

GOVERNMENT OF INDIA
(Ministry of Home Affairs)
Communication & IT Directorate
CENTRAL RESERVE POLICE FORCE
EAST BLOCK-7, SEC-1, R.K. PURAM, NEW DELHI-110066
(Tele/Fax No-011-26107493, Email-Id: comncell@crpf.gov.in)

No. B.V-7-C/2024-25-C(UHF)-Q


Dated, the 25 Feb'2025

Subject: - REQUEST FOR COMMENTS OF STAKEHOLDERS /OEM/FIRMS ON DRAFT QRS & TDS OF "DIGITAL HAND- HELD UHF TRANSCEIVERS, DIGITAL UHF BASE /MOBILE TRANSCEIVER SET AND DIGITAL UHF REPEATER SET."

1. The Draft QRs/TDs of "Digital hand-held UHF Transceivers, Digital UHF base/Mobile Transceiver set and Digital UHF Repeater set " is attached as **Appendix 'A'**. The OEMs/Vendors are requested to forward information of the product, which they can offer and also forward correct specifications of their system against each parameter. Only complied or not complied remarks will not be accepted. The firms are also requested to furnish the following details:-
 - Whether you are OEM/Vendor?
 - If vendor details of OEM.
 - Authorization certificate from OEM.
2. The required information/details may please be forwarded at the following addresses by 12 March'2025.

Communication Directorate, CRPF
East Block-7, Sec-1, R.K. Puram, New Delhi-110066
Email: comncell@crpf.gov.in

3. An early response is requested.


{Ujjwal Kumar Singh, AC (QRs)}
For DIG (Equipment)
Communication & IT Branch
Directorate General, C R P F

Draft QRs/TDs of Digital Hand-Held UHF Radio Set

S.N	Parameter	Specification	Trail directives
1.	General		
i.	Frequency range	403-470 MHz	B.O.O will check operation of radio set by programming lowest, highest and any random frequency in 403-470 MHz range with the help of measuring instrument
ii.	No of channels	Minimum 255	BOO will check practically
iii.	Channel spacing	12.5 KHz or better in Analog & Digital mode	BOO will check practically
iv.	Frequency stability	±1.5 ppm or better	BOO will check practically and Firm will submit certificate of Govt. Lab.
v.	Protocol & Technology	Digital TDMA	BOO will check practically and Firm will submit certificate of Govt. Lab.
vi.	Types of emission (modulation)	Analog: 11K0F3E Digital: 7K60FXE, 7K60FXD, 7K60FXW or equivalent technique complying to open standard/ nonproprietary Digital Protocol as defined by an international standards body like ETSI/FCC etc.	
vii.	Types of operation	Semi Duplex, push to talk (PTT)	BOO will check practically
viii.	Type of antenna	Rugged flexible helical antenna	BOO will check Physically
ix.	Weight	less than 400 grams with battery	BOO will check practically
x.	power source	Lithium –ion or Li-polymer battery pack of 2400 mAh or more with belt clip	BOO will check practically and Firm will submit certificate of Govt. Lab.
xi.	Protection	Protection against high VSWR	BOO will check by switching “ON” Radio set and removing antenna/ dummy load and PTT be pressed. In such a condition there should not be any harm to Radio set
2	Transmitter		
i.	RF Power output	1/4 Watt (programmable/selectable)	BOO will check practically and Firm will submit certificate of Govt. Lab.
ii.	FM Hum/Noise	-40dB or better	
iii.	Modulation limiting	±2.5 KHz @12.5 KHz	
iv.	Adjacent channel power	-60 db or better	
v.	Audio Distortion	less than 3%	
3	Receiver		
i.	Sensitivity	i) Analog: 0.25µV for 12 dB SINAD or better ii) Digital: 0.25µV at 5% BER or better	BOO will check practically and Firm will submit certificate of Govt. Lab.
ii.	Selectivity (Adjacent channel)	60 dB or better	
iii.	Inter Modulation	60 dB or better	
iv.	Audio Output	500 mW	
v.	Audio Response	+1, -3 dB	
vi.	Rated Audio	Less than 3%	

	Distortion		
4	Environmental Specifications		
i.	Operating Temperature	-30°C to + 60 °C	Firm will submit certificate of Govt. Lab.
ii.	Storage Temperature	-40°C to + 70 °C	
iii.	Humidity	Max. 95% @ +40°C non-condensing	
iv.	Environmental standard (i.e) Low & High Temperature, Low pressure, Temperature Shock,,Rain, Salt Fog, Vibration, Dust & Shock	MIL-STD-810 G or above	Firm will submit certificate of Govt. Lab.
		Standard Method Procedure	
		Low pressure 500.5 II	
		High Temp 501.5 I/A1, II/A1	
		Low Temp 502.5 I/C3, II/C1	
		Temp Shock 503.5 I-C	
		Rain 506.5 I, III	
		Salt fog 509.5 -	
		Dust 510.5 I, II	
		Vibration 514.6 I/Cat24, II/Cat5	
		Shock 516.6 I, VI	
v.	Dust & Water Intrusion	IP67 or better	Firm will submit certificate of Govt. Lab.
5	Accessories		
i.	Battery Charger	Single unit smart charger	BOO will check practically
ii.	Hands free kit (VOX unit with PTT) (Optional- as per user requirement)	The vendor should provide minimum of two variants for trials	BOO will check practically
iii.	Programming kit	All necessary latest programming software and hardware required for the set will be provided	BOO will check practically
iv.	Literature	i) User's manual with each radio sets should be provided free of cost in soft as well as hard copy. ii) Technical repairing manual with complete block diagram, circuit layout etc should be provided in soft as well as hard copy.	BOO will check practically
v.	Battery	Two extra Lithium-ion batteries with each Radio set or as per user requirement.	BOO will check practically
6	Configuration		
i.	Caller ID display	Should be available	BOO will check practically
ii.	Facility for locking the channel or key pad locking	Should be available	BOO will check practically
iii.	Scan with priority	Should be available	BOO will check practically
iv.	Transmitter Time Out Timer (TOT)	The time should be programmed to best suit the application	BOO will check practically

v.	LCD Display	Display: Should be available (Min Display size 1.8 inch)	BOO will check practically.
vi.	Mode of calls	Selective Call, Group Call, Inter and Intra Group call facility	BOO will check practically
vii.	Remote radio Kill/Stun/Revive facility with authentication.	Should be available	BOO will check practically
viii.	Mode of operation	Radio should operate in analog mode and digital mode (compatibility with existing all type of VHF analog & DMR radio sets)	BOO will check practically
ix.	Emergency Button	Allows a user to obtain help in critical situations.	BOO will check practically
x.	SMS Texting	Should be capable of sending minimum 45-character pre-defined messages & short messages from keypad	BOO will check practically.
xi.	Programming	Front panel programming with password protection or PC programming.	BOO will check practically
xii.	DTMF front panel key-pad with back lit	Should be available	BOO will check practically
xiii.	Battery strength bar	Should be available	BOO will check practically.
xiv.	Support GPS	Inbuilt GPS system with accuracy of less than 5 meters or better	BOO will check practically
xv.	GIS (As per user requirement)	Radio should have application protocol interface along with software applications to provide location and messaging on PC /Console.	
xvi.	Networking	Should be IP based for automatic roaming etc.	
xvii.	Vocoder	AMBE+2 or better	Firm will submit of Govt. Lab
xviii.	Communication security with user defined key management system (Optional)	System have in-built AEC 256 bit or better encryption system and should also have provision to support 3 rd party	BOO will check practically and Firm will submit certificate of Govt. Lab.
xix.	OTAP (over the air programming) facility (Optional)	should be available	BOO will check practically and Firm will submit OEM certificate
xx.	Bluetooth (Optional)	4.0 version or better	Firm will submit OEM certificate
xxi.	Noise cancellation	with or without external mic active noise cancellation	BOO will check practically
xxii.	EMI/EMC	ETSI EN 301 489-1 and ETSI 301 489-5 / TEC/SD/DD/EMC-221/05/OCT-16 or equivalent	Firm will submit certificate of Govt Lab.
7	Field Trial	The actual performance of the radio set will be assessed by BOO consisting CAPFs with expert Organization and evaluate the actual field	Field trial of equipment will be conducted by a Board of Officers in the operational area of the force in the presence of Vendor/representative of firms

		performance of radio.	to ascertain the user satisfaction before the proposal is accepted. Radio equipment with all required accessories will be provided by the participating firm's on "No Cost No Commitment" basis at the indenter discretion.
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Draft QRs/TDs OF DIGITAL UHF MOBILE/BASE TRANSRECEIVER SET (20 W)

Sn	Parameters	Specification	Trial directives
1.	General		
	i) Frequency Range	403-470 MHz (Full Band)	BOO will check operation of radio set by programming lowest, highest and any random frequency in 403-470 MHz range with the help of measuring instrument
	ii) No. of channel	500 or higher	BOO will check practically
	iii) Channel Spacing	12.5 KHz or better in analog & Digital mode	BOO will check practically
	iv) Frequency Stability	± 1.5 PPM or better	BOO will check practically and Firm will submit certificate of Govt. Lab.
	v) Protocol & Technology	Digital TDMA Technology	BOO will check practically and Firm will submit certificate of Govt. Lab.
	vi) Type of Emission (Modulation)	Analog: 11K0F3E Digital: 7K60FXE, 7K60FXD, 7K60FXW	BOO will check practically and Firm will submit certificate of Govt. Lab.
	vii) Type of Operation	Semi Duplex, press to talk (PTT)	BOO will check practically
	viii) Weight	Less than 2000 grams	BOO will check practically
	ix) Antenna Impedance	50 Ω	BOO will check practically.
	x)Power Source	12 Volt DC $\pm 15\%$	BOO will check practically
	xi) Protection	(i) Reverse polarity protection (ii) Protection against high VSWR	i) BOO will check it by connecting Radio set with DC supply in reverse polarity and switch the set to "ON" position. There should not be any harm to the Radio Set. ii) BOO will check by switching "ON" Radio set and removing antenna/ dummy load and PTT be pressed. In such a condition there should not be any harm to Radio set.
2.	Transmitter		
	i) R.F Power	20 Watt Programmable	BOO will check practically and

	output	/Selectable)			Firm will submit certificate of Govt. Lab.
	ii) FM Hum /Noise	-40 dB or better			
	iii) Modulation Limiting	± 2.5 KHz @ 12.5 KHz			
	iv) Adjacent Chanel power	-60 db or better			
	v) Audio Distortion	Less than 3%			
3.	Receiver				
	i) Sensitivity	i) Analog: 0.25µV for 12 dB SINAD or better ii) Digital: 0.25µV at 5% BER or better			BOO will check practically and Firm will submit certificate of Govt. Lab.
	ii) Selectivity (Adjacent channel)	60 dB or better.			
	iii)Inter Modulation	70 dB or better			
	iv)Audio Output	3 W or more			
	v)Audio Response	+1, -3 dB			
	vi) Rated Audio Distortion	Less than 3%			
4.					
	i) Operating Temperature	-30°C to + 60 °C			Firm will submit certificate of Govt. Lab.
	ii) Storage Temperature	-40°C to + 70 °C			
	iii) Humidity	Max. 95% @ +40°C non-condensing			
	iv) Environmental standard (i.e) Low & High Temperature, Low pressure, Temperature Shock, Rain, Salt Fog, Vibration, Dust	As per MIL MIL 810 G or better			Firm will submit certificate of Govt. Lab.
		Standard	Method	Procedure	
		Low pressure	500.5	II	
		High Temp	501.5	I/A1, II/A1	
		Low Temp	502.5	I/C3, II/C1	
		Temp Shock	503.5	I-C	

	& Shock	Rain	506.5	I,III	
		Salt fog	509.5	-	
		Dust	510.5	I,II	
		Vibration	514.6	I/Cat24, II/Cat5	
		Shock	516.6	I,V,VI	
	v) Dust &Water Intrusion	IP 54 or better			Firm will submit certificate of Govt. Lab.
5.	Accessories				
	i) Microphone	DTMF Microphone should be supplied with Radio		BOO will check practically.	
	ii) Battery cable & Mounting fixtures	Should be supplied with Radio		BOO will check practically	
	iii) Antenna	i) 3dB gain whip antenna with 3 meters co-axial cable with connector, magnetic base/ mounting bracket for vehicle use will be provided. i) 6dB or high gain Omni Directional antenna with 30-meter RF (LDF ¼" attenuation 2.7 dB per 100 feet or better) Cable for base station will be provided.		BOO will check practically. Firm will submit certificate of Govt. Lab.	
	iv) Programming kit	All necessary latest programming software and hardware required for the set will be provided		BOO will check practically programming are available and working properly.	
	v) Literature	i) User's manual with each radio sets should be provided free of cost in soft as well as hard copy. ii) Technical repairing manual with complete block diagram, circuit layout etc should be provided in soft as well as hard copy.		BOO will check practically	
6	Configuration				
	i) Caller ID display	Should be available		BOO will check practically	
	ii) Busy channel	Should be available		BOO will check practically	

	locks out		
	iii) Scan with priority	Should be available	BOO will check practically
	iv) Transmitter Time Out Timer (TOT)	The time should be programmed to best suit the application.	BOO will check practically
	v) LCD Display	Display: Should be available.	BOO will check practically
	vi) Mode of calls	Selective Call, Group Call, Inter and Intra Group call facility	BOO will check practically
	vii) Remote Radio Kill/Stun/Revive facility with authentication.	Should be available	BOO will check practically
	viii) Mode of operation	Radio should operate in Analog and Digital mode (compatible with existing all type of VHF Analog & DMR radio sets.)	BOO will check practically
	ix) Emergency Button	Allows a user to obtain help in critical situations.	BOO will check practically.
	x) SMS Texting	Should be capable of sending minimum 45 character pre-defined messages & short messages from keypad as Optional.	BOO will check practically
	xi) Programming	Front panel programming with password protection or PC programming.	BOO will check practically
	xii) Support GPS	GPS system with accuracy of less than 5 meters.	BOO will check practically.
	xiii)Networking	Should be IP based for automatic roaming etc.	
	xiv) GIS (As Per user requirement)	Radio should have application protocol interface along with software applications to provide location and messaging on PC /Console.	
	xv)Communication security user defined key management system (Optional)	System have in-built AEC 256 bit or better encryption system and should also have provision to support 3 rd party encryption	BOO will check practically and Firm will submit certificate of Govt. Lab.
	xvi) OTAP (over the air	should be available	BOO will check practically

	programming) facility (Optional)		
	xvii) EMI/EMC	ETSI EN 301 489-1 and ETSI 301 489-5 / TEC/SD/DD/EMC-221/05/OCT-16 or equivalent	Firm will submit certificate of Govt. Lab.
7	Field Trial	The actual performance of the radio set will be assessed by BOO consisting CAPFs with expert Organization and evaluate the actual field performance of radio	Field trial of equipment will be conducted by a Board of Officers in the operational area of the force in the presence of Vendor/ representative of firms to ascertain the user satisfaction before the proposal is accepted. Radio equipment with all required accessories will be provided by the participating firm's on " No cost No Commitment " basis at the indenter discretion.

Draft QRs/TDs OF DIGITAL UHF REPEATER SET

Sl No	Parameters	Specification	Trial directives
1.	General		
	i) Frequency Range	403-470 MHz (Full Band)	BOO will check operation of radio set by programming lowest, highest and any random frequency in 403-470 MHz range with the help of measuring instrument.
	ii) No. of channel	16 or more	BOO will check practically
	iii) Channel Spacing	12.5 KHz or better	BOO will check practically
	iv) Frequency Stability	± 1.5 PPM or better	BOO will check practically and Firm will submit certificate of Govt. Lab
	v) Protocol & Technology	Digital TDMA	BOO will check practically and Firm will submit certificate of Govt. Lab.
	vi) Type of Emission (Modulation)	Analog: 11K0F3E Digital: 7K60FXE, 7K60FXD, 7K60FXW	BOO will check practically and Firm will submit certificate of Govt. Lab.
	vii) Weight	Less than 10 Kg	BOO will check practically
	viii) Power Source	i) DC: 12 Volt ± 15% ii) AC: 110V-260V iii) There should be provision to shift automatically on DC supply during mains failure & when mains supply restored it should be shifted on mains from DC supply	BOO will check practically
	ix) Protection	(i) Reverse polarity protection (ii) Protection against high VSWR	BOO will check practically
	x) EMI/EMC	As per ETSI EN 301 489-1 and ETSI 301 489-5 / TEC/SD/DD/EMC-221/05/OCT-16 or equivalent	Firm will submit certificate of Govt. Lab.
	xi) Duplexer (Optional)	403 to 470 MHz (Frequency as per user requirement)	BOO will check practically

	xii) Mode of operation	Repeater should operate in Analog and digital mode and Compatible with existing all type of VHF digital and Analog radios in both plain and secure mode	BOO will check practically
	xiii) Antenna Impedance	50Ω	BOO will check practically.
	xiv) duty cycle	Should be 100 %	OEM will submit certificate
2.	Transmitter		
	i) R.F Power output	50 Watt or more (Programmable /Selectable)	BOO will check practically and Firm will submit certificate of Govt. Lab.
	ii) FM Hum /Noise	-40 dB or better	
	iii) Modulation Limiting	± 2.5 KHz @ 12.5 KHz	
	iv) Adjacent Channel power	-60 db or better	
	v) Audio Distortion	Less than 3%	
3.	Receiver		
	i) Sensitivity	i) Analog: 0.25 μV for 12 dB SINAD or better ii) Digital: 0.25μV at 5% BER or better	BOO will check practically and Firm will submit certificate of Govt. Lab.
	ii) Selectivity (Adjacent channel)	60 dB or better.	
	iii) Inter Modulation	70 dB or better	
	vi) Audio Response	+1, -3 dB	
	v) Rated Audio Distortion	Less than 3%	
4.	Environmental Specification		
	i) Operating Temperature	-30°C to + 60 °C	Firm will submit certificate of Govt. Lab.
	ii) Storage Temperature	-40°C to + 70 °C	
	iii) Humidity	Max. 95% @ +40°C non- condensing	
5	Networking	Should be capable to support IP site connects	Firm will show networking and interfaces related function of repeater practically by connecting it in user

6	Interfaces	<p>Ethernet port RJ-45 to provide</p> <p>a) Wide area IP connectivity for voice and data</p> <p>b) Remote monitoring and status check</p>	organisation network.
7.	Accessories		
	i) Battery cable & Mounting fixtures	Should be supplied with Repeater	BOO will check it practically by connecting battery cable & mounting fixtures with repeater.
	ii) Antenna	6dB or high gain Omni Directional antenna with 45-meter RF (LDF ¼" LDF ¼" attenuation 2.7 dB per 100 feet or better) Cable for repeater base station will be provided	Firm will submit certificate of Govt. Lab.
	iii) Programming kit	All necessary programming software and hardware required for the set will be provided.	BOO will check it practically that all necessary programming software and hardware are available as per user requirement.
	iv) Literature	<p>i) User's manual with each radio sets should be provided free of cost in soft as well as hard copy.</p> <p>ii) Technical repairing manual with complete block diagram, circuit layout etc should be provided in soft as well as hard copy.</p>	BOO will check it physically that User and Technical manual are available as per user requirement.
8	Field Trial	The actual performance of the radio set will be assessed by BOO consisting CAPFs with expert Organization and evaluate the actual field performance of radio	Field trial of equipment will be conducted by a Board of Officers in the operational area of the force in the presence of Vendor/ representative of firms to ascertain the user satisfaction before the proposal is accepted. Repeater equipment with all required accessories will be provided by the participating firm's on " No cost No Commitment " basis at the indenter discretion.

