FCC PART 15B, CLASS B

MEASUREMENT AND TEST REPORT

For

Grandstream Networks, Inc.

126 Brookline Ave., 3rd Floor Boston, MA 02215, USA

FCC ID: YZZUCM6302

Report Type:	**Product Type:**
Original Report	IP PBX

Report Number:	RSZ191210001-00
Report Date:	2020-04-27
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	IP PBX
Tested Model	UCM6302
Multiple Model	UCM6301
Voltage Range	DC 12.0V from adapter or DC 48.0V from POE
Highest operating frequency	1296MH
Date of Test	2019-12-19 to 2020-04-25
Sample serial number	RSZ191210001-EM-S1(Assigned by BACL, Shenzhen)
Received date	2019-12-10
Sample/EUT Status	Good condition
Adapter 1 information	Model: H18US1200150B(Sunlight) Input: AC 100-240V, 50/60Hz, 0.8A Output: DC 12V, 1.5A
Adapter 2 information	Model: F18W8-120150SPAU(Frecom) Input: AC 100-240V, 50/60Hz, 0.6A Output: DC 12V, 1.5A

Notes: This series products model: UCM6301 and UCM6302 are identical schematics,Model UCM6302 was selected for fully testing, the detailed information can be referred to the declaration which was stated and guaranteed by the applicant.

Objective

This test report is prepared on behalf of *Grandstream Networks, 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)

No related submittal(s).

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

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on CISPR 16-4-2:2011, the expended combined standard uncertainty of test at Bay Area Compliance Laboratories Corp. (Shenzhen) is shown as below. And the uncertainty will be taken into consideration for the test data recorded in the report

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

Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

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

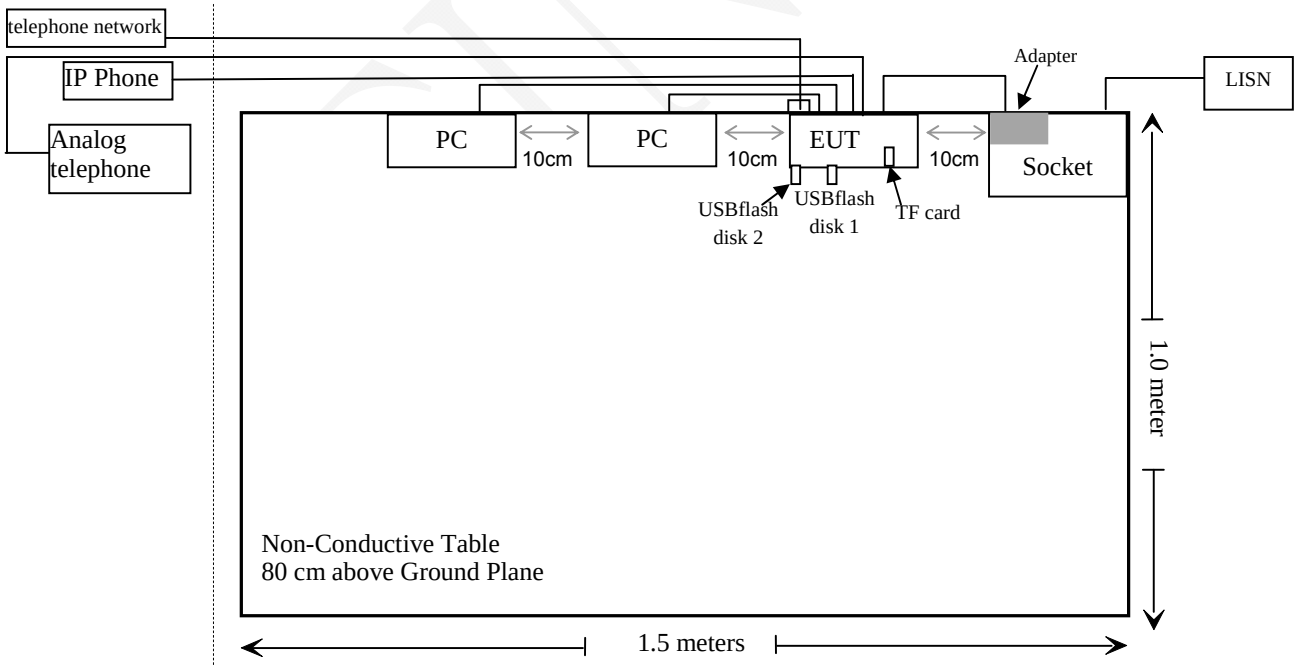
Manufacturer	Description	Model	Serial Number
BULL	Socket	GN-212	A37209315081183
Sandisk	TF card	N/A	Sandisk
BRLTEST	USBflash disk	N/A	N/A
Tecalst	USBflash disk	N/A	N/A
Grandstream	IP Phone	GXP2170	N/A
DELL	PC(laptop)	Latitude E5430	JG3NLV1
Dell	PC(laptop)	Latitude E5430	11429208685
Kinhao	Analog telephone	KT86AS	N/A
TP-LINK	POE	TL-POE160S	1177643000674

External I/O Cable

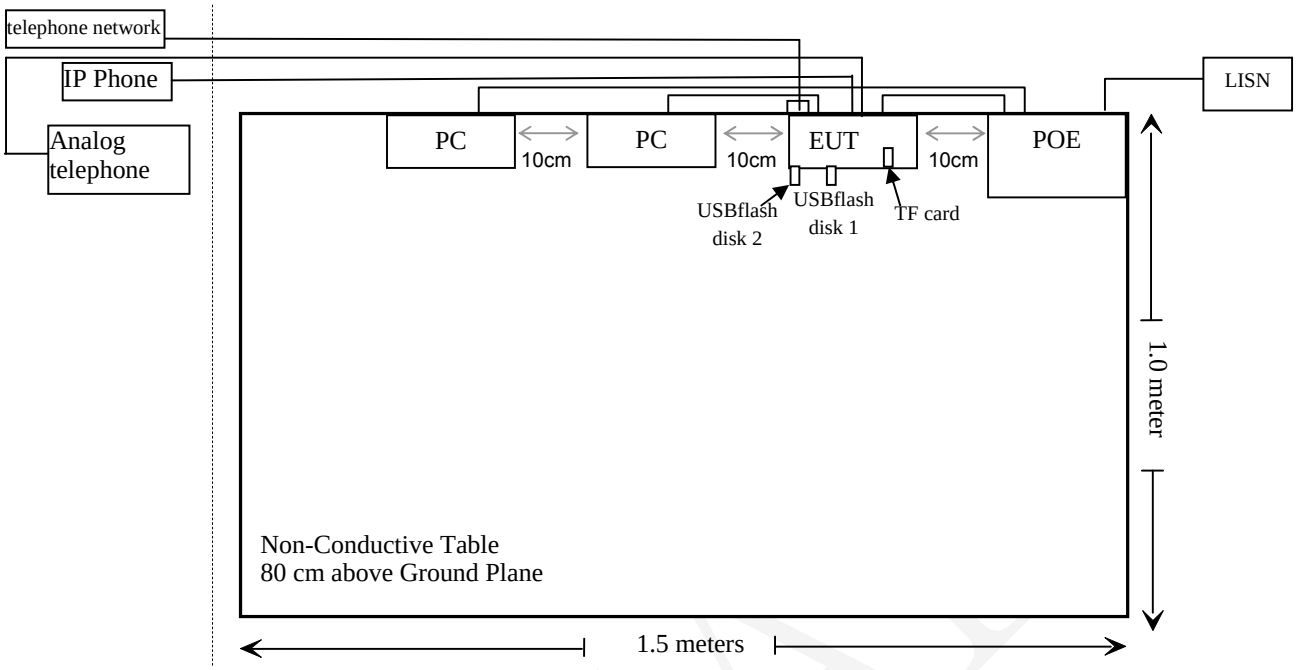
Cable Description	Length (m)	From/Port	To
Unshielded un-detachable AC cable	1.0	Socket	LISN
Unshielded Undetachable DC cable	2.0	Adapter	EUT
Unshielded detachable network cable	1.0	EUT	PC
Unshielded detachable network cable	1.0	EUT	PC
Unshielded detachable RJ11 cable	1.0	EUT	EUT
Unshielded detachable network cable	3.0	EUT	IP Phone
Unshielded detachable RJ11 cable	3.0	EUT	Analog telephone
Unshielded detachable network cable	2.0	EUT	IP Phone
Unshielded detachable RJ11 cable	2.0	EUT	Analog telephone
Unshielded detachable AC cable	1.0	POE	LISN
Unshielded detachable network cable	1.0	EUT	POE
Unshielded detachable network cable	1.0	PC	POE

Block Diagram of Test Setup

AC Mains:



POE:


telephone network
IP Phone
Analog telephone
LISN
PC
10cm
PC
10cm
EUT
10cm
POE
USBflash disk 2
USBflash disk 1
TF card
1.0 meter
Non-Conductive Table
80 cm above Ground Plane
1.5 meters

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	ESCI	101120	2019/7/9	2020/7/8
Rohde & Schwarz	LISN	ENV216	101613	2019/1/22	2020/1/21
Rohde & Schwarz	LISN	ENV216	101613	2020/1/21	2021/1/21
Rohde & Schwarz	Transient Limitor	ESH3Z2	DE25985	2019/11/29	2020/11/28
/	CE Cable	CE Cable	UF A210B-1-0720-504504	2019/11/29	2020/11/28
Rohde & Schwarz	CE Test software	EMC 32	V8.53.0	NCR	NCR
Radiated Emission Test					
R&S	EMI Test Receiver	ESR3	102455	2019/7/9	2020/7/8
Sonoma instrument	Pre-amplifier	310 N	186238	2019/4/20	2020/4/20
Sonoma instrument	Pre-amplifier	310 N	186238	2020/4/20	2021/4/20
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2017/12/22	2020/12/21
/	Cable 2	RF Cable 2	/	2019/11/29	2020/11/28
/	Cable	Chamber Cable 4	EC-007	2019/11/29	2020/11/28
Rohde & Schwarz	Auto test software	EMC 32	V9.10	NCR	NCR
Yijia	Temperature & Humidity Meter	TA218B	E0938	2019/10/14	2020/10/13
Rohde & Schwarz	Spectrum Analyzer	FSV40-N	102259	2019/7/22	2020/07/21
COM-POWER	Pre-amplifier	PA-122	181919	2019/11/29	2020/11/28
Sunol Sciences	Horn Antenna	DRH-118	A052604	2017/12/22	2020/12/21
Yijia	Temperature & Humidity Meter	TA218B	E0938	2019/10/14	2020/10/13
Insulted Wire Inc.	RF Cable	SPS-2503-3150	02222010	2019/11/29	2020/11/28
/	RF Cable	W1101-EQ1 OUT	/	2019/11/29	2020/11/28

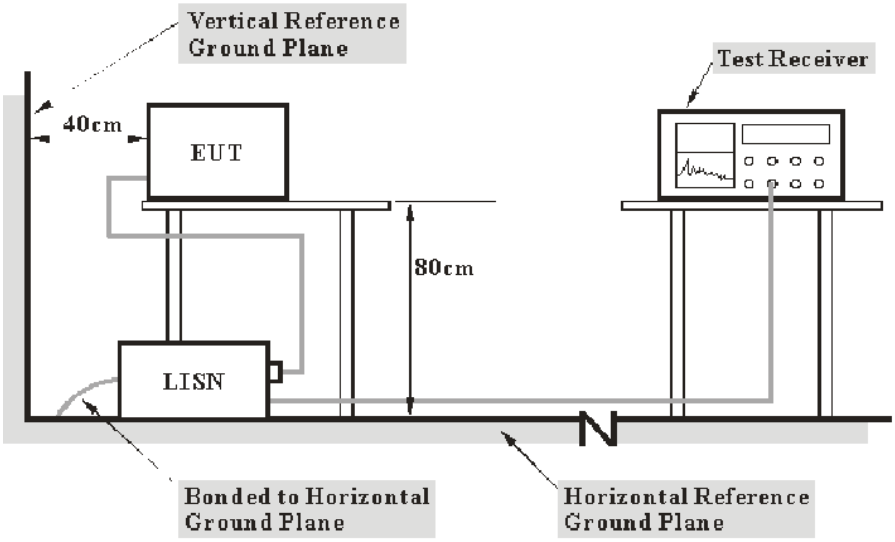
*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

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 conncected 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:

Correction Factor = LISN VDF + Cable Loss + 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:

Margin = Limit – Corrected Amplitude

Test Results Summary

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

Test Data

Environmental Conditions

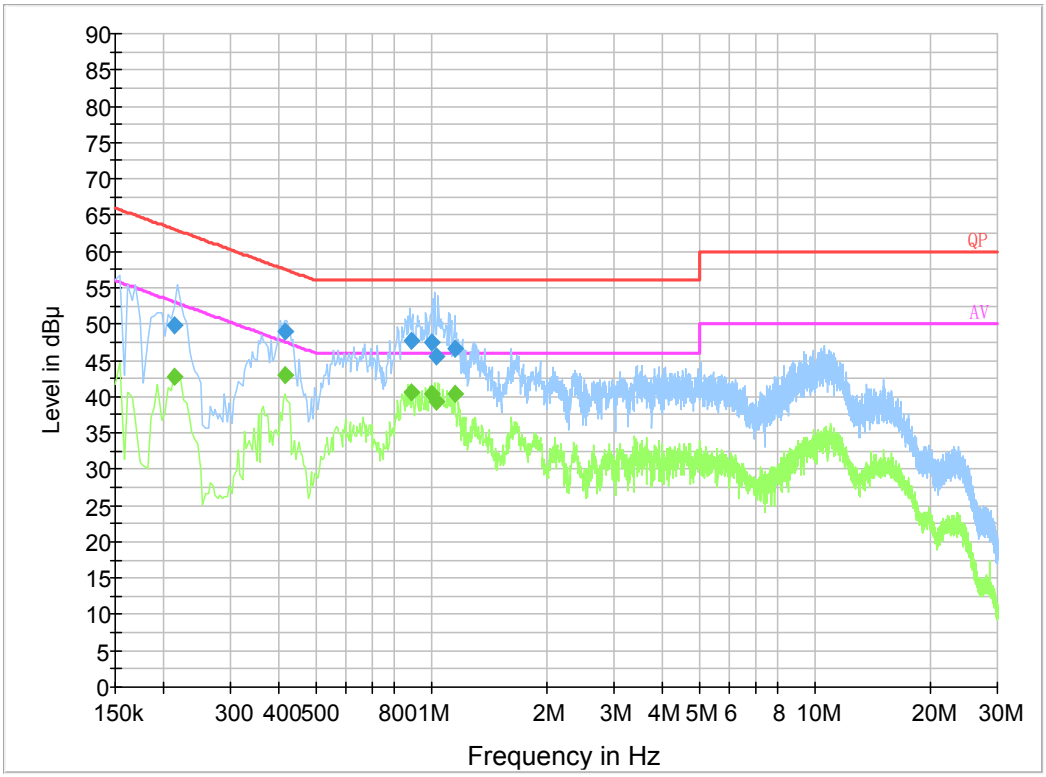
Temperature:	25 ℃
Relative Humidity:	65 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li from 2019-12-28 to 2020-04-24.

EUT Operation Mode: Working

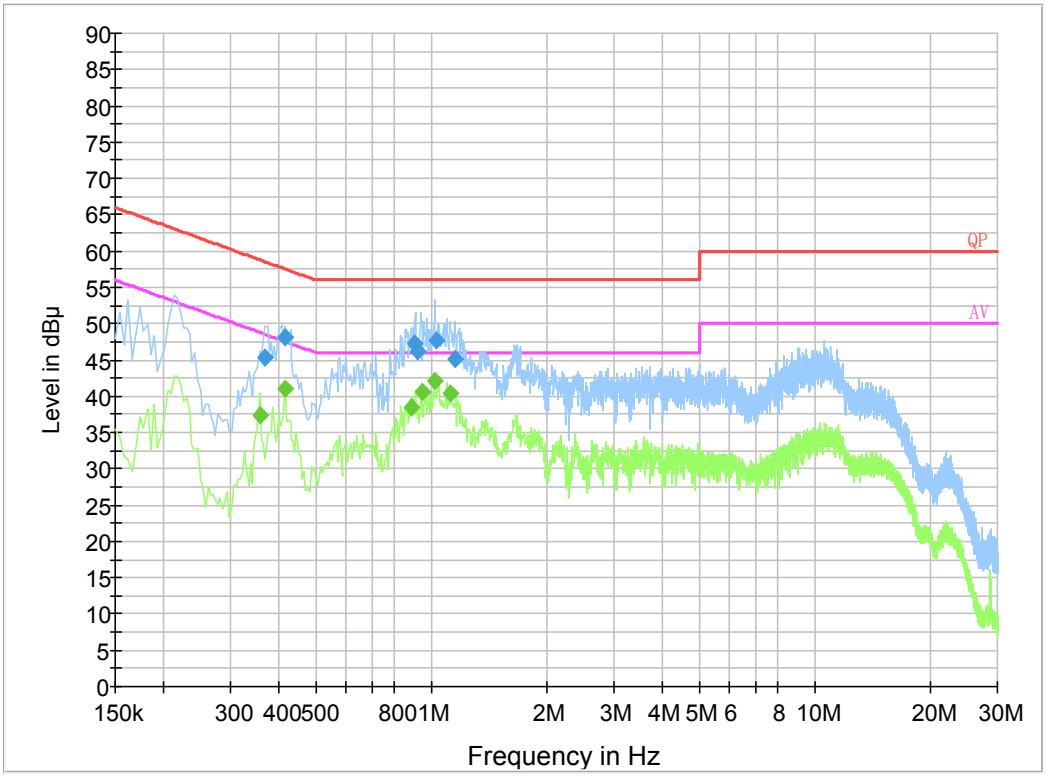
For model:UCM6302
For adapter 1:

AC 120V/60 Hz, Line



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
0.213500	49.8	19.8	63.1	13.3	QP
0.415670	49.1	19.9	57.5	8.4	QP
0.884770	47.8	19.8	56.0	8.2	QP
0.998850	47.5	19.9	56.0	8.5	QP
1.030670	45.6	19.9	56.0	10.4	QP
1.152690	46.7	19.8	56.0	9.3	QP
0.213500	42.8	19.8	53.1	10.3	Ave.
0.415670	43.0	19.9	47.5	4.5	Ave.
0.884770	40.6	19.8	46.0	5.4	Ave.
0.998850	40.5	19.9	46.0	5.5	Ave.
1.030670	39.2	19.9	46.0	6.8	Ave.
1.152690	40.4	19.8	46.0	5.6	Ave.

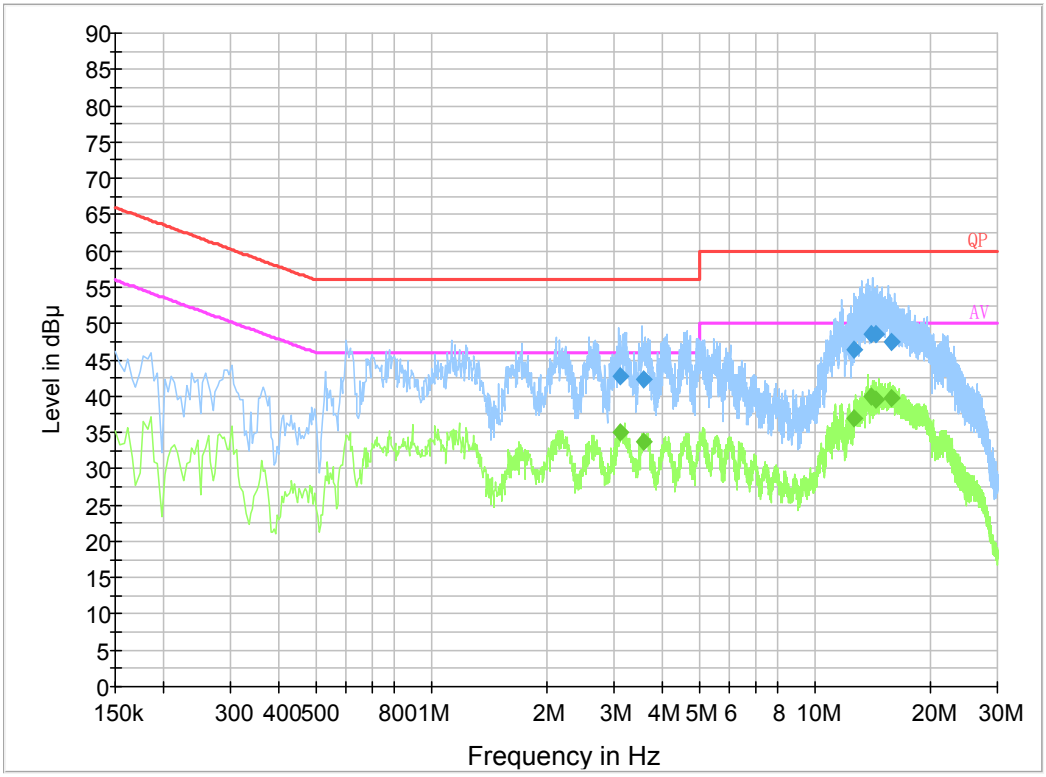
AC 120V/60 Hz, Neutral



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
0.368390	45.3	19.9	58.5	13.2	QP
0.415850	48.1	19.8	57.5	9.4	QP
0.908410	47.3	19.7	56.0	8.7	QP
0.923650	46.1	19.8	56.0	9.9	QP
1.034670	47.6	19.8	56.0	8.4	QP
1.156750	45.1	19.8	56.0	10.9	QP
0.358000	37.4	19.9	48.8	11.4	Ave.
0.418000	40.9	19.8	47.5	6.6	Ave.
0.890000	38.5	19.7	46.0	7.5	Ave.
0.946000	40.6	19.8	46.0	5.4	Ave.
1.022000	42.0	19.8	46.0	4.0	Ave.
1.126000	40.3	19.8	46.0	5.7	Ave.

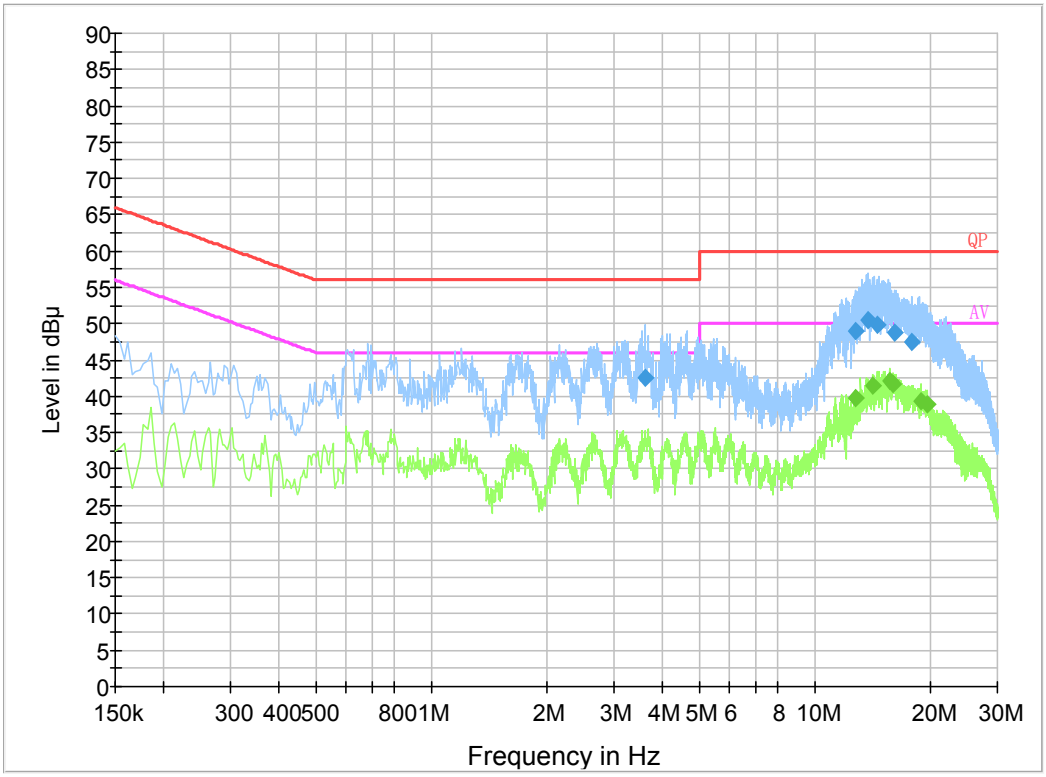
For adapter 2:

AC 120V/60 Hz, Line



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
3.107770	42.7	19.9	56.0	13.3	QP
3.576930	42.3	19.9	56.0	13.7	QP
12.715050	46.4	20.0	60.0	13.6	QP
14.060910	48.6	20.0	60.0	11.4	QP
14.439750	48.5	20.0	60.0	11.5	QP
15.923690	47.4	20.1	60.0	12.6	QP
3.107770	35.1	19.9	46.0	10.9	Ave.
3.576930	33.7	19.9	46.0	12.3	Ave.
12.715050	37.0	20.0	50.0	13.0	Ave.
14.060910	40.0	20.0	50.0	10.0	Ave.
14.439750	39.6	20.0	50.0	10.4	Ave.
15.923690	39.6	20.1	50.0	10.4	Ave.

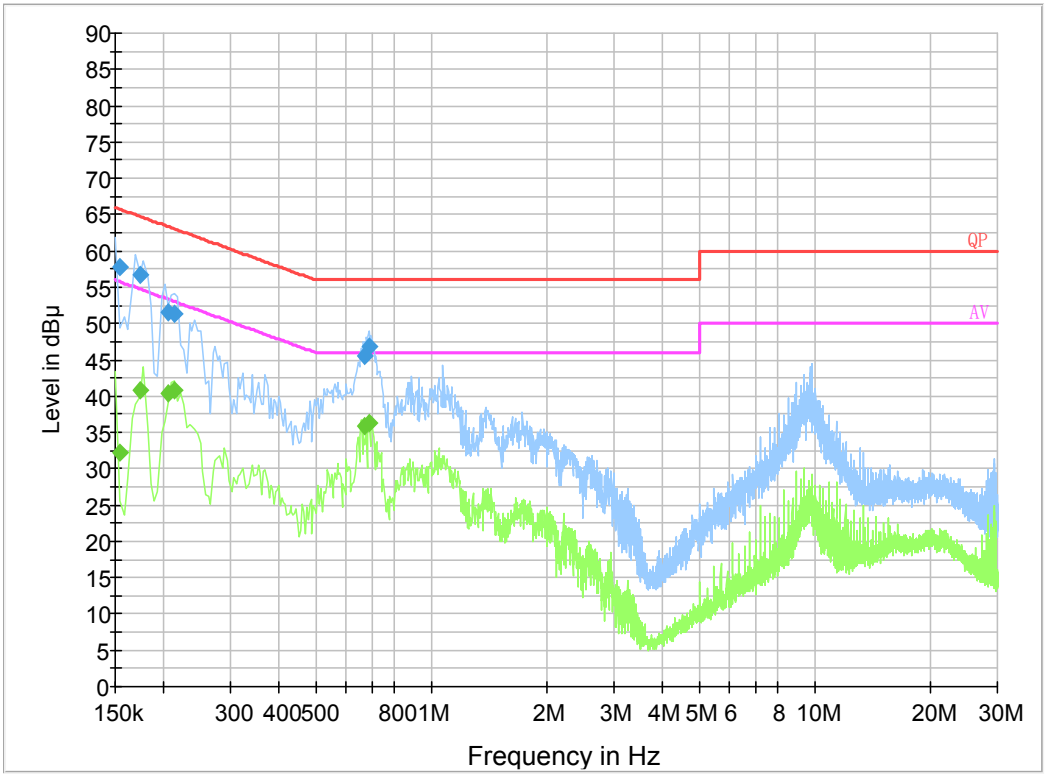
AC 120V/60 Hz, Neutral



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
3.631670	42.4	19.9	56.0	13.6	QP
12.833430	48.9	19.9	60.0	11.1	QP
13.810310	50.4	19.9	60.0	9.6	QP
14.625950	49.8	19.9	60.0	10.2	QP
16.159970	48.8	20.1	60.0	11.2	QP
17.860690	47.5	20.2	60.0	12.5	QP
12.818000	39.7	19.9	50.0	10.3	Ave.
14.202000	41.4	19.9	50.0	8.6	Ave.
15.654000	42.0	20.0	50.0	8.0	Ave.
16.006000	41.8	20.0	50.0	8.2	Ave.
19.010000	39.3	20.3	50.0	10.7	Ave.
19.638000	39.0	20.4	50.0	11.0	Ave.

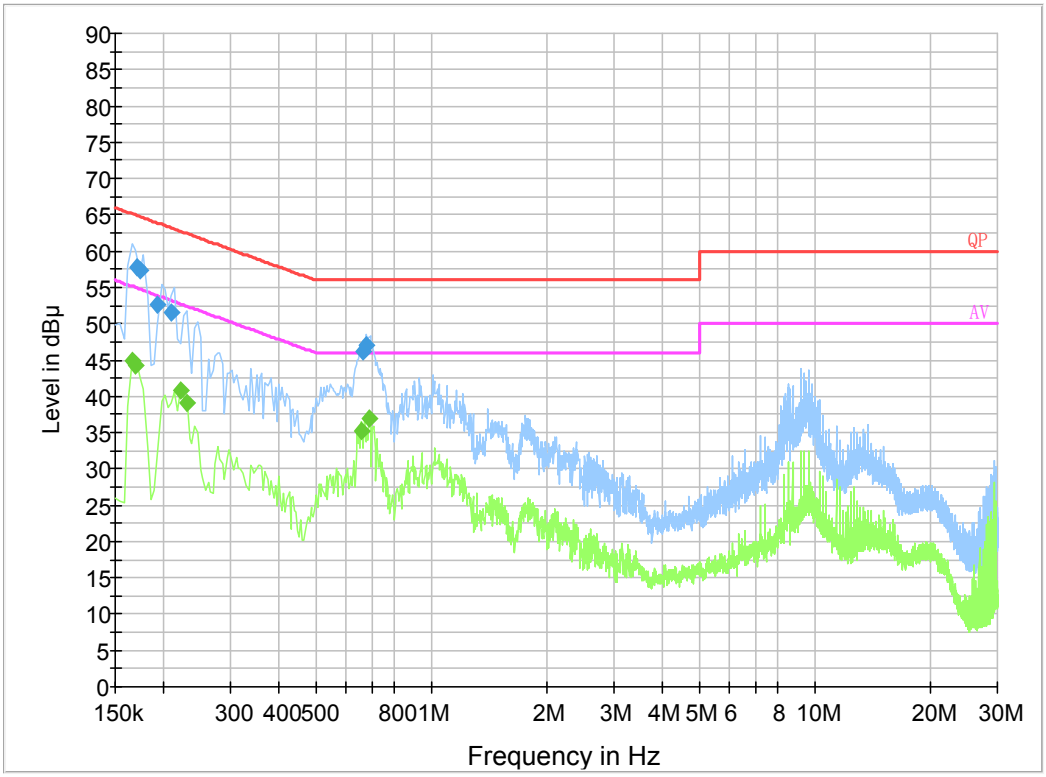
For POE:

AC 120V/60 Hz, Line



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
0.154000	57.7	19.8	65.8	8.1	QP
0.173500	56.8	19.9	64.8	8.0	QP
0.205500	51.5	19.8	63.4	11.9	QP
0.213500	51.3	19.8	63.1	11.8	QP
0.667870	45.6	19.8	56.0	10.4	QP
0.687650	46.8	19.8	56.0	9.2	QP
0.154000	32.3	19.8	55.8	23.5	Ave.
0.173500	40.9	19.9	54.8	13.9	Ave.
0.205500	40.4	19.8	53.4	13.0	Ave.
0.213500	40.7	19.8	53.1	12.4	Ave.
0.667870	35.9	19.8	46.0	10.1	Ave.
0.687650	36.4	19.8	46.0	9.6	Ave.

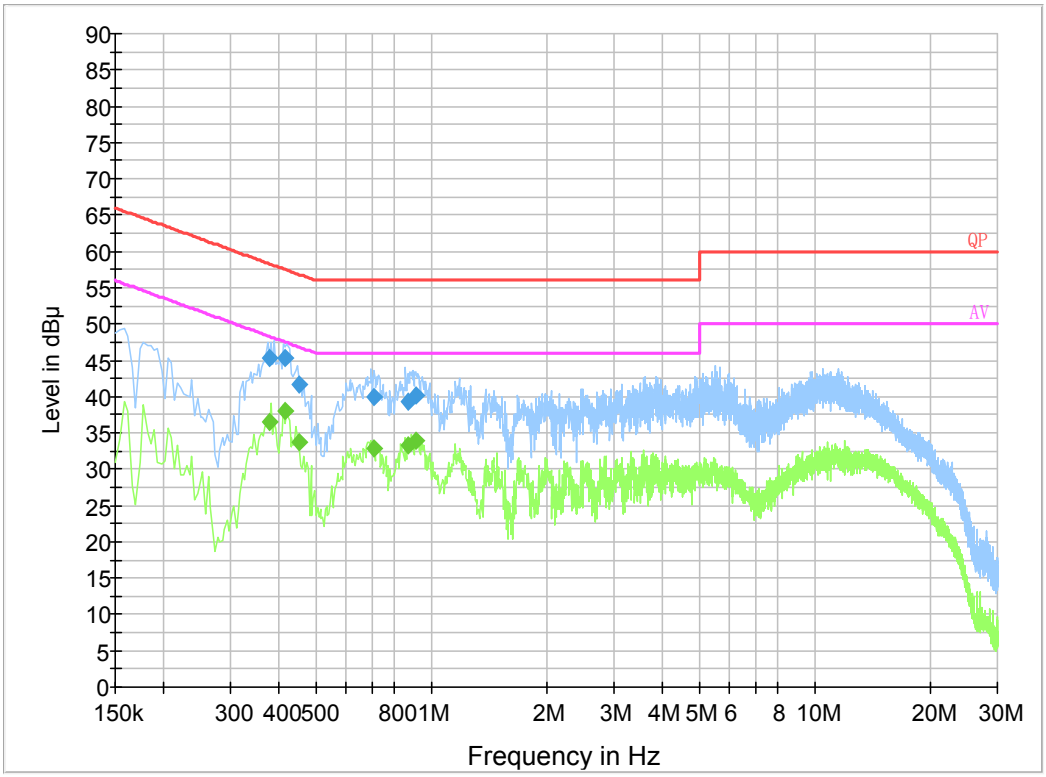
AC 120V/60 Hz, Neutral



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
0.170501	57.8	19.8	64.9	7.1	QP
0.174500	57.3	19.8	64.7	7.4	QP
0.193500	52.5	19.8	63.9	11.4	QP
0.209500	51.5	19.8	63.2	11.7	QP
0.664130	46.1	19.8	56.0	9.9	QP
0.675830	47.0	19.8	56.0	9.0	QP
0.166000	45.0	19.8	55.2	10.2	Ave.
0.170000	44.3	19.9	55.0	10.7	Ave.
0.222000	40.9	19.8	52.7	11.8	Ave.
0.230000	39.1	19.8	52.4	13.3	Ave.
0.658000	35.2	19.8	46.0	10.8	Ave.
0.690000	37.0	19.8	46.0	9.0	Ave.

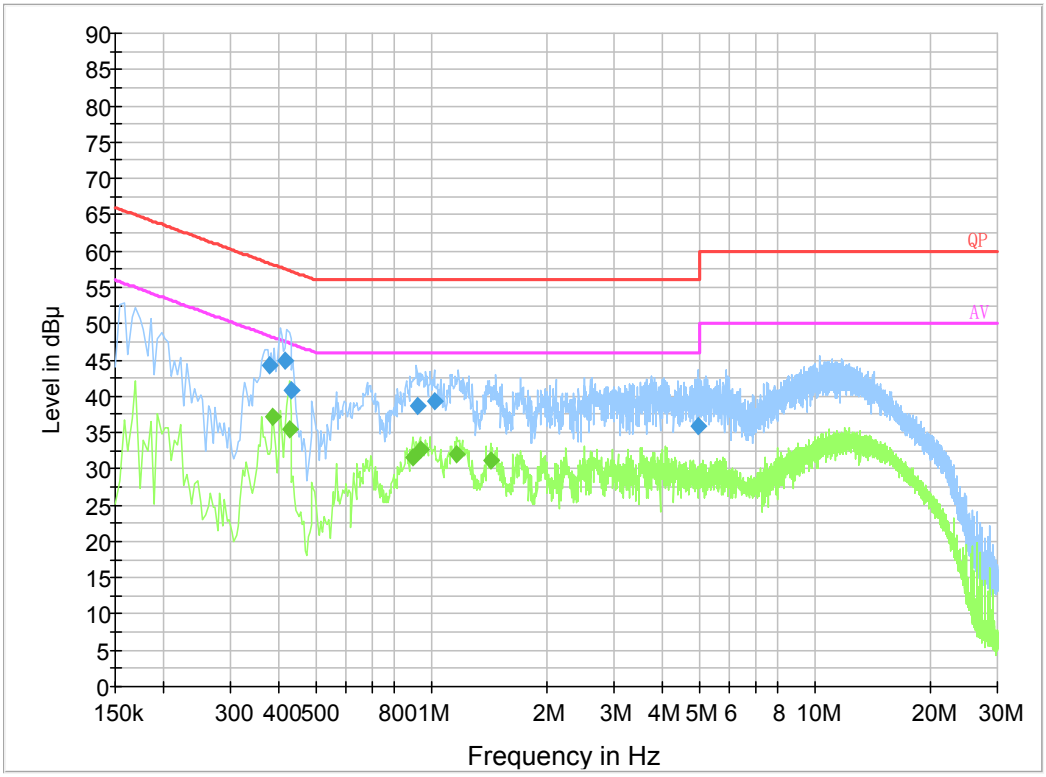
For model: UCM6301
For adapter 1:

AC 120V/60 Hz, Line



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
0.380270	45.3	19.9	58.3	13.0	QP
0.415670	45.3	19.9	57.5	12.2	QP
0.451250	41.6	19.8	56.9	15.3	QP
0.707530	40.0	19.8	56.0	16.0	QP
0.869130	39.2	19.8	56.0	16.8	QP
0.912350	40.1	19.8	56.0	15.9	QP
0.380270	36.4	19.9	48.3	11.9	Ave.
0.415670	38.1	19.9	47.5	9.4	Ave.
0.451250	33.8	19.8	46.9	13.1	Ave.
0.707530	32.9	19.8	46.0	13.1	Ave.
0.869130	33.2	19.8	46.0	12.8	Ave.
0.912350	34.0	19.8	46.0	12.0	Ave.

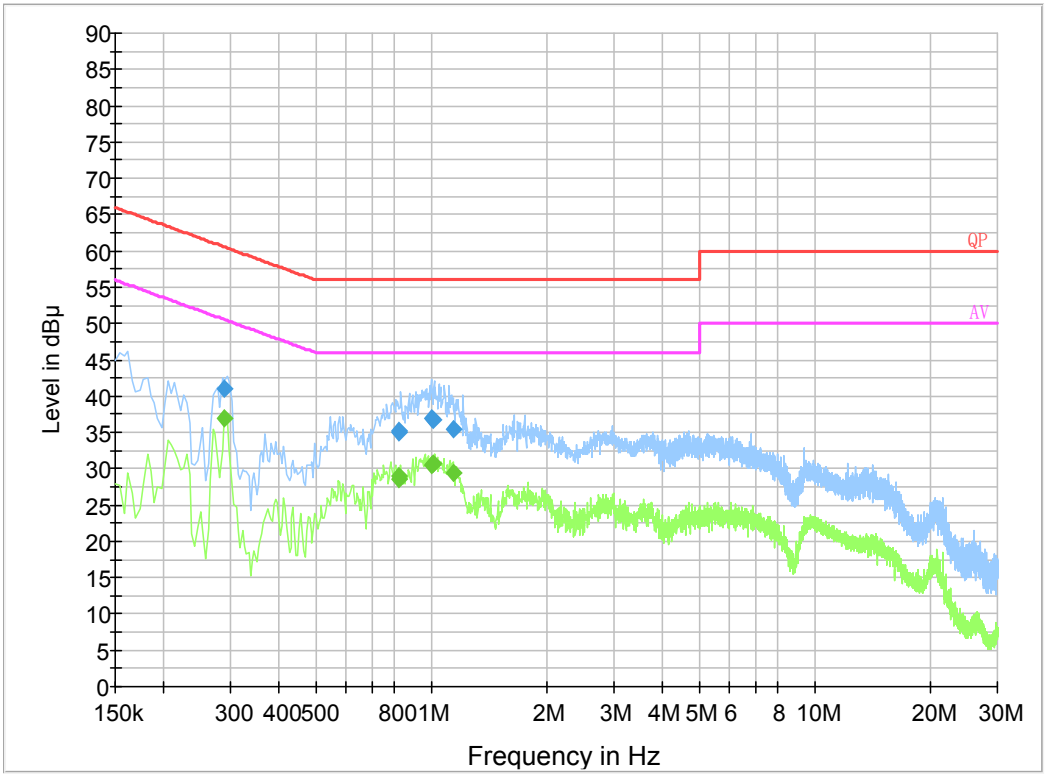
AC 120V/60 Hz, Neutral



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
0.379610	44.3	19.8	58.3	14.0	QP
0.415670	44.8	19.8	57.5	12.7	QP
0.431430	40.9	19.8	57.2	16.3	QP
0.924290	38.7	19.8	56.0	17.3	QP
1.022670	39.3	19.8	56.0	16.7	QP
4.991210	35.8	19.9	56.0	20.2	QP
0.386000	37.1	19.8	48.1	11.0	Ave.
0.426000	35.5	19.8	47.3	11.8	Ave.
0.898000	31.6	19.7	46.0	14.4	Ave.
0.938000	32.7	19.8	46.0	13.3	Ave.
1.170000	32.1	19.8	46.0	13.9	Ave.
1.426000	31.1	19.8	46.0	14.9	Ave.

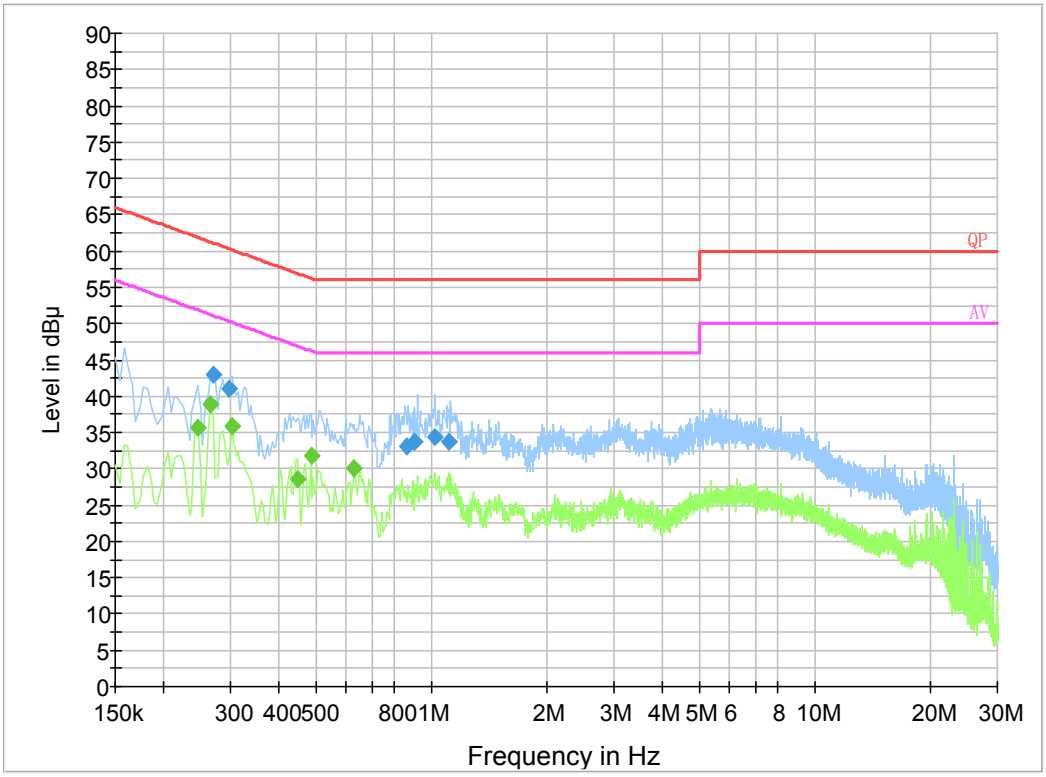
For adapter 2:

AC 120V/60 Hz, Line



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
0.289500	41.1	19.7	60.5	19.4	QP
0.821490	35.1	19.8	56.0	20.9	QP
0.821850	34.9	19.8	56.0	21.1	QP
1.002970	36.9	19.9	56.0	19.1	QP
1.010730	36.7	19.9	56.0	19.3	QP
1.146950	35.5	19.8	56.0	20.5	QP
0.289500	37.0	19.7	50.5	13.5	Ave.
0.821490	29.0	19.8	46.0	17.0	Ave.
0.821850	28.6	19.8	46.0	17.4	Ave.
1.002970	30.5	19.9	46.0	15.5	Ave.
1.010730	30.8	19.9	46.0	15.2	Ave.
1.146950	29.5	19.8	46.0	16.5	Ave.

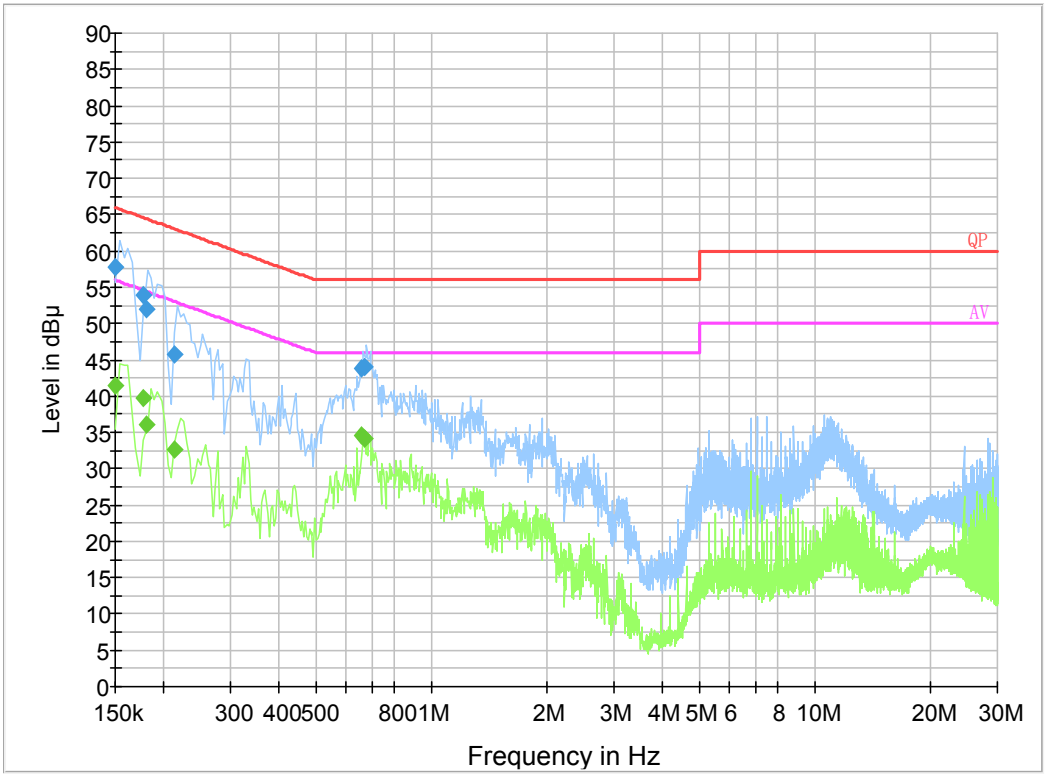
AC 120V/60 Hz, Neutral



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
0.269500	43.0	19.7	61.1	18.1	QP
0.297470	40.9	19.7	60.3	19.4	QP
0.865130	33.1	19.8	56.0	22.9	QP
0.908170	33.7	19.7	56.0	22.3	QP
1.018670	34.4	19.8	56.0	21.6	QP
1.109110	33.6	19.8	56.0	22.4	QP
0.246000	35.7	19.8	51.9	16.2	Ave.
0.266000	38.9	19.7	51.2	12.3	Ave.
0.302000	35.9	19.7	50.2	14.3	Ave.
0.450000	28.5	19.8	46.9	18.4	Ave.
0.486000	31.8	19.8	46.2	14.4	Ave.
0.630000	30.1	19.8	46.0	15.9	Ave.

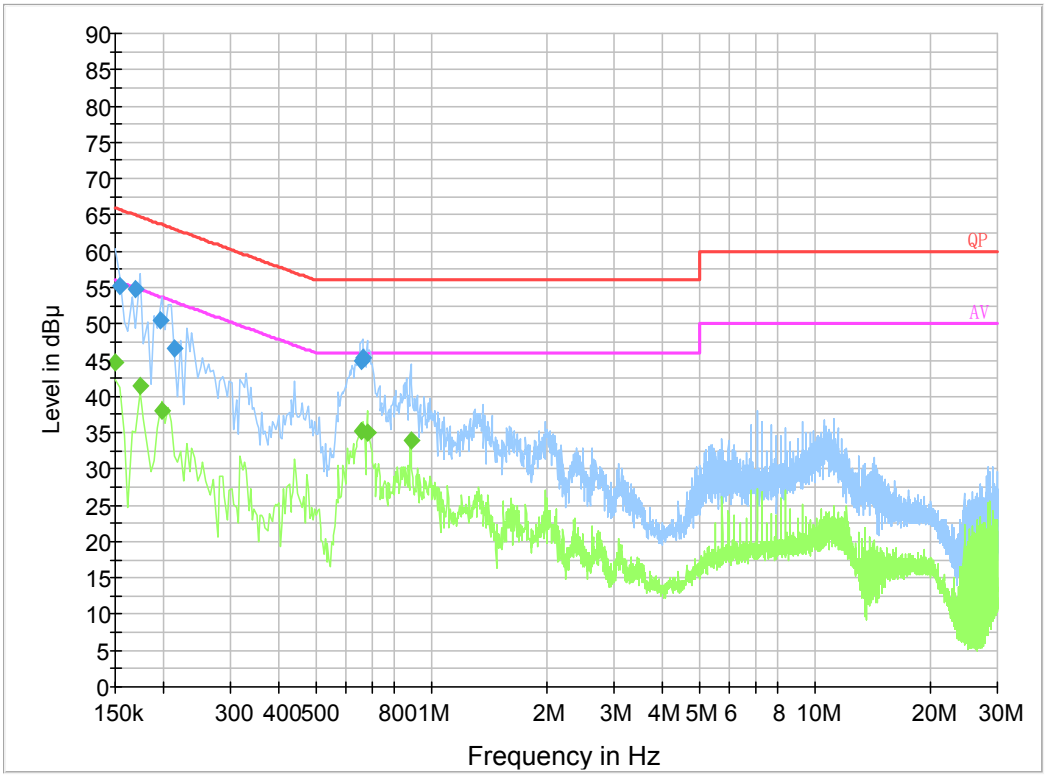
For POE:

AC 120V/60 Hz, Line



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
0.150000	57.8	19.8	66.0	8.2	QP
0.177500	54.0	19.9	64.6	10.6	QP
0.181500	52.1	19.9	64.4	12.3	QP
0.213500	45.7	19.8	63.1	17.4	QP
0.660130	43.9	19.8	56.0	12.1	QP
0.671830	44.0	19.8	56.0	12.0	QP
0.150000	41.4	19.8	56.0	14.6	Ave.
0.177500	39.8	19.9	54.6	14.8	Ave.
0.181500	36.1	19.9	54.4	18.3	Ave.
0.213500	32.7	19.8	53.1	20.4	Ave.
0.660130	34.5	19.8	46.0	11.5	Ave.
0.671830	34.3	19.8	46.0	11.7	Ave.

AC 120V/60 Hz, Neutral



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
0.154000	55.3	19.8	65.8	10.5	QP
0.169500	54.8	19.8	65.0	10.2	QP
0.197500	50.5	19.8	63.7	13.2	QP
0.213500	46.6	19.8	63.1	16.4	QP
0.656070	44.9	19.8	56.0	11.1	QP
0.664130	45.4	19.8	56.0	10.6	QP
0.150000	44.7	19.8	56.0	11.3	Ave.
0.174000	41.5	19.8	54.8	13.3	Ave.
0.198000	38.0	19.8	53.7	15.7	Ave.
0.658000	35.2	19.8	46.0	10.8	Ave.
0.682000	35.1	19.8	46.0	10.9	Ave.
0.886000	34.0	19.7	46.0	12.0	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

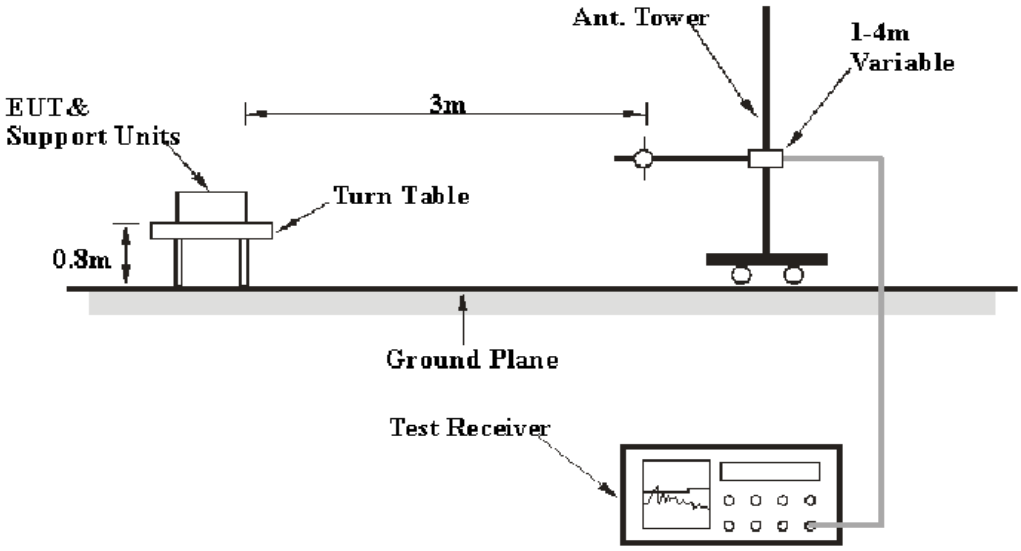
FCC §15.109 - RADIATED SPURIOUS EMISSIONS

Applicable Standard

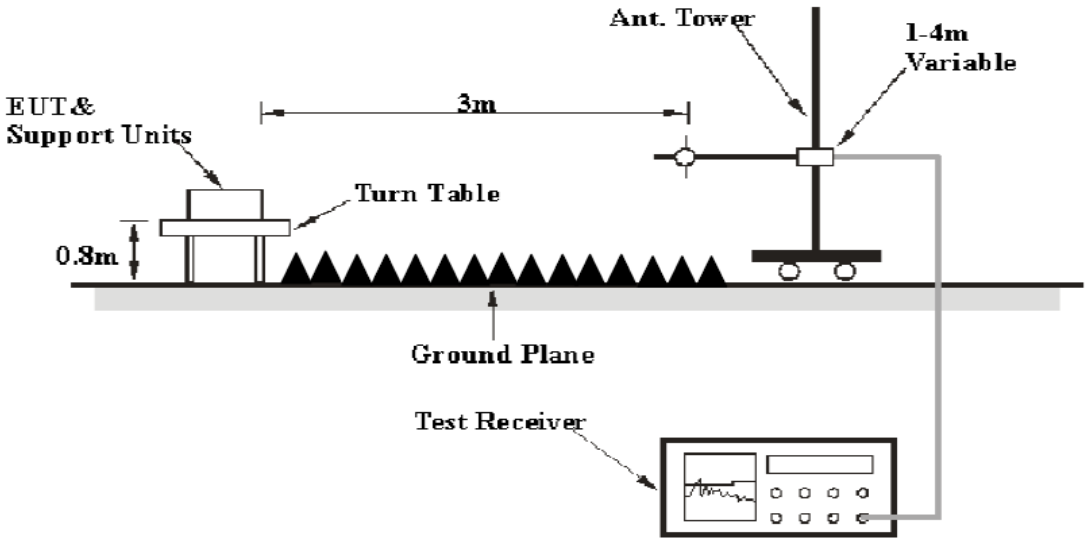
FCC §15.109

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 6.5 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	Measurement
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:

Corrected Amplitude = Meter Reading + Antenna Factor + Cable Loss - 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:

Margin = Limit – Corrected Amplitude

Test Results Summary

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

Test Data

Environmental Conditions

Temperature:	23 ℃
Relative Humidity:	56 %
ATM Pressure:	101.0 kPa

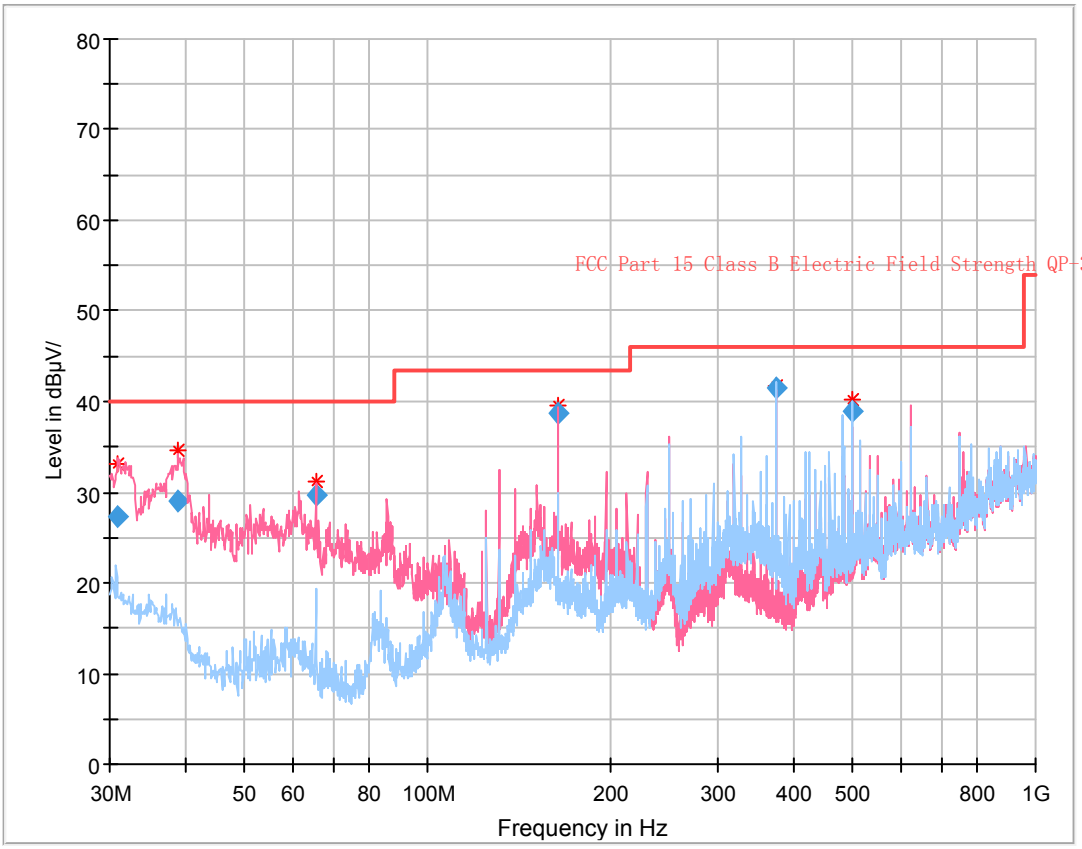
The testing was performed by Zero Yan from 2019-12-19 to 2020-04-25 for below 1G and Alen He and Leven Gan from 2020-02-24 to 2020-04-24 for above 1G.

EUT Operation Mode: Working

For model:UCM6302

For adapter 1:

30 MHz – 1 GHz:



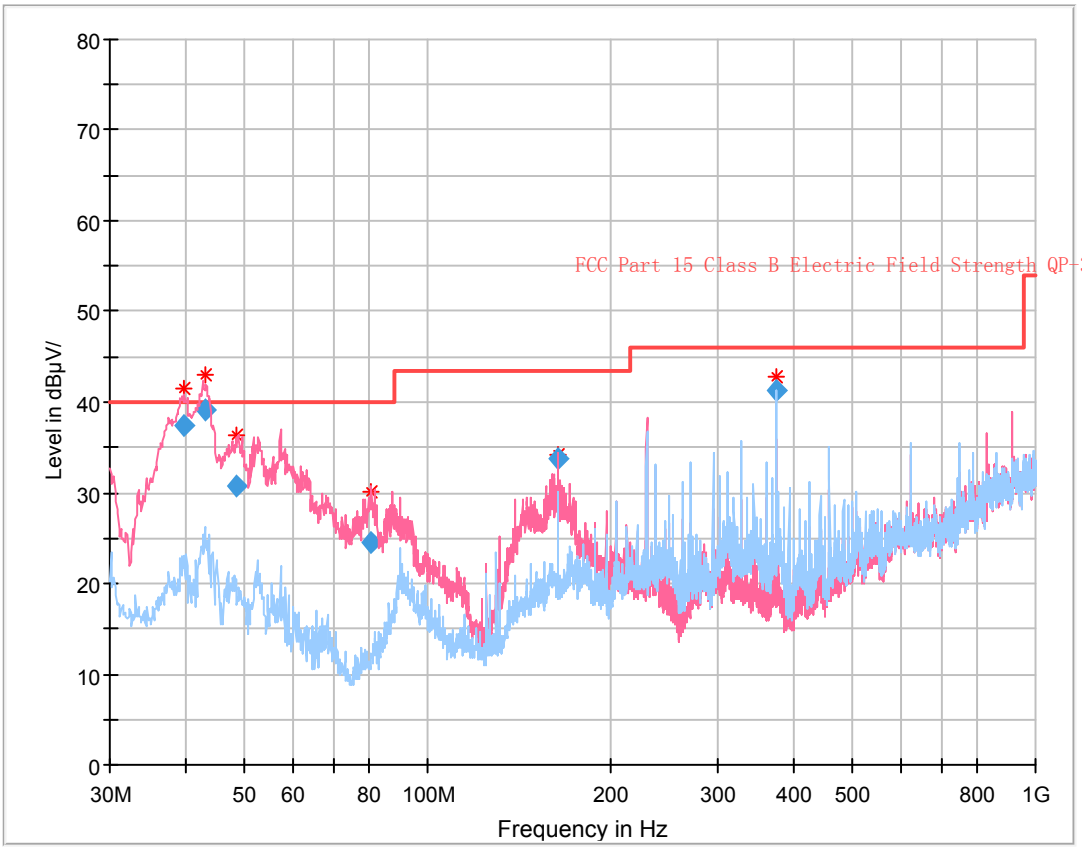
Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna height (cm)	Antenna Polarity	Turntable position (degree)	Correction Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
30.889375	27.33	109.0	V	204.0	-8.2	40.00	12.67
38.929625	29.11	109.0	V	230.0	-13.1	40.00	10.89
65.539750	29.72	223.0	V	22.0	-20.4	40.00	10.28
163.821875	38.66	104.0	V	173.0	-14.6	43.50	4.84
375.007875	41.42	109.0	H	273.0	-10.6	46.00	4.58
500.022000	38.98	109.0	H	292.0	-5.2	46.00	7.02

1 GHz – 6.5 GHz:

Frequency (MHz)	Measurement		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBµV/m)	FCC Part 15B	
	Reading (dBµV)	PK/QP/Ave.		Height (m)	Polar (H / V)			Limit (dBµV/m)	Margin (dB)
1347.66	43.24	PK	62	1.2	H	-4.11	39.13	74	34.87
1347.66	28.70	Ave.	62	1.2	H	-4.11	24.59	54	29.41
1347.66	43.39	PK	173	2.3	V	-4.11	39.28	74	34.72
1347.66	28.81	Ave.	173	2.3	V	-4.11	24.70	54	29.30
2241.35	45.84	PK	205	2.3	H	-0.56	45.28	74	28.72
2241.35	29.65	Ave.	205	2.3	H	-0.56	29.09	54	24.91
2241.35	45.51	PK	188	2.2	V	-0.56	44.95	74	29.05
2241.35	29.60	Ave.	188	2.2	V	-0.56	29.04	54	24.96

For adapter 2:

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)
39.648375	37.35	124.0	V	133.0	-13.5	40.00	2.65
43.056250	39.07	102.0	V	111.0	-15.9	40.00	0.93
48.430375	30.75	120.0	V	348.0	-18.9	40.00	9.25
80.651250	24.43	138.0	V	218.0	-19.9	40.00	15.57
163.821375	33.77	101.0	V	171.0	-14.6	43.50	9.73
375.017250	41.20	108.0	H	286.0	-10.6	46.00	4.80

1 GHz –6.5GHz:

Frequency (MHz)	Measurement		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBµV/m)	FCC Part 15B	
	Reading (dBµV)	PK/QP/Ave.		Height (m)	Polar (H / V)			Limit (dBµV/m)	Margin (dB)
1132.65	43.68	PK	276	1.6	H	-5.43	38.25	74	35.75
1132.65	28.85	Ave.	276	1.6	H	-5.43	23.42	54	30.58
1132.65	43.84	PK	97	2.3	V	-5.43	38.41	74	35.59
1132.65	28.89	Ave.	97	2.3	V	-5.43	23.46	54	30.54
2533.14	45.33	PK	257	1.6	H	-0.05	45.28	74	28.72
2533.14	29.55	Ave.	257	1.6	H	-0.05	29.50	54	24.50
2533.14	45.64	PK	345	2.0	V	-0.05	45.59	74	28.41
2533.14	29.63	Ave.	345	2.0	V	-0.05	29.58	54	24.42

For POE:

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)
39.229750	34.52	118.0	V	0.0	-13.3	40.00	5.48
43.119125	32.27	110.0	V	218.0	-16.0	40.00	7.73
163.832375	34.14	109.0	V	158.0	-14.6	43.50	9.36
249.998875	39.15	167.0	H	129.0	-14.1	46.00	6.85
270.272500	36.03	188.0	H	246.0	-12.7	46.00	9.97
875.042750	42.47	102.0	H	141.0	3.6	46.00	3.53

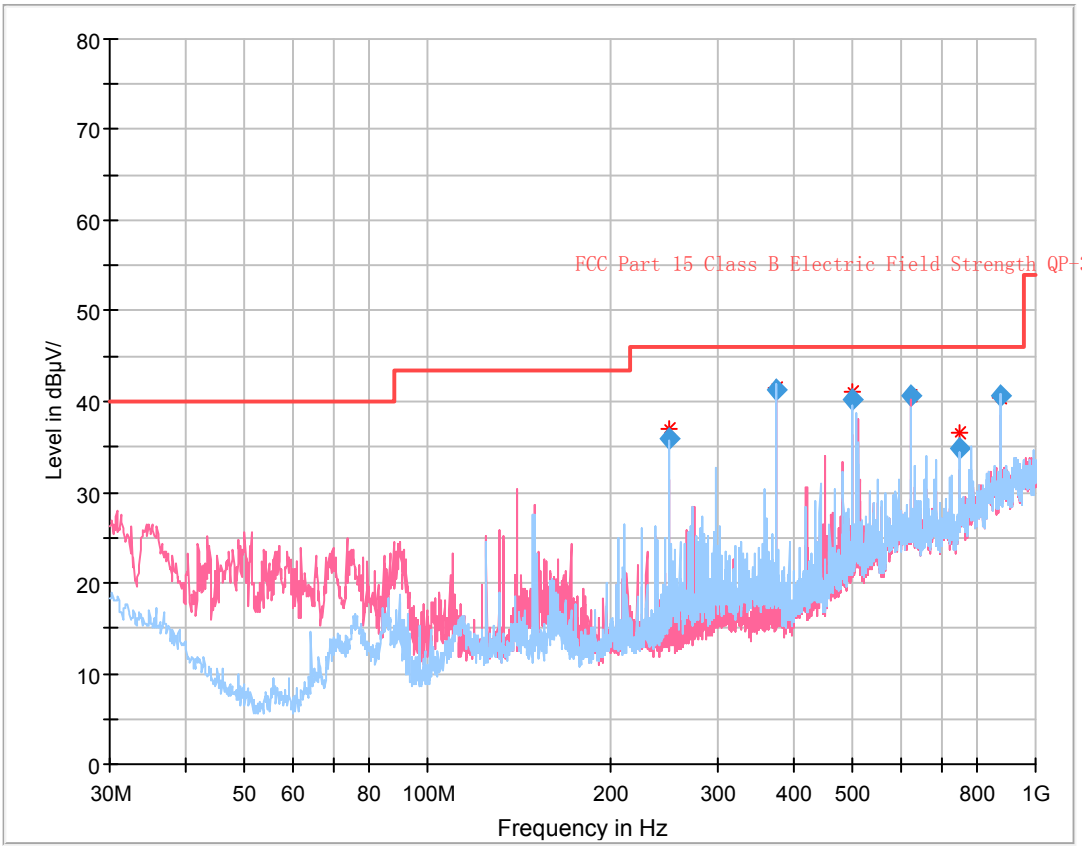
1 GHz – 6.5 GHz:

Frequency (MHz)	Measurement		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBµV/m)	FCC Part 15B	
	Reading (dBµV)	PK/QP/Ave.		Height (m)	Polar (H / V)			Limit (dBµV/m)	Margin (dB)
1053.39	43.77	PK	51	2.0	H	-5.83	37.94	74	36.06
1053.39	28.91	Ave.	51	2.0	H	-5.83	23.08	54	30.92
1053.39	43.54	PK	144	1.7	V	-5.83	37.71	74	36.29
1053.39	28.83	Ave.	144	1.7	V	-5.83	23.00	54	31.00
1622.57	45.11	PK	151	1.7	H	-2.61	42.50	74	31.50
1622.57	29.44	Ave.	151	1.7	H	-2.61	26.83	54	27.17
1622.57	45.53	PK	100	1.8	V	-2.61	42.92	74	31.08
1622.57	29.61	Ave.	100	1.8	V	-2.61	27.00	54	27.00

For model: UCM6301

For adapter 1:

30 MHz – 1 GHz:



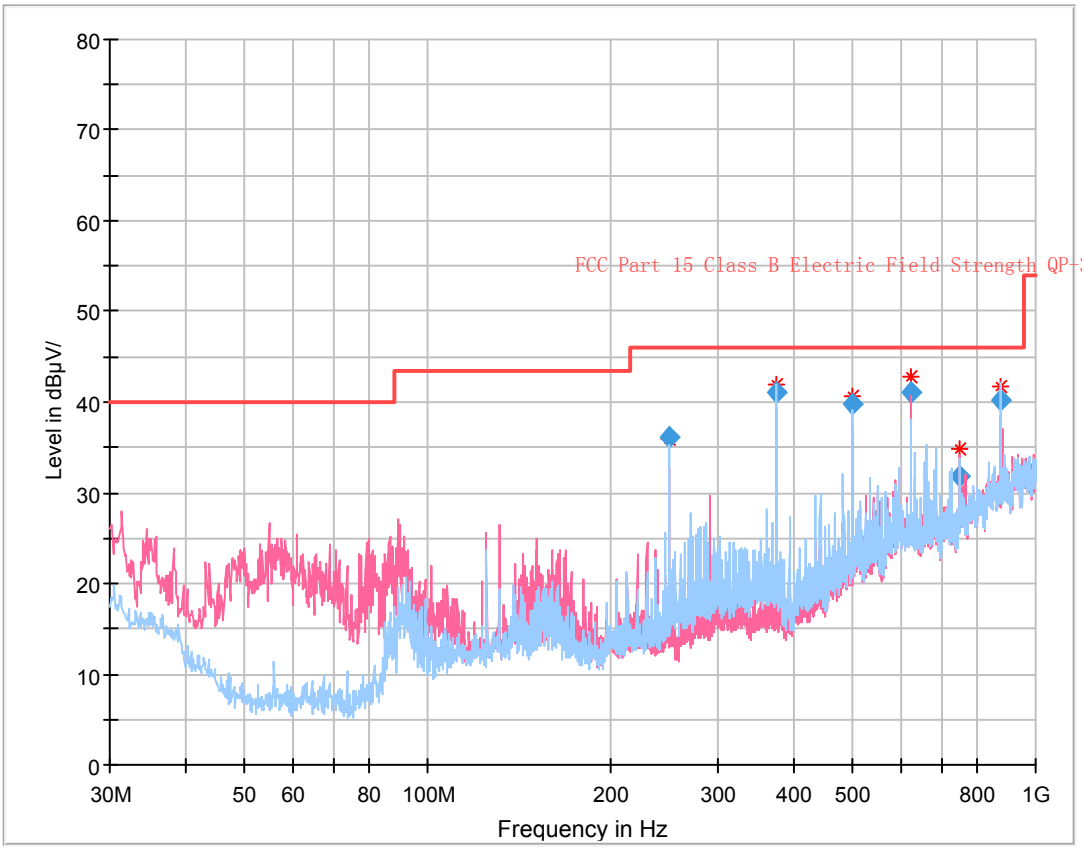
Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna height (cm)	Antenna Polarity	Turntable position (degree)	Correction Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
250.002125	35.87	118.0	H	0.0	-14.1	46.00	10.13
375.014125	41.29	109.0	H	243.0	-10.6	46.00	4.71
500.014625	40.15	199.0	H	297.0	-5.2	46.00	5.85
625.028125	40.70	109.0	V	259.0	-1.6	46.00	5.30
750.024250	34.81	130.0	H	43.0	-0.4	46.00	11.19
875.052000	40.55	103.0	H	341.0	3.6	46.00	5.45

1 GHz – 6.5 GHz:

Frequency (MHz)	Measurement		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBµV/m)	FCC Part 15B	
	Reading (dBµV)	PK/QP/Ave.		Height (m)	Polar (H / V)			Limit (dBµV/m)	Margin (dB)
1437.34	43.17	PK	193	1.7	H	-3.12	40.05	74	33.95
1437.34	28.24	Ave.	193	1.7	H	-3.12	25.12	54	28.88
1437.34	43.33	PK	244	1.8	V	-3.12	40.21	74	33.79
1437.34	28.27	Ave.	244	1.8	V	-3.12	25.15	54	28.85
2776.14	44.57	PK	174	1.9	H	0.83	45.40	74	28.60
2776.14	29.14	Ave.	174	1.9	H	0.83	29.97	54	24.03
2776.14	44.31	PK	241	2.1	V	0.83	45.14	74	28.86
2776.14	29.03	Ave.	241	2.1	V	0.83	29.86	54	24.14

For adapter 2:

30 MHz – 1 GHz:



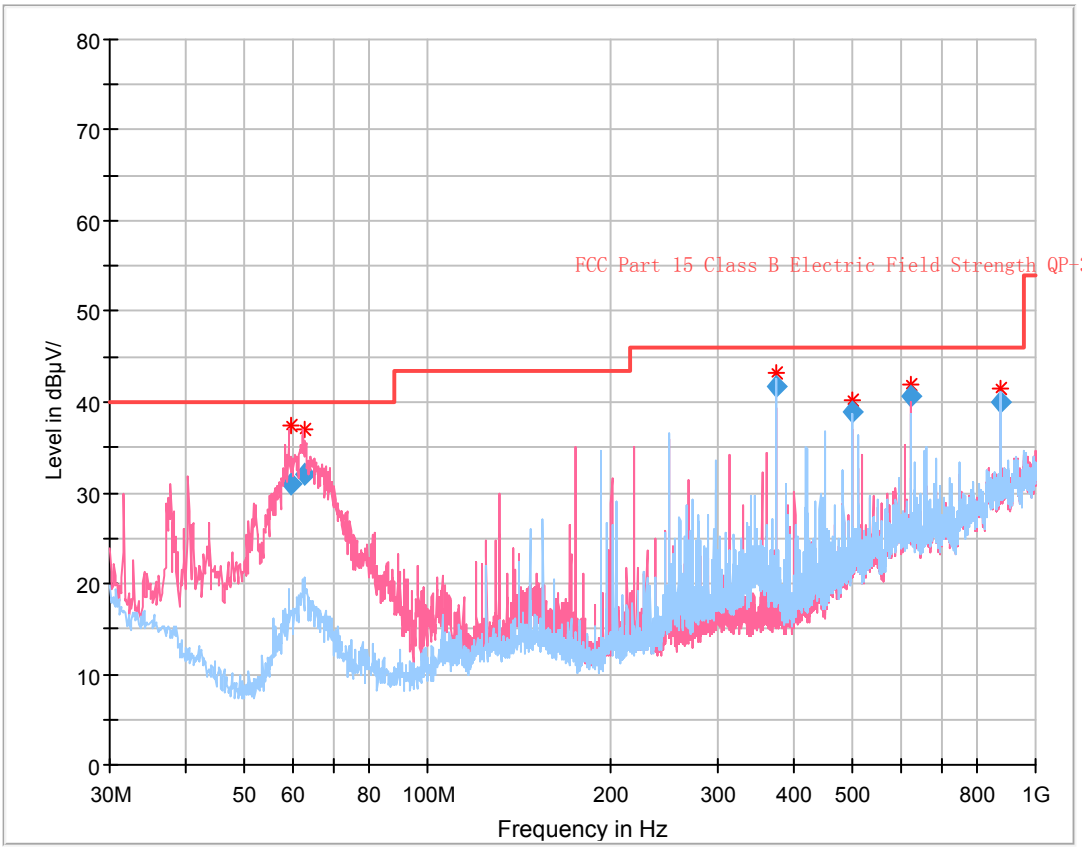
Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna height (cm)	Antenna Polarity	Turntable position (degree)	Correction Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
250.002625	36.20	157.0	H	289.0	-14.1	46.00	9.80
375.006125	41.18	109.0	H	245.0	-10.6	46.00	4.82
500.019250	39.81	203.0	H	335.0	-5.2	46.00	6.19
625.022125	40.98	110.0	V	260.0	-1.6	46.00	5.02
750.040875	31.77	102.0	V	259.0	-0.4	46.00	14.23
875.042125	40.15	101.0	H	339.0	3.6	46.00	5.85

1 GHz –6.5GHz:

Frequency (MHz)	Measurement		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBµV/m)	FCC Part 15B	
	Reading (dBµV)	PK/QP/Ave.		Height (m)	Polar (H / V)			Limit (dBµV/m)	Margin (dB)
1347.25	43.44	PK	146	1.7	H	-4.11	39.33	74	34.67
1347.25	28.48	Ave.	146	1.7	H	-4.11	24.37	54	29.63
1347.25	43.21	PK	119	1.4	V	-4.11	39.10	74	34.90
1347.25	28.35	Ave.	119	1.4	V	-4.11	24.24	54	29.76
2054.52	45.22	PK	157	1.1	H	-0.91	44.31	74	29.69
2054.52	29.17	Ave.	157	1.1	H	-0.91	28.26	54	25.74
2054.52	44.98	PK	90	2.0	V	-0.91	44.07	74	29.93
2054.52	28.93	Ave.	90	2.0	V	-0.91	28.02	54	25.98

For POE:

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)
59.443125	31.02	139.0	V	75.0	-20.1	40.00	8.98
62.993000	32.11	141.0	V	65.0	-20.3	40.00	7.89
375.013250	41.69	108.0	H	280.0	-10.6	46.00	4.31
500.011000	38.95	192.0	H	298.0	-5.2	46.00	7.05
625.027375	40.63	102.0	V	256.0	-1.6	46.00	5.37
875.046875	40.06	101.0	H	343.0	3.6	46.00	5.94

1 GHz – 6.5 GHz:

Frequency (MHz)	Measurement		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBµV/m)	FCC Part 15B	
	Reading (dBµV)	PK/QP/Ave.		Height (m)	Polar (H / V)			Limit (dBµV/m)	Margin (dB)
1142.34	43.11	PK	158	2.1	H	-5.43	37.68	74	36.32
1142.34	28.47	Ave.	158	2.1	H	-5.43	23.04	54	30.96
1142.34	42.98	PK	245	2.5	V	-5.43	37.55	74	36.45
1142.34	28.39	Ave.	245	2.5	V	-5.43	22.96	54	31.04
1785.10	45.45	PK	159	1.2	H	-2.05	43.40	74	30.60
1785.10	29.24	Ave.	159	1.2	H	-2.05	27.19	54	26.81
1785.10	45.13	PK	347	1.4	V	-2.05	43.08	74	30.92
1785.10	29.02	Ave.	347	1.4	V	-2.05	26.97	54	27.03

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

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