FCC Test Report

Report No.:	RF130605C26A
FCC ID:	I88Z5SPM9382
Test Model:	Z5SPM9382
Received Date:	Mar. 15, 2016
Test Date:	Apr. 13 ~ May 05, 2016
Issued Date:	May 10, 2016
Applicant:	ZyXEL Communications Corporation
Address:	No. 2, Gongye E. 9th Road, Hsinchu Science Park, Hsinchu, Taiwan, R.O.C
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
Test Location:	No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN (R.O.C.)

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Release Control Record

Issue No.	Description	Date Issued
RF130605C26A	Original release.	May 10, 2016

1 Certificate of Conformity

Product:	5G Wireless Card
Brand:	ZyXEL
Test Model:	Z5SPM9382
Sample Status:	Engineering sample
Applicant:	ZyXEL Communications Corporation
Test Date:	Apr. 13 ~ May 05, 2016
Standard:	47 CFR FCC Part 15, Subpart E (Section 15.407) ANSI C63.10:2013

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

Prepared by : _____ , **Date:** May 10, 2016

Pettie Chen / Senior Specialist

Approved by : _____ , **Date:** May 10, 2016

Ken Liu / Senior Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (SECTION 15.407)			
FCC Clause	Test Item	Result	Remarks
15.407(b)(6)	AC Power Conducted Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -34.04dB at 10.45000MHz.
15.407(b) (1/2/3/4(i/ii)/6)	Radiated Emissions & Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -1.0dB at 5080.00, 5150.00, 5360.00MHz.
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	Antenna connector is Reverse SMA Plug not a standard connector.

*For U-NII-3 band compliance with rule part 15.407(b)(i), the OOBE test plots were recorded in Annex A.

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expended Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.44 dB
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	3.59 dB
	200MHz ~1000MHz	3.60 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	5G Wireless Card
Brand	ZyXEL
Test Model	Z5SPM9382
Status of EUT	Engineering sample
Power Supply Rating	5Vdc (Power supply)
Modulation Type	64QAM, 16QAM, QPSK, BPSK for OFDM
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 & 5745 ~ 5825MHz
Number of Channel	5180 ~ 5240MHz: 4 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 5745 ~ 5825MHz: 5 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40)
Output Power	5180 ~ 5240MHz: 558.148mW 5745 ~ 5825MHz: 763.258mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Data Cable Supplied	NA

Note:

1. This report is prepared for FCC class II permissive change. This report is issued as a supplementary report of the original report no.: RF130605C26 & RF130605C26-1. Difference compared with the original report are updating standard to new rule version for U-NII-1 & U-NII-3 band. All tests had been re-tested.
2. The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and two receivers.

Modulation Mode	TX FUNCTION
802.11a	2TX
802.11n (HT20)	2TX
802.11n (HT40)	2TX

3. The following antenna was provided to the EUT.

Type	Brand	Model	Connector	Gain(dBi)
Omini-directional dipole	LYNwave	AOA120-221030-000526	Reverse SMA Plug	3.0

4. The power setting as below.

	802.11a	802.11n (HT20)		802.11n (HT40)
EUT Category: Indoor Access Point mode				
CH 36	19.5	19.5	CH 38	16
CH 40	23	23	CH 46	22.5
CH 48	22	22	CH 151	18
CH 149	19	19	CH 159	20
CH 157	24	24		
CH 159	21.5	20		
EUT Category: Mobile and Portable client device				
CH 36	19.5	19	CH 38	16
CH 40	19.5	19	CH 46	19
CH 48	19.5	19	CH 151	18
CH 149	19	19	CH 159	20
CH 157	24	24		
CH 159	21.5	20		

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

3.2 Description of Test Modes

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 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	EUT Category
A	√	√	√	√	Indoor Access Point mode
B	-	-	-	√	Mobile and Portable client device

Where **RE≥1G:** Radiated Emission above 1GHz **RE<1G:** Radiated Emission below 1GHz
PLC: Power Line Conducted Emission **APCM:** Antenna Port Conducted Measurement
NOTE: "-": Means no effect.

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)
A	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6.0
A	802.11n (HT20)		36 to 48	36, 40, 48	OFDM	BPSK	7.2
A	802.11n (HT40)		38 to 46	38, 46	OFDM	BPSK	15.0
A	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6.0
A	802.11n (HT20)		149 to 165	149, 157, 165	OFDM	BPSK	7.2
A	802.11n (HT40)		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)
A	802.11a	5180-5320	36 to 64	157	OFDM	BPSK	6.0
A	802.11a	5745-5825	149 to 165		OFDM	BPSK	6.0

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)
A	802.11a	5180-5320	36 to 64	157	OFDM	BPSK	6.0
A	802.11a	5745-5825	149 to 165		OFDM	BPSK	6.0

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)
A, B	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6.0
A, B	802.11n (HT20)		36 to 48	36, 40, 48	OFDM	BPSK	7.2
A, B	802.11n (HT40)		38 to 46	38, 46	OFDM	BPSK	15.0
A, B	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6.0
A, B	802.11n (HT20)		149 to 165	149, 157, 165	OFDM	BPSK	7.2
A, B	802.11n (HT40)		151 to 159	151, 159	OFDM	BPSK	15.0

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
RE≥1G	26deg. C, 66%RH	120Vac, 60Hz	Alan Wu
RE<1G	26deg. C, 66%RH	120Vac, 60Hz	Alan Wu
PLC	26deg. C, 66%RH	120Vac, 60Hz	Alan Wu
APCM	25deg. C, 60%RH	120Vac, 60Hz	Frank Liu

3.3 Duty Cycle of Test Signal

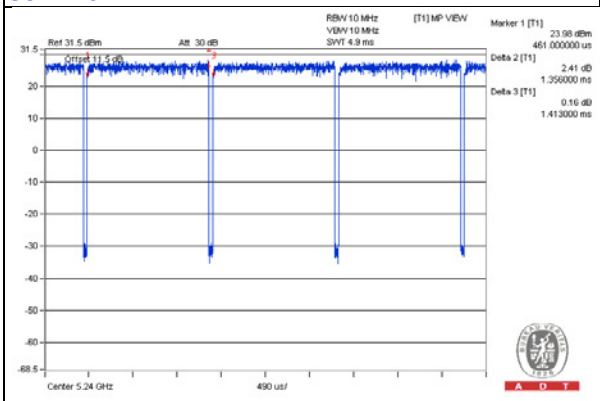
Duty cycle of test signal is < 98 %, duty factor is required

802.11a: Duty cycle = 1.356/1.413 = 0.96, Duty factor = 10 * log(1/0.96) = 0.18

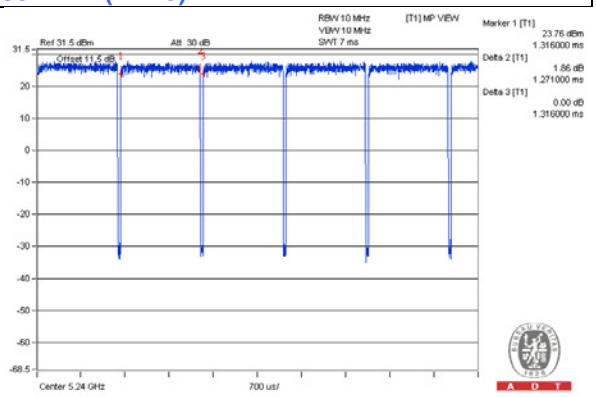
802.11n (HT20): Duty cycle = 1.271/1.316 = 0.966, Duty factor = 10 * log(1/0.966) = 0.15

802.11n (HT40): Duty cycle = 0.631/0.665 = 0.949, Duty factor = 10 * log(1/0.949) = 0.23

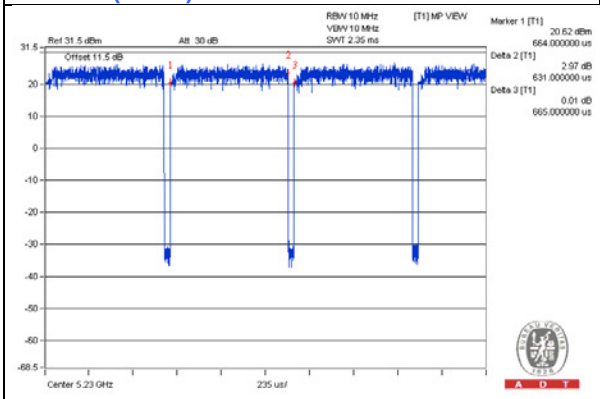
802.11a



802.11n (HT20)



802.11n (HT40)



3.4 Description of Support Units

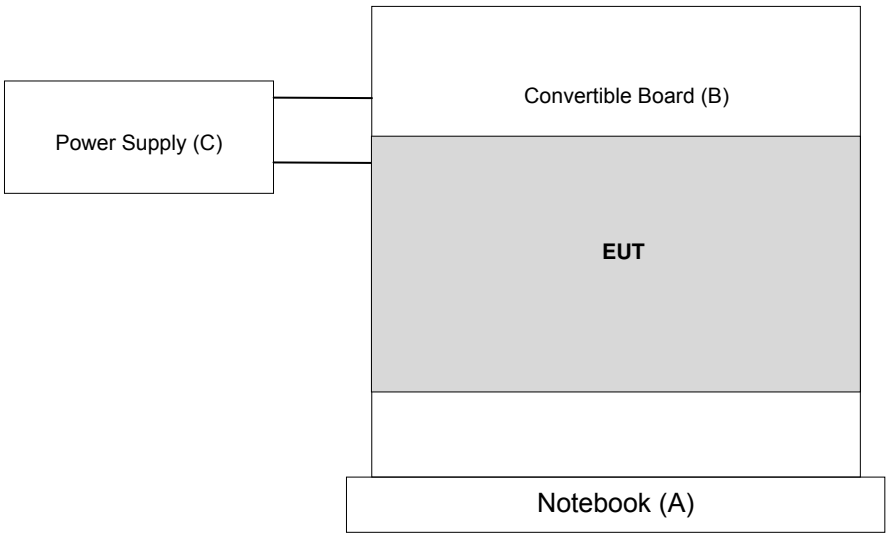
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook	DELL	E5410	6RP2YM1	FCC DoC Approved	-
B.	Convertible Board	NA	NA	NA	NA	Provied by client.
C.	Power Supply	Topward	6603D	NA	NA	-

Note:

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

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standard

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)
KDB 789033 D02 General UNII Test Procedure New Rules v01r02
KDB 662911 D01 Multiple Transmitter Output v02r01
ANSI C63.10-2013

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

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table.

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 Procedure New Rules v01r02	FIELD STRENGTH at 3m	
	PK:74 (dBμV/m)	AV:54 (dBμV/m)
Applicable To	EIRP Limit	Equivalent Field Strength at 3m
15.407(b)(1)	PK:-27 (dBm/MHz)	PK:68.2 (dBμV/m)
15.407(b)(2)		
15.407(b)(3)		
15.407(b)(4)(i)	PK:-27 (dBm/MHz) *1 PK:10 (dBm/MHz) *2 PK:15.6 (dBm/MHz) *3 PK:27 (dBm/MHz) *4	PK:68.2 (dBμV/m) *1 PK:105.2 (dBμV/m) *2 PK:110.8 (dBμV/m) *3 PK:122.2 (dBμV/m) *4
15.407(b)(4)(ii)	FIELD STRENGTH at 3m / § 15.247(d),	
	PK:74 (dBμV/m)	AV:54 (dBμV/m)

*1 beyond 75 MHz or more above of the band edge.
*2 below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above.
*3 below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above.
*4 from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

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

$$E = \frac{1000000\sqrt{30P}}{3}$$ μV/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	ESCI	100424	Oct. 12, 2015	Oct. 11, 2016
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Jul. 08, 2015	Jul. 07, 2016
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Jan. 07, 2016	Jan. 06, 2017
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-1170	Jan. 08, 2016	Jan. 07, 2017
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Jan. 18, 2016	Jan. 17, 2017
Preamplifier Agilent	8449B	3008A01960	Aug. 09, 2015	Aug. 08, 2016
Preamplifier Agilent	8447D	2944A10631	Aug. 09, 2015	Aug. 08, 2016
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH4-02(295012+309220)	Aug. 09, 2015	Aug. 08, 2016
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH4-03(250724)	Aug. 09, 2015	Aug. 08, 2016
Software BV ADT	ADT_Radiated_V7.6.15.9.4	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021703	NA	NA
Turn Table BV ADT	TT100	TT93021703	NA	NA
Turn Table Controller BV ADT	SC100.	SC93021703	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	815221	Oct. 18, 2015	Oct. 17, 2016
High Speed Peak Power Meter	ML2495A	0824011	Jul. 09, 2015	Jul. 08, 2016
Power Sensor	MA2411B	0738171	Jul. 09, 2015	Jul. 08, 2016

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 4.
3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 460141.
5. The IC Site Registration No. is IC7450F-4.

4.1.3 Test Procedure

a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

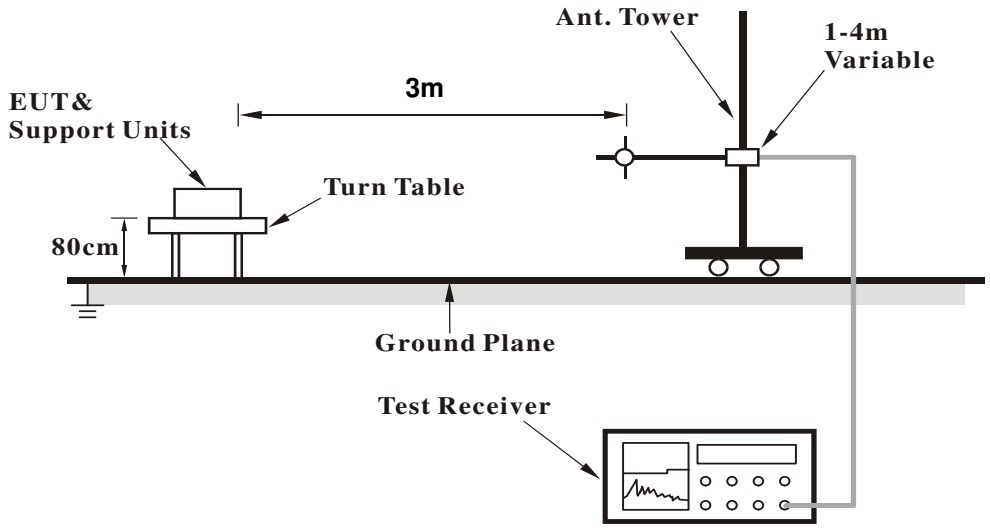
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

4.1.4 Deviation from Test Standard

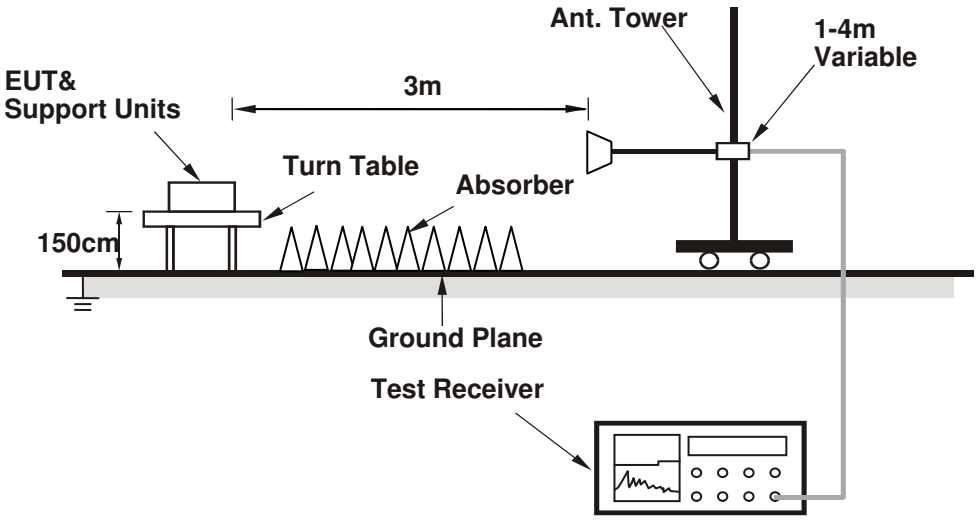
No deviation.

4.1.5 Test Setup

<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 Condition

a. Plugged the EUT into the notebook via convertible board and placed them on the testing table.
b. The notebook run a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.
c. The necessary accessories enable the system in full functions.

4.1.7 Test Results

ABOVE 1GHz DATA

802.11a

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	5150.00	58.3 PK	74.0	-15.7	1.00 H	123	52.80	5.50
2	5150.00	44.1 AV	54.0	-9.9	1.00 H	123	38.60	5.50
3	*5180.00	105.4 PK			1.00 H	121	65.90	39.50
4	*5180.00	96.3 AV			1.00 H	121	56.80	39.50
5	#10360.00	59.4 PK	74.0	-14.6	1.00 H	10	41.90	17.50
6	#10360.00	47.1 AV	54.0	-6.9	1.00 H	10	29.60	17.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	**5150.00**	**73.0 PK**	**74.0**	**-1.0**	**1.21 V**	**122**	**67.50**	**5.50**
2	5150.00	52.4 AV	54.0	-1.6	1.21 V	122	46.90	5.50
3	*5180.00	118.7 PK			1.20 V	124	79.20	39.50
4	*5180.00	108.9 AV			1.20 V	124	69.40	39.50
5	#10360.00	60.1 PK	74.0	-13.9	1.00 V	29	42.60	17.50
6	#10360.00	47.7 AV	54.0	-6.3	1.00 V	29	30.20	17.50

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)– 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) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	57.6 PK	74.0	-16.4	1.07 H	102	52.10	5.50
2	5150.00	44.1 AV	54.0	-9.9	1.07 H	102	38.60	5.50
3	*5200.00	108.8 PK			1.09 H	109	69.20	39.60
4	*5200.00	99.1 AV			1.09 H	109	59.50	39.60
5	#10400.00	59.8 PK	74.0	-14.2	1.00 H	7	41.80	18.00
6	#10400.00	47.2 AV	54.0	-6.8	1.00 H	7	29.20	18.00
7	15600.00	64.5 PK	74.0	-9.5	1.00 H	60	45.80	18.70
8	15600.00	50.7 AV	54.0	-3.3	1.00 H	60	32.00	18.70
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	70.1 PK	74.0	-3.9	1.02 V	128	64.60	5.50
2	5150.00	52.0 AV	54.0	-2.0	1.02 V	128	46.50	5.50
3	*5200.00	120.7 PK			1.00 V	122	81.10	39.60
4	*5200.00	110.3 AV			1.00 V	122	70.70	39.60
5	#10400.00	60.9 PK	74.0	-13.1	1.00 V	20	42.90	18.00
6	#10400.00	48.6 AV	54.0	-5.4	1.00 V	20	30.60	18.00
7	15600.00	68.8 PK	74.0	-5.2	1.79 V	117	50.10	18.70
8	15600.00	52.9 AV	54.0	-1.1	1.79 V	117	34.20	18.70

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)– 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) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	5120.00	56.8 PK	74.0	-17.2	1.00 H	95	51.40	5.40
2	5120.00	43.4 AV	54.0	-10.6	1.00 H	95	38.00	5.40
3	*5240.00	109.5 PK			1.00 H	108	69.90	39.60
4	*5240.00	99.4 AV			1.00 H	108	59.80	39.60
5	5350.00	57.6 PK	74.0	-16.4	1.00 H	96	51.90	5.70
6	5350.00	44.6 AV	54.0	-9.4	1.00 H	96	38.90	5.70
7	#10480.00	60.4 PK	74.0	-13.6	1.00 H	6	42.40	18.00
8	#10480.00	48.2 AV	54.0	-5.8	1.00 H	6	30.20	18.00
9	15720.00	64.3 PK	74.0	-9.7	1.00 H	66	45.80	18.50
10	15720.00	50.6 AV	54.0	-3.4	1.00 H	66	32.10	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	5120.00	62.2 PK	74.0	-11.8	1.16 V	79	56.80	5.40
2	5120.00	52.4 AV	54.0	-1.6	1.16 V	79	47.00	5.40
3	*5240.00	121.9 PK			1.00 V	75	82.30	39.60
4	*5240.00	111.7 AV			1.00 V	75	72.10	39.60
5	5350.00	62.3 PK	74.0	-11.7	1.00 V	75	56.60	5.70
6	5350.00	48.2 AV	54.0	-5.8	1.00 V	75	42.50	5.70
7	#10480.00	60.5 PK	74.0	-13.5	1.00 V	25	42.50	18.00
8	#10480.00	48.3 AV	54.0	-5.7	1.00 V	25	30.30	18.00
9	15720.00	65.8 PK	74.0	-8.2	1.86 V	116	47.30	18.50
10	15720.00	52.7 AV	54.0	-1.3	1.86 V	116	34.20	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) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	5080.00	56.8 PK	74.0	-17.2	2.35 H	229	51.40	5.40
2	5080.00	43.4 AV	54.0	-10.6	2.35 H	229	38.00	5.40
3	#5644.00	59.1 PK	68.2	-9.1	2.34 H	228	53.00	6.10
4	*5745.00	106.6 PK			2.35 H	229	66.20	40.40
5	*5745.00	96.7 AV			2.35 H	229	56.30	40.40
6	#5948.80	58.3 PK	68.2	-9.9	2.34 H	228	51.50	6.80
7	11490.00	59.6 PK	74.0	-14.4	1.00 H	8	40.30	19.30
8	11490.00	47.5 AV	54.0	-6.5	1.00 H	8	28.20	19.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5080.00	63.7 PK	74.0	-10.3	1.48 V	170	58.30	5.40
2	**5080.00**	**53.0 AV**	**54.0**	**-1.0**	**1.48 V**	**170**	**47.60**	**5.40**
3	#5640.00	58.7 PK	68.2	-9.5	1.47 V	169	52.60	6.10
4	*5745.00	117.6 PK			1.47 V	139	77.20	40.40
5	*5745.00	108.1 AV			1.47 V	139	67.70	40.40
6	#5931.20	58.3 PK	68.2	-9.9	1.47 V	169	51.60	6.70
7	11490.00	61.3 PK	74.0	-12.7	1.00 V	173	42.00	19.30
8	11490.00	49.4 AV	54.0	-4.6	1.00 V	173	30.10	19.30

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)– 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) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	4960.00	54.8 PK	74.0	-19.2	2.14 H	224	49.50	5.30
2	4960.00	42.2 AV	54.0	-11.8	2.14 H	224	36.90	5.30
3	*5785.00	113.0 PK			2.14 H	227	72.50	40.50
4	*5785.00	102.9 AV			2.14 H	227	62.40	40.50
5	11570.00	60.6 PK	74.0	-13.4	1.00 H	9	41.60	19.00
6	11570.00	48.7 AV	54.0	-5.3	1.00 H	9	29.70	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	4960.00	63.1 PK	74.0	-10.9	1.16 V	79	57.80	5.30
2	4960.00	52.7 AV	54.0	-1.3	1.16 V	79	47.40	5.30
3	*5785.00	119.9 PK			1.14 V	224	79.40	40.50
4	*5785.00	109.8 AV			1.14 V	224	69.30	40.50
5	11570.00	62.0 PK	74.0	-12.0	1.00 V	172	43.00	19.00
6	11570.00	50.0 AV	54.0	-4.0	1.00 V	172	31.00	19.00

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)– 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) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	5360.00	57.7 PK	74.0	-16.3	1.84 H	175	52.10	5.60
2	5360.00	45.2 AV	54.0	-8.8	1.84 H	175	39.60	5.60
3	#5647.20	58.4 PK	68.2	-9.8	1.83 H	176	52.30	6.10
4	*5825.00	109.4 PK			1.83 H	177	68.80	40.60
5	*5825.00	99.3 AV			1.83 H	177	58.70	40.60
6	#5953.60	57.9 PK	68.2	-10.3	1.83 H	176	51.20	6.70
7	11650.00	60.1 PK	74.0	-13.9	1.00 H	3	41.60	18.50
8	11650.00	48.2 AV	54.0	-5.8	1.00 H	3	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	5360.00	65.1 PK	74.0	-8.9	1.59 V	1	59.50	5.60
2	5360.00	52.9 AV	54.0	-1.1	1.59 V	1	47.30	5.60
3	5632.80	60.0 PK	68.2	-8.2	1.59 V	141	53.90	6.10
4	*5825.00	120.1 PK			1.60 V	141	79.50	40.60
5	*5825.00	109.8 AV			1.60 V	141	69.20	40.60
6	5965.60	59.6 PK	68.2	-8.6	1.59 V	141	52.90	6.70
7	11650.00	61.9 PK	74.0	-12.1	1.10 V	204	43.40	18.50
8	11650.00	49.6 AV	54.0	-4.4	1.10 V	204	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.

802.11n (HT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	58.2 PK	74.0	-15.8	1.05 H	110	52.70	5.50
2	5150.00	45.1 AV	54.0	-8.9	1.05 H	110	39.60	5.50
3	*5180.00	105.5 PK			1.00 H	123	66.00	39.50
4	*5180.00	95.8 AV			1.00 H	123	56.30	39.50
5	#10360.00	61.1 PK	74.0	-12.9	1.10 H	111	43.60	17.50
6	#10360.00	48.2 AV	54.0	-5.8	1.10 H	111	30.70	17.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	72.2 PK	74.0	-1.8	1.12 V	98	66.70	5.50
2	**5150.00**	**53.0 AV**	**54.0**	**-1.0**	**1.12 V**	**98**	**47.50**	**5.50**
3	*5180.00	116.9 PK			1.13 V	130	77.40	39.50
4	*5180.00	107.2 AV			1.13 V	130	67.70	39.50
5	#10360.00	61.6 PK	74.0	-12.4	1.00 V	71	44.10	17.50
6	#10360.00	48.2 AV	54.0	-5.8	1.00 V	71	30.70	17.50

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)– 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) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	58.2 PK	74.0	-15.8	1.08 H	107	52.70	5.50
2	5150.00	44.3 AV	54.0	-9.7	1.08 H	107	38.80	5.50
3	*5200.00	109.9 PK			1.09 H	109	70.30	39.60
4	*5200.00	99.4 AV			1.09 H	109	59.80	39.60
5	#10400.00	59.2 PK	74.0	-14.8	1.00 H	9	41.20	18.00
6	#10400.00	46.7 AV	54.0	-7.3	1.00 H	9	28.70	18.00
7	15600.00	63.8 PK	74.0	-10.2	1.00 H	60	45.10	18.70
8	15600.00	50.7 AV	54.0	-3.3	1.00 H	60	32.00	18.70
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	70.2 PK	74.0	-3.8	1.15 V	97	64.70	5.50
2	5150.00	52.6 AV	54.0	-1.4	1.15 V	97	47.10	5.50
3	*5200.00	120.5 PK			1.00 V	78	80.90	39.60
4	*5200.00	110.4 AV			1.00 V	78	70.80	39.60
5	#10400.00	60.5 PK	74.0	-13.5	1.00 V	25	42.50	18.00
6	#10400.00	48.4 AV	54.0	-5.6	1.00 V	25	30.40	18.00
7	15600.00	69.0 PK	74.0	-5.0	1.78 V	117	50.30	18.70
8	15600.00	52.8 AV	54.0	-1.2	1.78 V	117	34.10	18.70

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)– 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) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	5120.00	56.8 PK	74.0	-17.2	1.00 H	105	51.40	5.40
2	5120.00	43.5 AV	54.0	-10.5	1.00 H	105	38.10	5.40
3	*5240.00	109.1 PK			1.00 H	108	69.50	39.60
4	*5240.00	99.2 AV			1.00 H	108	59.60	39.60
5	5350.00	55.7 PK	74.0	-18.3	1.00 H	105	50.00	5.70
6	5350.00	43.3 AV	54.0	-10.7	1.00 H	105	37.60	5.70
7	#10480.00	59.3 PK	74.0	-14.7	1.00 H	5	41.30	18.00
8	#10480.00	47.8 AV	54.0	-6.2	1.00 H	5	29.80	18.00
9	15720.00	64.0 PK	74.0	-10.0	1.00 H	67	45.50	18.50
10	15720.00	50.5 AV	54.0	-3.5	1.00 H	67	32.00	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	5120.00	62.3 PK	74.0	-11.7	1.16 V	78	56.90	5.40
2	5120.00	52.4 AV	54.0	-1.6	1.16 V	78	47.00	5.40
3	*5240.00	120.6 PK			1.00 V	77	81.00	39.60
4	*5240.00	111.5 AV			1.00 V	77	71.90	39.60
5	5350.00	59.8 PK	74.0	-14.2	1.10 V	71	54.10	5.70
6	5350.00	49.0 AV	54.0	-5.0	1.10 V	71	43.30	5.70
7	#10480.00	60.1 PK	74.0	-13.9	1.00 V	21	42.10	18.00
8	#10480.00	48.0 AV	54.0	-6.0	1.00 V	21	30.00	18.00
9	15720.00	67.6 PK	74.0	-6.4	1.86 V	117	49.10	18.50
10	15720.00	52.6 AV	54.0	-1.4	1.86 V	117	34.10	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 149	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	5440.00	57.6 PK	74.0	-16.4	1.00 H	186	51.80	5.80
2	5440.00	44.9 AV	54.0	-9.1	1.00 H	186	39.10	5.80
3	#5621.60	58.8 PK	68.2	-9.4	1.00 H	183	52.70	6.10
4	*5745.00	105.5 PK			1.00 H	184	65.10	40.40
5	*5745.00	96.0 AV			1.00 H	184	55.60	40.40
6	#5956.80	58.7 PK	68.2	-9.5	1.00 H	183	52.00	6.70
7	11490.00	59.0 PK	74.0	-15.0	1.00 H	3	39.70	19.30
8	11490.00	47.1 AV	54.0	-6.9	1.00 H	3	27.80	19.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5440.00	62.8 PK	74.0	-11.2	1.04 V	134	57.00	5.80
2	5440.00	52.7 AV	54.0	-1.3	1.04 V	134	46.90	5.80
3	#5635.20	61.0 PK	68.2	-7.2	1.04 V	113	54.90	6.10
4	*5745.00	118.3 PK			1.05 V	114	77.90	40.40
5	*5745.00	107.9 AV			1.05 V	114	67.50	40.40
6	#5935.20	60.4 PK	68.2	-7.8	1.04 V	113	53.70	6.70
7	11490.00	60.2 PK	74.0	-13.8	1.00 V	183	40.90	19.30
8	11490.00	48.6 AV	54.0	-5.4	1.00 V	183	29.30	19.30

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)– 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) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	4960.00	55.8 PK	74.0	-18.2	1.00 H	236	50.50	5.30
2	4960.00	43.6 AV	54.0	-10.4	1.00 H	236	38.30	5.30
3	*5785.00	111.0 PK			1.00 H	233	70.50	40.50
4	*5785.00	101.1 AV			1.00 H	233	60.60	40.50
5	11570.00	60.5 PK	74.0	-13.5	1.00 H	3	41.50	19.00
6	11570.00	48.6 AV	54.0	-5.4	1.00 H	3	29.60	19.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4960.00	63.9 PK	74.0	-10.1	1.22 V	80	58.60	5.30
2	4960.00	52.8 AV	54.0	-1.2	1.22 V	80	47.50	5.30
3	*5785.00	120.3 PK			1.00 V	114	79.80	40.50
4	*5785.00	110.7 AV			1.00 V	114	70.20	40.50
5	11570.00	61.8 PK	74.0	-12.2	1.00 V	189	42.80	19.00
6	11570.00	49.9 AV	54.0	-4.1	1.00 V	189	30.90	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 165	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	5360.00	59.2 PK	74.0	-14.8	1.00 H	170	53.60	5.60
2	5360.00	46.2 AV	54.0	-7.8	1.00 H	170	40.60	5.60
3	#5617.60	58.7 PK	68.2	-9.5	1.00 H	178	52.60	6.10
4	*5825.00	108.5 PK			1.00 H	178	67.90	40.60
5	*5825.00	98.9 AV			1.00 H	178	58.30	40.60
6	#5940.00	58.7 PK	68.2	-9.5	1.00 H	178	52.00	6.70
7	11650.00	59.6 PK	74.0	-14.4	1.00 H	10	41.10	18.50
8	11650.00	48.1 AV	54.0	-5.9	1.00 H	10	29.60	18.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5360.00	64.6 PK	74.0	-9.4	1.11 V	59	59.00	5.60
2	5360.00	52.8 AV	54.0	-1.2	1.11 V	59	47.20	5.60
3	#5631.20	60.5 PK	68.2	-7.7	1.03 V	114	54.40	6.10
4	*5825.00	119.6 PK			1.04 V	114	79.00	40.60
5	*5825.00	110.2 AV			1.04 V	114	69.60	40.60
6	#5978.40	59.6 PK	68.2	-8.6	1.03 V	114	52.90	6.70
7	11650.00	60.4 PK	74.0	-13.6	1.00 V	193	41.90	18.50
8	11650.00	49.0 AV	54.0	-5.0	1.00 V	193	30.50	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.

802.11n (HT40)

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

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	59.0 PK	74.0	-15.0	1.10 H	100	53.50	5.50
2	5150.00	45.2 AV	54.0	-8.8	1.10 H	100	39.70	5.50
3	*5190.00	98.6 PK			1.51 H	159	59.10	39.50
4	*5190.00	88.1 AV			1.51 H	159	48.60	39.50
5	#10380.00	62.0 PK	74.0	-12.0	1.10 H	360	44.20	17.80
6	#10380.00	48.2 AV	54.0	-5.8	1.10 H	360	30.40	17.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	72.9 PK	74.0	-1.1	1.00 V	80	67.40	5.50
2	5150.00	52.8 AV	54.0	-1.2	1.00 V	80	47.30	5.50
3	*5190.00	110.7 PK			1.00 V	78	71.20	39.50
4	*5190.00	101.3 AV			1.00 V	78	61.80	39.50
5	#10380.00	62.1 PK	74.0	-11.9	1.20 V	40	44.30	17.80
6	#10380.00	48.5 AV	54.0	-5.5	1.20 V	40	30.70	17.80

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)– 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) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	58.1 PK	74.0	-15.9	1.32 H	158	52.60	5.50
2	5150.00	45.6 AV	54.0	-8.4	1.32 H	158	40.10	5.50
3	*5230.00	104.6 PK			1.00 H	107	65.00	39.60
4	*5230.00	94.2 AV			1.00 H	107	54.60	39.60
5	#10460.00	60.4 PK	74.0	-13.6	1.00 H	160	42.40	18.00
6	#10460.00	48.2 AV	54.0	-5.8	1.00 H	160	30.20	18.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	68.5 PK	74.0	-5.5	1.53 V	150	63.00	5.50
2	5150.00	52.8 AV	54.0	-1.2	1.53 V	150	47.30	5.50
3	*5230.00	116.0 PK			1.49 V	137	76.40	39.60
4	*5230.00	106.2 AV			1.49 V	137	66.60	39.60
5	#10460.00	61.0 PK	74.0	-13.0	1.40 V	182	43.00	18.00
6	#10460.00	48.3 AV	54.0	-5.7	1.40 V	182	30.30	18.00

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)– 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) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	5400.00	60.1 PK	74.0	-13.9	1.00 H	260	54.40	5.70
2	5400.00	46.5 AV	54.0	-7.5	1.00 H	260	40.80	5.70
3	#5640.00	61.9 PK	68.2	-6.3	1.44 H	182	55.80	6.10
4	*5755.00	101.5 PK			1.44 H	182	61.00	40.50
5	*5755.00	91.7 AV			1.44 H	182	51.20	40.50
6	#5953.60	61.3 PK	68.2	-6.9	1.44 H	182	54.60	6.70
7	11510.00	59.5 PK	74.0	-14.5	1.00 H	130	40.40	19.10
8	11510.00	47.2 AV	54.0	-6.8	1.00 H	130	28.10	19.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5400.00	62.7 PK	74.0	-11.3	1.08 V	283	57.00	5.70
2	5400.00	52.7 AV	54.0	-1.3	1.08 V	283	47.00	5.70
3	#5620.80	59.5 PK	68.2	-8.7	1.00 V	115	53.40	6.10
4	*5755.00	113.8 PK			1.00 V	116	73.30	40.50
5	*5755.00	103.8 AV			1.00 V	116	63.30	40.50
6	#5964.00	59.5 PK	68.2	-8.7	1.00 V	115	52.80	6.70
7	11510.00	60.5 PK	74.0	-13.5	1.10 V	150	41.40	19.10
8	11510.00	47.7 AV	54.0	-6.3	1.10 V	150	28.60	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.
6. " # ": The radiated frequency is out of the restricted band.

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

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	5360.00	58.0 PK	74.0	-16.0	1.35 H	310	52.40	5.60
2	5360.00	45.9 AV	54.0	-8.1	1.35 H	310	40.30	5.60
3	#5636.00	58.8 PK	68.2	-9.4	N/A H	N/A	52.70	6.10
4	*5795.00	105.0 PK			1.00 H	234	64.50	40.50
5	*5795.00	95.8 AV			1.00 H	234	55.30	40.50
6	#5983.20	60.0 PK	68.2	-8.2	1.00 H	233	53.30	6.70
7	11590.00	59.5 PK	74.0	-14.5	1.10 H	20	40.80	18.70
8	11590.00	45.4 AV	54.0	-8.6	1.10 H	20	26.70	18.70
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5360.00	65.8 PK	74.0	-8.2	1.22 V	282	60.20	5.60
2	**5360.00**	**53.0 AV**	**54.0**	**-1.0**	**1.22 V**	**282**	**47.40**	**5.60**
3	5626.40	59.6 PK	68.2	-8.6	1.00 V	261	53.50	6.10
4	*5795.00	116.9 PK			1.00 V	116	76.40	40.50
5	*5795.00	106.7 AV			1.00 V	116	66.20	40.50
6	5955.20	59.2 PK	68.2	-9.0	1.00 V	261	52.50	6.70
7	11590.00	61.3 PK	74.0	-12.7	1.00 V	120	42.60	18.70
8	11590.00	47.6 AV	54.0	-6.4	1.00 V	120	28.90	18.70

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)– 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

802.11a

CHANNEL	TX Channel 157	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	99.75	42.4 QP	43.5	-1.1	1.50 H	216	61.00	-18.60
2	142.44	36.7 QP	43.5	-6.8	2.00 H	224	50.80	-14.10
3	233.64	40.2 QP	46.0	-5.8	1.24 H	254	56.10	-15.90
4	299.62	44.7 QP	46.0	-1.3	1.00 H	249	57.50	-12.80
5	497.54	35.2 QP	46.0	-10.8	1.50 H	208	44.70	-9.50
6	528.58	35.3 QP	46.0	-10.7	1.50 H	235	44.30	-9.00
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	39.60	31.3 QP	40.0	-8.7	1.00 V	1	46.00	-14.70
2	99.75	42.3 QP	43.5	-1.2	1.00 V	243	60.90	-18.60
3	142.44	35.4 QP	43.5	-8.1	1.00 V	104	49.50	-14.10
4	165.73	33.8 QP	43.5	-9.7	1.00 V	79	47.90	-14.10
5	297.68	41.3 QP	46.0	-4.7	1.50 V	137	54.20	-12.90
6	528.58	28.6 QP	46.0	-17.4	1.00 V	279	37.60	-9.00

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

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.	Date Of Calibration	Due Date Of Calibration
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Nov. 16, 2015	Nov. 15, 2016
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond1-01	Dec. 26, 2015	Dec. 25, 2016
LISN ROHDE & SCHWARZ (EUT)	ESH3-Z5	835239/001	Feb. 26, 2016	Feb. 25, 2017
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Jul. 24, 2015	Jul. 23, 2016
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

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

4.2.3 Test Procedure

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

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

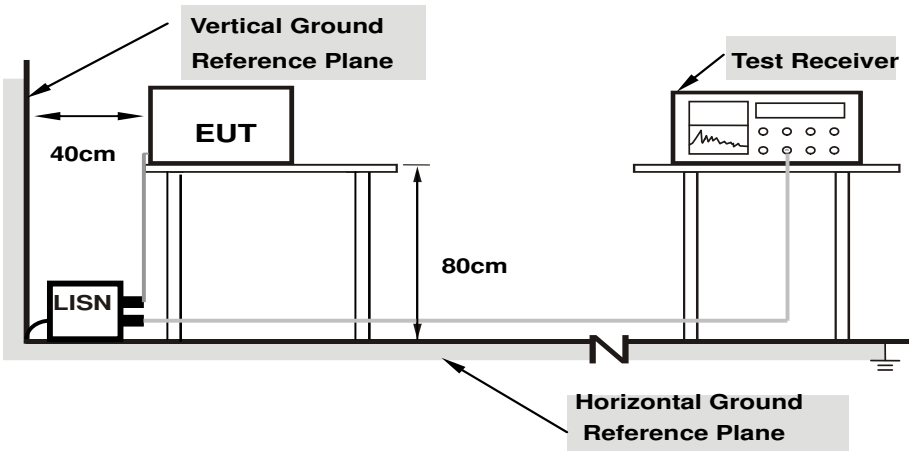
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Condition

Same as 4.1.6.

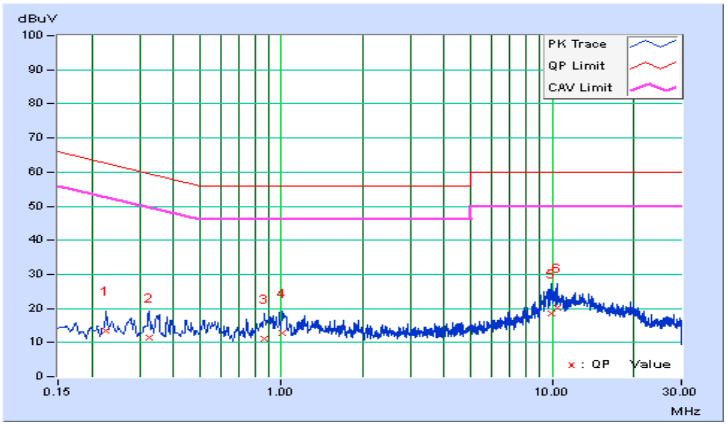
4.2.7 Test Results

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.22600	9.98	3.33	-1.01	13.31	8.97	62.60	52.60	-49.28	-43.62
2	0.32544	10.03	1.31	-3.57	11.34	6.46	59.57	49.57	-48.23	-43.11
3	0.86600	10.12	0.99	-2.61	11.11	7.51	56.00	46.00	-44.89	-38.49
4	1.00600	10.14	2.71	-0.58	12.85	9.56	56.00	46.00	-43.15	-36.44
5	9.89000	10.62	7.97	1.40	18.59	12.02	60.00	50.00	-41.41	-37.98
6	**10.45000**	**10.65**	**9.54**	**5.31**	**20.19**	**15.96**	**60.00**	**50.00**	**-39.81**	**-34.04**

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.

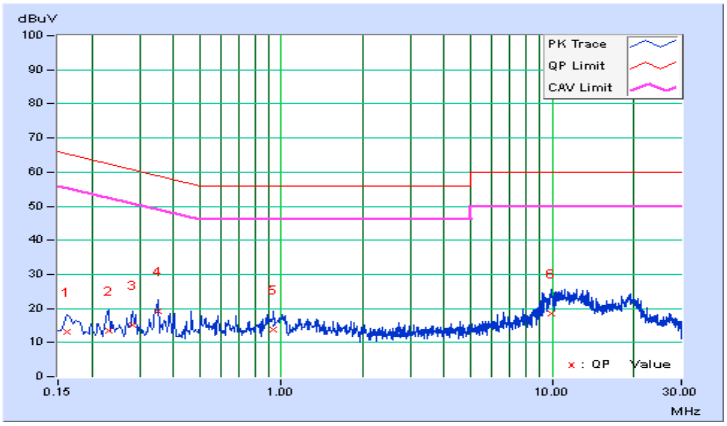


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16190	9.96	3.33	-2.41	13.29	7.55	65.37	55.37	-52.08	-47.82
2	0.22985	9.98	3.53	-1.75	13.51	8.23	62.46	52.46	-48.94	-44.22
3	0.28228	10.01	5.06	-2.12	15.07	7.89	60.75	50.75	-45.68	-42.86
4	0.35000	10.04	9.13	0.10	19.17	10.14	58.96	48.96	-39.79	-38.82
5	0.93400	10.12	3.68	-0.67	13.80	9.45	56.00	46.00	-42.20	-36.55
6	9.87800	10.52	7.86	2.31	18.38	12.83	60.00	50.00	-41.62	-37.17

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 ≦ 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)

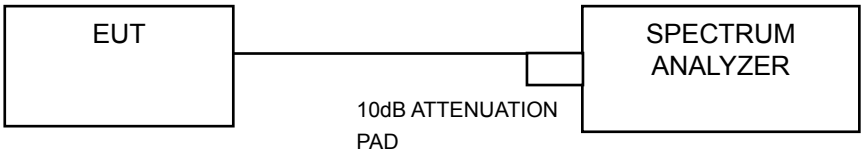
*B is the 26 dB emission bandwidth in megahertz

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

For 802.11a, 802.11n (HT20), 802.11n (HT40)

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

FOR OCCUPIED BANDWIDTH

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

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Condition

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:

EUT Category: Indoor Access Point mode

802.11a

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	20.41	21.06	237.545	23.76	30	Pass
40	5200	24.23	24.08	520.709	27.17	30	Pass
48	5240	23.10	22.70	390.383	25.91	30	Pass
149	5745	21.76	20.61	265.048	24.23	30	Pass
157	5785	25.80	24.90	689.219	28.38	30	Pass
165	5825	24.34	24.09	528.092	27.23	30	Pass

802.11n (HT20)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	21.92	21.29	290.183	24.63	30	Pass
40	5200	24.76	24.12	557.452	27.46	30	Pass
48	5240	22.90	22.60	376.954	25.76	30	Pass
149	5745	20.50	20.44	222.864	23.48	30	Pass
157	5785	26.12	25.49	**763.258**	28.83	30	Pass
165	5825	23.36	23.06	419.072	26.22	30	Pass

802.11n (HT40)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	18.49	18.33	138.709	21.42	30	Pass
46	5230	24.70	24.20	**558.148**	27.47	30	Pass
151	5755	20.47	19.45	199.534	23.00	30	Pass
159	5795	22.89	21.46	334.495	25.24	30	Pass

EUT Category: Mobile and Portable client device

802.11a

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	20.41	20.90	232.928	23.67	24	Pass
40	5200	20.50	20.80	232.428	23.66	24	Pass
48	5240	20.60	20.90	**237.842**	23.76	24	Pass
149	5745	21.76	20.61	265.048	24.23	30	Pass
157	5785	25.80	24.90	689.219	28.38	30	Pass
165	5825	24.34	24.09	528.092	27.23	30	Pass

802.11n (HT20)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	20.40	20.60	224.463	23.51	24	Pass
40	5200	20.50	20.70	229.692	23.61	24	Pass
48	5240	20.60	20.60	229.630	23.61	24	Pass
149	5745	20.50	20.44	222.864	23.48	30	Pass
157	5785	26.12	25.49	**763.258**	28.83	30	Pass
165	5825	23.36	23.06	419.072	26.22	30	Pass

802.11n (HT40)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	18.49	18.33	138.709	21.42	24	Pass
46	5230	20.50	20.60	227.017	23.56	24	Pass
151	5755	20.47	19.45	199.534	23.00	30	Pass
159	5795	22.89	21.46	334.495	25.24	30	Pass

26dB BANDWIDTH:

EUT Category: Indoor Access Point mode

802.11a

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)		Pass / Fail
		Chain 0	Chain 1	
36	5180	22.89	26.63	Pass
40	5200	36.88	37.34	Pass
48	5240	35.36	30.32	Pass

802.11n (HT20)

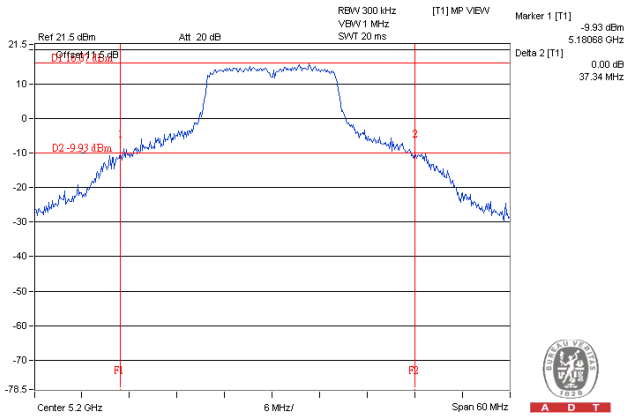
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)		Pass / Fail
		Chain 0	Chain 1	
36	5180	28.76	25.31	Pass
40	5200	42.37	40.04	Pass
48	5240	37.77	31.44	Pass

802.11n (HT40)

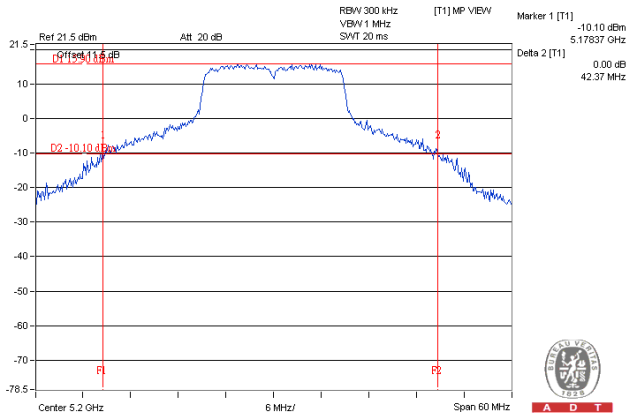
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)		Pass / Fail
		Chain 0	Chain 1	
38	5190	49.87	51.24	Pass
46	5230	92.05	84.05	Pass

SPECTRUM PLOT OF WORST VALUE

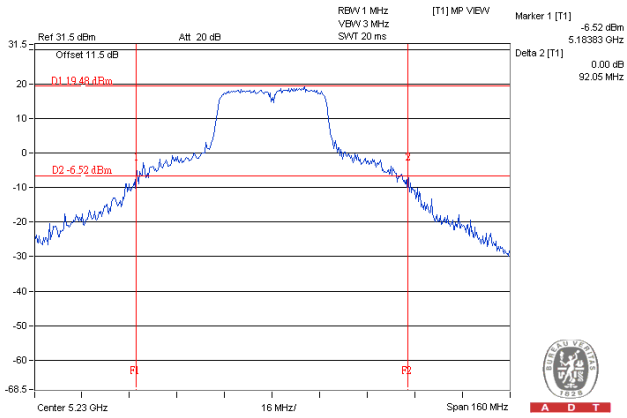
802.11a



802.11n (HT20)



802.11n (HT40)



EUT Category: Mobile and Portable client device

802.11a

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)		Pass / Fail
		Chain 0	Chain 1	
36	5180	22.66	24.78	Pass
40	5200	23.38	24.66	Pass
48	5240	22.57	22.72	Pass

802.11n (HT20)

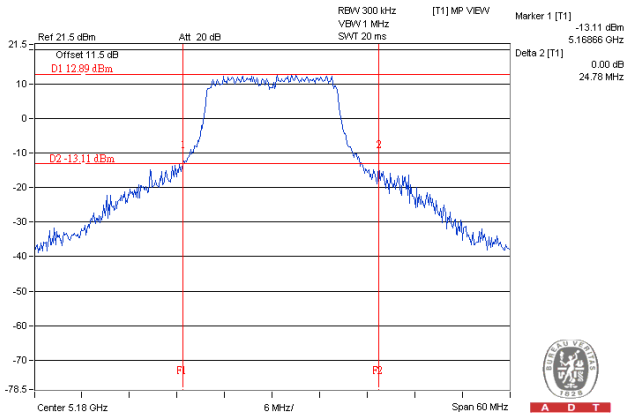
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)		Pass / Fail
		Chain 0	Chain 1	
36	5180	25.69	27.15	Pass
40	5200	24.38	27.41	Pass
48	5240	24.13	25.38	Pass

802.11n (HT40)

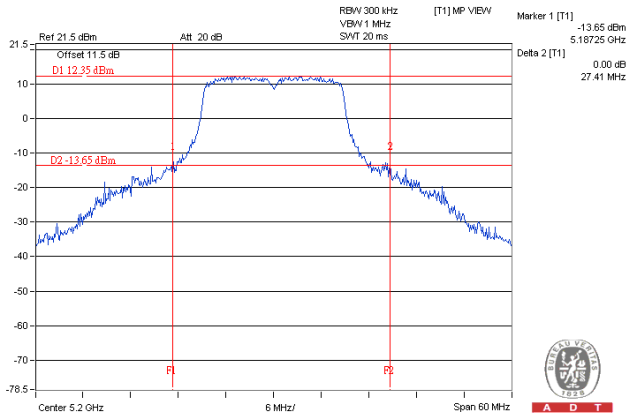
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)		Pass / Fail
		Chain 0	Chain 1	
38	5190	49.87	51.24	Pass
46	5230	50.42	52.87	Pass

SPECTRUM PLOT OF WORST VALUE

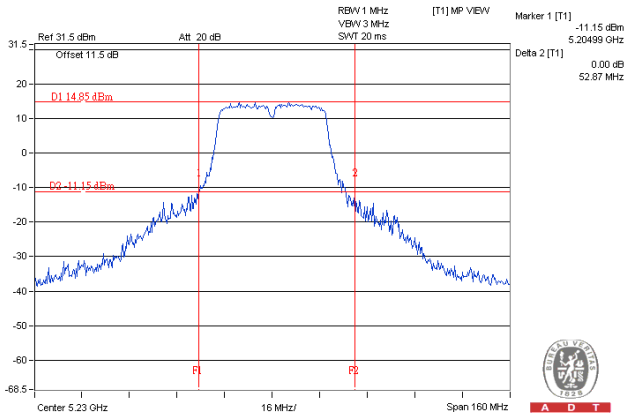
802.11a



802.11n (HT20)



802.11n (HT40)



OCCUPIED BANDWIDTH:

EUT Category: Indoor Access Point mode

802.11a

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)		Pass / Fail
		Chain 0	Chain 1	
36	5180	16.80	17.04	Pass
40	5200	18.84	19.08	Pass
48	5240	18.52	17.40	Pass

802.11n (HT20)

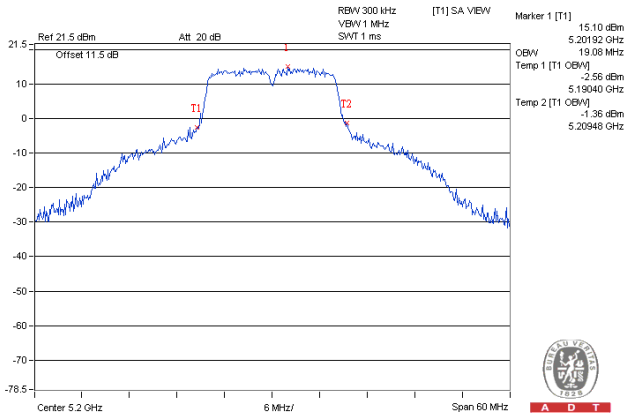
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)		Pass / Fail
		Chain 0	Chain 1	
36	5180	18.12	18.00	Pass
40	5200	23.64	21.48	Pass
48	5240	19.68	18.36	Pass

802.11n (HT40)

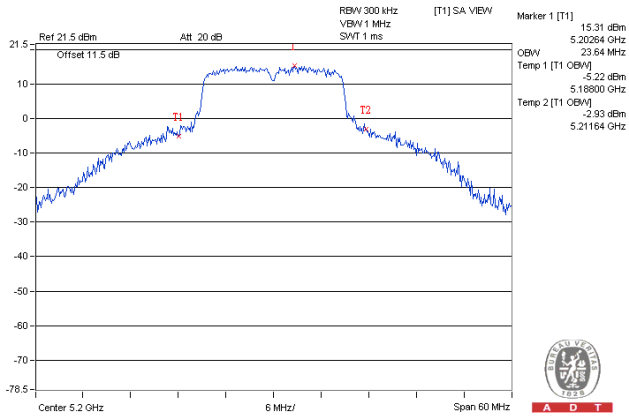
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)		Pass / Fail
		Chain 0	Chain 1	
38	5190	37.32	37.08	Pass
46	5230	39.00	38.76	Pass

SPECTRUM PLOT OF WORST VALUE

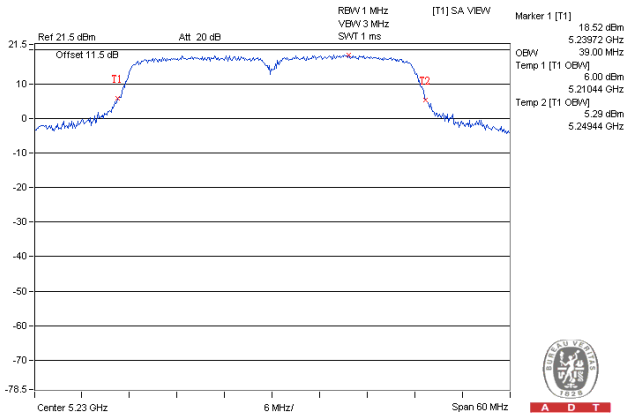
802.11a



802.11n (HT20)



802.11n (HT40)



EUT Category: Mobile and Portable client device

802.11a

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)		Pass / Fail
		Chain 0	Chain 1	
36	5180	16.68	16.92	Pass
40	5200	16.80	16.80	Pass
48	5240	16.80	16.68	Pass

802.11n (HT20)

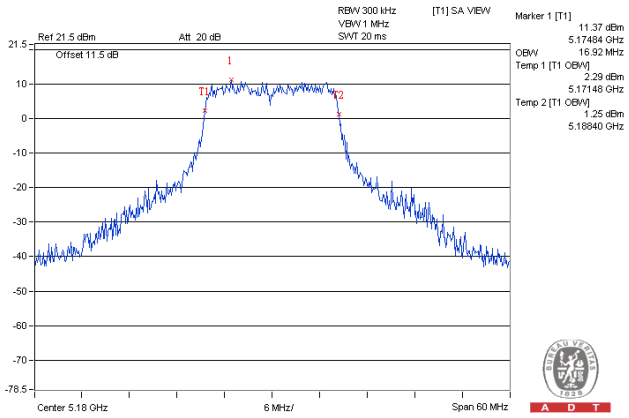
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)		Pass / Fail
		Chain 0	Chain 1	
36	5180	18.00	18.12	Pass
40	5200	17.88	17.88	Pass
48	5240	18.00	17.88	Pass

802.11n (HT40)

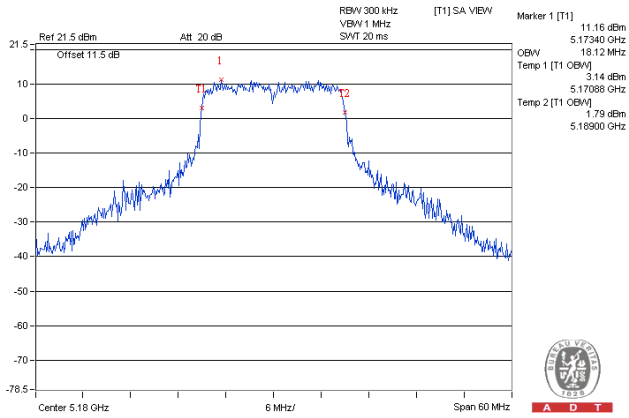
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)		Pass / Fail
		Chain 0	Chain 1	
38	5190	37.32	37.08	Pass
46	5230	36.96	36.72	Pass

SPECTRUM PLOT OF WORST VALUE

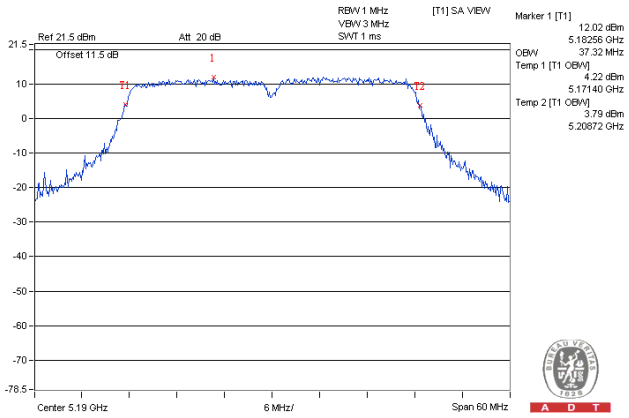
802.11a



802.11n (HT20)



802.11n (HT40)

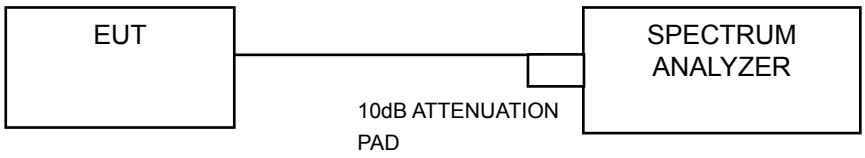


4.4 Peak Power Spectral Density Measurement

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 Procedure

For U-NII-1 band:

Using method SA-2

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

For U-NII-3 band:

1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
2) Set RBW = 500 kHz, Set VBW ≥ 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 = 10log(500kHz/300kHz)

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Condition

Same as Item 4.3.6.

4.4.7 Test Results

For U-NII-1 Band

EUT Category: Indoor Access Point mode

802.11a

Channel	Frequency (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					
36	5180	7.35	8.22	10.81	0.18	10.99	16.99	Pass
40	5200	11.01	11.00	14.01	0.18	14.19	16.99	Pass
48	5240	10.68	9.24	13.03	0.18	13.21	16.99	Pass

NOTE: 1. 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.

2. **For U-NII-1 Band:**

Directional gain = 3dBi + 10log(2) = 6.01dBi > 6dBi , so the power density limit shall be reduced to 17-(6.01-6) = 16.99dBm.

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

802.11n (HT20)

Channel	Frequency (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					
36	5180	8.42	8.06	11.25	0.15	11.40	16.99	Pass
40	5200	11.18	11.22	14.21	0.15	14.36	16.99	Pass
48	5240	10.43	9.27	12.90	0.15	13.05	16.99	Pass

NOTE: 1. 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.

2. **For U-NII-1 Band:**

Directional gain = 3dBi + 10log(2) = 6.01dBi > 6dBi , so the power density limit shall be reduced to 17-(6.01-6) = 16.99dBm.

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

802.11n (HT40)

Channel	Frequency (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	2.25	2.35	5.31	0.23	5.54	16.99	Pass
46	5230	8.18	7.79	11.00	0.23	11.23	16.99	Pass

NOTE: 1. 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.

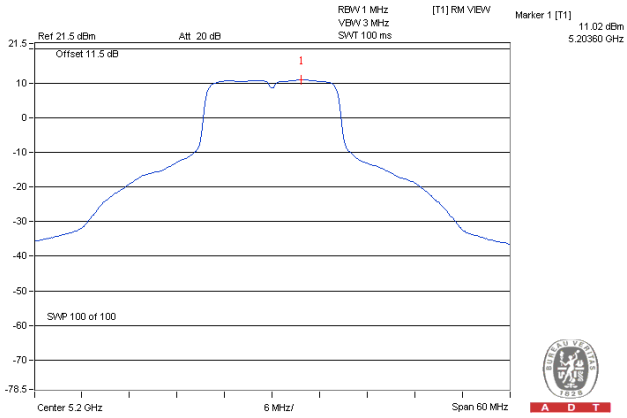
2. **For U-NII-1 Band:**

Directional gain = 3dBi + 10log(2) = 6.01dBi > 6dBi , so the power density limit shall be reduced to 17-(6.01-6) = 16.99dBm.

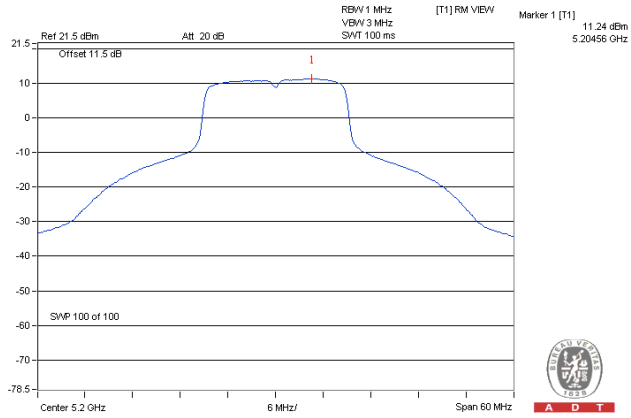
3. Refer to section 3.3 for duty cycle spectrum plot.

SPECTRUM PLOT OF WORST VALUE

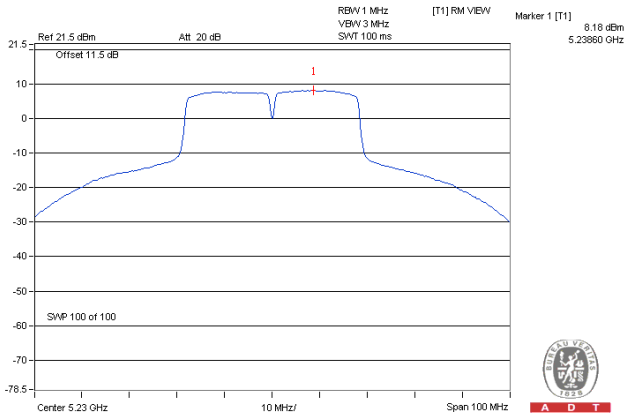
802.11a / Ch 40 / Chain 0



802.11n (HT20) / Ch 40 / Chain 0



802.11n (HT40) / Ch 46 / Chain 0



EUT Category: Mobile and Portable client device

For U-NII-1 Band

802.11a

Channel	Frequency (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					
36	5180	6.92	7.17	10.05	0.18	10.23	10.99	Pass
40	5200	7.32	7.33	10.33	0.18	10.51	10.99	Pass
48	5240	7.30	7.23	10.27	0.18	10.45	10.99	Pass

NOTE: 1. 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.

2. **For U-NII-1 Band:**

Directional gain = 3dBi + 10log(2) = 6.01dBi > 6dBi , so the power density limit shall be reduced to 11-(6.01-6) = 10.99dBm.

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

802.11n (HT20)

Channel	Frequency (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					
36	5180	7.16	7.24	10.21	0.15	10.36	10.99	Pass
40	5200	7.52	7.30	10.42	0.15	10.57	10.99	Pass
48	5240	7.65	6.93	10.32	0.15	10.47	10.99	Pass

NOTE: 1. 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.

2. **For U-NII-1 Band:**

Directional gain = 3dBi + 10log(2) = 6.01dBi > 6dBi , so the power density limit shall be reduced to 11-(6.01-6) = 10.99dBm.

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

802.11n (HT40)

Channel	Frequency (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	2.25	2.35	5.31	0.23	5.54	10.99	Pass
46	5230	3.85	3.55	6.71	0.23	6.94	10.99	Pass

NOTE: 1. 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.

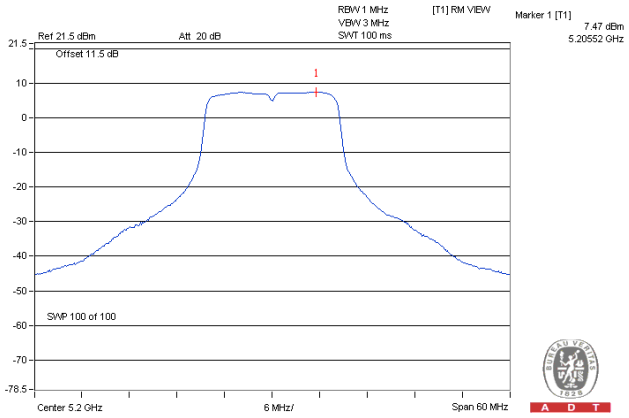
2. **For U-NII-1 Band:**

Directional gain = 3dBi + 10log(2) = 6.01dBi > 6dBi , so the power density limit shall be reduced to 11-(6.01-6) = 10.99dBm.

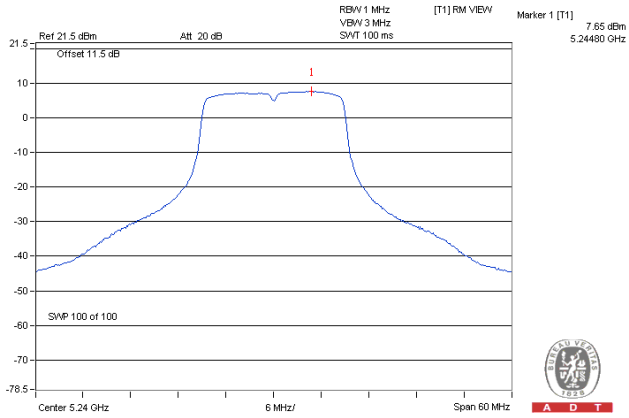
3. Refer to section 3.3 for duty cycle spectrum plot.

SPECTRUM PLOT OF WORST VALUE

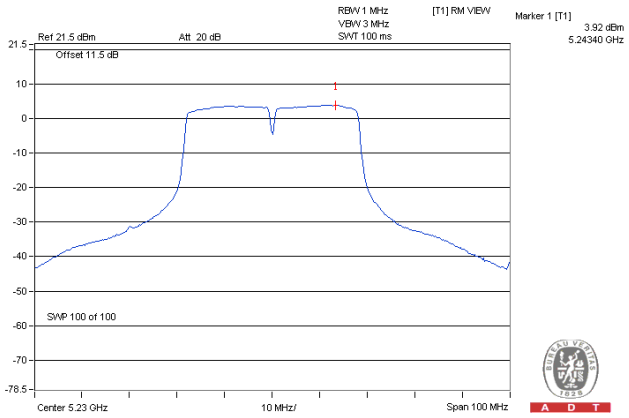
802.11a / Ch 40 / Chain 1



802.11n (HT20) / Ch 48 / Chain 0



802.11n (HT40) / Ch 46 / Chain 0



For U-NII-3 Band

802.11a

TX chain	Chan.	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	149	5745	2.54	4.76	3.01	0.18	7.95	29.99	Pass
	157	5785	3.91	6.13	3.01	0.18	9.32	29.99	Pass
	165	5825	3.73	5.95	3.01	0.18	9.14	29.99	Pass
1	149	5745	0.47	2.69	3.01	0.18	5.88	29.99	Pass
	157	5785	4.00	6.22	3.01	0.18	9.41	29.99	Pass
	165	5825	3.55	5.77	3.01	0.18	8.96	29.99	Pass

NOTE:
1. Directional gain = 3dBi + 10log(2) = 6.01dBi > 6dBi , so the power density limit shall be reduced to 30-(6.01-6) = 29.99dBm.
2. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

TX chain	Chan.	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	149	5745	0.56	2.78	3.01	0.15	5.94	29.99	Pass
	157	5785	4.75	6.97	3.01	0.15	10.13	29.99	Pass
	165	5825	1.91	4.13	3.01	0.15	7.29	29.99	Pass
1	149	5745	-0.63	1.59	3.01	0.15	4.75	29.99	Pass
	157	5785	3.52	5.74	3.01	0.15	8.90	29.99	Pass
	165	5825	1.84	4.06	3.01	0.15	7.22	29.99	Pass

NOTE:
1. Directional gain = 3dBi + 10log(2) = 6.01dBi > 6dBi , so the power density limit shall be reduced to 30-(6.01-6) = 29.99dBm.
2. Refer to section 3.3 for duty cycle spectrum plot.

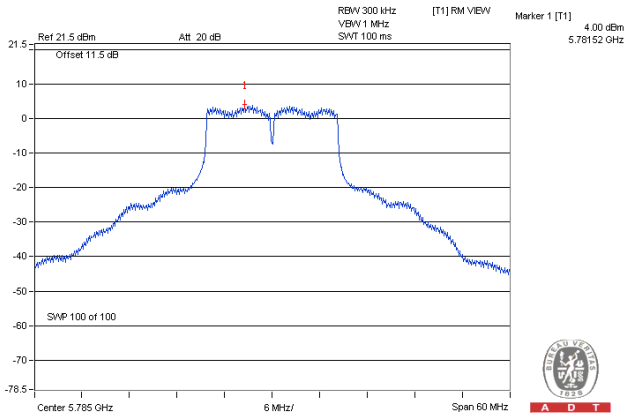
802.11n (HT40)

TX chain	Chan.	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	-2.57	-0.35	3.01	0.23	2.89	29.99	Pass
	159	5795	-2.80	-0.58	3.01	0.23	2.66	29.99	Pass
1	151	5755	-3.75	-1.53	3.01	0.23	1.71	29.99	Pass
	159	5795	-2.99	-0.77	3.01	0.23	2.47	29.99	Pass

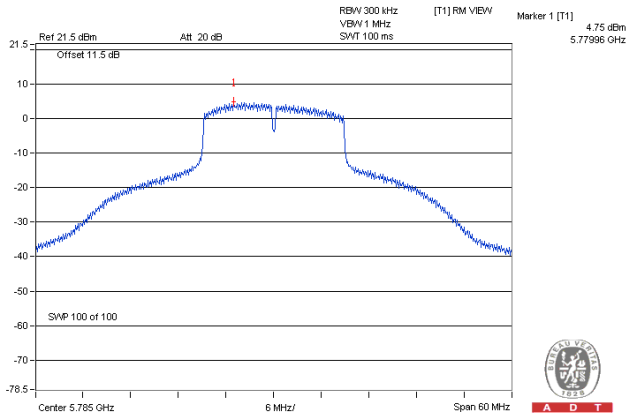
NOTE:
1. Directional gain = 3dBi + 10log(2) = 6.01dBi > 6dBi , so the power density limit shall be reduced to 30-(6.01-6) = 29.99dBm.
2. Refer to section 3.3 for duty cycle spectrum plot.

SPECTRUM PLOT OF WORST VALUE

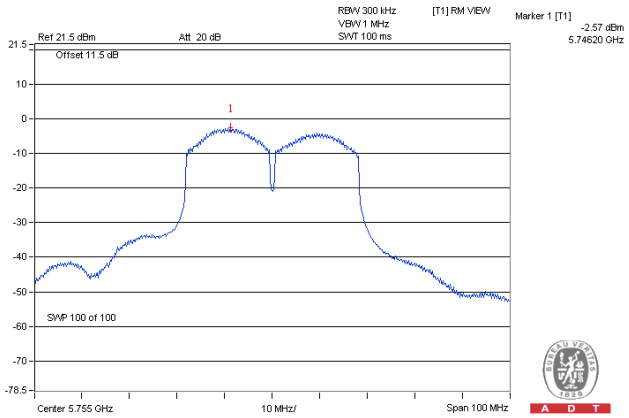
802.11a



802.11n (HT20)



802.11n (HT40)

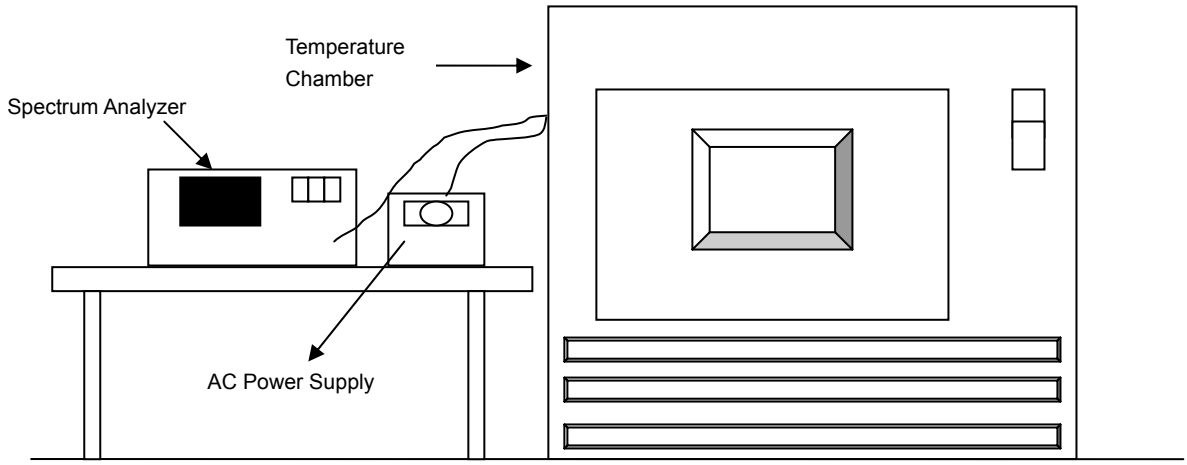


4.5 Frequency Stability Measurement

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

a. The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
b. Turn the EUT on and couple its output to a spectrum analyzer.
c. Turn the EUT off and set the chamber to the highest temperature specified.
d. 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.
e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
f. 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: 5180MHz									
TEMP. (℃)	POWER SUPPLY (Vac)	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	5180.0158	0.00031	5180.0155	0.00030	5180.0180	0.00035	5180.0149	0.00029
40	120	5179.9989	-0.00002	5179.9971	-0.00006	5179.9973	-0.00005	5179.9966	-0.00007
30	120	5180.0130	0.00025	5180.0099	0.00019	5180.0100	0.00019	5180.0128	0.00025
20	120	5180.0152	0.00029	5180.0154	0.00030	5180.0129	0.00025	5180.0128	0.00025
10	120	5179.9944	-0.00011	5179.9960	-0.00008	5179.9956	-0.00008	5179.9924	-0.00015
0	120	5180.0039	0.00008	5180.0028	0.00005	5180.0029	0.00006	5180.0015	0.00003
-10	120	5180.0180	0.00035	5180.0189	0.00036	5180.0194	0.00037	5180.0195	0.00038
-20	120	5179.9774	-0.00044	5179.9741	-0.00050	5179.9751	-0.00048	5179.9748	-0.00049
-30	120	5180.0044	0.00008	5180.0040	0.00008	5180.0042	0.00008	5180.0051	0.00010

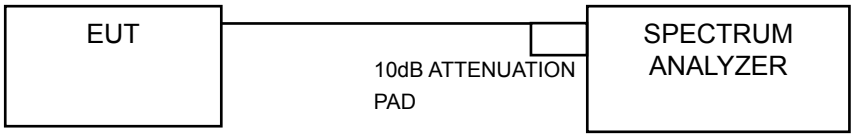
FREQUENCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5180MHz									
TEMP. (℃)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
20	138	5180.0161	0.00031	5180.0154	0.00030	5180.0130	0.00025	5180.0132	0.00025
	120	5180.0152	0.00029	5180.0154	0.00030	5180.0129	0.00025	5180.0128	0.00025
	102	5180.0157	0.00030	5180.0154	0.00030	5180.0122	0.00024	5180.0137	0.00026

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

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

4.6.5 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	15.67	16.30	0.5	Pass
157	5785	15.96	16.42	0.5	Pass
165	5825	16.41	16.07	0.5	Pass

802.11n (HT20)

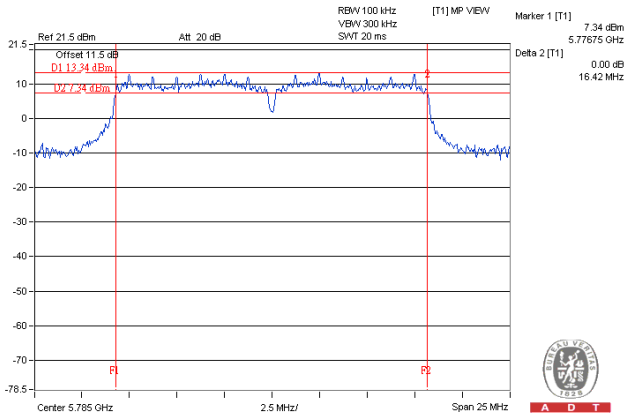
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	17.71	17.61	0.5	Pass
157	5785	15.74	17.60	0.5	Pass
165	5825	17.65	16.94	0.5	Pass

802.11n (HT40)

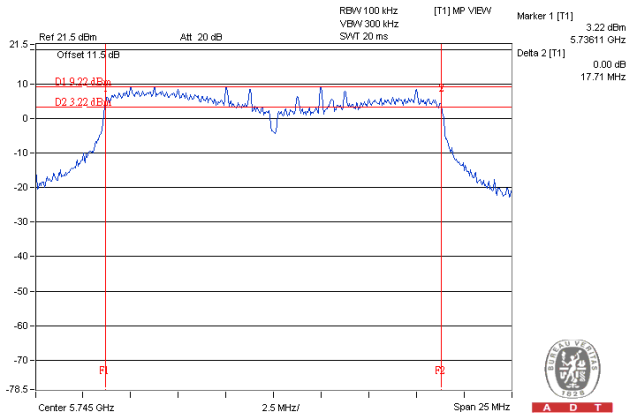
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
151	5755	35.55	35.88	0.5	Pass
159	5795	36.15	36.14	0.5	Pass

SPECTRUM PLOT OF WORST VALUE

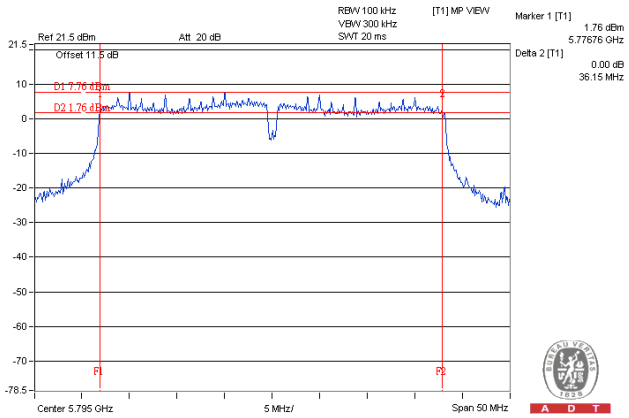
802.11a



802.11n (HT20)



802.11n (HT40)



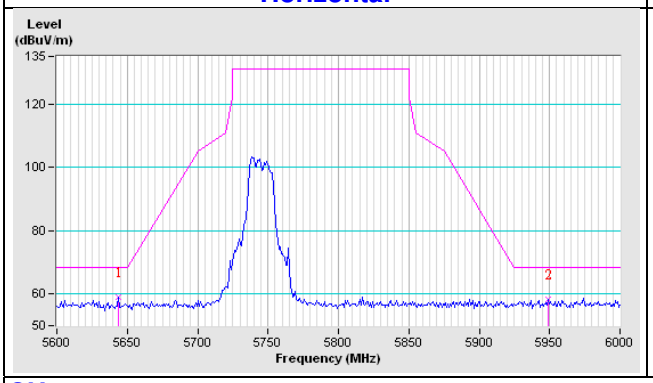
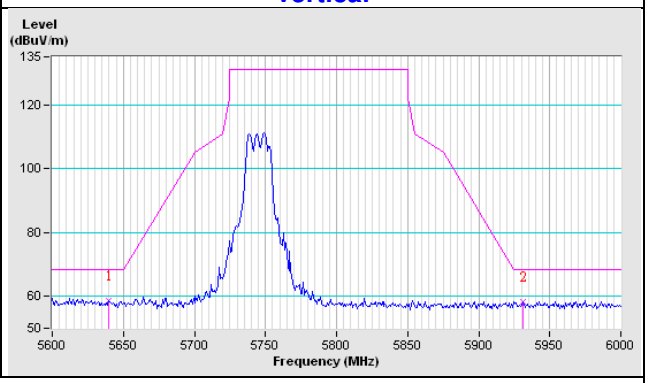
5 Pictures of Test Arrangements

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

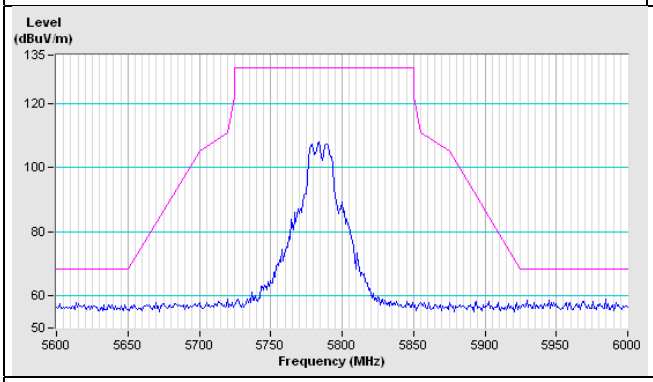
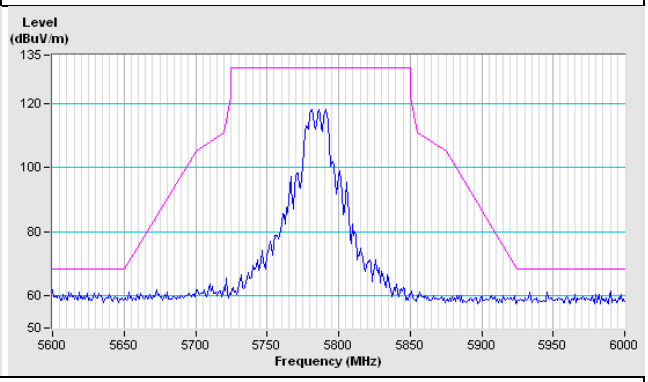
Annex A- Radiated Out of Band Emisison (OOBE) Measurement (For U-NII-3 band)

802.11a

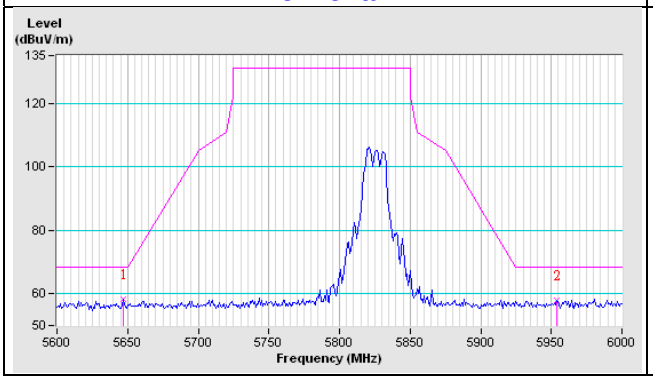
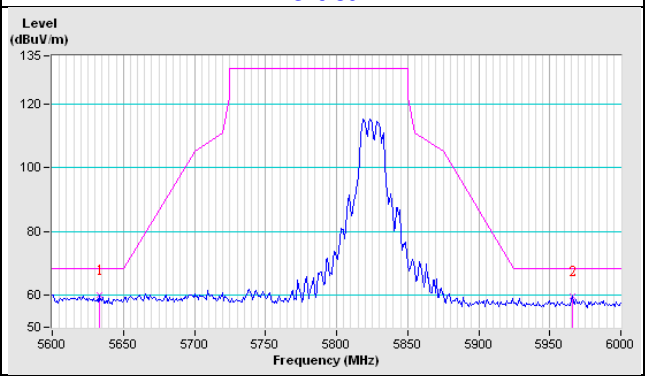
CH149

Horizontal	Vertical
	

CH157

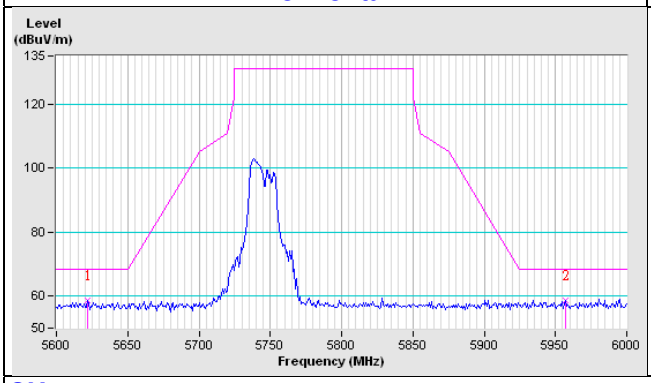
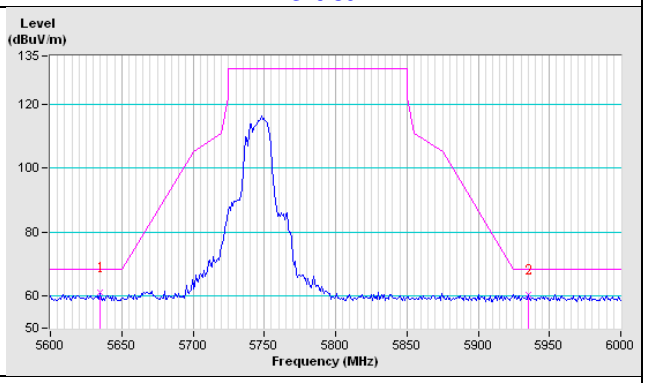
Horizontal	Vertical
	

CH165

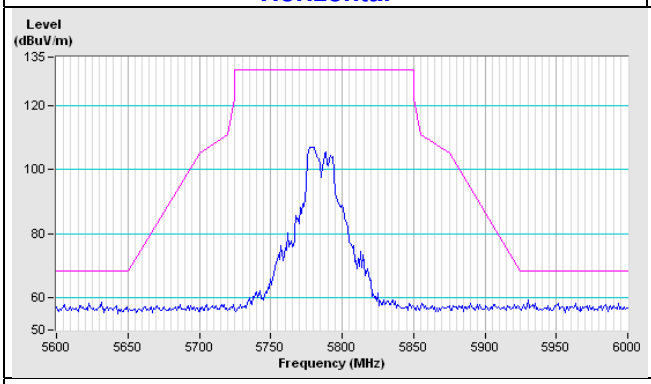
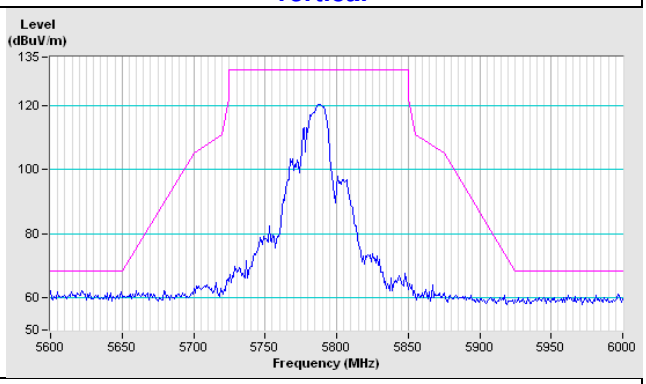
Horizontal	Vertical
	

802.11n (HT20)

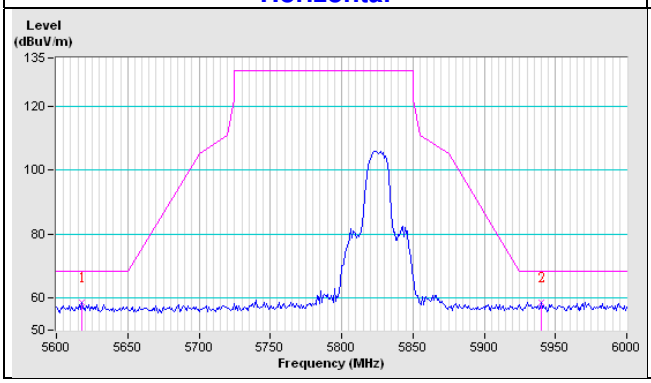
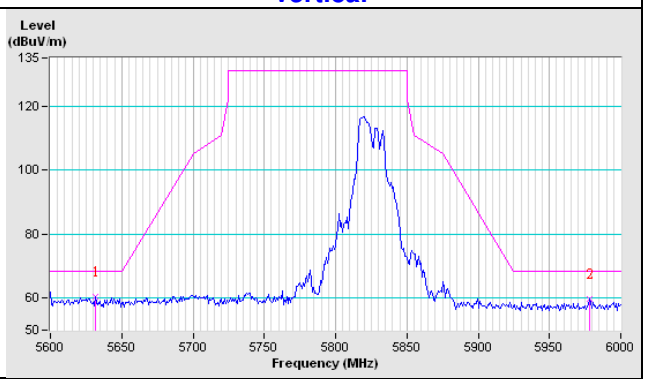
CH149

Horizontal	Vertical
	

CH157

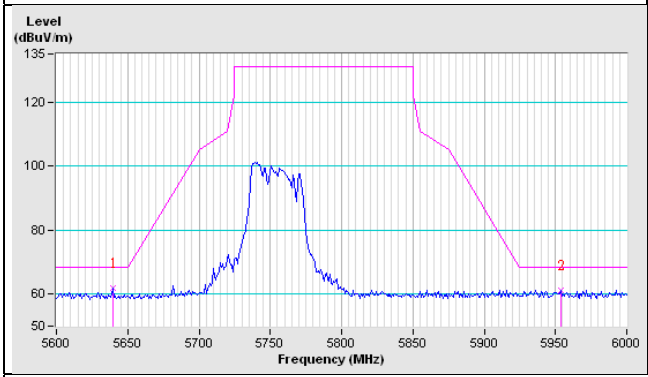
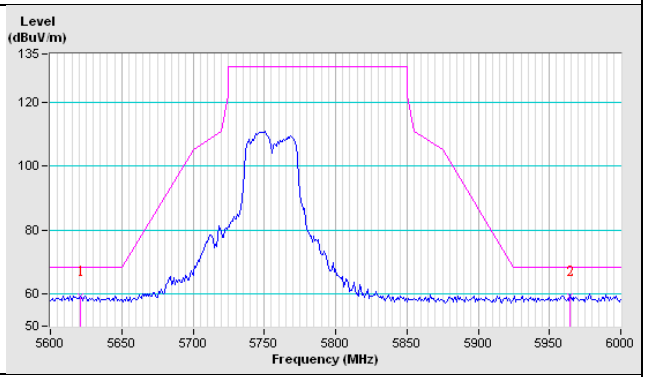
Horizontal	Vertical
	

CH165

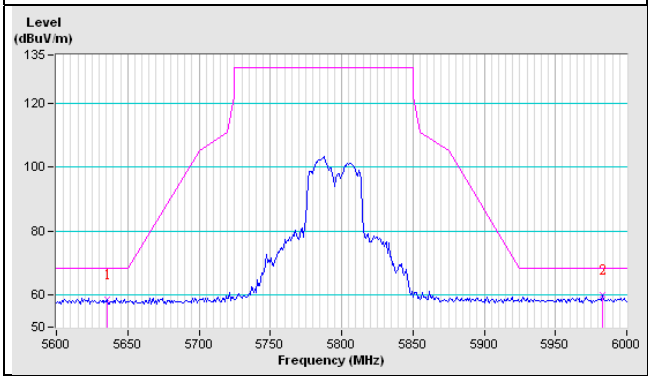
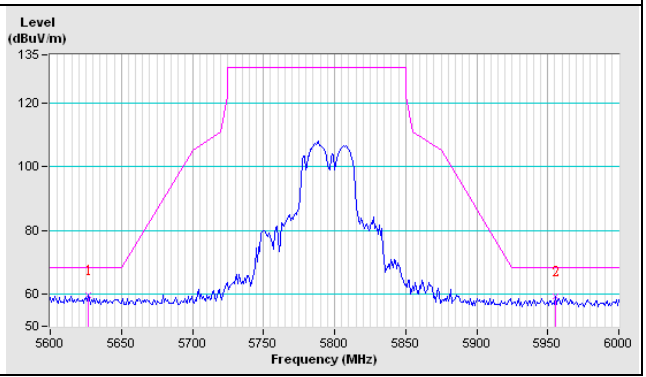
Horizontal	Vertical
	

802.11n (HT40)

CH151

Horizontal	Vertical
	

CH159

Horizontal	Vertical
	

Appendix – Information on the Testing Laboratories

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

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

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

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