Request for comments of stakeholders/OEM/Firms on proposed QRs (Quality Requirement) & TDs (Trial Directives) of **Static HF Transceiver** to this Hqr before 30.03.2017 as per following mode:

1. Email-id	comncell@crpf.gov.in
2. Fax	011-2436660
3. By Hand/Post	Room No.304, 3rd Floor, Block No-1 Directorate General, CRPF Lodhi Road New Delhi-03

Proposed QRs of Static HF Transceiver

1.1 General Specification

General		Comments
1.Frequency Range	2.0 MHz to 29.9999 MHz with 100 channel spacing and 10 Hz resolution.	
2. Modes	SSB(J3E) USB, LSB, AM/AM(E),CW/MCW,AFSK	
3.Preset	200 Channels or more	
4. Frequency Stability	± 1 PPM or better	
5. Built-in-test	Front panel testing.	
6. Input Power	+ 12 V DC Nominal (10.8V to 14.4V) & 230 V AC	
7. Power Consumption	≤30W in Receive & ≤ 450W in Transmit	
8. EMI / EMC	MIL-STD- 461/462C or ETSI or CISPR 22 or IEC 61000-4 Series (TEC/EMI/TEL-001/01 FEB-09) or latest standard	
9.Weight	Less than 10 KG	
10.Antenna Impedance	50 Ω Unbalanced	
11.Protection	(i) Reverse Polarity protection (without fuse)	
	(ii) Protection against high VSWR.	
	(iii) Over Voltage and under Voltage Protection.	
12. Roles	Fixed/Transportable/Mobile	
13. Headphone Impedance	Up to 600Ω	
14.Cooling	Built in fan/ Heat sink	
15.VSWR	Better than 1.5	
16. Visual display	Front panel LCD/LED display or latest technology	
17. Interface	RS-232 /USB	
18. Programming	PC programming software and front panel programming.	
19.Communication Security	AES 128 bit or AES 256 bit or SAG approved (As per user requirement)	
1.2 TRANSMITTER SPECIFICATION:		
TRANSMITTER		
1.RF Power	15W to 100W PEP (Low, Medium , High) As per user requirement with programmable feature.	
2. Spurious Emission	≤ 50 mW and 40 db or more below PEP	
3. Side Band Suppression	≥ 50db or better	
4.Carrier Suppression	≥ 40db or better	
5.Inter modulation distortion	30db minimum below PEP	
6.Audio Response	Within 6db from 350Hz to 2700Hz.	
7.Side Tone Level	Better than 0.1 mW into 150Ω load for 5mV of audio input at 1 KHz.	
8.Modulation Sensitivity	1 to 10 mV at 1 KHz for full power under SSB mode.	

1.3 RECEIVER SPECIFICATION		**Comments**
1.Receiver Sensitivity	-111dbm for 10db SINAD or better	
2.Image Rejection	≥70 db or better	
3.IF Rejection	≥70 db or better	
4.In band Inter Modulation Distortion	35db minimum below PEP	
5.Audio Response	Within ±6db from 350Hz to 2700Hz	
6.Audio Output	1W or more across loudspeaker	
7. Audio Frequency Harmonics Distortion.	≤ 25 db or better	
1.4 Environmental Parameters:-		
1.Operating Temperature	-30˚C to +55˚ C	
2.Storage Temperature	-30˚C to +60˚C	
3.Humidity	95% non-condensing @ 40˚C.	
4. Dust	MIL-STD-810F or better or JSS-55555	
5.Vibration	MIL-STD-810F or better or JSS-55555	
6.Shock	MIL-STD-810F or better or JSS-55555	
7. Altitude	MIL-STD-810F or better or JSS-55555	
1.5 Features:-		
1.Selective calling	Digital FSK coding	
2.Scanning	5 channels per second or better	
3.ALE (2G / 3G)	ALE 2G as per Appendix "A" and ALE 3G as per Appendix "C" of MIL-STD-188-141B	
4.Flash messages	Minimum 60 characters	
5. Vocoder	MELP/CELP (1200/2400/4800 bps)	
6.Frequency Hopping	Hop Rate: 6 / 12 / 25 hops per second (User programmable) as per regulation. Hop set table: 100 frequencies or better.	
7. In built Data Modem	MIL-STD -188 -110A/B/C single tone ≥ 4800 bps	
8.GPS Interface	Inbuilt GPS with polling facility.	
9.Data Communication	Provision for data communication	
10.Tele Call	The Radio set should have capability to dial and Operate data.	
11.RS-232 control	The Radio set should have capability to operate at 4800 baud rate or better.	
12.Tuneable receiver	Continuous tuneable.	
13.Radio kill/un-kill	Should have kill/un-kill function.	
14. Remote Operation	Capable to operate from remote location.	
15.Audio input sockets	Mic and external socket.	
16. Squelch	Coded squelch.	
17. Push to talk	Suitable Microphone to be provided.	
1.6 Data Terminal Specifications		
1. Processor	Intel Core i5	
2. Speed	Up to 2.5 GHz	
3. RAM	Minimum 2GB DDR3	
4. Memory Speed	1333 MHz	
5. HDD	Minimum 500 GB	
6. Display Size	Minimum 15.6 Inch	
7. Interface	USB Port	
8. Keyboard	Multimedia	
9. Mouse	Optical Mouse	
10. Operating System	Window 7/8 or latest version OS	
11. Data communication software	Compatible with Window 7/8 or latest version OS	

DRAFT TRIAL DIRECTIVES OF STATIC HF TRANSCEIVER

All parameters/specifications mentioned in QRs will be checked by the Board of Officers by ascertaining/verifying following checks in the presence of Vendor/Supplier/Manufacturer. In case of any discrepancies/problem, the vendor/rep of firm will demonstrate the features to the Board of officer of the force concerned. Further, if proper testing instrument for testing these parameters is not available with user organization, firm will provide the same.

(a) Physical Checks: In this category, specifications of the equipment will be checked physically as per QRs.

(b) Functional Checks: The vendors will show all the features/configuration of the equipment functioning on ground to the board of officers during trials.

1.1 General Specification

General		Draft Trial Procedure
1.Frequency Range	2.0 MHz to 29.9999 MHz with 100 Hz channel spacing and 10 Hz resolution.	BOO will check frequency range of HF set by programming lowest, highest and any random frequency in 2.0-29.9999 MHz range and will measure with the help of standard testing instruments. The RF output and sensitivity of radio set in entire band should be same.
2. Modes	SSB(J3E) USB, LSB, AM/AM(E), CW/MCW,AFSK	BOO will check Modulation practically after switching "ON" the radio set and setting these modes one by one and firm will produce OEM certificate.
3.Preset	200 Channels or more	BOO will check it practically by setting the channels in the radio set.
4. Frequency Stability	±1 PPM or better	BOO will check parameter practically by using the standard test instrument.
5. Built-in-test	Front panel testing.	BOO will check practically.
6. Input Power	+12 V DC Nominal (10.8V to 14.4V) & 230 V AC	BOO will check practically by connecting mentioned DC/AC voltages to radio set and will ensure that set works properly.
7. Power Consumption	≤30W in Receive & ≤ 450W in Transmit	BOO will check practically.
8. EMI / EMC	MIL-STD- 461/462C or ETSI or CISPR 22 or IEC 61000-4 Series (TEC/EMI/TEL-001/01 FEB-09) or latest standard	The firm will produce certificate of Govt. Lab. or NABL/ILAC accredited laboratory.
9.Weight	Less than 10 KG	BOO will measure weight with help of weighing machine
10.Antenna Impedance	50 Ω Unbalanced	BOO will check practically.
11.Protection	(i) Reverse Polarity protection (without fuse)	BOO will check practically and firm will produce OEM certificate.
	(ii) Protection against high VSWR.	
	(iii) Over Voltage and under Voltage Protection.	
12. Roles	Fixed/Transportable/Mobile	BOO will check practically.
13. Headphone Impedance	Up to 600Ω	BOO will check practically/Firm will produce OEM certificate.
14.Cooling	Built in fan/ Heat sink	BOO will check Physically.
15.VSWR	Better than 1.5	BOO will check practically.
16. Visual display	Front panel LCD/LED display or latest technology	BOO will check practically.
17. Interface	RS-232 / USB	BOO will check practically.

18. Programming	PC programming software and front panel programming.	BOO will check practically by software and front panel programming.
19.Communication Security	AES 128 bit or AES 256 bit or SAG approved (As per user requirement)	Firm will submit OEM Certificate.
1.2 <u>TRANSMITTER SPECIFICATION</u>		
TRANSMITTER		
1.RF Power	15W to 100W PEP (Low, Medium , High) As per user requirement with programmable feature.	BOO will check practically.
2. Spurious Emission	≤ 50 mW and 40 db or more PEP	BOO will check practically.
3. Side Band Suppression	≥ 50db or better	BOO will check practically.
4.Carrier Suppression	≥ 40db or better	BOO will check practically.
5.Inter modulation distortion	30db minimum below PEP	BOO will check practically.
6.Audio Response	Within 6db from 350Hz to 2700Hz.	BOO will check practically.
7.Side Tone Level	Better than 0.1 mW into 150Ω load for 5mV of audio input at 1 KHz.	BOO will check practically.
8.Modulation Sensitivity	1 to 10 mV at 1 KHz for full power under SSB mode.	BOO will check practically.
1.3 RECEIVER SPECIFICATION		
1.Receiver Sensitivity	-111dbm for 10db SINAD or better	BOO will check practically.
2.Image Rejection	≥70 db or better	BOO will check practically.
3.IF Rejection	≥70 db or better	BOO will check practically.
4.In band Inter Modulation Distortion	35db minimum below PEP	Firm will produce OEM certificate.
5.Audio Response	Within ±6db from 350Hz to 2700Hz	BOO will check practically.
6.Audio Output	1W or more across loudspeaker	BOO will check practically.
7. Audio Frequency Harmonics Distortion.	≤ 25 db or better	BOO will check practically.
1.3 Environmental Parameters:-		
1.Operating Temperature	-30˚C to +55˚ C	The firm will produce certificate of Govt. Lab. or NABL/ILAC accredited laboratory.
2.Storage Temperature	-30˚C to +60˚C	
3.Humidity	95% non-condensing @ 40˚C.	
4. Dust	MIL-STD-810F or better or JSS-55555	
5.Vibration	MIL-STD-810F or better or JSS-55555	
6.Shock	MIL-STD-810F or better or JSS-55555	
7. Water Intrusion	MIL-STD-810F or better or JSS-55555	
8. Altitude	MIL-STD-810F or better or JSS-55555	
1.4. Features:-		
1.Selective calling	Digital FSK coding	Firm will produce OEM Certificate.
2.Scanning	5 channels per second or better	
3. ALE 2G/ALE 3G	ALE 2G as per Appendix "A" and ALE 3G as per Appendix "C" of MIL-STD-188-141B	The firm will produce certificate of Govt. Lab. or NABL/ILAC accredited laboratory.

4.Flash messages	Minimum 60 characters	BOO will check practically.
5. Vocoder	MELP/CELP (1200/2400/4800bps)	Firm will produce OEM certificate.
6.Frequency Hopping	Hop Rate: 6 / 12 / 25 hops per second (User programmable) as per regulation. Hop set table: 100 frequencies or better.	Firm will produce OEM certificate.
7. In built Data Modem	MIL-STD -188 -110A/B/C single tone ≥ 4800 bps	Firm will produce OEM certificate.
8.GPS Interface	Inbuilt GPS with polling facility.	BOO will check practically.
9.Data Communication	Provision for data communication	BOO will check practically.
10.Tele Call	The Radio set should have capability to dial and Operate data.	Firm will produce OEM certificate.
11.RS-232 control	The Radio set should have capability to operate at 4800 baud rate or better.	BOO will check practically.
14.Tuneable receiver	Continuous tuneable.	BOO will check practically.
12.Radio kill/un-kill	Should have kill/un-kill function.	BOO will check practically.
13. Remote Operation	Capable to operate from remote location.	BOO will check practically.
14.Audio input sockets	Mic and external socket.	BOO will check practically.
15. Squelch	Coded squelch.	BOO will check practically.
16. Push to talk.	Suitable Microphone to be provided.	BOO will check practically.
1.6 Data Terminal Specifications		
1. Processor	Intel Core i5	BOO will check physically and firm will produce OEM certificate.
2. Speed	Up to 2.5 GHz	
3. RAM	Minimum 2GB DDR3	
4. Memory Speed	1333 MHz	
5. HDD	Minimum 500 GB	
6. Display Size	Minimum 15.6 Inch	
7. Interface	USB Port	
8. Keyboard	Multimedia	
9. Mouse	Optical Mouse	
10. Operating System	Window 7/8 or latest version OS	
11. Data communication software	Compatible with Window 7/8 or latest version OS	