FCC Test Report

Report No.:	RF170502C07-1
FCC ID:	NM8G011A
Test Model:	G011A
Received Date:	May 02, 2017
Test Date:	Jun. 04, 2017 ~ Jul. 18, 2017
Issued Date:	Jul. 19, 2017
Applicant:	HTC Corporation
Address:	1F, 6-3 Baoqiang Road, Xindian District, New Taipei City, Taiwan 231
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan (R.O.C)
Test Location (1):	No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.
Test Location (2):	No.215, Sec. 3, Beixin Rd., Xindian Dist., New Taipei City 231, Taiwan, R.O.C

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Release Control Record

Issue No.	Description	Date Issued
RF170502C07-1	Original Release	Jul. 19, 2017

1 Certificate of Conformity

Product:	Smartphone
Test Model:	G011A
Sample Status:	Production Unit
Applicant:	HTC Corporation
Test Date:	Jun. 04, 2017 ~ Jul. 18, 2017
Standards:	47 CFR FCC Part 15, Subpart C (Section 15.247) ANSI C63.10:2013

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by : _____ , **Date:** Jul. 19, 2017

Ivonne Wu / Supervisor

Approved by : _____ , **Date:** Jul. 19, 2017

David Huang / Project Engineer

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (Section 15.247)			
FCC Clause	**Test Item**	**Result**	**Remarks**
15.207	AC Power Conducted Emission	Pass	Meet the requirement of limit. Minimum passing margin is -3.54 dB at 0.61000 MHz.
15.205 & 209	Radiated Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -3.93 dB at 32.16 MHz.
15.247(d)	Band Edge Measurement	Pass	Meet the requirement of limit.
15.247(d)	Antenna Port Emission	Pass	Meet the requirement of limit.
15.247(a)(2)	6 dB Bandwidth	Pass	Meet the requirement of limit.
15.247(b)	Conducted power	Pass	Meet the requirement of limit.
15.247(e)	Power Spectral Density	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	No antenna connector is used.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT:

The listed uncertainties are the worst case uncertainty for the entire range of measurement. Please note that the uncertainty values are provided for informational purposes only and are not used in determining the PASS/FAIL results.

Measurement	**Frequency**	**Expended Uncertainty (k=2) (±)**
Conducted Emissions at mains ports	150 kHz ~ 30 MHz	2.44 dB
Radiated Emissions up to 1 GHz	30 MHz ~ 200 MHz	2.0153 dB
	200 MHz ~1000 MHz	2.0224 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	1.0121 dB
	18 GHz ~ 40 GHz	1.1508 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Smartphone
Test Model	G011A
Status of EUT	Production Unit
Power Supply Rating	5.0 Vdc or 9.0 Vdc (adapter) 3.85 Vdc (Li-ion battery)
Modulation Type	GFSK
Transfer Rate	LE 4.0: 1 Mbps LE 5.0: 2 Mbps
Operating Frequency	2402 ~ 2480 MHz
Number of Channel	40
Output Power	LE 4.0: 3.365 mW LE 5.0: 2.371 mW
Antenna Type	PIFA antenna with -1.22 dBi gain
Antenna Connector	N/A
Accessory Device	Refer to Note as below
Data Cable Supplied	Refer to Note as below

Note:

1. There're 2 configuraitons for the EUT listed as below.
   Main Sample: EUT + Battery 1
   2nd Sample: EUT + Battery 2
   ✧ Only the worst test data was presented in the report.
2. The EUT's accessories list refers to EMI report.
3. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 Description of Test Modes

40 channels are provided to this EUT:

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480

3.2.1 Test Mode Applicability and Tested Channel Detail

<LE 4.0>

EUT Configure Mode	Applicable To				Description
	RE≥1G	RE<1G	PLC	APCM	
A	√	√	√	√	Main Sample
B	√	√	√	-	2nd Sample

Where **RE≥1G:** Radiated Emission above 1 GHz **RE<1G:** Radiated Emission below 1 GHz
PLC: Power Line Conducted Emission **APCM:** Antenna Port Conducted Measurement

Note: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane**.
Note: "-"means no effect.

Radiated Emission Test (Above 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Type	Data Rate (Mbps)
A	0 to 39	0, 19, 39	GFSK	1
B	0 to 39	39	GFSK	1

Radiated Emission Test (Below 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Type	Data Rate (Mbps)
A, B	0 to 39	39	GFSK	1

Power Line Conducted Emission Test:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Type	Data Rate (Mbps)
A, B	0 to 39	39	GFSK	1

Antenna Port Conducted Measurement:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Type	Data Rate (Mbps)
A	0 to 39	0, 19, 39	GFSK	1

<LE 5.0>

EUT Configure Mode	Applicable To				Description
	RE≥1G	RE<1G	PLC	APCM	
A	√	√	√	√	Main Sample
B	√	√	√	-	2nd Sample

Where **RE≥1G:** Radiated Emission above 1 GHz **RE<1G:** Radiated Emission below 1 GHz
PLC: Power Line Conducted Emission **APCM:** Antenna Port Conducted Measurement

Note: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane**.
Note: "-"means no effect.

Radiated Emission Test (Above 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Type	Data Rate (Mbps)
A	0 to 39	0, 19, 39	GFSK	1
B	0 to 39	19	GFSK	1

Radiated Emission Test (Below 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Type	Data Rate (Mbps)
A, B	0 to 39	19	GFSK	1

Power Line Conducted Emission Test:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Type	Data Rate (Mbps)
A, B	0 to 39	19	GFSK	1

Antenna Port Conducted Measurement:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Type	Data Rate (Mbps)
A	0 to 39	0, 19, 39	GFSK	1

Test Condition:

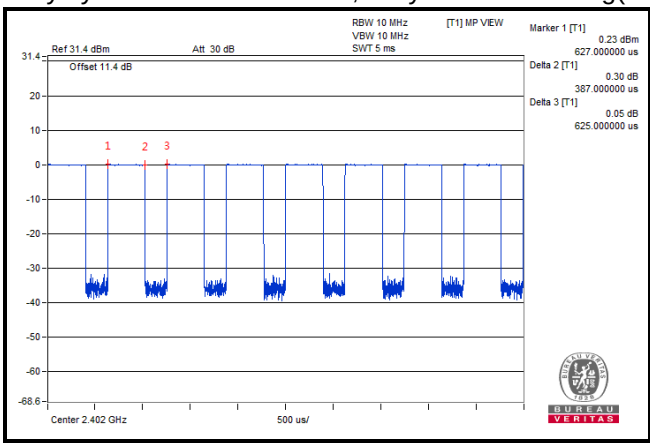
Applicable To	Environmental Conditions	Input Power	Tested by
RE≥1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Karl Lee
RE<1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Karl Lee
PLC	25 deg. C, 65 % RH	120 Vac, 60 Hz	Getaz Yang
APCM	25 deg. C, 65 % RH	3.85 Vdc	Carlos Chen

3.3 Duty Cycle of Test Signal

<LE 4.0>

Duty cycle of test signal is < 98 %

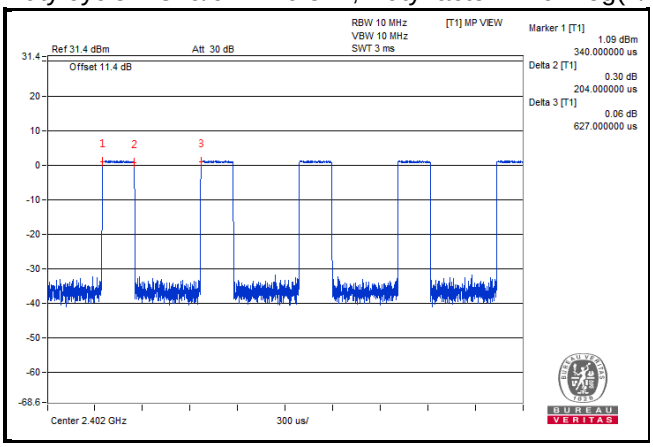
Duty cycle = 387/625 = 0.619, Duty factor = 10 * log(1/0.619) = 2.08



<LE 5.0>

Duty cycle of test signal is < 98 %

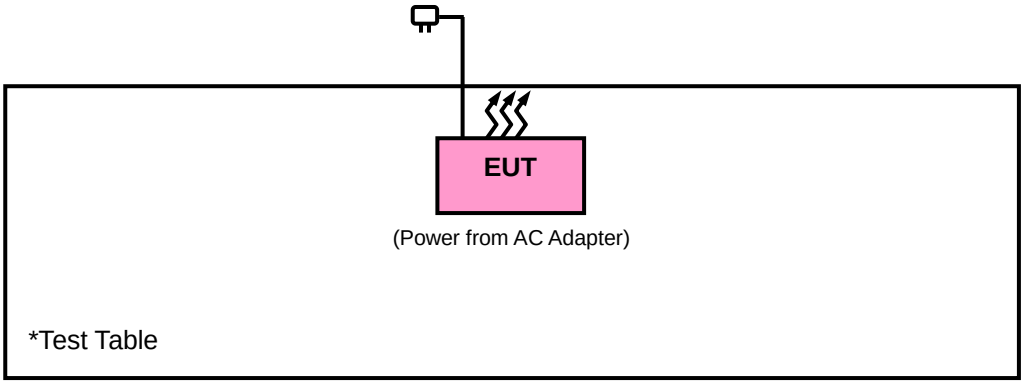
Duty cycle = 340/627 = 0.542, Duty factor = 10 * log(1/0.542) = 2.66



3.4 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units.

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C (15.247)
558074 D01 DTS Meas Guidance v04
ANSI C63.10-2013

All test items have been performed and recorded as per the above standards.

Note: The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20 dB below the highest level of the desired power:

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F (kHz)	300
0.490 ~ 1.705	24000/F (kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

Note:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver Agilent Technologies	N9010A	MY52220314	Nov. 16, 2016	Nov. 15, 2017
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Dec. 13, 2016	Dec. 12, 2017
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Dec. 16, 2016	Dec. 15, 2017
HORN Antenna ETS-Lindgren	3117	00143293	Dec. 29, 2016	Dec. 28, 2017
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Dec. 14, 2016	Dec. 13, 2017
Fixed Attenuator Mini-Circuits	BW-N10W5+	NA	Jul. 08, 2016	Jul. 07, 2017
Fixed Attenuator Mini-Circuits	BW-N10W5+	NA	Jul. 07, 2017	Jul. 06, 2018
Bluetooth Tester	CBT	100946	Jul. 29, 2016	Jul. 28, 2018
Loop Antenna	EM-6879	269	Aug. 11, 2016	Aug. 10, 2017
Preamplifier Agilent	310N	187226	Jun. 24, 2016	Jun. 23, 2017
Preamplifier Agilent	310N	187226	Jun. 23, 2017	Jun. 22, 2018
Preamplifier Agilent	83017A	MY39501357	Jun. 24, 2016	Jun. 23, 2017
Preamplifier Agilent	83017A	MY39501357	Jun. 23, 2017	Jun. 22, 2018
Power Meter Anritsu	ML2495A	1232002	Sep. 08, 2016	Sep. 07, 2017
Power Sensor Anritsu	MA2411B	1207325	Sep. 08, 2016	Sep. 07, 2017
RF signal cable ETS-LINDGREN	5D-FB	Cable-CH1-01(RFC-SMS-100-SMS-120+RFC-SMS-100-SMS-400)	Jun. 24, 2016	Jun. 23, 2017
RF signal cable ETS-LINDGREN	5D-FB	Cable-CH1-01(RFC-SMS-100-SMS-120+RFC-SMS-100-SMS-400)	Jun. 23, 2017	Jun. 22, 2018
RF signal cable ETS-LINDGREN	8D-FB	Cable-CH1-02(RFC-SMS-100-SMS-24)	Jun. 24, 2016	Jun. 23, 2017
RF signal cable ETS-LINDGREN	8D-FB	Cable-CH1-02(RFC-SMS-100-SMS-24)	Jun. 23, 2017	Jun. 22, 2018
Software BV ADT	E3 8.130425b	NA	NA	NA
Antenna Tower MF	NA	NA	NA	NA
Turn Table MF	NA	NA	NA	NA
Antenna Tower &Turn Table Controller MF	MF-7802	NA	NA	NA
Temperature & Humidity Chamber	GTH-120-40-CP-AR	MAA1306-019	Sep. 02, 2016	Sep. 01, 2017

DC Power Supply Topward	33010D	807748	Oct. 25, 2016	Oct. 24, 2018
Digital Multimeter Fluke	87-III	73680266	Nov. 10, 2016	Nov. 09, 2017

Note:
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HsinTien Chamber 1.
3. The horn antenna and preamplifier (model: 83017A) are used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 149147.
5. The IC Site Registration No. is IC7450I-1.

4.1.3 Test Procedures

a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1 GHz) / 1.5 meters (for above 1 GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
f. The test-receiver system was set to peak and average detected function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

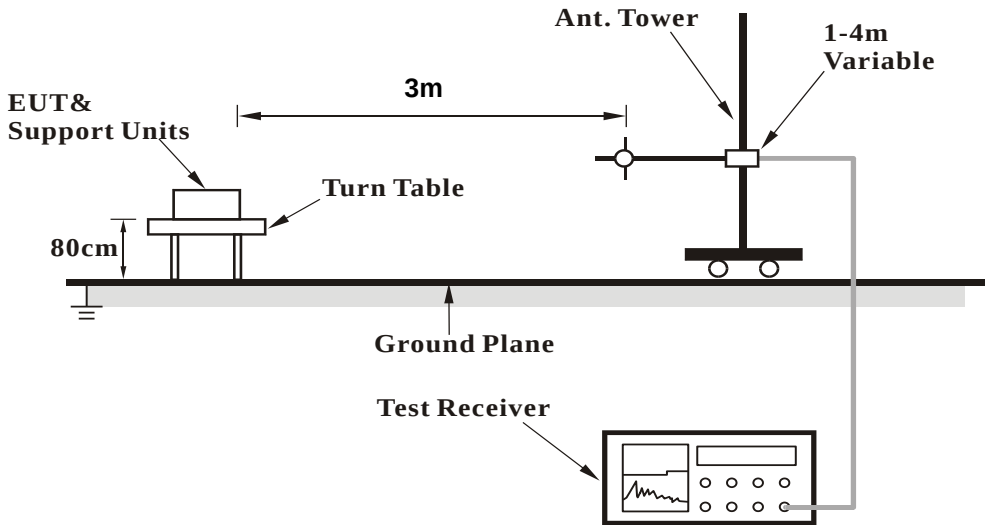
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz & 360 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 1/T for Average (Duty cycle < 98 %) detection at frequency above 1 GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz (Duty cycle ≥ 98 %) for Average detection (AV) at frequency above 1 GHz.
5. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

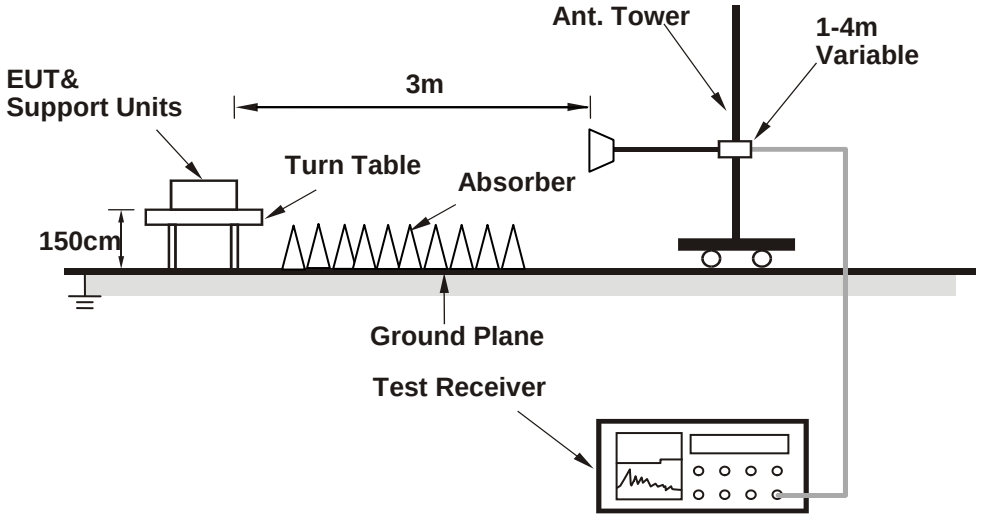
No deviation.

4.1.5 Test Set Up

<Frequency Range below 1 GHz>



<Frequency Range above 1 GHz>



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.6 EUT Operating Conditions

a. Placed the EUT on the testing table.
b. Set the EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

<LE 4.0>

ABOVE 1 GHz DATA：

Mode A

EUT Test Condition		Measurement Detail	
Channel	Channel 0	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2335.74	51.99	50.44	74	-22.01	31.74	5.33	35.52	139	56	Peak
2389.92	41.08	39.35	54	-12.92	31.8	5.4	35.47	139	56	Average
2402	99.54	97.81			31.8	5.4	35.47	139	56	Average
2402	100.24	98.51			31.8	5.4	35.47	139	56	Peak
4804	38.26	30.17	54	-15.74	33.96	8.25	34.12	196	237	Average
4804	47.45	39.36	74	-26.55	33.96	8.25	34.12	196	237	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2371.56	51.47	49.81	74	-22.53	31.78	5.37	35.49	104	354	Peak
2379.12	41.25	39.59	54	-12.75	31.78	5.37	35.49	104	354	Average
2402	96.45	94.72			31.8	5.4	35.47	104	354	Average
2402	97.14	95.41			31.8	5.4	35.47	104	354	Peak
4804	38.46	30.37	54	-15.54	33.96	8.25	34.12	164	128	Average
4804	47.58	39.49	74	-26.42	33.96	8.25	34.12	164	128	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 2402 MHz: Fundamental frequency.

EUT Test Condition		Measurement Detail	
Channel	Channel 19	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2370.57	41.07	39.41	54	-12.93	31.78	5.37	35.49	139	56	Average
2383.26	51.76	50.07	74	-22.24	31.78	5.4	35.49	139	56	Peak
2440	99.6	97.75			31.85	5.46	35.46	139	56	Average
2440	100.47	98.62			31.85	5.46	35.46	139	56	Peak
2483.6	41.65	39.69	54	-12.35	31.88	5.5	35.42	139	56	Average
2498.68	51.75	49.73	74	-22.25	31.9	5.53	35.41	139	56	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2338.8	51.62	50.05	74	-22.38	31.74	5.33	35.5	104	354	Peak
2353.2	41.14	39.55	54	-12.86	31.76	5.33	35.5	104	354	Average
2440	96.86	95.01			31.85	5.46	35.46	104	354	Average
2440	97.77	95.92			31.85	5.46	35.46	104	354	Peak
2491.2	41.59	39.58	54	-12.41	31.9	5.53	35.42	104	354	Average
2492.04	52.28	50.26	74	-21.72	31.9	5.53	35.41	104	354	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 2440 MHz: Fundamental frequency.

EUT Test Condition		Measurement Detail	
Channel	Channel 39	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2480	99.71	97.75			31.88	5.5	35.42	139	56	Average
2480	100.57	98.61			31.88	5.5	35.42	139	56	Peak
2487.92	41.74	39.73	54	-12.26	31.9	5.53	35.42	139	56	Average
2495.72	51.82	49.8	74	-22.18	31.9	5.53	35.41	139	56	Peak
4960	37.83	29.56	54	-16.17	33.99	8.29	34.01	127	332	Average
4960	47.01	38.74	74	-26.99	33.99	8.29	34.01	127	332	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2480	96.74	94.78			31.88	5.5	35.42	104	354	Average
2480	97.55	95.59			31.88	5.5	35.42	104	354	Peak
2484.6	41.83	39.84	54	-12.17	31.88	5.53	35.42	104	354	Average
2497.12	51.75	49.73	74	-22.25	31.9	5.53	35.41	104	354	Peak
4960	37.46	29.19	54	-16.54	33.99	8.29	34.01	154	92	Average
4960	48.02	39.75	74	-25.98	33.99	8.29	34.01	154	92	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 2480 MHz: Fundamental frequency.

Mode B

EUT Test Condition		Measurement Detail	
Channel	Channel 39	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2480	90.69	88.73			31.88	5.5	35.42	106	234	Average
2480	94.31	92.35			31.88	5.5	35.42	106	234	Peak
2493.2	40.35	38.33	54	-13.65	31.9	5.53	35.41	106	234	Average
2493.2	53.11	51.09	74	-20.89	31.9	5.53	35.41	106	234	Peak
4960	40.43	32.16	54	-13.57	33.99	8.29	34.01	144	187	Average
4960	48.99	40.72	74	-25.01	33.99	8.29	34.01	144	187	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2480	92.26	90.3			31.88	5.5	35.42	101	257	Average
2480	95.73	93.77			31.88	5.5	35.42	101	257	Peak
2495.28	40.39	38.37	54	-13.61	31.9	5.53	35.41	101	257	Average
2495.28	53.41	51.39	74	-20.59	31.9	5.53	35.41	101	257	Peak
4960	41.49	33.22	54	-12.51	33.99	8.29	34.01	169	178	Average
4960	49.91	41.64	74	-24.09	33.99	8.29	34.01	169	178	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 2480 MHz: Fundamental frequency.

9 kHz ~ 30 MHz DATA:

The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

30 MHz ~ 1 GHz WORST-CASE DATA:

Mode A

EUT Test Condition		Measurement Detail	
Channel	Channel 39	**Frequency Range**	30 MHz ~ 1 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Quasi-peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
37.02	32.36	51.2	40	-7.64	12.65	0.74	32.23	136	125	Peak
51.33	24.06	40.93	40	-15.94	14.46	0.9	32.23	115	142	Peak
92.91	22.15	41.76	43.5	-21.35	11.16	1.11	31.88	104	158	Peak
322.4	25.69	42.13	46	-20.31	13.56	2.11	32.11	115	158	Peak
485.5	16.84	30.17	46	-29.16	16.15	2.63	32.11	104	165	Peak
688.5	19.7	29.69	46	-26.3	19.06	3.05	32.1	119	154	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
32.16	36.07	55.93	40	-3.93	11.66	0.74	32.26	145	174	QP
46.47	34.05	50.91	40	-5.95	14.46	0.9	32.22	104	154	QP
79.41	33.16	56	40	-6.84	8.26	1.11	32.21	118	142	Peak
359.5	14.69	30.18	46	-31.31	14.35	2.26	32.1	165	195	Peak
647.2	19.01	29.77	46	-26.99	18.4	2.99	32.15	114	152	Peak
780.9	21.13	29.81	46	-24.87	20.14	3.27	32.09	102	132	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value

Mode B

EUT Test Condition		Measurement Detail	
Channel	Channel 39	**Frequency Range**	30 MHz ~ 1 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Quasi-peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
62.4	9.58	28.05	40	-30.42	12.86	0.9	32.23	148	127	Peak
150.96	17.89	40.2	43.5	-25.61	8.44	1.52	32.27	196	344	Peak
261.39	15.85	33.5	46	-30.15	12.52	1.94	32.11	155	210	Peak
449.1	15.25	29.36	46	-30.75	15.55	2.49	32.15	109	246	Peak
645.8	18.66	29.44	46	-27.34	18.38	2.99	32.15	148	132	Peak
822.2	20.33	28.21	46	-25.67	20.68	3.38	31.94	126	193	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
59.97	18.75	36.71	40	-21.25	13.37	0.9	32.23	126	134	Peak
127.74	6.77	28.42	43.5	-36.73	9.2	1.38	32.23	185	324	Peak
191.46	18.61	38.58	43.5	-24.89	10.68	1.61	32.26	126	304	Peak
454	15.3	29.33	46	-30.7	15.62	2.49	32.14	149	300	Peak
549.2	16.09	28.47	46	-29.91	17.06	2.76	32.2	142	123	Peak
705.3	18.6	28.27	46	-27.4	19.31	3.11	32.09	195	143	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value

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ABOVE 1 GHz DATA：

Mode A

EUT Test Condition		Measurement Detail	
Channel	Channel 0	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2358.96	41.18	39.55	54	-12.82	31.76	5.37	35.5	140	56	Average
2375.16	51.69	50.03	74	-22.31	31.78	5.37	35.49	140	56	Peak
2402	97.72	95.99			31.8	5.4	35.47	140	56	Average
2402	99.97	98.24			31.8	5.4	35.47	140	56	Peak
4804	38.78	30.69	54	-15.22	33.96	8.25	34.12	159	247	Average
4804	48.21	40.12	74	-25.79	33.96	8.25	34.12	159	247	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2373.18	51.61	49.95	74	-22.39	31.78	5.37	35.49	120	346	Peak
2385.6	41.65	39.94	54	-12.35	31.8	5.4	35.49	120	346	Average
2402	92.9	91.17			31.8	5.4	35.47	120	346	Average
2402	94.74	93.01			31.8	5.4	35.47	120	346	Peak
4804	37.86	29.77	54	-16.14	33.96	8.25	34.12	120	326	Average
4804	46.95	38.86	74	-27.05	33.96	8.25	34.12	120	326	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 2402 MHz: Fundamental frequency.

EUT Test Condition		Measurement Detail	
Channel	Channel 19	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2330.25	51.8	50.26	74	-22.2	31.73	5.33	35.52	140	56	Peak
2370.3	41.28	39.62	54	-12.72	31.78	5.37	35.49	140	56	Average
2440	97.77	95.92			31.85	5.46	35.46	140	56	Average
2440	99.27	97.42			31.85	5.46	35.46	140	56	Peak
2485.04	42.11	40.12	54	-11.89	31.88	5.53	35.42	140	56	Average
2491.24	52.85	50.84	74	-21.15	31.9	5.53	35.42	140	56	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2353.56	41.14	39.55	54	-12.86	31.76	5.33	35.5	120	346	Average
2354.91	51.44	49.81	74	-22.56	31.76	5.37	35.5	120	346	Peak
2440	91.76	89.91			31.85	5.46	35.46	120	346	Average
2440	94.34	92.49			31.85	5.46	35.46	120	346	Peak
2494.68	51.98	49.96	74	-22.02	31.9	5.53	35.41	120	346	Peak
2494.96	41.72	39.7	54	-12.28	31.9	5.53	35.41	120	346	Average

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 2440 MHz: Fundamental frequency.

EUT Test Condition		Measurement Detail	
Channel	Channel 39	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2480	98.13	96.17			31.88	5.5	35.42	140	56	Average
2480	99.58	97.62			31.88	5.5	35.42	140	56	Peak
2483.64	41.56	39.6	54	-12.44	31.88	5.5	35.42	140	56	Average
2497.8	52.55	50.53	74	-21.45	31.9	5.53	35.41	140	56	Peak
4960	37.99	29.72	54	-16.01	33.99	8.29	34.01	150	306	Average
4960	48.2	39.93	74	-25.8	33.99	8.29	34.01	150	306	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2480	92.66	90.7			31.88	5.5	35.42	120	346	Average
2480	94.91	92.95			31.88	5.5	35.42	120	346	Peak
2494.56	41.69	39.67	54	-12.31	31.9	5.53	35.41	120	346	Average
2499.52	52.27	50.25	74	-21.73	31.9	5.53	35.41	120	346	Peak
4960	38.42	30.15	54	-15.58	33.99	8.29	34.01	158	117	Average
4960	47.64	39.37	74	-26.36	33.99	8.29	34.01	158	117	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 2480 MHz: Fundamental frequency.

Mode B

EUT Test Condition		Measurement Detail	
Channel	Channel 19	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2344.14	41.08	39.51	54	-12.92	31.74	5.33	35.5	146	23	Average
2344.14	51.52	49.95	74	-22.48	31.74	5.33	35.5	146	23	Peak
2440	97.58	95.73			31.85	5.46	35.46	146	23	Average
2440	99.36	97.51			31.85	5.46	35.46	146	23	Peak
2489.245	42.08	40.07	54	-11.92	31.9	5.53	35.42	146	23	Average
2489.245	52.69	50.68	74	-21.31	31.9	5.53	35.42	146	23	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2364.17	41.05	39.42	54	-12.95	31.76	5.37	35.5	114	350	Average
2364.17	51.38	49.75	74	-22.62	31.76	5.37	35.5	114	350	Peak
2440	91.82	89.97			31.85	5.46	35.46	114	350	Average
2440	94.25	92.4			31.85	5.46	35.46	114	350	Peak
2496.23	41.38	39.36	54	-12.62	31.9	5.53	35.41	114	350	Average
2496.23	52.06	50.04	74	-21.94	31.9	5.53	35.41	114	350	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 2440 MHz: Fundamental frequency.

9 kHz ~ 30 MHz DATA:

The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

30 MHz ~ 1 GHz WORST-CASE DATA:

Mode A

EUT Test Condition		Measurement Detail	
Channel	Channel 19	**Frequency Range**	30 MHz ~ 1 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Quasi-peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
32.97	31.53	51.3	40	-8.47	11.74	0.74	32.25	132	165	Peak
54.84	25.67	42.86	40	-14.33	14.14	0.9	32.23	102	148	Peak
77.79	21.88	44.66	40	-18.12	8.33	1.11	32.22	159	142	Peak
364.4	14.88	30.32	46	-31.12	14.41	2.26	32.11	112	156	Peak
637.4	19	29.96	46	-27	18.27	2.93	32.16	132	165	Peak
806.1	21.71	30	46	-24.29	20.42	3.32	32.03	199	165	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
50.79	34.68	51.46	40	-5.32	14.54	0.9	32.22	156	158	Peak
80.76	34.68	57.56	40	-5.32	8.22	1.11	32.21	108	145	Peak
103.17	15.94	34.56	43.5	-27.56	12.36	1.28	32.26	111	142	Peak
344.1	14.33	30.08	46	-31.67	14.13	2.19	32.07	132	165	Peak
506.5	17.43	30.48	46	-28.57	16.43	2.63	32.11	199	165	Peak
699	21.03	30.78	46	-24.97	19.23	3.11	32.09	125	184	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value

Mode B

EUT Test Condition		Measurement Detail	
Channel	Channel 19	**Frequency Range**	30 MHz ~ 1 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Quasi-peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
62.4	10.13	28.6	40	-29.87	12.86	0.9	32.23	126	341	Peak
84.27	11.61	33.51	40	-28.39	9	1.11	32.01	184	245	Peak
220.08	21	40.23	46	-25	11.34	1.65	32.22	163	332	Peak
404.3	12.87	27.7	46	-33.13	15.05	2.34	32.22	106	137	Peak
506.5	16.68	29.73	46	-29.32	16.43	2.63	32.11	122	127	Peak
727	19.39	28.76	46	-26.61	19.59	3.16	32.12	196	213	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Factor (dB/m)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
73.2	8.91	31.24	40	-31.09	8.78	1.11	32.22	152	199	Peak
159.87	16.07	38.07	43.5	-27.43	8.75	1.52	32.27	124	158	Peak
282.72	11.23	28.54	46	-34.77	12.78	2.03	32.12	155	130	Peak
376.3	12.55	27.9	46	-33.45	14.54	2.26	32.15	143	118	Peak
589.1	17.1	28.66	46	-28.9	17.76	2.87	32.19	149	134	Peak
785.1	19.66	28.29	46	-26.34	20.18	3.27	32.08	127	115	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value

4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Nov. 21, 2016	Nov. 20, 2017
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond1-01	Dec. 22, 2016	Dec. 21, 2017
LISN/AMN ROHDE & SCHWARZ (EUT)	ESH3-Z5	835239/001	Mar. 10, 2017	Mar. 09, 2018
LISN/AMN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Jul. 28, 2016	Jul. 27, 2017
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Shielded Room 1.
3. The VCCI Site Registration No. is C-2040.

4.2.3 Test Procedures

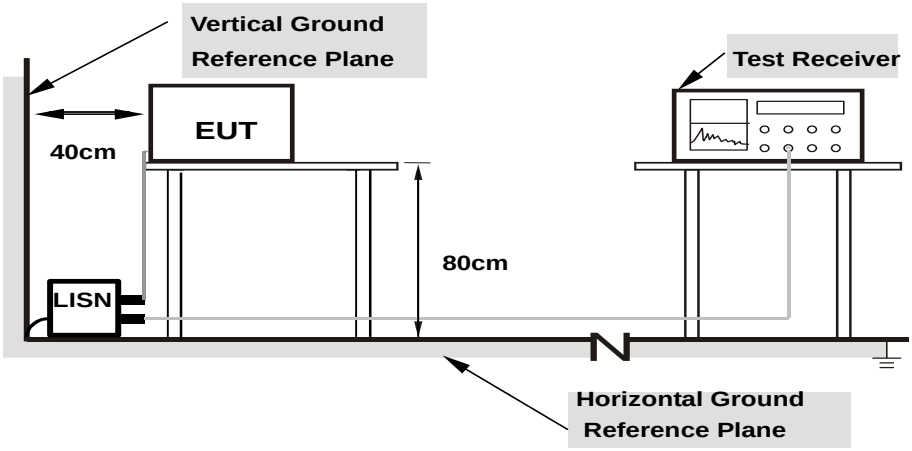
a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/50 uH of coupling impedance for the measuring instrument.
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

Note: All modes of operation were investigated and the worst-case emissions are reported.

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

4.2.6 EUT Operating Conditions

a. Placed the EUT on the testing table.
b. Set the EUT under transmission condition continuously at specific channel frequency.

4.2.7 Test Results

<LE 4.0>

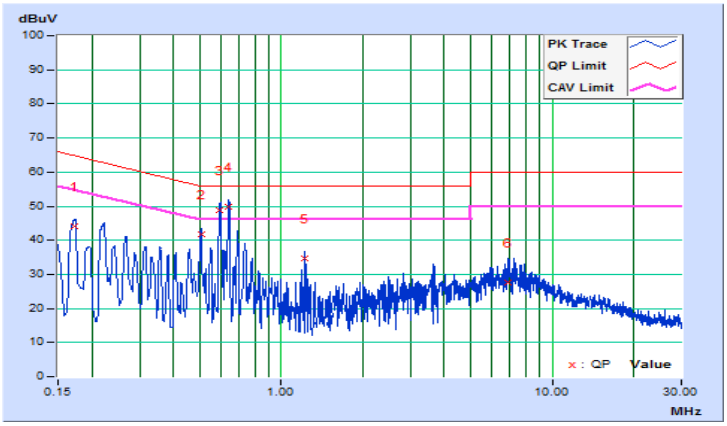
Mode A

Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25℃, 65%RH
Tested by	Getaz Yang	Test Date	2017/6/28

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17293	10.36	33.64	21.56	44.00	31.92	64.82	54.82	-20.82	-22.90
2	0.50600	10.40	31.24	23.18	41.64	33.58	56.00	46.00	-14.36	-12.42
3	0.59496	10.40	38.56	31.45	48.96	41.85	56.00	46.00	-7.04	-4.15
4	0.63882	10.40	39.36	31.02	49.76	41.42	56.00	46.00	-6.24	-4.58
5	1.22600	10.41	24.18	8.48	34.59	18.89	56.00	46.00	-21.41	-27.11
6	6.84600	10.69	16.99	4.54	27.68	15.23	60.00	50.00	-32.32	-34.77

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

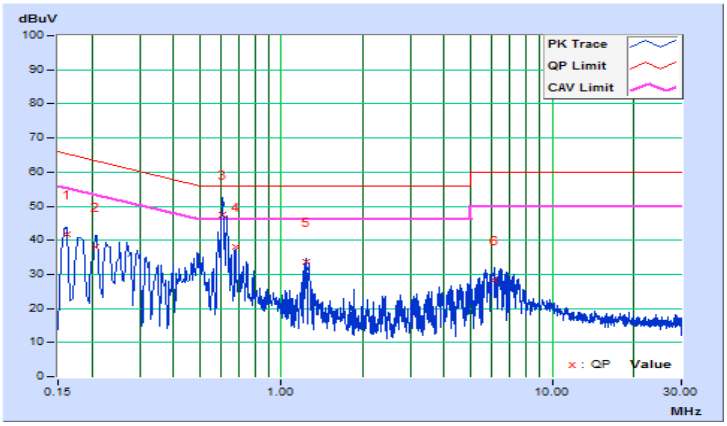


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25℃, 65%RH
Tested by	Getaz Yang	Test Date	2017/6/28

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16105	10.11	31.53	19.26	41.64	29.37	65.41	55.41	-23.77	-26.04
2	0.20631	10.14	27.99	12.68	38.13	22.82	63.35	53.35	-25.22	-30.53
3	0.61000	10.16	37.45	32.30	47.61	42.46	56.00	46.00	-8.39	-3.54
4	0.67800	10.16	27.77	20.04	37.93	30.20	56.00	46.00	-18.07	-15.80
5	1.23800	10.18	23.43	12.03	33.61	22.21	56.00	46.00	-22.39	-23.79
6	6.13000	10.41	17.80	3.08	28.21	13.49	60.00	50.00	-31.79	-36.51

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



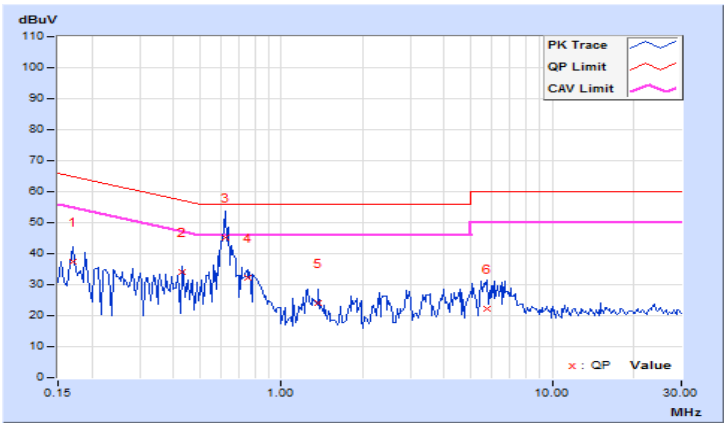
Mode B

Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25℃, 65%RH
Tested by	Getaz Yang	Test Date	2017/7/18

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16953	10.00	27.30	17.29	37.30	27.29	64.98	54.98	-27.68	-27.69
2	0.43125	9.92	23.98	17.86	33.90	27.78	57.23	47.23	-23.33	-19.45
3	0.61875	9.95	35.24	30.32	45.19	40.27	56.00	46.00	-10.81	-5.73
4	0.75156	9.97	22.42	13.69	32.39	23.66	56.00	46.00	-23.61	-22.34
5	1.37109	9.98	13.94	8.99	23.92	18.97	56.00	46.00	-32.08	-27.03
6	5.78516	10.06	11.99	4.23	22.05	14.29	60.00	50.00	-37.95	-35.71

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

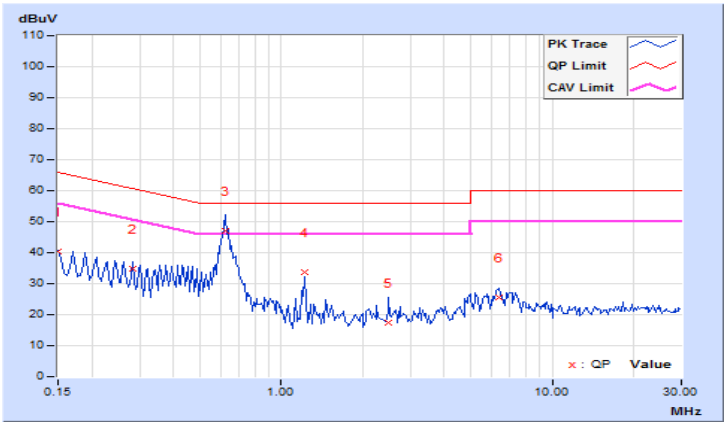


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25℃, 65%RH
Tested by	Getaz Yang	Test Date	2017/7/18

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.89	30.64	15.32	40.53	25.21	66.00	56.00	-25.47	-30.79
2	0.28281	9.86	24.85	11.84	34.71	21.70	60.73	50.73	-26.02	-29.03
3	0.61875	9.94	37.19	28.12	47.13	38.06	56.00	46.00	-8.87	-7.94
4	1.22266	9.93	23.72	11.49	33.65	21.42	56.00	46.00	-22.35	-24.58
5	2.49219	10.03	7.49	-7.60	17.52	2.43	56.00	46.00	-38.48	-43.57
6	6.33594	10.14	15.24	-0.53	25.38	9.61	60.00	50.00	-34.62	-40.39

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



<LE 5.0>

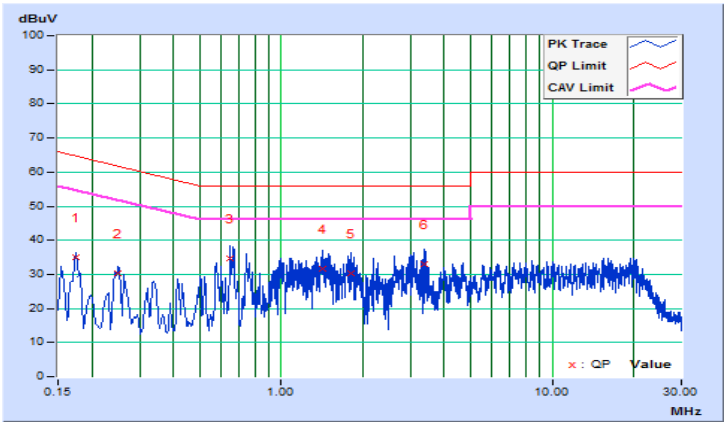
Mode A

Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25℃, 65%RH
Tested by	Getaz Yang	Test Date	2017/7/6

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17400	10.36	24.60	10.94	34.96	21.30	64.77	54.77	-29.81	-33.47
2	0.25006	10.38	19.85	11.58	30.23	21.96	61.76	51.76	-31.53	-29.80
3	0.65000	10.40	24.27	11.26	34.67	21.66	56.00	46.00	-21.33	-24.34
4	1.43000	10.43	21.09	10.85	31.52	21.28	56.00	46.00	-24.48	-24.72
5	1.81400	10.45	19.94	8.98	30.39	19.43	56.00	46.00	-25.61	-26.57
6	3.38200	10.54	22.42	8.14	32.96	18.68	56.00	46.00	-23.04	-27.32

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

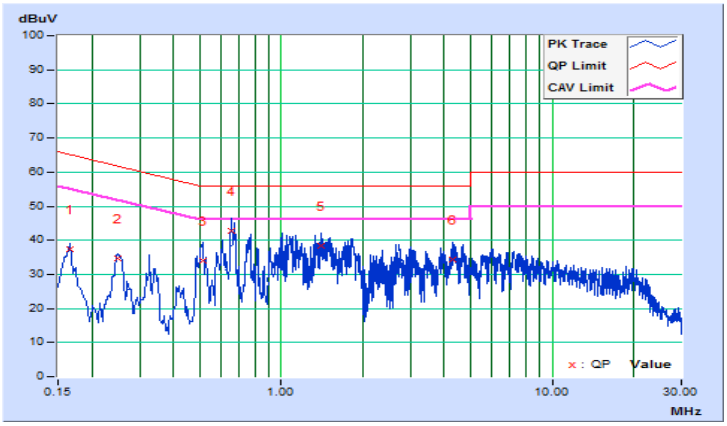


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25℃, 65%RH
Tested by	Getaz Yang	Test Date	2017/7/6

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16600	10.12	27.40	18.05	37.52	28.17	65.16	55.16	-27.64	-26.99
2	0.24875	10.14	24.49	16.86	34.63	27.00	61.80	51.80	-27.17	-24.80
3	0.51400	10.16	23.86	13.21	34.02	23.37	56.00	46.00	-21.98	-22.63
4	0.65400	10.16	32.60	19.84	42.76	30.00	56.00	46.00	-13.24	-16.00
5	1.41000	10.19	28.33	16.48	38.52	26.67	56.00	46.00	-17.48	-19.33
6	4.31000	10.35	24.08	15.00	34.43	25.35	56.00	46.00	-21.57	-20.65

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



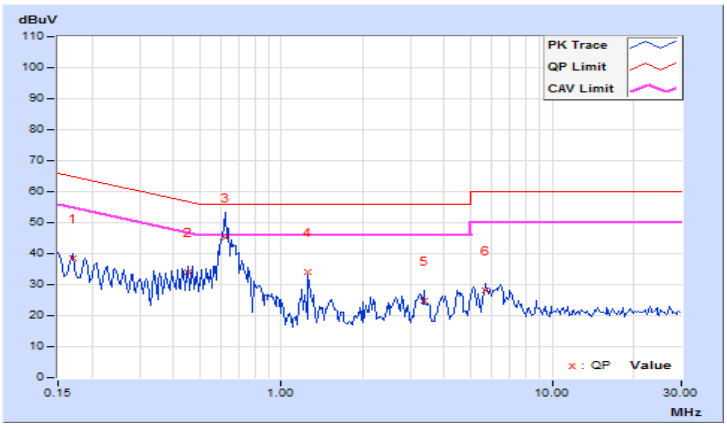
Mode B

Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25℃, 65%RH
Tested by	Getaz Yang	Test Date	2017/7/18

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16953	10.00	28.38	18.22	38.38	28.22	64.98	54.98	-26.60	-26.76
2	0.45078	9.92	24.31	27.05	34.23	36.97	56.86	46.86	-22.63	-9.89
3	0.61875	9.95	35.42	30.10	45.37	40.05	56.00	46.00	-10.63	-5.95
4	1.25781	9.99	24.19	13.89	34.18	23.88	56.00	46.00	-21.82	-22.12
5	3.36719	10.02	14.98	9.96	25.00	19.98	56.00	46.00	-31.00	-26.02
6	5.69922	10.06	18.19	11.21	28.25	21.27	60.00	50.00	-31.75	-28.73

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

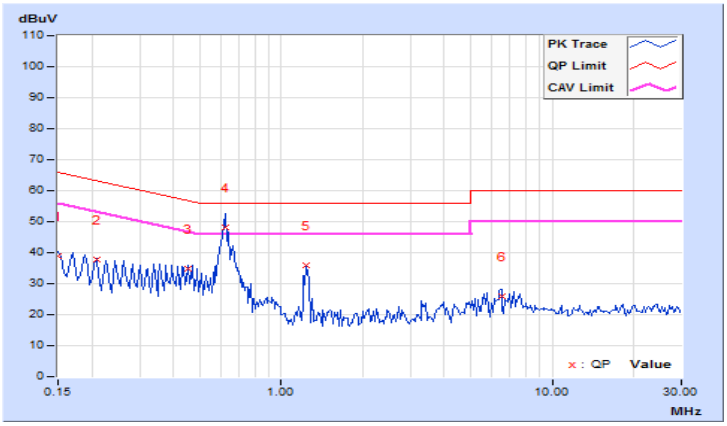


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25℃, 65%RH
Tested by	Getaz Yang	Test Date	2017/7/18

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.89	29.18	14.90	39.07	24.79	66.00	56.00	-26.93	-31.21
2	0.20859	9.80	27.92	13.25	37.72	23.05	63.26	53.26	-25.54	-30.21
3	0.45078	9.95	24.81	12.44	34.76	22.39	56.86	46.86	-22.10	-24.47
4	0.61875	9.94	38.31	28.97	48.25	38.91	56.00	46.00	-7.75	-7.09
5	1.23828	9.93	25.86	12.41	35.79	22.34	56.00	46.00	-20.21	-23.66
6	6.49219	10.13	15.66	3.86	25.79	13.99	60.00	50.00	-34.21	-36.01

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

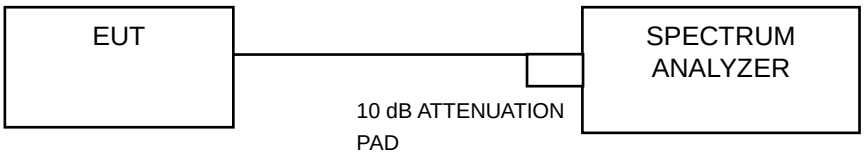


4.3 6 dB Bandwidth Measurement

4.3.1 Limits of 6 dB Bandwidth Measurement

The minimum of 6 dB Bandwidth Measurement is 0.5 MHz.

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

a. Set resolution bandwidth (RBW) = 100 kHz
b. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = Peak.
c. Trace mode = max hold.
d. Sweep = auto couple.
e. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

4.3.5 Deviation fromTest Standard

No deviation.

4.3.6 EUT Operating Conditions

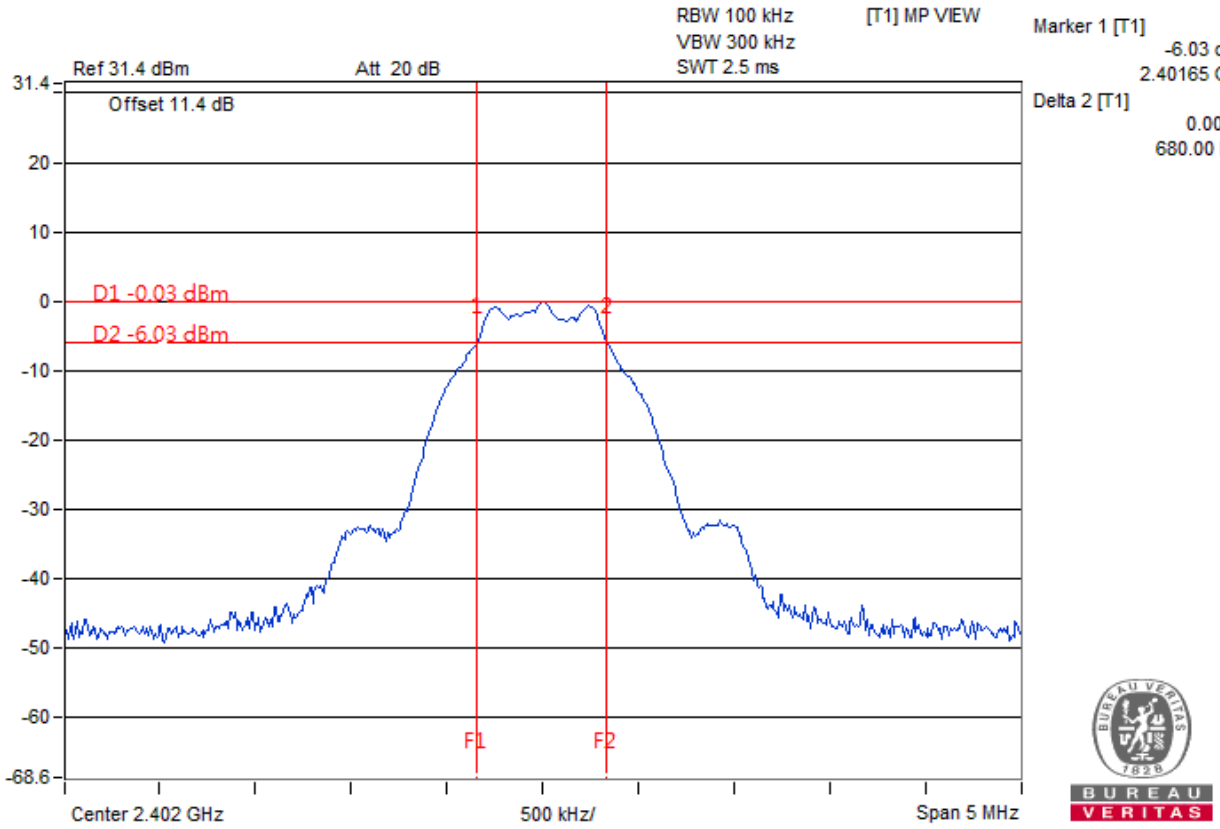
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 Test Result

<LE 4.0>

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
0	2402	0.68	0.5	Pass
19	2440	0.68	0.5	Pass
39	2480	0.67	0.5	Pass

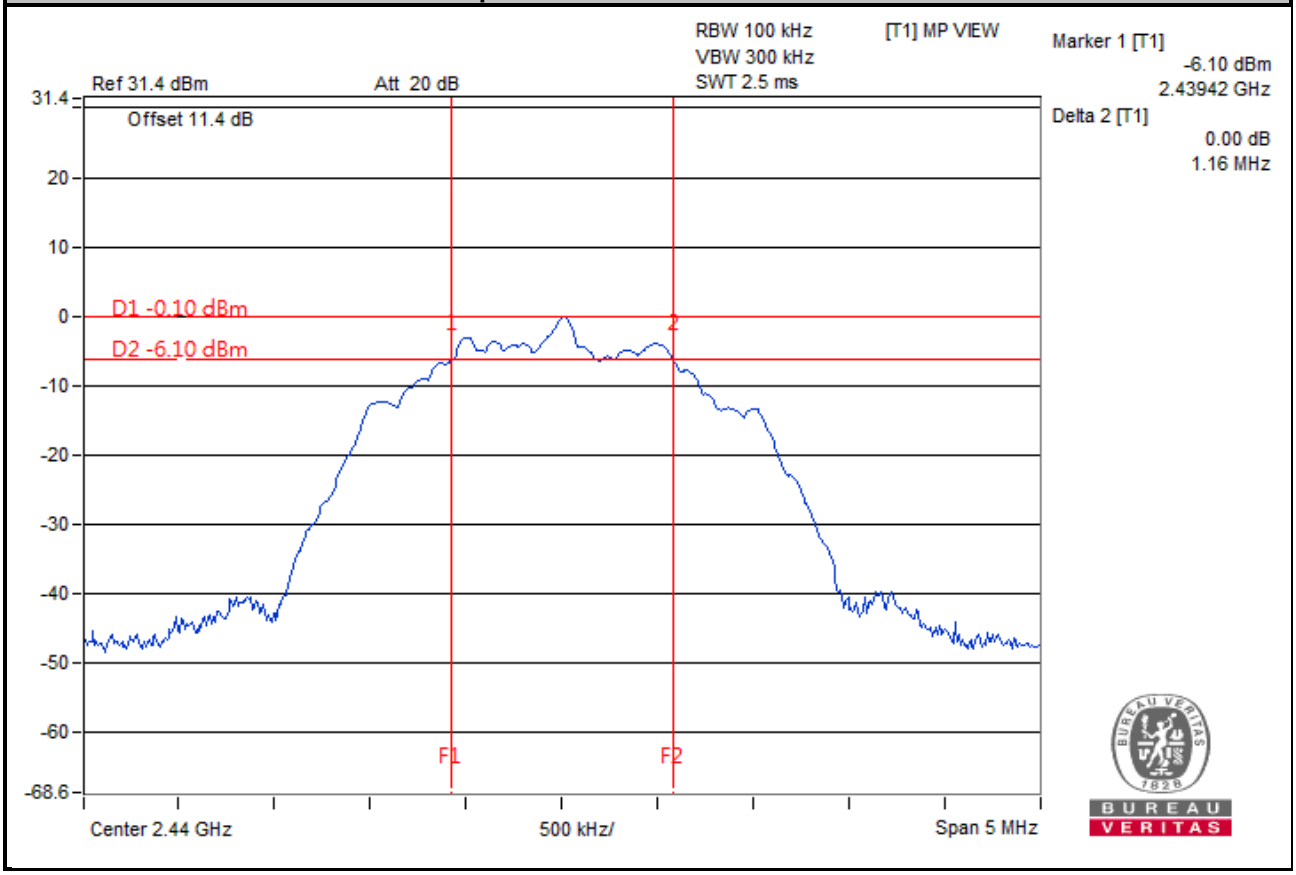
Spectrum Plot of Worst Value



<LE 5.0>

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
0	2402	1.15	0.5	Pass
19	2440	1.16	0.5	Pass
39	2480	1.15	0.5	Pass

Spectrum Plot of Worst Value

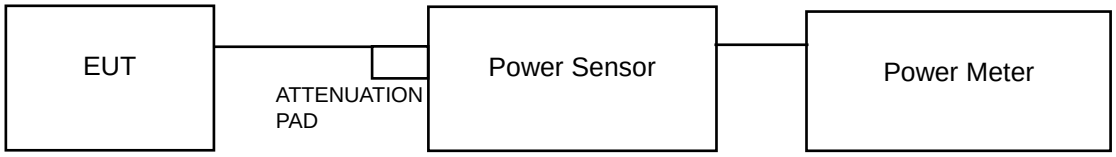


4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

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

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedures

A peak / average power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak / average power sensor. Record the power level.

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.4.7 Test Results

<LE 4.0>

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
0	2402	2.339	3.69	30	Pass
19	2440	2.535	4.04	30	Pass
39	2480	3.365	5.27	30	Pass

<LE 5.0>

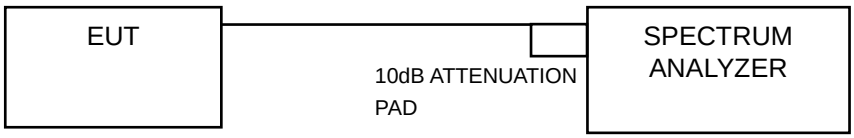
Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
0	2402	1.589	2.01	30	Pass
19	2440	1.746	2.42	30	Pass
39	2480	2.371	3.75	30	Pass

4.5 Power Spectral Density Measurement

4.5.1 Limits of Power Spectral Density Measurement

The Maximum of Power Spectral Density Measurement is 8 dBm.

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedure

a. Set the RBW = 3 kHz, VBW =10 kHz, Detector = peak.
b. Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
c. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

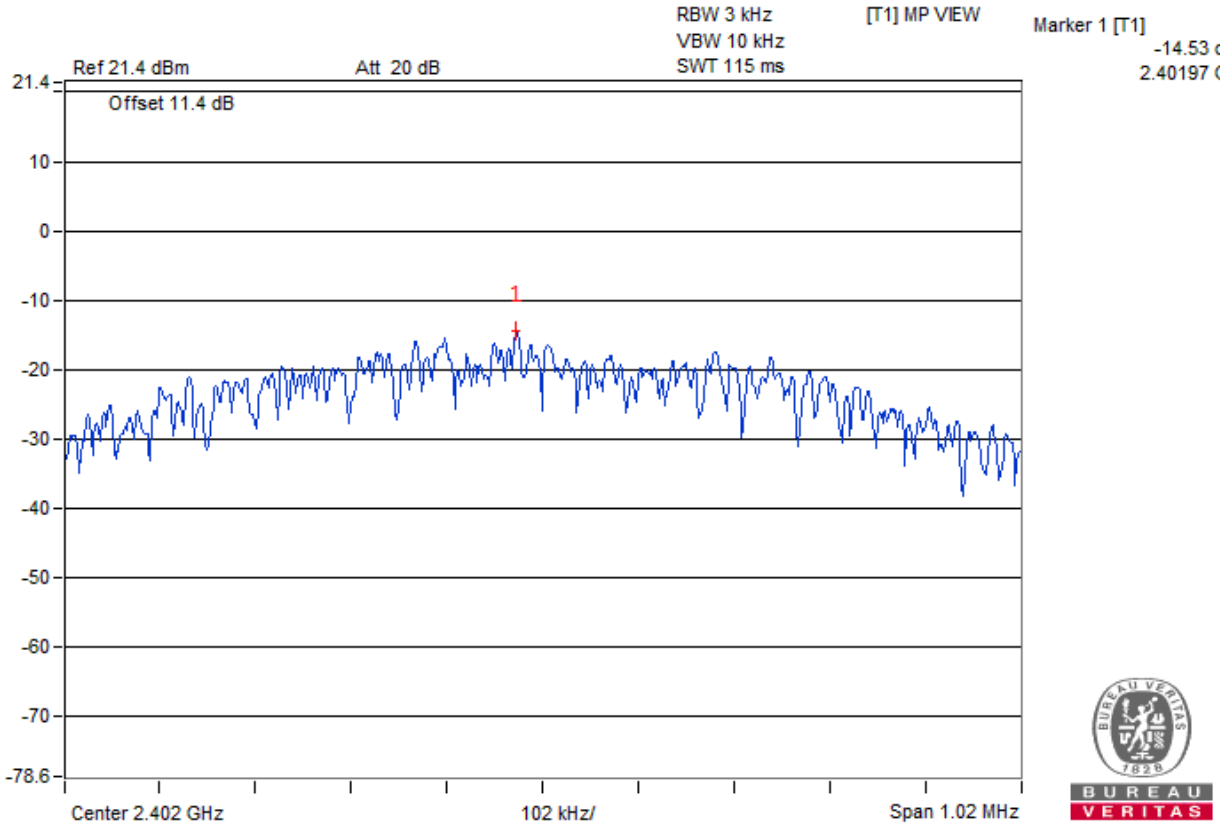
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.5.7 Test Results

<LE 4.0>

Channel	Frequency (MHz)	PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
0	2402	-14.53	8	Pass
19	2440	-14.90	8	Pass
39	2480	-14.64	8	Pass

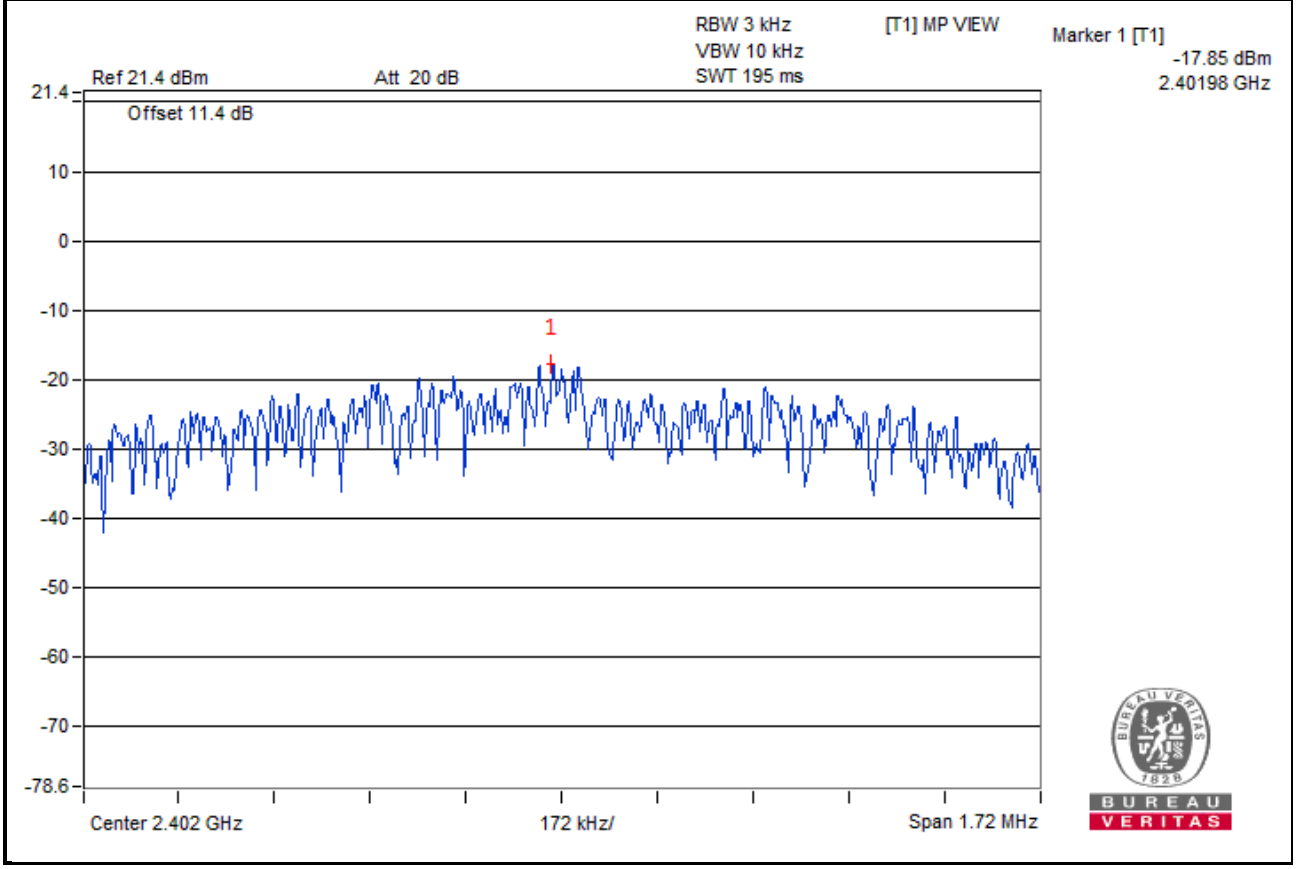
Spectrum Plot of Worst Value



<LE 5.0>

Channel	Frequency (MHz)	PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
0	2402	-17.85	8	Pass
19	2440	-18.23	8	Pass
39	2480	-17.94	8	Pass

Spectrum Plot of Worst Value

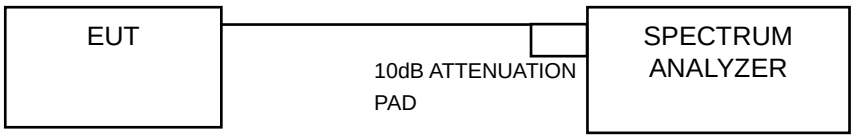


4.6 Conducted Out of Band Emission Measurement

4.6.1 Limits of Conducted Out of Band Emission Measurement

Below –20 dB of the highest emission level of operating band (in 100 kHz Resolution Bandwidth).

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW ≥ 300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOBE

1. Set RBW = 100 kHz.
2. Set VBW ≥ 300 kHz.
3. Detector = peak.
4. Sweep = auto couple.
5. Trace Mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum amplitude level.

4.6.5 Deviation from Test Standard

No deviation.

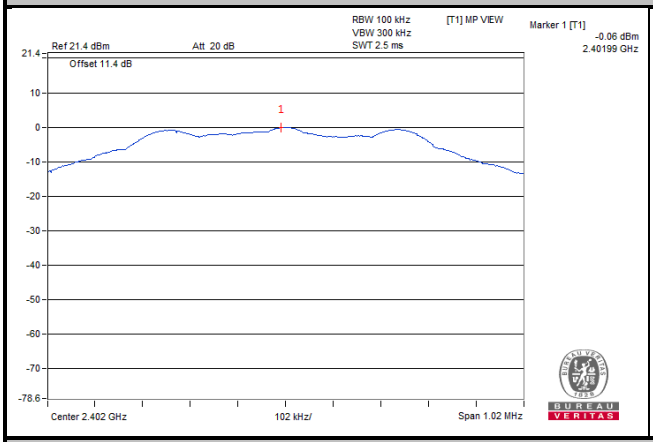
4.6.6 EUT Operating Condition

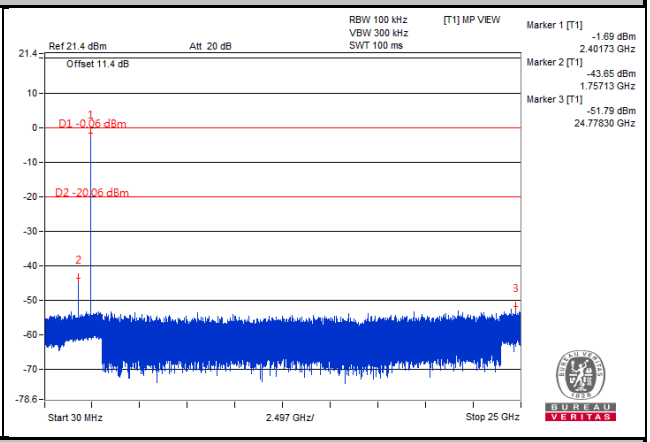
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.6.7 TEST RESULTS

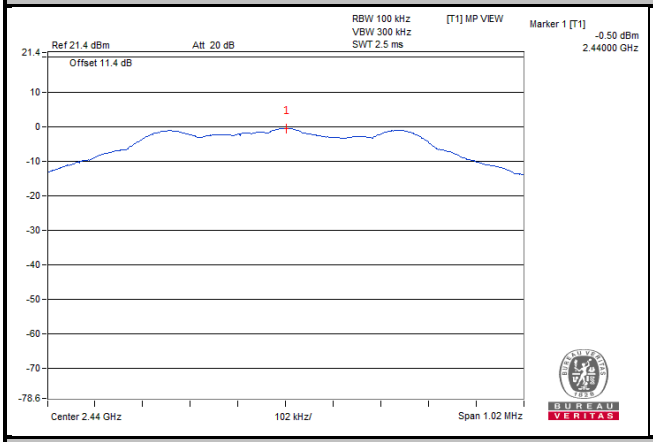
<LE 4.0>

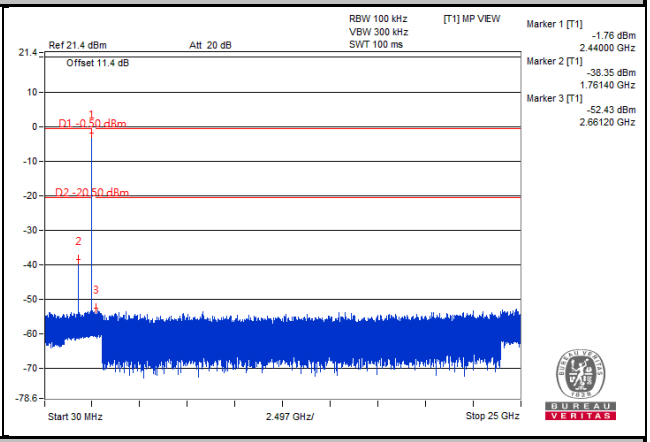
Ch 0



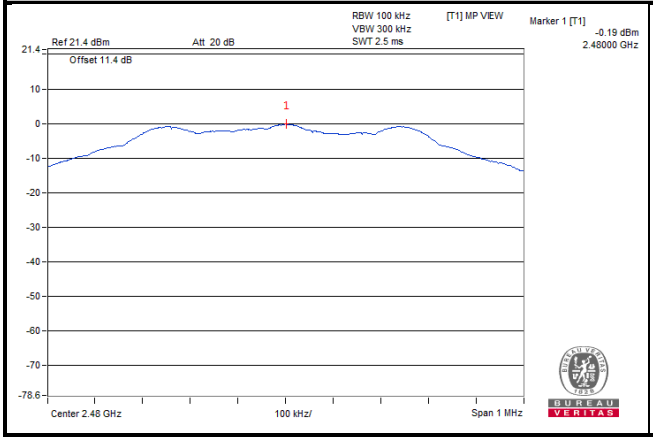


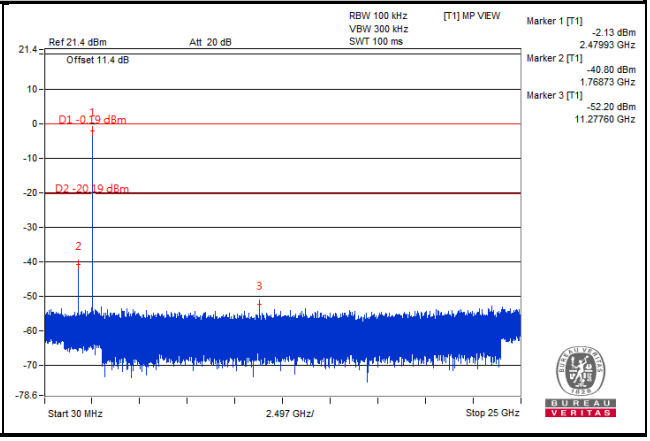
Ch 19

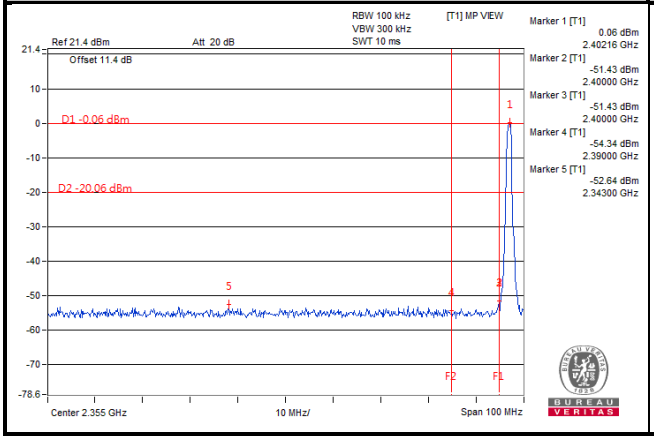
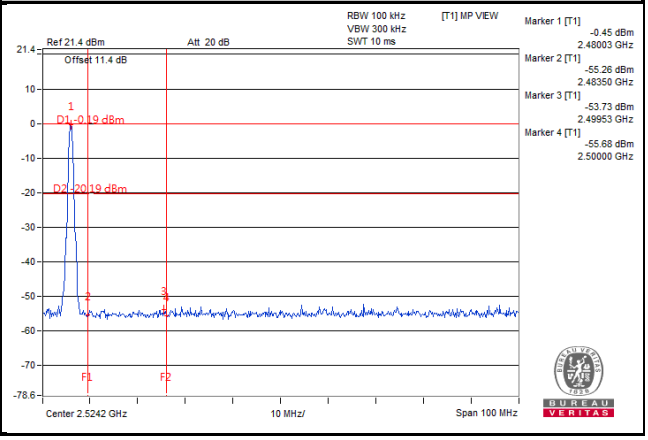




Ch 39

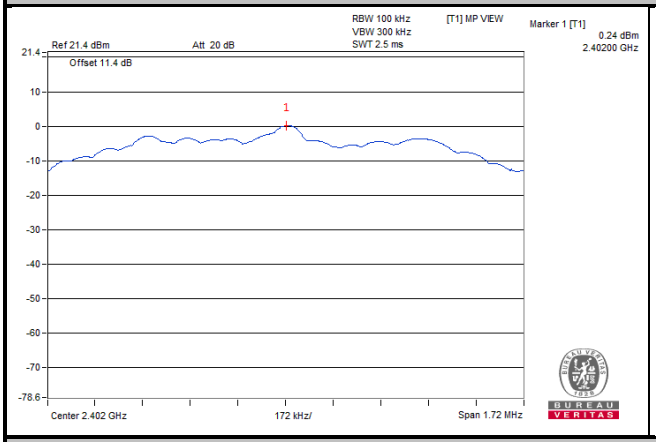


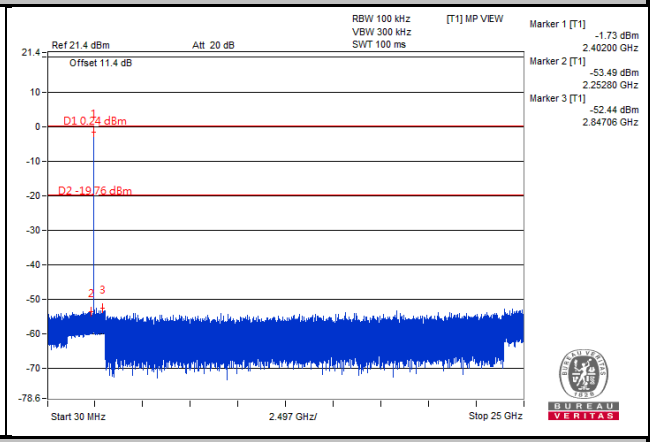


Ch 0 Band Edge	Ch 39 Band Edge
	

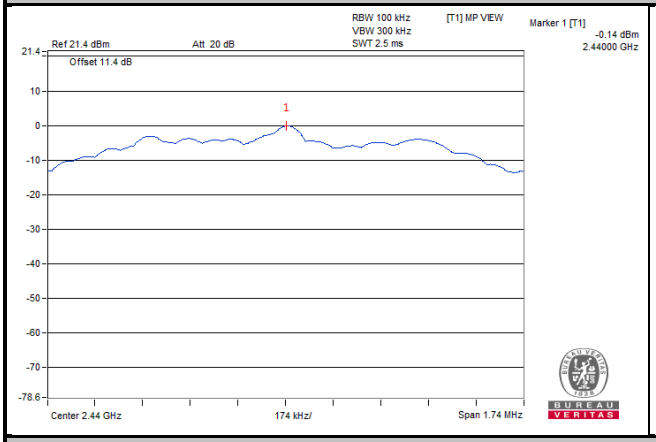
<LE 5.0>

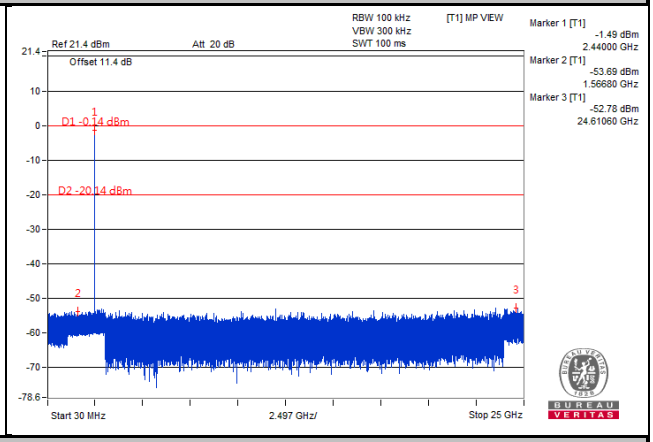
Ch 0



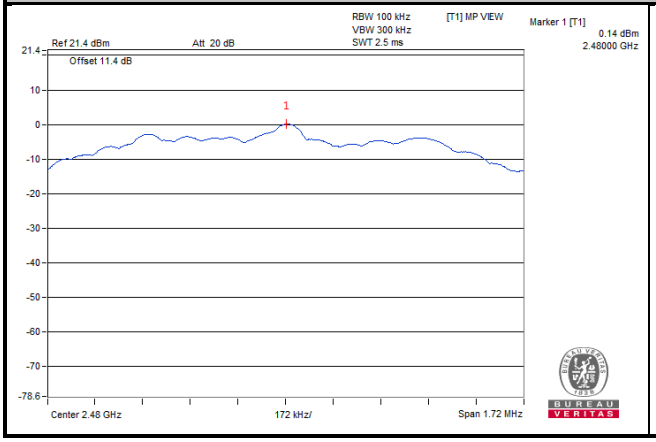


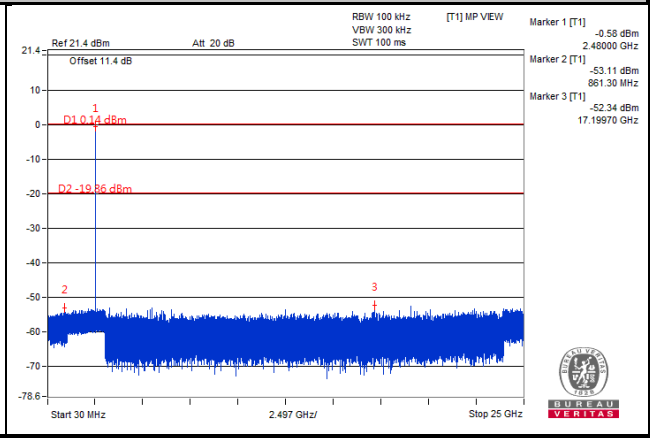
Ch 19

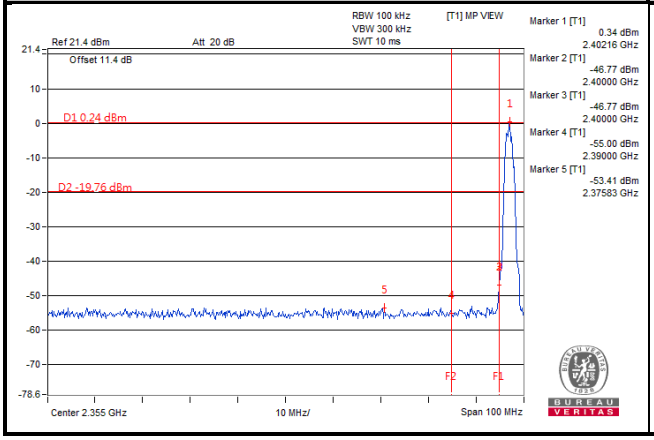
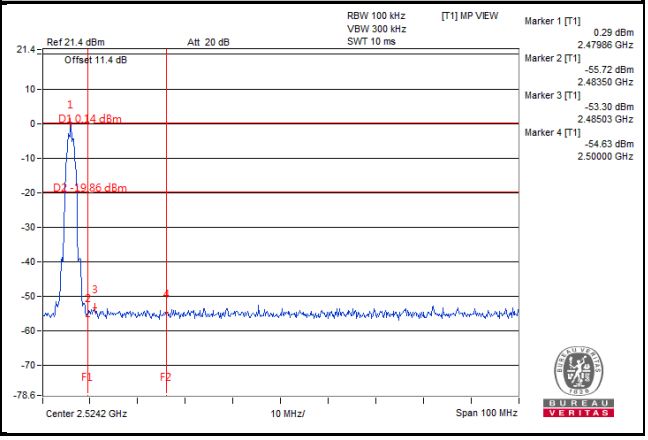




Ch 39





Ch 0 Band Edge	Ch 39 Band Edge
	

5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

Appendix – Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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Email: service.adt@tw.bureauveritas.com
Web Site: www.bureauveritas-adt.com

The address and road map of all our labs can be found in our web site also.

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