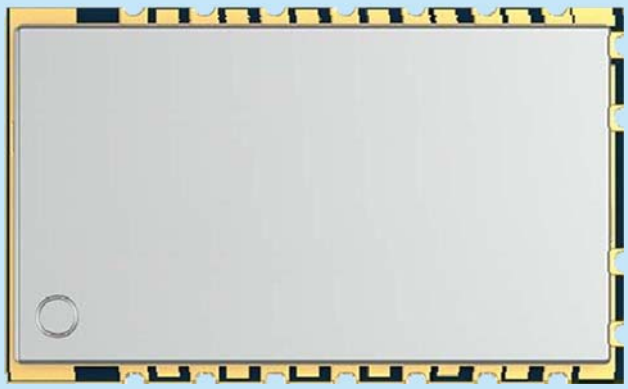
DMR818S-U Series DMR Walkie Talkie Module User Manual

- FCC & CE Certificated
- Dual slot, Independent frequency for Tx and Rx.
- 1W High power, long distance

Product Specification

Product Model: DMR818S-U Series



Catalogue

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Note: Revision History

Revision	Date	Comment
V1.0	2026-5	First release

1. Product Descriptions

Wireless walkie-talkie module： All core parameters of the wireless walkie-talkie module (CTCSS, CDCSS, SQ, predefined channels, etc.) can be easily configured via serial communication protocol. Matched with an external power supply, speaker and audio amplifier, it can be quickly assembled into a professional digital walkie-talkie. Its simplified interface and ultra-small size allow flexible embedding into various handheld devices and integrated systems.

➢ **DMR mode:**

- Message transmission and reception.
- Enhanced Encryption of Voice and Text Messages
- Various Voice Call Types
- Reminder for input calling, calling status checking
- Emergency alarm and radio monitor; Repeater
- Repeater Support:

➢ **Analog mode:**

- CTCSS/CDCSS configurable
- Squelch levels configurable

2. Features

- UHF band frequency: 406.1~430MHz，450~470MHz
- Distance up to 5Km
- High power1W (@CE, FCC 1W), Low power 0.5W
- High Sensitivity: -124dBm
- Bit error rate down to 1% under -121dBm
- Built-in EEPROM, data saved even powered off
- 0.5 ppm TCXO crystal
- Independent frequency for Tx and Rx.
- 9 adjustable volume
- AnalogBandwidth:6.25KHz/ 12.5KHz Digital Bandwidth: 12.5KHz
- Message transmission and reception
- DMR(Digital Mobile Radio)/ Analog walkie talkie
- 166 CDCSS
- 50 CTCSS

3. Application

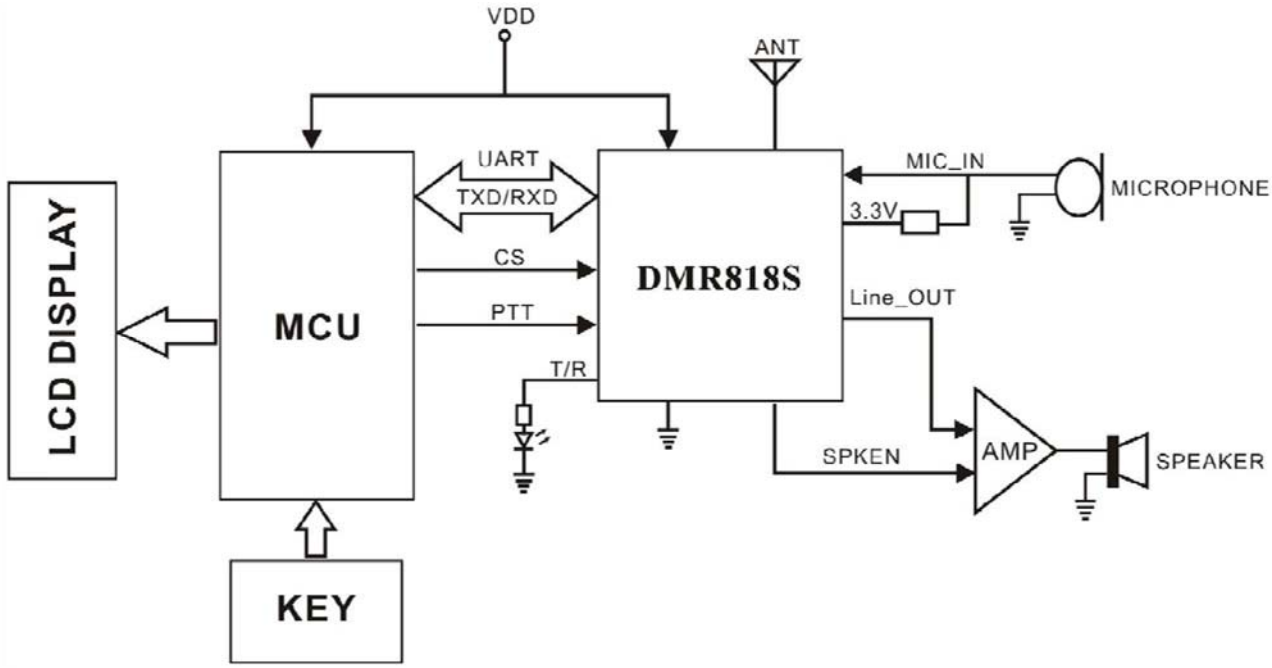
- DMR walkie talkie module
- Invisible intercom system
- Building security system
- Audio surveillance system

4. Electrical Characteristics

Parameters	Test condition	Min.	Typ.	Max	Unit
Voltage range		3.3	4.2	4.5	V
Operating Temperature		-20	25	60	℃
Frequency range	@UHF	406.1		470	MHz
Start time			2000		ms
Uart baud rate			57600		bps
Current Consumption					
Sleep current	CS pulled low for 3 seconds		< 55		uA
Rx current			<135		mA
Tx current （high power）	@VCC=4.2V, 1w analog		<1300		mA
	@VCC=4.2V, 1w digital		<1000		mA
Tx current （low power）	@VCC=4.2V, 0.5w analog		<650		mA
	@VCC=4.2V, 0.5w digital		<500		mA
RF Parameters					
Tolerance of frequency			1	1.5	ppm
Modulation sensitivity	1.5KHz/2.5KHz frequency offset (N/W)	6	7	12	mv
Adjacent-channel power	@12.5K offset	-60	-62		dBm
Mic input voltage			0.1	1.6	Vpp
CTCSS modulation frequency offset		0.35	0.4	0.6	KHz
Modulation characteristics	300HZ	-13	-11	-9	dB
	500HZ	-9	-6	-5	dB
	1000HZ	-3	0	1	dB
	2000HZ	3	6	7	dB
	3000HZ	5	7	11	dB
Rx Parameters					
Sensitivity	Analog (12db SNR)		-120		dBm

Receiving BER(DMR modulation)	@ -118dBm		5		%
Audio output amplitude				500	mV
Audio Output impedance			30		KOhm
Adjacent channel selectivity	Offset:+12.5KHz	60			dB
	Offset:+12.5KHz				

5. Typical Schematic Circuit:



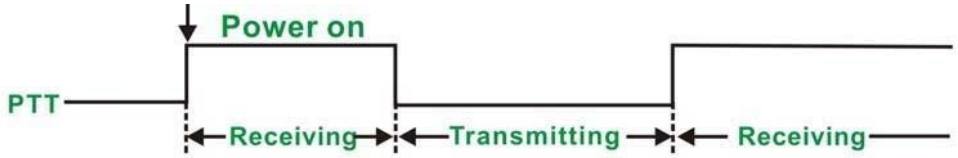
6. Functions descriptions:

For details, please check “DMR818S-U communication protocol”.

1）Voice transmission

“PTT” pin is used to control the voice transmission. Pull low to enable voice transmission; High to end transmission.

Timing operation:



Note: Serial instructions can also be used to enable voice transmission and ending. For details, please check “DMR818S-U communication protocol”

2) Voice receiving

After power on, DMR818S-U will enter into receiving mode automatically. It will return back to receiving mode after voice transmission ended.

For details of receiving process, please check “DMR818S-U communication protocol”.

3) Sleep function

The module can switch work and sleep mode through CS pin. When the CS pin is high, it is the working mode, and when the CS pin is low, it is the sleep mode. In sleep mode, all peripherals of the module are turned off and cannot communicate and respond to serial commands.

Note: CS pin is low level by default, in sleep mode, the user needs to give high level externally to make the module work.

After the CS pin level changes, the state needs 3 seconds to switch.

4) Switch of Audio amplifier

Pin “SPK_EN” is used to control external audio amplifier. When playing voice, SPK_EN in high level, low level when other status. The timing of SPK_EN as blow:

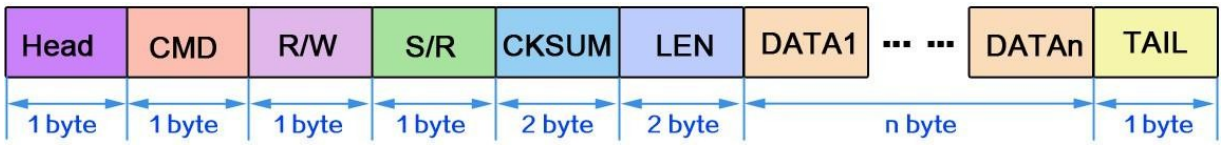


7. Brief of Serial Communication Protocol

All the parameters of DMR818S-U can be configured using Serial Communication Protocol.

MSB for the command.

Format as below：



The definition of protocol as below：

Offset	Flag	Length	Comment	Detail
0	Head	1	Packet header	0x68
1	CMD	1	command	0x01~0x28：parameter function refer to table 1

2	R/W	1	Read /write operation	0x00：reading ； 0x01：writing ； (external CPU TX is writing，external CPU RX is reading) 0x02：initiative sending
3	S/R	1	Setting/Responding	setting： 0x01： start answering： 0x00 Done 0x01 busy or fail（**note 2**） 0x02 No channel or channel errors （**note 3**） 0x07 module killed 0x09 check error note：message, voice refer to below corresponding specification
4、5	CKSUM	2	Checksum	Checksum for all the packet
6、7	LEN	2	Data length	DATA length，no information， LEN is 0
8	DATA	len	Data info	
	TAIL	1	Tail of packet	0x10

Note 1：CMD as below：

CMD	Function	Message available for All channels or current channel	Message save when Power off (yes / no)
0x01	Channel change		**yes**
0x02	Receive volume	**All**	**yes**
0x03	scanning	current channel	no
0x04	Transceiver status checking	current channel	no
0x05	Signal strength value	current channel	no
0x06	Various call modes（Call Type）	current channel	no
0x07	Message mode setting and transmit	current channel	no
0x09	Emergency alarm	current channel	no
0x0a	Enhancements	current channel	no
0x0b	Mic Gain configuration	**All**	**yes**
0x0c	Power-saving mode configuration	**All**	**yes**
0x0d	Transceiver frequency	current channel	**yes**
0x0e	Repeater/off-web	current channel	no
0x10	Receive/call type, number output	current channel	no
0x11	Read received data	current channel	no
0x12	SQ setting	current channel	**yes**
0x13	Mode of CTCSS/CDCSS	current channel	**yes**
0x14	CTCSS/CDCSS	current channel	**yes**

0x15	Monitor switch	current channel	no
0x16	Bit Error rates		no
0x17	High/low power	current channel	**yes**
0x18	Contact person	current channel	no
0x19	Encryption switch	current channel	no
0x1a	Completed initialization		no
0x22	Transmit contacts information	current channel	no
0x23	Testing message	current channel	no
0x24	ID reading	**all**	no
0x25	Firmware Version reading	**all**	no
0x28	Checking encryption status	current channel	no
0x29	Set up a contact to receive group calls	current channel	**yes**
0x30	Delete group call contact	current channel	**yes**
0x1B	Set the phone number	current channel	**yes**
0x31	Set native color code	current channel	**yes**
0x32	Set analog bandwidth	current channel	**yes**
0x33	Set time slot	current channel	**yes**
0xF0	Restore default parameters	**all**	**yes**
0xF2	Software reset	**all**	no

Note 2: When DMR818S-U is transmitting, receiving, and configuring, it will show 0x01 to tell setting fail for busy.

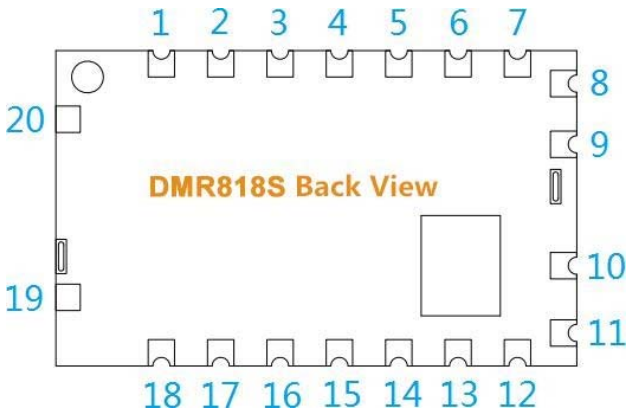
Note 3: It show 0x02 for below condition:

3.1: When change to non-exist channel;

3.2: It all happen when configure DMR settings in analogy channel(such as: message, special functions) ,

3.3 : Configure analog parameters in DMR channel.

8. Pin Assignment



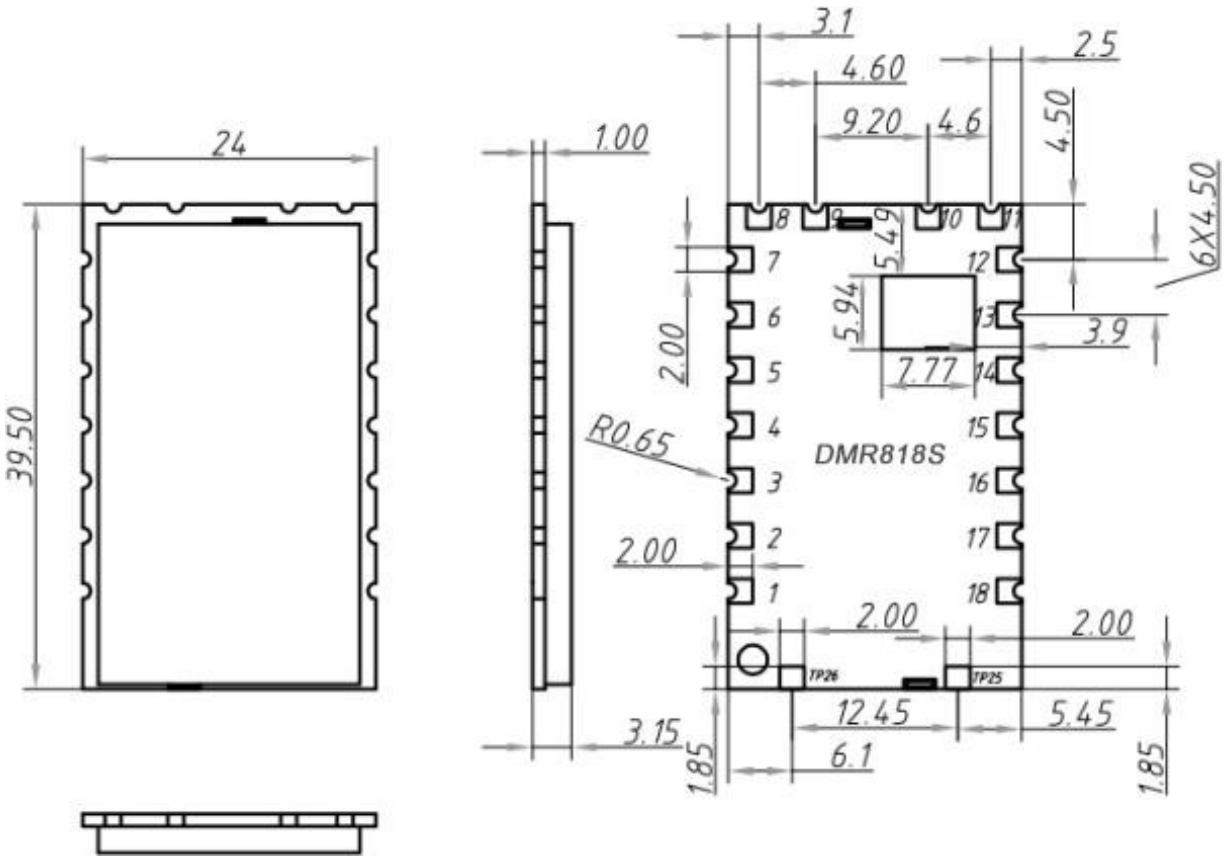
Pin NO.	Pin name	I/O	Level standard	Description

1	MIC_IN	I		Microphone or line in
2	UART-TX	O	0-3.3V	Transmit
3	UART-RX	I	0-3.3V	receive
4, 12	NC			
5	HST_TXD	O	0-3.3V	Transmit data pin (for upgrading program)
6	HST_RXD	I	0-3.3V	Receive data pin (for upgrading program)
7	ANT			connect 50 ohm antenna
8, 9, 10	GND	-		Ground
11	VCC	-	3.3-4.5V	External and Positive supply 3.3~4.5V
13	CS	I	0-4.5V	High level for normal working, leave open or pull low to enter sleeping mode
14	PTT	I	0-3.3V	Module Input, Transmitting/receiving control, pull low to force the module to enter TX state; pull high for Rx state
15	+3.3V	-		3.3V output，connect to 50mA
16	LINE_OUT	O		Audio output
17	T/R	O	0-3.3V	Module Output, status of transmitting/receiving, High for TX and low for Rx
18	SPKEN	O	0-3.3V	Audio amplifier control
19, 20	GND	-		Ground

9. Antenna

The antenna is very important for RF communication, Its performance will affect the communication, the module requires the antenna with 50Ω impedance. Universal antennas are Rod antenna, sucker antenna and telescopic antenna, User can choose the right antenna according to their application. We advise to use antennas listed on our website to get better performance.

10. Mechanism Dimension (Unit: mm)

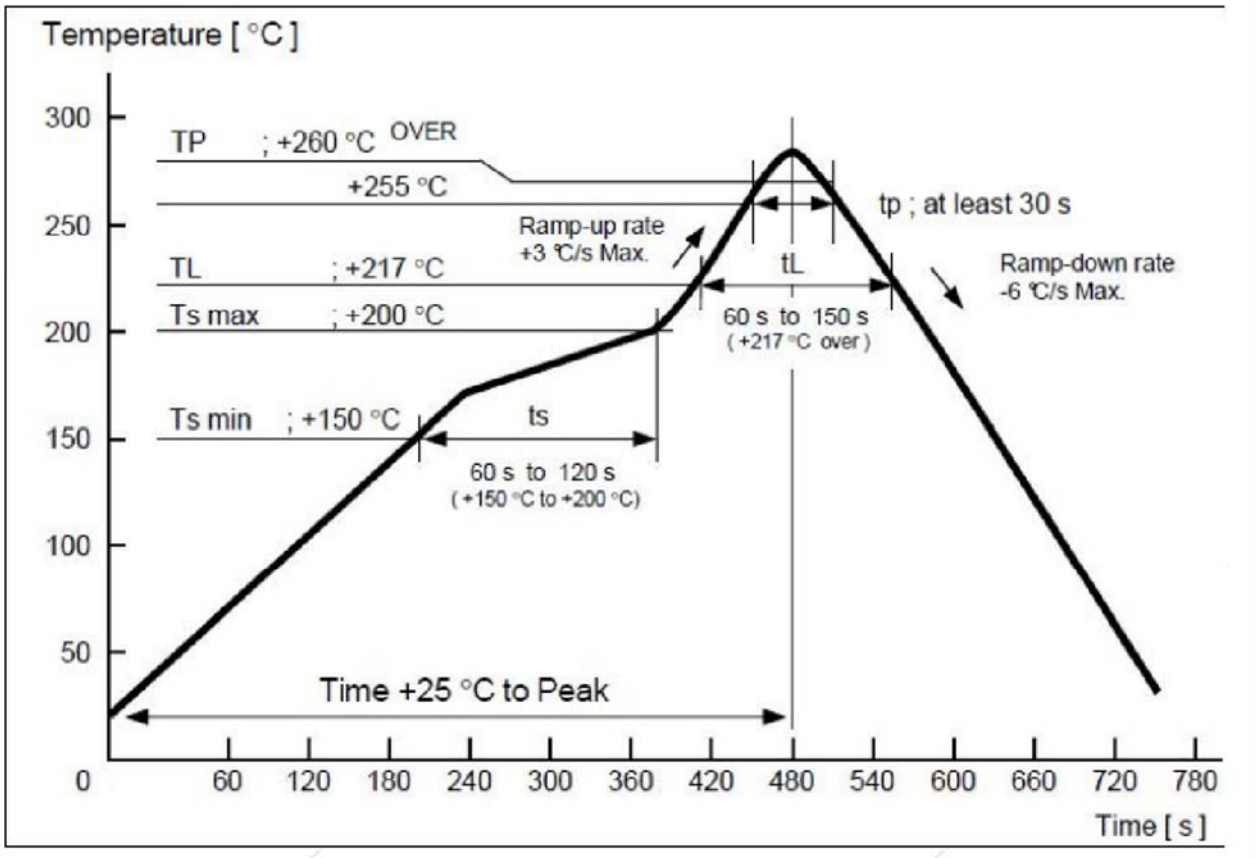


11. Order information

Product Name	Description
DMR818S-U-FCC	Working frequency :406.1~430MHz, 450-470MHz

Appendix: SMD Reflow Chart

We recommend you should obey the IPC related standards in setting the reflow profile:


Temperature [°C]
300
250
200
150
100
50
0
TP ; +260 °C OVER
+255 °C
TL ; +217 °C
Ts max ; +200 °C
Ts min ; +150 °C
Ramp-up rate
+3 °C/s Max.
tp ; at least 30 s
tL
60 s to 150 s
(+217 °C over)
Ramp-down rate
-6 °C/s Max.
ts
60 s to 120 s
(+150 °C to +200 °C)
Time +25 °C to Peak
60
120
180
240
300
360
420
480
540
600
660
720
780
Time [s]

ISED Canada Statement:

This device contains licence-exempt transmitter(s)/receiver(s)/ that comply with Innovation Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1) this device may not cause interference and

2) this device must accept any interference, including interference that may cause undesired operation of the device.

Radiation Exposure: This equipment complies with Canada radiation exposure limits set forth for an uncontrolled environment; To maintain compliance with IC's RF Exposure guidelines, This equipment should be installed and operated with minimum distance of 20cm the radiator your body. This device and its antenna(s) must not be co-located or operation in conjunction with any other antenna or transmitter.

Déclaration de l'ISED Canada:

Cet appareil contient des tasmittre (s) / récepteur (s) sans licence / conformes à l'innovationRSS exemptes de licence de Sciences et Développement économique Canada.

L'opération est sous réserve des deux conditions suivantes :

1) cet appareil ne peut pas causer d'interférences et

2) ce dispositif doit accepter toute interférence, y compris peut provoquer le fonctionnement indésirable de l'appareil.

Exposition aux rayonnements: Cet équipement est conforme aux radiations du Canada limites d'exposition pour un environnement incontrôlé noncé d'exposition RF Pour maintenir le respect des guides d'exposition RF d'IC, cquipment doit être.installé et actionné avec une distance minimale de 20cm le radiateur de votre corps. Cet appareil et ses antennes ne doivent pas être co-localisé ou en opération en conjonction avec toute autre antenne ou émetteur.

FCC Warning Statement

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or

television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
-- Reorient or relocate the receiving antenna.
-- Increase the separation between the equipment and receiver.
-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-- Consult the dealer or an experienced radio/TV technician for help.
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

RF Exposure Statement
This equipment complies with FCC radiation exposure limits set forth for an Occupational / Controlled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Caution:
1. This product can be used in EU member states. This device can be used in European
2. Products can be sold in all EU countries Declaration of conformity (NiceRF Wireless Technology LTD.) declares that Micro system with (Wireless walkie-talkie module) is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU.

Applicant: NiceRF Wireless Technology LTD.
Address: 309-314, Bldg A,Hongdu business building, Xin'an street, Zone 43, Baoan Dist, Shenzhen 518101, China

Frequency: 406.1-430MHz, 450-470MHz
Max. Conducted Power: 31.18dBm

2.2 List of applicable FCC rules

List the FCC rules that are applicable to the modular transmitter. These are the rules that specifically establish the bands of operation, the power, spurious emissions, and operating fundamental frequencies.

DO NOT list compliance to unintentional-radiator rules (Part 15 Subpart B) since that is not a condition of a module grant that is extended to a host manufacturer. See also Section 2.10 below concerning the need to notify host manufacturers that further testing is required.[3]

Explanation: This module meets the requirements of FCC Part 90.

2.3 Summarize the specific operational use conditions

Describe conditions that are applicable to the modular transmitter, such as including for example any limits on antennas. For example, if point-to-point antennas are used that require reduction in power or compensation for cable loss, for professional installed equipment, then this information must be in the instructions. In addition, certain information may also be needed, such as peak gain per frequency band and minimum gain, specifically for master devices in 5 GHz DFS bands.

Explanation: The EUT uses External Antenna, antenna gain: 1dBi. There is no restriction on the installation method.

2.4 Limited module procedures

If a modular transmitter is approved as a “limited module”, then the module manufacturer is responsible for approving the host environment that the limited module is used with. The manufacturer of a limited module must describe, both in the filing and in the installation instructions, the alternative means that the limited module manufacturer uses to verify that the host meets the necessary requirements to satisfy the module limiting conditions.

A limited module manufacturer has the flexibility to define its alternative method to address the conditions that limit the initial approval, such as: shielding, minimum signaling amplitude, buffered modulation/data inputs, or power supply regulation. The alternative method could include that the limited module manufacturer reviews detailed test data or host designs prior to giving the host manufacturer approval.

This limited module procedure is also applicable for RF exposure evaluation when it is necessary to demonstrate compliance in a specific host. The module manufacturer must state how control of the product into which the modular transmitter will be installed and maintained such that full compliance of the product is always ensured. For additional hosts other than the specific host originally granted with a limited module, a Class II permissive change is required on the module grant to register the additional host as a specific host also approved with the module.

Explanation: The module is not a limited module.

2.5 Trace antenna designs

For a modular transmitter with trace antenna designs, see the guidance in Question 11 of

KDB Publication 996369 D02 FAQ – Modules for Micro-Strip Antennas and traces. The integration information shall include for the TCB review the integration instructions for the following aspects: layout of trace design, parts list (BOM), antenna, connectors, and isolation requirements.[4]

a) Information that includes permitted variances (e.g., trace boundary limits, thickness, length, width, shape(s), dielectric constant, and impedance as applicable for each type of antenna);
b) Each design shall be considered a different type (e.g., antenna length in multiple(s) of frequency, the wavelength, and antenna shape (traces in phase) can affect antenna gain and must be considered);
c) The parameters shall be provided in a manner permitting host manufacturers to design the printed circuit (PC) board layout;
d) Appropriate parts by manufacturer and specifications;
e) Test procedures for design verification; and
f) Production test procedures for ensuring compliance.

The module grantee shall provide a notice that any deviation(s) from the defined parameters of the antenna trace, as described by the instructions, require that the host product manufacturer must notify the module grantee that they wish to change the antenna trace design. In this case, a Class II permissive change application is required to be filed by the grantee, or the host manufacturer can take responsibility through the change in FCC ID (new application) procedure followed by a Class II permissive change application.
Explanation: No. The module without trace antenna designs.

2.6 RF exposure considerations

It is essential for module grantees to clearly and explicitly state the RF exposure conditions that permit a host product manufacturer to use the module. Two types of instructions are required for RF exposure information: (1) to the host product manufacturer, to define the application conditions (mobile, portable –xx cm from a person's body); and (2) additional text needed for the host product manufacturer to provide to end users in their end-product manuals. If RF exposure statements and use conditions are not provided, then the host product manufacturer is required to take responsibility of the module through a change in FCC ID (new application).
Explanation: This equipment complies with FCC radiation exposure limits set forth for an Occupational / Controlled environment. This equipment should be installed and operated with minimum distance 50cm between the radiator & your body. This module is designed to comply with the FCC statement, FCC ID is: 2AD66-DMR818SU.

2.7 Antennas

For Part 15 and licensed CMRS Client devices a list of antennas included in the application for certification must be provided in the instructions. For modular transmitters approved as limited modules, all applicable professional installer instructions must be included as part of the information to the host product manufacturer. The antenna list shall also identify the antenna types (monopole, PIFA, dipole, etc. (note that for example an "omni-directional antenna" is not considered to be a specific "antenna type")).

For situations where the host product manufacturer is responsible for an external connector, for example with an RF pin and antenna trace design, the integration instructions shall inform the installer that unique antenna connector must be used on the Part 15 authorized transmitters used in the host product. The module manufacturers shall provide a list of acceptable unique connectors.
Explanation: The EUT uses External Antenna, antenna gain: 1dBi.

2.8 Label and compliance information
Grantees are responsible for the continued compliance of their modules to the FCC rules. This includes advising host product manufacturers that they need to provide a physical or e-label stating “Contains FCC ID” with their finished product. See Guidelines for Labeling and User Information for RF Devices –KDB Publication 784748.
Explanation: The host system using this module, should have label in a visible area indicated he following texts: Contains FCC ID: 2AD66-DMR818SU.

2.9 Information on test modes and additional testing requirements
Additional guidance for testing host products is given in KDB Publication 996369 D04 Module Integration Guide. Test modes should take into consideration different operational conditions for a standalone modular transmitter in a host, as well as for multiple simultaneously transmitting modules or other transmitters in a host product.

The grantee should provide information on how to configure test modes for host product evaluation for different operational conditions for a stand-alone modular transmitter in a host, versus with multiple, simultaneously transmitting modules or other transmitters in a host.

Grantees can increase the utility of their modular transmitters by providing special means, modes, or instructions that simulates or characterizes a connection by enabling a transmitter. This can greatly simplify a host manufacturer’s determination that a module as installed in a host complies with FCC requirements.
Explanation: Data transfer module demo board can control the EUT work in RF test mode at specified test channel

2.10 Additional testing, Part 15 Subpart B disclaimer
The grantee should include a statement that the modular transmitter is **only** FCC authorized for the specific rule parts (i.e., FCC transmitter rules) listed on the grant, and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. If the grantee markets their product as being Part 15 Subpart B compliant (when it also contains unintentional-radiator digital circuity), then the grantee shall provide a notice stating that the final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.[6]
Explanation: The module without unintentional-radiator digital circuity, so the module does not require an evaluation by FCC Part 15 Subpart B. The host should be evaluated by the FCC Subpart B.

2.11 Note EMI Considerations

Note that a host manufacture is recommended to use D04 Module Integration Guide recommending as "best practice" RF design engineering testing and evaluation in case non-linear interactions generate additional non-compliant limits due to module placement to host components or properties

For standalone mode, reference the guidance in D04 Module Integration Guide and for simultaneous mode[7]; see D02 Module Q&A Question 12, which permits the host manufacturer to confirm compliance.

Explanation: The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.

The host integrator must follow the integration instructions provided in this document and ensure that the composite system end product complies with the requirements by a technical assessment or evaluation to the rules and to KDB Publication 996369.

The host integrator installing this module into their product must ensure that the final composite product complies with the requirements by a technical assessment or evaluation to the rules, including the transmitter operation and should refer to guidance in KDB Publication 996369.

OEM/Host Manufacturer Responsibilities

OEM/Host manufacturers are ultimately responsible for the compliance of the Host and Module.

The final product must be reassessed against all the essential requirements of the FCC rule such as FCC Part 15 Subpart B before it can be placed on the US market. This includes reassessing the transmitter module for compliance with the Radio and RF Exposure essential requirements of the FCC rules.

2.12 How to make changes

Since. only Grantees are permitted to make permissive changes, it is recommended that module manufactures provide contact information and some guidance to host providers in the integration instructions if they expect their module will be used differently than granted.

Explanation: In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

DECLARATION OF CONFORMITY

I hereby declare that the product

Wireless walkie-talkie module
Model: DMR818S-U
Trade Mark: G-NiceRF

(Name of product, type or model, batch or serial number)

Hardware Version: V1.0, Software Version: V1.7
DC 4.2V

satisfies all the technical regulations applicable to the product within the scope of Council Directives 2014/53/EU, 2014/35/EU and 2014/30/EU:and declare that the same application has not been lodged with any other notified body.

	EMC: ETSI EN 301 489-1 V2.2.3 (2019-11)/ ETSI EN 301 489-5 V2.2.1 (2019-04)/ EN 55032:2015 + A1:2020 + A11:2020/ EN 55035:2017 + A11:2020	
	LVD: EN IEC 62368-1:2024+A11:2024	
	EMF: EN IEC 62311:2020	
	RF: ETSI EN 300 113 V2.2.1 (2016-12) ETSI EN 301 166 V2.1.1 (2016-11) ETSI EN 300 086 V2.1.2(2016-08)	
	(Title(s) of regulations, standards, etc.)	

All essential radio test suites have been carried out.
NOTIFIED BODY: MiCOM Labs Inc

- **Address**:

575 Boulder Court,
Pleasanton, California 94566
USA
Identification Number: 2280

MANUFACTURER or **AUTHORISED REPRESENTATIVE**: NiceRF Wireless Technology CO.,LTD
Address:
309-314, 3/F, Hongdu Business Building Zone 43,
Bao'an District,
Shenzhen, Guangdong, 518101 China

This declaration is issued under the sole responsibility of the manufacturer and, if applicable, his authorised representative.

Point of contact:

(Name, telephone and fax number)

Shenzhen, Guangdong**, Oct. 23, 2026**

(Place, date of issue)

GH. Song, Manager

(Name and title in block letters)