BR02

BR02 Repeater

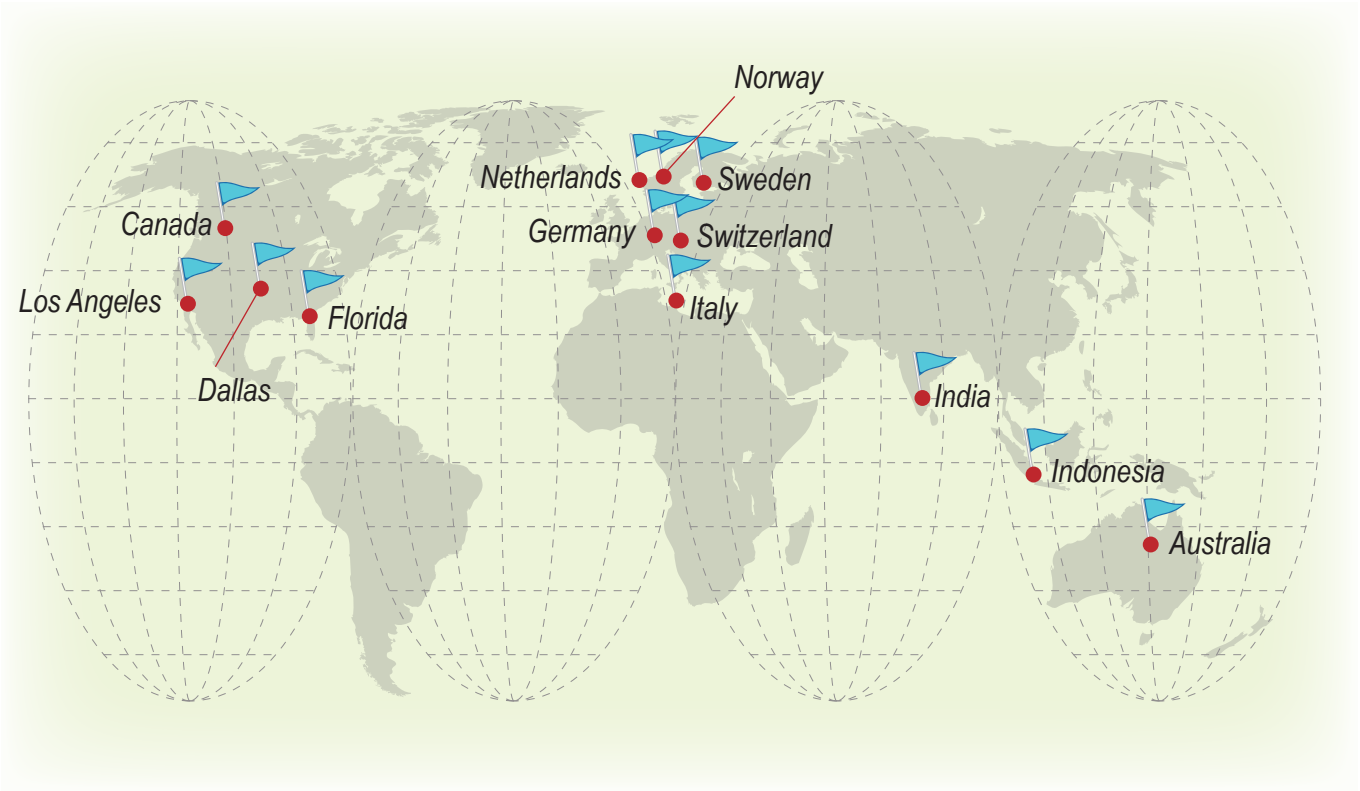
(Manpack, Vehicle Mounted and Fixed Station)

Please contact us with our Toll Free phone number : 888-657-2963
Leave a message on the Unication Website : http://www.unication.com or http://www.unicationusa.com

Content

What is Unication ?

- Unication Co., Ltd was originally founded in 1992 and has 27 years' experience with designing and manufacturing advanced critical communication solutions and systems. The innovation and advancement of Unction's professional radio communications products is the main spindle of the brand's development.
- Unication currently has independent design centers or sales companies in Los Angeles, Dallas, Florida, Poca Reyton, Canada, Australia, and Germany.
- As of now, Unication radio products have been sold to the United States / Canada, the Netherlands, Norway, Sweden, Switzerland, Australia, Italy, India, Indonesia and Middle East countries



Why did Unication design the BR02 Radio and Repeater Dual Mode Mobile (Manpack, Vehicle Mounted and Fixed Station)?

- The BR02 was primarily designed for public safety sectors and military applications, with a large power output and long-distanced communication capability. It is considered as a mobile radio device, which has higher transmission power (up to 50W), longer communication distance and various installations (vehicle mounted, manpack, desktop based and frame mounted), comparable to the portable radio devices (e.g. U3 and U4). In addition to working as a manpack radio or a vehicle mounted radio, the BR02 radio can also be used as a Radio Console with PC and monitor screen.

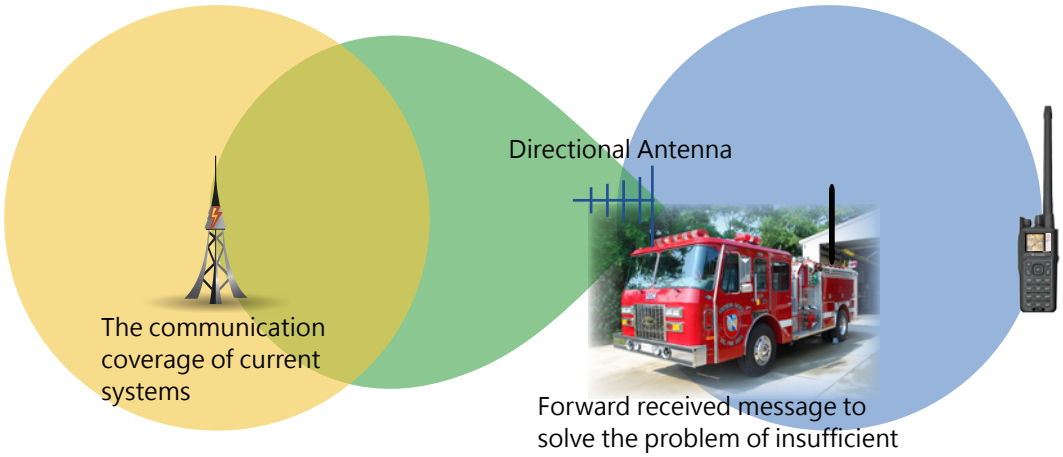
• **M2 Manpack**

• **M2 Vehicle Mounted**

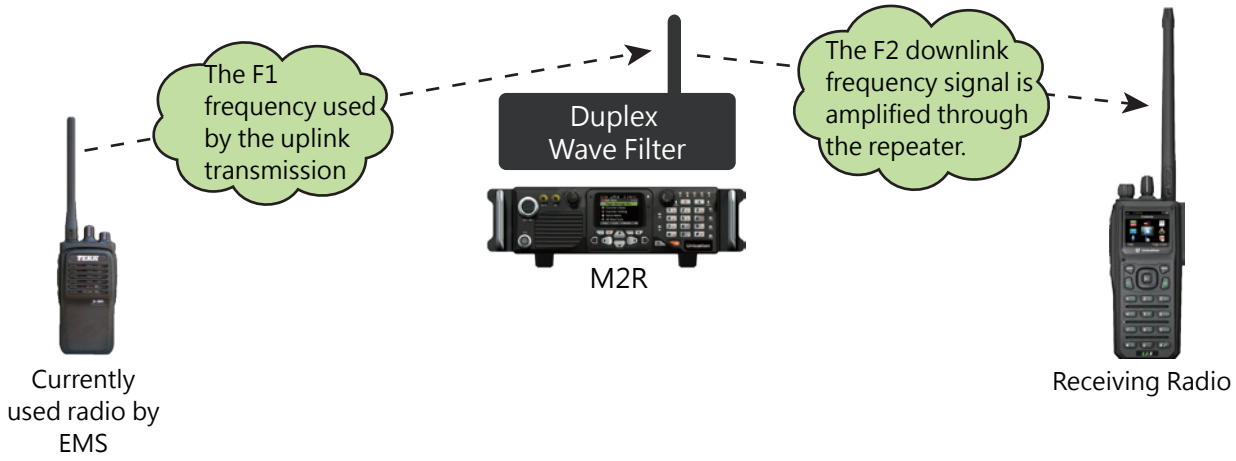
• **M2 Desktop**

• **M2 19” Fixed Station**

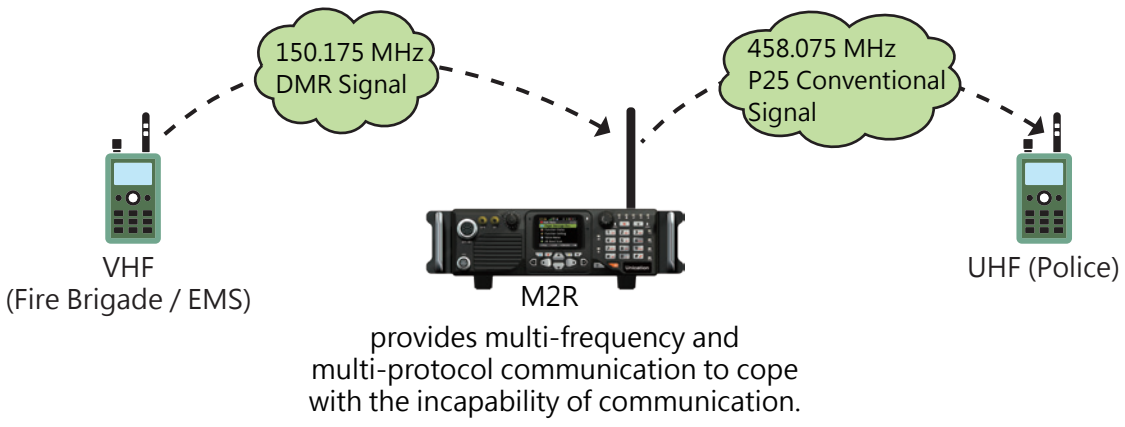
- To solve the problem of insufficient communication coverage of current systems.



- When users are out of the communication range covered by the systems, or the current system is damaged or malfunctioning, BR02 can quickly extend the communication range.



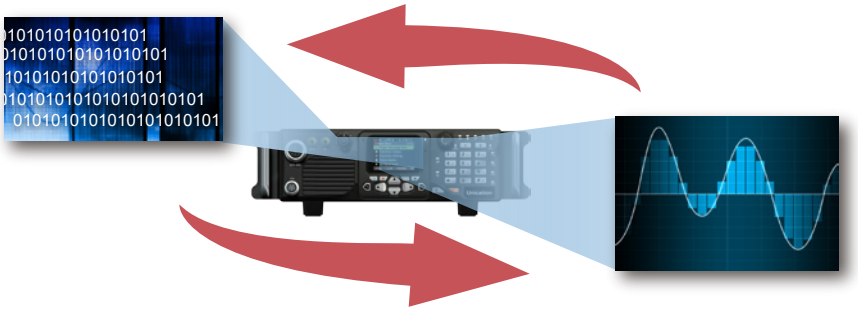
- To solve the communication problem that there are different radio frequency or different protocol of the public safety department while dispatching on site.



What are the features of the BR02 Long Distance Radio Signal Repeater (Manpack, Vehicle Mounted, and Fixed Station)?

● Support Both Digital and Analog Systems :

Support protocols of both Analog and Digital systems at the same time, and the coexistence of both Analog and Digital systems. Both Analog and Digital signals can be compatible in one frequency channel. The device will distinguish and decrypt the receiving signal as well as select the transmission mode automatically, so the transition from analog to digital mode is smoother and easier.



● GPS Location Report and Map Information Display :

Image Transmission: GPS location, voice and text memo can be attached to the photos, and users can transmit the photos by BR02. The receivers are able to check the photos and the notes of photos from the BR02 directly.

● Encrypted Communication :

With the exclusive techniques on DVOA (Digital Voice over Analog), the BR02 is capable of digital encrypted communication, such as AES-256, over both Digital and Analog systems. It highly enhances the performance of encryption and lowers the costs of traditional analog system, ensuring the communication is safe and secure. Meanwhile, users benefit from the great communication quality of Digital systems; even when using the Analog system.

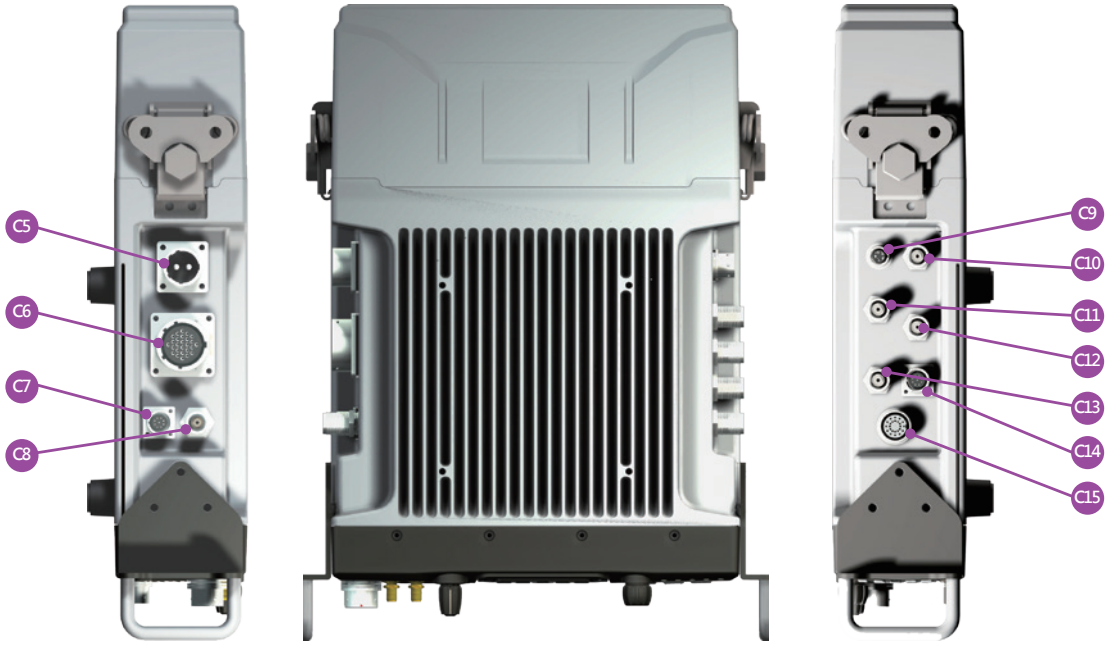
● Flexible and Numerous Types of Power Supply :

Large capacity battery can be purchased as optional, which allows communication without vehicle power supply or city power needed.

■ BR02 (Manpack, Vehicle mounting, Fixed Station) Specification and Function Description :

● BR02 Overview :

● Left Side View ● Top View ● Right Side View



● Front View

A : Button / Knob	
A1	Channel Knob
A2	Switch / Volume Knob
A3	Dynamite Function Button
A4	Back Button
A5	Navigation Button
A6	Enter Button
A7	Menu Button
A8	Emergency
A9	Button Number Button
A10	DVR Button
A11	Switch Button

B : LED Indicator	
B1	Alert Indicator
B2	Message Unread Indicator
B3	Voice Memo LED Indicator
B4	Power Indicator
B5	Channel Busy Indicator
B6	Tx / Rx Indicator
B7	GPS Status Indicator
B8	BT Status Indicator
B9	Function Switch Indicator
B10	Tx Repeater Status Indicator A
B11	Tx Repeater Status Indicator B
B12	Rx Repeater Status Indicator A
B13	Rx Repeater Status Indicator B

C : Port	
C1	USB Port (5 Pin)
C2	Microphone Port
C3	GPS Antenna Port
C4	BT Antenna Port
C5	Power Input Port (2 Pin)
C6	Auxiliary Connector Port
C7	RJ45 Port
C8	UHF Antenna Port
C9	Fan Connector
C10	UHF Antenna Port
C11	UHF Antenna Port (Manpack)
C12	Linear PA RX Connector
C13	Connector to External PA
C14	RJ45 Ethernet Connector
C15	External PA control Connector

D : LCD Sreen	
D1	2" High Brightness Color Display

E : Sensor	
E1	Microphone

■ BR02 Series			BR02		
■ BR02 Series Model Number			Basic	Advanced	Full Function
A BR02 Description					
A1	Frequency Range	WLB：30 to 88MHz VHF：136 to 174MHz UHF：400 to 470MHz 700/800：764-776 MHz 794-806 MHz 806-824 MHz 851-870 MHz	●	●	●
A2	Maximum Output	WLB：50W VHF：50W UHF：50W 700/800：35W	●	●	●
A3	Tx/Rx Bandwidth	25K, 20K，12.5K	●	●	●
A4	Receiving and Sending Signal Mode	1. The analog and digital signal can be mix-used in the same time. 2. It can auto-detect the coming signal mode and the protocol, and inter-modulate and decrypt based on the result. Users do not need to manually switch the channel.	●	●	●
A5	Usage of Equipment	Desktop and placed in the rack	●	●	●
B Compatibility of BR02 with other current equipment					
B1	Multiple certified standard protocols for users to choose from.	1. Protocol provided by Analog system: CTCSS / CDCSS, 2Tone, 5/6 Tone, MDC1200, uniDVOA 2. Protocol provided by Digital system: DMR, P25C, Full Duplex Mode 3. Protocol provided by Trunking system: P25T / Phase1, P25T / Phase2	●	●	●
B2	Analog and digital signal mixed	1. Automatically distinguish the coming signal mode (analog or digital) and protocol, then automatically turn on the corresponding module of demod-ulation and decoding. 2. Automatically use the same signal mode and protocol as the coming message once the radio is in "Hang times". 3. Users can achieve this function without switching the channels.	●	●	●
B3	Certification of compatibility	1.P25 CAP： Project 25 Compliance Assessment Program 2. DMR	●	●	●

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C Operating Environment of BR02					
C1	Operating environment of radio		Operating Temperature -30℃ to +60℃ Storage Temperature -55℃ to +85℃		
C2	Operating environment of color display		-30 ℃ ~ 70 ℃		
C3	Operating environment of battery		-20℃ ~ +60℃		
C4	Waterproof Condition of the Equipment		IP54		
C5	Dustproof Condition of the Equipment		IP54		
C6	Anti-Drop Condition of Equipment		MIL-STD 810 C / D / E / F / G		
C7	Safety Regulation of Product Design		FCC and IC, CE, ROHS, P25CAP		
D BR02 Hardware Description					
D1	Specification of Equipment Hardware		Please refer to D1-2		
D2	Dimension	Height (H) (mm)	212.3(exclu. Bat.) 243.5mm(inclu.bat)		
		Width (W) (mm)	230		
		Thickness (T) (mm)	75		
D3	Texture		Aluminum		
D4	Weight (Without antenna and battery)		3.2Kg		
D5	Specification of Screen Display		2″ 320*240 dots 262K Color		
D6	Radio Battery Specification	Li-Ion battery	●		
		Capacity (Ah)	WLB : 19.2?AH UHF : ? AH, VHF : ? AH 700/800MHz : ?AH		
		Maximum Voltage	WLB : 25.2V UHF & VHF & 700/800 MHz : 16.8V		
		Standard Voltage	WLB : 21.6V UHF & VHF & 700/800MHz 14.4V		
		Battery life (with ? Ah battery, full-charged in the condition "Tx : Rx : Standby = 5 : 5 : 90")	WLB : ?H / UHF : ?H / VHF : ? H / 700/800MHz : ?H		
E BR02 UI and Hardware Interface					
E1	Hardware Interface	1. RJ45 Ethernet Connector*2	●	●	●
		2. USB OTG Connector	●	●	●
		3. GPS Antenna Connector	—	●	●
		4. BT Antenna Connector	—	●	●
		5. 5. AUX port (Only support by Mobile / Desktop model) connects with the connector of external output power speaker	●	●	●
		6. Power Supply Input	●	●	●
		7. FAN Connector	●	●	●
		8. TX Antenna for Repeater	●	●	●
		9. RX Antenna for Repeater	●	●	●
		10. External PA Control Interface	—	●	●
		11. External PA Signal Input	—	●	●

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E BR02 UI and Hardware Interface					
E2	Operation UI & Hardware Interface	Power Switch and Volume Knob	●	●	●
		Channel Knob * 1 a. Switching of 16 channels in one zone b. Provide the 16 sending/receiving zone for users to set. c. Provide 256 sending/receiving table for users to set.	●	●	●
E3	LED Indicator	Power Switch & Indicator (Red / Green / Orange)	●	●	●
		GPS Status Indicator (Orange / Green)	—	●	●
		BT Status Indicator (Red / Blue)	—	●	●
		Repeater Traffic Status Indicator has 4 LED : a. TXA (Green) b. TXB (Green) c. RXA (Green) d. RXA (Green)	●	●	●
		External Ethernet traffic Status Indicator (Green)	●	●	●
		Shift LED (Three Colors) Different LED colors show multiple usage on the keypad	●	●	●
		Device Abnormal Alert Indicator (Red / Orange Color)	●	●	●
F BR02 UI and Hardware Interface					
F1	Fundamental Frequency (Logic, Audio, Power)	1. Main CPU + Digital Signal Processor	●	●	●
		2. Sub CPU + Digital Signal Processor	●	●	●
		3. Memory	●	●	●
		4. LCD + LCD backlight and drive circuit	●	●	●
		5. Keys and keypad backlight	●	●	●
		6. Audio codec + Audio power amplifier	●	●	●
		7. Geographic Information System (GIS)	—	●	●
		8. Sensor (light sensor, temperature sensor)	●	●	●
		9. Bluetooth	—	●	●
		10. Ethernet & HUB	●	●	●
		11. Power System	●	●	●
		12. Charging circuit + Power path switching	●	●	●
		13. External Port	●	●	●
F2	RF	1. RX (LNA, Mixer, VCO, BPF...)	●	●	●
		2. TX (driver, modulator, PA...)	●	●	●
		3. RF controllor (CPLD, FPGA...)	●	●	●

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G BR02 Receiver Electrical Specification					
G1	Sensitivity	Analog	≦ -118 (12 dB SINAD)dBm		
		Digital	≦ -118 (5% BER) dBm		
G2	Adjacent Channel Rejection	25 kHz	70dB		
		12.5 kHz	55dB		
G3	Spurious Response Rejection		≧ 80dB		
G4	Intermodulation Rejection		≧ 70dB		
G5	Hum and Noise Ratio	Unsquelched +/- 5.0 kHz	40dB		
		Squelched +/- 5.0 kHz	-57dBw		
G6	Blocking Rejection		≧ 90dB		
H BR02 BR02 Transmitter Electrical Specification					
H1	Output Power		50W (WLB, UHF, VHF) / 30W (700/800MHz)		
H2	Frequency Stability		≦ 0.5PPM		
H3	FM Hum and Noise Ratio	+ / - 2.5 kHz	≧ 34dB		
		+ / - 4kHz	≧ 38dB		
		+ / - 5 kHz	≧ 40dB		
H4	AM Echo and Noise		≧ 34dB		
H5	Unnecessary Radiated Spurious Emission		≧ 70dB		
H6	Unwanted Emissions: Adjacent Channel Power Ratio	Analog / < 20 kHz	60dBc		
		Analog / > 20 kHz	70dBc		
		Digital / > 20 kHz	60dBc		
H7	Transmit Delay Time		≦ 125ms		
I BR02 Transmitter Electrical Specification					
I1	Main CPU Performance	Main Frequency :(No Suggestions) MIPS:TBD.	●	●	●
I2	Sub CPU Performance	Main Frequency : 266 MHz MIPS:TBD.	●	●	●
I3	Memory	RAM : 64MB / Flash : 1GB	●	●	●
I4	Audio	Audio Distortion : <3% Speaker Audio SPL : ≧ 92dB Audio SINAD : ≧ 30dB Frequency Response Curve : Match	●	●	●
I5	GPS	Supported GIS positioning System GPS / Beidou / Galileo / Glonass / QZSS	—	●	●
		Frequency : 1.57 GHz	—	●	●
		Receive Sensitivity : ≦-140 dBm	—	●	●
		TTFF (Time To First Fix) Cold Start GPS≦31s, Glonass ≦ 53.9s ; Beidou ≦ 80s, GPS+Glonass ≦ 27s; GPS+ Beidou ≦ 32.2s	—	●	●

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I BR02 Transmitter Electrical Specification					
I5	GPS	TTFF (Time To First Fix) Hot Start: GPS ≦1s, Glonass ≦3.2s; Beidou≦2.1s, GPS + Glonass ≦1.1s; GPS+ Beidou ≦1.1s	–	●	●
		Horizontal Accuracy：GPS ≦1m, Beidou≦TBD, GPS+Glonass≦1.5m; GPS+ Beidou≦2.5m	–	●	●
I6	BT	2.4GHz BT4.1 Supports BT class 1(<100m) Sensitivity < -90dBm	–	●	●
I7	Current consumption in different working mode	Current consumption is ≦ 15 mA when the BR02 is in power off mode	●	●	●
		Current consumption of BR02 in standby receiving mode within power supply voltage range is： 1) LCM Off / Speaker Off ≦360mA 2) LCM On / Speaker On ≦500mA	●	●	●
		Current consumption of BR02 in transmitting mode within power supply voltage range is ： ≦15A @50W TX, ≦11A @25W TX ≦8A @10W TX, ≦6 A @50W TX	●	●	●
I8	External power supply specification	Power input is DC11-36V/0-30A	●	●	●
I9	Battery supply specification	DC：12-26V/0-15A	●	●	●
J BR02 Communication Protocol					
J1	Provide multiple certified and standard communication protocol for users to choose	Communication protocol of analog system 1. CTCSS/CDCSS 2. 2 Tone 3. 5/6 Tone 4. MDC1200 5. Uni DVOA	●	●	●
		Communication protocol of digital system 1. DMR 2. P25(c)	●	●	●
		Communication protocol of trunking system 1. P25(T) / Phase 1 2. P25(T) / Phase 2	–	●	●
K Encryption system of BR02					
K1	Provide communication encryption function (Fip#2 level)	1. Provide AES-256 encryption and decryption function for the sending and receiving of voice/text/photo 2. Provide each “TGID” for the function of independent setting “encryption key”	–	●	●

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L	BR02 standard certification				
L1	Standard certified safety certification of BR02	FCC and IC, CE, ROHS	●	●	●
L2	Compatibility certification of BR02	P25 CAP, DMR Tire I	●	●	●
L3	Battery certification	The cell itself must pass UL-1642, Cell List can be checked on the UL website; the pack itself must pass UL-2054 and the Battery Pack List or IEC62133 certification can be checked on the UL website.	●	●	●
M	Standard accessories of BR02				
M1	Standard accessories	1. External Speak & Mic	●	●	●
		2. Power supply cable	●	●	●
		3. RJ45 Ethernet Cable	●	●	●
		4. USB Programming Cable	●	●	●
		5. External RF Antenna	●	●	●
		6. External GPS Antenna	—	●	●
		7. External BT Antenna	—	●	●
M2	Optional accessories	1. Power Supply,240/230/120 VAC - 13.8-19 VDC, 30 Amp City power supply	●	●	●
		2. Main Battery with AL housing	—	—	●
		3. M2 City Power Battery Charger	—	—	●
		4. Car ignition wire cable	—	●	●
		5. Duplexer, pre-filter, antenna and RF Cable, lightning arrester	—	●	●
		6. AUX cable	—	●	●
		7. External 100-200W Power Amplifier and connecting cable	—	—	●
		8. Military power supply (MIL-STD-1399- 300B certification)	—	—	●
N	Repeater Functions of BR02				
N1	Provide access code to access repeater function	1. Carrier 2. CTCSS / CDCSS 3. Carrier and CTCSS / CDCSS 4. Single tone (in band) 5. DTMF v v v 6. MDC1200 Repeater ID 7. MDC1200 Repeater ID + CTCSS / CDCSS 8. UniDMR Basestation ID 9. P25 NAC	●	●	●

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N Repeater Functions of BR02					
N2	Provides multiple certified voice or data repeater functions of standard communication protocols	Communication protocol repeater provided by analog system 1. Analog voice 2. Analog voice with CTCSS or CDCSS (configura ble separately between RX & TX) 3. DTMF followed by Analog Voice 4. DTMF with CTCSS or CDCSS followed by Analog Voice 5. 2Tone followed by Analog Voice 6. 2Tone with CTCSS or CDCSS followed by Analog Voice 7. 5/6Tone followed by Analog Voice 8. 5/6Tone with CTCSS or CDCSS followed by Analog Voice 9. MDC1200 control followed by Analog Voice or MDC1200 Data 10. MDC1200 control with CTCSS or CDCSS followed by Analog Voice or MDC1200 Data 11. UDC2400 control followed by DVOA digital voice or data 12. UDC2400 control with CTCSS or CDCSS followed by DVOA digital voice or data	●	●	●
		Communication protocol of digital system 1. DMR control followed by Unication 2400 bps digital voice (UniDMR) or DMR data 2. Linear P25 Phase 1 control followed by P25 Digital Voice or P25 Data 3. FM P25 Phase 1 control followed by P25 Digital Voice or P25 Data	●	●	●
N3	Broadcast the Repeater's ID When the Channel is Free		●	●	●
N4	It provides channel status, device status monitoring function (remote notification function) by using Console , which can monitor the status of Repeater remotely by 1. Ethernet 2. Microwave 3. 2G / 3G / 4G / 5G 4. BT transfer to equipment with network function.	Provide channel monitoring function 1. External duty handheld radio's voice message recording and retrieval. 2. External duty handheld radio's text message recording and retrieval. 3. External duty handheld radio's picture message recording and retrieval. 4. Receiving and saving the location information sent from the external duty handheld radio and retrieval. 5. External duty handheld radio's OTA messages and retrieval . 6. Monitoring emergency messages sent from external duty handheld radio	●	●	●

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N Repeater Functions of BR02					
N5	Providing external duty handheld radios' control function by using console	Providing control function of external duty Radio 1. Send voice call to external duty handheld radio 2. Send text message to external duty handheld radio 3. Send picture message to external duty handheld radio 4. Send OTA type message to external duty handheld radio	●	●	●
N6	Providing remote control repeater function by using console	Providing control function of repeater device 1. Repeater function's On/Off control 2. Adjust repeater's TX power 3 Adjust repeater's channel parameter	●	●	●
N7	Providing the function of interconnecting multiple repeaters	Interconnecting by Ethernet	●	●	●
N8	BR02 repeater's other function	1. Voice Monitor And Record 2 Supporting Simulcast (simulcast) function 3. Repeater channels Qty: 1 CH? 4. Providing external 100W-200W 5. PA interface	●	●	●

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