Certificate Number: 5055.02

MPE REPORT

Report No.: SRTC2022-9004(F)-22011404(I)

Product Name: BT/Wi-Fi Module

Product Model: TX7663BU55T

Applicant: Hisense Communication Co., Ltd.

Manufacturer: Hisense Communication Co., Ltd.

Specification: FCC Part §2.1091, §2.1093, §1.1307(b), §1.1310 (2019)

FCC ID: SARMWH515S

The State Radio_monitoring_center Testing Center (SRTC)

15th Building, No.30 Shixing Street, Shijingshan District,

Beijing, P.R.China

Tel: 86-10-57996183 Fax: 86-10-57996388

CONTENTS

1 GENERAL INFORMATION

1.1 Notes of the test report

The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written permission of The State Radio_monitoring_center Testing Center (SRTC). The test results relate only to individual items of the samples which have been tested.The certification and accreditation identifiers used in this report shall not be applicable to the tested or calibrated samples thereof. The manufacturer shall not mark the tested samples or items (or a separate part of the item) with the identifiers of certification and accreditation to mislead relevant parties about the tested samples or items.

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
City:	Beijing
Country or Region:	P.R.China
Contacted person:	Liu Jia
Tel:	+86 10 57996183
Fax:	+86 10 57996388
Email:	liujiaf@srtc.org.cn
Registration Number	239125
Designation Number	CN1267

1.3 Applicant’s details

Company:	Hisense Communication Co., Ltd.
Address:	Hisense Infor. Industrial Park Economic Technology Dev. District, Qingdao, China

1.4 Manufacturer’s details

Company:	Hisense Communication Co., Ltd.
Address:	Hisense Infor. Industrial Park Economic Technology Dev. District, Qingdao, China

1.5 Test environment

Date of Receipt of test sample at SRTC:	2022-01-14
Testing Start Date:	2022-01-15
Testing End Date:	2022-01-27

Environmental Data:	Temperature (°C)	Humidity (%)
Ambient	22	35
Normal Supply Voltage (V d.c.):	3.3V	

2 DESCRIPTION OF THE DEVICE UNDER TEST

2.1 Final Equipment Build Status

Frequency Bands	BT/BLE: 2.402GHz~2.480GHz WIFI2.4GHz: 2.412GHz~2.462GHz WIFI5GHz UNII-1: 5.180GHz-5.240GHz WIFI5GHz UNII-2A: 5.260GHz-5.320GHz WIFI5GHz UNII-2C: 5.500GHz-5.720GHz WIFI5GHz UNII-3: 5.745GHz-5.825GHz
Mode	BT:GFSK/π/4DQPSK/8DPSK BLE: GFSK (LE 1Mbps) WIFI2.4GHz: 802.11b/g/n HT20/n HT40 WIFI5GHz: 802.11a/n HT20/n HT40 VHT20/ac VHT40 /ac VHT80/
Power Supply	DC Adapter
Hardware Version	V1.00
Software Version	no
IMEI or Sample	#1

ANT Gain information

Gain (dBi)	Frequency
3.72	2.4-2.5G
4.07	5.15G-5.85G

3 REFERENCE SPECIFICATION

Specification	Version	Title
2.1091	2019	Radio frequency radiation exposure evaluation: mobile devices.
2.1093	2019	Radio frequency radiation exposure evaluation: portable devices.
1.1307(b)	2019	Actions that may have a significant environmental effect, for which Environmental Assessments (EAs) must be prepared.
1.1310	2019	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: Ms. Li Jin	Issued date: 20220225

5 TEST RESULTS

5.1 Average Power Output Test Result

BT

Modulation type	Conducted Average Power(dBm)			Tune-up (dBm)
	2402MHz	2441MHz	2480MHz	
GFSK(DH5)	5.50	5.05	4.65	5.5
π/4DQPSK(2DH5)	5.57	5.13	5.25	**6.0**
8DPSK(3DH5)	5.60	5.20	5.27	6.0

BLE

Modulation type	Conducted Average Power(dBm)			Tune-up (dBm)
	2402MHz	2440MHz	2480MHz	
GFSK (LE 1Mbps)	5.44	4.77	5.62	**6.0**

WiFi2.4GHz

Test Mode	Tones/ RU Index	Freq(MHz)	Antenna	Average power output (dBm)	Tune-up (dBm)
802.11b	NA	2412	Chain0	17.74	18.0
802.11b	NA	2412	Chain1	17.35	17.5
802.11b	NA	2437	Chain0	17.80	18.0
802.11b	NA	2437	Chain1	17.49	17.5
802.11b	NA	2462	Chain0	17.81	18.0
802.11b	NA	2462	Chain1	17.43	17.5
802.11g	NA	2412	Chain0	17.87	18.0
802.11g	NA	2412	Chain1	17.82	18.0
802.11g	NA	2437	Chain0	17.71	18.0
802.11g	NA	2437	Chain1	17.59	18.0
802.11g	NA	2462	Chain0	17.91	18.0
802.11g	NA	2462	Chain1	17.83	18.0
802.11n HT20	NA	2412	Chain0	16.78	17.0
802.11n HT20	NA	2412	Chain1	16.76	17.0
802.11n HT20	NA	2412	MIMO	19.78	**20.0**
802.11n HT20	NA	2437	Chain0	16.60	17.0
802.11n HT20	NA	2437	Chain1	16.46	16.5
802.11n HT20	NA	2437	MIMO	19.54	20.0
802.11n HT20	NA	2462	Chain0	16.70	17.0
802.11n HT20	NA	2462	Chain1	16.68	17.0
802.11n HT20	NA	2462	MIMO	19.70	20.0
802.11n HT40	NA	2422	Chain0	16.54	17.0
802.11n HT40	NA	2422	Chain1	16.45	16.5
802.11n HT40	NA	2422	MIMO	19.51	20.0
802.11n HT40	NA	2437	Chain0	16.63	17.0
802.11n HT40	NA	2437	Chain1	16.44	16.5
802.11n HT40	NA	2437	MIMO	19.55	20.0
802.11n HT40	NA	2452	Chain0	16.53	17.0
802.11n HT40	NA	2452	Chain1	16.55	17.0
802.11n HT40	NA	2452	MIMO	19.55	20.0

WIFI5GHz UNII-1

Mode	Tones/ RUIndex	Freq (MHz)	Antenna	Conducted average power output(dBm)	Tune-up (dBm)
802.11a	NA	5180	Chain0	15.66	16.0
802.11a	NA	5180	Chain1	16.04	16.5
802.11a	NA	5220	Chain0	15.31	15.5
802.11a	NA	5220	Chain1	15.76	16.0
802.11a	NA	5240	Chain0	15.21	15.5
802.11a	NA	5240	Chain1	15.74	16.0
802.11n HT20	NA	5180	Chain0	15.55	16.0
802.11n HT20	NA	5180	Chain1	15.88	16.0
802.11n HT20	NA	5180	MIMO	18.73	19.0
802.11n HT20	NA	5220	Chain0	15.13	15.5
802.11n HT20	NA	5220	Chain1	15.61	16.0
802.11n HT20	NA	5220	MIMO	18.39	18.5
802.11n HT20	NA	5240	Chain0	15.13	15.5
802.11n HT20	NA	5240	Chain1	15.64	16.0
802.11n HT20	NA	5240	MIMO	18.40	18.5
802.11ac VHT20	NA	5180	Chain0	15.49	15.5
802.11ac VHT20	NA	5180	Chain1	15.96	16.0
802.11ac VHT20	NA	5180	MIMO	18.74	**19.0**
802.11ac VHT20	NA	5220	Chain0	15.21	15.5
802.11ac VHT20	NA	5220	Chain1	15.59	16.0
802.11ac VHT20	NA	5220	MIMO	18.41	18.5
802.11ac VHT20	NA	5240	Chain0	15.12	15.5
802.11ac VHT20	NA	5240	Chain1	15.68	16.0
802.11ac VHT20	NA	5240	MIMO	18.42	18.5
802.11n HT40	NA	5190	Chain0	15.30	15.5
802.11n HT40	NA	5190	Chain1	15.79	16.0
802.11n HT40	NA	5190	MIMO	18.56	19.0
802.11n HT40	NA	5230	Chain0	15.08	15.5
802.11n HT40	NA	5230	Chain1	15.56	16.0
802.11n HT40	NA	5230	MIMO	18.34	18.5
802.11ac VHT40	NA	5190	Chain0	15.36	15.5
802.11ac VHT40	NA	5190	Chain1	15.79	16.0
802.11ac VHT40	NA	5190	MIMO	18.59	19.0
802.11ac VHT40	NA	5230	Chain0	15.14	15.5
802.11ac VHT40	NA	5230	Chain1	15.55	16.0
802.11ac VHT40	NA	5230	MIMO	18.36	18.5

802.11ac VHT80	NA	5210	Chain0	14.85	15.0
802.11ac VHT80	NA	5210	Chain1	15.22	15.5
802.11ac VHT80	NA	5210	MIMO	18.05	18.5

WIFI5GHz UNII-2A

Mode	Tones/ RUIndex	Freq (MHz)	Antenna	Conducted average power output(dBm)	Tune-up (dBm)
802.11a	NA	5260	Chain0	15.14	15.5
802.11a	NA	5260	Chain1	15.66	16.0
802.11a	NA	5280	Chain0	15.39	15.5
802.11a	NA	5280	Chain1	16.14	16.5
802.11a	NA	5320	Chain0	16.12	16.5
802.11a	NA	5320	Chain1	16.67	17.0
802.11n HT20	NA	5260	Chain0	14.96	15.0
802.11n HT20	NA	5260	Chain1	15.58	16.0
802.11n HT20	NA	5260	MIMO	18.29	18.5
802.11n HT20	NA	5280	Chain0	15.39	15.5
802.11n HT20	NA	5280	Chain1	15.87	16.0
802.11n HT20	NA	5280	MIMO	18.65	19.0
802.11n HT20	NA	5320	Chain0	15.96	16.0
802.11n HT20	NA	5320	Chain1	16.50	16.5
802.11n HT20	NA	5320	MIMO	19.25	19.5
802.11ac VHT20	NA	5260	Chain0	14.92	15.0
802.11ac VHT20	NA	5260	Chain1	15.48	15.5
802.11ac VHT20	NA	5260	MIMO	18.22	18.5
802.11ac VHT20	NA	5280	Chain0	15.26	15.5
802.11ac VHT20	NA	5280	Chain1	15.87	16.0
802.11ac VHT20	NA	5280	MIMO	18.59	19.0
802.11ac VHT20	NA	5320	Chain0	15.94	16.0
802.11ac VHT20	NA	5320	Chain1	16.56	17.0
802.11ac VHT20	NA	5320	MIMO	19.27	**19.5**
802.11n HT40	NA	5270	Chain0	15.01	15.5
802.11n HT40	NA	5270	Chain1	15.61	16.0
802.11n HT40	NA	5270	MIMO	18.33	18.5
802.11n HT40	NA	5310	Chain0	15.78	16.0
802.11n HT40	NA	5310	Chain1	16.37	16.5
802.11n HT40	NA	5310	MIMO	19.10	19.5
802.11ac VHT40	NA	5270	Chain0	14.91	15.0
802.11ac VHT40	NA	5270	Chain1	15.65	16.0

802.11ac VHT40	NA	5270	MIMO	18.31	18.5
802.11ac VHT40	NA	5310	Chain0	15.57	16.0
802.11ac VHT40	NA	5310	Chain1	16.13	16.5
802.11ac VHT40	NA	5310	MIMO	18.87	19.0
802.11ac VHT80	NA	5290	Chain0	14.96	15.0
802.11ac VHT80	NA	5290	Chain1	15.60	16.0
802.11ac VHT80	NA	5290	MIMO	18.30	18.5

WIFI5GHz UNII-2C

Mode	Tones/ RUIndex	Freq (MHz)	Antenna	Conducted average power output(dBm)	Tune-up (dBm)
802.11a	NA	5500	Chain0	15.01	15.5
802.11a	NA	5500	Chain1	16.03	16.5
802.11a	NA	5580	Chain0	14.24	14.5
802.11a	NA	5580	Chain1	15.44	15.5
802.11a	NA	5700	Chain0	15.52	16.0
802.11a	NA	5700	Chain1	16.32	16.5
802.11a	NA	5720	Chain0	15.25	15.5
802.11a	NA	5720	Chain1	15.49	15.5
802.11n HT20	NA	5500	Chain0	14.90	15.0
802.11n HT20	NA	5500	Chain1	15.88	16.0
802.11n HT20	NA	5500	MIMO	18.43	18.5
802.11n HT20	NA	5580	Chain0	14.13	14.5
802.11n HT20	NA	5580	Chain1	15.31	15.5
802.11n HT20	NA	5580	MIMO	17.77	18.0
802.11n HT20	NA	5700	Chain0	15.24	15.5
802.11n HT20	NA	5700	Chain1	16.32	16.5
802.11n HT20	NA	5700	MIMO	18.82	**19.0**
802.11n HT20	NA	5720	Chain0	15.03	15.5
802.11n HT20	NA	5720	Chain1	15.40	15.5
802.11n HT20	NA	5720	MIMO	18.23	18.5
802.11ac VHT20	NA	5500	Chain0	14.82	15.0
802.11ac VHT20	NA	5500	Chain1	15.84	16.0
802.11ac VHT20	NA	5500	MIMO	18.37	18.5
802.11ac VHT20	NA	5580	Chain0	14.22	14.5
802.11ac VHT20	NA	5580	Chain1	15.27	15.5
802.11ac VHT20	NA	5580	MIMO	17.79	18.0
802.11ac VHT20	NA	5700	Chain0	15.22	15.5

802.11ac VHT20	NA	5700	Chain1	16.24	16.5
802.11ac VHT20	NA	5700	MIMO	18.77	19.0
802.11ac VHT20	NA	5720	Chain0	14.93	15.0
802.11ac VHT20	NA	5720	Chain1	15.51	16.0
802.11ac VHT20	NA	5720	MIMO	18.24	18.5
802.11n HT40	NA	5510	Chain0	14.61	15.0
802.11n HT40	NA	5510	Chain1	15.82	16.0
802.11n HT40	NA	5510	MIMO	18.27	18.5
802.11n HT40	NA	5590	Chain0	13.95	14.0
802.11n HT40	NA	5590	Chain1	15.20	15.5
802.11n HT40	NA	5590	MIMO	17.63	18.0
802.11n HT40	NA	5670	Chain0	14.81	15.0
802.11n HT40	NA	5670	Chain1	16.02	16.5
802.11n HT40	NA	5670	MIMO	18.47	18.5
802.11n HT40	NA	5710	Chain0	15.43	15.5
802.11n HT40	NA	5710	Chain1	13.18	13.5
802.11n HT40	NA	5710	MIMO	17.46	17.5
802.11ac VHT40	NA	5510	Chain0	14.58	15.0
802.11ac VHT40	NA	5510	Chain1	15.77	16.0
802.11ac VHT40	NA	5510	MIMO	18.23	18.5
802.11ac VHT40	NA	5590	Chain0	14.07	14.5
802.11ac VHT40	NA	5590	Chain1	15.24	15.5
802.11ac VHT40	NA	5590	MIMO	17.70	18.0
802.11ac VHT40	NA	5670	Chain0	14.91	15.0
802.11ac VHT40	NA	5670	Chain1	16.22	16.5
802.11ac VHT40	NA	5670	MIMO	18.62	19.0
802.11ac VHT40	NA	5710	Chain0	15.40	15.5
802.11ac VHT40	NA	5710	Chain1	13.23	13.5
802.11ac VHT40	NA	5710	MIMO	17.46	17.5
802.11ac VHT80	NA	5530	Chain0	14.36	14.5
802.11ac VHT80	NA	5530	Chain1	15.11	15.5
802.11ac VHT80	NA	5530	MIMO	17.76	18.0
802.11ac VHT80	NA	5610	Chain0	13.86	14.0
802.11ac VHT80	NA	5610	Chain1	15.12	15.5
802.11ac VHT80	NA	5610	MIMO	17.55	18.0
802.11ac VHT80	NA	5690	Chain0	14.89	15.0
802.11ac VHT80	NA	5690	Chain1	15.54	16.0
802.11ac VHT80	NA	5690	MIMO	18.24	18.5

WIFI5GHz UNII-3

Mode	Tones/ RUIndex	Freq (MHz)	Antenna	Conducted average power output(dBm)	EIRP (dBm)
802.11a	NA	5720	Chain0	7.87	8.0
802.11a	NA	5720	Chain1	8.08	8.5
802.11a	NA	5745	Chain0	16.31	16.5
802.11a	NA	5745	Chain1	16.59	17.0
802.11a	NA	5785	Chain0	16.62	17.0
802.11a	NA	5785	Chain1	16.89	17.0
802.11a	NA	5825	Chain0	16.30	16.5
802.11a	NA	5825	Chain1	16.71	17.0
802.11n HT20	NA	5720	Chain0	8.18	8.5
802.11n HT20	NA	5720	Chain1	8.31	8.5
802.11n HT20	NA	5720	MIMO	11.26	11.5
802.11n HT20	NA	5745	Chain0	16.17	16.5
802.11n HT20	NA	5745	Chain1	16.40	16.5
802.11n HT20	NA	5745	MIMO	19.30	19.5
802.11n HT20	NA	5785	Chain0	16.63	17.0
802.11n HT20	NA	5785	Chain1	16.66	17.0
802.11n HT20	NA	5785	MIMO	19.66	**20.0**
802.11n HT20	NA	5825	Chain0	16.11	16.5
802.11n HT20	NA	5825	Chain1	16.57	17.0
802.11n HT20	NA	5825	MIMO	19.36	19.5
802.11ac VHT20	NA	5720	Chain0	7.96	8.0
802.11ac VHT20	NA	5720	Chain1	8.41	8.5
802.11ac VHT20	NA	5720	MIMO	11.20	11.5
802.11ac VHT20	NA	5745	Chain0	16.18	16.5
802.11ac VHT20	NA	5745	Chain1	16.40	16.5
802.11ac VHT20	NA	5745	MIMO	19.30	19.5
802.11ac VHT20	NA	5785	Chain0	16.57	17.0
802.11ac VHT20	NA	5785	Chain1	16.73	17.0
802.11ac VHT20	NA	5785	MIMO	19.66	20.0
802.11ac VHT20	NA	5825	Chain0	16.17	16.5
802.11ac VHT20	NA	5825	Chain1	16.60	17.0
802.11ac VHT20	NA	5825	MIMO	19.40	19.5
802.11n HT40	NA	5710	Chain0	3.79	4.0
802.11n HT40	NA	5710	Chain1	3.98	4.0
802.11n HT40	NA	5710	MIMO	6.90	7.0
802.11n HT40	NA	5755	Chain0	16.33	16.5

802.11n HT40	NA	5755	Chain1	16.54	17.0
802.11n HT40	NA	5755	MIMO	19.45	19.5
802.11n HT40	NA	5795	Chain0	16.49	16.5
802.11n HT40	NA	5795	Chain1	16.71	17.0
802.11n HT40	NA	5795	MIMO	19.61	20.0
802.11ac VHT40	NA	5710	Chain0	3.45	3.5
802.11ac VHT40	NA	5710	Chain1	3.92	4.0
802.11ac VHT40	NA	5710	MIMO	6.70	7.0
802.11ac VHT40	NA	5755	Chain0	16.35	16.5
802.11ac VHT40	NA	5755	Chain1	16.61	17.0
802.11ac VHT40	NA	5755	MIMO	19.49	19.5
802.11ac VHT40	NA	5795	Chain0	16.46	16.5
802.11ac VHT40	NA	5795	Chain1	16.73	17.0
802.11ac VHT40	NA	5795	MIMO	19.61	20.0
802.11ac VHT80	NA	5690	Chain0	0.26	0.5
802.11ac VHT80	NA	5690	Chain1	0.63	1.0
802.11ac VHT80	NA	5690	MIMO	3.46	3.5
802.11ac VHT80	NA	5775	Chain0	16.08	16.5
802.11ac VHT80	NA	5775	Chain1	16.30	16.5
802.11ac VHT80	NA	5775	MIMO	19.20	19.5

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/cm2)	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/cm2)	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:

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

Where S = power density in mW/cm^2

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)	Maximum Power (dBm)	Ant Gain (dBi)	Maximum EIRP (dBm)	Maximum EIRP (mw)	Power Density at 20cm	Limit (mW/cm^2)	Power Density / Limit
BT	2402	6.0	3.72	9.72	9.38	0.002	1.0	0.002
BLE	2480	6.0	3.72	9.72	9.38	0.002	1.0	0.002
WLAN2.4GHz	2412	20.0	3.72	23.72	235.50	0.047	1.0	0.047
WLAN5.2GHz	5180	19.0	4.07	23.07	202.77	0.040	1.0	0.040
WLAN5.3GHz	5320	19.5	4.07	23.57	227.51	0.045	1.0	0.045
WLAN5.6GHz	5700	19.0	4.07	23.07	202.77	0.040	1.0	0.040
WLAN5.8GHz	5785	20.0	4.07	24.07	255.27	0.051	1.0	0.051

Note1:

SAR considers the worst case, use Tune up with maximum power plus antenna gain as EIRP.

Note2:

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
0.002	0.051	0.053

Note: Simultaneous Transmission Limit=Power Density_1/ limit_1 + Power Density_2/ limit_2<1

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

---End of Test Report---