

Minutes of Plan meet of 12 June 2013 (follow-up of some pending topics from different areas) :

1. Documentation related :

1.1 Documentation : follow-up on level 2 (ITR) -- from 29 May & earlier : conversion of older reports : FE has released 250-500 LNA report (ANR); ITR for 250-500 CDF feed is now overdue (HRB). FE team to explore 2 new reports : Test Range (expected by end-June) and Signal Flow Analysis (expected shortly).
==> email update from HRB : has started work on CDF ITR -- needs 2 more weeks; SFA : waiting for last piece of work to be completed; Test Range ok by end June. Follow-up after 2 weeks.

1.2 Documentation : SoP for antenna base work -- from 29 May & 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 (a) feeds (HRB) -- updated version to be released (b) FE boxes (ANR) -- first version should be circulated (c) Common Box (SSK) -- to be done alongwith FE box (d) OF system (PAR) -- 2nd draft should be circulated. FE team to finalise as many of these as possible !
==> email update from HRB : feedback being incorporated, needs 2 weeks; FE waiting for final values of expected power levels to be entered into the doc (maybe ready by next week); and then CBox can be done; OF is also ready -- some confusion about format (with Dongare).

2. FE & OF related :

2.1 Update on RF dump tests for new feeds -- from 29 May (HRB/GSS/SSK/DVL)
(i) new data and results for 130-260, 250-500, 550-900 (HRB/SSK) : further data for 130-260 (2 antennas) & 250-500 (all antennas) has been provided; NK is looking into it; meanwhile, FE group to produce deflection results for these data using the MATLAB code (HRB).
==> NK is working on the data; email response from HRB : latest data was taken with the HP Sp An, whereas the earlier on/off deflection code in matlab was made for R&S Sp An -- some changes may be needed : would be useful to have s'ware that can cater to data from both.
(ii) scheme for (re)calculation of expected values across the broad bands to be finalised (and added to measured curves) -- (SSK and team) : updates from Gaurav Parikh about the calculations and from DVL/YG about providing the Tsky values.
==> Tsky values at 5 MHz step have been given; need to resolve issues related to Tsource, Tlna, Tgnd etc. Follow-up after 2 weeks.

2.2 Tests of 130-260 system on C10 vs other antennas -- from 29 May (NK/HRB) : to follow-up on action items : (i) RF dump data to be taken for 2 antennas for analysis by FE group and NK (iii) interferometric tests to be done on 2 antenna system by NK.
==> C10 and W01 working ok; raw dump data taken (see 2.1 above); interferometric tests yet to be done by ANR. Follow-up after 2 weeks.

2.3 Mass production of 250-500 feeds -- from 29 May (HSK/HRB/SSK) : Production

and delivery status (for in-house and out-sourced) :

(i) check current stock with FE for # of dipoles and cavities

=> 2 new cones and 5 dipoles have come; 12th feed being installed today (E06).

After that, FE will have 1 cavity and 3 dipoles left.

(ii) ongoing mass production : sample unit from Physimech; updates on in-house production.

=> email update from HSK : Physimech has requested extension till 31st July !

in house production : 2 more cavities will be delivered by 17th June.

To take stock of the situation after 2 weeks.

2.4 Coexistence of 50-90 MHz RRI feed with 250-500 CDF on same face of turret -- from 29 & 15 May (HSK) : Mech group to check for possible solutions and report back, after looking at the drawings (awaited from RRI).

=> email update from HSK : no progress -- still waitings for drawings from RRI.

To check after 2 weeks.

2.5 Problem of access to FE boxes with 500-1000 CDF feed -- from 29 & 15 May (HSK) : Update on new solution being designed by Mech group.

=> email update from HSK : work in progress. To check after 2 weeks.

2.6 Work orders for CSIRO feed with 2 parties -- from 29 May & before (HSK/JNC/ANR) :

(i) check if sample feed from both vendors now available;

=> email update from HSK : 2nd one not delivered yet -- expected 18th June.

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

=> email update from HSK : not done yet.

To check after 2 weeks.

2.7 Status of improved 500-1000 MHz CDF -- from 29 May & earlier (HRB/GSS/SSK) :

(i) follow-up on immediate action items (#s 1 to 3) from 20 Mar discussions :

1. repeat the deflection tests for ver2 with a rigid stool design

2. to share the results of deflections wrt other antennas with old 610 system

3. finer adjustment of focus distance for ver2

=> rigid stool design has been given to w'shop for fabrication; most old 610 antennas give ~ 10 dB on CasA (against 11.1 dB expected); CDF gave best deflection of 9.5 dB with 1470 mm stool (with pntg offsets?), and 8.5 dB with 1270 mm stool.

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

4. status of tests with newly delivered ver2 solid cone

5. try ver2 dipole in ver1 cavity and verify that results don't degrade?

6. try new polariser + LNA in old feed : what will we learn? (are there enough components?) -- update on getting new face plate etc ready.

=> solid cone needed some fine tuning and is now getting ready for test on C10 antenna in next couple of days -- can be at default stool height or at 1470 mm height (without much difficulty); plate for item 6 is not yet ready -- to be done in Pune workshop.

(iii) comparison of measured parameters with simulations : follow-up on interaction with Yogesh Karandikar -- update on items from 20 Mar and 30 & 16 Jan meetings :

7. try more complicated / different dipole geometry in the standard cavity to see if another solution gives same or better RL performance?

8. simulation with denser mesh (higher order of basis functions)? to contact WiPLD experts for help and advice (in addition to Karandikar).

=> email update from HRB : working to get some feedback from WiPLD experts.

To follow-up on all the above after 2 weeks.

2.8 Follow-up on delivery of 550-900 MHz filters -- from 29 May & before (ANR/SSK) : status of delivery and in-house testing of prototype meeting full specs.

==> email update from ANR : will come by 28th June, alongwith visit of engineer.

Status check after 2 weeks.

2.9 Fabrication of 5 spare L-band feeds -- from 29 May & before (SSK/HSK) : to check if (i) 1st unit from Akvira Engg is now in FE lab and what is being done with it (ii) status of orders on other 2 parties (Physimech, Fabromech).

==> Significant errors and defects found in the Akvira Engg product and it needs to be sent back for corrections. To follow-up after 2 weeks.

2.10 Finalisation of design for total power detector for FE boxes -- from 29 May and earlier (ANR/SSK) : (i) final test results from prototype unit with 250-500 system in lab (ii) finalisation of amplifier scheme (iii) plan for population of 25 (?) units in hand (iv) plans for procurement for full mass production (v) plans for final ITR report on the design.

==> long discussion on the matter : current design (with Galli or Sirenza) may be ok for CB o/p, but probably not enough gain for FE o/p (not sure about further variation with wave-band selected); agreed to test the system for FE compatibility by doing distributed chain : coupler + 2 amplifiers (from OFC system) + detector unit (from AB group) and then test for 250-500 and L-band RF output and report back. GP to discuss the matter with FE team. To follow-up and cement the matter after 2 weeks.

2.11 FE power supplies at all antennas -- from 29 May (SSK/ANR) : about 20 antennas are having 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; FE team to produce a status doc on this and then to initiate action to take care of short term and long term requirements.

==> email update from ANR : list of antennas has been circulated -- total of 12 antennas share ABR supply : C00,C01,C02,C08,C09,C10,C12, E02, W03,W06, S02,S04; to follow up on long-term action for correcting this matter.

Follow-up after 2 weeks.

2.12 Characterisation of new FE+OF systems -- from 29 May & before (PAR/SSK) :

(i) status check on how many antennas with broadband links are giving reliable signal level performance : to discuss implications of recent status update circulated by FE team.

==> new results discussed in detail -- plus points are that 6 antennas now show matching power levels in both channels; main issue is about the higher power level being delivered now, compared to what is expected by GAB -- FE team to double check the numbers (at least for one sample antenna); to check with GAB to see how much power can they handle. To try and follow-up next week itself.

2.13 Calibration scheme with radiator at apex of antenna -- from 29 & 22 May (SSK/PAR/SRoy/DO/YG): to check if the following tests have been completed (from 20 Mar) and report is available :

(i) control expt with two RF cables used in loop-back fashion (at o/p of common box).

(ii) azimuth expt with back and forth movement and also with the loop;

(iii) temp performance of 40 m length of cable in env chamber.

Following detailed discussion of preliminary but very interesting results from 22 May, waiting for an updated and polished release of the results to all the interested members.

==> PAR to try and put out a first version of the report that can be shared with all, asap. To follow-up next week.

3. RFI related matters :

3.1 Follow-up on UPS RFI -- from 15 May & earlier (SSK/PAR/RVS) :

(i) procurement of 3 kVA unit from Miltech (RVS) -- to confirm if indent has been placed, after clearing the doubts about RFI specifications.

(ii) follow-up from RFI testing of Consul unit -- indent for 2 new units; sharing the RFI report with Consul etc (RVS/PAR).

==> confirmed that indent for 3 kVA unit from Miltech has been placed, as well as indent for 2 new units with Consul. To follow-up after one month now.

3.2 RFI testing of Miltech PC -- from 29 May, 25 Apr & earlier (pending for long!) (PAR/SSK):

update on testing new Miltech PC alone (and later with peripherals using new shielded ports, connectors, cables + Rabbit card), as per discussions of 29 May.

==> to take i7 PC and test shortly; follow-up after 2 weeks.

3.3 RFI tests of ethernet switches for antenna base -- from 29 May & earlier (SN/BAK/SSK): update on testing one available switch for RFI (as per 29 May discussion); (later : tests on integrated system with OF transceiver + switch + Miltech PC + MCM cards using shielded RJ45 connectors and CAT6 cables)

==> first test done with one switch -- to show results later; agreed to try a few other switches available in-house; try for putting switch inside box rather than take out the PCB; to start work on in-house design of box after testing a few switch units. Follow-up after one month.

3.4 Radiation from CAT5 cable -- from 29 May & earlier (SSK/PAR): Follow-up on action from 3 Apr discussions : to install shielded CAT6 cable in conference room as trial and finalise the scheme for all other public places in the building -- to check if quotes received and order placed.

==> to raise the foreign indent for direct import of the CAT5 cable. Check status after 2 weeks.

4. Operations :

4.1 New Miltec PCs -- from 29 May (CPK/JPK/SN) : update on giving one PC for RFI testing; installing software on second PC and then testing by connecting various peripherals like rabbit card,eth output to optical transceiver to short patch of fibre to optical back to copper and connect a laptop or 2nd Miltech PC etc.

==> this is going ok; can be taken up 2 weeks later, alongwith RFI report.

4.2 Identification of appropriate ethernet switches for antenna base -- from 29 May (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; to look into appropriate RFI cabinet for the switch.

==> few network switches from various companies have been identified and 2 units from Dlink of 16 + 4 and 24 + 4; do the same for other companies and then make a purchase and give for testing RFI. Follow-up after one month.

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

from 29 May (SN/CPK) : placement of eth switch in the rack; longer-term plans for proper utilisation of the space. Ops group to come up with a proposal.
==> work in progress; can be taken up 2 weeks later.

4.4 Mass production of shielded box for MCM cards -- from 29 May (CPK/PAR/SN/HSK):

(i) Check if report on RFI testing of Akvira and Physimech units is released and can we finalise the choice with Akvira?

(ii) How to plan for the mass production?

(iii) Ops group and RFI group were to sit together and discuss how to solve the problem of adapting to different size / pin count of RFI shielded connectors.

==> no major update here; CPK to check with PAR for both items; check 2 weeks later.

4.5 Development of M&C software -- from 29 May & before (JPK/RU/SN/NGK/YW) :

(i) update on HRS & SRS work with TCS (JPK/SN) -- plans for review of HRS report from TCS to be reported -- URGENT !

==> JPK has given a response; reminder to all stake-holders to look at and respond. Can check status again next week.

5. Back-ends :

5.1 Identification of appropriate ethernet switches for receiver room usage -- from 29 May and earlier (SN/PAR/BAK) : To see if the note about the plans for network wiring and switch choice and location can be discussed.

==> brief discussion about n/w plan : 3 options outlined, may select the one which has distributed switch configuration with 8-16 port switch in each rack + one main distribution switch. Choice of switches still needs some work. Follow-up after one month.

5.2 Power equalisation schemes for new back-ends -- from 29 May (SKS/NSR/BAK):

(i) option 1 : using detectors in GAB and local feedback loop -- status update on completion of monitoring set-up, start of work on the code etc.

(ii) option 2 : using correlator self outputs and computing gain corrections : status update on scheme being implemented by SKS and NSR.

==> work ongoing in both cases, no firm update; to follow-up after 2 weeks.

5.3 Support for 250-500 MHz in 8 antenna analog back-end -- from 05 June (NDS/BAK) : requires LO scheme going below the current 600 MHz; option for using sig gen + ampl + power splitters was discussed in 22 May meeting : to update status of this work.

==> work is in progress; should be possible for use in 1 to 2 weeks; status check after 2 weeks.

5.4 GPU corr status -- from 5 June & 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) root cause of time offset problem to be understood (SHR) (b) updates on 32 MHz imaging (DVL) (c) plans for 110 MHz imaging (DVL) (d) incorporation of beam modes in the basic code (SSK/YG) (e) to confirm plans for providing LO < RF support (SHR/SSK/BAK).

==> no updates on (a); no fresh updates on (b) and (c); work on (d) has started; work on (e) is in progress (see item 5.3); check next week.

(ii) update on testing K20 card (SHR/SSK) : report on latest discussions with

nvidia and plans for follow-up action.

==> improvement with code changes by Pradeep has reached ~ 15%; needs a fresh look at the code for further improvements -- this exercise is ongoing; check after 2 weeks.

(iii) plans for purchase of couple of host machines : (a) status of ordering of sample units (GSJ/SHR) (b) plans for tests using 2 R720 nodes available with comp group at GMRT (also Centos vs other OS?).

==> no updates on (a); for (b), some discussion about using 2 m/cs for i/o related tests -- to confirm by next week.

(iv) status and plans about configuration of 8 node cluster : to clarify present status of configuration and usage of the other 4 machines (SHR/BAK).

==> spare nodes are being used for some tests.

(v) update on purchase of bigger IB switch (GSJ/BAK).

==> work in progress, need to expedite this.

Follow-up suitably next week or the week after.

5.5 Final online control for GPU corr -- from 29 May (SSK/JPK/NR/DVL) :

(i) update on full GUI compatibility : update on sideband flag support and about settings for max number of channels allowed.

==> to check the exact status and features available at present by next week.

(ii) 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.

==> present versions does loading of FPGA code; to look into control of peripherals like sig gens etc.

Follow-up after 2 weeks.

5.6 8 antenna back-end plans for further astronomical tests -- from 5 Jun

(DVL/YG) : DVL had sent a detailed summary last week; need to follow-up on appropriate items from there : closure in producing images of extended sources from available 32 MHz data; getting test data with 110 MHz BW settings to be tried ASAP.

==> no fresh updates here; YG to follow-up with DVL next week.

6. Other items :

6.1 Jobs at TIFR -- from 29 May (HSK/SKG) : to follow-up on the following :

(i) update on status of our jobs at TIFR -- check if 120 items have been "fixed" + status of 180 pending jobs.

==> email update from HSK : 120 items done and can be collected from TIFR; 180 pending will be taken up when machine is free.

(ii) requirements from different groups : FE still had a few pending items like boxes etc -- is this done now?

==> FE group has given chassis requirement for 300 nos; work on specifying the requirement of boxes is ongoing.

(iii) follow-up on split of jobs between in-house, out-sourcing and TIFR -- have we started giving jobs to Akvira (many cases of "waiting for chassis to come")

==> 100 nos chassis of BE group done by Akvira -- worked ok; more to follow. Status check after 2 weeks.

6.2 System Release : Plans for integrated testing and release of 2-RF band (250 and L-band), 8-antenna system : Check list :

(1) Final list of 12 (14) antennas with broadband links --

List is as follows : ???

- (2) To check and confirm performance of OF link for these 12 antennas : need a status update if all antennas done with final version of OF system.
- (3) To check L-band performance for these 12 antennas : proper power levels and band shapes for (a) full band and (b) each 110 MHz sub-band : need a status update with plots / numbers etc. THIS IS URGENT and NEEDS REGULAR FOLLOW-UP.
- (4) To check schedule for 250-500 MHz feeds for at least 10 of the above 12 antennas -- 10 were done last time; need RF dump data and analysis results.
- (5) To check schedule for 250-500 MHz FE box (may not be the final version) for same set of 10 antennas as in item (4) above -- 7 were done by 29th May. Need detailed discussion about problems of stability, failure etc.
- (6) To check schedule for new common box (may not be the final version) for same set of 10 antennas as in item (4) above -- 5 were done by 1st May. Need status update on problems of failure and switch to Sirenza based system.
- (7) To check status and performance of 12-antenna broadband analog back-end system. Need to look into LO scheme for handling 250-500 MHz signals ! Also, plans for LPFs etc.
- (8) To plan for 8 antenna back-end to be released in few useful modes :
 - (a) 100/110 MHz BW mode (b) 200/250 MHz BW mode (c) 400 MHz BW mode (d) basic beamformer mode (?) -- need a more detailed discussion on these aspects. Some aspects need discussion and follow-up.
- (9) To check against the target date of mid to end July, which items may be falling behind the schedule. Also plans for a date for final release to be fixed.

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Minutes of Plan meet of 19 June 2013 (follow-up of some pending topics from different areas) :

1. Documentation related :

1.1 Detailed design doc -- pending for long : from 5 June & 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.

==> no progress -- FE team says too busy; how to handle this matter !?! To check after one month. analog BE system : Hande is doing the collection of the information after which the doc will be written; follow-up all after 1 month.

2. FE & OF related :

2.1 Update on results from test range -- from 5 June & before (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 update on results from HRB.

==> no updates on this.

(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.

==> STP student has started working with GSS on the project -- can expect some results by mid-July; to check after 4 weeks.

(iii) status of phase centre checking for ver1 550-900 CDF and CSIRO feeds -- was waiting for VVM to be available.

==> VVM set-up now ready; measurements will be done by next week. To check after 2 weeks.

2.2 New LNA for 130-260 system -- from 22 May & before (VBB/SSK) : (i) FE team to confirm earlier test results on variation of gain and Tsys with temperature -- to discuss next step possible for further testing (also check with Sirothia for inputs on the matter).

==> to do some tests with different length of cables in env chamber to understand effect of cable.

(ii) discussion about how this can be fitted into the real system to be put on the antennas.

==> to try and finalise the scheme and put on one 130-260 FE box with both temp monitors -- one for LNA and one for the box environment (see item 2.7 below). To follow-up after 3-4 weeks.

2.3 Mass production of 250-500 FE system -- from 5 June & before (ANR/SSK) :

(i) status of testing and installation of new feeds : to check if we are doing OK with the desired target; if 12 ants are completed, is there a sensitivity plot for all; can we take a break in installation of this feed.

==> to match with good L-band antennas W4 may need 250-500 system -- this can be swapped from one of the 12 antennas, or this can become 13th antenna. Other

issue is about test results from these installations -- whether are giving the expected sensitivity or not.

(ii) status of testing and installation of FE boxes : to check status of number of boxes installed and stability of performance.

==> email update from ANR : 8 nos have been done. 9th unit will go up on E06 shortly; matching is still bit of a problem -- trial and error.

(iii) status of testing and installation of modified Common Boxes : to check if new units with Sirenza amplifier have completed testing in the lab, and are ready for installation on antennas -- IMPORTANT !

==> does not appear to be ready... as other option with Hitite devices (HMC 740) is being explored (without any discussion in the Plan meeting forum !) -- VVB + SSK to explain the change of track ! Follow-up in the next meeting.

(iv) status of lower priority items : notch filter at 540, dir coupler, power splitter for noise, noise src, additional supply for new post ampl, temp monitor and power monitor, chassis, RFCM card, phase switch + opamp...

==> new design PCB sent for 540 filter; phase switch testing being done by Sougata; RFCM new cards not wired -- only repairing old cards; power splitter : 100 nos done and chassis being done; power monitoring : effort ongoing. To check status of all after 2 weeks.

2.4 Signal flow analysis related items -- from 5 June and before (GP/ANR/SSK)

(i) new version of L-band analysis to be released : check if last job of results from measurements at antenna base (W04) is done and report updated and ready for release?

==> spot measurements taken and gain varn over band done; to be put in the doc and released shortly.

(ii) additional scheme of 10 dB attn + 20 dB ampl : (a) signal flow analysis to be updated to include this (b) update on how many antennas now have this scheme.

==> this is in the OF section -- needs to be moved there; and then both have to connect to give the final result.

(iii) plans for trying analysis of 250-500 system; also generating a first cut block diagram of the 250-500 MHz receiver : to check if (a) analysis has started

(b) missing items (like temp monitor) added to blk diagram (c) list of parts, items to be ordered, jobs to be done for making new version FE box is ready. Any progress on any of these?

==> not started yet; may take couple of weeks to get there.

Follow-up after 2 weeks; introduce SFA for OF system also.

2.5 Directional coupler for 250-500 FE system -- from 5 June & before (ANR/SSK) :

follow-up on (i) status of testing prototype model made from old system

==> email update from ANR : cut piece from old sysem inserted in chassis got from w'shop and tested : max insertion loss found be 0.09 dB at 500 MHz -- to discuss detailed comparison with expected values (and other options) and try to conclude on the matter.

(ii) status of new PCBs that were ordered.

==> PCBs ready, waiting for delivery.

To follow-up after 2 weeks.

2.6 Filters at different stages of receiver chain -- from 5 June & before (SSK) :

(i) scheme for filters at antenna base : schematic of present scheme, and status of the development of the prototype.

==> PCB has been sent for manufacture; prototype will have all features assembled; will test in lab and then try at antenna base (problem of insertion loss and control logic)

(ii) to follow-up on refinements of the scheme for each FE box -- draft document showing these was to have been circulated by now.

Draft document with the above to be circulated in time for a discussion.

Waiting for updates for several weeks now !

==> SSK to recirculate the basic diagrams showing the filter configurations.

Follow-up after 2 weeks to check status.

2.7 Finalisation of design for temperature detectors for FE system -- from 5 June and before (SSK/VBB) : to discuss the outcomes from the recent tests & comparison work done by VBB to see if final scheme can be agreed upon.

==> One device is chip type : more suitable for mounting near the LNA and can be finalised for that; for the FE or CB box environment, can use the LM device right now, as ckts are ready for this -- will give 2 deg resolution with present MCM system (and 0.5 deg with new MCM system?). Agreed that all new FE and CB systems will go up with this temperature monitor for box installed and connected to MCM system and monitoring in control room to be enabled with help of telemetry and ops group.

Follow-up of status after 2 weeks.

2.8 Spares for L-band FE electronics -- from 5 June & before (ANR/SSK) : (check which of these items are complete and can be closed)

(i) RFCM-type card status : new design / PCB -- current status of cards (old + new).

==> 4-5 nos recovered from old failed cards; new cards waiting to be populated (shortage of manpower)

(ii) LNA tuning results and generation of spares : update from Gopi's work : to report about possible vendors for toroids and gold-plated Cu wires.

==> still waiting for toroids; meanwhile an alternate design with MMIC device is being looked at -- PCB may go for manufacture by end of the month.

(iii) filters : update about chassis from w'shop and ordering of connectors.

==> no update available.

(iv) noise gen : has to be assembled.

==> chassis from workshop awaited; PCB and device are ready.

(v) post-ampl and phase switch also need to be checked : to update about PCB and chassis (from w'shop) and status of integration work.

==> no new update on above status.

(vi) timescale for integration? : when can it start?

==> to wait for some more time.

(vii) need a detailed discussion to look at the progress and plans for getting the required spares, as progress has been slow (see MoM of 17 Apr for example).

==> progress continues to be slow whereas the situation in the field vis-a-vis the number of working L-band systems is becoming alarming. Needs close monitoring and follow-up ! To check after 2 weeks.

2.9 Calibration scheme with radiator at apex of antenna -- from 12 June & before (SSK/PAR/SRoy/DO/YG): to check if the following tests have been completed (from 20 Mar) and report is available :

(i) control expt with two RF cables used in loop-back fashion (at o/p of common box).

(ii) azimuth expt with back and forth movement and also with the loop;

(iii) temp performance of 40 m length of cable in env chamber.

Following detailed discussion of preliminary but very interesting results from 22 May, waiting for an updated and polished release of the results to all the interested members. Still waiting for the release of the data + results doc !

==> SSK needs one more week to polish the results and send out. To follow-up next meeting !

2.10 Characterisation of new OF systems -- from 12 June & before (PAR/SSK) :

follow-up from recent discussions to check on the following :

(i) results have been cross-checked on at least one antenna ?

==> weekly checks are being done and nos can be compared.

(ii) can analog BE handle the higher power levels that are coming in (for now) ?

==> to discuss (see item 5.x below)

(iii) is the 10 dB extra gain stage really needed ?

==> may be a good idea to keep it for now, as it will help to compensate loss of future things to be added such as filter bank at antenna base etc.

(iv) has performance across full band been characterised (including plot of full BW response) ?

==> agreed to give 400 MHz results also, as well as plots across full band

(v) is there a significant slope across the band : compare with expected and see what can be done about it) ?

==> to check after plots are available

(vi) any further antennas have been checked and added to the list of 6 ?

==> 2 antennas identified : E2 nd W4 (latter will need 250-500 also).

(vii) can users like DVL start running with L-band signals from 6-8 antennas to check bandshapes and correlations using the GPU back-end ?

==> to take up in the afternoon (see item 5.x below)

Some of the items need urgent follow-up in next meeting.

2.11 OF systems -- from 5 June and before (SSK/PAR) :

Follow-up on antennas where the next systems are being installed -- C13 completed? Next antenna started?

==> C13 not done yet; planning two more; meanwhile E6 has been updated to new system. Hence, one more antenna possible after C13.

To check after one month.

2.12 M&C for new FE systems with new MCM cards -- from 5 June (SSK/PAR/CPK/SN) :

The scheme for control of new FE systems with old / new MCM cards needs to be taken up for discussion and plans made accordingly. To follow-up on action items from meeting of 6th June.

==> some action items are underway and can be taken up for detailed discussion next week... to align with the minutes and check status after 2 weeks.

3. RFI related matters :

3.2 Mobile phone RFI -- from 5 June and earlier (SSK/PAR) :

to check (i) if more units of the particular phone can be / have been purchased

==> 3 phones now available (may not be exactly same model!); 1 has software loaded; cable for loading the software has been purchased. To check again after 2 weeks to see if 3 phones with software are available -- item can be closed then.

(ii) progress on identifying the operators at and around E06, and in Nagar, Junnar directions (follow-up with sending letters to BSNL etc).

==> draft of letter is still pending. To follow-up after 2 weeks.

3.3 Discussion relating to Industrial RFI survey -- from 5 June (PAR/SSK) :

revised docs (from 2009 and 2012 discussions) have been circulated by RFI group and were discussed in 5 June meeting; need to identify action to be taken.

==> is the document too exhaustive; to try and pick only relevant items from the document for follow-up? To have a smaller discussion separately? YG to

discuss with team and appropriate action to be planned. Follow-up after 3-4 weeks.

4. Operations :

4.1 Mass production of Rabbit MCM cards -- from 22 May, 25 Apr & before (CPK/SN) :

(i) status of testing of cards to be updated.

==> 40 cards tested, which is a bit less than expected, given that it was 32 on 22nd May.

(ii) follow-up on decision for procuring 80 more cards (follow-up from 20 Mar by YG and CPK)

==> needs a follow-up between YG and CPK and others...

Follow-up after one month.

4.2 Development of M&C software -- from 22 May & before (JPK/RU/SN/NGK/YW) :

(i) update on in-house development efforts (RU/SN)

==> interface with DAS has been done and can test with correlator at some time; baseband control in stand-alone mode has been checked; need to check with new system; simulator for multiple antennas has been tried out in the lab.

(ii) update on HRS & SRS work with TCS (JPK/SN) -- plans for review of HRS report from TCS to be reported -- URGENT !

==> HRS ver 0.7 released and review comments have been sent; 0.8 ver has been released; SJ has given his comments and inputs; some more follow-up is required from the stake-holders.

Matter of making space in the ABR is important. Being coordinated by SN but needs more input from others..

(iii) plans to organise larger discussions regarding major decision items (all)

-- follow-up from last meeting : to organise next meetings to look at (a) hardware interface issues (b) M&C of new FE systems

==> meeting for (b) has been held; to summarise the minutes from this and put follow-up action items in Plan meeting.

Follow-up on (i) after 4 weeks; on (ii) after 2 weeks; on (iii) after 2 weeks.

4.3 Using new MCM card on ethernet of PC for upgraded analog backend -- from 22 May (JPK/NS/CPK/BAK) :

(i) completion of s'ware (by NMS) for all commands & tests in receiver room -- to check compatibility with web-based version + SoP to be released.

==> MCM debug software for setting various parameters was released earlier -- web based version; now shifting to new version which is working from online side also and SOP has been released. Web based version can be added back (it is useful for the BE team) and Ops group feels it can be done in 2 weeks. Also, to check if SoP has been released. Follow-up after 2 weeks.

4.4 Monitoring of 3-phase power at each antenna -- from 25 Apr (SN/RVS) : Ops group to report on tests done at antenna base. Results from testing at C8 antenna to be reported.

==> no update on this matter. To check after 2 weeks.

5. Back-ends :

5.1 Analog back-end for 8 antennas -- from 5 June & before (BAK) : SOP for restored 8 ant system has been released; update on status of online control.

==> pending for completion; Atul + Nanaware to do this. To check after 2 week.

5.2 Support for 250-500 MHz in 8 antenna analog back-end -- from 5 & 12 June (NDS/BAK) : requires LO scheme going below the current 600 MHz; option for using sig gen + ampl + power splitters was discussed in 22 May meeting : to update status of this work.

==> cabling is done to feed common signal to each antenna; control of the switch to go from one mode to the other needs some more wiring work to be done -- internal to PIU and also between the main control unit to the PIUs; may take up to 2 weeks. To check status after 2 weeks.

5.3 Analog back-end beyond 8 antennas -- from 5 June and before (BAK) :

(i) status of implementation of new layout : drawing was to be circulated by Hande; to check status of low loss cable wiring.

==> main conversion and LO unit is available; pending is MCM PIU relating cabling; low loss cabling for upto 16 is done;

(ii) plans to expand from 8 to 12 antenna system by July release date -- check if we are on track for this.

==> see above.

(iii) filter bank choices in the system : to check status of PCBs and fabrication of units; to initiate discussion about installation of RF filters on input side (need a joint discussion with FE group about using FE BPFs on input side of analog BE system).

==> first set of PCBs have come (enough for 8 antennas, 200 MHz filter) -- to check with HSK about chassis. Still need to resolve the problem of input RF filters -- YG to set-up up 3 way discussion with FE and BE teams on this matter. Follow-up after one month.

5.4 GPU corr status -- from 12 June & 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) root cause of time offset problem to be understood (SHR) (b) updates on 32 MHz imaging (DVL) (c) plans for 110 MHz imaging (DVL) (d) incorporation of beam modes in the basic code (SSK/YG) (e) to confirm plans for providing LO < RF support (SHR/SSK/BAK).

==> (a) no update (b) to resend earlier images to see where we are (c) first round of tests ongoing (d) i/o requirement may need two machines, one for IA and one for PA, code development to be discussed next week; (e) SKS was to discuss with NSR about adding the feature -- to be confirmed.

(ii) update on testing K20 card (SHR/SSK) : report on latest discussions with nvidia and plans for follow-up action.

==> SHR looking at XGPU code and also planning for the reshuffling of the data.

(iii) plans for purchase of couple of host machines : (a) status of ordering of sample units (GSJ/SHR) (b) plans for tests using 2 R720 nodes available with comp group at GMRT (also Centos vs other OS?).

==> (a) only 1 unit each being ordered now! to check for repeat order possibility (b) can go ahead with this plan for testing i/o performance and fine tuning.

(iv) status and plans about configuration of 8 node cluster : to clarify present status of configuration and usage of the other 4 machines (SHR/BAK) -- can we get two K20 cards on these machines?

==> to follow-up with Pradeep for 2nd K20.

(v) update on purchase of bigger IB switch (GSJ/BAK).

==> folder ready for order.

5.5 Packetised corr, new modes -- from 5 June & earlier (SCC/BAK/DVL) :

(i) updates on antenna tests of 2K and 4K pt FFTs (with full delay) -- imaging of test data to be confirmed -- first order imaging done by DVL; detailed results awaited.

(ii) 10 Gbe link in pkt design (to allow integration with GPU design) -- repeat tests (with GPU corr also running in parallel) to verify performance, and imaging of test data to be done -- data had been taken; to confirm status of analysis.

==> imaging exercise still ongoing; direct dump of data in tax format now done by SCC. Follow-up after one month ?

5.6 8 antenna back-end plans for further astronomical tests -- from 5 Jun

(DVL/YG) : DVL had sent a detailed summary last week; need to follow-up on appropriate items from there : closure in producing images of extended sources from available 32 MHz data; getting test data with 110 MHz BW settings to be tried ASAP.

==> no direct updates on this.

5.7 Next-gen time & frequency standards -- from 25 Apr (NDS/BAK) :

(i) completion of tests at GMRT and summary of the same by NDS -- to check about response from NPL.

(ii) plans for visit to NPL -- is this clearer now?

(iii) look into OCXOs from Oscilloquartz -- to be taken up during visit to NPL

(iv) visit of Symmetricom and follow-up from the same.

==> visit by Symmetricom tomorrow; to try and get RVS etc. to be part of the discussion; follow-up after 2 weeks.

5.8 Power and cooling requirements for projected back-end systems -- pending

from 22 May, 25 & 10 Apr, 20 & 6 Mar, 9 Jan & earlier (BAK/RVS/YG) : short meeting took place between BAK, RVS, YG. To summarise action items from the same and follow-up on action on those.

==> follow-up action? To check for clearer picture after 2 weeks !

6. Other items :

Nothing here this week !

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