FCC RADIO TEST REPORT

FCC ID:2AT7Z-GML001Z

Product: Gravio Matrix
Trade Name: N/A
Model Name: GML001Z
Serial Model: N/A
Report No.: UNIA21011140ER-01

Prepared for

Asteria Technology Pte. Ltd.

160 ROBINSON ROAD, #19-05 SBF CENTER, SINGAPORE 068914

Prepared by

Shenzhen United Testing Technology Co., Ltd.

2F, Annex Bldg, Jiahuangyuan Tech Park, #365 Baotian 1 Rd, Tiegang Community, Xixiang Str, Bao'an District, Shenzhen, China

TEST RESULTCERTIFICATION

Applicant's name.....: Asteria Technology Pte. Ltd.

Address.....: 160 ROBINSON ROAD, #19-05 SBF CENTER, SINGAPORE 068914

Manufacture's Name.....: Asteria Technology Pte. Ltd.

Address.....: 160 ROBINSON ROAD, #19-05 SBF CENTER, SINGAPORE 068914

Product description

Product name.....: Gravio Matrix

Trade Mark.....: N/A

Model and/or type reference .: GML001Z

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 United 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 (s) of performance of tests.....: Jan. 11, 2021 ~ Mar. 18, 2021

Date of Issue.....: Mar. 23, 2021

Test Result.....: Pass

Prepared by: Bob liao

Bob liao/Editor

Reviewer: Kahn.Yang

Kahn yang/Supervisor

Approved & Authorized Signer: liuze

Liuze/Manager

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1. TEST SUMMARY

TEST PROCEDURES AND RESULTS

DESCRIPTION OF TEST	RESULT	STANGARD
CONDUCTED EMISSIONS TEST	COMPLIANT	FCC Part 15.207
RADIATED EMISSION TEST	COMPLIANT	FCC Part 15.209/15.249
BAND EDGE	COMPLIANT	FCC Part 15.249/15.205
20dB Bandwidth	COMPLIANT	FCC Part 15.215
ANTENNA REQUIREMENT	COMPLIANT	FCC Part 15.203

TEST FACILITY

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

Address :2F, Annex Bldg, JiahuangyuanTech Park, #365 Baotian 1 Rd,TiegangCommunity, XixiangStr, Bao'an District, Shenzhen,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.

Our test facility is recognized, certified, or accredited by the following organizations:

CNAS-LAB Code: L6964

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: CN1227

Test Firm Registration Number: 674885

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.

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	Gravio Matrix
Trade Mark	N/A
Model Name	GML001Z
Serial No.	N/A
Model Difference	N/A
FCC ID	2AT7Z-GML001Z
Antenna Type	Ceramics Antenna
Antenna Gain	0.5dBi
Frequency Range	2405~2480MHz
Number of Channels	16CH
Modulation Type	GFSK
Battery	N/A
PowerSource	DC 5V form adapter

2.2 Carrier Frequency of Channels

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2405	9	2445
2	2410	10	2450
3	2415	11	2455
4	2420	12	2460
5	2425	13	2465
6	2430	14	2470
7	2435	15	2475
8	2440	16	2480

2.3 Operation of EUT during testing

Operating Mode
The mode is used: Transmitting mode
Low Channel: 2405MHz
Middle Channel: 2440MHz
High Channel: 2480MHz

2.4 DESCRIPTION OF TEST SETUP

Operation of EUT during Conducted testing:

Operation of EUT duringRadiation testing:

Table forauxiliary equipment:

Equipment Description	Manufacturer	Model	Calibration Due Date
Adapter	HUAWEI	050200C01	N/A

2.5 MEASUREMENT INSTRUMENTS LIST

Item	Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
Conduction Emissions Measurement					
1	Conducted Emission Test Software	EZ-EMC	Ver.CCS-3A1-CE	N/A	N/A
2	AMN	Schwarzbeck	NNLK8121	8121370	2021.10.15
3	AMN	ETS	3810/2	00020199	2021.10.15
4	AAN	TESEQ	T8-Cat6	38888	2021.10.15
5	Pulse Limiter	CYBRTEK	EM5010	E115010056	2021.05.26
6	EMI Test Receiver	Rohde&Schwarz	ESCI	101210	2021.10.15
Radiated Emissions Measurement					
1	Radiated Emission Test Software	EZ-EMC	Ver.CCS-03A1	N/A	N/A
2	Horn Antenna	Sunol	DRH-118	A101415	2021.10.08
3	Broadband Hybrid Antenna	Sunol	JB1	A090215	2021.11.15
4	PREAMP	HP	8449B	3008A00160	2021.10.21
5	PREAMP	HP	8447D	2944A07999	2021.05.26
6	EMI TEST RECEIVER	Rohde&Schwarz	ESR3	101891	2021.10.15
7	VECTOR Signal Generator	Rohde&Schwarz	SMU200A	101521	2021.10.15
8	Signal Generator	Agilent	E4421B	MY4335105	2021.10.15
9	MXA Signal Analyzer	Agilent	N9020A	MY50510140	2021.10.15
10	MXA Signal Analyzer	Keysight	N9020A	MY51110104	2021.10.15
11	RF Power sensor	DARE	RPR3006W	15I00041SNO88	2021.06.09
12	RF Power sensor	DARE	RPR3006W	15I00041SNO89	2021.06.09
13	RF power divider	Anritsu	K241B	992289	2021.10.28
14	Wideband radio communication tester	Rohde&Schwarz	CMW500	154987	2021.11.19
15	Active Loop Antenna	Com-Power	AL-130R	10160009	2021.05.28
16	Broadband Hybrid Antennas	Schwarzbeck	VULB9163	VULB9163#958	2021.05.28
17	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1680	2021.05.28
18	Horn Antenna	A-INFOMW	LB-180400-KF	J211060660	2021.10.23
19	Microwave Broadband Preamplifier	Schwarzbeck	BBV 9721	100472	2021.05.28
20	Signal Generator	Agilent	N5183A	MY47420153	2021.05.28
21	Spctrum Analyzer	Rohde&Schwarz	FSP 40	100501	2021.05.28
22	Power Meter	KEYSIGHT	N1911A	MY50520168	2021.05.28
23	Frequency Meter	VICTOR	VC2000	997406086	2021.05.28
24	DC Power Source	HYELEC	HY5020E	055161818	2021.05.28

3. CONDUCTED EMISSIONS TEST

3.1 Conducted Power Line Emission Limit

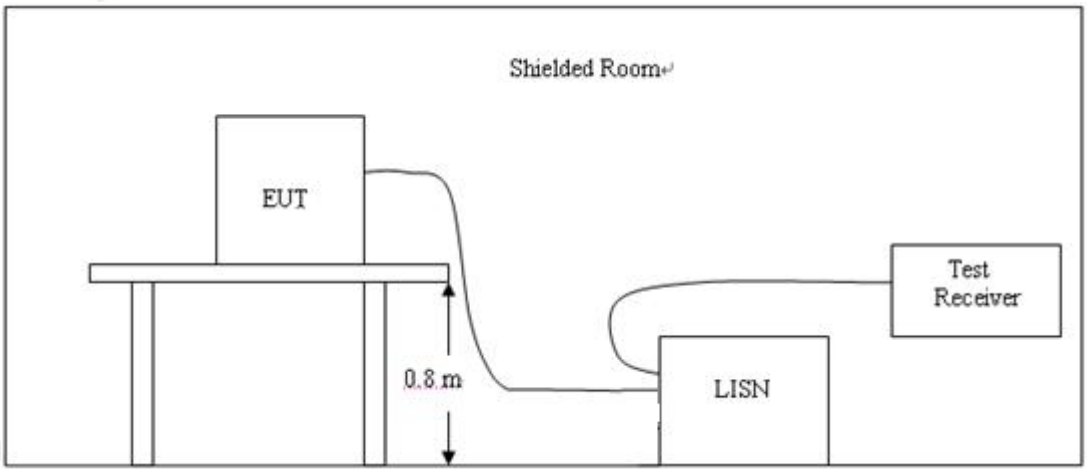
For unintentional device, according to § 15.107(a) Line Conducted Emission Limits is as following

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'smanual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed onthe 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/60Hzpower through a Line Impedance Stabilization Network (LISN) which supplied power source and wasgrounded 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 EUTusing a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has twomonitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1connected 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.

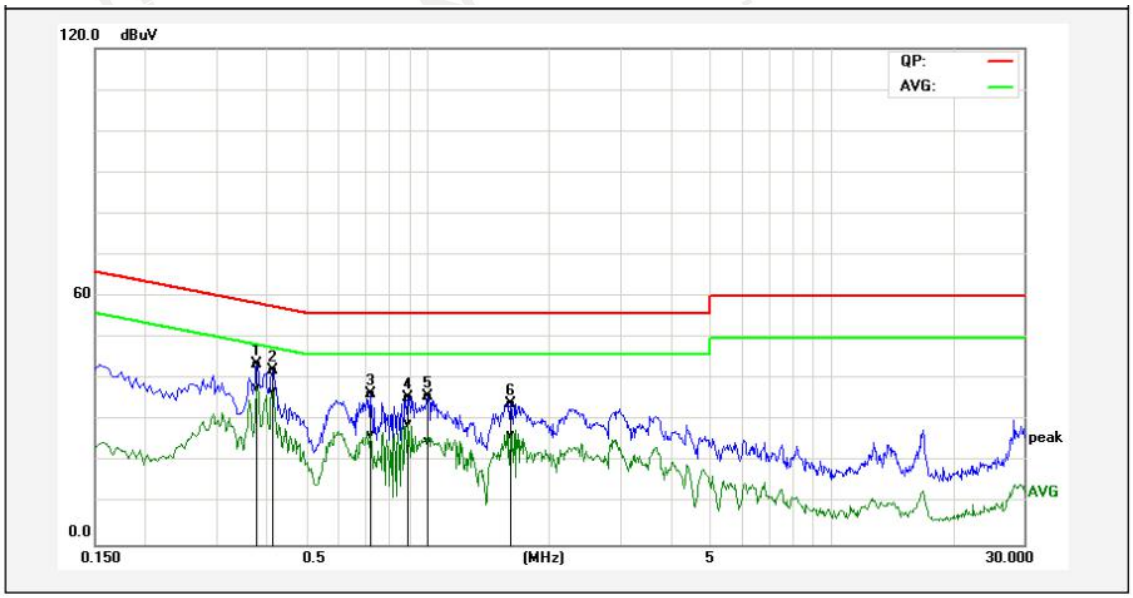
3.4 Test Result

Pass

Remark:

1. All modes were tested at AC 120V and 240V, only the worst result of AC 120V was reported.
2. All modes of Low, Middle, and High channel were tested, only the worst result of High Channel was reported as below:

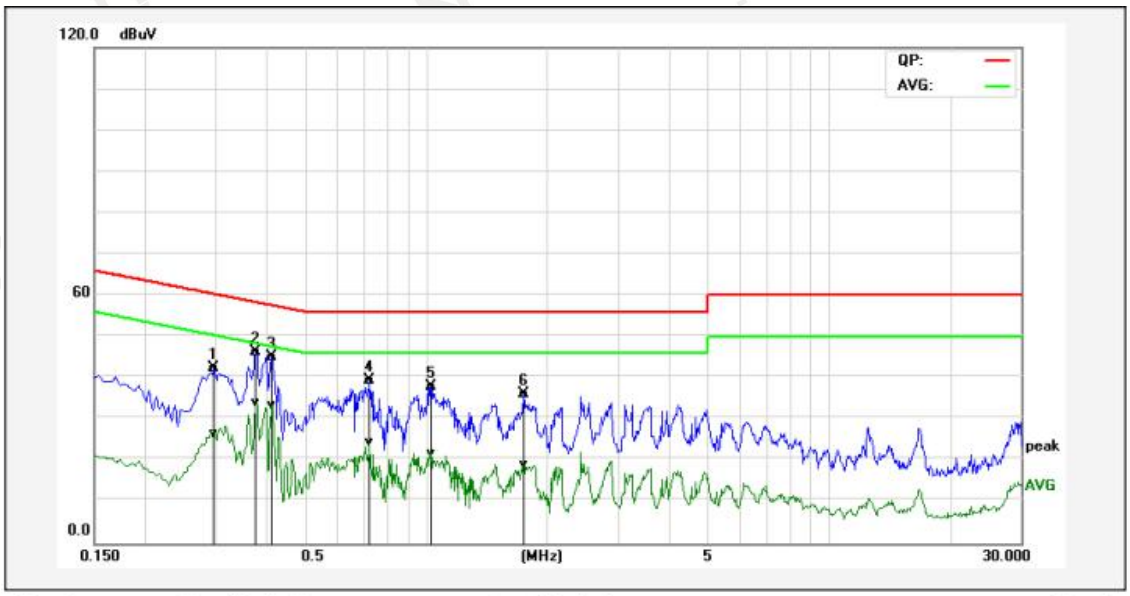
Temperature:	24℃	Relative Humidity:	45%
Test Date:	Mar. 15, 2021	Pressure:	1010hPa
Test Voltage:	AC 120V, 60Hz	Phase:	Line
Test Mode:	Transmitting mode of GFSK 2480MHz		



No.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark
1*	0.3780	33.96	28.21	9.82	43.78	38.03	58.32	48.32	-14.54	-10.29	Pass
2P	0.4140	32.48	27.27	9.81	42.29	37.08	57.57	47.57	-15.28	-10.49	Pass
3P	0.7220	26.76	16.78	9.82	36.58	26.60	56.00	46.00	-19.42	-19.40	Pass
4P	0.8980	25.85	19.38	9.84	35.69	29.22	56.00	46.00	-20.31	-16.78	Pass
5P	1.0020	26.04	15.27	9.87	35.91	25.14	56.00	46.00	-20.09	-20.86	Pass
6P	1.6060	24.10	16.77	9.89	33.99	26.66	56.00	46.00	-22.01	-19.34	Pass

Remark: Factor = Insertion Loss + Cable Loss, Result=Reading + Factor, Margin=Result – Limit.

Temperature:	24℃	Relative Humidity:	45%
Test Date:	Mar. 15, 2021	Pressure:	1010hPa
Test Voltage:	AC 120V, 60Hz	Phase:	Neutral
Test Mode:	Transmitting mode of GFSK 2480MHz		



No.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark
1P	0.2980	32.69	16.69	9.79	42.48	26.48	60.30	50.30	-17.82	-23.82	Pass
2*	0.3780	36.46	24.14	9.82	46.28	33.96	58.32	48.32	-12.04	-14.36	Pass
3P	0.4140	35.41	23.72	9.81	45.22	33.53	57.57	47.57	-12.35	-14.04	Pass
4P	0.7260	29.60	14.70	9.82	39.42	24.52	56.00	46.00	-16.58	-21.48	Pass
5P	1.0300	28.20	11.81	9.87	38.07	21.68	56.00	46.00	-17.93	-24.32	Pass
6P	1.7460	26.15	9.32	9.87	36.02	19.19	56.00	46.00	-19.98	-26.81	Pass

Remark: Factor = Insertion Loss + Cable Loss, Result=Reading + Factor, Margin=Result – Limit.

4 RADIATED EMISSION TEST

4.1 Radiation Limit

For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength ofradiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the followingvalues：

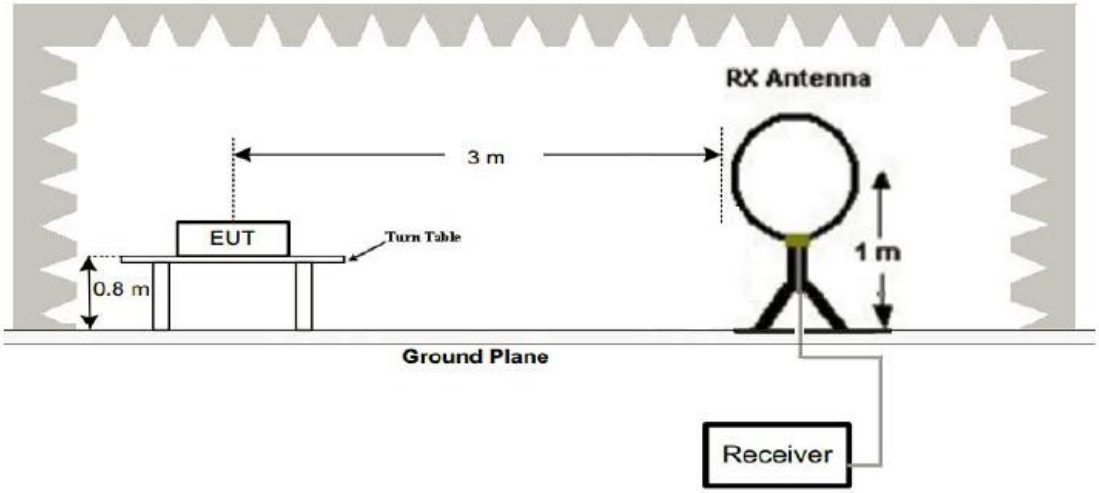
Limit calculation and transfer to 3m distance as showed in the following table:

Frequency (MHz)	Limit (dBuV/m)	Distance (m)
0.009-0.490	20log(2400/F(KHz))+40log(300/3)	3
0.490-1.705	20log(24000/F(KHz))+40log(30/3)	3
1.705-30.0	69.5	3
30-88	40.0	3
88-216	43.5	3
216-960	46.0	3
Above 960	54.0	3

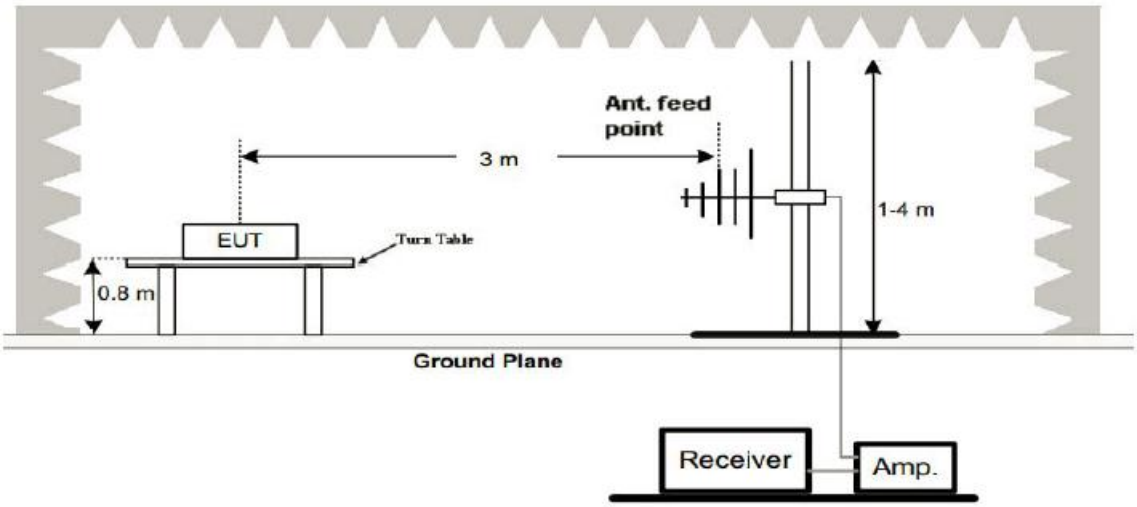
For intentional device, according to § 15.209(a), the general requirement of field strength of radiatedemissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

4.2 Test Setup

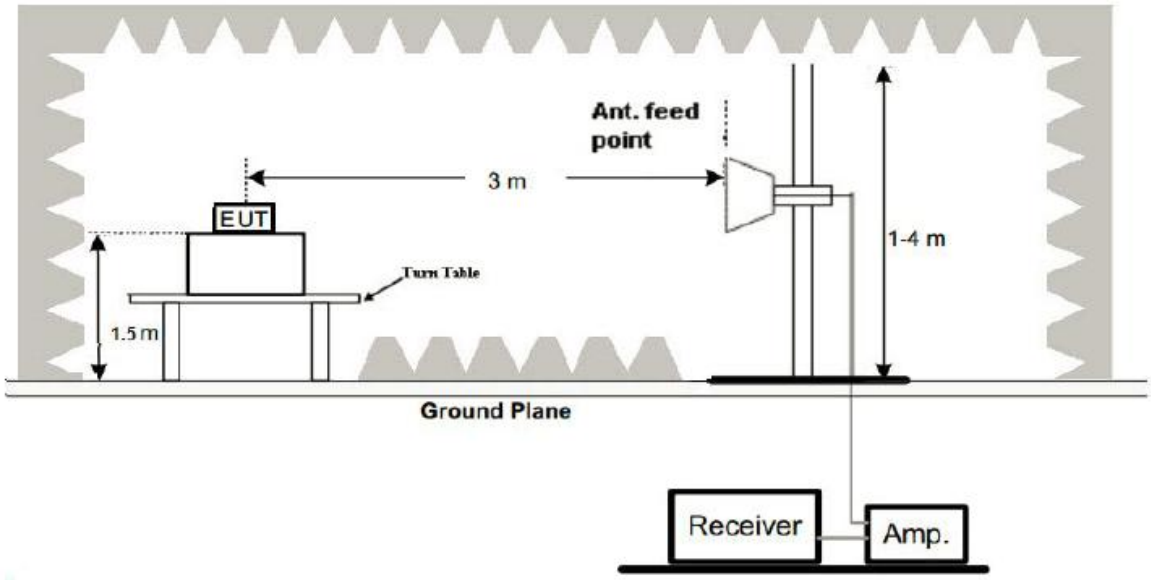
1. Radiated Emission Test-Up Frequency Below 30MHz



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



3. Radiated Emission Test-Up Frequency Above 1GHz



4.3 Test Procedure

1. Below 1GHz measurement the EUT is placed on turntable which is 0.8m above ground plane. And above 1GHz measurement EUT was placed on low permittivity and low tangent turn table which is 1.5m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highestemissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna bothhorizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The test frequency range from 9KHz to25GHz per FCC PART 15.33(a).

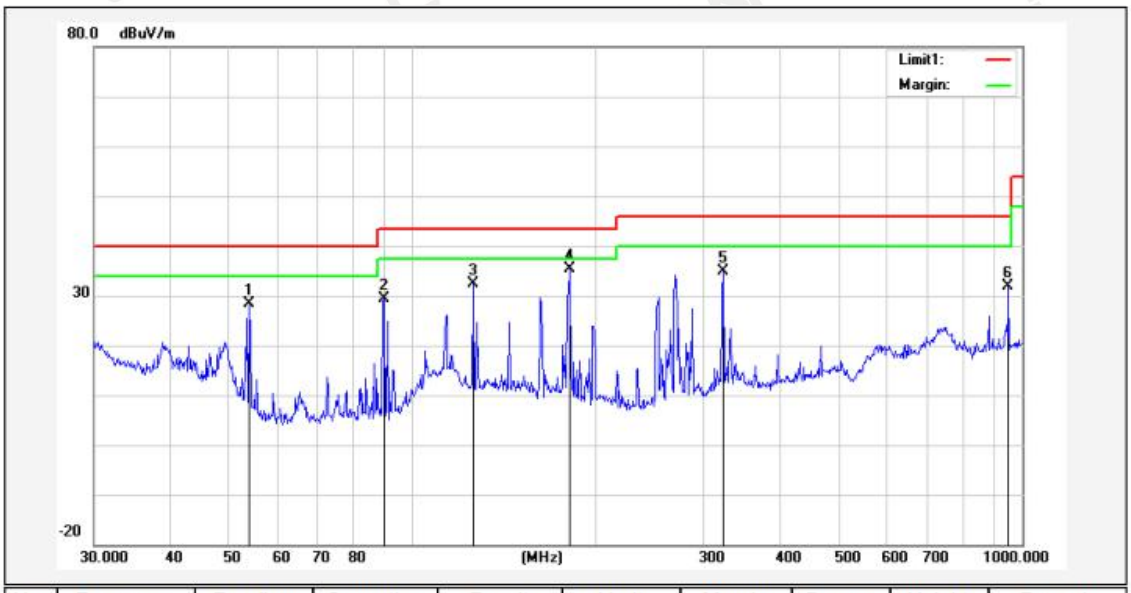
Note:
For battery operated equipment, the equipment tests shall be performed using a new battery.

4.4 Test Result

PASS
Remark:
1. All the test modes completed for test. The worst case of Radiated Emissionis High channel, the test data of this mode was reported.
2. By preliminary testing and verifying three axis (X, Y and Z) position of EUT transmitted status, it was found that “Z axis” position was the worst, and test data recorded in this report.
3. Radiated emission test from 9KHz to 10th harmonic of fundamental was verified, and Except for the noise floor of the system below 20dB from 9KHz to 30MHz, no radiation was found, so it was not recorded in this report.

Below 1GHz Test Results:

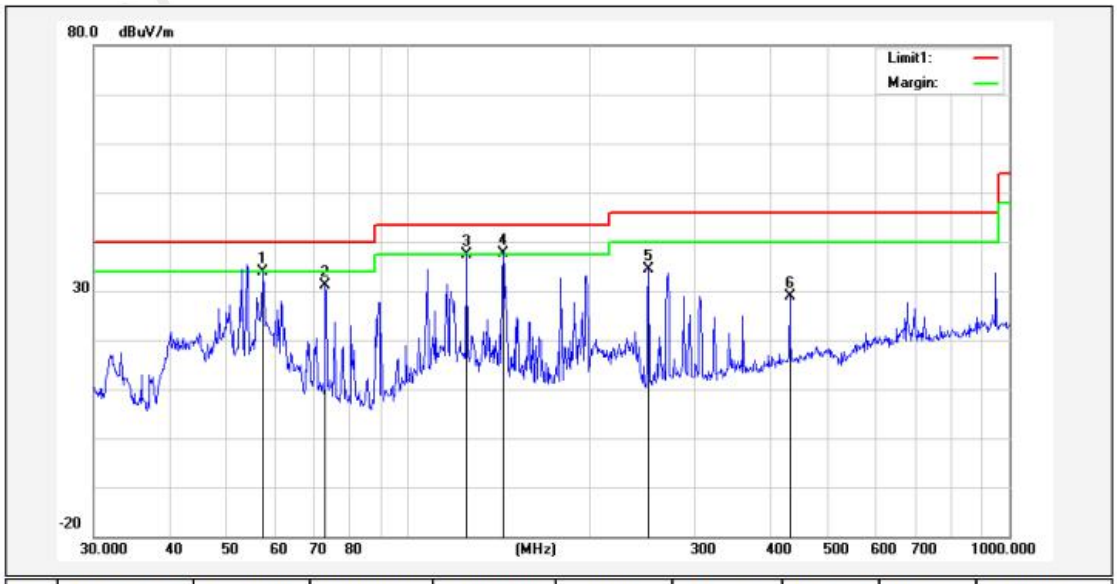
Temperature:	24℃	Relative Humidity:	45%
Test Date:	Mar. 15, 2021	Pressure:	1010hPa
Test Voltage:	AC 120V, 60Hz	Polarization:	Horizontal
Test Mode:	Transmitting mode of GFSK 2480MHz		



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (deg.)	Height (cm)	Remark
1	53.8818	49.49	-21.06	28.43	40.00	-11.57	150	100	peak
2	89.5900	50.54	-21.27	29.27	43.50	-14.23	120	100	peak
3	125.4457	48.81	-16.48	32.33	43.50	-11.17	270	100	peak
4*	180.6488	53.58	-18.32	35.26	43.50	-8.24	240	100	peak
5	323.3204	50.05	-15.10	34.95	46.00	-11.05	120	100	peak
6	948.7610	37.92	-6.15	31.77	46.00	-14.23	300	100	peak

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

Temperature:	24℃	Relative Humidity:	45%
Test Date:	Mar. 15, 2021	Pressure:	1010hPa
Test Voltage:	AC 120V, 60Hz	Polarization:	Vertical
Test Mode:	Transmitting mode of GFSK 2480MHz		



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (deg.)	Height (cm)	Remark
1	57.1914	54.67	-20.72	33.95	40.00	-6.05	150	100	peak
2	72.8466	51.77	-20.52	31.25	40.00	-8.75	240	100	peak
3	125.0066	52.88	-15.40	37.48	43.50	-6.02	120	100	peak
4*	143.8295	53.37	-15.64	37.73	43.50	-5.77	210	100	peak
5	251.1804	50.09	-15.64	34.45	46.00	-11.55	300	100	peak
6	431.0316	39.25	-10.41	28.84	46.00	-17.16	240	100	peak

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

Remark：
(1) Measuring frequencies from 9 KHz to the 1 GHz, Radiated emission test from 9KHz to 30MHzwas verified, and no any emission was found except system noise floor.
(2) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
(3) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.

Above 1 GHz Test Results:
CH Low (2405MHz)

Horizontal:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2405	107.65	-5.84	101.81	114	-12.19	PK
2405	80.35	-5.84	74.51	94	-19.49	AV
4810	61.24	-3.64	57.60	74	-16.40	PK
4810	48.65	-3.64	45.01	54	-8.99	AV
7215	57.06	-0.95	56.11	74	-17.89	PK
7215	46.32	-0.95	45.37	54	-8.63	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin= Absolute Level – Limit						

Vertical:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2405	107.33	-5.71	101.62	114	-12.38	PK
2405	79.52	-5.71	73.81	94	-20.19	AV
4810	61.42	-3.51	57.91	74	-16.09	PK
4810	47.53	-3.51	44.02	54	-9.98	AV
7215	56.81	-0.82	55.99	74	-18.01	PK
7215	47.01	-0.82	46.19	54	-7.81	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin= Absolute Level – Limit						

Note:For fundamental frequency，RBW and VBW set to be 3MHz，PK detector for PK value， RMS detector for AV value

CH Middle (2440MHz)

Horizontal:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2440	108.34	-5.71	102.63	114	-11.37	PK
2440	80.42	-5.71	74.71	94	-19.29	AV
4880	61.37	-3.51	57.86	74	-16.14	PK
4880	50.55	-3.51	47.04	54	-6.96	AV
7320	56.87	-0.82	56.05	74	-17.95	PK
7320	46.32	-0.82	45.50	54	-8.50	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

Vertical:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2440	108.53	-5.65	102.88	114	-11.12	PK
2440	79.64	-5.65	73.99	94	-20.01	AV
4880	61.34	-3.43	57.91	74	-16.09	PK
4880	48.72	-3.43	45.29	54	-8.71	AV
7320	57.65	-0.75	56.90	74	-17.10	PK
7320	46.81	-0.75	46.06	54	-7.94	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin= Absolute Level – Limit						

Note:For fundamental frequency，RBW and VBW set to be 3MHz， PK detector for PK value， RMS detector for AV value

CH High (2480MHz)
Horizontal:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2480	108.34	-5.65	102.69	114	-11.31	PK
2480	80.34	-5.65	74.69	94	-19.31	AV
4960	61.24	-3.43	57.81	74	-16.19	PK
4960	50.32	-3.43	46.89	54	-7.11	AV
7440	56.89	-0.75	56.14	74	-17.86	PK
7440	48.32	-0.75	47.57	54	-6.43	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin= Absolute Level – Limit						

Vertical:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2480	107.99	-5.65	102.34	114	-11.66	PK
2480	78.62	-5.65	72.97	94	-21.03	AV
4960	62.24	-3.43	58.81	74	-15.19	PK
4960	48.85	-3.43	45.42	54	-8.58	AV
7440	57.63	-0.75	56.88	74	-17.12	PK
7440	47.64	-0.75	46.89	54	-7.11	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin= Absolute Level – Limit						

Note:For fundamental frequency，RBW and VBW set to be 3MHz，PK detector for PK value， RMS detector for AV value

Remark：
(1) Measuring frequencies from 1 GHz to the 25 GHz.
(2) “F” denotes fundamental frequency; “H” denotes spurious frequency. “E” denotes band edge frequency.
(3) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
(4) Data of measurement within this frequency range ,that the value more than 20dB below limit is not record in the form.
(5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.The resolution bandwidth of test receiver/spectrum analyzer is 1MHzand video bandwidth is 3MHz for peak measurement with peak detectorat frequency above 1GHz.The resolution bandwidth of test receiver/spectrum analyzer is 1MHzand video bandwidth is 10Hz for Average measurement with peak
detection at frequency above 1GHz.
(6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dBuV/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dBuV/m(PK Value) <54 dBuV/m(AV Limit), the Average Detected not need to completed.
(7)All modes of operation were investigated and the worst-case emissionsare reported.

5 BAND EDGE

5.1 Limits

FCC PART 15.249(d) 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 emissionlimits in §15.209, whichever is the lesser attenuation.

5.2 Test Procedure

The band edge compliance of RF radiated emission should be measured by following the guidance in ANSIC63.10 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT issituated in three orthogonal planes (if appropriate), adjusting the measurement antenna height andpolarization etc. RBW 1MHz VBW 3MHz PK detector for PK value ， RBW 1MHz VBW 10Hz PK detector for AV value .The conducted RF band edge was measured by using a spectrum analyzer. Set span wide enough to capturethe highest in-band emission and the emission at the band edge. Set RBW to 100 KHz and VBW to 300 KHz,to measure the conducted peak band edge.

5.3 Test Result

PASS

Radiated Band Edge Test:

Operation Mode: TX CH Low (2405MHz)

Horizontal:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2310	56.32	-5.81	50.51	74	-23.49	PK
2310	/	-5.81	/	54	/	AV
2390	57.24	-5.84	51.40	74	-22.60	PK
2390	/	-5.84	/	54	/	AV
2400	58.63	-5.84	52.79	74	-21.21	PK
2400	/	-5.84	/	54	/	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2310	55.95	-5.81	50.14	74	-23.86	PK
2310	/	-5.81	/	54	/	AV
2390	56.37	-5.84	50.53	74	-23.47	PK
2390	/	-5.84	/	54	/	AV
2400	57.52	-5.84	51.68	74	-22.32	PK
2400	/	-5.84	/	54	/	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Operation Mode: TX CH High (2480MHz)

Horizontal:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.5	57.43	-5.65	51.78	74	-22.22	PK
2483.5	/	-5.65	/	54	/	AV
2500	55.21	-5.72	49.49	74	-24.51	PK
2500	/	-5.72	/	54	/	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.5	57.64	-5.65	51.99	74	-22.01	PK
2483.5	/	-5.65	/	54	/	AV
2500	54.82	-5.72	49.1	74	-24.9	PK
2500	/	-5.72	/	54	/	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

6 OCCUPIED BANDWIDTH MEASUREMENT

6.1 Test Setup

Same asRadiated Emission Measurement

6.2 Test Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set EUT as normal operation.
3. Based on ANSI C63.10 section 6.9.2: RBW=1%-5%OBW. VBW=3RBW.
4. The useful radiated emission from the EUT was detected by the spectrum analyzer with peak detector.

6.3 Measurement Equipment Used

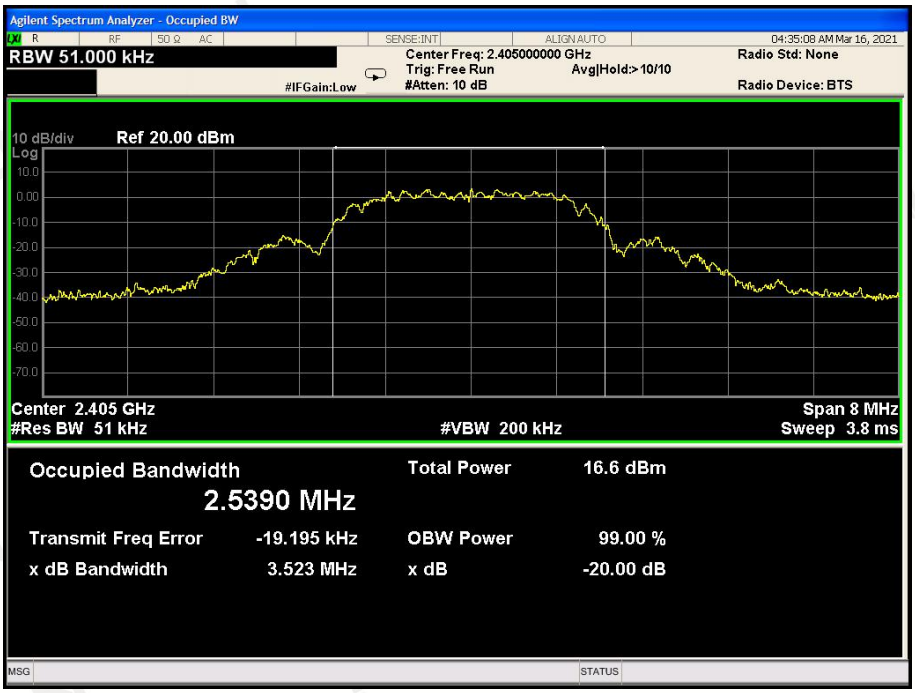
Same asRadiated Emission Measurement

6.4 Test Result

PASS

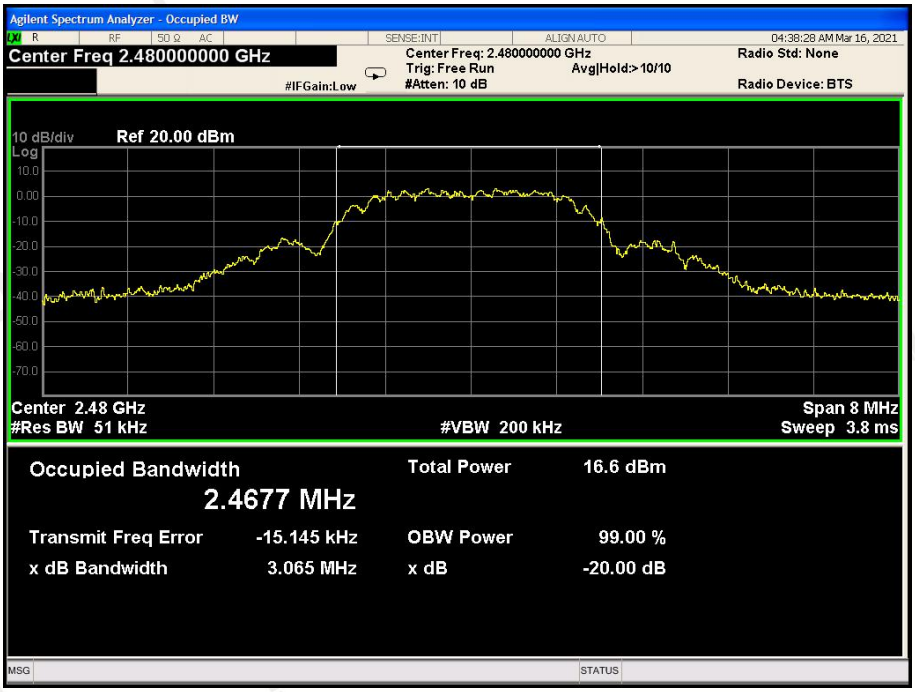
Frequency (MHz)	20dB Bandwidth (MHz)	Result
2405	3.523	PASS
2440	3.371	PASS
2480	3.065	PASS

CH:2405MHz



CH:2440MHz

CH:2480MHz

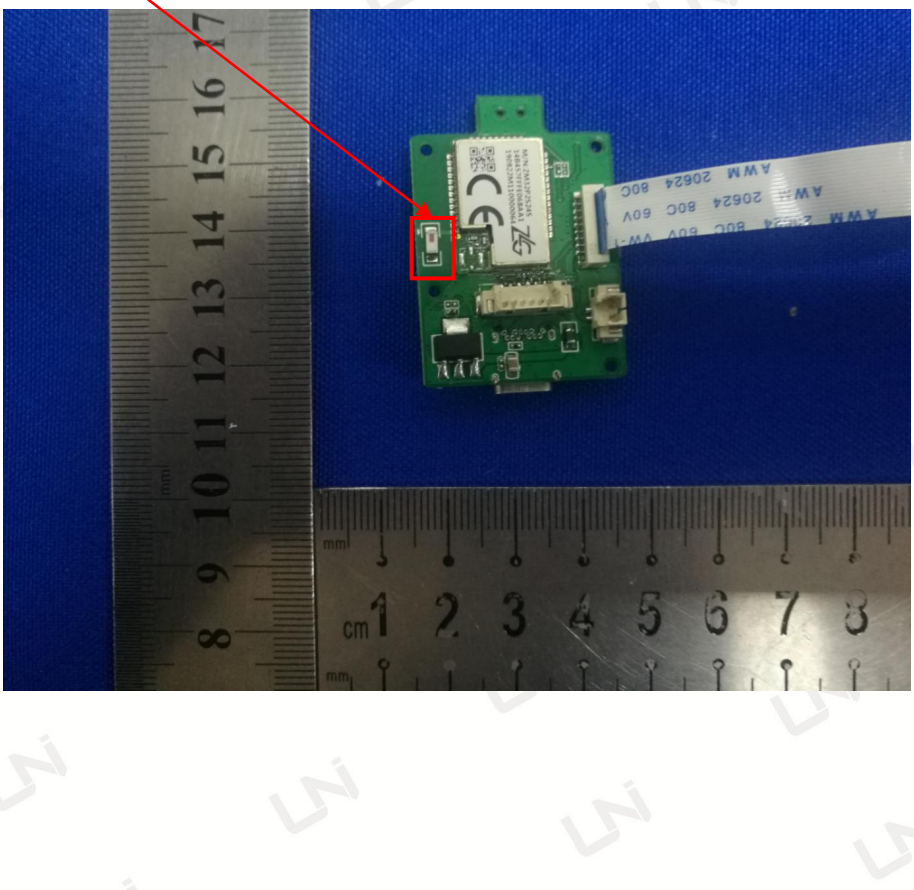


7 ANTENNA REQUIREMENT

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

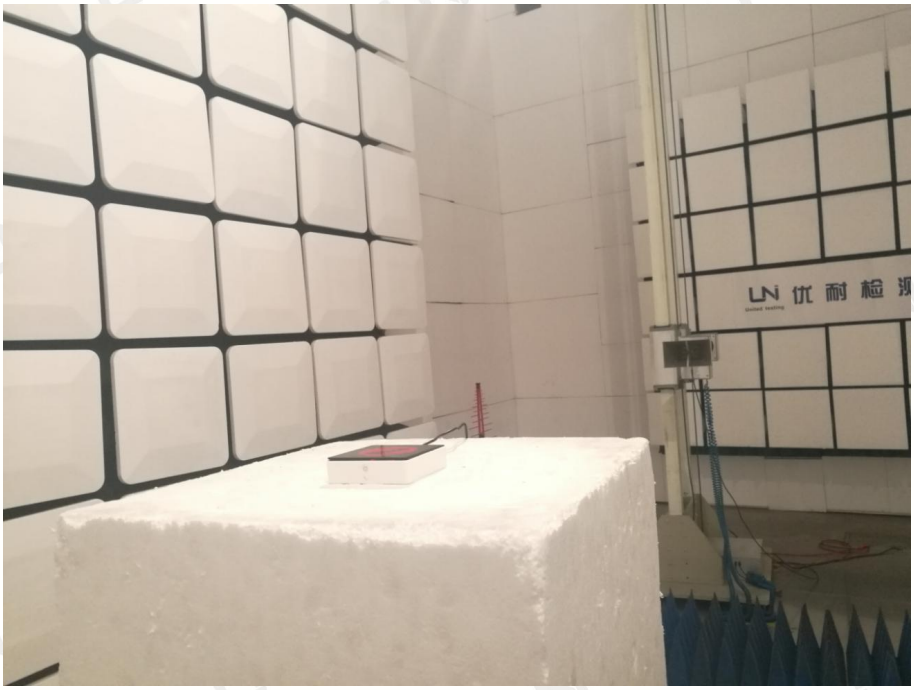
Antenna Connected Construction
The antenna used in this product is a ceramics Antenna, The directional gains of antenna used for transmitting is 0.5dBi.

ANTENNA:



8 PHOTOGRAPH OF TEST

8.1Radiated Emission



8.2Conducted Emission

End of Report

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