ACCREDITED
TESTING LABORATORY
CERTIFICATE # 4821.01

Bay Area Compliance Labs Corp.

FCC PART 15.407

TEST REPORT

For

GL Technologies (Hong Kong) Limited

FLAT/RM 203 2/F BUILDING 19W 19 SCIENCE PARK WEST AVENUE SHATIN NT,
Shatin, Hong Kong

FCC ID: 2AFIW-AP1300

Report Type:	**Product Type:**
Original Report	AC1300 Wireless Access Point

Report Number: RDG200610003-00BA1

Report Date: 2020-06-30

Jimmy Xiao

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

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 4
TEST FACILITY 4
SYSTEM TEST CONFIGURATION **5**
DESCRIPTION OF TEST CONFIGURATION 5
EUT EXERCISE SOFTWARE 6
EQUIPMENT MODIFICATIONS 7
SUPPORT EQUIPMENT LIST AND DETAILS 7
EXTERNAL I/O CABLE 7
BLOCK DIAGRAM OF TEST SETUP 8
SUMMARY OF TEST RESULTS **9**
TEST EQUIPMENT LIST **10**
FCC §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE) **11**
APPLICABLE STANDARD 11
RESULT 11
FCC §15.203 – ANTENNA REQUIREMENT **13**
APPLICABLE STANDARD 13
ANTENNA CONNECTOR CONSTRUCTION 13
FCC §15.407 (b) (6) §15.207 (a) – CONDUCTED EMISSIONS **14**
APPLICABLE STANDARD 14
EUT SETUP 14
EMI TEST RECEIVER SETUP 14
TEST PROCEDURE 14
TEST RESULTS SUMMARY 15
TEST DATA 15
§15.205 & §15.209 & §15.407(B) (1), (4), (6), (7) – UNDESIRABLE EMISSION **22**
APPLICABLE STANDARD 22
EUT SETUP 22
EMI TEST RECEIVER & SPECTRUM ANALYZER SETUP 23
TEST PROCEDURE 23
CORRECTED AMPLITUDE & MARGIN CALCULATION 23
TEST RESULTS SUMMARY 23
TEST DATA 23

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	AC1300 Wireless Access Point
Tested Model	GL-AP1300
Frequency Range	5G Wi-Fi: 5150-5250 MHz; 5725-5850 MHz
Maximum conducted output power	Wi-Fi: 5150-5250 MHz: 18.9dBm (802.11a), 19.7dBm(802.11n20/ac20) 20.0dBm(802.11n40/ac40), 19.7dBm(802.11 ac80) 5725-5850 MHz: 19.7dBm (802.11a), 19.6dBm(802.11n20/ac20) 20.0dBm(802.11n40/ac40), 19.7dBm(802.11 ac80)
Modulation Technique	OFDM
Antenna Specification	5.55dBi(5150-5250 MHz) 4.52dBi(5725-5850 MHz)
Voltage Range	DC 12V from adapter or DC48V from POE
Date of Test	2020-06-20
Sample serial number	RDG200610003-RFA1-S1 (Assigned by BACL, Shenzhen)
Received date	2020-06-10
Sample/EUT Status	Good condition
Adapter 1 information	Model: ICP30A-120-2000 Input: AC 100-240V, 50/60Hz, 0.8A Output: DC 12.0V, 2.0A
Adapter 2 information	Model:KA2401A-1202000DE Input: AC 100-240V, 50/60Hz, 0.65A Output: DC 12.0V, 2.0A

Objective

This type approval report is prepared on behalf of *GL Technologies (Hong Kong) Limited* in accordance with Part 2-Subpart J, Part 15-Subparts A and E of the Federal Communication Commissions rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart E, section 15.203, 15.205, 15.207, 15.209 and 15.407 rules.

Related Submittal(s)/Grant(s)

FCC Part 15.247 DTS submissions with FCC ID: 2AFIW-AP1300.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices. And KDB789033 D02 General U-NII Test Procedures New Rules v02r01.

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
Occupied Channel Bandwidth		±5%
RF Output Power with Power meter		±0.73dB
RF conducted test with spectrum		±1.6dB
AC Power Lines Conducted Emissions		±1.95dB
Emissions, Radiated	Below 1GHz	±4.75dB
	Above 1GHz	±4.88dB
Temperature		±1℃
Humidity		±6%
Supply voltages		±0.4%

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 device supports Beamforming and non-beamforming mode for 5G Wi-Fi. And these two modes share the same power declared by the applicant.

The EUT has two antennas for 5G Wi-Fi, it can operate in 802.11a/n20/n40/ac20/ac40/ac80 modes.

As the 802.11ac20/ac40 are identical with 802.11n20/n40 modes, so only 802.11n20/n40 modes were tested.

For 5150-5250MHz Band, 7 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	44	5220
38	5190	46	5230
40	5200	48	5240
42	5210	/	/

For 802.11a, 802.11n20 mode: channel 36, 40, 48 were tested; For 802.11n40 mode: channel 38, 46 were tested; For 802.11ac80 mode, channel 42 was tested.

For 5725-5850MHz Band, 8 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	157	5785
151	5755	159	5795
153	5765	161	5805
155	5775	165	5825

For 802.11a, 802.11n20 mode, channel 149, 157, 165 were tested; For 802.11n40 mode, channel 151, 159 were tested; For 802.11ac80 mode, channel 155 was tested.

EUT Exercise Software

"QRCT" software was used to test for Wi-Fi Mode.

Test frequencies and power level were configured as below:

U-NII	Mode	Frequency (MHz)	Rate (Mbps)	Power Level
5150 – 5250MHz	802.11 a	5180	6	18
		5200	6	18
		5240	6	18
	802.11 n20	5180	MCS0	18
		5200	MCS0	19
		5240	MCS0	19
	802.11 n40	5190	MCS0	17
		5230	MCS0	19
	802.11 ac80	5210	MCS0	17
5725 – 5850MHz	802.11 a	5745	6	20
		5785	6	20
		5825	6	20
	802.11 n20	5745	MCS0	20
		5785	MCS0	20
		5825	MCS0	20
	802.11 n40	5755	MCS0	20
		5795	MCS0	20
	802.11 ac80	5775	MCS0	20

Note 1: The two antenna ports share the same power level.
Note 2: The worse-case data rates are determined to be as follows for each mode based upon investigations by measuring the output power and PSD across all data rated bandwidths, and modulations.
The device supports SISO and MIMO in all modes, per pretest, the MIMO mode was the worst mode for all the modes.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

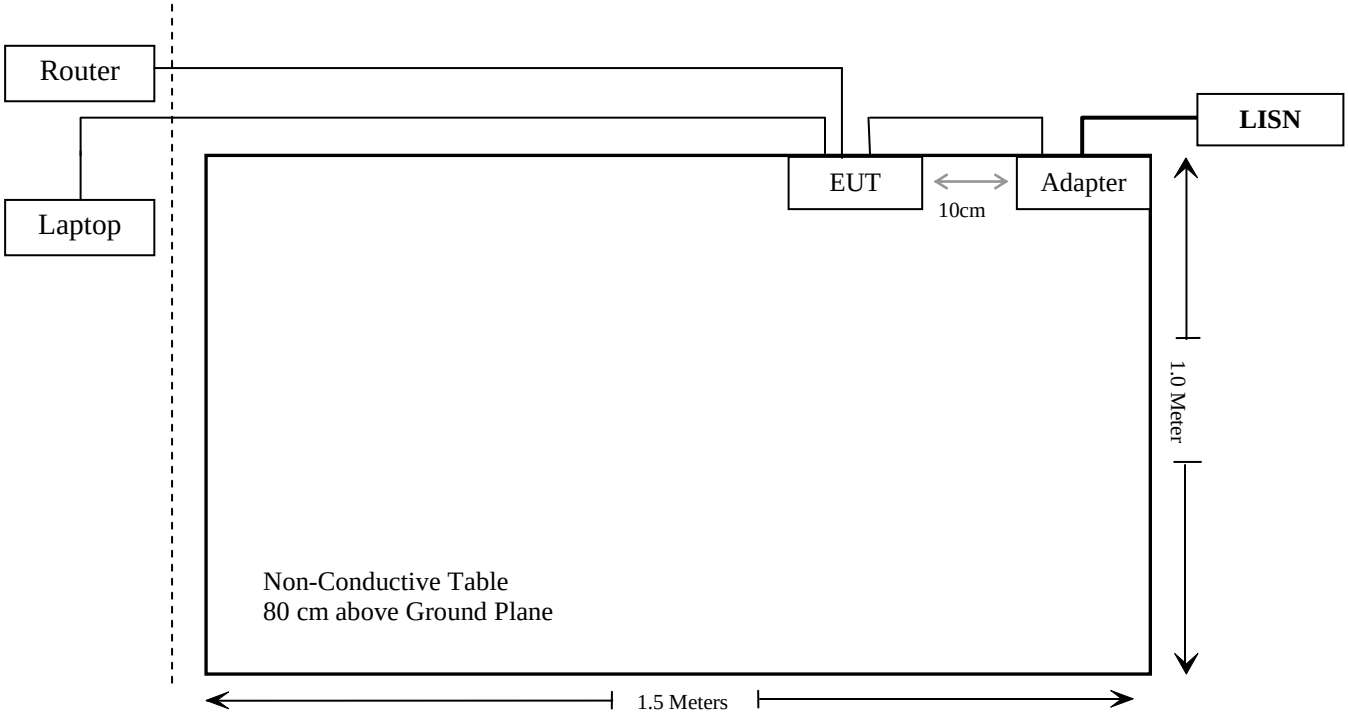
Manufacturer	Description	Model	Serial Number
GOSPELL	POE	G0720-480-050	G0720-480-050
Dell	PC	Latitude E5430	11429208685
Sagemcom	Wireless Router	1704N	3c81d839027c

External I/O Cable

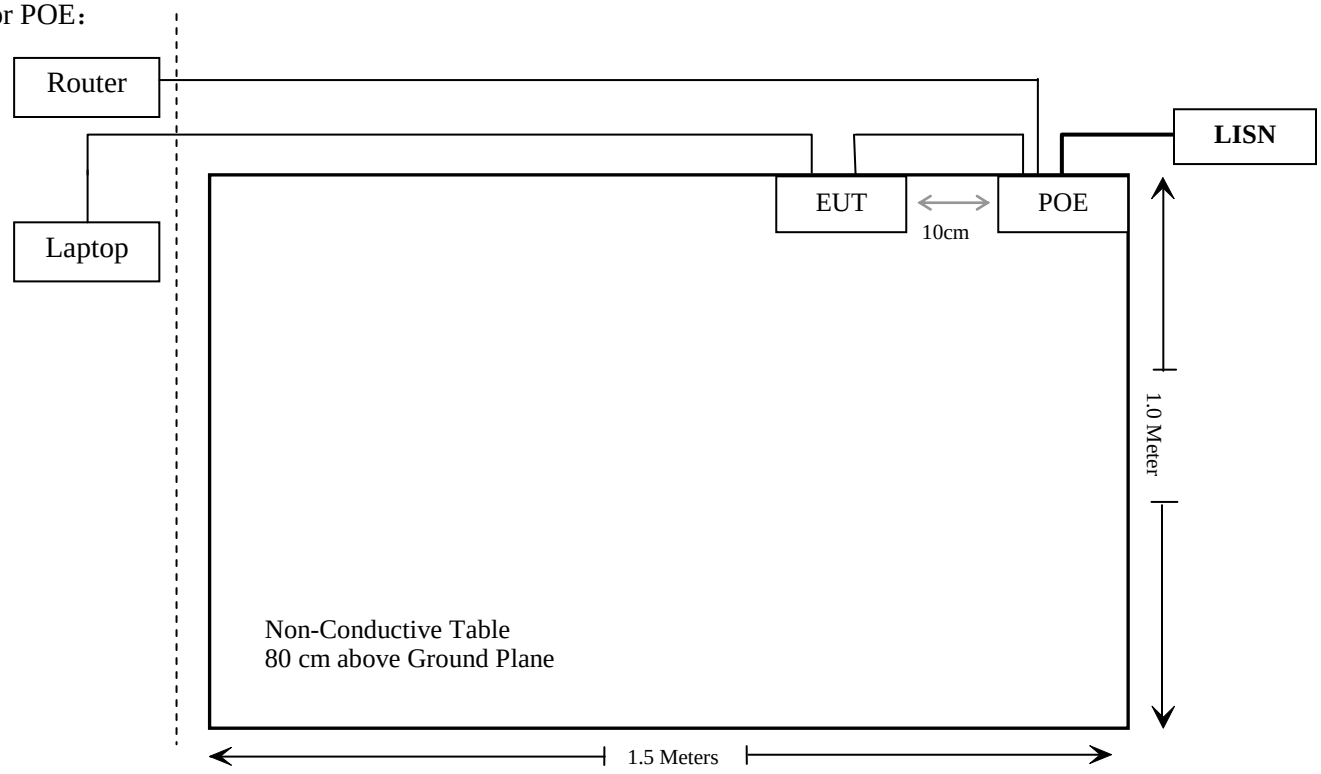
Cable Description	Length (m)	From/Port	To
Un-shielded Un-detachable DC Cable	1.0	EUT	Adapter
Un-shielded detachable AC Cable	1.0	LISN	POE
Un-shielded detachable RJ45 Cable	1.0	EUT	POE
Un-shielded detachable RJ45 Cable	10	EUT	PC
Un-shielded detachable RJ45 Cable	10	EUT	Router
Un-shielded detachable RJ45 Cable	10	POE	Router

Block Diagram of Test Setup

For conducted emissions
For Adapter：



For POE：



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1307 (b) (1) & §2.1091	Maximum Permissible Exposure(MPE)	Compliance
§15.203	Antenna Requirement	Compliance
§15.407(b)(6)& §15.207(a)	Conducted Emissions	Compliance
§15.205& §15.209 & §15.407(b) (1), (4),(7)	Undesirable Emission& Restricted Bands	Compliance
§15.407(a) (1), (5),(e)	26 dB Emission Bandwidth & 6dB Bandwidth	Compliance*
§15.407(a)(1),(3)	Conducted Transmitter Output Power	Compliance*
§15.407 (a)(1),(3)	Power Spectral Density	Compliance*

Compliant*: The EUT is identical with the device (model: GL-AP1300LTEC4, FCC ID: 2AFIW-AP1300C4), the only difference is that the device (model: GL-AP1300LTEC4, FCC ID: 2AFIW-AP1300C4) removed the LTE modular and LTE antennas. The rest are all same. So the "spurious emission below 1GHz" and "AC line conducted emission" were retest. Please refer to the report RDG200416004-00B for the data of other test items.

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Conducted Emissions Test					
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2019/7/9	2020/7/8
Rohde & Schwarz	LISN	ENV216	101613	2020/1/22	2021/1/21
Rohde & Schwarz	Transient Limitor	ESH3Z2	DE25985	2019/11/29	2020/11/28
Unknown	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	2020/4/20	2021/4/20
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2017/12/22	2020/12/21
Unknown	Cable 2	RF Cable 2	F-03-EM197	2019/11/29	2020/11/28
Unknown	Cable	Chamber Cable 1	F-03-EM236	2019/11/29	2020/11/28
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 §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart 2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

Limits for General Population/Uncontrolled Exposure

Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (V/m)**	**Magnetic Field Strength (A/m)**	**Power Density (mW/cm^2)**	**Averaging Time (Minutes)**
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*($180/f^2$)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

f = frequency in MHz
* = Plane-wave equivalent power density

Result

Calculated Formulary:

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

S = power density (in appropriate units, e.g. mW/cm2)
P = power input to the antenna (in appropriate units, e.g., mW).
G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

For simultaneously transmit system, the calculated power density should comply with:

$$\sum_i \frac{S_i}{S_{Limit,i}} \le 1$$

Mode	Frequency (MHz)	Antenna Gain		Max Tune Up Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm^2)	MPE Limit (mW/cm^2)
		(dBi)	(numeric)	(dBm)	(mW)			
2.4G Wi-Fi	2412-2472	6.93	4.93	21.0	125.89	20	0.124	1.0
BLE	2402-2480	-0.042	0.99	9.0	7.94	20	0.002	1.0
5G Wi-Fi	5150-5250	8.56	7.18	20.0	100.0	20	0.143	1.0
5G Wi-Fi	5725-5850	7.53	5.66	20.0	100.0	20	0.113	1.0

Note: 1. the tune up conducted power was declared by the applicant
2. the BLE, 2.4G Wi-Fi functions can transmit at the same time with 5G Wi-Fi.
3. For the Wi-Fi, as it can support the beam-forming function, so the antenna gain should add the 10lg2.

So the worst simultaneous transmitting consideration:

The ratio=$MPE_{2.4GWi\text{-}Fi}$/limit + $MPE_{5GWi\text{-}Fi}$/limit + MPE_{BLE}/limit =0.124/1.0+0.143/1.0+0.002/1.0 =0.269＜1.0

so simultaneous exposure is not required.

To maintain compliance with the FCC's RF exposure guidelines, place the equipment at least 20cm from nearby persons.

Result: Compliance

FCC §15.203 – 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 15.407 (a), if the transmitting antennas of directional gain greater than 6dBi are used, the transmit power and power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Antenna Connector Construction

The EUT has two internal antennas for Wi-Fi which were permanently attached. The antenna gain is 5.55dBi (5150-5250MHz) and 4.52dBi (5745-5850MHz), fulfill the requirement of this section. Please refer to the EUT photos.

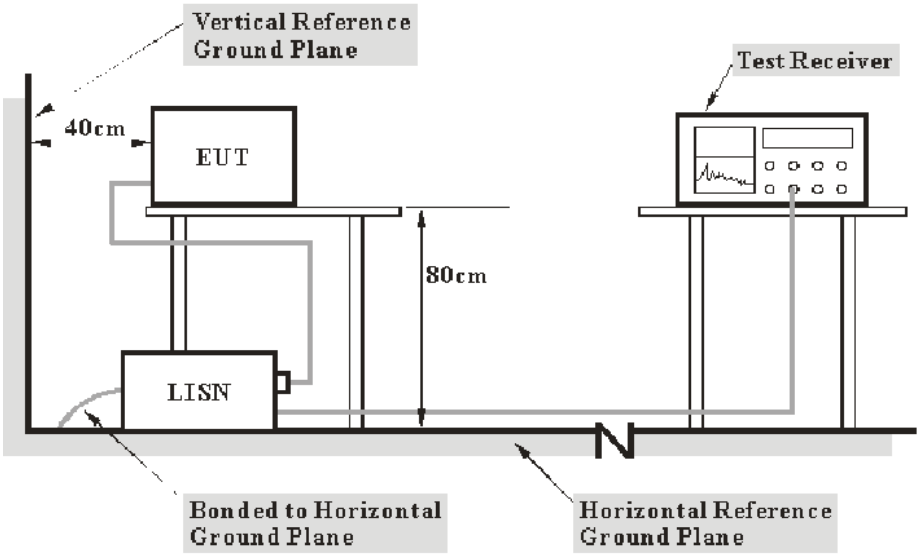
Result: Compliance.

FCC §15.407 (b) (6) §15.207 (a) – CONDUCTED EMISSIONS

Applicable Standard

FCC §15.207, §15.407(b) (6)

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 setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

The adapter was connected to a 120 VAC/60 Hz power source.

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 adapter was connected to the 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.

Test Results Summary

According to the EUT complied with the FCC Part 15.207.

Test Data

Environmental Conditions

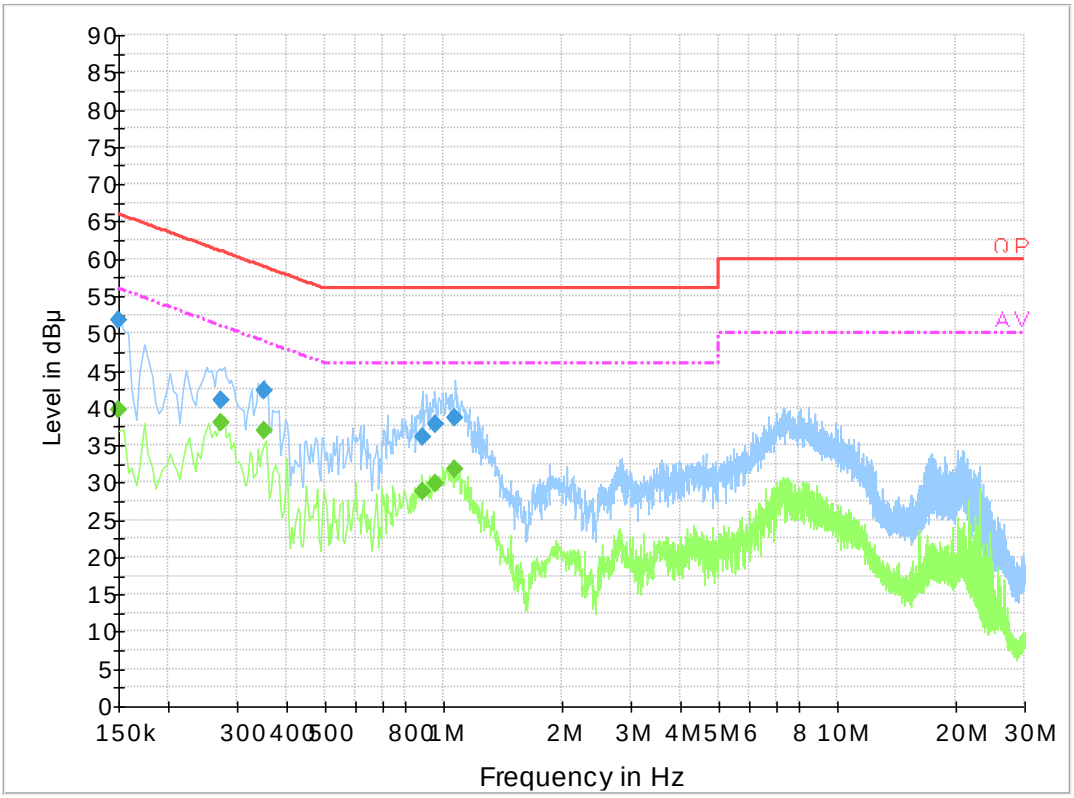
Temperature:	25 ℃
Relative Humidity:	65 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2020-06-20.

EUT operation mode: Transmitting (worst case is 802.11n40 mode 5230 MHz)

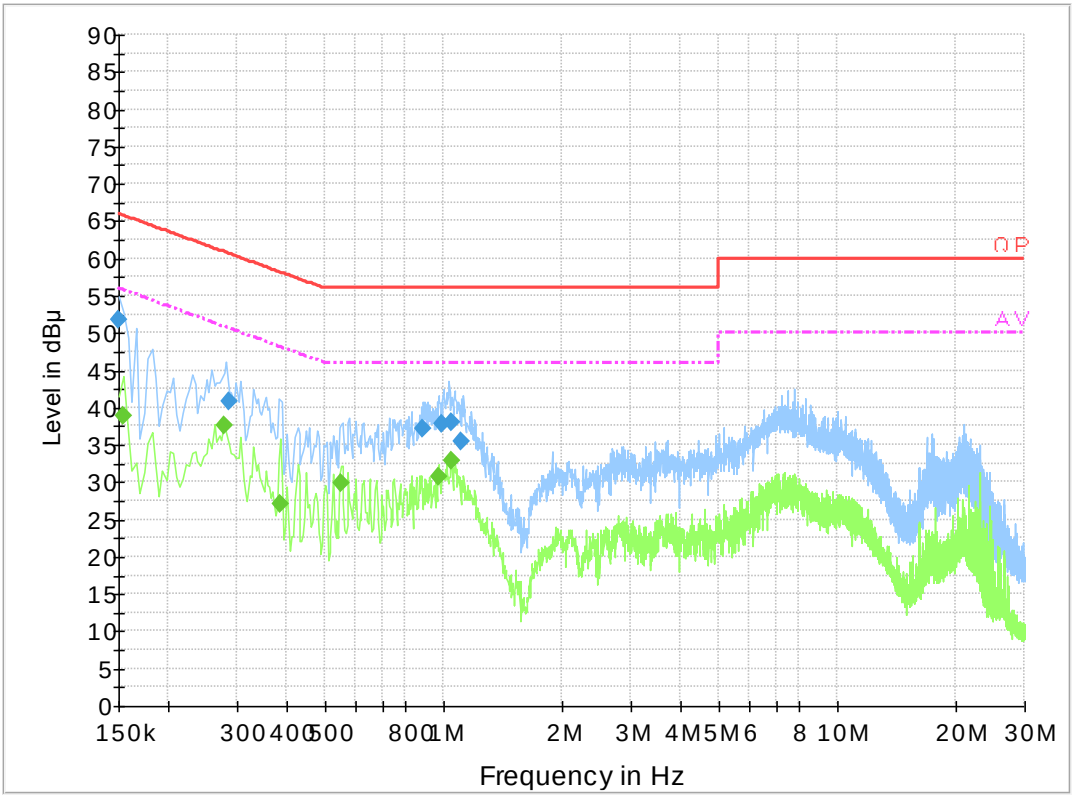
For Adapter 1

AC 120V/60 Hz, Line



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
0.150000	51.8	19.8	66.0	14.2	QP
0.273500	41.0	19.8	61.0	20.0	QP
0.352750	42.3	19.9	58.9	16.6	QP
0.888710	36.2	19.8	56.0	19.8	QP
0.959750	37.9	19.8	56.0	18.1	QP
1.069890	38.8	19.9	56.0	17.2	QP
0.150000	39.8	19.8	56.0	16.2	Ave.
0.273500	38.0	19.8	51.0	13.0	Ave.
0.352750	37.0	19.9	48.9	11.9	Ave.
0.888710	28.7	19.8	46.0	17.3	Ave.
0.959750	29.9	19.8	46.0	16.1	Ave.
1.069890	31.8	19.9	46.0	14.2	Ave.

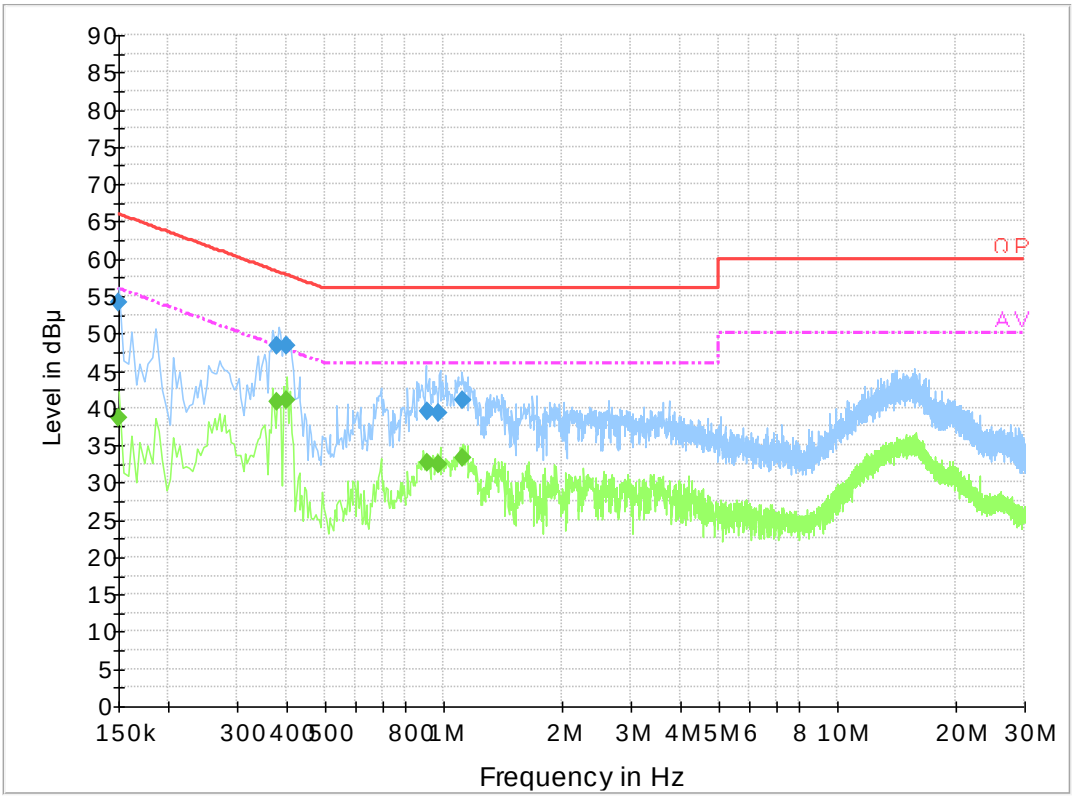
AC 120V/60 Hz, Neutral



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
0.150000	51.9	19.8	66.0	14.2	QP
0.286500	40.8	19.7	60.6	19.8	QP
0.884530	37.2	19.7	56.0	18.8	QP
0.994970	37.8	19.8	56.0	18.2	QP
1.046490	38.0	19.8	56.0	18.0	QP
1.113110	35.5	19.8	56.0	20.5	QP
0.154000	38.9	19.8	55.8	16.8	Ave.
0.278000	37.6	19.7	50.9	13.2	Ave.
0.386000	27.0	19.8	48.1	21.1	Ave.
0.550000	29.9	19.8	46.0	16.1	Ave.
0.974000	30.8	19.8	46.0	15.2	Ave.
1.050000	32.9	19.8	46.0	13.1	Ave.

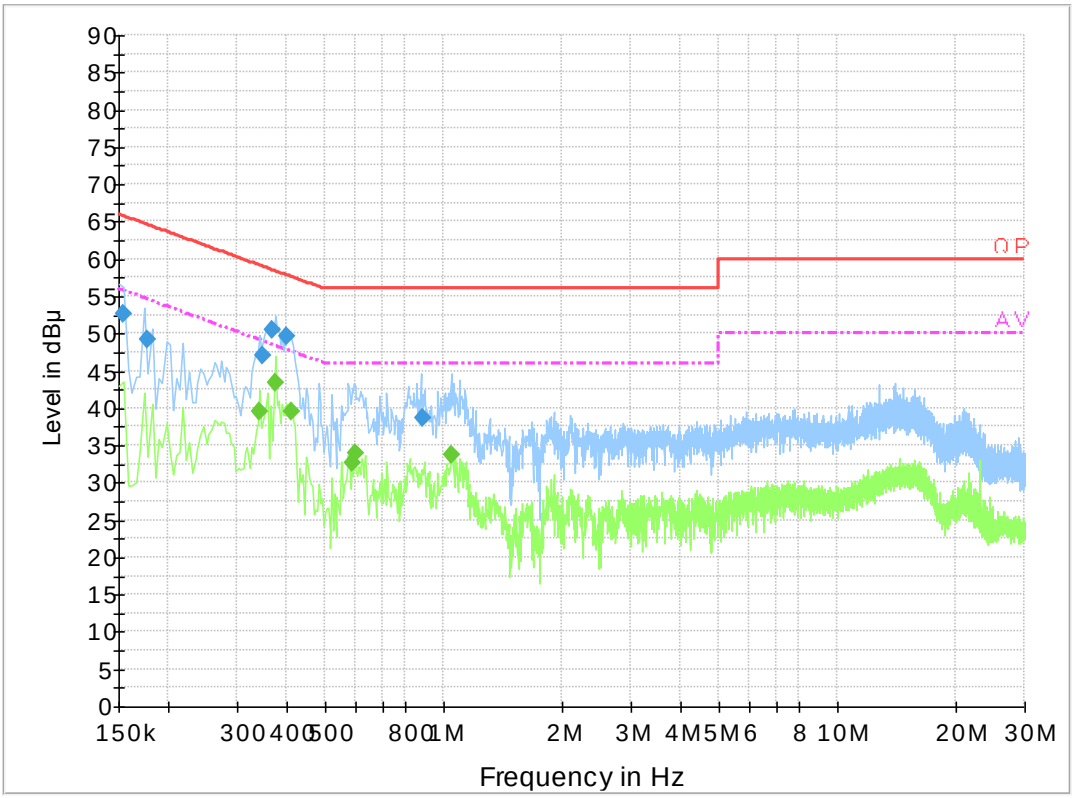
For Adapter 2

AC 120V/60 Hz, Line



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
0.150000	54.1	19.8	66.0	11.9	QP
0.380270	48.3	19.9	58.3	10.0	QP
0.399970	48.4	19.9	57.9	9.4	QP
0.912470	39.6	19.8	56.0	16.4	QP
0.979270	39.4	19.9	56.0	16.6	QP
1.121290	41.1	19.8	56.0	14.9	QP
0.150000	38.7	19.8	56.0	17.3	Ave.
0.380270	40.9	19.9	48.3	7.4	Ave.
0.399970	41.0	19.9	47.9	6.9	Ave.
0.912470	32.7	19.8	46.0	13.3	Ave.
0.979270	32.4	19.9	46.0	13.6	Ave.
1.121290	33.3	19.8	46.0	12.7	Ave.

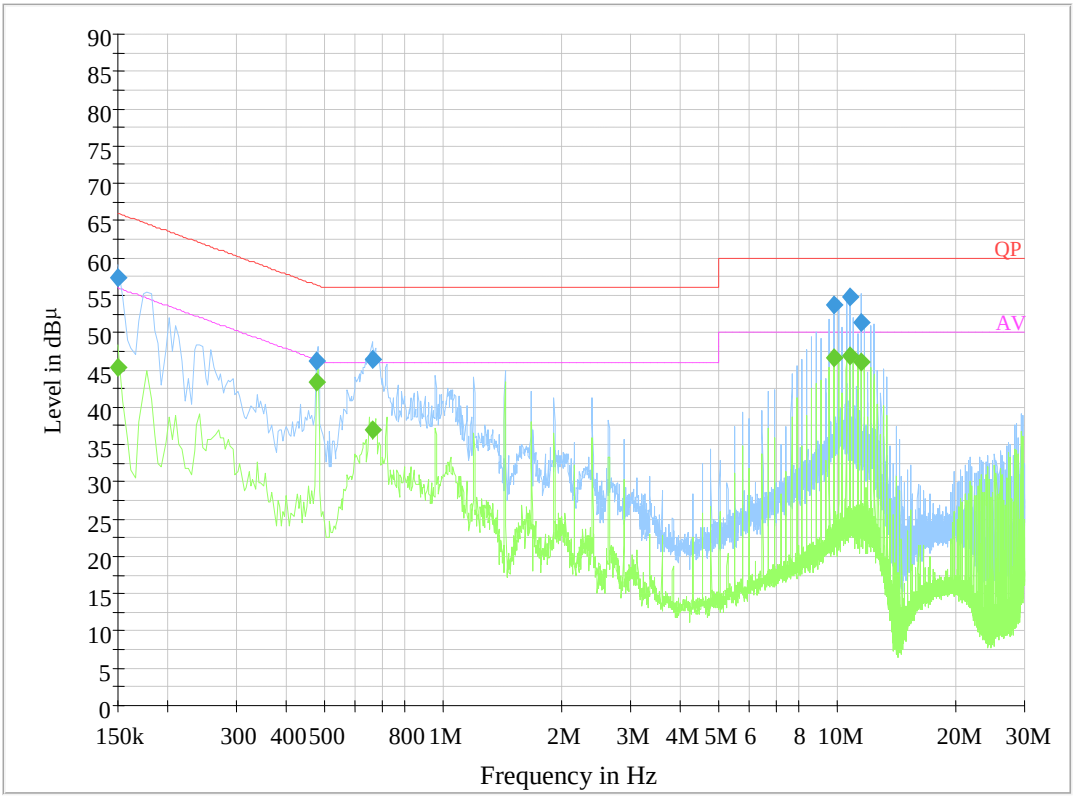
AC 120V/60 Hz, Neutral



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
0.154500	52.6	19.8	65.8	13.2	QP
0.177500	49.1	19.8	64.6	15.5	QP
0.348750	47.1	19.9	59.0	11.9	QP
0.368390	50.5	19.9	58.5	8.0	QP
0.399910	49.6	19.8	57.9	8.2	QP
0.891170	38.6	19.7	56.0	17.4	QP
0.342000	39.6	19.8	49.2	9.5	Ave.
0.374000	43.3	19.8	48.4	5.1	Ave.
0.414000	39.5	19.8	47.6	8.1	Ave.
0.586000	32.6	19.8	46.0	13.4	Ave.
0.598000	34.0	19.8	46.0	12.0	Ave.
1.050000	33.7	19.8	46.0	12.3	Ave.

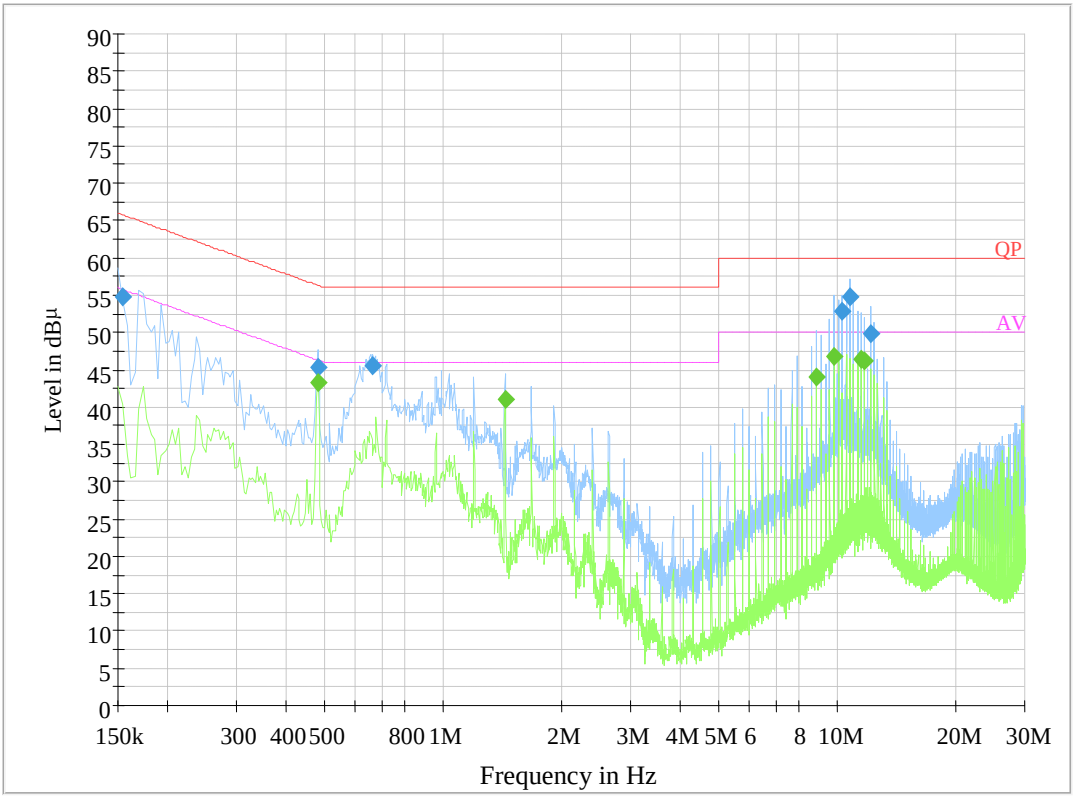
For POE:

AC 120V/60 Hz, Line



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
0.150000	57.4	19.8	66.0	8.6	QP
0.478770	46.3	19.8	56.4	10.1	QP
0.664070	46.4	19.8	56.0	9.6	QP
9.850250	53.8	20.0	60.0	6.2	QP
10.811790	54.8	20.0	60.0	5.2	QP
11.532990	51.3	20.0	60.0	8.7	QP
0.150000	45.3	19.8	56.0	10.7	Ave.
0.478770	43.2	19.8	46.4	3.2	Ave.
0.664070	36.9	19.8	46.0	9.1	Ave.
9.850250	46.6	20.0	50.0	3.4	Ave.
10.811790	46.9	20.0	50.0	3.1	Ave.
11.532990	45.8	20.0	50.0	4.2	Ave.

AC 120V/60 Hz, Neutral



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
0.154000	54.8	19.8	65.8	11.0	QP
0.482770	45.2	19.8	56.3	11.0	QP
0.664010	45.5	19.8	56.0	10.5	QP
10.330930	52.9	20.0	60.0	7.1	QP
10.811850	54.9	20.0	60.0	5.1	QP
12.254130	49.9	20.0	60.0	10.1	QP
0.482000	43.1	19.8	46.3	3.2	Ave.
1.442000	41.1	19.8	46.0	4.9	Ave.
8.890000	44.1	19.9	50.0	5.9	Ave.
9.850000	46.9	20.0	50.0	3.1	Ave.
11.534000	46.2	20.0	50.0	3.8	Ave.
11.774000	45.9	20.0	50.0	4.1	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

§15.205 & §15.209 & §15.407(B) (1), (4), (6), (7) – UNDESIRABLE EMISSION

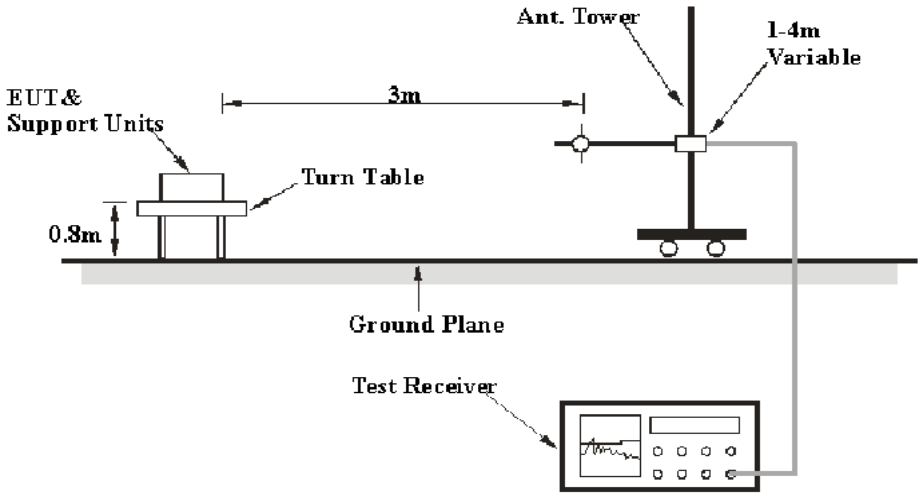
Applicable Standard

FCC §15.407 (b) (1), (4), (6), (7); §15.209; §15.205;

(b) Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:
(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(4) For transmitters operating in the 5.725-5.85 GHz band:
(i) All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.
Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.

EUT Setup

Below 1 GHz:



The radiated emission tests were performed in the 3 meters test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209, and FCC 15.247 limits.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 1 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were 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

Test Procedure

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

Data was recorded in Quasi-peak detection mode for frequency range of 30 MHz-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 7dB means the emission is 7dB 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 Title 47, Part 15, Subpart E, section 15.205, 15.209 and 15.407 rules.

Test Data

Environmental Conditions

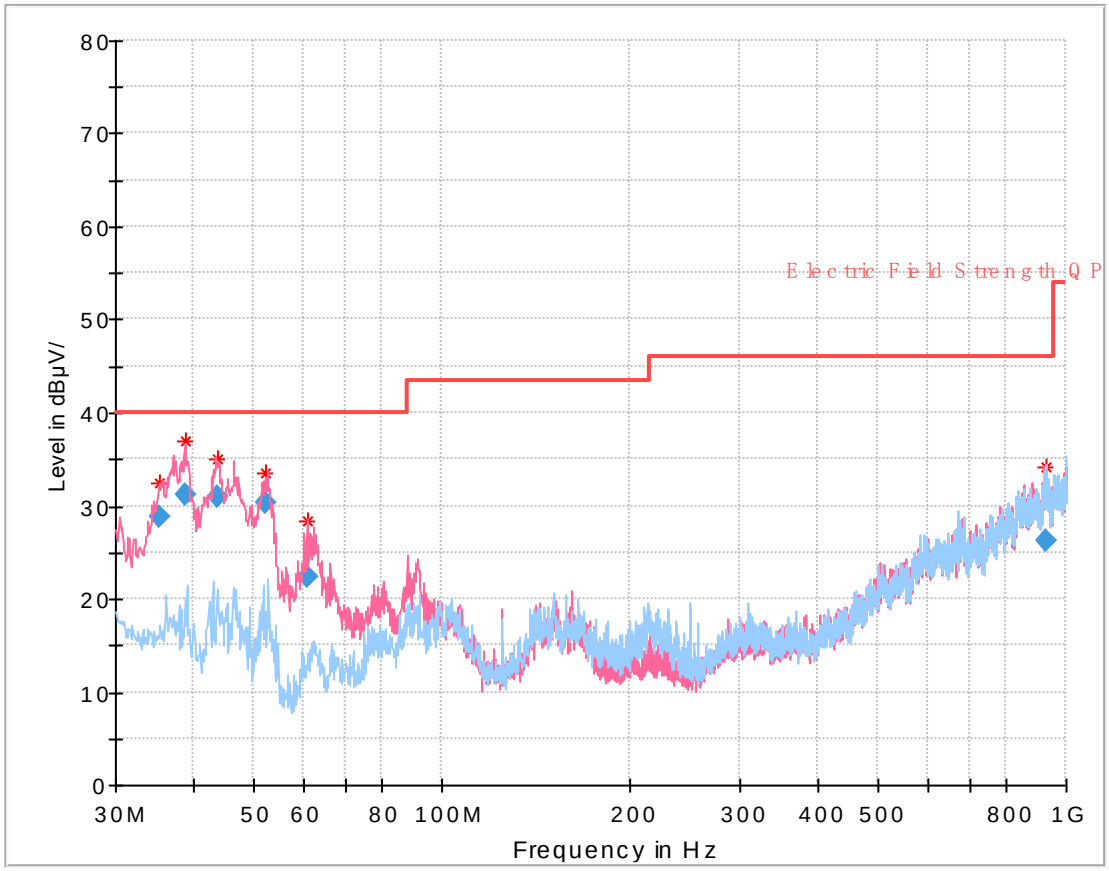
Temperature:	25 ℃
Relative Humidity:	60%
ATM Pressure:	101.0 kPa

The testing was performed by Holland Yang on 2020-06-20.

EUT operation mode: Transmitting

For Adapter 1

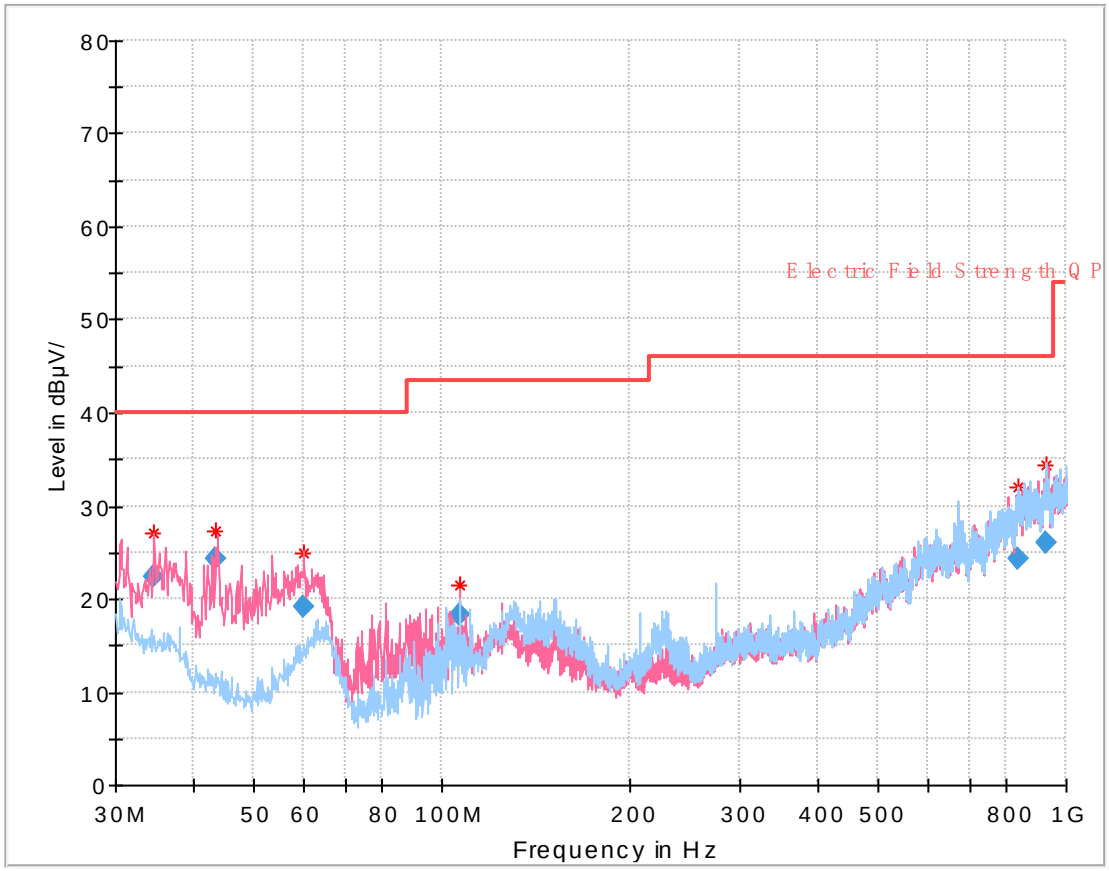
30 MHz – 1 GHz: *(worst case is 802.11n40 mode 5230 MHz)*



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna height (cm)	Antenna Polarity	Turntable position (degree)	Correction Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
35.365000	28.71	108.0	V	344.0	-10.8	40.00	11.29
38.986875	31.15	114.0	V	350.0	-13.1	40.00	8.85
43.850625	31.00	114.0	V	80.0	-16.5	40.00	9.00
52.251250	30.35	110.0	V	82.0	-19.8	40.00	9.65
60.830750	22.41	122.0	V	103.0	-20.2	40.00	17.59
931.302750	26.14	268.0	H	15.0	4.8	46.00	19.86

For Adapter 2

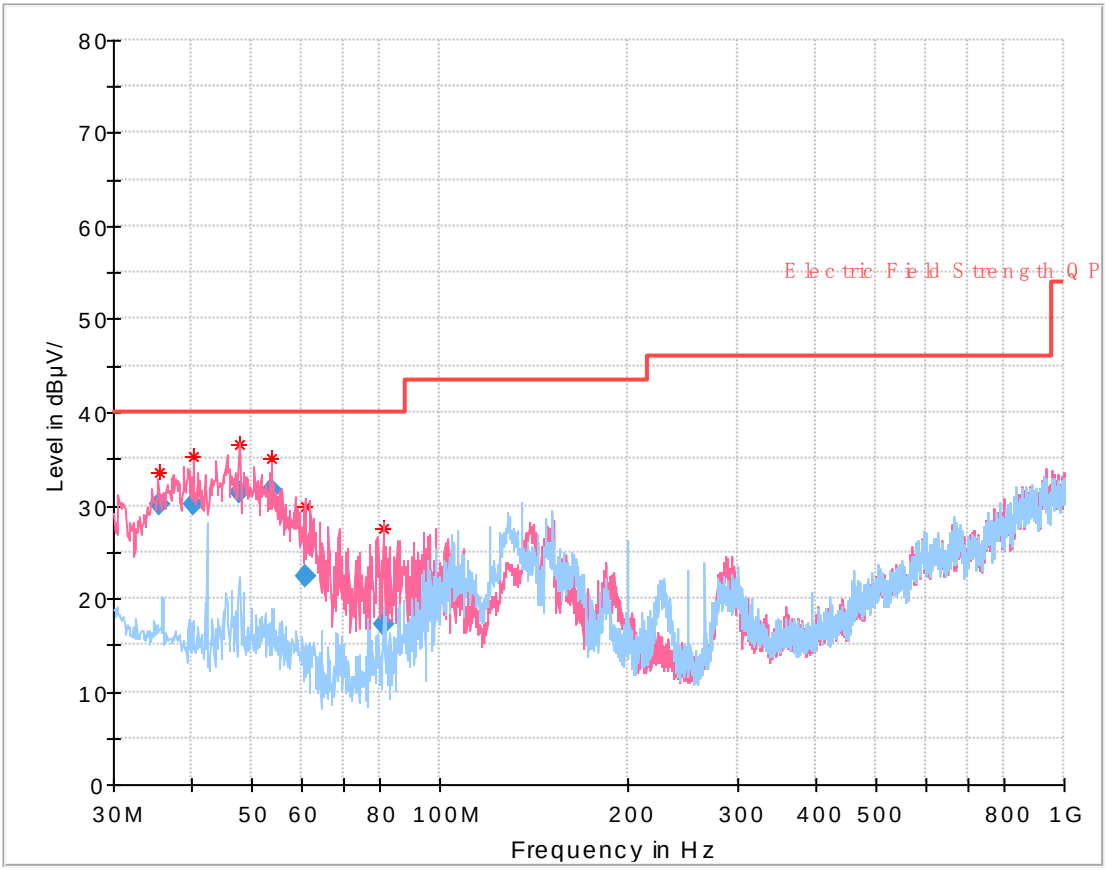
30 MHz – 1 GHz: *(worst case is 802.11n40 mode 5230 MHz)*



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna height (cm)	Antenna Polarity	Turntable position (degree)	Correction Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
34.593250	22.28	102.0	V	339.0	-10.3	40.00	17.72
43.518125	24.24	137.0	V	49.0	-16.3	40.00	15.76
60.194875	19.23	130.0	V	337.0	-20.2	40.00	20.77
106.688375	18.21	108.0	V	0.0	-16.0	43.50	25.29
834.665125	24.35	385.0	H	143.0	2.7	46.00	21.65
931.215875	26.12	292.0	H	20.0	4.8	46.00	19.88

For POE:

30 MHz – 1 GHz: *(worst case is 802.11n40 mode 5230 MHz)*



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna height (cm)	Antenna Polarity	Turntable position (degree)	Correction Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
35.570000	30.09	110.0	V	10.0	-10.9	40.00	9.91
40.352625	30.01	102.0	V	166.0	-14.0	40.00	9.99
47.836875	31.35	103.0	V	0.0	-18.6	40.00	8.65
53.816625	31.70	111.0	V	20.0	-19.8	40.00	8.30
60.760250	22.47	111.0	V	281.0	-20.2	40.00	17.53
81.195250	17.19	103.0	V	51.0	-19.9	40.00	22.81

Note:
Corrected Amplitude = Corrected Factor + Reading
Corrected Factor=Antenna factor (RX) + Cable Loss – Amplifier Factor
Margin = Limit- Corr. Amplitude
All other spurious emissions are 20 dB below the limit or are on the system noise floor level.

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