Minutes of Plan meet of 8 Jan 2014 (follow-up of some pending topics from different areas) :

1. Documentation related :

1.1 Documentation : follow-up on level 2 (ITR) -- from 18 Dec & earlier :
(i) conversion of older reports : Check if test range is done (appendix + inputs from Sanjit/PAR were pending).
==> Sanjit has given; PAR still pending; agreed to release without that appendix.
(ii) Check status of new items : power monitor (Gaurav), 250-500 main + sub-band filters (Sougata), 550-900 main + sub-band filters (Imran), temp monitor (tbd later), spares for 1420 feed (tbd later)
==> work ongoing; to check 2 weeks later.
(iii) Also, can we look at which ITRs may be ready for conversion to NTRs?
==> to be taken up later.
Follow-up on all items after 2 weeks.

1.2 Follow-up on level 3 (NTR) -- pending for long : from 18 Dec & long before (SSK): to check status of report on design of OF system -- SSK to confirm.
==> no update; follow-up after 2 weeks.

2. FE & OF related :

2.1 Update on results from test range -- pending from 18 Dec & before (HRB/GSS/SSK) :
(i) phase centre tests for 250-500 CDF : to report on expt with 10 to 20 cm height change in 250-500 feed on one antenna to see how much change in sensitivity is seen. Need short note summarising the results : to check if last measurement with reduced height has been completed and results ready for release. Agreed to try alternative of cutting the support legs of one 250-500 feed cone to the 10 cm reduction, instead of shortened stool (to avoid fouling with cable assembly).
==> not done yet; may happen by next week.
(ii) update on calculation (based on reference paper) of the expected deflection at 450 or 500 MHz and comparison with measurements to see if we are losing significant sensitivity -- GSS to come back with refined version more relevant for GMRT, and to see if further expts with 250-500 or 500-1000 feed are useful : cross check of results from code (0.3 dB for 0.5 lambda) wrt curves from Kildall paper and our 250-500 feed was to be reported -- integration routine and other problems now sorted out and result matching with Kildal paper; was ready to move to GMRT specific case of 250-500 to get efficiency factor as a function of freq over the band, after porting the data for the feed pattern -- need updates on this.
==> work in progress. can check after 2 weeks.
(iii) status of phase centre checking for ver1 550-900 CDF and CSIRO feeds -- waitng for results with new VVM set-up : results from tests of ver2 550-900 CDF. To check (a) progress on getting encoder (b) results from interim scheme that has been deployed (with 0.5 deg accuracy) : some squint was seen in E-plane pattern, and was to be checked with another feed.
==> (a) encoder has come; may be ready next week (b) to repeat test with notch filter on same feed.
Follow-up on all items 2 weeks later.

2.2 RF dump tests for new feeds -- from 18 Dec & before (HRB/GSS/SSK/PAR/NK)

(i) new data and results for 130-260, 250-500, 550-900 (HRB/SSK/NK) : (a) follow-up on discussion of current results : understanding of bad antennas for 250-500 band (e.g. C6, S2, S4) -- control expts with 3-4 bad antennas (with one good antenna) tracking on-source & off-source for long duration (4-5 hr) test : some new expts were planned -- to check if results are available for discussion.
==> some problems identified at antenna base (e.g. C4 one channel); meanwhile, long run test has not been done yet.
(b) follow-up from analysis done by NK and plans for interferometric tests at 130-260; interferometric test has been done; awaiting results / update from NK.
==> no updates; YG to follow-up.
(ii) scheme for (re)calculation of expected values across the broad bands to be finalised (and added to measured curves) -- (SSK/GP/HRB) : curves now being done with constant QH value and with variation of T_lna with freq incorporated; FE team to model the effect of the main BPF and see if the curves match better with data. New curves with effect of BPF included to be generated and circulated.
==> not yet done; tbd with some of the recent data.
All items : follow-up after 2 weeks.

2.3 Follow-up on 550-900 MHz band filters -- from 18 Dec & before (ANR/SSK) :
(i) comparison of product obtained from ICON with in-house effort and finalisation of plans : technical comparison of individual filter responses shows in-house design to be slightly better; but need to complete integrated unit for insertion loss etc before taking a final decision, including plans for mass production. PCB had gone to Argus and results were to be checked and reported.
==> PCB has come and test has been done; insertion loss has increased upto 3 dB now and some change in slope on higher side; chassis to be designed and unit to be fully integrated; to make a detailed comparison with ICON after that. Check status after 2 weeks.

2.4 Total power detector for FE & common boxes -- from 18 Dec & earlier (GP/ANR/SSK): follow-up on plans for final scheme : 20 dB coupler for CB and 10 dB coupler for FE (at final output) with common 20 dB amplifier (maybe Galli-52 instead of Sirenza) -- sample unit ready and tested in the lab with 2 chans for 1 common box; lab monitoring of signals via MCM card now working :
(i) to confirm if SOP for reading from online and recording + interpreting (including calibration) has been checked by GP and it the matter can be closed.
==> can be closed, except for making provision for FE box and to ensure that manually system is set to default by operator.
(ii) sample data from 2 units installed on E2 shows basic things are working ok: more sophisticated tests with on and off source tracking to be done (alongwith digital backend recording) -- check if tests done and results ready for discussion.
==> to do one more check with noise on-off and comparison with RF deflection.
(iii) plans for building 70 units for CB : follow-up on status of mass production, including chassis etc.
==> no chassis available yet; to follow-up and confirm the status.
(iv) plans for prototype of the FE monitoring unit : initial test results show that scheme may not be viable, but later problem was found in the particular piece of Galli ampl used (alternate options not required) -- 2 units had been assembled and found to give identical performance as per specs; to finalise plans for putting in a FE box in the lab (with online interface with JPK), followed by antenna test.
==> problem connector vs feed-thru is resolved and ok to go ahead with feed-thru arrangement as per original chassis; ready for lab test in spare 250-500 FE box.
(v) plans for ITR on the work : to be initiated now -- work is ongoing (see item 1.1)
==> work has started.

Follow-up on all items after 2 weeks.

2.5 Fixing non-working L-band feeds (short-term problem) -- from 18 Dec & before (SSK/ANR) : we have 32 feeds, 3 not working (1 dismantled for making drawings of new feed); all are device failures, but not able to put new device and tune it; now some LNAs have been successfully assembled by Gopi and C3,W1,E2 & E5 have been fitted with these and found working ok.
(i) Spares : Agreed to have 5 LNAs ready and available as spares : device available, PCBs ordered, chassis under request, gold plating of wire to be done again (but discreetly) -- need status update.
==> no progress; waiting for gold plating (manpower busy) and also waiting for spare feed to be available.
(ii) check status of alternate LNA designs :
(a) for MMIC ckt of Skyworks: MOQ was 3000; trying to get a few samples from the vendor or from Argus.
==> not yet initiated.
(b) third option agreed upon : to try and see if design used for 550-900 can be modified for 1-2 GHz use -- to also check the design done by Abhay Kulkarni -- need update on this.
==> not looked at yet.
Follow-up all items after 2 weeks.

2.6 Spares for L-band FE electronics -- from 18 Dec & before (ANR/SSK) :
(check which of these items are complete and can be closed)
(i) RFCM-type card status (3 nos of old RFCM cards are ready) : check status of testing of new (compact) RFCM card -- is it cleared now?
==> 3 of 4 bands now selecting; still needs a bit more work to resolve fully and then make final version of the PCB.
(ii) noise gen : PCB assembled; bench test completed; to integrate with one spare feed for final testing -- waiting for spare feed : status update needed.
==> no change in status.
(iii) timescale for integration : all components (except LNAs) for assembly of 3 feeds now ready : check (a) progress on LNAs (only 1 spare was ready on 20th Nov, 2nd was being assembled) (b) plans for integration of one unit, using the presently dis-assembled feed.
==> no progress yet; need some time for completing the cables and then integrating can be taken up after spare 610 feed ready.
(iv) finalisation of plans for having total of 5 working spare feeds -- from mechanical to electronics : need status update.
==> mechanical : order going to Akvira (see item 6.4 for more details)
Follow-up on all aspects aftre 2 weeks.

2.7 Filters at different stages of receiver chain -- from 25 Dec & before (SSK) :
(i) scheme for filters at antenna base : 3 type of ckts being designed using the new device : 2, 4, 8 way switches with different possible applications : (a) notch filter bank switching in rx room (b) filter bank switching inside FE box (c) rcvr room monitoring. ckt for 2:1 and 4:1 versions assembled & tested -- 25 dB isolation achieved (changes from 25 to 17 dB with frequency for 8:1 switch); aim is to target integrated unit for 250-500 with 4 sub-band filters with integration of RFCM switch; completed and tested for ICON units; to be done for in-house units (needs more nos of switches to be made ready) -- 550-900 (Imran) was waiting for PCB to come, 250-500 (Sougata) is in design stage : need status updates on these.
==> 550-900 first integration has been done; for 250-500 integrated PCB is a lower priority item as present version with individual boxes is doable.

(ii) to follow-up on refinements of the scheme for each FE box : update on 250-500 system (first to be done), alongiwth LPF from 1750 and above for HI band. sample PCB for 1750 LPF had come and was to be tested + other elements were to be assembled to produce the first unit for 250-500 system : 2 versions (1600 & 1750 MHz cut-off) assembled and tested; were to be installed in one antenna to check performance; was agreed to first test each of these (one after the other) at antenna base and obtain plots for Lband, with and without the filters -- check status of this.
==> tests have been done; results to be circulated; also notch filter for 1800 MHz is available -- can also be included in the test.
Status check on all items after 2 weeks.

2.8 Characterisation of new FE+OF systems -- from 18 Dec (PAR/SSK/SN) :
(i) Summary of L-band results and performance :
(a) stability of power levels and (b) bandshape over 400 MHz :
antennas with large (~ 18 dB) slope (C13, W1, S2...) to be checked and reported; ripples and funny bandshapes to be characterised and compared with antenna base measurements to try and identify source of problem. New data taken in early Dec (was being looked at by Sanjit, Ramesh & Ankur) : need status update on this.
==> work in progress; ripples seen in S6 etc.
(ii) Summary of 250-500 band performance :
(a) stability of power levels and bandshapes; variation from antenna to antenna.
==> no updates.
(b) presence of RFI in the band (TV lines etc) : need updates from new tests.
==> work in progress, but not clear... newer data over 130-260 MHz shows evidence for more terrestial TV transmitters; needs to be investigated & mapped.
(iii) settings of optimal attenuator values by control room : since 2 dB step size will remain for some time (till new MCM is used), settings in online files to be changed accordingly; look-up table or file arrangement with recommended attenuaiton setting for each band to be made available in control room asap, in coordination with Ops Group; and setting to be read from a config file -- check if these have been completed : pending for long for an update.
==> OF group to check with Ops group if done or not.
(iv) to characterise the recommended attenuator settings for different bands : completed for Lband, 250-500, existing 610, only 130-260 / existing 150 -- to be confirmed once by Ops Group and matter to be closed.
Follow-up on all items after 2 weeks.

2.9 Releasing existing 610 MHz system as part of the wideband upgrade -- from 18 Dec (SSK/ANR) : Preliminary tests of existing 610 feed through the wideband path show that ~ 100 MHz usable bandwidth may be possible as part of phase-I uGMRT. Agreed that only RF filter needs to be changed to new 550-900 BPF (alongwith mobile band and TV notch filters) -- two sample units had been made ready and were to be installed in FE ch1 of C8 & C12 : need status update and test results from these; also update on making more nos of these 2 notch filters.
==> sample test results looked encouraging; to be circulated; meanwhile, to start checking if PCB is available... to explore the microstrip option instead of lumped ckt.

2.10 Status of new CSIRO feeds : from 18 Dec & before (ANR/JNC) : to report on performance of the newly manufactured feeds.
==> new results are slightly better compared to ver2 (casting) but nowhere as good as original ver 1 (machined by Godrej) -- tbc with JNC about what to do.
Follow-up after 2 weeks.

2.11 Calibration scheme with radiator at apex of antenna -- from 18 Dec & before (SSK/PAR/SRoy/DO/YG): to follow-up on detailed discussion meeting in August : to schedule follow-up action appropriately, breaking the issue into smaller, more tractable parts :
(i) testing of dynamic range of old vs new electronics with parallel set-up on 2 antennas (SRoy to work with FE team on this) -- antennas to use had been identified; 2nd copy of crossed dipole was to be located for use and expt to be scheduled; first test of new system (C4) was to have been completed : need status update.
==> one set of tests done for C4 as fn of az, el and time; one more data set will be taken shortly; will compare with old C1 results; meanwhile modification needed at C1 for accommodating cross-dipole is being done; noise source test will be carried out after first round of CW tests completed.
(ii) finer aspects of variation of ampl and phase with various external parameters (DO to work with FE team on this) -- need an update on the status of this.
==> no updates available.
(iii) plans for taking up other longer ranging goals to be discussed, including procurement of new broadband antenna (suitable unit has been identified); meanwhile feasibility of connecting noise source and radiating has been checked by PAR -- can be carried out when needed. To firm up plans for these activities.
==> agreed to buy 2 nos of antennas.
Follow-up on all items after 2 weeks.

3. RFI related matters :

3.1 RFI testing of Miltech PC + peripherals for antenna base -- from 18 Dec and earlier (PAR/SSK/SN):
Integrated testing new i5 Miltech PC with peripherals -- using new shielded ports, connectors, shielded media converter + cables, Rabbit card (with Akvira make shielded box) showed good performance (new report with block diag and conclusions/ recommendations has been circulated); mech group had ordered 2 shielded boxes for Rabbit with Akvira (with modified connector diagrams and different back plates for extra SPI port). Tests were being done with these new units (using feed through arrangement till shielded 37 pin D-type connectors come) : need status update on this work.
==> email update from PAR : assembly work in progress. To check status after 2 weeks.

3.2 RFI tests of ethernet switches for antenna base -- from 18 Dec & earlier (SN/BAK/SSK): Testing the available switches for RFI (as per 29 May discussion); plans for design of RFI box for ethernet switches :
(i) procurement & testing of switches : sample units from Cisco, HP, Dlink and DELL had come and have been tested for RFI -- some are better than others; use of shielded CAT5 cable provides significant improvement; detailed report to be circulated and matter taken up for discussion.
==> email update from PAR : initial version of report circulated to group.
(ii) plans to use shielded eth adaptor that can be mounted on panel -- available from CAT5 work to be used for prototype testing.
==> no clear update on this.
(iii) design of RFI enclosure -- inputs for front panel design given to R. Lolap for completion of drawing; prototype was under fabrication in w'shop -- need status update.
==> email update from PAR : quote received; order to be placed -- not being

fabricated in NCRA w'shop.
Follow-up on all items after 2 weeks.

3.3 Mobile phone RFI -- from 18 Dec & earlier (SSK/PAR) :
Progress on identifying the operators at and around E06, and in Nagar, Junnar directions : letter had been sent to BSNL, some follow-up action was on (tilting of transmitter vs changing to 1800); need to check if outcome is satisfactory or letter to higher authority is required : dialogue with planning cell in charge of Pune had been initiated, with plans to contact DGM Telecon for Ahmednagar circle; status update needed.
==> email update from PAR : BSNL engineer planning a visit to understand level of RFI generated from 950 MHz towers at Gulanchwadi, Pargaon Mangarul etc.
Follow-up after 2 weeks.

3.4 Follow-up on UPS RFI -- from 18 Dec & earlier (SSK/PAR/RVS) :
(i) procurement of units from Miltech (RVS) : RFI testing of 3 nos repaired 1 kVA units from Miltech showed significant RFI -- updated report comparing original Miltech 1 kVA test reports (with same load conditions) have been circulated; it had been agreed to reject the 1 kVA units. Miltech has offered improved version for 3 kVA unit -- this can be followed up. Meanwhile, Miltech had requested for a chance to improve the 1 kVA units also : need status update on this.
==> Miltech will supply 3 kVA unit within next 3-4 weeks or so; for 1 kVA units, he has agreed to improve the unit to pass the test -- electrical is ready to give it a try; need to work out a scheme for transfer from servo to electrical.
(ii) follow-up from RFI testing of Ador 3 kVA units -- 2 nos of tested and cleared units are in use : in C9 and C10. Is there a final report on both of these? RFI team was to confirm.
==> no update.
(iii) Bigger units : agreed to order 2 nos of 4.5 kVA units with Ador, with option of split o/p with different isolation transformers (3 + 1.5 kVA); indent had been raised; to follow-up on status of this.
==> order will be placed shortly.
Check status on all items after 2 weeks.

3.5 Discussion relating to Industrial RFI survey -- from 18 Dec & before (PAR/SSK) :
revised docs (from 2009 and 2012 discussions) had been circulated by RFI group and were discussed in 5 June meeting (is the document too exhaustive?) : follow-up action identified :
(i) map showing zones and villages / towns to be completed on new SoI map and sent to DIC office for NOC clearance decisions; some information has been shared with DIC office; to discuss possible follow-up action on this.
==> email update from PAR : form has been finalised -- all required parameters are covered -- to be used for future cases (needs some clarification).
(ii) plans for starting survey asap with 2 teams (with extra manpower), lasting for one month, using SoI maps etc, to be finalised; foram specifying the format and information needed for survey was being finalised with DIC office, and plans were to start by 1st or 2nd week of Jan : need status update on this.
==> email update from PAR : information from DIC office is that they would like to start the survey from 1st week of April (!) and continue till end of May -- delay from their side is due to year-end work.

4. Operations :

4.1 New, improved Miltech PC -- from 18 Dec and earlier (CPK/SN/PAR) : 2 units of Miltech PC with two changes (more screws on panels + panel mount pwrline filters instead of chassis mount) under order by Ops Group : to check status of the enquiry / order.
==> quotation has come and file under process by Ops group. To follow-up after 2 weeks.

4.2 Development of M&C software -- from 18 Dec & before (JPK/RU/SN/NGK) :
(i) plans for modbus learning & testing : simple set-up of PC + Rabbit card with modbus for "hello world" level -- first test results should be available now.
==> not taken up yet.
(ii) plans for EPICS testing : one Rabbit card with associated details and code given to TCS for PoC work; simple set-up of PC + EPICS talking to Rabbit (with our native protocol), to be set-up in our lab also, so that first version from TCS can be tested in our lab; also PC104 to be given to TCS (emulator to be made ready by JPK).
==> now TCS has both Rabbit and PC104 available to them and working; will start work on setting-up of EPICS and CSS environment on one PC in the lab.
(iii) follow-up on interface of FE with new M&C system -- Naresh + Charu and Sougata have started work on this; will have full set-up of FE + Common box, but will start with M&C of common box using Rabbit card : to provide latest update on matters, and problems if any.
==> work in progress by the 3 member team; initial h'ware connectivity may not be too much work as 32 lines have to be mapped to 16 lines on interface card; low level software for bit pattern setting may be enough to demonstrate basic connectivity; after that, packaging will be the issue.
(iv) plans for populating a few (5-6) antennas with Rabbit card (with or without PC) for testing. C3 and C6 have been completed, and moving to S3, W3 + C8, C11 for prototype testing for TCS PoC version : need status update.
==> W3 will start now; C8, C11 don't need Rabbit -- only PC104 is required..
To follow-up on all items after 2 weeks.

4.3 Identification of appropriate ethernet switches for antenna base (and GAB) -- from 18 Dec & before (SN/PAR/BAK) : Ops group to work with Comp team and RFI group to plan for trying some of the 16/24 port switches for antenna base use :
(i) update on process of short-listing and comparison of specs, followed by indenting for suitable samples : items received from CISCO, HP, DELL & D-link -- update on orders & delivery of these.
==> items delivered (see item 3.2 above)
(ii) RFI testing of switches as they arrive :
==> all have been tested (see 3.2 above)
(iii) appropriate RFI cabinet for the switch -- update on status of work and plans
==> see also item 3.2 above
(iv) plans for BE teams need for switches in GAB system (in receiver room)
==> agreed to use 8-port switches for now though they are worse in RFI than the 24 port ones tested for antenna base use, and take a final decision later on; same for the SMPS power supply-- 2 nos ok for now.
To follow-up on all items after 2 weeks.

4.4 Planning for proper space utilisation for new equipment at antenna base -- from 18 Dec & before (SN/CPK/RVS) : long-term plans for proper utilisation of the space at antenna base. Follow-up on 14 Aug discussion on first report : reducing space requirement by making MCM cards horizontal -- confirmed; electrical has confirmed that isolation transformer can be put above the rack; discussion

about electrical consumption (2.6 kVA for new systems, 3.5 to 4 kVA for old + new systems) -- can this be reduced?
pending action items (SN was to follow-up with RVS and servo and report back) :
(i) joint measurements of load to be done by Ops and Electrical and reported.
What is the final conclusion from this? current practical load is around 1 kVA, but projections are still reaching close to 3 kVA -- may need a meeting to resolve this.
==> draft note has gone in internal circulation...
(ii) current UPS is 1 ph to 1 ph unit; can be made 3 ph to 1 ph (has the same footprint) and may have some advantages -- need a more detailed discussion to finalise plans.
==> no updates.
(iii) can we have single, shared UPS for both servo computer and rest of the ABR electronics? RVS & SKB to produce basic connection/wiring diagram for discussion by next week.
==> work to be initiated on this shortly.
(iv) how carefully does the load balancing for the 3 ph input to antenna shell needs to be done? not clear...
==> not discussed.
To follow-up on all action items 2 weeks from now.

5. Back-ends :

5.1 GPU corr (GWB-II) : release of 4 node, 8 input, 200/250/400 MHz version -- from 25 Dec & before (SHR/SSK/BAK) : (NOTE : GWB-I is existing released system !) : agreed to make 4 T7500 nodes with C2050/C2075 Fermi GPUs + remaining 4 T7500 nodes as host machines (to take care that these are the ones that transient pipeline uses presently so that sharing is possible); this should have ALL basic modes : total intensity and full polar IFR modes; IA + PA BFR modes with process_psr pipeline attached; full GUI support; to come up in trial code section without affecting the presently released mode.

(i) 1.7 s time offset problem to be resolved. May need checking with long stretches of data to see if the problem shows up -- SHR & GSJ planning some tests : confirmed with GSB tests that problem is there, but reason is not clear still.
==> have found problem in mapping of time stamp to data blocks and it appears to be corrected now; need to take some scans at L-band to confirm.

(ii) update on code for providing basic beam modes (computational load is 3 to 10% of GPU compute time) : first version of process_psr pipeline for IA has been released (with basic SOP), but essentially non-functional : to check if problem of threads not synchronised during the addition needs is now resolved by having a separate kernel (what is the additional compute time due to that?) moving out of phase shift kernel). need update if code with separate kernel has been tested on antenna signal and what is the extra loading.
==> IA mode tested on pulsar signal : addition of 7 antennas in single pol at 610 MHz will 200 MHz LPF -- can test with different settting in pmon to check S/N effects. yet to quantify the computational effort; to hand over to SSK for the process_psr pipeline work; to be integrated GWB-II code.

(iii) development of 4/8 bit versions of the code, for allowing BW > 200 MHz to be released : change in FPGA design is done and one common design with parameter is available and GPU side only iteger delay correction needs to be completed; and then test with sky signal.

==> no change.

(iv) modification GUI for supporting new modes, as well as having support for code in trial branch -- status and plans for this to be discussed : agreed to do this as different versions (instead of trial and release) but with clear separation of directories, codes and set-up files; NSR is already looking at the work to be done.
==> all work for corr mode of GWB-II GUI is done, waiting to be released; then will add beam mode options.
To follow-up on relevant items next week.

5.2 GPU corr (GWB-III) : next gen system -- from 18 Dec & before (SHR/SSK/GSJ/BAK) :
New improvements needed for finalising the design for the full 32 ant, dual pol system :
(i) plans for work on 4 new DELL machines (GSJ/SHR) : m/cs are in the rack and wiring + cabling is complete, running with analog noise source; new code with 2 x 10 Gbe I/) + improved logic for assigning specific threads to each core + env variables : no packet loss seen and tested for 200 MHz / 8 bits and 400 MHz / 4 bits, 16 inputs and working ok; without separate host m/c and without online interface.
==> this can be closed.
(ii) improvements in GPU code using K20 card (SHR/SSK) : cross-check on FFT code (done and can be closed); calibrating MAC performance vs data reshuffle load (done and no further improvements look possible; can be closed);
(a) looking at XGPU code (with Pradeep of nvidia) -- need status update on this;
==> work is ongoing and meeting with nvidia is due this week.
(b) trying sample PA beamformer code to estimate load etc. -- need status update.
==> no updates.
(iii) to start testing 400 MHz BW mode -- how best to conduct these tests? changes in the main code to handle 4 bits etc are resolved? to check how best to try this and come back with possible options. may need new FPGA design or may be able to merge both the designs? Appears that design of 400 MHz / 4 bit system is being moved to 620/720 m/cs; needs some change in 10 Gbe core due to change in OS.
To discuss and merge this agenda item accordingly with item (ii) above.
==> the basic 4bit design has been done and available in GWB-II (all of the above issues have been addressed) and will be ported to GWB-III when needed.
(iv) Layout and racks (GSJ/BAK) : layout diagram to be updated and long-term plan for racks to be initiated; agreed to purchase 2-4 standard racks urgently -- status update on order with President needed.
==> 3 different kinds of President racks discussed; to try and finalise after one discussion with RVS; to try and get one (simple) rack for immediate use.
(v) procurement of accessories like network cards, disks, cables etc to be looked into -- to finalise the type and quantities : 4 nos of dual 10 Gbe NIC cards is in process; no other major requirement at present; can be checked and closed.
==> no updates here; may be closed.
(vi) new purchase of Roach boards etc : follow-up on status of procurement.
==> folder in progress.
(vii) purchase of 4 more T620 machines : status update on this.
==> ready to order (folder is ready for order) alongwith order for 8 K20s -- waiting for final quotes.
To follow-up on all items after 2 weeks.

5.3 8 antenna back-end tests and future plans -- from 18 Dec & earlier (DVL/YG) :
(i) report of efforts to summarise all the existing tests and results : report for Lband have been circulated; needs detailed discussion.
(ii) plans to extract consolidated results and conclusions from the above --

phase wraps, ripples in passband, spikes / RFI in passband, variation of self power levels (with time and across frequency), level of correlation coeffs etc : initial update circulated by DVL -- to be discussed and follow-up action firmed up.
(iii) report on results from Lband test data for imaging of point sources and extended sources (including comparison with GSB) and further plans : to confirm if position shift is due to self-cal or not. To fold in results from tests of 18th Sep -- update is needed !
(iv) plans for further testing with 110 / 200 MHz BW signals at LBand.
(v) plans/strategy for tests at 250-500 and also 610 -- some long tracks to be tried out.
(vi) plans for running the new GWB back-end in parallel with all GSB observations at Lband, 610, 325 and 243 bands -- this appears to be happening fairly regularly; need to have script in place for some automated analysis of GWB data.
==> overall summary : some discussions on results and follow-up analysis are ongoing with DVL; plans for regular running of GWB in parallel with GSB for all regular observations are not yet firmly in place; also scheme for automated first cut analysis of the GWB data is being put in place and will take some more time. To follow-up on all these items next week.

5.4 SFP testing of final unit -- from 18 Dec and before (KDB/BAK) : SFP+ side working fine for both Cu and Opt; XAUI CX4 side is still flaky -- may still be marginal in timing. Update required from new tests after fresh inputs from vendor. Follow-up with MTE for PCB details and then with Vitesse -- is it resolved now?
==> still waiting for Vitesse. To check status after 2 weeks.

5.5 RFI filtering -- from 18 Dec (KDB/BAK/YG) : to add the first version of the real-time RFI filtering block (after some modifications) into the packetizer (now done -- in one input out of two with different options like replace by median or by constant or by digital noise source sample or clip to threshold via s'ware registers) -- to report about performance of the same, include testing; and then to look into optimisation of resource usage.
==> not much progress, but work in process. Status check after 2 weeks.

5.6 Next-gen time & frequency standards -- from 18 Dec & before (NDS/BAK) :
(i) completion of tests at GMRT and summary of the same by NDS & plans to visit NPL -- follow-up on plans for visit to NPL -- to confirm final dates, to discuss details about plans for tests to be done at NPL, including report of tests done so far at GMRT.
==> document of results from here being finalised, will be sent shortly; plans for tests to be done hae been discussed with them.
(ii) follow-up from the visit of Symmetricom -- a summary note about learnings and minutes from the visit was to be circulated, including comparison table etc, before circulating kinds of specs are required for our system.
(a) discussion with NPL about the tests to be done -- confirm final plans.
(b) to circulate the detailed specs made by BE group to larger audience in NCRA -- this has been done; need follow-up discussion.
==> no response from NCRA members -- needs a bit pushing?
Follow-up after 2 weeks, by which time team will be back from visit to NPL.

6. Other items :

6.1 New python assembly design -- from 18 Dec (HSK/SSK) : FE group wants the python configuration in E6 to be adopted for all antennas -- this needs to be

discussed with mechanical group and finalised; FE and mech have dicussed about plans for modified python assembly that will give additional protection to cables; SSK will circulate a report about this; and after discussion and clearing the plans, sample unit will be made by mech group; meanwhile, mech group will circulate short report on their understanding of the matter, alongwith photos, in 10 days time -- need update on all of these issues.
==> email update from HSK : work in progress; will shortly circulate the note.

6.2 Coexistence of 50-90 MHz RRI feed with 250-500 CDF on same face of turret -- from 18 Dec and before (HSK) : Mech group to check for possible solutions and report back, after looking at the drawings (awaited from RRI). Update from mech group about reverse engineering for making the drawings.
==> email update from HSK : work in progress.

6.3 Problem of access to FE boxes with 500-1000 CDF feed -- from 18 Dec & before (HSK) : Update on new solution being designed by Mech group -- test was to be done : trial run in dummy area, followed by test at actual height -- to update results of these tests, which are pending for long time now !
==> email update from HSK : no progress on this -- it is a matter of concern and needs to be looked into (YG to follow-up with HSK separately).

6.4 Fabrication of 5 spare L-band feeds -- from 18 Dec & before (SSK/HSK) : to finalise the plans for construction with the different vendors : Akvira, Physimech, Fabromech) : to update status of the procurement work.
==> email update from HSK : Akvira was the lowest bidder; folder in process for placing the order (for how many feeds plus other components?)

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Minutes of Plan meet of 8 Jan 2014 (follow-up of some pending topics from different areas) :

1. Documentation related :

1.1 Documentation : follow-up on level 2 (ITR) -- from 18 Dec & earlier :
(i) conversion of older reports : Check if test range is done (appendix + inputs from Sanjit/PAR were pending).
==> Sanjit has given; PAR still pending; agreed to release without that appendix.
(ii) Check status of new items : power monitor (Gaurav), 250-500 main + sub-band filters (Sougata), 550-900 main + sub-band filters (Imran), temp monitor (tbd later), spares for 1420 feed (tbd later)
==> work ongoing; to check 2 weeks later.
(iii) Also, can we look at which ITRs may be ready for conversion to NTRs?
==> to be taken up later.
Follow-up on all items after 2 weeks.

1.2 Follow-up on level 3 (NTR) -- pending for long : from 18 Dec & long before (SSK): to check status of report on design of OF system -- SSK to confirm.
==> no update; follow-up after 2 weeks.

2. FE & OF related :

2.1 Update on results from test range -- pending from 18 Dec & before (HRB/GSS/SSK) :
(i) phase centre tests for 250-500 CDF : to report on expt with 10 to 20 cm height change in 250-500 feed on one antenna to see how much change in sensitivity is seen. Need short note summarising the results : to check if last measurement with reduced height has been completed and results ready for release. Agreed to try alternative of cutting the support legs of one 250-500 feed cone to the 10 cm reduction, instead of shortened stool (to avoid fouling with cable assembly).
==> not done yet; may happen by next week.
(ii) update on calculation (based on reference paper) of the expected deflection at 450 or 500 MHz and comparison with measurements to see if we are losing significant sensitivity -- GSS to come back with refined version more relevant for GMRT, and to see if further expts with 250-500 or 500-1000 feed are useful : cross check of results from code (0.3 dB for 0.5 lambda) wrt curves from Kildall paper and our 250-500 feed was to be reported -- integration routine and other problems now sorted out and result matching with Kildal paper; was ready to move to GMRT specific case of 250-500 to get efficiency factor as a function of freq over the band, after porting the data for the feed pattern -- need updates on this.
==> work in progress. can check after 2 weeks.
(iii) status of phase centre checking for ver1 550-900 CDF and CSIRO feeds -- waitng for results with new VVM set-up : results from tests of ver2 550-900 CDF. To check (a) progress on getting encoder (b) results from interim scheme that has been deployed (with 0.5 deg accuracy) : some squint was seen in E-plane pattern, and was to be checked with another feed.
==> (a) encoder has come; may be ready next week (b) to repeat test with notch filter on same feed.
Follow-up on all items 2 weeks later.

2.2 RF dump tests for new feeds -- from 18 Dec & before (HRB/GSS/SSK/PAR/NK)
(i) new data and results for 130-260, 250-500, 550-900 (HRB/SSK/NK) : (a) follow-up on discussion of current results : understanding of bad antennas for 250-500 band (e.g. C6, S2, S4) -- control expts with 3-4 bad antennas (with one good antenna) tracking on-source & off-source for long duration (4-5 hr) test : some new expts were planned -- to check if results are available for discussion.
==> some problems identified at antenna base (e.g. C4 one channel); meanwhile, long run test has not been done yet.
(b) follow-up from analysis done by NK and plans for interferometric tests at 130-260; interferometric test has been done; awaiting results / update from NK.
==> no updates; YG to follow-up.
(ii) scheme for (re)calculation of expected values across the broad bands to be finalised (and added to measured curves) -- (SSK/GP/HRB) : curves now being done with constant QH value and with variation of T_lna with freq incorporated; FE team to model the effect of the main BPF and see if the curves match better with data. New curves with effect of BPF included to be generated and circulated.
==> not yet done; tbd with some of the recent data.
All items : follow-up after 2 weeks.

2.3 Follow-up on 550-900 MHz band filters -- from 18 Dec & before (ANR/SSK) :
(i) comparison of product obtained from ICON with in-house effort and finalisation of plans : technical comparison of individual filter responses shows in-house design to be slightly better; but need to complete integrated unit for insertion loss etc before taking a final decision, including plans for mass production. PCB had gone to Argus and results were to be checked and reported.
==> PCB has come and test has been done; insertion loss has increased upto 3 dB

now and some change in slope on higher side; chassis to be designed and unit to be fully integrated; to make a detailed comparison with ICON after that. Check status after 2 weeks.

2.4 Total power detector for FE & common boxes -- from 18 Dec & earlier (GP/ANR/SSK): follow-up on plans for final scheme : 20 dB coupler for CB and 10 dB coupler for FE (at final output) with common 20 dB amplifier (maybe Galli-52 instead of Sirenza) -- sample unit ready and tested in the lab with 2 chans for 1 common box; lab monitoring of signals via MCM card now working :
(i) to confirm if SOP for reading from online and recording + interpreting (including calibration) has been checked by GP and it the matter can be closed.
==> can be closed, except for making provision for FE box and to ensure that manually system is set to default by operator.
(ii) sample data from 2 units installed on E2 shows basic things are working ok: more sophisticated tests with on and off source tracking to be done (alongwith digital backend recording) -- check if tests done and results ready for discussion.
==> to do one more check with noise on-off and comparison with RF deflection.
(iii) plans for building 70 units for CB : follow-up on status of mass production, including chassis etc.
==> no chassis available yet; to follow-up and confirm the status.
(iv) plans for prototype of the FE monitoring unit : initial test results show that scheme may not be viable, but later problem was found in the particular piece of Galli ampl used (alternate options not required) -- 2 units had been assembled and found to give identical performance as per specs; to finalise plans for putting in a FE box in the lab (with online interface with JPK), followed by antenna test.
==> problem connector vs feed-thru is resolved and ok to go ahead with feed-thru arrangement as per original chassis; ready for lab test in spare 250-500 FE box.
(v) plans for ITR on the work : to be initiated now -- work is ongoing (see item 1.1)
==> work has started.
Follow-up on all items after 2 weeks.

2.5 Fixing non-working L-band feeds (short-term problem) -- from 18 Dec & before (SSK/ANR) : we have 32 feeds, 3 not working (1 dismantled for making drawings of new feed); all are device failures, but not able to put new device and tune it; now some LNAs have been successfully assembled by Gopi and C3,W1,E2 & E5 have been fitted with these and found working ok.
(i) Spares : Agreed to have 5 LNAs ready and available as spares : device available, PCBs ordered, chassis under request, gold plating of wire to be done again (but discreetly) -- need status update.
==> no progress; waiting for gold plating (manpower busy) and also waiting for spare feed to be available.
(ii) check status of alternate LNA designs :
(a) for MMIC ckt of Skyworks: MOQ was 3000; trying to get a few samples from the vendor or from Argus.
==> not yet initiated.
(b) third option agreed upon : to try and see if design used for 550-900 can be modified for 1-2 GHz use -- to also check the design done by Abhay Kulkarni -- need update on this.
==> not looked at yet.
Follow-up all items after 2 weeks.

2.6 Spares for L-band FE electronics -- from 18 Dec & before (ANR/SSK) :
(check which of these items are complete and can be closed)
(i) RFCM-type card status (3 nos of old RFCM cards are ready) : check status of

testing of new (compact) RFCM card -- is it cleared now?
==> 3 of 4 bands now selecting; still needs a bit more work to resolve fully and then make final version of the PCB.
(ii) noise gen : PCB assembled; bench test completed; to integrate with one spare feed for final testing -- waiting for spare feed : status update needed.
==> no change in status.
(iii) timescale for integration : all components (except LNAs) for assembly of 3 feeds now ready : check (a) progress on LNAs (only 1 spare was ready on 20th Nov, 2nd was being assembled) (b) plans for integration of one unit, using the presently dis-assembled feed.
==> no progress yet; need some time for completing the cables and then integrating can be taken up after spare 610 feed ready.
(iv) finalisation of plans for having total of 5 working spare feeds -- from mechanical to electronics : need status update.
==> mechanical : order going to Akvira (see item 6.4 for more details)
Follow-up on all aspects aftre 2 weeks.

2.7 Filters at different stages of receiver chain -- from 25 Dec & before (SSK) :
(i) scheme for filters at antenna base : 3 type of ckts being designed using the new device : 2, 4, 8 way switches with different possible applications : (a) notch filter bank switching in rx room (b) filter bank switching inside FE box (c) rcvr room monitoring. ckt for 2:1 and 4:1 versions assembled & tested -- 25 dB isolation achieved (changes from 25 to 17 dB with frequency for 8:1 switch); aim is to target integrated unit for 250-500 with 4 sub-band filters with integration of RFCM switch; completed and tested for ICON units; to be done for in-house units (needs more nos of switches to be made ready) -- 550-900 (Imran) was waiting for PCB to come, 250-500 (Sougata) is in design stage : need status updates on these.
==> 550-900 first integration has been done; for 250-500 integrated PCB is a lower priority item as present version with individual boxes is doable.
(ii) to follow-up on refinements of the scheme for each FE box : update on 250-500 system (first to be done), alongiwth LPF from 1750 and above for HI band. sample PCB for 1750 LPF had come and was to be tested + other elements were to be assembled to produce the first unit for 250-500 system : 2 versions (1600 & 1750 MHz cut-off) assembled and tested; were to be installed in one antenna to check performance; was agreed to first test each of these (one after the other) at antenna base and obtain plots for Lband, with and without the filters -- check status of this.
==> tests have been done; results to be circulated; also notch filter for 1800 MHz is available -- can also be included in the test.
Status check on all items after 2 weeks.

2.8 Characterisation of new FE+OF systems -- from 18 Dec (PAR/SSK/SN) :
(i) Summary of L-band results and performance :
(a) stability of power levels and (b) bandshape over 400 MHz :
antennas with large (~ 18 dB) slope (C13, W1, S2...) to be checked and reported; ripples and funny bandshapes to be characterised and compared with antenna base measurements to try and identify source of problem. New data taken in early Dec (was being looked at by Sanjit, Ramesh & Ankur) : need status update on this.
==> work in progress; ripples seen in S6 etc.
(ii) Summary of 250-500 band performance :
(a) stability of power levels and bandshapes; variation from antenna to antenna.
==> no updates.
(b) presence of RFI in the band (TV lines etc) : need updates from new tests.
==> work in progress, but not clear... newer data over 130-260 MHz shows

evidence for more terrestial TV transmitters; needs to be investigated & mapped.
(iii) settings of optimal attenuator values by control room : since 2 dB step
size will remain for some time (till new MCM is used), settings in online files
to be changed accordingly; look-up table or file arrangement with recommended
attenuaiton setting for each band to be made available in control room asap,
in coordination with Ops Group; and setting to be read from a config file --
check if these have been completed : pending for long for an update.
==> OF group to check with Ops group if done or not.
(iv) to characterise the recommended attenuator settings for different bands :
completed for Lband, 250-500, existing 610, only 130-260 / existing 150 -- to
be confirmed once by Ops Group and matter to be closed.
Follow-up on all items after 2 weeks.

2.9 Releasing existing 610 MHz system as part of the wideband upgrade -- from
18 Dec (SSK/ANR) : Preliminary tests of existing 610 feed through the wideband
path show that ~ 100 MHz usable bandwidth may be possible as part of phase-I uGMRT.
Agreed that only RF filter needs to be changed to new 550-900 BPF (alongwith mobile
band and TV notch filters) -- two sample units had been made ready and were to be
installed in FE ch1 of C8 & C12 : need status update and test results from these;
also update on making more nos of these 2 notch filters.
==> sample test results looked encouraging; to be circulated; meanwhile, to
start checking if PCB is available... to explore the microstrip option instead
of lumped ckt.

2.10 Status of new CSIRO feeds : from 18 Dec & before (ANR/JNC) : to report on
performance of the newly manufactured feeds.
==> new results are slightly better compared to ver2 (casting) but nowhere as
good as original ver 1 (machined by Godrej) -- tbc with JNC about what to do.
Follow-up after 2 weeks.

2.11 Calibration scheme with radiator at apex of antenna -- from 18 Dec & before
(SSK/PAR/SRoy/DO/YG): to follow-up on detailed discussion meeting in August : to
schedule follow-up action appropriately, breaking the issue into smaller, more
tractable parts :
(i) testing of dynamic range of old vs new electronics with parallel set-up on 2
antennas (SRoy to work with FE team on this) -- antennas to use had been identified;
2nd copy of crossed dipole was to be located for use and expt to be scheduled;
first test of new system (C4) was to have been completed : need status update.
==> one set of tests done for C4 as fn of az, el and time; one more data set will
be taken shortly; will compare with old C1 results; meanwhile modification needed
at C1 for accommodating cross-dipole is being done; noise source test will be
carried out after first round of CW tests completed.
(ii) finer aspects of variation of ampl and phase with various external parameters
(DO to work with FE team on this) -- need an update on the status of this.
==> no updates available.
(iii) plans for taking up other longer ranging goals to be discussed, including
procurement of new broadband antenna (suitable unit has been identified); meanwhile
feasibility of connecting noise source and radiating has been checked by PAR --
can be carried out when needed. To firm up plans for these activities.
==> agreed to buy 2 nos of antennas.
Follow-up on all items after 2 weeks.

3. RFI related matters :

3.1 RFI testing of Miltech PC + peripherals for antenna base -- from 18 Dec and earlier (PAR/SSK/SN):
Integrated testing new i5 Miltech PC with peripherals -- using new shielded ports, connectors, shielded media converter + cables, Rabbit card (with Akvira make shielded box) showed good performance (new report with block diag and conclusions/ recommendations has been circulated); mech group had ordered 2 shielded boxes for Rabbit with Akvira (with modified connector diagrams and different back plates for extra SPI port). Tests were being done with these new units (using feed through arrangement till shielded 37 pin D-type connectors come) : need status update on this work.
==> email update from PAR : assembly work in progress. To check status after 2 weeks.

3.2 RFI tests of ethernet switches for antenna base -- from 18 Dec & earlier (SN/BAK/SSK): Testing the available switches for RFI (as per 29 May discussion); plans for design of RFI box for ethernet switches :
(i) procurement & testing of switches : sample units from Cisco, HP, Dlink and DELL had come and have been tested for RFI -- some are better than others; use of shielded CAT5 cable provides significant improvement; detailed report to be circulated and matter taken up for discussion.
==> email update from PAR : initial version of report circulated to group.
(ii) plans to use shielded eth adaptor that can be mounted on panel -- available from CAT5 work to be used for prototype testing.
==> no clear update on this.
(iii) design of RFI enclosure -- inputs for front panel design given to R. Lolap for completion of drawing; prototype was under fabrication in w'shop -- need status update.
==> email update from PAR : quote received; order to be placed -- not being fabricated in NCRA w'shop.
Follow-up on all items after 2 weeks.

3.3 Mobile phone RFI -- from 18 Dec & earlier (SSK/PAR) :
Progress on identifying the operators at and around E06, and in Nagar, Junnar directions : letter had been sent to BSNL, some follow-up action was on (tilting of transmitter vs changing to 1800); need to check if outcome is satisfactory or letter to higher authority is required : dialogue with planning cell in charge of Pune had been initiated, with plans to contact DGM Telecon for Ahmednagar circle; status update needed.
==> email update from PAR : BSNL engineer planning a visit to understand level of RFI generated from 950 MHz towers at Gulanchwadi, Pargaon Mangarul etc.
Follow-up after 2 weeks.

3.4 Follow-up on UPS RFI -- from 18 Dec & earlier (SSK/PAR/RVS) :
(i) procurement of units from Miltech (RVS) : RFI testing of 3 nos repaired 1 kVA units from Miltech showed significant RFI -- updated report comparing original Miltech 1 kVA test reports (with same load conditions) have been circulated; it had been agreed to reject the 1 kVA units. Miltech has offered improved version for 3 kVA unit -- this can be followed up. Meanwhile, Miltech had requested for a chance to improve the 1 kVA units also : need status update on this.
==> Miltech will supply 3 kVA unit within next 3-4 weeks or so; for 1 kVA units, he has agreed to improve the unit to pass the test -- electrical is ready to give it a try; need to work out a scheme for transfer from servo to electrical.
(ii) follow-up from RFI testing of Ador 3 kVA units -- 2 nos of tested and cleared

units are in use : in C9 and C10. Is there a final report on both of these? RFI team was to confirm.
==> no update.
(iii) Bigger units : agreed to order 2 nos of 4.5 kVA units with Ador, with option of split o/p with different isolation transformers (3 + 1.5 kVA); indent had been raised; to follow-up on status of this.
==> order will be placed shortly.
Check status on all items after 2 weeks.

3.5 Discussion relating to Industrial RFI survey -- from 18 Dec & before (PAR/SSK) : revised docs (from 2009 and 2012 discussions) had been circulated by RFI group and were discussed in 5 June meeting (is the document too exhaustive?) : follow-up action identified :
(i) map showing zones and villages / towns to be completed on new SoI map and sent to DIC office for NOC clearance decisions; some information has been shared with DIC office; to discuss possible follow-up action on this.
==> email update from PAR : form has been finalised -- all required parameters are covered -- to be used for future cases (needs some clarification).
(ii) plans for starting survey asap with 2 teams (with extra manpower), lasting for one month, using SoI maps etc, to be finalised; foram specifying the format and information needed for survey was being finalised with DIC office, and plans were to start by 1st or 2nd week of Jan : need status update on this.
==> email update from PAR : information from DIC office is that they would like to start the survey from 1st week of April (!) and continue till end of May -- delay from their side is due to year-end work.

4. Operations :

4.1 New, improved Miltech PC -- from 18 Dec and earlier (CPK/SN/PAR) : 2 units of Miltech PC with two changes (more screws on panels + panel mount pwrline filters instead of chassis mount) under order by Ops Group : to check status of the enquiry / order.
==> quotation has come and file under process by Ops group. To follow-up after 2 weeks.

4.2 Development of M&C software -- from 18 Dec & before (JPK/RU/SN/NGK) :
(i) plans for modbus learning & testing : simple set-up of PC + Rabbit card with modbus for "hello world" level -- first test results should be available now.
==> not taken up yet.
(ii) plans for EPICS testing : one Rabbit card with associated details and code given to TCS for PoC work; simple set-up of PC + EPICS talking to Rabbit (with our native protocol), to be set-up in our lab also, so that first version from TCS can be tested in our lab; also PC104 to be given to TCS (emulator to be made ready by JPK).
==> now TCS has both Rabbit and PC104 available to them and working; will start work on setting-up of EPICS and CSS environment on one PC in the lab.
(iii) follow-up on interface of FE with new M&C system -- Naresh + Charu and Sougata have started work on this; will have full set-up of FE + Common box, but will start with M&C of common box using Rabbit card : to provide latest update on matters, and problems if any.
==> work in progress by the 3 member team; initial h'ware connectivity may not be too much work as 32 lines have to be mapped to 16 lines on interface card; low level software for bit pattern setting may be enough to demonstrate basic

connectivity; after that, packaging will be the issue.
(iv) plans for populating a few (5-6) antennas with Rabbit card (with or without PC) for testing. C3 and C6 have been completed, and moving to S3, W3 + C8, C11 for prototype testing for TCS PoC version : need status update.
==> W3 will start now; C8, C11 don't need Rabbit -- only PC104 is required..
To follow-up on all items after 2 weeks.

4.3 Identification of appropriate ethernet switches for antenna base (and GAB)
-- from 18 Dec & before (SN/PAR/BAK) : Ops group to work with Comp team and RFI group to plan for trying some of the 16/24 port switches for antenna base use :
(i) update on process of short-listing and comparison of specs, followed by indenting for suitable samples : items received from CISCO, HP, DELL & D-link -- update on orders & delivery of these.
==> items delivered (see item 3.2 above)
(ii) RFI testing of switches as they arrive :
==> all have been tested (see 3.2 above)
(iii) appropriate RFI cabinet for the switch -- update on status of work and plans
==> see also item 3.2 above
(iv) plans for BE teams need for switches in GAB system (in receiver room)
==> agreed to use 8-port switches for now though they are worse in RFI than the 24 port ones tested for antenna base use, and take a final decision later on; same for the SMPS power supply-- 2 nos ok for now.
To follow-up on all items after 2 weeks.

4.4 Planning for proper space utilisation for new equipment at antenna base -- from 18 Dec & before (SN/CPK/RVS) : long-term plans for proper utilisation of the space at antenna base. Follow-up on 14 Aug discussion on first report : reducing space requirement by making MCM cards horizontal -- confirmed; electrical has confirmed that isolation transformer can be put above the rack; discussion about electrical consumption (2.6 kVA for new systems, 3.5 to 4 kVA for old + new systems) -- can this be reduced?
pending action items (SN was to follow-up with RVS and servo and report back) :
(i) joint measurements of load to be done by Ops and Electrical and reported. What is the final conclusion from this? current practical load is around 1 kVA, but projections are still reaching close to 3 kVA -- may need a meeting to resolve this.
==> draft note has gone in internal circulation...
(ii) current UPS is 1 ph to 1 ph unit; can be made 3 ph to 1 ph (has the same footprint) and may have some advantages -- need a more detailed discussion to finalise plans.
==> no updates.
(iii) can we have single, shared UPS for both servo computer and rest of the ABR electronics? RVS & SKB to produce basic connection/wiring diagram for discussion by next week.
==> work to be initiated on this shortly.
(iv) how carefully does the load balancing for the 3 ph input to antenna shell needs to be done? not clear...
==> not discussed.
To follow-up on all action items 2 weeks from now.

5. Back-ends :

5.1 GPU corr (GWB-II) : release of 4 node, 8 input, 200/250/400 MHz version -- from 25 Dec & before (SHR/SSK/BAK) : (NOTE : GWB-I is existing released system !) :

agreed to make 4 T7500 nodes with C2050/C2075 Fermi GPUs + remaining 4 T7500 nodes as host machines (to take care that these are the ones that transient pipeline uses presently so that sharing is possible); this should have ALL basic modes : total intensity and full polar IFR modes; IA + PA BFR modes with process_psr pipeline attached; full GUI support; to come up in trial code section without affecting the presently released mode.

(i) 1.7 s time offset problem to be resolved. May need checking with long stretches of data to see if the problem shows up -- SHR & GSJ planning some tests : confirmed with GSB tests that problem is there, but reason is not clear still.
==> have found problem in mapping of time stamp to data blocks and it appears to be corrected now; need to take some scans at L-band to confirm.

(ii) update on code for providing basic beam modes (computational load is 3 to 10% of GPU compute time) : first version of process_psr pipeline for IA has been released (with basic SOP), but essentially non-functional : to check if problem of threads not synchronised during the addition needs is now resolved by having a separate kernel (what is the additional compute time due to that?) moving out of phase shift kernel). need update if code with separate kernel has been tested on antenna signal and what is the extra loading.
==> IA mode tested on pulsar signal : addition of 7 antennas in single pol at 610 MHz will 200 MHz LPF -- can test with different settting in pmon to check S/N effects. yet to quantify the computational effort; to hand over to SSK for the process_psr pipeline work; to be integrated GWB-II code.

(iii) development of 4/8 bit versions of the code, for allowing BW > 200 MHz to be released : change in FPGA design is done and one common design with parameter is available and GPU side only iteger delay correction needs to be completed; and then test with sky signal.
==> no change.

(iv) modification GUI for supporting new modes, as well as having support for code in trial branch -- status and plans for this to be discussed : agreed to do this as different versions (instead of trial and release) but with clear separation of directories, codes and set-up files; NSR is already looking at the work to be done.
==> all work for corr mode of GWB-II GUI is done, waiting to be released; then will add beam mode options.
To follow-up on relevant items next week.

5.2 GPU corr (GWB-III) : next gen system -- from 18 Dec & before (SHR/SSK/GSJ/BAK) : New improvements needed for finalising the design for the full 32 ant, dual pol system :
(i) plans for work on 4 new DELL machines (GSJ/SHR) : m/cs are in the rack and wiring + cabling is complete, running with analog noise source; new code with 2 x 10 Gbe I/) + improved logic for assigning specific threads to each core + env variables : no packet loss seen and tested for 200 MHz / 8 bits and 400 MHz / 4 bits, 16 inputs and working ok; without separate host m/c and without online interface.
==> this can be closed.
(ii) improvements in GPU code using K20 card (SHR/SSK) : cross-check on FFT code (done and can be closed); calibrating MAC performance vs data reshuffle load (done and no further improvements look possible; can be closed);
(a) looking at XGPU code (with Pradeep of nvidia) -- need status update on this;
==> work is ongoing and meeting with nvidia is due this week.
(b) trying sample PA beamformer code to estimate load etc. -- need status update.

==> no updates.
(iii) to start testing 400 MHz BW mode -- how best to conduct these tests? changes in the main code to handle 4 bits etc are resolved? to check how best to try this and come back with possible options. may need new FPGA design or may be able to merge both the designs? Appears that design of 400 MHz / 4 bit system is being moved to 620/720 m/cs; needs some change in 10 Gbe core due to change in OS. To discuss and merge this agenda item accordingly with item (ii) above.
==> the basic 4bit design has been done and available in GWB-II (all of the above issues have been addressed) and will be ported to GWB-III when needed.
(iv) Layout and racks (GSJ/BAK) : layout diagram to be updated and long-term plan for racks to be initiated; agreed to purchase 2-4 standard racks urgently -- status update on order with President needed.
==> 3 different kinds of President racks discussed; to try and finalise after one discussion with RVS; to try and get one (simple) rack for immediate use.
(v) procurement of accessories like network cards, disks, cables etc to be looked into -- to finalise the type and quantities : 4 nos of dual 10 Gbe NIC cards is in process; no other major requirement at present; can be checked and closed.
==> no updates here; may be closed.
(vi) new purchase of Roach boards etc : follow-up on status of procurement.
==> folder in progress.
(vii) purchase of 4 more T620 machines : status update on this.
==> ready to order (folder is ready for order) alongwith order for 8 K20s -- waiting for final quotes.
To follow-up on all items after 2 weeks.

5.3 8 antenna back-end tests and future plans -- from 18 Dec & earlier (DVL/YG) :
(i) report of efforts to summarise all the existing tests and results : report for Lband have been circulated; needs detailed discussion.
(ii) plans to extract consolidated results and conclusions from the above -- phase wraps, ripples in passband, spikes / RFI in passband, variation of self power levels (with time and across frequency), level of correlation coeffs etc : initial update circulated by DVL -- to be discussed and follow-up action firmed up.
(iii) report on results from Lband test data for imaging of point sources and extended sources (including comparison with GSB) and further plans : to confirm if position shift is due to self-cal or not. To fold in results from tests of 18th Sep -- update is needed !
(iv) plans for further testing with 110 / 200 MHz BW signals at LBand.
(v) plans/strategy for tests at 250-500 and also 610 -- some long tracks to be tried out.
(vi) plans for running the new GWB back-end in parallel with all GSB observations at Lband, 610, 325 and 243 bands -- this appears to be happening fairly regularly; need to have script in place for some automated analysis of GWB data.
==> overall summary : some discussions on results and follow-up analysis are ongoing with DVL; plans for regular running of GWB in parallel with GSB for all regular observations are not yet firmly in place; also scheme for automated first cut analysis of the GWB data is being put in place and will take some more time.
To follow-up on all these items next week.

5.4 SFP testing of final unit -- from 18 Dec and before (KDB/BAK) : SFP+ side working fine for both Cu and Opt; XAUI CX4 side is still flaky -- may still be marginal in timing. Update required from new tests after fresh inputs from vendor. Follow-up with MTE for PCB details and then with Vitesse -- is it resolved now?
==> still waiting for Vitesse. To check status after 2 weeks.

5.5 RFI filtering -- from 18 Dec (KDB/BAK/YG) : to add the first version of the real-time RFI filtering block (after some modifications) into the packetizer (now done -- in one input out of two with different options like replace by median or by constant or by digital noise source sample or clip to threshold via s'ware registers) -- to report about performance of the same, include testing; and then to look into optimisation of resource usage.
==> not much progress, but work in process. Status check after 2 weeks.

5.6 Next-gen time & frequency standards -- from 18 Dec & before (NDS/BAK) :
(i) completion of tests at GMRT and summary of the same by NDS & plans to visit NPL -- follow-up on plans for visit to NPL -- to confirm final dates, to discuss details about plans for tests to be done at NPL, including report of tests done so far at GMRT.
==> document of results from here being finalised, will be sent shortly; plans for tests to be done hae been discussed with them.
(ii) follow-up from the visit of Symmetricom -- a summary note about learnings and minutes from the visit was to be circulated, including comparison table etc, before circulating kinds of specs are required for our system.
(a) discussion with NPL about the tests to be done -- confirm final plans.
(b) to circulate the detailed specs made by BE group to larger audience in NCRA -- this has been done; need follow-up discussion.
==> no response from NCRA members -- needs a bit pushing?
Follow-up after 2 weeks, by which time team will be back from visit to NPL.

6. Other items :

6.1 New python assembly design -- from 18 Dec (HSK/SSK) : FE group wants the python configuration in E6 to be adopted for all antennas -- this needs to be discussed with mechanical group and finalised; FE and mech have dicussed about plans for modified python assembly that will give additional protection to cables; SSK will circulate a report about this; and after discussion and clearing the plans, sample unit will be made by mech group; meanwhile, mech group will circulate short report on their understanding of the matter, alongwith photos, in 10 days time -- need update on all of these issues.
==> email update from HSK : work in progress; will shortly circulate the note.

6.2 Coexistence of 50-90 MHz RRI feed with 250-500 CDF on same face of turret -- from 18 Dec and before (HSK) : Mech group to check for possible solutions and report back, after looking at the drawings (awaited from RRI). Update from mech group about reverse engineering for making the drawings.
==> email update from HSK : work in progress.

6.3 Problem of access to FE boxes with 500-1000 CDF feed -- from 18 Dec & before (HSK) : Update on new solution being designed by Mech group -- test was to be done : trial run in dummy area, followed by test at actual height -- to update results of these tests, which are pending for long time now !
==> email update from HSK : no progress on this -- it is a matter of concern and needs to be looked into (YG to follow-up with HSK separately).

6.4 Fabrication of 5 spare L-band feeds -- from 18 Dec & before (SSK/HSK) : to finalise the plans for construction with the different vendors : Akvira, Physimech, Fabromech) : to update status of the procurement work.
==> email update from HSK : Akvira was the lowest bidder; folder in process for

placing the order (for how many feeds plus other components?)

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Minutes of Plan meet of 15 Jan 2014 (follow-up of some pending topics from different areas) :

1. Documentation related :

1.1 Detailed design doc -- pending for long : from 26 Dec & before (SSK) : follow-up on subsystems to be converted : (i) OF Rx system to be completed (Satish Lokhande) -- hardcopies had been collected; doc to be made ready (ii) OF Tx to be started. Field measurements completed few weeks ago and were to be verified once more and then results were to be compiled; should have results ready by now -- some updates are required !
==> no updates; needs urgent follow-up!

2. FE & OF related :

2.1 New LNA for 130-260 system -- from 25 & 5 Dec, 20 Nov & before (VBB/SSK) : (i) Variation of gain and Tsys with temperature : tests show new LNA with 40-60 deg K varn in Tlna (cf old LNA with 150-200 K) for same variation of 50 deg K in env chamber; new data with 3 temperatures (chamber, inside FE box, inside LNA box) all looking slightly different (and not tracking); T_lna change is about 30-40 deg K; is there a gain change? (note that some of the results are for 130-260 system, some are for 250-500 system !); follow-up action items now agreed upon are :
(a) plot the T_lna and G_lna vs T_ambient for both systems, for one or two spot frequencies in the band
==> new plots made; and working nicely for both G_lna and T_lna.
(b) since chamber takes 1 deg/min to settle, step change response can not be done easily; hence, to try 10 deg steps with ~ 30 min wait for settling time, for 250-500 system.
==> test done with both box and LNA temp allowed to settle to chamber value; new plots (for 250-500 new lna) show monotonic increase in T_lna from ~5 to ~55 deg with temp change of 0 to 60 deg ! gain change (drop with temp) is much less only ~ 0.2 to 0.3 dB over 60 deg !!
(c) to try an expt where the temp monitor can be put on the LNA itself.
==> last few tests have been done with 2nd monitor in contact with the device ! follow-up suggestions : to repeat once to check repeatibility of results; and then to characterise 130-260, 500-900 and Lband LNAs
(ii) update on scheme for fitting two temp monitors (one for LNA, one for box) in 130-260 MHz FE box for tests on bench followed by antenna tests : lab test with manual readings had been done (showed 15 deg temp difference between LNA body and FE box (open)); work ongoing to study online data from 3 antennas : W1 (130-260 FE box), W4 (250-500 FE box) and E2 (common box) was tested ok, and some long duration (8 hr) tests have been carried out on W1; need some data on W4 and E2; also 24 hr test to be done when no GTAC obs is on (e.g. Wed night) to get simultaneous reading on all 3 antennas for follow-up.
==> test yet to be done.
(iii) mass production of temp monitoring system : since enough number of cards are now ready, agreed that temp monitor can be installed in any FE or CB box that goes up on an antenna (e.g. 250-500 being modified for notch filters etc) and a list to be maintained and updated by FE team.

==> this is beginning to happen
also to start planning for larger scale implementation of the scheme : ~ 300 such units to be built for the full GMRT ? ==> components, PCBs etc...
Follow-up on all items after 2 weeks.

2.2 Mass production of 250-500 FE system -- from 26 Dec & before (ANR/SSK) :
(i) testing of 15 installed feeds : FE group has been doing weekly plots & results, and deflection plots have been added to these : some data had been taken for C6 (showed different lines in each poln -- RFI or internal?) & S2 (noisy bandshape -- effect of TV line?) : color grey scale plots discussed -- there are clear signatures of TV line(s) at 175 and 540 + one more around 220 (this needs to be checked) + military satellite + a few occasional bursts of RFI; to repeat similar tests at receiver room at OF output to compare with these antenna base measurements.
==> no direct results on this, but useful side discussion on lines seen by the 250-500 system with feed at focus and feed at other positions (horizon & vert up) showing evidence for (a) different kinds of lines (b) harmonics of military satellite when antenna beam directly pointing to it etc... -- agreed to try an expt with 2 antennas -- feed at focus in one and feed pointing up in the other and record for 24 hrs as sky drifts by.

(ii) status of testing and installaton of FE boxes : ten antennas fitted + 2 spare units ready and tested : update on procurement of standard connector (main delivery expected around 20 Jan) : to check if correct sample units have been (re)delivered and have been tested with the 2 nos of chassis made ready for integration.
==> email update from ANR : Radiall make samples (one each of male & female) received last week and sent to w'shop along with dir coupler for modification of the chassis -- sample units have been sent back by w'shop; follow-up on with Radiall for supply of final order of connectors at the earliest; meanwhile 2 units made ready for integration in FE box have old connectors (Srinar make).

(iii) plans for sub-band filters for 250-500 MHz system -- update on testing of sample units and results from these to be discussed; updated report with all 4 sub-bands over plotted was sent; roll-off is a bit slow on the higher freq side compared to existing L-band sub-band filters; insertion loss is better; agreed to put up one or two units in antennas and check the performance :
(a) 6 dB BW varies from 90 to 124 MHz : new design now reduces 124 MHz to closer to 100 MHz (tested ok) -- check if this item can be closed now.
==> can be closed.
(b) 2 units of the exisiting design were to be made ready and install on ch1 of 2 antennas, small add-on card to make it compatible with RFCM card was made and tested ok and filter switching was verified in the lab; modification for the bits was to be done and the system tested in final shape and made ready for integration with new box (for antenna installation); issue of chassis to be addressed.
==> bench testing with manual setting of bits working fine with patch card + old RFCM card; needs a bit more work for setting the bits via online or computer control -- this needs to be looked at with Ops group.

(iv) plans for notch filters in FE box for existing 250-500 antennas : notch filter at 540 (lumped ckt) -- one set installed in 2 antennas -- S2 & W4 -- in pol 1, in receiver room. Performance had been checked and found OK; to make units ready for all existing 250-500 FE systems, along with 175 MHz filters. 4 units fully assembled (1 BPF + 2 notch filters), tuned, tested and ready; 2 more 540 notch filters were to be made ready to completed the units for 3 antennas.
(a) status of installation in antennas (after W1 ?) to be updated.

==> confirmed that W1 FE box installation is done; one more box is ready, but antenna not yet decided -- agreed to try C4 as the next one; also 2 more sets of BPF + 540 + 175 notch filters is ready and 2 more boxes can be made ready; of these, one will be the new FE box.
(b) check status of PCBs for remaining units (including more PCBs for 175 filter)
==> 80 PCBs and chassis for 540 filter are in hand; for 175 filter they need to be ordered (VBB).
(c) update on chassis procurement.
==> waiting for w'shop to supply more units.

(v) status of other auxiliary items :
-- noise source, power splitter, directional coupler etc : sample unit has been assembled / integrated on the bench; integrated noise on/off testing on bench yet to be done; plans for integration with new FE box to be finalised.
==> put in new FE box, but not yet tested there.
-- post amp : Hitite 740 new stock for 30 antennas available; to check if post amp has been tested with slow rise power supply.
==> no update.
-- power monitor : status update on the older scheme with Galli amplifier : is it ready for integration in FE box? feed-thru vs connectorised arrangement -- to be finalised.
==> feed-thru arrangement is working fine (no pick-up) and simpler than connector arrangement and finalised; done in 2 prototype units and will be done for the units to be put in new FE box.
-- temp monitor : to check plans for final integrated testing.
==> this is on track also.
-- RFCM card : check if PCB fully tested? (meanwhile, older version of new RFCM card can be used for layout testing purposes) -- finalise layout in new FE box.
==> new card is basically working; needs some more testing of bit pattern matching etc with the Lband system.

Regular follow-up on all items after 2 weeks.

2.3 status of lab integration of final version of 250-500 box -- from 26 Dec and before (ANR/SSK/HSK) :
modelling shows that existing size of box is not adequate (inspite of double deckering of chassis); deeper FE boxes are needed -- 15 cm has been added (wt of new empty box is 15 kg); mech group has confirmed that this is ok (present depth is 468 mm, can be increased to 700 mm; also, rear member in the cage can be removed to further increase depth); also total weight of populated box will go up by a significant amount : HSK to check the impact if total wt of all boxes goes up by 50% (capacity at turret; static & dynamic loading capacity of feed gearbox etc):
(a) one sample box has been supplied by mech group -- to check status of 2nd unit.
(b) to start integration work -- update on status of this is needed.
(c) estimate of total weight of populated new box to be given to mech group.
(d) HSK to circulate existing drawing of turret and the first calculations about impact of weight increase.
==> still waiting for 2nd box (getting ready in w'shop); all items are ready for integration in 1st box; waiting for semi-rigid cables to be ready and DC wiring to be completed; need to wait a bit more to get estimate of the weight; need updates from HSK on drawings etc.

2.4 Directional coupler for 250-500 FE system -- from 26 Dec & before (ANR/SSK) :
(i) update on plans for mass production : PCBs for full system had been received;

SMA connectors have come; drilling of holes in chassis was waiting for finalisation of connector (meanwhile sample units have been assembled in new FE box with spare connectors that are available) -- need status update, if not covered in item 2.2)
==> see 2.2 above (this could be removed as an independent item).

2.5 Status of improved 500-1000 MHz CDF -- from 26 Dec & earlier (HRB/GSS/SSK) : there are 3 different versions of dipole (v1, v2a, v2b) and 2 versions of cone v1, v2) in trial phase; 3 test feeds have been built using these :
ver1 : dipole v1 + cone v1 : RL is OK, deflection is not good & falls with freq
ver2a : dipole v2a + cone v2 (mesh?) : RL is good; deflection is OK & flat with freq
ver2b : dipole 2b + cone v2 (solid?) : RL is v. good; deflection is good but not flat
Follow-up action items are as follows :
(i) simulation results for different combinations of the above were carried out and discussed in detail : it appears that dipole (rather than cavity) is dominant for deciding the RL behaviour (and also H-plane taper?); cone appears important for E-plane taper; best results for RL and good beam pattern match over large freq range appear to be for dipole v2b (triple sleeve) with cone v1 (66 deg).
To discuss the possibility of testing dipole v2b + cone v1 combination in lab and on antenna. Was waiting for v2b dipole to be free (or new one to be ready), and for 2 nos of FE boxes to be ready; need status update on this.
==> neither v2b dipole is available (workshop fabrication is ongoing), nor FE box is available... to expedite delivery of v2b dipole from wshop and to look into having one FE box ready.

(ii) simulation results for denser mesh case (higher order basis functions): new simulations are with finer planes rather than higher order basis functions; this needs to be confirmed; also, 50 MHz shift that is seen needs to be understood; also explore default number of current elements in simulation (from 19 Dec meet); discussion with WiPLD indicates that increase in PolDeg may make a difference; to update about this and plans for final strategy.
==> no response yet from WiPLD on the clarification sought -- to send a reminder.

(iii) there is noticeable difference in simulated and measured RL curves which needs some study also (it appears that agreement was better for 250-500 CDF?).
==> no significant discussion; wait for item (ii) above to converge ?

(iv) to do deflection tests for ver2 with a rigid stool design (and with finer adjustment of the focus distance, if needed) and then bring down the ver2b feed and replace with normalg 235/610 feed (or with v2b dipole + v1 cone combination?). will need a spare 610 feed to be made ready using 550-900 LNA ? agreed to try current ver2a with 1480 rigid stool (which is ready) to see if there is any change in beamwidth.
==> currently ver2a with 1480 rigid stool is what is up on C10 -- HRB to check with control room for data points and see if an answer can be got soon.

(v) to compare deflection and beamwidth results for new feeds with old 610 system -- first round of results were shown and are quite useful; extension to later data shows stable behaviour for Aug to end Nov at 47 arcmin (when ver2b with 1280 stool was there) + plus some other details; will be useful to see values for ver2a with 1480 stool now.
==> see item (iv) above.

(vi) to compare RL measurements for ver2 dipole in ver1 cavity (and vice versa?) was waiting for C10 feed to come down -- see item (iii) above -- this is done

now (?) and can be rechecked when v1 cone is mated with v2b dipole.
==> held up because of lack of ver2 dipole -- to try and expedite getting this.

(vii) any new ideas? discussion of 19th Dec came up with following action items:
(a) get 2 more v2b dipoles fabricated -- work underway, need status update.
(b) design Kildall ring feed at 750 MHz using v2b dipole -- work ongoing; status?
(c) try simulation of CDF250-500 scaled by factor of 2 -- to be tried after (b)
(d) design Dual-ring feed 550-900 MHz (intial BFRs can be made for 650 & 800 MHz)
(e) repeat Radiation pattern measurement @ 800 MHz (include notch filter) for CDF550-900 MHz (Cone v2, Dipole v2b) -- being tried by GS : need status update.
==> (a) already discussed and waiting for dipoles from w'shop; (b) work is done need to confirm once and give request to w'shop; for (c) agreed to try exactly scaled ver of 250-500 dipole (except for the vertical pipes) and simulate the RL to see what is shows and then discuss next step; for (e) still waiting for the mobile filter to be made available !

Regular follow-up on all items 2 weeks later.

2.6 Signal flow analysis (SFA) related items -- from 26 Dec & before (GP/ANR/SSK)
(i) SFA for OF system to be discussed, including addition of the scheme of 10 dB attn + 20 dB ampl -- SSK was to complete review of doc by Ankur and release the same after internal discussions; this is significantly overdue now !
==> no update.
(ii) plans for SFA of 250-500 system : analysis had started, and some lab tests had also been done; and all data required had been taken; there were some problems in reconciling bench test results with analysis, for existing system -- these are resolved, and first draft report is now awaited...
==> report ready for internal circulation.
Regular follow-up after 2 weeks.

2.7 Filters at different stages of receiver chain -- from 26 Dec & before (SSK) :
(i) scheme for filters at antenna base : 3 type of ckts being designed using the new device : 2, 4, 8 way switches with different possible applications : (a) notch filter bank switching in rx room (b) filter bank switching inside FE box (c) rcvr room monitoring. ckt for 2:1 and 4:1 versions assembled & tested -- 25 dB isolation achieved (changes from 25 to 17 dB with frequency for 8:1 switch); aim is to target integrated unit for 550-900 with 4 sub-band filters with integration of RFCM switch; completed and tested for ICON units; to be done for in-house units (needs more nos of switches to be made ready). 550-900 unit was waiting for PCB to come; 250-500 unit was waiting for design of master PCB to be completed; any updates?
==> 550-900 main PCB is there; waiting for chassis to complete the integration; for 250-500, first system to be assembled using discrete units; work on integrated PCB yet to be started...
(ii) to follow-up on refinements of the scheme for each FE box : update on 250-500 system (first to be done), alongiwth LPF from 1750 and above for HI band. sample PCB for 1750 LPF had come and was to be tested + other elements were to be assembled to produce the first unit for 250-500 system : 2 versions (1600 & 1750 MHz cut-off) assembled and tested; were to be installed in one antenna to check performance; was agreed to first test each of these (one after the other) at antenna base and obtain plots for Lband, with and without the filters -- check status of this.
==> no updates (Ankur likely to be the responsible person -- to be asked to provide an update).
Regular follow-up after 2 weeks.

2.8 Walsh switching arrangement in FE -- from 26 Dec & before (SSK/SCC/PAR) : Some tests have been done on the bench by FE group; first draft of report has been circulated.
(i) to devise a simple test using Lband system + radiation from apex to demonstrate the working of the system (on any antenna) -- need update on plans for this : on track for testing in 1st week of Jan? agreed to postpone for some time due to conflicts with other requirements; to decide when it can be taken up.
==> can come back to this after some of the other tests on apex radiation scheme is over.
(ii) plans for implementation in other systems e.g. 250-500 FE box (needs the new RFCM card to be ready?) -- meanwhile, for old RFCM card, one PCB designed for incorporating patch card for level conversion for filter select, and new Walsh Opamp (OP37) -- temporary PCB is ready and tested for 2 FEBs; final PCB has been sent for fabrication; need status update on these.
==> final version of patch PCB manufactured outside has come for 10 nos -- one such PCB is enough for Walsh and filter bank control for both pol channels; yet to be tested...
Regular follow-up after 2 weeks.

2.9 Releasing existing 610 MHz system as part of the wideband upgrade -- from 26 Dec (SSK/ANR) : Preliminary tests of existing 610 feed through the wideband path show that ~ 100 MHz usable bandwidth may be possible as part of phase-I uGMRT. Agreed that only RF filter needs to be changed to new 550-900 BPF (alongwith mobile band notch filter) -- two sample units had been made ready and installed in ch 1 of C8 and C12 (without mobile filter) and initial deflection plots were to be circulated; also spares for mobile filters to be looked into.
==> FE team to remind itself to circulate the results; 10 units of mobile filter PCB have been ordered but not yet delivered -- need status of this. Regular follow-up after 2 weeks.

2.10 OF systems -- from 26 Dec & before (SSK/PAR) : Plans for further systems :
(i) component ordering for remaining items : thermo-electric coolers for 10 antennas needs to be ordered -- it was decided 50 nos to be ordered. To check the status of delivery of items.
==> 50 nos have come; item can be closed.
(ii) plans for extending the wideband OF link to beyond 15 antennas : C12 had been completed as 16th antenna; which is the next antenna?
==> one set is under test; antenna to be decided.
(iii) problem of manpower for assembling : update on plans for local manpower and plans for getting person from Argus to work at GMRT for 2 weeks.
==> no updates on this; needs urgent inputs from SSK.
Follow-up after 2 weeks.

2.11 Alternate fibre connectivity -- from 26 Dec & 20 Nov (PAR/SSK) : Tata telecom has offer for 16 Mbps from E5 to from Kalyan to Nagar highway; Rs 8 lakhs per annum or so... to be discussed and follow-up after 2 weeks.
==> to be discussed...

3. RFI related matters :

3.1 RFI from cable TV leakage -- from 26 Dec (PAR/SSK) : This could be a bigger problem than boosters etc ? : tests had been planned to see how much is the leakage

as a function of frequency and then see if operators can be requested to change the frequency or improve their set-up; results on 2 tests to be reported : 1st one at control room of operator and 2nd at some distance away to see which channel and operator is the culprit. Further tests had been done at N'gaon. Previous discussion showed inconclusive results; RFI team was to try out "sniffing" method, based on results from control room. Recently, information has been collected from operators in Otur, Ale, Junnar and Belha; team is checking channels received at FE o/p in 150 and 235 bands; to check if on track for controlled expt to be done by end of Dec; information has been received from operators; follow-up discussion is needed to understand the problem...
==> present thinking of RFI team is that the lines seen are from terrestial TV transmitters, rather than digital TV; likely to be in 175 to 229 MHz range; follow-up action on generating list of all the terrestial transmitters in a large enough neighbourhood and their frequencies to be done to check which ones are expected to affect GMRT; for cable TV : to complete the round of data gathering from the nearby operators to keep as a log; to work out a plan for monitoring the GTAC data (30:1 data) for RFI in 325 and 243 band.
Regular follow-up after 2 weeks.

3.2 Effect of military satellite RFI in 243 band -- from 26 Dec & before (PAR/SSK/SN) : follow-up action on testing for saturation effects, decision about appropriate location of switchable filter, possibility about control room (ops group) being able to come up with algorithm for prediction (for user's) :
(i) filter related action items :
(a) report on prototype filter by FE group has been circulated (?); old filter works only up to 1 GHz -- this needs to be looked into
==> new version of the filter has been made that works upto Lband and this is ready for testing.
(b) meanwhile to try a test where this filter is inserted in the path (for 2 antennas) for a short time when 250-500 is selected.
==> the new filter has been put in ch 1 of 2 antennas (C8 & C12) -- FE to confirm.
(c) FE team to make a full list of various filters put in various signal paths as part of upgrade (including for testing) -- this can be put up on the upgrade info page maintained by control room.
(ii) Ops group to investigate and come up with algorithm to use in control room, after getting the relevant data from PAR. SN to update on the latest status, including plans for testing the algorithm being developed -- appears that Ops group is ready with a program and discussion with RFI group says that PAR will provide test cases for checking the algorithm; appropriate longer term action to be decided (including other satellites?).
==> test not yet done, but will happen shortly.
(d) new aspect : to set-up a broader group or expert team for making a list of generalised tasks... -- to be followed up by YG.
To check status of all items after 2 weeks.

3.3 Radiation from CAT5 cable -- from 26 Dec & earlier (SSK/PAR): Follow-up on action from 3 Apr discussions : to install shielded CAT5/CAT6 cable in conference room as trial and finalise the scheme for all other public places in the building: first report has been circulated that combines testing of switches and CAT5 cables; conclusion is that use of shielded cable makes significant difference to the discrete lines as well as to broadband RFI. Hence we can go ahead with a controlled expt in GMRT Conf room to quantify the improvement -- status update on this is needed.

==> plan discussed : put few laptops in conference room to ping some of the servers in main control room via the switch; do the test with and without the shielded CAT5 cable and report the result; will need some help from computer group for making the cable. Regular follow-up after 2 weeks.

4. Operations :

4.1 Mass production of Rabbit MCM cards -- from 26 Dec & before (CPK/SN) :
(i) status check on how many cards are ready
==> now 63 are ready; may need to speed up the delivery a bit.
(ii) to complete the work for deciding how many more MCM cards are needed -- SN to report on the discussion about whether OF and sentinel can share on MCM card. OF is ok with sharing if no high voltage items are being monitored; quick check showed about 20 spare monitoring points after including current & projected estimates from OF and sentinel; agreed that this a feasible solution and matter can be closed... but see (iii) below...
(iii) meanwhile, NGK has requested for a relook : to discuss once more and take a final call about total number of cards needed.
==> summary of the new request and discussions thereof : (a) need for sharing between sentinel and OF may not be sufficient -- this was discussed again and it was agreed that the sharing model is feasible and no need to revise it; (b) may need one more card at antenna base to act as a supervisory card at -- it was felt that if that is to be done, a general purpose computer may be a better option and this should be discussed thoroughly (as there is already a possible option to a Miltech-type PC at antenna base); (c) extra for spares and for test set-up -- it was clarified that as per current count, the total number of spares is 15% (including the spares that BE group has projected in their count) which is above the normal level that is usually maintained in most systems; also, the transition from present to new M&C system will need to happen en-masse at an appropriate point of time (as hybrid control system would not be feasible for running the regular GTAC observations); (d) the projected number of cards as per some earlier projection is not being met -- it was agreed that if there was a formal document that projected a certain number of cards, then this could be looked at and that particular need could be addressed.

4.2 Mass production of shielded box for MCM cards -- from 26 Dec & before (CPK/PAR/SN/HSK): RFI test report of Akvira vs Physimech showed Akvira is better and this has been selected.
(i) status of ordering 2-3 more boxes from Akvira -- units have arrived and are under assembly and testing; plan is to make everything ready and put in the 37 pin shielded connectors as soon as they come and then do the test with dummy LED type loads -- any status update on this?
==> work ongoing for putting the Rabbit cards in the 2 boxes -- cables, dummy load etc ready; but 37 pin Dtype delayed to February. Agreed to go ahead with prelim tests using existing connectors.
(ii) status of work on shielded connectors that are required for antenna usage of MCM cards: waiting for 37 pin D-type 25 pairs to come -- expected by 10 Jan. To use existing connectors for the preliminary measurements -- status of this to be reported.
==> see above.
(iii) How to plan for the mass production? Ops group to report on discussions with Mech group and finalise drawings for 2 types of box : with and without provision for SPI port on chassis + 1 serial port on each box; aim to place

final order on Akvira. RFI group to complete the 2 prototype units (above), and then hand over the matter to Ops group. To check if this moving forward or not.
==> no actual forward movement on this till testing is completed.
Regular follow-up after 2 weeks.

4.3 Development of M&C software -- from 26 Dec & before (JPK/RU/SN/NGK) :
(i) update on work with TCS (JPK/SN) : current status of PoC phase of work
==> format of report was getting finalised -- test cases details discussed with them, and TCS has agreed to carry out the action item with 8 test cases -- results will be added in the report as an annexure to the main report; interim review is due on 24th Jan and this needs to be confirmed and organised. Regular follow-up after 2 weeks.

5. Back-ends :

5.1 Documenations :
(i) Detailed design doc -- pending for long : from 26 Dec & before (BAK) : analog back-end was due sometime ago ! Hande was starting to make the first version -- first version has been prepared; update will happen after one round of discussion -- to check status of this.
==> no update on this.
(ii) ITRs for analog back-end systems and digital systems to be taken up :
analog back-end : Sandeep and Navnath to look into; pkt corr first level has been done but not yet circulated; GPU corr needs to be started -- Reddy & Irappa to work on this with target of end-Dec -- need a status update of various activities : first level draft by Sandeep & Mekhala for pkt circulated; status of GPU corr doc to be checked.
==> no update. To check status again after 2 weeks.

5.2 Analog back-end for 8 antennas and beyond -- from 26 Dec & before (BAK) :
(i) appropriate attenuator settings for Lband & 250-500 done; 610 band was being finalised -- updated table had been circulated; few iterations need to be done and then updated table + report can be circulated by Ganla -- pending.
==> no updates.
(ii) status of work for having i/p side RF filters : to confirm plans with FE group for sharing mass production units; to check status of 8:1 switch : agreed that it is ok with FE group to share the designs, provided BE team is ok with the performance specs; ok to include BE requirements in order of PCBs and components (cost sharing to be worked out accordingly);
however, BE group to take care of mass assembly separately, as it will be done with in-house manpower by FE group for their filters.
final configurtion and layout of 8:1 switch to be done as part of finalisation of the PIU, requiring filter chassis etc. Need to discuss updates and way forward for this -- email discussion has taken place and needs some follow-up to resolve pending matters.
==> no updates.
(iii) to check status, plans and timescales for 16 antenna system : system is completed except for making all the connections -- to confirm status of this and remaining plans to be discussed.
==> no updates.
To check status after 2 weeks.

5.3 Power equalisation schemes for new back-ends -- from 26 Dec and before

(SSK/NSR/BAK/SRoy): Need updates on both of the following :
(i) option 1 : using detectors in GAB and local feedback loop -- monitoring set-up working; code for computing the attenuation values being finalised by DKN (from algorithm taken from NSR) -- status update required.
(ii) option 2 : using correlator self outputs and computing gain corrections :
(a) Scheme is working; to check if circulated SOP is all right -- bugs etc to be reported back; SRoy to look at SOP and see if any updates are needed.
(b) Plans for implementation of user controllled ALC mode : issue of timescales of the loop, kind of useful outputs that it can produce etc. 4 modes of operations had been discussed (see MoM of 3 Oct 2013) :
(i) on demand -- this is the current released mode.
(ii) repeatable at some interval specified by the user -- can it be script based?
(iii) automatic, should adjust in response to a stimulus in the input power -- needs a discussion.
(iv) should provide a reliable power monitoring scheme -- needs discussion.
Also, issues like logging of results etc to be discussed. Agreed to have a document that spells out the main requirements (from user point of view) and possible solution options / techniques that can be taken up for discussion in Plan meeting for finalising the plan of action -- one round of discussion has taken place between SRoy and SSK and some follow-up action has been planned; need SRoy / SSK to update on this, including the overall document.
==> no updates ! Some parts of this are pending -- to check with individuals and decide follow-up after 1 or 2 weeks.

5.4 Walsh modulation : prototype set-up on Roach board -- from 26 Dec (SCC/BAK): plans of BE team for implementing prototype scheme -- basic unit for switching using sq wave signal from GPIO pin tested ok; was put in main PoCo correlator and was being tested. SCC to provide status update on integrated testing.
==> email update from SCC -- needs to be summarised and discussed. to decide follow-up in next week or the week after.

5.5 GPU corr (GWB-II) : release of 4 node, 8 input, 200/250/400 MHz version -- from 25 Dec & before (SHR/SSK/BAK) : (NOTE : GWB-I is existing released system !) : agreed to make 4 T7500 nodes with C2050/C2075 Fermi GPUs + remaining 4 T7500 nodes as host machines (to take care that these are the ones that transient pipeline uses presently so that sharing is possible); this should have ALL basic modes : total intensity and full polar IFR modes; IA + PA BFR modes with process_psr pipeline attached; full GUI support; to come up in trial code section without affecting the presently released mode.

(i) 1.7 s time offset problem -- appears to be resolved. Need checking with few more long stretches of data (at Lband) to confirm.
==> no updates on this aspect.

(ii) update on code for providing basic beam modes (computational load is 3 to 10% of GPU compute time) : first version of process_psr pipeline for IA has been released (with basic SOP), but essentially non-functional; new version with separate kernel (outside phase shift kernel) for beam formation has been developed; IA mode tested on pulsar signal : addition of 7 antennas in single pol at 610 MHz with 200 MHz LPF -- to test with different settting in pmon to check S/N effects. yet to quantify the computational effort; to hand over to SSK for the process_psr pipeline work; to be integrated GWB-II code.
==> no updates -- need a time scale for when it can be released.

(iii) development of 4/8 bit versions of the code, for allowing BW > 200 MHz to be released : change in FPGA design is done and one common design with parameter is available and GPU side only iteger delay correction needs to be completed; and then test with sky signal.
==> no updates.

(iv) modification GUI for supporting new modes, as well as having support for code in trial branch -- all work for this was supposed to have been completed and new set-up was to be released, and then beam modes were to be added -- need status update on this.
==> no updates.

Need urgent follow-up on many of the above in next week's meeting !

5.6 Final online control for GPU corr -- from 26 Dec & before (SSK/JPK/NR/DVL) :
(i) status of full GUI compatibility : update on sideband flag support and issue of net_sign[] to be resolved : needed some change in GPU & DAS code. SSK to report on this -- can this be merged into appropriate item in 5.5 above? BE team was to discuss and get back on this.
(ii) to check cause of problem for modes with more than 2K channels -- best done with raw voltage files ? thought to be due to counter data being sent in place of ADC data once every 4K data points -- will be eliminated in new integrated design for 8 / 4 bits; also to check about spikes in channels that are power of 2.
(iii) follow-up on long-term items like provision for control of FPGA and other peripherals (like sig generator) for different modes -- details of existing provisions to be discussed and plans for final configuration to be finalised; this should NOT be an issue in the new release? may need some testing on antenna signals.
==> no updates on any of the items.

5.7 8 antenna back-end tests and future plans -- from 8 Jan & earlier (DVL/YG) :
(i) report of efforts to summarise all the existing tests and results : report for Lband have been circulated; some follow-up has also occured; needs detailed discussion to work out specific action items and also refinement of the report itself (see below also).
(ii) plans to extract consolidated results and conclusions from the above -- phase wraps, ripples in passband, spikes / RFI in passband, variation of self power levels (with time and across frequency), level of correlation coeffs etc : initial update circulated by DVL -- to be discussed and follow-up action firmed up.
(iii) report on results from Lband test data for imaging of point sources and extended sources (including comparison with GSB) and further plans : to confirm if position shift is due to self-cal or not. To fold in results from tests of 18th Sep -- update is long overdue !
(iv) plans for further testing with 110 / 200 MHz BW signals at LBand.
(v) plans/strategy for tests at 250-500 and also 610 -- some long tracks to be tried out.
(vi) plans for running the new GWB back-end in parallel with all GSB observations at Lband, 610, 325 and 243 bands -- this appears to be happening fairly regularly; need to have script in place for some automated analysis of GWB data.
==> some discussions with DVL about planning follow-up on detailed analysis of the results collected so far + plans for follow-up, including some plans for trying imaging exercise with the new system. To follow-up after 2 weeks.

5.9 Power and cooling requirements for projected back-end systems -- from 26 Dec

and earlier (GSJ/BAK/RVS/YG) : some modifications have been made and some tests have been done and preliminary results circulted -- to discuss these and plan further activities; fan on and off to be tested; scheme for monitoring of processor temperature to be refined. Shelton and Ganla to provide status update on the tests being done.
==> no updates, no discussions; postponed for 2 weeks later.

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Minutes of Plan meet of 22 Jan 2014 (follow-up of some pending topics from different areas) :

1. Documentation related :

1.1 Documentation : follow-up on level 2 (ITR) -- from 8 Jan & earlier :
(i) conversion of older reports : Check if test range is done (appendix + inputs from PAR were pending), but agreed to release first version without these, instead of waiting -- to check status of this.
==> 1st version released (without PAR inputs) to Plan webpage -- will add the other details later on. Item can be closed for now.
(ii) Check status of new items : power monitor (Gaurav), 250-500 main + sub-band filters (Sougata), 550-900 main + sub-band filters (Imran), temp monitor (tbd later), spares for 1420 feed (tbd later)
==> work ongoing for power monitor, and filter banks.
(iii) Also, can we look at which ITRs may be ready for conversion to NTRs?
==> maybe filter design work can be taken up...
Regular follow-up on relevant items 2 weeks later.

1.2 Follow-up on level 3 (NTR) -- pending for long : from 8 Jan & long before (SSK): to check status of report on design of OF system -- SSK to confirm.
==> no update from SSK. Regular follow-up after 2 weeks.

2. FE & OF related :

2.1 Update on results from test range -- pending from 8 Jan & before (HRB/GSS/SSK) :
(i) phase centre tests for 250-500 CDF : to report on expt with 10 to 20 cm height change in 250-500 feed on one antenna to see how much change in sensitivity is seen. Need short note summarising the results : to check if last measurement with reduced height has been completed and results ready for release. Agreed to try alternative of cutting the support legs of one 250-500 feed cone to the 10 cm reduction, instead of shortened stool (to avoid fouling with cable assembly).
==> modified structure ready; will be installed in one antenna & tested shortly.

(ii) update on calculation (based on reference paper) of the expected deflection at 450 or 500 MHz and comparison with measurements to see if we are losing significant sensitivity -- GSS to come back with refined version more relevant for GMRT, and to see if further expts with 250-500 or 500-1000 feed are useful : cross check of results from code (0.3 dB for 0.5 lambda) wrt curves from Kildall paper and our 250-500 feed was to be reported -- integration routine and other problems now sorted out and result matching with Kildal paper; was ready to move to GMRT specific case of 250-500 to get efficiency factor as a function of freq over the band, after porting the data for the feed pattern -- need updates on this.
==> initial calculations done for 400 MHz for cone-dipole : appears to give about 50% less aperture efficiency than expected -- needs a bit of cross-check, including possibility of doing calculations with measured radn patterns of 327 Kildal feed

(iii) status of phase centre checking for ver1 550-900 CDF and CSIRO feeds -- waitng for results with new VVM set-up : results from tests of ver2 550-900 CDF. To check (a) progress on installing new encoder (b) results from interim scheme

that has been deployed (with 0.5 deg accuracy): some squint was seen in E-plane pattern, and was to be checked with another feed / mobile notch filter.
==> new encoder installed and working; should think about some protection circuit for it? notch filter for mobile has been received; so now ready for testing.

Regular follow-up on all items after 2 weeks.

2.2 RF dump tests for new feeds -- from 8 Jan & before (HRB/GSS/SSK/PAR/NK)
(i) new data and results for 130-260, 250-500, 550-900 (HRB/SSK/NK) : (a) follow-up on discussion of current results : understanding of bad antennas for 250-500 band (e.g. C6, S2, S4) -- control expts with 3-4 bad antennas (with one good antenna) tracking on-source & off-source for long duration (4-5 hr) test : some new expts were planned -- to check if results are available for discussion; also, some problems were identified at antenna base (e.g. C4 one channel) -- need update.
==> C4 testing showed problem with RL of the dipole -- this has been replaced. with a spare dipole and old one needs to be checked to identify cause of problem.
(b) follow-up from analysis done by NK and plans for interferometric tests at 130-260 : interferometric test has been done; awaiting results / update from NK.
==> no update on this yet.
(ii) scheme for (re)calculation of expected values across the broad bands to be finalised (and added to measured curves) -- (SSK/GP/HRB) : curves now being done with constant QH value and with variation of T_lna with freq incorporated; FE team to model the effect of the main BPF and see if the curves match better with data. New curves with effect of BPF included to be generated and circulated.
==> HRB will complete this week and send.
Regular follow-up on all items after 2 weeks.

2.3 Follow-up on 550-900 MHz band filters -- from 8 Jan & before (ANR/SSK) :
(i) comparison of product obtained from ICON with in-house effort and finalisation of plans : technical comparison of individual filter responses shows in-house design to be slightly better; but need to complete integrated unit for insertion loss etc before taking a final decision, including plans for mass production. Tests with integrated unit using new PCB show insertaion loss increases to 3 dB now and some change in slope on higher side; to complete chassis and full integration and then repeat the tests and make detailed comparison with ICON results.
==> still waiting for chassis -- drawing to be done this week ! Regular follow-up after 2 weeks.

2.4 Total power detector for FE & common boxes -- from 8 Jan & earlier (GP/ANR/SSK): follow-up on plans for final scheme : 20 dB coupler for CB and 10 dB coupler for FE (at final output) with common 20 dB amplifier (maybe Galli-52 instead of Sirenza) -- sample unit ready and tested in the lab with 2 chans for 1 common box; lab monitoring of signals via MCM card now working :
(i) sample data from 2 units installed on E2 shows basic things are working ok: more sophisticated tests with on and off source tracking to be done (alongwith digital backend recording, if possible) -- check if tests done and results ready.
==> tests being done today; results should be available shortly.
(ii) plans for building 70 units for CB : follow-up on status of mass production, including chassis etc.
==> chassis outsourced to 3rd party -- to confirm expected date of delivery.
(iii) plans for prototype of the FE monitoring unit : initial test results show that scheme may not be viable, but later problem was found in the particular piece of Galli ampl used (alternate options not required) -- 2 units had been assembled and found to give identical performance as per specs; problem of feed-thru vs

connector was resolved in favour of feed-thru (as per original chassis design); to finalise plans for putting in a FE box in the lab (with online interface with JPK), followed by antenna test.
==> lab testing done; now ready for integration in FE box; agreed to put in one of the boxes getting ready with notch filters to go on one existing 250-500 MHz.
(iv) status of ITR on the work
==> started to look at it as per item 1.1(ii).
Regular follow-up on all items after 2 weeks.

2.5 Fixing non-working L-band feeds (short-term problem) -- from 8 Jan & before (SSK/ANR) : we have 32 feeds, 3 not working (1 dismantled for making drawings of new feed); all are device failures, but not able to put new device and tune it; now some LNAs have been successfully assembled by Gopi and C3,W1,E2 & E5 have been fitted with these and found working ok.
(i) Spares : Agreed to have 5 LNAs ready and available as spares : device is available, PCBs ordered, chassis under request, gold plating of wire to be done again (but discreetly) -- need status update.
==> effort still ongoing, also looking at an alternate party.
(ii) check status of alternate LNA designs :
(a) for MMIC ckt of Skyworks: MOQ was 3000; trying to get a few samples from the vendor or from Argus.
==> yet to discuss this matter; but meanwhile, also fix a date for his visit to GMRT for a more direct engagement.
(b) third option agreed upon : to try and see if design used for 550-900 can be modified for 1-2 GHz use -- to also check the design done by Abhay Kulkarni -- need update on this.
==> ANR has looked at the report and is now looking at the design file to see if it can be tweaked to give somewhat better performance in the range of interest.
Regular follow-up on all items after 2 weeks.

2.6 Spares for L-band FE electronics -- from 8 Jan & before (ANR/SSK) :
(check which of these items are complete and can be closed)
(i) RFCM-type card status (3 nos of old RFCM cards are ready) : check status of testing of new (compact) RFCM card -- is it fully cleared now?
==> all tests cleared for control signals; no tests for monitoring signals done -- this will be needed for new FE systems ! Agreed to (a) get 10 PCBs of the present design for current Lband spares and (b) to enhance the design to v2 to add monitoring facilities and compatibility with new MCM card, as the final design target; to fix time scales for all this and report back next time.
(ii) noise gen : PCB assembled; bench test completed; to integrate with one spare feed for final testing -- waiting for spare feed : status update needed.
==> still pending for spare feed.
(iii) timescale for integration : all components (except LNAs) for assembly of 3 feeds now ready : check (a) progress on LNAs (only 1 spare was ready on 20th Nov, 2nd was being assembled) (b) plans for integration of one unit, using the presently dis-assembled feed. Agreed to take these up after spare 610 feed is made ready.
==> 610 feed may be ready by end of next week and then this work can be taken up.
(iv) finalisation of plans for having total of 5 working spare feeds -- from mechanical to electronics : need status update.
==> final drawings not yet signed off and cleared for the box for the 3 feeds that are mechanically ready. For the new 3 nos, order is with Akvira -- expected by mid-March (including the enclosure / box -- upated drawing needed by him too).
Regular follow-up on all items after 2 weeks.

2.7 Filters at different stages of receiver chain -- from 8 Jan & before (SSK) :
(i) scheme for filters at antenna base : 3 type of ckts being designed using the new device : 2, 4, 8 way switches with different possible applications : (a) notch filter bank switching in rx room (b) filter bank switching inside FE box (c) rcvr room monitoring. ckt for 2:1 and 4:1 versions assembled & tested -- 25 dB isolation achieved (changes from 25 to 17 dB with frequency for 8:1 switch); aim is to target integrated units for 550-900 with 4 sub-band filters with integration of RFCM switch; complete and compare against ICON units -- results to be reported; for 250-500 it was agreed to go ahead with the discrete design for now and do the integrated PCB (Sougata) at lower priority; need status updates on these.
==> work is ongoing at some level.
(ii) to follow-up on refinements of the scheme for each FE box : update on 250-500 system (first to be done), alongiwth LPF from 1750 and above for HI band. sample PCB for 1750 LPF had come and was to be tested + other elements were to be assembled to produce the first unit for 250-500 system : 2 versions (1600 & 1750 MHz cut-off) assembled and tested; were to be installed in one antenna to check performance; was agreed to first test each of these (one after the other) at antenna base and obtain plots for Lband, with and without the filters : tests had been done, results were to be circulated (also, to include notch filter for 1800 in the tests) -- check status of this.
==> reminder to circulate first round results; and plan for the second round with the 1800 filter. also, work on a narrower CDMA filter is ongoing (can be made into a sepearate sub-topic).
Regular follow-up on relevant items after 2 weeks.

2.8 Characterisation of new FE+OF systems -- from 8 Jan (PAR/SSK/SN) :
(i) Summary of L-band results and performance :
(a) stability of power levels and (b) bandshape over 400 MHz :
antennas with large (~ 18 dB) slope (C13, W1, S2...) to be checked and reported; ripples and funny bandshapes to be characterised and compared with antenna base measurements to try and identify source of problem. New data taken in early Dec (was being looked at by Sanjit, Ramesh & Ankur) -- ripples seen in S6 etc and work was ongoing -- need status update on this.
==> ongoing at some level -- may be useful to compare with final data.
(ii) Summary of 250-500 band performance :
(a) stability of power levels and bandshapes; variation from antenna to antenna.
(b) presence of RFI in the band (TV lines etc) : need updates from new tests, including follow-up on fainter TV stations seen in the bands + other issues.
==> waiting for the new 16 channel system to come up...
(iii) settings of optimal attenuator values by control room : since 2 dB step size will remain for some time (till new MCM is used), settings in online files to be changed accordingly; look-up table or file arrangement with recommended attenuaiton setting for each band to be made available in control room asap, in coordination with Ops Group; and setting to be read from a config file -- check if these have been completed : pending for long for an update. To confirm if this is done or not and whether matter can be closed.
==> neds a final confirmation before closing.
(iv) to characterise the recommended attenuator settings for different bands : completed for Lband, 250-500, existing 610, only 130-260 / existing 150 -- to be confirmed once by Ops Group and matter to be closed.
==> needs a final confirmation before closing.
Regular follow-up on all items after 2 weeks.

2.9 Releasing existing 610 MHz system as part of the wideband upgrade -- from

8 Jan (SSK/ANR) : Preliminary tests of existing 610 feed through the wideband path show that ~ 100 MHz usable bandwidth may be possible as part of phase-I uGMRT. Agreed that only RF filter needs to be changed to new 550-900 BPF (alongwith mobile band and TV notch filters) -- two sample units had been made ready and were put in FE ch1 of C8 & C12; initial tests had been done and looked encouraging -- plots of deflection were to be made and circulated; PCBs for the filters were to be finalised (microstrip option instead of lumped ckt) and ordered; need status update on all of these.
==> deflection plots now circulated; show increased range of deflection compared to original system (extra 10 MHz on lower side and 20 MHz on upper side, leading to total BW of ~ 120 MHz : ~ 565 MHz to ~ 690 MHz) + some wider response on high freq side (upto ~ 780 MHz) with much lower deflection (~ 5 dB down). No updates on PCB finalisation and ordering. Regular follow-up after 2 weeks.

2.10 Status of new CSIRO feeds : from 8 Jan & before (ANR/JNC) : to report on performance of the newly manufactured feeds -- new results are slightly better compared to ver2 (casting) but not as good as the original ver 1 (machined by Godrej) -- to decide follow-up action.
==> not discussed.

2.11 Calibration scheme with radiator at apex of antenna -- from 8 Jan & before (SSK/PAR/SRoy/DO/YG): to follow-up on detailed discussion meeting in August : to schedule follow-up action appropriately, breaking the issue into smaller, more tractable parts :
(i) testing of dynamic range of old vs new electronics with parallel set-up on 2 antennas (SRoy to work with FE team on this) -- antennas to use had been identified; 2nd copy of crossed dipole was to be located for use and expt to be scheduled; first test of new system (C4) was completed, and 2nd data set was being planned; results to be compared with earlier ones on C1; modification needed for putting cross-dipole being done on C1; plans for noise source test etc : need status update.
==> email update from PAR : C4 test partially completed; will be done by this week; noise source test will be done next week.
(ii) finer aspects of variation of ampl and phase with various external parameters (DO to work with FE team on this) -- need an update on the status of this.
==> no clear updates -- results of first order comparison will be ready by next week (from email update by PAR).
(iii) plans for taking up other longer ranging goals to be discussed, including procurement of new broadband antenna (suitable unit has been identified); meanwhile feasibility of connecting noise source and radiating has been checked by PAR -- can be carried out when needed. To follow-up plans for buying 2 nos of broadband antennas.
==> email update from PAR : enquiry has been sent, waiting for quotes.

3. RFI related matters :

3.1 RFI testing of Miltech PC + peripherals for antenna base -- from 8 Jan and earlier (PAR/SSK/SN):
Integrated testing new i5 Miltech PC with peripherals -- using new shielded ports, connectors, shielded media converter + cables, Rabbit card (with Akvira make shielded box) showed good performance (new report with block diag and conclusions/ recommendations has been circulated); mech group had ordered 2 shielded boxes for Rabbit with Akvira (with modified connector diagrams and different back plates for extra SPI port). Tests were being done with these new units (using feed through

arrangement till shielded 37 pin D-type connectors come) : need status update on this work.
==> email update from PAR : work in progress -- crimping of analog monitoring cable completed; assembly of rabbit card completed; assembly & soldering of 37pin back panel completed; can check again after 2 weeks.

3.2 RFI tests of ethernet switches for antenna base -- from 8 Jan & earlier (SN/BAK/SSK): Testing the available switches for RFI (as per 29 May discussion); plans for design of RFI box for ethernet switches :
(i) procurement & testing of switches : sample units from Cisco, HP, Dlink and DELL had come and have been tested for RFI -- some are better than others; use of shielded CAT5 cable provides significant improvement; initial report has been circulated and matter needs to be taken up for discussion.
==> to be taken in a joint group.
(ii) plans to use shielded eth adaptor that can be mounted on panel -- available from CAT5 work to be used for prototype testing.
==> this is going on.
(iii) design of RFI enclosure -- inputs for front panel design given to R. Lolap for completion of drawing; prototype was to be fabricated in w'shop, but is now outsourced (?) -- need status update.
==> pending for enough quotes ? to check with HSK.
Regular follows-up after 2 weeks.

3.3 Mobile phone RFI -- from 8 Jan & earlier (SSK/PAR) :
Progress on identifying the operators at and around E06, and in Nagar, Junnar directions : letter had been sent to BSNL, some follow-up action was on (tilting of transmitter vs changing to 1800); need to check if outcome is satisfactory or letter to higher authority is required : dialogue with planning cell in charge of Pune had been initiated, with plans to contact DGM Telecon for Ahmednagar circle; visit by BSNL engineer was to have happened to understand / discuss level of RFI generated from 950 MHz towers at Gulanchwadi, Pargaon Mangarul etc.
==> follow-up with BSNL : they are changing 3 locations at Alephata and the 2 above. RFI group will do an incremental study after that.
Regular follow-up after 2 weeks.

3.4 Follow-up on UPS RFI -- from 8 Jan & earlier (SSK/PAR/RVS) :
(i) procurement of units from Miltech (RVS) : both 1 and 3 kVA units are under discussion :
(a) RFI testing of 3 nos repaired 1 kVA units from Miltech showed significant RFI -- updated report comparing original Miltech 1 kVA test reports (with same load conditions) have been circulated; it had been agreed to reject the 1 kVA units, however Miltech has offered to fix the problem with these units and electrical group is ready to give it a try (to transfer the order from servo to electrical).
(b) Miltech has offered improved version for 3 kVA unit -- order has been placed for the same and unit is expected by early-mid Feb : to check status of this.
(ii) follow-up from RFI testing of Ador 3 kVA units -- 2 nos of tested and cleared units are in use : in C9 and C10. Is there a final report on both of these? RFI team was to confirm.
==> PAR will confirm.
(iii) Bigger units : agreed to order 2 nos of 4.5 kVA units with Ador, with option of split o/p with different isolation transformers (3 + 1.5 kVA); indent had been raised; to follow-up on status of this.
==> no updates.

3.5 Discussion relating to Industrial RFI survey -- from 8 Jan & before (PAR/SSK) : revised docs (from 2009 and 2012 discussions) had been circulated by RFI group and were discussed in 5 June meeting (is the document too exhaustive?) : follow-up action identified :
(i) map showing zones and villages / towns to be completed on new SoI map and sent to DIC office for NOC clearance decisions; some information has been shared with DIC office; to discuss possible follow-up action on this; to discuss / understand the form that has been created and see if this part can be closed.
==> form discussed in detail and agreed that it looks good and appropriate for the need for the survey; side issue : to get some admin help for entering info from NOC (map work is still).
(ii) plans for starting survey asap with 2 teams (with extra manpower), lasting for one month, using SoI maps etc, to be finalised; foram specifying the format and information needed for survey was being finalised with DIC office, and plans were to start by 1st or 2nd week of Jan, now looks like being postponed to start in 1st week of April (!) : need status update on this.
==> agreed to try for the 1st April timeline; need 2 vehicles (as there are 2 teams) -- to be worked out with admin; accommodation for the members from DIC team may be needed; one more engineer (to help) may be required.

4. Operations :

4.1 New, improved Miltech PC -- from 8 Jan and earlier (CPK/SN/PAR) : 2 units of Miltech PC with two changes (more screws on panels + panel mount pwrline filters instead of chassis mount) under order by Ops Group : to check status of the enquiry / order.
==> PO just gone. May take one or two months to come. To follow-up after one month.

4.2 Development of M&C software -- from 8 Jan & before (JPK/RU/SN/NGK) :
(i) plans for modbus learning & testing : simple set-up of PC + Rabbit card with modbus for "hello world" level -- first test results should be available now.
==> will happen alongwith item (ii) below.
(ii) plans for EPICS testing : one Rabbit card + one PC104 card with associated details and code given to TCS for PoC work; simple set-up of PC + EPICS talking to Rabbit (with our native protocol), to be set-up in our lab also, so that first version from TCS can be tested in our lab.
==> work ongoing by JPK; some issues in installing the modules around the core EPICs module (which is installed successfully).
(iii) follow-up on interface of FE with new M&C system -- Naresh + Charu and Sougata have started work on this; will have full set-up of FE + Common box, but will start with M&C of common box using Rabbit card : initial h'ware connectivity may not be too much work as 32 lines have to be mapped to 16 lines on interface card; low level software for bit pattern setting may be enough to demonstrate basic connectivity; after that, packaging will be the issue. Need status update on the work.
==> work ongoing to understand the cards in the common box.
(iv) plans for populating a few (5-6) antennas with Rabbit card (with or without PC) for testing. C3 and C6 have been completed, and moving to S3, W3 + C8, C11 (only PC104 required) for prototype testing : W3 was starting need status update.
==> plan for PoC testing : PC to PC104 on one eth port; PC to PC between ABR and CEB (for 2 level SACE); PC to Rabbit in GAB with PC to PC in CEB. Rabbit card in W3 not yet started.

Regular follow-up on all items after 2 weeks.

4.3 Identification of appropriate ethernet switches for antenna base (and GAB)
-- from 8 Jan & before (SN/PAR/BAK) : Ops group to work with Comp team and RFI group to plan for trying some of the 16/24 port switches for antenna base use :
(i) appropriate RFI cabinet for the switch -- update on status of work and plans (see also item 3.2 above)
==> see item 3.2 -- no further discussion.
(ii) plans for BE teams need for switches in GAB system (in receiver room) : agreed to use 8-port switches for now though they are worse in RFI than the 24 port ones tested for antenna base use, and take a final decision later on; same for the SMPS power supply-- 2 nos ok for now.
==> no discussion on this item.
Regular follow-up after 2 weeks.

4.4 Planning for proper space utilisation for new equipment at antenna base -- from 8 Jan & before (SN/CPK/RVS) : long-term plans for proper utilisation of the space at antenna base. Follow-up on 14 Aug discussion on first report : reducing space requirement by making MCM cards horizontal -- confirmed; electrical has confirmed that isolation transformer can be put above the rack; discussion about electrical consumption (2.6 kVA for new systems, 3.5 to 4 kVA for old + new systems) -- can this be reduced?
pending action items (SN was to follow-up with RVS and servo and report back) :
(i) joint measurements of load to be done by Ops and Electrical and reported. What is the final conclusion from this? current practical load is around 1 kVA, but projections are still reaching close to 3 kVA -- may need a meeting to resolve this. to follow-up if draft note is ready for external circulation and discussion.
==> still pending.
(ii) current UPS is 1 ph to 1 ph unit; can be made 3 ph to 1 ph (has the same footprint) and may have some advantages -- need a more detailed discussion to finalise plans.
==> no discussion on this.
(iii) can we have single, shared UPS for both servo computer and rest of the ABR electronics? RVS & SKB to produce basic connection/wiring diagram for discussion by next week.
==> no update on this.
(iv) how carefully does the load balancing for the 3 ph input to antenna shell needs to be done? not clear...
==> no discussion on this.
To follow-up on specific issues above with RVS; regular follow-up after 2 weeks.

5. Back-ends :

5.1 GPU corr (GWB-II) : release of 4 node, 8 input, 200/250/400 MHz version -- from 15 Jan & before (SHR/SSK/BAK) : (NOTE : GWB-I is existing released system !) : agreed to make 4 T7500 nodes with C2050/C2075 Fermi GPUs + remaining 4 T7500 nodes as host machines (to take care that these are the ones that transient pipeline uses presently so that sharing is possible); this should have ALL basic modes : total intensity and full polar IFR modes; IA + PA BFR modes with process_psr pipeline attached; full GUI support; to come up in trial code section without affecting the presently released mode.

(i) 1.7 s time offset problem -- appears to be resolved. Need checking with few

more long stretches of data (at Lband) to confirm.
==> no new data taken ; changes is there in GWB-II only (not in GWB-I); needs some more investigation before item can be closed.

(ii) update on code for providing basic beam modes (computational load is 3 to 10% of GPU compute time) : first version of process_psr pipeline for IA has been released (with basic SOP), but essentially non-functional; new version with separate kernel (outside phase shift kernel) for beam formation has been developed; IA mode tested on pulsar signal : addition of 7 antennas in single pol at 610 MHz with 200 MHz LPF -- to test with different settting in pmon to check S/N effects. yet to quantify the computational effort; to hand over to SSK for the process_psr pipeline work; to be integrated GWB-II code
==> not yet integratined in GWB-II that is available; but will happen shortly within one week. May be possible to work out the PA mode into it; to start the work for phasing; also need to complete the computational load estimates.

(iii) development of 4/8 bit versions of the code, for allowing BW > 200 MHz to be released : change in FPGA design is done and one common design with parameter is available and GPU side only iteger delay correction needs to be completed; and then test with sky signal.
==> status remains same; likely to release this with GWB-III.

(iv) modification GUI for supporting new modes, as well as having support for code in trial branch -- all work for this was supposed to have been completed and new set-up was to be released, and then beam modes were to be added -- need status update on this.
==> GUI appears to be progressing fine for GWB-II v1 ready for release; GWB-II v2 will come shortly after that alongwith beam modes.

Regular follow-up on relevant items next week (to check which can be converted to longer term issues)

5.2 GPU corr (GWB-III) : next gen system -- from 8 Jan & before (SHR/SSK/GSJ/BAK) : New improvements needed for finalising the design for the full 32 ant, dual pol system : 4 new DELL machines are in the rack and wiring + cabling is complete, running with analog noise source; new code with 2 x 10 Gbe I/O + improved logic for assigning specific threads to each core + env variables is completed (tested for 200 MHz / 8 bits and 400 MHz / 4 bits, 16 inputs and working ok with no pkt loss); ongoing action items :
(i) improvements in GPU code using K20 card (SHR/SSK) : cross-check on FFT code (done and can be closed); calibrating MAC performance vs data reshuffle load (done and no further improvements look possible; can be closed);
(a) looking at XGPU code (with Pradeep of nvidia) -- need status update on this;
==> walk thru with Vinay of nvidia by Reddy had been done; need some follow-up.
(b) trying sample PA beamformer code to estimate load etc. -- need status update.
==> needs to be added.
(ii) to start testing 400 MHz BW mode -- how best to conduct these tests? all changes in the main code to handle 4 bits etc have been done in GWB-II and now need to be ported to GWB-III and tested.
==> method is agreed, but when to do is not clear -- bigger discussion is pending.
(iii) Layout and racks (GSJ/BAK) : layout diagram to be updated and long-term plan for racks to be initiated; 3 different kinds of President racks discussed -- to try and finalise after one more round of discussions including RVS; meanwhile, agreed to get one rack on an urgent basis for immediate use.

==> indent for 2 nos of cyber rack has been raised; to follow-up closely; meanwhile, to assemble GSB nodes on half-height rack.
(iv) procurement of accessories like network cards, disks, cables etc to be looked into -- only 4 nos of dual 10 Gbe NIC cards is in process -- to check status of the same.
==> arrived and can be closed.
(v) new purchase of Roach boards etc : follow-up on status of procurement, and take stock of total number.
==> enquiry has gone now.
(vi) purchase of 4 more T620 machines & 8 K20s : status update on this.
==> T620 folder is ready for PO; K20s folder is ready with recommendation. Regular follow-up 2 weeks later.

5.3 Walsh modulation : prototype set-up on Roach board -- from 15 Jan (SCC/BAK): plans of BE team for implementing prototype scheme -- basic unit for switching using sq wave signal from GPIO pin tested ok; was put in main PoCo correlator and was being tested. SCC had sent brief email update on integrated testing -- need detailed discussion.
==> brief update in absence of SCC : to try for 1 bit long delay (1 microsec) set-up in the FPGA and test ccf with. Regular follow-up after 2 weeks.

5.4 SFP testing of final unit -- from 8 Jan and before (KDB/BAK) : SFP+ side working fine for both Cu and Opt; XAUI CX4 side is still flaky -- may still be marginal in timing. Update required from new tests after fresh inputs from vendor. Follow-up with MTE for PCB details and then with Vitesse -- is it resolved now?
==> dialogue with Vitesse is still going on. To check again after 2 weeks.

5.5 RFI filtering -- from 8 Jan (KDB/BAK/YG) : to add the first version of the real-time RFI filtering block (after some modifications) into the packetizer (now done -- in one input out of two with different options like replace by median or by constant or by digital noise source sample or clip to threshold via s'ware registers) -- to report about performance of the same, include testing; and then to look into optimisation of resource usage.
==> being programmed into packetiser of GWB-I... Regular follow-up after 2 weeks.

5.6 Next-gen time & frequency standards -- from 8 Jan & before (NDS/BAK) :
(i) brief update from BE team from visit to NPL
(ii) plans for follow-up action
==> brief update from BAK on NPL visit : different MASER vendors; set-up required for hosting a MASER unit; testing of our unit gave results similar to those in our lab which implies our unit is ten times worse than expected. Detailed report to be circulated by BE team. Follow-up after 2 weeks.

6. Other items :

6.1 New python assembly design -- from 8 Jan (HSK/SSK) : FE group wants the python configuration in E6 to be adopted for all antennas -- this needs to be discussed with mechanical group and finalised; FE and mech have dicussed about plans for modified python assembly that will give additional protection to cables; SSK will circulate a report about this; and after discussion and clearing the plans, sample unit will be made by mech group; meanwhile, mech group has circulate short report on their understanding of the matter, alongwith photos : to discuss this in detail today.

==> current vs E6 system was discussed; HSK to produce an updated note about possible options. Regular follow-up after 2 weeks.

6.2 Coexistence of 50-90 MHz RRI feed with 250-500 CDF on same face of turret -- from 8 Jan and before (HSK) : Mech group to check for possible solutions and report back, after looking at the drawings (awaited from RRI). Update from mech group about reverse engineering for making the drawings -- mech group has circulated a brief note : to be discussed in detail today.
==> detailed discussion of note from mech shows that it is rather incompatible : either cone has to be truncated or its height has to be raised by 30 cm to avoid conflict (will work with 500-100 CDF ?!?). Mech to try and come up with a solution that allows coexistence with L-band. Regular follow-up after 2 weeks.

6.3 Problem of access to FE boxes with 500-1000 CDF feed -- from 8 Jan & before (HSK) : Update on new solution being designed by Mech group -- test was to be done : trial run in dummy area, followed by test at actual height -- to update results of these tests, which are pending for long time now !
==> tbc with HSK !! Follow-up after 2 weeks.

6.4 Fabrication of 5 spare L-band feeds -- from 8 Jan & before (SSK/HSK) : to finalise the plans for construction with the different vendors : Akvira, Physimech, Fabromech) : to update status of the procurement work with Akvira.
==> see item 2.X above for details.

6.5 Jobs at TIFR -- from 26 Dec (HSK/SKG) : to check the following :
(i) update on status of our jobs at TIFR -- check status after collecting 120 nos: 60 more were under processing in December; to check date of delivery of these.
==> last set of 60 nos (bonus amount) still waiting in the pipeline. Check status again after 4 weeks.

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Minutes of Plan meet of 29 Jan 2014 (follow-up of some pending topics
from different areas) :

1. Documentation related :

1.1 Detailed design doc -- pending for long : from 15 Jan & before (SSK/BAK) :
follow-up on subsystems to be converted : (i) OF Rx system to be completed
(Satish Lokhande) -- hardcopies had been collected; doc to be made ready
==> no updates on this.
(ii) OF Tx to be started. Field measurements completed few weeks ago and were
to be verified once more and then results were to be compiled; should have results
ready by now -- some updates are required !
==> there is some mismatch between simulation results and actual data points;
need a spare Tx-Rx system for testing -- will do after next antenna installation
is over and then all the systems can be completed. Can check after 2 or 4 weeks.
Regular follow-up on both items after 2 weeks.

2. FE & OF related :

2.1 New LNA for 130-260 system -- from 15 Jan & before (VBB/SSK) :
(i) Variation of gain and Tsys with temperature : tests show new LNA (250-500)
has ~5 to ~55 deg K varn in Tlna for variation of 0-60 deg K in env chamber,
and gain change is ~ 0.2 to 0.3 dB -- confirmed with new test that waits for
temp to stabilise after giving 10 deg steps (tests are now done with one monitor
in contact with the device and one in the box, alongwith chamber temp monitor)
follow-up action items now agreed upon are :
(a) to do once more to check repeatibility; then test the 130-260, 550-900 and
Lband LNAs one by one.
==> no further progress / update on this.
(ii) update on scheme for fitting two temp monitors (one for LNA, one for box)
in 130-260 MHz FE box for tests on bench followed by antenna tests : lab test
with manual readings had been done (showed 15 deg temp difference between LNA
body and FE box (open)); work ongoing to study online data from 3 antennas :
W1 (130-260 FE box), W4 (250-500 FE box) and E2 (common box) was tested ok, and
some long duration (8 hr) tests have been carried out on W1; need some data on
W4 and E2; also 24 hr test to be done when no GTAC obs is on (e.g. Wed night) to
get simultaneous reading on all 3 antennas for follow-up. Pending for long now.
==> tests not done yet, pending for long-time.
(iii) mass production of temp monitoring system : since enough number of cards
are now ready, agreed that temp monitor can be installed in any FE or CB box
that goes up on an antenna (e.g. 250-500 being modified for notch filters etc)
and a list to be maintained and updated by FE team.
==> list to be supplied by FE team.
(iv) planning for long-term implementation : ~ 300 temp monitor units will be
needed for full GMRT -- plans for components, PCBs etc need to be presented.
==> basic temp monitor needs one PCB -- to check how many are there and what is
needed; same for the devices.
Regular follow-up on all items after 2 weeks.

2.2 Mass production of 250-500 FE system -- from 15 Jan & before (ANR/SSK) :
(i) testing of 15 installed feeds : FE group has been doing weekly plots & results, and deflection plots have been added to these : some data had been taken for C6 (showed different lines in each poln -- RFI or internal?) & S2 (noisy bandshape -- effect of TV line?) : color grey scale plots discussed -- there are clear signatures of TV line(s) at 175 and 540 + one more around 220 (this needs to be checked) + military satellite + a few occasional bursts of RFI; further tests with feed at focus and pointed elsewhere show evidence for (a) different kinds of lines (b) harmonics of military satellite when antenna beam directly pointing to it etc... -- agreed to try an expt with 2 antennas -- feed at focus in one and feed pointing up in the other and record for 24 hrs as sky drifts by.
==> no updates on this right now.

(ii) status of testing and installaton of FE boxes : ten antennas fitted + 2 spare units ready and tested : update on procurement of standard connector -- samples had come and modified units had been received from w'shop -- tested ok and ready for integration? Update on main delivery (was expected around 20 Jan) required.
==> integrated testing (including thermal cycling) going on; bulk order for 100 nos of male & female connectors has been delivered; meanwhile one box integrated & tested with 540 and 175 notch filters and power, temp monitors -- will be installed on antenna (C4) today.

(iii) plans for sub-band filters for 250-500 MHz system -- update on testing of sample units and results from these to be discussed; updated report with all 4 sub-bands over plotted was sent; roll-off is a bit slow on the higher freq side compared to existing L-band sub-band filters; insertion loss is better; agreed to put up one or two units in antennas and check the performance :
(a) 2 units of the exisiting design were to be made ready and install on ch1 of 2 antennas, bench test with manual setting of bits working ok with patch card + old MCM card combination; work to complete integration with online control was on-going -- need status update on this, and plans for integration with new box and antenna installation; issue of chassis to be addressed.
==> all tests possible in the lab are done; rest will be done in situ, but discussion needs to happen with Ops group to allow for command for sub-band selection in 325 system and the same can be tested in the lab; chassis (and PCBs) are enough only for 1 ant, 2 ch system.

(iv) plans for notch filters in FE box for existing 250-500 antennas : notch filter at 540 (lumped ckt) -- one set installed in 2 antennas -- S2 & W4 -- in pol 1, in receiver room. Performance had been checked and found OK; to make units ready for all existing 250-500 FE systems, along with 175 MHz filters. 4 units fully assembled (1 BPF + 2 notch filters), tuned, tested and ready; 2 more 540 notch filters were to be made ready to complete the units for 3 antennas; installation on W1 was completed
(a) status of installation in further antenna (C4 + next?) to be updated.
(b) status of PCBs for remaining units : 80 PCBs in hand for 540 filter, but need to order more for 175 filter (VBB).
(c) update on chassis procurement.
==> 3 antennas which are done are (most likely) C6, W1 and C4 (going today)--TBC; 175 filter requires follow-up; 12 nos chassis have been received for 540 and ~ 10 nos have been completed; need to check is older chassis will do for 175.

(v) status of other auxiliary items :
-- noise source, power splitter, directional coupler etc : sample unit has been

assembled / integrated on the bench; integrated noise on/off testing on bench yet to be done; integrated in new FE box; plans for testing to be finalised.
==> goes with testing of new box.
-- post amp : Hitite 740 new stock for 30 antennas available; to check if post amp has been tested with slow rise power supply.
==> no progress, but SSK wants to keep on the agenda.
-- power monitor : status update on the older scheme with Galli amplifier : is it ready for integration in FE box? feed-thru vs connectorised arrangement -- to be finalised.
==> these 2 sample units are going on C4 today with old FE box; for new box, to try and get few more PCBs (which have been redesigned to final version).
-- temp monitor : to check plans for final integrated testing.
==> going on track.
-- RFCM card : check if fully tested (some bit pattern matching tests were remaining) and can be used for actual control; finalise layout in new FE box.
==> this card is ready, but is not suited for 250-500 due to functional details; what is agreed is that new box will work with old RFCM card + patch card, but will be layout wise compatible with new RFCM card. detailed design of new RFCM card can be now made as a separate agenda item.
==> Regular follow-up on all items after 2 weeks.

2.3 status of lab integration of final version of 250-500 box -- from 15 Jan and before (ANR/SSK/HSK) :
modelling shows that existing size of box is not adequate (inspite of double deckering of chassis); deeper FE boxes are needed -- 15 cm has been added (wt of new empty box is 15 kg); mech group has confirmed that this is ok (present depth is 468 mm, can be increased to 700 mm; also, rear member in the cage can be removed to further increase depth); also total weight of populated box will go up by a significant amount : HSK to check the impact if total wt of all boxes goes up by 50% (capacity at turret; static & dynamic loading capacity of feed gearbox etc):
(a) one sample box has been supplied by mech group -- to check status of 2nd unit.
==> no update.
(b) work on integration of units into the box : semi-rigid cables and DC wiring was to be completed -- update on status of this is needed.
==> not much progress on this till now; will start now.
(c) estimate of total weight of populated new box is ~ 27 kg (!) -- this may make the box unwieldy to handle at the focus; discussion initiated to see if weight of some of the components can be reduced (use plate based deisgn of individual boxes instead of milled chassis, wherever possible) : needs follow-up discussion.
==> agreed that 27 kg is too heavy; plans for reduction : integrate some of the smaler units into single units : integrated filter unit TBD; dir coupler, noise source and power splitter can be combined into one chassis; similarly, some of filter chassis can be combined; finally, the bigger chassis can be plate + rail assemblies, rather than milled units.
(d) HSK to circulate existing drawing of turret and the first calculations about impact of weight increase.
==> need update from HSK.
Regular follow-up on all items after 2 weeks.

2.4 FE power supplies at all antennas -- from 18 Dec & before (SSK/ANR) : Some antennas have FE supply (some are home made, some are the original supplies); other antennas use the ABR power supply which can lead to problems of overloading etc; only 5 antennas remain with shared supply and none are upgraded systems.
(i) solution 1 : update on plans for in-house completion of 5 supplies -- ripple

has been reduced from 700 to 100 mv on sample unit (with bigger capacitor bank); status of assembly of 10 units, for which boxes have been delivered by workshop.
==> all components etc are there but work is stopped due to other priorities.
(ii) solution 2 : plans for purchase of off-the-shelf supplies & scheme for usage. Check status of testing and acceptance of units, including RFI properties -- one unit was tested for RFI and found ok (formal report awaited?) : status update on completing remaining 4 antennas (C0, C9, W3 & W6) and look to closing this matter.
==> not done yet, three of these supplies have been diverted to OF system at Rx room -- this will take care of 30 ant system; repeat order needed for FE system; meanwhile, put the existing ones on antennas where new OF systems have been put.
(iii) to resolve whether it is better to have all supplies at the bottom, or some (in-house) on top and others (off-the-shelf) at bottom? -- will need some more time; can revisit around end of Jan 2014.
==> this can be left pending for some more time -- maybe one month.
Regular follow-up on all items after 4 weeks.

2.5 Status of improved 500-1000 MHz CDF -- from 15 Jan & earlier (HRB/GSS/SSK) : there are 3 different versions of dipole (v1, v2a, v2b) and 2 versions of cone v1, v2) in trial phase; 3 test feeds have been built using these :
ver1 : dipole v1 + cone v1 : RL is OK, deflection is not good & falls with freq
ver2a : dipole v2a + cone v2 (mesh?) : RL is good; deflection is OK & flat with freq
ver2b : dipole 2b + cone v2 (solid?) : RL is v. good; deflection is good but not flat
Follow-up action items are as follows :
(i) simulation results for different combinations of the above were carried out and discussed in detail : it appears that dipole (rather than cavity) is dominant for deciding the RL behaviour (and also H-plane taper?); cone appears important for E-plane taper; best results for RL and good beam pattern match over large freq range appear to be for dipole v2b (triple sleeve) with cone v1 (66 deg).
To discuss the possibility of testing dipole v2b + cone v1 combination in lab and on antenna. Was waiting for v2b dipole to be free (or new one to be ready), and for 2 nos of FE boxes to be ready; need status update on this.
==> no updates.

(ii) simulation results for denser mesh case (higher order basis functions): new simulations are with finer planes rather than higher order basis functions; this needs to be confirmed; also, 50 MHz shift that is seen needs to be understood; also explore default number of current elements in simulation (from 19 Dec meet); discussion with WiPLD indicates that increase in PolDeg may make a difference; to update about this and plans for final strategy. Need update about repsonse from WiPLD.
==> no updates.

(iii) there is noticeable difference in simulated and measured RL curves which needs some study also (it appears that agreement was better for 250-500 CDF?).
==> no updates.

(iv) to do deflection tests for ver2 with a rigid stool design (and with finer adjustment of the focus distance, if needed) and then bring down the ver2b feed and replace with normalg 235/610 feed (or with v2b dipole + v1 cone combination?). will need a spare 610 feed to be made ready using 550-900 LNA ? agreed to try current ver2a with 1480 rigid stool (which is already on C10) to see if there is any change in beamwidth -- HRB to get the data from control room and report status.
==> no updates.

(v) to compare deflection and beamwidth results for new feeds with old 610 system -- first round of results were shown and are quite useful; extension to later data shows stable behaviour for Aug to end Nov at 47 arcmin (when ver2b with 1280 stool was there) + plus some other details; will be useful to see values for ver2a with 1480 stool now.
==> no updates.

(vi) to compare RL measurements for ver2 dipole in ver1 cavity (and vice versa?) was waiting for C10 feed to come down -- see item (iii) above -- this is done now (?) and can be rechecked when v1 cone is mated with v2b dipole (was held up becuase of lack of ver2 dipole).
==> no updates.

(vii) any new ideas? discussion of 19th Dec came up with following action items:
(a) get 2 more v2b dipoles fabricated -- work underway, need status update UREGNT!
(b) design Kildall ring feed at 750 MHz using v2b dipole -- work ongoing; status of request to workshop to be confirmed.
(c) try simulation of CDF250-500 scaled by factor of 2 -- to be tried after (b) status update on this needed.
(d) design Dual-ring feed 550-900 MHz (intial BFRs can be made for 650 & 800 MHz)
(e) repeat Radiation pattern measurement @ 800 MHz (include notch filter) for CDF550-900 MHz (Cone v2, Dipole v2b) -- being tried by GS : need status update.
==> no updates.
Regular, formal follow-up on all items after 2 weeks; meanwhile, YG to check about progress.

2.6 Signal flow analysis (SFA) related items -- from 15 Jan & before (GP/ANR/SSK)
(i) SFA for OF system to be discussed, including addition of the scheme of 10 dB attn + 20 dB ampl -- SSK was to complete review of doc by Ankur and release the same after internal discussions; this is significantly overdue now !!
==> same problem as in item 1.1 -- mismatch of simulations and data is holding this up.
(ii) plans for SFA of 250-500 system : analysis had started, and some lab tests had also been done; and all data required had been taken; there were some problems in reconciling bench test results with analysis, for existing system -- these are resolved, and first draft report is now awaited (was ready for internal circulation).
==> internal feedback requires some changes that GBP is looking into.
Regular follow-up on all items after 2 weeks.

2.7 Filters at different stages of receiver chain -- from 15 Jan & before (SSK) :
Scheme for filters at antenna base : 3 type of ckts being designed using the new device : 2, 4, 8 way switches with different possible applications : (a) notch filter bank switching in rx room (b) filter bank switching inside FE box (c) rcvr room monitoring. Ckt for 2:1 and 4:1 versions assembled & tested -- 25 dB isolation achieved (changes from 25 to 17 dB with frequency for 8:1 switch); aim is to target integrated unit for 550-900 with 4 sub-band filters with integration of RFCM switch (and do final comparison with ICON units); for 250-500, first system is to be assembled using discrete units and work on integrated to go on in the background.
(i) 550-900 unit PCB done & was waiting for chassis; 250-500 system with discrete units was getting assembled and work on integrated unit was waiting for design of master PCB to be completed; any updates?
==> drawing just finished and chassis yet to be made -- may need one week and then integration and testing; no new updates on 250-500 system.

(ii) to follow-up on refinements of the scheme for each FE box : update on 250-500 system (first to be done), alongiwth LPF from 1750 and above for HI band. sample PCB for 1750 LPF had come and was to be tested + other elements were to be assembled to produce the first unit for 250-500 system : 2 versions (1600 & 1750 MHz cut-off) assembled and tested; were to be installed in one antenna to check performance; was agreed to first test each of these (one after the other) at antenna base and obtain plots for Lband, with and without the filters -- check status of this : updates on this are pending for a long time now.
==> no progress on this as tests done last week did not show 1800 MHz mobile signal in rx room signal; some confusion about LPF cut off values : TBC
(iii) FE team to make a full list of various filters put in various signal paths as part of upgrade (including for testing) -- this can be put up on the upgrade info page maintained by control room.
==> FE team to make a consolidated list of filter installations in the rx chain of different antennas and supply to control room and upate periodically with help from control room.
==> Regular follow-up on all items after 2 weeks.

2.8 Walsh switching arrangement in FE -- from 15 Jan & before (SSK/SCC/PAR) : Some tests have been done on the bench by FE group; first draft of report has been circulated.
(i) to devise a simple test using Lband system + radiation from apex to demonstrate the working of the system (on any antenna) -- need update on plans for this : on track for testing in 1st week of Jan? agreed to postpone for some time due to conflicts with other requirements; to decide when it can be taken up.
==> not discussed; email update from PAR : Aaronia make antenna purchase under progress; meanwhile, test can be done with existing 1 GHz monopole in 3rd week of Feb.
(ii) plans for implementation in other systems e.g. 250-500 FE box (needs the new RFCM card to be ready?) -- meanwhile, for old RFCM card + patch PCB design shown to be working ok for nnew walsh opamp (OP37) + filter bank control; 10 nos of this PCB had come and were to be tested.
==> assembly of 10 nos is going on.
Regular follow-up on all items after 2 weeks.

2.9 OF systems -- from 15 Jan & before (SSK/PAR) : Plans for further systems :
(i) plans for extending the wideband OF link to beyond 15 antennas : C12 had been completed as 16th antenna; next system is under test; antenna to be decided.
==> C14 is the next antenna -- will get installed this week.
(ii) problem of manpower for assembling : update on plans for local manpower and plans for getting person from Argus to work at GMRT for 2 weeks -- need urgent update from SSK on this.
==> no real update on this, except Argus will plan a visit in first week of Feb or so.
Regular follow-up after 2 weeks.

2.10 Alternate fibre connectivity -- from 15 Jan and before (PAR/SSK) : Tata telecom has offer for 16 Mbps from E5 to from Kalyan to Nagar highway; Rs 8 lakhs per annum or so... to be discussed and follow-up after 2 weeks -- pending for long.
==> not discussed yet again ! YG to look for a different avenue to have this discussion.

3. RFI related matters :

3.1 RFI from TV signals (from cable to terrestial systems + boosters) -- from 15 Jan and before (PAR/SSK) : Cable TV leakage could be a bigger problem than boosters etc ? : tests had been planned to see how much is the leakage as a function of frequency and then see if operators can be requested to change the frequency or improve their set-up; results on 2 tests to be reported : 1st one at control room of operator and 2nd at some distance away to see which channel and operator is the culprit. Further tests had been done at N'gaon. Present thinking of RFI team is that the lines seen are from terrestial TV transmitters, rather than cable TV (!) -- likely to be in 175 to 229 MHz range. Follow-up action items :
(i) generate list of all the terrestial transmitters in neighbourhood (with large enough range) and their frequencies, and to check which ones are expected to affect us.
==> email update from PAR : preliminary list has been made; need to get exact freq of Ahmednagar station; follow-up action to be discussed.
(ii) for cable TV : to complete the round of data gathering from the nearby operators to keep as a log;
==> email update from PAR : list of cable tv channels collected for 2 out of 3 local networks/operators.
(iii) to work out a plan for monitoring the GTAC data (30:1 data) for RFI in 325 and 243 band.
==> no update.
Regular follow-up on all items after 2 weeks.

3.2 Effect of military satellite RFI in 243 band -- from 15 Jan & before (PAR/SSK/SN) : follow-up action on testing for saturation effects, decision about appropriate location of switchable filter, possibility about control room (ops group) being able to come up with algorithm for prediction (for user's) :
(i) filter related action items :
(a) report on prototype filter by FE group has been circulated (?); old filter works only up to 1 GHz, and new version has been made that works upto Lband and was getting tested.
==> no updates.
(b) meanwhile to try a test where this filter is inserted in the path (for 2 antennas) for a short time when 250-500 is selected -- put in ch 1 of C8 & C12 (to confirm) and check data for the same.
==> email update from PAR : satellite filter has been put at Orx o/p in CH1 of E2 and C6 antennas (does it affect performance in other bands ?)
(c) FE team to make a full list of various filters put in various signal paths as part of upgrade (including for testing) -- this can be put up on the upgrade info page maintained by control room.
==> no updates.
(ii) Ops group to investigate and come up with algorithm to use in control room, after getting the relevant data from PAR. SN to update on the latest status, including plans for testing the algorithm being developed -- appears that Ops group is ready with a program and discussion with RFI group says that PAR will provide test cases for checking the algorithm; appropriate longer term action to be decided (including other satellites?); waiting for test to be completed.
==> test not done yet.
Regular follow-up on all items after 2 weeks.

3.3 Satellite RFI at GMRT : generalised task force (FE + BE + Ops team) -- new item from 15 Jan onwards (PAR/KDB/SNK/JPK) : aim is to have a combined approach

where Ops group can have prediction routine for all known satellites, FE group can help characterise their effects in different uGMRT bands, and BE group can come up with mitigation techniques. To follow-up on the initial discussion of 15 Jan.
==> no major update.
Regular follow-up after 2 weeks.

3.4 Radiation from CAT5 cable -- from 15 Jan & earlier (SSK/PAR): Follow-up on action from 3 Apr discussions : to install shielded CAT5/CAT6 cable in conference room as trial and finalise the scheme for all other public places in the building: first report has been circulated that combines testing of switches and CAT5 cables; conclusion is that use of shielded cable makes significant difference to the discrete lines as well as to broadband RFI. Agreed to go ahead with controlled expt in GMRT Conf room to quantify the improvement; plan is as follows : put few laptops in conference room to ping some of the servers in main control room via the switch; do the test with and without the shielded CAT5 cable and report the result; will need some help from computer group for making the cable -- status update on this is needed.
==> email update from PAR : RFI ambience test completed and data collected for Conference Room; RJ45 RFI shilded cables will be made in the OF lab and test will be repeated after installing the cables; expected to be completed 26th Feb.
Regular follow-up after 4 weeks.

4. Operations :

4.1 Mass production of Rabbit MCM cards -- from 15 Jan & before (CPK/SN/NGK) :
(i) status check on how many cards are ready now and plans to speed up delivery
==> 64 now done; to start looking at speeding up the assembly.
(ii) to finalise plans for how many more MCM cards are needed -- discussion on 15 Jan may need some refinements, based on comments by NGK on the MoM (?) -- to discuss and take a final call on the matter.
==> postponed as all required not present.
To be taken up again after 2 weeks.

4.2 Mass production of shielded box for MCM cards -- from 15 Jan & before (CPK/PAR/SN/HSK): RFI test report of Akvira vs Physimech showed Akvira is better and this has been selected.
(i) status of ordering 2-3 more boxes from Akvira -- units have arrived and are under assembly and testing; plan is to make everything ready and put in the 37 pin shielded connectors as soon as they come and then do the test with dummy LED type loads -- status update on current situation of testing.
==> email update from PAR : integration of system components under progress; testing expected to be completed by 14 Feb.
(ii) status of work on shielded connectors that are required for antenna usage of MCM cards: waiting for 37 pin D-type 25 pairs to come -- expected by 10 Jan. To use existing connectors for the preliminary measurements -- status of this to be reported.
==> no update.
(iii) How to plan for the mass production? Ops group to report on discussions with Mech group and finalise drawings for 2 types of box : with and without provision for SPI port on chassis + 1 serial port on each box; aim to place final order on Akvira. RFI group to complete 2 more prototype units, and then hand over the matter to Ops group. To check if this moving forward or not.

==> no update.
Regular follow-up on all items after 2 weeks.

4.3 Development of M&C software -- from 15 Jan & before (JPK/RU/SN/NGK) :
(i) update on work with TCS (JPK/SN) : current status of PoC phase of work
==> EPICS sequencer, deviced driver development, SACE interface ongoing; status review planned for this week.
(ii) monthly update on in-house work (RU/SN)
==> servo related commands in online v2, tested with PC104 in lab setting for many of the servo commands; python environment for interface with online v2 has been done and can be used for having multiple users; web interface for looking at the monitor data and astronomer UI.
(iii) discussion to confirm long-term plans for full system : whether M&C system with part old and part new running GTAC observations is feasible or not?
==> to be done later, as all required members not present, and maybe better to do so in a bigger group.
Regular follow-up after 2 weeks.

5. Back-ends :

5.1 Documenations :
(i) Detailed design doc -- pending for long : from 15 Jan & before (BAK) : analog back-end was due sometime ago ! Hande was starting to make the first version -- first version has been prepared; update will happen after one round of discussion -- to check status of this.
==> Hande to modify first draft based on feedback from 1st round.
(ii) ITRs for analog back-end systems and digital systems to be taken up :
analog back-end : Sandeep and Navnath to look into; pkt corr first level has been done but not yet circulated; GPU corr needs to be started -- Reddy & Irappa to work on this with target of end-Dec -- need a status update of various activities : first level draft by Sandeep & Mekhala for pkt circulated; status of GPU corr doc to be checked.
==> need feedback to Sandeep & Mekhala; Reddy has sent first draft to BAK -- needs to move to next level of internal circulation; analog back-end ITR to be started.
Regular follow-up on all items after 2 weeks.

5.2 Analog back-end for 8 antennas and beyond -- from 15 Jan & before (BAK) :
(i) appropriate attenuator settings for Lband & 250-500 done; 610 band was being finalised -- updated table had been circulated; few iterations need to be done and then updated table + report can be circulated by Ganla -- pending.
==> this is mostly complete; needs to be done for 4 more antennas to complete 16 nos, and then for 16 to 20.
(ii) status of work for having i/p side RF filters : to confirm plans with FE group for sharing mass production units; to check status of 8:1 switch : agreed that it is ok with FE group to share the designs, provided BE team is ok with the performance specs; ok to include BE requirements in order of PCBs and components (cost sharing to be worked out accordingly);
however, BE group to take care of mass assembly separately, as it will be done with in-house manpower by FE group for their filters.
final configurtion and layout of 8:1 switch to be done as part of finalisation of the PIU, requiring filter chassis etc. Need to discuss updates and way forward for this -- email discussion has taken place and needs some follow-up

to resolve pending matters.
==> final layout of PIU needs size of chassis of the RF filters; YG to try and organise joint discussion.
(iii) to check status, plans and timescales for 16 antenna system : system is completed except for making all the connections -- to confirm status of this and remaining plans to be discussed.
==> this is fully complete from BE side, from cabling from OF to cabling to correlator wall panel; now assembling for antennas 16-24 -- some problems with dry solder contacts.
Regular follow-up on all items after 2 weeks.

5.3 Power equalisation schemes for new back-ends -- from 15 Jan and before (SSK/NSR/BAK/SRoy): Need updates on both of the following :
(i) option 1 : using detectors in GAB and local feedback loop -- monitoring set-up working; code for computing the attenuation values being finalised by DKN (from algorithm taken from NSR) -- status update required.
==> testing was going on.
(ii) option 2 : using correlator self outputs and computing gain corrections :
(a) Scheme is working; to check if circulated SOP is all right -- bugs etc to be reported back; SRoy to look at SOP and see if any updates are needed.
==> no update on this.
(b) Plans for implementation of user controllled ALC mode : issue of timescales of the loop, kind of useful outputs that it can produce etc. 4 modes of operations had been discussed (see MoM of 3 Oct 2013) :
(i) on demand -- this is the current released mode.
(ii) repeatable at some interval specified by the user -- can it be script based?
(iii) automatic, should adjust in response to a stimulus in the input power -- needs a discussion.
(iv) should provide a reliable power monitoring scheme -- needs discussion.
Also, issues like logging of results etc to be discussed. Agreed to have a document that spells out the main requirements (from user point of view) and possible solution options / techniques that can be taken up for discussion in Plan meeting for finalising the plan of action -- one round of discussion has taken place between SRoy and SSK and some follow-up action has been planned; need SRoy / SSK to update on this, including the overall document.
==> brief discussion about attenuation settings related issue; 5% (0.25 dB) ok as per SRoy ; to check unit to unit variations for a couple of units and see if settings are stable.
Regular follow-up on all aspects after 2 weeks.

5.4 GPU corr (GWB-II) : release of 4 node, 8 input, 200/250/400 MHz version -- from 22 Jan & before (SHR/SSK/BAK) : (NOTE : GWB-I is existing released system !) : agreed to make 4 T7500 nodes with C2050/C2075 Fermi GPUs + remaining 4 T7500 nodes as host machines (to take care that these are the ones that transient pipeline uses presently so that sharing is possible); this should have ALL basic modes : total intensity and full polar IFR modes; IA + PA BFR modes with process_psr pipeline attached; full GUI support; to come up in trial code section without affecting the presently released mode.

(i) 1.7 s time offset problem -- appears to be resolved (changes are in GWB-II only, not in GWB-I). Need checking with few more long stretches of data (at Lband) to confirm.
==> appears that problem is not seen anymore; still needs a bit more checking before closing for good.

(ii) update on code for providing basic beam modes (computational load is 3 to 10% of GPU compute time) : new version with separate kernel (outside phase shift kernel) for beam formation has been developed; IA mode tested on pulsar signal : addition of 7 antennas in single pol at 610 MHz with 200 MHz LPF -- to test with different settting in pmon to check S/N effects. Other action items :
(a) to quantify the computational effort (SHR);
(b) process_psr pipeline to be done (SSK);
(c) to be integrated GWB-II code and released (SHR+SSK);
(d) to check plans for PA mode integration and for phasing;
==> computational effort has gone up to 7% from 3%. process_psr pipeline completed and interface to GUI still pending; GAC set-up is also pending; PA mode & phasing work initiated, may need some more discussion.

(iii) development of 4/8 bit versions of the code, for allowing BW > 200 MHz to be released : change in FPGA design is done and one common design with parameter is available and GPU side only iteger delay correction needs to be completed; and then test with sky signal. status remains same; likely to release this with GWB-III.
==> no change in status.

(iv) modification GUI for supporting new modes, as well as having support for code in trial branch -- GUI v1 for GWB-II has been released; v2 with beam modes fully incorporated to be released soon?
==> beam mode incorporation is ongoing.

5.5 Final online control for GPU corr -- from 15 Jan & before (SSK/JPK/NR/DVL) :
(i) status of full GUI compatibility : update on sideband flag support and issue of net_sign[] to be resolved : needed some change in GPU & DAS code. SSK to report on this -- can this be merged into appropriate item in 5.5 above? BE team was to discuss and get back on this.
==> email update from BAK : problem has been resolved.
(ii) to check cause of problem for modes with more than 2K channels -- best done with raw voltage files ? thought to be due to counter data being sent in place of ADC data once every 4K data points -- will be eliminated in new integrated design for 8 / 4 bits; also to check about spikes in channels that are power of 2.
==> email update from BAK : 2K channel limitation will not be there for 800 MHz design, which has been modified and tested ok for longer FFTs.
(iii) follow-up on long-term items like provision for control of FPGA and other peripherals (like sig generator) for different modes -- details of existing provisions to be discussed and plans for final configuration to be finalised; this should NOT be an issue in the new release? may need some testing on antenna signals.
==> no progress on this.
Regular follow-up on all items after 2 weeks.

5.6 8 antenna back-end tests and future plans -- from 15 Jan & earlier (DVL/YG) :
(i) report of efforts to summarise all the existing tests and results : report for Lband have been circulated; some follow-up has also occured; needs detailed discussion to work out specific action items and also refinement of the report itself (see below also).
(ii) plans to extract consolidated results and conclusions from the above -- phase wraps, ripples in passband, spikes / RFI in passband, variation of self power levels (with time and across frequency), level of correlation coeffs etc : initial update circulated by DVL -- to be discussed and follow-up action firmed up.

(iii) review of scheme for quick testing of data using analysis script by Sachin
(iv) plans for further testing with 110 / 200 MHz BW signals at LBand, including imaging exercies.
(v) plans/strategy for tests at 250-500 and also 610 -- some long tracks to be tried out.
(vi) plans for running the new GWB back-end in parallel with all GSB observations at Lband, 610, 325 and 243 bands -- this appears to be happening, though not very regularly; need to have script in place for some automated analysis of GWB data.
==> some action has occurred for some of these items, but needs a more detailed discussion with DVL and appropriate follow-up.

5.7 Power and cooling requirements for projected back-end systems -- from 26 Dec and earlier (GSJ/BAK/RVS/YG) : some modifications have been made and some tests have been done and preliminary results circulted -- to discuss these and plan further activities; fan on and off to be tested; scheme for monitoring of processor temperature to be refined. Shelton and Ganla to provide status update on the tests being done.
==> email update from BAK : monitored data and plots now available on webpage; planning to test temperature monitoring in compute nodes using one spare node available, by 5th Feb.
ISB + GSJ working on selecting suitable racks for final system -- COOL racks from President Systems etc and other options being looked into; also joint visit with electrical team is planned.

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