

Manual of WCF733R

1. Introduction

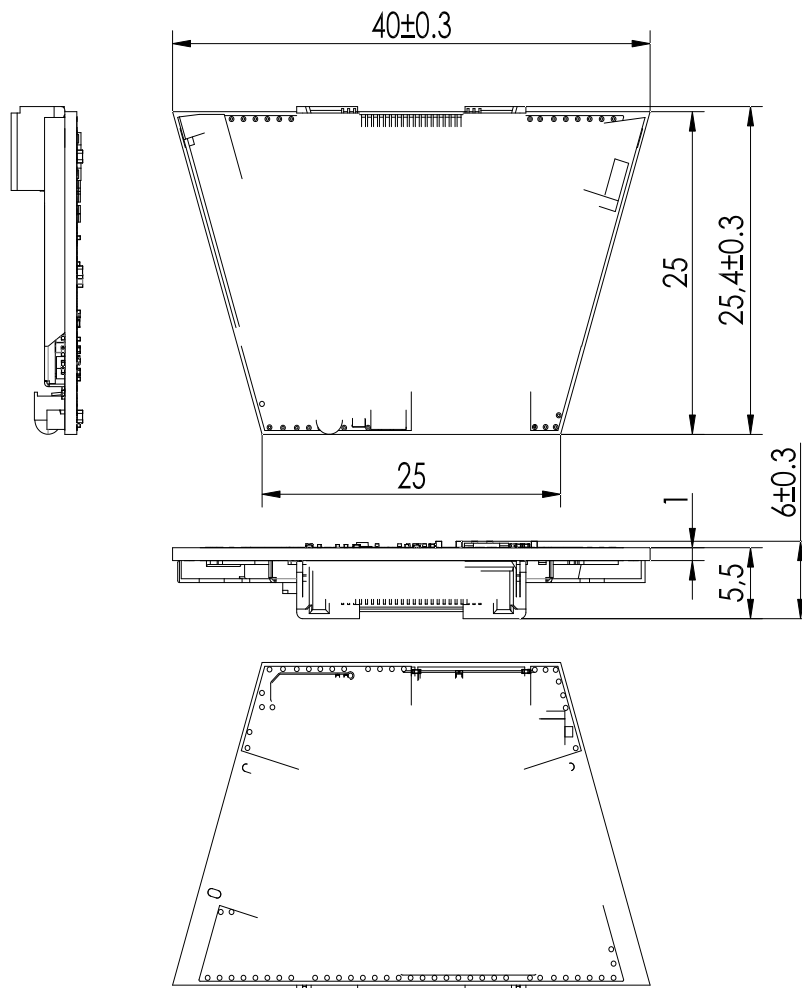
WCF733R is a Wi-Fi / Bluetooth Combo module compliant with IEEE802.11 a.b.g.n.ac MAC/baseband/radio and Bluetooth 5.2 optimized for low-power applications.

The core chipset is from Realtek part number RTL8822EU.

2.Pin Definition

No.	Define	Description
1	IR_RX	IR Receiver
2	BT_UART_TXD	NC
3	GND	Ground
4	WIFI_USB_ON	WiFi _USB_suspend
5	WIFI_WOW	WiFi wake host
6	BTWIFI_NRESET	WiFi reset
7	BT_WAKE	BT wakehost
8	GND	Ground
9	USB_D-	USB_D-
10	USB_D+	USB_D+
11	A5V_PW_WIFI	Supply voltage 5V
12	A5V_PW_WIFI	Supply voltage 5V
13	LED	Light emitting diode
14	I2C_SCL	I2C digital serial clock input
15	I2C_SDA	I2C digital serial data output
16	KEY1	Key
17	GND	Ground
18	MIC_on/off	NC
19	DMIC_CLK	NC
20	DMIC_DATA	NC
21	MIC_GND	NC
22	IR_OUT1	NC
23	IR_OUT2	NC
24	A3.3V_PW_Sensor	Supply voltage 3.3V

3. Module Dimension



4. Recommended Operating Condition

Parameter	Min	Typ.	Max	Unit
Operating voltage	4.5	5	5.5	V
Operating temperature	-10	-	50	°C

<Regulatory notice to host manufacturer according to KDB 996369 D03 OEM Manual v01>

List of applicable FCC rules

This module has been granted modular approval as below listed FCC rule parts.

-FCC Rule parts 15C (15.247, 15.407)

Summarize the specific operational use conditions

-The OEM integrator should use equivalent antennas which is the same type and equal or less gain than an antenna listed in 2.7 in this instruction manual.

RF exposure considerations

The module has been certified for integration into products only by OEM integrators under the following condition:

- The antenna(s) must be installed such that a minimum separation distance of at least 20 cm is maintained between the radiator (antenna) and all persons at all times.

- The transmitter module must not be co-located or operating in conjunction with any other antenna or transmitter except in accordance with FCC multi-transmitter product procedures.

- Mobile use

As long as the three conditions above are met, further transmitter testing will not be required.

OEM integrators should provide the minimum separation distance to end users in their end-product manuals.

Antenna type

BT/LE : PCB antenna

WLAN : Metal antenna

* Antenna gain and frequency are listed separately on the back.

Any new antenna type, higher gain than listed antenna should be met the requirements of FCC rule 15.203 and 2.1043 as permissive change procedure.

Label and compliance information

End Product Labeling

The module is labeled with its own FCC ID and IC Certification Number. If the FCC ID and IC Certification Number are not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. In that case, the final end product must be labeled in a visible area with the following:

"Contains FCC ID: A3LWCF733R

"Contains IC: 649E-WCF733R

Information on test modes and additional testing requirements

-OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, additional transmitter in the host, etc.).

Additional testing, Part 15 Subpart B disclaimer

-The final host product also requires Part 15 subpart B compliance testing with the modular transmitter installed to be properly authorized for operation as a Part 15 digital device.

Approval Statement

- **FCC approval statement(美国)**

RF Software restrictions

1. Contention-Based Protocol, as demonstrated in the FCC test report, is permanently embedded in the module and is not host-dependent and can't be changed by anyone.

2. Operation of transmitters in the 5.25-5.35GHz, 5.47-5.725GHz bands in this Modular device will only associate and connect with a low-power indoor access point or subordinate device and never directly connect to other client devices.

This feature is included in its firmware and can't be changed by anyone.

3. Operation of transmitters in the 5.25-5.35GHz, 5.47-5.725GHz bands in this Modular device will always initiate transmission under the control of a low-power indoor AP or subordinate except for brief transmissions before joining a network. These short messages will only occur if the client has detected an indoor AP or subordinate operating on a channel. These brief messages will have a time-out mechanism such that if it does not receive a response from an AP it will not continually repeat the request.

This device complies with Part 15 of the FCC's 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 undesirable operation.

To satisfy FCC exterior labeling requirements, the following text must be placed on the exterior of the end-product.

Contains Transmitter module FCC ID: A3LWCF733R

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.
- The OEM integrator is responsible for ensuring the end-user has no manual instruction to remove or install module.
- The module is limited to installation in mobile or fixed applications.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device meets all the other requirements specified in Part 15E, Section 15.407 of the FCC Rules.

-RF exposure considerations

The module has been certified for integration into products only by OEM integrators under the following condition:

- The antenna(s) must be installed such that a minimum separation distance of at least 20cm is maintained between the radiator(antenna) and all persons at all times.
- The transmitter module must not be co-located or operating in conjunction with any other antenna or transmitter except in accordance with FCC multi-transmitter product procedures.

This device can support Ad-hoc and Wi-Fi Direct for 2.4GHz, UNII 1, and UNII 3 bands.

The device operates strictly as a client in DFS channels (with passive scan). It does not support ad-hoc, Wi-Fi Direct Group Owner, Hotspot, or any other peer-to-peer modes that may initiate a network in DFS channels (UNII2-2A and UNII2-2C band)

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 EMF essential requirements of the FCC rules. This module must not be incorporated into any other device or system without retesting for compliance as multi-radio and combined equipment.

IMPORTANT: The final host product must have an integral antenna that is not removable by the end user.

Antenna Type & Antenna Gain

BT

Antenna	Frequency(MHz)	Antenna Type	MAX Antenna Gain(dBi)
BT	2400-2480	PCB Antenna	-4.02dBi

2.4G WiFi

Antenna	Frequency(MHz)	Antenna Type	MAX Antenna Gain(dBi)
1	2400-2480	Metal Antenna	-1.51dBi
2	2400-2480	Metal Antenna	-0.71dBi

5G WiFi

Antenna	Frequency(MHz)	Antenna Type	MAX Antenna Gain(dBi)
1	5150-5850	Metal Antenna	1.43dBi
2	5150-5850	Metal Antenna	0.86dBi

- **Canada IC approval statement (与美国共同提供)**

IC approval

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.**
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.**

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- (1) L'appareil ne doit pas produire de brouillage;**
- (2) L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.**

Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Attention: Toute change ou modifications non expressément approuvées par la partie responsable de la conformité pourraient annuler l'autorité de faire fonctionner cet équipement.

Please notice that if the ISED certification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains IC: 649E-WCF733R" any similar wording that expresses the same meaning may be used.

l'appareil hôte doit porter une étiquette donnant le numéro de certification du module d'Industrie Canada, précédé des mots (Contient un module d'émission , du mot IC: 649E- WCF733R) ou d'une formulation similaire exprimant le même sens, comme suit

The device for operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite

systems.

Les dispositifs fonctionnant dans la bande 5150-5250 MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux;

User should also be advised that high-power radars are allocated as primary users (i.e. priority users) of the bands 5250-5350 MHz and 5650-5850 MHz and that these radars could cause interference and/or damage to LE-LAN devices.

Les utilisateurs doivent également être informés que les radars de haute puissance sont affectés aux bandes 5250 - 5350 MHz et 5650 - 5850 MHz en tant qu'utilisateurs principaux (c. - à - D. utilisateurs prioritaires) et que ces radars peuvent causer des interférences et / ou des dommages à l'équipement le - lan.

The device meets the exemption from the routine evaluation limits in section 2.5 of RSS 102 and compliance with RSS-102 RF exposure, users can obtain Canadian information on RF exposure and compliance.

Le dispositif rencontre l'exemption des limites courantes d'évaluation dans la section 2.5 de RSS 102 et la conformité à l'exposition de RSS-102 RF, utilisateurs peut obtenir l'information canadienne sur l'exposition et la conformité de RF.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

Cet émetteur ne doit pas être Co-placé ou ne fonctionnant en même temps qu'aucune autre antenne ou émetteur. Cet équipement devrait être installé et actionné avec une distance minimum de 20 centimètres entre le radiateur et votre corps.

IMPORTANT: The final host product must have an integral antenna that is not removable by the end user.

BT Gain

Frequency (MHz)	Efficiency (%)	Average Gain (dBi)			Max Gain (dBi)		
		Ver	Hor	Total	Ver	Hor	Total
2400	18.18	-9.69	-8.59	-7.40	-4.57	-6.06	-4.24
2410	18.76	-9.51	-8.33	-7.27	-4.29	-6.00	-4.06
2420	17.81	-9.70	-8.53	-7.49	-4.43	-6.42	-4.15
2430	17.55	-9.79	-8.56	-7.56	-4.34	-6.62	-4.14
2440	17.54	-9.87	-8.43	-7.56	-4.41	-6.55	-4.13
2450	17.24	-10.02	-8.44	-7.63	-4.54	-6.62	-4.25
2460	16.49	-10.20	-8.60	-7.83	-4.90	-6.80	-4.44
2470	14.81	-10.64	-8.96	-8.30	-5.55	-7.21	-4.76
2480	14.07	-10.72	-9.03	-8.52	-6.04	-7.44	-4.80

ANT1 Gain

Frequency (MHz)	Efficiency (%)	Average Gain (dBi)			Max Gain (dBi)		
		Ver	Hor	Total	Ver	Hor	Total
2400	26.77	-8.05	-5.82	-5.72	-2.64	-2.50	-2.15
2410	27.73	-7.85	-5.71	-5.57	-2.59	-2.42	-2.12
2420	27.72	-7.79	-5.95	-5.57	-2.59	-2.71	-2.11
2430	28.11	-7.66	-6.16	-5.51	-2.44	-2.96	-1.96
2440	27.48	-7.76	-6.42	-5.61	-2.54	-3.20	-1.89
2450	28.59	-7.52	-6.34	-5.44	-2.29	-3.07	-1.84
2460	28.96	-7.37	-6.48	-5.38	-2.07	-3.19	-1.69
2470	29.51	-7.16	-6.67	-5.30	-1.80	-3.38	-1.55
2480	29.82	-7.03	-6.91	-5.25	-1.58	-3.64	-1.51
5150	47.97	-4.71	-3.25	-3.19	0.64	1.02	1.11
5200	45.90	-4.92	-3.37	-3.38	0.47	0.77	1.07
5250	49.90	-4.60	-3.06	-3.02	0.58	0.86	1.31
5300	51.73	-4.35	-2.91	-2.86	0.53	1.02	1.25
5350	55.03	-4.20	-2.66	-2.59	0.69	0.97	1.09
5400	54.41	-4.15	-2.81	-2.64	0.58	0.64	0.74
5450	50.94	-4.41	-3.13	-2.93	0.22	0.29	0.32
5500	49.66	-4.31	-3.42	-3.04	0.31	0.33	0.35
5550	51.04	-4.37	-3.44	-2.92	0.24	0.27	0.58
5600	50.11	-4.54	-3.65	-3.00	0.13	0.03	0.86
5650	52.85	-4.04	-3.34	-2.77	0.60	0.67	0.80
5700	55.00	-3.51	-3.05	-2.60	1.07	1.12	1.23
5750	55.04	-3.39	-3.04	-2.59	1.09	1.15	1.18
5800	54.35	-3.42	-3.06	-2.65	1.02	1.04	1.11
5850	56.12	-3.30	-2.72	-2.51	1.32	1.36	1.43

ANT2 Gain

Frequency (MHz)	Efficiency (%)	Average Gain (dBi)			Max Gain (dBi)		
		Ver	Hor	Total	Ver	Hor	Total
2400	32.68	-5.19	-5.21	-4.86	-0.91	-2.53	-0.91
2410	33.49	-5.13	-5.23	-4.75	-0.96	-2.53	-0.96
2420	34.82	-5.03	-5.19	-4.58	-0.92	-2.43	-0.92
2430	36.14	-4.96	-5.19	-4.42	-0.87	-2.31	-0.87
2440	37.39	-4.88	-5.26	-4.27	-0.78	-2.18	-0.78
2450	37.23	-4.97	-5.47	-4.29	-0.83	-2.19	-0.77
2460	36.64	-5.06	-5.70	-4.36	-0.88	-2.29	-0.75
2470	36.28	-5.13	-5.90	-4.40	-0.86	-2.43	-0.73
2480	36.37	-5.13	-5.98	-4.39	-0.76	-2.52	-0.71
5150	41.11	-6.62	-5.74	-3.86	-0.81	-1.24	0.66
5200	39.07	-6.85	-6.05	-4.08	-0.86	-1.72	0.12
5250	41.16	-6.59	-5.68	-3.86	-0.84	-1.43	0.24
5300	44.71	-6.15	-5.11	-3.50	-0.71	-1.03	0.27
5350	50.35	-5.69	-4.30	-2.98	-0.57	-0.34	0.77
5400	52.81	-5.35	-4.06	-2.77	-0.46	-0.26	0.86
5450	50.17	-5.59	-4.03	-3.00	-0.26	0.39	0.70
5500	49.61	-5.56	-4.24	-3.04	-0.30	0.21	0.34
5550	48.70	-5.57	-4.42	-3.12	-0.42	0.08	0.08
5600	44.20	-6.00	-5.05	-3.55	-1.05	-0.61	-0.61
5650	43.50	-6.06	-4.91	-3.62	-0.65	-0.59	-0.56
5700	45.11	-5.75	-4.69	-3.46	-0.42	-0.49	-0.42
5750	45.08	-5.63	-4.81	-3.46	-0.54	-0.53	-0.53
5800	42.29	-5.92	-5.06	-3.74	-0.85	-0.96	-0.80
5850	42.44	-6.08	-4.76	-3.72	-0.61	-1.02	-0.58

- Europe CE approval statement

Resticted countries :

AT BE BG CH CY CZ DE DK
EE ES EL FI FR HR HU IE IS
IT LI LT LU LV MT NL NO PL
PT RO SE SI SK TR UK(NI)



This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

ANT Gain Table

BT Gain

Frequency (MHz)	Efficiency (%)	Average Gain (dBi)			Max Gain (dBi)		
		Ver	Hor	Total	Ver	Hor	Total
2400	18.18	-9.69	-8.59	-7.40	-4.57	-6.06	-4.24
2410	18.76	-9.51	-8.33	-7.27	-4.29	-6.00	-4.06
2420	17.81	-9.70	-8.53	-7.49	-4.43	-6.42	-4.15
2430	17.55	-9.79	-8.56	-7.56	-4.34	-6.62	-4.14
2440	17.54	-9.87	-8.43	-7.56	-4.41	-6.55	-4.13
2450	17.24	-10.02	-8.44	-7.63	-4.54	-6.62	-4.25
2460	16.49	-10.20	-8.60	-7.83	-4.90	-6.80	-4.44
2470	14.81	-10.64	-8.96	-8.30	-5.55	-7.21	-4.76
2480	14.07	-10.72	-9.03	-8.52	-6.04	-7.44	-4.80

ANT1 Gain

Frequency (MHz)	Efficiency (%)	Average Gain (dBi)			Max Gain (dBi)		
		Ver	Hor	Total	Ver	Hor	Total
2400	26.77	-8.05	-5.82	-5.72	-2.64	-2.50	-2.15
2410	27.73	-7.85	-5.71	-5.57	-2.59	-2.42	-2.12
2420	27.72	-7.79	-5.95	-5.57	-2.59	-2.71	-2.11
2430	28.11	-7.66	-6.16	-5.51	-2.44	-2.96	-1.96
2440	27.48	-7.76	-6.42	-5.61	-2.54	-3.20	-1.89
2450	28.59	-7.52	-6.34	-5.44	-2.29	-3.07	-1.84
2460	28.96	-7.37	-6.48	-5.38	-2.07	-3.19	-1.69
2470	29.51	-7.16	-6.67	-5.30	-1.80	-3.38	-1.55
2480	29.82	-7.03	-6.91	-5.25	-1.58	-3.64	-1.51
5150	47.97	-4.71	-3.25	-3.19	0.64	1.02	1.11
5200	45.90	-4.92	-3.37	-3.38	0.47	0.77	1.07
5250	49.90	-4.60	-3.06	-3.02	0.58	0.86	1.31
5300	51.73	-4.35	-2.91	-2.86	0.53	1.02	1.25
5350	55.03	-4.20	-2.66	-2.59	0.69	0.97	1.09
5400	54.41	-4.15	-2.81	-2.64	0.58	0.64	0.74
5450	50.94	-4.41	-3.13	-2.93	0.22	0.29	0.32
5500	49.66	-4.31	-3.42	-3.04	0.31	0.33	0.35
5550	51.04	-4.37	-3.44	-2.92	0.24	0.27	0.58
5600	50.11	-4.54	-3.65	-3.00	0.13	0.03	0.86
5650	52.85	-4.04	-3.34	-2.77	0.60	0.67	0.80
5700	55.00	-3.51	-3.05	-2.60	1.07	1.12	1.23
5750	55.04	-3.39	-3.04	-2.59	1.09	1.15	1.18
5800	54.35	-3.42	-3.06	-2.65	1.02	1.04	1.11
5850	56.12	-3.30	-2.72	-2.51	1.32	1.36	1.43

ANT2 Gain

Frequency (MHz)	Efficiency (%)	Average Gain (dBi)			Max Gain (dBi)		
		Ver	Hor	Total	Ver	Hor	Total
2400	32.68	-5.19	-5.21	-4.86	-0.91	-2.53	-0.91
2410	33.49	-5.13	-5.23	-4.75	-0.96	-2.53	-0.96
2420	34.82	-5.03	-5.19	-4.58	-0.92	-2.43	-0.92
2430	36.14	-4.96	-5.19	-4.42	-0.87	-2.31	-0.87
2440	37.39	-4.88	-5.26	-4.27	-0.78	-2.18	-0.78
2450	37.23	-4.97	-5.47	-4.29	-0.83	-2.19	-0.77
2460	36.64	-5.06	-5.70	-4.36	-0.88	-2.29	-0.75
2470	36.28	-5.13	-5.90	-4.40	-0.86	-2.43	-0.73
2480	36.37	-5.13	-5.98	-4.39	-0.76	-2.52	-0.71
5150	41.11	-6.62	-5.74	-3.86	-0.81	-1.24	0.66
5200	39.07	-6.85	-6.05	-4.08	-0.86	-1.72	0.12
5250	41.16	-6.59	-5.68	-3.86	-0.84	-1.43	0.24
5300	44.71	-6.15	-5.11	-3.50	-0.71	-1.03	0.27
5350	50.35	-5.69	-4.30	-2.98	-0.57	-0.34	0.77
5400	52.81	-5.35	-4.06	-2.77	-0.46	-0.26	0.86
5450	50.17	-5.59	-4.03	-3.00	-0.26	0.39	0.70
5500	49.61	-5.56	-4.24	-3.04	-0.30	0.21	0.34
5550	48.70	-5.57	-4.42	-3.12	-0.42	0.08	0.08
5600	44.20	-6.00	-5.05	-3.55	-1.05	-0.61	-0.61
5650	43.50	-6.06	-4.91	-3.62	-0.65	-0.59	-0.56
5700	45.11	-5.75	-4.69	-3.46	-0.42	-0.49	-0.42
5750	45.08	-5.63	-4.81	-3.46	-0.54	-0.53	-0.53
5800	42.29	-5.92	-5.06	-3.74	-0.85	-0.96	-0.80
5850	42.44	-6.08	-4.76	-3.72	-0.61	-1.02	-0.58