

FCC TEST REPORT

(Part 15, Subpart E)

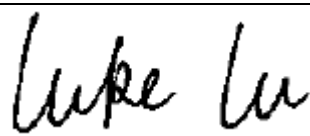
Applicant:	Quectel Wireless Solutions Co., Ltd.
Address:	Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China 200233

Manufacturer or Supplier:	Quectel Wireless Solutions Co., Ltd.
Address:	Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China 200233
Product:	LTE Module
Brand Name:	Quectel
Model Name:	SC66-A
FCC ID:	XMR201908SC66A
Date of tests:	May. 23, 2019 ~ Sep. 07, 2019

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

Prepared by Alex Chen Engineer / Mobile Department	Approved by Luke Lu Manager / Mobile Department
 Date: Sep. 12, 2019	 Date: Sep. 12, 2019

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Test Report No.: RF190522W005-8

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF190522W005-8	Original release	Sep. 12, 2019

1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART E		
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT
15.407(b)(6)	AC Power Conducted Emission	Compliance
15.407(b) (1/2/3/4/5)	Radiated Emission & Band Edge Measurement	Compliance
15.407(a/1/2/3)	Maximum conducted output Power	Compliance
15.407(a/1/2/3)	Peak Power Spectral Density	Compliance
15.403(i)	26 dB Bandwidth	Compliance
15.407(e)	6 dB Bandwidth	Compliance
15.203	Antenna Requirement	Compliance

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	UNCERTAINTY
AC Power Conducted emissions	±2.70dB
Radiated emissions (30MHz~1GMHz)	±4.98dB
Radiated emissions (1GMHz ~6GMHz)	±4.70dB
Radiated emissions (6GMHz ~18GMHz)	±4.60dB
Radiated emissions (18GMHz ~40GMHz)	±4.12dB
Conducted emissions	±4.01dB
Occupied Channel Bandwidth	±43.58KHz
Conducted Output power	±2.06dB
Power Spectral Density	±0.85 dB

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

EUT	LTE Module
BRAND NAME	Quectel
MODEL NAME	SC66-A
NOMINAL VOLTAGE	DC 4V
MODULATION TECHNOLOGY	OFDM
TRANSFER RATE	802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to MCS7 802.11ac: up to 390.0Mbps
OPERATING FREQUENCY	5180 ~ 5240MHz, 5260 ~ 5320MHz, 5500 ~ 5700MHz, 5745 ~ 5805MHz
NUMBER OF CHANNEL	5180 ~ 5240MHz: 4 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz) 1 for 802.11ac (80MHz) 5260 ~ 5320MHz: 4 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz) 1 for 802.11ac (80MHz) 5500 ~ 5700MHz: 11 for 802.11a, 802.11n (20MHz) 5 for 802.11n (40MHz) 2 for 802.11ac (80MHz) 5745 ~ 5805MHz: 4 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz) 1 for 802.11ac (80MHz)
AVERAGE POWER	25.18mW for 5180 ~ 5240MHz 25.12mW for 5260 ~ 5320MHz 24.60mW for 5500 ~ 5700MHz 25.12mW for 5745 ~ 5805MHz
ANTENNA TYPE	5180 ~ 5240MHz: PCB Antenna with 4.48dBi gain 5260 ~ 5320MHz: PCB Antenna with 4.88dBi gain 5500 ~ 5700MHz: PCB Antenna with 5.05dBi gain 5745 ~ 5805MHz: PCB Antenna with 4.54dBi gain
HW VERSION	R1.0
SW VERSION	SC66ANAR01A06
I/O PORTS	Refer to user's manual

**NOTE:**

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

MODULATION MODE	TX FUNCTION
802.11a	2TX/2RX
802.11n (20MHz)	2TX/2RX
802.11n (40MHz)	2TX/2RX
802.11ac (80MHz)	2TX/2RX

3. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
4. The device will automatically discontinue transmission in case of either absence of information to transmit or operational failure.

2.2 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 5250 ~ 5350MHz

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
52	5260 MHz	60	5300 MHz
56	5280 MHz	64	5320 MHz

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
54	5270 MHz	62	5310 MHz

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
58	5290 MHz		

FOR 5470 ~ 5725MHz

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

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

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
102	5510 MHz	126	5630 MHz
110	5550 MHz	134	5670 MHz
118	5590 MHz		

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
106	5530 MHz	122	5610 MHz

FOR 5725 ~ 5805MHz

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		

2.2.1 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	DATA RATE (Mbps)
A	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0
A	802.11n (20MHz)		36 to 48	36, 40, 48	OFDM	MCS0
A	802.11n (40MHz)		38 to 46	38, 46	OFDM	MCS0
A	802.11ac (80MHz)		42	42	OFDM	V0
A	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	6.0
A	802.11n (20MHz)		52 to 64	52, 60, 64	OFDM	MCS0
A	802.11n (40MHz)		54 to 62	54, 62	OFDM	MCS0
A	802.11ac (80MHz)		58	58	OFDM	V0
A	802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	6.0
A	802.11n (20MHz)		100 to 140	100, 116, 140	OFDM	MCS0
A	802.11n (40MHz)		102 to 134	102, 110, 134	OFDM	MCS0
A	802.11ac (80MHz)		106	106	OFDM	V0
A	802.11a	5725-5805	149 to 161	149, 157, 161	OFDM	6.0
A	802.11n (20MHz)		149 to 161	149, 157, 161	OFDM	MCS0
A	802.11n (40MHz)		151 to 159	151, 159	OFDM	MCS0
A	802.11ac (80MHz)		155	155	OFDM	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	DATA RATE (Mbps)
A	802.11a	5500-5700	100 to 140	140	OFDM	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	DATA RATE (Mbps)
A	802.11a	5500-5700	100 to 140	140	OFDM	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	DATA RATE (Mbps)
A	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0
A	802.11n (20MHz)		36 to 48	36, 40, 48	OFDM	MCS0
A	802.11n (40MHz)		38 to 46	38, 46	OFDM	MCS0
A	802.11ac (80MHz)		42	42	OFDM	V0
A	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	6.0
A	802.11n (20MHz)		52 to 64	52, 60, 64	OFDM	MCS0
A	802.11n (40MHz)		54 to 62	54, 62	OFDM	MCS0
A	802.11ac (80MHz)		58	58	OFDM	V0
A	802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	6.0
A	802.11n (20MHz)		100 to 140	100, 116, 140	OFDM	MCS0
A	802.11n (40MHz)		102 to 134	102, 110, 134	OFDM	MCS0
A	802.11ac (80MHz)		106	106	OFDM	V0
A	802.11a	5725-5805	149 to 161	149, 157, 161	OFDM	6.0
A	802.11n (20MHz)		149 to 161	149, 157, 161	OFDM	MCS0
A	802.11n (40MHz)		151 to 159	151, 159	OFDM	MCS0
A	802.11ac (80MHz)		155	155	OFDM	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	DATA RATE (Mbps)
A	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0
A	802.11n (20MHz)		36 to 48	36, 40, 48	OFDM	MCS0
A	802.11n (40MHz)		38 to 46	38, 46	OFDM	MCS0
A	802.11ac (80MHz)		42	42	OFDM	V0
A	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	6.0
A	802.11n (20MHz)		52 to 64	52, 60, 64	OFDM	MCS0
A	802.11n (40MHz)		54 to 62	54, 62	OFDM	MCS0
A	802.11ac (80MHz)		58	58	OFDM	V0
A	802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	6.0
A	802.11n (20MHz)		100 to 140	100, 116, 140	OFDM	MCS0
A	802.11n (40MHz)		102 to 134	102, 110, 134	OFDM	MCS0
A	802.11ac (80MHz)		106	106	OFDM	V0
A	802.11a	5725-5805	149 to 161	149, 157, 161	OFDM	6.0
A	802.11n (20MHz)		149 to 161	149, 157, 161	OFDM	MCS0
A	802.11n (40MHz)		151 to 159	151, 159	OFDM	MCS0
A	802.11ac (80MHz)		155	155	OFDM	V0

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE<1G	23deg. C, 62%RH	DC 4V	Star Le
RE≥1G	23deg. C, 62%RH	DC 4V	Star Le
PLC	24deg. C, 61%RH	DC 4V	Jacky Liu
APCM	23.5deg. C, 60%RH	DC 4V	Big Wang

2.3 DUTY CYCLE OF TEST SIGNAL

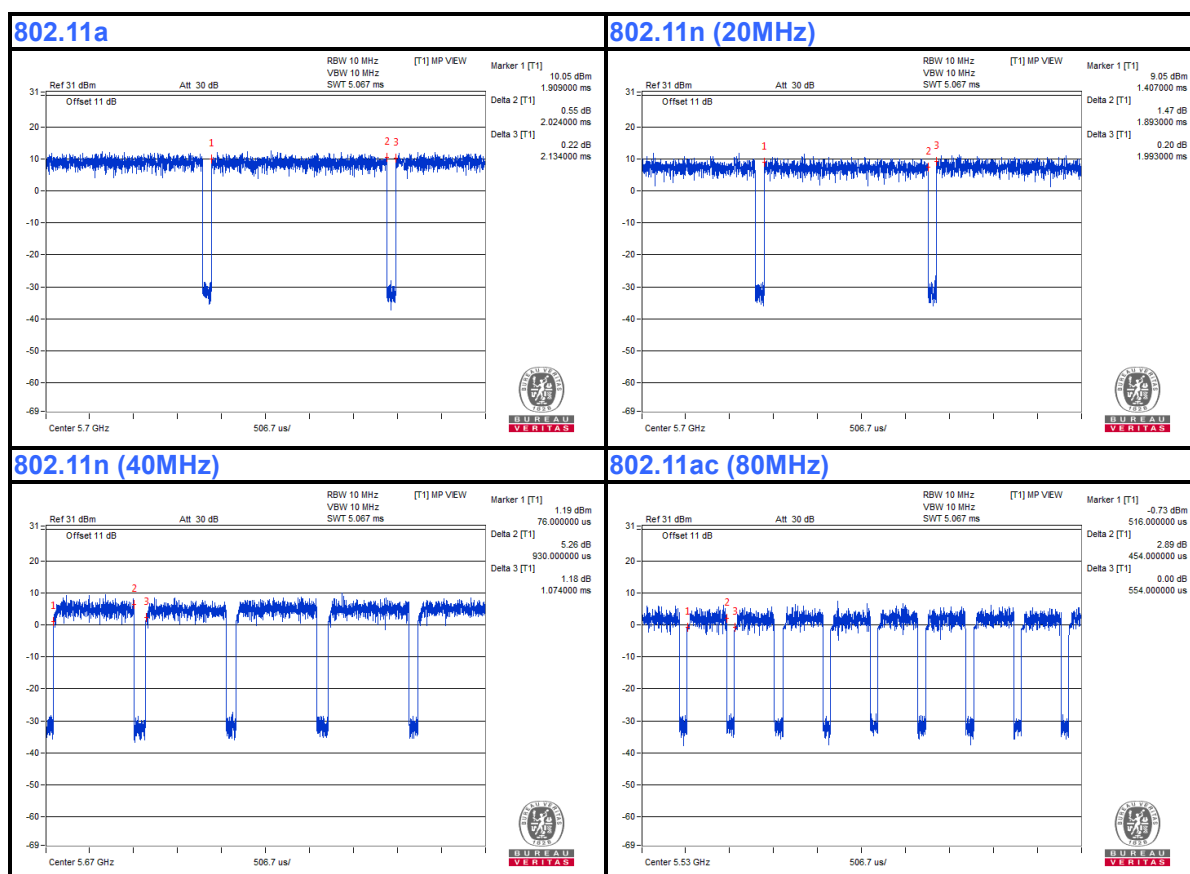
Duty cycle of test signal is < 98%, duty factor shall be considered.

802.11a: Duty cycle = $2.024/2.134=0.948$, Duty factor = $10 * \log(1/0.948) = 0.23$

802.11n (20MHz): Duty cycle = $1.893/1.993=0.950$, Duty factor = $10 * \log(1/0.950) = 0.22$

802.11n (40MHz): Duty cycle = $0.930/1.074 = 0.866$, Duty factor = $10 * \log(1/0.866) = 0.63$

802.11ac (80MHz): Duty cycle = $0.454/0.554 = 0.819$, Duty factor = $10 * \log(1/0.819) = 0.87$



2.4 ANTENNA REQUIREMENT

Per FCC Part 15.203. An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Conclusion:

The EUT use one PCB antenna that use permanently attached and the detail information list as below:

ANT Gain	Type	TX/RX	Frequency range
4.48	PCB Antenna	TX & RX	5180 ~ 5240MHz
4.88	PCB Antenna	TX & RX	5260 ~ 5320MHz
5.05	PCB Antenna	TX & RX	5500 ~ 5700MHz
4.54	PCB Antenna	TX & RX	5745 ~ 5805MHz

2.5 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.

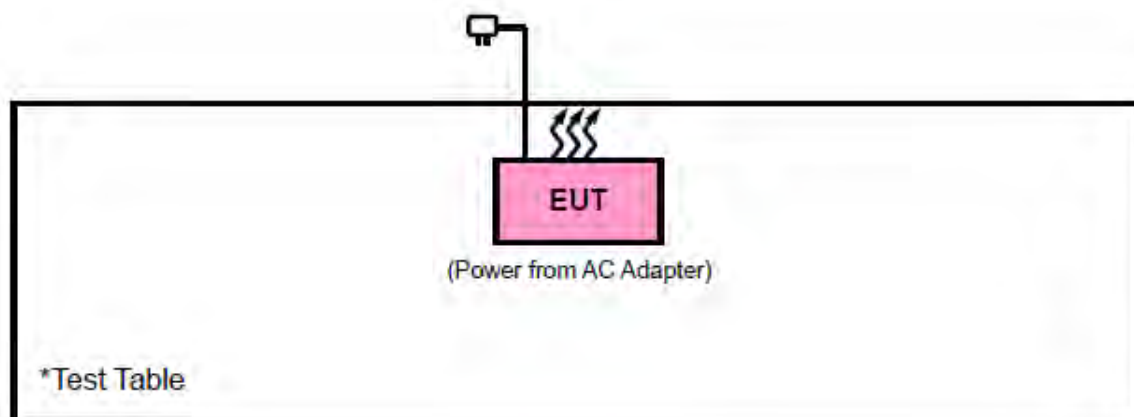
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	DC source	LONG WEI	PS-6403D	010934269	N/A
2	PC	HP	A6608CN	3CR83825X3	N/A

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).

2.4.1 CONFIGURATION OF SYSTEM UNDER TEST



2.6 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 v02r01

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 (Certification). The test report has been issued separately.

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

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.

3.1.2 LIMITS OF UNWANTED EMISSION

RESTRICTED BANDS	APPLICABLE TO	LIMIT	
	789033 D02 General UNII Test Procedures New Rules v02r01	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:

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

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.

3.1.3 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	Euroshieldpn-CT0001143-1216	Feb. 26,19	Feb. 25,20
Bilog Antenna	ETS-LINDGREN	3143B	00161965	Feb. 26,19	Feb. 25,20
Horn Antenna	ETS-LINDGREN	3117	00168728	Feb. 26,19	Feb. 25,20
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Nov. 21, 18	Nov. 20, 19
Test Software	E3	V 9.160323	N/A	N/A	N/A
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A	N/A
10dB Attenuator	JFW/USA	50HF-010-SMA	1505	Jun. 24,19	Jun. 23,20
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Feb. 26,19	Feb. 25,20
Signal Pre-Amplifier	EMSI	EMC 9135	980249	Jun. 24,19	Jun. 23,20
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	Jun. 24,19	Jun. 23,20
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Jun. 24,19	Jun. 23,20

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 3m Chamber.
3. The FCC Site Registration No. is 525120; The Designation No. is CN1171.

3.1.4 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 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The 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:

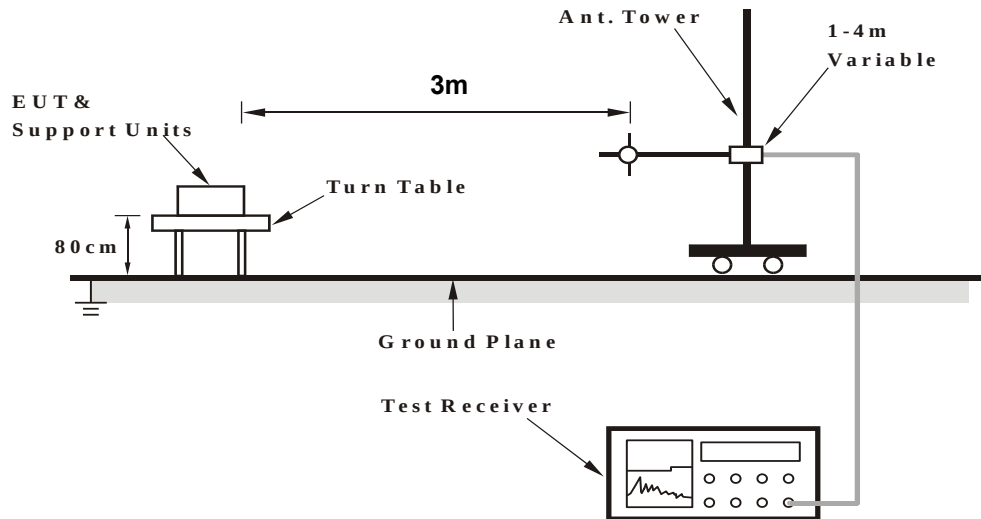
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency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

3.1.5 DEVIATION FROM TEST STANDARD

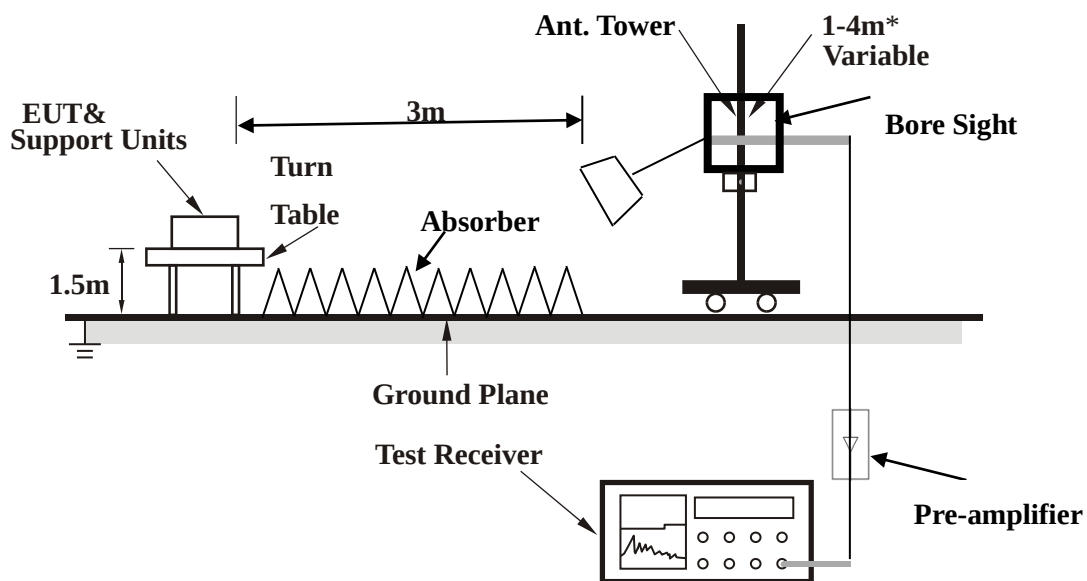
No deviation.

3.1.6 TEST SETUP

< Frequency Range 30MHz~1GHz >



<Frequency Range above 1GHz>



Note: Above 1G is a directional antenna

Depends on the EUT height and the antenna 3dB beamwidth both, refer to section 7.3 of CISPR 16-2-3.

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

3.1.7 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.

3.1.8 TEST RESULTS

BELOW 1GHz WORST-CASE DATA:

30 MHz – 1GHz data:

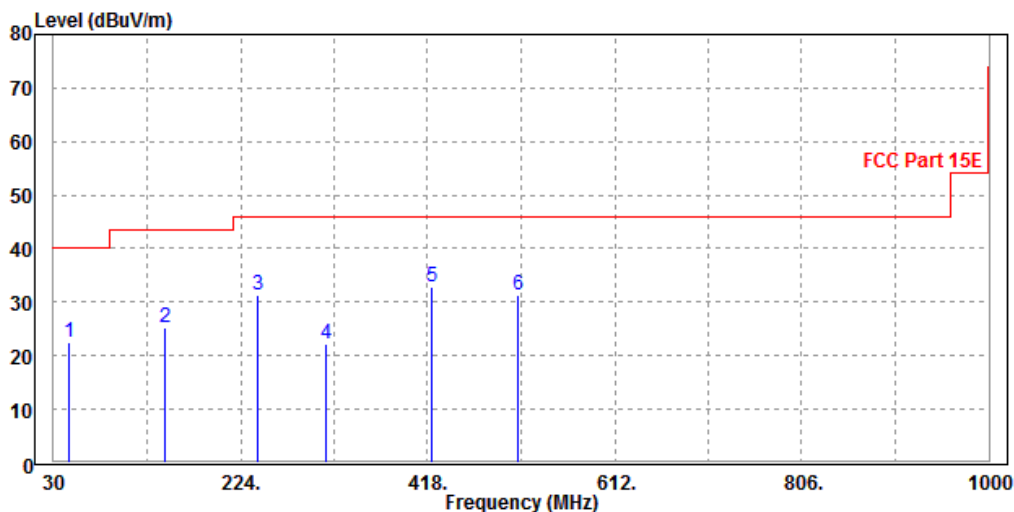
802.11a

CHANNEL	TX Channel 140	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	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
45.26	22.59	51.48	40	-17.41	7.48	1.04	37.41	100	360	QP
145.23	25.21	51.24	43.5	-18.29	9.27	1.56	36.86	100	360	QP
241.12	31.2	53.22	46	-14.8	12.61	2	36.63	100	360	QP
312.62	22.14	42.15	46	-23.86	14.49	2.26	36.76	100	360	QP
422.36	32.98	49.66	46	-13.02	17.49	2.7	36.87	100	360	QP
512.32	31.22	46.56	46	-14.78	18.7	3.01	37.05	100	360	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.

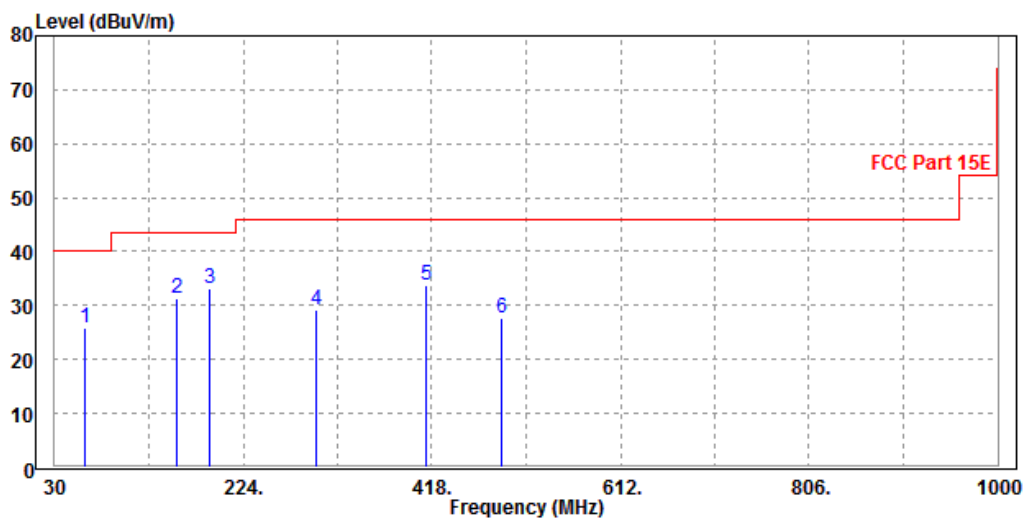


CHANNEL	Channel 140	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

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
61.25	25.87	55.21	40	-14.13	6.9	1.09	37.33	100	0	QP
156.39	31.46	56.45	43.5	-12.04	10.15	1.62	36.76	100	0	QP
189.65	33.15	57.42	43.5	-10.35	10.59	1.74	36.6	100	0	QP
299.55	29.33	49.68	46	-16.67	14.19	2.21	36.75	100	0	QP
412.35	33.9	50.61	46	-12.1	17.47	2.67	36.85	100	0	QP
489.74	27.65	43.12	46	-18.35	18.56	2.95	36.98	100	0	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

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	60.61	63.59	74	-13.39	35.95	7.42	46.35	100	251	Peak
5150	46.57	49.55	54	-7.43	35.95	7.42	46.35	100	251	Average
5180	103.54	106.48			35.98	7.43	46.35	100	251	Peak
5180	94.9	97.84			35.98	7.43	46.35	100	251	Average
5350	58.77	61.45	74	-15.23	36.15	7.47	46.3	100	251	Peak
5350	44.68	47.36	54	-9.32	36.15	7.47	46.3	100	251	Average
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	61.67	64.31	74	-12.33	36.29	7.42	46.35	100	90	Peak
5150	46.59	49.23	54	-7.41	36.29	7.42	46.35	100	90	Average
5180	99.71	102.32			36.31	7.43	46.35	100	90	Peak
5180	90.65	93.26			36.31	7.43	46.35	100	90	Average
5350	58.83	61.25	74	-15.17	36.41	7.47	46.3	100	90	Peak
5350	45.09	47.51	54	-8.91	36.41	7.47	46.3	100	90	Average

REMARKS:

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

CHANNEL	TX Channel 40	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	58.5	61.48	74	-15.5	35.95	7.42	46.35	100	245	Peak
5150	44.88	47.86	54	-9.12	35.95	7.42	46.35	100	245	Average
5200	102.73	105.64			36	7.43	46.34	100	245	Peak
5200	93.44	96.35			36	7.43	46.34	100	245	Average
5350	59.21	61.89	74	-14.79	36.15	7.47	46.3	100	245	Peak
5350	45.55	48.23	54	-8.45	36.15	7.47	46.3	100	245	Average
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	59.05	61.69	74	-14.95	36.29	7.42	46.35	100	92	Peak
5150	45.68	48.32	54	-8.32	36.29	7.42	46.35	100	92	Average
5200	98.86	101.45			36.32	7.43	46.34	100	92	Peak
5200	88.64	91.23			36.32	7.43	46.34	100	92	Average
5350	59.16	61.58	74	-14.84	36.41	7.47	46.3	100	92	Peak
5350	45.44	47.86	54	-8.56	36.41	7.47	46.3	100	92	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 5200MHz: Fundamental frequency.

CHANNEL	TX Channel 48	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	59.7	61.37	74	-14.3	37.26	7.42	46.35	100	232	Peak
5150	46.19	47.86	54	-7.81	37.26	7.42	46.35	100	232	Average
5240	103.9	105.49			37.3	7.44	46.33	100	232	Peak
5240	94.82	96.41			37.3	7.44	46.33	100	232	Average
5350	60.15	61.64	74	-13.85	37.34	7.47	46.3	100	232	Peak
5350	45.87	47.36	54	-8.13	37.34	7.47	46.3	100	232	Average
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	58.77	61.41	74	-15.23	36.29	7.42	46.35	100	95	Peak
5150	45.01	47.65	54	-8.99	36.29	7.42	46.35	100	95	Average
5240	99.77	102.32			36.34	7.44	46.33	100	95	Peak
5240	88.89	91.44			36.34	7.44	46.33	100	95	Average
5350	59.26	61.68	74	-14.74	36.41	7.47	46.3	100	95	Peak
5350	44.89	47.31	54	-9.11	36.41	7.47	46.3	100	95	Average

REMARKS:

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



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	61.53	64.51	74	-12.47	35.95	7.42	46.35	100	215	Peak
5150	46.3	49.28	54	-7.7	35.95	7.42	46.35	100	215	Average
5180	103.17	106.11			35.98	7.43	46.35	100	215	Peak
5180	94.51	97.45			35.98	7.43	46.35	100	215	Average
5350	58.88	61.56	74	-15.12	36.15	7.47	46.3	100	215	Peak
5350	45.14	47.82	54	-8.86	36.15	7.47	46.3	100	215	Average
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	59.71	62.35	74	-14.29	36.29	7.42	46.35	100	300	Peak
5150	46.52	49.16	54	-7.48	36.29	7.42	46.35	100	300	Average
5180	99.75	102.36			36.31	7.43	46.35	100	300	Peak
5180	90.04	92.65			36.31	7.43	46.35	100	300	Average
5350	58.81	61.23	74	-15.19	36.41	7.47	46.3	100	300	Peak
5350	45.43	47.85	54	-8.57	36.41	7.47	46.3	100	300	Average

REMARKS:

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

CHANNEL	TX Channel 40	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	58.4	61.38	74	-15.6	35.95	7.42	46.35	100	256	Peak
5150	44.53	47.51	54	-9.47	35.95	7.42	46.35	100	256	Average
5200	102.78	105.69			36	7.43	46.34	100	256	Peak
5200	92.55	95.46			36	7.43	46.34	100	256	Average
5350	59.04	61.72	74	-14.96	36.15	7.47	46.3	100	256	Peak
5350	45.13	47.81	54	-8.87	36.15	7.47	46.3	100	256	Average
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	59.14	61.78	74	-14.86	36.29	7.42	46.35	100	96	Peak
5150	45.04	47.68	54	-8.96	36.29	7.42	46.35	100	96	Average
5200	99.84	102.43			36.32	7.43	46.34	100	96	Peak
5200	89.72	92.31			36.32	7.43	46.34	100	96	Average
5350	58.93	61.35	74	-15.07	36.41	7.47	46.3	100	96	Peak
5350	45.7	48.12	54	-8.3	36.41	7.47	46.3	100	96	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 5200MHz: Fundamental frequency.

CHANNEL	TX Channel 48	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	58.91	61.89	74	-15.09	35.95	7.42	46.35	100	251	Peak
5150	44.58	47.56	54	-9.42	35.95	7.42	46.35	100	251	Average
5240	103.57	106.42			36.04	7.44	46.33	100	251	Peak
5240	93.6	96.45			36.04	7.44	46.33	100	251	Average
5350	59.07	61.75	74	-14.93	36.15	7.47	46.3	100	251	Peak
5350	44.46	47.14	54	-9.54	36.15	7.47	46.3	100	251	Average
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	59.77	62.41	74	-14.23	36.29	7.42	46.35	100	99	Peak
5150	45.68	48.32	54	-8.32	36.29	7.42	46.35	100	99	Average
5240	99.8	102.35			36.34	7.44	46.33	100	99	Peak
5240	90.71	93.26			36.34	7.44	46.33	100	99	Average
5350	59.89	62.31	74	-14.11	36.41	7.47	46.3	100	99	Peak
5350	45.27	47.69	54	-8.73	36.41	7.47	46.3	100	99	Average

REMARKS:

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



**BUREAU
VERITAS**

Test Report No.: RF190522W005-8

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										
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	61.91	64.89	74	-12.09	35.95	7.42	46.35	100	255	Peak
5150	46.16	49.14	54	-7.84	35.95	7.42	46.35	100	255	Average
5190	98.57	101.49			35.99	7.43	46.34	100	255	Peak
5190	89.4	92.32			35.99	7.43	46.34	100	255	Average
5350	59.16	61.84	74	-14.84	36.15	7.47	46.3	100	255	Peak
5350	45.01	47.69	54	-8.99	36.15	7.47	46.3	100	255	Average
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	61.89	64.53	74	-12.11	36.29	7.42	46.35	100	89	Peak
5150	47.22	49.86	54	-6.78	36.29	7.42	46.35	100	89	Average
5190	96.98	99.58			36.31	7.43	46.34	100	89	Peak
5190	86.96	89.56			36.31	7.43	46.34	100	89	Average
5350	59.03	61.45	74	-14.97	36.41	7.47	46.3	100	89	Peak
5350	45.7	48.12	54	-8.3	36.41	7.47	46.3	100	89	Average

REMARKS:

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

CHANNEL	TX Channel 46	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	58.89	61.87	74	-15.11	35.95	7.42	46.35	100	258	Peak
5150	45.23	48.21	54	-8.77	35.95	7.42	46.35	100	258	Average
5230	99.5	102.36			36.03	7.44	46.33	100	258	Peak
5230	90.59	93.45			36.03	7.44	46.33	100	258	Average
5350	59.17	61.85	74	-14.83	36.15	7.47	46.3	100	258	Peak
5350	45.68	48.36	54	-8.32	36.15	7.47	46.3	100	258	Average
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	58.89	61.87	74	-15.11	35.95	7.42	46.35	100	258	Peak
5150	45.23	48.21	54	-8.77	35.95	7.42	46.35	100	258	Average
5230	99.5	102.36			36.03	7.44	46.33	100	258	Peak
5230	90.59	93.45			36.03	7.44	46.33	100	258	Average
5350	59.17	61.85	74	-14.83	36.15	7.47	46.3	100	258	Peak
5350	45.68	48.36	54	-8.32	36.15	7.47	46.3	100	258	Average

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)

CHANNEL	TX Channel 42	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	61.4	64.38	74	-12.6	35.95	7.42	46.35	100	263	Peak
5150	46.26	49.24	54	-7.74	35.95	7.42	46.35	100	263	Average
5210	95.46	98.35			36.01	7.44	46.34	100	263	Peak
5210	86.52	89.41			36.01	7.44	46.34	100	263	Average
5350	59.85	62.53	74	-14.15	36.15	7.47	46.3	100	263	Peak
5350	45.58	48.26	54	-8.42	36.15	7.47	46.3	100	263	Average
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	60.57	63.21	74	-13.43	36.29	7.42	46.35	100	92	Peak
5150	46.15	48.79	54	-7.85	36.29	7.42	46.35	100	92	Average
5210	94.01	96.58			36.33	7.44	46.34	100	92	Peak
5210	84.89	87.46			36.33	7.44	46.34	100	92	Average
5350	59.47	61.89	74	-14.53	36.41	7.47	46.3	100	92	Peak
5350	45.25	47.67	54	-8.75	36.41	7.47	46.3	100	92	Average

REMARKS:

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



Band 2

802.11a

CHANNEL	TX Channel 52	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	59.33	62.31	74	-14.67	35.95	7.42	46.35	100	235	Peak
5150	45.25	48.23	54	-8.75	35.95	7.42	46.35	100	235	Average
5260	103.71	106.52			36.06	7.45	46.32	100	235	Peak
5260	93.6	96.41			36.06	7.45	46.32	100	235	Average
5350	58.7	61.38	74	-15.3	36.15	7.47	46.3	100	235	Peak
5350	44.94	47.62	54	-9.06	36.15	7.47	46.3	100	235	Average
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	58.75	61.39	74	-15.25	36.29	7.42	46.35	100	95	Peak
5150	44.57	47.21	54	-9.43	36.29	7.42	46.35	100	95	Average
5260	98.74	101.25			36.36	7.45	46.32	100	95	Peak
5260	89.93	92.44			36.36	7.45	46.32	100	95	Average
5350	59.92	62.34	74	-14.08	36.41	7.47	46.3	100	95	Peak
5350	45.69	48.11	54	-8.31	36.41	7.47	46.3	100	95	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 5260MHz: Fundamental frequency.

CHANNEL	TX Channel 60	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	58.35	61.33	74	-15.65	35.95	7.42	46.35	100	259	Peak
5150	44.97	47.95	54	-9.03	35.95	7.42	46.35	100	259	Average
5300	102.88	105.63			36.1	7.46	46.31	100	259	Peak
5300	92.73	95.48			36.1	7.46	46.31	100	259	Average
5350	59.63	62.31	74	-14.37	36.15	7.47	46.3	100	259	Peak
5350	45.01	47.69	54	-8.99	36.15	7.47	46.3	100	259	Average
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	59.01	61.65	74	-14.99	36.29	7.42	46.35	100	97	Peak
5150	45.18	47.82	54	-8.82	36.29	7.42	46.35	100	97	Average
5300	99.09	101.56			36.39	7.46	46.3	100	97	Peak
5300	89.68	92.15			36.39	7.46	46.3	100	97	Average
5350	59.89	62.31	74	-14.11	36.41	7.47	46.3	100	97	Peak
5350	45.9	48.32	54	-8.1	36.41	7.47	46.3	100	97	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 5300MHz: Fundamental frequency.

CHANNEL	TX Channel 64	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	58.61	61.59	74	-15.39	35.95	7.42	46.35	100	248	Peak
5150	44.15	47.13	54	-9.85	35.95	7.42	46.35	100	248	Average
5320	102.9	105.62			36.12	7.46	46.3	100	248	Peak
5320	92.43	95.15			36.12	7.46	46.3	100	248	Average
5350	61.8	64.48	74	-12.2	36.15	7.47	46.3	100	248	Peak
5350	47.1	49.78	54	-6.9	36.15	7.47	46.3	100	248	Average
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	58.72	61.36	74	-15.28	36.29	7.42	46.35	100	97	Peak
5150	44.97	47.61	54	-9.03	36.29	7.42	46.35	100	97	Average
5320	100	102.45			36.39	7.46	46.3	100	97	Peak
5320	91.17	93.62			36.39	7.46	46.3	100	97	Average
5350	61.83	64.25	74	-12.17	36.41	7.47	46.3	100	97	Peak
5350	47.21	49.63	54	-6.79	36.41	7.47	46.3	100	97	Average

REMARKS:

- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
- 5320MHz: Fundamental frequency.



802.11n (20MHz)

CHANNEL	TX Channel 52	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	58.23	61.21	74	-15.77	35.95	7.42	46.35	100	256	Peak
5150	44.87	47.85	54	-9.13	35.95	7.42	46.35	100	256	Average
5260	103.77	106.58			36.06	7.45	46.32	100	256	Peak
5260	94.61	97.42			36.06	7.45	46.32	100	256	Average
5350	59.67	62.35	74	-14.33	36.15	7.47	46.3	100	256	Peak
5350	45.44	48.12	54	-8.56	36.15	7.47	46.3	100	256	Average
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	59.75	62.39	74	-14.25	36.29	7.42	46.35	100	90	Peak
5150	45	47.64	54	-9	36.29	7.42	46.35	100	90	Average
5260	100.04	102.55			36.36	7.45	46.32	100	90	Peak
5260	89.79	92.3			36.36	7.45	46.32	100	90	Average
5350	60.03	62.45	74	-13.97	36.41	7.47	46.3	100	90	Peak
5350	45.81	48.23	54	-8.19	36.41	7.47	46.3	100	90	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 5260MHz: Fundamental frequency.

CHANNEL	TX Channel 60	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	58.27	61.25	74	-15.73	35.95	7.42	46.35	100	251	Peak
5150	44.71	47.69	54	-9.29	35.95	7.42	46.35	100	251	Average
5300	102.73	105.48			36.1	7.46	46.31	100	251	Peak
5300	92.89	95.64			36.1	7.46	46.31	100	251	Average
5350	59	61.68	74	-15	36.15	7.47	46.3	100	251	Peak
5350	45.53	48.21	54	-8.47	36.15	7.47	46.3	100	251	Average
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	58.9	61.54	74	-15.1	36.29	7.42	46.35	100	96	Peak
5150	44.41	47.05	54	-9.59	36.29	7.42	46.35	100	96	Average
5300	98.76	101.23			36.38	7.46	46.31	100	96	Peak
5300	89.84	92.31			36.38	7.46	46.31	100	96	Average
5350	59.36	61.78	74	-14.64	36.41	7.47	46.3	100	96	Peak
5350	45.11	47.53	54	-8.89	36.41	7.47	46.3	100	96	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 5300MHz: Fundamental frequency.

CHANNEL	TX Channel 64	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	58.48	61.46	74	-15.52	35.95	7.42	46.35	100	236	Peak
5150	44.25	47.23	54	-9.75	35.95	7.42	46.35	100	236	Average
5320	102.49	105.21			36.12	7.46	46.3	100	236	Peak
5320	93.74	96.46			36.12	7.46	46.3	100	236	Average
5350	63.67	66.35	74	-10.33	36.15	7.47	46.3	100	236	Peak
5350	47.48	50.16	54	-6.52	36.15	7.47	46.3	100	236	Average
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	59.2	61.84	74	-14.8	36.29	7.42	46.35	100	95	Peak
5150	45.67	48.31	54	-8.33	36.29	7.42	46.35	100	95	Average
5320	99.87	102.32			36.39	7.46	46.3	100	95	Peak
5320	90	92.45			36.39	7.46	46.3	100	95	Average
5350	63.47	65.89	74	-10.53	36.41	7.47	46.3	100	95	Peak
5350	48.21	50.63	54	-5.79	36.41	7.47	46.3	100	95	Average

REMARKS:

- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
- 5320MHz: Fundamental frequency.



802.11n (40MHz)

CHANNEL	TX Channel 54	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	59.47	62.45	74	-14.53	35.95	7.42	46.35	100	241	Peak
5150	45.16	48.14	54	-8.84	35.95	7.42	46.35	100	241	Average
5270	99.56	102.36			36.07	7.45	46.32	100	241	Peak
5270	89.83	92.63			36.07	7.45	46.32	100	241	Average
5350	59.87	62.55	74	-14.13	36.15	7.47	46.3	100	241	Peak
5350	45.63	48.31	54	-8.37	36.15	7.47	46.3	100	241	Average
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	59.77	62.41	74	-14.23	36.29	7.42	46.35	100	96	Peak
5150	45.61	48.25	54	-8.39	36.29	7.42	46.35	100	96	Average
5270	98.81	101.32			36.36	7.45	46.32	100	96	Peak
5270	90.02	92.53			36.36	7.45	46.32	100	96	Average
5350	60.79	63.21	74	-13.21	36.41	7.47	46.3	100	96	Peak
5350	46.25	48.67	54	-7.75	36.41	7.47	46.3	100	96	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 5270MHz: Fundamental frequency.



CHANNEL	TX Channel 62	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	59.17	62.15	74	-14.83	35.95	7.42	46.35	100	223	Peak
5150	44.86	47.84	54	-9.14	35.95	7.42	46.35	100	223	Average
5310	99.39	102.13			36.11	7.46	46.31	100	223	Peak
5310	90.5	93.24			36.11	7.46	46.31	100	223	Average
5350	63.89	66.57	74	-10.11	36.15	7.47	46.3	100	223	Peak
5350	47.51	50.19	54	-6.49	36.15	7.47	46.3	100	223	Average
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	59.11	61.75	74	-14.89	36.29	7.42	46.35	100	91	Peak
5150	45.3	47.94	54	-8.7	36.29	7.42	46.35	100	91	Average
5310	97.96	100.42			36.39	7.46	46.31	100	91	Peak
5310	88.8	91.26			36.39	7.46	46.31	100	91	Average
5350	62.1	64.52	74	-11.9	36.41	7.47	46.3	100	91	Peak
5350	47.45	49.87	54	-6.55	36.41	7.47	46.3	100	91	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 5310MHz: Fundamental frequency.



802.11ac (80MHz)

CHANNEL	TX Channel 58	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	59.16	62.14	74	-14.84	35.95	7.42	46.35	100	211	Peak
5150	45.33	48.31	54	-8.67	35.95	7.42	46.35	100	211	Average
5290	98.51	101.28			36.09	7.45	46.31	100	211	Peak
5290	87.58	90.35			36.09	7.45	46.31	100	211	Average
5350	63.99	66.67	74	-10.01	36.15	7.47	46.3	100	211	Peak
5350	48.01	50.69	54	-5.99	36.15	7.47	46.3	100	211	Average
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	59.77	62.41	74	-14.23	36.29	7.42	46.35	100	95	Peak
5150	45.49	48.13	54	-8.51	36.29	7.42	46.35	100	95	Average
5290	97.15	99.64			36.37	7.45	46.31	100	95	Peak
5290	88.74	91.23			36.37	7.45	46.31	100	95	Average
5350	61.95	64.37	74	-12.05	36.41	7.47	46.3	100	95	Peak
5350	47.81	50.23	54	-6.19	36.41	7.47	46.3	100	95	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 5290MHz: Fundamental frequency.



Band 3

802.11a

CHANNEL	TX Channel 100	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
5460	61.62	64.13	74	-12.38	36.26	7.49	46.26	100	235	Peak
5460	47.05	49.56	54	-6.95	36.26	7.49	46.26	100	235	Average
#5470	64.01	66.51	68.3	-4.29	36.27	7.49	46.26	100	235	Peak
5500	103.79	106.24			36.3	7.5	46.25	100	235	Peak
5500	93.93	96.38			36.3	7.5	46.25	100	235	Average
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
5460	61.16	63.45	74	-12.84	36.48	7.49	46.26	100	95	Peak
5460	46.83	49.12	54	-7.17	36.48	7.49	46.26	100	95	Average
#5470	63	65.29	68.3	-5.3	36.48	7.49	46.26	100	95	Peak
5500	100.11	102.36			36.5	7.5	46.25	100	95	Peak
5500	88.98	91.23			36.5	7.5	46.25	100	95	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 5500MHz: Fundamental frequency.
3. #: Out of restricted band.

CHANNEL	TX Channel 116	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
5460	59.8	62.31	74	-14.2	36.26	7.49	46.26	100	236	Peak
5460	45.81	48.32	54	-8.19	36.26	7.49	46.26	100	236	Average
#5470	60.95	63.45	68.3	-7.35	36.27	7.49	46.26	100	236	Peak
5580	103.15	105.47			36.33	7.58	46.23	100	236	Peak
5580	94.01	96.33			36.33	7.58	46.23	100	236	Average
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
5460	60.06	62.35	74	-13.94	36.48	7.49	46.26	100	99	Peak
5460	45.83	48.12	54	-8.17	36.48	7.49	46.26	100	99	Average
#5470	62.03	64.32	68.3	-6.27	36.48	7.49	46.26	100	99	Peak
5580	100.16	102.26			36.55	7.58	46.23	100	99	Peak
5580	91.37	93.47			36.55	7.58	46.23	100	99	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 5580MHz: Fundamental frequency.
3. #: Out of restricted band.

CHANNEL	TX Channel 140	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
5700	103.53	105.64			36.38	7.7	46.19	100	241	Peak
5700	93.37	95.48			36.38	7.7	46.19	100	241	Average
#5725	64.25	66.32	68.3	-4.05	36.39	7.73	46.19	100	241	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
5700	99.49	101.36			36.62	7.7	46.19	100	96	Peak
5700	90.27	92.14			36.62	7.7	46.19	100	96	Average
#5725	64.05	65.88	68.3	-4.25	36.63	7.73	46.19	100	96	Peak

REMARKS:

- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
- 5700MHz: Fundamental frequency.
- #: Out of restricted band.

802.11n (20MHz)

CHANNEL	TX Channel 100	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
5460	60.62	63.13	74	-13.38	36.26	7.49	46.26	100	124	Peak
5460	47.35	49.86	54	-6.65	36.26	7.49	46.26	100	124	Average
#5470	62.82	65.32	68.3	-5.48	36.27	7.49	46.26	100	124	Peak
5500	103.18	105.63			36.3	7.5	46.25	100	124	Peak
5500	92.86	95.31			36.3	7.5	46.25	100	124	Average
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
5460	60.86	63.15	74	-13.14	36.48	7.49	46.26	100	36	Peak
5460	46.67	48.96	54	-7.33	36.48	7.49	46.26	100	36	Average
#5470	62.96	65.25	68.3	-5.34	36.48	7.49	46.26	100	36	Peak
5500	100.07	102.32			36.5	7.5	46.25	100	36	Peak
5500	91.16	93.41			36.5	7.5	46.25	100	36	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 5500MHz: Fundamental frequency.
3. #: Out of restricted band.

CHANNEL	TX Channel 116	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
5460	59.81	62.32	74	-14.19	36.26	7.49	46.26	100	126	Peak
5460	45.38	47.89	54	-8.62	36.26	7.49	46.26	100	126	Average
#5470	60.92	63.42	68.3	-7.38	36.27	7.49	46.26	100	126	Peak
5580	102.28	104.6			36.33	7.58	46.23	100	126	Peak
5580	91.33	93.65			36.33	7.58	46.23	100	126	Average
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
5460	59.92	62.21	74	-14.08	36.48	7.49	46.26	100	28	Peak
5460	45.83	48.12	54	-8.17	36.48	7.49	46.26	100	28	Average
#5470	61.26	63.55	68.3	-7.04	36.48	7.49	46.26	100	28	Peak
5580	99.26	101.36			36.55	7.58	46.23	100	28	Peak
5580	90.01	92.11			36.55	7.58	46.23	100	28	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 5580MHz: Fundamental frequency.
3. #: Out of restricted band.

CHANNEL	TX Channel 140	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
5700	102.1	104.21			36.38	7.7	46.19	100	142	Peak
5700	93.51	95.62			36.38	7.7	46.19	100	142	Average
#5725	62.16	64.23	68.3	-6.14	36.39	7.73	46.19	100	142	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
5700	98.69	100.56			36.62	7.7	46.19	100	31	Peak
5700	89.34	91.21			36.62	7.7	46.19	100	31	Average
#5725	62.71	64.54	68.3	-5.59	36.63	7.73	46.19	100	31	Peak

REMARKS:

- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
- 5700MHz: Fundamental frequency.
- #: Out of restricted band.



802.11n (40MHz)

CHANNEL	TX Channel 102	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
5460	62.13	64.64	74	-11.87	36.26	7.49	46.26	100	135	Peak
5460	46.62	49.13	54	-7.38	36.26	7.49	46.26	100	135	Average
#5470	62.98	65.48	68.3	-5.32	36.27	7.49	46.26	100	135	Peak
5510	100.83	103.27			36.3	7.51	46.25	100	135	Peak
5510	90.69	93.13			36.3	7.51	46.25	100	135	Average
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
5460	62.03	64.32	74	-11.97	36.48	7.49	46.26	100	21	Peak
5460	46.22	48.51	54	-7.78	36.48	7.49	46.26	100	21	Average
#5470	63.39	65.68	68.3	-4.91	36.48	7.49	46.26	100	21	Peak
5510	100.09	102.32			36.51	7.51	46.25	100	21	Peak
5510	90.22	92.45			36.51	7.51	46.25	100	21	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 5510MHz: Fundamental frequency.
3. #: Out of restricted band.

CHANNEL	TX Channel 110	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
5460	59.61	62.12	74	-14.39	36.26	7.49	46.26	100	142	Peak
5460	45.34	47.85	54	-8.66	36.26	7.49	46.26	100	142	Average
#5470	61.01	63.51	68.3	-7.29	36.27	7.49	46.26	100	142	Peak
5550	99	101.37			36.32	7.55	46.24	100	142	Peak
5550	89.08	91.45			36.32	7.55	46.24	100	142	Average
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
5460	60.3	62.59	74	-13.7	36.48	7.49	46.26	100	12	Peak
5460	45.06	47.35	54	-8.94	36.48	7.49	46.26	100	12	Average
#5470	60.86	63.15	68.3	-7.44	36.48	7.49	46.26	100	12	Peak
5550	98.21	100.37			36.53	7.55	46.24	100	12	Peak
5550	88.1	90.26			36.53	7.55	46.24	100	12	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 5550MHz: Fundamental frequency.
3. #: Out of restricted band.

CHANNEL	TX Channel 134	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
5670	99.16	101.32			36.37	7.67	46.2	100	128	Peak
5670	89.13	91.29			36.37	7.67	46.2	100	128	Average
#5725	62.88	64.95	68.3	-5.42	36.39	7.73	46.19	100	128	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
5670	97.28	99.21			36.6	7.67	46.2	100	25	Peak
5670	89.3	91.23			36.6	7.67	46.2	100	25	Average
#5725	62.6	64.43	68.3	-5.7	36.63	7.73	46.19	100	25	Peak

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 5670MHz: Fundamental frequency.
3. #: Out of restricted band.



802.11ac (80MHz)

CHANNEL	TX Channel 106	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
5460	61.07	63.58	74	-12.93	36.26	7.49	46.26	100	132	Peak
5460	46.27	48.78	54	-7.73	36.26	7.49	46.26	100	132	Average
#5470	62.25	64.75	68.3	-6.05	36.27	7.49	46.26	100	132	Peak
5530	97.85	100.25			36.31	7.53	46.24	100	132	Peak
5530	88.23	90.63			36.31	7.53	46.24	100	132	Average
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
5460	61.28	63.57	74	-12.72	36.48	7.49	46.26	100	16	Peak
5460	46.72	49.01	54	-7.28	36.48	7.49	46.26	100	16	Average
#5470	62.98	65.27	68.3	-5.32	36.48	7.49	46.26	100	16	Peak
5530	96.48	98.67			36.52	7.53	46.24	100	16	Peak
5530	86.3	88.49			36.52	7.53	46.24	100	16	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 5530MHz: Fundamental frequency.
3. #: Out of restricted band.



Test Report No.: RF190522W005-8

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	101.36	102.24			37.55	7.75	46.18	100	135	Peak
5745	91.63	92.51			37.55	7.75	46.18	100	135	Average
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	99.44	100.32			37.55	7.75	46.18	100	21	Peak
5745	89.27	90.15			37.55	7.75	46.18	100	21	Average

REMARKS:

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



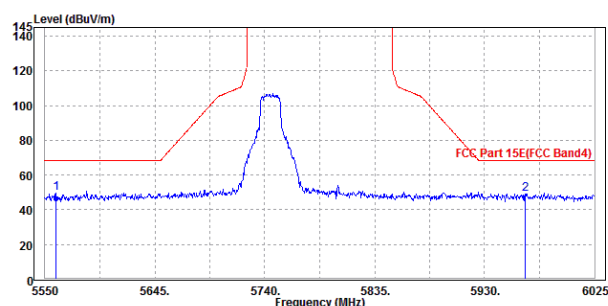
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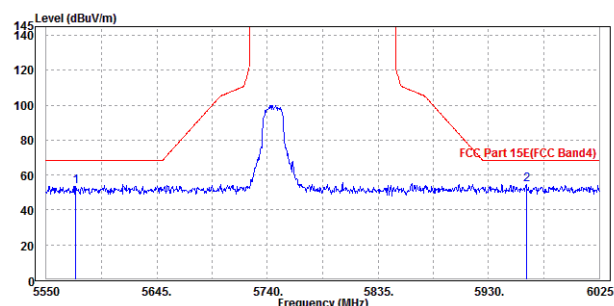
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FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5559.5	49.43	47.47	68.3	-18.87	36.32	7.56	41.92	100	130	Peak
5965.15	49.17	46.89	68.3	-19.13	36.49	7.97	42.18	100	130	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
5575.18	53.7	51.5	68.3	-14.6	36.55	7.58	41.93	100	130	Peak
5962.3	54.32	51.75	68.3	-13.98	36.78	7.97	42.18	100	130	Peak

CH 149

Horizontal



Vertical



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	100.45	101.26			37.57	7.79	46.17	100	65	Peak
5785	90.47	91.28			37.57	7.79	46.17	100	65	Average
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	98.13	99.84			36.67	7.79	46.17	100	45	Peak
5785	87.92	89.63			36.67	7.79	46.17	100	45	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 5785MHz: Fundamental frequency.



**BUREAU
VERITAS**

Test Report No.: RF190522W005-8

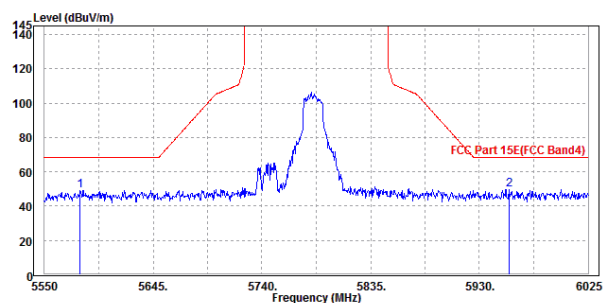
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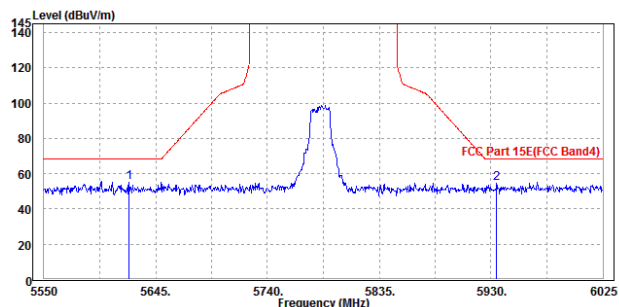
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FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5581.35	48.85	46.87	68.3	-19.45	36.33	7.58	41.93	100	130	Peak
5955.65	49.61	47.34	68.3	-18.69	36.48	7.96	42.17	100	130	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
5622.2	55.39	53.16	68.3	-12.91	36.57	7.62	41.96	100	130	Peak
5934.75	54.59	52.05	68.3	-13.71	36.76	7.94	42.16	100	130	Peak

CH 157

Horizontal



Vertical





CHANNEL	TX Channel 161	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
5805	100.54	101.31			37.58	7.81	46.16	100	135	Peak
5805	91.79	92.56			37.58	7.81	46.16	100	135	Average
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	99.58	100.35			37.58	7.81	46.16	100	0	Peak
5805	89.5	90.27			37.58	7.81	46.16	100	0	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 5805MHz: Fundamental frequency.



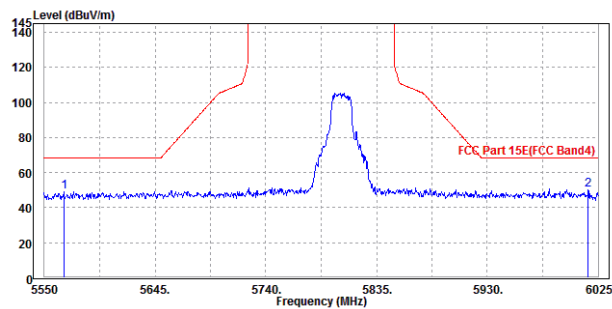
OOBE DATA

802.11a

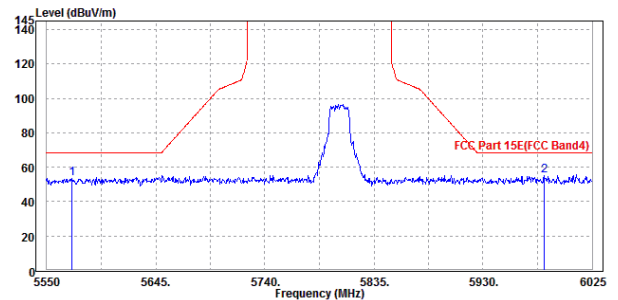
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5566.63	48.85	46.87	68.3	-19.45	36.33	7.57	41.92	100	130	Peak
6016.45	50.15	47.88	68.3	-18.15	36.51	7.98	42.22	100	130	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
5571.85	53.33	51.15	68.3	-14.97	36.54	7.57	41.93	100	130	Peak
5983.2	55.18	52.59	68.3	-13.12	36.79	7.99	42.19	100	130	Peak

CH 161

Horizontal



Vertical





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	100.54	101.42			37.55	7.75	46.18	100	136	Peak
5745	90.66	91.54			37.55	7.75	46.18	100	136	Average
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	101.44	102.32			37.55	7.75	46.18	100	75	Peak
5745	90.58	91.46			37.55	7.75	46.18	100	75	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 5745MHz: Fundamental frequency.



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Test Report No.: RF190522W005-8

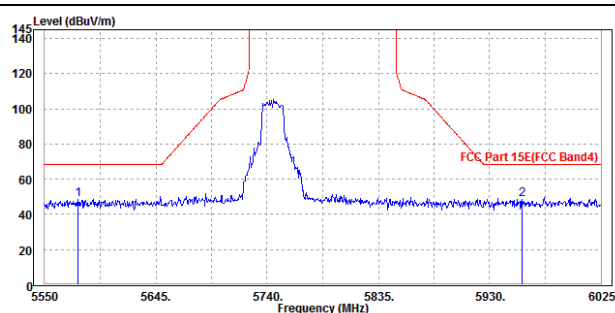
OOBE DATA

802.11n (20MHZ)

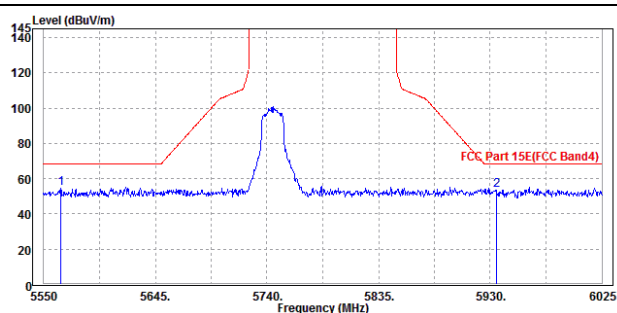
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5578.5	48.62	46.64	68.3	-19.68	36.33	7.58	41.93	100	130	Peak
5958.03	48.64	46.36	68.3	-19.66	36.48	7.97	42.17	100	130	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
5564.73	54.38	52.19	68.3	-13.92	36.54	7.57	41.92	100	130	Peak
5935.23	53.75	51.21	68.3	-14.55	36.76	7.94	42.16	100	130	Peak

CH 149

Horizontal



Vertical



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	100.77	101.58			37.57	7.79	46.17	100	145	Peak
5785	90.55	91.36			37.57	7.79	46.17	100	145	Average
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	99.54	101.25			36.67	7.79	46.17	100	25	Peak
5785	89.52	91.23			36.67	7.79	46.17	100	25	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 5785MHz: Fundamental frequency.



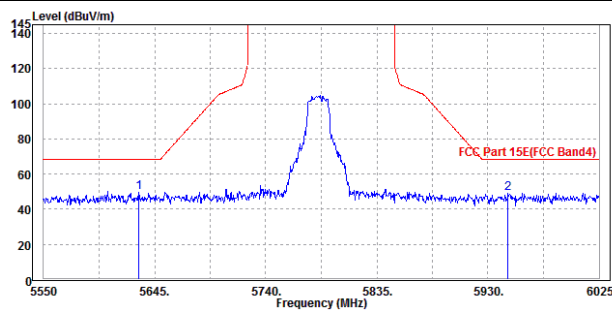
OOBE DATA

802.11n (20MHZ)

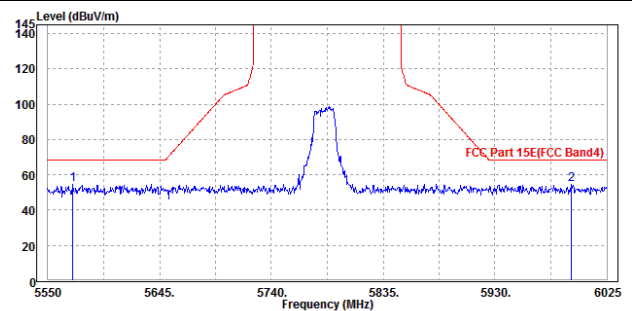
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5631.7	49.42	47.4	68.3	-18.88	36.35	7.63	41.96	100	130	Peak
5947.1	49.17	46.9	68.3	-19.13	36.48	7.96	42.17	100	130	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
5571.38	54.35	52.17	68.3	-13.95	36.54	7.57	41.93	100	130	Peak
5994.6	54.33	51.73	68.3	-13.97	36.8	8	42.2	100	130	Peak

CH 157

Horizontal



Vertical



CHANNEL	TX Channel 161	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
5805	100.52	101.29			37.58	7.81	46.16	100	0	Peak
5805	89.54	90.31			37.58	7.81	46.16	100	0	Average
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	102.67	100.26			36.68	7.81	42.08	100	35	Peak
5805	92.63	90.22			36.68	7.81	42.08	100	35	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 5805MHz: Fundamental frequency.



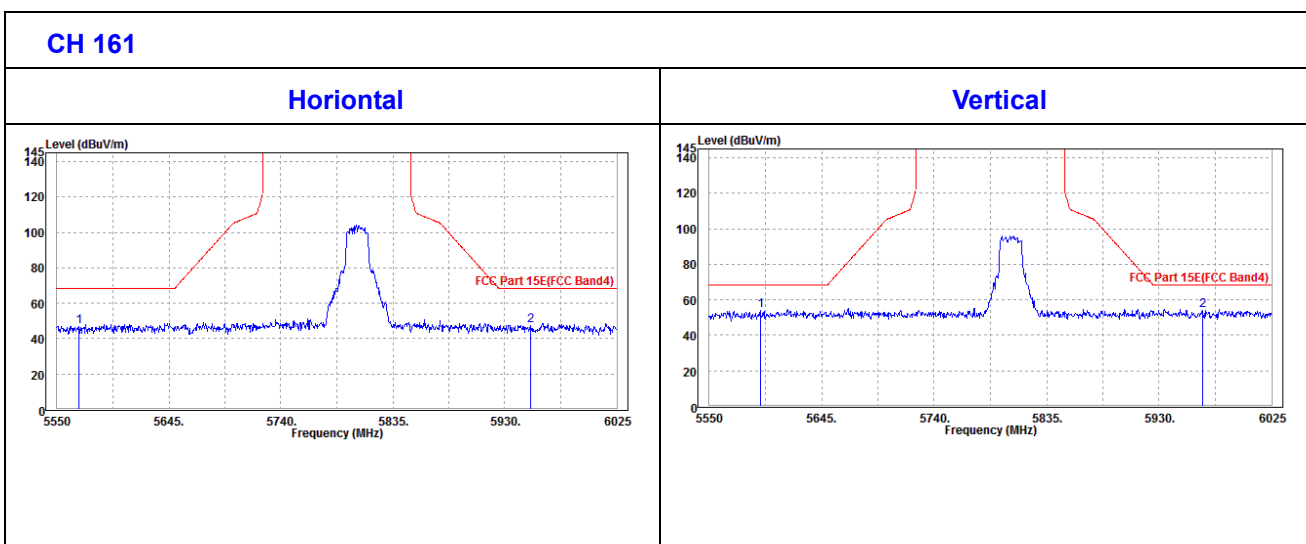
**BUREAU
VERITAS**

Test Report No.: RF190522W005-8

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
5568.53	47.08	45.1	68.3	-21.22	36.33	7.57	41.92	100	130	Peak
5951.85	47.27	45	68.3	-21.03	36.48	7.96	42.17	100	130	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
5593.23	54.25	52.03	68.3	-14.05	36.56	7.6	41.94	100	130	Peak
5966.58	54.3	51.72	68.3	-14	36.78	7.98	42.18	100	130	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	99.37	100.24			37.55	7.76	46.18	100	138	Peak
5755	89.48	90.35			37.55	7.76	46.18	100	138	Average
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	99.48	101.25			36.65	7.76	46.18	100	62	Peak
5755	89.77	91.54			36.65	7.76	46.18	100	62	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 5755MHz: Fundamental frequency.



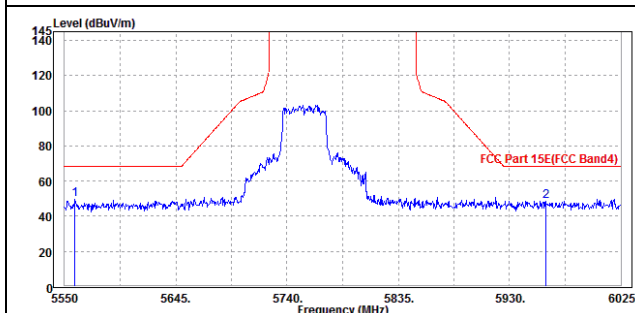
OUBE DATA

802.11n (40MHZ)

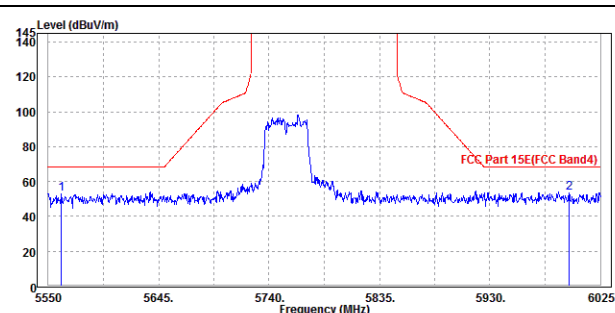
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5559.03	49.43	47.47	68.3	-18.87	36.32	7.56	41.92	100	130	Peak
5960.88	48.59	46.31	68.3	-19.71	36.48	7.97	42.17	100	130	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
5561.4	52.73	50.55	68.3	-15.57	36.54	7.56	41.92	100	130	Peak
5998.4	53.33	50.72	68.3	-14.97	36.8	8.01	42.2	100	130	Peak

CH 151

Horizontal



Vertical



CHANNEL	TX Channel 159	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
5795	99.77	100.56			37.58	7.8	46.17	100	126	Peak
5795	90.88	91.67			37.58	7.8	46.17	100	126	Average
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	99.73	100.52			37.58	7.8	46.17	100	325	Peak
5795	90.85	91.64			37.58	7.8	46.17	100	325	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 5795MHz: Fundamental frequency.



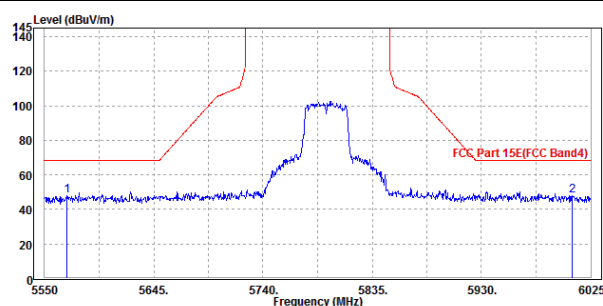
OOBE DATA

802.11n (40MHZ)

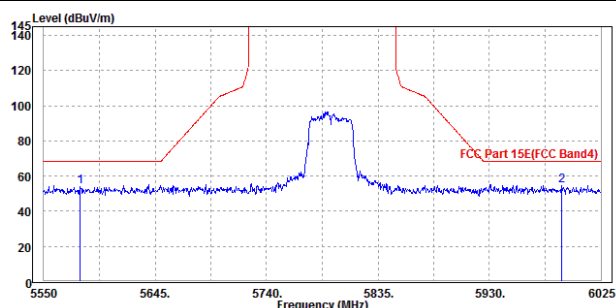
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5569.48	48.15	46.17	68.3	-20.15	36.33	7.57	41.92	100	130	Peak
6008.85	47.99	45.69	68.3	-20.31	36.51	8	42.21	100	130	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
5581.35	53.98	51.78	68.3	-14.32	36.55	7.58	41.93	100	130	Peak
5991.75	54.47	51.86	68.3	-13.83	36.8	8	42.19	100	130	Peak

CH 159

Horizontal



Vertical





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	98.8	99.62			37.57	7.78	46.17	100	148	Peak
5775	88.92	89.74			37.57	7.78	46.17	100	148	Average
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	96.59	98.31			36.67	7.78	46.17	100	12	Peak
5775	86.41	88.13			36.67	7.78	46.17	100	12	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 5775MHz: Fundamental frequency.



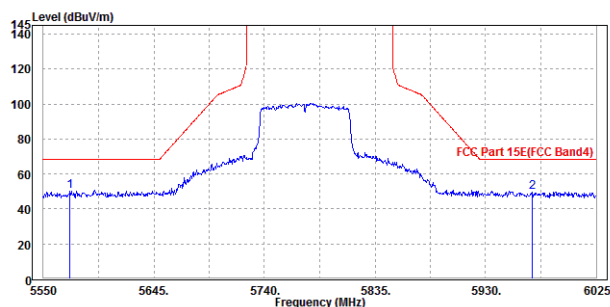
Oobe Data

802.11ac (80MHz)

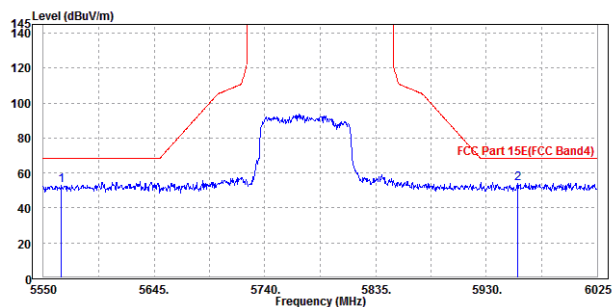
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5572.8	50.41	48.44	68.3	-17.89	36.33	7.57	41.93	100	130	Peak
5969.9	49.72	47.43	68.3	-18.58	36.49	7.98	42.18	100	130	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
5565.68	52.86	50.67	68.3	-15.44	36.54	7.57	41.92	100	130	Peak
5956.6	54.2	51.63	68.3	-14.1	36.77	7.97	42.17	100	130	Peak

CH 155

Horizontal



Vertical



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

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.

3.2.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESR3	101900	Feb. 26,19	Feb. 25,20
EMC32 test software	Rohde&Schwarz	EMC32	NA	NA	NA
LISN network	Rohde&Schwarz	ENV216	101922	Feb. 26,19	Feb. 25,20

NOTE:

1. The test was performed in CE shielded 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.

3.2.3 TEST PROCEDURES

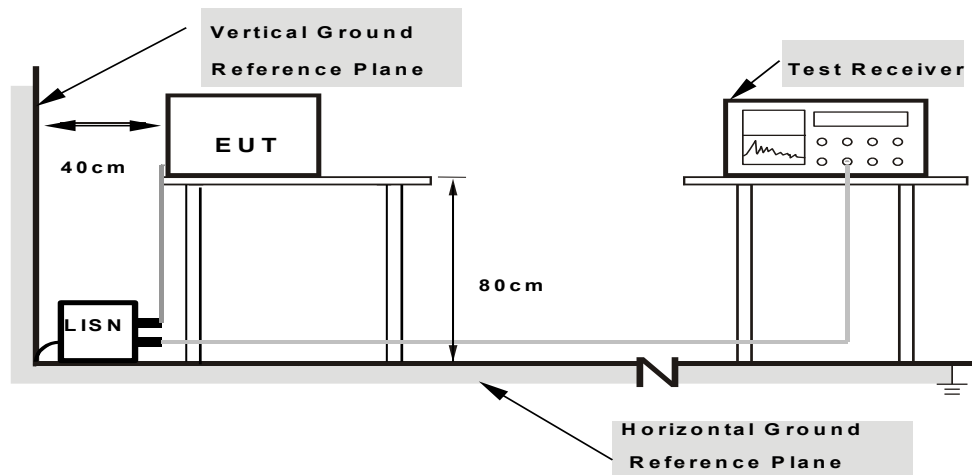
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

NOTE: 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 cm 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

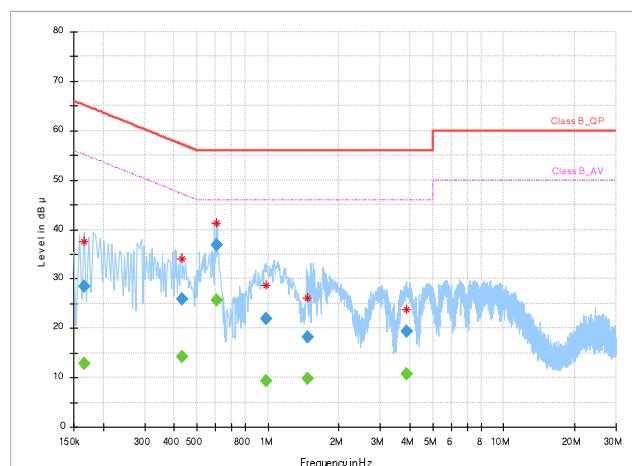
CONDUCTED WORST-CASE DATA :

Frequency Range	150KHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25deg. C, 52RH
Test Voltage	DC 4V	Tested By	Jimmy Liu

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.166000	---	12.85	55.16	-42.31	L	ON	9.9
0.166000	28.41	---	65.16	-36.75	L	ON	9.9
0.432000	---	14.14	47.21	-33.08	L	ON	10.0
0.432000	25.89	---	57.21	-31.33	L	ON	10.0
0.608000	---	25.60	46.00	-20.40	L	ON	10.0
0.608000	36.91	---	56.00	-19.09	L	ON	10.0
0.980000	---	9.40	46.00	-36.60	L	ON	10.1
0.980000	21.92	---	56.00	-34.08	L	ON	10.1
1.472000	---	9.76	46.00	-36.24	L	ON	10.1
1.472000	18.26	---	56.00	-37.74	L	ON	10.1
3.880000	---	10.68	46.00	-35.32	L	ON	10.2
3.880000	19.36	---	56.00	-36.64	L	ON	10.2

- 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

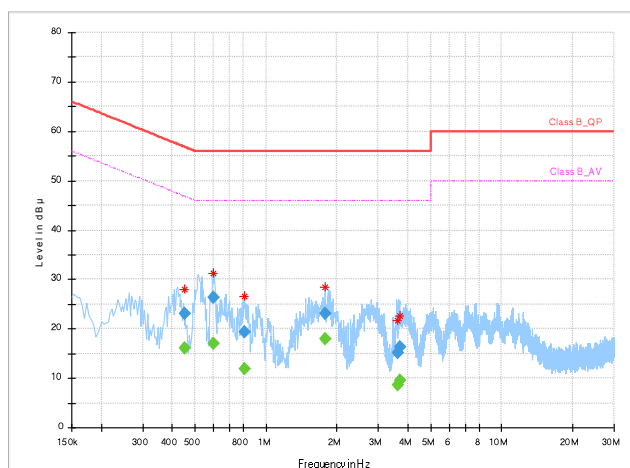


Frequency Range	150KHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25deg. C, 52RH
Test Voltage	DC 4V	Tested By	Jimmy Liu

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.452000	---	16.05	46.84	-30.79	N	ON	9.9
0.452000	23.17	---	56.84	-33.67	N	ON	9.9
0.600000	---	17.13	46.00	-28.87	N	ON	9.9
0.600000	26.31	---	56.00	-29.69	N	ON	9.9
0.812000	---	11.87	46.00	-34.13	N	ON	9.9
0.812000	19.33	---	56.00	-36.67	N	ON	9.9
1.784000	---	18.07	46.00	-27.93	N	ON	10.0
1.784000	23.19	---	56.00	-32.81	N	ON	10.0
3.624000	---	8.68	46.00	-37.32	N	ON	10.1
3.624000	15.13	---	56.00	-40.87	N	ON	10.1
3.700000	---	9.48	46.00	-36.52	N	ON	10.1
3.700000	16.44	---	56.00	-39.56	N	ON	10.1

- 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



3.3 MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

3.3.1 LIMITS OF MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

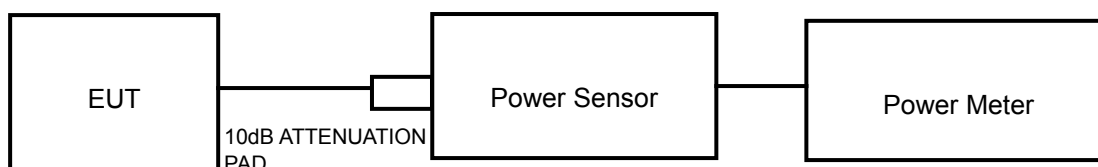
Operation Band	EUT Category		LIMIT
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p $\leq$ 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
		Fixed point-to-point Access Point	1 Watt (30 dBm)
		Indoor Access Point	1 Watt (30 dBm)
	√	Client devices	250mW (24 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.

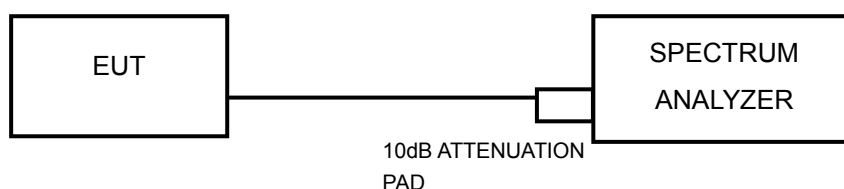
3.3.2 TEST SETUP

FOR POWER OUTPUT MEASUREMENT

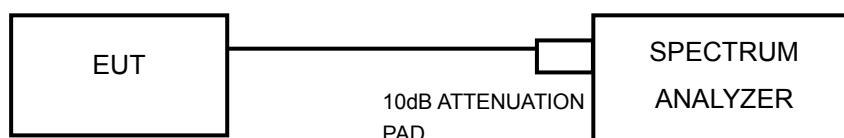
802.11a, 802.11n (20MHz), 802.11n (40MHz) TEST CONFIGURATION



11ac TEST CONFIGURATION



FOR 26dB BANDWIDTH



3.3.3 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Power Meter	ANRITSU	ML2495A	1506002	Feb. 26,19	Feb. 25,20
EXA Signal Analyzer	KEYSIGHT	N9010A-526	MY54510322	Feb. 26,19	Feb. 25,20
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	Feb. 26,19	Feb. 25,20
Power Sensor	ANRITSU	MA2411B	1339352	Feb. 26,19	Feb. 25,20

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.

3.3.4 TEST PROCEDURE

FOR POWER MEASUREMENT

For 802.11a, 802.11n (20MHz), 802.11n (40MHz)

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 802.11ac (80MHz)

1. Measure the duty cycle, x , of the transmitter output signal as described in II.B.
2. Set span to encompass the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.
3. Set RBW = 1 MHz.
4. Set VBW $\geq$ 3 MHz.
5. Number of points in sweep $\geq 2 \times \text{span} / \text{RBW}$. (This ensures that bin-to-bin spacing is $\leq \text{RBW}/2$, so that narrowband signals are not lost between frequency bins.)
6. Sweep time = auto.
7. Detector = power averaging (rms), if available. Otherwise, use sample detector mode.
8. Do not use sweep triggering. Allow the sweep to “free run.”
9. Trace average at least 100 traces in power averaging (rms) mode; however, the number of traces to be averaged shall be increased above 100 as needed to ensure that the average accurately represents the true average over the on and off periods of the transmitter.
10. Add $10 \log (1/x)$, where x is the duty cycle, to the measured power 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). For example, add $10 \log (1/0.25) = 6 \text{ dB}$ if the duty cycle is 25%.

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) ≥ 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.



Test Report No.: RF190522W005-8

3.3.7 TEST RESULTS

OUTPUT POWER:

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL AVERAGE POWER (dBm)	Duty Factor	FINAL AVERAGE POWER (dBm)	FINAL AVERAGE POWER (mW)	POWER LIMIT (dBm)	PASS/FAIL
		ANT 0	ANT 1						
36	5180	10.18	9.93	13.07	0.23	13.3	21.38	24	PASS
40	5200	10.15	9.86	13.02	0.23	13.25	21.13	24	PASS
48	5240	10.54	10.02	13.30	0.23	13.53	22.54	24	PASS
52	5260	10.17	9.82	13.01	0.23	13.24	21.09	24	PASS
60	5300	10.39	9.72	13.08	0.23	13.31	21.43	24	PASS
64	5320	10.42	9.76	13.11	0.23	13.34	21.58	24	PASS
100	5500	10.23	10.34	13.30	0.23	13.53	22.54	24	PASS
116	5580	10.07	10.27	13.18	0.23	13.41	21.93	24	PASS
140	5700	9.92	10.42	13.19	0.23	13.42	21.98	24	PASS
149	5745	10.42	10.25	13.35	0.23	13.58	22.80	30	PASS
157	5785	10.02	10.37	13.21	0.23	13.44	22.08	30	PASS
161	5805	10.17	10.29	13.24	0.23	13.47	22.23	30	PASS

**802.11n (20MHz)**

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL AVERAGE POWER (dBm)	Duty Factor	FINAL AVERAGE POWER (dBm)	FINAL AVERAGE POWER (mW)	POWER LIMIT (dBm)	PASS/FAIL
		ANT 0	ANT 1						
36	5180	10.36	10.04	13.21	0.22	13.43	22.03	24	PASS
40	5200	10.41	10.08	13.26	0.22	13.48	22.28	24	PASS
48	5240	10.45	9.84	13.17	0.22	13.39	21.83	24	PASS
52	5260	10.23	9.78	13.02	0.22	13.24	21.09	24	PASS
60	5300	10.29	9.67	13.00	0.22	13.22	20.99	24	PASS
64	5320	10.33	9.69	13.03	0.22	13.25	21.13	24	PASS
100	5500	10.08	10.11	13.11	0.22	13.33	21.53	24	PASS
116	5580	9.99	10.16	13.09	0.22	13.31	21.43	24	PASS
140	5700	9.73	10.38	13.08	0.22	13.30	21.38	24	PASS
149	5745	10.58	10.01	13.31	0.22	13.53	22.54	30	PASS
157	5785	10.33	10.45	13.40	0.22	13.62	23.01	30	PASS
161	5805	10.09	10.02	13.07	0.22	13.29	21.33	30	PASS



802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL AVERAGE POWER (dBm)	Duty Factor	FINAL AVERAGE POWER (dBm)	FINAL AVERAGE POWER (mW)	POWER LIMIT (dBm)	PASS/FAIL
		ANT 0	ANT 1						
38	5190	10.61	10.12	13.38	0.63	14.01	25.18	24	PASS
46	5230	10.46	10.18	13.33	0.63	13.96	24.89	24	PASS
54	5270	10.64	10.06	13.37	0.63	14.00	25.12	24	PASS
62	5310	10.71	9.96	13.36	0.63	13.99	25.06	24	PASS
102	5510	10.22	10.31	13.28	0.63	13.91	24.60	24	PASS
110	5550	9.92	10.14	13.04	0.63	13.67	23.28	24	PASS
134	5670	9.91	10.25	13.09	0.63	13.72	23.55	24	PASS
151	5755	10.34	10.38	13.37	0.63	14.00	25.12	30	PASS
159	5798	9.87	10.17	13.03	0.63	13.66	23.23	30	PASS

802.11ac (80MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL AVERAGE POWER (dBm)	Duty Factor	FINAL AVERAGE POWER (dBm)	FINAL AVERAGE POWER (mW)	POWER LIMIT (dBm)	PASS/FAIL
		ANT 0	ANT 1						
42	5210	9.21	9.06	12.15	0.87	13.02	20.04	24	PASS
58	5290	9.34	8.98	12.17	0.87	13.04	20.14	24	PASS
106	5530	8.79	9.45	12.14	0.87	13.01	20.00	24	PASS
155	5775	9.05	9.33	12.20	0.87	13.07	20.28	30	PASS

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

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH		26dB BANDWIDTH (MHz)		PASS/FAIL
		Chain0	Chain1	Chain0	Chain1	
36	5180	16.80	16.68	23.52	23.50	PASS
40	5200	16.74	16.68	23.56	23.17	PASS
48	5240	16.74	16.62	24.50	23.68	PASS
52	5260	16.74	16.62	23.47	23.66	PASS
60	5300	16.68	16.62	23.80	23.35	PASS
64	5320	16.74	16.74	23.60	23.43	PASS
100	5500	16.68	16.68	23.57	23.43	PASS
116	5580	16.74	16.68	24.20	23.32	PASS
140	5700	16.68	16.68	23.40	23.09	PASS
CHANNEL	CHANNEL FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH		6dB BANDWIDTH (MHz)		PASS/FAIL
		Chain0	Chain1	Chain0	Chain1	
149	5745	16.62	16.62	15.09	15.92	PASS
157	5785	16.74	16.74	15.78	15.67	PASS
161	5805	16.68	16.62	15.29	16.04	PASS

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH		26dB BANDWIDTH (MHz)		PASS/FAIL
		Chain0	Chain1	Chain0	Chain1	
36	5180	17.82	17.82	25.53	24.35	PASS
40	5200	17.94	17.82	24.47	23.69	PASS
48	5240	17.88	17.82	25.10	24.06	PASS
52	5260	17.88	17.82	25.04	24.83	PASS
60	5300	17.88	17.82	24.97	24.37	PASS
64	5320	17.82	17.82	24.94	24.26	PASS
100	5500	17.82	17.82	25.14	24.02	PASS
116	5580	17.94	17.76	24.94	24.10	PASS
140	5700	17.94	17.82	24.34	25.47	PASS
CHANNEL	CHANNEL FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH		6dB BANDWIDTH (MHz)		PASS/FAIL
		Chain0	Chain1	Chain0	Chain1	
149	5745	17.82	17.82	15.05	17.58	PASS
157	5785	17.82	17.88	15.97	15.97	PASS
161	5805	17.82	17.76	15.41	16.91	PASS

802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH		26dB BANDWIDTH (MHz)		PASS/FAIL
		Chain0	Chain1	Chain0	Chain1	
38	5190	36.36	36.42	42.63	42.24	PASS
46	5230	36.48	36.42	42.25	42.50	PASS
54	5270	36.36	36.36	42.48	42.04	PASS
62	5310	36.48	36.42	42.60	42.13	PASS
102	5510	36.48	36.42	42.63	42.28	PASS
110	5550	36.48	36.36	42.26	41.99	PASS
134	5670	36.42	36.42	42.39	42.25	PASS
CHANNEL	CHANNEL FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH		6dB BANDWIDTH (MHz)		PASS/FAIL
		Chain0	Chain1	Chain0	Chain1	
151	5755	36.48	36.42	35.43	35.33	PASS
159	5795	36.48	36.42	35.08	35.94	PASS

802.11ac (80MHz)

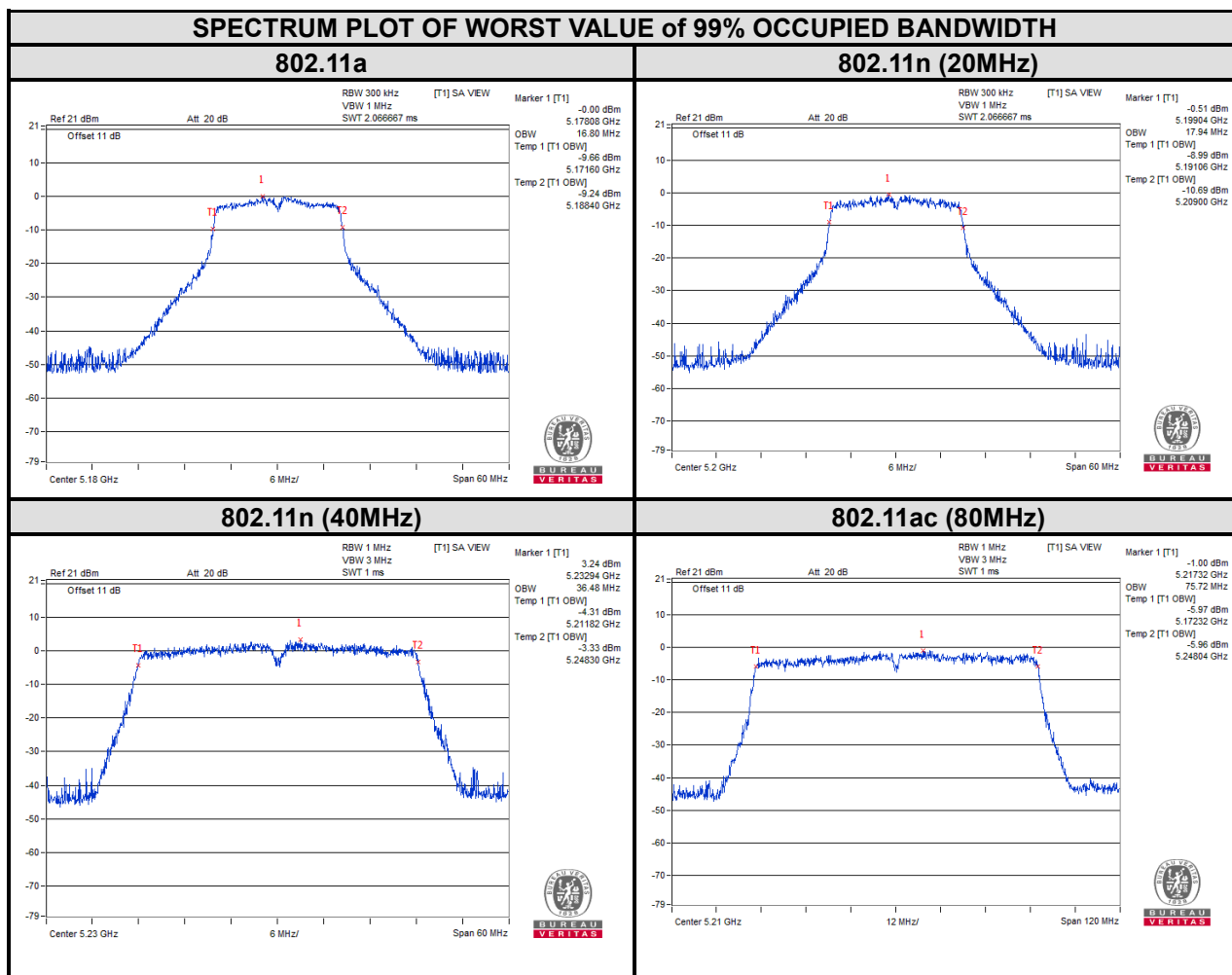
CHANNEL	CHANNEL FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH		26dB BANDWIDTH (MHz)		PASS/FAIL
		Chain0	Chain1	Chain0	Chain1	
42	5210	75.72	75.60	84.20	83.80	PASS
58	5290	75.72	75.60	84.30	83.45	PASS
106	5530	75.72	75.60	83.07	83.35	PASS
CHANNEL	CHANNEL FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH		6dB BANDWIDTH (MHz)		PASS/FAIL
		Chain0	Chain1	Chain0	Chain1	
155	5775	75.84	75.72	75.12	75.18	PASS



BUREAU
VERITAS

Test Report No.: RF190522W005-8

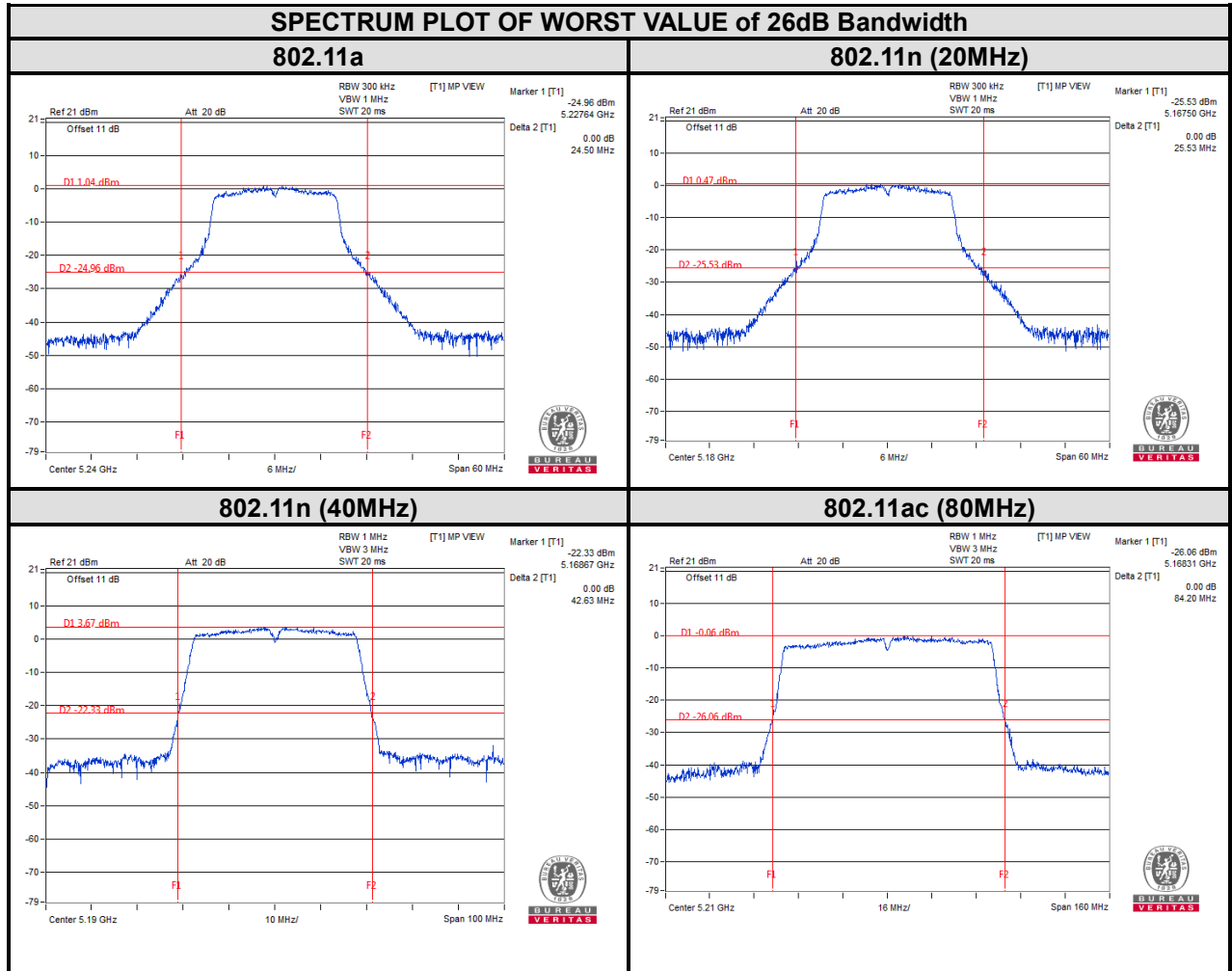
For U-NII-1:





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VERITAS

Test Report No.: RF190522W005-8

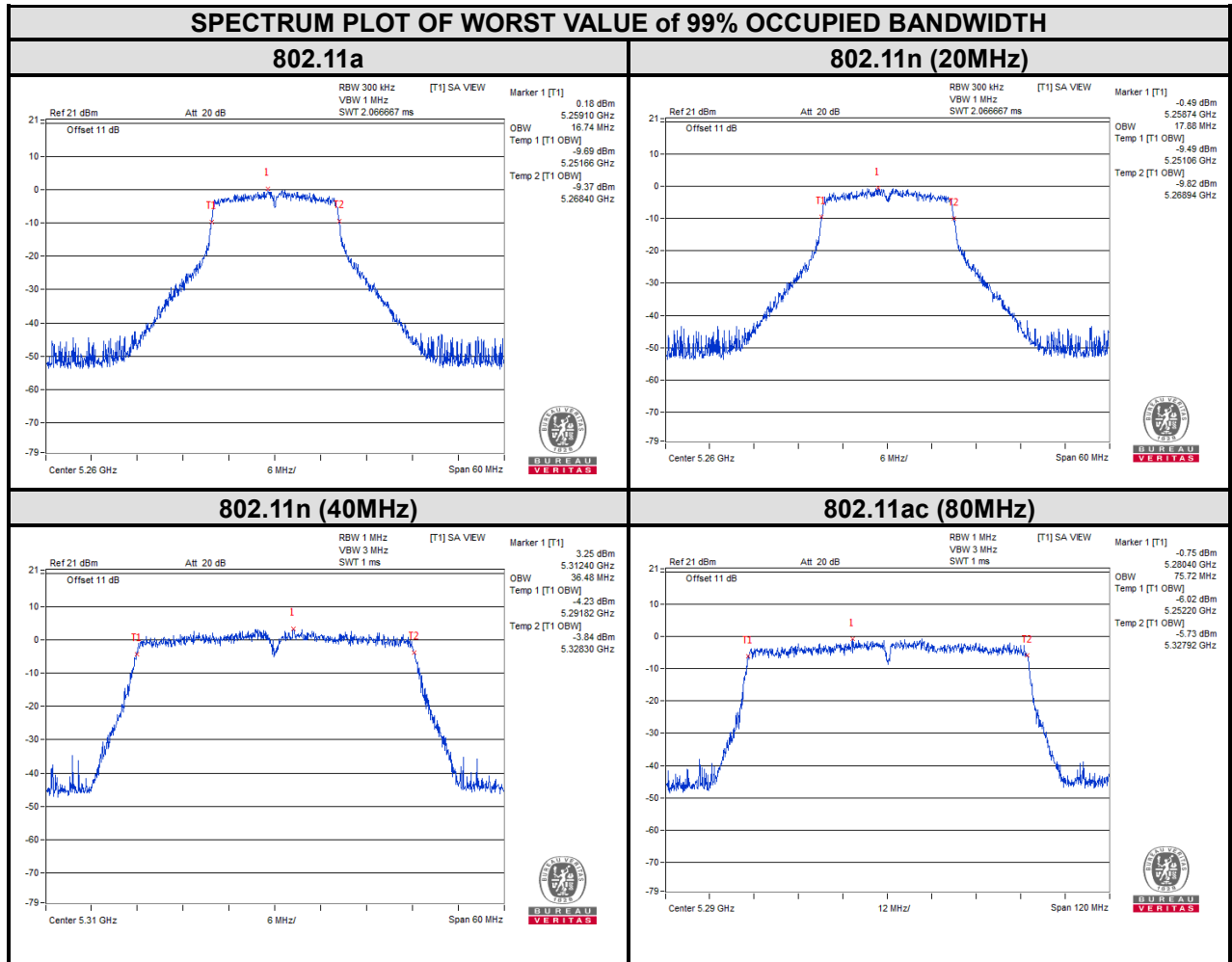




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VERITAS

Test Report No.: RF190522W005-8

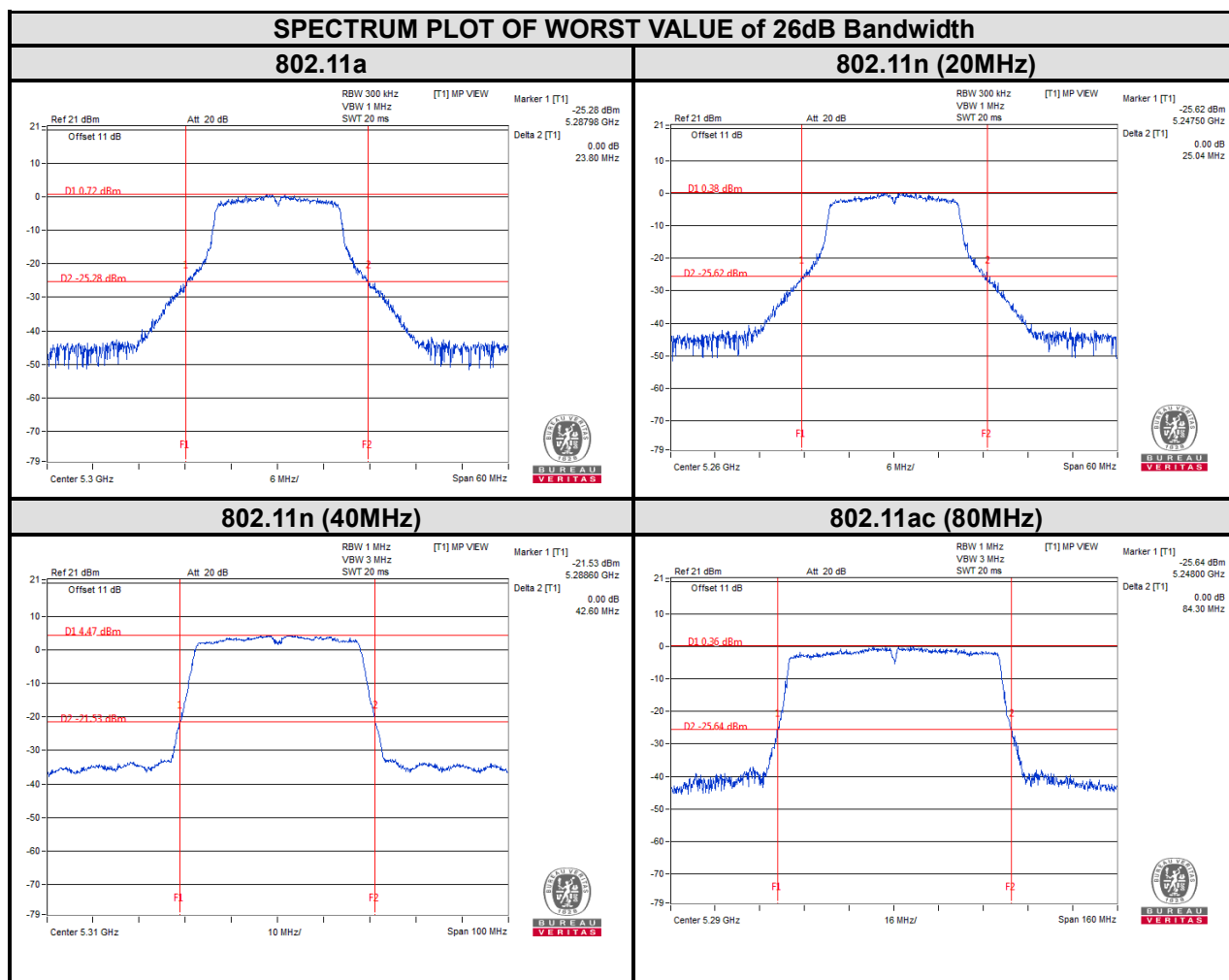
For U-NII-2A:





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VERITAS

Test Report No.: RF190522W005-8

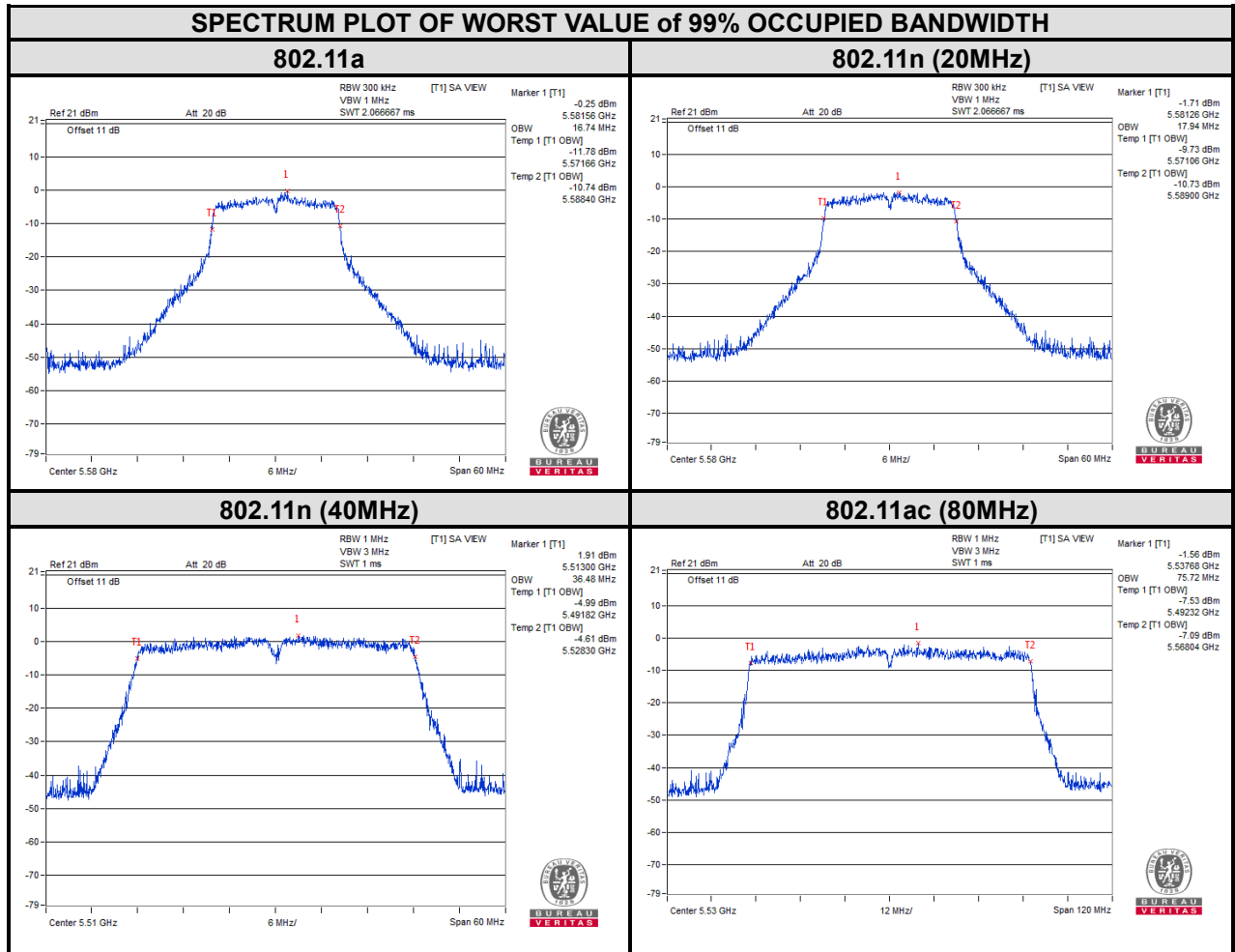




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VERITAS

Test Report No.: RF190522W005-8

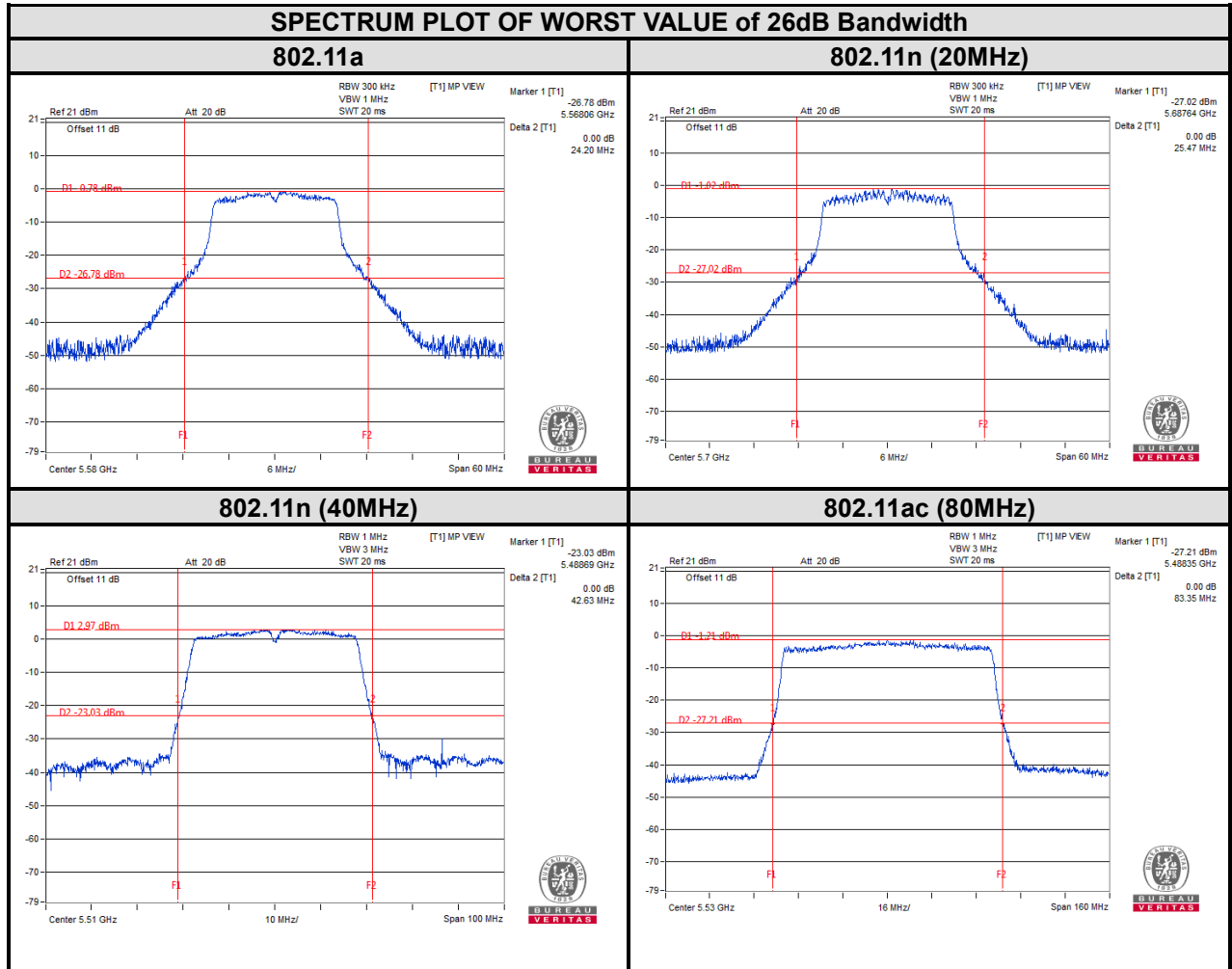
For U-NII-2C:





BUREAU
VERITAS

Test Report No.: RF190522W005-8

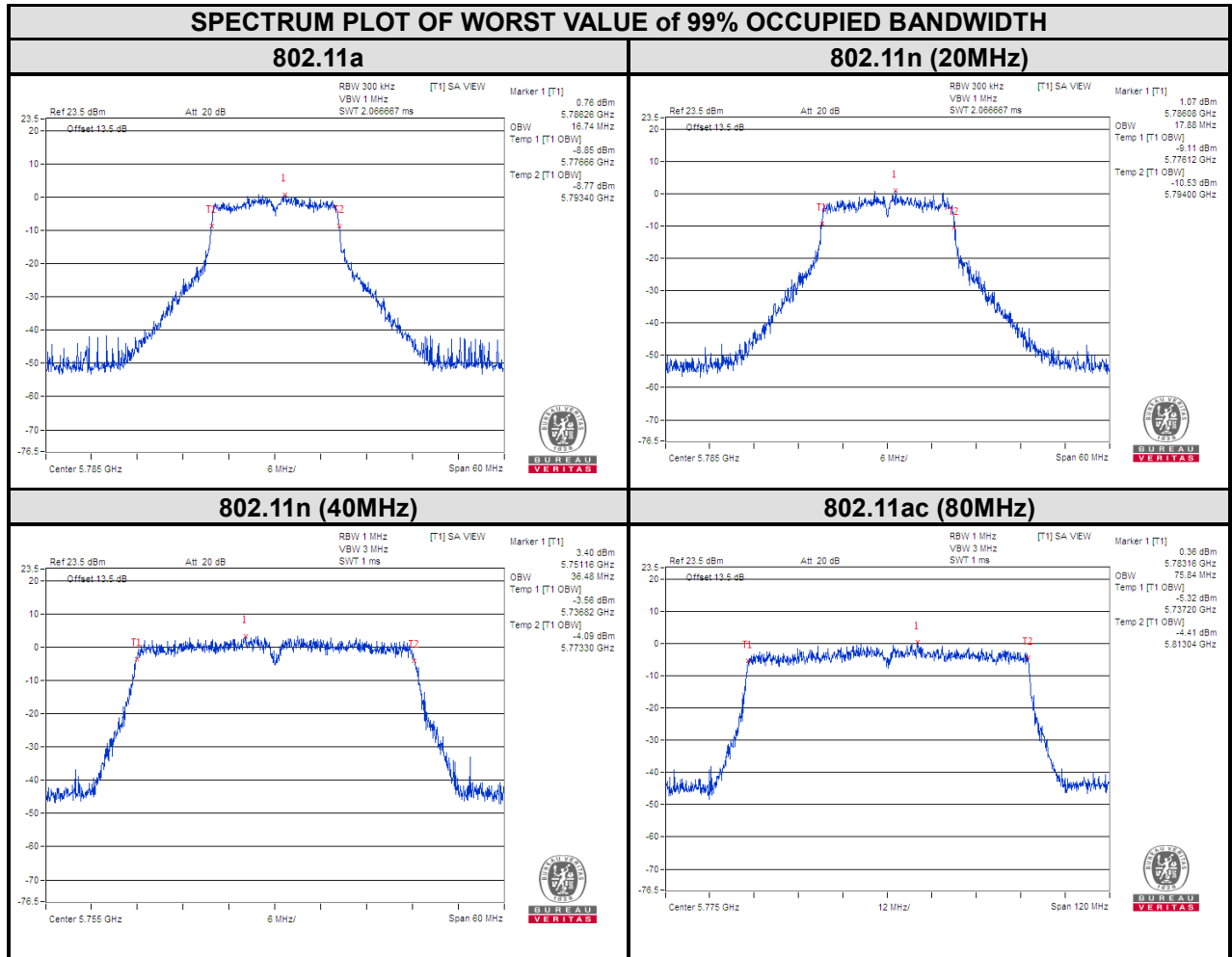




BUREAU
VERITAS

Test Report No.: RF190522W005-8

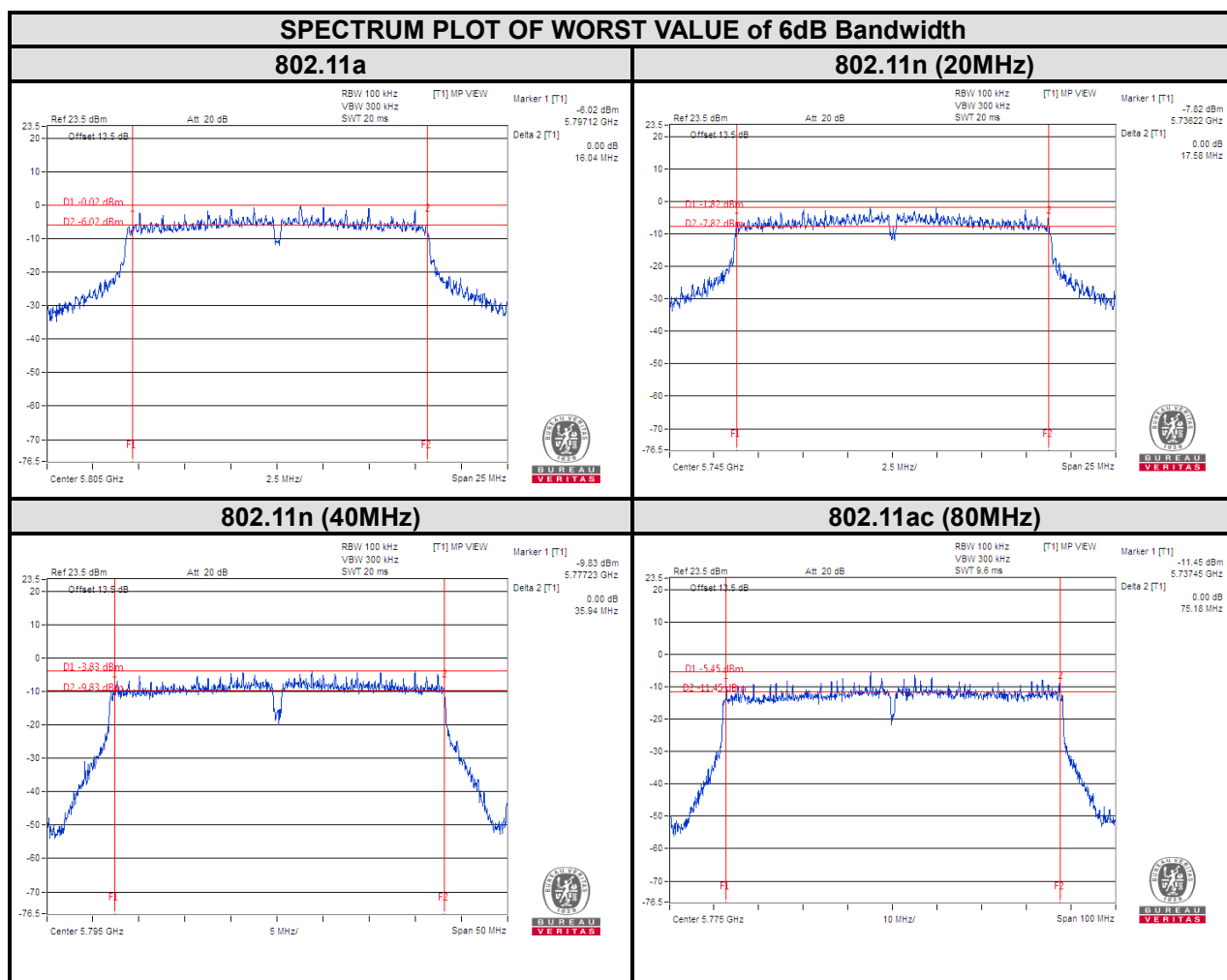
For U-NII-3:





BUREAU
VERITAS

Test Report No.: RF190522W005-8

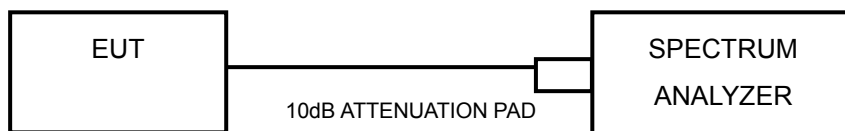


3.4 MAXIMUM POWER SPECTRAL DENSITY MEASUREMENT

3.4.1 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

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

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

3.4.5 DEVIATION FROM TEST STANDARD

No deviation.

3.4.6 EUT OPERATING CONDITIONS

Same as 3.1.6.

3.4.7 TEST RESULTS

For U-NII-1 & U-NII-2A & U-NII-2C:

802.11a

CHANNEL	FREQUENCY (MHz)	PSD w/o Duty Factor (dBm/MHz)		TOTAL PSD w/o Duty Factor (dBm/MHz)	Duty Factor	PSD with Duty Factor (dBm/MHz)	MAXIMUM LIMIT (dBm/MHz)	PASS/FAIL
		Chain0	Chain1					
36	5180	2.53	3.60	6.11	0.23	6.34	11	PASS
40	5200	1.53	3.41	5.58	0.23	5.81	11	PASS
48	5240	3.06	3.75	6.42	0.23	6.65	11	PASS
52	5260	2.81	4.28	6.62	0.23	6.85	11	PASS
60	5300	2.72	3.91	6.36	0.23	6.59	11	PASS
64	5320	2.46	3.64	6.10	0.23	6.33	11	PASS
100	5500	1.75	2.55	5.19	0.23	5.42	11	PASS
116	5580	1.73	2.75	5.28	0.23	5.51	11	PASS
140	5700	2.51	1.94	5.24	0.23	5.47	11	PASS

Note: $N_{ANT} = 2$, $N_{SS}=2$, Directional gain = $G_{ANT} + 10 \log(N_{ANT}/ N_{SS})$ dBi = 5.05dBi < 6dBi, density limit shall not be reduced.

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PSD w/o Duty Factor (dBm/MHz)		TOTAL PSD w/o Duty Factor (dBm/MHz)	Duty Factor	PSD with Duty Factor (dBm/MHz)	MAXIMUM LIMIT (dBm/MHz)	PASS/FAIL
		Chain0	Chain1					
36	5180	2.63	3.61	6.16	0.22	6.38	11	PASS
40	5200	2.87	3.49	6.20	0.22	6.42	11	PASS
48	5240	2.50	3.53	6.05	0.22	6.27	11	PASS
52	5260	2.25	4.13	6.30	0.22	6.52	11	PASS
60	5300	2.02	3.78	6.00	0.22	6.22	11	PASS
64	5320	1.87	3.57	5.82	0.22	6.04	11	PASS
100	5500	1.76	2.79	5.31	0.22	5.53	11	PASS
116	5580	1.04	2.51	4.84	0.22	5.06	11	PASS
140	5700	0.45	1.27	3.89	0.22	4.11	11	PASS

Note: $N_{ANT} = 2$, $N_{SS}=2$, Directional gain = $G_{ANT} + 10 \log(N_{ANT}/ N_{SS})$ dBi = 5.05dBi < 6dBi, density limit shall not be reduced.



802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	PSD w/o Duty Factor (dBm/MHz)		TOTAL PSD w/o Duty Factor (dBm/MHz)	Duty Factor	PSD with Duty Factor (dBm/MHz)	MAXIMUM LIMIT (dBm/MHz)	PASS/FAIL
		Chain0	Chain1					
38	5190	-0.31	1.54	3.73	0.63	4.36	11	PASS
46	5230	-0.18	2.30	4.25	0.63	4.88	11	PASS
54	5270	0.03	2.17	4.25	0.63	4.88	11	PASS
62	5310	-0.30	1.38	3.62	0.63	4.25	11	PASS
102	5510	-0.70	-0.46	2.43	0.63	3.06	11	PASS
110	5550	-1.47	-0.56	2.01	0.63	2.64	11	PASS
134	5670	-2.50	-0.24	1.79	0.63	2.42	11	PASS

Note: $N_{ANT} = 2$, $N_{SS}=2$, Directional gain = $G_{ANT} + 10 \log(N_{ANT}/ N_{SS})$ dBi = 5.05dBi < 6dBi, density limit shall not be reduced.

802.11ac (80MHz)

CHANNEL	FREQUENCY (MHz)	PSD w/o Duty Factor (dBm/MHz)		TOTAL PSD w/o Duty Factor (dBm/MHz)	Duty Factor	PSD with Duty Factor (dBm/MHz)	MAXIMUM LIMIT (dBm/MHz)	PASS/FAIL
		Chain0	Chain1					
42	5210	-3.84	-2.43	-0.09	0.87	0.78	11	PASS
58	5290	-3.64	-3.38	-0.51	0.87	0.36	11	PASS
106	5530	-5.08	-3.93	-1.49	0.87	-0.62	11	PASS

Note: $N_{ANT} = 2$, $N_{SS}=2$, Directional gain = $G_{ANT} + 10 \log(N_{ANT}/ N_{SS})$ dBi = 5.05dBi < 6dBi, density limit shall not be reduced.

For U-NII-3:

802.11a

CHANNEL	FREQUENCY (MHz)	PSD w/o Duty Factor (dBm/MHz)		TOTAL 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
		Chain0	Chain1						
149	5745	-0.48	-0.37	2.60	-0.41	0.23	-0.18	30	PASS
157	5785	-1.15	-0.48	2.23	-0.78	0.23	-0.55	30	PASS
161	5805	-0.29	-0.28	2.74	-0.27	0.23	-0.04	30	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PSD w/o Duty Factor (dBm/MHz)		TOTAL 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
		Chain0	Chain1						
149	5745	-0.50	-0.44	2.53	-0.48	0.22	-0.26	30	PASS
157	5785	-0.85	-0.15	2.53	-0.48	0.22	-0.26	30	PASS
161	5805	-0.90	-0.44	2.33	-0.68	0.22	-0.46	30	PASS

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	PSD w/o Duty Factor (dBm/MHz)		TOTAL 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
		Chain0	Chain1						
151	5755	-3.76	-3.55	-0.66	-3.67	0.63	-3.04	30	PASS
159	5795	-3.93	-3.30	-0.60	-3.61	0.63	-2.98	30	PASS

802.11ac (80MHz)

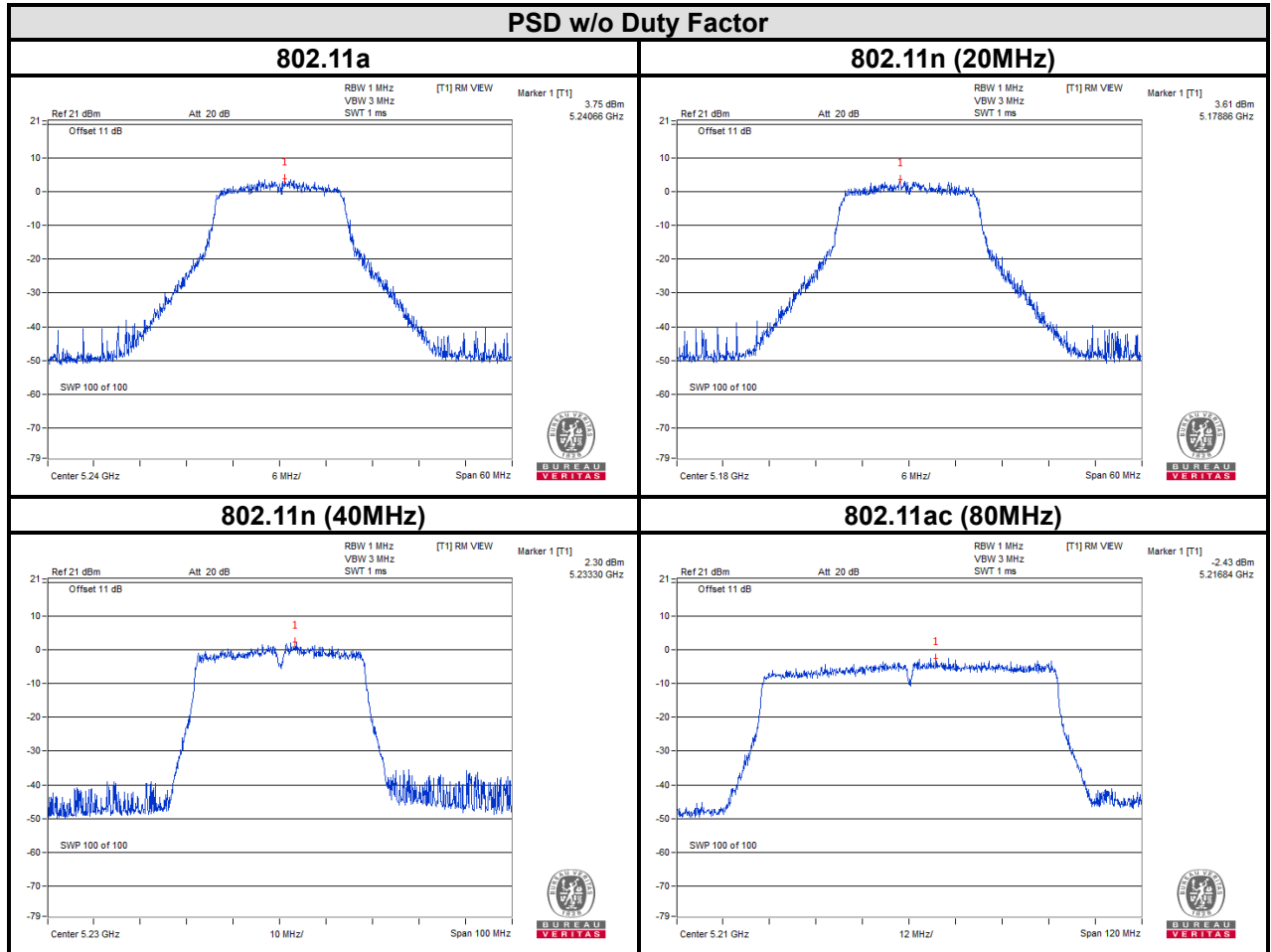
CHANNEL	FREQUENCY (MHz)	PSD w/o Duty Factor (dBm/MHz)		TOTAL PSD w/o Duty Factor (dBm/MHz)	PSD w/o Duty Factor (dBm/500kHz)	Duty Factor	PSD with Duty Factor (dBm/500kHz)	LIMIT (dBm/500kHz)	PASS /FAIL
		Chain0	Chain1						
155	5775	-7.81	-7.17	-4.44	-7.45	0.87	-6.58	30	PASS



BUREAU
VERITAS

Test Report No.: RF190522W005-8

For 5180~5240MHz

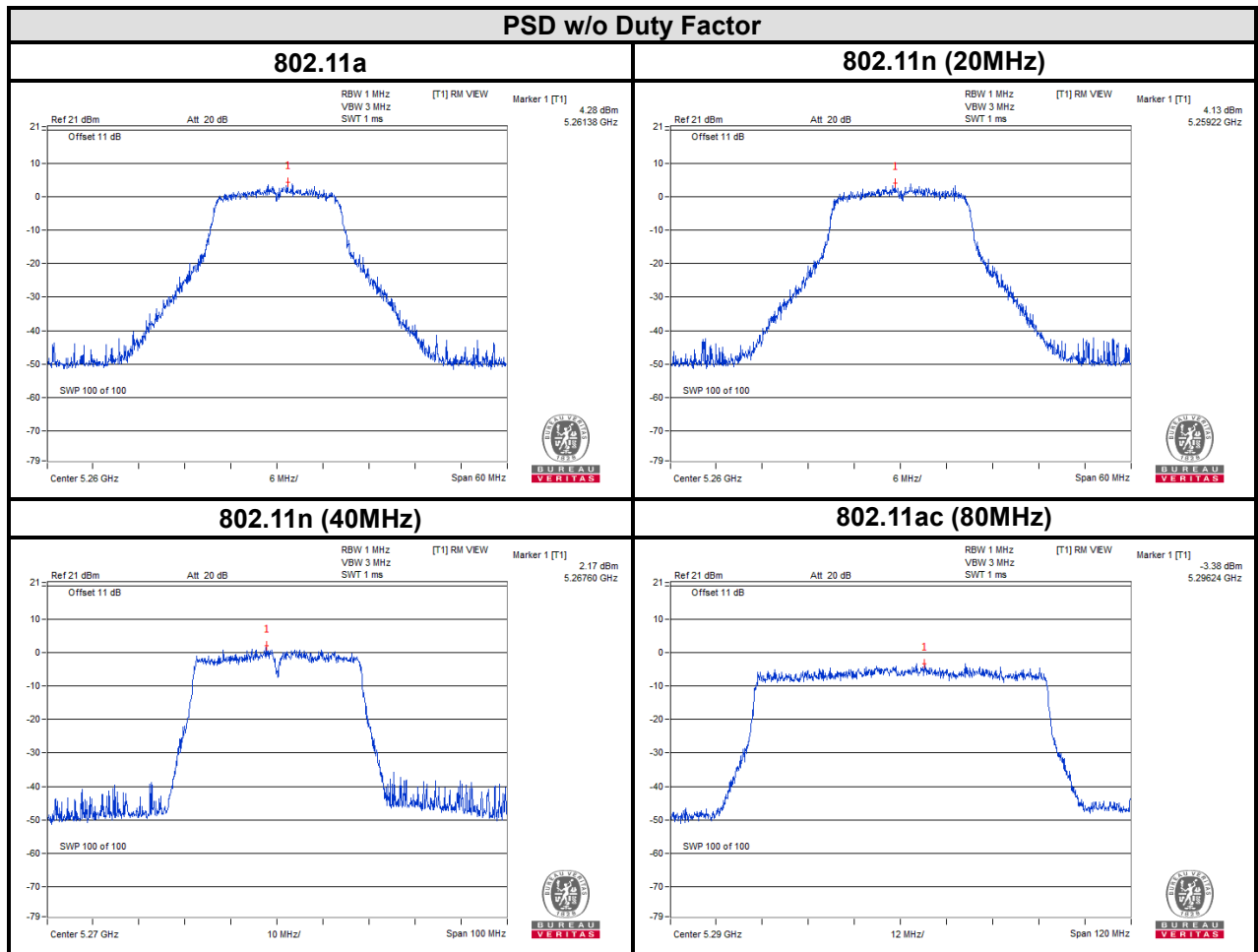




BUREAU
VERITAS

Test Report No.: RF190522W005-8

For 5260~5320MHz

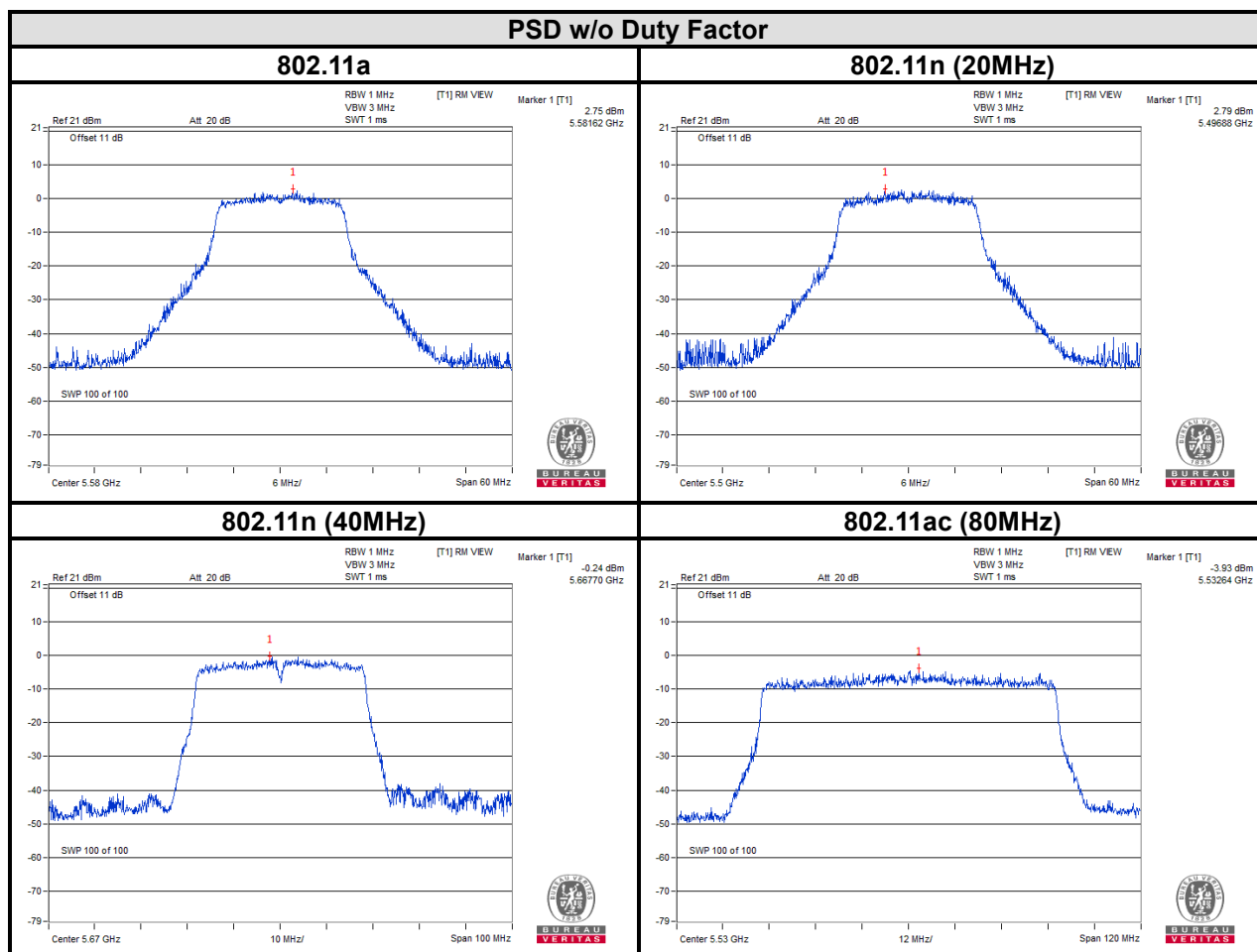




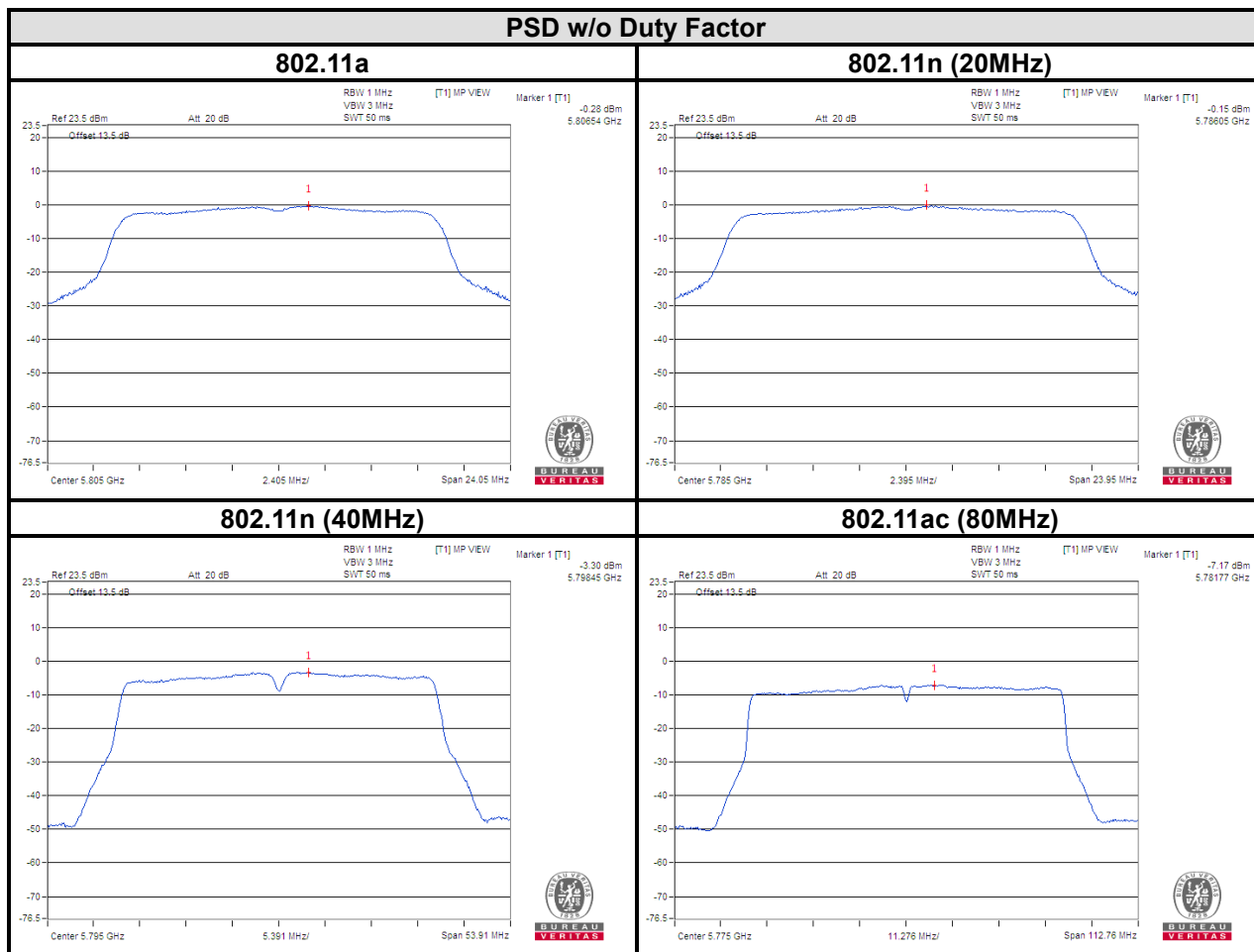
BUREAU
VERITAS

Test Report No.: RF190522W005-8

For 5500~5720MHz



For 5745~5805MHz





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---