


## 85. DIGITAL VHF REPEATER SET (PORTABLE RADIO)

SINo	PARAMETER	SPECIFICATION	
1	<b>General</b>		
	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 Capacity	16 or more	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.	
	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) Weight	Less than 15 Kg	BOO will check practically to measure weight by weighing machine.
	viii) Power source	i) DC -13.8 Volt + 15% ii) AC - 230 Volt + 15%, 50Hz iii) There should be provision to shift automatically on DC supply during mains failure & when mains	Apply 230 VAC ±15% and 13.8 VDC ±15% one by one and check that whether set is working properly or otherwise.

		supply restored it should be shifted on mains from DC supply	
	ix) 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 set be switched "ON" removing antenna/dummy load and PTT be pressed. In such a condition there should not be any harm to Radio set.
2	<b>Transmitter</b>		
	i) RF Power output	45 Watt or more (programmable / Selectable)	B.O.O. 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	<b>Receiver</b>		
	i) Sensitivity	i) Analog :- 0.30 $\mu$ V (12 dB SINAD ) or better ii) Digital :- 0.30 $\mu$ V at 5% BER or better	B.O.O. 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	70 dB or better	
	iv) Audio Response	+1,-3 dB	
	v) Rated Audio Distortion	Less than 3%	
4	<b>ENVIRONMENTAL SPECIFICATION</b>		
	i) Operating Temperature	-30 <sup>0</sup> C to +60 <sup>0</sup> C	Firm must produce certificate of any Government accredited Lab. or NABL or ILAC approved laboratory.
	ii) Storage Temperature	-40 <sup>0</sup> C to +70 <sup>0</sup> C	
	iii) Humidity	Max. 95% @ +40 <sup>0</sup> C non-condensing.	
5	<b>Networking</b>	Should be capable to support IP site connects.	Firm will show Networking and interfaces related function of repeater practically by connecting it in user organization network.
6	<b>Interfaces</b>	Ethernet port RJ-45 to provide a) Wide area IP connectivity for Voice and Data. b) Remote monitoring and status check.	
7	<b>Accessories</b>		
	Battery cable & Mounting fixtures	Should be supplied with Repeater	B.O.O. will check it practically by connecting battery cable & mounting fixtures with repeater.
	Antenna	i) 3dB/6dB gain Omni directional antenna	BOO will check it practically by connecting antenna & accessories with repeater. During

		with 45 meter RF Cable RG-217 for base station will be provided <b>as per quantity mentioned in list of store.</b>	transmission there should be no mismatch between radio and antenna.
	Programming kit	All necessary programming software and hardware required for the set will be provided <b>as per quantity mentioned in list of store.</b>	BOO will check it practically that all necessary programming software and hardware are available as per user requirement.
	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 <b>as per quantity mentioned in list of store.</b>	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.	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 " <b>No Cost No Commitment</b> " basis at the indenter discretion.