

TEST REPORT

Report No. : CHTEW2201018403 Report Verification: 

Project No..... : SHT2201044201EW

FCC ID..... : BBOSC100

Applicant's name..... : COBRA ELECTRONICS CORPORATION

Address..... : 6500 WEST CORTLAND STREET, CHICAGO, IL 60707 USA

Manufacturer..... : COBRA ELECTRONICS CORPORATION

Address..... : 6500 WEST CORTLAND STREET, CHICAGO, IL 60707 USA

Test item description : Cobra SC 100

Trade Mark : Cobra

Model/Type reference..... : SC100

Listed Model(s) : -

Standard : FCC CFR Title 47 Part 15 Subpart E Section 15.407

Date of receipt of test sample..... : May 19, 2020

Date of testing..... : May 19, 2020- Jan.28, 2022

Date of issue..... : Jan.29, 2022

Result..... : PASS

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Testing Laboratory Name : Shenzhen Huatongwei International Inspection Co., Ltd.

Address..... : 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road,
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1. TEST STANDARDS AND REPORT VERSION

1.1. Test Standards

The tests were performed according to following standards:

- [FCC Rules Part 15.407](#): General technical requirements.
- [ANSI C63.10:2013](#): American National Standard for Testing Unlicensed Wireless Devices
- [KDB789033 D02 v02r01](#): GUIDELINES FOR COMPLIANCE TESTING OF UNLICENSED NATIONAL INFORMATION INFRASTRUCTURE (U-NII) DEVICES PART 15, SUBPART E

1.2. Report version

Revision No.	Date of issue	Description
N/A	2022-01-29	Change the chip and update Software version, update AC Conducted Emission, Band edge(Radiated), Radiated Spurious Emission and test setup photos based on the report CHTEW20060004(2020-06-01)

2. TEST DESCRIPTION

Report clause	Test Items	Standard Requirement	Result
5.1	Antenna Requirement	15.203/15.247(c)	PASS
5.2	AC Conducted Emission	15.207	PASS
5.3	Maximum Conducted Output Power	15.407(a)	PASS ^{*1}
5.4	Maximum Power Spectral Density	15.407(a)	PASS ^{*1}
5.5	26dB Bandwidth and 99% Occupancy bandwidth	15.407(a)	PASS ^{*1}
5.6	6dB Bandwidth	15.407(a)	PASS ^{*1}
5.7	Band edge(Conducted)	15.407(b)	PASS ^{*1}
5.8	Band edge(Radiated)	15.407(b)	PASS
5.9	Radiated Spurious Emissions	15.209	PASS
5.10	Frequency Stability	15.407(g)	PASS ^{*1}

Note:

- The measurement uncertainty is not included in the test result.

3. SUMMARY

3.1. Client Information

Applicant:	COBRA ELECTRONICS CORPORATION
Address:	6500 WEST CORTLAND STREET, CHICAGO, IL 60707 USA
Manufacturer:	COBRA ELECTRONICS CORPORATION
Address:	6500 WEST CORTLAND STREET, CHICAGO, IL 60707 USA

3.2. Product Description

Name of EUT:	Cobra SC 100
Trade Mark:	Cobra
Model No.:	SC100
Listed Model(s):	-
Power supply:	DC 5V
Hardware version:	90100D1590001
Software version:	COBRA SC-100 V1.57

3.3. Radio Specification Description

5G WIFI			
Support type ^{*2}	☒ 802.11a	☒ 802.11n(HT20)	☒ 802.11n(HT40)
	☒ 802.11ac(HT20)	☒ 802.11ac(HT40)	☒ 802.11ac(HT80)
Function:	☐ Outdoor AP	☐ Indoor AP	☐ Fixed P2P
	☒ Client		
DFS type:	☐ master devices	☐ Slave devices with radar detection	☒ Slave devices without radar detection
Modulation:	BPSK, QPSK, 16QAM, 64QAM		
Operation frequency:	☒ Band I:	5150MHz~5250MHz	
	☒ Band II:	5250MHz~5350MHz	
	☒ Band III:	5470MHz~5725MHz	
	☒ Band IV:	5725MHz~5850MHz	
Supported Bandwidth	20MHz:	802.11n, 802.11a,802.11ac	
	40MHz:	802.11n,802.11ac	
	80MHz:	802.11ac	
Antenna type:	FPC		
Antenna gain:	-2.04dBi		

Note:

*2: only show the RF function associated with this report.

3.4. Testing Laboratory Information

Laboratory Name	Shenzhen Huatongwei International Inspection Co., Ltd.	
Laboratory Location	1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China	
Connect information:	Phone: 86-755-26715499 E-mail: cs@szhtw.com.cn http://www.szhtw.com.cn	
Qualifications	Type	Accreditation Number
	FCC	762235

4. TEST CONFIGURATION

4.1. Test frequency list

According to section 15.31(m), regards to the operating frequency range over 10 MHz, must select three channels which were tested. The Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, please see the below .

Band	Test Channel	20MHz		40MHz		80MHz	
		Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
I	CH _L	36	5180	38	5190	-	-
	CH _M	44	5220	-	-	42	5210
	CH _H	48	5240	46	5230	-	-
II	CH _L	52	5260	54	5270	-	-
	CH _M	56	5280	-	-	58	5290
	CH _H	64	5320	62	5310	-	-
III	CH _L	100	5500	102	5510	106	5530
	CH _M	120	5600	118	5590	122	5610
	CH _H	140	5700	134	5670	138	5690
IV	CH _L	149	5745	151	5755	-	-
	CH _M	157	5785	-	-	155	5775
	CH _H	165	5825	159	5795	-	-

4.2. Descriptions of Test mode

Preliminary tests were performed in different data rates, final test modes are considering the modulation and worse data rates as below table.

Modulation	Data rate
802.11a	6Mbps
802.11n(HT20)/ 802.11ac(HT20)	MCS0
802.11n(HT40)/ 802.11ac(HT40)	MCS0
802.11ac(HT80)	MCS0

4.3. Test mode

For RF test items
The engineering test program was provided and enabled to make EUT continuous transmit.
For AC power line conducted emissions:
The EUT was set to connect with the WLAN AP under large package sizes transmission.
For Radiated spurious emissions test item:
The engineering test program was provided and enabled to make EUT continuous transmit. The EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data Recorded in the report.

4.4. Support unit used in test configuration and system

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

The following peripheral devices and interface cables were connected during the measurement:

Whether support unit is used?					
✓ No					
Item	Equipement	Trade Name	Model No.	FCC ID	Power cord
1					
2					

4.5. Testing environmental condition

Type	Requirement	Actual
Temperature:	15~35°C	25°C
Relative Humidity:	25~75%	50%
Air Pressure:	860~1060mbar	1000mbar

4.6. Measurement uncertainty

Test Item	Measurement Uncertainty
AC Conducted Emission (150kHz~30MHz)	3.02 dB
Radiated Emission (30MHz~1000MHz)	4.90 dB
Radiated Emissions (1GHz~25GHz)	4.96 dB
Peak Output Power	0.51 dB
Power Spectral Density	0.51 dB
Conducted Spurious Emission	0.51 dB
6dB Bandwidth	70 Hz
Frequency error	70 Hz

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

4.7. Equipment Used during the Test

● Conducted Emission							
Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Shielded Room	Albatross projects	HTWE0114	N/A	N/A	2018/09/28	2023/09/27
●	EMI Test Receiver	R&S	HTWE0111	ESCI	101247	2021/9/14	2022/9/13
●	Artificial Mains	SCHWARZBECK	HTWE0113	NNLK 8121	573	2021/9/17	2022/9/16
●	Pulse Limiter	R&S	HTWE0033	ESH3-Z2	100499	2021/9/13	2022/9/12
●	RF Connection Cable	HUBER+SUHNER	HTWE0113-02	ENVIROFLE X 142	EF-NM-BNCM-2M	2021/9/17	2022/9/16
●	Test Software	R&S	N/A	ES-K1	N/A	N/A	N/A

● Radiated emission-6th test site							
Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Semi-Anechoic Chamber	Albatross projects	HTWE0127	SAC-3m-02	C11121	2018/09/30	2022/09/29
●	EMI Test Receiver	R&S	HTWE0099	ESCI	100900	2021/9/14	2022/9/13
●	Loop Antenna	R&S	HTWE0170	HFH2-Z2	100020	2021/04/06	2022/04/05
●	Ultra-Broadband Antenna	SCHWARZBECK	HTWE0123	VULB9163	538	2021/04/06	2022/04/05
●	Pre-Amplifier	SCHWARZBECK	HTWE0295	BBV 9742	N/A	2021/11/5	2022/11/04
●	RF Connection Cable	HUBER+SUHNER	HTWE0062-01	N/A	N/A	2021/02/26	2022/02/25
●	RF Connection Cable	HUBER+SUHNER	HTWE0062-02	SUCOFLEX104	501184/4	2021/02/26	2022/02/25
●	Test Software	R&S	N/A	ES-K1	N/A	N/A	N/A

● Radiated emission-7th test site							
Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Semi-Anechoic Chamber	Albatross projects	HTWE0122	SAC-3m-01	N/A	2018/09/27	2022/09/26
●	Spectrum Analyzer	R&S	HTWE0098	FSP40	100597	2021/09/13	2022/09/12
●	Horn Antenna	SCHWARZBECK	HTWE0126	9120D	1011	2020/04/01	2023/03/31
●	Broadband Horn Antenna	SCHWARZBECK	HTWE0103	BBHA9170	BBHA9170472	2020/4/27	2023/4/27
●	Pre-amplifier	CD	HTWE0071	PAP-0102	12004	2021/11/5	2022/11/4
●	Broadband Pre-amplifier	SCHWARZBECK	HTWE0201	BBV 9718	9718-248	2021/03/05	2022/03/04
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-01	6m 18GHz S Serisa	N/A	2021/02/26	2022/02/25
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-02	6m 3GHz RG Serisa	N/A	2021/02/26	2022/02/25
●	RF Connection Cable	HUBER+SUHNER	HTWE0119-05	6m 3GHz RG Serisa	N/A	2021/02/26	2022/02/25
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-04	6m 3GHz RG Serisa	N/A	2021/02/26	2022/02/25
●	RF Connection Cable	HUBER+SUHNER	HTWE0121-01	6m 18GHz S Serisa	N/A	2021/02/26	2022/02/25
●	Test Software	Audix	N/A	E3	N/A	N/A	N/A

● RF Conducted Method						
Used	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Signal and spectrum Analyzer	R&S	FSV40	100048	2019/10/26	2020/10/25
●	Spectrum Analyzer	Agilent	N9020A	MY50510187	2019/10/26	2020/10/25
●	Power Meter	Anritsu	ML249A	N/A	2019/10/26	2020/10/25
○	Radio communication tester	R&S	CMW500	137688-Lv	2019/10/26	2020/10/25

5. TEST CONDITIONS AND RESULTS

5.1. Antenna Requirement

Requirement

FCC CFR Title 47 Part 15 Subpart C Section 15.203:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

TEST RESULT

☒ **Passed** ☐ **Not Applicable**

The antenna type is a FPC antenna, the directional gain of the antenna less than 6 dBi, please refer to the below antenna photo.

I



5.2. AC Conducted Emission

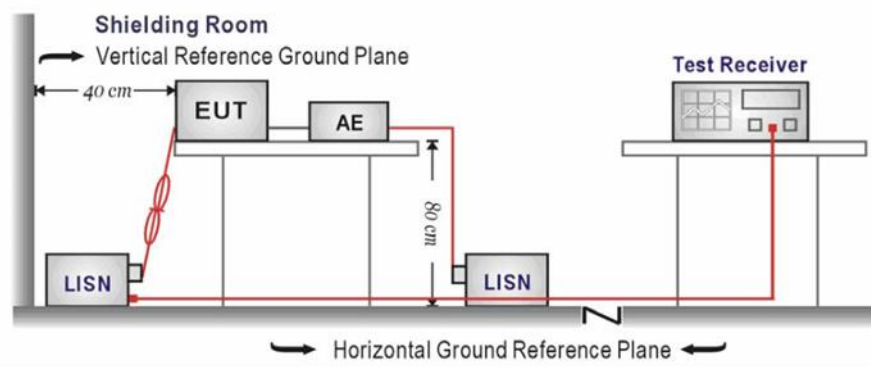
LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.207

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST CONFIGURATION



TEST PROCEDURE

1. The EUT was setup according to ANSI C63.10 requirements.
2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface.
3. The EUT and simulators are connected to the main power through a line impedances stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment.
4. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)
5. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.
6. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
7. Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.
8. During the above scans, the emissions were maximized by cable manipulation.

TEST MODE:

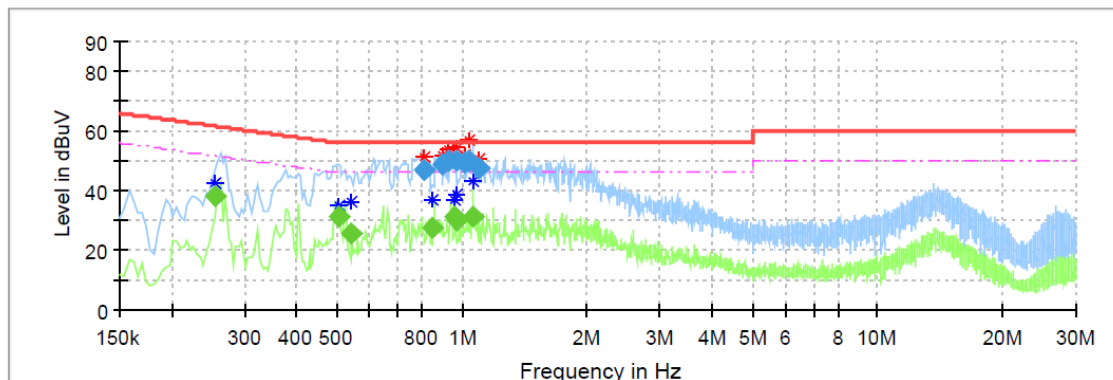
Please refer to the clause 4.3

TEST RESULT

☒ Passed ☐ Not Applicable

Test Line:

L

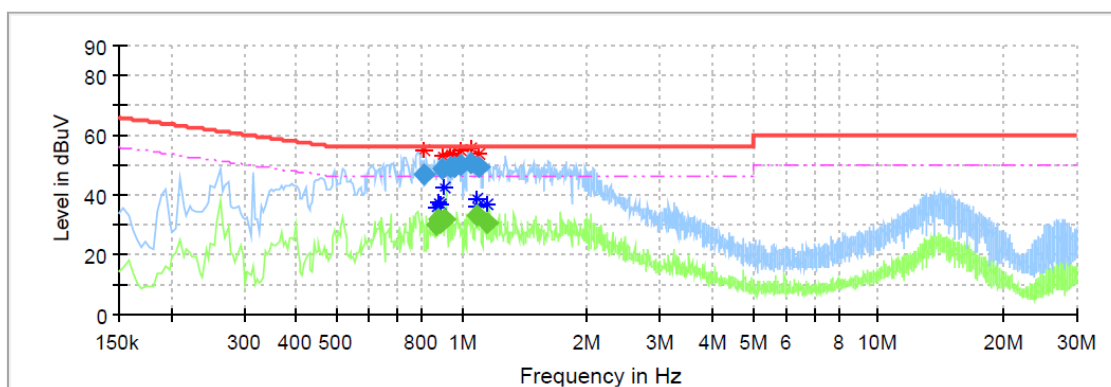


Final Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Corr. (dB)
0.255500	---	38.21	51.58	13.37	L1	10.1
0.503500	---	31.18	46.00	14.82	L1	10.1
0.539500	---	25.60	46.00	20.40	L1	10.1
0.807500	47.00	---	56.00	9.00	L1	10.2
0.847500	---	27.39	46.00	18.61	L1	10.1
0.895500	48.48	---	56.00	7.52	L1	10.1
0.931500	50.20	---	56.00	5.80	L1	10.1
0.955500	---	30.98	46.00	15.02	L1	10.1
0.967500	---	30.04	46.00	15.96	L1	10.1
0.971500	50.06	---	56.00	5.94	L1	10.1
1.019500	49.35	---	56.00	6.65	L1	10.1
1.043500	50.20	---	56.00	5.80	L1	10.1
1.059500	---	31.09	46.00	14.91	L1	10.1
1.099500	47.79	---	56.00	8.21	L1	10.1

Test Line:

N



Final Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Corr. (dB)
0.808500	47.03	---	56.00	8.97	N	10.2
0.867500	---	29.75	46.00	16.25	N	10.1
0.879500	---	31.85	46.00	14.15	N	10.1
0.891500	---	30.81	46.00	15.19	N	10.1
0.899500	48.98	---	56.00	7.02	N	10.1
0.911500	---	31.86	46.00	14.14	N	10.1
0.936500	49.62	---	56.00	6.38	N	10.1
0.955500	49.67	---	56.00	6.33	N	10.1
0.987500	50.20	---	56.00	5.80	N	10.1
1.051500	50.84	---	56.00	5.16	N	10.1
1.091500	---	32.96	46.00	13.04	N	10.1
1.095500	49.50	---	56.00	6.50	N	10.1
1.147500	---	30.44	46.00	15.56	N	10.1

5.3. Band edge

LIMIT

FCC CFR Title 47 Part 15 Subpart E Section 15.407(b)

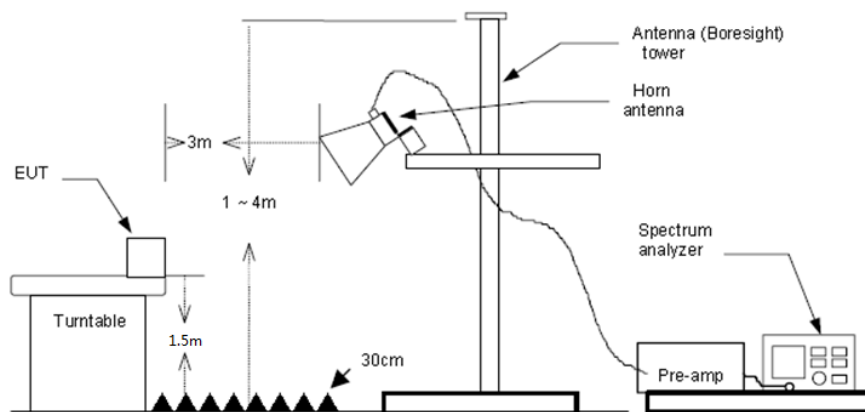
Un-restricted band emissions above 1GHz			
Operating Band	Frequency	EIRP Limit	Value
5150-5250MHz	Above 1GHz	-27dBm/MHz(68.2dBuV/m)@3m	Peak
5250-5350MHz	Above 1GHz	-27dBm/MHz(68.2dBuV/m)@3m	Peak
5470-5725MHz	Above 1GHz	-27dBm/MHz(68.2dBuV/m)@3m	Peak
5725-5850 MHz	1GHz-5.65GHz	-27 dBm/MHz(68.2dBuV/m)@3m	Peak
	5.65GHz-5.7GHz	-27*dBm/MHz to 10dBm/MHz (68.2* dBuV/m to 105.6dBuV/m)	Peak
	5.7GHz-5.72GHz	10*dBm/MHz to 15.6dBm/MHz (105.6*dBuV/m to 110.8dBuV/m)	Peak
	5.72GHz-5.725GHz	15.6*dBm/MHz to 27dBm/MHz (110.8dBuV/m to* 122.2dBuV/m)	Peak
	5.85GHz-5.855GHz	27dBm/MHz to 15.6*dBm/MHz (122.2dBuV/m to110.8* dBuV/m)	Peak
	5.855GHz-5.875GHz	15.6dBm/MHz to 10*dBm/MHz (110.8dBuV/m to 105.6* dBuV/m)	Peak
	5.875GHz-5.925GHz	10dBm/MHz to -27*dBm/MHz (105.6dBuV/m to 68.2* dBuV/m)	Peak
	Above 5.925GHz	-27 dBm/MHz(68.2dBuV/m)@3m	Peak

* Increase/Decreases with the linearly of the frequency.

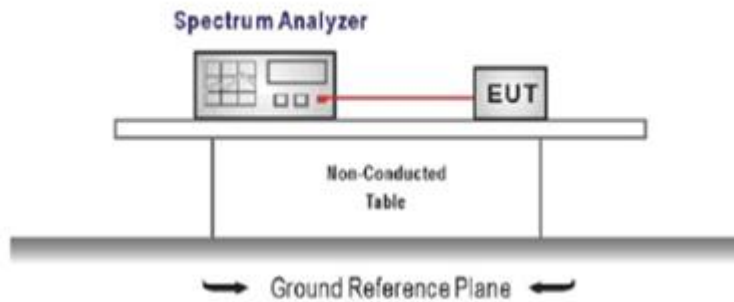
For emission above 1GHz and in restricted band, according to FCC KDB 789033 D02 General UNII Test Procedure, all emission that complies with both the average and peak limits of Section 15.209 is not required to satisfy the -27 dBm/MHz peak emission limit. $E[dB\mu V/m] = EIRP[dBm] + 95.2$, for $d = 3$ meters.

TEST CONFIGURATION

Radiated:



Conducted :



TEST PROCEDURE

1. The EUT was setup and tested according to ANSI C63.10:2013 requirements.
2. The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
4. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10:2013 on radiated measurement.
5. The receiver set as follow:
RBW=1MHz, VBW=3MHz PEAK detector for Peak value.
RBW=1MHz, VBW=3MHz RMS detector for Average value.

TEST MODE:

Please refer to the clause 4.3

TEST RESULTS

☒ Passed ☐ Not Applicable

Radiated Band Edge Test Data

Band: I & II		Worst mode: 802.11a			Test channel: CH _L		
Frequency (MHz)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Factor (dB)	Test value	Polarization
5150.00	24.74	33.63	68.20	34.57	8.89	Vertical	Peak
5150.00	18.81	27.70	54.00	26.30	8.89	Vertical	Average
5150.00	24.66	33.55	68.20	34.65	8.89	Horizontal	Peak
5150.00	19.84	28.73	54.00	25.27	8.89	Horizontal	Average

Band: I & II		Worst mode: 802.11a			Test channel: CH _H		
Frequency (MHz)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Factor (dB)	Test value	Polarization
5350.00	25.16	33.60	68.20	34.40	8.54	Vertical	Peak
5350.00	18.18	26.62	54.00	27.38	8.54	Vertical	Average
5350.00	24.57	33.01	68.20	35.19	8.54	Horizontal	Peak
5350.00	17.80	26.24	54.00	27.76	8.54	Horizontal	Average

Band: III		Worst mode: 802.11a			Test channel: CH _L		
Frequency (MHz)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Factor (dB)	Test value	Polarization
5470.00	18.46	27.35	54.00	26.65	8.99	Vertical	Peak
5470.00	24.87	33.96	68.20	34.24	8.99	Vertical	Average
5470.00	25.17	34.06	68.20	34.14	8.99	Horizontal	Peak
5470.00	20.01	28.00	54.00	24.00	8.99	Horizontal	Average

Band: III		Worst mode: 802.11a			Test channel: CH _H		
Frequency (MHz)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Factor (dB)	Test value	Polarization
5725.00	25.85	34.95	68.20	33.25	9.00	Vertical	Peak
5725.00	19.36	28.26	54.00	25.74	9.00	Vertical	Average
5725.00	25.06	34.16	68.20	34.24	9.00	Horizontal	Peak
5725.00	18.77	27.87	54.00	26.13	9.00	Horizontal	Average

Band: IV		Worst mode: 802.11a			Test channel: CH _L		
Frequency (MHz)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Factor (dB)	Test value	Polarization
5725.00	25.41	34.41	68.20	33.79	9.00	Vertical	Peak
5725.00	17.38	26.38	54.00	27.62	9.00	Vertical	Average
5725.00	23.97	32.97	68.20	35.23	9.00	Horizontal	Peak
5725.00	18.86	27.86	54.00	26.14	9.00	Horizontal	Average

Band: IV		Worst mode: 802.11a			Test channel: CH _H		
Frequency (MHz)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Factor (dB)	Test value	Polarization
5850.00	25.76	35.53	68.20	32.67	9.77	Vertical	Peak
5850.00	17.41	27.18	54.00	26.82	9.77	Vertical	Average
5850.00	24.81	34.58	68.20	33.62	9.77	Horizontal	Peak
5850.00	18.55	28.32	54.00	25.68	9.77	Horizontal	Average

Remark:

1. Final Level = Receiver Read level + Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.
3. Test 802.11a, 802.11n, 802.11ac mode, all modulations have been tested, only worst case is reported

5.4. Radiated Spurious Emissions

LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.209 and Part 15 Subpart E Section 15.407

Frequency	Limit (dBuV/m)	Value
0.009 MHz ~0.49 MHz	2400/F(kHz) @300m	Quasi-peak
0.49 MHz ~ 1.705 MHz	24000/F(kHz) @30m	Quasi-peak
1.705 MHz ~30 MHz	30 @30m	Quasi-peak

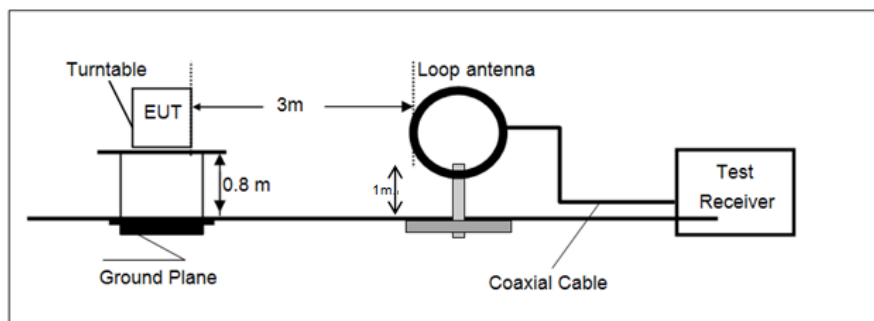
Note: Limit dBuV/m @3m = Limit dBuV/m @300m + 40*log(300/3)= Limit dBuV/m @300m +80,

Limit dBuV/m @3m = Limit dBuV/m @30m +40*log(30/3)= Limit dBuV/m @30m + 40.

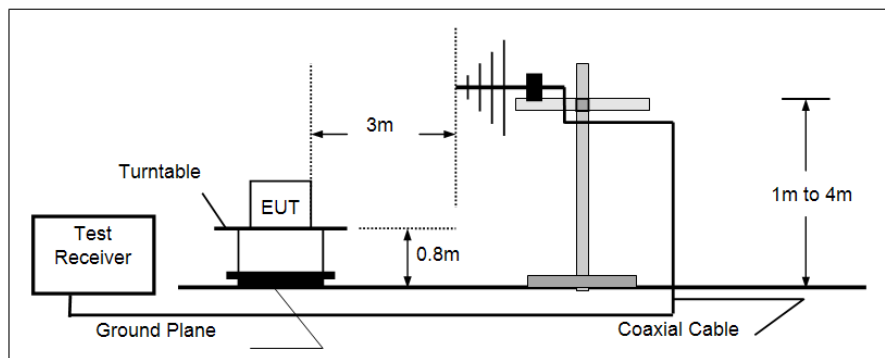
Unwanted emissions below 1GHz and Restricted band emissions above 1GHz		
Frequency	Limit (dBuV/m @3m)	Value
30MHz-88MHz	40.00	Quasi-peak
88MHz-216MHz	43.50	Quasi-peak
216MHz-960MHz	46.00	Quasi-peak
960MHz-1GHz	54.00	Quasi-peak
Above 1GHz	54.00	Average
	74.00	Peak

TEST CONFIGURATION

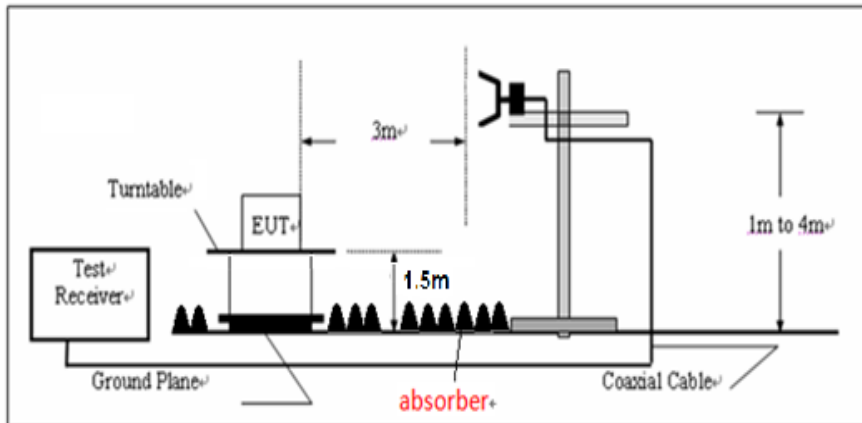
- 9KHz ~30MHz



- 30MHz ~ 1GHz



➤ Above 1GHz

**TEST PROCEDURE**

1. The EUT was setup and tested according to ANSI C63.10:2013
2. The EUT is placed on a turn table which is 0.8 meter above ground for below 1 GHz, and 1.5 m for above 1 GHz. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT was set 3 meters from the receiving antenna, which was mounted on the top of a variable height antenna tower.
4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
5. Set to the maximum power setting and enable the EUT transmit continuously.
6. Use the following spectrum analyzer settings
 - a) Span shall wide enough to fully capture the emission being measured;
 - b) Below 1 GHz:
RBW=120 kHz, VBW=300 kHz, Sweep=auto, Detector function=peak, Trace=max hold;
If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
 - c) From 1 GHz to 10th harmonic:
RBW=1MHz, VBW=3MHz Peak detector for Peak value.
RBW=1MHz, VBW=3MHz RMS detector for Average value.

TEST MODE:

Please refer to the clause 4.3

TEST RESULT

☒ Passed ☐ Not Applicable

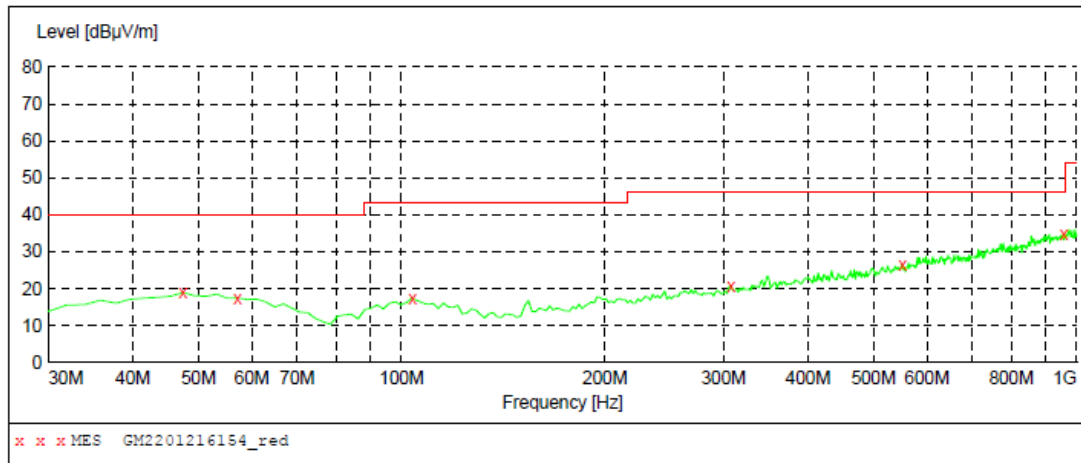
TEST Data**TEST DATA FOR 9 kHz ~ 30 MHz**

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

TEST DATA FOR 30MHz-1GHz

Polarization:

Horizontal

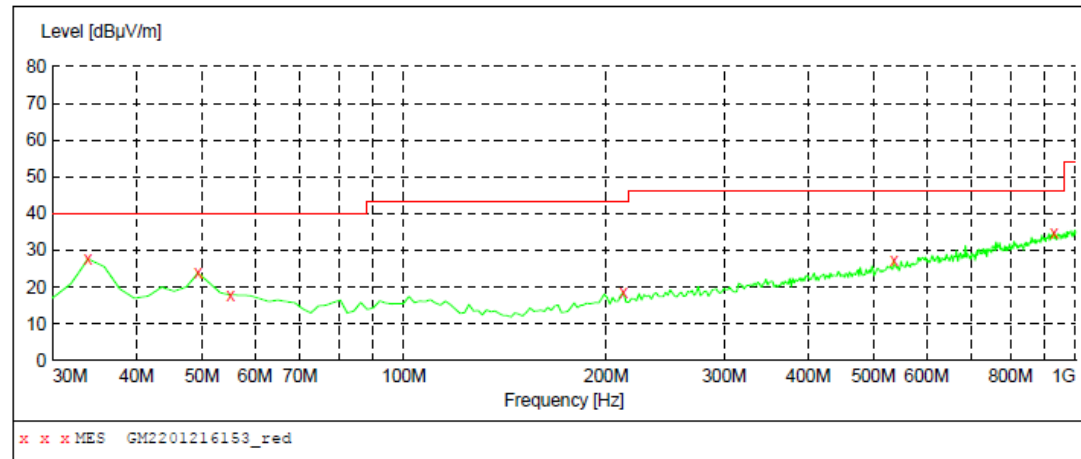
**MEASUREMENT RESULT: "GM2201216154_red"**

1/22/2022 2:01AM

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
47.460000	19.00	-8.8	40.0	21.0	QP	100.0	105.00	HORIZONTAL
57.160000	17.50	-9.5	40.0	22.5	QP	100.0	0.00	HORIZONTAL
103.720000	17.50	-10.6	43.5	26.0	QP	100.0	312.00	HORIZONTAL
307.420000	20.80	-7.2	46.0	25.2	QP	100.0	136.00	HORIZONTAL
551.860000	26.60	-0.7	46.0	19.4	QP	100.0	288.00	HORIZONTAL
957.320000	34.80	7.5	46.0	11.2	QP	100.0	90.00	HORIZONTAL

Polarization:

Vertical

**MEASUREMENT RESULT: "GM2201216153_red"**

1/22/2022 1:59AM

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
33.880000	27.70	-12.0	40.0	12.3	QP	100.0	12.00	VERTICAL
49.400000	23.90	-9.0	40.0	16.1	QP	100.0	163.00	VERTICAL
55.220000	17.90	-9.2	40.0	22.1	QP	100.0	12.00	VERTICAL
212.360000	18.40	-10.6	43.5	25.1	QP	100.0	163.00	VERTICAL
536.340000	27.20	-1.2	46.0	18.8	QP	100.0	26.00	VERTICAL
928.220000	34.70	7.2	46.0	11.3	QP	100.0	93.00	VERTICAL

Remark:

Transd=Cable lose+ Antenna factor- Pre-amplifier; Margin=Limit -Level

TEST DATA FOR Above 1GHz

Band: I		Worst mode: 802.11a			Test channel: CH _L		
Frequency (MHz)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Factor (dB)	Test value	Polarization
1838.66	22.11	16.30	74.00	57.70	-5.81	Vertical	Peak
4492.69	26.74	32.06	74.00	41.94	5.32	Vertical	Peak
7372.91	28.22	43.50	74.00	30.50	15.28	Vertical	Peak
10886.16	28.46	46.21	74.00	27.79	17.75	Vertical	Peak
1860.69	23.69	17.87	74.00	56.13	-5.82	Horizontal	Peak
3164.94	29.62	30.28	74.00	43.72	0.66	Horizontal	Peak
5218.25	28.39	37.27	74.00	36.73	8.88	Horizontal	Peak
7283.31	27.62	42.66	74.00	31.34	15.04	Horizontal	Peak

Band: I		Worst mode: 802.11a			Test channel: CH _M		
Frequency (MHz)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Factor (dB)	Test value	Polarization
1913.56	22.34	16.66	74.00	57.34	-5.68	Vertical	Peak
4560.25	26.97	32.57	74.00	41.43	5.60	Vertical	Peak
6196.44	28.12	38.99	74.00	35.01	10.87	Vertical	Peak
8575.81	29.84	45.56	74.00	28.44	15.72	Vertical	Peak
1499.38	21.84	16.21	74.00	57.79	-5.63	Horizontal	Peak
2139.75	22.43	18.83	74.00	55.17	-3.60	Horizontal	Peak
3533.59	29.20	30.38	74.00	43.62	1.18	Horizontal	Peak
4395.75	27.34	32.21	74.00	41.79	4.87	Horizontal	Peak

Band: I		Worst mode: 802.11a			Test channel: CH _H		
Frequency (MHz)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Factor (dB)	Test value	Polarization
1674.16	22.90	16.75	74.00	57.25	-6.15	Vertical	Peak
3167.88	29.93	30.60	74.00	43.40	0.67	Vertical	Peak
3498.34	28.36	29.39	74.00	44.61	1.03	Vertical	Peak
4326.72	27.56	31.64	74.00	42.36	4.08	Vertical	Peak
1603.66	22.24	15.97	74.00	58.03	-6.27	Horizontal	Peak
3861.13	28.09	30.50	74.00	43.50	2.41	Horizontal	Peak
5215.31	28.71	37.61	74.00	36.39	8.90	Horizontal	Peak
6641.47	28.68	41.96	74.00	32.04	13.28	Horizontal	Peak

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.
3. Measuring frequencies from 1 GHz to 40GHz.
4. Test 802.11a, 802.11n ,802.11ac mode,all modulations have been tested,only worst case is reported

Band:II		Worst mode: 802.11a			Test channel: CH _L		
Frequency (MHz)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Factor (dB)	Test value	Polarization
1841.59	23.11	17.30	74.00	56.70	-5.81	Vertical	Peak
3792.09	28.59	30.55	74.00	43.45	1.96	Vertical	Peak
6991.03	27.58	41.74	74.00	32.26	14.16	Vertical	Peak
9241.16	29.07	46.27	74.00	27.73	17.20	Vertical	Peak
1503.78	22.53	16.88	74.00	57.12	-5.65	Horizontal	Peak
3608.50	29.38	30.84	74.00	43.16	1.46	Horizontal	Peak
6068.66	27.82	38.46	74.00	35.54	10.64	Horizontal	Peak
8004.47	29.68	45.88	74.00	28.12	16.20	Horizontal	Peak

Band:II		Worst mode: 802.11a			Test channel: CH _M		
Frequency (MHz)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Factor (dB)	Test value	Polarization
1514.06	22.67	16.95	74.00	57.05	-5.72	Vertical	Peak
3220.75	29.86	30.45	74.00	43.55	0.59	Vertical	Peak
6628.25	28.11	41.35	74.00	32.65	13.24	Vertical	Peak
8167.50	28.56	44.68	74.00	29.32	16.12	Vertical	Peak
1851.88	23.16	17.34	74.00	56.66	-5.82	Horizontal	Peak
4168.09	28.06	31.70	74.00	42.30	3.64	Horizontal	Peak
6343.31	27.89	39.01	74.00	34.99	11.12	Horizontal	Peak
7320.03	29.57	44.68	74.00	29.32	15.11	Horizontal	Peak

Band: II		Worst mode: 802.11a			Test channel: CH _H		
Frequency (MHz)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Factor (dB)	Test value	Polarization
1818.09	22.93	17.12	74.00	56.88	-5.81	Vertical	Peak
4044.72	28.12	31.24	74.00	42.76	3.12	Vertical	Peak
6731.06	27.97	41.36	74.00	32.64	13.39	Vertical	Peak
8146.94	29.41	45.60	74.00	28.40	16.19	Vertical	Peak
1562.53	22.69	16.65	74.00	57.35	-6.04	Horizontal	Peak
3872.88	29.69	32.18	74.00	41.82	2.49	Horizontal	Peak
5959.97	27.86	38.13	74.00	35.87	10.27	Horizontal	Peak
7173.16	28.98	43.82	74.00	30.18	14.84	Horizontal	Peak

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.
3. Measuring frequencies from 1 GHz to 40GHz.
4. Test 802.11a, 802.11n, 802.11ac mode, all modulations have been tested, only worst case is reported

Band: III		Worst mode: 802.11a			Test channel: CH _L		
Frequency (MHz)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Factor (dB)	Test value	Polarization
1276.13	22.42	16.79	74.00	57.21	-5.63	Vertical	Peak
2733.13	23.81	24.90	74.00	49.10	1.09	Vertical	Peak
4616.06	26.98	32.85	74.00	41.15	5.87	Vertical	Peak
7240.72	28.19	43.20	74.00	30.80	15.01	Vertical	Peak
1458.25	22.31	16.70	74.00	57.30	-5.61	Horizontal	Peak
3056.25	29.02	29.15	74.00	44.85	0.13	Horizontal	Peak
5686.78	28.05	36.87	74.00	37.13	8.82	Horizontal	Peak
7976.56	29.08	45.30	74.00	28.70	16.22	Horizontal	Peak

Band: III		Worst mode: 802.11a			Test channel: CH _M		
Frequency (MHz)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Factor (dB)	Test value	Polarization
1393.63	22.46	16.88	74.00	57.12	-5.58	Vertical	Peak
2812.44	23.25	25.14	74.00	48.86	1.89	Vertical	Peak
5742.59	28.12	37.25	74.00	36.75	9.13	Vertical	Peak
7982.44	29.19	45.40	74.00	28.60	16.21	Vertical	Peak
1769.63	22.53	16.64	74.00	57.36	-5.89	Horizontal	Peak
3529.19	28.66	29.83	74.00	44.17	1.17	Horizontal	Peak
6904.38	27.19	41.29	74.00	32.71	14.10	Horizontal	Peak
8484.75	30.23	45.71	74.00	28.29	15.48	Horizontal	Peak

Band: III		Worst mode: 802.11a			Test channel: CH _H		
Frequency (MHz)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Factor (dB)	Test value	Polarization
1727.03	22.21	16.19	74.00	57.81	-6.02	Vertical	Peak
3633.47	29.42	30.92	74.00	43.08	1.50	Vertical	Peak
6620.91	27.90	41.12	74.00	32.88	13.22	Vertical	Peak
7945.72	28.51	44.77	74.00	29.23	16.26	Vertical	Peak
2282.22	22.67	20.23	74.00	53.77	-2.44	Horizontal	Peak
4949.47	26.82	34.33	74.00	39.67	7.51	Horizontal	Peak
5792.53	28.15	37.65	74.00	36.35	9.50	Horizontal	Peak
10811.25	28.81	46.53	74.00	27.47	17.72	Horizontal	Peak

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.
3. Measuring frequencies from 1 GHz to 40GHz.
4. Test 802.11a, 802.11n, 802.11ac mode, all modulations have been tested, only worst case is reported

Band: IV			Worst mode: 802.11a			Test channel: CH _L	
Frequency (MHz)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Factor (dB)	Test value	Polarization
1732.91	23.35	17.35	74.00	56.65	-6.00	Vertical	Peak
3624.66	30.26	31.74	74.00	42.26	1.48	Vertical	Peak
5717.63	28.08	37.03	74.00	36.97	8.95	Vertical	Peak
7123.22	27.97	42.53	74.00	31.47	14.56	Vertical	Peak
1364.25	23.58	18.00	74.00	56.00	-5.58	Horizontal	Peak
3188.44	29.78	30.56	74.00	43.44	0.78	Horizontal	Peak
5751.41	27.81	37.01	74.00	36.99	9.20	Horizontal	Peak
7738.63	28.82	44.20	74.00	29.80	15.38	Horizontal	Peak

Band: IV			Worst mode: 802.11a			Test channel: CH _M	
Frequency (MHz)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Factor (dB)	Test value	Polarization
1912.09	22.55	16.86	74.00	57.14	-5.69	Vertical	Peak
4103.47	28.18	31.45	74.00	42.55	3.27	Vertical	Peak
6830.94	28.79	42.27	74.00	31.73	13.48	Vertical	Peak
7884.03	28.93	45.08	74.00	28.92	16.15	Vertical	Peak
1593.38	23.02	16.78	74.00	57.22	-6.24	Horizontal	Peak
2808.03	23.64	25.60	74.00	48.40	1.96	Horizontal	Peak
4764.41	27.31	34.12	74.00	39.88	6.81	Horizontal	Peak
6217.00	27.52	38.42	74.00	35.58	10.90	Horizontal	Peak

Band: IV			Worst mode: 802.11a			Test channel: CH _H	
Frequency (MHz)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Factor (dB)	Test value	Polarization
1781.38	23.64	17.78	74.00	56.22	-5.86	Vertical	Peak
4930.38	27.32	34.70	74.00	39.30	7.38	Vertical	Peak
7625.53	28.50	44.26	74.00	29.74	15.76	Vertical	Peak
9596.59	29.60	46.73	74.00	27.27	17.13	Vertical	Peak
1496.44	21.84	16.21	74.00	57.79	-5.63	Horizontal	Peak
4193.06	28.77	32.55	74.00	41.45	3.78	Horizontal	Peak
5788.13	27.89	37.35	74.00	36.65	9.46	Horizontal	Peak
7904.59	29.35	45.65	74.00	28.35	16.30	Horizontal	Peak

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.
3. Measuring frequencies from 1 GHz to 40GHz.
4. Test 802.11a, 802.11n, 802.11ac mode, all modulations have been tested, only worst case is reported

-----End of Report-----