RF TEST REPORT

Report No.: 16020308-FCC-R1
Supersede Report No.: N/A

Applicant	Beijing Jia An Electronics Technology Co.,Ltd.
Product Name	BLE module
Main Model	BTRS-Uart
Test Standard	FCC Part 15.247: 2015, ANSI C63.10: 2013
Test Date	April 12 to April 21, 2016
Issue Date	April 27, 2016
Test Result	☑ Pass ☐ Fail
Equipment complied with the specification	☑
Equipment did not comply with the specification	☐

Amos Xia		
Amos Xia Test Engineer	Herve Idoko Checked By	

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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
16020308-FCC-R1	NONE	Original	April 27, 2016

2. Customer information

Applicant Name	Beijing Jia An Electronics Technology Co.,Ltd.
Applicant Add	No.19 GuCheng West Street,Shi Jing Shan District,Beijing 100043, China
Manufacturer	Beijing Jia An Electronics Technology Co.,Ltd.
Manufacturer Add	No.19 GuCheng West Street,Shi Jing Shan District,Beijing 100043, 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.	986914
IC Test Site No.	4842B-1
Test Software	Labview of SIEMIC version 1.0

4. Equipment under Test (EUT) Information

Description of EUT:	BLE module
Main Model:	BTRS-Uart
Serial Model:	N/A
Date EUT received:	April 08, 2016
Test Date(s):	April 12 to April 21, 2016
Output Max power	-0.154 dBm
Antenna Gain:	BLE: -2.3 dBi
Type of Modulation:	BLE: GFSK
RF Operating Frequency (ies):	BLE: 2402-2480 MHz
Number of Channels:	BLE: 40CH
Port:	N/A
Input Power:	DC 5-15V
Trade Name :	N/A
FCC ID:	VVJ-BTRS

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), §2.1093	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),	AC Power Line Conducted Emissions	Compliance
§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 protable device, thus requires RF exposure evaluation;
Please refer to SIEMIC RF Exposure Report: 16020308-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.

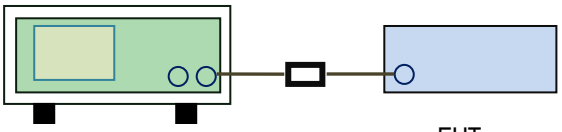
Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit. And according to FCC 47 CFR section 15.247 (b), if the transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount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

Antenna Connector Construction

The EUT has 1 antenna:
A PIFA antenna for BLE, the gain is -2.3 dBi for BLE.
Result: Compliance.

6.3 DTS (6 dB) Channel Bandwidth

Temperature	20°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar
Test date :	April 12, 2016
Tested By :	Amos Xia

Spec	Item	Requirement	Applicable
§ 15.247(a)(2) RSSGen (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 v03r05, 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	0.654	≥0.5	Pass
		Mid	2440	0.642	≥0.5	Pass
		High	2480	0.621	≥0.5	Pass

Test Plots

6dB Bandwidth measurement result

6dB Bandwidth - Low CH 2402

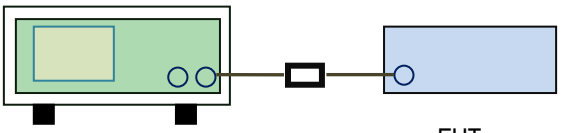
6dB Bandwidth - Mid CH 2440

6dB Bandwidth - High CH 2480

6.4 Maximum Output Power

Temperature	20°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar
Test date :	April 12, 2016
Tested By :	Amos Xia

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	 Spectrum Analyzer EUT		
Test Procedure	558074 D01 DTS Meas Guidance v03r05, 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	-1.165	30	Pass
		Mid	2440	-0.348	30	Pass
		High	2480	-0.154	30	Pass

Test Plots

Output Power measurement result

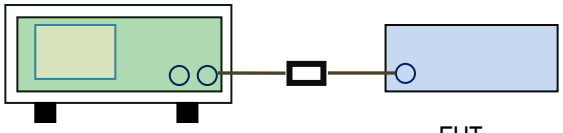
Output power - Low CH 2402

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 :	April 12, 2016
Tested By :	Amos Xia

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 v03r05, 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	-1.167	8	Pass
		Mid	2440	-0.302	8	Pass
		High	2480	-0.416	8	Pass

Test Plots

Power Spectral Density measurement result

PSD - Low CH 2402

PSD - Mid CH 2440

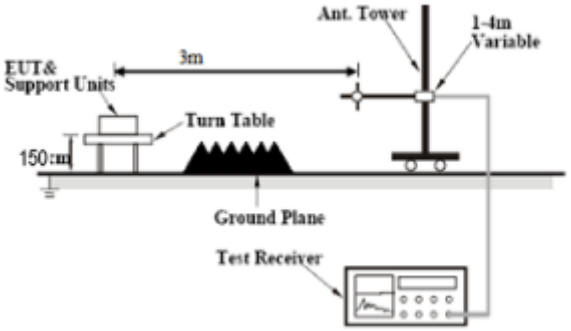
PSD - High CH 2480

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

Temperature	20°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar
Test date :	April 15, 2016
Tested By :	Amos Xia

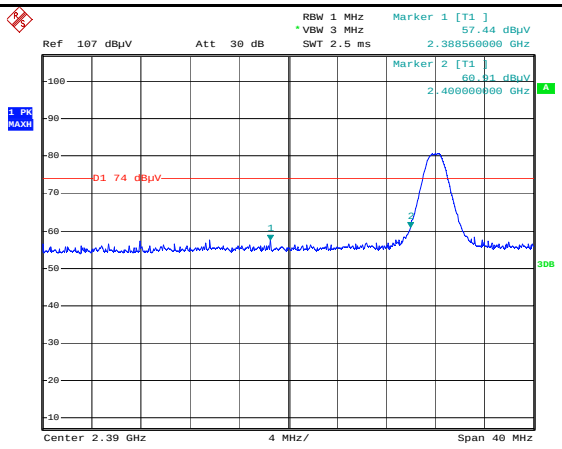
Requirement(s):

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

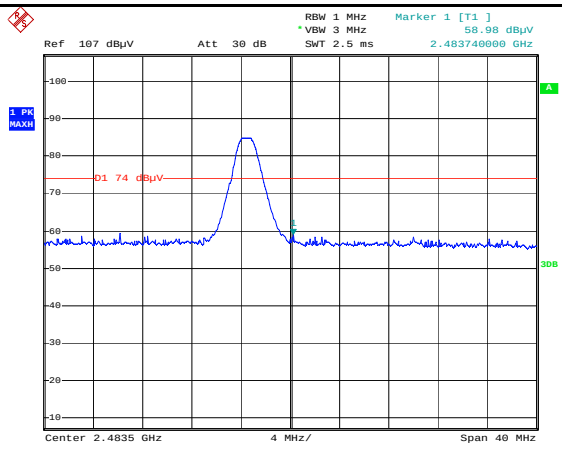
Band Edge measurement result



Date: 15.APR.2016 12:04:09

Band Edge, Left Side (Peak)

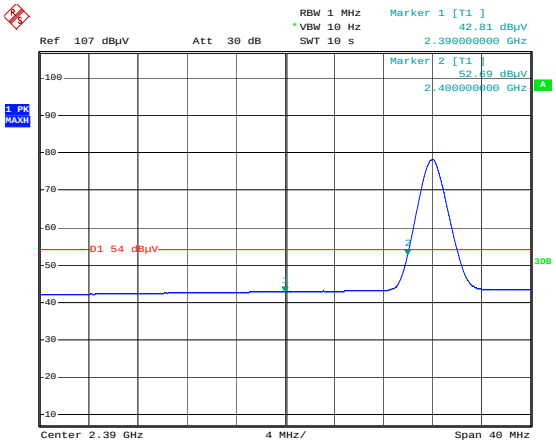
Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz



Date: 15.APR.2016 12:02:28

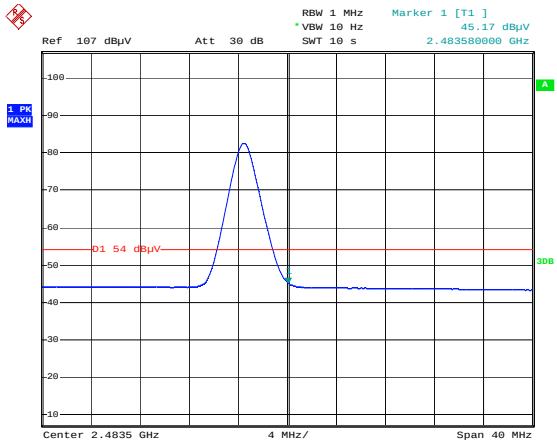
Band Edge, Right Side (Peak)

Note: F1 is frequency 2483.5MHz



Date: 15.APR.2016 12:05:00

Band Edge, Left Side (Average)



Date: 15.APR.2016 12:01:03

Band Edge, Right Side (Average)

6.7 AC Power Line Conducted Emissions

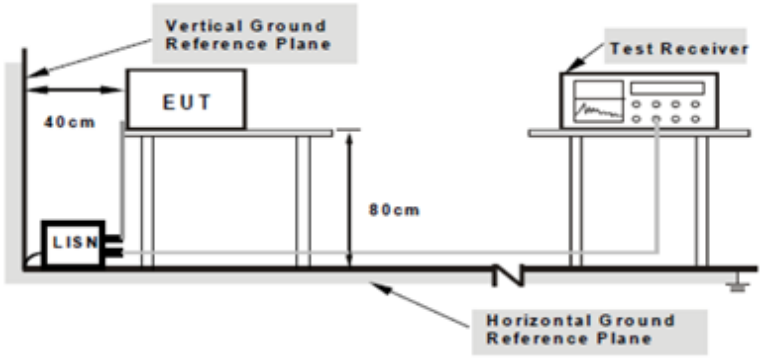
Temperature	20°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar
Test date :	April 21, 2016
Tested By :	Amos Xia

Requirement(s):

Spec	Item	Requirement	Applicable
47CFR§15.207, RSS210 (A8.1)	a)	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.	☑

Frequency ranges (MHz)	Limit (dBμV)	
	QP	Average
0.15 ~ 0.5	66 – 56	56 – 46
0.5 ~ 5	56	46
5 ~ 30	60	50

Test Setup



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.

Procedure

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).

Remark	
Result	☑ Pass ☐ Fail
Test Data	☑ Yes ☐ N/A
Test Plot	☑ Yes (See below) ☐ N/A

Data sample

Frequency (MHz)	Quasi-Peak (dBμV)	Limit (dBμV)	Margin (dB)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Factors (dB)
xxx	56.21	66.00	-9.79	39.20	56.00	-16.80	12.22

Frequency (MHz) = Emission frequency in MHz

Quais-Peak/Average (dBμV)=Receiver Reading(dBμV)+ Factor(dB)

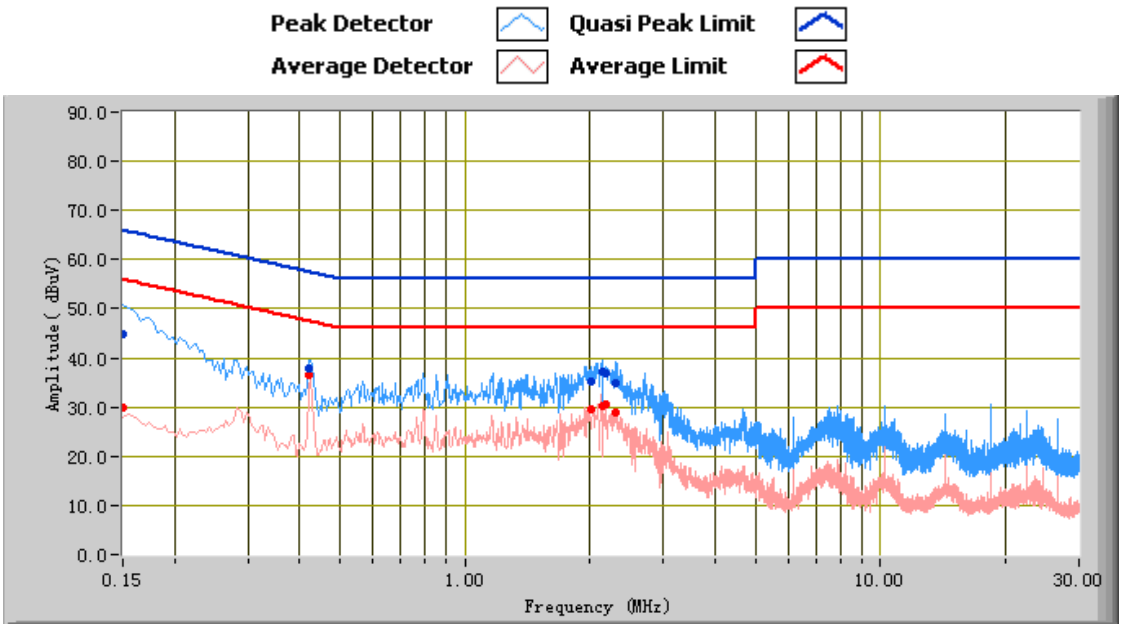
Limit(dBμV)=Limit stated in standard

Factor (dB)= cable loss+ Insertion loss of LISN+ Insertion loss of transient limiter (The transient limiter included 10dB attenuation)

Calculation Formula:

Margin (dB)=Quasi Peak / Average (dBμV) – limit (dBμV)

Test Mode :	Normal Working Mode

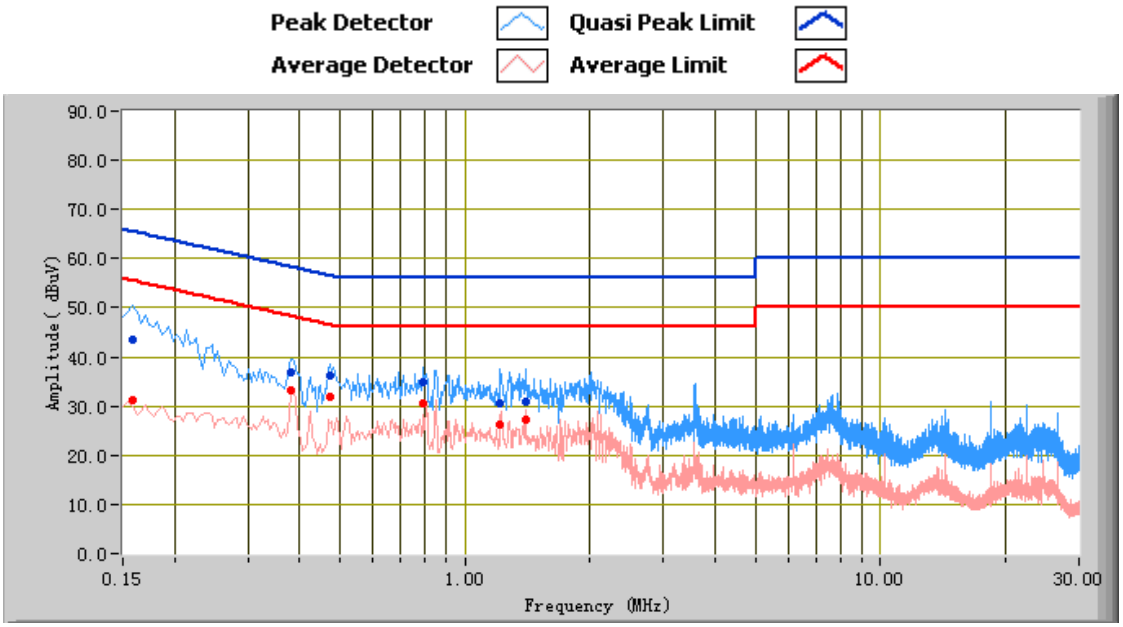


Test Data

Phase Line Plot at 120Vac, 60Hz

Frequency (MHz)	Quasi Peak (dBµV)	Limit (dBµV)	Margin (dB)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Factors (dB)
0.15	44.67	66.00	-21.33	29.79	56.00	-26.21	12.22
2.13	37.09	56.00	-18.91	30.15	46.00	-15.85	10.88
2.31	34.88	56.00	-21.12	29.05	46.00	-16.95	10.88
2.18	36.82	56.00	-19.18	30.48	46.00	-15.52	10.88
2.02	35.29	56.00	-20.71	29.63	46.00	-16.37	10.88
0.42	38.02	57.41	-19.39	36.43	47.41	-10.98	11.20

Test Mode :	Normal Working Mode



Test Data

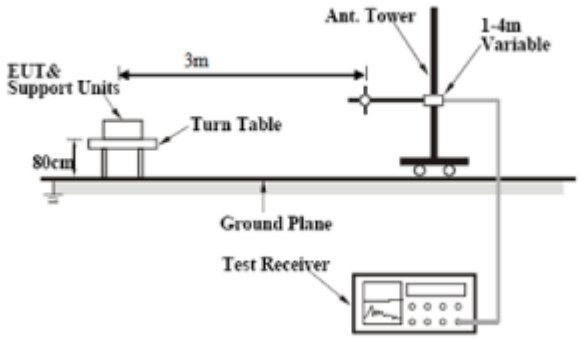
Phase Neutral Plot at 120Vac, 60Hz

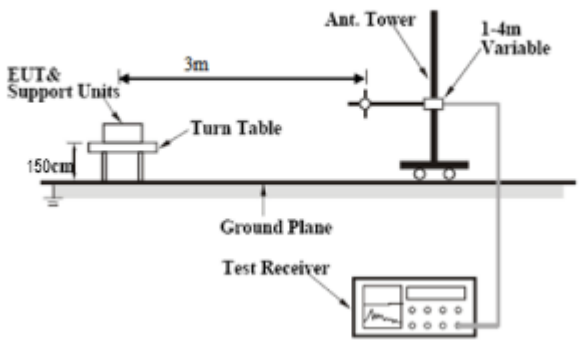
Frequency (MHz)	Quasi Peak (dBµV)	Limit (dBµV)	Margin (dB)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Factors (dB)
0.16	43.47	65.57	-22.10	31.27	55.57	-24.29	12.10
0.47	36.07	56.44	-20.38	31.84	46.44	-14.61	11.10
0.79	34.71	56.00	-21.29	30.41	46.00	-15.59	10.85
1.21	30.56	56.00	-25.44	26.09	46.00	-19.91	10.75
1.39	30.97	56.00	-25.03	27.27	46.00	-18.73	10.79
0.38	36.90	58.24	-21.34	33.29	48.24	-14.94	11.25

6.8 Radiated Spurious Emissions

Temperature	20°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar
Test date :	April 12, 2016
Tested By :	Amos Xia

Requirement(s):

<table>
<tr><th>Spec</th><th>Item</th><th>Requirement</th><th>Applicable</th></tr>
<tr><td rowspan="3">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
<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>b)</td><td>For non-restricted band, 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 or 30dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, determined by the measurement method on output power to be used. Attenuation below the general limits specified in § 15.209(a) is not required
☒ 20 dB down ☐ 30 dB down</td><td>☑</td></tr>
<tr><td>c)</td><td>or restricted band, emission must also comply with the radiated emission limits specified in 15.209</td><td>☑</td></tr>
<tr><td>Test Setup</td><td colspan="3">A: Frequency Below 1000MHz:
 

B: Frequency Above1000MHz:
 
</td></tr>
</table>

Procedure	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 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

Frequency (MHz)	Quasi Peak (dBμV/m)	Azimuth	Polarity (H/V)	Height (cm)	Factors (dB)	Limit (dBμV/m)	Margin (dB)
xxx	32.23	181.00	H	350.00	-38.23	40.00	-7.77

Frequency (MHz) = Emission frequency in MHz

Quais-Peak (dBμV/m)= Receiver Reading(dBμV/m)+ Factor(dB)

Azimuth=Position of turn table

Polarity=Polarity of Receiver antenna

Height(cm)= Height of Receiver antenna

Factor (dB)=Antenna factor + cable loss- antenna gain

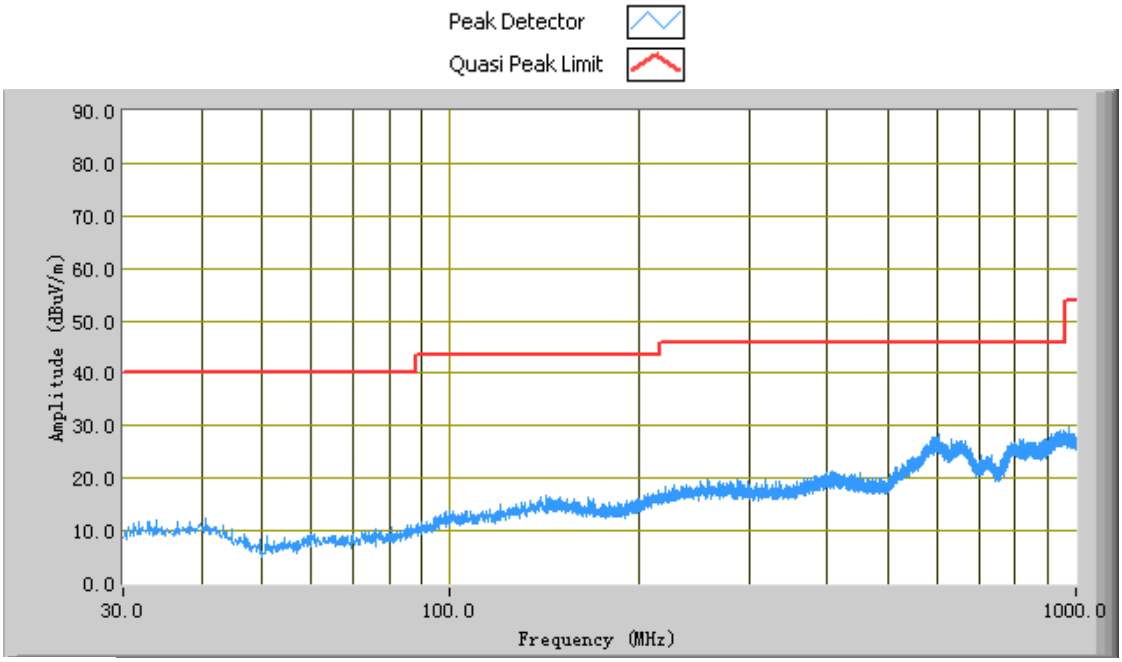
Limit (dBμV/m)=Limit stated in standard

Calculation Formula:

Margin (dB)=Quasi Peak (dBμV/m) – limit (dBμV/m)

Test Mode:	Normal Working Mode

(Below 1GHz)



Test Data

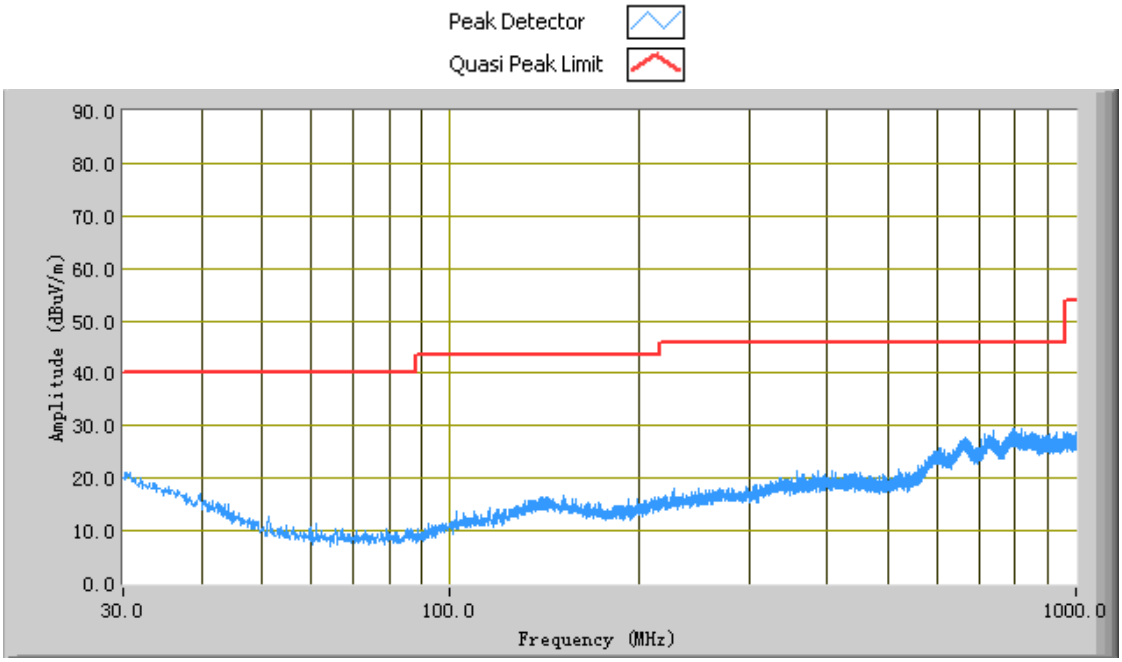
Horizontal Polarity Plot @3m

Frequency (MHz)	Peak (dBµV/m)	Azimuth	Polarity (H/V)	Height (cm)	Factors (dB)	Limit (dBµV/m)	Margin (dB)
958.65	29.15	273.60	H	200.00	-17.23	46.00	-16.85
941.44	29.12	266.00	H	100.00	-16.83	46.00	-16.88
945.44	28.95	234.70	H	200.00	-16.92	46.00	-17.05
930.64	28.46	95.90	H	100.00	-17.40	46.00	-17.54
604.24	28.45	358.70	H	200.00	-20.74	46.00	-17.55
914.64	28.31	82.90	H	100.00	-18.43	46.00	-17.69

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

Test Mode:	Normal Working Mode

(Below 1GHz)



Test Data

Vertical Polarity Plot @3m

Frequency (MHz)	Peak (dBµV/m)	Azimuth	Polarity (H/V)	Height (cm)	Factors (dB)	Limit (dBµV/m)	Margin (dB)
794.24	29.55	231.20	V	100.00	-17.64	46.00	-16.45
796.30	29.49	191.70	V	200.00	-17.58	46.00	-16.51
816.31	29.41	0.80	V	100.00	-17.54	46.00	-16.59
736.77	29.00	315.50	V	100.00	-19.27	46.00	-17.00
853.29	28.89	96.00	V	200.00	-17.88	46.00	-17.11
785.14	28.83	262.80	V	200.00	-17.91	46.00	-17.17

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

Test Mode:	Transmitting Mode

Low Channel (2402 MHz)

Frequency (MHz)	Substituted level (dBμV/m)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4804.00	75.54	AV	V	11.2	12.83	55	44.57	54	-9.43
4804.00	71.06	AV	H	11.2	12.83	55	40.09	54	-13.91
4804.00	82.59	PK	V	11.2	12.83	55	51.62	74	-22.38
4804.00	79.14	PK	H	11.2	12.83	55	48.17	74	-25.83

Middle Channel (2440 MHz)

Frequency (MHz)	Substituted level (dBμV/m)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4882.00	73.55	AV	V	11.2	12.5	55	42.25	54	-11.75
4882.00	72.52	AV	H	11.2	12.5	55	41.22	54	-12.78
4882.00	83.89	PK	V	11.2	12.5	55	52.59	74	-21.41
4882.00	79.21	PK	H	11.2	12.5	55	47.91	74	-26.09

High Channel (2480 MHz)

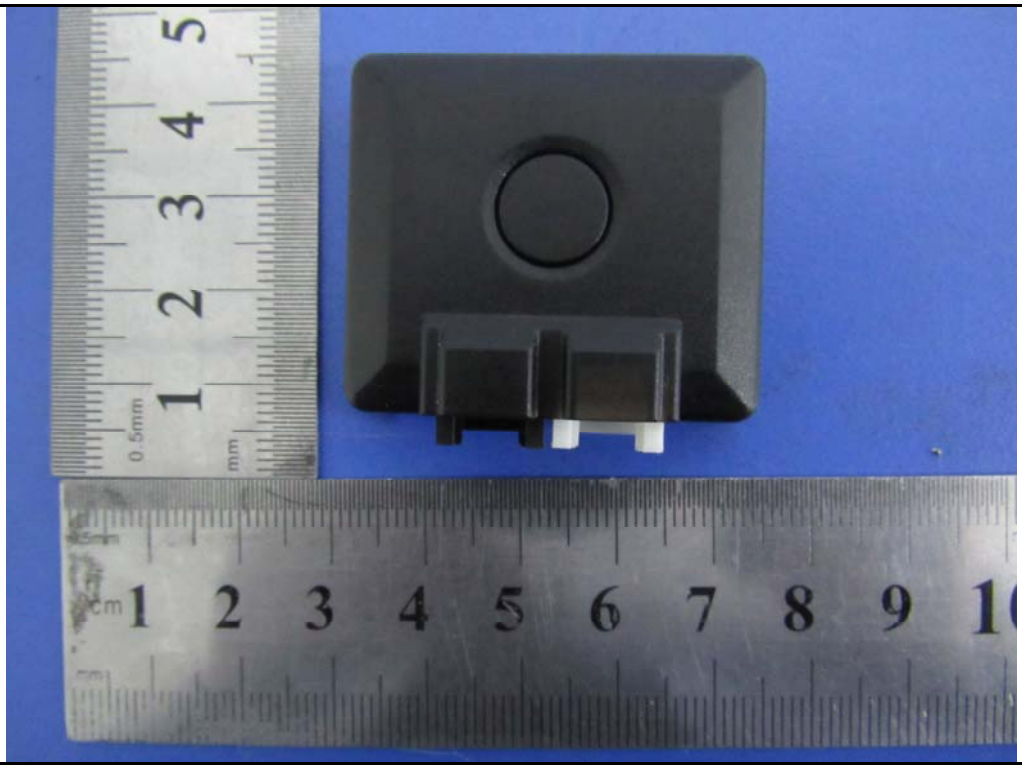
Frequency (MHz)	Substituted level (dBμV/m)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4960.00	73.46	AV	V	11.2	12.5	55	42.16	54	-11.84
4960.00	71.21	AV	H	11.2	12.5	55	39.91	54	-14.09
4960.00	80.39	PK	V	11.2	12.5	55	49.09	74	-24.91
4960.00	79.48	PK	H	11.2	12.5	55	48.18	74	-25.82

Annex A. TEST INSTRUMENT

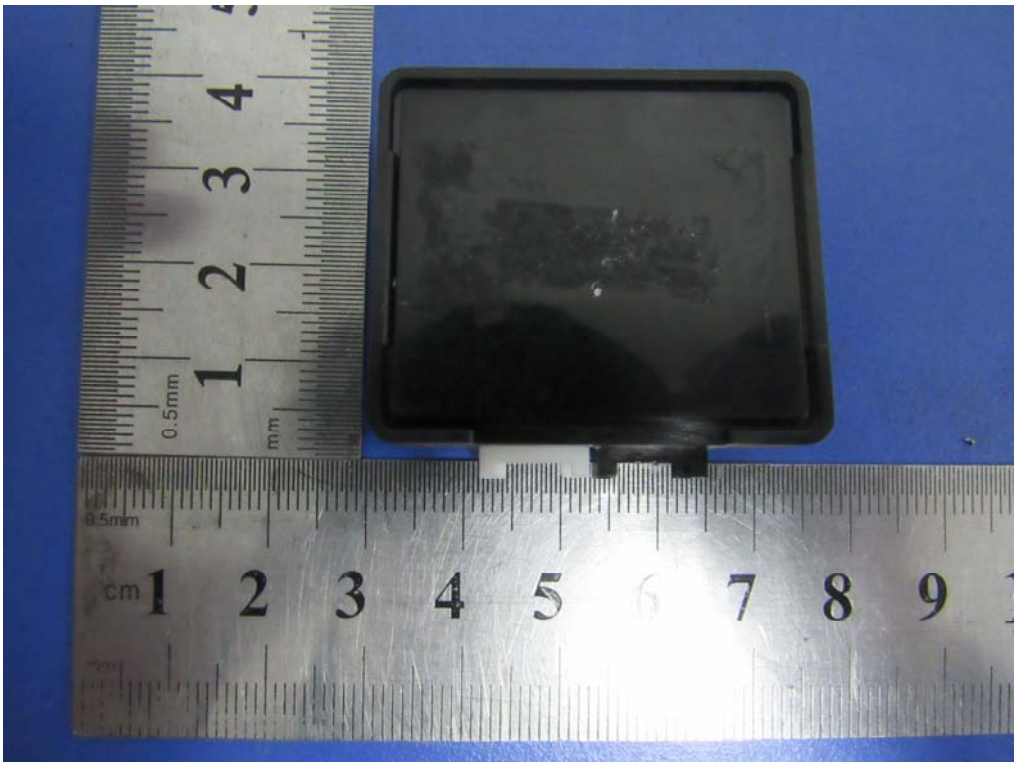
Instrument	Model	Serial #	Cal Date	Cal Due	In use
AC Line Conducted Emissions					
R&S EMI Test Receiver	ESPI3	101216	11/03/2015	11/02/2016	☑
V-LISN	ESH3-Z5	838979/005	09/27/2015	09/26/2016	☑
INFOMW Antenna (1 ~18GHz)	JXTXLB-10180	J2031081120092	10/08/2015	10/07/2016	☑
SIEMIC Labview Conducted Emissions software	V1.0	N/A	N/A	N/A	☑
RF conducted test					
R&S EMI Receiver	ESPI3	101216	11/03/2015	11/02/2016	☑
Power Splitter	1#	1#	02/02/2016	02/01/2017	☑
Spectrum Analyzer	N9010A	MY47191130	10/09/2015	10/08/2016	☑
Temperature/Humidity Chamber	1007H	N/A	01/07/2016	01/06/2017	☑
Radiated Emissions					
Spectrum Analyzer	N9010A	MY47191130	10/09/2015	10/08/2016	☑
R&S EMI Receiver	ESPI3	101216	11/04/2015	11/03/2016	☑
Antenna (30MHz~6GHz)	JB6	A121411	04/10/2016	04/09/2017	☑
EMCO Horn Antenna (1 ~18GHz)	3115	N/A	11/15/2015	11/14/2016	☑
INFOMW Antenna (1 ~18GHz)	JXTXLB-10180	J2031081120092	10/09/2015	10/08/2016	☑
Horn Antenna (18~40GHz)	AH-840	101013	04/30/2015	04/29/2016	N/A
Microwave Pre-Amp (18~40GHz)	PA-840	181250	05/29/2015	05/28/2016	N/A
Hp Agilent Pre-Amplifier	8447F	1937A01160	10/27/2015	10/26/2016	☑
MITEQ Pre-Amplifier (0.1 ~ 18GHz)	AMF-7D-00101800-	1451709	10/27/2015	10/26/2016	☑
SIEMIC Labview Radiated Emissions software	V1.0	N/A	N/A	N/A	☑

Annex B. EUT And Test Setup Photographs

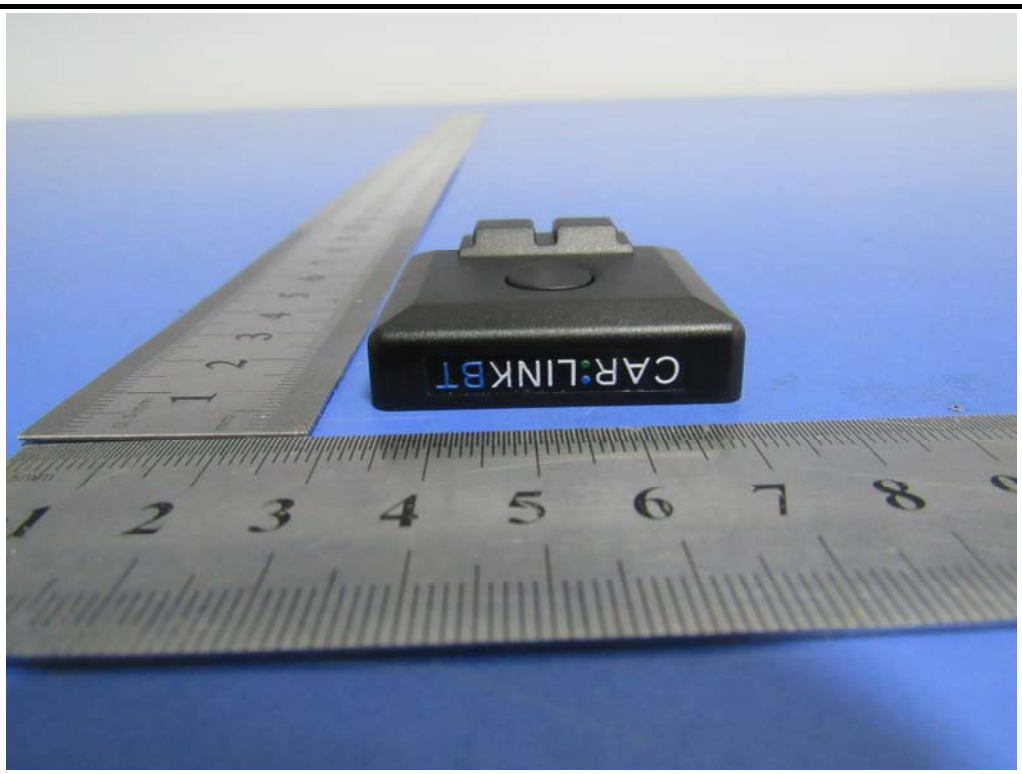
Annex B.i. Photograph: EUT External Photo



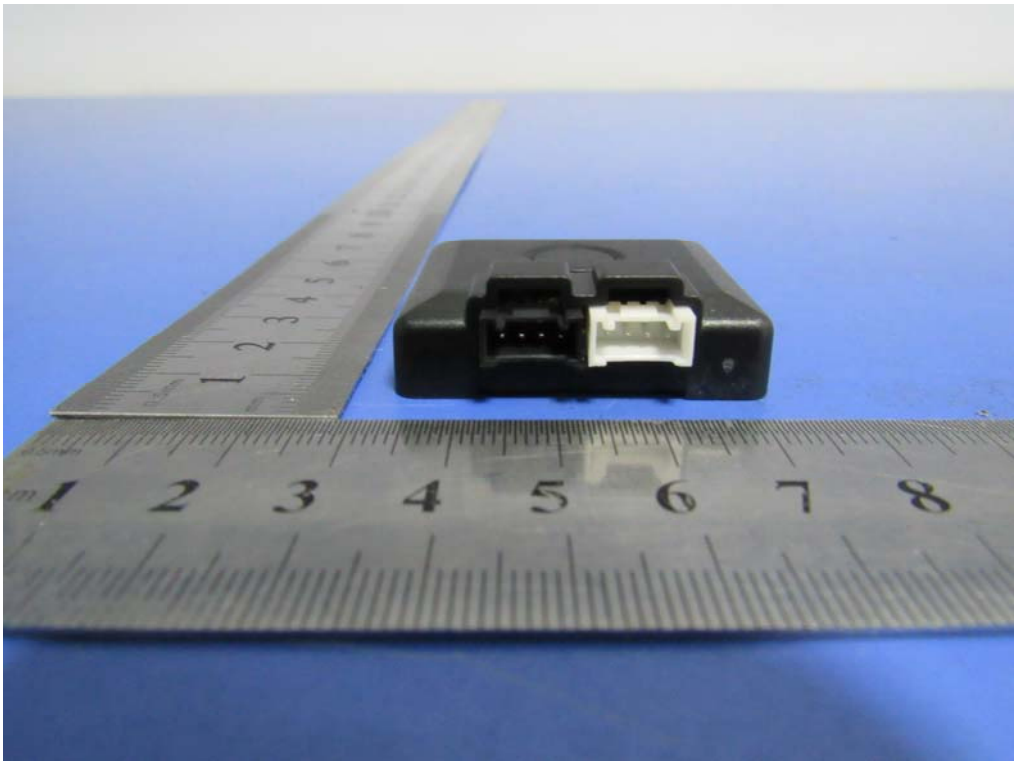
EUT - Front View



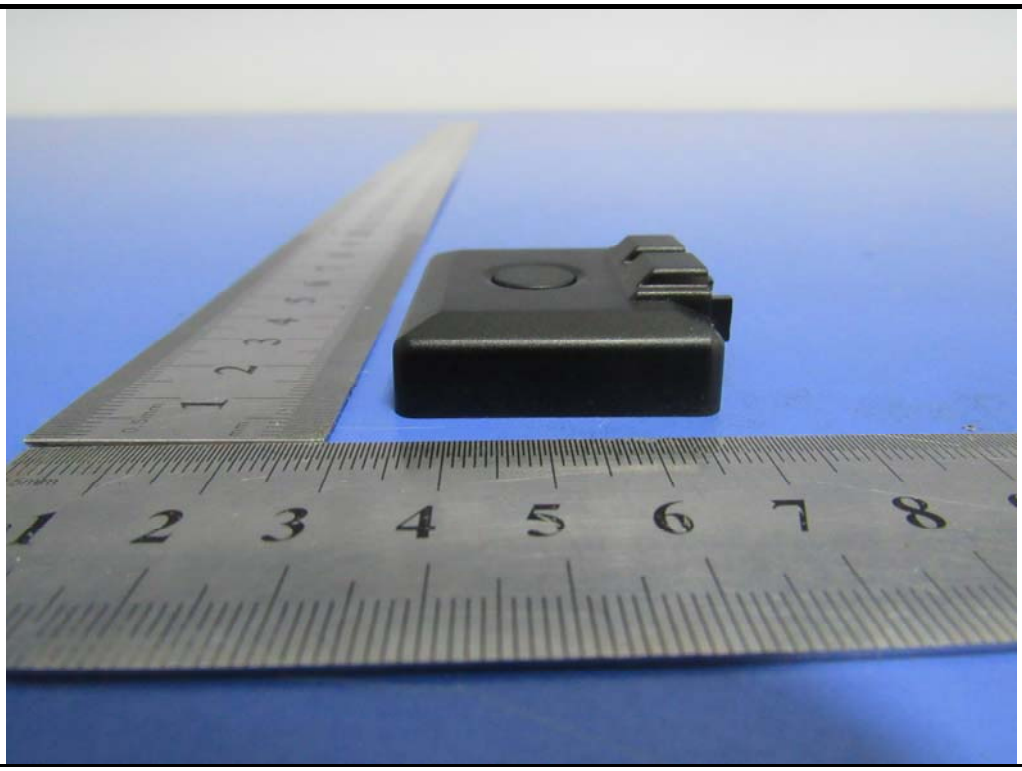
EUT - Rear View



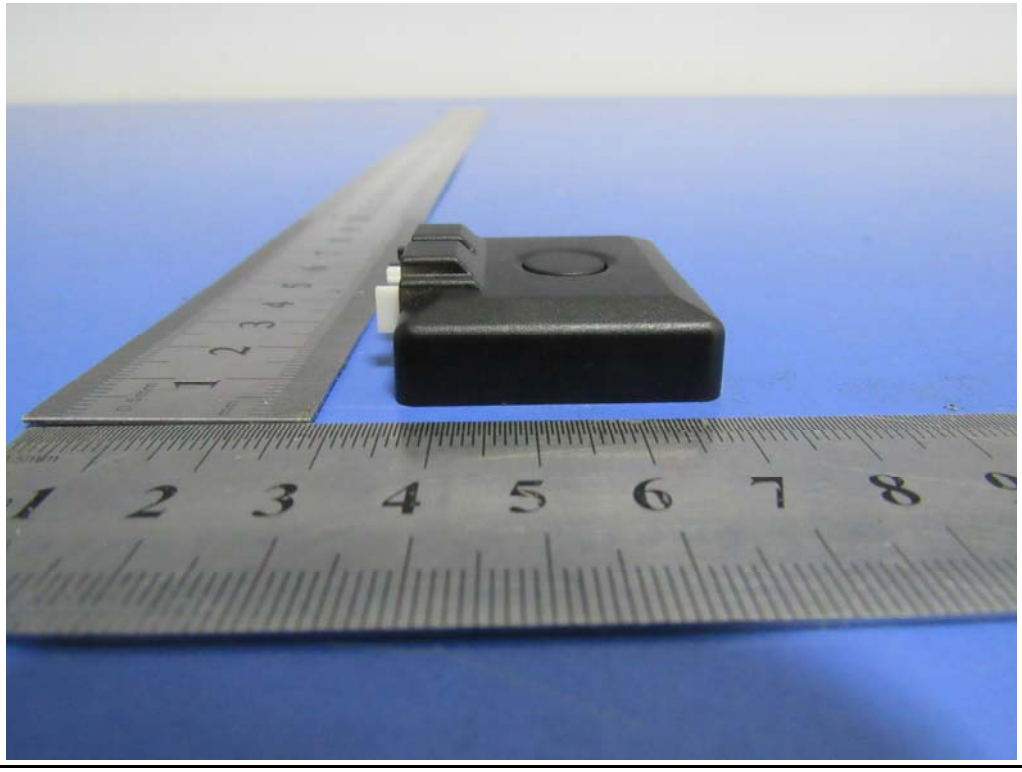
EUT - Top View



EUT - Bottom View



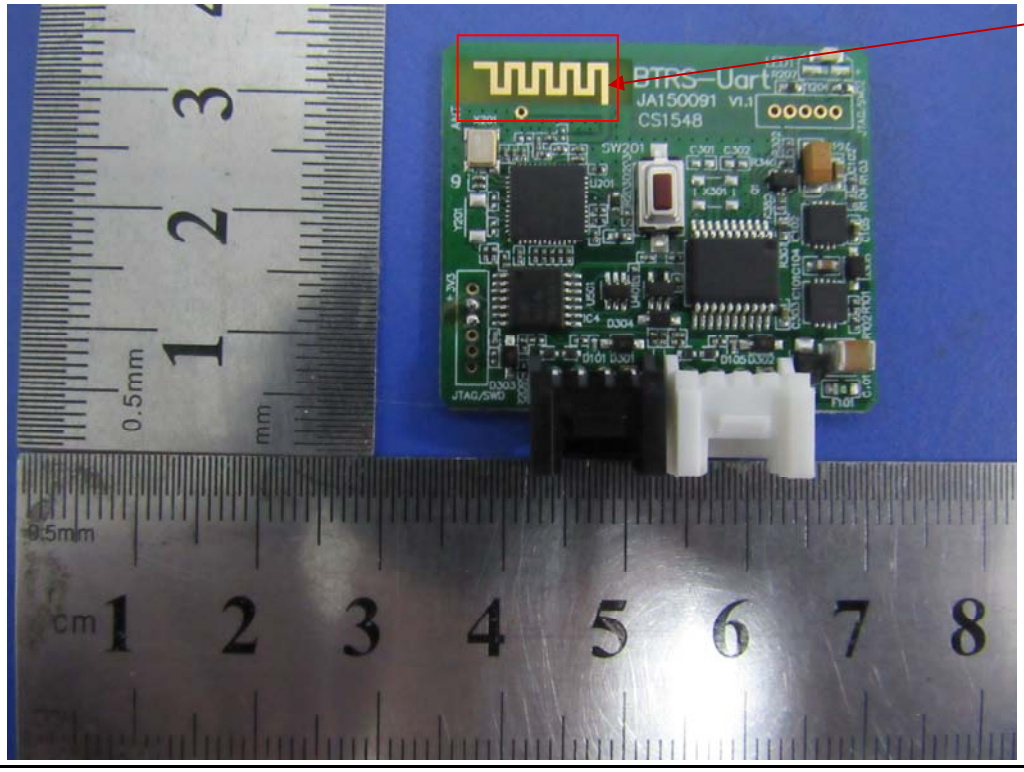
EUT – Left View



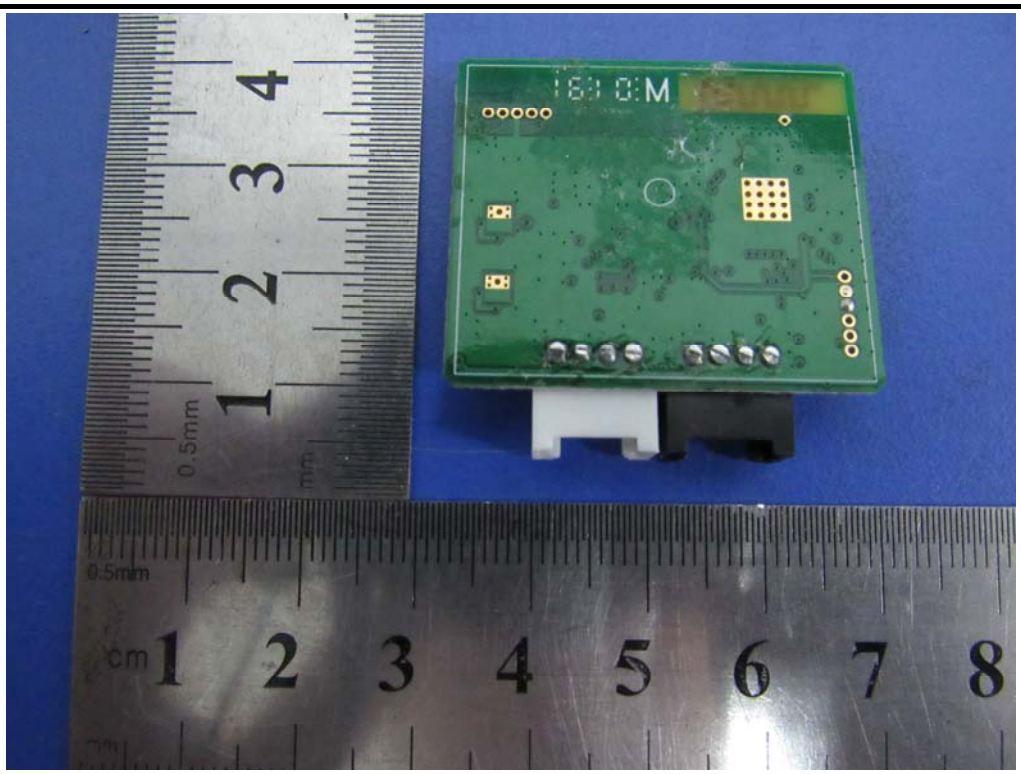
EUT – Right View

Annex B.ii. Photograph: EUT Internal Photo

EUT – Uncover Front View



EUT PCB - Front View

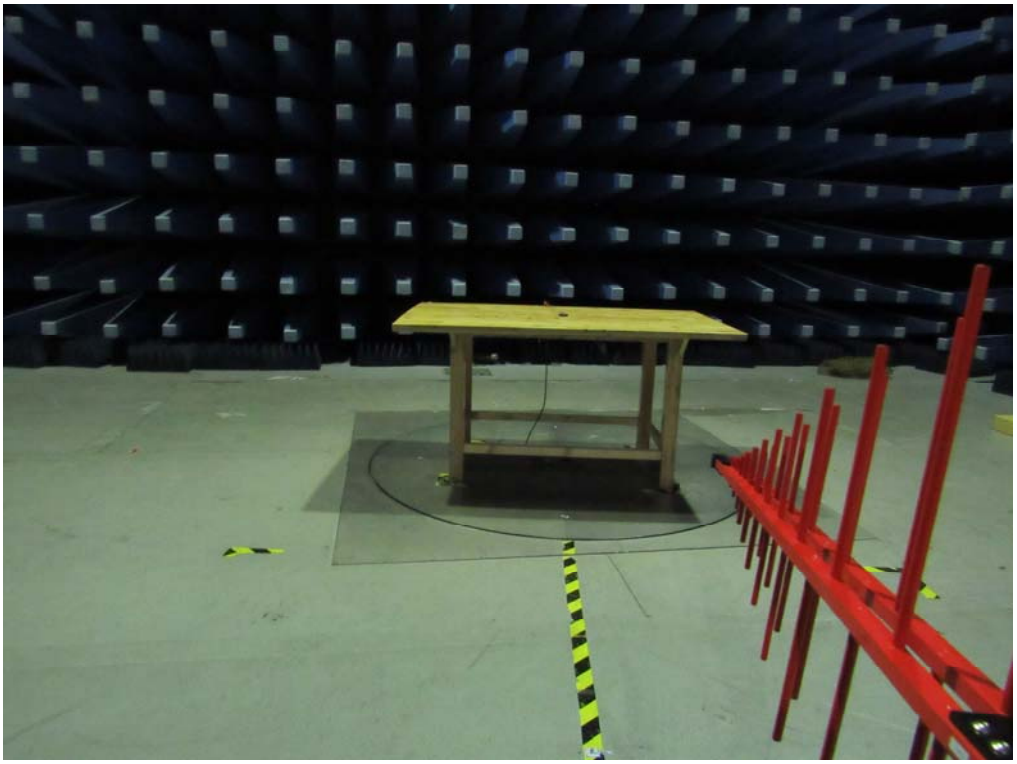


EUT PCB - Rear View

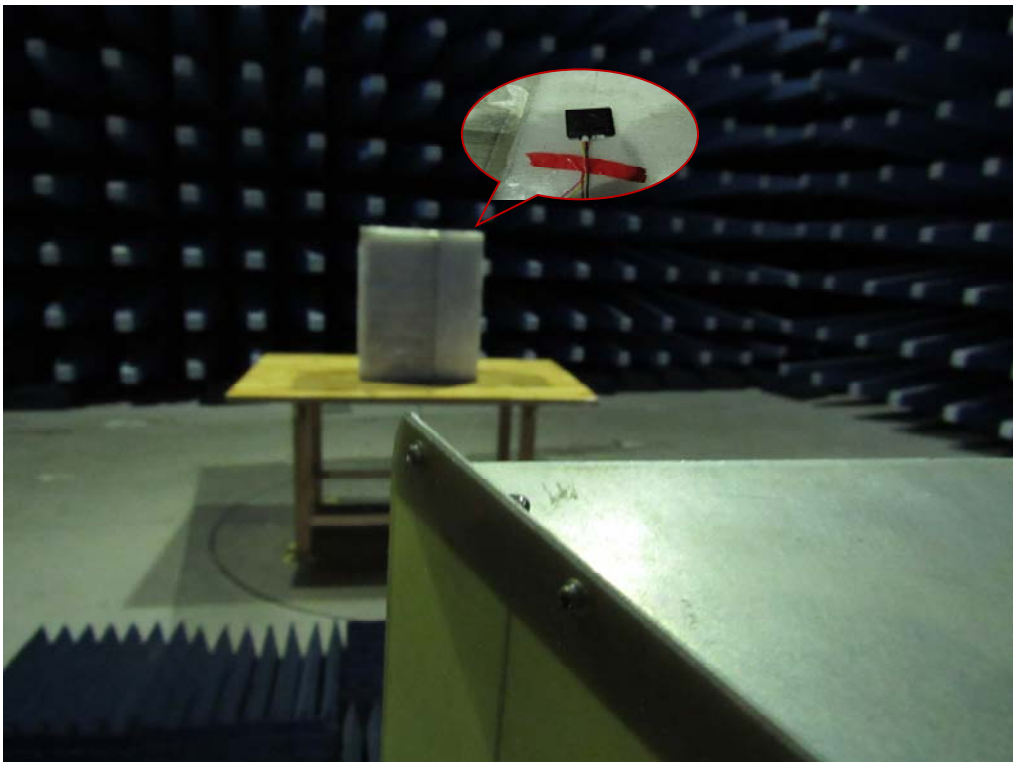
Annex B.iii. Photograph: Test Setup Photo

Conducted Emissions Setup Front View

Conducted Emissions Setup Side View



Radiated Emissions Setup Below 1GHz Front View

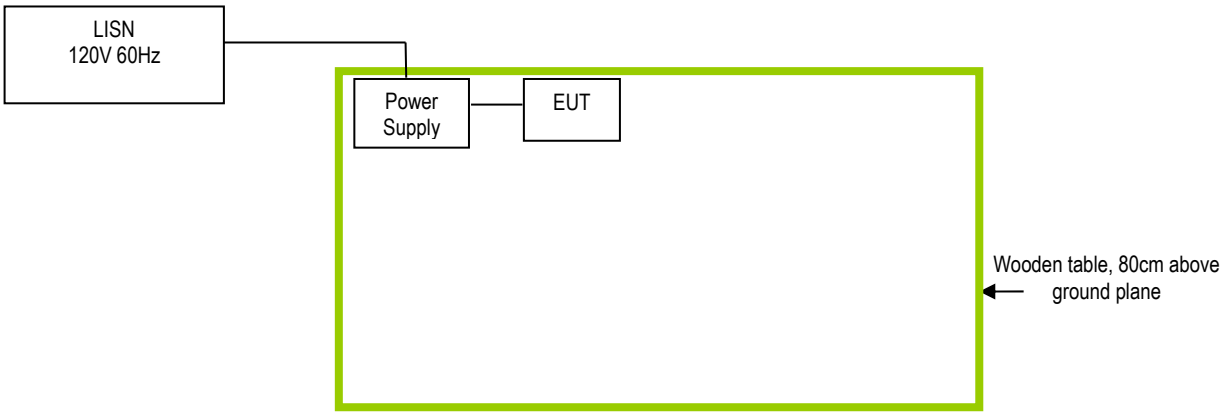


Radiated Spurious Emissions Test Setup Above 1GHz

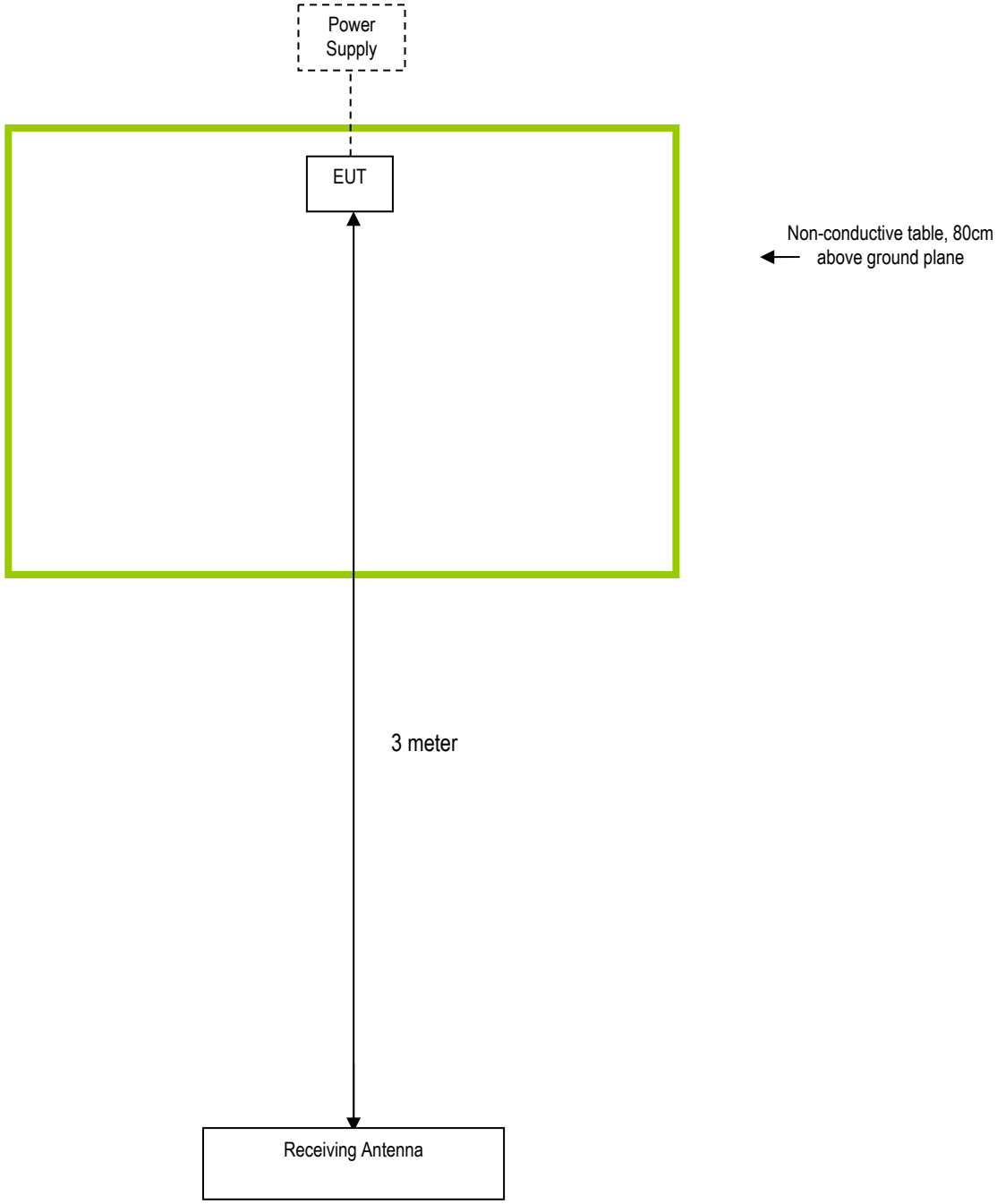
Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

Annex C.i. TEST SET UP BLOCK

Block Configuration Diagram for AC Line Conducted Emissions



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	Calibration Date
BK PRECISION	DC Power Supply	1786B	N/A

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

Please see attachment

Annex E. DECLARATION OF SIMILARITY

N/A