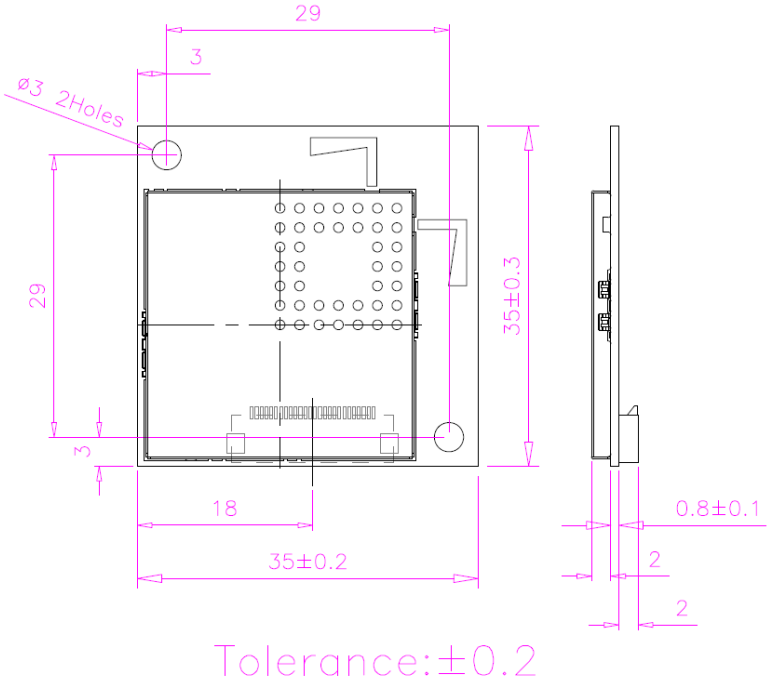
User Manual

IA9Q5 S83F

RF 5G Wireless Module

1. Appearance & Dimension

- Dimension：35 * 35 * 0.8 mm
- Mechanical Drawing：

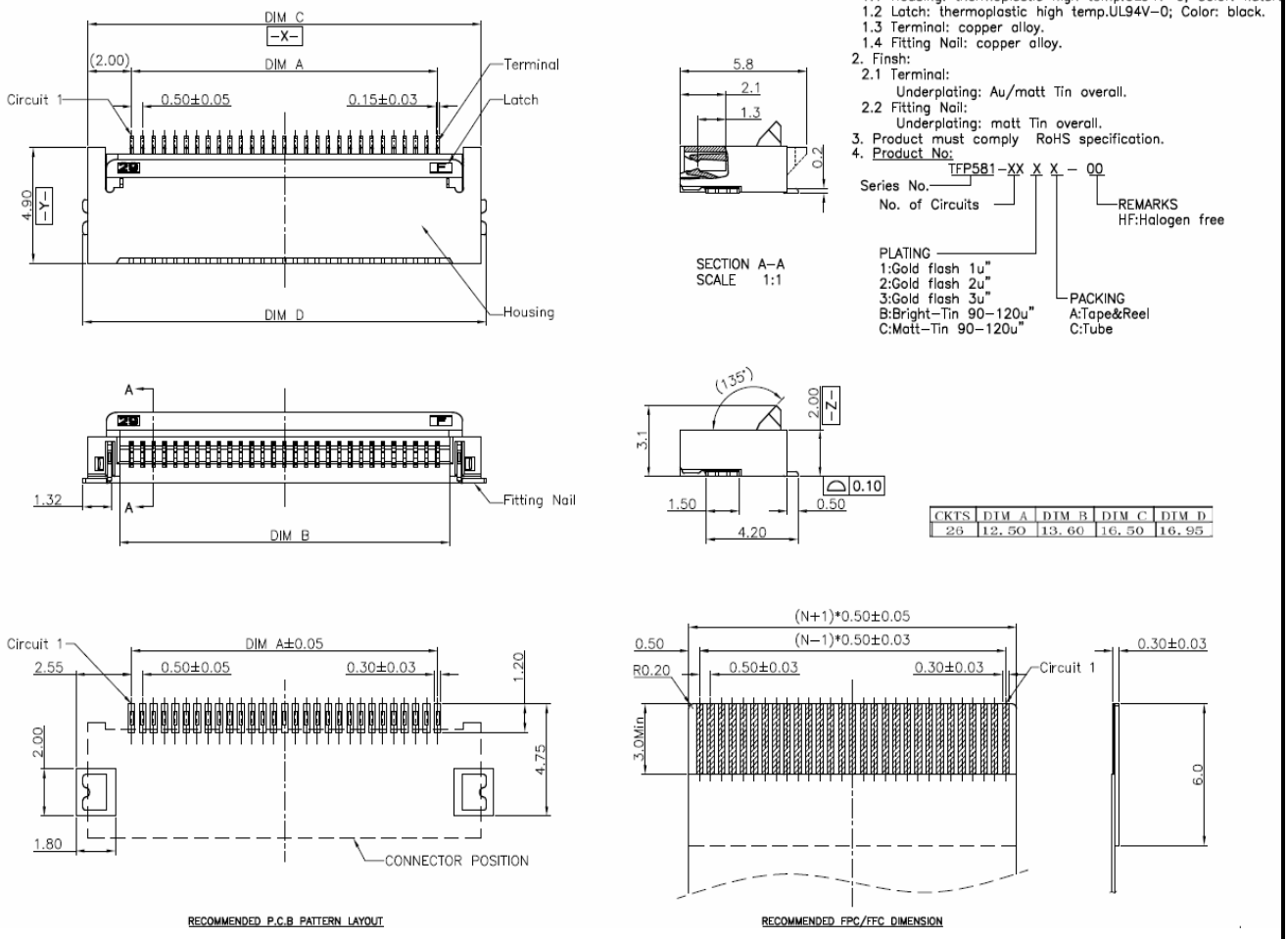


2. Mechanical & Key Connector

2.1 PCB Board Material

Type：FR-4，Surface finish：ENIG，Layers：4。Dimension：35 * 35 * 0.8 mm;

2.2 FFC Connector



3. Performance

3.1 RF Specification

Standard	Wireless 5G Proprietary Protocol
Connector Type	FPC connector 26 Pin
Transceiver mode	1T1R
Modulation	GFSK
Frequency range	5.165 ~ 5.200 GHz (option) 5.740 ~ 5.840 GHz
Output Power	12dBm (Peak power at Antenna port)
Sensitivity	-90dBm(The smaller, the better)
Input Voltage	3.0~3.6V (3.3V TYP.)
Power consumption	Consumption Current (TX_MODE):100 mA Consumption Current (RX_MODE):65 mA
Antenna Type	Dual PCB Routing on board

3.2 Antenna Specification

Impedance	Input impedance 50 ohm
Frequency	5.135GHz~5.205GHz，5.740~5.840GHz
VSWR	5.135GHz~5.205GHz , 1.46 ; 5.740~5.840GHz , 2.02
R.L	5.135GHz~5.205GHz：RL≤-14.5dB，5.15~5.85GHz：RL≤-9.4dB
Isolation	ANT0 VS ANT1 ≤-15dB The antennas didn't operate simultaneous.
Gain	Omni-direction，Peak Gain ≤ 2.85dBi

3.4 GPIO Pin define

Pin	Name	I/O	Connector Pin Define
1	VCCIO	P	DC 3.0 ~ 3.6V IN.
2	DGND	P	Digital GND.
3	SPB_I2S_MCLK	I/O	SPB I2S audio MCLK system clock output.
4	GPIO 32	I/O	GPIO.
5	GPIO 14	I/O	GPIO.
6	GPIO 31	I/O	GPIO/SPI Clock In.
7	GPIO 17	I/O	GPIO.
8	GPIO 36	I/O	GPIO/I2C_BUSY, Module Pull High/SPI CS.
9	GPIO 13	I/O	GPIO.
10	GPIO 26	I/O	GPIO.
11	GPIO 0	I/O	GPIO.
12	GPIO 11	I/O	GPIO/SPI Master Out(MOSI).
13	GPIO 27	I/O	GPIO.
14	GPIO 21	I/O	GPIO.
15	GPIO 16	I/O	GPIO.
16	GPIO 34	I/O	GPIO/SPI Master In(MISO).
17	M_RESET(PORN)	I	Internal power on reset (1)
18	I2C_CLK	I/O	I2C Master/Slave clock signal.
19	I2C_DATA	I/O	I2C Master/Slave data signal.
20	GPIO 30	I/O	GPIO.
21	SPA_I2S_DATA	I/O	I2S DATA 0.
22	SPB_I2S_LRCK	I/O	SPB I2S audio LRCK.
23	DGND	P	Digital GND.
24	SPB_I2S_BCK	I/O	SPB I2S audio BCK.
25	GPIO 15	I/O	GPIO.
26	SPB_I2S_DATA	I/O	SPB I2S audio Data.

4 Reliability Test

NO	Test Item	Test condition	Test result
1	**TCT (Operating)**	a) Power on b) Vin = working voltage c) -10℃ to 60℃ d) Duration of exposure –10℃ & 60℃ at least 5mins. e) Ramp rate 2.3 ℃/mins or less. f) Power on/off 2,000 times (applicable to new module project with EEPROM or ECN related to EEPROM.) g) 30 cycles, samples: 6pcs	Pass
2	**LTST (Operating)**	a) Power on. b) Vin = working voltage c) Operation at –10℃. d) 72hrs, samples: 6pcs	Pass
3	**HTST (Operating)**	a) Power on. b) Vin = working voltage c) Operation at 60℃. d) 72hrs, samples: 6pcs	Pass
4	**THB (Operating)**	a) Power on. b) Vin = working voltage c) Operation at 40℃/90%RH~95%RH. d) 72hrs, samples: 6pcs	Pass
5	**HTOL (Operating)**	a) Just Power on Module，No Pairing with RX b) Vin = working voltage c) Operation at 85℃ d) 96hrs, samples:50pcs	Pass
6	**TST (Storage)**	a) No DC input to Module b) -10℃ to 60℃, Ramp rate 5℃/mins or less c) Duration of exposure at least 5mins. d) 30 cycles, samples: 22pcs	Pass
7	**LTST (Storage)**	a) No DC input to Module b) Storage Temp: -20℃ c) 300hrs, samples: 22pcs	Pass
8	**HTST (Storage)**	a) No DC input to Module b) Storage Temp: +85℃ c) 300hrs, samples: 22pcs	Pass

9	**THT**	a) No DC input to Module b) 40℃, 90%RH~95%RH c) 72hrs, samples: 22pcs	Pass
10	**Packing VIBRATION**	a) Sinusoidal, 3g, 5~500Hz, 1hrs/axis b) Random, 3g, 5~500Hz, 0.5hrs/axis c) Number of cycles：3 cycles for each axis d) Vibration axis：X, Y and Z e) samples:6pcs	Pass
11	**Packing Drop Test**	a) Height: 92cm (or more) dropped, 1corner, 3 edges, 6 faces. (Total: 10 drops) b) Samples: 6pcs	Pass

5. Features

a. 5.2GHz/5.8GHz ISM Band

b. GFSK modulation

c. Low BOM cost

d. Long distance > 30m (Line of sight)

e. Support 1-1 duplex mode or 1-N broadcasting mode

f. RF frequency hopping in 58 channels

g. Digital I2S audio interface

h. Support no audio detection function

i. Audio format 24bit , 32/44.1/48KHz sampling rate

j. Robust Packet error correction

k. Low power consumption

l. No RF induced audio noise

m. Compatible with FCC/ CE regulations

6. Application

a. Wireless HTiB Rear Speaker

b. Wireless Outdoor Speaker

c. Wireless TV theater

d. Wireless Audio Sender

e. Wireless Headphone & Wireless Stereo Ear Microphone

7. Statement

a. CE Statement

Herby, Syncomm Technology Corp. declares that this RF 5G Wireless Module ， IA9Q5 S83F is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU.

1.) Operation limit：Use the RF 5G Wireless Module in the environment with the temperature between 0℃ and 55℃(Temp.),

2.) Operation Frequency range: 5740MHz-5840 MHz

5740MHz-5840 MHz can be used can be used in Europe without restriction.

3.) RF Output Power: 9.81dBm

■ **MANUFACTURER INFORMATION:**

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b. FCC 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.