

## FCC Test Report

**Report No.:** RF200605C24-1 R1

**FCC ID:** V65E7110

**Test Model:** E7110

**Received Date:** Jun. 29, 2020

**Test Date:** Jul. 30, 2020 ~ Aug. 26, 2020

**Issued Date:** Nov. 17, 2020

**Applicant:** Kyocera Corporation % Kyocera International, Inc.

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**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch  
Lin Kou Laboratories

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**Test Location:** No.19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City  
33383, Taiwan

**FCC Registration /**  
**Designation Number:** 788550 / TW0003



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### Release Control Record

Issue No.	Description	Date Issued
RF200605C24-1	Original Release	Oct. 16, 2020
RF200605C24-1 R1	Revise applicant and accessory information	Nov. 17, 2020

## 1 Certificate of Conformity

**Product:** Smart Phone

**Brand:** Kyocera

**Test Model:** E7110

**Sample Status:** Identical Prototype

**Applicant:** Kyocera Corporation % Kyocera International, Inc.

**Test Date:** Jul. 30, 2020 ~ Aug. 26, 2020

**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 RF characteristics under the conditions specified in this report.



**Prepared by :** \_\_\_\_\_, **Date:** Nov. 17, 2020  
Shelly Hsueh / Specialist



**Approved by :** \_\_\_\_\_, **Date:** Nov. 17, 2020  
Dylan Chiou / Senior 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 -23.03 dB at 0.21 MHz.
15.205 & 209	Radiated Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -5.48 dB at 41.64 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.
---	Occupied Bandwidth Measurement	Pass	Reference only
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.

Note:

1. For 2.4G band compliance with rule 15.247(d) of the band-edge items, the test plots were recorded in Annex A. Test Procedures refer to report 4.1.3.
2. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

### 2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150 kHz ~ 30 MHz	2.79 dB
Radiated Emissions up to 1 GHz	9 kHz ~ 30 MHz	3.04 dB
	30 MHz ~ 200 MHz	2.93 dB
	200 MHz ~ 1000 MHz	2.95 dB
	1 GHz ~ 18 GHz	2.26 dB
Radiated Emissions above 1 GHz	18 GHz ~ 40 GHz	1.94 dB

### 2.2 Modification Record

There were no modifications required for compliance.

### 3 General Information

#### 3.1 General Description of EUT

<b>Product</b>	Smart Phone
<b>Brand</b>	Kyocera
<b>Test Model</b>	E7110
<b>Status of EUT</b>	Identical Prototype
<b>Power Supply Rating</b>	3.85 Vdc (Li-ion battery) 5 Vdc / 9 Vdc / 12 Vdc (adapter)
<b>Modulation Type</b>	GFSK
<b>Transfer Rate</b>	LE 4.0: 1 Mbps LE 5.0: 2 Mbps
<b>Operating Frequency</b>	2402 ~ 2480 MHz
<b>Number of Channel</b>	40
<b>Output Power</b>	LE 4.0: 5.521 mW LE 5.0: 5.702 mW
<b>Antenna Type</b>	Fixed Internal antenna with -0.4 dBi gain
<b>Antenna Connector</b>	N/A
<b>Accessory Device</b>	Refer to Note as below
<b>Data Cable Supplied</b>	N/A

Note:

1. The EUT contains following accessory devices.

<b>Product</b>	<b>Brand</b>	<b>Model</b>	<b>Description</b>
Adapter	Kyocera	SCP-53ADT	I/P: 100-240 Vac, 50/60 Hz, 0.6 A O/P: 5 Vdc, 3 A; 9 Vdc, 3 A; 15 Vdc, 1.8 A; 20 Vdc, 1.35 A
USB Cable	Kyocera	SCP-27SDC	--

2. The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.
3. The above EUT information is declared by manufacturer and for more detailed features description, please refers 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)						
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 $\geq$ 1G	RE $<$ 1G	PLC	APCM	
-	✓	✓	✓	✓	-

Where      **RE $\geq$ 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)
-	0 to 39	0, 19, 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)
-	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)
-	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)
-	0 to 39	0, 19, 39	GFSK	1

### <LE 5.0>

EUT Configure Mode	Applicable To				Description
	RE $\geq$ 1G	RE $<$ 1G	PLC	APCM	
-	√	√	√	√	-

Where      **RE $\geq$ 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)
-	0 to 39	0, 19, 39	GFSK	2

#### 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)
-	0 to 39	39	GFSK	2

#### 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)
-	0 to 39	39	GFSK	2

#### 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)
-	0 to 39	0, 19, 39	GFSK	2

**Test Condition:**

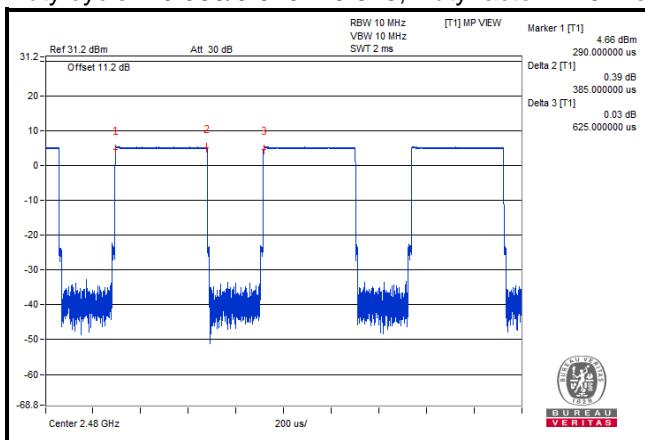
Applicable To	Environmental Conditions	Input Power	Tested by
RE $\geq$ 1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Cyril Chen
RE<1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Cyril Chen
PLC	25 deg. C, 65 % RH	120 Vac, 60 Hz	Getaz Yang
APCM	25 deg. C, 65 % RH	120 Vac, 60 Hz	Wayne Lin

**3.3 Duty Cycle of Test Signal**

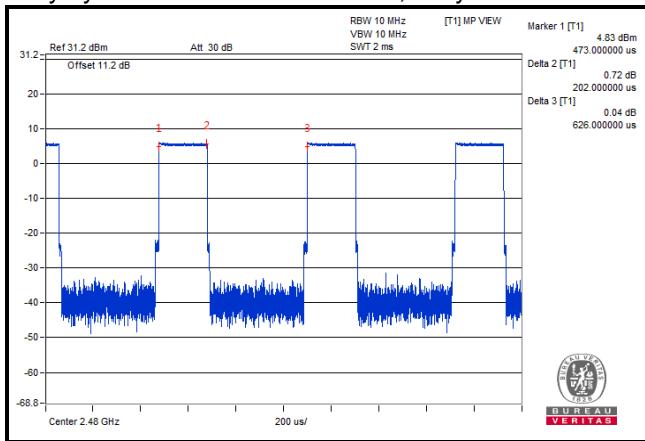
Duty cycle of test signal is < 98 %, duty factor shall be considered.

**<LE 4.0>**

Duty cycle =  $0.385/0.625 = 0.616$ , Duty factor =  $10 * \log(1/0.616) = 2.10$


**<LE 5.0>**

Duty cycle =  $0.202/0.626 = 0.323$ , Duty factor =  $10 * \log(1/0.323) = 4.91$



### 3.4 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

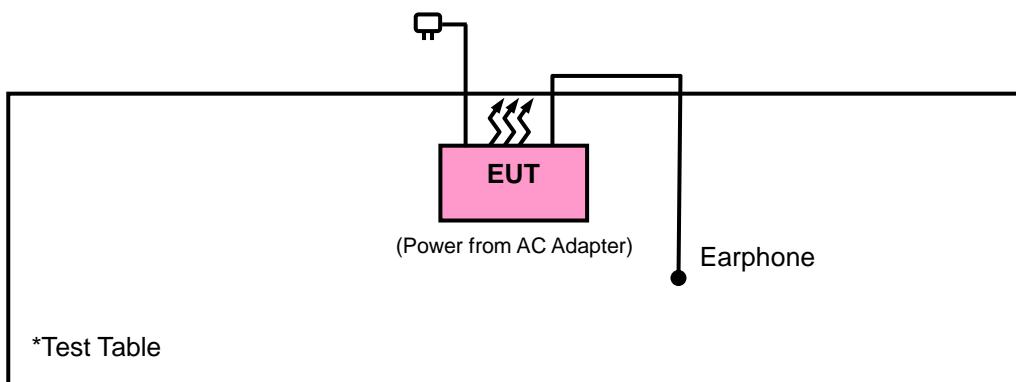
No.	Product	Brand	Model No.	Serial No.	FCC ID
1.	Earphone	Sony	MH410C	N/A	N/A

No.	Signal Cable Description of The Above Support Units
1.	90cm

Note:

1. All power cords of the above support units are non-shielded (1.8m).

#### 3.4.1 Configuration of System under Test



### 3.5 General Description of Applied Standards and References

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

#### Test Standard:

#### FCC Part 15, Subpart C (15.247)

ANSI C63.10-2013

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

#### References Test Guidance:

#### KDB 558074 D01 15.247 Meas Guidance v05r02

All test items have been performed as a reference to the above KDB test guidance.

## 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 (dB<sub>uV</sub>/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	N9038A	MY51210203	Mar. 18, 2020	Mar. 17, 2021
Spectrum Analyzer Agilent	N9010A	MY52220314	Dec. 12, 2019	Dec. 11, 2020
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Apr. 16, 2020	Apr. 15, 2021
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-969	Nov. 24, 2019	Nov. 23, 2020
BILOG Antenna SCHWARZBECK	VULB 9168	9168-472	Nov. 08, 2019	Nov. 07, 2020
Fixed Attenuator WORKEN	MDCS18N-10	MDCS18N-10-01	Apr. 14, 2020	Apr. 13, 2021
Loop Antenna	EM-6879	269	Sep. 16, 2019	Sep. 15, 2020
Bluetooth Tester	CBT	100946	Aug. 06, 2020	Aug. 05, 2022
Preamplifier EMCI	EMC 330H	980112	Oct. 08, 2019	Oct. 07, 2020
Power Meter Anritsu	ML2495A	1012010	Sep. 04, 2019	Sep. 03, 2020
Power Sensor Anritsu	MA2411B	1315050	Sep. 04, 2019	Sep. 03, 2020
RF Coaxial Cable EMCI	EMC104-SM-SM-8000	171005	Oct. 07, 2019	Oct. 06, 2020
RF Coaxial Cable HUBER+SUHNNER	SUCOFLEX 104	EMC104-SM-SM-1000(140807)	Oct. 08, 2019	Oct. 07, 2020
RF Coaxial Cable Worken	8D-FB	Cable-Ch10-01	Oct. 08, 2019	Oct. 07, 2020
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Software BV ADT	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower & Turn Table Controller MF	MF-7802	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 Chamber 10.

#### 4.1.3 Test Procedures

##### For Radiated Emission below 30 MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. 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. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case 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.

##### Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz at frequency below 30 MHz.

##### For Radiated Emission above 30 MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters (for 30 MHz ~ 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:

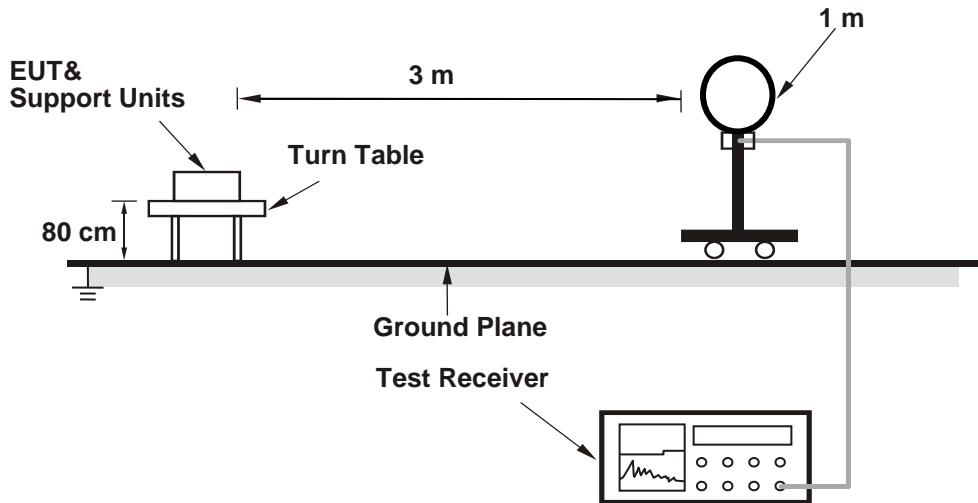
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) or Peak detection (PK) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK)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

#### 4.1.4 Deviation from Test Standard

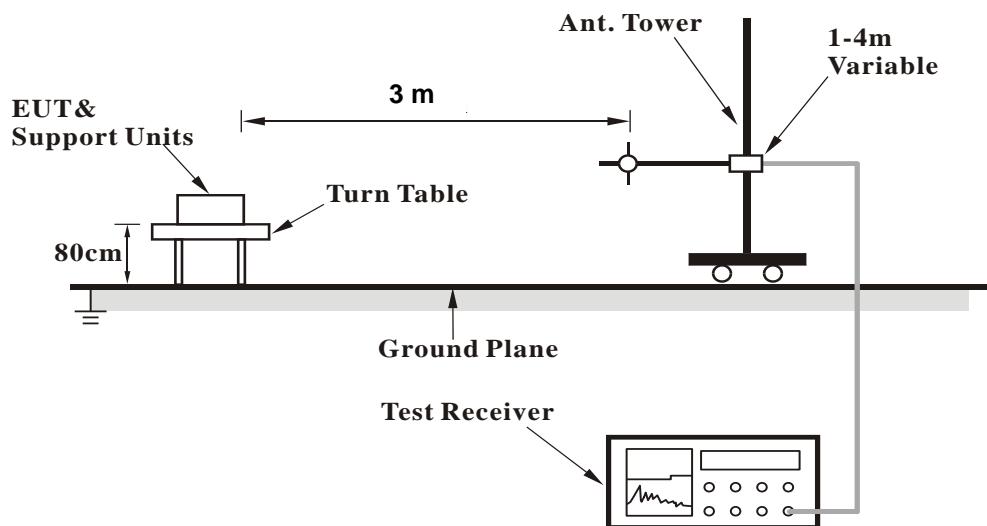
No deviation.

#### 4.1.5 Test Set Up

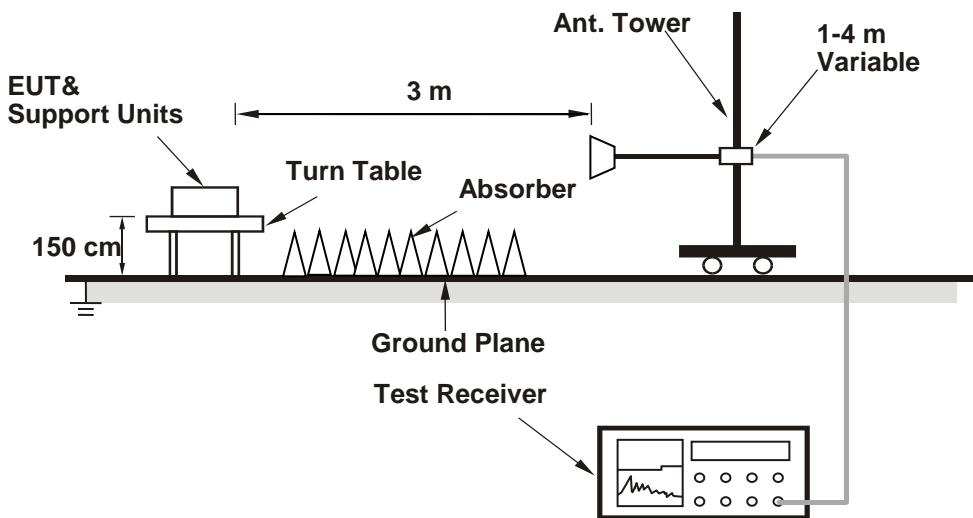
##### <Radiated Emission below 30 MHz>



##### <Radiated Emission 30 MHz to 1 GHz>



**<Radiated Emission above 1 GHz>**



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

#### 4.1.6 EUT Operating Conditions

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

#### 4.1.7 Test Results

##### Above 1 GHz Data:

<LE 4.0>

EUT Test Condition		Measurement Detail		
Channel		Frequency Range		1 GHz ~ 25 GHz
Input Power		Detector Function		Peak (PK) Average (AV)
Environmental Conditions		Tested By		Cyril Chen

##### Antenna Polarity & Test Distance: Horizontal at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	36.68	42.6	-5.92	54	-17.32	159	335	Average
2390	45.7	51.62	-5.92	74	-28.3	159	335	Peak
2402	98.27	104.21	-5.94	-----	-----	159	335	Average
2402	100.36	106.3	-5.94	-----	-----	159	335	Peak
4804	34.51	50.15	-15.64	54	-19.49	154	121	Average
4804	43.29	58.93	-15.64	74	-30.71	154	121	Peak

##### Antenna Polarity & Test Distance: Vertical at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	36.83	42.75	-5.92	54	-17.17	386	34	Average
2390	47.3	53.22	-5.92	74	-26.7	386	34	Peak
2402	92.73	98.67	-5.94	-----	-----	386	34	Average
2402	94.78	100.72	-5.94	-----	-----	386	34	Peak
4804	35.12	50.76	-15.64	54	-18.88	185	74	Average
4804	43.5	59.14	-15.64	74	-30.5	185	74	Peak

##### Remarks:

1. Emission Level = Read Level + Factor  
Margin value = Emission level – Limit value
2. 2402 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail		
Channel		Frequency Range		1 GHz ~ 25 GHz
Input Power		Detector Function		Peak (PK) Average (AV)
Environmental Conditions		Tested By		Cyril Chen

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	37.1	43.02	-5.92	54	-16.9	153	336	Average
2390	45.9	51.82	-5.92	74	-28.1	153	336	Peak
2440	100.97	106.85	-5.88	-----	-----	153	336	Average
2440	101.75	107.63	-5.88	-----	-----	153	336	Peak
2483.5	37.15	42.85	-5.7	54	-16.85	153	336	Average
2483.5	46.56	52.26	-5.7	74	-27.44	153	336	Peak
4880	34.73	50.29	-15.56	54	-19.27	144	276	Average
4880	43.24	58.8	-15.56	74	-30.76	144	276	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	37.82	43.74	-5.92	54	-16.18	376	37	Average
2390	46.84	52.76	-5.92	74	-27.16	376	37	Peak
2440	94.94	100.82	-5.88	-----	-----	376	37	Average
2440	95.72	101.6	-5.88	-----	-----	376	37	Peak
2483.5	36.97	42.67	-5.7	54	-17.03	376	37	Average
2483.5	46.14	51.84	-5.7	74	-27.86	376	37	Peak
4880	33.8	49.36	-15.56	54	-20.2	131	150	Average
4880	41.49	57.05	-15.56	74	-32.51	131	150	Peak

Remarks:

1. Emission Level = Read Level + Factor  
Margin value = Emission level – Limit value
2. 2440 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail		
Channel		Frequency Range		1 GHz ~ 25 GHz
Input Power		Detector Function		Peak (PK) Average (AV)
Environmental Conditions		Tested By		Cyril Chen

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2480	99.9	105.6	-5.7	-----	-----	170	344	Average
2480	100.71	106.41	-5.7	-----	-----	170	344	Peak
2483.5	38.32	44.02	-5.7	54	-15.68	170	344	Average
2483.5	49.97	55.67	-5.7	74	-24.03	170	344	Peak
4960	34.44	49.89	-15.45	54	-19.56	212	247	Average
4960	42.73	58.18	-15.45	74	-31.27	212	247	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2480	94.37	100.07	-5.7	-----	-----	372	22	Average
2480	95.22	100.92	-5.7	-----	-----	372	22	Peak
2483.5	37.17	42.87	-5.7	54	-16.83	372	22	Average
2483.5	46.96	52.66	-5.7	74	-27.04	372	22	Peak
4960	33.57	49.02	-15.45	54	-20.43	150	164	Average
4960	42.02	57.47	-15.45	74	-31.98	150	164	Peak

Remarks:

1. Emission Level = Read Level + Factor  
Margin value = Emission level – Limit value
2. 2480 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

**<LE 5.0>**

EUT Test Condition		Measurement Detail		
<b>Channel</b>		Channel 0		Frequency Range
<b>Input Power</b>		120 Vac, 60 Hz		Detector Function
<b>Environmental Conditions</b>		25 deg. C, 65 % RH		Tested By
				Cyril Chen

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	37.43	43.35	-5.92	54	-16.57	130	337	Average
2390	46.03	51.95	-5.92	74	-27.97	130	337	Peak
2402	99.06	105	-5.94	-----	-----	130	337	Average
2402	100.81	106.75	-5.94	-----	-----	130	337	Peak
4804	34.84	50.48	-15.64	54	-19.16	278	197	Average
4804	42.78	58.42	-15.64	74	-31.22	278	197	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	37.46	43.38	-5.92	54	-16.54	385	30	Average
2390	45.88	51.8	-5.92	74	-28.12	385	30	Peak
2402	93.33	99.27	-5.94	-----	-----	385	30	Average
2402	95.27	101.21	-5.94	-----	-----	385	30	Peak
4804	33.87	49.51	-15.64	54	-20.13	180	127	Average
4804	42.11	57.75	-15.64	74	-31.89	180	127	Peak

**Remarks:**

1. Emission Level = Read Level + Factor  
Margin value = Emission level – Limit value
2. 2402 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail		
Channel		Frequency Range		1 GHz ~ 25 GHz
Input Power		Detector Function		Peak (PK) Average (AV)
Environmental Conditions		Tested By		Cyril Chen

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	37.48	43.4	-5.92	54	-16.52	147	341	Average
2390	48.02	53.94	-5.92	74	-25.98	147	341	Peak
2440	99.86	105.74	-5.88	-----	-----	147	341	Average
2440	101.76	107.64	-5.88	-----	-----	147	341	Peak
2483.5	37.66	43.36	-5.7	54	-16.34	147	341	Average
2483.5	46.16	51.86	-5.7	74	-27.84	147	341	Peak
4880	34.55	50.11	-15.56	54	-19.45	150	241	Average
4880	43.28	58.84	-15.56	74	-30.72	150	241	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	37.72	43.64	-5.92	54	-16.28	375	29	Average
2390	47.05	52.97	-5.92	74	-26.95	375	29	Peak
2440	94	99.88	-5.88	-----	-----	375	29	Average
2440	95.92	101.8	-5.88	-----	-----	375	29	Peak
2483.5	37.63	43.33	-5.7	54	-16.37	375	29	Average
2483.5	46.24	51.94	-5.7	74	-27.76	375	29	Peak
4880	33.62	49.18	-15.56	54	-20.38	192	194	Average
4880	41.61	57.17	-15.56	74	-32.39	192	194	Peak

Remarks:

1. Emission Level = Read Level + Factor  
Margin value = Emission level – Limit value
2. 2440 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail		
Channel		Frequency Range		1 GHz ~ 25 GHz
Input Power		Detector Function		Peak (PK) Average (AV)
Environmental Conditions		Tested By		Cyril Chen

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2480	98.76	104.46	-5.7	-----	-----	120	342	Average
2480	100.68	106.38	-5.7	-----	-----	120	342	Peak
2483.5	39.31	45.01	-5.7	54	-14.69	120	342	Average
2483.5	51.26	56.96	-5.7	74	-22.74	120	342	Peak
4960	35.59	51.04	-15.45	54	-18.41	248	158	Average
4960	43.86	59.31	-15.45	74	-30.14	248	158	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2480	94.39	100.09	-5.7	-----	-----	364	13	Average
2480	96.32	102.02	-5.7	-----	-----	364	13	Peak
2483.5	37.85	43.55	-5.7	54	-16.15	364	13	Average
2483.5	49.17	54.87	-5.7	74	-24.83	364	13	Peak
4960	34.4	49.85	-15.45	54	-19.6	154	215	Average
4960	43.06	58.51	-15.45	74	-30.94	154	215	Peak

Remarks:

1. Emission Level = Read Level + Factor  
Margin value = Emission level – Limit value
2. 2480 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

### 9 kHz ~ 30 MHz Data:

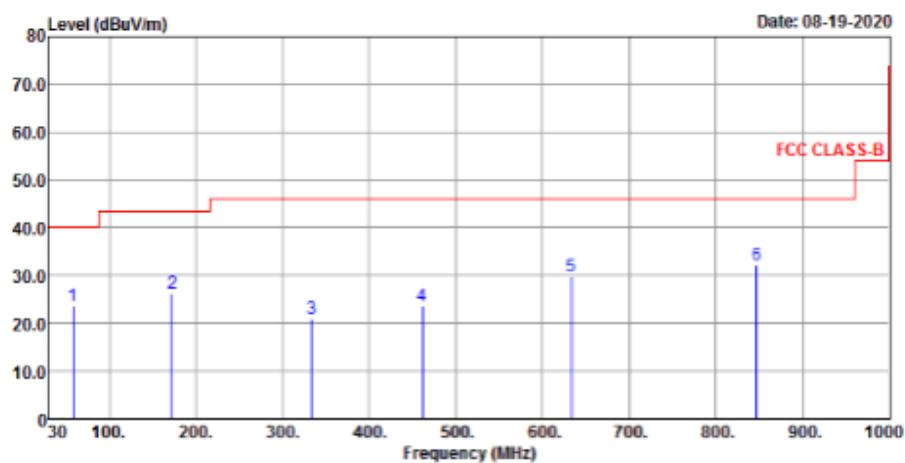
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

### 30 MHz ~ 1 GHz Worst-Case Data:

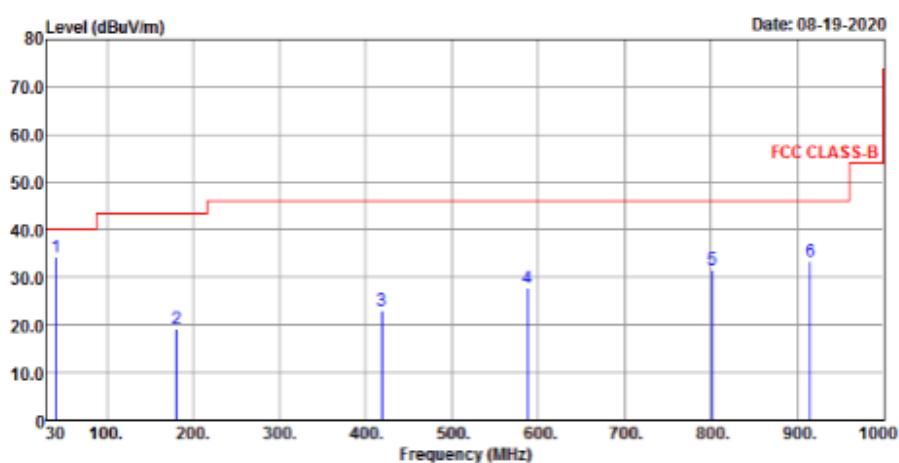
<LE 4.0>

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	Cyril Chen

#### Horizontal



#### Vertical



**Antenna Polarity & Test Distance: Horizontal at 3 m**

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
58.13	23.49	35.68	-12.19	40	-16.51	123	241	QP
172.59	26.17	38.76	-12.59	43.5	-17.33	167	231	QP
333.61	20.89	30.87	-9.98	46	-25.11	193	214	QP
460.68	23.56	29.79	-6.23	46	-22.44	241	187	QP
633.34	29.84	31.59	-1.75	46	-16.16	154	213	QP
846.74	32.3	29.87	2.43	46	-13.7	125	216	QP

**Antenna Polarity & Test Distance: Vertical at 3 m**

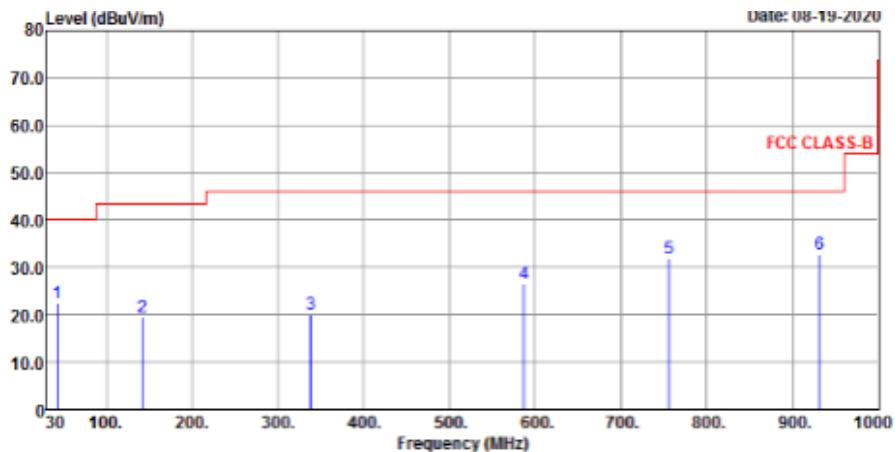
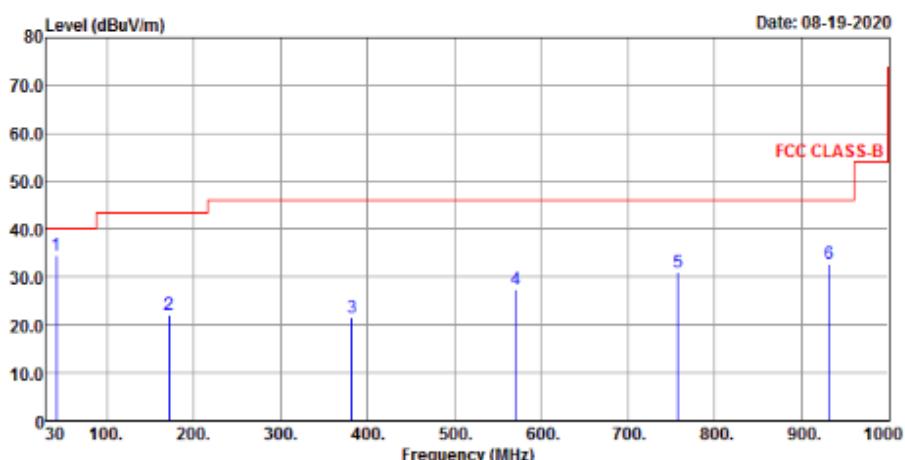
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
40.67	34.19	46.25	-12.06	40	-5.81	133	147	QP
180.35	19.14	32.6	-13.46	43.5	-24.36	130	191	QP
418.97	23	30.58	-7.58	46	-23	124	128	QP
587.75	27.62	30.74	-3.12	46	-18.38	126	114	QP
801.15	31.5	29.8	1.7	46	-14.5	109	216	QP
915.61	33.3	30.06	3.24	46	-12.7	151	234	QP

**Remarks:**

1. Emission Level = Read Level + Factor  
 Margin value = Emission level – Limit value
2. The emission levels of other frequencies were very low against the limit.

**<LE 5.0>**

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	Cyril Chen

**Horizontal**

**Vertical**


Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
43.58	22.48	34.4	-11.92	40	-17.52	144	154	QP
142.52	19.38	31.33	-11.95	43.5	-24.12	102	154	QP
338.46	20.03	29.99	-9.96	46	-25.97	133	182	QP
586.78	26.42	29.57	-3.15	46	-19.58	126	34	QP
755.56	32.02	31	1.02	46	-13.98	124	114	QP
931.13	32.64	29.21	3.43	46	-13.36	136	320	QP
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
41.64	34.52	46.56	-12.04	40	-5.48	100	134	QP
171.62	22.19	34.64	-12.45	43.5	-21.31	107	267	QP
382.11	21.41	30.11	-8.7	46	-24.59	140	205	QP
570.29	27.47	31.22	-3.75	46	-18.53	103	189	QP
757.5	31.13	30.09	1.04	46	-14.87	111	200	QP
931.13	32.73	29.3	3.43	46	-13.27	136	156	QP

Remarks:

1. Emission Level = Read Level + Factor  
Margin value = Emission level – Limit value
2. The emission levels of other frequencies were very low against the limit.

## 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

Note: 1. The lower limit shall apply at the transition frequencies.  
 2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

### 4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Dec. 11, 2019	Dec. 10, 2020
RF signal cable Woken	5D-FB	Cable-cond1-01	Sep. 05, 2019	Sep. 04, 2020
LISN/AMN ROHDE & SCHWARZ (EUT)	ENV216	101826	Feb. 20, 2020	Feb. 19, 2021
LISN/AMN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Aug. 28, 2020	Aug. 27, 2021
Software ADT	BV ADT_Cond_V7.3.7.4	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-12040.

### 4.2.3 Test Procedures

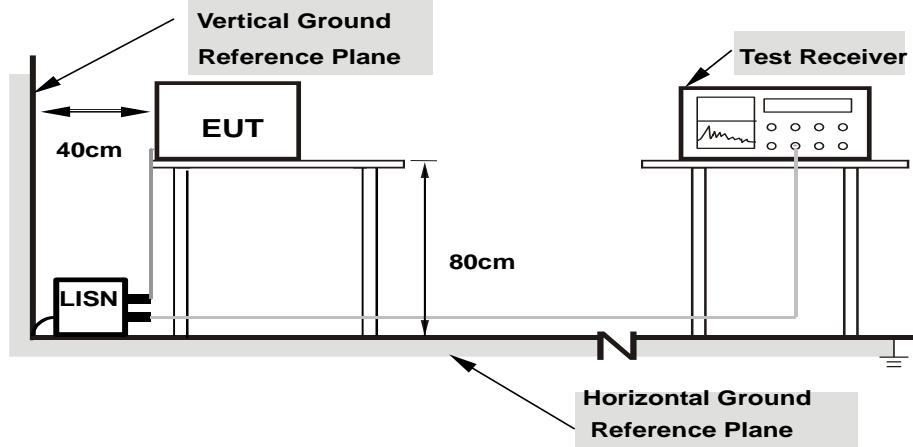
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/50 uH of coupling impedance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

**Note:** The resolution bandwidth and video bandwidth of test receiver is 9 kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15 MHz - 30 MHz.

#### 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 cm 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

##### CONDUCTED WORST-CASE DATA

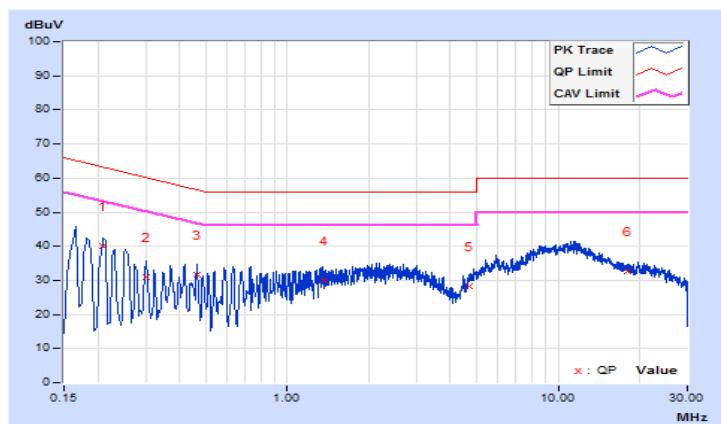
<LE 4.0>

<b>Frequency Range</b>	150kHz ~ 30MHz	<b>Detector Function &amp; Resolution Bandwidth</b>	Quasi-Peak (QP) / Average (AV), 9kHz
<b>Input Power</b>	120Vac, 60Hz	<b>Environmental Conditions</b>	23°C, 70%RH
<b>Tested by</b>	Getaz Yang		
<b>Test Mode</b>	Mode 1		

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	0.21000	9.62	30.56	16.28	40.18	25.90	63.21	53.21	-23.03	-27.31
2	0.30200	9.64	21.49	7.57	31.13	17.21	60.19	50.19	-29.06	-32.98
3	0.46567	9.65	22.12	10.48	31.77	20.13	56.59	46.59	-24.82	-26.46
4	1.36200	9.70	20.19	8.57	29.89	18.27	56.00	46.00	-26.11	-27.73
5	4.69000	9.80	18.49	8.90	28.29	18.70	56.00	46.00	-27.71	-27.30
6	18.07000	9.91	22.80	14.52	32.71	24.43	60.00	50.00	-27.29	-25.57

##### 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

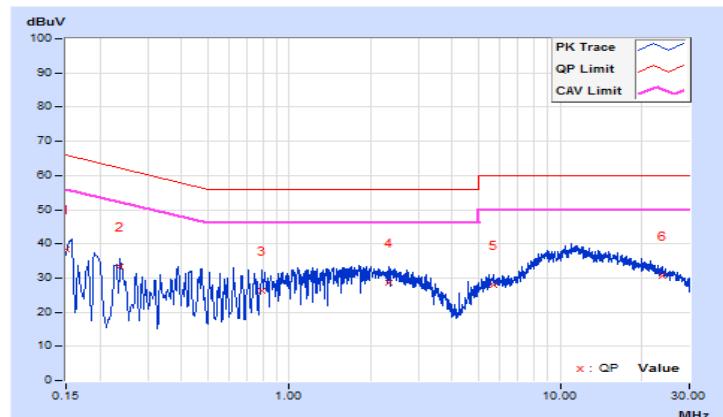


<b>Frequency Range</b>	150kHz ~ 30MHz	<b>Detector Function &amp; Resolution Bandwidth</b>	Quasi-Peak (QP) / Average (AV), 9kHz
<b>Input Power</b>	120Vac, 60Hz	<b>Environmental Conditions</b>	23°C, 70%RH
<b>Tested by</b>	Getaz Yang		
<b>Test Mode</b>	Mode 1		

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	9.66	28.84	13.24	38.50	22.90	66.00	56.00	-27.50	-33.10
2	0.23723	9.65	23.62	7.96	33.27	17.61	62.19	52.19	-28.92	-34.58
3	0.79400	9.69	16.49	2.70	26.18	12.39	56.00	46.00	-29.82	-33.61
4	2.34600	9.77	18.91	9.03	28.68	18.80	56.00	46.00	-27.32	-27.20
5	5.68600	9.85	18.09	9.06	27.94	18.91	60.00	50.00	-32.06	-31.09
6	23.88200	10.05	20.70	12.00	30.75	22.05	60.00	50.00	-29.25	-27.95

**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>**

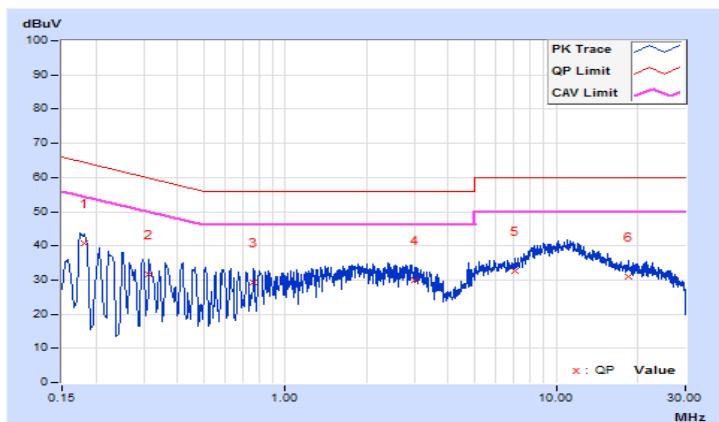
<b>Frequency Range</b>	150kHz ~ 30MHz	<b>Detector Function &amp; Resolution Bandwidth</b>	Quasi-Peak (QP) / Average (AV), 9kHz
<b>Input Power</b>	120Vac, 60Hz	<b>Environmental Conditions</b>	23°C, 70%RH
<b>Tested by</b>	Getaz Yang		
<b>Test Mode</b>	Mode 2		

**Phase Of Power : Line (L)**

<b>No</b>	<b>Frequency (MHz)</b>	<b>Correction Factor (dB)</b>	<b>Reading Value (dBuV)</b>		<b>Emission Level (dBuV)</b>		<b>Limit (dBuV)</b>		<b>Margin (dB)</b>	
			<b>Q.P.</b>	<b>AV.</b>	<b>Q.P.</b>	<b>AV.</b>	<b>Q.P.</b>	<b>AV.</b>	<b>Q.P.</b>	<b>AV.</b>
1	0.18085	9.62	31.14	13.63	40.76	23.25	64.45	54.45	-23.69	-31.20
2	0.31400	9.64	22.09	6.45	31.73	16.09	59.86	49.86	-28.13	-33.77
3	0.76600	9.67	19.46	9.86	29.13	19.53	56.00	46.00	-26.87	-26.47
4	3.00200	9.76	20.37	12.62	30.13	22.38	56.00	46.00	-25.87	-23.62
5	7.09000	9.83	22.81	13.66	32.64	23.49	60.00	50.00	-27.36	-26.51
6	18.51800	9.91	21.13	13.76	31.04	23.67	60.00	50.00	-28.96	-26.33

**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

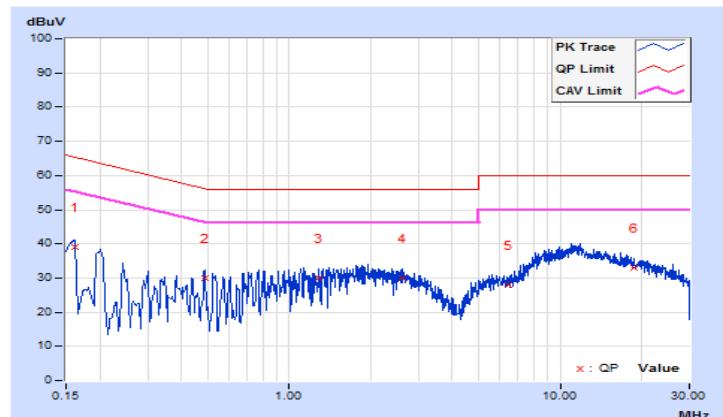


<b>Frequency Range</b>	150kHz ~ 30MHz	<b>Detector Function &amp; Resolution Bandwidth</b>	Quasi-Peak (QP) / Average (AV), 9kHz
<b>Input Power</b>	120Vac, 60Hz	<b>Environmental Conditions</b>	23°C, 70%RH
<b>Tested by</b>	Getaz Yang		
<b>Test Mode</b>	Mode 2		

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	9.66	29.37	12.92	39.03	22.58	65.41	55.41	-26.38	-32.83
2	0.48600	9.67	20.29	8.32	29.96	17.99	56.24	46.24	-26.28	-28.25
3	1.28600	9.72	20.10	8.24	29.82	17.96	56.00	46.00	-26.18	-28.04
4	2.62600	9.78	20.16	8.52	29.94	18.30	56.00	46.00	-26.06	-27.70
5	6.41800	9.86	18.03	9.82	27.89	19.68	60.00	50.00	-32.11	-30.32
6	18.67800	10.02	23.05	14.47	33.07	24.49	60.00	50.00	-26.93	-25.51

**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

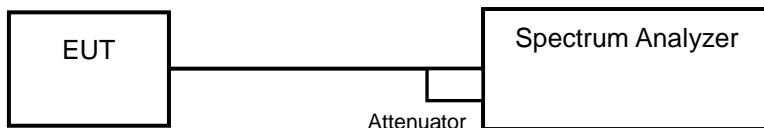


### 4.3 6 dB Bandwidth Measurement

#### 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)  $\geq 3 \times$  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 from Test Standard

No deviation.

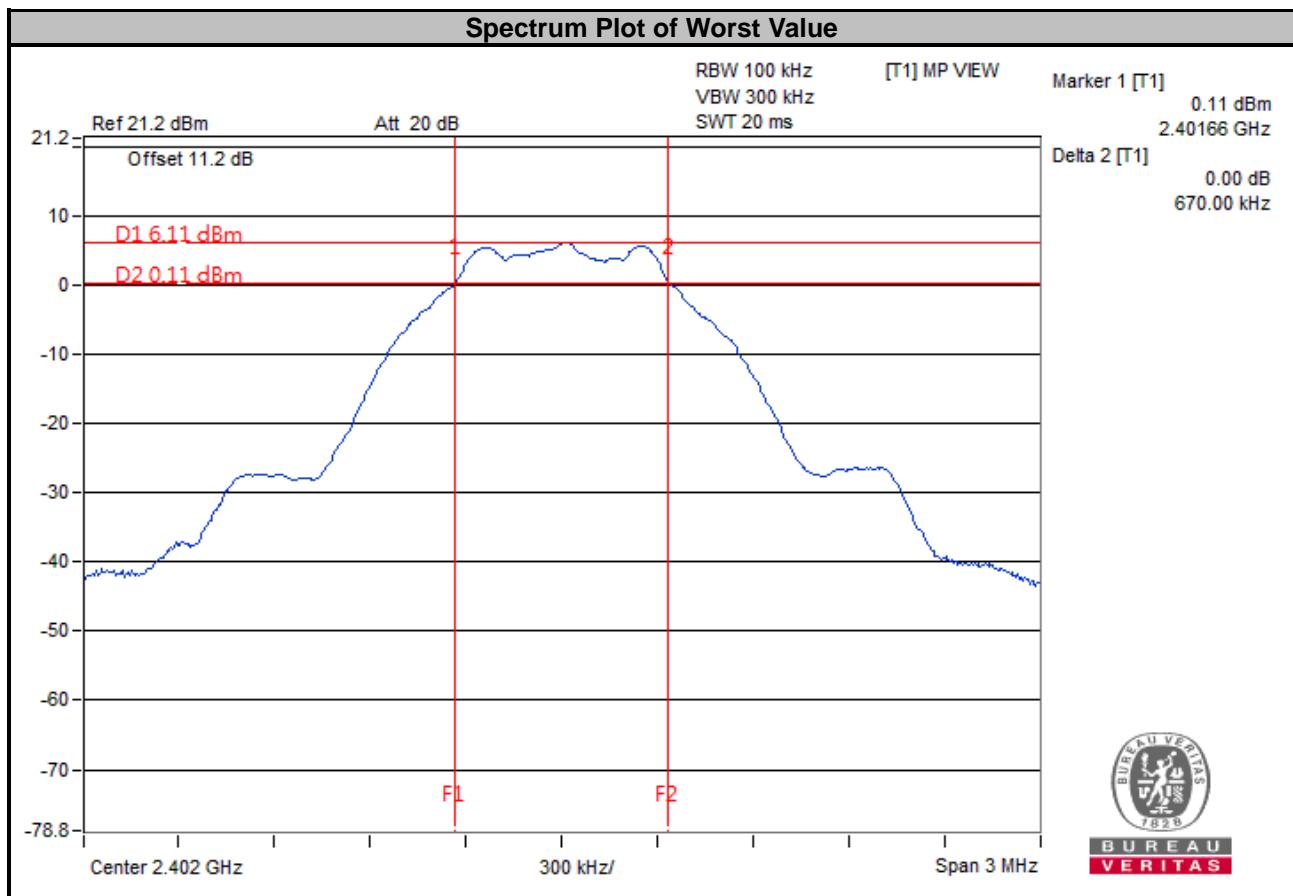
#### 4.3.6 EUT Operating Conditions

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 Results

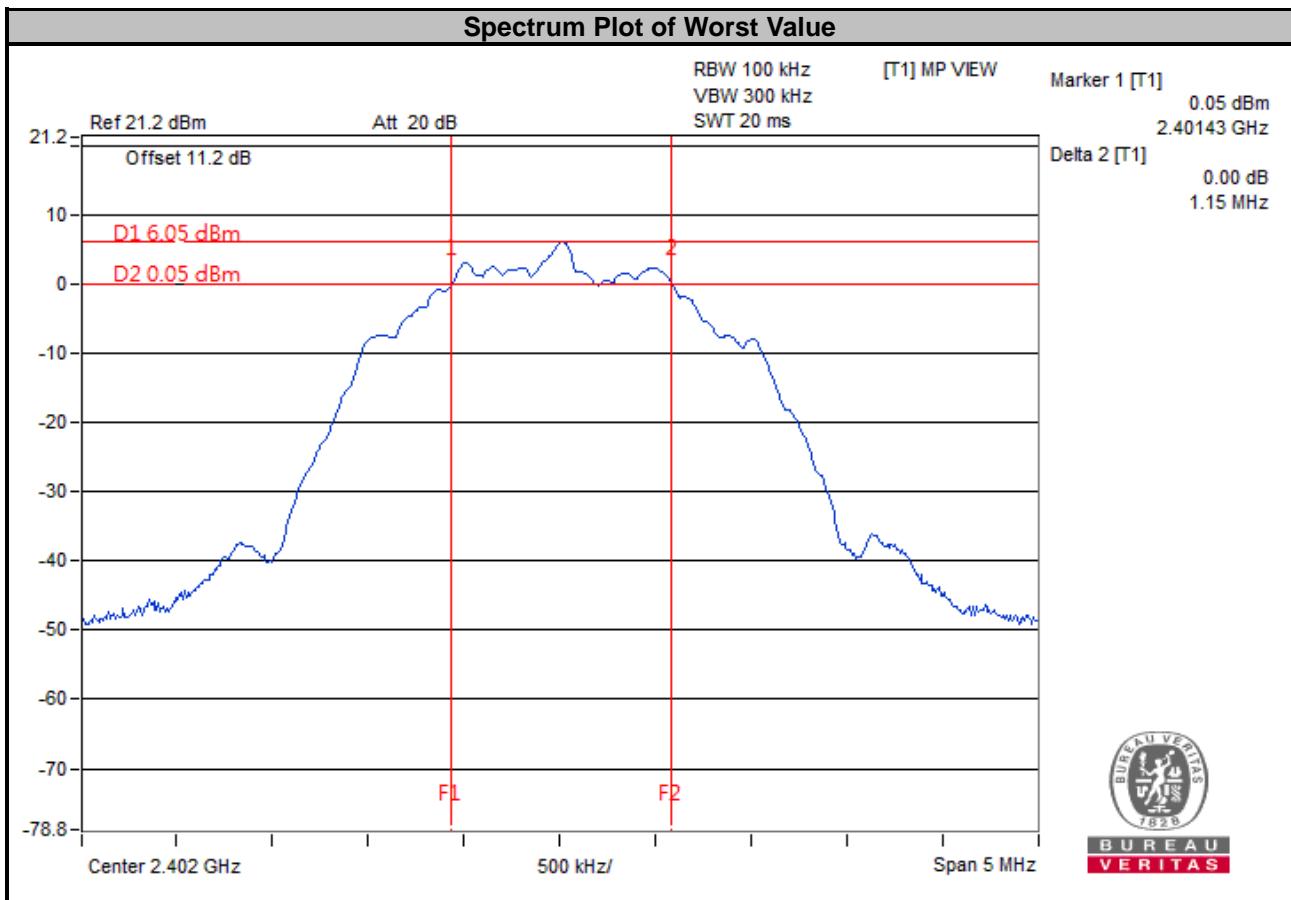
<LE 4.0>

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



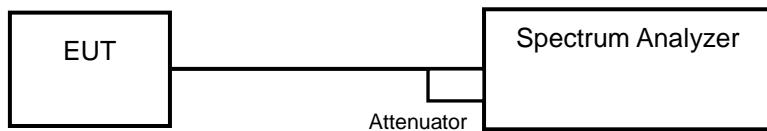
**<LE 5.0>**

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



## 4.4 Occupied Bandwidth Measurement

### 4.4.1 Test Setup



### 4.4.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

### 4.4.3 Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with resolution bandwidth in the range of 1 % to 5 % of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth and set the detector to sampling. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 % of the total mean power of a given emission.

### 4.4.4 Deviation from Test Standard

No deviation.

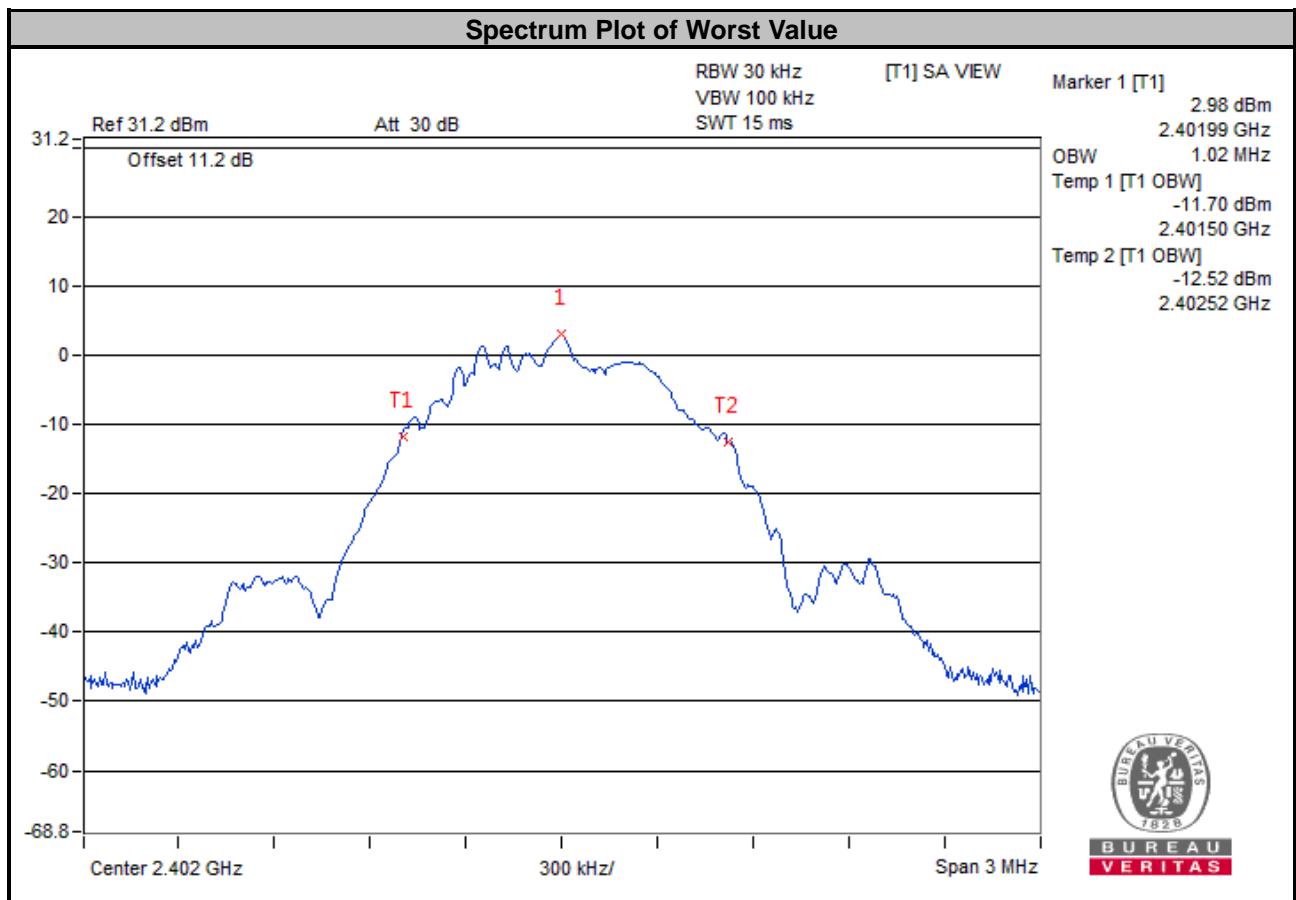
### 4.4.5 EUT Operating Conditions

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

#### 4.4.6 Test Results

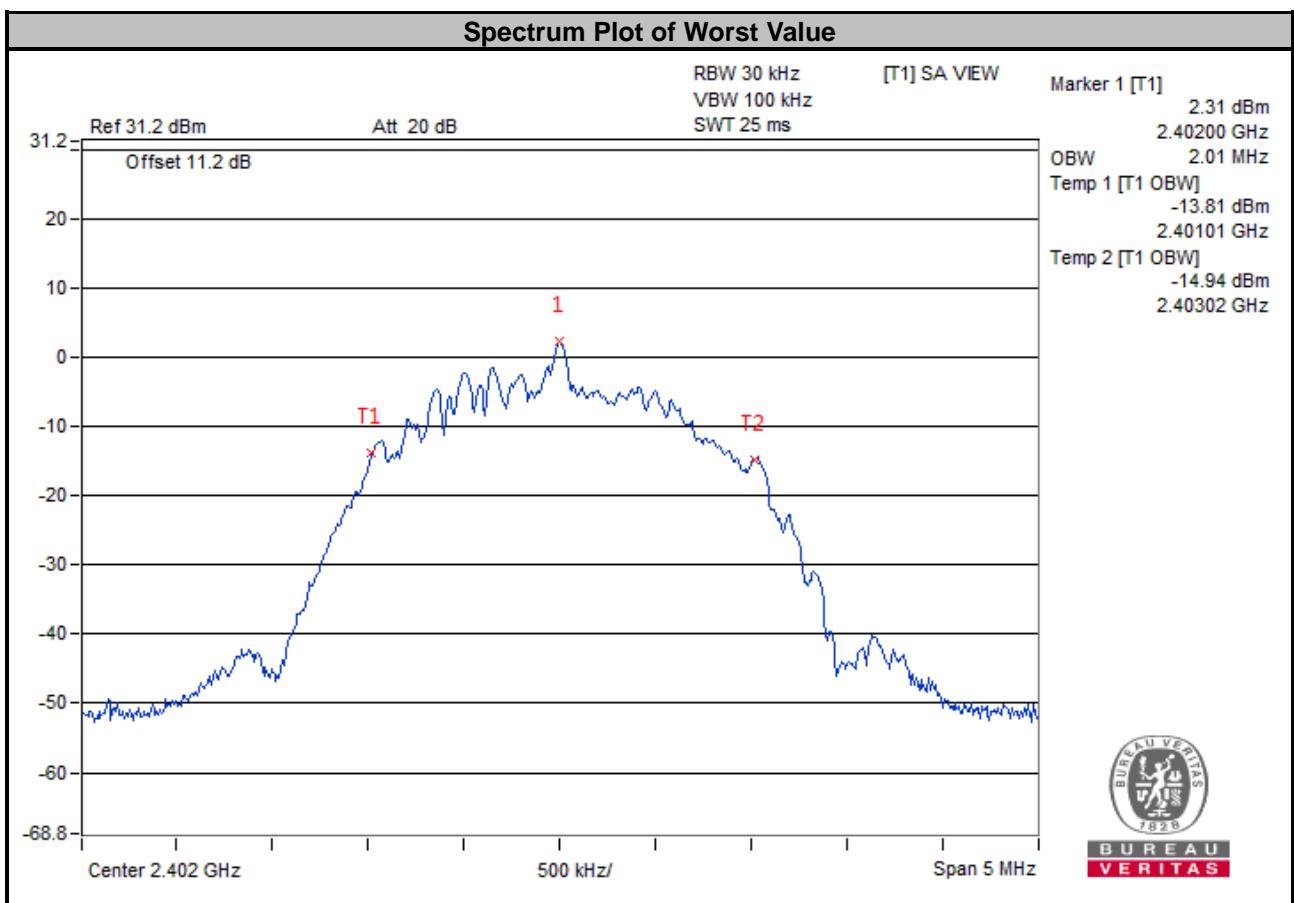
<LE 4.0>

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	Pass / Fail
0	2402	1.02	Pass
19	2440	1.02	Pass
39	2480	1.02	Pass



**<LE 5.0>**

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	Pass / Fail
0	2402	2.01	Pass
19	2440	2.01	Pass
39	2480	2.01	Pass

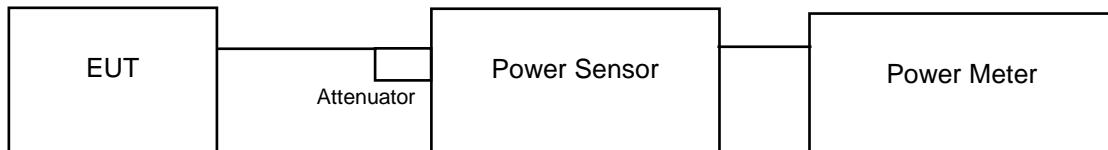


## 4.5 Conducted Output Power Measurement

### 4.5.1 Limits of Conducted Output Power Measurement

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

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

### 4.5.5 Deviation from Test Standard

No deviation.

### 4.5.6 EUT Operating Conditions

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

## 4.5.7 Test Results

&lt;LE 4.0&gt;

Channel	Freq. (MHz)	Peak Power		Power Limit (mW)	Pass / Fail
		(mW)	(dBm)		
0	2402	4.256	6.29	1000	Pass
19	2440	5.521	7.42	1000	Pass
39	2480	4.498	6.53	1000	Pass

&lt;LE 5.0&gt;

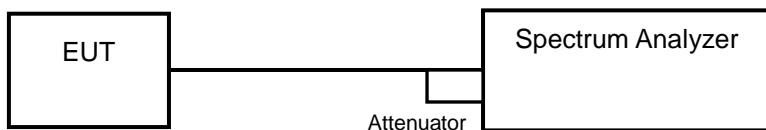
Channel	Freq. (MHz)	Peak Power		Power Limit (mW)	Pass / Fail
		(mW)	(dBm)		
0	2402	4.457	6.49	1000	Pass
19	2440	5.702	7.56	1000	Pass
39	2480	4.667	6.69	1000	Pass

## 4.6 Power Spectral Density Measurement

### 4.6.1 Limits of Power Spectral Density Measurement

The Maximum of Power Spectral Density Measurement is 8 dBm in any 3 kHz band during any time interval of continuous transmission.

### 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

- a. Set analyzer center frequency to DTS channel center frequency.
- b. Set the span to 1.5 times the DTS bandwidth.
- c. Set the RBW to:  $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$ .
- d. Set the VBW  $\geq 3 \times \text{RBW}$ .
- e. Detector = peak.
- f. Sweep time = auto couple.
- g. Trace mode = max hold.
- h. Allow trace to fully stabilize.
- i. Use the peak marker function to determine the maximum amplitude level within the RBW.

### 4.6.5 Deviation from Test Standard

No deviation.

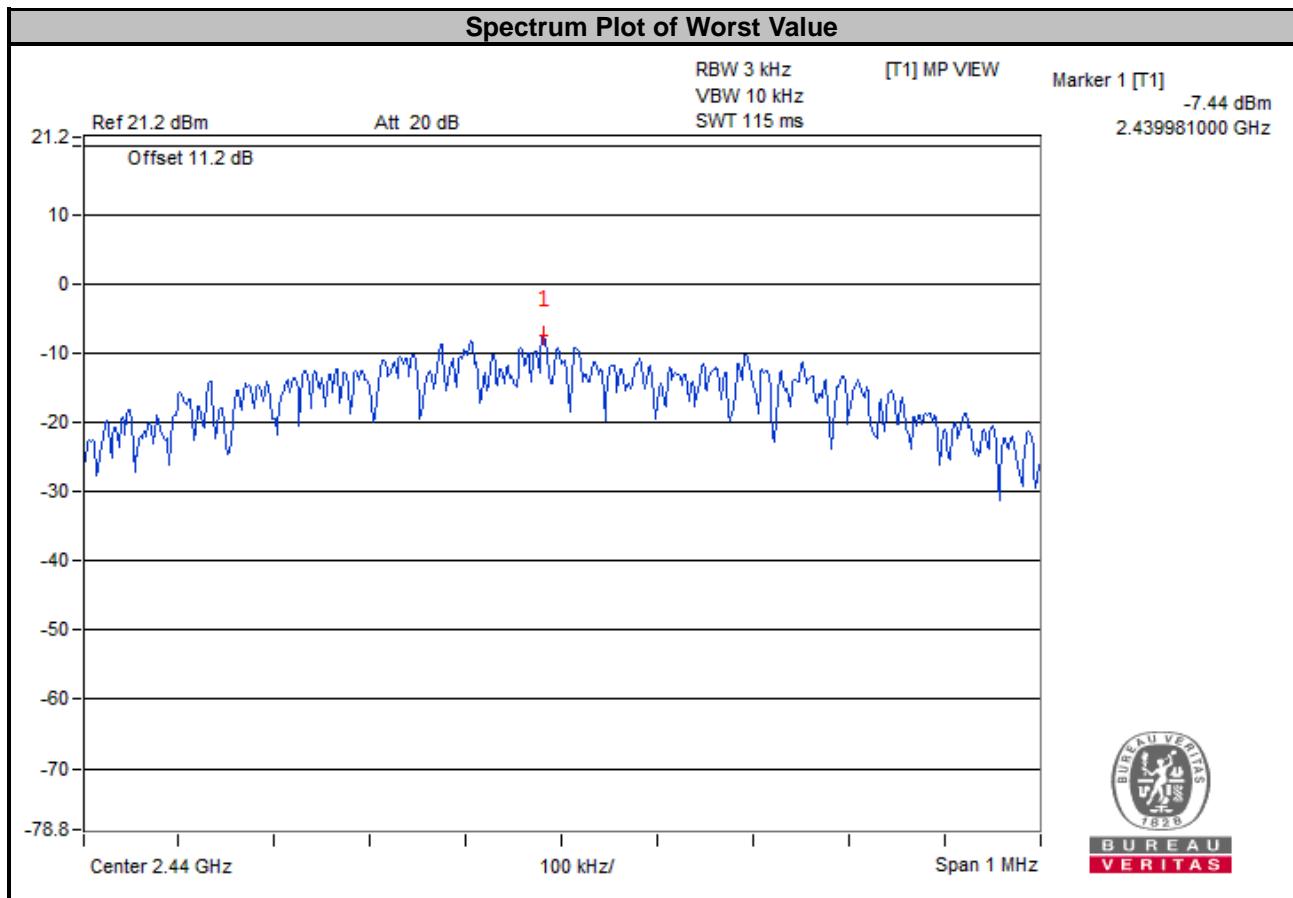
### 4.6.6 EUT Operating Condition

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

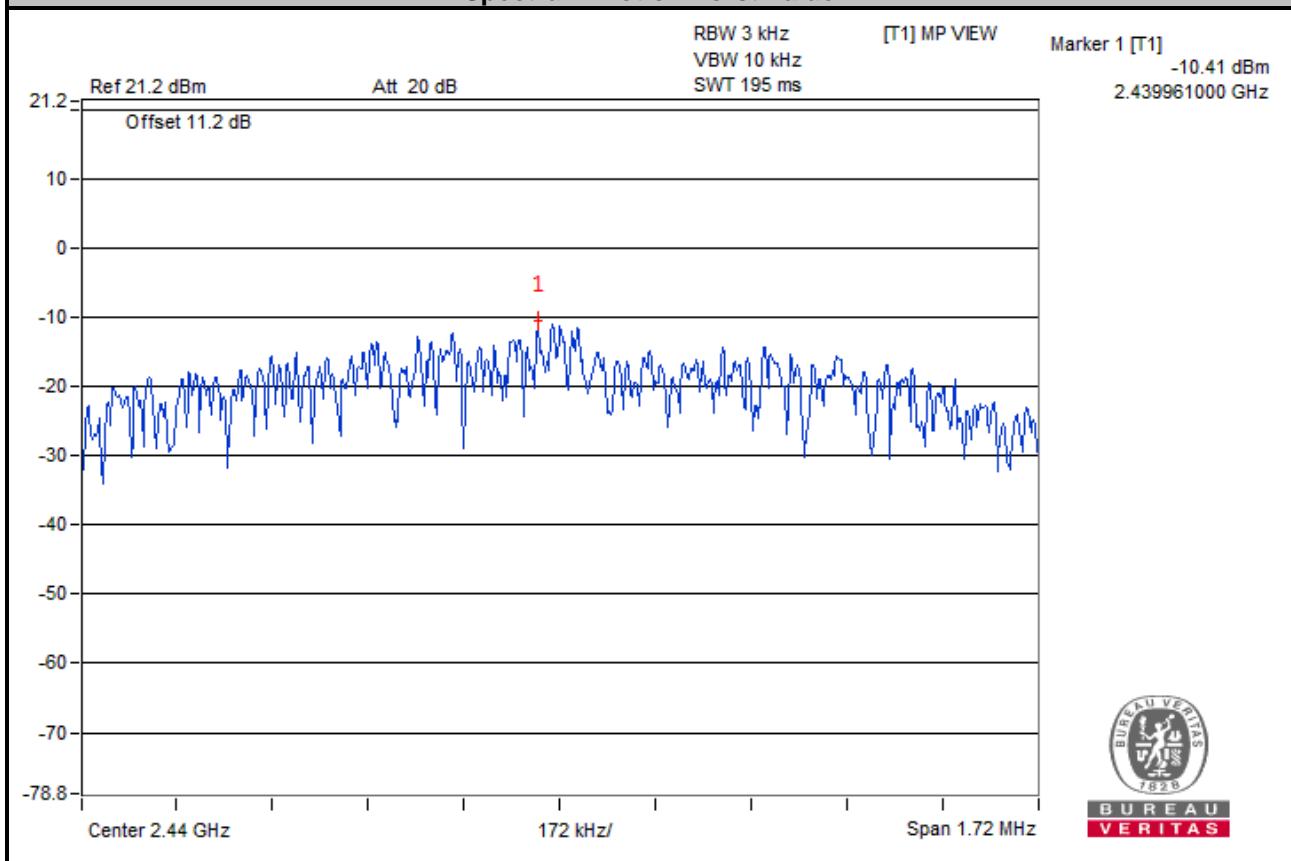
<LE 4.0>

Channel	Frequency (MHz)	PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
0	2402	-8.50	8	Pass
19	2440	-7.44	8	Pass
39	2480	-8.30	8	Pass



**<LE 5.0>**

Channel	Frequency (MHz)	PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
0	2402	-11.55	8	Pass
19	2440	-10.41	8	Pass
39	2480	-11.35	8	Pass

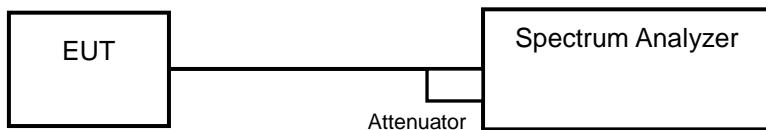
**Spectrum Plot of Worst Value**


## 4.7 Conducted Out of Band Emission Measurement

### 4.7.1 Limits of Conducted Out of Band Emission Measurement

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

### 4.7.2 Test Setup



### 4.7.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

### 4.7.4 Test Procedure

#### MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW  $\geq$  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 OOB

1. Set RBW = 100 kHz.
2. Set VBW  $\geq$  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.

### 4.7.5 Deviation from Test Standard

No deviation.

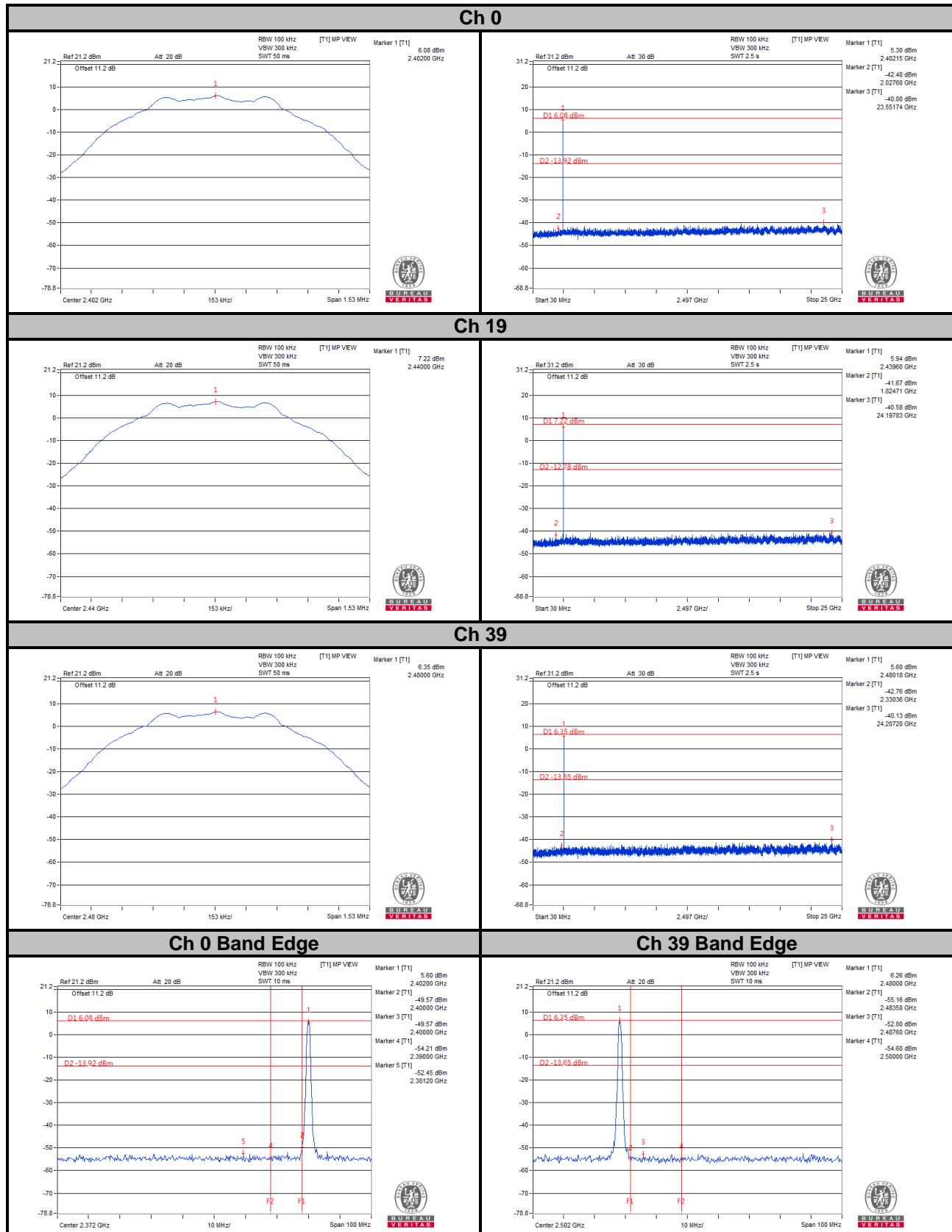
### 4.7.6 EUT Operating Condition

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

#### 4.7.7 Test Results

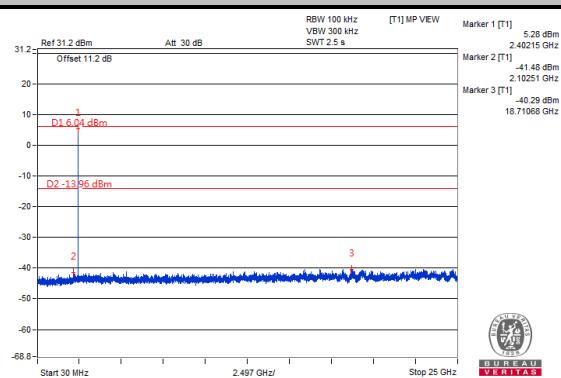
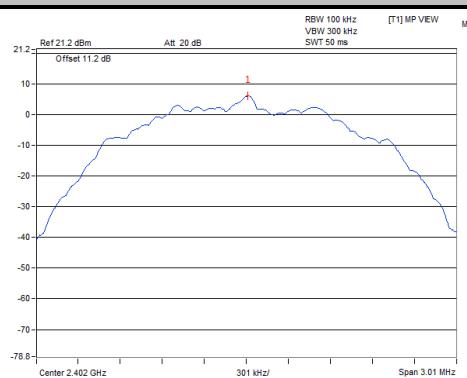
The spectrum plots are attached on the following images. D1 line indicates the highest level, D2 line indicates the 20 dB offset below D1. It shows compliance with the requirement.

<LE 4.0>

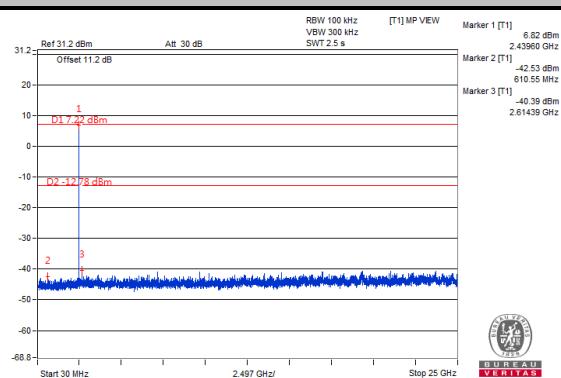
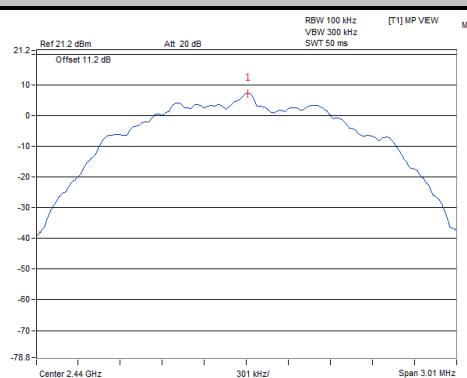


<LE 5.0>

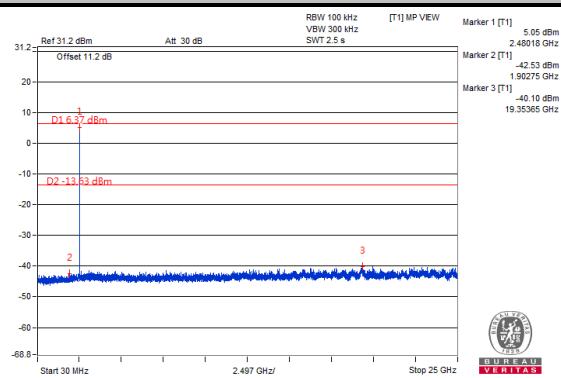
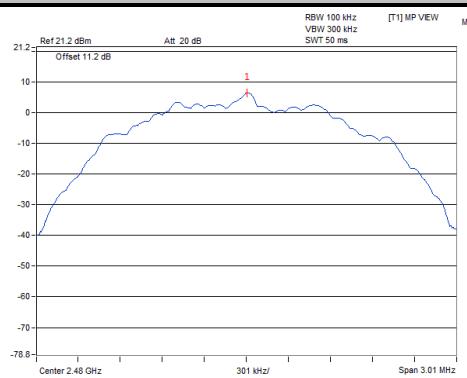
Ch 0



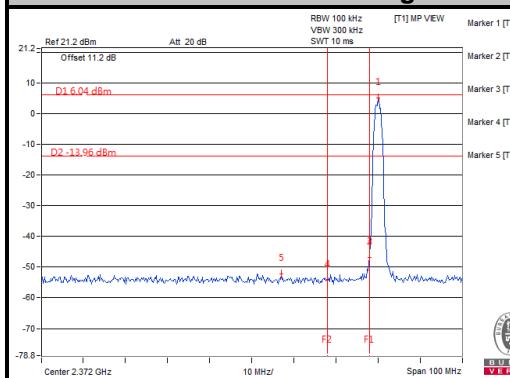
Ch 19



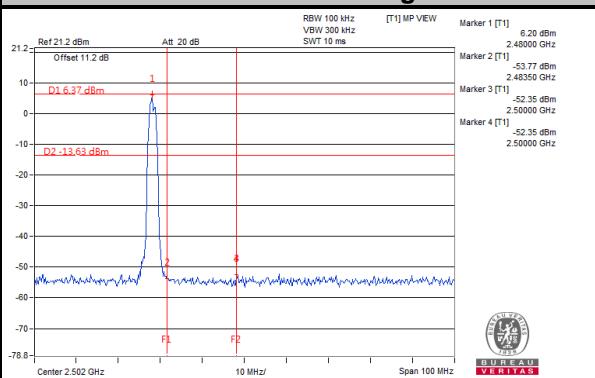
Ch 39



Ch 0 Band Edge



Ch 39 Band Edge

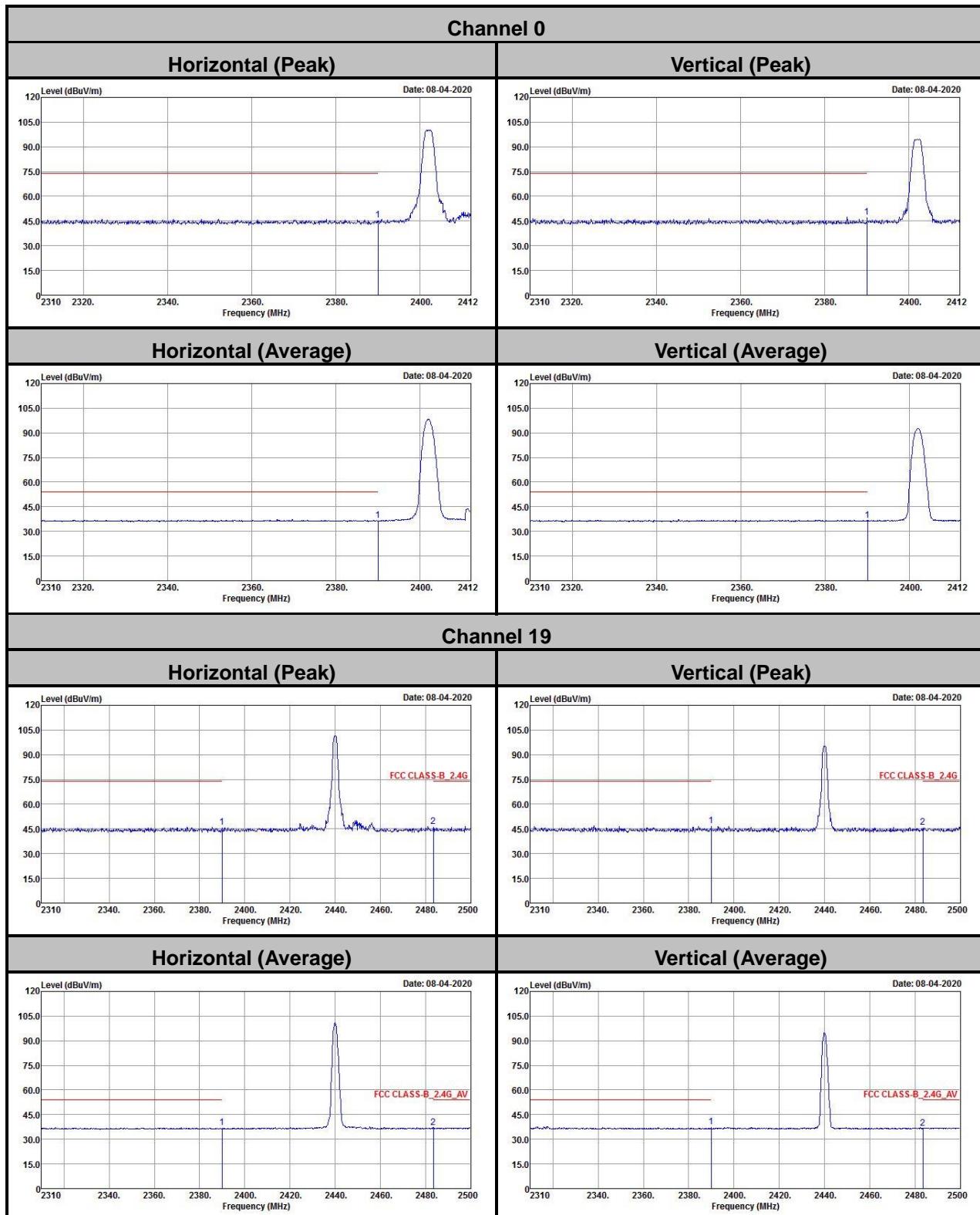


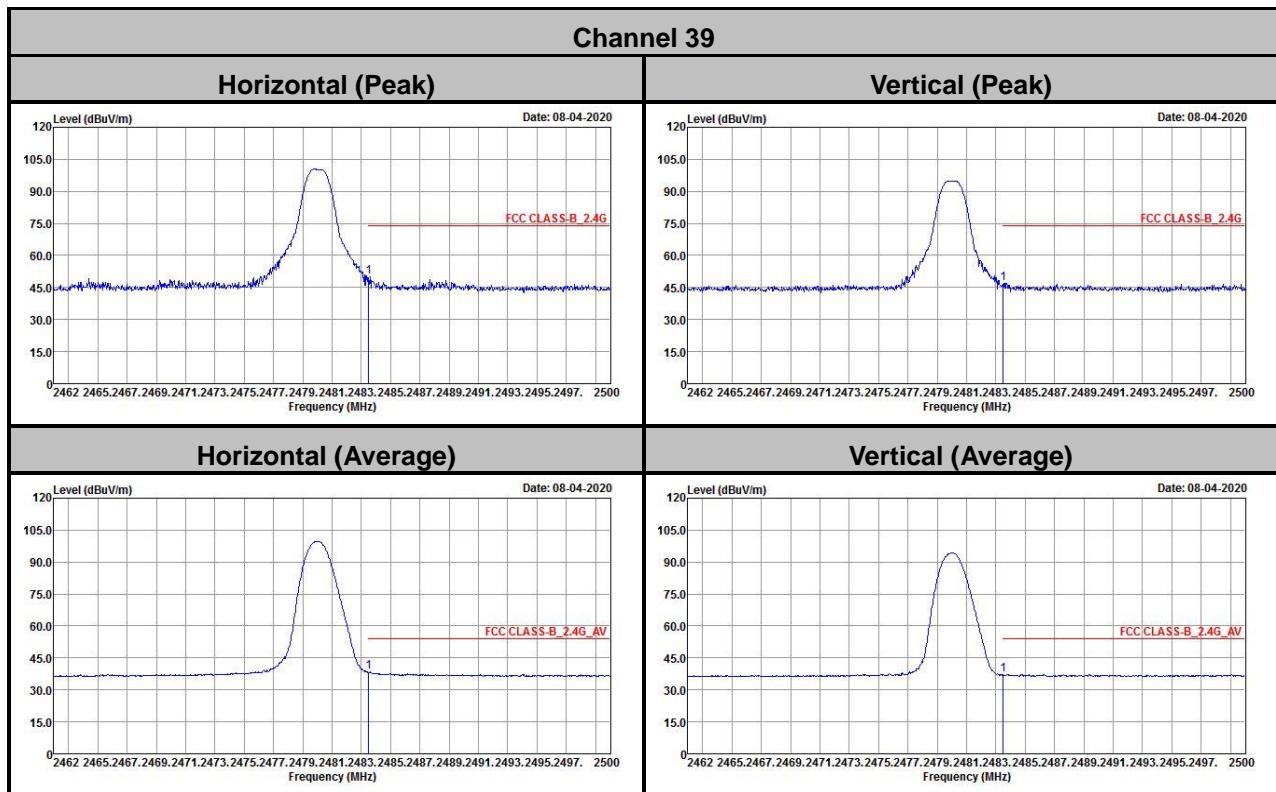
## 5 Pictures of Test Arrangements

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

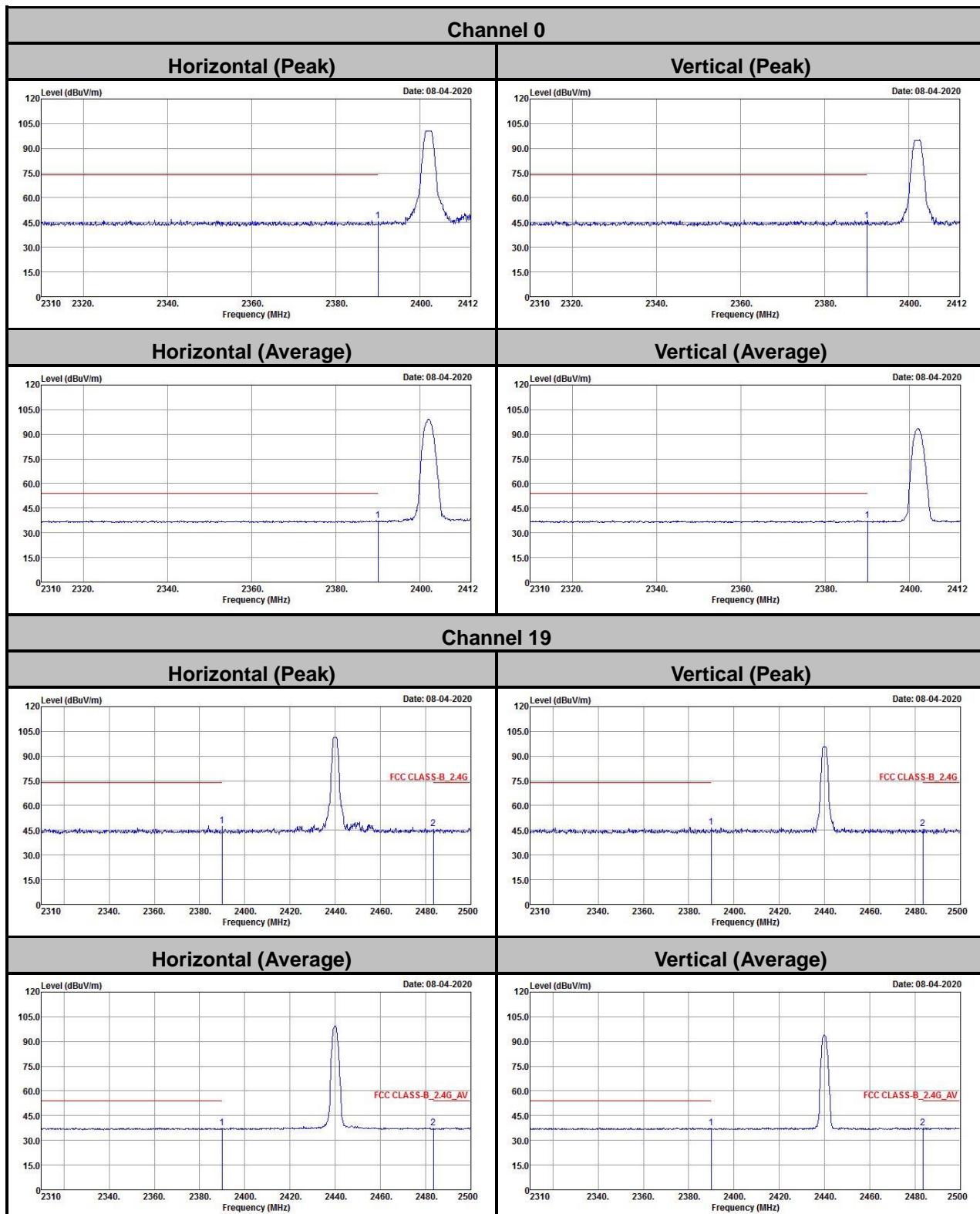
## Annex A- Band-edge Measurement

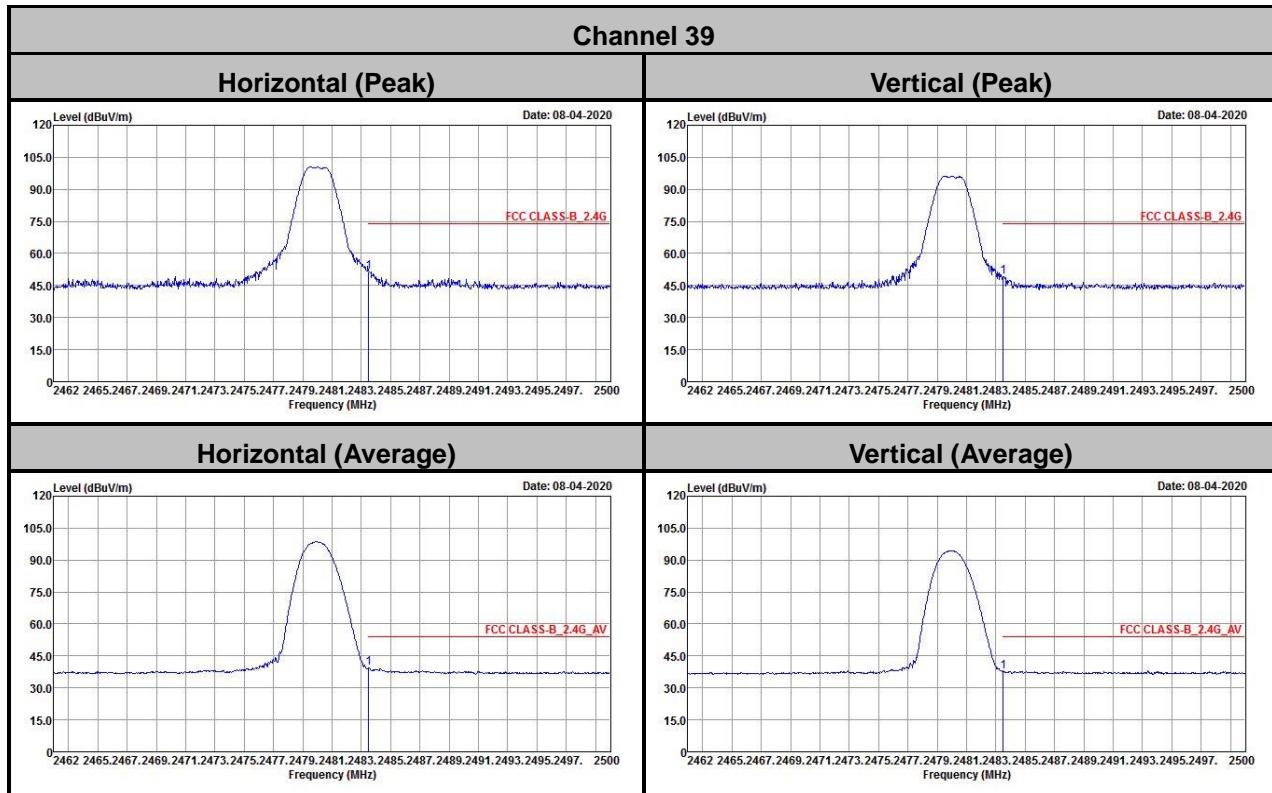
<LE 4.0>





<LE 5.0>





## Appendix – Information of 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 FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

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

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

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