

FCC PART 15B, CLASS B TEST REPORT

For

Advanced Mobile Payment Inc.

Units 401-403, 15 Wertheim Court. Richmond Hill, Ontario L4B 3H7 Canada

FCC ID: 2AKJB-AMP6700

Report Type: Original Report	Product Type: AMP 6700
Report Number: RSZ180809001-00A	
Report Date: 2018-10-16	
Simon Wang <i>Simon wang</i>	
Reviewed By: RF Engineer	
Prepared By: Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F., West Wing, Third Phase of Wanli Industrial Building, Shihua Road, Futian Free Trade Zone, Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008 www.baclcorp.com.cn	

Note: This report must not be used by the customer to claim product certification, approval, or endorsement by A2LA* or any agency of the Federal Government. * This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk

“*”

TABLE OF CONTENTS

GENERAL INFORMATION.....	3
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	3
OBJECTIVE	3
RELATED SUBMITTAL(S)/GRANT(S).....	3
TEST METHODOLOGY	3
MEASUREMENT UNCERTAINTY	3
TEST FACILITY	4
SYSTEM TEST CONFIGURATION.....	5
DESCRIPTION OF TEST CONFIGURATION	5
EUT EXERCISE SOFTWARE	5
SPECIAL ACCESSORIES.....	5
EQUIPMENT MODIFICATIONS	5
SUPPORT EQUIPMENT LIST AND DETAILS	5
EXTERNAL I/O CABLE.....	5
BLOCK DIAGRAM OF TEST SETUP	6
SUMMARY OF TEST RESULTS	8
TEST EQUIPMENT LIST	9
FCC §15.107 – AC LINE CONDUCTED EMISSIONS.....	10
APPLICABLE STANDARD	10
EUT SETUP	10
EMI TEST RECEIVER SETUP.....	10
TEST PROCEDURE	10
CORRECTED FACTOR & MARGIN CALCULATION	11
TEST RESULTS SUMMARY	11
TEST DATA	11
FCC §15.109 - RADIATED SPURIOUS EMISSIONS	16
APPLICABLE STANDARD	16
EUT SETUP	16
EMI TEST RECEIVER SETUP.....	17
TEST PROCEDURE	17
CORRECTED AMPLITUDE & MARGIN CALCULATION	17
TEST RESULTS SUMMARY	17
TEST DATA	18

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Advanced Mobile Payment Inc.*'s product, model number: *AMP 6700 (FCC ID: 2AKJB-AMP6700)* or the "EUT" in this report was a *AMP 6700*, which was measured approximately: 19.7 cm (L) * 19.2 cm (W) * 4.4 cm (H), rated with input voltage: DC 9.5V from adapter. the high frequency is 2480MHz

Adapter Information:

Model: ADS-25SG-12-2 09524E

Input: AC 100-240V, 50/60Hz, Max. 0.7 A

Output: DC 9.5V, 2.5A

**All measurement and test data in this report was gathered from production sample serial number: 180809001. (Assigned by BACL, Shenzhen). The EUT supplied by the applicant was received on 2018-08-09.*

Objective

This test report is prepared on behalf of *Advanced Mobile Payment Inc.* in accordance with Part 2-Subpart J, Part 15-Subparts A, B of the Federal Communication Commissions rules.

The objective of the manufacturer is to determine the compliance of the EUT with FCC Part 15 B.

Related Submittal(s)/Grant(s)

FCC Part 15.247 DSS&DTS and Part 15.225 DXX submissions with FCC ID: 2AKJB-AMP6700.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

All emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement Uncertainty

Parameter		uncertainty
Conducted Emissions		±1.95dB
Emissions, radiated	Below 1GHz	±4.75dB
	Above 1GHz	±4.88dB

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F., West Wing, Third Phase of Wanli Industrial Building, Shihua Road, Futian Free Trade Zone, Shenzhen, Guangdong, China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 342867, the FCC Designation No.: CN1221.

The test site has been registered with ISED Canada under ISED Canada Registration Number 3062B.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in a manufacturer testing fashion.

EUT operation mode: working

EUT Exercise Software

No exercise software was used.

Special Accessories

No special accessory.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

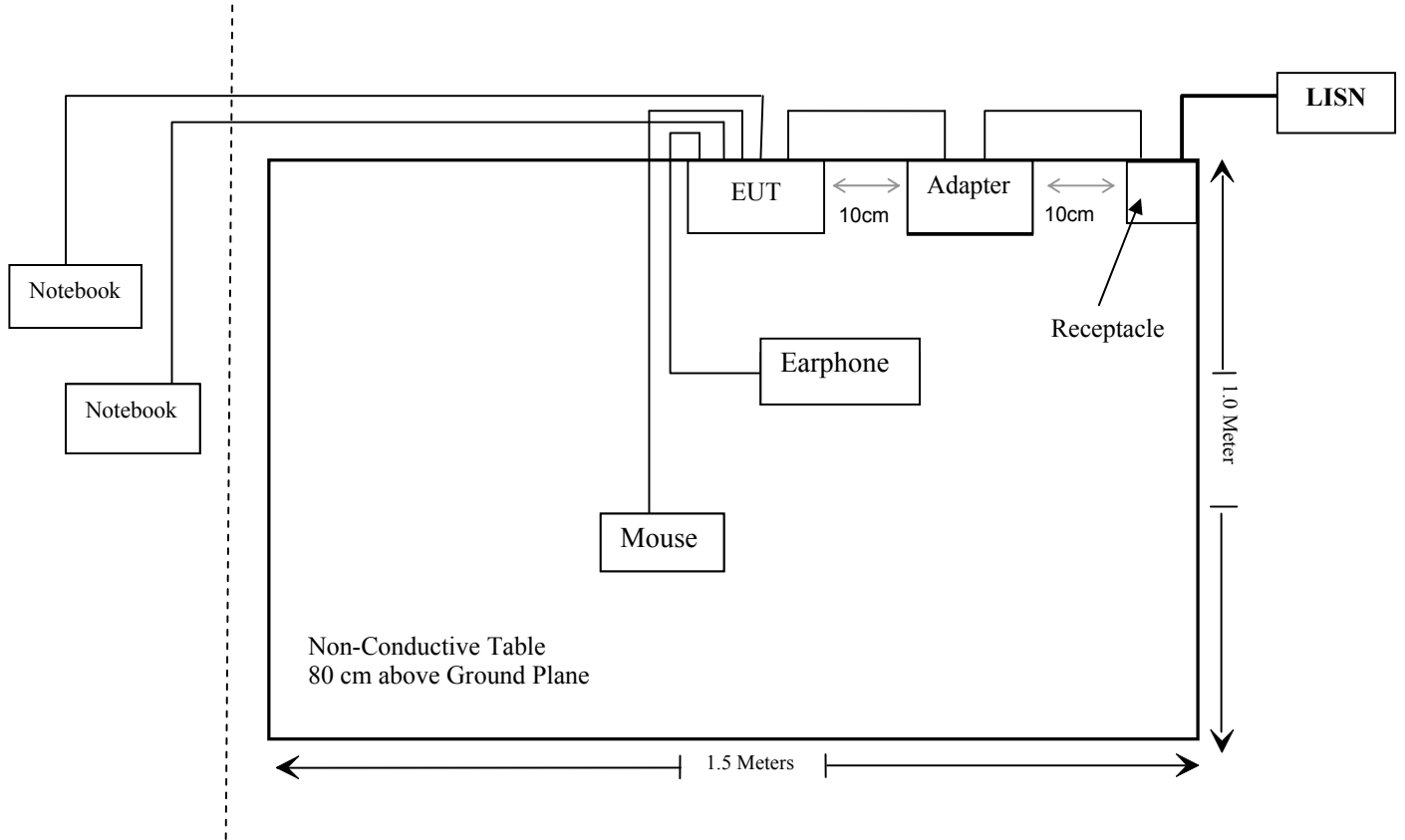
Manufacturer	Description	Model	Serial Number
Lenovo	Notebook	SR860	100000633225
Lenovo	Notebook	Air 15	100897564
Lenovo	Mouse	M300	11093844046
Philip	Earphone	SHE3705BK	28232617325
N/A	POE	PSE801FM	N/A

External I/O Cable

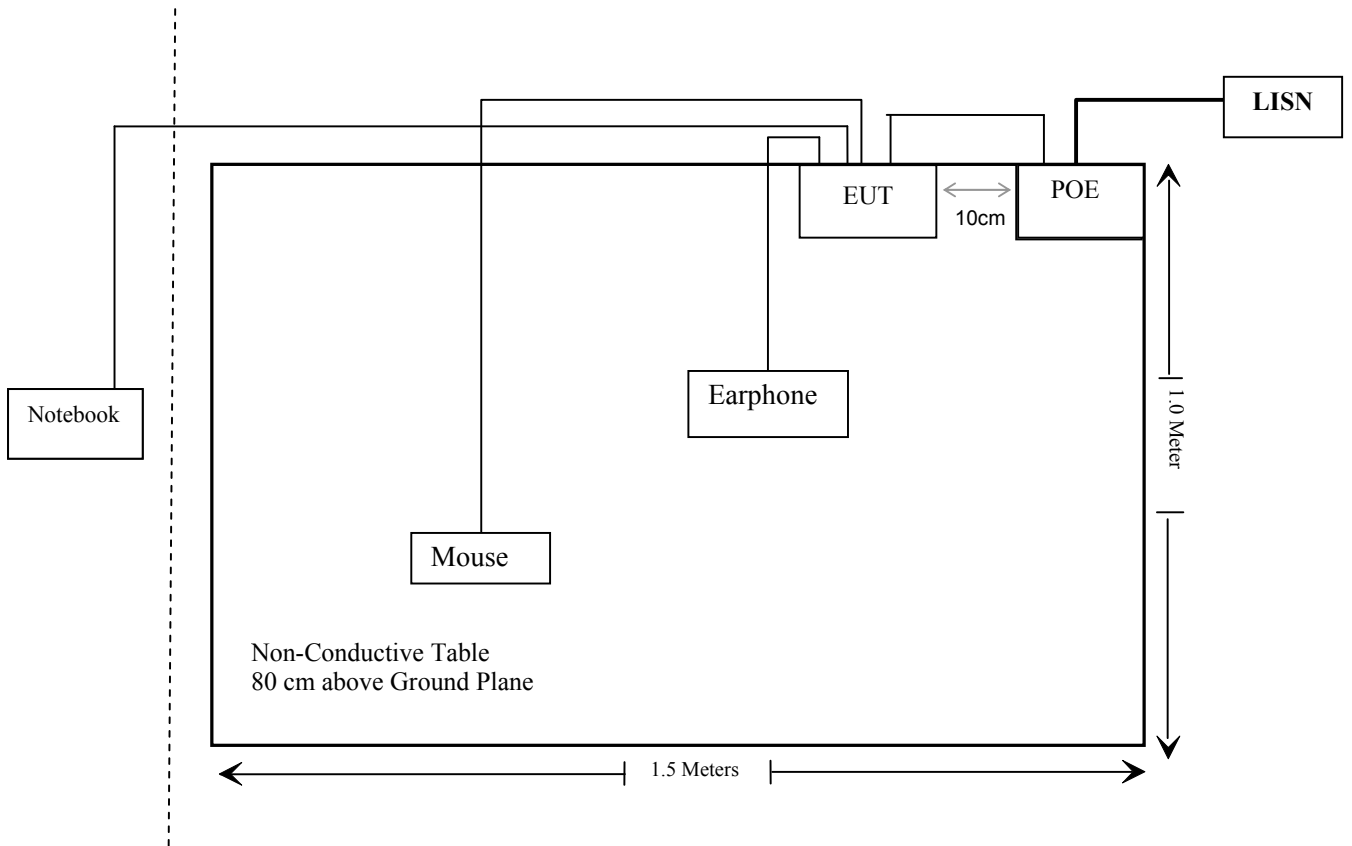
Cable Description	Length (m)	From/Port	To
Un-Shielding Detachable DC Cable	1.2	EUT	Adapter
Un-shielding Detachable AC Cable	0.8	Adapter	Receptacle
Un-shielding Detachable Earphone Cable	0.8	EUT	Earphone
Un-shielding Undetachable AC Cable	1.0	Receptacle	LISN
Un-shielding Detachable RJ45 Cable	0.8	EUT	POE
Un-shielding Detachable AC Cable	1.0	POE	LISN

Block Diagram of Test Setup

For conducted emission:



For POE Supply:



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Results
§15.107	AC Line Conducted Emissions	Compliance
§15.109	Radiated Spurious Emissions	Compliance

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
AC Line Conducted Emission Test					
Rohde & Schwarz	EMI Test Receiver	ESCS30	100176	2018-08-04	2019-08-04
Rohde & Schwarz	LISN	ENV216	3560.6650.12-101613-Yb	2017-12-21	2018-12-21
Rohde & Schwarz	Transient Limiter	ESH3Z2	DE25985	2018-05-21	2018-11-19
Rohde & Schwarz	CE Test software	EMC 32	V8.53.0	NCR	NCR
/	Conducted Emission Cable	/	UF A210B-1-0720-504504	2018-05-12	2018-11-12
Radiated Emission Test					
A.H.System	Horn Antenna	SAS-200/571	135	2018-08-17	2021-08-18
Rohde & Schwarz	Signal Analyzer	FSEM	845987/005	2018-06-23	2019-06-23
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2017-12-22	2020-12-21
COM-POWER	Pre-amplifier	PA-122	181919	2018-05-22	2018-11-22
Sonoma instrument	Amplifier	310N	186238	2018-05-12	2018-11-12
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2018-01-11	2019-01-11
Ducommun technologies	RF Cable	UFA147A-2362-100100	MFR64639 231029-003	2018-08-01	2019-02-01
Ducommun technologies	RF Cable	104PEA	218124002	2018-05-21	2018-11-21
Ducommun technologies	RF Cable	RG-214	1	2018-05-21	2018-11-19
Ducommun technologies	RF Cable	RG-214	2	2018-05-22	2018-11-22
Rohde & Schwarz	Auto test software	EMC 32	V9.10	NCR	NCR

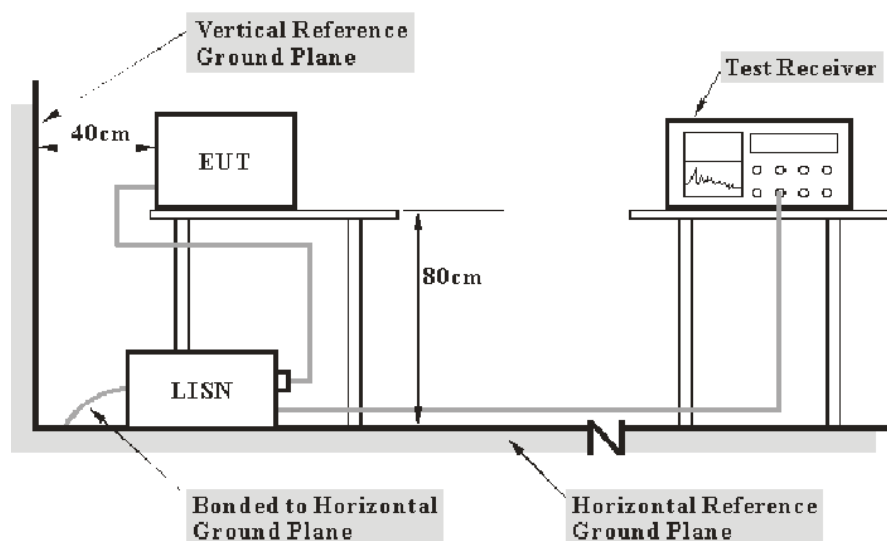
* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

FCC §15.107 – AC LINE CONDUCTED EMISSIONS

Applicable Standard

According to FCC §15.107

EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The measurement procedure of EUT setup is according with per ANSI C63.4-2014. The related limit was specified in FCC Part 15.107 Class B.

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the host PC was connected to the first LISN and the other relevant equipments were connected to the second LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Corrected Factor & Margin Calculation

The Corrected factor is calculated by adding LISN/ISN VDF (Voltage Division Factor), Cable Loss and Transient Limiter Attenuation. The basic equation is as follows:

$$\text{Correction Factor} = \text{LISN VDF} + \text{Cable Loss} + \text{Transient Limiter Attenuation}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.107,

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level is in compliance with the limit if

$$L_m + U_{(Lm)} \leq L_{lim} + U_{cispr}$$

In BACL., $U_{(Lm)}$ is less than U_{cispr} , if L_m is less than L_{lim} , it implies that the EUT complies with the limit.

Test Data

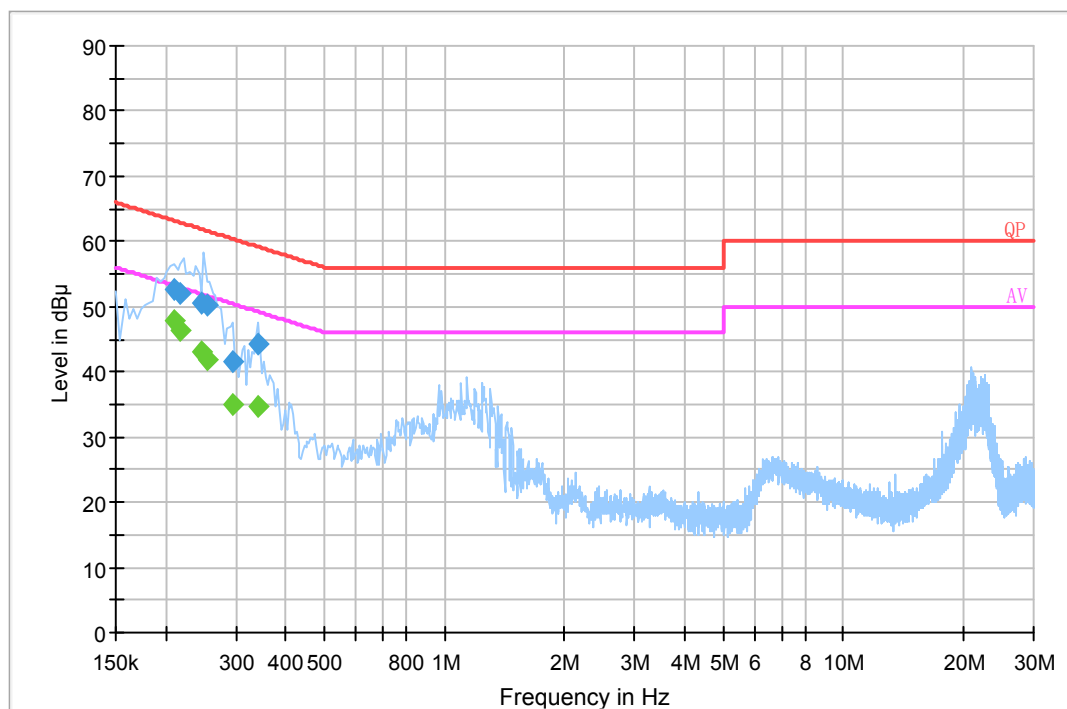
Environmental Conditions

Temperature:	24 °C
Relative Humidity:	60 %
ATM Pressure:	101.0 kPa

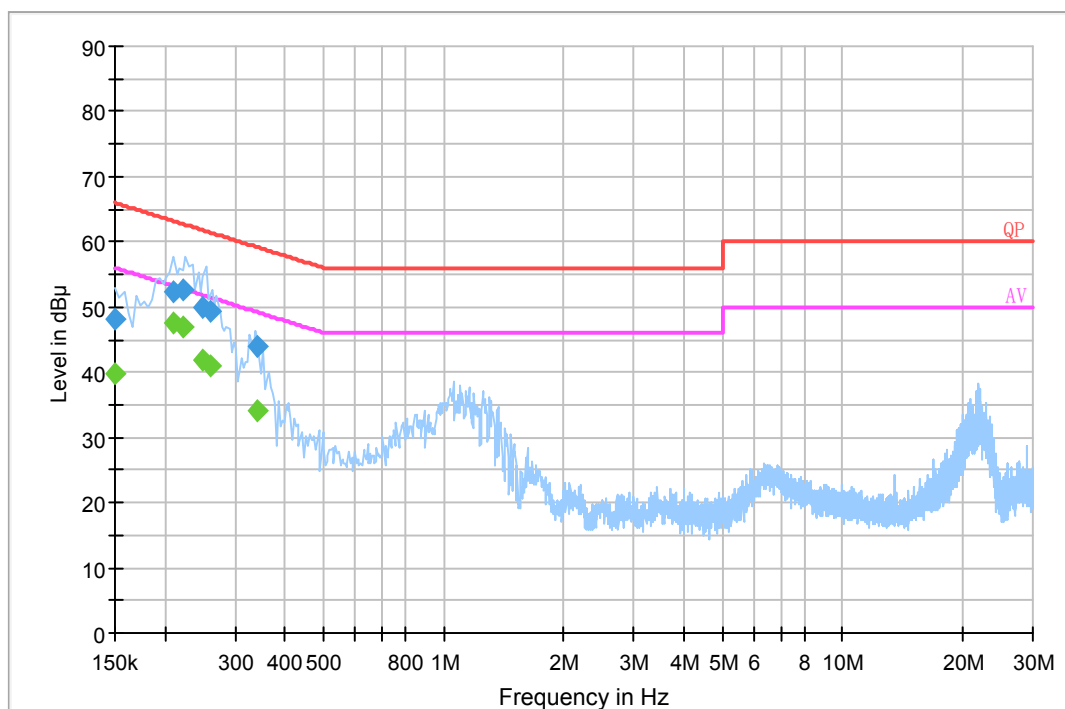
The testing was performed by Shawn Xiao on 2018-10-12.

EUT Operation Mode: Working(adapter power supply)

AC 120V/60 Hz, Line



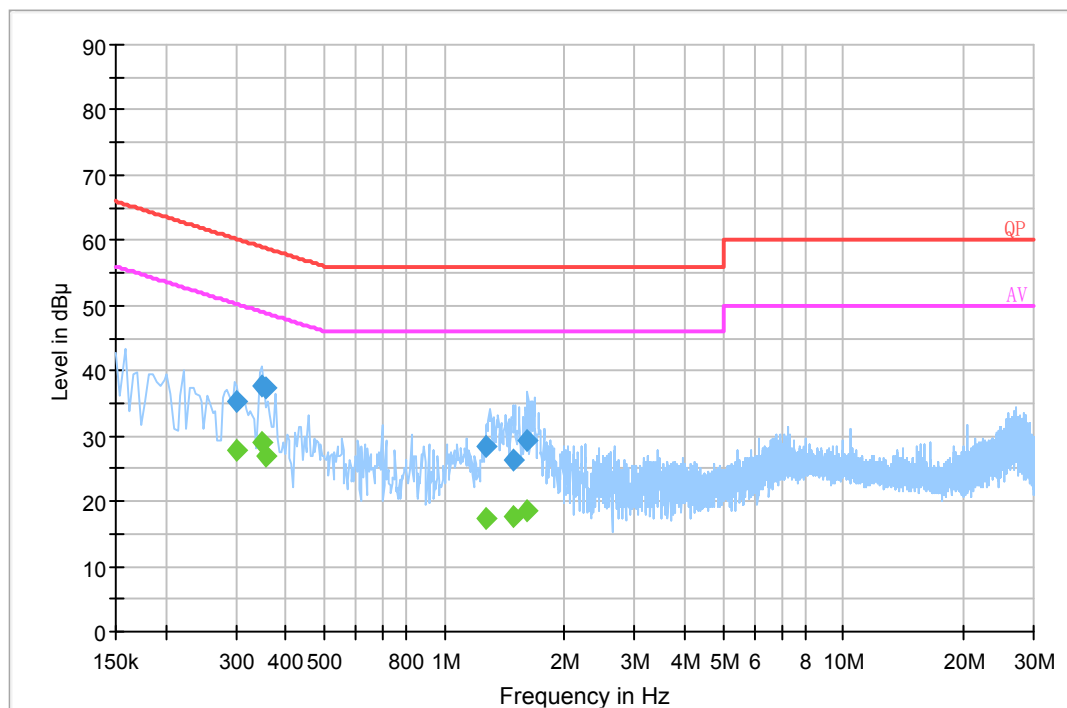
Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
0.209500	52.6	19.7	63.2	10.6	QP
0.217500	52.1	19.7	62.9	10.8	QP
0.245500	50.6	19.7	61.9	11.3	QP
0.253500	50.3	19.7	61.6	11.3	QP
0.293500	41.5	19.8	60.4	18.9	QP
0.340870	44.3	19.7	59.2	14.9	QP
0.209500	47.7	19.7	53.2	5.5	Ave.
0.217500	46.5	19.7	52.9	6.4	Ave.
0.245500	42.9	19.7	51.9	9.0	Ave.
0.253500	42.0	19.7	51.6	9.6	Ave.
0.293500	35.1	19.8	50.4	15.3	Ave.
0.340870	34.6	19.7	49.2	14.6	Ave.

AC 120V/60 Hz, Neutral

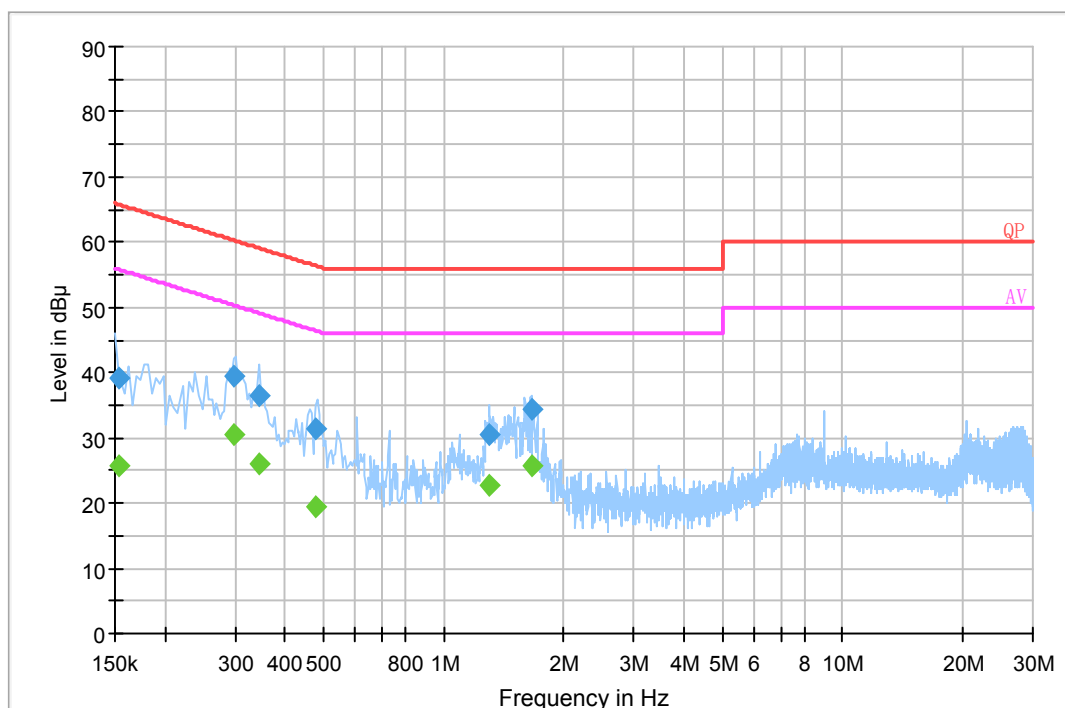
Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
0.150000	48.2	19.8	66.0	17.8	QP
0.209500	52.5	19.7	63.2	10.7	QP
0.221500	52.5	19.7	62.8	10.3	QP
0.249500	50.1	19.7	61.8	11.7	QP
0.261500	49.4	19.7	61.4	12.0	QP
0.340930	44.0	19.7	59.2	15.2	QP
0.150000	39.7	19.8	56.0	16.3	Ave.
0.209500	47.5	19.7	53.2	5.7	Ave.
0.221500	47.0	19.7	52.8	5.8	Ave.
0.249500	41.7	19.7	51.8	10.1	Ave.
0.261500	41.0	19.7	51.4	10.4	Ave.
0.340930	34.0	19.7	49.2	15.2	Ave.

EUT Operation Mode: Working(POE power supply):

Line



Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
0.301500	35.3	19.8	60.2	24.9	QP
0.348690	37.6	19.7	59.0	21.4	QP
0.355250	37.3	19.7	58.8	21.5	QP
1.274590	28.4	19.8	56.0	27.6	QP
1.495470	26.3	19.8	56.0	29.7	QP
1.617730	29.4	19.9	56.0	26.6	QP
0.301500	27.7	19.8	50.2	22.5	Ave.
0.348690	29.1	19.7	49.0	19.9	Ave.
0.355250	26.9	19.7	48.8	21.9	Ave.
1.274590	17.2	19.8	46.0	28.8	Ave.
1.495470	17.7	19.8	46.0	28.3	Ave.
1.617730	18.4	19.9	46.0	27.6	Ave.

Neutral

Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
0.154000	39.2	19.8	65.8	26.6	QP
0.297470	39.6	19.8	60.3	20.7	QP
0.344810	36.5	19.7	59.1	22.6	QP
0.478770	31.3	19.8	56.4	25.1	QP
1.298470	30.6	19.8	56.0	25.4	QP
1.657130	34.5	19.9	56.0	21.5	QP
0.154000	25.7	19.8	55.8	30.1	Ave.
0.297470	30.4	19.8	50.3	19.9	Ave.
0.344810	25.9	19.7	49.1	23.2	Ave.
0.478770	19.4	19.8	46.4	27.0	Ave.
1.298470	22.9	19.8	46.0	23.1	Ave.
1.657130	25.9	19.9	46.0	20.1	Ave.

Note:

- 1) Correction Factor = LISN VDF (Voltage Division Factor) + Cable Loss + Transient Limiter Attenuation
- 2) Corrected Amplitude = Reading + Correction Factor
- 3) Margin = Limit – Corrected Amplitude

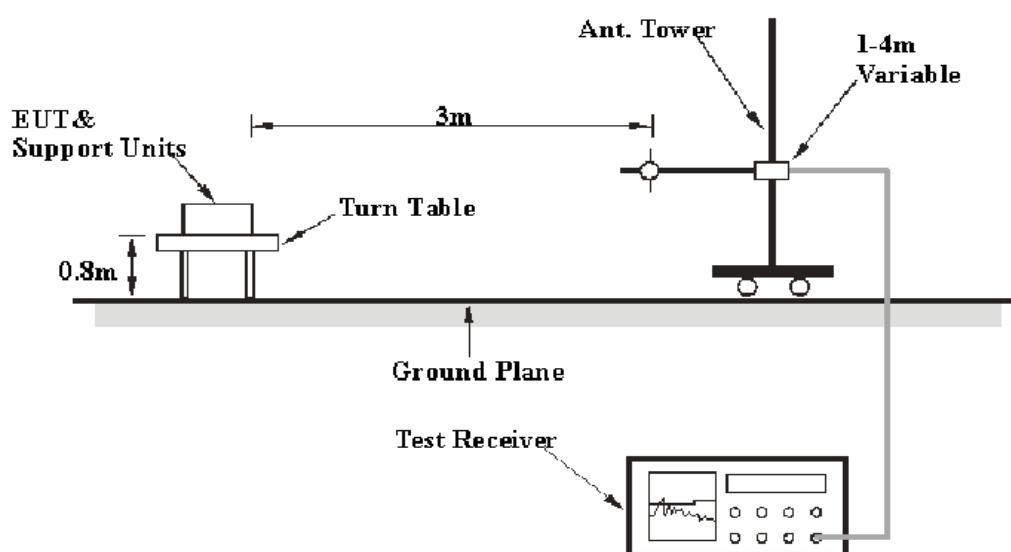
FCC §15.109 - RADIATED SPURIOUS EMISSIONS

Applicable Standard

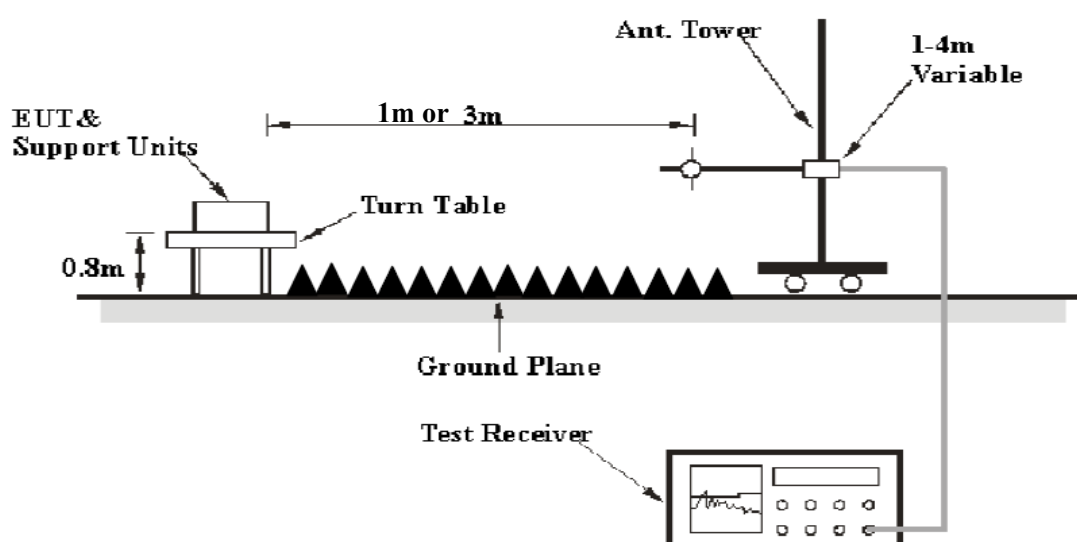
FCC §15.109

EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.4-2014. The specification used was the FCC Part 15.109 Class B limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 12.4 GHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Measurment
30 MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1MHz	3 MHz	/	PK
	1MHz	10 Hz	/	Ave.

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the Quasi-peak detector mode from 30 MHz to 1 GHz and PK and average detector modes for frequencies above 1 GHz.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Results Summary

According to the data in the following table, the EUT complied with the FCC §15.109 Class B,

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level is in compliance with the limit if

$$L_m + U_{(Lm)} \leq L_{lim} + U_{cispr}$$

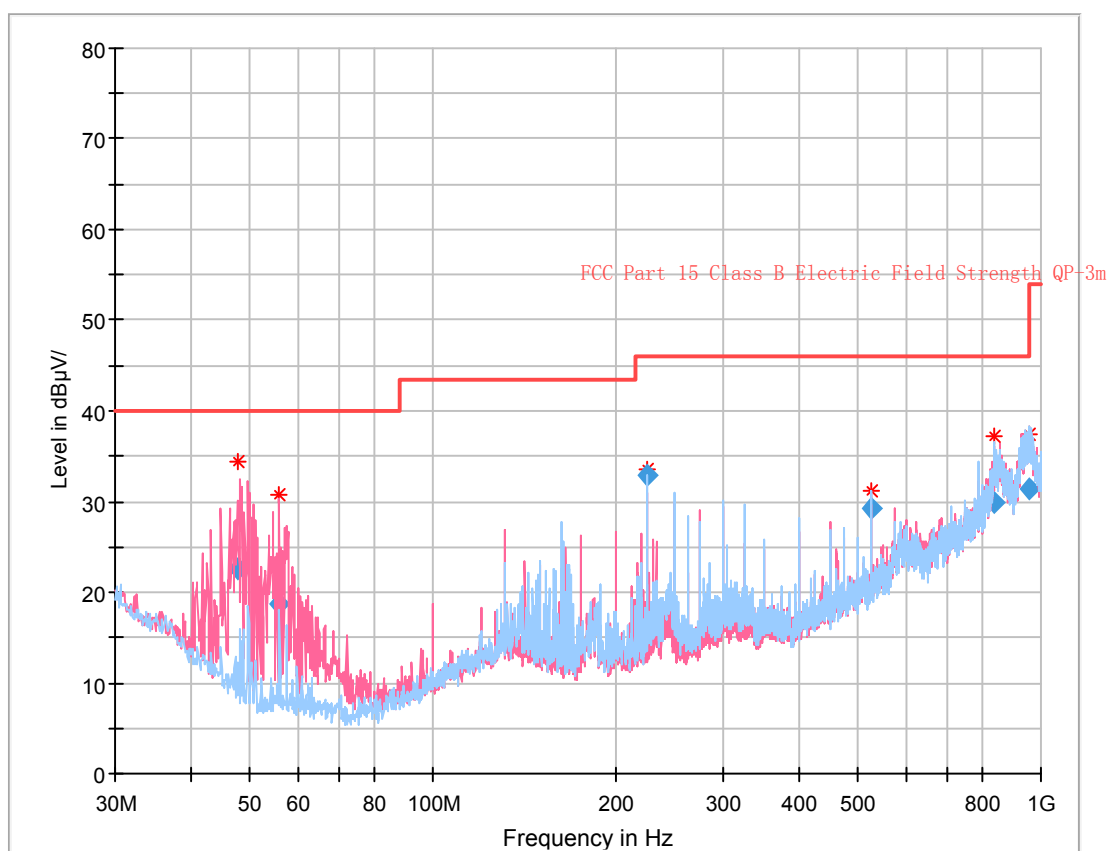
In BACL, $U_{(Lm)}$ is less than U_{cispr} , if L_m is less than L_{lim} , it implies that the EUT complies with the limit.

Test Data**Environmental Conditions**

Temperature:	25 °C
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by Shawn Xiao on 2018-10-11.

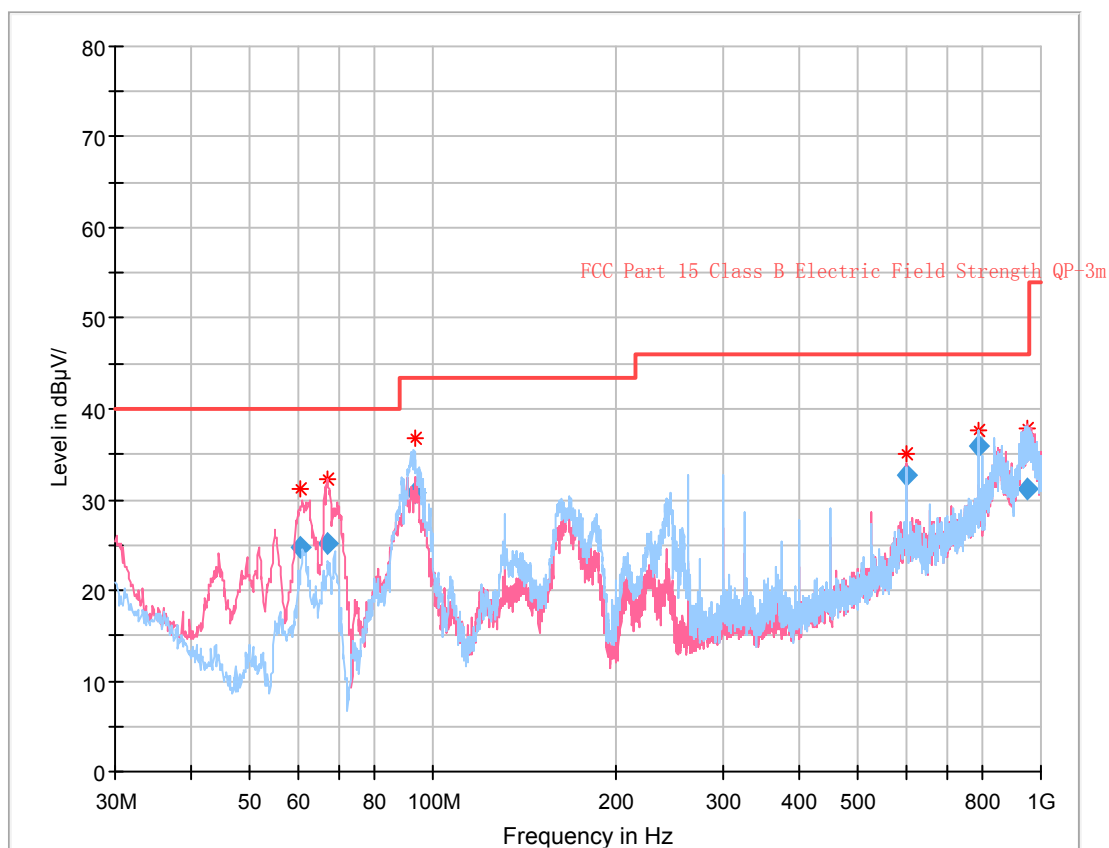
EUT Operation Mode: Working(adapter power supply)

30 MHz~1 GHz:

Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna height (cm)	Antenna Polarity	Turntable position (degree)	Correction Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
47.746000	22.50	101.0	V	121.0	-18.6	40.00	17.50
55.956625	18.72	107.0	V	58.0	-20.0	40.00	21.28
225.018125	32.89	149.0	H	59.0	-14.0	46.00	13.11
524.998500	29.27	108.0	H	59.0	-6.3	46.00	16.73
838.780000	29.97	392.0	H	343.0	5.8	46.00	16.03
954.997625	31.42	177.0	H	0.0	9.6	46.00	14.58

EUT Operation Mode: Working(POE power supply)

30 MHz~1 GHz:



Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna height (cm)	Antenna Polarity	Turntable position (degree)	Correction Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
60.621625	24.77	107.0	V	109.0	-20.2	40.00	15.23
67.003625	25.14	106.0	V	170.0	-20.5	40.00	14.86
93.517750	30.81	213.0	H	63.0	-18.4	43.50	12.69
600.017000	32.77	100.0	V	355.0	-1.6	46.00	13.23
787.516375	35.92	108.0	H	24.0	1.3	46.00	10.08
949.507750	31.11	194.0	V	184.0	9.9	46.00	14.89

1 GHz – 18 GHz (Pre-scan adapter and POE power supply,worst case data as below):

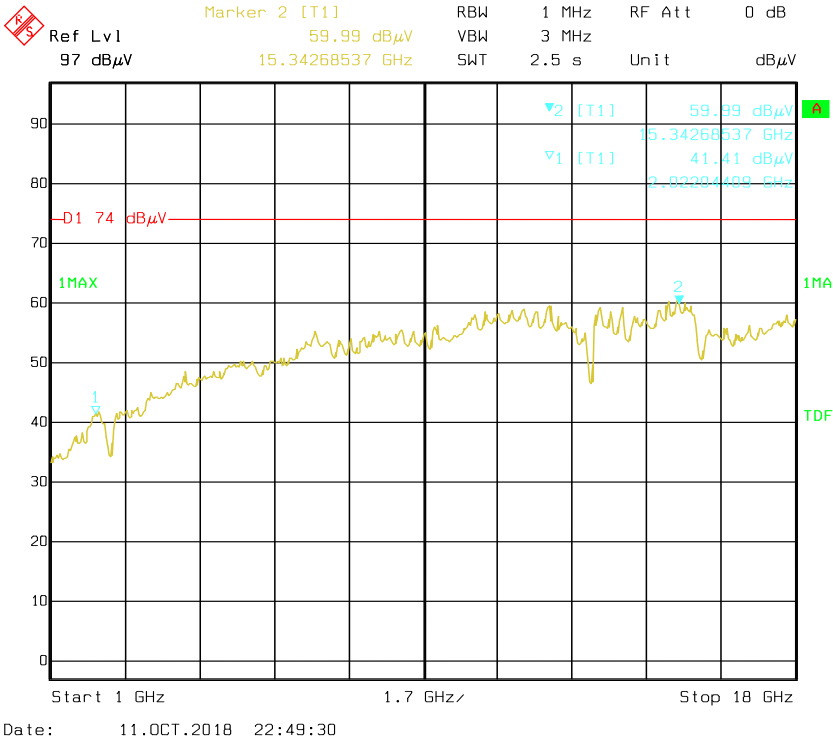
Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBuV/m)	FCC Part 15B	
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H / V)			Limit (dBuV/m)	Margin (dB)
1442.30	42.65	PK	354	1.3	H	-1.86	40.79	74	33.21
1442.30	28.37	Ave.	354	1.3	H	-1.86	26.51	54	27.49
1442.30	42.19	PK	95	1.7	V	-1.86	40.33	74	33.67
1442.30	28.52	Ave.	95	1.7	V	-1.86	26.66	54	27.34
2022.04	42.07	PK	174	1.6	H	-0.66	41.41	74	31.77
2022.04	28.36	Ave.	174	1.6	H	-0.66	27.70	54	26.30
2022.04	43.13	PK	171	2.4	V	-0.66	42.47	74	30.90
2022.04	28.35	Ave.	171	2.4	V	-0.66	27.69	54	27.31

Note:

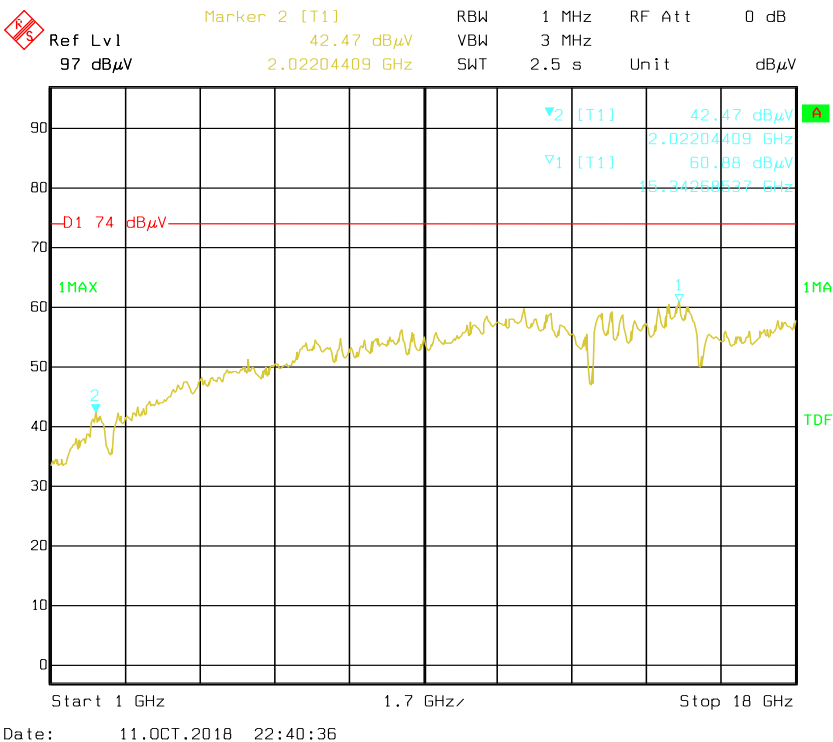
- 1) Correction Factor=Antenna factor (RX) + cable loss – amplifier factor
- 2) Corrected Amplitude = Correction Factor + Reading
- 3) Margin = Limit - Corrected Amplitude

Pre-scan for peak

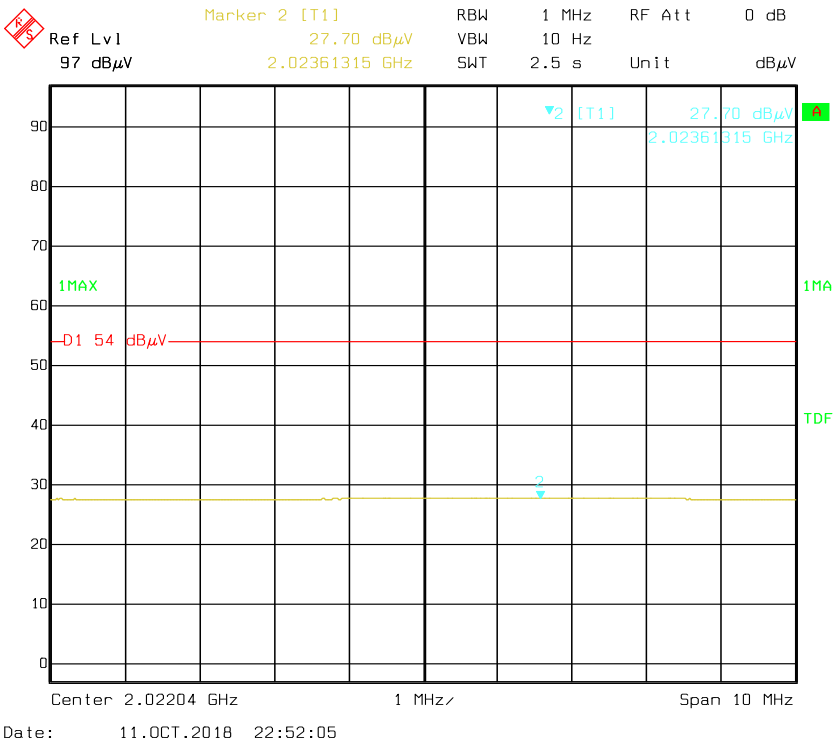
Horizontal – Peak (1-18 GHz)



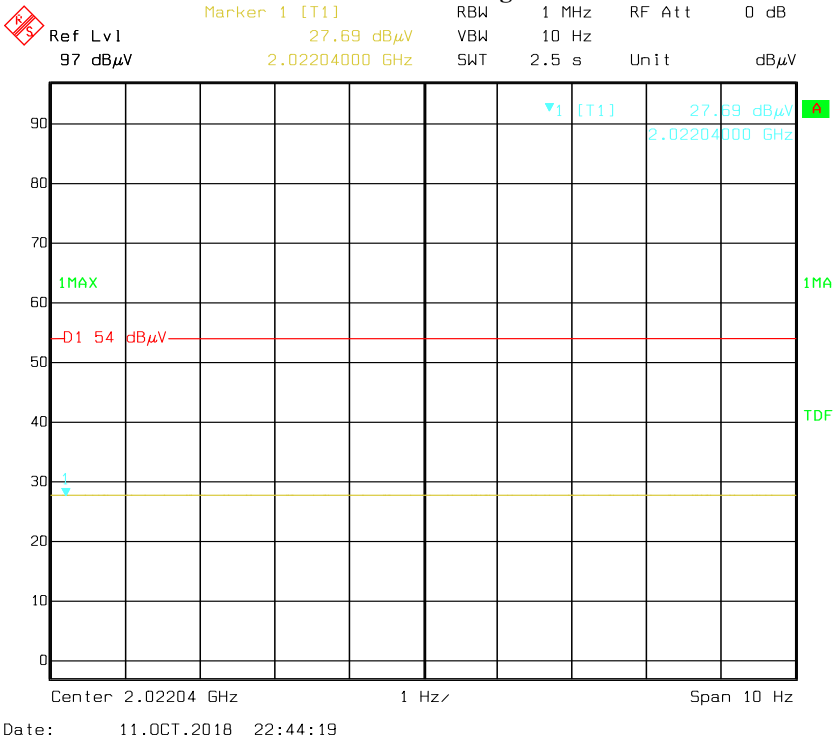
Vertical - Peak (1-18 GHz)



Horizontal – Average



Vertical - Average



***** END OF REPORT *****