

F. No. IV-21011/24/09-Prov-I-MHA-Prov-I - 1782

भारत सरकार/Government of India

गृह मंत्रालय/Ministry of Home Affairs

पुलिस आधुनिकीकरण प्रभाग /Police Modernization Division

संभरण-I डेस्क /Prov.I Desk

Jaisalmer House, 26, Man Singh Road,
New Delhi, dated the 03rd November, 2016

To

The DsG: AR, BSF, CISF, CRPF, ITBP, NSG, SSB, IB & BPR&D.

Subject: Revised QRs and Trial Directives Broadband Radio Relay for PSTN Network Connectivity.

Sir,

The undersigned is directed to refer to the subject mentioned above and to say that the revised QRs and Trial Directives in respect of Broadband Radio Relay for PSTN Network Connectivity as per Annex-I and Annex-II, respectively have been approved by the competent authority in MHA.

2. Henceforth, all the CAPFs should procure and trial evaluate the above item, required by them, strictly as per the laid down revised QRs and TDs of Broadband Radio Relay for PSTN Network Connectivity.

3. Concerned CAPF will be accountable for correctness of the QRs and Trial Directives of Broadband Radio Relay for PSTN Network Connectivity.

4. QRs/Specifications of Radio Relay for PSTN Network Connectivity issued earlier vide MHA's letter No.IV-21011/24/2009-Prov-I dated 23.6.2009 and 14.9.2011 is rescinded.

Encl: As above.

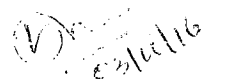
Yours faithfully,


(Ritesh Kumar)

Under Secretary to the Govt. of India

Copy forwarded for necessary action to:

SO (IT), MHA - with the request to host the QRs and Trial Directives of Broadband Radio Relay for PSTN Network Connectivity on official website of MHA (under the page of Organizational Set up, Police Modernization Division-Communication Equipments) and remove earlier QRs/Specifications of Direction Finder vide letter No. IV-21011/24/2009-Prov-I dated 23.6.2009 and 14.9.2011. Soft copy is being sent through email.



(V. Devadas)
Section Officer (Prov-I)

Copy to: DDG (Procurement), MHA

Amended draft QRs of Broadband Radio Relay for PSTN Network Connectivity

S/No	Nomenclature	Specifications
1	Radio configuration	PTMP System consisting of outdoor and indoor equipment (01 x Base station and 02 x CPEs), antenna, cables (RF/IF) with connectors, system software and all other hardware and software required for operation, monitoring and configuration of the link.
2	Frequency bands	5825 – 5875 MHz
3	Modulation	OFDM or latest
4	Tx output power (dBm)	The system with broadband modulation tech, the max peak output power shall not exceed 1 Watt. Effective Isotropic Radiated Power (e.i.r.p) shall not exceed 4 Watt.
5	Rx sensitivity (dBm)	Fade or gain margin shall be 20 dB or above. Typical range of operation shall be 20 Km (typical path loss of 132 dB). The receiver sensitivity parameter in dBm @ 10 ⁻⁶ BER shall be specified by the supplier.
6	RF Channel	Max 9 overlapping Channel in frequency band 5.825 GHz to 5.875 GHz in 5/10/20 MHz channel width configuration option or better.
7	Wireless Error Correction	FEC 1/2, 2/3, 3/4 and 5/6
Operational Parameters		
1	Standards Compliance	The offered radio systems should be of IEEE 802.3 network compliant and should have TEK/ AES 128 bit encryption or better.
2	Operating Modes	Point To Multi Point
3	Useful throughput	i) Base Station to support pure IP traffic of Min 50 Mbps throughput or better. ii) CPE to support, Min 10 Mbps throughput or better.
4	VLAN Support	VLAN Support: According to IEEE 802.1q standards should also support Double tagging Q in Q (DVLAN). Should separate VLANs for service traffic and management traffic.
5	Repeater Configuration	Base station to be programmable as repeater as per following format:- BS ↔ CPE (Baseband patching), CPE ↔ BS
6	Link Span in repeater Mode	Max 30 KMs in two hops (Refer Serial no. 5 of specification above)
7	Link distance	Max 15 KMs in one hop
Network Management and Security		
1	Network support	Ethernet support should be available
2	Antenna alignment tool	Buzzer/visual LEDs (SNR)
3	Management interface	Ethernet
4	Management Utilities	Centralized NMS- SNMP V1, V2 or latest and Telnet/SSH based.
5	Networking Management system	Should support SNMP
6	IPv6 support	Should be IPv6 ready
7	IP Protection	IP 66 standard or better.


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S/No	Nomenclature	Specifications
8	Bandwidth Configuration	System should be able to configure symmetric and asymmetric bandwidth upto 85%:15% or better in either direction. Upload and down load percentage should be user configurable in steps of 1%.
Physical, Environmental and Compliance Parameter		
1	Network connection	Ethernet
2	External Antenna connection	N Type Connector with weather proof casing
3	POE adaptor	IDU to provide power over Cat-5 or better quality cable to ODU
4	Power source	AC-230V +/- 10%, 50 Hz +/- 2 Hz, DC 12 V / 24 V / 48 V.
5	Power consumption	Less than 35 watt
6	Radio Operating environment	-10 deg to 55 deg C
7	Enclosure	All weather casing for outdoor unit.
8	Mounting accessory	Tower/Latticed mast pneumatic/hydraulic mast as per user requirement at the time of tendering.
9	Environmental compliance	EMC : FCC: 47 CFR Class B, Part15, Subpart B ETSI: EN 300 386, EN 301 489-1, EN 301 489-4 CAN/CSA-CEI/IEC: CISPR 22-04 Class B AS/NZS: CISPR 22-2004 Class B Safety : FCC/IC: UL 60950-1, UL 60950-22, CAN/CSA C22.2 60950-1, CAN/CSA C22.2 60950-22 ETSI:EN/IEC 60950-1, EN/IEC 60950-22
10	Power Backup	Power Backup: 2/1 KVA Standard UPS for base station / CPE respectively as per user requirement at the time of tendering.
Antenna Specifications		
1	Directional Antenna	<u>Electrical Parameters:</u> Frequency (MHz) : Licence free band Gain (dBi) : 2x29±0.5 VSWR (Max) : 1.5:1 H Plane BW (°): 6±0.5 E Plane BW (°): 6±0.5 Polarization : Linear V & H Front to Back Ratio (dB) >30 Cross Poln (dB) >32 <u>Mechanical Parameters</u> Mounting Style : Tower and Pole
2	60° Sectoral Antenna	<u>Electrical Parameters:</u> Frequency (MHz) : Licence free band Gain (dBi) : 2x18±0.5 VSWR (Max) : 1.5:1 H Plane BW (°): 60 ± 5 E Plane BW (°): 6 ± 1 Polarization : V & H Front to Back Ratio (dB) >26 Cross Poln (dB) >22 <u>Mechanical Parameters</u> Mounting Style : Tower and Pole

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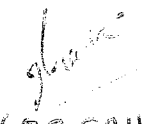
S/No	Nomenclature	Specifications
3	90° Sectoral Antenna	<p>Electrical Parameters: Frequency (MHz) : Licence free band Gain (dBi) : 2x18±0.5 VSWR (Max) : 1.5:1 H Plane BW (°) : 90 ± 5 E Plane BW (°) : 8 ± 1 Polarization : V & H Front to Back Ratio (dB) >26 Cross Poln (dB) >22</p> <p>Mechanical Parameters Mounting Style : Tower and Pole</p>
4	120° Dual Poln Sectoral Antenna	<p>Electrical Parameters: Frequency (MHz) : Licence free band Gain (dBi) : 2x16±0.5 VSWR (Max) : 1.5:1 H Plane BW (°) : 120 ± 5 E Plane BW (°) : 8 ± 2 Polarization : H & V Front to Back Ratio (dB) >26 Cross Poln (dB) >22</p> <p>Mechanical Parameters Mounting Style : Tower, Pole and Wall</p>


 (Narender Kumar)
 Sub-Insp, ITBP


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 (Manoj Kumar)
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 ESG,NSG



 (Maj Amit)
 Comn GP,NSG

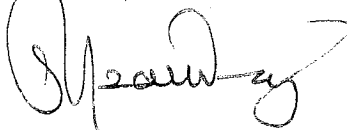

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 Rep of BPR&D


 (P.C. Jha)
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 (Devenara Singh Rawat)
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 R.P. Pandey
 IG(Comn),CRPF

Approved/Not Approved


 (K. Durga Prasad, IPS) 4/7/16.
 DG, CRPF

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Annexure-B

TDs of Broadband Radio Relay for PSTN Network Connectivity

All parameters/specifications mentioned in QRs will be checked by the Board of Officers by ascertaining/verifying in the presence of authorized representative of the firm. In case of any discrepancies/problem, the 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 CAPFs, same will be arranged by the firm.

- (a) **Physical Checks**: In this category specifications of the equipment will be checked physically as per QRs.
- (b) **Functional Check**: The rep of firm will show all features/ configuration of the equipment functioning on ground to the board of officers during trials.
- (c) **Submission of certificates**: Specification which cannot be checked due to lack of testing facilities/ expertise will be complied by Firm by producing OEM certificate or lab test certificate as per requirement mentioned in TDs.

SNo	Nomenclature	Specifications	Draft Trial Directives
1	Radio configuration	PTMP System consisting of outdoor and indoor equipment (01 x Base station and 02 x CPEs), antenna, cables (RF/IF) with connectors, system software and all other hardware and software required for operation, monitoring and configuration of the link.	The Board will also carry out physical check as well as functional test of the mentioned parameter. In case of any discrepancies/ problem the rep of firm will demonstrate the features to be Board of officer. Firm will also submit OEM compliance and system capability certificate.
2	Frequency bands	5825 – 5875 MHz	
3	Modulation	OFDM or latest	
4	Tx output power (dBm)	The system with broadband modulation tech, the max peak output power shall not exceed 1 Watt. Effective Isotropic Radiated Power (e.i.r.p) shall not exceed 4 Watt.	
5	Rx sensitivity (dBm)	Fade or gain margin shall be 20 dB or above. Typical range of operation shall be 20 Km (typical path loss of 132 dB). The receiver sensitivity parameter in dBm @ 10 ⁻⁶ BER shall be specified by the supplier.	The Board will also carry out physical check as well as functional test of the mentioned parameter. In case of any discrepancies/ problem, the rep of firm will demonstrate the features to the Board of officer. Firm will also submit OEM compliance and system capability certificate.

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SNo	Nomenclature	Specifications	Draft Trial Directives
6	RF Channel	Max 9 overlapping Channel in frequency band 5.825 GHz to 5.875 GHz in 5/10/20 MHz channel width configuration option or better.	The Board will also carry out physical check as well as functional test of the mentioned parameter. In case of any discrepancies/ problem, the rep of firm will demonstrate the features to the Board of officer. Firm will also submit OEM compliance and system capability certificate.
7	Wireless Error Correction	FEC 1/2, 2/3, 3/4 and 5/6	
Operational Parameters			
1	Standards Compliance	The offered radio systems should be of IEEE 802.3 network compliant and should have TEK/ AES 128 bit encryption or better.	The Board will also carry out physical check as well as functional test of the mentioned parameter. In case of any discrepancies/ problem, the rep of firm will demonstrate the features to the Board of officer. Firm will also submit OEM compliance and system capability certificate.
2	Operating Modes	Point To Multi Point	
3	Useful throughput	i) Base Station to support pure IP traffic of Min 50 Mbps throughput or better. ii) CPE to support, Min 10 Mbps throughput or better.	
4	VLAN Support	VLAN Support: According to IEEE 802.1q standards should also support Double tagging Q in Q (DVLAN). Should separate VLANs for service traffic and management traffic.	
5	Repeater Configuration	Base station to be programmable as repeater as per following format:- BS ↔ CPE (Baseband patching), CPE ↔ BS	
6	Link Span in repeater Mode	Max 30 KMs in two hops (Refer Serial no. 5 of specification above)	
7	Link distance	Max 15 KMs in one hop	
Network Management and Security			
1	Network support	Ethernet support should be available	Firm must submit OEM compliance certificate.
2	Antenna alignment tool	Buzzer/visual LEDs (SNR)	Firm will demonstrate Antenna alignment using Buzzer/visual LEDs (SNR).
3	Management interface	Ethernet	Firm will demonstrate Ethernet port working.
4	Management Utilities	Centralized NMS- SNMP V1, V2 or latest and Telnet/SSH based.	Firm will demonstrate necessary hardware eqpt for configuration /maintenance of the terminal.

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SNo	Nomenclature	Specifications	Draft Trial Directives
5	Networking Management system	Should support SNMP	Firm must submit OEM compliance certificate.
6	IPv6 support	Should be IPv6 ready	BOO will check practically to support IPv6. Firm must submit OEM compliance certificate.
7	IP Protection	IP 66 standard or better.	Firm must produce certificate of any Govt. accredited lab or National Accreditation Board for Testing and Calibration (NABL) approved laboratory or International Laboratory Accreditation Corporation (ILAC) approved laboratory.
8	Bandwidth Configuration	System should be able to configure symmetric and asymmetric bandwidth upto 85%:15% or better in either direction. Upload and down load percentage should be user configurable in steps of 1%	Firm must submit OEM compliance certificate.
Physical, Environmental and Compliance Parameter			
1	Network connection	Ethernet	Firm will show Ethernet port.
2	External Antenna connection	N Type Connector with weather proof casing	Firm will show N Type Connector with weather proof casing.
3	POE adaptor	IDU to provide power over Cat-5 or better quality cable to ODU	Firm will demonstrate POE as specified in the QR.
4	Power source	AC-230V +/- 10%, 50 Hz +/- 2 Hz, DC 12 V / 24 V / 48 V.	Firm will demonstrate AC-230V +/- 10%, 50 Hz +/- 2 Hz, DC 12/24 /48 V.
5	Power consumption	Less than 35 watt	Firm must submit OEM compliance certificate.
6	Radio Operating environment	-10 deg to 55 deg C	Firm must produce certificate of any Govt. accredited lab or National Accreditation Board for Testing and Calibration (NABL) approved laboratory or International Laboratory Accreditation Corporation (ILAC) approved laboratory.
7	Enclosure	All weather casing for outdoor unit.	
8	Mounting accessory	Tower/Latticed mast pneumatic/hydraulic mast as per user requirement at the time of tendering.	Board will check all mounting accessory practically as described in the QRs.

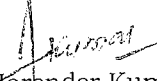
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SNo	Nomenclature	Specifications	Draft Trial Directives
9	Environmental compliance	EMC : FCC: 47 CFR Class B, Part15, Subpart B ETSI: EN 300 386, EN 301 489-1, EN 301 489-4 CAN/CSA-CEI/IEC: CISPR 22-04 Class B AS/NZS: CISPR 22-2004 Class B Safety : FCC/IC: UL 60950-1, UL 60950-22,CAN/CSA C22.2 60950-1, CAN/CSA C22.2 60950-22 ETSI:EN/IEC 60950-1, EN/IEC 60950-22	Firm must produce certificate of any Govt. accredited lab or National Accreditation Board for Testing and Calibration (NABL) approved laboratory or International Laboratory Accreditation Corporation (ILAC) approved laboratory.
10	Power Backup	Power Backup: 2/1 KVA Standard UPS for base station / CPE respectively as per user requirement at the time of tendering.	BOO check its practically.
Antenna Specifications			
1	Directional Antenna	Electrical Parameters: Frequency (MHz) : Licence free band Gain (dBi) : 2x29±0.5 VSWR (Max) : 1.5:1 H Plane BW (°) : 6±0.5 E Plane BW (°) : 6±0.5 Polarization : Linear V & H Front to Back Ratio (dB) >30 Cross Poln (dB) >32 Mechanical Parameters Mounting Style : Tower and Pole	The Board will also carry out physical check as well as functional test of the mentioned parameter. In case of any discrepancies/ problem the rep of firm will demonstrate the features to be Board of officer. Firm will also submit OEM compliance and system capability certificate.
2	60° Sectoral Antenna	Electrical Parameters: Frequency (MHz) : Licence free band Gain (dBi) : 2x18±0.5 VSWR (Max) : 1.5:1 H Plane BW (°) : 60 ± 5 E Plane BW (°) : 6 ± 1 Polarization : V & H Front to Back Ratio (dB) >26 Cross Poln (dB) >22 Mechanical Parameters Mounting Style : Tower and Pole	The Board will also carry out physical check as well as functional test of the mentioned parameter. In case of any discrepancies/ problem the rep of firm will demonstrate the features to be Board of officer. Firm will also submit OEM compliance and system capability certificate.


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SNo	Nomenclature	Specifications	Draft Trial Directives
3	90° Sectoral Antenna	<p>Electrical Parameters: Frequency (MHz) : licence free band Gain (dBi) : 2x18±0.5 VSWR (Max) : 1.5:1 H Plane BW (°) : 90 ± 5 E Plane BW (°) : 8 ± 1 Polarization : V & H Front to Back Ratio (dB) : >26 Cross Poln (dB) : >22</p> <p>Mechanical Parameters Mounting Style : Tower and Pole</p>	The Board will also carry out physical check as well as functional test of the mentioned parameter. In case of any discrepancies/ problem the rep of firm will demonstrate the features to be Board of officer. Firm will also submit OEM compliance and system capability certificate.
4	120° Dual Poln Sectoral Antenna	<p>Electrical Parameters: Frequency (MHz) : licence free band Gain (dBi) : 2x16±0.5 VSWR (Max) : 1.5:1 H Plane BW (°) : 120 ± 5 E Plane BW (°) : 8 ± 2 Polarization : H & V Front to Back Ratio (dB) : >26 Cross Poln (dB) : >22</p> <p>Mechanical Parameters Mounting Style : Tower, Pole and Wall</p>	The Board will also carry out physical check as well as functional test of the mentioned parameter. In case of any discrepancies/ problem the rep of firm will demonstrate the features to be Board of officer. Firm will also submit OEM compliance and system capability certificate.



 (Narender Kumar)
 (SI, ITBP)

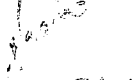

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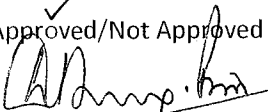
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