



731 Enterprise Drive
Lexington, KY 40510

Telephone: 859-226-1000
Facsimile: 859-226-1040
www.intertek-etlsemko.com

FINAL TEST REPORT

Report Number: 101968343LEX-002
Project Number: G101968343

Report Issue Date: 2/2/2015

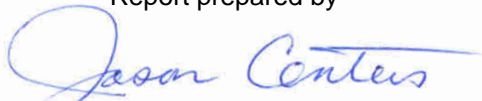
Product Name: Portal Gateway

Standards: Title 47 CFR Part 15.247
RSS-210 Issue 8

Tested by:
Intertek Testing Services NA, Inc.
731 Enterprise Drive
Lexington, KY 40510

Client:
Stanley Security Solutions
6161 E 75th Street
Indianapolis, IN 46250

Report prepared by


Jason Centers, Staff Engineer

Report reviewed by


Bryan Taylor, Team Leader



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1 Introduction and Conclusion

The tests indicated in section 2 were performed on the product constructed as described in section 3. The remaining test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test method, a list of the actual test equipment used, documentation photos, results and raw data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product tested complied with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested.

The INTERTEK-Lexington is located at 731 Enterprise Drive, Lexington Kentucky, 40510. The radiated emission test site is a 10-meter semi-anechoic chamber. The chamber meets the characteristics of CISPR 16-1 and ANSI C63.4. For measurements, a remotely controlled flush-mount metal-top turntable is used to rotate the EUT a full 360 degrees. A remote controlled non-conductive antenna mast is used to scan the antenna height from one to four meters. The test site is listed with the FCC under registration number 485103. The test site is listed with Industry Canada under site number IC 2042M-1.

2 Test Summary

Page	Test full name	FCC Reference	IC Reference	Result
6	Peak Conducted Power	§ 15.247(b)(3)(4)	RSS-210 (A8.4)	Pass
13	Occupied Bandwidth	§ 15.247(a)(2)	RSS-210 (A8.2), RSS-GEN (4.6.1)	Pass
22	Conducted Spurious Emissions	§ 15.247(d)	RSS-210 (A8.5)	Pass
25	Power Spectral Density	§ 15.247(e)	RSS-210 A8.2(B)	Pass
29	Radiated Spurious Emissions (Transmitter)	§ 15.247(d), § 15.209, and § 15.205	RSS-210 (2.2)	Pass
39	AC Powerline Conducted Emissions	§ 15.107, § 15.207	RSS-Gen (7.2.4)	Pass
44	Antenna Requirement per FCC Part 15.203	§ 15.203	RSS-Gen (7.1.2)	Pass

3 Description of Equipment Under Test

Equipment Under Test	
Manufacturer	Stanley Security Solutions
Model Number	C83068
Serial Number	Not Labeled
FCC Identifier	WEF-C83068
IC Identifier	7713A-C83068
Receive Date	1/13/2015
Test Start Date	1/13/2015
Test End Date	1/31/2015
Device Received Condition	Good
Test Sample Type	Production
Frequency Band	2405MHz – 2480MHz
Mode(s) of Operation	Zigbee
Modulation Type	OFDM
Duty Cycle	100%
Transmission Control	Test Commands
Test Channels	11, 18, 26
Antenna Type (15.203)	Internal
Operating Voltage	Powered by 120VAC/60Hz
Power Supply	Global Tek, Inc, Model # GT-21089-1512-W2

Description of Equipment Under Test
<p>The device is part of a wireless security system. The device connects to the local network and recognizes all wireless reader locks within its antenna range.</p> <p>The device has two Zigbee transmitters that operate independent of each other but maybe active and transmitting on the same channel simultaneously.</p>

Operating modes of the EUT:

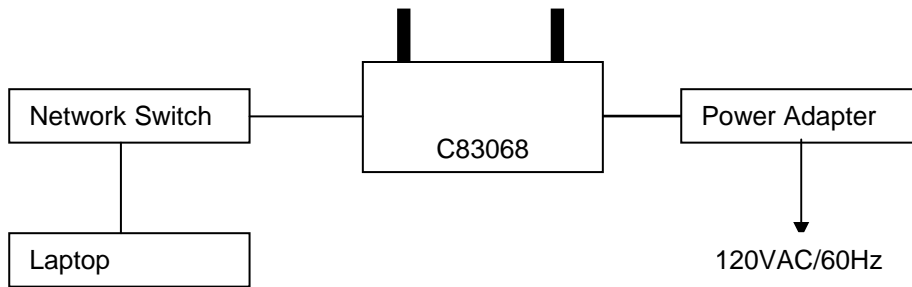
No.	Descriptions of EUT Exercising
1	Transmitting a modulated test signal on low, mid or high channels.
2	Receive mode/ Idle mode.

The following commands were used to set the max power for each of the channels:

- Ch 11: radio -s4 -k121212 -c 0 -p 8 -cm
- Ch 12: radio -s4 -k121212 -c 1 -p 15 -cm
- Ch 18: radio -s4 -k121212 -c 8 -p 15 -cm
- Ch 25: radio -s4 -k121212 -c 14 -p 15 -cm
- Ch 26: radio -s4 -k121212 -c 15 -p 3 -cm

The power on the high and low channels was reduced to meet the radiated bandedge requirements. The adjacent channels met the requirements when tested at max power. All tests were performed with the device operating at max power on channel 11, 18 and 26 with the exception of the radiated bandedge measurements and the peak out power measurements were the power was reduced and channels 11, 12, 25 and 26 were tested to document the output power levels.

3.1 EUT Block Diagram:



3.2 Cables:

Cables					
Description	Length	Shielding	Ferrites	Connection	
				From	To
Cat 5 Cable	25ft	No	No	EUT	Network Hub
Power Cable	5ft	No	No	EUT	Power Adapter

3.3 Support Equipment:

Support Equipment			
Description	Manufacturer	Model Number	Serial Number
Laptop	Gateway	LT2802u	11906695725
POE Injector	Laird Technologies	POE-48iD	117083059D

3.4 Optional External Antennas:

Description	Manufacturer	Model Number	Peak Gain (dBi)
Rubber Duck Omni Directional Antenna	L-Com	HG2402RD-RSF	2.2
ISM-XF Panel Antenna	MAXRAD	MP24008XFPTNF	8.5
Omni Directional Ceiling Mount Antenna	PCTEL	MC2400PTMSMA	2.5
Outdoor Omni-Directional Antenna	Comtelco	BS2400XL3	5.0

4 Peak Conducted Power

4.1 Test Limits

§ 15.247(b)(3): For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the *maximum conducted output power* is the highest total transmit power occurring in any mode.

§ 15.247(b)(4): The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

4.2 Test Procedure

ANSI C63.10: 2013 and KDB Publication No. 558074: Guidance on Measurements for Digital Transmission Systems (47 CFR 15.247). The peak output power was measured a spectrum analyzer with a RBW setting higher then the DTS bandwidth of the transmitted signal.

4.3 Test Equipment Used:

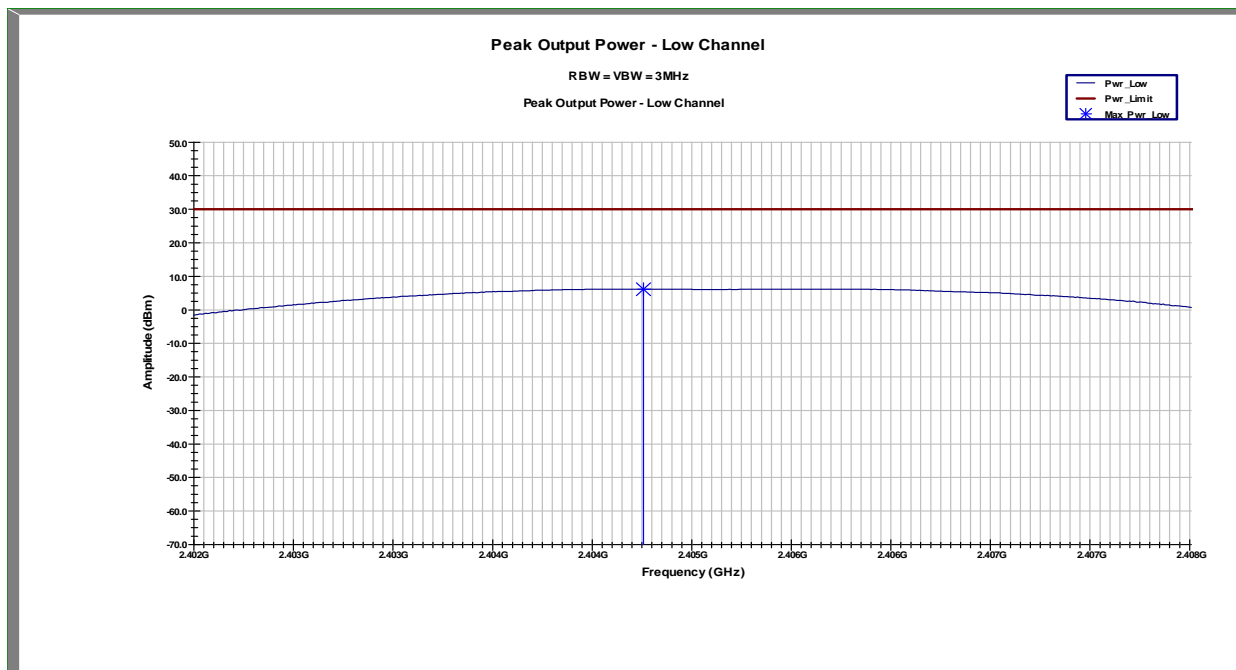
Description	Serial Number	Manufacturer	Model	Cal. Date	Cal. Due
Spectrum Analyzer	3720	Rohde & Schwarz	FSEK30	9/15/2014	9/15/2015

4.4 Results:

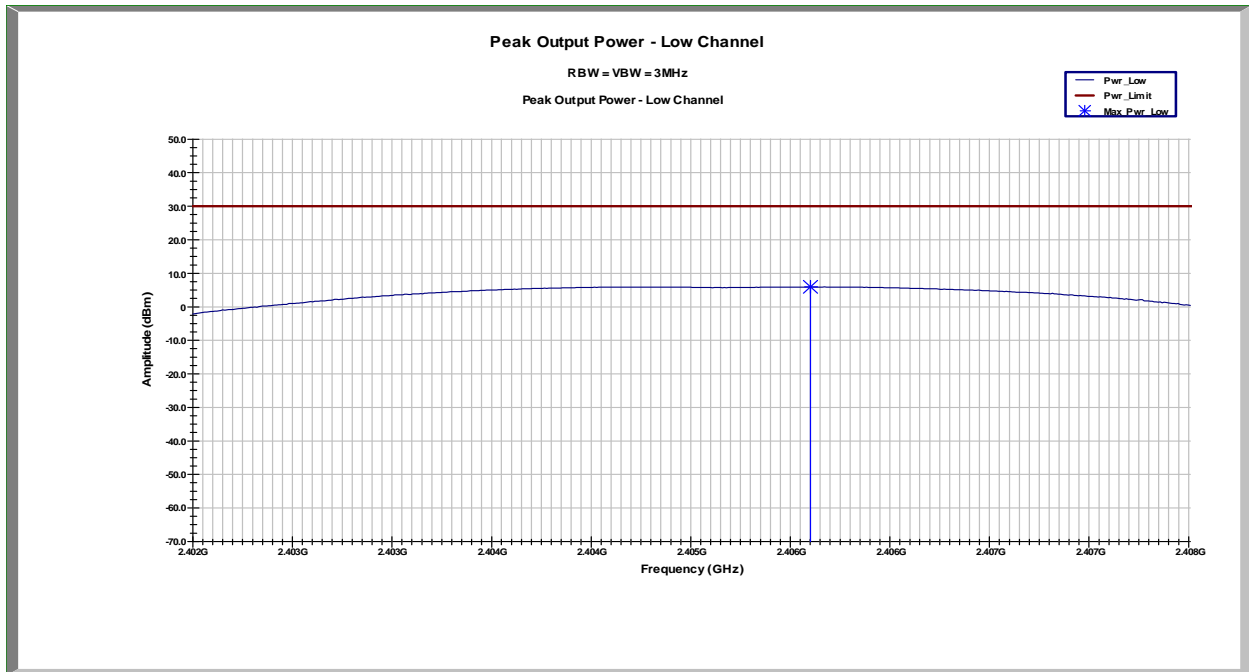
Mode	Channel Number	Frequency (MHz)	Peak Output Power (dBm)	Limit (dBm)	Result
Zigbee – Transmitter 1	11	2405	6.15	30	Pass
Zigbee – Transmitter 2	11	2405	5.92	30	Pass
Zigbee – Transmitter 1	12	2410	10.65	30	Pass
Zigbee – Transmitter 2	12	2410	10.5	30	Pass
Zigbee – Transmitter 1	18	2445	10.25	30	Pass
Zigbee – Transmitter 2	18	2445	10.12	30	Pass
Zigbee – Transmitter 1	25	2475	10.0	30	Pass
Zigbee – Transmitter 2	25	2475	9.58	30	Pass
Zigbee – Transmitter 1	26	2480	-7.56	30	Pass
Zigbee – Transmitter 2	26	2480	-8.49	30	Pass

Channel	Transmitter 1 Output Power (dBm)	Transmitter 2 Output Power (dBm)	Transmitter 1 Output Power (mW)	Transmitter 2 Output Power (mW)	Aggregate Output Power (mW)
11	6.15	5.92	4.12	3.91	8.03
12	10.65	10.5	11.61	11.22	22.83
18	10.25	10.12	10.59	10.28	20.87
25	10	9.58	10.00	9.08	19.08
26	-7.56	-8.49	0.18	0.14	0.32

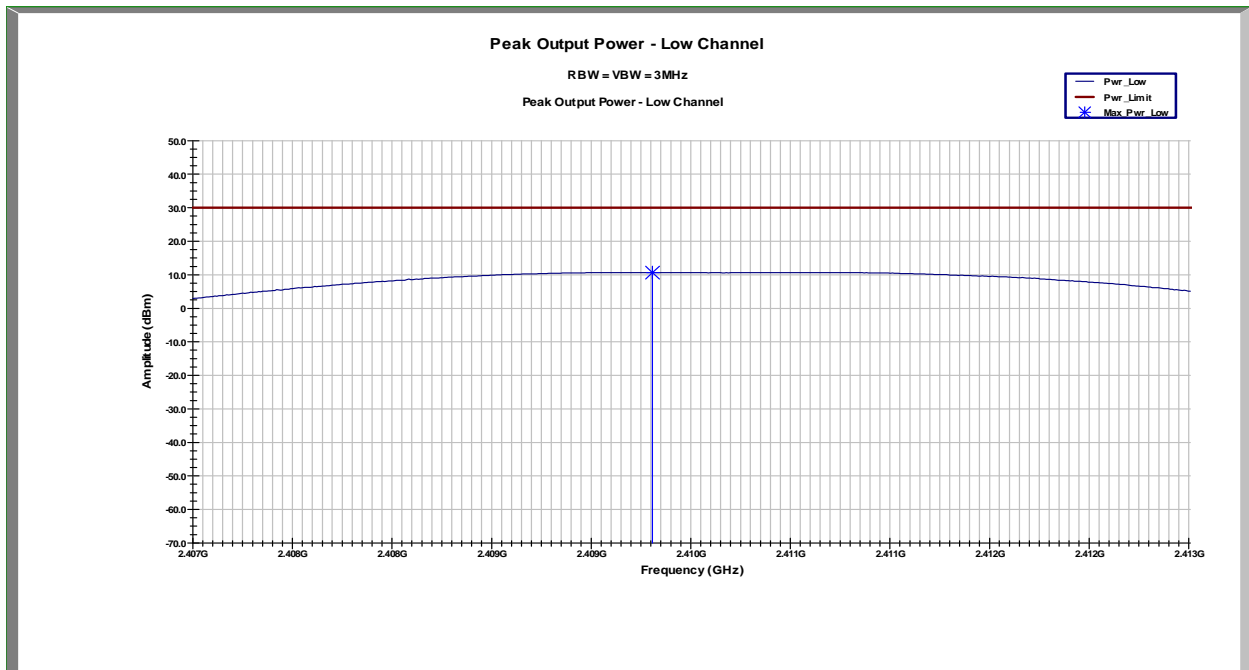
The power was reduced on channel 11 and 26 to meet the bandedge requirements for radiated emissions. Worst Case Simultaneous Tx Power is Transmitter 1 and 2 transmitting simultaneously on channel 12 per KDB 662911.



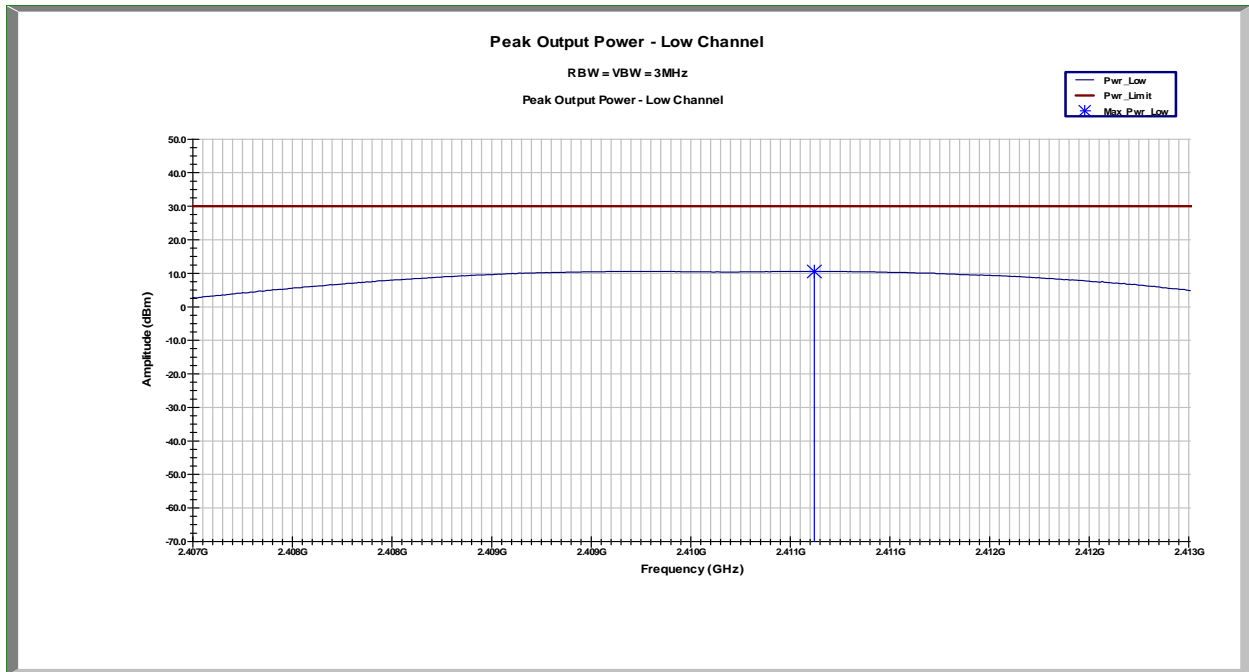
Peak Output Power – Transmitter 1 Channel 11



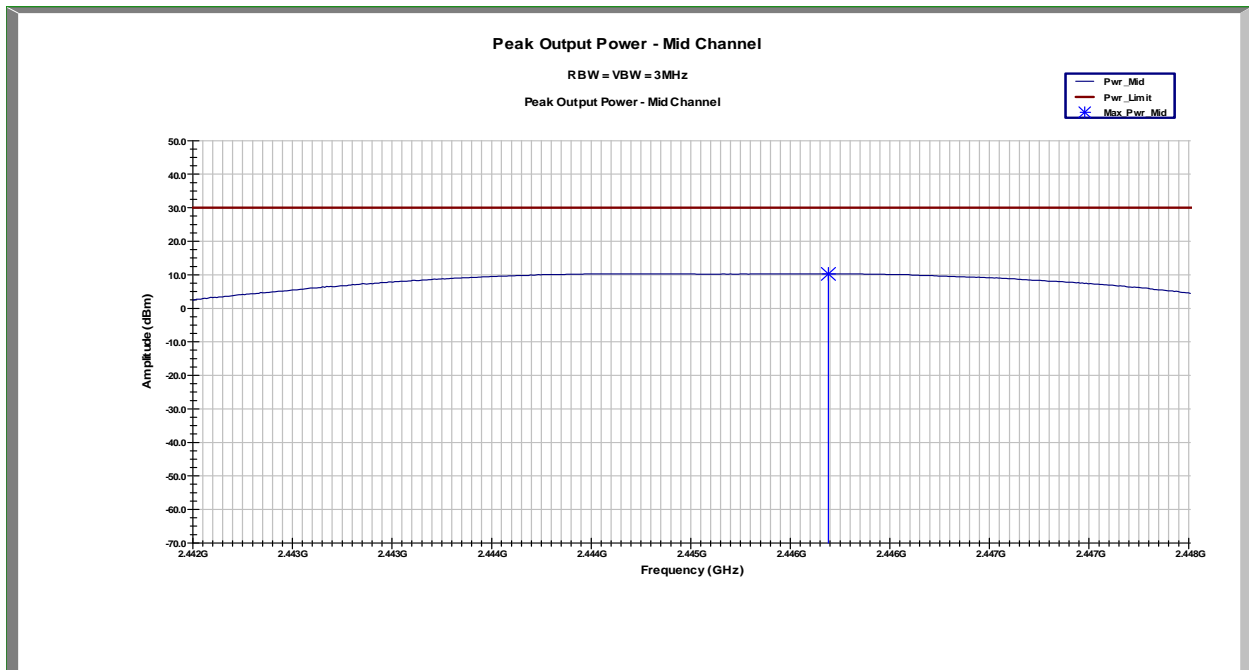
Peak Output Power – Transmitter 2 Channel 11



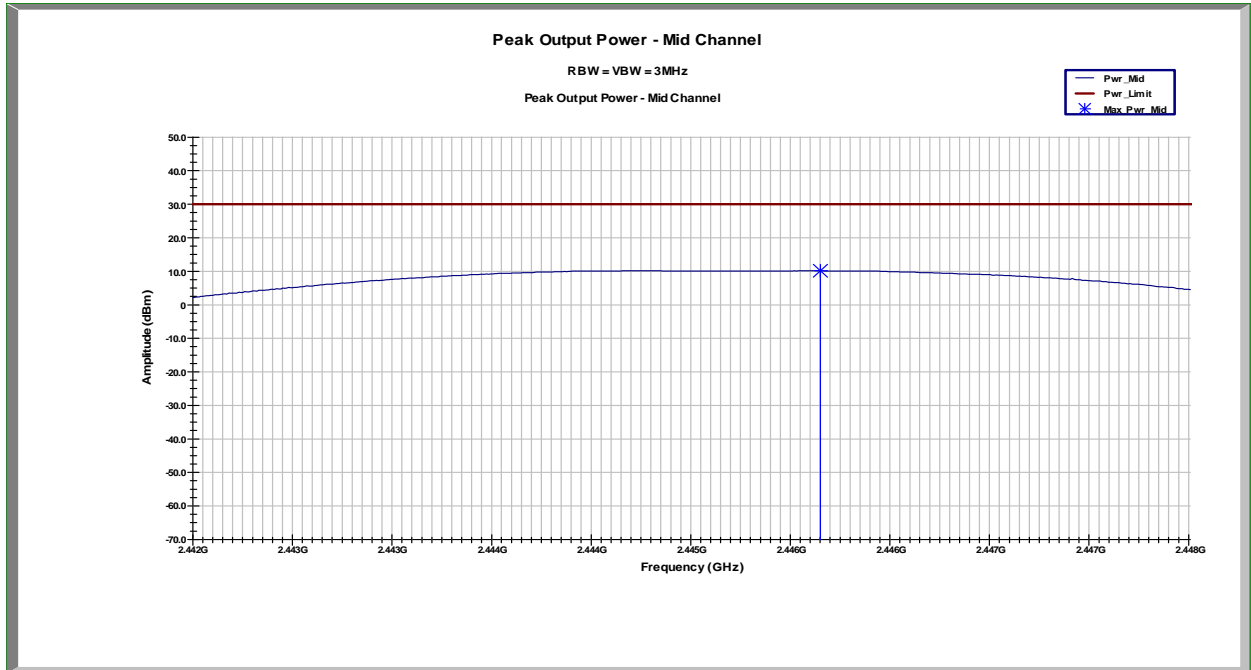
Peak Output Power – Transmitter 1 Channel 12



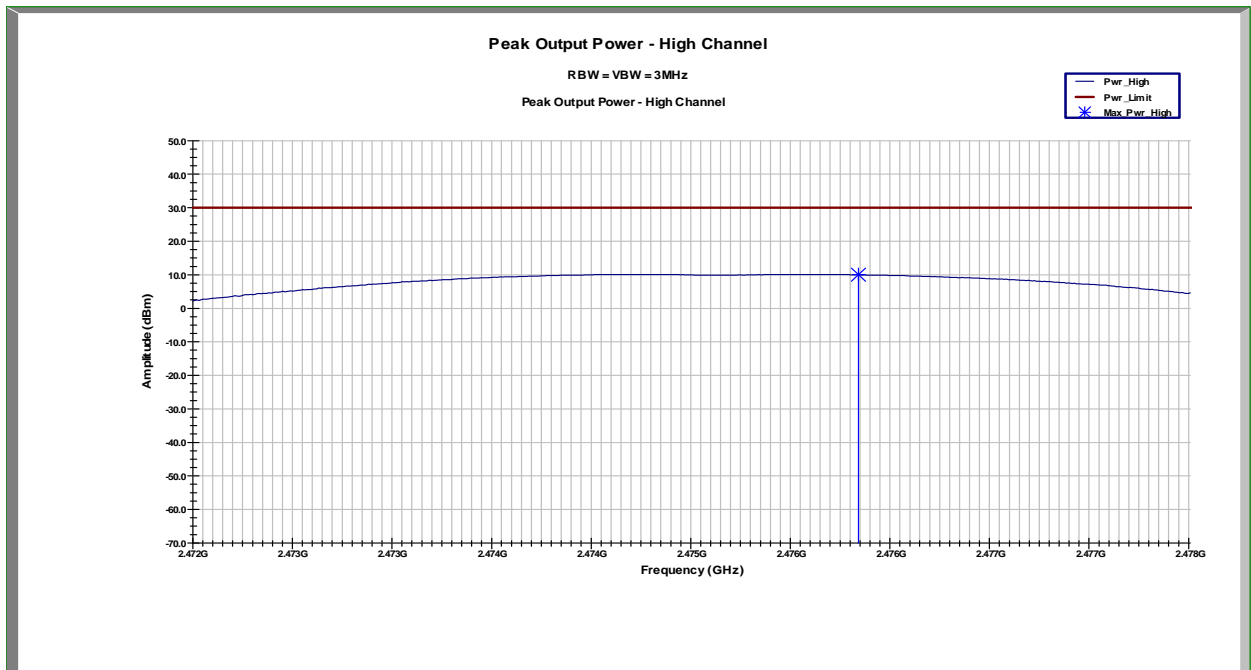
Peak Output Power – Transmitter 2 Channel 12



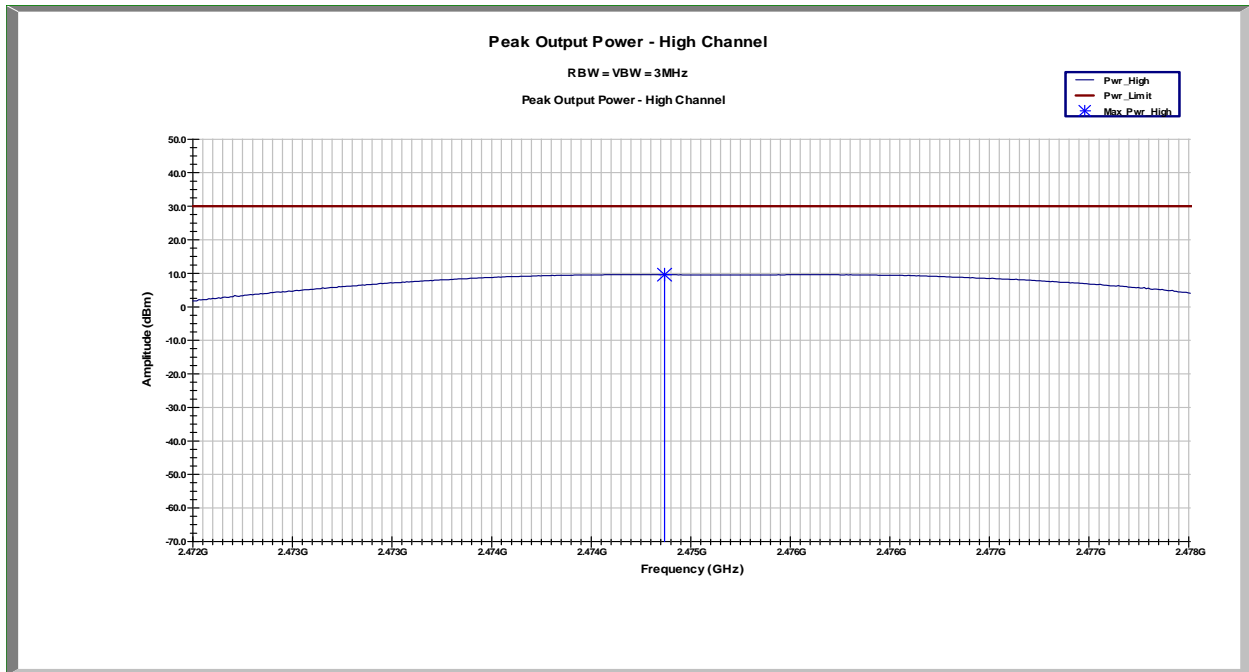
Peak Output Power – Transmitter 1 Channel 18



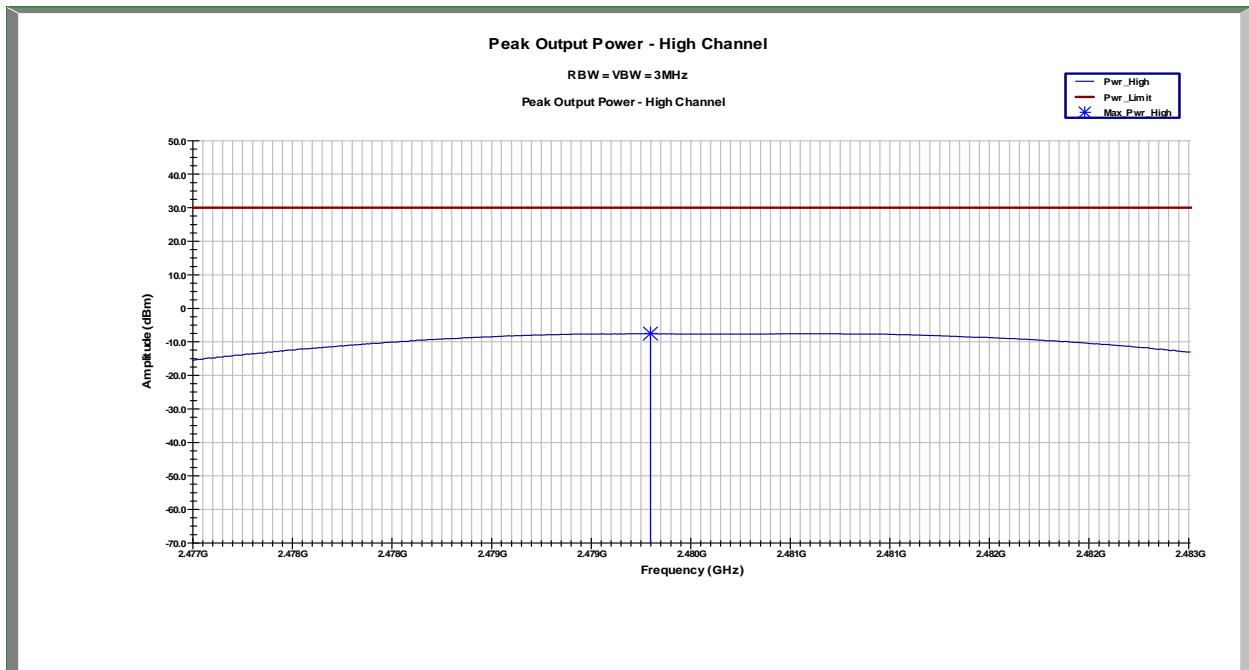
Peak Output Power – Transmitter 2 Channel 18



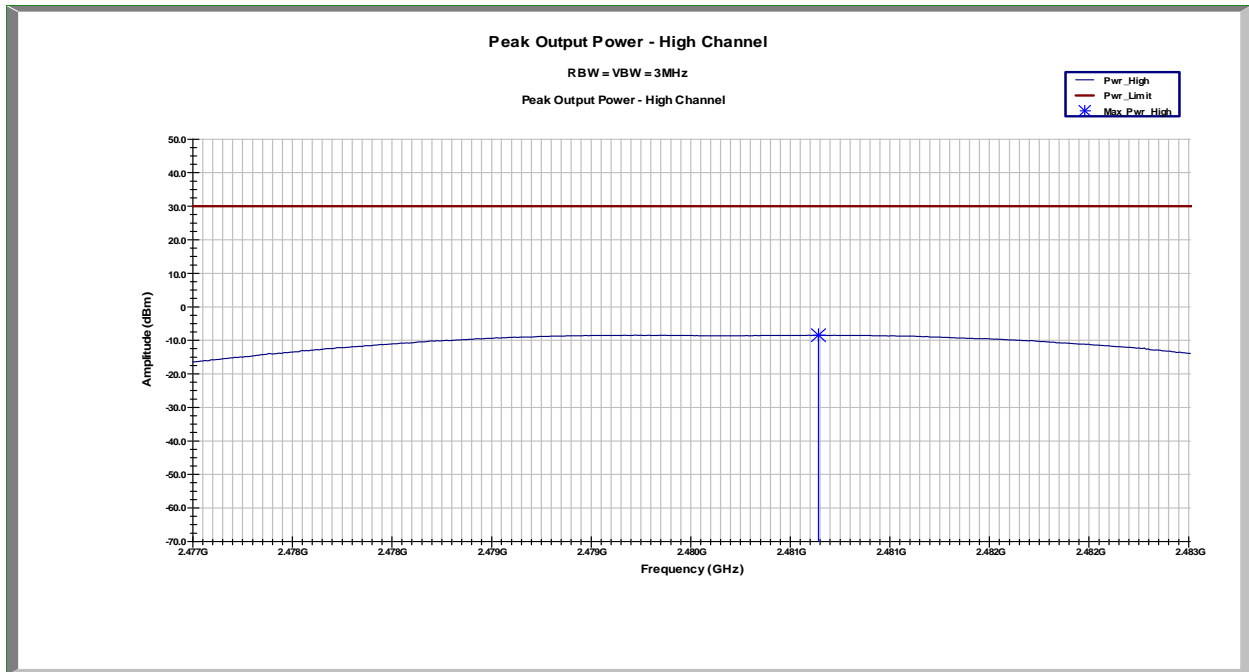
Peak Output Power – Transmitter 1 Channel 25



Peak Output Power – Transmitter 2 Channel 25



Peak Output Power – Transmitter 1 Channel 26



Peak Output Power – Transmitter 2 Channel 26

5 Occupied Bandwidth

5.1 Test Limits

§ 15.247(a)(2): For digital modulation systems, the minimum 6dB bandwidth shall be at least 500kHz.

5.2 Test Procedure

ANSI C63.10: 2013 and KDB Publication No. 558074: Guidance on Measurements for Digital Transmission Systems (47 CFR 15.247)

5.3 Test Equipment Used:

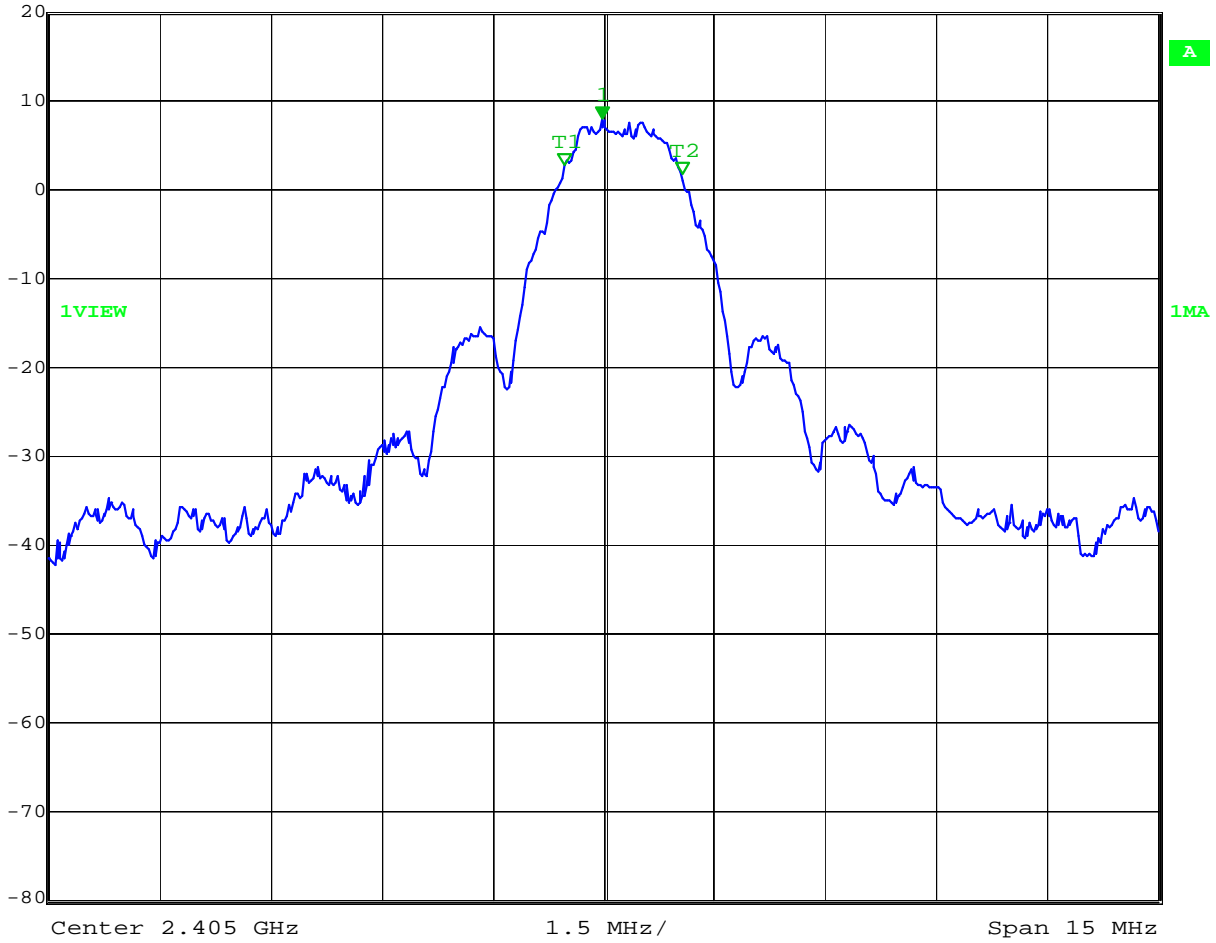
Description	Serial Number	Manufacturer	Model	Cal. Date	Cal. Due
Spectrum Analyzer	3720	Rohde & Schwarz	FSEK30	9/15/2014	9/15/2015

5.4 Results:

Mode	Channel Number	Frequency (MHz)	6dB Bandwidth	99% Power Bandwidth	Result
Transmitter 1	11	2405	1.59 MHz	---	Pass
Transmitter 1	18	2440	1.62 MHz	2.46 MHz	Pass
Transmitter 1	26	2480	1.62 MHz	---	Pass
Transmitter 2	11	2405	1.62 MHz	---	Pass
Transmitter 2	18	2440	1.62 MHz	2.43 MHz	Pass
Transmitter 2	26	2480	1.62 MHz	---	Pass



Ref Lvl	Marker 1 [T1 ndB]	RBW	100 kHz	RF Att	30 dB
20 dBm	ndB 6.00 dB	VBW	300 kHz		
	BW 1.59318637 MHz	SWT	5 ms	Unit	dBm

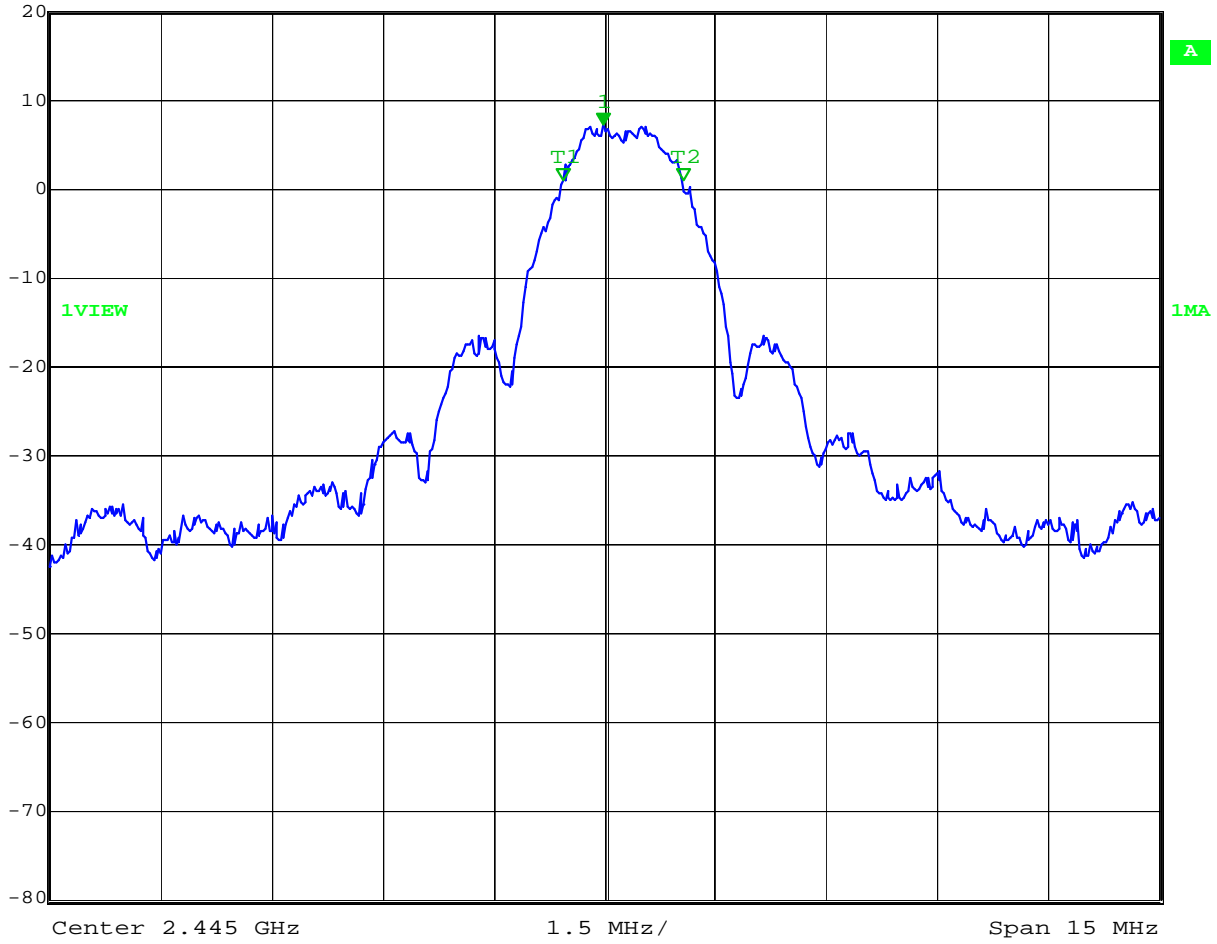


Date: 23.JAN.2015 13:54:54

Transmitter 1 - 6dB Bandwidth Plot (Channel 11)



Ref Lvl	Marker 1 [T1 ndB]	RBW	100 kHz	RF Att	30 dB
20 dBm	ndB 6.00 dB	VBW	300 kHz		
	BW 1.62324649 MHz	SWT	5 ms	Unit	dBm

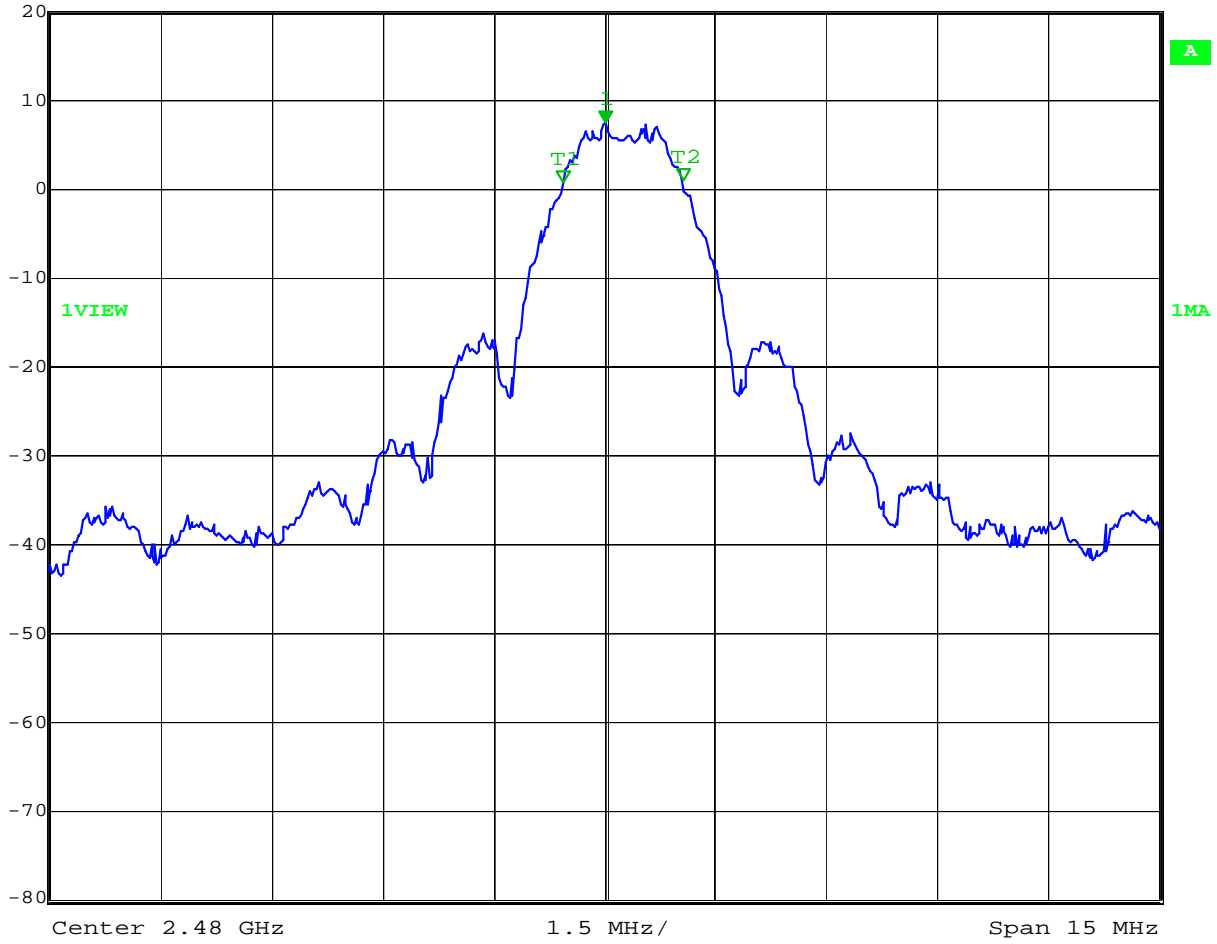


Date: 23.JAN.2015 13:56:27

Transmitter 1 - 6dB Bandwidth Plot (Channel 18)



Ref Lvl	Marker 1 [T1 ndB]	RBW	100 kHz	RF Att	30 dB
20 dBm	ndB 6.00 dB	VBW	300 kHz		
	BW 1.62324649 MHz	SWT	5 ms	Unit	dBm

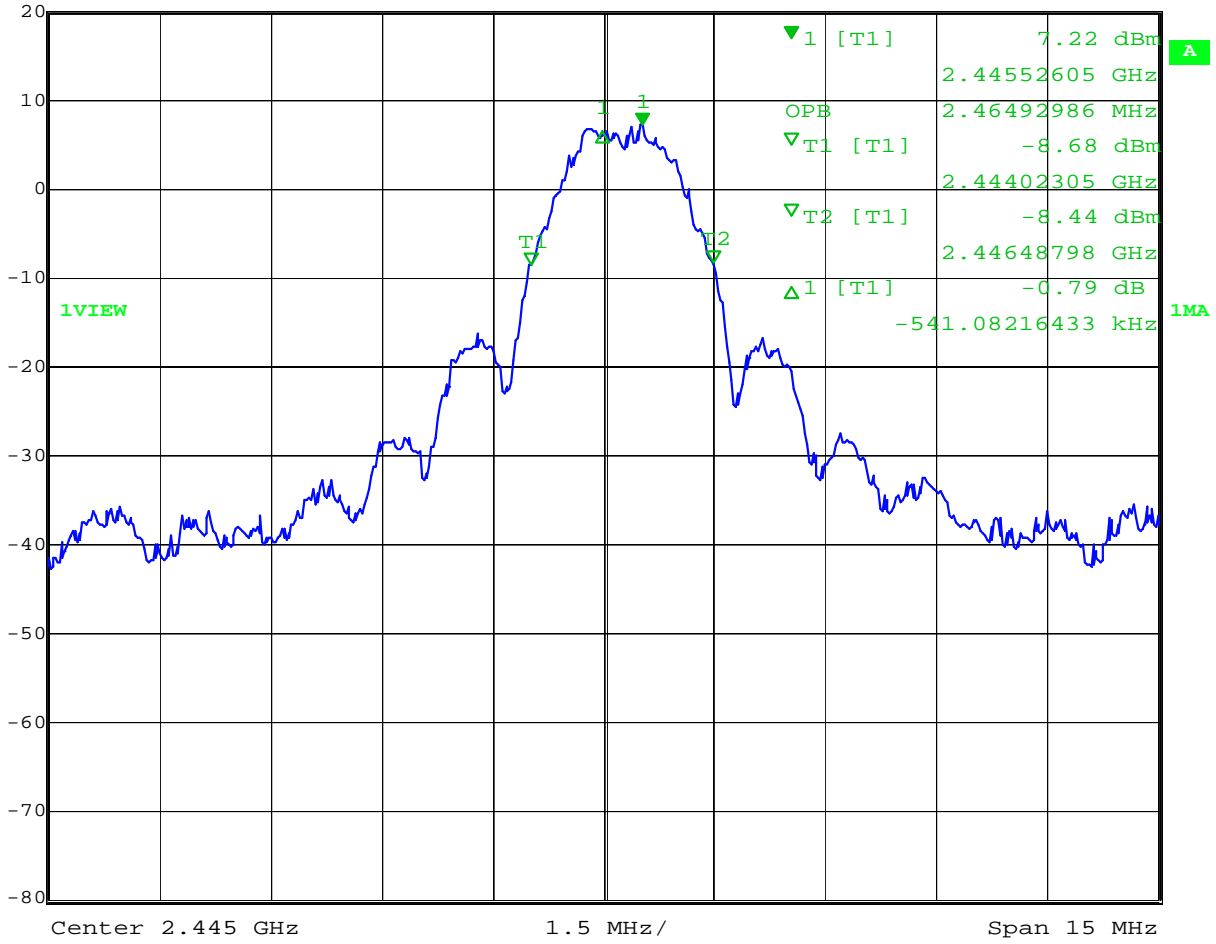


Date: 23.JAN.2015 13:57:58

Transmitter 1 - 6dB Bandwidth Plot (Channel 26)



Marker 1 [T1] RBW 100 kHz RF Att 30 dB
 Ref Lvl 7.22 dBm VBW 300 kHz
 20 dBm 2.44552605 GHz SWT 5 ms Unit dBm

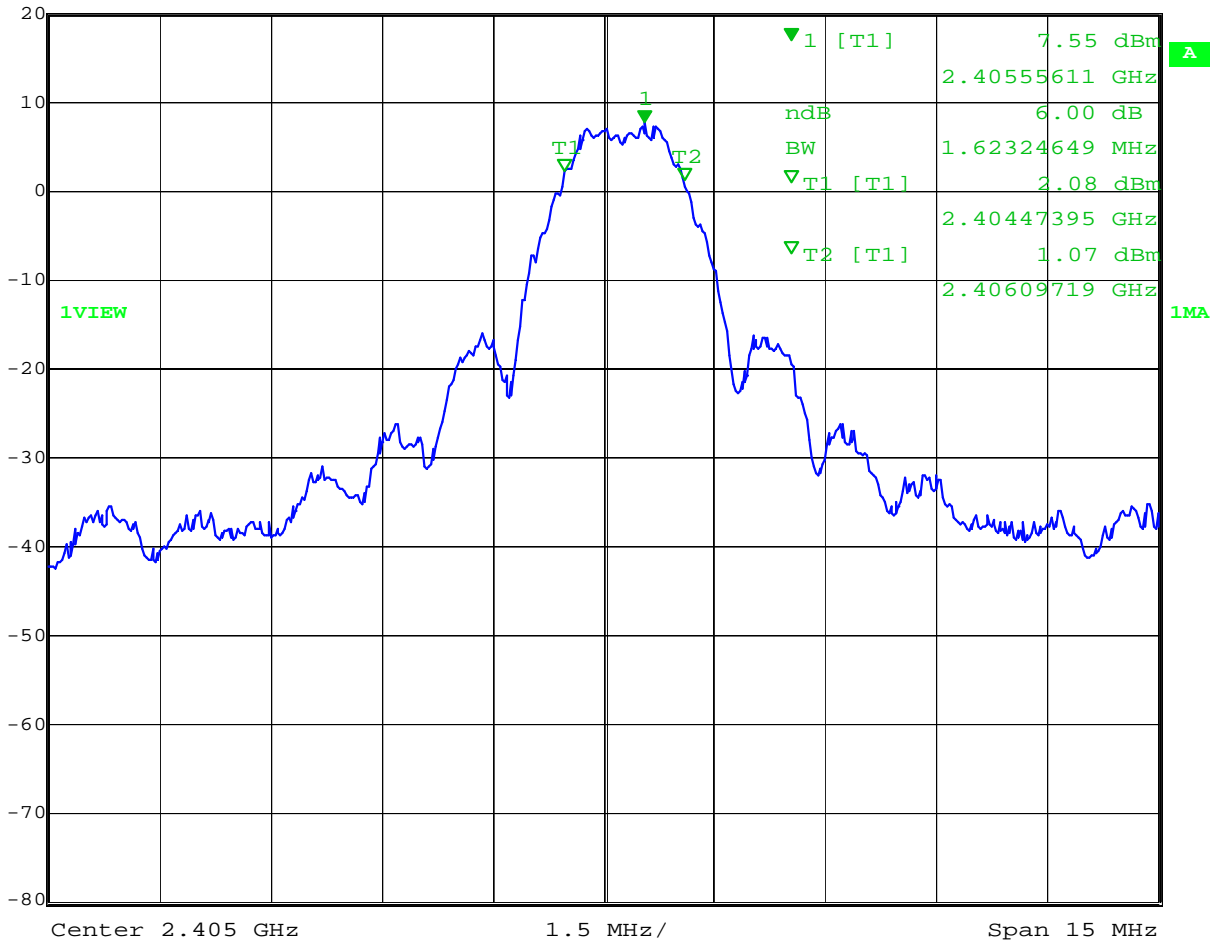


Date: 23.JAN.2015 14:01:24

Transmitter 1 - 99% Power Bandwidth Plot (Channel 18)



Ref Lvl	20 dBm	Marker 1 [T1 ndB]	ndB	6.00 dB	RBW	100 kHz	RF Att	30 dB
		BW	1.62324649 MHz		VBW	300 kHz		
		SWT			Unit	5 ms		dBm

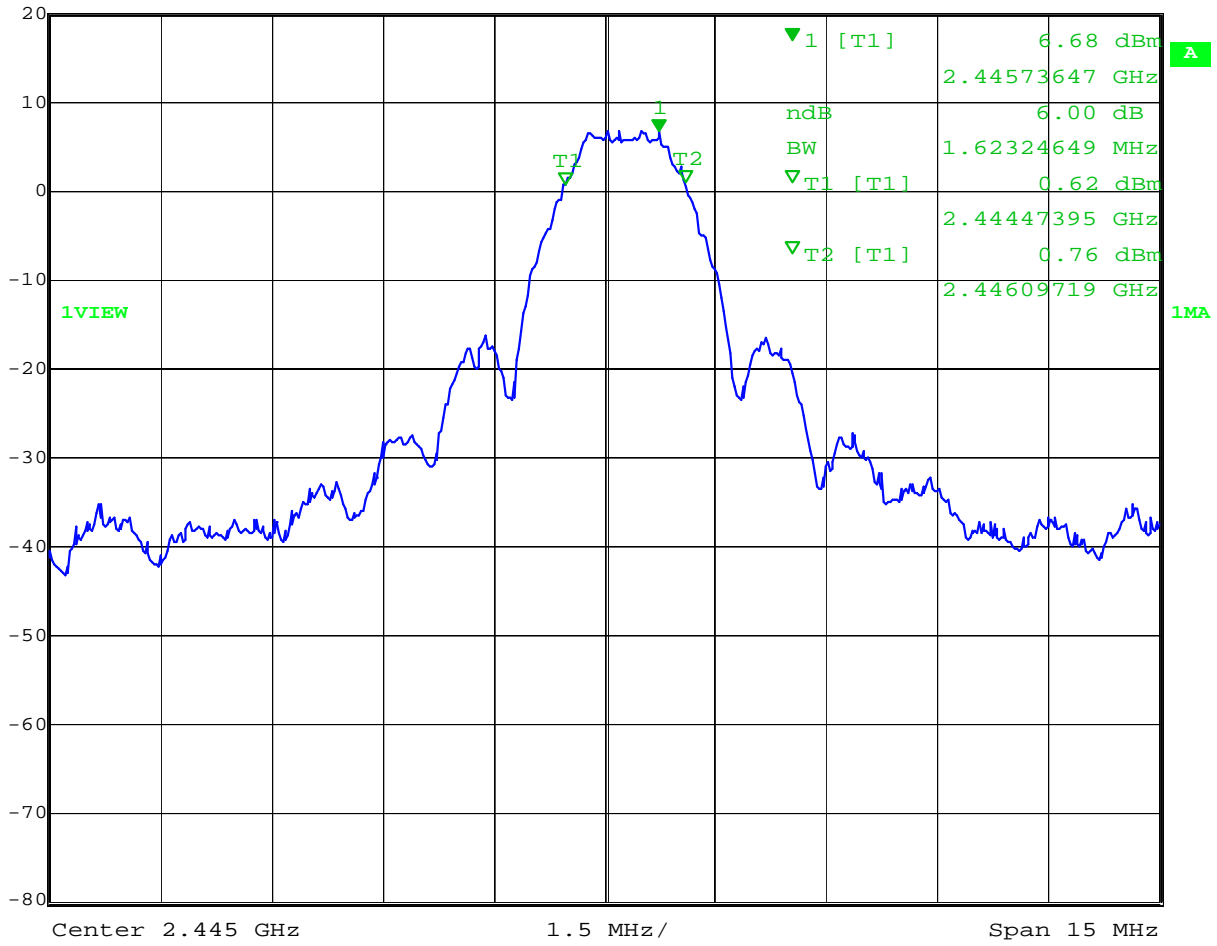


Date: 23.JAN.2015 14:08:40

Transmitter 2 - 6dB Bandwidth Plot (Channel 11)



Ref Lvl	20 dBm	Marker 1 [T1 ndB]	ndB	6.00 dB	RBW	100 kHz	RF Att	30 dB
		BW	1.62324649 MHz		VBW	300 kHz		
		SWT			SWT	5 ms	Unit	dBm

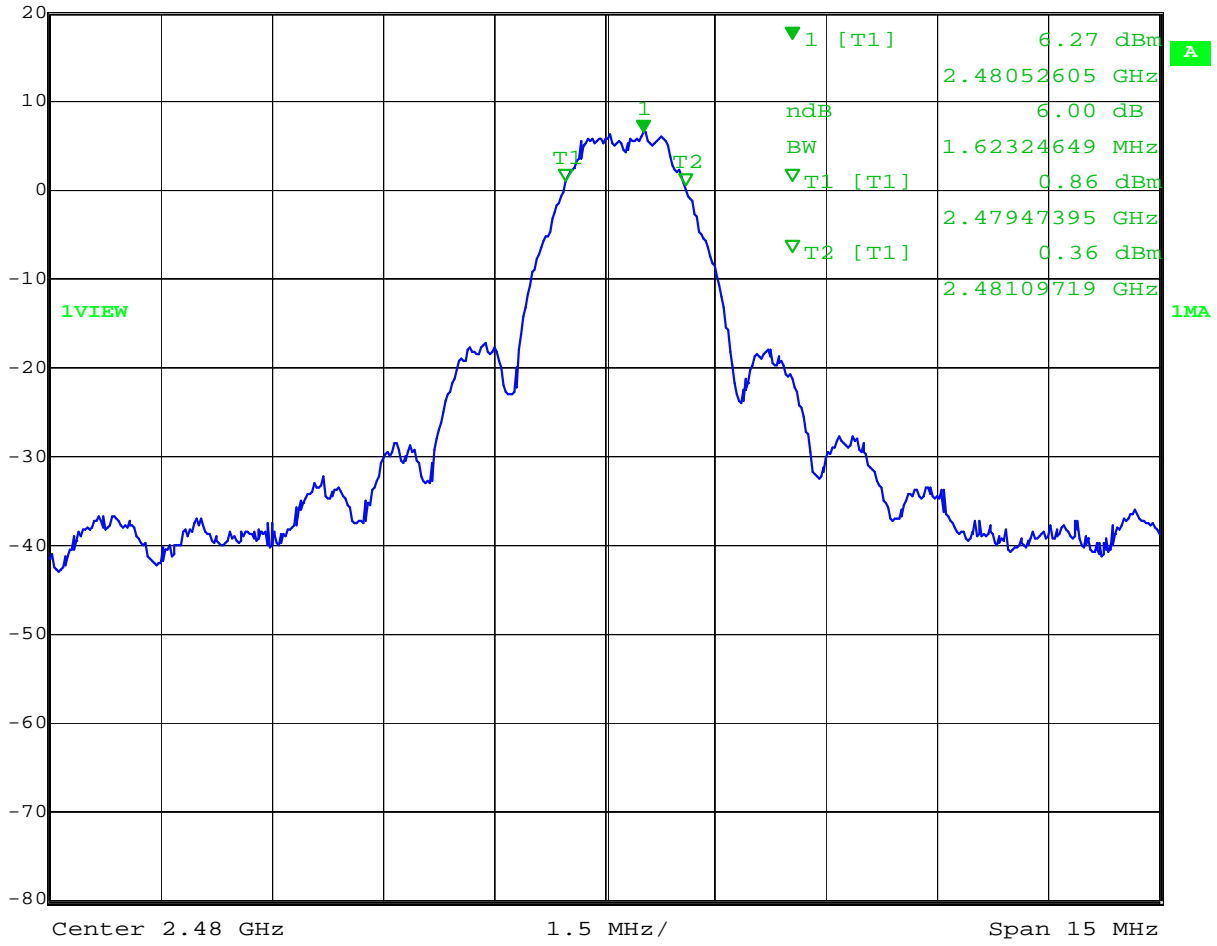


Date: 23.JAN.2015 14:05:35

Transmitter 2 - 6dB Bandwidth Plot (Channel 18)



Ref Lvl	20 dBm	Marker 1 [T1 ndB]	ndB	6.00 dB	RBW	100 kHz	RF Att	30 dB
		BW	1.62324649 MHz		VBW	300 kHz		
					SWT	5 ms	Unit	dBm

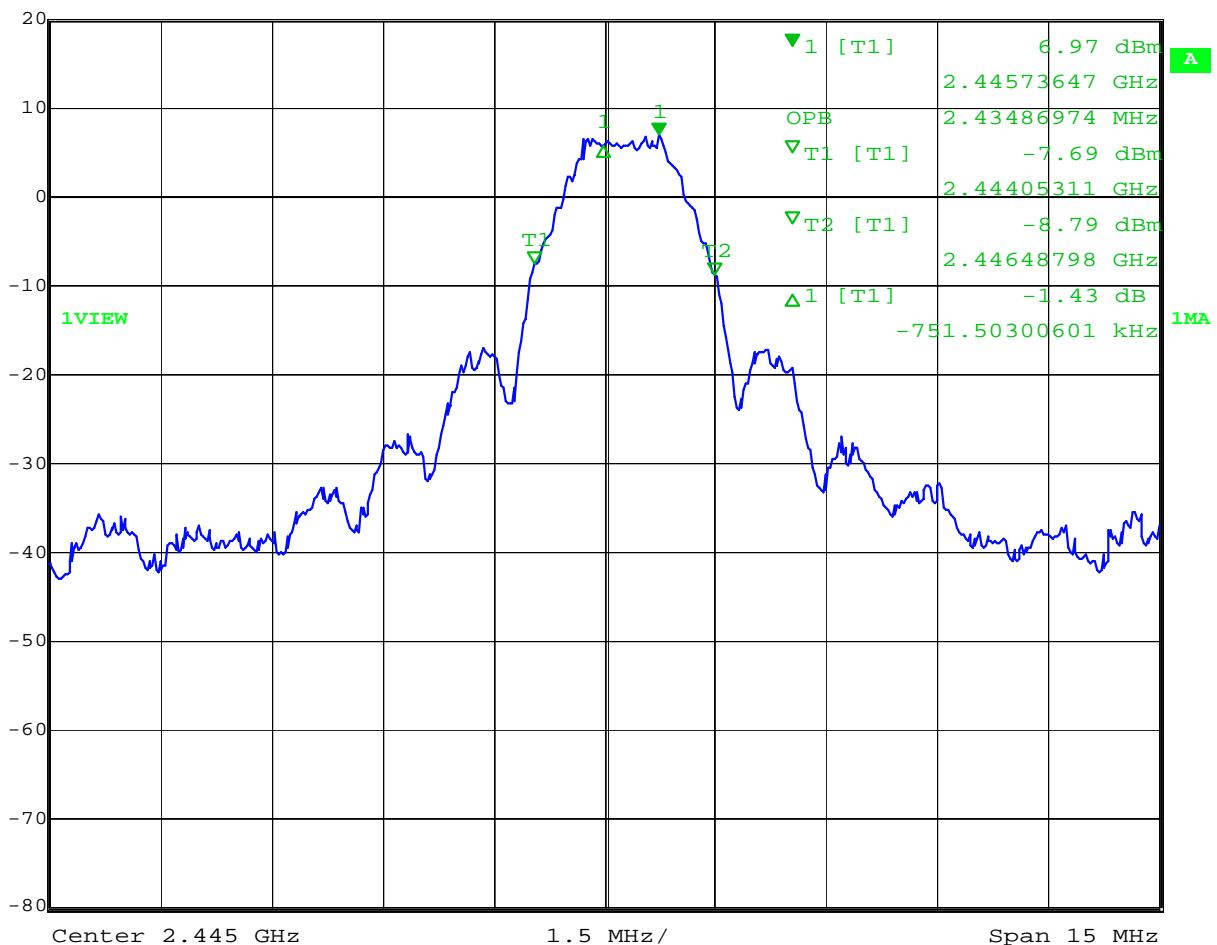


Date: 23.JAN.2015 14:10:18

Transmitter 2 - 6dB Bandwidth Plot (Channel 26)



	Marker 1 [T1]	RBW	100 kHz	RF Att	30 dB
Ref Lvl	6.97 dBm	VBW	300 kHz		
20 dBm	2.44573647 GHz	SWT	5 ms	Unit	dBm



Date: 23.JAN.2015 14:03:54

Transmitter 2 - 99% Power Bandwidth Plot (Channel 18)

6 Conducted Spurious Emissions

6.1 Test Limits

§ 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

6.2 Test Procedure

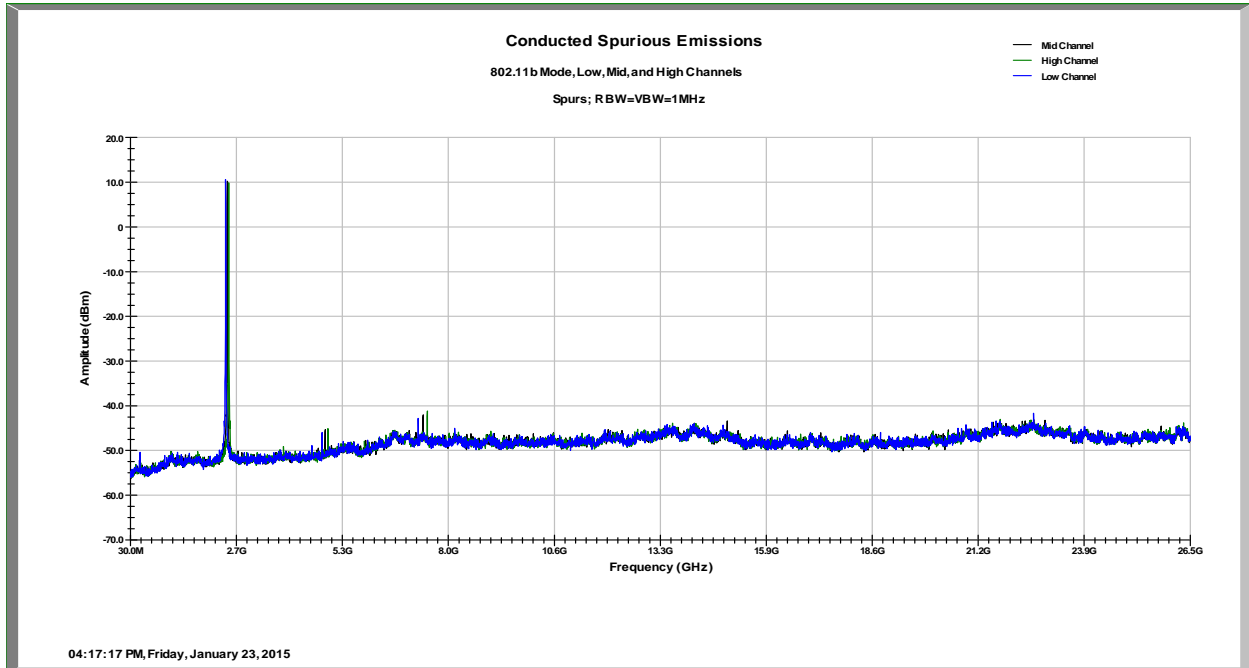
ANSI C63.10: 2013 and KDB Publication No. 558074: Guidance on Measurements for Digital Transmission Systems (47 CFR 15.247)

6.3 Test Equipment Used:

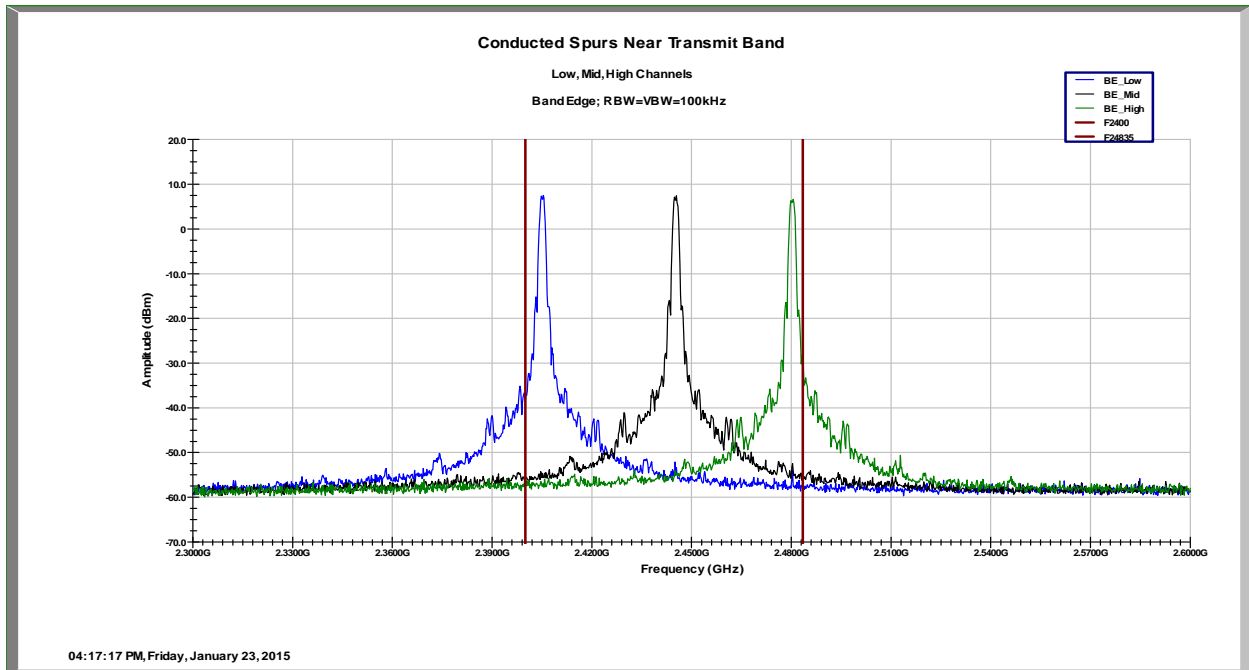
Description	Serial Number	Manufacturer	Model	Cal. Date	Cal. Due
Spectrum Analyzer	3720	Rohde & Schwarz	FSEK30	9/15/2014	9/15/2015

6.4 Results:

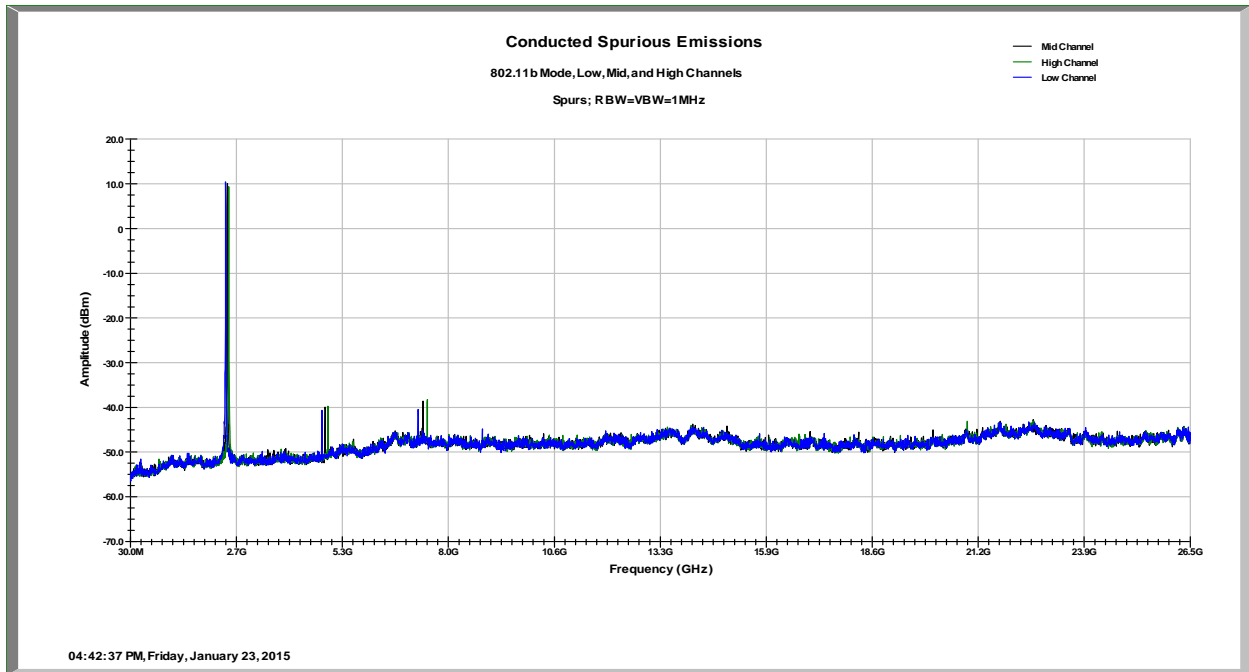
The following plots show that there are no conducted spurious emissions exceeding the 20dB down criteria. The device was tested at maximum power on channels the low, mid and high channels.



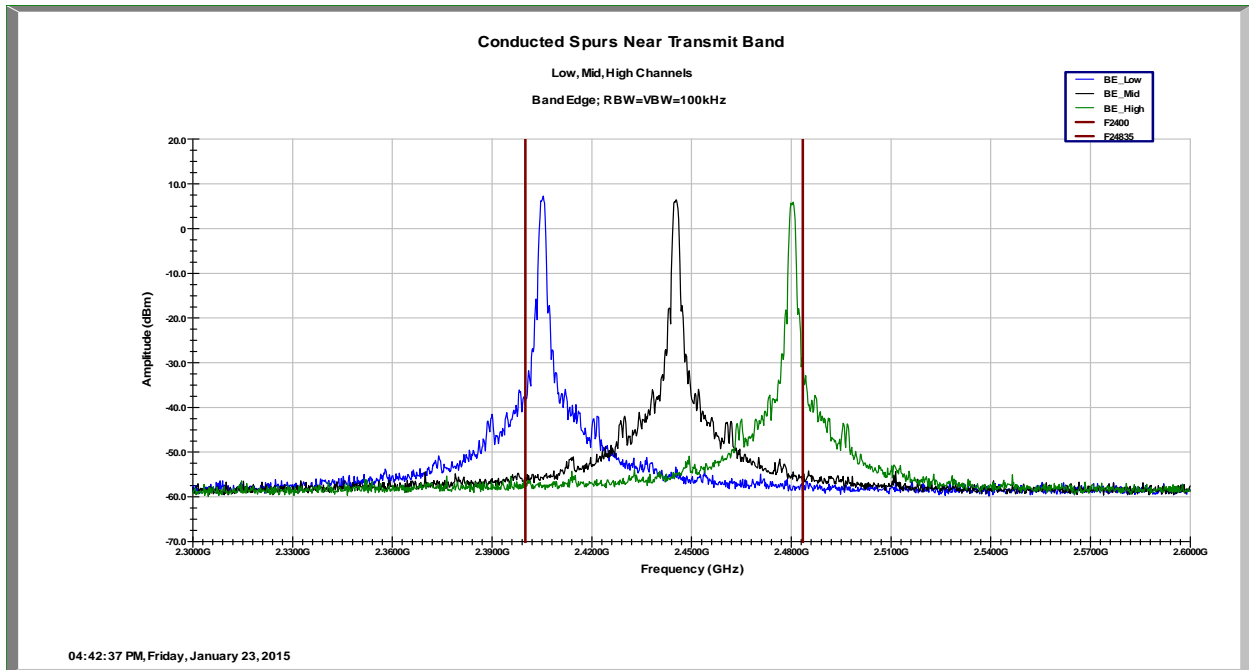
Transmitter 1 - Conducted Spurious Emissions - Low, Mid, High Channels



Transmitter 1 – Conducted Emissions Close to Band Edge - Low, Mid, High Channels



Transmitter 2 - Conducted Spurious Emissions - Low, Mid, High Channels



Transmitter 2 – Conducted Emissions Close to Band Edge - Low, Mid, High Channels

7 Power Spectral Density

7.1 Test Limits

§ 15.247(e): For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

7.2 Test Procedure

ANSI C63.10: 2013 and KDB Publication No. 558074: Guidance on Measurements for Digital Transmission Systems (47 CFR 15.247)

7.3 Test Equipment Used:

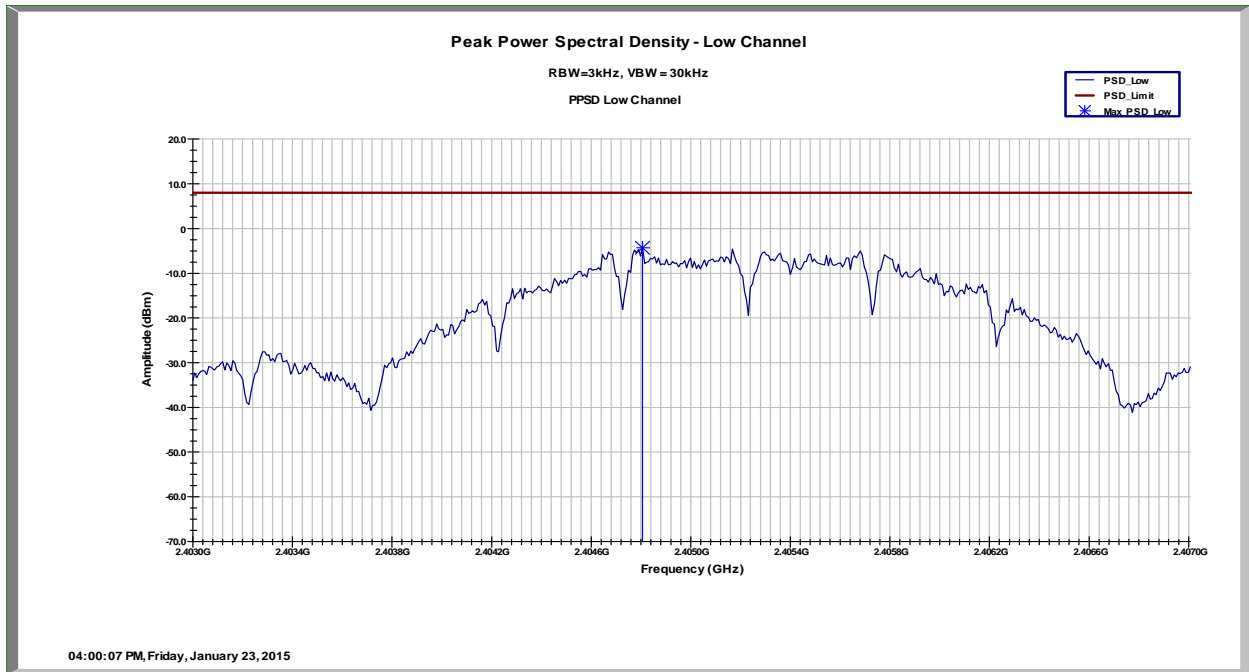
Description	Serial Number	Manufacturer	Model	Cal. Date	Cal. Due
Spectrum Analyzer	3720	Rohde & Schwarz	FSEK30	9/15/2014	9/15/2015

7.4 Results:

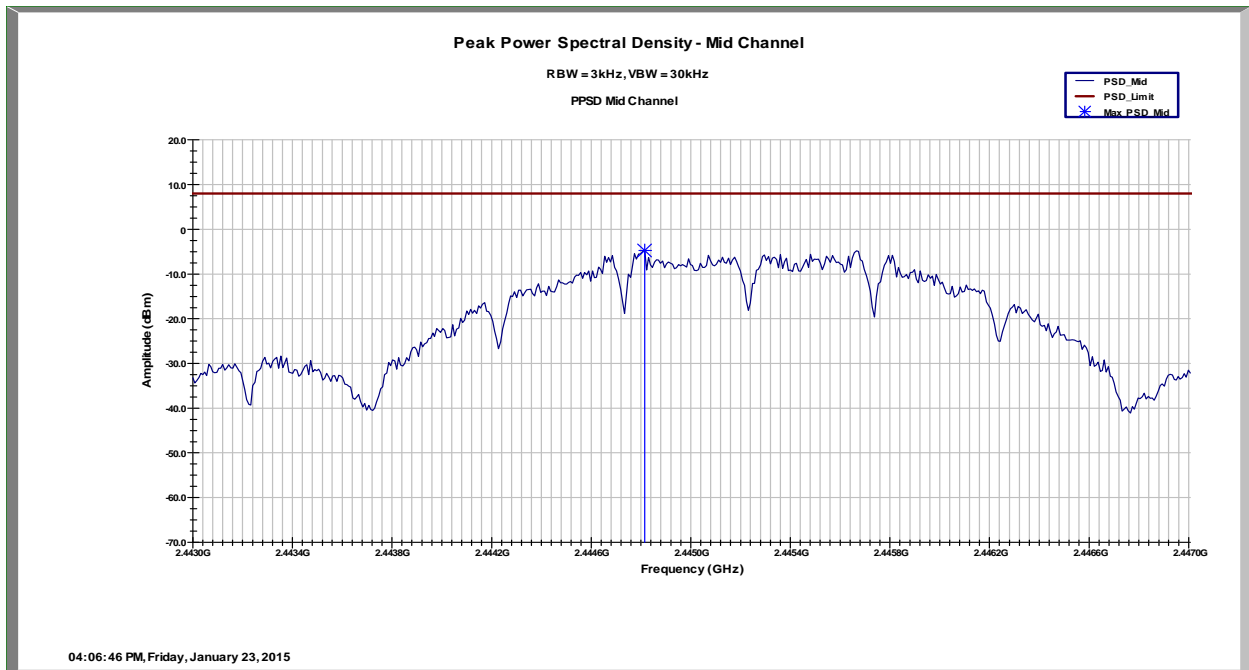
*PSD Option 1 Method

Mode	Channel Number	Frequency (MHz)	PSD in 3kHz BW (dBm)	Limit (dBm)	Margin (dBm)	Result
Zigbee – Transmitter 1	11	2405	-4.31	8.0	-12.31	Pass
Zigbee – Transmitter 2	11	2405	-4.73	8.0	-12.73	Pass
Zigbee – Transmitter 1	18	2445	-4.72	8.0	-12.72	Pass
Zigbee – Transmitter 2	18	2445	-5.18	8.0	-13.18	Pass
Zigbee – Transmitter 1	26	2480	-5.5	8.0	-13.5	Pass
Zigbee – Transmitter 2	26	2480	-5.82	8.0	-13.82	Pass

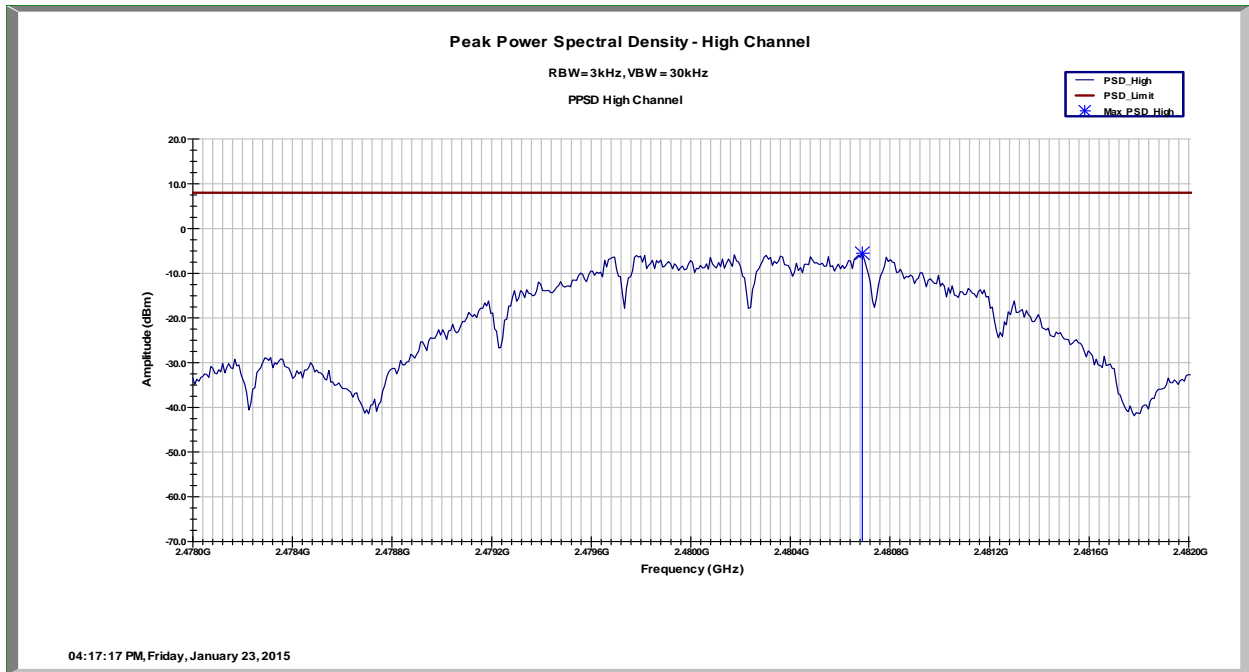
Channel	Transmitter 1 PSD (dBm)	Transmitter 2 PSD (dBm)	Transmitter 1 PSD (mW)	Transmitter 2 PSD (mW)	Aggregate PSD Power (mW)	Aggregate PSD Power (dBm)
11	-4.31	-4.73	0.37	0.34	0.71	-1.50
18	-4.72	-5.18	0.34	0.30	0.64	-1.93
26	-5.5	-5.82	0.28	0.26	0.54	-2.65



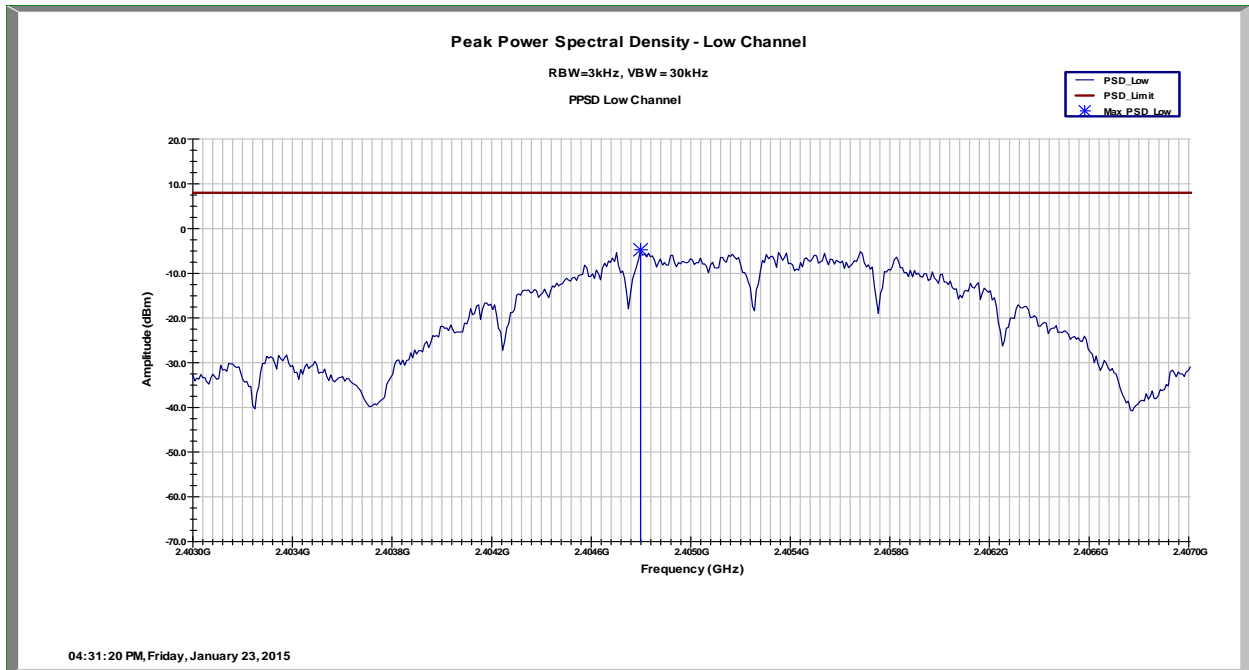
Power Spectral Density – Transmitter 1, Channel 11



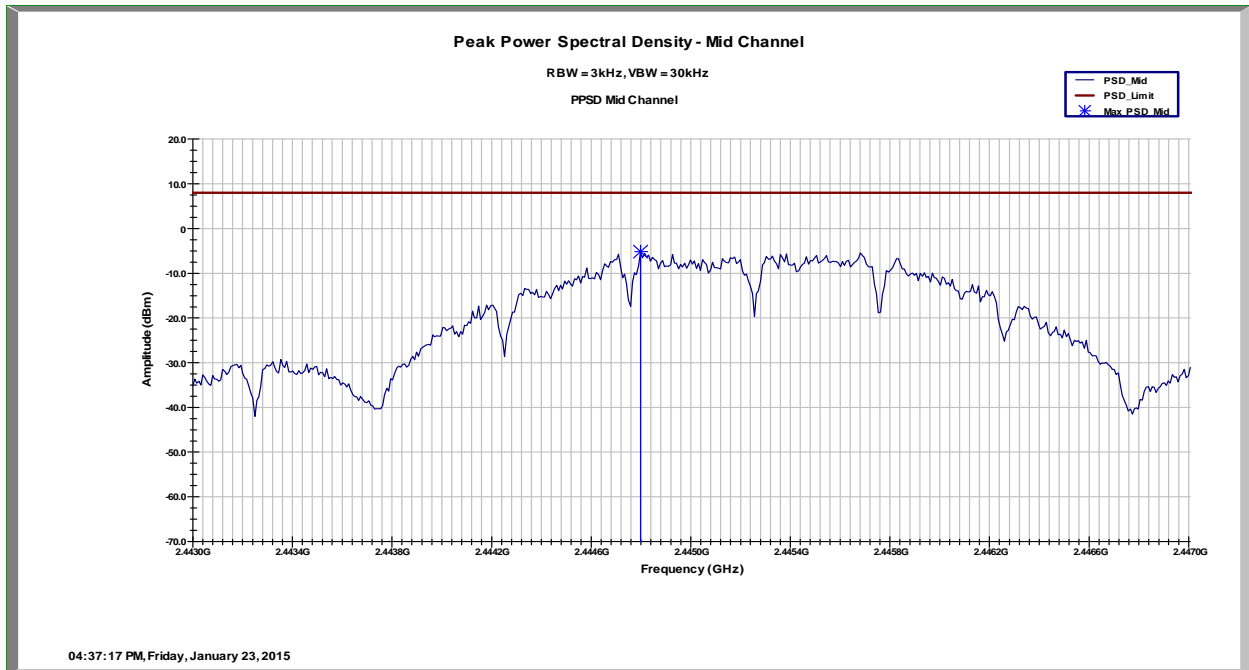
Power Spectral Density – Transmitter 1, Channel 18



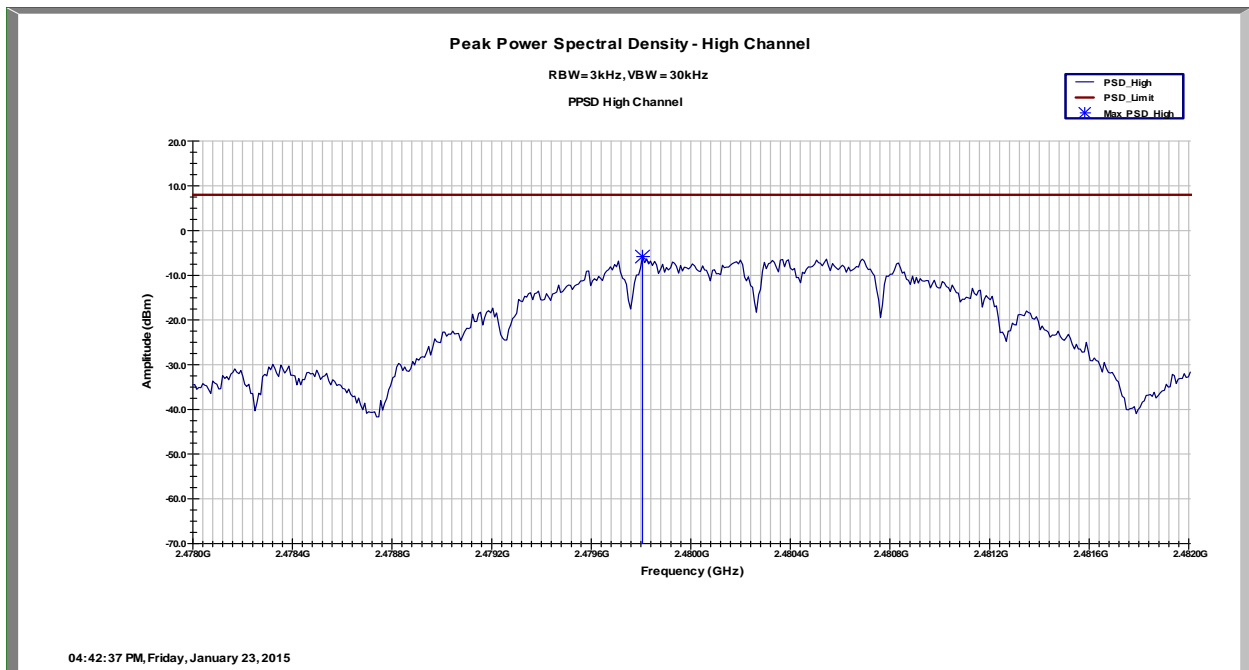
Power Spectral Density – Transmitter 1, Channel 26



Power Spectral Density – Transmitter 2, Channel 11



Power Spectral Density – Transmitter 2, Channel 18



Power Spectral Density – Transmitter 2, Channel 26

8 Radiated Spurious Emissions (Transmitter)

8.1 Test Limits

§ 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Part 15.205(a): Restricted Bands of Operations

MHz	MHz	MHz	GHz
0.090–0.110	16.42–16.423	399.9–410	4.5–5.15
10.495–0.505	16.69475–16.69525	608–614	5.35–5.46
2.1735–2.1905	16.80425–16.80475	960–1240	7.25–7.75
4.125–4.128	25.5–25.67	1300–1427	8.025–8.5
4.17725–4.17775	37.5–38.25	1435–1626.5	9.0–9.2
4.20725–4.20775	73–74.6	1645.5–1646.5	9.3–9.5
6.215–6.218	74.8–75.2	1660–1710	10.6–12.7
6.26775–6.26825	108–121.94	1718.8–1722.2	13.25–13.4
6.31175–6.31225	123–138	2200–2300	14.47–14.5
8.291–8.294	149.9–150.05	2310–2390	15.35–16.2
8.362–8.366	156.52475–156.52525	2483.5–2500	17.7–21.4
8.37625–8.38675	156.7–156.9	2655–2900	22.01–23.12
8.41425–8.41475	162.0125–167.17	3260–3267	23.6–24.0
12.29–12.293	167.72–173.2	3332–3339	31.2–31.8
12.51975–12.52025	240–285	3345.8–3358	36.43–36.5
12.57675–12.57725	322–335.4	3600–4400	(2)
13.36–13.41.			

¹ Until February 1, 1999, this restricted band shall be 0.490–0.510 MHz.

² Above 38.6

Part 15.209(a): Field Strength Limits for Restricted Bands of Operation

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 - 0.490	2,400 / F (kHz)	300
0.490 - 1.705	24,000 / 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

8.2 Test Procedure

ANSI C63.10: 2013 and KDB Publication No. 558074: Guidance on Measurements for Digital Transmission Systems (47 CFR 15.247)

8.3 Example of Field Strength Calculation Method:

The measured field strength was calculated by summing the readings taken from the spectrum analyzer with the appropriate correction factors associated with the antenna losses and cable losses. The calculation formula and sample calculations are listed below:

Formula:

$$FS = RA + AF + CF$$

FS = Field Strength in dB μ V/m

RA = Receiver Amplitude in dB μ V

AF = Antenna Factor in dB

CF = Cable Attenuation Factor in dB (Including preamplifier and filter attenuation)

Example Calculation:

$$RA = 19.48 \text{ dB}\mu\text{V}$$

$$AF = 18.52 \text{ dB}$$

$$CF = 0.78 \text{ dB}$$

$$FS = 19.48 + 18.52 + 0.78 = 38.78 \text{ dB}\mu\text{V/m}$$

$$\text{Level in } \mu\text{V/m} = \text{Common Antilogarithm } [(38.78 \text{ dB}\mu\text{V/m})/20] = 86.89 \mu\text{V/m}$$

8.4 Test Equipment Used:

Description	Serial Number	Manufacturer	Model	Cal. Date	Cal. Due
EMI Test Receiver	1302.6005.40	Rohde & Schwarz	ESU40	9/17/2014	9/17/2015
Preamplifier	122005	Rohde&Schwarz	TS-PR18	11/26/2014	11/26/2015
Bilog Antenna	2564	Schaffner	CBL6111C	4/21/2014	4/21/2015
Horn Antenna	00156319	ETS	3117	5/2/2014	5/2/2015
System Controller	121701-1	Sunol Sciences	SC99V	Time of Use	Time of Use
EMC Software	Version 9.15.02	Rohde&Schwarz	EMC32	Time of Use	Time of Use

8.5 Results:

All spurious emissions were attenuated by at least 20dB below the level of the fundamental as required by Part 15.247(d). Additionally, all emissions falling within restricted bands of operation and at the band edges were found to be below the limit specified in Part 15.209(a). The spurious emissions listed in the following tables are the worst case emissions. Radiated emissions was investigated up to the tenth harmonic of the transmit frequency. For the radiated spurious tests, both transmitters were active and transmitting at max power on the same channel for each of the sets of measurements at the low, mid and high channels.

Worst Case Spurious Measurements Channel 11 (Max Power) – HG2402RD-RSF Antenna

Frequency (MHz)	Average (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
4809.400000	---	48.55	74.00	25.45	1000.000	241.0	H	337.0	7.5
4809.400000	38.69	---	54.00	15.31	1000.000	241.0	H	337.0	7.5
4811.600000	39.67	---	54.00	14.33	1000.000	251.0	V	336.0	7.5
4811.600000	---	49.21	74.00	24.79	1000.000	251.0	V	336.0	7.5
7214.400000	---	52.90	74.00	21.10	1000.000	260.0	V	220.0	10.4
7214.400000	43.29	---	54.00	10.71	1000.000	260.0	V	220.0	10.4
7217.200000	39.28	---	54.00	14.72	1000.000	257.0	V	213.0	10.4
7217.200000	---	48.63	74.00	25.37	1000.000	257.0	V	213.0	10.4
9619.000000	---	46.22	74.00	27.78	1000.000	98.0	H	324.0	13.6
9619.000000	35.32	---	54.00	18.68	1000.000	98.0	H	324.0	13.6
12024.000000	---	46.96	74.00	27.04	1000.000	338.0	V	239.0	17.4
12024.000000	37.27	---	54.00	16.73	1000.000	338.0	V	239.0	17.4
14429.000000	---	46.31	74.00	27.69	1000.000	236.0	V	165.0	16.9
14429.000000	36.02	---	54.00	17.98	1000.000	236.0	V	165.0	16.9
16834.800000	---	52.08	74.00	21.92	1000.000	368.0	V	252.0	21.6
16834.800000	40.71	---	54.00	13.29	1000.000	368.0	V	252.0	21.6

Worst Case Spurious Measurements Channel 18 – HG2402RD-RSF Antenna

Frequency (MHz)	Average (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
4889.400000	---	47.46	74.00	26.54	1000.000	401.0	H	328.0	7.4
4889.400000	38.70	---	54.00	15.30	1000.000	401.0	H	328.0	7.4
7334.400000	41.03	---	54.00	12.97	1000.000	403.0	V	0.0	10.5
7334.400000	---	50.17	74.00	23.83	1000.000	403.0	V	0.0	10.5
7337.200000	---	53.43	74.00	20.57	1000.000	232.0	V	342.0	10.5
7337.200000	45.51	---	54.00	8.49	1000.000	232.0	V	342.0	10.5
9779.000000	---	46.13	74.00	27.87	1000.000	214.0	V	0.0	13.8
9779.000000	34.31	---	54.00	19.69	1000.000	214.0	V	0.0	13.8
12225.200000	36.92	---	54.00	17.08	1000.000	218.0	V	330.0	17.2
12225.200000	---	47.66	74.00	26.34	1000.000	218.0	V	330.0	17.2
14669.400000	---	47.14	74.00	26.86	1000.000	98.0	V	270.0	17.4
14669.400000	36.45	---	54.00	17.55	1000.000	98.0	V	270.0	17.4
16801.800000	40.73	---	54.00	13.27	1000.000	225.0	V	309.0	21.5
16801.800000	---	51.85	74.00	22.15	1000.000	225.0	V	309.0	21.5
16973.600000	40.66	---	54.00	13.34	1000.000	367.0	V	255.0	21.6
16973.600000	---	52.43	74.00	21.57	1000.000	367.0	V	255.0	21.6
17114.400000	---	50.80	74.00	23.20	1000.000	301.0	H	330.0	21.2
17114.400000	39.76	---	54.00	14.24	1000.000	301.0	H	330.0	21.2

Worst Case Spurious Measurements Channel 26 (Max Power) – HG2402RD-RSF Antenna

Frequency (MHz)	Average (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
4959.400000	---	43.91	74.00	30.09	1000.000	282.0	H	326.0	7.2
4959.400000	33.83	---	54.00	20.17	1000.000	282.0	H	326.0	7.2
7439.200000	46.61	---	54.00	7.39	1000.000	209.0	V	0.0	10.9
7439.200000	---	56.33	74.00	17.67	1000.000	209.0	V	0.0	10.9
7439.400000	---	55.37	74.00	18.63	1000.000	212.0	H	0.0	10.9
7439.400000	46.06	---	54.00	7.94	1000.000	212.0	H	0.0	10.9
9919.000000	---	47.58	74.00	26.42	1000.000	98.0	V	0.0	14.0
9919.000000	36.45	---	54.00	17.55	1000.000	98.0	V	0.0	14.0
12399.000000	36.08	---	54.00	17.92	1000.000	328.0	H	300.0	16.9
12399.000000	---	46.47	74.00	27.53	1000.000	328.0	H	300.0	16.9
14880.200000	---	48.52	74.00	25.48	1000.000	410.0	V	312.0	18.2
14880.200000	37.52	---	54.00	16.48	1000.000	410.0	V	312.0	18.2
16257.800000	---	50.74	74.00	23.26	1000.000	289.0	V	162.0	20.7
16257.800000	40.06	---	54.00	13.94	1000.000	289.0	V	162.0	20.7
16314.600000	---	50.87	74.00	23.13	1000.000	210.0	V	210.0	20.8
16314.600000	40.14	---	54.00	13.86	1000.000	210.0	V	210.0	20.8
17360.200000	---	49.76	74.00	24.24	1000.000	289.0	V	318.0	20.6
17360.200000	39.27	---	54.00	14.73	1000.000	289.0	V	318.0	20.6

Channel 11 (Reduced Power) Band Edge Emissions – HG2402RD-RSF Antenna

Frequency (MHz)	Average (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2388.382500	50.24	---	54.00	3.76	1000.000	98.0	V	222.0	37.7
2388.382500	---	59.67	74.00	14.33	1000.000	98.0	V	222.0	37.7
2388.792000	48.81	---	54.00	5.19	1000.000	404.0	V	349.0	37.7
2388.792000	---	59.24	74.00	14.76	1000.000	404.0	V	349.0	37.7
2390.000000	50.17	---	54.00	3.83	1000.000	404.0	V	347.0	37.7
2390.000000	---	59.70	74.00	14.30	1000.000	404.0	V	347.0	37.7

Channel 12 Band Edge Emissions – HG2402RD-RSF Antenna

Frequency (MHz)	Average (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2390.000000	---	56.63	74.00	17.37	1000.000	402.0	V	348.0	37.7
2390.000000	46.18	---	54.00	7.82	1000.000	402.0	V	348.0	37.7

Channel 25 Band Edge Emissions – HG2402RD-RSF Antenna

Frequency (MHz)	Average (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2483.500000	48.92	---	54.00	5.08	1000.000	401.0	V	234.0	37.8
2483.500000	---	58.99	74.00	15.01	1000.000	401.0	V	234.0	37.8
2486.228000	---	59.14	74.00	14.86	1000.000	407.0	V	231.0	37.8
2486.228000	48.35	---	54.00	5.65	1000.000	407.0	V	231.0	37.8
2490.544000	---	59.52	74.00	14.48	1000.000	410.0	V	234.0	37.8
2490.544000	49.52	---	54.00	4.48	1000.000	410.0	V	234.0	37.8
2491.908000	---	58.77	74.00	15.23	1000.000	404.0	V	234.0	37.8
2491.908000	48.32	---	54.00	5.68	1000.000	404.0	V	234.0	37.8

Channel 26 (Reduced Power) Band Edge Emissions – HG2402RD-RSF Antenna

Frequency (MHz)	Average (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2483.500000	---	59.62	74.00	14.38	1000.000	246.0	V	232.0	37.8
2483.500000	49.23	---	54.00	4.77	1000.000	246.0	V	232.0	37.8

Worst Case Spurious Measurements Channel 11 (Max Power) – MP24008XFPTNF Antenna

Frequency (MHz)	Average (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
4809.400000	32.08	---	54.00	21.92	1000.000	225.0	V	311.0	7.5
4809.400000	---	41.97	74.00	32.03	1000.000	225.0	V	311.0	7.5
7214.400000	36.35	---	54.00	17.65	1000.000	407.0	V	346.0	10.4
7214.400000	---	47.43	74.00	26.57	1000.000	407.0	V	346.0	10.4
9620.200000	33.45	---	54.00	20.55	1000.000	295.0	H	147.0	13.6
9620.200000	---	43.40	74.00	30.60	1000.000	295.0	H	147.0	13.6
12025.600000	37.00	---	54.00	17.00	1000.000	372.0	H	288.0	17.4
12025.600000	---	48.67	74.00	25.33	1000.000	372.0	H	288.0	17.4
14429.400000	---	46.95	74.00	27.05	1000.000	237.0	V	315.0	16.9
14429.400000	35.71	---	54.00	18.29	1000.000	237.0	V	315.0	16.9
16835.200000	---	52.68	74.00	21.32	1000.000	410.0	V	196.0	21.6
16835.200000	40.99	---	54.00	13.01	1000.000	410.0	V	196.0	21.6

Worst Case Spurious Measurements Channel 18 (Max Power) – MP24008XFPTNF Antenna

Frequency (MHz)	Average (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
4889.400000	---	45.52	74.00	28.48	1000.000	321.0	V	126.0	7.4
4889.400000	35.56	---	54.00	18.44	1000.000	321.0	V	126.0	7.4
7334.400000	42.05	---	54.00	11.95	1000.000	100.0	H	174.0	10.5
7334.400000	---	50.04	74.00	23.96	1000.000	100.0	H	174.0	10.5
9779.400000	---	44.37	74.00	29.63	1000.000	410.0	V	252.0	13.8
9779.400000	34.01	---	54.00	19.99	1000.000	410.0	V	252.0	13.8
12224.400000	36.86	---	54.00	17.14	1000.000	284.0	V	213.0	17.2
12224.400000	---	47.01	74.00	26.99	1000.000	284.0	V	213.0	17.2
14670.200000	36.65	---	54.00	17.35	1000.000	221.0	V	148.0	17.4
14670.200000	---	47.31	74.00	26.69	1000.000	221.0	V	148.0	17.4
16826.000000	40.91	---	54.00	13.09	1000.000	292.0	H	265.0	21.6
16826.000000	---	52.49	74.00	21.51	1000.000	292.0	H	265.0	21.6
17115.600000	---	50.92	74.00	23.08	1000.000	301.0	V	121.0	21.2
17115.600000	39.99	---	54.00	14.01	1000.000	301.0	V	121.0	21.2

Worst Case Spurious Measurements Channel 26 (Max Power) – MP24008XFPTNF Antenna

Frequency (MHz)	Average (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2480.400000	32.25	---	54.00	21.75	1000.000	348.0	V	126.0	3.9
2480.400000	---	40.35	74.00	33.65	1000.000	348.0	V	126.0	3.9
4959.400000	39.43	---	54.00	14.57	1000.000	304.0	V	335.0	7.2
4959.400000	---	48.71	74.00	25.29	1000.000	304.0	V	335.0	7.2
7439.400000	---	45.04	74.00	28.96	1000.000	269.0	H	126.0	10.9
7439.400000	35.52	---	54.00	18.48	1000.000	269.0	H	126.0	10.9
9919.000000	---	44.72	74.00	29.28	1000.000	236.0	H	207.0	14.0
9919.000000	34.22	---	54.00	19.78	1000.000	236.0	H	207.0	14.0
12399.800000	---	47.03	74.00	26.97	1000.000	219.0	H	226.0	16.9
12399.800000	36.19	---	54.00	17.81	1000.000	219.0	H	226.0	16.9
14879.800000	---	48.06	74.00	25.94	1000.000	231.0	V	213.0	18.2
14879.800000	37.41	---	54.00	16.59	1000.000	231.0	V	213.0	18.2
17359.000000	---	50.33	74.00	23.67	1000.000	245.0	V	324.0	20.6
17359.000000	39.30	---	54.00	14.70	1000.000	245.0	V	324.0	20.6

Channel 11 (Reduced Power) Band Edge Emissions -- MP24008XFPTNF Antenna

Frequency (MHz)	Average (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2388.572000	---	52.88	74.00	21.12	1000.000	376.0	V	132.0	37.7
2388.572000	42.54	---	54.00	11.46	1000.000	376.0	V	132.0	37.7
2388.656000	42.44	---	54.00	11.56	1000.000	374.0	V	131.0	37.7
2388.656000	---	53.51	74.00	20.49	1000.000	374.0	V	131.0	37.7
2390.000000	---	54.37	74.00	19.63	1000.000	380.0	V	139.0	37.7
2390.000000	43.19	---	54.00	10.81	1000.000	380.0	V	139.0	37.7

Channel 12 Band Edge Emissions – MP24008XFPTNF Antenna

Frequency (MHz)	Average (dB μ V/m)	MaxPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2378.756000	41.67	---	54.00	12.33	1000.000	371.0	V	128.0	37.7
2378.756000	---	52.29	74.00	21.71	1000.000	371.0	V	128.0	37.7
2389.760000	42.10	---	54.00	11.90	1000.000	374.0	V	132.0	37.7
2389.760000	---	52.80	74.00	21.20	1000.000	374.0	V	132.0	37.7
2390.000000	41.86	---	54.00	12.14	1000.000	410.0	V	118.0	37.7
2390.000000	---	52.78	74.00	21.22	1000.000	410.0	V	118.0	37.7

Channel 25 Band Edge Emissions – MP24008XFPTNF Antenna

Frequency (MHz)	Average (dB μ V/m)	MaxPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2483.500000	---	53.71	74.00	20.29	1000.000	307.0	V	124.0	37.8
2483.500000	43.37	---	54.00	10.63	1000.000	307.0	V	124.0	37.8
2484.044000	44.93	---	54.00	9.07	1000.000	410.0	V	131.0	37.8
2484.044000	---	56.18	74.00	17.82	1000.000	410.0	V	131.0	37.8
2486.068000	42.79	---	54.00	11.21	1000.000	300.0	V	126.0	37.8
2486.068000	---	53.02	74.00	20.98	1000.000	300.0	V	126.0	37.8
2490.364000	43.81	---	54.00	10.19	1000.000	400.0	V	136.0	37.8
2490.364000	---	54.45	74.00	19.55	1000.000	400.0	V	136.0	37.8
2491.884000	43.01	---	54.00	10.99	1000.000	314.0	V	128.0	37.8
2491.884000	---	53.03	74.00	20.97	1000.000	314.0	V	128.0	37.8

Channel 26 (Reduced Power) Band Edge Emissions – MP24008XFPTNF Antenna

Frequency (MHz)	Average (dB μ V/m)	MaxPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2483.500000	---	53.62	74.00	20.38	1000.000	297.0	V	127.0	37.8
2483.500000	42.39	---	54.00	11.61	1000.000	297.0	V	127.0	37.8
2483.592000	42.86	---	54.00	11.14	1000.000	410.0	V	129.0	37.8
2483.592000	---	53.26	74.00	20.74	1000.000	410.0	V	129.0	37.8
2483.932000	42.41	---	54.00	11.59	1000.000	408.0	V	130.0	37.8
2483.932000	---	52.74	74.00	21.26	1000.000	408.0	V	130.0	37.8

Worst Case Spurious Measurements Channel 11 (Max Power) – MC2400PTMSMA Antenna

Frequency (MHz)	Average (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
4809.400000	---	45.55	74.00	28.45	1000.000	341.0	V	231.0	7.5
4809.400000	35.81	---	54.00	18.19	1000.000	341.0	V	231.0	7.5
7214.400000	---	44.21	74.00	29.79	1000.000	346.0	V	136.0	10.4
7214.400000	33.87	---	54.00	20.13	1000.000	346.0	V	136.0	10.4
9619.800000	33.35	---	54.00	20.65	1000.000	305.0	H	174.0	13.6
9619.800000	---	44.25	74.00	29.75	1000.000	305.0	H	174.0	13.6
12024.000000	---	46.63	74.00	27.37	1000.000	336.0	H	220.0	17.4
12024.000000	36.52	---	54.00	17.48	1000.000	336.0	H	220.0	17.4
14430.600000	---	46.50	74.00	27.50	1000.000	374.0	H	174.0	16.9
14430.600000	35.77	---	54.00	18.23	1000.000	374.0	H	174.0	16.9
16836.000000	---	52.11	74.00	21.89	1000.000	401.0	V	258.0	21.6
16836.000000	40.41	---	54.00	13.59	1000.000	401.0	V	258.0	21.6

Worst Case Spurious Measurements Channel 18 – MC2400PTMSMA Antenna

Frequency (MHz)	Average (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
4889.400000	39.53	---	54.00	14.47	1000.000	346.0	V	344.0	7.4
4889.400000	---	48.17	74.00	25.83	1000.000	346.0	V	344.0	7.4
7334.400000	33.19	---	54.00	20.81	1000.000	295.0	V	119.0	10.5
7334.400000	---	43.18	74.00	30.82	1000.000	295.0	V	119.0	10.5
9780.600000	33.57	---	54.00	20.43	1000.000	384.0	V	164.0	13.8
9780.600000	---	44.06	74.00	29.94	1000.000	384.0	V	164.0	13.8
12224.400000	37.16	---	54.00	16.84	1000.000	401.0	V	251.0	17.2
12224.400000	---	48.44	74.00	25.56	1000.000	401.0	V	251.0	17.2
14669.000000	36.49	---	54.00	17.51	1000.000	222.0	H	196.0	17.4
14669.000000	---	47.47	74.00	26.53	1000.000	222.0	H	196.0	17.4
17115.200000	---	50.93	74.00	23.07	1000.000	410.0	V	216.0	21.2
17115.200000	40.00	---	54.00	14.00	1000.000	410.0	V	216.0	21.2

Worst Case Spurious Measurements Channel 26 (Max Power) – MC2400PTMSMA Antenna

Frequency (MHz)	Average (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
4959.400000	39.96	---	54.00	14.04	1000.000	404.0	V	348.0	7.2
4959.400000	---	49.04	74.00	24.96	1000.000	404.0	V	348.0	7.2
7439.400000	36.21	---	54.00	17.79	1000.000	286.0	V	150.0	10.9
7439.400000	---	46.01	74.00	27.99	1000.000	286.0	V	150.0	10.9
9919.000000	34.09	---	54.00	19.91	1000.000	408.0	H	138.0	14.0
9919.000000	---	44.87	74.00	29.13	1000.000	408.0	H	138.0	14.0
12399.000000	36.25	---	54.00	17.75	1000.000	293.0	V	348.0	16.9
12399.000000	---	46.80	74.00	27.20	1000.000	293.0	V	348.0	16.9
14879.800000	---	48.41	74.00	25.59	1000.000	410.0	H	222.0	18.2
14879.800000	37.71	---	54.00	16.29	1000.000	410.0	H	222.0	18.2
17359.000000	---	49.58	74.00	24.42	1000.000	218.0	V	335.0	20.6
17359.000000	38.96	---	54.00	15.04	1000.000	218.0	V	335.0	20.6

Channel 11 (Reduced Power) Band Edge Emissions -- MC2400PTMSMA Antenna

Frequency (MHz)	Average (dB μ V/m)	MaxPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2390.000000	---	55.29	74.00	18.71	1000.000	352.0	V	229.0	37.7
2390.000000	44.29	---	54.00	9.71	1000.000	352.0	V	229.0	37.7

Channel 12 Band Edge Emissions -- MC2400PTMSMA Antenna

Frequency (MHz)	Average (dB μ V/m)	MaxPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2390.000000	---	53.34	74.00	20.66	1000.000	232.0	V	126.0	37.7
2390.000000	42.61	---	54.00	11.39	1000.000	232.0	V	126.0	37.7

Channel 25 Band Edge Emissions -- MC2400PTMSMA Antenna

Frequency (MHz)	Average (dB μ V/m)	MaxPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2483.500000	---	55.57	74.00	18.43	1000.000	408.0	V	337.0	37.8
2483.500000	44.43	---	54.00	9.57	1000.000	408.0	V	337.0	37.8

Channel 26 (Reduced Power) Band Edge Emissions -- MC2400PTMSMA Antenna

Frequency (MHz)	Average (dB μ V/m)	MaxPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2483.500000	42.49	---	54.00	11.51	1000.000	400.0	H	158.0	37.8
2483.500000	---	53.86	74.00	20.14	1000.000	400.0	H	158.0	37.8

Worst Case Spurious Measurements Channel 11 (Max Power) – BS2400XL3 Antenna

Frequency (MHz)	Average (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
7214.400000	---	48.77	74.00	25.23	1000.000	237.0	V	349.0	10.4
7214.400000	38.83	---	54.00	15.17	1000.000	237.0	V	349.0	10.4
9619.000000	---	45.85	74.00	28.15	1000.000	410.0	H	115.0	13.6
9619.000000	33.33	---	54.00	20.67	1000.000	410.0	H	115.0	13.6
12024.800000	37.08	---	54.00	16.92	1000.000	410.0	H	143.0	17.4
12024.800000	---	50.12	74.00	23.88	1000.000	410.0	H	143.0	17.4
14429.400000	---	48.70	74.00	25.30	1000.000	398.0	H	112.0	16.9
14429.400000	35.56	---	54.00	18.44	1000.000	398.0	H	112.0	16.9
16834.400000	---	53.23	74.00	20.77	1000.000	202.0	H	139.0	21.6
16834.400000	40.75	---	54.00	13.25	1000.000	202.0	H	139.0	21.6
4809.400000	40.82	---	54.00	13.18	1000.000	165.0	V	0.0	7.5
4809.400000	---	50.08	74.00	23.92	1000.000	165.0	V	0.0	7.5

Worst Case Spurious Measurements Channel 18 – BS2400XL3 Antenna

Frequency (MHz)	Average (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
4889.400000	33.05	---	54.00	20.95	1000.000	410.0	V	0.0	7.4
4889.400000	---	44.48	74.00	29.52	1000.000	410.0	V	0.0	7.4
7334.400000	---	49.58	74.00	24.42	1000.000	410.0	V	0.0	10.5
7334.400000	40.12	---	54.00	13.88	1000.000	410.0	V	0.0	10.5
9779.400000	33.68	---	54.00	20.32	1000.000	229.0	H	0.0	13.8
9779.400000	---	46.39	74.00	27.61	1000.000	229.0	H	0.0	13.8
12225.200000	---	49.80	74.00	24.20	1000.000	321.0	V	305.0	17.2
12225.200000	36.95	---	54.00	17.05	1000.000	321.0	V	305.0	17.2
14671.000000	---	49.19	74.00	24.81	1000.000	362.0	V	150.0	17.4
14671.000000	36.39	---	54.00	17.61	1000.000	362.0	V	150.0	17.4
17115.600000	---	52.79	74.00	21.21	1000.000	242.0	V	0.0	21.2
17115.600000	39.64	---	54.00	14.36	1000.000	242.0	V	0.0	21.2

Worst Case Spurious Measurements Channel 26 (Max Power) – BS2400XL3 Antenna

Frequency (MHz)	Average (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
4959.400000	29.04	---	54.00	24.96	1000.000	410.0	V	326.0	7.2
4959.400000	---	41.30	74.00	32.70	1000.000	410.0	V	326.0	7.2
7439.400000	32.28	---	54.00	21.72	1000.000	233.0	V	0.0	10.9
7439.400000	---	45.09	74.00	28.91	1000.000	233.0	V	0.0	10.9
9919.000000	33.81	---	54.00	20.19	1000.000	340.0	V	158.0	14.0
9919.000000	---	46.85	74.00	27.15	1000.000	340.0	V	158.0	14.0
12401.000000	36.01	---	54.00	17.99	1000.000	252.0	V	184.0	16.9
12401.000000	---	48.73	74.00	25.27	1000.000	252.0	V	184.0	16.9
14880.200000	---	49.93	74.00	24.07	1000.000	319.0	H	212.0	18.2
14880.200000	37.33	---	54.00	16.67	1000.000	319.0	H	212.0	18.2
17360.600000	---	51.48	74.00	22.52	1000.000	219.0	H	167.0	20.6
17360.600000	39.14	---	54.00	14.86	1000.000	219.0	H	167.0	20.6

Channel 11 (Reduced Power) Band Edge Emissions – BS2400XL3 Antenna

Frequency (MHz)	Average (dB μ V/m)	MaxPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2388.488400	---	55.81	74.00	18.19	1000.000	214.0	V	194.0	37.7
2388.488400	46.04	---	54.00	7.96	1000.000	214.0	V	194.0	37.7
2390.000000	48.87	---	54.00	5.13	1000.000	100.0	V	193.0	37.7
2390.000000	---	59.18	74.00	14.82	1000.000	100.0	V	193.0	37.7

Channel 12 Band Edge Emissions – BS2400XL3 Antenna

Frequency (MHz)	Average (dB μ V/m)	MaxPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2390.000000	---	56.43	74.00	17.57	1000.000	100.0	V	193.0	37.7
2390.000000	45.44	---	54.00	8.56	1000.000	100.0	V	193.0	37.7

Channel 25 Band Edge Emissions – BS2400XL3 Antenna

Frequency (MHz)	Average (dB μ V/m)	MaxPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2483.500000	50.73	---	54.00	3.27	1000.000	201.0	V	208.0	37.8
2483.500000	---	56.94	74.00	17.06	1000.000	410.0	V	180.0	37.8
2486.113000	46.13	---	54.00	7.87	1000.000	232.0	V	210.0	37.8
2486.113000	---	57.83	74.00	16.17	1000.000	232.0	V	210.0	37.8
2490.439000	52.97	---	54.00	1.03	1000.000	100.0	V	180.0	37.8
2490.439000	---	63.07	74.00	10.93	1000.000	100.0	V	180.0	37.8
2490.661000	47.68	---	54.00	6.32	1000.000	248.0	V	183.0	37.8
2490.661000	---	58.70	74.00	15.30	1000.000	248.0	V	183.0	37.8
2491.864000	43.45	---	54.00	10.55	1000.000	410.0	V	181.0	37.8
2491.864000	---	56.18	74.00	17.82	1000.000	410.0	V	181.0	37.8

Channel 26 (Reduced Power) Band Edge Emissions – BS2400XL3 Antenna

Frequency (MHz)	Average (dB μ V/m)	MaxPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2483.500000	---	56.05	74.00	17.95	1000.000	410.0	V	212.0	37.8
2483.500000	43.07	---	54.00	10.93	1000.000	410.0	V	212.0	37.8

9 AC Powerline Conducted Emissions

9.1 Test Limits

§ 15.107(e): Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

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

*Decreases with the logarithm of the frequency.

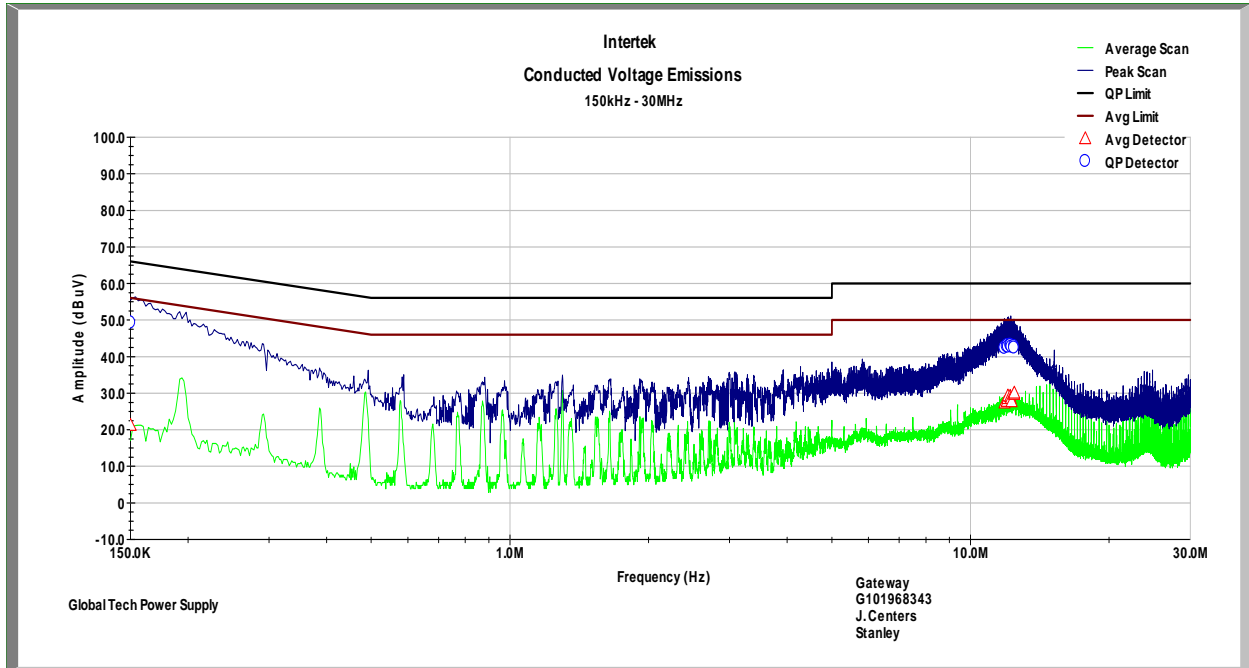
9.2 Test Procedure

ANSI C63.4: 2003

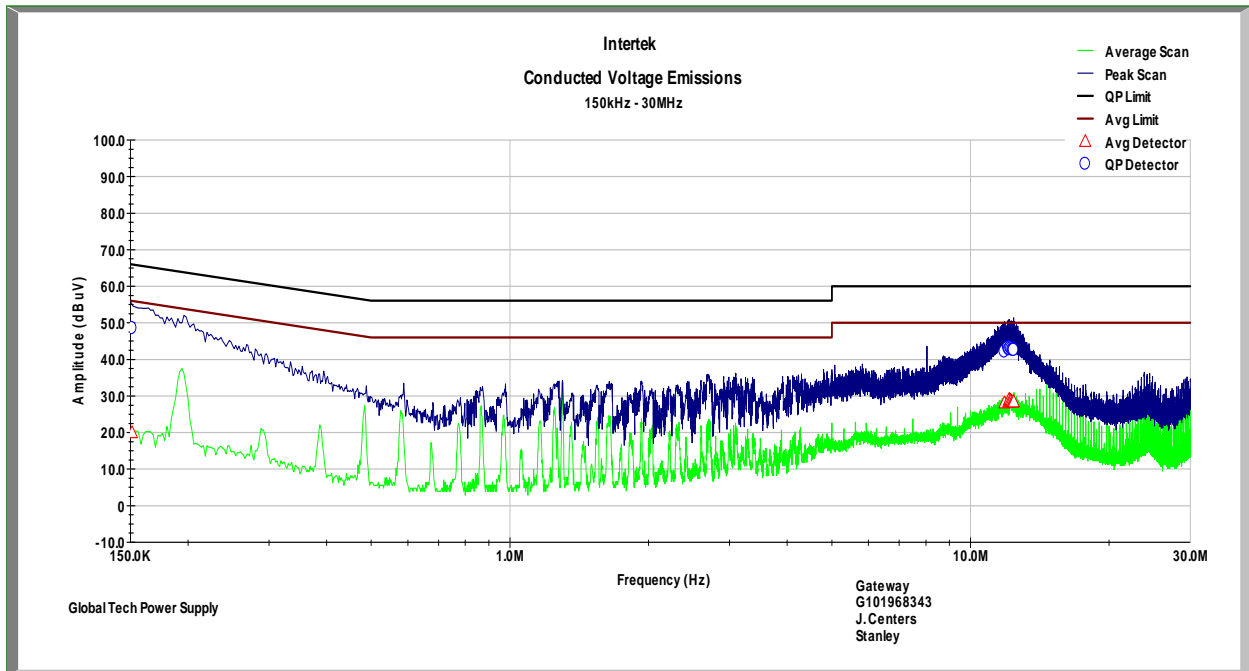
9.3 Test Equipment Used:

Description	Serial Number	Manufacturer	Model	Cal. Date	Cal. Due
EMI Test Receiver	10887490.26	Rohde & Schwarz	ESI26	8/22/2014	8/22/2015
LISN	3333	Teseq	NNB52	3/12/2014	3/12/2015
TILE Software	V7.0.6.545	ETS Lindgren	TILE	Time of Use	Time of Use

9.4 Results:



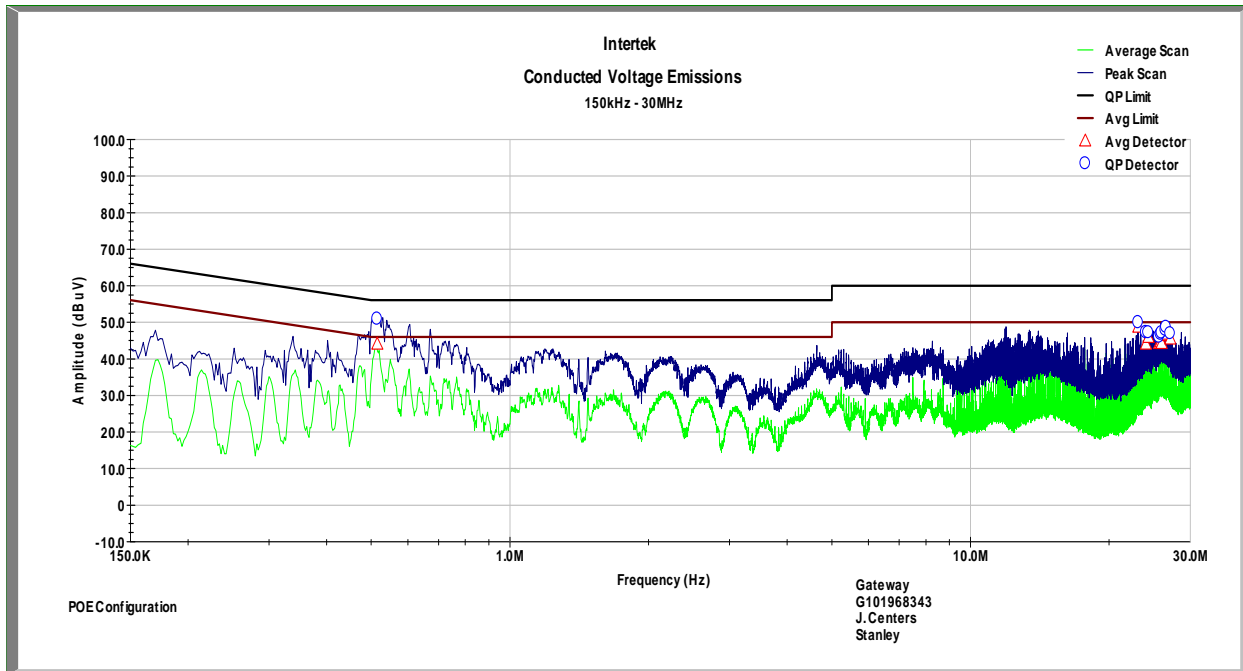
Quasi-Peak and Average Measurements (Tx Mid Channel) – Line 1 (Global Tech Power Supply)



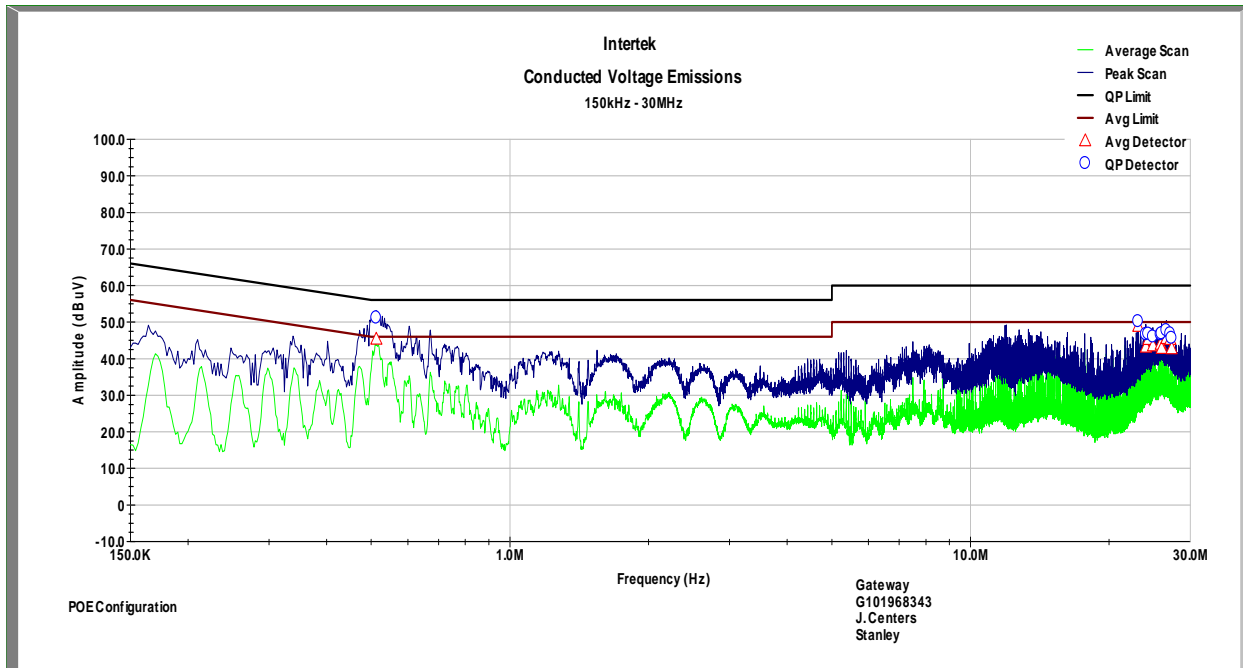
Quasi-Peak and Average Measurements (Tx Mid Channel) – Neutral (Global Tech Power Supply)

Conducted Voltage Emissions on Power Lines								
Test Engineer:	C. Davis		Start Date:	1/22/2015		End Date:	1/22/2015	
Temperature:	21.9C		Humidity:	23.30%		Pressure:	995.59 mbar	
Specification:	FCC Part 15B		Test Limit:	Class B		RBW:	9kHz	
Notes:	Global Tek Power Supply							
Line	Frequency (MHz)	Quasi-Peak (dBuV)	Quasi-Peak Limit (dBuV)	Quasi-Peak Delta (dB)	Average (dBuV)	Average Limit (dBuV)	Average Delta (dB)	Results
L1	151.100 KHz	48.42	65.969	-17.549	19.931	55.969	-36.038	Compliant
L1	11.852 MHz	42.009	60	-17.991	28.094	50	-21.906	Compliant
L1	12.081 MHz	43.131	60	-16.869	28.357	50	-21.643	Compliant
L1	12.116 MHz	42.688	60	-17.312	28.572	50	-21.428	Compliant
L1	12.137 MHz	42.753	60	-17.247	29.034	50	-20.966	Compliant
L1	12.206 MHz	43.104	60	-16.896	28.776	50	-21.224	Compliant
L1	12.261 MHz	42.876	60	-17.124	28.541	50	-21.459	Compliant
L1	12.326 MHz	42.615	60	-17.385	28.36	50	-21.64	Compliant
L1	12.381 MHz	42.477	60	-17.523	28.337	50	-21.663	Compliant
L1	12.421 MHz	42.48	60	-17.52	28.384	50	-21.616	Compliant
Neutral	150.100 KHz	49.207	65.997	-16.79	21.158	55.997	-34.84	Compliant
Neutral	11.855 MHz	42.279	60	-17.721	27.331	50	-22.669	Compliant
Neutral	11.997 MHz	42.78	60	-17.22	27.793	50	-22.207	Compliant
Neutral	12.030 MHz	43.042	60	-16.958	28.565	50	-21.435	Compliant
Neutral	12.068 MHz	42.595	60	-17.405	29.191	50	-20.809	Compliant
Neutral	12.195 MHz	43.067	60	-16.933	29.08	50	-20.92	Compliant
Neutral	12.237 MHz	43.01	60	-16.99	28.528	50	-21.472	Compliant
Neutral	12.280 MHz	42.586	60	-17.414	27.638	50	-22.362	Compliant
Neutral	12.435 MHz	42.701	60	-17.299	29.649	50	-20.351	Compliant
Neutral	12.441 MHz	42.324	60	-17.676	30.004	50	-19.996	Compliant

Test Data (Tx Mid Channel) – Global Tech Power Supply



Quasi-Peak and Average Measurements (Tx Mid Channel) – Line 1 (POE Configuration)



Quasi-Peak and Average Measurements (Tx Mid Channel) – Neutral (POE Configuration)

Conducted Voltage Emissions on Power Lines								
Test Engineer:	J. Centers		Start Date:	1/13/2015		End Date:	1/13/2015	
Temperature:	21.8C		Humidity:	19.50%		Pressure:	29.4 inHg	
Specification:	FCC Part 15B		Test Limit:	Class B		RBW:	9kHz	
Notes:	POE Powered							
Line	Frequency (MHz)	Quasi-Peak (dBuV)	Quasi-Peak Limit (dBuV)	Quasi-Peak Delta (dB)	Average (dBuV)	Average Limit (dBuV)	Average Delta (dB)	Results
L1	515.300 KHz	50.907	56	-5.093	44.003	46	-1.997	Compliant
L1	23.129 MHz	49.956	60	-10.044	48.64	50	-1.36	Compliant
L1	24.044 MHz	47.209	60	-12.791	44.033	50	-5.967	Compliant
L1	24.350 MHz	47.164	60	-12.836	45.831	50	-4.169	Compliant
L1	25.693 MHz	45.978	60	-14.022	44.241	50	-5.759	Compliant
L1	25.877 MHz	46.77	60	-13.23	44.656	50	-5.344	Compliant
L1	25.999 MHz	47.072	60	-12.928	44.229	50	-5.771	Compliant
L1	26.488 MHz	47.86	60	-12.14	46.429	50	-3.571	Compliant
L1	26.610 MHz	48.663	60	-11.337	46.738	50	-3.262	Compliant
L1	27.159 MHz	46.937	60	-13.063	45.455	50	-4.545	Compliant
Neutral	512.700 KHz	51.14	56	-4.86	45.303	46	-0.697	Compliant
Neutral	23.129 MHz	50.156	60	-9.844	48.807	50	-1.193	Compliant
Neutral	24.043 MHz	46.592	60	-13.408	43.172	50	-6.828	Compliant
Neutral	24.349 MHz	46.731	60	-13.269	45.221	50	-4.779	Compliant
Neutral	24.899 MHz	45.938	60	-14.062	43.456	50	-6.544	Compliant
Neutral	25.875 MHz	46.536	60	-13.464	43.939	50	-6.061	Compliant
Neutral	25.997 MHz	46.805	60	-13.195	42.777	50	-7.223	Compliant
Neutral	26.611 MHz	47.672	60	-12.328	45.539	50	-4.461	Compliant
Neutral	27.159 MHz	46.782	60	-13.218	45.208	50	-4.792	Compliant
Neutral	27.343 MHz	45.58	60	-14.42	42.72	50	-7.28	Compliant

Test Data (Tx Mid Channel) – POE Configuration

10 Antenna Requirement per FCC Part 15.203**10.1 Test Limits**

§ 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. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

10.2 Results:

The sample tested met the antenna requirement. The antenna used a RP-SMA connector.

11 Measurement Uncertainty

The measured value related to the corresponding limit will be used to decide whether the equipment meets the requirements.

The measurement uncertainty figures were calculated and correspond to a coverage factor of $k = 2$, providing a confidence level of respectively 95.45 % in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian).

Measurement uncertainty Table

Parameter	Uncertainty	Notes
Radiated emissions, 30 to 1000 MHz	+3.9dB	
Radiated emissions, 1 to 18 GHz	+4.2dB	
Radiated emissions, 18 to 40 GHz	+4.3dB	
Power Port Conducted emissions, 150kHz to 30 MHz	+2.8dB	

12 Revision History

Revision Level	Date	Report Number	Notes
0	2/2/2015	101968343LEX-002	Original Issue