Question 13
The requirement states that 'the system shall be capable of generating and receiving arbitrary waveforms over the frequency range 500KHz to 25MHz and be capable of recording and displaying the received data as range versus frequency'. Does this requirement mean that the hardware must be capable of performing these functions with customer supplied software, or is this software required to be supplied with the equipment as part of your solicitation?

Answer:
The system should be supplied with software to perform these functions, including display for at least one standard ionosonde waveform. The system shall be capable of accepting, generating, receiving and recording arbitrary waveforms.

Question 14
Does the transmitter need to be relocatable, or is only the receive equipment to be moved when changing between mono-static and bi-static operation?

Answer:
See Amendment 1 as the Specifications have been revised.

Question 15
Are the Tx and Rx systems to be operated in a ground benign environment? If not what are the environmental limits to be used?

Answer:
Yes.

Question 16
Over what period is data collection required? Is the data to be downloaded via the network connection or via removable disks?

Answer:
The system should have at least a 500GByte storage capacity. Data should be accessible by network using a standard secure network protocol (I.e. sftp, ssh)

Question 17
What frequency change rate is required for the frequency agility? This is required to ensure that switching and filters can be achieved within the specified period.

Answer:
1msec.

Question 18
Other than calibration data, are there any other requirements for system self diagnostics reporting or remote diagnostics interrogation?

Answer:
No additional requirements.

Question 19
When is the Calibration of the RX system and associated data required to be performed? i.e. Periodically (e.g. hourly), coincident with the sounder run, before each sounder run or on the basis of another control mechanism?

Answer:
Upon user command.

Question 20
Please clarify if the 4 cross polarised antennae are intended to cover the band 500kHz to 25MHz as a set, i.e. each antenna covering a portion of the band or is each antennae required to cover the band 500kHz to 25MHz?

Answer:
Each antenna covers the entire 500kHz to 25MHz resulting in 8 receive channels.

Question 21
What are the expectations in regards to Aeolian noise performance of these antennae?

Answer:
The receive system should operate in 10 knots without degradation of sideband phase noise specification.

Question 22
What are the environmental limits for the receive antennas? – VSWR, couple power , the maximum wind is of particular importance.

Answer:
The receive system should withstand a 0dBm input. This may be achieved through system attenuation. Maximum wind without damage should be in excess of 30 knots.

Question 23
What range of ground types will the receive antennas be expected to be mounted on? For example, antennas mounting and earthing structures may need to be varied depending on whether the expected surfaces are earth, rock or both, is an earth mat/counterpoise to be supplied with the antenna.

Answer:
Assume a ground type of soft earth. No mat/counterpoise is required.

Question 24
What would be the minimum separation between the transmit antenna and the receive antennas when operated in monostatic mode?

Answer:
Separation shall be sufficient such that self-protection is not required.

Question 25
If the antenna is required to cover 500KHz -25MHz, what is the preferred frequency characteristics of the RX antennae?

Answer:
The overall design should nominally yield atmospheric noise limited performance for rural settings at mid latitude based on the International Radio Consultative Committee (CCIR) measurements. The antenna gain, efficiency and receiver sensitivity should be sufficient for this goal.

Question 26
Frequency Accuracy. Please clarify should the frequency accuracy be $\pm 1 \times 10^{8}$ or $\pm 1 \times 10^{-8}$

Answer:
See Amendment 1 as the Specifications have been revised.

Question 27
What frequency is the phase noise measured at, we have assumed you are using the clock frequency of 80MHz.

Answer:
Correct, higher clock frequencies may be scaled appropriately.

Question 28
The exciter is required to provided two output channels, but the system only has a single channel pulsed output amplifier. Is the second channel just required to be brought out to a patch panel and terminated, or is it used within the system for some other purpose?

Answer:
Patch panel termination is acceptable.

Question 29
The required RF frequency range is stated to be 500 kHz to 30 MHz with a pulse bandwidth up to 100 kHz. Is the lowest output frequency 500 kHz or 450 kHz (taking pulse bandwidth into consideration)?

Answer:
The exciter should be capable of accepting commands, and digitally producing a modulated waveform with center frequency of 500kHz to 25MHz. Total system bandwidth (to include filters, transmitter etc.) is 500kHz to 25MHz including modulation.

Question 30
RF Frequency is given as both 500Khz to 30MHz and 500KHz to 25MHz. Can you please clarify which is the required specification?

Answer:
See Amendment 2 as the Specifications have been revised.

Question 31
Do the two arbitrary exciter channels need to be capable of phase coherent operation? If so, what phase matching is required?

Answer:
Yes. ±5 degrees.

Question 32
Is calibration and calibration data required for the transmit chain?

Answer:
No.

Question 33
Please indicate what the TX antenna return loss characteristics are so that an assessment of the Power Amplifier performance in an operational mode can be determined.

Answer:
The TX antenna VSWR shall not exceed 3:1. Performance assessments may be made assuming a better than 2:1 VSWR.

Question 34
It is assumed that the supply of the TX antenna is excluded from the solicitation, however, can you please supply an indication of the TX antenna arrangement / configuration?

Answer:
The TX antenna is not part of this solicitation. The system will be used at varying field sites. A Delta or Rhombic antenna typical of previous ionosonde systems would be a good indication of the arrangement that might be utilized.

Question 35
We have assumed the TX gain flatness is ± dB at -10dB max means testing at 10dB below maximum amplifier power output, ie 300W output, is this a correct assumption

Answer:
Yes, correct.

Question 36
Please supply more detail of the commercial warranty requirements, namely on site support or return to supplier/manufacturer?

Answer:
See Amendment 2 as the Specifications have been revised.