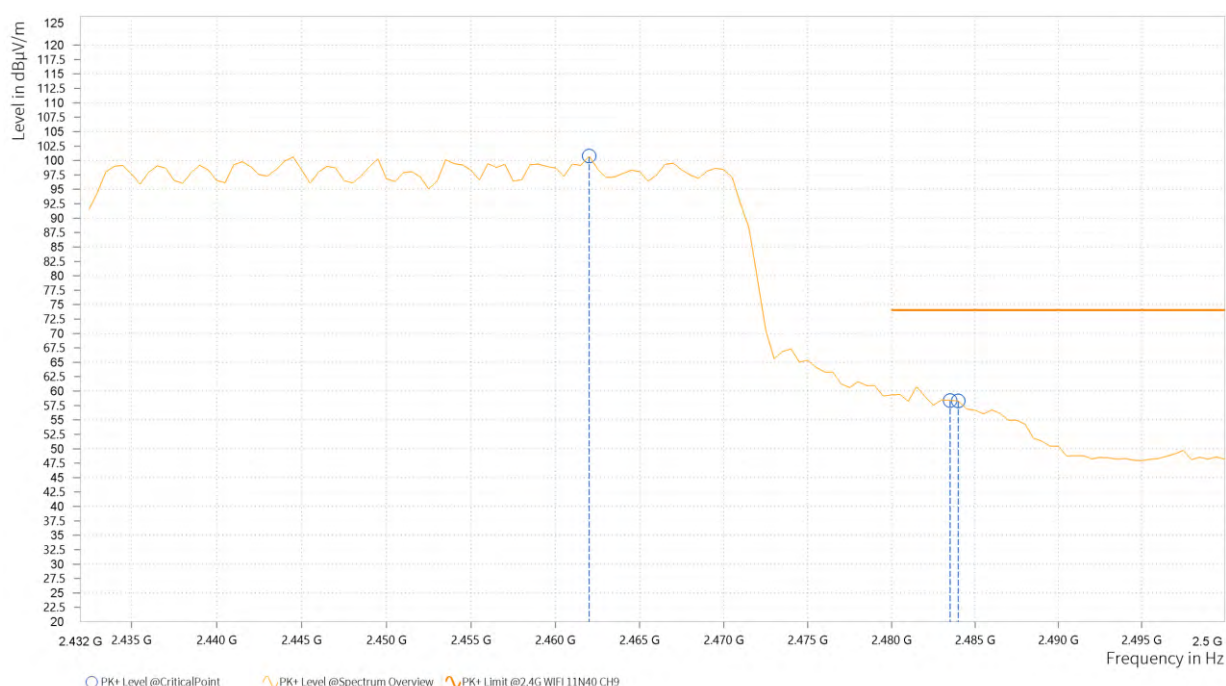


Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	2,460.500	91.16			7.40	H	5.6	1
4	2,483.500	45.91	54.00	8.09	7.36	H	63	2
4	2,486.000	45.54	54.00	8.46	7.36	H	63	2



ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	2,462.000	100.75			7.39	V	141.5	1
4	2,483.500	58.39	74.00	15.61	7.36	V	92.5	1
4	2,484.000	58.30	74.00	15.70	7.36	V	141.5	1



Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	2,442.000	83.30			7.40	V	143.9	1
4	2,483.500	38.46	54.00	15.54	7.36	V	302.9	1
4	2,486.500	38.17	54.00	15.83	7.36	V	147.8	2



REMARKS:

- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Limit value–Emission level.
- 2422MHz: Fundamental frequency.



Test Report No.: PSU-QSU2306120115RF12

BELOW 1GHz WORST-CASE DATA:

30 MHz – 1GHz data:

BT-LE _1M

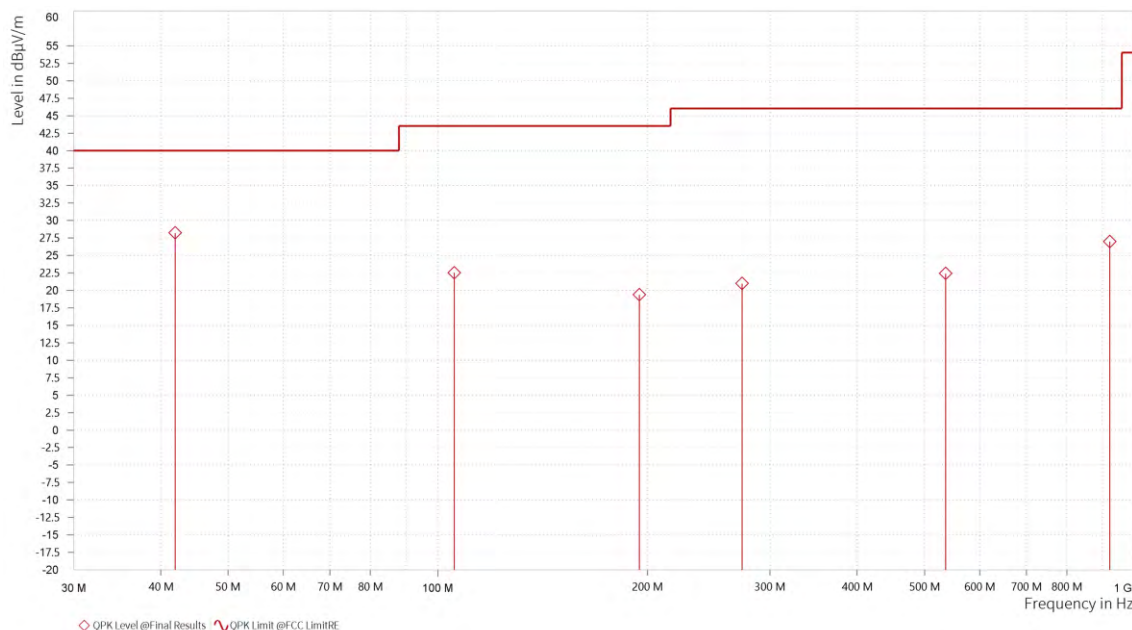
CHANNEL	TX Channel 19	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+: QPK Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	41.980	33.46	40.00	6.54	-7.71	H	257.6	1
1	105.612	28.16	43.50	15.34	-9.03	H	1	1
1	194.803	25.05	43.50	18.45	-8.90	H	102.2	2
1	273.567	27.01	46.00	18.99	-6.50	H	257.6	1
1	535.904	27.95	46.00	18.05	-3.13	H	359	1
1	922.691	32.95	46.00	13.05	3.05	H	354.8	2

REMARKS:

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



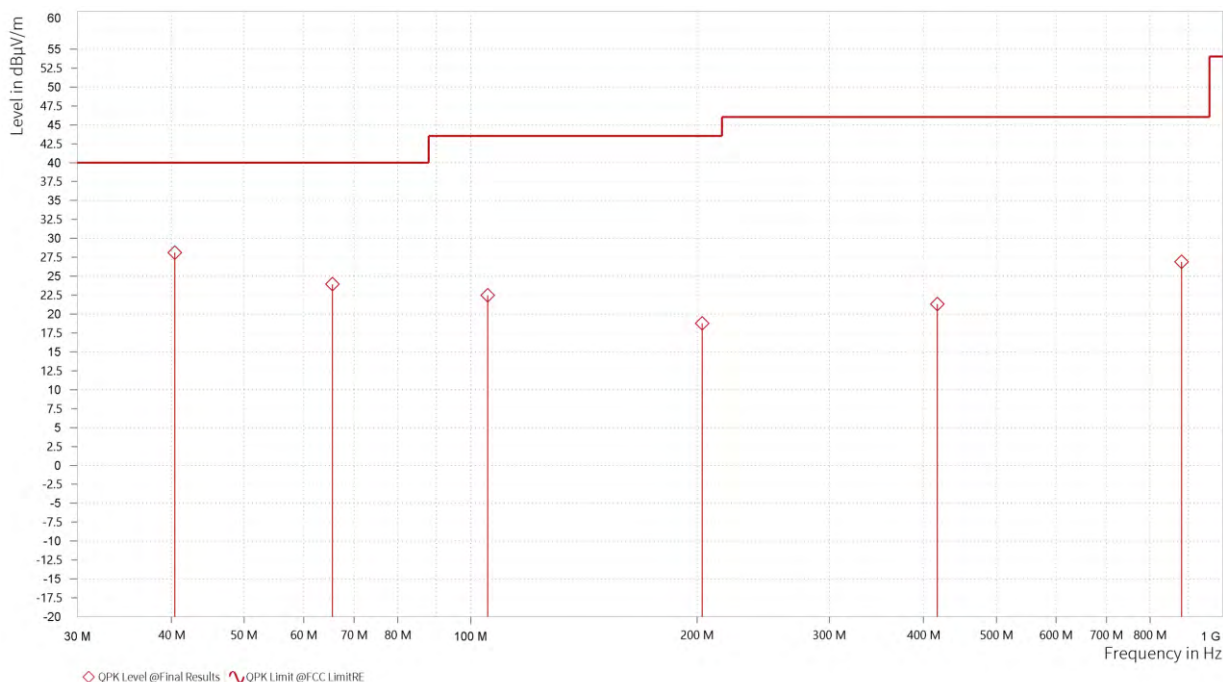
CHANNEL	TX Channel 19	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+: QPK Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	40.428	32.90	40.00	7.10	-8.28	V	9	1
1	65.502	30.50	40.00	9.50	-9.89	V	359	2
1	105.369	27.90	43.50	15.60	-9.02	V	278.1	1
1	203.145	24.51	43.50	18.99	-8.54	V	1	2
1	417.467	28.69	46.00	17.31	-3.39	V	1	1
1	881.321	33.17	46.00	12.83	2.62	V	354.8	2

REMARKS:

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





ABOVE 1GHz TEST DATA

Note: 1. For radiated emissions testing , the full testing range of different modes have been scanned , only the worst case harmonic data is reported in the sheet.

2. All other emissions were greater than 20dB below the limit was not recorded

BT-LE _1M

CHANNEL	TX Channel 0	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dB μ V/m]	PK+ Limit [dB μ V/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
3	2,402.300	106.46			6.59	H	170	2
5	2,379.350	43.93	74.00	30.07	6.67	H	140.6	1
5	2,390.000	42.76	74.00	31.24	6.75	H	170.3	2

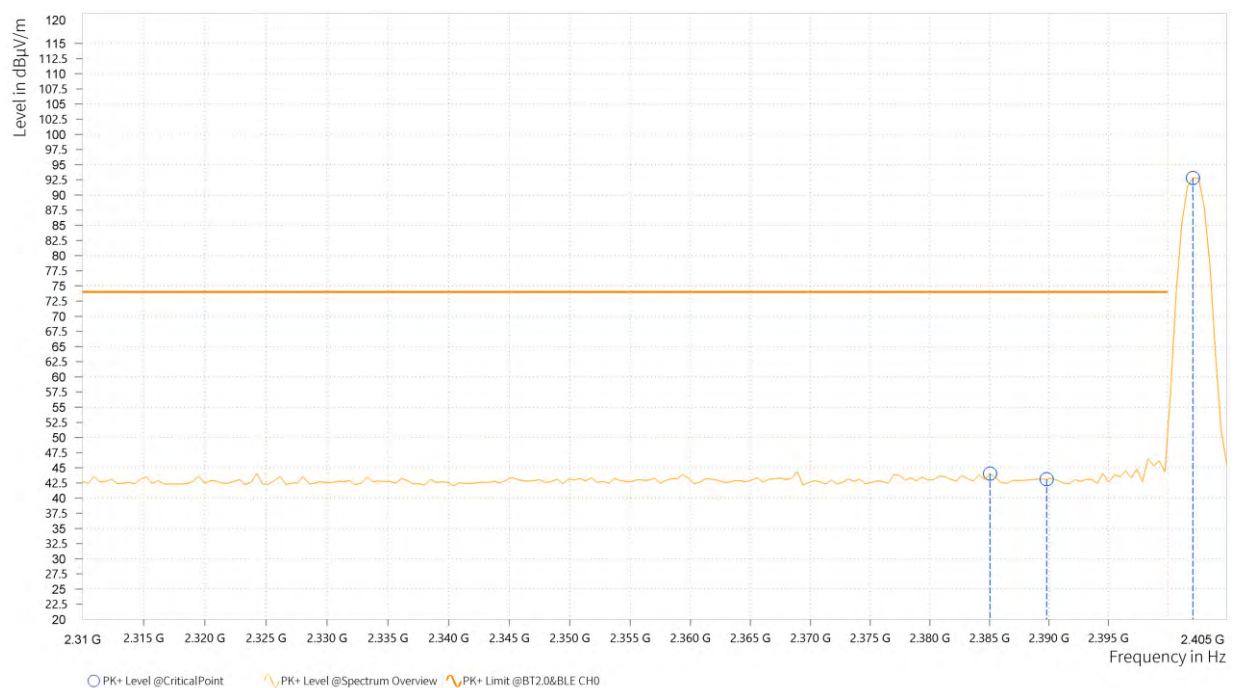


Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	2,332.800	30.46	54.00	23.54	6.54	H	0.9	2
5	2,390.000	30.86	54.00	23.14	6.75	H	123.8	2
5	2,402.150	95.83			6.83	H	5.2	1

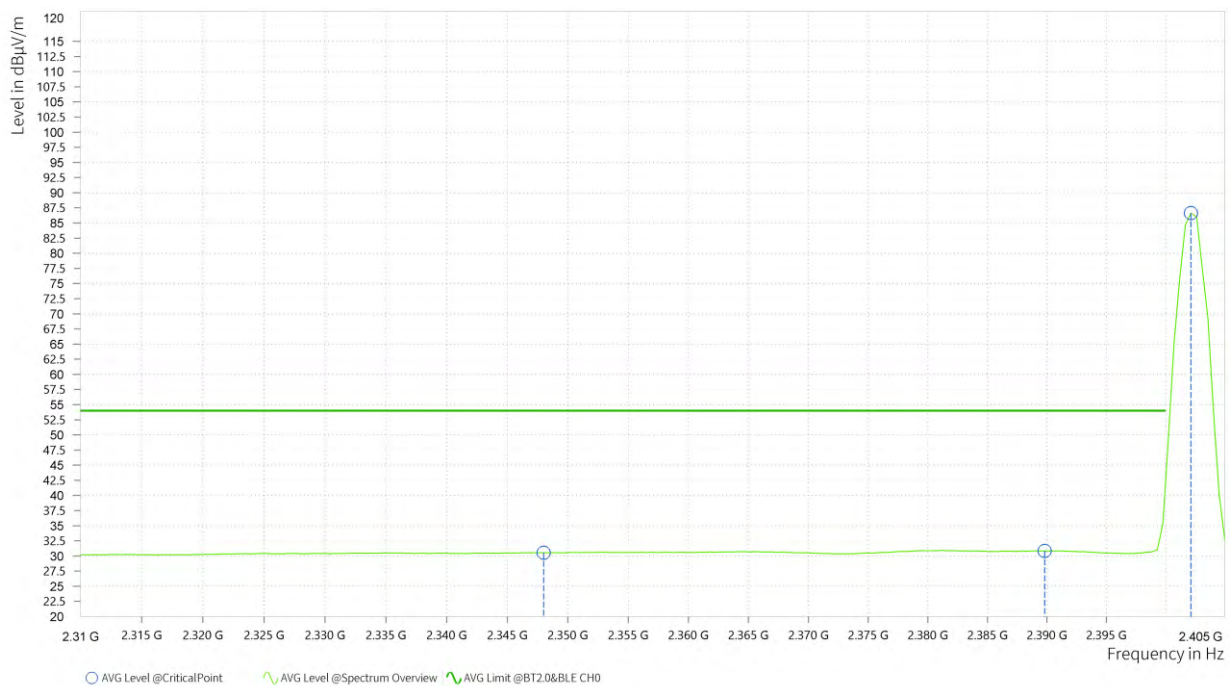


ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	2,385.050	44.06	74.00	29.94	6.71	V	345.8	1
5	2,390.000	43.11	74.00	30.89	6.75	V	170.3	2
5	2,402.150	92.80			6.83	V	218.2	2



Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	2,348.000	30.53	54.00	23.47	6.53	V	359	1
5	2,390.000	30.85	54.00	23.15	6.75	V	211	2
5	2,402.150	86.64			6.83	V	46.1	1



REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Limit value–Emission level.
2. 2402MHz: Fundamental frequency.

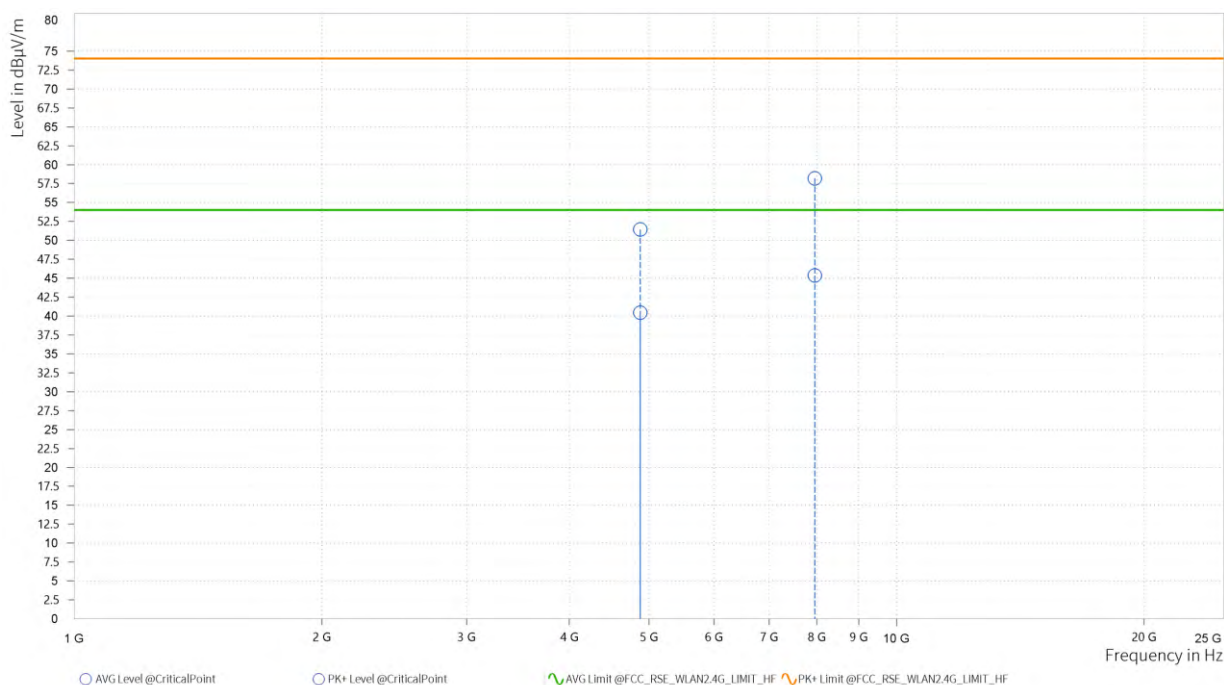


Test Report No.: PSU-QSU2306120115RF12

CHANNEL	TX Channel 19	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

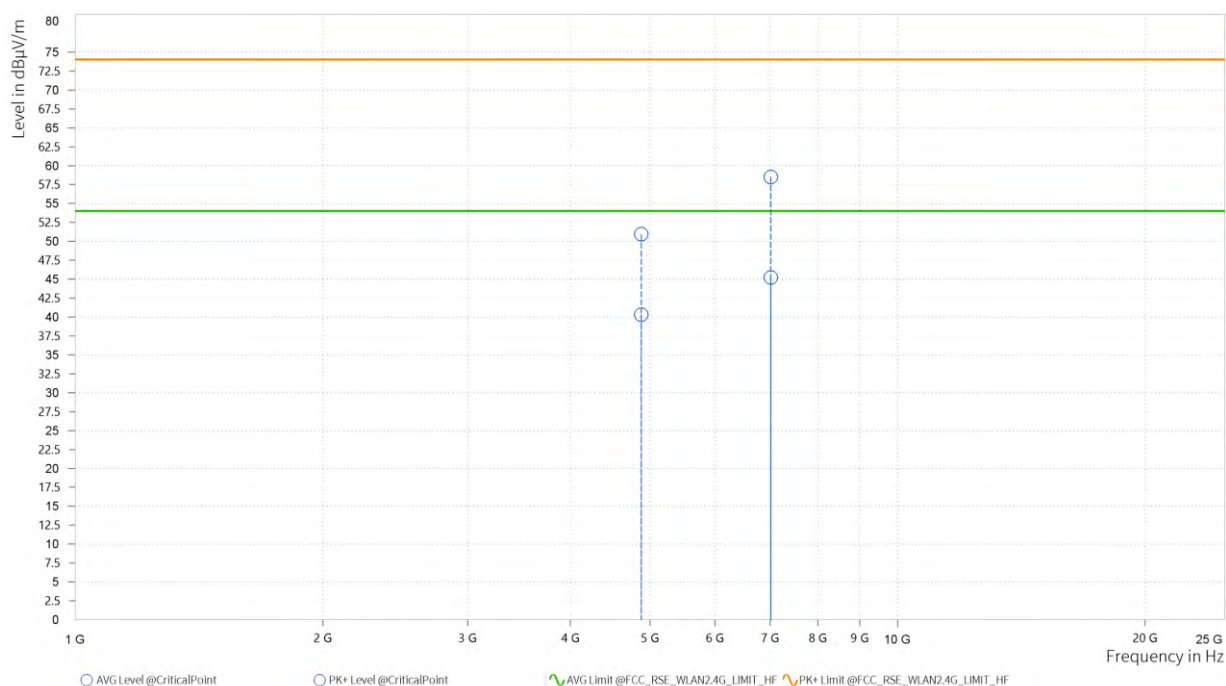
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	4,880.000	51.44	74.00	22.56	40.43	54.00	13.57	15.52	H	359	2
2	7,956.500	58.20	74.00	15.80	45.34	54.00	8.66	22.61	H	319.7	1



ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	4,880.000	50.94	74.00	23.06	40.31	54.00	13.69	15.52	V	91.4	1
2	7,014.000	58.52	74.00	15.48	45.22	54.00	8.78	21.62	V	359.1	2



REMARKS:

- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Limit value–Emission level.
- 2440MHz: Fundamental frequency.

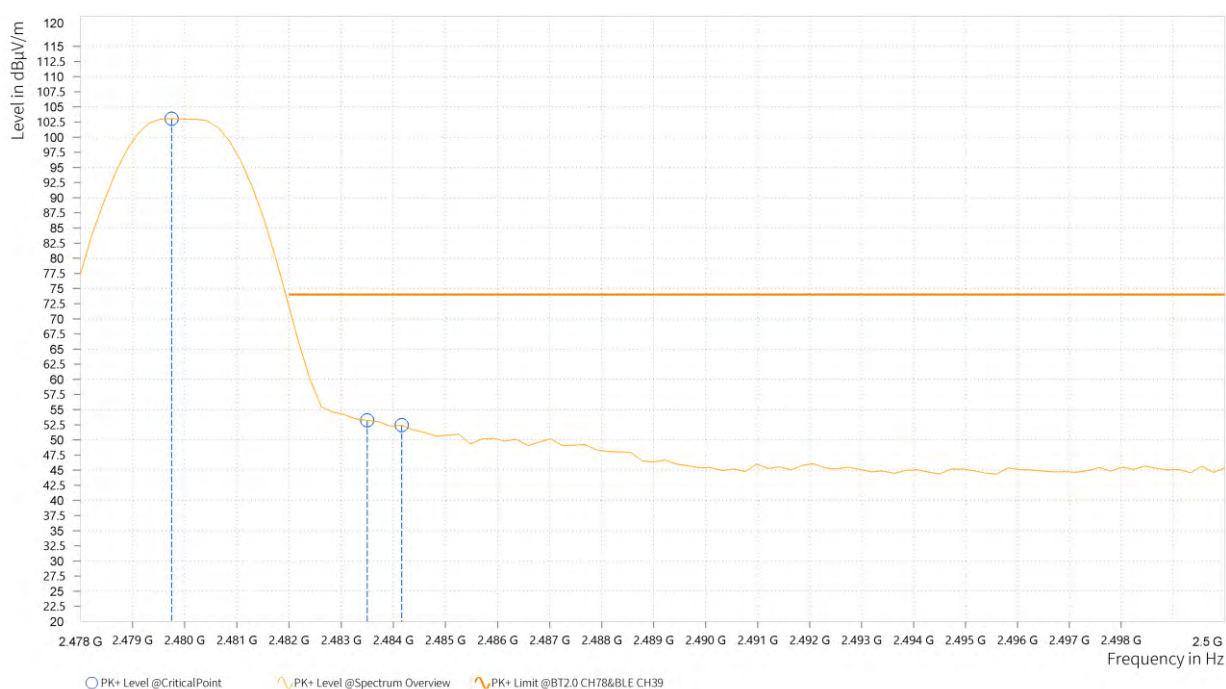


Test Report No.: PSU-QSU2306120115RF12

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	2,479.748	103.05			6.72	H	21	1
6	2,483.500	53.22	74.00	20.78	6.74	H	5.1	1
6	2,484.160	52.42	74.00	21.58	6.74	H	5.1	1

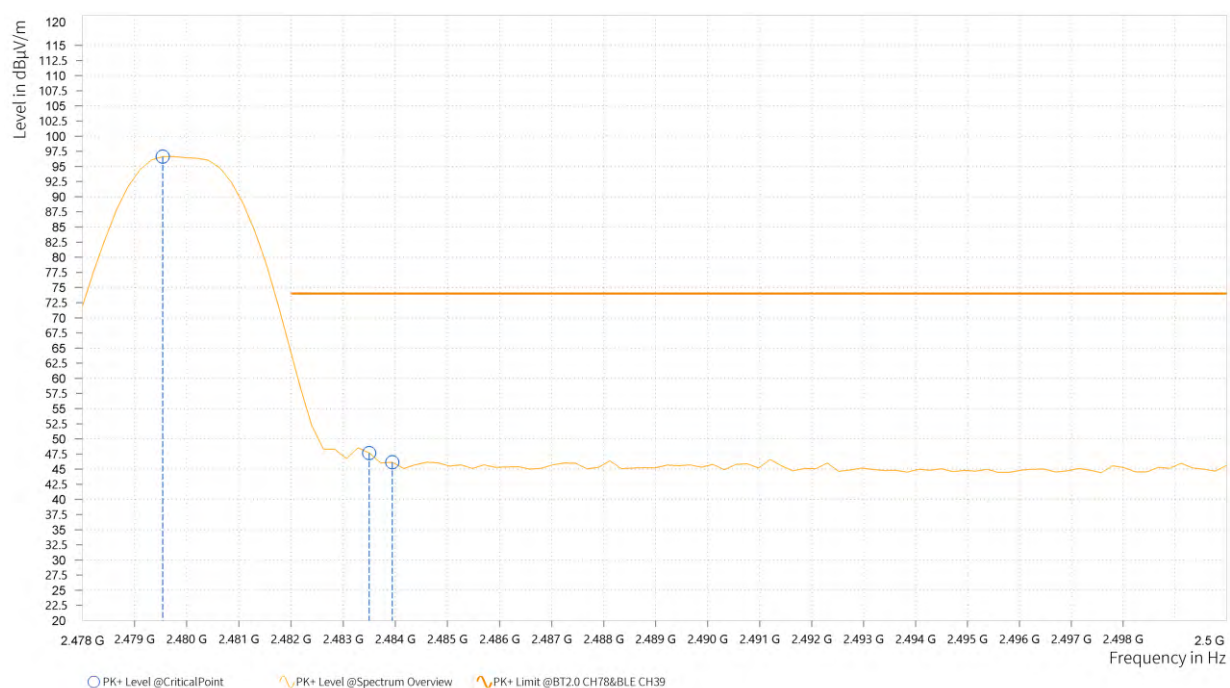


Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,479.980	97.98			6.73	H	357.4	1
6	2,483.500	32.71	54.00	21.29	6.74	H	187.2	1
6	2,484.380	32.30	54.00	21.70	6.74	H	187.2	1

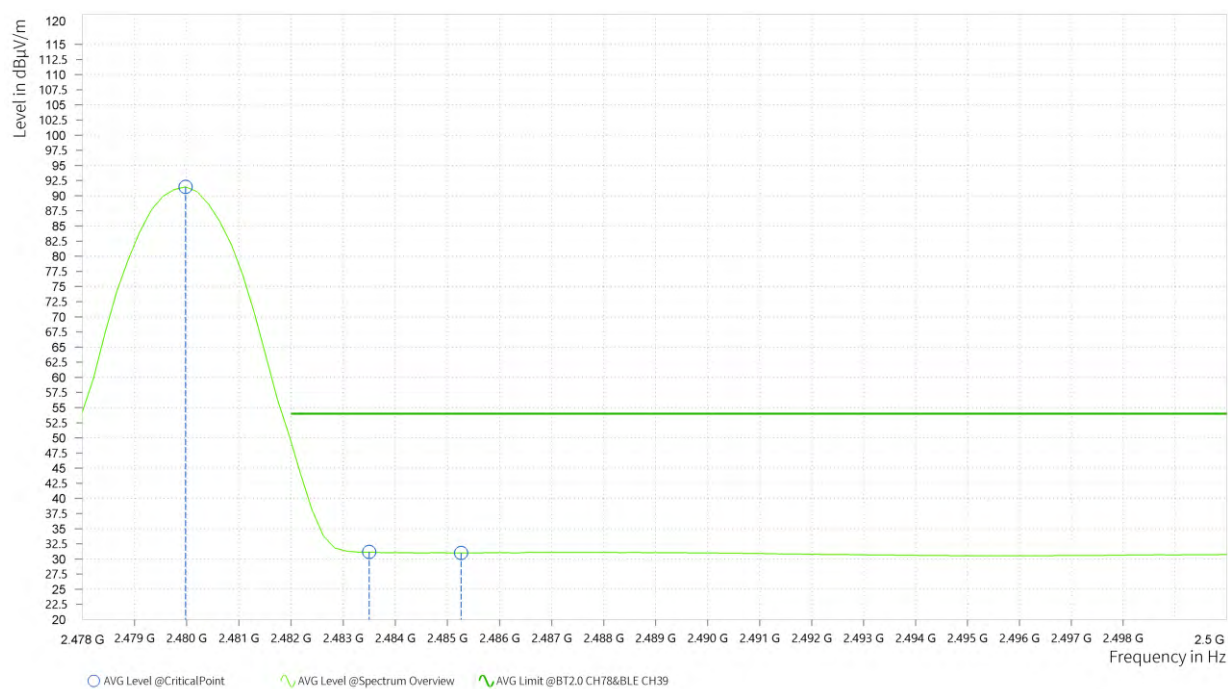


ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,479.540	96.61			6.72	V	125	2
6	2,483.500	47.67	74.00	26.33	6.74	V	125	2
6	2,483.940	46.13	74.00	27.87	6.74	V	125	2



Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,479.980	91.46			6.73	V	317.4	2
6	2,483.500	31.14	54.00	22.86	6.74	V	317.4	2
6	2,485.260	30.98	54.00	23.02	6.75	V	317.4	2



REMARKS:

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



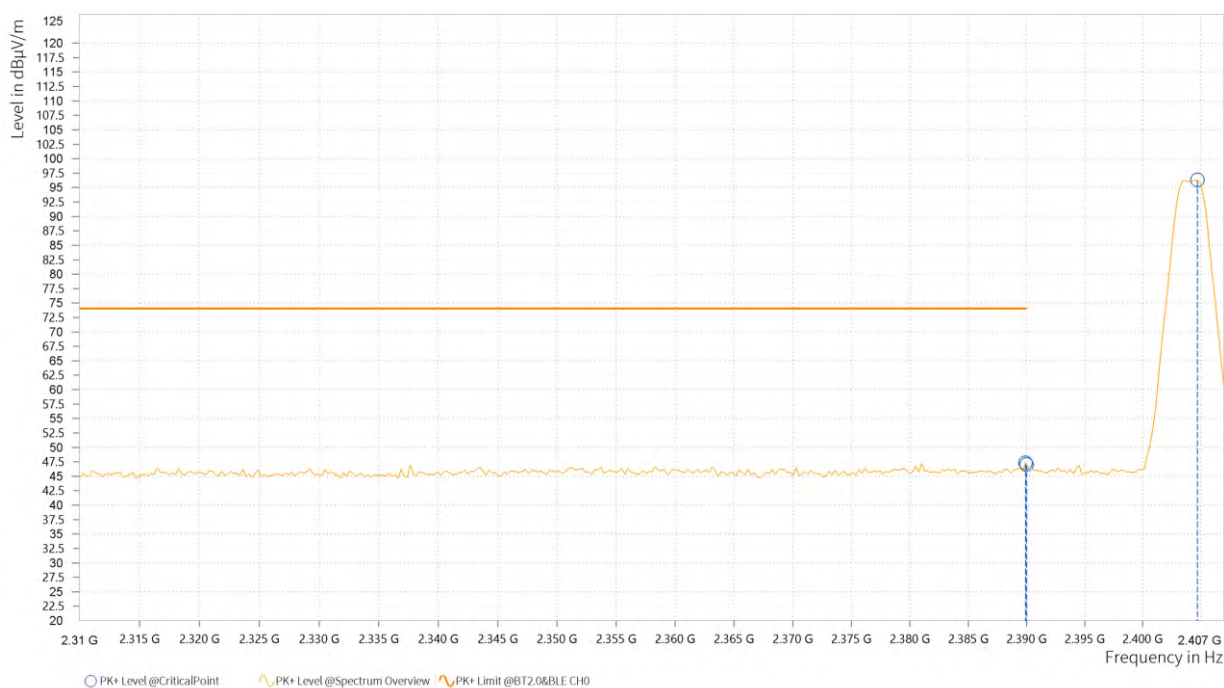
Test Report No.: PSU-QSU2306120115RF12

BT-LE_2M

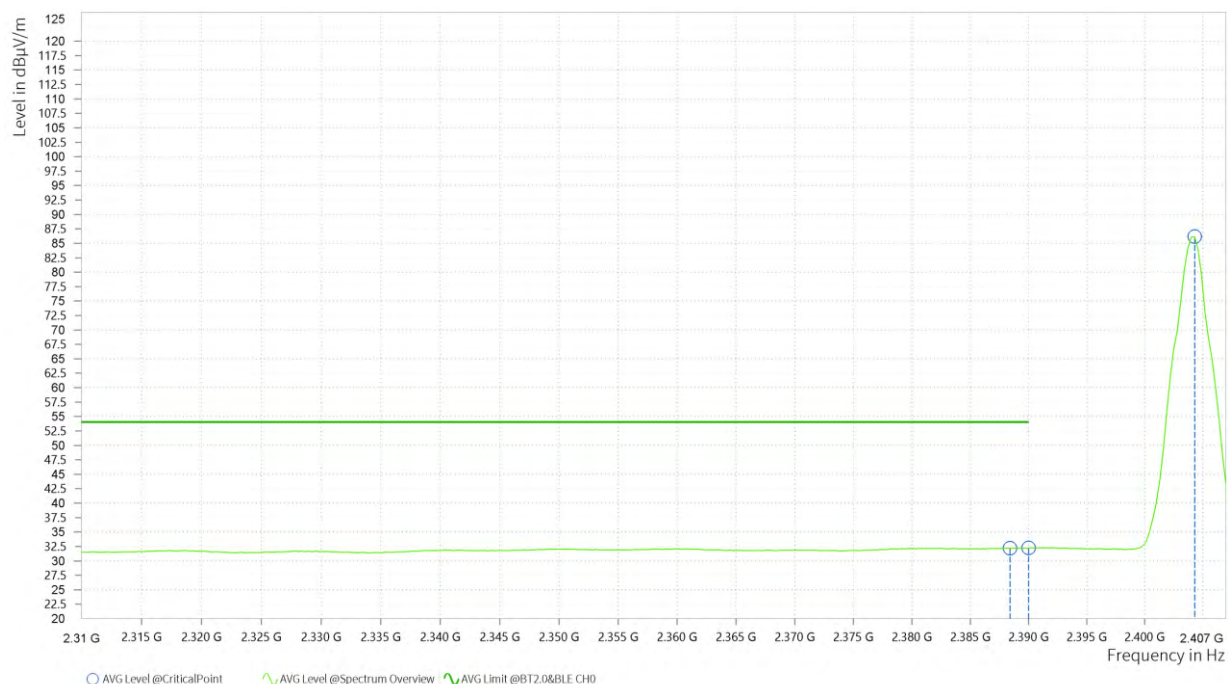
CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,389.915	47.34	74.00	26.66	7.08	H	225.2	1
6	2,390.000	47.05	74.00	26.95	7.08	H	225.2	1
6	2,404.705	96.30			7.11	H	4.9	1

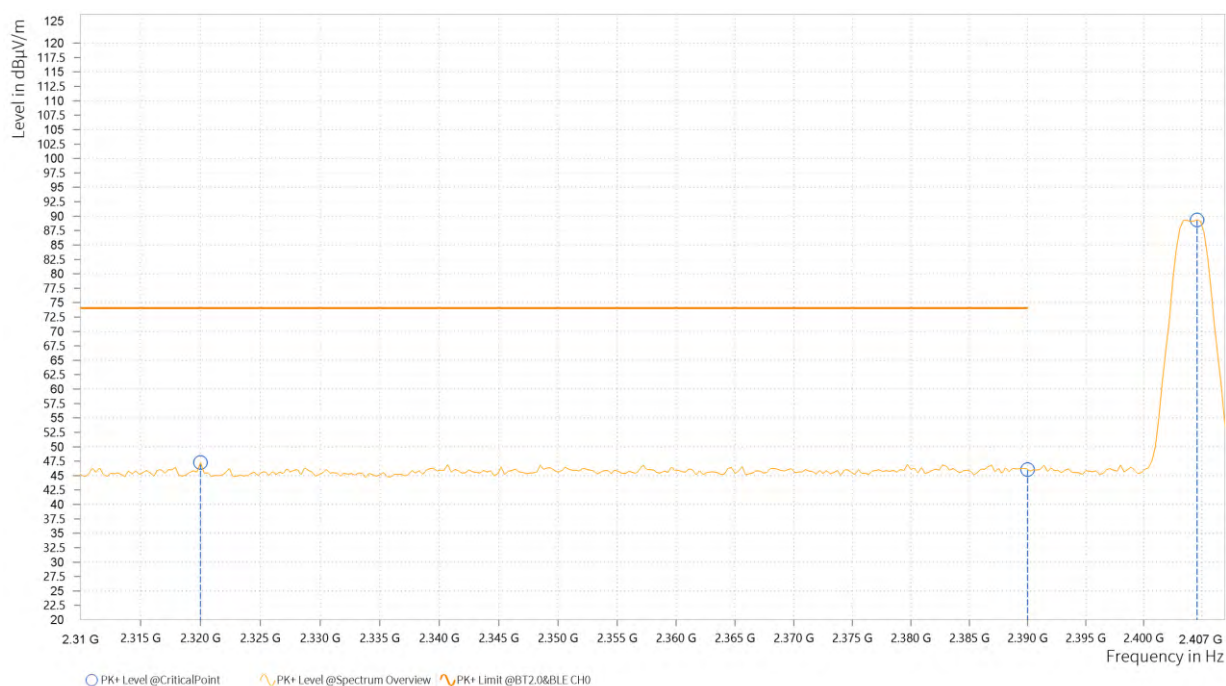


Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	2,388.400	32.19	54.00	21.81	7.08	H	204.2	2
5	2,390.000	32.25	54.00	21.75	7.08	H	155	1
5	2,404.300	86.14			7.11	H	5	1

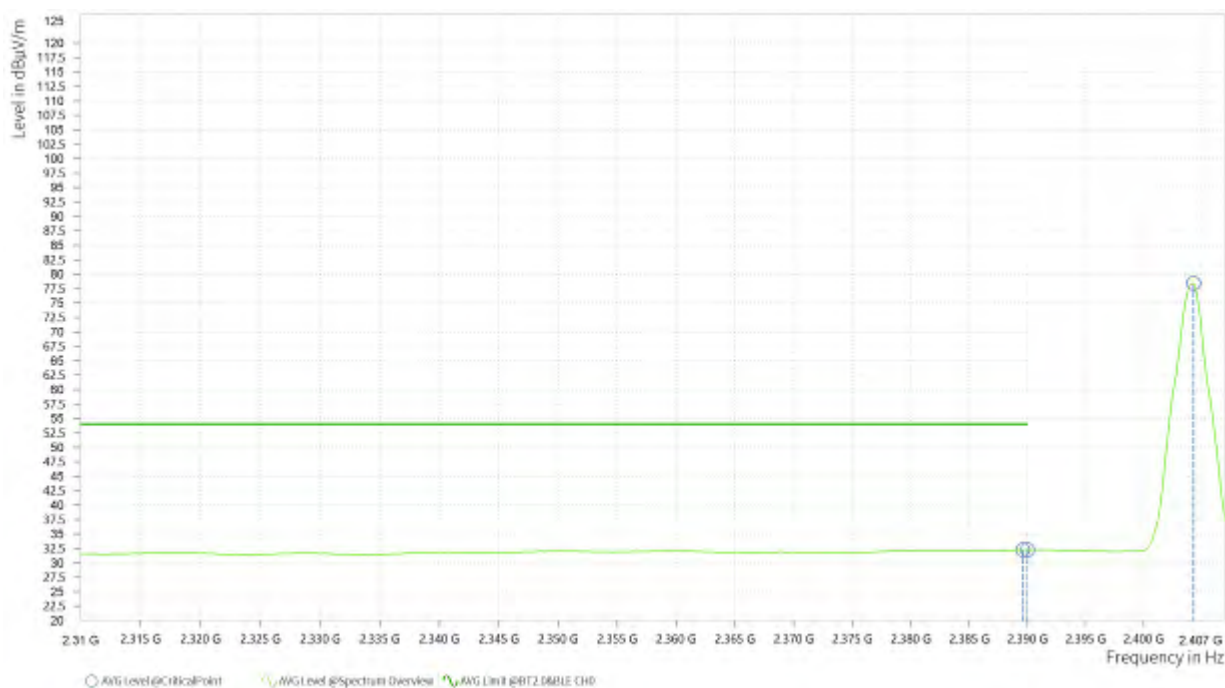


ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	2,320.000	47.26	74.00	26.74	7.07	V	47.4	2
5	2,390.000	46.06	74.00	27.94	7.09	V	313	1
5	2,404.600	89.36			7.11	V	205.2	2



Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	2,389.600	32.28	54.00	21.72	7.08	V	208.5	1
5	2,390.000	32.25	54.00	21.75	7.08	V	359	2
5	2,404.300	78.43			7.11	V	206.5	2



REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Limit value–Emission level.
2. 2404MHz: Fundamental frequency.

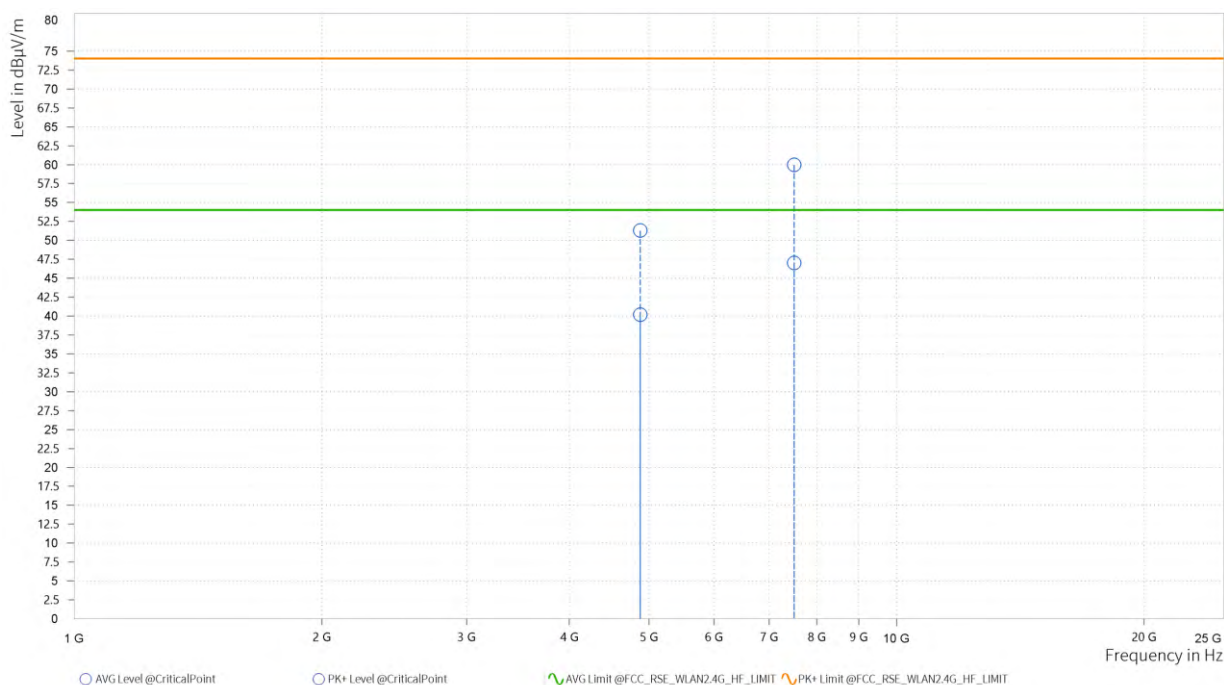


Test Report No.: PSU-QSU2306120115RF12

CHANNEL	TX Channel 19	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	4,880.000	51.29	74.00	22.71	40.18	54.00	13.82	15.30	H	1	1
2	7,508.000	59.96	74.00	14.04	47.02	54.00	6.98	21.77	H	15.4	2

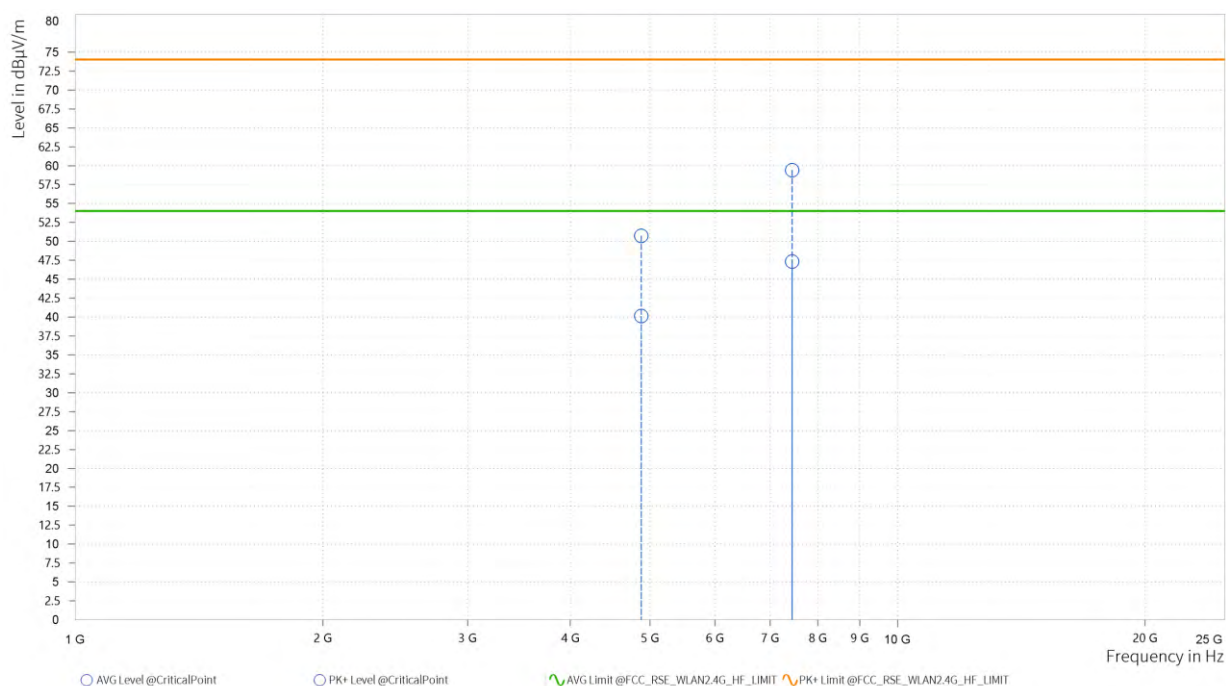




Test Report No.: PSU-QSU2306120115RF12

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	4,880.000	50.74	74.00	23.26	40.13	54.00	13.87	15.30	V	359.1	1
2	7,441.000	59.41	74.00	14.59	47.34	54.00	6.66	21.52	V	343.8	1



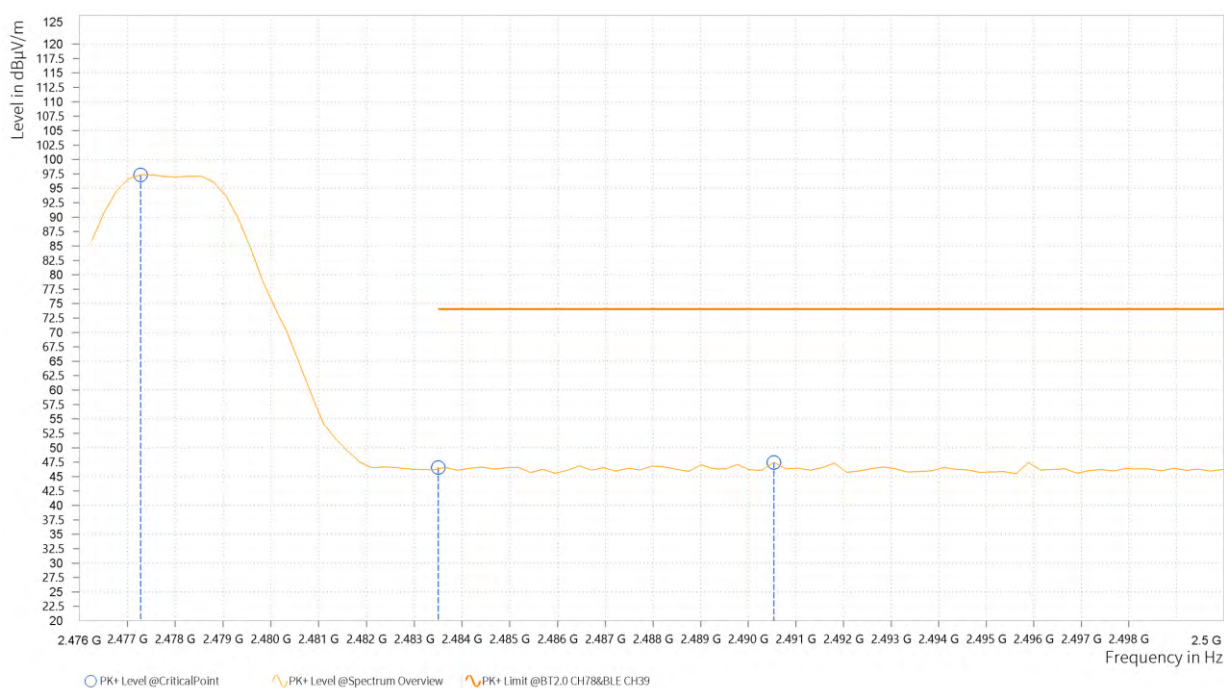
REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Limit value–Emission level.
2. 2440MHz: Fundamental frequency.

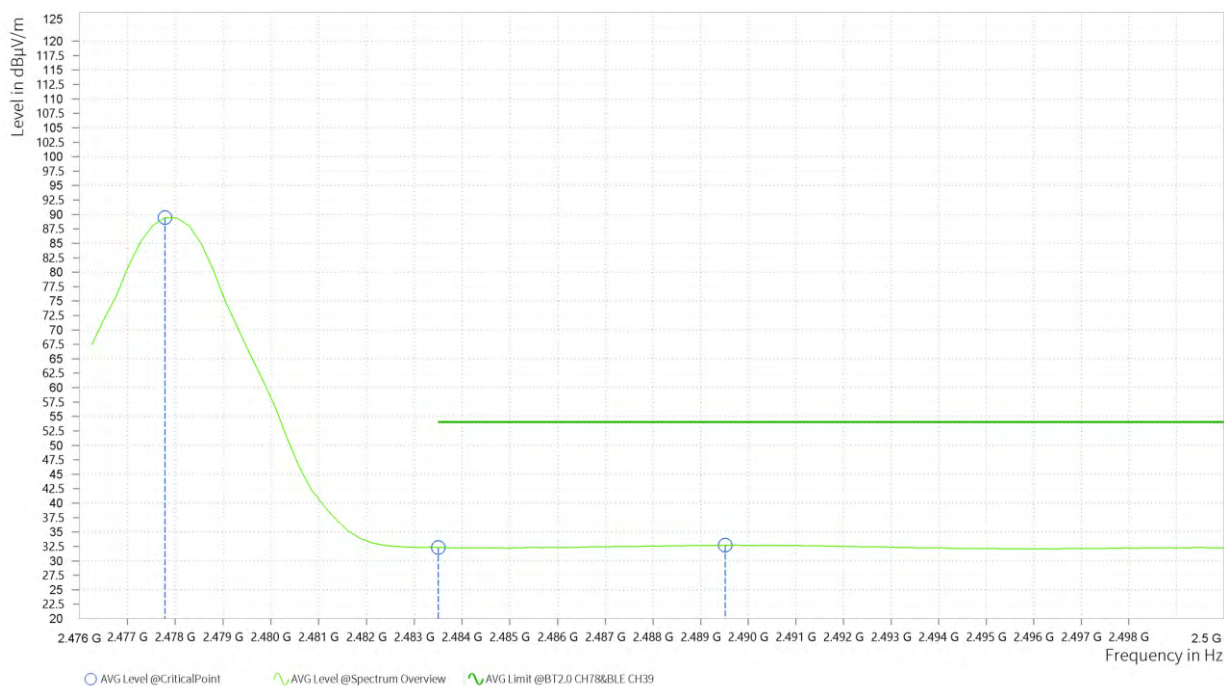
CHANNEL	TX Channel 38	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,477.275	97.32			7.35	H	53.4	2
6	2,483.500	46.58	74.00	27.42	7.36	H	231.2	1
6	2,490.535	47.47	74.00	26.53	7.37	H	357.8	1



Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,477.785	89.44			7.35	H	51.1	2
6	2,483.500	32.33	54.00	21.67	7.36	H	2	2
6	2,489.515	32.71	54.00	21.29	7.37	H	359	2

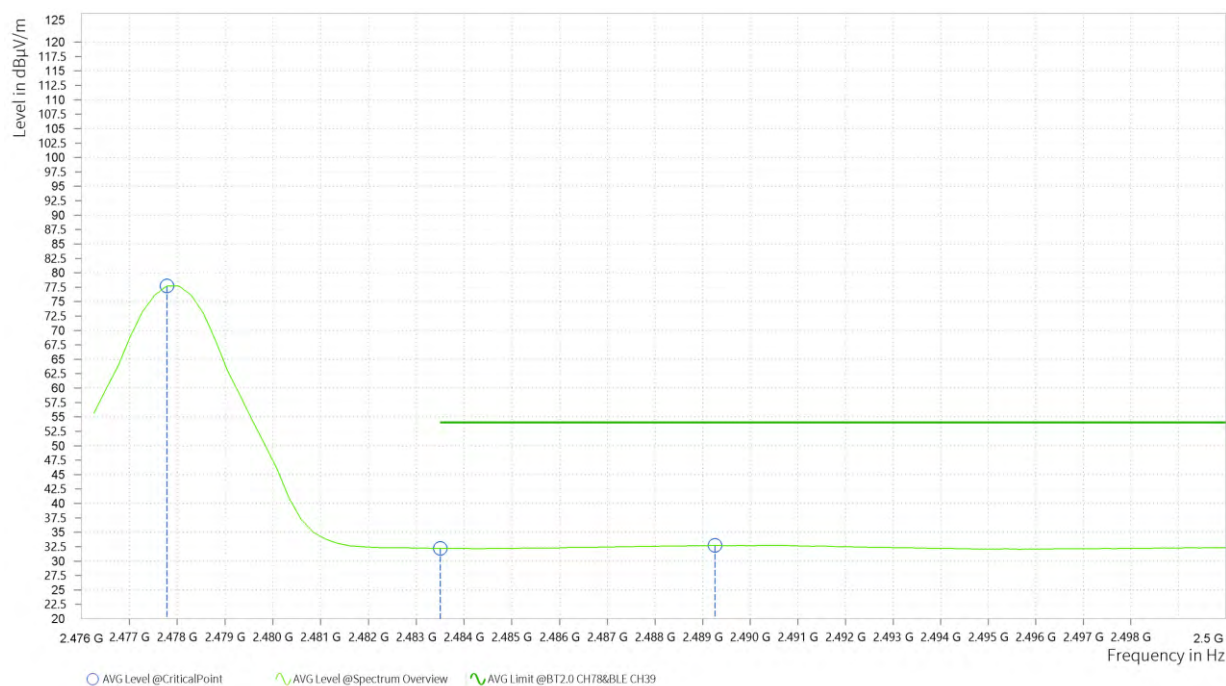


ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,477.530	85.86			7.35	V	125.2	2
6	2,483.500	45.94	74.00	28.06	7.36	V	359.1	1
6	2,491.045	47.87	74.00	26.13	7.37	V	359.1	1



Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,477.785	77.72			7.35	V	127.6	2
6	2,483.500	32.21	54.00	21.79	7.36	V	2	2
6	2,489.260	32.73	54.00	21.27	7.37	V	359	2



REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Limit value–Emission level.
2. 2478MHz: 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 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
2. The test was performed in RF Oven room.



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Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	R&S	ESW 44	101973	Feb.25,22	Feb.24,24
Open Switch and Control Unit	R&S	OSP-B157W8	100836	N/A	N/A
Vector Signal Generator	R&S	SMBV100B	102176	Feb.16,22	Feb.15,24
Signal Generator	R&S	SMB100A03	182185	Feb.16,22	Feb.15,24
Wideband Radio Communication	R&S	CMW500	169399	Jun.26,22	Jun.25,24
Hygrothermograph	DELI	20210528	SZ015	Sep.06,22	Sep.05,24
PC	LENOVO	E14	HRSW0024	N/A	N/A
CABLE	R&S	J12J103539-00-1	SEP-03-20-069	Apr.28,23	Oct.27,23
CABLE	R&S	J12J103539-00-1	SEP-03-20-070	Apr.28,23	Oct.27,23
Test Software	EMC32	EMC32	N/A	N/A	N/A
Temperature Chamber	votsch	VT4002	58566078100050	May.31,22	May.30,24

NOTE:

1. The calibration interval of the above test instruments is 6 months or 24 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

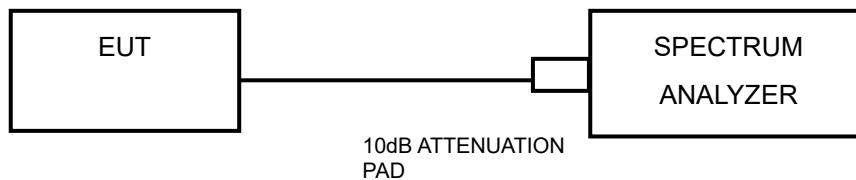
1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points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



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3.3.7 TEST RESULTS

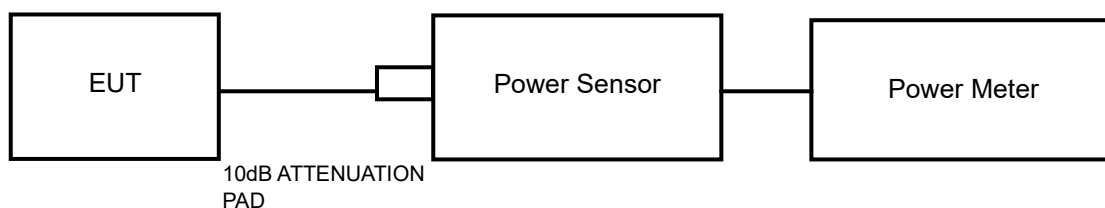
Please Refer to Appendix1/2 Of this test report.

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.



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3.4.7 TEST RESULTS

3.4.7.1 MAXIMUM PEAK OUTPUT POWER

Please Refer to Appendix1/2 Of this test report.



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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.

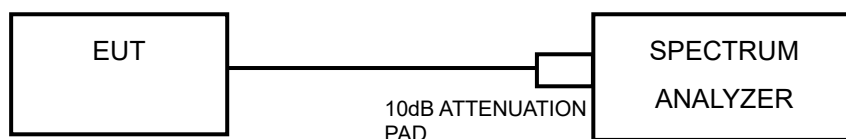
Please Refer to Appendix1/2 Of this test report.

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 $\geq 3 \times$ 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.



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3.5.7 TEST RESULTS

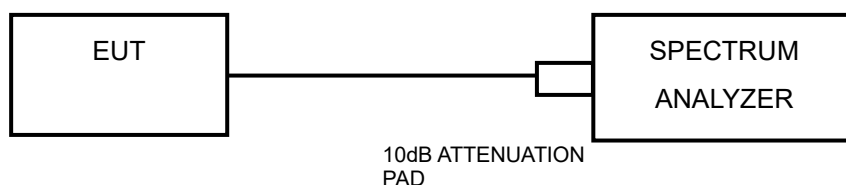
Please Refer to Appendix1/2 Of this test report.

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 $\geq$ 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 OOB

1. Set RBW = 100 kHz.
2. Set VBW $\geq$ 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

According to FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

Directional gain = GANT + Array Gain, where Array Gain is as follows.

For power spectral density (PSD) measurements on all devices,

Array Gain = $10 \log(N_{ANT} / N_{SS})$ dB;

For power measurements on IEEE 802.11 devices, Array Gain = 0 dB for $N_{ANT} \leq 4$;

The EUT supports Cyclic Delay Diversity (CDD) mode,

For power measurements, the directional GANT is set equal to the antenna having the highest gain as following formulas.

Directional Gain = Max.Gain + Array Gain.

For PSD measurements, the directional GANT calculation is following F)2)f)ii of KDB 662911 D01 v02r01.

The directional gain is calculated as following table.

2.4GHz	Ant 1 (dBi)	Ant 2 (dBi)	DG For Power (dBi)	DG For PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
	-0.5	-0.5	-0.5	2.51	0.00	0.00

NOTE :DG= directional gain, Power Limit Reduction = DG For Power Gain -6dBi<0

PSD Limit Reduction = DG For PSD - 6dBi<0. Therefore, it is not necessary to reduce maximum peak output power and PSD limit.



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4 PHOTOGRAPHS OF THE TEST CONFIGURATION

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



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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 2.4G

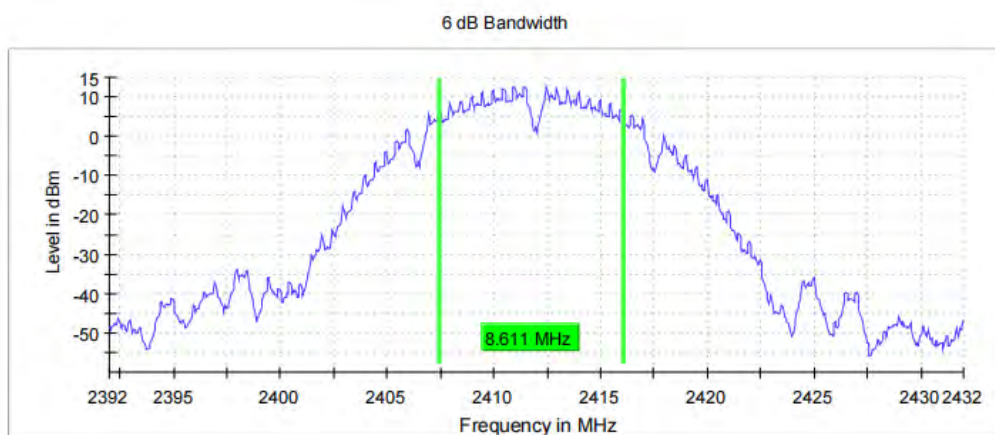
DTS BANDWIDTH

TEST RESULT

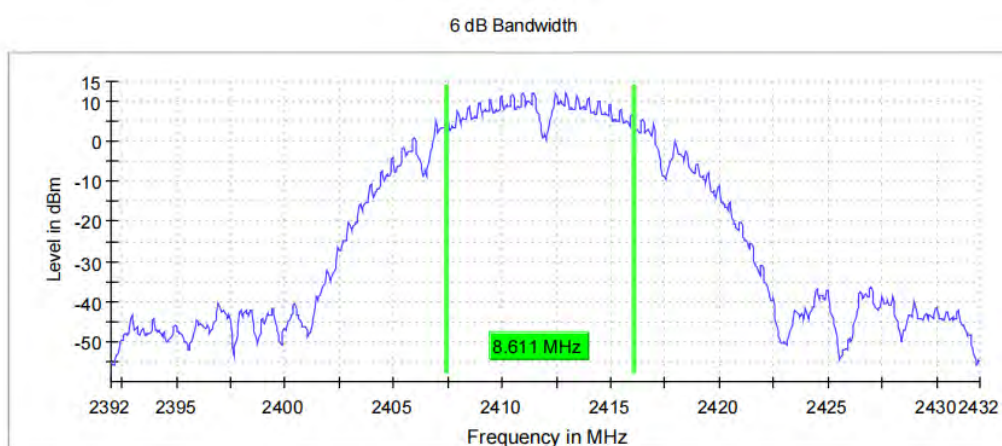
TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant0	2412	8.611	2407.419	2416.030	0.5	PASS
	Ant1	2412	8.611	2407.419	2416.030	0.5	PASS
	Ant0	2437	8.210	2432.870	2441.080	0.5	PASS
	Ant1	2437	8.210	2432.870	2441.080	0.5	PASS
	Ant0	2462	8.661	2457.369	2466.030	0.5	PASS
	Ant1	2462	8.611	2457.419	2466.030	0.5	PASS
11G	Ant0	2412	15.169	2404.365	2419.534	0.5	PASS
	Ant1	2412	15.219	2404.365	2419.584	0.5	PASS
	Ant0	2437	15.219	2429.365	2444.584	0.5	PASS
	Ant1	2437	15.219	2429.365	2444.584	0.5	PASS
	Ant0	2462	15.419	2454.165	2469.584	0.5	PASS
	Ant1	2462	15.219	2454.365	2469.584	0.5	PASS
11N20	Ant0	2412	16.020	2404.365	2420.385	0.5	PASS
	Ant1	2412	17.071	2403.114	2420.185	0.5	PASS
	Ant0	2437	15.219	2429.365	2444.584	0.5	PASS
	Ant1	2437	16.421	2428.164	2444.584	0.5	PASS
	Ant0	2462	15.219	2454.365	2469.584	0.5	PASS
	Ant1	2462	15.419	2454.165	2469.584	0.5	PASS
11N40	Ant0	2422	35.222	2404.414	2439.636	0.5	PASS
	Ant1	2422	35.272	2404.364	2439.636	0.5	PASS
	Ant0	2437	35.222	2419.414	2454.636	0.5	PASS
	Ant1	2437	35.172	2419.414	2454.586	0.5	PASS
	Ant0	2452	35.172	2434.414	2469.586	0.5	PASS
	Ant1	2452	35.172	2434.414	2469.586	0.5	PASS

TEST GRAPHS

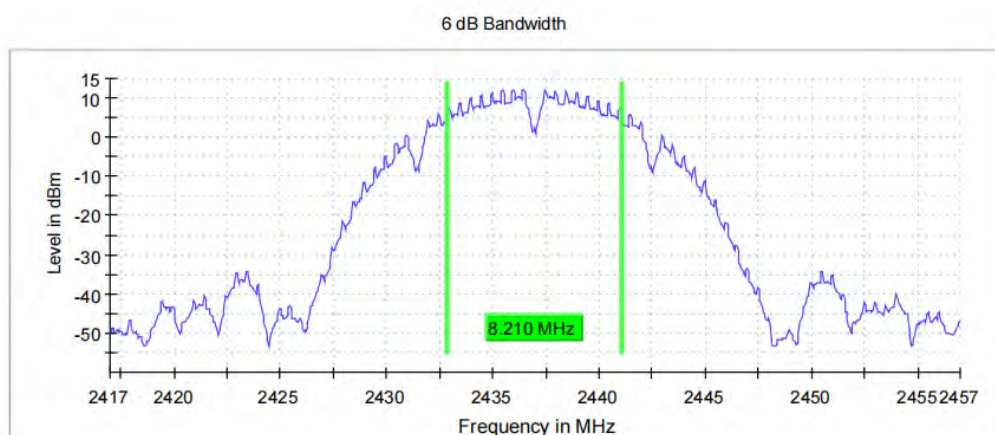
11B_Ant0_2412



11B_Ant1_2412



11B_Ant0_2437

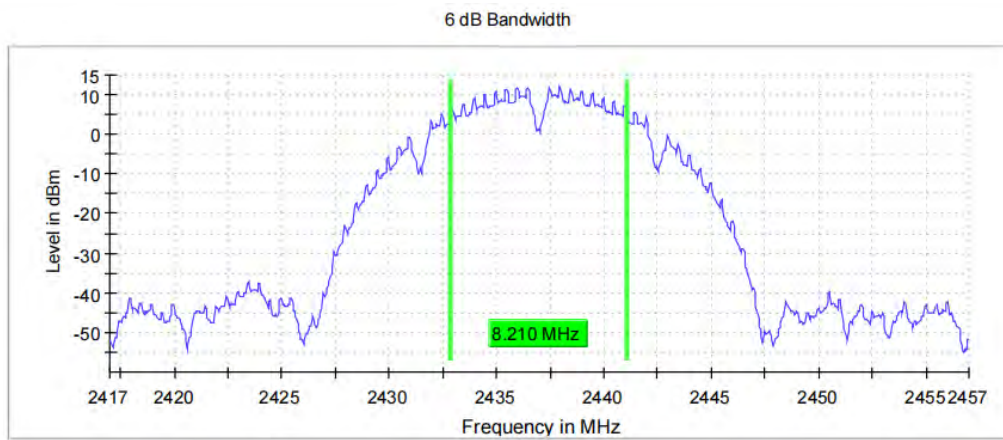




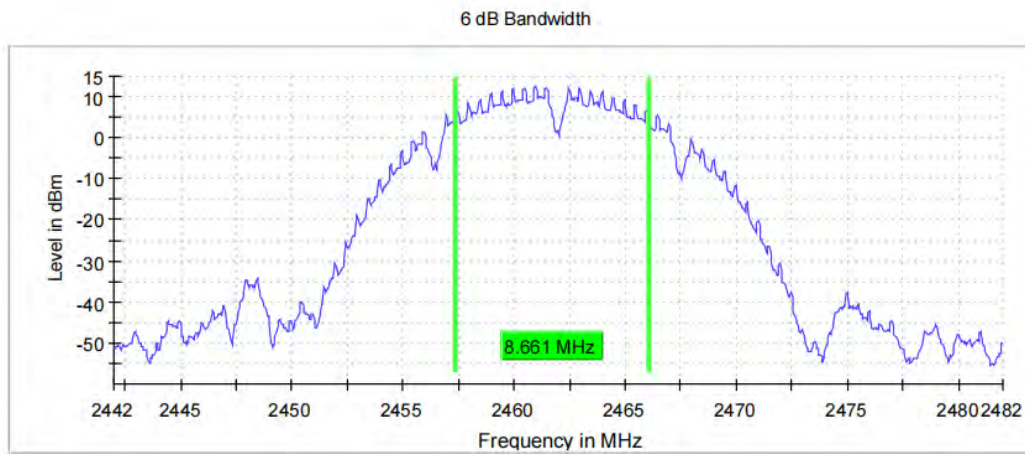
BUREAU
VERITAS

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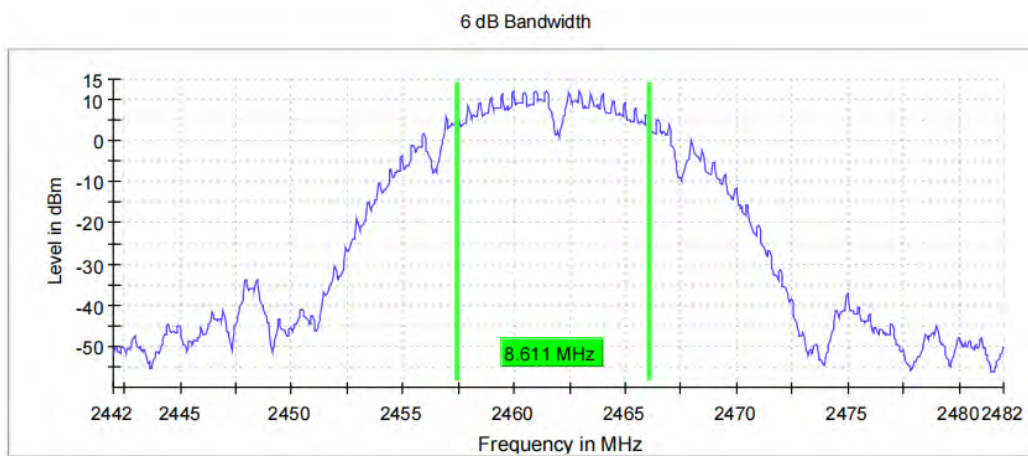
11B_Ant1_2437



11B_Ant0_2462



11B_Ant1_2462



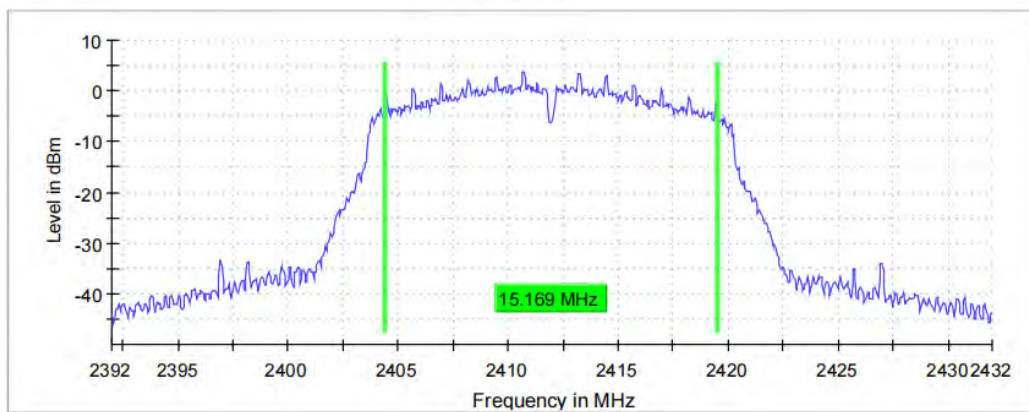
11G_Ant0_2412



BUREAU
VERITAS

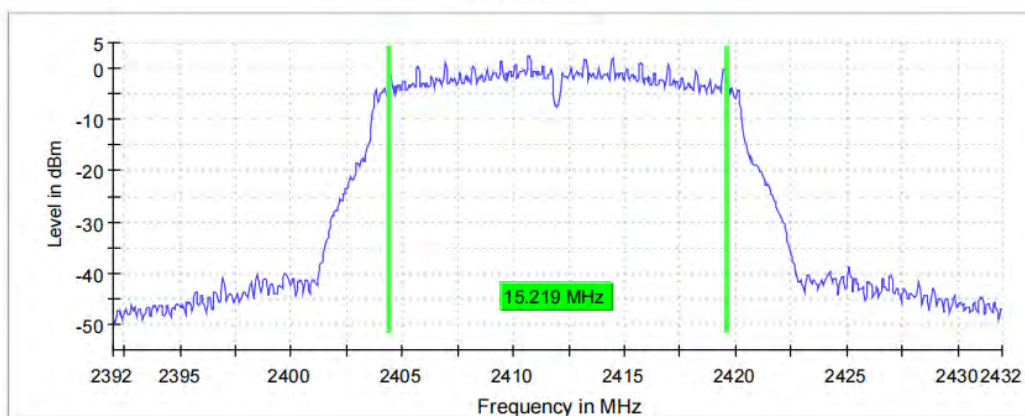
Test Report No.: PSU-QSU2306120115RF12

6 dB Bandwidth



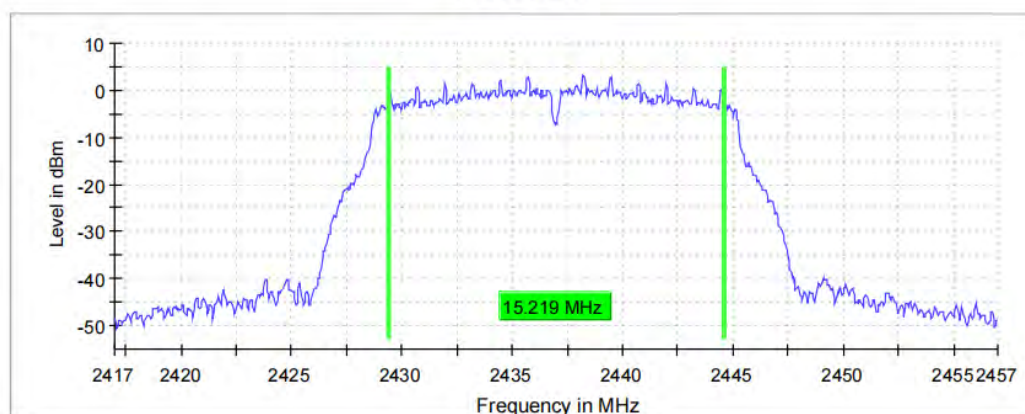
11G_Ant1_2412

6 dB Bandwidth



11G_Ant0_2437

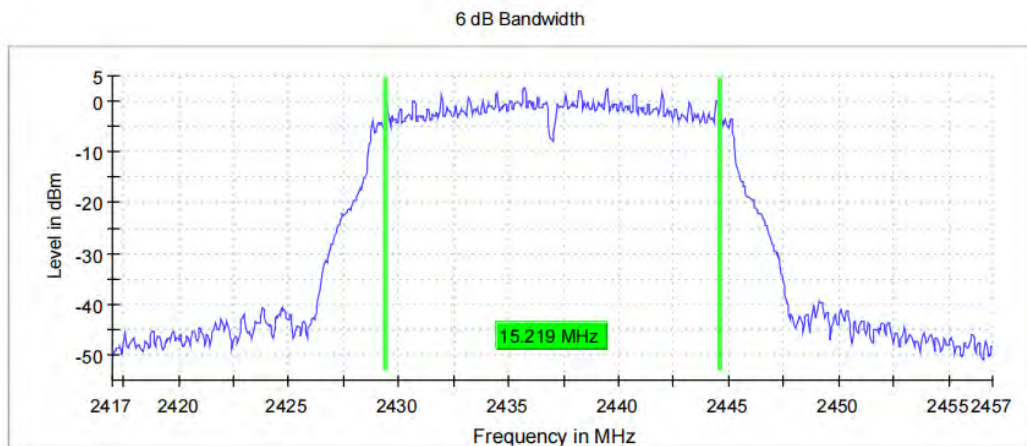
6 dB Bandwidth



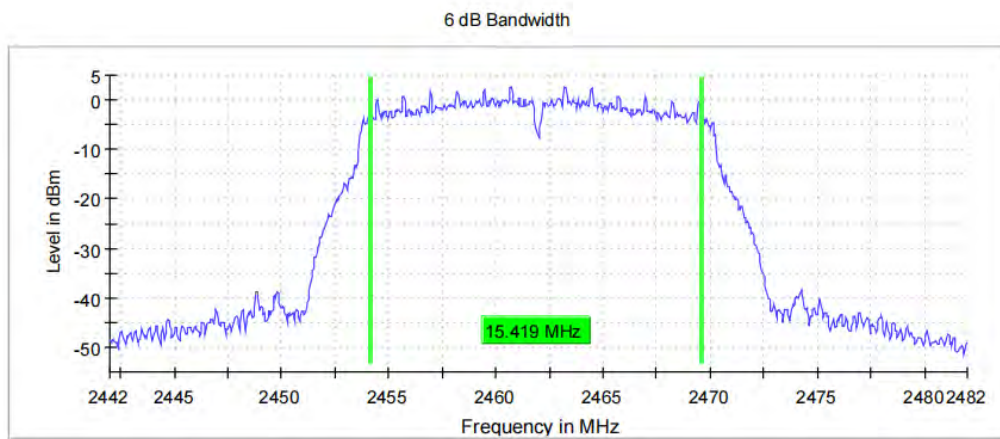
11G_Ant1_2437



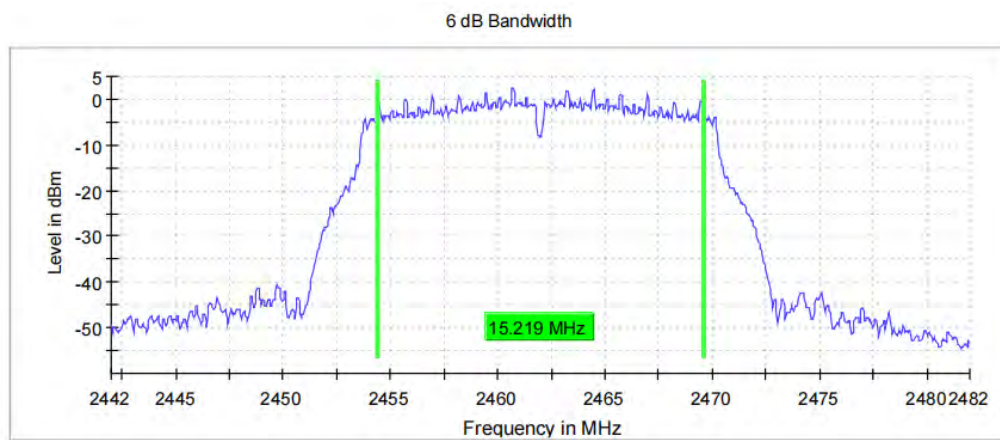
Test Report No.: PSU-QSU2306120115RF12



11G_Ant0_2462



11G_Ant1_2462

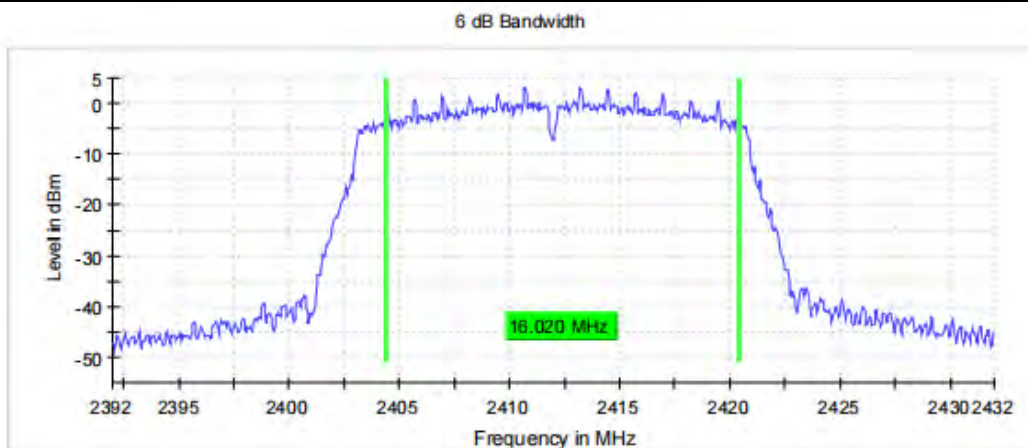


11N20_Ant0_2412

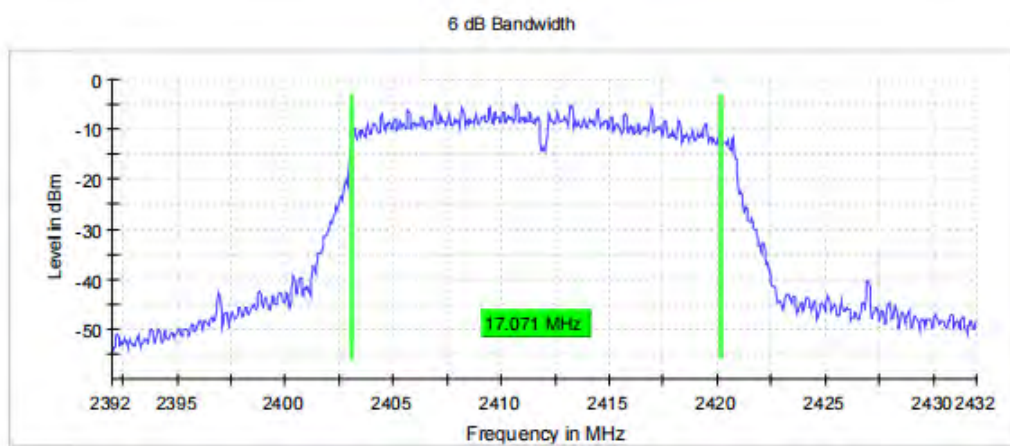


BUREAU
VERITAS

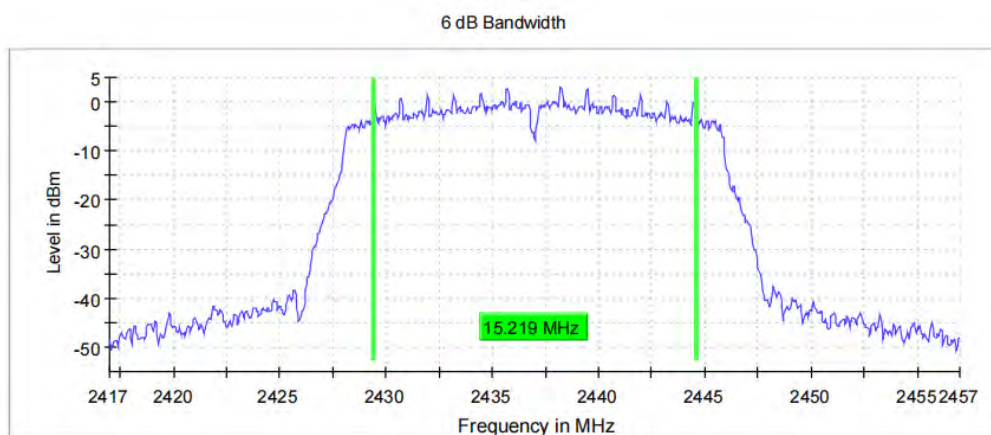
Test Report No.: PSU-QSU2306120115RF12



11N20_Ant1_2412



11N20_Ant0_2437



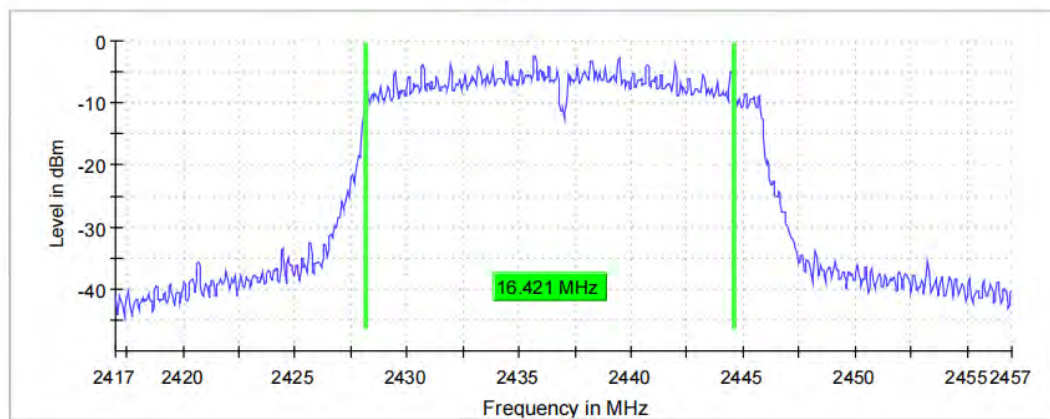
11N20_Ant1_2437



BUREAU
VERITAS

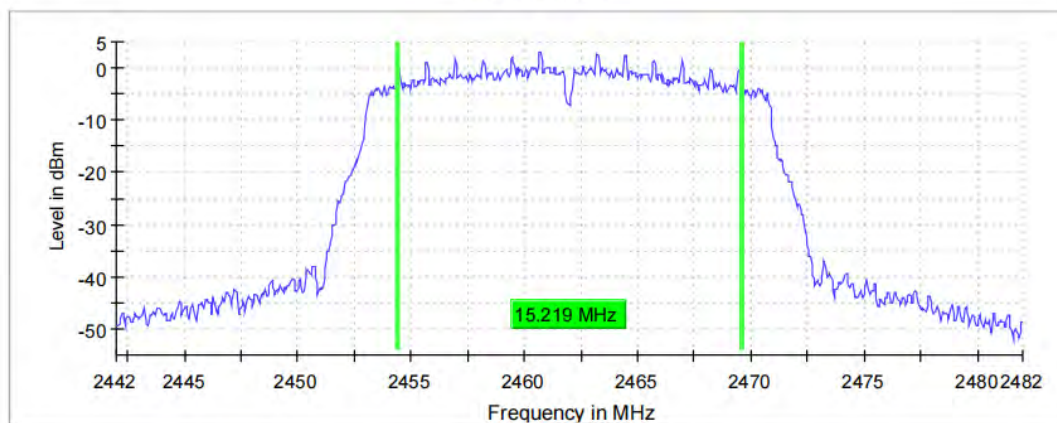
Test Report No.: PSU-QSU2306120115RF12

6 dB Bandwidth



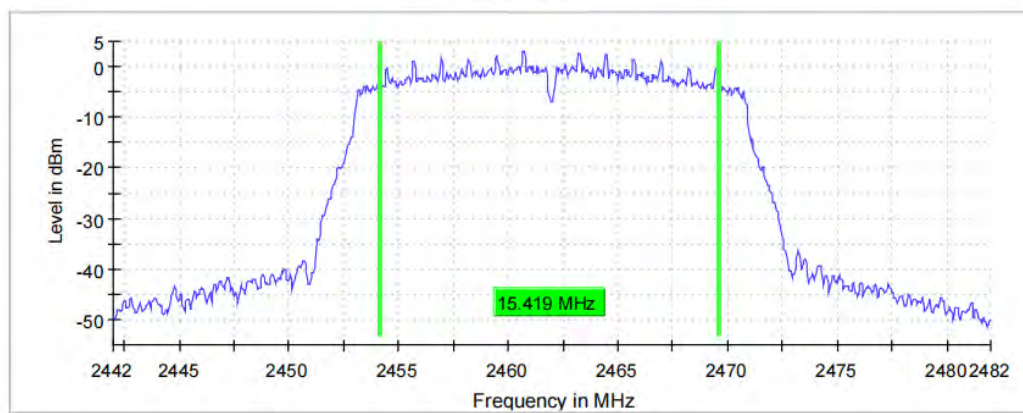
11N20_Ant0_2462

6 dB Bandwidth



11N20_Ant1_2462

6 dB Bandwidth

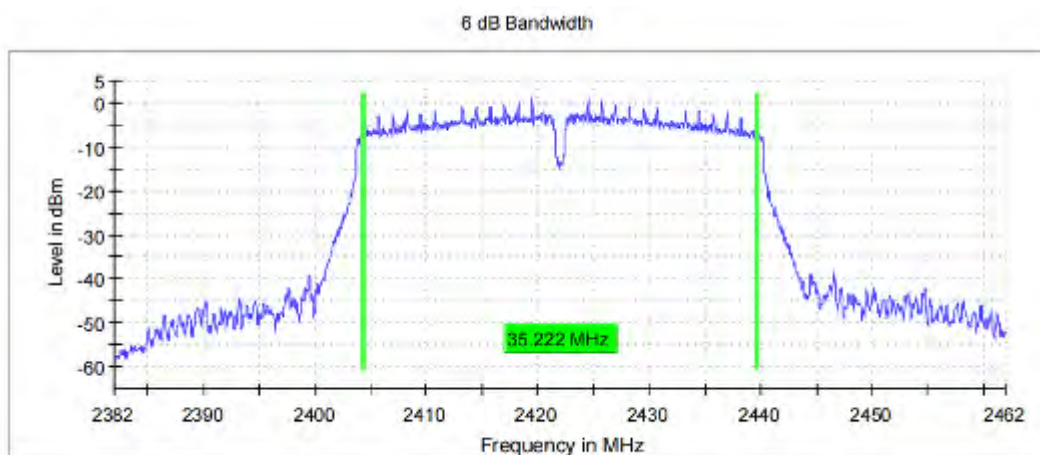


11N40_Ant0_2422

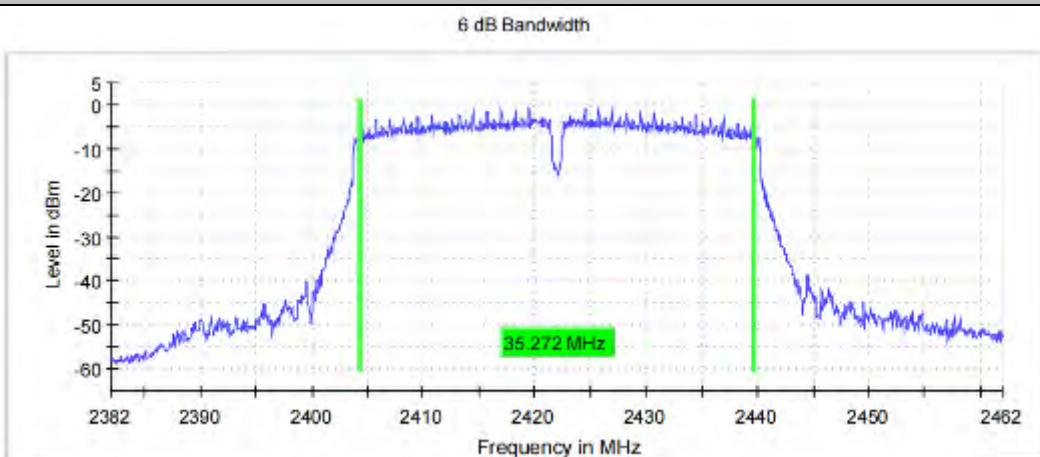


BUREAU
VERITAS

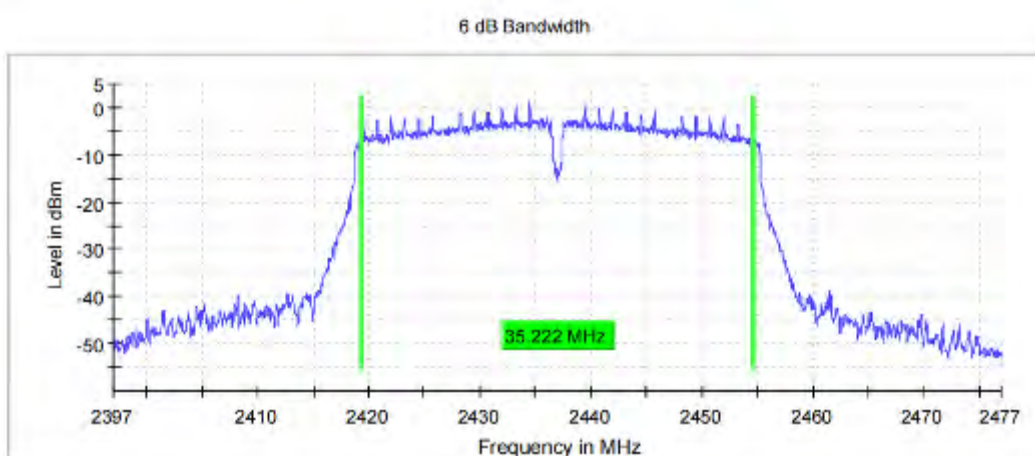
Test Report No.: PSU-QSU2306120115RF12



11N40_Ant1_2422



11N40_Ant0_2437

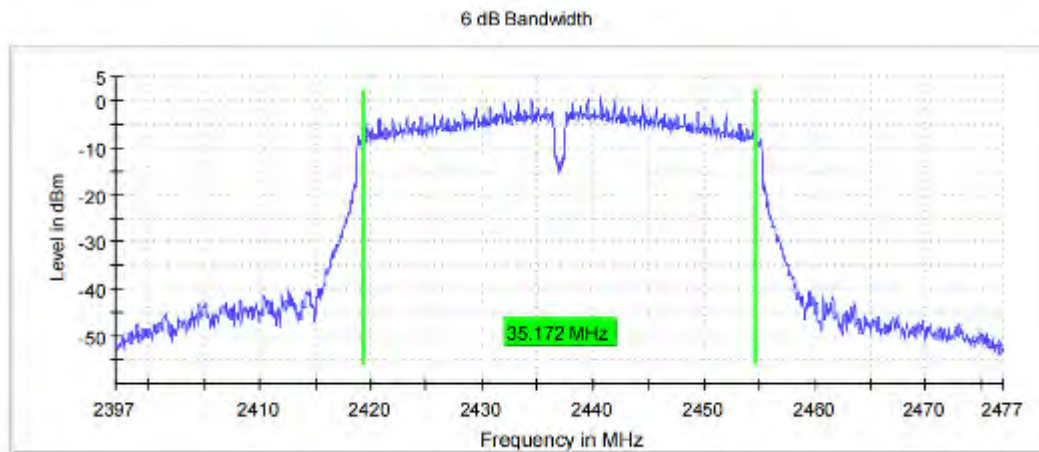


11N40_Ant1_2437

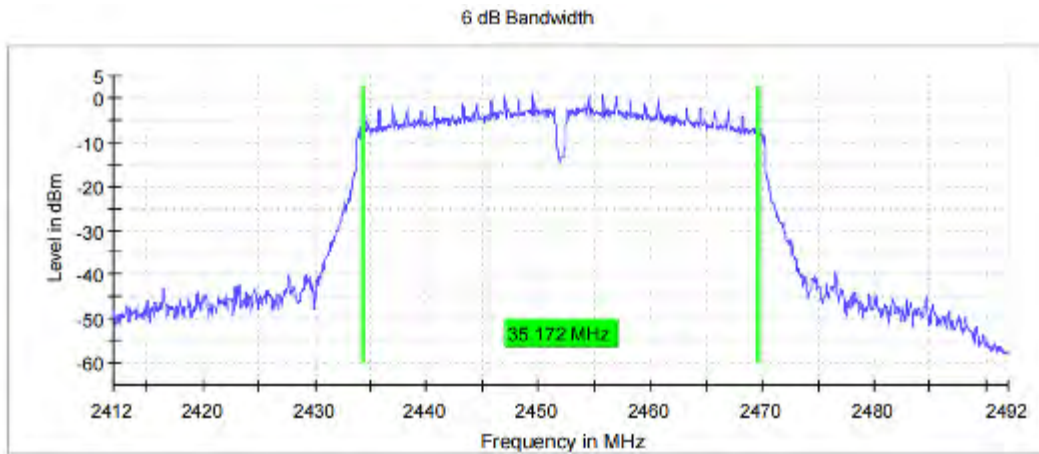


BUREAU
VERITAS

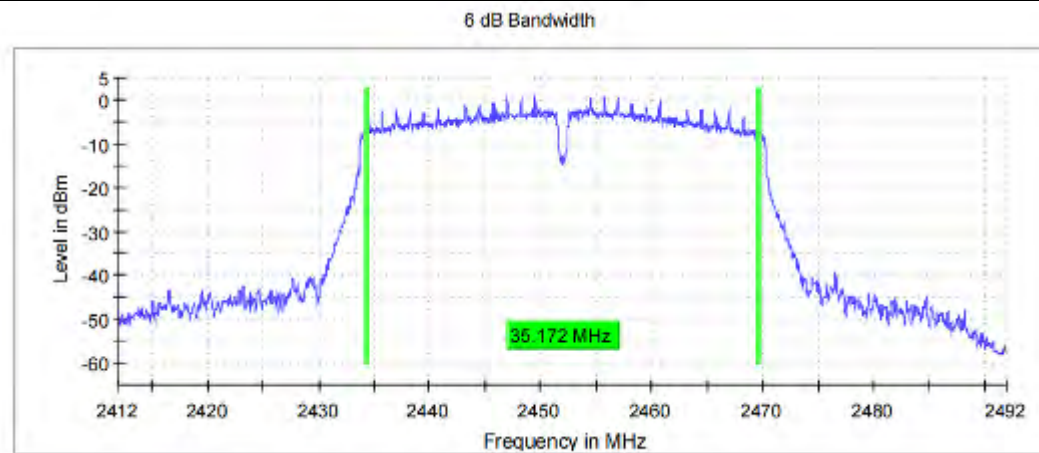
Test Report No.: PSU-QSU2306120115RF12



11N40_Ant0_2452



11N40_Ant1_2452





Test Report No.: PSU-QSU2306120115RF12

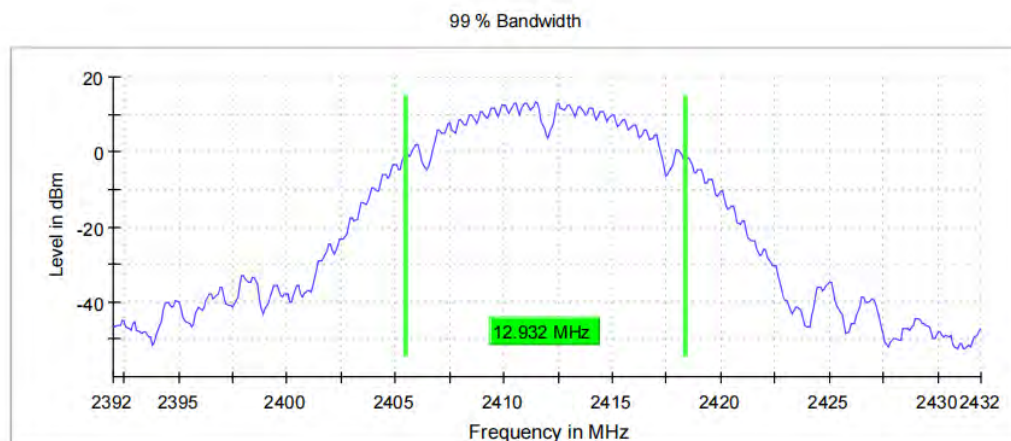
OCCUPIED CHANNEL BANDWIDTH

TEST RESULT

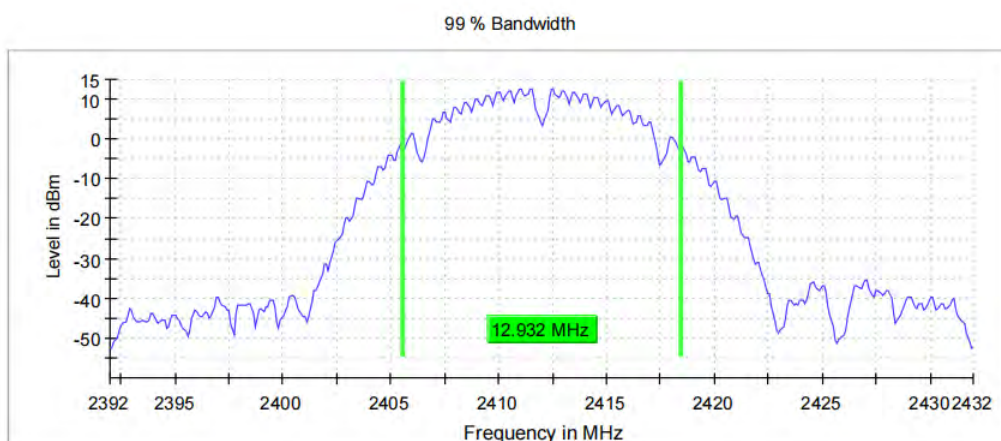
TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant0	2412	12.932	2405.434	2418.366	---	---
	Ant1	2412	12.932	2405.534	2418.466	---	---
	Ant0	2437	12.732	2430.634	2443.366	---	---
	Ant1	2437	12.632	2430.734	2443.366	---	---
	Ant0	2462	12.832	2455.434	2468.266	---	---
	Ant1	2462	12.832	2455.434	2468.266	---	---
11G	Ant0	2412	16.241	2403.830	2420.070	---	---
	Ant1	2412	16.541	2403.729	2420.271	---	---
	Ant0	2437	16.541	2428.729	2445.271	---	---
	Ant1	2437	16.441	2428.830	2445.271	---	---
	Ant0	2462	16.441	2453.729	2470.170	---	---
	Ant1	2462	16.441	2453.729	2470.170	---	---
11N20	Ant0	2412	17.644	2403.228	2420.872	---	---
	Ant1	2412	17.644	2403.128	2420.772	---	---
	Ant0	2437	17.644	2428.228	2445.872	---	---
	Ant1	2437	17.744	2428.128	2445.872	---	---
	Ant0	2462	17.644	2453.128	2470.772	---	---
	Ant1	2462	17.544	2453.228	2470.772	---	---
11N40	Ant0	2422	36.364	2403.818	2440.182	---	---
	Ant1	2422	36.364	2403.818	2440.182	---	---
	Ant0	2437	36.364	2418.818	2455.182	---	---
	Ant1	2437	36.113	2418.818	2454.931	---	---
	Ant0	2452	36.364	2433.818	2470.182	---	---
	Ant1	2452	36.364	2433.818	2470.182	---	---

TEST GRAPHS

11B_Ant0_2412



11B_Ant1_2412



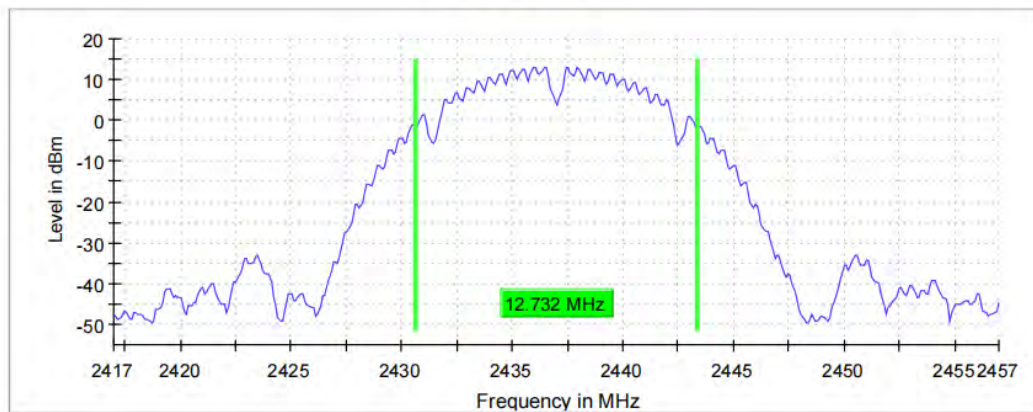
11B_Ant0_2437



BUREAU
VERITAS

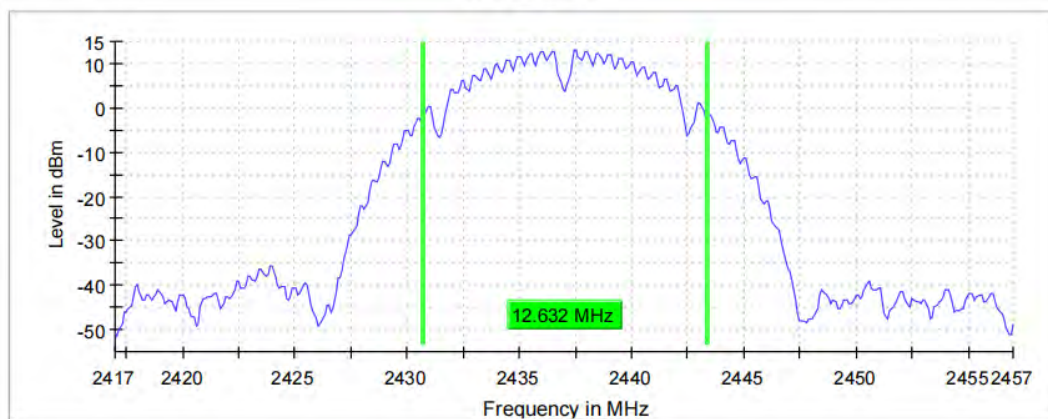
Test Report No.: PSU-QSU2306120115RF12

99 % Bandwidth



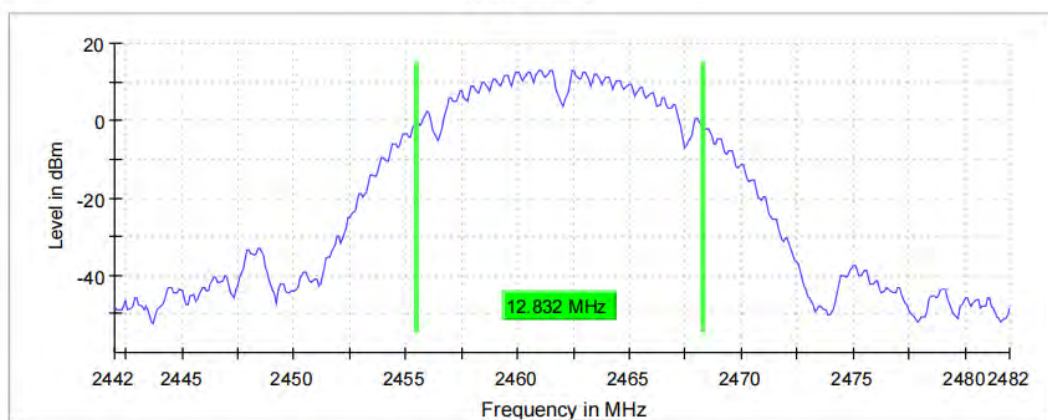
11B_Ant1_2437

99 % Bandwidth



11B_Ant0_2462

99 % Bandwidth



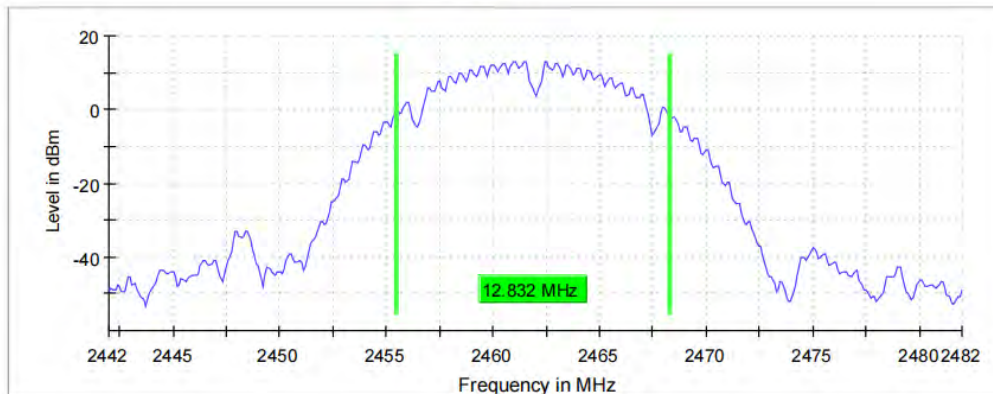
11B_Ant1_2462



BUREAU
VERITAS

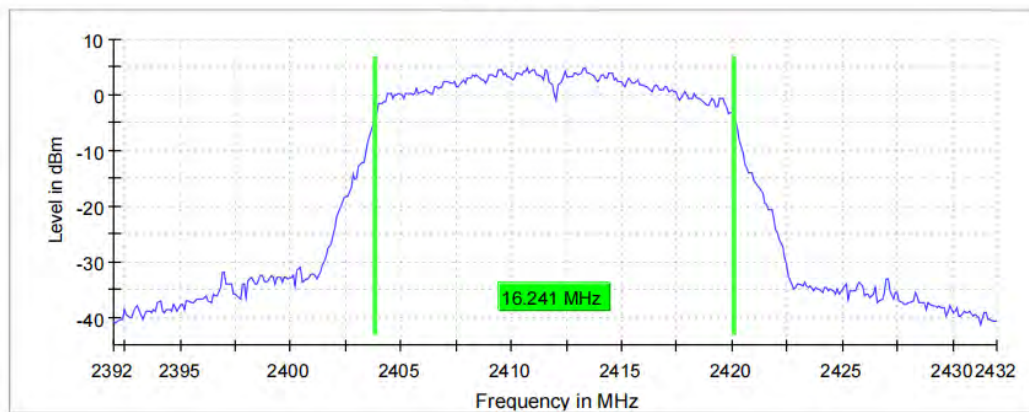
Test Report No.: PSU-QSU2306120115RF12

99 % Bandwidth



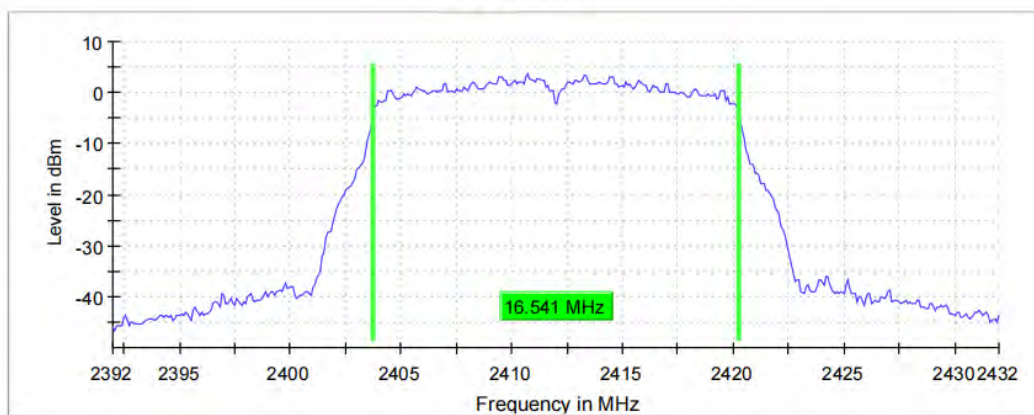
11G_Ant0_2412

99 % Bandwidth



11G_Ant1_2412

99 % Bandwidth



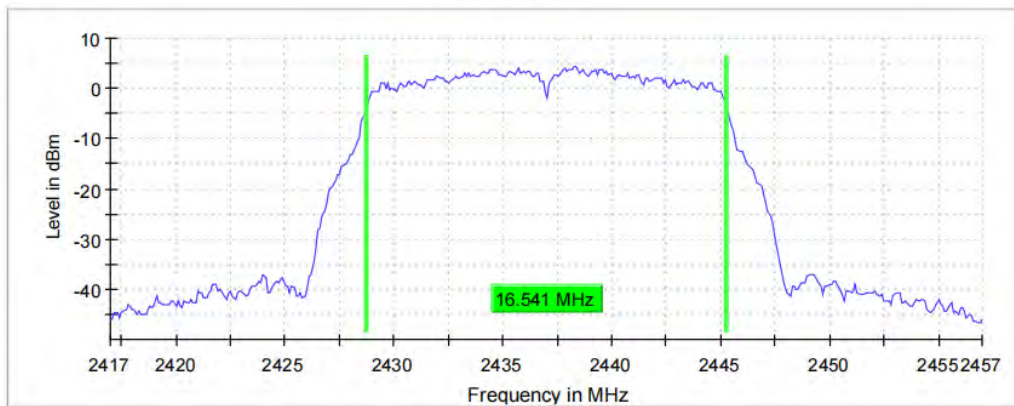
11G_Ant0_2437



BUREAU
VERITAS

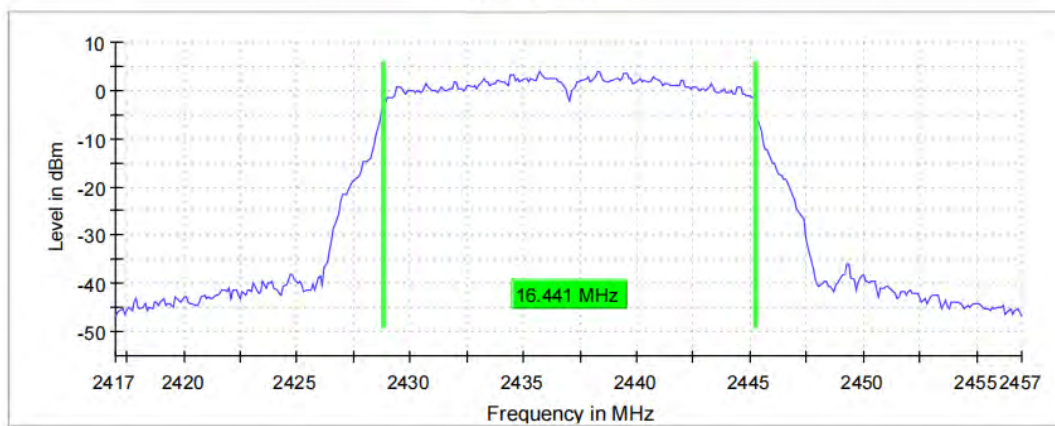
Test Report No.: PSU-QSU2306120115RF12

99 % Bandwidth



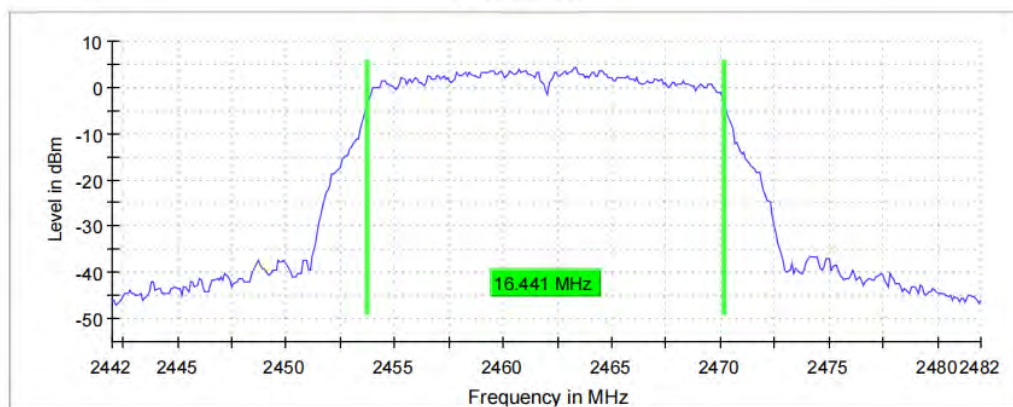
11G_Ant1_2437

99 % Bandwidth



11G_Ant0_2462

99 % Bandwidth



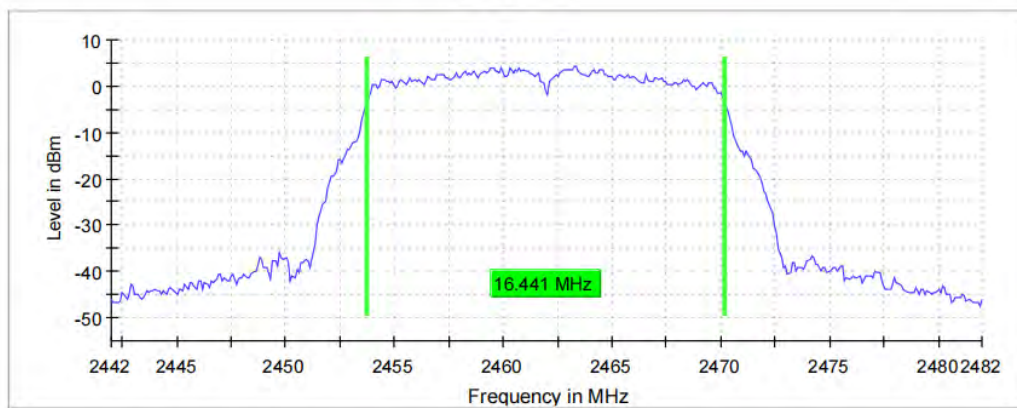
11G_Ant1_2462



BUREAU
VERITAS

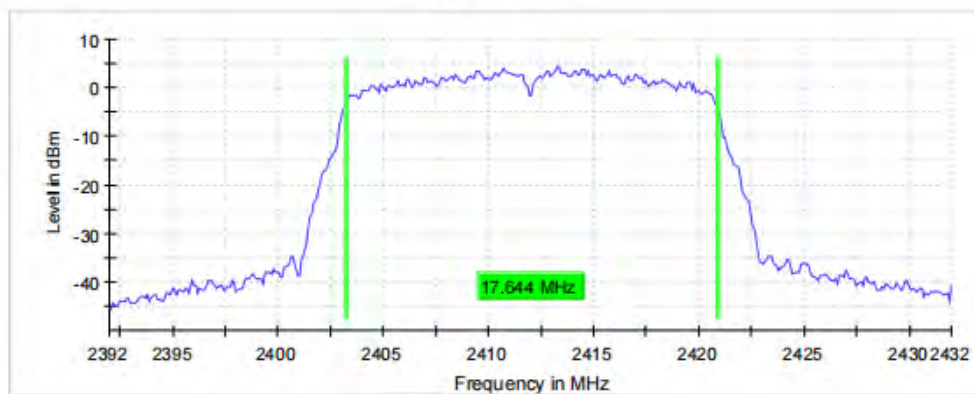
Test Report No.: PSU-QSU2306120115RF12

99 % Bandwidth



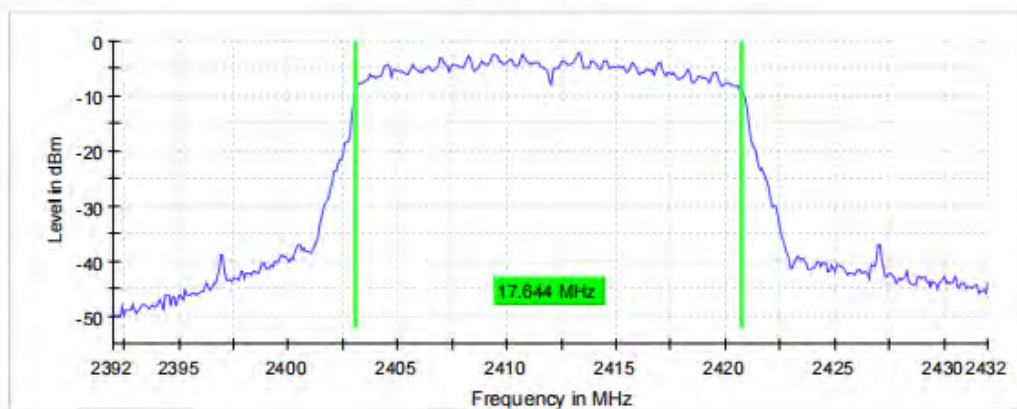
11N20_Ant0_2412

99 % Bandwidth



11N20_Ant1_2412

99 % Bandwidth



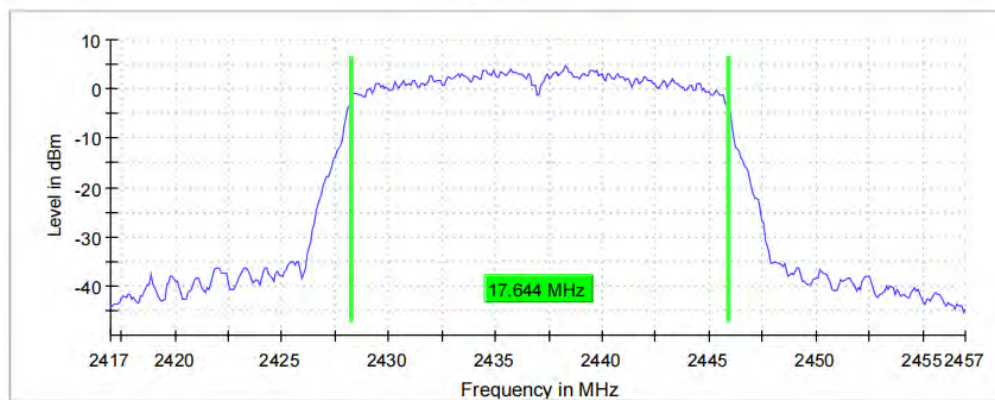
11N20_Ant0_2437



BUREAU
VERITAS

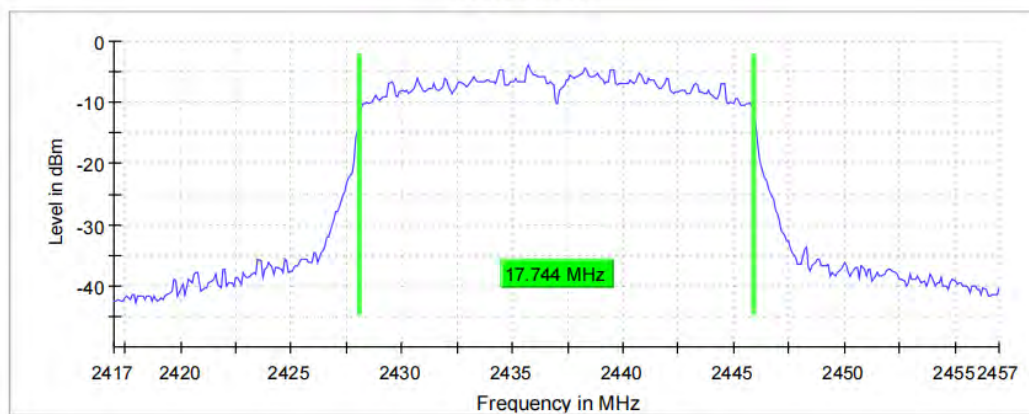
Test Report No.: PSU-QSU2306120115RF12

99 % Bandwidth



11N20_Ant1_2437

99 % Bandwidth



11N20_Ant0_2462

99 % Bandwidth

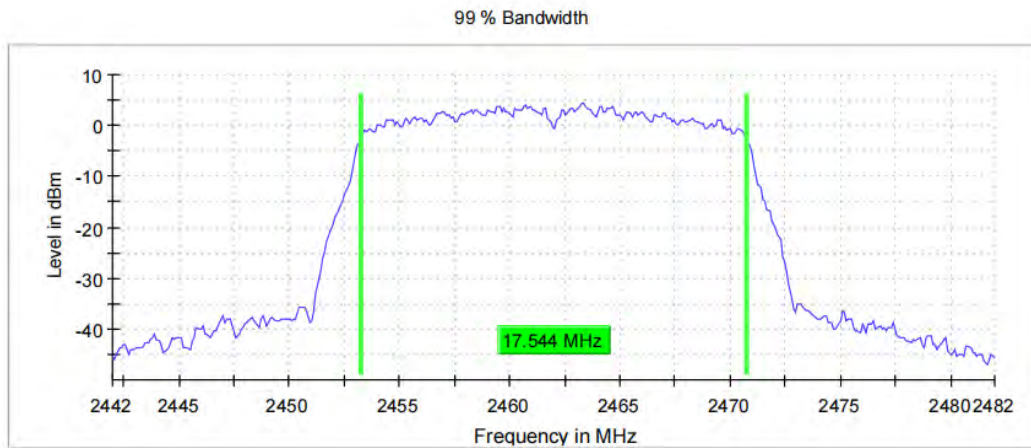


11N20_Ant1_2462

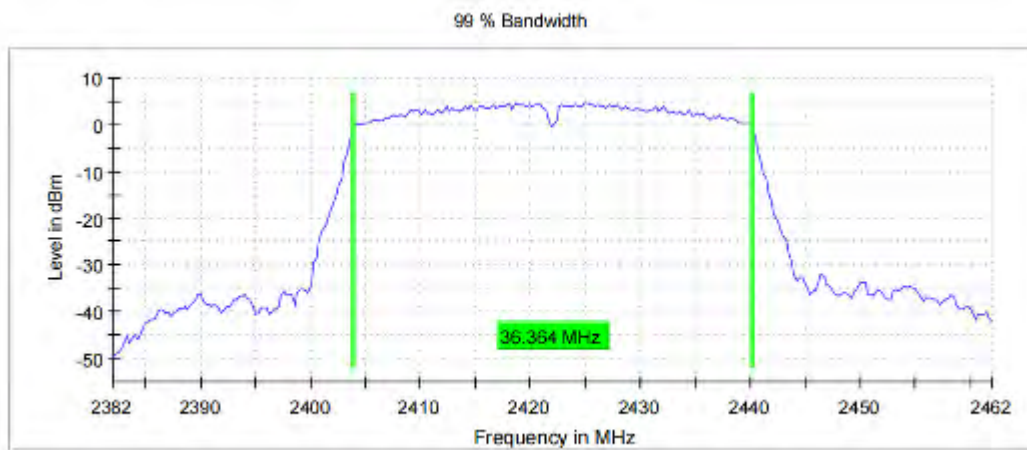


BUREAU
VERITAS

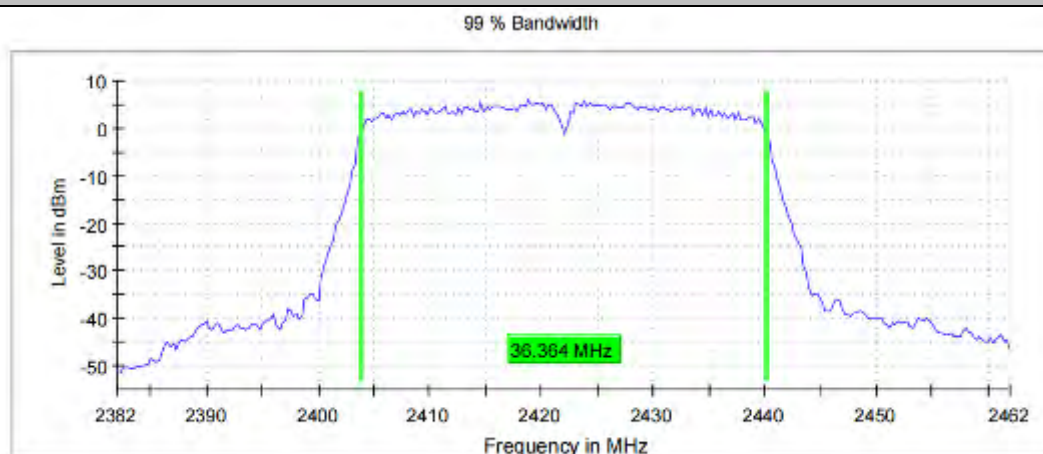
Test Report No.: PSU-QSU2306120115RF12



11N40_Ant0_2422



11N40_Ant1_2422



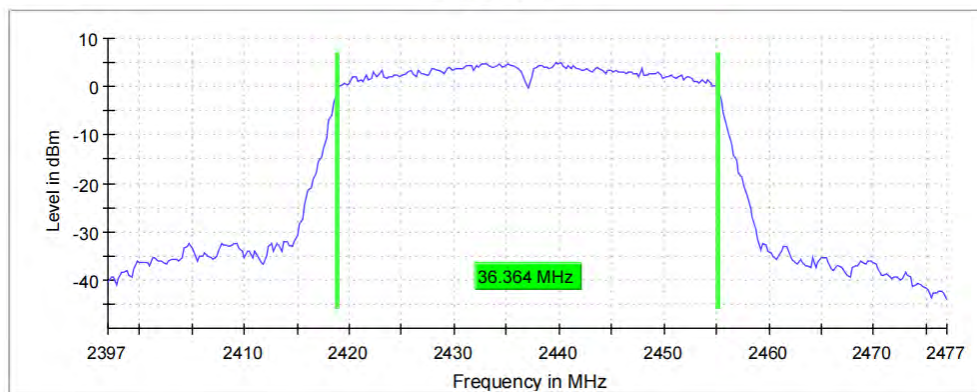
11N40_Ant0_2437



BUREAU
VERITAS

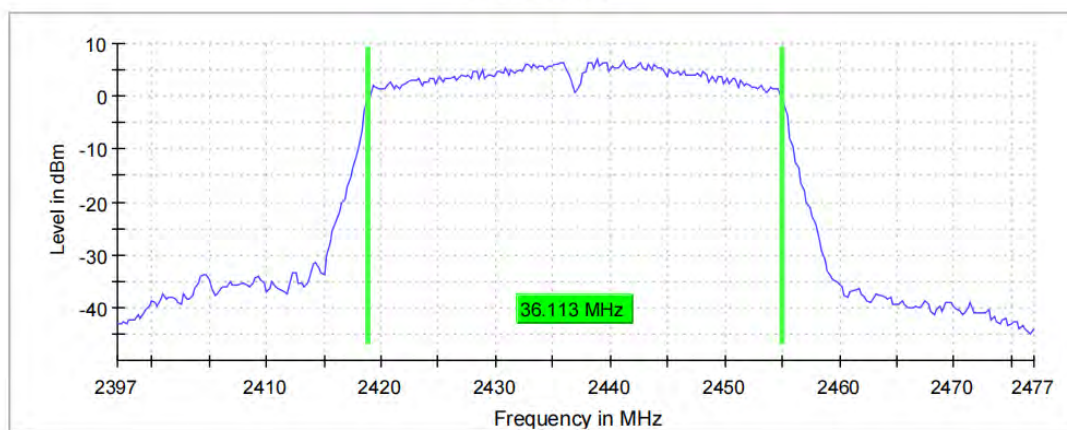
Test Report No.: PSU-QSU2306120115RF12

99 % Bandwidth



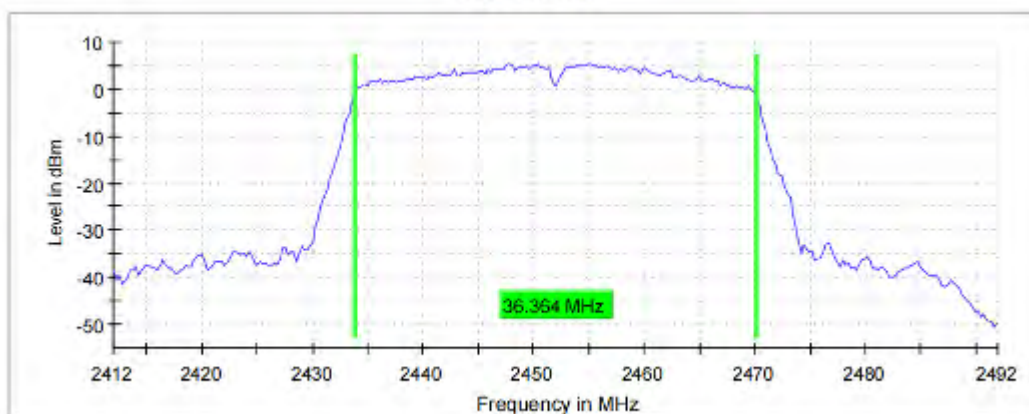
11N40_Ant1_2437

99 % Bandwidth



11N40_Ant0_2452

99 % Bandwidth

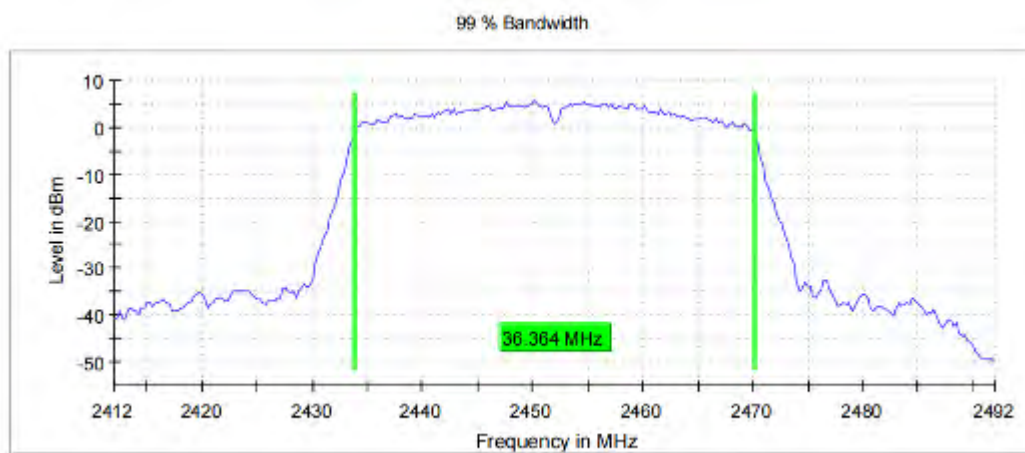


11N40_Ant1_2452



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MAXIMUM CONDUCTED OUTPUT POWER

TEST RESULT PEAK

TestMode	Antenna	Frequency [MHz]	Peak power [dBm]	Peak power [mw]	Limit [dBm]	Verdict	Power Setting
11B-MIMO	Ant0	2412	22.74	187.96	≤30.00	PASS	18
	Ant0	2437	22.78	189.79	≤30.00	PASS	18
	Ant0	2462	22.43	174.81	≤30.00	PASS	18
11G-MIMO	Ant0	2412	29.34	859.01	≤30.00	PASS	15
	Ant0	2437	29.38	866.96	≤30.00	PASS	15
	Ant0	2462	29.09	810.96	≤30.00	PASS	15
11N20-MIMO	Ant0	2412	29.63	918.33	≤30.00	PASS	15
	Ant0	2437	29.74	941.89	≤30.00	PASS	15
	Ant0	2462	29.63	918.33	≤30.00	PASS	15
11N40-MIMO	Ant0	2412	29.50	891.25	≤30.00	PASS	15
	Ant0	2437	29.53	897.43	≤30.00	PASS	15
	Ant0	2462	29.56	903.65	≤30.00	PASS	15

TEST RESULT AVERAGE

Test Mode	Antenna	Frequency [MHz]	Average power [dBm]	Limit [dBm]	Verdict	Power Setting
11B -MIMO	Ant0	2412	18.61	/	PASS	18
	Ant0	2437	18.59	/	PASS	18
	Ant0	2462	18.26	/	PASS	18
11G - MIMO	Ant0	2412	15.82	/	PASS	15
	Ant0	2437	15.96	/	PASS	15
	Ant0	2462	15.70	/	PASS	15
11N20 - MIMO	Ant0	2412	15.98	/	PASS	15
	Ant0	2437	16.25	/	PASS	15
	Ant0	2462	15.84	/	PASS	15
11N40	Ant0	2422	15.96	/	PASS	15



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- MIMO	Ant0	2437	16.11	/	PASS	15
	Ant0	2452	16.08	/	PASS	15



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MAXIMUM POWER SPECTRAL DENSITY

TEST RESULT

TestMode	Antenna	Frequency[MHz]	Result [dBm/3kHz]	Limit [dBm/3kHz]	Verdict
11B	Ant0	2412	-1.02	≤8.00	PASS
	Ant1	2412	-2.86	≤8.00	PASS
	total	2412	1.17	≤8.00	PASS
	Ant0	2437	-2.64	≤8.00	PASS
	Ant1	2437	-2.40	≤8.00	PASS
	total	2437	0.49	≤8.00	PASS
	Ant0	2462	-2.38	≤8.00	PASS
	Ant1	2462	-2.00	≤8.00	PASS
	total	2462	0.82	≤8.00	PASS
11G	Ant0	2412	-11.62	≤8.00	PASS
	Ant1	2412	-12.37	≤8.00	PASS
	total	2412	-8.97	≤8.00	PASS
	Ant0	2437	-11.13	≤8.00	PASS
	Ant1	2437	-11.84	≤8.00	PASS
	total	2437	-8.46	≤8.00	PASS
	Ant0	2462	-10.83	≤8.00	PASS
	Ant1	2462	-11.44	≤8.00	PASS
	total	2462	-8.11	≤8.00	PASS
11N20	Ant0	2412	-12.77	≤8.00	PASS
	Ant1	2412	-12.38	≤8.00	PASS
	total	2412	-9.56	≤8.00	PASS
	Ant0	2437	-11.81	≤8.00	PASS
	Ant1	2437	-11.79	≤8.00	PASS
	total	2437	-8.79	≤8.00	PASS
	Ant0	2462	-12.32	≤8.00	PASS
	Ant1	2462	-12.83	≤8.00	PASS
	total	2462	-9.56	≤8.00	PASS
11N40	Ant0	2422	-16.08	≤8.00	PASS
	Ant1	2422	-16.40	≤8.00	PASS
	total	2422	-13.23	≤8.00	PASS



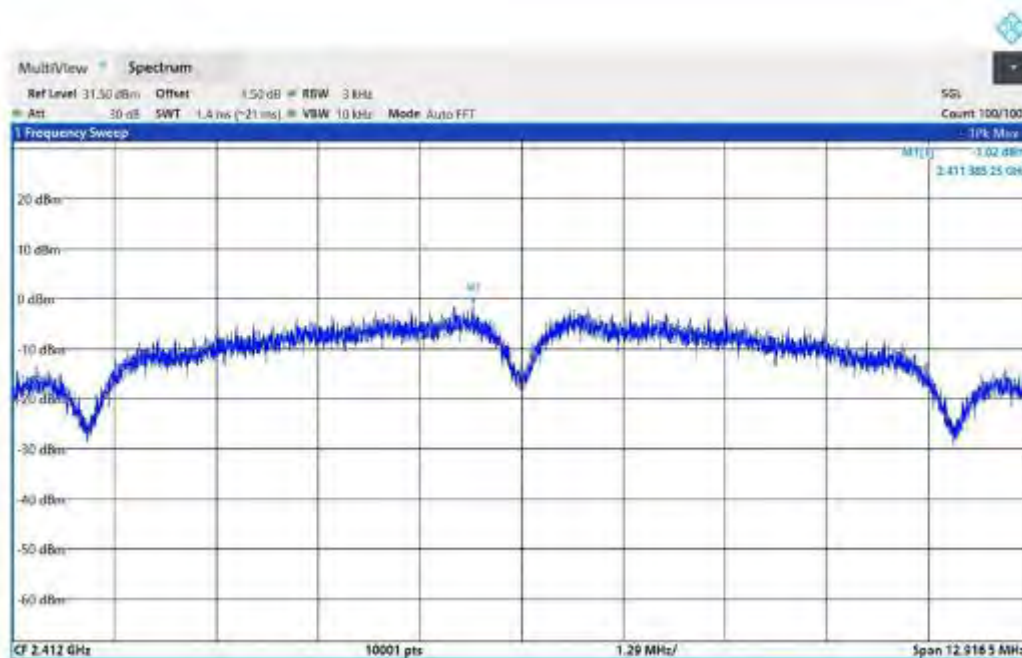
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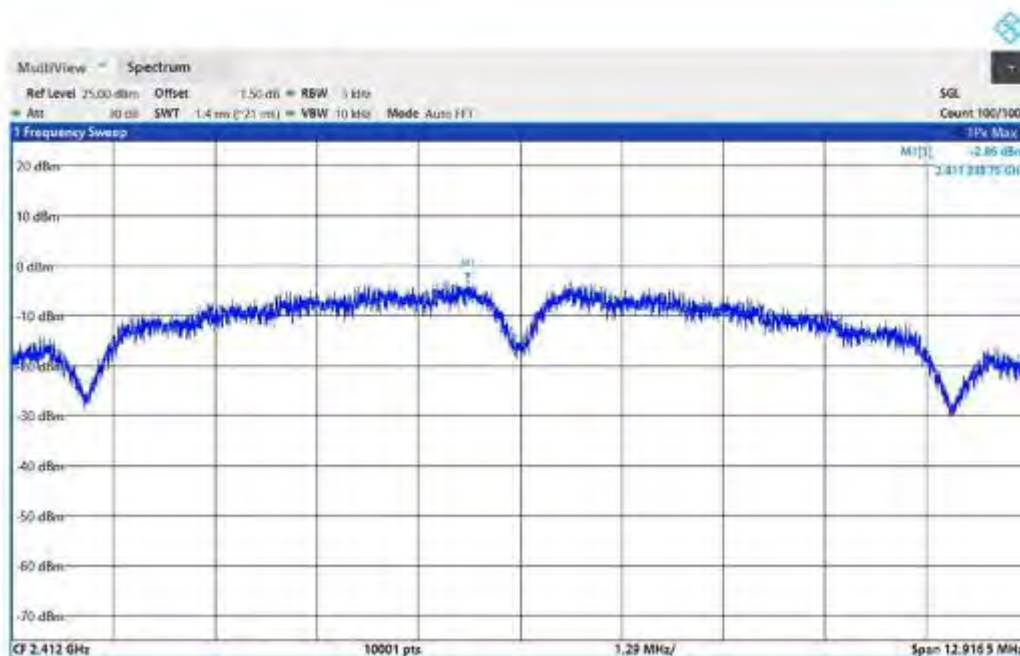
	Ant0	2437	-15.20	≤8.00	PASS
	Ant1	2437	-15.20	≤8.00	PASS
	total	2437	-12.19	≤8.00	PASS
	Ant0	2452	-15.83	≤8.00	PASS
	Ant1	2452	-16.34	≤8.00	PASS
	total	2452	-13.07	≤8.00	PASS

TEST GRAPHS

11B_Ant0_2412



11B_Ant1_2412

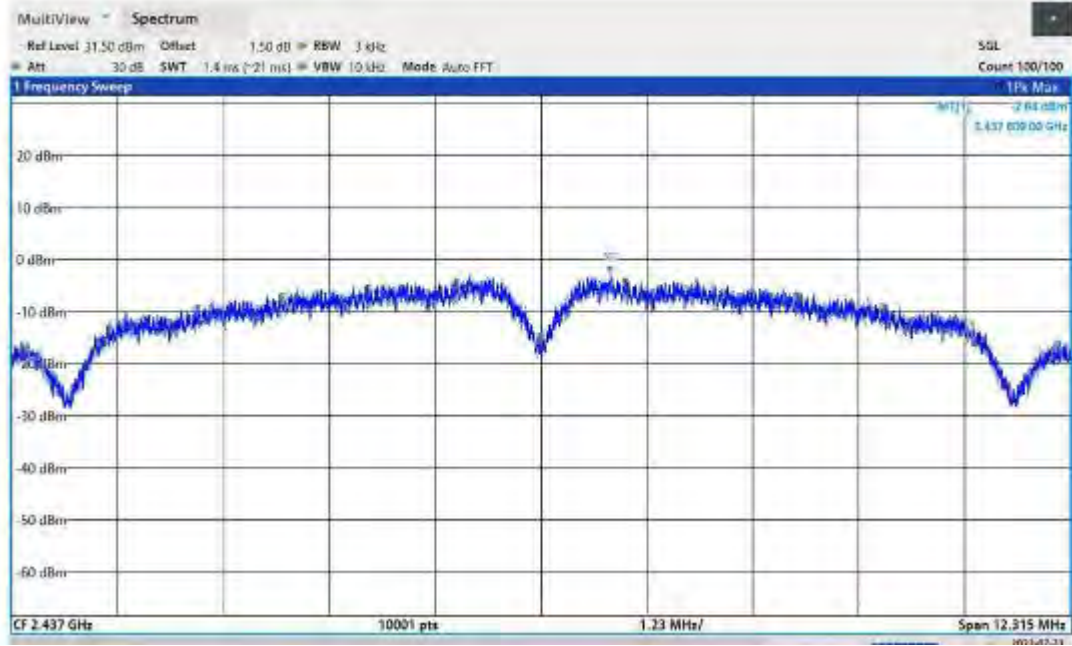


11B_Ant0_2437

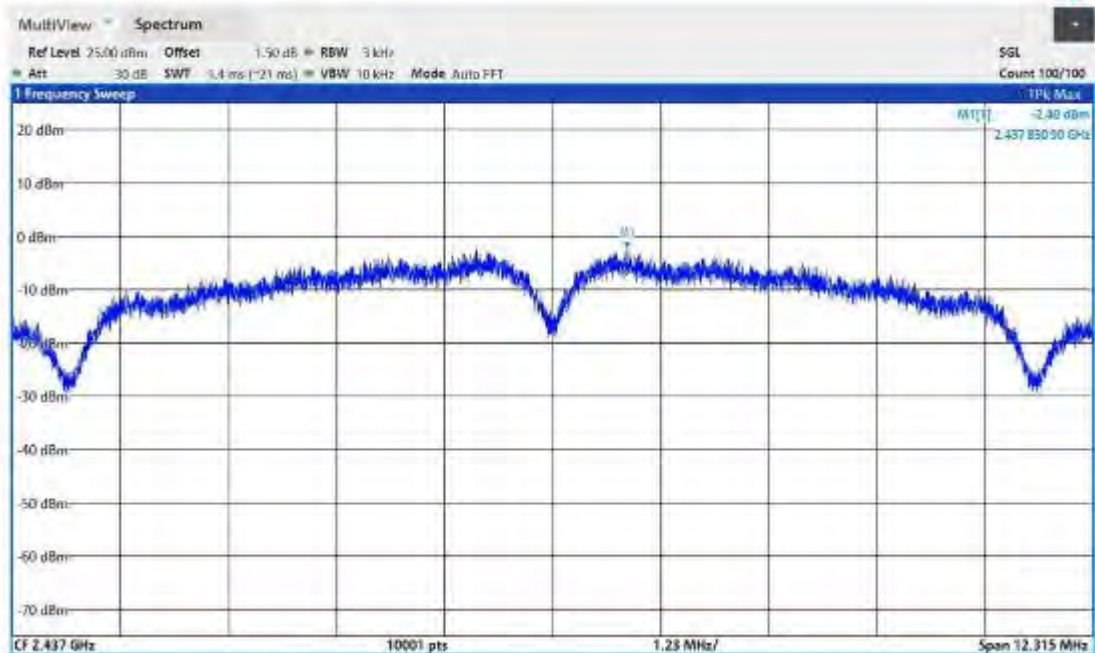


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Test Report No.: PSU-QSU2306120115RF12



11B_Ant1_2437

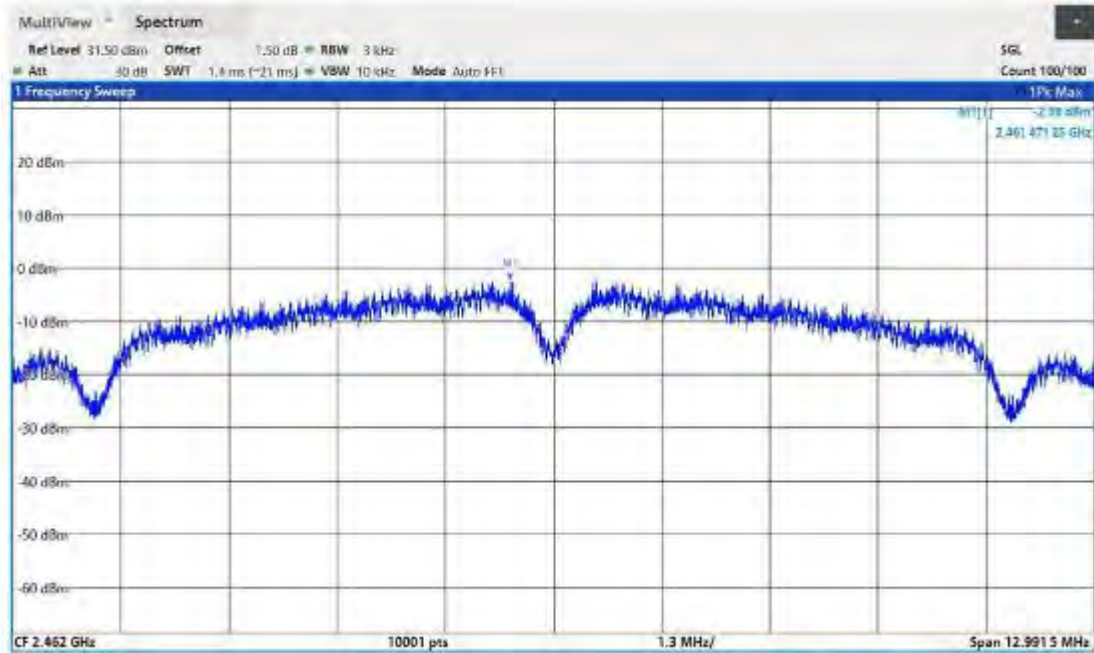


11B_Ant0_2462

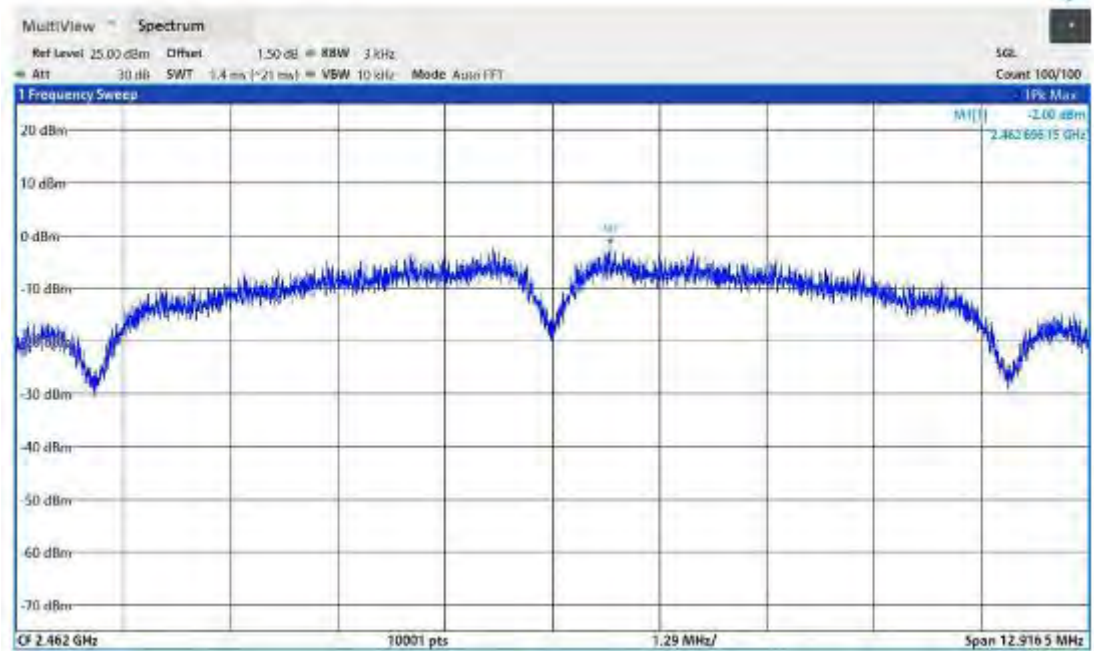


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VERITAS

Test Report No.: PSU-QSU2306120115RF12



11B_Ant1_2462

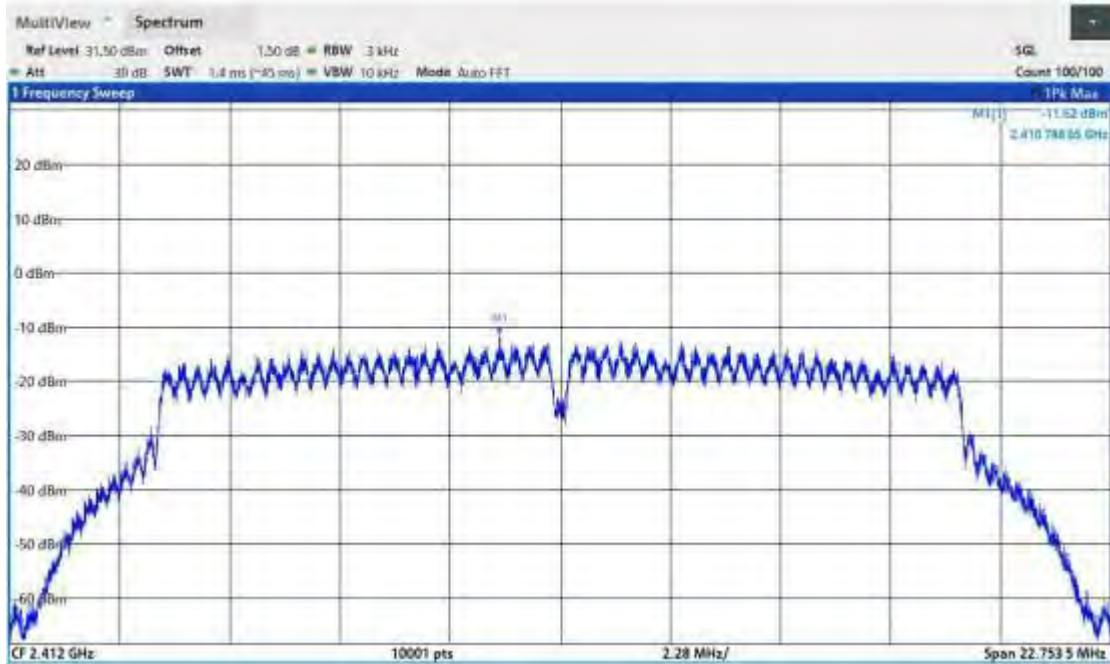


11G_Ant0_2412

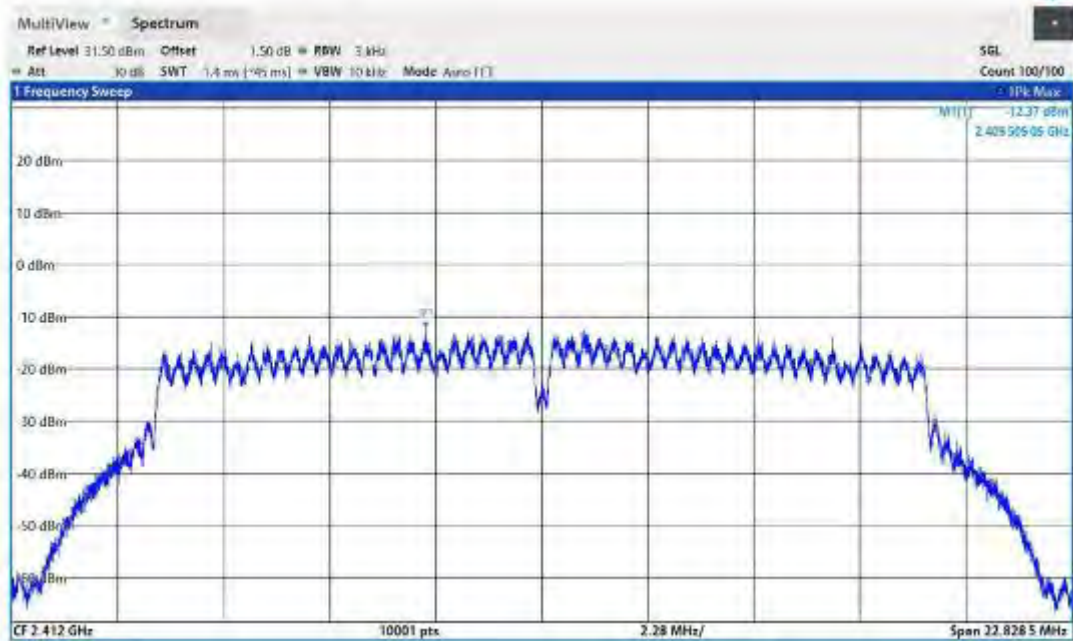


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VERITAS

Test Report No.: PSU-QSU2306120115RF12



11G_Ant1_2412

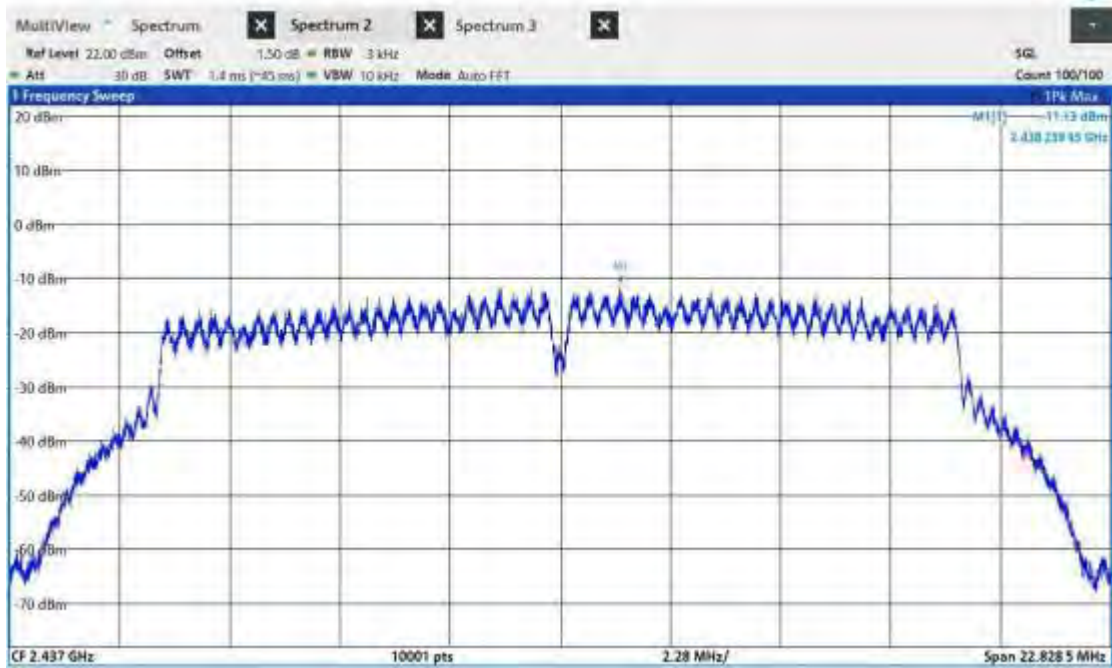


11G_Ant0_2437

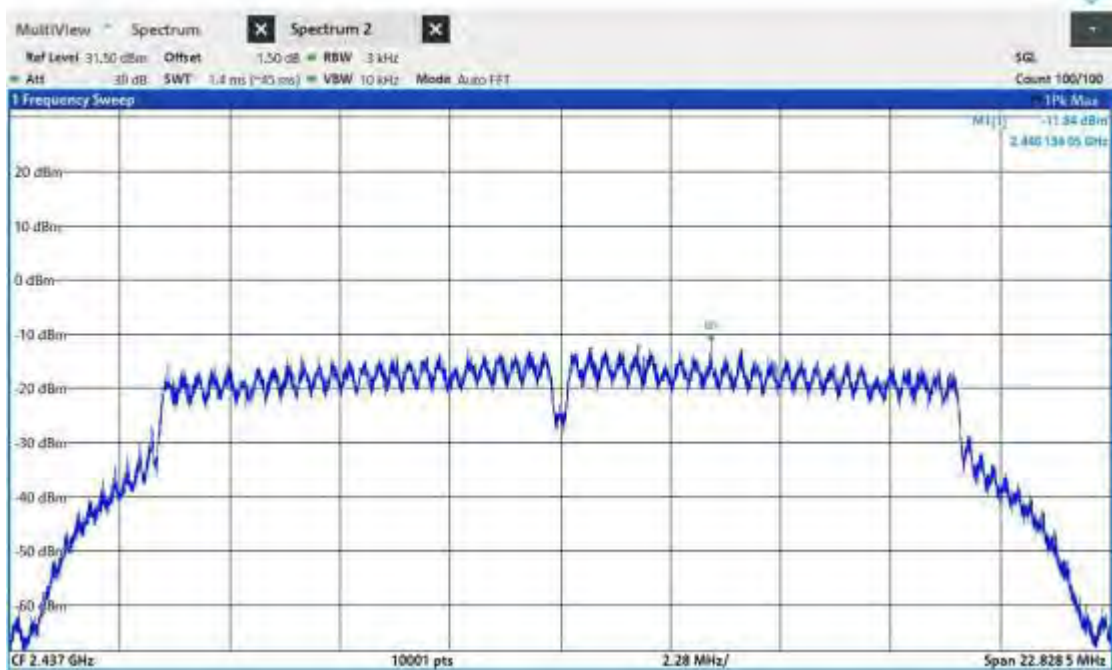


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VERITAS

Test Report No.: PSU-QSU2306120115RF12



11G_Ant1_2437

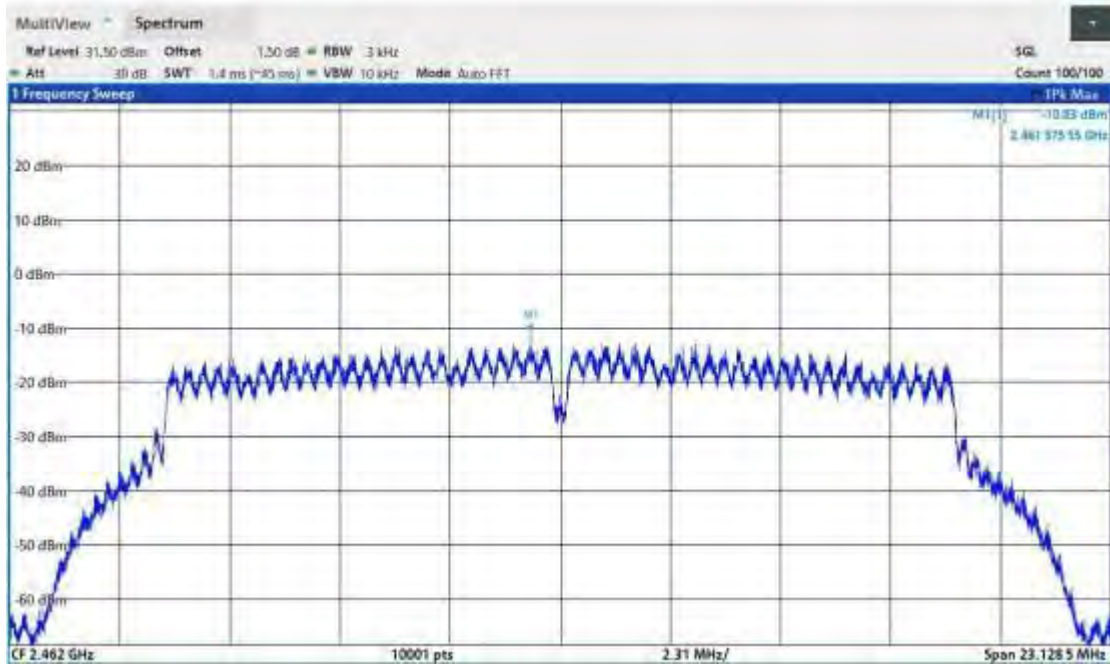


11G_Ant0_2462

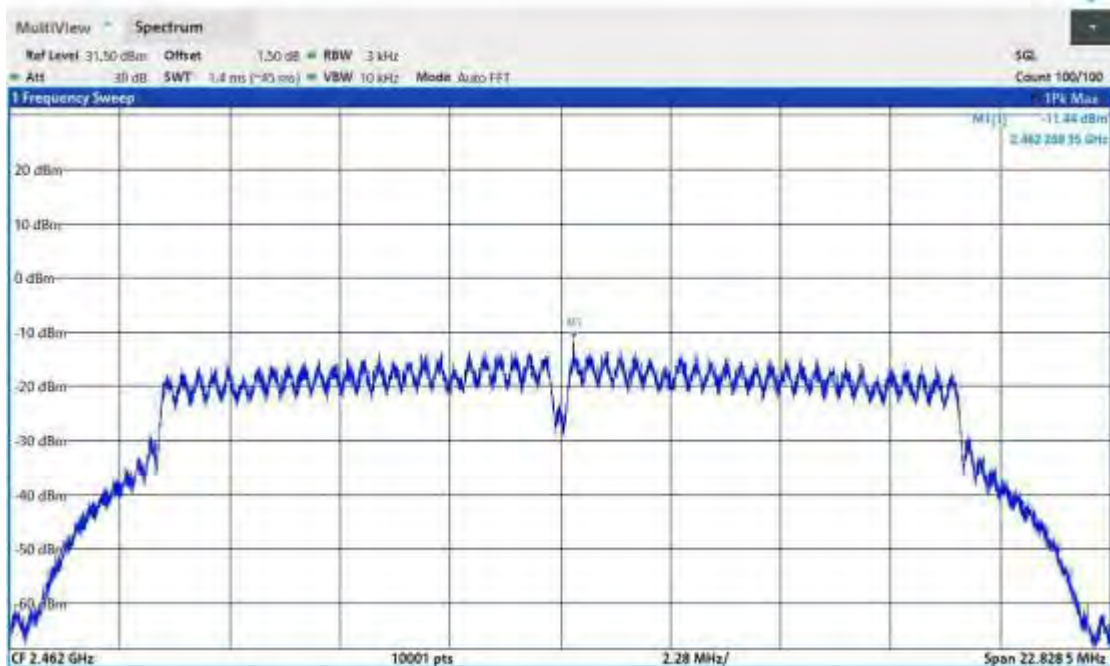


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VERITAS

Test Report No.: PSU-QSU2306120115RF12



11G_Ant1_2462

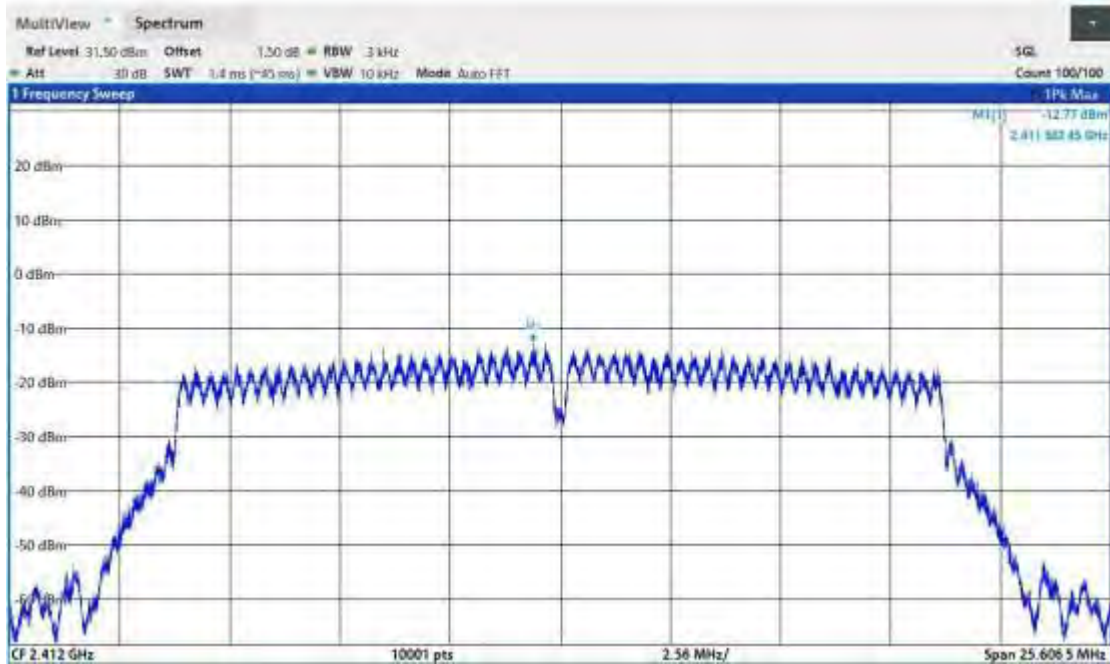


11N20_Ant0_2412

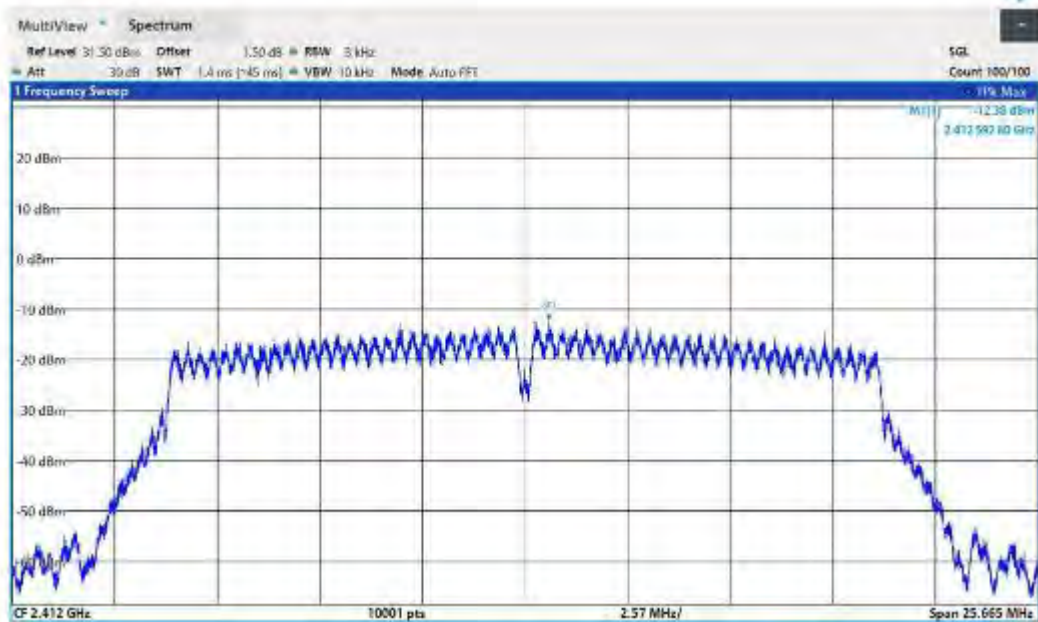


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VERITAS

Test Report No.: PSU-QSU2306120115RF12



11N20_Ant1_2412

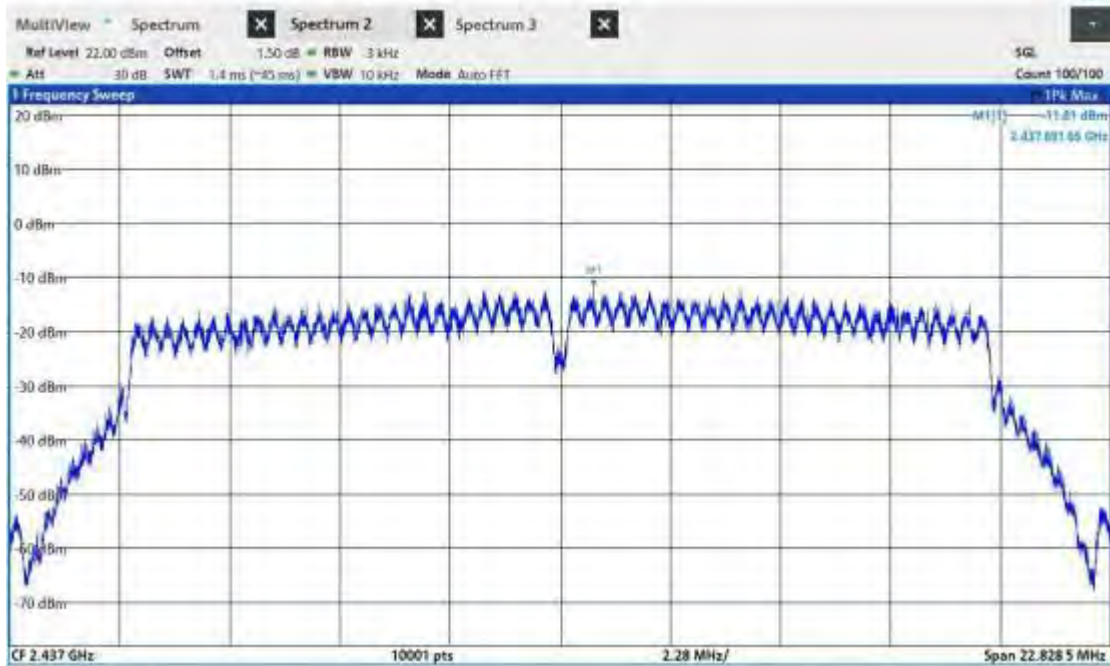


11N20_Ant0_2437

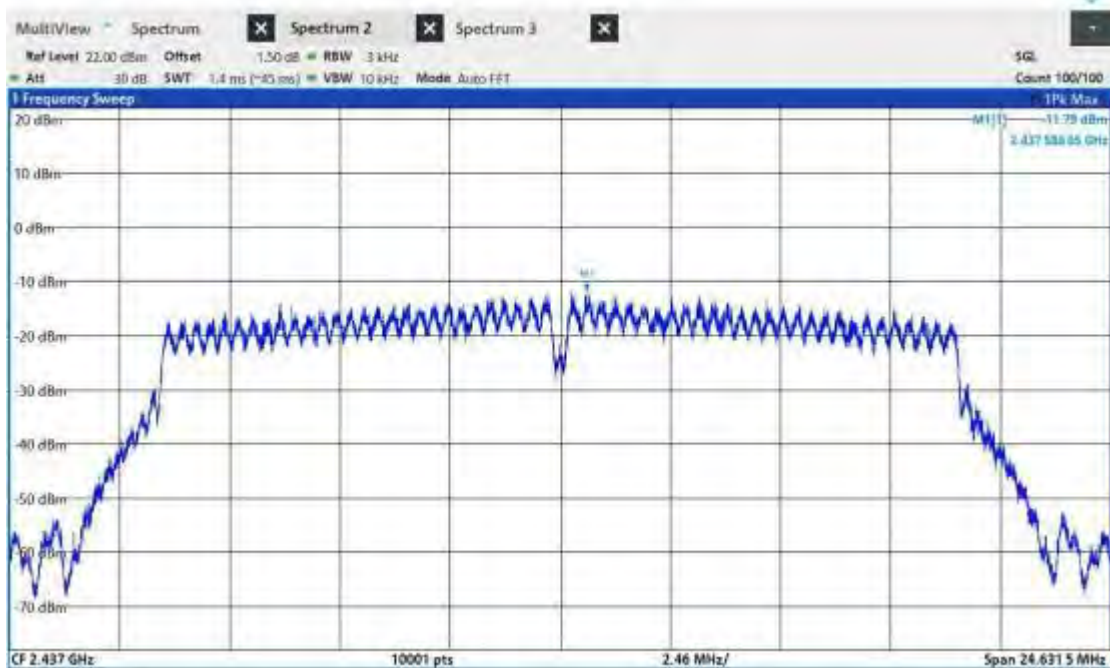


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VERITAS

Test Report No.: PSU-QSU2306120115RF12



11N20_Ant1_2437

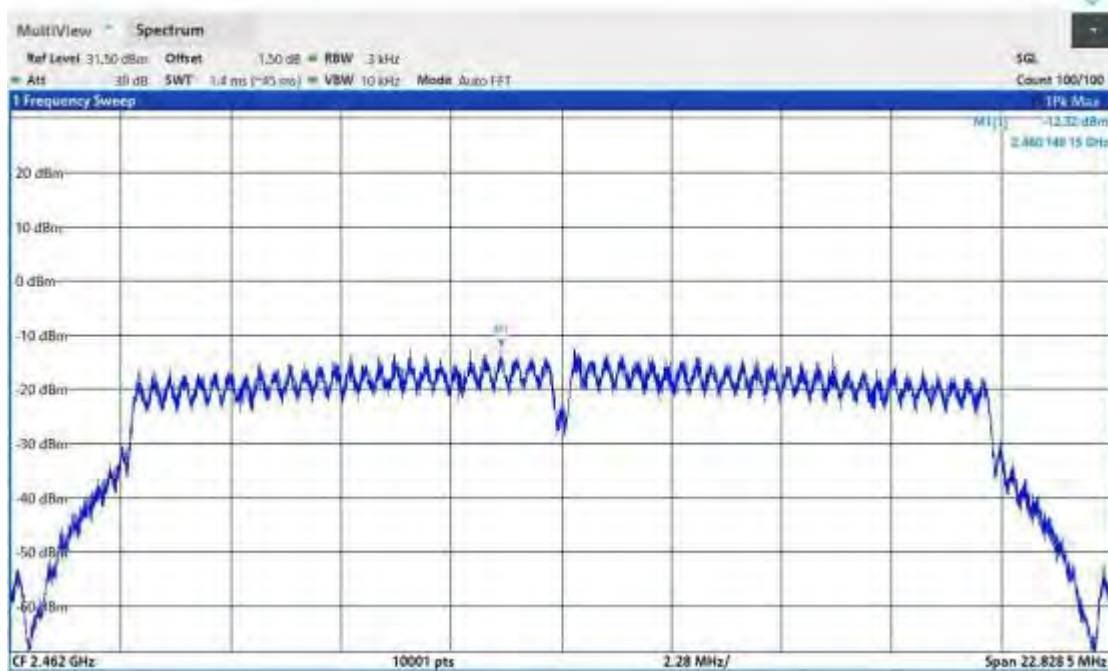


11N20_Ant0_2462

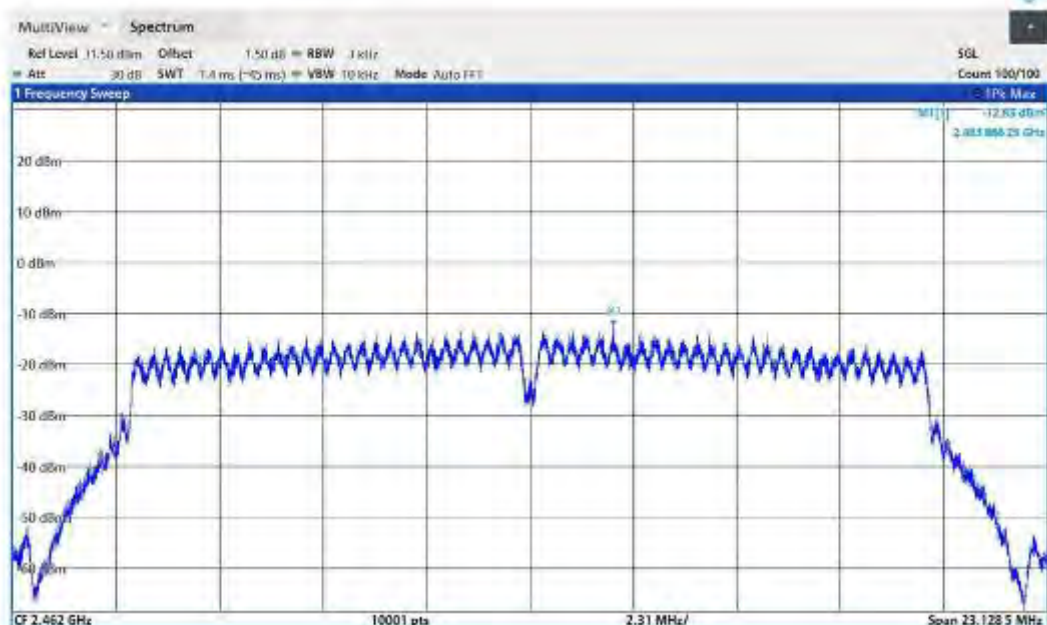


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VERITAS

Test Report No.: PSU-QSU2306120115RF12



11N20_Ant1_2462

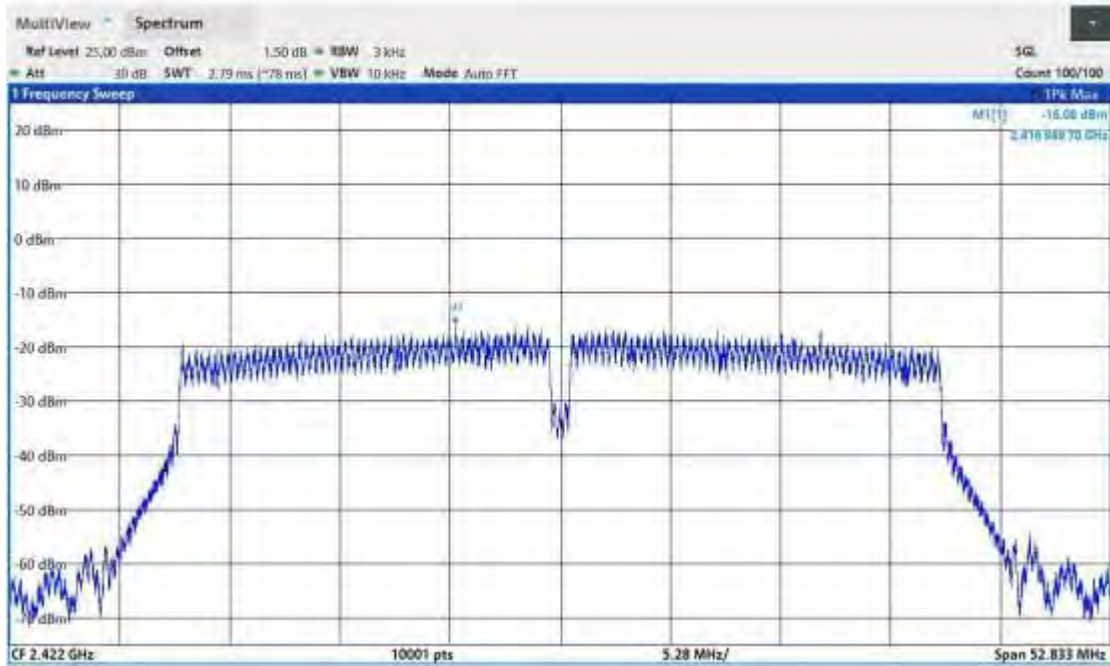


11N40_Ant0_2422

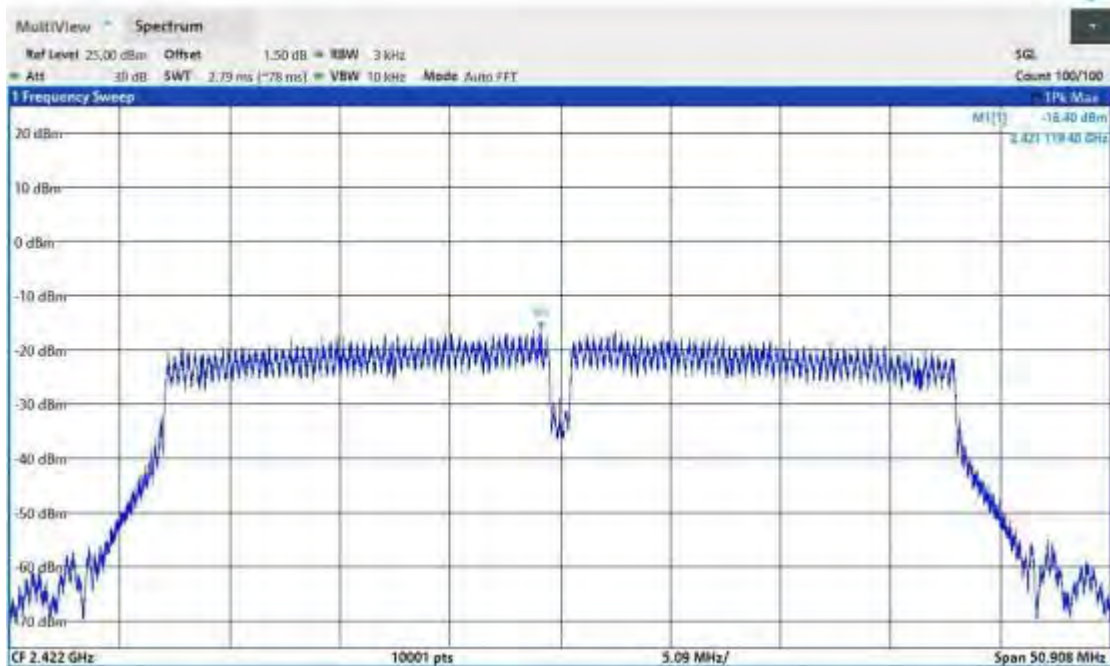


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11N40_Ant1_2422

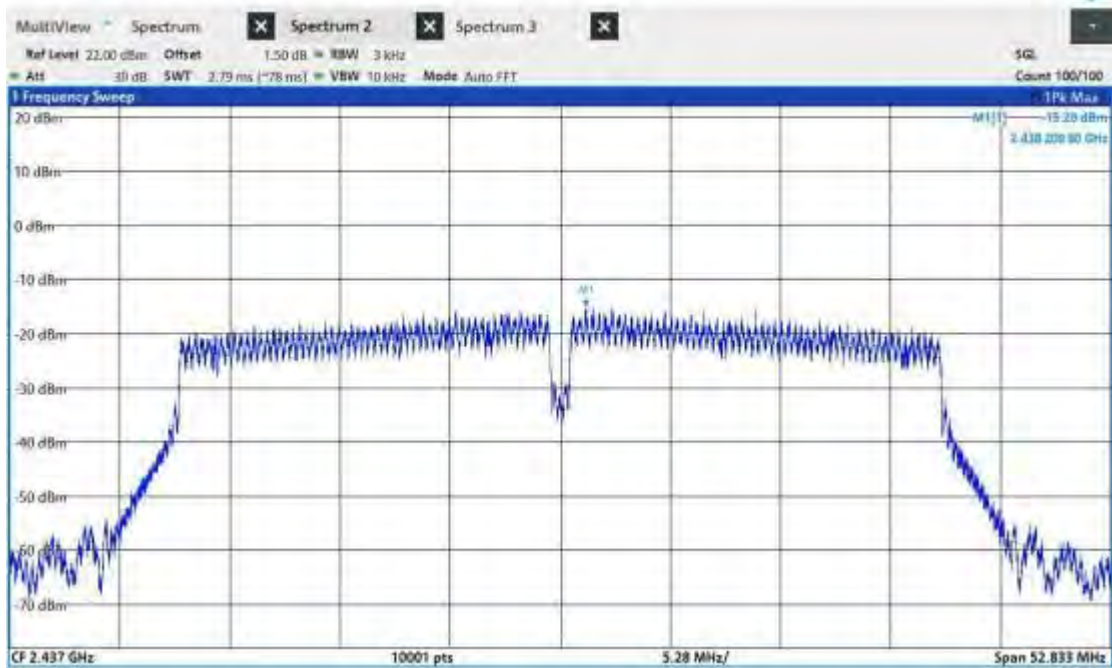


11N40_Ant0_2437

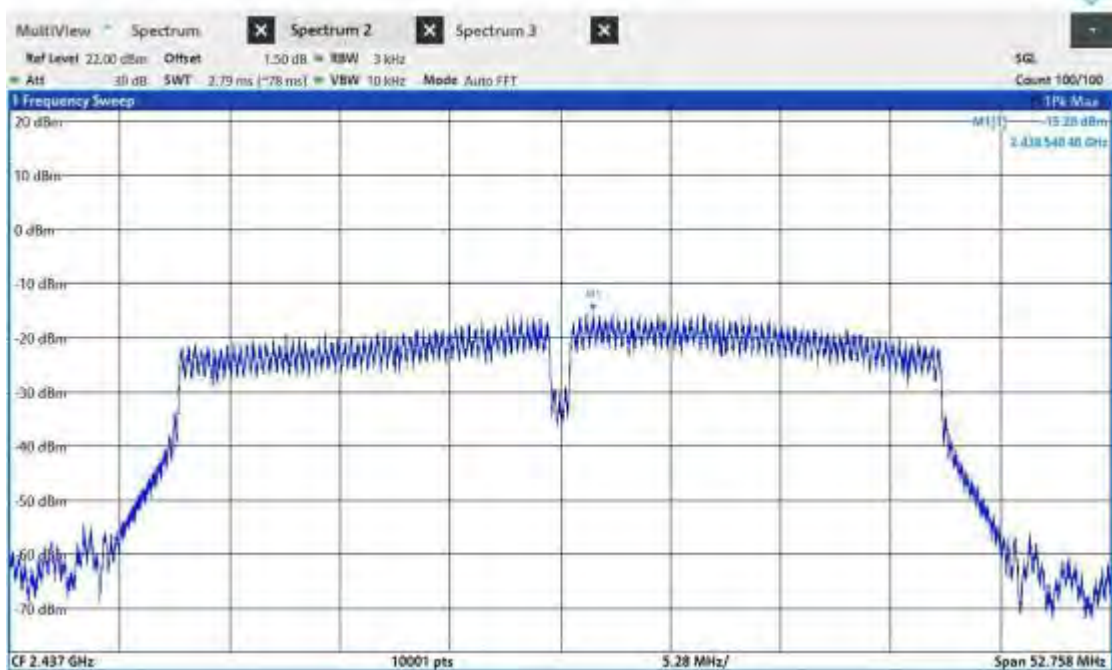


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11N40_Ant1_2437

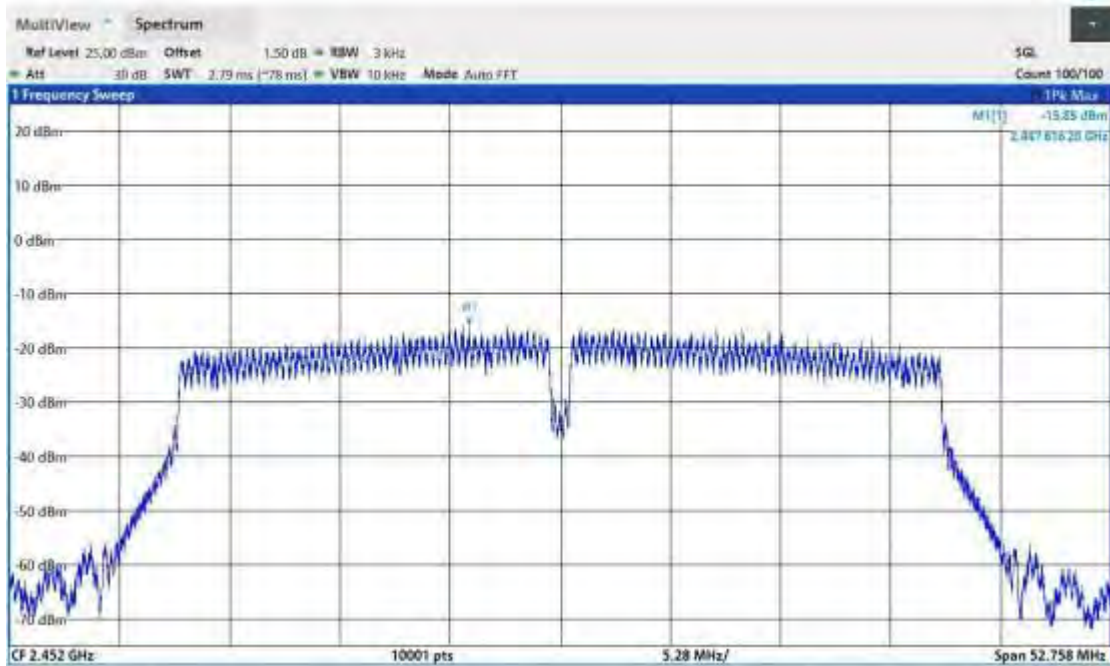


11N40_Ant0_2452

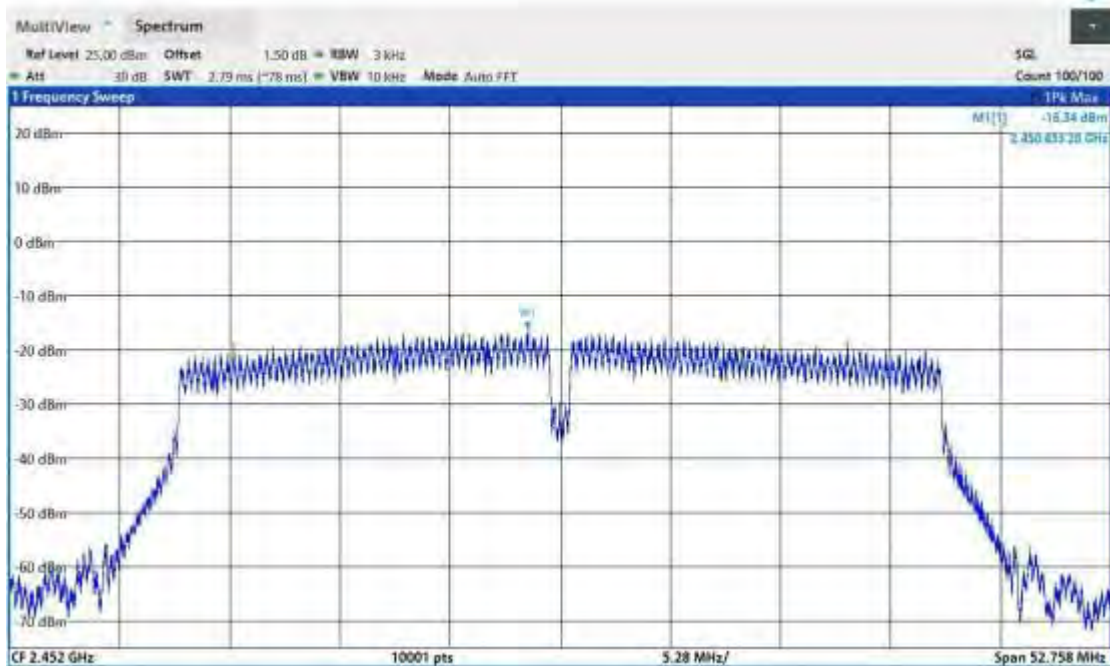


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VERITAS

Test Report No.: PSU-QSU2306120115RF12



11N40_Ant1_2452





Test Report No.: PSU-QSU2306120115RF12

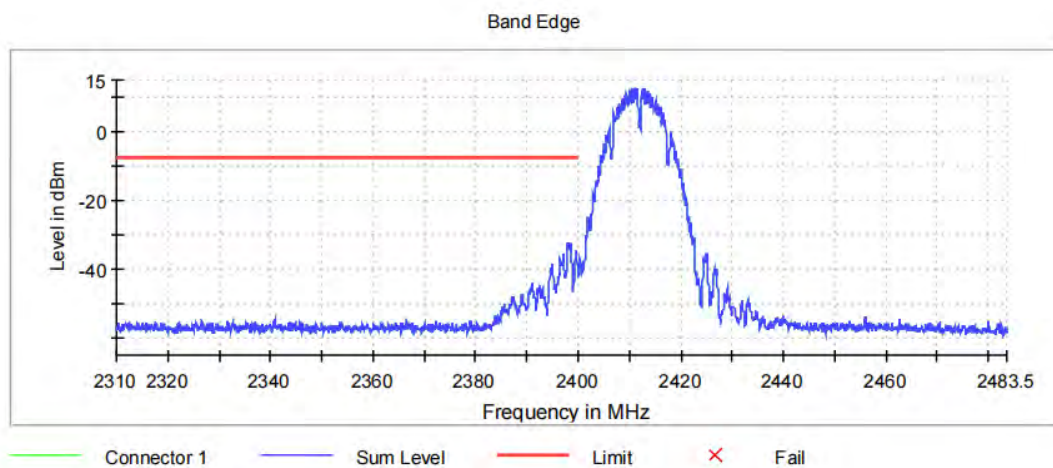
BAND EDGE MEASUREMENTS

TEST RESULT

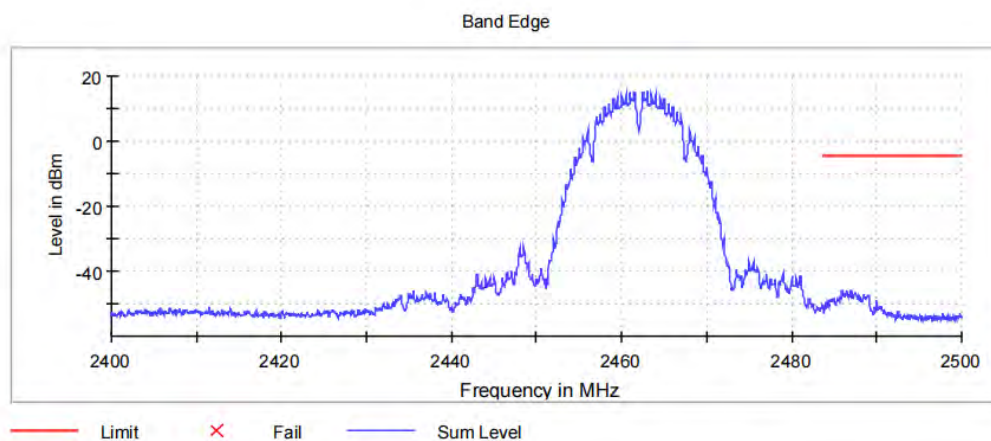
TestMode	Antenna	ChName	Frequency [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant0	Low	2412	12.7	-32.4	≤ -7.3	PASS
	Ant0	High	2462	15.3	-45.9	≤ -4.7	PASS
	Ant1	Low	2412	11.9	-38.6	≤ -8.1	PASS
	Ant1	High	2462	15.2	-45.8	≤ -4.8	PASS
11G	Ant0	Low	2412	3.6	-31.6	≤ -16.4	PASS
	Ant0	High	2462	5.5	-47.0	≤ -14.5	PASS
	Ant1	Low	2412	2.4	-38.4	≤ -17.6	PASS
	Ant1	High	2462	5.5	-46.6	≤ -14.5	PASS
11N20	Ant0	Low	2412	2.8	-38.2	≤ -17.2	PASS
	Ant0	High	2462	2.9	-49.4	≤ -17.1	PASS
	Ant1	Low	2412	-3.6	-39.2	≤ -23.6	PASS
	Ant1	High	2462	-6.1	-50.9	≤ -26.1	PASS
11N40	Ant0	Low	2412	0.4	-37.6	≤ -19.6	PASS
	Ant0	High	2462	3.1	-43.4	≤ -16.9	PASS
	Ant1	Low	2412	-0.4	-38.8	≤ -20.4	PASS
	Ant1	High	2462	3.2	-43.0	≤ -16.8	PASS

TEST GRAPHS

11B-CDD_Ant0_Low_2412



11B-CDD_Ant0_High_2462

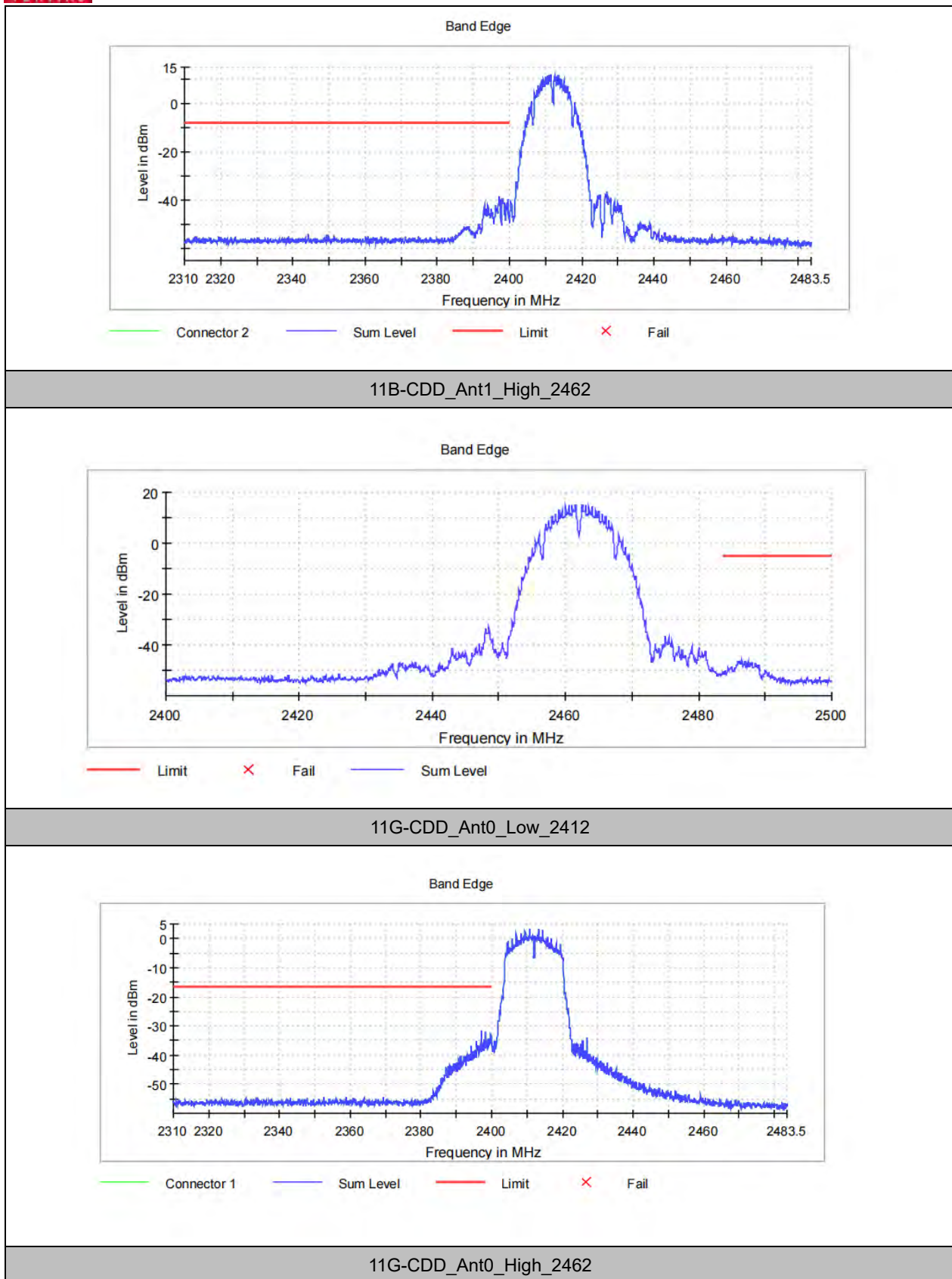


11B-CDD_Ant1_Low_2412



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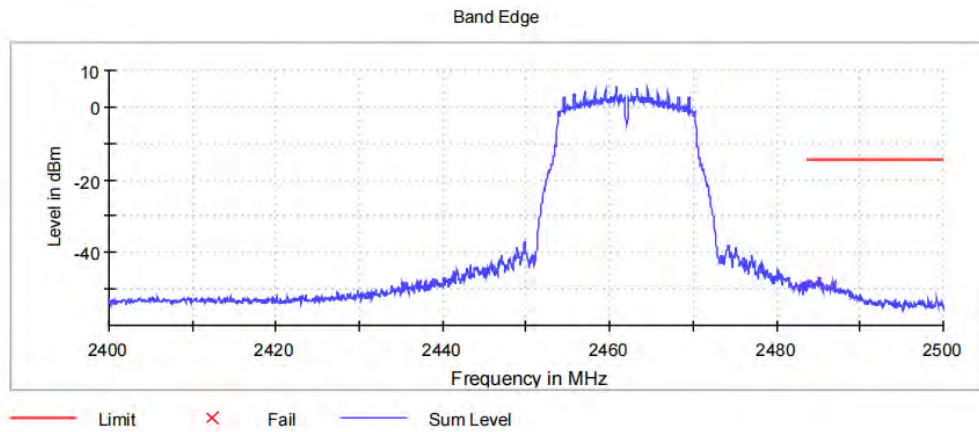
Test Report No.: PSU-QSU2306120115RF12



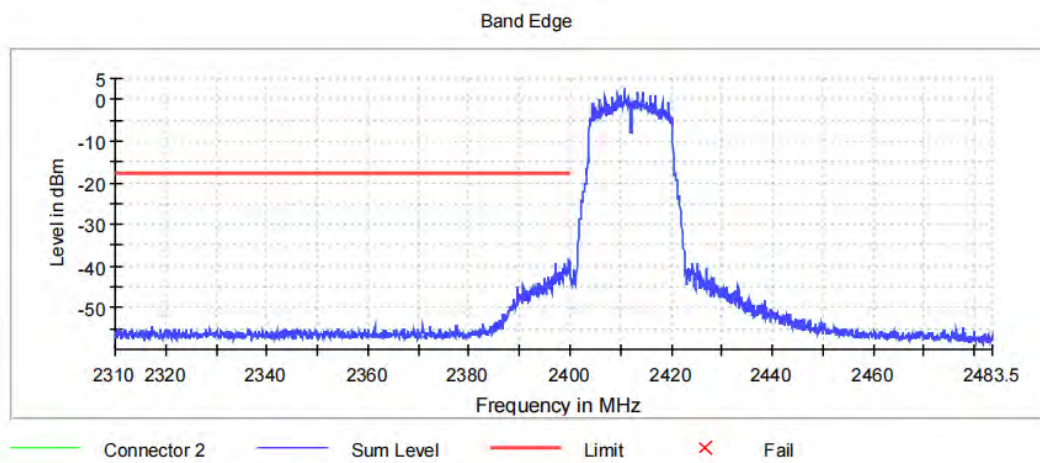


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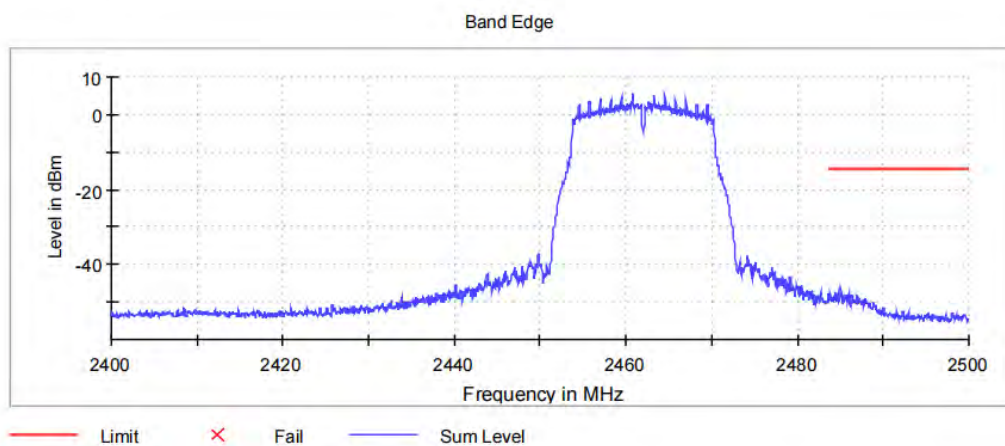
Test Report No.: PSU-QSU2306120115RF12



11G-CDD_Ant1_Low_2412



11G-CDD_Ant1_High_2462

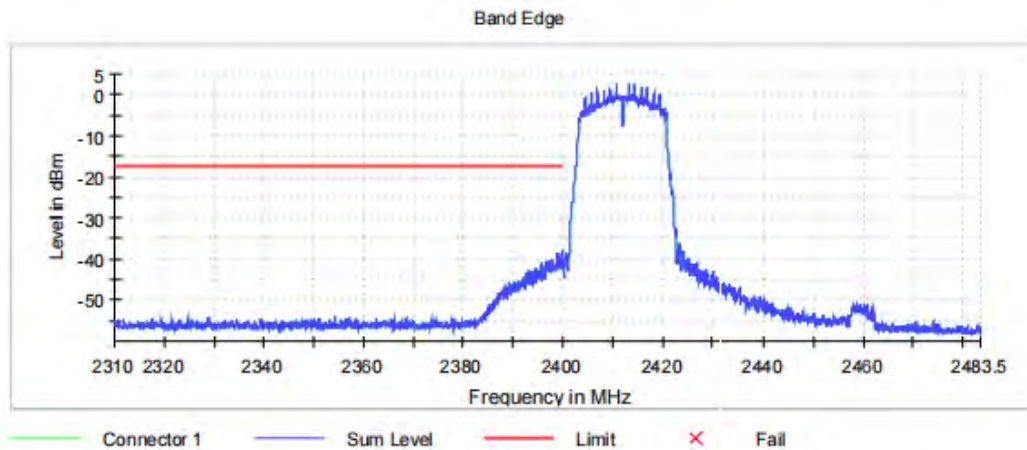


11N20SISO_Ant0_Low_2412

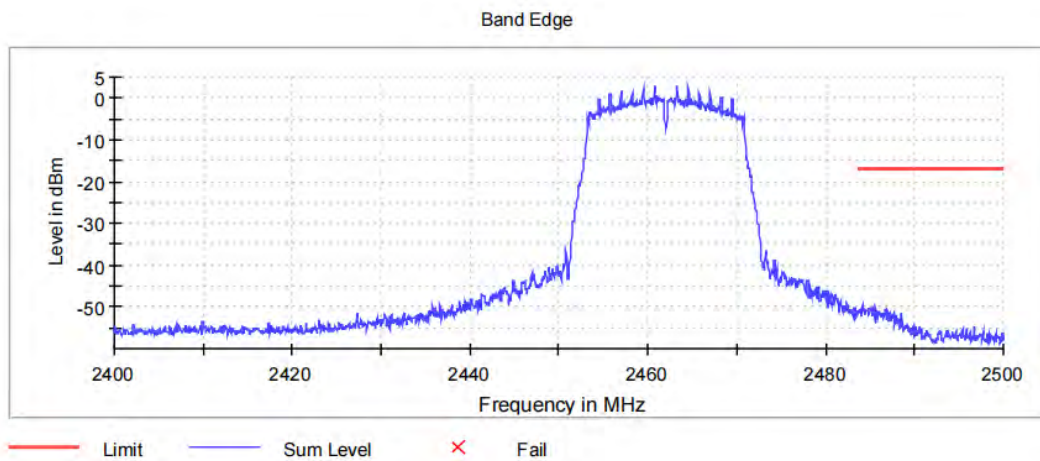


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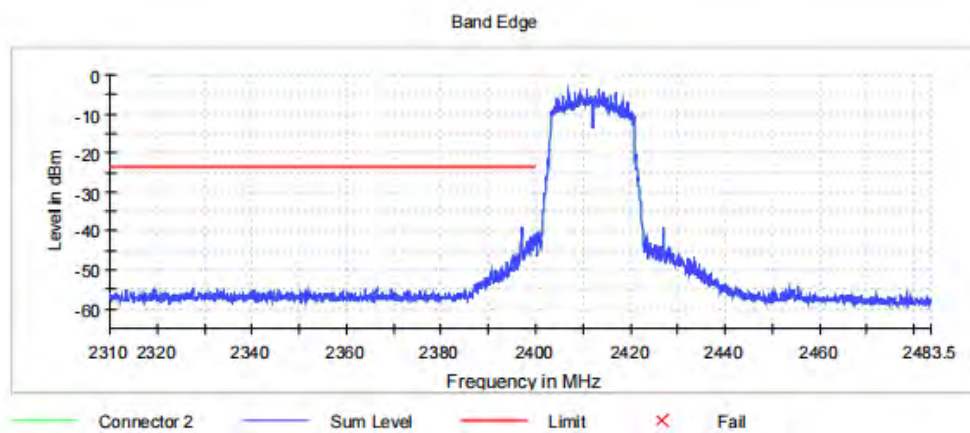
Test Report No.: PSU-QSU2306120115RF12



11N20SISO_Ant0_High_2462



11N20SISO_Ant1_Low_2412

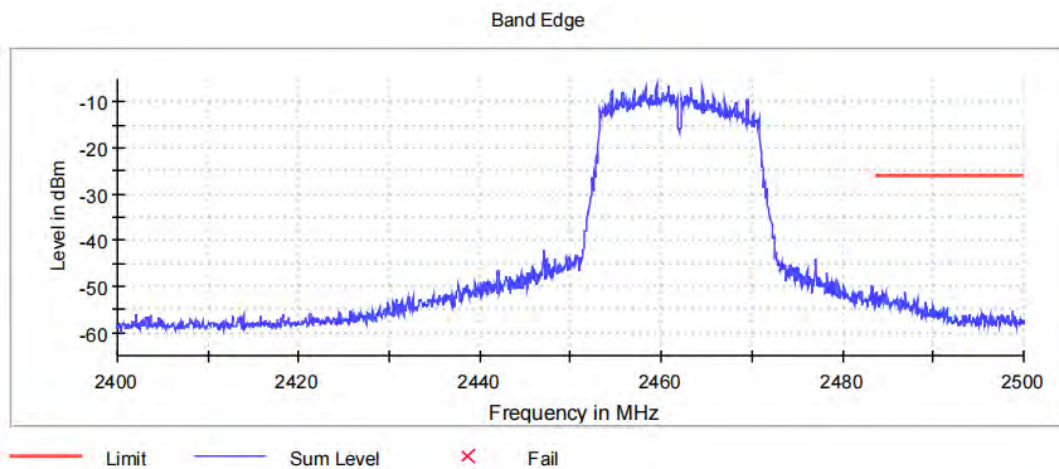


11N20SISO_Ant1_High_2462

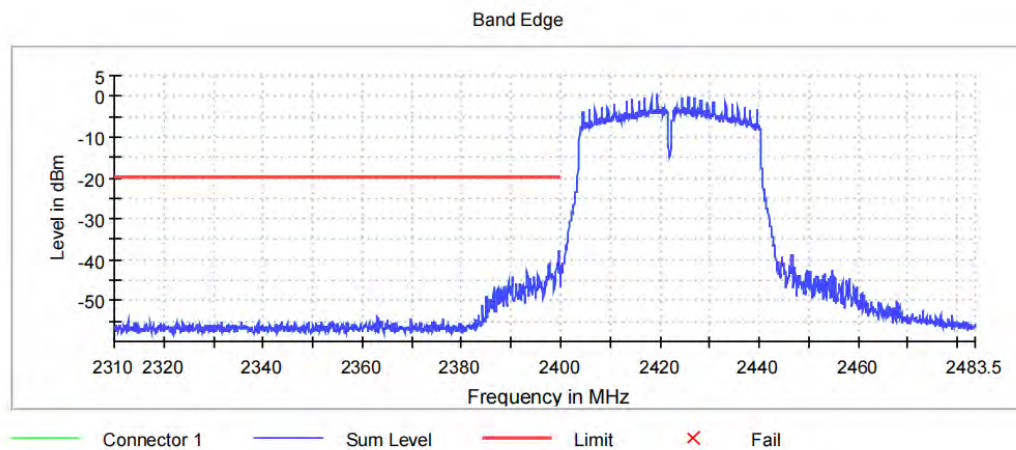


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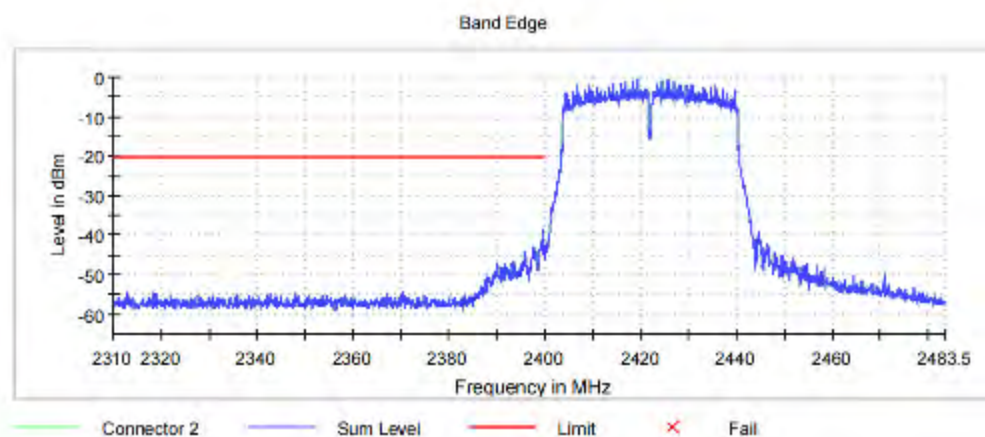
Test Report No.: PSU-QSU2306120115RF12



11N40SISO_Ant0_Low_2412



11N40SISO_Ant0_High_2462

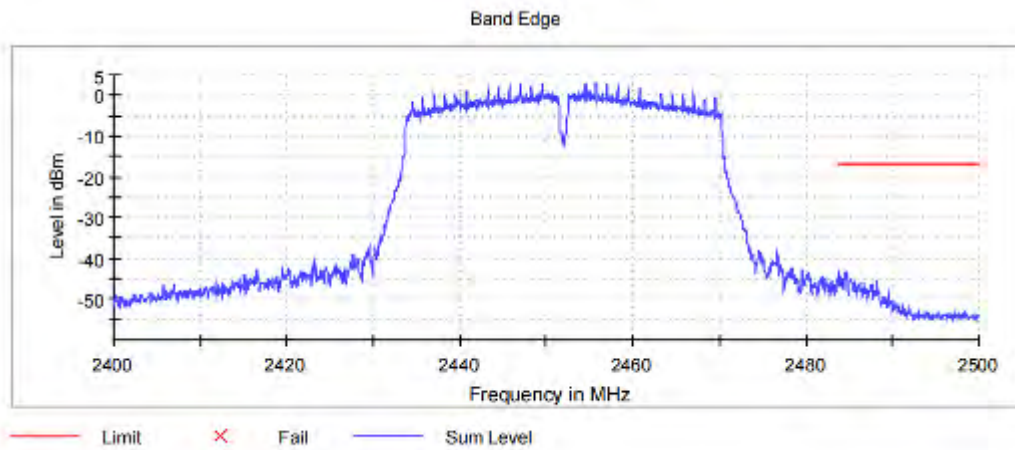


11N40SISO_Ant1_Low_2412

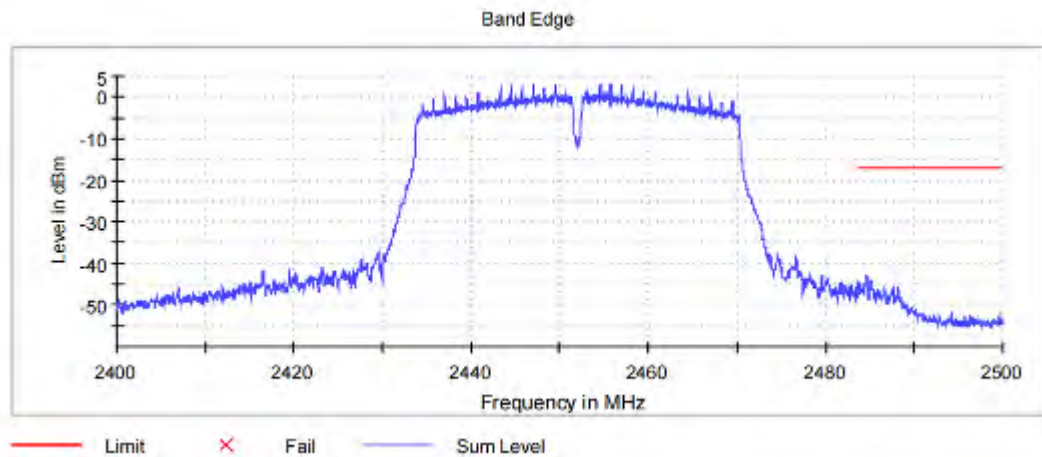


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11N40SISO_Ant1_High_2462

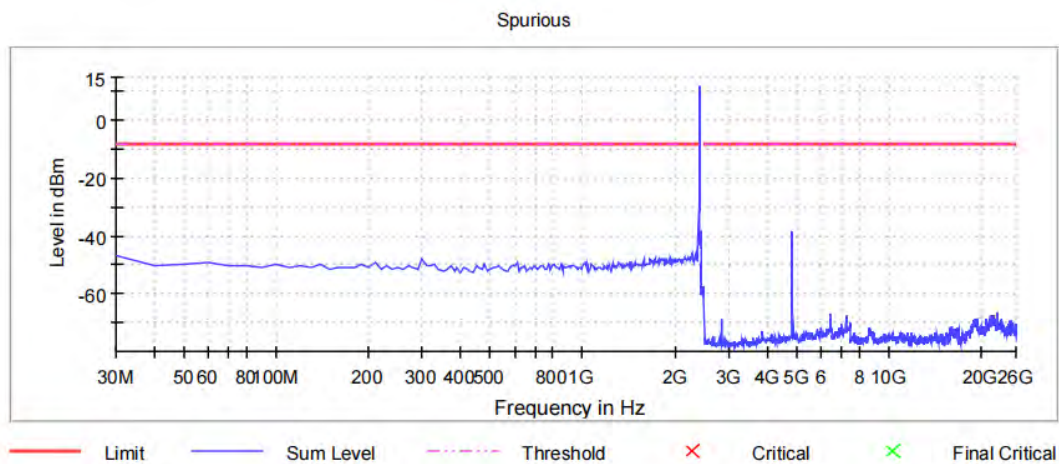


**CONDUCTED SPURIOUS EMISSION****TEST RESULT**

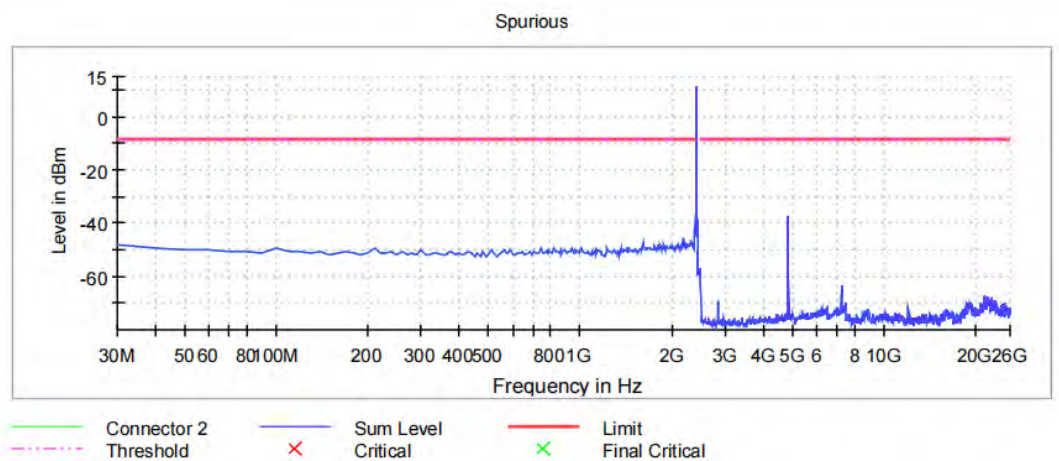
TestMode	Antenna	Frequency[MHz]	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11A	Ant0	2412	30~26000	12.1	-38.5	≤-7.9	PASS
	Ant1	2412	30~26000	11.3	-37.1	≤-8.7	PASS
	Ant0	2437	30~26000	11.4	-34.5	≤-8.6	PASS
	Ant1	2437	30~26000	10.3	-36.9	≤-9.7	PASS
	Ant0	2462	30~26000	11.1	-34.3	≤-8.9	PASS
	Ant1	2462	30~26000	12.3	-34.7	≤-7.7	PASS
11G	Ant0	2412	30~26000	0.6	-40.3	≤-19.4	PASS
	Ant1	2412	30~26000	0.7	-44.9	≤-19.3	PASS
	Ant0	2437	30~26000	1.7	-55.0	≤-18.3	PASS
	Ant1	2437	30~26000	-0.7	-56.2	≤-20.7	PASS
	Ant0	2462	30~26000	2.2	-46.1	≤-17.8	PASS
	Ant1	2462	30~26000	1.1	-46.9	≤-18.9	PASS
11N20	Ant0	2412	30~26000	0.3	-43.7	≤-19.7	PASS
	Ant1	2412	30~26000	-9.7	-53.8	≤-29.7	PASS
	Ant0	2437	30~26000	1.4	-56.1	≤-18.6	PASS
	Ant1	2437	30~26000	-13.1	-69.1	≤-33.1	PASS
	Ant0	2462	30~26000	1.0	-46.6	≤-19.0	PASS
	Ant1	2462	30~26000	0.6	-36.1	≤-19.4	PASS
11N40	Ant0	2422	30~26000	-0.8	-48.8	≤-20.8	PASS
	Ant1	2422	30~26000	-1.9	-46.9	≤-21.9	PASS
	Ant0	2437	30~26000	0.2	-51.7	≤-19.8	PASS
	Ant1	2437	30~26000	-0.5	-53.9	≤-20.5	PASS
	Ant0	2452	30~26000	-0.8	-46.1	≤-20.8	PASS
	Ant1	2452	30~26000	-0.4	-47.5	≤-20.4	PASS

TEST GRAPHS

11B_Ant0_2412_30~26000



11B_Ant1_2412_30~26000



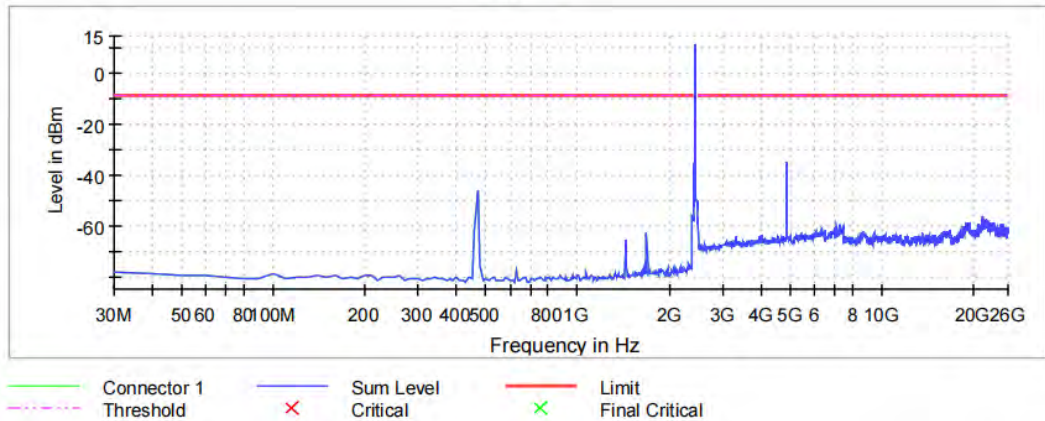
11B_Ant0_2437_30~26000



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VERITAS

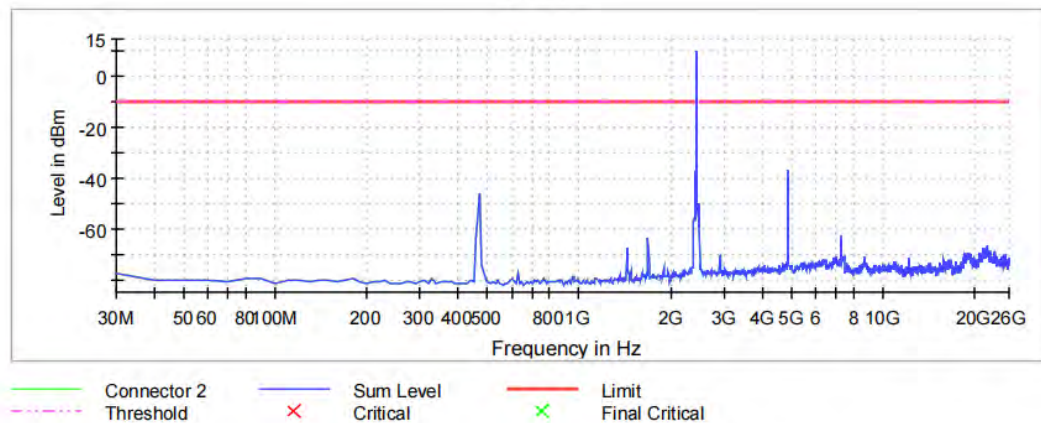
Test Report No.: PSU-QSU2306120115RF12

Spurious



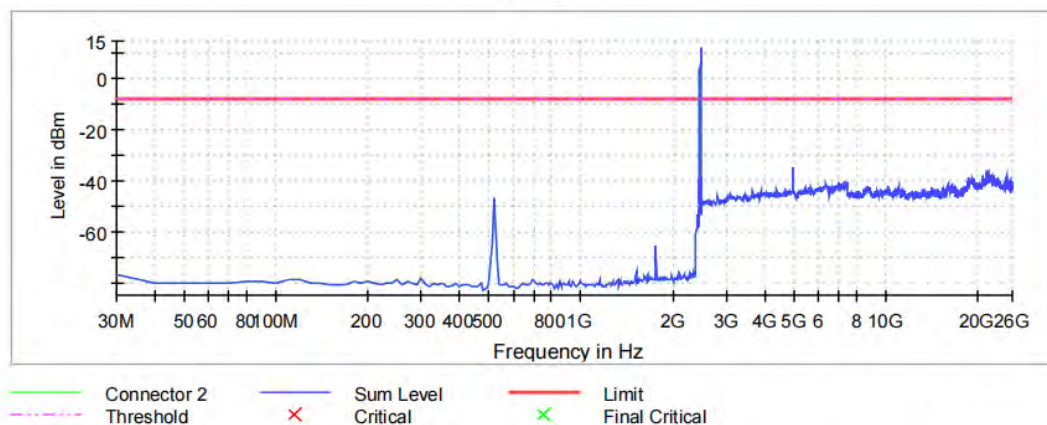
11B_Ant1_2437_30~26000

Spurious



11B_Ant0_2462_30~26000

Spurious



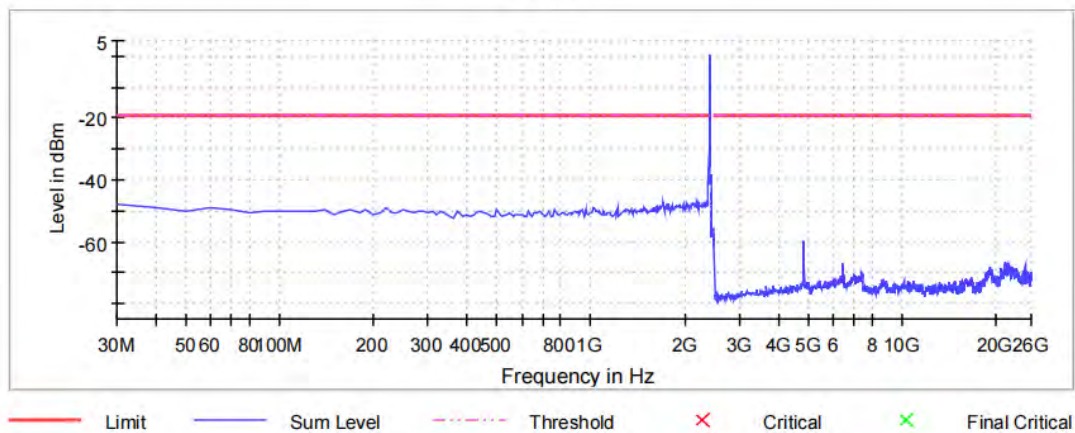
11G_Ant0_2412_30~26000



BUREAU
VERITAS

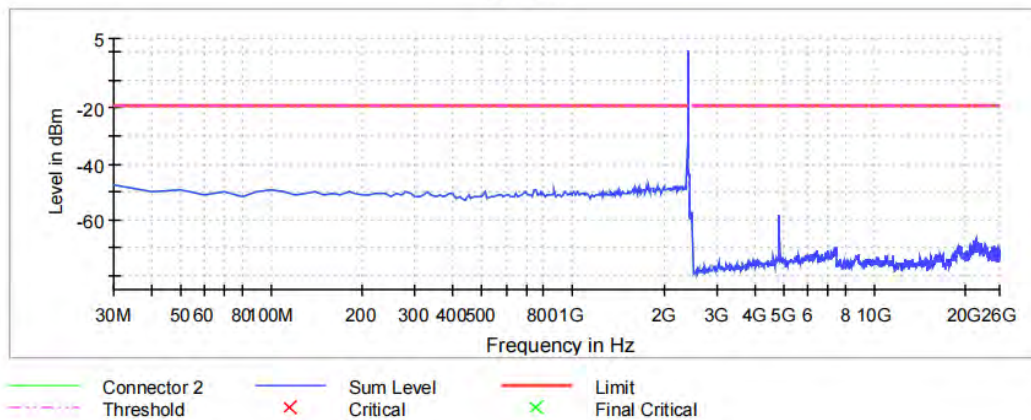
Test Report No.: PSU-QSU2306120115RF12

Spurious



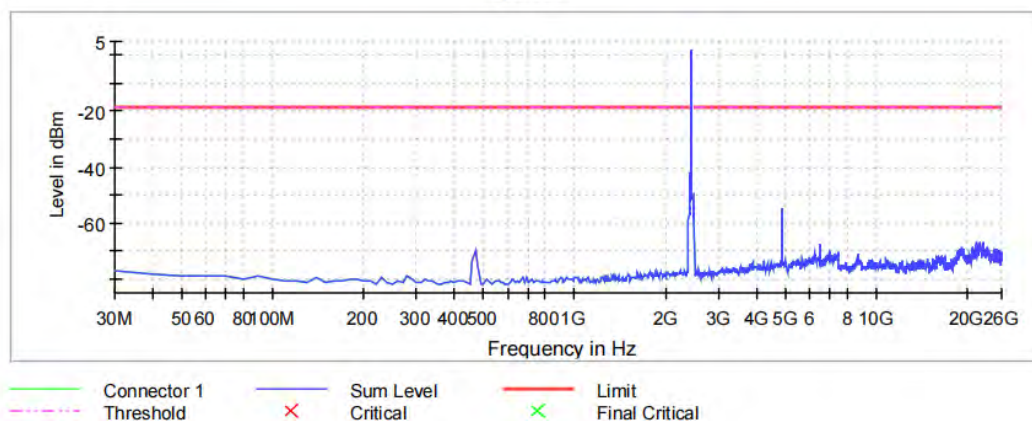
11G_Ant1_2412_30~26000

Spurious



11G_Ant0_2437_30~26000

Spurious

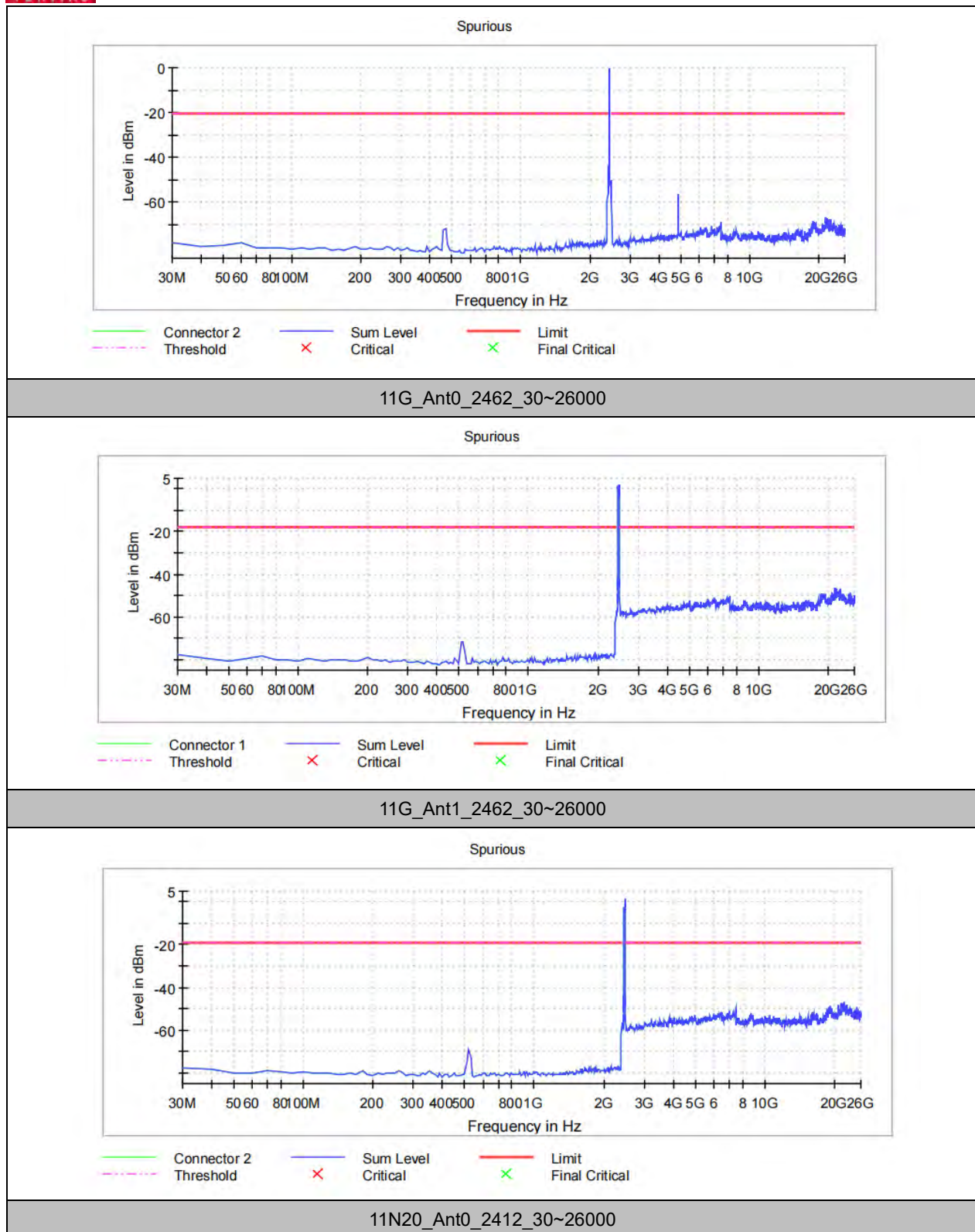


11G_Ant1_2437_30~26000



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VERITAS

Test Report No.: PSU-QSU2306120115RF12

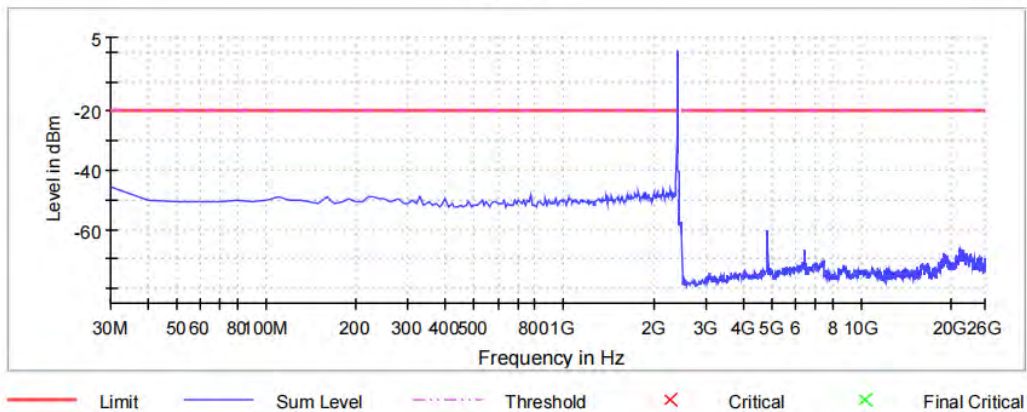




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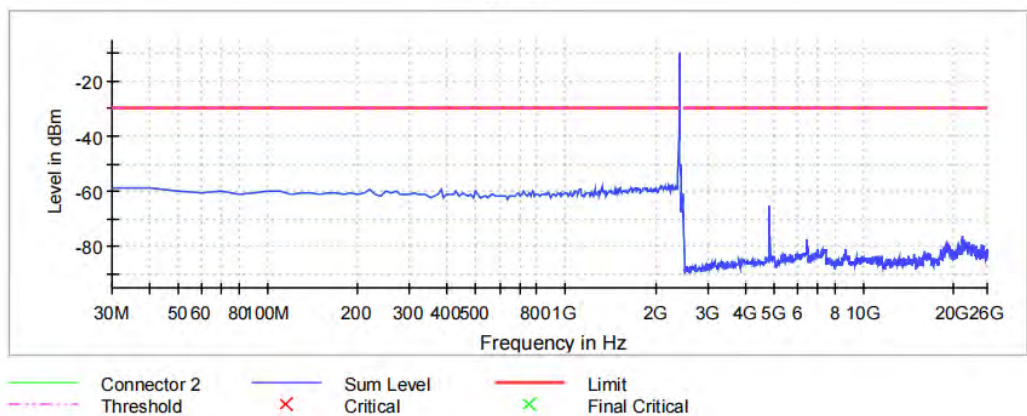
Test Report No.: PSU-QSU2306120115RF12

Spurious



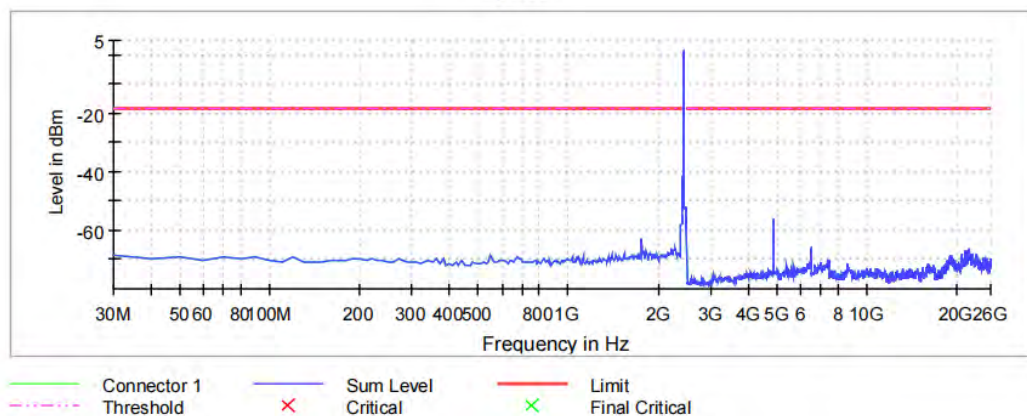
11N20_Ant1_2412_30~26000

Spurious



11N20_Ant0_2437_30~26000

Spurious

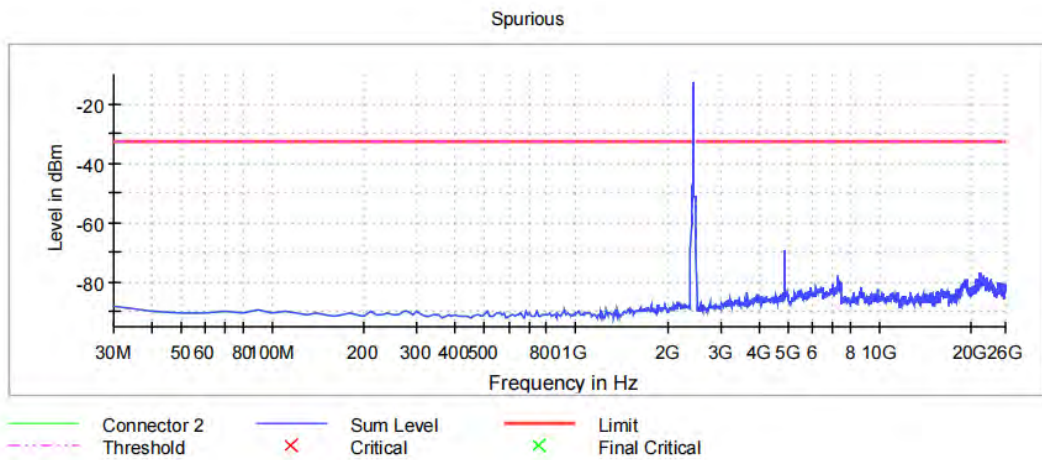


11N20_Ant1_2437_30~26000

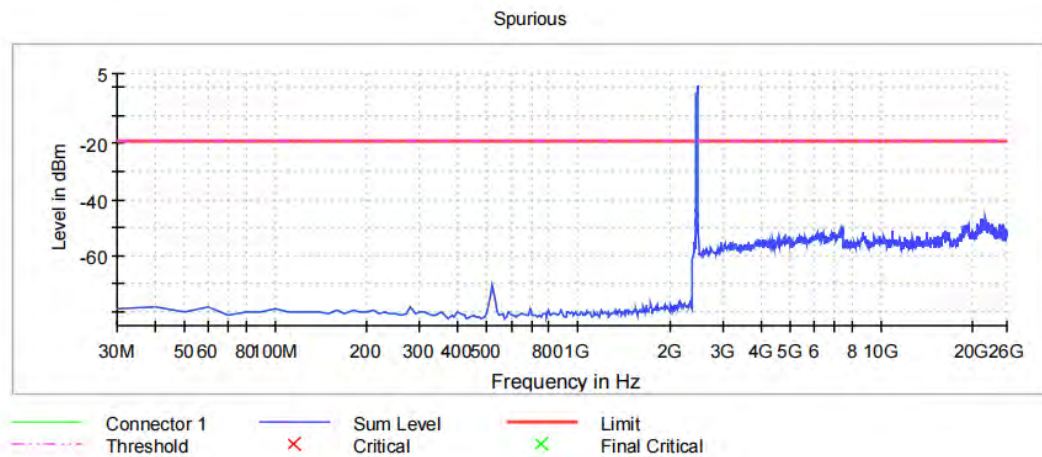


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VERITAS

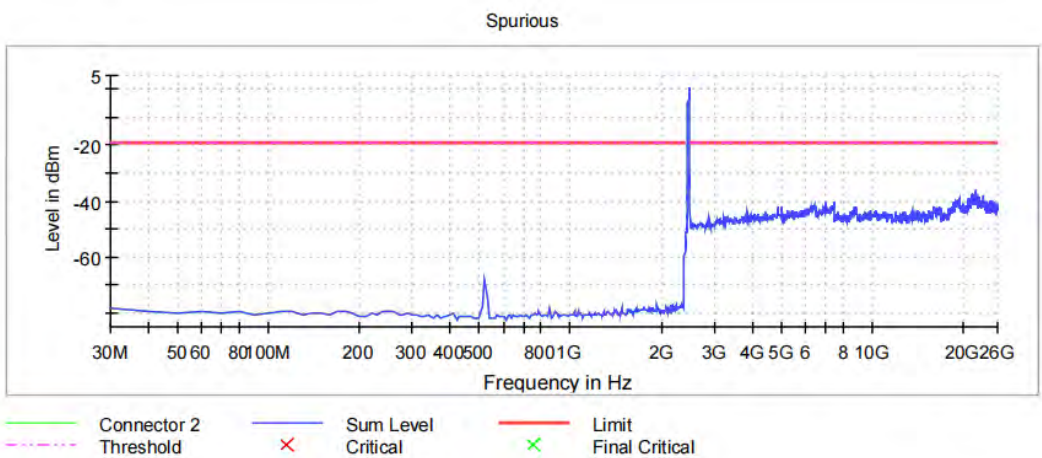
Test Report No.: PSU-QSU2306120115RF12



11N20_Ant0_2462_30~26000



11N20_Ant1_2462_30~26000



11N40_Ant0_2422_30~26000



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Test Report No.: PSU-QSU2306120115RF12

