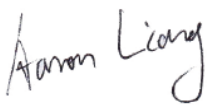
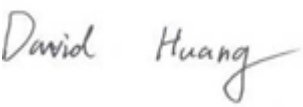


RF TEST REPORT



Report No.: Q181023S005-FCC-R4

Supersede Report No.: N/A

Applicant	TP-LINK Technologies Co., Ltd.	
Product Name	C5 Plus smartphone	
Model No.	TP7031C	
Serial No.	TP7031CXYZZ	
Test Standard	FCC Part 15.247, ANSI C63.10: 2013	
Test Date	Nov. 06 to Nov. 20, 2018	
Issue Date	Nov. 22, 2018	
Test Result	☒ Pass ☐ Fail	
Equipment complied with the specification ☒		
Equipment did not comply with the specification ☐		
		
Aaron Liang Test Engineer	David Huang Checked By	
This test report may be reproduced in full only Test result presented in this test report is applicable to the tested sample only		

Issued by:

SIEMIC (SHENZHEN-CHINA) LABORATORIES

Zone A, Floor 1, Building 2 Wan Ye Long Technology Park

South Side of Zhoushi Road, Bao' an District, Shenzhen, Guangdong China 518108

Phone: +86 0755 2601 4629801 Email: China@siemic.com.cn

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
Q181023S005-FCC-R4	NONE	Original	Nov. 22, 2018

2. Customer information

Applicant Name	TP-LINK Technologies Co., Ltd.
Applicant Add	Building 24-1F/3F/4F/5F, 28-1F/2F/3F/4F Science and Technology Park, Shennan Road, Nanshan District, Shenzhen City, Guangdong Province, P.R. China
Manufacturer	TP-LINK Technologies Co.,Ltd
Manufacturer Add	Building 24-1F/3F/4F/5F, 28-1F/2F/3F/4F Science and Technology Park, Shennan Road, Nanshan District, Shenzhen City, Guangdong Province, P.R. China

3. Test site information

Test Lab A:

Lab performing tests	SIEMIC (Shenzhen-China) LABORATORIES
Lab Address	Zone A, Floor 1, Building 2 Wan Ye Long Technology Park South Side of Zhoushi Road, Bao' an District, Shenzhen, Guangdong China 518108
FCC Test Site No.	535293
IC Test Site No.	4842E-1
Test Software	Radiated Emission Program-To Shenzhen v2.0

Test Lab B:

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(ver.lcp-03A1)

Note: We just perform Radiated Spurious Emission above 18GHz in the test Lab. B.

4. Equipment under Test (EUT) Information

Description of EUT:	C5 Plus smartphone
Main Model:	TP7031C
	TP7031CXYZZ
	(Model Difference
	Description of Model Name Differentiation:
	X=2 , indicates Grey ; X=4 , indicates Gold ; X=7 , indicates Blue ;
Serial Model:	X=8 , indicates Red ;
	Y=0 , indicates the memory is 512MB RAM + 8GB Flash; Y=1 , indicates the memory is 1GB RAM + 8GB Flash; Y=2 , indicates the memory is 1GB RAM + 16GB Flash;
	Z=' A' to ' Z' , ZZ indicates different regions or customers.
	All models are same with electrical parameters and internal circuit structure.)
Date EUT received:	Nov. 05, 2018
Test Date(s):	Nov. 06 to Nov. 20, 2018
Equipment Category :	DTS
Antenna Gain:	BLE: -0.5dBi
Antenna Type:	PIFA antenna
Type of Modulation:	BLE: GFSK
RF Operating Frequency (ies):	BLE: 2402-2480 MHz
Max. Output Power:	6.060dBm

Number of Channels: BLE: 40CH

Port: Please refer to the user' s manual

Trade Name : neffos

Adapter :

Model: A8-501000

Input: AC100-240V~50/60Hz,0.2A Max

Output: DC 5.0V, 1.0A

Input Power:

Battery :

Model: NBL-40A2150

Spec: 3.8V, 2150mAh from Li-ion

Limited charge voltage: 4.35V

Rating:3.8V/2150mAh/8.17Wh

Typical3.8V/2200mAh/8.36Wh

FCC ID: TE7C5PLUSV1

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
§15.203	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 Restricted Frequency Bands	Compliance
§15.207 (a),	AC Power Line Conducted Emissions	Compliance
§15.205, §15.209, §15.247(d)	Radiated Emissions & Unwanted Emissions into Restricted Frequency Bands	Compliance

Measurement Uncertainty

Emissions		
Test Item	Description	Uncertainty
Band-Edge & Unwanted Emissions into Restricted Frequency Bands and Radiated Emissions & Unwanted Emissions into Restricted Frequency Bands	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 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 2 antennas:

A permanently attached PIFA antenna for Bluetooth/BLE/WIFI/GPS, the gain is -0.5dBi for Bluetooth/BLE, the gain is -0.5dBi for WIFI, the gain is -0.5dBi for GPS.

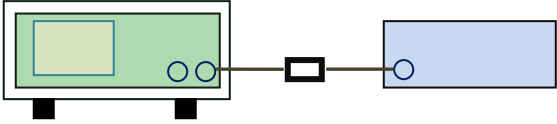
A permanently attached PIFA antenna for GSM/PCS/UMTS, the gain is 0dBi for GSM850, 0dBi for PCS1900, 0dBi for UMTS-FDD Band V, -0.5dBi for UMTS-FDD Band II.

The antenna meets up with the ANTENNA REQUIREMENT.

Result: Compliance.

6.2 DTS (6 dB) Channel Bandwidth

Temperature	22 °C
Relative Humidity	54%
Atmospheric Pressure	1021mbar
Test date :	Nov. 21, 2018
Tested By :	Aaron Liang

Spec	Item	Requirement	Applicable
§ 15.247(a)(2)	a)	6dB BW ≥ 500kHz;	☒
RSS Gen(4.6.1)	b)	99% BW: For FCC reference only; required by IC.	☒
Test Setup	 Spectrum Analyzer EUT		
Test Procedure	558074 D01 DTS MEAS Guidance v03r03, 8.1 DTS bandwidth 6dB Emission bandwidth measurement procedure - Set RBW = 30 kHz. - Set the video bandwidth (VBW) ≥ 3 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

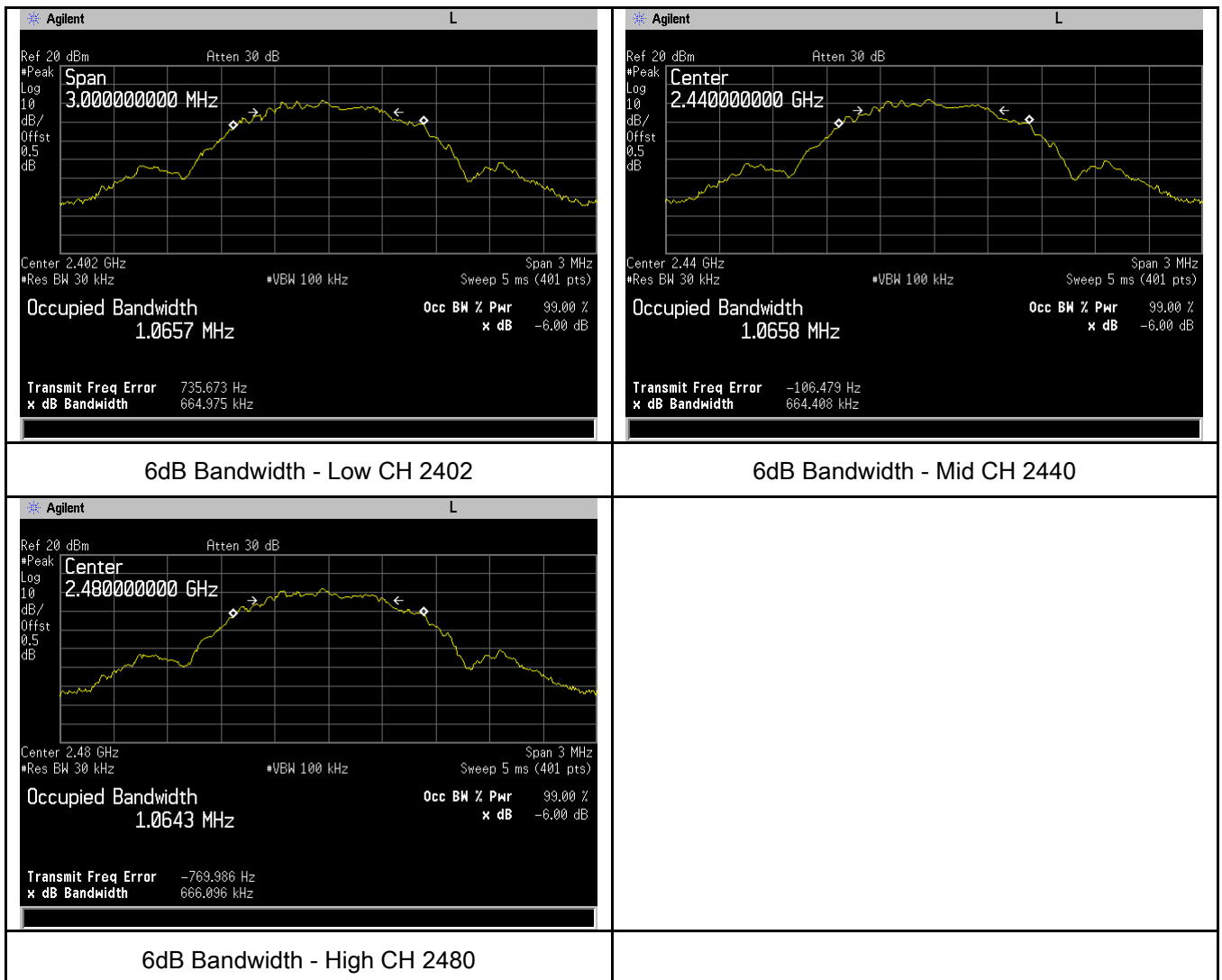
Test Plot ☒ Yes (See below) ☐ N/A

6dB Bandwidth measurement result

Test Data

CH	Frequency (MHz)	6dB Bandwidth (kHz)	99% Occupied Bandwidth (MHz)
Low	2402	664.975	1.0657
Mid	2440	664.408	1.0658
High	2480	666.096	1.0643

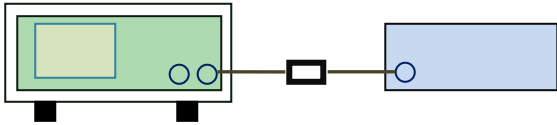
Test Plots



6.3 Maximum Output Power

Temperature	22 °C
Relative Humidity	54%
Atmospheric Pressure	1021mbar
Test date :	Nov. 21, 2018
Tested By :	Aaron Liang

Requirement(s):

Spec	Item	Requirement	Applicable
§15.247(b) (3),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)	DTS in 902-928MHz, 2400-2483.5MHz: ≤ 1 Watt	☒
Test Setup	 Spectrum Analyzer EUT		
Test Procedure	558074 D01 DTS MEAS Guidance v03r03, 9.1.2 Integrated band power method Maximum output power measurement procedure a) Set the RBW $\geq$ DTS bandwidth. b) Set VBW $\geq 3 \times$ RBW. c) Set span $\geq 3 \times$ 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

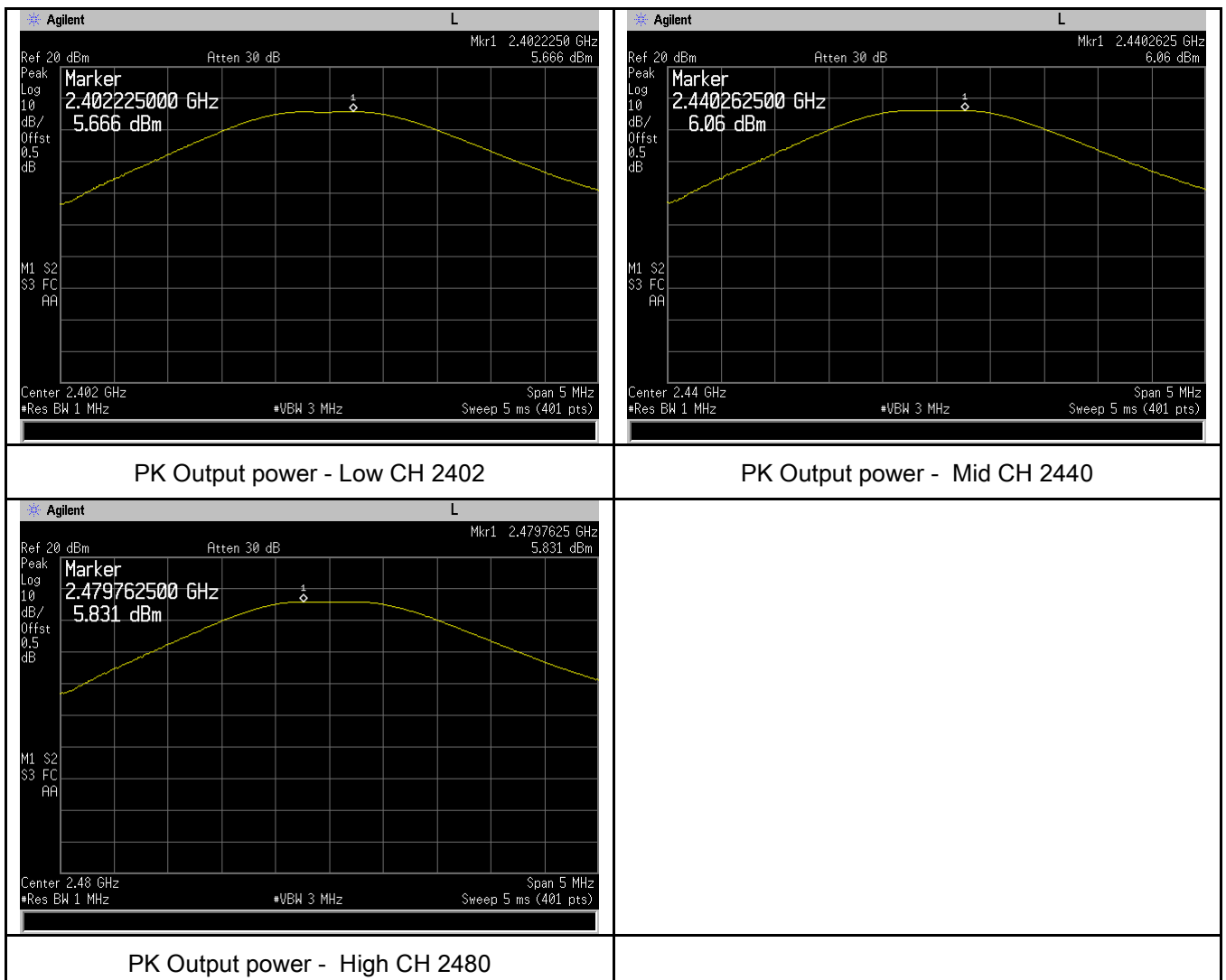
Test Plot ☒ Yes (See below) ☐ N/A

Output Power measurement result

Test Data

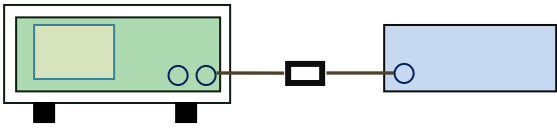
Type	CH	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Result
Output power	Low	2402	5.666	30	Pass
	Mid	2440	6.060	30	Pass
	High	2480	5.831	30	Pass

Test Plots



6.4 Power Spectral Density

Temperature	22 °C
Relative Humidity	54%
Atmospheric Pressure	1021mbar
Test date :	Nov. 21, 2018
Tested By :	Aaron Liang

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	 Spectrum Analyzer EUT		
Test Procedure	558074 D01 DTS MEAS Guidance v03r03, 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: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$. - d) Set the VBW $\geq 3 \times \text{RBW}$. - 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		

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

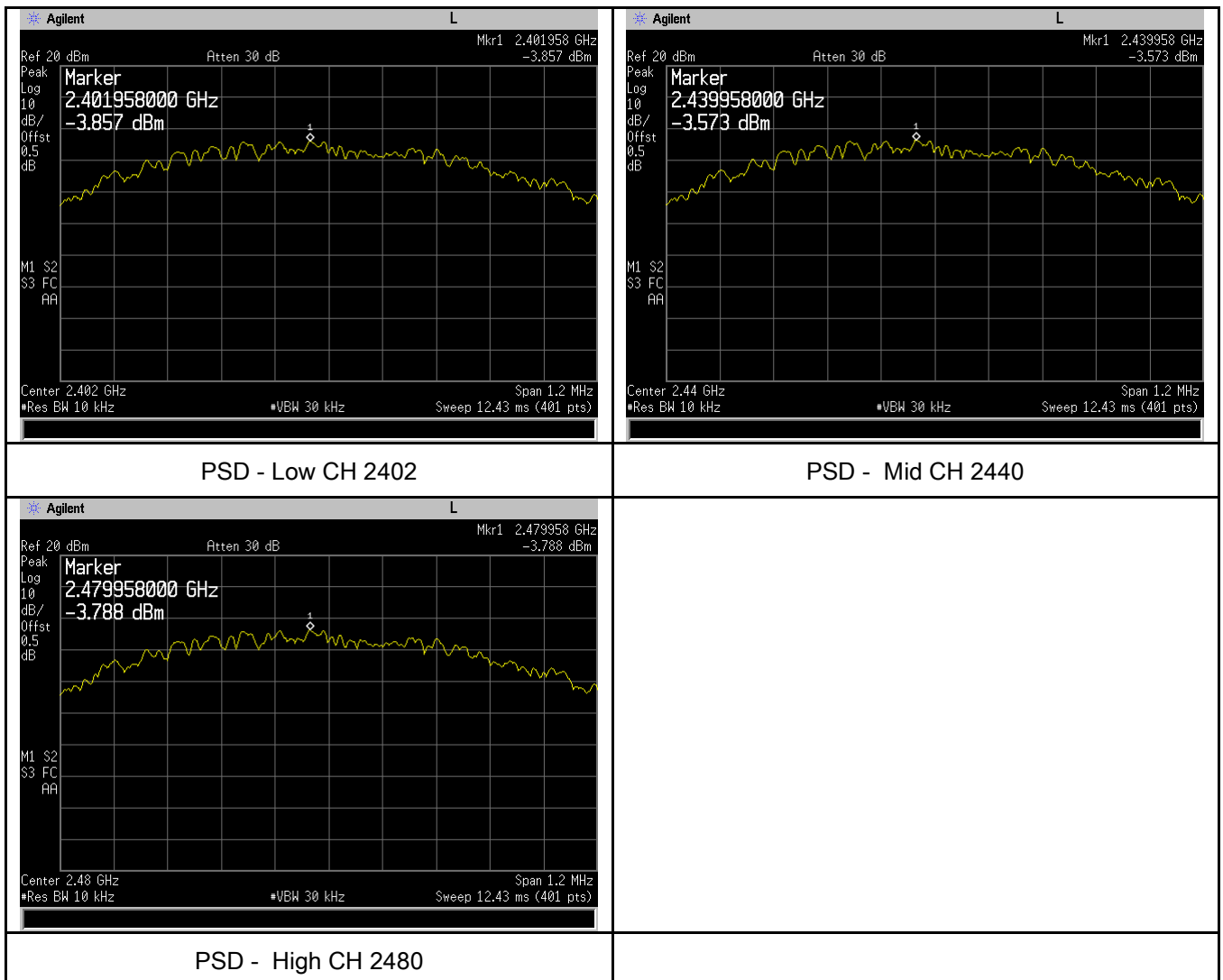
Power Spectral Density measurement result

Test Data

Type	CH	Freq (MHz)	Reading (dBm)	Factor (dB)	Result (dBm)	Limit (dBm)	Result
PSD	Low	2402	-3.857	-5.23	-9.087	8	Pass
	Mid	2440	-3.573	-5.23	-8.803	8	Pass
	High	2480	-3.788	-5.23	-9.018	8	Pass

Note: factor= $10\log(3/10)=-5.23$

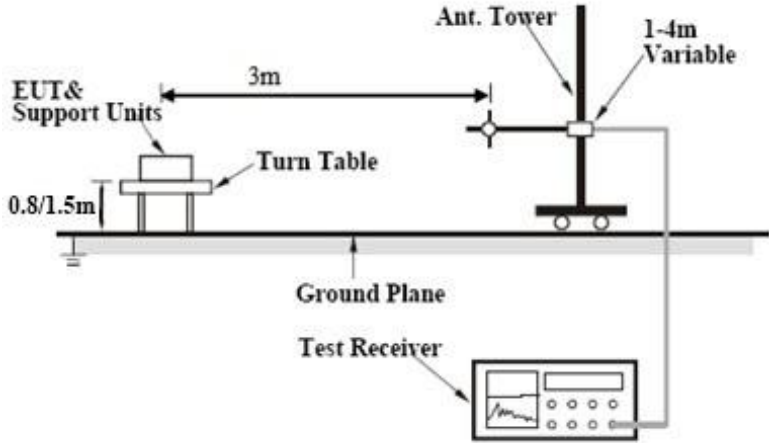
Test Plots



6.5 Band-Edge & Unwanted Emissions into Restricted Frequency Bands

Temperature	22°C
Relative Humidity	51%
Atmospheric Pressure	1009mbar
Test date :	Nov. 09, 2018
Tested By :	Aaron Liang

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.		

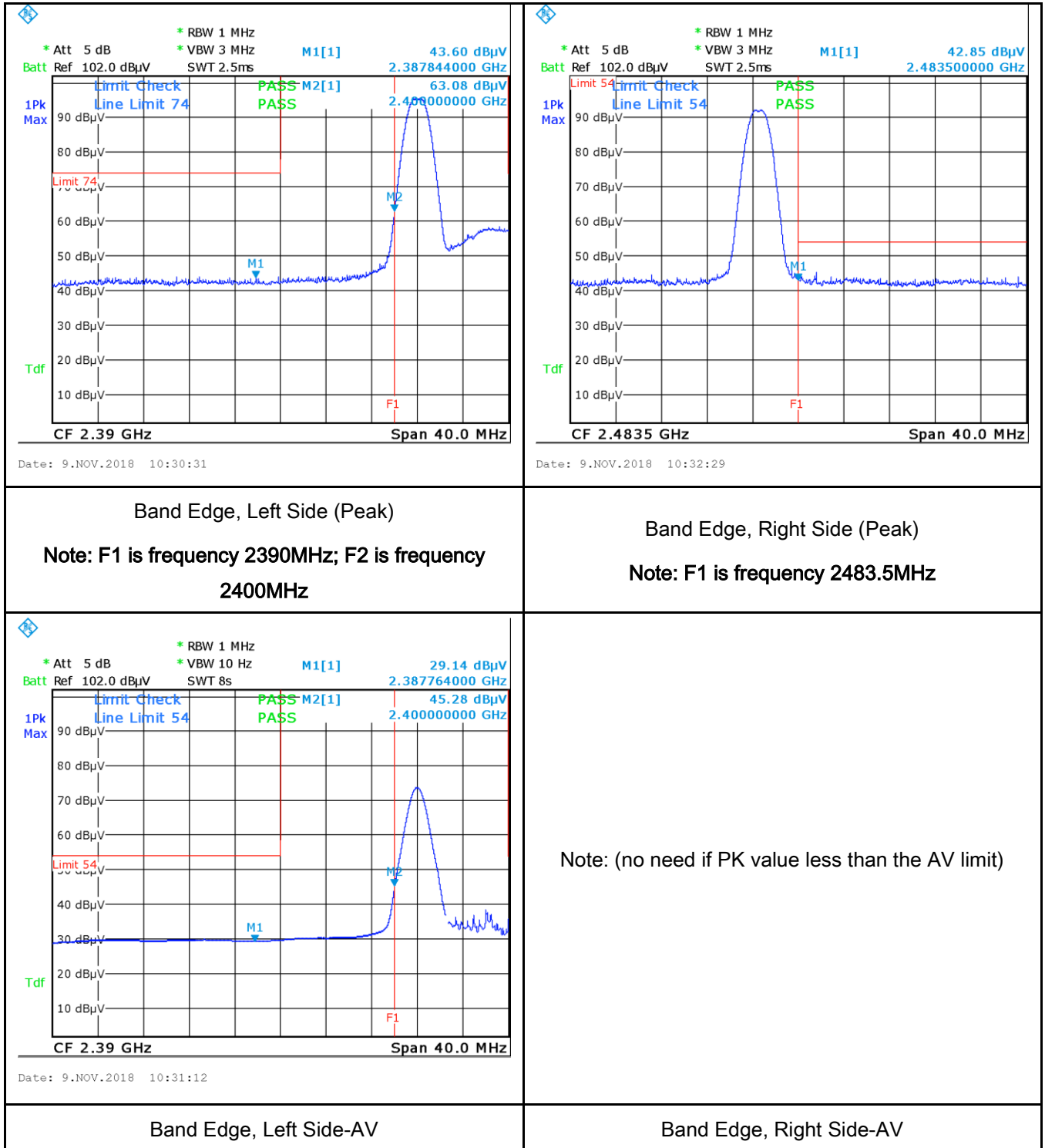
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	- 3. First, set both RBW and VBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100kHz bandwidth from band edge, check the emission of EUT, if pass then set Spectrum Analyzer as below: a. The resolution bandwidth and video 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

Band Edge measurement result



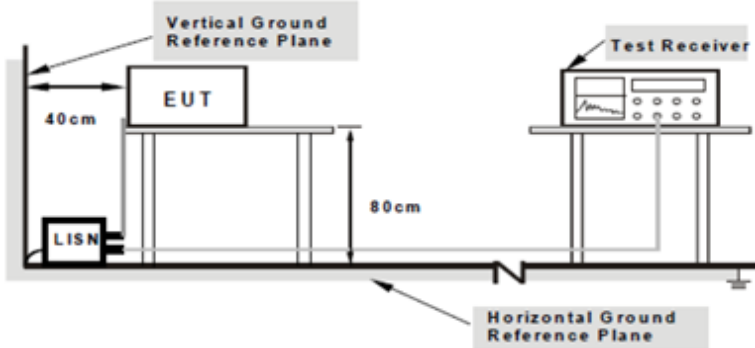
Note: Both Horizontal and vertical polarities were investigated.

6.6 AC Power Line Conducted Emissions

Temperature	25°C
Relative Humidity	50%
Atmospheric Pressure	1008mbar
Test date :	Nov. 08, 2018
Tested By :	Aaron Liang

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.	☒														
		<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>		Frequency ranges (MHz)	Limit (dBµV)		QP	Average	0.15 ~ 0.5	66 – 56	56 – 46	0.5 ~ 5	56	46	5 ~ 30	60	50
		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	- 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. - The power supply for the EUT was fed through a 50W/50mH EUT LISN, connected to filtered mains. - The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss
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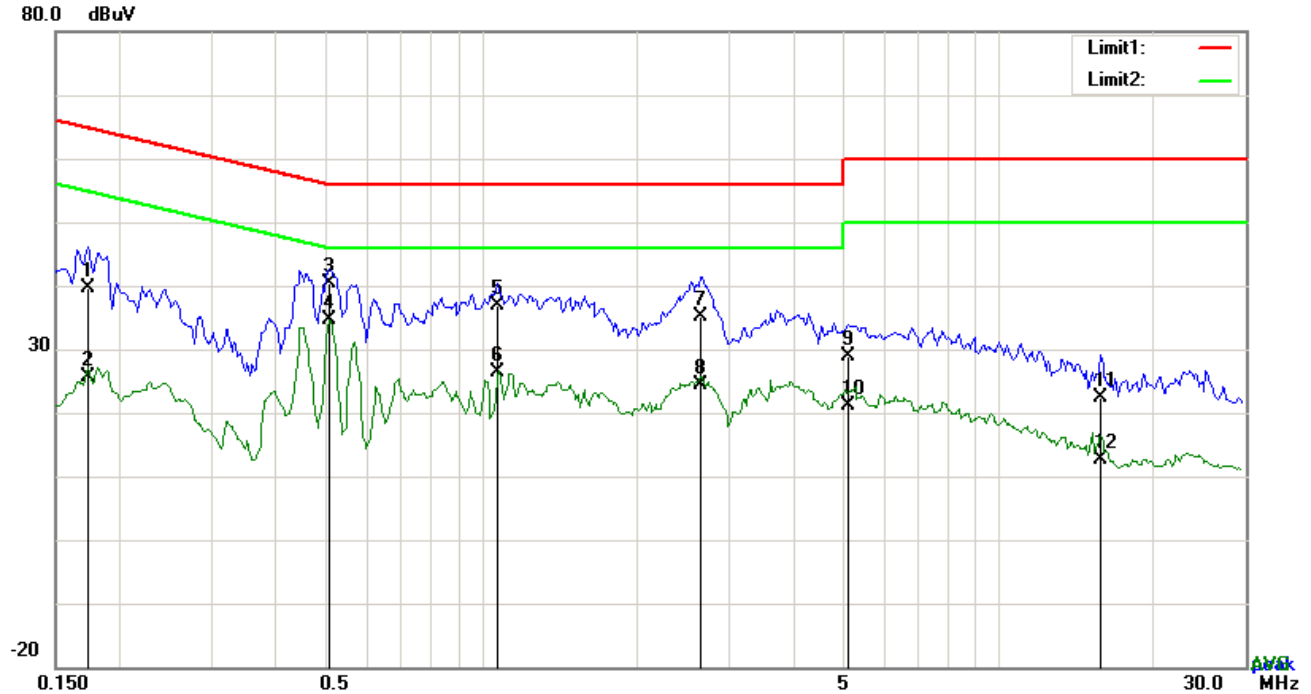
Test Report No.	Q181023S005-FCC-R4
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	coaxial cable. 4. All other supporting equipment were powered separately from another main supply. 5. The EUT was switched on and allowed to warm up to its normal operating condition. 6. A scan was made on the NEUTRAL 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: Transmitting Mode

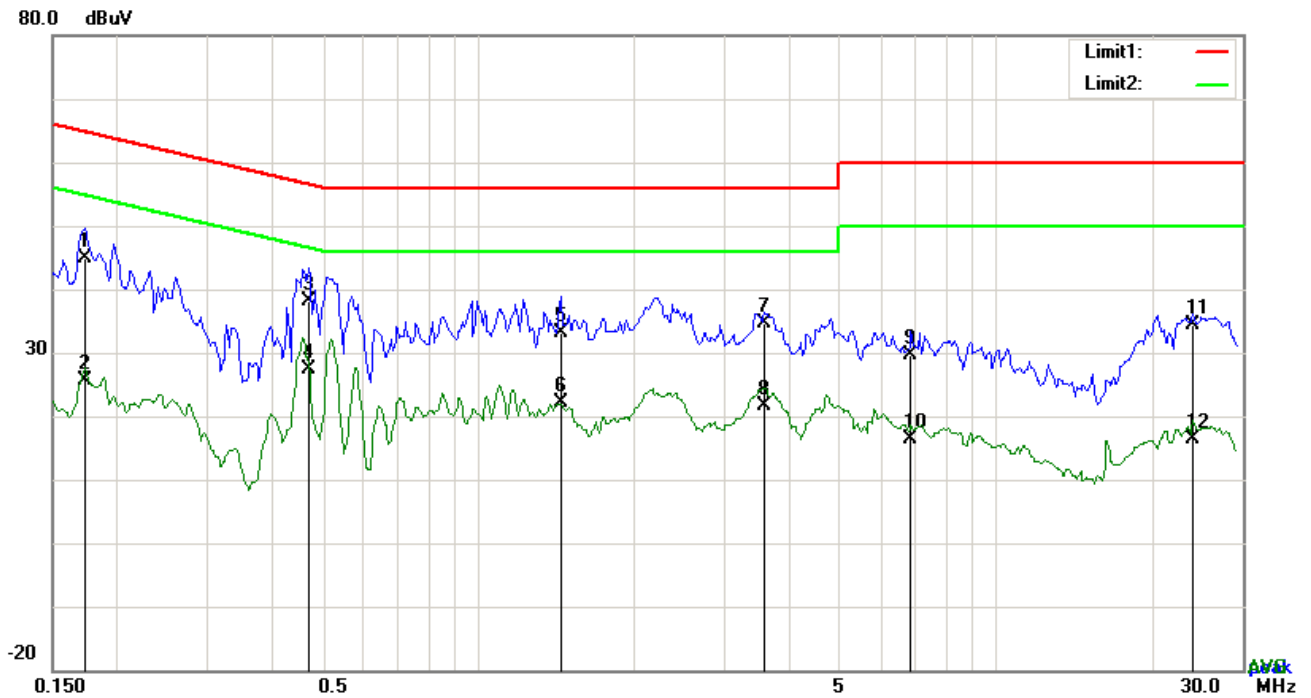


Test Data

Phase Line Plot at 120Vac, 60Hz

No.	P/L	Frequency (MHz)	Reading (dBμV)	Detector	Corrected (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)
1	L1	0.1734	29.65	QP	10.03	39.68	64.80	-25.12
2	L1	0.1734	15.68	AVG	10.03	25.71	54.80	-29.09
3	L1	0.5088	30.40	QP	10.03	40.43	56.00	-15.57
4	L1	0.5088	24.72	AVG	10.03	34.75	46.00	-11.25
5	L1	1.0743	26.75	QP	10.03	36.78	56.00	-19.22
6	L1	1.0743	16.36	AVG	10.03	26.39	46.00	-19.61
7	L1	2.6616	25.19	QP	10.05	35.24	56.00	-20.76
8	L1	2.6616	14.22	AVG	10.05	24.27	46.00	-21.73
9	L1	5.1138	18.78	QP	10.08	28.86	60.00	-31.14
10	L1	5.1138	11.14	AVG	10.08	21.22	50.00	-28.78
11	L1	15.7725	12.06	QP	10.24	22.30	60.00	-37.70
12	L1	15.7725	2.36	AVG	10.24	12.60	50.00	-37.40

Test Mode: Transmitting Mode

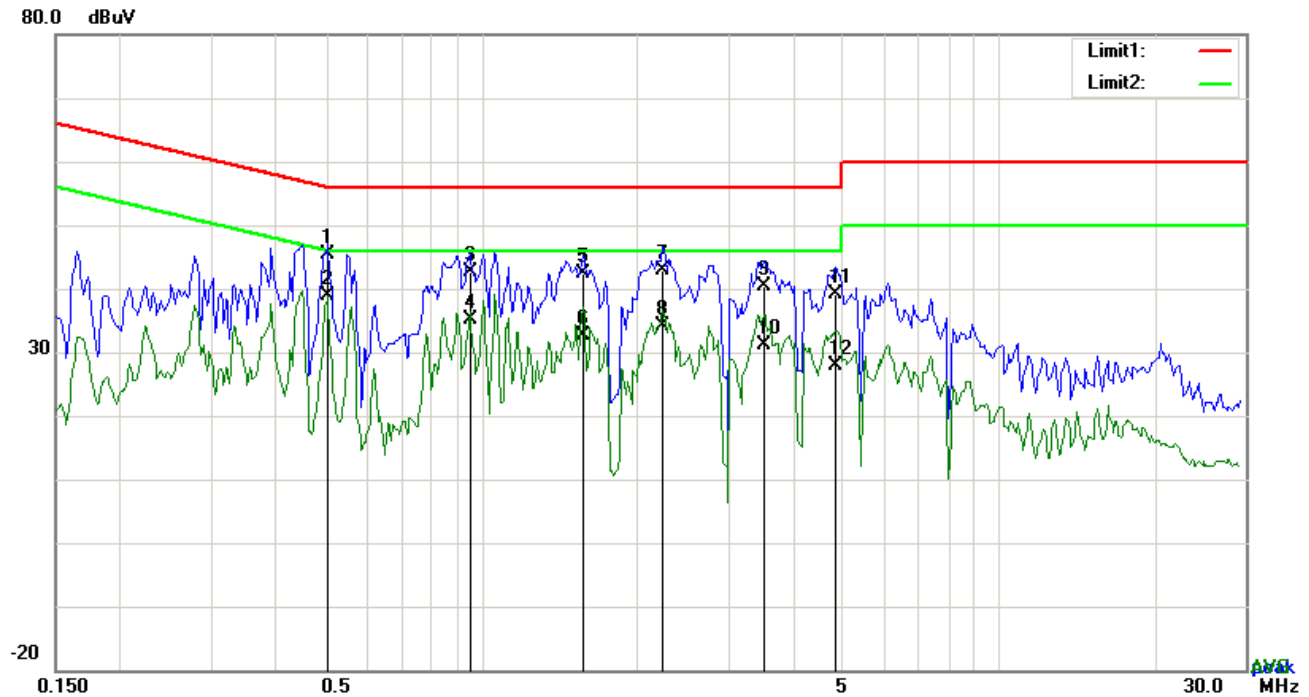


Test Data

Phase Neutral Plot at 120Vac, 60Hz

No.	P/L	Frequency (MHz)	Reading (dBμV)	Detector	Corrected (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)
1	N	0.1734	34.97	QP	10.02	44.99	64.80	-19.81
2	N	0.1734	15.51	AVG	10.02	25.53	54.80	-29.27
3	N	0.4698	28.09	QP	10.02	38.11	56.52	-18.41
4	N	0.4698	17.45	AVG	10.02	27.47	46.52	-19.05
5	N	1.4409	23.18	QP	10.03	33.21	56.00	-22.79
6	N	1.4409	12.02	AVG	10.03	22.05	46.00	-23.95
7	N	3.5811	24.45	QP	10.06	34.51	56.00	-21.49
8	N	3.5811	11.68	AVG	10.06	21.74	46.00	-24.26
9	N	6.8610	19.64	QP	10.10	29.74	60.00	-30.26
10	N	6.8610	6.30	AVG	10.10	16.40	50.00	-33.60
11	N	24.0405	23.95	QP	10.32	34.27	60.00	-25.73
12	N	24.0405	6.04	AVG	10.32	16.36	50.00	-33.64

Test Mode: Transmitting Mode

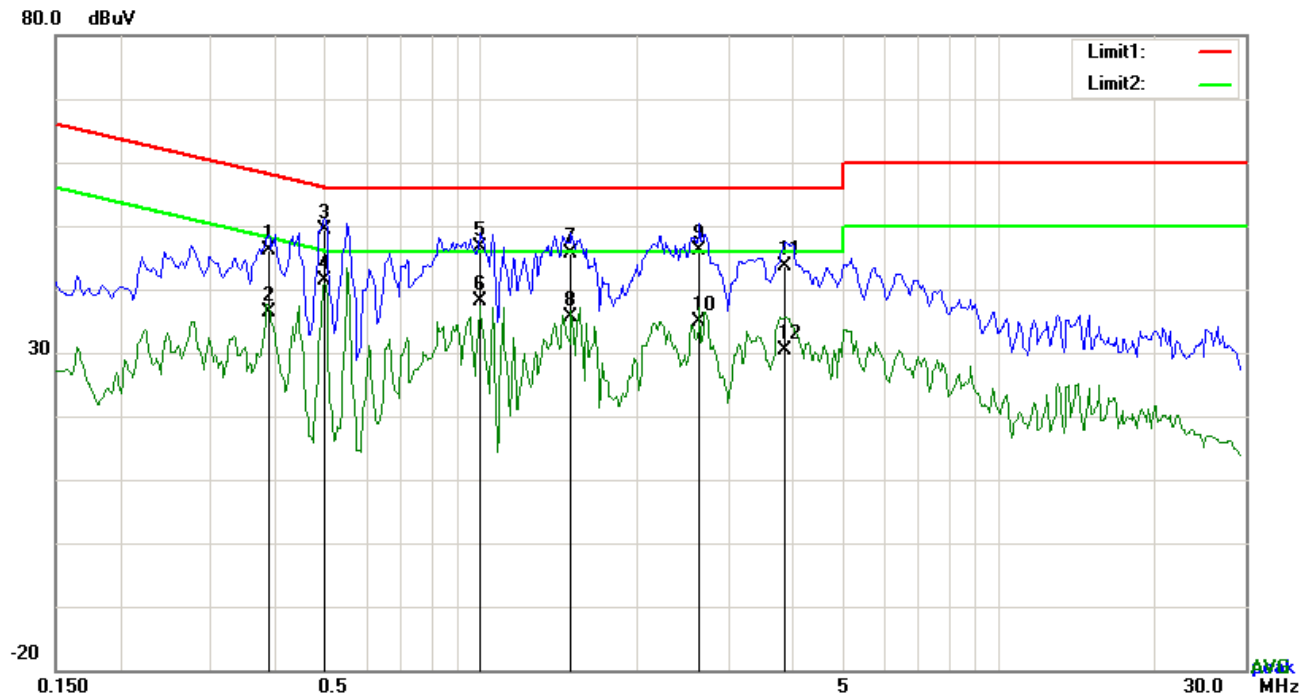


Test Data

Phase Line Plot at 240Vac, 60Hz

No.	P/L	Frequency (MHz)	Reading (dBμV)	Detector	Corrected (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)
1	L1	0.5049	35.26	QP	10.03	45.29	56.00	-10.71
2	L1	0.5049	28.75	AVG	10.03	38.78	46.00	-7.22
3	L1	0.9495	32.51	QP	10.03	42.54	56.00	-13.46
4	L1	0.9495	25.17	AVG	10.03	35.20	46.00	-10.80
5	L1	1.5735	32.45	QP	10.04	42.49	56.00	-13.51
6	L1	1.5735	22.53	AVG	10.04	32.57	46.00	-13.43
7	L1	2.2404	32.89	QP	10.05	42.94	56.00	-13.06
8	L1	2.2404	24.00	AVG	10.05	34.05	46.00	-11.95
9	L1	3.5265	30.25	QP	10.06	40.31	56.00	-15.69
10	L1	3.5265	21.02	AVG	10.06	31.08	46.00	-14.92
11	L1	4.8408	28.99	QP	10.08	39.07	56.00	-16.93
12	L1	4.8408	17.69	AVG	10.08	27.77	46.00	-18.23

Test Mode: Transmitting Mode



Test Data

Phase Neutral Plot at 240Vac, 60Hz

No.	P/L	Frequency (MHz)	Reading (dBμV)	Detector	Corrected (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)
1	N	0.3879	36.05	QP	10.02	46.07	58.11	-12.04
2	N	0.3879	26.38	AVG	10.02	36.40	48.11	-11.71
3	N	0.4971	39.47	QP	10.02	49.49	56.05	-6.56
4	N	0.4971	31.38	AVG	10.02	41.40	46.05	-4.65
5	N	0.9924	36.62	QP	10.03	46.65	56.00	-9.35
6	N	0.9924	27.98	AVG	10.03	38.01	46.00	-7.99
7	N	1.4877	35.68	QP	10.03	45.71	56.00	-10.29
8	N	1.4877	25.61	AVG	10.03	35.64	46.00	-10.36
9	N	2.6460	36.14	QP	10.05	46.19	56.00	-9.81
10	N	2.6460	24.77	AVG	10.05	34.82	46.00	-11.18
11	N	3.8658	33.49	QP	10.06	43.55	56.00	-12.45
12	N	3.8658	20.29	AVG	10.06	30.35	46.00	-15.65

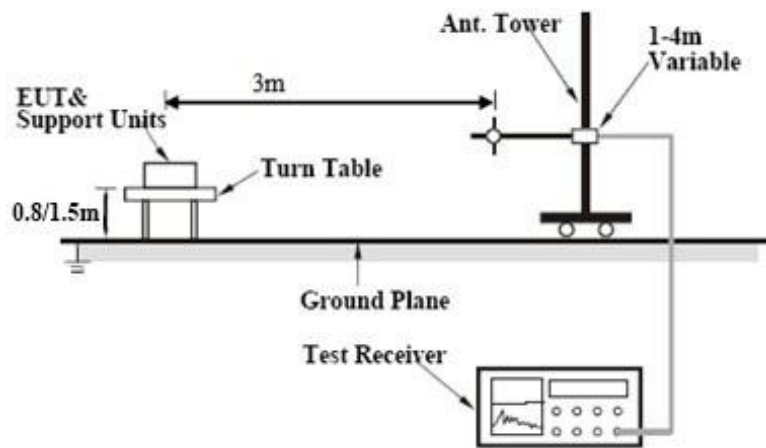
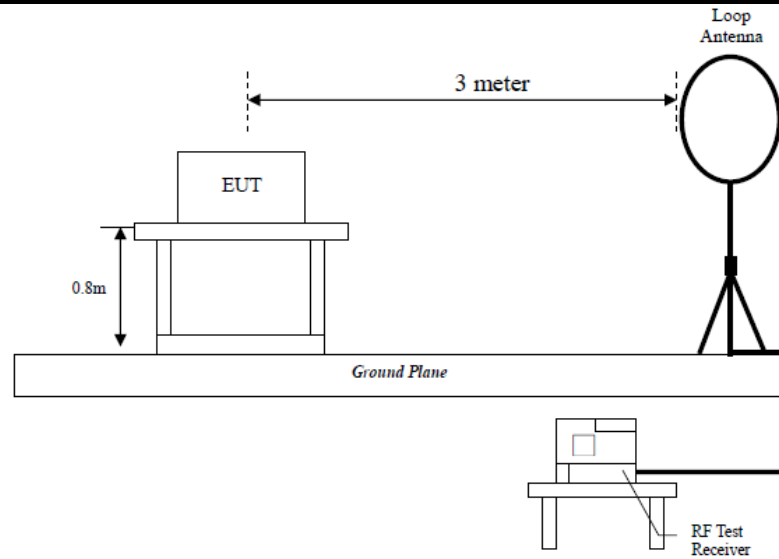
6.7 Radiated Emissions & Restricted Band

Temperature	22°C
Relative Humidity	51%
Atmospheric Pressure	1009mbar
Test date :	Nov. 09, 2018
Tested By :	Aaron Liang

Requirement(s):

Spec	Item	Requirement	Applicable																
47CFR§15.247(d), RSS210 (A8.5)	a)	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>0.009~0.490</td><td>2400/F(KHz)</td></tr><tr><td>0.490~1.705</td><td>24000/F(KHz)</td></tr><tr><td>1.705~30.0</td><td>30</td></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>		Frequency range (MHz)	Field Strength (µV/m)	0.009~0.490	2400/F(KHz)	0.490~1.705	24000/F(KHz)	1.705~30.0	30	30 – 88	100	88 – 216	150	216 960	200	Above 960	500
		Frequency range (MHz)		Field Strength (µV/m)															
		0.009~0.490		2400/F(KHz)															
		0.490~1.705		24000/F(KHz)															
		1.705~30.0		30															
		30 – 88		100															
		88 – 216		150															
		216 960		200															
	Above 960	500																	
b)	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																		
	c)		or restricted band, emission must also comply with the radiated emission limits specified in 15.209	☒															

Test Setup



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 Quasi 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.
Remark	
Result	☒ Pass ☐ Fail

Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Test Result:

Test Mode:	Transmitting Mode
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Frequency range: 9KHz - 30MHz

Freq. (MHz)	Detection value	Factor (dB/m)	Reading (dBuV/m)	Result (dBuV/m)	Limit@3m (dBuV/m)	Margin (dB)
--	--	--	--	--	--	>20
--	--	--	--	--	--	>20

Note:

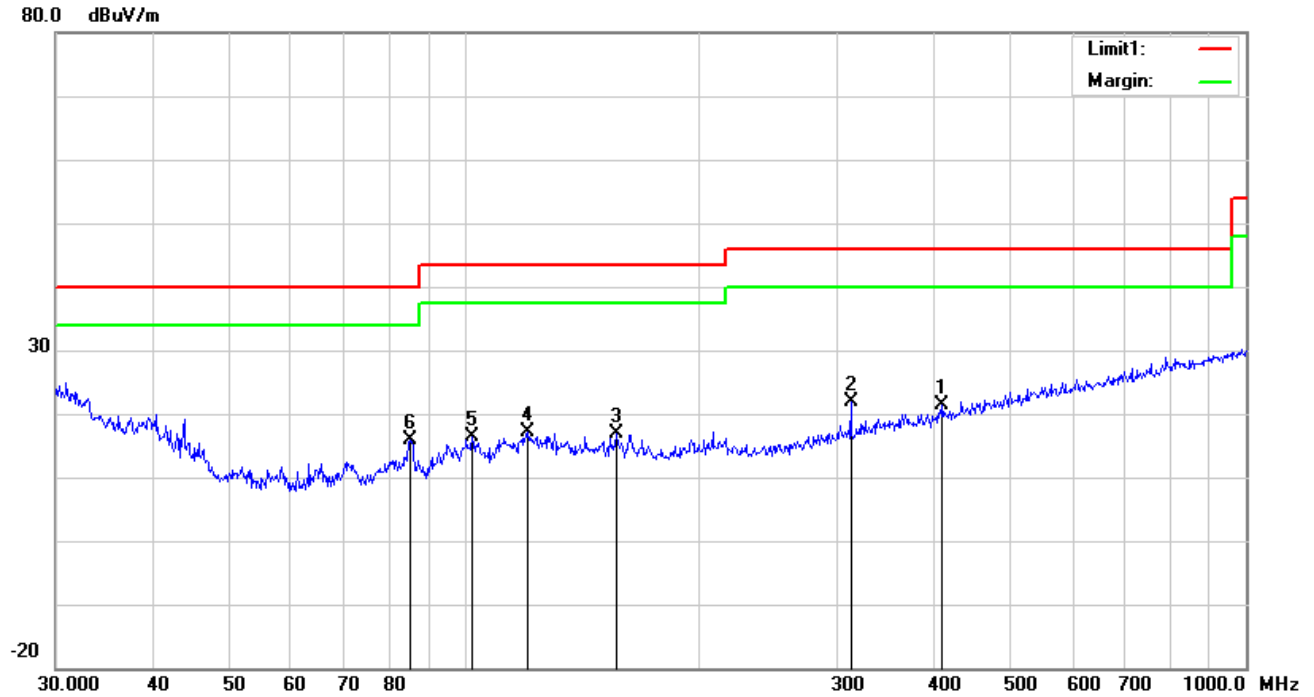
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor = $40 \log (\text{specific distance}/\text{test distance})$ (dB);

Limit line = specific limits(dBuv) + distance extrapolation factor.

Test Mode: Transmitting Mode

30MHz -1GHz

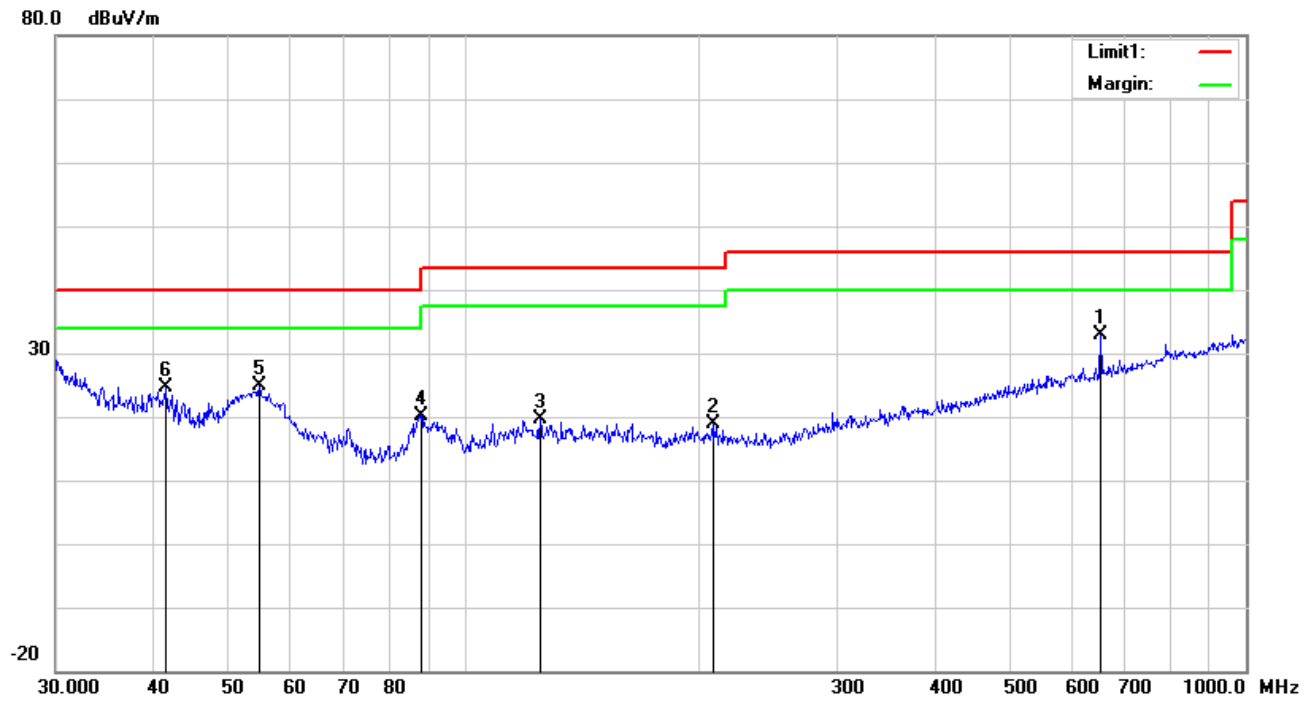


Test Data

Horizontal Polarity Plot @3m

No.	P/L	Frequency	Reading	Ant_F	PA_G	Cab_L	Result	Limit	Margin	Height	Degr ee
		(MHz)	(dBuV/m)	(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)
1	H	408.9460	25.39	15.88	21.99	2.03	21.31	46.00	-24.69	100	173
2	H	312.1794	28.44	13.86	22.26	1.85	21.89	46.00	-24.11	100	252
3	H	156.4578	25.25	12.60	22.29	1.37	16.93	43.50	-26.57	100	6
4	H	120.6991	24.56	13.85	22.36	1.16	17.21	43.50	-26.29	100	90
5	H	102.3597	26.86	10.81	22.32	1.13	16.48	43.50	-27.02	100	282
6	H	85.2981	29.31	7.81	22.37	1.06	15.81	40.00	-24.19	100	256

30MHz -1GHz



Test Data

Vertical Polarity Plot @3m

N o.	P/ L	Frequency (MHz)	Reading (dBuV/m)	Ant_F (dB/m)	PA_G (dB)	Cab_L (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degr ee ()
1	V	651.9417	32.10	19.67	21.47	2.63	32.93	46.00	-13.07	100	172
2	V	207.8501	27.68	11.99	22.37	1.57	18.87	43.50	-24.63	100	55
3	V	125.0066	27.35	13.57	22.37	1.18	19.73	43.50	-23.77	100	235
4	V	88.0329	33.67	7.92	22.34	1.00	20.25	43.50	-23.25	100	217
5	V	54.6429	38.57	7.89	22.39	0.78	24.85	40.00	-15.15	100	314
6	V	41.5670	33.21	12.87	22.28	0.78	24.58	40.00	-15.42	100	106

Above 1GHz

Test Mode:	Transmitting Mode
------------	-------------------

Low Channel (2402 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	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	45.83	AV	V	33.39	7.22	48.46	37.98	54	-16.02
4804	42.38	AV	H	33.39	7.22	48.46	34.53	54	-19.47
4804	68.54	PK	V	33.39	7.22	48.46	60.69	74	-13.31
4804	65.86	PK	H	33.39	7.22	48.46	58.01	74	-15.99
10010	39.1	AV	V	39.21	9.12	47.44	39.99	54	-14.01
10010	39.5	AV	H	39.21	9.12	47.44	40.39	54	-13.61
10010	60.82	PK	V	39.21	9.12	47.44	61.71	74	-12.29
10010	59.82	PK	H	39.21	9.12	47.44	60.71	74	-13.29

Middle Channel (2440 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	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)
4880	48.54	AV	V	33.62	7.53	48.36	41.33	54	-12.67
4880	47.9	AV	H	33.62	7.53	48.36	40.69	54	-13.31
4880	66	PK	V	33.62	7.53	48.36	58.79	74	-15.21
4880	63.75	PK	H	33.62	7.53	48.36	56.54	74	-17.46
10918	40.31	AV	V	39.88	9.79	46.24	43.74	54	-10.26
10918	39.55	AV	H	39.88	9.79	46.24	42.98	54	-11.02
10918	60.37	PK	V	39.88	9.79	46.24	63.8	74	-10.2
10918	60.56	PK	H	39.88	9.79	46.24	63.99	74	-10.01

High Channel (2480 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	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	49.26	AV	V	33.89	7.86	48.31	42.7	54	-11.3
4960	48.15	AV	H	33.89	7.86	48.31	41.59	54	-12.41
4960	65.67	PK	V	33.89	7.86	48.31	59.11	74	-14.89
4960	68.59	PK	H	33.89	7.86	48.31	62.03	74	-11.97
17866	24.51	AV	V	42.31	19.68	45.26	41.24	54	-12.76
17866	21.45	AV	H	42.31	19.68	45.26	38.18	54	-15.82
17866	44.39	PK	V	42.31	19.68	45.26	61.12	74	-12.88
17866	46.85	PK	H	42.31	19.68	45.26	63.58	74	-10.42

Note:

1, The testing has been conformed to 10*2480MHz=24,800MHz

2, All other emissions more than 30 dB below the limit

3, X-Axis, Y-Axis and Z-Axis were investigated. The results above show only the worst case.

4, The radiated spurious test above 18GHz is subcontracted to SIEMIC (Nanjing-China) Laboratories. and found 30dB below the limit at least.

Annex A. TEST INSTRUMENT

The product was tested in accordance with the following specifications.

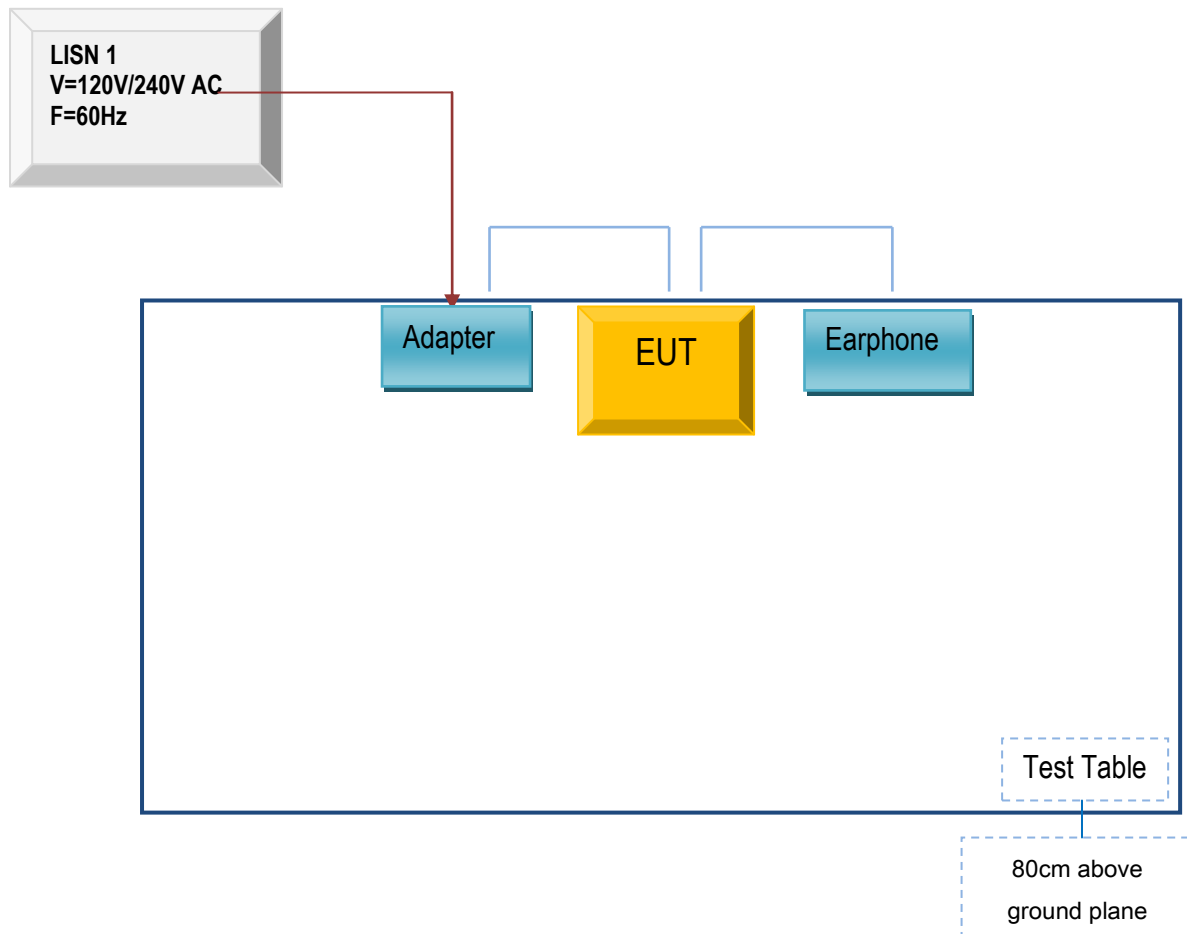
All testing has been performed according to below product classification:

FCC Rules	Description of Test	Result
§15.203	Antenna Requirement	Please refer to 17021127-FCC-R1
§15.247(a)(1)	Channel Separation	Please refer to 17021127-FCC-R1
§15.247(a)(1)	20 dB Bandwidth	Please refer to 17021127-FCC-R1
§15.247(b)(1)	Peak Output Power	Please refer to 17021127-FCC-R1
§15.247(a)(1)(iii)	Number of Hopping Channel	Please refer to 17021127-FCC-R1
§15.247(a)(1)(iii)	Time of Occupancy (Dwell Time)	Please refer to 17021127-FCC-R1
§15.247(d)	Band Edge& Restricted Band	Please refer to 17021127-FCC-R1
§15.207(a)	AC Line Conducted Emissions	Please refer to 17021127-FCC-R1
§15.205, §15.209, §15.247(d)	Radiated Emissions& Restricted Band	Please refer to 17021127-FCC-R1

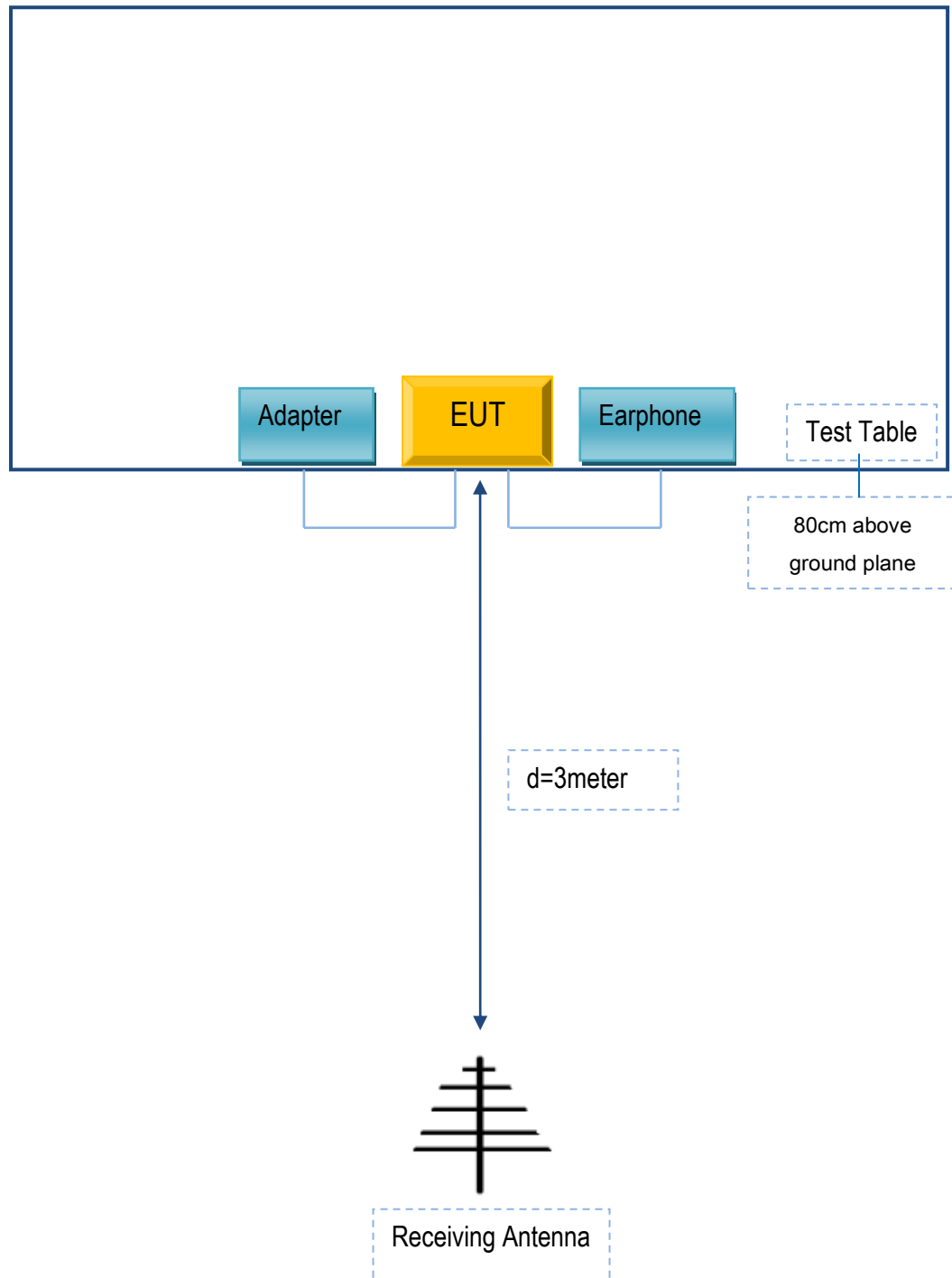
Annex B. TEST SETUP AND SUPPORTING EQUIPMENT

Annex B.i. TEST SET UP BLOCK

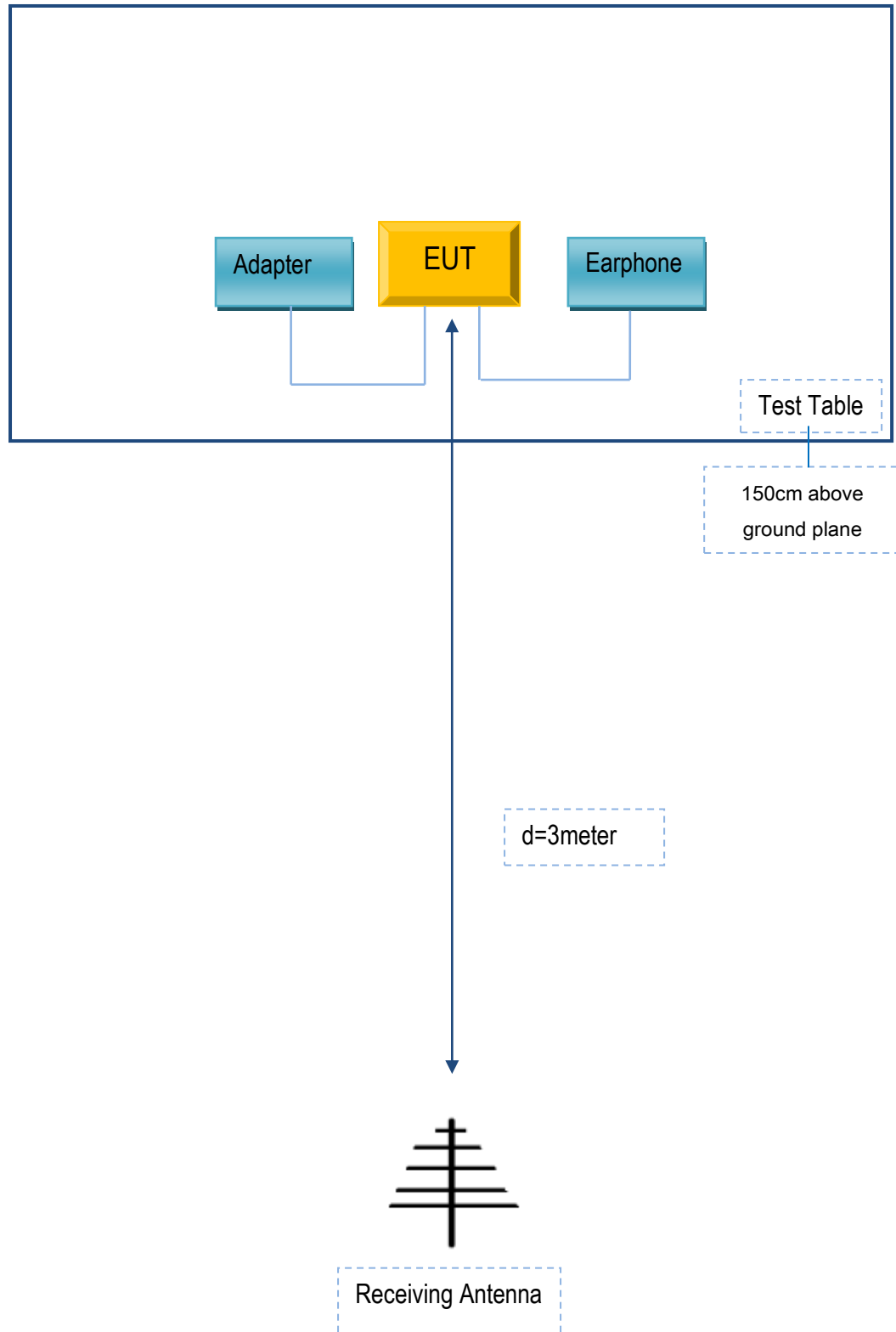
Block Configuration Diagram for AC Line Conducted Emissions



Block Configuration Diagram for Radiated Emissions (Below 1GHz) .



Block Configuration Diagram for Radiated Emissions (Above 1GHz) .



Annex C. ii. SUPPORTING EQUIPMENT DESCRIPTION

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

Supporting Equipment:

Manufacturer	Equipment Description	Model	Serial No
Dongguan Aohai Power Technology Co.,Ltd.	Adapter	A8-501000	N/A
Dong guan Tenji Technology Industrial Co., Ltd.	Earphone	TJ101891E	N/A

Supporting Cable:

Cable type	Shield Type	Ferrite Core	Length	Serial No
USB Cable	Un-shielding	No	1m	N/A

Annex C. User Manual / Block Diagram / Schematics / Partlist/ DECLARATION OF SIMILARITY

TP-LINK TECHNOLOGIES CO., LTD.

Building 24 (floors 1,3,4,5) and 28 (floors1-4)
Central Science and Technology Park, Shennan Rd, Nanshan, Shenzhen, China

Product Change Description

We, TP-LINK TECHNOLOGIES CO., LTD. ,declare on our sole responsibility that the product,

[TP7031CXYZZ]

is the variant of the initial certified product,

[TP7031C]

Except the following changes on the latest MODEL: [TP7031CXYZZ]

Series Name TP7031CXYZZ

Model Difference

Description of Model Name Differentiation:

X=2, indicates Grey; X=4, indicates Gold; X=7, indicates Blue;

X=8, indicates Red;

Y=0, indicates the memory is 512MB RAM + 8GB Flash; Y=1, indicates

the memory is 1GB RAM + 8GB Flash; Y=2, indicates the memory is

1GB RAM + 16GB Flash;

Z='A' to 'Z', ZZ indicates different regions or customers.

All models are same with electrical parameters and internal circuit structure.

HARDWARE MODIFICATION:

Power Amplifier changes: NO

Antenna changes: NO

PCB Layout changes: NO

LCD changes: NO

Speaker changes: NO

Camera changes: NO

Vibrator changes: NO Bluetooth

changes: NO

FM changes: NO

Other changes: NO

MECHANICAL MODIFICATIONS:

Use new metal front/back cover or keypad: NO

Mechanical shell changes: NO

Other changes detailed: NO

Signature:



Name: Huang Jing

Designation: Regulatory Compliance Manager

Date: 2018-11-29