



FCC PART 15B, CLASS B

MEASUREMENT AND TEST REPORT

For

Crestron Electronics Inc

15 Volvo Drive, Rockleigh, New Jersey, 07647, USA

FCC ID: EROUC-P10

Report Type: Original Report	Product Type: Personal Communication Device
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Report Number:	RSZ210112002-00A
Report Date:	2021-03-05
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	Personal Communication Device
Tested Model	M202029001
Voltage Range	DC 44~57V from POE
Highest operating frequency	5GHz
Date of Test	2021-01-20 to 2021-02-04
Sample number	RSZ210112002-EM-S1(Assigned by BACL, Shenzhen)
Received date	2021-01-12
Sample/EUT Status	Good condition
Applicant	Crestron Electronics Inc
Applicant Address	15 Volvo Drive, Rockleigh, New Jersey, 07647, USA
Manufacturer	Crestron Electronics Inc
Manufacturer Address	15 Volvo Drive, Rockleigh, New Jersey, 07647, USA

Model	SKU Code	Description
M202029001	UC-P10-T-C-HS	10in Teams Video Phone with Handset and Camera
	UC-P10-T-C-HS-I	10in Teams Video Phone with Handset and Camera (International)
	UC-P10-T-HS	10in Teams Phone with Handset, No Camera
	UC-P10-T-HS-I	10in Teams Phone with Handset, No Camera (International)
	UC-P10-T-C	10in Teams Video Phone with Camera, No handset
	UC-P10-T-C-I	10in Teams Video Phone with Camera, No handset (International)
	UC-P10-T	10in Teams Phone No Handset, No Camera
	UC-P10-T-I	10in Teams Phone No Handset, No Camera (international)
Note: "International" is for world, without "International" is for US, with Sales Purpose		

Objective

This test report is 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.

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 expanded 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		$\pm 1.95\text{dB}$
Radiated Emissions	Below 1GHz	$\pm 4.75\text{dB}$
	Above 1GHz	$\pm 4.88\text{dB}$

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 Exercise Software

No exercise software was used.

Equipment Modifications

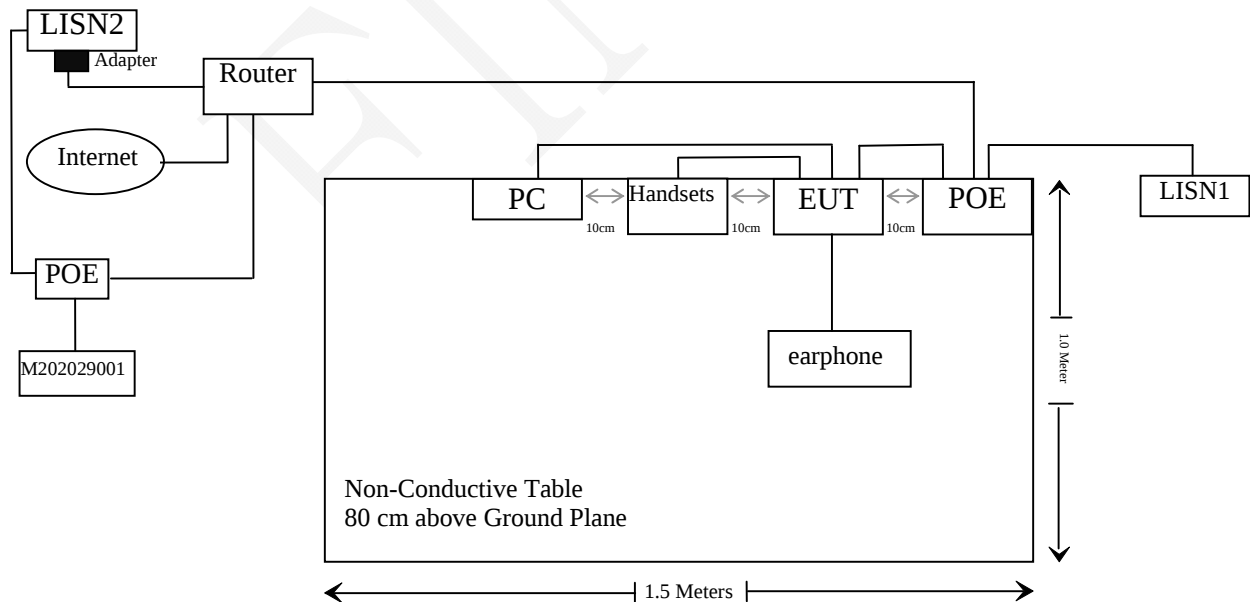
No modification was made to the EUT tested.

Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
GOSPELL	POE	G0720-480-050	G0720-480-050
HP	PC	Compaq CQ45	5CG33407QL
Dell	PC	Latitude E5430	11429208685
HIKVISION	Router	DS-3WR03-E	10021642429
Heweisun	Adapter	BN003-A05009	BN003-A05009
Crandstream	Personal Communication Device	M202029001	M202029001
Unknown	Earphone	001	001

External I/O Cable

Cable Description	Length (m)	From/Port	To
Unshielded detachable AC cable	1.0	LISN1	POE
Unshielded detachable Network cable	1.0	POE	EUT
Unshielded detachable Network cable	5.0	EUT	PC
Unshielded detachable handset cable	1.0	EUT	Handsets
Unshielded detachable Network cable	10.0	EUT	Router
Unshielded Un-detachable DC cable	1.2	Adapter	Router
Unshielded detachable Network cable	1.0	Internet	Router
Unshielded detachable Network cable	2.0	POE	Router
Unshielded detachable Network cable	1.0	POE	M202029001
Unshielded detachable AC cable	1.2	LISN2	POE
Unshielded detachable Network cable	1.0	POE	ISN
Unshielded detachable Network cable	1.0	ISN	EUT
Unshielded Un-detachable typC cable	1.2	EUT	earphone

Block Diagram of Test Setup

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	2020/08/04	2021/08/03
Rohde & Schwarz	LISN	ENV216	101613	2020/08/04	2021/08/03
Rohde & Schwarz	Transient Limitor	ESH3Z2	DE25985	2020/11/29	2021/11/28
Unknown	CE Cable	CE Cable	UF A210B-1-0720-504504	2020/11/29	2021/11/28
Rohde & Schwarz	CE Test software	EMC 32	V8.53.0	NCR	NCR
Radiated Emission Test					
R&S	EMI Test Receiver	ESR3	102455	2020/08/04	2021/08/03
Sonoma instrument	Pre-amplifier	310 N	186238	2020/08/04	2021/08/03
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2020/12/22	2023/12/21
Unknown	Cable 2	RF Cable 2	F-03-EM197	2020/11/29	2021/11/28
Unknown	Cable	Chamber Cable 1	F-03-EM236	2020/11/29	2021/11/28
Unknown	Cable	Chamber Cable 4	EC-007	2020/11/29	2021/11/28
Rohde & Schwarz	Auto test software	EMC 32	V9.10	NCR	NCR
Yijia	Temperature & Humidity Meter	TA218B	E0938	2020/09/30	2021/09/29
Rohde & Schwarz	Spectrum Analyzer	FSV40-N	102259	2020/08/04	2021/08/03
COM-POWER	Pre-amplifier	PA-122	181919	2020/11/29	2021/11/28
Sunol Sciences	Horn Antenna	3115	9107-3694	2021/01/15	2024/01/14
the electro-Mechanics Co	Horn Antenna	3116	9510-2270	2019/10/13	2022/10/12
Insulted Wire Inc.	RF Cable	SPS-2503-3150	02222010	2020/11/29	2021/11/28
Unknown	RF Cable	W1101-EQ1 OUT	F-19-EM005	2020/11/29	2021/11/28
Unknown	Signal Cable	RG-214	2	2020/11/29	2021/11/28

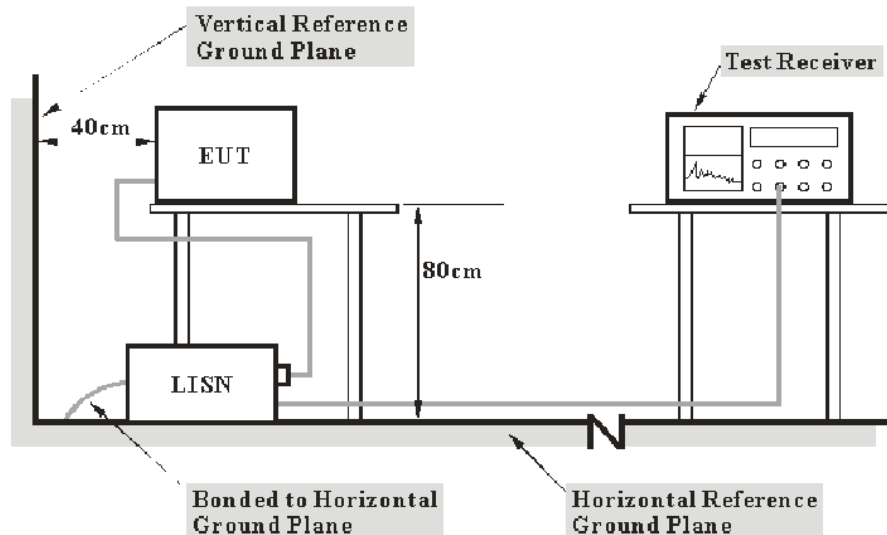
* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

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.

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 device 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 Data

Environmental Conditions

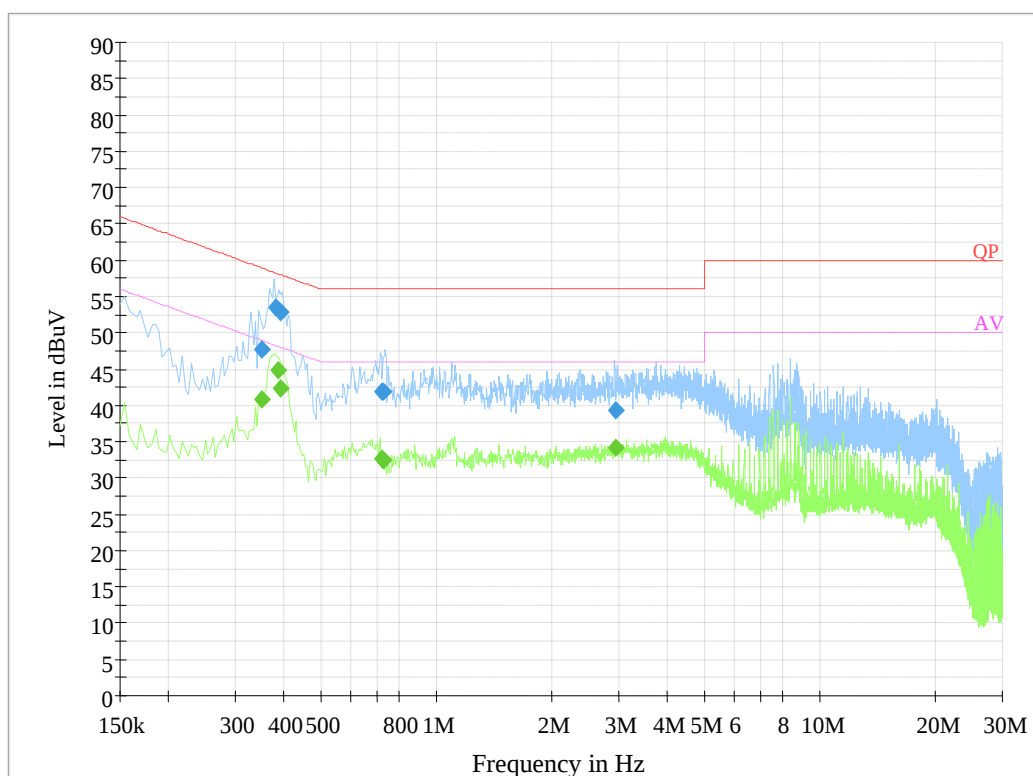
Temperature:	25 °C
Relative Humidity:	65 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2021-01-20.

EUT Operation Mode: video call

Note: worst case test on Combination Mode: M202029001 (UC-P10-T-C-HS)

AC 120V/60 Hz, Line

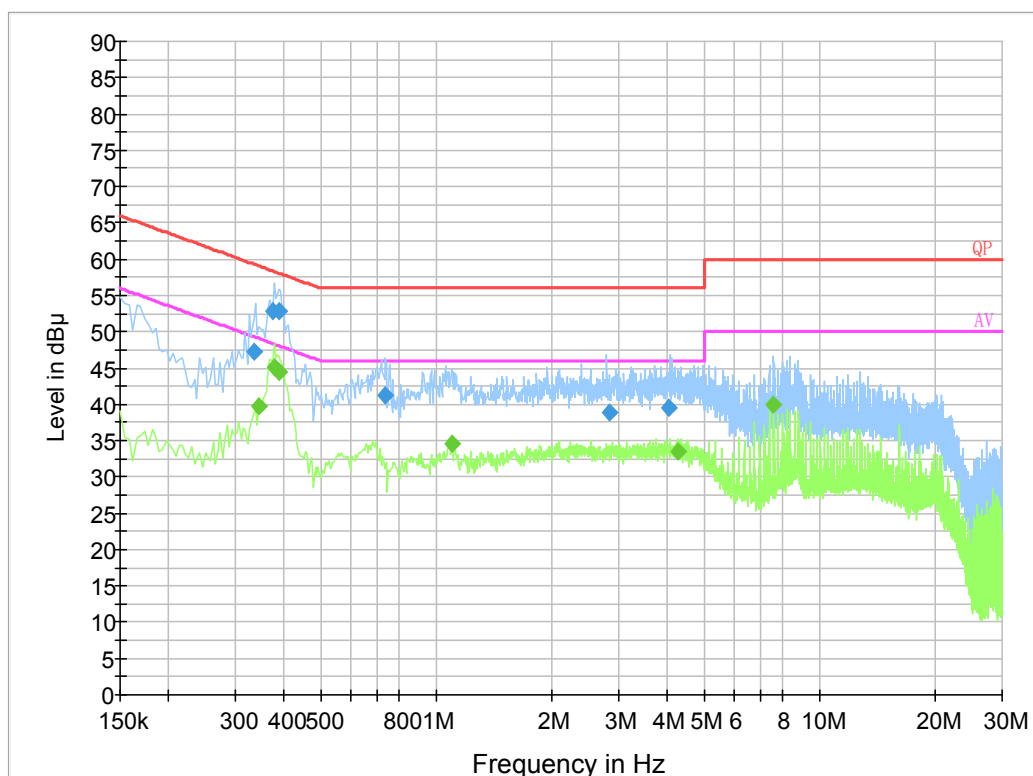


Final Result 1

Frequency (MHz)	QuasiPeak (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.351190	47.6	9.000	L1	19.9	11.3	58.9
0.383670	53.4	9.000	L1	19.9	4.8	58.2
0.392150	52.8	9.000	L1	19.9	5.2	58.0
0.723230	41.9	9.000	L1	19.8	14.1	56.0
0.726930	41.8	9.000	L1	19.8	14.2	56.0
2.934110	39.3	9.000	L1	19.9	16.7	56.0

Final Result 2

Frequency (MHz)	Average (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.351190	40.8	9.000	L1	19.9	8.1	48.9
0.383670	45.0	9.000	L1	19.9	3.2	48.2
0.392150	42.4	9.000	L1	19.9	5.6	48.0
0.723230	32.6	9.000	L1	19.8	13.4	46.0
0.726930	32.5	9.000	L1	19.8	13.5	46.0
2.934110	34.2	9.000	L1	19.9	11.8	46.0

AC 120V/60 Hz, Neutral:**Final Result 1**

Frequency (MHz)	QuasiPeak (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.336930	47.2	9.000	N	19.8	12.1	59.3
0.376330	52.8	9.000	N	19.8	5.6	58.4
0.388150	52.8	9.000	N	19.8	5.3	58.1
0.734930	41.1	9.000	N	19.8	14.9	56.0
2.835910	38.9	9.000	N	19.9	17.1	56.0
4.064650	39.4	9.000	N	19.9	16.6	56.0

Final Result 2

Frequency (MHz)	Average (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.346000	39.8	9.000	N	19.8	9.3	49.1
0.378000	45.2	9.000	N	19.8	3.1	48.3
0.390000	44.4	9.000	N	19.8	3.6	48.1
1.098000	34.7	9.000	N	19.8	11.3	46.0
4.282000	33.6	9.000	N	19.9	12.4	46.0
7.606000	40.0	9.000	N	19.9	10.0	50.0

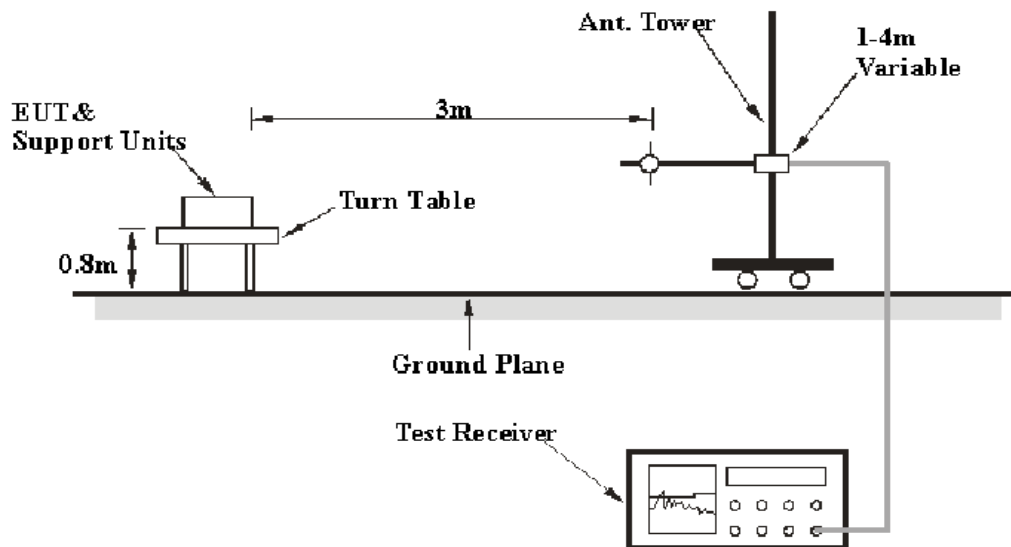
FCC §15.109 - RADIATED SPURIOUS EMISSIONS

Applicable Standard

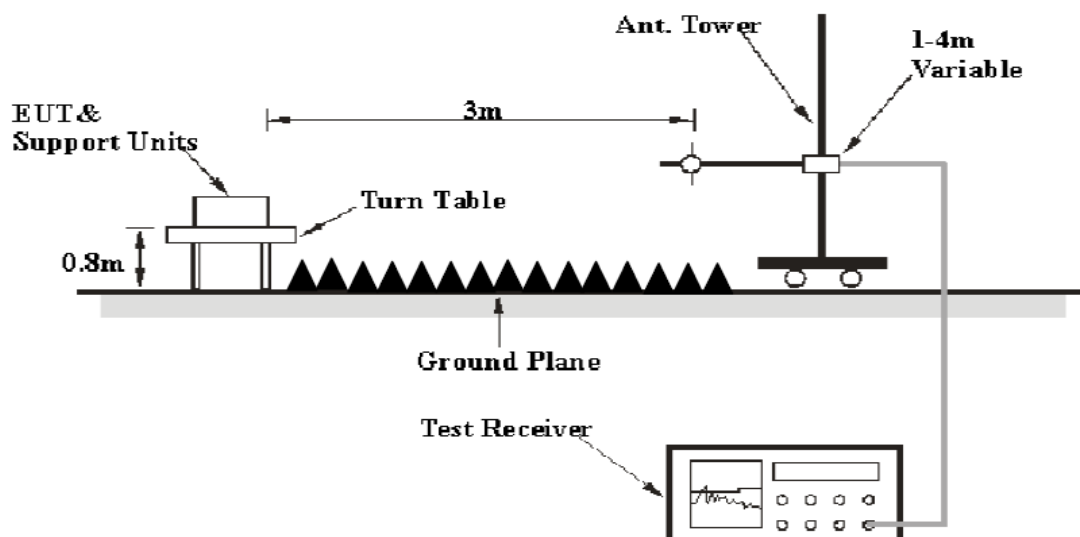
FCC §15.109

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 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

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:

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

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 Data

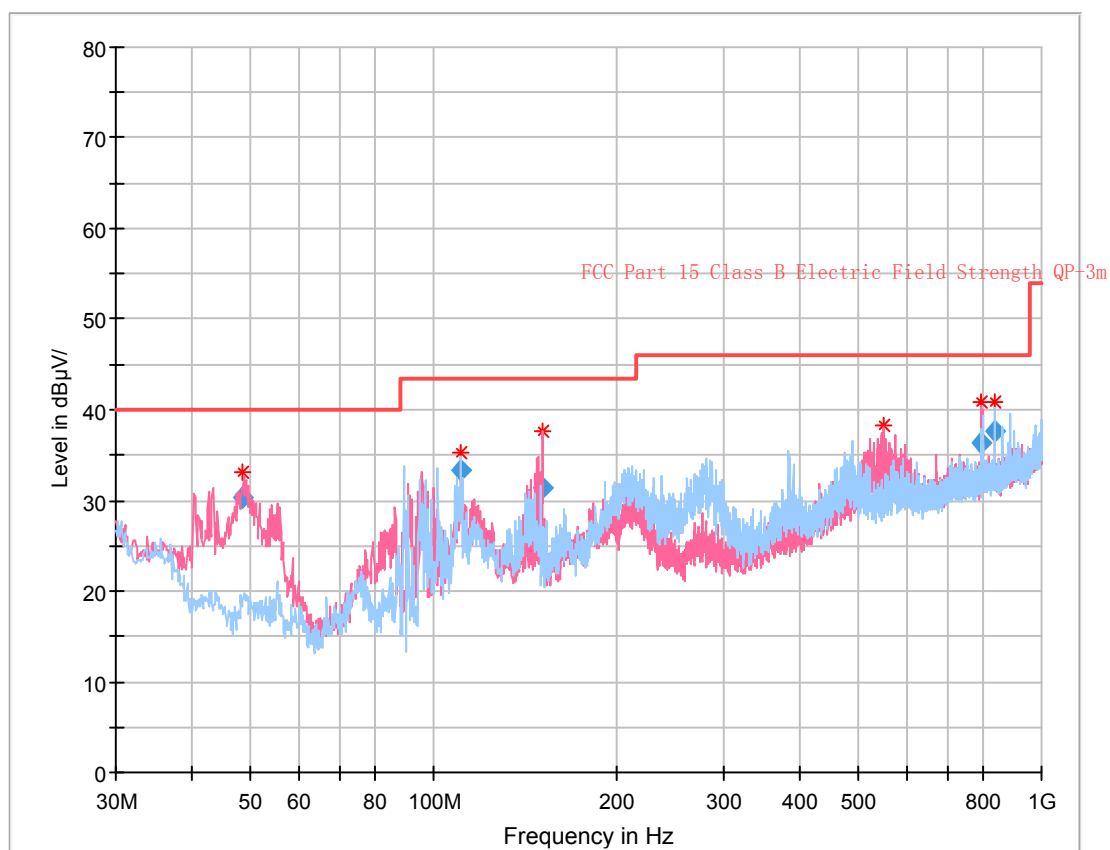
Environmental Conditions

Temperature:	20.3~24 °C
Relative Humidity:	41~56 %
ATM Pressure:	100.9~101.2 kPa

The testing was performed by Kilroy Deng and Holland Yang from 2021-02-03 to 2021-02-04 for below 1GHz and Leven Gan on 2021-01-20 for above 1GHz.

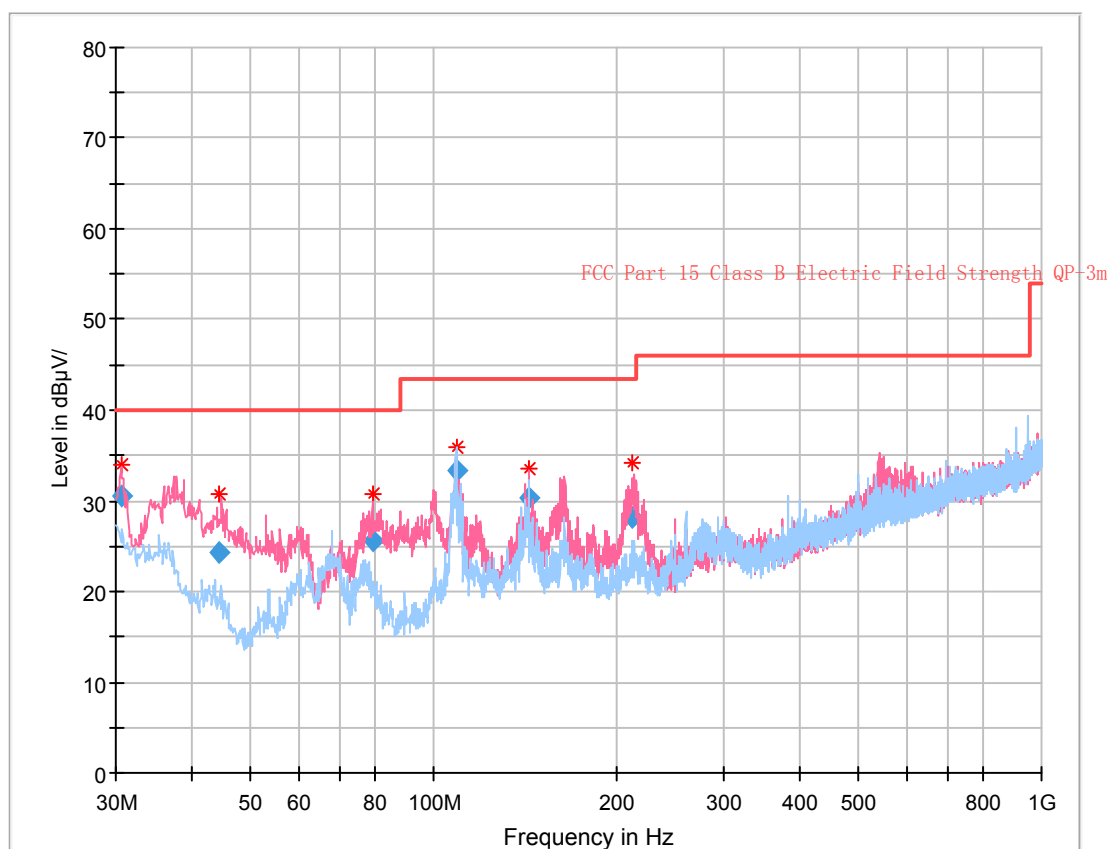
EUT Operation Mode: video call, calling

Test Combination Mode 1: M202029001 (UC-P10-T-C-HS)

30 MHz – 1 GHz:**Final Result**

Frequency (MHz)	QuasiPeak (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
48.525250	30.39	40.00	9.61	116.0	V	13.0	-9.8
110.802625	33.25	43.50	10.25	270.0	H	185.0	-5.1
150.979125	31.48	43.50	12.02	105.0	V	223.0	-5.4
550.426875	30.45	46.00	15.55	116.0	V	214.0	1.4
796.673500	36.29	46.00	9.71	106.0	V	43.0	5.5
839.967625	37.67	46.00	8.33	113.0	H	118.0	6.0

Test Combination Mode 2: M202029001 (UC-P10-T-HS)

30 MHz – 1 GHz:**Final Result**

Frequency (MHz)	QuasiPeak (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.603625	30.47	40.00	9.53	116.0	V	118.0	2.0
44.383750	24.38	40.00	15.62	119.0	V	34.0	-7.4
79.273125	25.49	40.00	14.51	110.0	V	205.0	-10.7
108.801125	33.30	43.50	10.20	290.0	H	193.0	-5.4
143.326500	30.22	43.50	13.28	269.0	V	171.0	-4.9
212.427250	28.20	43.50	15.30	110.0	V	293.0	-5.3

1-30GHz: (worst case test on model Combination Mode: M202029001 (UC-P10-T-C-HS))

Frequency (MHz)	Measurement		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dB μ V/m)	FCC Part 15B	
	Reading (dB μ V)	PK/QP/Ave.		Height (m)	Polar (H / V)			Limit (dB μ V/m)	Margin (dB)
1582.51	47.92	PK	172	1.3	H	-2.50	45.42	74	28.58
1582.51	31.45	Ave.	172	1.3	H	-2.50	28.95	54	25.05
1582.51	45.89	PK	52	1.4	V	-2.50	43.39	74	30.61
1582.51	31.38	Ave.	52	1.4	V	-2.50	28.88	54	25.12
2048.54	44.01	PK	243	1.4	H	-0.75	43.26	74	30.74
2048.54	29.74	Ave.	243	1.4	H	-0.75	28.99	54	25.01
2048.54	44.85	PK	215	1.3	V	-0.75	44.10	74	29.90
2048.54	29.77	Ave.	215	1.3	V	-0.75	29.02	54	24.98

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