

FCC Test Report

Report No.: RF151202C40

FCC ID: JVPWDP02R

Test Model: WDP02R

Received Date: Dec. 02, 2015

Test Date: Jan. 29 ~ Jun. 02, 2016

Issued Date: Jun. 03, 2016

Applicant: BenQ Corporation

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A O T

Release Control Record

Issue No.	Description	Date Issued
RF151202C40	Original release.	Jun. 03, 2016



A O T

1 Certificate of Conformity

Product: Wireless FHD Kit

Brand: BenQ

Test Model: WDP02R

Sample Status: Engineering sample

Applicant: BenQ Corporation

Test Date: Jan. 29 ~ Jun. 02, 2016

Standards: 47 CFR FCC Part 15, Subpart E (Section 15.407)
ANSI C63.10:2013

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

Prepared by : Sunt Lee, **Date:** Jun. 03, 2016
Sunt Lee / Specialist

Approved by : Ken Liu, **Date:** Jun. 03, 2016
Ken Liu / Senior Manager



2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (SECTION 15.407)			
FCC Clause	Test Item	Result	Remarks
15.407(b)(6)	AC Power Conducted Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -9.45dB at 1.27734MHz.
15.407(b) (1/2/3/4/6)	Radiated Emissions & Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -1.6dB at 10360.00, 10380.00, 10480.00MHz.
15.407(a)(1/2 /3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
15.407(a)(1/2 /3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6dB bandwidth	Pass	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	No antenna connector is used.

3.1 General Description of EUT

Note:

- | Modulation Mode | TX Function |
|-----------------|-------------|
| WHDI (20MHz) | 1TX |
| WHDI (40MHz) | 1TX |

- | | |
|--------------|--------------------------------|
| Brand | Asian Power Devices Inc. |
| Model | WB-10E05R |
| Input Power | 100-240Vac, 50-60Hz, 0.4A Max. |
| Output Power | 5Vdc, 2A |

3.2 Description of Test Modes

5180~5240MHz:

4 channels are provided for WHDI (20MHz).

Channel	Frequency	Channel	Frequency
36	5180 MHz	44	5220 MHz
40	5200 MHz	48	5240 MHz

2 channels are provided for WHDI (40MHz).

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

5270~5310MHz:

2 channels are provided for WHDI (40MHz).

Channel	Frequency	Channel	Frequency
54	5270 MHz	62	5310 MHz

5510~5670MHz:

3 channels are provided for WHDI (40MHz).

Channel	Frequency	Channel	Frequency
102	5510 MHz	134	5670 MHz
110	5550 MHz		

5745~5825MHz:

5 channels are provided for WHDI (20MHz).

Channel	Frequency	Channel	Frequency
149	5745MHz	161	5805MHz
153	5765MHz	165	5825MHz
157	5785MHz		

2 channels are provided for WHDI (40MHz).

Channel	Frequency	Channel	Frequency
151	5755 MHz	159	5795 MHz

3.2.1 Test Mode Applicability and Tested Channel Detail

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

Where RE $\geq$ 1G: Radiated Emission above 1GHz & Bandedge Measurement
 RE<1G: Radiated Emission below 1GHz
 PLC: Power Line Conducted Emission
 APCM: Antenna Port Conducted Measurement

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	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Kbps)
-	WHDI (20MHz)	5180-5240	36 to 48	36, 40, 48	OFDM	30/60
		5190-5230	149 to 165	149, 157, 165	OFDM	30/60
-	WHDI (40MHz)	5190-5230	38 to 46	38, 46	OFDM	30/60
-		5270-5310	54 to 62	54, 62	OFDM	30/60
-		5510-5670	102 to 134	102, 110, 134	OFDM	30/60
-		5755-5795	151 to 159	151, 159	OFDM	30/60

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	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Kbps)
-	WHDI (40MHz)	5190-5230	38 to 46	38	OFDM	30/60

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	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Kbps)
-	WHDI (40MHz)	5190-5230	38 to 46	38	OFDM	30/60

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	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Kbps)
-	WHDI (20MHz)	5180-5240	36 to 48	36, 40, 48	OFDM	30/60
-		5190-5230	149 to 165	149, 157, 165	OFDM	30/60
-	WHDI (40MHz)	5190-5230	38 to 46	38, 46	OFDM	30/60
-		5270-5310	54 to 62	54, 62	OFDM	30/60
-		5510-5670	102 to 134	102, 110, 134	OFDM	30/60
-		5755-5795	151 to 159	151, 159	OFDM	30/60

Test Condition:

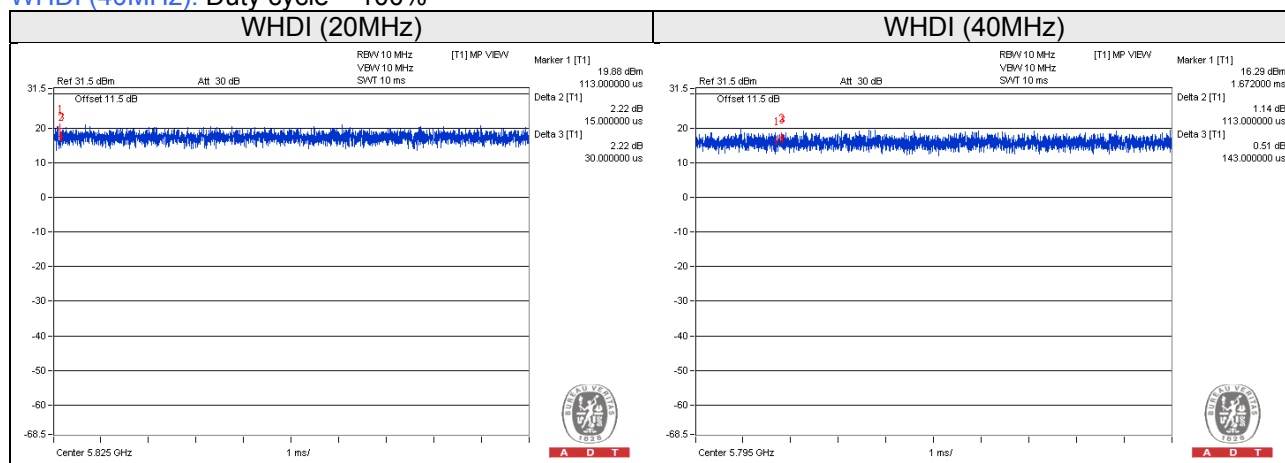
Applicable to	Environmental Conditions	Input Power	Tested by
RE $\geq$ 1G	22 deg. C, 67% RH	120Vac, 60Hz	Chris Lin
RE<1G	25 deg. C, 66% RH	120Vac, 60Hz	Chris Lin
PLC	20 deg. C, 70% RH	120Vac, 60Hz	Jones Chang
APCM	25 deg. C, 60% RH	120Vac, 60Hz	Ted Chang

3.3 Duty Cycle of Test Signal

Duty cycle of test signal is $\geq 98\%$, duty factor is not required.

WHDI (20MHz): Duty cycle = 100%

WHDI (40MHz): Duty cycle = 100%



3.4 Description of Support Units

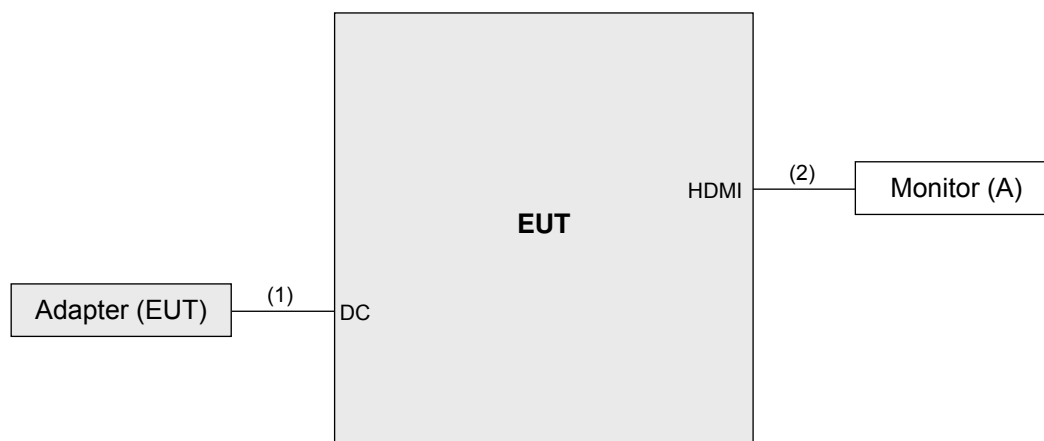
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Monitor	DELL	U2410	CN-0J257M-72872-0A 6-02YL	FCC DoC Approved	-

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	USB	1	1.45	Y	0	Accessory of EUT
2.	HDMI-1	1	0.5	Y	0	Accessory of EUT

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards

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

FCC Part 15, Subpart E (15.407)

789033 D02 General UNII Test Procedures New Rules v01r02

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.

LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

APPLICABLE TO	LIMIT	
789033 D02 General UNII Test Procedures New Rules v01r02	FIELD STRENGTH AT 3m	
	PK:74 (dBuV/m)	AV:54 (dBuV/m)
APPLICABLE TO	EIRP LIMIT	EQUIVALENT FIELD STRENGTH AT 3m
15.407(b)(1)	PK:-27 (dBm/MHz)	PK:68.2(dBuV/m)
15.407(b)(2)		
15.407(b)(3)		
15.407(b)(4)	PK:-27 (dBm/MHz) ^{*1} PK:-17 (dBm/MHz) ^{*2}	PK: 68.2(dBuV/m) ^{*1} PK:78.2 (dBuV/m) ^{*2}

NOTE: ^{*1} beyond 10MHz of the band edge ^{*2} within 10 MHz of band edge

The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$$E = \frac{1000000\sqrt{30P}}{3} \mu\text{V/m, where P is the eirp (Watts).}$$

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESCI	100424	Oct. 12, 2015	Oct. 11, 2016
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Jul. 08, 2015	Jul. 07, 2016
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Jan. 07, 2016	Jan. 06, 2017
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-1170	Jan. 08, 2016	Jan. 07, 2017
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Jan. 18, 2016	Jan. 17, 2017
Preamplifier Agilent	8449B	3008A01960	Aug. 09, 2015	Aug. 08, 2016
Preamplifier Agilent	8447D	2944A10631	Aug. 09, 2015	Aug. 08, 2016
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH4-02(295012+309220)	Aug. 09, 2015	Aug. 08, 2016
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH4-03(250724)	Aug. 09, 2015	Aug. 08, 2016
Software BV ADT	ADT_Radiated_V7.6.15.9.4	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021703	NA	NA
Turn Table BV ADT	TT100	TT93021703	NA	NA
Turn Table Controller BV ADT	SC100.	SC93021703	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	815221	Oct. 18, 2015	Oct. 17, 2016
High Speed Peak Power Meter	ML2495A	0824011	Jul. 09, 2015	Jul. 08, 2016
Power Sensor	MA2411B	0738171	Jul. 09, 2015	Jul. 08, 2016

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 4.
3. The horn antenna and preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 460141.
5. The IC Site Registration No. is IC7450F-4.

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. 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 detect 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:

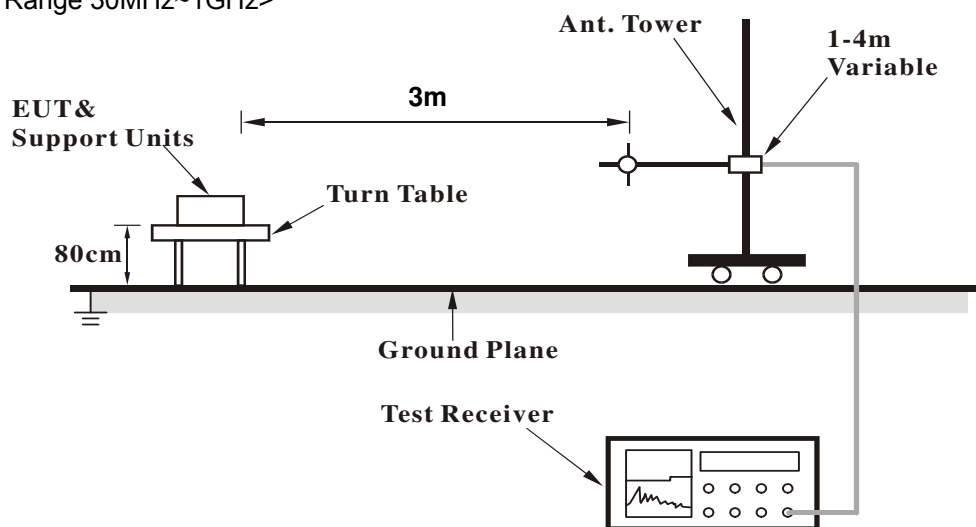
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor ($10 \log(1/\text{duty cycle})$).
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.
5. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

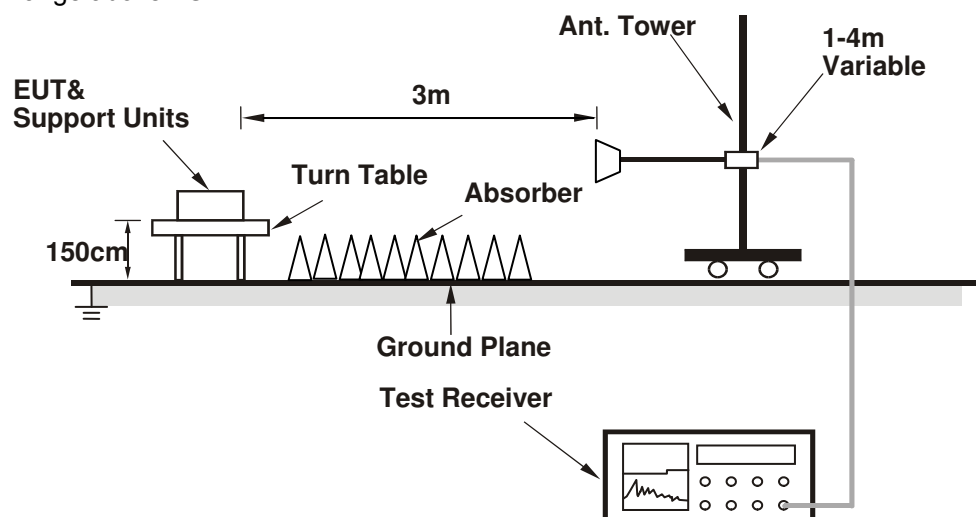
No deviation.

4.1.5 Test Set Up

<Frequency Range 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

- The EUT was connected with the monitor via HDMI cable.
- The EUT was under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

Above 1GHz data:

WHDI (20MHz)

CHANNEL	TX Channel 36	DETECTOR	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz	FUNCTION	Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	58.1 PK	74.0	-15.9	1.68 H	245	52.60	5.50
2	5150.00	45.7 AV	54.0	-8.3	1.68 H	245	40.20	5.50
3	*5180.00	107.4 PK			1.67 H	246	67.90	39.50
4	*5180.00	95.6 AV			1.67 H	246	56.10	39.50
5	#10360.00	61.4 PK	74.0	-12.6	2.35 H	230	43.90	17.50
6	#10360.00	50.8 AV	54.0	-3.2	2.35 H	230	33.30	17.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	57.8 PK	74.0	-16.2	1.00 V	342	52.30	5.50
2	5150.00	45.5 AV	54.0	-8.5	1.00 V	342	40.00	5.50
3	*5180.00	104.6 PK			1.04 V	344	65.10	39.50
4	*5180.00	92.9 AV			1.04 V	344	53.40	39.50
5	#10360.00	67.4 PK	74.0	-6.6	2.28 V	164	49.90	17.50
6	#10360.00	52.4 AV	54.0	-1.6	2.28 V	164	34.90	17.50

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 40	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	107.8 PK			1.98 H	248	68.20	39.60
2	*5200.00	96.1 AV			1.98 H	248	56.50	39.60
3	#10400.00	61.5 PK	74.0	-12.5	2.31 H	233	43.50	18.00
4	#10400.00	51.1 AV	54.0	-2.9	2.31 H	233	33.10	18.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	105.0 PK			1.04 V	6	65.40	39.60
2	*5200.00	94.0 AV			1.04 V	6	54.40	39.60
3	#10400.00	67.7 PK	74.0	-6.3	2.21 V	161	49.70	18.00
4	#10400.00	52.2 AV	54.0	-1.8	2.21 V	161	34.20	18.00

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 48	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	107.2 PK			1.74 H	246	67.60	39.60
2	*5240.00	96.0 AV			1.74 H	246	56.40	39.60
3	5350.00	57.6 PK	74.0	-16.4	1.78 H	241	51.90	5.70
4	5350.00	45.3 AV	54.0	-8.7	1.78 H	241	39.60	5.70
5	#10480.00	61.3 PK	74.0	-12.7	2.37 H	239	43.30	18.00
6	#10480.00	51.0 AV	54.0	-3.0	2.37 H	239	33.00	18.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	105.7 PK			1.30 V	18	66.10	39.60
2	*5240.00	94.3 AV			1.30 V	18	54.70	39.60
3	5350.00	57.2 PK	74.0	-16.8	1.25 V	17	51.50	5.70
4	5350.00	45.1 AV	54.0	-8.9	1.25 V	17	39.40	5.70
5	#10480.00	67.7 PK	74.0	-6.3	2.27 V	159	49.70	18.00
6	#10480.00	52.4 AV	54.0	-1.6	2.27 V	159	34.40	18.00

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 149	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5714.00	57.1 PK	74.0	-16.9	2.15 H	265	50.90	6.20
2	#5714.00	46.3 AV	54.0	-7.7	2.15 H	265	40.10	6.20
3	#5722.00	59.3 PK	78.2	-18.9	2.63 H	N/A	53.00	6.30
4	#5725.00	59.0 PK	78.2	-19.2	2.00 H	248	52.70	6.30
5	*5745.00	105.5 PK			2.11 H	258	65.10	40.40
6	*5745.00	92.6 AV			2.11 H	258	52.20	40.40
7	11490.00	61.9 PK	74.0	-12.1	1.85 H	302	42.60	19.30
8	11490.00	50.2 AV	54.0	-3.8	1.85 H	302	30.90	19.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5714.00	57.8 PK	74.0	-16.2	1.10 V	300	51.60	6.20
2	#5714.00	44.9 AV	54.0	-9.1	1.10 V	300	38.70	6.20
3	#5722.00	58.9 PK	78.2	-19.3	1.15 V	306	52.60	6.30
4	#5725.00	56.3 PK	78.2	-21.9	1.07 V	305	50.00	6.30
5	*5745.00	102.5 PK			1.04 V	292	62.10	40.40
6	*5745.00	90.1 AV			1.04 V	292	49.70	40.40
7	11490.00	60.0 PK	74.0	-14.0	1.33 V	50	40.70	19.30
8	11490.00	48.3 AV	54.0	-5.7	1.33 V	50	29.00	19.30

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	106.8 PK			2.34 H	253	66.30	40.50
2	*5785.00	94.2 AV			2.34 H	253	53.70	40.50
3	11570.00	61.6 PK	74.0	-12.4	1.94 H	341	42.60	19.00
4	11570.00	49.6 AV	54.0	-4.4	1.94 H	341	30.60	19.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	102.8 PK			1.00 V	301	62.30	40.50
2	*5785.00	90.0 AV			1.00 V	301	49.50	40.50
3	11570.00	60.2 PK	74.0	-13.8	1.28 V	64	41.20	19.00
4	11570.00	48.0 AV	54.0	-6.0	1.28 V	64	29.00	19.00

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	105.7 PK			2.35 H	249	65.10	40.60
2	*5825.00	93.4 AV			2.35 H	249	52.80	40.60
3	#5850.00	55.6 PK	78.2	-22.6	2.31 H	241	49.00	6.60
4	#5853.00	59.0 PK	78.2	-19.2	2.41 H	255	52.40	6.60
5	#5861.00	59.2 PK	74.0	-14.8	2.40 H	256	52.60	6.60
6	#5861.00	47.1 AV	54.0	-6.9	2.40 H	256	40.50	6.60
7	11650.00	61.4 PK	74.0	-12.6	1.26 H	38	42.90	18.50
8	11650.00	49.1 AV	54.0	-4.9	1.26 H	38	30.60	18.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	102.0 PK			1.01 V	294	61.40	40.60
2	*5825.00	91.1 AV			1.01 V	294	50.50	40.60
3	#5850.00	53.3 PK	78.2	-24.9	1.09 V	297	46.70	6.60
4	#5853.00	57.0 PK	78.2	-21.2	1.05 V	300	50.40	6.60
5	#5861.00	57.2 PK	74.0	-16.8	1.05 V	300	50.60	6.60
6	#5861.00	45.3 AV	54.0	-8.7	1.05 V	300	38.70	6.60
7	11650.00	59.1 PK	74.0	-14.9	1.63 V	58	40.60	18.50
8	11650.00	47.2 AV	54.0	-6.8	1.63 V	58	28.70	18.50

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

WHDI (40MHz)

CHANNEL	TX Channel 38	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	65.9 PK	74.0	-8.1	2.12 H	258	60.40	5.50
2	5150.00	48.2 AV	54.0	-5.8	2.12 H	258	42.70	5.50
3	*5190.00	105.7 PK			2.11 H	252	66.20	39.50
4	*5190.00	94.0 AV			2.11 H	252	54.50	39.50
5	#10380.00	64.2 PK	74.0	-9.8	2.25 H	214	46.40	17.80
6	#10380.00	51.0 AV	54.0	-3.0	2.25 H	214	33.20	17.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	63.0 PK	74.0	-11.0	1.08 V	10	57.50	5.50
2	5150.00	47.2 AV	54.0	-6.8	1.08 V	10	41.70	5.50
3	*5190.00	103.8 PK			1.03 V	19	64.30	39.50
4	*5190.00	92.0 AV			1.03 V	19	52.50	39.50
5	#10380.00	67.2 PK	74.0	-6.8	1.00 V	86	49.40	17.80
6	#10380.00	52.4 AV	54.0	-1.6	1.00 V	86	34.60	17.80

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 46	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5230.00	106.2 PK			2.22 H	251	66.60	39.60
2	*5230.00	94.9 AV			2.22 H	251	55.30	39.60
3	5350.00	62.9 PK	74.0	-11.1	2.23 H	256	57.20	5.70
4	5350.00	47.3 AV	54.0	-6.7	2.23 H	256	41.60	5.70
5	#10460.00	63.8 PK	74.0	-10.2	2.23 H	219	45.80	18.00
6	#10460.00	50.8 AV	54.0	-3.2	2.23 H	219	32.80	18.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5230.00	103.4 PK			1.02 V	20	63.80	39.60
2	*5230.00	91.9 AV			1.02 V	20	52.30	39.60
3	5350.00	62.7 PK	74.0	-11.3	1.00 V	18	57.00	5.70
4	5350.00	47.0 AV	54.0	-7.0	1.00 V	18	41.30	5.70
5	#10460.00	64.4 PK	74.0	-9.6	2.27 V	132	46.40	18.00
6	#10460.00	51.7 AV	54.0	-2.3	2.27 V	132	33.70	18.00

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 54	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	58.0 PK	74.0	-16.0	1.77 H	241	52.50	5.50
2	5150.00	45.0 AV	54.0	-9.0	1.77 H	241	39.50	5.50
3	*5270.00	106.3 PK			1.80 H	248	66.70	39.60
4	*5270.00	94.9 AV			1.80 H	248	55.30	39.60
5	#10540.00	63.3 PK	74.0	-10.7	2.26 H	218	45.20	18.10
6	#10540.00	50.3 AV	54.0	-3.7	2.26 H	218	32.20	18.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	57.4 PK	74.0	-16.6	1.57 V	17	51.90	5.50
2	5150.00	44.6 AV	54.0	-9.4	1.57 V	17	39.10	5.50
3	*5270.00	103.6 PK			1.60 V	18	64.00	39.60
4	*5270.00	92.1 AV			1.60 V	18	52.50	39.60
5	#10540.00	65.1 PK	74.0	-8.9	2.35 V	39	47.00	18.10
6	#10540.00	51.5 AV	54.0	-2.5	2.35 V	39	33.40	18.10

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 62	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5310.00	106.1 PK			1.79 H	248	66.50	39.60
2	*5310.00	94.8 AV			1.79 H	248	55.20	39.60
3	5350.00	62.2 PK	74.0	-11.8	1.74 H	242	56.50	5.70
4	5350.00	46.7 AV	54.0	-7.3	1.74 H	242	41.00	5.70
5	10620.00	63.6 PK	74.0	-10.4	2.22 H	216	45.30	18.30
6	10620.00	50.7 AV	54.0	-3.3	2.22 H	216	32.40	18.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5310.00	104.5 PK			1.67 V	17	64.90	39.60
2	*5310.00	92.6 AV			1.67 V	17	53.00	39.60
3	5350.00	57.9 PK	74.0	-16.1	1.67 V	19	52.20	5.70
4	5350.00	44.9 AV	54.0	-9.1	1.67 V	19	39.20	5.70
5	10620.00	64.7 PK	74.0	-9.3	2.22 V	39	46.40	18.30
6	10620.00	51.7 AV	54.0	-2.3	2.22 V	39	33.40	18.30

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 102	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	55.6 PK	74.0	-18.4	1.61 H	274	49.80	5.80
2	5460.00	44.5 AV	54.0	-9.5	1.61 H	274	38.70	5.80
3	#5470.00	56.5 PK	74.0	-17.5	1.65 H	281	50.60	5.90
4	#5470.00	45.6 AV	54.0	-8.4	1.65 H	281	39.70	5.90
5	*5510.00	101.9 PK			1.60 H	276	62.00	39.90
6	*5510.00	90.2 AV			1.60 H	276	50.30	39.90
7	11020.00	60.5 PK	74.0	-13.5	1.08 H	64	41.50	19.00
8	11020.00	49.5 AV	54.0	-4.5	1.08 H	64	30.50	19.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	56.4 PK	74.0	-17.6	1.71 V	81	50.60	5.80
2	5460.00	44.6 AV	54.0	-9.4	1.71 V	81	38.80	5.80
3	#5470.00	58.5 PK	74.0	-15.5	1.74 V	80	52.60	5.90
4	#5470.00	46.5 AV	54.0	-7.5	1.74 V	80	40.60	5.90
5	*5510.00	106.4 PK			1.71 V	74	66.50	39.90
6	*5510.00	93.9 AV			1.71 V	74	54.00	39.90
7	11020.00	63.4 PK	74.0	-10.6	1.99 V	180	44.40	19.00
8	11020.00	50.6 AV	54.0	-3.4	1.99 V	180	31.60	19.00

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 110	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5550.00	105.3 PK			1.78 H	75	65.30	40.00
2	*5550.00	92.8 AV			1.78 H	75	52.80	40.00
3	11100.00	64.0 PK	74.0	-10.0	1.13 H	19	44.40	19.60
4	11100.00	51.5 AV	54.0	-2.5	1.13 H	19	31.90	19.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5550.00	104.9 PK			1.88 V	74	64.90	40.00
2	*5550.00	92.1 AV			1.88 V	74	52.10	40.00
3	11100.00	62.2 PK	74.0	-11.8	1.26 V	97	42.60	19.60
4	11100.00	51.1 AV	54.0	-2.9	1.26 V	97	31.50	19.60

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 134	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5670.00	101.2 PK			1.40 H	306	61.00	40.20
2	*5670.00	89.6 AV			1.40 H	306	49.40	40.20
3	#5725.00	57.8 PK	74.0	-16.2	1.45 H	310	51.50	6.30
4	#5725.00	46.9 AV	54.0	-7.1	1.45 H	310	40.60	6.30
5	11340.00	62.3 PK	74.0	-11.7	1.25 H	87	42.60	19.70
6	11340.00	49.8 AV	54.0	-4.2	1.25 H	87	30.10	19.70
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5670.00	101.7 PK			1.06 V	295	61.50	40.20
2	*5670.00	90.1 AV			1.06 V	295	49.90	40.20
3	#5725.00	56.4 PK	74.0	-17.6	1.10 V	300	50.10	6.30
4	#5725.00	45.8 AV	54.0	-8.2	1.10 V	300	39.50	6.30
5	11340.00	61.7 PK	74.0	-12.3	1.08 V	222	42.00	19.70
6	11340.00	49.6 AV	54.0	-4.4	1.08 V	222	29.90	19.70

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 151	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5714.00	57.4 PK	74.0	-16.6	1.91 H	253	51.20	6.20
2	#5714.00	47.5 AV	54.0	-6.5	1.91 H	253	41.30	6.20
3	#5722.00	59.9 PK	78.2	-18.3	1.58 H	251	53.60	6.30
4	#5725.00	56.6 PK	78.2	-21.6	1.85 H	246	50.30	6.30
5	*5755.00	104.6 PK			1.90 H	250	64.10	40.50
6	*5755.00	92.4 AV			1.90 H	250	51.90	40.50
7	11510.00	60.3 PK	74.0	-13.7	1.14 H	193	41.20	19.10
8	11510.00	48.2 AV	54.0	-5.8	1.14 H	193	29.10	19.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5714.00	58.1 PK	74.0	-15.9	1.12 V	310	51.90	6.20
2	#5714.00	46.7 AV	54.0	-7.3	1.12 V	310	40.50	6.20
3	#5722.00	63.1 PK	78.2	-15.1	1.14 V	308	56.80	6.30
4	#5725.00	59.9 PK	78.2	-18.3	1.18 V	315	53.60	6.30
5	*5755.00	102.0 PK			1.10 V	306	61.50	40.50
6	*5755.00	91.1 AV			1.10 V	306	50.60	40.50
7	11510.00	61.7 PK	74.0	-12.3	1.24 V	74	42.60	19.10
8	11510.00	49.5 AV	54.0	-4.5	1.24 V	74	30.40	19.10

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 159	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	106.3 PK			1.90 H	249	65.80	40.50
2	*5795.00	93.3 AV			1.90 H	249	52.80	40.50
3	#5850.00	57.9 PK	78.2	-20.3	1.88 H	241	51.30	6.60
4	#5853.00	59.0 PK	78.2	-19.2	1.85 H	256	52.40	6.60
5	#5861.00	57.8 PK	74.0	-16.2	1.57 H	251	51.20	6.60
6	#5861.00	47.8 AV	54.0	-6.2	1.57 H	251	41.20	6.60
7	11550.00	61.6 PK	74.0	-12.4	1.27 H	84	42.60	19.00
8	11550.00	49.1 AV	54.0	-4.9	1.27 H	84	30.10	19.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	103.7 PK			1.49 V	75	63.20	40.50
2	*5795.00	91.8 AV			1.49 V	75	51.30	40.50
3	#5850.00	57.2 PK	78.2	-21.0	1.57 V	77	50.60	6.60
4	#5853.00	59.2 PK	78.2	-19.0	1.51 V	79	52.60	6.60
5	#5861.00	58.2 PK	74.0	-15.8	1.51 V	80	51.60	6.60
6	#5861.00	47.2 AV	54.0	-6.8	1.51 V	80	40.60	6.60
7	11550.00	60.9 PK	74.0	-13.1	1.25 V	74	41.90	19.00
8	11550.00	49.1 AV	54.0	-4.9	1.25 V	74	30.10	19.00

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

Below 1GHz worst-case data: WHDI (40MHz)

CHANNEL	TX Channel 38	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	31.84	37.0 QP	40.0	-3.0	1.99 H	12	52.40	-15.40
2	97.81	26.5 QP	43.5	-17.0	1.99 H	12	45.30	-18.80
3	173.49	32.9 QP	43.5	-10.6	1.99 H	12	47.20	-14.30
4	239.46	29.8 QP	46.0	-16.2	1.00 H	281	44.80	-15.00
5	782.78	38.6 QP	46.0	-7.4	1.50 H	76	41.90	-3.30
6	936.07	38.3 QP	46.0	-7.7	1.00 H	18	39.30	-1.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	37.66	31.5 QP	40.0	-8.5	2.00 V	213	46.20	-14.70
2	134.68	26.3 QP	43.5	-17.2	1.00 V	7	41.10	-14.80
3	239.46	23.5 QP	46.0	-22.5	1.51 V	202	38.50	-15.00
4	600.38	29.8 QP	46.0	-16.2	1.00 V	7	36.90	-7.10
5	747.85	39.3 QP	46.0	-6.7	2.00 V	184	43.20	-3.90
6	938.01	33.1 QP	46.0	-12.9	1.51 V	307	34.10	-1.00

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

Note: 1.

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup

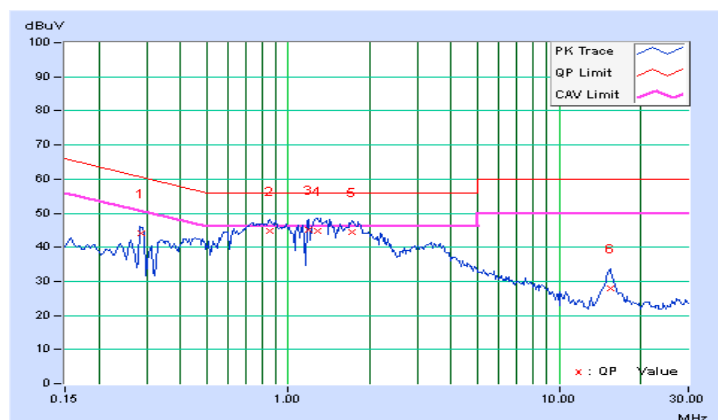
4.2.7 Test Results

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.28679	10.22	33.91	28.75	44.13	38.97	60.62	50.62	-16.48	-11.64
2	0.85313	10.29	34.53	24.13	44.82	34.42	56.00	46.00	-11.18	-11.58
3	1.19141	10.32	34.76	25.33	45.08	35.65	56.00	46.00	-10.92	-10.35
4	1.27734	10.33	34.53	26.22	44.86	36.55	56.00	46.00	-11.14	-9.45
5	1.73047	10.36	34.10	24.98	44.46	35.34	56.00	46.00	-11.54	-10.66
6	15.43750	10.59	17.35	9.97	27.94	20.56	60.00	50.00	-32.06	-29.44

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.

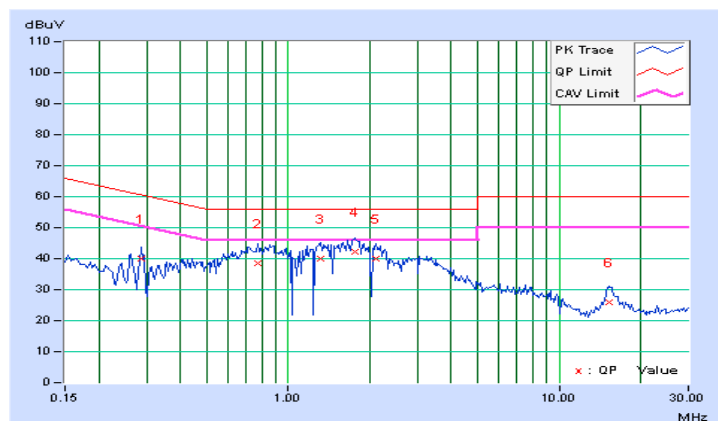


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.28672	10.24	29.76	11.25	40.00	21.49	60.62	50.62	-20.62	-29.13
2	0.77500	10.29	28.12	15.58	38.41	25.87	56.00	46.00	-17.59	-20.13
3	1.31250	10.33	29.76	16.97	40.09	27.30	56.00	46.00	-15.91	-18.70
4	1.76172	10.38	31.85	17.00	42.23	27.38	56.00	46.00	-13.77	-18.62
5	2.11328	10.42	29.60	15.31	40.02	25.73	56.00	46.00	-15.98	-20.27
6	15.25000	10.73	15.26	5.20	25.99	15.93	60.00	50.00	-34.01	-34.07

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 Transmit Power Measurement

4.3.1 Limits of Transmit Power Measurement

Operation Band	EUT Category	LIMIT
	Outdoor Access Point	1 Watt (30 dBm)
U-NII-1		

*B is the 26 dB emission bandwidth in megahertz

4.3.2 Test Setup

For Power Output

For 26dB and Occupied Bandwidth

4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

For Power Output

Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

For Occupied Bandwidth

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 300 kHz RBW and 1MHz VBW. 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.

4.3.5 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 Result

Power Output:

WHDI (20MHz)

Channel	Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
36	5180	26.853	14.29	30	Pass
40	5200	25.177	14.01	30	Pass
48	5240	27.416	14.38	30	Pass
149	5745	28.314	14.52	30	Pass
157	5785	26.485	14.23	30	Pass
165	5825	25.823	14.12	30	Pass

WHDI (40MHz)

Channel	Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
38	5190	47.315	16.75	30	Pass
46	5230	45.290	16.56	30	Pass
54	5270	44.978	16.53	24	Pass
62	5310	46.881	16.71	24	Pass
102	5510	45.082	16.54	24	Pass
110	5550	45.186	16.55	24	Pass
134	5670	45.920	16.62	24	Pass
151	5755	45.709	16.60	30	Pass
159	5795	44.771	16.51	30	Pass

Note:

For U-NII-2A, U-NII-2C Band:

1. $11\text{dBm} + 10\log (40.59) = 27.08 > 24\text{dBm}$
2. $11\text{dBm} + 10\log (40.45) = 27.07 > 24\text{dBm}$
3. $11\text{dBm} + 10\log (40.41) = 27.06 > 24\text{dBm}$
4. $11\text{dBm} + 10\log (40.10) = 27.03 > 24\text{dBm}$
5. $11\text{dBm} + 10\log (40.51) = 27.08 > 24\text{dBm}$



A D T

26dB Bandwidth:

WHDI (20MHz)

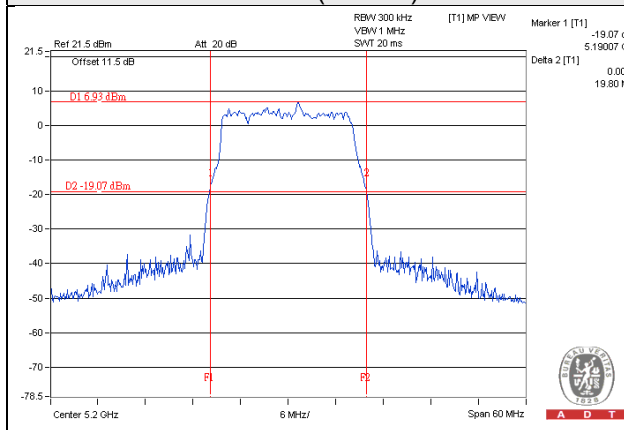
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	Pass / Fail
36	5180	19.77	Pass
40	5200	19.80	Pass
48	5240	19.77	Pass

WHDI (40MHz)

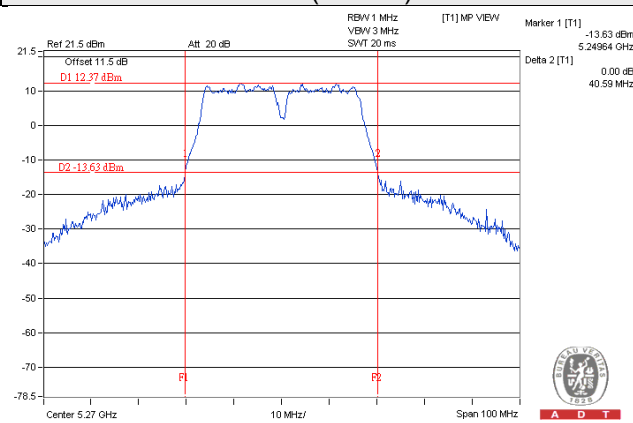
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	Pass / Fail
38	5190	40.09	Pass
46	5230	40.49	Pass
54	5270	40.59	Pass
62	5310	40.45	Pass
102	5510	40.41	Pass
110	5550	40.10	Pass
134	5670	40.51	Pass

Spectrum Plot of Worst Value

WHDI (20MHz)



WHDI (40MHz)





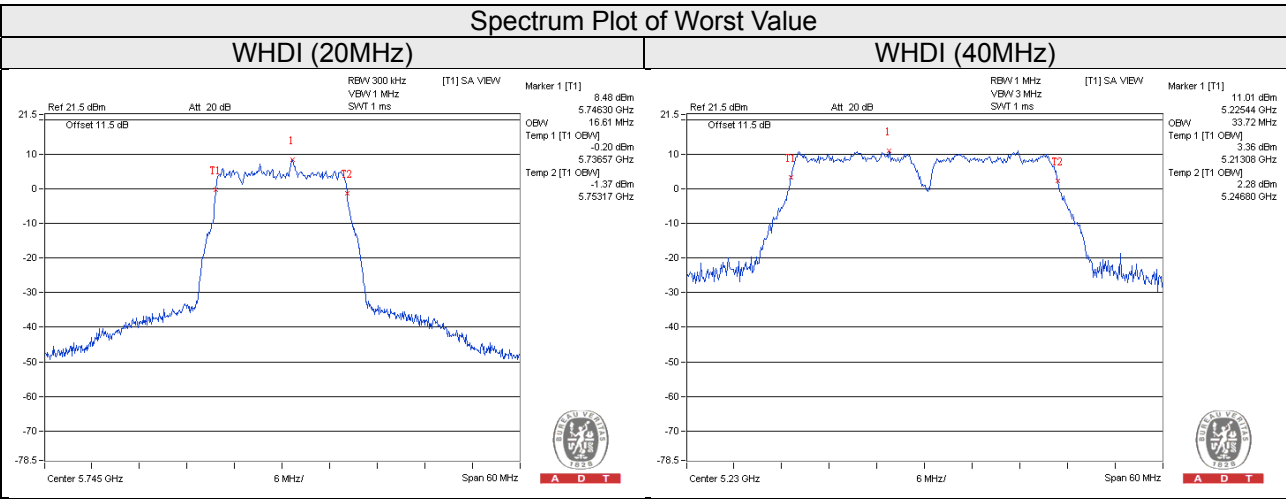
A D T

Occupied Bandwidth:
WHDI (20MHz)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
36	5180	16.56
40	5200	16.56
48	5240	16.56
149	5745	16.61
157	5785	16.56
165	5825	16.56

WHDI (40MHz)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
38	5190	31.80
46	5230	33.72
54	5270	33.72
62	5310	33.72
102	5510	33.72
110	5550	31.92
134	5670	33.72
151	5755	31.92
159	5795	31.92



EUT MAXIMUM CONDUCTED POWER

WHDl (40MHz)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	46.881	16.71
5470~5725	45.920	16.62

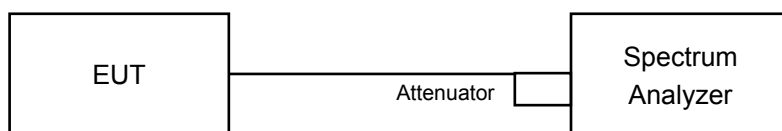
Note: Manufacturer provides Transmit Power Control description to meet this requirement.

4.4 Peak Power Spectral Density Measurement

4.4.1 Limits of Peak Power Spectral Density Measurement

Operation Band	EUT Category		LIMIT
U-NII-1		Outdoor Access Point	17dBm/ MHz
		Fixed point-to-point Access Point	
	√	Indoor Access Point	11dBm/ MHz
		Mobile and Portable client device	
U-NII-2A	√		11dBm/ MHz
U-NII-2C	√		11dBm/ MHz
U-NII-3	√		30dBm/ 500kHz

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

For U-NII-1, U-NII-2A, U-NII-2C band:

Using method SA-2

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 30 kHz, Set VBW $\geq$ 1 MHz, Detector = RMS.
- 3) Set Channel power measure = 1MHz.
- 4) Sweep time = auto, trigger set to "free run".
- 5) Trace average at least 100 traces in power averaging mode.
- 6) Record the max value and add 10 log (1/duty cycle).

For U-NII-3 band:

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 500 kHz, Set VBW $\geq$ 3 RBW, Detector = RMS.
- 3) Sweep time = auto, trigger set to "free run".
- 4) Trace average at least 100 traces in power averaging mode.
- 5) Record the max value and add 10 log (1/duty cycle).
- 6) Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(500 \text{ kHz}/300\text{kHz})$.

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Conditions

Same as item 4.3.6.

4.4.7 Test Results

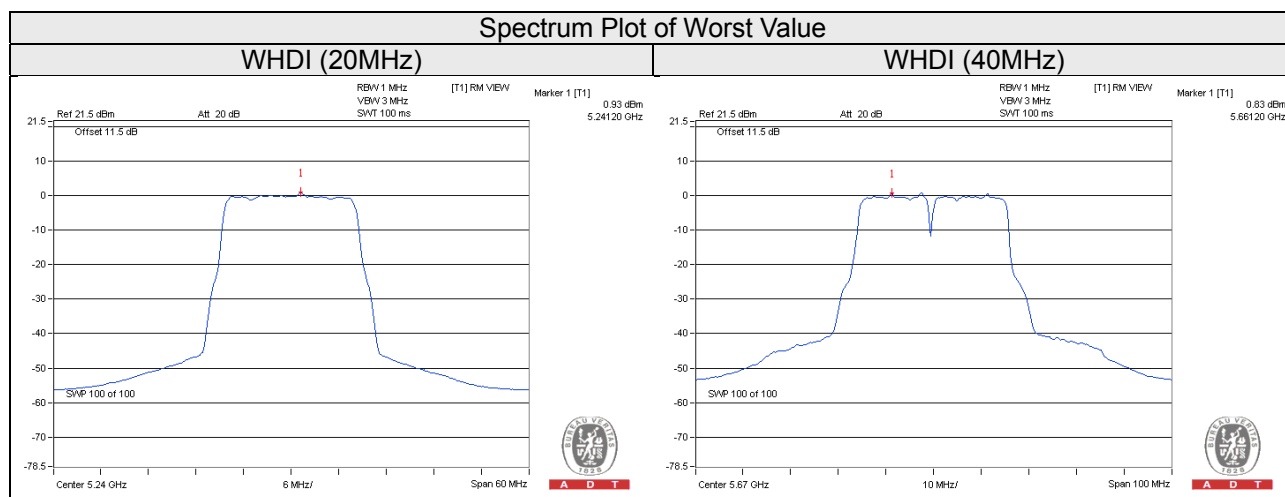
For U-NII-1, U-NII-2A, U-NII-2C Band:

WHDI (20MHz)

Channel	Frequency (MHz)	PSD (dBm)	Max. Limit (dBm)	Pass / Fail
36	5180	0.74	17	Pass
40	5200	0.38	17	Pass
48	5240	0.93	17	Pass

WHDI (40MHz)

Channel	Frequency (MHz)	PSD (dBm)	Max. Limit (dBm)	Pass / Fail
38	5190	0.43	17	Pass
46	5230	0.15	17	Pass
54	5270	0.78	11	Pass
62	5310	0.20	11	Pass
102	5510	0.66	11	Pass
110	5550	-1.44	11	Pass
134	5670	0.83	11	Pass



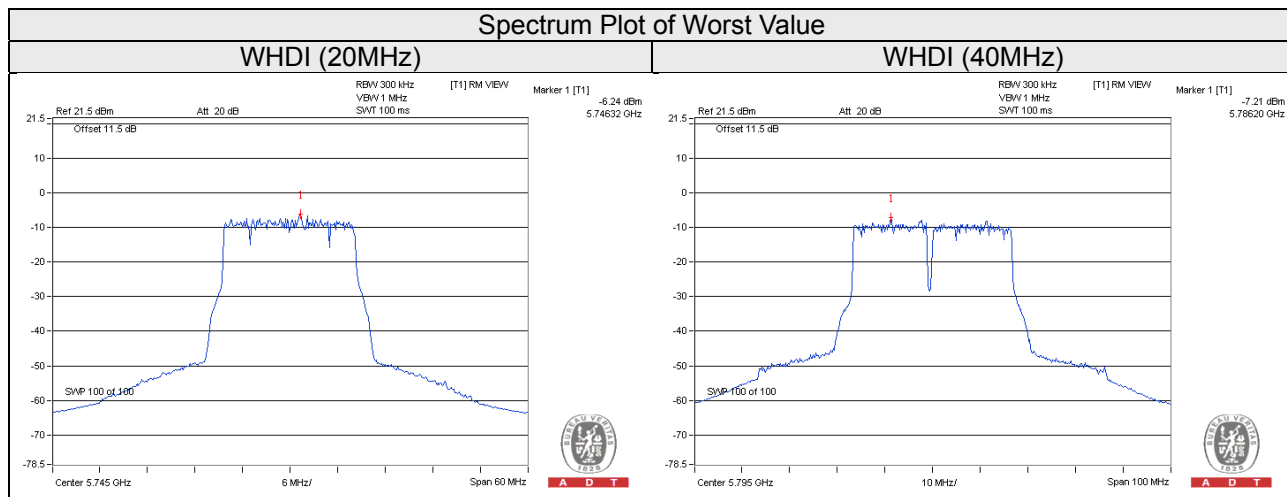
For U-NII-3 Band:

WHDI (20MHz)

Channel	Frequency (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass / Fail
149	5745	-6.24	-4.02	30	Pass
157	5785	-6.39	-4.17	30	Pass
165	5825	-6.70	-4.48	30	Pass

WHDI (40MHz)

Channel	Frequency (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass / Fail
151	5755	-10.01	-7.79	30	Pass
159	5795	-7.21	-4.99	30	Pass

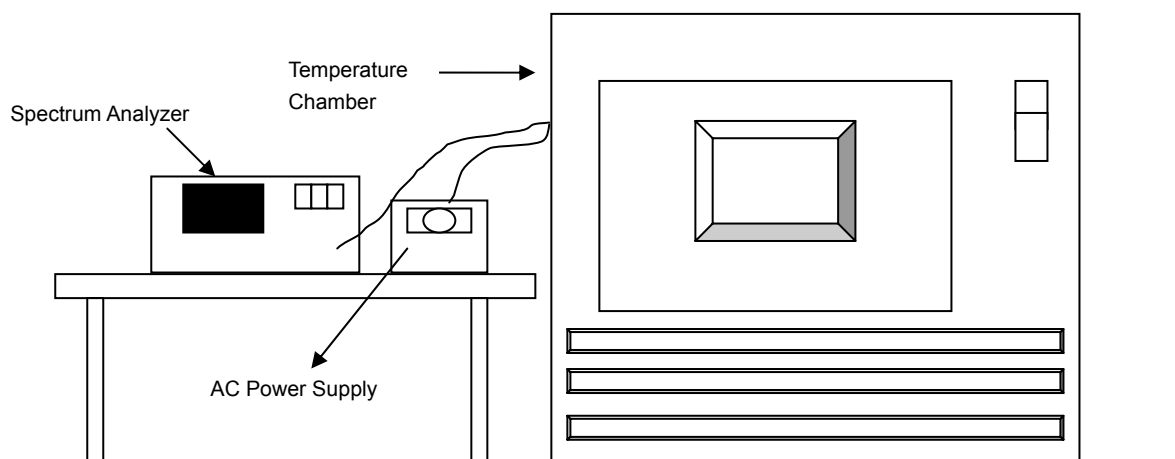


4.5 Frequency Stability

4.5.1 Limits of Frequency Stability Measurement

The frequency of the carrier signal shall be maintained within band of operation

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

- The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
- Turn the EUT on and couple its output to a spectrum analyzer.
- Turn the EUT off and set the chamber to the highest temperature specified.
- Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
- Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
- The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

Set the EUT transmit at un-modulation mode to test frequency stability.



4.5.7 Test Results

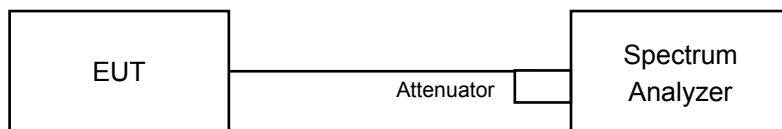
Frequency Stability Versus Temp.	
Operating Frequency: 5240MHz	
Temp. (	

4.6 6dB Bandwidth Measurement

4.6.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

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

- 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

4.6.5 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.

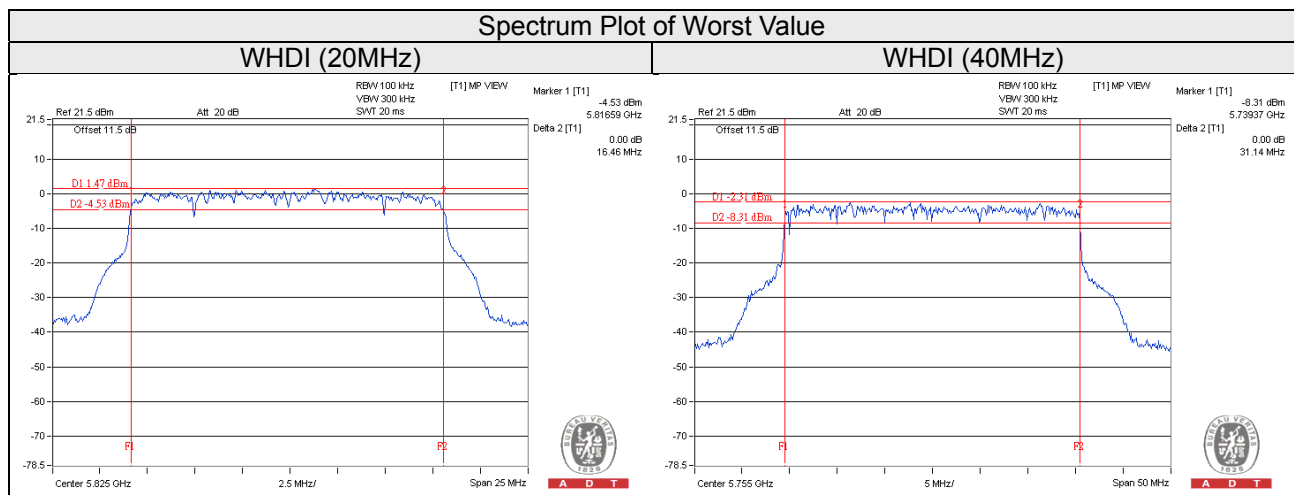
4.6.7 Test Results

WHDI (20MHz)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
149	5745	16.47	0.5	Pass
157	5785	16.50	0.5	Pass
165	5825	16.46	0.5	Pass

WHDI (40MHz)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
151	5755	31.14	0.5	Pass
159	5795	32.25	0.5	Pass



5 Pictures of Test Arrangements

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

Appendix – Information on the Testing Laboratories

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

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

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Fax: 886-2-26051924

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Web Site: www.bureauveritas-adt.com

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

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