## No. B.V-7/2012-13 (QRs)

#### भारत सरकार/Government of India

### गृह मंत्रालय/Ministry of Home Affairs

## पुलिस आधुनिकीकरण प्रभाग /Police Modernization Division संभरण-I डेस्क /Prov.I Desk

26, Man Singh Road, Jaisalmer House, New Delhi, the 2<sup>nd</sup> October, 2014

To,

The DsG: AR (through LOAR), BSF, CISF, CRPF, ITBP, SSB, NSG & BPR&D.

Subject: Revised Trial Directives of Digital Hand Held VHF Transceiver Set, Digital VHF Base/Mobile Transceiver Set and Digital VHF Repeater Set.

The undersigned is directed to refer to the subject mentioned above and to say that the revised Trial Directive in respect of Digital Hand Held VHF Transceiver Set, Digital VHF Base/Mobile Transceiver Set and Digital VHF Repeater Set as per Appdx-A, B & C respectively have been approved by the competent authority in MHA.

- 2. Concerned CAPF will be responsible for correctness of QRs.
- 3. Henceforth, all the CAPFs should procure the above items, required by them strictly as per the laid down Technical Specification/QRs.
- 4. Trial Directives of Digital Hand Held VHF Transceiver Set, Digital VHF Base/Mobile Transceiver Set and Digital VHF Repeater Set issued earlier vide letter of even No. dated 22.08.2013 is rescinded.

Yours faithfully,

maied are

(P.K. Srivastava)

Under Secretary to the Govt. of India

Encl: As above.

Copy forwarded for necessary action to:

SO (IT), MHA - with the request to host the revised Trial Directives on official website of MHA (under the page of Organizational Set up, Police Modernization Division) and remove earlier trial Directives vide letter of even number dated 22.08.2013(http://mha.nic.in/sites/upload\_files/mha/files/QRSTrialDir\_VHF\_230813. pdf). Soft copy is being sent through email also.

(R. K∬Soni)

Section officer (₱rov-I)

Copy to: Director (Procurement), MHA

Mppdx. "A"

#### TRIAL DIRECTIVE FOR DIGITAL HAND HELD VHF TRANSCEIVER SET

S! No	Parameters	Specification	Trial/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	B.O.O will check all these parameters one by one
	iii) Channel Spacing	12.5 KHz or better	with the help of standard testing instruments. If the standard test instruments are not available then firm
	iv)Frequency Stability	± 1.5 PPM or better	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.
	v) Protocol & Technology	Digital TDMA or FDMA Technology or better User organization may decide protocol and technology as per their requirement/ choice.	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/non proprietary Digital Protocol as defined by an international standards body like ETSI / FCC etc.	B.O.O 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.
1	viii) Type of Antenna	Rugged flexible Helical Antenna	B.O.O will check Physically and Practically to assess fitment, flexibility & ruggedness of antenna.
	ix) Weight	Less than 450 grams with battery.	B.O.O. will check practically to measure weight by weighing machine.
	x) Power Source	Ni-Mh or 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) B.O.O 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) B.O.O 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.

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2.	Transmitter	The second secon	Amended Trial Directive
	i) R.F Power output	1/5 Watt (Programmable	B.O.O will check all these parameters
		/Selectable)	in the entire frequency range
	ii) FM Hum / Noise	-40 dB or better	mentioned in the QR with the help of
	iii) Modulation Limiting	± 2.5 KHz @ 12.5 KHz -60 db or better	standard testing instruments. If the standard test instruments are not
	iv) Adjacent Channel Power	-50 db or better	available then firm must produce
	v) Audio Distortion	Less than 3%	certificate of any Govt. accredited lab
	) Tradition is the control of the co	Bood tradit 070	or National Accreditation Board for
			Testing and Calibration Laboratories
			(NABL) approved laboratory or
			International Laboratory Accreditation Corporation (ILAC) approved
			laboratory.
3.	Receiver		
	i) Sensitivity	i) Analog :- 0.30μV for 12 dB	B.O.O will check all these parameters
		SINAD or better	in the entire frequency range
		ii) Digital : - 0.30µV at 5%	mentioned in the QR with the help of
	0.1	BER or better	standard testing instruments. If the
	ii) Selectivity (Adjacent channel)	60 dB or better	standard test instruments are not available then firm must produce
	iii) Inter Modulation	60 dB or better	certificate of any Govt. accredited lab
	iv) Audio Output	500 mW	or National Accreditation Board for
	v) Audio Response	+1,-3 dB	Testing and Calibration Laboratories
	vi) Rated Audio Distortion	Less than 3%	(NABL) approved laboratory or
			International Laboratory Accreditation
			Corporation (ILAC) approved laboratory.
4	Environmental Specificat	ion	Firm must produce certificate of any
	i) Operating Temperature	-30°C to +60 °C	Government accredited Lab. or NABL
	ii) Storage Temperature	-40°C to +70 °C	or ILAC approved laboratory.
	iii) Humidity	Max. 95% @ +40°C non-	
		condensing	
	iv)Environmental		Firm must produce certificate of any
1	standard (i.e) Low & High		Government accredited Lab. or NABL
	Temperature, Low pressure, Temperature		or ILAC approved laboratory for the desired or better MIL standard.
	pressure, Temperature Shock, Solar Radiation,		desired of better Mile standard.
	Rain, Salt Fog, Vibration,		
	Dust & Shock		
	v) Dust & Water	IP 57 or better	Firm must produce certificate of any
	Intrusion		Government accredited Lab. or NABL
			or ILAC approved laboratory.
5	Accessories		
	i) Battery Charger	Single unit smart charger (capable to charge Lithium-	B.O.O will check it practically by charging the batteries from smart
		Ion, Ni-MH, Lithium-Polymer	charger and note down whether the
		batteries.	batteries are charge properly or
			otherwise.
	ii) Hands free Kit (VOX	The vendor should provide	Check Practically by connecting Hands
	unit with PTT) (optional)	minimum of two variants for	free kit with radio set. By making voice
		trials	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	Check Practically to assess that all
	,	hardware required for	necessary software and hardware
		programming of the set	required for programming of the set is
			available and working properly.
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	iv) Literature	i) Users 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 users' requirement in soft as well as hard copy.	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 strip.	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	B.O.O 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	B.O.O. will check it practically by making call.
	vii) Remote Radio Kill / Stun / Revive facility	Should be available	B.O.O. will check it practically by sending kill command to particular radio. Radio set received kill command will get killed. Similarly, Set should revive if we send the revive command to killed radio.

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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)	B.O.O 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 a user to obtain help in critical situations.	B.O.O. will check it practically by pressing emergency button.
x) SMS Texting	Should be capable of sending pre defined messages & short messages from keypad as Optional.	B.O.O. will check it practically by sending pre-defined messages 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.	B.O.O. 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	B.O.O. will check it Physically/ Practically that radio set is having DTMF key pad with back lit.
xiii) Battery strength bar	Should be available	B.O.O. 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.(Optional-As per user requirement)	Firm will demonstrate features related with GPS, GIS and Networking mentioned at Sl No.6 xiv) to xvi) to Board of Officers during the
xv) GIS	Radio should have Application protocol interface along with software applications to provide locations and messaging on PC/ Console. (Optional-As per user requirement)	trial and all function should work as per requirement.
xvi)Networking	Should be IP based for automatic roaming etc. (Optional-As per user requirement)	

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7	Field Trial	The actual performance of the radio set will be assessed.	conducted operational presence firms to as before the equipment will be prifirm's on	by a Board of Officers in the larea of the force in the of Vendor/representative of scertain the user satisfaction proposal is accepted. Radio with all required accessories rovided by the participating "No Cost No Commitment" e indenter discretion.
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(So	hrab Ansari,SI/Exe, (	CISF) (R.K. Khumbh	are, AC, SSB)	(M.S.Yadav, AC, CRPF)
(O.S	S.Chadhan, AC, NSG	(Gautam kumar A	AC, ITBP)	(Brajesh Kumar, DC, BSF)
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[Vir	endra Agrawal, DIG (	Eqpt), CRPF]	[Mahesh Kum	T,DIG(Comn), CRPF]
[Sha	ailendra Kumar, IG (C	Compl, CRPF]		

Approved/Not Approved

(Dilip Trivedi, IPS)

# TRIAL DIRECTIVE FOR DIGITAL VHF BASE/MOBILE TRANSCEIVER SET

S1	Parameters	Specification	Trial/Test Procedure
<b>No</b> 1.	General		
1.	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	B.O.O will check all these parameters one
		12.5 KHz or better	by one with the help of standard testing
	iii) Channel Spacing iv) Frequency Stability	± 1.5 PPM or better	instruments. If the standard testinstruments 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.
	v) Protocol & Technology	Digital TDMA or FDMA Technology or better (User organization may decide protocol & Technology as per their requirement/ choice)	B.O.O 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	Analog;11K0F3E Digital	B.O.O will check all these parameters with
	Emission (Modulation)	; 4 FSK or equivalent technique complying to open standard / non proprietary Digital Protocol as defined by an international standards body like ETSI / FCC etc.	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
-	vii) Type of	Simplex, press to talk	Simplex means set either works in receive
	Operation	. / .	mode or in transmit mode. Same will be checked practically.
	viii) Weight	Less than 2000 grams	B.O.O. will check practically to measure weight by weighing machine.
	ix) Power Source	13.8 Volt DC ± 15%	Apply 13.8VDC ±15% from power supply and check that whether set is working properly or otherwise.
	x) Protection	(i) Reverse polarity protection (ii) Protection against high VSWR	i) B.O.O 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) B.O.O 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

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2.	Transmitter		DOO 11 1 1 11 11
2.	i) R.F Power output	25 Watt Programmab	B.O.O will check all these
	i) R.F Fower output	25 Watt Programmable / Selectable)	le parameters in the entire
	ii) FM Hum /Noise	-40 dB or better	frequency range mentioned in the QR with the help of standard
	iii) Modulation Limiting	± 2.5 KHz @ 12.5 KHz	testing instruments. If the
			standard test instruments are
	iv) Adjacent Chanel power		not available then firm must
	v) Audio Distortion	Less than 3%	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.
3.	Receiver		B.O.O will check all these
	i) Sensitivity	i) Analog:- 0.30 µV for 12 dB	
	, , , , , , , , , , , , , , , , , , , ,	SINAD or better	frequency range mentioned in the
		ii) Digital :- 0.30µV at 5%	QR with the help of standard
		BER or better	testing instruments If the
	ii) Selectivity (Adjacent	60 dB or better.	standard test instruments are
	channel)		not available then firm must
	iii) Inter Modulation	70 dB or better	produce certificate of any Govt.
	iv) Audio Output	3 W or more	accredited lab or National
	v) Audio Response	+1,-3 dB	Accreditation Board for Testing and Calibration Laboratories
	vi) Rated Audio Distortion	Less than 3%	(NABL) approved laboratory or
			International Laboratory
			Accreditation Corporation (ILAC)
			approved laboratory.
4.	<b>Environmental Specificat</b>	ion	Firm must produce certificate of
	i) Operating Temperature	-30°C to +60 °C	any Government accredited Lab.
	ii) Storage Temperature	-40°C to +70 °C	or NABL or ILAC approved
	iii) Humidity	Max. 95% @ +40°C non-	laboratory.
		condensing	
	•	As per MIL 810 C,D,E,F	Firm must produce certificate of
	standard (i.e) Low & High		any Government accredited Lab.
	Temperature , Low		or NABL or ILAC approved
	pressure, Temperature Shock, Solar Radiation,		laboratory for the desired or better MIL standard.
	Rain, Salt Fog, Vibration,		better MIL standard.
	Dust & Shock		
ŀ		IP 54 or better	Firm must produce certificate of
	,		any Government accredited Lab.
			or NABL or ILAC approved
			laboratory.
5.	Accessories		
	i) Microphone	DTMF Microphone should	B.O.O. will check physically and
		be supplied with Radio	practically that DTMF
-			Microphone supplied with radio
-			and is working properly.
	ii) Battery cable &	Should be supplied with	Physically check by connecting
	Mounting fixtures	Radio	battery cable & mounting fixtures
			with radio.
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	iii) Antenna	i) 0dB/3dB gain whip antenna with	
		3 meters. Co-axial cable with	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
		connector, magnetic base/	
		mounting bracket for vehicle use	serviceability whether antenna
		will be provided as per user's	matched or not.
		requirements.	
		ii) 3dB/6dB gain Omni Directional	
		antenna with 30 meter RF Cable for	
		base station will be provided as per	
		user's requirements.	
	iv) Programming kit	<b>7</b>	1
		and hardware required for the set	
		will be provided as per user's	
		requirements.	available and working properly.
	v) Literature	i) Users manual with each radio	Physically check to confirm that
		sets should be provided free of cost	User and Technical manual are
		in soft as well as hard copy.	available in Hard as well as in Soft
		ii) Technical repairing manual with	Copy.
		complete block diagram, circuit	
		layout etc should be provided as per	
	\(\frac{1}{2}\)	users' requirement in soft as well as	
6	Configuration	hard copy.	
O	Configuration	Should be available	D- D-
	i) Caller ID display	Should be available	By Programming two radio sets
			with same frequency and different
			ID. And Making call from one
			radio and check display in
			another radio set, ID of caller radio should be displayed.
	ii) Busy channel	Should be available	Programmed one radio with busy
	lock out	Should so available	channel lock out option and make
			call from another radio on same
	V		frequency. In the mean time if we
			want to make call from first radio,
			its transmitter will remain disable
			till PTT of second radio is released.
	iii)Scan with	Should be available	Radio sets programmed with
	priority		priority scanning on pressing the
			scan button will start scanning
			channels with the priority.
	iv)Transmitter Time	The time should be programmed to	iv) PTT of Radio set programmed
	Out Timer (TOT)	best suit the application.	with TOT option be 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
1			screen.
	vi) Mode of calls	Selective Call, Group Call, Inter and	B.O.O. will check it practically by
		Intra Group call facility	making call.
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vii) Remote Radio Kill / Stun /Revive facility	Should be available	B.O.O. will check it practically by sending kill command to particular radio. Radio set received 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)	B.O.O 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	Allows a user to obtain help in	B.O.O. will check it practically by pressing emergency button.
Button	critical situations.	B.O.O. will check it practically by
x) SMS Texting	Should be capable of sending pre defined messages & short messages from keypad as Optional.	sending pre-defined messages from one radio to another. Message should be displayed in the screen of receiving radio.
xi) Programming	Front panel programming with password protection or PC programming	B.O.O. will check it practically by programming radio from front panel having password protection. Similarly Board will also programmed radio with the help of PC. • Radio set should be programmed from front panel as well as from PC also.
xii) Support GPS	Inbuilt GPS system with accuracy of less than 10 meters. (Optional-As per user requirement)	Firm will demonstrate features related with GPS, GIS and Networking mentioned at Sl No.6-
xiii) Networking	Should be IP based for automatic roaming etc.(Optional-As per user requirement)	(xii to xiv) to Board of Officers during trail).
xiv) GIS	Radio should have Application protocol interface along with software applications to provide locations and messaging on PC/Console (Optional-As per user requirement)	

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7.	rield Trial	The actual performance of the radio	Field trial of equipment will be
		set will be assessed.	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
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(Dilip Trivedi, IPS) (DG, CRPF)

# TRIAL DIRECTIVE FOR DIGITAL VHF REPEATER SET

Parameters	Specifications	Trial/Test Procedure
General	Control of the second of the s	
i) Frequency Range	136-174 MHz (Full Band)	Functional check: B.O.O will checo operation of radio set by programming lowest, highest and any random frequency in 136-174 MHz range with
ii) No. of channel	16 or more	the help of measuring instruments.  B.O.O will check all these parameter
iii) Channel Spacing	12.5 KHz or better	one by one with the help of standar testing instruments. If the standard testing instruments are the standard testing instruments.
iv) Frequency Stability	± 1.5 PPM or better	instruments are not available then firm must produce certificate of any Govern accredited lab or National Accreditation Board for Testing and Calibration Laboratories (NABL) approved laboratory or International Laboratory Accreditation Corporation (ILAC approved laboratory approved lab
v) Protocol &	Digital TDMA or FDMA	approved laboratory.  B.O.O will check all these parameter
Technology	Technology or better(User organization may decide	r with the help of standard testin
	protocol & Technology	instruments If the standard tes instruments are not available then firm
	as per their requirement/	must produce certificate of any Gove
	choice)	accredited lab or National Accreditation Board for Testing and Calibration Laboratorics (NABL) approved laboratory or International Laboratory Accreditation Corporation (ILAC) approved laboratory
vi) Typc of	Analog; 11K0F3E	B.O.O will check all these parameters
Emission	Digital;4FSK or	with the help of standard testing
(Modulation)	equivalent technique	instruments. If the standard tes
	complying to open	instruments are not available then firm
	standard / non proprietary Digital	must produce certificate of any Govt
	proprietary Digital Protocol as defined by an	accredited lab or National Accreditation
	international standards	Board for Testing and Calibration
	body like ETSI / FCC etc.	Laboratories (NABL) approved laboratory or International Laboratory Accreditation
i) Weight	Less than 15 Kg	Corporation (ILAC) approved laboratory. B.O.O. will check Physically to measure the weight by weighing machine.
ii) Power Source	i) DC -13.8 Volt ± 15%	Apply 230 VAC ±15% and 13.8VDC
	ii)AC-230Volt±15%,50Hz	±15% one by one and check that
	iii)There should be	whether set is working properly or
	provision to shift	otherwise.
	automatically on DC	
	supply during mains	
	failure & when mains	
	supply restored it should be shifted on mains from	
	DC supply	

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2	Transmitter	the way and the state of the st	B.O.O will check all these parameters
	i) R.F Power output	45 Watt or more (Programmable/ Selectable)	the entire frequency range mentioned the QR with the help of standard test instruments. If the standard t
	ii) FM Hum / Noise	-40 dB or better	instruments are not available then fi
	iii) Modulation Limiting	± 2.5 KHz@ 12.5 KHz	must produce certificate of any Go accredited lab or National Accreditati Board for Testing and Calibrat
	iv) Adjacent Chanel Power	-60 dB or better	Laboratories (NABL) approved laborate
	v) Audio Distortion	Less than 3%	or International Laboratory Accreditat Corporation (ILAC) approved laboratory
3	Receiver		B.O.O will check all these parameters
	i) Sensitivity	i) Analog:- 0.30 µV for 12 dB SINAD or better ii) Digital :- 0.30µV at 5% BER or better	the entire frequency range mentioned the QR with the help of standard test instruments. If the standard to instruments are not available then for
	ii) Selectivity	60 dB or better	must produce certificate of any Go
	(Adjacent channel)		accredited lab or National Accreditat
	iii)Inter Modulation	70 dB or better	
	iv) Audio Response v) Rated Audio	+1,-3 dB Less than 3%	Laboratories (NABL) approved laborat or International Laboratory Accreditat Corporation (ILAC) approved laboratory
4	Distortion Environmental Spe	oification	Firm must produce certificate of a
4	i) Operating Temperature	-30°C to +60 °C	Government accredited Lab. or NABL ILAC approved laboratory.
	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 Interfarelated function of repeater practically
6	Interfaces	Ethernet port RJ-45 to provide a) Wide area IP connectivity for Voice and Data. b) Remote monitoring	connecting it in user organization network.
		and status check.	
	Accessories	Ol 1d be assessed	B.O.O. will check it practically
7	<ul><li>i) Battery cable</li><li>&amp; Mounting fixtures</li></ul>	Should be supplied with Repeater	connecting battery cable & mount fixtures with repeater.
	ii) Antenna	3dB/6dB gain Omni Directional antenna with 45 meter RF Cable RG-217 for base station will be provided as per	B.O.O. will check it practically connecting antenna & accessories vertically repeater. During transmission the should be no mismatch between radio antenna.

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	iii) Programming	All necessary programming	proceeding client
	kit	software and hardware required	all necessary programming
		for the set will be provided as	
	ira) Titourat	per user's requirements.	available as per user requirement.
	iv) Literature	i) Users manual with each radio	B.O.O will check it Physically that
		sets should be provided free of	user and technical manual are
		cost in soft as well as hard copy.	available as per user requirement.
		ii) Technical repairing manual	
		with complete block diagram,	•
		circuit layout etc should be	
		provided as per users'	
		requirement in soft as well as	
		hard copy.	
8.	Field Trial	The actual performance of the	Field trial of equipment will be
		radio set will be assessed.	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.
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ohrai	b Ansari, CISF)	(R.K. Khumbhare, AC, SSB)	(M.S.Yadav,AC,CRPF)
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(O.S. Chauhan, AC, NSG)

kumar AC, ITBP)

(Brajesh Kumar, DC, BSF)

(Rajesh Ekka, DD, DCPW)

(Lt. Col Rajnish Kishore, AR)

[Sumit Gupta, PSO(E), BPR&D)

(Dr. Mayank Dwivedi Sc. "F" DLIC/DRDO)

[Virendra Agrawal, DIG (Eqpt), CRPF]

[Mahesh Kur HG(Comn), CRPF

[Shailendra Kumar, IG (Comm), CRPF]

(Dilip Trivedi, IPS) (DG, CRPF)