

TEST REPORT

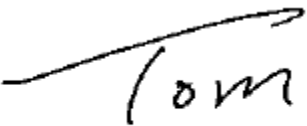
Applicant	BenQ Corporation
Address	16 Jihu Road, Neihu, Taipei 114, Taiwan

Manufacturer or Supplier	BenQ Corporation
Address	16 Jihu Road, Neihu, Taipei 114, Taiwan
Product Name	InstaShow S Button
Brand Name	BenQ
Model	WDC20TC
Additional Model & Model Difference	N/A
Date of tests	Feb. 26, 2021 ~ Jun. 02, 2021

The tests have been carried out according to the requirements of the following standard:

☒ **FCC Part 15, Subpart E, Section 15.407**

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Tested by Tom Chen Project Engineer / EMC Department	Approved by Glyn He Assistant Manager / EMC Department
	 Date: Jul. 13, 2021

This report is governed by, and incorporates by reference, CPS Conditions of Service as posted at the date of issuance of this report at <https://www.cps.bureauveritas.com/terms-conditions> and is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon request for accredited tests. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.

TABLE OF CONTENTS

RELEASE CONTROL RECORD	4
1. SUMMARY OF TEST RESULTS.....	5
1.1 MEASUREMENT UNCERTAINTY	5
2. GENERAL INFORMATION	6
2.1 GENERAL DESCRIPTION OF EUT.....	6
2.2 DESCRIPTION OF TEST MODES.....	7
2.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL	8
2.3 DUTY CYCLE OF TEST SIGNAL	10
2.4 DESCRIPTION OF SUPPORT UNITS.....	11
2.5 GENERAL DESCRIPTION OF APPLIED STANDARDS.....	11
3. TEST TYPES AND RESULTS.....	12
3.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT	12
3.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT.....	12
3.1.2 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS	13
3.1.3 TEST INSTRUMENTS.....	14
3.1.4 TEST PROCEDURES	15
3.1.5 DEVIATION FROM TEST STANDARD	15
3.1.6 TEST SETUP.....	16
3.1.7 EUT OPERATING CONDITION	17
3.1.8 TEST RESULTS	18
3.2 CONDUCTED EMISSION MEASUREMENT	38
3.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT	38
3.2.2 TEST INSTRUMENTS.....	38
3.2.3 TEST PROCEDURES	39
3.2.4 DEVIATION FROM TEST STANDARD	39
3.2.5 TEST SETUP.....	39
3.2.6 EUT OPERATING CONDITIONS	39
3.2.7 TEST RESULTS	40
3.3 TRANSMIT POWER MEASUREMENT	42

3.3.1	LIMITS OF TRANSMIT POWER MEASUREMENT	42
3.3.2	TEST SETUP	42
3.3.3	TEST INSTRUMENTS	43
3.3.4	TEST PROCEDURE	43
3.3.5	DEVIATION FROM TEST STANDARD	44
3.3.6	EUT OPERATING CONDITIONS	44
3.3.7	TEST RESULTS	45
3.4	PEAK POWER SPECTRAL DENSITY MEASUREMENT	53
3.4.1	LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT	53
3.4.2	TEST SETUP	53
3.4.3	TEST INSTRUMENTS	53
3.4.4	TEST PROCEDURES	53
3.4.5	DEVIATION FROM TEST STANDARD	54
3.4.6	EUT OPERATING CONDITIONS	54
3.4.7	TEST RESULTS	55
3.5	FREQUENCY STABILITY	61
3.5.1	LIMITS OF FREQUENCY STABILITY MEASUREMENT	61
3.5.2	TEST SETUP	61
3.5.3	TEST INSTRUMENTS	61
3.5.4	TEST PROCEDURE	62
3.5.5	DEVIATION FROM TEST STANDARD	62
3.5.6	EUT OPERATING CONDITION	62
3.5.7	TEST RESULTS	63
4.	PHOTOGRAPHS OF THE TEST CONFIGURATION	64
5.	APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	65



Test Report No.: RF2102WDG0194

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF2102WDG0194	Original release.	Jul. 13, 2021

1. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART E (SECTION 15.407 UNDER NEW RULE)			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.407(b)(6)	AC Power Conducted Emissions	PASS	Meet the requirement of limit.
15.407(b)(1/4/6)	Radiated Emissions & Band Edge Measurement	PASS	Meet the requirement of limit.
15.407(a)(1/3)	Max Average Transmit Power	PASS	Meet the requirement of limit.
15.407(a)(1/3)	Peak Power Spectral Density	PASS	Meet the requirement of limit.
15.407(g)	Frequency Stability	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is i-pex not a standard connector.

1.1 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	3.05dB
Radiated emissions	9KHz ~ 30MHz	2.16dB
	30MHz ~ 1GMHz	3.82dB
	1GHz ~ 18GHz	4.94dB
	18GHz ~ 40GHz	5.07dB

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

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT NAME	InstaShow S Button
MODEL NO.	WDC20TC
FCC ID	JVPWDC20TC
POWER SUPPLY	DC 5V from Host Unit
MODULATION TECHNOLOGY	OFDM
MODULATION TYPE	256QAM, 64QAM, 16QAM, QPSK, BPSK
TRANSFER RATE	802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 300Mbps 802.11ac: up to 867Mbps
OPERATING FREQUENCY	5180 ~ 5240MHz, 5745 ~ 5825MHz
NUMBER OF CHANNEL	5180 ~ 5240MHz: 4 channels for 802.11a, 802.11n, 11ac (20MHz) 2 channels for 802.11n, 11ac (40MHz): 1 channel for 802.11ac 80MHz 5745 ~ 5825MHz: 5 channels for 802.11a, 802.11n, 11ac (20MHz) 2 channels for 802.11n, 11ac (40MHz) 1 channel for 802.11ac (80MHz)
CONDUCTED OUTPUT POWER	15.545mW for 5150 ~ 5250MHz (Maximum AVG Power) 15.604mW for 5725 ~ 5850MHz (Maximum AVG Power)
ANTENNA TYPE	5180 ~ 5240MHz: FPCB antenna with 2dBi gain for Ant1/2 5745 ~ 5825MHz: FPCB antenna with 2dBi gain for Ant1/2
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	Type C cable: Shielded, detachable, 0.1m

NOTES:

- For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
- For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
- The EUT incorporates a MIMO function. Physically, the EUT provides 2 completed transmitters and 2 receivers.

MODULATION MODE	TX FUNCTION
802.11a	2TX/2RX
802.11ac 80MHz	2TX/2RX
802. 11n 20MHz	2TX/2RX
802. 11n 40MHz	2TX/2RX

- Please refer to the EUT photo document (Reference No.: 2102WDG0194) for detailed product photo.

2.2 DESCRIPTION OF TEST MODES

FOR 5150 ~ 5250MHz

4 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

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

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac (VHT80):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
42	5210MHz	--	--

FOR 5725 ~ 5850MHz

5 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
149	5745MHz	153	5765MHz
157	5785MHz	161	5805MHz
165	5825MHz	--	--

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
151	5755MHz	159	5795MHz

1 channel is provided for 802.11ac (VHT80):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
155	5775MHz	--	--

2.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE $\geq$ 1G	RE<1G	PLC	APCM	
-	√	√	√	√	Powered by notebook with wifi(5G) link

Where **RE $\geq$ 1G**: Radiated Emission above 1GHz

RE<1G: Radiated Emission below 1GHz

PLC: Power Line Conducted Emission

APCM: Antenna Port Conducted Measurement

NOTE:

1. 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)
-	802.11a	5150-5250	36 to 48	36, 40, 48	OFDM	BPSK	6.0
-	802.11n (20MHz)		36 to 48	36, 40, 48	OFDM	BPSK	6.5
-	802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	13.5
-	802.11ac (80MHz)		42	42	OFDM	BPSK	29.3
-	802.11a	5725-5850	149 to 165	149, 157, 165	OFDM	BPSK	6.0
-	802.11n (20MHz)		149 to 165	149, 157, 165	OFDM	BPSK	6.5
-	802.11n (40MHz)		151 to 159	151, 159	OFDM	BPSK	13.5
-	802.11ac (80MHz)		155	155	OFDM	BPSK	29.3

RADIATED EMISSION TEST (BELOW 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11a	5150-5250 5725-5850	36 to 48 149 to 165	36	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)
-	802.11a	5180-5240 5725-5850	36 to 48 149 to 165	36	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)
-	802.11a	5150-5250	36 to 48	36, 40, 48	OFDM	BPSK	6.0
-	802.11n (20MHz)		36 to 48	36, 40, 48	OFDM	BPSK	6.5
-	802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	13.5
-	802.11ac (80MHz)		42	42	OFDM	BPSK	29.3
-	802.11a	5725-5850	149 to 165	149, 157, 165	OFDM	BPSK	6.0
-	802.11n (20MHz)		149 to 165	149, 157, 165	OFDM	BPSK	6.5
-	802.11n (40MHz)		151 to 159	151, 159	OFDM	BPSK	13.5
-	802.11ac (80MHz)		155	155	OFDM	BPSK	29.3

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE<1G	25deg. C, 51%RH	DC 5V from notebook	Panda
RE≥1G	25deg. C, 51%RH	DC 5V from notebook	Panda
PLC	20deg. C, 56%RH	DC 5V from notebook	Ming Bai
APCM	20deg. C, 55%RH	DC 5V from notebook	Vincent



**BUREAU
VERITAS**

Test Report No.: RF2102WDG0194

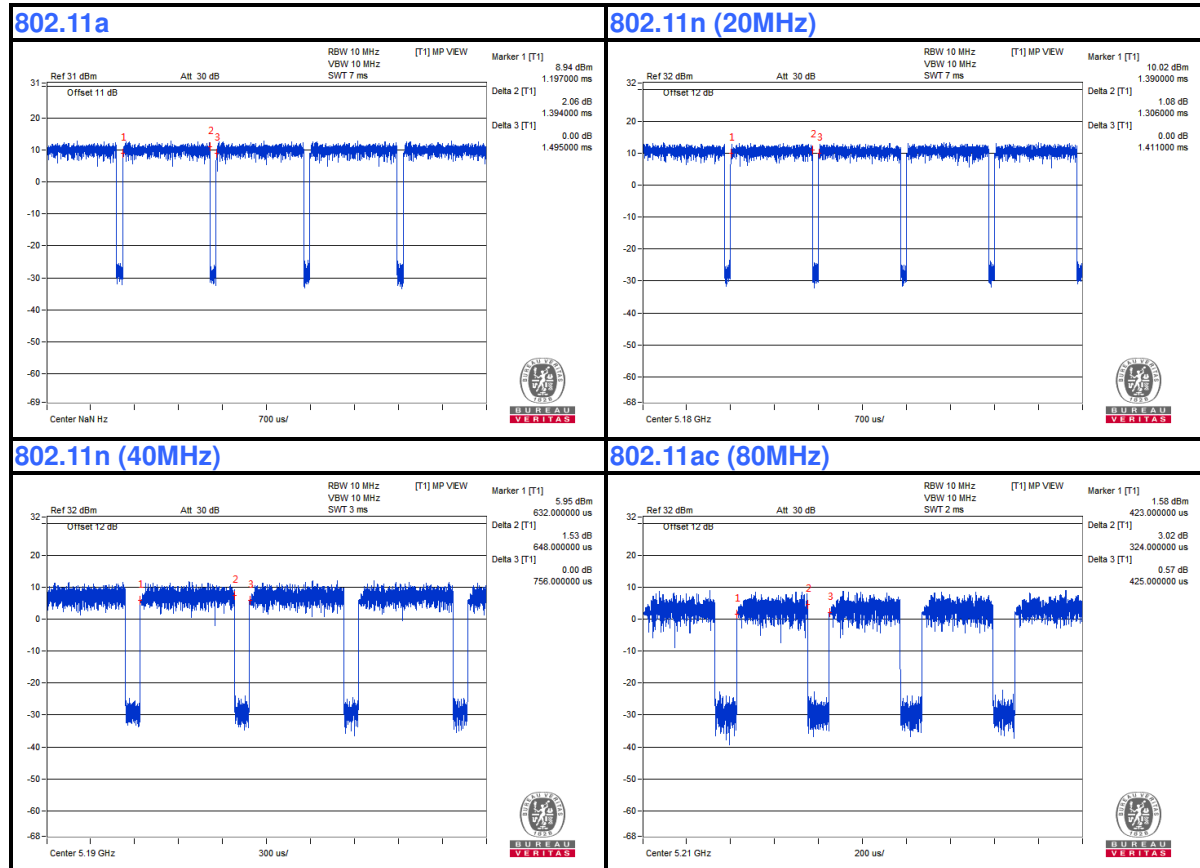
2.3 DUTY CYCLE OF TEST SIGNAL

802.11a: Duty cycle = $1.394/1.495 = 0.932$, Duty factor = $10 * \log(1/0.932) = 0.306$

802.11n (20MHz): Duty cycle = $1.306/1.411 = 0.926$, Duty factor = $10 * \log(1/0.926) = 0.334$.

802.11n (40MHz): Duty cycle = $0.648/0.756 = 0.857$, Duty factor = $10 * \log(1/0.857) = 0.670$

802.11ac (80MHz): Duty cycle = $0.324/0.425 = 0.762$, Duty factor = $10 * \log(1/0.762) = 1.180$



2.4 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	Notebook	DELL	E6430	4XF49A02	N/A
2	Notebook	DELL	Latitude 5280	CZFTNH2	N/A

NO.	DESCRIPTION OF THE ABOVE SUPPORT UNITS
1,2	AC: Unshielded, Detachable 0.8m; DC: Unshielded, Detachable 1.8m

2.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart E (15.407)

789033 D02 General UNII Test Procedures New Rules v02r01

KDB 662911 D01 Multiple Transmitter Output v02r01

ANSI C63.10-2013

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

3. TEST TYPES AND RESULTS

3.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT

3.1.1 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

NOTES:

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 30dB under any condition of modulation.

3.1.2 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

APPLICABLE TO	LIMIT	
789033 D02 General UNII Test Procedures New Rules v01r03	FIELD STRENGTH AT 3m	
	PK: 74 (dBμV/m)	AV: 54 (dBμV/m)
APPLICABLE TO	EIRP LIMIT	EQUIVALENT FIELD STRENGTH AT 3m
15.407(b)(1)	PK: -27 (dBm/MHz)	PK: 68.2 (dBμV/m)
15.407(b)(2)		
15.407(b)(3)		
15.407(b)(4)	Note	Note

NOTE: For transmitters operating in the 5.725-5.85 GHz band:

Section 15.407(b)(4) specifies the unwanted emissions limit for the U-NII-3 band. A band emissions mask is specified in Section 15.407(b)(4)(i). An alternative to the band emissions mask is specified in Section 15.407(b)(4)(ii). The alternative limits are based on the highest antenna gain specified in the filing. There are also marketing and importation restrictions for the alternative limit.

15.407(b)(4)(i) 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.

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

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

3.1.3 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESU40	100449	Mar. 07,22
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV7	102331	May 13, 22
Active Loop Antenna (9KHz -30MHz)	SCHWARZBECK	FMZB 1519B	1519B-045	May 29, 22
Amplifier (9KHz -1GHz)	Burgeon	BPA-530	100210	Mar. 13,22
Bilog Antenna (20MHz -2GHz)	Teseq	CBL 6111D	30643	May 29, 22
Horn Antenna (1GHz -18GHz)	ETS -Lindgren	3117	00062558	May 29, 22
Horn Antenna (18GHz -40GHz)	SCHWARZBECK	BBHA 9170	BBHA9170147	May 09, 22
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	NSEMC003	May 22, 22
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A
Broadband Preamplifier (1GHz~18GHz)	SCHWARZBECK	BBV9718	305	May 08, 22
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Mar. 13,22
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A

NOTES:

1. The test was performed in 966 Chamber.
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.
3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 749762.

3.1.4 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 1.5 meters(above 1GHz) and 0.8 meters(below 1GHz) above the ground at a 3 meters semi-anechoic chamber. 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.

NOTES:

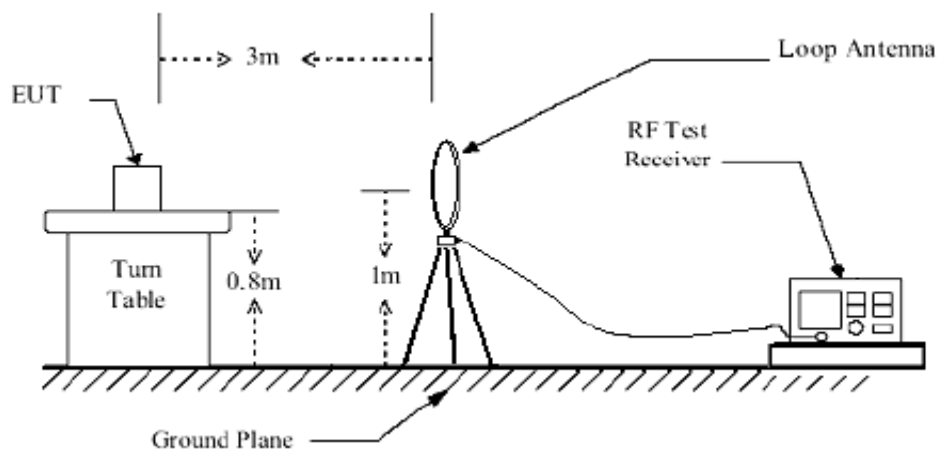
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98%) or 10Hz(Duty cycle > 98%) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

3.1.5 DEVIATION FROM TEST STANDARD

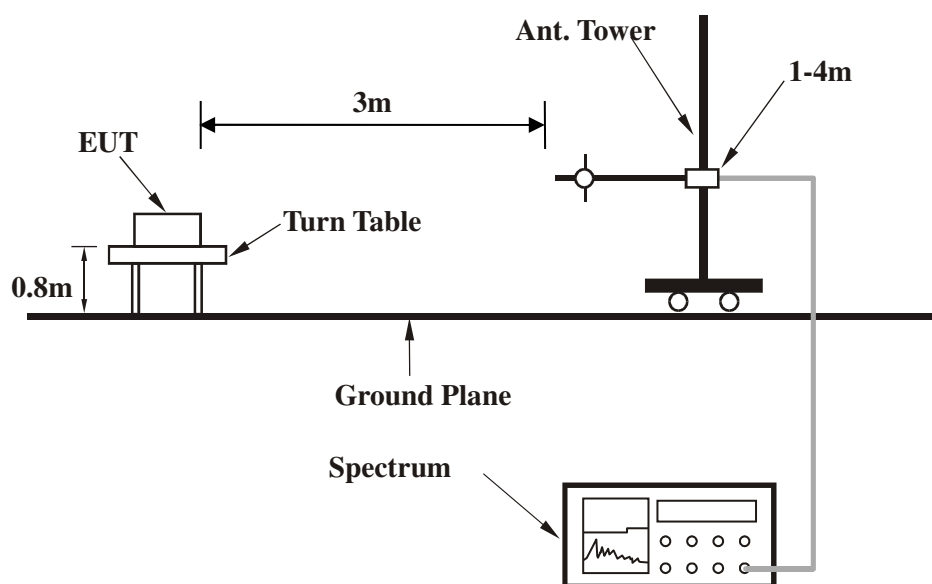
No deviation.

3.1.6 TEST SETUP

Below 30MHz test setup

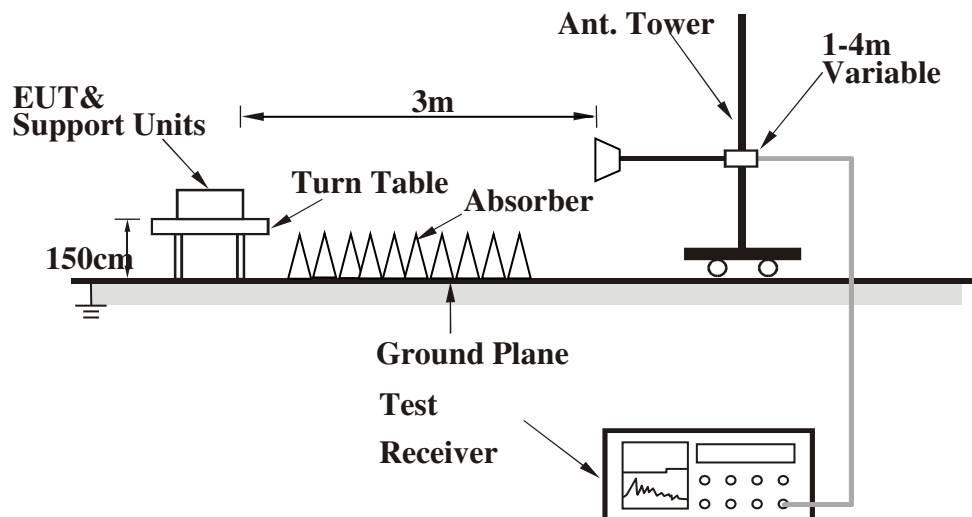


Below 1GHz test setup



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

Above 1GHz test setup



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

3.1.7 EUT OPERATING CONDITION

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

3.1.8 TEST RESULTS

BELOW 1GHz WORST-CASE DATA

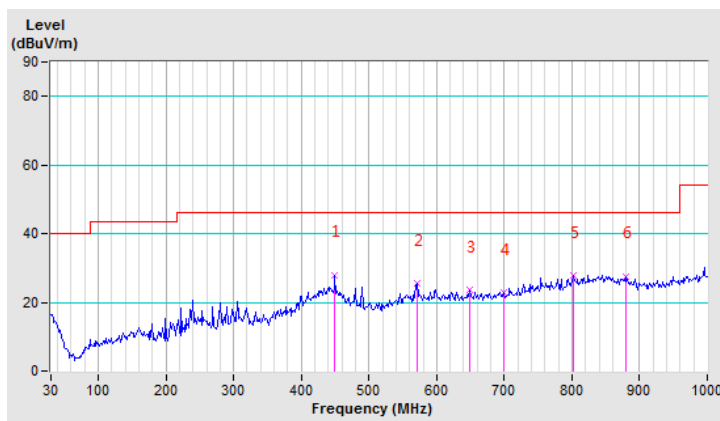
802.11a

CHANNEL	TX Channel 36	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	449.71	28.01 QP	46.00	-17.99	1.00 H	45	38.46	-10.45
2	570.96	25.61 QP	46.00	-20.39	1.00 H	57	32.73	-7.12
3	648.69	23.62 QP	46.00	-22.38	1.00 H	141	29.36	-5.74
4	699.98	22.73 QP	46.00	-23.27	1.00 H	67	28.08	-5.35
5	802.58	27.67 QP	46.00	-18.33	1.00 H	90	31.12	-3.45
6	880.30	27.63 QP	46.00	-18.37	1.00 H	121	29.93	-2.30

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The emission levels of other frequencies were less than 20dB margin against the limit.
4. Margin value = Emission level – Limit value.

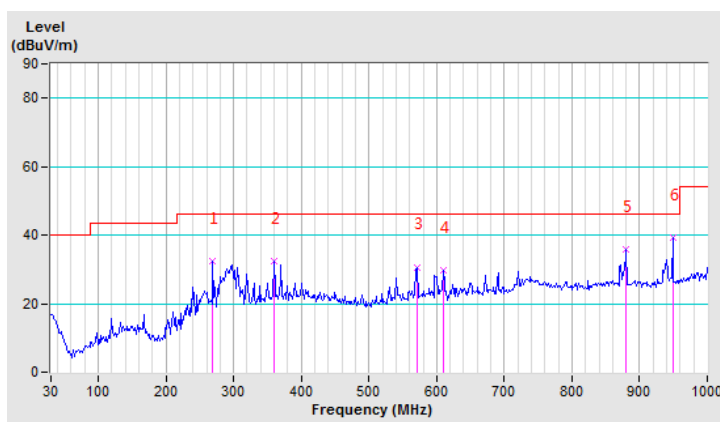


CHANNEL	TX Channel 36	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

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	269.39	32.38 QP	46.00	-13.62	1.00 V	117	47.89	-15.51
2	359.55	32.50 QP	46.00	-13.50	1.00 V	242	44.80	-12.30
3	570.96	30.68 QP	46.00	-15.32	1.00 V	183	37.80	-7.12
4	609.82	29.66 QP	46.00	-16.34	1.00 V	159	36.25	-6.59
5	880.30	35.66 QP	46.00	-10.34	1.00 V	194	37.96	-2.30
6	948.70	39.28 QP	46.00	-6.72	1.00 V	302	40.72	-1.44

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 emission levels of other frequencies were less than 20dB margin against the limit.
4. Margin value = Emission level – Limit value.



Band 1 (5150-5250MHz):

ABOVE 1GHz DATA

802.11a

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5147.00	60.70 PK	74.00	-13.30	1.00 H	147	49.09	11.61
2	5147.00	48.00 AV	54.00	-6.00	1.00 H	147	36.39	11.61
3	5150.00	60.72 PK	74.00	-13.28	1.00 H	147	49.10	11.62
4	5150.00	48.20 AV	54.00	-5.80	1.00 H	147	36.58	11.62
5	*5180.00	110.46 PK			1.00 H	147	98.81	11.65
6	*5180.00	100.55 AV			1.00 H	147	88.90	11.65
7	#10360.00	61.59 PK	68.20	-6.61	1.00 H	0	41.21	20.38
8	15540.00	63.12 PK	74.00	-10.88	1.00 H	0	37.55	25.57
9	15540.00	49.21 AV	54.00	-4.79	1.00 H	0	23.64	25.57
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	5148.00	55.27 PK	74.00	-18.73	1.00 V	226	43.66	11.61
2	5148.00	42.19 AV	54.00	-11.81	1.00 V	226	30.58	11.61
3	5150.00	52.91 PK	74.00	-21.09	1.00 V	226	41.29	11.62
4	5150.00	42.74 AV	54.00	-11.26	1.00 V	226	31.12	11.62
5	*5180.00	100.51 PK			1.00 V	226	88.86	11.65
6	*5180.00	91.90 AV			1.00 V	226	80.25	11.65
7	#10360.00	60.47 PK	68.20	-7.73	1.00 V	0	47.82	20.38
8	15540.00	62.01 PK	74.00	-11.99	1.00 V	0	36.44	25.57
9	15540.00	48.57 AV	54.00	-5.43	1.00 V	0	23.00	25.57

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 emission levels of other frequencies were greater than 20dB margin.
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	5147.00	56.48 PK	74.00	-17.52	1.00 H	159	44.87	11.61
2	5147.00	42.58 AV	54.00	-11.42	1.00 H	159	30.97	11.61
3	5150.00	57.67 PK	74.00	-16.33	1.00 H	159	46.05	11.62
4	5150.00	43.14 AV	54.00	-10.86	1.00 H	159	31.52	11.62
5	*5200.00	109.72 PK			1.00 H	159	98.03	11.69
6	*5200.00	95.17 AV			1.00 H	159	83.48	11.69
7	#10400.00	64.01 PK	68.20	-4.19	1.00 H	0	43.46	20.55
8	15600.00	67.03 PK	74.00	-6.97	1.00 H	0	41.36	25.67
9	15600.00	49.75 AV	54.00	-4.25	1.00 H	0	24.08	25.67
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	5148.00	53.88 PK	74.00	-20.12	1.00 V	123	42.27	11.61
2	5148.00	41.38 AV	54.00	-12.62	1.00 V	123	29.77	11.61
3	5150.00	53.71 PK	74.00	-20.29	1.00 V	123	42.09	11.62
4	5150.00	41.21 AV	54.00	-12.79	1.00 V	123	29.59	11.62
5	*5200.00	104.56 PK			1.00 V	123	92.87	11.69
6	*5200.00	90.13 AV			1.00 V	123	78.44	11.69
7	#10400.00	63.14 PK	68.20	-5.06	1.00 V	0	42.59	20.55
8	15600.00	66.59 PK	74.00	-7.41	1.00 V	0	40.92	25.67
9	15600.00	49.57 AV	54.00	-4.43	1.00 V	0	23.90	25.67

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 emission levels of other frequencies were greater than 20dB margin.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



**BUREAU
VERITAS**

Test Report No.: RF2102WDG0194

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	5149.00	55.45 PK	74.00	-18.55	1.00 H	201	43.84	11.61
2	5149.00	40.96 AV	54.00	-13.04	1.00 H	201	29.35	11.61
3	5150.00	57.34 PK	74.00	-16.66	1.00 H	201	45.72	11.62
4	5150.00	43.01 AV	54.00	-10.99	1.00 H	201	31.39	11.62
5	*5240.00	108.45 PK			1.00 H	201	96.71	11.74
6	*5240.00	93.14 AV			1.00 H	201	81.40	11.74
7	5350.00	56.28 PK	74.00	-17.72	1.00 H	201	44.39	11.89
8	5350.00	42.17 AV	54.00	-11.83	1.00 H	201	30.28	11.89
9	5353.00	55.48 PK	74.00	-18.52	1.00 H	201	43.58	11.90
10	5353.00	42.37 AV	54.00	-11.63	1.00 H	201	30.47	11.90
11	#10480.00	58.76 PK	68.20	-9.44	1.00 H	0	37.88	20.88
12	15720.00	63.15 PK	74.00	-10.85	1.00 H	0	37.28	25.87
13	15720.00	47.25 AV	54.00	-6.75	1.00 H	0	21.38	25.87
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	5147.00	54.59 PK	74.00	-19.41	1.00 V	101	42.98	11.61
2	5147.00	39.75 AV	54.00	-14.25	1.00 V	101	28.14	11.61
3	5150.00	56.47 PK	74.00	-17.53	1.00 V	101	44.85	11.62
4	5150.00	41.14 AV	54.00	-12.86	1.00 V	101	29.52	11.62
5	*5240.00	106.47 PK			1.00 V	101	94.73	11.74
6	*5240.00	91.47 AV			1.00 V	101	79.73	11.74
7	5350.00	55.62 PK	74.00	-18.38	1.00 V	101	43.73	11.89
8	5350.00	40.19 AV	54.00	-13.81	1.00 V	101	28.30	11.89
9	5357.00	54.85 PK	74.00	-19.15	1.00 V	101	42.95	11.90
10	5357.00	41.03 AV	54.00	-12.97	1.00 V	101	29.13	11.90
11	#10480.00	56.14 PK	68.20	-12.06	1.00 V	0	35.26	20.88
12	15720.00	62.58 PK	74.00	-11.42	1.00 V	0	36.71	25.87
13	15720.00	46.75 AV	54.00	-7.25	1.00 V	0	20.88	25.87

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 emission levels of other frequencies were greater than 20dB margin.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

Bureau Veritas Shenzhen Co., Ltd.
Dongguan Branch

No. 96, Guantai Road (Houjie Section), Houjie
Town, Dongguan City, Guangdong Province.
523942. People's Republic of China.

Tel: +86 769 8998 2098
Fax: +86 769 8593 1080
Email: customerservice.dg@bureauveritas.com

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								
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	5140.00	56.60 PK	74.00	-17.40	1.00 H	307	45.00	11.60
2	5140.00	42.58 AV	54.00	-11.42	1.00 H	307	30.98	11.60
3	5150.00	56.35 PK	74.00	-17.65	1.00 H	307	44.73	11.62
4	5150.00	43.92 AV	54.00	-10.08	1.00 H	307	32.30	11.62
5	*5180.00	105.47 PK			1.00 H	307	93.82	11.65
6	*5180.00	91.55 AV			1.00 H	307	79.90	11.65
7	#10360.00	59.78 PK	68.20	-8.42	1.00 H	0	39.40	20.38
8	15540.00	64.15 PK	74.00	-9.85	1.00 H	0	38.58	25.57
9	15540.00	48.75 AV	54.00	-5.25	1.00 H	0	23.18	25.57
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	5148.39	56.58 PK	74.00	-17.42	1.00 V	208	44.97	11.61
2	5148.39	42.25 AV	54.00	-11.75	1.00 V	208	30.64	11.61
3	5150.00	56.22 PK	74.00	-17.78	1.00 V	208	44.60	11.62
4	5150.00	43.54 AV	54.00	-10.46	1.00 V	208	31.92	11.62
5	*5180.00	105.82 PK			1.00 V	208	94.17	11.65
6	*5180.00	91.35 AV			1.00 V	208	79.70	11.65
7	#10360.00	61.02 PK	68.20	-7.18	1.00 V	0	40.64	20.38
8	15540.00	65.17 PK	74.00	-8.83	1.00 V	0	39.60	25.57
9	15540.00	49.03 AV	54.00	-4.97	1.00 V	0	23.46	25.57

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 emission levels of other frequencies were greater than 20dB margin.
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	5146.45	54.15 PK	74.00	-19.85	1.00 H	144	42.54	11.61
2	5146.45	41.03 AV	54.00	-12.97	1.00 H	144	29.42	11.61
3	5150.00	55.23 PK	74.00	-18.77	1.00 H	144	43.61	11.62
4	5150.00	42.13 AV	54.00	-11.87	1.00 H	144	30.51	11.62
5	*5200.00	109.84 PK			1.00 H	144	98.15	11.69
6	*5200.00	95.14 AV			1.00 H	144	83.45	11.69
7	#10400.00	58.45 PK	68.20	-9.75	1.00 H	0	37.90	20.55
8	15600.00	53.26 PK	74.00	-20.74	1.00 H	0	27.59	25.67
9	15600.00	48.54 AV	54.00	-5.46	1.00 H	0	22.87	25.67
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	5145.26	53.15 PK	74.00	-20.85	1.00 V	207	41.55	11.60
2	5145.26	40.18 AV	54.00	-13.82	1.00 V	207	28.58	11.60
3	5150.00	54.45 PK	74.00	-19.55	1.00 V	207	42.83	11.62
4	5150.00	41.26 AV	54.00	-12.74	1.00 V	207	29.64	11.62
5	*5200.00	103.62 PK			1.00 V	207	91.93	11.69
6	*5200.00	90.15 AV			1.00 V	207	78.46	11.69
7	#10400.00	57.62 PK	68.20	-10.58	1.00 V	0	37.07	20.55
8	15600.00	52.15 PK	74.00	-21.85	1.00 V	0	26.48	25.67
9	15600.00	47.34 AV	54.00	-6.66	1.00 V	0	21.67	25.67

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 emission levels of other frequencies were greater than 20dB margin.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



**BUREAU
VERITAS**

Test Report No.: RF2102WDG0194

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	5147.46	52.96 PK	74.00	-21.04	1.00 H	165	41.35	11.61
2	5147.46	43.58 AV	54.00	-10.42	1.00 H	165	31.97	11.61
3	5150.00	53.75 PK	74.00	-20.25	1.00 H	165	42.13	11.62
4	5150.00	43.65 AV	54.00	-10.35	1.00 H	165	32.03	11.62
5	*5240.00	107.54 PK			1.00 H	165	95.80	11.74
6	*5240.00	93.58 AV			1.00 H	165	81.84	11.74
7	5350.00	55.04 PK	74.00	-18.96	1.00 H	165	43.15	11.89
8	5350.00	43.87 AV	54.00	-10.13	1.00 H	165	31.98	11.89
9	5352.48	54.85 PK	74.00	-19.15	1.00 H	165	42.95	11.90
10	5352.48	44.25 AV	54.00	-9.75	1.00 H	165	32.35	11.90
11	#10480.00	59.03 PK	68.20	-9.17	1.00 H	0	38.15	20.88
12	15720.00	63.54 PK	74.00	-10.46	1.00 H	0	37.67	25.87
13	15720.00	49.02 AV	54.00	-4.98	1.00 H	0	23.15	25.87
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	5144.17	52.58 PK	74.00	-21.42	1.00 V	266	40.97	11.61
2	5144.17	41.78 AV	54.00	-12.22	1.00 V	266	30.17	11.61
3	5150.00	53.15 PK	74.00	-20.85	1.00 V	266	41.53	11.62
4	5150.00	42.68 AV	54.00	-11.32	1.00 V	266	31.06	11.62
5	*5240.00	104.63 PK			1.00 V	266	92.89	11.74
6	*5240.00	91.47 AV			1.00 V	266	79.73	11.74
7	5350.00	54.45 PK	74.00	-19.55	1.00 V	266	42.56	11.89
8	5350.00	43.69 AV	54.00	-10.31	1.00 V	266	31.80	11.89
9	5356.58	54.58 PK	74.00	-19.42	1.00 V	266	42.68	11.90
10	5356.58	43.96 AV	54.00	-10.04	1.00 V	266	32.06	11.90
11	#10480.00	58.75 PK	68.20	-9.45	1.00 V	0	37.87	20.88
12	15720.00	63.15 PK	74.00	-10.85	1.00 V	0	37.28	25.87
13	15720.00	48.57 AV	54.00	-5.43	1.00 V	0	22.70	25.87

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 emission levels of other frequencies were greater than 20dB margin.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

Bureau Veritas Shenzhen Co., Ltd.
Dongguan Branch

No. 96, Guantai Road (Houjie Section), Houjie
Town, Dongguan City, Guangdong Province.
523942. People's Republic of China.

Tel: +86 769 8998 2098
Fax: +86 769 8593 1080
Email: customerservice.dg@bureauveritas.com

802.11n (40MHz)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5145.19	64.75 PK	74.00	-9.25	1.00 H	251	53.15	11.60
2	5145.19	50.35 AV	54.00	-3.65	1.00 H	251	38.75	11.60
3	5150.00	63.51 PK	74.00	-10.49	1.00 H	251	51.89	11.62
4	5150.00	50.12 AV	54.00	-3.88	1.00 H	251	38.50	11.62
5	*5190.00	103.13 PK			1.00 H	251	91.46	11.67
6	*5190.00	89.37 AV			1.00 H	251	77.70	11.67
7	#10380.00	58.69 PK	68.20	-9.51	1.00 H	0	38.22	20.47
8	15570.00	63.47 PK	74.00	-10.53	1.00 H	0	37.84	25.63
9	15570.00	50.28 AV	54.00	-3.72	1.00 H	0	24.65	25.63
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	5144.45	63.42 PK	74.00	-10.58	1.00 V	197	51.82	11.60
2	5144.45	49.75 AV	54.00	-4.25	1.00 V	197	38.15	11.60
3	5150.00	61.96 PK	74.00	-12.04	1.00 V	197	50.34	11.62
4	5150.00	50.26 AV	54.00	-3.74	1.00 V	197	38.64	11.62
5	*5190.00	102.33 PK			1.00 V	197	90.66	11.67
6	*5190.00	88.14 AV			1.00 V	197	76.47	11.67
7	#10380.00	57.45 PK	68.20	-10.75	1.00 V	0	36.98	20.47
8	15570.00	62.45 PK	74.00	-11.55	1.00 V	0	36.82	25.63
9	15570.00	49.58 AV	54.00	-4.42	1.00 V	0	23.95	25.63

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 emission levels of other frequencies were greater than 20dB margin.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5147.29	55.45 PK	74.00	-18.55	1.00 H	148	43.84	11.61
2	5147.29	40.39 AV	54.00	-13.61	1.00 H	148	28.78	11.61
3	5150.00	56.56 PK	74.00	-17.44	1.00 H	148	44.94	11.62
4	5150.00	42.19 AV	54.00	-11.81	1.00 H	148	30.57	11.62
5	*5230.00	106.48 PK			1.00 H	148	94.76	11.72
6	*5230.00	93.58 AV			1.00 H	148	81.86	11.72
7	#10460.00	60.48 PK	68.20	-7.72	1.00 H	0	39.68	20.80
8	15690.00	62.36 PK	74.00	-11.64	1.00 H	0	36.54	25.82
9	15690.00	48.58 AV	54.00	-5.42	1.00 H	0	22.76	25.82
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	5144.65	54.26 PK	74.00	-19.74	1.00 V	74	42.66	11.60
2	5144.65	39.85 AV	54.00	-14.15	1.00 V	74	28.25	11.60
3	5150.00	55.57 PK	74.00	-18.43	1.00 V	74	43.95	11.62
4	5150.00	41.09 AV	54.00	-12.91	1.00 V	74	29.47	11.62
5	*5230.00	102.15 PK			1.00 V	74	90.43	11.72
6	*5230.00	90.45 AV			1.00 V	74	78.73	11.72
7	#10460.00	59.75 PK	68.20	-8.45	1.00 V	0	38.95	20.80
8	15690.00	60.25 PK	74.00	-13.75	1.00 V	0	34.43	25.82
9	15690.00	47.75 AV	54.00	-6.25	1.00 V	0	21.93	25.82

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 emission levels of other frequencies were greater than 20dB margin.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

802.11ac (80MHz)

CHANNEL	TX Channel 42	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	5144.15	58.48 PK	74.00	-15.52	1.00 H	125	46.87	11.61
2	5144.15	43.15 AV	54.00	-10.85	1.00 H	125	31.54	11.61
3	5150.00	59.55 PK	74.00	-14.45	1.00 H	125	47.93	11.62
4	5150.00	44.58 AV	54.00	-9.42	1.00 H	125	32.96	11.62
5	*5210.00	100.70 PK			1.00 H	125	89.00	11.70
6	*5210.00	90.58 AV			1.00 H	125	78.88	11.70
7	#10420.00	61.48 PK	68.20	-6.72	1.00 H	0	40.84	20.64
8	15630.00	55.45 PK	74.00	-18.55	1.00 H	0	29.73	25.72
9	15630.00	42.78 AV	54.00	-11.22	1.00 H	0	17.06	25.72
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	5146.58	58.75 PK	74.00	-15.25	1.00 V	166	47.14	11.61
2	5146.58	44.15 AV	54.00	-9.85	1.00 V	166	32.54	11.61
3	5150.00	58.45 PK	74.00	-15.55	1.00 V	166	46.83	11.62
4	5150.00	43.15 AV	54.00	-10.85	1.00 V	166	31.53	11.62
5	*5210.00	99.13 PK			1.00 V	166	87.43	11.70
6	*5210.00	89.75 AV			1.00 V	166	78.05	11.70
7	#10420.00	60.45 PK	68.20	-7.75	1.00 V	0	39.81	20.64
8	15630.00	53.15 PK	74.00	-20.85	1.00 V	0	27.43	25.72
9	15630.00	41.26 AV	54.00	-12.74	1.00 V	0	15.54	25.72

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 emission levels of other frequencies were greater than 20dB margin.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

Band 4 (5725-5850MHz):

ABOVE 1GHz DATA

802.11a

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	#5715.75	57.46 PK	109.61	-52.15	1.00 H	197	44.48	12.98
2	#5722.48	60.27 PK	116.46	-56.19	1.00 H	197	47.27	13.00
3	#5725.00	62.66 PK	122.20	-59.54	1.00 H	197	49.64	13.02
4	*5745.00	107.94 PK			1.00 H	197	94.84	13.10
5	*5745.00	77.04 AV			1.00 H	197	63.94	13.10
6	11490.00	52.48 PK	74.00	-21.52	1.00 H	0	29.46	23.02
7	11490.00	37.49 AV	54.00	-16.51	1.00 H	0	14.47	23.02
8	#17235.00	54.57 PK	68.20	-13.63	1.00 H	0	25.79	28.78
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	#5719.99	59.25 PK	110.80	-51.55	1.00 V	157	46.26	12.99
2	#5721.63	59.87 PK	114.52	-54.65	1.00 V	157	46.87	13.00
3	#5725.00	62.08 PK	122.20	-60.12	1.00 V	157	49.06	13.02
4	*5745.00	109.23 PK			1.00 V	157	96.13	13.10
5	*5745.00	78.35 AV			1.00 V	157	65.25	13.10
6	11490.00	54.36 PK	74.00	-19.64	1.00 V	0	31.34	23.02
7	11490.00	38.46 AV	54.00	-15.54	1.00 V	0	15.44	23.02
8	#17235.00	57.48 PK	68.20	-10.72	1.00 V	0	28.70	28.78

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 emission levels of other frequencies were greater than 20dB margin.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



**BUREAU
VERITAS**

Test Report No.: RF2102WDG0194

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	#5710.70	54.34 PK	108.20	-53.86	1.00 H	0	41.38	12.96
2	#5718.27	54.31 PK	110.32	-56.01	1.00 H	0	41.32	12.99
3	*5785.00	109.39 PK			1.00 H	97	96.14	13.25
4	*5785.00	83.21 AV			1.00 H	97	69.96	13.25
5	#5859.25	54.67 PK	109.61	-54.94	1.00 H	0	41.12	13.55
6	11570.00	53.14 PK	74.00	-20.86	1.00 H	0	30.00	23.14
7	11570.00	35.25 AV	54.00	-18.75	1.00 H	0	12.11	23.14
8	#17355.00	50.17 PK	68.20	-18.03	1.00 H	0	21.10	29.07
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	#5711.53	54.88 PK	108.43	-53.55	1.00 V	205	41.92	12.96
2	#5720.79	55.46 PK	112.60	-57.14	1.00 V	205	42.46	13.00
3	*5785.00	111.27 PK			1.00 V	205	98.02	13.25
4	*5785.00	85.32 AV			1.00 V	205	72.07	13.25
5	#5853.36	55.70 PK	114.54	-58.84	1.00 V	205	42.17	13.53
6	11570.00	54.47 PK	74.00	-19.53	1.00 V	0	31.33	23.14
7	11570.00	37.42 AV	54.00	-16.58	1.00 V	0	14.28	23.14
8	#17355.00	54.57 PK	68.20	-13.63	1.00 V	0	25.50	29.07

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 emission levels of other frequencies were greater than 20dB margin.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	109.79 PK			1.00 H	201	96.37	13.42
2	*5825.00	83.54 AV			1.00 H	201	70.12	13.42
3	#5850.00	56.82 PK	122.20	-65.38	1.00 H	0	43.30	13.52
4	#5856.73	57.13 PK	110.31	-53.18	1.00 H	0	43.58	13.55
5	#5861.78	57.25 PK	108.90	-51.65	1.00 H	0	43.69	13.56
6	11650.00	56.45 PK	74.00	-17.55	1.00 H	0	33.20	23.25
7	11650.00	40.25 AV	54.00	-13.75	1.00 H	0	17.00	23.25
8	#17475.00	60.47 PK	68.20	-7.73	1.00 H	0	31.13	29.34
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	110.90 PK			1.00 V	201	97.48	13.42
2	*5825.00	86.34 AV			1.00 V	201	72.92	13.42
3	#5850.00	58.43 PK	122.20	-63.77	1.00 V	112	44.91	13.52
4	#5856.73	60.42 PK	110.31	-49.89	1.00 V	112	46.87	13.55
5	#5863.46	59.08 PK	108.43	-49.35	1.00 V	112	45.51	13.57
6	11650.00	57.50 PK	74.00	-16.50	1.00 V	0	34.25	23.25
7	11650.00	43.45 AV	54.00	-10.55	1.00 V	0	20.20	23.25
8	#17475.00	63.14 PK	68.20	-5.06	1.00 V	0	33.80	29.34

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 emission levels of other frequencies were greater than 20dB margin.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

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								
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	#5720.45	58.75 PK	111.83	-53.08	1.00 H	205	45.76	12.99
2	#5722.54	59.45 PK	116.59	-57.14	1.00 H	205	46.45	13.00
3	#5725.00	63.12 PK	122.20	-59.08	1.00 H	205	50.10	13.02
4	*5745.00	107.46 PK			1.00 H	205	94.36	13.10
5	*5745.00	83.15 AV			1.00 H	205	70.05	13.10
6	11490.00	57.45 PK	74.00	-16.55	1.00 H	0	34.43	23.02
7	11490.00	38.25 AV	54.00	-15.75	1.00 H	0	15.23	23.02
8	#17235.00	55.45 PK	68.20	-12.75	1.00 H	0	26.67	28.78
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	#5712.38	59.96 PK	108.67	-48.71	1.00 V	122	47.00	12.96
2	#5714.65	59.45 PK	109.30	-49.85	1.00 V	122	46.48	12.97
3	#5725.00	62.64 PK	122.20	-59.56	1.00 V	122	49.62	13.02
4	*5745.00	109.35 PK			1.00 V	122	96.25	13.10
5	*5745.00	82.47 AV			1.00 V	122	69.37	13.10
6	11490.00	58.75 PK	74.00	-15.25	1.00 V	0	35.73	23.02
7	11490.00	40.15 AV	54.00	-13.85	1.00 V	0	17.13	23.02
8	#17235.00	58.75 PK	68.20	-9.45	1.00 V	0	29.97	28.78

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 emission levels of other frequencies were greater than 20dB margin.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



**BUREAU
VERITAS**

Test Report No.: RF2102WDG0194

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	#5709.01	54.70 PK	107.73	-53.03	1.00 H	98	41.75	12.95
2	#5718.27	55.11 PK	110.32	-55.21	1.00 H	98	42.12	12.99
3	*5785.00	105.46 PK			1.00 H	98	92.21	13.25
4	*5785.00	82.10 AV			1.00 H	98	68.85	13.25
5	#5855.89	55.23 PK	110.55	-55.32	1.00 H	98	41.69	13.54
6	11570.00	57.61 PK	74.00	-16.39	1.00 H	0	34.47	23.14
7	11570.00	42.47 AV	54.00	-11.53	1.00 H	0	19.33	23.14
8	#17355.00	59.75 PK	68.20	-8.45	1.00 H	0	30.68	29.07
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5714.06	55.30 PK	109.14	-53.84	1.00 V	0	42.33	12.97
2	#5719.95	56.22 PK	110.79	-54.57	1.00 V	0	43.23	12.99
3	*5785.00	110.92 PK			1.00 V	103	97.67	13.25
4	*5785.00	90.51 AV			1.00 V	103	77.26	13.25
5	#5856.73	54.59 PK	110.31	-55.72	1.00 V	0	41.04	13.55
6	11570.00	60.58 PK	74.00	-13.42	1.00 V	0	37.44	23.14
7	11570.00	45.58 AV	54.00	-8.42	1.00 V	0	22.44	23.14
8	#17355.00	62.58 PK	68.20	-5.62	1.00 V	0	33.51	29.07

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 emission levels of other frequencies were greater than 20dB margin.
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	#5717.43	55.29 PK	110.08	-54.79	1.00 H	0	42.30	12.99
2	*5825.00	108.63 PK			1.00 H	54	95.21	13.42
3	*5825.00	54.25 AV			1.00 H	54	40.83	13.42
4	#5850.00	57.43 PK	122.20	-64.77	1.00 H	0	43.91	13.52
5	#5855.89	57.12 PK	110.55	-53.43	1.00 H	0	43.58	13.54
6	11650.00	60.58 PK	74.00	-13.42	1.00 H	0	37.33	23.25
7	11650.00	45.58 AV	54.00	-8.42	1.00 H	0	22.33	23.25
8	#17475.00	62.22 PK	68.20	-5.98	1.00 H	0	32.88	29.34
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	#5719.11	54.30 PK	110.55	-56.25	1.00 V	0	41.31	12.99
2	*5825.00	111.26 PK			1.00 V	277	97.84	13.42
3	*5825.00	89.45 AV			1.00 V	277	76.03	13.42
4	#5850.00	59.56 PK	122.20	-62.64	1.00 V	0	46.04	13.52
5	#5859.25	59.06 PK	109.61	-50.55	1.00 V	0	45.51	13.55
6	11650.00	62.48 PK	74.00	-11.52	1.00 V	0	39.23	23.25
7	11650.00	46.58 AV	54.00	-7.42	1.00 V	0	23.33	23.25
8	#17475.00	63.25 PK	68.20	-4.95	1.00 V	0	33.91	29.34

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 emission levels of other frequencies were greater than 20dB margin.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

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								
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	#5716.59	70.76 PK	109.85	-39.09	1.00 H	64	57.78	12.98
2	#5717.43	68.97 PK	110.08	-41.11	1.00 H	64	55.98	12.99
3	#5725.00	69.91 PK	122.20	-52.29	1.00 H	64	56.89	13.02
4	*5755.00	107.14 PK			1.00 H	64	94.01	13.13
5	*5755.00	87.69 AV			1.00 H	64	74.56	13.13
6	11510.00	59.85 PK	74.00	-14.15	1.00 H	0	36.79	23.06
7	11510.00	44.57 AV	54.00	-9.43	1.00 H	0	21.51	23.06
8	#17265.00	59.75 PK	68.20	-8.45	1.00 H	0	30.89	28.86
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	#5707.33	70.54 PK	107.26	-36.72	1.00 V	0	57.59	12.95
2	#5714.06	71.48 PK	109.14	-37.66	1.00 V	0	58.51	12.97
3	#5725.00	72.42 PK	122.20	-49.78	1.00 V	0	59.40	13.02
4	*5755.00	109.12 PK			1.00 V	209	95.99	13.13
5	*5755.00	90.45 AV			1.00 V	109	77.32	13.13
6	11510.00	63.45 PK	74.00	-10.55	1.00 V	0	40.39	23.06
7	11510.00	46.58 AV	54.00	-7.42	1.00 V	0	23.52	23.06
8	#17265.00	61.78 PK	68.20	-6.42	1.00 V	0	32.92	28.86

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 emission levels of other frequencies were greater than 20dB margin.
4. Margin value = Emission level – Limit value.
5. " * " : Fundamental frequency.
6. " # " : The radiated frequency is out of the restricted band.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5719.95	59.56 PK	110.79	-51.23	1.00 H	0	46.57	12.99
2	*5795.00	104.61 PK			1.00 H	87	91.31	13.30
3	*5795.00	82.16 AV			1.00 H	87	68.86	13.30
4	#5850.00	57.38 PK	122.20	-64.82	1.00 H	0	43.86	13.52
5	#5860.10	56.18 PK	109.37	-53.19	1.00 H	0	42.62	13.56
6	11590.00	62.48 PK	74.00	-11.52	1.00 H	0	39.31	23.17
7	11590.00	44.17 AV	54.00	-9.83	1.00 H	0	21.00	23.17
8	#17385.00	62.57 PK	68.20	-5.63	1.00 H	0	33.43	29.14
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	#5719.11	59.20 PK	110.55	-51.35	1.00 V	147	46.21	12.99
2	*5795.00	109.36 PK			1.00 V	147	96.06	13.30
3	*5795.00	89.25 AV			1.00 V	147	75.95	13.30
4	#5850.00	60.85 PK	122.20	-61.35	1.00 V	147	47.33	13.52
5	#5859.25	57.83 PK	109.61	-51.78	1.00 V	147	44.28	13.55
6	11590.00	63.45 PK	74.00	-10.55	1.00 V	0	40.28	23.17
7	11590.00	45.58 AV	54.00	-8.42	1.00 V	0	22.41	23.17
8	#17385.00	63.14 PK	68.20	-5.06	1.00 V	0	34.00	29.14

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 emission levels of other frequencies were greater than 20dB margin.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



**BUREAU
VERITAS**

Test Report No.: RF2102WDG0194

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								
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	#5680.41	60.43 PK	90.74	-30.31	1.00 H	0	47.59	12.84
2	#5725.00	61.86 PK	122.20	-60.34	1.00 H	0	48.84	13.02
3	*5775.00	99.95 PK			1.00 H	165	86.74	13.21
4	*5775.00	78.43 AV			1.00 H	165	65.22	13.21
5	#5850.00	55.62 PK	122.20	-66.58	1.00 H	0	42.10	13.52
6	11550.00	58.75 PK	74.00	-15.25	1.00 H	0	35.64	23.11
7	11550.00	41.15 AV	54.00	-12.85	1.00 H	0	18.04	23.11
8	#17325.00	61.48 PK	68.20	-6.72	1.00 H	0	32.48	29.00
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	#5678.73	63.26 PK	89.50	-26.24	1.00 V	79	50.44	12.82
2	#5682.09	65.44 PK	91.98	-26.54	1.00 V	79	52.60	12.84
3	#5725.00	68.13 PK	122.20	-54.07	1.00 V	79	55.11	13.02
4	*5775.00	105.43 PK			1.00 V	79	92.22	13.21
5	*5775.00	84.57 AV			1.00 V	79	71.36	13.21
6	#5850.00	58.81 PK	122.20	-63.39	1.00 V	79	45.29	13.52
7	11550.00	64.58 PK	74.00	-9.42	1.00 V	0	41.47	23.11
8	11550.00	47.58 AV	54.00	-6.42	1.00 V	0	24.47	23.11
9	#17325.00	62.88 PK	68.20	-5.32	1.00 V	0	33.88	29.00

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The emission levels of other frequencies were greater than 20dB margin.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

3.2 CONDUCTED EMISSION MEASUREMENT

3.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

- NOTES:**
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.

3.2.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESR7	101494	Mar. 07,22
Artificial Mains Network	Rohde&Schwarz	ENV216	101173	Mar. 07,22
Artificial Mains Network	Rohde&Schwarz	ESH3-Z5	100317	Mar. 07,22
Voltage probe	SCHWARZBECK	TK 9421	TK 9421-176	Sep. 17,21
Test software	ADT	ADT_Cond_V7.3.7	N/A	N/A

NOTES:

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, GREGT/CHINA and NIM/CHINA.

3.2.3 TEST PROCEDURES

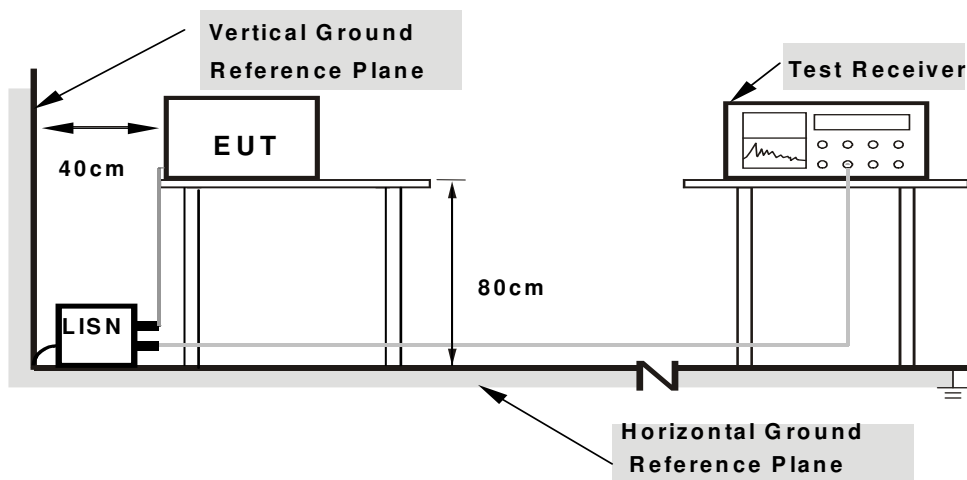
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance 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) were not recorded.

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

3.2.4 DEVIATION FROM TEST STANDARD

No deviation.

3.2.5 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).

3.2.6 EUT OPERATING CONDITIONS

Same as 3.1.6

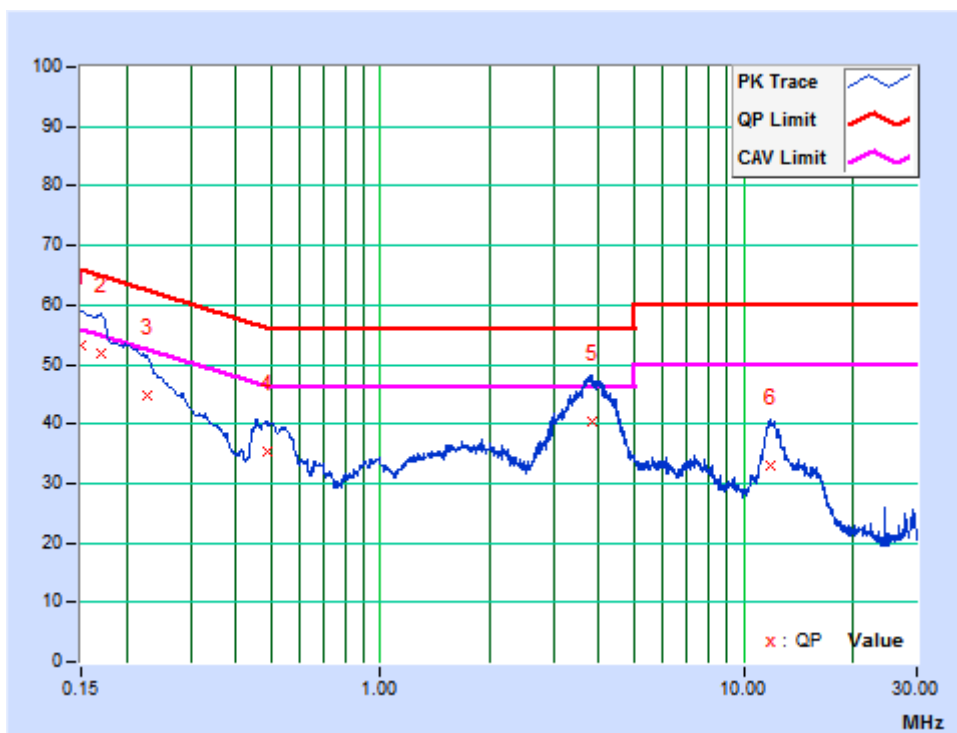
3.2.7 TEST RESULTS

CONDUCTED WORST-CASE DATA: 802.11a

PHASE	Line	6dB BANDWIDTH	9kHz
-------	------	---------------	------

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	0.15000	9.66	43.41	22.52	53.07	32.18	66.00	56.00	-12.93	-23.82
2	0.17011	9.68	42.19	25.52	51.87	35.20	64.96	54.96	-13.09	-19.76
3	0.22683	9.73	35.08	19.53	44.81	29.26	62.56	52.56	-17.76	-23.31
4	0.48750	9.83	25.38	14.81	35.21	24.64	56.21	46.21	-21.00	-21.57
5	3.82425	9.85	30.70	21.62	40.55	31.47	56.00	46.00	-15.45	-14.53
6	11.82750	10.02	22.99	15.90	33.01	25.92	60.00	50.00	-26.99	-24.08

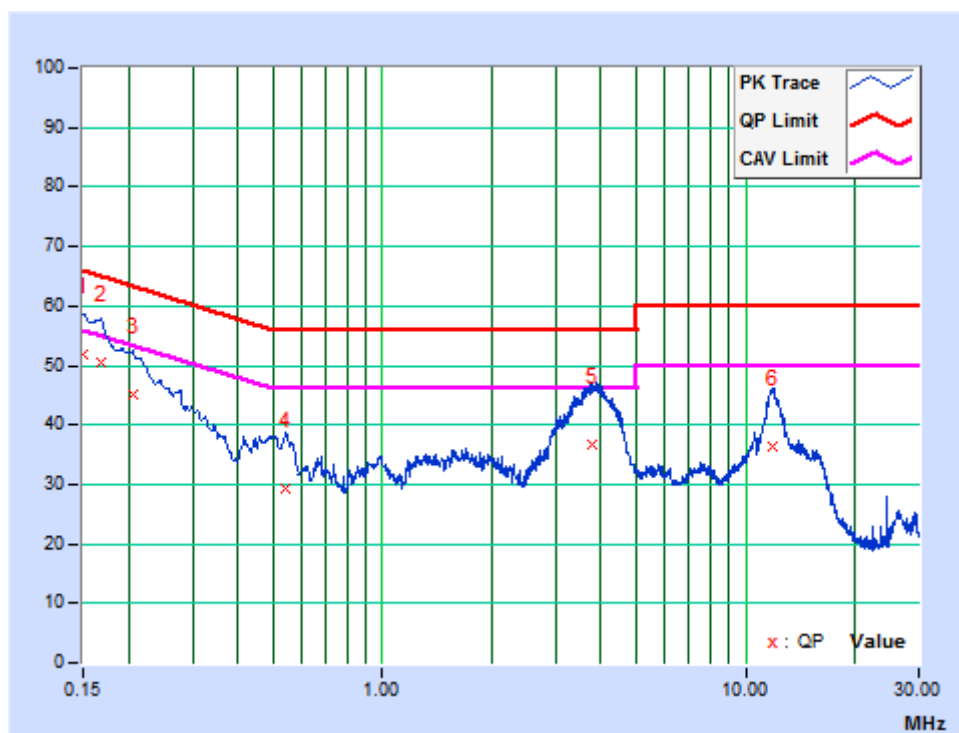
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. The emission levels of other frequencies were very low against the limit.
 3. Margin value = Emission level - Limit value
 4. Correction factor = Insertion loss + Cable loss
 5. Emission Level = Correction Factor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



PHASE	Neutral	6dB BANDWIDTH	9kHz
-------	---------	---------------	------

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	0.15000	9.66	42.15	20.55	51.81	30.21	66.00	56.00	-14.19	-25.79
2	0.16743	9.68	40.72	21.75	50.40	31.43	65.09	55.09	-14.69	-23.66
3	0.20627	9.72	35.32	19.28	45.04	29.00	63.35	53.35	-18.31	-24.35
4	0.54375	9.84	19.52	7.89	29.36	17.73	56.00	46.00	-26.64	-28.27
5	3.76575	9.88	26.80	15.49	36.68	25.37	56.00	46.00	-19.32	-20.63
6	11.83650	10.06	26.15	19.91	36.21	29.97	60.00	50.00	-23.79	-20.03

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.



3.3 TRANSMIT POWER MEASUREMENT

3.3.1 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(24dBm) or 11 dBm+10LogB*
U-NII-2C	-		250mW(24dBm) or 11 dBm+10LogB*
U-NII-3	√		1 Watt (30 dBm)

NOTE: 1. Where B is the 26dB emission bandwidth in MHz.

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

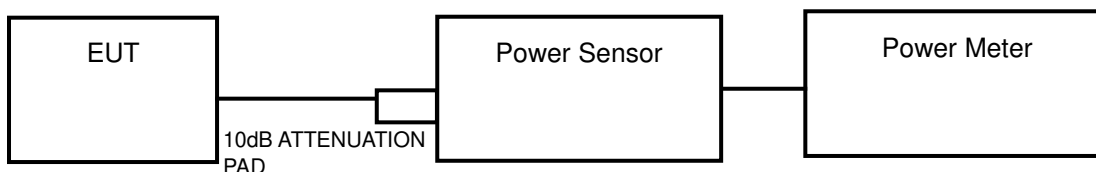
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

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

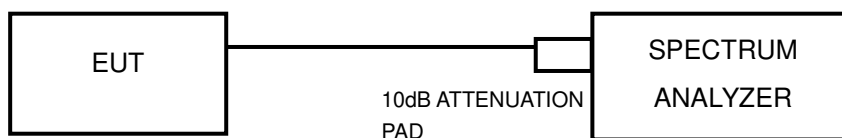
Array Gain = $5 \log(N_{ANT}/N_{SS})$ dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

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

3.3.2 TEST SETUP



FOR 6/26dB BANDWIDTH



3.3.3 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Next Cal.
Power Sensor	Keysight	U2021XA	MY55060016	N/A
Power Sensor	Keysight	U2021XA	MY55060018	Jun. 03,21
Power Meter	Anritsu	ML2495A	1139001	Feb. 24,22
Power Sensor	Anritsu	MA2411B	1531155	Feb. 24,22
Digital Multimeter	FLUKE	15B	A1220010DG	N/A
Humid & Temp Programmable Tester	Haida	HD-225T	110807201	Nov. 03,21
Oscilloscope	Agilent	DSO9254A	MY51260160	Aug. 10,21
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV40	101094	Feb. 24,22
Signal Generator	Agilent	N5183A	MY50140980	Aug. 10,21
MXG-B RF Vector Signal Generator	Keysight	N5182B	MY56200288	Sep. 04,21
Attenuator	MINI	BW-S10W2+	S130129FGE2	N/A
DC Source	Keysight	E3642A	MY56146098	N/A

NOTES:

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

3.3.4 TEST PROCEDURE

FOR AVERAGE POWER MEASUREMENT

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

FOR 26dB BANDWIDTH

- 1) Set RBW = approximately 1% of the emission bandwidth.
- 2) Set the VBW > RBW.
- 3) Detector = RMS.
- 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) ≥ 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.

3.3.5 DEVIATION FROM TEST STANDARD

No deviation.

3.3.6 EUT OPERATING CONDITIONS

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

3.3.7 TEST RESULTS

Power Output:

802.11a

Channel Number	FREQ. (MHz)	AVG. CONDUCTED POWER (dBm)		AVG. CONDUCTED POWER (mW)		Total Max. power output		LIMIT (dBm)	PASS /FAIL
		Chain 0	Chain 1	Chain 0	Chain 1	mW	dBm		
36	5180	9.10	8.62	8.128	7.278	15.406	11.88	24.00	PASS
40	5200	9.12	8.68	8.166	7.379	15.545	11.92	24.00	PASS
48	5240	8.94	8.33	7.834	6.808	14.642	11.66	24.00	PASS
149	5745	9.22	8.32	8.356	6.792	15.148	11.80	30.00	PASS
157	5785	9.38	8.41	8.67	6.934	15.604	11.93	30.00	PASS
165	5825	8.17	8.50	6.561	7.079	13.640	11.35	30.00	PASS

802.11n (20MHz)

Channel Number	FREQ. (MHz)	AVG. CONDUCTED POWER (dBm)		AVG. CONDUCTED POWER (mW)		Total Max. power output		LIMIT (dBm)	PASS /FAIL
		Chain 0	Chain 1	Chain 0	Chain 1	mW	dBm		
36	5180	8.98	8.63	7.907	7.295	15.202	11.82	24.00	PASS
40	5200	9.02	8.47	7.98	7.031	15.011	11.76	24.00	PASS
48	5240	8.95	8.25	7.852	6.683	14.535	11.62	24.00	PASS
149	5745	9.26	8.13	8.433	6.501	14.934	11.74	30.00	PASS
157	5785	8.16	8.25	6.546	6.683	13.229	11.22	30.00	PASS
165	5825	8.26	8.50	6.699	7.079	13.778	11.39	30.00	PASS

802.11n (40MHz)

Channel Number	FREQ. (MHz)	AVG. CONDUCTED POWER (dBm)		AVG. CONDUCTED POWER (mW)		Total Max. power output		LIMIT (dBm)	PASS /FAIL
		Chain 0	Chain 1	Chain 0	Chain 1	mW	dBm		
38	5190	8.11	8.88	6.471	7.727	14.198	11.52	24.00	PASS
46	5230	8.18	8.80	6.577	7.586	14.163	11.51	24.00	PASS
151	5755	8.46	8.53	7.015	7.129	14.144	11.51	30.00	PASS
159	5795	8.52	8.68	7.112	7.379	14.491	11.61	30.00	PASS

802.11ac (80MHz)

Channel Number	FREQ. (MHz)	AVG. CONDUCTED POWER (dBm)		AVG. CONDUCTED POWER (mW)		Total Max. power output		LIMIT (dBm)	PASS /FAIL
		Chain 0	Chain 1	Chain 0	Chain 1	mW	dBm		
42	5210	8.84	8.32	7.656	6.792	14.448	11.60	24.00	PASS
155	5775	9.17	8.20	8.26	6.607	14.867	11.72	30.00	PASS

26dB BANDWIDTH for 5150-5250MHz:

802.11a

Channel	Channel Frequency (MHz)	26dB Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	21.86	21.92
40	5200	21.93	21.89
48	5240	21.87	21.84

802.11n (20MHz)

Channel	Channel Frequency (MHz)	26dB Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	22.08	22.14
40	5200	22.07	22.15
48	5240	21.99	21.99

802.11n (40MHz)

Channel	Channel Frequency (MHz)	26dB Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	41.47	41.43
46	5230	41.32	41.32

802.11ac (80MHz)

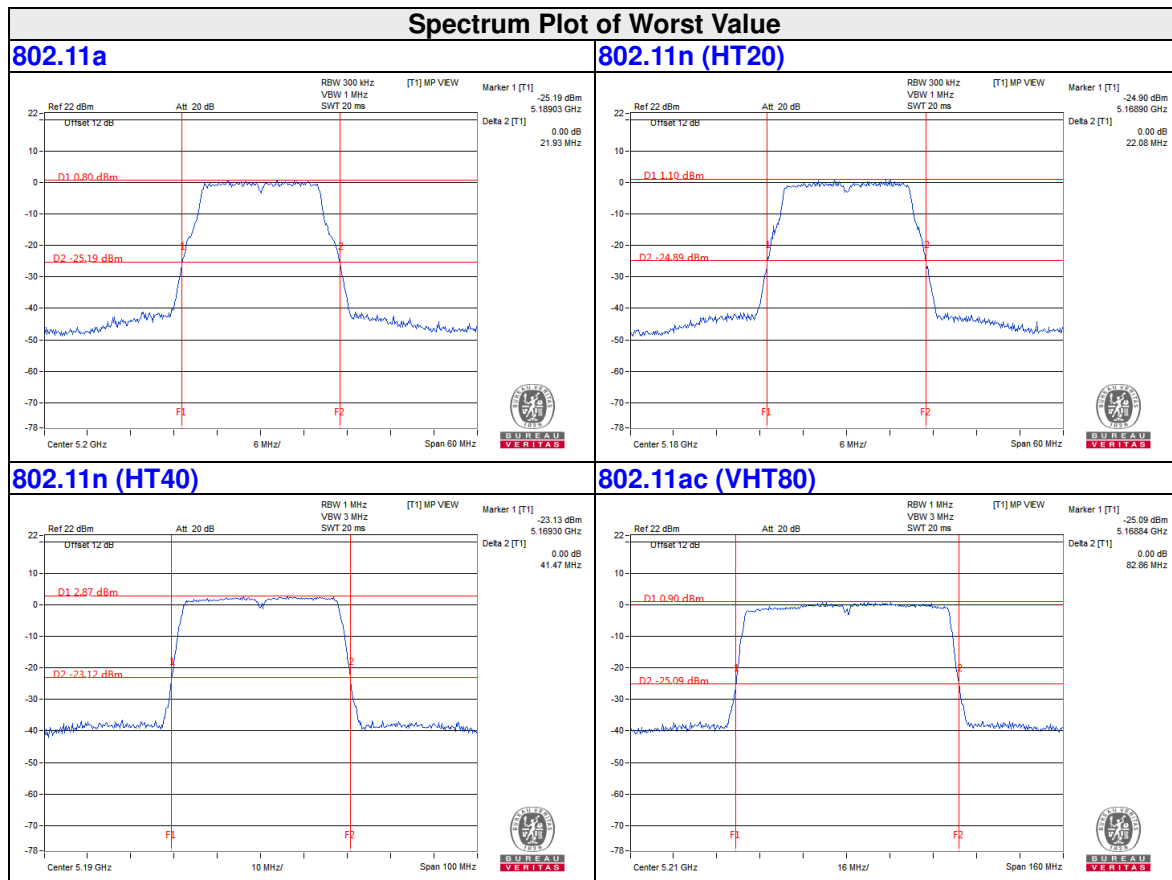
Channel	Channel Frequency (MHz)	26dB Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	82.86	83.05



BUREAU
VERITAS

Test Report No.: RF2102WDG0194

CHAIN 0

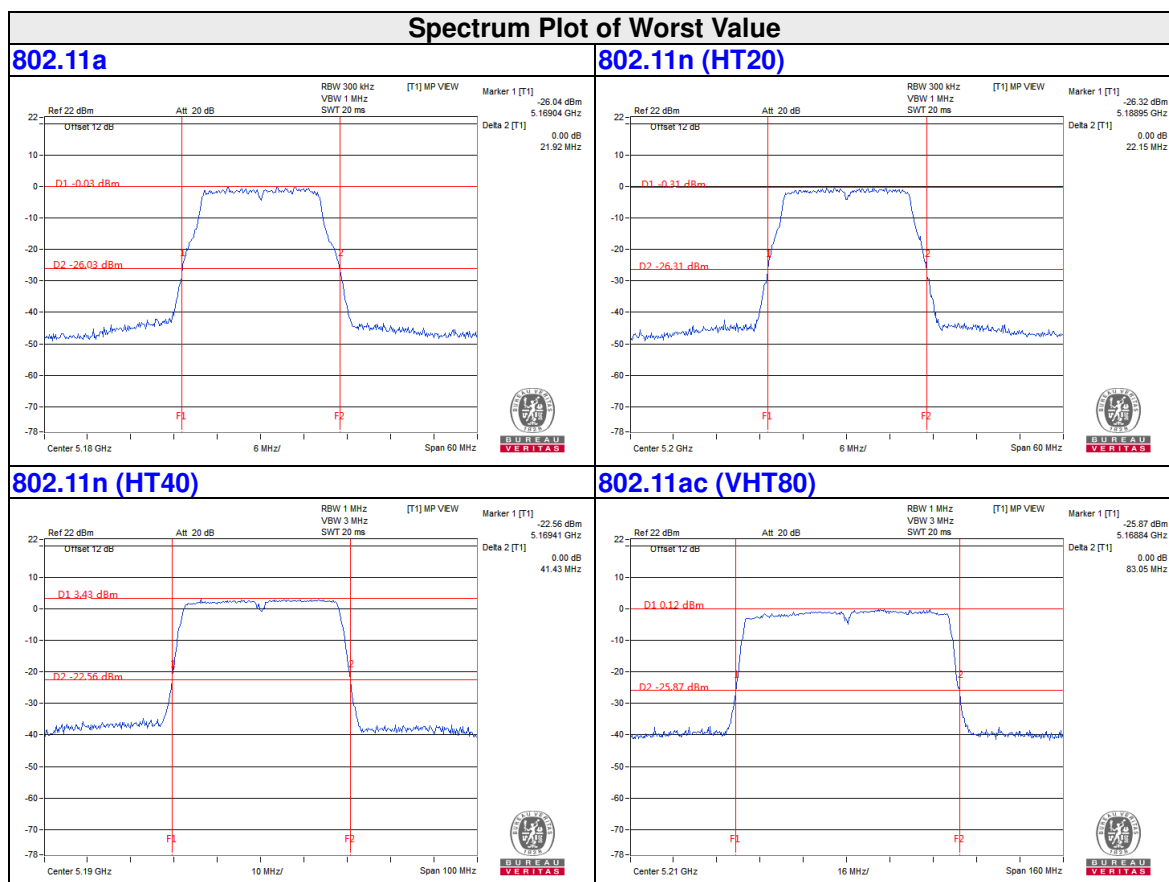


Bureau Veritas Shenzhen Co., Ltd.
Dongguan Branch

No. 96, Guantai Road (Houjie Section), Houjie
Town, Dongguan City, Guangdong Province.
523942. People's Republic of China.

Tel: +86 769 8998 2098
Fax: +86 769 8593 1080
Email: customerservice.dg@bureauveritas.com

CHAIN 1



6dB BANDWIDTH for 5725-5850MHz

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	16.42	16.42	0.5	Pass
157	5785	16.41	16.41	0.5	Pass
165	5825	16.43	16.41	0.5	Pass

802.11n (20M)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	17.65	17.64	0.5	Pass
157	5785	17.64	17.64	0.5	Pass
165	5825	17.64	17.65	0.5	Pass

802.11n (40M)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
151	5755	36.46	36.46	0.5	Pass
159	5795	36.46	36.48	0.5	Pass

802.11ac (80MHz)

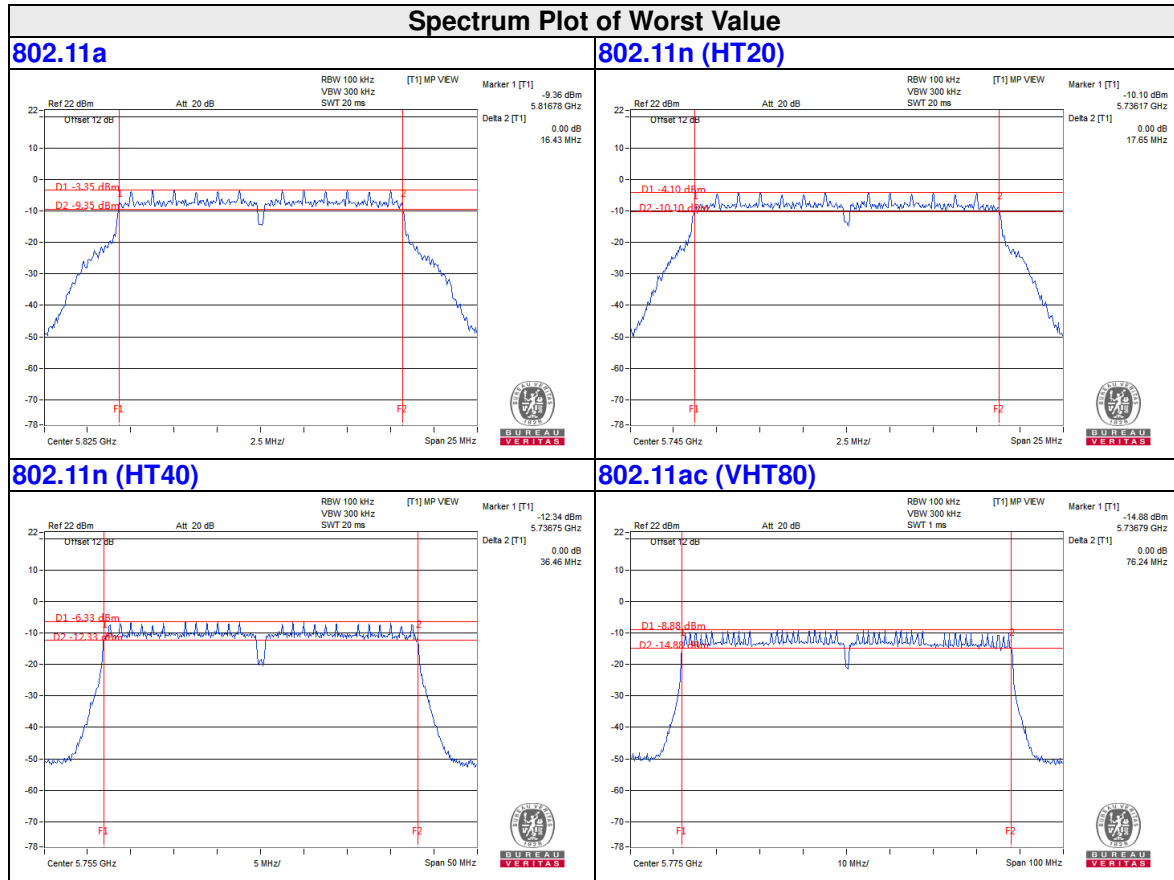
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
155	5775	76.24	76.02	0.5	Pass



BUREAU
VERITAS

Test Report No.: RF2102WDG0194

CHAIN 0

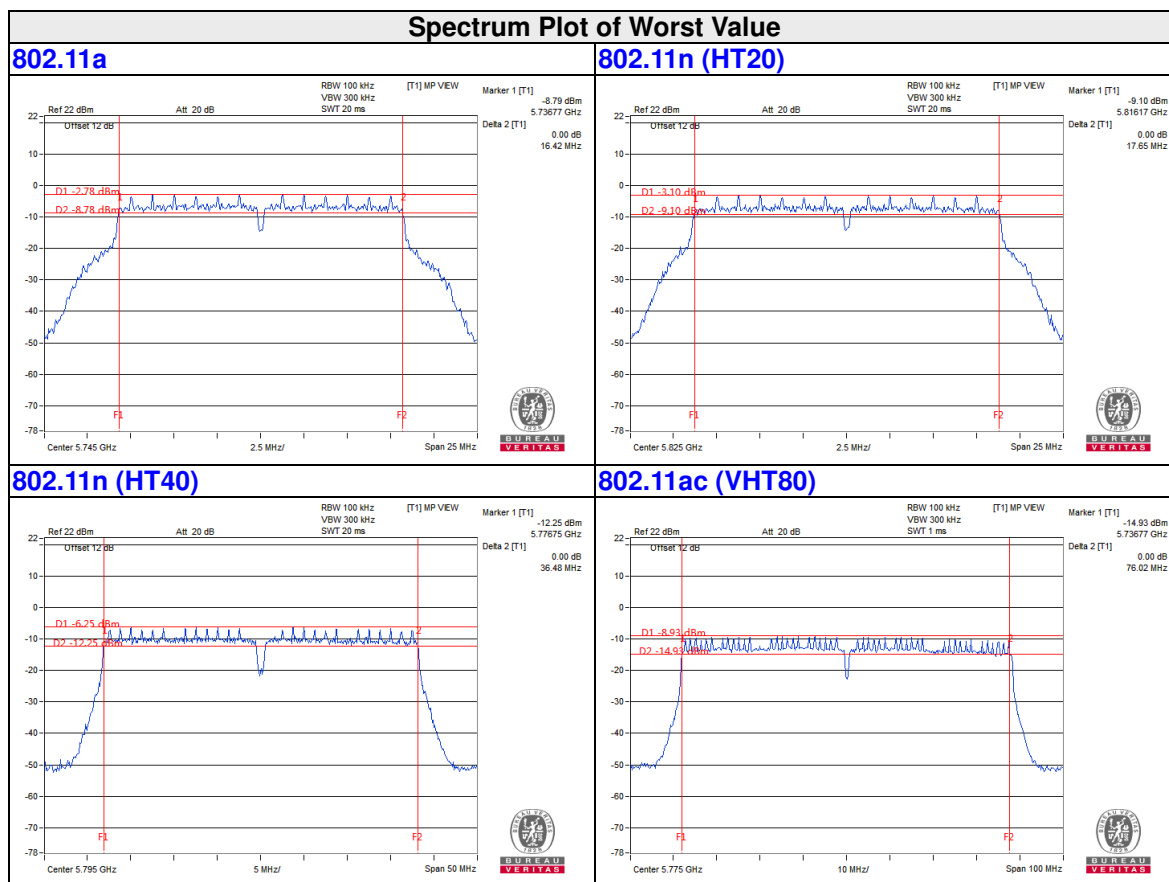


Bureau Veritas Shenzhen Co., Ltd.
Dongguan Branch

No. 96, Guantai Road (Houjie Section), Houjie
Town, Dongguan City, Guangdong Province.
523942. People's Republic of China.

Tel: +86 769 8998 2098
Fax: +86 769 8593 1080
Email: customerservice.dg@bureauveritas.com

CHAIN 1

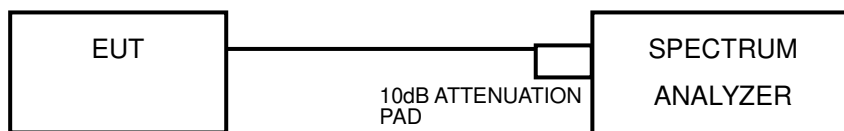


3.4 PEAK POWER SPECTRAL DENSITY MEASUREMENT

3.4.1 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

3.4.2 TEST SETUP



3.4.3 TEST INSTRUMENTS

Refer to section 3.3.3 to get information of above instrument.

3.4.4 TEST PROCEDURES

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

Using method SA-2

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 1MHz, Set VBW = 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) Record the max value and add 10 log (1/duty cycle)

For U-NII-3 band:

Using method SA-2

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 300 kHz, Set VBW = 1 MHz, Detector = RMS
- 3) Set Channel power measure = 1MHz
- 4) Sweep time = auto, trigger set to “free run”.
- 5) Trace average at least 100 traces in power averaging mode.
- 6) Record the max value and add 10 log (1/duty cycle)

3.4.5 DEVIATION FROM TEST STANDARD

No deviation.

3.4.6 EUT OPERATING CONDITIONS

Same as 3.3.6

3.4.7 TEST RESULTS

**For 5.180~5.240GHz
802.11a**

Chan.	Chan. Freq. (MHz)	PSD (dBm)		Duty Factor (dB)	Total PSD (dBm)	MAX. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	-3.97	-4.70	0.306	-0.704	11.00	Pass
40	5200	-3.70	-4.60	0.306	-0.504	11.00	Pass
48	5240	-3.63	-4.44	0.306	-0.394	11.00	Pass

Note: 1. Directional gain = $2\text{dBi} + 10\log(2) = 5.01\text{dBi} < 6\text{dBi}$, so the power density limit no need to reduce.

2. Refer to section 2.3 for duty cycle spectrum plot.

802.11n (20MHz)

Chan.	Chan. Freq. (MHz)	PSD (dBm)		Duty Factor (dB)	Total PSD (dBm)	MAX. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	-4.35	-4.88	0.334	-1.266	11.00	Pass
40	5200	-4.34	-5.18	0.334	-1.396	11.00	Pass
48	5240	-4.06	-4.84	0.334	-1.086	11.00	Pass

Note: 1. Directional gain = $2\text{dBi} + 10\log(2) = 5.01\text{dBi} < 6\text{dBi}$, so the power density limit no need to reduce.

2. Refer to section 2.3 for duty cycle spectrum plot.

802.11n (40MHz)

Chan.	Chan. Freq. (MHz)	PSD (dBm)		Duty Factor (dB)	Total PSD With Duty Factor (dBm)	MAX. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	-8.19	-7.77	0.670	-4.29	11.00	Pass
46	5230	-7.89	-7.60	0.670	-4.06	11.00	Pass

Note: 1. Directional gain = $2\text{dBi} + 10\log(2) = 5.01\text{dBi} < 6\text{dBi}$, so the power density limit no need to reduce.

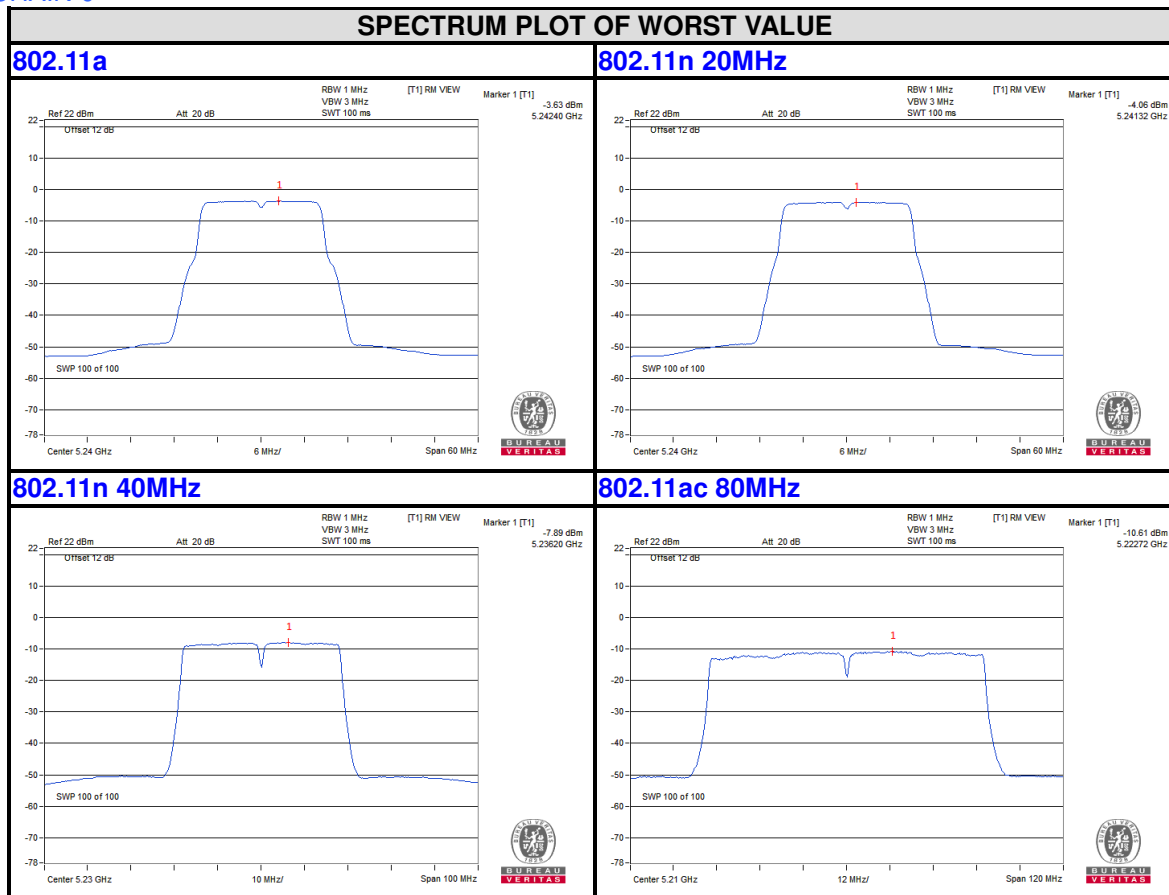
2. Refer to section 2.3 for duty cycle spectrum plot.

802.11ac (80MHz)

Chan.	Chan. Freq. (MHz)	PSD (dBm)		Duty Factor (dB)	Total PSD With Duty Factor (dBm)	MAX. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	-10.61	-11.49	1.180	-6.84	11.00	Pass

- Note:** 1. Directional gain = $2\text{dBi} + 10\log(2) = 5.01\text{dBi} < 6\text{dBi}$, so the power density limit no need to reduce.
2. Refer to section 2.3 for duty cycle spectrum plot.

CHAIN 0

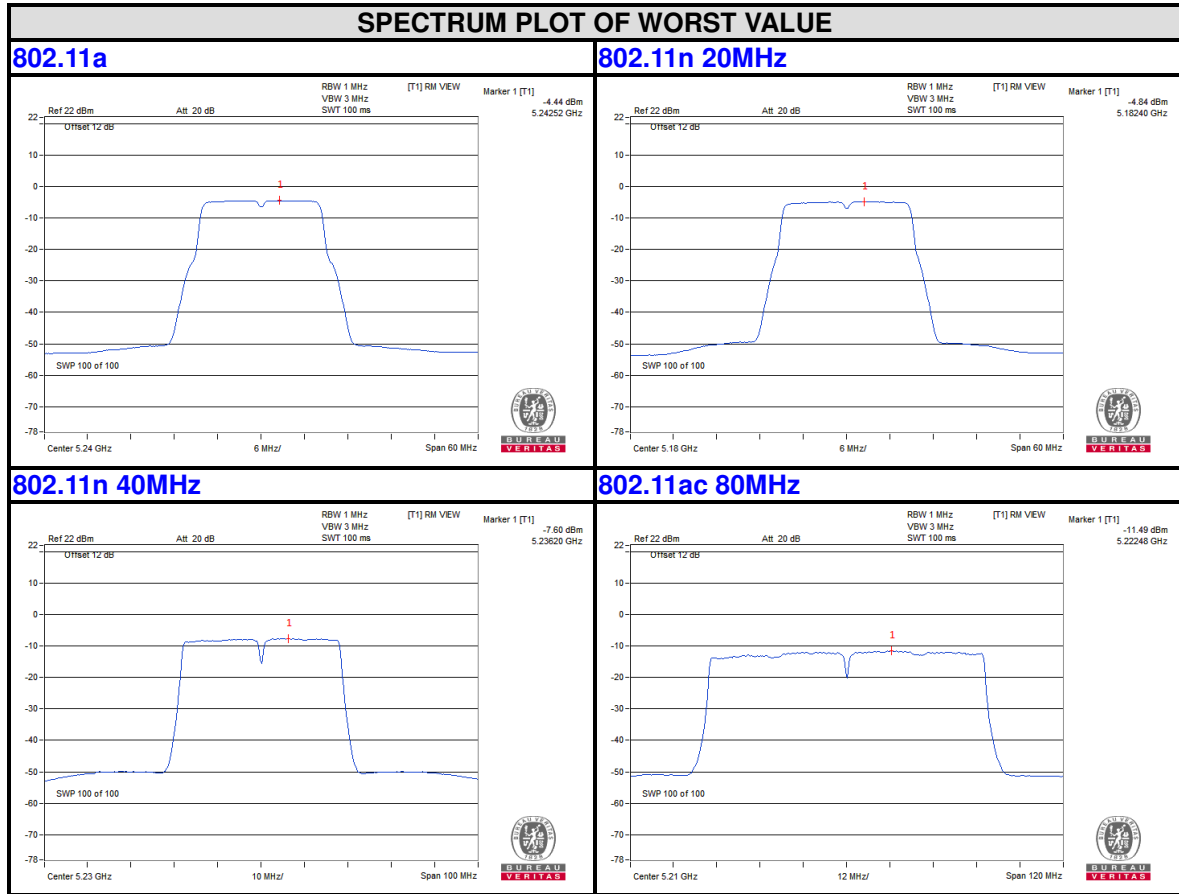




BUREAU
VERITAS

Test Report No.: RF2102WDG0194

CHAIN 1



Bureau Veritas Shenzhen Co., Ltd.
Dongguan Branch

No. 96, Guantai Road (Houjie Section), Houjie
Town, Dongguan City, Guangdong Province.
523942. People's Republic of China.

Tel: +86 769 8998 2098
Fax: +86 769 8593 1080
Email: customerservice.dg@bureauveritas.com

**For 5.745~5.825GHz
802.11a**

TX chain	Channel	Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	10 log (N=2) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
0	149	5745	-13.95	-11.73	3.01	-8.42	30.00	Pass
	157	5785	-13.88	-11.66	3.01	-8.35	30.00	Pass
	165	5825	-13.77	-11.55	3.01	-8.24	30.00	Pass
1	149	5745	-12.22	-10.00	3.01	-6.69	30.00	Pass
	157	5785	-13.88	-11.66	3.01	-8.35	30.00	Pass
	165	5825	-13.67	-11.45	3.01	-8.14	30.00	Pass

Note: 1. Directional gain = $2\text{dBi} + 10\log(2) = 5.01\text{dBi} < 6\text{dBi}$, so the power density limit no need to reduce.

2. Refer to section 2.3 for duty cycle spectrum plot.

802.11n (20MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	10 log (N=2) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
0	149	5745	-14.74	-12.52	3.01	-9.51	30.00	Pass
	157	5785	-14.32	-12.10	3.01	-9.09	30.00	Pass
	165	5825	-14.08	-11.86	3.01	-8.85	30.00	Pass
1	149	5745	-14.77	-12.55	3.01	-9.54	30.00	Pass
	157	5785	-14.43	-12.21	3.01	-9.20	30.00	Pass
	165	5825	-14.01	-11.79	3.01	-8.78	30.00	Pass

Note: 1. Directional gain = $2\text{dBi} + 10\log(2) = 5.01\text{dBi} < 6\text{dBi}$, so the power density limit no need to reduce.

2. Refer to section 2.3 for duty cycle spectrum plot.

802.11n (40MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	10 log (N=2) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
0	151	5755	-17.59	-15.37	3.01	-12.36	30.00	Pass
	159	5795	-17.42	-15.20	3.01	-12.19	30.00	Pass
1	151	5755	-17.76	-15.54	3.01	-12.53	30.00	Pass
	159	5795	-17.33	-15.11	3.01	-12.10	30.00	Pass

Note: 1. Directional gain = $2\text{dBi} + 10\log(2) = 5.01\text{dBi} < 6\text{dBi}$, so the power density limit no need to reduce.

2. Refer to section 2.3 for duty cycle spectrum plot.

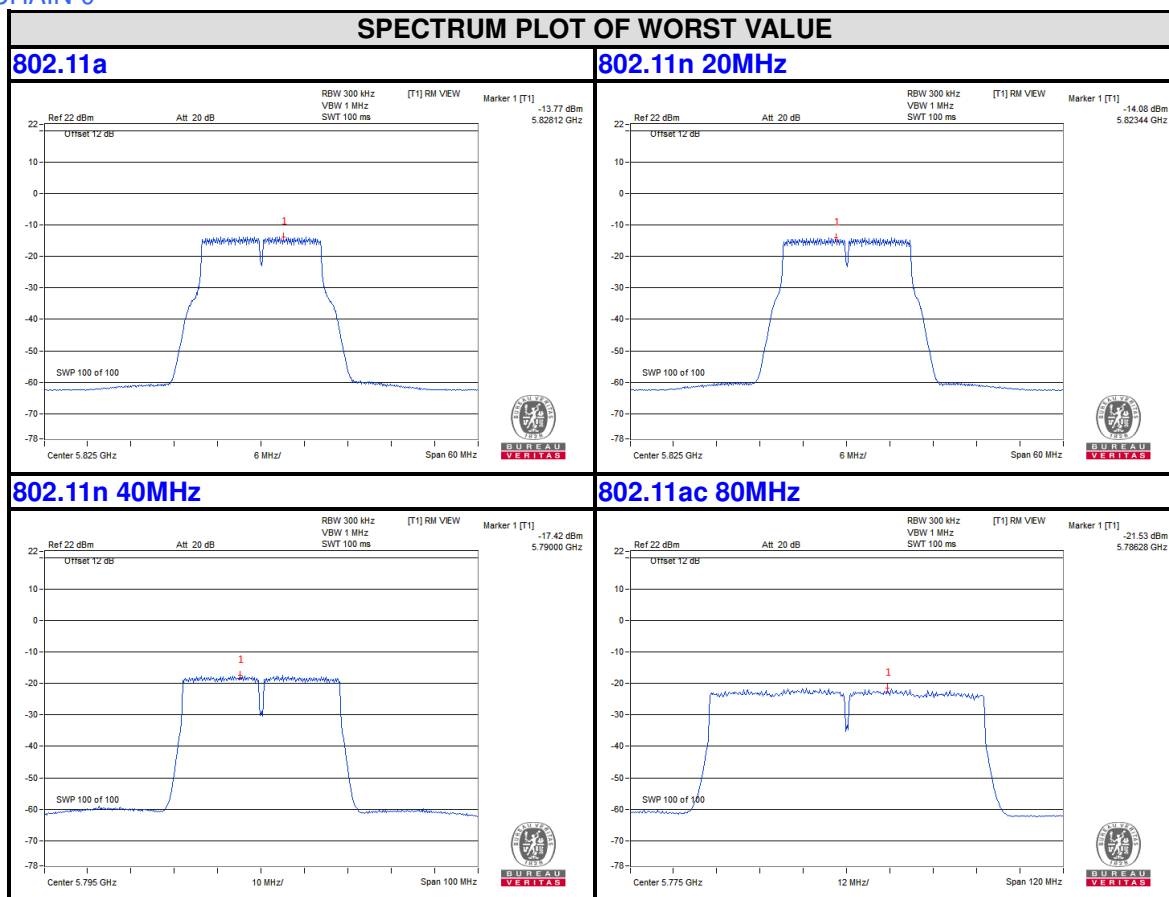
802.11ac (80MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	10 log (N=2) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
0	151	5755	-21.53	-19.31	3.01	-16.30	30.00	Pass
1	151	5755	-21.37	-19.15	3.01	-16.14	30.00	Pass

Note: 1. Directional gain = $2dBi + 10\log(2) = 5.01dBi < 6dBi$, so the power density limit no need to reduce.

2. Refer to section 2.3 for duty cycle spectrum plot.

CHAIN 0

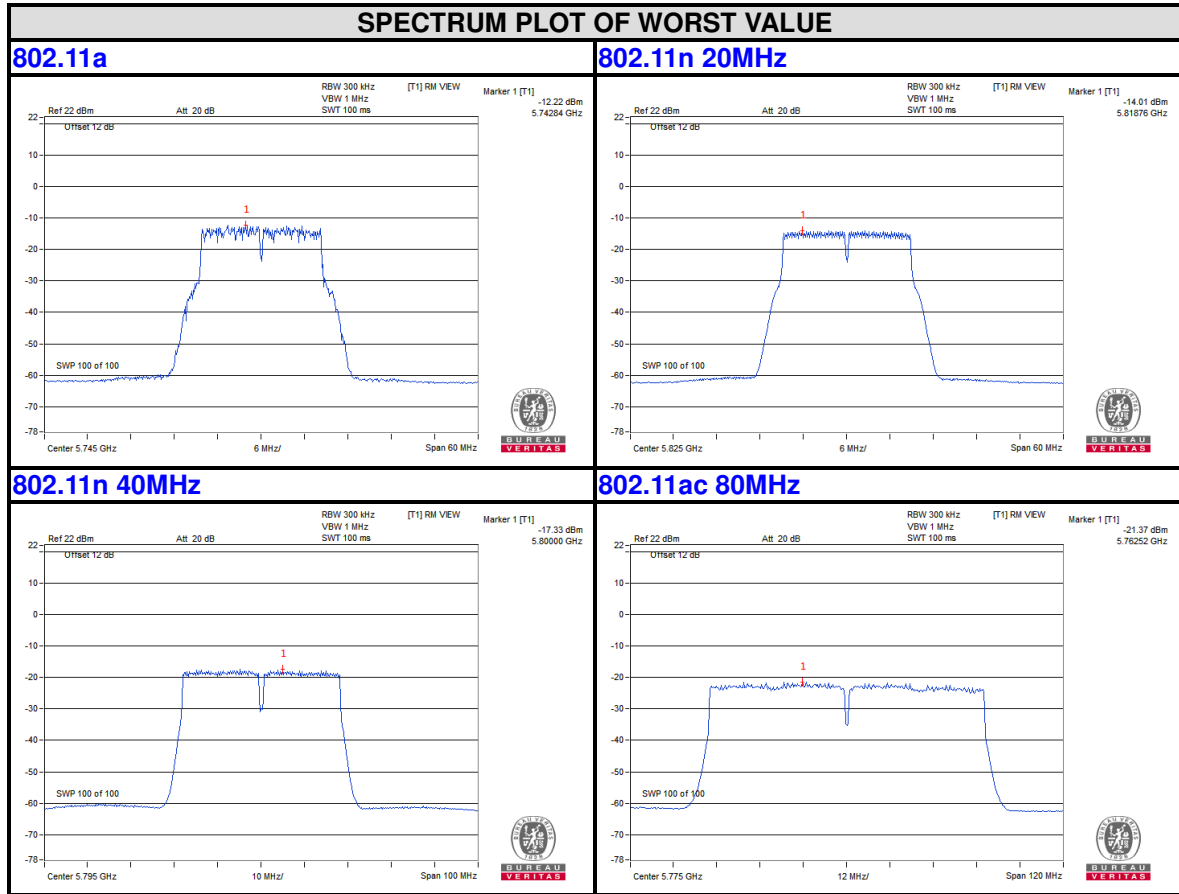




BUREAU
VERITAS

Test Report No.: RF2102WDG0194

CHAIN 1



Bureau Veritas Shenzhen Co., Ltd.
Dongguan Branch

No. 96, Guantai Road (Houjie Section), Houjie
Town, Dongguan City, Guangdong Province.
523942. People's Republic of China.

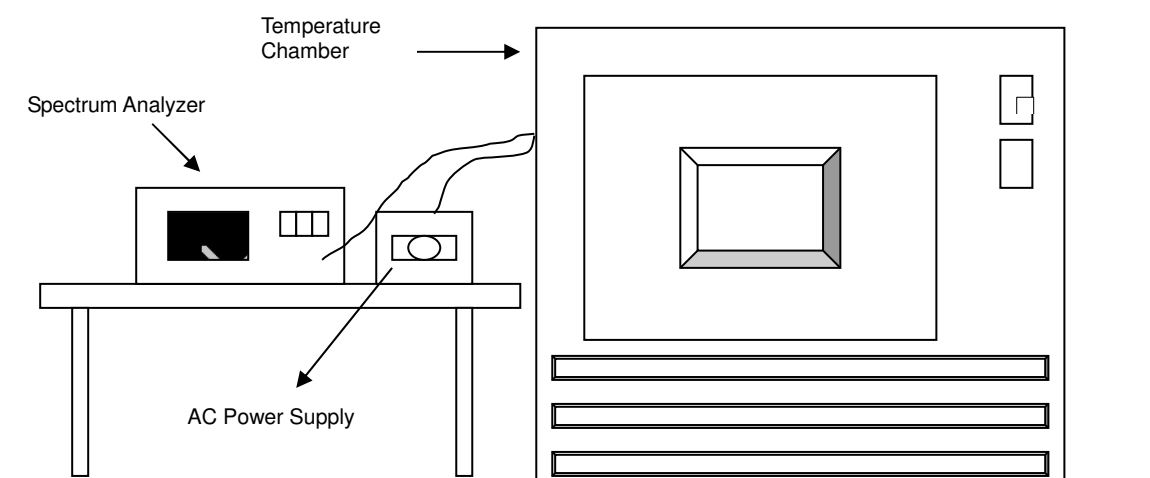
Tel: +86 769 8998 2098
Fax: +86 769 8593 1080
Email: customerservice.dg@bureauveritas.com

3.5 FREQUENCY STABILITY

3.5.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

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

3.5.2 TEST SETUP



3.5.3 TEST INSTRUMENTS

Refer to section 3.3.3 to get information of above instrument.

3.5.4 TEST PROCEDURE

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

3.5.5 DEVIATION FROM TEST STANDARD

No deviation.

3.5.6 EUT OPERATING CONDITION

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

3.5.7 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	5179.9795	-0.00040	5179.9779	-0.00043	5179.9788	-0.00041	5179.9813	-0.00036
40	120	5179.999	-0.00002	5179.9965	-0.00007	5179.9997	-0.00001	5179.9977	-0.00004
30	120	5179.9899	-0.00019	5179.9922	-0.00015	5179.994	-0.00012	5179.995	-0.00010
20	120	5179.9793	-0.00040	5179.9781	-0.00042	5179.9782	-0.00042	5179.9804	-0.00038
10	120	5180.0022	0.00004	5180.0023	0.00004	5180.0008	0.00002	5180.002	0.00004
0	120	5180.0073	0.00014	5180.0052	0.00010	5180.004	0.00008	5180.0035	0.00007
-10	120	5180.0221	0.00043	5180.0199	0.00038	5180.0216	0.00042	5180.0218	0.00042
-20	120	5180.0176	0.00034	5180.0187	0.00036	5180.0206	0.00040	5180.0173	0.00033
-30	120	5179.9916	-0.00016	5179.9935	-0.00013	5179.9918	-0.00016	5179.9887	-0.00022

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
20	138	5179.9791	-0.00040	5179.9787	-0.00041	5179.9786	-0.00041	5179.9797	-0.00039
	120	5179.9793	-0.00040	5179.9781	-0.00042	5179.9782	-0.00042	5179.9804	-0.00038
	102	5179.9799	-0.00039	5179.9774	-0.00044	5179.9783	-0.00042	5179.9801	-0.00038



Test Report No.: RF2102WDG0194

4. PHOTOGRAPHS OF THE TEST CONFIGURATION

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

5. 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---