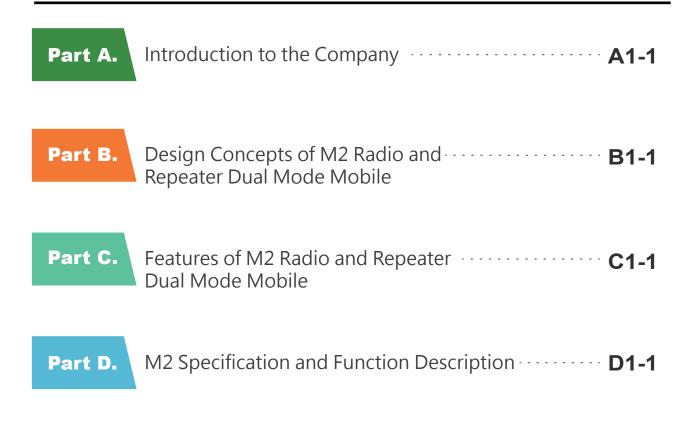# M2

M2 Radio & Repeater dual mode mobile
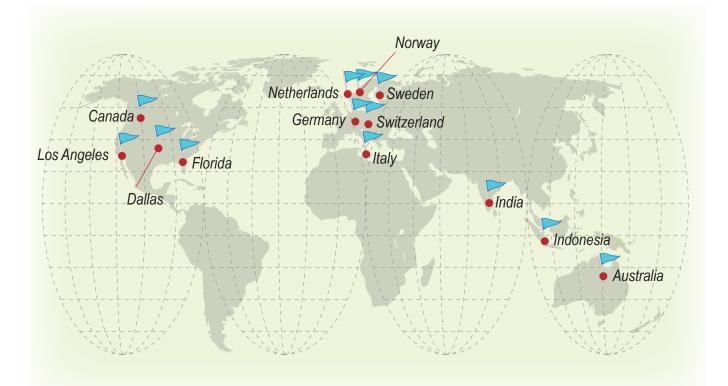
目錄

■ 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 M2 Radio and Repeater Dual Mode Mobile (Manpack, Vehicle Mounted and Fixed Station)?

● The M2 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), comparible to the portable radio devices (e.g. U3 and U4). In addition to working as a manpack radio or a vehicle mounted radio, the M2 radio can also be used as a Radio Console with PC and monitor screen.
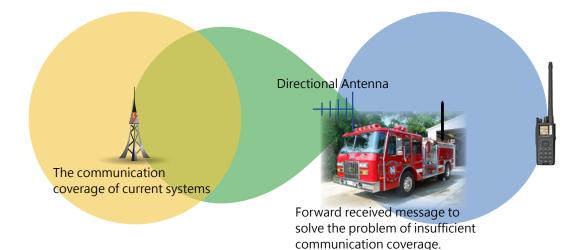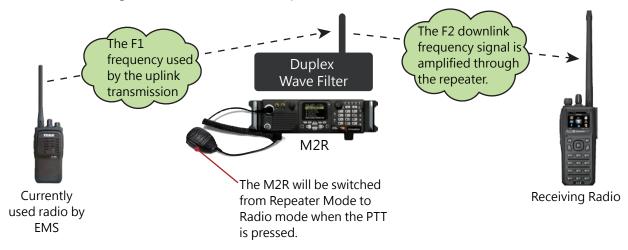

● **M2 Manpack**

● **M2 Vehicle Mounted**

● **M2 Desktop**

● **M2 19" Fixed Station**

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

Directional Antenna

The communication coverage of current systems

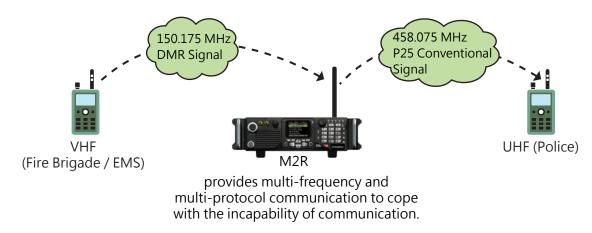Forward received message to solve the problem of insufficient communication coverage.

● When users are out of the communication range covered by the systems, or the current system is damaged or malfunctioning, the Radio & Repeater Dual Mode of M2R can quickly extend the communication range. M2R is a Radio and a Repeater all in one.

The F1 frequency used by the uplink transmission

Duplex Wave Filter

The F2 downlink frequency signal is amplified through the repeater.

M2R

The M2R will be switched from Repeater Mode to Radio mode when the PTT is pressed.

Currently used radio by EMS

Receiving Radio

● To solve the communication problem that there are different radio frequency or different protocol of the public safety department while dispatching on site.
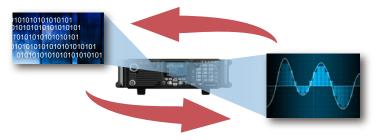
150.175 MHz DMR Signal

458.075 MHz P25 Conventional Signal

VHF (Fire Brigade / EMS)

M2R

UHF (Police)

provides multi-frequency and multi-protocol communication to cope with the incapability of communication.

What are the features of the M2 Long Distance Radio Signal Repeater (Manpack, Vehicle Mounted, and Fixed Station)?

● A Long Distance Radio Signal Repeater (Manpack, Vehicle Mounted, and Fixed Station) with numerous functions and features:

Unication's 50 W Smart Manpack / Mobile Radio is different from ordinary Single Function Mobile Radios, but more like a Smartphone. The Smart Radio contains an independent operating system which not only allows users to customize the two-way radio of the APP, but also comprises various types of protocols. Every protocol of the two-way radio will be explained by the DSP prompt information. With the capability of communicating with radios with multiple functions by one device, including DMR, p25 or analog radio devices, and no need to preset or pre-program the parameters. The M2 is a Radio and Repeater dual mode mobile which combines the functionalities of both.
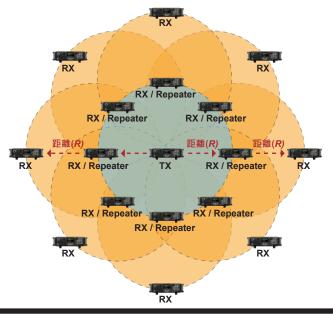
● Support Both Digital and Analog Systems:

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.

● Repeater Mode R&R (Radio and Repeater)

Sometimes, when users are on a mission there is a need to temporarily expand the mission areas due to some special circumstance. Users are often limited by the distance of communication and this causes a delay in receiving the commands that need to be transferred to the members. Unication provides R&R function which allows user's M2 to be a radio in general situations. However, when an expanded distance of communication is needed, users can switch the radio to the repeater mode. The radio on hand can then instantly be used as a repeater, doubling the distance of communications and extending the coverage area of communications by four times.

● 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 M2. The receivers are able to check the photos and the notes of photos from the M2 directly.

Transmit the photo with GPS location, voice and text memos

Handheld monitoring device of the commander on site

● Possession of a Database Which Can Be Transmitted by Direct Connection or Remotely :

With the possession of the Database, missing persons, stolen vehicles, wanted criminals, construction drawings, map, weather conditions and so forth can be sent to the M2 by using the control panel, remote PC or by direct connection, so that users can check information on the database instantly. Also, saved data in M2 can be shared with the other users.

● Encrypted Communication :

With the exclusive techniques on DVOA (Digital Voice over Analog), the M2 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; evenwhen using the Analog system.

AES-256 digital encryption

● Over the Air Command (OTA) :

M2 supports powerful Over the Air Command function. Captains have the ability to transmit the following commands to members' devices: 1. Remote monitoring and recording; 2. Temporary prohibition of reception and transmission; 3. Kill the designated radios over the air and erase all the information in it; 4. Report the GPS location of the member's radio remotely; 5. Remove the time limit of communication temporarily; 6. Add/ delete channels temporarily; 7. Remote control the system.

● One Device with Multiple Usage :

M2 can be used as a manpack radio, a vehicle mounted radio, and even a console radio. Of course, placing it in the rack is not a problem! It is also a Radio & Repeater dual mode mobile with cross frequency band (WLB vs VHF or UHF or 700/800MHz) and cross Analog & Digital protocols, which is able to support the demanded communication system in every on site scenerio.

● Alert :

The Man-down alert, fall alert, still alert and the emergency button are inbuilt in the M2. Whenever there is urgent situation, M2 can ignore the "Channel Busy" mode and transmit the mayday with the greatest power output automatically. After receiving the mayday, the captain can send out the OTA command to the radios, and request the radios to report back the auto GPS location and indicate the location on a map. Remote monitoring function can also be activated to monitor the voice of the scene and communicate with the scene directly.

● 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.

■ M2 (Manpack, Vehicle Mounting, Fixed Station) Specification and Function Description: :

● M2 Overview：

● Left Side View　　● Top View　　● Right Side View

● Front View

A : Button / Knob		B : LED Indicator		C : Port		D : LCD Sreen	
A1	Channel Knob	B1	Alert Indicator	C1	USB Port (5 Pin)	D1	2" High Brightness Color Display
A2	Switch / Volume Knob	B2	Message Unread Indicator	C2	Microphone Port		
		B3	Voice Memo LED Indicator	C3	GPS Antenna Port		
A3	Dynamite Function Button	B4	Power Indicator	C4	BT Antenna Port		
A4	Back Button	B5	Channel Busy Indicator	C5	Power Input Port (2 Pin)		
A5	Navigation Button	B6	Tx / Rx Indicator	C6	Auxiliary Connector Port		
		B7	GPS Status Indicator	C7	RJ45 Port	E : Sensor	
A6	Enter Button	B8	BT Status Indicator	C8	UHF Antenna Port	E1	Microphone
A7	Menu Button	B9	Function Switch Indicator	C9	Fan Connector		
A8	Emergency Button	B10	Tx Repeater Status Indicator A	C10	UHF Antenna Port		
A9	Number Button	B11	Tx Repeater Status Indicator B	C11	UHF Antenna Port (Manpack)		
A10	DVR Button	B12	Rx Repeater Status Indicator A	C12	Linear PA RX Connector		
A11	Switch Button	B13	Rx Repeater Status Indicator B	C13	Connector to External PA		
				C14	RJ45 Ethernet Connector		
				C15	External PA control Connector		

■ M2 Radio Series			Manpack			Mobile			Fix Station		
■ Model of M2 Radio Series			M2 MS	M2 MA1	M2 MA2	M2 VS	M2 VA1	M2 VA2	M2 DS	M2 DA1	M2 DA2
A Operating Environment of M2 Radio											
A1	Environment	• Temperature range	-30 ~ +60 ℃								
A2	Waterproof Condition of the Equipment	The sample is placed in the immersion tank and the distance from the bottom of the sample to the water surface is at least 1 m. The distance from the top of the specimen to the water surface is at least 0.15 m. Test time: 30 min.	IP Ⅹ 7			IP Ⅹ 4			IP Ⅹ 4		
A3	Dustproof Condition of the Equipment	The device should not be entered the dust at a low pressure of 20 mbar.	IP 6 Ⅹ			IP 5 Ⅹ			IP 5 Ⅹ		
A4	Anti-Drop Condition of Equipment	●MIL-STD 810 C/D/E/F/G					●				
A5	Safety Regulation of Product Design	• FCC and IC ‧ CE ‧ ROHS ‧ P25 CAP					●				
B Specification of Equipment Hardware											
B1	Appearance of Equipment		Please refer page D1-1								
B2	Dimension (Without antenna, but with the protection sheet)	Height (H) (mm)	75 mm								
		Width (W) (mm)	230 mm								
		Thickness (T) (mm)	223 mm								
B3	Texture		Aluminum								
B4	Weight (Without antenna and battery)		3.2kg			2.8kg (Without waterproof cover)			2.9kg (Without Handle)		
B5	Operating Interface Hardware	1. Power Switch and Volume Knob		●			●			●	
		2. Channel Knob *1 a. Switching of 16 channels in one zone b. Provide the 64 sending/receiving zone for users to set. c. Provide 1,024 sending/receiving table for users to set.		●			●			●	
		3. Emergency button (red, on the top of radio) a. a. Press the emergency button, then press PTT to start the emergency call. It can also be set that after pressing the emergency, the radio will immediately send the pre-recorded message and turn on the mic to send the surrounding voice. b. When there is the emergency call, the radio will use the maximum output power rate to emit instead of the originally programmed power rate. c. It will automatically emit the GPS coordinate of the radio current location to the group in order to take the action. d. It can immediately call without the restriction of Hang Time between the group.		●			●			●	

■ M2 Radio Series			Manpack			Mobile			Fix Station		
■ Model of M2 Radio Series			M2 MS	M2 MA1	M2 MA2	M2 VS	M2 VA1	M2 VA2	M2 DS	M2 DA1	M2 DA2
B Specification of Equipment Hardware											
B5	Operating Interface Hardware	4. Four-direction button (Up / Down / Left / Right) and confirmed button a. For users to shift the cursor and option.		●			●			●	
		5. 4 dynamite function buttons		●			●			●	
B6	Radio Battery Specification (Standard Accessory)	1. Li-Ion battery		●			—			●	
		2. Capacity (mAh)	1920mAh			—			1920mAh		
		3. Voltage	14.4V			—			14.4V		
		4. Battery life (with 3000 mAh battery, full-charged in the condition "Tx : Rx : Standby = 5 : 5 : 90")	18hrs			—			18hrs		
B7	Current consumption when the radio is turned off		≦ 4 mA								
B8	The current consumption in the standby status of the power supply voltage range.	LCM turn off / Speaker turn off	≦ 150 mA								
		LCM turn on / Speaker turn on	≦ 500 mA								
B9	The radio in the voltage range		≦ 14 A								
B10	Frequency range and the max emission rate	• 30-88 MHz (WLB)	50W								
		• 136-174 MHz (VHF)	50W								
		• 380-470 MHz (UHF)	50W								
		• 450-520 MHz (UHF)	50W								
		• 764-776 MHz (700/800)	35W								
		• 794-806 MHz (700/800)	35W								
		• 806-824 MHz (700/800)	35W								
		• 851-870 MHz (700/800)	35W								
B11	Band width for TX/RX (kHz)		25K / 12.5K / 6.25K								
B12	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 intermodulate and decrypt based on the result. Users do not need to manually switch the channel.		●			●			●	
B13	Receiving and sending message type	1. Under the analog system, it is able to receive and send the text and image message only in the protocol MDC 1200 and WDC. 2. Use MDC 1200 and WDC to receive and send the message, voice, text and Image.	—	●	●	—	●	●	—	●	●
B14	Audio Specification	Sound pressure	≥92 dB								
		Distortion	≤10%								
		Hum and noise ratio	≥30 dB								
		MOS listening quality	≥3min								
		Microphone Sensitivity	≥-46 dBV								
		Microphone background noise cancellation	≥10 dB								

■ M2 Radio Series			Manpack			Mobile			Fix Station		
■ Model of M2 Radio Series			M2 MS	M2 MA1	M2 MA2	M2 VS	M2 VA1	M2 VA2	M2 DS	M2 DA1	M2 DA2
B Specification of Equipment Hardware											
B15 GPS	The time required to cold boot to satellite positioning		≦ 32 seconds								
	The time required to warm up to satellite positioning		≦ 2 seconds								
B16 Bluetooth	Communication distance - with the voice quality		≧ 3 meters								
	Communication distance - sending the data		≧ 30 meters								
B17 Hardware and Interface	LCD Screen		320 x 240 pixel								
	Speaker		4W								
	Antenna Connector		50 Ohm								
	USB		2.0								
C Features and specifications (RF Rx)											
C1 Reference Sensitivity (Conducted)	Analog		≦ -118 (12 dB SINAD) dBm								
	Digital		≦ -118 (5% BER) dBm								
C2 Faded Reference Sensitivity (Conducted)			-108 dBm								
C3 Adjacent Channel Selectivity	Wide Band / 25kHz		75 dB								
	Narrow Band / 12.5kHz		55 dB								
C4 Spurious Response Rejection			≧ 80 dB								
C5 Intermodulation Rejection			≧ 75 dB								
C6 Hum and Noise Ratio	Unsquelched + / - 5.0 kHz		40 dB								
	Squelched + / - 5.0 kHz		-57 dBW								
C7 Receiver Attack Time			<150 ms								
C8 Blocking Rejection			≧ 90 dB								
C9 Co-Channel Rejection			< 9 dB								
C10 Resistance to the interference Signal Delay Spread	C4FM		50 us								
	Standard Simulcast		80 us								
C11 Signal Delay Spread Capability	No talk group or encryption		< 125 ms								
	Talk group only		< 370 ms								
	Encryption group only		< 370 ms								
	Both (on clear or encrypted channel)		< 460 ms								
C12 Squelch Opening SINAD	CTCSS		≦ 8 dB								
	CDCSS		≦ 10 dB								
C13 Receiver Audio Attack Time	CTCSS		≦ 250 ms								
	CDCSS		≦ 350 ms								
C14 CTCSS Decoder Response Bandwidth	F LOW		> next lower CTCSS Tone Code x 1.005 Hz								
	F HIGH		< next higher CTCSS Tone Code x 0.995 Hz								
	F LOW		< selected CTCSS Tone Code x 0.995 Hz								
	F HIGH		> selected CTCSS Tone Code x 1.005 Hz								

■ M2 Radio Series		Manpack			Mobile			Fix Station		
■ Model of M2 Radio Series		M2 MS	M2 MA1	M2 MA2	M2 VS	M2 VA1	M2 VA2	M2 DS	M2 DA1	M2 DA2
C Features and specifications (RF Tx)										

C1	Conducted Carrier Output Power Rating	≧ 50 Watts
C2	Carrier Frequency Stability	≦ 0.5 ppm
C3	Modulation Limiting	2.2 ~ 5 KHz
C4	Carrier Attack Time / Transmitter attack time — Digital / The transmitter power attack time	≦ 50 ms
	Digital / The transmitter encoder attack time	≦ 100 ms
	Analog / The transmitter power attack time	≦ 100 ms
C5	Transmitter Power and Encoder Attack time with Busy Idle Operation	≦ 30 ms
C6	Audio Distortion	10 %
C7	FM Hum and Noise Ratio — +/- 2.5 kHz	≧34 dB
	+/- 4.0 kHz	≧38 dB
	+/- 5.0 kHz	≧40 dB
C8	AM Hum and Noise Ratio	≧34 dB
C9	Unwanted Emissions: Radiated Spurious	70 dB
C10	Adjacent Channel Power Ratio — Analog / < 20 kHz	60 dBc
	Analog / > 20 kHz	70 dBc
	Digital / > 20 kHz	60 dBc
C11	Transmitter Throught Delay	≦125 ms
C12	Frequency Deviation for C4FM — High level signal deviation	2544 ~ 3111 Hz
	Low level signal deviation	848 ~ 1037 Hz
C13	Modulation Fidelity	< 5 %
C14	Symbol Rate Accuracy	< 10 ppm
C15	RFSS Throughput Delay	< 100 ms
C16	RFSS Idle to Busy Transition Time	< 30 ms
C17	Transmitter Modulation Limiting	< 5 KHz
C18	Encoder Response Time	< 150 ms
C19	CTCSS Encoder Frequency	±0.3 %
C20	CTCSS Tone Distortion	< 5 %
C21	Transmitter SINAD	> 20 dB
C22	Transmitter FM Hum and Noise Ratio — +/- 2.5 kHz	30 dB
	+/- 4.0 kHz	33 dB
	+/- 5.0 kHz	35 dB
C23	Transmitter Sub audible Deviation — +/- 2.5 kHz	350 - 600 Hz
	+/- 4.0 kHz	400 - 800 Hz
	+/- 5.0 kHz	500 - 1000 Hz

■ M2 Radio Series			Manpack			Mobile			Fix Station		
■ Model of M2 Radio Series			M2 MS	M2 MA1	M2 MA2	M2 VS	M2 VA1	M2 VA2	M2 DS	M2 DA1	M2 DA2
D	**M2 Radio Function**										
D1	Multiple certified standard protocols for users to choose from.	1. Protocol provided by Analog system (a)CTCSS / CDCSS (b)2 Tones (c)MDC 1200 (d)Uni DVOA	—	●	●	—	●	●	—	●	●
		2. Protocol provided by Digital System (a)DMR Tier I and Tier II (b)P25(C)	—	●	●	—	●	●	—	●	●
		3. Protocol provided by Trunking system (a)P25(T) P25 Phase I / P25 Phase II	—	●	●	—	●	●	—	●	●
D2	Analog and digital signal mixed	1. Automatically distinguish the incoming signal mode (analog or digital) and protocol, then automatically turn on the corresponding module of demodulation 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.	●	●	●	●	●	●	●	●	●
D3	Voice / text / image sending and receiving	1. Under the analog system, it is able to receive and send the text and image message only in the protocol MDC 1200 and Uni DVOA. 2. Under the digital signal system, both text and photo messages can be received and sent in DMR, P25(C),P25(T) / Phase#1 and P25(T) / Phase#2.	—	●	●	—	●	●	—	●	●
D4	Switch the radio into the signal repeater mode, it can extend the communication distance, enlarge the signal coverage range, and overcome the terrain and obstacles on the scene.	1. The function can be switched manually and remoted by the on-site commander at the OTAC. 2. The extension of communication distance and signal coverage area depend on the length of antenna and the height of position. It is usually two times of the original communication distance.	—	●	●	—	●	●	—	●	●
D5	Encryption for communication	1. AES 256 Encryption for the voice, text and image delivering and receiving.	—	—	●	—	—	●	—	—	●

■ M2 Radio Series			Manpack			Mobile			Fix Station		
■ Model of M2 Radio Series			M2 MS	M2 MA1	M2 MA2	M2 VS	M2 VA1	M2 VA2	M2 DS	M2 DA1	M2 DA2
D M2 機提供的功能											
D6	Setting function for diverse receiving mode and receiving chart	1. System setting : a. Talk Around Mode b. Conventional Mode c. Trunking Mode d. Scan Mode	●	●	●	●	●	●	●	●	●
		2. Receiving mode setting: a. When the working system setting of the specific channel is Convention or Talk Around, it can be set into the following receiving mode: • Single band and multiple receiving group • Multiple frequency (Assign a main frequency. Then, scan in the following way: Main→Sub1→Sub2→Main) b. Listening (Scanning) frequency and band width setting c. Listening (Scanning) frequency protocol setting (Digital and analog) d. Set multiple groups in each frequency. It is no need to set the group in the analog system since it can not be distinguish. e. Stay time when scanning It is necessary to set the stay time in each frequency when a specific channel is set as the multiple frequency scanning mode. f. Reply to the message If a specific frequency is set as the multiple frequency scanning mode, when the radio scan that receiving the voice message, the receiving side can press the PTT to reply.	●	●	●	●	●	●	●	●	●
		3. If the specific frequency is set as the scanner, it can provide the function setting that scanning frequency range, frequency interval, multiple frequencies, stay time and the start-point of the multiple scanning zone altering. (Note1:) It will use the auto-detect and auto-intermodulation to check the signal mode and protocol. (Note2:) The radio can also manually adjust the function to provide better voice quality.	●	●	●	●	●	●	●	●	●
D7	Manually set the receiving table	Users can set the frequency, band width and protocol by the keyboard of the radio.	●	●	●	●	●	●	●	●	●
D8	Remote use OTAP to set the receiving table	The function is provided to the dispatch center or the commander who stays on-site can set the new receiving table to a specific group.	—	●	●	—	●	●	—	●	●

■ M2 Radio Series			Manpack			Mobile			Fix Station		
■ Model of M2 Radio Series			M2 MS	M2 MA1	M2 MA2	M2 VS	M2 VA1	M2 VA2	M2 DS	M2 DA1	M2 DA2
D M2 提供的功能											
D9	Emergency call	1. The top of the radio is set with a red button. When the user press the button, then press the PTT, he/she can make the emergency call function.	●	●	●	●	●	●	●	●	●
		2. When the radio is in the emergency call status : a. The radio will send the GPS coordinate of its current location to the group in the current channel. b. Do not need to follow the rule that cannot send the message when there is communication in progress. c. Can be free from the current restriction about the TX power, and use the maximum power to emit.	—	●	●	—	●	●	—	●	●
		3. Receive / Send the emergency call (when receive the emergency call) a. The radio will beep an alert tone, and inform the following voice call is the emergency call. b. The screen will show the number of the radio which made the emergency call. c. The screen will show the digital map (the receiving side of the radio will be regarded as the center of the digital map.) and the location of the radio which make the emergency call.	—	●	●	—	●	●	—	●	●
D10	Operation interface	1. Four-direction button and confirmed button 2. Four dynamic function buttons. The buttons will change its corresponding function by operating the radio. 3. Menu and Home button	●	●	●	●	●	●	●	●	●
D11	Quickly activate and cancel the operation of hardware	1. There are 12 buttons front of the radio, including: 0-9 / * / # a. Layer#1 for quickly activate and cancel a1. Show the whole group's radio location on the map (Centering the user's own) • Press "*" and "0" to "activate". • Press "#" and "0" to cancel. a2. Automatically and regularly report the user's own radio location to the assigned commander, dispatch center and group. (Note1:) The interval time and parameters of reporting can be set in the "Function Setting". • Press "*" and "1" to "activate". • Press "#" and "1" to cancel.	—	●	●	—	●	●	—	●	●

■ M2 Radio Series		Manpack			Mobile			Fix Station		
■ Model of M2 Radio Series		M2 MS	M2 MA1	M2 MA2	M2 VS	M2 VA1	M2 VA2	M2 DS	M2 DA1	M2 DA2
D M2 提供的功能										
D11 Quickly activate and cancel the operation of hardware	a3. Call Alert #1 function Ask the group to immediately inform the GPS coordinate one time. • Press "*" and "2" to "activate". • Press "#" and "2" to cancel. (Note1:) The function is only for one time. After operating, it will be automatically cancel.	—	●	●	—	●	●	—	●	●
	a4. CALL Alert #2 function If the commander or the user of the radio console cannot get the response from specific radio (Not in the group call), he can activate this function. The receiving side will show the call person's information. The indicator will flicker to inform the user about the unread message, then user can call back. • Press "*" and "3" to "activate". • Press "#" and "3" to cancel. (Note1:) the same as the a3 (Note1)	—	●	●	—	●	●	—	●	●
	a5. Communication button for sending the message to individual or group The radio is provided with the contact list like the mobile phone. User can select the specific individual or group to send the message. • Press "*" and "4" to "activate". • Press "#" and "4" to cancel. (Note1:) the same as a3 (Note1) (Note2:) The selected group or individual may in the different frequency from the current used frequency. DSP will set according to the selected frequency and turn back to the original frequency after the hang time.	—	●	●	—	●	●	—	●	●
	a6. Send text / image message The radio can send and receive the text and image. • Press "*" and "5" to "activate". • Press "#" and "5" to cancel. (Note#1) same as the Note in a3. (Note#2) same as the Note2 in a5. (Note#3) The message source can be Image Box, Text Message Box, Can Message Box, or manually key in text data.	—	●	●	—	●	●	—	●	●
	a7. Activate the internal Bluetooth and external earphone, PTT and Mic Bluetooth to simulate the voice call connection. • Press "*" and "6" to "activate". • Press "#" and "6" to cancel.	—	●	●	—	●	●	—	●	●
	a8. Activate the contact function with the external Mobile Console The radio can connect with the external tablet or iPad (as the device for Radio Console).	—	●	●	—	●	●	—	●	●

■ M2 Radio Series		Manpack			Mobile			Fix Station		
■ Model of M2 Radio Series		M2 MS	M2 MA1	M2 MA2	M2 VS	M2 VA1	M2 VA2	M2 DS	M2 DA1	M2 DA2
D M2 提供的功能										
D12 Address book for the users to send the message at the same time. Users do not need to switch to the receiving table.	1. In the multiple frequency, multiple group can be set in the receiving table. It can increase the usability of the radio. Since the difference of the duties, a radio user may not need to involve in multiple groups. It may confuse the user when sending the message.	•	•	•	•	•	•	•	•	•
	2. The radio is provided with the address book which can let the user uses to send the message. (voice, text and image)	—	•	•	—	•	•	—	•	•
	3. While selecting "send message", the screen will automatically show the information about the current receiver. After the message sent (including Hang Time), the radio will automatically reply to the current channel which the channel knob stays.	•	•	•	•	•	•	•	•	•
D13 Call alert	1. If the sending side cannot get the response when calling, he can leave the voice message to ask the individual receiving side to reply immediately.	•	•	•	•	•	•	•	•	•
	2. When the call alert function is operated, the sending side's information will show on the receiving side's screen to replace the standby screen. The indicator for the "unread message" will keep flickering until the receiving side press the "read" function.	—	•	•	—	•	•	—	•	•
D14 Voice call recording	1. There is the call recording button on the radio case.	—	•	•	—	•	•	—	•	•
	2. Press the button during a call to record both side of communication.	—	•	•	—	•	•	—	•	•
	3. While the radio is recording, the indicator will flicker to remind the user.	—	•	•	—	•	•	—	•	•
	4. While recording, multiple calls will be combined into a recording file, named after the time, and saved into the call recording box. Note: The multiple calls are including the back and forth calls of the groups during the hang time.	—	•	•	—	•	•	—	•	•
	5. User can enter through the operation interface to enter the assign file for playing the voice or time zone playing function. Note : the recording function will be controlled by turning on/off the speaker and push/unleash the PTT.	—	•	•	—	•	•	—	•	•
D15 Use the pre-programmed "can message" for text message	1. The radio can be programmed with "can message" through PPS or Radio Console.	—	•	•	—	•	•	—	•	•
	2. User can use the pre-programmed can message as the content of text message.	—	•	•	—	•	•	—	•	•

■ M2 Radio Series			Manpack			Mobile			Fix Station		
■ Model of M2 Radio Series			M2 MS	M2 MA1	M2 MA2	M2 VS	M2 VA1	M2 VA2	M2 DS	M2 DA1	M2 DA2
D M2 提供的功能											
D16	Unread message alert	1. Although there is the alert tone beeped when the text, image and call alert received, the noise of the surroundings will cause the user do not aware of the message. Therefore, the radio is provided with the unread message alert.	●	●	●	●	●	●	●	●	●
		2. This function will beep the alert tone and flicker the indicator to remind the users of the unread message.	—	●	●	—	●	●	—	●	●
D17	Stealth mode	1. To avoid that the screen and the indicator are too light to effect the duty, the radio can be set into the stealth mode.	—	●	●	—	●	●	—	●	●
		2. When the stealth mode is activated, all the indicator and screen of the radio will be turned off. The voice call and alert tone can only be exported through the user's earphone, micro-phone, and the Bluetooth module of PTT.	—	●	●	—	●	●	—	●	●
D18	Automatically and regularly report the GPS coordinate of the current location to the commander, group and dispatch center.	1. The radio can be set to automatically and regularly report the GPS coordinate of the current location to the assigned person. (dispatch center, commander or group)	—	●	●	—	●	●	—	●	●
		2. If the system is busy when the radio reported, the radio will auto-detect the system available time, then report.	—	●	●	—	●	●	—	●	●
D19	Indicate each radio's location	1. Once the function is activated, it will automatically and regularly update its own coordinate on the screen.	—	●	●	—	●	●	—	●	●
		2. The screen will automatically show the suitable map based on the user's location	—	●	●	—	●	●	—	●	●
		3. The other radios will report their coordinates on the leader's radio map.	—	●	●	—	●	●	—	●	●
		4. User can control the proportion of map and show the proportion on the screen to let the user estimates the distance.	—	●	●	—	●	●	—	●	●
		5. User can select the key target to indicate its dynamite location, and hide others location. This function can help user to avoid the multiple indicators. The key target can be changed anytime as well.	—	●	●	—	●	●	—	●	●
		6. Map can be transmit through PPS or Radio Console.	—	●	●	—	●	●	—	●	●
		7. If the user stay indoor and GPS cannot make the connection positioning, this function cannot be fulfilled. The screen will show the phrase "GPS cannot be positioned to inform the user.	—	●	●	—	●	●	—	●	●

■ M2 Radio Series			Manpack			Mobile			Fix Station		
■ Model of M2 Radio Series			M2 MS	M2 MA1	M2 MA2	M2 VS	M2 VA1	M2 VA2	M2 DS	M2 DA1	M2 DA2
D M2 提供的功能											
D20	The function about the movement record of the radio, map and compass. (It can replace the paper map and compass.)	1. When the function is activated, it will show a suitable map on the screen. (Note: The suitable map is the one which user's own location marked in the center.)	—	●	●	—	●	●	—	●	●
		2. The map will change as the user's movements.	—	●	●	—	●	●	—	●	●
		3. When the function is activated, it will position its own location and the time on the map regularly. All the marked point will not disappear in order to let the user know his movement route.	—	●	●	—	●	●	—	●	●
		4. The movement record will be recorded by time and two-dimensional element. The file will be saved into the "Radio Movement Record" function. It can be check or export into the Radio Console for reviewing.	—	●	●	—	●	●	—	●	●
		5. If the GPS cannot be connected during the function operating, the screen will show the word " Lost GPS connection" on the digital map instead of disappearing out of the screen. The record will show the word "Lost Connection" during this time.	—	●	●	—	●	●	—	●	●
		6. The digital map will show the compass and 12 o'clock direction.	●	●	●	●	●	●	●	●	●
D21	Request the specific group or individual send their or his GPS coordinate	1. This function can request the specific person or group to send the GPS coordinate of the current radio position.	—	●	●	—	●	●	—	●	●
D22	Man Down Alert	1. This function is usually only turned on when the user is on duty to avoid the accidental touch. Note : This function is provided to the person who does not need to lie down during the duty. It is more suitable for the police and firefighter, instead of the military.	—	●	●	—	●	●	—	●	●
		2. Once this function is turned on, when the acceleration of the carrier's body tilt exceeds a reasonable set value, it will be regarded as "Man-down". When the ""Man-down"" happens, the radio will immediately send the coordinate of the man down location.	—	●	●	—	●	●	—	●	●
		3. When receiving the man down alert, the receiving side will beep the alert tone and show the suitable map and the man-down person's and the user's relative location.	—	●	●	—	●	●	—	●	●
		4. The file will be automatically saved in the Man-down Alert Record.	—	●	●	—	●	●	—	●	●

■ M2 Radio Series		Manpack			Mobile			Fix Station		
■ Model of M2 Radio Series		M2 MS	M2 MA1	M2 MA2	M2 VS	M2 VA1	M2 VA2	M2 DS	M2 DA1	M2 DA2
D M2 提供的功能										
D23 External Radio Console Connection Function	1. Unication manufactures two kinds of Radio Console products. a. Fixed: PC or notebook b. Portable: Tablet 2. The radio is provided with the wireless (Bluetooth) and USB for radio console connection. (Use the radio as the interface between the radio console and other radios for the message exchanging.)	—	●	●	—	●	●	—	●	●
	3. The function of connected radio console a. Control the coverage range = the reachable distance of the radio TX/RX	—	●	●	—	●	●	—	●	●
	b. When the radio receives the dynamic location of each radio, it can transfer it and show it on the console. It can provide the command and dispatch function.	—	●	●	—	●	●	—	●	●
	c. Can monitor and listen to the call content from all group in the same frequency. Can automatically record all call content for check as well.	—	●	●	—	●	●	—	●	●
	d. User can send the photos or text to the radio console and the radio which connects with the console, then shows the message on the console. (The photo can contain with the GPS coordinate and the voice recording.)	—	●	●	—	●	●	—	●	●
	e. The commander of the radio console can make the voice call with all groups, specific group or individual.	—	●	●	—	●	●	—	●	●
	f. The commander can write the text and the existed text, mail and photo which have already in the console through the console to other radios.	—	●	●	—	●	●	—	●	●
	g. Please check the Fixed Radio Console and Portable Radio Console brochure for the other console function.	—	●	●	—	●	●	—	●	●
D24 Add the GPS coordinate of the photo location and the voice description to the photo.	1. This function can use in the mountain disaster rescuing. The radio can send a file which combined with the photo, the GPS coordinate of the photo location and the text and voice note. This file can be sent to the group or the dispatch center to enhance the efficiency of disaster relief.	—	●	●	—	●	●	—	●	●
	2. It would be better if the function can be operated with another product which can mobile radio console (with 7" screen tablet).	—	●	●	—	●	●	—	●	●

■ M2 Radio Series			Manpack			Mobile			Fix Station		
■ Model of M2 Radio Series			M2 MS	M2 MA1	M2 MA2	M2 VS	M2 VA1	M2 VA2	M2 DS	M2 DA1	M2 DA2
D M2 提供的功能											
D25	Show the target point on the map, then encrypt and send the GPS coordinate to the receiving group.	1. This function can be used when encountering the situation that the mountain relief, field march or army and air force support in the badly positioning.	—	●	●	—	●	●	—	●	●
		2. The commander can assign the location for gathering, landing or attacking, and alter the location into the GPS coordinate. Then, the GPS coordinate can be send to the receiving side's map.	—	●	●	—	●	●	—	●	●
D26	Mutiple message data	1. The radio has the record box of the following data and the message, including : a. Receive / send text message record b. Receive / send image message record (including images, the GPS coordinate of the photo, the narration recording and the text of the image.) c. Record of the receive / text voice call d. Digital map e. GPS coordinate of the radio path f. Canned message	—	●	●	—	●	●	—	●	●
		2. The data above can be create, check, and import and transfer with the external device through USB and BT. Also, the data can be deleted in the same time or one by one, and lock and unlock. Note1 : Users cannot delete the record of voice call recording and the moving coordinate. It can only be deleted after entering the encryption key by the commander. Note2 : The commander can remotely activate the record of Voice call recording and the moving coordinate by the OTAC function.	—	●	●	—	●	●	—	●	●
D27	M2 can automatically adjust the transmission power according to the voltage stored in the battery	1. After M2 radio is fully charged, the maximum voltage of the battery is 16.8 volts. The regular operating voltage of M2 is 14.8 volts	—	●	●	—	●	●	—	●	●
		2. The maximum transmission power of M2 is designed to be 50W (LOS is about 50 kilometers, which varies according to the environment used and the height of the antenna.) But when the battery output voltage is less than 12V, it cannot transmit at the full power because it will cause the radio to stop.	—	●	●	—	●	●	—	●	●
		3. The design of M2 is originally provided with a manual interface for users to set the transmission power according to the usage environment, so as to save power	—	●	●	—	●	●	—	●	●

■ M2 Radio Series			Manpack			Mobile			Fix Station		
■ Model of M2 Radio Series			M2 MS	M2 MA1	M2 MA2	M2 VS	M2 VA1	M2 VA2	M2 DS	M2 DA1	M2 DA2
D M2 提供的功能											
D27 M2 can automatically adjust the transmission power according to the voltage stored in the battery	4. This function is to provide a more refined adjustment function under the original manual adjustment of the transmission power, so that the radio still has the function of receiving when the battery voltage is too low to send.		—	●	●	—	●	●	—	●	●
E Specification of Standard / Optional Accessory											
E1	Battery (Standard)	Voltage range	13.2 ~ 16.8 V								
		Capacitance range	19200 mAh - 18 hours								
E2	Charger (Standard)	Charging time	≦ 4 hours								
		Charging current	8.3 capacitance								
E3	Speaker Mic (Optional)	Connector	10 Pin								
		Length	1Watt								
		Mic Sensitivity	≧ -50 dBV								
E4	Programming Cable		Software Programming								
E5	Headset		Wireless Headset								
E6	PDA		Support Unication Console Software								
E7	Backrest		Tactical Backrest								

■ Unication M2 Accessories :

● M2 Accessories Introduction :

A1

A2

A3

A4

A5

A6

A7

A : Accessory													
A1	Battery	A2	Adapter	A3	External Speaker Mic	A4	Wireless Headset	A5	Programming Cable	A6	PDA	A7	Tactical Backrest

M2