Minutes of Plan meet of 4 Sep 2013 (follow-up of some pending topics from different areas) :

1. Documentation related :

1.1 Detailed design doc -- pending for long : from 22 Aug & 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 (iii) analog BE system to be completed.
==> to add new changes made and make combined changes for this and SFA for OF; need 2 more weeks time. confirm with BE what is the status.
Follow-up after 2 weeks.

2. FE & OF related :

2.1 New LNA for 130-260 system -- from 22 Aug & before (VBB/SSK) :
(i) Variation of gain and Tsys with temperature : to discuss note on the first set of results circulated by VBB : to check change in loss with freq and temp against expected values from data sheet.
==> no updates on cross-check with data sheet -- TBD next time. plots of varn of noise temp vs freq with different physical temp of LNA (existing device) was shown -- not clear if this is new LNA or older LNA. All this needs clarification from VBB.
(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 and (b) online for one antenna installation.
==> no work done in this context as team is doing common box first.
Follow-up after 2 weeks.

2.2 Update on RF dump tests for new feeds -- from 28 Aug & before (HRB/GSS/SSK)
(i) new data and results for 130-260, 250-500, 550-900 (HRB/SSK) : (a) follow-up on discussion of current results : understanding of bad antennas for 250-500 band (e.g. C6, S2, S4) -- agreed to do a control expt with 3-4 bad antennas (with one good antenna) tracking off-source from calibrator for ~4 hrs with 30-60 sec integration and see what the data shows.
(b) getting some more data at night time (for both 250-500 and 130-260), following request by NK.
==> (a) one test has been done with source tracking; cold sky will be done shortly; investigation of dip in W6 at around 400 MHz -- may be in filter.
(b) TBD
Follow-up after 2 weeks.

2.3 Mass production of 250-500 FE system -- from 22 Aug & before (ANR/SSK) :
(i) testing of 15 new feeds : (a) FE group is sending weekly plots & results -- need to add deflection plots to these. (b) to discuss latest plots from FE group and results from these and follow-up action items on problematic antennas (S2 and then C6 were to be taken up).

==> short-term studies show ok, except that problems in C6 etc are still seen at some level; still need a long-term study and interpretation from the same; also ON-OFF will help.

(ii) status of testing and installaton of FE boxes : ten antennas fitted + plans for 2 spare units : (a) to check status of completion of spare units (b) update on procurement of new connector -- samples from Amphenol and Radiall were to be tested and finalised for bulk order.
==> both are assembled, waiting for testing -- will be done both together; samples from Amphenol will come this week; Radiall will come a bit later.

(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 was going on).
==> no update from 2 weeks ago; can check again after 2 weeks.

(iv) plans for sub-band filters for 250-500 MHz system -- update on testing of sample units and results from these to be discussed.
==> new results for 3 new sub-bands (by Sougata) discussed -- small shift of 5 to 15 MHz is seen : to plot all 4 sub-band responses together and send improved version of report for discussion two weeks later.

(v) status of other auxiliary items :
notch filter at 540 (lumped vs microstrip) -- are samples of both ready (for comparison)?
==> looks like microstrip design may not give optimal performance at this freq; agreed to go ahead with lumped element desing; to try to put one set at rx room for trial purposes in signal paths for one / two antennas.
dir coupler (2 units ready) -- one to be installed in 3rd spare FE box (when?)
==> see below.
power splitter for noise (waiting for chassis) -- status to be reported.
==> suitable chassis has come; noise source is available; will attempt to integrate by month end or so.
noise src : when can we test noise on/off for 250-500 system in lab / antenna?
==> to aim for something in the lab by month end (see below)
post amp : status of delivery of fresh stock of Hitite 740 to be updated.
==> some devices have been "discovered" in the lab -- how many? 20 or 100 or more? (TBC); anyway, current order to be kept alive -- it is close to delivery. May need a slow-rise power supply for this? (TBC)
power monitor : status update on getting prototype unit ready.
==> PCB gone for fabrication; integration target end of the month.
temp monitor : can learning from 130-260 work now be applied to 250-500 ?
==> some R&D remains for positioning of temp monitor on or near LNA. Target for integration at end of the month.
RFCM card : update on debugging of new card.
==> additional manpower (Imran) added to help with the debugging.
phase switch + opamp : discussion on test report.
==> see main item separately. note that new RFCM card working is essential for new Opamp to be used in these wave bands.

==> Follow-up on all items after 2 weeks.

2.4 Status of improved 500-1000 MHz CDF -- from 22 Aug & earlier (HRB/GSS/SSK) :

(i) there is a 10% larger beam width for C10 (antenna + solid cone ver2b feed) -- need to check simulation results for ver1 and ver2 to check beam width of just the feed. Need update on this from HRB.
==> rerunning of simulation for ver1, ver2a & ver2b for consistent cross-check. also done ver1 dipole in ver2 cavity and ver2a / 2b dipoles in ver1 cavity; to compile the results and present / share.
(ii) follow-up on action items (#s 1 to 3) from 20 Mar discussions :

1. repeat deflection tests for ver2 with a rigid stool design -- is it done?
   ==> stool is still under fabrication in w'shop will come by next time -- can complete test and if spare 235/610 feed is available, then bring down ver2b.
2. to share results of deflections wrt other antennas with old 610 system 30-to-1 results -- internal summary report was to be released by 21 Aug.
   ==> work has been done; report needs to be compled and sent.
3. finer adjustment of focus distance for ver2 -- tbd after item 1 above.

(ii) slightly longer term follow-up items from 20 Mar discussion :

4. need repeat of tests with ver2b solid cone to confirm performance -- tbd asap
   ==> see item (ii).1 above.
5. try ver2 dipole in ver1 cavity and verify the RL BW -- tbd asap
   ==> ver1 vs ver2a can be done; with ver2b can be done later.
6. try new polariser + LNA in old feed : what will we learn? (are there enough components?) -- update on getting new face plate etc ready.
   ==> drawing to be given to workshop

(iii) comparison of measured parameters with simulations :

7. to discuss results from more complicated dipole geometries in ver1 or ver2 cavity
   ==> may not be much scope for this?
8. possibilities for further simulations, including with denser mesh (higher order of basis functions)
   ==> new results will address these aspects.

==> to take up for discussion when new results are avaiable -- latest after 2 weeks; to try and rationalise the list of sub-items above.

2.5 Signal flow analysis (SFA) related items -- from 22 Aug & 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.
==> work ongoing; will have something concrete after 2 weeks.
(ii) plans for SFA of 250-500 system : to check if analysis has started and how things are going.
==> no progress to report; to check again after 2 weeks.

2.6 Directional coupler for 250-500 FE system -- from 22 Aug & before (ANR/SSK) :
(i) report giving detailed comparison of old and new designs to be circulated : waiting for ANR to add appropriate statements about new design to the earlier circulated report and recirculate.
==> ANR has sent out the doc today -- can check and close the matter.
(ii) update on plans for mass production : PCB fabrication, chassis design and manufacturing etc. Update on delivery of PCBs and chassis for mass production; procurement of new SMA connectors.
==> PCBs for 30 antennas will come by today; chassis prototype certified and is now in mass production; SMA connectors in enquiry stage.
Follow-up after 2 weeks.

2.7 Finalisation of temperature detectors for FE system -- from 22 Aug and

before (SSK/VBB/SN) : All new FE boxes to go up with the agreed design for monitoring of box temp; scheme for monitoring in control room to be implmented with help of telemetry and ops group. To check (a) if values for unit installed on W1 can now be measured in control room (b) plans for installation of 2 units in one box, after solving MCM related issue. (see also 2.1 above)
==> some trial data is there with VBB, but this can be done on a routine basis with help from control room; other item can be coupled with 2.1 ; follow-up after 2 weeks.

2.8 Filters at different stages of receiver chain -- from 22 Aug & before (SSK) :
(i) scheme for filters at antenna base : check if prototype has been assembled (and tested) after wiring of 2nd switch (there was problem of static and assembly was being done in telemetry lab; also, chassis was not ready).
(ii) to follow-up on refinements of the scheme for each FE box :
(a) SSK was to (re)send the draft document (b) update on 250-500 system (first to be done).
==> the new device continues to be tricky -- to check with vendor and literature for options; also, for antenna filter switching this may not be required -- to assemble prototype with existing switches used in FE system (using old PCBs) and then take a final decision. SSK to resend once more! Agreed to complete 250-500 first. Follow-up after 2 weeks.

2.9 Characterisation of new FE+OF systems -- from 28 Aug & before (PAR/SSK/DVL) :
(i) follow-up from the latest summary and trends for L-band results over the past few weeks : (a) status of antennas with lower deflection at Lband (b) similarly for antennas at 250-500.
==> check with new set of results to identify good antennas.
(ii) slope across 400 MHz : worst case antennas (~ 18 dB change) were to be checked at antenna base (C13, W1, S2...) -- any updates on this?
==> claim is that most cases of large slope are now gone. to check with new set of results.
Follow-up next week.

2.10 M&C for new FE systems with new MCM cards -- from 22 & 7 Aug (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.
==> no follow-up at present; need to look into; check with SN and follow-up after 2 weeks.

2.11 Fixing the non-working L-band feeds (short-term problem) -- from 28 Aug (SSK/ANR) : two LNAs have been successfully assembled and tuned by Gopi; to check if we can now have working feed for 30th antenna made ready and installed asap.
==> LNAs are working, but the feed being made ready appears to have a probe problem -- should come by tomorrow and it may be possible to install by next week.
Check status next week.

3. RFI related matters :

3.1 RFI from cable TV leakage -- from 31 July (PAR/SSK) : This could be a bigger problem than boosters etc : to see if we can have a clear test 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?
==> test has been thought about but not had time to try it out. To check again

after 2 weeks.

3.2 Effect of military satellite RFI in 243 band -- from 22 Aug & 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) design of prototype filter by FE group
==> prototype (lumped element) has been done and tested and sample results are available (to circualated) and also plan to put in one channel of 2 antennas at 250-500 band.
(ii) Ops group to investigate and come up with algorithm to use in control room.
==> Ops group to talk in detail with PAR to get the satellite data and with SNK about the algorithm.
Follow-up after 2 weeks.

3.3 Discussion relating to Industrial RFI survey -- from 22 Aug (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?) : immediate follow-up action identified : DIC has been contacted and meeting has to be fixed; what are the inputs required for this? Latest update on situation needed from PAR.
==> PAR to take whatever docs are available with NSD and navigate the meeting accordingly. To check status after 2 weeks.

4. Operations :

4.1 Mass production of Rabbit MCM cards -- from 22 Aug & before (CPK/SN) :
(ii) to complete the work for deciding how many more MCM cards are needed -- SN to report on the effort to discuss with all GCs (as agreed in 14 Aug meeting).
==> no action taken yet; SN to follow-up. To check next week.

4.2 Mass production of shielded box for MCM cards -- from 22 Aug & before (CPK/PAR/SN/HSK): CPK was to check with PAR and report on the following :
(i) RFI test report of Akvira vs Physimech units is not yet released -- can we have the final version released asap !
==> still pending; to locate the data and complete the report.
(ii) status of problem of adapting to different size / pin count of RFI shielded connectors to be reported : update on plans for moving from feed-throughs to D-type connectors with embedded RFI filters. This was waiting for D-type connectors to arrive. Meanwhile, it was agreed to do a test with active control of some of the lines going out through the D-type connector, to check if filtered connection is required or not?
==> shielded versions of D-type 37 pin connector are available; 10 nos sample are being purchased (600 USD); meanwhile, tests with active control of the lines shows RFI, even with shielded 50-core cable --> shielded connectors are required, at least for use at the antennas.
(iii) How to plan for the mass production? Ops group to report on discussions with Mech group.
==> based on above discussions, Ops group to finalise drawings for the box (can be 2 types : one with and without provision for SPI port on chassis + 1 serial port on each box would be useful to have; final order can then be placed on Akvira.
To follow-up on all items after 2 weeks.

4.3 Development of M&Csoftware -- from 22 Aug & before (JPK/RU/SN/NGK) :

(i) update on work with TCS (JPK/SN) : plans for next phase of work.
==> working on freezing the requirements and specs -- may converge by the end of this week. To try and put an enquiry by next week.
(ii) discussion on longer term issues : (a) plans for communication protocol related meeting (b) plans for scheduling of next discussion meeting and possible topic (finalisation of ABR hadrware?).
==> Ops group to finalise and come back.
Status check next week, as needed.

4.4 Identification of appropriate ethernet switches for antenna base -- from 22 Aug & before (SN/PAR) : 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) updated on process of short-listing and comparison of specs, followed by indenting for suitable samples : quotes had been received for CISCO, HP, DELL and D-link -- check status of formal enquiry process.
==> last date is 12th Sep.
(ii) to look into appropriate RFI cabinet for the switch : status of sample drawing and fabrication of same in workshop.
==> no update.
Follow-up next week?

Identification of appropriate for central building : CPK feels that we may need L3 with a high speed 40 Gbps connection to server (over IB). 2 possible models have been identified HP and Cisco (48 port, costing ~ 5 lakhs. To fold this into the corresponding agenda item.

5. Back-ends :

5.1 Identification of appropriate ethernet switches for reciever room usage -- from 22 Aug and earlier (SN/PAR/BAK) : Currently using 8-port 100 Mbps switches which will meet the needs for 16 ant dual pol system; would like to go for slightly bigger (16 port, 1 Gbps, level-2) units for final system. Can couple with the exercise being done by Ops group (item 4.4 above) for identifying suitable RFI friendly unit. Update on plans by BE team.
==> ONe 8-port switch given to RFI team for testing; otherwise ok to go with Ops groups work on the item. To fold this with main item for future follow-up.

5.2 Analog back-end for 8 antennas and beyond -- from 28, 22 Aug & before (BAK) :
(i) Problems with getting fringes for 250-500 settings : LO problems resolved?
==> to try expt with LO=600 with both FSW and Sig Gen and report back by next week.
(ii) Updated SOP for filter banks + external LO to be circulated and put on appropriate web-page
==> done, and item is on plan web-page maintained by Dongare -- can be closed.
(iii) bandshape and power levels to be checked : working solution for Lband is there (with LO > RF); need to check and confirm for 250-500 and 610 bands.
==> some more work is needed to work out attenuations for 250-500 and 610.
(iv) filter bank choices in the new GAB system :
(a) LPF on o/p side completed (only problem of spike in non-filtered o/p when using filtered o/p to be fixed)
==> this problem not yet looked into in detail; may need some slightly better isolation later on.
(b) status of work on having input side RF filters in place for new system : to confirm the plans with FE group for sharing mass production units.

==> needs a joint discussion; meanwhile 8:1 switch ckt is being assembled for use for this case.
Follow-up on some items next week; others 2 weeks later.

5.3 Support for 250-500 MHz in new 8 antenna GAB -- from 22 Aug & before (NDS/BAK) : requires LO scheme going below the current 600 MHz; need plans for long-term solution.
Two options to be explored :
(i) sig gen with eth control as default
==> this can be done; to check if something other than web-based interface can be done. Maybe USB scheme developed earlier can be modified.
(ii) new LO generation circuit using new AD chip that can cover the full range -- to develop sample prototype to check.
==> actual order not yet placed; comes with full PCB, only software has to be written.
Can check after one month.

5.4 Power equalisation schemes for new back-ends -- from 22, 14 Aug and before (SSK/NSR/BAK): 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 -- data coming in response to monitor command needed to be checked.
==> no progress on this; waiting for Sisodia to give program that JPK can use...
(ii) option 2 : using correlator self outputs and computing gain corrections :
1st version was to be ready for release ; NSR and SSK to provide status update if problem solved or not and tests done.
==> email update from SSK claims this is now working, with steps of 0.5 dB; needs a detailed follow-up to verify performance.
Follow-up as needed next week; else 2 weeks later.

5.5 GPU corr status -- from 28 Aug & before (SHR/GSJ/SSK/BAK/DVL) :
updates on following items, pending from last discussion :
(i) release of 4 node, 8 input, 200/250 MHz version -- to confirm status and test results for 32 & 110 MHz data sets : (a) 1.7 s time offset problem to be resolved (SHR/SSK) (b) status update page for GPU corr to be created (c) mismatch of int and frac delay updates : new code released? (SHR) (d) delay table and phase wraps to be checked -- are there any major wraps for any antenna (DVL/SSK) (e) plans for 110 MHz imaging (DVL) (f) update on code for providing basic beam modes (SSK/SHR/YG)
==> (a) not tried out (b) going to upgrade page (c) new code is released -- to confirm the date released and cross-check the data sets (d) analysis of different dates to provide updates (e) data for point source imaging is avaailable, can try for simple double source (f) recording is working now, but there appear to be some problems of data values from the GPUs.
(ii) update on testing K20 card (SHR/SSK) : XGPU code, reshuffle alorithm, new optimisatios from nvidia etc. : to discuss note circulated by SHR.
==> not much further to do till response from nvidia is available.
(iii) plans for work on 4 new DELL machines (GSJ/SHR) : stand alone 2 x 10 Gbe I/O + corr tests on the R720 and T620 machines to be done. Fedora17 to be tried? Are the machines in corr room now? Long-term plan for racks to be initiated.
==> not discussed in detail due to lack of time.
(iv) status and plans about configuration of 8 node cluster (SHR/BAK) : can we plan integrated 8 node, 16-input correlator tests -- has first test been tried?
==> not discussed due to lack of time.
(v) integration of bigger IB switch into the system + addition of one host m/c

+ ordering of other related network materials.
==> some tests have been done; to decide further action; not discussed in detail.

5.6 Final online control for GPU corr -- from 22 Aug & 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 code.
(ii) to check if max no of chans increased to 16K (as reported on 7th Aug) and if this mode has been tested.
(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 significant update; waiting for time to make changes in main GPU code for item (i); follow-up after 2 weeks.

5.7 8 antenna back-end plans for further astronomical tests -- from 28 Aug and earlier (DVL/YG) : (i) report on results of tests at Lband (110 MHz subbands) and other bands -- power levels and bandshapes, level of cross-corr values, variaitons of ampl and phase with freq and time and follow-up etc.
(ii) possible options with 610 MHz band (iii) first test results with 250-500 MHz band ?
(iv) plans for running the GPU corr by default at all times alongwith the GSB.
==> not discussed in detail, but DVL to look into items (iii) & (iv).

5.8 Power and cooling requirements for projected back-end systems -- pending from 24 July and much earlier (BAK/RVS/YG) : to confirm plan of action for next set of tests : what is planned and when?
==> not discussed at all.

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Minues of Plan meet of 18 Sep 2013 (follow-up of some pending topics
from different areas) :

1. Documentation related :

1.1 Documentation : follow-up on level 2 (ITR) -- from 28 Aug & earlier :
conversion of older reports : FE has released 250-500 LNA report (ANR) & ITR for
250-500 CDF feed (HRB) & revised SFA (GP). Check if test range is done. Check
for other pending items across groups. FE group is to come back with which
of these are ready to be converted to NTR and publications.
==> test range is getting done; can check again 2 weeks later. Other items
can be taken up for detailed identification at that time.
list of items for Indian URSI meeting to be finalised by FE group.

1.2 Documentation : SoP for antenna base work -- from 28 Aug & before
(SSK/ANR/HRB) : updated version to be made ready for (i) installation of upgrade
systems and (ii) ensure proper working of existing systems.
To check status of work on part (i) for feeds (HRB) -- final version was to be
released 2 weeks ago. Then to check for any relevant activity required for (ii).
==> Another 2 weeks required for HRB. Can close item (ii).

1.3 Follow-up on level 3 (NTR) -- pending for long : from 28 Aug, 10 Jul & before
(SSK): to check status of report on design of OF system -- SSK to confirm.
==> no progress. to check again after 2 weeks ?

2. FE & OF related :

2.1 Update on results from test range -- pending from 28 Aug & 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 long overdue -- HRB to give update.
==> Will do 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 -- to check if bug has been fixed.
This is also long overdue -- GSS to give update.
==> GSS has been looking into it to see which routines are giving problem. Will
take about 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 how long it will take to get test range functional (encoder problem).
==> Encoder has to be ordered; will take 8 weeks or so. OK to order two units.

2.2 RF dump tests for new feeds -- from 4 Sep, 28 Aug & before (HRB/GSS/SSK)

(i) new data and results for 130-260, 250-500, 550-900 (HRB/SSK) : (a) follow-up on discussion of current results : understanding of bad antennas for 250-500 band (e.g. C6, S2, S4) -- control expt with 3-4 bad antennas (with one good antenna) tracking on-source and off-source to be completed.
==> short duration has been taken; to repeat for longer duration ~ 4-5 hrs.
(b) getting some more data at night time (for both 250-500 and 130-260), following request by NK. For 250-500, it has been done; for 130-260 it is still pending.
==> will take data for 130-260 in next couple of days and send.
(ii) scheme for (re)calculation of expected values across the broad bands to be finalised (and added to measured curves) -- (SSK/GP/HRB) : to check follow-up from 28 Aug -- generating curves using constant value for QH and to check if data sheet for QH shows variation in value with frequency.
==> new plots to be made and sent out; meanwhile, one possibility worth checking is if the NF of the amplifier is changing with frequency and can be measured.
To follow-up after 2 weeks.

side issue about quality of AC power and regulated vs unregulated power supplies used for the FE electronics -- to try a lab test.

2.3 Follow-up on 550-900 MHz band filters -- from 28 Aug & before (ANR/SSK) :
(i) status of delivery from vendor and testing of prototype meeting full specs: this was due in first week of September.
==> there has been one more round of interactions with ICON, but no final item has been shipped.
(ii) status update on in-house development work : status of testing prototype for (a) modified for 15 MHz shift (b) second sub-band.
==> PCBs have just come and have been tested; details about matching with specs to be checked and reported. Looks like shift is gone; once confirmed both bands, remaining 2 bands can be send for manufacture for samples.
Follow-up after 2 weeks.

2.4 Finalisation of design for total power detector for FE boxes -- from 28 Aug and earlier (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) check if 2nd unit is integrated and tested
==> done ok; meanwhile 1st unit is now installed on W1 (?); temp monitor is also there on this antenna and a test for monitoring both over day time can be initiated.
(ii) what are the lab tests of monitoring showing?
==> showing expected behaviour -- successful.
(iii) update if using online system to read the values is now possible / tested.
==> waiting for final conversion table to be implemented by Ops Group (JPK).
(iv) Plans for building X units.
==> PCBs for 70 units given for fabrication; parts have been ordered, except connectors may need to be checked; chassis also has to be given.
(v) Plans for ITR on the work.
==> can be taken up later on.
Follow-up after 2 weeks on all items.

2.5 FE power supplies at all antennas -- from 28 Aug & 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 more supplies -- to check current status of ordering components for 5 supplies.
==> components for assembling 2 units are in hand; trying for improved ripple with some modifications (extra capacitors).
(iii) short-term : plans for purchase of off-the-shelf supplies & scheme for usage. check if new enquiry has been floated?
==> indent has been given.
Follow-up after 2 weeks.

2.6 Fixing the non-working L-band feeds (short-term problem) -- from 28 Aug (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.
(i) check if order for toroids has gone and what is delivery date.
==> order gone; delivery date not known.
(ii) 2 LNAs successfully done by MG; to check if probe problem is fixed and if feed has been made ready and put on E5.
==> one repaired feed has gone to W1 where there was a failure -- working ok.
(iii) check status of alternate LNA designs : for OHMIC make MMIC ckt : results from first unit available? For Skyworks MMIC (expected to give better performance): status of PCB and chassis design work; date of delivery of device.
==> OHMIC ckt is giving poor return loss and needs to be debugged for proper matching; no work yet on PCB and chassis for Skyworks design -- to try and match it with the delivery date of device (which is under purchase).
Follow-up after 2 weeks.

2.7 Spares for L-band FE electronics -- from 28 Aug & 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 and release of new (compact) card.
==> making new PCB for this card, based on tracing the old PCB.
(ii) noise gen : status of delivery and assembly of new PCB.
==> PCB arrived, not clear if assembly and testing have been done or not.
(iii) post-ampl & phase switch : to update about the wiring work.
==> work has been initiated and 2-3 units have been wired and being tested.
(iv) timescale for integration? : when can it start? by end September?
==> all electronics (except LNA) required for assembling 3 feeds is now available; two feeds are ready at Pune workshop -- need to be tested for RL and then brought to GMRT for integration with electronics.
Follow-up after 2 weeks.

2.8 Walsh switching arrangement in FE -- from 28 Aug and before (SSK) :
Some tests have been done on the bench by FE group; results to be reported; also to go back to action items from 19 Dec 2012 discussions; does new system need new RFCM card?
==> basic report has been circulated and can be looked into for finalisation; this system already implemented in all Lband antennas and should be working -- to devise a simple test. Sougata and Pravin to discuss and see. Also, to plan for matching test in BE units.
Follow-up after 2 weeks.

2.9 Characterisation of new FE+OF systems -- from 4 Sep, 28 Aug & before (PAR/SSK/DVL) :
(i) follow-up from the latest summary and trends for L-band results over the past few weeks : (a) ~ 3 antennas with ~ 5 dB lower deflection at Lband (b) similarly

for antennas at 250-500.
==> some are due to cable problems (e.g. W1 & C4 has just now been repaired). Will take up next worst antenna (W5). All antennas with 2 dB or more deficiency in deflection being taken up.
(ii) slope across 400 MHz : worst case antennas (~ 18 dB change) were to be checked at antenna base (C13, W1, S2...) -- to get new bandshape plots for all antennas to cross-check if any antennas have large slope or not.
==> agreed to band plots over full Lband for the 15 antennas.
(iii) optimal settings of attenuator values : factor of 2 (due to control bit problem) to be resolved.
==> 2 dB step problem will be solved with new MCM card; recommended value for 250-500 can be 10,10 (i.e. 20 dB) -- to do a look-up table / file arrangement in control room.
(iv) is the power level too high for 250-500 system?
(v) to characterise the recommended attenuator settings for 610 band.
==> TBD and provided by next week.
Follow-up next week on relevant items.

2.10 Releasing existing 610 MHz system as part of the widebang upgrade -- from 28 Aug (SSK/ANR) : Preliminary tests of existing 610 feed through the wideband path show that ~ 100 MHz usable bandwidth may be possible. To explore in detail if this is a feasible "bonus" that can be addeded to the phase-I u-GMRT : agreed that only RF filter needs to be changed; to confirm if lumped element boards are available for making new RF filter. To explore combination of 550-900 BPF + mobile band notch filter on one antenna as test case -- when can this be scheduled?
==> can try one antenaa one pol for one of the broadband antenna FE box in about 2 weeks. To check status after 2 weeks.

2.11 OF systems -- from 28 Aug, 31 July & before (SSK/PAR) : Plans for further systems : component ordering for remaining items : all except thermo-electric cooler are in full quantity : update on ordering of balance units of thermo-electric cooler.
==> no updates; SSK to check and report. To try and close by next week.

2.12 Calibration scheme with radiator at apex of antenna -- from 22 Aug & 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.
==> agreed to try the test ; to follow-up after 2/4 weeks.

3. RFI related matters :

3.1 RFI testing of Miltech PC + ethernet switches for antenna base -- from 14 Aug and earlier (PAR/SSK/SN):
(i) update on testing new i5 Miltech PC alone (and later with peripherals using new shielded ports, connectors, cables + Rabbit card). First report circulated, has 3 main suggestions : more screws on panels; panel mount pwrline filters instead of chassis mount; use without kbd & mouse OK. Action items : to check results from tests using integrated kbd+mouse unit that came with the PC; can we give

feedback to Miltech about first two suggestions.
==> integrated kbd+mouse also give RFI; to investigate with Miltech afeer discusison with Ops Group.
(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).
==> comparison report of Physimech vs Akvira has been done; change in drawing to be told to R. Lolap for modified drawing.
Follow-up after 2 weeks.

3.2 RFI tests of ethernet switches for antenna base -- from 28 Aug & earlier (SN/BAK/SSK): update on testing the available switches for RFI (as per 29 May discussion); plans for design of RFI box for ethernet switches : some tests have been done and reports are awaited; some follow-up action needs to be taken up. Status of ongoing efforts for (i) procurement and testing of switches and (ii) design of RFI enclosure to be summarised.
==> waiting for drawing to be done by mech person (Rajesh Lolap). After that fab can start. To follow-up after 2 weeks.

3.3 Radiation from CAT5 cable -- from 28 Aug & 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: confirm if order has been placed for cable & connectors and expected date of delivery.
==> order has gone; need to check expected date of delivery.
Follow-up after 4 weeks.

3.4 Follow-up on UPS RFI -- from 28 Aug & earlier (SSK/PAR/RVS) :
(i) procurement of units from Miltech (RVS) -- Status of follow-up on failed 1 kVA units from Miltech; status of order for 3 kVA unit from Miltech.
(ii) follow-up from RFI testing of Ador unit -- to check RFI results for 2nd unit from Ador and decide follow-up action for mass production (this is now linked to item on estimation of total power budget at antenna base !).
==> email update from RVS : 1 unit of repaired 1 kVA unit from Miltech expected in next few days -- can be given for RFI testing once checked to be running ok; no update on 3 kVA unit. no updates on RFI testing of 2nd Ador unit. To follow-up after 2 weeks.

3.5 Discussion relating to Industrial RFI survey -- from 28 Aug (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?) : immediate follow-up action identified : to contact DIC for conducting a joint survey -- status update on this from PAR.
==> RFI group to circulate summary of the meeting, which was very positive and they can start the activity from October; two teams can be formed, weekly activity for one month will be enough; need to make detailed map using SoI maps to give to them -- one week. If eveything is ready from our side, then we can start from first week of Oct; else, middle of Oct. (one more manpower needed -- maybe Amit Sawant). Follow-up on status after 2 weeks.

4. Operations :

4.1 Development of M&C software -- from 28, 14 & 7 Aug & 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; also monitoring of all the channels at control room -- JPK looking into identifying the appropriate channel(s) -- job done for 6 signals, instead of 7 signals that are required (to check for completion and then close this item).
==> temporary tasks for monitoring of GAB points via Rabbit is possible; for long-term thing, structures in online need to be changed -- will be done properly during coming MTAC (including some spare capacity).
(ii) update work with TCS (JPK/SN) -- discussion on freezing the specs for the PoC design and raising the indent.
==> plan to have a meeting early next week with TRDDC + TCS to find the matter.
Follow-up on item (i) after 2 / 4 weeks and by next week for item (ii)

(iii) plans to organise larger discussions regarding major decision items (all)
(a) follow-up from last meeting of FE related issues
==> no updates yet.
(b) feedback from discussion with TCS regarding hardware interface and protocol related issues
==> modbus vs in-house protocols : can try one simple set-up of PC + Rabbit card with modbus for "hello world" level; can try PC + EPICS talking to Rabbit (with our native protocol set-up) -- may be with Subhro's help. (async commn related issue with modbus; also limit on packet size); TCS may need some test set-up from us for trying out things.
(c) plans for next discussion session -- Ops Group was to finalise and come back.
==> For now, we can think of ordering a few Miltech PCs and then take a final decision later on. Also can think of populating a few antennas with Rabbit card (with or without PC) for testing purposes.
Follow-up after 2 weeks.

4.2 Identification of appropriate ethernet switches for antenna base (and GAB) -- from 4 Sep, 22 Aug & 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 had been received for CISCO, HP, DELL and D-link -- check status of formal enquiry process (12th Sep was the last date)
(ii) appropriate RFI cabinet for the switch -- work in progress ?
==> may get folder from purchase with quotes by next week. Check after 2 weeks.

4.3 Identification of appropriate eth switch for central building -- from 4 Sep (CPK) : Ops group feels we may need L3 with a high speed 40 Gbps connection to server (over IB). 2 possible models have been identified HP and Cisco (48 port, costing ~ 5 lakhs. To discuss possible follow-up options.
==> getting ready for raising indent; check status after 2 weeks.

4.4 Planning for proper space utilisation for new equipment at antenna base -- from 28 Aug, 31 Jul & 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; check with electrical if isolation transformer can be moved somewhere else in the room; outcome from discussion about electrical consumption (2.6 kVA for new systems, 3.5 to 4 kVA for old + new systems) -- can this be reduced?

==> see email update from JPK : meeting held with RVS -- minutes to be circulated; possible rearrangement of isolation transformer and distribution baro discussed; electrical person (alongwith person from each group) to measure the actual load at antenna base.

5. Back-ends :

5.1 Analog back-end for 8 antennas and beyond -- from 4 Sep, 28 Aug & later (BAK) :
(i) release of new 8 antenna (dual pol) system of final GAB units, with full online control & final set of LPFs at output : cause of failure on 15 Sep to be understood and reported.
==> Cause of failure of 15th Sep was likely related to online control issues (as web-based version was working ok) -- maybe some problem wiht the socket program (JPK/NS to look into it), or with new MCM / online program -- TBC by telemetry group.
(ii) appropriate attenuator settings for Lband, 250-500 and 610 bands to be finalised and released.
==> TBD by next week.
(iii) to agree on follow-up action for spikes in non-filtered o/p when using filtered o/p.
==> tests yet to be done; item is on lower priority till other things are finished; can check again afer 4 weeks.
(iv) 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.
==> no progress on this -- YG to set-up the discussion.

5.2 Power equalisation schemes for new back-ends -- from 4 Sep, 28 Aug & before (SSK/NSR/JPK/BAK): 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 -- update on "waiting for Sisodia to give program that JPK can use..."
==> JPK will be releasing in next few dys.
(ii) option 2 : using correlator self outputs and computing gain corrections : 1st version has been released by NSR + SSK -- to confirm performance and check if any follow-up action is needed; longer-term plans : to move towards a pseudo-ALC mode using this tool.
==> This power equalisation schem is working; a proper SOP has to be prepared by NSR; need a discussion to start work on pseudeo-ALC mode.

5.3 GPU corr status -- from 4 Sep & before (SHR/GSJ/SSK/BAK/DVL) :
updates on following items, pending from last discussion :
(i) release of 4 node, 8 input, 200/250/400 MHz version (SHR/SSK/BAK):
(a) 1.7 s time offset problem to be resolved.
(b) starting problem : often comes up with split behaviour of fringes only for 4 antennas on each FPGA board.
(c) update on code for providing basic beam modes -- waiting for completion of process_psr pipeline; computational load estimate to be provided.
(d) to start testing 400 MHz BW mode -- how best to conduct these tests?
(e) to move data collection to additional host node (needs new IB switch) -- see item (ii)(a) below.
==> (a) cause not yet understood -- more tests are planned.
(b) some further studies need to be done for this
(c) basic beam mode is ready; process_psr code needs to be attached; computational

load needs to be estimated.
(d) no updates
(e) machine connected to the new switch, code to be modified to utilise the same.

(ii) release of 8 node, 16 input, 200/400 MHz version (SHR/SSK/GSJ/BAK)
(a) move to new IB switch to be done so that all 8 nodes + host nodes can be connected (appropriate machines to be identified for the same).
(b) plan for connecting all 8 nodes, with corresponding FPGA boards; which 8 GPUs will be used etc.
(c) analog signal connection : to start with dual polar, 8 input or single polar, 16 input configuration?
==> (a) new IB switch is in place and all 8 nodes (+ 1 host machine) are now shifted to corr room and are in place.
(b) all nodes connected to switch and to driving FPGAs; all have either C2050 or C2075 -- ready for tests.
(c) No updated on this -- tbd next week.

(iii) update on testing K20 card (SHR/SSK) : XGPU code, reshuffle alorithm, new optimisatios from nvidia etc. : to discuss note circulated by SHR; plans for follow-up discusison with nvidia.
==> no progress.
(iv) plans for work on 4 new DELL machines (GSJ/SHR) : stand alone 2 x 10 Gbe I/O + corr tests on the R720 and T620 machines to be done. Fedora17 to be tried? Are the machines in corr room now? Long-term plan for racks to be initiated.
(v) procurement of accessories like network cards, disks, cables etc to be looked into.
==> machines shifted to rack in corr room, Roach + ADC to be installed -- SHR, GJS & Bhonde are working this.

5.4 8 antenna back-end tests and future plans -- from 4 Sep (DVL/YG) :
(i) report of efforts to summarise all the existing tests and results
==> to wait 2-3 days for this.
(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 etc.
==> same as (i) above.
(iii) report on results from Lband test data for imaging of point sources and extended sources (including comparison with GSB) and further plans.
==> basic imaging ok, but there may be some issues as one is seeing different offsets of image positions for GPU system -- may be due to self calibration? TBC.
(iv) plans for further testing with 110 / 200 MHz BW signals at LBand.
==> to take up after results from existing data are summarised.
(v) plans/strategy for tests at 250-500 and also 610.
==> on to-do list.
(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.
==> SOP under preparation; will be released soon.

5.5 SFP testing of final unit -- from 22 Aug, 7 Aug & 24 July or so (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.
==> Vitesss has asked a few queries regarding PCB design and loopback test results -- forwarded to Bhupesh, and waiting for his reply. To follow-up after

2 weeks.

6. Other items :

6.1 Jobs at TIFR -- from 28 Aug (HSK/SKG) : to follow-up on the following :
(i) update on status of our jobs at TIFR -- check status of collecting the pending jobs (how many are remaining?), and finishing in NCRA workshop of jobs already collected.
==> 180 chassis units awaiting response from TIFR for pick-up.

6.2 Coexistence of 50-90 MHz RRI feed with 250-500 CDF on same face of turret -- from 28 Aug and before (HSK) : Mech group to check for possible solutions and report back, after looking at the drawings (awaited from RRI). Follow-up action with RRI required.
==> matter escalated to higher levels in RRI (awaiting a final response from them). Check two weeks later.

6.3 Problem of access to FE boxes with 500-1000 CDF feed -- from 28 Aug & before (HSK) : Update on new solution being designed by Mech group -- test was to be done at antenna.
==> action underway; Mech group will take trial run in dummy area and then at the actual sight before 30th Sep 2013. To be followed-up after 2 weeks.

6.4 Work orders for CSIRO feed with 2 parties -- from 28 Aug & before (HSK/JNC/ANR) :
(i) whether filling operation is over and new lab tests have been done on feed.
==> filling material received, but operation not done yet. Follow-up after 2 weeks.

6.5 Fabrication of 5 spare L-band feeds -- from 28 Aug & before (SSK/HSK) : to check about
(i) faulty unit from Akvira Engg has come back and tested in FE lab?
==> repair work over; waiting to arrange vehicle for shifti.
(ii) latest status of orders on other 2 parties (Physimech -- 10th Sep, Fabromech -- 15th Sep).
==> PhysiMech have delivered the sample feed on 15th Sep; mech group to open, check and hand over to FE team for testing. Fabromech will deliver on 23rd Sep. To follow-up after 2 week.

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