

TEST REPORT

Report No.: SHE20100021-02DE

Date: 2020-12-04

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Applicant : Shanghai BroadMobi Communication Technology Co., Ltd.
Address of Applicant : 15F, Building 9, No.99 Tianzhou Rd.,Xuhui District,
Shanghai, P.R.China

Product Name : LTE MIFI
Model No. : R800C
Sample No. : E20100021-01#01
E20100021-01#02
FCC ID : 2AON8R800C

Standards : FCC CFR47 Part 15, Subpart E

Date of Receipt : 2020-11-07
Date of Test : 2020-11-10 ~ 2020-12-03
Date of Issue : 2020-12-04

Remark:

This report details the results of the testing carried out on one sample, the results contained in this report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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Revision Record			
Version	Date	Revisions	Revised By
1.0	2020-1-21	Original	--

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1 General Information

1.1 Testing Laboratory

Company Name	ICAS Testing Technology Service (Shanghai) Co., Ltd.
Address	No.1298 Pingan Rd, Minhang District, Shanghai, China
Telephone	0086 21-51682999
Fax	0086 21-54711112
Homepage	www.icasiso.com

1.2 Details of Application

Company Name	Shanghai BroadMobi Communication Technology Co., Ltd
Address	15F, Building 9, No.99 Tianzhou Rd.,Xuhui District, Shanghai, P.R.China
Contact Person	Yu rong
Telephone	60913308-857
Email	yurong@broadmobi.com

1.3 Details of EUT

Product Name	LTE MIFI
Brand Name	Broadmobi
Model No.	R800C
FCC ID	2AON8R800C
Mode of Operation	WLAN 802.11a/n(HT20/40)/ac(HT20/40/80)
Frequency Range	Band I: 5150 MHz ~ 5250 MHz Band IV: 5725 MHz ~ 5850 MHz
Modulation Type	256QAM, 64QAM, 16QAM, BPSK, QPSK
Channel Bandwidth	802.11a: 20MHz 802.11n: 20MHz, 40MHz 802.11ac: 20MHz, 40MHz, 80MHz
Antenna Type	internal antenna
Antenna Gain0	1.29 dBi
Antenna Gain1	1.18 dBi
Extreme Temperature Range	0℃ ~ +35℃
Test Voltage	DC 3.80V
Extreme Voltage	Low Voltage: DC 3.4V High Voltage: DC 4.2V

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1.4 Test Methodology

47 CFR Part 15, Subpart C (10-1-16 Edition)	Miscellaneous Wireless Communications Services
KDB Publication 789033 D02 v02r01	Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E
KDB Publication 662911 D01 v02r01	Emissions Testing of Transmitters with Multiple Outputs in the Same Band (e.g., MIMO, Smart Antenna, etc)
ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices

Note(s):

All test items were verified and recorded according to the standards and without any addition/deviation/exclusion during the test.

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2 Test Condition

2.1 Environmental conditions

Temperature (°C)	18-25
Humidity (%RH)	40-65
Barometric Pressure (mbar)	960-1060

2.2 Equipment List

Name of Equipment	Manufacturer	Model	Serial No.	Cal. Due Date
Spectrum Analyzer	Keysight	N9020B	MY59260184	2021-08-18
Spectrum Analyzer	Rohde & Schwarz	FSV40N	101450	2021-06-08
EMI Test Receiver	Rohde & Schwarz	ESPI3	100173	2021-06-08
EMI Test Receiver	Rohde & Schwarz	ESR 7	101911	2021-06-08
V-network	SCHWARZBECK	NSLK 8127	8127-902	2021-02-20
Wideband Radio Communication Tester	Rohde & Schwarz	CMW 500	100687	2021-08-18
DC Power Supply	ACPOWER	ADC-0800025-15	D215010003	2021-03-15
Temperature Chamber	SHKTEST	SHK-B101	20190819001	2021-03-15
Broadband Antenna	SCHWARZBECK	VULB9163	9163-1037	2021-06-08
Horn Antenna-18G	SCHWARZBECK	BBHA9120D	9120D-1775	2021-06-08
Loop Antenna	SCHWARZBECK	FMZB 1513	N/A	2021-03-19
Horn Antenna-40G	YINGLIAN	LB-180400-KF	N/A	2021-07-26
EMC chamber 9*6*6 (L*W*H)	CHANGNING	966	N/A	2021-06-08
Shielded Enclosure 8*5*4 (L*W*H)	CHANGNING	854	N/A	2021-06-08
Test Software	BL	BL410_E	N/A	N/A

2.3 Measurement Uncertainty

Parameter	Frequency	Uncertainty
Antenna Port Conducted Emission	< 1GHz	± 1.5 dB
	> 1GHz	± 1.5 dB
Radiated Emission	30 MHz – 1 GHz	± 3 dB
	> 1GHz	± 3 dB

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3 Test Set-up and Operation Modes

3.1 Details of Test Mode

Using test software was control EUT work in continuous transmitter and receiver mode. Select test channel as below:

For 802.11a/n(HT20), 802.11ac(VHT20)

Band I (5150 – 5250 MHz)		Band IV (5725 – 5850 MHz)	
Channel	Frequency	Channel	Frequency
The lowest channel(CH36)	5180MHz	The lowest channel(CH149)	5745MHz
The middle channel(CH44)	5220MHz	The middle channel(CH157)	5785MHz
The highest channel(CH48)	5240MHz	The highest channel(CH165)	5825MHz

For 802.11n(HT40), 802.11ac(VHT40)

Band I (5150 – 5250 MHz)		Band IV (5725 – 5850 MHz)	
Channel	Frequency	Channel	Frequency
The lowest channel(CH38)	5190MHz	The lowest channel(CH151)	5755MHz
The highest channel(CH46)	5230MHz	The highest channel(CH159)	5795MHz

For 802.11ac(VHT80)

Band I (5150 – 5250 MHz)		Band IV (5725 – 5850 MHz)	
Channel	Frequency	Channel	Frequency
The lowest channel(CH42)	5210MHz	The lowest channel(CH155)	5775MHz

Through Pre-scan under all rate at lowest channel, the data rate as below table described is the worst case, so we choose these data rate for test.

Type	Data rate (For Chain 0)	Data rate (For Chain 1)
802.11a	24Mbps	36Mbps
802.11n(HT20), 802.11ac(VHT20)	MCS6	MCS6
802.11n(HT40), 802.11ac(VHT40)	MCS6	MCS6
802.11ac(VHT80)	MCS0	MCS0

The basic operation modes are:

- A. On
 - 1. WLAN mode
 - a. Transmitting
 - b. Receiving
- B. Standby
- C. Off

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3.2 Special Accessories and Auxiliary Equipment

Description	Manufacturer	Model No.	Serial No.
Laptop	Lenovo	TP00083A	N/A

3.3 Support Software

Description	Manufacturer	Software Name
Software	Qualcomm	QRCT

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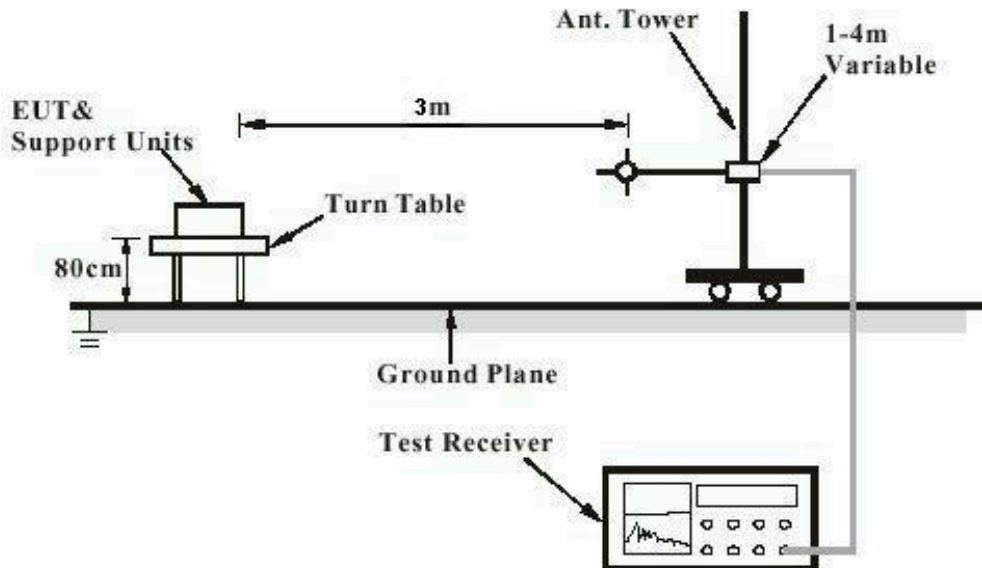
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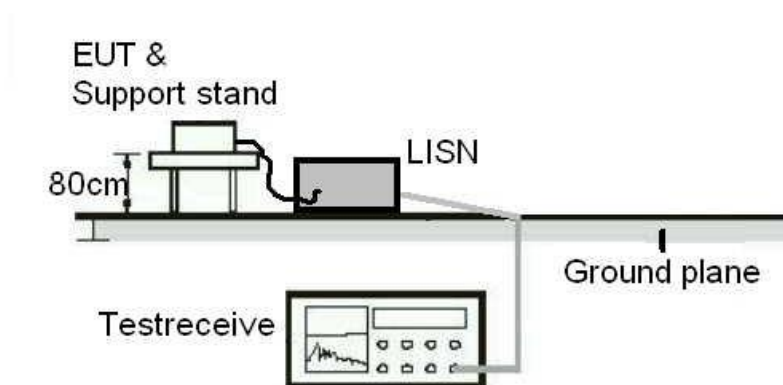
3.4 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test



Note: Measurements above 1GHz are done with a table height of 1.5m. In addition, there is RF absorbing material on the floor of the test site for above 1GHz measurement.

Diagram of Measurement Equipment Configuration for Conduction Measurement



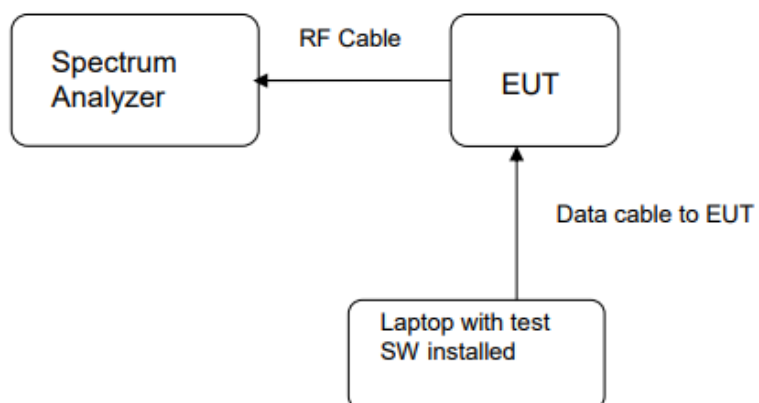
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Diagram of Measurement Equipment Configuration for Transmitter Measurement



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4 Test Results

4.1 Transmitter Requirement & Test Suites

4.1.1 Antenna Requirement

RESULT:

PASS

Test standard : FCC Part 15.407(a), 15.203

Requirement : The use of approved antennas only with directional gains that do not exceed 6 dBi

According to the manufacturer declaration the EUT has an antenna with a max gain of 1.29 dBi. The antenna is an internal antenna with no possibility of replacement with a non-approved antenna by the end-user.

Therefore, the EUT is considered to comply with this provision.

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4.1.2 Peak Output Power and E.I.R.P

RESULT:

PASS

Test standard : FCC Part 15.407(a)
Requirement : ANSI C63.10-2013, KDB 789033

Kind of test site : Shielded room

Test setup

Test Channel : Low/Middle/High
Operation Mode : A.1.a
Ambient temperature : 25°C
Relative humidity : 52%

Table 1: Peak Output Power

Band I (5150 – 5250 MHz)

Test Mode	Test Channel (MHz)	Measured Peak Output Power				FCC Limit (mW)
		Chain 0		Chain 1		
		(dBm)	(mW)	(dBm)	(mW)	
802.11a	5180	12.90	19.50	13.73	23.60	250
	5220	12.69	18.58	13.23	21.04	
	5240	12.80	19.05	13.27	21.23	
802.11n(HT20)	5180	13.22	20.99	13.79	23.93	
	5220	12.90	19.50	13.15	20.65	
	5240	12.97	19.82	13.31	21.43	
802.11ac(VHT20)	5180	13.23	21.04	14.05	25.41	
	5220	12.85	19.28	13.58	22.80	
	5240	12.93	19.63	13.57	22.75	
802.11n(HT40)	5190	12.66	18.45	13.35	21.63	
	5230	12.42	17.46	13.01	20.00	
802.11ac(VHT40)	5190	12.79	19.01	13.39	21.83	
	5230	12.48	17.70	13.02	20.04	
802.11ac(VHT80)	5210	12.22	16.67	13.06	20.23	

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Band I (5150 – 5250 MHz)

Test Mode	Test Channel (MHz)	Measured Peak Output Power				FCC Limit (mW)
		MIMO Chain 0		MIMO Chain 1		
		(dBm)	(mW)	(dBm)	(mW)	
802.11a	5180	13.09	20.37	13.58	22.80	250
	5220	12.66	18.45	13.07	20.28	
	5240	12.78	18.97	13.10	20.42	
802.11n(HT20)	5180	13.15	20.65	13.74	23.66	
	5220	12.83	19.19	13.25	21.13	
	5240	12.93	19.63	13.28	21.28	
802.11ac(VHT20)	5180	13.26	21.18	13.75	23.71	
	5220	12.85	19.28	13.25	21.13	
	5240	12.95	19.72	13.29	21.33	
802.11n(HT40)	5190	12.62	18.28	13.30	21.38	
	5230	12.52	17.86	13.01	20.00	
802.11ac(VHT40)	5190	12.75	18.84	13.27	21.23	
	5230	12.61	18.24	12.97	19.82	
802.11ac(VHT80)	5210	11.89	15.45	12.65	18.41	

Band I (5150 – 5250 MHz)

Test Mode	Test Channel (MHz)	Measured Peak Output Power		FCC Limit (mW)
		MIMO		
		(dBm)	(mW)	
802.11a	5180	16.35	43.17	250
	5220	15.88	38.73	
	5240	15.95	39.39	
802.11n(HT20)	5180	16.47	44.31	
	5220	16.06	40.32	
	5240	16.12	40.91	
802.11ac(VHT20)	5180	16.52	44.89	
	5220	16.06	40.41	
	5240	16.13	41.05	
802.11n(HT40)	5190	15.98	39.66	
	5230	15.78	37.86	
802.11ac(VHT40)	5190	16.03	40.07	
	5230	15.80	38.06	
802.11ac(VHT80)	5210	15.30	33.86	

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Band IV (5725 – 5850 MHz)

Test Mode	Test Channel (MHz)	Measured Peak Output Power				FCC Limit (mW)
		Chain 0		Chain 1		
		(dBm)	(mW)	(dBm)	(mW)	
802.11a	5745	12.08	16.14	12.29	16.94	250
	5785	12.37	17.26	12.53	17.91	
	5825	13.45	22.13	13.28	21.28	
802.11n(HT20)	5745	12.19	16.56	12.44	17.54	
	5785	12.48	17.70	12.68	18.54	
	5825	12.95	19.72	13.41	21.93	
802.11ac(VHT20)	5745	12.33	17.10	12.45	17.58	
	5785	12.61	18.24	12.69	18.58	
	5825	13.71	23.50	13.46	22.18	
802.11n(HT40)	5755	11.89	15.45	11.87	15.38	
	5795	12.92	19.59	12.42	17.46	
802.11ac(VHT40)	5755	11.92	15.56	11.85	15.31	
	5795	12.95	19.72	12.54	17.95	
802.11ac(VHT80)	5745	11.64	14.59	12.12	16.29	

Band IV (5725 – 5850 MHz)

Test Mode	Test Channel (MHz)	Measured Peak Output Power				FCC Limit (W)
		MIMO Chain 0		MIMO Chain 1		
		(dBm)	(mW)	(dBm)	(mW)	
802.11a	5745	12.14	16.37	12.08	16.14	1
	5785	12.44	17.54	12.32	17.06	
	5825	13.51	22.44	13.08	20.32	
802.11n(HT20)	5745	12.30	16.98	12.24	16.75	
	5785	12.56	18.03	12.48	17.70	
	5825	13.65	23.17	13.20	20.89	
802.11ac(VHT20)	5745	12.25	16.79	12.28	16.90	
	5785	12.58	18.11	12.51	17.82	
	5825	13.65	23.17	13.27	21.23	
802.11n(HT40)	5755	11.89	15.45	11.78	15.07	
	5795	11.18	13.12	12.44	17.54	
802.11ac(VHT40)	5755	11.90	15.49	11.81	15.17	
	5795	12.92	19.59	12.45	17.58	
802.11ac(VHT80)	5775	11.69	14.76	11.67	14.69	

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Band IV (5725 – 5850 MHz)

Test Mode	Test Channel (MHz)	Measured Peak Output Power		FCC Limit (W)
		MIMO		
		(dBm)	(mW)	
802.11a	5745	15.12	32.51	1
	5785	15.39	34.60	
	5825	16.31	42.76	
802.11n(HT20)	5745	15.28	33.73	
	5785	15.53	35.73	
	5825	16.44	44.06	
802.11ac(VHT20)	5745	15.28	33.69	
	5785	15.55	35.93	
	5825	16.47	44.40	
802.11n(HT40)	5755	14.85	30.52	
	5795	14.87	30.66	
802.11ac(VHT40)	5755	14.87	30.66	
	5795	15.70	37.17	
802.11ac(VHT80)	5775	14.69	29.45	

Note :

5G MIMO gain is $1.29\text{dBi} + 10\log(2) = 4.30\text{dBi}$ (1.29dBi is MAX gain of 5G)

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4.1.3 26dB Bandwidth and 99% Bandwidth

RESULT:

PASS

Test standard : FCC Part 15.407(a)
Requirement : ANSI C63.10-2013, KDB 789033
Kind of test site : Shielded room

Test setup

Test Channel : Low/Middle/High
Operation Mode : A.1.a
Ambient temperature : 25°C
Relative humidity : 52%

Notes

Test plots please refer to the annex document "WIFI5G-TX EXHIBIT A of SHE20100021-02DE Chain 0".

Test plots please refer to the annex document "WIFI5G-TX EXHIBIT A of SHE20100021-02DE Chain 1".

Table 2: Chain 0 26dB Bandwidth and 99% Bandwidth

Band I (5150 – 5250 MHz)

Test Mode	Test Channel	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
802.11a	5180	19.977	16.563
	5220	20.523	16.563
	5240	20.581	16.574
802.11n(HT20)	5180	19.572	17.417
	5220	22.0333	17.734
	5240	21.511	17.724
802.11ac(VHT20)	5180	19.923	17.391
	5220	20.296	17.431
	5240	21.525	17.787
802.11n(HT40)	5190	40.150	35.786
	5230	40.331	35.732
802.11ac(VHT40)	5190	39.984	35.842
	5230	40.440	35.779
802.11ac(VHT80)	5210	82.811	75.049

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Band IV (5725 – 5850 MHz)

Test Mode	Test Channel	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
802.11a	5745	19.559	16.253
	5785	20.187	16.587
	5825	20.226	16.604
802.11n(HT20)	5745	19.965	17.430
	5785	21.576	17.764
	5825	19.922	17.419
802.11ac(VHT20)	5745	20.157	17.429
	5785	22.076	17.704
	5825	21.477	17.730
802.11n(HT40)	5755	40.046	35.812
	5795	42.574	36.378
802.11ac(VHT40)	5755	40.174	35.804
	5795	42.796	36.503
802.11ac(VHT80)	5775	82.392	74.929

Table 3: Chain 1 26dB Bandwidth and 99% Bandwidth

Band I (5150 – 5250 MHz)

Test Mode	Test Channel (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MH
802.11a	5180	20.770	16.529
	5220	21.109	16.578
	5240	20.839	16.581
802.11n(HT20)	5180	21.504	17.748
	5220	19.556	17.386
	5240	22.035	17.743
802.11ac(VHT20)	5180	20.640	17.718
	5220	21.672	17.777
	5240	21.183	17.774
802.11n(HT40)	5190	43.464	36.485
	5230	42.762	36.503
802.11ac(VHT40)	5190	43.632	36.522
	5230	44.487	36.457
802.11ac(VHT80)	5210	82.286	74.866

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Band IV (5725 – 5850 MHz)

Test Mode	Test Channel (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
802.11a	5745	20.219	16.608
	5785	20.334	16.577
	5825	20.217	16.582
802.11n(HT20)	5745	21.347	17.760
	5785	21.074	17.768
	5825	21.238	17.778
802.11ac(VHT20)	5745	19.445	17.399
	5785	19.637	17.429
	5825	19.626	17.413
802.11n(HT40)	5755	40.513	35.839
	5795	40.447	35.832
802.11ac(VHT40)	5755	40.607	35.765
	5795	39.333	35.751
802.11ac(VHT80)	5775	82.106	74.964

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4.1.4 6dB Bandwidth

RESULT:

PASS

Test standard : FCC Part 15.407(e)
Requirement : ANSI C63.10-2013, KDB 789033
Kind of test site : Shielded room

Test setup

Test Channel : Low/Middle/High
Operation Mode : A.1.a
Ambient temperature : 25°C
Relative humidity : 52%

Notes

Test plots please refer to the annex document "WIFI5G 6dB EXHIBIT A of SHE20100021-02DE Chain 0".

Test plots please refer to the annex document "WIFI5G 6dB EXHIBIT A of SHE20100021-02DE Chain 1".

Table 4: Chain 0 6dB Bandwidth

Band IV (5725 – 5850 MHz)

Test Mode	Test Channel	6dB Bandwidth	Limit
802.11a	5745	15.100	0.5
	5785	15.018	
	5825	15.102	
802.11n(HT20)	5745	14.708	
	5785	14.437	
	5825	16.068	
802.11ac(VHT20)	5745	15.095	
	5785	15.143	
	5825	15.048	
802.11n(HT40)	5755	33.876	
	5795	33.831	
802.11ac(VHT40)	5755	33.874	
	5795	33.855	
802.11ac(VHT80)	5775	74.087	

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Table 5: Chain 1 6dB Bandwidth

Band IV (5725 – 5850 MHz)

Test Mode	Test Channel	6dB Bandwidth	Limit
802.11a	5745	15.548	0.5
	5785	15.535	
	5825	15.331	
802.11n(HT20)	5745	15.476	
	5785	13.173	
	5825	12.604	
802.11ac(VHT20)	5745	15.454	
	5785	15.132	
	5825	15.047	
802.11n(HT40)	5755	35.138	
	5795	35.104	
802.11ac(VHT40)	5755	34.978	
	5795	35.122	
802.11ac(VHT80)	5775	75.127	

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4.1.5 Power Spectral Density

RESULT:

PASS

Test standard : FCC Part 15.407(a)
Requirement : ANSI C63.10-2013, KDB 789033
Kind of test site : Shielded room

Test setup

Test Channel : Low/Middle/High
Operation Mode : A.1.a
Ambient temperature : 25°C
Relative humidity : 52%

Notes

Test plots please refer to the annex document "WIFI5G PSD EXHIBIT A of SHE20100021-02DE Chain 0".

Test plots please refer to the annex document "WIFI5G PSD EXHIBIT A of SHE20100021-02DE Chain 1".

Test plots please refer to the annex document "WIFI5G PSD EXHIBIT A of SHE20100021-02DE MIMO Chain1".

Test plots please refer to the annex document "WIFI5G PSD EXHIBIT A of SHE20100021-02DE MIMO Chain2".

Table 6: Chain 0 Power Spectral Density

Band I (5150 – 5250 MHz)

Test Mode	Test Channel (MHz)	PSD (dBm/MHz)	FCC Limit (dBm/MHz)
802.11a	5180	4.50	11
	5220	4.55	
	5240	5.75	
802.11n(HT20)	5180	4.62	
	5220	4.60	
	5240	5.38	
802.11ac(VHT20)	5180	5.18	
	5220	4.98	
	5240	4.77	
802.11n(HT40)	5190	5.75	
	5230	5.79	
802.11ac(VHT40)	5190	6.01	
	5230	6.18	
802.11ac(VHT80)*	5210	3.14	

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Band IV (5725 – 5850 MHz)

Test Mode	Test Channel (MHz)	PSD (dBm/500KHz)	PSD (dBm/500KHz)
802.11a	5745	4.62	30
	5785	5.77	
	5825	5.60	
802.11n(HT20)	5745	5.06	
	5785	4.95	
	5825	6.66	
802.11ac(VHT20)	5745	5.48	
	5785	5.55	
	5825	7.04	
802.11n(HT40)	5755	2.55	
	5795	3.10	
802.11ac(VHT40)	5755	2.66	
	5795	2.57	
802.11ac(VHT80)	5775	-0.94	

Table 7: Chain 1 Power Spectral Density

Band I (5150 – 5250 MHz)

Test Mode	Test Channel (MHz)	PSD (dBm/MHz)	FCC Limit (dBm/MHz)
802.11a	5180	5.96	11
	5220	5.49	
	5240	5.60	
802.11n(HT20)	5180	5.72	
	5220	5.25	
	5240	5.19	
802.11ac(VHT20)	5180	5.70	
	5220	5.37	
	5240	5.48	
802.11n(HT40)	5190	2.69	
	5230	2.58	
802.11ac(VHT40)	5190	2.82	
	5230	2.52	
802.11ac(VHT80)	5210	0.85	

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Band IV (5725 – 5850 MHz)

Test Mode	Test Channel (MHz)	PSD (dBm/500KHz)	PSD (dBm/500KHz)
802.11a	5745	5.47	30
	5785	5.72	
	5825	6.49	
802.11n(HT20)	5745	5.41	
	5785	5.46	
	5825	6.17	
802.11ac(VHT20)	5745	5.37	
	5785	5.89	
	5825	6.31	
802.11n(HT40)	5755	2.54	
	5795	2.23	
802.11ac(VHT40)	5755	2.18	
	5795	3.40	
802.11ac(VHT80)	5775	-0.38	

Table 8:MIMO Chain 0 Power Spectral Density

Band I (5150 – 5250 MHz)

Test Mode	Test Channel (MHz)	PSD (dBm/MHz)	FCC Limit (dBm/MHz)
802.11a	5180	5.12	11
	5220	5.44	
	5240	5.48	
802.11n(HT20)	5180	4.30	
	5220	4.18	
	5240	4.79	
802.11ac(VHT20)	5180	5.06	
	5220	4.94	
	5240	4.88	
802.11n(HT40)	5190	3.67	
	5230	3.47	
802.11ac(VHT40)	5190	4.44	
	5230	5.23	
802.11ac(VHT80)	5210	2.46	

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Band IV (5725 – 5850 MHz)

Test Mode	Test Channel (MHz)	PSD (dBm/500KHz)	PSD (dBm/500KHz)
802.11a	5745	5.50	30
	5785	5.66	
	5825	6.79	
802.11n(HT20)	5745	4.52	
	5785	4.80	
	5825	7.12	
802.11ac(VHT20)	5745	5.55	
	5785	5.45	
	5825	6.51	
802.11n(HT40)	5755	2.24	
	5795	1.75	
802.11ac(VHT40)	5755	2.61	
	5795	3.63	
802.11ac(VHT80)	5775	-0.92	

Table 9: MIMO Chain 1 Power Spectral Density

Band I (5150 – 5250 MHz)

Test Mode	Test Channel (MHz)	PSD (dBm/MHz)	FCC Limit (dBm/MHz)
802.11a	5180	6.01	11
	5220	5.86	
	5240	5.73	
802.11n(HT20)	5180	5.48	
	5220	4.97	
	5240	5.32	
802.11ac(VHT20)	5180	5.88	
	5220	5.61	
	5240	5.64	
802.11n(HT40)	5190	2.53	
	5230	2.77	
802.11ac(VHT40)	5190	2.92	
	5230	2.68	
802.11ac(VHT80)	5210	1.76	

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Band IV (5725 – 5850 MHz)

Test Mode	Test Channel (MHz)	PSD (dBm/500KHz)	PSD (dBm/500KHz)
802.11a	5745	5.32	30
	5785	5.98	
	5825	6.59	
802.11n(HT20)	5745	5.52	
	5785	5.14	
	5825	6.18	
802.11ac(VHT20)	5745	5.09	
	5785	5.50	
	5825	5.89	
802.11n(HT40)	5755	2.12	
	5795	3.24	
802.11ac(VHT40)	5755	2.75	
	5795	3.54	
802.11ac(VHT80)	5775	-0.69	

Table 10: MIMO Power Spectral Density

Band I (5150 – 5250 MHz)

Test Mode	Test Channel (MHz)	PSD (dBm/MHz)	FCC Limit (dBm/MHz)
802.11a	5180	8.60	11
	5220	8.66	
	5240	8.62	
802.11n(HT20)	5180	7.94	
	5220	7.60	
	5240	8.07	
802.11ac(VHT20)	5180	8.50	
	5220	8.30	
	5240	8.29	
802.11n(HT40)	5190	6.15	
	5230	6.14	
802.11ac(VHT40)	5190	6.76	
	5230	7.14	
802.11ac(VHT80)	5210	5.13	

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Band IV (5725 – 5850 MHz)

Test Mode	Test Channel (MHz)	PSD (dBm/500KHz)	PSD (dBm/500KHz)
802.11a	5745	8.42	30
	5785	8.83	
	5825	9.70	
802.11n(HT20)	5745	8.06	
	5785	7.99	
	5825	9.68	
802.11ac(VHT20)	5745	8.34	
	5785	8.49	
	5825	9.22	
802.11n(HT40)	5755	5.19	
	5795	5.58	
802.11ac(VHT40)	5755	5.68	
	5795	6.60	
802.11ac(VHT80)	5775	2.20	

MIMO PSD= Chain1+Chain2 (mw)

Note:5G MIMO gain is 1.29dBi + 10log(2) =4.30dBi (1.29dBi is MAX gain of 5G)

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4.1.6 Undesirable Emission

RESULT:

PASS

Test standard	: FCC Part 15.407(b), 15.209
Requirement	: ANSI C63.10-2013, KDB 789033
Kind of test site	: Shielded room

Test setup

Test Channel	: Low/Middle/High
Operation Mode	: A.1.a
Ambient temperature	: 25°C
Relative humidity	: 52%

Notes

Test plots please refer to the annex document "WIFI5G-TX CSE EXHIBIT A of SHE20100021-02DE Chain 0".

Test plots please refer to the annex document "WIFI5G-TX CSE EXHIBIT A of SHE20100021-02DE Chain 1".

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4.1.7 Spurious Emission

RESULT:

PASS

Test standard	: FCC Part 15.407(b)
Requirement	: ANSI C63.10-2013
Kind of test site	: 3m Semi-Anechoic Chamber

Test setup

Test Channel	: Low/Middle/High
Operation Mode	: A
Ambient temperature	: 25°C
Relative humidity	: 52%

Notes:

1. Test plots please refer to the annex document
"WIFI5GB1B4-TX EXHIBIT A of SHE20100021-02DE FCC mimo".
2. For 9 kHz ~ 30 MHz, the amplitude of spurious emissions that are attenuated by more than 20dB below the permissible. The value has no need to be reported.
3. The spurious above 18GHz is noise only and 20dB below the limit. The value has no need to be reported.
4. The EUT is working in the Normal link mode below 1 GHz.

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4.1.8 Band Edge (Restricted-band band-edge)

RESULT:

PASS

Test standard	: FCC Part 15.407(b)
Requirement	: ANSI C63.10-2013, KDB 789033
Kind of test site	: 3m Semi-Anechoic Chamber

Test setup

Test Channel	: Low/Middle/High
Operation Mode	: A.1
Ambient temperature	: 25°C
Relative humidity	: 52%

For details refer to following test plot.

Notes:

1. Test plots please refer to the annex document

"WIFI5GB1B4-TX EXHIBIT A of SHE20100021-02DE FCC mimo".

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4.1.9 Frequency Stability

RESULT:

PASS

Test standard : FCC Part 15.407(g)

Kind of test site : Shielded room

Test setup

Test Channel : Low/Middle/High

Operation Mode : A.1

Ambient temperature : 25°C

Relative humidity : 52%

Table 11: Chain 0 Frequency Stability

Band I (5150 – 5250 MHz):

Voltage vs. Frequency Stability (5180MHz)

Test Conditions		Frequency (MHz)	Max. Deviation (ppm)	Limit (ppm)
Temp (°C)	Voltage (V)			
25	3.4 V	5179.9764	4.556	± 20
	3.7 V	5179.9775	4.344	
	4.2 V	5179.9782	4.208	

Temperature vs. Frequency Stability (5180MHz)

Test Conditions		Frequency (MHz)	Max. Deviation (ppm)	Limit (ppm)
Voltage (V)	Temp (°C)			
3.7 V	-30	--	--	± 20
	-20	--	--	
	-10	--	4.710	
	0	5179.9753	4.768	
	10	5179.9729	5.232	
	20	5179.9739	5.039	
	30	5179.9753	4.768	
	35	5179.9878	2.355	

Note:

The all configurations were tested respectively, but only the worst channel shown here.

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Band IV (5725 – 5850 MHz):

Voltage vs. Frequency Stability (5745MHz)

Test Conditions		Frequency (MHz)	Max. Deviation (ppm)	Limit (ppm)
Temp (°C)	Voltage (V)			
25	3.4 V	5744.9703	5.170	± 20
	3.7 V	5744.9722	4.839	
	4.2 V	5744.9717	4.926	

Temperature vs. Frequency Stability (5745MHz)

Test Conditions		Frequency (MHz)	Max. Deviation (ppm)	Limit (ppm)
Voltage (V)	Temp (°C)			
3.7 V	-30	--	--	± 20
	-20	--	--	
	-10	--	--	
	0	5744.9725	4.787	
	10	5744.9695	5.309	
	20	5744.9734	4.630	
	30	5744.9726	4.769	
	35	5744.9718	4.909	

Note:

The all configurations were tested respectively, but only the worst channel shown here.

Table 12: Chain 2 Frequency Stability

Band I (5150 – 5250 MHz):

Voltage vs. Frequency Stability (5180MHz)

Test Conditions		Frequency (MHz)	Max. Deviation (ppm)	Limit (ppm)
Temp (°C)	Voltage (V)			
25	3.4 V	5179.9798	3.900	± 20
	3.7 V	5180.0132	2.548	
	4.2 V	5179.9828	3.320	

Temperature vs. Frequency Stability (5180MHz)

Test Conditions		Frequency (MHz)	Max. Deviation (ppm)	Limit (ppm)
Voltage (V)	Temp (°C)			
3.7 V	-30	--	--	± 20
	-20	--	--	
	-10	--	--	
	0	5180.0356	-6.873	

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	10	5179.9654	6.680	
	20	5179.9598	7.761	
	30	5180.0273	-5.270	
	40	5179.9832	3.243	
	50	5179.9785	4.151	

Note:

The all configurations were tested respectively, but only the worst channel shown here.

Band IV (5725 – 5850 MHz):

Voltage vs. Frequency Stability (5745MHz)

Test Conditions		Frequency (MHz)	Max. Deviation (ppm)	Limit (ppm)
Temp (°C)	Voltage (V)			
25	3.4 V	5744.9711	5.030	± 20
	3.7 V	5744.9675	5.657	
	4.2 V	5744.9682	5.535	

Temperature vs. Frequency Stability (5745MHz)

Test Conditions		Frequency (MHz)	Max. Deviation (ppm)	Limit (ppm)
Voltage (V)	Temp (°C)			
3.7 V	-30	--	--	± 20
	-20	--	--	
	-10	--	--	
	0	5744.9698	5.257	
	10	5744.9753	4.299	
	20	5744.9705	5.135	
	30	5744.9692	5.361	
	40	5744.9686	5.466	
	50	5744.9714	4.978	

Note:

The all configurations were tested respectively, but only the worst channel shown here.

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4.2 Mains Emissions

4.2.1 Conducted Emission on AC Mains

RESULT:

PASS

Test standard	: FCC Part 15.207
Requirement	: ANSI C63.10-2013
Kind of test site	: Shielded room

Test setup

Input Voltage	: AC 120V, 60Hz; AC 240V, 50Hz
Operation Mode	: Normal Link
Earthing	: Not Connected
Ambient temperature	: 25°C
Relative humidity	: 52%

For details refer to following test plot.

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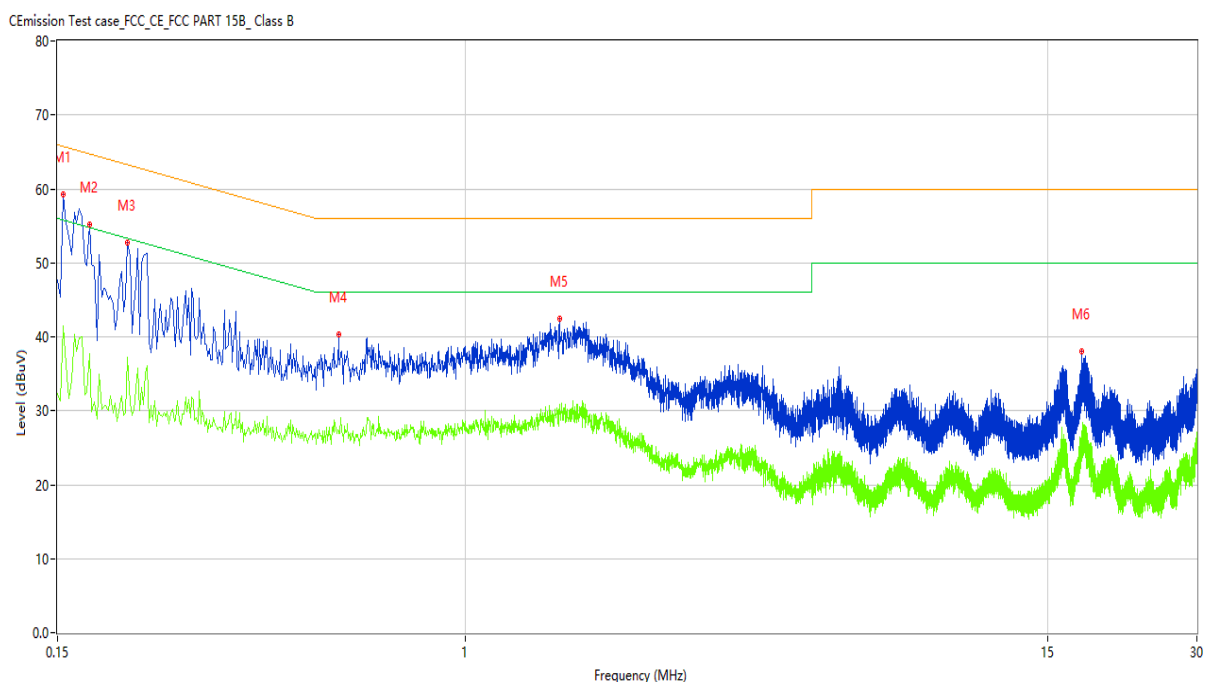
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Note:

The all configurations were tested respectively, but only the worst configuration shown here.

Figure 1: Conducted Emission on AC Mains, L Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.150	59.95	10.15	66.00	-6.05	Peak	L	Pass
1*	0.150	55.24	10.15	66.00	-10.76	QP	L	Pass
1**	0.150	32.26	10.15	56.00	-23.74	AV	L	Pass
2	0.174	56.51	10.15	64.77	-8.26	Peak	L	Pass
2*	0.174	51.00	10.15	64.77	-13.77	QP	L	Pass
2**	0.174	37.77	10.15	54.77	-17.00	AV	L	Pass
3	0.208	52.63	10.15	63.28	-10.65	Peak	L	Pass
3*	0.208	48.32	10.15	63.28	-14.96	QP	L	Pass
3**	0.208	37.19	10.15	53.28	-16.09	AV	L	Pass
4	0.554	38.35	10.15	56.00	-17.65	Peak	L	Pass
4*	0.554	32.13	10.15	56.00	-23.87	QP	L	Pass
4**	0.554	26.87	10.15	46.00	-19.13	AV	L	Pass
5	1.548	41.34	10.17	56.00	-14.66	Peak	L	Pass
5*	1.548	37.47	10.17	56.00	-18.53	QP	L	Pass
5**	1.548	30.93	10.17	46.00	-15.07	AV	L	Pass
6	17.538	37.33	10.46	60.00	-22.67	Peak	L	Pass
6*	17.538	30.67	10.46	60.00	-29.33	QP	L	Pass
6**	17.538	26.28	10.46	50.00	-23.72	AV	L	Pass

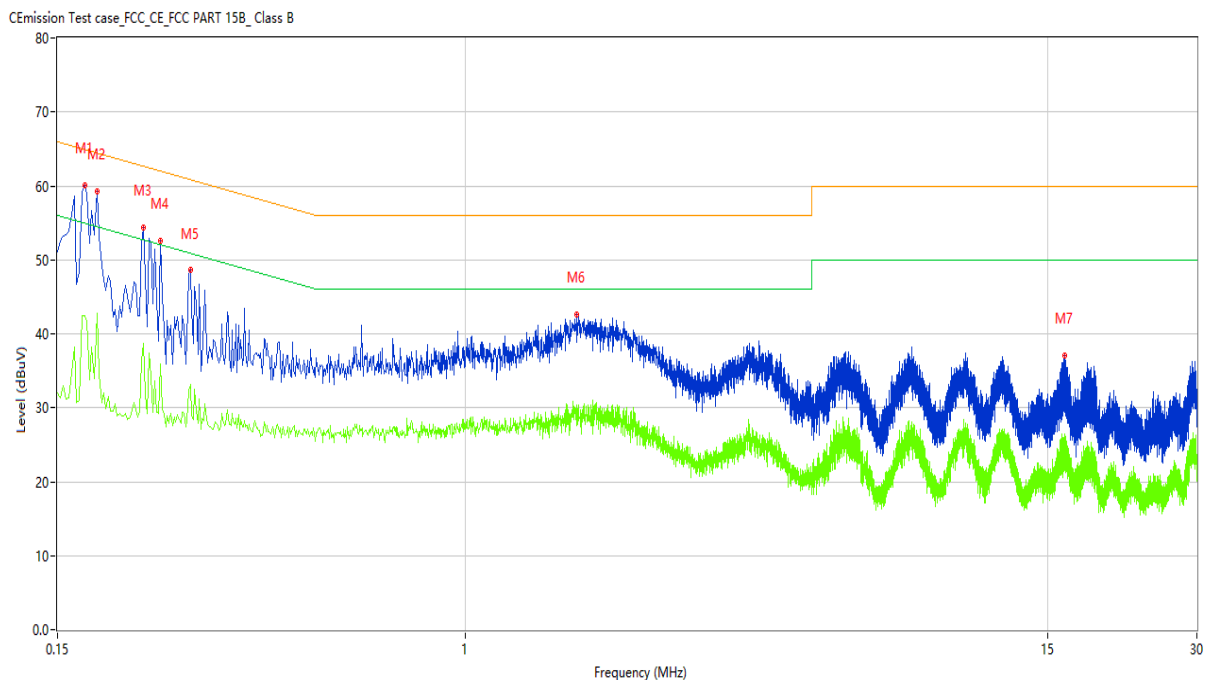
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Figure 2: Conducted Emission on AC Mains, N Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.170	60.18	10.15	64.96	-4.78	Peak	N	Pass
1*	0.170	56.78	10.15	64.96	-8.18	QP	N	Pass
1**	0.170	42.39	10.15	54.96	-12.57	AV	N	Pass
2	0.180	60.21	10.15	64.49	-4.28	Peak	N	Pass
2*	0.180	56.34	10.15	64.49	-8.15	QP	N	Pass
2**	0.180	42.74	10.15	54.49	-11.75	AV	N	Pass
3	0.224	54.18	10.14	62.67	-8.49	Peak	N	Pass
3*	0.224	50.22	10.14	62.67	-12.45	QP	N	Pass
3**	0.224	38.66	10.14	52.67	-14.01	AV	N	Pass
4	0.242	51.66	10.14	62.03	-10.37	Peak	N	Pass
4*	0.242	45.94	10.14	62.03	-16.09	QP	N	Pass
4**	0.242	35.96	10.14	52.03	-16.07	AV	N	Pass
5	0.278	47.02	10.14	60.88	-13.86	Peak	N	Pass
5*	0.278	41.42	10.14	60.88	-19.46	QP	N	Pass
5**	0.278	33.17	10.14	50.88	-17.71	AV	N	Pass
6	1.680	39.56	10.17	56.00	-16.44	Peak	N	Pass
6*	1.680	35.99	10.17	56.00	-20.01	QP	N	Pass
6**	1.680	29.19	10.17	46.00	-16.81	AV	N	Pass
7	16.262	36.63	10.43	60.00	-23.37	Peak	N	Pass
7*	16.262	28.30	10.43	60.00	-31.70	QP	N	Pass
7**	16.262	24.80	10.43	50.00	-25.20	AV	N	Pass

End of the report