

TEST REPORT

Report Number: 100841385ATL-001

August 14, 2012

Product Designation: US: 44917 Canada: 47417, 47418, 47419 and 47420

Standard: FCC 15.247 and RSS-210, Issue 8, 2010 Frequency Hopping and Digital Modulation Systems operatin within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz
CFR, Title 47, Chapter I, Part 15 Subpart B
ICES-003, Issue 4, 2004

Tested by:

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Duluth, GA 30096

Client:

Hunter Fan Company
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Tests performed by:



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Report reviewed by:



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1.0 Introduction and Conclusion

The tests indicated in section 2.0 were performed on the product constructed as described in section 3.0. 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 complies with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested.

2.0 Test Summary

Section	Test Full Name	Test Date	Result
4.0	System setup including cable interconnection details, support equipment and simplified block diagram. (System Setup)		
5.0	Transmitter Information for equipment operating under Parts 11, 15 and 18 of the rules (Transmitter Info - Unlicensed)		
6.0	FCC 15.247 6dB Bandwidth (211759)	08/07/2012	PASS
7.0	FCC Part 15.247(b)(3) / RSS-210 A8.4(4) (Peak Output Power)	08/07/2012	PASS
8.0	FCC Part 15.247(e) / RSS-210 A8.2(2) (Power Spectral Density)	08/02/2012	PASS
9.0	FCC Part 15.247(d) / RSS-210 A8.5 - Conducted (Conducted Spurious Emissions)	08/07/2012	PASS
10.0	FCC Part 15.247(d) / RSS-210 A8.5 - Radiated (Radiated Spurious Emissions)	08/06/2012	PASS
11.0	Additional provisions to the general radiated emission limitations. (FCC 15C - 15.215)	08/07/2012	PASS

3.0 Description of Equipment Under Test

Equipment Under Test			
Description	Manufacturer	Model Number	Serial Number
iSTAT Thermostat	Hunter Fan	44917 *	Not Labeled

* 47417, 47418, 47419 and 47420 are Canadian models and are electrically equivalent to the tested model

EUT receive date:	July 30, 2012
EUT receive condition:	Good

Description of EUT provided by Client:

The thermostat connects to HVAC systems via traditional wired connections. It controls the HVAC system's heating and cooling cycles via user inputs or automated set points adjustment through a proprietary cloud computing algorithm.

The thermostat communicates to a gateway via a proprietary 900MHz radio frequency communication protocol for data exchange to the cloud servers. The gateway is connected to a WIFI router via wired Ethernet connection. The gateway also requires an AC power adapter for power supply.

Cloud computing servers are utilized to collect thermostat data and also allow users to logon to the servers via web applications to program and manage the thermostat from a computer or mobile device. Internet access is required for users to program and manage the thermostat through a computer or mobile device.

Description of EUT exercising:

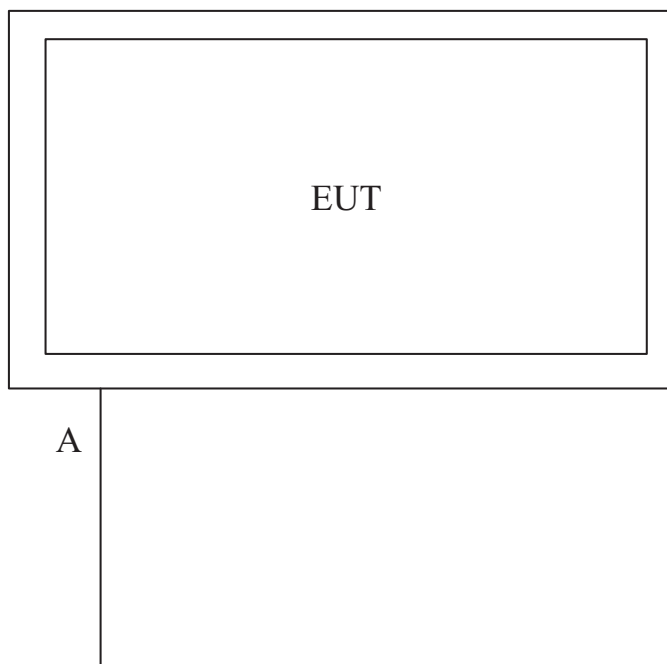
During emissions testing, the EUT was powered from four, new AA batteries. To facilitate measurements, the EUT was configured to continuously transmit a modulated carrier. Low, middle, and high channels were evaluated.

4.0 System setup including cable interconnection details, support equipment and simplified block diagram. (System Setup)

Method:

Record the details of EUTcabling, document the support equipment, and show the interconnections in a block diagram.

Drawing:



Setup Diagram

4.0 System setup including cable interconnection details, support equipment and simplified block diagram. (System Setup)

EUT Cabling						
ID	Description	Length	Shielding	Ferrites	Connection	
					From	To
A	Appliance Wiring (x8)	1m	None	None	Thermostat (EUT)	Unterminated

Support Equipment			
Description	Manufacturer	Model Number	Serial Number
None required			

5.0 Transmitter Information for equipment operating under Parts 11, 15 and 18 of the rules (Transmitter Info - Unlicensed)

Method:

Complete the overview spreadsheet.

Related Submittal(s) Grants: This report is for use with an application for certification of a low power transmitter. One transmitter is included in the application.

5.0 Transmitter Information for equipment operating under Parts 11, 15 and 18 of the rules (Transmitter Info - Unlicensed)

Data:

FCC Rule Part			
2.1033(b)(1)	Applicant	Company Name:	Hunter Fan Company
		Address:	7130 Goodlett Parkway, Suite 400 Memphis, TN 38016
		Phone:	901-248-2212
		Fax:	901-248-2382
		Contact Name:	Robert Davis
		Email:	rdavis@hunterfan.com
2.1033(b)(2)	Equipment	FCC ID:	IN2TXICT
		IC:	3558A-TXICT
		EUT Model Number:	44917
		EUT Serial Number:	Not Labeled
2.1033(b)(3)	User Manual	Attach as separate exhibit.	
2.1033(b)(4)	Brief description of circuit functions	Attach as separate exhibit.	
2.1033(b)(5)	Block diagram showing frequency of oscillators	Attach as separate exhibit.	
2.1033(b)(6)	Test report	Incorporated with this document	
2.1033(b)(7)	Internal and external photographs	Attach as separate exhibit.	
2.1033(b)(8)	Peripheral Equipment	Can be used?	No
		Comercially available?	No
2.1033(b)(9)	Transition rules apply?	No	
2.1033(b)(10)	Scanning receiver?	No	
2.1033(b)(11)	Transmitter in 59-64 GHz band?	No	
2.1033(b)(12)	Software defined radio?	No	

6.0 FCC 15.247 6dB Bandwidth (211759)

Method:

TEST PROCEDURE REFERENCE

FCC's KDB Publication 558074, "Measurement of Digital Transmission Systems Operating under Section 15.247" March 23, 2005

TEST LIMIT

The minimum 6 dB bandwidth shall be at least 500 kHz.

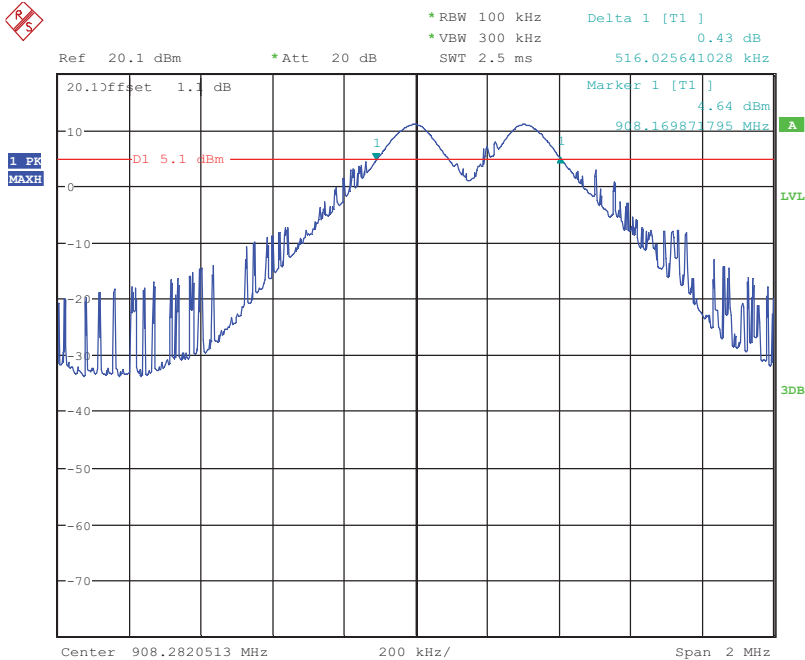
Connect the antenna port of the EUT to the input of a spectrum analyzer. Input a referency level offset into the spectrum analyzer to account for the associated cable loss. Set the analyzer resolution to 100kHz and video bandwidths to 300kHz and turn on the max hold function. Use the marker peak search on the resultant trace to find the peak amplitude. Positioned the markers on either side of the peak amplitude such that they were 6dB lower than the peak amplitude. The 6dB bandwidth is the frequency difference between the marker on the lower side and the marker on the higher side of the peak amplitude. The 6dB bandwidth shall be measured for the highest data rate for each possible modulation mode on the high, middle, and low channels.

Test Equipment Used:

Description:	Manufacturer:	Model:	Asset Number:	Cal Date:	Cal Due:
Cable E405, 40 GHz, 2.9, 2m	Megaphase	TM40 K1K1 80	E405	07/07/2012	07/07/2013
Spectrum Analyzer, 20Hz-50GHz	Rohde & Schwarz	FSU 50	100005	12/07/2011	12/07/2012

Results: The sample tested was found to Comply.

Plot:

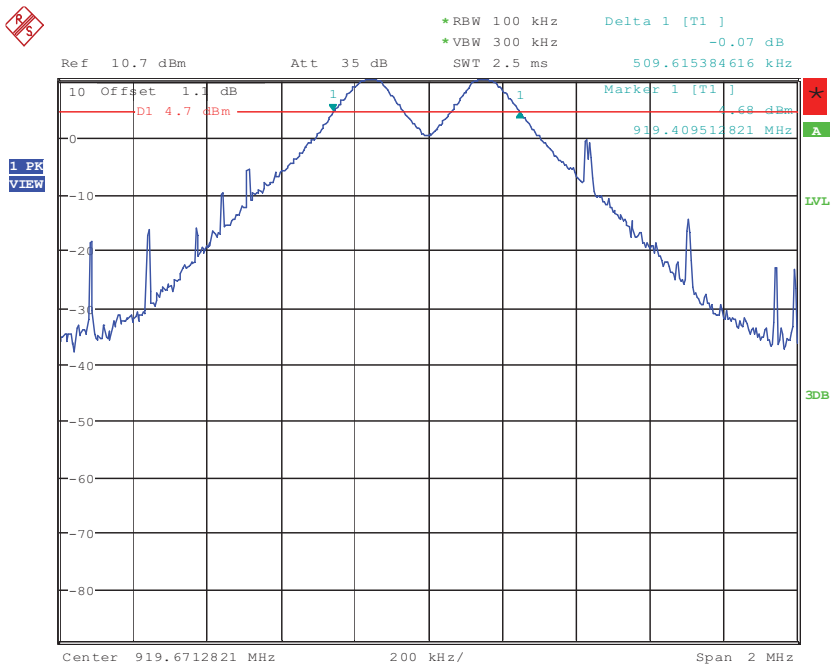


Date: 2.AUG.2012 09:48:39

Low Channel

6.0 FCC 15.247 6dB Bandwidth (211759)

Plot:

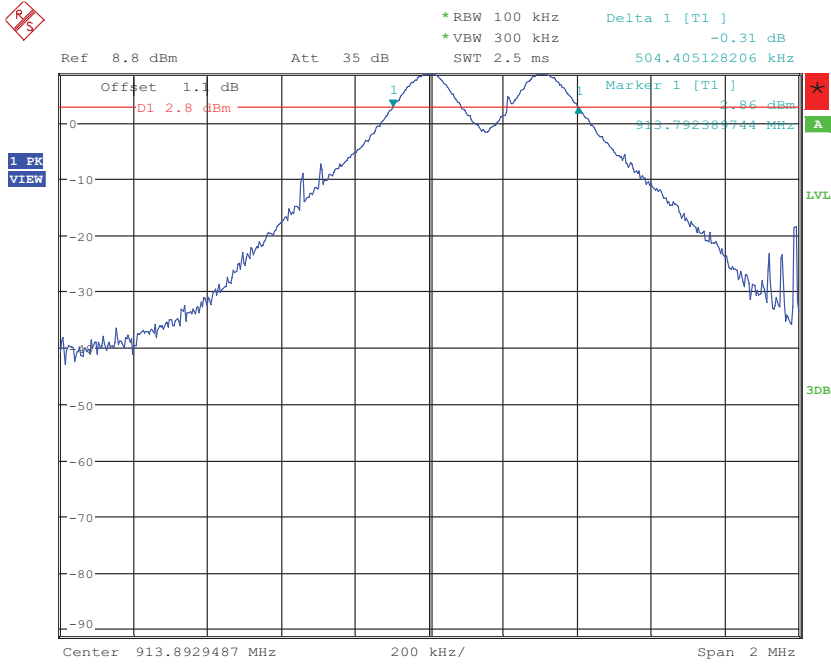


Date: 7.AUG.2012 13:09:48

High Channel

6.0 FCC 15.247 6dB Bandwidth (211759)

Plot:



Date: 7.AUG.2012 05:45:28

Mid Channel

6.0 FCC 15.247 6dB Bandwidth (211759)**Data:**

Channel	6 dB Bandwidth	RBW kHz	VBW kHz
Low	516kHz	100	300
Mid	504.4kHz	100	300
High	509.6kHz	100	300

7.0 FCC Part 15.247(b)(3) / RSS-210 A8.4(4) (Peak Output Power)

Method:

TEST PROCEDURE REFERENCE

FCC's KDB Publication 558074, "Measurement of Digital Transmission Systems Operating under Section 15.247" March 23, 2005

TEST LIMIT

The maximum peak conducted output power of the intentional radiator shall not exceed the following: 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.

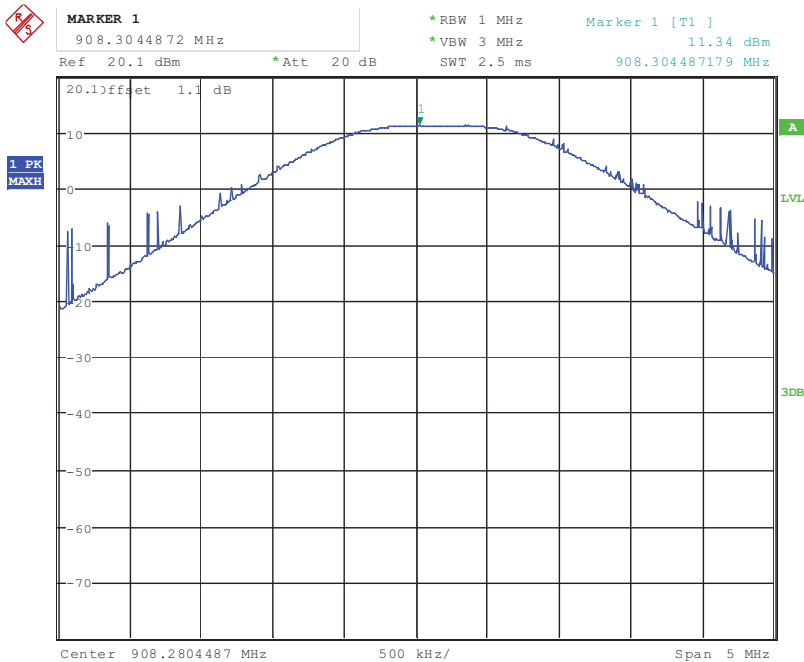
Connect the antenna port of the EUT to the input of a peak power meter (or spectrum analyzer with resolution bandwidth set greater than the emission bandwidth). Read the power directly from the power meter (or equivalent) that is corrected for cable loss to obtain the power at the antenna terminals. Measure the conducted power on the high, middle and low channels for all data rates and modulation modes.

Test Equipment Used:

Description:	Manufacturer:	Model:	Asset Number:	Cal Date:	Cal Due:
Cable E405, 40 GHz, 2.9, 2m	Megaphase	TM40 K1K1 80	E405	07/07/2012	07/07/2013
Spectrum Analyzer, 20Hz-50GHz	Rohde & Schwarz	FSU 50	100005	12/07/2011	12/07/2012

Results: The sample tested was found to Comply.

Plot:

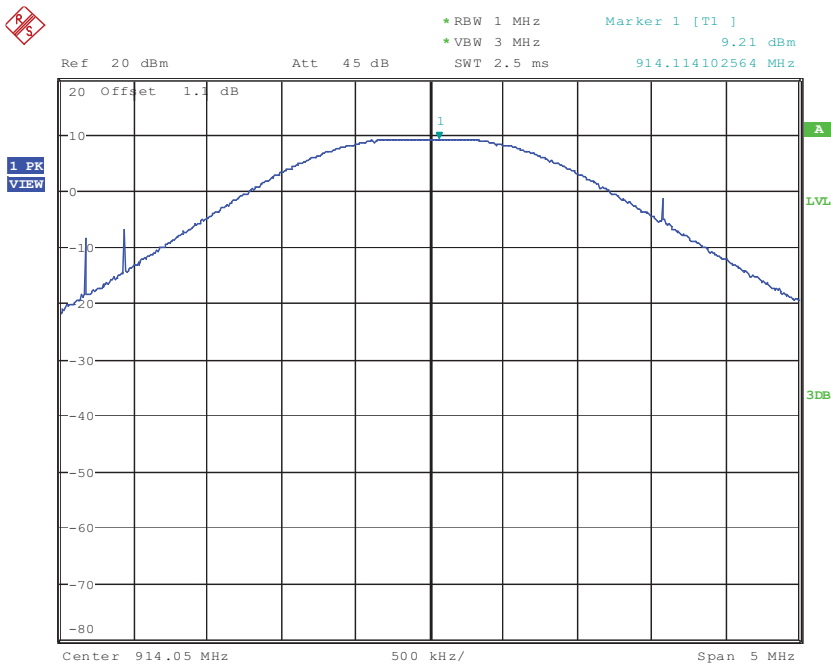


Date: 2.AUG.2012 10:10:10

Output Power - Low Channel

7.0 FCC Part 15.247(b)(3) / RSS-210 A8.4(4) (Peak Output Power)

Plot:

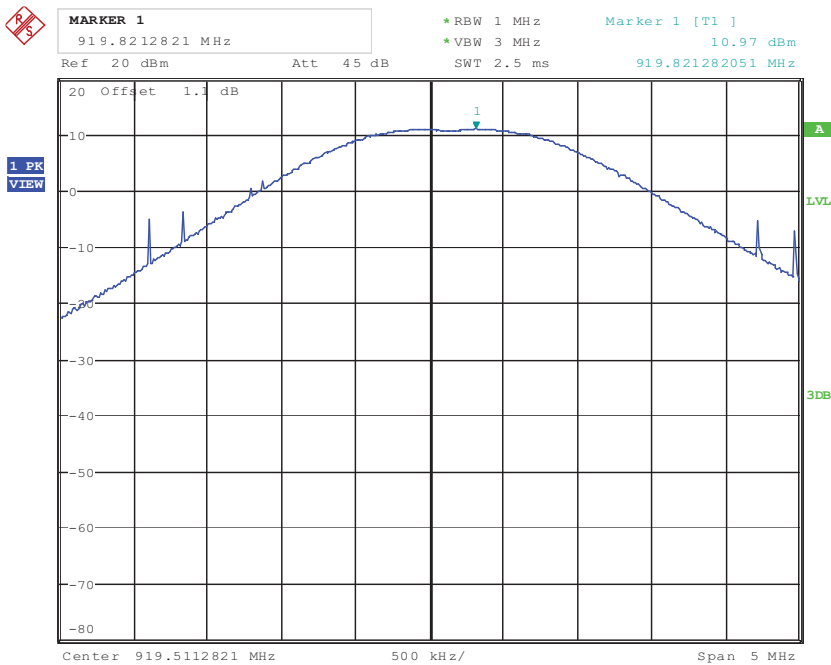


Date: 7.AUG.2012 05:34:03

Output Power - Mid Channel

7.0 FCC Part 15.247(b)(3) / RSS-210 A8.4(4) (Peak Output Power)

Plot:



Date: 7.AUG.2012 13:07:52

Output Power - High Channel

7.0 FCC Part 15.247(b)(3) / RSS-210 A8.4(4) (Peak Output Power)

Data:

Channel	Peak Power (dBm)	RBW MHz	VBW MHz
Low	11.34	1	3
Mid	9.21	1	3
High	10.97	1	3

8.0 FCC Part 15.247(e) / RSS-210 A8.2(2) (Power Spectral Density)

Method:

TEST PROCEDURE REFERENCE

FCC's KDB Publication 558074, "Measurement of Digital Transmission Systems Operating under Section 15.247" March 23, 2005

TEST LIMIT

The peak level measured must be no greater than +8 dBm.

Connect the antenna port of the EUT to the input of a spectrum analyzer. Input an offset into the analyzer amplitude to account for the associated cable loss.

Set the span to cover the entire emission bandwidth. With a bandwidth of 100kHz or greater, set the marker to the peak emission and move that frequency to the center of the display. Set the analyzer resolution and video bandwidths to 3kHz and turn on the max hold function. Set the frequency span was set to 300kHz around the highest amplitude occurring in the peak emission envelope. The total sweep time was calculated as follows:

Sweep time (Sec.) = (Fstop - Fstart)/Resolution Bandwidth

Example:

Sweep time (Sec) = 300kHz / 3kHz

Sweep time (Sec) = 100 Seconds

Perform a peak search on the resultant trace. Record the amplitude of that peak as the maximum power density in dBm. Measure the power density for all data rates and modulation modes on the middle channel.

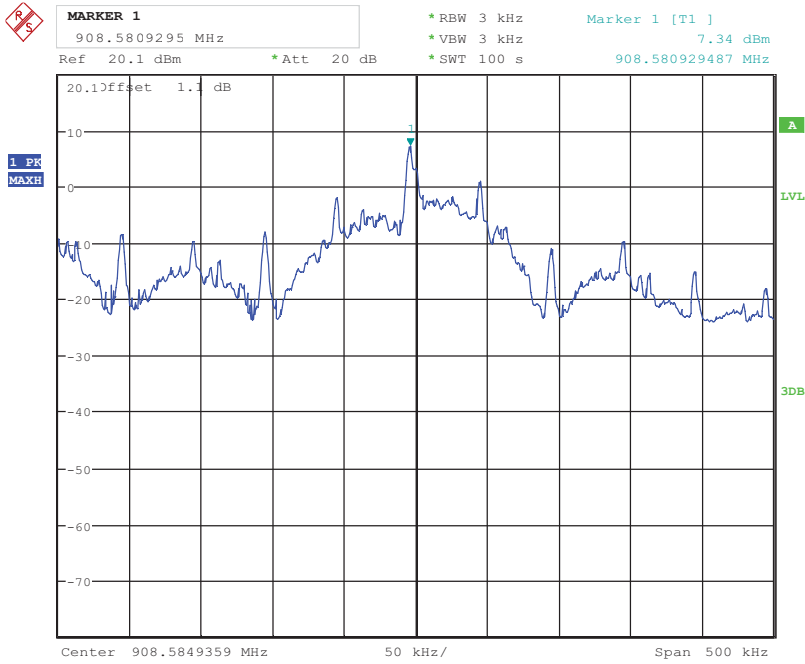
For the high and low channels, measure the power density at the data rate and modulation mode that resulted in the highest and lowest conducted power for that channel.

Test Equipment Used:

Description:	Manufacturer:	Model:	Asset Number:	Cal Date:	Cal Due:
Cable E405, 40 GHz, 2.9, 2m	Megaphase	TM40 K1K1 80	E405	07/07/2012	07/07/2013
Spectrum Analyzer, 20Hz-50GHz	Rohde & Schwarz	FSU 50	100005	12/07/2011	12/07/2012

Results: The sample tested was found to Comply.

8.0 FCC Part 15.247(e) / RSS-210 A8.2(2) (Power Spectral Density)

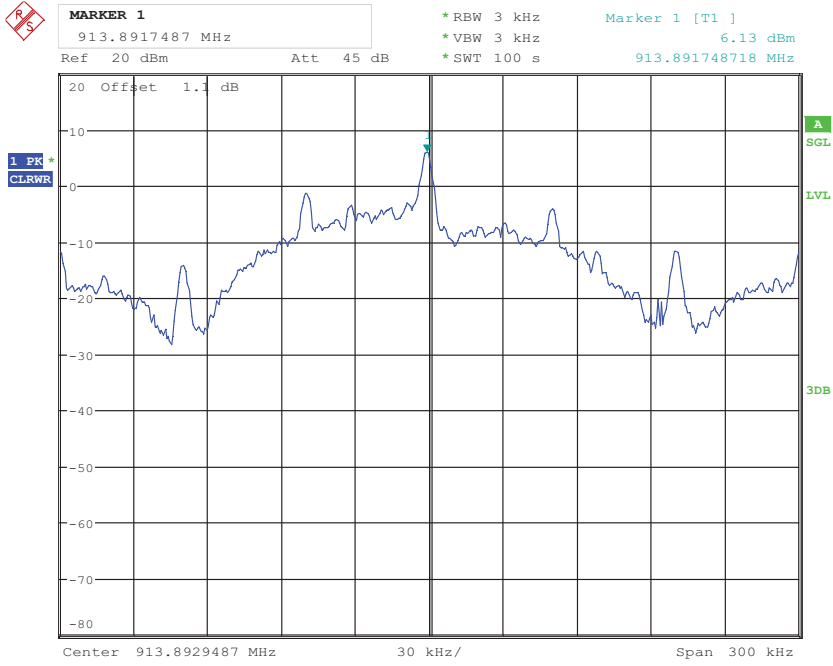


Date: 2.AUG.2012 10:28:48

Low Channel

8.0 FCC Part 15.247(e) / RSS-210 A8.2(2) (Power Spectral Density)

Plot:

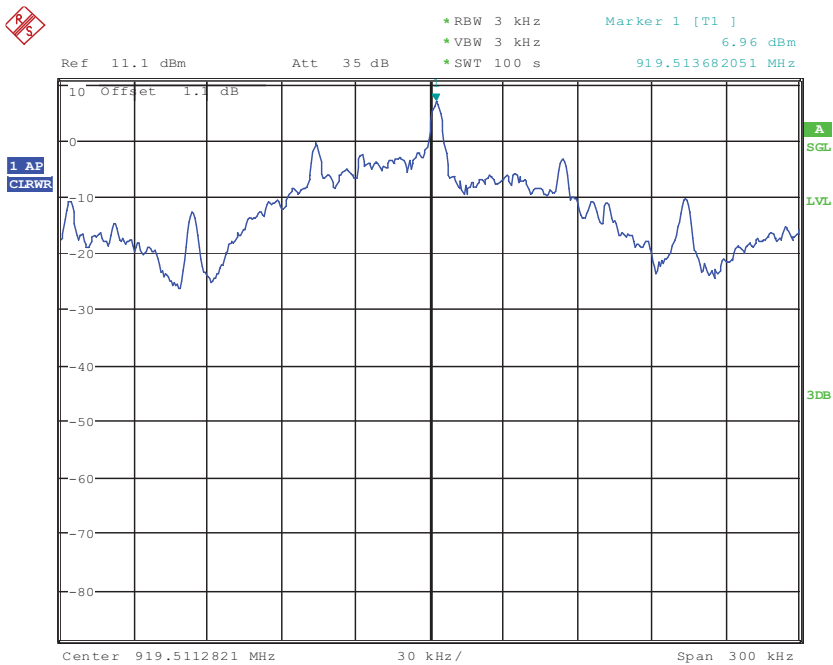


Date: 7.AUG.2012 05:39:38

Mid Channel

8.0 FCC Part 15.247(e) / RSS-210 A8.2(2) (Power Spectral Density)

Plot:



Date: 7.AUG.2012 12:19:23

High Channel

8.0 FCC Part 15.247(e) / RSS-210 A8.2(2) (Power Spectral Density)**Data:**

Channel	PSD dBm	Limit dBm	RBW kHz	VBW kHz	Span kHz	Sweep Time seconds
Low	7.34	8	3	3	300	100
Mid	6.13	8	3	3	300	100
High	6.96	8	3	3	300	100

9.0 FCC Part 15.247(d) / RSS-210 A8.5 - Conducted (Conducted Spurious Emissions)**Method:**

TEST PROCEDURE REFERENCE

FCC's KDB Publication 558074, "Measurement of Digital Transmission Systems Operating under Section 15.247" March 23, 2005

TEST LIMIT

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the radio frequency power that is produced 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 section A8.4(4), the attenuation required shall be 30 dB instead of 20 dB.

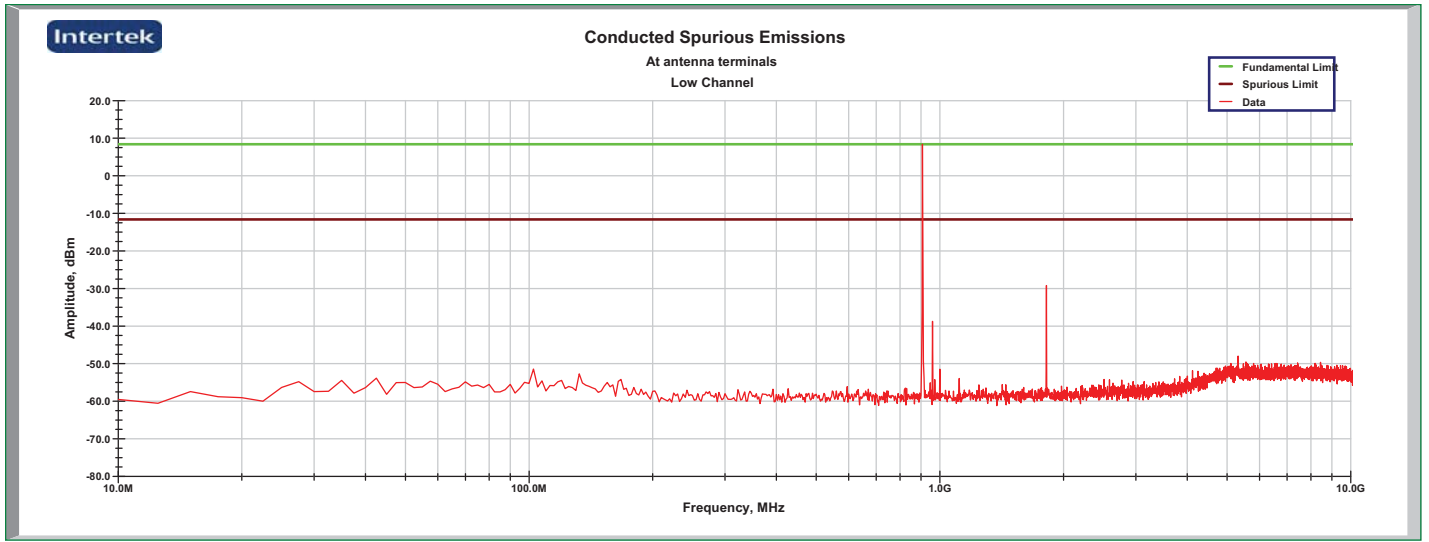
Test Equipment Used:

Description:	Manufacturer:	Model:	Asset Number:	Cal Date:	Cal Due:
Cable E405, 40 GHz, 2.9, 2m	Megaphase	TM40 K1K1 80	E405	07/07/2012	07/07/2013
Spectrum Analyzer, 20Hz-50GHz	Rohde & Schwarz	FSU 50	100005	12/07/2011	12/07/2012

Results: The sample tested was found to Comply.

9.0 FCC Part 15.247(d) / RSS-210 A8.5 - Conducted (Conducted Spurious Emissions)

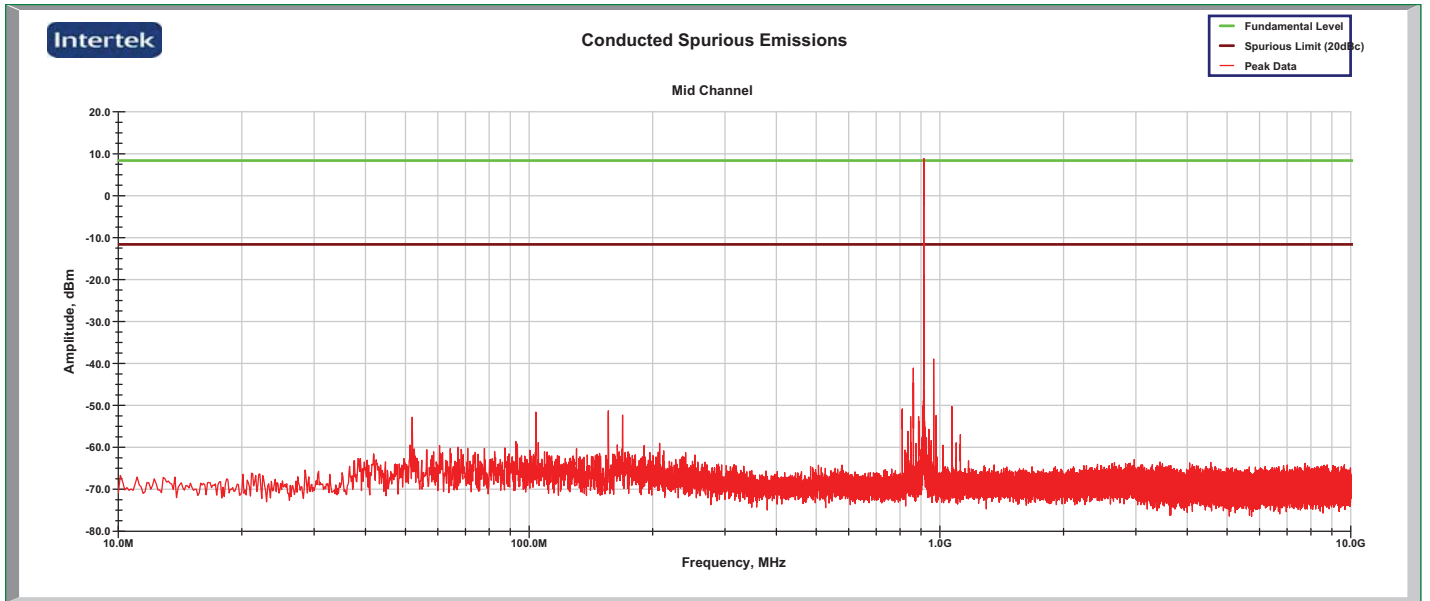
Plot:



Low Channel

9.0 FCC Part 15.247(d) / RSS-210 A8.5 - Conducted (Conducted Spurious Emissions)

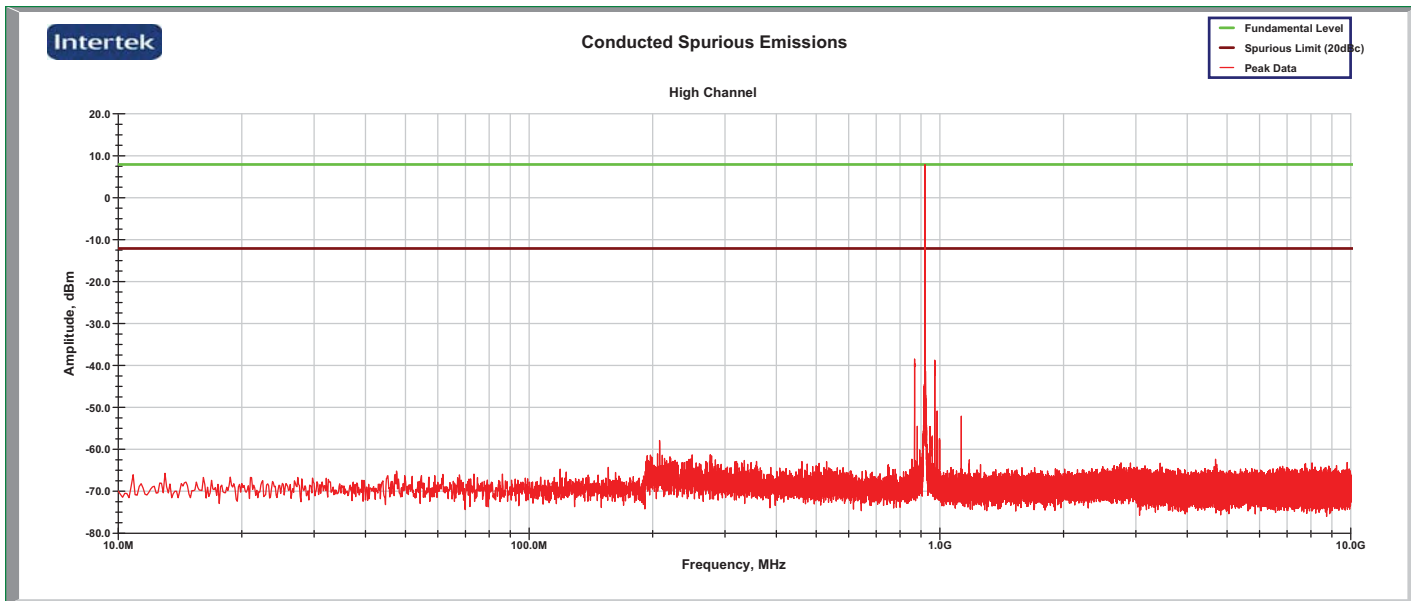
Plot:



Mid Channel

9.0 FCC Part 15.247(d) / RSS-210 A8.5 - Conducted (Conducted Spurious Emissions)

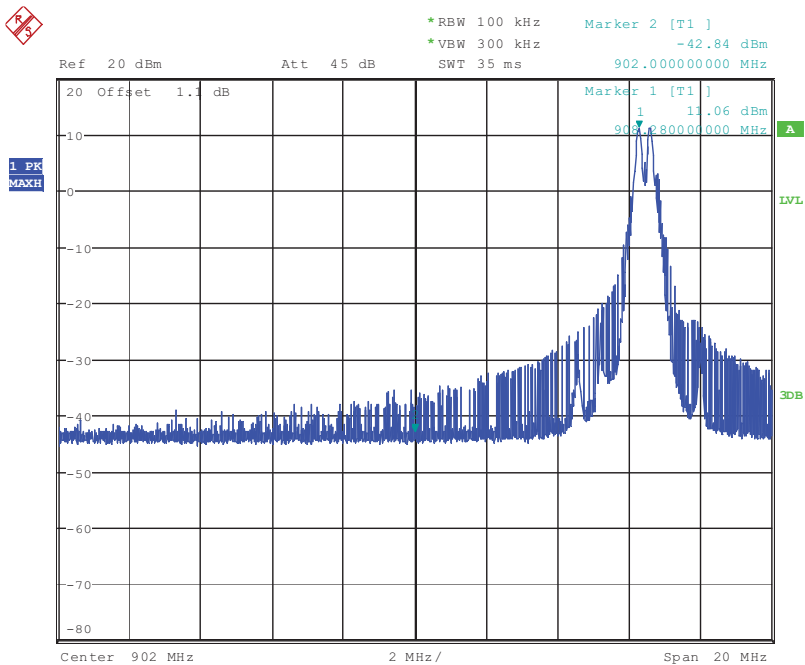
Plot:



High Channel

9.0 FCC Part 15.247(d) / RSS-210 A8.5 - Conducted (Conducted Spurious Emissions)

Plot:

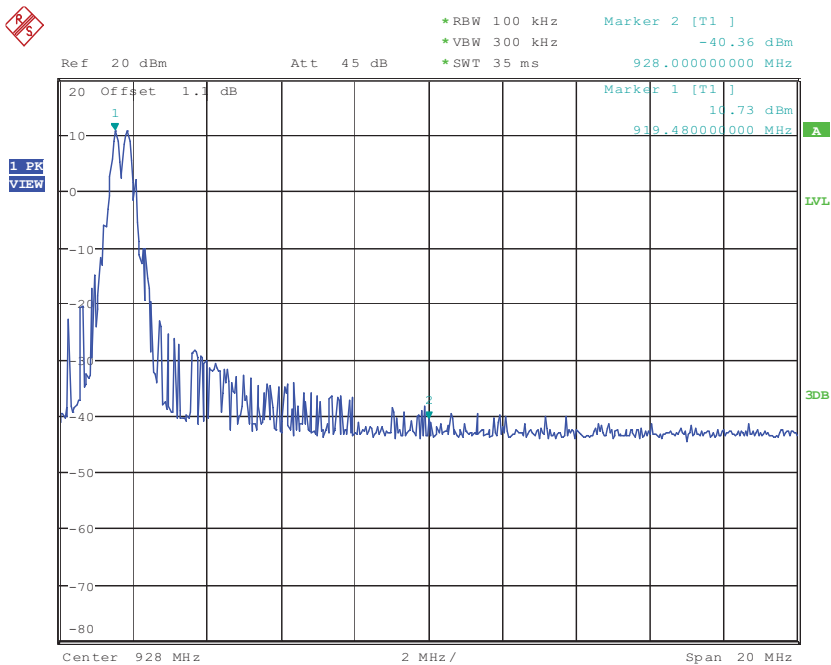


Date: 2.AUG.2012 11:00:19

Band Edge - Low Channel

9.0 FCC Part 15.247(d) / RSS-210 A8.5 - Conducted (Conducted Spurious Emissions)

Plot:



Date: 7.AUG.2012 13:15:30

Band Edge - High Channel

10.0 FCC Part 15.247(d) / RSS-210 A8.5 - Radiated (Radiated Spurious Emissions)**Method:**

TEST PROCEDURE REFERENCE

FCC's KDB Publication 558074, "Measurement of Digital Transmission Systems Operating under Section 15.247" March 23, 2005

TEST LIMIT

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the radio frequency power that is produced 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.

Attenuation below the general limits specified in Tables 2 and 3 of RSS-210 is not required. In addition, radiated emissions which fall in the restricted bands must also comply with the radiated emission limits specified in FCC 15.209 and Tables 2 and 3 of RSS-210.

Test Equipment Used:

Description:	Manufacturer:	Model:	Asset Number:	Cal Date:	Cal Due:
7m Cable, 0.01-18GHz	Storm Products Co.	A81-0303-275.6	ST-5	07/25/2012	07/25/2013
7m Cable, 0.01-18GHz	Storm Products Co.	A81-0303-275.6	ST-4	07/25/2012	07/25/2013
Antenna, BiLog, 20-2000MHz	Chase	CBL6112B	211386	10/25/2011	10/25/2012
Antenna, Horn, <18 GHz	EMCO	3115	BOX-HORN1	09/22/2010	09/22/2012
Cable MP3, 18 GHz, N, 10m	Megaphase	G919-NKNK-394	MP3	05/07/2012	05/07/2013
Cable, 3-meters, 1-18GHz	Megaphase	EM18-N1N1-119	MP-HF-1	06/28/2012	06/28/2013
Cable, N-N, 3 meters, 18GHz	Megaphase	TM18-NKNK-118	E206	05/07/2012	05/07/2013
EMI Receiver	Hewlett Packard	8546A	213109	12/29/2011	12/29/2012
EMI Receiver, Preselector section	Hewlett Packard	85460A	213108	12/29/2011	12/29/2012
Excel spreadsheet for radiated emissions	Software	Excel - RE Worksh	SW004	12/08/2011	12/08/2012
Filter, 2 GHz High Pass	Filtek	HP12/2000-5AB	213155a	07/06/2012	07/06/2013
Preamplifier, 10 MHz to 2000 MHz, 30 dB gain	Mini-Circuits	ZKL-2	200069	07/19/2012	07/19/2013
Preamplifier, 20 MHz to 18 GHz, 40 dB	A.H. Systems	PAM-0118	200108	05/22/2012	05/22/2013
Tile - software profile for radiated and conducted emissions testing.	Software	Tile - Emissions	SW006	12/08/2011	12/08/2012

Results: The sample tested was found to Comply.

10.0 FCC Part 15.247(d) / RSS-210 A8.5 - Radiated (Radiated Spurious Emissions)

Photo:



Test Setup (30-1000MHz)

10.0 FCC Part 15.247(d) / RSS-210 A8.5 - Radiated (Radiated Spurious Emissions)

Photo:



Test Setup (30-1000MHz)

10.0 FCC Part 15.247(d) / RSS-210 A8.5 - Radiated (Radiated Spurious Emissions)

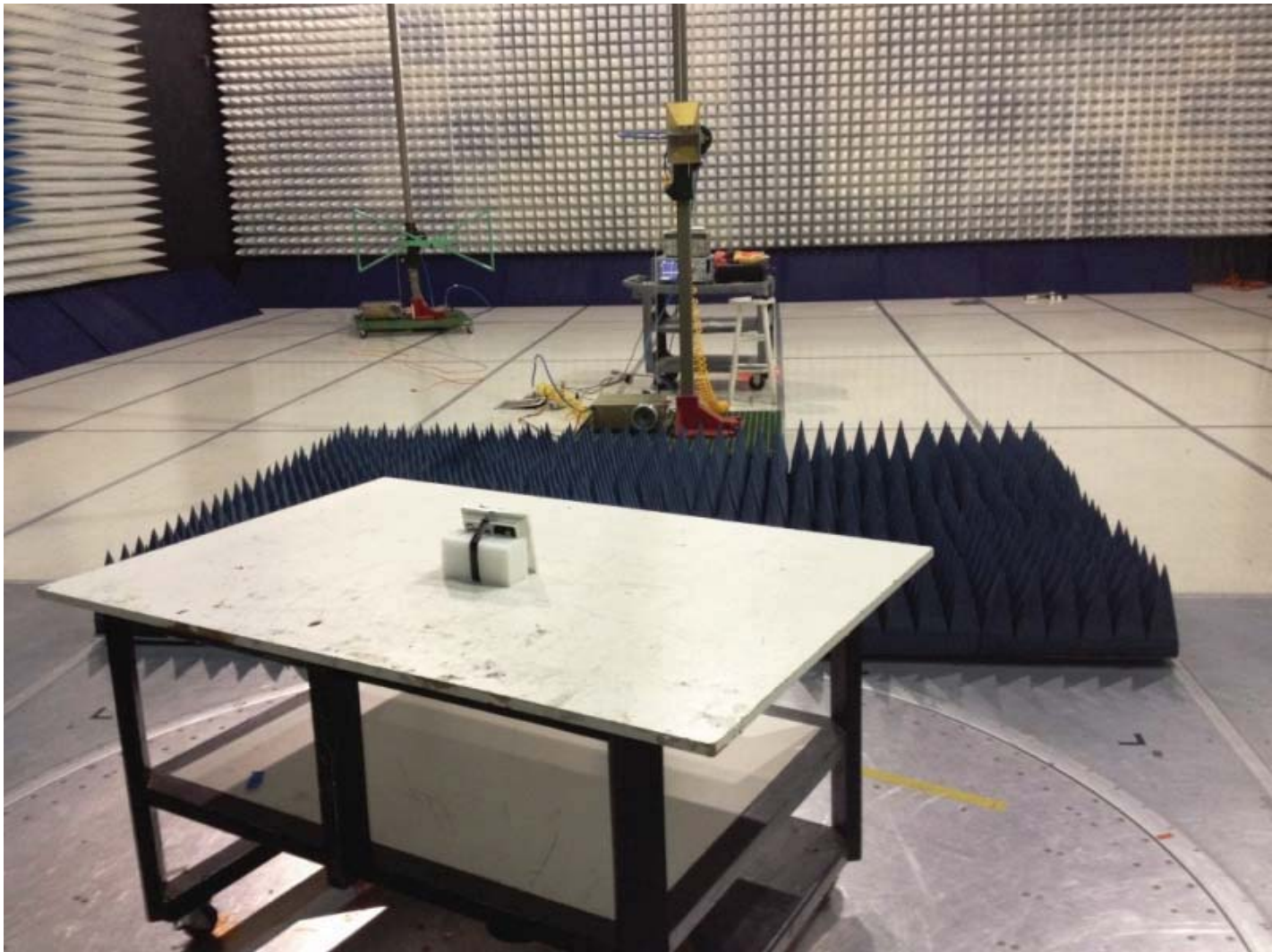
Photo:



Test Setup (1-10GHz)

10.0 FCC Part 15.247(d) / RSS-210 A8.5 - Radiated (Radiated Spurious Emissions)

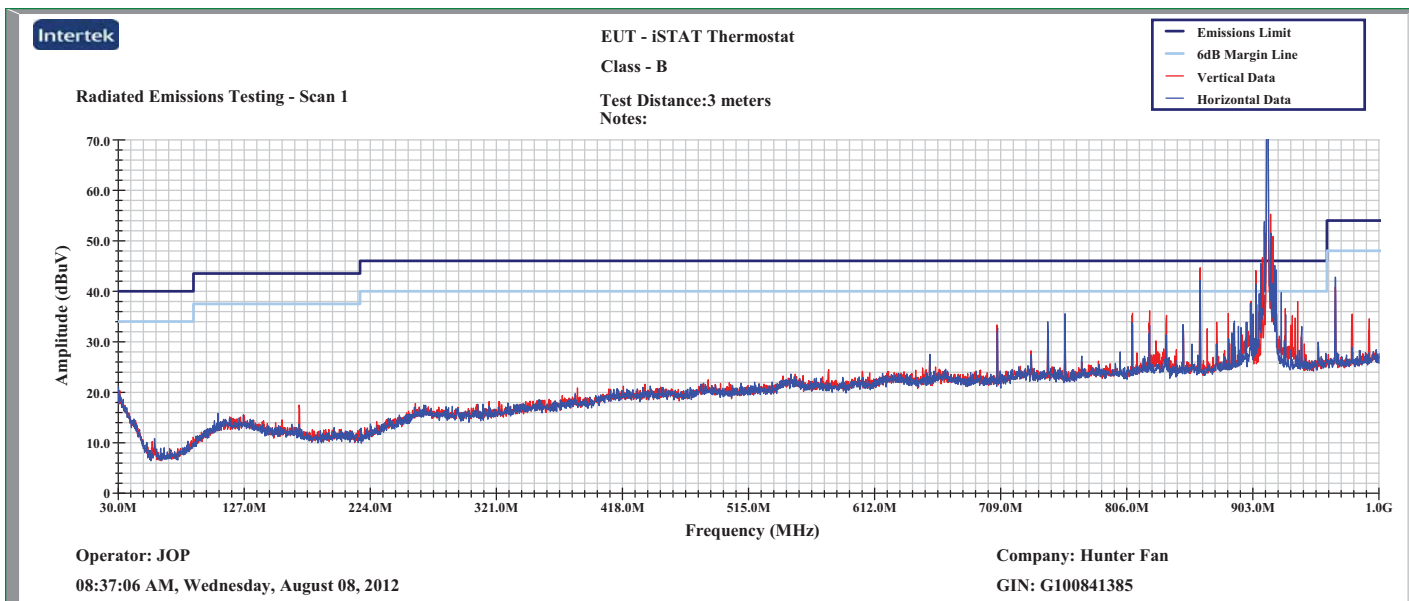
Photo:



Test Setup (1-10GHz)

10.0 FCC Part 15.247(d) / RSS-210 A8.5 - Radiated (Radiated Spurious Emissions)

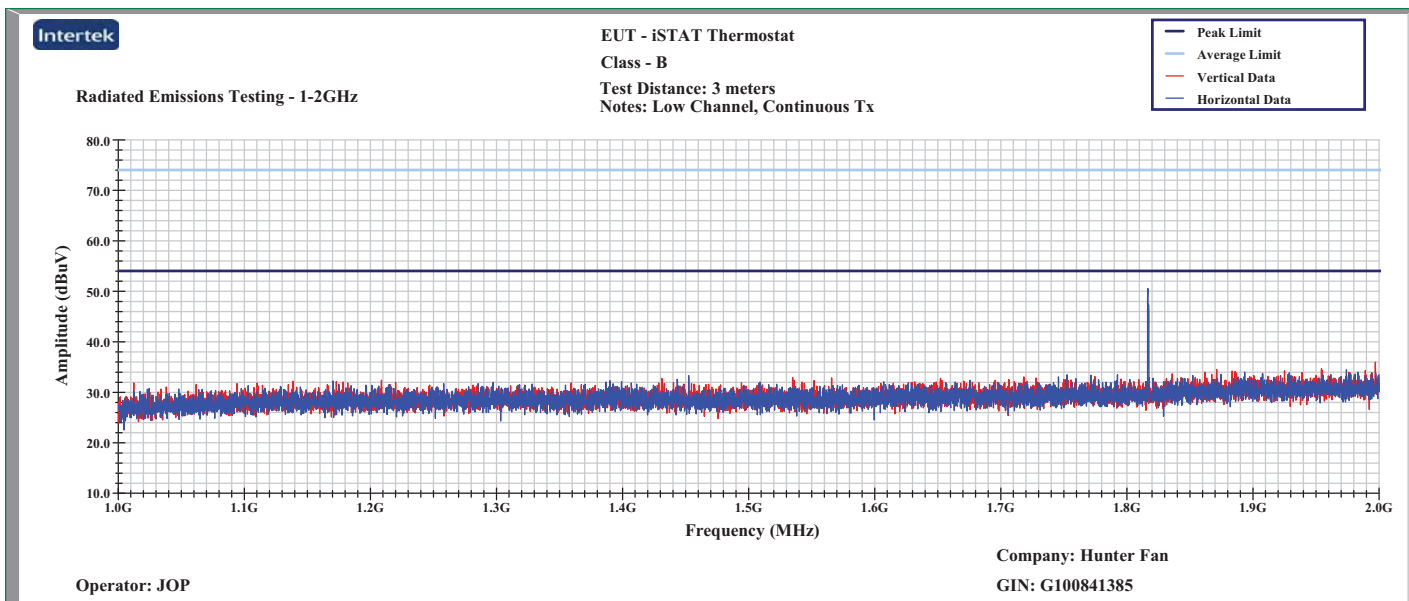
Plot:



Peak Plot - Low Channel (30-1000MHz)

10.0 FCC Part 15.247(d) / RSS-210 A8.5 - Radiated (Radiated Spurious Emissions)

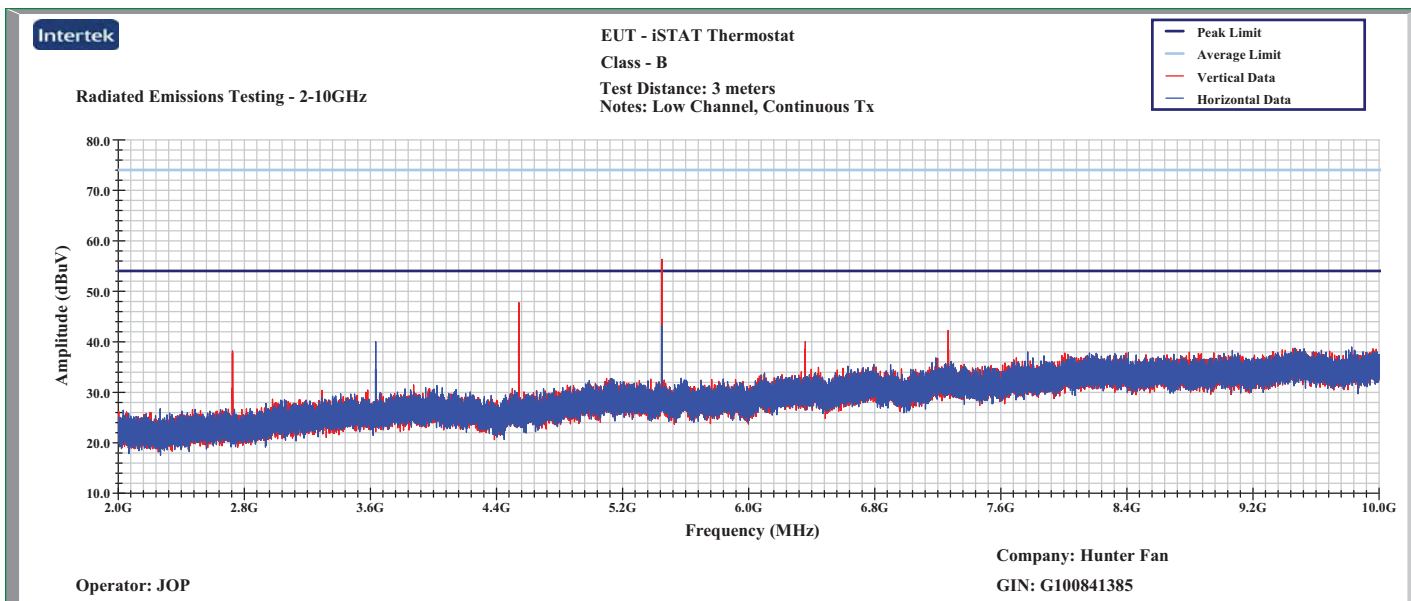
Plot:



Peak Plot - Low Channel (1-2GHz)

10.0 FCC Part 15.247(d) / RSS-210 A8.5 - Radiated (Radiated Spurious Emissions)

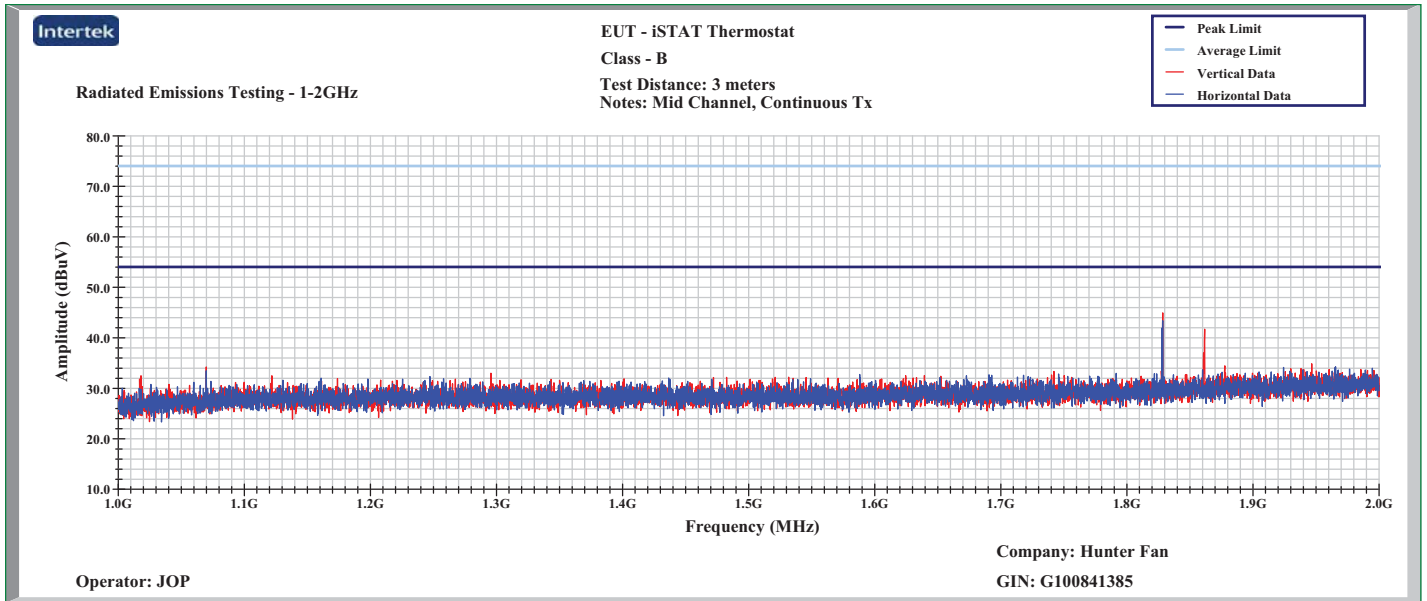
Plot:



Peak Plot - Low Channel (2-10GHz)

10.0 FCC Part 15.247(d) / RSS-210 A8.5 - Radiated (Radiated Spurious Emissions)

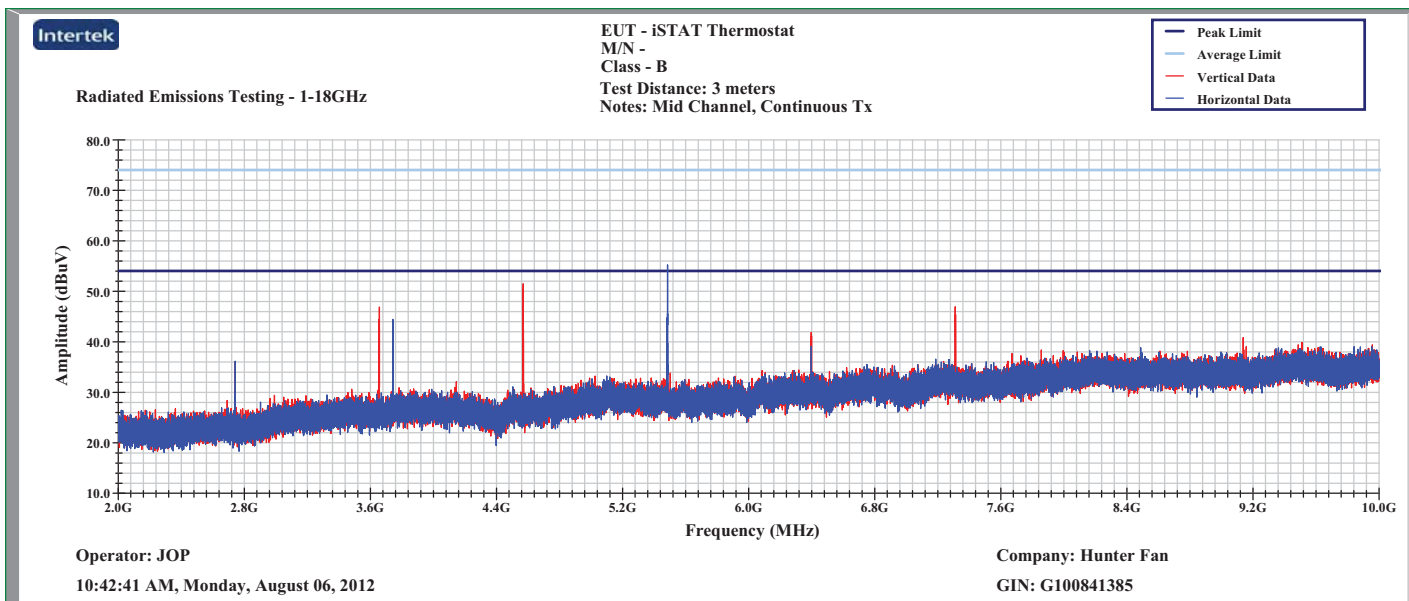
Plot:



Peak Plot - Mid Channel (1-2GHz)

10.0 FCC Part 15.247(d) / RSS-210 A8.5 - Radiated (Radiated Spurious Emissions)

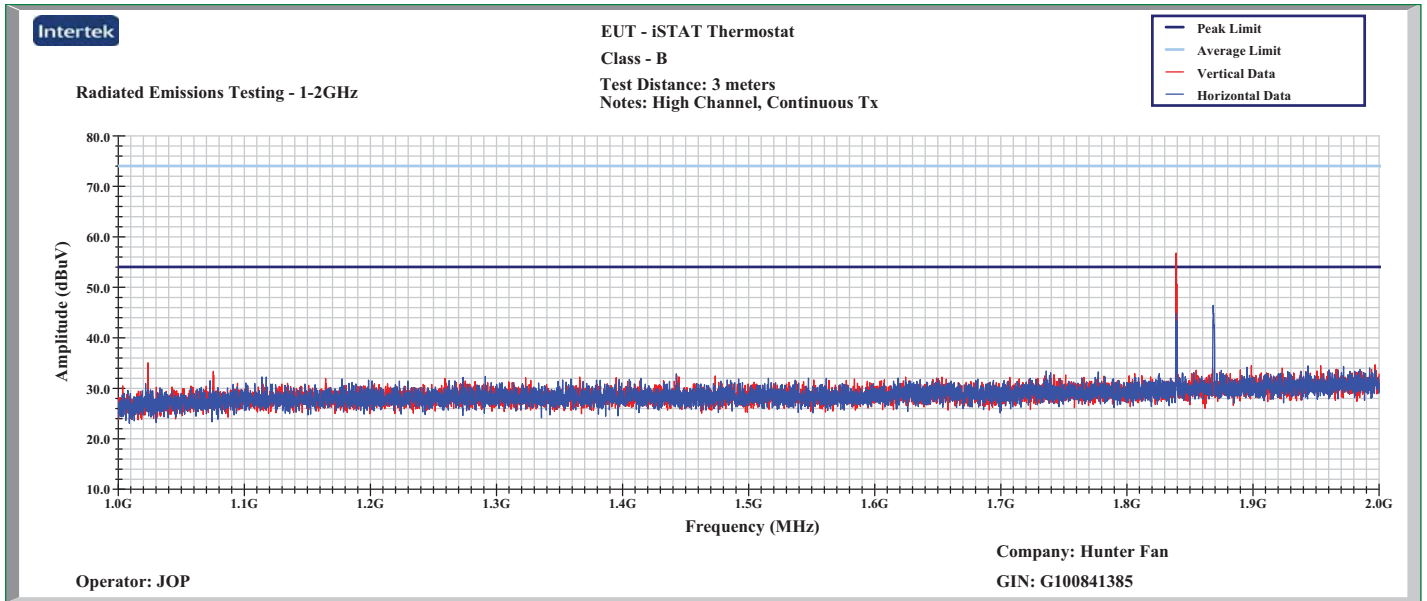
Plot:



Peak Plot - Mid Channel (2-10GHz)

10.0 FCC Part 15.247(d) / RSS-210 A8.5 - Radiated (Radiated Spurious Emissions)

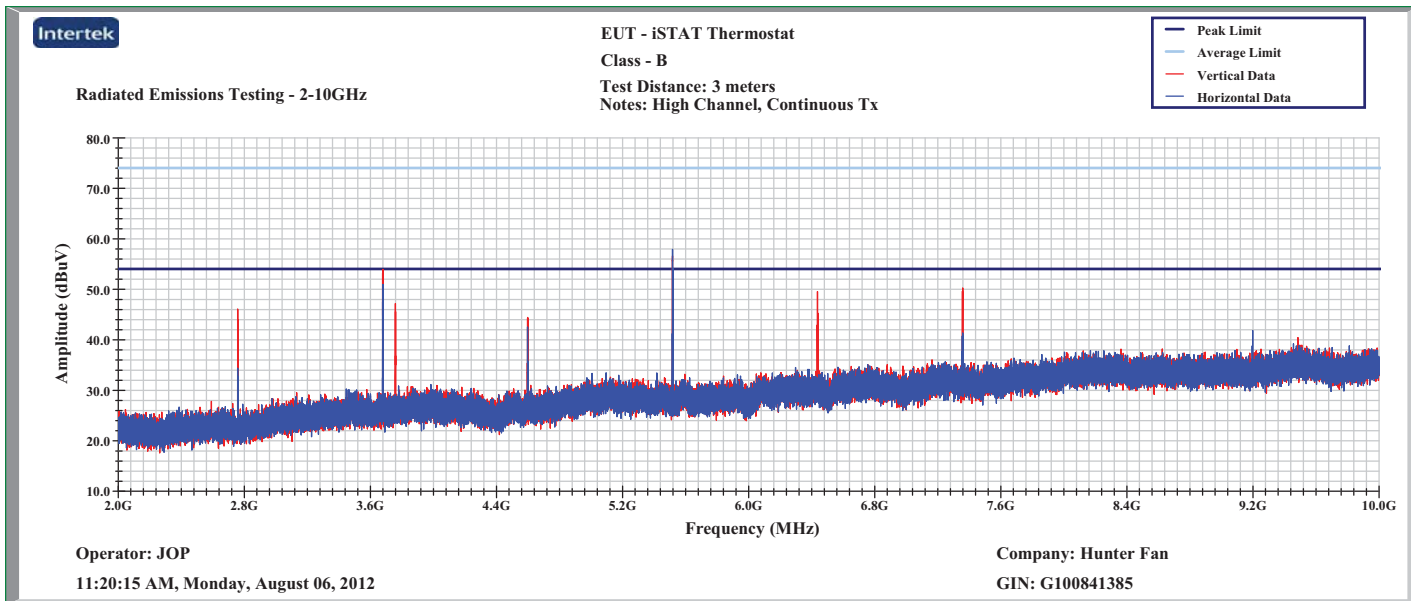
Plot:



Peak Plot - High Channel (1-2GHz)

10.0 FCC Part 15.247(d) / RSS-210 A8.5 - Radiated (Radiated Spurious Emissions)

Plot:



Peak Plot - High Channel (2-10GHz)

10.0 FCC Part 15.247(d) / RSS-210 A8.5 - Radiated (Radiated Spurious Emissions)

Data:

All spurious emissions were compared to the 15.209 limits.

10.0 FCC Part 15.247(d) / RSS-210 A8.5 - Radiated (Radiated Spurious Emissions)

Date: 8/8/2012

Test Distance (m): 3

Frequency Range (MHz): 30-1000

Limit: FCC15 Class B-3m

Input power: 3x AA Batteries

Modifications for compliance (y/n): n

A	B	C	D	E	F	G	H	I	J
Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Net dB(uV/m)	3m Limit dB(uV/m)	Margin dB	Detectors / Bandwidths / Det/RBW/VBW
h	861.900	54.3	20.7	5.9	36.3	44.7	46.0	-1.3	QP/120k/300k
v	861.900	54.0	21.4	5.9	36.3	45.0	46.0	-1.0	QP/120k/300k
h	965.923	52.4	20.9	6.3	36.0	43.5	54.0	-10.5	QP/120k/300k
h	757.910	47.0	20.4	5.5	36.6	36.3	46.0	-9.7	QP/120k/300k
v	810.365	45.6	20.9	5.7	36.5	35.7	46.0	-10.3	QP/120k/300k
v	823.460	45.7	21.1	5.8	36.4	36.1	46.0	-9.9	QP/120k/300k
Calculations		G=C+D+E-F		I=G-H					

Spurious Tabular Data (30-1000MHz)

10.0 FCC Part 15.247(d) / RSS-210 A8.5 - Radiated (Radiated Spurious Emissions)

Data:

Date: 8/6/2012

Test Distance (m): 3

Frequency Range (MHz): 1000-10000

Limit: FCC15 Class B-3m

Input power: 3x AA Batteries

Modifications for compliance (y/n): n

A	B	C	D	E	F	G	H	I	J
Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Net dB(uV/m)	3m Limit dB(uV/m)	Margin dB	Detectors / Bandwidths Det/RBW/VBW
Low Channel									
h	1816.625	21.2	26.5	6.0	0.0	53.7	74.0	-20.3	Pk/1MHz/3MHz
h	1816.625	1.7	26.5	6.0	0.0	34.2	54.0	-19.8	Avg/1MHz/3MHz
v	2724.800	52.1	28.7	7.9	37.8	50.9	74.0	-23.1	Pk/1MHz/3MHz
v	2724.800	32.6	28.7	7.9	37.8	31.4	54.0	-22.6	Avg/1MHz/3MHz
h	3633.050	48.3	31.8	9.2	37.9	51.5	74.0	-22.5	Pk/1MHz/3MHz
h	3633.050	27.9	31.8	9.2	37.9	31.1	54.0	-22.9	Avg/1MHz/3MHz
v	4541.325	48.8	32.3	10.4	38.0	53.4	74.0	-20.6	Pk/1MHz/3MHz
v	4541.325	28.9	32.3	10.4	38.0	33.5	54.0	-20.5	Avg/1MHz/3MHz
Calculations		G=C+D+E-F			I=G-H				

Spurious Tabular Data - Low Channel (1-10GHz)

10.0 FCC Part 15.247(d) / RSS-210 A8.5 - Radiated (Radiated Spurious Emissions)

Data:

Date: 8/6/2012

Test Distance (m): 3

Frequency Range (MHz): 1000-10000

Limit: FCC15 Class B-3m

Input power: 3x AA Batteries

Modifications for compliance (y/n): n

A	B	C	D	E	F	G	H	I	J
Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Net dB(uV/m)	3m Limit dB(uV/m)	Margin dB	Detectors / Bandwidths Det/RBW/VBW
Mid Channel									
v	1828.700	23.0	26.8	6.0	0.0	55.7	74.0	-18.3	Pk/1MHz/3MHz
v	1828.700	6.8	26.8	6.0	0.0	39.5	54.0	-14.5	Avg/1MHz/3MHz
h	1828.700	23.7	26.6	6.0	0.0	56.2	74.0	-17.8	Pk/1MHz/3MHz
h	1828.700	7.5	26.6	6.0	0.0	40.0	54.0	-14.0	Avg/1MHz/3MHz
h	1861.625	8.8	26.8	6.0	0.0	41.7	54.0	-12.3	Pk/1MHz/3MHz
v	3655.600	54.6	31.6	9.2	37.9	57.5	74.0	-16.5	Avg/1MHz/3MHz
v	3655.600	31.8	31.6	9.2	37.9	34.7	54.0	-19.3	Pk/1MHz/3MHz
h	3655.600	51.0	31.9	9.2	37.9	54.3	74.0	-19.7	Avg/1MHz/3MHz
h	3655.600	29.1	31.9	9.2	37.9	32.4	54.0	-21.6	Pk/1MHz/3MHz
v	4569.450	50.8	32.3	10.4	38.0	55.5	74.0	-18.5	Avg/1MHz/3MHz
v	4569.450	29.0	32.3	10.4	38.0	33.7	54.0	-20.3	Pk/1MHz/3MHz
h	4569.450	51.0	32.2	10.4	38.0	55.6	74.0	-18.4	Avg/1MHz/3MHz
h	4569.450	29.2	32.2	10.4	38.0	33.8	54.0	-20.2	Pk/1MHz/3MHz
v	5483.350	55.5	34.3	11.6	37.8	63.5	74.0	-10.5	Avg/1MHz/3MHz
v	5483.350	29.2	34.3	11.6	37.8	37.2	54.0	-16.8	Pk/1MHz/3MHz
h	5483.350	48.0	34.2	11.6	37.8	55.9	74.0	-18.1	Avg/1MHz/3MHz
h	5483.350	27.9	34.2	11.6	37.8	35.8	54.0	-18.2	Pk/1MHz/3MHz
v	6397.300	33.5	34.6	12.4	37.1	43.4	54.0	-10.6	Avg/1MHz/3MHz
Calculations		G=C+D+E-F			I=G-H				

Spurious Tabular Data - Mid Channel (1-10GHz)

10.0 FCC Part 15.247(d) / RSS-210 A8.5 - Radiated (Radiated Spurious Emissions)

Data:

Date: 8/6/2012

Test Distance (m): 3

Frequency Range (MHz): 1000-10000

Limit: FCC15 Class B-3m

Input power: 3x AA Batteries

Modifications for compliance (y/n): n

A	B	C	D	E	F	G	H	I	J
Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Net dB(uV/m)	3m Limit dB(uV/m)	Margin dB	Detectors / Bandwidths Det/RBW/VBW
High Channel									
v	1838.900	24.6	26.8	6.0	0.0	57.4	74.0	-16.6	Pk/1MHz/3MHz
v	1838.900	7.1	26.8	6.0	0.0	39.9	54.0	-14.1	Avg/1MHz/3MHz
h	1838.900	23.8	26.6	6.0	0.0	56.4	74.0	-17.6	Pk/1MHz/3MHz
h	1838.900	7.2	26.6	6.0	0.0	39.8	54.0	-14.2	Avg/1MHz/3MHz
h	1868.500	12.8	26.9	6.0	0.0	45.7	54.0	-8.3	Pk/1MHz/3MHz
v	2758.500	47.2	28.7	7.9	37.8	46.0	74.0	-28.0	Pk/1MHz/3MHz
v	2758.500	30.1	28.7	7.9	37.8	28.9	54.0	-25.1	Avg/1MHz/3MHz
v	3677.900	52.3	31.7	9.3	37.9	55.4	74.0	-18.6	Pk/1MHz/3MHz
v	3677.900	29.8	31.7	9.3	37.9	32.9	54.0	-21.1	Avg/1MHz/3MHz
h	3677.900	50.9	32.0	9.3	37.9	54.3	74.0	-19.7	Pk/1MHz/3MHz
h	3677.900	29.8	32.0	9.3	37.9	33.2	54.0	-20.8	Avg/1MHz/3MHz
v	5516.980	55.4	34.3	11.6	37.8	63.5	74.0	-10.5	Pk/1MHz/3MHz
v	5516.980	29.2	34.3	11.6	37.8	37.3	54.0	-16.7	Avg/1MHz/3MHz
h	5516.980	48.5	34.2	11.6	37.8	56.5	74.0	-17.5	Pk/1MHz/3MHz
h	5516.980	28.3	34.2	11.6	37.8	36.3	54.0	-17.7	Avg/1MHz/3MHz
v	6436.500	40.6	34.5	12.5	37.1	50.5	74.0	-23.5	Pk/1MHz/3MHz
v	6436.500	24.6	34.5	12.5	37.1	34.5	54.0	-19.5	Avg/1MHz/3MHz
v	7358.500	37.0	36.5	13.5	36.4	50.5	74.0	-23.5	Pk/1MHz/3MHz
v	7358.500	17.8	36.5	13.5	36.4	31.3	54.0	-22.7	Avg/1MHz/3MHz
Calculations		G=C+D+E-F		I=G-H					

Spurious Tabular Data - High Channel (1-10GHz)

11.0 Additional provisions to the general radiated emission limitations. (FCC 15C - 15.215)**Method:**

§ 15.215 Additional provisions to the general radiated emission limitations.

(a) The regulations in §§15.217 through 15.257 provide alternatives to the general radiated emission limits for intentional radiators operating in specified frequency bands. Unless otherwise stated, there are no restrictions as to the types of operation permitted under these sections.

(b) In most cases, unwanted emissions outside of the frequency bands shown in these alternative provisions must be attenuated to the emission limits shown in §15.209. In no case shall the level of the unwanted emissions from an intentional radiator operating under these additional provisions exceed the field strength of the fundamental emission.

(c) Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

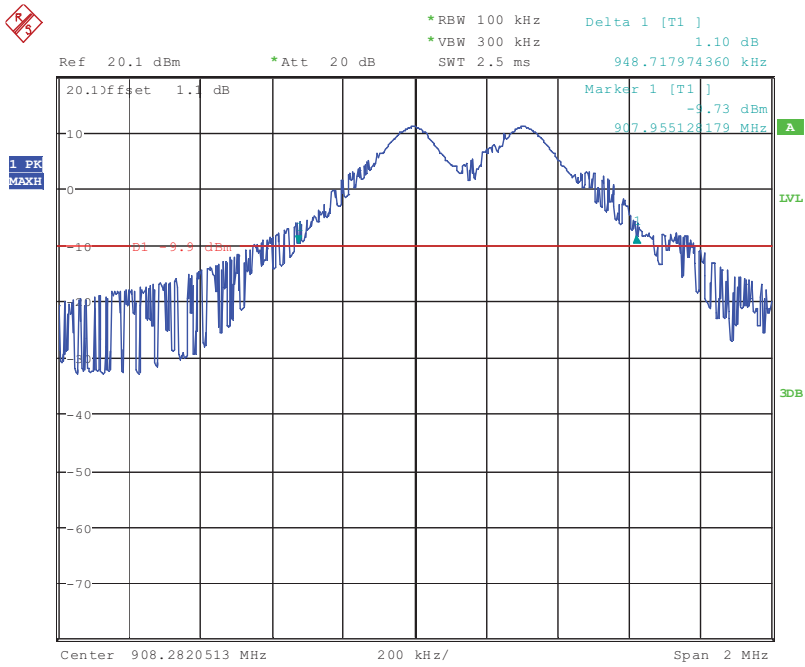
Test Equipment Used:

Description:	Manufacturer:	Model:	Asset Number:	Cal Date:	Cal Due:
Cable E405, 40 GHz, 2.9, 2m	Megaphase	TM40 K1K1 80	E405	07/07/2012	07/07/2013
Spectrum Analyzer, 20Hz-50GHz	Rohde & Schwarz	FSU 50	100005	12/07/2011	12/07/2012

Results: The sample tested was found to Comply.

11.0 Additional provisions to the general radiated emission limitations. (FCC 15C - 15.215)

Plot:

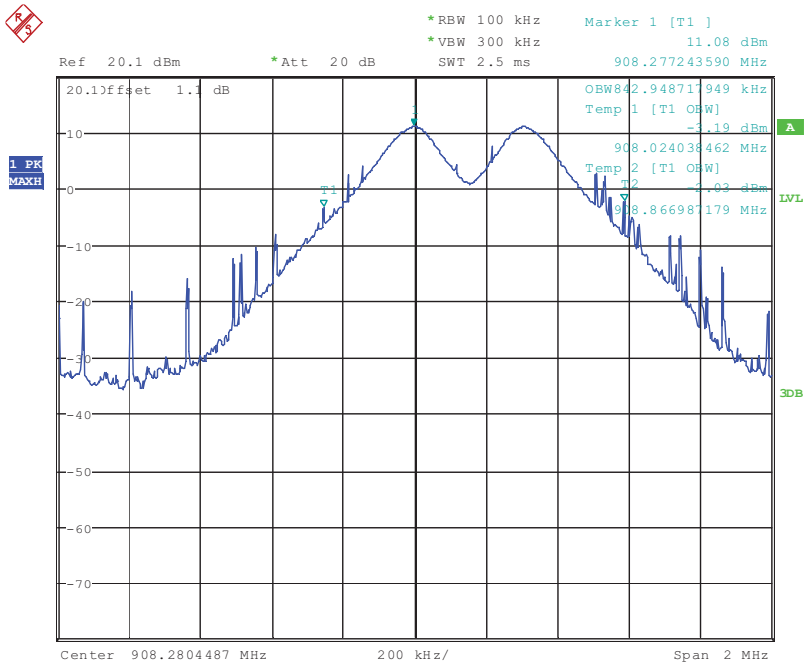


Date: 2.AUG.2012 09:55:06

Low Channel - 20dB Bandwidth (949kHz)

11.0 Additional provisions to the general radiated emission limitations. (FCC 15C - 15.215)

Plot:

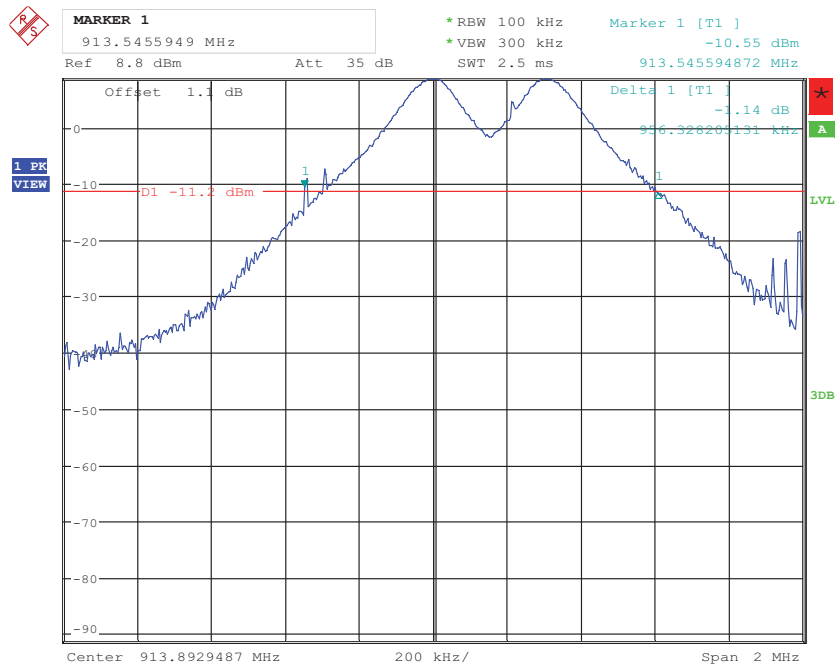


Date: 2.AUG.2012 10:16:57

Low Channel - 99% OBW (843kHz)

11.0 Additional provisions to the general radiated emission limitations. (FCC 15C - 15.215)

Plot:

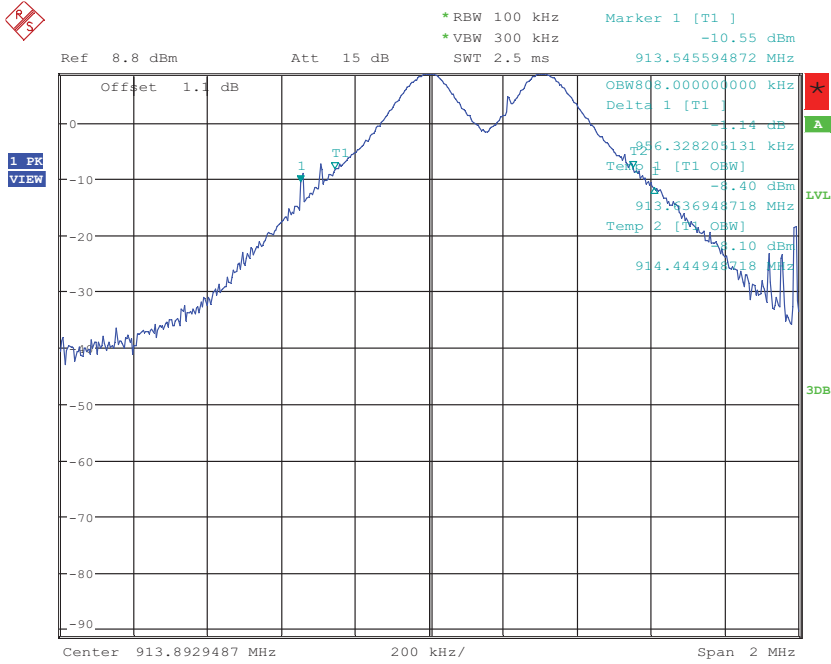


Date: 7.AUG.2012 05:47:27

Mid Channel - 20dB Bandwidth (956kHz)

11.0 Additional provisions to the general radiated emission limitations. (FCC 15C - 15.215)

Plot:

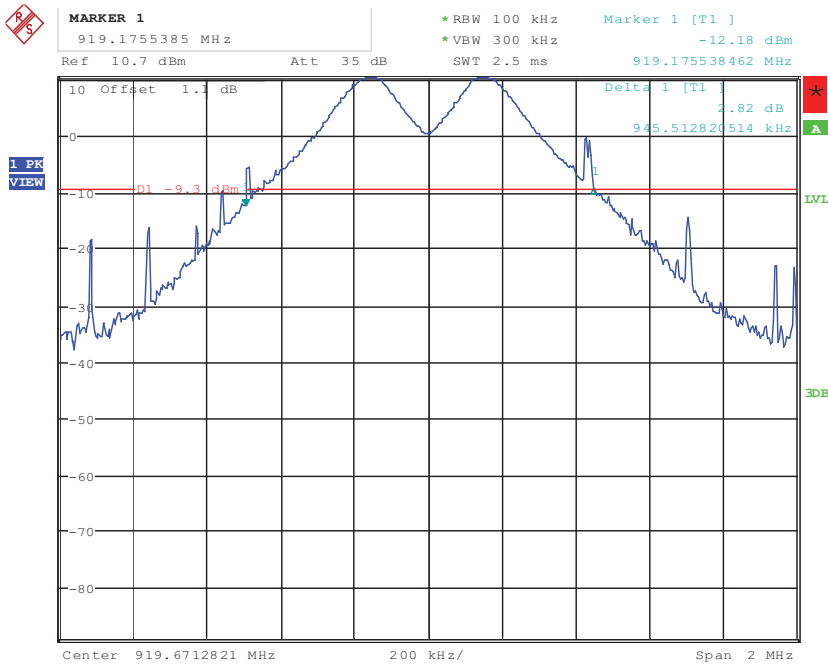


Date: 7.AUG.2012 05:48:04

Mid Channel - 99% OBW (808kHz)

11.0 Additional provisions to the general radiated emission limitations. (FCC 15C - 15.215)

Plot:

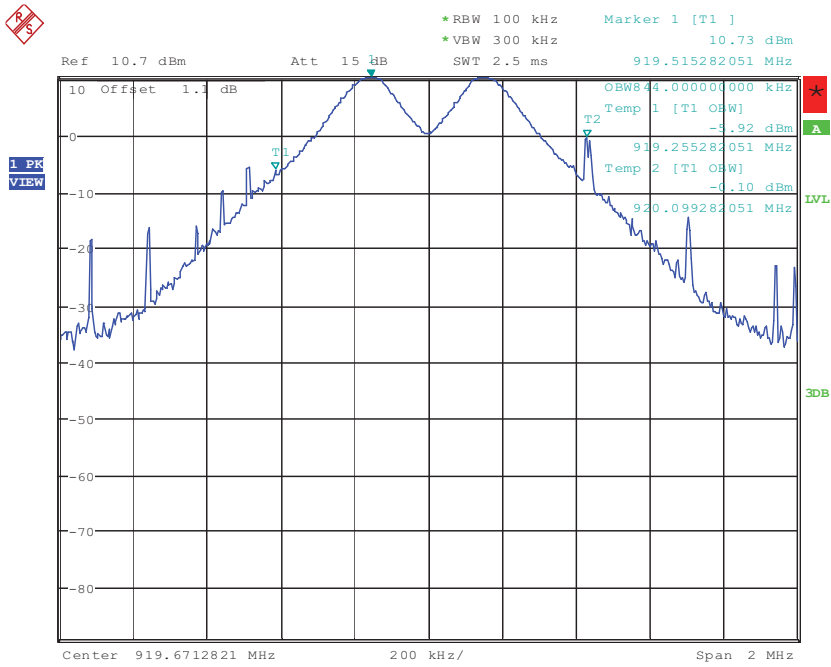


Date: 7.AUG.2012 13:11:07

High Channel - 20dB Bandwidth (919kHz)

11.0 Additional provisions to the general radiated emission limitations. (FCC 15C - 15.215)

Plot:



Date: 7.AUG.2012 13:11:45

High Channel - 99% OBW (844kHz)