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TEST REPORT

Report No.: CHTEW20010018

Report Verification:

Project No...... SHT1911051203EW

FCC ID.....: 2ADE3NMC003

Applicant's name.....: WUXI IDATA TECHNOLOGY COMPANY LTD.

Address...... Floor 11, Building B1, Wuxi Binhu National Sensing Information

Center, No. 999 Gaolang East Road, Wuxi, China

Manufacturer...... WUXI IDATA TECHNOLOGY COMPANY LTD.

Address...... Floor 11, Building B1, Wuxi Binhu National Sensing Information

Center, No. 999 Gaolang East Road, Wuxi, China

Test item description New Mobile Computer

Trade MarkiData

Model/Type reference.....i iData K1

Listed Model(s) K1,H2,K1S,K1P,K1C,K1T,iData H2,M1,iData K1S,iData

K1C,iData K1T,iData K1P,iData K1 Pro,iData K1 Plus,iData K1

Cold, iData K1 5G, iData K1 Cold-Chain, iData K1 RFID

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

Date of receipt of test sample.......... Dec 16, 2019

Date of testing...... Dec 17, 2019- Jan 02, 2020

Date of issue...... Jan 03, 2020

Result...... PASS

Compiled by

(Position+Printed name+Signature): File administrator Silvia Li

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(Position+Printed name+Signature): RF Manager Hans Hu

Plans 1 va

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

Address....... 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road,

Tianliao, Gongming, Shenzhen, China

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The test report merely correspond to the test sample.

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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	2020-01-03	Original

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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
5.4	Maximum Power Spectral Density	15.407(a)	PASS
5.5	26dB Bandwidth and 99% Ocuppy bandwith	15.407(a)	PASS
5.6	6dB Bandwidth	15.407(a)	PASS
5.7	Band edge	15.407(b)	PASS
5.8	Radiated Spurious Emissions	15.209	PASS
5.9	Frequency Stability	15.407(g)	PASS

Note:

The measurement uncertainty is not included in the test result.

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3. **SUMMARY**

3.1. Client Information

Applicant:	WUXI IDATA TECHNOLOGY COMPANY LTD.
Address:	Floor 11, Building B1, Wuxi Binhu National Sensing Information Center, No. 999 Gaolang East Road, Wuxi, China
Manufacturer:	WUXI IDATA TECHNOLOGY COMPANY LTD.
Address:	Floor 11,Building B1,Wuxi Binhu National Sensing Information Center,No.999 Gaolang East Road,Wuxi ,China

3.2. Product Description

Name of EUT: New Mobile Computer	
Trade Mark:	iData
Model No.:	iData K1
Listed Model(s):	K1,H2,K1S,K1P,K1C,K1T,iData H2,M1,iData K1S,iData K1C,iData K1T,iData K1P,iData K1 Pro,iData K1 Plus,iData K1 Cold,iData K1 5G,iData K1 Cold-Chain,iData K1 RFID
Power supply:	DC 3.8V
Hardware version:	H162XO
Software version:	K1V200R001C01B017

3.3. Radio Specification Description

Support type*1	⊠ 802.11a	⊠ 802.11n(HT20)	⊠ 802.11n(HT40)	
	⊠ 802.11ac(HT20)	⊠ 802.11ac(HT40)	⊠ 802.11ac(HT80)	
Function:	Outdoor AP	☐ Indoor AP	☐ Fixed P2P	
Modulation:	BPSK, QPSK, 16Q	AM, 64QAM		
	⊠ Band I:	5150MHz~5250MHz		
Operation from the same of	☐ Band II: 5250MHz~5350MHz			
Operation frequency:	☐ Band III: 5470MHz~5725MHz			
	☑ Band IV:	5725MHz~5850MHz		
	20MHz:	802.11ac,802.11n, 802.1	l1a	
Supported Bandwidth	40MHz:	802.11ac,802.11n		
	80MHz: 802.11ac			
Antenna type:	PIFA Antenna			
Antenna gain:	-3.0dBi			

Note:

^{*1:} only show the RF function associated with this report.

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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			
	Туре	Accreditation Number		
	CNAS	L1225		
Qualifications	A2LA	3902.01		
	FCC	762235		
	Canada	5377A		

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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 blue front.

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

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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:

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

4.5. Testing environmental condition

Туре	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.

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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	2019/10/26	2020/10/25		
•	Artificial Mains	SCHWARZBECK	HTWE0113	NNLK 8121	573	2019/10/23	2020/10/22		
•	Pulse Limiter	R&S	HTWE0033	ESH3-Z2	100499	2019/10/23	2020/10/22		
•	RF Connection Cable	HUBER+SUHNER	HTWE0113-02	ENVIROFLE X_142	EF-NM- BNCM-2M	2019/10/23	2020/10/22		
•	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	2021/09/29	
•	EMI Test Receiver	R&S	HTWE0099	ESCI	100900	2019/10/26	2020/10/25	
•	Loop Antenna	R&S	HTWE0170	HFH2-Z2	100020	2018/04/02	2021/04/01	
•	Ultra-Broadband Antenna	SCHWARZBECK	HTWE0119	VULB9163	546	2017/04/05	2020/04/04	
•	Pre-Amplifer	SCHWARZBECK	HTWE0295	BBV 9742	N/A	2019/11/14	2020/11/13	
•	RF Connection Cable	HUBER+SUHNER	HTWE0062- 01	N/A	N/A	2019/08/21	2020/08/20	
•	RF Connection Cable	HUBER+SUHNER	HTWE0062- 02	SUCOFLEX 104	501184/4	2019/05/27	2020/05/26	
•	Test Software	R&S	N/A	ES-K1	N/A	N/A	N/A	

•	Radiated emis	sion-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	2021/09/26
•	Spectrum Analyzer	R&S	HTWE0098	FSP40	100597	2019/10/26	2020/10/25
•	Horn Antenna	SCHWARZBECK	HTWE0126	9120D	1011	2017/04/01	2020/03/31
•	Horn Antenna	SCHWARZBECK	HTWE0103	BBHA9170	25841	2017/03/27	2020/03/26
•	Broadband Horn Antenna	SCHWARZBECK	HTWE0103	BBHA9170	BBHA9170472	2018/10/11	2021/10/10
•	Pre-amplifier	CD	HTWE0071	PAP-0102	12004	2019/11/14	2020/11/13
•	Broadband Pre- amplifier	SCHWARZBECK	HTWE0201	BBV 9718	9718-248	2019/05/23	2020/05/22
•	RF Connection Cable	HUBER+SUHNER	HTWE0120-01	6m 18GHz S Serisa	N/A	2019/05/10	2020/05/09
•	RF Connection Cable	HUBER+SUHNER	HTWE0120-02	6m 3GHz RG Serisa	N/A	2019/05/10	2020/05/09
•	RF Connection Cable	HUBER+SUHNER	HTWE0120-03	6m 3GHz RG Serisa	N/A	2019/05/10	2020/05/09
•	RF Connection Cable	HUBER+SUHNER	HTWE0120-04	6m 3GHz RG Serisa	N/A	2019/05/10	2020/05/09
•	RF Connection Cable	HUBER+SUHNER	HTWE0121-01	6m 18GHz S Serisa	N/A	2019/05/10	2020/05/09
•	Test Software	Audix	N/A	E3	N/A	N/A	N/A

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•	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			
0	Radio communication tester	R&S	CMW500	137688-Lv	2019/10/26	2020/10/25			

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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 responseble 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
⊠ Passeu	

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



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5.2. AC Conducted Emission

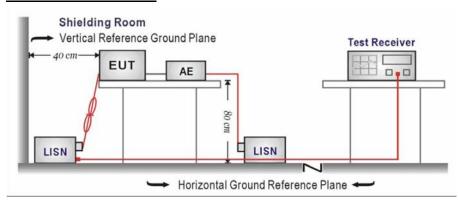
LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.207

Fragues ov rop go (MHz)	Limit (dBuV)			
Frequency range (MHz)	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

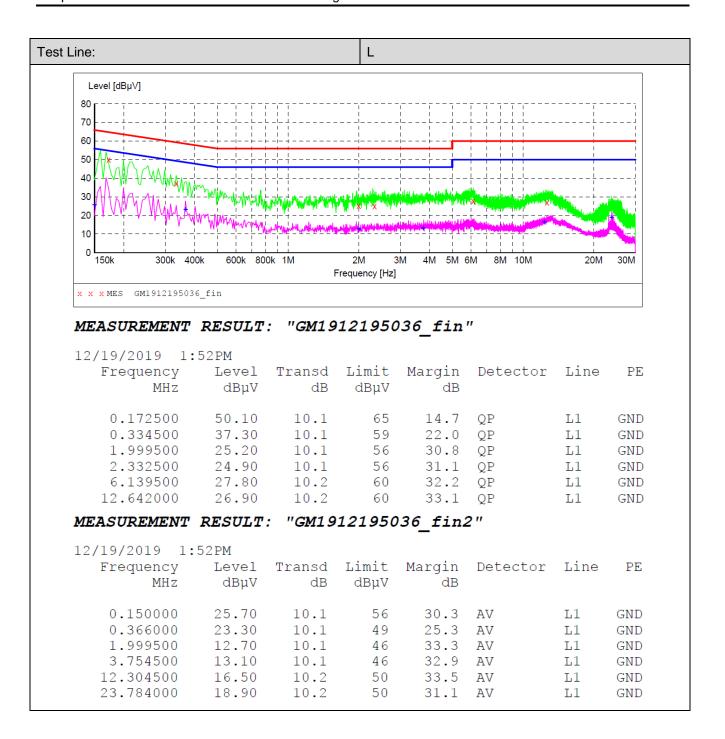
- 1. The EUT was setup according to ANSI C63.10 requirements.
- 2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface.
- 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:

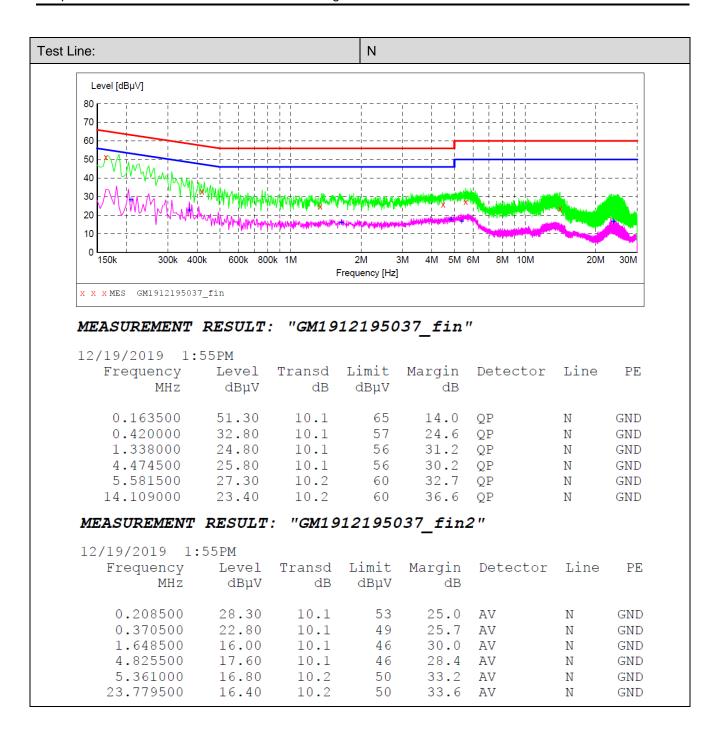
Please refer to the clause 4.3

TEST RESULT

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5.3. Maximum Conducted Output Power

LIMIT

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

For the 5.15~5.25GHz band:

Outdoor AP

The maximum conducted output power (P_{out}) shall not exceed the lesser of 1W (30dBm). if G_{Tx} >6dBi, then P_{out} =30-(G_{Tx} -6). e.i.r.p. at any elevation angle above 30 degrees \leq 125mW (21dBm)

Indoor AP

The maximum conducted output power (P_{out}) shall not exceed the lesser of 1W (30dBm). if G_{Tx} >6dBi, then Pout =30-(G_{Tx} -6).

Point-to-point AP

The maximum conducted output power (P_{out}) shall not exceed the lesser of 1W (30dBm). if G_{Tx} >23dBi, then Pout =30-(G_{Tx} -23).

Client devices

For the 5.25~5.35GHz band:

The maximum conducted output power (P_{out}) shall not exceed the lesser of 250mW (24dBm) or 11dBm+10 log B, where B is the 26dB emission bandwith in MHz.

if G_{Tx} >6dBi, then P_{out} =24-(G_{Tx} -6).

For the 5.47~5.725GHz band:

The maximum conducted output power (P_{out}) shall not exceed the lesser of 250mW (24dBm) or 11dBm+10 log B, where B is the 26dB emission bandwith in MHz.

if G_{Tx} >6dBi, then P_{out} =24-(G_{Tx} -6).

The maximum conducted output power (Pout) shall not exceed the lesser of 250W (24dBm).

if G_{Tx} >6dBi, then Pout =24-(G_{Tx} -6).

For the 5.725~5.85GHz band:

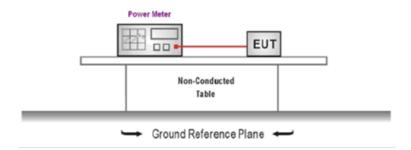
Point-to-multipoint systems (P2M)

The maximum conducted output power (P_{out}) shall not exceed the lesser of 1W (30dBm). if G_{Tx} >6dBi, then P_{out} =30-(G_{Tx} -6).

Point-to-point systems (P2P)

The maximum conducted output power (Pout) shall not exceed the lesser of 1W (30dBm).

TEST CONFIGURATION



TEST PROCEDURE

- 1. The EUT was tested according to KDB789033 Section E-3-b)
- 2. The maximum conducted output power may be measured using a broadband AVG RF power meter.
- Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor.
- The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter.
- 5. Record the measurement data.

6. TEST MODE:

Please refer to the clause 4.3

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TEST RESULT

 $oxed{oxed}$ Passed $oxed{oxed}$ Not Applicable

TEST Data

Please refer to appendix A on the appendix report

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5.4. Power Spectral Density

LIMIT

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

For the 5.15~5.25GHz band:

Outdoor AP

The peak power spectral density (PSD) shall not exceed the lesser of 17dBm/MHz. if G_{Tx} >6dBi, then PSD =17-(G_{Tx} -6).

Indoor AP

The peak power spectral density (PSD) shall not exceed the lesser of 17dBm/MHz. if G_{Tx} >6dBi, then PSD =17-(G_{Tx} -6).

Point-to-point AP

The peak power spectral density (PSD) shall not exceed the lesser of 17dBm/MHz. if G_{Tx} >23dBi, then PSD =17-(G_{Tx} -23).

Client devices

For the 5.25~5.35GHz band:

The peak power spectral density (PSD) shall not exceed the lesser of 11dBm/MHz. if G_{Tx} >6dBi, then PSD =11-(G_{Tx} -6).

For the 5.47~5.725GHz band:

The peak power spectral density (PSD) shall not exceed the lesser of 11dBm/MHz. if G_{T_x} >6dBi, then PSD =11-(G_{T_x} -6).

The peak power spectral density (PSD) shall not exceed the lesser of 11dBm/MHz.

if G_{Tx} >6dBi, then PSD =11-(G_{Tx} -6).

For the 5.725~5.85GHz band:

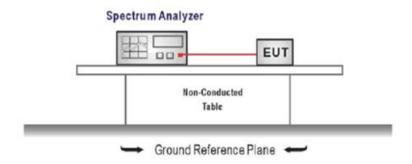
Point-to-multipoint systems (P2M)

The peak power spectral density (PSD) shall not exceed the lesser of 30dBm/500kHz. if $G_{Tx}>6dBi$, then PSD = $30-(G_{Tx}-6)$.

Point-to-point systems (P2P)

The peak power spectral density (PSD) shall not exceed the lesser of 30dBm/500kHz.

TEST CONFIGURATION



TEST PROCEDURE

- According KDB 789033 D02 Section F
- Analyzer was setting as follow:

Center frequency: test channel

Span was set to encompass the entire emission bandwidth of the signal

RBW=1MHz for devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz

RBW=500kHz for devices operating in the band 5.725-5.85 GHz

VBW ≥ 3 RBW

Number of sweep points > 2 x (span/RBW)

Sweep time = auto

Detector = Peak

Trigger was set to free run for all modes, trace was averaged over 100 sweeps

3. The peak search function of the spectrum analyzer was used to find the peak of the spectrum.

Report No.: Page: **TEST MODE:** Please refer to the clause 4.3 **TEST RESULT** ■ Not Applicable □ Passed

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Issued:

2020-01-03

TEST Data

Please refer to appendix B on the appendix report

CHTEW20010018

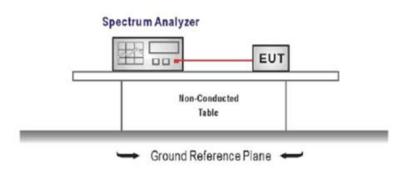
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5.5. 26dB bandwidth and 99% Occupy bandwidth

LIMIT

The bandwidth at 26dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating at its maximum duty cycle, at its maximum power control level, as defined in KDB 789033 D02, and at the appropriate frequencies. The spectrum analyzer's bandwidth measurement function is configured to measure the 26dB bandwidth.

TEST CONFIGURATION



TEST PROCEDURE

- 1. According KDB 789033 D02 Section C
- 2. Connect the antenna port(s) to the spectrum analyzer input.
- 3. Configure the spectrum analyzer as shown below (enter all losses between the transmitter output and the spectrum analyzer).

Center Frequency = Channel center frequency

Span=2 x emission bandwidth

RBW = 1% to 5% of the emission bandwidth

VBW>3 x RBW

Sweep time= auto couple

Detector = Peak

Trace mode = max hold

- 4. Place the radio in continuous transmit mode, allow the trace to stabilize, view the transmitter wave form on the spectrum analyzer.
- 5. Measure the maximum width of the emission that is 26 dB down from the maximum of the emission, and use the 99 % power bandwidth function of the instrument

TEST MODE:

Please refer to the clause 4.3

TEST RESULT

TEST Data

Please refer to appendix C and D on the appendix report

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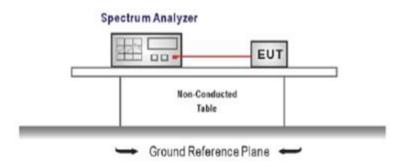
5.6. 6dB Bandwidth

LIMIT

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

Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz

TEST CONFIGURATION



TEST PROCEDURE

- 1. C Connect the antenna port(s) to the spectrum analyzer input.
- 2. Configure the spectrum analyzer as shown below (enter all losses between the transmitter output and the spectrum analyzer).

Center Frequency =test channel center frequency

Span=2 x emission bandwidth

RBW = 100 kHz, VBW ≥ 3 × RBW

Sweep time= auto couple

Detector = Peak

Trace mode = max hold

- 3. Place the radio in continuous transmit mode, allow the trace to stabilize, view the transmitter wave form on the spectrum analyzer.
- 4. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission, and record the pertinent measurements.

TEST MODE:

Please refer to the clause 4.3

TEST RESULT

TEST Data

Please refer to appendix E on the appendix report

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5.7. Band edge

LIMIT

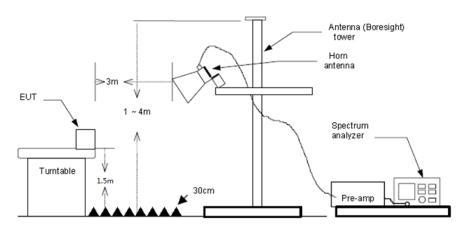
FCC CFR Title 47 Part 15 Subpart E Section 15.407(b)

	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					
	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					
5725-5850 MHz	5.72GHz-5.725GHz	15.6*dBm/MHz to 27dBm/MHz (110.8dBuV/m to* 122.2dBuV/m)	Peak					
3723-3630 MITZ	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



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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 waspositioned 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. Thisis repeated for both horizontal and vertical polarization of the antenna. In order to find themaximum emission, all of the interface cables were manipulated according to ANSI C63.10:2013 on radiated measurement.
- The receiver set as follow: RBW=1MHz, VBW=3MHz PEAK detector for Peak value. RBW=1MHz, VBW=3MHz RMS detector for Average value.

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Please refer to the clause 4.3

TEST	RESU	LTS
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□ Passed	□ Not Applicable
⊠ Passed	■ Not Applicable

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TEST Data

Band: I&II			orst mode: 802	2.11a	Test o		
Frequency (MHz)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Factor (dB)	Test value	Polarization
5150.00	17.85	26.74	54.00	27.26	8.89	Vertical	Average
5150.00	23.23	32.12	68.20	36.08	8.89	Vertical	Peak
5150.00	18.44	27.33	54.00	26.67	8.89	Horizontal	Average
5150.00	25.42	34.31	68.20	33.89	8.89	Horizontal	Peak

Band: I&II			orst mode: 802	2.11a	Test o		
Frequency (MHz)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Factor (dB)	Test value	Polarization
5350.00	17.86	26.40	54.00	27.60	8.54	Vertical	Average
5350.00	25.20	33.74	68.20	34.46	8.54	Vertical	Peak
5350.00	17.36	25.90	54.00	28.10	8.54	Horizontal	Average
5350.00	24.27	32.81	68.20	35.39	8.54	Horizontal	Peak

Band: III	Worst mode: 802.11a				Test o		
Frequency (MHz)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Factor (dB)	Test value	Polarization
5470.00	17.21	26.20	54.00	27.80	8.99	Vertical	Average
5470.00	23.23	32.22	68.20	35.98	8.99	Vertical	Peak
5470.00	17.69	26.68	54.00	27.32	8.99	Horizontal	Average
5470.00	23.84	32.83	68.20	35.37	8.99	Horizontal	Peak

Band: III	Worst mode: 802.11a				Test o		
Frequency (MHz)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Factor (dB)	Test value	Polarization
5725.00	17.71	26.71	54.00	27.29	9.00	Vertical	Average
5725.00	27.29	36.29	68.20	31.91	9.00	Vertical	Peak
5725.00	16.80	25.80	54.00	28.20	9.00	Horizontal	Average
5725.00	23.77	32.77	68.20	35.43	9.00	Horizontal	Peak

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Band: IV	Worst mode: 802.11a				Test o		
Frequency (MHz)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Factor (dB)	Test value	Polarization
5725.00	16.98	25.98	54.00	28.02	9.00	Vertical	Average
5725.00	24.22	33.22	68.20	34.98	9.00	Vertical	Peak
5725.00	17.43	26.43	54.00	27.57	9.00	Horizontal	Average
5725.00	22.66	31.66	68.20	36.54	9.00	Horizontal	Peak

Band: IV	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	17.57	27.34	54.00	26.66	9.77	Vertical	Average
5850.00	23.00	32.77	68.20	35.43	9.77	Vertical	Peak
5850.00	16.21	25.98	54.00	28.02	9.77	Horizontal	Average
5850.00	21.94	31.71	68.20	36.49	9.77	Horizontal	Peak

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

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5.8. 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

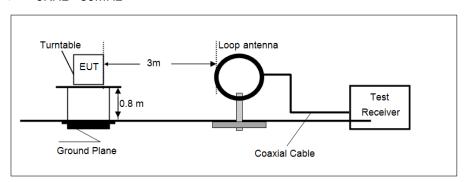
Note: Limit dBuV/m @3m = Limit dBuV/m @300m + 40*log(300/3)= Limit dBuV/m @300m +80,

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

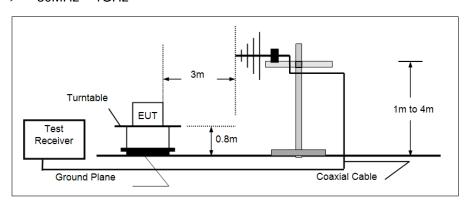
Unwanted emissions below	v 1GHz and Restricted band emissions	above 1GHz
Frequency	Limit (dBuV/m @3m)	Value
30MHz-88MHz	40.00	Quasi-peak
88MHz-216MHz	43.50	Quasi-peak
216MHz-960MHz	46.00	Quasi-peak
960MHz-1GHz	54.00	Quasi-peak
Above 1GHz	54.00	Average
Above IGHZ	74.00	Peak

TEST CONFIGURATION

➤ 9KHz ~30MHz

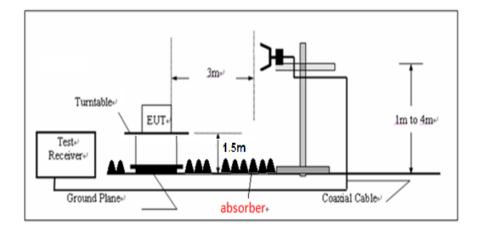


> 30MHz ~ 1GHz



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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 ELIT measured by the peak detector is 3 dB lower than the a

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

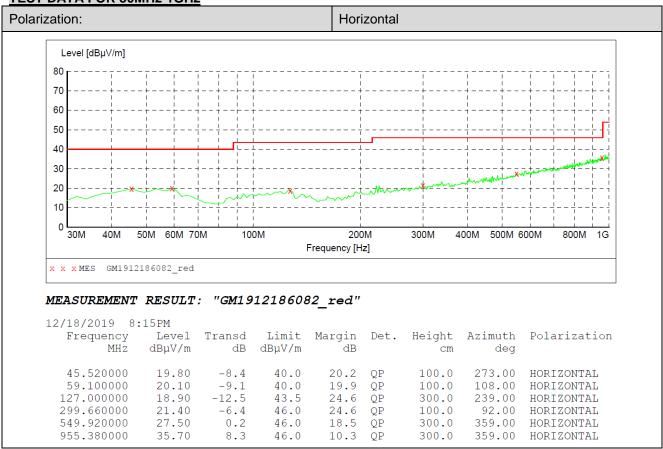
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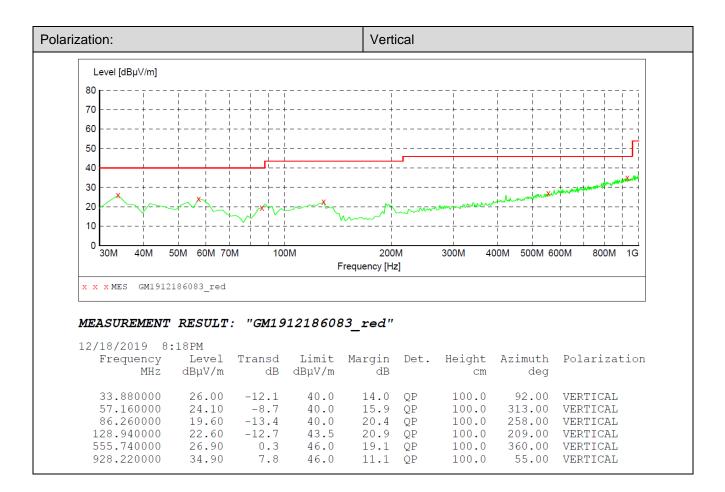
TEST Data

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





Remark:

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

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TEST DATA FOR Above 1GHz

Band: I		Wo	orst mode: 802	2.11a	Test channel: CH _L		
Frequency (MHz)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Factor (dB)	Test value	Polarization
1342.22	23.67	18.10	74.00	55.90	-5.57	Vertical	Peak
3154.66	29.28	29.88	74.00	44.12	0.60	Vertical	Peak
5158.03	28.35	37.25	74.00	36.75	8.90	Vertical	Peak
7528.59	28.33	43.87	74.00	30.13	15.54	Vertical	Peak
1273.19	23.48	17.84	74.00	56.16	-5.64	Horizontal	Peak
3207.53	29.55	30.30	74.00	43.70	0.75	Horizontal	Peak
5227.06	29.60	38.44	74.00	35.56	8.84	Horizontal	Peak
8119.03	28.92	45.20	74.00	28.80	16.28	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
1318.72	22.65	17.08	74.00	56.92	-5.57	Vertical	Peak
3150.25	29.79	30.37	74.00	43.63	0.58	Vertical	Peak
5230.00	27.47	36.29	74.00	37.71	8.82	Vertical	Peak
7471.31	28.63	44.03	74.00	29.97	15.40	Vertical	Peak
1340.75	23.13	17.56	74.00	56.44	-5.57	Horizontal	Peak
3195.78	29.95	30.77	74.00	43.23	0.82	Horizontal	Peak
5115.44	27.64	36.47	74.00	37.53	8.83	Horizontal	Peak
7242.19	27.86	42.88	74.00	31.12	15.02	Horizontal	Peak

Band: I		Wo	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	
1235.00	22.95	17.21	74.00	56.79	-5.74	Vertical	Peak	
3172.28	30.36	31.06	74.00	42.94	0.70	Vertical	Peak	
5256.44	27.78	36.46	74.00	37.54	8.68	Vertical	Peak	
7527.13	29.06	44.59	74.00	29.41	15.53	Vertical	Peak	
1240.88	23.06	17.34	74.00	56.66	-5.72	Horizontal	Peak	
3280.97	31.06	30.94	74.00	43.06	-0.12	Horizontal	Peak	
6156.78	27.91	38.72	74.00	35.28	10.81	Horizontal	Peak	
8042.66	29.78	46.03	74.00	27.97	16.25	Horizontal	Peak	

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Band: II		Wo	orst mode: 802	2.11a	Test channel: CH _L			
Frequency (MHz)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Factor (dB)	Test value	Polarization	
1320.19	23.04	17.47	74.00	56.53	-5.57	Vertical	Peak	
3220.75	29.57	30.16	74.00	43.84	0.59	Vertical	Peak	
5213.84	27.80	36.71	74.00	37.29	8.91	Vertical	Peak	
7096.78	29.11	43.53	74.00	30.47	14.42	Vertical	Peak	
1408.31	22.68	17.10	74.00	56.90	-5.58	Horizontal	Peak	
3154.66	30.27	30.87	74.00	43.13	0.60	Horizontal	Peak	
5138.94	27.75	36.62	74.00	37.38	8.87	Horizontal	Peak	
7408.16	28.20	43.57	74.00	30.43	15.37	Horizontal	Peak	

Band: II		Wo	orst mode: 802	Test channel: CH _M			
Frequency (MHz)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Factor (dB)	Test value	Polarization
1217.38	23.13	17.35	74.00	56.65	-5.78	Vertical	Peak
3182.56	30.26	31.01	74.00	42.99	0.75	Vertical	Peak
5156.56	27.52	36.42	74.00	37.58	8.90	Vertical	Peak
7176.09	27.69	42.55	74.00	31.45	14.86	Vertical	Peak
1227.66	23.57	17.81	74.00	56.19	-5.76	Horizontal	Peak
3150.25	29.61	30.19	74.00	43.81	0.58	Horizontal	Peak
4726.22	27.89	34.45	74.00	39.55	6.56	Horizontal	Peak
6676.72	27.81	41.21	74.00	32.79	13.40	Horizontal	Peak

Band: II		Wo	orst mode: 802	2.11a	Test channel: CH _H		
Frequency (MHz)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Factor (dB)	Test value	Polarization
1207.09	22.84	17.03	74.00	56.97	-5.81	Vertical	Peak
3176.69	29.31	30.03	74.00	43.97	0.72	Vertical	Peak
4789.38	27.01	33.99	74.00	40.01	6.98	Vertical	Peak
6808.91	28.84	42.12	74.00	31.88	13.28	Vertical	Peak
1264.38	23.08	17.42	74.00	56.58	-5.66	Horizontal	Peak
3175.22	30.13	30.84	74.00	43.16	0.71	Horizontal	Peak
4673.34	27.76	33.98	74.00	40.02	6.22	Horizontal	Peak
6666.44	27.70	41.06	74.00	32.94	13.36	Horizontal	Peak

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Band: III		Worst mode: 802.11a			Test o		
Frequency (MHz)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Factor (dB)	Test value	Polarization
1311.38	23.22	17.65	74.00	56.35	-5.57	Vertical	Peak
3134.09	30.13	30.63	74.00	43.37	0.50	Vertical	Peak
4867.22	28.16	35.30	74.00	38.70	7.14	Vertical	Peak
6707.56	28.37	41.82	74.00	32.18	13.45	Vertical	Peak
1212.97	23.51	17.71	74.00	56.29	-5.80	Horizontal	Peak
3179.63	29.49	30.22	74.00	43.78	0.73	Horizontal	Peak
5219.72	27.22	36.10	74.00	37.90	8.88	Horizontal	Peak
7026.28	28.04	42.28	74.00	31.72	14.24	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
1356.91	23.04	17.46	74.00	56.54	-5.58	Vertical	Peak
3182.56	30.73	31.48	74.00	42.52	0.75	Vertical	Peak
5193.28	27.47	36.44	74.00	37.56	8.97	Vertical	Peak
7455.16	28.54	43.93	74.00	30.07	15.39	Vertical	Peak
1337.81	22.95	17.38	74.00	56.62	-5.57	Horizontal	Peak
3175.22	29.17	29.88	74.00	44.12	0.71	Horizontal	Peak
5140.41	27.44	36.31	74.00	37.69	8.87	Horizontal	Peak
7491.88	29.07	44.48	74.00	29.52	15.41	Horizontal	Peak

Band: III		Worst mode: 802.11a			Test o		
Frequency (MHz)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Factor (dB)	Test value	Polarization
1270.25	23.77	18.12	74.00	55.88	-5.65	Vertical	Peak
3206.06	29.75	30.52	74.00	43.48	0.77	Vertical	Peak
5069.91	28.24	36.75	74.00	37.25	8.51	Vertical	Peak
7487.47	28.41	43.81	74.00	30.19	15.40	Vertical	Peak
1230.59	22.78	17.03	74.00	56.97	-5.75	Horizontal	Peak
3150.25	31.63	32.21	74.00	41.79	0.58	Horizontal	Peak
4874.56	27.09	34.24	74.00	39.76	7.15	Horizontal	Peak
7546.22	28.86	44.48	74.00	29.52	15.62	Horizontal	Peak

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Band: IV		Worst mode: 802.11a			Test		
Frequency (MHz)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Factor (dB)	Test value	Polarization
1349.56	22.79	17.22	74.00	56.78	-5.57	Vertical	Peak
3148.78	29.89	30.46	74.00	43.54	0.57	Vertical	Peak
4877.50	26.96	34.11	74.00	39.89	7.15	Vertical	Peak
6682.59	27.64	41.05	74.00	32.95	13.41	Vertical	Peak
1324.59	22.98	17.41	74.00	56.59	-5.57	Horizontal	Peak
3148.78	29.39	29.96	74.00	44.04	0.57	Horizontal	Peak
4884.84	28.15	35.31	74.00	38.69	7.16	Horizontal	Peak
6619.44	27.71	40.92	74.00	33.08	13.21	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
1262.91	23.47	17.80	74.00	56.20	-5.67	Vertical	Peak
3154.66	30.55	31.15	74.00	42.85	0.60	Vertical	Peak
4733.56	27.53	34.13	74.00	39.87	6.60	Vertical	Peak
6689.94	28.48	41.92	74.00	32.08	13.44	Vertical	Peak
1221.78	23.51	17.74	74.00	56.26	-5.77	Horizontal	Peak
3176.69	29.02	29.74	74.00	44.26	0.72	Horizontal	Peak
4902.47	27.10	34.30	74.00	39.70	7.20	Horizontal	Peak
6682.59	27.96	41.37	74.00	32.63	13.41	Horizontal	Peak

Band: IV		Worst mode: 802.11a			Test o		
Frequency (MHz)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Factor (dB)	Test value	Polarization
1270.25	33.62	27.97	74.00	46.03	-5.65	Vertical	Peak
3195.78	33.18	34.00	74.00	40.00	0.82	Vertical	Peak
4817.28	30.75	37.82	74.00	36.18	7.07	Vertical	Peak
6892.63	29.21	43.24	74.00	30.76	14.03	Vertical	Peak
1315.78	23.05	17.48	74.00	56.52	-5.57	Horizontal	Peak
3188.44	29.32	30.10	74.00	43.90	0.78	Horizontal	Peak
4856.94	27.34	34.46	74.00	39.54	7.12	Horizontal	Peak
6769.25	28.58	41.86	74.00	32.14	13.28	Horizontal	Peak

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. 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

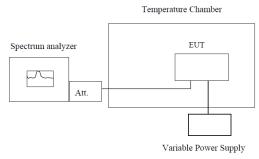
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5.9. Frequency stability

LIMIT

Within Operation Band

TEST CONFIGURATION



Note: Measurement setup for testing on Antenna connector

TEST PROCEDURE

- 1. The equipment under test was connected to an external power supply.
- 2. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators.
- 3. The EUT was placed inside the temperature chamber.
- 4. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25℃ operating frequency as reference frequency.
- 5. Turn EUT off and set the chamber temperature to −20 °C. After the temperature stabilized for approximately 30 minutes recorded the frequency.
- 6. Repeat step measure with 10℃ increased per stage until the highest temperature of +50℃ reached..

TEST MODE:

Please refer to the clause 4.3

TEST RESULT

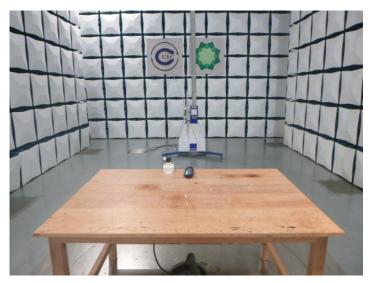
Please refer to appendix F on the appendix report

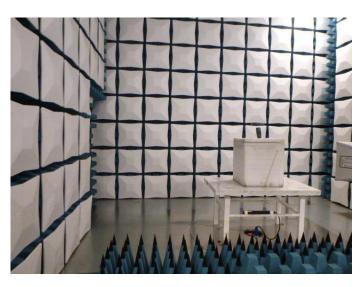
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6. TEST SETUP PHOTOS

Radiated Emission







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AC Conducted Emission



7. EXTERANAL AND INTERNAL PHOTOS

Reference to the test report No. : CHTEW20010012

8. APPENDIX REPORT