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PURUS TEK. CORP LTD

TEST REPORT

REPORT NUMBER
200500222TWN-001

ISSUE DATE
Jun. 23, 2020

PAGES
42

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Radio Spectrum
TEST REPORT

Applicant:	**PURUS TEK. CORP LTD** **7F., No.618, Ruiguang Rd., Neihu Dist, Taipei City 114, Taiwan (R.O.C.)**
Product:	**PURUS air i Smart Air Cleaner**
Model No.:	**PURUS air i plus**
Brand Name:	**PURUS**
FCC ID:	**2AVQN010918916**
Test Method/ Standard:	**47 CFR FCC Part 15.247 & ANSI C63.10 2013** **KDB 558074 D01 v05r02**
Test By:	**Intertek Testing Services Taiwan Ltd.,** **Hsinchu Laboratory** **No. 11, Lane 275, Ko-Nan 1 Street, Chia-Tung Li,** **Shiang-Shan District, Hsinchu City, Taiwan**

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Revision History

Report No.	Issue Date	Revision Summary
200500222TWN-001	Jun. 23, 2020	Original report

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Summary of Test Data

Test Requirement	Applicable Rule (Section 15.247)	Result
Minimum 6 dB Bandwidth	15.247(a)(2)	Pass
Maximum Peak Conducted Output Power	15.247(b)(3)	Pass
Power Spectral Density	15.247(e)	Pass
Emissions In Non-Restricted Frequency Bands	15.247(d)	Pass
Emissions In Restricted Frequency Bands (Radiated emission measurements)	15.247(d), 15.205, 15.209	Pass
Emission On The Band Edge	15.247(d), 15.205	Pass
AC Power Line Conducted Emission	15.207	Pass
Antenna Requirement	15.203	Pass

Note: Please note that the test results with statement of conformity, the decision rules which are based on: Safety Testing: the specification, standard or IEC Guide 115.
Other Testing: the specification, standard and not taking into account the measurement uncertainty.

1. General Information

1.1 Identification of the EUT

Product:	PURUS air i Smart Air Cleaner
Model No.:	PURUS air i plus
S/N:	PA19420030420
Operating Frequency:	2402 MHz ~ 2480 MHz
Channel Number:	40 channels
Frequency of Each Channel:	2402+2 k, k＝0 ~ 39
Access scheme:	GFSK
Rated Power:	DC 5V
Power Cord:	N/A
Sample receiving date:	May 15, 2020
Sample condition:	Workable
Test Date(s):	May 20, 2020 ~ Jun. 23, 2020

1.2 Antenna description

Antenna Gain : 1.5 dBi
Antenna Type : PCB Antenna
Connector Type : Fixed

1.3 Operation mode

Power setting: 4 dBm
EUT use TTL to USB serial connected to Notebook PC & LAN, executing “Pixart BLE Tool v1.1.1” and select different frequency and modulation.

Conducted Emission test
Test Voltage: 120Vac, 60Hz
(1) The EUT 5Vdc power by adapter or Notebook PC.
(2) The EUT Bluetooth link Smartphone, and use app Program control function
(3) Select fan speed: 1 & 10 for during all test.

1.4 Peripherals equipment

Peripherals	Brand	Model No.	Serial No.	Data cable
Notebook PC	HP	HP ProBook 440 G3	5CD8021S9H	USB shielded cable 1.6 meter TTL to USB serial cable 0.1 meter
Adapter	kobo	PSAI10R-050Q	N/A	USB shielded cable 1.2 meter

For Conducted Emission test only

Adapter mode

Peripherals	Brand	Model No.	Serial No.	Description of Data Cable
Adapter	kobo	PSAI10R-050Q	N/A	USB shielded cable 1.2 meter
Smart phone	ASUS	zenfone3	N/A	N/A

Notebook PC mode

Peripherals	Brand	Model No.	Serial No.	Description of Data Cable
USB Dongle	Transcend	TS4GJF330	556179-0897	USB shielded cable 1.6 meter
Modem	GVC	SF-1156V/R	8D010046E	N/A
Printer	HP	hp deskjet 3325	N/A	N/A
Mouse	N/A	N/A	N/A	N/A
Notebook PC	HP	WZR-AGL300NH	N/A	USB shielded cable 1.2 meter
Smart phone	ASUS	zenfone3	N/A	N/A

2. Minimum 6 dB Bandwidth

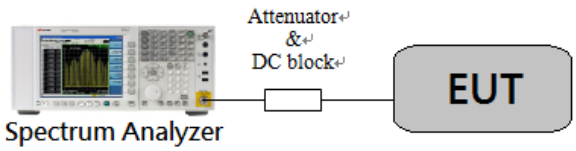
2.1 Instrument Setting

Spectrum Parameter	Setting
Detector	Peak
RBW	100kHz
VBW	≧3 x RBW
Sweep	Auto couple
Trace	Allow the trace to stabilize.
Span	Between two times and five times the occupied bandwidth
Attenuation	Auto

2.2 Test Procedure

Step 1	The transmitter output was connected to the spectrum analyzer.
Step 2	Test was performed accordance with ANSI C63.10.
Step 3	Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

2.3 Test Diagram



2.4 Limit

The minimum 6 dB bandwidth shall be at least 500 kHz.

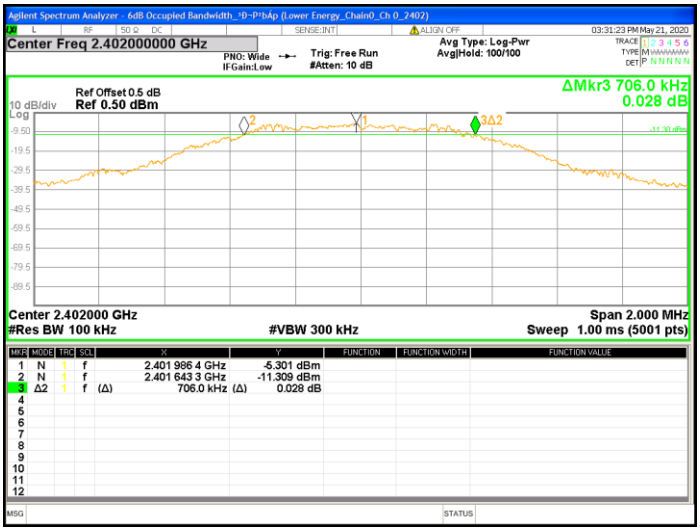
2.5 Operating Environment Condition

Temperature (℃) :	24
Relative Humidity (%) :	60

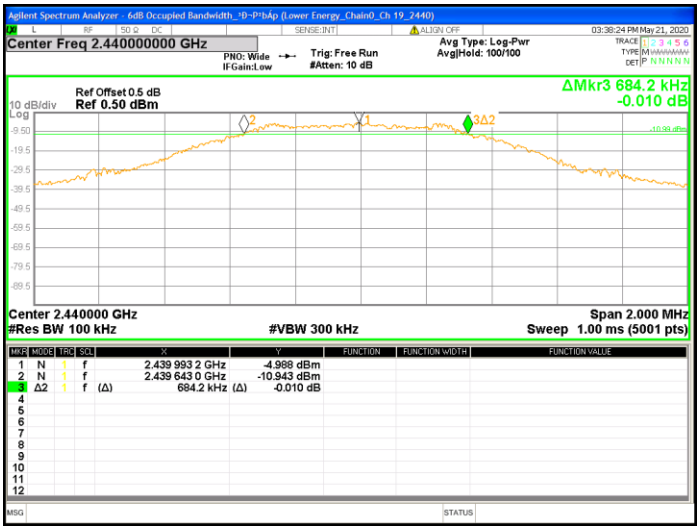
2.6 Test Results

Mode	Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
BLE	0	2402	0.706	>0.5	Pass
	19	2440	0.684	>0.5	Pass
	39	2480	0.693	>0.5	Pass

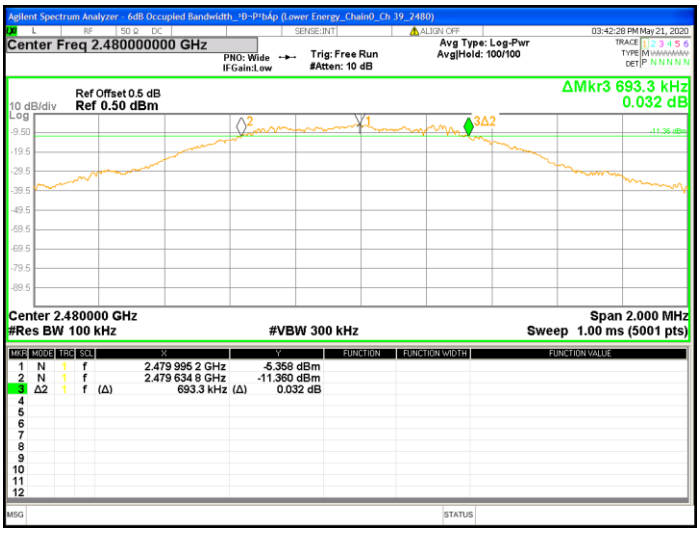
Chain0 : 6dB Bandwidth @ Lower Energy Mode Ch 0



Chain0 : 6dB Bandwidth @ Lower Energy Mode Ch 19



Chain0 : 6dB Bandwidth @ Lower Energy Mode Ch 39



3. Maximum Peak Conducted Output Power

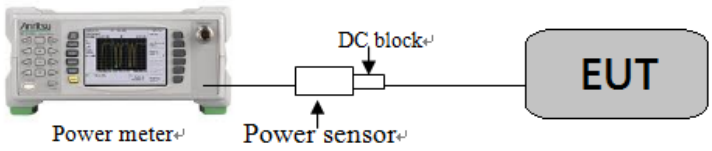
3.1 Instrument Setting

Power Meter Parameter	Setting
Bandwidth	65MHz bandwidth is greater than the EUT emission bandwidth
Detector	Peak & Average

3.2Test Procedure

he preferred methodology is to use integrated average power measurements, as described in 11.9.2 and 11.13.3 of ANSI C63.10. The peak integrated band power methods of 11.9.1.2 and 11.13.3.2 of ANSI C63.10 are not applicable for FCC compliance testing purposes.

3.3 Test Diagram



3.4 Limit

For systems using digital modulation in the 2400-2483.5 MHz: 1 Watt (30dBm)

3.5 Operating Environment Condition

Temperature (℃) :	24
Relative Humidity (%) :	60

3.6 Test Results

Mode	Channel	Frequency (MHz)	Output Power (AV) (dBm)	Total Power (AV) (mW)	Maximum power (PK) (dBm)	Maximum power (PK) (mW)	Limit (dBm)	Margin (dB)
BLE	0	2042	-2.18	0.61	-1.80	0.66	30	-31.80
	19	2440	-2.13	0.61	-1.77	0.67	30	-31.77
	39	2480	-2.38	0.58	-2.01	0.63	30	-32.01

4. Power Spectral Density

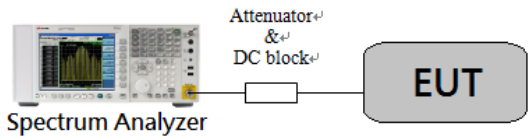
4.1 Instrument Setting

Spectrum Function	Setting
Detector	Peak
RBW	≧3 kHz
VBW	≧3 x RBW
Sweep	Auto couple
Trace	Max hold
Span	1.5 times x 6dB bandwidth
Attenuation	Auto

4.2 Test Procedure

Step 1	Test procedure refer to subclause 11.10 of ANSI C63.10.
Step 2	Using the maximum conducted output power in the fundamental emission demonstrates compliance. The EUT must be configured to transmit continuously at full power over the measurement duration.
Step 3	Use the peak marker function to determine the maximum amplitude level within the RBW.

4.3 Test Diagram



4.4 Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission

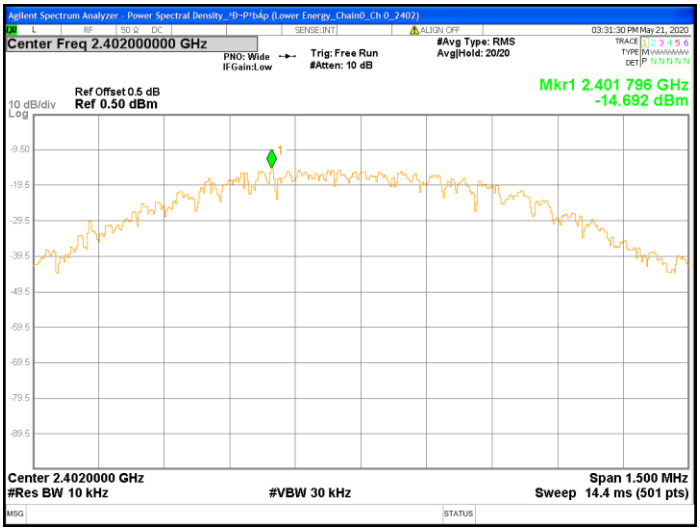
4.5 Operating Environment Condition

Temperature (℃) :	24
Relative Humidity (%) :	60

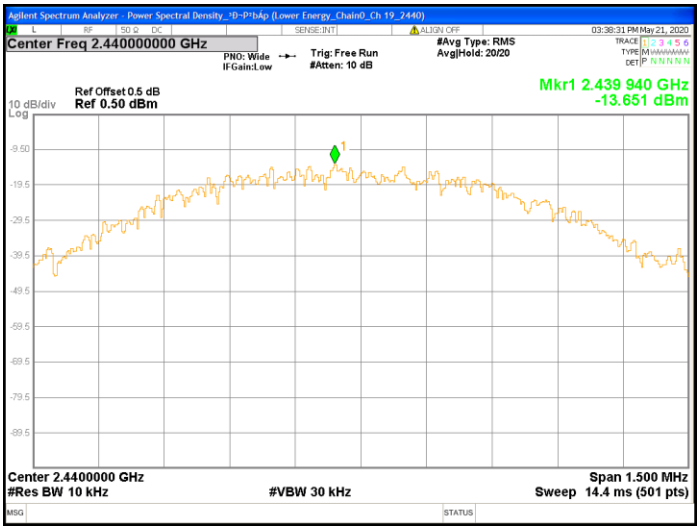
4.6 Test Results

Mode	Channel	Frequency (MHz)	RBW factor	PSD in 10kHz	PSD in 3kHz		Limit (dBm)	Margin (dB)
					(dBm)	(mW)		
BLE	0	2402	5.23	-14.69	-19.92	0.01	8	-27.92
	19	2440	5.23	-13.65	-18.88	0.01	8	-26.88
	39	2480	5.23	-14.16	-19.39	0.01	8	-27.39

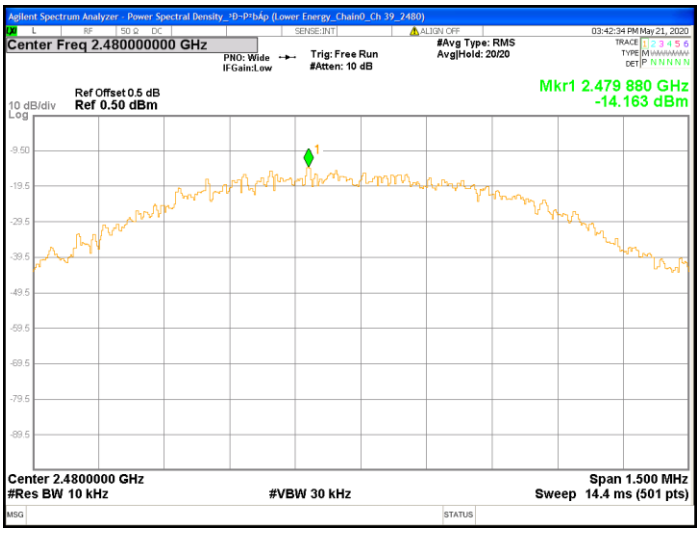
Chain0 : Power Spectral Density @ Lower Energy Mode Ch 0



Chain0 : Power Spectral Density @ Lower Energy Mode Ch 19



Chain0 : Power Spectral Density @ Lower Energy Mode Ch 39



5. Emissions in Non-Restricted Frequency Bands

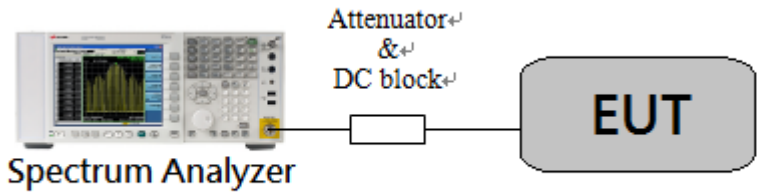
5.1 Instruments Setting

Spectrum Function	Setting (Reference Level)	Setting (Emission Level)
Detector	Peak	Peak
RBW	≧ 100 kHz	≧ 100 kHz
VBW	≧ 3 x RBW	≧ 3 x RBW
Sweep	Auto couple	Auto couple
Trace	Max hold	Max hold
Span	≧ 1.5 time 6dB bandwidth	
Attenuation	Auto	Auto

5.2 Test Procedure

Step 1 The procedure was used in antenna-port conducted and connected to the spectrum analyzer.
Step 2 Set instrument center frequency to center frequency.
Step 3 Use the parameter configured in subclause 11.11 of ANSI C63.10 to measure.
Step 4 Use the peak marker function to determine the maximum amplitude level.

5.3 Test Diagram



5.4 Limit

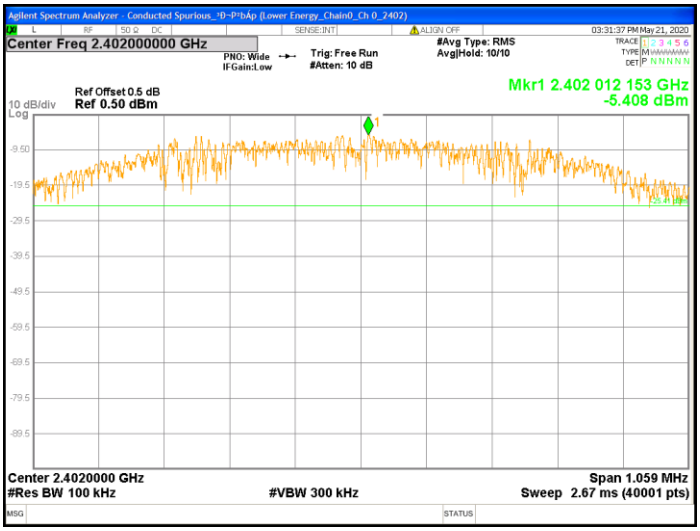
The peak output power measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz

5.5 Operating Environment Condition

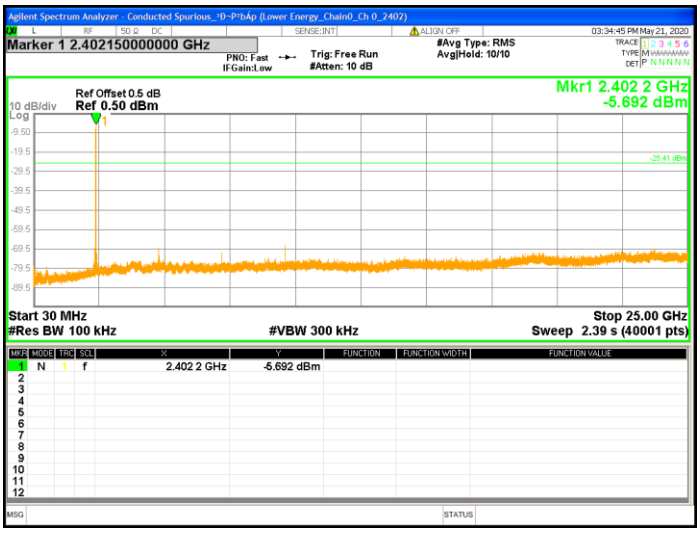
Temperature (℃) :	24
Relative Humidity (%) :	60

5.6 Test Results

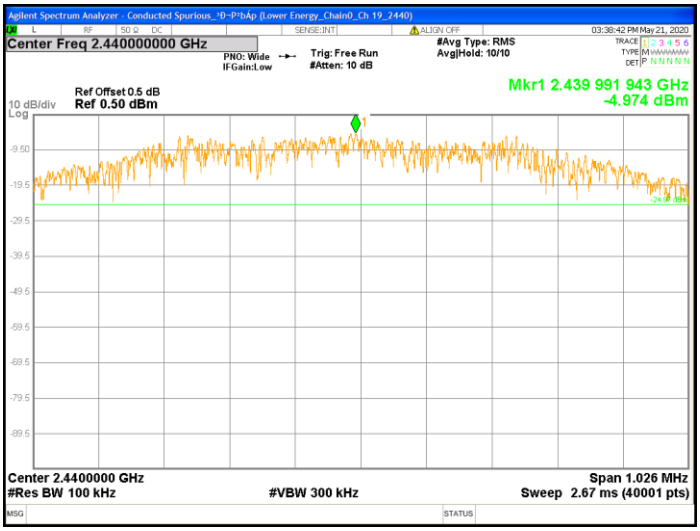
Chain0 : Conducted Spurious @ Lower Energy Mode Ch 0



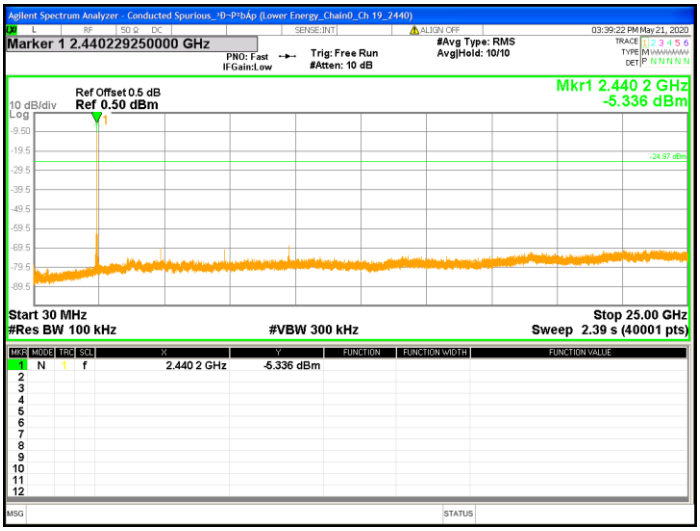
Chain0 : Conducted Spurious @ Lower Energy Mode Ch 0



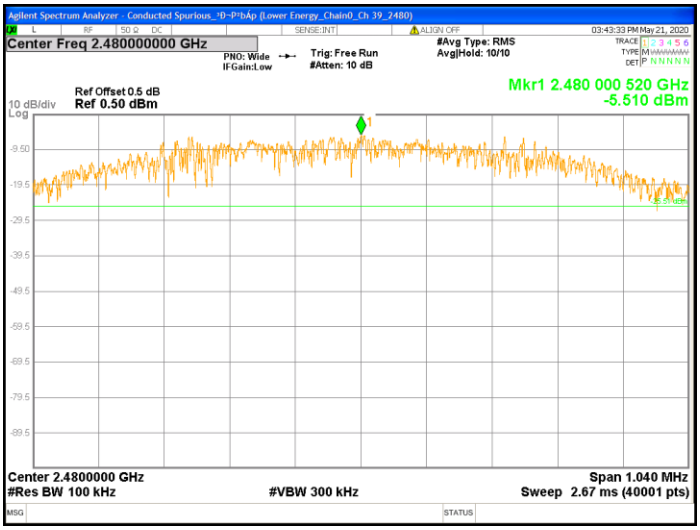
Chain0 : Conducted Spurious @ Lower Energy Mode Ch 19



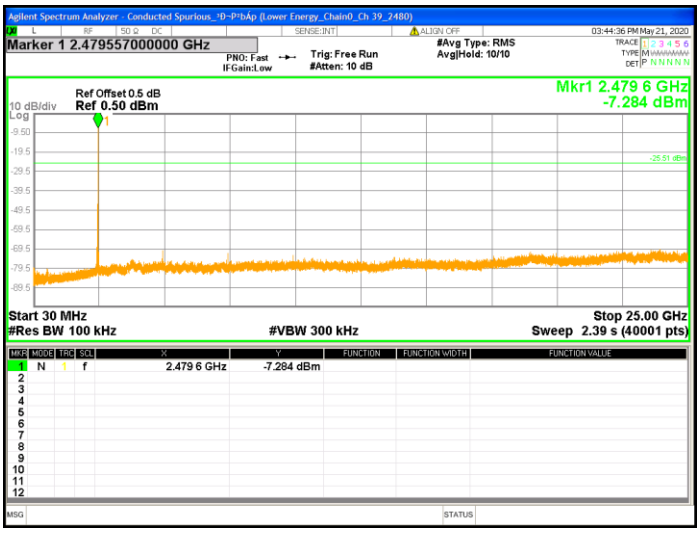
Chain0 : Conducted Spurious @ Lower Energy Mode Ch 19



Chain0 : Conducted Spurious @ Lower Energy Mode Ch 39



Chain0 : Conducted Spurious @ Lower Energy Mode Ch 39



6. Emissions in Restricted Frequency Bands (Radiated emission measurements)

6.1 Instrument Setting

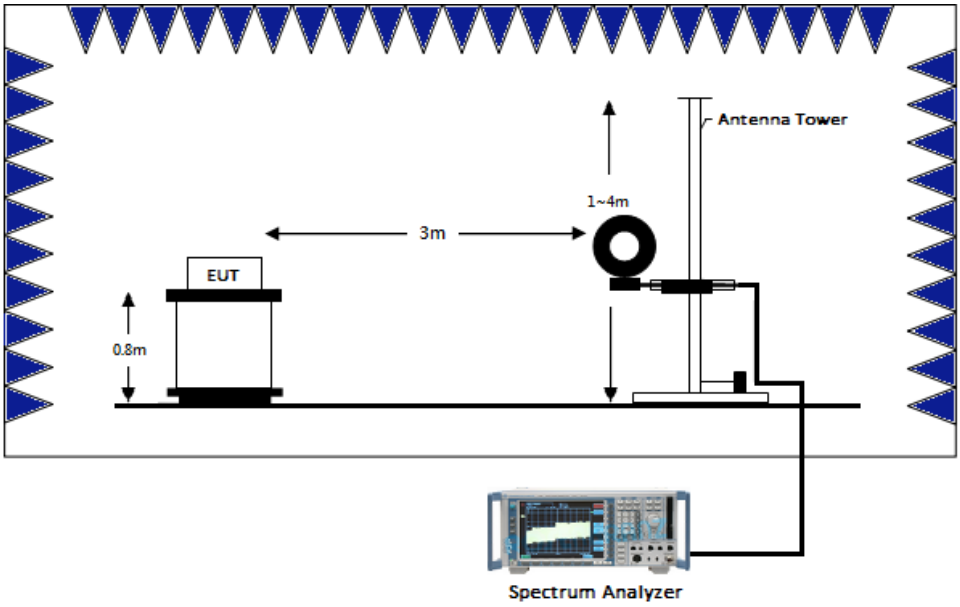
Receiver Function	Setting (Below 1GHz)	Setting (Above 1GHz)
Detector	QP	Peak and Average
RBW	9-150 kHz ; 200-300 Hz 0.15-30 MHz; 9-10 kHz 30-1000 MHz; 100-120 kHz	1MHz
VBW	≧3 x RBW	3MHz
Sweep	Auto couple	Auto couple
Start Frequency	9 kHz	1GHz
Stop Frequency	1 GHz	Tenth harmonic
Attenuation	Auto	Auto

6.2 Test Procedure

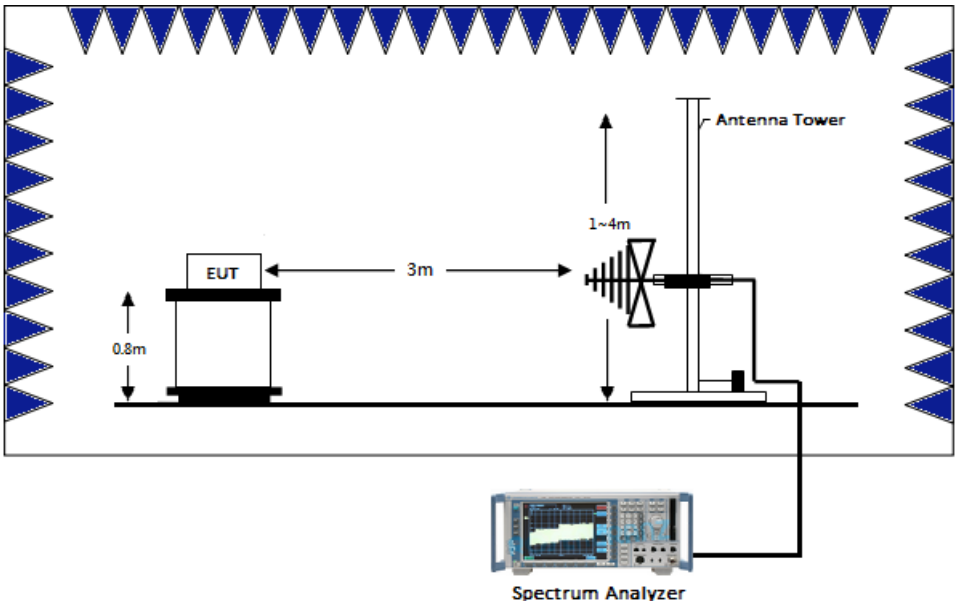
Step 1	Configure the EUT according to ANSI C63.10:2013. The EUT was placed on the top of the turntable 0.8 meter (below 1GHz) and 1.5 meter (above 1GHz) above ground. The center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
Step 2	Power on the EUT and all the companion devices. The turntable was rotated by 360 degree to find the position of the maximum emission level.
Step 3	The height of the receiving antenna was varied between one meter and four meters above ground to find the maximum emission field strength of the both horizontal and vertical polarization.
Step 4	If find the frequencies above the limit or below within 3dB, the antenna tower was scan (from 1m to 4m) and then the turntable was rotated to find the maximum reading.
Step 5	Set the test-receiver system to peak or CISPR quasi-peak detector with specified bandwidth under maximum hold mode.
Step 6	For emissions above 1GHz, use 1MHz VBW and 3MHz RBW for reading in spectrum analyzer. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response.
Step 7	If the emissions level of the EUT in peak mode was 3dB lower than the average limit specified then testing will be stopped and peak values of the EUT will be reported. Otherwise, the emissions which do not have 3dB margin will be measured using the quasi-peak method for below 1GHz.
Step 8	For testing above 1GHz, The emissions level of the EUT in peak mode was lower than average limit, then testing will be stopped and peak values of the EUT will be reported, otherwise, the emission will be measured in average mode again and reported.
Step 9	In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be quasi-peak measured by receiver.

6.3 Test Diagram

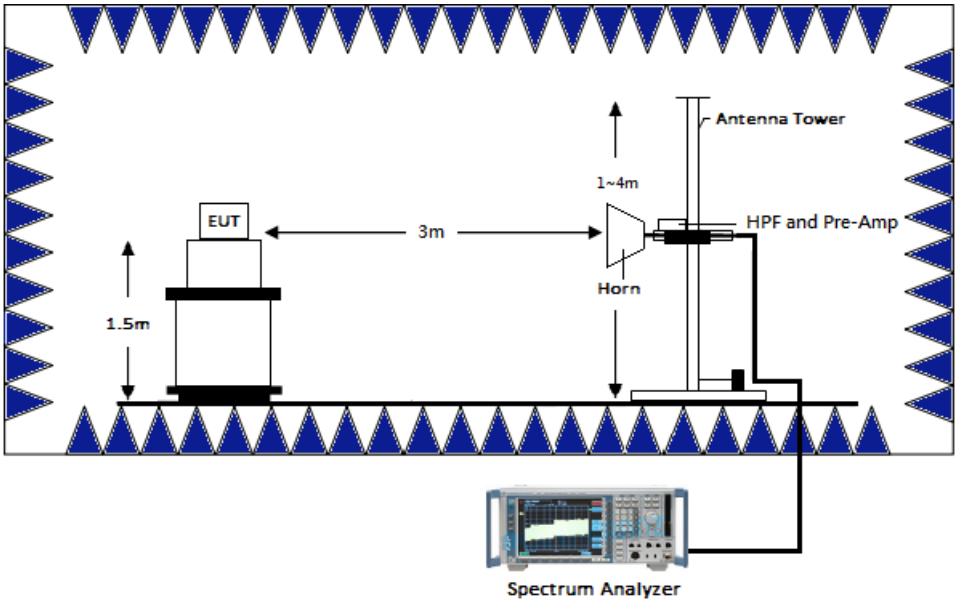
6.3.1 Radiated emission from 9kHz to 30MHz uses Loop Antenna:



6.3.2 Radiated emission below 1GHz using Bilog Antenna



6.3.3 Radiated emission above 1GHz using Horn Antenna



6.4 Limit

Frequency(MHz)	Field Strength(uV/m)	Measurement distance(m)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remark:

1. In the above table, the tighter limit applies at the band edges.
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system

6.5 Operating Environment Condition

Temperature (℃) :	25
Relative Humidity (%) :	61

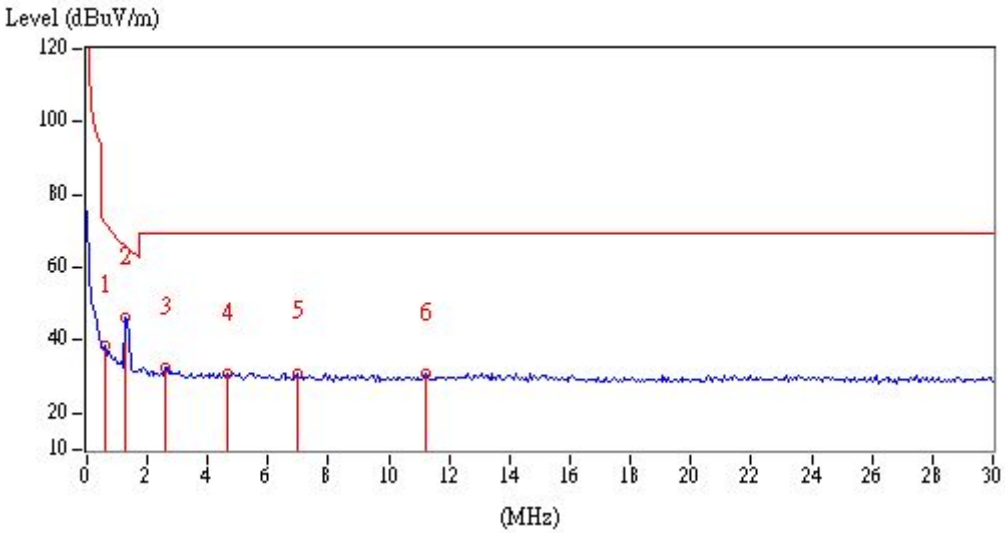
6.6 Test Result

6.6.1 Measurement results: frequencies 9kHz to 30MHz

The test was performed on EUT under continuously transmitting mode. The worst case occurred at Channel 39.

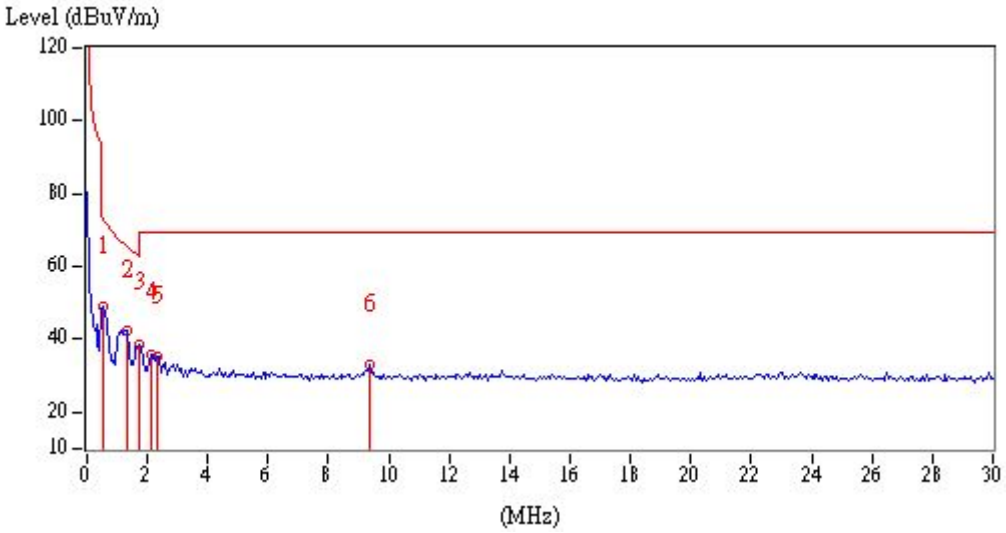
Ant Polarity	Frequency (MHz)	Detector	Factor (dB/m)	Reading (dBµV)	Corrected Reading (dBµV/m)	Limit @ 3m (dBµV/m)	Margin (dB)
Perpendicular	0.61	QP	18.44	20.27	38.71	71.90	-33.19
Perpendicular	1.27	QP	18.46	27.94	46.40	65.53	-19.13
Perpendicular	2.59	QP	18.48	14.20	32.68	69.54	-36.86
Perpendicular	4.63	QP	19.08	11.59	30.67	69.54	-38.87
Perpendicular	6.97	QP	19.66	11.49	31.15	69.54	-38.39
Perpendicular	11.23	QP	20.41	10.38	30.79	69.54	-38.75

Remark: Corr. Factor = Antenna Factor + Cable Loss



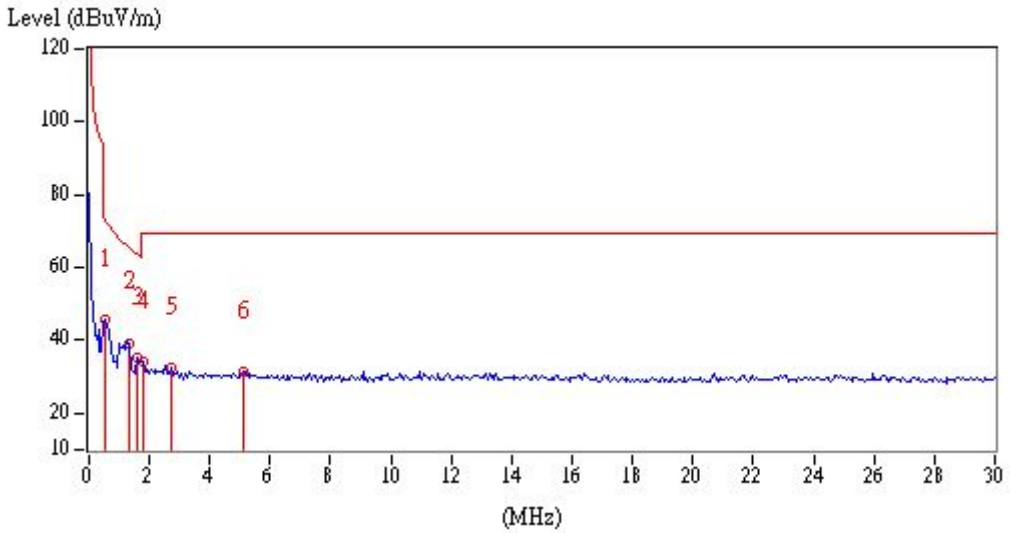
Ant Polarity	Frequency (MHz)	Detector	Factor (dB/m)	Reading (dBµV)	Corrected Reading (dBµV/m)	Limit @ 3m (dBµV/m)	Margin (dB)
Parallel	0.55	QP	18.43	30.34	48.77	72.80	-24.03
Parallel	1.33	QP	18.46	23.96	42.42	65.13	-22.71
Parallel	1.75	QP	18.47	20.39	38.86	69.54	-30.68
Parallel	2.11	QP	18.47	17.65	36.12	69.54	-33.42
Parallel	2.35	QP	18.48	17.04	35.52	69.54	-34.02
Parallel	9.37	QP	20.21	12.79	33.00	69.54	-36.54

Remark: Corr. Factor = Antenna Factor + Cable Loss



Ant Polarity	Frequency (MHz)	Detector	Factor (dB/m)	Reading (dBµV)	Corrected Reading (dBµV/m)	Limit @ 3m (dBµV/m)	Margin (dB)
Ground-parallel	0.55	QP	18.43	27.39	45.82	72.80	-26.98
Ground-parallel	1.33	QP	18.46	20.96	39.42	65.13	-25.71
Ground-parallel	1.57	QP	18.47	16.89	35.36	63.69	-28.33
Ground-parallel	1.81	QP	18.47	15.50	33.97	69.54	-35.57
Ground-parallel	2.71	QP	18.48	14.20	32.68	69.54	-36.86
Ground-parallel	5.11	QP	19.23	12.07	31.30	69.54	-38.24

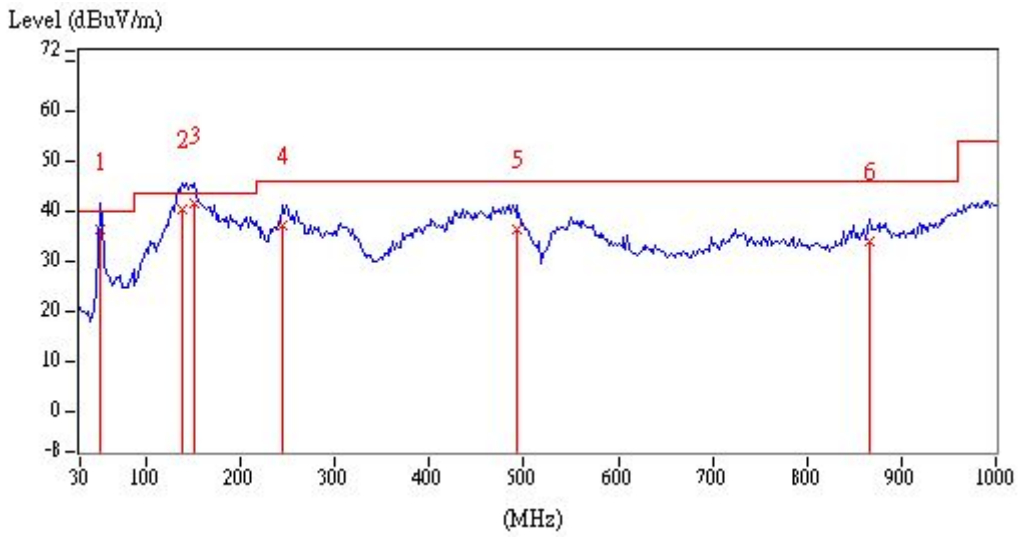
Remark: Corr. Factor = Antenna Factor + Cable Loss



6.6.1 Measurement results: frequencies below 1 GHz

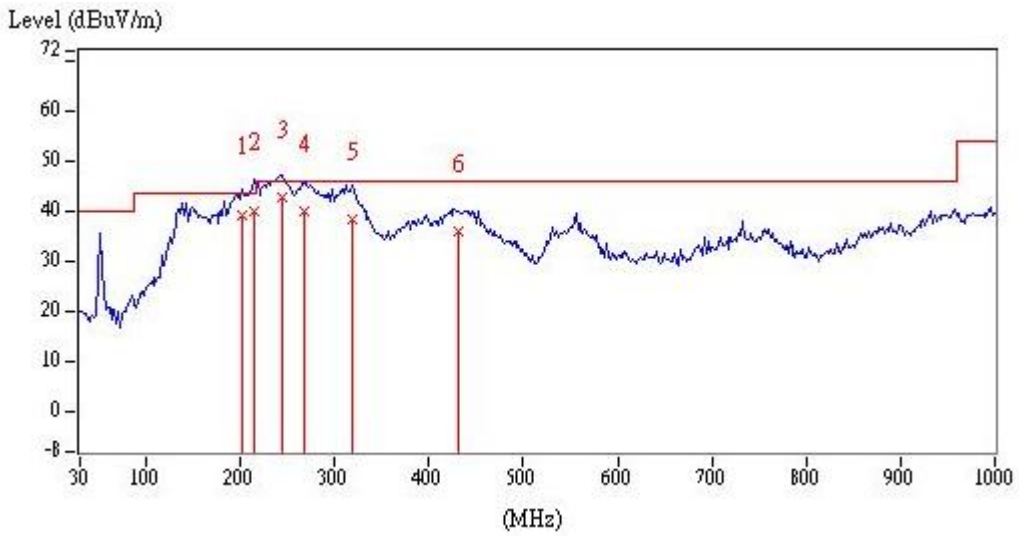
The test was performed on EUT under continuously transmitting mode. The worst case occurred at Channel 39.

Ant Polarity	Frequency (MHz)	Detector	Factor (dB/m)	Reading (dBµV)	Corrected Reading (dBµV/m)	Limit @ 3m (dBµV/m)	Margin (dB)
Vertical	52.22	QP	18.89	17.51	36.40	40.00	-3.60
Vertical	138.64	QP	22.28	18.32	40.60	43.50	-2.90
Vertical	150.28	QP	21.00	20.50	41.50	43.50	-2.00
Vertical	245.34	QP	20.10	17.20	37.30	46.00	-8.70
Vertical	491.72	QP	26.33	10.17	36.50	46.00	-9.50
Vertical	866.14	QP	31.48	2.62	34.10	46.00	-11.90



Ant Polarity	Frequency (MHz)	Detector	Factor (dB/m)	Reading (dBµV)	Corrected Reading (dBµV/m)	Limit @ 3m (dBµV/m)	Margin (dB)
Horizontal	202.66	QP	17.46	21.94	39.40	43.50	-4.10
Horizontal	214.11	QP	17.72	22.38	40.10	43.50	-3.40
Horizontal	244.40	QP	20.04	22.66	42.70	46.00	-3.30
Horizontal	266.68	QP	21.34	18.56	39.90	46.00	-6.10
Horizontal	319.06	QP	22.86	15.44	38.30	46.00	-7.70
Horizontal	431.58	QP	25.66	10.24	35.90	46.00	-10.10

Remark: Corr. Factor = Antenna Factor + Cable Loss



6.6.2 Measurement results: frequency above 1GHz to 25GHz

Mode	Frequency (MHz)	Spectrum Analyzer Detector	Ant. Pol. (H/V)	Correction Factor (dB/m)	Reading (dBµV)	Corrected Reading (dBµV/m)	Limit @ 3 m (dBµV/m)	Margin (dB)
BLE , Ch0	4804	PK	V	7.34	35.59	42.94	74.00	-31.06
	4804	PK	H	7.34	37.49	44.83	74.00	-29.17
BLE , Ch19	4880	PK	V	7.54	35.19	42.73	74.00	-31.27
	4880	PK	H	7.54	36.73	44.27	74.00	-29.73
BLE , Ch39	4960	PK	V	7.75	36.36	44.10	74.00	-29.90
	4960	PK	H	7.75	40.16	47.90	74.00	-26.10

Remark: Correction Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Pre_Amplifier Gain

7. Emission on Band Edge

7.1 Instrument Setting

Spectrum Function	Setting
Detector	Peak and Average
RBW	1MHz
VBW	3MHz
Sweep	Auto couple
Restrict bands	2310 MHz ~ 2390 MHz 2483.5 MHz ~ 2500 MHz
Attenuation	Auto

7.2 Test Procedure

The test procedure is the same as Emissions in Restricted Frequency Bands (Radiated emission measurements).

7.3 Operating Environment Condition

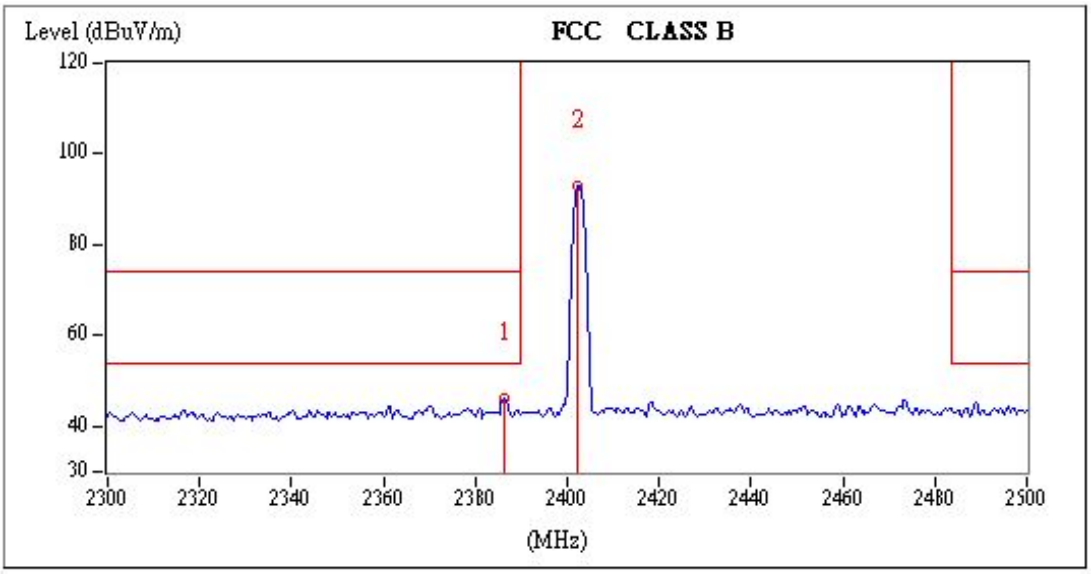
Temperature (℃) :	27
Relative Humidity (%) :	59

7.4 Test Results

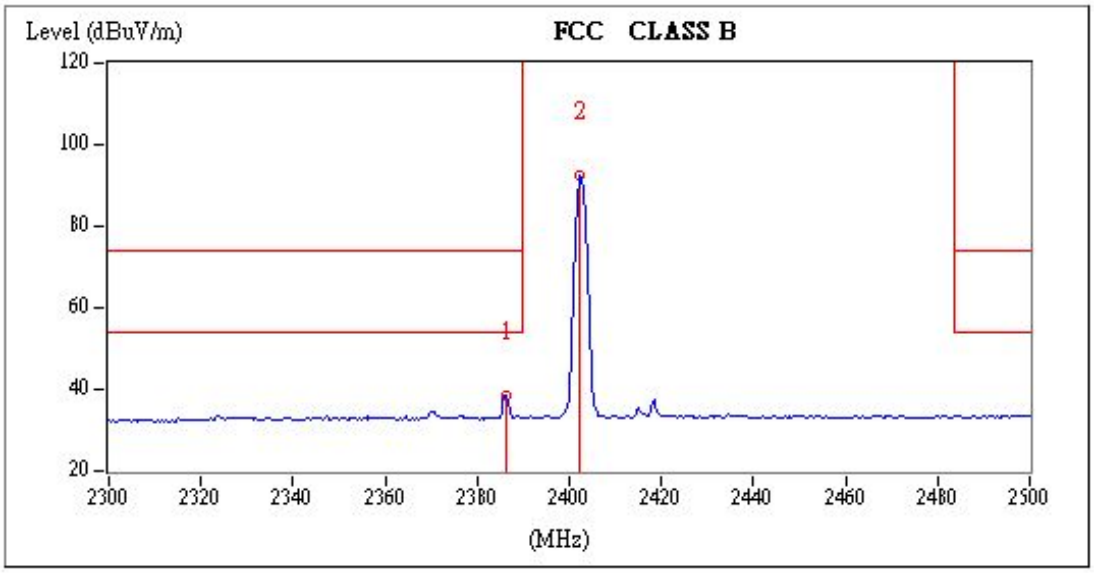
Mode	Frequency (MHz)	Spectrum Analyzer Detector	Ant. Pol. (H/V)	Correction Factor (dB/m)	Reading (dBµV)	Corrected Reading (dBµV/m)	Limit @ 3 m (dBµV/m)	Margin (dB)	Restricted band (MHz)
BLE	2386.40	PK	H	34.50	11.59	46.09	74	-27.91	2310~2390
	2386.40	AV	H	34.50	3.91	38.41	54	-15.59	
	2483.50	PK	H	34.92	24.67	59.59	74	-14.41	2483.5~2500
	2496.40	AV	H	34.97	0.93	35.90	54	-18.10	

Remark: Correction Factor = Antenna Factor + Cable Loss

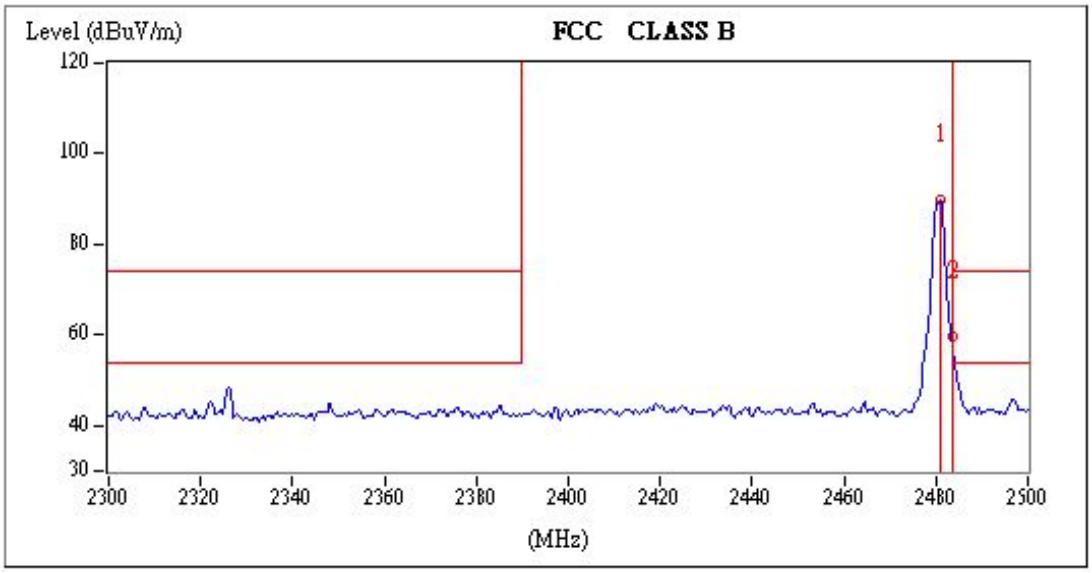
Bandedge @ Mode BLE Ch0 Peak



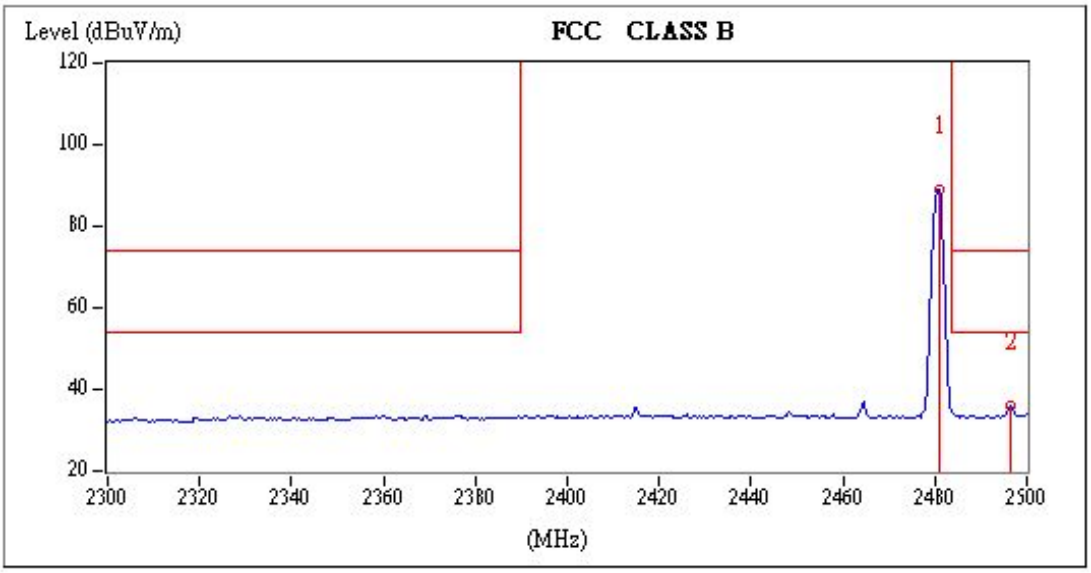
Bandedge @ Mode BLE Ch0 Average



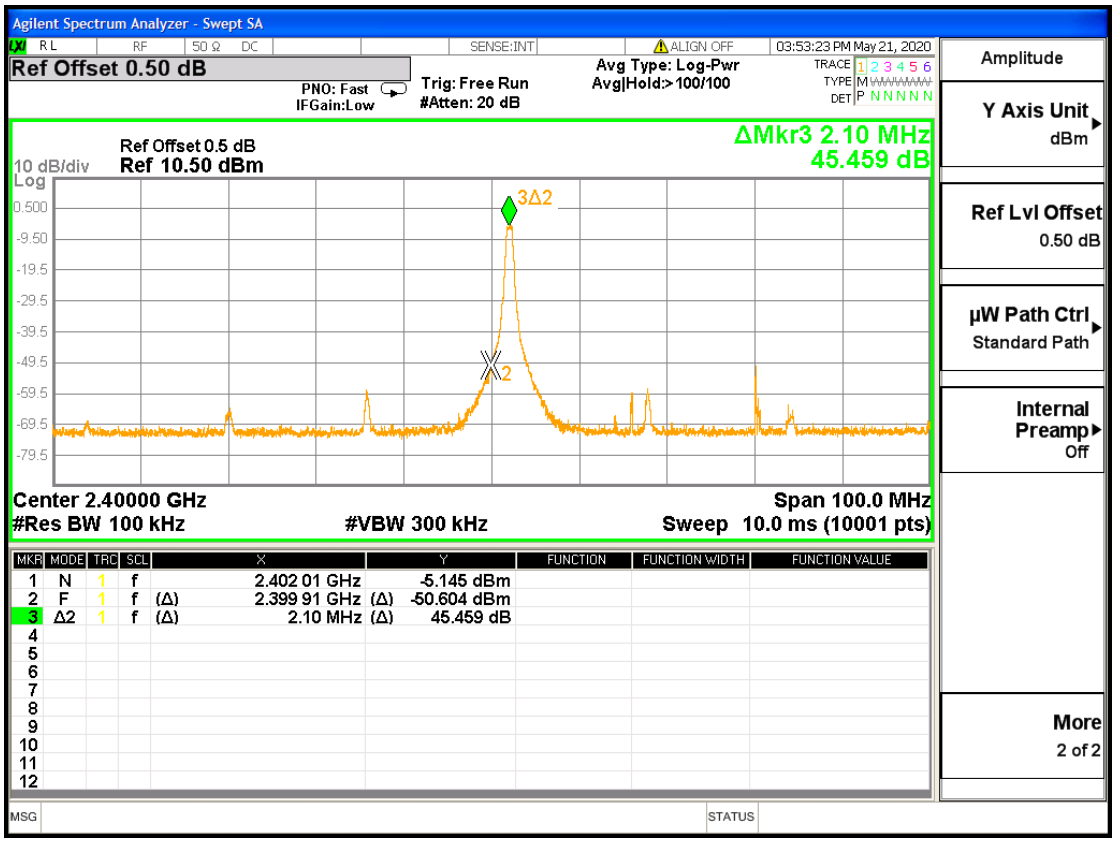
Bandedge @ Mode BLE Ch39 Peak



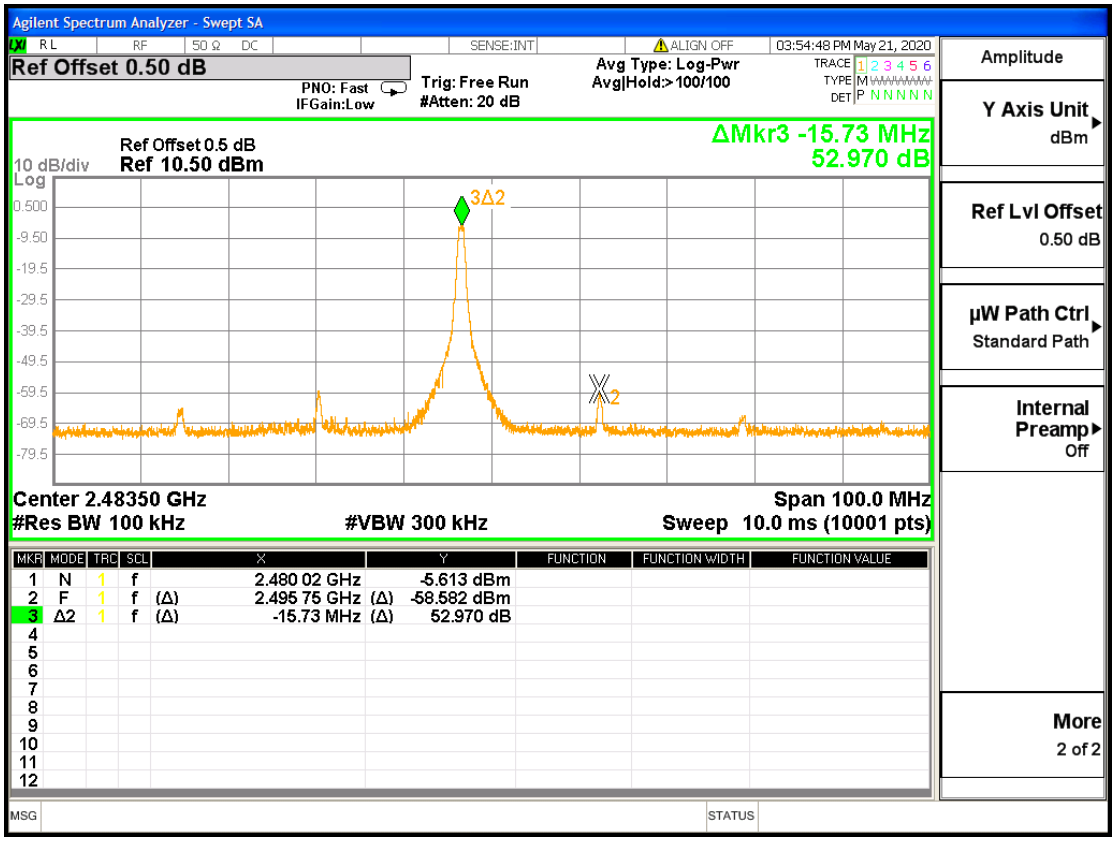
Bandedge @ Mode BLE Ch39 Average



Authirized Bandedge @ Mode BLE Ch0



Authirized Bandedge @ Mode BLE Ch39



8. AC Power Line Conducted Emission

8.1 Measuring instrument setting

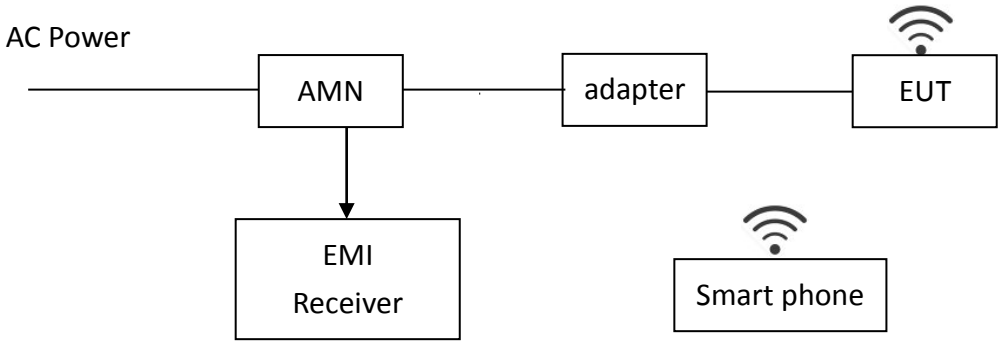
Receiver Function	Setting
Detector	QP
Start frequency	0.15MHz
Stop frequency	30MHz
IF bandwidth	9 kHz
Attenuation	10dB

8.2 Test Procedure

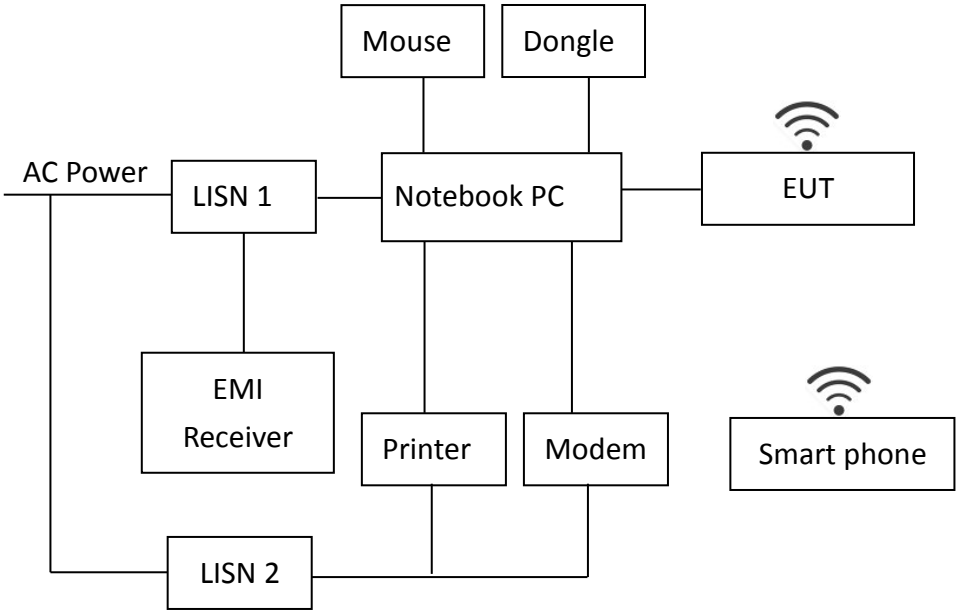
Step 1	Configure the EUT according to ANSI C63.10:2013. The EUT or host of EHT has to be placed 0.4 meter far from the conducting wall of the shielding room and at least 80 centimeters from any other grounded conducting surface.
Step 2	Connect EUT or host of EUT to the power mains through a line impedance stabilization network.
Step 3	All the companion devices are connected to the other LISN. The LISN should provide 50Uh/50ohms coupling impedance.
Step 4	The frequency range from 150 kHz to 30MHz was searched.
Step 5	Set the test-receiver system to peak detector and specified bandwidth with maximum hold mode.
Step 6	The measurement has to be done between each power line and ground at the power terminal.

8.3 Test Diagram

For Adapter mode



For Notebook PC mode



8.4 Limit

Frequency (MHz)	Conducted Limit (dBuV)	
	Q.P.	Ave.
0.15~0.50	66 – 56	56 – 46
0.50~5.00	56	46
5.00~30.0	60	50

8.5 Operating Environment Condition

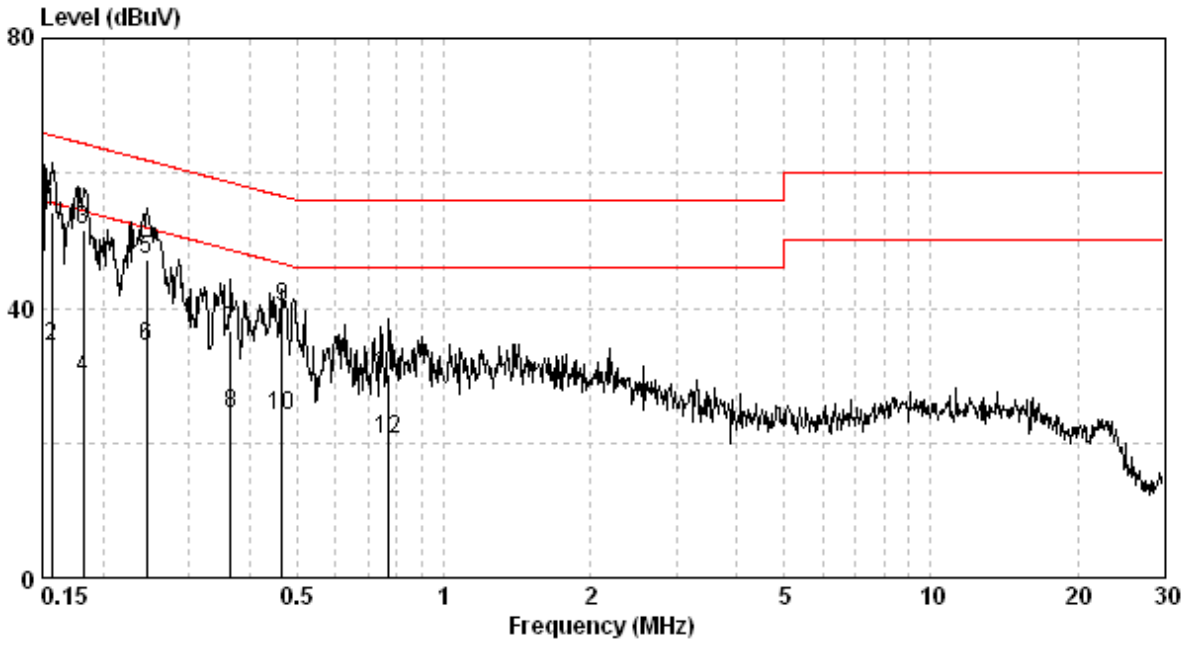
Temperature (℃):	23
Relative Humidity (%):	53
Atmospheric Pressure (hPa):	1007
Test data:	Jun. 09, 2020

8.6 Test Results

Phase: Live Line
Test Condition: Adapter mode

Frequency (MHz)	Corr. Factor (dB)	Reading QP (dBuV)	Level QP (dBuV)	Limit QP (dBuV)	Reading AV (dBuV)	Level AV (dBuV)	Limit AV (dBuV)	Margin (dB) QP	Margin (dB) AV
0.156	9.70	44.62	54.32	65.65	24.58	34.27	55.65	-11.33	-21.37
0.182	9.69	41.86	51.56	64.37	19.83	29.52	54.37	-12.82	-24.85
0.246	9.72	37.42	47.13	61.91	24.50	34.21	51.91	-14.77	-17.69
0.365	9.76	26.82	36.58	58.61	14.53	24.30	48.61	-22.02	-24.31
0.466	9.79	30.23	40.02	56.58	14.15	23.94	46.58	-16.56	-22.64
0.771	9.81	20.23	30.04	56.00	10.64	20.44	46.00	-25.96	-25.56

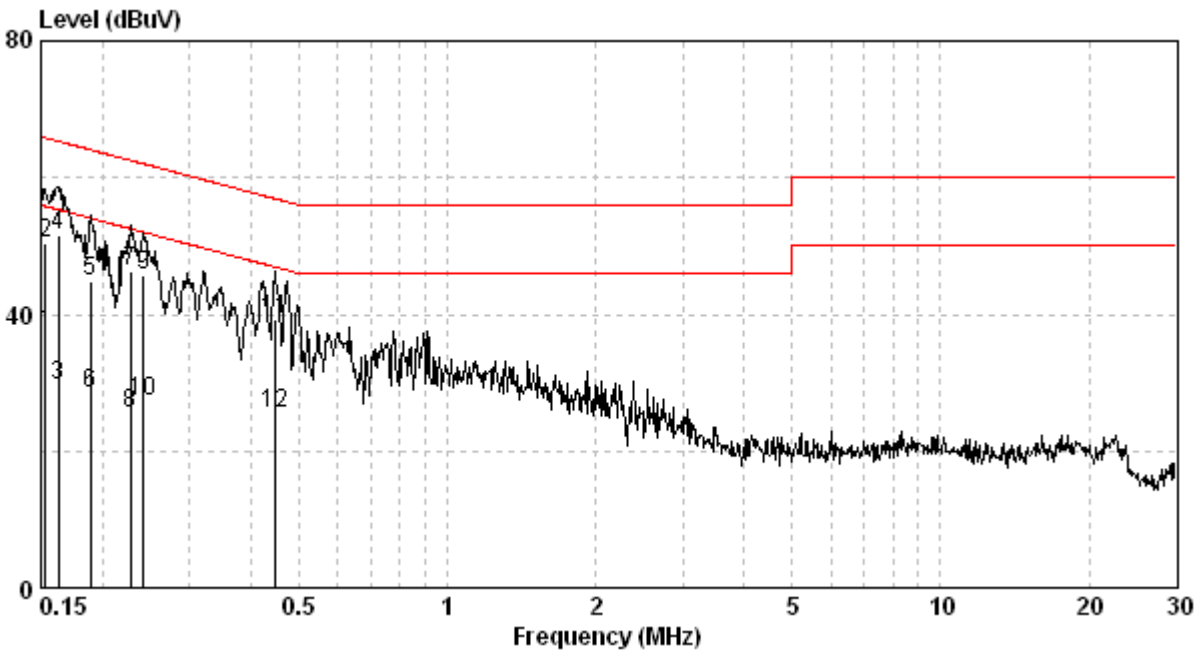
Remark:
1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Level (dBuV) = Corr. Factor (dB) + Reading (dBuV)
3. Margin (dB) = Level (dBuV) – Limit (dBuV)



Phase: Neutral Line
Test Condition: Adapter mode

Frequency (MHz)	Corr. Factor (dB)	Reading QP (dBuV)	Level QP (dBuV)	Limit QP (dBuV)	Reading AV (dBuV)	Level AV (dBuV)	Limit AV (dBuV)	Margin (dB) QP	Margin (dB) AV
0.153	9.71	40.62	50.33	65.82	27.51	37.22	55.82	-15.49	-18.60
0.162	9.71	41.82	51.53	65.34	19.86	29.57	55.34	-13.81	-25.77
0.189	9.70	35.01	44.72	64.06	18.65	28.35	54.06	-19.35	-25.71
0.228	9.71	36.60	46.31	62.52	15.74	25.45	52.52	-16.21	-27.07
0.242	9.72	35.98	45.70	62.04	17.61	27.33	52.04	-16.34	-24.71
0.447	9.79	29.47	39.26	56.93	15.76	25.55	46.93	-17.67	-21.39

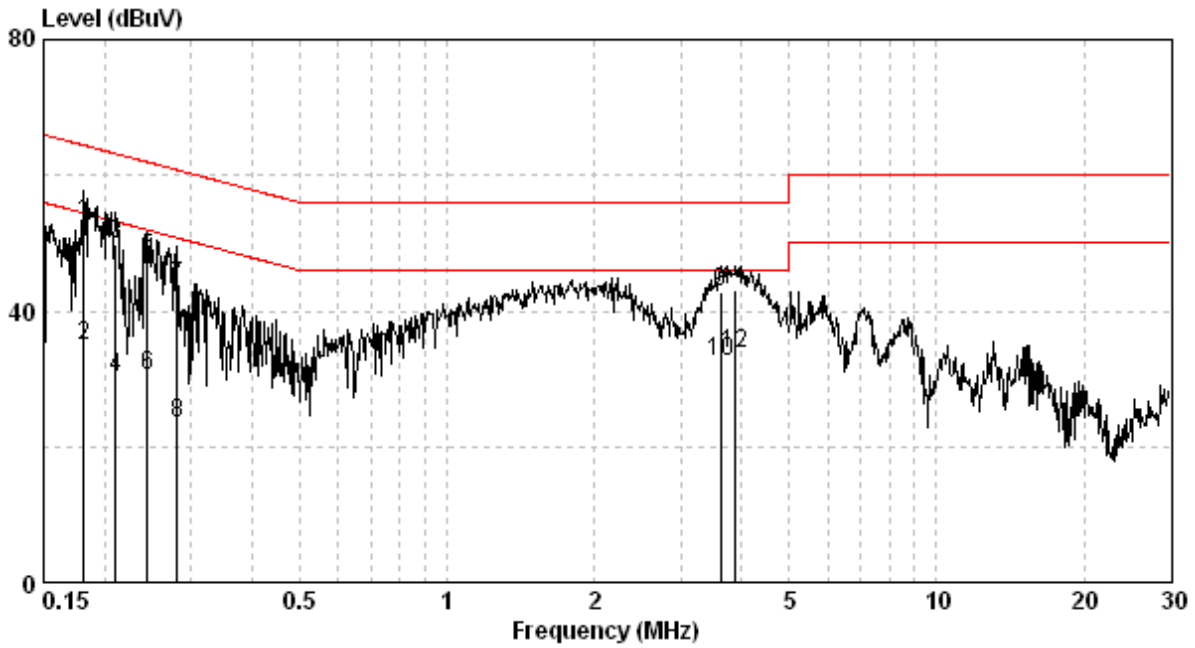
Remark:
1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Level (dBuV) = Corr. Factor (dB) + Reading (dBuV)
3. Margin (dB) = Level (dBuV) – Limit (dBuV)



Phase: Live Line
Test Condition: Notebook PC mode

Frequency (MHz)	Corr. Factor (dB)	Reading QP (dBuV)	Level QP (dBuV)	Limit QP (dBuV)	Reading AV (dBuV)	Level AV (dBuV)	Limit AV (dBuV)	Margin (dB) QP	Margin (dB) AV
0.182	9.69	43.37	53.07	64.42	25.05	34.75	54.42	-11.35	-19.67
0.211	9.70	40.17	49.87	63.18	20.61	30.31	53.18	-13.31	-22.88
0.244	9.71	38.18	47.90	61.95	20.68	30.39	51.95	-14.06	-21.56
0.282	9.73	34.04	43.78	60.76	13.81	23.54	50.76	-16.99	-27.23
3.623	9.86	33.05	42.92	56.00	22.69	32.56	46.00	-13.08	-13.44
3.881	9.87	33.23	43.10	56.00	23.76	33.63	46.00	-12.90	-12.37

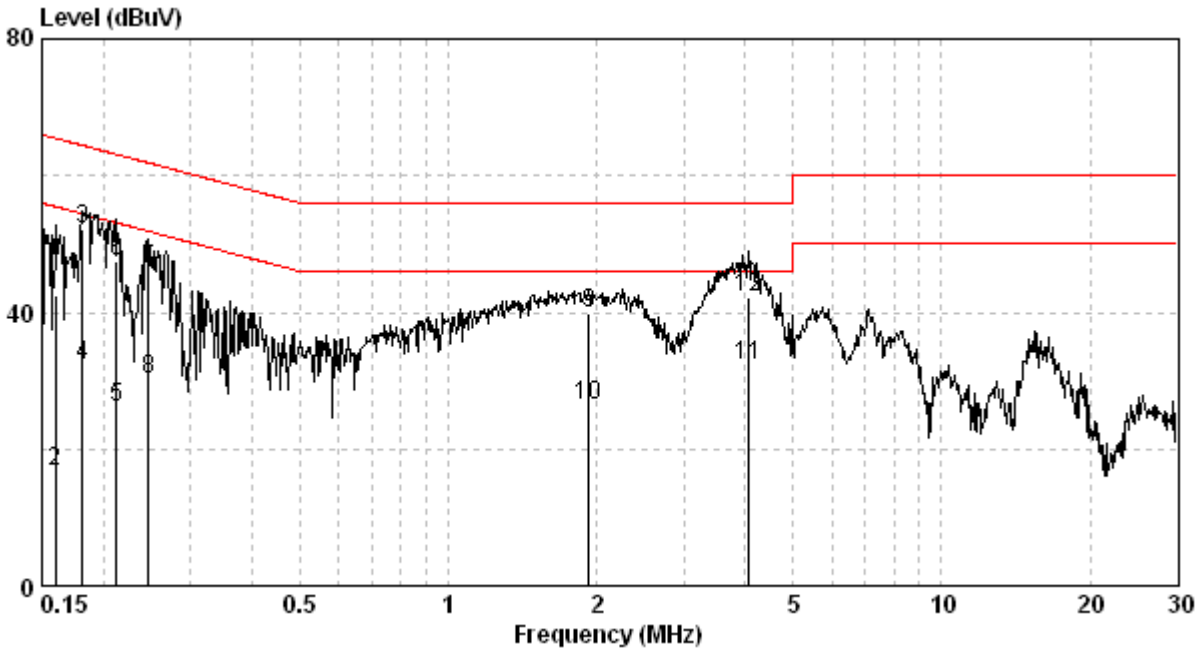
Remark:
1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Level (dBuV) = Corr. Factor (dB) + Reading (dBuV)
3. Margin (dB) = Level (dBuV) – Limit (dBuV)



Phase: Neutral Line
Test Condition: Notebook PC mode

Frequency (MHz)	Corr. Factor (dB)	Reading QP (dBuV)	Level QP (dBuV)	Limit QP (dBuV)	Reading AV (dBuV)	Level AV (dBuV)	Limit AV (dBuV)	Margin (dB) QP	Margin (dB) AV
0.160	9.71	32.66	42.36	65.47	7.08	16.79	55.47	-23.11	-38.68
0.182	9.70	42.39	52.09	64.42	22.48	32.18	54.42	-12.32	-22.24
0.213	9.71	37.68	47.39	63.10	16.23	25.94	53.10	-15.71	-27.16
0.247	9.72	36.55	46.27	61.86	20.61	30.33	51.86	-15.59	-21.53
1.928	9.84	30.07	39.91	56.00	16.66	26.50	46.00	-16.09	-19.50
4.070	9.88	32.22	42.10	56.00	22.24	32.12	46.00	-13.90	-13.88

Remark:
1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Level (dBuV) = Corr. Factor (dB) + Reading (dBuV)
3. Margin (dB) = Level (dBuV) – Limit (dBuV)



Appendix A: Test equipment list

Test Equipment/ Test site	Brand	Model No.	Serial No.	Calibration Date	Next Calibration Date
EMI Test Receiver	Rohde & Schwarz	ESR-7	101822	2019/06/19	2020/06/17
Signal Analyzer	Agilent	N9030A	MY51380492	2019/08/21	2020/08/19
Active Loop Antenna	SCHWARZBECK MESS-ELEKTRONIC	FMZB1519	1519-067	2020/04/13	2021/04/12
Bi_log Hybrid Antenna	ETC	MCTD 2786B	BLB17J04019 & JB-5-019	2019/07/12	2020/07/10
Horn Antenna	SHWARZBECK	BBHA 9120 D	9120D-456	2020/01/20	2021/01/18
Power Meter	Anritsu	ML2495A	0844001	2019/10/23	2020/10/21
Power Sensor	Anritsu	MA2411B	0738452	2019/10/23	2020/10/21
966-2(A) Cable	SUHNER	SMA / EX 100	N/A	2019/08/19	2020/08/17
966-2(B) Cable	SUHNER	SUCOFLEX 104P	CB0005	2019/08/19	2020/08/17
Hight Pass Filter	Wainwright	WHKX3.0/18G-12SS	N/A	2020/05/27	2021/05/26
966-2_3m Semi-Anechoic Chamber	966_2	CEM-966_2	N/A	2020/02/23	2021/02/22

Note: No Calibration Required (NCR)

Test Equipment	Brand	Model No.	Serial No.	Calibration Date	Next Calibration Date
EMI Test Receiver	R&S	ESR7	101822	2019/06/19	2020/06/17
LISN	R&S	ENV216	101160	2019/07/17	2020/07/15
LISN	R&S	ESH3-Z5	835239/023	2019/09/23	2020/09/21
CON-2 Cable	SUHNER	EMCCFD300-BM-NM-6000	170502	2020/04/30	2021/04/29
Test software	Audix	e3	V4.20040112L	NCR	NCR

Note: No Calibration Required (NCR).

Appendix B: Measurement Uncertainty

This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k=2.

Item	Uncertainty
Vertically polarized radiated disturbances from 30MHz~1GHz in a semi-anechoic chamber at a distance of 3m	4.90 dB
Horizontally polarized radiated disturbances from 30MHz~1GHz in a semi-anechoic chamber at a distance of 3m	4.89 dB
Vertically polarized Radiated disturbances from 1GHz~18GHz in a semi-anechoic chamber at a distance of 3m	4.29 dB
Horizontally polarized Radiated disturbances from 1GHz~18GHz in a semi-anechoic chamber at a distance of 3m	4.29 dB
Vertically polarized Radiated disturbances from 18GHz~26.5GHz in a semi-anechoic chamber at a distance of 1m	2.45 dB
Horizontally polarized Radiated disturbances from 18GHz~26.5GHz in a semi-anechoic chamber at a distance of 1m	2.45 dB
Radiated disturbances from 9kHz~30MHz in a semi-anechoic chamber at a distance of 3m	3.32 dB
Emission on the Band Edge Test	4.29 dB
Minimum 6 dB Bandwidth	7.69 %
Maximum Peak Conducted Output Power	0.37 dB
Power Spectral Density	1.15 dB
Emissions In Non-Restricted Frequency Bands	1.15 dB
AC Power Line Conducted Emission	2.52 dB