FCC RADIO TEST REPORT

FCC ID: 2AVI7-91DA3C

Product： Smartee G3

Trade Name： N/A

Model Name： SM3001

Serial Model： SM3001+, SM3001x, PCHQ1

Report No.： HK1910082514-11E

Prepared for

Webee Corporation

SUITE# W014. 440 N. Wolfe Road, Sunnyvale, CA 94085

Prepared by

Shenzhen HUAK Testing Technology Co., Ltd.

1F, B2 Building, Junfeng Zhongcheng Zhizao Innovation Park,
Heping Community, Fuhai Street, Bao'an District, Shenzhen, China

TEST RESULT CERTIFICATION

Applicant's name ..... : Webee Corporation

Address ..... : SUITE# W014. 440 N. Wolfe Road, Sunnyvale, CA 94085

Manufacture's Name ..... : Webee Corporation

Address ..... : SUITE# W014. 440 N. Wolfe Road, Sunnyvale, CA 94085

Product description

Product name ..... : Smartee G3

Trade Mark ..... : N/A

Model and/or type reference : SM3001, SM3001+, SM3001x, PCHQ1

Standards ..... : FCC Rules and Regulations Part 15 Subpart C Section 15.249
ANSI C63.10: 2013

This device described above has been tested by Shenzhen HUAK Testing Technology Co., Ltd., and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Date of Test .....:

Date (s) of performance of tests.....: Oct. 06, 2019 ~Dec. 25, 2019

Date of Issue .....: Dec. 25, 2019

Test Result .....: Pass

Testing Engineer : Gary Qian

(Gary Qian)

Technical Manager : Eden Hu

(Eden Hu)

Authorized Signatory : Jason Zhou

(Jason Zhou)

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1 TEST SUMMARY

1.1 TEST PROCEDURES AND RESULTS

DESCRIPTION OF TEST		RESULT
AC Power Line Conducted Emission	§ 15.207	COMPLIANT
Field Strength of Fundamental	§ 15.249 (a) (d)/ §15.209	COMPLIANT
Spurious Emissions	§ 15.249 (a) (d)/ §15.209	COMPLIANT
Band Edge	§ 15.249 (a) (d)/ §15.209	COMPLIANT
20dB Occupied Bandwidth	§ 15.215 (c)	COMPLIANT
Antenna requirement	§ 15.203	COMPLIANT

1.2 TEST FACILITY

Test Firm : Shenzhen HUAK Testing Technology Co., Ltd.

Address : 1/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.The testing quality system of our laboratory meets with ISO/IEC-17025 requirements, which is approved by CNAS. This approval result is accepted by MRA of APLAC.

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:2017 General Requirements) for the Competence of testing Laboratories.

Designation Number: CN1229

Test Firm Registration Number: 616276

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission. The acceptance letter from the FCC is maintained in our files.

1.3 MEASUREMENT UNCERTAINTY

Measurement Uncertainty

Conducted Emission Expanded Uncertainty	=	2.23dB, k=2
Radiated emission expanded uncertainty(9kHz-30MHz)	=	3.08dB, k=2
Radiated emission expanded uncertainty(30MHz-1000MHz)	=	4.42dB, k=2
Radiated emission expanded uncertainty(Above 1GHz)	=	4.06dB, k=2

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Smartee G3
Trade Mark	N/A
Model Name	SM3001
Serial No.	SM3001+, SM3001x, PCHQ1
Model Difference	All model's the function, software and electric circuit are the same, only with a product color and model named different. Test sample model: SM3001.
FCC ID	2AVI7-91DA3C
Antenna Type	internal Antenna
Antenna Gain	1dBi
Operation frequency	908.40 MHz, 916.00 MHz
Number of Channels	2CH
Modulation Type	ASK
Battery	N/A
Power Source	DC5V/3A From Adapter

2.2 Carrier Frequency of Channels

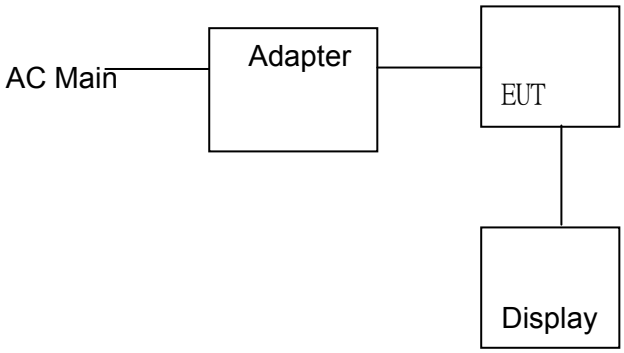
Operation Frequency each of channel	
Channel	Frequency
01	908.40 MHz
02	916.00 MHz

2.3 Operation of EUT during testing

Operating Mode
The mode is used: Transmitting mode

2.4 DESCRIPTION OF TEST SETUP

Operation of EUT during Conducted, Radiation testing:



Operation of EUT during Above1GHz Radiation testing:

- Adapter information
  Model: TEKA018-0503000UK
  Input: 100-240V~ 50/60Hz, 0.5Amax
  Output: 5V, 3000mA

- Display information
  Model: 24PFF3661/T3
  Input: AC 120V/60Hz

2.5 MEASUREMENT INSTRUMENTS LIST

Item	Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
CONDUCTED EMISSIONS TEST					
1	LISN	R&S	ENV216	HKE-002	2018.12.27
2	LISN	R&S	ENV216	HKE-029	2018.12.27
3	EMI Test Receiver	R&S	ESCI-7	HKE-010	2018.12.27
RADIATED EMISSION TEST					
1	Broadband antenna	Schwarzbeck	VULB 9163	HKE-012	201912.27
2	Horn antenna	Schwarzbeck	9120D	HKE-013	2018.12.27
3	Receiver	R&S	ESCI 7	HKE-010	2018.12.27
4	Position controller	Taiwan MF	MF7802	HKE-011	201912.27
5	Preamplifier	EMCI	EMC051845SE	HKE-015	2018.12.27
6	Preamplifier	Agilent	83051A	HKE-016	2018.12.27
7	High pass filter unit	Tonscend	JS0806-F	HKE-055	2018.12.27
8	Spectrum analyzer	Agilent	N9020A	HKE-048	2018.12.27
9	Spectrum analyzer	Agilent	N9020A	HKE-048	2018.12.27
10	Signal generator	Agilent	83630A	HKE-028	2018.12.27
11	Signal generator	Agilent	N5182A	HKE-029	2018.12.27
12	RF automatic control unit	Tonscend	JS0806-2	HKE-060	2018.12.27
13	Power meter	Agilent	E4419B	HKE-085	2018.12.27

3 CONDUCTED EMISSION TEST

3.1 Test Limit

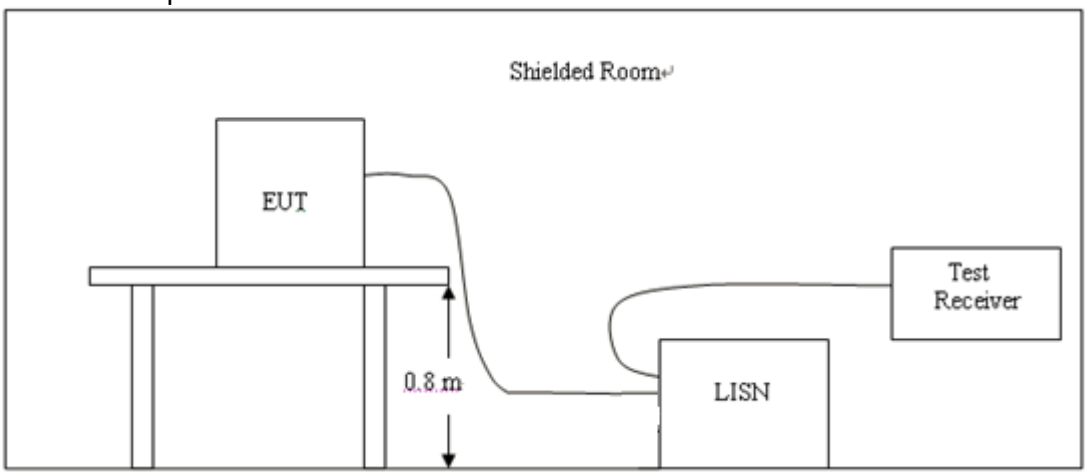
For unintentional device, according to § 15.107(a) Line Conducted Emission Limits is as following

Frequency (MHz)	Maximum RF Line Voltage(dBμV)			
	CLASS A		CLASS B	
	Q.P.	Ave.	Q.P.	Ave.
0.15~0.50	79	66	66~56*	56~46*
0.50~5.00	73	60	56	46
5.00~30.0	73	60	60	50

* Decreasing linearly with the logarithm of the frequency

For intentional device, according to §15.207(a) Line Conducted Emission Limit is same as above table.

3.2 Test Setup



3.3 Test Procedure

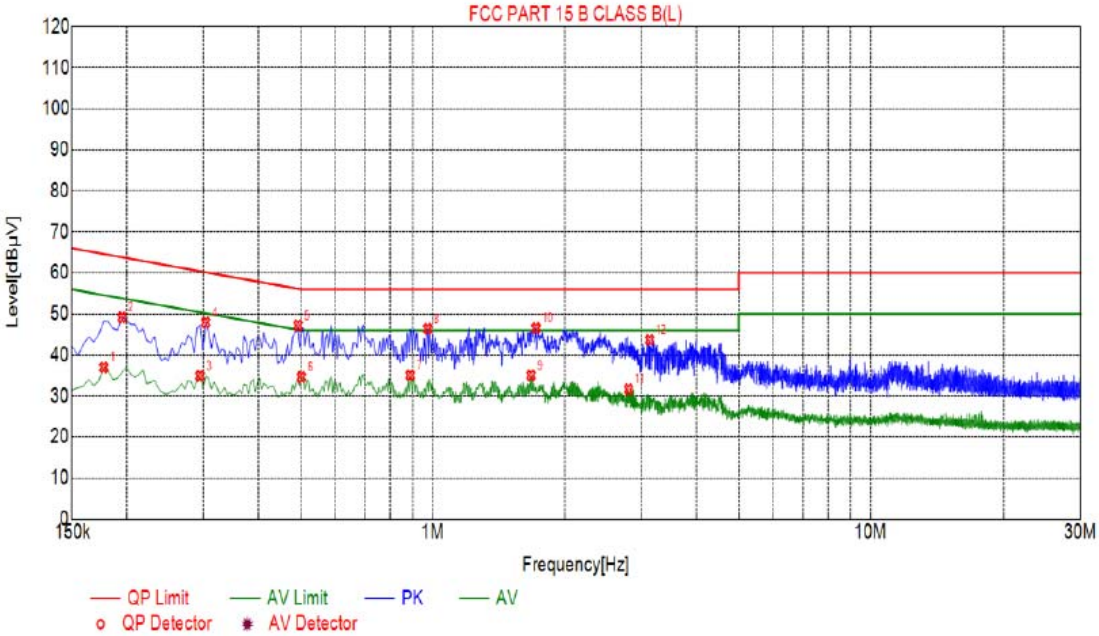
1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. A wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10.
2. Support equipment, if needed, was placed as per ANSI C63.10.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
4. If a EUT received DC power from the USB Port of Notebook PC, the PC's adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5. All support equipments received AC power from a second LISN, if any.
6. The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer/Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.

3.4 Test Result

PASS

All the test modes completed for test. only the worst result of of AC240V/60Hz was reported as below:

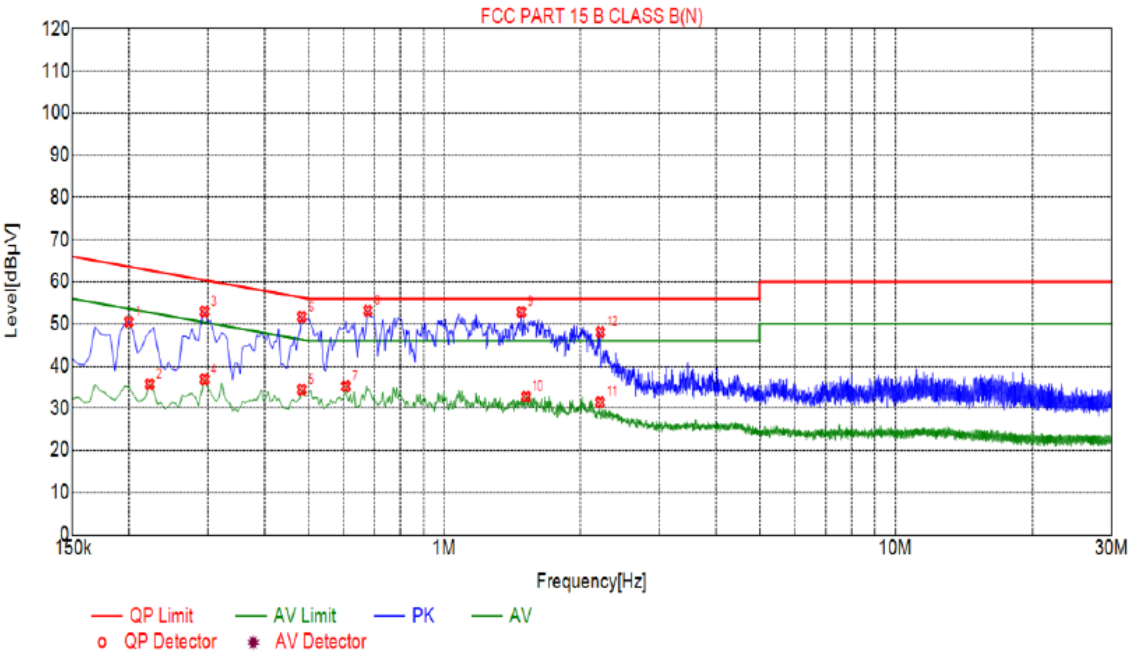
Conducted Emission on Line Terminal of the power line (150 kHz to 30MHz)



Suspected List								
NO.	Freq. [MHz]	Level [dBµV]	Factor [dB]	Limit [dBµV]	Margin [dB]	Reading [dBµV]	Detector	Type
1	0.1770	36.99	10.05	54.63	17.64	26.94	AV	L
2	0.1950	49.16	10.03	63.82	14.66	39.13	PK	L
3	0.2940	34.91	10.03	50.41	15.50	24.88	AV	L
4	0.3030	47.95	10.04	60.16	12.21	37.91	PK	L
5	0.4920	47.24	10.04	56.13	8.89	37.20	PK	L
6	0.5010	34.64	10.04	46.00	11.36	24.60	AV	L
7	0.8880	35.08	10.06	46.00	10.92	25.02	AV	L
8	0.9735	46.40	10.06	56.00	9.60	36.34	PK	L
9	1.6755	35.04	10.13	46.00	10.96	24.91	AV	L
10	1.7205	46.54	10.13	56.00	9.46	36.41	PK	L
11	2.8005	31.65	10.21	46.00	14.35	21.44	AV	L
12	3.1290	43.69	10.23	56.00	12.31	33.46	PK	L

Remark: Margin = Limit – Level

Conducted Emission on Neutral Terminal of the power line (150 kHz to 30MHz)



Suspected List								
NO.	Freq. [MHz]	Level [dBµV]	Factor [dB]	Limit [dBµV]	Margin [dB]	Reading [dBµV]	Detector	Type
1	0.1995	50.52	10.03	63.63	13.11	40.49	PK	N
2	0.2220	35.73	10.04	52.74	17.01	25.69	AV	N
3	0.2940	52.97	10.03	60.41	7.44	42.94	PK	N
4	0.2940	36.87	10.03	50.41	13.54	26.84	AV	N
5	0.4830	34.44	10.04	46.29	11.85	24.40	AV	N
6	0.4830	51.72	10.04	56.29	4.57	41.68	PK	N
7	0.6045	35.20	10.05	46.00	10.80	25.15	AV	N
8	0.6765	53.20	10.05	56.00	2.80	43.15	PK	N
9	1.4820	52.86	10.10	56.00	3.14	42.76	PK	N
10	1.5180	32.74	10.11	46.00	13.26	22.63	AV	N
11	2.2155	31.42	10.17	46.00	14.58	21.25	AV	N
12	2.2200	48.06	10.17	56.00	7.94	37.89	PK	N

Remark: Margin = Limit – Level

4 RADIATED EMISSION TEST

4.1 Test Limit

1. Limit (Field strength of the fundamental signal):

Frequency	Limit(dBuV/m@3m)	Remark
902MHz-928MHz	94.00	Average Value
	114.00	Peak Value

2. Limit (Spurious Emissions):

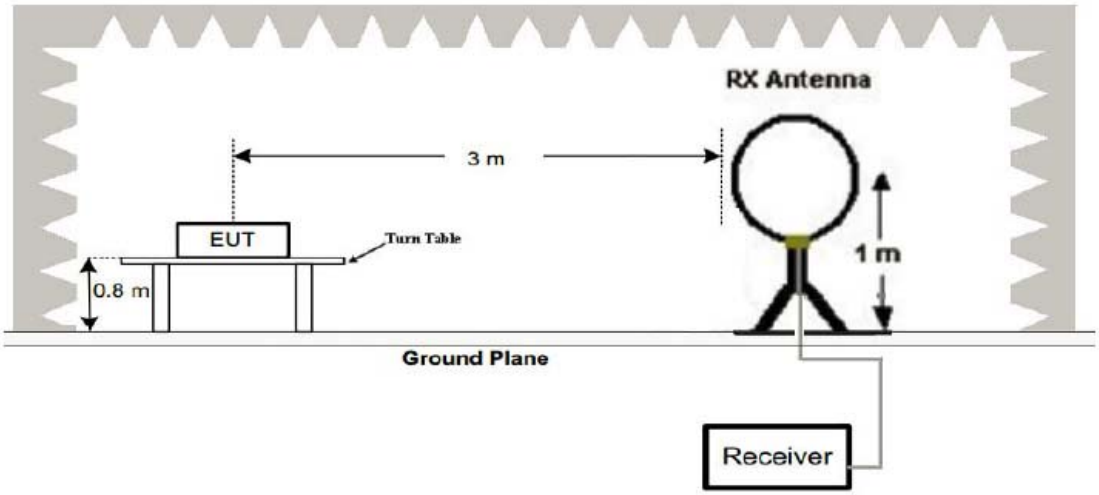
Frequency	Limit(dBuV/m@3m)	Remark
0.009-0.490	2400/F(KHz)	Quasi-peak Value
0.490-1.705	24000/F(KHz)	Quasi-peak Value
1.705-30	30	Quasi-peak Value
30MHz-88MHz	40.0	Quasi-peak Value
88MHz-216MHz	43.5	Quasi-peak Value
216MHz-960MHz	46.0	Quasi-peak Value
960MHz-1GHz	54.0	Quasi-peak Value
Above 1GHz	54.0	Average Value
	74.0	Peak Value

3. Limit (Band edge):

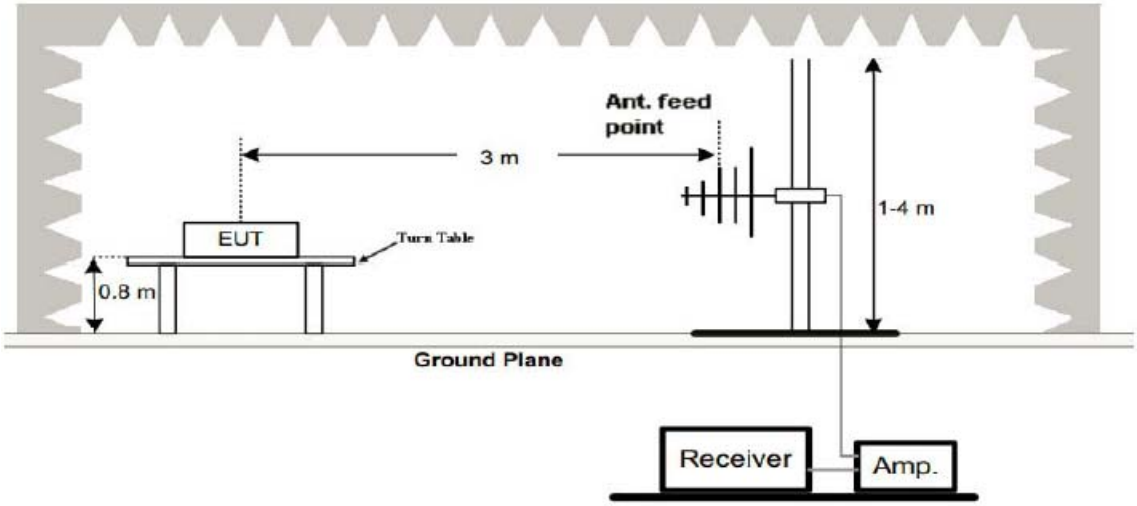
Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

4.2 Test Setup

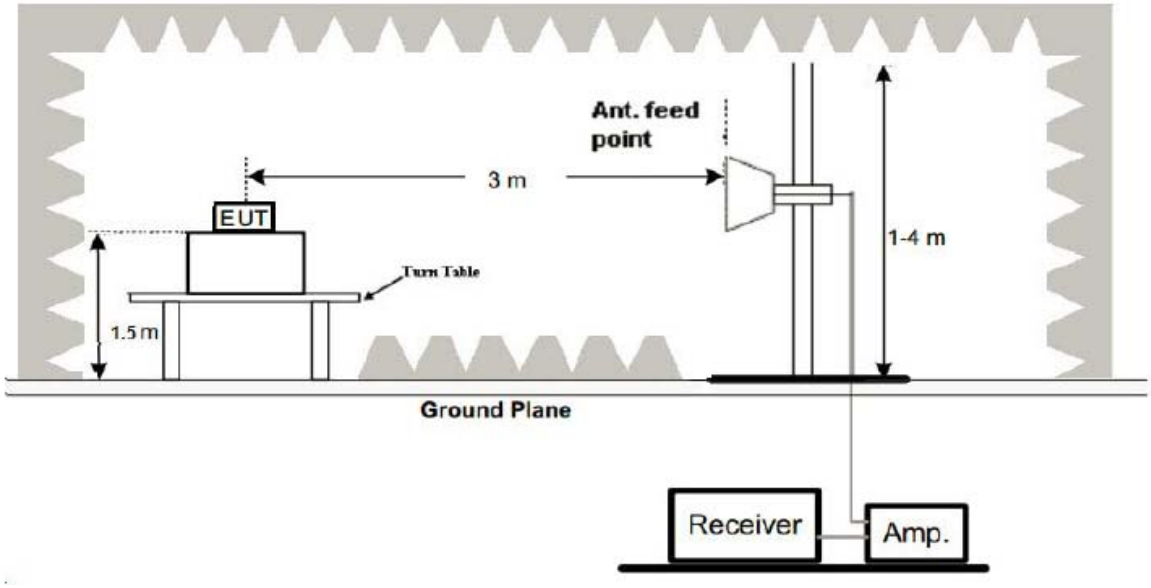
1. Radiated Emission Test-Up Frequency Below 30MHz



2. Radiated Emission Test-Up Frequency 30MHz~1GHz



3. Radiated Emission Test-Up Frequency Above 1GHz



4. Receiver Setup:

Frequency	Detector	RBW	VBW	Remark
9kHz- 150kHz	Quasi-peak	200Hz	1kHz	Quasi-peak Value
150kHz-30MHz	Quasi-peak	9kHz	30kHz	Quasi-peak Value
30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak Value
Above 1GHz	Peak	1MHz	3MHz	Peak Value
	Peak	1MHz	10Hz	Average Value

4.3 Test Procedure

1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber in below 1GHz, 1.5m above the ground in above 1GHz. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

4.4 Test Result

Field Strength of Fundamental:

Frequency (MHz)	Emission (dBuV/m)	Ant. Pol.	Limits PK/AV (dBuV/m)	Margin (dB)	Remark
908.4	94.21	H	114	-19.79	PK
908.4	81.62	H	94	-12.38	AV
908.4	94.75	V	114	-19.25	PK
908.4	82.03	V	94	-11.97	AV
916	94.14	H	114	-19.86	PK
916	81.43	H	94	-12.57	AV
916	94.82	V	114	-19.18	PK
916	82.19	V	94	-11.81	AV

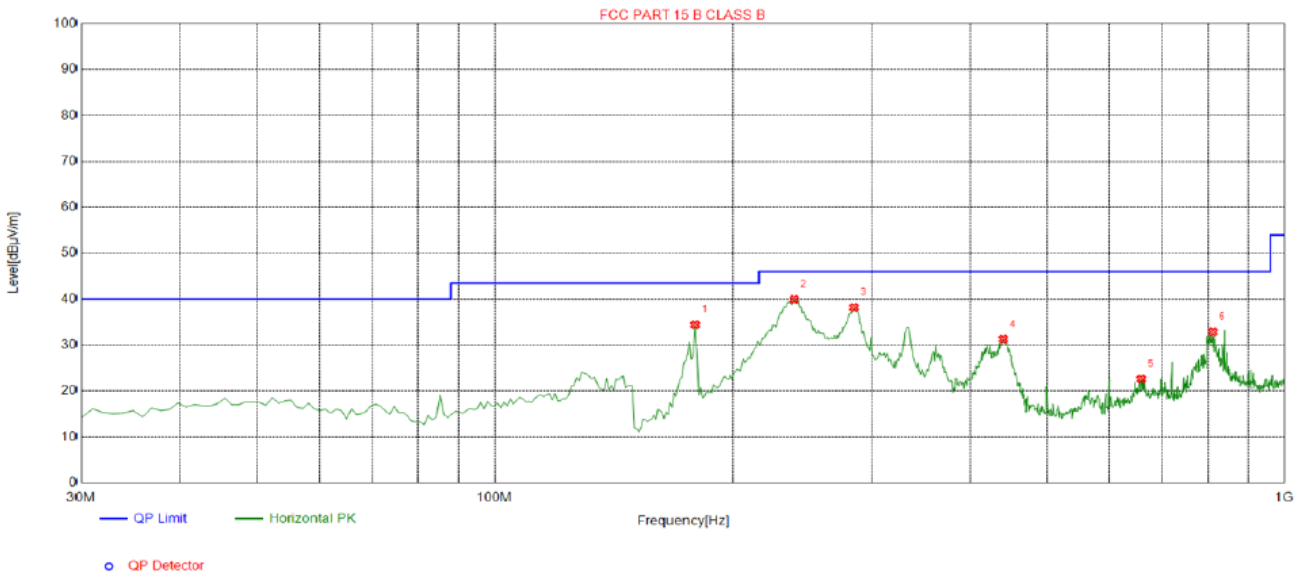
Spurious Emissions:

For 9 kHz-30MHz Test Results:

Note: The emission levels are 20 dB below the limit value, which are not reported. It is deemed to comply with the requirement.

For 30MHz-1GHz Test Results:
All the test modes completed for test. The worst case of Radiated Emission is 916MHz; the test data of this mode was reported.

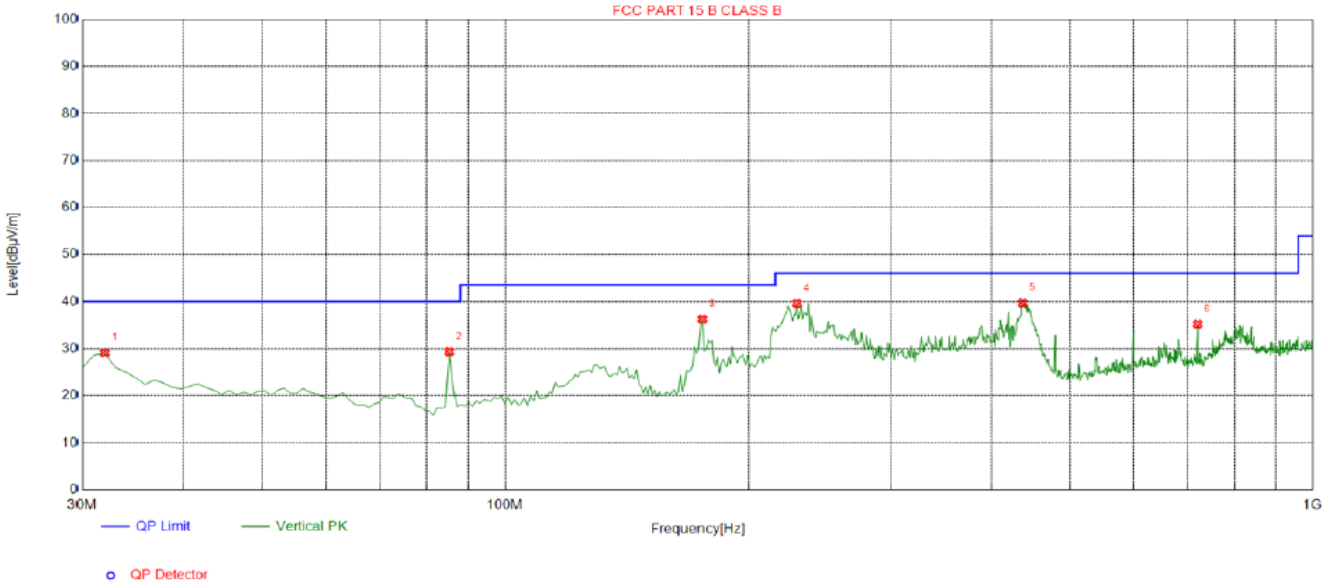
Temperature:	22℃	Relative Humidity:	46%
Test Date:	Oct. 07, 2019	Pressure:	1010hPa
Test Voltage:	DC5V/3A From Adapter	Polarization:	Horizontal
Test Mode:	Transmitting mode		



Suspected List									
NO.	Freq. [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	179.3800	-16.88	51.28	34.40	43.50	9.10	100	226	Horizontal
2	239.5200	-13.88	53.83	39.95	46.00	6.05	100	319	Horizontal
3	285.1100	-13.04	51.22	38.18	46.00	7.82	100	322	Horizontal
4	440.3100	-9.41	40.68	31.27	46.00	14.73	100	319	Horizontal
5	658.5600	-5.28	27.87	22.59	46.00	23.41	100	348	Horizontal
6	811.8200	-2.91	35.76	32.85	46.00	13.15	100	348	Horizontal

Remark: Absolute Level = Reading Level + Factor, Margin = Absolute Level – Limit
Factor = Ant. Factor + Cable Loss – Pre-amplifier

Temperature:	22°C	Relative Humidity:	46%
Test Date:	Oct. 07, 2019	Pressure:	1010hPa
Test Voltage:	DC5V/3A From Adapter	Polarization:	Vertical
Test Mode:	Transmitting mode		



Suspected List									
NO.	Freq. [MHz]	Factor [dB]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	31.9400	-16.26	45.38	29.12	40.00	10.88	100	38	Vertical
2	85.2900	-18.20	47.56	29.36	40.00	10.64	100	191	Vertical
3	175.5000	-17.06	53.34	36.28	43.50	7.22	100	286	Vertical
4	229.8200	-14.32	53.94	39.62	46.00	6.38	100	18	Vertical
5	437.4000	-9.53	49.25	39.72	46.00	6.28	100	325	Vertical
6	720.6400	-4.70	39.93	35.23	46.00	10.77	100	236	Vertical

Remark: Absolute Level = Reading Level + Factor, Margin = Absolute Level – Limit
Factor = Ant. Factor + Cable Loss – Pre-amplifier

For Above 1GHz Test Results:

Frequency (MHz)	Ant. Pol.	PK Reading (dBμV)	AV Reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin Peak(dB)
					Peak (dBμV/m)	AV (dBμV/m)			
1816.8	H	50.97	---	-4.12	46.85	---	74.00	54.00	-27.15
2725.2	H	50.76	---	-0.58	50.18	---	74.00	54.00	-23.82
1816.8	V	55.29	---	-4.17	51.12	---	74.00	54.00	-22.88
2725.2	V	51.15	---	-0.58	50.57	---	74.00	54.00	-23.43

Frequency (MHz)	Ant. Pol.	PK Reading (dBμV)	AV Reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin Peak(dB)
					Peak (dBμV/m)	AV (dBμV/m)			
1832	H	50.83	---	-4.12	46.71	---	74.00	54.00	-27.29
2748	H	50.59	---	-0.58	50.01	---	74.00	54.00	-23.99
1832	V	55.49	---	-4.17	51.32	---	74.00	54.00	-22.68
2748	V	51.22	---	-0.58	50.64	---	74.00	54.00	-23.36

Note:
1. Emission Level = Peak Reading + Correction Factor; Correction Factor = Antenna Factor + Cable loss – Pre-amplifier
2. Margin = Emission - Limit
3. The emission levels of other frequencies are very lower than the limit and not show in test report.
4. Measurements were conducted from 1 GHz to the 10th harmonic of highest fundamental frequency.
5. Data of measurement shown “---“ in the above table mean that the reading of emissions is attenuated more than 20dB below the limits or the field strength is too small to be measured.

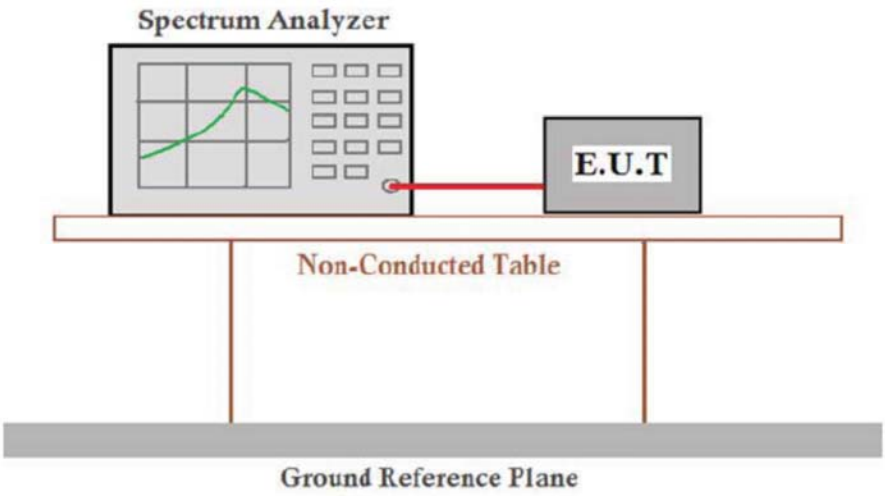
Band Edge Requirement:

Frequency (MHz)	Ant. Pol.	PK Reading (dBμV)	AV Reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin Peak(dB)
					Peak (dBμV/m)	AV (dBμV/m)			
902	H	55.15	---	-3.8	51.35	---	74	---	-22.65
928	H	55.39	---	-3.7	51.69		74	---	-22.31
902	V	54.76	---	-3.8	50.96		74	---	-23.04
928	V	53.81	---	-4.3	49.51		74	---	-24.49

Note:
1. Emission Level = Peak Reading + Correction Factor; Correction Factor = Antenna Factor + Cable loss – Pre-amplifier
2. Margin = Emission - Limit
3. The emission levels of other frequencies are very lower than the limit and not show in test report.
4. Measurements were conducted from 1 GHz to the 10th harmonic of highest fundamental frequency.
5. Data of measurement shown “---“ in the above table mean that the reading of emissions is attenuated more than 20dB below the limits or the field strength is too small to be measured.

5 OCCUPIED BANDWIDTH TEST

5.1 Test Setup



5.2 Rules and specifications

CFR 47 Part 15.215(c)

ANSI C63.10: 2013

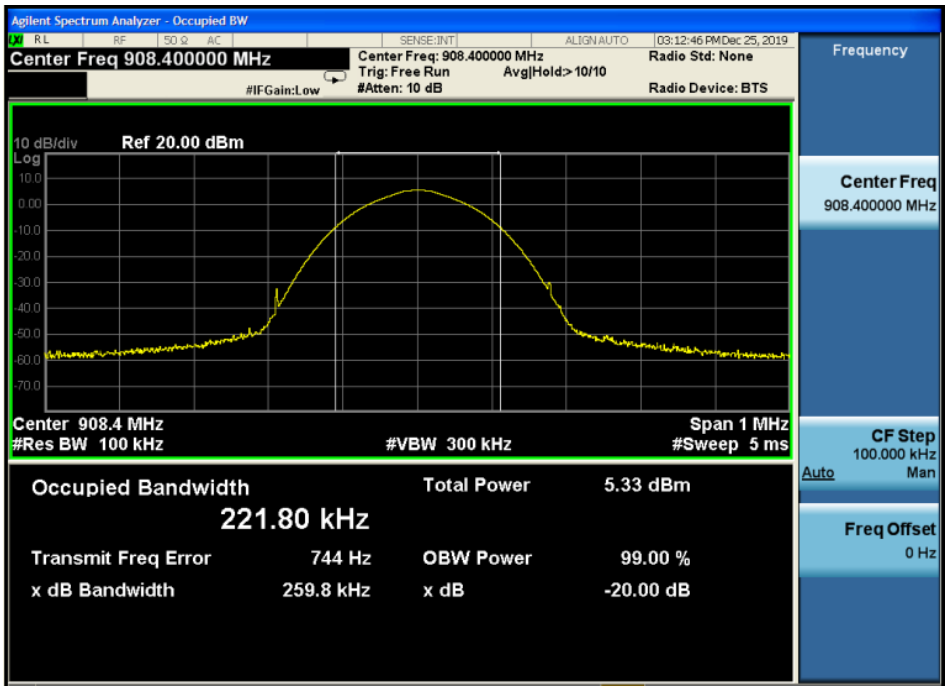
5.3 Test Procedure

1. According to the follow Test-setup, keep the relative position between the artificial antenna and the EUT.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Use the following spectrum analyzer settings for 20dB Bandwidth measurement.
   Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel; RBW⩾1% of the 20dB bandwidth; VBW⩾RBW; Sweep = auto; Detector function = peak; Trace = max hold.
4. Measure and record the results in the test report.

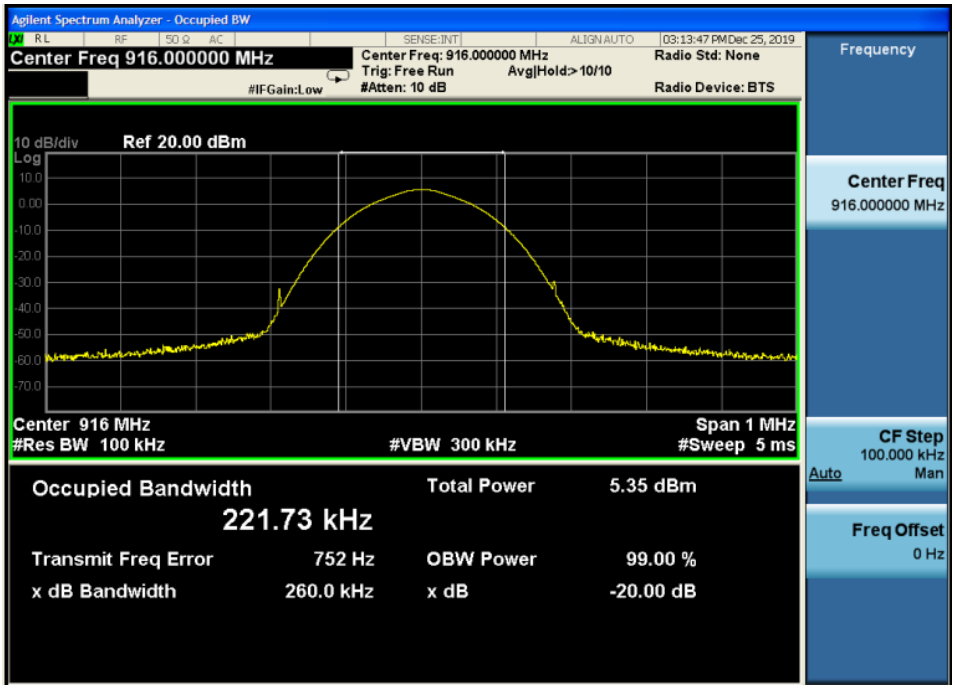
5.4 Test Result

PASS

Mode	Frequency(MHz)	20dB Bandwidth (KHz)	Limit (kHz)	Conclusion
TX	908.4	259.8	/	PASS



Mode	Frequency(MHz)	20dB Bandwidth (KHz)	Limit (kHz)	Conclusion
TX	916	260.0	/	PASS

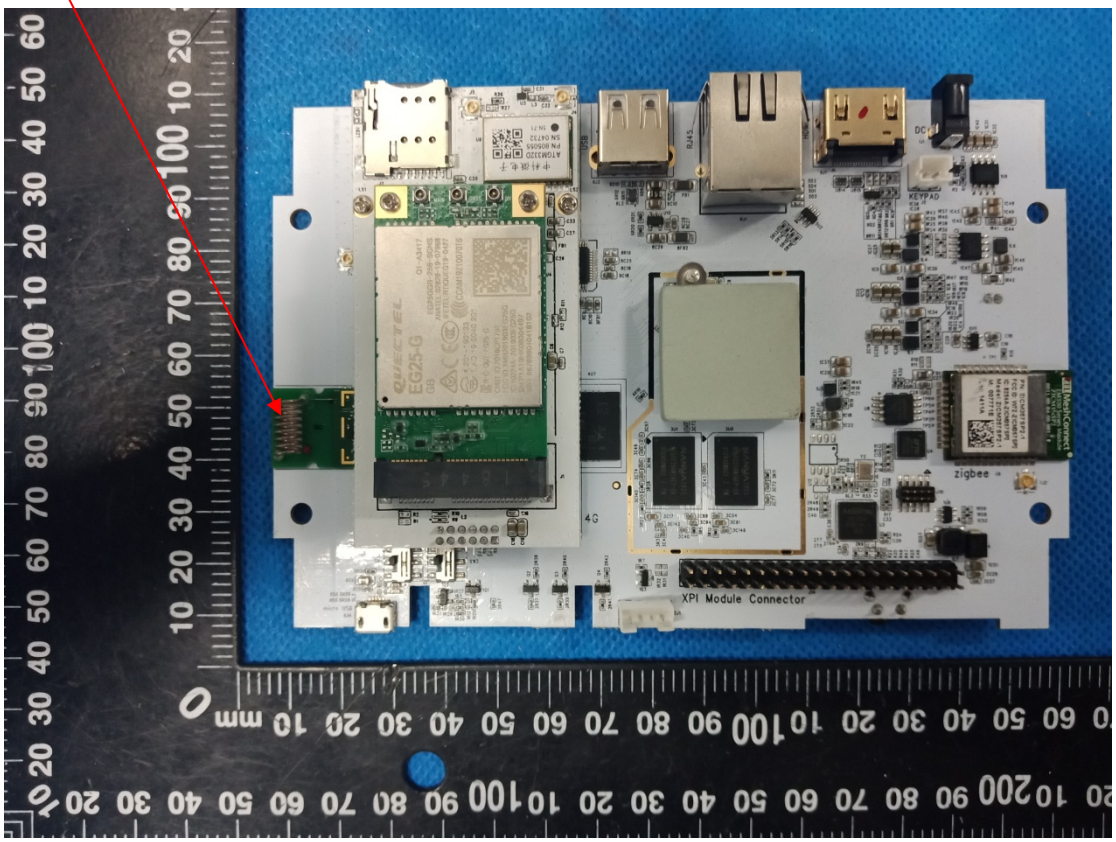


6 ANTENNA REQUIREMENT

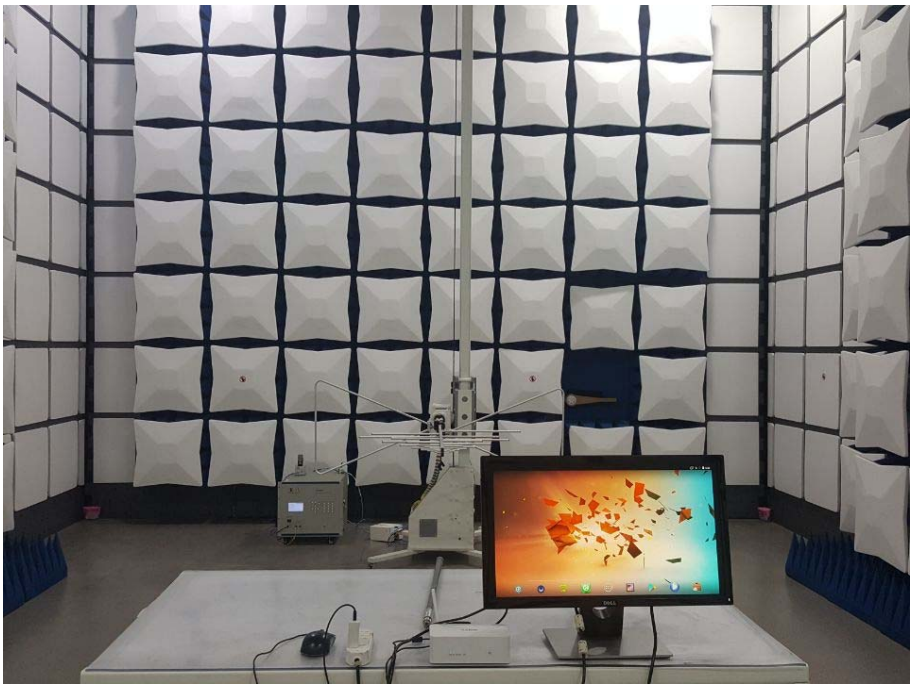
Standard Applicable:
For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

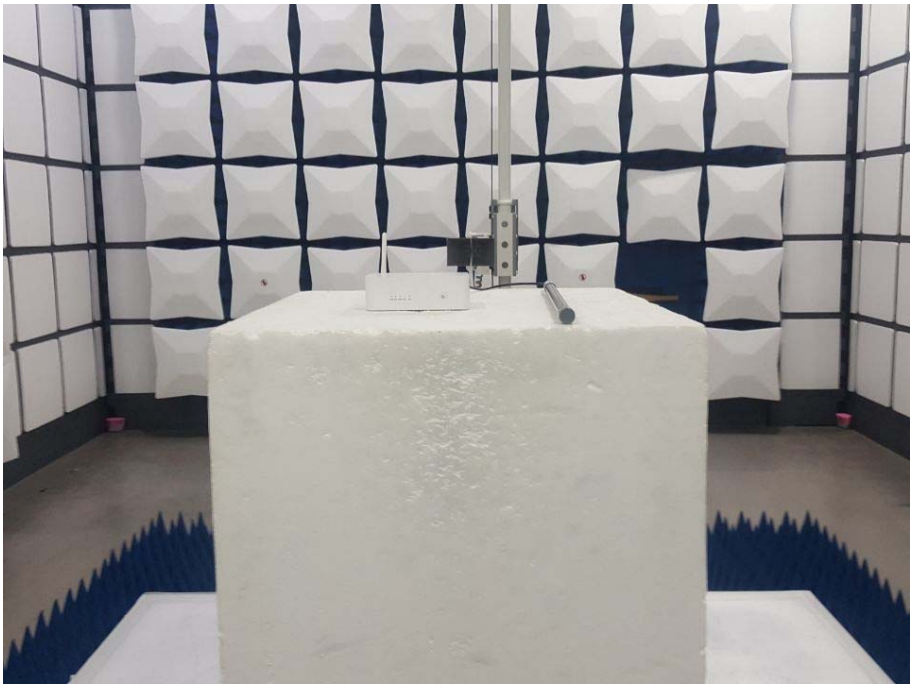
Antenna Connected Construction
The antenna used in this product is a internal Internal, The directional gains of antenna used for transmitting is 1dBi.

ANTENNA



7 PHOTOGRAPH OF TEST





8 PHOTOS OF THE EUT

Reference to the reporter : ANNEX A of external photos and ANNEX B of internal photos

---------End of test report---------