

Minutes of Plan meet of 20 Nov 2013 (follow-up of some pending topics from different areas) :

1. Documentation related :

1.1 Detailed design doc -- pending for long : from 30 Oct & 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 (ii) OF Tx to be started. Field measurements completed few weeks and were being compiled; should have results ready by now -- some updates are required !
==> results to be compiled and sent out in next week to ten days. Follow-up after 2 weeks.

1.2 Documentation : SoP for antenna base work -- from 30 Oct & before (SSK/ANR/HRB) : updated version to be made ready for installation of upgrade systems : to check if updated version of doc for feeds from HRB, after 1st round of discussion, can be cleared.
==> 2nd version has been circulated; to wait for about a week for any comments, and then close the matter. Follow-up after 2 weeks.

2. FE & OF related :

2.1 New LNA for 130-260 system -- from 30 Oct & before (VBB/SSK) :
(i) Variation of gain and T_{sys} with temperature : tests show new LNA with 40-60 deg K varn in T_{Ina} (cf old LNA with 150-200 K) for same variation of 50 deg K in env chamber; test to be done with temp monitor on / close to new LNA to compare with other results. New data had been taken, results circulated -- to be discussed
==> latest results show 3 temperatures (chamber, inside FE box, inside LNA box) all looking slightly different (and not tracking); T_{Ina} change is about 30-40 deg K; is there a gain change?; follow-up action items : (a) plot the T_{Ina} at one freq as a function of time alongwith the ambient temp as a function of time (b) to give a step change to the system using the chamber and record the response (c) to try an expt where the temp monitor can be put on the LNA itself.
(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)) -- update on work with Ops group to get readings from :
(a) USB MCM program in the lab -- continuous display now works and how to store data was being explored. There were some problems of repeatability reported on 30th Oct -- to check if these have been addressed or not.
==> no update; VBB to check and respond.
(b) 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 was to have been done during Diwali break -- updates expected.
==> no updates; VBB to check and report.
Follow-up after 2 weeks. Meanwhile reminder to VBB about pending items.

2.2 Mass production of 250-500 FE system -- from 30 Oct & 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?) : grey scale plots were to have been made for this.
==> 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. Follow-up after 2 weeks.

(ii) status of testing and installation of FE boxes : ten antennas fitted + 2 spare units ready and tested : update on procurement of new connector -- follow-up on (a) effort to shift to standard connector available in market : time scales for sample connectors and main order delivery to be updated.

(b) modifying the new chassis for the same -- drilling etc. : few sample chassis were to be made ready as per new connector diagram.

==> order gone; delivery by 20th Jan; samples have been sent to NCRA -- need to be tracked down. 2 chassis are ready with modified hole locations -- can be used for integration. Follow-up after 2 week.

(iii) status of testing and installation of modified Common Boxes : 8 antennas fitted with mixture of 2 combinations : newer Hitite + Hitite scheme and older Sirenza + ECG scheme + 2 spare units : check status of readiness of 2 spare units (one was ready, second needed broadband amplifier to be fitted) -- check if this item can be closed.

==> both are ready and tested; item can be closed. No follow-up required !

(iv) 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 :

(a) to compare slower roll-off on higher side with existing L-band sub-band filters
==> no update on this matter... waiting for plot from sub-band filters

(b) 6 dB BW varies from 90 to 124 MHz : agreed to reduce 124 MHz to closer to 100 MHz with last round of redesign -- is this done?

==> modified design sent for PCB manufacture.

(c) 2 units of the existing design were to be made ready and install on ch1 of 2 antennas, after checking that RFCM card will support the operation.

==> to check about the possibility and response.

Follow-up on all items after 2 weeks.

(v) status of other auxiliary items :

-- 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 systems.

==> matter discussed in more detail, as per results from existing narrow band system which is also affected; agreed to put 175 and 540 TV filters in FE box for all the 250-500 antennas; filters for 3 antennas are available and can be sequenced over the next one month; for remaining PCBs have been ordered for 540; 10 spare PCBs are there for 175 -- more will be needed; chassis need to be expedited.

-- noise source, power splitter, directional coupler etc to be assembled into one unit for integrated noise on/off testing in the lab were on track for completion : whether problem of chassis height difference has been resolved? what about plans for going to antenna? -- to check if sample unit is ready on the bench.

==> ready on the bench.

-- post amp : Hitite 740 new stock has come and will take care of 30 antennas; to check if post amp has been tested with slow rise power supply.
==> former can be closed; latter will take some more time to be tested.
-- power monitor : status update on getting PCB and making prototype ready -- tested units to go in FE box, dummy chassis units to be used for layout work.
==> the scheme is not working as the temp detector is not sensitive enough for the low power and the amplifier adds too much noise; to check if any other power detector device is available that will be sensitive enough for this task.
-- temp monitor : to check about doing final integrated testing.
==> this is available.
-- RFCM card : check if PCB has been delivered (meanwhile, older version of new RFCM card can be used for layout testing purposes)
==> 2 weeks more for delivery for PCB.
Follow-up on all items after 2 weeks.

(vi) status of lab integration of final version of 250-500 box : this was due quite some time ago -- update is needed !
==> present modelling is showing that existing size of box is not adequate, inspite of double decking of boxes etc; hence deeper FE boxes are needed -- at least 10 cm, more like 15 cm may be needed -- detailed work for this is on-going; meanwhile HSK confirmed that deeper boxes are possible (rear member in the cage can be removed to facilitate this) -- HSK to circulate existing drawing; also weight will go up : HSK to check the impact if total wt of all boxes goes up by 50%; sample box can be taken up as soon as FE has the dimensions clear.
Follow-up on detailed plans, after 2 weeks.

2.3 Directional coupler for 250-500 FE system -- from 30 Oct & before (ANR/SSK) :
(i) update on plans for mass production : PCBs for full system had been receive; drilling of holes in chassis was waiting for finalisation of connector; SMA connectors had been indented. Need status update (if not covered under item 2.2)
==> SMA connectors ordered but not received yet; type N story already covered.
Follow-up after 2 weeks.

2.4 Status of improved 500-1000 MHz CDF -- from 30 Oct & earlier (HRB/GSS/SSK) : there are 3 different versions : ver1 (), ver2a (), ver2b () in circulation right now.
(i) simulation results for ver1, ver2a, ver2b for consistency & cross-check were to be compiled and presented; also for ver1 dipole in ver2 cavity and ver2a / 2b dipoles in ver1 cavity. Initial results by HRB were discussed : it appears that dipole (rather than cavity) is the dominant member; best results appear to be for dipole 2b (triple sleeve dipole); 3 dB beamwidths indicate that dipole 2b in cone 1 (70 deg) or cone 2 (66 deg) gives best results. Follow-up action was as follows :
(a) add comparison plot from earlier results as a cross-check
(b) to check taper plots and actual E-H radiation pattern plots (for different freqs) for a more detailed comparison.
==> some discussion on this, needs detailed follow-up.

(ii) also simulation results for denser mesh case (higher order basis functions): all new results are for denser mesh -- to compare sample case with older results with coarser mesh and if results consisten, then close this item.
==> new simulations are with finer planes rather than higher order basis function; this needs to be confirmed; 50 MHz shift is seen which needs to be understood.

(iii) repeat 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. Needed a spare 610 feed to be made ready using 550-900 LNA -- to check status of this.

==> no updates on this.

(iv) to compare deflection results for new feeds with old 610 system (via 30to1) waiting for completed report to be sent out -- first round of results were shown and are quite useful; to extend the data beyond Aug 2013 to latest date and then discuss again -- check if this is ready.

==> need update about extending results beyond Aug 2013 to Nov 2013.

(v) 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.

==> not clear if this has been done or not...

(vi) any new ideas? e.g. multi-ring feed option? -- postponed for the moment.

==> not taken up at present.

2.5 Signal flow analysis (SFA) related items -- from 30 Oct & 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 !

==> will release first draft by next week.

(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; first version of report is expected !

==> first version not yet circulated -- should happen soon?

To check status after 2 weeks.

2.6 Filters at different stages of receiver chain -- from 30 Oct & 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. To check status of PCB manufacturing -- PTH problem solved?

==> PTH solved for now by manual means; ckt for 2:1 and 4:1 versions assembled and tested ; isolation in the switch is ~ 25 dB for all GMRT freqs for 2:1 and 4:1 assemblies; for 8:1 it changes from 25 to 17 dB from low to high freqs. Will target 250-500 with 4 sub-band filters with integration with RFCM switch.

(ii) for antenna filter switching prototype with existing switches (with old PCBs) was to be assembled and checked -- this may not be required now; can be closed after following item (i) for some more time.

==> this could be dropped now.

(iii) to follow-up on refinements of the scheme for each FE box : update on 250-500 system (first to be done), alongwith 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 are available : 1680 and 1750 MHz cut-off -- both are assembled and tested; can be installed in one antenna and tested for performance.

To follow-up all items after 2 weeks.

2.7 Walsh switching arrangement in FE -- from 6 Nov & 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 this.

==> agreed this can be done and will be tried shortly.

(ii) plans for implementation in other systems e.g. 250-500 FE box (needs the new RFCM card to be ready?) -- to check if connector problem is resolved or an interim solution can be tried out to complete the integration.

==> new RFCM card is needed for running with new, faster opamp (as in Lband); right now, testing on the bench with older opamp and existing RFCM card -- for this, there is no connector problem.

(iii) joint discussion with BE team for matching test in BE system : FE team to provide a sample stand-alone phase switch unit to BE team (item can be moved to BE section after that) -- needed conversion to +/- 10 V switching arrangement.

==> getting done and will be available soon.

Can check all items after 2 weeks.

2.8 M&C for new FE systems with new MCM cards -- from 30 Oct & much beore (SSK/PAR/CPK/SN) :

Follow-up on action items from the joint meeting -- SSK & SN to provide latest update on matters, and problems if any -- matter is long overdue now !

==> no updates on this; need to take some specific measures for this... check after 2 weeks (after intermediate discussion between SN and SSK).

2.9 OF systems -- from 30 Oct & 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 placing the order.

==> indent has been placed; to check delivery status.

(ii) plans for extending the wideband OF link to beyond 15 antennas : agreed to start 15th antenna; to check if problem of manpower for assembling can be resolved.

==> discussion for augmenting the work force : Manisha Parathe can start; one local person who can be trained has been identified; to check if work contract can be given to some of the people presently working as contractors. Can also investigate Argus as a vendor; what roles can be given to Santosh Bhor etc...

Check status after 2 weeks.

2.10 Alternate fibre connectivity : new item : 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.

3. RFI related matters :

3.1 RFI from cable TV leakage -- from 30 Oct (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. Need update on the first order results and conclusions.

==> readings and data taken; but need more detailed analysis; may need to visit a few more places? can we follow a process of sniffing out, based on the user's data? RFI team to check on this. need a better way to find and solve the problem... Follow-up more closely after 2 weeks.

3.2 Effect of military satellite RFI in 243 band -- from 30 Oct & 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 predictions for user's observations. Status update on two action items :

(i) action items :

(a) report on prototype filter by FE group was to have been circulated -- still pending; need to check that this filter does not obstruct L-band...

==> to check the Lband performance and clear for usage in 2 antennas in rx room.

(b) plan to put in one channel of 2 antennas at 250-500 band, in the receiver room, avoiding the antennas which have 540 TV filters.

(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 -- overdue now.

==> SN to check with SNK and report.

Follow-up next week, or 2 weeks later.

3.3 Radiation from CAT5 cable -- from 30 Oct & 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: material had arrived and sample cables were to be made and tested in controlled set-up and results reported.

==> material has been withdrawn and cable will be made by next week and then tested.

Follow-up after 2 weeks.

3.4 RFI testing of LED lights for GMRT labs & building -- from 30 Oct (PAR/SSK/RVS) :

Electrical group has indented for 5 W lamps + X Watt tube lights (after samples had been tested for RFI and cleared) -- delivered units had 5 W and 7 W lamps and latter found to generate RFI (not to be used at GMRT); mass installation done and tested; agreed to install in canteen as first location; tubelights were to go through mass installation testing before clearing for use.

==> tubelights (50 nos) also failed the test; hence, only 5 W bulbs found suitable! can keep with the 5 W bulbs installed for a few months and then check for RFI and take a final decision about bulk purchase.

Follow-up after one month.

4. Operations :

4.1 Mass production of Rabbit MCM cards -- from 30 & 9 Oct & before (CPK/SN) :

(i) status of testing of cards to be updated (58 nos had been completed by 25 Sep)

==> 2 more cards ready and tested.

(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; to take final decision if OF & sentinel can share.

==> looks feasible, but 3 way meeting may be needed to reach final closure on the matter; to follow-up after 2 weeks for finalising plan of action.

4.2 Monitoring of 3-phase power at each antenna -- from 30 Oct & before (SN/RVS) :

Ops group has successfully tested the scheme, including online monitoring, on one antenna (C8); test on full set-up at W3 with both MSEB & genset included had been done and were fine; modification in online for setting alarm also completed &

tested; ready to go ahead with mass production : SN to present plans and timelines for this.

==> ready for mass production : PCBs for all antennas will come by next week; parts may be cash purchase, chassis has to be done; manpower for assembly is available. first few units will be ready in a month; no down time for installation (day time is enough); 2 days per antenna for wiring etc; to choose convenient sequence of antennas; to check after one month.

4.3 Mass production of shielded box for MCM cards -- from 30 Oct & 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 (need drawing to be updated) -- is this done now? (is CAD m/c repaired?).

==> this is done and item can be closed.

(ii) status of work on shielded connectors that are required for antenna usage of MCM cards: waiting for 10 nos of sample versions of D-type, and also for 37 pin D-type 25 pairs to come. To confirm if POs have been sent & what is the timescale?

==> POs sent; delivery by Jan. will make prelim measurements with existing connectors till then.

(iii) How to plan for the mass production? RFI 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.

==> to confirm with HSK about order with Akvira for prototype units.

Follow-up after 2 weeks.

4.4 Development of M&C software -- from 30 Oct & before (JPK/RU/SN/NGK) :

(i) update on work with TCS (JPK/SN) : plans for PoC phase of work

==> in the last stage of clearance.

Follow-up after 2 weeks.

5. Back-ends :

5.1 Documentations :

(i) Detailed design doc -- pending for long : from 30 Oct & before (BAK) : analog back-end was due sometime ago ! Hande was starting to make the first version. Need status update on this.

==> Hande is making first version of write-up for internal circulation by 29th November. Check status after 2 weeks.

(ii) ITRs for analog back-end systems and digital systems to be taken up : pkt corr, GPU corr, beamformer designs etc. BE group to look into this and report plans : pkt corr had started; GPU corr yet to start, what about others?

==> 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. Check status after 2 weeks.

5.2 Analog back-end for 8 antennas and beyond -- from 30 Oct & before (BAK) :

(i) Release of new 8 antenna (dual pol) system : some aspects of online control need to be refined -- BAK to look into more streamlined control set-up and report plans.

==> appears that problem due to control PC reset without restarting MCMs -- NS has modified MCM firmware to take care of this problem now. to check status

after 2 weeks and close the matter, if appropriate.

(ii) appropriate attenuator settings for Lband & 250-500 done; 610 band yet to be finalised and released -- data had been taken and matter needs to be closed.

==> Ganla needs to repeat the data set once more and then finalise the values. Should happen within the next week; to check after 2 weeks.

(iii) 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 configuration 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.

==> not resolved yet; needs a 3-way discussion... follow-up after 2 weeks.

5.3 Power equalisation schemes for new back-ends -- from 30 Oct and before (SSK/NSR/BAK/SRoy): Need updates on both of the following :

(i) option 1 : using detectors in GAB and local feedback loop -- status update on completion of monitoring set-up, code for getting the values and applying the feedback etc -- new MCM program was under test and JPK + DKN were on last stage of the work : status update needed.

==> monitoring set-up is now working; need to now do the algorithm for computing the attenuation values -- DKN and NSR will work together on this.

(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 can also take a look at the SoP and see what should be done.

(b) Plans for implementation of user controlled 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.

==> brief discussion happened; agreed to take up more detailed discussion with Sanjay Kudale.

Detailed follow-up after 2 weeks; meanwhile, one 3 way meeting involving SSK and SRoy to be held.

5.4 Walsh modulation : to develop prototype set-up on Roach board -- from 30 & 3 Oct (SCC/BAK) :

(i) to check if FE team has handed one unit to BE team -- see item 2.7

==> waiting for FE team to complete the unit and hand over to BE team.

(ii) to check plans of BE team for implementing prototype scheme -- SCC to report about checking FPGA for input pin and plans for the circuit design.

==> basic unit for switching using sq wave signal from GPIO pin has been tested ok; need to put into a main PoCo correlator ckt and check.

Follow-up after 2 weeks.

5.5 GPU corr (GWB-I) : release of 4 node, 8 input, 200/250/400 MHz version --

from 6 Nov & before (SHR/SSK/BAK) :

(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 -- some tests were planned last week.

==> SHR and GSJ to work together to investigate this problem and provide an update. Can check after 2 weeks.

(iii) 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) -- to be tested. Need to discuss plans for PA bfr and load estimates for the same (for planning K20 design).

==> IA SoP is under test; SNR related problem had been detected in IA Bfr -- SHR looking into the fix for this; no update on the other issues -- discussion is needed with SSK and SHR. Follow-up next week.

(iv) to start testing 400 MHz BW mode -- how best to conduct these tests? need some changes in the main code to handle 4 bits etc... code for 4 bit data is there in offline version; 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 follow-up after 1-2 weeks.

(v) to move data collection to additional host node and release the following 3 modes : total I single pol and dual pol and full polar (which have been tested from a separate area -- to integrate into trial area of main code branch and test fully and release. code had been made ready; to check about problem of crashing of 8 node version; release for 4 node version, if 8 node version still giving problems.

==> plans to test T620 m/c as a possible host node; also SHR will look into using one of the new DELL i3 m/cs as an option and place repeat order (if useful). Follow-up after 1-2 weeks.

(vi) ITR for this work needs to be taken up -- timeline needs to be set for this !

==> covered in item 5.1(ii) above -- can be moved there entirely.

5.6 GPU corr (GWB-II) : release of 8 node, 16 input, 200/400 MHz version -- from 6 Nov & before (SHR/SSK/GSJ/BAK) : 8 nodes with C2050/C2075 GPUs and one host m/c now connected to the new IB switch (subset of this works as the 4 node, 8 input system as GWB-I above), with analog connections 8 ant dual pol done.

Pending issues :

(i) plan for testing and release etc to be finalised -- GUI to be modified for both kinds of systems : confirm if this is done & can be closed -- pending for update from NSR/SSK.

==> SHR is working with NSR on modifying the GUI.

(ii) plans for regular testing of this system to be worked out, once problem in 5.5(v) above can be cleared...

==> no updates on 5.5(v) code crashing problem...

5.7 Final online control for GPU corr -- from 30 Oct & 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.

==> SHR looking into this with NSR.

(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.

(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.

==> no progress reported.

Follow-up on all items after 2 weeks.

5.8 8 antenna back-end tests and future plans -- from 6 Nov, 30 Oct (DVL/YG) :

(i) report of efforts to summarise all the existing tests and results : should be ready by now; DVL to update status.

(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 back-end in parallel with all GSB observations at Lband, 610, 325 and 243 bands : SOP with appropriate settings etc. -- this needs to be formalised asap with a few more additions.

==> No updates provided; this needs to be followed up.

5.9 Power and cooling requirements for projected back-end systems -- from 30 Oct and much earlier (GSJ/BAK/RVS/YG) : some modifications have been made and some tests have been done and preliminary results circulated -- to discuss these and plan further activities; fan on and off to be tested; scheme for monitoring of processor temperature to be refined.

==> testing nodes 39 to 48 (2 nodes have wrong kernel) -- results circulated by Shelton -- has some useful things, needs a bit more update and follow-up ...

Shelton and Atul Ganla will work together on temperature monitoring of room temp and PC node temp. Follow-up after 2 weeks.

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Minutes of Plan meet of 27 Nov 2013 (follow-up of some pending topics from different areas) :

1. Documentation related :

1.1 Documentation : follow-up on level 2 (ITR) -- from 6 Nov & earlier :

(i) conversion of older reports : Check if test range is done (appendix + inputs from Sanjit were pending).

==> to complete the appendix some inputs from PAR are remaining; check 2 weeks later.

(ii) Check status of other (new) items : power monitor, temp monitor (later), filter designs, spares for 1420 feed etc... to see if list of next ITRs can be finalised.

Also, can we look at which ITRs may be ready for conversion to NTRs?

==> power monitor and filter designs can be taken up; follow-up 2 weeks later.

1.2 Follow-up on level 3 (NTR) -- pending for long : from 6 Nov, 28 Aug & before (SSK): to check status of report on design of OF system -- SSK to confirm.

==> no progress. follow-up after 2 weeks?

2. FE & OF related :

2.1 Update on results from test range -- pending from 6 Nov & before (HRB/GSS/SSK) :

(i) phase centre tests for 250-500 CDF : to report on expt with 10 to

20 mm 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. This is stuck due to stool problems ! -- need to decide if 610 or L-band feed location can be used.

==> one test has been done with a modified stool, but there was some other failure (CBox) -- needs another try.

(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 -- correct integration routine had been identified, but some new problems found in MATLAB code? GSS to update.

==> integration routine and other problems now sorted out and result matching with Kildal paper; now ready to move to GMRT specific case of 250-500 to get efficiency factor as a function of freq over the band -- feed pattern is needed.

(iii) status of phase centre checking for ver1 550-900 CDF and CSIRO feeds -- waiting for results with new VVM set-up : results from tests of ver2 550-900 CDF.

To check (i) progress on getting encoder (ii) if alternate scheme of AI strip + webcam is providnd useful as an interim measure for GMRT feeds.

==> scheme working to 0.5 deg accuracy -- now testing 550-900 feed.

Follow-up on all items after 2 week.

2.2 RF dump tests for new feeds -- from 6 Nov & before (HRB/GSS/SSK/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 : results to be circulated and discussed.

==> some more tests need to be done to follow-up on earlier results; can follow-up after 2 weeks.

(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 from Nissim yet; need further reminders.

(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.

==> no update on this -- GP to be reminded.

Follow-up on all items 2 weeks later.

2.3 Follow-up on 550-900 MHz band filters -- from 6 Nov & before (ANR/SSK) :

(i) status of delivery from vendor and testing of prototype meeting full specs: quality of product obtained and comparison with in-house effort : roll-off on higher side, integrated performance, price to performance factor etc.

(ii) status update on in-house development work : prototypes for all 4 sub-bands are working ok. FE team to hook-up individual units with the switch to produce and test the combined unit and compare with outsourced product.

To review the performance of in-house vs ICON product and take a final decision on the way forward, including plans for mass production.

==> comparison of results from in-house and ICON done; in-house is slightly better; need to wait for the integrated unit to be ready to check full insertion loss etc; issue of mass production still remains.

2.4 Total power detector for FE & common boxes -- from 6 Nov & 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 procedure for reading from online and recording + interpreting (including calibration) the data has been finalised by GP & JPK.

==> GP needs one round of doing the tasks with SoP and operators and then matter can be closed.

(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). -- results to be discussed.

==> GP will do this test when running independent check.

(iii) plans for building 70 units for CB : follow-up on status of mass production.

==> PCBs available; chassis request placed -- need to check status; all components available.

(iv) plans for prototype of the FE monitoring unit : initial test results show that scheme may not be viable -- to discuss about other alternate options (as mentioned briefly on 20th Nov).

==> old scheme tried without amplifier -- appears that the sensitivity of detector is enough; only 2 dB amplification of final o/p to MCM is required. If this works well, can think of modifying CB design also for this -- may need some connection between ampl i/p and o/p via Cu track or coupling cap.

(v) plans for ITR on the work : to be initiated for the Common Box design?

==> again deferred till FE box issue is resolved.

Follow-up on all items after 2 weeks.

2.5 FE power supplies at all antennas -- from 6 Nov & 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 units, including boxes from workshop.

==> 10 boxes getting ready; some delay in material for boxes.

(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.

==> agreed to do one RFI test and clear; and then use all 10 + 10 home made as needed to solve the problems; can check if supplies at bottom is a better option than some on top and some at bottom.

Follow-up after 2 weeks.

2.6 Fixing non-working L-band feeds (short-term problem) -- from 6 Nov & 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.

(i) W1, C3, E2, E5 have been fitted with newly assembled LNAs : to check their performance for stability and see if this item can be closed.

==> waiting for user feedback about performance of these antennas before closing the item.

(ii) How many LNAs we should have ready and available as spares : agreed to have a target of 5 spares : what work is required to reach this? Chassis, PCB, device, gold wire etc...?

==> PCBs ordered, chassis under request, gold plating to be done again (more discreetly!).

(iii) check status of alternate LNA designs :

(a) for OHMIC make, there was a problem of poor return loss -- matching ckt being made?

==> no progress; may close this item.

(b) for MMIC ckt of Skyworks: MOQ was 3000; trying to get a few samples from the vendor or from Argus.

==> no progress, yet to talk with Argus etc..

(c) 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.

Update is needed on these items !

==> it is worth exploring, but nothing has been done.

Follow-up on all items after 2 weeks, after closing appropriate ones.

2.7 Spares for L-band FE electronics -- from 6 Nov & 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 PCB with Argus for new (compact) RFCM card.

==> PCB is ready, will come to us within a week -- needs to be picked-up.

(ii) noise gen : PCB assembled; bench test completed; to integrate with one spare feed for final testing : status update needed.

==> nothing new here.

(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)

(b) latest on testing of Akvira make feed to improve the return loss (c) status with Physimech feed (d) proposed date for integration of first feed + electronics.

==> (a) one set of LNAs is ready to be assembled -- to go ahead with this
(b) extra teflon + improved contact with OMT has solved the RL problem which is now better than -15 dB (upto -29 dB) for all the 3 feeds; Akvira and Fabromech are dimensionally correct; for Physimech the cone angle is wrong -- needs to be corrected. HSK to source 3 feeds to make total of 5 working using Akvira or Fabromech; 3 nos of enclosures to be made (by 15th Dec) + 2 to be combined with feed order. For immediate assembly, FE group to work with one dis-assembled unit (2nd disassembled unit is in w'shop). Probe to be sent from wshop.
Follow-up on all items after 2 weeks.

2.8 Characterisation of new FE+OF systems -- from 6 Nov (PAR/SSK/DVL) :

(i) Summary of L-band results and performance :

(a) stability of power levels

(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.

(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)

(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 attenuation setting for each band to be made available in control room asap, in coordination with Ops Group -- check if these have been completed.

(iv) to characterise the recommended attenuator settings for different bands : completed for Lband, 250-500 and existing 610 -- only 130-260 / old 150 remaining to be characterised and values given to control room.

==> not discussed in detail. may need follow-up next week.

2.10 Releasing existing 610 MHz system as part of the wideband upgrade -- from 6 Nov (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 u-GMRT. 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; to check if these have been installed in antenna(s) with broadband path, alongwith required notch filters for TV line.

==> integrated in the box and almost ready to go; to order more mobile filters to generate some spares. follow-up 2 weeks later.

2.11 New filters for Lband -- from 6 Nov (ANR/SSK) : Sample Lband full-band BPF had been designed -- has no slope with freq and better insertion loss. Not clear if it has any real advantage over existing system -- agreed to circulate a plot comparing old and new filters for full band BPF for a quantitative comparison.

Also, prototype design of new sub-band filter (with better insertion loss) has also been done -- need a detailed discussion to see how to proceed on this topic.

==> not covered. can be taken up 2 weeks later.

2.12 Next Gen Common Box -- from 6 Nov (ANR/SSK) : Like 250-500 FE box, final version of Common Box needs to be assembled and tested : final power & temp monitor, interface to Rabbit card, choice of a fresh RFCM card, new arrangement for power supply distribution -- FE team to make a list of changes and produce a block diagram showing all the units to be incorporated (and then see when & how these items will be ready) -- to check if block diagram is ready for circulation.

==> not covered; can be taken up 2 weeks later, when FE box situation is clearer.

2.13 Calibration scheme with radiator at apex of antenna -- from 6 Nov & 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 (SRoy to work with FE team on this) (ii) finer aspects of variation of ampl and phase with various external parameters (DO to work with FE team on this) (iii) plans for taking up other longer ranging goals to be discussed; meanwhile feasibility of connecting noise source and radiating to be looked at by PAR. For item (i) : agreed to try and have parallel set-up on 2 antennas -- one with old and one with new electronics; to indent for broadband antenna for long-term; to update status of noise gen test also. Discussion on this pending for some time now.

==> item (i) : discussed in detail about parallel arrangement on 2 antennas : C0 for old system and W? for new system (where broadband path and new common box are present) after putting same cross dipole; to follow-up on noise source test after that (PAR to check with ABR team about noise source and get) ; to take up Walsh related after that. Follow-up after 2 weeks.

3. RFI related matters :

3.1 RFI testing of Miltech PC + ethernet switches for antenna base -- from 6 Nov and earlier (PAR/SSK/SN):

(i) update on testing new i5 Miltech PC (with peripherals using new shielded ports, connectors, cables + Rabbit card). 2 units are to be ordered by Ops Group with two changes as suggested from RFI test report (more screws on panels + panel mount pwrline filters instead of chassi mount) -- to check status of indent (and then move this item to Ops Group related matters)

==> indent not put yet -- Ops Group to follow-up and report next week.

(ii) integrated testing of PC + peripherals done : miltech i5 PC + shielded media converter + Rabbit card (with Akvira make shielded box) tests showed good performance (full details, alongwith block diagram, to be added to the report); can order 2-4 shielded box for Rabbit with Akvira (with modified connector diagrams). Action items : (a) updated report with full details to be produced; (b) modified drawing to be completed (c) order to be sent to Akvira.

==> (a) report to be resent by PAR (b) drawing completed (c) mech has ordered 2 nos of the boxes, with different back plates (for extra SPI port) -- should come within 10 days -- will assemble and populate with all the parts (only shielded 37 p D-type and power supply is awaited) : will use feed through arrangement for power supply... follow-up after 2 weeks.

3.2 RFI tests of ethernet switches for antenna base -- from 6 Nov & earlier (SN/BAK/SSK): Testing the available switches for RFI (as per 29 May discussion); plans for design of RFI box for ethernet switches : Status update on

(i) procurement & testing of switches : one switch from Dlink (plus any others?)

(ii) plans to use shielded eth adaptor that can be mounted on panel

(iii) design of RFI enclosure -- inputs for front panel design to be given to R. Lolap for completion of drawing (and then prototype to be fabricated in w'shop).

==> (i) Cisco, HP and Dlink switches have come and simple test has been done; need to do test in connection; meanwhile Dell switch has also come -- can be added in the list (no more switches expected).

==> (ii) shielded adaptor is in hand as part of the CAT5 item -- will use this for the prototype box.

==> (iii) dimensions for the basic box + fans & connectors in front and side plates given to R. Lolap ; main box may have been given to workshop already; expected date of delivery to be given.

Follow-up on all items after 2 weeks.

3.3 Mobile phone RFI -- from 6 Nov & earlier (SSK/PAR) :

(i) progress on identifying the operators at and around E06, and in Nagar, Junnar directions (follow-up with sending letters to BSNL etc). -- check if letter to BSNL has been sent and what is the follow-up action after that.

==> letter given; follow-up going on; they want to try old trick of tilting their transmitters... have gone to the higher authority (head of planning for Pune+Nagar region) who have agreed for the change to 1800, but need time to get equipment -- requires follow-up; can check after 2 weeks to see if a letter to higher authority is required.

3.4 Follow-up on UPS RFI -- from 6 Nov & 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 (?) -- need discussion to finalise the action; also, update on status of order for 3 kVA unit from Miltech.

==> Miltech has offered to improve -- can be invited for a visit; feedback can be used for 3 kVA unit.

(ii) follow-up from RFI testing of Ador 3 kVA units -- RFI group to confirm how many units (2 or 3) they have tested and comparison of results from the same.

==> only 2 nos bought, one at a time; both are tested; one is in C9, other in C10; this can be closed.

(iii) RVS to update on possibility of ordering 2 nos of 4.5 kVA units from Ador, with same size and RFI properties as 3 kVA units. (this is now linked to item on estimation of total power budget at antenna base !).

==> agreed to go ahead with 2 nos of 4.5 kVA, with possible option of split o/p with different isolation transformers. To check the loads and decide the split.

Follow-up on all items after 2 weeks.

3.5 Discussion relating to Industrial RFI survey -- from 6 Nov & 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) RFI team has met DIC for conducting a joint survey -- summary of this meeting to be circulated -- not done yet !

==> this is so old that it can be closed !

(ii) map showing zones and villages / towns to be completed (was 90% done) and sent to DIC office for NOC clearance decisions.

==> big SoI map has finally been obtained and work is nearing completion.

(iii) plans for starting survey from around 1st Dec with 2 teams (with extra manpower), lasting for one month, using SoI maps etc, to be finalised.

==> waiting for DIC to confirm start date of 1st Dec; if delayed, then 15th Dec can be tried.

(iv) availability of extra manpower (Amit Sawant?) to be confirmed.

==> Amit Sawant not available; to start with rotation of existing manpower and then see if new person can be found.

Follow-up after 2 weeks.

4. Operations :

4.1 Development of M&C software -- from 6 Nov & before (JPK/RU/SN/NGK) :

(i) new things related to old software : new requirements from FE monitoring of temp and power : FE monitoring of all 64 channels from RFCM card to MCM card to Laptop via serial to USB converter; available as a file on the PC -- done by RU for FE group; FE monitoring of all (7 nos) channels in control room has been tested and needs to be incorporated into ONLINE, alongwith 3 phase AC points (JPK). To check if last item is completed -- then this item can be closed.

==> all completed and can be closed.

(ii) for GAB monitoring, first order test has been done and found ok; follow-up action needs to be completed -- update needed.

==> few small cosmetic changes requested by BE group are ongoing; basic software running for last week or more without problems -- SOP to be circulated to control room.

(iii) 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 yet running; will be taken up now.

(iv) plans for EPICS testing : agreed to give one Rabbit card with associated details and code to TCS for testing; simple set-up of PC + EPICS talking to Rabbit (with our native protocol), to be set-up in our lab also. SN to provide status update on this.

==> not yet running; we'll be taken up now.

(v) follow-up on interface of FE with new M&C system -- SN + SSK to report about plans for this.

==> 3 way meeting tomorrow, if possible.

(vi) plans for ordering a few Miltech PCs (and take a final call later on) : 2 nos to be ordered by Ops Group (see item 3.1(i))

==> update by next week.

(vii) plans for populating a few antennas with Rabbit card (with or without PC) for testing. C3 was done and C6 was next -- need status update.

==> will be done next week; then do 3-4 more to have total of 5-6 to support various kinds of tests.

(viii) plans to organise larger discussions regarding major decision items.

==> nothing happening here -- this item can be dropped now.

Follow-up on all active items 2 weeks later.

4.2 Identification of appropriate ethernet switches for antenna base (and GAB)

-- from 6 Nov & 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 : quotes received for CISCO, HP, DELL & D-link -- update on orders & delivery of these.

(ii) RFI testing of switches as they arrive : DELL has been tested; D-link was next... need status update.

(iii) appropriate RFI cabinet for the switch -- update on status of work and plans (see also item 3.2 above)

==> see updates in item 3.2 above; to see if these two need to exist as separate agenda items...

4.3 Planning for proper space utilisation for new equipment at antenna base --

from 6 Nov & 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.

==> to be repeated tomorrow and summarised.

(ii) to clarify if UPS is a 1 ph or 3 ph input (with 1 ph output)?

==> it is a 1 ph to 1 ph unit; can be made 3 ph to 1 ph but will need more space (not preferred)

(iii) can we have single, shared UPS for both servo computer and rest of the ABR electronics ?

==> RVS and SKB to make the connection diagram for a possible solution.

(iv) how carefully does the load balancing for the 3 ph input to antenna shell needs to be done?

==> may not be a serious issue.

Follow-up on all items after 2 weeks.

5. Back-ends :

5.1 GPU corr (GWB-I) : release of 4 node, 8 input, 200/250/400 MHz version -- from 20 Nov & before (SHR/SSK/BAK) :

(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.

==> wait for feedback from the tests.

(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) -- to be tested. Need to discuss plans for PA bfr and load estimates for the same (for planning K20 design). IA SoP is under test; SNR related problem had been detected in IA Bfr -- SHR looking into the fix for this; need updates on the other issues -- discussion is needed with SSK and SHR.

==> need IA tests showing pulsar profile etc. ; also need to resolve the problem of threads not synchronised during the addition -- separate from phase shift kernel and check (for now). need way forward for PA bfr also...

(iii) to start testing 400 MHz BW mode -- how best to conduct these tests? need some changes in the main code to handle 4 bits etc... code for 4 bit data is there in offline version; 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 move this agenda item accordingly.

==> this activity is now under item 5.3 for next generation development

(iv) to move data collection to additional host node and release the following 3 modes : total I single pol and dual pol and full polar (which have been tested from a separate area -- to integrate into trial area of main code branch and test fully and release. code had been made ready; to check about problem of crashing of 8 node version; release for 4 node version, if 8 node version still giving problems; plans to test T620 m/c as a possible host node; also SHR will look into using one of the new DELL i3 m/cs as an option and place repeat order (if useful). ==> to try a bit more with the current master machine to see if it can be optimised to work; then shift to 620/720 m/c.

(v) ITR for this work needs to be taken up -- timeline has been set for end-Dec with SHR and IMG working on it -- to be confirmed and recorded (and merged with main BE documentation agenda item).

==> see main documentation agenda item running on alternate weeks...

Follow-up on relevant items next week.

5.2 GPU corr (GWB-II) : release of 8 node, 16 input, 200/400 MHz version -- from 20 Nov & before (SHR/SSK/GSJ/BAK) : 8 nodes with C2050/C2075 GPUs and one host m/c now connected to the new IB switch (subset of this works as the 4 node, 8 input system as GWB-I above), with analog connections 8 ant dual pol done.

Pending issues :

(i) plan for testing and release etc to be finalised -- GUI to be modified for both kinds of systems : confirm if this is done & can be closed -- pending for update from NSR/SSK. SHR is working with NSR on modifying the GUI.

==> GUI mods to be done after crashing problem with master node is solved.

(ii) plans for regular testing of this system to be worked out, once problem in 5.1(v) above can be cleared...

==> after above item is fixed.

Check status next week.

5.3 GPU corr : next gen improvements -- from 6 Nov & 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; to confirm if wiring and cabling is complete and PPS distribution and Roach boards for inputs are connected; test results for stand alone 2 x 10 Gbe I/O + corr tests on the R720 and T620 machines -- to be discussed.

==> all wiring completed; running with analog noise source connections; new code with (a) 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 -- needs online to be free for testing.

(ii) improvements in GPU code using K20 card (SHR/SSK) : cross-check on FFT code; calibrating MAC performance vs data reshuffle load; looking at XGPU code (with Pradeep of nvidia); trying sample PA beamformer code to estimate load etc.

==> FFT item can be closed; for MAC we need to look at XGPU.

(iii) 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 this to be provided.

==> some interaction with President has happened and a quote for a basic rack has been obtained -- needs to be followed up.

(iv) 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.

(v) new purchase of Roach boards etc : follow-up on status of procurement.

==> indent has been placed.

Follow-up on all items after 2 weeks.

5.4 8 antenna back-end tests and future plans -- pending from 6 Nov (DVL/YG) :

(i) report of efforts to summarise all the existing tests and results : should be ready by now; DVL to update status.

==> report has been put out; needs study and 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 !

==> no update on this.

(iv) plans for further testing with 110 / 200 MHz BW signals at LBand.

==> no updates.

(v) plans/strategy for tests at 250-500 and also 610 -- some long tracks to be tried out.

==> no updates.

(vi) plans for running the new back-end in parallel with all GSB observations at Lband, 610, 325 and 243 bands : SOP with appropriate settings etc. -- this needs to be formalised asap with a few more additions.

==> this appears to be happening; for analysis, waiting for a script to be completed.

Follow-up on relevant items next week.

5.5 SFP testing of final unit -- from 6 Nov 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 -- can we move forward now?

==> some information has been provided by MTE but may not be enough to get the job done; waiting for some feedback... follow-up after 2 weeks.

5.6 RFI filtering -- from 6 Nov (KDB/BAK/YG) : to add the first version of the real-time RFI filtering block (after some modifications) into the packetizer design and check the performance; to check if integration with packetiser design is completed, and then to look into optimisation of resource usage.

==> integrated into packetiser 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). Follow-up after 2 weeks.

5.7 Next-gen time & frequency standards -- from 6 Nov & 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.

==> date fixed for 13 to 17 Jan; tickets done.

(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. To form a small group to look into the detailed specs circulated by BE group.

==> some discussion ongoing with NPL for detailed tests to be done.

Follow-up after 2 weeks.

6. Other items :

6.1 New python assembly design -- from 6 Nov (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. HSK to prepare a comparison report and discussion to be held -- still pending; discussion to be organised.

==> visit to E6 planned today; to have follow-up after that.

6.2 Jobs at TIFR -- from 6 Nov (HSK/SKG) : to follow-up on the following :

(i) update on status of our jobs at TIFR -- check status after collecting 120 nos -- how many are remaining?, and see if matter can be closed.

==> 60 more can be done; will be scheduled in December, will come in January.

6.3 Coexistence of 50-90 MHz RRI feed with 250-500 CDF on same face of turret --

from 6 Nov 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 from possibilities for reverse engineering.

==> no progress ;

6.4 Problem of access to FE boxes with 500-1000 CDF feed -- from 6 Nov & 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 !

==> design is under fabrication ?

6.5 Work orders for CSIRO feed with 2 parties -- from 6 Nov & before (HSK/JNC/ANR) :

(i) whether filling operation is over and new lab tests have been done on feed.

==> no progress, may happen by end of this week.

6.6 Fabrication of 5 spare L-band feeds -- from 6 Nov & before (SSK/HSK) : to

check about

(i) unit from Akvira Engg now fully working or not?

(ii) latest status on testing of units from other 2 parties (Physimech, Fabromech)

See discussion under item 2.xx

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