

FCC Test Report

Report No.: RF140617C17A-1

FCC ID: NKR-F1

Test Model: DNUB-F1

Received Date: Apr. 13, 2015

Test Date: Apr. 24 ~ Apr. 26, 2015

Issued Date: May 06, 2015

Applicant: Wistron NeWeb Corp.

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Release Control Record

Issue No.	Description	Date Issued
RF140617C17A-1	Original release	May 06, 2015

1 Certificate of Conformity

Product: 11 abgn 2X2 USB Module

Brand: Funai

Test Model: DNUB-F1

Sample Status: Engineering sample

Applicant: Wistron NeWeb Corp.

Test Date: Dec. 27, 2014 ~ Jan. 19, 2015

Standards: 47 CFR FCC Part 15, Subpart E (Section 15.407)
ANSI C63.10:2009

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 :


Ivy Lin / Specialist

Date:

May 06, 2015

Approved by :


Ken Liu / Senior Manager

Date:

May 06, 2015

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 -13.98dB at 0.42334MHz.
15.407(b)(1/2/3/4/6)	Radiated Emissions & Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -1.0dB at 10480.00MHz, 10600.00MHz.
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.

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	Expended Uncertainty (k=2) ($\pm$)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.44 dB
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	3.86 dB
	200MHz ~ 1000MHz	3.87 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	11 abgn 2X2 USB Module
Brand	Funai
Test Model	DNUB-F1
Status of EUT	Engineering sample
Power Supply Rating	5Vdc (host equipment)
Modulation Type	64QAM, 16QAM, QPSK, BPSK
Modulation Technology	OFDM
Transfer Rate	802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 300Mbps
Operating Frequency	5180 ~ 5240MHz, 5260 ~ 5320MHz, 5500 ~ 5700MHz & 5745 ~ 5825MHz
Number of Channel	5180 ~ 5240MHz: 4 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 5260 ~ 5320MHz: 4 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 5500 ~ 5700MHz: 11 for 802.11a, 802.11n (HT20) 5 for 802.11n (HT40) 5745 ~ 5825MHz: 5 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40)
Output Power	5180 ~ 5240MHz: 40.700mW 5260 ~ 5320MHz: 50.236mW 5500 ~ 5700MHz: 109.044mW 5745 ~ 5825MHz: 74.165mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Data Cable Supplied	NA

Note:

- The EUT incorporates a MIMO function. Physically, the EUT provides 2 completed transmitters and 2 receivers.

Modulation Mode	TX Function
802.11a	2TX
802.11n (20MHz)	2TX
802.11n (40MHz)	2TX

- The antenna used in this EUT is listed as below table:

Item	Type	Gain (dBi)						Connector
		2.4 ~ 2.4385GHz	5.15GHz	5.25GHz	5.35GHz	5.47 ~ 5.725GHz	5.725 ~ 5.850GHz	
Ant. Left	Printed	-2.65	-2.72	-2.52	-2.43	-2.15	-2.15	NA
Ant. Right	Printed	-2.35	-3.66	-3.56	-3.4	-3.33	-3.34	

3.2 Description of Test Modes

FOR 5180 ~ 5240MHz

4 channels are provided for 802.11a, 802.11n (HT20):

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

2 channels are provided for 802.11n (HT40):

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

FOR 5260 ~ 5320MHz

4 channels are provided for 802.11a, 802.11n (HT20):

Channel	Frequency	Channel	Frequency
52	5260 MHz	60	5300 MHz
56	5280 MHz	64	5320 MHz

2 channels are provided for 802.11n (HT40):

Channel	Frequency	Channel	Frequency
54	5270 MHz	62	5310 MHz

FOR 5500 ~ 5700MHz

11 channels are provided for 802.11a, 802.11n (HT20):

Channel	Frequency	Channel	Frequency
100	5500 MHz	124	5620 MHz
104	5520 MHz	128	5640 MHz
108	5540 MHz	132	5660 MHz
112	5560 MHz	136	5680 MHz
116	5580 MHz	140	5700 MHz
120	5600 MHz		

5 channels are provided for 802.11n (HT40):

Channel	Frequency	Channel	Frequency
102	5510 MHz	126	5630 MHz
110	5550 MHz	134	5670 MHz
118	5590 MHz		

FOR 5745 ~ 5825MHz:

5 channels are provided for 802.11a, 802.11n (HT20):

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

2 channels are provided for 802.11n (HT40):

Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

Where **RE≥1G**: Radiated Emission above 1GHz & Bandedge Measurement
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 **Y-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	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6.0
-	802.11n (HT20)		36 to 48	36, 40, 48	OFDM	BPSK	7.2
	802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	15.0
-	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6.0
-	802.11n (HT20)		52 to 64	52, 60, 64	OFDM	BPSK	7.2
	802.11n (40MHz)		54 to 62	54, 62	OFDM	BPSK	15.0
-	802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	BPSK	6.0
-	802.11n (HT20)		100 to 140	100, 116, 140	OFDM	BPSK	7.2
	802.11n (40MHz)		102 to 134	102, 110, 134	OFDM	BPSK	15.0
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6.0
-	802.11n (HT20)		149 to 165	149, 157, 165	OFDM	BPSK	7.2
	802.11n (40MHz)		151 to 159	151, 159	OFDM	BPSK	15.0

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	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11n (HT20)	5180-5240	36 to 48	116	OFDM	BPSK	7.2
-		5260-5320	52 to 64		OFDM	BPSK	7.2
-		5500-5700	100 to 140		OFDM	BPSK	7.2
-		5745-5825	149 to 165		OFDM	BPSK	7.2

Power Line Conducted Emission Test:

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

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11n (HT20)	5180-5240	36 to 48	116	OFDM	BPSK	7.2
-		5260-5320	52 to 64		OFDM	BPSK	7.2
-		5500-5700	100 to 140		OFDM	BPSK	7.2
-		5745-5825	149 to 165		OFDM	BPSK	7.2

Antenna Port Conducted Measurement:

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

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6.0
-	802.11n (HT20)		36 to 48	36, 40, 48	OFDM	BPSK	7.2
	802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	15.0
-	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6.0
-	802.11n (HT20)		52 to 64	52, 60, 64	OFDM	BPSK	7.2
	802.11n (40MHz)		54 to 62	54, 62	OFDM	BPSK	15.0
-	802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	BPSK	6.0
-	802.11n (HT20)		100 to 140	100, 116, 140	OFDM	BPSK	7.2
	802.11n (40MHz)		102 to 134	102, 110, 134	OFDM	BPSK	15.0
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6.0
-	802.11n (HT20)		149 to 165	149, 157, 165	OFDM	BPSK	7.2
	802.11n (40MHz)		151 to 159	151, 159	OFDM	BPSK	15.0

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	20 deg. C, 67% RH	120Vac, 60Hz	Jones Chang, Nick Hsu
RE<1G	20 deg. C, 67% RH	120Vac, 60Hz	Jones Chang
PLC	22 deg. C, 70% RH	120Vac, 60Hz	Jones Chang
APCM	25 deg. C, 60% RH	120Vac, 60Hz	Leo Tsai

3.3 Duty Cycle of Test Signal

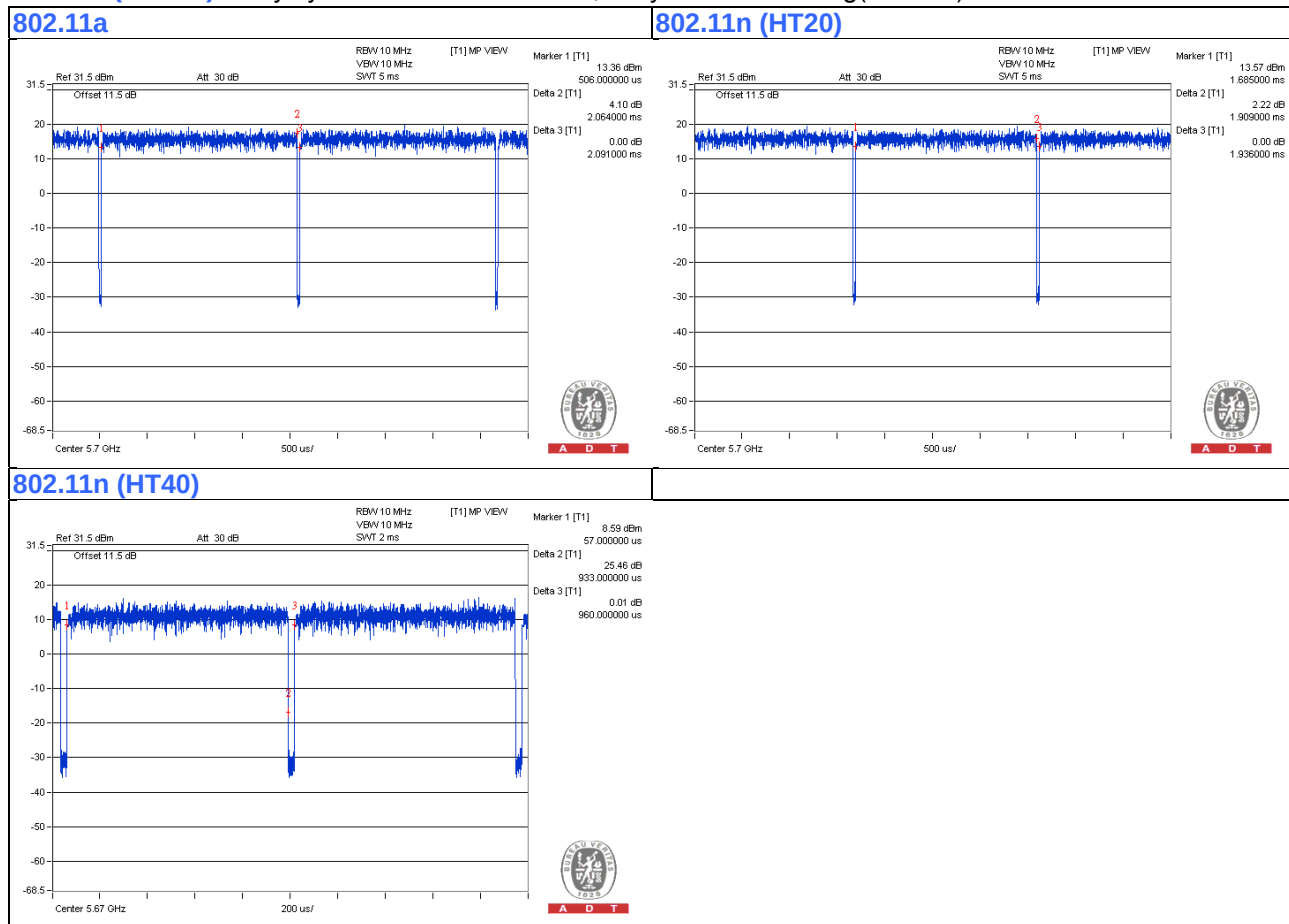
Duty cycle of test signal is > 98%, duty factor is not required.

802.11a: Duty cycle = $2.06/2.09 = 0.986$

802.11n (20MHz): Duty cycle = $1.91/1.94 = 0.985$

Duty cycle of test signal is < 98 %, duty factor is required

802.11n (40MHz): Duty cycle = $0.93/0.96 = 0.969$, Duty factor = $10 * \log(1/0.969) = 0.14$



3.4 Description of Support Units

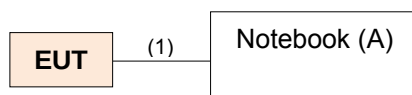
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook	DELL	E5410	1HC2XM1	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 cable	1	1.5	Y	0	-

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 Procedure New Rules v01

ANSI C63.10-2009

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

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 v01	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.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESIB7	100187	Apr. 10, 2015	Apr. 09, 2016
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100041	Aug. 29, 2014	Aug. 28, 2015
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Feb. 05, 2015	Feb. 04, 2016
HORN Antenna SCHWARZBECK	9120D	209	Feb. 09, 2015	Feb. 08, 2016
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Feb. 09, 2015	Feb. 08, 2016
Preamplifier Agilent	8447D	2944A10738	Oct. 18, 2014	Oct. 17, 2015
Preamplifier Agilent	8449B	3008A01964	Aug. 22, 2014	Aug. 21, 2015
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	214378/4	Aug. 22, 2014	Aug. 21, 2015
RF signal cable HUBER+SUHNNER	SUCOFLEX 106	12738/6 +309224/4	Aug. 22, 2014	Aug. 21, 2015
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021702	NA	NA
Turn Table BV ADT	TT100	TT93021702	NA	NA
Turn Table Controller BV ADT	SC100	SC93021702	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	815221	Oct. 18, 2014	Oct. 17, 2015
High Speed Peak Power Meter	ML2495A	0824011	Jul. 26, 2014	Jul. 25, 2015
Power Sensor	MA2411B	0738171	Jul. 26, 2014	Jul. 25, 2015
WIT Standard Temperature And Humidity Chamber	TH-4S-C	W981030	Jun. 09, 2014	Jun. 08, 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 test was performed in HwaYa Chamber 3.
 3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
 4. The FCC Site Registration No. is 988962.
 5. The IC Site Registration No. is IC 7450F-3.

4.1.3 Test Procedures

- a. The EUT was placed on the top of a rotating table 0.8 meters 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:

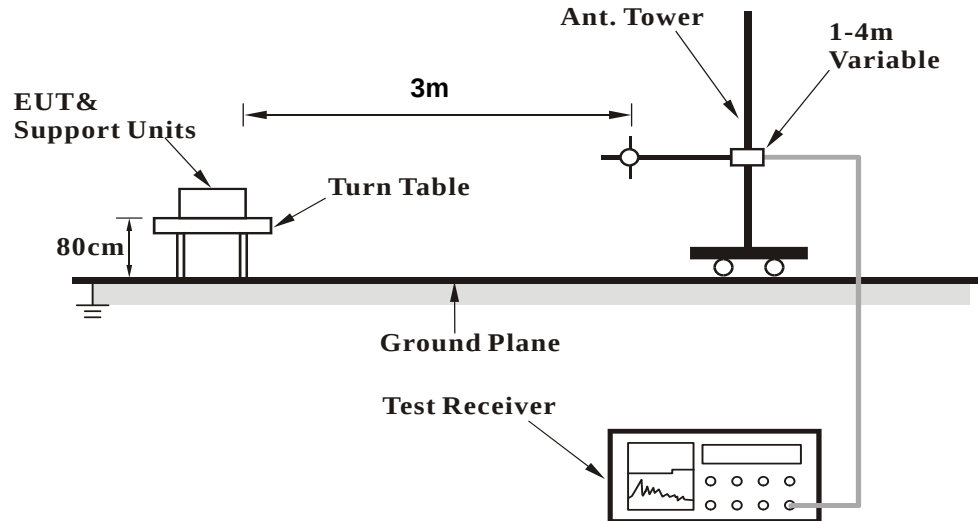
1. For emission measurements above 1 GHz, the EUT shall be placed at a height of 1.5 m above the ground at 3 meter chamber room for test
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
4. 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 ($10 \log(1/\text{duty cycle})$).
5. 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.
6. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

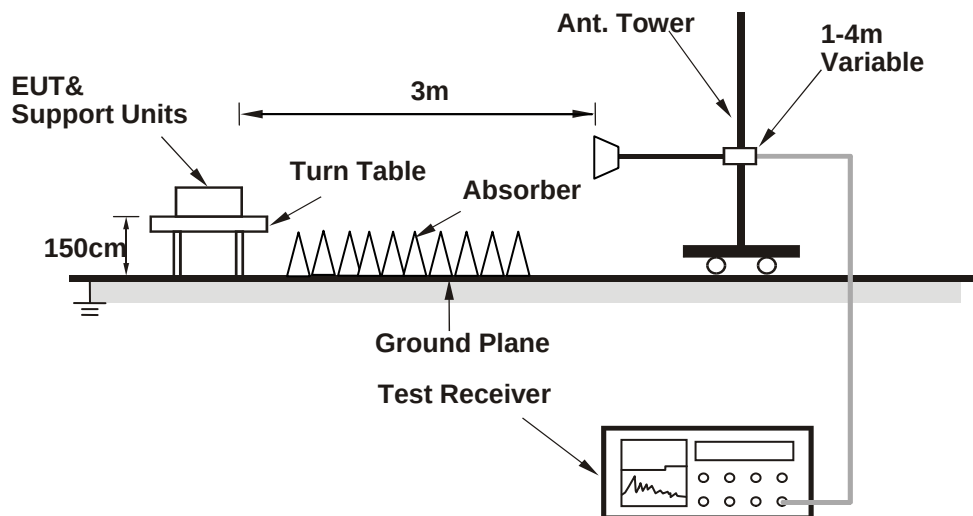
No deviation.

4.1.5 Test Set Up

<Frequency Range below 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 the testing table.
- Set the EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

ABOVE 1GHz DATA

802.11a

CHANNEL	TX Channel 36	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	72.7 PK	74.0	-1.3	1.50 H	141	66.70	6.00
2	5150.00	51.9 AV	54.0	-2.1	1.50 H	141	45.90	6.00
3	*5180.00	106.0 PK			1.57 H	139	66.50	39.50
4	*5180.00	96.5 AV			1.57 H	139	57.00	39.50
5	#10360.00	63.7 PK	74.0	-10.3	1.09 H	328	45.30	18.40
6	#10360.00	50.2 AV	54.0	-3.8	1.09 H	328	31.80	18.40
7	15540.00	62.3 PK	74.0	-11.7	1.43 H	98	43.40	18.90
8	15540.00	49.3 AV	54.0	-4.7	1.43 H	98	30.40	18.90
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	71.5 PK	74.0	-2.5	1.32 V	122	65.50	6.00
2	5150.00	50.8 AV	54.0	-3.2	1.32 V	122	44.80	6.00
3	*5180.00	106.1 PK			1.30 V	73	66.60	39.50
4	*5180.00	96.4 AV			1.30 V	73	56.90	39.50
5	#10360.00	67.2 PK	74.0	-6.8	1.25 V	178	48.80	18.40
6	#10360.00	52.8 AV	54.0	-1.2	1.21 V	175	34.40	18.40
7	15540.00	61.9 PK	74.0	-12.1	1.39 V	122	43.00	18.90
8	15540.00	49.0 AV	54.0	-5.0	1.39 V	122	30.10	18.90

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)
– Pre-Amplifier 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	106.3 PK			1.35 H	134	66.70	39.60
2	*5200.00	96.5 AV			1.35 H	134	56.90	39.60
3	#10400.00	61.1 PK	74.0	-12.9	1.23 H	109	42.60	18.50
4	#10400.00	48.0 AV	54.0	-6.0	1.23 H	109	29.50	18.50
5	15600.00	62.2 PK	74.0	-11.8	1.20 H	85	43.40	18.80
6	15600.00	48.9 AV	54.0	-5.1	1.20 H	85	30.10	18.80
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	*5200.00	105.0 PK			1.13 V	85	65.40	39.60
2	*5200.00	95.5 AV			1.13 V	85	55.90	39.60
3	#10400.00	65.9 PK	74.0	-8.1	1.20 V	180	47.40	18.50
4	#10400.00	52.4 AV	54.0	-1.6	1.20 V	180	33.90	18.50
5	15600.00	62.8 PK	74.0	-11.2	1.28 V	334	44.00	18.80
6	15600.00	50.1 AV	54.0	-3.9	1.28 V	334	31.30	18.80

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)
– Pre-Amplifier 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	108.3 PK			1.55 H	137	68.70	39.60
2	*5240.00	98.4 AV			1.55 H	137	58.80	39.60
3	5350.00	58.4 PK	74.0	-15.6	1.55 H	144	52.30	6.10
4	5350.00	47.1 AV	54.0	-6.9	1.55 H	144	41.00	6.10
5	#10480.00	61.5 PK	74.0	-12.5	1.39 H	256	42.50	19.00
6	#10480.00	48.5 AV	54.0	-5.5	1.39 H	256	29.50	19.00
7	15720.00	61.7 PK	74.0	-12.3	1.23 H	110	43.20	18.50
8	15720.00	48.5 AV	54.0	-5.5	1.23 H	110	30.00	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	*5240.00	106.3 PK			1.33 V	131	66.70	39.60
2	*5240.00	96.8 AV			1.33 V	131	57.20	39.60
3	5350.00	57.8 PK	74.0	-16.2	1.33 V	131	51.70	6.10
4	5350.00	46.6 AV	54.0	-7.4	1.33 V	131	40.50	6.10
5	#10480.00	66.9 PK	74.0	-7.1	1.19 V	181	47.90	19.00
6	#10480.00	53.0 AV	54.0	-1.0	1.19 V	181	34.00	19.00
7	15720.00	63.0 PK	74.0	-11.0	1.25 V	221	44.50	18.50
8	15720.00	50.1 AV	54.0	-3.9	1.25 V	221	31.60	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)
– Pre-Amplifier 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 52	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	57.3 PK	74.0	-16.7	1.38 H	109	51.30	6.00
2	5150.00	46.5 AV	54.0	-7.5	1.38 H	109	40.50	6.00
3	*5260.00	107.3 PK			1.48 H	141	67.60	39.70
4	*5260.00	98.0 AV			1.48 H	141	58.30	39.70
5	#10520.00	62.0 PK	74.0	-12.0	1.28 H	156	42.80	19.20
6	#10520.00	48.8 AV	54.0	-5.2	1.28 H	156	29.60	19.20
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	56.5 PK	74.0	-17.5	1.27 V	80	50.50	6.00
2	5150.00	45.9 AV	54.0	-8.1	1.27 V	80	39.90	6.00
3	*5260.00	107.0 PK			1.27 V	122	67.30	39.70
4	*5260.00	96.9 AV			1.27 V	122	57.20	39.70
5	#10520.00	68.4 PK	74.0	-5.6	1.08 V	176	49.20	19.20
6	#10520.00	52.7 AV	54.0	-1.3	1.08 V	176	33.50	19.20

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)
– Pre-Amplifier 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 60	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	*5300.00	108.6 PK			1.53 H	141	68.90	39.70
2	*5300.00	99.3 AV			1.53 H	141	59.60	39.70
3	10600.00	61.1 PK	74.0	-12.9	1.28 H	103	42.00	19.10
4	10600.00	48.1 AV	54.0	-5.9	1.28 H	103	29.00	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	*5300.00	107.6 PK			1.29 V	68	67.90	39.70
2	*5300.00	97.8 AV			1.29 V	68	58.10	39.70
3	10600.00	68.0 PK	74.0	-6.0	1.00 V	177	48.90	19.10
4	10600.00	52.1 AV	54.0	-1.9	1.00 V	177	33.00	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)
– Pre-Amplifier 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 64	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	*5320.00	109.2 PK			1.39 H	135	69.50	39.70
2	*5320.00	99.6 AV			1.39 H	135	59.90	39.70
3	5350.00	70.4 PK	74.0	-3.6	1.45 H	140	64.30	6.10
4	5350.00	50.6 AV	54.0	-3.4	1.45 H	140	44.50	6.10
5	10640.00	61.6 PK	74.0	-12.4	1.20 H	115	42.70	18.90
6	10640.00	48.6 AV	54.0	-5.4	1.20 H	115	29.70	18.90
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	*5320.00	107.1 PK			1.40 V	104	67.40	39.70
2	*5320.00	97.5 AV			1.40 V	104	57.80	39.70
3	5350.00	69.4 PK	74.0	-4.6	1.33 V	105	63.30	6.10
4	5350.00	39.4 AV	54.0	-14.6	1.33 V	105	33.30	6.10
5	10640.00	67.1 PK	74.0	-6.9	1.00 V	179	48.20	18.90
6	10640.00	52.3 AV	54.0	-1.7	1.00 V	179	33.40	18.90

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)
– Pre-Amplifier 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 100	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	63.1 PK	74.0	-10.9	1.56 H	141	56.70	6.40
2	5460.00	48.2 AV	54.0	-5.8	1.56 H	141	41.80	6.40
3	#5470.00	69.8 PK	74.0	-4.2	1.60 H	134	63.40	6.40
4	#5470.00	52.3 AV	54.0	-1.7	1.60 H	134	45.90	6.40
5	*5500.00	110.7 PK			1.50 H	39	70.70	40.00
6	*5500.00	100.7 AV			1.50 H	39	60.70	40.00
7	11000.00	59.0 PK	74.0	-15.0	1.34 H	42	39.40	19.60
8	11000.00	46.5 AV	54.0	-7.5	1.34 H	42	26.90	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	5460.00	60.2 PK	74.0	-13.8	1.28 V	277	53.80	6.40
2	5460.00	47.6 AV	54.0	-6.4	1.28 V	277	41.20	6.40
3	#5470.00	69.9 PK	74.0	-4.1	1.27 V	281	63.50	6.40
4	#5470.00	51.2 AV	54.0	-2.8	1.27 V	281	44.80	6.40
5	*5500.00	111.3 PK			1.34 V	263	71.30	40.00
6	*5500.00	100.6 AV			1.34 V	263	60.60	40.00
7	11000.00	61.7 PK	74.0	-12.3	1.03 V	179	42.10	19.60
8	11000.00	49.4 AV	54.0	-4.6	1.03 V	179	29.80	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)
– Pre-Amplifier 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 116	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	*5580.00	114.9 PK			1.00 H	130	74.80	40.10
2	*5580.00	105.7 AV			1.00 H	130	65.60	40.10
3	11160.00	61.9 PK	74.0	-12.1	1.18 H	351	42.70	19.20
4	11160.00	49.8 AV	54.0	-4.2	1.18 H	351	30.60	19.20
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	*5580.00	113.0 PK			1.33 V	138	72.90	40.10
2	*5580.00	103.1 AV			1.33 V	138	63.00	40.10
3	11160.00	62.4 PK	74.0	-11.6	1.05 V	182	43.20	19.20
4	11160.00	52.2 AV	54.0	-1.8	1.05 V	182	33.00	19.20

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)
– Pre-Amplifier 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 140	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	*5700.00	110.9 PK			1.00 H	140	70.60	40.30
2	*5700.00	102.2 AV			1.00 H	140	61.90	40.30
3	#5725.00	69.9 PK	74.0	-4.1	1.31 H	140	63.10	6.80
4	#5725.00	52.3 AV	54.0	-1.7	1.31 H	140	45.50	6.80
5	11400.00	61.6 PK	74.0	-12.4	1.05 H	353	43.10	18.50
6	11400.00	48.5 AV	54.0	-5.5	1.05 H	353	30.00	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	*5700.00	109.2 PK			1.00 V	121	68.90	40.30
2	*5700.00	100.0 AV			1.00 V	121	59.70	40.30
3	#5725.00	68.9 PK	74.0	-5.1	1.08 V	261	62.10	6.80
4	#5725.00	52.9 AV	54.0	-1.1	1.08 V	261	46.10	6.80
5	11400.00	60.4 PK	74.0	-13.6	1.06 V	180	41.90	18.50
6	11400.00	48.5 AV	54.0	-5.5	1.06 V	180	30.00	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)
– Pre-Amplifier 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	70.2 PK	74.0	-3.8	1.36 H	145	63.40	6.80
2	#5714.00	52.2 AV	54.0	-1.8	1.36 H	145	45.40	6.80
3	#5722.00	74.6 PK	78.2	-3.6	1.33 H	142	67.80	6.80
4	#5725.00	62.1 PK	78.2	-16.1	1.45 H	143	55.30	6.80
5	*5745.00	111.8 PK			1.00 H	141	71.40	40.40
6	*5745.00	102.2 AV			1.00 H	141	61.80	40.40
7	11490.00	62.9 PK	74.0	-11.1	1.15 H	357	44.50	18.40
8	11490.00	49.0 AV	54.0	-5.0	1.15 H	357	30.60	18.40
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	70.2 PK	74.0	-3.8	1.35 V	262	63.40	6.80
2	#5714.00	51.3 AV	54.0	-2.7	1.35 V	262	44.50	6.80
3	#5722.00	74.9 PK	78.2	-3.3	1.50 V	241	68.10	6.80
4	#5725.00	56.6 PK	78.2	-21.6	1.49 V	261	49.80	6.80
5	*5745.00	110.8 PK			1.21 V	269	70.40	40.40
6	*5745.00	100.9 AV			1.21 V	269	60.50	40.40
7	11490.00	60.9 PK	74.0	-13.1	1.04 V	153	42.50	18.40
8	11490.00	48.4 AV	54.0	-5.6	1.04 V	153	30.00	18.40

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)
– Pre-Amplifier 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 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	116.2 PK			1.18 H	128	75.70	40.50
2	*5785.00	105.6 AV			1.18 H	128	65.10	40.50
3	11570.00	64.4 PK	74.0	-9.6	1.15 H	354	46.00	18.40
4	11570.00	52.3 AV	54.0	-1.7	1.15 H	354	33.90	18.40
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	113.5 PK			1.12 V	271	73.00	40.50
2	*5785.00	103.7 AV			1.12 V	271	63.20	40.50
3	11570.00	63.0 PK	74.0	-11.0	1.03 V	178	44.60	18.40
4	11570.00	50.8 AV	54.0	-3.2	1.03 V	178	32.40	18.40

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)
– Pre-Amplifier 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 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	114.5 PK			1.46 H	141	74.00	40.50
2	*5825.00	104.8 AV			1.46 H	141	64.30	40.50
3	#5850.00	56.7 PK	78.2	-21.5	1.69 H	128	49.80	6.90
4	#5853.00	75.7 PK	78.2	-2.5	1.50 H	130	68.70	7.00
5	#5861.00	72.2 PK	74.0	-1.8	1.38 H	143	65.20	7.00
6	#5861.00	51.8 AV	54.0	-2.2	1.38 H	143	44.80	7.00
7	11650.00	63.2 PK	74.0	-10.8	1.11 H	356	44.30	18.90
8	11650.00	51.4 AV	54.0	-2.6	1.11 H	356	32.50	18.90
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	112.5 PK			1.00 V	269	72.00	40.50
2	*5825.00	103.4 AV			1.00 V	269	62.90	40.50
3	#5850.00	55.4 PK	78.2	-22.8	1.12 V	261	48.50	6.90
4	#5853.00	74.5 PK	78.2	-3.7	1.25 V	281	67.50	7.00
5	#5861.00	70.0 PK	74.0	-4.0	1.18 V	262	63.00	7.00
6	#5861.00	51.9 AV	54.0	-2.1	1.18 V	262	44.90	7.00
7	11650.00	62.5 PK	74.0	-11.5	1.22 V	180	43.60	18.90
8	11650.00	50.2 AV	54.0	-3.8	1.22 V	180	31.30	18.90

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)
– Pre-Amplifier 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.

802.11n (HT20)

CHANNEL	TX Channel 36	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	62.1 PK	74.0	-11.9	1.43 H	144	56.10	6.00
2	5150.00	46.9 AV	54.0	-7.1	1.43 H	144	40.90	6.00
3	*5180.00	103.3 PK			1.58 H	125	63.80	39.50
4	*5180.00	95.1 AV			1.58 H	125	55.60	39.50
5	#10360.00	60.8 PK	74.0	-13.2	1.13 H	252	42.40	18.40
6	#10360.00	48.0 AV	54.0	-6.0	1.13 H	252	29.60	18.40
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	57.2 PK	74.0	-16.8	1.47 V	133	51.20	6.00
2	5150.00	46.9 AV	54.0	-7.1	1.47 V	133	40.90	6.00
3	*5180.00	104.8 PK			1.42 V	107	65.30	39.50
4	*5180.00	95.3 AV			1.42 V	107	55.80	39.50
5	#10360.00	66.6 PK	74.0	-7.4	1.07 V	181	48.20	18.40
6	#10360.00	52.1 AV	54.0	-1.9	1.07 V	181	33.70	18.40

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)
– Pre-Amplifier 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	104.6 PK			1.50 H	140	65.00	39.60
2	*5200.00	95.3 AV			1.50 H	140	55.70	39.60
3	#10400.00	60.9 PK	74.0	-13.1	1.00 H	20	42.40	18.50
4	#10400.00	47.8 AV	54.0	-6.2	1.00 H	20	29.30	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	*5200.00	107.0 PK			1.13 V	76	67.40	39.60
2	*5200.00	96.9 AV			1.13 V	76	57.30	39.60
3	#10400.00	67.4 PK	74.0	-6.6	1.21 V	181	48.90	18.50
4	#10400.00	52.2 AV	54.0	-1.8	1.21 V	181	33.70	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)
– Pre-Amplifier 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	105.4 PK			1.54 H	127	65.80	39.60
2	*5240.00	96.4 AV			1.54 H	127	56.80	39.60
3	5350.00	58.1 PK	74.0	-15.9	1.41 H	360	52.00	6.10
4	5350.00	46.2 AV	54.0	-7.8	1.41 H	360	40.10	6.10
5	#10480.00	62.1 PK	74.0	-11.9	1.10 H	152	43.10	19.00
6	#10480.00	49.0 AV	54.0	-5.0	1.10 H	152	30.00	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	*5240.00	107.4 PK			1.30 V	122	67.80	39.60
2	*5240.00	97.5 AV			1.30 V	122	57.90	39.60
3	5350.00	56.9 PK	74.0	-17.1	1.16 V	115	50.80	6.10
4	5350.00	45.7 AV	54.0	-8.3	1.16 V	115	39.60	6.10
5	#10480.00	66.7 PK	74.0	-7.3	1.16 V	175	47.70	19.00
6	#10480.00	52.7 AV	54.0	-1.3	1.16 V	175	33.70	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)
– Pre-Amplifier 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 52	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	57.3 PK	74.0	-16.7	1.22 H	99	51.30	6.00
2	5150.00	46.0 AV	54.0	-8.0	1.22 H	99	40.00	6.00
3	*5260.00	105.5 PK			1.46 H	139	65.80	39.70
4	*5260.00	96.5 AV			1.46 H	139	56.80	39.70
5	#10520.00	61.7 PK	74.0	-12.3	1.22 H	166	42.50	19.20
6	#10520.00	48.4 AV	54.0	-5.6	1.22 H	166	29.20	19.20
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	58.0 PK	74.0	-16.0	1.40 V	111	52.00	6.00
2	5150.00	47.0 AV	54.0	-7.0	1.40 V	111	41.00	6.00
3	*5260.00	106.5 PK			1.25 V	124	66.80	39.70
4	*5260.00	96.7 AV			1.25 V	124	57.00	39.70
5	#10520.00	67.5 PK	74.0	-6.5	1.09 V	180	48.30	19.20
6	#10520.00	52.4 AV	54.0	-1.6	1.09 V	180	33.20	19.20

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)
– Pre-Amplifier 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 60	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	*5300.00	106.3 PK			1.43 H	143	66.60	39.70
2	*5300.00	96.8 AV			1.43 H	143	57.10	39.70
3	10600.00	62.9 PK	74.0	-11.1	1.30 H	101	43.80	19.10
4	10600.00	50.1 AV	54.0	-3.9	1.30 H	101	31.00	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	*5300.00	106.3 PK			1.32 V	118	66.60	39.70
2	*5300.00	96.6 AV			1.32 V	118	56.90	39.70
3	10600.00	67.9 PK	74.0	-6.1	1.00 V	181	48.80	19.10
4	10600.00	53.0 AV	54.0	-1.0	1.00 V	181	33.90	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)
– Pre-Amplifier 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 64	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	*5320.00	107.4 PK			1.42 H	142	67.70	39.70
2	*5320.00	98.3 AV			1.42 H	142	58.60	39.70
3	5350.00	68.9 PK	74.0	-5.1	1.33 H	142	62.80	6.10
4	5350.00	50.4 AV	54.0	-3.6	1.33 H	142	44.30	6.10
5	10640.00	61.0 PK	74.0	-13.0	1.20 H	120	42.10	18.90
6	10640.00	48.3 AV	54.0	-5.7	1.20 H	120	29.40	18.90
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	*5320.00	106.5 PK			1.37 V	108	66.80	39.70
2	*5320.00	97.0 AV			1.37 V	108	57.30	39.70
3	5350.00	56.4 PK	74.0	-17.6	1.39 V	110	50.30	6.10
4	5350.00	49.5 AV	54.0	-4.5	1.39 V	110	43.40	6.10
5	10640.00	66.9 PK	74.0	-7.1	1.03 V	180	48.00	18.90
6	10640.00	52.3 AV	54.0	-1.7	1.03 V	180	33.40	18.90

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)
– Pre-Amplifier 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 100	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	61.1 PK	74.0	-12.9	1.40 H	43	54.70	6.40
2	5460.00	47.3 AV	54.0	-6.7	1.40 H	43	40.90	6.40
3	#5470.00	69.9 PK	74.0	-4.1	1.73 H	31	63.50	6.40
4	#5470.00	52.2 AV	54.0	-1.8	1.73 H	31	45.80	6.40
5	*5500.00	108.9 PK			1.69 H	38	68.90	40.00
6	*5500.00	99.7 AV			1.69 H	38	59.70	40.00
7	11000.00	59.3 PK	74.0	-14.7	1.13 H	233	39.70	19.60
8	11000.00	46.7 AV	54.0	-7.3	1.13 H	233	27.10	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	5460.00	59.2 PK	74.0	-14.8	1.50 V	282	52.80	6.40
2	5460.00	47.4 AV	54.0	-6.6	1.50 V	282	41.00	6.40
3	#5470.00	69.4 PK	74.0	-4.6	1.28 V	284	63.00	6.40
4	#5470.00	51.3 AV	54.0	-2.7	1.28 V	284	44.90	6.40
5	*5500.00	108.0 PK			1.00 V	85	68.00	40.00
6	*5500.00	99.1 AV			1.00 V	85	59.10	40.00
7	11000.00	62.3 PK	74.0	-11.7	1.03 V	176	42.70	19.60
8	11000.00	49.5 AV	54.0	-4.5	1.03 V	176	29.90	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)
– Pre-Amplifier 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 116	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	*5580.00	113.2 PK			1.00 H	130	73.10	40.10
2	*5580.00	104.6 AV			1.00 H	130	64.50	40.10
3	11160.00	62.5 PK	74.0	-11.5	1.27 H	0	43.30	19.20
4	11160.00	48.8 AV	54.0	-5.2	1.27 H	0	29.60	19.20
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	*5580.00	112.6 PK			1.40 V	121	72.50	40.10
2	*5580.00	103.6 AV			1.40 V	121	63.50	40.10
3	11160.00	64.5 PK	74.0	-9.5	1.02 V	181	45.30	19.20
4	11160.00	52.2 AV	54.0	-1.8	1.02 V	181	33.00	19.20

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)
– Pre-Amplifier 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 140	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	*5700.00	109.3 PK			1.00 H	141	69.00	40.30
2	*5700.00	100.0 AV			1.00 H	141	59.70	40.30
3	#5725.00	70.1 PK	74.0	-3.9	1.20 H	128	63.30	6.80
4	#5725.00	52.6 AV	54.0	-1.4	1.20 H	128	45.80	6.80
5	11400.00	59.7 PK	74.0	-14.3	1.21 H	321	41.20	18.50
6	11400.00	47.0 AV	54.0	-7.0	1.21 H	321	28.50	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	*5700.00	108.4 PK			1.38 V	121	68.10	40.30
2	*5700.00	99.2 AV			1.38 V	121	58.90	40.30
3	#5725.00	69.0 PK	74.0	-5.0	1.07 V	260	62.20	6.80
4	#5725.00	51.8 AV	54.0	-2.2	1.07 V	260	45.00	6.80
5	11400.00	59.8 PK	74.0	-14.2	1.12 V	172	41.30	18.50
6	11400.00	48.0 AV	54.0	-6.0	1.12 V	172	29.50	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)
– Pre-Amplifier 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	72.8 PK	74.0	-1.2	1.35 H	135	66.00	6.80
2	#5714.00	51.8 AV	54.0	-2.2	1.35 H	135	45.00	6.80
3	#5722.00	76.9 PK	78.2	-1.3	1.59 H	142	70.10	6.80
4	#5725.00	63.2 PK	78.2	-15.0	1.57 H	142	56.40	6.80
5	*5745.00	109.9 PK			1.63 H	140	69.50	40.40
6	*5745.00	101.1 AV			1.63 H	140	60.70	40.40
7	11490.00	60.6 PK	74.0	-13.4	1.10 H	307	42.20	18.40
8	11490.00	47.8 AV	54.0	-6.2	1.10 H	307	29.40	18.40
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	70.0 PK	74.0	-4.0	1.29 V	283	63.20	6.80
2	#5714.00	51.2 AV	54.0	-2.8	1.29 V	283	44.40	6.80
3	#5722.00	75.6 PK	78.2	-2.6	1.29 V	283	68.80	6.80
4	#5725.00	59.6 PK	78.2	-18.6	1.28 V	276	52.80	6.80
5	*5745.00	111.1 PK			1.28 V	262	70.70	40.40
6	*5745.00	101.3 AV			1.28 V	262	60.90	40.40
7	11490.00	59.9 PK	74.0	-14.1	1.25 V	176	41.50	18.40
8	11490.00	47.7 AV	54.0	-6.3	1.25 V	176	29.30	18.40

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)
– Pre-Amplifier 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 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	114.4 PK			1.17 H	128	73.90	40.50
2	*5785.00	104.6 AV			1.17 H	128	64.10	40.50
3	11570.00	63.0 PK	74.0	-11.0	1.17 H	354	44.60	18.40
4	11570.00	52.2 AV	54.0	-1.8	1.17 H	354	33.80	18.40
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	113.8 PK			1.00 V	270	73.30	40.50
2	*5785.00	104.2 AV			1.00 V	270	63.70	40.50
3	11570.00	63.7 PK	74.0	-10.3	1.06 V	173	45.30	18.40
4	11570.00	51.0 AV	54.0	-3.0	1.06 V	173	32.60	18.40

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)
– Pre-Amplifier 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 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	112.7 PK			1.59 H	144	72.20	40.50
2	*5825.00	103.4 AV			1.59 H	144	62.90	40.50
3	#5850.00	58.0 PK	78.2	-20.2	1.56 H	143	51.10	6.90
4	#5853.00	76.4 PK	78.2	-1.8	1.66 H	141	69.40	7.00
5	#5861.00	69.2 PK	74.0	-4.8	1.49 H	145	62.20	7.00
6	#5861.00	51.6 AV	54.0	-2.4	1.49 H	145	44.60	7.00
7	11650.00	63.8 PK	74.0	-10.2	1.18 H	358	44.90	18.90
8	11650.00	51.3 AV	54.0	-2.7	1.18 H	358	32.40	18.90
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	111.9 PK			1.00 V	269	71.40	40.50
2	*5825.00	103.0 AV			1.00 V	269	62.50	40.50
3	#5850.00	55.7 PK	78.2	-22.5	1.00 V	262	48.80	6.90
4	#5853.00	75.4 PK	78.2	-2.8	1.26 V	261	68.40	7.00
5	#5861.00	71.8 PK	74.0	-2.2	1.25 V	261	64.80	7.00
6	#5861.00	51.2 AV	54.0	-2.8	1.25 V	261	44.20	7.00
7	11650.00	61.0 PK	74.0	-13.0	1.00 V	151	42.10	18.90
8	11650.00	49.2 AV	54.0	-4.8	1.00 V	151	30.30	18.90

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)
– Pre-Amplifier 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.

802.11n (HT40)

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	46.0 PK	74.0	-28.0	1.35 H	129	40.00	6.00
2	5150.00	52.2 AV	54.0	-1.8	1.35 H	129	46.20	6.00
3	*5190.00	102.1 PK			1.49 H	126	62.60	39.50
4	*5190.00	92.1 AV			1.49 H	126	52.60	39.50
5	#10380.00	61.0 PK	74.0	-13.0	1.03 H	260	42.50	18.50
6	#10380.00	48.2 AV	54.0	-5.8	1.03 H	260	29.70	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	5150.00	69.4 PK	74.0	-4.6	1.22 V	73	63.40	6.00
2	5150.00	52.7 AV	54.0	-1.3	1.22 V	73	46.70	6.00
3	*5190.00	101.9 PK			1.47 V	120	62.40	39.50
4	*5190.00	92.9 AV			1.47 V	120	53.40	39.50
5	#10380.00	63.3 PK	74.0	-10.7	1.00 V	181	44.80	18.50
6	#10380.00	49.6 AV	54.0	-4.4	1.00 V	181	31.10	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)
– Pre-Amplifier 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	104.0 PK			1.49 H	141	64.40	39.60
2	*5230.00	94.4 AV			1.49 H	141	54.80	39.60
3	5350.00	57.3 PK	74.0	-16.7	1.49 H	87	51.20	6.10
4	5350.00	46.1 AV	54.0	-7.9	1.49 H	87	40.00	6.10
5	#10460.00	61.1 PK	74.0	-12.9	1.38 H	215	42.20	18.90
6	#10460.00	47.9 AV	54.0	-6.1	1.38 H	215	29.00	18.90
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	104.7 PK			1.30 V	66	65.10	39.60
2	*5230.00	95.0 AV			1.30 V	66	55.40	39.60
3	5350.00	59.1 PK	74.0	-14.9	1.23 V	73	53.00	6.10
4	5350.00	47.2 AV	54.0	-6.8	1.23 V	73	41.10	6.10
5	#10460.00	66.0 PK	74.0	-8.0	1.19 V	177	47.10	18.90
6	#10460.00	52.1 AV	54.0	-1.9	1.19 V	177	33.20	18.90

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)
– Pre-Amplifier 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	*5270.00	103.1 PK			1.00 H	136	63.40	39.70
2	*5270.00	94.3 AV			1.00 H	136	54.60	39.70
3	5350.00	58.0 PK	74.0	-16.0	1.18 H	151	51.90	6.10
4	5350.00	46.0 AV	54.0	-8.0	1.18 H	151	39.90	6.10
5	#10540.00	61.6 PK	74.0	-12.4	1.20 H	179	42.40	19.20
6	#10540.00	48.7 AV	54.0	-5.3	1.20 H	179	29.50	19.20
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	*5270.00	103.3 PK			1.00 V	62	63.60	39.70
2	*5270.00	95.3 AV			1.00 V	62	55.60	39.70
3	5350.00	58.7 PK	74.0	-15.3	1.13 V	54	52.60	6.10
4	5350.00	46.2 AV	54.0	-7.8	1.13 V	54	40.10	6.10
5	#10540.00	64.1 PK	74.0	-9.9	1.15 V	180	44.90	19.20
6	#10540.00	52.6 AV	54.0	-1.4	1.15 V	180	33.40	19.20

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)
– Pre-Amplifier 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	102.7 PK			1.30 H	145	63.00	39.70
2	*5310.00	93.0 AV			1.30 H	145	53.30	39.70
3	5350.00	67.4 PK	74.0	-6.6	1.48 H	139	61.30	6.10
4	5350.00	52.9 AV	54.0	-1.1	1.48 H	139	46.80	6.10
5	10620.00	60.5 PK	74.0	-13.5	1.06 H	244	41.50	19.00
6	10620.00	46.9 AV	54.0	-7.1	1.06 H	244	27.90	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	*5310.00	101.3 PK			1.00 V	63	61.60	39.70
2	*5310.00	92.9 AV			1.00 V	63	53.20	39.70
3	5350.00	70.4 PK	74.0	-3.6	1.49 V	119	64.30	6.10
4	5350.00	52.6 AV	54.0	-1.4	1.49 V	119	46.50	6.10
5	10620.00	62.1 PK	74.0	-11.9	1.03 V	181	43.10	19.00
6	10620.00	49.4 AV	54.0	-4.6	1.03 V	181	30.40	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)
– Pre-Amplifier 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	59.2 PK	74.0	-14.8	1.55 H	139	52.80	6.40
2	5460.00	47.4 AV	54.0	-6.6	1.55 H	139	41.00	6.40
3	#5470.00	68.4 PK	74.0	-5.6	1.61 H	138	62.00	6.40
4	#5470.00	52.6 AV	54.0	-1.4	1.61 H	138	46.20	6.40
5	*5510.00	102.0 PK			1.47 H	136	62.00	40.00
6	*5510.00	93.4 AV			1.47 H	136	53.40	40.00
7	11020.00	59.1 PK	74.0	-14.9	1.21 H	275	39.70	19.40
8	11020.00	46.9 AV	54.0	-7.1	1.21 H	275	27.50	19.40
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	58.6 PK	74.0	-15.4	1.33 V	266	52.20	6.40
2	5460.00	46.8 AV	54.0	-7.2	1.33 V	266	40.40	6.40
3	#5470.00	68.9 PK	74.0	-5.1	1.26 V	272	62.50	6.40
4	#5470.00	52.4 AV	54.0	-1.6	1.26 V	272	46.00	6.40
5	*5510.00	101.9 PK			1.72 V	226	61.90	40.00
6	*5510.00	92.7 AV			1.72 V	226	52.70	40.00
7	11020.00	59.0 PK	74.0	-15.0	1.36 V	302	39.60	19.40
8	11020.00	47.1 AV	54.0	-6.9	1.36 V	302	27.70	19.40

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)
– Pre-Amplifier 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	#5470.00	70.8 PK	74.0	-3.2	1.38 H	144	64.40	6.40
2	#5470.00	52.1 AV	54.0	-1.9	1.38 H	144	45.70	6.40
3	*5550.00	110.4 PK			1.01 H	32	70.30	40.10
4	*5550.00	101.0 AV			1.01 H	32	60.90	40.10
5	11100.00	59.5 PK	74.0	-14.5	1.16 H	340	40.60	18.90
6	11100.00	47.1 AV	54.0	-6.9	1.16 H	340	28.20	18.90
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	#5470.00	72.8 PK	74.0	-1.2	1.00 V	74	66.40	6.40
2	#5470.00	50.6 AV	54.0	-3.4	1.00 V	74	44.20	6.40
3	*5550.00	110.8 PK			1.48 V	263	70.70	40.10
4	*5550.00	102.1 AV			1.48 V	263	62.00	40.10
5	11100.00	60.1 PK	74.0	-13.9	1.26 V	149	41.20	18.90
6	11100.00	47.3 AV	54.0	-6.7	1.26 V	149	28.40	18.90

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)
– Pre-Amplifier 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 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	106.6 PK			1.00 H	143	66.40	40.20
2	*5670.00	97.9 AV			1.00 H	143	57.70	40.20
3	#5725.00	67.7 PK	74.0	-6.3	1.32 H	132	60.90	6.80
4	#5725.00	50.2 AV	54.0	-3.8	1.32 H	132	43.40	6.80
5	11340.00	58.9 PK	74.0	-15.1	1.33 H	254	39.70	19.20
6	11340.00	46.7 AV	54.0	-7.3	1.33 H	254	27.50	19.20
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	105.3 PK			1.33 V	70	65.10	40.20
2	*5670.00	96.2 AV			1.33 V	70	56.00	40.20
3	#5725.00	69.9 PK	74.0	-4.1	1.36 V	242	63.10	6.80
4	#5725.00	52.2 AV	54.0	-1.8	1.36 V	242	45.40	6.80
5	11340.00	58.9 PK	74.0	-15.1	1.17 V	264	39.70	19.20
6	11340.00	46.9 AV	54.0	-7.1	1.17 V	264	27.70	19.20

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)
– Pre-Amplifier 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	69.6 PK	74.0	-4.4	1.34 H	136	62.80	6.80
2	#5714.00	52.8 AV	54.0	-1.2	1.34 H	136	46.00	6.80
3	#5722.00	71.3 PK	78.2	-6.9	1.36 H	139	64.50	6.80
4	#5725.00	53.5 PK	78.2	-24.7	1.34 H	139	46.70	6.80
5	*5755.00	103.3 PK			1.39 H	144	62.80	40.50
6	*5755.00	94.4 AV			1.39 H	144	53.90	40.50
7	11510.00	59.1 PK	74.0	-14.9	1.45 H	201	40.80	18.30
8	11510.00	46.7 AV	54.0	-7.3	1.45 H	201	28.40	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	#5714.00	68.6 PK	74.0	-5.4	1.14 V	283	61.80	6.80
2	#5714.00	52.7 AV	54.0	-1.3	1.14 V	283	45.90	6.80
3	#5722.00	70.4 PK	78.2	-7.8	1.14 V	272	63.60	6.80
4	#5725.00	53.6 PK	78.2	-24.6	1.08 V	262	46.80	6.80
5	*5755.00	102.7 PK			1.28 V	261	62.20	40.50
6	*5755.00	94.2 AV			1.28 V	261	53.70	40.50
7	11510.00	59.5 PK	74.0	-14.5	1.15 V	243	41.20	18.30
8	11510.00	46.6 AV	54.0	-7.4	1.15 V	243	28.30	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)
– Pre-Amplifier 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	110.5 PK			1.45 H	136	70.00	40.50
2	*5795.00	101.0 AV			1.45 H	136	60.50	40.50
3	#5850.00	57.2 PK	78.2	-21.0	1.58 H	127	50.30	6.90
4	#5853.00	74.1 PK	78.2	-4.1	1.54 H	129	67.10	7.00
5	#5861.00	71.6 PK	74.0	-2.4	1.38 H	128	64.60	7.00
6	#5861.00	52.2 AV	54.0	-1.8	1.38 H	128	45.20	7.00
7	11590.00	61.6 PK	74.0	-12.4	1.21 H	1	43.10	18.50
8	11590.00	49.4 AV	54.0	-4.6	1.21 H	1	30.90	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	*5795.00	110.0 PK			1.20 V	283	69.50	40.50
2	*5795.00	101.2 AV			1.20 V	283	60.70	40.50
3	#5850.00	54.9 PK	78.2	-23.3	1.26 V	298	48.00	6.90
4	#5853.00	73.3 PK	78.2	-4.9	1.25 V	283	66.30	7.00
5	#5861.00	69.4 PK	74.0	-4.6	1.19 V	262	62.40	7.00
6	#5861.00	51.8 AV	54.0	-2.2	1.19 V	262	44.80	7.00
7	11590.00	60.6 PK	74.0	-13.4	1.06 V	177	42.10	18.50
8	11590.00	48.6 AV	54.0	-5.4	1.06 V	177	30.10	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)
– Pre-Amplifier 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

802.11n (20MHz)

CHANNEL	TX Channel 116	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	57.12	32.1 QP	40.0	-7.9	1.99 H	248	46.70	-14.60
2	132.95	31.9 QP	43.5	-11.6	1.99 H	108	47.20	-15.30
3	234.05	37.0 QP	46.0	-9.0	1.49 H	87	52.60	-15.60
4	265.16	41.2 QP	46.0	-4.8	1.00 H	80	55.00	-13.80
5	527.64	33.6 QP	46.0	-12.4	1.49 H	123	41.60	-8.00
6	724.01	32.1 QP	46.0	-13.9	1.49 H	221	36.10	-4.00
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	57.12	27.7 QP	40.0	-12.3	1.00 V	111	42.30	-14.60
2	99.89	31.4 QP	43.5	-12.1	1.00 V	4	50.20	-18.80
3	166.00	29.8 QP	43.5	-13.7	1.00 V	168	44.00	-14.20
4	265.16	30.7 QP	46.0	-15.3	1.00 V	153	44.50	-13.80
5	531.53	28.4 QP	46.0	-17.6	1.00 V	195	36.30	-7.90
6	799.84	30.2 QP	46.0	-15.8	1.50 V	147	32.40	-2.20

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)
– Pre-Amplifier 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. 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.

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Nov. 11, 2014	Nov. 10, 2015
RF signal cable Woken	5D-FB	Cable-HYC01-01	Dec. 26, 2014	Dec. 25, 2015
LISN ROHDE & SCHWARZ (EUT)	ESH3-Z5	835239/001	Mar. 02, 2015	Mar. 01, 2016
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Jul. 21, 2014	Jul. 20, 2015
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

Notes: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The test was performed in HwaYa Shielded Room 1.

3. The VCCI Site Registration No. is C-2040.

4.2.3 Test Procedures

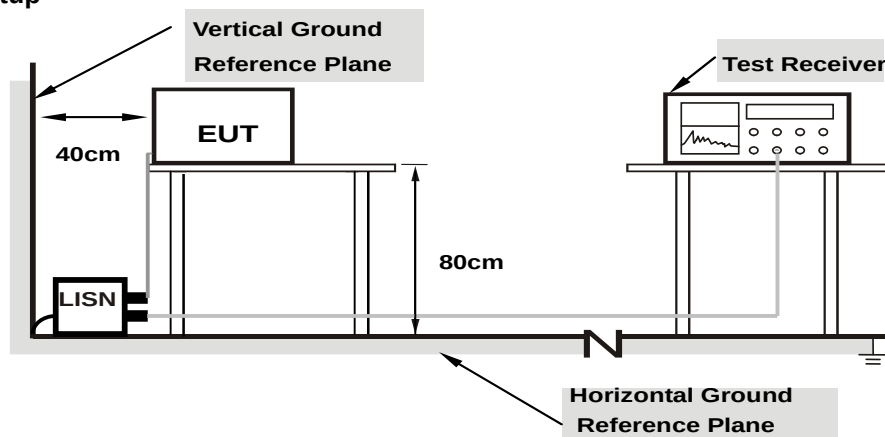
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- 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



Note: 1.Support units were connected to second LISN.

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

4.2.6 EUT Operating Conditions

Same as 4.1.6.

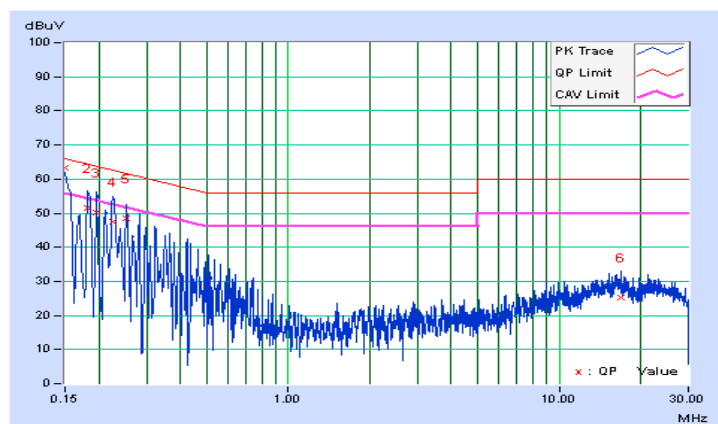
4.2.7 Test Results

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	0.15000	0.05	63.26	45.42	63.31	45.47	66.00	56.00	-2.69	-10.53
2	0.18170	0.06	51.50	34.61	51.56	34.67	64.41	54.41	-12.85	-19.74
3	0.19692	0.06	50.16	33.16	50.22	33.22	63.74	53.74	-13.52	-20.52
4	0.22434	0.06	47.35	32.71	47.41	32.77	62.66	52.66	-15.25	-19.89
5	0.25166	0.06	48.35	33.63	48.41	33.69	61.70	51.70	-13.29	-18.01
6	16.91999	0.76	24.33	14.77	25.09	15.53	60.00	50.00	-34.91	-34.47

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.

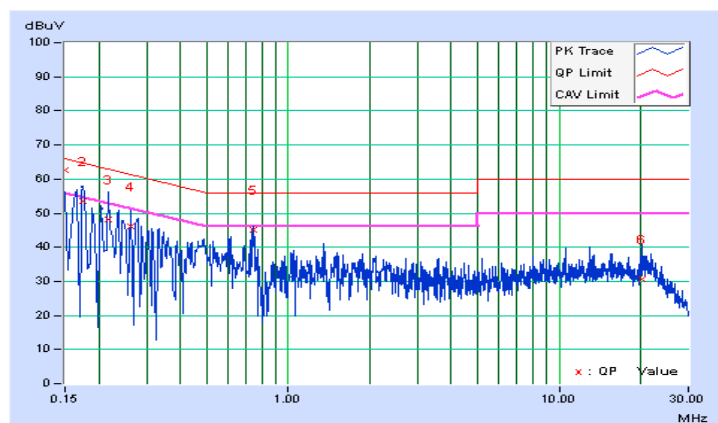


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	0.05	62.43	45.33	62.48	45.38	66.00	56.00	-3.52	-10.62
2	0.17374	0.05	53.58	36.60	53.63	36.65	64.78	54.78	-11.15	-18.13
3	0.21647	0.05	48.20	31.91	48.25	31.96	62.95	52.95	-14.70	-20.99
4	0.26339	0.05	46.19	31.82	46.24	31.87	61.32	51.32	-15.08	-19.45
5	0.74041	0.07	45.20	32.22	45.27	32.29	56.00	46.00	-10.73	-13.71
6	20.32951	0.73	29.75	21.88	30.48	22.61	60.00	50.00	-29.52	-27.39

REMARKS:

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



4.3 Transmit Power Measurement

4.3.1 Limits of Transmit Power Measurement

Operation Band	EUT Category		LIMIT
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p $\leq$ 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
		Fixed point-to-point Access Point	1 Watt (30 dBm)
		Indoor Access Point	1 Watt (30 dBm)
	√	Mobile and Portable client device	250mW (24 dBm)
U-NII-2A	√		250mW (24 dBm) or 11 dBm+10 log B*
U-NII-2C	√		250mW (24 dBm) or 11 dBm+10 log B*
U-NII-3	√		1 Watt (30 dBm)

*B is the 26 dB emission bandwidth in megahertz

Per KDB 662911 Method of conducted output power measurement on IEEE 802.11 devices,

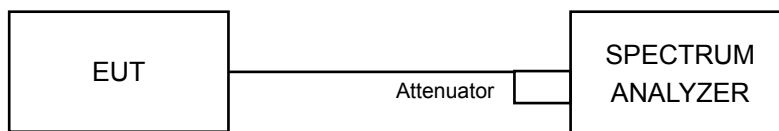
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

Array Gain = $5 \log(N_{ANT}/N_{SS})$ dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

For power measurements on all other devices: Array Gain = $10 \log(N_{ANT}/N_{SS})$ dB.

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

FOR AVERAGE POWER MEASUREMENT

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.

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:

802.11a

CHAN.	FREQ. (MHz)	MAXIMUM CONDUCTED POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
36	5180	11.66	11.48	28.715	14.58	24	PASS
40	5200	11.89	11.47	29.481	14.70	24	PASS
48	5240	13.16	13.01	40.700	16.10	24	PASS
52	5260	12.95	12.93	39.358	15.95	23.96	PASS
60	5300	13.51	14.37	49.792	16.97	24	PASS
64	5320	13.46	14.48	50.236	17.01	24	PASS
100	5500	12.94	13.04	39.816	16.00	24	PASS
116	5580	17.43	17.14	107.096	20.30	24	PASS
140	5700	12.84	12.88	38.64	15.87	23.94	PASS
149	5745	12.68	13.39	40.362	16.06	30	PASS
157	5785	15.81	15.57	74.165	18.70	30	PASS
165	5825	14.77	14.86	60.612	17.83	30	PASS

NOTE:

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

CHAIN 0

1. $11\text{dBm} + 10\log(19.75) = 23.96\text{dBm} < 24\text{dBm}$.
2. $11\text{dBm} + 10\log(22.38) = 24.50\text{dBm} > 24\text{dBm}$.
3. $11\text{dBm} + 10\log(22.94) = 24.61\text{dBm} > 24\text{dBm}$.
4. $11\text{dBm} + 10\log(21.29) = 24.28\text{dBm} > 24\text{dBm}$.
5. $11\text{dBm} + 10\log(36.34) = 26.60\text{dBm} > 24\text{dBm}$.
6. $11\text{dBm} + 10\log(19.68) = 23.94\text{dBm} < 24\text{dBm}$.

CHAIN 1

1. $11\text{dBm} + 10\log(21.52) = 24.33\text{dBm} > 24\text{dBm}$.
2. $11\text{dBm} + 10\log(21.96) = 24.42\text{dBm} > 24\text{dBm}$.
3. $11\text{dBm} + 10\log(23.55) = 24.72\text{dBm} > 24\text{dBm}$.
4. $11\text{dBm} + 10\log(21.24) = 24.27\text{dBm} > 24\text{dBm}$.
5. $11\text{dBm} + 10\log(33.26) = 26.22\text{dBm} > 24\text{dBm}$.
6. $11\text{dBm} + 10\log(21.29) = 24.28\text{dBm} > 24\text{dBm}$.

802.11n (HT20)

CHAN.	FREQ. (MHz)	MAXIMUM CONDUCTED POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
36	5180	11.12	11.27	26.339	14.21	24	PASS
40	5200	11.46	11.52	28.187	14.50	24	PASS
48	5240	13.06	12.69	38.808	15.89	24	PASS
52	5260	12.77	12.75	37.759	15.77	24	PASS
60	5300	12.65	12.67	36.901	15.67	24	PASS
64	5320	13.43	14.27	48.759	16.88	24	PASS
100	5500	12.89	12.93	39.088	15.92	24	PASS
116	5580	17.66	17.05	109.044	20.38	24	PASS
140	5700	12.32	12.51	34.885	15.43	24	PASS
149	5745	12.63	13.03	38.414	15.84	30	PASS
157	5785	15.56	15.45	71.05	18.52	30	PASS
165	5825	14.88	15.04	62.676	17.97	30	PASS

NOTE:

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

CHAIN 0

1. $11\text{dBm} + 10\log(22.01) = 24.43\text{dBm} > 24\text{dBm}$.
2. $11\text{dBm} + 10\log(21.52) = 24.33\text{dBm} > 24\text{dBm}$.
3. $11\text{dBm} + 10\log(21.37) = 24.30\text{dBm} > 24\text{dBm}$.
4. $11\text{dBm} + 10\log(23.80) = 24.77\text{dBm} > 24\text{dBm}$.
5. $11\text{dBm} + 10\log(35.23) = 26.47\text{dBm} > 24\text{dBm}$.
6. $11\text{dBm} + 10\log(24.55) = 24.90\text{dBm} > 24\text{dBm}$.

CHAIN 1

1. $11\text{dBm} + 10\log(21.94) = 24.41\text{dBm} > 24\text{dBm}$.
2. $11\text{dBm} + 10\log(20.02) = 24.01\text{dBm} > 24\text{dBm}$.
3. $11\text{dBm} + 10\log(20.17) = 24.05\text{dBm} > 24\text{dBm}$.
4. $11\text{dBm} + 10\log(23.04) = 24.62\text{dBm} > 24\text{dBm}$.
5. $11\text{dBm} + 10\log(33.65) = 26.27\text{dBm} > 24\text{dBm}$.
6. $11\text{dBm} + 10\log(23.14) = 24.64\text{dBm} > 24\text{dBm}$.

802.11n (HT40)

CHAN.	FREQ. (MHz)	MAXIMUM CONDUCTED POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
38	5190	10.95	10.96	24.919	13.97	24	PASS
46	5230	12.51	12.24	34.573	15.39	24	PASS
54	5270	11.91	11.88	30.941	14.91	24	PASS
62	5310	11.00	11.27	25.986	14.15	24	PASS
102	5510	9.73	8.43	16.363	12.14	24	PASS
110	5550	16.92	16.94	98.635	19.94	24	PASS
134	5670	12.22	12.65	35.08	15.45	24	PASS
151	5755	7.70	8.05	12.271	10.89	30	PASS
159	5795	14.50	15.04	60.099	17.79	30	PASS

NOTE:

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

CHAIN 0

1. $11\text{dBm} + 10\log(66.84) = 29.25\text{dBm} > 24\text{dBm}$.
2. $11\text{dBm} + 10\log(42.77) = 27.31\text{dBm} > 24\text{dBm}$.
3. $11\text{dBm} + 10\log(40.62) = 27.09\text{dBm} > 24\text{dBm}$.
4. $11\text{dBm} + 10\log(96.62) = 30.85\text{dBm} > 24\text{dBm}$.
5. $11\text{dBm} + 10\log(67.22) = 29.27\text{dBm} > 24\text{dBm}$.

CHAIN 1

1. $11\text{dBm} + 10\log(55.02) = 28.41\text{dBm} > 24\text{dBm}$.
2. $11\text{dBm} + 10\log(41.93) = 27.23\text{dBm} > 24\text{dBm}$.
3. $11\text{dBm} + 10\log(43.78) = 27.41\text{dBm} > 24\text{dBm}$.
4. $11\text{dBm} + 10\log(98.27) = 30.92\text{dBm} > 24\text{dBm}$.
5. $11\text{dBm} + 10\log(70.86) = 29.50\text{dBm} > 24\text{dBm}$.

26dB BANDWIDTH:

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
36	5180	19.50	19.53	PASS
40	5200	19.64	19.51	PASS
48	5240	22.19	22.74	PASS
52	5260	19.75	21.52	PASS
60	5300	22.38	21.96	PASS
64	5320	22.94	23.55	PASS
100	5500	21.29	21.24	PASS
116	5580	36.34	33.26	PASS
140	5700	19.68	21.29	PASS

802.11n (HT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
36	5180	19.78	19.65	PASS
40	5200	20.08	20.81	PASS
48	5240	23.44	21.84	PASS
52	5260	22.01	21.94	PASS
60	5300	21.52	20.02	PASS
64	5320	21.37	20.17	PASS
100	5500	23.80	23.04	PASS
116	5580	35.23	33.65	PASS
140	5700	24.55	23.14	PASS

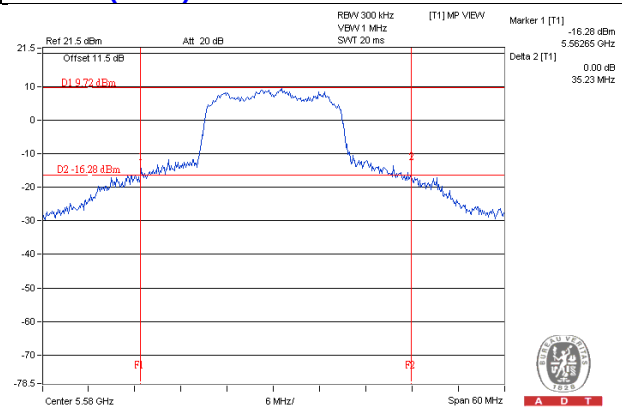
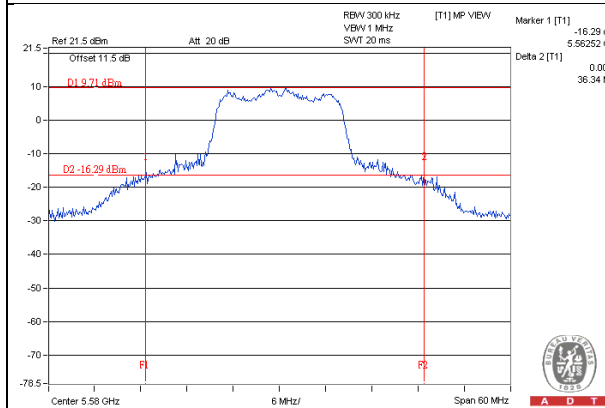
802.11n (HT40)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
38	5190	50.65	45.10	PASS
46	5230	48.10	71.44	PASS
54	5270	66.84	55.02	PASS
62	5310	42.77	41.93	PASS
102	5510	40.62	43.78	PASS
110	5550	96.62	98.27	PASS
134	5670	67.22	70.86	PASS

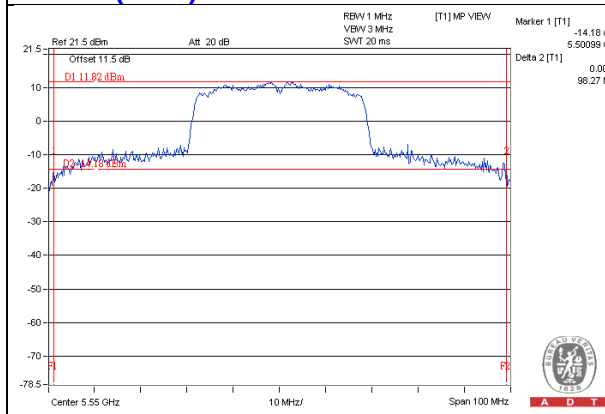
SPECTRUM PLOT OF WORST VALUE

802.11a

802.11n (HT20)



802.11n (HT40)



OCCUPIED BANDWIDTH:

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)	
		CHAIN 0	CHAIN 1
36	5180	16.56	16.56
40	5200	16.56	16.56
48	5240	16.80	16.56
52	5260	16.68	16.56
60	5300	16.80	16.68
64	5320	16.68	16.56
100	5500	16.80	16.56
116	5580	18.12	17.52
140	5700	16.68	16.56
149	5745	16.61	16.61
157	5785	17.04	17.16
165	5825	16.80	16.68

802.11n (HT20)

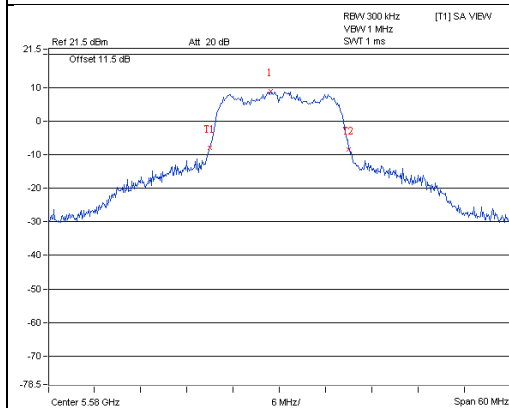
CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)	
		CHAIN 0	CHAIN 1
36	5180	17.76	17.64
40	5200	17.64	17.64
48	5240	17.76	17.76
52	5260	17.64	17.76
60	5300	17.88	17.76
64	5320	17.64	17.76
100	5500	17.76	17.76
116	5580	18.48	18.12
140	5700	17.76	17.76
149	5745	17.76	17.64
157	5785	18.00	17.88
165	5825	17.88	17.64

802.11n (HT40)

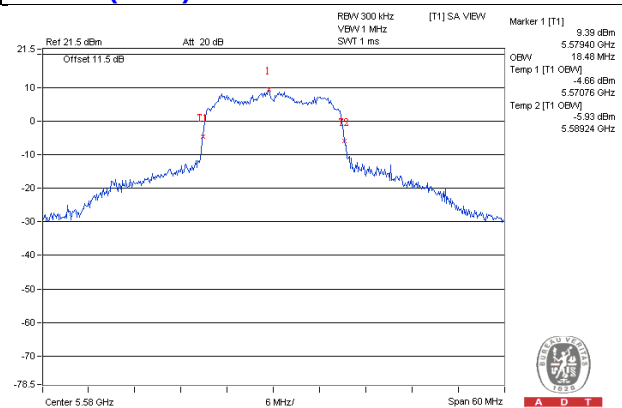
CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)	
		CHAIN 0	CHAIN 1
38	5190	36.72	36.60
46	5230	36.72	36.84
54	5270	36.72	36.72
62	5310	36.72	36.72
102	5510	36.72	36.72
110	5550	37.56	37.32
134	5670	36.72	36.84
151	5755	36.84	36.72
159	5795	37.08	37.08

SPECTRUM PLOT OF WORST VALUE

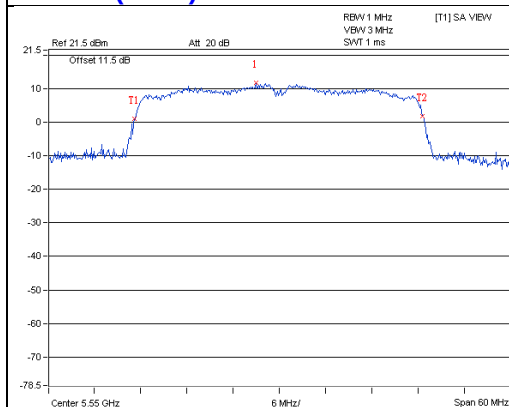
802.11a



802.11n (HT20)



802.11n (HT40)



EUT MAXIMUM CONDUCTED POWER

802.11a

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	50.236	17.01
5470~5725	107.096	20.30

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

802.11n (HT20)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	48.759	16.88
5470~5725	109.044	20.38

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

802.11n (HT40)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	30.941	14.91
5470~5725	98.635	19.94

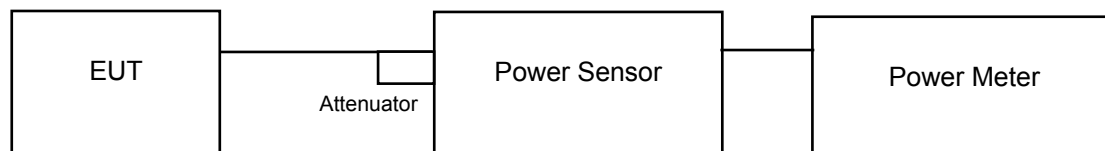
NOTE: Manufacturer provides Transmit Power Control description to meet this requirement.

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	
	√	Mobile and Portable client device	11dBm/ MHz
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:

802.11a, 802.11n (HT20):

Using method SA-1 alternative

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 30 kHz, Set VBW ≥ 1 MHz, Detector = RMS
- 3) Set Channel power measure = 1MHz
- 4) Sweep time =20ms.
- 5) Perform a single sweep.
- 6) Record the max value

802.11a, 802.11n (HT40):

Using method SA-2 alternative

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 30 kHz, Set VBW ≥ 1 MHz, Detector = RMS
- 3) Set Channel power measure = 1MHz
- 4) Sweep time =20ms.
- 5) Perform a single sweep.
- 6) Record the max value and add 10 log (1/duty cycle)

For U-NII-3 band:

802.11a, 802.11n (HT20):

- 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 $BWCF = 10\log(500 \text{ kHz}/300\text{kHz})$

802.11a, 802.11n (HT40):

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 1 MHz, Set VBW $\geq$ 3 MHz, Detector = RMS
- 3) 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)

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

802.11a

CHAN.	CHAN. FREQ. (MHz)	PSD (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1			
36	5180	-1.58	-1.17	1.64	11	PASS
40	5200	-1.35	-0.81	1.94	11	PASS
48	5240	0.09	0.67	3.40	11	PASS
52	5260	0.40	0.35	3.39	11	PASS
60	5300	0.44	0.67	3.57	11	PASS
64	5320	0.33	0.92	3.65	11	PASS
100	5500	0.68	0.75	3.73	11	PASS
116	5580	4.49	3.88	7.21	11	PASS
140	5700	-0.23	0.20	3.00	11	PASS

NOTE:

1. For U-NII-1 Band:

Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = -0.014 \text{ dBi} < 6 \text{ dBi}$, so the power density limit shall be not reduced.

For U-NII-2A Band:

Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 0.109 \text{ dBi} < 6 \text{ dBi}$, so the power density limit shall be not reduced.

For U-NII-2C Band:

Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 0.290 \text{ dBi} < 6 \text{ dBi}$, so the power density limit shall be not reduced.

2. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

CHAN.	CHAN. FREQ. (MHz)	PSD (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1			
36	5180	-1.60	-2.41	1.02	11	PASS
40	5200	-1.15	-1.96	1.47	11	PASS
48	5240	-0.28	-0.21	2.77	11	PASS
52	5260	-0.01	-0.58	2.72	11	PASS
60	5300	-0.26	-0.66	2.55	11	PASS
64	5320	0.44	0.53	3.50	11	PASS
100	5500	0.63	0.79	3.72	11	PASS
116	5580	4.44	3.53	7.02	11	PASS
140	5700	-0.43	-0.61	2.49	11	PASS

NOTE:

1. For U-NII-1 Band:

Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = -0.014 \text{ dBi} < 6 \text{ dBi}$, so the power density limit shall be not reduced.

For U-NII-2A Band:

Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 0.109 \text{ dBi} < 6 \text{ dBi}$, so the power density limit shall be not reduced.

For U-NII-2C Band:

Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 0.290 \text{ dBi} < 6 \text{ dBi}$, so the power density limit shall be not reduced.

2. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT40)

CHAN.	FREQ. (MHz)	PSD (dBm)		TOTAL PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	TOTAL PSD WITH DUTY FACTOR (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1					
38	5190	-5.83	-5.99	-2.90	0.14	-2.76	11	PASS
46	5230	-4.46	-4.15	-1.29	0.14	-1.15	11	PASS
54	5270	-4.50	-4.86	-1.67	0.14	-1.53	11	PASS
62	5310	-5.21	-5.96	-2.56	0.14	-2.42	11	PASS
102	5510	-6.50	-7.48	-3.96	0.14	-3.82	11	PASS
110	5550	0.73	-0.54	3.15	0.14	3.29	11	PASS
134	5670	-4.66	-5.27	-1.95	0.14	-1.81	11	PASS

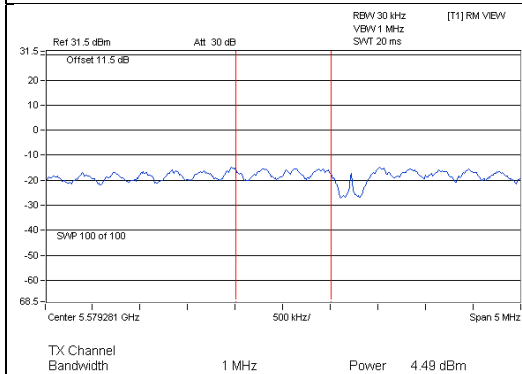
NOTE:

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- For U-NII-1 Band:**
Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = -0.014 \text{ dBi} < 6 \text{ dBi}$, so the power density limit shall be not reduced.
- For U-NII-2A Band:**
Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 0.109 \text{ dBi} < 6 \text{ dBi}$, so the power density limit shall be not reduced.
- For U-NII-2C Band:**
Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 0.290 \text{ dBi} < 6 \text{ dBi}$, so the power density limit shall be not reduced.
- Refer to section 3.3 for duty cycle spectrum plot.

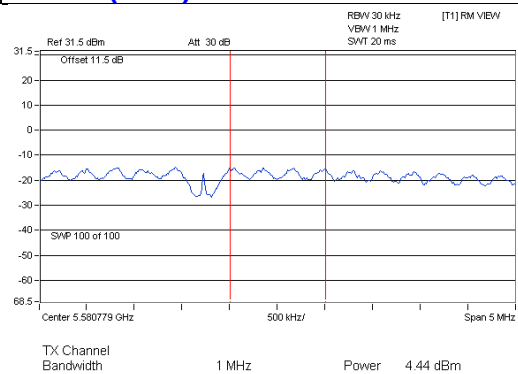
SPECTRUM PLOT OF WORST VALUE

802.11a

802.11n (HT20)

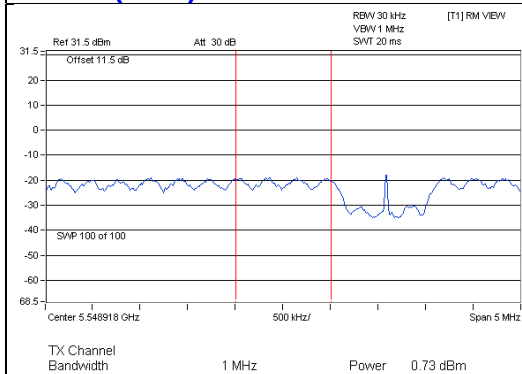


A D T



A D T

802.11n (HT40)



A D T

For U-NII-3 Band

802.11a

TX chain	Channel	Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	10 log (N=2) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	PASS /FAIL
0	149	5745	-7.18	-4.96	3.01	-1.95	30	PASS
	157	5785	-4.02	-1.80	3.01	1.21	30	PASS
	165	5825	-5.15	-2.93	3.01	0.08	30	PASS
1	149	5745	-6.82	-4.60	3.01	-1.59	30	PASS
	157	5785	-4.11	-1.89	3.01	1.12	30	PASS
	165	5825	-5.03	-2.81	3.01	0.20	30	PASS

NOTE:

- Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 0.286 \text{ dBi} < 6 \text{ dBi}$, so the power density limit shall be not reduced.
- Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

TX chain	Channel	Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	10 log (N=2) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	PASS /FAIL
0	149	5745	-6.87	-4.65	3.01	-1.64	30	PASS
	157	5785	-4.23	-2.01	3.01	1.00	30	PASS
	165	5825	-5.32	-3.10	3.01	-0.09	30	PASS
1	149	5745	-7.09	-4.87	3.01	-1.86	30	PASS
	157	5785	-4.40	-2.18	3.01	0.83	30	PASS
	165	5825	-5.49	-3.27	3.01	-0.26	30	PASS

NOTE:

- Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 0.286 \text{ dBi} < 6 \text{ dBi}$, so the power density limit shall be not reduced.
- Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

TX chain	Channel	Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	10 log (N=2) dB	Duty factor	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	PASS /FAIL
0	151	5755	-16.46	-14.24	3.01	0.14	-11.09	30	PASS
	159	5795	-9.50	-7.28	3.01	0.14	-4.13	30	PASS
1	151	5755	-16.34	-14.12	3.01	0.14	-10.97	30	PASS
	159	5795	-9.23	-7.01	3.01	0.14	-3.86	30	PASS

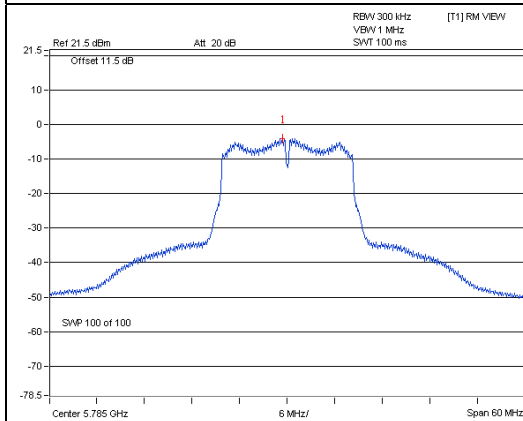
NOTE:

- Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 0.286 \text{ dBi} < 6 \text{ dBi}$, so the power density limit shall be not reduced.
- Refer to section 3.3 for duty cycle spectrum plot.

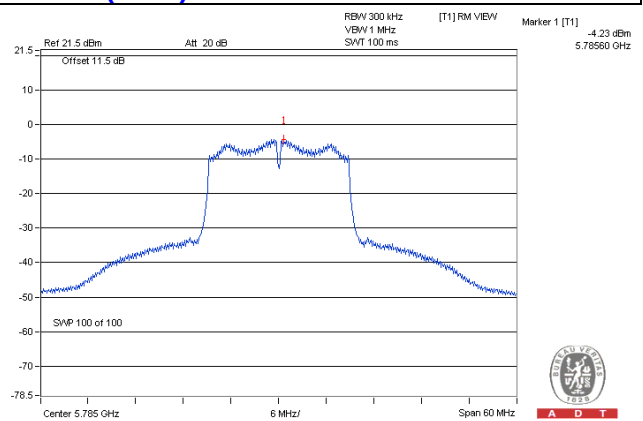
SPECTRUM PLOT OF WORST VALUE

802.11a

802.11n (HT20)

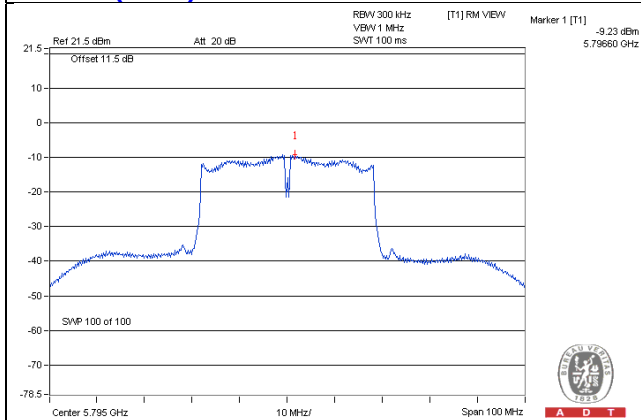


A D T



A D T

802.11n (HT40)



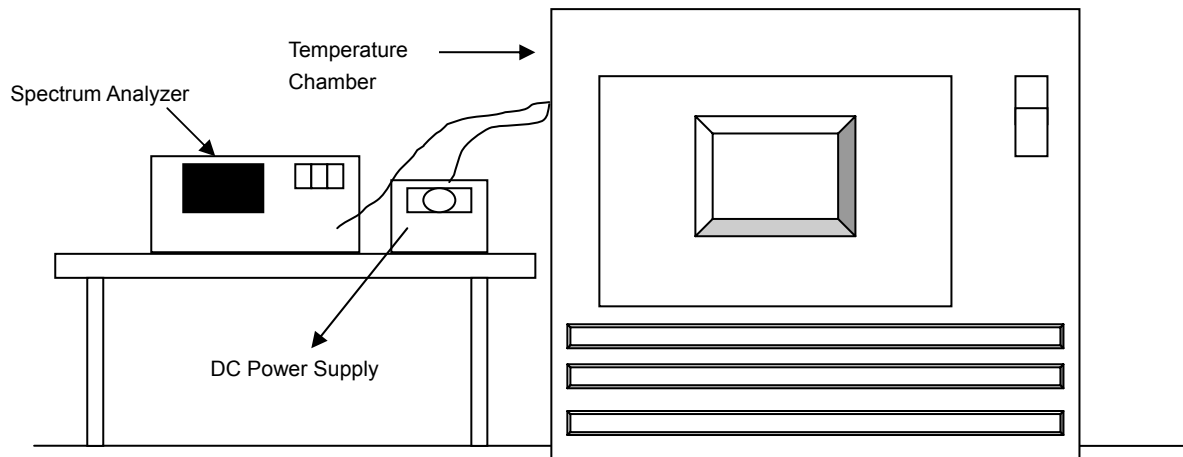
A D T

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: 5700MHz									
Temp. (°C)	Power Supply (Vdc)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
50	120	5700.0166	0.00029	5700.0153	0.00027	5700.0154	0.00027	5700.0118	0.00021
40	120	5699.9903	-0.00017	5699.9891	-0.00019	5699.9921	-0.00014	5699.9883	-0.00021
30	120	5699.9825	-0.00031	5699.9822	-0.00031	5699.9864	-0.00024	5699.9867	-0.00023
20	120	5699.9705	-0.00052	5699.9729	-0.00048	5699.9701	-0.00052	5699.9715	-0.00050
10	120	5700.0199	0.00035	5700.0197	0.00035	5700.0186	0.00033	5700.0181	0.00032
0	120	5699.9862	-0.00024	5699.9824	-0.00031	5699.9870	-0.00023	5699.9857	-0.00025
-10	120	5700.0131	0.00023	5700.0120	0.00021	5700.0131	0.00023	5700.0105	0.00018
-20	120	5699.9915	-0.00015	5699.9912	-0.00015	5699.9920	-0.00014	5699.9912	-0.00015
-30	120	5699.9819	-0.00032	5699.9841	-0.00028	5699.9825	-0.00031	5699.9857	-0.00025

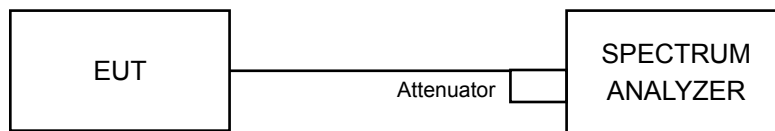
Frequency Stability Versus Temp.									
Operating Frequency: 5700MHz									
Temp. (°C)	Power Supply (Vdc)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
20	138	5699.9714	-0.00050	5699.9729	-0.00048	5699.9703	-0.00052	5699.9726	-0.00048
	120	5699.9705	-0.00052	5699.9729	-0.00048	5699.9701	-0.00052	5699.9715	-0.00050
	102	5699.9702	-0.00052	5699.9739	-0.00046	5699.9708	-0.00051	5699.9713	-0.00050

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

802.11a

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	15.35	15.68	0.5	PASS
157	5785	15.43	15.82	0.5	PASS
165	5825	15.63	15.69	0.5	PASS

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	15.52	16.37	0.5	PASS
157	5785	15.55	16.35	0.5	PASS
165	5825	15.50	16.31	0.5	PASS

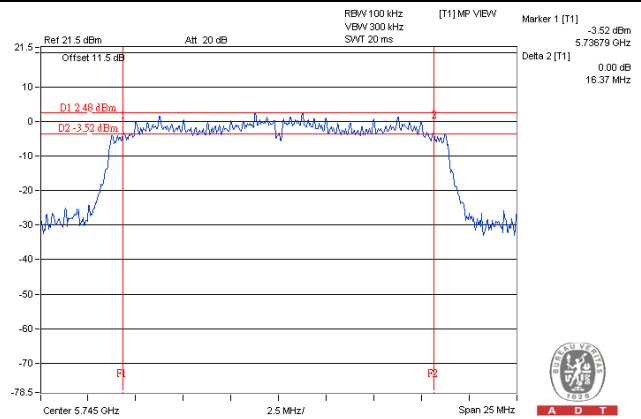
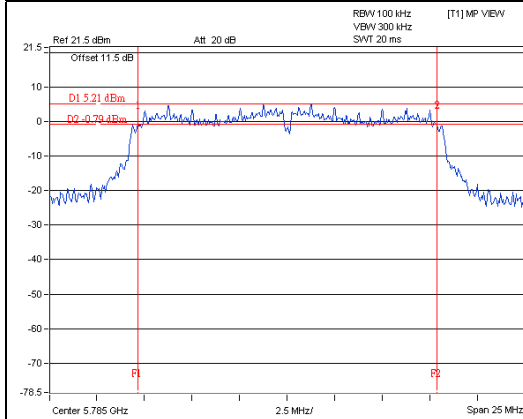
802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
151	5755	36.41	36.46	0.5	PASS
159	5795	36.41	36.43	0.5	PASS

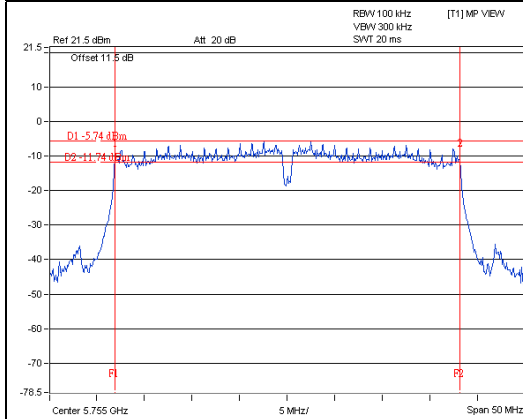
SPECTRUM PLOT OF WORST VALUE

802.11a

802.11n (HT20)



802.11n (HT40)



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:

Linko EMC/RF Lab

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

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