

# FCC TEST REPORT (15.247)

**REPORT NO.:** RF150713C17  
**MODEL NO.:** Spectrum200-C, Spectrum100-C  
**FCC ID:** VUISPECTRUM-C  
**RECEIVED:** Jul. 13, 2015  
**TESTED:** Jul.16 , 2015  
**ISSUED:** Jul. 24, 2015

**APPLICANT:** PEGATRON CORPORATION

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Taiwan (R.O.C)

**ISSUED BY:** Bureau Veritas Consumer Products Services (H.K.)  
Ltd., Taoyuan Branch

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Taipei City, Taiwan ( R.O.C )

**TEST LOCATION:** No.19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan  
Dist., Taoyuan City 33383, Taiwan, R.O.C.

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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF150713C17	Original release	Jul. 24, 2015



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## 1. CERTIFICATION

**PRODUCT:** STB

**MODEL NO.:** Spectrum200-C, Spectrum100-C

**BRAND:** CISCO

**APPLICANT:** PEGATRON CORPORATION

**TESTED:** Jul.16 , 2015

**TEST SAMPLE:** ENGINEERING SAMPLE

**STANDARDS:** FCC Part 15, Subpart C (Section 15.247)

ANSI C63.10-2013

The above equipment (model: Spectrum200-C, Spectrum100-C) 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**

: Rona Chen

Rona Chen / Specialist

, **DATE** : Jul. 24, 2015

**APPROVED BY**

: Kay Wu

Kay Wu / Supervisor

, **DATE** : Jul. 24, 2015

## 2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -19.69dB at 3.46484MHz.
15.205 & 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -4.15dB at 7275MHz.
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)	6dB 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	Antenna connector is N/A.

### 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	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	2.93 dB
	200MHz ~1000MHz	2.95 dB
	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB

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

### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>EUT</b>	STB
<b>MODEL NO.</b>	Spectrum200-C, Spectrum100-C
<b>POWER SUPPLY</b>	12.0Vdc (Adapter)
<b>MODULATION TYPE</b>	O-QPSK
<b>MODULATION TECHNOLOGY</b>	DSSS
<b>TRANSFER RATE</b>	250kbps
<b>OPERATING FREQUENCY</b>	2425 ~ 2475MHz
<b>NUMBER OF CHANNEL</b>	11
<b>OUTPUT POWER</b>	2.786mW
<b>ANTENNA TYPE</b>	Printed PCB antenna with 4.1dBi gain
<b>ANTENNA CONNECTOR</b>	N/A
<b>DATA CABLE</b>	Refer to Note as below
<b>I/O PORTS</b>	Refer to user's manual
<b>ACCESSORY DEVICES</b>	Refer to Note as below

**NOTE:**

1. All models are listed as below.

Brand	MODEL	DIFFERENCE
CISCO	Spectrum200-C	with HDD
	Spectrum100-C	without HDD

2. The EUT contains following accessory devices.

ITEM	BRAND	MODEL	SPECIFICATION
Adapter	DELTA Electronics, INC.	EADP-40MB A	I/P: 100-240Vac, 50-60Hz, 1.2A O/P: 12Vdc, 3A 1.8m shielded cable with core

3. The above EUT information is declared by the manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

### 3.2 DESCRIPTION OF TEST MODES

11 channels are provided to this EUT:

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
15	2425 MHz	21	2455 MHz
16	2430 MHz	22	2460 MHz
17	2435 MHz	23	2465 MHz
18	2440 MHz	24	2470 MHz
19	2445 MHz	25	2475 MHz
20	2450 MHz		



### 3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

#### ZigBee:

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE $\geq$ 1G	RE<1G	PLC	APCM	
A	√	√	√	√	Spectrum 200-C
B	√	√	√	-	Spectrum 100-C

Where **RE $\geq$ 1G**: Radiated Emission above 1GHz **RE<1G**: Radiated Emission below 1GHz  
**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**.

#### RADIATED EMISSION TEST (ABOVE 1GHz):

- ☒ 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 TECHNOLOGY	MODULATION TYPE
A, B	15 to 25	15, 20, 25	DSSS	O-QPSK

#### RADIATED EMISSION TEST (BELOW 1GHz):

- ☒ 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 TECHNOLOGY	MODULATION TYPE
A, B	15 to 25	15	DSSS	O-QPSK

#### 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 TECHNOLOGY	MODULATION TYPE
A, B	15 to 25	15, 20, 25	DSSS	O-QPSK

#### **BANDEDGE MEASUREMENT:**

- ☒ 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 TECHNOLOGY	MODULATION TYPE
A	15 to 25	15, 20, 25	DSSS	O-QPSK

#### **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 TECHNOLOGY	MODULATION TYPE
A	15 to 25	15, 20, 25	DSSS	O-QPSK

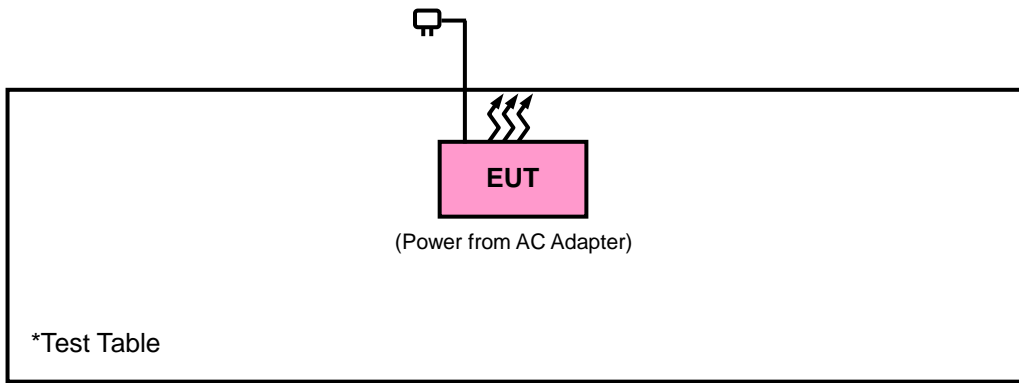
#### **TEST CONDITION:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE $\geq$ 1G	25deg. C, 65%RH	120Vac, 60Hz	Anson Lin
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Anson Lin
PLC	25deg. C, 65%RH	120Vac, 60Hz	Toby Tian
APCM	25deg. C, 65%RH	120Vac, 60Hz	Howard Kao

### 3.3 DESCRIPTION OF SUPPORT UNITS

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

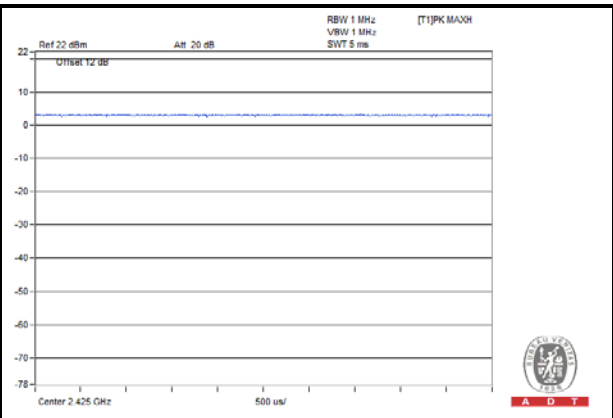
#### 3.3.1 CONFIGURATION OF SYSTEM UNDER TEST



### 3.4 DUTY CYCLE TEST SIGNAL

#### WLAN 2.4GHz

Duty cycle of test signal is 100 %, duty factor is not required.



### 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 v03r03**

**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 20dB 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 1000MHz, 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 20dB 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	Jan.21, 2015	Jan.21, 2016
Spectrum Analyzer Agilent	N9010A	MY52220314	Sep.03, 2014	Sep.02, 2015
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Dec. 10, 2014	Dec. 09, 2015
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Feb. 04, 2015	Feb. 04, 2016
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-969	Feb. 09, 2015	Feb. 09, 2016
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Feb. 04, 2015	Feb. 04, 2016
Loop Antenna	EM-6879	269	Aug.13, 2014	Aug.12, 2015
Preamplifier EMCI	EMC 012645	980115	Dec. 12, 2014	Dec. 11, 2015
Preamplifier EMCI	EMC 184045	980116	Jan. 09, 2015	Jan. 08, 2016
Preamplifier EMCI	EMC 330H	980112	Dec. 27, 2014	Dec. 26, 2015
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	309219/4 2950114	Oct. 18, 2014	Oct. 17, 2015
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250130/4	Oct. 18, 2014	Oct. 17, 2015
RF signal cable Worken	RG-213	NA	Nov. 07, 2014	Nov. 06, 2015
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
Bluetooth Tester	CBT	100980	Apr. 18, 2013	Apr. 17, 2015
Power Meter	ML2495A	1232002	Sep. 17, 2014	Sep. 16, 2015
Power Sensor	MA2411B	1207325	Sep. 17, 2014	Sep. 16, 2015

- 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 calibration interval of the loop antenna is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The test was performed in HwaYa Chamber 10.
4. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
5. The FCC Site Registration No. is 690701.
6. The IC Site Registration No. is IC 7450F-10.

#### 4.1.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) 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. Height of receiving 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 Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

**NOTE:**

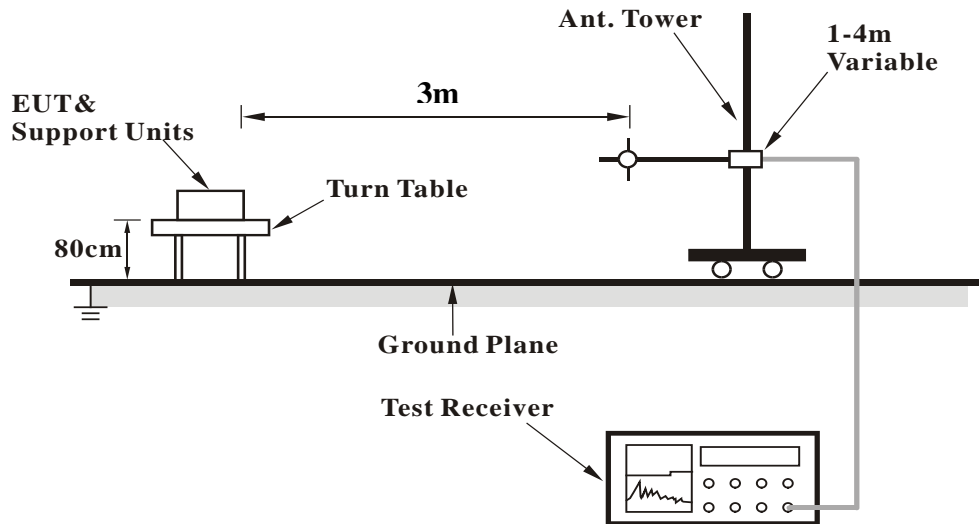
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution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

#### 4.1.4 DEVIATION FROM TEST STANDARD

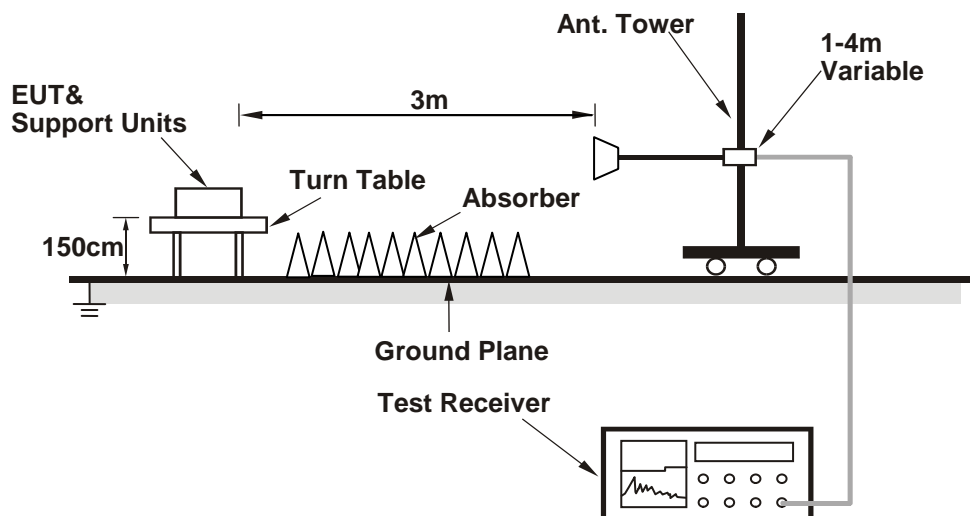
No deviation.

#### 4.1.5 TEST SETUP

<Frequency Range 30MHz ~ 1GHz>



<Frequency Range above 1GHz>



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

#### 4.1.6 EUT OPERATING CONDITIONS

- Placed the EUT on a testing table.
- Use the software to control the EUT under transmission condition continuously at specific channel frequency.



#### 4.1.7 TEST RESULTS

##### ABOVE 1GHz WORST-CASE DATA

##### MODE A

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 15	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Anson Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (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
2320	33.87	40.59	54	-20.13	26.72	4.03	37.47	153	51	Average
2320	57.34	64.06	74	-16.66	26.72	4.03	37.47	153	51	Peak
2425	99.59	105.93			27.01	4.11	37.46	153	51	Average
2425	101.96	108.3			27.01	4.11	37.46	153	51	Peak
2486	34.43	40.45	54	-19.57	27.15	4.15	37.32	153	51	Average
2486	57.14	63.16	74	-16.86	27.15	4.15	37.32	153	51	Peak
7275	46.32	54.29	54	-7.68	35.76	8.2	51.93	124	78	Average
7275	56.06	64.03	74	-17.94	35.76	8.2	51.93	124	78	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (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
2348	34.02	40.69	54	-19.98	26.77	4.05	37.49	218	68	Average
2348	57.19	63.86	74	-16.81	26.77	4.05	37.49	218	68	Peak
2425	99.88	106.22			27.01	4.11	37.46	218	68	Average
2425	102.26	108.6			27.01	4.11	37.46	218	68	Peak
2496	34.78	40.67	54	-19.22	27.2	4.16	37.25	218	68	Average
2496	57.15	63.04	74	-16.85	27.2	4.16	37.25	218	68	Peak
7275	49.85	57.82	54	-4.15	35.76	8.2	51.93	116	350	Average
7275	59.22	67.19	74	-14.78	35.76	8.2	51.93	116	350	Peak

##### REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 2425MHz: Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 20	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Anson Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (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
2382	33.78	40.34	54	-20.22	26.86	4.08	37.5	187	49	Average
2382	57.43	63.99	74	-16.57	26.86	4.08	37.5	187	49	Peak
2450	99.63	105.84			27.06	4.12	37.39	187	49	Average
2450	102.02	108.23			27.06	4.12	37.39	187	49	Peak
2488	35.1	41.06	54	-18.9	27.2	4.16	37.32	187	49	Average
2488	57.03	62.99	74	-16.97	27.2	4.16	37.32	187	49	Peak
7350	44.65	52.12	54	-9.35	35.97	8.24	51.68	142	81	Average
7350	53.84	61.31	74	-20.16	35.97	8.24	51.68	142	81	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (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
2354	33.71	40.34	54	-20.29	26.81	4.05	37.49	239	71	Average
2354	57.77	64.4	74	-16.23	26.81	4.05	37.49	239	71	Peak
2450	99.61	105.82			27.06	4.12	37.39	239	71	Average
2450	102.05	108.26			27.06	4.12	37.39	239	71	Peak
2496	35.06	40.95	54	-18.94	27.2	4.16	37.25	239	71	Average
2496	58.21	64.1	74	-15.79	27.2	4.16	37.25	239	71	Peak
7350	48.75	56.22	54	-5.25	35.97	8.24	51.68	104	349	Average
7350	58.19	65.66	74	-15.81	35.97	8.24	51.68	104	349	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 2450MHz: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 25	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Anson Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (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
2360	34.29	40.44	54	-19.71	26.81	4.53	37.49	168	43	Average
2360	57.2	63.35	74	-16.8	26.81	4.53	37.49	168	43	Peak
2475	99.97	105.51			27.15	4.63	37.32	168	43	Average
2475	102.28	107.82			27.15	4.63	37.32	168	43	Peak
2484	37.31	42.85	54	-16.69	27.15	4.63	37.32	168	43	Average
2484	58.24	63.78	74	-15.76	27.15	4.63	37.32	168	43	Peak
7425	42.59	49.6	54	-11.41	36.13	8.31	51.45	140	79	Average
7425	52.9	59.91	74	-21.1	36.13	8.31	51.45	140	79	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (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
2332	33.93	40.16	54	-20.07	26.72	4.52	37.47	233	69	Average
2332	58.03	64.26	74	-15.97	26.72	4.52	37.47	233	69	Peak
2475	99.93	105.47			27.15	4.63	37.32	233	69	Average
2475	102.28	107.82			27.15	4.63	37.32	233	69	Peak
2492	37.47	42.87	54	-16.53	27.2	4.65	37.25	233	69	Average
2492	57.38	62.78	74	-16.62	27.2	4.65	37.25	233	69	Peak
7425	46.78	53.79	54	-7.22	36.13	8.31	51.45	113	345	Average
7425	56.64	63.65	74	-17.36	36.13	8.31	51.45	113	345	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 2475MHz: Fundamental frequency.



A D T

**MODE B**

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 15	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Anson Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (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
2374	34.13	40.7	54	-19.87	26.86	4.07	37.5	192	49	Average
2374	57.06	63.63	74	-16.94	26.86	4.07	37.5	192	49	Peak
2425	98.42	104.76			27.01	4.11	37.46	192	49	Average
2425	100.9	107.24			27.01	4.11	37.46	192	49	Peak
2498	34.2	40.09	54	-19.8	27.2	4.16	37.25	192	49	Average
2498	57.55	63.44	74	-16.45	27.2	4.16	37.25	192	49	Peak
7275	43.93	51.9	54	-10.07	35.76	8.2	51.93	100	40	Average
7275	52.98	60.95	74	-21.02	35.76	8.2	51.93	100	40	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (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	34.09	40.66	54	-19.91	26.86	4.07	37.5	184	30	Average
2370	58.06	64.63	74	-15.94	26.86	4.07	37.5	184	30	Peak
2425	98.99	105.33			27.01	4.11	37.46	184	30	Average
2425	101.49	107.83			27.01	4.11	37.46	184	30	Peak
2498	34.46	40.35	54	-19.54	27.2	4.16	37.25	184	30	Average
2498	58.18	64.07	74	-15.82	27.2	4.16	37.25	184	30	Peak
7275	48.47	56.44	54	-5.53	35.76	8.2	51.93	107	0	Average
7275	56.52	64.49	74	-17.48	35.76	8.2	51.93	107	0	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 2425MHz: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 20	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Anson Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (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
2360	33.76	40.39	54	-20.24	26.81	4.05	37.49	171	46	Average
2360	56.79	63.42	74	-17.21	26.81	4.05	37.49	171	46	Peak
2450	97.98	104.19			27.06	4.12	37.39	171	46	Average
2450	100.59	106.8			27.06	4.12	37.39	171	46	Peak
2500	34.94	40.83	54	-19.06	27.2	4.16	37.25	171	46	Average
2500	57.53	63.42	74	-16.47	27.2	4.16	37.25	171	46	Peak
7350	43.27	50.74	54	-10.73	35.97	8.24	51.68	100	37	Average
7350	53.93	61.4	74	-20.07	35.97	8.24	51.68	100	37	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (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
2328	33.91	40.62	54	-20.09	26.72	4.04	37.47	181	29	Average
2328	57.13	63.84	74	-16.87	26.72	4.04	37.47	181	29	Peak
2450	98.97	105.18			27.06	4.12	37.39	181	29	Average
2450	101.52	107.73			27.06	4.12	37.39	181	29	Peak
2494	35.42	41.31	54	-18.58	27.2	4.16	37.25	181	29	Average
2494	56.89	62.78	74	-17.11	27.2	4.16	37.25	181	29	Peak
7350	48.04	55.51	54	-5.96	35.97	8.24	51.68	106	360	Average
7350	58.35	65.82	74	-15.65	35.97	8.24	51.68	106	360	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 2450MHz: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 25	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Anson Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (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
2382	33.74	40.3	54	-20.26	26.86	4.08	37.5	191	48	Average
2382	57.71	64.27	74	-16.29	26.86	4.08	37.5	191	48	Peak
2475	97.45	103.47			27.15	4.15	37.32	191	48	Average
2475	100	106.02			27.15	4.15	37.32	191	48	Peak
2486	35.78	41.8	54	-18.22	27.15	4.15	37.32	191	48	Average
2486	57.21	63.23	74	-16.79	27.15	4.15	37.32	191	48	Peak
7425	42.76	49.77	54	-11.24	36.13	8.31	51.45	120	27	Average
7425	52.34	59.35	74	-21.66	36.13	8.31	51.45	120	27	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (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
2360	33.98	40.61	54	-20.02	26.81	4.05	37.49	146	32	Average
2360	57.08	63.71	74	-16.92	26.81	4.05	37.49	146	32	Peak
2475	100.24	106.26			27.15	4.15	37.32	146	32	Average
2475	102.74	108.76			27.15	4.15	37.32	146	32	Peak
2492	37.18	43.07	54	-16.82	27.2	4.16	37.25	146	32	Average
2492	57.46	63.35	74	-16.54	27.2	4.16	37.25	146	32	Peak
7425	47.59	54.6	54	-6.41	36.13	8.31	51.45	100	356	Average
7425	57.57	64.58	74	-16.43	36.13	8.31	51.45	100	356	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 2475MHz: Fundamental frequency.

**BELOW 1GHz WORST-CASE DATA:**
**MODE A**

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 15	FREQUENCY RANGE	30MHz ~ 1GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Anson Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (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
83.35	32.12	54.67	40	-7.88	8.18	0.92	31.65	100	291	Peak
283.17	30.29	48.02	46	-15.71	12.45	1.59	31.77	100	306	Peak
405.39	34.77	49.45	46	-11.23	15.45	1.92	32.05	152	146	Peak
475.23	35.7	48.7	46	-10.3	16.83	2.04	31.87	120	133	Peak
567.38	34.42	45.43	46	-11.58	18.86	2.2	32.07	118	0	Peak
792.42	30.64	37.33	46	-15.36	22.12	2.6	31.41	100	36	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (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
83.35	32.12	54.67	40	-7.88	8.18	0.92	31.65	100	291	Peak
283.17	30.29	48.02	46	-15.71	12.45	1.59	31.77	100	306	Peak
405.39	34.77	49.45	46	-11.23	15.45	1.92	32.05	152	146	Peak
475.23	35.7	48.7	46	-10.3	16.83	2.04	31.87	120	133	Peak
567.38	34.42	45.43	46	-11.58	18.86	2.2	32.07	118	0	Peak
792.42	30.64	37.33	46	-15.36	22.12	2.6	31.41	100	36	Peak

**REMARKS:** Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value



A D T

## MODE B

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 15	FREQUENCY RANGE	30MHz ~ 1GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Anson Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (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
113.43	32.48	52.85	43.5	-11.02	10.37	1.12	31.86	100	157	Peak
159.87	28.48	46.49	43.5	-15.02	12.73	1.14	31.88	100	263	Peak
275.43	40.15	58.29	46	-5.85	12.22	1.56	31.92	102	313	Peak
394.5	36.89	51.86	46	-9.11	15.21	1.9	32.08	148	152	Peak
567.4	33.62	44.63	46	-12.38	18.86	2.2	32.07	106	310	Peak
792.1	38.91	45.6	46	-7.09	22.12	2.6	31.41	120	63	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (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
87.24	26.89	49.51	40	-13.11	8.25	0.95	31.82	106	259	Peak
112.62	30.48	50.96	43.5	-13.02	10.27	1.11	31.86	114	289	Peak
278.4	31.23	49.2	46	-14.77	12.31	1.58	31.86	103	223	Peak
359.5	28.69	44.49	46	-17.31	14.38	1.79	31.97	115	223	Peak
566.7	35.53	46.56	46	-10.47	18.84	2.2	32.07	100	109	Peak
792.8	38.76	45.44	46	-7.24	22.12	2.61	31.41	157	225	Peak

**REMARKS:** 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 OF EMISSION (MHz)	CONDUCTED LIMIT (dB $\mu$ V)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	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 0.50MHz.
3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

### 4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100288	Apr. 27, 2015	Apr. 26, 2016
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 26, 2014	Dec. 25, 2015
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Dec. 30, 2014	Dec. 29, 2015
V-LISN ROHDE & SCHWARZ	NNBL 8226-2	8226-142	Jun. 17, 2015	Jun. 16, 2016
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 2.
3. The VCCI Site Registration No. is C-2047.

#### 4.2.3 TEST PROCEDURES

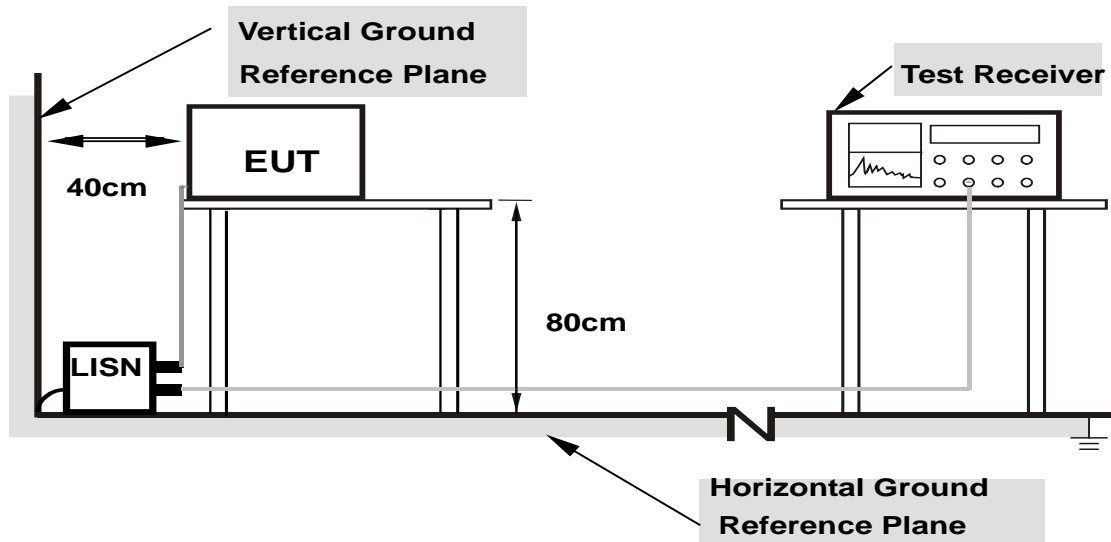
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling 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 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) 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

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

#### 4.2.6 EUT OPERATING CONDITIONS

Same as section 4.1.6.

## 4.2.7 TEST RESULTS

### CONDUCTED WORST-CASE DATA :

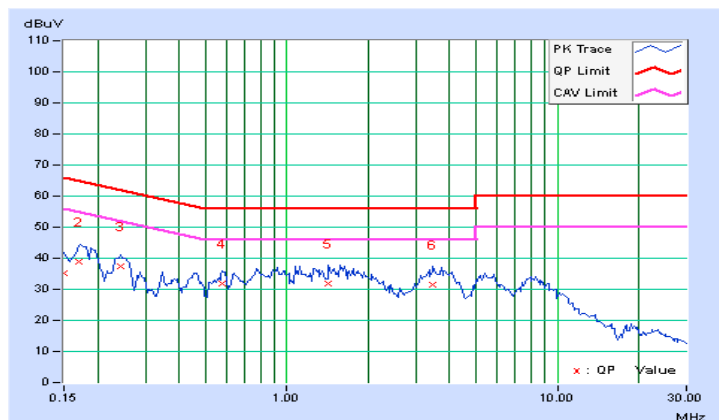
#### MODE A

PHASE	Line 1	6dB BANDWIDTH	9kHz
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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	0.15000	0.16	35.01	8.29	35.17	8.45	66.00	56.00	-30.83	-47.55
2	0.16953	0.17	38.68	26.22	38.85	26.39	64.98	54.98	-26.14	-28.60
3	0.24375	0.17	37.17	28.64	37.34	28.81	61.97	51.97	-24.63	-23.16
4	0.57969	0.19	31.70	21.60	31.89	21.79	56.00	46.00	-24.11	-24.21
5	1.42578	0.25	31.59	24.04	31.84	24.29	56.00	46.00	-24.16	-21.71
6	3.46484	0.33	31.13	25.98	31.46	26.31	56.00	46.00	-24.54	-19.69

#### 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

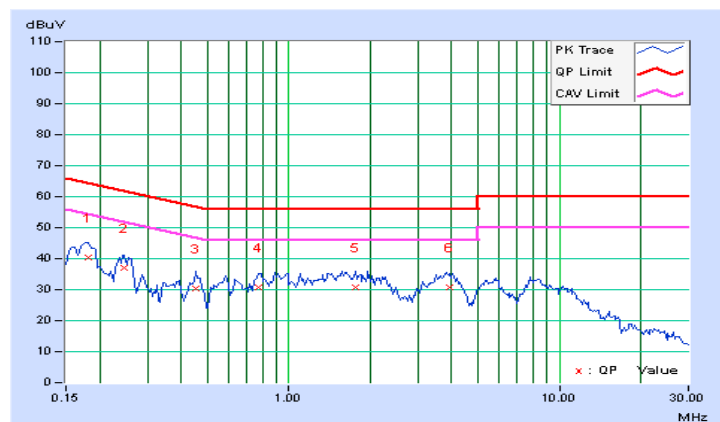


PHASE	Line 1	6dB BANDWIDTH	9kHz
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Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18125	0.18	40.35	29.94	40.53	30.12	64.43	54.43	-23.90	-24.31
2	0.24766	0.18	36.88	27.29	37.06	27.47	61.84	51.84	-24.77	-24.36
3	0.45469	0.20	30.03	20.51	30.23	20.71	56.79	46.79	-26.56	-26.08
4	0.77109	0.22	30.62	20.36	30.84	20.58	56.00	46.00	-25.16	-25.42
5	1.76563	0.28	30.40	23.65	30.68	23.93	56.00	46.00	-25.32	-22.07
6	3.91406	0.38	30.20	25.27	30.58	25.65	56.00	46.00	-25.42	-20.35

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



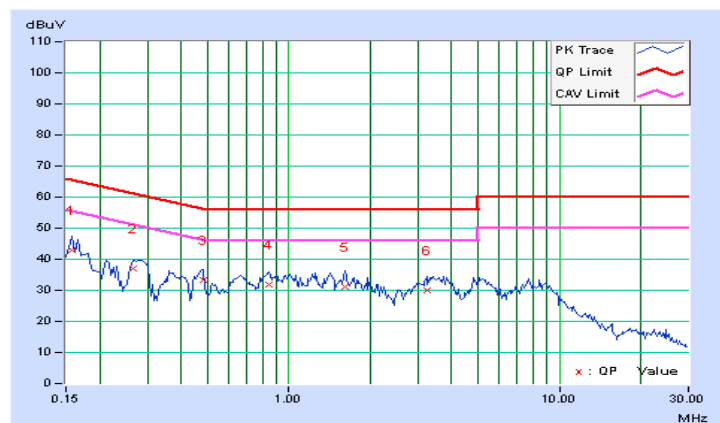
## MODE B

PHASE	Line 1	6dB BANDWIDTH	9kHz
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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	0.15781	0.17	42.68	32.67	42.85	32.84	65.58	55.58	-22.73	-22.74
2	0.26719	0.17	36.91	29.24	37.08	29.41	61.20	51.20	-24.12	-21.79
3	0.48203	0.19	33.15	23.15	33.34	23.34	56.30	46.30	-22.97	-22.97
4	0.84141	0.22	31.72	24.29	31.94	24.51	56.00	46.00	-24.06	-21.49
5	1.60547	0.25	30.78	24.57	31.03	24.82	56.00	46.00	-24.97	-21.18
6	3.22656	0.32	29.66	24.06	29.98	24.38	56.00	46.00	-26.02	-21.62

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

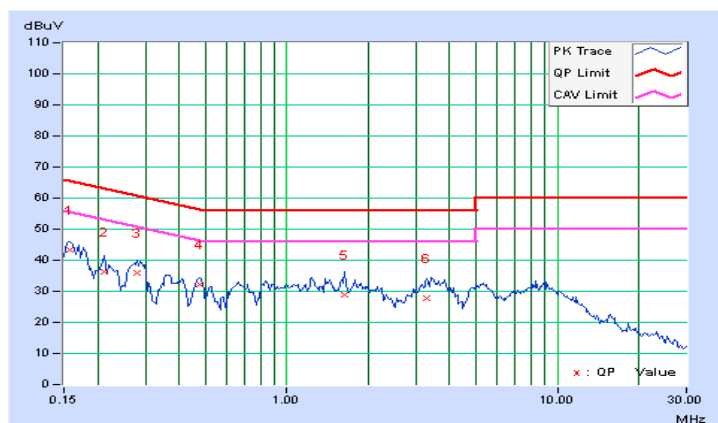


PHASE	Line 1	6dB BANDWIDTH	9kHz
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Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15781	0.18	43.10	34.41	43.28	34.59	65.58	55.58	-22.30	-20.99
2	0.21250	0.18	36.21	28.97	36.39	29.15	63.11	53.11	-26.72	-23.96
3	0.27891	0.19	35.59	21.51	35.78	21.70	60.85	50.85	-25.07	-29.15
4	0.47813	0.21	32.07	24.19	32.28	24.40	56.37	46.37	-24.10	-21.98
5	1.63281	0.27	28.47	22.95	28.74	23.22	56.00	46.00	-27.26	-22.78
6	3.30078	0.35	27.38	20.94	27.73	21.29	56.00	46.00	-28.27	-24.71

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

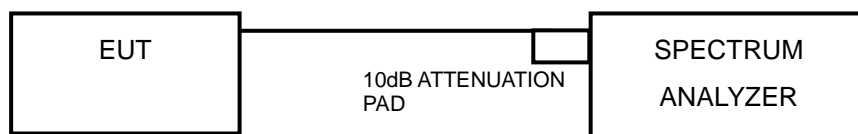


## 4.3 6dB BANDWIDTH MEASUREMENT

### 4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB 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

- Set resolution bandwidth (RBW) = 100kHz
- Set the video bandwidth (VBW)  $\geq 3 \times$  RBW, Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- 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.

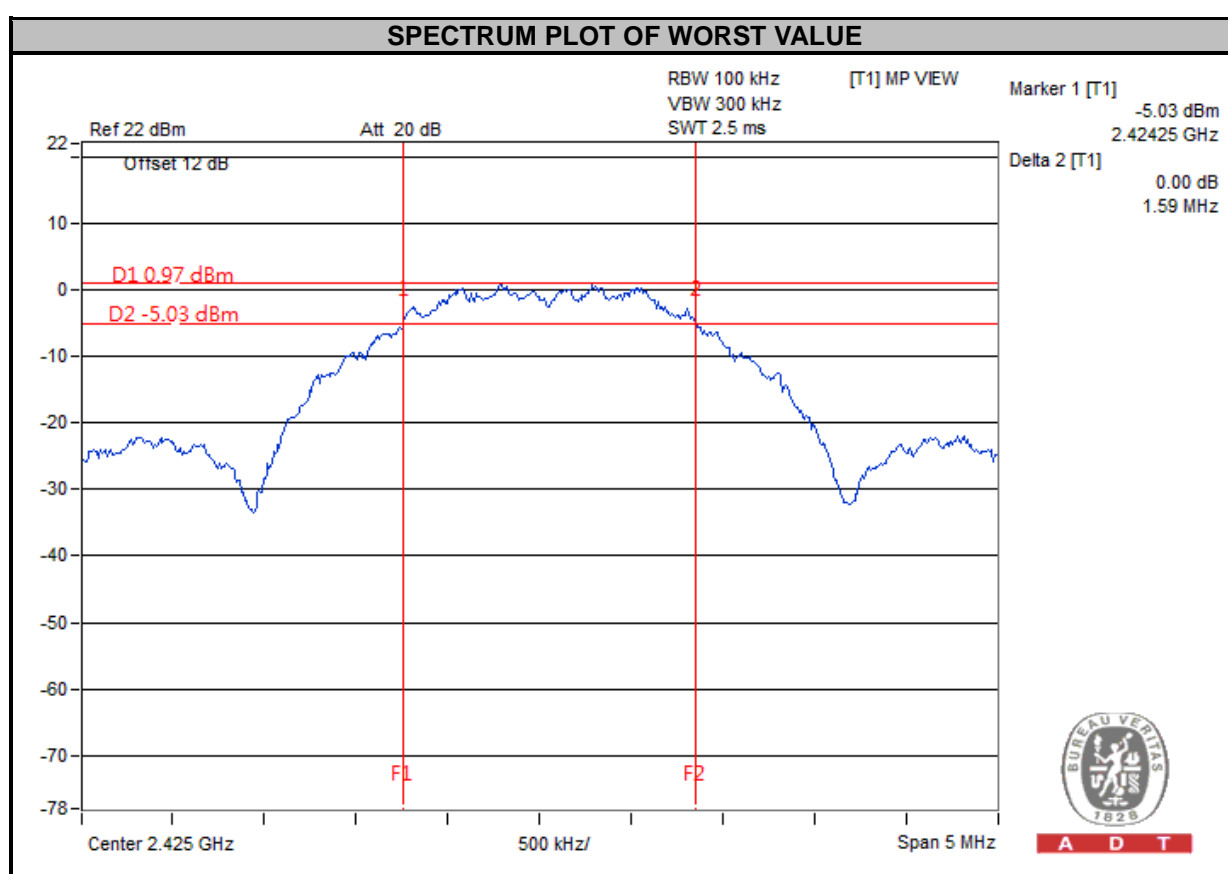
### 4.3.6 EUT OPERATING CONDITIONS

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

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
15	2425	1.59	0.5	PASS
20	2450	1.59	0.5	PASS
25	2475	1.59	0.5	PASS

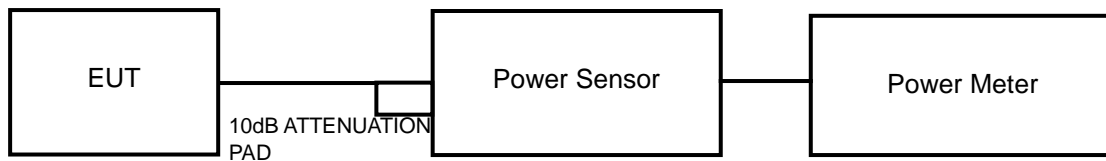


## 4.4 CONDUCTED OUTPUT POWER

### 4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

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

### 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 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 peak power level.

### 4.4.5 DEVIATION FROM TEST STANDARD

No deviation.

### 4.4.6 EUT OPERATING CONDITIONS

Same as section 4.3.6.

### 4.4.7 TEST RESULTS

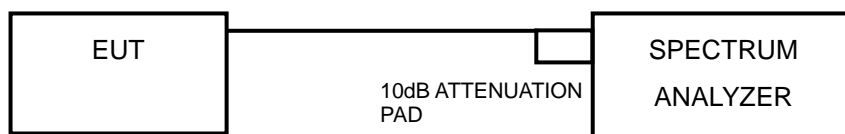
CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS / FAIL
15	2425	2.786	4.45	30	PASS
20	2450	2.667	4.26	30	PASS
25	2475	2.606	4.16	30	PASS

## 4.5 POWER SPECTRAL DENSITY MEASUREMENT

### 4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

### 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

- Set the RBW = 3 kHz, VBW = 10 kHz, Detector = peak.
- Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
- 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

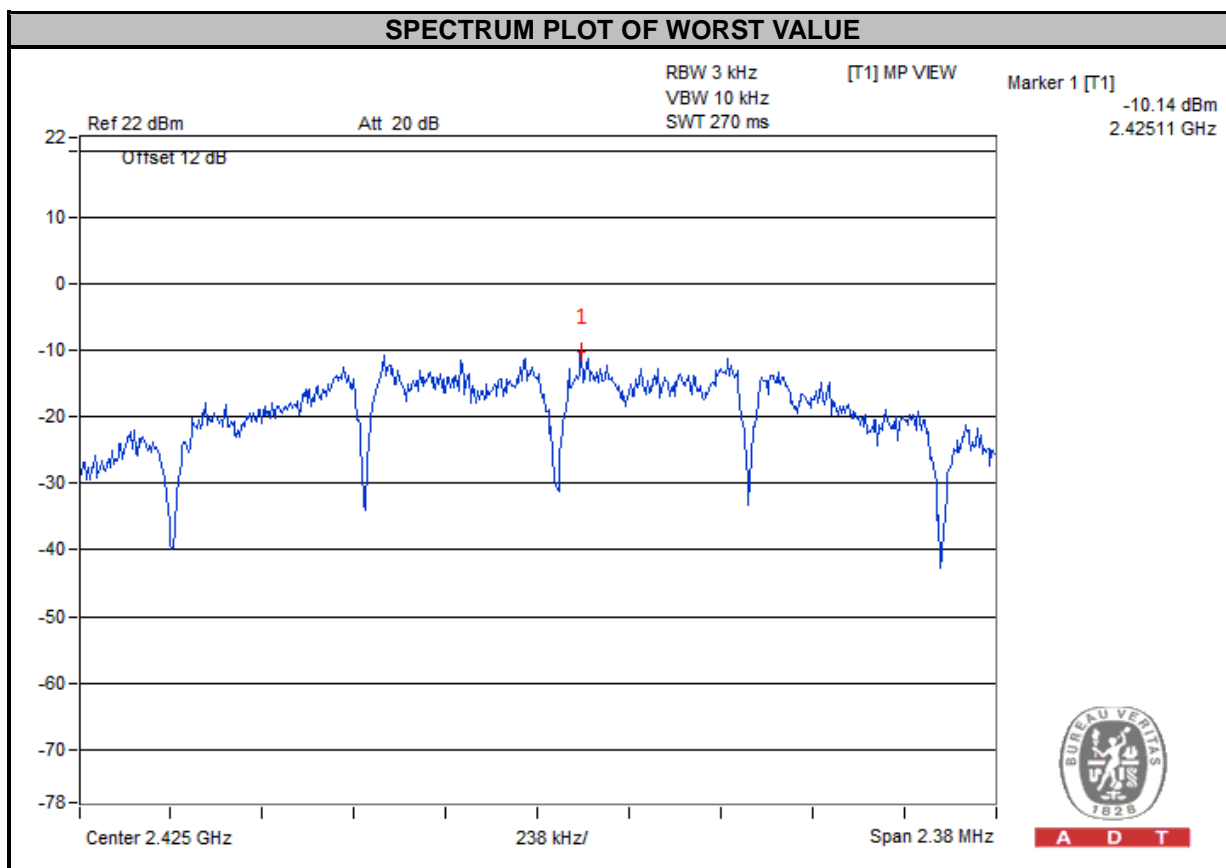
No deviation.

### 4.5.6 EUT OPERATING CONDITION

Same as section 4.3.6.

#### 4.5.7 TEST RESULTS

CHANNEL	FREQUENCY (MHz)	PSD (dBm/3kHz)	LIMIT (dBm/3kHz)	PASS / FAIL
15	2425	-10.14	8	PASS
20	2450	-10.63	8	PASS
25	2475	-10.84	8	PASS

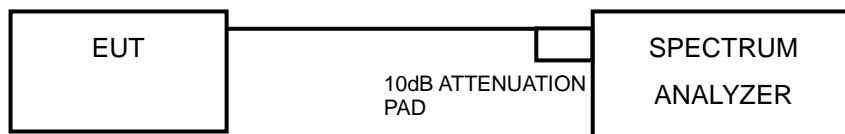


## 4.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

### 4.6.1 LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT

Below  $-20\text{dB}$  of the highest emission level of operating band (in  $100\text{kHz}$  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 =  $100\text{ kHz}$ .
2. Set the VBW  $\geq 300\text{ kHz}$ .
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  $100\text{ kHz}$  band segment within the fundamental EBW.

#### MEASUREMENT PROCEDURE OOB

1. Set RBW =  $100\text{ kHz}$ .
2. Set VBW  $\geq 300\text{ kHz}$ .
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

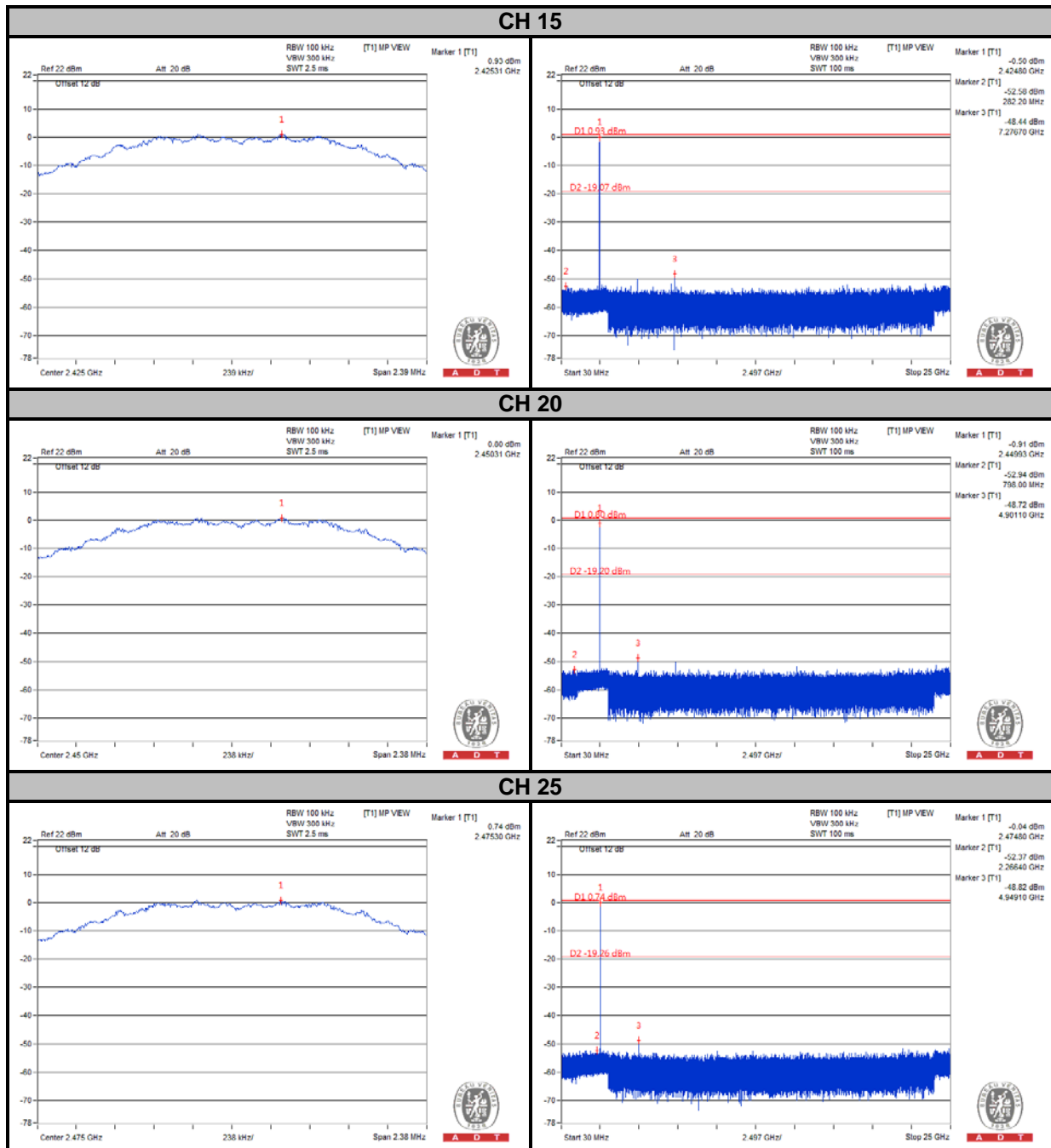
No deviation.

### 4.6.6 EUT OPERATING CONDITION

Same as section 4.3.6.

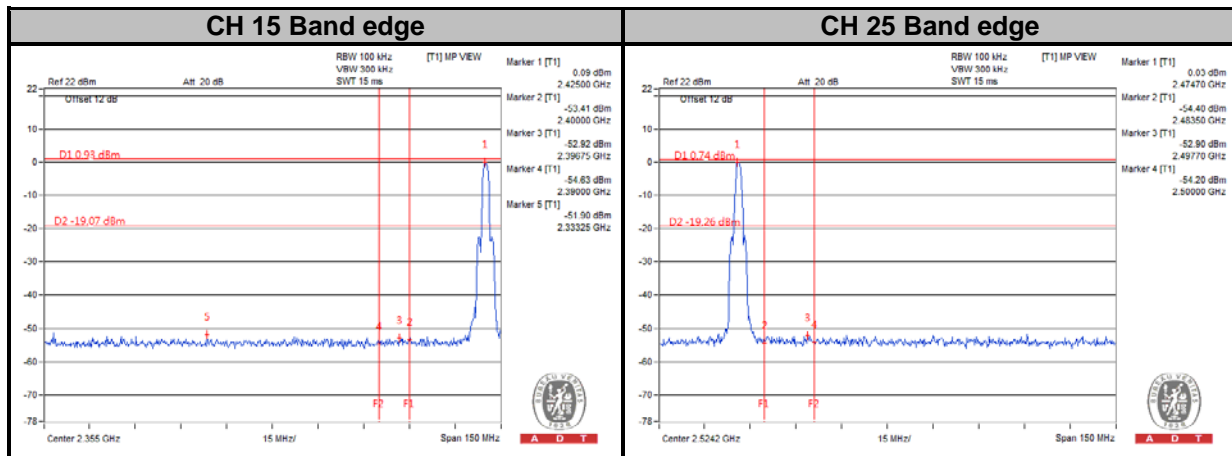
#### 4.6.7 TEST RESULTS

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





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## 5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



## 6. 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:

**Linko EMC/RF Lab:**

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Fax: 886-2-26051924

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**Web Site:** [www.bureauveritas-adt.com](http://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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## **7. APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB**

No any modifications are made to the EUT by the lab during the test.

---END---