

CHANNEL	TX Channel 39	DETECTOR	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz	FUNCTION	Average (AV)

Rg	Frequency [MHz]		AVG Limit [dBµV/m]	But the common of	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,479.760	95.55			7.36	Н	205.4	2
6	2,483.500	33.82	54.00	20.18	7.36	Н	5.6	1
6	2,483.720	33.79	54.00	20.21	7.36	Н	5.6	1

Rg	Frequency [MHz]		PK+ Limit [dBµV/m]	MARKETIN	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,479.540	97.50			7.36	Н	207.7	2
6	2,483.500	46.56	74.00	27.44	7.36	H	355	2
6	2,484.820	46.95	74.00	27.05	7.36	Н	130	2

Rg	Frequency [MHz]	AVG Level [dBµV/m]	The second secon	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,479.980	88.76			7.36	V	80.6	1
6	2,483.500	32.23	54.00	21.77	7.36	V	80.6	1
6	2,483.940	32.09	54.00	21.91	7.36	V	80.6	1

Rg	Frequency [MHz]		PK+ Limit [dBµV/m]		Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,480.200	90.17			7.36	V	78.2	1
6	2,483.500	46.99	74.00	27.01	7.36	V	78.2	1
6	2,492.520	46.91	74.00	27.09	7.37	V	0.9	2

# **REMARKS:**

- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor Margin value = Limit value - Emission Level .
- 2. 2480MHz: Fundamental frequency.

# 3.3 6 dB BANDWIDTH MEASUREMENT

# 3.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

#### 3.3.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Power Meter	ANRITSU	ML2495A	1506002	Feb. 14,23	Feb. 13,24
EXA Signal Analyzer	KEYSIGHT	N9010A-526	MY54510523	Feb. 14,23	Feb. 13,24
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	May.10,23	May.09,24
Power Sensor	ANRITSU	MA2411B	1339352	Feb. 14,23	Feb. 13,24

#### NOTE:

- 1. The calibration interval of the above test instruments is 24 months or 6 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
- 2. The test was performed in RF Oven room.

# 3.3.3 TEST PROCEDURE

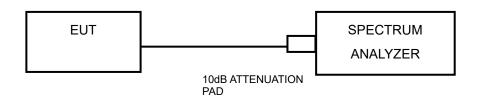
- 1. Set RBW = 100 kHz.
- 2. Set the video bandwidth (VBW) ≥ 3 RBW.
- 3. Detector = Peak.
- 4. Trace mode = max hold.
- 5. Sweep = auto couple.
- 6. Allow the trace to stabilize.
- 7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude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



# 3.3.4 DEVIATION FROM TEST STANDARD

No deviation.

# 3.3.5 TEST SETUP



# 3.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.



# 3.3.7 TEST RESULTS

Please Refer to Appendix1/2 Of this test report.

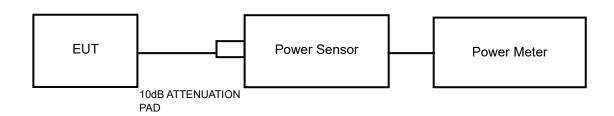


# 3.4 CONDUCTED OUTPUT POWER

# 3.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 2400–2483.5 MHz band: 1 Watt (30dBm)

# 3.4.2 TEST SETUP



# 3.4.3 TEST INSTRUMENTS

Refer to section 3.3.2 to get information of above instrument.

#### 3.4.4 TEST PROCEDURES

A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the power level.

#### 3.4.5 DEVIATION FROM TEST STANDARD

No deviation.

#### 3.4.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.



# 3.4.7 TEST RESULTS

# 3.4.7.1 MAXIMUM PEAK OUTPUT POWER

Please Refer to Appendix1/2 Of this test report.



# 3.4.7.2 AVERAGE OUTPUT POWER (FOR REFERENCE)

The average power sensor was used on the output port of the EUT. A power meter was used to read the response of the power sensor. Record the power level.

Please Refer to Appendix1/2 Of this test report.

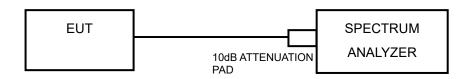


#### 3.5 POWER SPECTRAL DENSITY MEASUREMENT

#### 3.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm/3KHz.

#### 3.5.2 TEST SETUP



# 3.5.3 TEST INSTRUMENTS

Refer to section 3.3.2 to get information of above instrument.

# 3.5.4 TEST PROCEDURE

- 1. Set the span to 1.5 times the DTS bandwidth
- 2. Set the RBW = 3 kHz, VBW  $\geq 3 \text{ x RBW}$ , Detector = peak.
- 3. Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
- 4. Use the peak marker function to determine the maximum amplitude level.

#### 3.5.5 DEVIATION FROM TEST STANDARD

No deviation.

# 3.5.6 EUT OPERATING CONDITION

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.



# 3.5.7 TEST RESULTS

Please Refer to Appendix1/2 Of this test report.

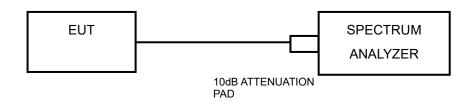


# 3.6 OUT OF BAND EMISSION MEASUREMENT

# 3.6.1 LIMITS OF OUT OF BAND EMISSION MEASUREMENT

Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

# 3.6.2 TEST SETUP



# 3.6.3 TEST INSTRUMENTS

Refer to section 3.3.2 to get information of above instrument.

# 3.6.4 TEST PROCEDURE

#### **MEASUREMENT PROCEDURE REF**

- 1. Set the RBW = 100 kHz.
- 2. Set the VBW ≥ 300 kHz.
- 3. Detector = peak.
- 4. Sweep time = auto couple.
- 5. Trace mode = max hold.
- 6. Allow trace to fully stabilize.
- 7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.



#### **MEASUREMENT PROCEDURE OOBE**

- 1. Set RBW = 100 kHz.
- 2. Set VBW ≥ 300 kHz.
- 3. Set span to encompass the spectrum to be examined
- 4. Detector = peak.
- 5. Trace Mode = max hold.
- 6. Sweep = auto couple.

#### 3.6.5 DEVIATION FROM TEST STANDARD

No deviation.

# 3.6.6 EUT OPERATING CONDITION

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

# 3.6.7 TEST RESULTS

The spectrum plots are attached on the following images. D1 line indicates the highest level. D2 line indicates the 20dB offset below D1. It shows compliance to the requirement.

Please Refer to Appendix1/2 Of this test report.



# 3.7 ANTENNA REQUIREMENTS

# 3.7.1 STANDARD APPLICABLE

If transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

# 3.7.2 ANTENNA CONNECTED CONSTRUCTION

An embedded-in antenna design is used.

#### 3.7.3 ANTENNA GAIN

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit and PSD limit.



# 4 PHOTOGRAPHS OF THE TEST CONFIGURATION

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



# 5 MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.



# 6 APPENDIX 1: WLAN DTS BANDWIDTH

# TEST RESULT

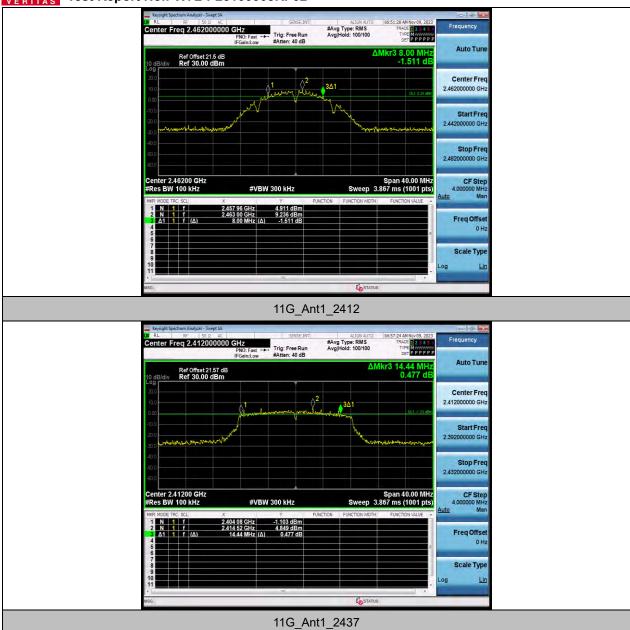
TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
		2412	7.600	2408.440	2416.040	0.5	PASS
11B	Ant1	2437	7.720	2433.000	2440.720	0.5	PASS
		2462	8.000	2457.960	2465.960	0.5	PASS
	Ant1	2412	14.440	2404.080	2418.520	0.5	PASS
11G		2437	15.400	2429.720	2445.120	0.5	PASS
		2462	15.440	2454.120	2469.560	0.5	PASS
		2412	15.000	2404.480	2419.480	0.5	PASS
11N20SISO	Ant1	2437	15.120	2429.440	2444.560	0.5	PASS
		2462	16.000	2453.480	2469.480	0.5	PASS



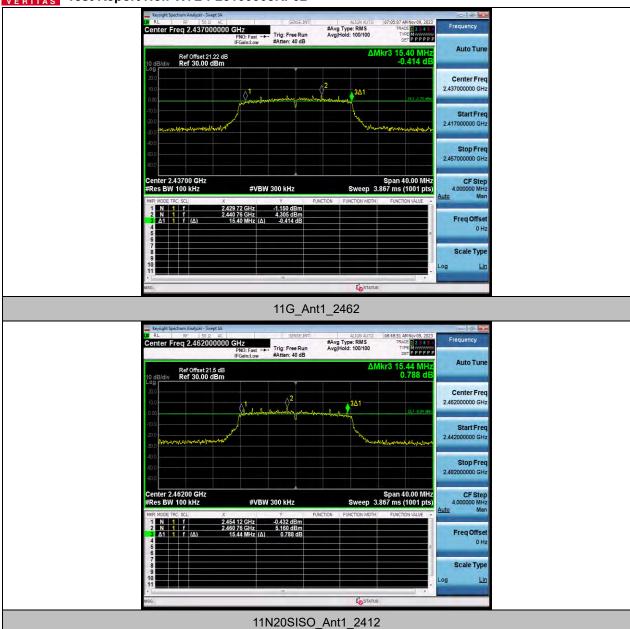
# **TEST GRAPHS**



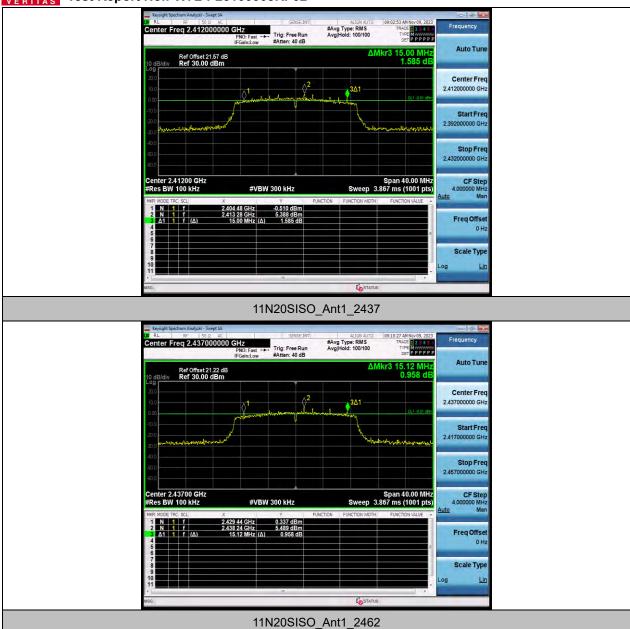


















# OCCUPIED CHANNEL BANDWIDTH TEST RESULT

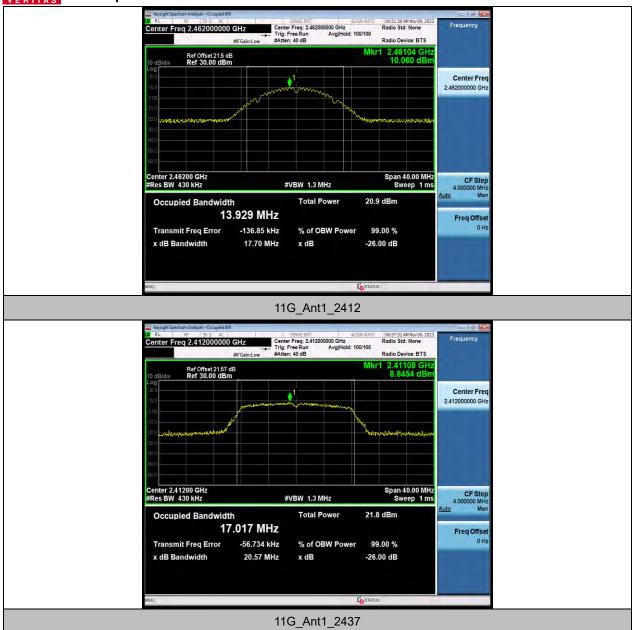
TestMode	Antenna	Channel Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
		2412	13.721	2405.0763	2418.7973		
11B	Ant1	2437	13.755	2430.2336	2443.9886		
		2462	13.929	2454.8987	2468.8277		
	Ant1	2412	17.017	2403.4348	2420.4518		
11G		2437	17.090	2428.5573	2445.6473		
		2462	17.128	2453.3337	2470.4617		
		2412	17.928	2402.9932	2420.9212		
11N20SISO	Ant1	2437	17.994	2428.0461	2446.0401		
		2462	17.975	2452.9103	2470.8853		



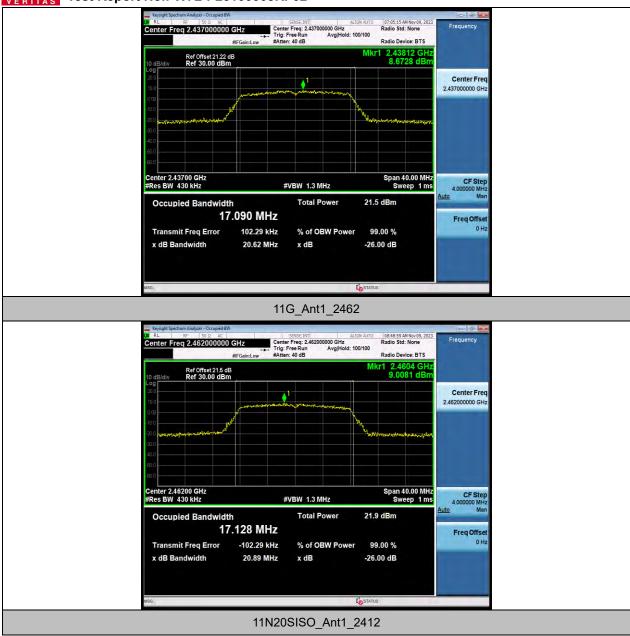
# **TEST GRAPHS**



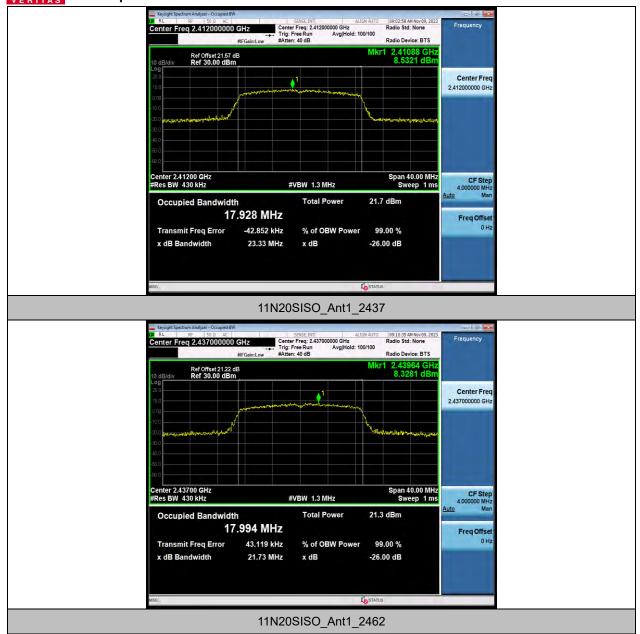


















# MAXIMUM CONDUCTED OUTPUT POWER TEST RESULT

Test Mode	TX Mod.	Freq. [MHz]	Ant.	Average power [dBm]	Peak power [dBm]	Peak power [mw]	Conducted Power Limit [dBm]	EIRP power [dBm]	EIRP power [mw]	EIRP Limit [dBm]	Verdict	Power Setting
		2412	ANT1	17.07	19.47	88.51	≤30.00	21.47	140.28	≤36.00	PASS	17
11B	SISO	2437	ANT1	17.2	19.54	89.95	≤30.00	21.54	142.56	≤36.00	PASS	17
		2462	ANT1	17.27	19.59	90.99	≤30.00	21.59	144.21	≤36.00	PASS	17
		2412	ANT1	15.25	17.57	57.15	≤30.00	19.57	90.57	≤36.00	PASS	15
11G	SISO	2437	ANT1	15.37	17.66	58.34	≤30.00	19.66	92.47	≤36.00	PASS	15
		2462	ANT1	15.39	17.71	59.02	≤30.00	19.71	93.54	≤36.00	PASS	15
		2412	ANT1	14.77	24.19	262.42	≤30.00	26.19	415.91	≤36.00	PASS	15
11N20	SISO	2437	ANT1	15.0	24.61	289.07	≤30.00	26.61	458.14	≤36.00	PASS	15
		2462	ANT1	14.93	24.45	278.61	≤30.00	26.45	441.57	≤36.00	PASS	15
Note:T	he Δνα	arage n	OWER W	ith duty o	vole fac	rtor						

Note: The Average power with duty cycle factor.

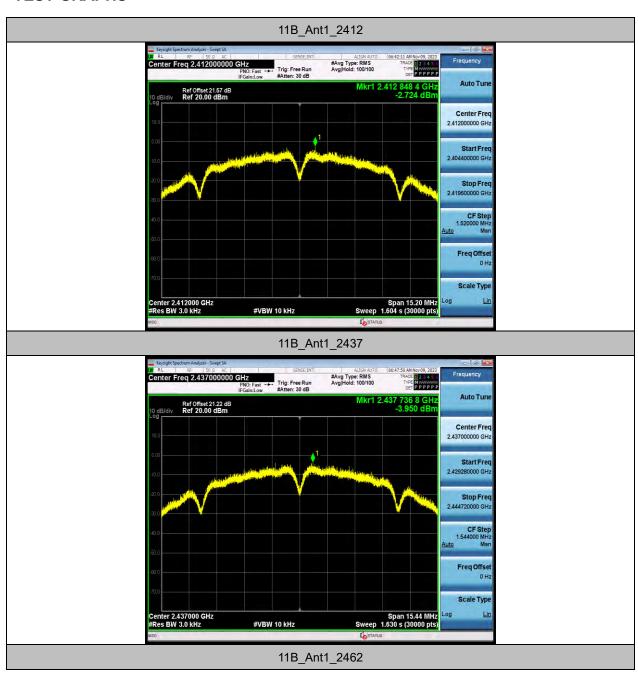


# MAXIMUM POWER SPECTRAL DENSITY TEST RESULT

TestMode	Antenna	Frequency[MHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
		2412	-2.72	≤8.00	PASS
11B	Ant1	2437	-3.95	≤8.00	PASS
		2462	-2.67	≤8.00	PASS
	Ant1	2412	-6.84	≤8.00	PASS
11G		2437	-8.54	≤8.00	PASS
		2462	-7.65	≤8.00	PASS
		2412	-7.50	≤8.00	PASS
11N20SISO	Ant1	2437	-7.13	≤8.00	PASS
		2462	-7.43	≤8.00	PASS



# **TEST GRAPHS**





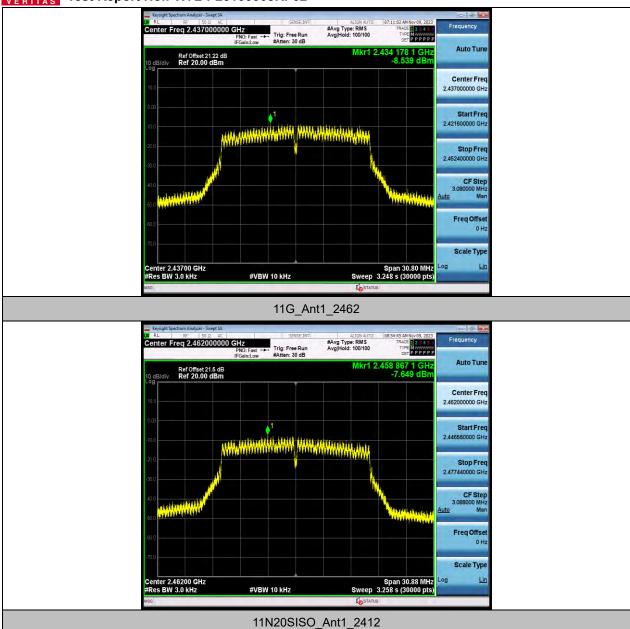


11G\_Ant1\_2437

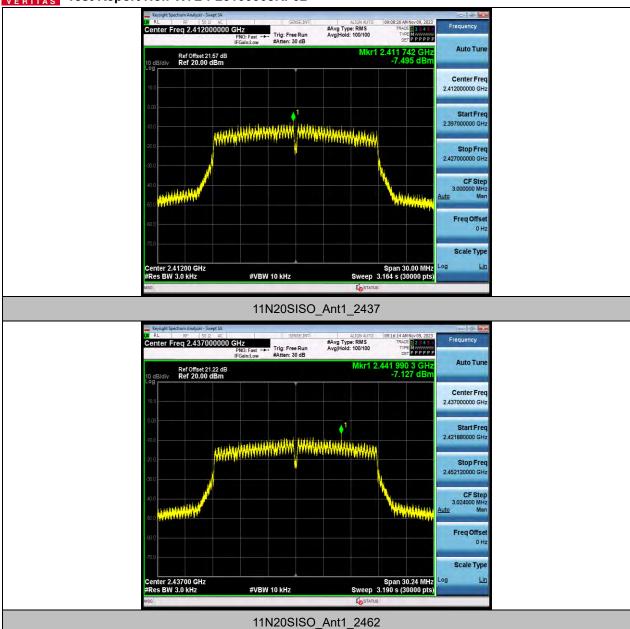
#VBW 10 kHz

Span 28.88 MHz Sweep 3.046 s (30000 pts)













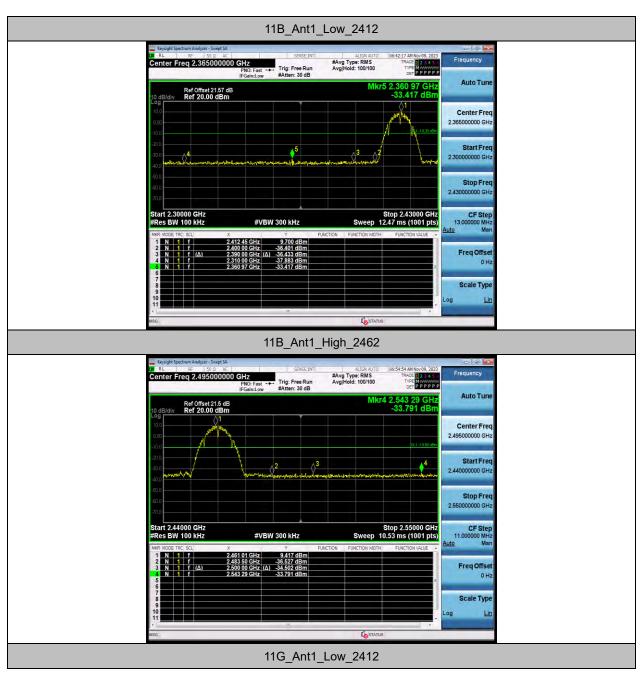


# BAND EDGE MEASUREMENTS TEST RESULT

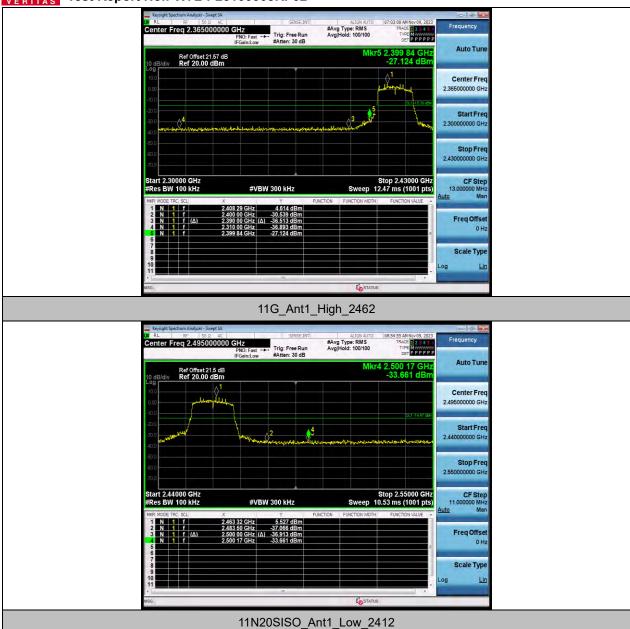
TestMode	Antenna	ChName	Frequency[MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	9.70	-33.42	≤-10.3	PASS
IID	Anti	High	2462	9.42	-33.79	≤-10.58	PASS
11G	A 14	Low	2412	4.61	-27.12	≤-15.39	PASS
116	Ant1	High	2462	5.53	-33.66	≤-14.47	PASS
11N20SISO	•	Low	2412	5.78	-27.81	≤-14.23	PASS
1111/205150	Ant1	High	2462	5.12	-33.25	≤-14.88	PASS



# **TEST GRAPHS**











#### 11N20SISO\_Ant1\_High\_2462





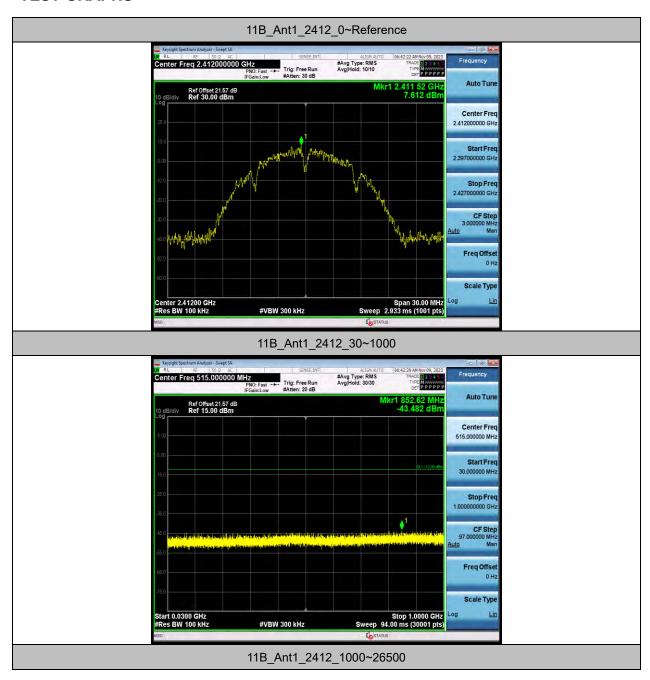
VERITAS Test Report No.: W7L-P23100008RF02

# CONDUCTED SPURIOUS EMISSION TEST RESULT

TestMode	Antenna	Frequency[MHz]	FreqRange	RefLevel	Result	Limit	Verdict	
			[Mhz]	[dBm]	[dBm]	[dBm]		
11B	Ant1	2412	Reference	7.61	7.61		PASS	
			30~1000	7.61	-43.48	≤-12.39	PASS	
			1000~26500	7.61	-24.36	≤-12.39	PASS	
		2437	Reference	8.68	8.68		PASS	
			30~1000	8.68	-43.43	≤-11.32	PASS	
			1000~26500	8.68	-24.26	≤-11.32	PASS	
		2462	Reference	9.01	9.01		PASS	
			30~1000	9.01	-42.68	≤-10.99	PASS	
			1000~26500	9.01	-23.76	≤-10.99	PASS	
11G	Ant1	2412	Reference	2.02	2.02		PASS	
			30~1000	2.02	-42.81	≤-17.98	PASS	
			1000~26500	2.02	-22.77	≤-17.98	PASS	
		2437	Reference	4.57	4.57		PASS	
			30~1000	4.57	-43.3	≤-15.43	PASS	
			1000~26500	4.57	-23.58	≤-15.43	PASS	
		2462	Reference	2.43	2.43		PASS	
			30~1000	2.43	-43.33	≤-17.57	PASS	
			1000~26500	2.43	-23.89	≤-17.57	PASS	
11N20SISO	Ant1	2412	Reference	1.83	1.83		PASS	
			30~1000	1.83	-42.65	≤-18.17	PASS	
			1000~26500	1.83	-24	≤-18.17	PASS	
		2437	Reference	1.18	1.18		PASS	
			30~1000	1.18	-43.27	≤-18.82	PASS	
			1000~26500	1.18	-23.84	≤-18.82	PASS	
		2462	Reference	2.73	2.73		PASS	
			30~1000	2.73	-42.19	≤-17.27	PASS	
			1000~26500	2.73	-23.86	≤-17.27	PASS	



#### **TEST GRAPHS**





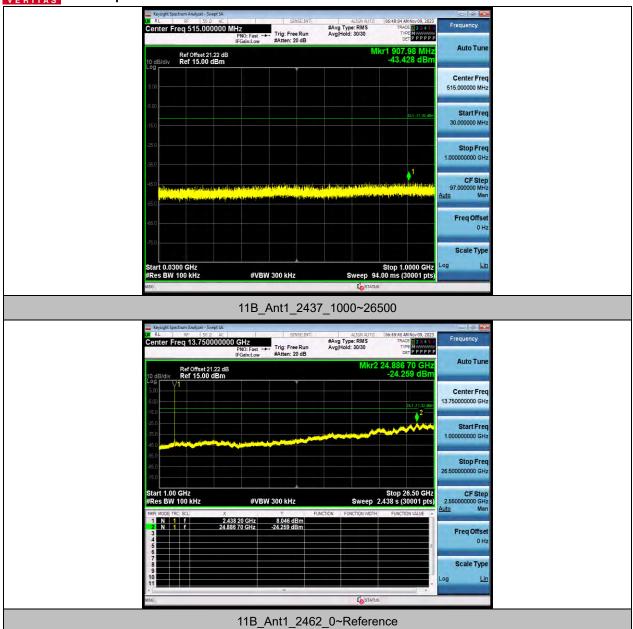


#### 11B\_Ant1\_2437\_0~Reference

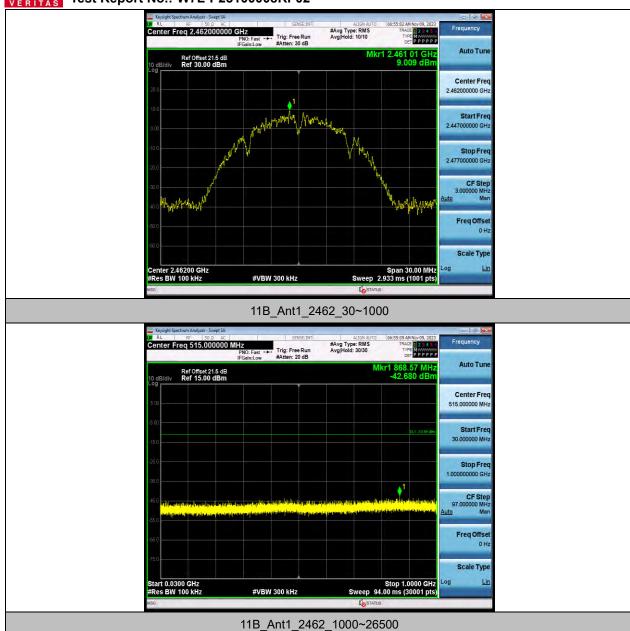


11B\_Ant1\_2437\_30~1000











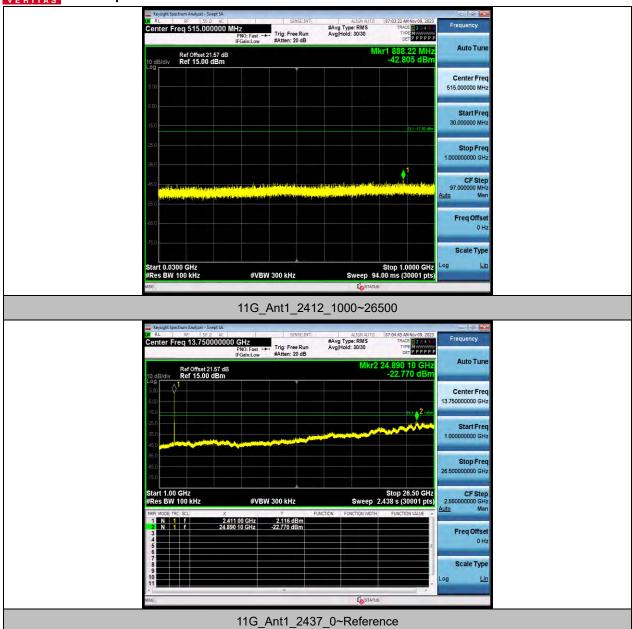


#### 11G\_Ant1\_2412\_0~Reference



11G\_Ant1\_2412\_30~1000

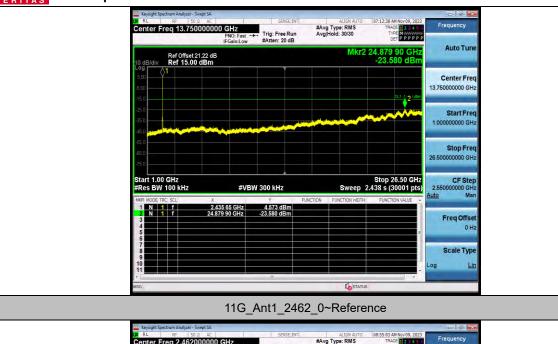








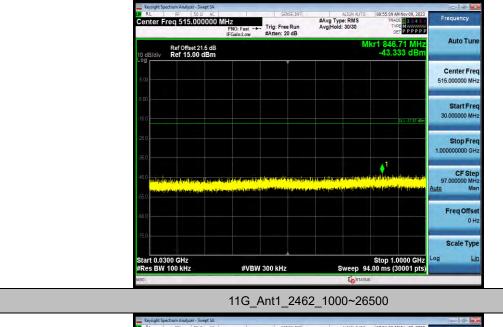






11G\_Ant1\_2462\_30~1000







11N20SISO\_Ant1\_2412\_0~Reference







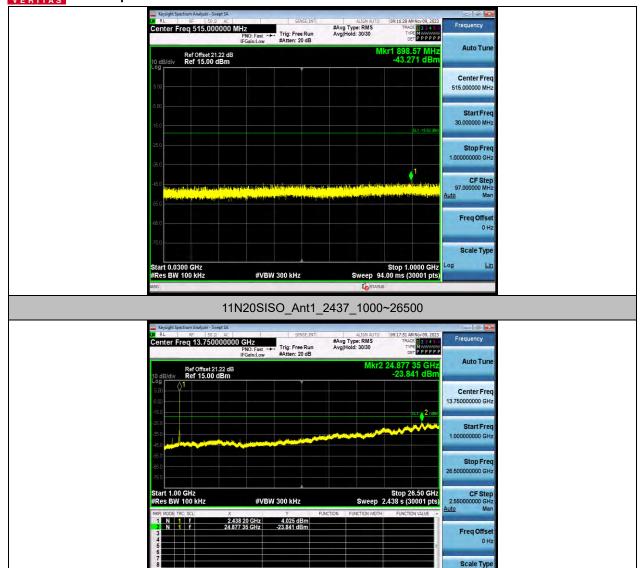


#### 11N20SISO\_Ant1\_2437\_0~Reference



11N20SISO\_Ant1\_2437\_30~1000



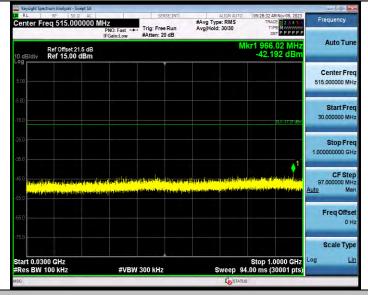


11N20SISO\_Ant1\_2462\_0~Reference





#### 11N20SISO\_Ant1\_2462\_30~1000



11N20SISO\_Ant1\_2462\_1000~26500



### VERITAS Test Report No.: W7L-P23100008RF02





VERITAS Test Report No.: W7L-P23100008RF02

## DUTY CYCLE TEST RESULT

TestMode	Antenna	Frequency[MHz]	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Factor
11B	Ant1	2412	8.39	8.43	99.53	0.02
		2437	8.39	8.43	99.53	0.02
		2462	8.39	8.43	99.53	0.02
11G	Ant1	2412	1.39	1.43	97.20	0.12
		2437	1.39	1.43	97.20	0.13
		2462	1.39	1.43	97.20	0.12
11N20SISO	Ant1	2412	1.30	1.35	96.30	0.16
		2437	1.30	1.34	97.01	0.13
		2462	1.30	1.35	96.30	0.16



#### **TEST GRAPHS**

