RF TEST REPORT

Report No.: 15020854-FCC-R1
Supersede Report No.: N/A

Applicant	FrSky Electronic Co., Ltd.
Product Name	Digital Telemetry Radio System
Model No.	TARANIS X9E
Serial No.	N/A
Test Standard	FCC Part 15.247: 2014, ANSI C63.10: 2013
Test Date	September 11 to October 15, 2015
Issue Date	October 16, 2015
Test Result	☑ Pass ☐ Fail
Equipment complied with the specification	☑
Equipment did not comply with the specification	☐

Deon Dai	Herve Idoko	
Deon Dai 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
15020854-FCC-R1	NONE	Original	October 16, 2015

2. Customer information

Applicant Name	FrSky Electronic Co., Ltd.
Applicant Add	No.100 Jinxi Road ,Wuxi,Jiangsu,China
Manufacturer	FrSky Electronic Co., Ltd.
Manufacturer Add	No.100 Jinxi Road ,Wuxi,Jiangsu,China

3. Test site information

Lab performing tests	SIEMIC (Nanjing-China) Laboratories
Lab Add	2-1 Longcang Avenue Yuhua Economic andTechnology 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:	Digital Telemetry Radio System
Main Model:	TARANIS X9E
Serial Model:	N/A
Date EUT received:	August 17, 2015
Test Date(s):	September 11 to October 15, 2015
Equipment Category :	FHSS
Antenna Gain:	2 dBi
Type of Modulation:	2-FSK
RF Operating Frequency (ies):	2405-2474 MHz
Max. Output Power:	18.738dBm
Number of Channels:	47CH
Port:	Power Port, USB Port
Input Power:	SWITCHING ADAPTER: Model: PSEA180050U Input: 100-240V; 50/60Hz; 0.25A Output:18.0Vdc; 0.5A Battery: Ni-MH AA2000mAh 9.6V
Trade Name :	Frsky
FCC ID:	XYFX90209EK

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)(1)	Channel Separation	Compliance
§15.247(a)(1)	20 dB Bandwidth	Compliance
§15.247(b)(1)	Peak Output Power	Compliance
§15.247(a)(1)(iii)	Number of Hopping Channel	Compliance
§15.247(a)(1)(iii)	Time of Occupancy (Dwell Time)	Compliance
§15.247(d)	Band Edge	Compliance
§15.207(a)	AC Line Conducted Emissions	Compliance
§15.205, §15.209, §15.247(d)	Radiated Emissions	Compliance

Measurement Uncertainty

Emissions		
Test Item	Description	Uncertainty
Band Edge and Radiated Spurious 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)	+5.6dB/-4.5dB
-	-	-

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: 15020854-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

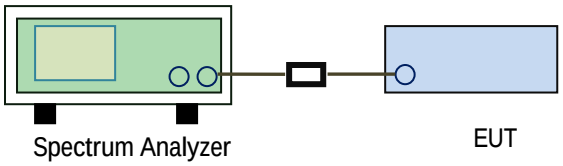
The EUT has 1 antenna:
A permanently attached PIFA antenna for 2.4G, the gain is 2dBi.
The antenna meets up with the ANTENNA REQUIREMENT.

Result: Compliance.

6.3 Channel Separation

Temperature	25°C
Relative Humidity	51%
Atmospheric Pressure	1018mbar
Test date :	September 21, 2015
Tested By :	Deon Dai

Requirement(s):

Spec	Item	Requirement	Applicable
§ 15.247(a)(1)	a)	Channel Separation < 20dB BW and 20dB BW < 25KHz ; Channel Separation Limit=25KHz Chanel Separation < 20dB BW and 20dB BW > 25kHz ; Channel Separation Limit=2/3 20dB BW	☑
Test Setup			
Test Procedure		The test follows FCC Public Notice DA 00-705 Measurement Guidelines. Use the following spectrum analyzer settings: - The EUT must have its hopping function enabled - Span = wide enough to capture the peaks of two adjacent channels - Resolution (or IF) Bandwidth (RBW) ≥1% of the span - Video (or Average) Bandwidth (VBW) ≥RBW - Sweep = auto - Detector function = peak - Trace = max hold - Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section. Submit this plot.	
Remark			
Result		☑ Pass ☐ Fail	

Test Data ☑ Yes ☐ N/A

Test Plot ☑ Yes (See below) ☐ N/A

Channel Separation measurement result

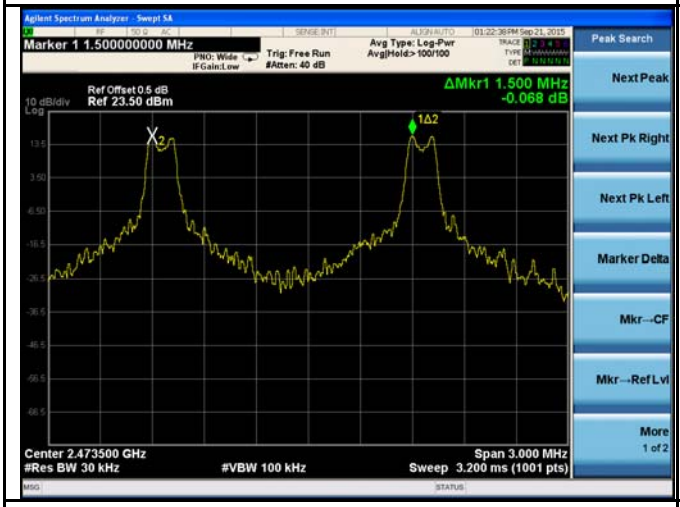
Type/ Modulation	CH	CH Freq (MHz)	CH Separation (MHz)	Limit (MHz)	Result
CH Separation	Low Channel	2405	1.500	0.240	Pass
	Adjacency Channel	2406			
	Mid Channel	2441	1.500	0.234	Pass
	Adjacency Channel	2442			
	High Channel	2474	1.500	0.236	Pass
	Adjacency Channel	2473			

Test Plots

Channel Separation measurement result

2-FSK - Low Channel

2-FSK - Middle Channel

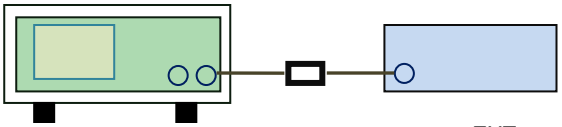


2-FSK - High Channel

6.4 20dB Bandwidth

Temperature	23°C
Relative Humidity	51%
Atmospheric Pressure	1018mbar
Test date :	September 21, 2015
Tested By :	Deon Dai

Requirement(s):

Spec	Item	Requirement	Applicable
§15.247(a) (1)	a)	Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.	☑
Test Setup			
Test Procedure	The test follows FCC Public Notice DA 00-705 Measurement Guidelines. Use the following spectrum analyzer settings: - Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel - RBW ≥1% of the 20 dB bandwidth - VBW ≥RBW - Sweep = auto - Detector function = peak - Trace = max hold. - The EUT should be transmitting at its maximum data rate. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 20 dB down one side of the emission. Reset the marker-delta function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 20 dB bandwidth of the emission. If this value varies with different modes of operation (e.g., data rate, modulation format, etc.), repeat this test for each variation. The limit is specified in one of the subparagraphs of this Section. Submit this plot(s).		
Remark			
Result	☑ Pass ☐ Fail		

Test Data ☑ Yes ☐ N/A

Test Plot ☑ Yes (See below) ☐ N/A

Measurement result

Modulation	CH	CH Freq (MHz)	20dB Bandwidth (MHz)
2-FSK	Low	2405	0.240
	Mid	2441	0.234
	High	2474	0.236

Test Plots

20dB Bandwidth measurement result

2-FSK - Low Channel

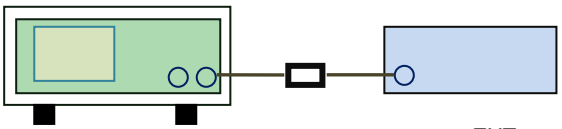
2-FSK - Middle Channel

2-FSK - High Channel

6.5 Peak Output Power

Temperature	23°C
Relative Humidity	51%
Atmospheric Pressure	1018mbar
Test date :	September 21, 2015
Tested By :	Deon Dai

Requirement(s):

Spec	Item	Requirement	Applicable
§15.247(b) (2)	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	The test follows FCC Public Notice DA 00-705 Measurement Guidelines. Use the following spectrum analyzer settings: - Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel - RBW > the 20 dB bandwidth of the emission being measured - VBW ≥RBW - Sweep = auto - Detector function = peak - Trace = max hold - Allow the trace to stabilize. - Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power (see the note above regarding external attenuation and cable loss). The limit is specified in one of the subparagraphs of this Section. Submit this plot. A peak responding power meter may be used instead of a spectrum analyzer.		
Remark			
Result	☑ Pass ☐ Fail		

Test Data ☑ Yes ☐ N/A

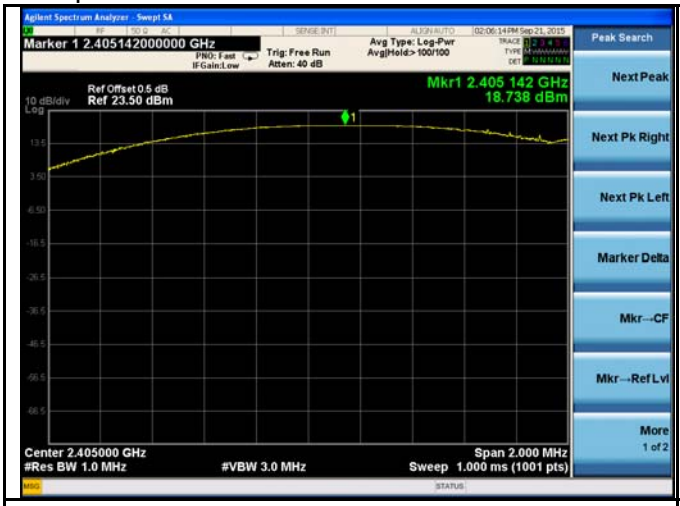
Test Plot ☑ Yes (See below) ☐ N/A

Peak Output Power measurement result

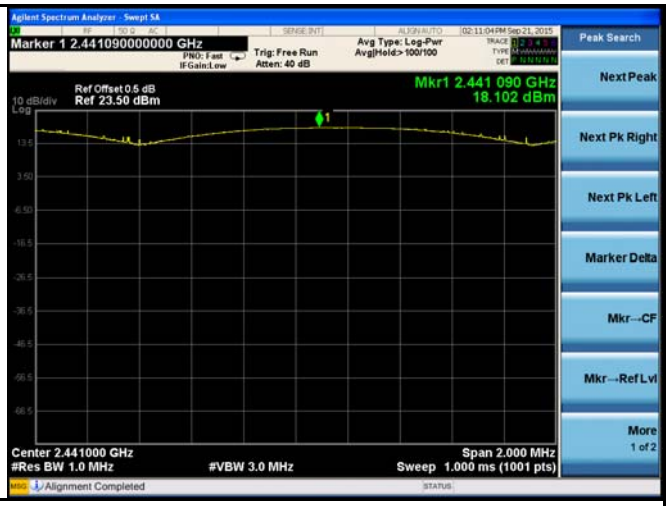
Type	Modulation	CH	Freq (MHz)	Conducted Power (dBm)	Conducted Power (mW)	Limit (mW)	Result
Output power	2-FSK	Low	2405	18.738	74.78	1000	Pass
		Mid	2441	18.102	64.60	1000	Pass
		High	2474	17.273	53.37	1000	Pass

Test Plots

Output Power measurement result



2-FSK Output power - Low CH 2405



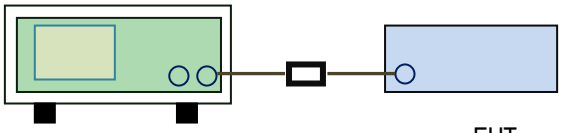
2-FSK Output power - Mid CH 2441

2-FSK Output power - High CH 2474

6.6 Number of Hopping Channel

Temperature	23°C
Relative Humidity	51%
Atmospheric Pressure	1018mbar
Test date :	September 21, 2015
Tested By :	Deon Dai

Requirement(s):

Spec	Item	Requirement	Applicable
§15.247(a) (1)(iii)	a)	FHSS in 2400-2483.5MHz ≥ 15 channels	☑
Test Setup			
Test Procedure	The test follows FCC Public Notice DA 00-705 Measurement Guidelines. Use the following spectrum analyzer settings: The EUT must have its hopping function enabled. - Span = the frequency band of operation - RBW ≥1% of the span - VBW ≥RBW - Sweep = auto - Detector function = peak - Trace = max hold - Allow trace to fully stabilize. - It may prove necessary to break the span up to sections, in order to clearly show all of the hopping frequencies. The limit is specified in one of the subparagraphs of this Section. Submit this plot(s).		
Remark			
Result	☑ Pass ☐ Fail		

Test Data ☑ Yes ☐ N/A

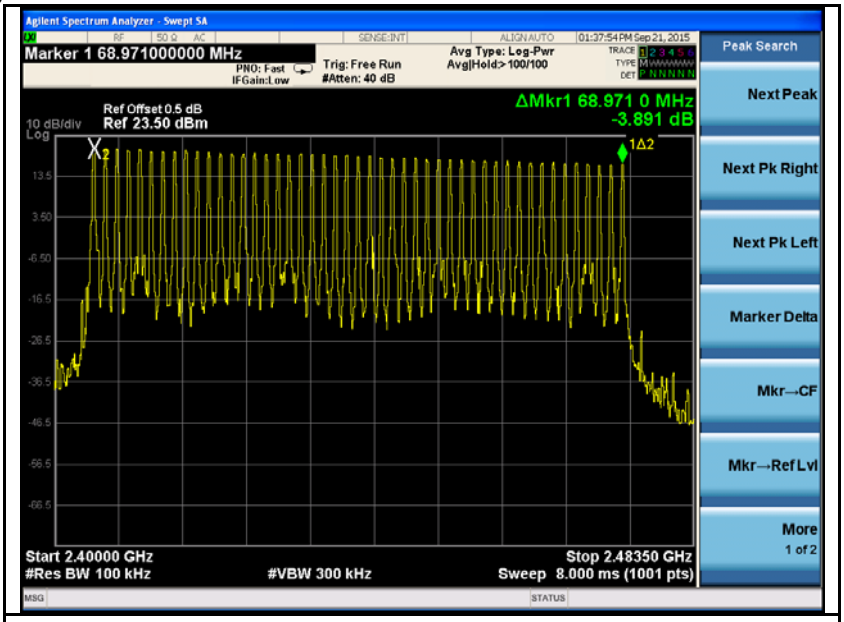
Test Plot ☑ Yes (See below) ☐ N/A

Number of Hopping Channel measurement result

Type	Modulation	Frequency Range	Number of Hopping Channel	Limit
Number of Hopping Channel	2-FSK	2405-2474	47	15

Test Plots

Number of Hopping Channels measurement result

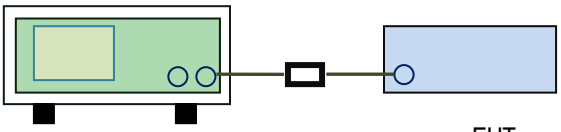


2-FSK

6.7 Time of Occupancy (Dwell Time)

Temperature	23°C
Relative Humidity	51%
Atmospheric Pressure	1018mbar
Test date :	September 21, 2015
Tested By :	Deon Dai

Requirement(s):

Spec	Item	Requirement	Applicable
§15.247(a)(1)(iii)	a)	Dwell Time < 0.4s	☑
Test Setup			
Test Procedure	The test follows FCC Public Notice DA 00-705 Measurement Guidelines. Use the following spectrum analyzer - Span = zero span, centered on a hopping channel - RBW = 1 MHz - VBW ≥RBW - Sweep = as necessary to capture the entire dwell time per hopping channel - Detector function = peak - Trace = max hold - use the marker-delta function to determine the dwell time		
Remark			
Result	☑ Pass ☐ Fail		

Test Data ☑ Yes ☐ N/A

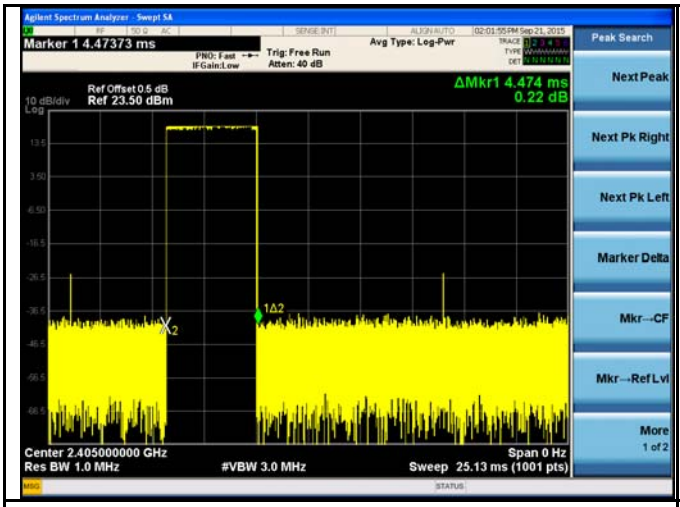
Test Plot ☑ Yes (See below) ☐ N/A

Dwell Time measurement result

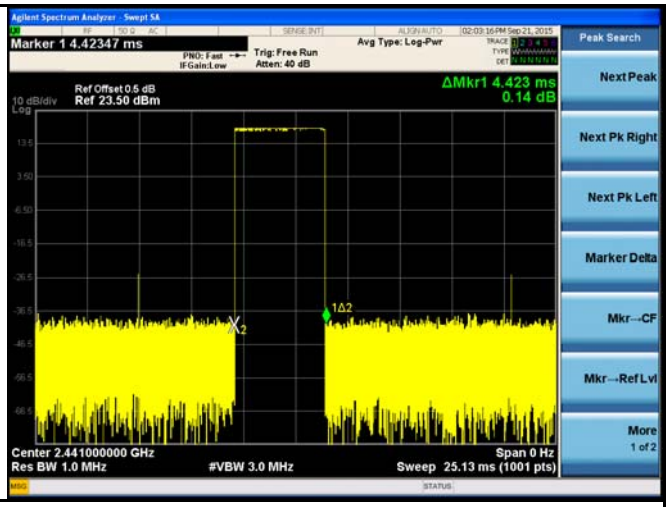
Type	Modulation	CH	Pulse Width (ms)	Dwell Time (ms)	Limit (ms)	Result
Dwell Time	2-FSK	Low	4.474	98.428	400	Pass
		Mid	4.423	97.306	400	Pass
		High	4.500	99.000	400	Pass
Note: Dwell time=Pulse Time (ms) × (110 ÷ 2 ÷ 47) ×0.4×47						

Test Plots

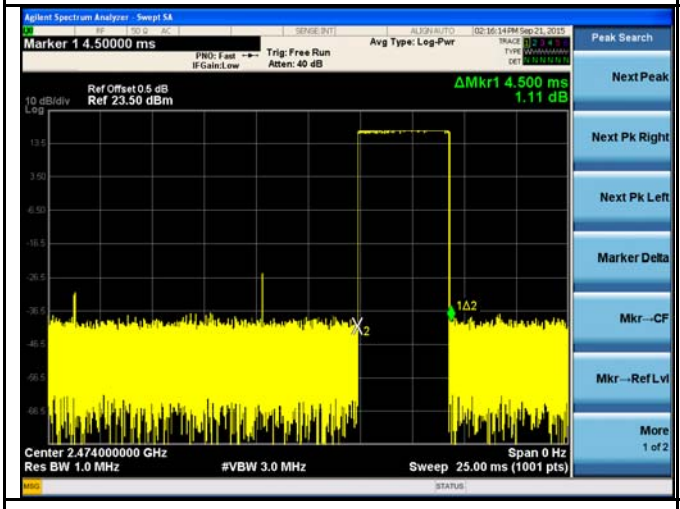
Dwell Time measurement result



2-FSK - Low CH 2405



2-FSK - Mid CH 2441



2-FSK - High CH 2474

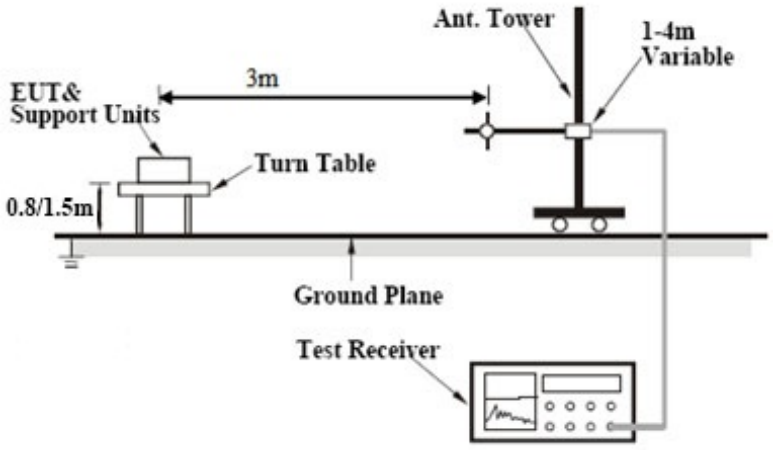
6.8 Band Edge

Temperature	24°C
Relative Humidity	57%
Atmospheric Pressure	1015mbar
Test date :	September 11 to October 15, 2015
Tested By :	Deon Dai

Requirement(s):

Spec	Item	Requirement	Applicable
§15.247(a) (1)(iii)	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

The test follows FCC Public Notice DA 00-705 Measurement Guidelines.

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 Quasiy Peak detection at frequency below 1GHz.
  b. 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.
  c. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz with Peak detection for Average Measurement as below at frequency above 1GHz.
- 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

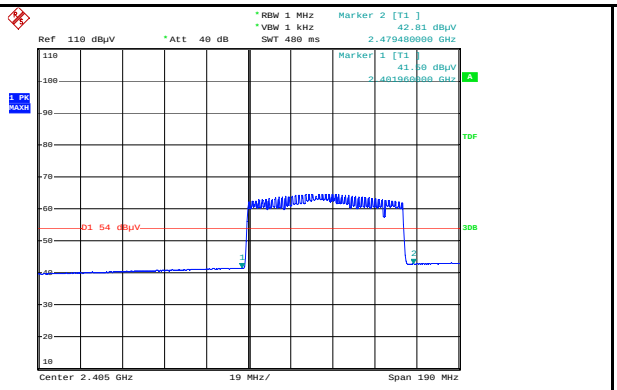
☑ Pass ☐ Fail

Test Data ☐ Yes ☑ N/A

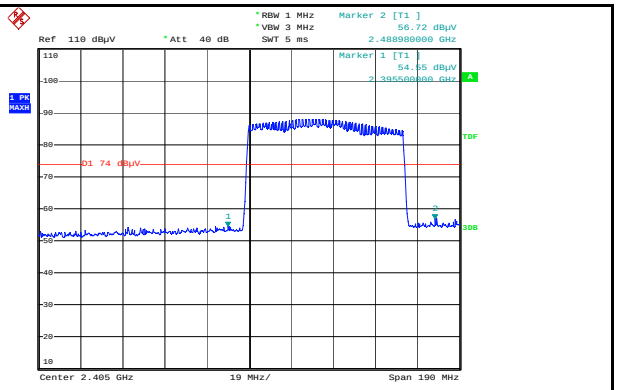
Test Plot ☑ Yes (See below) ☐ N/A

Test Plots

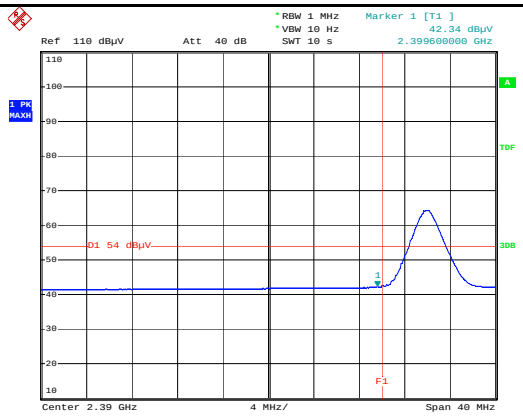
2-FSK Mode:



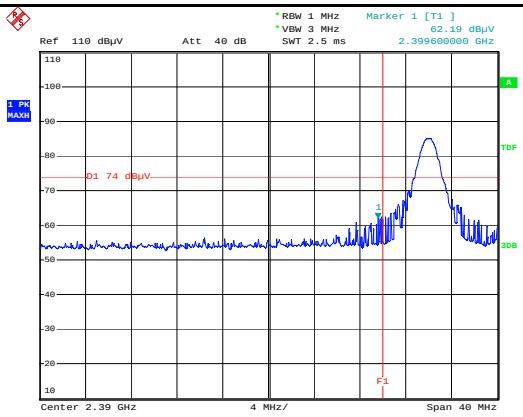
2-FSK -Hopping-Ave



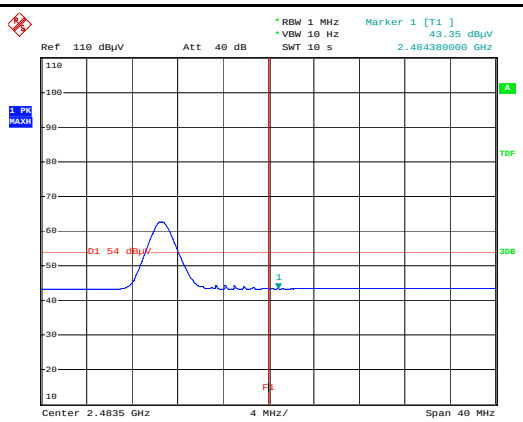
2-FSK -Hopping-PK



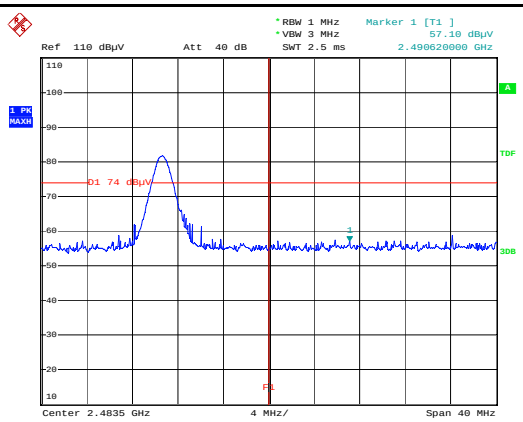
2-FSK -Left Side-Ave



2-FSK -Left Side-PK



2-FSK -Right Side-Ave



2-FSK -Right Side-PK

6.9 AC Power Line Conducted Emissions

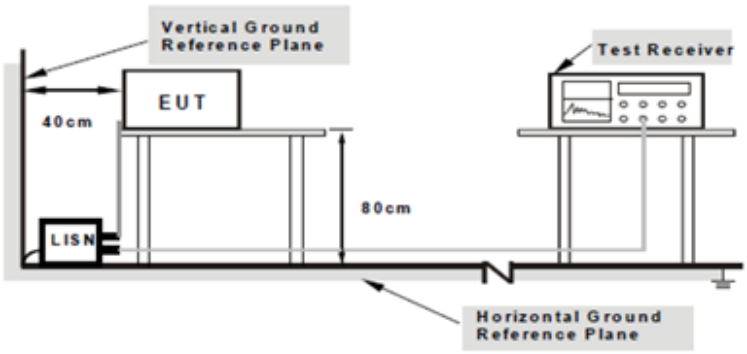
Temperature	24°C
Relative Humidity	59%
Atmospheric Pressure	1017mbar
Test date :	September 28, 2015
Tested By :	Deon Dai

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).

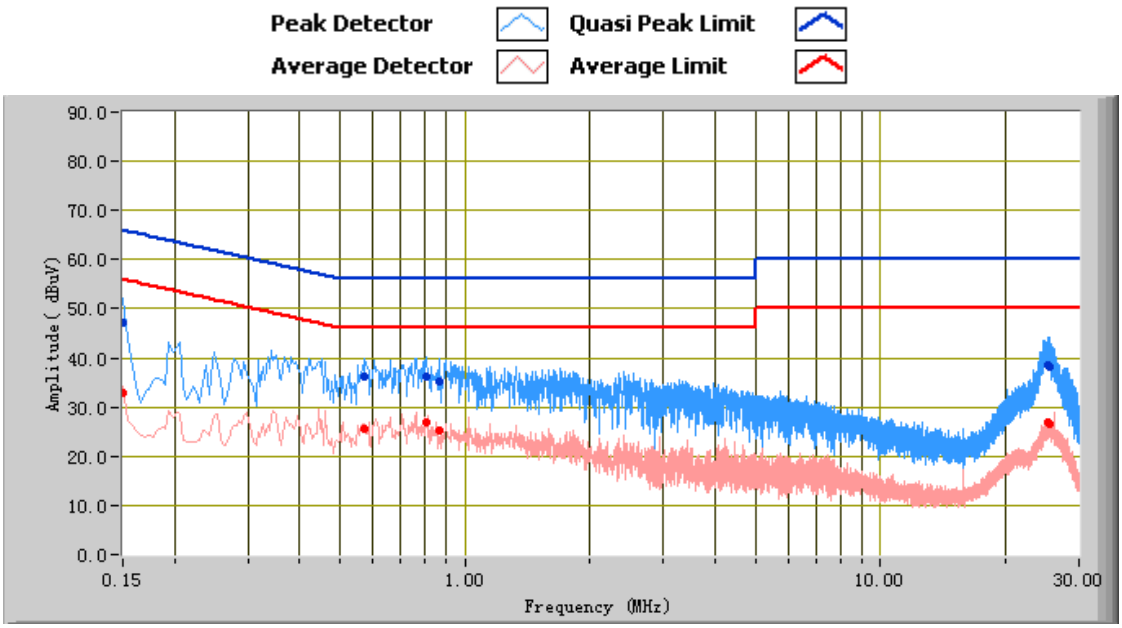
Remark

Result ☑ Pass ☐ Fail

Test Data ☑ Yes ☐ N/A

Test Plot ☑ Yes (See below) ☐ N/A

Test Mode:	Charging & Transmitting

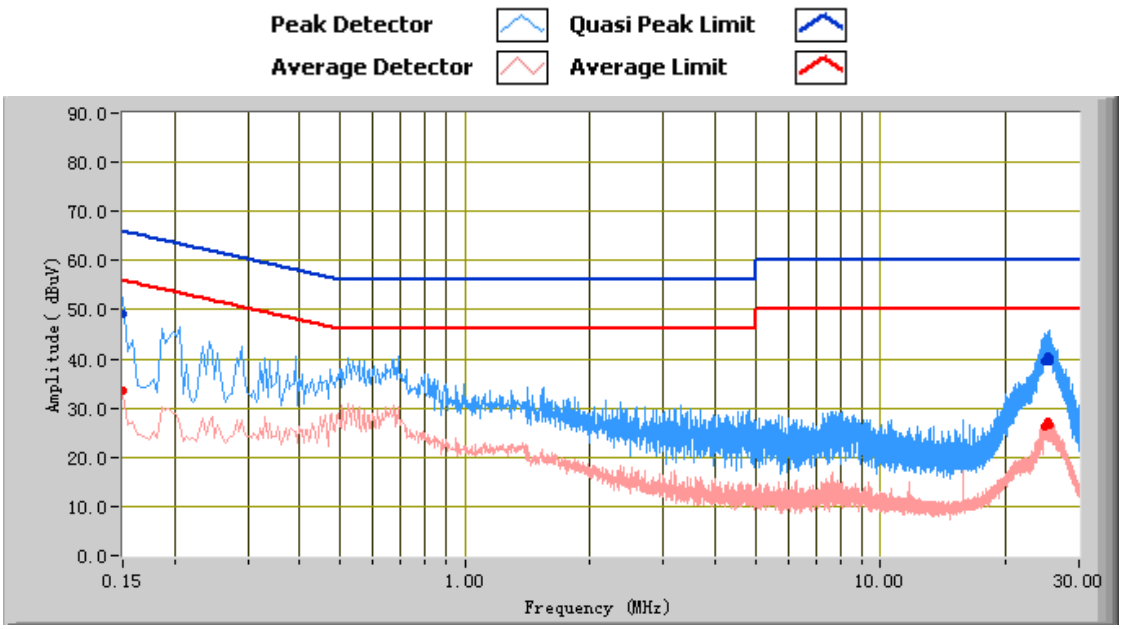


Test Data

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	47.20	66.00	-18.80	32.89	56.00	-23.11	12.22
25.49	38.14	60.00	-21.86	26.47	50.00	-23.53	11.72
0.81	36.34	56.00	-19.66	27.03	46.00	-18.97	10.84
25.21	38.56	60.00	-21.44	26.75	50.00	-23.25	11.71
0.87	35.35	56.00	-20.65	25.17	46.00	-20.83	10.79
0.57	36.20	56.00	-19.80	25.72	46.00	-20.28	11.03

Test Mode:	Charging & Transmitting

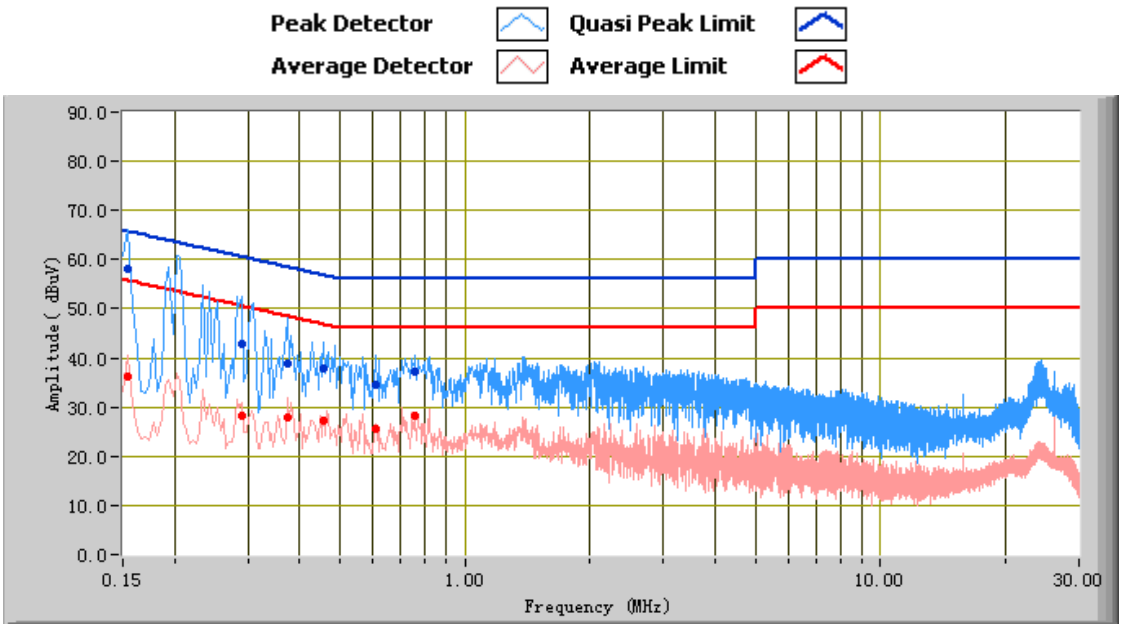


Test Data

Phase Neutral Plot at 120Vac, 60Hz

Frequency (MHz)	Quasi Peak (dBµV)	Limit (dBµV)	Margin (dB)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Factors (dB)
0.15	49.27	66.00	-16.73	33.55	56.00	-22.45	12.21
25.52	39.60	60.00	-20.40	26.44	50.00	-23.56	11.75
25.20	39.74	60.00	-20.26	26.45	50.00	-23.55	11.74
24.87	39.53	60.00	-20.47	26.34	50.00	-23.66	11.73
25.21	40.63	60.00	-19.37	27.08	50.00	-22.92	11.74
25.39	40.05	60.00	-19.95	26.63	50.00	-23.37	11.75

Test Mode:	Charging & Transmitting

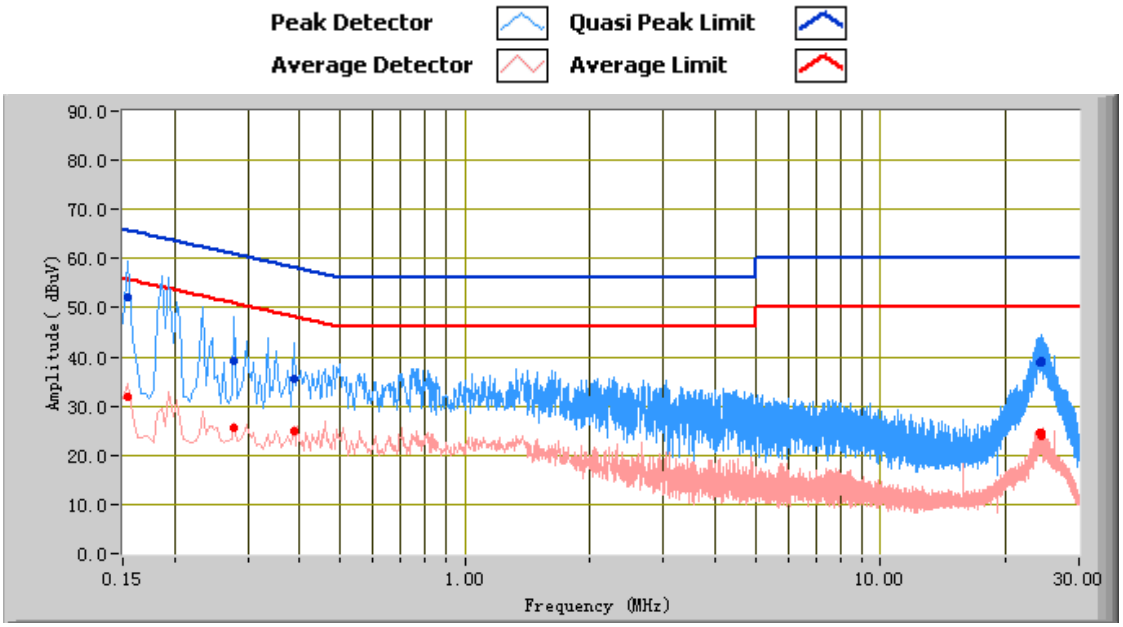


Test Data

Phase Line Plot at 240Vac, 50Hz

Frequency (MHz)	Quasi Peak (dBµV)	Limit (dBµV)	Margin (dB)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Factors (dB)
0.15	57.96	65.78	-7.82	36.22	55.78	-19.56	12.16
0.29	42.87	60.52	-17.65	28.08	50.52	-22.44	11.39
0.37	38.72	58.41	-19.69	28.03	48.41	-20.38	11.27
0.46	37.78	56.73	-18.95	27.38	46.73	-19.35	11.15
0.61	34.43	56.00	-21.57	25.52	46.00	-20.48	11.00
0.76	37.34	56.00	-18.66	28.28	46.00	-17.72	10.88

Test Mode:	Charging & Transmitting



Test Data

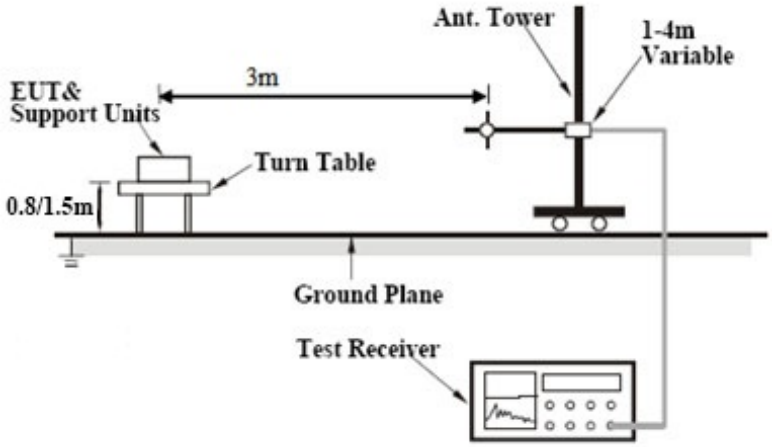
Phase Neutral Plot at 240Vac, 50Hz

Frequency (MHz)	Quasi Peak (dBµV)	Limit (dBµV)	Margin (dB)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Factors (dB)
0.15	52.15	65.78	-13.63	31.84	55.78	-23.94	12.15
0.28	39.19	60.87	-21.68	25.56	50.87	-25.32	11.41
0.39	35.49	58.15	-22.66	24.89	48.15	-23.26	11.24
24.28	38.70	60.00	-21.30	24.06	50.00	-25.94	11.71
24.41	39.21	60.00	-20.79	24.69	50.00	-25.31	11.72
24.09	38.96	60.00	-21.04	24.53	50.00	-25.47	11.71

6.10 Radiated Spurious Emissions

Temperature	25°C
Relative Humidity	58%
Atmospheric Pressure	1016mbar
Test date :	September 11, 2015
Tested By :	Deon Dai

Requirement(s):

<table>
<tr><th>Spec</th><th>Item</th><th>Requirement</th><th>Applicable</th></tr>
<tr><td>47CFR§15.205, §15.209, §15.247(d)</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>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 is 10Hz with Peak detection for Average Measurement as below at frequency above 1GHz.
5. Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.</td></tr>
<tr><td>Remark</td><td colspan="3"></td></tr>
</table>

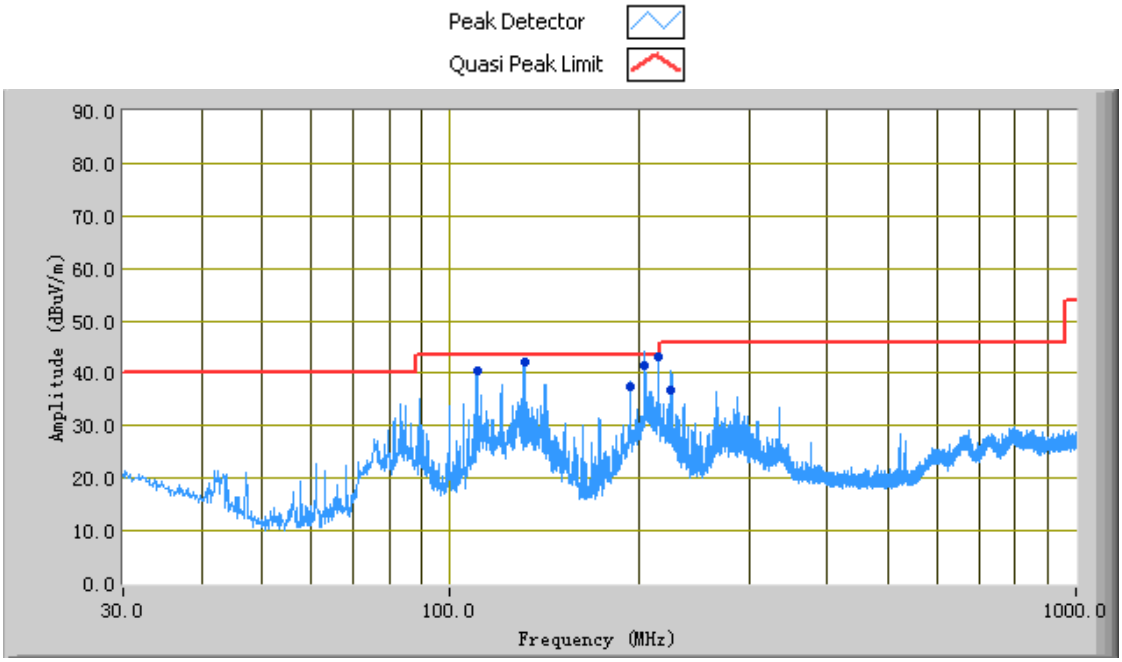
Result	☑ Pass	☐ Fail

Test Data ☑ Yes ☐ N/A

Test Plot ☑ Yes (See below) ☐ N/A

Test Mode:	Charging & Transmitting

(Below 1GHz)



Test Data

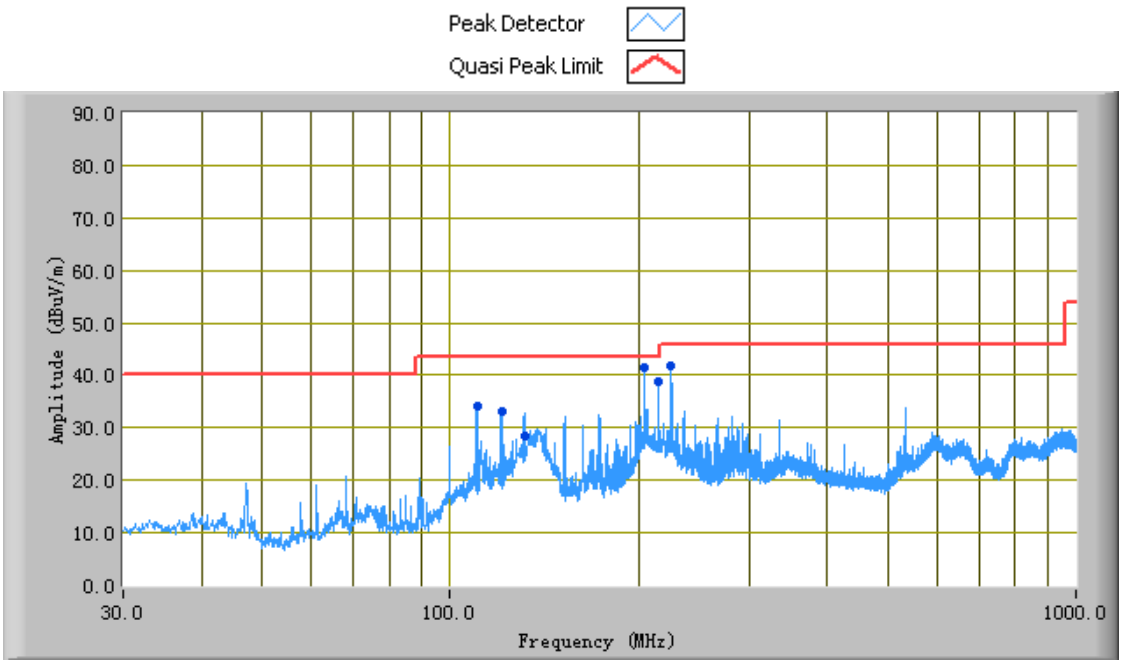
Vertical Polarity Plot @3m

Frequency (MHz)	Quasi Peak (dBµV/m)	Azimuth	Polarity (H/V)	Height (cm)	Factors (dB)	Limit (dBµV/m)	Margin (dB)
204.72	41.55	3.00	V	109.00	-31.79	43.50	-1.95
215.26	43.06	352.00	V	100.00	-31.22	43.50	-0.44
131.22	42.06	95.00	V	104.00	-31.59	43.50	-1.44
110.23	40.36	96.00	V	101.00	-32.90	43.50	-3.14
194.24	37.44	26.00	V	101.00	-31.94	43.50	-6.06
225.74	36.88	305.00	V	102.00	-30.67	46.00	-9.12

Note: The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not recorded.

Test Mode:	Charging & Transmitting

(Below 1GHz)



Test Data

Horizontal Polarity Plot @3m

Frequency (MHz)	Quasi Peak (dBµV/m)	Azimuth	Polarity (H/V)	Height (cm)	Factors (dB)	Limit (dBµV/m)	Margin (dB)
204.83	41.78	126.00	H	179.00	-31.18	43.50	-1.72
215.23	38.92	360.00	H	138.00	-30.39	43.50	-4.58
225.67	41.88	335.00	H	162.00	-29.59	46.00	-4.12
110.24	34.13	360.00	H	282.00	-32.18	43.50	-9.37
120.75	33.00	214.00	H	274.00	-31.92	43.50	-10.50
131.24	28.46	15.00	H	279.00	-31.66	43.50	-15.04

Note: The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not recorded.

Test Mode:	Transmitting Mode

Low Channel (2405 MHz)

Frequency (MHz)	S.A. Reading (dBµV)	Detector (PK/AV)	Direction (degree)	Height (cm)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)
4808.00	37.84	AV	122	100	V	32.7	8.17	30	48.71	54	-5.29
4808.00	35.62	AV	290	200	H	32.7	8.17	30	46.49	54	-7.51
4808.00	48.62	PK	104	110	V	32.7	8.17	30	59.49	74	-14.51
4808.00	45.73	PK	233	190	H	32.7	8.17	30	56.6	74	-17.4
2799.25	28.98	AV	231	100	V	29.5	8.5	30	36.98	54	-17.02
2799.25	26.27	AV	25	190	H	29.5	8.5	30	34.27	54	-19.73
2799.25	32.87	PK	322	100	V	29.5	8.5	30	40.87	74	-33.13
2799.25	33.18	PK	108	200	H	29.5	8.5	30	41.18	74	-32.82

Middle Channel (2441 MHz)

Frequency (MHz)	S.A. Reading (dBµV)	Detector (PK/AV)	Direction (degree)	Height (cm)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)
4882.50	35.31	AV	122	100	V	32.8	9	30	47.11	54	-6.89
4882.50	34.56	AV	52	198	H	32.8	9	30	46.36	54	-7.64
4882.50	43.36	PK	299	101	V	32.8	9	30	55.16	74	-18.84
4882.50	42.42	PK	207	200	H	32.8	9	30	54.22	74	-19.78
7245.50	22.15	AV	331	110	V	35.6	11.16	30	38.91	54	-15.09
7245.50	20.25	AV	38	200	H	35.6	11.16	30	37.01	54	-16.99
7245.50	25.15	PK	206	120	V	35.6	11.16	30	41.91	74	-32.09
7245.50	23.42	PK	174	190	H	35.6	11.16	30	40.18	74	-33.82

High Channel (2474 MHz)

Frequency (MHz)	S.A. Reading (dBµV)	Detector (PK/AV)	Direction (degree)	Height (cm)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)
4958.00	35.22	AV	45	101	V	32.9	10.16	30	48.28	54	-5.72
4958.00	33.65	AV	122	200	H	32.9	10.16	30	46.71	54	-7.29
4958.00	40.56	PK	235	100	V	32.9	10.16	30	53.62	74	-20.38
4958.00	37.71	PK	109	200	H	32.9	10.16	30	50.77	74	-23.23
3245.50	30.23	AV	229	109	V	30.6	9.35	30	40.18	54	-13.82
3245.50	28.11	AV	301	200	H	30.6	9.35	30	38.06	54	-15.94
3245.50	34.59	PK	99	101	V	30.6	9.35	30	44.54	74	-29.46
3245.50	33.98	PK	191	200	H	30.6	9.35	30	43.93	74	-30.07

Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Due	In use
AC Line Conducted Emissions Emission					
R&S EMI Test Receiver	ESPI3	101216	09/27/2015	09/26/2016	☑
V-LISN	ESH3-Z5	838979/005	09/27/2015	09/26/2016	☑
INFOMW Antenna (1 ~18GHz)	JXTXLB-10180	J2031081120092	10/09/2015	10/08/2016	☑
SIEMIC Labview Conducted Emissions software	V1.0	N/A	N/A	N/A	☑
RF conducted test					
R&S EMI Receiver	ESPI3	101216	09/27/2015	09/26/2016	☑
Power Splitter	1#	1#	02/02/2015	02/01/2016	☑
Hp Spectrum Analyzer	8563E	3821A09023	09/27/2015	09/26/2016	☑
Temperature/Humidity Chamber	1007H	N/A	01/07/2015	01/06/2016	☑
Radiated Emissions					
Agilent Technologies Spectrum Analyzer	N9010A	MY47191130	03/11/2015	03/10/2016	☑
R&S EMI Receiver	ESPI3	101216	09/27/2015	09/26/2016	☑
Antenna (30MHz~6GHz)	JB6	A121411	06/04/2015	06/03/2016	☑
EMCO Horn Antenna (1 ~18GHz)	3115	N/A	10/09/2015	10/08/2016	☑
INFOMW Antenna (1 ~18GHz)	JXTXLB-10180	J2031081120092	10/09/2015	10/08/2016	☑
Horn Antenna (18~40GHz)	AH-840	101013	04/22/2015	04/22/2016	☑
Microwave Pre-Amp (18~40GHz)	PA-840	181250	05/29/2015	05/28/2016	☑
SIEMIC Labview Radiated Emissions software	V1.0	N/A	N/A	N/A	☑

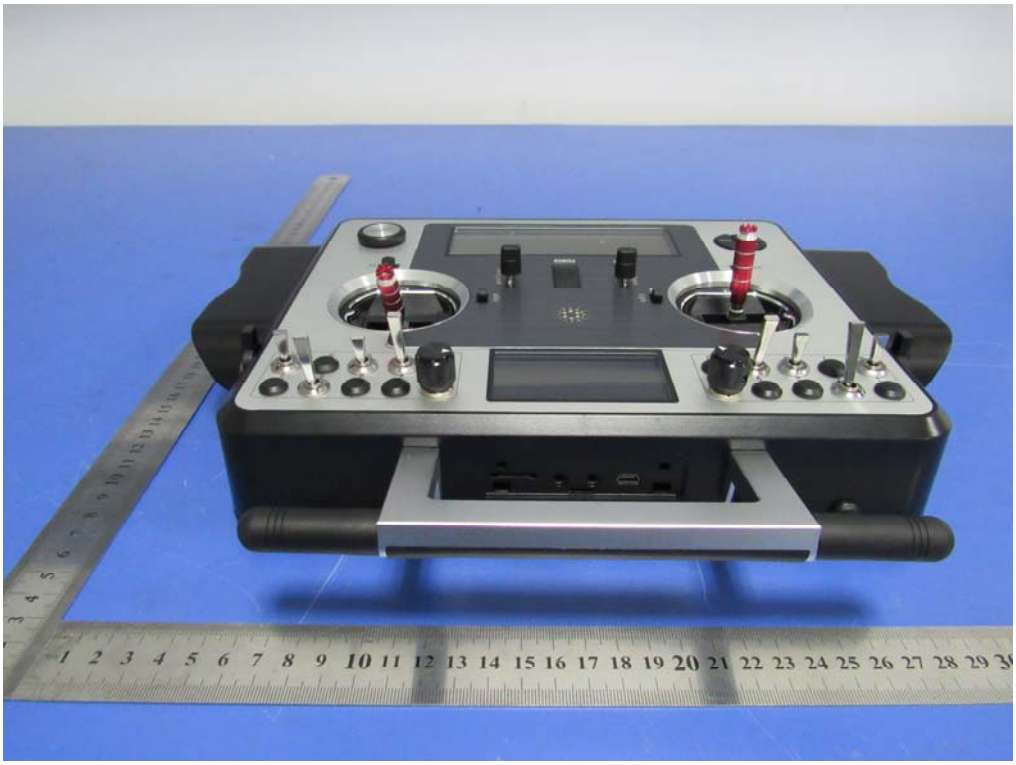
Annex B. EUT And Test Setup Photographs

Annex B.i. Photograph EUT Internal Photo

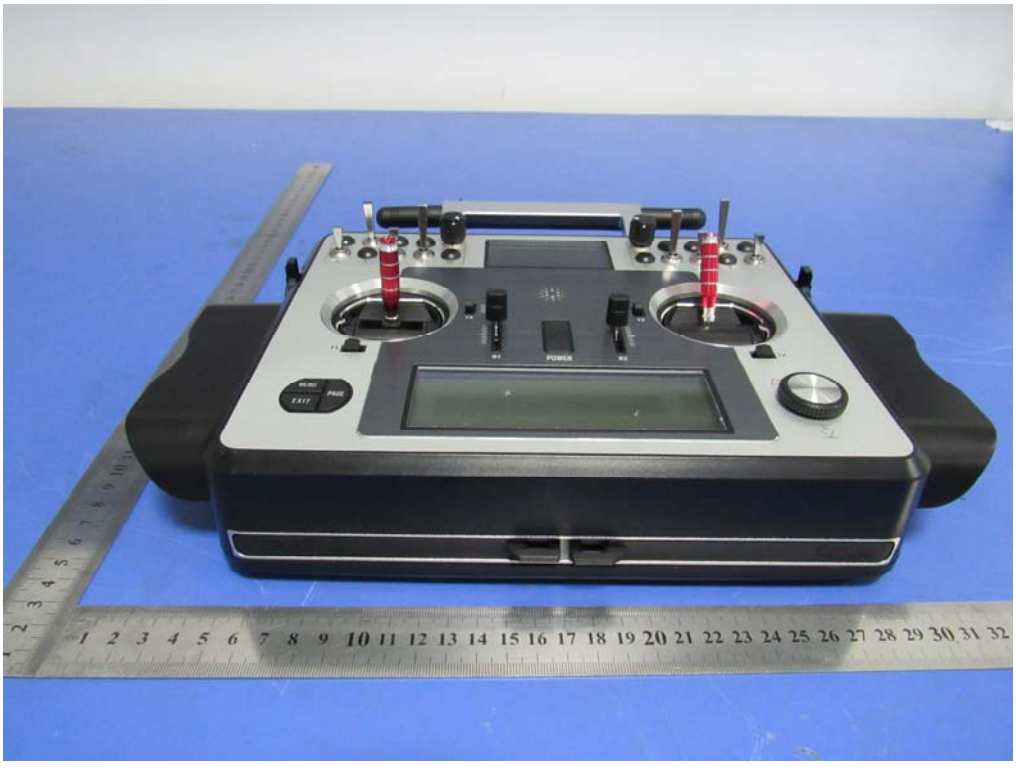
All Packages – Front View

Front View of EUT

Rear View of EUT



Top View of EUT

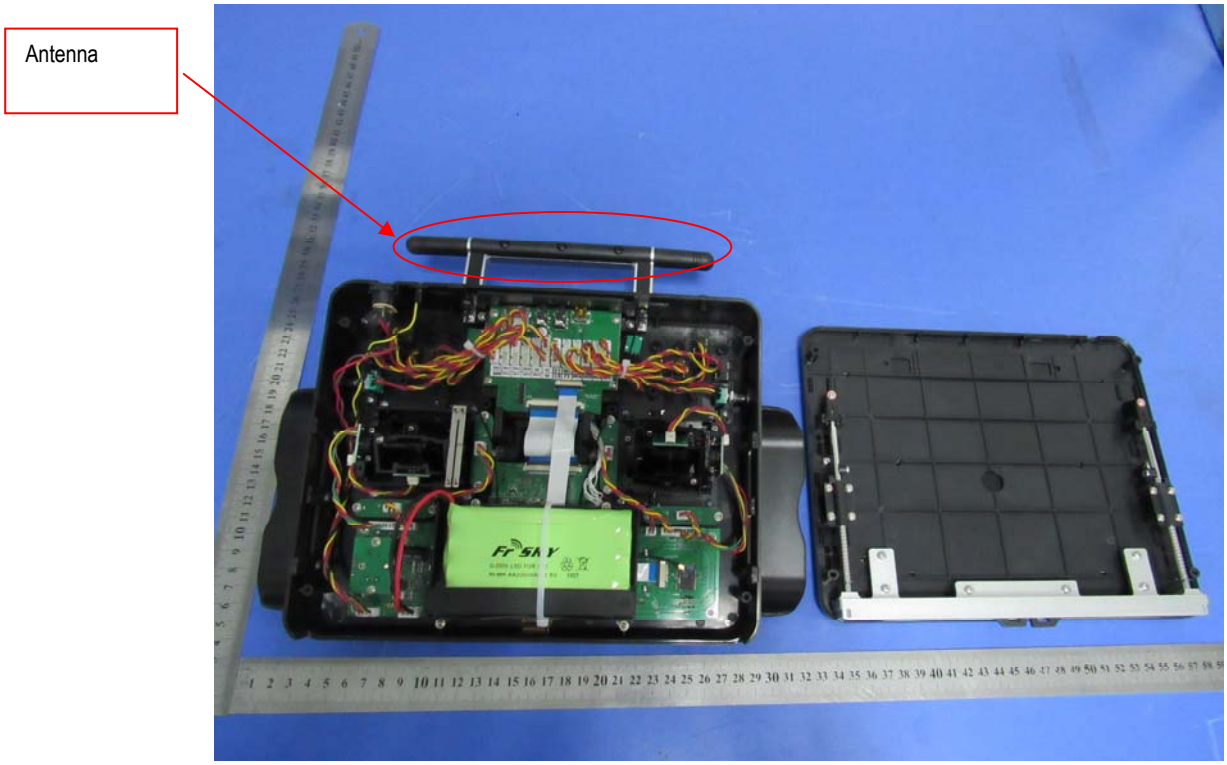


Bottom View of EUT

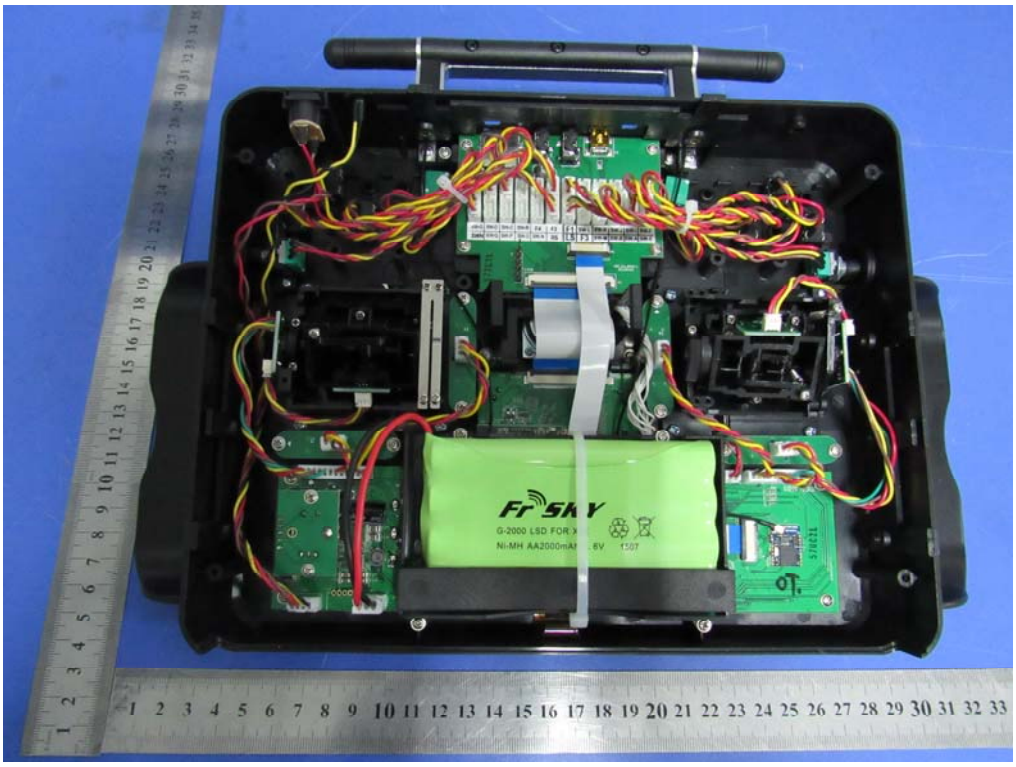
Left View of EUT

Right View of EUT

Annex B.ii. Photograph EUT Internal Photo

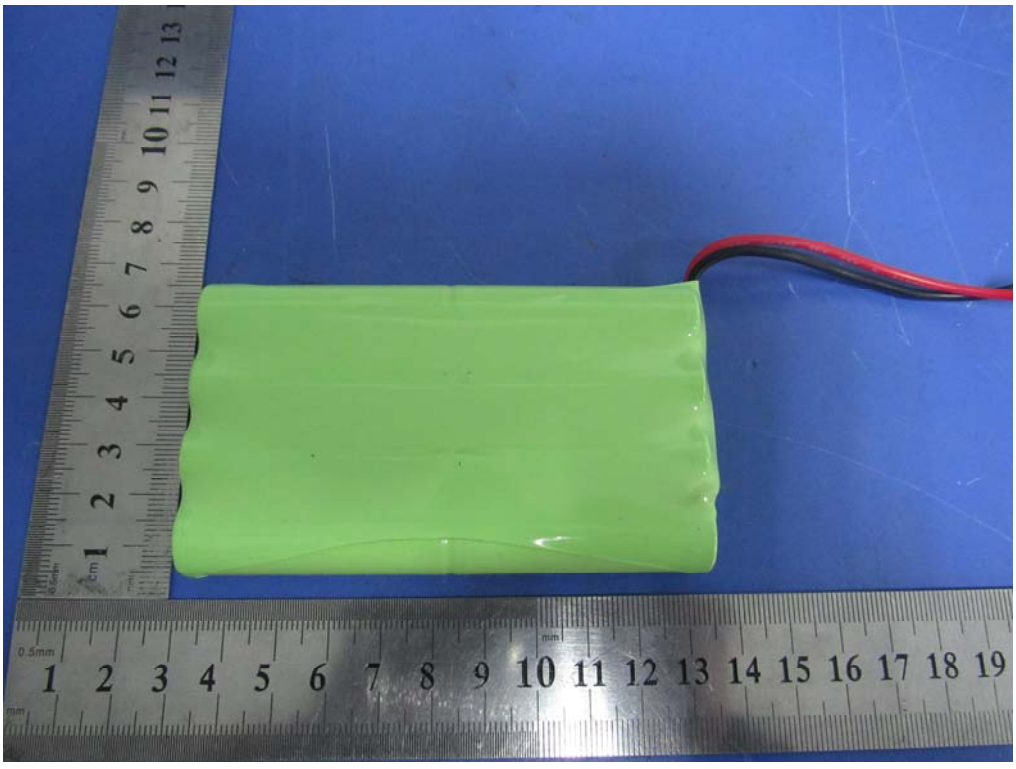


Uncover- Front View 1



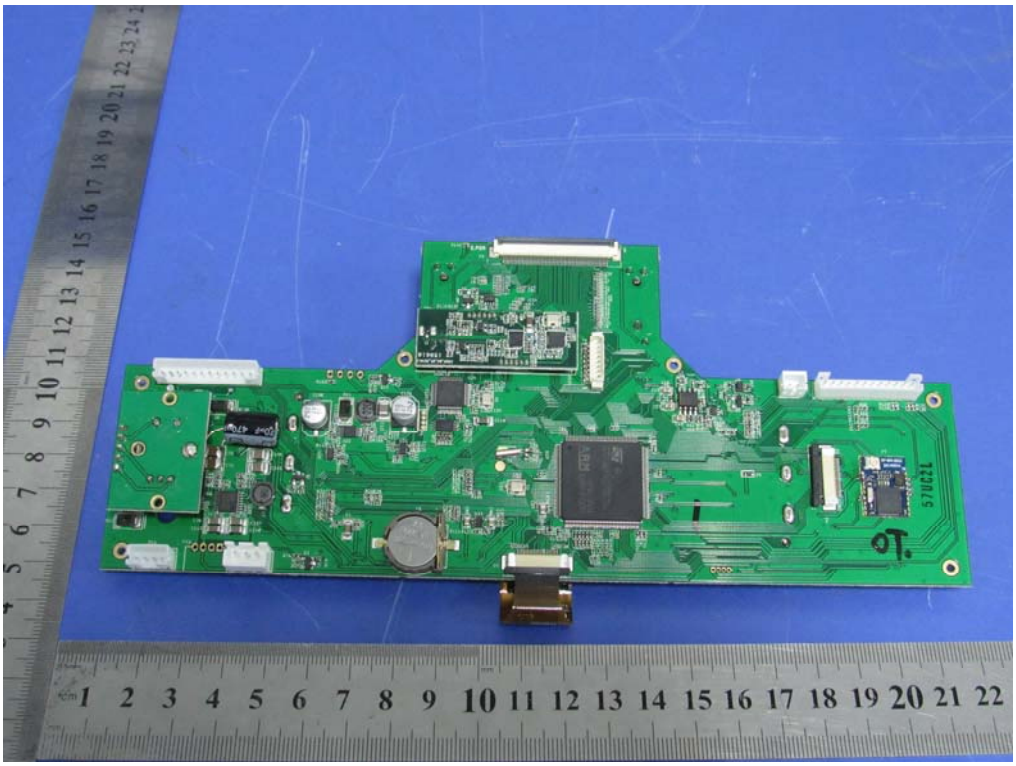
Uncover- Front View 2

Battery– Front View

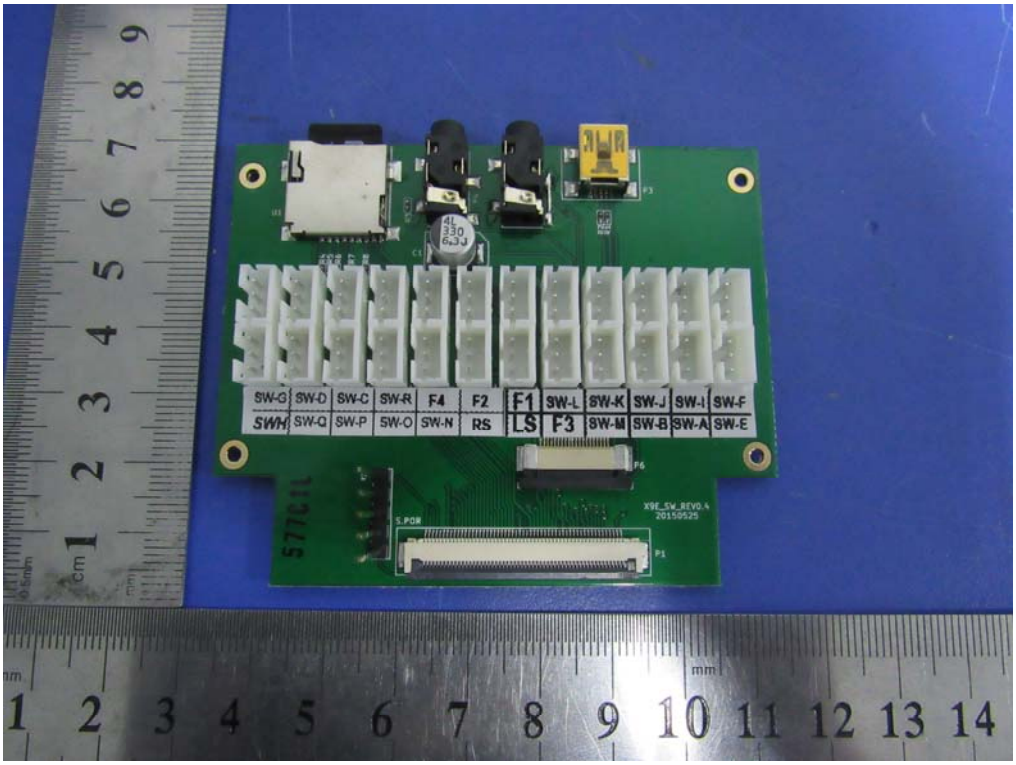


Battery– Rear View

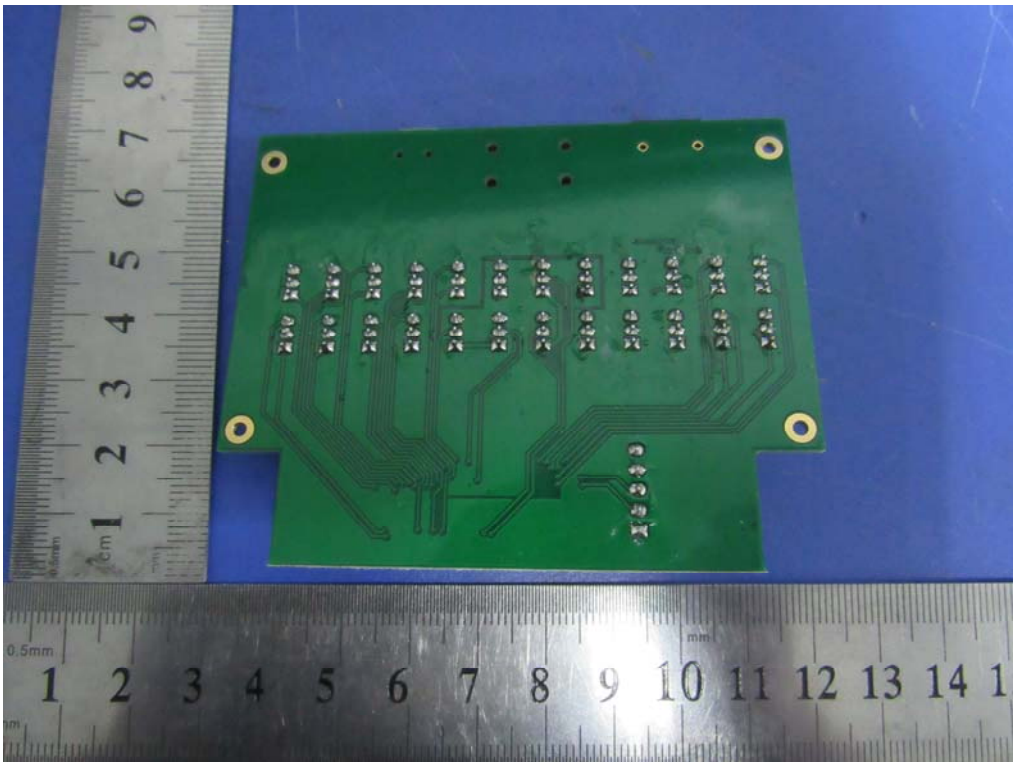
EUT PCB 1 – Front View



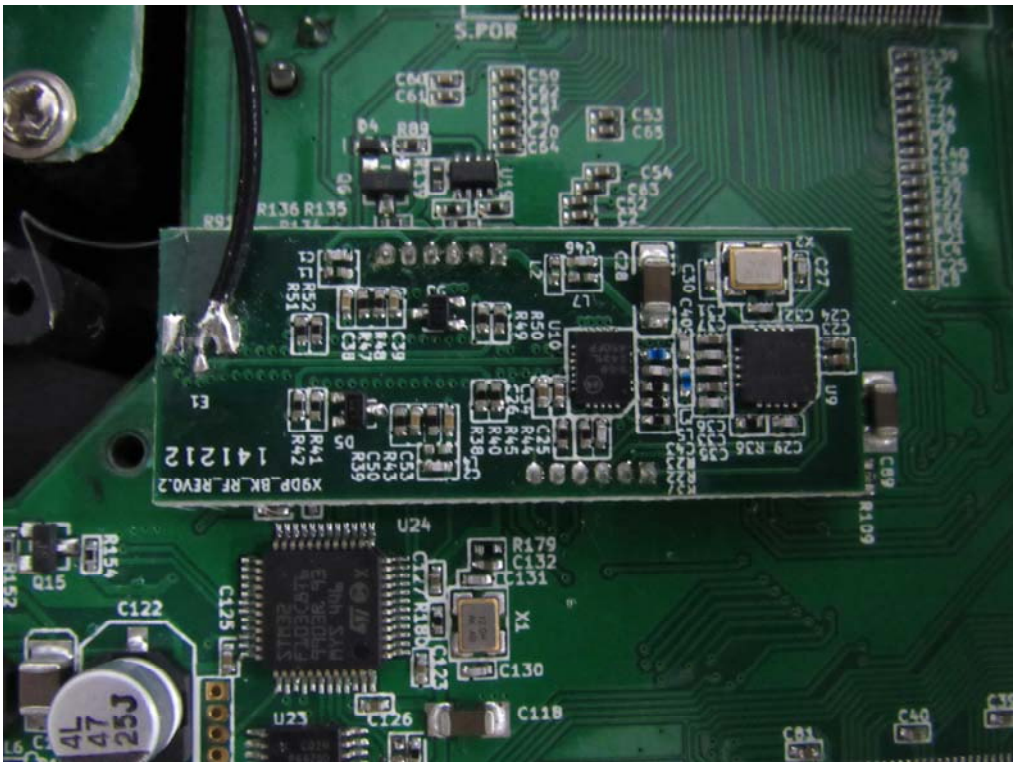
EUT PCB 1 – Rear View



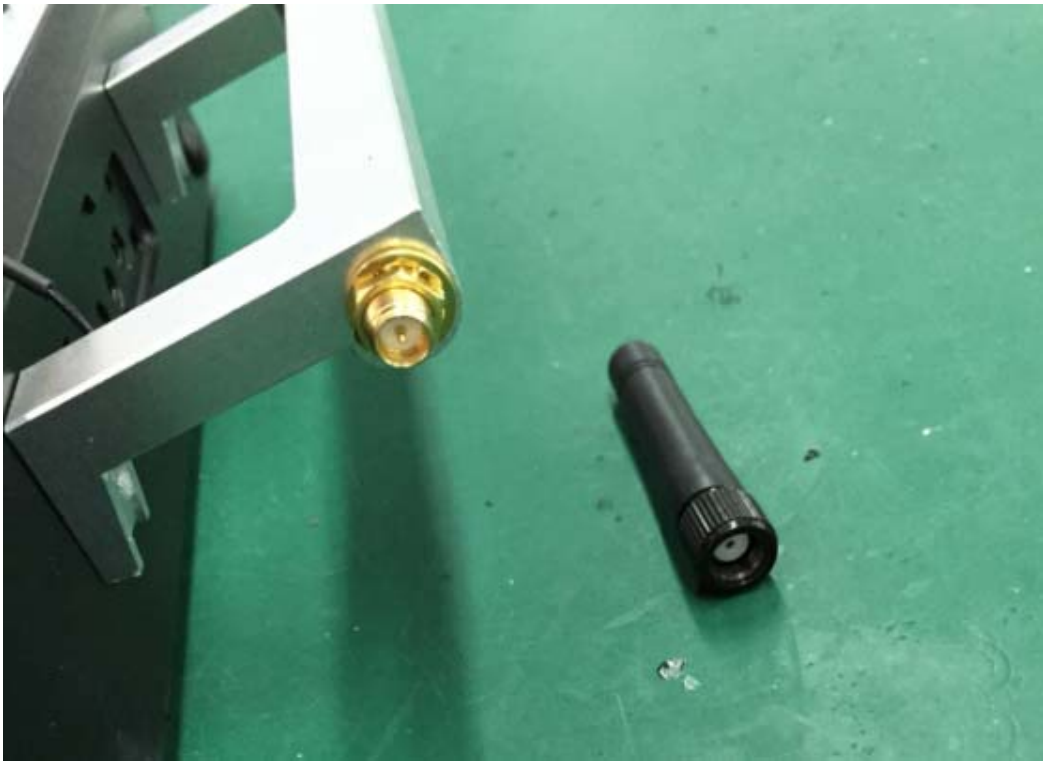
EUT PCB 2 – Front View



EUT PCB 2 – Rear View



EUT Module – Front View

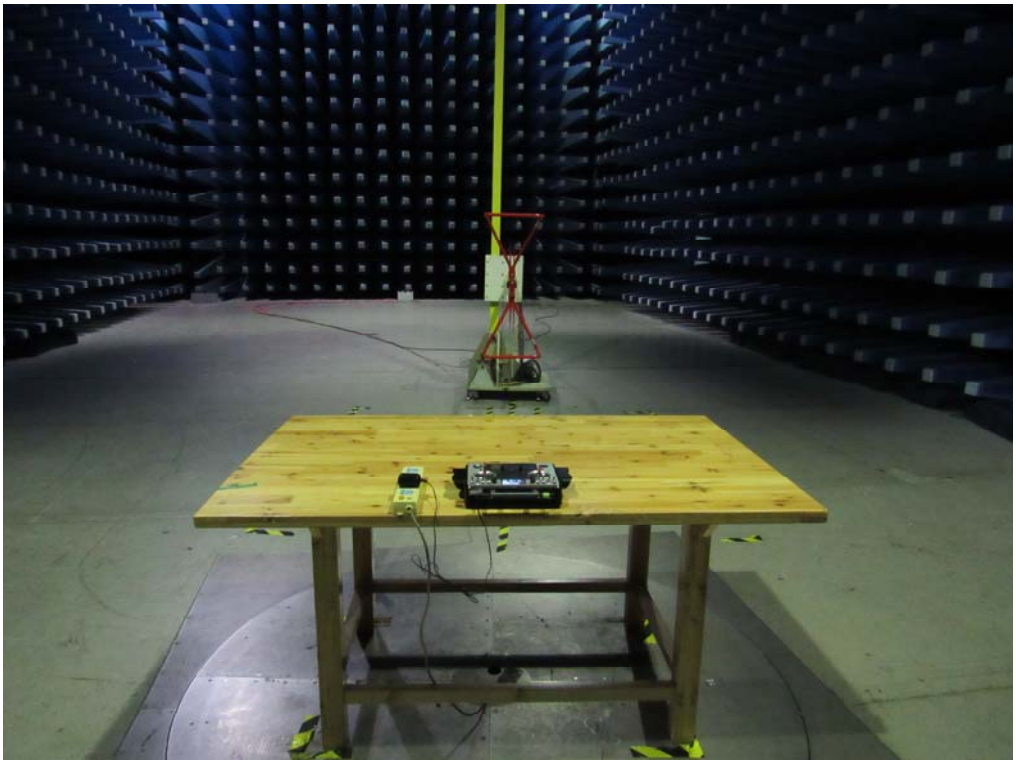


SMA Port – Front View

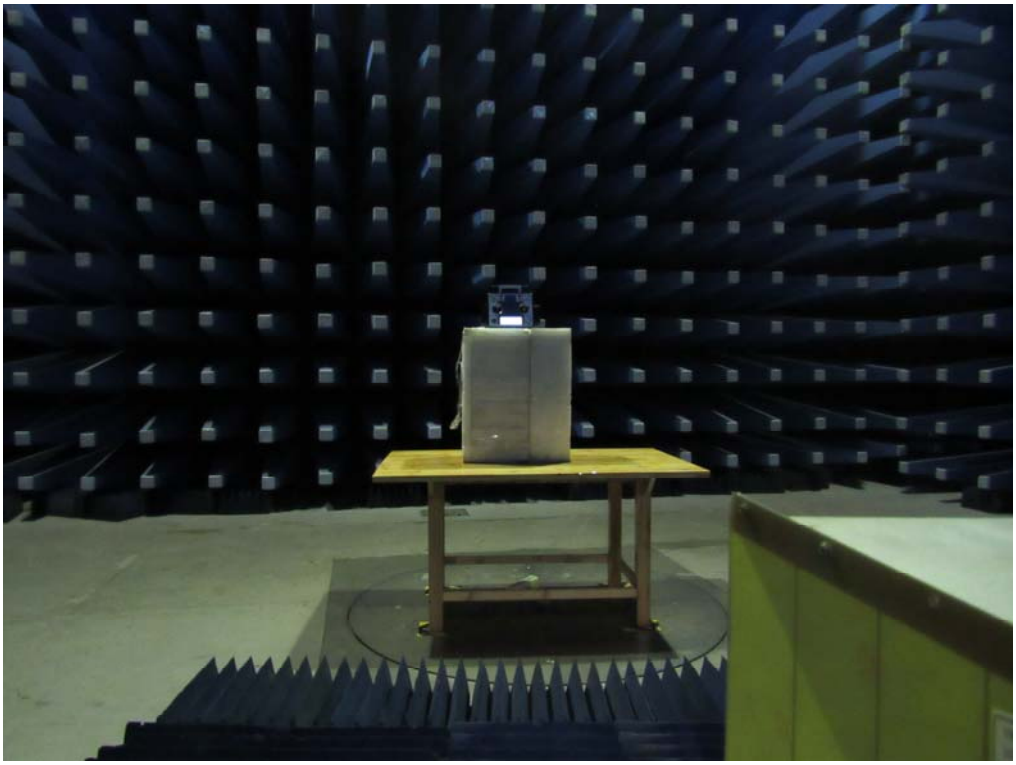
Annex B.iii. Photograph: Test Setup Photo

Conducted Emissions Test Setup – Front View

Conducted Emissions Test Setup – Side View



Radiated Spurious Emissions Test Setup Below 1GHz

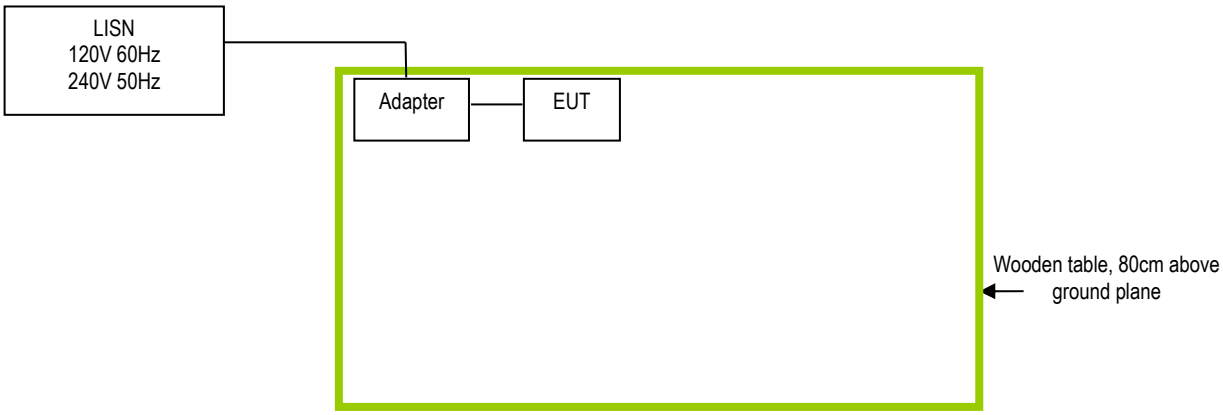


Radiated Spurious Emissions Test Setup Above 1GHz

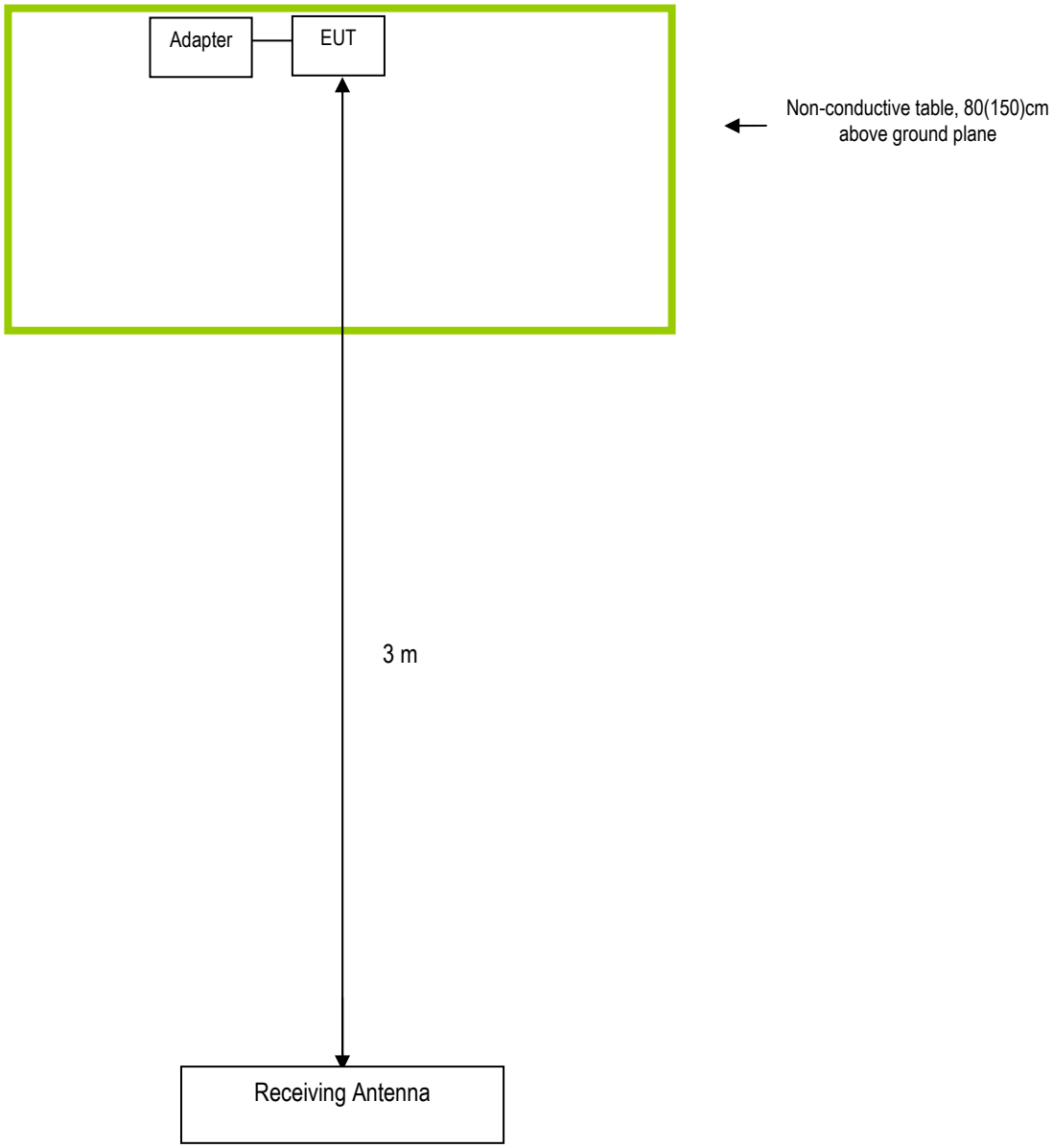
Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

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	Calibration Due Date
N/A	N/A	N/A	N/A	N/A

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

Please see attachment

Annex E. DECLARATION OF SIMILARITY

N/A