


RADIO & COMMUNICATION EQUIPMENT (CSSR)

82. WALKIE TALKIE SETS

SPECIFICATION OF DIGITAL HAND HELD VHF TRANS RECEIVER SET)

SI No	PARAMETER	SPECIFICATION	TRAIL /TEST PROCEDURE
			
1	General		
	i) Frequency Range	136 -174 MHz (Full band)	Functional check: B.O.O. will check operation of radio set by programming lowest, highest and any random frequency in 136-174 MHz range with the help of measuring instruments.
	ii) No of Channel	255 or higher	BOO will check all these parameters one by one with the help of standard testing instruments. If the standard test instruments are not available then firm must produce certificate of any Govt. accredited lab or National Accreditation Board for Testing and Calibration Laboratories (NABL) approved laboratory or International Laboratory Accreditation Corporation (ILAC) approved laboratory.
	iii) Channel spacing	12.5 KHz or better	
	iv) Frequency stability	± 1.5 PPM or better	
	v) Protocol & Technology	Digital DMR (TDMA) Technology.	BOO will check all these parameters with the help of standard testing instruments. If the standard test instruments are not available then firm must produce certificate of any Govt. accredited lab or National Accreditation Board for Testing and Calibration Laboratories (NABL) approved laboratory or International Laboratory Accreditation Corporation (ILAC) approved laboratory
	vi) Type of Emission (Modulation)	Analog : 11K0F3E Digital : 4FSK or equivalent technique complying to open standard / nonproprietary Digital Protocol as defined by an international standard body like ETSI/FCC etc.	BOO will check all these parameters with the help of standard testing instruments. If the standard test instruments are not available then firm must produce certificate of any Govt. accredited lab or National Accreditation Board for Testing and Calibration Laboratories (NABL) approved laboratory or International Laboratory Accreditation Corporation (ILAC) approved laboratory.
	vii) Type of operation	Simplex, press to talk	Simplex means set either work in receive mode or in transmit mode. Same will be checked practically.
	viii) Type of Antenna	Rugged flexible Helical antenna	BOO will check physically and practically to assess fitment, flexibility & ruggedness of antenna.
	ix) Weight	Less than 450 gm with battery	BOO will check practically to measure weight by

			weighing machine.
	x) Power source	Ni-Mhor Lithium-ion or Li-polymer battery pack of 2000 mAH or more with belt clip(Bidder shall mention DC Voltage and Chemistry).	Physical check to assess type, make & voltage/ capacity of battery and it should be as per specification. In addition firm must produce certificate of any Govt. accredited Lab. Or NABL or ILAC approved laboratory.
	xi) Protection	(i) Reverse polarity protection (ii) Protection against high VSWR	i) BOO will check it by connecting Radio setwith 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) RF Power output	1 / 5 Watts (Programmable / Selectable)	BOO will check all these parameters in the entire frequency range mentioned in the QR with the help of standard testing instruments. If the standard test instruments are not available then firm must produce certificate of any Govt. accredited Lab or National Accreditation Board for Testing and Calibration Laboratories (NABL) approved laboratory or International Laboratory Accreditation Corporation (ILAC) approved laboratory.
	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 :- 0.30 μVfor 12 dB SINAD or better ii) Digital :- 0.30 μV at 5% BER or better	BOO will check all these parameters in the entire frequency range mentioned in the QR with the help of standard testing instruments. If the standard test instruments are not available then firm must produce certificate of any Govt. accredited Lab or National Accreditation Board for Testing and Calibration Laboratories (NABL) approved laboratory or International Laboratory Accreditation Corporation (ILAC) approved laboratory.
	ii) Selectivity (Adjacent Chanel)	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 Distortion	Less than 3%	
4	ENVIRONMENTAL SPECIFICATION		
	i) Operating Temperature	-30 ⁰ C to +60 ⁰ C	Firm must produce certificate of any Government accredited Lab. Or NABL or ILAC approved laboratory.
	ii) Storage Temperature	-40 ⁰ C to +70 ⁰ C	
	iii) Humidity	Max. 95% @ +40 ⁰ C non-condensing	
	iv) Environmental standard (i.e) Low & High Temperature, Low pressure, Temperature Shock, Solar Radiation, Rain, Salt Fog,	As per MIL 810 C,D,E,F	Firm must produce certificate of any Government accredited Lab. Or NABL or ILAC approved laboratory for the desired or better MIL standard.

	Vibration, Dust & Shock		
	v) Dust & water Intrusion	IP 57 or better	Firm must produce certificate of any Government accredited Lab. or NABL or ILAC approved laboratory.
5	Accessories		
	i) Battery Charger	Single unit smart charger (capable to charge Lithium-ion, Ni-MH, Lithium polymer)	BOO will check it practically by charging the batteries from smart charger and note down whether the batteries are charge properly or otherwise.
	ii) Hands free Kit (VOXunit with PTT)(optional)	The vender should provide minimum of two variants for trails.	Check practically by connecting Hands free kit with radio set. By making voice call Radio set should start transmission without pressing PTT. On 'no speech' Radio set should switch automatically to reception mode.
	iii) Programming kit	All necessary software and hardware required for programming of the set.	Check Practically to assess that all necessary software and hardware required for programming of the set is available and working properly.
	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 as per quantity mentioned in list of store..	Physically check to confirm that User and Technical manual are available in Hard as well as in Soft Copy.
	v) Battery	Two extra Lithium -ion or Ni-Mh or Li-polymer batteries with each Radio Set.	Physical/Practical check to assess that extra battery is as per specification, compatible with Radio set and working properly.
	vi) Leather case (Optional)	One good quality leather case with belt clip & shoulder strap.	Practically /Physically check by inserting radio set in it to assess that radio set can be easily inserted in leather case. Leather case should have belt clip and shoulder strip of sufficient length.
6	Configuration		
	i) Caller ID display	Should be available	BOO will check it by programming two radio sets on same frequency and different ID. Make call from one radio and check display in another radio set, ID of caller radio should be displayed.
	ii) Facility for locking the channel or key pad locking	Should be available	Program locking channel or key pad facilities in radio set and check whether the channel or key pads locked or otherwise.
	iii) Scan with priority	Should be available	Radio sets programmed with priority scanning on pressing the scan button, will starts scanning channels with the priority.
	iv) Transmitter Time Out Timer (TOT)	The time should be programmed to best suit the application.	PTT of Radio set pressed continuously. Radio set comes automatically in reception mode after completion of time programmed for TOT option.
	v) LCD display	Should be available	Practical/Physical check by switching on the radio set, there should be display on the LCD screen.
	vi) Mode of calls	Selective Call, Group Call, Inter and Intra Group call facility	BOO will check it practically by making call.
	vii) Remote Radio Kill / Stun /	Should be available	BOO will check it practically by sending kill command to particular radio. Radio set received

	Revive facility		kill command will get killed. Similarly, Set should revive if we send the revive command to killed radio.
	viii) Mode of operation	Radio should operate in analog mode and digital mode. (Compatible with existing all type of VHF analogue radio sets viz :Motorola, Icom, Kenwood, Vertex etc.)	BOO will be check practically by making call from existing analog sets to digital set after setting it in Analog mode and vice-versa. For checking interoperability with existing digital radio system, if available, make calls between them and the proposed radio sets (in digital mode) and verify proper communication should happen if both digital radio systems are based on same technology.
	ix) Emergency Button	Allows user to obtain help in critical situations.	BOO will check it practically by pressing emergency button.
	x) SMS Texting	Should be capable of sending pre-defined messages & short messages from keypads as Optional.	BOO will check it practically by sending pre-defined message from one radio to another. Message should be displayed on the screen of receiving radio.
	xi) Programming	Front panel programming with password protection or PC programming.	BOO will check it practically by programming radio from front panel having password protection. Similarly, Board will also program radio with the help of PC, Radio set should be programmed from front panel as well as from PC also.
	xii) DTMF front panel key pad with back lit	Should be available	BOO will check it Physically/Practically that radio set is having DTMF key pad with back lit.
	xiii) Battery strength bar	Should be available	BOO will check it practically that battery strength bar indicates the strength bar as increasing/decreasing when battery is charged/discharged.
	xiv)Support GPS	Inbuilt GPS system with accuracy of less than 10 meters (facility should be available in the radio set and should be demonstrated during trial. NDRF may opt to purchase the tariff of PGS later on)	Firm will demonstrate features related with GPS, GIS and Networking mentioned at Sl.No.6 xiv to xvi) to Board or Officers during the trial and all function should work as per requirement.
	xv) GIS	Radio should have application protocol interface along with software applications to provide locations and messaging on PC/Console. (Standard slot facility should be available in the radio set for connection of PC or other hardware and should be demonstrated during trial. NDRF may opt to purchase the tariff hardware and software for GIS later on)	
	xvi)Networking	Should be IP based for automatic roaming etc. (facility should be available in the radio set and should be demonstrated during trial. NDRF may opt to use this facility later on)	
7	Field Trial	The actual performance of the radio set will be assessed.	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.