U5

Unication U5 frequency HoppingPortable Radio

HAND HELD RADIO SPECIAL DESIGN FOR
MILITARY & PUBLIC SAFETY PURPOSE USE

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

Portable Radio Model & Usage Scenarios Introduction :

U3

- WLB - 30 ~ 88MHz / 2W
- VHF Band / 5W
- UHF Band / 4W
- 700/800MHz / 3W
- Analog + Digital

U4

- WLB - 30 ~ 88MHz / 5W
- VHF Band / 5W
- UHF Band / 4W
- 700/800MHz / 3W
- Analog + Digital

U5
1000 Hopping Radio

- WLB - 30 ~ 88MHz / 5W
- VHF Band / 5W
- UHF Band / 4W
- 700/800MHz / 3W
- Analog + Digital

U6
Lightweight Radio

- WLB - 30 ~ 88MHz / 5W
- VHF Band / 5W
- UHF Band / 4W
- 700/800MHz / 3W
- Analog + Digital

U7
Multi Band Public Safety Radio

- 30 ~ 530MHz 5W
- 130 ~ 960MHz 5W
- Analog + Digital
- Data modem 100KHz @200Kbps

U8

LTE + Public Safety Radio

- 130 ~ 960MHz / 5W
- LTE Frequency Band
- Analog + Digital + LTE
- LTE Data modem

Tactical + Public Safety Radio

- 30 ~ 530MHz / 5W
- 130 ~ 960MHz / 5W
- Analog + Digital + Tactical
- Tactical Data modem 20MHz @30Mbps

M2L (50W Manpack Radio, Mobile WLB) The Introduction of Long Distance Radio Usage Scenario in different circumstance：

• **M2** Manpack

• **M2** Mobile

• **M2** Desktop

• **M2 19” RACK**

■ Portable Radio Case Holder Usage Scenario Introduction :

• Portable Radio Case Holder

■ BT Headset Usage Scenario Introduction :

• BT Headset

■ Mobile Radio Console Usage Scenario Introduction :

• Mobile Radio Console

Unication Portable Radio Design Concept Description：

- At present, the transmission methods (Analog, Digital) used in the radio system, transmission protocol and transmission network have no consistent specifications which make it impossible to communicate with each other when the united communication is implemented. It results in a huge problem in managing and commanding. Therefore, when this new generation radio is designed, it should consider the interoperability and compatibility of the transmission methods (Analog, Digital), transmission protocol (Including MDC1200, 5 tone, 2 tone, DTMF, DMR, P25 and so on...) and different transmission Network (PTSN, Mobile, Internet and Radio).

- Unication New Generation Two-Way Radio Solution：

1. Unication new generation two-way radio integrates the traditional analog system and modern digital technology in one which applies to the communication requirements of analog and digital and is able automatically detect, distinguish and convert the messages.
2. Unication Two-Way Radio can automatically detect, distinguish and convert the messages in different protocol which allows radios to exchange the information in different protocol.
3. Unication Two-Way Radio also supports on different communication platforms and expand the communication distances.
4. Unication Two-Way Radio can exchange the text message, picture and other information with Unication Radios or other radios on site.
5. Unication Two-Way Radio has GPS, map marking function and it is conducive to management, deployment, monitoring and personnel safety protection.

Unication Portable Radio Feature ：

● Digital and Analog Dual Mode. Improve the compatibility with the existing systems. ：

U5 Portable Radio supports multiple Protocol, including MDC 1200, 5 tone, 2 tone, DTMF, DMR, P25...and so on. U5 Portable Radio also has these function: Support analog and digital two systems coexisted which means 2 Protocol can be compatible in one frequency channel, automatically distinguish the Protocol which the radio receives and demodulate it, automatically distinguish whether the system used by the other radio is digital or analog system and selects the mode to transmission, and is able to work with the two-way digital and analog systems of the mainstream brands on the market.

● Repeater Mode R&R (Radio and Repeater)：

Sometimes, when users are in the mission, they need to temporarily expand the mission areas due to some special circumstances. Users are often limited by the distance of the communication and this causes the delay of receiving the command which needs to be transferred to the members. Unication provide R&R function which allows user's radio to be a radio in general situations. However, when a expanded distance of communication is needed, user can switch the radio to the repeater mode. The radio on the hand can instantly be used as repeater and the distance of the communication becomes double.

● GPS Self-Located and Automatically Location Reported to Specific Radios：

U5 Radio is built in GPS (Global Positioning System) and provides automatically location report function. It makes users are able to immediately understand the deployment or the situation of the members in the group and that means users can dispatch the members and provide the support in a best efficient way.

● Display the Information of the Map and the Radio Position in the Group：

Unication provide a Map Software which supports Unication radios. The software allows the users to download the map information into the radios and the users can combine it with the GPS function of the radio which directly display the map information on the radio's screen, mark out the self-location and the location of other members in the group.

● Picture Transmission Function：

Unication U5 Radio is able to transmit the picture via radio wave in either analog mode or digital mode. Combined with the radio built-in GPS function, users can directly send the picture which is added the GPS information, voice memo or text message to another radios. When other radios receive the picture, it can be displayed directly on the radio's screen and users can know the position information, voice memo and text message of the picture.

● Analog Communication AES-256 Digital Encryption (SDVOA) Function：

Voice-digitalization in analog system allows users to enjoy the communication quality under the digital system. Combined with AES-256 certificated by Federal Government of the United States, even in the analog system, users can have the digital-system-level effect of encryption.

● Bluetooth Application：

Built-in Bluetooth transmission function. Users can combine it with the Bluetooth wireless speaker mic provided by Unication. This solve the cable problems which always bother you; users can be more nimble in the mission. Also, combine the Bluetooth with the mobile camera, user can send the picture to the radio via Bluetooth . Next, user can report the situation very quick through sending the picture to the specific person via radio.

● Emergency Call and Man-down Alert Call Function：

When in the emergency situation, users can sending the emergency signal by pressing the emergency button manually. Besides, when man-down alert function is activated, the radio will send out man-down alert call if the member is down. When the commander receives the emergency signal, he can via the radio on his hand to activate the monitoring function to listen to the on-site message, talk to the on-site member and ask the on-site radio to report the position information.

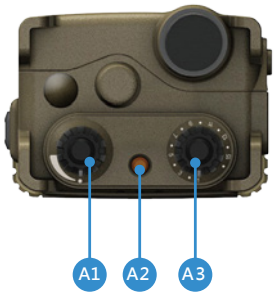
● Remote Monitoring Function：

This function allows commander to remote monitor the radios in your group. Commander can through specific OTA orders to activate any radio's microphone in the group and have the remote monitoring.

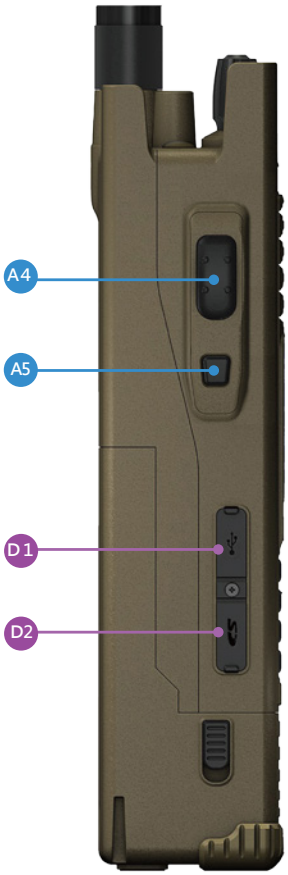
■ U5 Portable Radio Specification & Function Description :

● U5 Overview :

● Top View

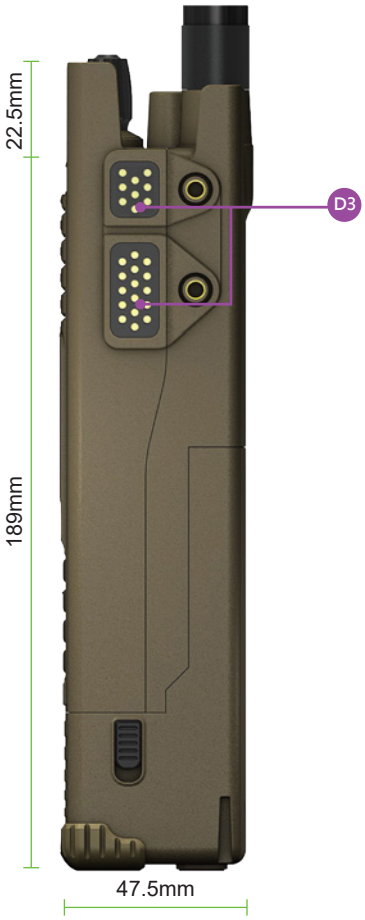


● Left Side View



● Front View

● Right Side View



A : Button	
A1	Power & Volume Knob
A2	Emergency Button
A3	Channel Switch Knob
A4	PTT Button
A5	Keypad Lock Button
A6	Function Status Button
A7	Navigation Button
A8	Numerical Keypad
A9	Shift Button
A10	Band Select Button

B : LED Indicator	
B1	Battery Status Indicator
B2	Bluetooth Signal LED Indicator
B3	RF Status Indicator
B4	Shift Button Indicator
B5	Unread/Un-Listen Message Indicator

C : LCD Screen	
C1	2" High Brightness Color Display

D : Port	
D1	USB Port
D2	SD Card
D3	Accessory Port

E : Sensor	
E1	Light Sensor
E2	Microphone

■ Handheld Radio Series		U5 Series		
■ Model of Handheld Radio Series		U5S	U5A1	U5A2
A	Operating Environment of Handheld Radio			
A1	Transmission Security : pseudorandom frequency Hopping (FH) at rate up to 1000 hops / second	●	●	●
A2	Tactical Anti-Jamming Frequency Hopping (FH) mode Vocoder	1200 bps Mulit-Frame modified MELPe robust military grade.		
A3	Tactical Anti-Jamming Frequency Hopping (FH) rates	● 600 hop per second ● 1000 hops per (available with firmware upgrade option).		
A4	Hopset Frequencies and NetIDs	● Hopset: 256 frequencies per NetID fully programmable with pseudorandom patterns. ● NetID: up to 72 fully programmable.		
A5	Late Entry	● Automatic late entry synchronization channel acquisition for both FDMA & FH modes.		
A6	Tactical FH and FDMA mode Voice and Data Security	● **AES256 cypher engine with 256 bit user generated and entered key.**		
A 7	Talk Groups (TGID)	● FH mode: 4,608 TGIDs (up to 64 TGIDs per Net ID = 64 x 72 = 4,608). Each NetIDs is assigned to a Channel knob setting. ● FDMA mode: 65,536 Talk Groups (64 TGIDs per channel knob setting x 16 channel knob setting x 64 zones = 65,536 Talk groups).		
A 8	Modem Multi-path Capability	● **100 microseconds.**		
A 9	Number of Channels	● **FH Mode: 72 NET ID**		
A10	Spurious Response Rejection (Conducted)	● **FH Mode: 60 dB**		
A11	Conducted and Radiated spurious emissions at antenna port	● **FH 600 hops per second: <-10 dBm** ● **FH 1000 hops per second: < -10 dBm**		
A12	Conducted and Radiated spurious emissions at antenna port	● **FH 600 Hz Mode: <-10 dBm** ● **FH 1000 Hz Mode: < -7 dBm**		
A13	TX Adjacent Channel Power Ratio	● **FH 600 Frequency Hopping Mode: 50 dB (@ 25KHz offset)** ● **FH 1000 Frequency Hopping Mode: 50 dB (@ 25 KHz offset), with the 24kbps modulation and the 1200 bps vocoder**		

■ Handheld Radio Series			U5 Series		
■ Model of Handheld Radio Series			U5S	U5A1	U5A2
A	**Operating Environment of Handheld Radio**				
A14	Environment	• Temperature range	-30 ~ +60 ℃		
A15	Waterproof Condition of the Equip-ment	• 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 X7		
A16	Dustproof Condition of the Equip-ment	•The device should not be entered the dust at a low pressure of 20 mbar.	IP 6X		
A17	Operating Temperature, vehicle vibration, drop, humidity and salt spray conditions of the Equipment		●MIL-STD-810G		
A18	The Capability of Against Electromagnetic Interference		●MIL-STD-461F		
B	**Specification of Equipment Hardware**				
B1	Appearance of Device		Please refer page D1-1		
B2	Dimension (Without antenna, but with the protection sheet)	Height (H) (mm)	189.0 mm		
		Width (W) (mm)	64.0 mm		
		Thickness (T) (mm)	47.5 mm		
B3	Texture		Aluminum alloy and industrial plastic		
B4	Weight (Without antenna and battery)		< 560 g		
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. 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.	●	●	●

■ Handheld Radio Series			U5 Series		
■ Model of Handheld Radio Series			U5S	U5A1	U5A2
B Specification of Equipment Hardware					
B5	Operating Interface Hardware	3. Emergency button (red, on the top of radio) 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.	●	●	●
		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	1. Li-Ion battery	●		
		2. Capacity (mAh)	3000mAh		
		3. Voltage	5.8 - 8.4V		
		4. Battery life (with 3000 mAh battery, full-charged in the condition "Tx : Rx : Standby = 5 : 5 : 90")	≧ 8 hours		
B7	Current consumption when the radio is turned off		≦ 1.5 mA		
B8	The current consumption in the standby status of the power supply voltage range.	LCM turn off / Speaker turn off	≦ 170 mA		
		LCM turn on / Speaker turn on	≦ 370 mA		
B9	The radio in the voltage range		≦ 1.7 A		
B10	Frequency range and the max emission rate	• 30-37 MHz (L1)	5W		
		• 37-50 MHz (L2)	5W		
		• 50-66 MHz (L3)	5W		
		• 66-88 MHz (L4)	5W		
		• 30-88 MHz (WLB)	5W		
		• 136-174 MHz (VHF)	5W		
		• 330-400 MHz (U1)	4W		
		• 380-430 MHz (U2)	4W		
		• 403-470 MHz (U3)	4W		
		• 450-520 MHz (U4)	4W		

■ Handheld Radio Series			U5 Series		
■ Model of Handheld Radio Series			U5S	U5A1	U5A2
B Specification of Equipment Hardware					
B11	Frequency range and the max emission rate		12.5 KHz 25 KHz		
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	≧3 min		
		Microphone Sensitivity	≧-46 dBV		
		Microphone background noise cancellation	≧10 dB		
B15	GPS	The time required to cold boot to satellite positioning	≦ 40 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	≧ 10 meters		
B17	Hardware and Interface	LCD Screen	320 x 240 pixel		
		Speaker	1 W		
		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	64 dB		
		Narrow Band / 12.5KHz	55 dB		
C4	Spurious Response Rejection		≧ 80 dB		
C5	Intermodulation Rejection		≧ 70 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		

■ Handheld Radio Series			U5 Series		
■ Model of Handheld Radio Series			U5S	U5A1	U5A2
C Features and specifications (RF RX)					
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		
C Feature and Specification (RF TX)					
C1	Conducted Carrier Output Power Rating		≧ 5 Watts		
C2	Carrier Frequency Stability		≦ 3 ppm		
C3	Modulation Limiting		3 ~ 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		

■ Handheld Radio Series			U5 Series					
■ Model of Handheld Radio Series			U5S		U5A1		U5A2	
C Feature and Specification (RF TX)								
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					
D 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 b. P25(C) 3. Protocol provided by Trunking system a. P25(T)	–	●	●	–	●	●
D2	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 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.	●	●	●	●	●	●

■ Handheld Radio Series			U5 Series					
■ Model of Handheld Radio Series			U5S		U5A1		U5A2	
D Radio Function								
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.	–	–	●	–	–	●
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: a1. Single band and multiple receiving group a2. 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.	●	●	●	●	●	●

■ Handheld Radio Series			U5 Series					
■ Model of Handheld Radio Series			U5S		U5A1		U5A2	
D Radio Function								
D6	Setting function for diverse receiving mode and receiving chart	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.	—	●	●	—	●	●
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. (the same as 7-3-a)	●	●	●	●	●	●
		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.	—	●	●	—	●	●

■ Handheld Radio Series			U5 Series					
■ Model of Handheld Radio Series			U5S		U5A1		U5A2	
D Radio Function								
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. 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	—	●	●	—	●	●

■ Handheld Radio Series			U5 Series					
■ Model of Handheld Radio Series			U5S		U5A1		U5A2	
D Radio Function								
D11	Quickly activate and cancel the operation of hardware	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).	—	●	●	—	●	●
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.	●	●	●	●	●	●

■ Handheld Radio Series			U5 Series					
■ Model of Handheld Radio Series			U5S		U5A1		U5A2	
D Radio Function								
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. Note1 : 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. Note1 : the recording function will be controlled by turning on/off the speaker and push/unleash the PTT.	—	●	●	—	●	●
D15	Use the pre-program med "can message" for text message	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.	—	●	●	—	●	●
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.	—	●	●	—	●	●

■ Handheld Radio Series			U5 Series					
■ Model of Handheld Radio Series			U5S		U5A1		U5A2	
D Radio Function								
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, microphone, 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.	—	●	●	—	●	●
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.	—	●	●	—	●	●

■ Handheld Radio Series			U5 Series					
■ Model of Handheld Radio Series			U5S		U5A1		U5A2	
D Radio Function								
D20	The function about the movement record of the radio, map and compass. (It can replace the paper map and compass.)	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 " lose GPS connection" on the digital map instead of disap-pearing out of the screen. The record will show the word "lose 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	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 1 : 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 lo	—	●	●	—	●	●
		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.	—	●	●	—	●	●

■ Handheld Radio Series			U5 Series					
■ Model of Handheld Radio Series			U5S		U5A1		U5A2	
D Radio Function								
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).	–	●	●	–	●	●

■ Handheld Radio Series			U5 Series					
■ Model of Handheld Radio Series			U5S		U5A1		U5A2	
D Radio Function								
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.	—	●	●	—	●	●

E Specification of Standard / Optional Accessory				
E1	Battery (Standard)	Voltage range	6.4 ~ 8.6 V	6.0 ~ 8.7 V
		Capacitance range	2360 mAh - hour	3000 mAh - hour
E2	Charger (Standard)	Charging time	≦ 4 hours	≦ 4 hours
		Charging current	0.4 capacitance	0.5 capacitance
E3	Speaker Mic (Optional)	Connector	8 Pin	9 Pin
		Length	1 Watt	1 Watt
		Mic Sensitivity	≧ -44 dBV	≧ -50 dBV
E4	Cable (Optional)	Power rate of Speaker	5 Pin	16 Pin
		Mic Sensitivity	1.35 meter	1 meter

■ Handheld Radio Series			U5 Series	
■ Model of Handheld Radio Series			U5S	U5A1 / U5A2
F Certification				
F1	FCC		LEA-U3-VHF LEA-U3-UHF-MID LEA-U3-700-800	Applying for certification
F2	IC		3819A-U3VHF 3819A-U3IUHF 3819A-U700800	Applying for certification
F3	CE		EN 300 086 EN 300 328 EN 301 489-1 EN 301 489-5 EN 301 489-17 EN 60065	Applying for certification
F4	Military Standards		MIL-STD-810G	MIL-STD-810H
		Low Pressure	500.6 Procedure II	—
		High Temperature	501.6 Procedure I, III	501.7 Procedure I, II
		Low Temperature	502.6 Procedure I, II	502.7 Procedure I,II
		Temperature Shock	503.6 Procedure I	503.7 Procedure I
		Solar Radiation	505.5 Procedure II	—
		Humidity	507.6 Procedure II	507.6 Procedure II
		Shock	516.7 Procedure I V	516.8 Procedure I
		Salt Fog Test	509.5	509.7
		Vibration Test	—	514.8 Procedure I /C-I

Features of Unication Portable Radio Console :

Upgraded Map of Unication's Radio :

Unication's radio provides Location Display function, but this is limited by the 2 inches screen of the radio, which is not clear enough, and not able to achieve the best visual effect. The map can be fully shown with the radio console to redeem the small screen and attain the best performance of command and dispatch.

Transmit Photos with Radios Conveniently :

Take photos/ capture photos from emails/ USB photos with the portable radio console and transmit the photos to all the radios by connecting the console with an assigned radio, to transmit photos instantly.

Read Duty Information Automatically :

Automatically read the duty information from dispatch center after connecting to the Internet before or out on duty, and send the case information to the officer on duty automatically, to shorten the transmission time of case message and increase efficiency.

Increase the efficiency of typing message with Unication's Two-way Radio :

Compose messages in different languages with a bigger screen of the portable radio console to expedite the message transmission, and increase efficiency of communication.

Offline Map Application :

Offline map can be downloaded/ imported/ exported as image by the portable radio console, so personnel can still be commanded and dispatched even there is no Internet connection.

Handle All the Communication Records in Hand All the Time :

Portable radio console keeps all the communication records including text/ photos/ voice messages. Users can instantly check on the corresponding records by time/ sender and receiver/ communication type. Voice and photos messages can be downloaded as well.

Advanced Vehicle License/ Human Faces Identification :

Portable radio console provides powerful vehicle license/ human faces identification which allows users to identify the vehicles or suspects rapidly.

Multi IO expansion for customized functions development :

Extra function such as NFC/ fingerprint identification/ barcode reader/ RS232/ Bluetooth/ USB/ Micro SD/ docking connector/ Wi-Fi/ LTE can be added to the portable radio console based on customer's requirements and develop customized functions.

Hot Swapping Battery :

The battery of portable radio console is hot swap designed. Users can change the battery without turning off the device. Duty will not be stopped due to no power.

■ Descriptions of Portable Radio Console Appearance :

● Descriptions of Uni311 Appearance :

A：Device Interface					
A1	Headphone Plug	A2	Micro USB	A3	Monitor Screen

■ Portable Radio Console Series			Uni311 Portable Radio Console		
■ Models of Portable Radio Console Series			SRC1	SRCA1	SRCA2
A	**Operating Environment of Portable Radio Console**				
A1	Operating Environment of the Radio Device	• Range of Operating Temperature	-20 ~ +50 ℃	-20 ~ +50 ℃	-20 ~ +50 ℃
A2	Waterproof Condition of the Equipment	•Water jets test: 6.3mm nozzle, the testing sample is 2.5 - 3m away from the nozzle, water volume is 12.5L/min (750L/h), test duration is 1 minute per square meter for at least 3 minutes.	IP X5	IP X5	IP X5
A3	Dustproof Condition of the Equipment	•No ingress of dust under the low pressure of 20 mbar.	IP 6X	IP 6X	IP 6X
A4	Operating Temperature, vehicle vibration, drop, humidity and salt spray conditions of the Equipment		MIL-STD-810G (and above) approved	MIL-STD-810G (and above) approved	MIL-STD-810G (and above) approved
B	**Specifications of the Equipment Hardware**				
B1	Appearance of Device		Please refer page 21	Please refer page 21	Please refer page 21
B2	Dimensions	Height (H) (mm)	168 mm	168 mm	168 mm
		Width (H) (mm)	225 mm	225 mm	225 mm
		Thickness (T) (mm)	27 mm	27 mm	27 mm
B3	Texture		Industrial Plastic	Industrial Plastic	Industrial Plastic
B4	Weight (Includes a standard battery pack)		≦ 950 g	≦ 950 g	≦ 950 g
B5	Radio Battery Specifications (Standard Accessory)	Lithium Battery	●	●	●
		Capacity (mAh)	3200mAh (Optional 200mAh)	3200mAh (Optional 200mAh)	3200mAh (Optional 200mAh)
		Normal Supply Voltage	7.5 V	7.5 V	7.5 V
		Standby Time (Tested by TabletMark 2017)	Internal battery (2900 mAh): 266 min Internal(2900 mAh) + external battery (4200 mAh): 592 min		
C	**Functions of Portable Radio Console**				
C1	Check the radio's GPS location and dispatch	Show current GPS location of the radio on the map.	●	●	●
		Show previous GPS location of the radio on the map.	●	●	●
		Check the current GPS location of the radio in some areas on the map.	●	●	●
		Map and man-down location will be displayed on the map.	—	●	●
		Transmit voice message to radios.	—	●	●
		Transmit text message to radios.	—	●	●
		Transmit image to radios.	—	●	●

■ Portable Radio Console Series			Uni311 Portable Radio Console		
■ Models of Portable Radio Console Series			SRC1	SRCA1	SRCA2
C Functions of Portable Radio Console					
C2	Offline Map Management with Portable Radio Console	Download offline map of the specific areas by portable radio console.	●	●	●
		Export offline map of the specific areas by portable radio console.	●	●	●
		Import offline map of the specific areas by portable radio console.	●	●	●
C3	Check communication records of U3/ U4/ M2 through portable radio console	The portable radio console is capable of collecting the communication records of the personnel's radio from different districts, dispatch officers can instantly check on the communication history online. When it is required to check on the records, the text/ image / voice messages can be read and downloaded.	●	●	●
C4	Man-down Record List	The portable radio console is capable of collecting the man-down history record of the personnel's radio from different districts, dispatch officers can check on their man-down record. When there is man-down alert, dispatch officers can monitor that man-down radio, and disable this function after the incidents ended.	●	●	●
C5	Portable Radio Console Account Management	Amend the current login password of the portable radio console. (Note: General users can only amend this item.) Add/ amend/ delete general users' accounts and authority management of the portable radio console. (Note: Only the administrator is available for this management.)	●	●	●
C6	Portable Radio Console Receiving Table Management	Download the new radio receiving table and update it to the radios.	●	●	●
C7	Automatically Report User's Operation Problems	Users can report the problems of operation by this function. (Note: This function can be disabled by the system parameter settings. After disabling this function, the analysis report on desktop and come out by the system has to be sent back to Unication.	●	●	●
C8	Portable Radio Console System Parameter Settings	Multi-language parameter settings	●	●	●
		Radio connection parameter settings (Note: Radio USB/ BT)	●	●	●
		Enable Chinese text messages. (Note: Default is set as disabled)	●	●	●
		Settings of whether enable alerts, and the alert interval time when text/ image messages received.	●	●	●

■ Portable Radio Console Series			Uni311 Portable Radio Console		
■ Models of Portable Radio Console Series			SRC1	SRCA1	SRCA2
C Functions of Portable Radio Console					
C8	Portable Radio Console System Parameter Settings	Settings of sending software operation log to advise the Unication Engineering Team by communication application, when the software occurs abnormality or mistake. (Parameters will be sent by email. Default is set as disabled. This can be enabled only when user agrees.)	●	●	●
		Function switch of automatic issue report to Unication's engineering team by communication application and also upload to server whilst abnormal operation of software. (Note: Some companies forbid any information uploaded. Default is set as disabled. This can be enabled only when user agrees.)	●	●	●
		Function switch of system operation record analysis. (Note: This function can be disabled when the system works steadily to increase efficiency. Default is set as enabled.)	●	●	●
		Delete all communication records. Note: It can only be deleted by administrator.)	●	●	●
C9	Portable Radio Console System Backup Settings	Back up information of the system.	–	●	●
		Retrieve the information of the system.	–	●	●
C10	User's operation manual	Operation manual in written form and graphic.	●	●	●
		Operation manual video	●	●	●
C11	Software Free Trial	Free trial starts automatically once the software installed. If the users do not purchase the software three months later, all the functions of the software will be invalid automatically.	●	●	●
C12	Software Purchase Shortcut	Free trial starts automatically once the software installed. If the users do not purchase the software three months later, all the functions of the software will be invalid automatically. Users can purchase the software by this shortcut from Unication. Unication will provide a serial number of this software to the users, and they can continue with the software.	●	●	●
C13	Automatic Alert Through Portable Radio Console	When text message received by the radio, Incoming Text Message Box will be alerted.	●	●	●
		When photo message received by the radio, Incoming Photo Message Box will be alerted.	●	●	●
		Alert when Man-down Alert received by the radio.	–	●	●

■ Portable Radio Console Series			Uni311 Portable Radio Console		
■ Models of Portable Radio Console Series			SRC1	SRCA1	SRCA2
C Functions of Portable Radio Console					
C13	Automatic Alert Through Portable Radio Console	Automatically play the voice message and pop out the prompt window with PTT button for reply, when voice message received by the radio.	●	●	●
		Unread message alert is provided. It alerts regularly to remind users of unread messages.	—	●	●