
MPE REPORT

Report No.: SRTC2021-9004(F)-21090302(I)

Product Name: BT/Wi-Fi Module

Product Model: MW510-1

Applicant: Hisense Communication Co., Ltd.

Manufacturer: Hisense Communication Co., Ltd.

Specification: FCC Part §2.1091, §2.1093, §1.1307(b), §1.1310

(2020) FCC ID: SARMW5101

The State Radio_monitoring_center Testing Center (SRTC)

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1 GENERAL INFORMATION

1.1 Notes of the test report

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1.2 Information about the testing laboratory

Company:	The State Radio_monitoring_center Testing Center (SRTC)
Address:	15th Building, No.30 Shixing Street, Shijingshan District, P.R.China
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1.3 Applicant's details

Company:	Qingdao Hisense Communication Co., Ltd.
Address:	No.218, Qianwangang Road, Economic and Technological Development Zone, Qingdao, Shandong Province, China
City:	Qingdao
Country or Region:	China
Contacted person:	Wang Haining
Tel:	0532-55756937
Fax:	---
Email:	wanghaining@hisense.com

1.4 Manufacturer's details

Company:	Qingdao Hisense Communication Co., Ltd.
Address:	No.218, Qianwangang Road, Economic and Technological Development Zone, Qingdao, Shandong Province, China
City:	Qingdao
Country or Region:	China
Contacted person:	Wang Haining
Tel:	0532-55756937
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Email:	wanghaining@hisense.com

2 DESCRIPTION OF THE DEVICE UNDER TEST

2.1 Final Equipment Build Status


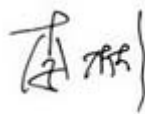

Frequency Bands	BT/BLE: 2400MHz – 2483.5MHz WIFI2.4GHz: 2400MHz – 2483.5MHz WIFI5GHz UNII-1: 5150MHz – 5250MHz WIFI5GHz UNII-2A: 5250MHz – 5350MHz WIFI5GHz UNII-2C: 5470MHz – 5725MHz WIFI5GHz UNII-3: 5725MHz – 5850MHz
Mode	BT:GFSK/π/4DQPSK/8DPSK BLE: GFSK WIFI2.4GHz: 802.11b/g/n HT20/HT40 WIFI5GHz: 802.11a/n HT20/n HT40 802.11ac VHT20/VHT40/VHT80
Power Supply	DC Adapter
Hardware Version	V1.00
Software Version	---
IMEI or Sample	#1

3 REFERENCE SPECIFICATION

Specification	Version	Title
2.1091	2020	Radio frequency radiation exposure evaluation: mobile devices.
2.1093	2020	Radio frequency radiation exposure evaluation: portable devices.
1.1307(b)	2020	Actions that may have a significant environmental effect, for which Environmental Assessments (EAs) must be prepared.
1.1310	2020	Radio frequency radiation exposure limits.
KDB447498	October 23, 2015	RF exposure procedures and equipment authorization policies for mobile and portable devices

4 RESULT SUMMARY

No.	Test case	FCC reference
1	MPE Calculation	FCC Part §2.1091, FCC Part §2.1093, FCC Part §1.1307(b) FCC Part §1.1310 KDB 447498

This Test Report Is Issued by: Mr. Peng Zhen 	Checked by: Mr. Li Bin 
Tested by: Mr. Du Wei 	Issued date: 20210926

5 TEST RESULTS

5.1 Average Power Output Test Result

Mode	Maximum Average power(dBm)
BT	10.0
BLE	10.5
WiFi2.4GHz	20.0
WiFi5.2GHz	18.5
WiFi5.3GHz	18.5
WiFi5.6GHz	19.0
WiFi5.8GHz	18.5

5.2 Calculation result

FCC LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

(A) Limits for Occupational/Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f ²	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6

(B) Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f ²	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30

f = frequency in MHz *Plane-wave equivalent power density

Calculation procedure:

According to §2.1091, §2.1093, §1.1307(b) and §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$S = PG / (4\pi R^2)$$

Where S = power density in mW/cm²

P = transmit power in mW

G = numeric gain of transmit antenna

R = distance (cm)

The calculations in the table below use the highest gain of antenna for client EUT. These calculations represent worst case in terms of the exposure levels.

Band	Freq. (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Average EIRP (mW)	Power Density at 20cm (mW/cm ²)	Limit (mW/cm ²)	Power Density / Limit
BT	2441	0.7	10.0	10.7	11.749	0.002	1.000	0.002
BLE	2402	0.7	10.5	11.2	13.183	0.003	1.000	0.002
WLAN2.4GHz Band	2412	3.7	20.0	23.7	234.423	0.047	1.000	0.032
WLAN5.2GHz Band	5180	3.6	18.5	22.1	162.181	0.032	1.000	0.030
WLAN5.3GHz Band	5320	3.6	18.5	22.1	162.181	0.032	1.000	0.027
WLAN5.6GHz Band	5700	3.6	19.0	22.6	181.970	0.036	1.000	0.030
WLAN5.8GHz Band	5745	3.6	18.5	22.1	162.181	0.032	1.000	0.027

Note:

For conservativeness, the lowest frequency of each band is used to determine the MPE limit of that band.

Worst Simultaneous Transmission Result

BT Power Density / Limit	WLAN Power Density / Limit	Σ(Power Density / Limit) of BT+ WLAN
0.003	0.047	0.050

Note: Simultaneous Transmission Limit=Power Density₁/ limit₁ + Power Density₂/ limit₂<1

According to the KDB447498 D01 section 7.1 determine the device is exclusion from SAR test.

---End of Test Report---