

RF Test Report

Applicant : Grand Mate Co., Ltd
Product Type : Automatic Burner control
Trade Name : GRAND MATE
Model Number : GM9K2A-C-120VAC, GM9K2A-A-120VAC, GM9K2B-A-120VAC,
GM9K2C-A-120VAC, GM9K2D-A-120VAC, GM9K2B-C-120VAC,
GM9K2C-C-120VAC, GM9K2D-C-120VAC, GM9K2A-E-120VAC,
GM9K2B-E-120VAC, GM9K2C-E-120VAC, GM9K2D-E-120VAC,
GM9K2A-G-120VAC, GM9K2B-G-120VAC, GM9K2C-G-120VAC,
GM9K2D-G-120VAC, GM9K2A-I-120VAC, GM9K2B-I-120VAC,
GM9K2C-I-120VAC, GM9K2D-I-120VAC
Applicable Standard : FCC 47 CFR PART 15 SUBPART C
ANSI C63.10:2013
Received Date : Oct. 03, 2019
Test Period : Dec. 25, 2019 ~ Jan. 14, 2020
Issued Date : Mar. 13, 2020

Issued by

A Test Lab Techno Corp.
No. 140-1, Changan Street, Bade District,
Taoyuan City 33465, Taiwan (R.O.C.)
Tel : +886-3-2710188 / Fax : +886-3-2710190



Taiwan Accreditation Foundation accreditation number: 1330
Test Firm MRA designation number: TW0010

Note:

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3. The relevant information is provided by customers in this test report. According to the correctness, appropriateness or completeness of the information provided by the customer, if there is any doubt or error in the information which affects the validity of the test results, the laboratory does not take the responsibility.



Revision History

Rev.	Issued Date	Revisions	Revised By
00	Feb. 05, 2020	Initial Issue	Tobey Cheng
01	Feb. 19, 2020	Page 6 Add Serial Number. Page 10 Revised Test Instruments. Page 34 & 35 Revised test data.	Nina Lin
02	Mar. 13, 2020	Page 7 Revised EUT Test Step.	Nina Lin

Verification of Compliance

Issued Date: Mar. 13, 2020

Applicant : Grand Mate Co., Ltd
Product Type : Automatic Burner control
Trade Name : GRAND MATE
Model Number : GM9K2A-C-120VAC, GM9K2A-A-120VAC, GM9K2B-A-120VAC, GM9K2C-A-120VAC, GM9K2D-A-120VAC, GM9K2B-C-120VAC, GM9K2C-C-120VAC, GM9K2D-C-120VAC, GM9K2A-E-120VAC, GM9K2B-E-120VAC, GM9K2C-E-120VAC, GM9K2D-E-120VAC, GM9K2A-G-120VAC, GM9K2B-G-120VAC, GM9K2C-G-120VAC, GM9K2D-G-120VAC, GM9K2A-I-120VAC, GM9K2B-I-120VAC, GM9K2C-I-120VAC, GM9K2D-I-120VAC

FCC ID : UMPGM9K2
EUT Rated Voltage : AC 120 V/60 Hz
Test Voltage : AC 120 V/60 Hz
Applicable Standard : FCC 47 CFR PART 15 SUBPART C
ANSI C63.10:2013

Test Result : Complied

Performing Lab. : A Test Lab Techno Corp.
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Taiwan Accreditation Foundation accreditation number:
1330 <http://www.atl-lab.com.tw/e-index.htm>

A Test Lab Techno Corp. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by A Test Lab Techno Corp. based on interpretations and/or observations of test results. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Approved By

: Fly Lu

(Manager)

(Fly Lu)

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1 General Information

1.1. Summary of Test Result

Standard	Item	Results	Remark
15.207	AC Power Conducted Emission	PASS	----
15.231(a)	Transmitter Deactivation Time	PASS	----
15.231(b)	Transmitter Radiated Emissions	PASS	----
15.231(c)	20 dB Bandwidth	PASS	----
15.203	Antenna Requirement	PASS	----
CFR 47 Part 15.231(2010) / ANSI C63.10:2013			

Standard	Description
CFR47, Part 15, Subpart C	Intentional Radiators
ANSI C63. 10: 2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

1.2. Measurement Uncertainty

Test Item	Frequency Range	Uncertainty (dB)
Conducted Emission	150 kHz ~ 30 MHz	2.68
Radiated Emission	30 MHz ~ 1000 MHz	4.99
	1000 MHz ~ 18000 MHz	4.99
	18000 MHz ~ 26500 MHz	4.23
	26500 MHz ~ 40000 MHz	4.39
RF Bandwidth	4.79 %	

Decision Rule

- ☒ Uncertainty is not included.
☐ Uncertainty is included.

2 EUT Description

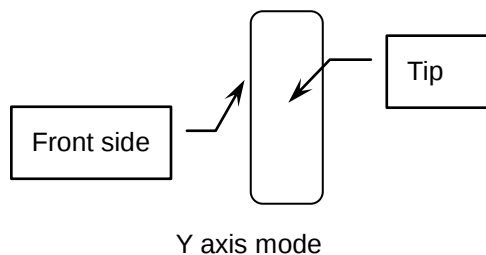
Applicant	Grand Mate Co., Ltd No.30, Lugong S. 2nd Rd., Lukang Township, Changhua County 50544, Taiwan
Manufacturer	Grand Mate Co., Ltd No.30, Lugong S. 2nd Rd., Lukang Township, Changhua County 50544, Taiwan
Product Type	Automatic Burner control
Trade Name	GRAND MATE
Model Number	GM9K2A-C-120VAC, GM9K2A-A-120VAC, GM9K2B-A-120VAC, GM9K2C-A-120VAC, GM9K2D-A-120VAC, GM9K2B-C-120VAC, GM9K2C-C-120VAC, GM9K2D-C-120VAC, GM9K2A-E-120VAC, GM9K2B-E-120VAC, GM9K2C-E-120VAC, GM9K2D-E-120VAC, GM9K2A-G-120VAC, GM9K2B-G-120VAC, GM9K2C-G-120VAC, GM9K2D-G-120VAC, GM9K2A-I-120VAC, GM9K2B-I-120VAC, GM9K2C-I-120VAC, GM9K2D-I-120VAC
Models different description	This control module applied in gas burner control systems. The fire control function built in in Control Board (CB). The CB can work independent by adapter, but normally used combination of CBand PB (the power supply by PB). The Power Board (PB) can output voltage of AC control loads. The CB's code is 9K2X (X=A to G); PB's code is -Y (Y= A to J); Their combination code is GM9K2X-Y-ZVAC (Z= 120 . They represent criterions of markets, 120=CSA)
Serial Number	U9K2AC00A02A3T-1950T0002(for model : GM9K2A-C-120VAC) U9K2AI05A02067-1939T0001(for model : GM9K2A-I-120VAC) U9K2AE05A02067-1939T001(for model : GM9K2A-E-120VAC) (In the test report use EUT model: GM9K2A-C-120VAC to operate testing.)
FCC ID	UMPGM9K2
Frequency Range	434 MHz
Modulation Type	2GFSK
Number of Channels	1 Channel
Antenna Type	Helical Antenna
Operate Temp. Range	-20 ~ +80 °C

3 Test Methodology

3.1. Mode of Operation

Test Mode
Mode 1: Transmitter Mode
Mode 2: Continuous TX Mode

Then, the above highest fundamental level mode of the configuration of the EUT and antenna was chosen for all final test items.



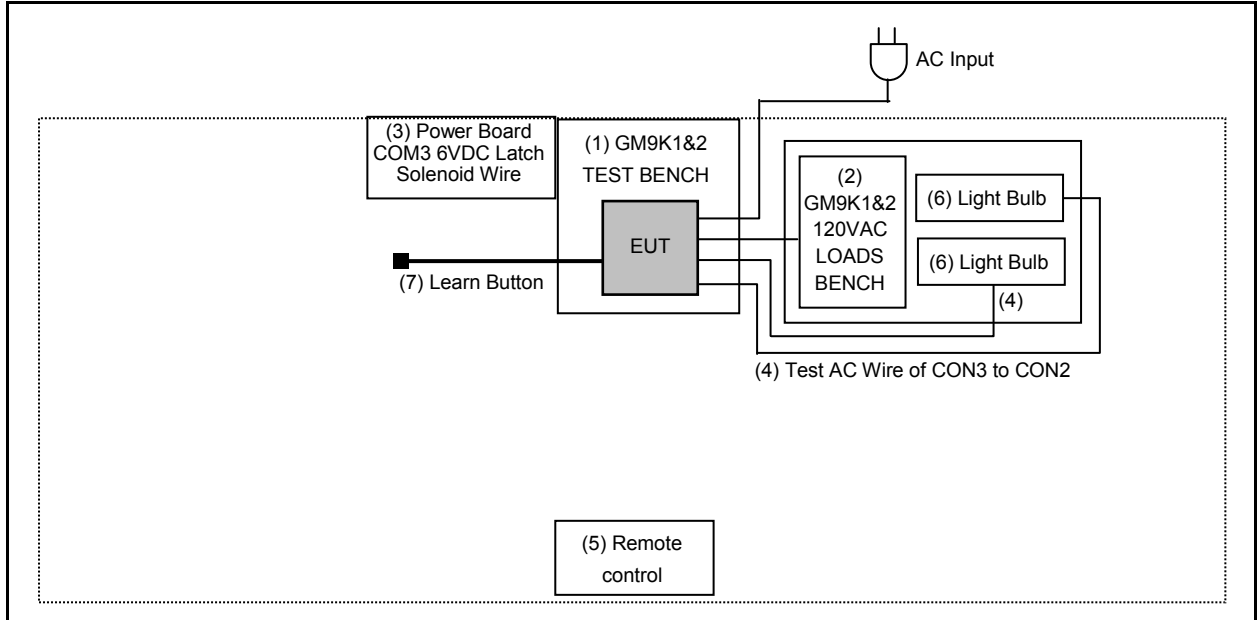
3.2. EUT Test Step

1.	Setup the EUT shown on "Configuration of Test System Details".
2.	Turn on the power of all equipment.
3.	EUT connects peripheral Learn Button to operate TX function manually.
4.	EUT run test program.

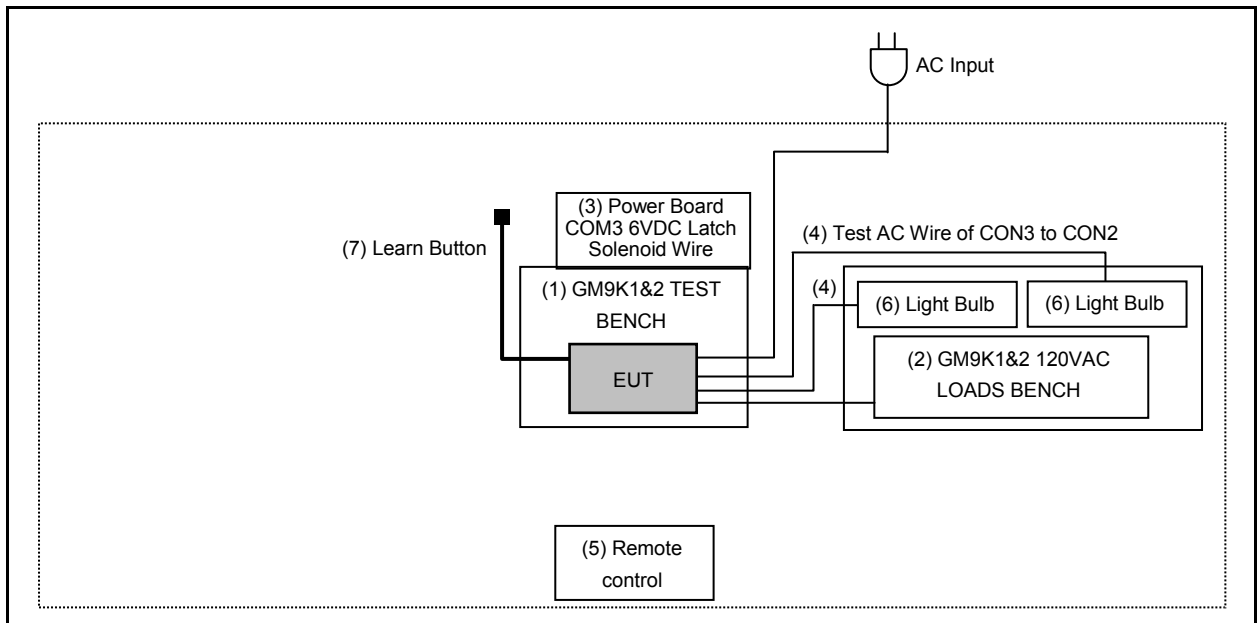
Measurement Software			
No.	Description	Software	Version
1	Conducted Emission	EZ EMC	1.1.4.3
2	Radiated Emission	EZ EMC	1.1.4.4

3.3. Configuration of Test System Details

Conducted Emission



Radiated Emissions





Devices Description					
Product		Manufacturer	Model Number	Serial Number	Power Cord
(1)	GM9K1&2 TEST BENCH	GRAND MATE	GM9K1&2 TEST BENCH D2-05	---	---
(2)	GM9K1&2 120VAC LOADS BENCH	GRAND MATE	GM9K1&2 120VAC LOADS BENCH	---	---
(3)	Power Board COM3 6VDC Latch Solenoid Wire	---	CSA AWM FT-1 VW-1 20AWG 105C/300V	---	---
(4)	Test AC Wire of CON3 to CON2	---	CSA SPT-1 VW-1 2*0.824mm(18AWG) 105C/300V	---	---
(5)	Remote control	Grand Mate	RFC2-C	---	---
(6)	Light Bulb	TOA Lighting	---	---	---
(7)	Learn Button	---	---	---	---



3.4. Test Instruments

For Conducted Emission

Test Period: Jan. 14, 2020

Testing Engineer: Louis Shen

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
Test Receiver	R&S	ESCI	100367	05/23/2019	1 year
LISN	R&S	ENV216	101040	04/03/2019	1 year
LISN	R&S	ENV216	101041	03/28/2019	1 year
RF Cable	Woken	00100D1380194M	TE-02-03	05/23/2019	1 year

For Radiated Emissions

Test Period: Jan. 09, 2020

Testing Engineer: Ricky Liu

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
Spectrum Analyzer (10 Hz~44 GHz)	Keysight	N9010A	MY52221312	01/14/2019	1 year
Pre Amplifier (1~26.5 GHz)	Agilent	8449B	3008A02237	10/18/2019	1 year
Pre Amplifier (100 kHz~1.3 GHz)	Agilent	8447D	2944A11119	01/14/2019	1 year
Broadband Antenna	Schwarzbeck	VULB9168	416	10/23/2019	1 year
Horn Antenna (1~18 GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	9120D-550	08/22/2019	1 year
RF Cable	EMCI	EMC104-N-N-6000	TE01-1	02/20/2019	1 year
Microwave Cable	EMCI	EMC104-SM -SM-13000	170814	10/29/2019	1 year
Microwave Cable	EMCI	EMC102-KM -KM-14000	151001	02/20/2019	1 year

For Conducted

Test Period: Dec. 25, 2019

Testing Engineer: Negi Chiu

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
Spectrum Analyzer (20 Hz~26.5 GHz)	Agilent	N9020A	US47520902	09/18/2019	1 year



3.5. Test Site Environment

Items	Required (IEC 60068-1)	Actual
Temperature (°C)	15-35	23-26
Humidity (%RH)	25-75	55-60
Barometric pressure (mbar)	860-1060	990

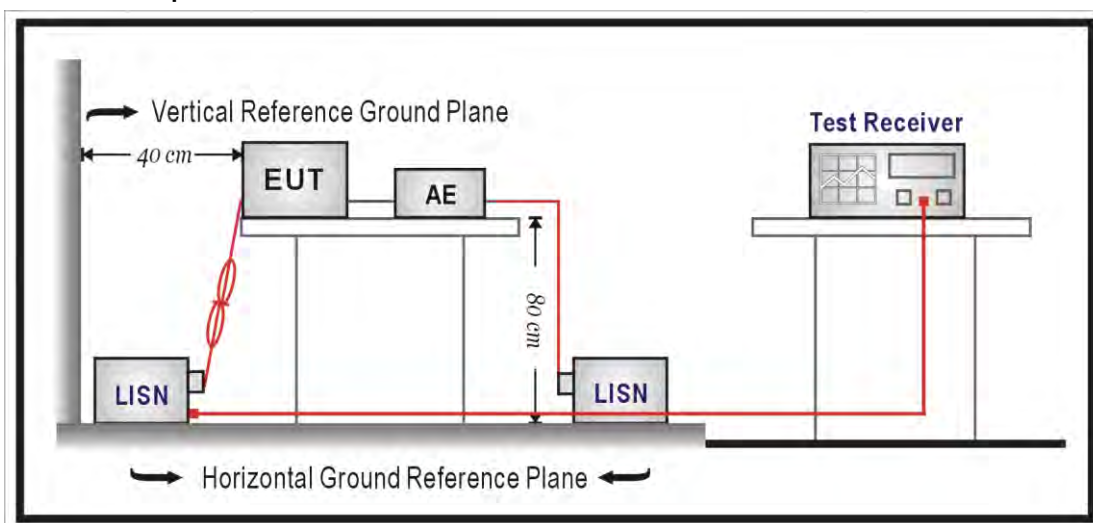
4 Measurement Procedure

4.1. AC Power Line Conducted Emission Measurement

■ Limit

Frequency (MHz)	Quasi-peak	Average
0.15 - 0.5	66 to 56	56 to 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

■ Test Setup



■ Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a $50\ \Omega // 50\ \mu\text{H}$ coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a $50\ \Omega // 50\ \mu\text{H}$ coupling impedance with 50 ohm termination.

Tabletop device shall be placed on a non-conducting platform, of nominal size 1 m by 1.5 m, raised 80 cm above the reference ground plane. The wall of screened room shall be located 40 cm to the rear of the EUT. Other surfaces of tabletop or floor standing EUT shall be at least 80 cm from any other ground conducting surface including one or more LISNs. For floor-standing device shall be placed under the EUT with a 12 mm insulating material.

Conducted emissions were investigated over the frequency range from 0.15 MHz to 30 MHz using a resolution bandwidth of 9 kHz. The equipment under test (EUT) shall be meet the limits in section 4.1, as applicable, including the average limit and the quasi-peak limit when using respectively, an average detector and quasi-peak detector measured in accordance with the methods described of related standard. When all of peak value were complied with quasi-peak and average limit from 150 kHz to 30 MHz then quasi-peak and average measurement was unnecessary.

The AMN shall be placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for AMNs mounted on top of the ground reference plane. This distance is between the closest points of the AMN and the EUT. All other units of the EUT and associated equipment shall be at least 0.8 m from the AMN. If the mains power cable is longer than 1 m then the cable shall be folded back and forth at the centre of the lead to form a bundle no longer than 0.4 m. All of interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 cm to 40 cm long. All of EUT and AE shall be separate place more than 0.1 m. All 50 Ω ports of the LISN shall be resistively terminated into 50 Ω loads when not connected to the measuring instrument.

If the reading of the measuring receiver shows fluctuations close to the limit, the reading shall be observed for at least 15 s at each measurement frequency; the higher reading shall be recorded with the exception of any brief isolated high reading which shall be ignored.

4.2. Radiated Emissions Measurement

■ Limit

According to FCC Part 15.231(b) requirement:

In addition to the provisions of §15.205, the field strength of emissions from intentional radiator operated under this section shall not exceed the following:

Fundamental and harmonics emission limits

Frequency range	Average Field Strength of Fundamental	Peak Field Strength of Fundamental
(MHz)	(dB μ V/m@3 m)	(dB μ V/m@3 m)
434	80.83	100.83

General Radiated emission Limit

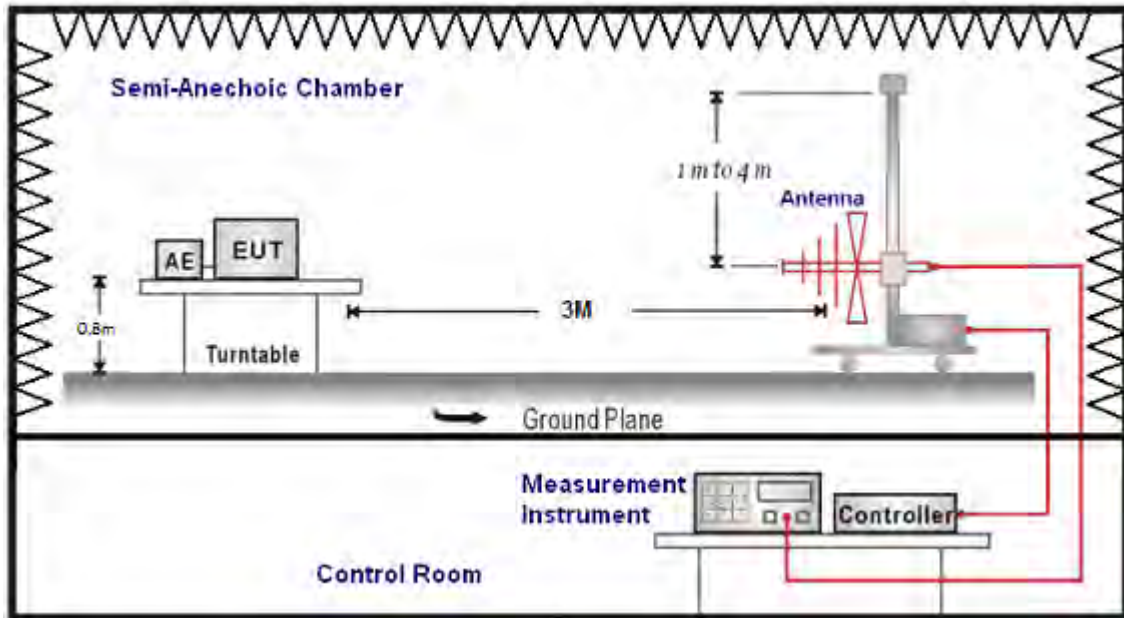
Frequency range	Field Strength of Fundamental	Field Strength of Harmonics
(MHz)	(μ V/m at 3 m)	(μ V/m at 3 m)
40.66 to 40.70	2250 (67.04 dBuV)	225 (47.04 dBuV)
70 to 130	1250 (61.94 dBuV)	125 (41.94 dBuV)
130 to 174	1250 (61.94 dBuV) to 3750 (71.48 dBuV)	125 (41.94 dBuV) to 375 (51.48 dBuV)
174 to 260	3750 (71.48 dBuV)	375 (51.48 dBuV)
260 to 470	3750 (71.48 dBuV) to 12500 (81.94 dBuV)	375 (51.48 dBuV) to 1250 (61.94 dBuV)
470 and above	12500 (81.94 dBuV)	1250 (61.94 dBuV)

Remark: 1. The table above tighter limit applies at the band edges.

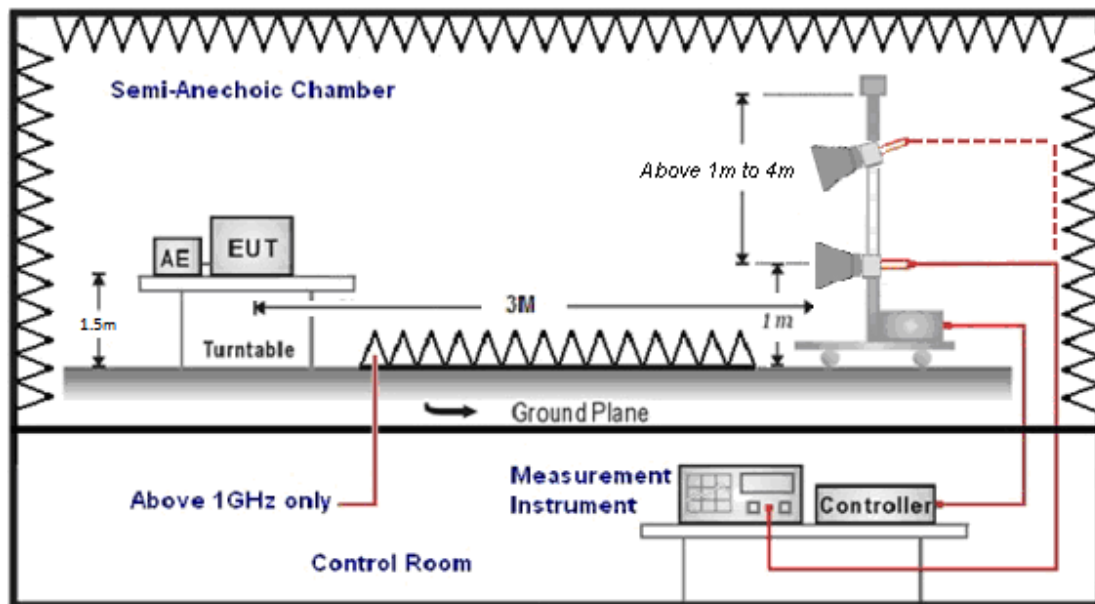
2. The measurement distance in meters, which that between form closest point of EUT to instrument antenna.

■ Setup

Below 1 GHz



Above 1 GHz



■ Test Procedure

Final radiation measurements were made on a three-meter, Semi Anechoic Chamber. The EUT system was placed on a nonconductive turntable which is 0.8 or 1.5 meters height, top surface 1.0 x 1.5 meter. The spectrum was examined from 250 MHz to 2.5 GHz in order to cover the whole spectrum below 10th harmonic which could generate from the EUT. During the test, EUT was set to transmit continuously & Measurements spectrum range from 30 MHz to 26.5 GHz is investigated.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak. For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, and then the video bandwidth is set to 3 MHz for peak measurements and 10 Hz for average measurements.

A nonconductive material surrounded the EUT to supporting the EUT for standing on three orthogonal planes. At each condition, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters to find the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarization.

SCHWARZBECK MESS-ELEKTRONIK Biconilog Antenna at 3 Meter and the SCHWARZBECK Double Ridged Guide Antenna was used in frequencies 1 – 26.5 GHz at a distance of 1 meter. All test results were extrapolated to equivalent signal at 3 meters utilizing an inverse linear distance extrapolation Factor (20 dB/decade).

For testing above 1 GHz, the emission level of the EUT in peak mode was 20 dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

Appropriate preamplifiers were used for improving sensitivity and precautions were taken to avoid overloading or desensitizing the spectrum analyzer. No post – detector video filters were used in the test.

The spectrum analyzer's 6 dB bandwidth was set to 1 MHz, and the analyzer was operated in the peak detection mode, for frequencies both below and up 1 GHz. The average levels were obtained by subtracting the duty cycle correction factor from the peak readings.

The following procedures were used to convert the emission levels measured in decibels referenced to 1 microvolt (dBuV) into field intensity in micro volts per meter (uV/m).

The actual field intensity in decibels referenced to 1 microvolt in to field intensity in micro volts per meter (dBuV/m).

The actual field is intensity in referenced to 1 microvolt per meter (dBuV/m) is determined by algebraically adding the measured reading in dBuV, the antenna factor (dB), and cable loss (dB) and Subtracting the gain of preamplifier (dB) is auto calculate in spectrum analyzer.

$$(1) \text{ Amplitude (dBuV/m) = FI (dBuV) + AF (dBuV) + CL (dBuV) - Gain (dB)}$$

FI= Reading of the field intensity.

AF= Antenna factor.

CL= Cable loss.

P.S Amplitude is auto calculate in spectrum analyzer.

$$(2) \text{ Actual Amplitude (dBuV/m) = Amplitude (dBuV) - Dis(dB)}$$

The FCC specified emission limits were calculated according the EUT operating frequency and by following linear interpolation equations:

(a) For fundamental frequency : Transmitter Output < +30 dBm

(b) For spurious frequency : Spurious emission limits = fundamental emission limit /10

Data of measurement within this frequency range without mark in the table above means the reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.

■ Calculation of Average Factor

The output field strengths of specification in accordance with the FCC rules specify measurements with an average detector. During the test, a spectrum analyzer incorporating a peak detector was used. Therefore, a reduction factor can be applied to the resultant peak signal level and compared to the limit for measurement instrumentation incorporating an average detector.

Please see the diagrams below.

(*) When the field strength (or envelope power) is not constant or when it is in pulses, and an averaging detector is specified to be used, the value of field strength or power over one complete pulse train, excluding blanking intervals, shall be averaged as long as the pulse train does not exceed 0.1 seconds. In cases where the pulse train exceeds 0.1 seconds, the average value (of field strength or output power) shall be determined during a 0.1 second interval during which the field strength or power is at its maximum value.

4.3. 20 dB Bandwidth Measurement

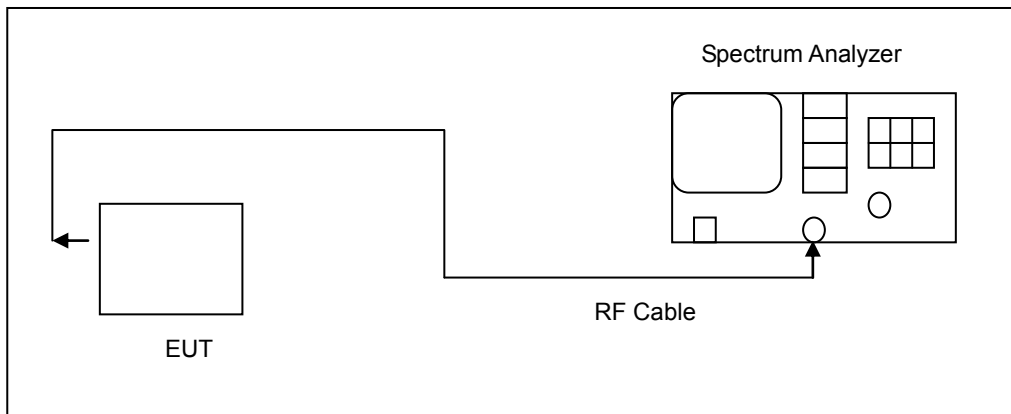
■ Limit

According to FCC Part 15.231(c) requirement:

The 20 dB

$$\text{B.W Limit} = 0.25 \% * f \text{ (MHz)} = 0.25 \% * 315 \text{ MHz} = 787.5 \text{ kHz}$$

■ Test Setup



■ Test Procedure

The RF output port of the Equipment-Under-Test is directly coupled to the input of the analyzer through a specialized RF connector and a 10 dB passive attenuator. A fully charged battery was used for the supply voltage.

The RF function of the EUT was enabled. The spectrum analyzer used the following settings:

1. Span = 1 MHz
2. RBW $\geq 1 \%$ of the 20 dB span
3. VBW $\geq$ RBW
4. Sweep = auto
5. Detector function = peak
6. Trace = max hold

The trace was allowed to stabilize. The EUT was transmitting at its maximum data rate. The marker-to-peak function was used to set the marker to the peak of the emission. The marker-delta function was used to measure 20 dB down one side of the emission. The marker-delta function and marker was moved to the other side of the emission until it was even with the reference marker. The marker-delta reading at this point was the 20 dB bandwidth of the emission.



4.4. Antenna Requirement

- **Limit**

For intentional device, 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.

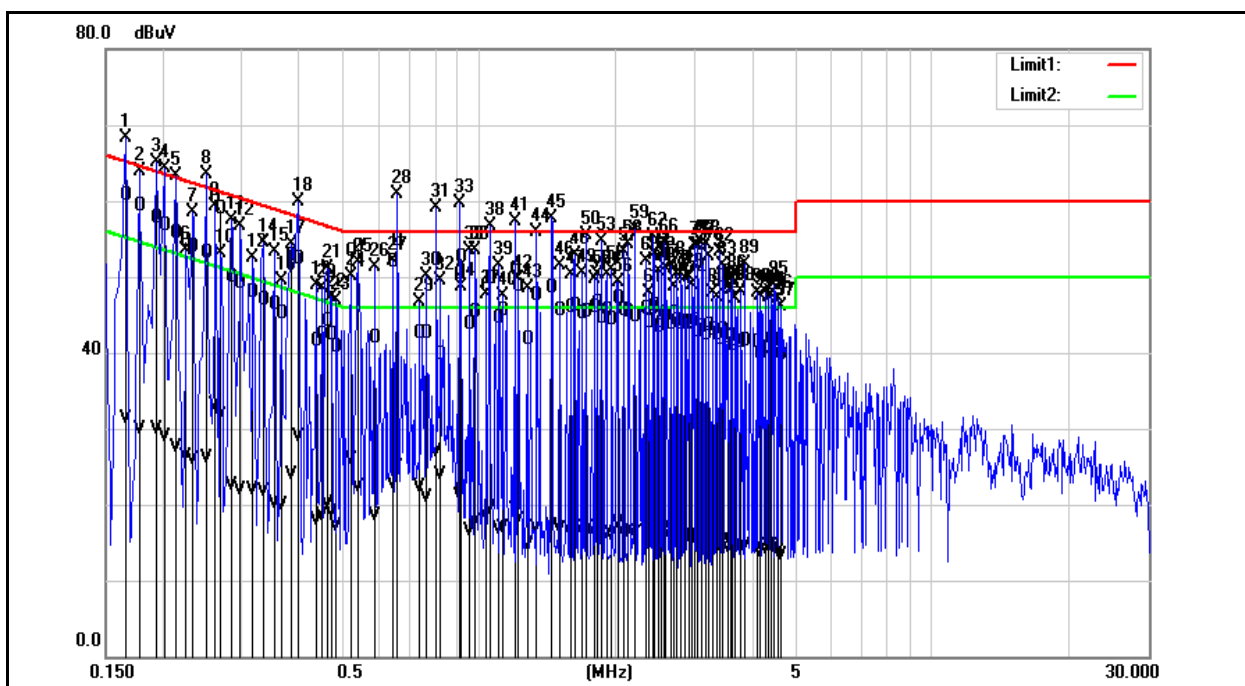
- **Antenna Connector Construction**

See section 2 – antenna information.

5 Test Results

Annex A. Conducted Emission

Standard:	FCC Part 15.231	Line:	L1
Test item:	Conducted Emission	Power:	AC 120 V/60 Hz
Mode:	Mode 1	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Description:			



No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1660	51.05	21.64	9.65	60.70	31.29	65.16	55.16	-4.46	-23.87	Pass
2	0.1780	49.69	20.31	9.64	59.33	29.95	64.58	54.58	-5.25	-24.63	Pass
3	0.1940	48.00	20.22	9.64	57.64	29.86	63.86	53.86	-6.22	-24.00	Pass
4	0.2020	47.16	19.34	9.64	56.80	28.98	63.53	53.53	-6.73	-24.55	Pass
5	0.2140	46.12	17.90	9.64	55.76	27.54	63.05	53.05	-7.29	-25.51	Pass
6	0.2260	45.02	16.62	9.64	54.66	26.26	62.60	52.60	-7.94	-26.34	Pass
7	0.2340	44.30	16.32	9.64	53.94	25.96	62.31	52.31	-8.37	-26.35	Pass
8	0.2500	43.48	16.45	9.64	53.12	26.09	61.76	51.76	-8.64	-25.67	Pass
9	0.2620	50.57	23.55	9.64	60.21	33.19	61.37	51.37	-1.16	-18.18	Pass
10	0.2700	49.27	21.98	9.64	58.91	31.62	61.12	51.12	-2.21	-19.50	Pass

Note: 1. Result (dBuV) = Correction factor (dB) + Reading(dBuV).
2. Correction factor (dB) = Cable loss (dB) + L.I.S.N. factor (dB).

Standard:	FCC Part 15.231	Line:	L1
Test item:	Conducted Emission	Power:	AC 120 V/60 Hz
Mode:	Mode 1	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Description:			

No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
11	0.2860	40.30	12.90	9.65	49.95	22.55	60.64	50.64	-10.69	-28.09	Pass
12	0.2980	39.45	12.23	9.65	49.10	21.88	60.30	50.30	-11.20	-28.42	Pass
13	0.3180	38.30	12.31	9.65	47.95	21.96	59.76	49.76	-11.81	-27.80	Pass
14	0.3340	37.32	12.05	9.65	46.97	21.70	59.35	49.35	-12.38	-27.65	Pass
15	0.3540	36.62	10.51	9.65	46.27	20.16	58.87	48.87	-12.60	-28.71	Pass
16	0.3660	35.53	10.25	9.65	45.18	19.90	58.59	48.59	-13.41	-28.69	Pass
17	0.3860	42.98	14.21	9.65	52.63	23.86	58.15	48.15	-5.52	-24.29	Pass
18	0.3980	42.73	19.31	9.65	52.38	28.96	57.90	47.90	-5.52	-18.94	Pass
19	0.4380	31.94	8.16	9.66	41.60	17.82	57.10	47.10	-15.50	-29.28	Pass
20	0.4500	32.57	8.91	9.66	42.23	18.57	56.88	46.88	-14.65	-28.31	Pass
21	0.4620	34.50	10.36	9.66	44.16	20.02	56.66	46.66	-12.50	-26.64	Pass
22	0.4740	32.65	9.33	9.66	42.31	18.99	56.44	46.44	-14.13	-27.45	Pass
23	0.4860	31.08	7.49	9.66	40.74	17.15	56.24	46.24	-15.50	-29.09	Pass
24	0.5220	43.59	16.33	9.66	53.25	25.99	56.00	46.00	-2.75	-20.01	Pass
25	0.5420	44.29	12.66	9.66	53.95	22.32	56.00	46.00	-2.05	-23.68	Pass
26	0.5900	32.20	8.79	9.66	41.86	18.45	56.00	46.00	-14.14	-27.55	Pass
27	0.6460	42.25	13.00	9.66	51.91	22.66	56.00	46.00	-4.09	-23.34	Pass
28	0.6580	45.00	15.33	9.66	54.66	24.99	56.00	46.00	-1.34	-21.01	Pass
29	0.7420	32.75	12.65	9.67	42.42	22.32	56.00	46.00	-13.58	-23.68	Pass
30	0.7660	32.85	11.18	9.68	42.53	20.86	56.00	46.00	-13.47	-25.14	Pass
31	0.8060	42.36	17.22	9.68	52.04	26.90	56.00	46.00	-3.96	-19.10	Pass
32	0.8220	30.11	14.32	9.68	39.79	24.00	56.00	46.00	-16.21	-22.00	Pass
33	0.9060	40.53	11.46	9.68	50.21	21.14	56.00	46.00	-5.79	-24.86	Pass
34	0.9180	42.75	12.11	9.68	52.43	21.79	56.00	46.00	-3.57	-24.21	Pass
35	0.9540	34.08	6.92	9.68	43.76	16.60	56.00	46.00	-12.24	-29.40	Pass

Note: 1. Result (dBuV) = Correction factor (dB) + Reading(dBuV).
2. Correction factor (dB) = Cable loss (dB) + L.I.S.N. factor (dB).



Standard:	FCC Part 15.231	Line:	L1
Test item:	Conducted Emission	Power:	AC 120 V/60 Hz
Mode:	Mode 1	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Description:			

No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
36	0.9820	35.55	8.07	9.68	45.23	17.75	56.00	46.00	-10.77	-28.25	Pass
37	1.0420	38.96	8.86	9.68	48.64	18.54	56.00	46.00	-7.36	-27.46	Pass
38	1.0580	40.08	9.78	9.68	49.76	19.46	56.00	46.00	-6.24	-26.54	Pass
39	1.1100	34.87	6.94	9.68	44.55	16.62	56.00	46.00	-11.45	-29.38	Pass
40	1.1260	35.85	7.31	9.69	45.54	17.00	56.00	46.00	-10.46	-29.00	Pass
41	1.1980	41.27	9.63	9.69	50.96	19.32	56.00	46.00	-5.04	-26.68	Pass
42	1.2180	39.10	8.30	9.69	48.79	17.99	56.00	46.00	-7.21	-28.01	Pass
43	1.2820	32.00	5.00	9.69	41.69	14.69	56.00	46.00	-14.31	-31.31	Pass
44	1.3380	37.80	7.15	9.69	47.49	16.84	56.00	46.00	-8.51	-29.16	Pass
45	1.4420	38.87	7.44	9.70	48.57	17.14	56.00	46.00	-7.43	-28.86	Pass
46	1.5100	35.84	7.10	9.70	45.54	16.80	56.00	46.00	-10.46	-29.20	Pass
47	1.5940	36.29	6.34	9.70	45.99	16.04	56.00	46.00	-10.01	-29.96	Pass
48	1.6300	36.45	7.27	9.71	46.16	16.98	56.00	46.00	-9.84	-29.02	Pass
49	1.6980	35.44	6.71	9.71	45.15	16.42	56.00	46.00	-10.85	-29.58	Pass
50	1.7180	35.66	6.20	9.71	45.37	15.91	56.00	46.00	-10.63	-30.09	Pass
51	1.8020	36.23	6.59	9.71	45.94	16.30	56.00	46.00	-10.06	-29.70	Pass
52	1.8220	36.75	7.10	9.71	46.46	16.81	56.00	46.00	-9.54	-29.19	Pass
53	1.8660	34.73	6.35	9.71	44.44	16.06	56.00	46.00	-11.56	-29.94	Pass
54	1.9100	35.85	6.31	9.72	45.57	16.03	56.00	46.00	-10.43	-29.97	Pass
55	1.9620	34.54	6.15	9.72	44.26	15.87	56.00	46.00	-11.74	-30.13	Pass
56	2.0260	37.38	7.87	9.72	47.10	17.59	56.00	46.00	-8.90	-28.41	Pass
57	2.0860	35.86	6.54	9.72	45.58	16.26	56.00	46.00	-10.42	-29.74	Pass
58	2.1420	35.55	6.62	9.72	45.27	16.34	56.00	46.00	-10.73	-29.66	Pass
59	2.2060	34.94	6.32	9.72	44.66	16.04	56.00	46.00	-11.34	-29.96	Pass
60	2.3340	36.07	6.52	9.73	45.80	16.25	56.00	46.00	-10.20	-29.75	Pass

Note: 1. Result (dBuV) = Correction factor (dB) + Reading(dBuV).
2. Correction factor (dB) = Cable loss (dB) + L.I.S.N. factor (dB).

Standard:	FCC Part 15.231	Line:	L1
Test item:	Conducted Emission	Power:	AC 120 V/60 Hz
Mode:	Mode 1	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Description:			

No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
61	2.3780	34.12	5.95	9.73	43.85	15.68	56.00	46.00	-12.15	-30.32	Pass
62	2.4100	35.95	7.01	9.73	45.68	16.74	56.00	46.00	-10.32	-29.26	Pass
63	2.4420	36.29	7.03	9.73	46.02	16.76	56.00	46.00	-9.98	-29.24	Pass
64	2.4940	33.54	5.69	9.73	43.27	15.42	56.00	46.00	-12.73	-30.58	Pass
65	2.5300	34.23	5.94	9.74	43.97	15.68	56.00	46.00	-12.03	-30.32	Pass
66	2.5660	35.37	6.89	9.74	45.11	16.63	56.00	46.00	-10.89	-29.37	Pass
67	2.5940	34.98	6.13	9.74	44.72	15.87	56.00	46.00	-11.28	-30.13	Pass
68	2.6540	33.89	5.75	9.74	43.63	15.49	56.00	46.00	-12.37	-30.51	Pass
69	2.6820	35.38	6.64	9.74	45.12	16.38	56.00	46.00	-10.88	-29.62	Pass
70	2.7220	34.27	6.34	9.74	44.01	16.08	56.00	46.00	-11.99	-29.92	Pass
71	2.7860	33.94	6.00	9.74	43.68	15.74	56.00	46.00	-12.32	-30.26	Pass
72	2.8540	34.08	5.93	9.74	43.82	15.67	56.00	46.00	-12.18	-30.33	Pass
73	2.9100	33.86	5.91	9.75	43.61	15.66	56.00	46.00	-12.39	-30.34	Pass
74	2.9580	34.06	5.87	9.75	43.81	15.62	56.00	46.00	-12.19	-30.38	Pass
75	2.9940	34.27	5.78	9.75	44.02	15.53	56.00	46.00	-11.98	-30.47	Pass
76	3.0300	33.04	5.26	9.75	42.79	15.01	56.00	46.00	-13.21	-30.99	Pass
77	3.1020	33.59	5.61	9.75	43.34	15.36	56.00	46.00	-12.66	-30.64	Pass
78	3.1700	32.64	5.58	9.75	42.39	15.33	56.00	46.00	-13.61	-30.67	Pass
79	3.2100	33.81	5.43	9.75	43.56	15.18	56.00	46.00	-12.44	-30.82	Pass
80	3.2860	33.11	5.10	9.75	42.86	14.85	56.00	46.00	-13.14	-31.15	Pass
81	3.3580	32.60	5.07	9.75	42.35	14.82	56.00	46.00	-13.65	-31.18	Pass
82	3.4140	32.05	4.67	9.75	41.80	14.42	56.00	46.00	-14.20	-31.58	Pass
83	3.4460	33.20	5.41	9.75	42.95	15.16	56.00	46.00	-13.05	-30.84	Pass
84	3.5460	32.08	4.56	9.77	41.85	14.33	56.00	46.00	-14.15	-31.67	Pass
85	3.6020	32.34	5.27	9.77	42.11	15.04	56.00	46.00	-13.89	-30.96	Pass

Note: 1. Result (dBuV) = Correction factor (dB) + Reading(dBuV).

2. Correction factor (dB) = Cable loss (dB) + L.I.S.N. factor (dB).

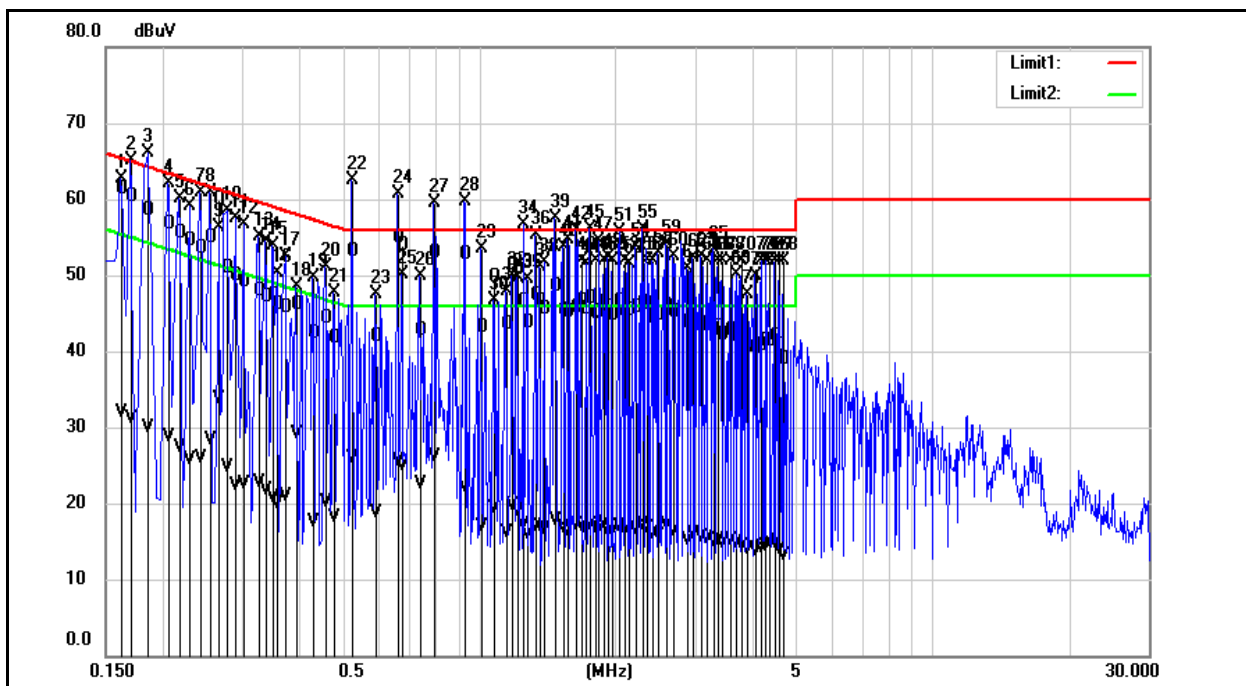


Standard:	FCC Part 15.231	Line:	L1
Test item:	Conducted Emission	Power:	AC 120 V/60 Hz
Mode:	Mode 1	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Description:			

No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
86	3.6340	31.17	4.25	9.77	40.94	14.02	56.00	46.00	-15.06	-31.98	Pass
87	3.6660	31.71	4.45	9.77	41.48	14.22	56.00	46.00	-14.52	-31.78	Pass
88	3.7900	31.49	4.31	9.77	41.26	14.08	56.00	46.00	-14.74	-31.92	Pass
89	3.8500	31.78	4.81	9.77	41.55	14.58	56.00	46.00	-14.45	-31.42	Pass
90	4.1060	31.50	4.48	9.78	41.28	14.26	56.00	46.00	-14.72	-31.74	Pass
91	4.1700	29.89	3.84	9.78	39.67	13.62	56.00	46.00	-16.33	-32.38	Pass
92	4.2820	30.67	4.28	9.78	40.45	14.06	56.00	46.00	-15.55	-31.94	Pass
93	4.3420	30.95	4.70	9.78	40.73	14.48	56.00	46.00	-15.27	-31.52	Pass
94	4.4300	31.86	4.67	9.78	41.64	14.45	56.00	46.00	-14.36	-31.55	Pass
95	4.4900	31.75	4.53	9.78	41.53	14.31	56.00	46.00	-14.47	-31.69	Pass
96	4.5620	30.52	3.90	9.79	40.31	13.69	56.00	46.00	-15.69	-32.31	Pass
97	4.6260	29.86	3.57	9.79	39.65	13.36	56.00	46.00	-16.35	-32.64	Pass

Note: 1. Result (dBuV) = Correction factor (dB) + Reading(dBuV).
2. Correction factor (dB) = Cable loss (dB) + L.I.S.N. factor (dB).

Standard:	FCC Part 15.231	Line:	N
Test item:	Conducted Emission	Power:	AC 120 V/60 Hz
Mode:	Mode 1	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Description:			



No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1620	51.60	22.27	9.65	61.25	31.92	65.36	55.36	-4.11	-23.44	Pass
2	0.1700	50.66	21.50	9.65	60.31	31.15	64.96	54.96	-4.65	-23.81	Pass
3	0.1860	48.96	20.35	9.64	58.60	29.99	64.21	54.21	-5.61	-24.22	Pass
4	0.2060	47.00	18.98	9.64	56.64	28.62	63.37	53.37	-6.73	-24.75	Pass
5	0.2180	45.88	17.65	9.64	55.52	27.29	62.89	52.89	-7.37	-25.60	Pass
6	0.2300	44.83	16.15	9.64	54.47	25.79	62.45	52.45	-7.98	-26.66	Pass
7	0.2420	43.86	16.33	9.64	53.50	25.97	62.03	52.03	-8.53	-26.06	Pass
8	0.2540	45.25	18.74	9.64	54.89	28.38	61.63	51.63	-6.74	-23.25	Pass
9	0.2660	50.30	24.08	9.64	59.94	33.72	61.24	51.24	-1.30	-17.52	Pass
10	0.2780	41.35	15.12	9.65	51.00	24.77	60.88	50.88	-9.88	-26.11	Pass

Note: 1. Result (dBuV) = Correction factor (dB) + Reading(dBuV).

2. Correction factor (dB) = Cable loss (dB) + L.I.S.N. factor (dB).



Standard:	FCC Part 15.231	Line:	L1
Test item:	Conducted Emission	Power:	AC 120 V/60 Hz
Mode:	Mode 1	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Description:			

No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
11	0.2900	40.35	12.67	9.65	50.00	22.32	60.52	50.52	-10.52	-28.20	Pass
12	0.3020	39.51	12.82	9.65	49.16	22.47	60.19	50.19	-11.03	-27.72	Pass
13	0.3260	38.19	12.99	9.65	47.84	22.64	59.55	49.55	-11.71	-26.91	Pass
14	0.3380	37.40	12.04	9.65	47.05	21.69	59.25	49.25	-12.20	-27.56	Pass
15	0.3500	37.63	11.10	9.65	47.28	20.75	58.96	48.96	-11.68	-28.21	Pass
16	0.3580	36.36	10.16	9.65	46.01	19.81	58.77	48.77	-12.76	-28.96	Pass
17	0.3740	35.98	11.24	9.65	45.63	20.89	58.41	48.41	-12.78	-27.52	Pass
18	0.3940	36.47	19.42	9.65	46.12	29.07	57.98	47.98	-11.86	-18.91	Pass
19	0.4300	32.55	7.89	9.66	42.21	17.55	57.25	47.25	-15.04	-29.70	Pass
20	0.4580	34.64	10.52	9.66	44.30	20.18	56.73	46.73	-12.43	-26.55	Pass
21	0.4780	32.02	8.37	9.66	41.68	18.03	56.37	46.37	-14.69	-28.34	Pass
22	0.5220	43.52	16.33	9.66	53.18	25.99	56.00	46.00	-2.82	-20.01	Pass
23	0.5900	32.17	9.11	9.66	41.83	18.77	56.00	46.00	-14.17	-27.23	Pass
24	0.6580	45.19	15.76	9.66	54.85	25.42	56.00	46.00	-1.15	-20.58	Pass
25	0.6740	44.20	15.18	9.66	53.86	24.84	56.00	46.00	-2.14	-21.16	Pass
26	0.7420	32.96	12.85	9.67	42.63	22.52	56.00	46.00	-13.37	-23.48	Pass
27	0.7940	43.18	16.35	9.68	52.86	26.03	56.00	46.00	-3.14	-19.97	Pass
28	0.9260	42.98	12.50	9.68	52.66	22.18	56.00	46.00	-3.34	-23.82	Pass
29	1.0100	33.39	7.27	9.68	43.07	16.95	56.00	46.00	-12.93	-29.05	Pass
30	1.0740	40.04	9.64	9.68	49.72	19.32	56.00	46.00	-6.28	-26.68	Pass
31	1.1420	33.91	6.39	9.69	43.60	16.08	56.00	46.00	-12.40	-29.92	Pass
32	1.1820	41.60	9.99	9.69	51.29	19.68	56.00	46.00	-4.71	-26.32	Pass
33	1.2140	40.96	9.19	9.69	50.65	18.88	56.00	46.00	-5.35	-27.12	Pass
34	1.2540	36.79	7.41	9.69	46.48	17.10	56.00	46.00	-9.52	-28.90	Pass
35	1.2740	34.09	6.13	9.69	43.78	15.82	56.00	46.00	-12.22	-30.18	Pass

Note: 1. Result (dBuV) = Correction factor (dB) + Reading(dBuV).
2. Correction factor (dB) = Cable loss (dB) + L.I.S.N. factor (dB).



Standard:	FCC Part 15.231	Line:	L1
Test item:	Conducted Emission	Power:	AC 120 V/60 Hz
Mode:	Mode 1	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Description:			

No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
36	1.3300	37.52	7.17	9.69	47.21	16.86	56.00	46.00	-8.79	-29.14	Pass
37	1.3540	36.80	7.14	9.69	46.49	16.83	56.00	46.00	-9.51	-29.17	Pass
38	1.3940	35.89	6.82	9.70	45.59	16.52	56.00	46.00	-10.41	-29.48	Pass
39	1.4660	38.90	7.93	9.70	48.60	17.63	56.00	46.00	-7.40	-28.37	Pass
40	1.5300	35.62	7.03	9.70	45.32	16.73	56.00	46.00	-10.68	-29.27	Pass
41	1.5660	35.34	6.63	9.70	45.04	16.33	56.00	46.00	-10.96	-29.67	Pass
42	1.6300	36.03	7.31	9.71	45.74	17.02	56.00	46.00	-10.26	-28.98	Pass
43	1.6780	36.89	7.22	9.71	46.60	16.93	56.00	46.00	-9.40	-29.07	Pass
44	1.7220	35.79	6.54	9.71	45.50	16.25	56.00	46.00	-10.50	-29.75	Pass
45	1.7500	37.24	7.45	9.71	46.95	17.16	56.00	46.00	-9.05	-28.84	Pass
46	1.8020	35.16	6.94	9.71	44.87	16.65	56.00	46.00	-11.13	-29.35	Pass
47	1.8340	35.33	6.72	9.71	45.04	16.43	56.00	46.00	-10.96	-29.57	Pass
48	1.8860	36.61	7.56	9.72	46.33	17.28	56.00	46.00	-9.67	-28.72	Pass
49	1.9220	36.07	6.43	9.72	45.79	16.15	56.00	46.00	-10.21	-29.85	Pass
50	1.9620	34.96	6.60	9.72	44.68	16.32	56.00	46.00	-11.32	-29.68	Pass
51	2.0340	36.81	7.24	9.72	46.53	16.96	56.00	46.00	-9.47	-29.04	Pass
52	2.0980	35.41	6.68	9.72	45.13	16.40	56.00	46.00	-10.87	-29.60	Pass
53	2.1380	35.52	6.50	9.72	45.24	16.22	56.00	46.00	-10.76	-29.78	Pass
54	2.2100	35.96	6.76	9.72	45.68	16.48	56.00	46.00	-10.32	-29.52	Pass
55	2.2940	36.59	7.33	9.72	46.31	17.05	56.00	46.00	-9.69	-28.95	Pass
56	2.3380	36.38	6.92	9.73	46.11	16.65	56.00	46.00	-9.89	-29.35	Pass
57	2.3980	34.48	6.09	9.73	44.21	15.82	56.00	46.00	-11.79	-30.18	Pass
58	2.4820	34.92	6.05	9.73	44.65	15.78	56.00	46.00	-11.35	-30.22	Pass
59	2.5820	36.12	7.31	9.74	45.86	17.05	56.00	46.00	-10.14	-28.95	Pass
60	2.6780	35.36	6.50	9.74	45.10	16.24	56.00	46.00	-10.90	-29.76	Pass

Note: 1. Result (dBuV) = Correction factor (dB) + Reading(dBuV).
2. Correction factor (dB) = Cable loss (dB) + L.I.S.N. factor (dB).

Standard:	FCC Part 15.231	Line:	L1
Test item:	Conducted Emission	Power:	AC 120 V/60 Hz
Mode:	Mode 1	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Description:			

No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
61	2.8780	34.04	5.31	9.74	43.78	15.05	56.00	46.00	-12.22	-30.95	Pass
62	2.9580	33.79	6.09	9.75	43.54	15.84	56.00	46.00	-12.46	-30.16	Pass
63	3.0860	33.68	5.81	9.75	43.43	15.56	56.00	46.00	-12.57	-30.44	Pass
64	3.1660	33.58	5.46	9.75	43.33	15.21	56.00	46.00	-12.67	-30.79	Pass
65	3.2780	32.93	5.23	9.75	42.68	14.98	56.00	46.00	-13.32	-31.02	Pass
66	3.3500	33.28	5.41	9.75	43.03	15.16	56.00	46.00	-12.97	-30.84	Pass
67	3.4220	32.36	4.91	9.75	42.11	14.66	56.00	46.00	-13.89	-31.34	Pass
68	3.5740	32.93	5.27	9.77	42.70	15.04	56.00	46.00	-13.30	-30.96	Pass
69	3.6940	32.22	4.97	9.77	41.99	14.74	56.00	46.00	-14.01	-31.26	Pass
70	3.7820	31.93	4.58	9.77	41.70	14.35	56.00	46.00	-14.30	-31.65	Pass
71	3.8980	30.74	4.19	9.77	40.51	13.96	56.00	46.00	-15.49	-32.04	Pass
72	4.0700	30.51	4.03	9.77	40.28	13.80	56.00	46.00	-15.72	-32.20	Pass
73	4.1860	30.87	4.38	9.78	40.65	14.16	56.00	46.00	-15.35	-31.84	Pass
74	4.2860	31.55	4.59	9.78	41.33	14.37	56.00	46.00	-14.67	-31.63	Pass
75	4.3380	31.57	5.09	9.78	41.35	14.87	56.00	46.00	-14.65	-31.13	Pass
76	4.4820	32.13	5.02	9.78	41.91	14.80	56.00	46.00	-14.09	-31.20	Pass
77	4.5900	30.88	4.18	9.79	40.67	13.97	56.00	46.00	-15.33	-32.03	Pass
78	4.6860	29.02	3.29	9.79	38.81	13.08	56.00	46.00	-17.19	-32.92	Pass

Note: 1. Result (dBuV) = Correction factor (dB) + Reading(dBuV).
2. Correction factor (dB) = Cable loss (dB) + L.I.S.N. factor (dB).

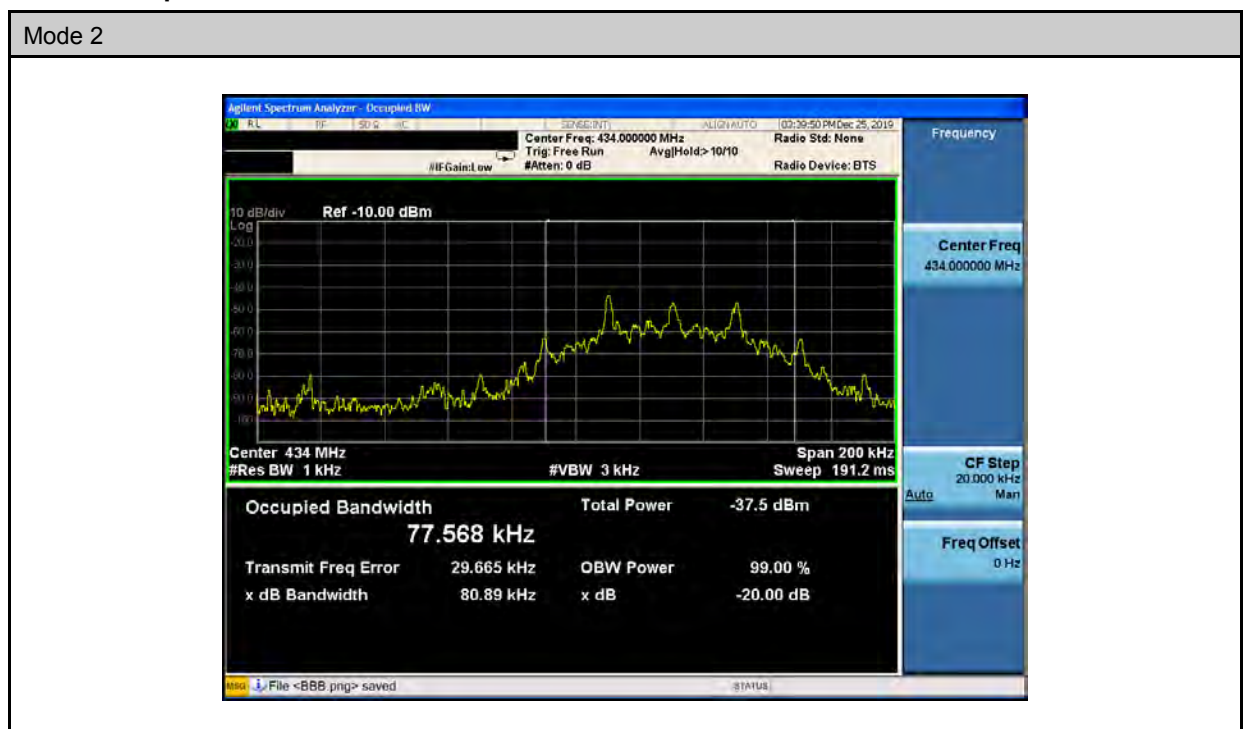


Annex B. Conducted Test Results

20 dB Bandwidth Measurement

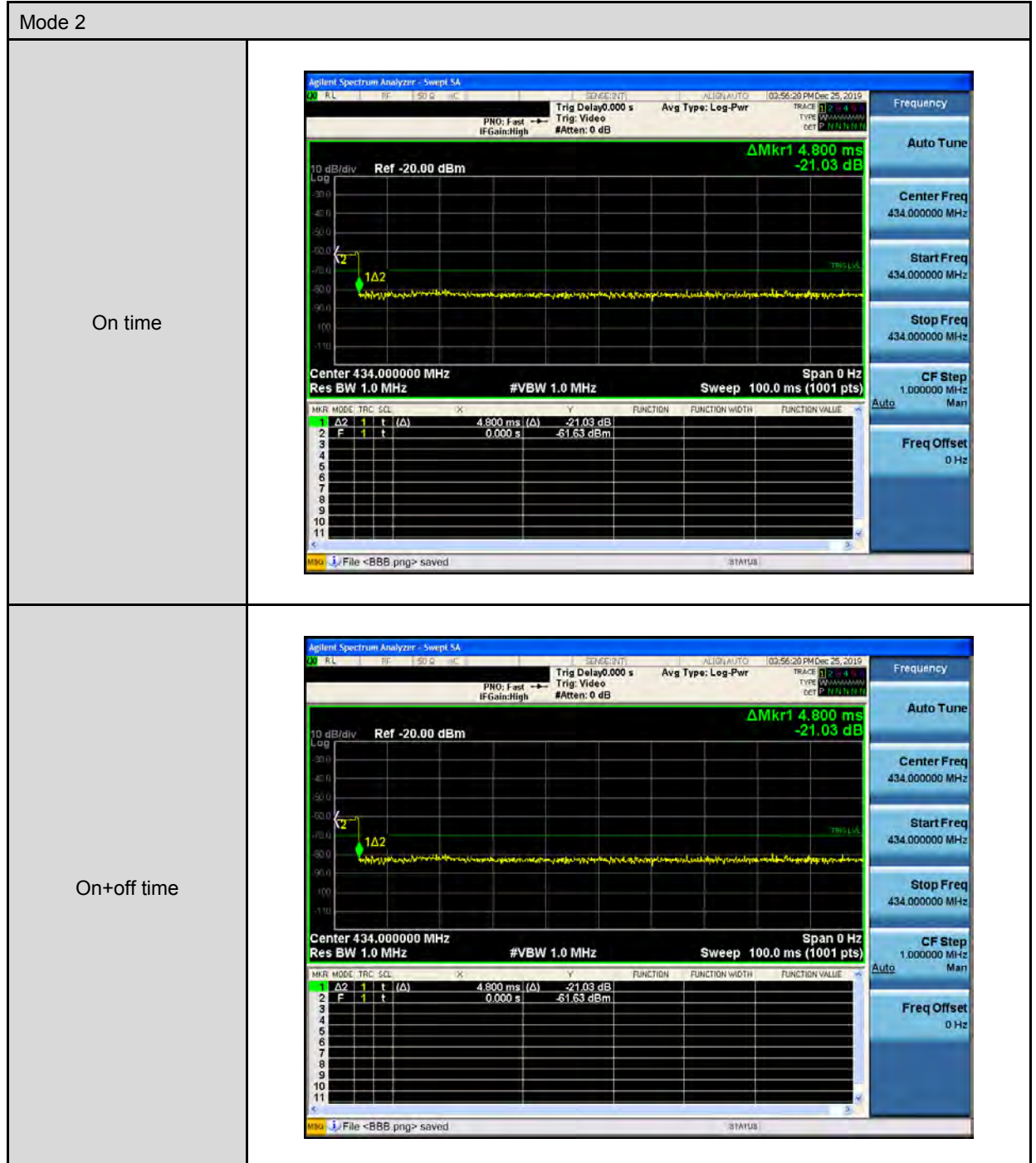
Test Mode	Mode 2	
Frequency (MHz)	20 dB Bandwidth (kHz)	Limited (kHz)
434	80.89	1085

■ Test Graphs



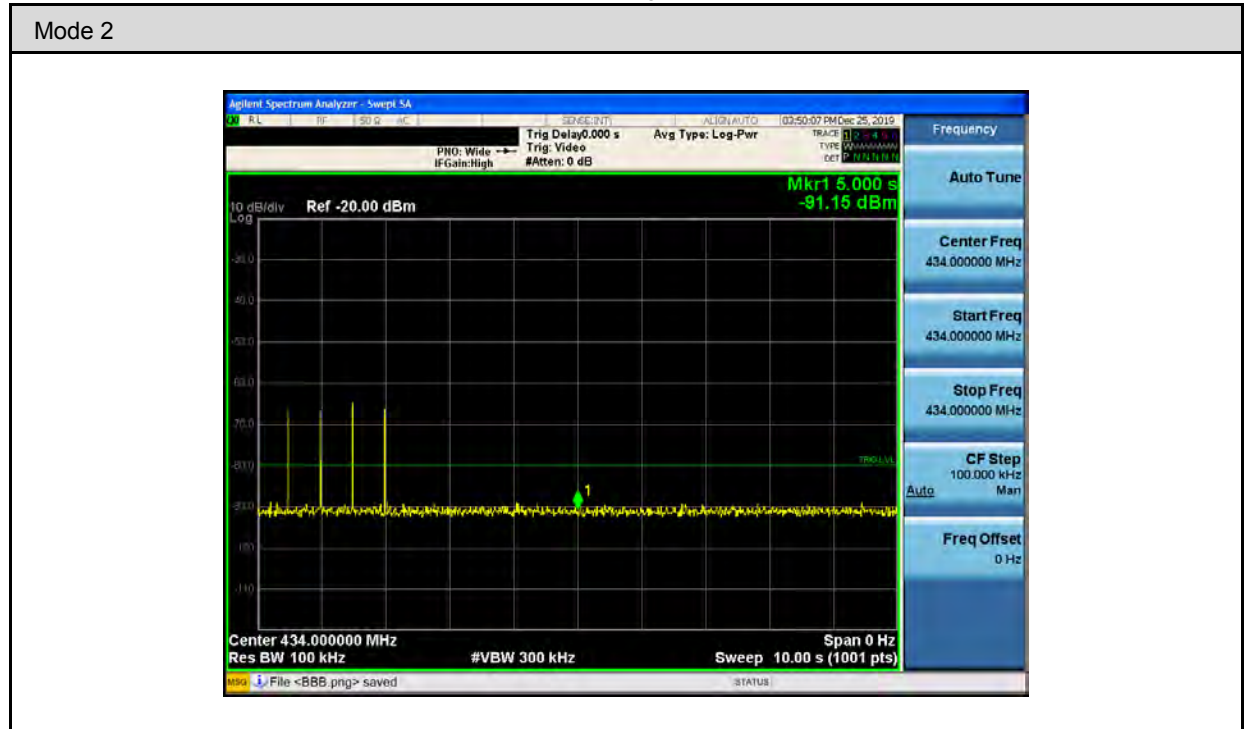
Annex C. Radiated Emissions Measurement

Duty Cycle Test Diagrams





The EUT was complied with the requirement of FCC 15.231 (a) (1), which employed a switch that will automatically deactivate the transmitter within less than 5 seconds of being released.



Duty Cycle Results

Test Mode	Mode 2	
Item	Results	Note
Ton	4.8 ms	----
Tp	100 ms	----
Duty Cycle	0.048	----
Averaging Factor (20 log * Duty Cycle)	-26.37518	----

Please see the diagrams below.

Note:

1. RB=100 kHz, VB=300 kHz, SPAN=0
2. Duty Cycle= Ton/Tp



Fundamental Frequency Test Results

Standard:	FCC Part 15.231	Test Distance:	3 m
Test item:	Fundamental	Power:	AC 120 V/60 Hz
Mode:	Mode 2	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Ant.Polar.:	Horizontal		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	434.02	91.27	-1.37	89.9	100.83	-10.93	peak
2	434.02	89.9	-26.38	63.52	80.83	-17.31	AVG

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

Example: $89.9 = -1.37 + 91.27$

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15.231	Test Distance:	3 m
Test item:	Fundamental	Power:	AC 120 V/60 Hz
Mode:	Mode 2	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Ant.Polar.:	Vertical		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	434.06	90.96	-1.37	89.59	100.83	-11.24	peak
2	434.06	89.59	-26.38	63.21	80.83	-17.62	AVG

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

Example: $89.59 = -1.37 + 90.96$

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Below 1 GHz

Standard:		FCC Part 15.231		Test Distance:		3 m	
Test item:		Radiated Emission		Power:		AC 120 V/60 Hz	
Mode:		Mode 2		Temp.(°C)/Hum.(%RH):		26(°C)/60 %RH	
Description:							
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
91.1100	35.72	-12.07	23.65	43.50	-19.85	QP	H
164.8300	39.22	-5.91	33.31	43.50	-10.19	QP	H
184.2300	41.32	-7.19	34.13	43.50	-9.37	QP	H
491.7200	36.61	-0.44	36.17	46.00	-9.83	QP	H
775.9300	29.98	5.31	35.29	46.00	-10.71	QP	H
938.8900	29.25	8.62	37.87	46.00	-8.13	QP	H
93.0500	41.19	-11.81	29.38	43.50	-14.12	QP	V
164.8300	37.89	-5.91	31.98	43.50	-11.52	QP	V
500.4500	36.84	-0.32	36.52	46.00	-9.48	QP	V
515.9700	36.79	0.01	36.80	46.00	-9.20	QP	V
773.0200	31.61	5.25	36.86	46.00	-9.14	QP	V
934.0400	29.90	8.48	38.38	46.00	-7.62	QP	V

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

Example: 23.65 = -12.07 + 35.72

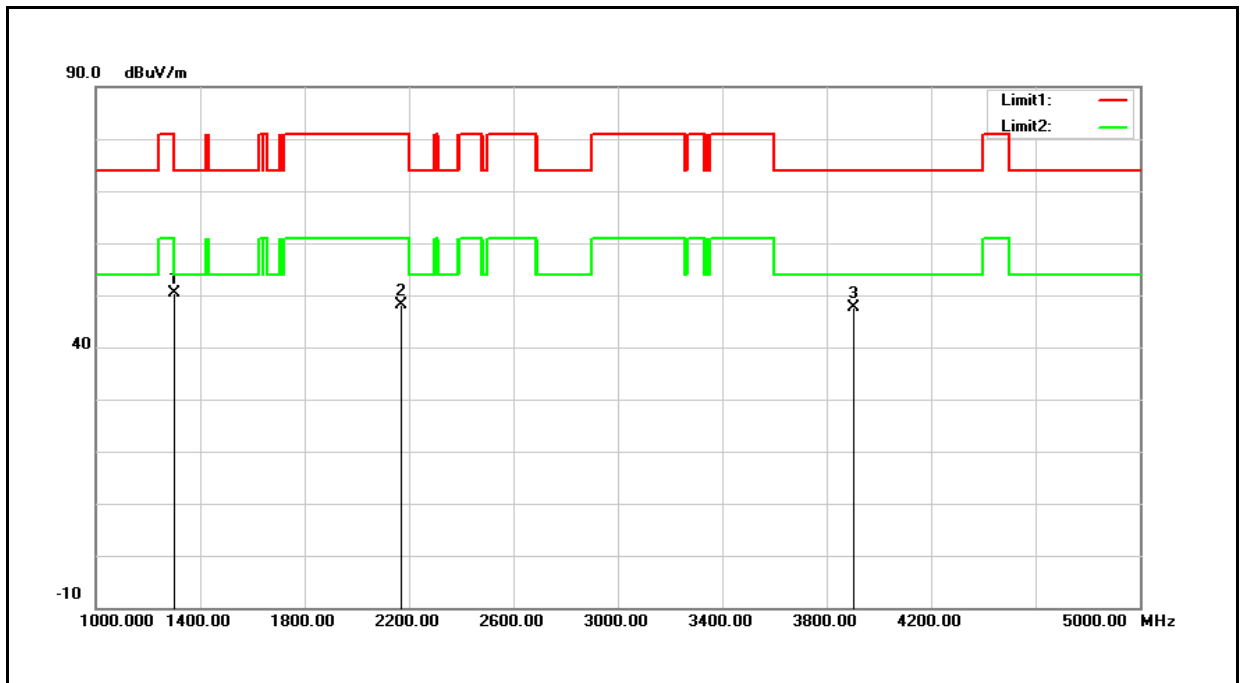
2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Harmonic

Above 1 GHz

Standard:	FCC Part 15.231	Test Distance:	3 m
Test item:	Harmonic	Power:	AC 120 V/60 Hz
Mode:	Mode 2	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Ant.Polar.:	Horizontal		



No	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1302.000	56.06	-5.63	50.43	74.00	-23.57	peak
2	2170.000	50.03	-1.94	48.09	80.83	-32.74	peak
3	3906.000	44.09	3.62	47.71	74.00	-26.29	peak

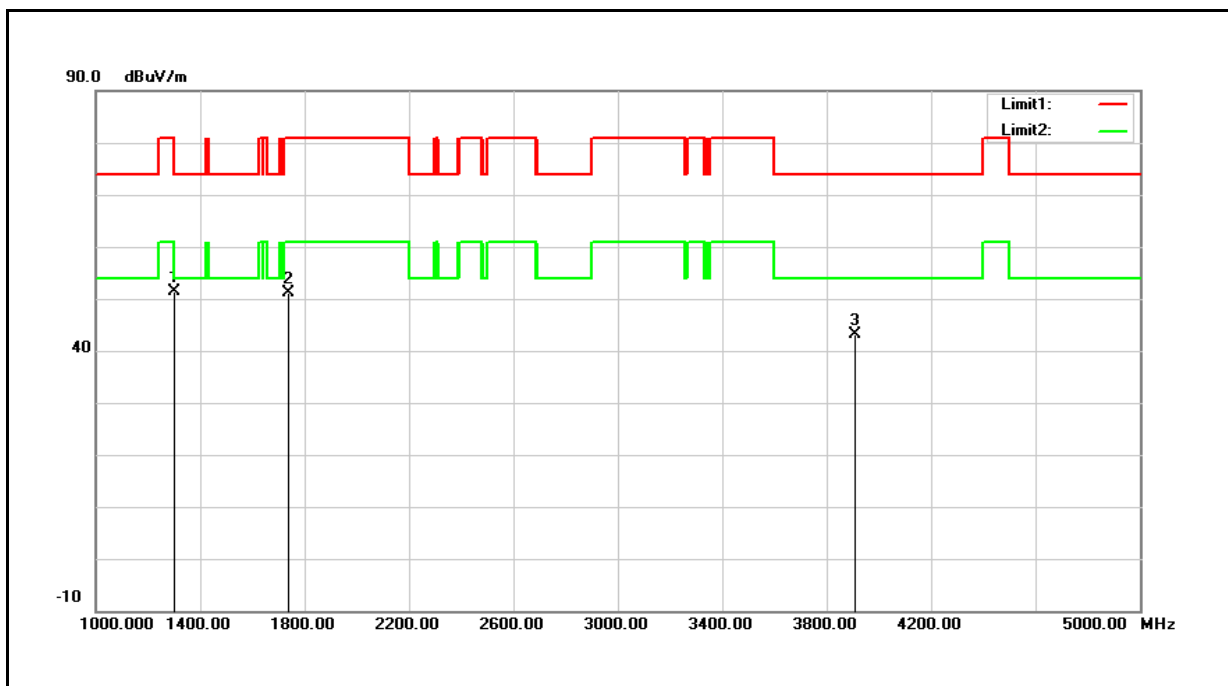
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

Example: 50.43 = -5.63 + 56.06

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15.231	Test Distance:	3 m
Test item:	Harmonic	Power:	AC 120 V/60 Hz
Mode:	Mode 2	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Ant.Polar.:	Vertical		



No	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1302.000	56.94	-5.63	51.31	74.00	-22.69	peak
2	1736.000	54.81	-3.76	51.05	80.83	-29.78	peak
3	3908.000	39.45	3.63	43.08	74.00	-30.92	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

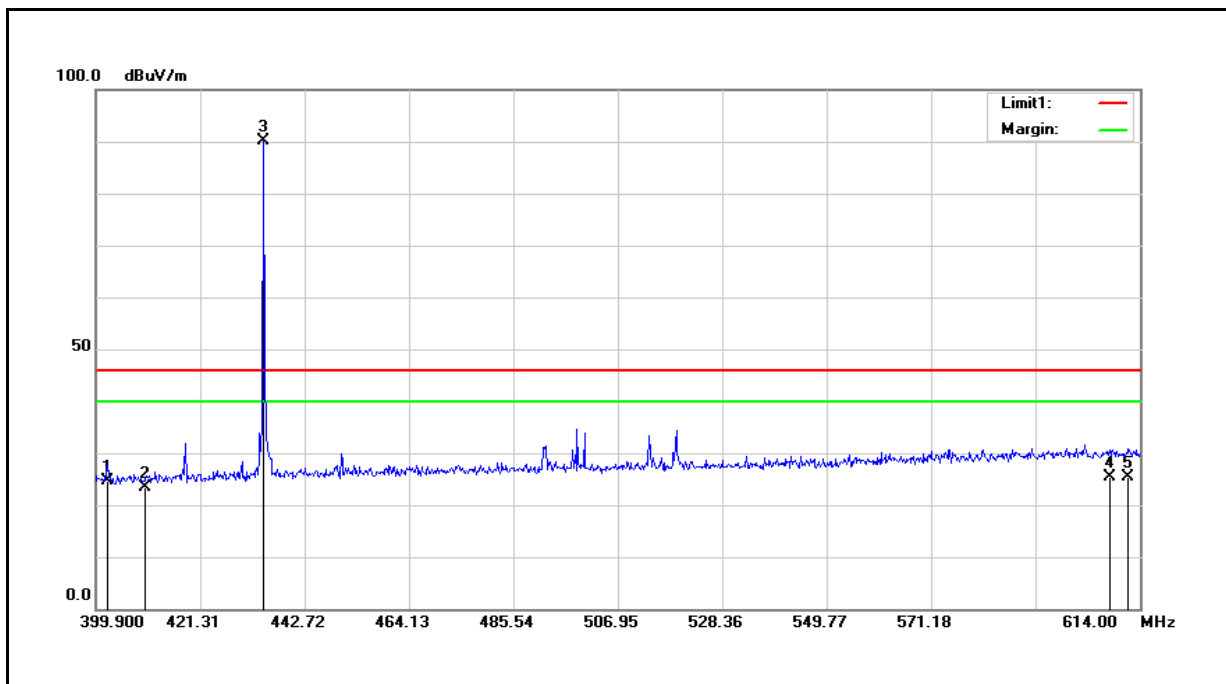
Example: 51.31 = -5.63 + 56.94

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Band edge

Standard:	FCC Part 15.231	Test Distance:	3 m
Test item:	Band edge	Power:	AC 120 V/60 Hz
Mode:	Mode 2	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Ant.Polar.:	Horizontal		



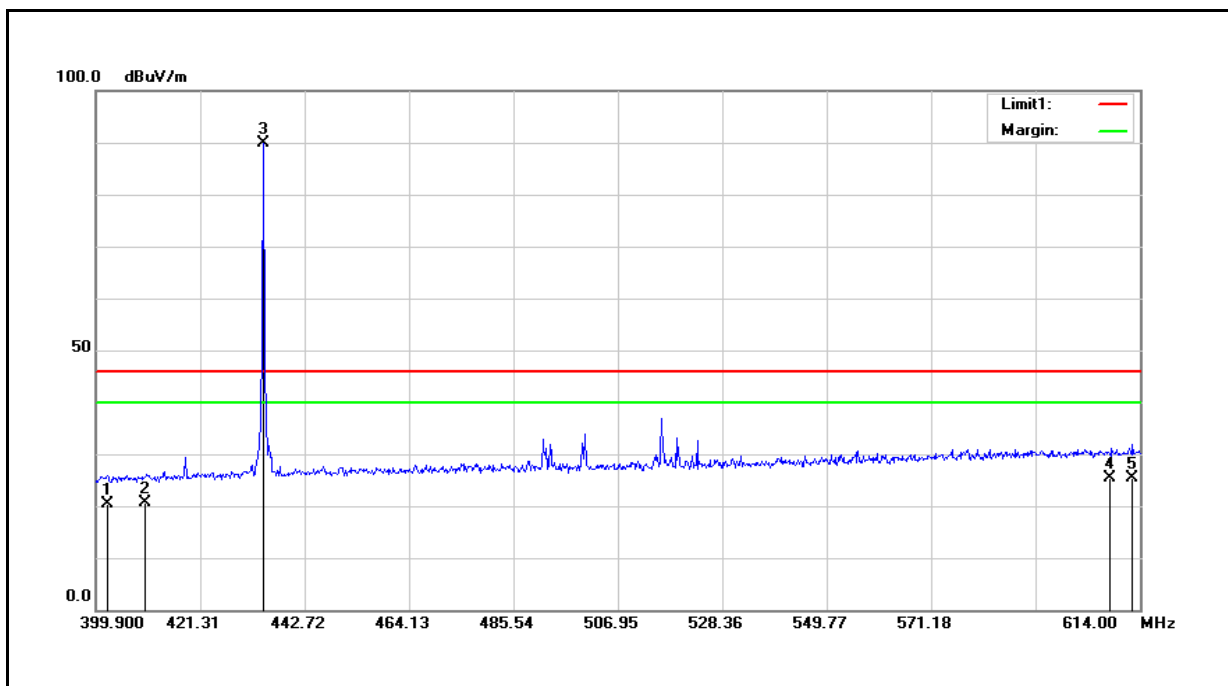
No	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	402.2551	26.81	-2.20	24.61	46.00	-21.39	QP
2	410.0000	25.42	-2.00	23.42	46.00	-22.58	QP
3	434.3701	91.46	-1.37	90.09	---	---	peak
4	608.0000	23.00	2.38	25.38	46.00	-20.62	QP
5	611.6448	23.00	2.41	25.41	46.00	-20.59	QP

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15.231	Test Distance:	3 m
Test item:	Band edge	Power:	AC 120 V/60 Hz
Mode:	Mode 2	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Ant.Polar.:	Vertical		



No	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	402.2551	22.51	-2.20	20.31	46.00	-25.69	QP
2	410.0000	22.64	-2.00	20.64	46.00	-25.36	QP
3	434.3701	91.33	-1.37	89.96	---	---	peak
4	608.0000	23.04	2.38	25.42	46.00	-20.58	QP
5	612.5013	23.04	2.43	25.47	46.00	-20.53	QP

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

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