

Hisense Communication Co., Ltd.

MPE ASSESSMENT REPORT

Report Type:

FCC Part §2.1091, §2.1093 and §1.1307(b) assessment report

Model:

MW604

REPORT NUMBER:

220100379SHA-007

ISSUE DATE:

March 1, 2022

DOCUMENT CONTROL NUMBER:

TTRFFCCMPE-01_V1 © 2018 Intertek





Intertek Testing Services Shanghai Building No.86, 1198 Qinzhou Road (North) Caohejing Development Zone Shanghai 200233, China

Telephone: 86 21 6127 8200

www.intertek.com

Report no.: 220100379SHA-007

Applicant: Hisense Communication Co., Ltd.

No.218, Qianwangang Road, Economic and Technological

Development Zone, Qingdao, Shandong Province, China

Manufacturer: Hisense Communication Co., Ltd.

No.218, Qianwangang Road, Economic and Technological Development Zone, Qingdao, Shandong Province, China

Product Name: BT/Wi-Fi Module

Type/Model: MW604
FCC ID: SARMW604

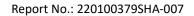
SUMMARY:

The equipment complies with the requirements according to the following standard(s) or Specification:

KDB447498 D01 General RF Exposure Guidance v06 FCC Part2.1091, FCC Part2.1093 FCC Part1.1307(b)

PREPARED BY:	KEVIEWED BY:	
Tylan tang	Wakeyou	
Project Engineer	 Reviewer	
Dylan Tang	Wakeyou Wang	

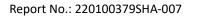
This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.





Revision History

Report No.	Version	Description	Issued Date
211001862SHA-004	Rev. 01	Initial issue of report	March 1, 2022





1 GENERAL INFORMATION

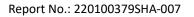
1.1 Description of Equipment Under Test (EUT)

Product name:	BT/Wi-Fi Module
Type/Model:	MW604
Description of EUT:	The EUT is a BT/Wi-Fi Module which supports WIFI and Bluetooth function, and has only one model.
Rating:	DC 5V
EUT type:	⊠ Table top ☐ Floor standing
Product Marketing Name:	MW604
HVIN:	MW604
Software Version:	/
Hardware Version:	V1.00
	0211022-65-001(for radiation sample),
Serial numbers:	0211022-65-002(for conduction sample)
Sample received date:	December 15, 2021
Date of test:	December 15, 2021 ~ February 25, 2022

1.2 Technical Specification

Frequency Range:	2402-2480MHz
Support Standards:	IEEE 802.15.1
Type of Modulation:	GFSK
Channel Number:	40
Data Rate:	1Mbps
Channel Separation:	2MHz
Antenna Information:	0.7dBi, PCB antenna

Frequency Range:	2402-2480MHz
Support Standards:	Bluetooth 5.2 (BR+EDR)
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Type of Modulation:	GFSK, π/4 DQPSK, 8DPSK
Channel Number:	79 (0 - 78)
Data Rate:	1Mbps
Channel Separation:	1 MHz
Antenna:	Internal PCB antenna, 0.7dBi gain

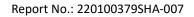




TEST REPORT

Frequency Band:	2400MHz ~ 2483.5MHz		
	IEEE 802.11b, IEEE 802.11g, IEEE 802.11n(HT20), IEEE		
	802.11n(HT40),		
	IEEE 802.11ac(VHT20), IEEE 802.11ax(VHT40),IEEE		
Support Standards:	802.11ax(HE20), IEEE 802.11ax(HE40)		
	IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK)		
	IEEE 802.11g: OFDM (64-QAM, 16-QAM, QPSK, BPSK)		
	IEEE 802.11n(HT20): OFDM (64-QAM, 16-QAM, QPSK, BPSK)		
	IEEE 802.11n(HT40): OFDM (64-QAM, 16-QAM, QPSK, BPSK)		
	IEEE 802.11ac(VHT20): OFDM (64-QAM, 16-QAM, QPSK,		
	BPSK)		
	IEEE 802.11ac(VHT40): OFDM (64-QAM, 16-QAM, QPSK,		
	BPSK)		
	IEEE 802.11ax(HE20): OFDMA (64-QAM, 16-QAM, QPSK,		
	BPSK ,1024QAM)		
	IEEE 802.11ax(HE40): OFDMA (64-QAM, 16-QAM, QPSK,		
Type of Modulation:	BPSK ,1024QAM)		
	2412MHz to 2462MHz for IEEE 802.11b/g/n(HT20))/ac(VHT20)		
	/ax(HE20)		
Operating Frequency	2422MHz to 2452MHz for IEEE 802.11n(HT40)		
Operating Frequency:	/ac(VHT20)/ax(HE40)		
	11 Channels for 802.11b,		
	802.11g ,802.11n(HT20) ,802.11ax(HE20) and /ac(VHT20)		
Channel Number:	7 Channels for 802.11n(HT40) , 802.11ax(HE40) and /ac(VHT40)		
Channel Separation:	5 MHz		
A decree to form the	PCB antenna 1: 1.2dBi		
Antenna Information:	PCB antenna 2: 1.3dBi		

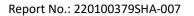
	5150 ~ 5250MHz
	5250 ~ 5350MHz
	5470 ~ 5725MHz
Frequency Range:	5725 ~ 5850MHz
	802.11a, 802.11n(HT20), 802.11n(HT40), 802.11ac(HT20),
	802.11ac(HT40), 802.11ac(HT80), 802.11ax(HE20),
Support Standards:	802.11ax(HE40) , 802.11ax(HE80)
	OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
Type of Modulation:	OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM,1024QAM)
	For 5180 ~ 5240MHz band: Channel 36 - 48
	For 5260 ~ 5320MHz Band: Channel 52 - 64
	For 5500 ~ 5700MHz Band: Channel 100 - 140
Channel Number:	For 5745 ~ 5825MHz band: Channel 149 - 165
	PCB antenna 1: 1.9dBi
Antenna Information:	PCB antenna 2: 1.7dBi





TEST REPORT

	5925 ~ 6425MHz
	6425 ~ 6525MHz
	6525 ~ 6875MHz
Frequency Range:	6875 ~ 7125MHz
	802.11n(HT20), 802.11n(HT40), 802.11ac(HT20), 802.11ac(HT40),
	802.11ac(HT80), 802.11ax(HE20), 802.11ax(HE40),
Support Standards:	802.11ax(HE80)
	OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
Type of Modulation:	OFDMA (BPSK, QPSK, 16QAM, 64QAM,256QAM,1024QAM)
	For 5925 ~ 6425MHz band: Channel 1 - 93
	For 6425 ~ 6525MHz Band: Channel 97 - 119
	For 6525 ~ 6875MHz Band: Channel 117 - 187
Channel Number:	For 6875 ~ 7125MHz band: Channel 189 - 233
	PCB antenna 1: 2.0dBi
Antenna Information:	PCB antenna 2: 1.9dBi

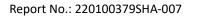




1.3 Description of Test Facility

Name:	Intertek Testing Services Shanghai
Address:	Building 86, No. 1198 Qinzhou Road(North), Shanghai 200233, P.R. China
Telephone:	86 21 61278200
Telefax:	86 21 54262353

The test facility is recognized,	CNAS Accreditation Lab Registration No. CNAS L0139
certified, or accredited by these	FCC Accredited Lab Designation Number: CN1175
organizations:	IC Registration Lab CAB identifier.: CN0051
	VCCI Registration Lab Registration No.: R-14243, G-10845, C-14723, T-12252
	A2LA Accreditation Lab Certificate Number: 3309.02





2 MPE Assessment

Test result: Pass

2.1 MPE Assessment Limit

Mobile device exposure for standalone operations:

Frequency range	E-field strength (V/m)	H-field strength (A/m)	B-field (uT)	Equivalent plane wave power density Seq (W/m²)
0-1 Hz	-	3,2 × 10 ⁴	4 × 10 ⁴	- Seq (VV/III)
1-8 Hz	10 000	$3.2 \times 10^4/f^2$	$4 \times 10^4/f^2$	-
8-25 Hz	10 000	4 000/f	5 000/f	-
0,025-0,8 kHz	250/f	4/f	5/f	-
0,8-3 kHz	250/f	5	6,25	-
3-150 kHz	87	5	6,25	-
0,15-1 MHz	87	0,73/f	0,92/f	-
1-10 MHz	87/f ^{1/2}	0,73/f	0,92/f	-
10-400 MHz	28	0,073	0,092	2
400-2 000 MHz	1,375 f ^{1/2}	0,0037 f ^{1/2}	0,0046 f ^{1/2}	f/200
2-300 GHz	61	0,16	0,20	10

Mobile device exposure for simultaneous transmission operations: the sum of the MPE ratios for all simultaneously transmitting antennas incorporated in a host device is \leq 1.0





TEST REPORT

2.2 Assessment Results

Power density (S) is calculated according to the formula:

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

Where $S = power density in mW/cm^2$

P = Radiated transmit power in mW

G = numeric gain of transmit antenna

R = distance (cm)

As we can see from the test report 220100379SHA-001&220100379SHA-002&220100379SHA-003&220100379SHA-004&220100379SHA-005:

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.

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.

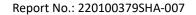
Frequency band	Ро	wer	Antenna Gain	R	S	Limits
(MHz)	dBm	mW	dBi	(cm)	(mW/cm2)	(mW/cm2)
2402 – 2480	6.86	4.85	0.7	20	0.0010	1
2412 – 2462	19.74	94.19	4.96	20	0.093	1
5180 – 5825	18.28	67.30	4.96	20	0.066	1
5925 – 7125	0.16	1.04	4.96	20	0.001	1

Note: 1 mW/cm2 from 1.310 Table 1.

BT/BLE and 2.4G WIFI can simultaneous transmitting, so the maximum rate of MPE is, 0.0010/1+0.093/1=0.094<=1.0.

BT/BLE and 5G WIFI can simultaneous transmitting, so the maximum rate of MPE is, 0.0010/1+0.066/1=0.067<=1.0.

BT/BLE and 6G WIFI can simultaneous transmitting, so the maximum rate of MPE is, 0.0010/1+0.001/1=0.0011<=1.0.





Appendix I

Definition below must be outlined in the User Manual:	
---	--

To satisfy FCC RF exposure requirements, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during device operation. To ensure compliance, operations at closer than this distance is not recommended.