

## FCC Test Report

**Report No.:** RF150511C14C-1

**FCC ID:** EHA-RS9113DB

**Test Model:** PB32

**Series Model:** PB22

**Received Date:** Aug. 03, 2016

**Test Date:** Oct. 17 ~ Nov. 18, 2016

**Issued Date:** Dec. 06, 2016

**Applicant:** Intermec Technologies Corporation

**Address:** 9680 old Bailes Rd Fort Mill SC29707 South Carolina United States

**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, R.O.C.

**Test Location:** No.19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN (R.O.C.)



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### Release Control Record

Issue No.	Description	Date Issued
RF150511C14C-1	Original release	Dec. 06, 2016

## 1 Certificate of Conformity

**Product:** wireless portable printer

**Brand:** Intermec, Honeywell

**Test Model:** PB32

**Series Model:** PB22

**Sample Status:** Engineering sample


**Applicant:** Intermec Technologies Corporation

**Test Date:** Oct. 17 ~ Nov. 18, 2016

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

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

**Prepared by :**  , **Date:** Dec. 06, 2016  
Polly Chien / Specialist

**Approved by :**  , **Date:** Dec. 06, 2016  
Ken Liu / Senior Manager

## 2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
FCC Clause	Test Item	Result	Remarks
15.407(b)(6)	AC Power Conducted Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -9.87dB at 0.36875MHz.
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 5725.00MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only.
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.

\*For U-NII-3 band compliance with rule part 15.407(b)(4)(i), the OOB 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	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.44 dB
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	3.63 dB
	200MHz ~ 1000MHz	3.64 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	wireless portable printer
Brand	Intermec, Honeywell
Test Model	PB32
Series Model	PB22
Model Difference	Refer to note for more details
Status of EUT	Engineering sample
Power Supply Rating	12Vdc from adapter 7.2Vdc from battery
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 72.2Mbps
Operating Frequency	5180 ~ 5240MHz, 5260 ~ 5320MHz, 5500 ~ 5700MHz & 5745 ~ 5825MHz
Number of Channel	5180 ~ 5240MHz: 4 for 802.11a, 802.11n (HT20) 5260 ~ 5320MHz: 4 for 802.11a, 802.11n (HT20) 5500 ~ 5700MHz: 8 for 802.11a, 802.11n (HT20) 5745 ~ 5825MHz: 5 for 802.11a, 802.11n (HT20)
Output Power	5180 ~ 5240MHz: 23.335mW 5260 ~ 5320MHz: 23.121mW 5500 ~ 5700MHz: 7.962mW 5745 ~ 5825MHz: 21.135mW
Antenna Type	PCB Trace antenna with 0.5dBi gain
Antenna Connector	N/A
Accessory Device	Adapter, battery
Data Cable Supplied	N/A

Note:

- All models are listed as below. There are different sizes of outer appearance.

Brand	Model	Difference
Intermec,	PB32 (Main test model)	Size: 3" label printer
Honeywell	PB22	Size: 2" label printer

- The EUT provides 1 completed transmitter and 1 receiver.

Modulation Mode	TX Function
802.11a	1TX
802.11n (HT20)	1TX

- The EUT has disabled the 5600-5650MHz band.

4. The EUT consumes power from the following adapter and battery.

Adapter	
Brand	Intermec Technologies Corporation
Model	073573
Input Power	100-240Vac, 47-63Hz, 1A
Output Power	12Vdc, 4.15A, 50W
Power Line	1.8m power cable with one core attached on adapter

Battery	
Brand	Intermec Technologies Corporation
Model	AB27
Rating	7.2Vdc, 2.25AH



### 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

#### 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

#### For 5500 ~ 5700MHz

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

Channel	Frequency	Channel	Frequency
100	5500 MHz	116	5580 MHz
104	5520 MHz	132	5660 MHz
108	5540 MHz	136	5680 MHz
112	5560 MHz	140	5700 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		

### 3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE $\geq$ 1G	RE<1G	PLC	APCM	
A	√	√	√	√	Model: PB32
B	-	√	√	-	Model: PB22

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

Note:

- The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Z-plane**.
- "-" 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	6.5
A	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6.0
A	802.11n (HT20)		52 to 64	52, 60, 64	OFDM	BPSK	6.5
A	802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	BPSK	6.0
A	802.11n (HT20)		100 to 140	100, 116, 140	OFDM	BPSK	6.5
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	6.5

#### 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, B	802.11a	5180-5240	36 to 48	48	OFDM	BPSK	6.0
	802.11a	5260-5320	52 to 64		OFDM	BPSK	6.0
	802.11a	5500-5700	100 to 140		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, B	802.11a	5180-5240	36 to 48	48	OFDM	BPSK	6.0
	802.11a	5260-5320	52 to 64		OFDM	BPSK	6.0
	802.11a	5500-5700	100 to 140		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	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	6.5
A	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6.0
A	802.11n (HT20)		52 to 64	52, 60, 64	OFDM	BPSK	6.5
A	802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	BPSK	6.0
A	802.11n (HT20)		100 to 140	100, 116, 140	OFDM	BPSK	6.5
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	6.5

### **Test Condition:**

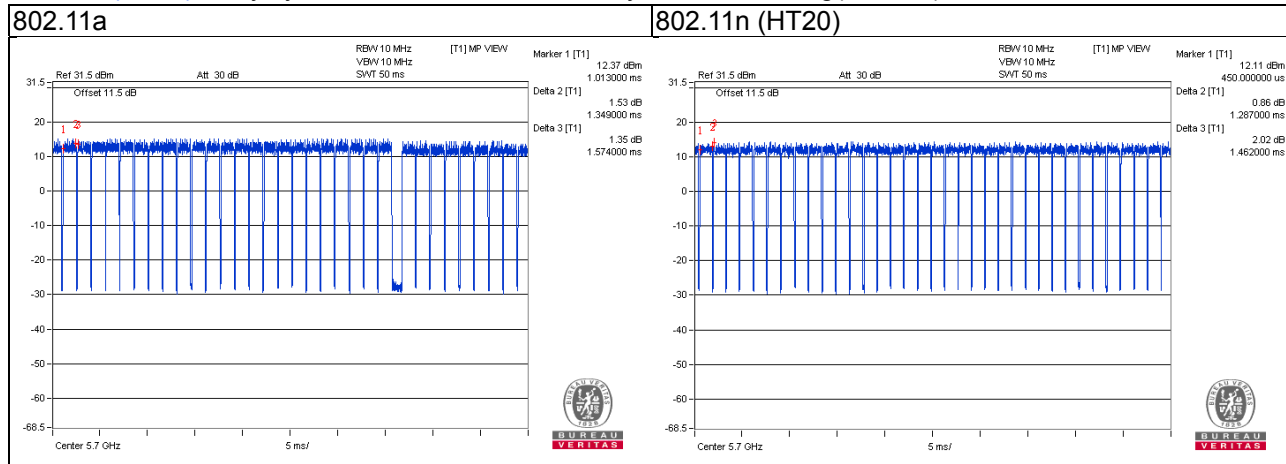
APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE $\geq$ 1G	25deg. C, 69%RH	120Vac, 60Hz	Bond Tseng
	20deg. C, 69%RH	120Vac, 60Hz	Bayu Chen
RE $<$ 1G	20deg. C, 69%RH	120Vac, 60Hz	Bayu Chen
PLC	20deg. C, 69%RH	120Vac, 60Hz	Bayu Chen
APCM	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui

### 3.3 Duty Cycle of Test Signal

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

802.11a: Duty cycle =  $1.349/1.57 = 0.859$ , Duty factor =  $10 * \log(1/0.859) = 0.66$

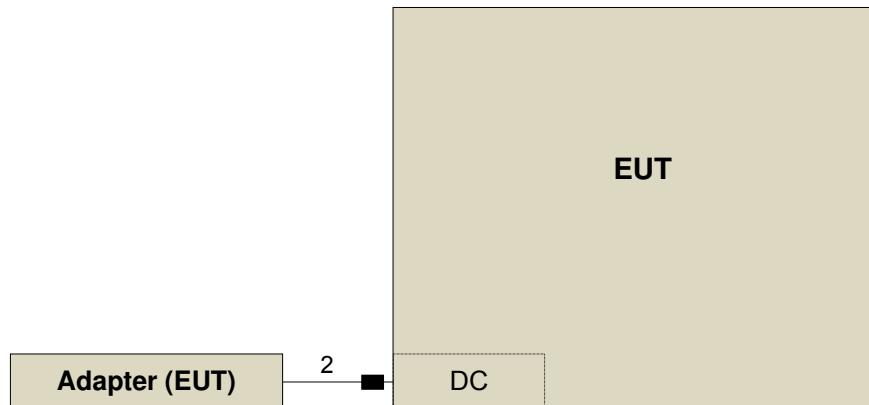
802.11n (HT20): Duty cycle =  $1.28/1.46 = 0.877$ , Duty factor =  $10 * \log(1/0.877) = 0.57$



### 3.4 Description of Support Units

The EUT has been tested as an independent unit.

#### 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)**

**KDB 789033 D02 General UNII Test Procedures New Rules v01r03**

ANSI C63.10-2013

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.

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 v01r03		Field Strength at 3m	
		PK:74 (dBuV/m)	AV:54 (dBuV/m)
Frequency Band	Applicable To	EIRP Limit	Equivalent Field Strength at 3m
5150~5250 MHz	15.407(b)(1)	PK:-27 (dBm/MHz)	PK:68.2(dBuV/m)
5250~5350 MHz	15.407(b)(2)		
5470~5725 MHz	15.407(b)(3)		
5725~5850 MHz	<input checked="" type="checkbox"/> 15.407(b)(4)(i)	PK:-27 (dBm/MHz) <sup>*1</sup> PK:10 (dBm/MHz) <sup>*2</sup> PK:15.6 (dBm/MHz) <sup>*3</sup> PK:27 (dBm/MHz) <sup>*4</sup>	PK: 68.2(dBuV/m) <sup>*1</sup> PK:105.2 (dBuV/m) <sup>*2</sup> PK: 110.8(dBuV/m) <sup>*3</sup> PK:122.2 (dBuV/m) <sup>*4</sup>
	<input type="checkbox"/> 15.407(b)(4)(ii)	Emission limits in section 15.247(d)	
<sup>*1</sup> beyond 75 MHz or more above of the band edge.		<sup>*2</sup> below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above.	
<sup>*3</sup> below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above.		<sup>*4</sup> 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:

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

#### 4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESCS30	100289	Dec. 23, 2015	Dec. 22, 2016
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Apr. 19, 2016	Apr. 18, 2017
BILOG Antenna SCHWARZBECK	VULB9168	9168-148	Jan. 18, 2016	Jan. 17, 2017
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-1169	Jan. 08, 2016	Jan. 07, 2017
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Jan. 18, 2016	Jan. 17, 2017
Loop Antenna	EM-6879	269	Aug. 11, 2016	Aug. 10, 2017
Preamplifier Agilent	8449B	3008A01911	Aug. 09, 2016	Aug. 08, 2017
Preamplifier Agilent	8447D	2944A10638	Aug. 09, 2016	Aug. 08, 2017
RF signal cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-02 (309222 +248780)	Aug. 09, 2016	Aug. 08, 2017
RF signal cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-03 (274092)	Aug. 09, 2016	Aug. 08, 2017
RF signal cable Woken	8D-FB	Cable-CH9-01	Aug. 09, 2016	Aug. 08, 2017
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower & Turn BV ADT	AT100	AT93021705	NA	NA
Turn Table BV ADT	TT100	TT93021705	NA	NA
Turn Table Controller BV ADT	SC100	SC93021705	NA	NA
High Speed Peak Power Meter	ML2495A	0824012	Aug. 11, 2016	Aug. 10, 2017
Power Sensor	MA2411B	0738171	Aug. 11, 2016	Aug. 10, 2017
26GHz ~ 40GHz Amplifier	EM26400	815221	Oct. 17, 2016	Oct. 16, 2017

- 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 9.  
 3. The horn antenna and preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.  
 4. The FCC Site Registration No. is 215374.  
 5. The IC Site Registration No. is IC 7450F-9.

### 4.1.3 Test Procedures

#### For Radiated emission below 30MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Both X and Y axes of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

#### NOTE:

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

#### For Radiated emission above 30MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 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  $\geq 1/T$  (Duty cycle < 98%) or 10Hz (Duty cycle  $\geq 98\%$ ) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

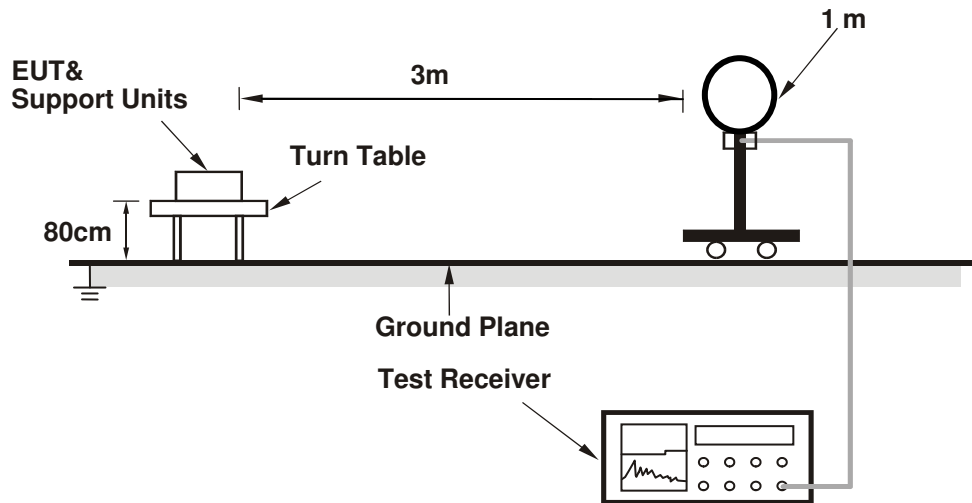
### 4.1.4 Deviation from Test Standard

No deviation.

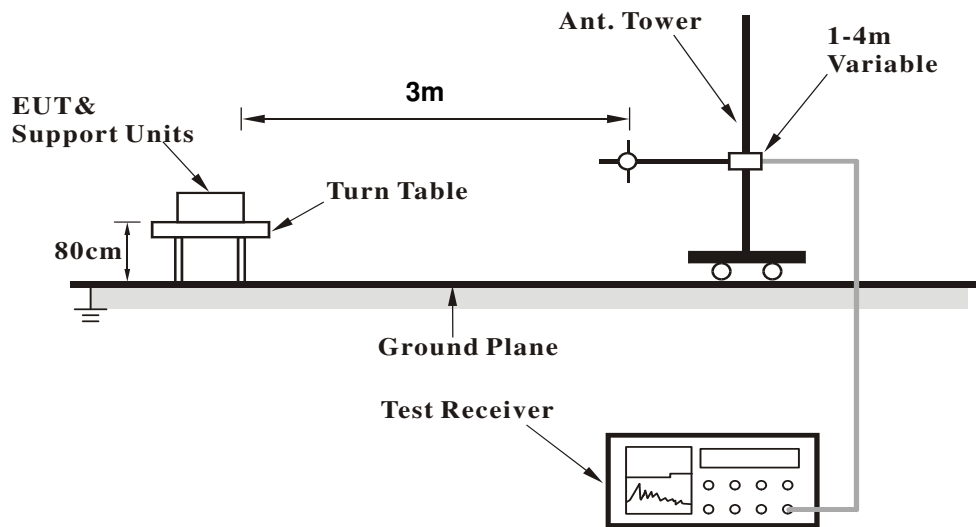


#### 4.1.5 Test Set Up

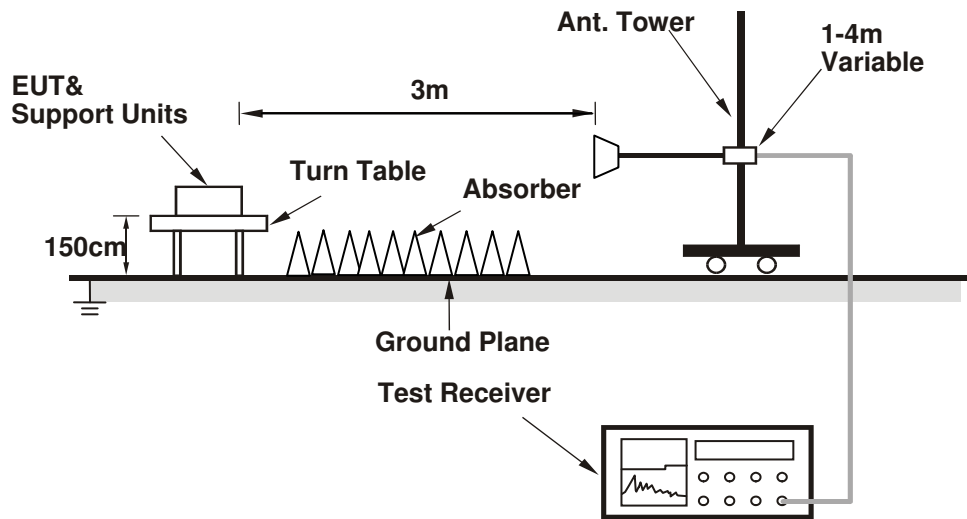
##### For Radiated emission below 30MHz



##### For Radiated emission 30MHz to 1GHz



### For Radiated emission above 1GHz



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

#### 4.1.6 EUT Operating Conditions

- a. Set EUT under transmission condition continuously at specific channel frequency.

#### 4.1.7 Test Results

Above 1GHz Worst-case Data:

802.11a

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

#### ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	59.1 PK	74.0	-14.9	1.76 H	358	54.50	4.60
2	5150.00	46.0 AV	54.0	-8.0	1.76 H	358	41.40	4.60
3	*5180.00	99.2 PK			1.76 H	358	56.40	42.80
4	*5180.00	89.3 AV			1.76 H	358	46.50	42.80
5	#6906.00	56.4 PK	74.0	-17.6	1.63 H	20	47.00	9.40
6	#6906.00	44.7 AV	54.0	-9.3	1.63 H	20	35.30	9.40
7	#10360.00	61.7 PK	74.0	-12.3	1.13 H	247	45.90	15.80
8	#10360.00	47.7 AV	54.0	-6.3	1.13 H	247	31.90	15.80

#### 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	62.3 PK	74.0	-11.7	1.68 V	34	57.70	4.60
2	5150.00	46.2 AV	54.0	-7.8	1.68 V	34	41.60	4.60
3	*5180.00	100.8 PK			1.68 V	34	58.00	42.80
4	*5180.00	91.1 AV			1.68 V	34	48.30	42.80
5	#6906.00	55.8 PK	74.0	-18.2	1.44 V	356	46.40	9.40
6	#6906.00	46.2 AV	54.0	-7.8	1.44 V	356	36.80	9.40
7	#10360.00	61.4 PK	74.0	-12.6	1.03 V	158	45.60	15.80
8	#10360.00	47.6 AV	54.0	-6.4	1.03 V	158	31.80	15.80

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 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	100.1 PK			1.63 H	0	57.30	42.80
2	*5200.00	90.3 AV			1.63 H	0	47.50	42.80
3	#10400.00	61.8 PK	74.0	-12.2	1.08 H	254	45.80	16.00
4	#10400.00	48.0 AV	54.0	-6.0	1.08 H	254	32.00	16.00

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	101.2 PK			1.68 V	34	58.40	42.80
2	*5200.00	91.6 AV			1.68 V	34	48.80	42.80
3	#10400.00	61.5 PK	74.0	-12.5	1.00 V	168	45.50	16.00
4	#10400.00	47.7 AV	54.0	-6.3	1.00 V	168	31.70	16.00

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 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	101.1 PK			1.55 H	353	58.20	42.90
2	*5240.00	91.6 AV			1.55 H	353	48.70	42.90
3	5350.00	59.7 PK	74.0	-14.3	1.55 H	353	55.00	4.70
4	5350.00	46.2 AV	54.0	-7.8	1.55 H	353	41.50	4.70
5	#10480.00	62.1 PK	74.0	-11.9	1.15 H	249	46.10	16.00
6	#10480.00	48.1 AV	54.0	-5.9	1.15 H	249	32.10	16.00

**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	101.9 PK			1.60 V	35	59.00	42.90
2	*5240.00	92.5 AV			1.60 V	35	49.60	42.90
3	5350.00	59.9 PK	74.0	-14.1	1.60 V	35	55.20	4.70
4	5350.00	46.3 AV	54.0	-7.7	1.60 V	35	41.60	4.70
5	#10480.00	61.8 PK	74.0	-12.2	1.10 V	152	45.80	16.00
6	#10480.00	47.8 AV	54.0	-6.2	1.10 V	152	31.80	16.00

**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	59.9 PK	74.0	-14.1	1.88 H	357	55.30	4.60
2	5150.00	47.1 AV	54.0	-6.9	1.88 H	357	42.50	4.60
3	*5260.00	99.6 PK			1.88 H	357	56.70	42.90
4	*5260.00	90.7 AV			1.88 H	357	47.80	42.90
5	#10520.00	60.4 PK	74.0	-13.6	1.00 H	258	44.40	16.00
6	#10520.00	46.8 AV	54.0	-7.2	1.00 H	258	30.80	16.00

**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	60.1 PK	74.0	-13.9	1.97 V	28	55.50	4.60
2	5150.00	47.3 AV	54.0	-6.7	1.97 V	28	42.70	4.60
3	*5260.00	103.4 PK			1.97 V	28	60.50	42.90
4	*5260.00	93.9 AV			1.97 V	28	51.00	42.90
5	#10520.00	60.0 PK	74.0	-14.0	1.00 V	162	44.00	16.00
6	#10520.00	46.3 AV	54.0	-7.7	1.00 V	162	30.30	16.00

**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 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	99.2 PK			1.93 H	0	56.30	42.90
2	*5300.00	89.3 AV			1.93 H	0	46.40	42.90
3	10600.00	60.7 PK	74.0	-13.3	1.00 H	253	44.40	16.30
4	10600.00	47.0 AV	54.0	-7.0	1.00 H	253	30.70	16.30

**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	*5300.00	104.0 PK			1.82 V	33	61.10	42.90
2	*5300.00	94.5 AV			1.82 V	33	51.60	42.90
3	10600.00	60.4 PK	74.0	-13.6	1.11 V	157	44.10	16.30
4	10600.00	46.7 AV	54.0	-7.3	1.11 V	157	30.40	16.30

**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.

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	99.0 PK			1.58 H	357	56.10	42.90
2	*5320.00	89.1 AV			1.58 H	357	46.20	42.90
3	5350.00	61.6 PK	74.0	-12.4	1.58 H	357	56.90	4.70
4	5350.00	47.2 AV	54.0	-6.8	1.58 H	357	42.50	4.70
5	#7093.00	56.2 PK	74.0	-17.8	1.69 H	24	45.60	10.60
6	#7093.00	44.1 AV	54.0	-9.9	1.69 H	24	33.50	10.60
7	10640.00	60.9 PK	74.0	-13.1	1.05 H	261	44.50	16.40
8	10640.00	47.0 AV	54.0	-7.0	1.05 H	261	30.60	16.40

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	*5320.00	104.7 PK			1.79 V	29	61.80	42.90
2	*5320.00	94.8 AV			1.79 V	29	51.90	42.90
3	5350.00	68.8 PK	74.0	-5.2	1.79 V	29	64.10	4.70
4	5350.00	49.4 AV	54.0	-4.6	1.79 V	29	44.70	4.70
5	#7093.00	56.5 PK	74.0	-17.5	1.84 V	0	45.90	10.60
6	#7093.00	46.8 AV	54.0	-7.2	1.84 V	0	36.20	10.60
7	10640.00	60.6 PK	74.0	-13.4	1.00 V	163	44.20	16.40
8	10640.00	46.5 AV	54.0	-7.5	1.00 V	163	30.10	16.40

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 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	61.5 PK	74.0	-12.5	1.87 H	12	56.70	4.80
2	5460.00	47.2 AV	54.0	-6.8	1.87 H	12	42.40	4.80
3	#5470.00	68.3 PK	74.0	-5.7	1.87 H	12	63.40	4.90
4	#5470.00	50.2 AV	54.0	-3.8	1.87 H	12	45.30	4.90
5	*5500.00	101.6 PK			1.87 H	12	58.40	43.20
6	*5500.00	91.6 AV			1.87 H	12	48.40	43.20
7	11000.00	63.6 PK	74.0	-10.4	1.02 H	245	46.30	17.30
8	11000.00	49.7 AV	54.0	-4.3	1.02 H	245	32.40	17.30

**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	5460.00	61.8 PK	74.0	-12.2	1.70 V	26	57.00	4.80
2	5460.00	47.3 AV	54.0	-6.7	1.70 V	26	42.50	4.80
3	#5470.00	70.1 PK	74.0	-3.9	1.70 V	26	65.20	4.90
4	#5470.00	51.9 AV	54.0	-2.1	1.70 V	26	47.00	4.90
5	*5500.00	104.3 PK			1.70 V	26	61.10	43.20
6	*5500.00	94.4 AV			1.70 V	26	51.20	43.20
7	11000.00	63.3 PK	74.0	-10.7	1.06 V	156	46.00	17.30
8	11000.00	49.6 AV	54.0	-4.4	1.06 V	156	32.30	17.30

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 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	101.7 PK			1.92 H	8	58.30	43.40
2	*5580.00	91.8 AV			1.92 H	8	48.40	43.40
3	7440.00	57.1 PK	74.0	-16.9	1.96 H	28	45.80	11.30
4	7440.00	44.7 AV	54.0	-9.3	1.96 H	28	33.40	11.30
5	11160.00	63.1 PK	74.0	-10.9	1.00 H	251	46.50	16.60
6	11160.00	49.3 AV	54.0	-4.7	1.00 H	251	32.70	16.60

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	*5580.00	104.6 PK			1.57 V	19	61.20	43.40
2	*5580.00	95.5 AV			1.57 V	19	52.10	43.40
3	7440.00	57.9 PK	74.0	-16.1	2.10 V	25	46.60	11.30
4	7440.00	46.9 AV	54.0	-7.1	2.10 V	25	35.60	11.30
5	11160.00	62.7 PK	74.0	-11.3	1.13 V	168	46.10	16.60
6	11160.00	49.1 AV	54.0	-4.9	1.13 V	168	32.50	16.60

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.

CHANNEL	TX Channel 140	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

## ANTENNA POLARITY &amp; 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	100.7 PK			1.76 H	358	57.20	43.50
2	*5700.00	90.5 AV			1.76 H	358	47.00	43.50
3	#5725.00	70.2 PK	74.0	-3.8	1.76 H	358	65.10	5.10
4	#5725.00	51.6 AV	54.0	-2.4	1.76 H	358	46.50	5.10
5	11400.00	62.5 PK	74.0	-11.5	1.08 H	262	46.00	16.50
6	11400.00	48.9 AV	54.0	-5.1	1.08 H	262	32.40	16.50

## ANTENNA POLARITY &amp; 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	103.6 PK			1.77 V	26	60.10	43.50
2	*5700.00	93.9 AV			1.77 V	26	50.40	43.50
3	#5725.00	71.4 PK	74.0	-2.6	1.77 V	26	66.30	5.10
4	#5725.00	<b>53.0 AV</b>	<b>54.0</b>	<b>-1.0</b>	<b>1.77 V</b>	<b>26</b>	<b>47.90</b>	<b>5.10</b>
5	11400.00	62.3 PK	74.0	-11.7	1.00 V	146	45.80	16.50
6	11400.00	48.6 AV	54.0	-5.4	1.00 V	146	32.10	16.50

## 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	#5617.60	61.2 PK	68.2	-7.0	1.81 H	8	56.20	5.00
2	*5745.00	104.0 PK			1.81 H	8	60.40	43.60
3	*5745.00	94.3 AV			1.81 H	8	50.70	43.60
4	#5976.00	61.2 PK	68.2	-7.0	1.81 H	8	55.80	5.40
5	7660.00	58.6 PK	74.0	-15.4	1.74 H	31	47.40	11.20
6	7660.00	46.8 AV	54.0	-7.2	1.74 H	31	35.60	11.20
7	11490.00	61.4 PK	74.0	-12.6	1.00 H	253	45.30	16.10
8	11490.00	47.3 AV	54.0	-6.7	1.00 H	253	31.20	16.10

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	#5604.00	60.8 PK	68.2	-7.4	1.86 V	27	55.80	5.00
2	*5745.00	106.1 PK			1.86 V	27	62.50	43.60
3	*5745.00	96.4 AV			1.86 V	27	52.80	43.60
4	#5954.40	60.2 PK	68.2	-8.0	1.86 V	27	54.90	5.30
5	7660.00	59.8 PK	74.0	-14.2	2.18 V	60	48.60	11.20
6	7660.00	48.5 AV	54.0	-5.5	2.18 V	60	37.30	11.20
7	11490.00	60.8 PK	74.0	-13.2	1.03 V	165	44.70	16.10
8	11490.00	47.1 AV	54.0	-6.9	1.03 V	165	31.00	16.10

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 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	#5624.00	60.4 PK	68.2	-7.8	1.77 H	320	55.30	5.10
2	*5785.00	104.9 PK			1.77 H	320	61.30	43.60
3	*5785.00	94.9 AV			1.77 H	320	51.30	43.60
4	#5926.40	60.3 PK	68.2	-7.9	1.77 H	320	55.00	5.30
5	11570.00	60.9 PK	74.0	-13.1	1.12 H	249	44.80	16.10
6	11570.00	47.8 AV	54.0	-6.2	1.12 H	249	31.70	16.10

**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	#5637.60	59.7 PK	68.2	-8.5	1.80 V	21	54.60	5.10
2	*5785.00	106.0 PK			1.80 V	21	62.40	43.60
3	*5785.00	96.3 AV			1.80 V	21	52.70	43.60
4	#5981.60	60.4 PK	68.2	-7.8	1.80 V	21	55.10	5.30
5	11570.00	60.6 PK	74.0	-13.4	1.00 V	153	44.50	16.10
6	11570.00	47.3 AV	54.0	-6.7	1.00 V	153	31.20	16.10

**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 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	#5627.20	60.3 PK	68.2	-7.9	1.67 H	319	55.20	5.10
2	*5825.00	104.2 PK			1.67 H	319	60.60	43.60
3	*5825.00	94.5 AV			1.67 H	319	50.90	43.60
4	#5972.00	60.9 PK	68.2	-7.3	1.67 H	319	55.50	5.40
5	11650.00	61.2 PK	74.0	-12.8	1.09 H	255	44.90	16.30
6	11650.00	48.3 AV	54.0	-5.7	1.09 H	255	32.00	16.30

**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	#5624.80	59.8 PK	68.2	-8.4	1.74 V	27	54.70	5.10
2	*5825.00	106.1 PK			1.74 V	27	62.50	43.60
3	*5825.00	96.3 AV			1.74 V	27	52.70	43.60
4	#5964.80	59.6 PK	68.2	-8.6	1.74 V	27	54.30	5.30
5	11650.00	60.9 PK	74.0	-13.1	1.00 V	147	44.60	16.30
6	11650.00	47.7 AV	54.0	-6.3	1.00 V	147	31.40	16.30

**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.

## 802.11n (HT20)

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

## ANTENNA POLARITY &amp; 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	62.2 PK	74.0	-11.8	1.74 H	3	57.60	4.60
2	5150.00	46.8 AV	54.0	-7.2	1.74 H	3	42.20	4.60
3	*5180.00	100.0 PK			1.74 H	3	57.20	42.80
4	*5180.00	89.8 AV			1.74 H	3	47.00	42.80
5	#10360.00	61.7 PK	74.0	-12.3	1.17 H	251	45.90	15.80
6	#10360.00	47.7 AV	54.0	-6.3	1.17 H	251	31.90	15.80

## ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	63.1 PK	74.0	-10.9	1.62 V	33	58.50	4.60
2	5150.00	47.3 AV	54.0	-6.7	1.62 V	33	42.70	4.60
3	*5180.00	100.9 PK			1.62 V	33	58.10	42.80
4	*5180.00	90.9 AV			1.62 V	33	48.10	42.80
5	#10360.00	61.5 PK	74.0	-12.5	1.00 V	163	45.70	15.80
6	#10360.00	47.6 AV	54.0	-6.4	1.00 V	163	31.80	15.80

## 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 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	101.1 PK			1.66 H	359	58.30	42.80
2	*5200.00	91.1 AV			1.66 H	359	48.30	42.80
3	#10400.00	62.0 PK	74.0	-12.0	1.20 H	238	46.00	16.00
4	#10400.00	48.1 AV	54.0	-5.9	1.20 H	238	32.10	16.00

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	102.4 PK			1.77 V	33	59.60	42.80
2	*5200.00	92.4 AV			1.77 V	33	49.60	42.80
3	#10400.00	61.5 PK	74.0	-12.5	1.02 V	157	45.50	16.00
4	#10400.00	47.6 AV	54.0	-6.4	1.02 V	157	31.60	16.00

**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 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	101.9 PK			1.57 H	351	59.00	42.90
2	*5240.00	92.0 AV			1.57 H	351	49.10	42.90
3	5350.00	60.0 PK	74.0	-14.0	1.57 H	351	55.30	4.70
4	5350.00	45.8 AV	54.0	-8.2	1.57 H	351	41.10	4.70
5	#10480.00	62.2 PK	74.0	-11.8	1.16 H	243	46.20	16.00
6	#10480.00	47.9 AV	54.0	-6.1	1.16 H	243	31.90	16.00

**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	103.1 PK			1.88 V	32	60.20	42.90
2	*5240.00	93.2 AV			1.88 V	32	50.30	42.90
3	5350.00	60.2 PK	74.0	-13.8	1.88 V	32	55.50	4.70
4	5350.00	46.0 AV	54.0	-8.0	1.88 V	32	41.30	4.70
5	#10480.00	61.7 PK	74.0	-12.3	1.00 V	149	45.70	16.00
6	#10480.00	47.7 AV	54.0	-6.3	1.00 V	149	31.70	16.00

**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	60.1 PK	74.0	-13.9	1.48 H	336	55.50	4.60
2	5150.00	46.8 AV	54.0	-7.2	1.48 H	336	42.20	4.60
3	*5260.00	102.2 PK			1.48 H	336	59.30	42.90
4	*5260.00	92.9 AV			1.48 H	336	50.00	42.90
5	#10520.00	61.0 PK	74.0	-13.0	1.00 H	249	45.00	16.00
6	#10520.00	47.2 AV	54.0	-6.8	1.00 H	249	31.20	16.00

**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	60.3 PK	74.0	-13.7	2.00 V	28	55.70	4.60
2	5150.00	47.0 AV	54.0	-7.0	2.00 V	28	42.40	4.60
3	*5260.00	105.4 PK			2.00 V	28	62.50	42.90
4	*5260.00	95.9 AV			2.00 V	28	53.00	42.90
5	#10520.00	60.6 PK	74.0	-13.4	1.05 V	176	44.60	16.00
6	#10520.00	46.7 AV	54.0	-7.3	1.05 V	176	30.70	16.00

**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 60	DETECTOR	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz	FUNCTION	Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	103.9 PK			1.53 H	329	61.00	42.90
2	*5300.00	94.7 AV			1.53 H	329	51.80	42.90
3	10600.00	61.4 PK	74.0	-12.6	1.06 H	253	45.10	16.30
4	10600.00	47.7 AV	54.0	-6.3	1.06 H	253	31.40	16.30

**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	*5300.00	106.4 PK			1.63 V	38	63.50	42.90
2	*5300.00	97.2 AV			1.63 V	38	54.30	42.90
3	10600.00	60.9 PK	74.0	-13.1	1.00 V	169	44.60	16.30
4	10600.00	47.2 AV	54.0	-6.8	1.00 V	169	30.90	16.30

**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.

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	102.9 PK			1.62 H	349	60.00	42.90
2	*5320.00	93.4 AV			1.62 H	349	50.50	42.90
3	5350.00	68.2 PK	74.0	-5.8	1.62 H	349	63.50	4.70
4	5350.00	50.0 AV	54.0	-4.0	1.62 H	349	45.30	4.70
5	#7093.00	56.6 PK	74.0	-17.4	1.57 H	33	46.00	10.60
6	#7093.00	45.4 AV	54.0	-8.6	1.57 H	33	34.80	10.60
7	10640.00	61.6 PK	74.0	-12.4	1.00 H	248	45.20	16.40
8	10640.00	47.8 AV	54.0	-6.2	1.00 H	248	31.40	16.40

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	*5320.00	106.2 PK			1.71 V	25	63.30	42.90
2	*5320.00	96.2 AV			1.71 V	25	53.30	42.90
3	5350.00	71.0 PK	74.0	-3.0	1.71 V	25	66.30	4.70
4	5350.00	52.5 AV	54.0	-1.5	1.71 V	25	47.80	4.70
5	#7093.00	56.9 PK	74.0	-17.1	1.79 V	3	46.30	10.60
6	#7093.00	46.9 AV	54.0	-7.1	1.79 V	3	36.30	10.60
7	10640.00	61.2 PK	74.0	-12.8	1.04 V	155	44.80	16.40
8	10640.00	47.4 AV	54.0	-6.6	1.04 V	155	31.00	16.40

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 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	60.5 PK	74.0	-13.5	1.93 H	0	55.70	4.80
2	5460.00	47.5 AV	54.0	-6.5	1.93 H	0	42.70	4.80
3	#5470.00	68.1 PK	74.0	-5.9	1.93 H	0	63.20	4.90
4	#5470.00	48.7 AV	54.0	-5.3	1.93 H	0	43.80	4.90
5	*5500.00	100.4 PK			1.93 H	0	57.20	43.20
6	*5500.00	90.0 AV			1.93 H	0	46.80	43.20
7	11000.00	63.4 PK	74.0	-10.6	1.00 H	248	46.10	17.30
8	11000.00	49.3 AV	54.0	-4.7	1.00 H	248	32.00	17.30

**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	5460.00	60.9 PK	74.0	-13.1	1.77 V	26	56.10	4.80
2	5460.00	47.8 AV	54.0	-6.2	1.77 V	26	43.00	4.80
3	#5470.00	69.0 PK	74.0	-5.0	1.77 V	26	64.10	4.90
4	#5470.00	50.1 AV	54.0	-3.9	1.77 V	26	45.20	4.90
5	*5500.00	103.1 PK			1.77 V	26	59.90	43.20
6	*5500.00	93.2 AV			1.77 V	26	50.00	43.20
7	11000.00	63.1 PK	74.0	-10.9	1.07 V	143	45.80	17.30
8	11000.00	49.1 AV	54.0	-4.9	1.07 V	143	31.80	17.30

**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 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	100.6 PK			2.00 H	3	57.20	43.40
2	*5580.00	90.1 AV			2.00 H	3	46.70	43.40
3	11160.00	62.8 PK	74.0	-11.2	1.08 H	257	46.20	16.60
4	11160.00	48.7 AV	54.0	-5.3	1.08 H	257	32.10	16.60

**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	*5580.00	104.2 PK			1.78 V	30	60.80	43.40
2	*5580.00	93.9 AV			1.78 V	30	50.50	43.40
3	11160.00	62.4 PK	74.0	-11.6	1.13 V	150	45.80	16.60
4	11160.00	48.3 AV	54.0	-5.7	1.13 V	150	31.70	16.60

**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.

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	101.0 PK			1.83 H	358	57.50	43.50
2	*5700.00	90.3 AV			1.83 H	358	46.80	43.50
3	#5725.00	70.9 PK	74.0	-3.1	1.83 H	358	65.80	5.10
4	#5725.00	51.5 AV	54.0	-2.5	1.83 H	358	46.40	5.10
5	7600.00	57.1 PK	74.0	-16.9	2.00 H	35	46.00	11.10
6	7600.00	45.8 AV	54.0	-8.2	2.00 H	35	34.70	11.10
7	11400.00	62.4 PK	74.0	-11.6	1.01 H	262	45.90	16.50
8	11400.00	48.6 AV	54.0	-5.4	1.01 H	262	32.10	16.50

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	103.7 PK			1.94 V	25	60.20	43.50
2	*5700.00	93.5 AV			1.94 V	25	50.00	43.50
3	#5725.00	72.1 PK	74.0	-1.9	1.94 V	25	67.00	5.10
4	#5725.00	52.9 AV	54.0	-1.1	1.94 V	25	47.80	5.10
5	7600.00	57.9 PK	74.0	-16.1	1.99 V	68	46.80	11.10
6	7600.00	47.6 AV	54.0	-6.4	1.99 V	68	36.50	11.10
7	11400.00	62.2 PK	74.0	-11.8	1.00 V	158	45.70	16.50
8	11400.00	48.5 AV	54.0	-5.5	1.00 V	158	32.00	16.50

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	#5624.80	60.6 PK	68.2	-7.6	1.72 H	318	55.50	5.10
2	*5745.00	103.4 PK			1.72 H	318	59.80	43.60
3	*5745.00	93.2 AV			1.72 H	318	49.60	43.60
4	#5931.20	59.5 PK	68.2	-8.7	1.72 H	318	54.20	5.30
5	7660.00	57.7 PK	74.0	-16.3	1.59 H	30	46.50	11.20
6	7660.00	46.5 AV	54.0	-7.5	1.59 H	30	35.30	11.20
7	11490.00	61.0 PK	74.0	-13.0	1.13 H	247	44.90	16.10
8	11490.00	47.2 AV	54.0	-6.8	1.13 H	247	31.10	16.10

**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	#5631.20	61.4 PK	68.2	-6.8	1.77 V	26	56.30	5.10
2	*5745.00	106.1 PK			1.77 V	26	62.50	43.60
3	*5745.00	96.1 AV			1.77 V	26	52.50	43.60
4	#5969.60	60.6 PK	68.2	-7.6	1.77 V	26	55.30	5.30
5	7660.00	58.4 PK	74.0	-15.6	2.20 V	65	47.20	11.20
6	7660.00	48.0 AV	54.0	-6.0	2.20 V	65	36.80	11.20
7	11490.00	60.8 PK	74.0	-13.2	1.05 V	154	44.70	16.10
8	11490.00	47.1 AV	54.0	-6.9	1.05 V	154	31.00	16.10

**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 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	#5627.20	60.1 PK	68.2	-8.1	1.65 H	316	55.00	5.10
2	*5785.00	103.8 PK			1.65 H	316	60.20	43.60
3	*5785.00	94.0 AV			1.65 H	316	50.40	43.60
4	#5981.60	59.6 PK	68.2	-8.6	1.65 H	316	54.30	5.30
5	11570.00	61.0 PK	74.0	-13.0	1.00 H	254	44.90	16.10
6	11570.00	47.6 AV	54.0	-6.4	1.00 H	254	31.50	16.10

**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	#5622.40	60.3 PK	68.2	-7.9	1.63 V	23	55.20	5.10
2	*5785.00	106.9 PK			1.63 V	23	63.30	43.60
3	*5785.00	97.1 AV			1.63 V	23	53.50	43.60
4	#5984.00	60.4 PK	68.2	-7.8	1.63 V	23	55.10	5.30
5	11570.00	60.7 PK	74.0	-13.3	1.00 V	163	44.60	16.10
6	11570.00	47.3 AV	54.0	-6.7	1.00 V	163	31.20	16.10

**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 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	#5618.40	60.2 PK	68.2	-8.0	1.66 H	319	55.10	5.10
2	*5825.00	104.9 PK			1.66 H	319	61.30	43.60
3	*5825.00	94.7 AV			1.66 H	319	51.10	43.60
4	#5970.40	60.2 PK	68.2	-8.0	1.66 H	319	54.90	5.30
5	11650.00	61.4 PK	74.0	-12.6	1.10 H	261	45.10	16.30
6	11650.00	48.0 AV	54.0	-6.0	1.10 H	261	31.70	16.30

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	#5624.80	60.2 PK	68.2	-8.0	1.77 V	22	55.10	5.10
2	*5825.00	106.2 PK			1.77 V	22	62.60	43.60
3	*5825.00	96.0 AV			1.77 V	22	52.40	43.60
4	#5932.80	59.9 PK	68.2	-8.3	1.77 V	22	54.60	5.30
5	11650.00	61.0 PK	74.0	-13.0	1.13 V	178	44.70	16.30
6	11650.00	47.4 AV	54.0	-6.6	1.13 V	178	31.10	16.30

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.

## Below 1GHz Worst-case Data: 802.11a

CHANNEL	TX Channel 48	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz	TEST MODE	A

## ANTENNA POLARITY &amp; 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	30.00	29.5 QP	40.0	-10.5	1.51 H	91	45.10	-15.60
2	82.38	22.3 QP	40.0	-17.7	2.00 H	128	40.70	-18.40
3	154.16	29.9 QP	43.5	-13.6	1.51 H	121	43.20	-13.30
4	288.02	35.0 QP	46.0	-11.0	1.00 H	94	46.50	-11.50
5	383.08	35.2 QP	46.0	-10.8	1.26 H	92	44.40	-9.20
6	672.14	38.2 QP	46.0	-7.8	1.00 H	229	40.50	-2.30

## ANTENNA POLARITY &amp; 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	33.88	34.6 QP	40.0	-5.4	1.00 V	324	50.00	-15.40
2	64.92	30.6 QP	40.0	-9.4	1.24 V	126	45.70	-15.10
3	165.80	34.6 QP	43.5	-8.9	1.00 V	151	48.00	-13.40
4	288.02	41.5 QP	46.0	-4.5	1.00 V	153	53.00	-11.50
5	383.08	36.2 QP	46.0	-9.8	1.00 V	104	45.40	-9.20
6	827.34	38.3 QP	46.0	-7.7	1.00 V	314	37.00	1.30

## 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

CHANNEL	TX Channel 48	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz	TEST MODE	B

**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	30.00	29.6 QP	40.0	-10.4	1.50 H	14	45.20	-15.60
2	70.74	29.8 QP	40.0	-10.2	1.26 H	223	45.60	-15.80
3	206.54	29.5 QP	43.5	-14.0	1.50 H	118	45.50	-16.00
4	256.98	40.8 QP	46.0	-5.2	1.01 H	121	53.90	-13.10
5	365.62	35.5 QP	46.0	-10.5	1.01 H	102	45.20	-9.70
6	877.78	39.3 QP	46.0	-6.7	1.26 H	111	36.90	2.40

**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	30.00	34.5 QP	40.0	-5.5	1.24 V	13	50.10	-15.60
2	70.74	33.1 QP	40.0	-6.9	1.00 V	194	48.90	-15.80
3	127.00	36.2 QP	43.5	-7.3	1.49 V	236	51.70	-15.50
4	148.34	34.5 QP	43.5	-9.0	1.49 V	236	47.80	-13.30
5	239.52	37.6 QP	46.0	-8.4	1.00 V	262	51.60	-14.00
6	877.78	42.8 QP	46.0	-3.2	1.00 V	195	40.40	2.40

**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

## 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	ESCS30	100289	Dec. 23, 2015	Dec. 22, 2016
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond2-01	Dec. 26, 2015	Dec. 25, 2016
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Jan. 11, 2016	Jan. 10, 2017
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Jul. 26, 2016	Jul. 25, 2017
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

- Note:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.  
 2. The test was performed in HwaYa Shielded Room 2.  
 3. The VCCI Site Registration No. is C-2047.

#### 4.2.3 Test Procedures

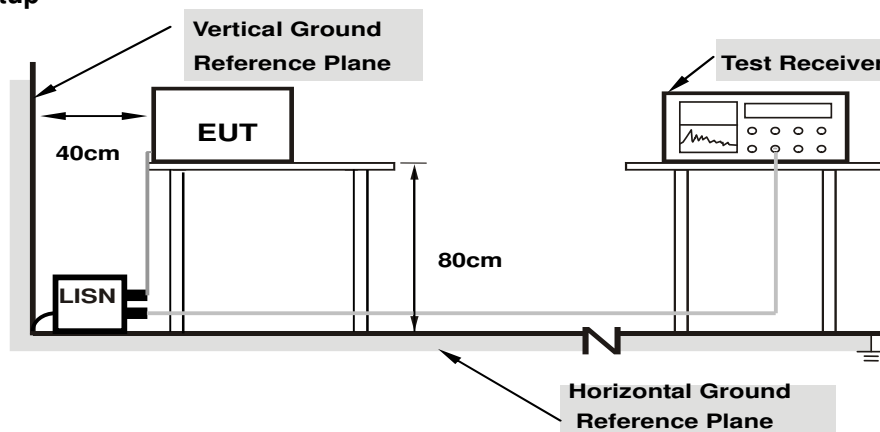
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.22031	10.16	19.52	16.98	29.68	27.14	62.81	52.81	-33.13	-25.67
2	0.36875	10.19	29.46	27.95	39.65	38.14	58.53	48.53	-18.88	-10.39
3	0.51719	10.20	25.15	20.88	35.35	31.08	56.00	46.00	-20.65	-14.92
4	0.88828	10.21	21.99	20.74	32.20	30.95	56.00	46.00	-23.80	-15.05
5	7.55078	10.43	21.61	21.67	32.04	32.10	60.00	50.00	-27.96	-17.90
6	11.55078	10.50	13.00	12.93	23.50	23.43	60.00	50.00	-36.50	-26.57

#### REMARKS:

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



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

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	0.22031	10.16	20.19	19.40	30.35	29.56	62.81
2	0.36875	10.19	29.20	28.27	39.39	38.46	58.53	48.53	-19.14	-10.07
3	0.51328	10.19	21.09	15.14	31.28	25.33	56.00	46.00	-24.72	-20.67
4	0.96250	10.21	22.05	20.64	32.26	30.85	56.00	46.00	-23.74	-15.15
5	6.81250	10.47	10.15	11.40	20.62	21.87	60.00	50.00	-39.38	-28.13
6	10.81250	10.57	8.72	7.73	19.29	18.30	60.00	50.00	-40.71	-31.70

#### REMARKS:

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



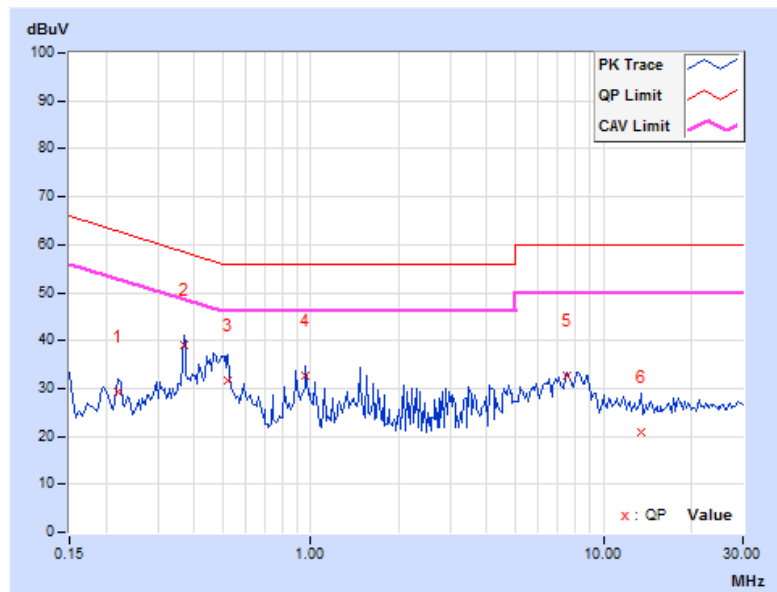


Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	B		

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	0.22031	9.92	19.40	16.98	29.32	26.90	62.81
2	0.36875	9.95	29.06	28.01	39.01	37.96	58.53	48.53	-19.52	-10.57
3	0.52109	9.96	21.59	18.04	31.55	28.00	56.00	46.00	-24.45	-18.00
4	0.96250	9.98	22.72	21.43	32.70	31.41	56.00	46.00	-23.30	-14.59
5	7.55078	10.32	22.41	21.81	32.73	32.13	60.00	50.00	-27.27	-17.87
6	13.40234	10.70	10.16	9.97	20.86	20.67	60.00	50.00	-39.14	-29.33

#### REMARKS:

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

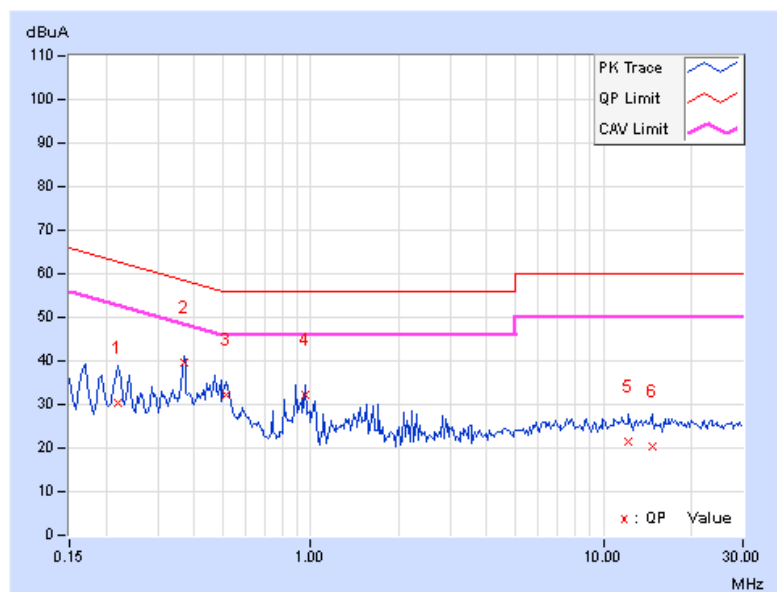


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	B		

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	0.22031	10.16	20.19	19.56	30.35	29.72	62.81
2	<b>0.36875</b>	<b>10.19</b>	<b>29.36</b>	<b>28.47</b>	<b>39.55</b>	<b>38.66</b>	<b>58.53</b>	<b>48.53</b>	<b>-18.98</b>	<b>-9.87</b>
3	0.51719	10.19	21.97	19.06	32.16	29.25	56.00	46.00	-23.84	-16.75
4	0.96250	10.21	22.05	20.78	32.26	30.99	56.00	46.00	-23.74	-15.01
5	12.21875	10.60	10.71	8.79	21.31	19.39	60.00	50.00	-38.69	-30.61
6	14.66016	10.64	9.61	8.57	20.25	19.21	60.00	50.00	-39.75	-30.79

#### 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

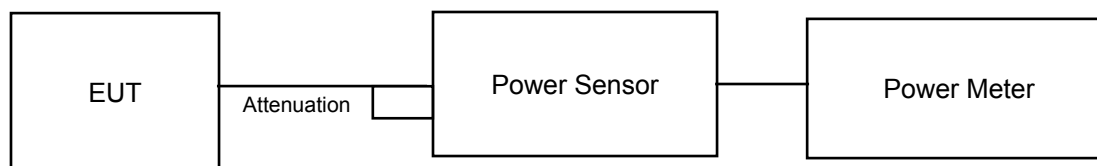
#### 4.3.1 Limits of Transmit Power Measurement

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)

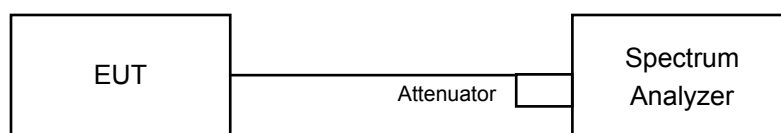
\*B is the 26 dB emission bandwidth in megahertz

#### 4.3.2 Test Setup

For Power Output Measurement



For 26dB and Occupied Bandwidth



#### 4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

#### 4.3.4 Test Procedure

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 (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
36	5180	23.121	13.64	24.00	Pass
40	5200	22.751	13.57	24.00	Pass
48	5240	<b>23.335</b>	13.68	24.00	Pass
52	5260	22.491	13.52	24.00	Pass
60	5300	22.803	13.58	24.00	Pass
64	5320	22.961	13.61	24.00	Pass
100	5500	7.889	8.97	24.00	Pass
116	5580	<b>7.962</b>	9.01	24.00	Pass
140	5700	6.776	8.31	24.00	Pass
149	5745	19.77	12.96	30.00	Pass
157	5785	20.941	13.21	30.00	Pass
165	5825	<b>21.135</b>	13.25	30.00	Pass

Note:

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

1.  $11\text{dBm} + 10\log ( 37.27 ) = 26.71 > 24\text{dBm}$
2.  $11\text{dBm} + 10\log ( 37.29 ) = 26.72 > 24\text{dBm}$
3.  $11\text{dBm} + 10\log ( 38.30 ) = 26.83 > 24\text{dBm}$
4.  $11\text{dBm} + 10\log ( 36.44 ) = 26.62 > 24\text{dBm}$
5.  $11\text{dBm} + 10\log ( 36.32 ) = 26.60 > 24\text{dBm}$
6.  $11\text{dBm} + 10\log ( 35.02 ) = 26.44 > 24\text{dBm}$

## 802.11n (HT20)

Chan.	Freq. (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
36	5180	22.803	13.58	24.00	Pass
40	5200	22.961	13.61	24.00	Pass
48	5240	22.646	13.55	24.00	Pass
52	5260	<b>23.121</b>	13.64	24.00	Pass
60	5300	22.233	13.47	24.00	Pass
64	5320	22.542	13.53	24.00	Pass
100	5500	7.194	8.57	24.00	Pass
116	5580	7.261	8.61	24.00	Pass
140	5700	5.754	7.60	24.00	Pass
149	5745	5.902	7.71	30.00	Pass
157	5785	20.941	13.21	30.00	Pass
165	5825	<b>21.135</b>	13.25	30.00	Pass

## Note:

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

1.  $11\text{dBm} + 10\log ( 43.61 ) = 27.40 > 24\text{dBm}$
2.  $11\text{dBm} + 10\log ( 43.63 ) = 27.40 > 24\text{dBm}$
3.  $11\text{dBm} + 10\log ( 43.83 ) = 27.42 > 24\text{dBm}$
4.  $11\text{dBm} + 10\log ( 42.77 ) = 27.31 > 24\text{dBm}$
5.  $11\text{dBm} + 10\log ( 42.08 ) = 27.24 > 24\text{dBm}$
6.  $11\text{dBm} + 10\log ( 42.42 ) = 27.28 > 24\text{dBm}$

26dB Bandwidth:

802.11a

Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)
36	5180	37.87
40	5200	35.92
48	5240	37.34
52	5260	37.27
60	5300	37.29
64	5320	38.30
100	5500	36.44
116	5580	36.32
140	5700	35.02

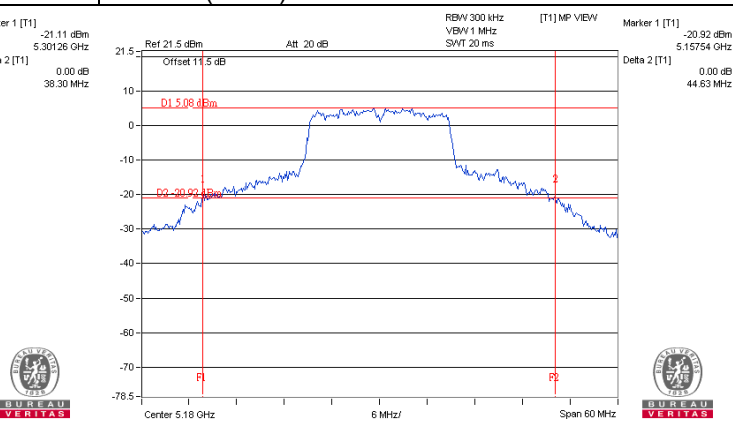
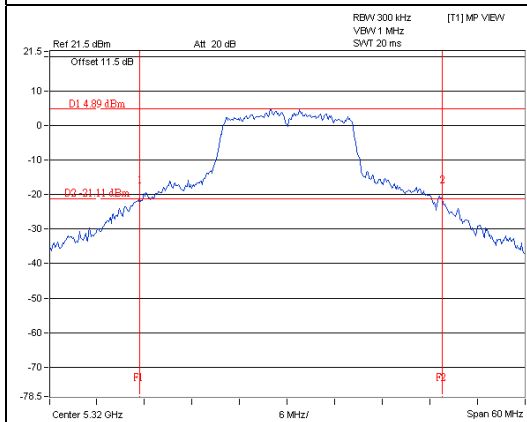
802.11n (HT20)

Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)
36	5180	44.63
40	5200	43.41
48	5240	43.70
52	5260	43.61
60	5300	43.63
64	5320	43.83
100	5500	42.77
116	5580	42.08
140	5700	42.42

### Spectrum Plot of Worst Value

802.11a

802.11n (HT20)



## Occupied Bandwidth:

## 802.11a

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)
36	5180	22.08
40	5200	18.84
48	5240	18.68
52	5260	20.68
60	5300	19.80
64	5320	21.00
100	5500	18.72
116	5580	18.48
140	5700	18.48
149	5745	25.30
157	5785	25.92
165	5825	23.88

## 802.11n (HT20)

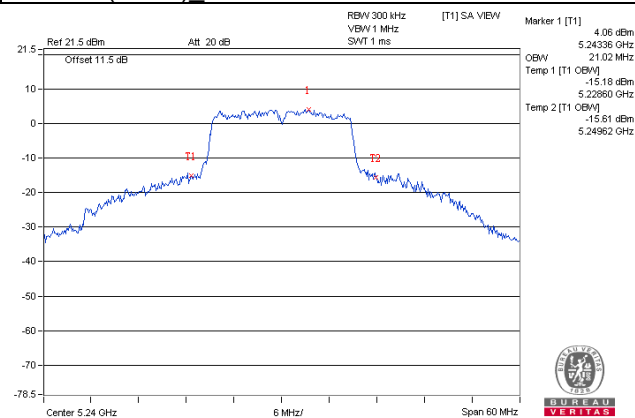
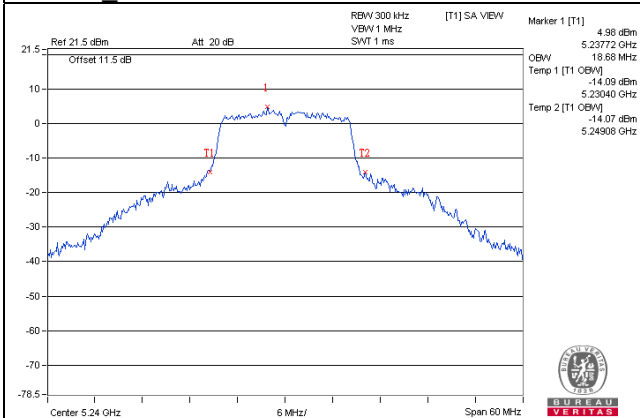
Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)
36	5180	24.24
40	5200	22.80
48	5240	21.02
52	5260	22.68
60	5300	23.40
64	5320	24.60
100	5500	19.20
116	5580	19.32
140	5700	19.68
149	5745	28.52
157	5785	29.04
165	5825	26.40



Spectrum Plot of Worst Value

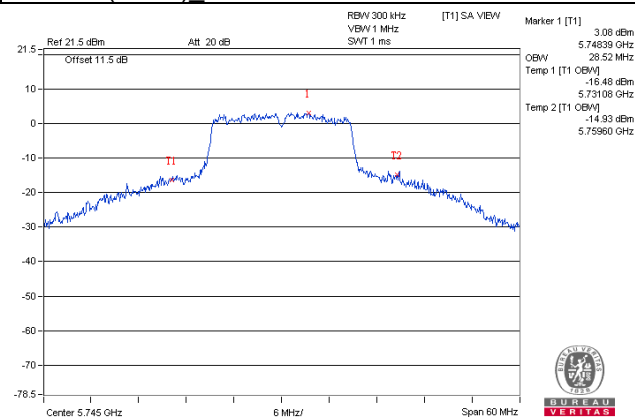
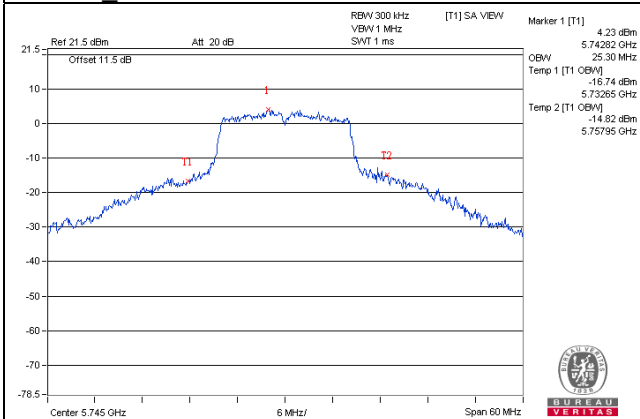
802.11a\_CH48

802.11n (HT20)\_CH48



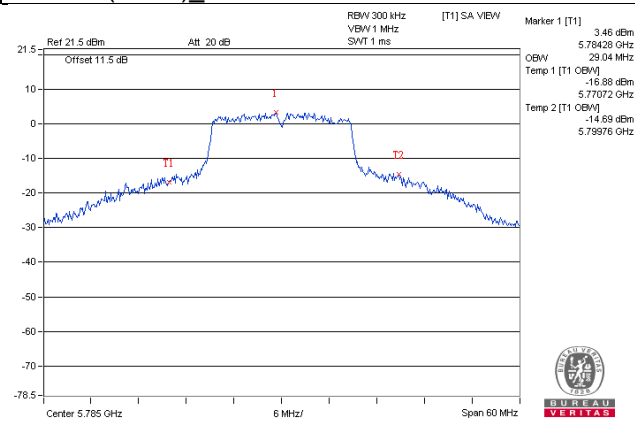
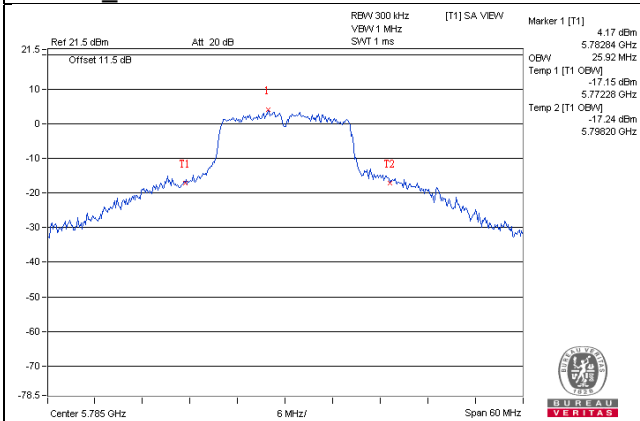
802.11a\_CH149

802.11n (HT20)\_CH149



802.11a\_CH157

802.11n (HT20)\_CH157



## EUT MAXIMUM CONDUCTED POWER

### 802.11a

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	22.961	13.61
5470~5725	7.962	9.01

### 802.11n (HT20)

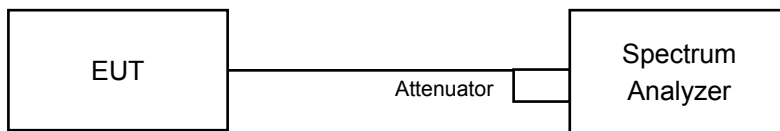
Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	23.121	13.64
5470~5725	7.261	8.61

## 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:**

Using method SA-2, Duty cycle <98%

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

**For U-NII-3 band:**

Duty cycle <98%

Set span to encompass the entire emission bandwidth (EBW) of the signal.

- Set RBW = 300 kHz, Set VBW ≥ 1 MHz, Detector = RMS
- Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.
- 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  $BWCF = 10\log(500\text{ kHz}/300\text{ kHz})$
- Sweep time = auto, trigger set to “free run”.
- Trace average at least 100 traces in power averaging mode.
- 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 W/O Duty Factor (dBm/MHz)	Duty Factor (dB)	PSD With Duty Factor (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
36	5180	1.19	0.66	1.85	11	Pass
40	5200	-0.28	0.66	0.38	11	Pass
48	5240	-0.29	0.66	0.37	11	Pass
52	5260	-0.33	0.66	0.33	11	Pass
60	5300	-0.43	0.66	0.23	11	Pass
64	5320	-0.34	0.66	0.32	11	Pass
100	5500	-4.12	0.66	-3.46	11	Pass
120	5600	-5.58	0.66	-4.92	11	Pass
140	5700	-5.65	0.66	-4.99	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.
- Refer to section 3.3 for duty cycle spectrum plot.

##### 802.11n (HT20)

Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm/MHz)	Duty Factor (dB)	PSD With Duty Factor (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
36	5180	0.76	0.57	1.33	11	Pass
40	5200	0.28	0.57	0.85	11	Pass
48	5240	0.18	0.57	0.75	11	Pass
52	5260	-0.08	0.57	0.49	11	Pass
60	5300	-0.34	0.57	0.23	11	Pass
64	5320	-0.22	0.57	0.35	11	Pass
100	5500	-4.80	0.57	-4.23	11	Pass
120	5600	-5.42	0.57	-4.85	11	Pass
140	5700	-5.50	0.57	-4.93	11	Pass

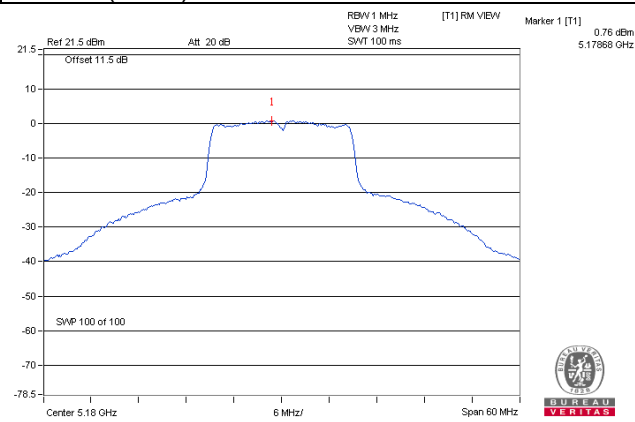
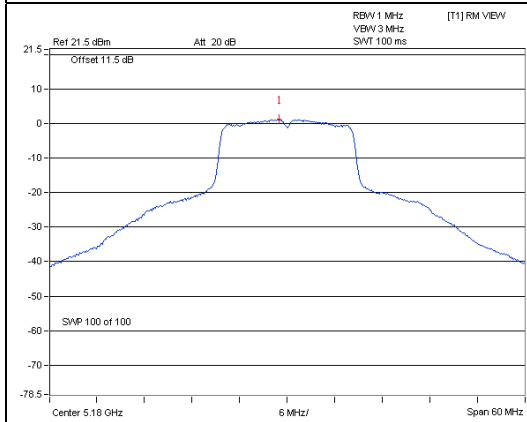
Note:

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

### Spectrum Plot of Worst Value

802.11a

802.11n (HT20)



For U-NII-3 Band

802.11a

Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor		Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
		(dBm/300kHz)	(dBm/500kHz)				
149	5745	-9.52	-7.30	0.66	-6.64	30	Pass
157	5785	-9.27	-7.05	0.66	-6.39	30	Pass
165	5825	-9.51	-7.29	0.66	-6.63	30	Pass

Note: Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

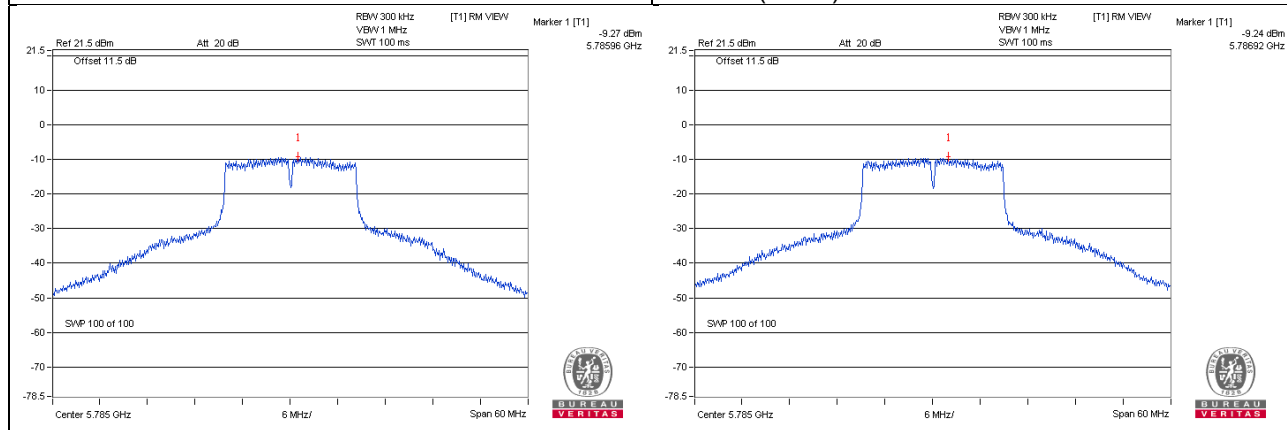
Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor		Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
		(dBm/300kHz)	(dBm/500kHz)				
149	5745	-14.93	-12.71	0.57	-12.14	30	Pass
157	5785	-9.24	-7.02	0.57	-6.45	30	Pass
165	5825	-9.82	-7.60	0.57	-7.03	30	Pass

Note: Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

802.11a

802.11n (HT20)

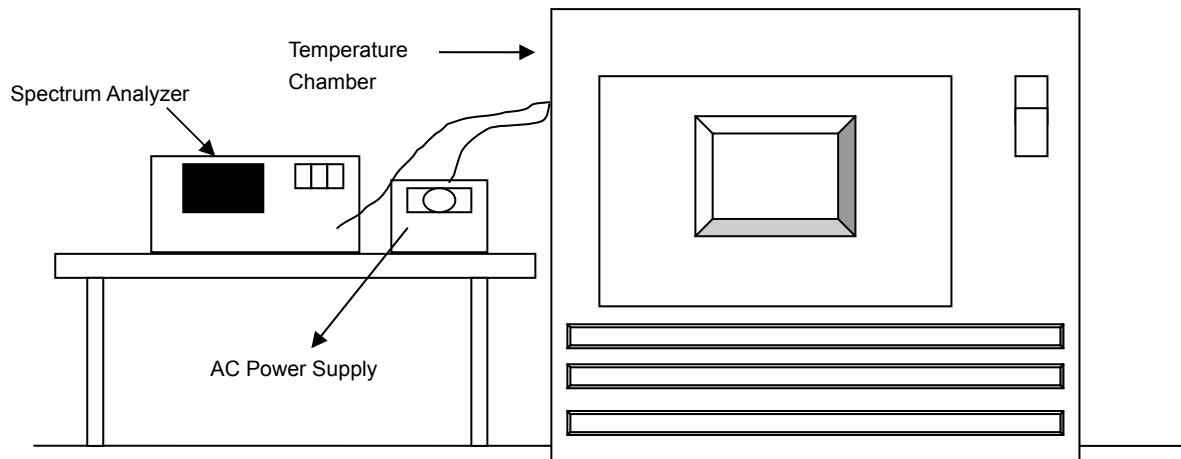


## 4.5 Frequency Stability

### 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: 5180MHz									
Temp. (°C)	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	5179.9777	-0.00043	5179.9772	-0.00044	5179.9755	-0.00047	5179.9778	-0.00043
40	120	5179.9830	-0.00033	5179.9839	-0.00031	5179.9791	-0.00040	5179.9836	-0.00032
30	120	5179.9799	-0.00039	5179.9811	-0.00036	5179.9792	-0.00040	5179.9806	-0.00037
20	120	5180.0013	0.00003	5180.0036	0.00007	5180.0031	0.00006	5180.0028	0.00005
10	120	5180.0042	0.00008	5180.0009	0.00002	5180.0053	0.00010	5180.0015	0.00003
0	120	5180.0206	0.00040	5180.0209	0.00040	5180.02	0.00039	5180.0223	0.00043
-10	120	5180.0179	0.00035	5180.0189	0.00036	5180.0148	0.00029	5180.0165	0.00032
-20	120	5179.9842	-0.00031	5179.9819	-0.00035	5179.9834	-0.00032	5179.982	-0.00035
-30	120	5179.9790	-0.00041	5179.9757	-0.00047	5179.9748	-0.00049	5179.9771	-0.00044

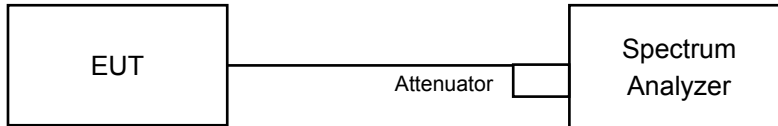
Frequency Stability Versus Voltage									
Operating Frequency: 5180MHz									
Temp. (°C)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
20	138	5180.0014	0.00003	5180.0037	0.00007	5180.0032	0.00006	5180.0025	0.00005
	120	5180.0013	0.00003	5180.0036	0.00007	5180.0031	0.00006	5180.0028	0.00005
	102	5180.0006	0.00001	5180.003	0.00006	5180.0038	0.00007	5180.0025	0.00005

## 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

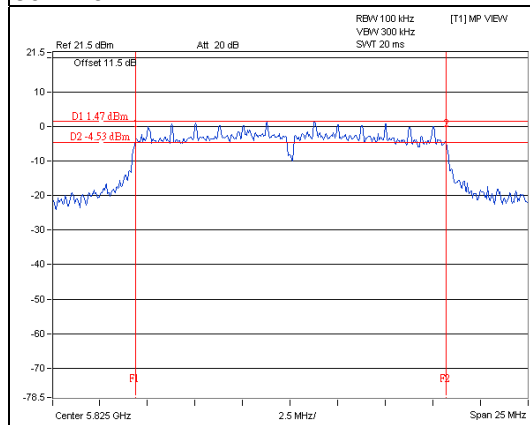
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
149	5745	16.33	0.5	Pass
157	5785	16.37	0.5	Pass
165	5825	16.38	0.5	Pass

#### 802.11n (HT20)

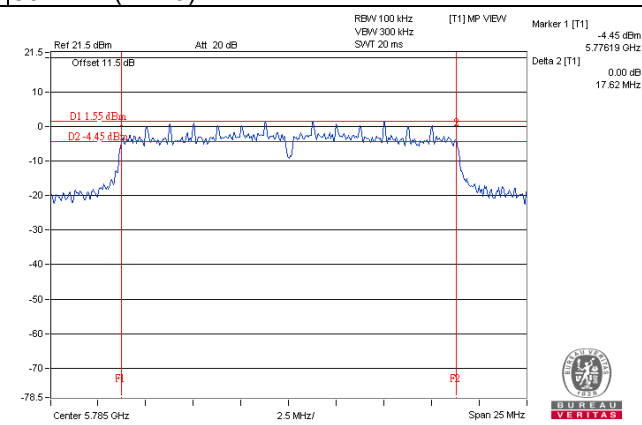
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
149	5745	17.61	0.5	Pass
157	5785	17.62	0.5	Pass
165	5825	17.61	0.5	Pass

### Spectrum Plot of Worst Value

#### 802.11a



#### 802.11n (HT20)

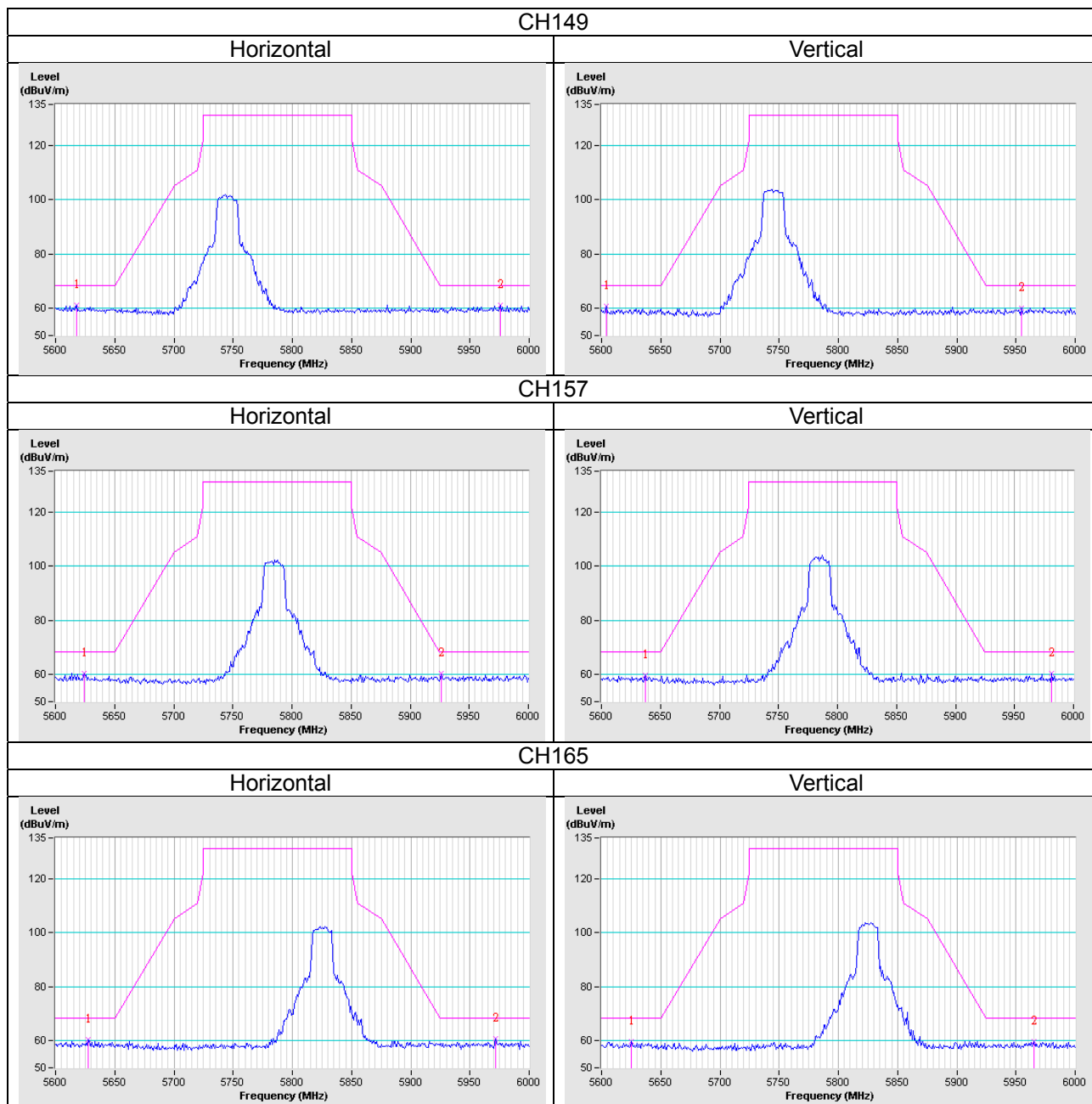


## 5 Pictures of Test Arrangements

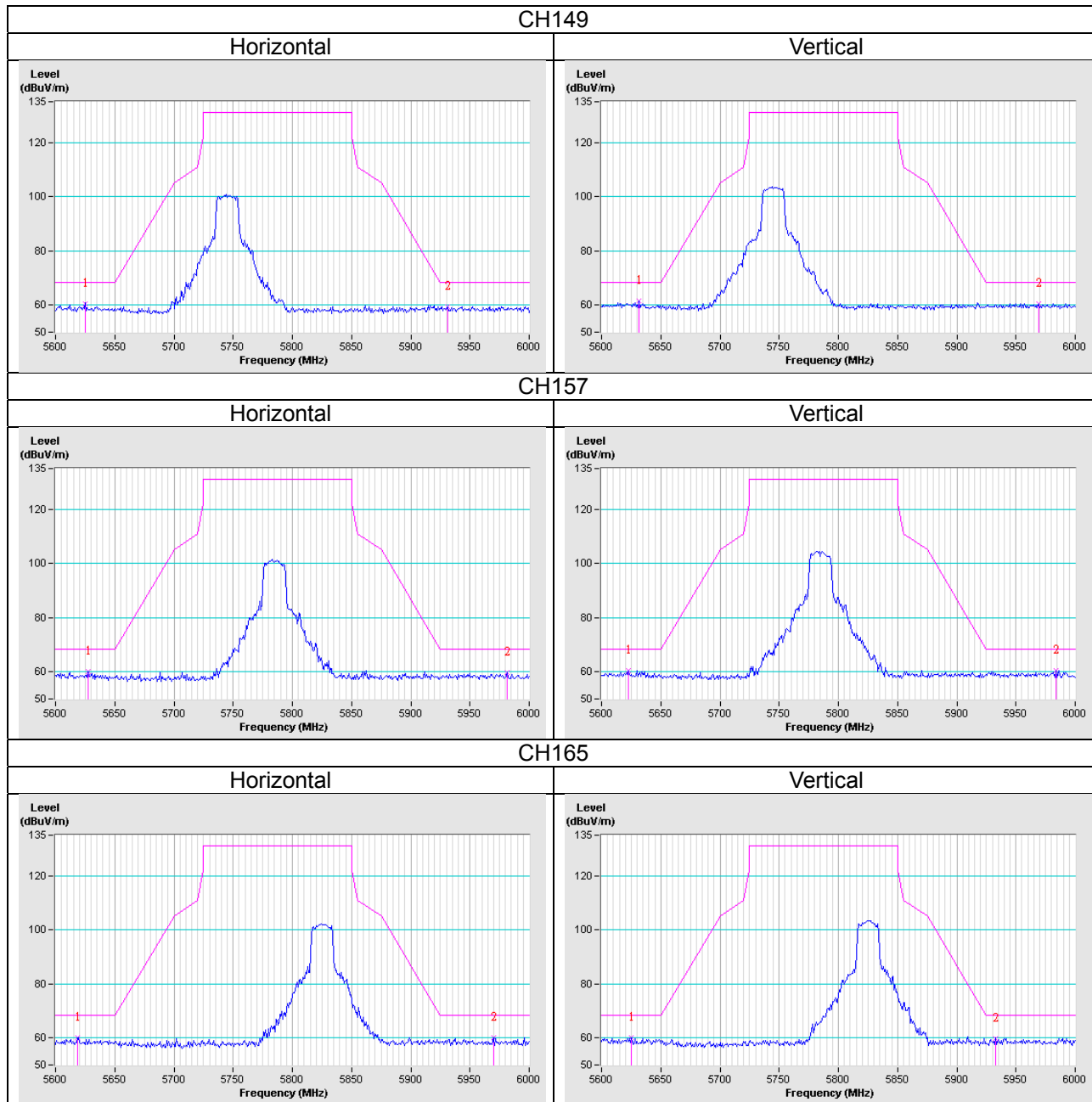
Please refer to the attached file (Test Setup Photo).

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

802.11a



802.11n (HT20)



## Appendix – Information on the Testing Laboratories

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

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

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Fax: 886-2-26051924

**Hsin Chu EMC/RF/Telecom Lab**

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**Web Site:** [www.bureauveritas-adt.com](http://www.bureauveritas-adt.com)

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

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