



Test Report No.: RF170330W002-7



# FCC TEST REPORT

## (Part 15, Subpart E)

**Product:** Portable Tablet Computer

**Model No.:** TB-8704V

**FCC ID:** O57TB8704V

**Applicant:** Lenovo(Shanghai) Electronics Technology Co., Ltd.

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**Report No.:** RF170330W002-7

**Received Date:** Mar. 30, 2017

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**Issued Date:** May 11, 2017

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Test Report No.: RF170330W002-7

## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF170330W002-7	Original release	May 11, 2017



# 1 CERTIFICATION

**PRODUCT:** Portable Tablet Computer  
**BRAND NAME:** Lenovo  
**MODEL NAME:** TB-8704V  
**APPLICANT:** Lenovo(Shanghai) Electronics Technology Co., Ltd.  
**TESTED:** Apr. 11, 2017 ~ May 10, 2017  
**TEST SAMPLE:** Production Unit  
**STANDARDS:** **FCC Part 15, Subpart E (15.407), Section 15.407**  
ANSI C63.10-2013

The above equipment has been tested by **Bureau Veritas Shenzhen Co., Ltd. Dongguan 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 :** Harry , **DATE:** May 11, 2017  
(Harry Li/ Engineer)

**APPROVED BY :** Sam Tung , **DATE:** May 11, 2017  
( Sam Tung / Manager)



## 2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART E (SECTION 15.407)			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
15.407(b)(5)	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -19.41dB at 0.500000MHz.
15.407(b) (1/2/3/4/6)	Radiated Emission & Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -5.33dB at 11570.00MHz.
15.407(a/1/2/3)	Maximum conducted output 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)	6 dB Bandwidth	PASS	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	No antenna connector is used.

### 2.1 MEASUREMENT UNCERTAINTY

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

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.70dB
Radiated emissions	9KHz ~ 30MHz	2.90dB
	30MHz ~ 1GMHz	4.06dB
	1GHz ~ 18GHz	4.58dB
	18GHz ~ 40GHz	1.94dB

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



### 3 GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>EUT</b>	Portable Tablet Computer
<b>MODEL NO.</b>	TB-8704V
<b>POWER SUPPLY</b>	5.2Vdc (adapter or host equipment) 3.85Vdc (battery)
<b>MODULATION TYPE</b>	64QAM, 16QAM, QPSK, BPSK
<b>MODULATION TECHNOLOGY</b>	OFDM
<b>TRANSFER RATE</b>	802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to MCS7 802.11ac: up to 390.0Mbps
<b>OPERATING FREQUENCY</b>	5180 ~ 5240MHz, 5745 ~ 5805MHz
<b>NUMBER OF CHANNEL</b>	5180 ~ 5240MHz: 4 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz) 1 for 802.11ac (80MHz) 5745 ~ 5825MHz: 4 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz) 1 for 802.11ac (80MHz)
<b>AVERAGE POWER</b>	25.645mW for 5180 ~ 5240MHz 25.882mW for 5745 ~ 5805MHz
<b>ANTENNA TYPE</b>	PIFA Antenna with -5dBi gain
<b>HW VERSION</b>	Lenovo Tablet TB-8704V
<b>SW VERSION</b>	TB-8704V_RF01_170504
<b>I/O PORTS</b>	Refer to user's manual
<b>CABLE SUPPLIED</b>	USB cable: non-shielded, detachable, 1.0m

**NOTE:**

- For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
- The EUT incorporates a SISO function. Physically, the EUT provides one completed transmitter and one receiver.

MODULATION MODE	TX FUNCTION
802.11a	1TX/1RX
802.11n (20MHz)	1TX/1RX
802.11n (40MHz)	1TX/1RX
802.11ac (80MHz)	1TX/1RX



3. There were Sample A and B for this project, the difference is as below:

SAMPLE	EUT CONFIGURATION INFORMATION
A	(LCD+TP)1+ Battery1 + eMMC 1(16G+2G)+Front Camera1+Back Camera1+ USB Cable1 + Adapter 1
B	(LCD+TP)2+ Battery2 + eMMC 1 (16G+2G)+Frond Camera2+Back Camera2 + USB Cable2+ Adapter 2

4. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

**List of Accessories:**

Accessories	Brand	Model	Manufacturer	Specification
AC Adapter 1	Acbel	C-P35	AcBel	I/P:100-240Vac, 300mA O/P: 5.2Vdc, 2000mA
AC Adapter 2	Huntkey	C-P35	Huntkey	I/P:100-240Vac, 500mA O/P: 5.2Vdc, 2000mA
Battery 1	Sunwoda	L16D1P34	Sunwoda	Rating: 3.85Vdc, 4850mAh
Battery 2	SCUD	L16D1P34	SCUD	Rating: 3.85Vdc, 4850mAh
USB Cable 1	Deren	-	Deren	1.0m non-shielded cable w/o core
USB Cable 2	Saibao	-	Saibao	1.0m non-shielded cable w/o core
LCD+TP Panel 1	o-FILM&INX	MTF-080-2711-04IKA	o-FILM&INX	8"
LCD+TP Panel 2	GIS&BOE	TC080GFL06V.C	GIS&BOE	8"
eMMC 1	Samsung	KMQE10013M-B318	Samsung	16G+2G
eMMC 2	Hynix	H9TQ17ABJTBCUR-KUM	Hynix	16G+2G
Front Camera1	Qtech	F5695AK	Qtech	5M
Front Camera2	AVC	CCBFL05006	AVC	5M
Back Camera1	Qtech	FX219BH	Qtech	8M
Back Camera2	o-FILM	OV8856	o-FILM	8M





### 3.2 DESCRIPTION OF TEST MODES

#### FOR 5150 ~ 5250MHz

4 channels are provided for 802.11a, 802.11n (20MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
36	5180 MHz	44	5220 MHz
40	5200 MHz	48	5240 MHz

2 channels are provided for 802.11n (40MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac (80MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
42	5210 MHz		

#### FOR 5725 ~ 5825MHz

4 channels are provided for 802.11a, 802.11n (20MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
149	5745 MHz	157	5785 MHz
153	5765 MHz	161	5805 MHz

2 channels are provided for 802.11n (40MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
151	5755 MHz	159	5795 MHz

1 channel is provided for 802.11ac (80MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
155	5775 MHz		



3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
A	√	√	√	-	Powered by Adapter with wifi(5G) link
B	-	-	-	√	Powered by Battery with wifi(5G) link
C	-	-	-	-	Powered by USB with wifi(5G) link

Where **RE≥1G**: Radiated Emission above 1GHz      **RE<1G**: Radiated Emission below 1GHz  
**PLC**: Power Line Conducted Emission      **APCM**: Antenna Port Conducted Measurement

**NOTE:**  
The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane**.  
**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, 44, 48	OFDM	BPSK	6.0
A	802.11n (20MHz)		36 to 48	36, 44, 48	OFDM	BPSK	MCS0
A	802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	MCS0
A	802.11ac (80MHz)		42	42	OFDM	BPSK	V0
A	802.11a	5725-5825	149 to 161	149, 157, 161	OFDM	BPSK	6.0
A	802.11n (20MHz)		149 to 161	149, 157, 161	OFDM	BPSK	MCS0
A	802.11n (40MHz)		151 to 159	151, 159	OFDM	BPSK	MCS0
A	802.11ac (80MHz)		155	155	OFDM	BPSK	V0



**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	5745 ~ 5805	149 to 161	157	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	5745 ~ 5805	149 to 161	36	OFDM	BPSK	6.0

**BANDEDGE MEASUREMENT:**

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

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11a	5180-5240	36 to 48	36, 48	OFDM	BPSK	6.0
A	802.11n (20MHz)		36 to 48	36, 48	OFDM	BPSK	MCS0
A	802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	MCS0
A	802.11ac (80MHz)		42	42	OFDM	BPSK	V0
A	802.11a	5725-5825	149 to 161	149, 161	OFDM	BPSK	6.0
A	802.11n (20MHz)		149 to 161	149, 161	OFDM	BPSK	MCS0
A	802.11n (40MHz)		151 to 159	151, 159	OFDM	BPSK	MCS0
A	802.11ac (80MHz)		155	155	OFDM	BPSK	V0



**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)
B	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6.0
B	802.11n (20MHz)		36 to 48	36, 40, 48	OFDM	BPSK	MCS0
B	802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	MCS0
B	802.11ac (80MHz)		42	42	OFDM	BPSK	V0
B	802.11a	5725-5825	149 to 161	149, 161	OFDM	BPSK	6.0
B	802.11n (20MHz)		149 to 161	149, 161	OFDM	BPSK	MCS0
B	802.11n (40MHz)		151 to 159	151, 159	OFDM	BPSK	MCS0
B	802.11ac (80MHz)		155	155	OFDM	BPSK	V0

**TEST CONDITION:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE<1G	23deg. C, 62%RH	DC 5.2V By Adapter	Tony Zou
RE≥1G	23deg. C, 62%RH	DC 5.2V By Adapter	Tony Zou
PLC	24deg. C, 61%RH	DC 5.2V By Adapter	Simon Yang
APCM	23.5deg. C, 60%RH	DC 3.85V By battery	Moon Xiong



### 3.3 DUTY CYCLE OF TEST SIGNAL

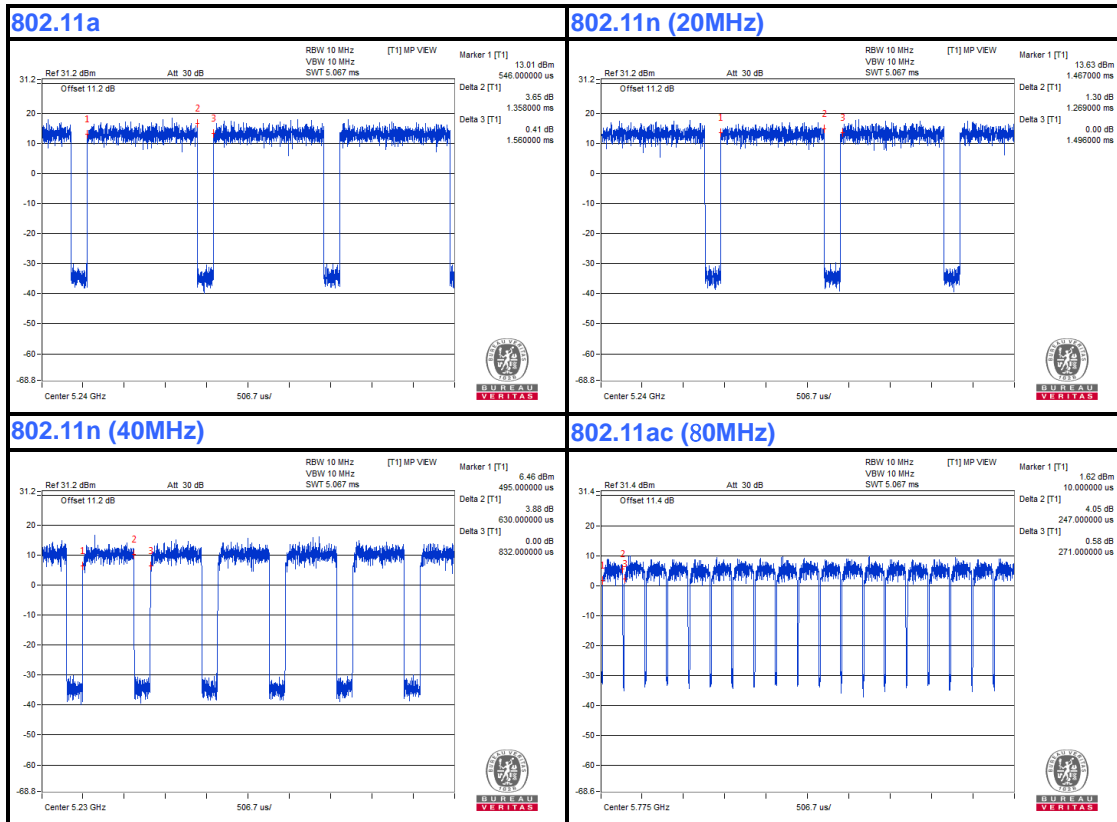
Duty cycle of test signal is < 98%, duty factor shall be considered.

**802.11a:** Duty cycle = 1.358/1.560 = 0.871, Duty factor = 10 \* log(1/0.871) = 0.60

**802.11n (20MHz):** Duty cycle = 1.269/1.496 = 0.848, Duty factor = 10 \* log(1/0.848) = 0.72

**802.11n (40MHz):** Duty cycle = 0.630/0.832 = 0.757, Duty factor = 10 \* log(1/0.757) = 1.21

**802.11ac (80MHz):** Duty cycle = 0.247/0.271 = 0.911, Duty factor = 10 \* log( 1/0.911) = 0.40





### 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.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	DC source	LONG WEI	PS-6403D	010934269	N/A
2	PC	HP	A6608CN	3CR83825X3	N/A

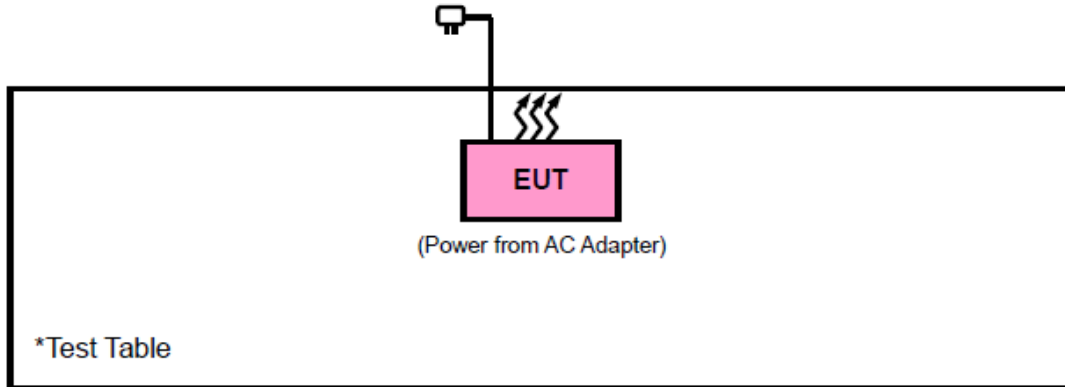
NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	DC Line: Unshielded, Detachable 1.0m
2	AC Line: Unshielded, Detachable 1.5m

**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 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 U-NII Test Procedures New Rules v01r02**

**ANSI C63.10-2013**

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

**NOTE:** The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It 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.

#### 4.1.2 LIMITS OF UNWANTED EMISSION

RESTRICTED BANDS	APPLICABLE TO	LIMIT	
	789033 D02 General UNII Test Procedures New Rules v01r02	FIELD STRENGTH AT 3m (dBµV/m)	
	PK : 74	AV : 54	
OUT OF THE RESTRICTED BANDS	APPLICABLE TO	EIRP LIMIT (dBm/MHz)	EQUIVALENT FIELD STRENGTH AT 3m (dBµV/m)
	15.407(b)(1)	PK : -27	PK : 68.3
	15.407(b)(2)		
	15.407(b)(3)		
15.407(b)(4)	See note 2 (FCC 16-24)		





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

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

2. All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

### 4.1.3 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESR7	101494	Apr. 01,17	Mar. 31,18
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV7	102331	Nov. 04,16	Nov. 03,17
Bilog Antenna	Teseq	CBL 6111D	30643	Jul. 14, 16	Jul. 13, 17
Loop antenna	Daze	ZN30900A	0708	Nov. 28,16	Nov. 27,17
Horn Antenna (1GHz -18GHz)	ETS -Lindgren	3117	00062558	May 18,16	May 17,17
10m Semi-anechoic Chamber	CHANGLING	21.4m*12.1m*8.8m	NSEMC006	Mar. 12,16	Mar. 11,18
Test Software	E3	V 9.160323	N/A	N/A	N/A
Horn Antenna (15GHz-40GHz)	SCHWARZBECK	BBHA 9170	BBHA9170242	Mar. 02,17	Mar. 01,18
Amplifier (9kHz-1GHz)	SONOMA	310D	186955	Feb. 10,17	Feb. 09,18
Pre-Amplifier(1-18G)	HP	8449B	3008A00409	Apr. 16,17	Apr. 15,18
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Nov. 04,16	Nov. 03,17
BLUETOOTH TESTER	Rohde&Schwarz	CBT32	100811	Aug. 08,16	Aug. 07,17

**NOTE:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
2. The test was performed in 10m Chamber.
3. The FCC Site Registration No. is 502831.



#### 4.1.4 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) above the ground at 10 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 antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

**NOTE:**

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

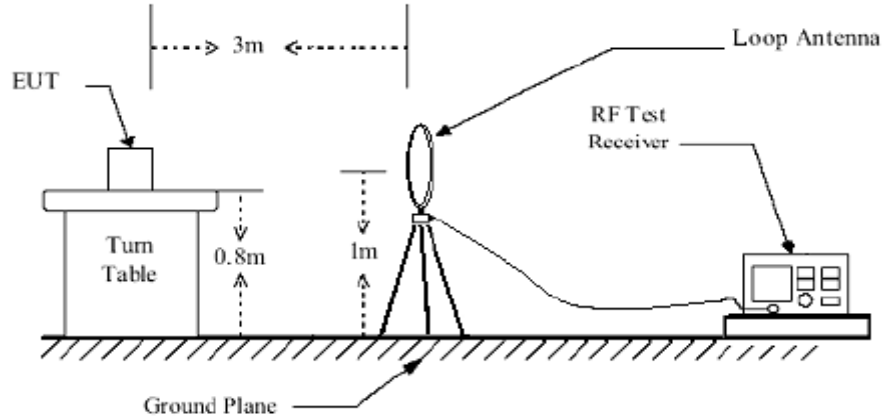
#### 4.1.5 DEVIATION FROM TEST STANDARD

No deviation.

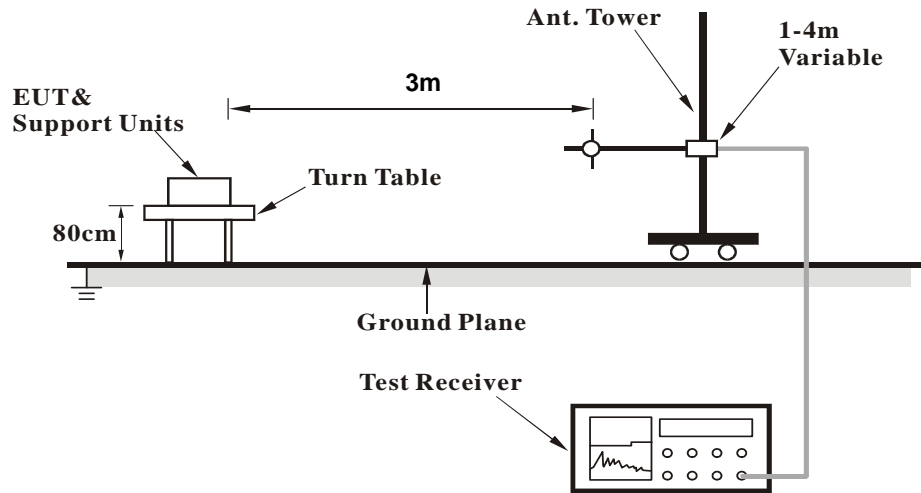


### 4.1.6 TEST SETUP

< Frequency Range below 30MHz >

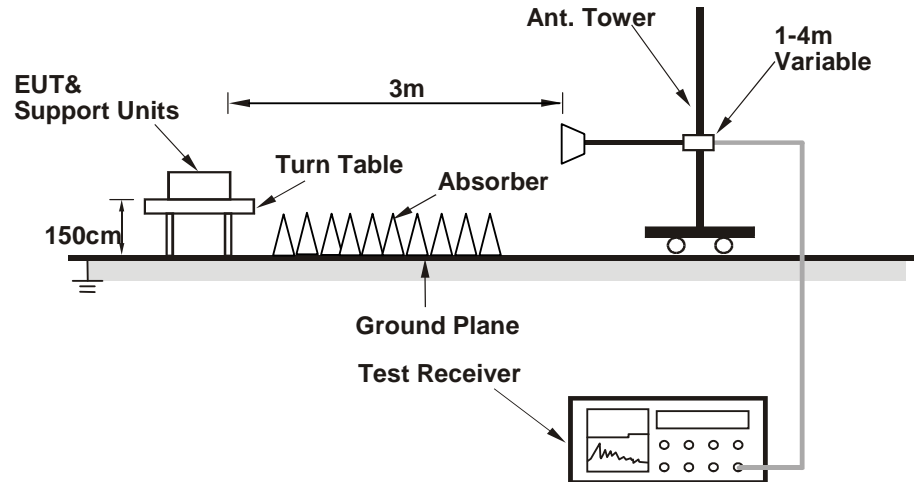


< Frequency Range 30MHz~1GHz >





<Frequency Range above 1GHz>



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

#### 4.1.7 EUT OPERATING CONDITION

- a. Set the EUT under full load condition and placed them on a testing table.
- b. Set the transmitter part of EUT under transmission condition continuously at specific channel frequency.
- c. The necessary accessories enable the EUT in full functions.



### 4.1.8 TEST RESULTS

#### BELOW 1GHz WORST-CASE DATA:

**9 KHz – 30 MHz data:** the amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

**30 MHz – 1GHz data:**

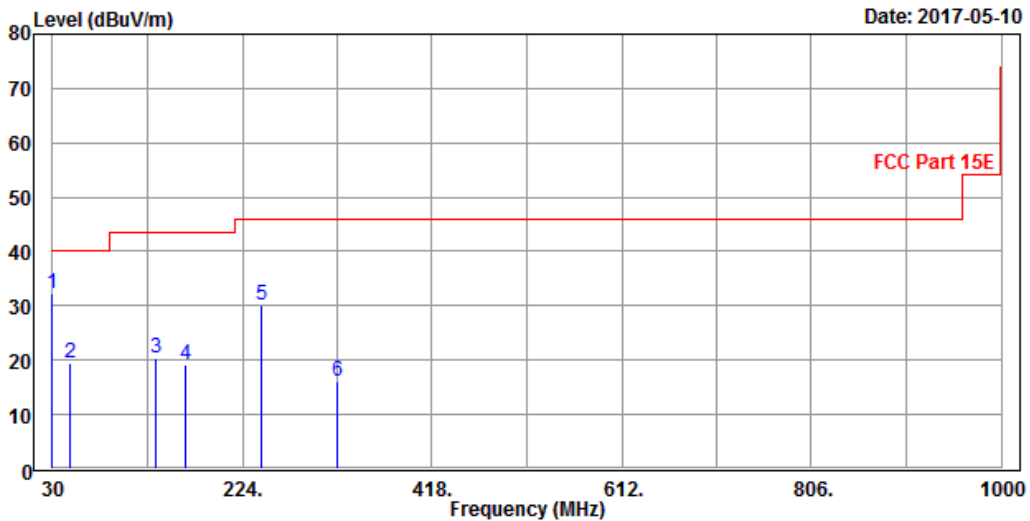
**802.11a**

<b>CHANNEL</b>	TX Channel 157	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
30	32.15	51.83	40	-7.85	17.1	0.78	37.56	100	28	QP
47.46	19.33	48.26	40	-20.67	7.44	1.04	37.41	100	60	QP
135.73	20.34	47.58	43.5	-23.16	7.83	1.79	36.86	100	152	QP
165.8	19.19	43.84	43.5	-24.31	10.11	1.97	36.73	100	148	QP
243.4	30.18	52.19	46	-15.82	12.1	2.41	36.52	100	263	QP
321	16.2	36.06	46	-29.8	13.88	2.81	36.55	100	84	QP

#### REMARKS:

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



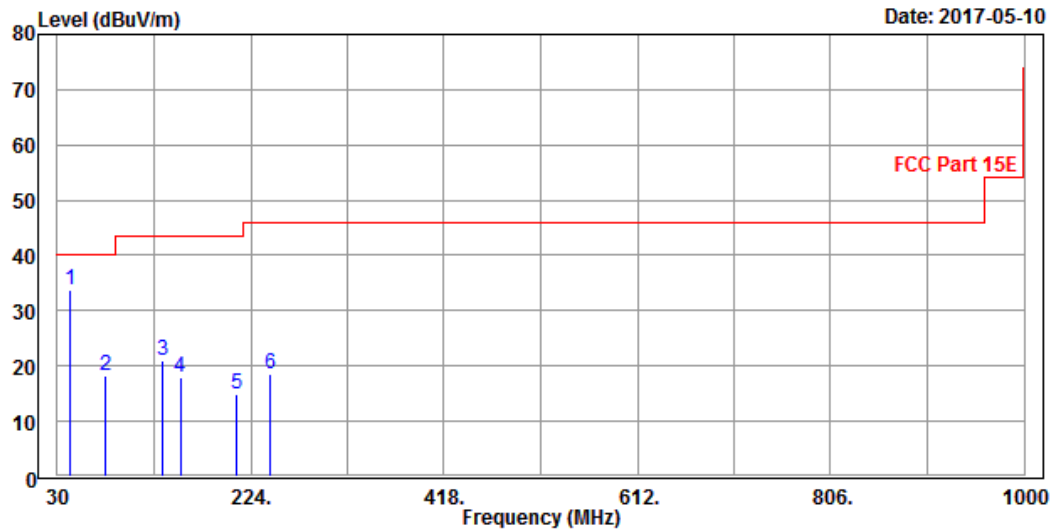


<b>CHANNEL</b>	Channel 157	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
42.61	33.61	60.86	40	-6.39	9.23	0.98	37.46	100	25	QP
78.5	18.17	47.33	40	-21.83	6.64	1.37	37.17	100	140	QP
134.76	21.01	48.31	43.5	-22.49	7.79	1.78	36.87	100	36	QP
153.19	17.91	43.26	43.5	-25.59	9.52	1.9	36.77	100	248	QP
209.45	15.04	38.83	43.5	-28.46	10.53	2.22	36.54	100	67	QP
243.4	18.69	40.7	46	-27.31	12.1	2.41	36.52	100	196	QP

**REMARKS:**

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





**ABOVE 1GHz WORST-CASE DATA:**

**Note:** For higher frequency, the emission is too low to be detected.

**Band 1:**  
**802.11a**

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5150	42.61	43.43	54	-11.39	34.48	13.71	49.01	116	305	Average
5150	51.57	52.39	74	-22.43	34.48	13.71	49.01	116	305	Peak
5180	90.78	91.49			34.52	13.79	49.02	116	305	Average
5180	99.61	100.32			34.52	13.79	49.02	116	305	Peak
5350	41.33	41.41	54	-12.67	34.72	14.28	49.08	116	305	Average
5350	51.45	51.53	74	-22.55	34.72	14.28	49.08	116	305	Peak

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5150	43.55	44.37	54	-10.45	34.48	13.71	49.01	105	355	Average
5150	51.55	52.37	74	-22.45	34.48	13.71	49.01	105	355	Peak
5180	93.12	93.83			34.52	13.79	49.02	105	355	Average
5180	102.13	102.84			34.52	13.79	49.02	105	355	Peak
5350	41.4	41.48	54	-12.6	34.72	14.28	49.08	105	355	Average
5350	52.13	52.21	74	-21.87	34.72	14.28	49.08	105	355	Peak

**REMARKS:**

- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor  
Margin value = Emission level – Limit value.
- 5180MHz: Fundamental frequency.



BUREAU  
VERITAS

Test Report No.: RF170330W002-7

<b>CHANNEL</b>	TX Channel 44	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5150	43.01	43.83	54	-10.99	34.48	13.71	49.01	102	310	Average
5150	52.54	53.36	74	-21.46	34.48	13.71	49.01	102	310	Peak
5220	91.24	91.81			34.56	13.91	49.04	102	310	Average
5220	100.48	101.05			34.56	13.91	49.04	102	310	Peak
5350	41.68	41.76	54	-12.32	34.72	14.28	49.08	102	310	Average
5350	51.87	51.95	74	-22.13	34.72	14.28	49.08	102	310	Peak

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5150	42.85	43.67	54	-11.15	34.48	13.71	49.01	105	342	Average
5150	51.72	52.54	74	-22.28	34.48	13.71	49.01	105	342	Peak
5220	91.26	91.83			34.56	13.91	49.04	105	342	Average
5220	100.37	100.94			34.56	13.91	49.04	105	342	Peak
5350	41.64	41.72	54	-12.36	34.72	14.28	49.08	105	342	Average
5350	52.71	52.79	74	-21.29	34.72	14.28	49.08	105	342	Peak

**REMARKS:**

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor  
Margin value = Emission level – Limit value.
2. 5220MHz: Fundamental frequency.





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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5150	41.83	42.65	54	-12.17	34.48	13.71	49.01	115	305	Average
5150	52.18	53	74	-21.82	34.48	13.71	49.01	115	305	Peak
5240	91.21	91.69			34.59	13.97	49.04	115	305	Average
5240	99.36	99.84			34.59	13.97	49.04	115	305	Peak
5350	41.68	41.76	54	-12.32	34.72	14.28	49.08	115	305	Average
5350	51.72	51.8	74	-22.28	34.72	14.28	49.08	115	305	Peak

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5150	41.78	42.6	54	-12.22	34.48	13.71	49.01	130	47	Average
5150	52.04	52.86	74	-21.96	34.48	13.71	49.01	130	47	Peak
5240	93.46	93.94			34.59	13.97	49.04	130	47	Average
5240	102.46	102.94			34.59	13.97	49.04	130	47	Peak
5350	41.58	41.66	54	-12.42	34.72	14.28	49.08	130	47	Average
5350	52.06	52.14	74	-21.94	34.72	14.28	49.08	130	47	Peak

**REMARKS:**

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor  
Margin value = Emission level – Limit value.
2. 5240MHz: Fundamental frequency.



BUREAU  
VERITAS

Test Report No.: RF170330W002-7

802.11n (20MHz)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5150	43.22	44.04	54	-10.78	34.48	13.71	49.01	102	305	Average
5150	53.38	54.2	74	-20.62	34.48	13.71	49.01	102	305	Peak
5180	90.52	91.23			34.52	13.79	49.02	102	305	Average
5180	99.65	100.36			34.52	13.79	49.02	102	305	Peak
5350	41.65	41.73	54	-12.35	34.72	14.28	49.08	102	305	Average
5350	52.35	52.43	74	-21.65	34.72	14.28	49.08	102	305	Peak

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5150	43.93	44.75	54	-10.07	34.48	13.71	49.01	105	355	Average
5150	53.12	53.94	74	-20.88	34.48	13.71	49.01	105	355	Peak
5180	92.96	93.67			34.52	13.79	49.02	105	355	Average
5180	101.86	102.57			34.52	13.79	49.02	105	355	Peak
5350	41.59	41.67	54	-12.41	34.72	14.28	49.08	105	355	Average
5350	51.05	51.13	74	-22.95	34.72	14.28	49.08	105	355	Peak

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor  
Margin value = Emission level – Limit value.
2. 5180MHz: Fundamental frequency.



<b>CHANNEL</b>	TX Channel 44	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5150	41.89	42.71	54	-12.11	34.48	13.71	49.01	102	310	Average
5150	53.06	53.88	74	-20.94	34.48	13.71	49.01	102	310	Peak
5220	90.81	91.38			34.56	13.91	49.04	102	310	Average
5220	100.36	100.93			34.56	13.91	49.04	102	310	Peak
5350	41.7	41.78	54	-12.3	34.72	14.28	49.08	102	310	Average
5350	52.05	52.13	74	-21.95	34.72	14.28	49.08	102	310	Peak

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5150	41.78	42.6	54	-12.22	34.48	13.71	49.01	105	342	Average
5150	52.01	52.83	74	-21.99	34.48	13.71	49.01	105	342	Peak
5220	91.03	91.6			34.56	13.91	49.04	105	342	Average
5220	99.63	100.2			34.56	13.91	49.04	105	342	Peak
5350	41.67	41.75	54	-12.33	34.72	14.28	49.08	105	342	Average
5350	51.7	51.78	74	-22.3	34.72	14.28	49.08	105	342	Peak

**REMARKS:**

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor  
Margin value = Emission level – Limit value.
2. 5220MHz: Fundamental frequency.



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5150	41.84	42.66	54	-12.16	34.48	13.71	49.01	100	302	Average
5150	53.79	54.61	74	-20.21	34.48	13.71	49.01	100	302	Peak
5240	90.1	90.58			34.59	13.97	49.04	100	302	Average
5240	98.46	98.94			34.59	13.97	49.04	100	302	Peak
5350	41.71	41.79	54	-12.29	34.72	14.28	49.08	100	302	Average
5350	52.39	52.47	74	-21.61	34.72	14.28	49.08	100	302	Peak

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5150	41.8	42.62	54	-12.2	34.48	13.71	49.01	122	48	Average
5150	52.21	53.03	74	-21.79	34.48	13.71	49.01	122	48	Peak
5240	92.98	93.46			34.59	13.97	49.04	122	48	Average
5240	102.04	102.52			34.59	13.97	49.04	122	48	Peak
5350	41.65	41.73	54	-12.35	34.72	14.28	49.08	122	48	Average
5350	51.92	52	74	-22.08	34.72	14.28	49.08	122	48	Peak

**REMARKS:**

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor  
Margin value = Emission level – Limit value.
2. 5240MHz: Fundamental frequency.



802.11n (40MHz)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5150	43.39	44.21	54	-10.61	34.48	13.71	49.01	115	305	Average
5150	54	54.82	74	-20	34.48	13.71	49.01	115	305	Peak
5190	87.44	88.12			34.53	13.82	49.03	115	305	Average
5190	97.57	98.25			34.53	13.82	49.03	115	305	Peak
5350	41.73	41.81	54	-12.27	34.72	14.28	49.08	115	305	Average
5350	52.57	52.65	74	-21.43	34.72	14.28	49.08	115	305	Peak

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5150	44.97	45.79	54	-9.03	34.48	13.71	49.01	127	355	Average
5150	55.35	56.17	74	-18.65	34.48	13.71	49.01	127	355	Peak
5190	89.23	89.91			34.53	13.82	49.03	127	355	Average
5190	99.46	100.14			34.53	13.82	49.03	127	355	Peak
5350	41.66	41.74	54	-12.34	34.72	14.28	49.08	127	355	Average
5350	51.99	52.07	74	-22.01	34.72	14.28	49.08	127	355	Peak

REMARKS:

- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor  
Margin value = Emission level – Limit value.
- 5190MHz: Fundamental frequency.



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5150	41.89	42.71	54	-12.11	34.48	13.71	49.01	115	305	Average
5150	51.71	52.53	74	-22.29	34.48	13.71	49.01	115	305	Peak
5230	87.19	87.71			34.58	13.94	49.04	115	305	Average
5230	98.78	99.3			34.58	13.94	49.04	115	305	Peak
5350	41.63	41.71	54	-12.37	34.72	14.28	49.08	115	305	Average
5350	52.46	52.54	74	-21.54	34.72	14.28	49.08	115	305	Peak

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5150	41.98	42.8	54	-12.02	34.48	13.71	49.01	130	48	Average
5150	51.78	52.6	74	-22.22	34.48	13.71	49.01	130	48	Peak
5230	89.71	90.23			34.58	13.94	49.04	130	48	Average
5230	100.42	100.94			34.58	13.94	49.04	130	48	Peak
5350	41.63	41.71	54	-12.37	34.72	14.28	49.08	130	48	Average
5350	52.23	52.31	74	-21.77	34.72	14.28	49.08	130	48	Peak

**REMARKS:**

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor  
Margin value = Emission level – Limit value.
2. 5230MHz: Fundamental frequency.



802.11ac (80MHz)

<b>CHANNEL</b>	TX Channel 42	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5150	42.7	43.52	54	-11.3	34.48	13.71	49.01	102	305	Average
5150	52.7	53.52	74	-21.3	34.48	13.71	49.01	102	305	Peak
5210	80.7	81.3			34.55	13.88	49.03	102	305	Average
5210	94.15	94.75			34.55	13.88	49.03	102	305	Peak
5350	41.39	41.47	54	-12.61	34.72	14.28	49.08	102	305	Average
5350	51.59	51.67	74	-22.41	34.72	14.28	49.08	102	305	Peak

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5150	42.8	43.62	54	-11.2	34.48	13.71	49.01	130	55	Average
5150	55.63	56.45	74	-18.37	34.48	13.71	49.01	130	55	Peak
5210	82.09	82.69			34.55	13.88	49.03	130	55	Average
5210	95.43	96.03			34.55	13.88	49.03	130	55	Peak
5350	41.34	41.42	54	-12.66	34.72	14.28	49.08	130	55	Average
5350	51.51	51.59	74	-22.49	34.72	14.28	49.08	130	55	Peak

REMARKS:

- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor  
Margin value = Emission level – Limit value.
- 5210MHz: Fundamental frequency.



Band 4

802.11a

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5745	94.08	91.72			35.19	16.31	49.14	105	310	Average
5745	102.53	100.17			35.19	16.31	49.14	105	310	Peak
11490	48.28	38.26	54	-5.72	39.1	19.08	48.16	100	148	Average
11490	59.43	49.41	74	-14.57	39.1	19.08	48.16	100	148	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5745	96.43	94.07			35.19	16.31	49.14	125	35	Average
5745	105.37	103.01			35.19	16.31	49.14	125	35	Peak
11490	48.32	38.3	54	-5.68	39.1	19.08	48.16	100	60	Average
11490	59.5	49.48	74	-14.5	39.1	19.08	48.16	100	60	Peak

REMARKS:

- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor  
Margin value = Emission level – Limit value.
- 5745MHz: Fundamental frequency.

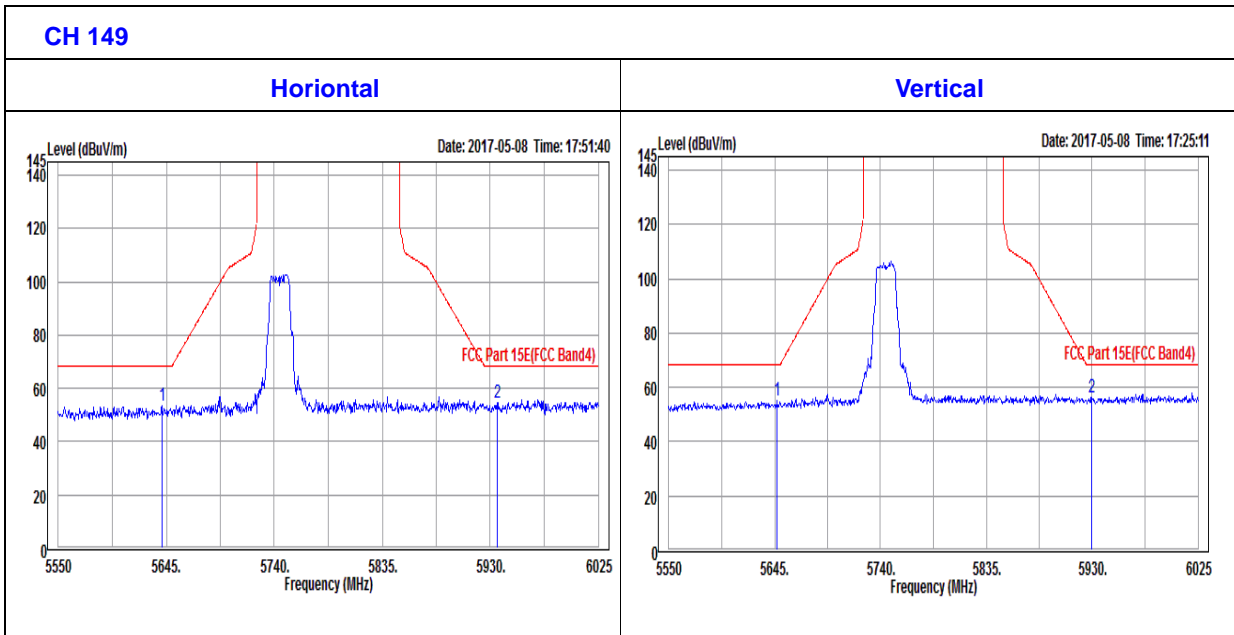




**OOBE DATA**

**802.11a**

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5641.68	53.7	52.13	68.3	-14.6	35.07	15.63	49.13	105	310	Peak
5936.18	54.54	50.73	68.3	-13.76	35.42	17.55	49.16	105	310	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5647.38	55.37	53.75	68.3	-12.93	35.08	15.67	49.13	125	35	Peak
5929.53	56.17	52.4	68.3	-12.13	35.42	17.51	49.16	125	35	Peak





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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5785	93.98	91.32			35.24	16.57	49.15	110	310	Average
5785	103.31	100.65			35.24	16.57	49.15	110	310	Peak
11570	48.37	38.26	54	-5.63	39.16	19.12	48.17	100	155	Average
11570	59.9	49.79	74	-14.1	39.16	19.12	48.17	100	155	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5785	96.36	93.7			35.24	16.57	49.15	111	32	Average
5785	104.41	101.75			35.24	16.57	49.15	111	32	Peak
<b>11570</b>	<b>48.67</b>	<b>38.56</b>	<b>54</b>	<b>-5.33</b>	<b>39.16</b>	<b>19.12</b>	<b>48.17</b>	<b>100</b>	<b>64</b>	Average
11570	59.74	49.63	74	-14.26	39.16	19.12	48.17	100	64	Peak

REMARKS:

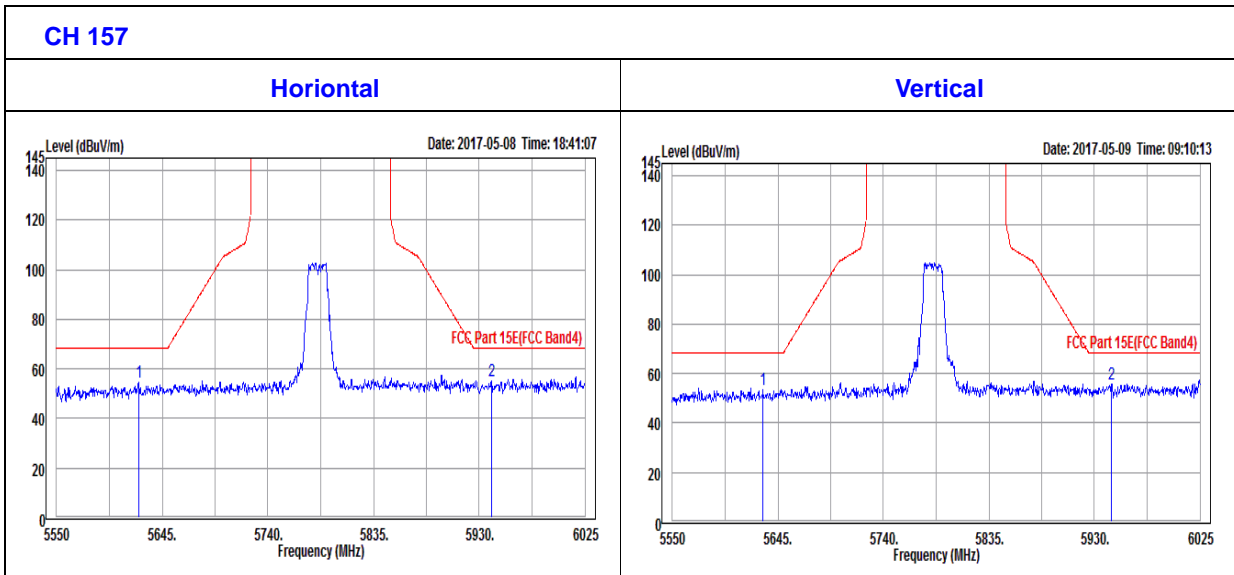
- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor  
Margin value = Emission level – Limit value.
- 5785MHz: Fundamental frequency.



**OOBE DATA**

802.11a

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5623.63	54.66	53.22	68.3	-13.64	35.05	15.52	49.13	110	310	Peak
5940.93	55.15	51.3	68.3	-13.15	35.43	17.58	49.16	110	310	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5631.7	53.56	52.06	68.3	-14.74	35.06	15.57	49.13	111	32	Peak
5945.68	55.84	51.95	68.3	-12.46	35.43	17.62	49.16	111	32	Peak





<b>CHANNEL</b>	TX Channel 161	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5805	93.67	90.85			35.27	16.7	49.15	108	305	Average
5805	103.07	100.25			35.27	16.7	49.15	108	305	Peak
11610	48.3	38.15	54	-5.7	39.19	19.14	48.18	100	240	Average
11610	60.01	49.86	74	-13.99	39.19	19.14	48.18	100	240	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5805	95.51	92.69			35.27	16.7	49.15	144	8	Average
5805	103.7	100.88			35.27	16.7	49.15	144	8	Peak
11610	48.47	38.32	54	-5.53	39.19	19.14	48.18	100	40	Average
11610	60.18	50.03	74	-13.82	39.19	19.14	48.18	100	40	Peak

**REMARKS:**

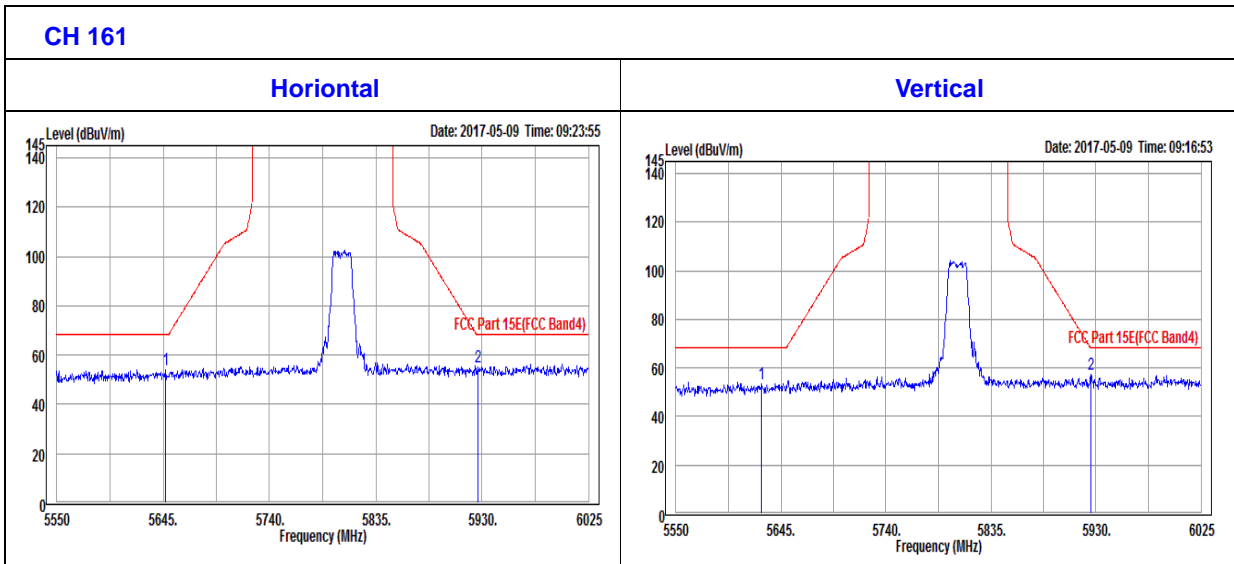
- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor  
Margin value = Emission level – Limit value.
- 5805MHz: Fundamental frequency.



**OOBE DATA**

**802.11a**

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5647.38	53.96	52.34	68.3	-14.34	35.08	15.67	49.13	108	305	Peak
5926.68	55.4	51.66	68.3	-12.9	35.41	17.49	49.16	108	305	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5627.43	53.7	52.24	68.3	-14.6	35.05	15.54	49.13	144	8	Peak
5925.73	57.54	53.8	68.3	-10.76	35.41	17.49	49.16	144	8	Peak





802.11n (20MHz)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5745	93.79	91.43			35.19	16.31	49.14	106	310	Average
5745	103.39	101.03			35.19	16.31	49.14	106	310	Peak
11490	48.19	38.17	54	-5.81	39.1	19.08	48.16	100	150	Average
11490	59.69	49.67	74	-14.31	39.1	19.08	48.16	100	150	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5745	96.47	94.11			35.19	16.31	49.14	105	32	Average
5745	104.65	102.29			35.19	16.31	49.14	105	32	Peak
11490	48.11	38.09	54	-5.89	39.1	19.08	48.16	100	60	Average
11490	59.99	49.97	74	-14.01	39.1	19.08	48.16	100	60	Peak

REMARKS:

- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor  
Margin value = Emission level – Limit value.
- 5745MHz: Fundamental frequency.



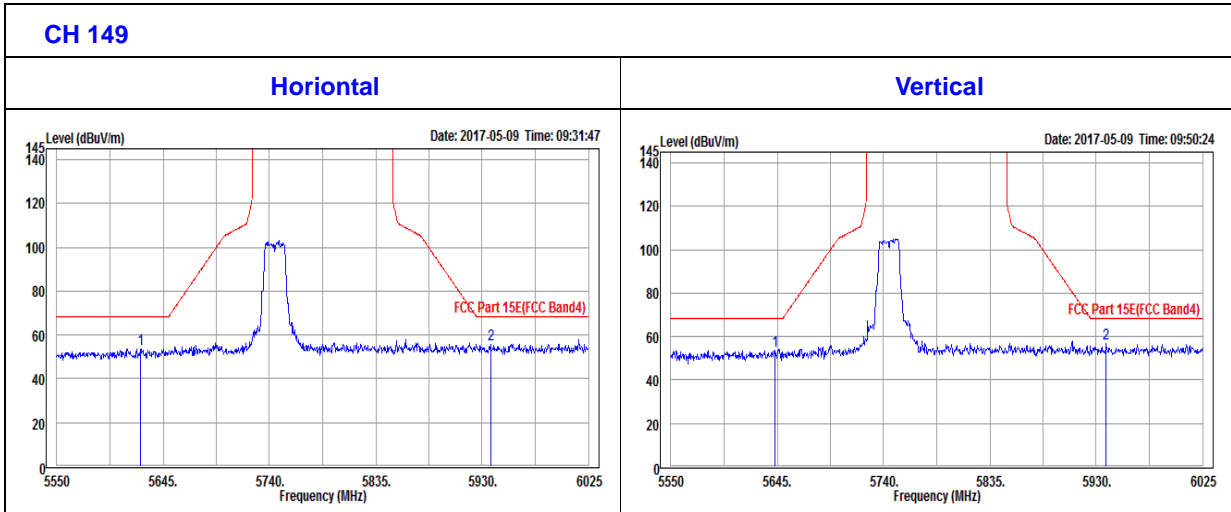
**BUREAU  
VERITAS**

Test Report No.: RF170330W002-7

**OOBE DATA**

802.11n (20MHZ)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5625.05	53.71	52.26	68.3	-14.59	35.05	15.53	49.13	106	310	Peak
5937.6	55.81	51.98	68.3	-12.49	35.43	17.56	49.16	106	310	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5643.1	53.55	51.97	68.3	-14.75	35.07	15.64	49.13	105	32	Peak
5939.03	56.54	52.7	68.3	-11.76	35.43	17.57	49.16	105	32	Peak





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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5785	94.28	91.62			35.24	16.57	49.15	110	305	Average
5785	103.44	100.78			35.24	16.57	49.15	110	305	Peak
11570	48.46	38.35	54	-5.54	39.16	19.12	48.17	100	120	Average
11570	60.59	50.48	74	-13.41	39.16	19.12	48.17	100	120	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5785	95.88	93.22			35.24	16.57	49.15	130	32	Average
5785	104.89	102.23			35.24	16.57	49.15	130	32	Peak
11570	48.45	38.34	54	-5.55	39.16	19.12	48.17	100	105	Average
11570	60.34	50.23	74	-13.66	39.16	19.12	48.17	100	105	Peak

**REMARKS:**

- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor  
Margin value = Emission level – Limit value.
- 5785MHz: Fundamental frequency.

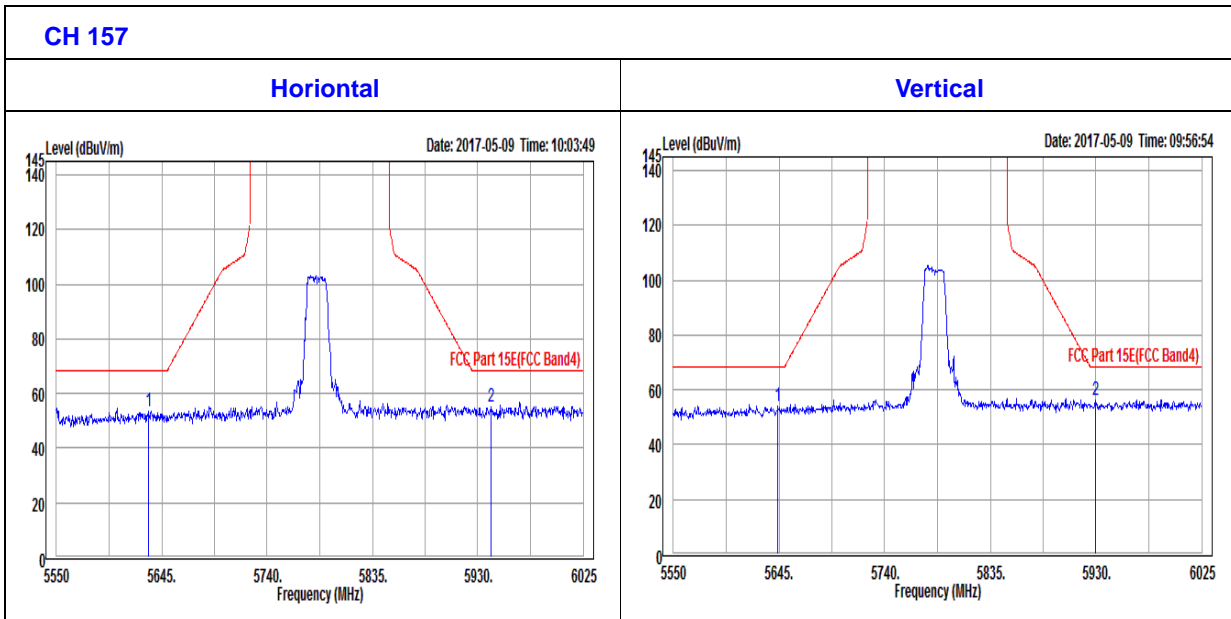




**OOBE DATA**

**802.11n (20MHZ)**

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5632.65	53.43	51.93	68.3	-14.87	35.06	15.57	49.13	110	305	Peak
5942.35	55.35	51.49	68.3	-12.95	35.43	17.59	49.16	110	305	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5644.05	54.24	52.65	68.3	-14.06	35.07	15.65	49.13	130	32	Peak
5929.53	56.35	52.58	68.3	-11.95	35.42	17.51	49.16	130	32	Peak





<b>CHANNEL</b>	TX Channel 161	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5805	92.87	90.05			35.27	16.7	49.15	110	310	Average
5805	103.13	100.31			35.27	16.7	49.15	110	310	Peak
11610	48.63	38.48	54	-5.37	39.19	19.14	48.18	100	136	Average
11610	60.78	50.63	74	-13.22	39.19	19.14	48.18	100	136	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5805	95.88	93.06			35.27	16.7	49.15	138	10	Average
5805	104.24	101.42			35.27	16.7	49.15	138	10	Peak
11610	48.39	38.24	54	-5.61	39.19	19.14	48.18	100	36	Average
11610	60.28	50.13	74	-13.72	39.19	19.14	48.18	100	36	Peak

**REMARKS:**

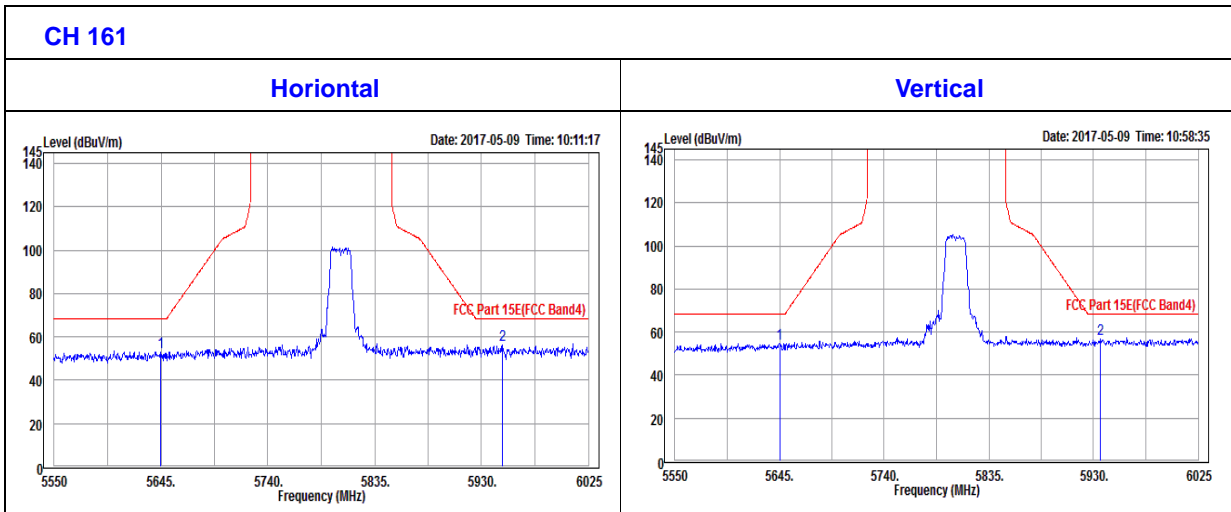
- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor  
Margin value = Emission level – Limit value.
- 5805MHz: Fundamental frequency.



**OOBE DATA**

**802.11n (20MHZ)**

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5644.53	53.18	51.59	68.3	-15.12	35.07	15.65	49.13	110	310	Peak
5948.53	56.28	52.37	68.3	-12.02	35.44	17.63	49.16	110	310	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5645	54.56	52.96	68.3	-13.74	35.07	15.66	49.13	138	10	Peak
5936.18	56.83	53.02	68.3	-11.47	35.42	17.55	49.16	138	10	Peak





802.11n (40MHz)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5755	90.67	88.24			35.21	16.37	49.15	125	305	Average
5755	101.06	98.63			35.21	16.37	49.15	125	305	Peak
11510	48.2	38.16	54	-5.8	39.11	19.09	48.16	100	156	Average
11510	60.68	50.64	74	-13.32	39.11	19.09	48.16	100	156	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5755	92.46	90.03			35.21	16.37	49.15	125	35	Average
5755	102.82	100.39			35.21	16.37	49.15	125	35	Peak
11510	48.16	38.12	54	-5.84	39.11	19.09	48.16	100	64	Average
11510	59.71	49.67	74	-14.29	39.11	19.09	48.16	100	64	Peak

REMARKS:

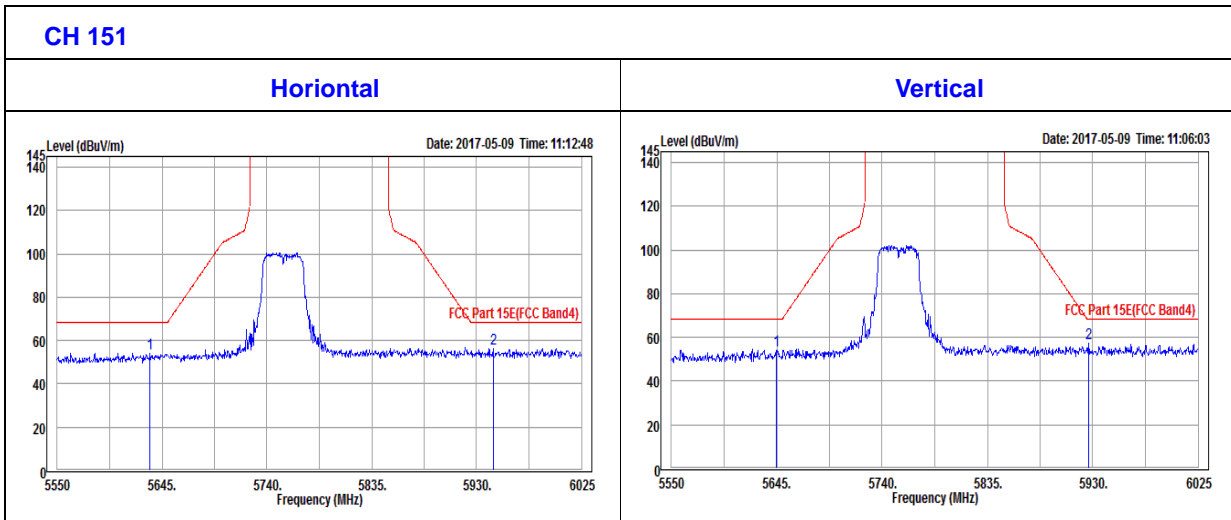
- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor  
Margin value = Emission level – Limit value.
- 5755MHz: Fundamental frequency.



**OOBE DATA**

**802.11n (40MHZ)**

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5634.08	53.76	52.25	68.3	-14.54	35.06	15.58	49.13	125	305	Peak
5945.2	56.43	52.55	68.3	-11.87	35.43	17.61	49.16	125	305	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5644.53	54.27	52.68	68.3	-14.03	35.07	15.65	49.13	125	35	Peak
5926.2	57.15	53.41	68.3	-11.15	35.41	17.49	49.16	125	35	Peak





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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5795	90.03	87.3			35.25	16.63	49.15	110	310	Average
5795	100.3	97.57			35.25	16.63	49.15	110	310	Peak
11590	48.41	38.28	54	-5.59	39.17	19.13	48.17	100	36	Average
11590	60.45	50.32	74	-13.55	39.17	19.13	48.17	100	36	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5795	92.01	89.28			35.25	16.63	49.15	125	10	Average
5795	102.58	99.85			35.25	16.63	49.15	125	10	Peak
11590	60.61	50.48	54	6.61	39.17	19.13	48.17	100	36	Average
11590	48.26	38.13	74	-25.74	39.17	19.13	48.17	100	36	Peak

**REMARKS:**

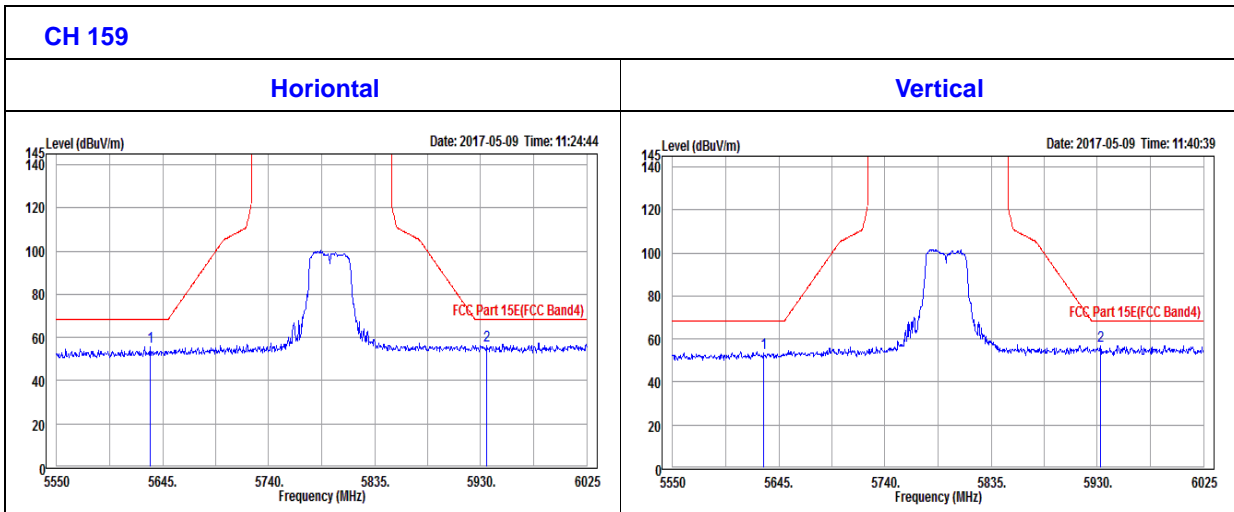
- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor  
Margin value = Emission level – Limit value.
- 5795MHz: Fundamental frequency.



**OOBE DATA**

**802.11n (40MHZ)**

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5634.08	55.7	54.19	68.3	-12.6	35.06	15.58	49.13	110	310	Peak
5935.7	56.44	52.63	68.3	-11.86	35.42	17.55	49.16	110	310	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5631.7	53.41	51.91	68.3	-14.89	35.06	15.57	49.13	125	10	Peak
5932.85	56.92	53.13	68.3	-11.38	35.42	17.53	49.16	125	10	Peak





802.11ac (80MHz)

CHANNEL	TX Channel 155	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5775	83.24	80.66			35.23	16.5	49.15	106	305	Average
5775	96.92	94.34			35.23	16.5	49.15	106	305	Peak
11550	48.17	38.09	54	-5.83	39.14	19.11	48.17	100	125	Average
11550	60.51	50.43	74	-13.49	39.14	19.11	48.17	100	125	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5775	86.29	83.71			35.23	16.5	49.15	138	30	Average
5775	99.41	96.83			35.23	16.5	49.15	138	30	Peak
11550	48.33	38.25	54	-5.67	39.14	19.11	48.17	100	63	Average
11550	60.75	50.67	74	-13.25	39.14	19.11	48.17	100	63	Peak

REMARKS:

- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor  
Margin value = Emission level – Limit value.
- 5775MHz: Fundamental frequency.

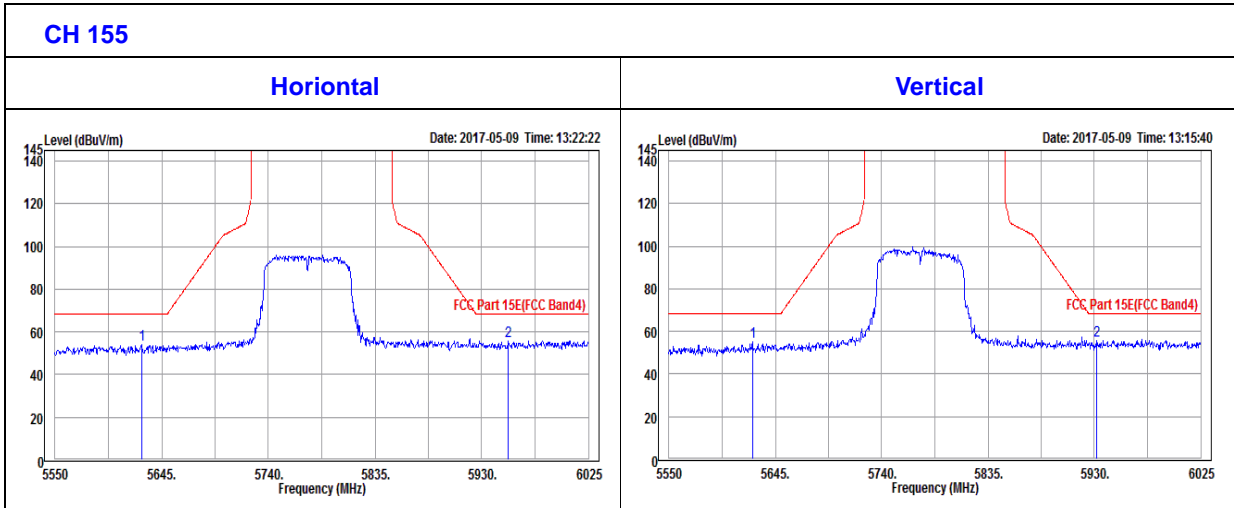




**OOBE DATA**

**802.11ac (80MHZ)**

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5626.95	54.04	52.58	68.3	-14.26	35.05	15.54	49.13	106	305	Peak
5953.75	55.82	51.88	68.3	-12.48	35.44	17.67	49.17	106	305	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5624.58	54.88	53.44	68.3	-13.42	35.05	15.52	49.13	138	30	Peak
5932.38	55.94	52.15	68.3	-12.36	35.42	17.53	49.16	138	30	Peak





## 4.2 CONDUCTED EMISSION MEASUREMENT

### 4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBµV)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

- NOTE:**
1. The lower limit shall apply at the transition frequencies.
  2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.
  3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

### 4.2.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESR7	101494	Apr. 01,17	Mar. 31,18
Artificial Mains Network	Rohde&Schwarz	ENV216	101173	Feb. 18,17	Feb. 17,18
Artificial Mains Network	Rohde&Schwarz	ESH3-Z5	100317	Apr. 01,17	Mar. 31,18
Voltage probe	SCHWARZBECK	TK 9421	TK 9421-176	Nov. 25,16	Nov. 24,17
Test software	ADT	ADT_Cond_V7.3.7	N/A	N/A	N/A

- NOTE:**
1. The test was performed in shielded room 553.
  2. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

### 4.2.3 TEST PROCEDURES

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

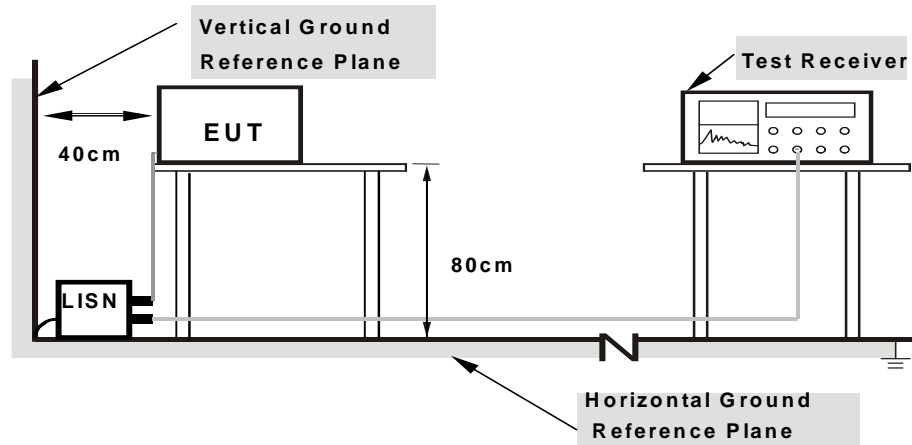
**NOTE:** All modes of operation were investigated and the worst-case emissions are reported.



#### 4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.2.5 TEST SETUP



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

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

#### 4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.



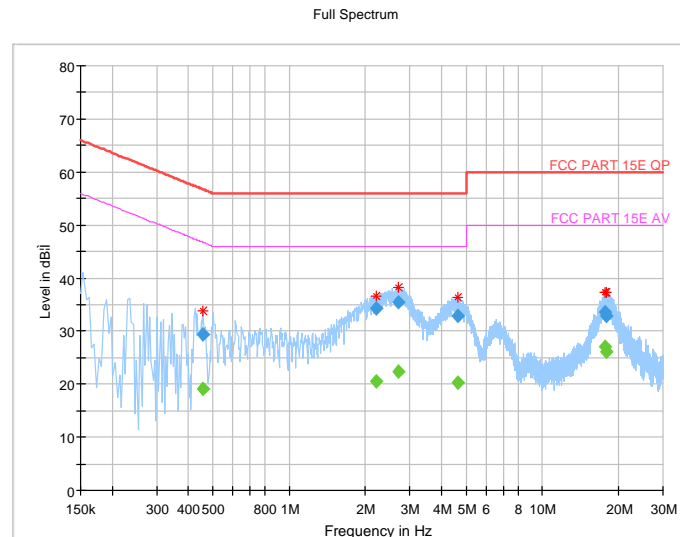
4.2.7 TEST RESULTS

CONDUCTED WORST-CASE DATA :

Frequency Range	150KHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120Vac, 60Hz	Environmental Conditions	24deg. C, 55RH
Tested By	Simon Yang	TEST DATE	2017/05/02

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.456000	---	19.13	46.77	-27.64	L	ON	9.7
0.456000	29.50	---	56.77	-27.27	L	ON	9.7
2.200000	---	20.59	46.00	-25.41	L	ON	9.7
2.200000	34.26	---	56.00	-21.74	L	ON	9.7
2.696000	---	22.31	46.00	-23.69	L	ON	9.7
2.696000	35.55	---	56.00	-20.45	L	ON	9.7
4.624000	---	20.31	46.00	-25.69	L	ON	9.7
4.624000	32.80	---	56.00	-23.20	L	ON	9.7
17.588000	---	27.03	50.00	-22.97	L	ON	9.9
17.588000	33.64	---	60.00	-26.36	L	ON	9.9
17.976000	---	26.12	50.00	-23.88	L	ON	9.9
17.976000	32.99	---	60.00	-27.01	L	ON	9.9

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.



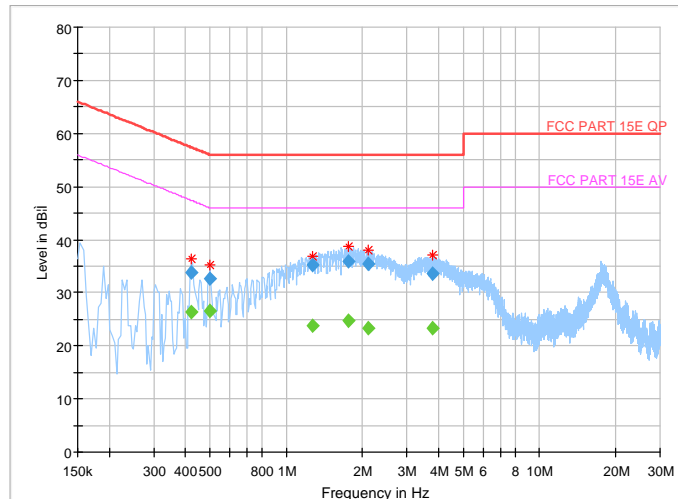


<b>Frequency Range</b>	150KHz ~ 30MHz	<b>Detector Function &amp; Resolution Bandwidth</b>	Quasi-Peak (QP) / Average (AV), 9 kHz
<b>Input Power</b>	120Vac, 60Hz	<b>Environmental Conditions</b>	24deg. C, 55RH
<b>Tested By</b>	Simon Yang	<b>TEST DATE</b>	2017/05/02

Frequency (MHz)	QuasiPeak (dB $\mu$ V)	CAverage (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Line	Filter	Corr. (dB)
0.424000	---	26.37	47.37	-21.00	N	ON	10.1
0.424000	33.79	---	57.37	-23.58	N	ON	10.1
<b>0.500000</b>	---	<b>26.59</b>	<b>46.00</b>	<b>-19.41</b>	<b>N</b>	<b>ON</b>	<b>10.1</b>
0.500000	32.67	---	56.00	-23.33	N	ON	10.1
1.272000	---	23.81	46.00	-22.19	N	ON	9.9
1.272000	35.13	---	56.00	-20.87	N	ON	9.9
1.768000	---	24.78	46.00	-21.22	N	ON	9.8
1.768000	35.99	---	56.00	-20.01	N	ON	9.8
2.120000	---	23.40	46.00	-22.60	N	ON	9.8
2.120000	35.52	---	56.00	-20.48	N	ON	9.8
3.776000	---	23.22	46.00	-22.78	N	ON	9.8
3.776000	33.58	---	56.00	-22.42	N	ON	9.8

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.

Full Spectrum





### 4.3 MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

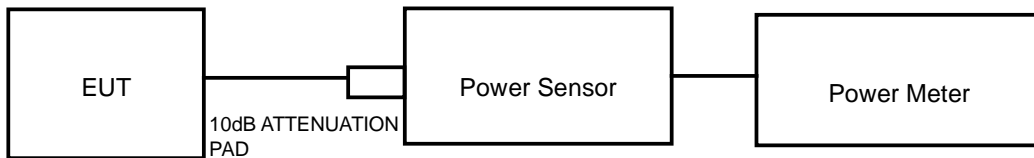
#### 4.3.1 LIMITS OF MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

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)
	√	Client devices	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)

NOTE: Where B is the 26dB emission bandwidth in MHz.

#### 4.3.2 TEST SETUP

##### FOR POWER OUTPUT MEASUREMENT



##### FOR 26dB BANDWIDTH





#### 4.3.3 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Power Sensor	Keysight	U2021XA	MY55060016	Apr. 21,17	Apr. 20,18
Power Sensor	Keysight	U2021XA	MY55060018	Apr. 21,17	Apr. 20,18
10dB Attenuator	JFW/USA	50HF-010-SMA	1505	Jul. 27, 16	Jul. 26, 17
Digital Multimeter	FLUKE	15B	A1220010DG	Oct. 13, 16	Oct.12, 17
Humid & Temp Programmable Tester	Haida	HD-2257	110807201	Sep.05,16	Sep. 04,17
Oscilloscope	Agilent	DSO9254A	MY51260160	Nov. 04,16	Nov. 03,17
Signal Analyzer	Rohde & Schwarz	FSV7	102331	Nov. 04,16	Nov. 03,17
Signal Generator	Agilent	N5183A	MY50140980	Nov. 04,16	Nov. 03,17
Agile Signal Generator	Agilent	8645A	Agilent	Aug.08, 16	Aug.07, 17
ESG Vector Signal Generator	Agilent	E4438C	MY49072505	Apr. 15, 17	Apr. 14, 18
BLUETOOTH TESTER	Rohde&Schwarz	CBT32	100811	Aug.08, 16	Aug. 07, 17

**NOTE:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
2. The test was performed in RF Oven room.



#### 4.3.4 TEST PROCEDURE

##### FOR POWER MEASUREMENT

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

##### FOR 99 PERCENT OCCUPIED BANDWIDTH

The following procedure shall be used for measuring (99 %) power bandwidth:

1. Set center frequency to the nominal EUT channel center frequency.
2. Set span = 1.5 times to 5.0 times the OBW.
3. Set RBW = 1 % to 5 % of the OBW
4. Set VBW  $\geq 3 \cdot$  RBW
5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
6. Use the 99 % power bandwidth function of the instrument (if available).
7. If the instrument does not have a 99 % power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.





#### FOR 26dB BANDWIDTH

- 1) Set RBW = approximately 1% of the emission bandwidth.
- 2) Set the VBW > RBW.
- 3) Detector = Peak.
- 4) Trace mode = max hold.
- 5) Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

#### FOR 6dB BANDWIDTH

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW)  $\geq 3$  RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

#### 4.3.5 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.



### 4.3.7 TEST RESULTS

#### OUTPUT POWER:

##### 802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
36	5180	23.442	13.70	24	PASS
40	5200	23.988	13.80	24	PASS
48	5240	24.099	13.82	24	PASS
149	5745	23.281	13.67	30	PASS
157	5785	23.496	13.71	30	PASS
161	5805	22.029	13.43	30	PASS

##### 802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
36	5180	23.933	13.79	24	PASS
40	5200	24.378	13.87	24	PASS
48	5240	22.909	13.60	24	PASS
149	5745	23.335	13.68	30	PASS
157	5785	22.029	13.43	30	PASS
161	5805	21.777	13.38	30	PASS

##### 802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
38	5190	<b>25.645</b>	14.09	24	PASS
46	5230	24.946	13.97	24	PASS
151	5755	<b>25.882</b>	14.13	30	PASS
159	5795	24.491	13.89	30	PASS

##### 802.11ac (80MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	MAX. OUTPUT POWER (mW)	MAX. OUTPUT POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
42	5210	18.197	12.60	24	PASS
155	5775	19.454	12.89	30	PASS



**99% OCCUPIED BANDWIDTH & 26dB BANDWIDTH/6dB BANDWIDTH:**

**802.11a**

CHANNEL	CHANNEL FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH	26dB BANDWIDTH (MHz)	PASS/FAIL
36	5180	16.74	21.97	PASS
40	5200	16.92	21.62	PASS
48	5240	16.98	21.84	PASS
CHANNEL	CHANNEL FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH	6dB BANDWIDTH (MHz)	PASS/FAIL
149	5745	16.92	16.40	PASS
157	5785	16.86	16.36	PASS
161	5805	18.06	17.58	PASS

**802.11n (20MHz)**

CHANNEL	CHANNEL FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH	26dB BANDWIDTH (MHz)	PASS/FAIL
36	5180	17.94	22.40	PASS
40	5200	17.94	22.01	PASS
48	5240	17.94	22.41	PASS
CHANNEL	CHANNEL FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH	6dB BANDWIDTH (MHz)	PASS/FAIL
149	5745	17.94	17.55	PASS
157	5785	17.94	17.58	PASS
161	5805	18.06	17.58	PASS



802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH	26dB BANDWIDTH (MHz)	PASS/FAIL
38	5190	36.30	44.18	PASS
46	5230	36.36	44.90	PASS
CHANNEL	CHANNEL FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH	6dB BANDWIDTH (MHz)	PASS/FAIL
151	5755	36.48	34.78	PASS
159	5795	36.48	35.14	PASS

802.11ac (80MHz)

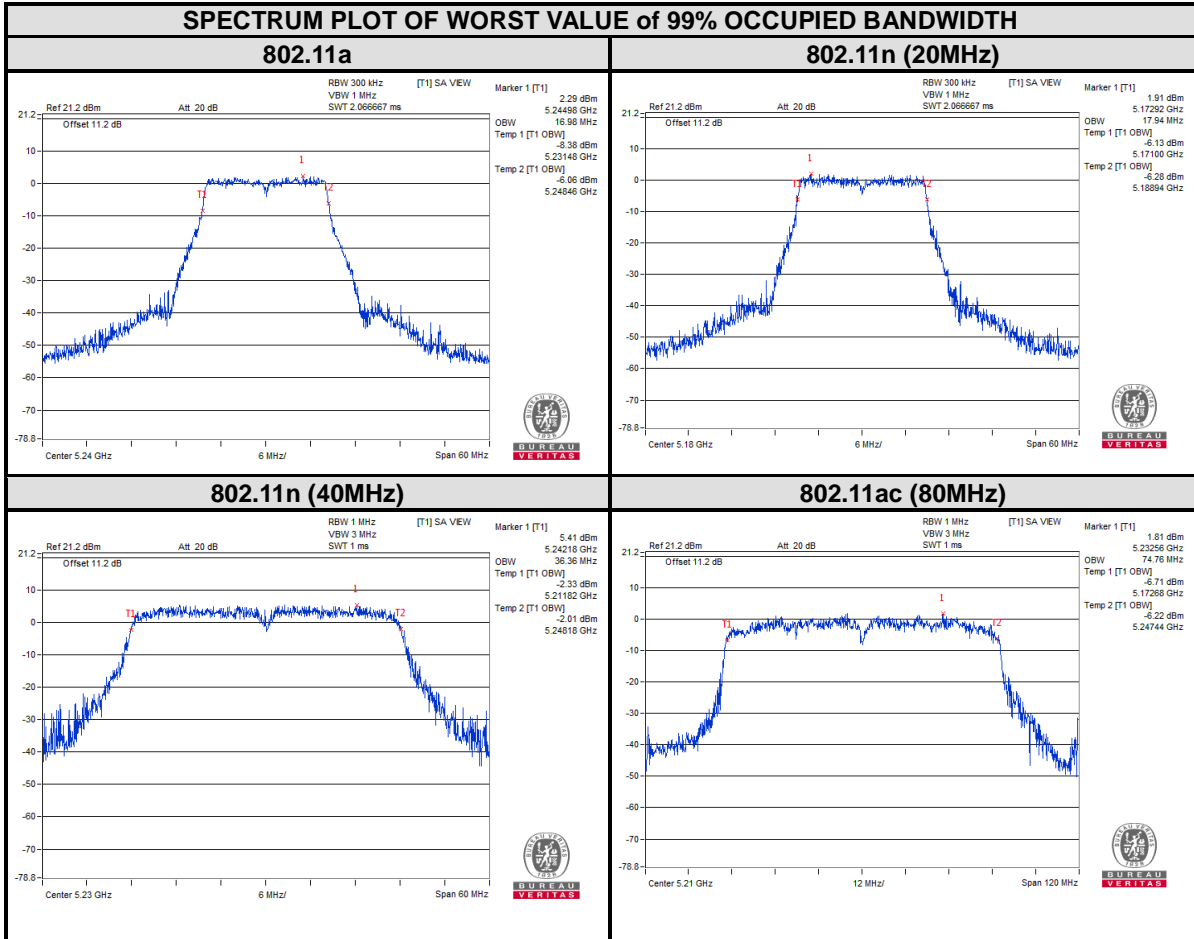
CHANNEL	CHANNEL FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH	26dB BANDWIDTH (MHz)	PASS/FAIL
42	5210	74.76	84.06	PASS
CHANNEL	CHANNEL FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH	6dB BANDWIDTH (MHz)	PASS/FAIL
155	5775	74.52	73.91	PASS



BUREAU VERITAS

Test Report No.: RF170330W002-7

For U-NII-1:



Bureau Veritas Shenzhen Co., Ltd.  
Dongguan Branch

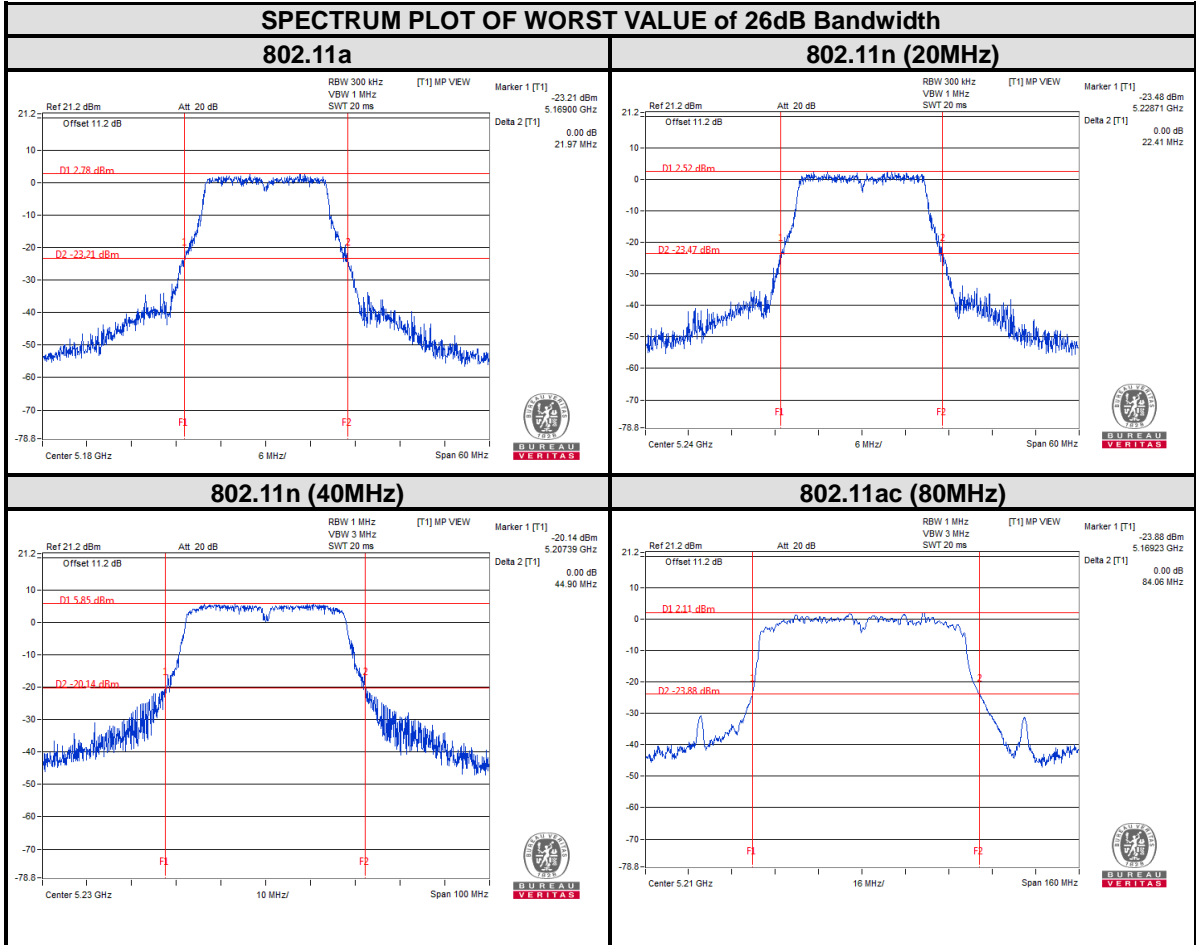
No. 34, Chenwulu Section, Guantai Rd., Houjie  
Town, Dongguan City, Guangdong 523942, China

Tel: +86 769 8593 5656  
Fax: +86 769 8593 1080  
Email: [customerservice.dg@cn.bureauveritas.com](mailto:customerservice.dg@cn.bureauveritas.com)



BUREAU VERITAS

Test Report No.: RF170330W002-7



Bureau Veritas Shenzhen Co., Ltd.  
Dongguan Branch

No. 34, Chenwulu Section, Guantai Rd., Houjie  
Town, Dongguan City, Guangdong 523942, China

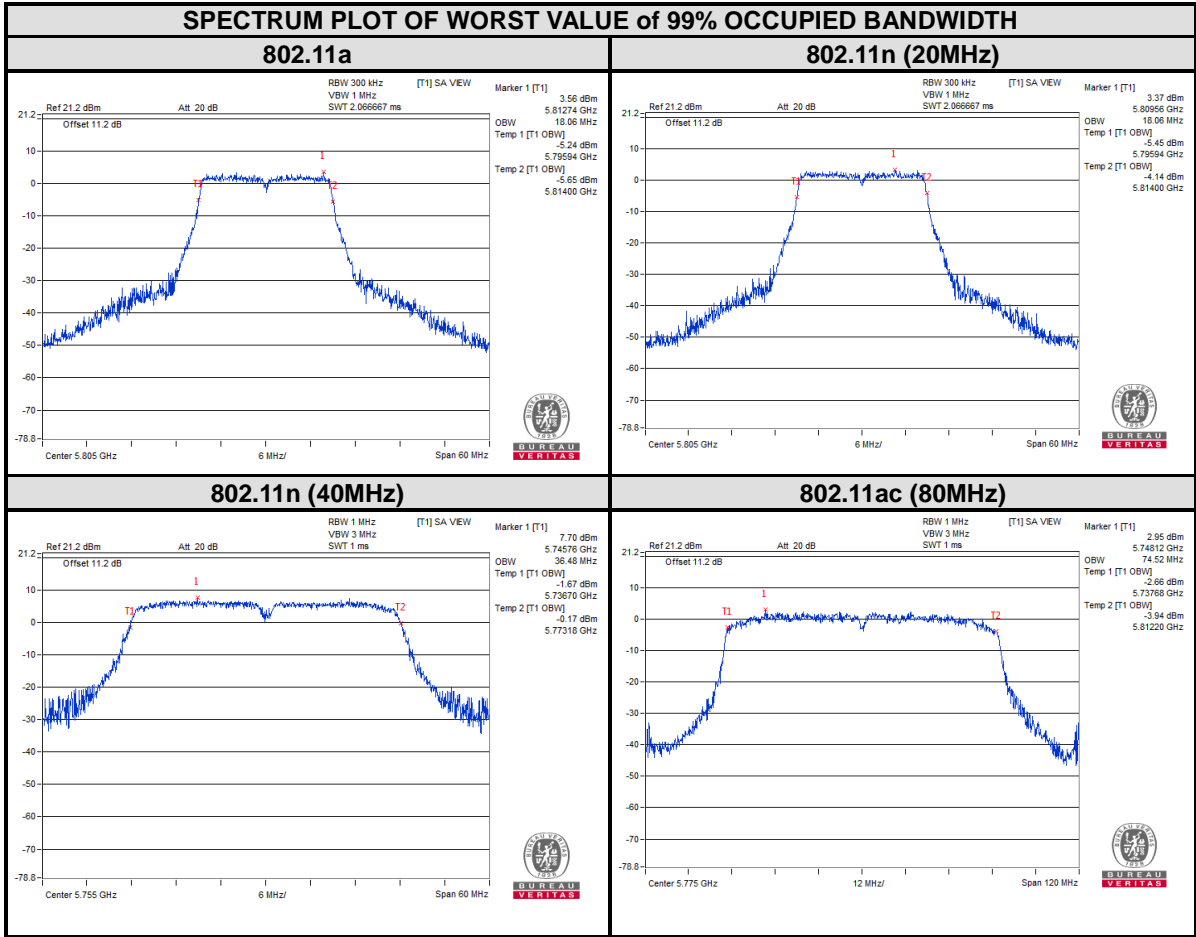
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For U-NII-3:



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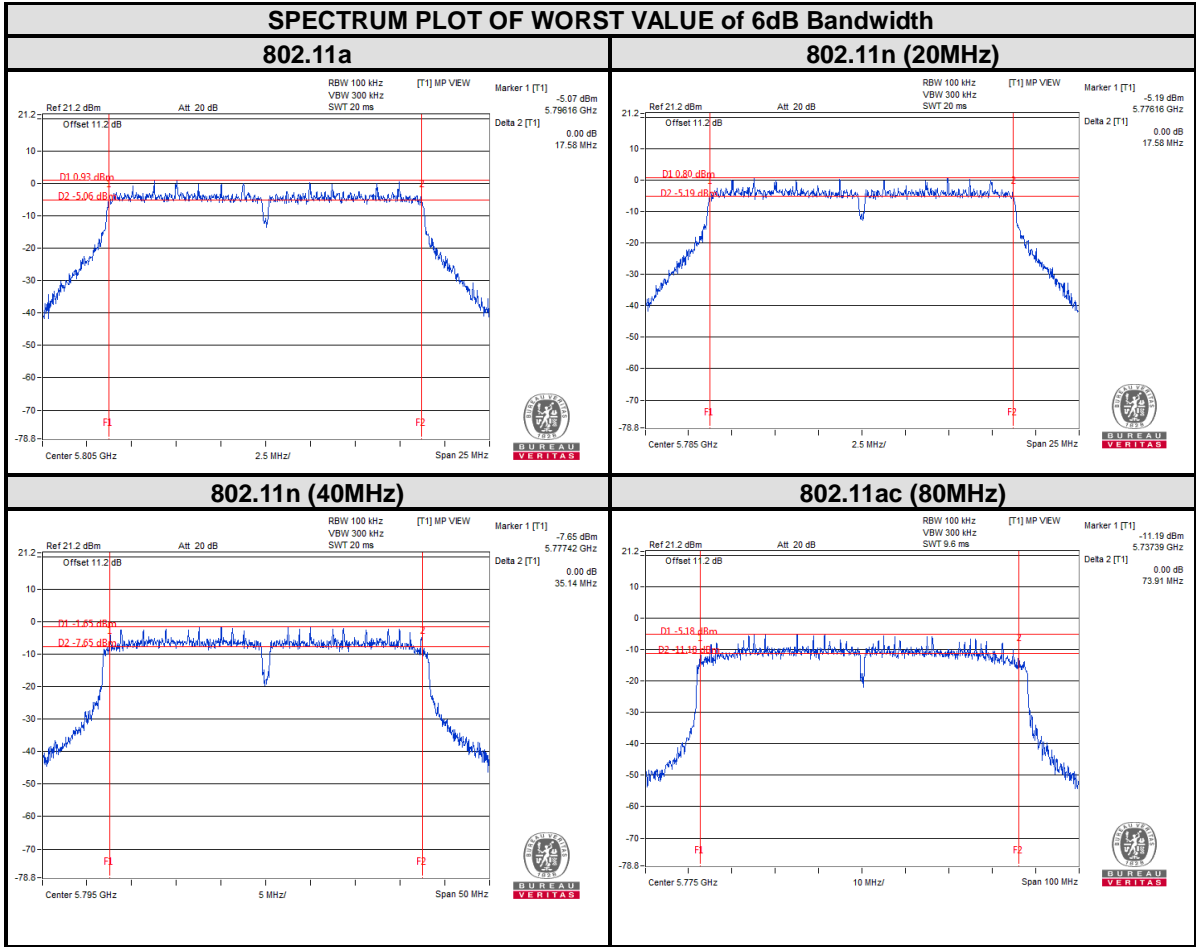
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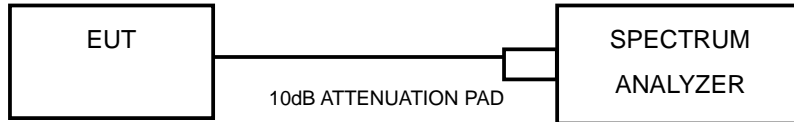


#### 4.4 MAXIMUM POWER SPECTRAL DENSITY MEASUREMENT

##### 4.4.1 LIMITS OF MAXIMUM 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	
	√	Client devices	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 4.3.3 to get information of above instrument.



#### 4.4.4 TEST PROCEDURES

Using method SA-2

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 1 MHz, Set VBW  $\geq$  3 MHz, Detector = RMS
- 3) 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) Add  $10 \log (1/x)$ , where  $x$  is the duty cycle, to the measured power in order to compute the average power during the actual transmission times (because the measurement represents an average over both the on and off times of the transmission).
- 7) Record the max value

#### 4.4.5 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.4.6 EUT OPERATING CONDITIONS

Same as 4.1.6.



#### 4.4.7 TEST RESULTS

For U-NII-1:

##### 802.11a

CHANNEL	FREQUENCY (MHz)	PSD w/o Duty Factor (dBm/MHz)	Duty Factor	PSD with Duty Factor (dBm/MHz)	MAXIMUM LIMIT (dBm/MHz)	PASS/FAIL
36	5180	4.90	0.60	5.50	11	PASS
40	5200	5.52	0.60	6.12	11	PASS
48	5240	5.08	0.60	5.68	11	PASS

##### 802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PSD w/o Duty Factor (dBm/MHz)	Duty Factor	PSD with Duty Factor (dBm/MHz)	MAXIMUM LIMIT (dBm/MHz)	PASS/FAIL
36	5180	5.61	0.72	6.33	11	PASS
40	5200	4.74	0.72	5.46	11	PASS
48	5240	4.67	0.72	5.39	11	PASS

##### 802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	PSD w/o Duty Factor (dBm/MHz)	Duty Factor	PSD with Duty Factor (dBm/MHz)	MAXIMUM LIMIT (dBm/MHz)	PASS/FAIL
38	5190	3.47	1.21	4.68	11	PASS
46	5230	2.35	1.21	3.56	11	PASS

##### 802.11ac (80MHz)

CHANNEL	FREQUENCY (MHz)	PSD w/o Duty Factor (dBm/MHz)	Duty Factor	PSD with Duty Factor (dBm/MHz)	MAXIMUM LIMIT (dBm/MHz)	PASS/FAIL
42	5210	-1.69	0.40	-1.29	11	PASS



For U-NII-3:

802.11a

CHANNEL	FREQUENCY (MHz)	PSD w/o Duty Factor (dBm/MHz)	PSD w/o Duty Factor (dBm/500kHz)	Duty Factor	PSD with Duty Factor (dBm/500kHz)	LIMIT (dBm/500kHz)	PASS /FAIL
149	5745	10.26	7.25	0.60	7.85	30	PASS
157	5785	9.75	6.74	0.60	7.34	30	PASS
161	5805	9.53	6.52	0.60	7.12	30	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PSD w/o Duty Factor (dBm/MHz)	PSD w/o Duty Factor (dBm/500kHz)	Duty Factor	PSD with Duty Factor (dBm/500kHz)	LIMIT (dBm/500kHz)	PASS /FAIL
149	5745	9.92	6.91	0.72	7.63	30	PASS
157	5785	9.69	6.68	0.72	7.40	30	PASS
161	5805	10.11	7.10	0.72	7.82	30	PASS

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	PSD w/o Duty Factor (dBm/MHz)	PSD w/o Duty Factor (dBm/500kHz)	Duty Factor	PSD with Duty Factor (dBm/500kHz)	LIMIT (dBm/500kHz)	PASS /FAIL
151	5755	7.34	4.33	1.21	5.54	30	PASS
159	5795	7.42	4.41	1.21	5.62	30	PASS

802.11ac (80MHz)

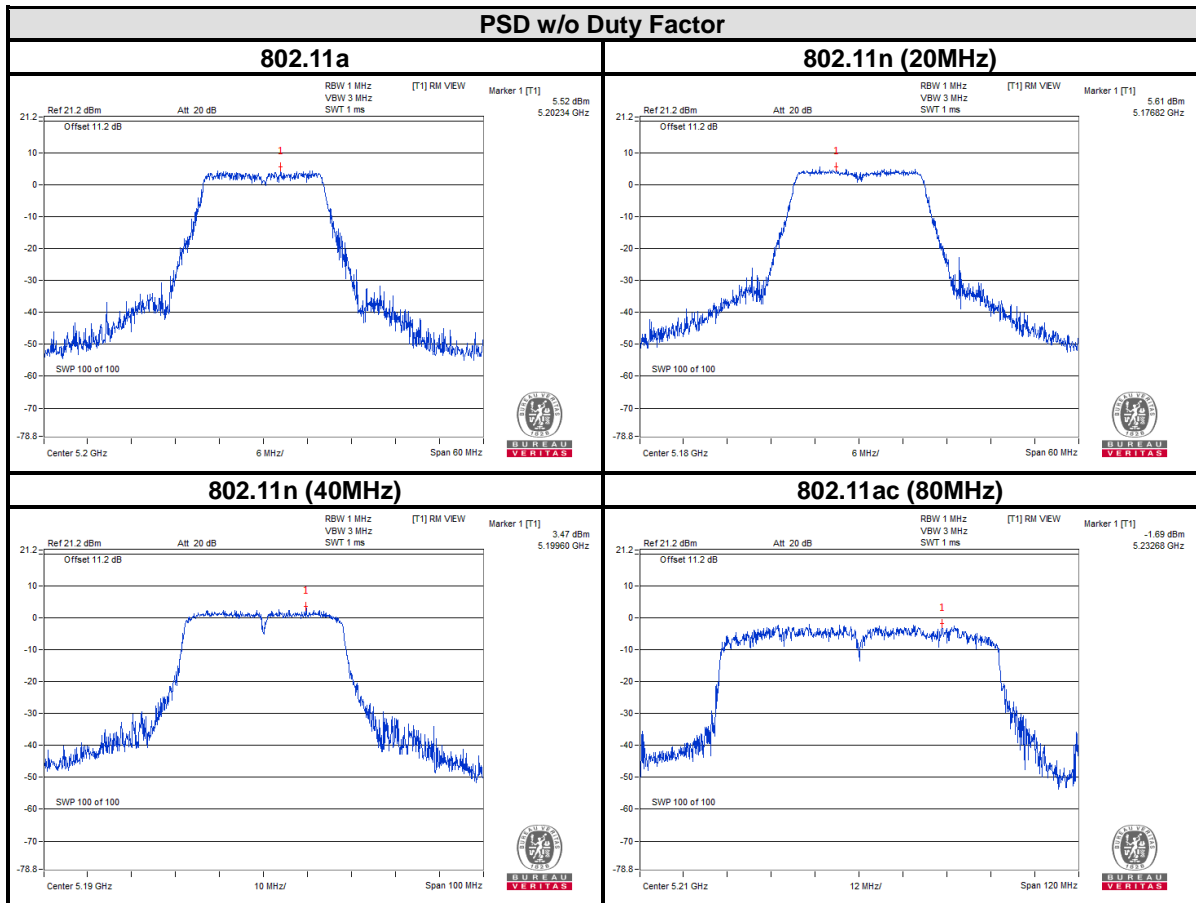
CHANNEL	FREQUENCY (MHz)	PSD w/o Duty Factor (dBm/MHz)	PSD w/o Duty Factor (dBm/500kHz)	Duty Factor	PSD with Duty Factor (dBm/500kHz)	LIMIT (dBm/500kHz)	PASS /FAIL
155	5775	2.89	-0.12	0.40	0.28	30	PASS



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For 5180~5240MHz



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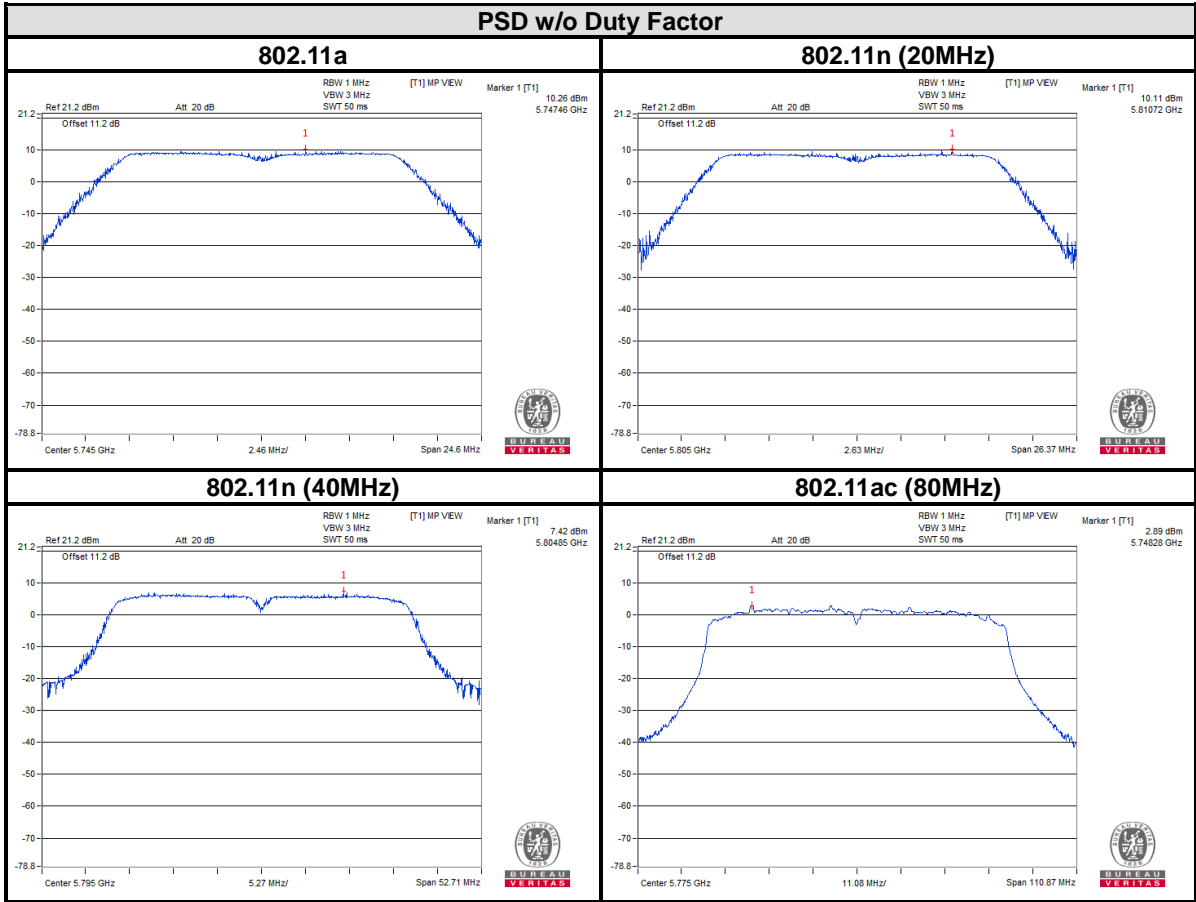
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BUREAU VERITAS

Test Report No.: RF170330W002-7

For 5745~5825MHz



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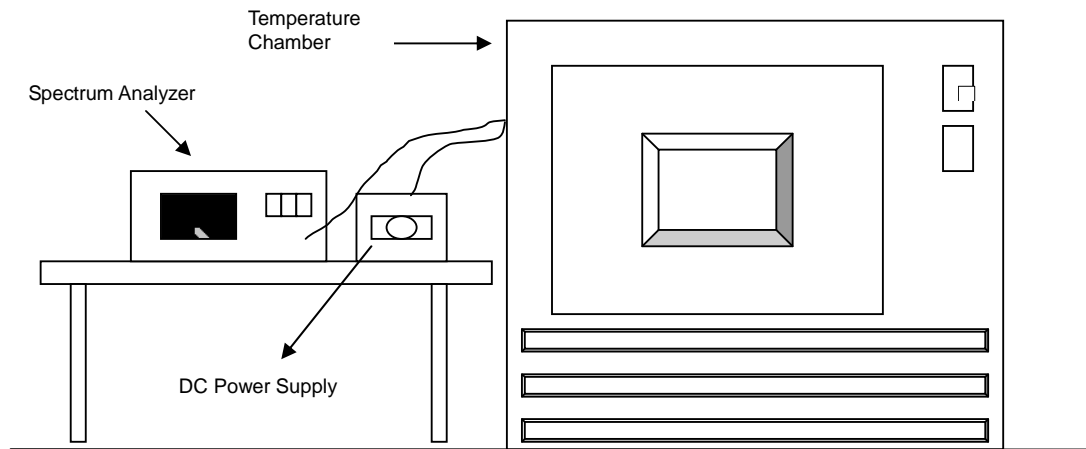


## 4.5 FREQUENCY STABILITY

### 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 4.3.3 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 DC 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. (°C)	Power Supply (Vdc)	0 MINUTE		2 MINUTES		5 MINUTES		10 MINUTE		RESULT
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	
50	3.85	5180.0036	0.695	5179.9989	-0.212	5180.0028	0.541	5180.0059	1.139	PASS
40	3.85	5179.9813	-3.610	5179.9801	-3.842	5179.9789	-4.073	5179.9807	-3.726	PASS
30	3.85	5179.9858	-2.741	5179.9762	-4.595	5179.9769	-4.459	5179.9771	-4.421	PASS
20	3.85	5179.9902	-1.892	5179.9869	-2.529	5179.9849	-2.915	5179.9887	-2.181	PASS
10	3.85	5179.9803	-3.803	5179.9797	-3.919	5179.9898	-1.969	5179.9852	-2.857	PASS
0	3.85	5179.9773	-4.382	5179.9791	-4.035	5179.9781	-4.228	5179.9751	-4.807	PASS
-10	3.85	5180.0111	2.143	5180.0155	2.992	5180.01	1.931	5180.0094	1.815	PASS
-20	3.85	5179.9977	-0.444	5179.9919	-1.564	5179.9987	-0.251	5179.9945	-1.062	PASS
-30	3.85	5180.006	1.158	5180.0088	1.699	5180.0041	0.792	5180.0069	1.332	PASS

FREQUENCY STABILITY VERSUS VOLTAGE										
OPERATING FREQUENCY: 5180MHz										
TEMP. (°C)	Power Supply (Vdc)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE		RESULT
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	
20	4.4	5179.9897	-1.988	5179.9874	-2.432	5179.9842	-3.050	5179.9892	-2.085	PASS
	3.85	5179.9902	-1.892	5179.9869	-2.529	5179.9849	-2.915	5179.9887	-2.181	PASS
	3.4	5179.9885	-2.220	5179.9861	-2.683	5179.9848	-2.934	5179.9876	-2.394	PASS



FREQUENCY STABILITY VERSUS TEMP.										
OPERATING FREQUENCY: 5805MHz										
TEMP. (°C)	Power Supply (Vdc)	0 MINUTE		2 MINUTES		5 MINUTES		10 MINUTE		RESULT
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	
50	3.85	5805.0317	5.461	5805.0228	3.928	5805.0265	4.565	5805.0231	3.979	PASS
40	3.85	5805.0283	4.875	5805.0297	5.116	5805.0305	5.254	5805.0196	3.376	PASS
30	3.85	5804.9738	-4.513	5804.9747	-4.358	5804.9732	-4.617	5804.9739	-4.496	PASS
20	3.85	5805.0067	1.154	5805.0002	0.034	5805.0054	0.930	5805.0078	1.344	PASS
10	3.85	5805.0146	2.515	5805.0148	2.550	5805.0089	1.533	5805.0157	2.705	PASS
0	3.85	5805.0204	3.514	5805.0202	3.480	5805.0251	4.324	5805.0301	5.185	PASS
-10	3.85	5804.9946	-0.930	5804.9918	-1.413	5804.9946	-0.930	5804.9988	-0.207	PASS
-20	3.85	5805.0139	2.394	5805.015	2.584	5805.0234	4.031	5805.0209	3.600	PASS
-30	3.85	5804.9946	-0.930	5804.9939	-1.051	5805.0019	0.327	5805.0014	0.241	PASS

FREQUENCY STABILITY VERSUS VOLTAGE										
OPERATING FREQUENCY: 5180MHz										
TEMP. (°C)	Power Supply (Vdc)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE		RESULT
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	
20	4.4	5805.0061	1.051	5804.9991	-0.155	5805.0052	0.896	5805.0075	1.292	PASS
	3.85	5805.0067	1.154	5805.0002	0.034	5805.0054	0.930	5805.0078	1.344	PASS
	3.4	5805.0066	1.137	5805.0009	0.155	5805.0066	1.137	5805.0083	1.430	PASS



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## 5 PHOTOGRAPHS OF THE TEST CONFIGURATION

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



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## **6 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB**

No modifications were made to the EUT by the lab during the test.

**---END---**