RF TEST REPORT

Report No.: 17021527-FCC-R1
Supersede Report No.: N/A

Applicant	Zhejiang VALUE Mechanical & Electrical Products CO.,LTD
Product Name	Wireless Refrigerant Scale
Main Model	NRS2i01
Serial Model	NRS1i, VRS-50i-01, VRS-50i, NRS1i01, NRS2i, VRS-100i-01, VRS-100i,NRS3i01, NRS3i, VRS-120i-01, VRS-120i
Test Standard	FCC Part 15.247: 2017, ANSI C63.10: 2013
Test Date	November 08 to November 13, 2017
Issue Date	November 13, 2017
Test Result	☒ Pass ☐ Fail
Equipment complied with the specification	☒
Equipment did not comply with the specification	☐

Trety Lu	Deon Dai	
Trety Lu Test Engineer	Deon Dai Engineer Reviewer	

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Test result presented in this test report is applicable to the tested sample only

Issued by:
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Laboratories Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.

In addition to testing and certification, SIEMIC provides initial design reviews and compliance management throughout a project. Our extensive experience with China, Asia Pacific, North America, European, and International compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

Accreditations for Conformity Assessment

Country/Region	Scope
USA	EMC, RF/Wireless, SAR, Telecom
Canada	EMC, RF/Wireless, SAR, Telecom
Taiwan	EMC, RF, Telecom, SAR, Safety
Hong Kong	RF/Wireless, SAR, Telecom
Australia	EMC, RF, Telecom, SAR, Safety
Korea	EMI, EMS, RF, SAR, Telecom, Safety
Japan	EMI, RF/Wireless, SAR, Telecom
Singapore	EMC, RF, SAR, Telecom
Europe	EMC, RF, SAR, Telecom, Safety

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1. Report Revision History

Report No.	Report Version	Description	Issue Date
17021527-FCC-R1	NONE	Original	November 13, 2017

2. Customer information

Applicant Name	Zhejiang VALUE Mechanical & Electrical Products CO.,LTD
Applicant Add	jiulong Avenue,Western Industrial District,Wenling,Zhejiang,China
Manufacturer	Zhejiang VALUE Mechanical & Electrical Products CO.,LTD
Manufacturer Add	jiulong Avenue,Western Industrial District,Wenling,Zhejiang,China

3. Test site information

Lab performing tests	SIEMIC (Nanjing-China) Laboratories
Lab Address	2-1 Longcang Avenue Yuhua Economic and Technology Development Park, Nanjing, China
FCC Test Site No.	694825
IC Test Site No.	4842B-1
Test Software	EZ_EMC

4. Equipment under Test (EUT) Information

Description of EUT:	Wireless Refrigerant Scale
Main Model:	NRS2i01
Serial Model:	NRS1i, VRS-50i-01, VRS-50i, NRS1i01, NRS2i, VRS-100i-01, VRS-100i,NRS3i01, NRS3i, VRS-120i-01, VRS-120i
Date EUT received:	November 06, 2017
Test Date(s):	November 08 to November 13, 2017
Output Max power	-1.282dBm
Antenna Gain:	BLE: 0.5 dBi
Type of Modulation:	BLE: GFSK
RF Operating Frequency (ies):	BLE: 2402-2480 MHz
Number of Channels:	BLE: 40CH
Port:	N/A
Input Power:	4*AA(4*1.5V)
Trade Name :	N/A
FCC ID:	2ANTN0001

Operating channel list

Channel	Frequency(MHz)	Channel	Frequency(MHz)	Channel	Frequency(MHz)
00	2402	14	2430	28	2458
01	2404	15	2432	29	2460
02	2406	16	2434	30	2462
03	2408	17	2436	31	2464
04	2410	18	2438	32	2466
05	2412	19	2440	33	2468
06	2414	20	2442	34	2470
07	2416	21	2444	35	2472
08	2418	22	2446	36	2474
09	2420	23	2448	37	2476
10	2422	24	2450	38	2478
11	2424	25	2452	39	2480
12	2426	26	2454		
13	2428	27	2456		

5. Test Summary

The product was tested in accordance with the following specifications.
All testing has been performed according to below product classification:

FCC Rules	Description of Test	Result
§15.247 (i), §2.1091	RF Exposure	Compliance
§15.203	Antenna Requirement	Compliance
§15.247 (a)(2)	DTS (6 dB) CHANNEL BANDWIDTH	Compliance
§15.247(b)(3)	Conducted Maximum Output Power	Compliance
§15.247(e)	Power Spectral Density	Compliance
§15.247(d)	Band-Edge & Unwanted Emissions into Non-Restricted Frequency Bands	Compliance
§15.207 (a),	Power Line Conducted Emissions	N/A
§15.205, §15.209, §15.247(d)	Radiated Spurious Emissions & Unwanted Emissions into Restricted Frequency Bands	Compliance

Measurement Uncertainty

Test Item	Description	Uncertainty
Radiated Emissions	Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 (for EUTs < 0.5m X 0.5m X 0.5m)	3.952dB

6. Measurements, Examination And Derived Results

6.1 RF Exposure

The EUT is a portable device, thus requires RF exposure evaluation;
Please refer to SIEMIC RF Exposure Report: 17021527-FCC-H1.

6.2 Antenna Requirement

Applicable Standard

According to § 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 shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

a. Antenna must be permanently attached to the unit.
b. Antenna must use a unique type of connector to attach to the EUT.

Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit. And according to FCC 47 CFR section 15.247 (b), if the transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

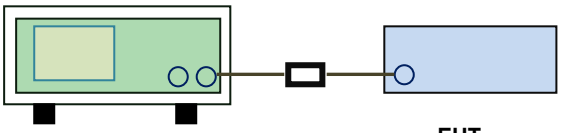
Antenna Connector Construction

Antenna must be permanently attached to the unit, it meets up with the ANTENNA REQUIREMENT.

Result: Compliant.

6.3 DTS (6 dB) Channel Bandwidth

Temperature	20°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar
Test date :	November 08, 2017
Tested By :	Trety Lu

Spec	Item	Requirement	Applicable
§ 15.247(a)(2) RSS Gen (4.6.1)	a)	6dB BW≥500kHz;	☒
	b)	20dB BW: For FCC reference only; required by IC.	☐
Test Setup			
Test Procedure	558074 D01 DTS Meas Guidance V04, 8.1 DTS bandwidth 6dB Emission bandwidth measurement procedure - Set RBW = 100 kHz. - Set the video bandwidth (VBW) ≥ 3 x RBW. - Detector = Peak. - Trace mode = max hold. - Sweep = auto couple. - Allow the trace to stabilize. 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.		
Remark			
Result	☒Pass ☐Fail		
Test Data	☒Yes ☐N/A		
Test Plot	☒Yes (See below) ☐N/A		

6dB Bandwidth measurement result

Type	Test mode	CH	Freq (MHz)	Result (MHz)	Limit (MHz)	Result
6dB BW	BLE	Low	2402	0.716	≥0.5	Pass
		Mid	2440	0.7048	≥0.5	Pass
		High	2480	0.7073	≥0.5	Pass

Test Plots

6dB Bandwidth measurement result

6dB Bandwidth - Low CH 2402

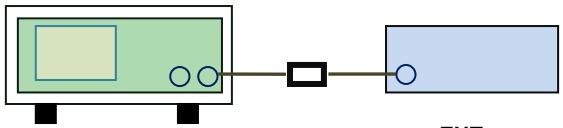
6dB Bandwidth - Mid CH 2440

6dB Bandwidth - High CH 2480

6.4 Maximum Output Power

Temperature	20°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar
Test date :	November 08, 2017
Tested By :	Trety Lu

Requirement(s):

Spec	Item	Requirement	Applicable
§15.247(b)(2),RSS210 (A8.4)	a)	FHSS in 2400-2483.5MHz with ≥ 75 channels: ≤1 Watt	☐
	b)	FHSS in 5725-5850MHz: ≤1 Watt	☐
	c)	For all other FHSS in the 2400-2483.5MHz band: ≤0.125 Watt.	☐
	d)	FHSS in 902-928MHz with ≥ 50 channels: ≤1 Watt	☐
	e)	FHSS in 902-928MHz with ≥ 25 & <50 channels: ≤0.25 Watt	☐
	f)	DSSS in 902-928MHz, 2400-2483.5MHz, 5725-5850MHz: ≤1 Watt	☒
Test Setup			
Test Procedure	558074 D01 DTS Meas Guidance V04, 9.1.2 Integrated band power method Maximum output power measurement procedure a) Set the RBW ≥ DTS bandwidth. b) Set VBW ≥ 3 × RBW. c) Set span ≥ 3 x RBW d) Sweep time = auto couple. e) Detector = peak. f) Trace mode = max hold. g) Allow trace to fully stabilize. h) Use peak marker function to determine the peak amplitude level.		
Remark			
Result	☒Pass ☐Fail		
Test Data	☒Yes ☐N/A		
Test Plot	☒Yes (See below) ☐N/A		

Output Power measurement result

Type	Test mode	CH	Freq (MHz)	Conducted Power (dBm)	Limit (dBm)	Result
Output power	BLE	Low	2402	-2.625	30	Pass
		Mid	2440	-1.372	30	Pass
		High	2480	-1.282	30	Pass

Test Plots

Output Power measurement result

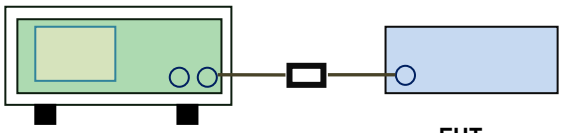
Output power - Low CH 2402

Output power - Mid CH 2440

Output power - High CH 2480

6.5 Power Spectral Density

Temperature	20°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar
Test date :	November 08, 2017
Tested By :	Trety Lu

Spec	Item	Requirement	Applicable
§15.247(e)	a)	The power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.	☒
Test Setup			
Test Procedure	558074 D01 DTS MEAS Guidance V04 10.2 power spectral density method power spectral density measurement procedure a) Set analyzer center frequency to DTS channel center frequency. b) Set the span to 1.5 times the DTS bandwidth. c) Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz. d) Set the VBW ≥ 3 × RBW. e) Detector = peak. f) Sweep time = auto couple. g) Trace mode = max hold. h) Allow trace to fully stabilize. i) Use the peak marker function to determine the maximum amplitude level within the RBW. j) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.		
Remark			
Result	☒ Pass ☐ Fail		
Result	☒ Pass ☐ Fail		
Test Data	☒ Yes ☐ N/A		

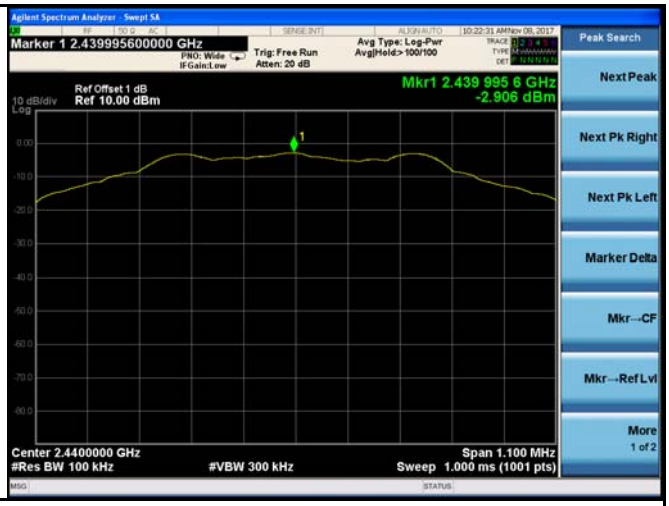
Power Spectral Density measurement result

Type	Test mode	CH	Freq (MHz)	PSD (dBm)	Limit (dBm)	Result
PSD	BLE	Low	2402	-3.939	8	Pass
		Mid	2440	-2.906	8	Pass
		High	2480	-1.977	8	Pass

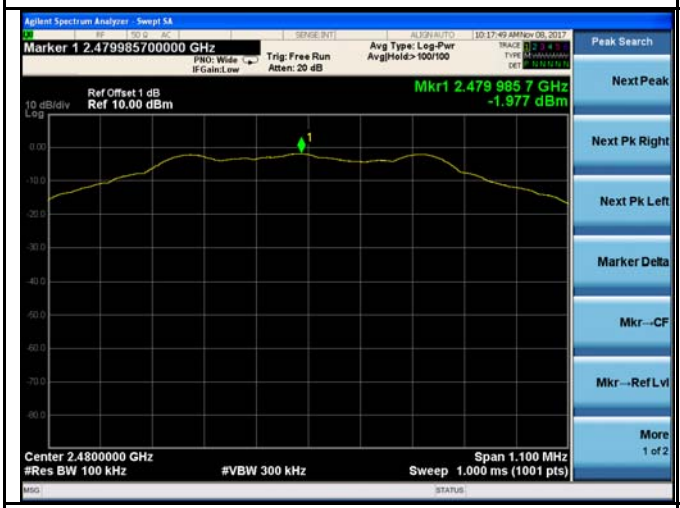
Test Plots

Power Spectral Density measurement result

PSD - Low CH 2402



PSD - Mid CH 2440



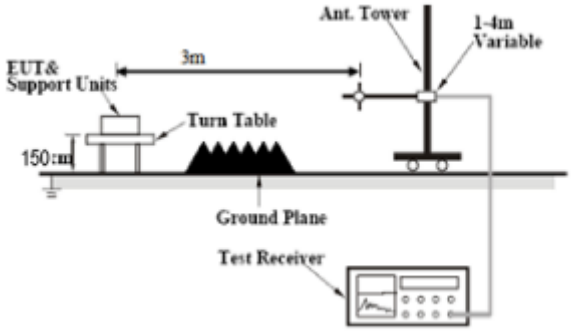
PSD - High CH 2480

6.6 Band-Edge & Unwanted Emissions into Non-Restricted Frequency Bands

Temperature	20°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar
Test date :	November 13, 2017
Tested By :	Trety Lu

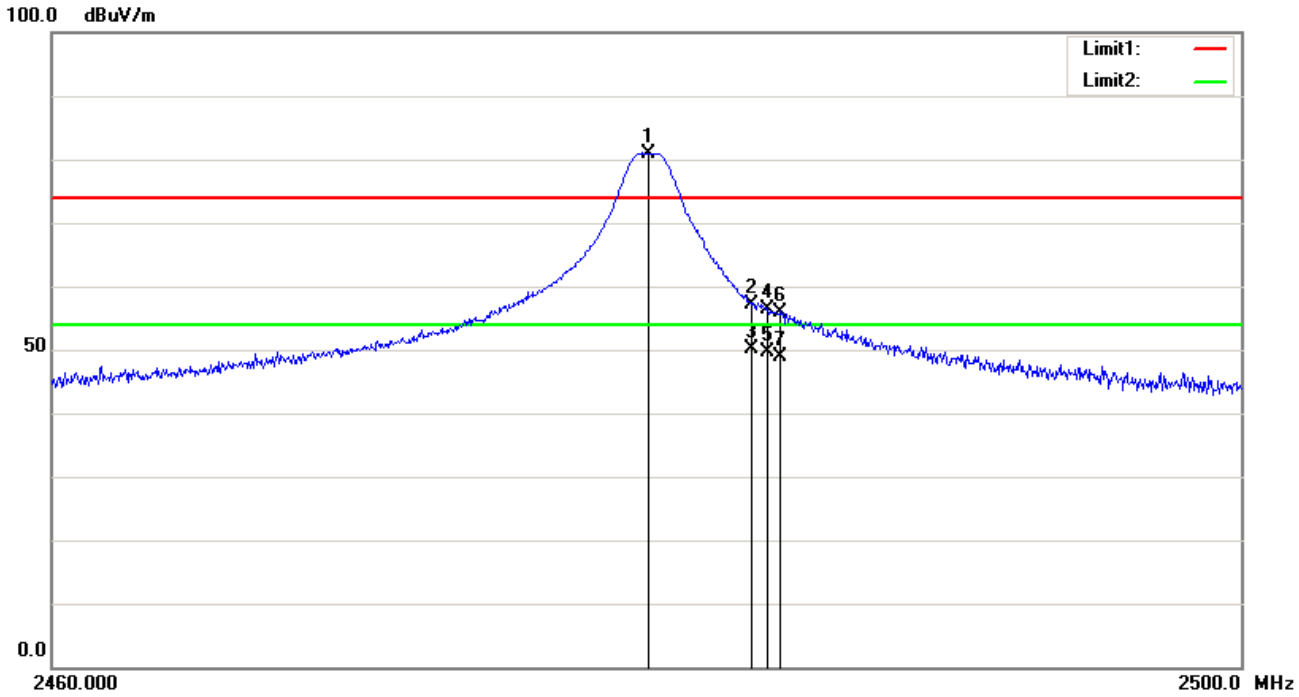
Requirement(s):

Spec	Item	Requirement	Applicable
§15.247(d)	a)	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.	☒

Test Setup	
Test Procedure	Radiated Method Only - 1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator. - 2. Position the EUT without connection to measurement instrument. Put it on the Rotated table and turn on the EUT and make it operate in transmitting mode. Then set it to Low Channel and High Channel within its operating range, and make sure the instrument is operated in its linear range. - 3. First, set both RBW and VBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100kHz bandwidth from band edge, check the emission of EUT, if pass then set Spectrum Analyzer as below: a. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi Peak detection at frequency below 1GHz. b. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz. c. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth for Average detection (AV) as below at frequency above 1GHz. ■ 1/T kHz (Duty cycle < 98%) □ 10 Hz (Duty cycle > 98%) - 4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency. - 5. Repeat above procedures until all measured frequencies were complete.
Remark	
Result	☒ Pass ☐ Fail
Test Data	☒ Yes ☐ N/A
Test Plot	☒ Yes (See below) ☐ N/A

Test Plots
Band Edge measurement result

Test Mode:	Transmitting BLE Mode

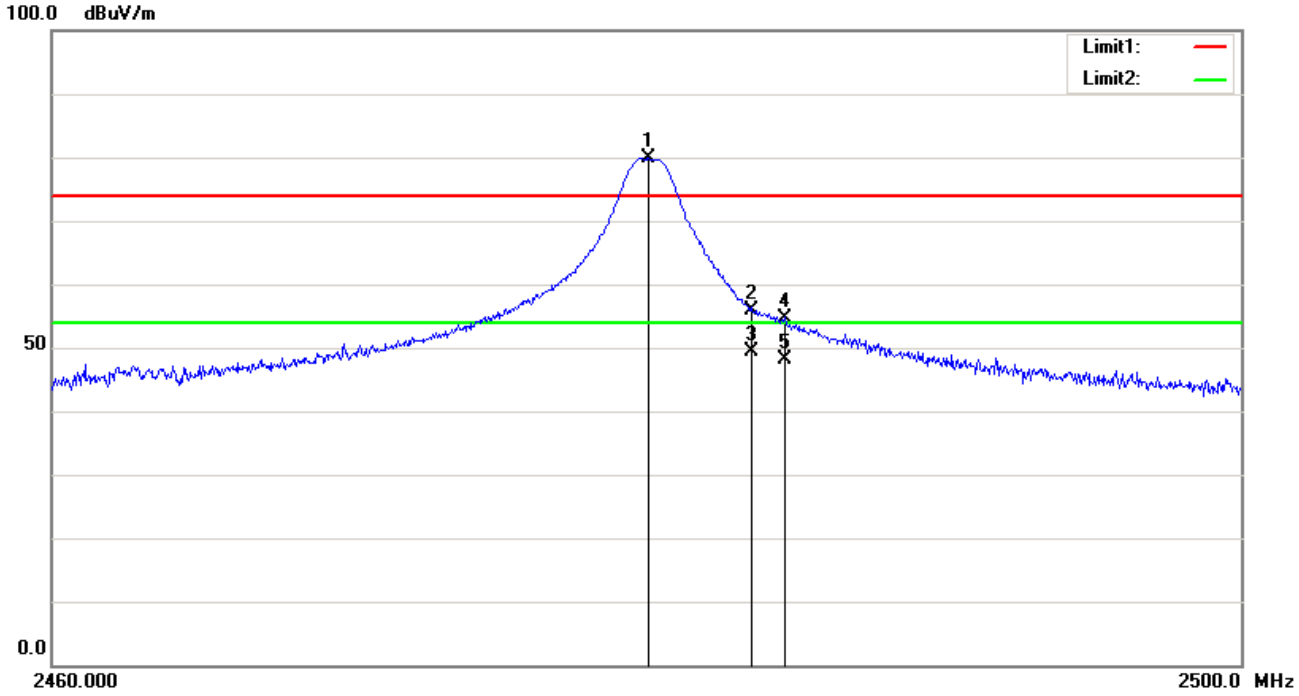


Test Data

GFSK-Right Side-V

No.	Frequency (MHz)	Reading (dBµV/m)	Detector	Ant_F (dB/m)	PA_G (dB)	Cab_L (dB)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Degree (°)
1	2480.000	97.96	peak	31.59	52.62	4.06	80.99	74.00	6.99	100	184
2	2483.500	73.99	peak	31.59	52.63	4.06	57.01	74.00	-16.99	100	184
3	2483.500	67.17	AVG	31.59	52.63	4.06	50.19	54.00	-3.81	100	184
4	2484.040	73.37	peak	31.59	52.63	4.06	56.39	74.00	-17.61	100	184
5	2484.040	66.66	AVG	31.59	52.63	4.06	49.68	54.00	-4.32	100	184
6	2484.480	72.98	peak	31.59	52.63	4.06	56.00	74.00	-18.00	200	196
7	2484.480	65.95	AVG	31.59	52.63	4.06	48.97	54.00	-5.03	200	196

Test Mode:	Transmitting BLE Mode

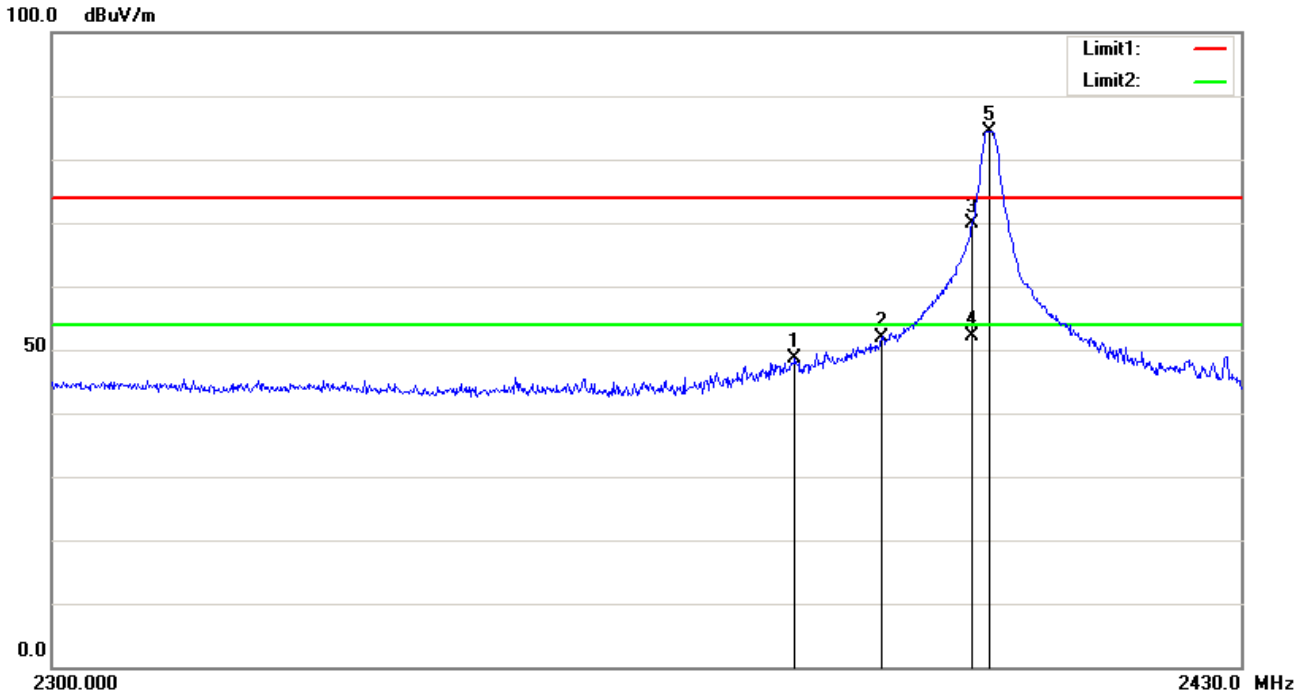


Test Data

GFSK-Right Side-H

No.	Frequency (MHz)	Reading (dBµV/m)	Detector	Ant_F (dB/m)	PA_G (dB)	Cab_L (dB)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Degree (°)
1	2480.000	96.78	peak	31.59	52.62	4.06	79.81	74.00	5.81	100	305
2	2483.500	72.82	peak	31.59	52.63	4.06	55.84	74.00	-18.16	100	305
3	2483.500	66.36	AVG	31.59	52.63	4.06	49.38	54.00	-4.62	100	305
4	2484.640	71.54	peak	31.59	52.63	4.06	54.56	74.00	-19.44	100	305
5	2484.640	65.17	AVG	31.59	52.63	4.06	48.19	54.00	-5.81	100	305

Test Mode:	Transmitting BLE Mode

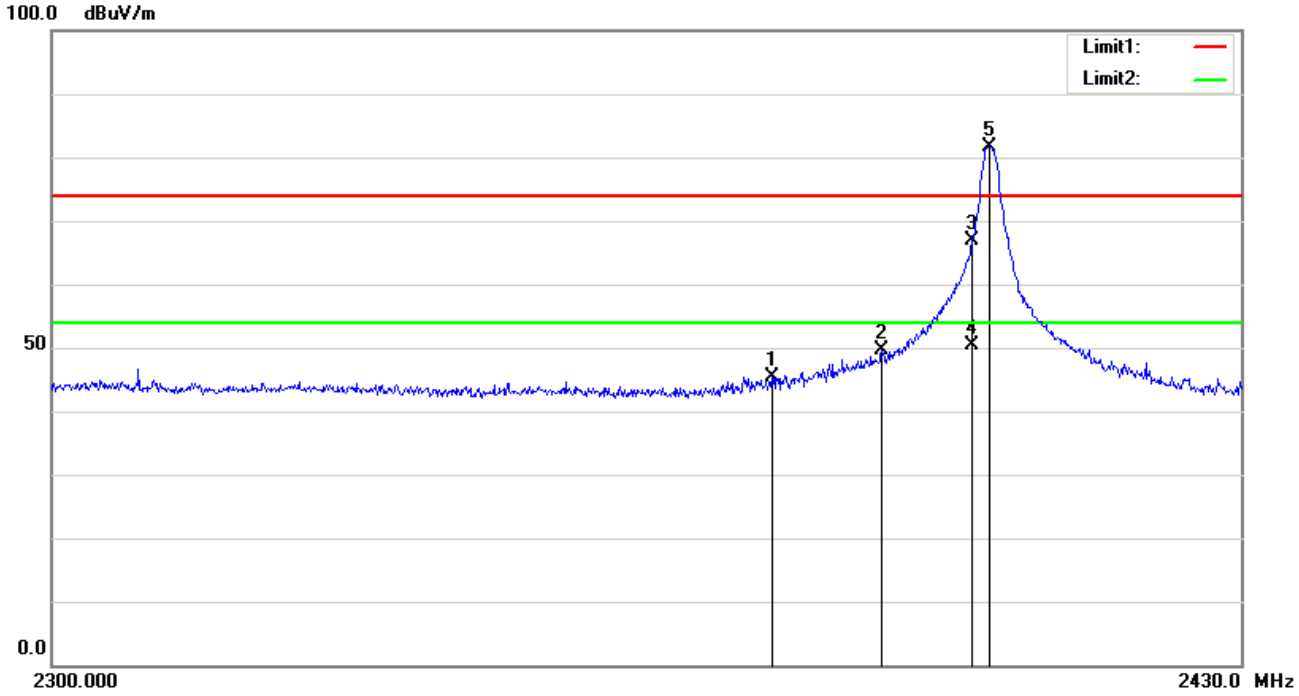


Test Data

GFSK-Left Side-V

No.	Frequency	Reading	Detector	Ant_F	PA_G	Cab_L	Result	Limit	Margin	Height	Degree
	(MHz)	(dBµV/m)		(dB/m)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(cm)	(°)
1	2380.470	65.57	peak	31.53	52.54	4.03	48.59	74.00	-25.41	100	300
2	2390.000	68.85	peak	31.53	52.55	4.02	51.85	74.00	-22.15	100	308
3	2400.000	86.83	peak	31.54	52.56	4.01	69.82	74.00	-4.18	100	308
4	2400.000	69.15	AVG	31.54	52.56	4.01	52.14	54.00	-1.86	100	308
5	2402.000	101.36	peak	31.54	52.56	4.01	84.35	74.00	10.35	100	308

Test Mode:	Transmitting BLE Mode



Test Data

GFSK-Left Side-H

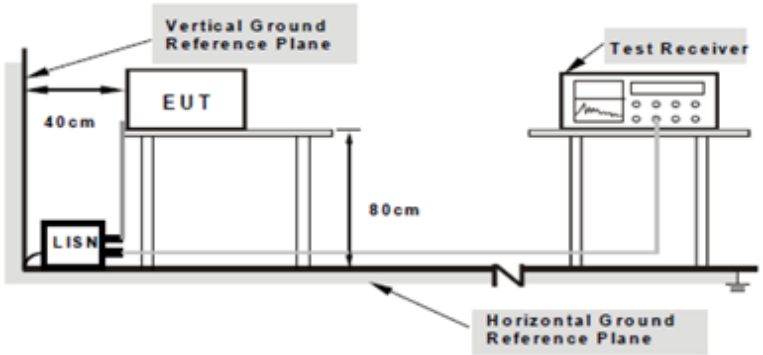
No.	Frequency (MHz)	Reading (dBµV/m)	Detector	Ant_F (dB/m)	PA_G (dB)	Cab_L (dB)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Degree (°)
1	2378.000	62.42	peak	31.53	52.54	4.03	45.44	74.00	-28.56	200	125
2	2390.000	66.67	peak	31.53	52.55	4.02	49.67	74.00	-24.33	100	139
3	2400.000	83.86	peak	31.54	52.56	4.01	66.85	74.00	-7.15	100	139
4	2400.000	67.42	AVG	31.54	52.56	4.01	50.41	54.00	-3.59	100	139
5	2402.000	98.59	peak	31.54	52.56	4.01	81.58	74.00	7.58	100	139

6.7 Power Line Conducted Emissions

Temperature	---
Relative Humidity	---
Atmospheric Pressure	---
Test date :	---
Tested By :	---

Requirement(s):

<table>
<tr><th>Spec</th><th>Item</th><th>Requirement</th><th>Applicable</th></tr>
<tr><td>47CFR§15.207, RSS210 (A8.1)</td><td>a)</td><td>For Low-power radio-frequency devices that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 [mu]H/50 ohms line impedance stabilization network (LISN). The lower limit applies at the boundary between the frequencies ranges.

Class A Limit
<table>
<tr><th rowspan="2">Frequency ranges (MHz)</th><th colspan="2">Limit (dBμV)</th></tr>
<tr><th>QP</th><th>Average</th></tr>
<tr><td>0.15 ~ 0.5</td><td>79</td><td>66</td></tr>
<tr><td>0.5 ~ 30</td><td>73</td><td>60</td></tr>
</table>
Class B Limit
<table>
<tr><th rowspan="2">Frequency ranges (MHz)</th><th colspan="2">Limit (dBμV)</th></tr>
<tr><th>QP</th><th>Average</th></tr>
<tr><td>0.15 ~ 0.5</td><td>66 – 56</td><td>56 – 46</td></tr>
<tr><td>0.5 ~ 5</td><td>56</td><td>46</td></tr>
<tr><td>5 ~ 30</td><td>60</td><td>50</td></tr>
</table></td><td>☐</td></tr>
<tr><td>Test Setup</td><td colspan="3"> 

Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80cm from EUT and at least 80cm from other units and other metal planes support units.</td></tr>
<tr><td>Procedure</td><td colspan="3">1. The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table.
2. The power supply for the EUT was fed through a 50W/50mH EUT LISN, connected to filtered mains.
3. The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable.
4. All other supporting equipment were powered separately from another main supply.
5. The EUT was switched on and allowed to warm up to its normal operating condition.
6. A scan was made on the NEUTRAL line (for AC mains) or Earth line (for DC power) over the required frequency range using an EMI test receiver.
7. High peaks, relative to the limit line, The EMI test receiver was then tuned to the selected frequencies and the necessary measurements made with a receiver bandwidth setting of 10 kHz.
8. Step 7 was then repeated for the LIVE line (for AC mains) or DC line (for DC power).</td></tr>
<tr><td>Remark</td><td colspan="3">Power supply by battery</td></tr>
<tr><td>Result</td><td colspan="3">☐Pass ☐Fail ☒N/A</td></tr>
</table>

Test Data	☐Yes ☒N/A
Test Plot	☐Yes (See below) ☒N/A

Data sample

No.	Frequency	Reading	Detector	Lisn/Isn	Ps_Lmt	Cab_L	Result	Limit	Margin
	(MHz)	(dBμV)		(dB}	(dB)	(dB)	(dBμV)	(dBμV)	(dB)

Frequency (MHz) = Emission frequency in MHz

Reading (dBμV) = Receiver Reading Value

Detector=Quasi Peak Detector or Average Detector

Lisn/ISN= Insertion loss of LISN

Ps_Lmt= Insertion loss of transient limiter (The transient limiter included 10dB attenuation)

Cab_L= cable loss

Result (dBμV) = Reading Value + Corrected Value

Limit (dBμV) = Limit stated in standard

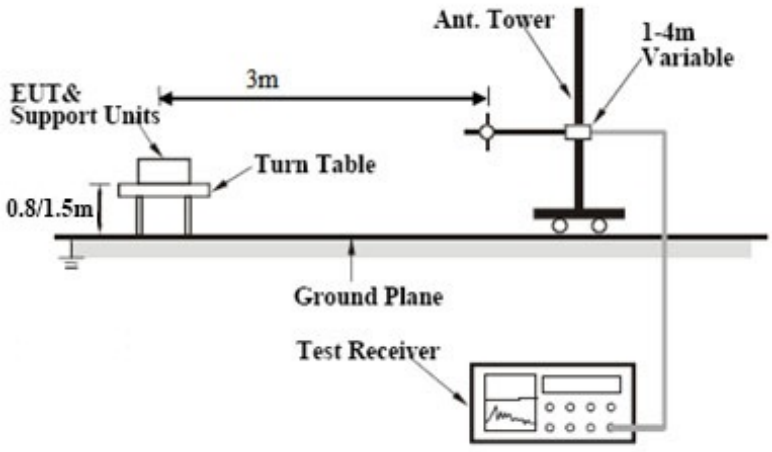
Calculation Formula:

Margin (dB) = Result (dBμV) – limit (dBμV)

6.8 Radiated Emissions

Temperature	20°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar
Test date :	November 10, 2017
Tested By :	Trety Lu

Requirement(s):

<table>
<tr><th>Spec</th><th>Item</th><th>Requirement</th><th>Applicable</th></tr>
<tr><td>47CFR§15.247(d), RSS210 (A8.5)</td><td>a)</td><td>Except higher limit as specified elsewhere in other section, the emissions from the low-power radio-frequency devices shall not exceed the field strength levels specified in the following table and the level of any unwanted emissions shall not exceed the level of the fundamental emission. The tighter limit applies at the band edges
Class A Limit
<table>
<tr><th>Frequency range (MHz)</th><th>Field Strength (μV/m)</th></tr>
<tr><td>30 – 88</td><td>90</td></tr>
<tr><td>88 – 216</td><td>150</td></tr>
<tr><td>216 – 960</td><td>210</td></tr>
<tr><td>Above 960</td><td>300</td></tr>
</table>
Class B Limit
<table>
<tr><th>Frequency range (MHz)</th><th>Field Strength (μV/m)</th></tr>
<tr><td>30 – 88</td><td>100</td></tr>
<tr><td>88 – 216</td><td>150</td></tr>
<tr><td>216 – 960</td><td>200</td></tr>
<tr><td>Above 960</td><td>500</td></tr>
</table></td><td>☒</td></tr>
<tr><td>Test Setup</td><td colspan="3"> 
</td></tr>
<tr><td>Procedure</td><td colspan="3">1. The EUT was switched on and allowed to warm up to its normal operating condition.
2. The test was carried out at the selected frequency points obtained from the EUT characterization. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner:
a. Vertical or horizontal polarization (whichever gave the higher emission level over a full rotation of the EUT) was chosen.
b. The EUT was then rotated to the direction that gave the maximum emission.
c. Finally, the antenna height was adjusted to the height that gave the maximum emission.
3. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasiy Peak detection at frequency below 1GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz with Peak detection for Peak measurement at frequency above 1GHz.
The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth with Peak</td></tr>
</table>

	detection for Average Measurement as below at frequency above 1GHz. ■ 1/T kHz (Duty cycle < 98%) □ 10 Hz (Duty cycle > 98%) 5. Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.
Remark	
Result	☒Pass ☐Fail
Test Data	☒Yes ☐N/A
Test Plot	☒Yes (See below) ☐N/A

Data sample

No.	Frequency	Reading	Detector	Ant_F	PA_G	Cab_L	Result	Limit	Margin	Height	Degree
	(MHz)	(dBμV/m)		(dB/m)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(cm)	(°)

Frequency (MHz) = Emission frequency in MHz

Reading (dBμV/m) = Receiver Reading Value

Detector= Peak Detector or Quasi Peak Detector

Ant_F=Antenna Factor

PA_G=Pre-Amplifier Gain

Cab_L=Cable Loss

Result (dBμV/m) = Read ing Value + Corrected Value

Limit (dBμV/m) = Limit stated in standard

Height (cm) = Height of Receiver antenna

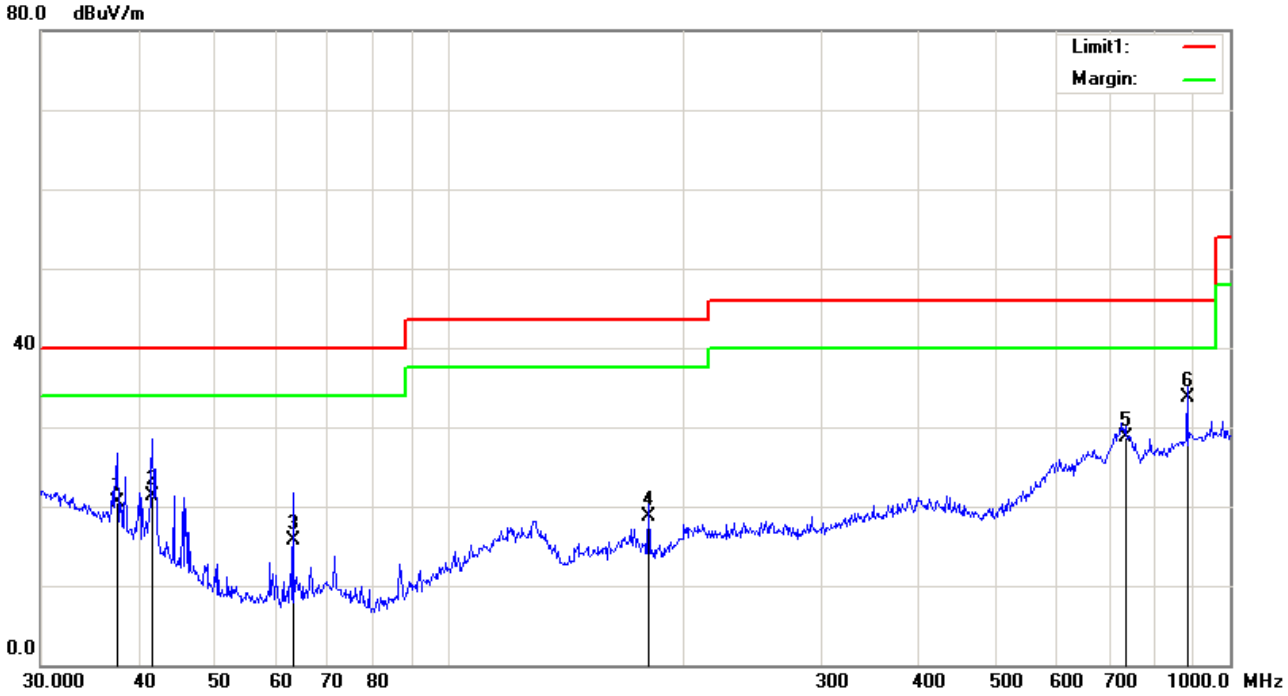
Degree = Turn table degree

Calculation Formula:

Margin (dB) = Result (dBμV/m) – limit (dBμV/m)

Test Mode:	Transmitting BLE Mode-Low Channel

Below 1GHz



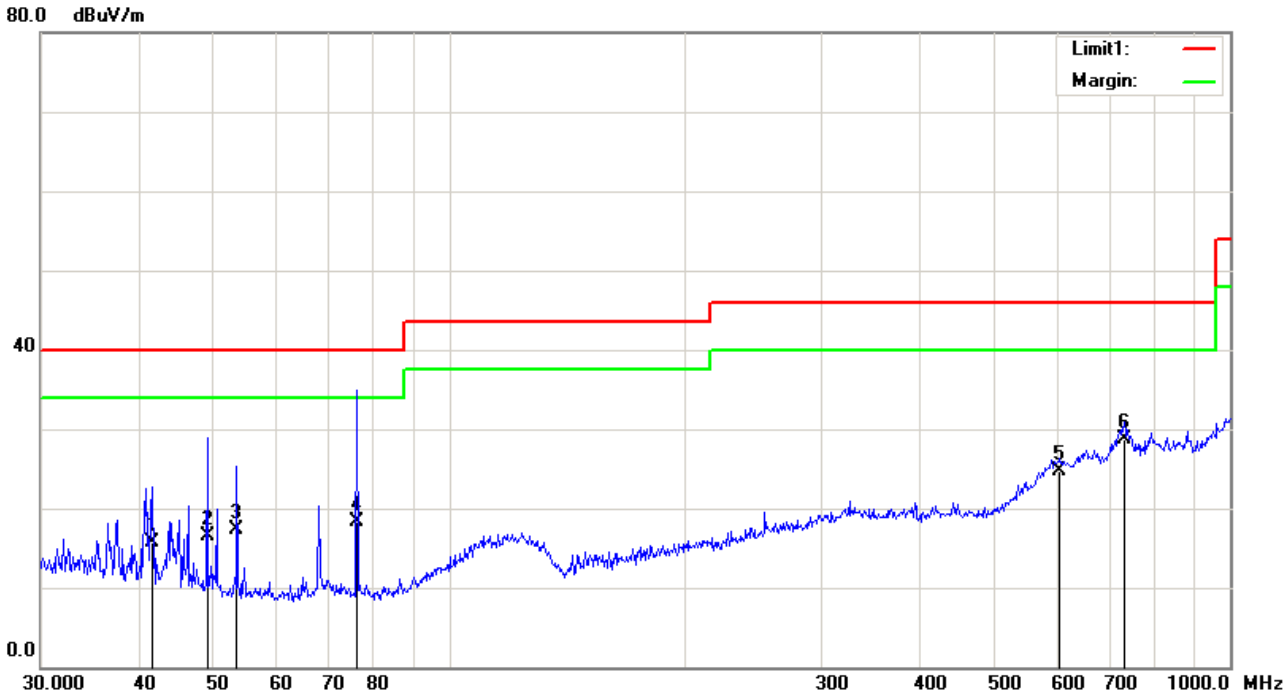
Test Data

Vertical Polarity Plot @3m

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Ant_F (dB/m)	PA_G (dB)	Cab_L (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)
1	37.6798	48.07	QP	17.13	45.67	1.01	20.54	40.00	-19.46	100	108
2	41.7130	51.49	QP	14.63	45.81	1.08	21.39	40.00	-18.61	200	251
3	63.0916	53.15	QP	8.65	47.50	1.34	15.64	40.00	-24.36	200	360
4	180.0165	50.60	QP	12.30	46.31	2.16	18.75	43.50	-24.75	100	173
5	734.4913	47.35	QP	22.23	45.29	4.35	28.64	46.00	-17.36	100	306
6	881.4067	51.55	QP	23.28	45.95	4.80	33.68	46.00	-12.32	100	11

Test Mode:	Transmitting BLE Mode-Low Channel

Below 1GHz

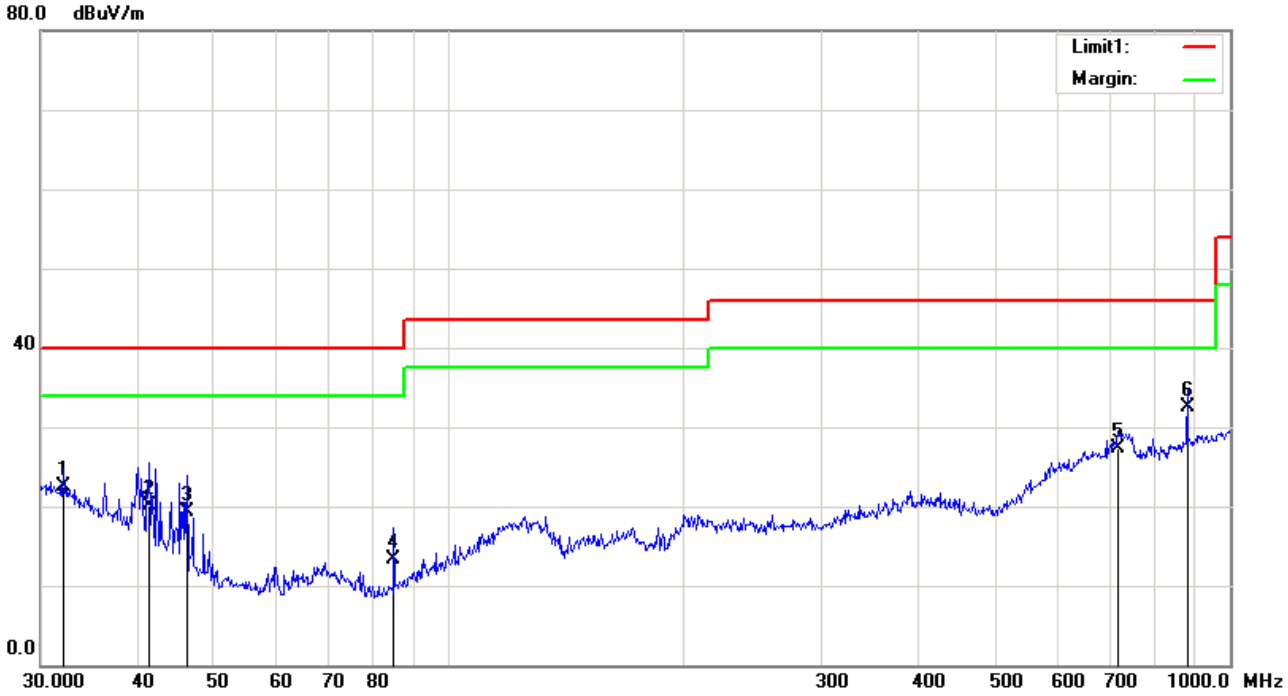


Horizontal Polarity Plot @3m

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Ant_F (dB/m)	PA_G (dB)	Cab_L (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)
1	41.7130	49.71	QP	10.77	45.81	1.08	15.75	40.00	-24.25	200	39
2	49.0145	51.63	QP	9.99	46.36	1.23	16.49	40.00	-23.51	100	215
3	53.5052	52.95	QP	9.75	46.63	1.26	17.33	40.00	-22.67	200	322
4	76.2442	54.86	QP	9.98	47.91	1.44	18.37	40.00	-21.63	300	6
5	605.6592	47.58	QP	21.32	48.21	3.95	24.64	46.00	-21.36	300	306
6	731.9203	47.10	QP	22.59	45.38	4.34	28.65	46.00	-17.35	200	130

Test Mode:	Transmitting BLE Mode-Middle Channel

Below 1GHz



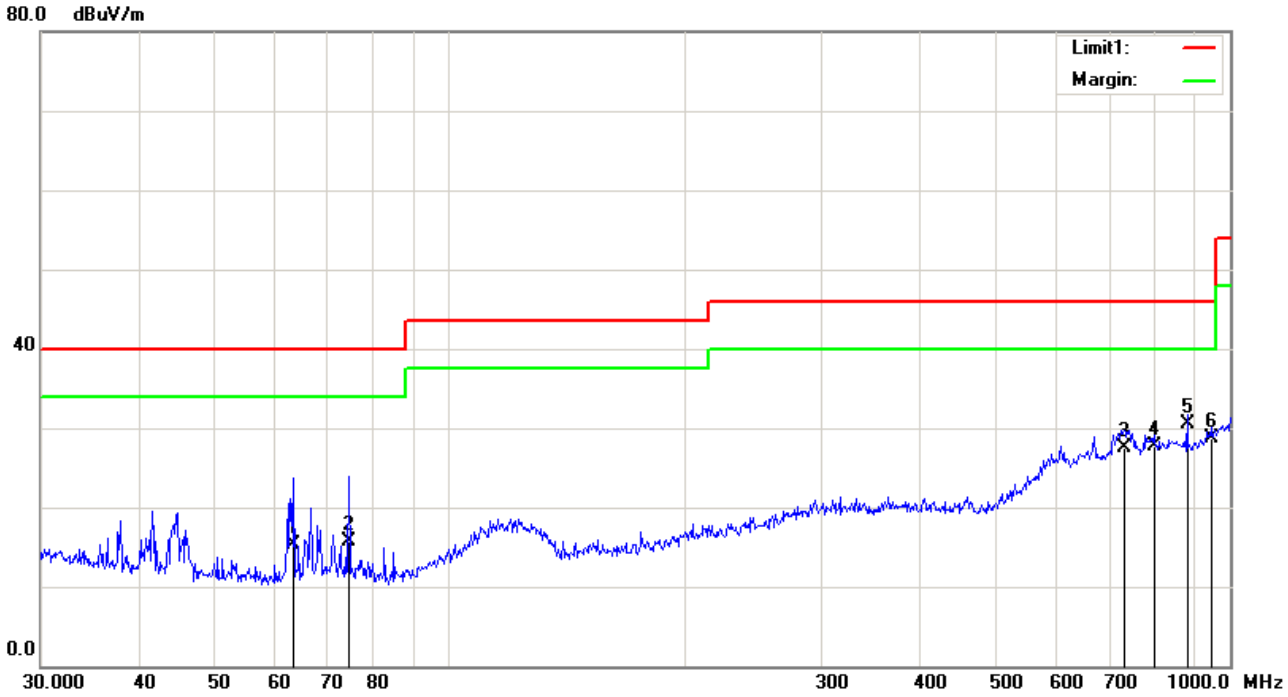
Test Data

Vertical Polarity Plot @3m

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Ant_F (dB/m)	PA_G (dB)	Cab_L (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)
1	32.0668	46.93	QP	20.40	45.67	0.91	22.57	40.00	-17.43	100	85
2	41.2765	49.97	QP	14.92	45.78	1.08	20.19	40.00	-19.81	200	91
3	46.1780	52.70	QP	11.62	46.11	1.17	19.38	40.00	-20.62	300	90
4	84.9995	51.12	QP	8.17	47.52	1.47	13.24	40.00	-26.76	200	168
5	719.1995	46.39	QP	22.39	45.75	4.31	27.34	46.00	-18.66	100	241
6	881.4067	50.32	QP	23.28	45.95	4.80	32.45	46.00	-13.55	200	241

Test Mode:	Transmitting BLE Mode-Middle Channel

Below 1GHz

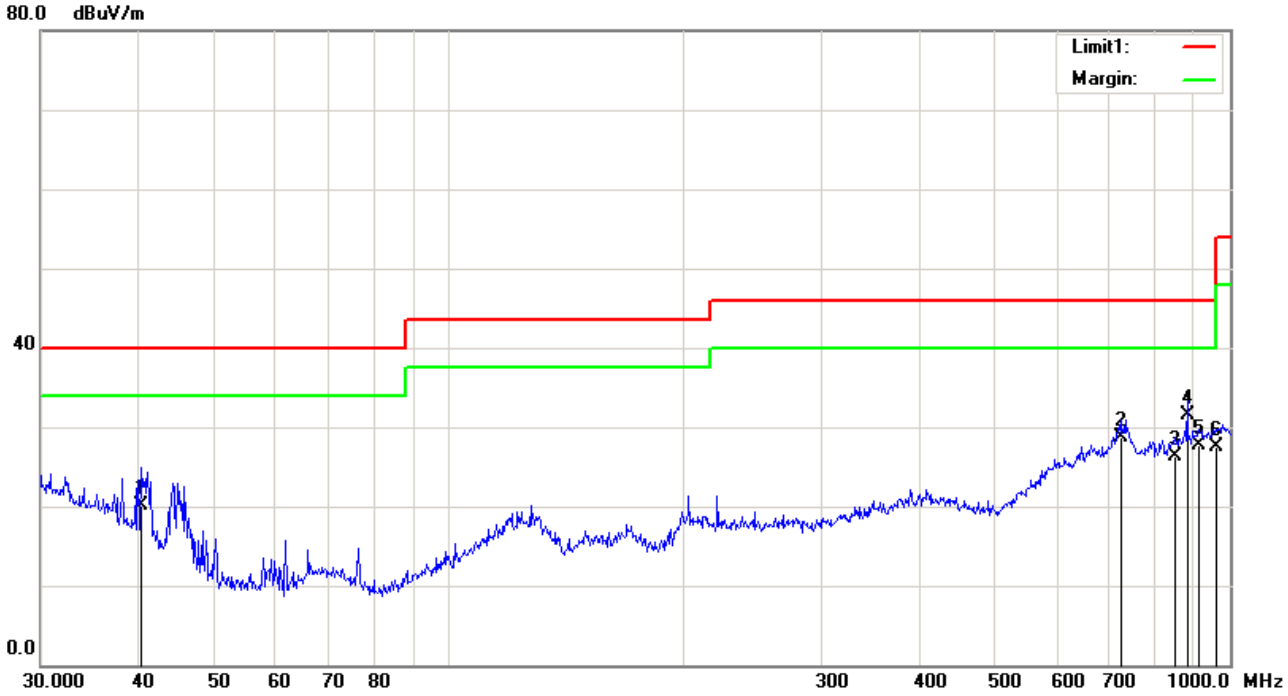


Horizontal Polarity Plot @3m

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Ant_F (dB/m)	PA_G (dB)	Cab_L (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)
1	63.3132	52.68	QP	8.70	47.52	1.35	15.21	40.00	-24.79	200	246
2	74.3955	53.06	QP	9.09	47.94	1.44	15.65	40.00	-24.35	300	300
3	731.9203	46.27	QP	22.26	45.38	4.34	27.49	46.00	-18.51	300	181
4	798.9797	47.93	QP	21.56	46.37	4.55	27.67	46.00	-18.33	200	210
5	881.4067	48.35	QP	23.28	45.95	4.80	30.48	46.00	-15.52	254	0
6	945.4399	45.99	QP	23.65	45.95	4.95	28.64	46.00	-17.36	291	360

Test Mode:	Transmitting BLE Mode-High Channel

Below 1GHz



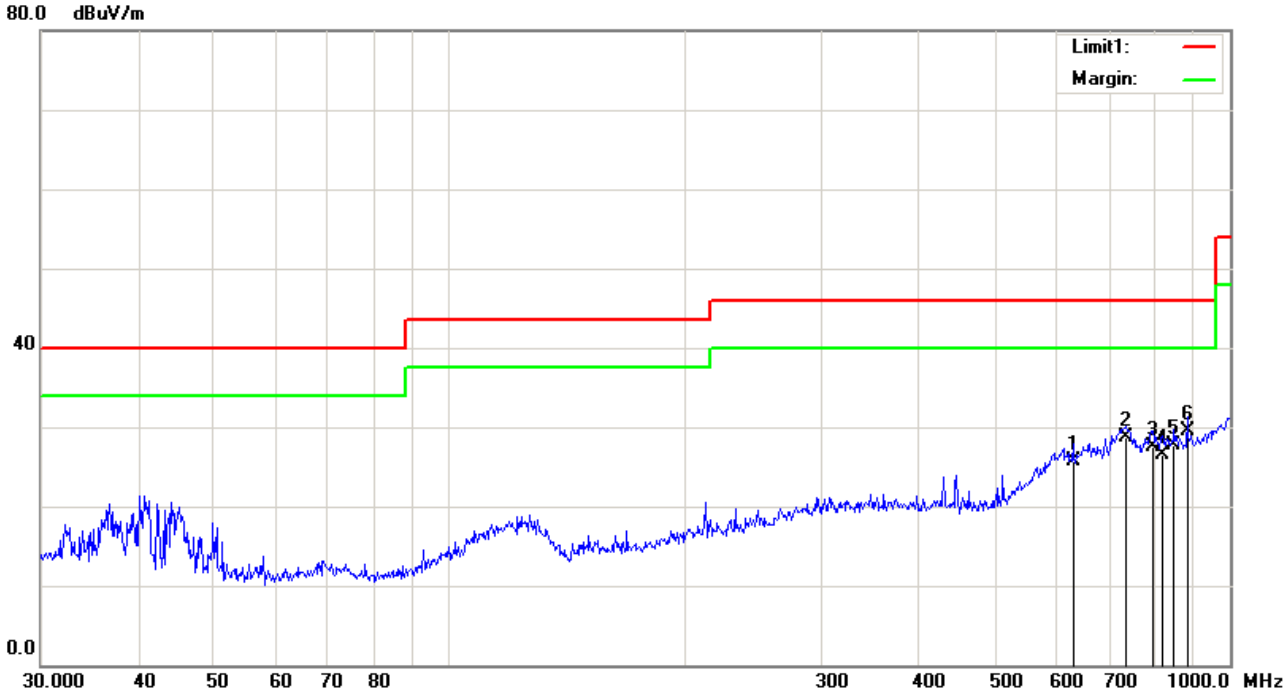
Test Data

Vertical Polarity Plot @3m

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Ant_F (dB/m)	PA_G (dB)	Cab_L (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)
1	40.2757	49.26	QP	15.59	45.72	1.06	20.19	40.00	-19.81	200	201
2	724.2611	47.61	QP	22.34	45.63	4.32	28.64	46.00	-17.36	100	309
3	851.0353	45.29	QP	22.63	46.25	4.70	26.37	46.00	-19.63	300	56
4	881.4067	49.36	QP	23.28	45.95	4.80	31.49	46.00	-14.51	200	129
5	912.8620	45.76	QP	23.66	46.63	4.89	27.68	46.00	-18.32	100	238
6	958.7943	45.15	QP	23.64	46.23	4.98	27.54	46.00	-18.46	100	80

Test Mode:	Transmitting BLE Mode-High Channel

Below 1GHz



Horizontal Polarity Plot @3m

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Ant_F (dB/m)	PA_G (dB)	Cab_L (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)
1	629.4772	46.98	QP	21.60	46.97	4.03	25.64	46.00	-20.36	200	48
2	734.4913	47.02	QP	22.61	45.29	4.35	28.69	46.00	-17.31	300	157
3	796.1830	46.30	QP	22.98	46.33	4.53	27.48	46.00	-18.52	200	198
4	818.8341	44.52	QP	22.94	45.66	4.61	26.41	46.00	-19.59	300	34
5	848.0563	46.30	QP	22.86	46.23	4.69	27.62	46.00	-18.38	100	170
6	881.4067	47.83	QP	22.76	45.95	4.80	29.44	46.00	-16.56	200	63

Test Mode:	Transmitting BLE Mode-Low Channel

Above 1GHz

Horizontal

No.	Frequency	Reading	Detector	Ant_F	PA_G	Cab_L	Result	Limit	Margin	Height	Degree
	(MHz)	(dBµV/m)		(dB/m)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(cm)	(°)
1	1867.000	66.64	peak	30.53	51.61	3.99	49.55	74.00	-24.45	169	0
2	2139.000	64.70	peak	31.38	52.35	4.13	47.86	74.00	-26.14	100	306
3	4485.000	57.19	peak	32.47	52.01	5.83	43.48	74.00	-30.52	100	320
4	5658.000	57.35	peak	33.47	52.80	6.16	44.18	74.00	-29.82	200	108
5	8548.000	56.64	peak	34.26	53.84	8.35	45.41	74.00	-28.59	100	170
6	11676.000	56.06	peak	38.56	53.45	10.03	51.20	74.00	-22.80	200	296

Vertical

No.	Frequency	Reading	Detector	Ant_F	PA_G	Cab_L	Result	Limit	Margin	Height	Degree
	(MHz)	(dBµV/m)		(dB/m)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(cm)	(°)
1	1765.000	68.37	peak	29.94	51.12	4.01	51.20	74.00	-22.80	200	314
2	1901.000	69.30	peak	30.73	51.77	3.98	52.24	74.00	-21.76	200	3
3	4502.000	57.54	peak	32.50	51.99	5.85	43.90	74.00	-30.10	200	325
4	6270.000	55.67	peak	33.83	52.12	5.84	43.22	74.00	-30.78	200	82
5	9806.000	55.71	peak	38.23	53.96	9.09	49.07	74.00	-24.93	200	5
6	11693.000	55.71	peak	38.56	53.48	10.03	50.82	74.00	-23.18	100	99

Note: The AV measurement performed, more than 20dB below limit so AV test data was not presented.

Test Mode:	Transmitting BLE Mode-Middle Channel

Above 1GHz

Horizontal

No.	Frequency	Reading	Detector	Ant_F	PA_G	Cab_L	Result	Limit	Margin	Height	Degree
	(MHz)	(dBuV/m)		(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)
1	1820	65.34	peak	30.53	51.61	3.99	48.25	74.00	-25.75	100	154
2	2131	64.89	peak	31.38	52.35	4.13	48.05	74.00	-25.95	200	249
3	4485	57.46	peak	32.47	52.01	5.83	43.75	74.00	-30.25	100	265
4	5627	57.25	peak	33.47	52.8	6.16	44.08	74.00	-29.92	200	169
5	8590	56.74	peak	34.26	53.84	8.35	45.51	74.00	-28.49	300	274
6	11557	55.41	peak	38.56	53.45	10.03	50.55	74.00	-23.45	200	350

Vertical

No.	Frequency	Reading	Detector	Ant_F	PA_G	Cab_L	Result	Limit	Margin	Height	Degree
	(MHz)	(dBuV/m)		(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)
1	1746	67.24	peak	29.94	51.12	4.01	50.07	74.00	-23.93	200	158
2	1910	68.19	peak	30.73	51.77	3.98	51.13	74.00	-22.87	200	165
3	45960	56.33	peak	32.5	51.99	5.85	42.69	74.00	-31.31	300	310
4	6268	55.48	peak	33.83	52.12	5.84	43.03	74.00	-30.97	100	141
5	9857	55.89	peak	38.23	53.96	9.09	49.25	74.00	-24.75	200	250
6	11356	54.37	peak	38.56	53.48	10.03	49.48	74.00	-24.52	100	139

Note: The AV measurement performed, more than 20dB below limit so AV test data was not presented.

Test Mode:	Transmitting BLE Mode-High Channel

Above 1GHz

Horizontal

No.	Frequency	Reading	Detector	Ant_F	PA_G	Cab_L	Result	Limit	Margin	Height	Degree
	(MHz)	(dBuV/m)		(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)
1	2020.000	60.77	peak	31.31	52.26	3.97	43.79	74.00	-30.21	100	194
2	4960.000	66.57	peak	33.51	54.03	5.89	51.94	74.00	-22.06	200	21
3	6151.000	55.60	peak	33.64	51.75	5.85	43.34	74.00	-30.66	100	54
4	7579.000	56.09	peak	35.34	54.78	7.49	44.14	74.00	-29.86	200	104
5	9908.000	54.83	peak	38.48	54.03	9.17	48.45	74.00	-25.55	200	281
6	11557.000	55.13	peak	38.59	53.24	10.08	50.56	74.00	-23.44	100	336

Vertical

No.	Frequency	Reading	Detector	Ant_F	PA_G	Cab_L	Result	Limit	Margin	Height	Degree
	(MHz)	(dBuV/m)		(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)
1	2020.000	60.60	peak	31.31	52.26	3.97	43.62	74.00	-30.38	200	8
2	4960.000	65.14	peak	33.51	54.03	5.89	50.51	74.00	-23.49	200	295
3	6015.000	55.28	peak	33.42	51.33	5.85	43.22	74.00	-30.78	200	21
4	8225.000	56.06	peak	35.48	54.29	8.09	45.34	74.00	-28.66	200	86
5	9874.000	54.55	peak	38.40	54.01	9.14	48.08	74.00	-25.92	200	150
6	10843.000	55.02	peak	38.46	53.17	9.45	49.76	74.00	-24.24	200	166

Note: The AV measurement performed, more than 20dB below limit so AV test data was not presented.

Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Due	In use
AC Line Conducted Emissions					
R&S EMI Test Receiver	ESPI3	101216	05/03/2017	05/02/2018	☐
Transient Limiter	LIT-153	531021	10/30/2017	10/29/2018	☐
V-LISN	ESH3-Z5	838979/005	05/15/2017	05/14/2018	☐
SIEMIC EZ_EMC Conducted Emissions software	Ver.ICP-03A1	N/A	N/A	N/A	☐
RF conducted test					
Spectrum Analyzer	N9010A	MY47191130	05/03/2017	05/02/2018	☒
Radiated Emissions					
Spectrum Analyzer	N9010A	MY47191130	05/03/2017	05/02/2018	☒
R&S EMI Receiver	ESPI3	101216	05/03/2017	05/02/2018	☒
Antenna (30MHz~6GHz)	JB6	A121411	10/31/2017	10/31/2018	☒
EMCO Horn Antenna (1 ~18GHz)	3115	N/A	11/15/2016	11/14/2018	☒
Hp Pre-Amplifier	8447F	1937A01160	10/31/2017	10/30/2018	☒
Agilent Pre-Amplifier	8449B	N/A	10/31/2017	10/30/2018	☒
SIEMIC EZ_EMC Radiated Emissions software	Ver.ICP-03A1	N/A	N/A	N/A	☒

Annex B. EUT And Test Setup Photographs

Annex B.i. Photograph: EUT External Photos

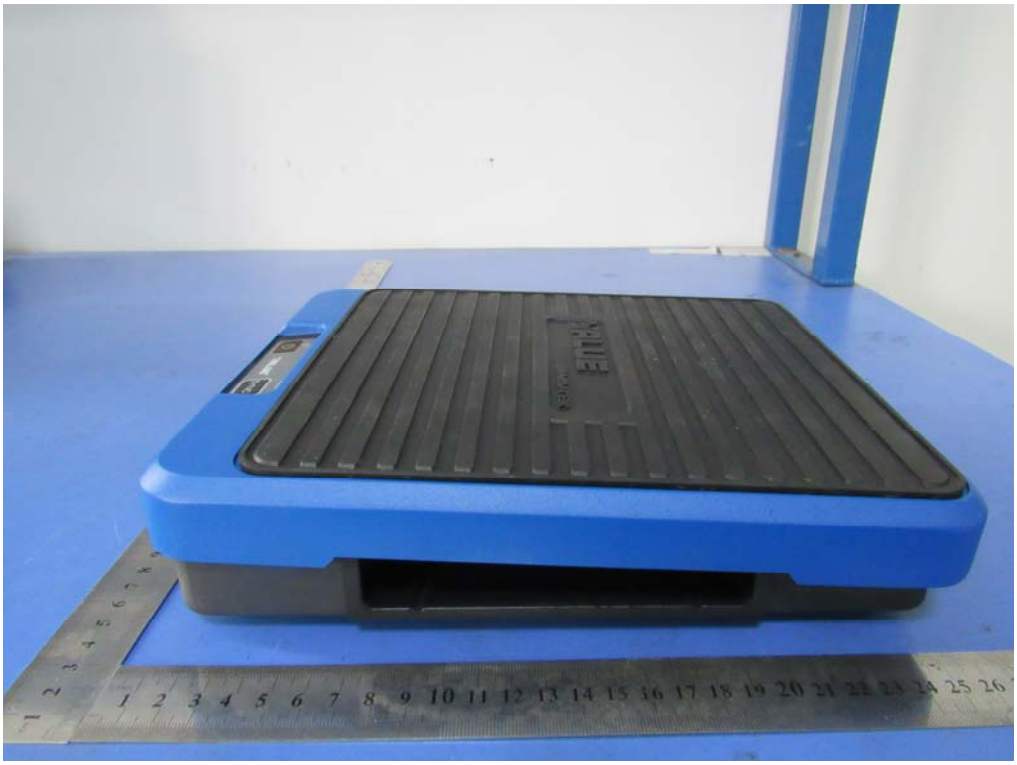
EUT - Front View

EUT - Rear View

EUT - Top View

EUT - Bottom View

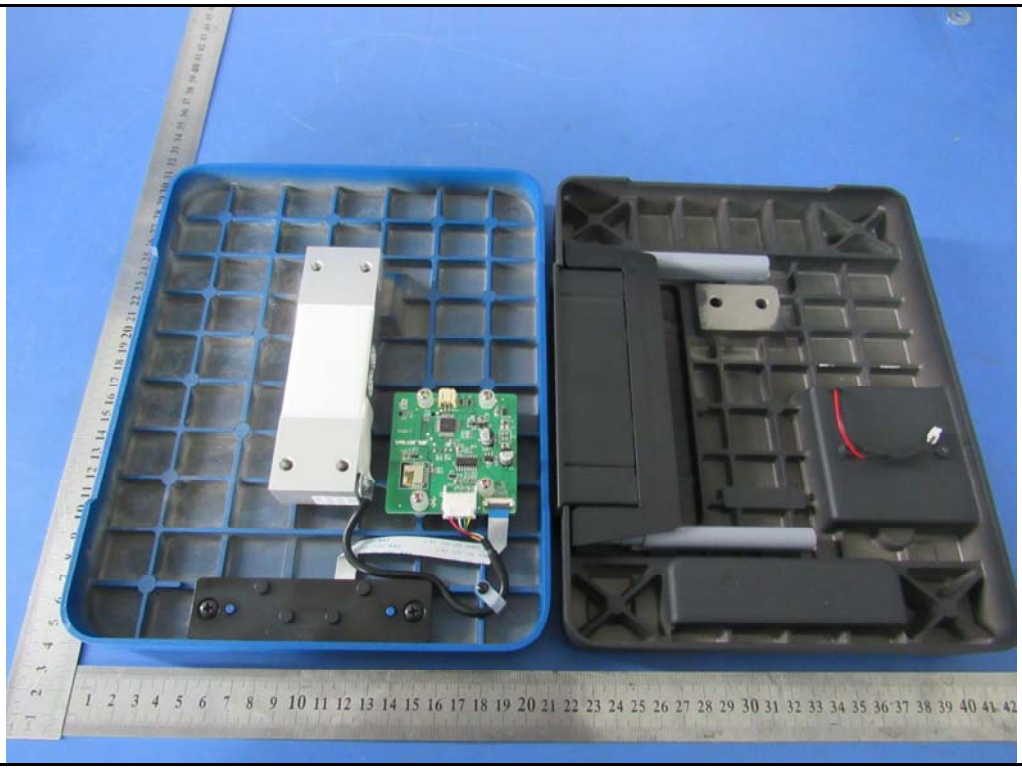
EUT - Left View



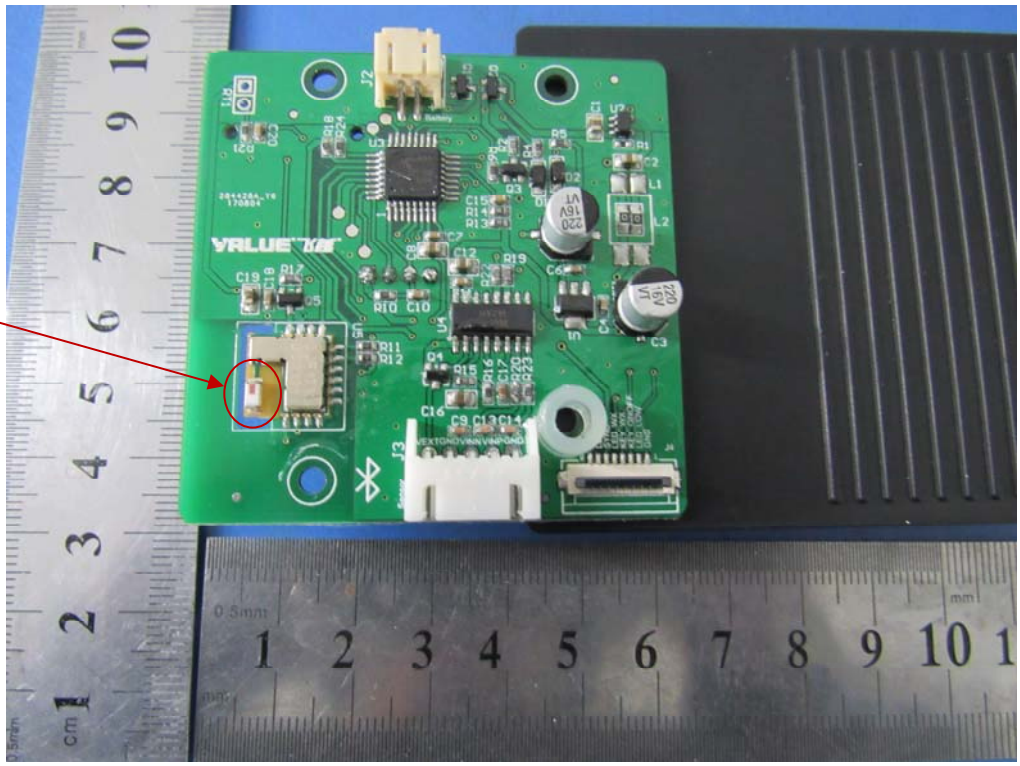
EUT - Right View

Annex B.ii. Photograph: EUT Internal Photos

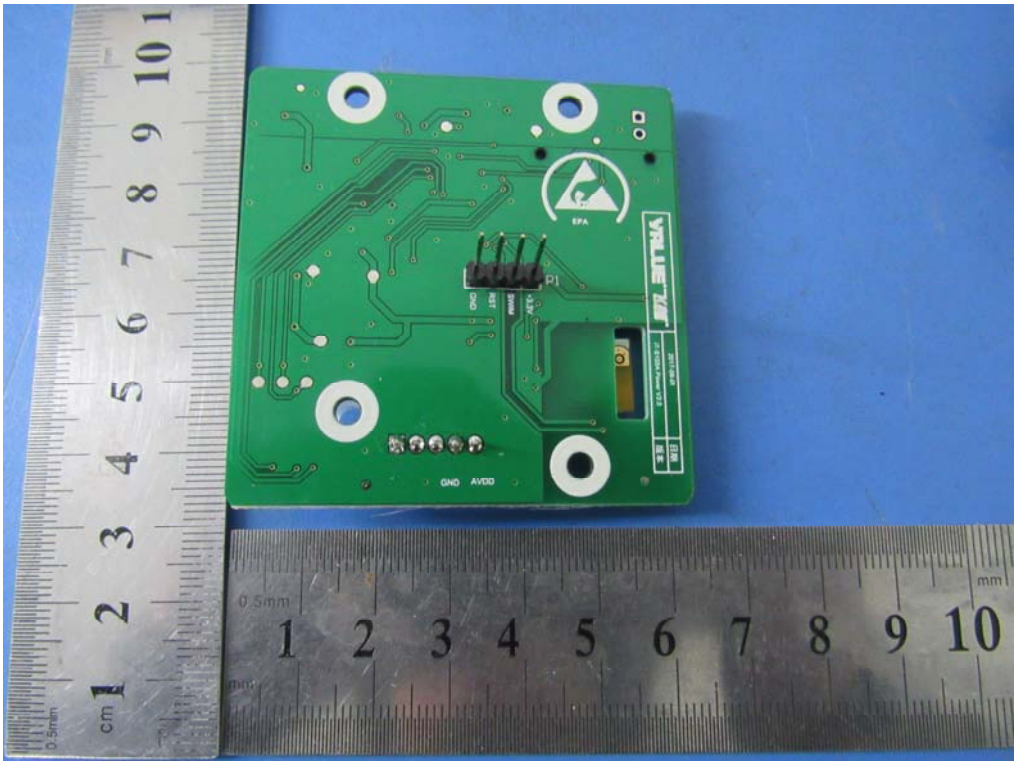
EUT – Uncover Front View 1



EUT – Uncover Front View 2

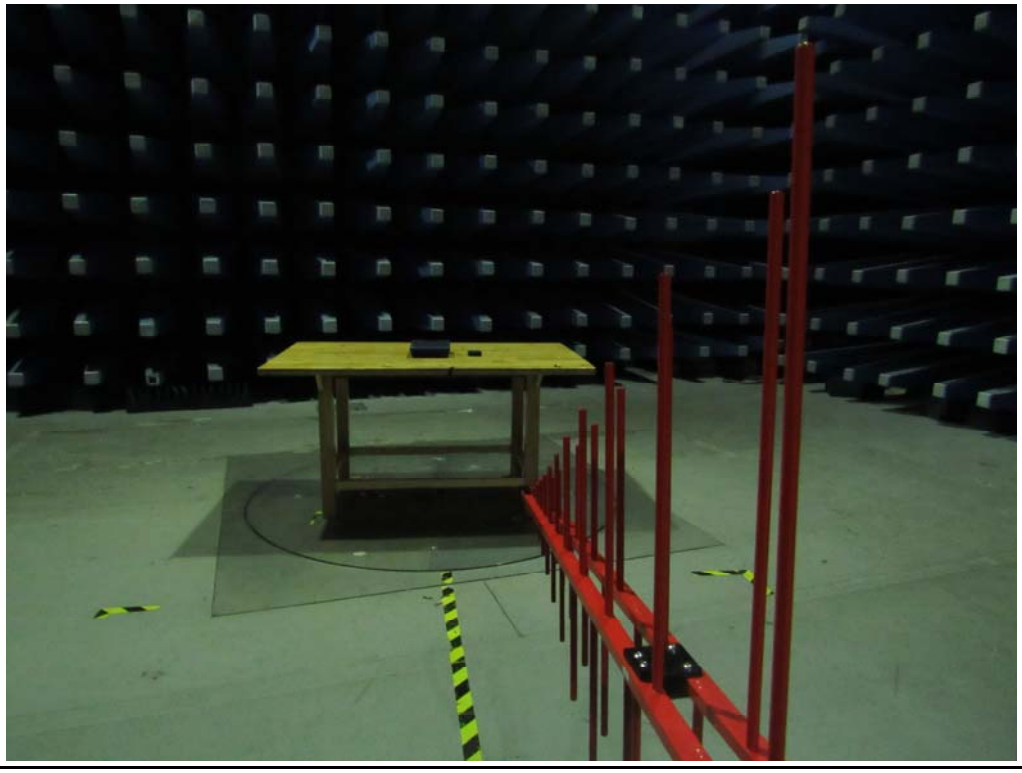


EUT – PCBA Front View

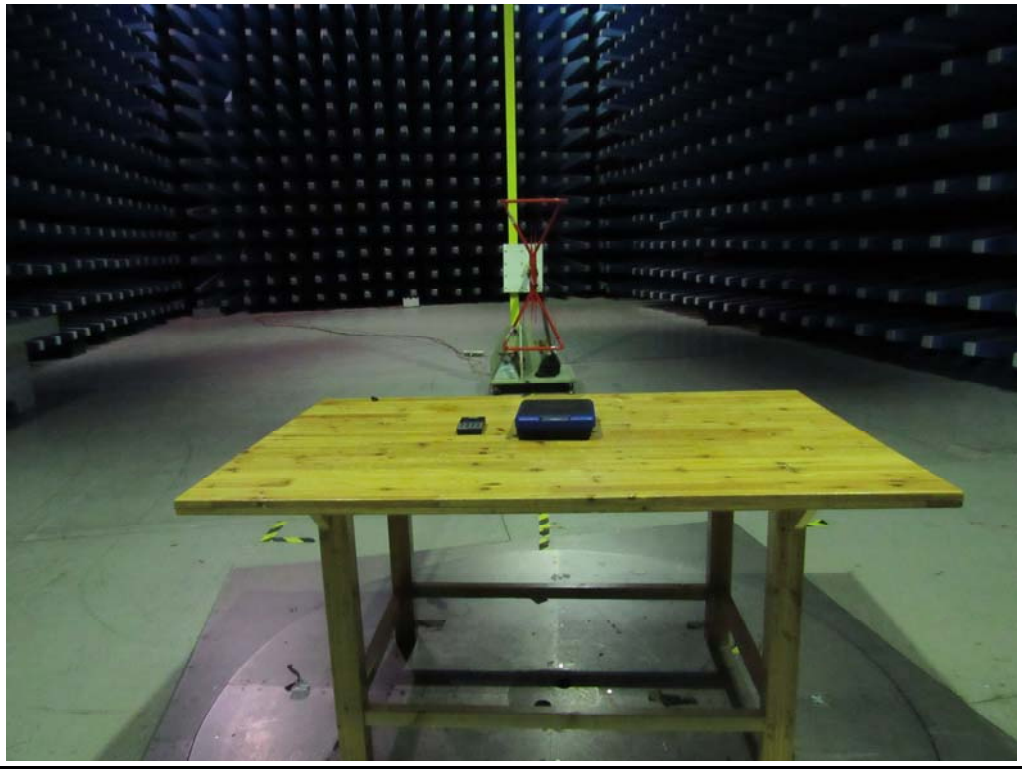


EUT - PCBA Rear View

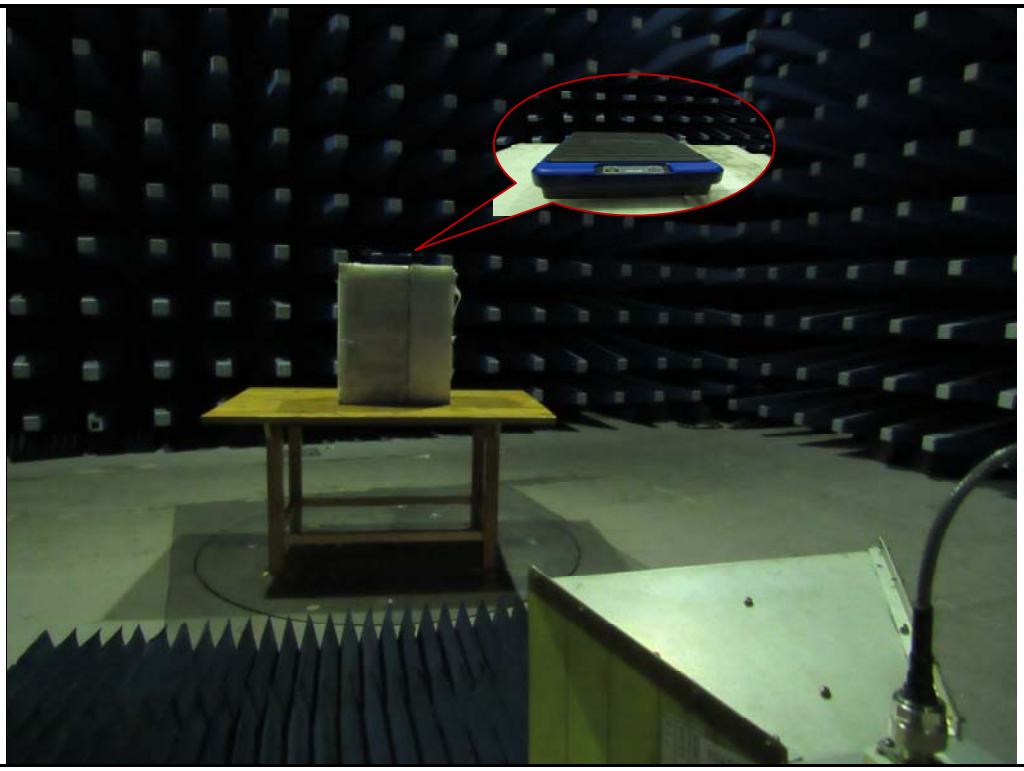
Annex B.iii. Photograph: Test Setup Photo



Radiated Spurious Emissions Test Setup Below 1GHz Front View



Radiated Spurious Emissions Test Setup Below 1GHz Rear View

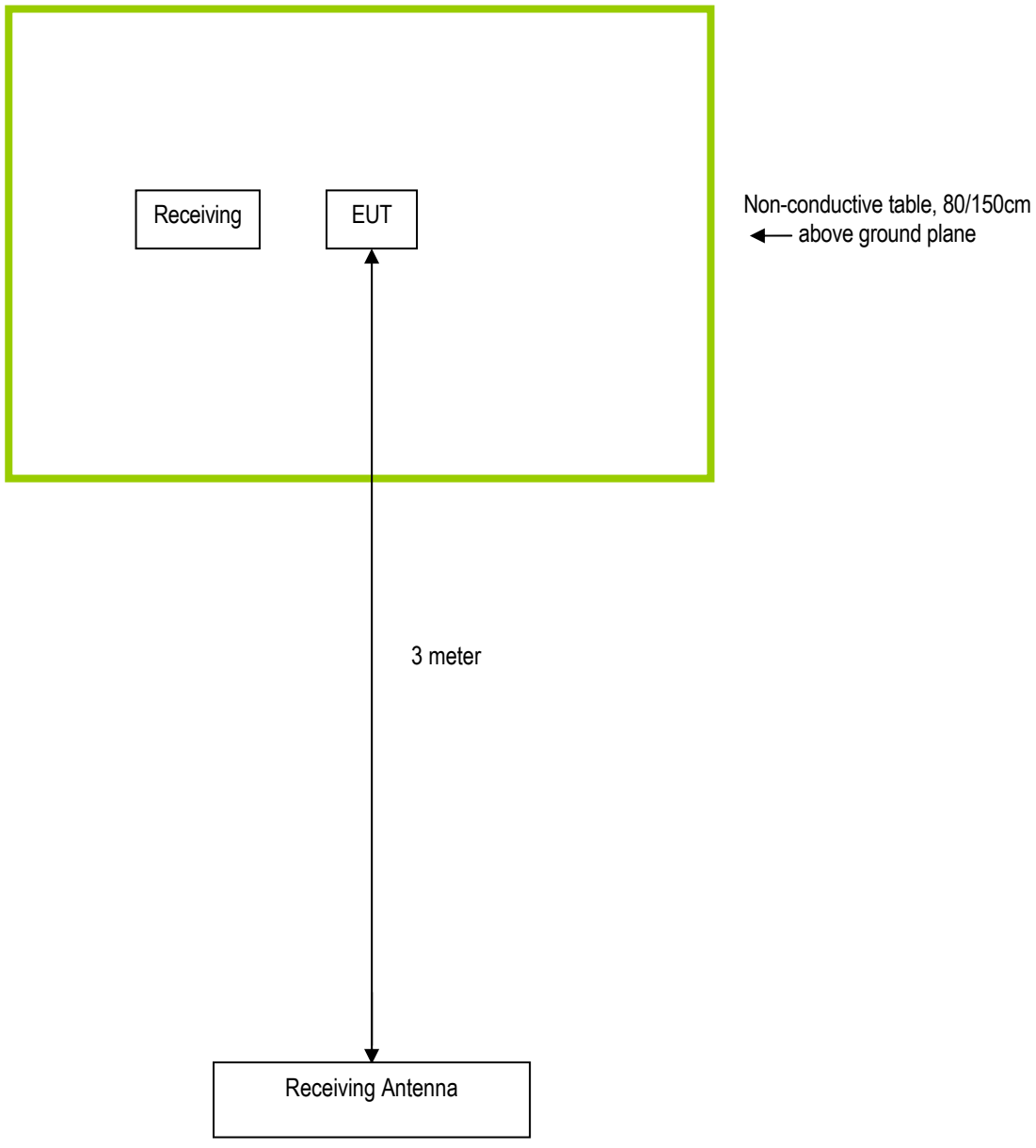


Radiated Spurious Emissions Test Setup Above 1GHz

Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

Annex C.i. TEST SET UP BLOCK

Block Configuration Diagram for Radiated Emissions



Annex C. ii. SUPPORTING EQUIPMENT DESCRIPTION

The following is a description of supporting equipment and details of cables used with the EUT.

Manufacturer	Equipment Description	Model
Zhejiang VALUE Mechanical & Electrical Products CO.,LTD	Hand-held device	H1

Annex D. User Manual / Block Diagram / Schematics / Partlist

Please see attachment

Annex E. DECLARATION OF SIMILARITY

Zhejiang VALUE Mechanical & Electrical Products CO., LTD

To: SIEMIC INC.

Declaration letter

Dear Sir,

For our business issue and marketing requirement, we would like to list different models numbers on the FCC ceritification, as following:

FCC ID: 2ANTN0001

Model No.: NRS1i01、NRS1i、VRS-50i-01、VRS-50i
NRS2i01、NRS2i、VRS-100i-01、VRS-100i
NRS3i01、NRS3i、VRS-120i-01、VRS-120i

1、NRS1i01、NRS1i、VRS-50i-01、VRS-50i are same, the sensor range is 50kg.

2、NRS2i01、NRS2i、VRS-100i-01、VRS-100i are same, the sensor range is 100kg.

3、NRS3i01、NRS3i、VRS-120i-01、VRS-120i are same, the sensor range is 120kg.

4、NRS series and VRS series exported to different countries are only different in the color of scale. Other spare parts and internal structure are same.

5、No.1, No.2 is small size scale (dimension of scale 210*260*61.5mm), No.3 is large size scale (dimension of scale 270*320*65.7mm).They are only different in size. Other spare parts and internal structure are same.

Thank you!

Signature: Xiaoyan Wang 2017.11.10

Printed name/title: Xiaoyan Wang

Address: jiulong Avenue,Western Industrial District,Wenling,Zhejiang,China