HERMON LABORATORIES

839.01
Electrical

Hermon Laboratories Ltd.
Harakevet Industrial Zone, Binyamina 30500,
Israel
Tel. +972-4-6288001
Fax. +972-4-6288277
E-mail: mail@hermonlabs.com

TEST REPORT

ACCORDING TO: FCC 47CFR part 15 subpart C § 15.247 and RSS-210 Issue 7

FOR:

RadWin Ltd.

Outdoor radio unit operating in the 2.4 GHz band

Model: RADWIN 1000 RW-1020-0150, RADWIN 2000 RW-2020-0150

Table of contents

1	Applicant information	3
2	Equipment under test attributes	3
3	Manufacturer information	3
4	Test details	3
5	Tests summary	4
6	EUT description	5
6.1	General information	5
6.2	Ports and lines	5
6.3	Support and test equipment	5
6.4	Changes made in the EUT	5
6.5	Test configuration	6
6.6	Transmitter characteristics	7
7	Transmitter tests according to 47CFR part 15 subpart C and RSS-210 requirements	8
7.1	Minimum 6 dB bandwidth	8
7.2	Peak output power	19
7.3	Spurious emissions at RF antenna connector	21
7.4	Field strength of spurious emissions	65
7.5	Peak spectral power density	107
7.6	Conducted emissions	146
7.7	Antenna requirements	149
8	Receiver tests	150
8.1	Receiver spurious emissions at RF antenna connector	150
9	APPENDIX A Test equipment and ancillaries used for tests	154
10	APPENDIX A Measurement uncertainties	156
11	APPENDIX C Test laboratory description	157
12	APPENDIX D Specification references	157
13	APPENDIX E Test equipment correction factors	158
14	APPENDIX F Abbreviations and acronyms	168

HERMON LABORATORIES

1 Applicant information

Client name:	RadWin Ltd.
Address:	32 Habarzel str., Tel Aviv 69710, Israel
Telephone:	+972 3766 2988
Fax:	+972 3766 2922
E-mail:	shlomo_weiss@radwin.com
Contact name:	Mr. Shlomo Weiss

2 Equipment under test attributes

Product name:	Point to point radio system
Product type:	Point to point transceiver
Model(s):	1) RADWIN 1000 RW-1020-0150, 2) RADWIN 2000 RW-2020-0150
Receipt date	2/03/2009

3 Manufacturer information

Manufacturer name:	RadWin Ltd.
Address:	32 Habarzel str., Tel Aviv 69710, Israel
Telephone:	+972 3766 2988
Fax:	+972 3766 2922
E-Mail:	shlomo_weiss@radwin.com
Contact name:	Mr. Shlomo Weiss

4 Test details

Project ID:	19431
Location:	Hermon Laboratories Ltd. Harakevet Industrial Zone, Binyamina 30500, Israel
Test started:	2/03/2009
Test completed:	2/27/2009
Test specification(s):	FCC 47CFR part 15:2008, subpart C §15.247; RSS-210 Issue 7, Annex 8

5 Tests summary

Test	Status
Transmitter characteristics	
FCC section 15.247(a)(2), RSS-210 section A8.2(a), 6 dB bandwidth	Pass
FCC section 15.247(b)(3), RSS-210 section A8.4(4), Peak output power	Pass
FCC section 15.247(b)5, RSS-Gen section 5.5, RF exposure	Pass, provided in Application for certification exhibit
FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions	Pass
FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions	Pass
Section 15.247(e), RSS-210 section A8.2(b), Peak power density	Pass
FCC section 15.207(a), RSS-Gen section 7.2.2, Conducted emission	Pass
FCC section 15.203, RSS-Gen section 7.1.4, Antenna requirement	Pass
RSS-Gen, Section 7.2.3.2, Receiver spurious emission	Pass

The test results relate only to the items tested. Pass/ fail decision was based on nominal values.

	Name and Title	Date	Signature
Tested by:	Mr. E. Plotnichenko, test engineer	February 27, 2009	
Reviewed by:	Mrs. M. Cherniavsky, certification engineer	March 5, 2009	
Approved by:	Mr. M. Nikishin, EMC and Radio group leader	March 6, 2009	

HERMON LABORATORIES

6 EUT description

6.1 General information

The EUT, RADWIN 1000 RW-1020-0150/ RADWIN 2000 RW-2020-0150 is an outdoor radio unit (ODU). The power and the Ethernet communication are supplied by indoor unit (IDU) or PoE device. It has two antenna configurations – integrated and connectorized that can support dual pole antenna type. RADWIN 1000 activates one RF port and RADWIN 2000 - two ports. The EUT, model RADWIN 2000 was tested. The antennas used are 17.5 dBi flat integrated and 20 dBi flat external.

6.2 Ports and lines

Port type	Port description	Connected		Connector type	Q-ty	Cable type	Cable length, m	Indoor / outdoor
		From	To					
Power	-48 VDC	AC/DC adapter	IDU	Terminal block	1	unshielded	2	Indoor
Power	AC power	mains	AC/DC adapter	IEC 60320	1	unshielded	1	Indoor
RF	Antenna	EUT	antenna	N-type	2	coax	1	Outdoor*
Signal	DC+ Ethernet	IDU	EUT	RJ45	1	FTP	20	Outdoor
Signal	Ethernet	IDU	Laptop	RJ45	1	shielded	1.5	Indoor

6.3 Support and test equipment

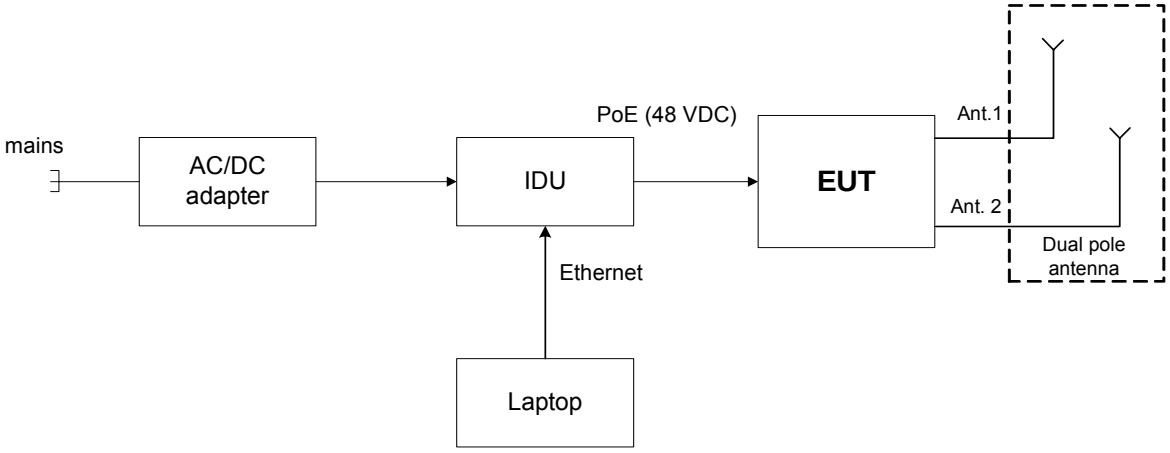
Description	Manufacturer	Model number	Serial number
Laptop	Dell	Latitude/D530	NA
IDU (for configuration with ODU)	RadWin Ltd.	IDU-E	DE2E2000123
AC/DC	YCL	WMB480042-5G	S0714002271

6.4 Changes made in the EUT

No changes were implemented.

HERMON LABORATORIES

6.5 Test configuration



6.6 Transmitter characteristics

Type of equipment	
V	Stand-alone (Equipment with or without its own control provisions)
	Combined equipment (Equipment where the radio part is fully integrated within another type of equipment)
	Plug-in card (Equipment intended for a variety of host systems)

Intended use		**Condition of use**
V	fixed	Always at a distance more than 2 m from all people
	mobile	Always at a distance more than 20 cm from all people
	portable	May operate at a distance closer than 20 cm to human body

Assigned frequency range	2400 – 2483.5 MHz
Operating frequency range	2412 - 2462 MHz
RF channel spacing	5 MHz, 10 MHz, 20 MHz

Maximum rated output power	At transmitter 50 Ω RF output connector	25.33 dBm for 5 MHz CBW; 25.39 dBm for 10 MHz CBW; 25.47 dBm for 20 MHz CBW
	Effective radiated power (for equipment with no RF connector)	NA

Is transmitter output power variable?		No		
	V	Yes		continuous variable
				stepped variable with stepsize: 0.5 dB
			minimum RF power	NA
			maximum RF power	25.47 dBm

Antenna connection					
unique coupling	**V**	standard connector	integral		with temporary RF connector
				V	without temporary RF connector

Antenna/s technical characteristics

Type	Manufacturer	Model number	Gain
Flat Panel – Dual polarized Integrated	Radwin Ltd.	RW-9612-2327INT	17.5 dBi
Flat Panel – Dual polarized External	Radwin Ltd.	RW-9612-2427	19 dBi (20 dBi - 1 dB feeder loss)

Transmitter 99% power bandwidth	**Transmitter aggregate data rate/s, MBps**	**Type of modulation (OFDM)**
5 MHz	3.25 6.5, 9.75 13, 19.5 26, 29.5, 32.5	BPSK QPSK 16QAM 64QAM
10 MHz	6.5 13, 19.5 26, 39 52, 58.5, 65	BPSK QPSK 16QAM 64QAM
20 MHz	13 26, 39 52, 78 104, 117, 130	BPSK QPSK 16QAM 64QAM

Modulating test signal (baseband)			OFDM			
Maximum transmitter duty cycle in normal use			40 %			
Transmitter duty cycle supplied for test			100 %			
Transmitter power source						
	Battery	**Nominal rated voltage**	VDC	Battery type		
	DC	**Nominal rated voltage**	48 VDC from IDU unit powered by 120 VAC			
	AC mains	**Nominal rated voltage**	VAC	Frequency	Hz	
Common power source for transmitter and receiver			**V** yes		no	

Test specification:	FCC section 15.247(a)(2), RSS-210 section A8.2(a), 6 dB bandwidth		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(a)(2)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 6:53:45 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

7 Transmitter tests according to 47CFR part 15 subpart C and RSS-210 requirements

7.1 Minimum 6 dB bandwidth

7.1.1 General

This test was performed to measure 6 dB bandwidth of the EUT carrier frequency. Specification test limits are given in Table 7.1.1.

Table 7.1.1 6 dB bandwidth limits

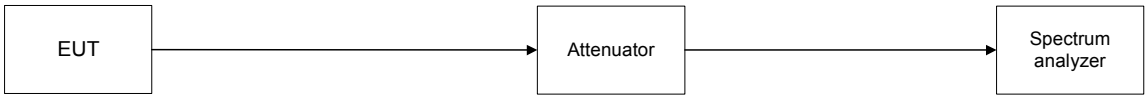
Assigned frequency, MHz	Modulation envelope reference points*, dBc	Minimum bandwidth, kHz
902.0 – 928.0	6.0	500.0
2400.0 – 2483.5		
5725.0 – 5850.0		

* - Modulation envelope reference points provided in terms of attenuation below the peak of modulated carrier.

7.1.2 Test procedure

7.1.2.1 The EUT was set up as shown in Figure 7.1.1, energized and its proper operation was checked.
7.1.2.2 The EUT was set to transmit modulated carrier.
7.1.2.3 The transmitter minimum 6dB bandwidth was measured with spectrum analyzer as frequency delta between reference points on modulation envelope and provided in Table 7.1.2 and associated plot.

Figure 7.1.1 The 6 dB bandwidth test setup



Test specification:	FCC section 15.247(a)(2), RSS-210 section A8.2(a), 6 dB bandwidth		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(a)(2)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 6:53:45 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

Table 7.1.2 The 6 dB bandwidth test results

ASSIGNED FREQUENCY BAND:	2400 – 2483.5 MHz
DETECTOR USED:	Peak
SWEEP MODE:	Single
SWEEP TIME:	Auto
RESOLUTION BANDWIDTH:	100 kHz
VIDEO BANDWIDTH:	300 kHz
MODULATION ENVELOPE REFERENCE POINTS:	6.0 dBc

Carrier frequency, MHz	Modulation	Bit Rate, Mbps	6 dB bandwidth, kHz	Limit, kHz	Margin, kHz	Verdict
5 MHz CBW						
2412.0	BPSK	3.25	4433	500	-3933	Pass
	64QAM	32.5	4433	500	-3933	Pass
2437.0	BPSK	3.25	4445	500	-3945	Pass
	64QAM	32.5	4433	500	-3933	Pass
2462.0	BPSK	3.25	4468	500	-3968	Pass
	64QAM	32.5	4468	500	-3968	Pass
10 MHz CBW						
2412.0	BPSK	6.5	8860	500	-8360	Pass
	64QAM	65	8840	500	-8340	Pass
2437.0	BPSK	6.5	8860	500	-8360	Pass
	64QAM	65	8860	500	-8360	Pass
2462.0	BPSK	6.5	8900	500	-8400	Pass
	64QAM	65	8860	500	-8360	Pass
20MHz CBW						
2412.0	BPSK	13	17710	500	-17210	Pass
	64QAM	130	17640	500	-17140	Pass
2437.0	BPSK	13	17710	500	-17210	Pass
	64QAM	130	17780	500	-17280	Pass
2462.0	BPSK	13	17780	500	-17280	Pass
	64QAM	130	17780	500	-17280	Pass

Reference numbers of test equipment used

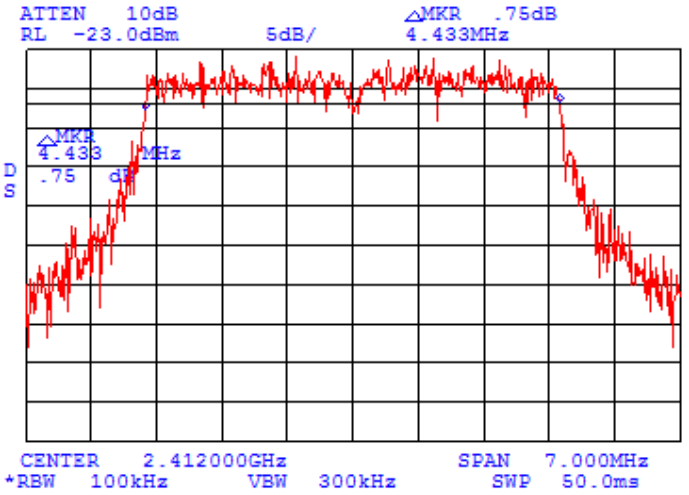
HL 1424	HL 3175	HL 3179	HL 3442	HL 3472				

Full description is given in Appendix A.

Test specification:	FCC section 15.247(a)(2), RSS-210 section A8.2(a), 6 dB bandwidth		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(a)(2)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 6:53:45 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

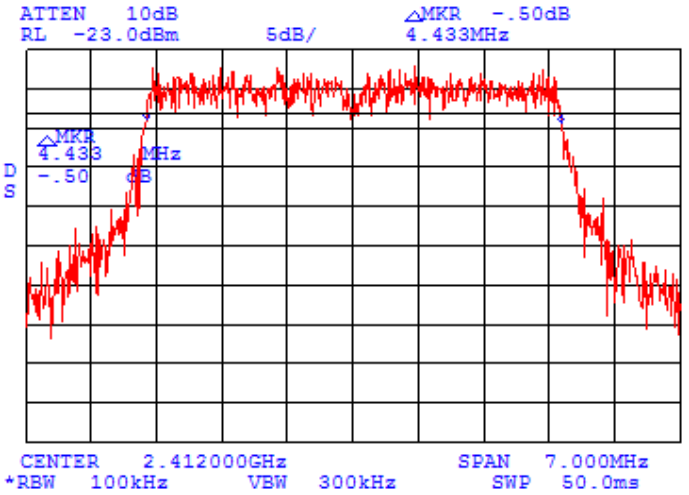
Plot 7.1.1 The 6 dB bandwidth test result at low frequency

Emission Bandwidth	5 MHz
Modulation / Bit Rate	BPSK / 3.25 Mbps



Plot 7.1.2 The 6 dB bandwidth test result at low frequency

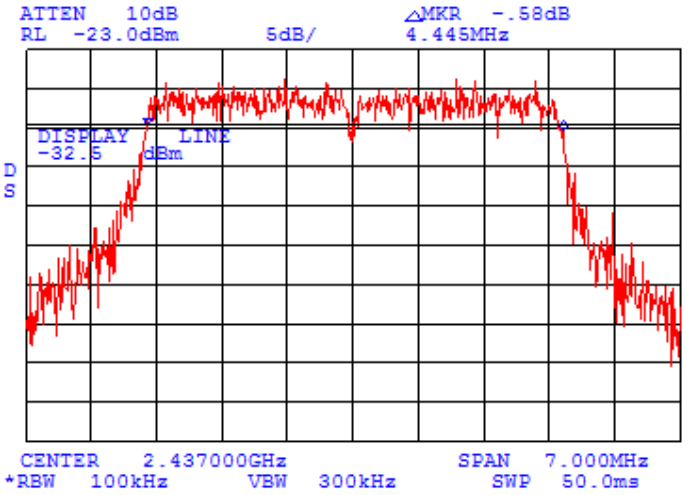
Emission Bandwidth	5 MHz
Modulation / Bit Rate	64QAM / 32.5 Mbps



Test specification:	FCC section 15.247(a)(2), RSS-210 section A8.2(a), 6 dB bandwidth		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(a)(2)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 6:53:45 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

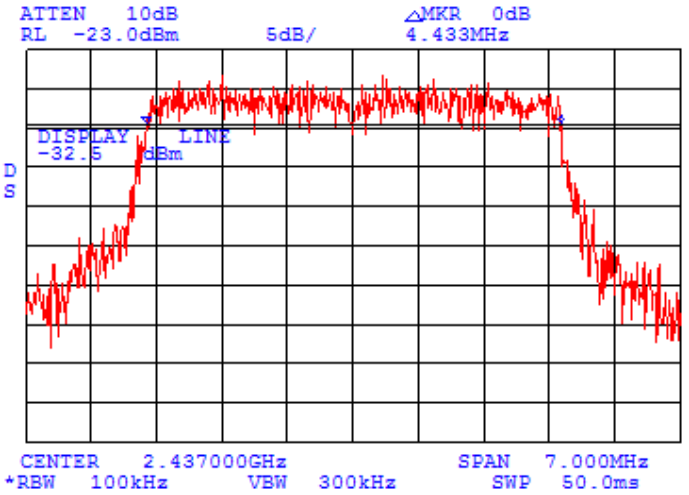
Plot 7.1.3 The 6 dB bandwidth test result at mid frequency

Emission Bandwidth	5 MHz
Modulation / Bit Rate	BPSK / 3.25 Mbps



Plot 7.1.4 The 6 dB bandwidth test result at mid frequency

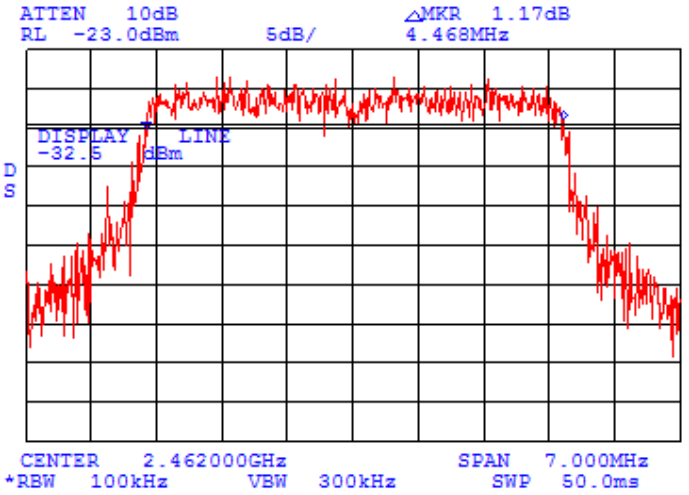
Emission Bandwidth	5 MHz
Modulation / Bit Rate	64QAM / 32.5 Mbps



Test specification:	FCC section 15.247(a)(2), RSS-210 section A8.2(a), 6 dB bandwidth		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(a)(2)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 6:53:45 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

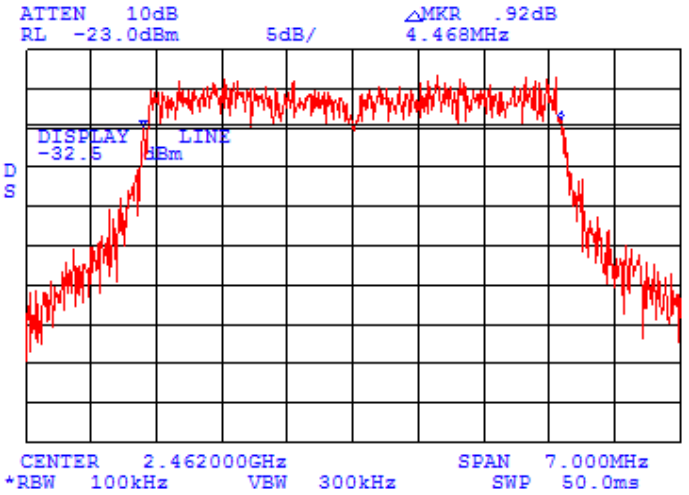
Plot 7.1.5 The 6 dB bandwidth test result at high frequency

Emission Bandwidth	5 MHz
Modulation / Bit Rate	BPSK / 3.25 Mbps



Plot 7.1.6 The 6 dB bandwidth test result at high frequency

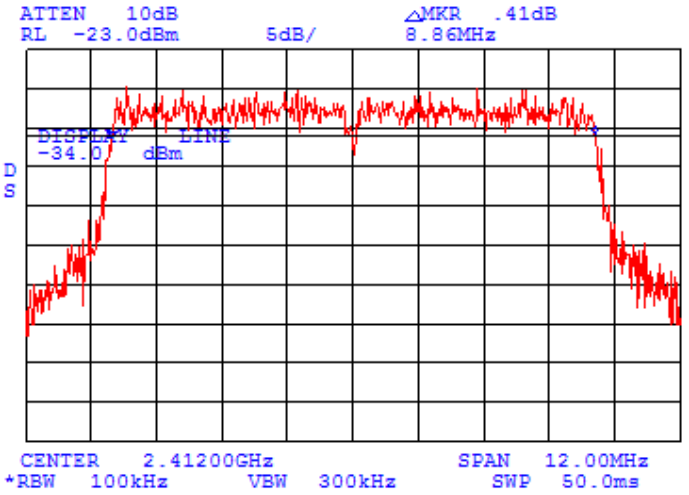
Emission Bandwidth	5 MHz
Modulation / Bit Rate	64QAM / 32.5 Mbps



Test specification:	FCC section 15.247(a)(2), RSS-210 section A8.2(a), 6 dB bandwidth		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(a)(2)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 6:53:45 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

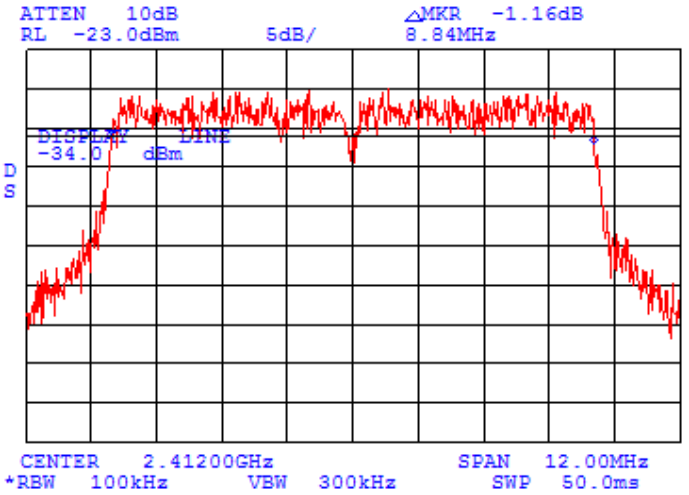
Plot 7.1.7 The 6 dB bandwidth test result at low frequency

Emission Bandwidth	10MHz
Modulation / Bit Rate	BPSK / 6.5 Mbps



Plot 7.1.8 The 6 dB bandwidth test result at low frequency

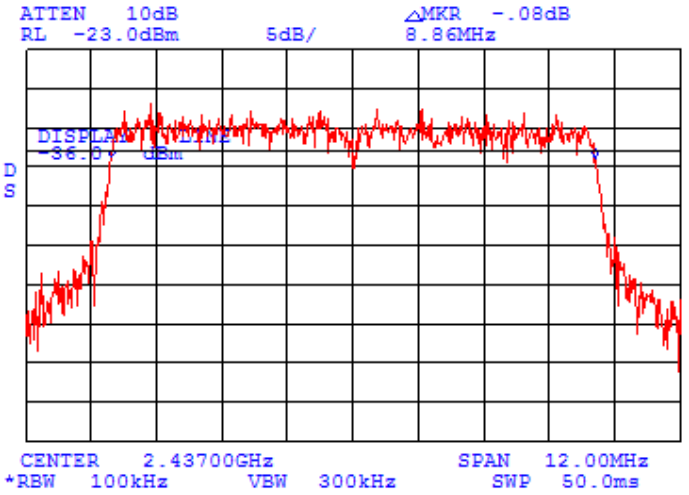
Emission Bandwidth	10 MHz
Modulation / Bit Rate	64QAM / 65 Mbps



Test specification:	FCC section 15.247(a)(2), RSS-210 section A8.2(a), 6 dB bandwidth		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(a)(2)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 6:53:45 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

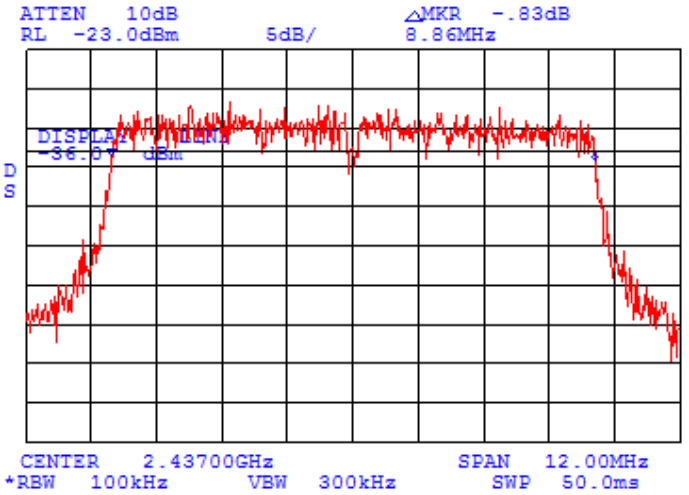
Plot 7.1.9 The 6 dB bandwidth test result at mid frequency

Emission Bandwidth	10MHz
Modulation / Bit Rate	BPSK / 6.5 Mbps



Plot 7.1.10 The 6 dB bandwidth test result at mid frequency

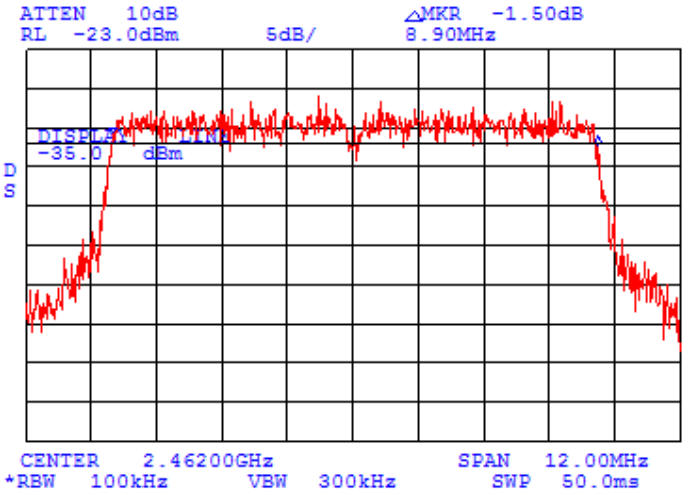
Emission Bandwidth	10 MHz
Modulation / Bit Rate	64QAM / 65 Mbps



Test specification:	FCC section 15.247(a)(2), RSS-210 section A8.2(a), 6 dB bandwidth		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(a)(2)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 6:53:45 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

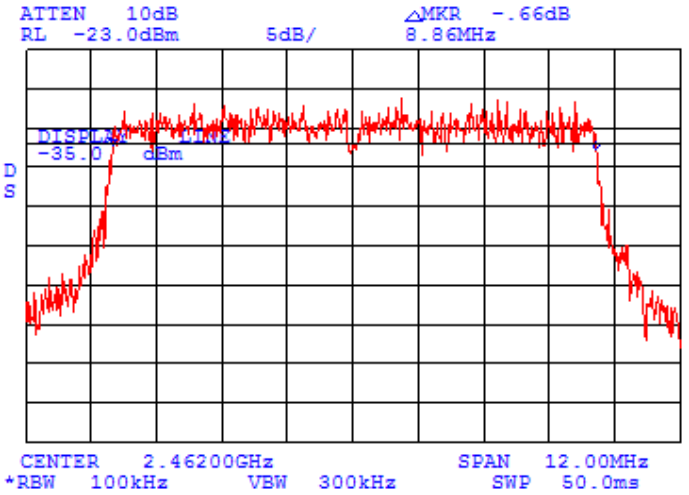
Plot 7.1.11 The 6 dB bandwidth test result at high frequency

Emission Bandwidth	10MHz
Modulation / Bit Rate	BPSK / 6.5 Mbps



Plot 7.1.12 The 6 dB bandwidth test result at high frequency

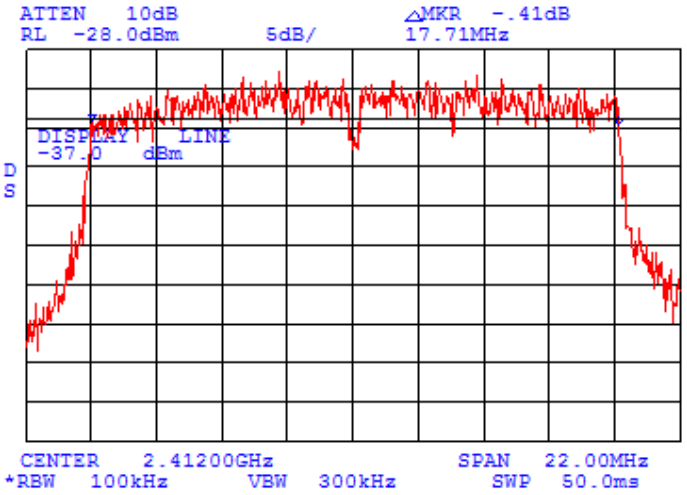
Emission Bandwidth	10 MHz
Modulation / Bit Rate	64QAM / 65 Mbps



Test specification:	FCC section 15.247(a)(2), RSS-210 section A8.2(a), 6 dB bandwidth		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(a)(2)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 6:53:45 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

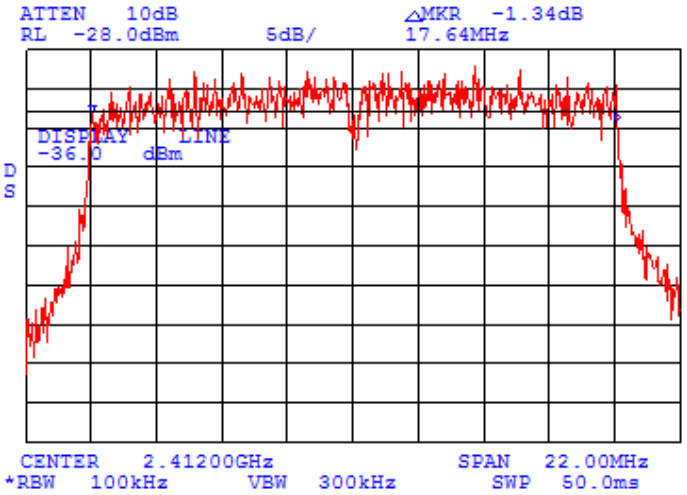
Plot 7.1.13 The 6 dB bandwidth test result at low frequency

Emission Bandwidth	20MHz
Modulation / Bit Rate	BPSK / 13 Mbps



Plot 7.1.14 The 6 dB bandwidth test result at low frequency

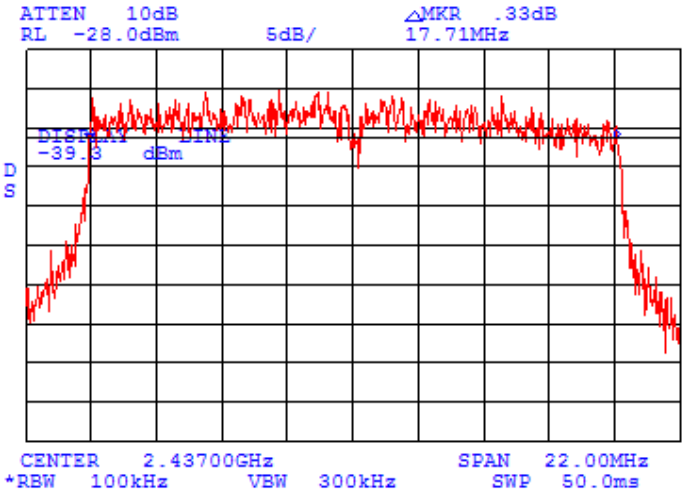
Emission Bandwidth	20 MHz
Modulation / Bit Rate	64QAM / 130 Mbps



Test specification:	FCC section 15.247(a)(2), RSS-210 section A8.2(a), 6 dB bandwidth		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(a)(2)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 6:53:45 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

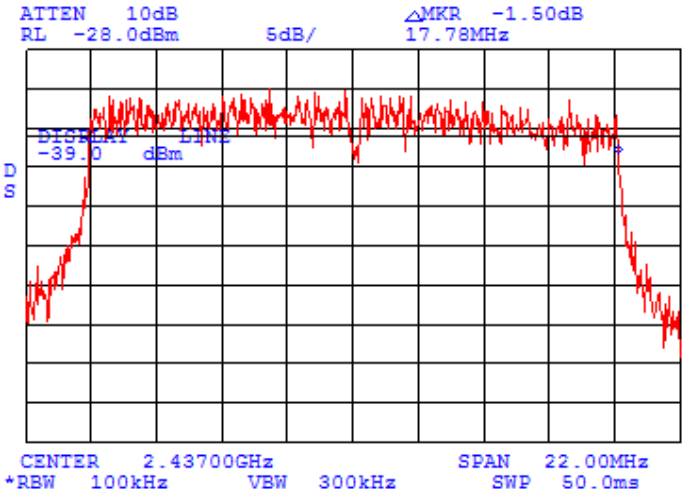
Plot 7.1.15 The 6 dB bandwidth test result at mid frequency

Emission Bandwidth	20MHz
Modulation / Bit Rate	BPSK / 13 Mbps



Plot 7.1.16 The 6 dB bandwidth test result at mid frequency

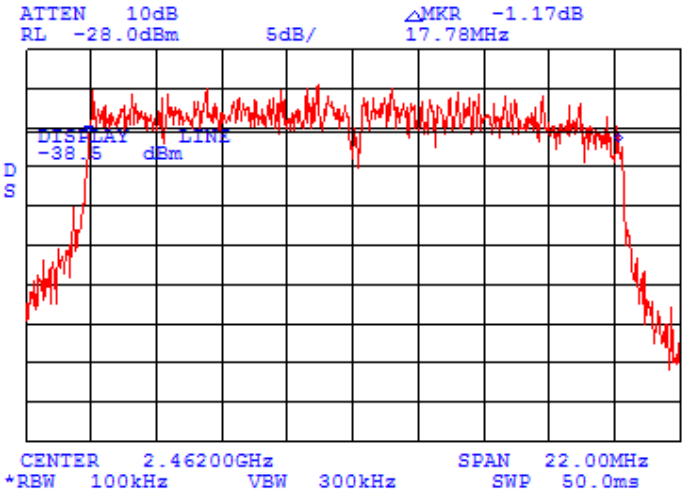
Emission Bandwidth	20 MHz
Modulation / Bit Rate	64QAM / 130 Mbps



Test specification:	FCC section 15.247(a)(2), RSS-210 section A8.2(a), 6 dB bandwidth		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(a)(2)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 6:53:45 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

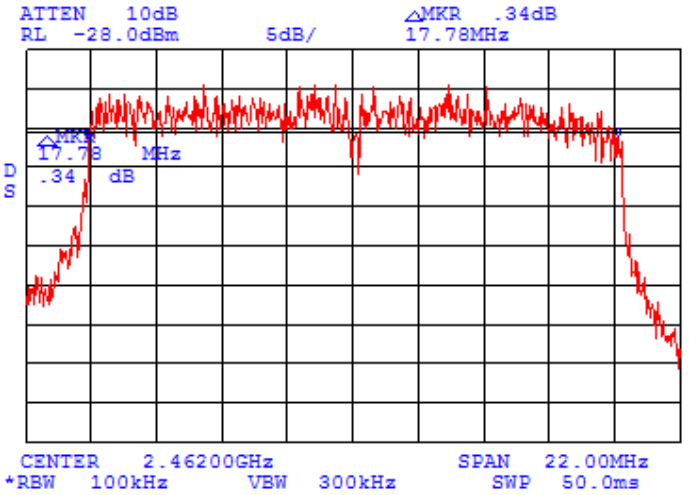
Plot 7.1.17 The 6 dB bandwidth test result at high frequency

Emission Bandwidth	20MHz
Modulation / Bit Rate	BPSK / 13 Mbps



Plot 7.1.18 The 6 dB bandwidth test result at high frequency

Emission Bandwidth	20 MHz
Modulation / Bit Rate	64QAM / 130 Mbps



Test specification:	FCC section 15.247(b)(3), RSS-210 section A8.4(4), Peak output power		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(b), Option 2, Method #3		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:12:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

7.2 Peak output power

7.2.1 General

This test was performed to measure the maximum peak output power at the transmitter RF antenna connector. Specification test limits are given in Table 7.2.1.

Table 7.2.1 Peak output power limits

Assigned frequency range, MHz	Maximum antenna gain, dBi	Peak output power*	
		W	dBm
902.0 – 928.0	6.0	1.0	30.0
2400.0 – 2483.5			
5725.0 – 5850.0			

*- If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power limit shall be reduced below the stated value as follows:

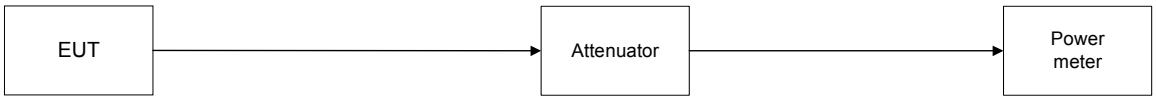
by 1 dB for every 3 dB that the directional gain of antenna exceeds 6 dBi for fixed point-to-point transmitters operate in 2400-2483.5 MHz band;

without any corresponding reduction for fixed point-to-point transmitters operate in 5725-5850 MHz band; by the amount in dB that the directional gain of antenna exceeds 6 dBi for the rest of transmitters.

7.2.2 Test procedure

7.2.2.1 The EUT was set up as shown in Figure 7.2.1, energized and its proper operation was checked.
7.2.2.2 The EUT was adjusted to produce maximum available for end user RF output power.
7.2.2.3 The peak power meter was used and the maximum peak output power was measured as provided in Table 7.2.2.

Figure 7.2.1 Peak output power test setup



Test specification:	FCC section 15.247(b)(3), RSS-210 section A8.4(4), Peak output power		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(b), Option 2, Method #3		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:12:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

Table 7.2.2 Peak output power test results

ASSIGNED FREQUENCY: 2400 – 2483.5 MHz
TRANSMITTER OUTPUT POWER SETTINGS: Maximum
DETECTOR USED: Peak

Modulation, Bit rate, Mbps	Power meter reading, dBm		Total peak output power, dBm**	Limit, dBm	Margin*, dBm	Verdict
	Antenna 1	Antenna 2				
5 MHz BW, Low channel						
BPSK, 3.25	22.17	22.32	25.26	25.67	-0.41	Pass
64QAM, 32.5	22.29	22.34	25.33	25.67	-0.34	Pass
5 MHz BW, Mid channel						
BPSK, 3.25	22.26	21.88	25.08	25.67	-0.59	Pass
64QAM, 32.5	22.39	22.18	25.30	25.67	-0.37	Pass
5 MHz BW, High channel						
BPSK, 3.25	20.05	23.31	24.99	25.67	-0.68	Pass
64QAM, 32.5	20.08	23.58	25.18	25.67	-0.49	Pass
10 MHz BW, Low channel						
BPSK, 6.5	22.16	22.46	25.32	25.67	-0.35	Pass
64QAM, 65	22.24	22.51	25.39	25.67	-0.28	Pass
10 MHz BW, Mid channel						
BPSK, 6.5	22.19	21.85	25.03	25.67	-0.64	Pass
64QAM, 65	22.21	22.10	25.17	25.67	-0.50	Pass
10 MHz BW, High channel						
BPSK, 6.5	20.22	23.29	25.03	25.67	-0.64	Pass
64QAM, 65	20.40	23.55	25.26	25.67	-0.41	Pass
20 MHz BW, Low channel						
BPSK, 13	22.28	22.13	25.22	25.67	-0.45	Pass
64QAM, 130	22.39	22.53	25.47	25.67	-0.20	Pass
20 MHz BW, Mid channel						
BPSK, 13	22.15	21.23	24.72	25.67	-0.95	Pass
64QAM, 130	22.39	21.38	24.92	25.67	-0.75	Pass
20 MHz BW, High channel						
BPSK, 13	20.38	23.38	25.14	25.67	-0.53	Pass
64QAM, 130	20.54	23.44	25.24	25.67	-0.43	Pass

* - Margin = Peak output power – specification limit.
** - The total peak output power is the sum of power, measured at 2 antenna outputs
NOTE: Limit was calculated according to antenna assembly gain of 19 dBi. Only one power setting applied using different antenna types.

Reference numbers of test equipment used

HL 3175	HL 3179	HL 3180	HL 3301	HL 3302	HL 3385		

Full description is given in Appendix A.

Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

7.3 Spurious emissions at RF antenna connector

7.3.1 General

This test was performed to measure spurious emissions at RF antenna connector. Specification test limits are given in Table 7.3.1.

Table 7.3.1 Spurious emission limits

Frequency*, MHz	Attenuation below carrier*, dBc
0.009 – 10th harmonic	20.0 (30.0)

* - The above limits applied from the lowest radio frequency generated in the device, without going below 9 kHz up to the tenth harmonic of the highest fundamental frequency.
** - Spurious emission limit is provided in terms of attenuation below the peak of modulated carrier measured with the same resolution bandwidth.

7.3.2 Test procedure

7.3.2.1 The EUT was set up as shown in Figure 7.3.1, energized and its proper operation was checked.
7.3.2.2 The EUT was adjusted to produce maximum available to end user RF output power.
7.3.2.3 The highest emission level within the authorized band was measured.
7.3.2.4 The spurious emission was measured with spectrum analyzer as provided in Table 7.3.2, the associated plots and referenced to the highest emission level measured within the authorized band.

Figure 7.3.1 Spurious emission test setup, individual RF output testing

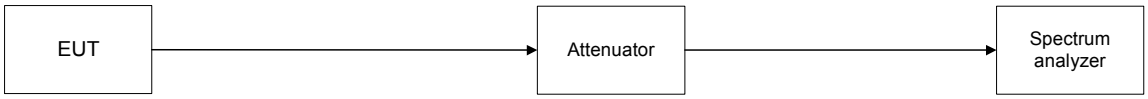
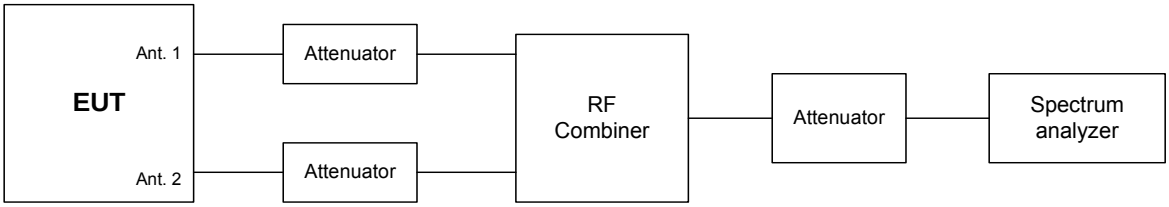


Figure 7.3.2 Spurious emission test setup, combined RF outputs testing



Test specification:	**FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions**		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	**Air Pressure:** 1013 hPa	**Relative Humidity:** 48%	**Power Supply:** 120 VAC
Remarks:			

Table 7.3.2 Spurious emission test results

ASSIGNED FREQUENCY RANGE: 2400 – 2483.5 MHz
INVESTIGATED FREQUENCY RANGE: 0.009 – 25000 MHz
DETECTOR USED: Peak
RESOLUTION BANDWIDTH: 100 kHz
VIDEO BANDWIDTH: 300 kHz
MODULATION: 64QAM (low channel) / BPSK (mid and high channels)
BIT RATE: 32.5 Mbps(low channel) / 3.25 (mid and high channels)
TRANSMITTER OUTPUT POWER: Maximum

Frequency, MHz	Spurious emission, dBm	Emission at carrier, dBm	Attenuation below carrier, dBc	Limit, dBc	Margin, dB*	Verdict
Low carrier frequency						
No spurious emissions were found						Pass
Mid carrier frequency						
No spurious emissions were found						Pass
High carrier frequency						
No spurious emissions were found						Pass

*****- Margin = Attenuation below carrier – specification limit.

Reference numbers of test equipment used

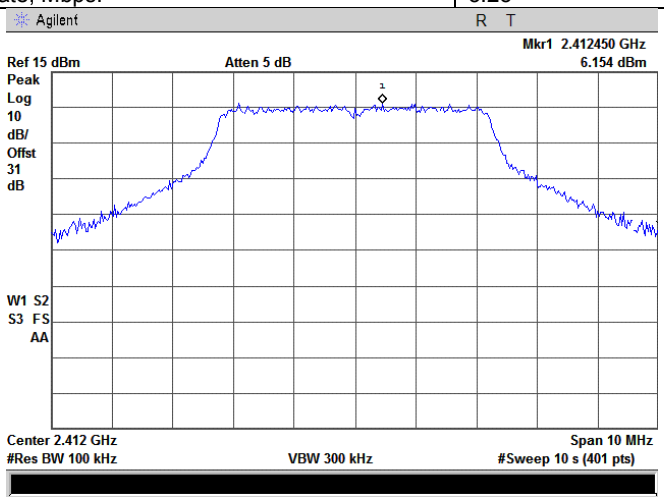
HL 2015	HL 2909	HL 3175	HL 3179	HL 3180	HL 3206	HL 3386	HL 3435
HL 3437	HL 3455	HL 3472	HL 3473				

Full description is given in Appendix A.

Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

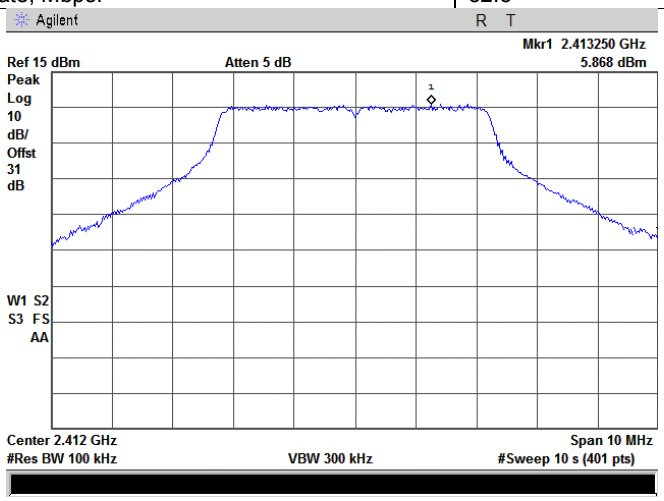
Plot 7.3.1 The highest emission level within the assigned band at low carrier frequency, individual RF chain (Antenna 2)

Emission Bandwidth, MHz:	5
Modulation:	BPSK
Bit Rate, Mbps:	3.25



Plot 7.3.2 The highest emission level within the assigned band at low carrier frequency, individual RF chain (Antenna 2)

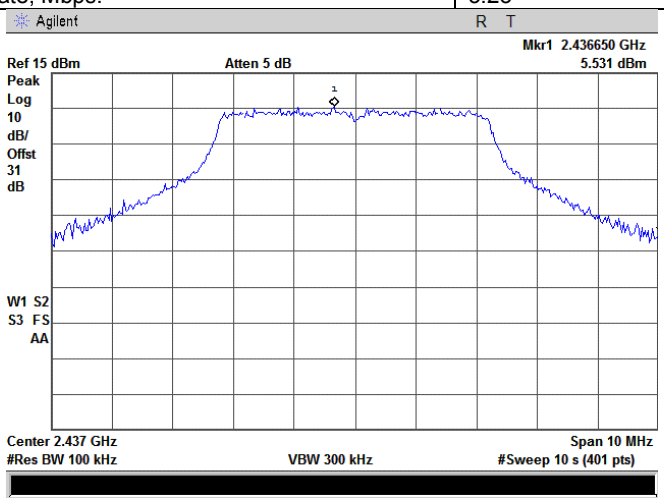
Emission Bandwidth, MHz:	5
Modulation:	64QAM
Bit Rate, Mbps:	32.5



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

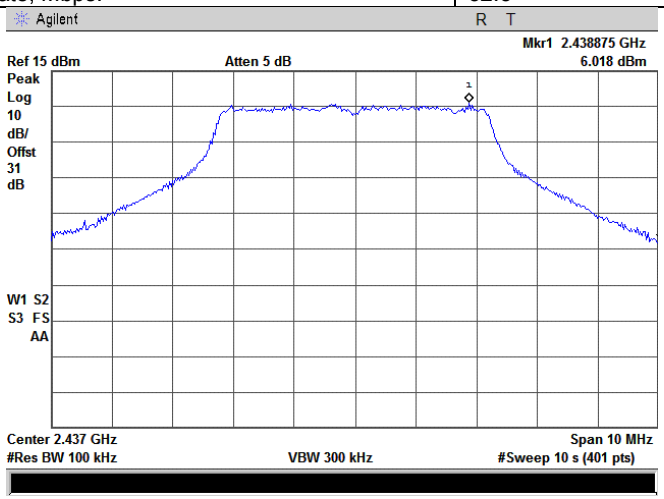
Plot 7.3.3 The highest emission level within the assigned band at mid carrier frequency, individual RF chain (Antenna 2)

Emission Bandwidth, MHz:	5
Modulation:	BPSK
Bit Rate, Mbps:	3.25



Plot 7.3.4 The highest emission level within the assigned band at mid carrier frequency, individual RF chain (Antenna 2)

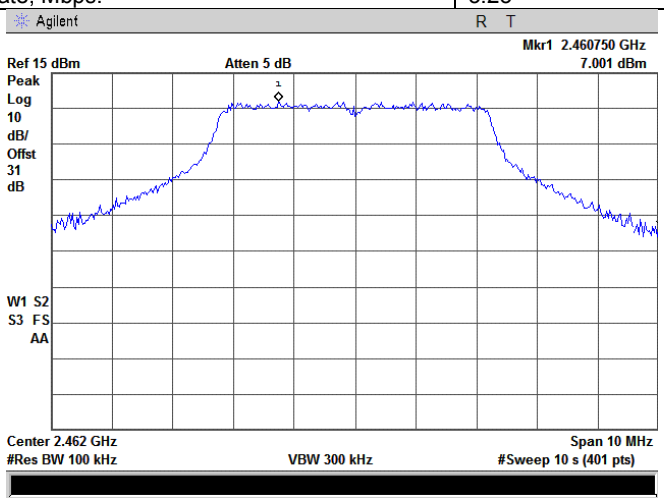
Emission Bandwidth, MHz:	5
Modulation:	64QAM
Bit Rate, Mbps:	32.5



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

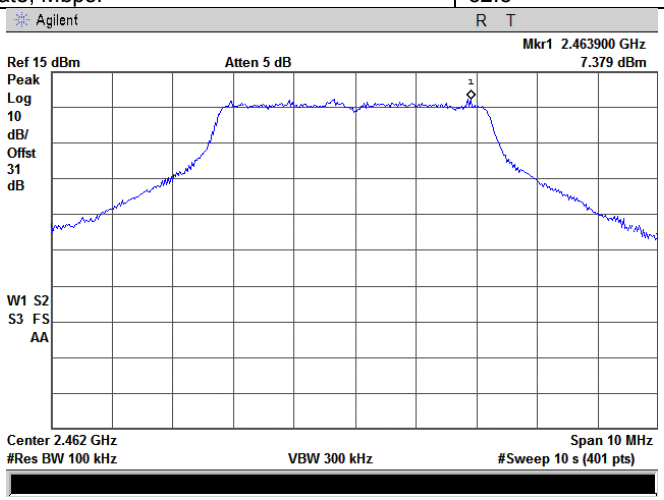
Plot 7.3.5 The highest emission level within the assigned band at high carrier frequency, individual RF chain (Antenna 2)

Emission Bandwidth, MHz:	5
Modulation:	BPSK
Bit Rate, Mbps:	3.25



Plot 7.3.6 The highest emission level within the assigned band at high carrier frequency individual RF chain (Antenna 2)

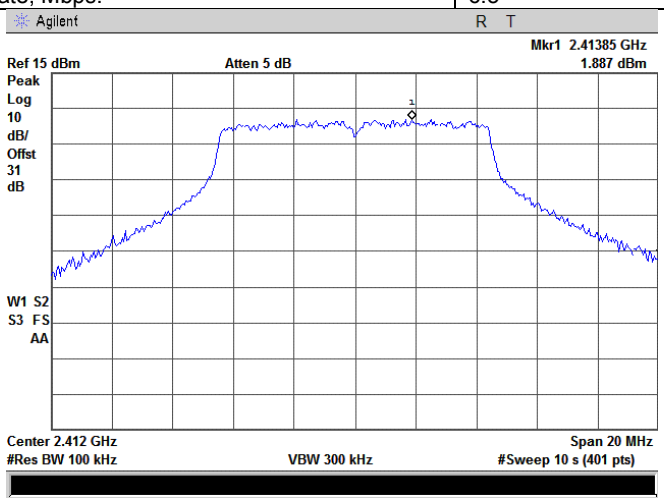
Emission Bandwidth, MHz:	5
Modulation:	64QAM
Bit Rate, Mbps:	32.5



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

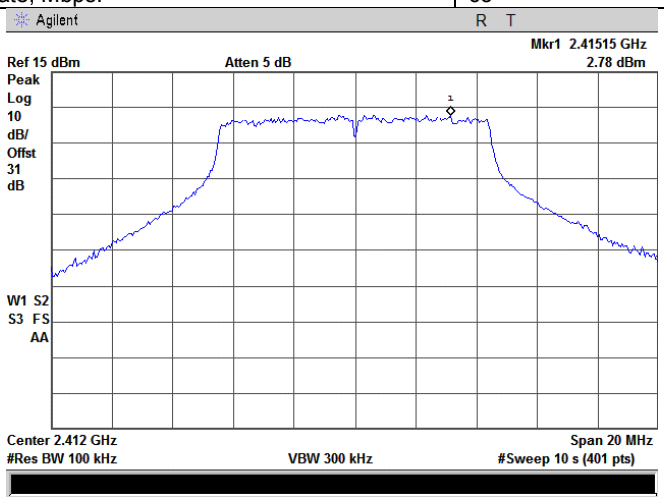
Plot 7.3.7 The highest emission level within the assigned band at low carrier frequency, individual RF chain (Antenna 2)

Emission Bandwidth, MHz:	10
Modulation:	BPSK
Bit Rate, Mbps:	6.5



Plot 7.3.8 The highest emission level within the assigned band at low carrier frequency, individual RF chain (Antenna 2)

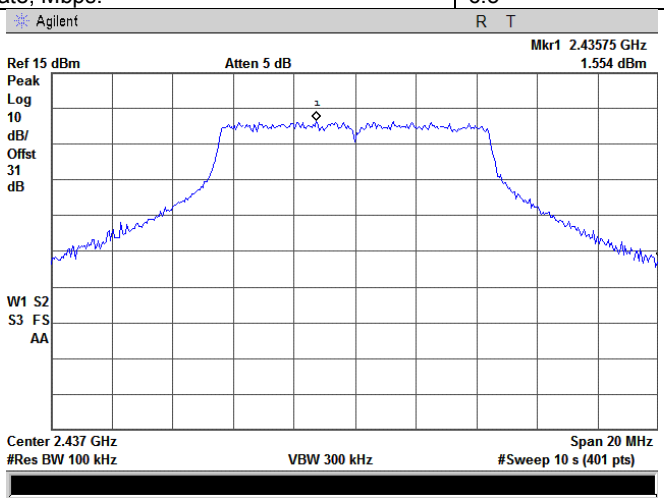
Emission Bandwidth, MHz:	10
Modulation:	64QAM
Bit Rate, Mbps:	65



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

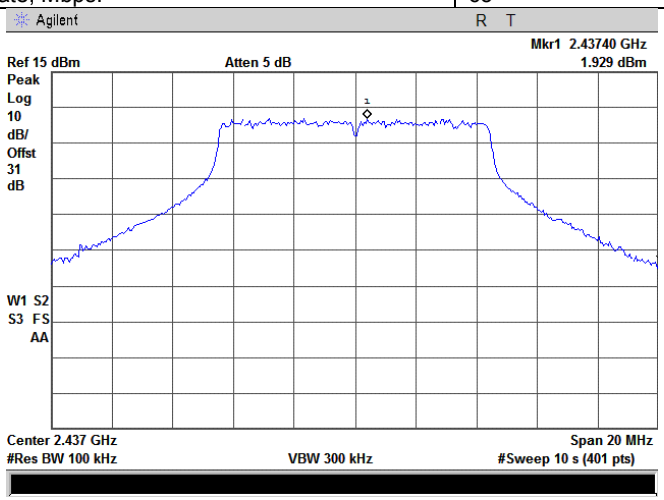
Plot 7.3.9 The highest emission level within the assigned band at mid carrier frequency, individual RF chain (Antenna 2)

Emission Bandwidth, MHz:	10
Modulation:	BPSK
Bit Rate, Mbps:	6.5



Plot 7.3.10 The highest emission level within the assigned band at mid carrier frequency individual RF chain (Antenna 2)

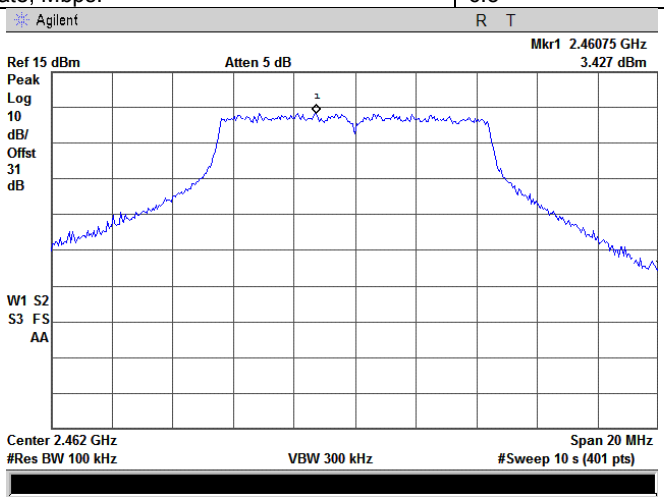
Emission Bandwidth, MHz:	10
Modulation:	64QAM
Bit Rate, Mbps:	65



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

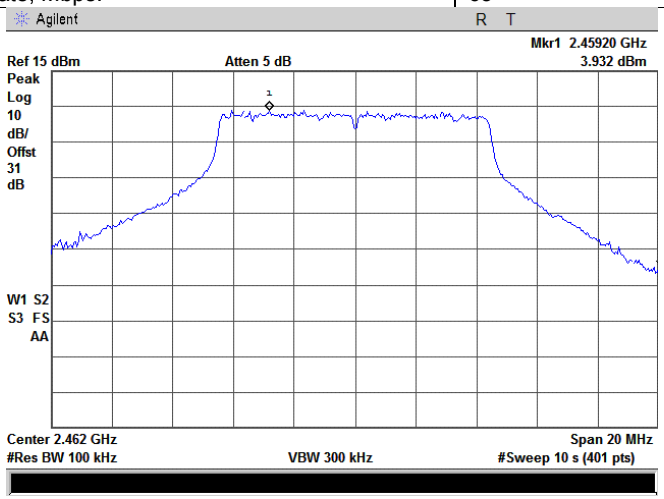
Plot 7.3.11 The highest emission level within the assigned band at high carrier frequency individual RF chain (Antenna 2)

Emission Bandwidth, MHz:	10
Modulation:	BPSK
Bit Rate, Mbps:	6.5



Plot 7.3.12 The highest emission level within the assigned band at high carrier frequency individual RF chain (Antenna 2)

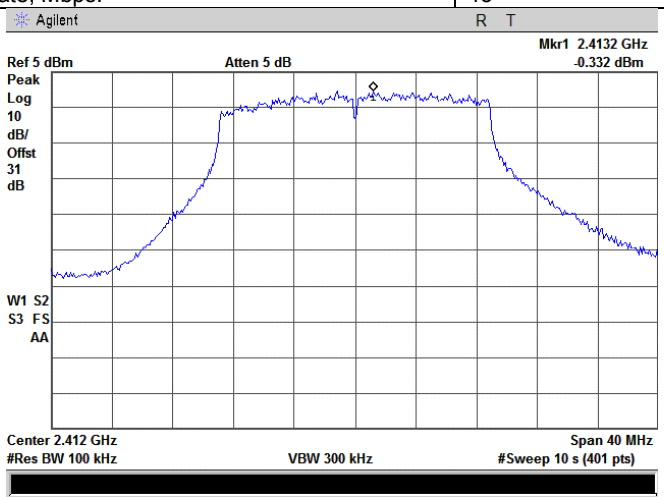
Emission Bandwidth, MHz:	10
Modulation:	64QAM
Bit Rate, Mbps:	65



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

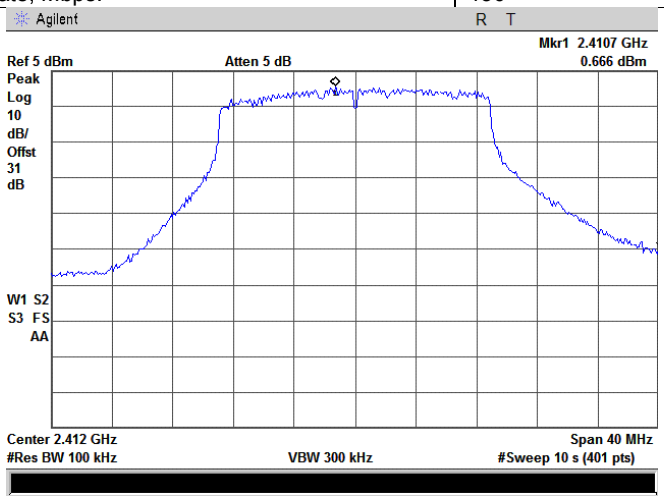
Plot 7.3.13 The highest emission level within the assigned band at low carrier frequency, individual RF chain (Antenna 2)

Emission Bandwidth, MHz:	20
Modulation:	BPSK
Bit Rate, Mbps:	13



Plot 7.3.14 The highest emission level within the assigned band at low carrier frequency, individual RF chain (Antenna 2)

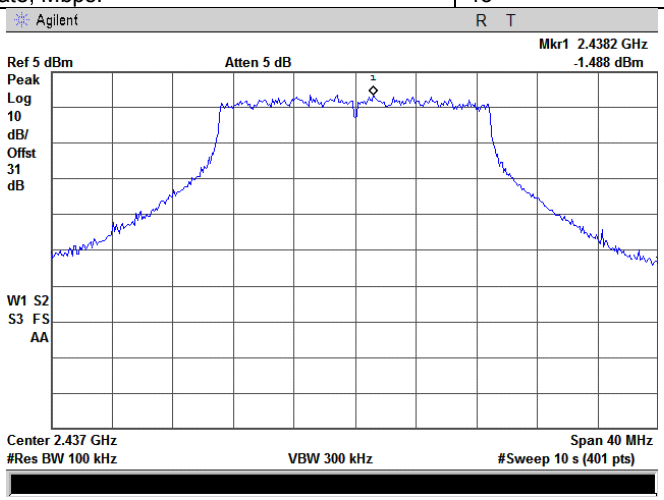
Emission Bandwidth, MHz:	20
Modulation:	64QAM
Bit Rate, Mbps:	130



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

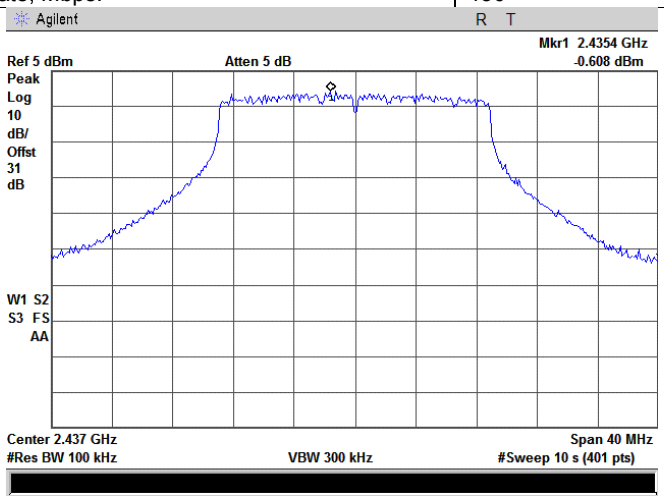
Plot 7.3.15 The highest emission level within the assigned band at mid carrier frequency, individual RF chain (Antenna 2)

Emission Bandwidth, MHz:	20
Modulation:	BPSK
Bit Rate, Mbps:	13



Plot 7.3.16 The highest emission level within the assigned band at mid carrier frequency individual RF chain (Antenna 2)

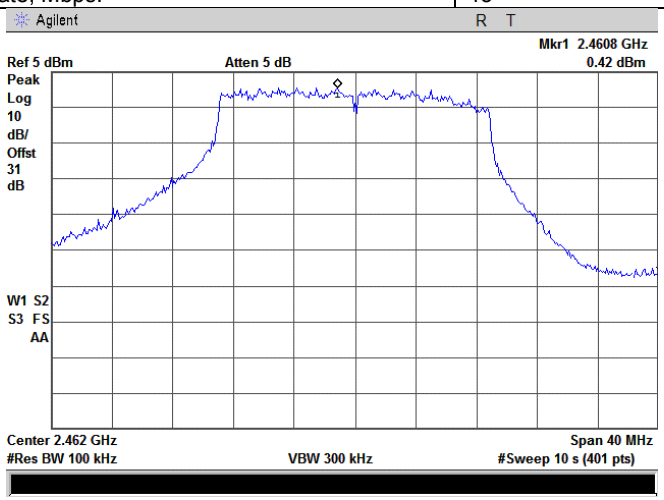
Emission Bandwidth, MHz:	20
Modulation:	64QAM
Bit Rate, Mbps:	130



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

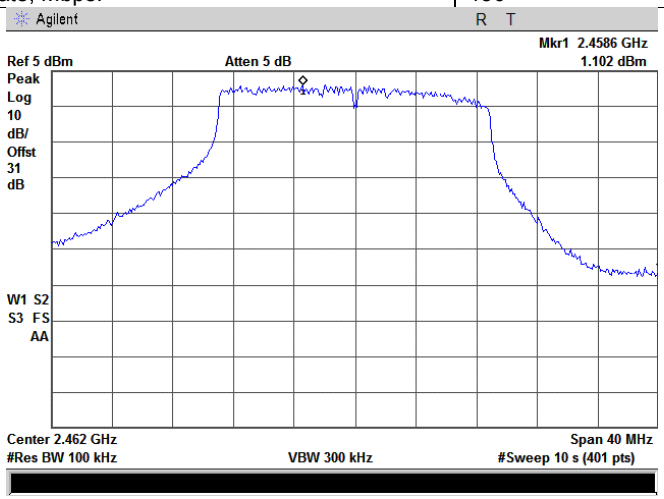
Plot 7.3.17 The highest emission level within the assigned band at high carrier frequency, individual RF chain (Antenna 2)

Emission Bandwidth, MHz:	20
Modulation:	BPSK
Bit Rate, Mbps:	13



Plot 7.3.18 The highest emission level within the assigned band at high carrier frequency, individual RF chain (Antenna 2)

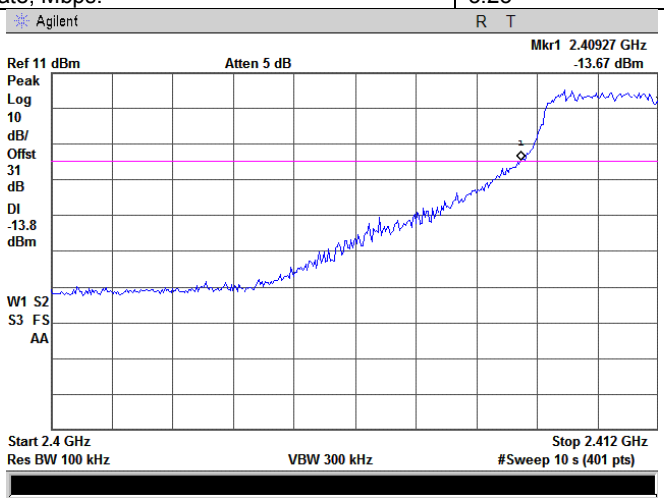
Emission Bandwidth, MHz:	20
Modulation:	64QAM
Bit Rate, Mbps:	130



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

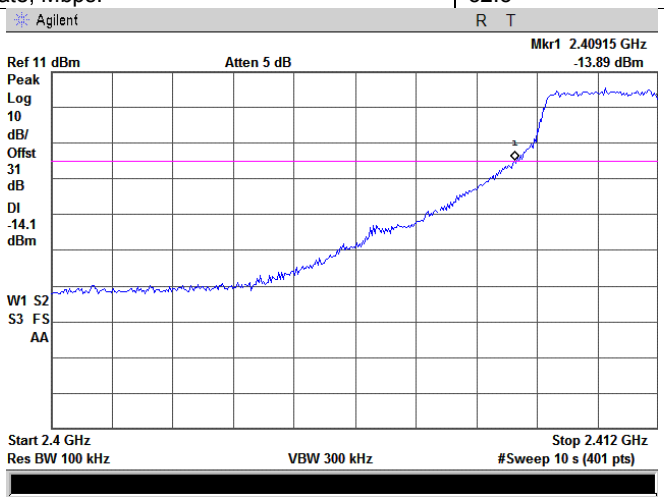
Plot 7.3.19 Spurious emission measurements at band edge at low carrier frequency, individual RF chain (Antenna 2)

Emission Bandwidth, MHz:	5
Modulation:	BPSK
Bit Rate, Mbps:	3.25



Plot 7.3.20 Spurious emission measurements at band edge at low carrier frequency, individual RF chain (Antenna 2)

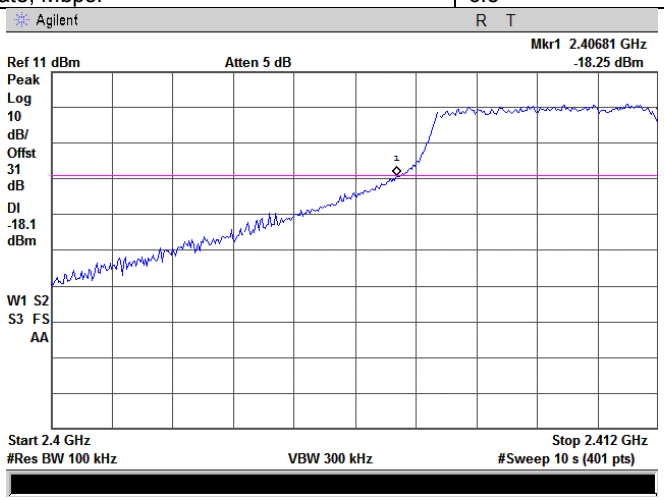
Emission Bandwidth, MHz:	5
Modulation:	64QAM
Bit Rate, Mbps:	32.5



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

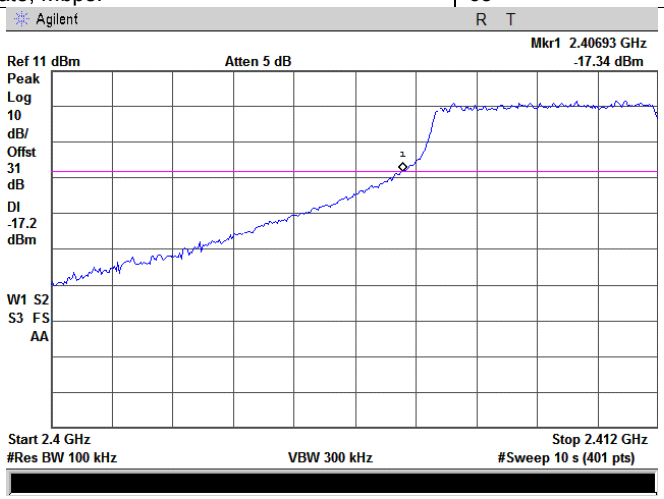
Plot 7.3.21 Spurious emission measurements at band edge at low carrier frequency, individual RF chain (Antenna 2)

Emission Bandwidth, MHz:	10
Modulation:	BPSK
Bit Rate, Mbps:	6.5



Plot 7.3.22 Spurious emission measurements at band edge at low carrier frequency, individual RF chain (Antenna 2)

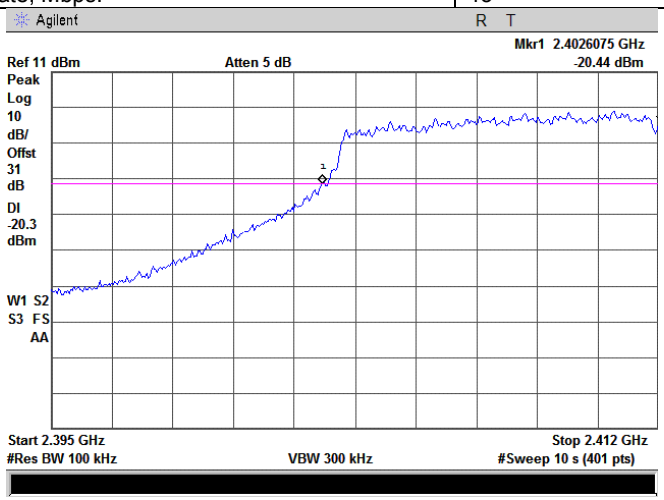
Emission Bandwidth, MHz:	10
Modulation:	64QAM
Bit Rate, Mbps:	65



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

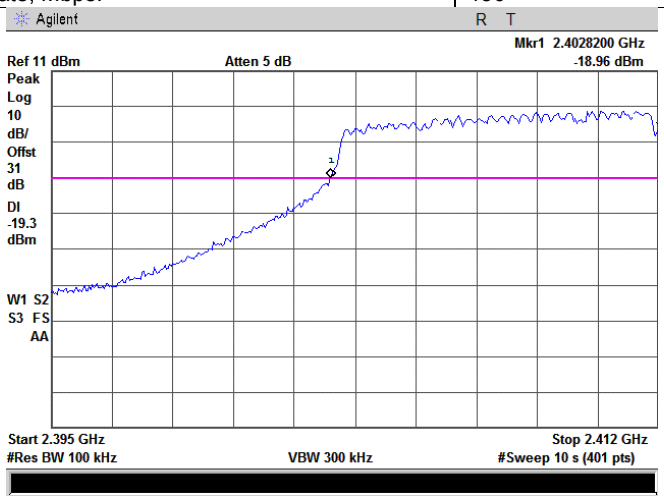
Plot 7.3.23 Spurious emission measurements at band edge at low carrier frequency, individual RF chain (Antenna 2)

Emission Bandwidth, MHz:	20
Modulation:	BPSK
Bit Rate, Mbps:	13



Plot 7.3.24 Spurious emission measurements at band edge at low carrier frequency, individual RF chain (Antenna 2)

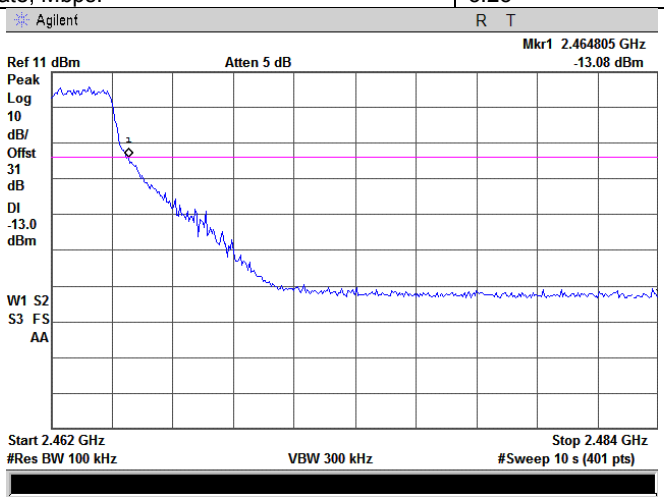
Emission Bandwidth, MHz:	20
Modulation:	64QAM
Bit Rate, Mbps:	130



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

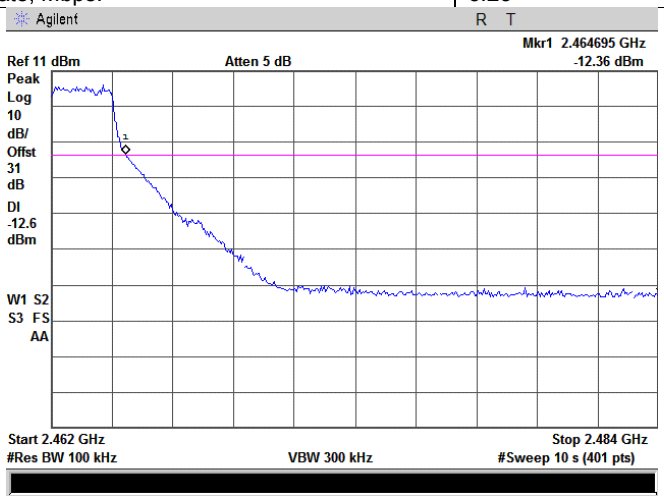
Plot 7.3.25 Spurious emission measurements at band edge at high carrier frequency, individual RF chain (Antenna 2)

Emission Bandwidth, MHz:	5
Modulation:	BPSK
Bit Rate, Mbps:	3.25



Plot 7.3.26 Spurious emission measurements at band edge at high carrier frequency, individual RF chain (Antenna 2)

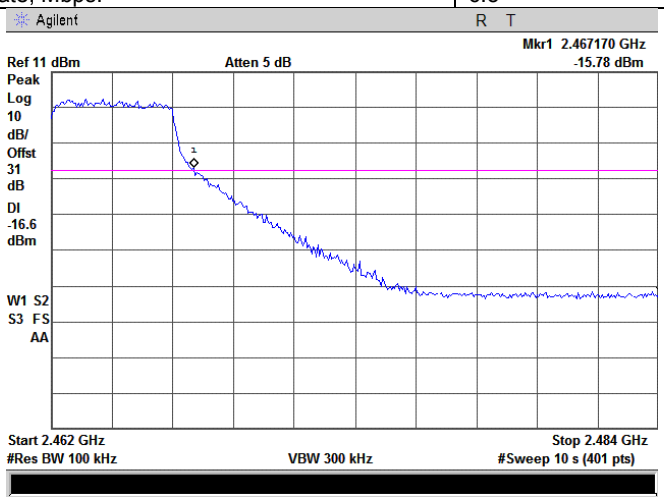
Emission Bandwidth, MHz:	5
Modulation:	64QAM
Bit Rate, Mbps:	3.25



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

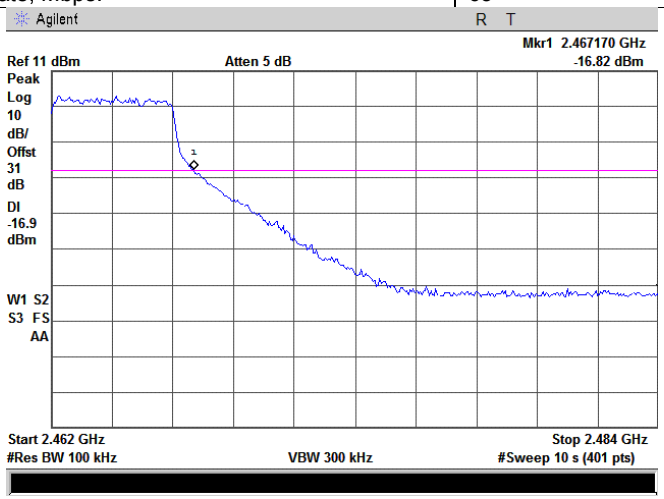
Plot 7.3.27 Spurious emission measurements at band edge at high carrier frequency, individual RF chain (Antenna 2)

Emission Bandwidth, MHz:	10
Modulation:	BPSK
Bit Rate, Mbps:	6.5



Plot 7.3.28 Spurious emission measurements at band edge at high carrier frequency, individual RF chain (Antenna 2)

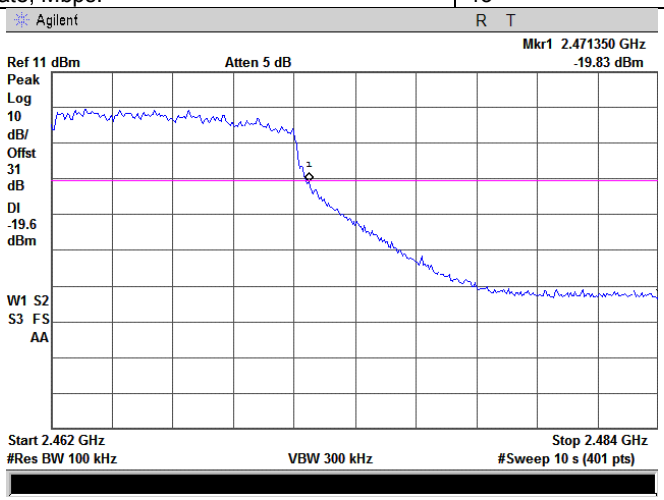
Emission Bandwidth, MHz:	10
Modulation:	64QAM
Bit Rate, Mbps:	65



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

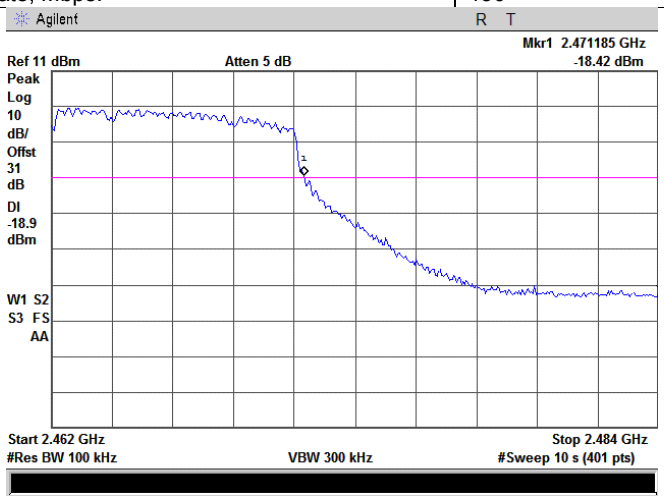
Plot 7.3.29 Spurious emission measurements at band edge at high carrier frequency, individual RF chain (Antenna 2)

Emission Bandwidth, MHz:	20
Modulation:	BPSK
Bit Rate, Mbps:	13



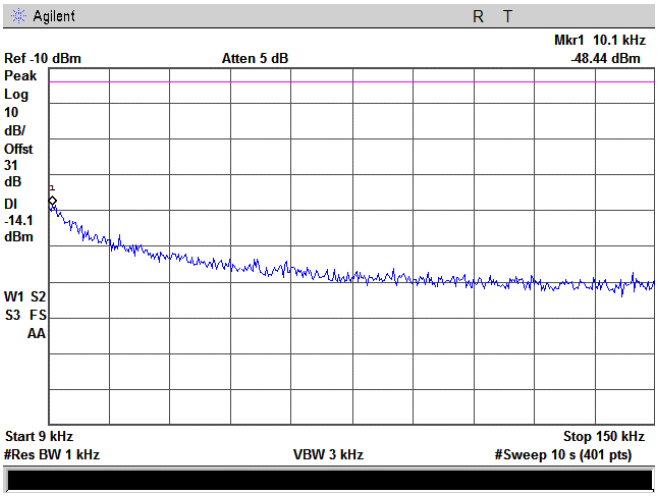
Plot 7.3.30 Spurious emission measurements at band edge at high carrier frequency, individual RF chain (Antenna 2)

Emission Bandwidth, MHz:	20
Modulation:	64QAM
Bit Rate, Mbps:	130

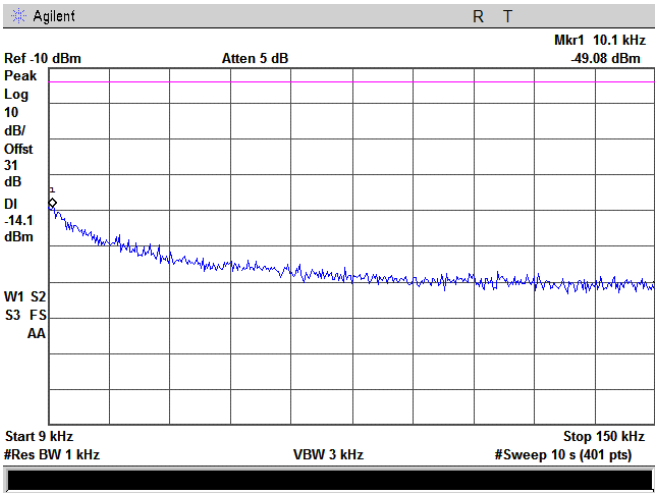


Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

Plot 7.3.31 Spurious emission measurements in 9 - 150 kHz range at low carrier frequency, individual RF chain (Antenna 2)

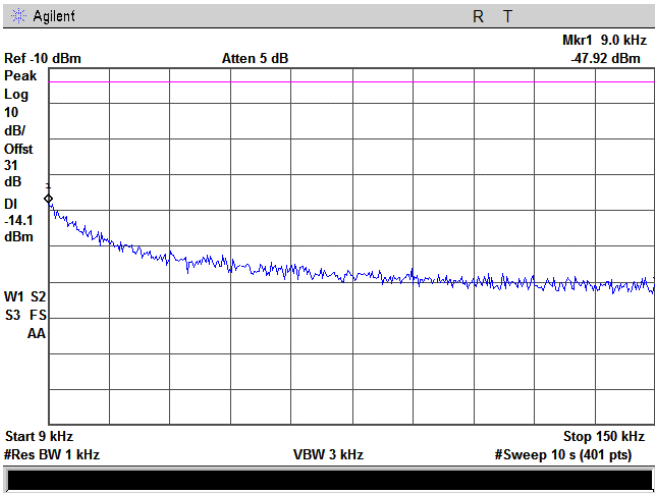


Plot 7.3.32 Spurious emission measurements in 9 - 150 kHz range at mid carrier frequency, individual RF chain (Antenna 2)

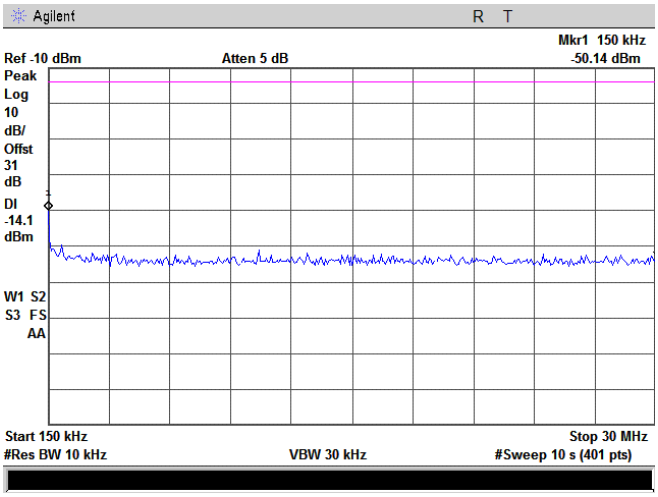


Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

Plot 7.3.33 Spurious emission measurements in 9 - 150 kHz range at high carrier frequency, individual RF chain (Antenna 2)

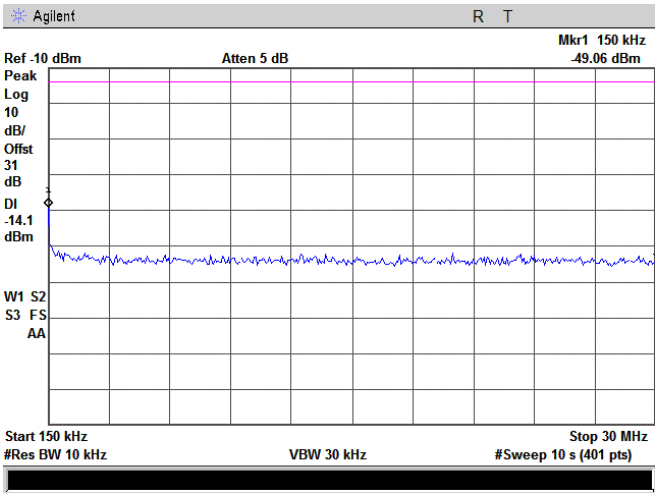


Plot 7.3.34 Spurious emission measurements in 0.15 - 30 MHz range at low carrier frequency, individual RF chain (Antenna 2)

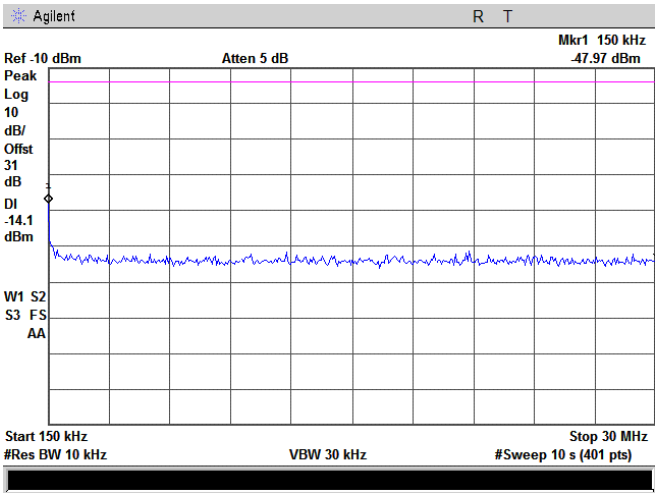


Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

Plot 7.3.35 Spurious emission measurements in 0.15 - 30 MHz range at mid carrier frequency, individual RF chain (Antenna 2)

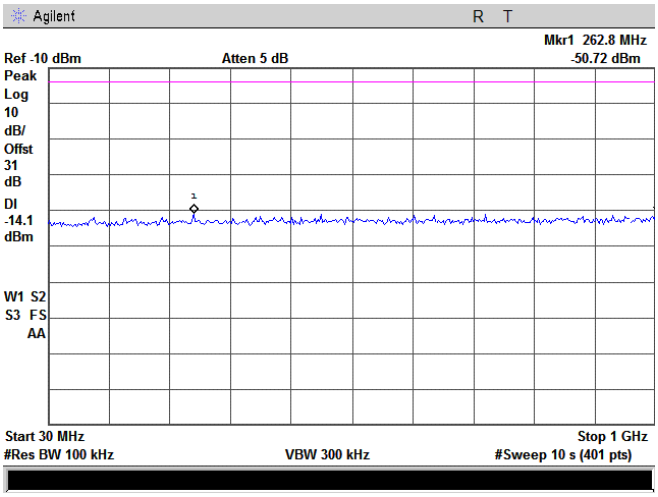


Plot 7.3.36 Spurious emission measurements in 0.15 - 30 MHz range at high carrier frequency, individual RF chain (Antenna 2)

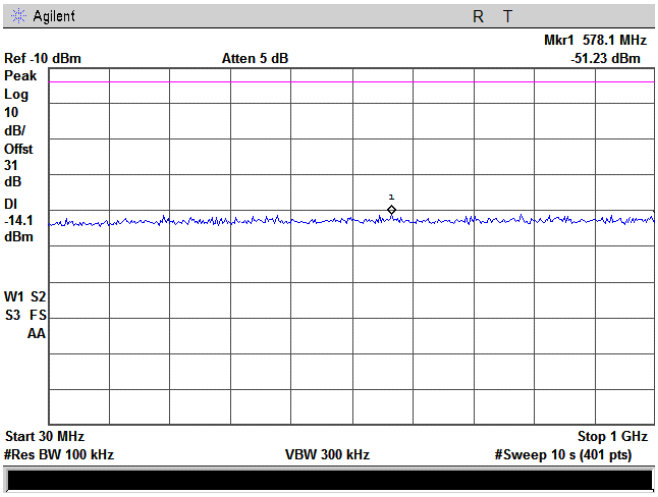


Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

Plot 7.3.37 Spurious emission measurements in 30 - 1000 MHz range at low carrier frequency, individual RF chain (Antenna 2)

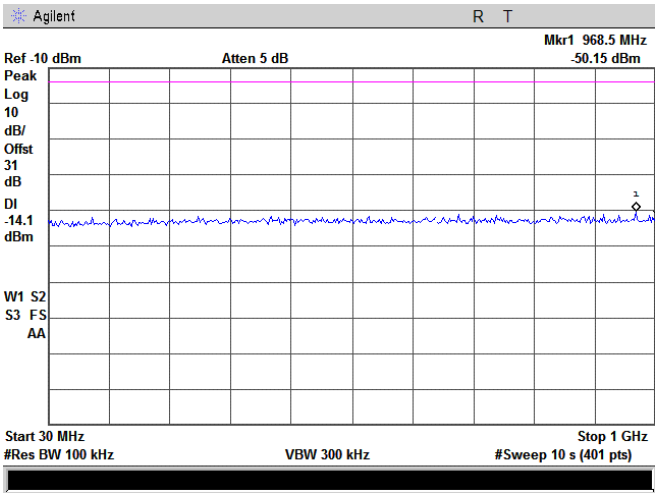


Plot 7.3.38 Spurious emission measurements in 30 - 1000 MHz range at mid carrier frequency, individual RF chain (Antenna 2)

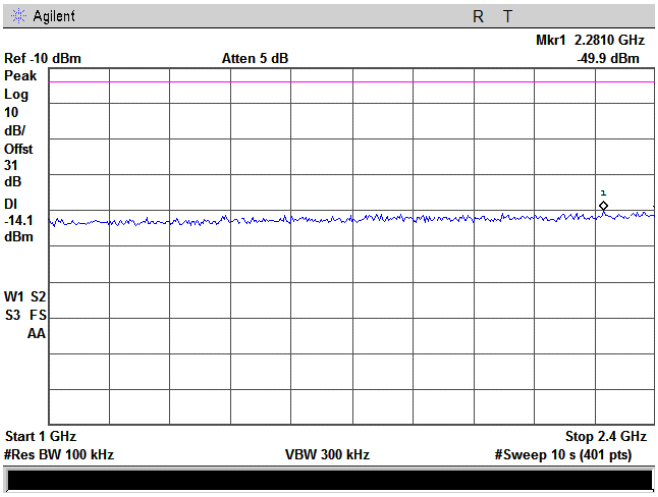


Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

Plot 7.3.39 Spurious emission measurements in 30 - 1000 MHz range at high carrier frequency, individual RF chain (Antenna 2)

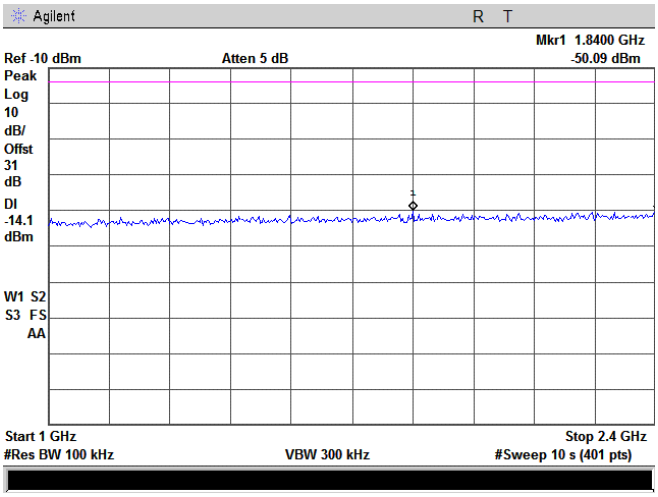


Plot 7.3.40 Spurious emission measurements in 1000 – 2400 MHz range at low carrier frequency, individual RF chain (Antenna 2)

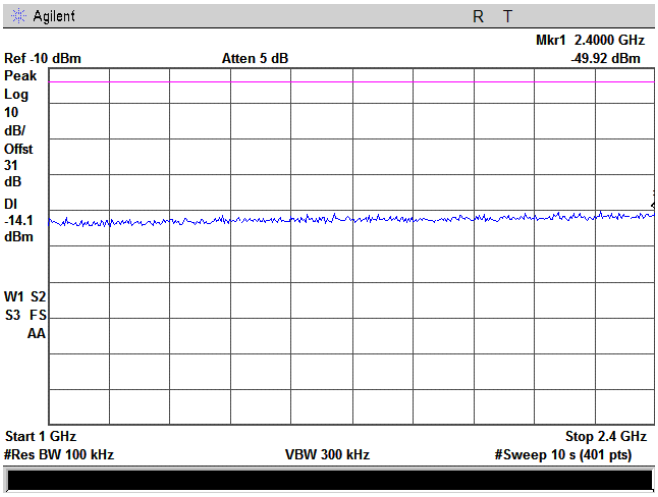


Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

Plot 7.3.41 Spurious emission measurements in 1000 - 2400 MHz range at mid carrier frequency, individual RF chain (Antenna 2)

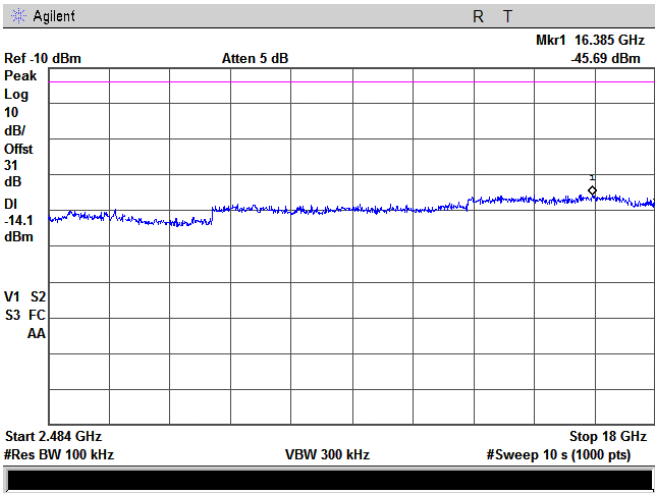


Plot 7.3.42 Spurious emission measurements in 1000 - 2400 MHz range at high carrier frequency, individual RF chain (Antenna 2)

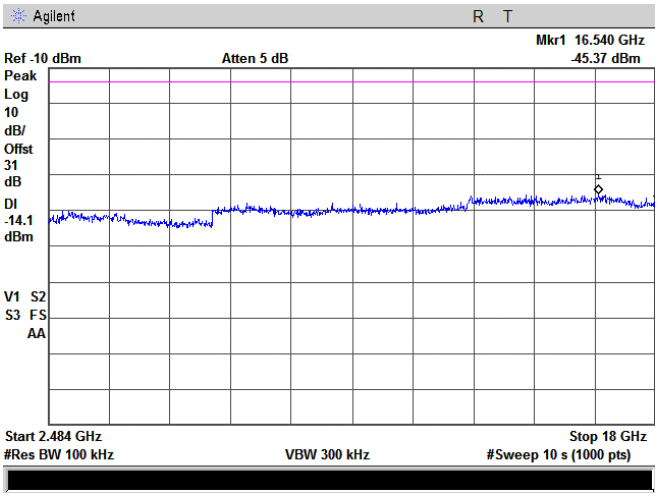


Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

Plot 7.3.43 Spurious emission measurements in 2483.5 - 18000 MHz range at low carrier frequency, individual RF chain (Antenna 2)

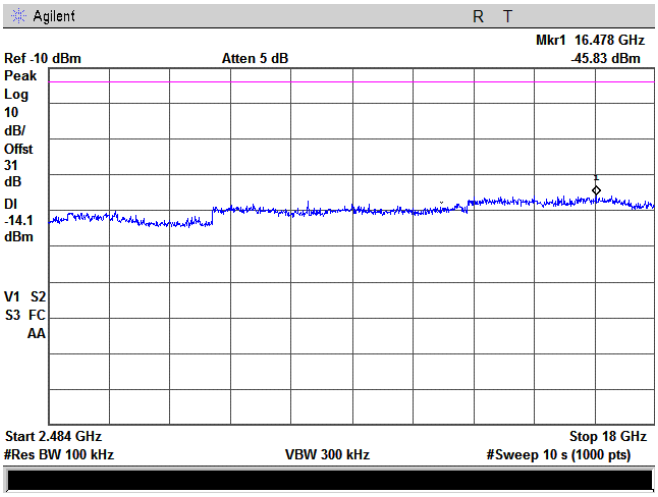


Plot 7.3.44 Spurious emission measurements in 2483.5 - 18000 MHz range at mid carrier frequency, individual RF chain (Antenna 2)

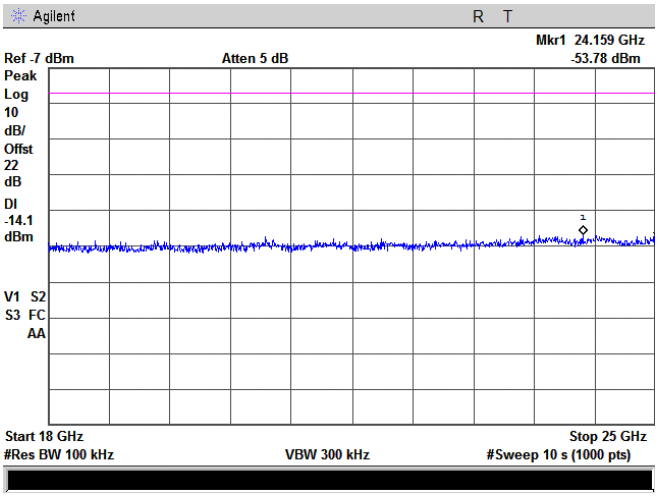


Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

Plot 7.3.45 Spurious emission measurements in 2483.5 - 18000 MHz range at high carrier frequency, individual RF chain (Antenna 2)

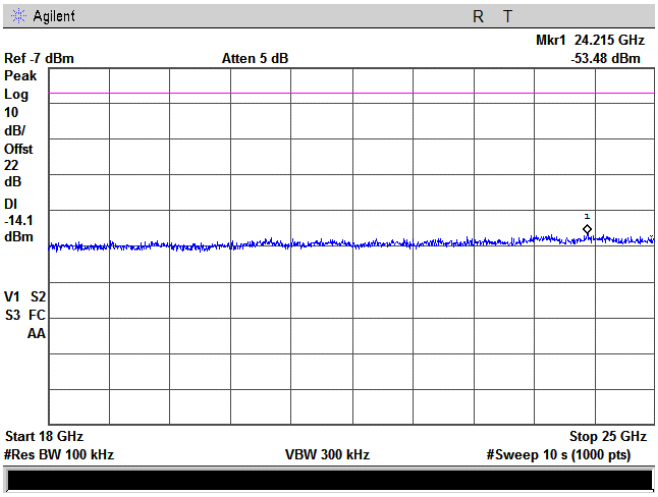


Plot 7.3.46 Spurious emission measurements in 18000 - 25000 MHz range at low carrier frequency, individual RF chain (Antenna 2)

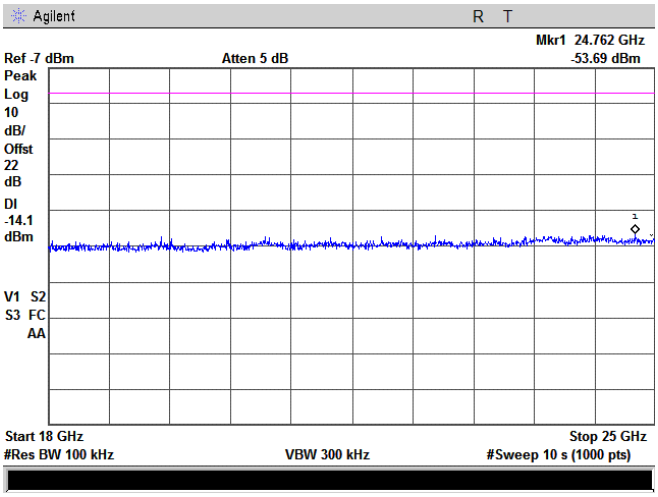


Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

Plot 7.3.47 Spurious emission measurements in 18000 - 25000 MHz range at mid carrier frequency, individual RF chain (Antenna 2)



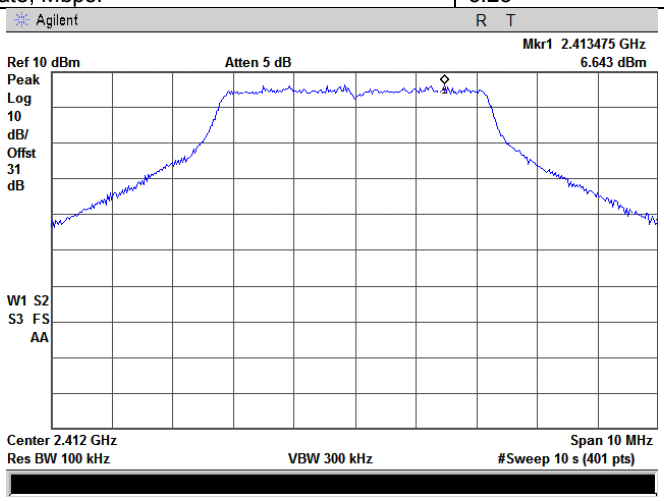
Plot 7.3.48 Spurious emission measurements in 18000 - 25000 MHz range at high carrier frequency, individual RF chain (Antenna 2)



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

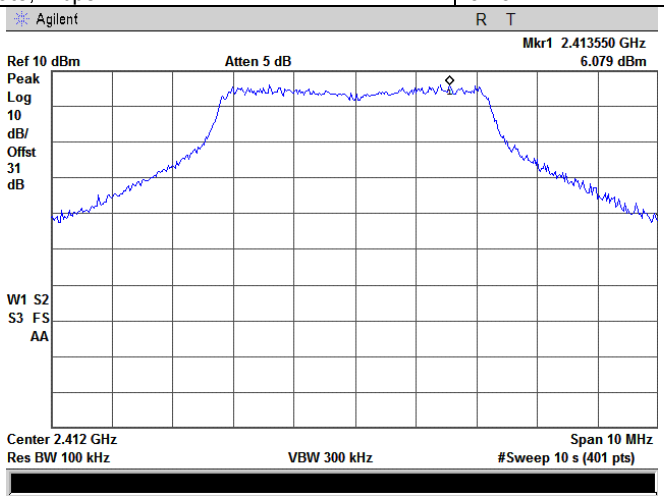
Plot 7.3.49 The highest emission level within the assigned band at low carrier frequency, combined RF outputs

Emission Bandwidth, MHz:	5
Modulation:	BPSK
Bit Rate, Mbps:	3.25



Plot 7.3.50 The highest emission level within the assigned band at low carrier frequency, combined RF outputs

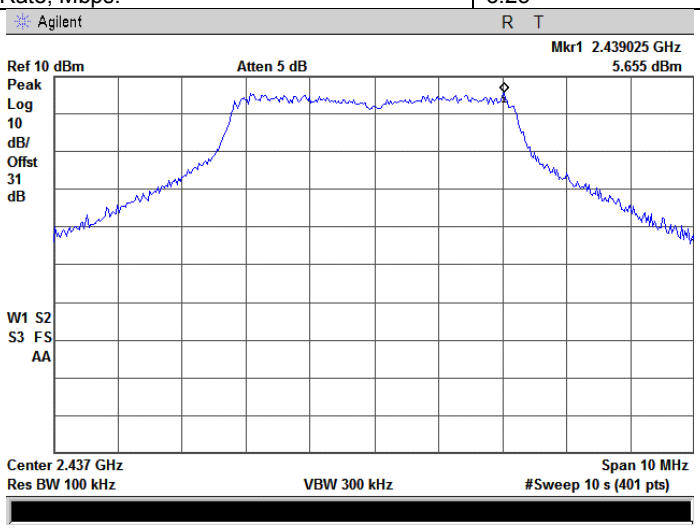
Emission Bandwidth, MHz:	5
Modulation:	64QAM
Bit Rate, Mbps:	32.5



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

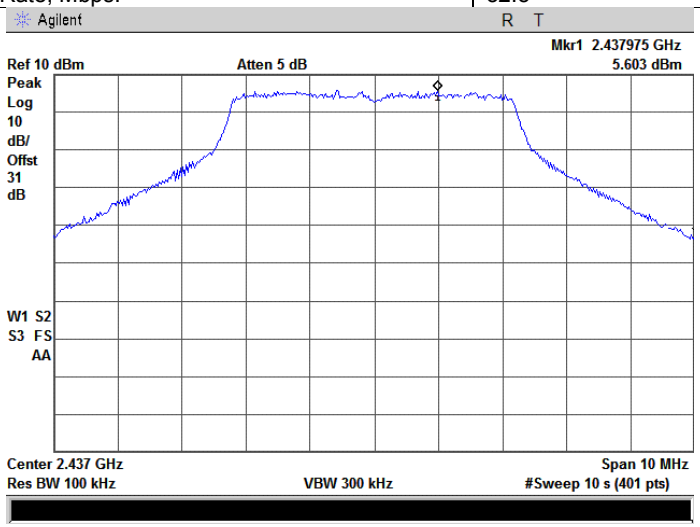
Plot 7.3.51 The highest emission level within the assigned band at mid carrier frequency, combined RF outputs

Emission Bandwidth, MHz:	5
Modulation:	BPSK
Bit Rate, Mbps:	3.25



Plot 7.3.52 The highest emission level within the assigned band at mid carrier frequency, combined RF outputs

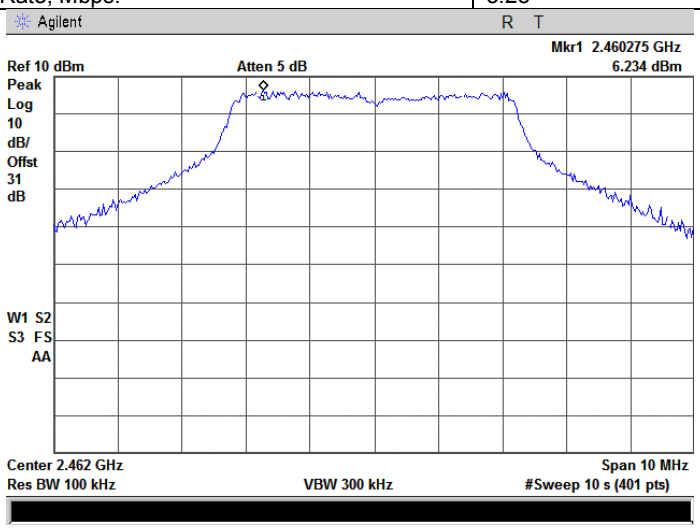
Emission Bandwidth, MHz:	5
Modulation:	64QAM
Bit Rate, Mbps:	32.5



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

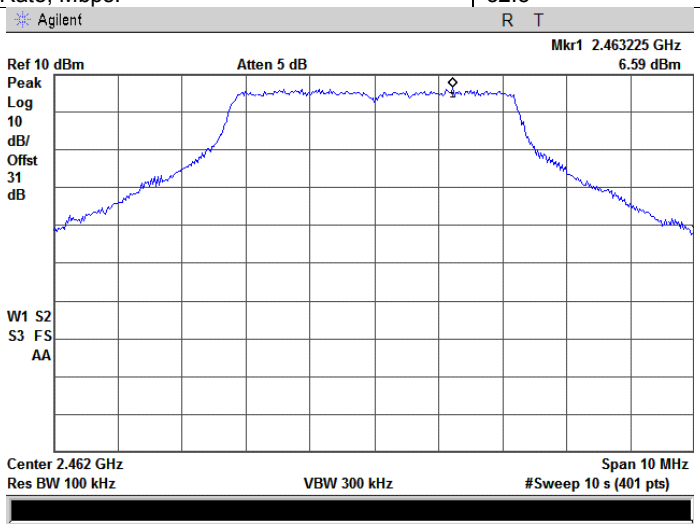
Plot 7.3.53 The highest emission level within the assigned band at high carrier frequency, combined RF outputs

Emission Bandwidth, MHz:	5
Modulation:	BPSK
Bit Rate, Mbps:	3.25



Plot 7.3.54 The highest emission level within the assigned band at high carrier frequency, combined RF outputs

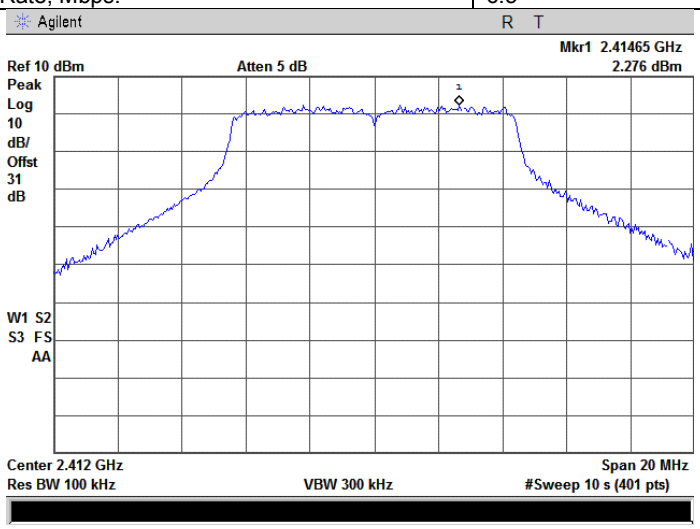
Emission Bandwidth, MHz:	5
Modulation:	64QAM
Bit Rate, Mbps:	32.5



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

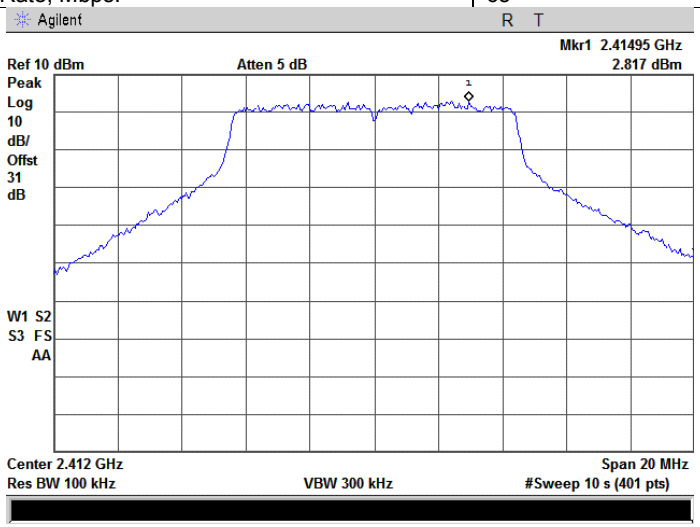
Plot 7.3.55 The highest emission level within the assigned band at low carrier frequency, combined RF outputs

Emission Bandwidth, MHz:	10
Modulation:	BPSK
Bit Rate, Mbps:	6.5



Plot 7.3.56 The highest emission level within the assigned band at low carrier frequency, combined RF outputs

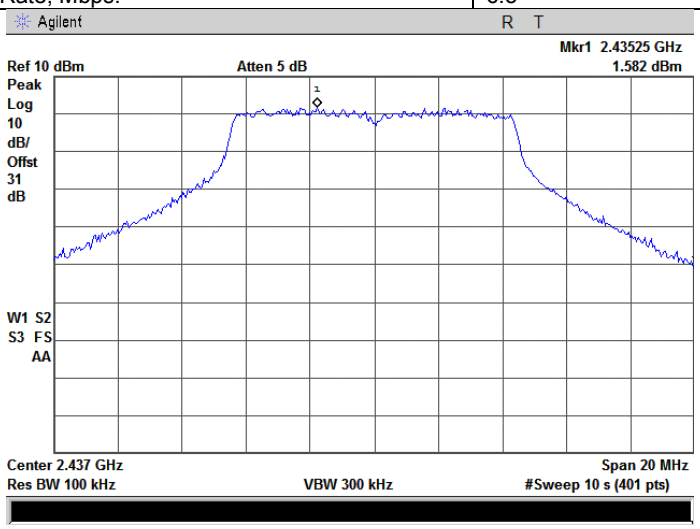
Emission Bandwidth, MHz:	10
Modulation:	64QAM
Bit Rate, Mbps:	65



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

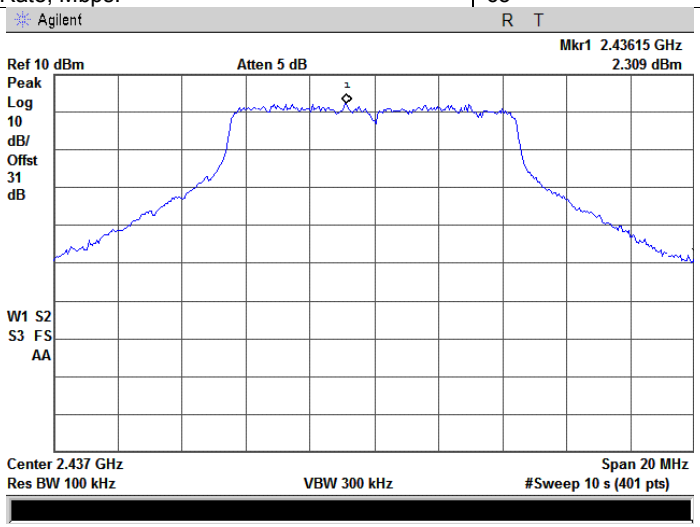
Plot 7.3.57 The highest emission level within the assigned band at mid carrier frequency, combined RF outputs

Emission Bandwidth, MHz:	10
Modulation:	BPSK
Bit Rate, Mbps:	6.5



Plot 7.3.58 The highest emission level within the assigned band at mid carrier frequency, combined RF outputs

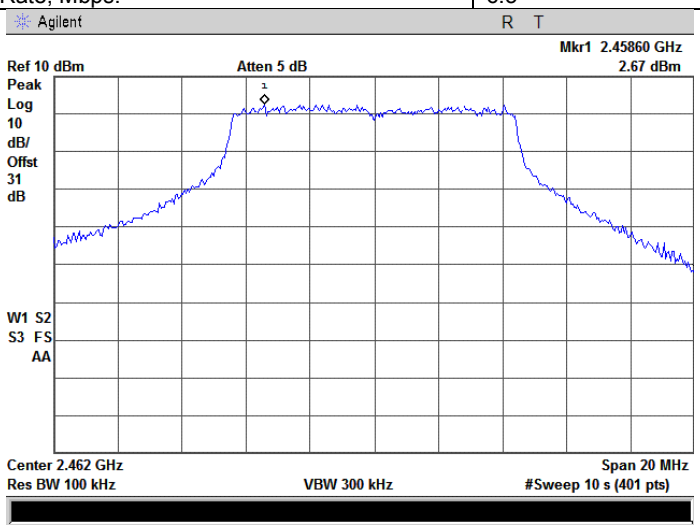
Emission Bandwidth, MHz:	10
Modulation:	64QAM
Bit Rate, Mbps:	65



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

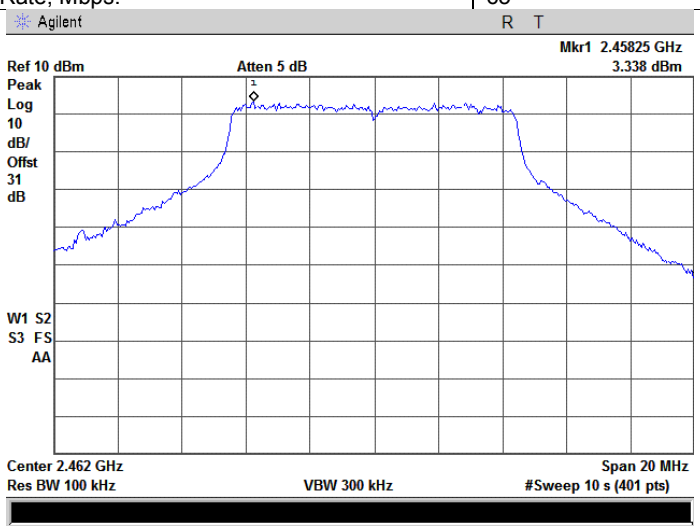
Plot 7.3.59 The highest emission level within the assigned band at high carrier frequency, combined RF outputs

Emission Bandwidth, MHz:	10
Modulation:	BPSK
Bit Rate, Mbps:	6.5



Plot 7.3.60 The highest emission level within the assigned band at high carrier frequency, combined RF outputs

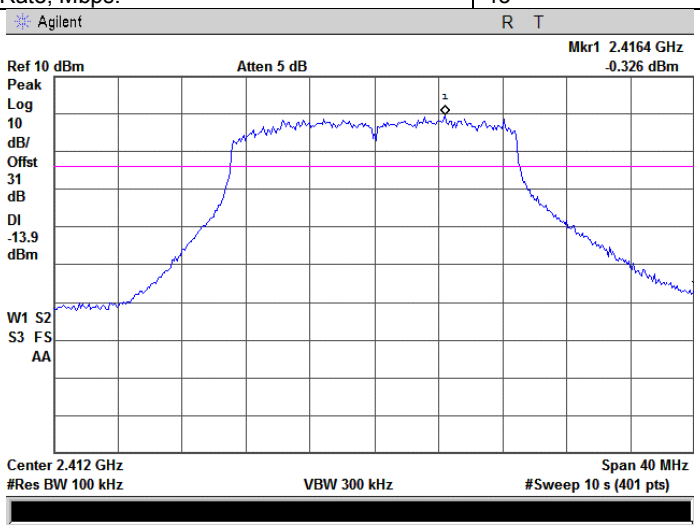
Emission Bandwidth, MHz:	10
Modulation:	64QAM
Bit Rate, Mbps:	65



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

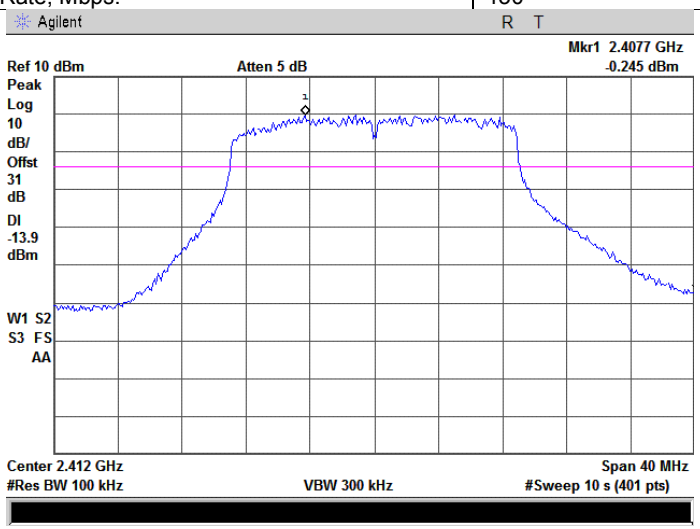
Plot 7.3.61 The highest emission level within the assigned band at low carrier frequency, combined RF outputs

Emission Bandwidth, MHz:	20
Modulation:	BPSK
Bit Rate, Mbps:	13



Plot 7.3.62 The highest emission level within the assigned band at low carrier frequency, combined RF outputs

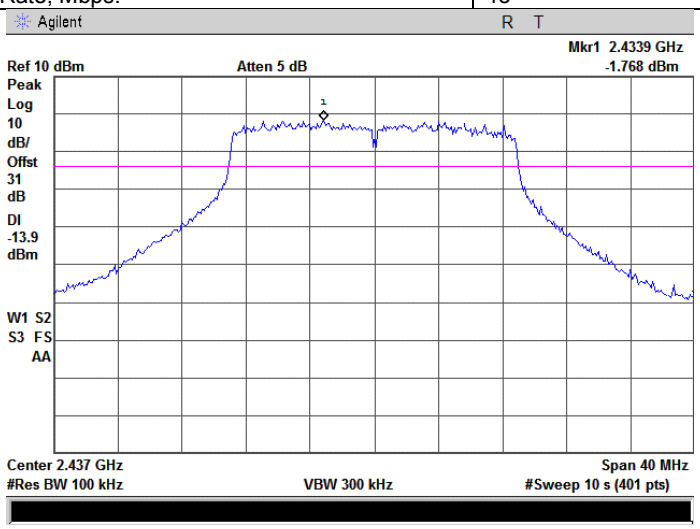
Emission Bandwidth, MHz:	20
Modulation:	64QAM
Bit Rate, Mbps:	130



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

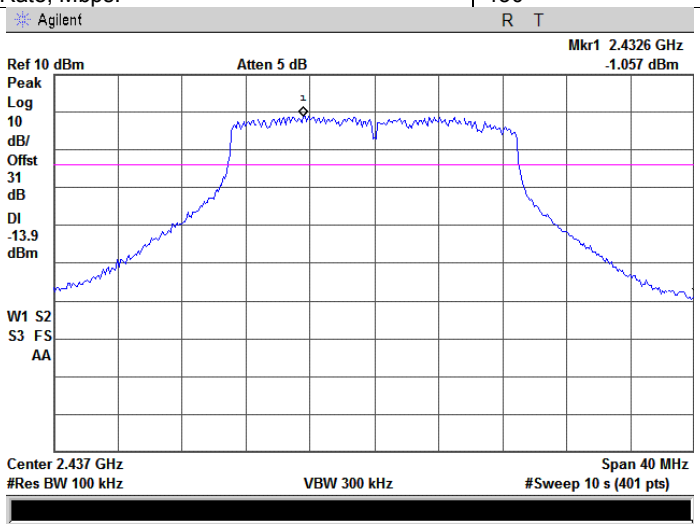
Plot 7.3.63 The highest emission level within the assigned band at mid carrier frequency, combined RF outputs

Emission Bandwidth, MHz:	20
Modulation:	BPSK
Bit Rate, Mbps:	13



Plot 7.3.64 The highest emission level within the assigned band at mid carrier frequency, combined RF outputs

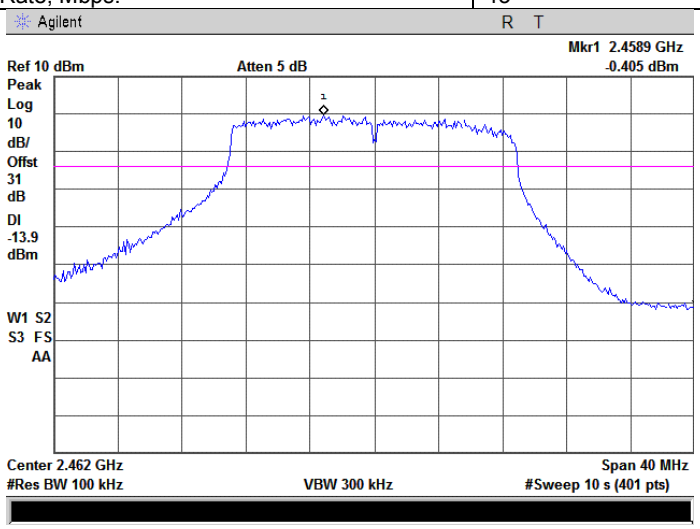
Emission Bandwidth, MHz:	20
Modulation:	64QAM
Bit Rate, Mbps:	130



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

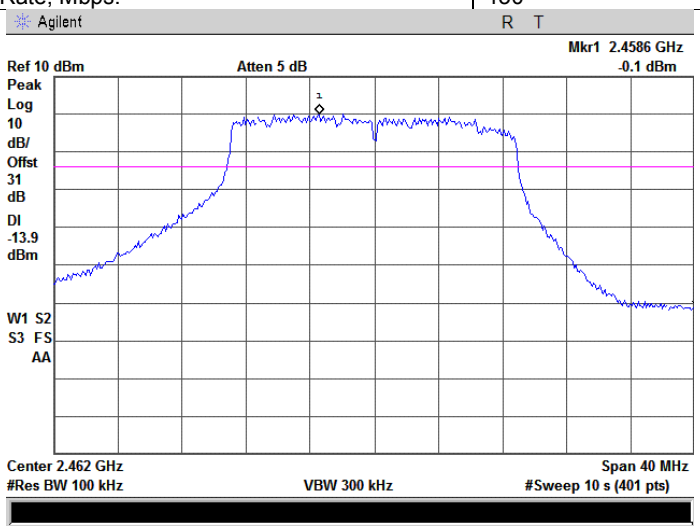
Plot 7.3.65 The highest emission level within the assigned band at high carrier frequency, combined RF outputs

Emission Bandwidth, MHz:	20
Modulation:	BPSK
Bit Rate, Mbps:	13



Plot 7.3.66 The highest emission level within the assigned band at high carrier frequency, combined RF outputs

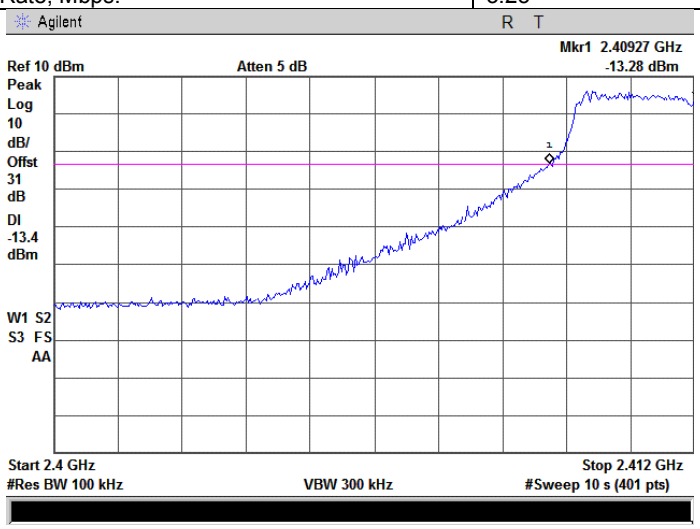
Emission Bandwidth, MHz:	20
Modulation:	64QAM
Bit Rate, Mbps:	130



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

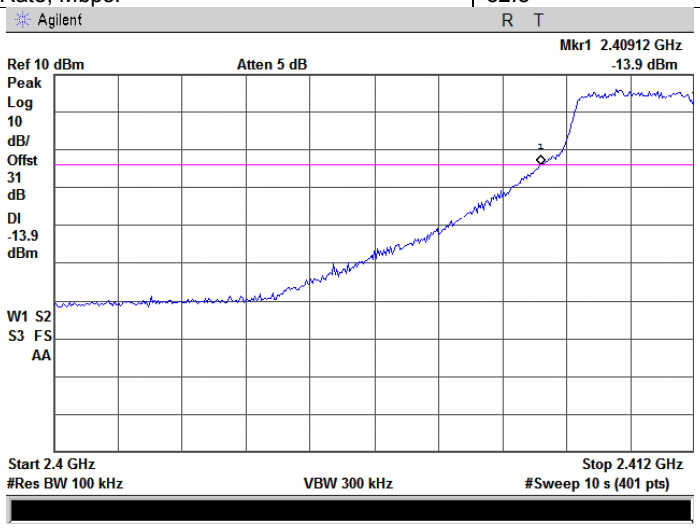
Plot 1.1.7.3.67 Spurious emission measurements at band edge at low carrier frequency, combined RF outputs

Emission Bandwidth, MHz:	5
Modulation:	BPSK
Bit Rate, Mbps:	3.25



Plot 1.1.7.3.68 Spurious emission measurements at band edge at low carrier frequency, combined RF outputs

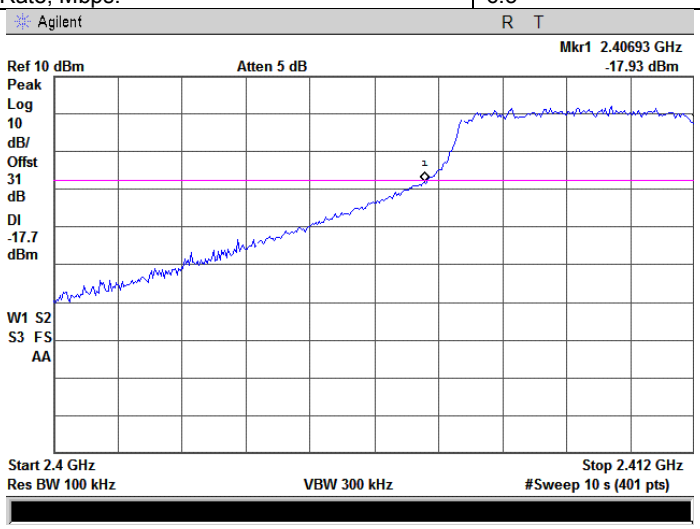
Emission Bandwidth, MHz:	5
Modulation:	64QAM
Bit Rate, Mbps:	32.5



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

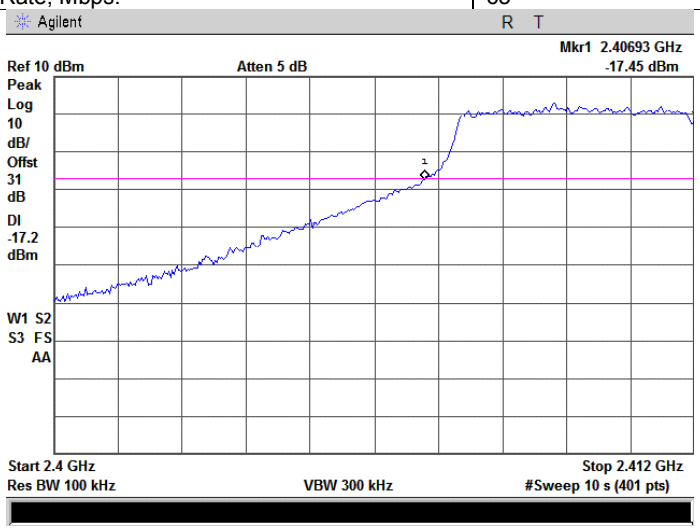
Plot 1.1.7.3.69 Spurious emission measurements at band edge at low carrier frequency, combined RF outputs

Emission Bandwidth, MHz:	10
Modulation:	BPSK
Bit Rate, Mbps:	6.5



Plot 1.1.7.3.70 Spurious emission measurements at band edge at low carrier frequency, combined RF outputs

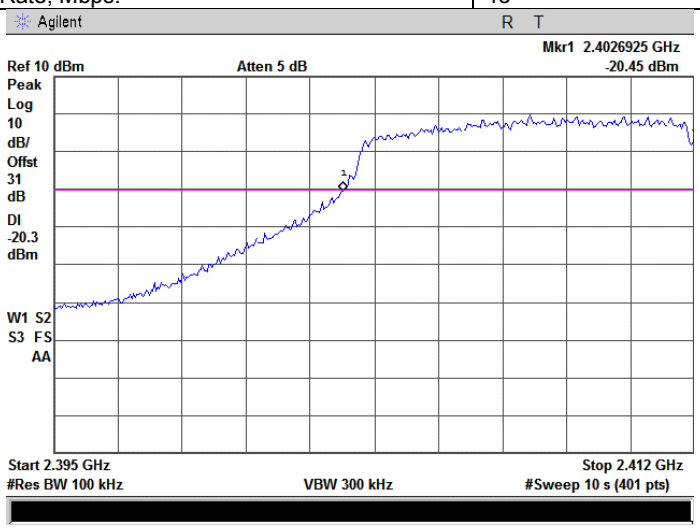
Emission Bandwidth, MHz:	10
Modulation:	64QAM
Bit Rate, Mbps:	65



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

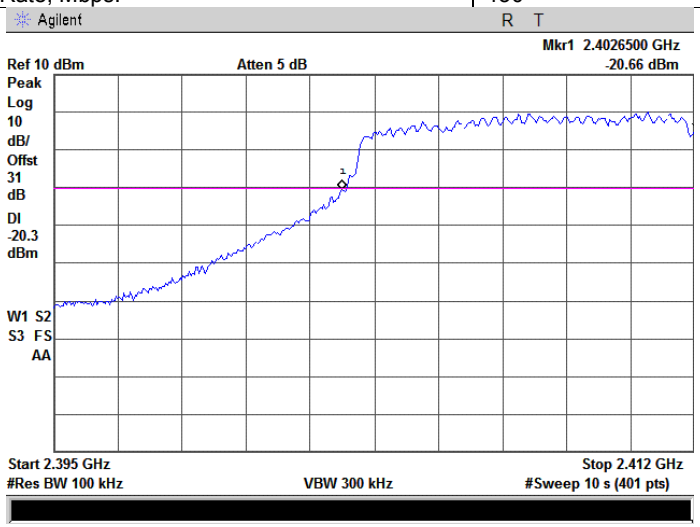
Plot 1.1.7.3.71 Spurious emission measurements at band edge at low carrier frequency, combined RF outputs

Emission Bandwidth, MHz:	20
Modulation:	BPSK
Bit Rate, Mbps:	13



Plot 1.1.7.3.72 Spurious emission measurements at band edge at low carrier frequency, combined RF outputs

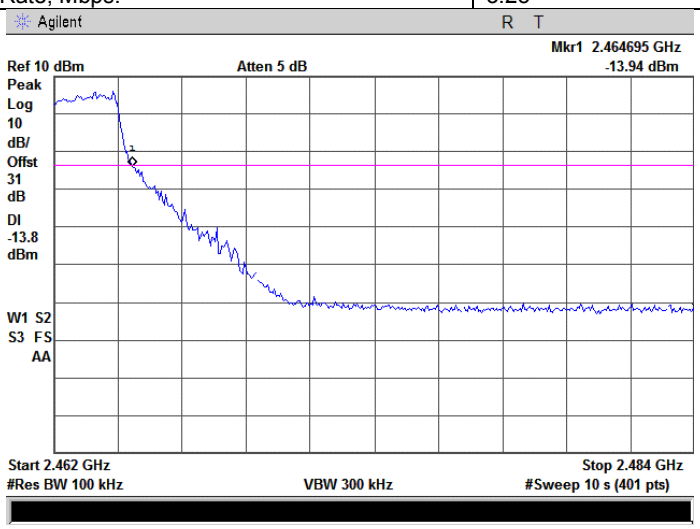
Emission Bandwidth, MHz:	20
Modulation:	64QAM
Bit Rate, Mbps:	130



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

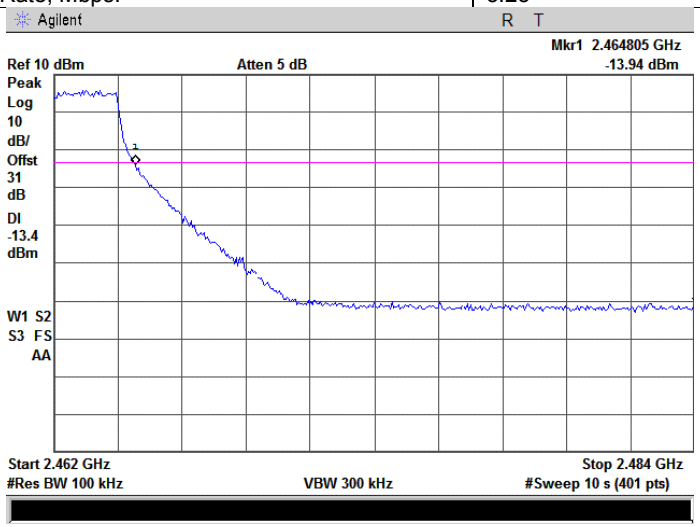
Plot 1.1.7.3.73 Spurious emission measurements at band edge at high carrier frequency, combined RF outputs

Emission Bandwidth, MHz:	5
Modulation:	BPSK
Bit Rate, Mbps:	3.25



Plot 1.1.7.3.74 Spurious emission measurements at band edge at high carrier frequency, combined RF outputs

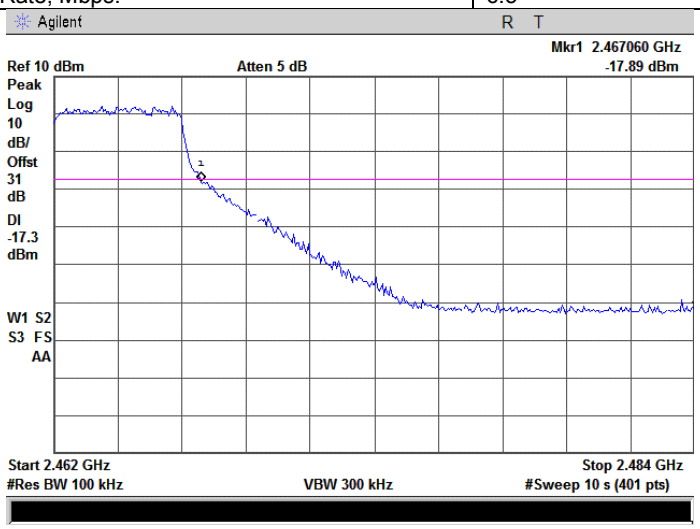
Emission Bandwidth, MHz:	5
Modulation:	64QAM
Bit Rate, Mbps:	3.25



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

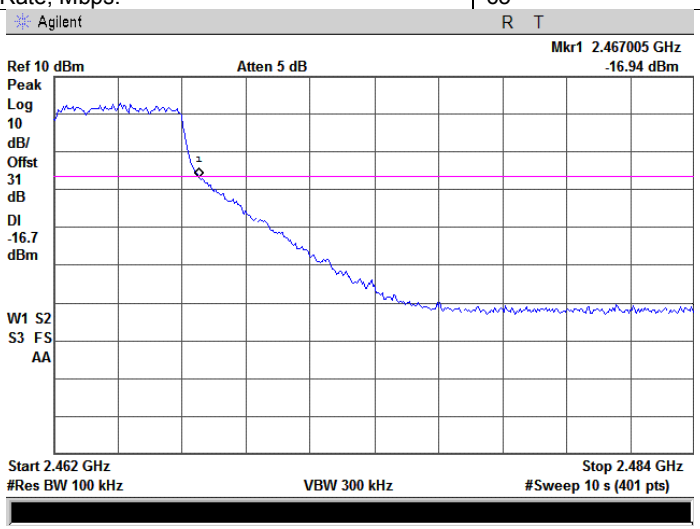
Plot 1.1.7.3.75 Spurious emission measurements at band edge at high carrier frequency, combined RF outputs

Emission Bandwidth, MHz:	10
Modulation:	BPSK
Bit Rate, Mbps:	6.5



Plot 1.1.7.3.76 Spurious emission measurements at band edge at high carrier frequency, combined RF outputs

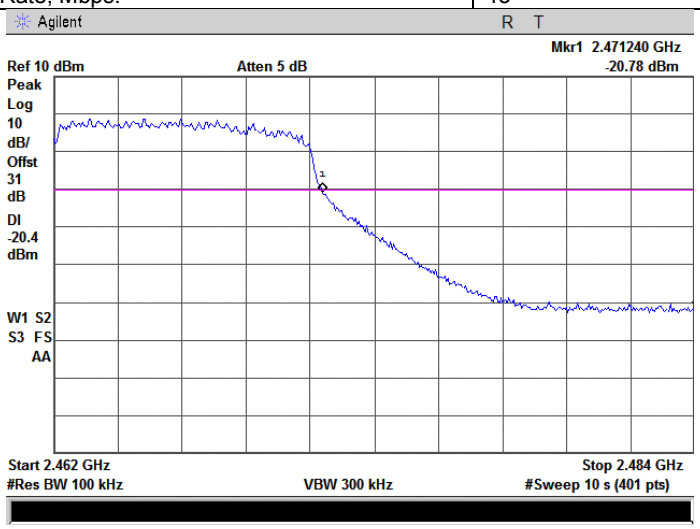
Emission Bandwidth, MHz:	10
Modulation:	64QAM
Bit Rate, Mbps:	65



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

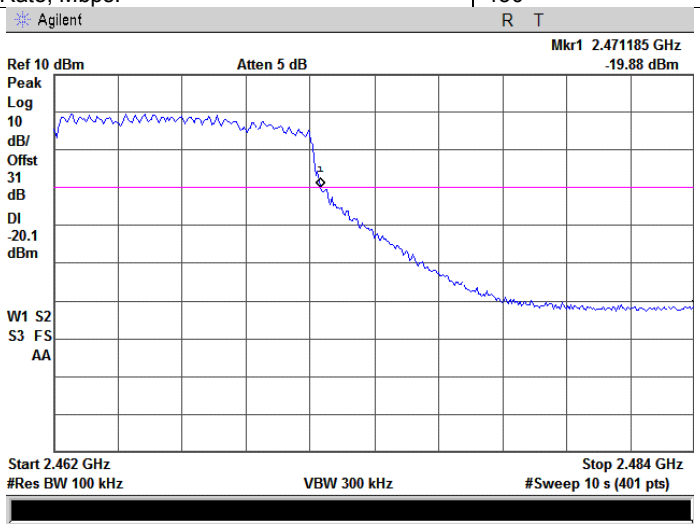
Plot 1.1.7.3.77 Spurious emission measurements at band edge at high carrier frequency, combined RF outputs

Emission Bandwidth, MHz:	20
Modulation:	BPSK
Bit Rate, Mbps:	13



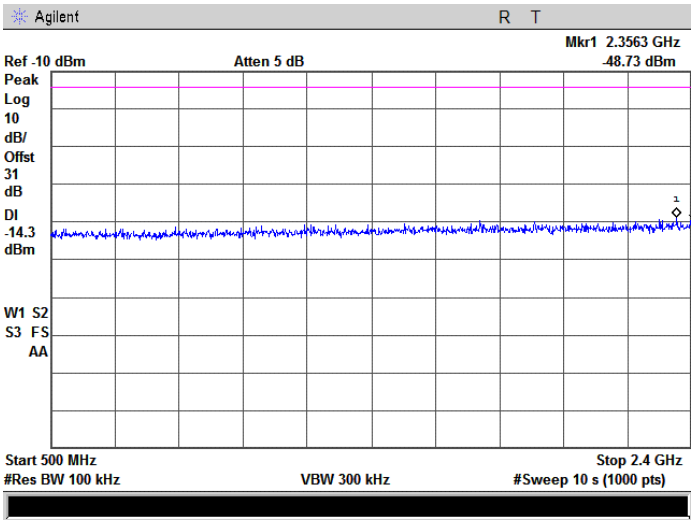
Plot 1.1.7.3.78 Spurious emission measurements at band edge at high carrier frequency, combined RF outputs

Emission Bandwidth, MHz:	20
Modulation:	64QAM
Bit Rate, Mbps:	130

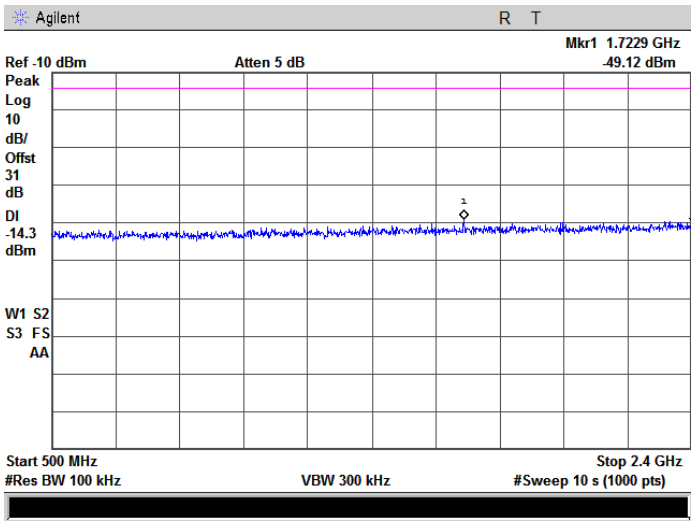


Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

Plot 7.3.79 Spurious emission measurements in 500 – 2400 MHz range at low carrier frequency, combined RF outputs

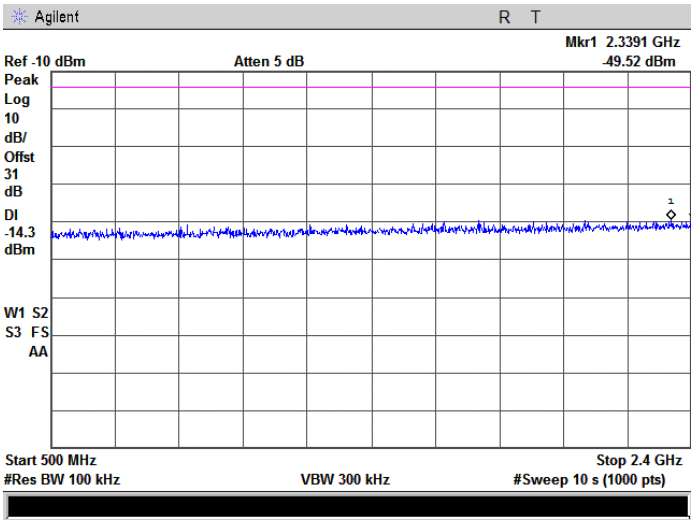


Plot 7.3.80 Spurious emission measurements in 500 - 2400 MHz range at mid carrier frequency, combined RF outputs

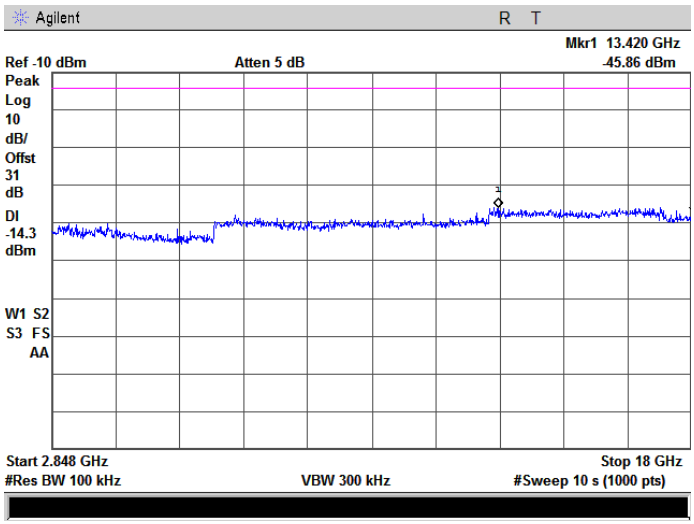


Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

Plot 7.3.81 Spurious emission measurements in 500 - 2400 MHz range at high carrier frequency, combined RF outputs

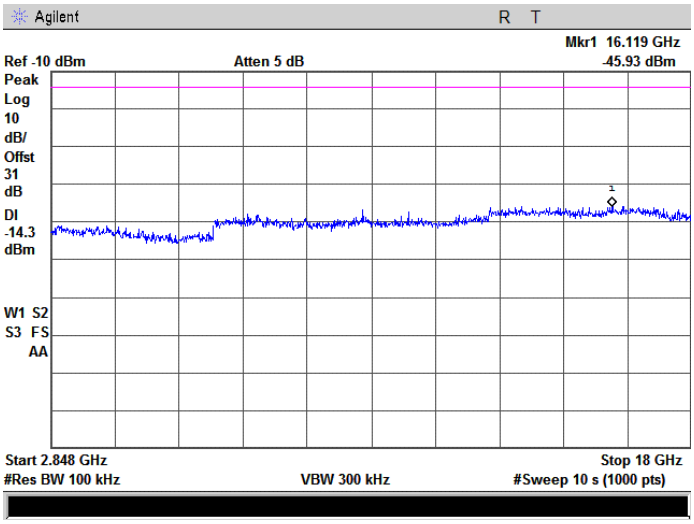


Plot 7.3.82 Spurious emission measurements in 2483.5 - 18000 MHz range at low carrier frequency, combined RF outputs

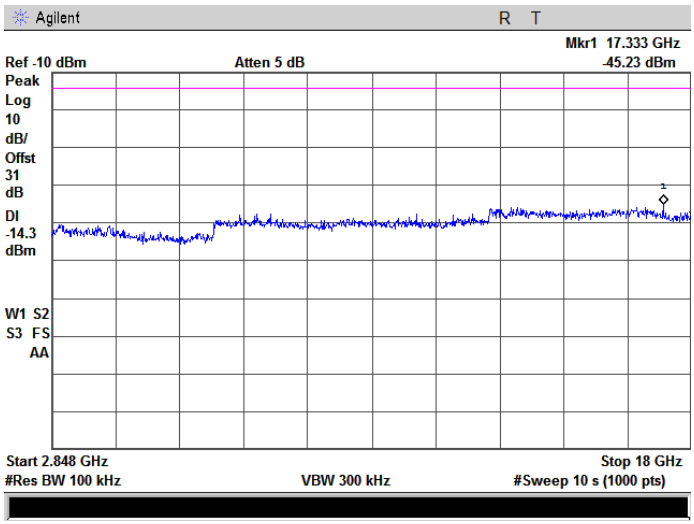


Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 1:41:42 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

Plot 7.3.83 Spurious emission measurements in 2483.5 - 18000 MHz range at mid carrier frequency, combined RF outputs



Plot 7.3.84 Spurious emission measurements in 2483.5 - 18000 MHz range at high carrier frequency, combined RF outputs



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

7.4 Field strength of spurious emissions

7.4.1 General

This test was performed to measure field strength of spurious emissions from the EUT. Specification test limits) are given in Table 7.4.1.

Table 7.4.1 Radiated spurious emissions limits

Frequency, MHz	Field strength at 3 m within restricted bands, dB(µV/m)*			Attenuation of field strength of spurious versus carrier outside restricted bands, dBc***
	Peak	Quasi Peak	Average	
0.009 – 0.090	148.5 – 128.5	NA	128.5 – 108.5**	20.0
0.090 – 0.110	NA	108.5 – 106.8**	NA	
0.110 – 0.490	126.8 – 113.8	NA	106.8 – 93.8**	
0.490 – 1.705	NA	73.8 – 63.0**	NA	
1.705 – 30.0*		69.5		
30 – 88		40.0		
88 – 216		43.5		
216 – 960		46.0		
960 - 1000		54.0		
1000 – 10th harmonic	74.0	NA	54.0	

*- The limit for 3 m test distance was calculated using the inverse square distance extrapolation factor as follows:

$$Lim_{S2} = Lim_{S1} + 40 \log (S_1/S_2),$$

where S_1 and S_2 – standard defined and test distance respectively in meters.

**- The limit decreases linearly with the logarithm of frequency.

*** - The field strength limits applied from the lowest radio frequency generated in the device, without going below 9 kHz up to the tenth harmonic of the highest fundamental frequency.

7.4.2 Test procedure for spurious emission field strength measurements in 9 kHz to 30 MHz band

7.4.2.1 The EUT was set up as shown in Figure 7.4.1, energized and the performance check was conducted.

7.4.2.2 The specified frequency range was investigated with antenna connected to spectrum analyzer/ EMI receiver. To find maximum radiation the turntable was rotated 360^0 and the measuring antenna was rotated around its vertical axis.

7.4.2.3 The worst test results (the lowest margins) were recorded and shown in the associated plots.

7.4.3 Test procedure for spurious emission field strength measurements above 30 MHz

7.4.3.1 The EUT was set up as shown in Figure 7.4.2, energized and the performance check was conducted.

7.4.3.2 The specified frequency range was investigated with antenna connected to spectrum analyzer/ EMI receiver. To find maximum radiation the turntable was rotated 360^0, the measuring antenna height was changed from 1 to 4 m, its polarization was switched from vertical to horizontal.

7.4.3.3 The worst test results (the lowest margins) were recorded and shown in the associated plots.

7.4.3.4 The spurious radiated emissions within restricted bands was checked for all emission bandwidths and lowest and highest bit rates.

Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

Figure 7.4.1 Setup for spurious emission field strength measurements below 30 MHz

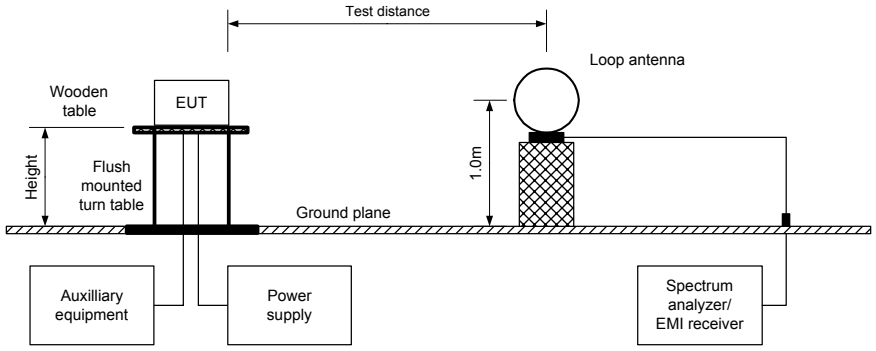
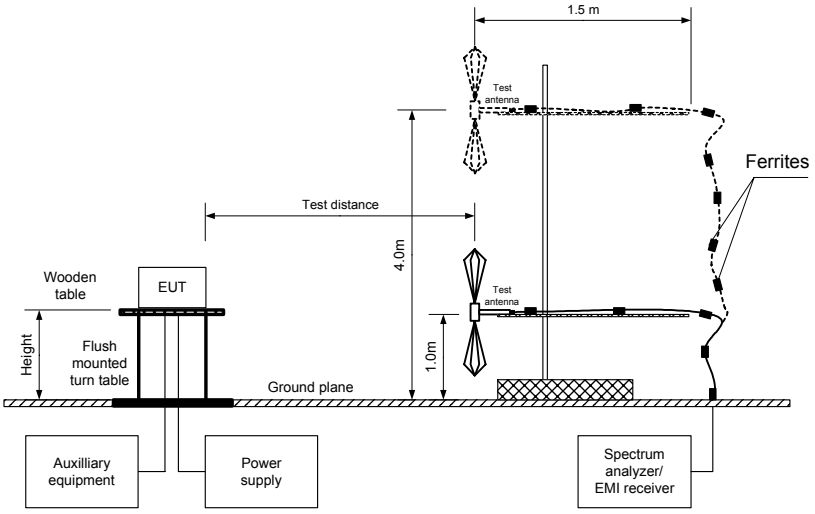


Figure 7.4.2 Setup for spurious emission field strength measurements above 30 MHz



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

Table 7.4.2 Field strength of spurious emissions above 1 GHz within restricted bands

ASSIGNED FREQUENCY: 2400 – 2483.5 MHz
INVESTIGATED FREQUENCY RANGE: 1000 - 25000MHz
TEST DISTANCE: 3 m
MODULATION: 64QAM (low channel) / BPSK (mid and high channels) ****
BIT RATE: 32.5 Mbps(low channel) / 32.5 Mbps (mid and high channels)****
DUTY CYCLE: 100 %
TRANSMITTER OUTPUT POWER SETTINGS: Maximum
TRANSMITTER OUTPUT POWER: According to Peak output power test result
DETECTOR USED: Peak
RESOLUTION BANDWIDTH: 1000 kHz
TEST ANTENNA TYPE: Double ridged guide

Frequency, MHz	Antenna		Azimuth, degrees*	Peak field strength(VBW=3 MHz)			Average field strength(VBW=10 Hz)				Verdict
	Polarization	Height, m		Measured, dB(µV/m)	Limit, dB(µV/m)	Margin, dB**	Measured, dB(µV/m)	Calculated, dB(µV/m)	Limit, dB(µV/m)	Margin, dB***	
Low carrier frequency											
1200.0	Vertical	1.8	45	50.25	74.00	-23.75	46.25	46.25	54.00	-7.75	Pass
1158.7	Vertical	1.0	90	48.20	74.00	-25.80	40.66	40.66	54.00	-13.34	
4824.0	Vertical	1.0	0	61.02	74.00	-12.98	44.15	44.15	54.00	-9.85	
7236.2	Horizontal	1.0	0	52.41	74.00	-21.59	39.54	39.54	54.00	-14.46	
Mid carrier frequency											
1200.0	Vertical	1.8	45	50.25	74.00	-23.75	46.25	46.25	54.00	-7.75	Pass
1158.7	Vertical	1.0	90	48.20	74.00	-25.80	40.66	40.66	54.00	-13.34	
4874.03	Vertical	1.0	0	59.01	74.00	-14.99	42.22	42.22	54.00	-11.78	
7310.85	Horizontal	1.2	0	54.36	74.00	-19.64	41.54	41.54	54.00	-12.46	
High carrier frequency											
1200.0	Vertical	1.8	45	50.25	74.00	-23.75	46.25	46.25	54.00	-7.75	Pass
1158.7	Vertical	1.0	90	48.20	74.00	-25.80	40.66	40.66	54.00	-13.34	
4923.95	Vertical	1.0	0	52.42	74.00	-21.58	39.38	39.38	54.00	-14.62	
7386.75	Horizontal	1.2	0	55.89	74.00	-18.11	43.73	43.73	54.00	-10.27	

*****- EUT front panel refers to 0 degrees position of turntable.
******- Margin = Measured field strength - specification limit.
***- Margin = Calculated field strength - specification limit,
Where Calculated field strength = Measured field strength + average factor.
****- As worst case in power spectral density test.

Table 7.4.3 Average factor calculation

Transmission pulse		Transmission burst		Transmission train duration, ms	Average factor, dB
Duration, ms	Period, ms	Duration, ms	Period, ms		
-	-	-	-	-	0

*- Average factor was calculated as follows

for pulse train shorter than 100 ms: $$Average\ factor = 20 \times \log_{10}\left(\frac{Pulse\ duration}{Pulse\ period} \times \frac{Burst\ duration}{Train\ duration} \times Number\ of\ bursts\ within\ pulse\ train\right)$$

for pulse train longer than 100 ms: $$Average\ factor = 20 \times \log_{10}\left(\frac{Pulse\ duration}{Pulse\ period} \times \frac{Burst\ duration}{100\,ms} \times Number\ of\ bursts\ within\ 100\,ms\right)$$

EUT was configured for 100% Duty Cycle transmission – no Average Factor was used.

Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

Table 7.4.4 Field strength of spurious emissions below 1 GHz within restricted bands

ASSIGNED FREQUENCY: 2400 – 2483.5 MHz
INVESTIGATED FREQUENCY RANGE: 0.009 – 1000 MHz
TEST DISTANCE: 3 m
MODULATION: 64QAM (low channel) / BPSK (mid and high channels) ***
BIT RATE: 32.5 Mbps(low channel) / 32.5 Mbps (mid and high channels)***
DUTY CYCLE: 100 %
TRANSMITTER OUTPUT POWER SETTINGS: Maximum
TRANSMITTER OUTPUT POWER: According to Peak output power test result
RESOLUTION BANDWIDTH: 1 kHz (9 kHz – 150 kHz)
9.0 kHz (150 kHz – 30 MHz)
120 kHz (30 MHz – 1000 MHz)
VIDEO BANDWIDTH: > Resolution bandwidth
TEST ANTENNA TYPE: Active loop (9 kHz – 30 MHz)
Biconilog (30 MHz – 1000 MHz)

Frequency, MHz	Peak emission, dB(µV/m)	Quasi-peak			Antenna polarization	Antenna height, m	Turn-table position**, degrees	Verdict
		Measured emission, dB(µV/m)	Limit, dB(µV/m)	Margin, dB*				
Low carrier frequency								
37.55	30.9	27.7	40.0	-12.2	Vertical	1.0	90	Pass
970.9	43.9	41.9	54.0	-12.1	Vertical	1.0	90	
961.5	44.2	43.0	54.0	-11.0	Vertical	1.0	90	
974.6	47.2	45.8	54.0	-8.2	Vertical	1.0	90	
Mid carrier frequency								
37.54	32.2	28.7	40.0	-11.3	Vertical	1.0	90	Pass
961.5	44.4	43.0	54.0	-11.0	Vertical	1.0	90	
970.9	44.2	42.4	54.0	-11.6	Vertical	1.0	90	
974.6	47.0	45.6	54.0	-8.4	Vertical	1.0	90	
High carrier frequency								
37.55	32.0	28.7	40.0	-11.3	Vertical	1.0	90	Pass
961.5	45.2	44.0	54.0	-10.0	Vertical	1.0	90	
970.9	43.8	42.0	54.0	-12.0	Vertical	1.0	90	
974.6	47.2	46.0	54.0	-8.0	Vertical	1.0	90	

*****- Margin = Measured emission - specification limit.
******- EUT front panel refer to 0 degrees position of turntable.
***- As the worst case in power spectral density test.

Reference numbers of test equipment used

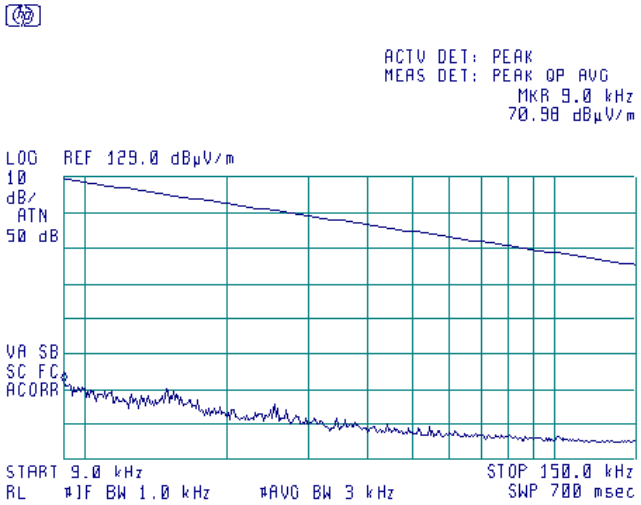
HL 0446	HL 0521	HL 0604	HL 0768	HL 1424	HL 1984	HL 2254	HL 2387
HL 2909	HL 3121	HL 3122	HL 3344	HL 3356	HL 3532	HL 3533	HL 3535
HL 3616							

Full description is given in Appendix A.

Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

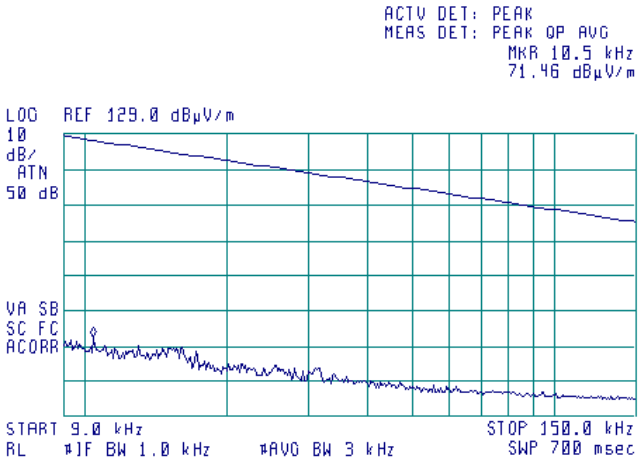
Plot 7.4.1 Radiated emission measurements from 9 to 150 kHz at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical



Plot 7.4.2 Radiated emission measurements from 9 to 150 kHz at the mid carrier frequency

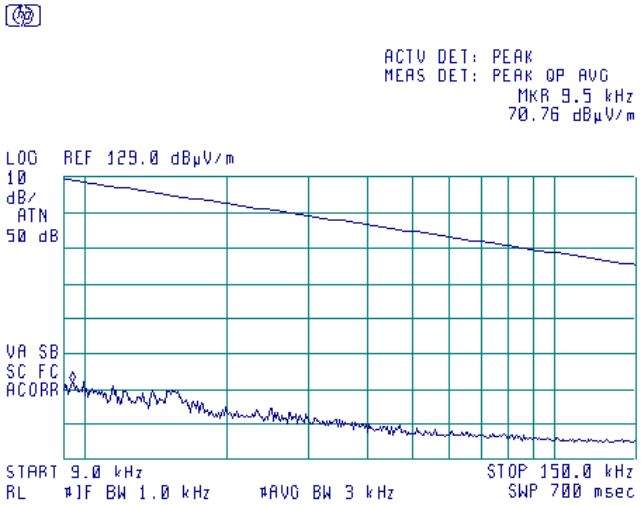
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

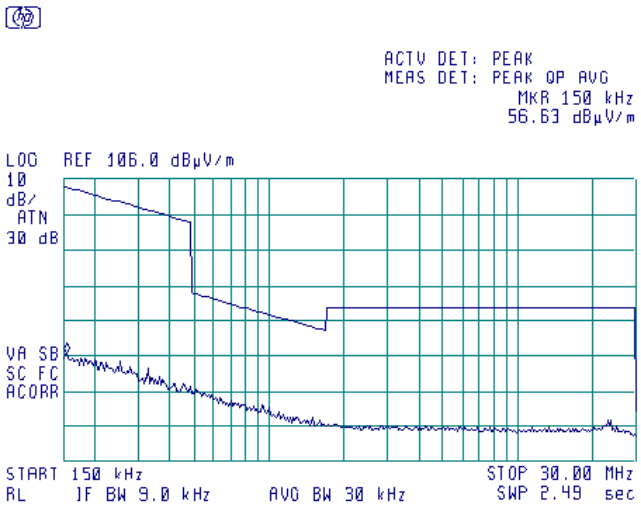
Plot 7.4.3 Radiated emission measurements from 9 to 150 kHz at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical



Plot 7.4.4 Radiated emission measurements from 0.15 to 30 MHz at the low carrier frequency

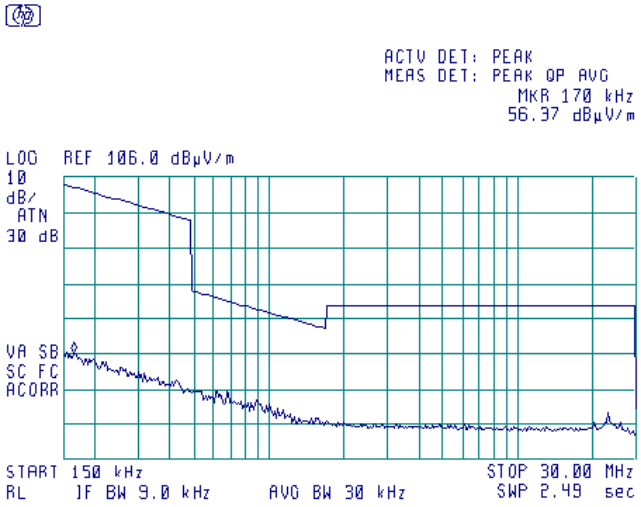
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

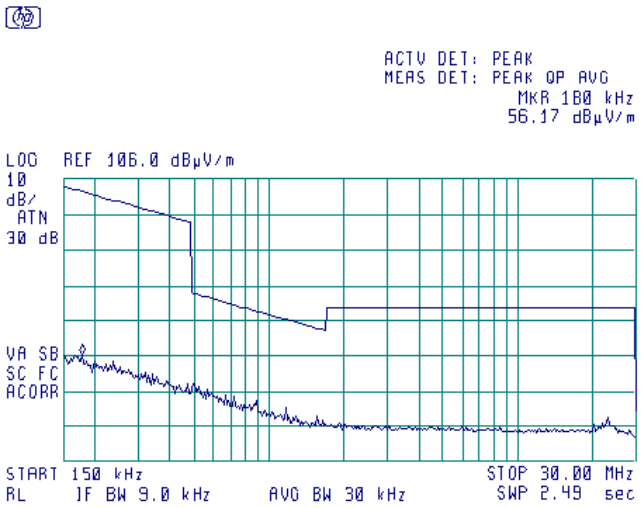
Plot 7.4.5 Radiated emission measurements from 0.15 to 30 MHz at the mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical



Plot 7.4.6 Radiated emission measurements from 0.15 to 30 MHz at the high carrier frequency

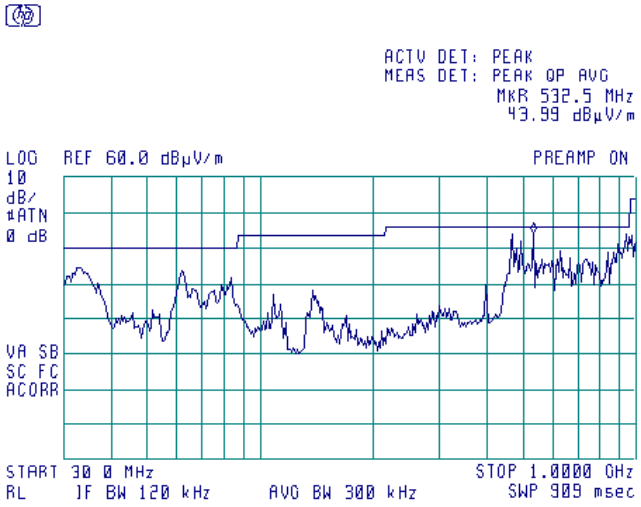
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

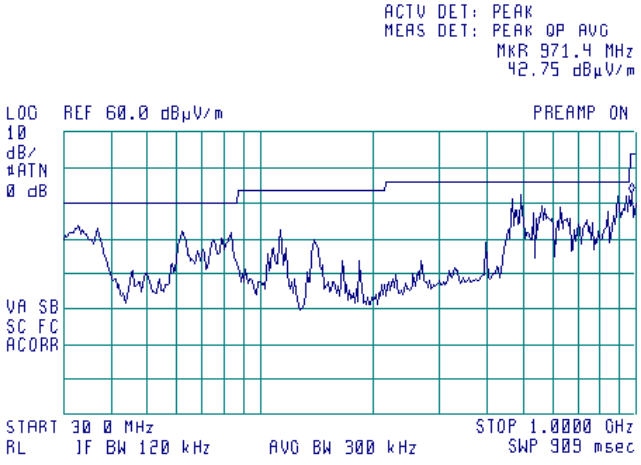
Plot 7.4.7 Radiated emission measurements from 30 to 1000 MHz at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



Plot 7.4.8 Radiated emission measurements from 30 to 1000 MHz at the mid carrier frequency

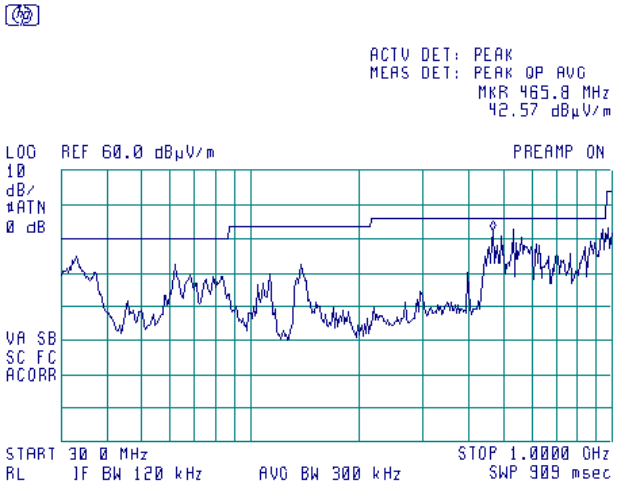
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

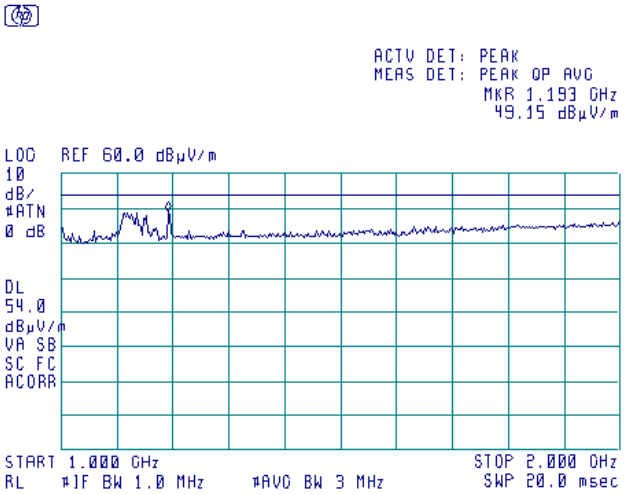
Plot 7.4.9 Radiated emission measurements from 30 to 1000 MHz at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



Plot 7.4.10 Radiated emission measurements from 1000 to 2000 MHz at the low carrier frequency

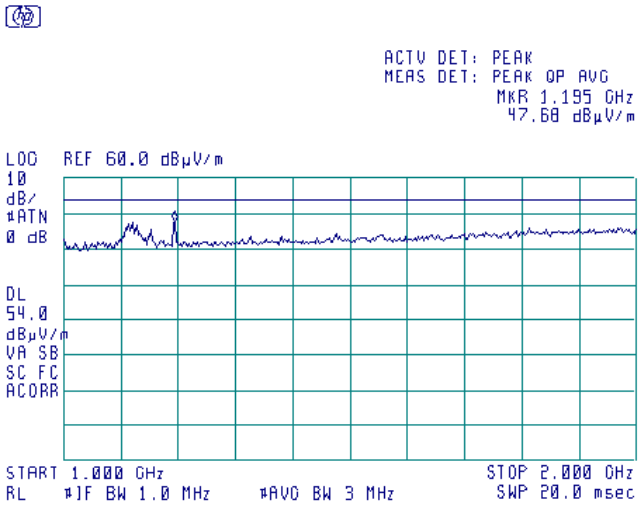
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR MODE Peak



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

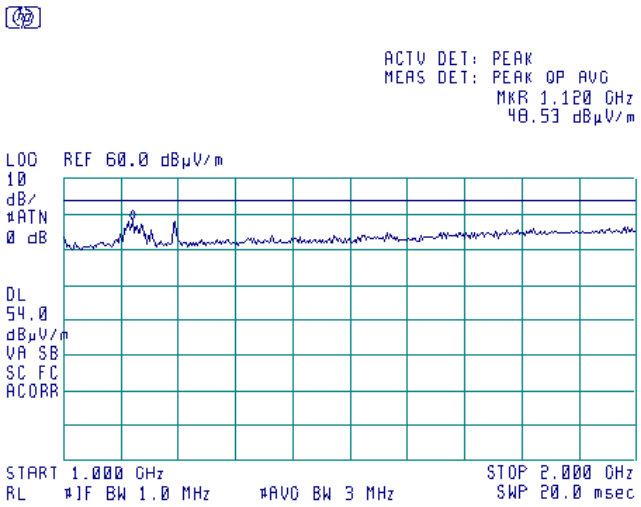
Plot 7.4.11 Radiated emission measurements from 1000 to 2000 MHz at the mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR MODE Peak



Plot 7.4.12 Radiated emission measurements from 1000 to 2000 MHz at the high carrier frequency

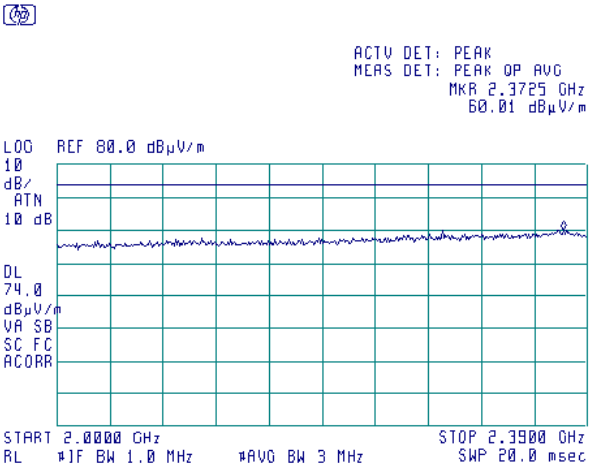
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR MODE Peak



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

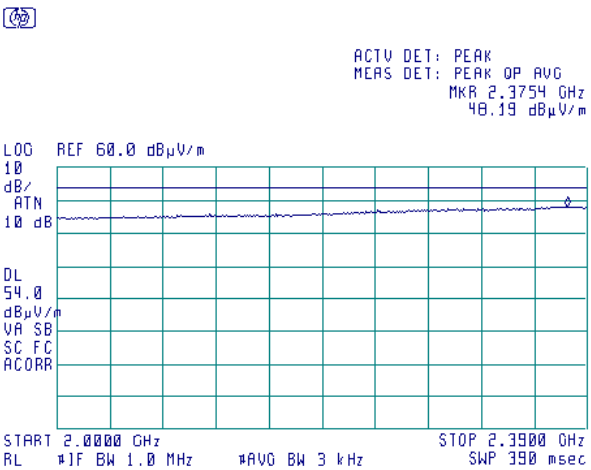
Plot 7.4.13 Radiated emission measurements from 2000 to 2390 MHz at the low carrier frequency

TEST SITE:	Semi anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal
EMISSION BANDWIDTH:	5 MHz
MODULATION:	BPSK
DETECTOR MODE	Peak



Plot 7.4.14 Radiated emission measurements from 2000 to 2390 MHz at the low carrier frequency

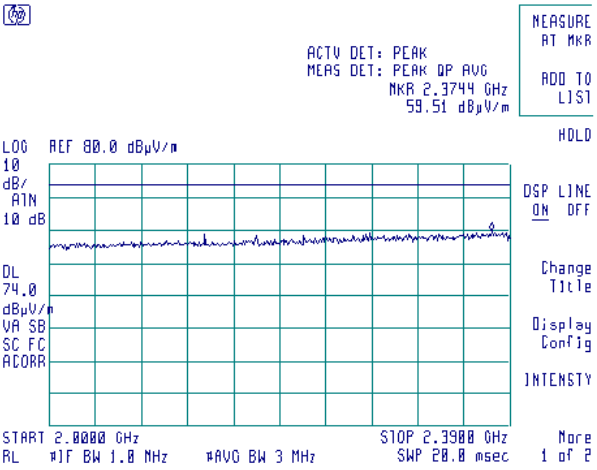
TEST SITE:	Semi anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal
EMISSION BANDWIDTH:	5 MHz
MODULATION:	BPSK
DETECTOR MODE	Average



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

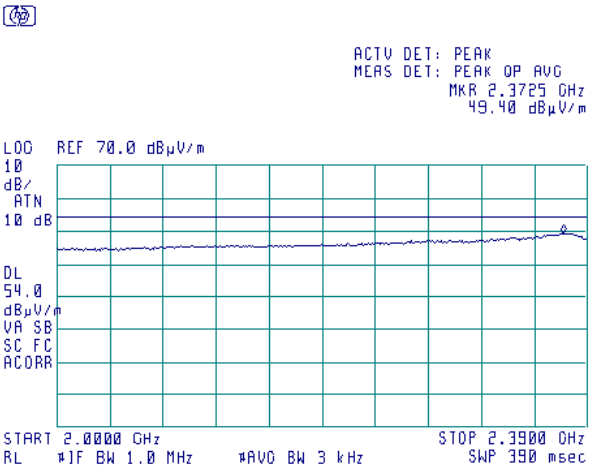
Plot 7.4.15 Radiated emission measurements from 2000 to 2390 MHz at the low carrier frequency

TEST SITE:	Semi anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal
EMISSION BANDWIDTH:	5 MHz
MODULATION:	64QAM
DETECTOR MODE	Peak



Plot 7.4.16 Radiated emission measurements from 2000 to 2390 MHz at the low carrier frequency

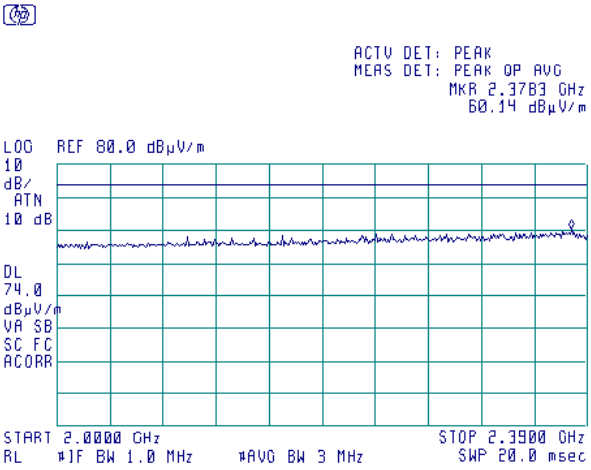
TEST SITE:	Semi anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal
EMISSION BANDWIDTH:	5 MHz
MODULATION:	64QAM
DETECTOR MODE	Average



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

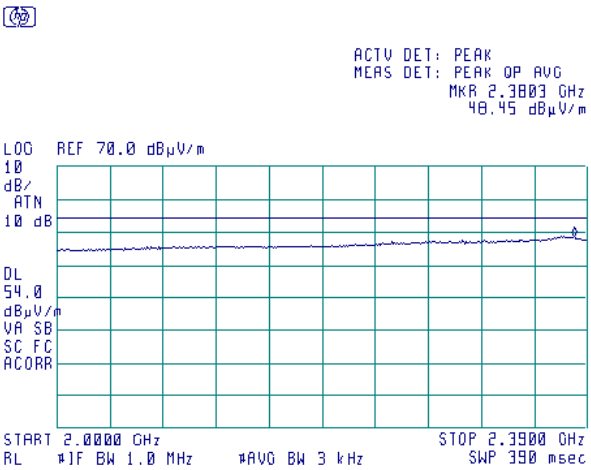
Plot 7.4.17 Radiated emission measurements from 2000 to 2390 MHz at the low carrier frequency

TEST SITE:	Semi anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal
EMISSION BANDWIDTH:	10 MHz
MODULATION:	BPSK
DETECTOR MODE	Peak



Plot 7.4.18 Radiated emission measurements from 2000 to 2390 MHz at the low carrier frequency

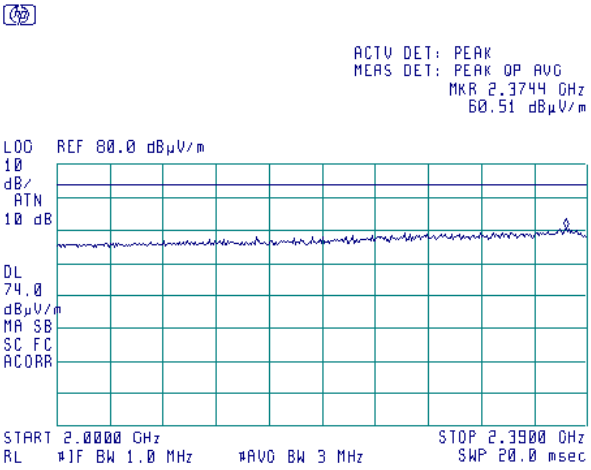
TEST SITE:	Semi anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal
EMISSION BANDWIDTH:	10 MHz
MODULATION:	BPSK
DETECTOR MODE	Average



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

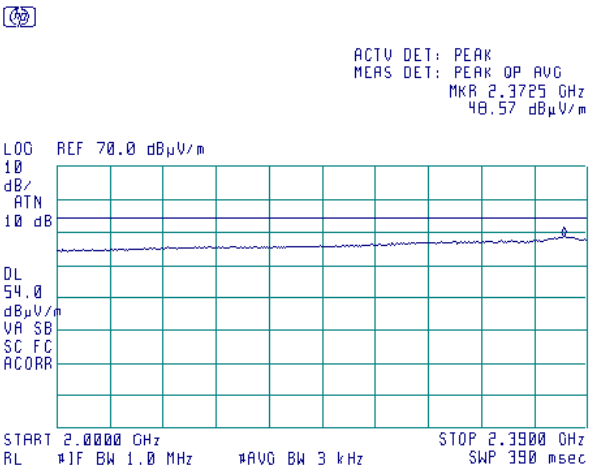
Plot 7.4.19 Radiated emission measurements from 2000 to 2390 MHz at the low carrier frequency

TEST SITE:	Semi anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal
EMISSION BANDWIDTH:	10 MHz
MODULATION:	64QAM
DETECTOR MODE	Peak



Plot 7.4.20 Radiated emission measurements from 2000 to 2390 MHz at the low carrier frequency

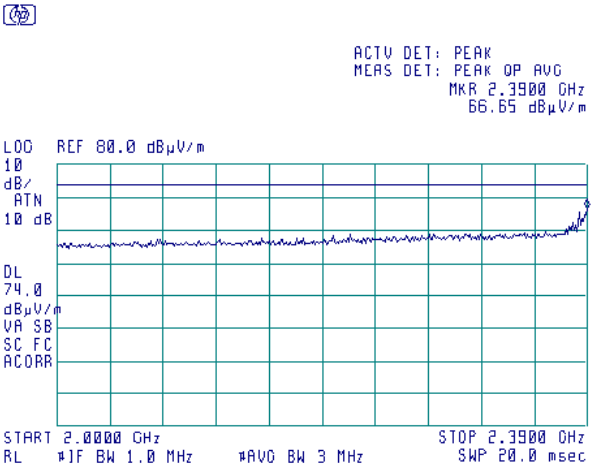
TEST SITE:	Semi anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal
EMISSION BANDWIDTH:	10 MHz
MODULATION:	64QAM
DETECTOR MODE	Average



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

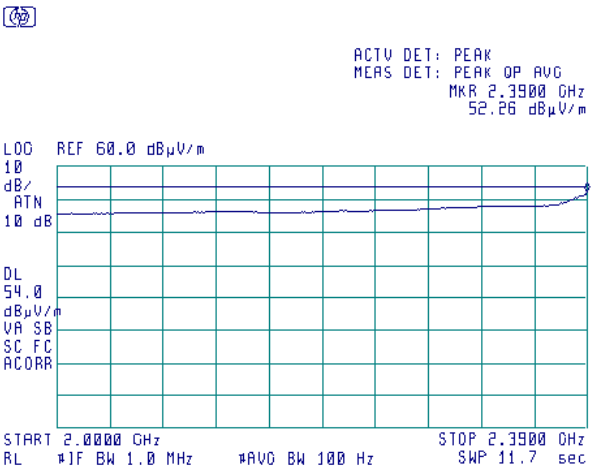
Plot 7.4.21 Radiated emission measurements from 2000 to 2390 MHz at the low carrier frequency

TEST SITE:	Semi anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal
EMISSION BANDWIDTH:	10 MHz
MODULATION:	BPSK
DETECTOR MODE	Peak



Plot 7.4.22 Radiated emission measurements from 2000 to 2390 MHz at the low carrier frequency

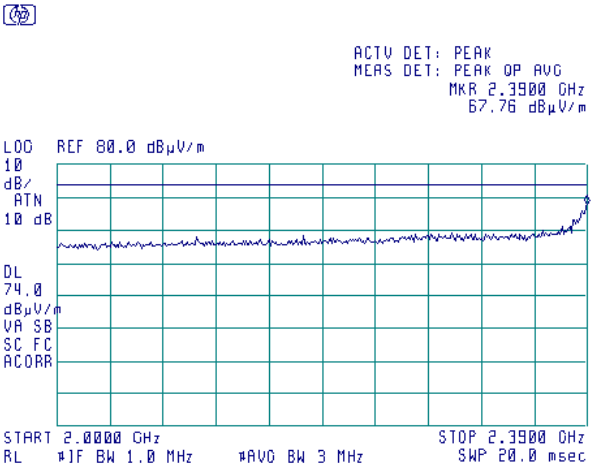
TEST SITE:	Semi anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal
EMISSION BANDWIDTH:	10 MHz
MODULATION:	BPSK
DETECTOR MODE	Average



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

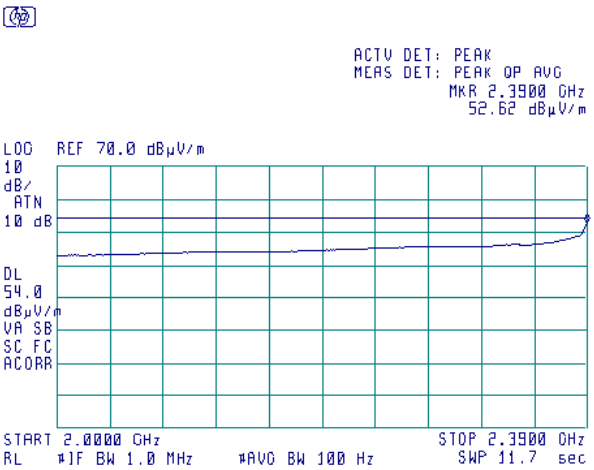
Plot 7.4.23 Radiated emission measurements from 2000 to 2390 MHz at the low carrier frequency

TEST SITE:	Semi anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal
EMISSION BANDWIDTH:	20 MHz
MODULATION:	64QAM
DETECTOR MODE	Peak



Plot 7.4.24 Radiated emission measurements from 2000 to 2390 MHz at the low carrier frequency

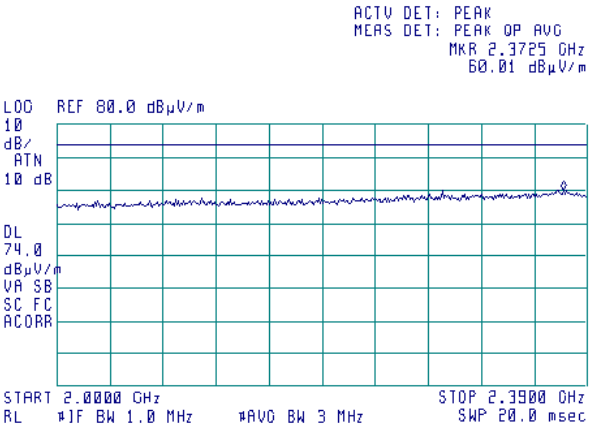
TEST SITE:	Semi anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal
EMISSION BANDWIDTH:	20 MHz
MODULATION:	64QAM
DETECTOR MODE	Average



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

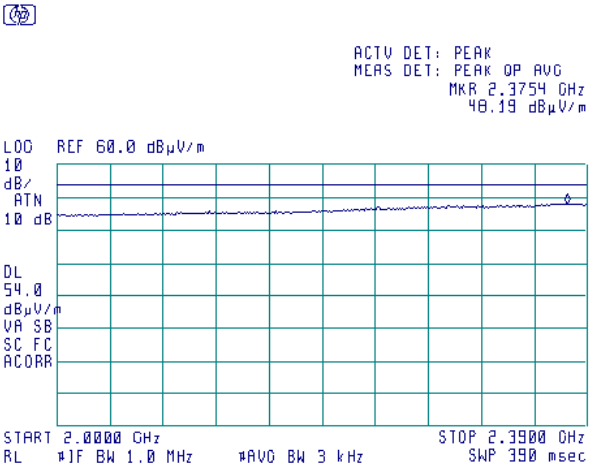
Plot 7.4.25 Radiated emission measurements from 2000 to 2390 MHz at the mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR MODE Peak



Plot 7.4.26 Radiated emission measurements from 2000 to 2390 MHz at the mid carrier frequency

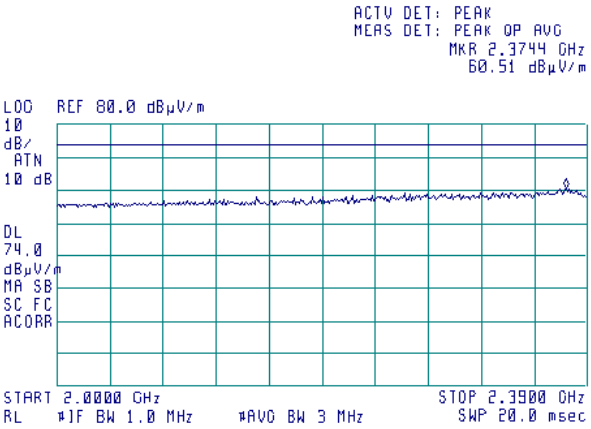
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR MODE Average



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

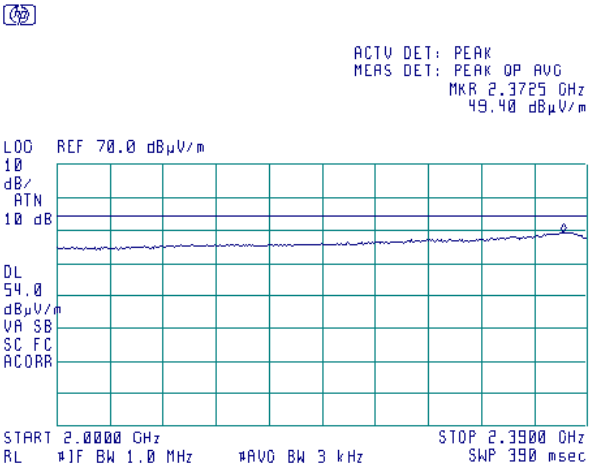
Plot 7.4.27 Radiated emission measurements from 2000 to 2390 MHz at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR MODE Peak



Plot 7.4.28 Radiated emission measurements from 2000 to 2390 MHz at the high carrier frequency

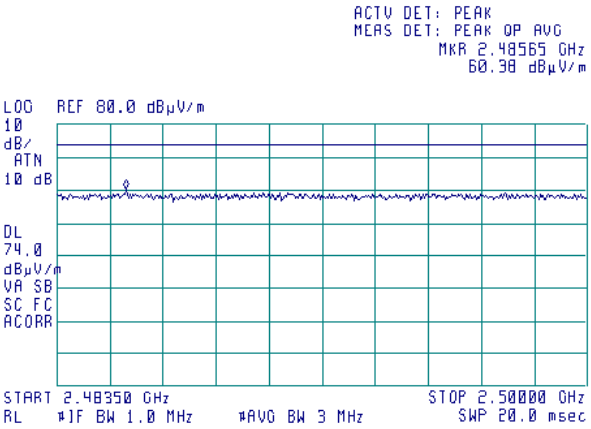
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR MODE Average



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

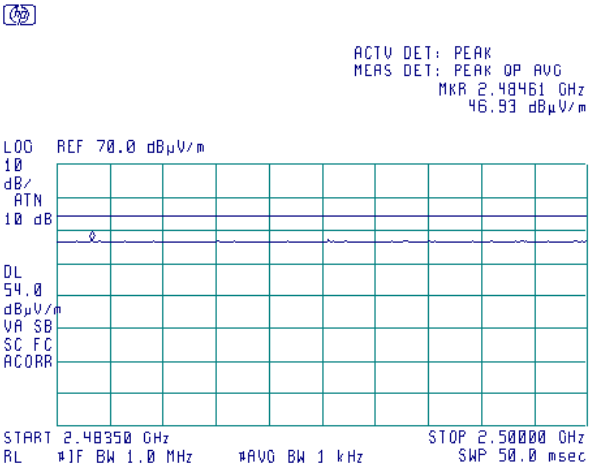
Plot 7.4.29 Radiated emission measurements from 2483.5 to 2500 MHz at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR MODE Peak



Plot 7.4.30 Radiated emission measurements from 2483.5 to 2500 MHz at the low carrier frequency

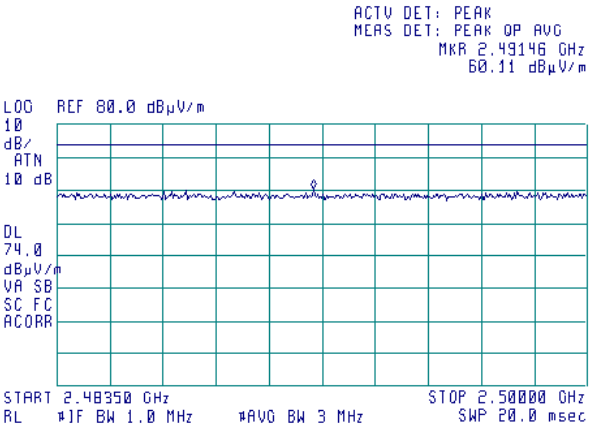
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR MODE Average



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

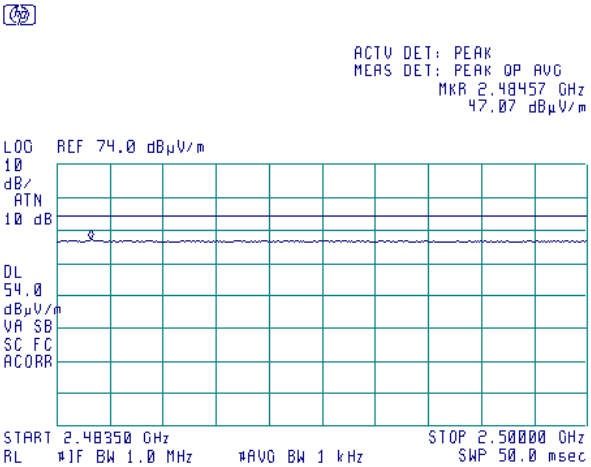
Plot 7.4.31 Radiated emission measurements from 2483.5 to 2500 MHz at the mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR MODE Peak



Plot 7.4.32 Radiated emission measurements from 2483.5 to 2500 MHz at the mid carrier frequency

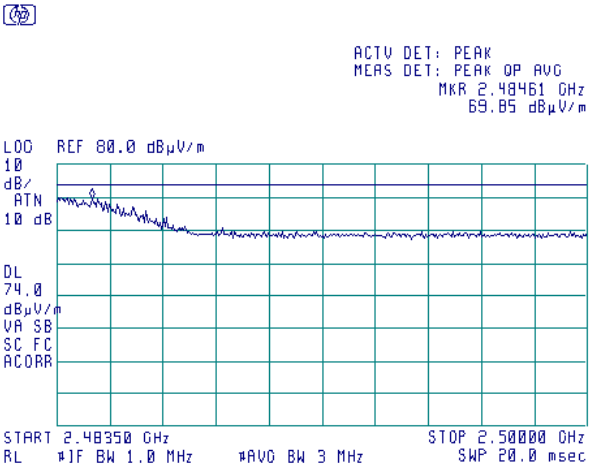
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR MODE Average



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

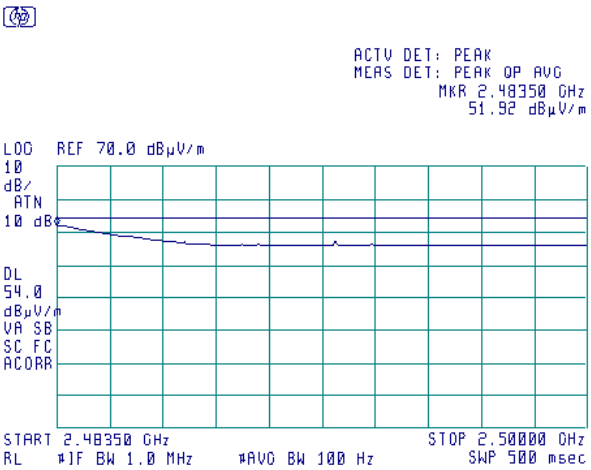
Plot 7.4.33 Radiated emission measurements from 2483.5 to 2500 MHz at the high carrier frequency

TEST SITE:	Semi anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal
EMISSION BANDWIDTH:	20 MHz
MODULATION:	BPSK
DETECTOR MODE	Peak



Plot 7.4.34 Radiated emission measurements from 2483.5 to 2500 MHz at the high carrier frequency

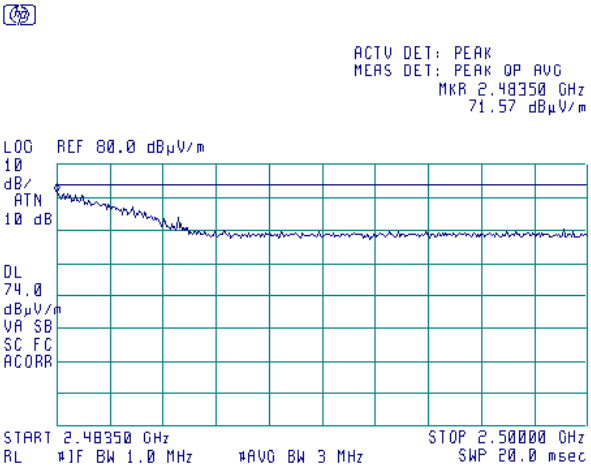
TEST SITE:	Semi anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal
EMISSION BANDWIDTH:	20 MHz
MODULATION:	BPSK
DETECTOR MODE	Average



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

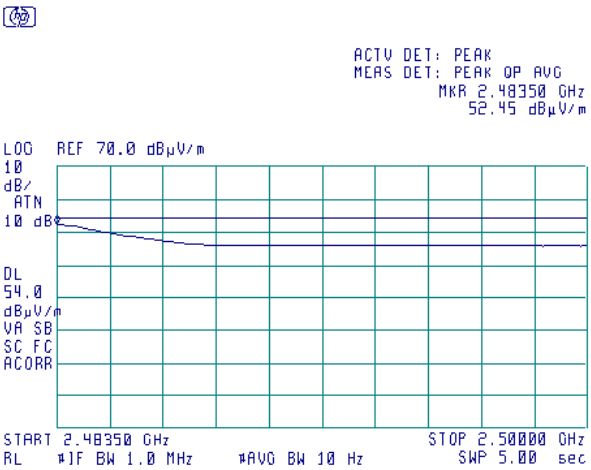
Plot 7.4.35 Radiated emission measurements from 2483.5 to 2500 MHz at the high carrier frequency

TEST SITE:	Semi anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal
EMISSION BANDWIDTH:	20 MHz
MODULATION:	64QAM
DETECTOR MODE	Peak



Plot 7.4.36 Radiated emission measurements from 2483.5 to 2500 MHz at the high carrier frequency

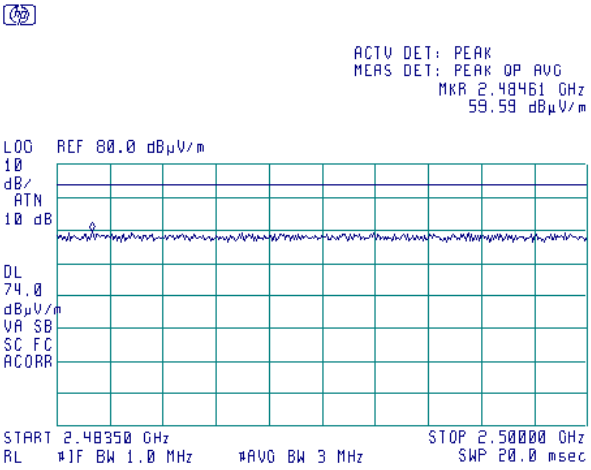
TEST SITE:	Semi anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal
EMISSION BANDWIDTH:	20 MHz
MODULATION:	64QAM
DETECTOR MODE	Average



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

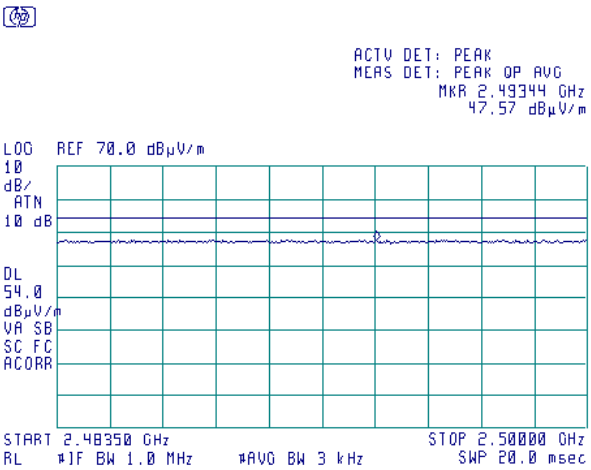
Plot 7.4.37 Radiated emission measurements from 2483.5 to 2500 MHz at the high carrier frequency

TEST SITE:	Semi anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal
EMISSION BANDWIDTH:	10 MHz
MODULATION:	BPSK
DETECTOR MODE	Peak



Plot 7.4.38 Radiated emission measurements from 2483.5 to 2500 MHz at the high carrier frequency

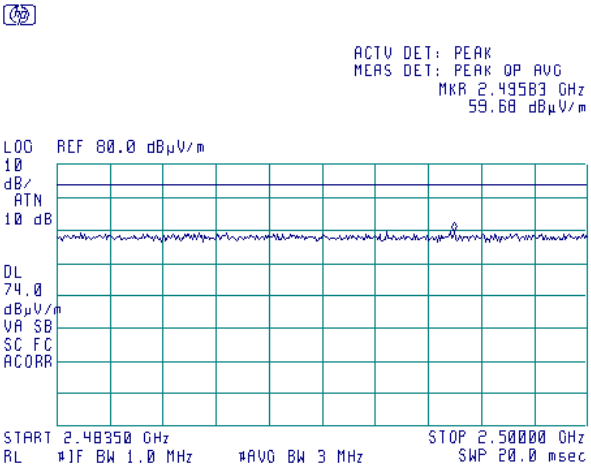
TEST SITE:	Semi anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal
EMISSION BANDWIDTH:	10 MHz
MODULATION:	BPSK
DETECTOR MODE	Average



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

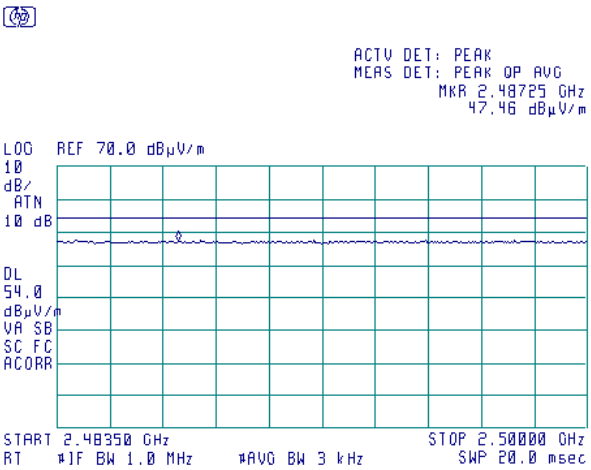
Plot 7.4.39 Radiated emission measurements from 2483.5 to 2500 MHz at the high carrier frequency

TEST SITE:	Semi anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal
EMISSION BANDWIDTH:	10 MHz
MODULATION:	64QAM
DETECTOR MODE	Peak



Plot 7.4.40 Radiated emission measurements from 2483.5 to 2500 MHz at the high carrier frequency

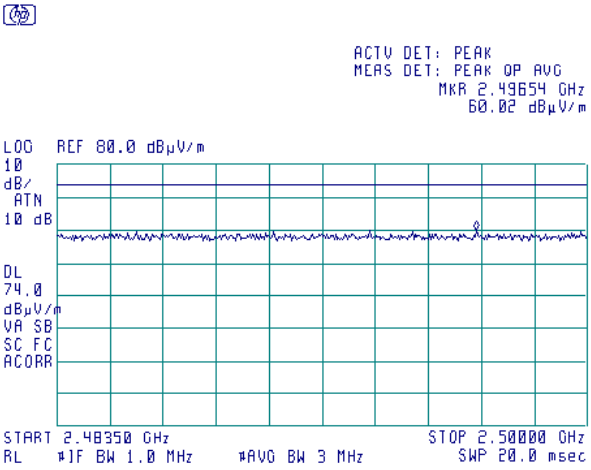
TEST SITE:	Semi anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal
EMISSION BANDWIDTH:	10 MHz
MODULATION:	64QAM
DETECTOR MODE	Average



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

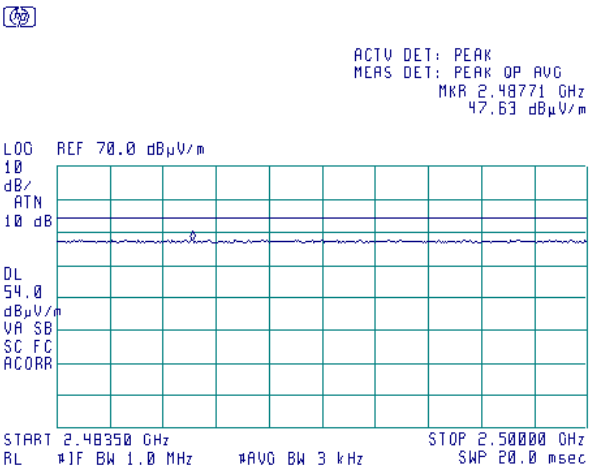
Plot 7.4.41 Radiated emission measurements from 2483.5 to 2500 MHz at the high carrier frequency

TEST SITE:	Semi anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal
EMISSION BANDWIDTH:	5 MHz
MODULATION:	BPSK
DETECTOR MODE	Peak



Plot 7.4.42 Radiated emission measurements from 2483.5 to 2500 MHz at the high carrier frequency

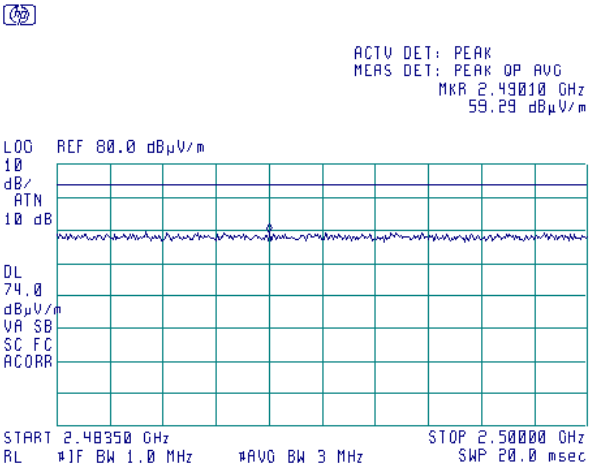
TEST SITE:	Semi anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal
EMISSION BANDWIDTH:	5 MHz
MODULATION:	BPSK
DETECTOR MODE	Average



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

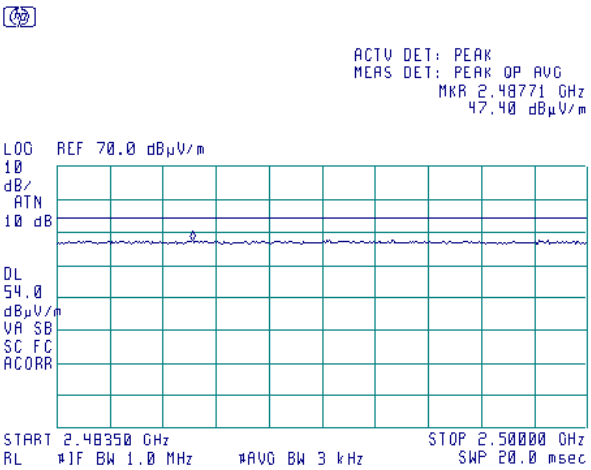
Plot 7.4.43 Radiated emission measurements from 2483.5 to 2500 MHz at the high carrier frequency

TEST SITE:	Semi anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal
EMISSION BANDWIDTH:	5 MHz
MODULATION:	64QAM
DETECTOR MODE	Peak



Plot 7.4.44 Radiated emission measurements from 2483.5 to 2500 MHz at the high carrier frequency

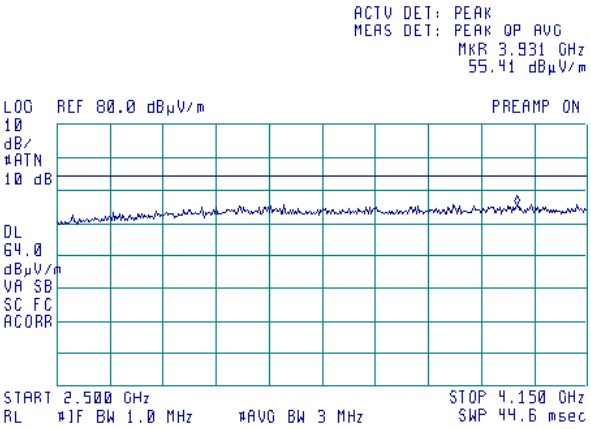
TEST SITE:	Semi anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal
EMISSION BANDWIDTH:	5 MHz
MODULATION:	64QAM
DETECTOR MODE	Average



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

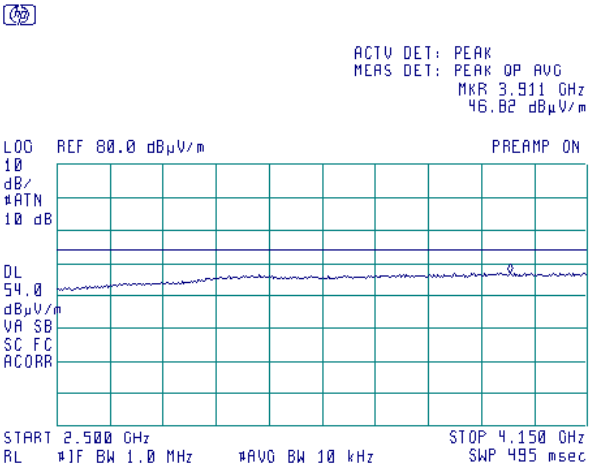
Plot 7.4.45 Radiated emission measurements from 2500 to 4150 MHz at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR MODE Peak



Plot 7.4.46 Radiated emission measurements from 2500 to 4150 MHz at the low carrier frequency

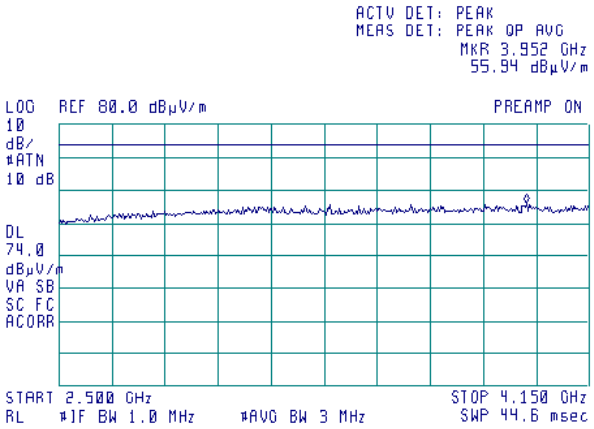
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR MODE Average



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

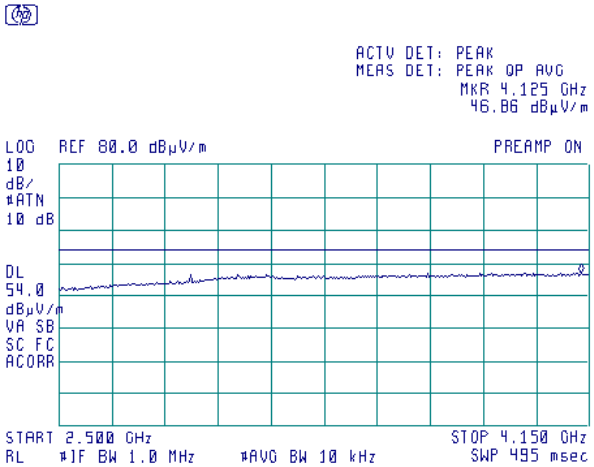
Plot 7.4.47 Radiated emission measurements from 2500 to 4150 MHz at the mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR MODE Peak



Plot 7.4.48 Radiated emission measurements from 2500 to 4150 MHz at the mid carrier frequency

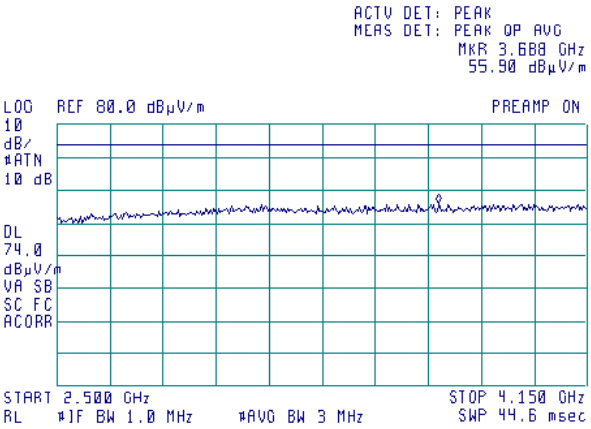
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR MODE Average



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

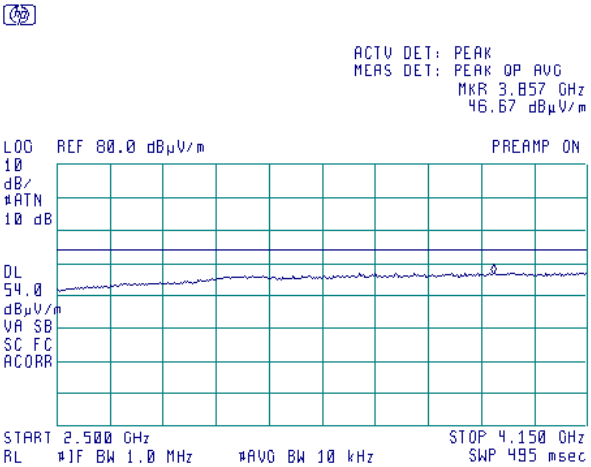
Plot 7.4.49 Radiated emission measurements from 2500 to 4150 MHz at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR MODE Peak



Plot 7.4.50 Radiated emission measurements from 2500 to 4150 MHz at the high carrier frequency

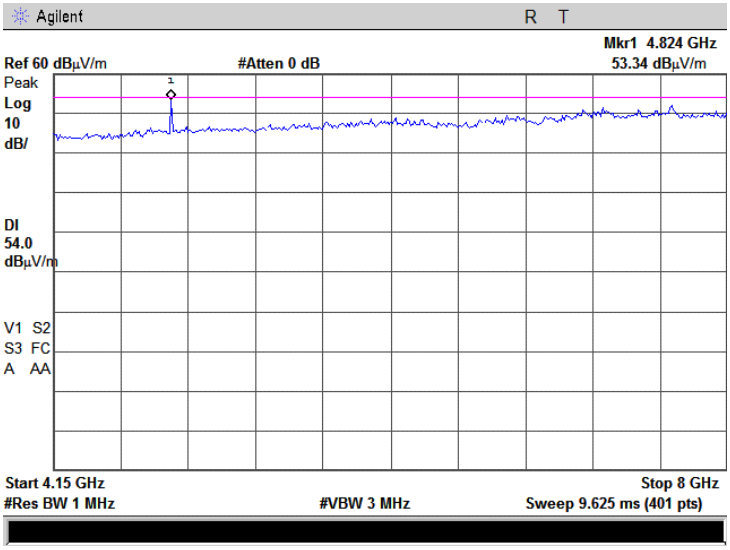
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR MODE Average



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

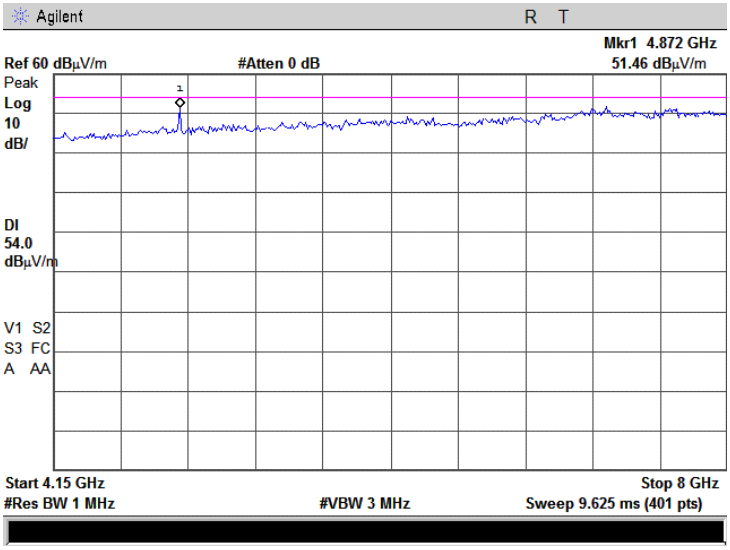
Plot 7.4.51 Radiated emission measurements from 4150 to 8000 MHz at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR MODE Peak



Plot 7.4.52 Radiated emission measurements from 4150 to 8000 MHz at the mid carrier frequency

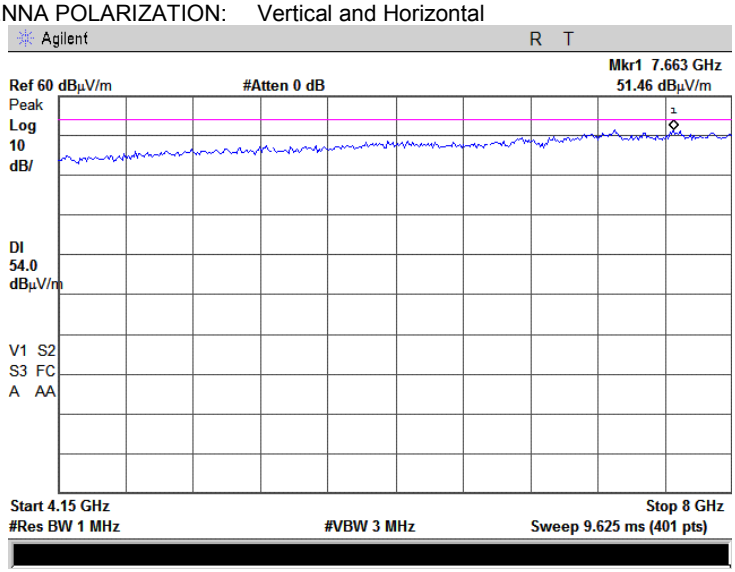
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR MODE Peak



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

Plot 7.4.53 Radiated emission measurements from 4150 to 8000 MHz at the high carrier frequency

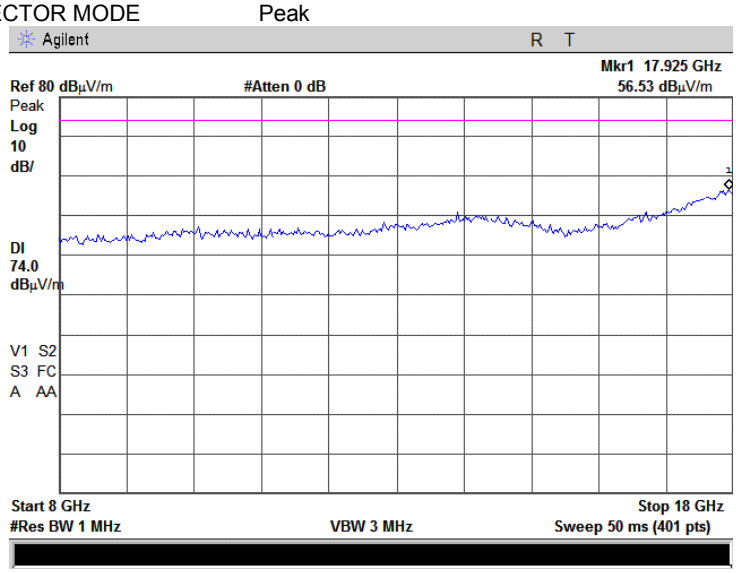
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

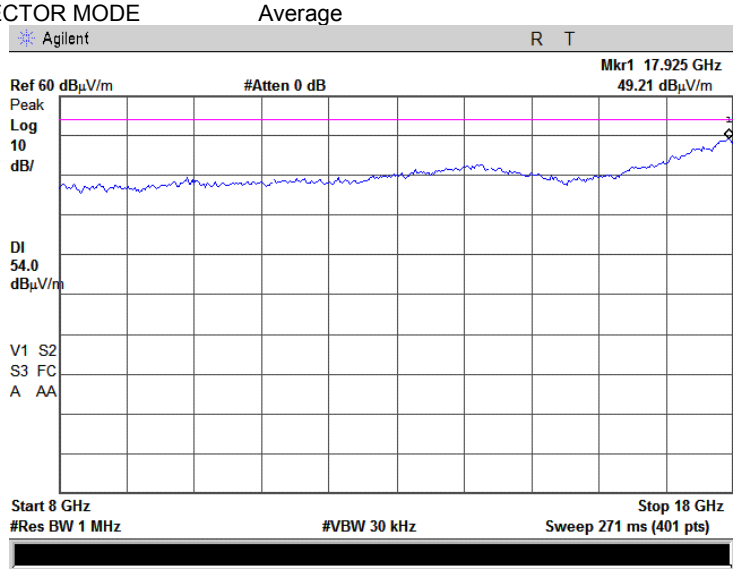
Plot 7.4.54 Radiated emission measurements from 8000 to 18000 MHz at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR MODE Peak



Plot 7.4.55 Radiated emission measurements from 8000 to 18000 MHz at the low carrier frequency

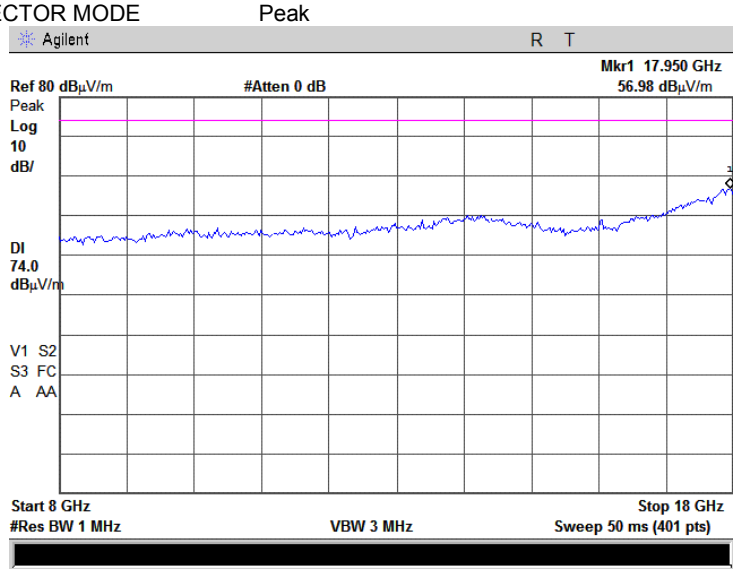
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR MODE Average



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

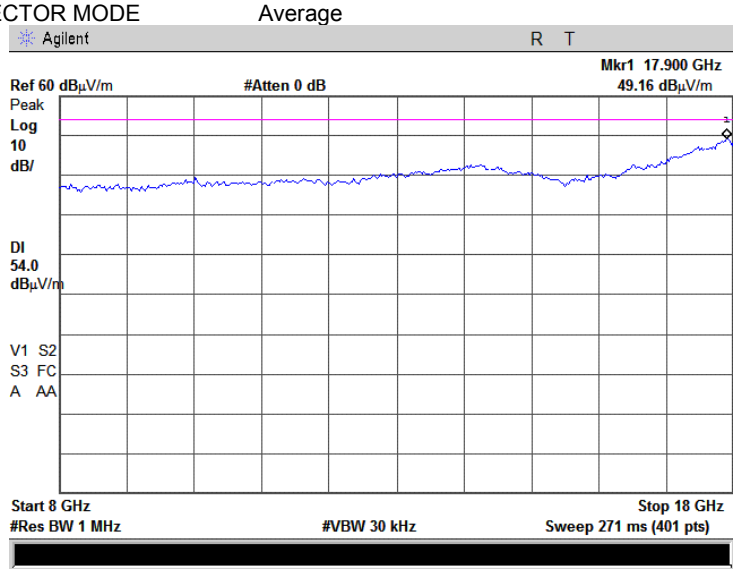
Plot 7.4.56 Radiated emission measurements from 8000 to 18000 MHz at the mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR MODE Peak



Plot 7.4.57 Radiated emission measurements from 8000 to 18000 MHz at the mid carrier frequency

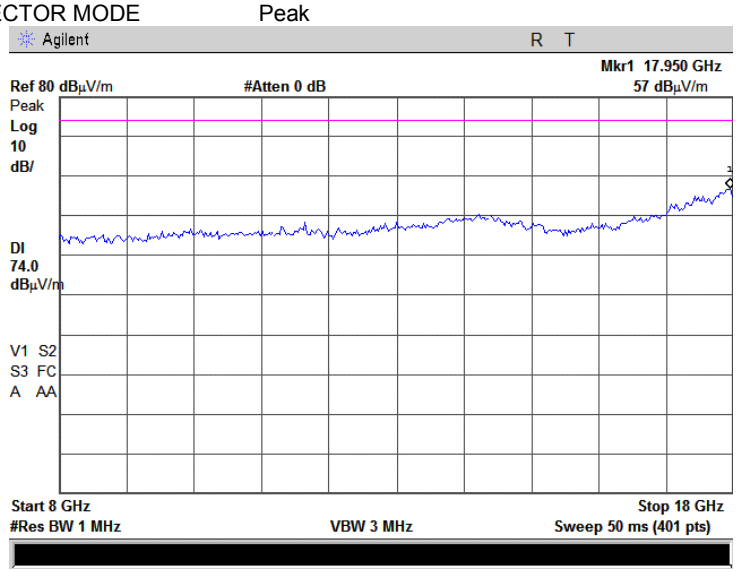
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR MODE Average



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

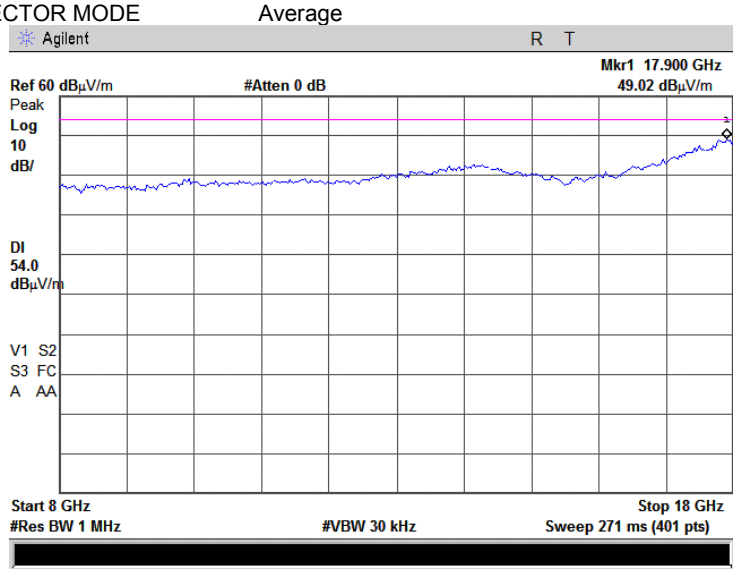
Plot 7.4.58 Radiated emission measurements from 8000 to 18000 MHz at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR MODE Peak



Plot 7.4.59 Radiated emission measurements from 8000 to 18000 MHz at the high carrier frequency

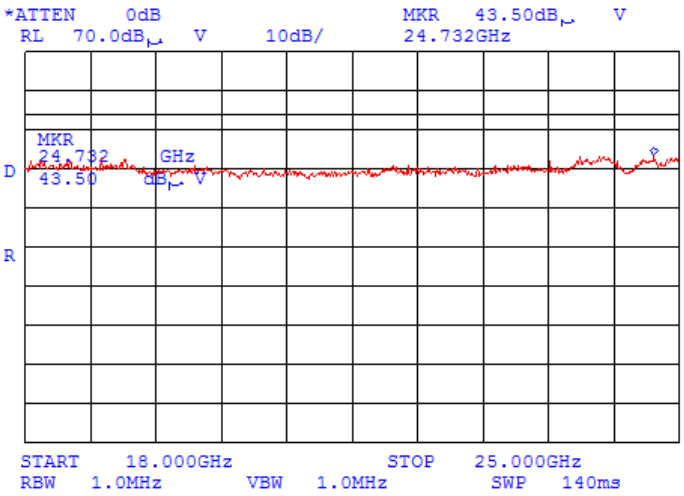
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR MODE Average



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

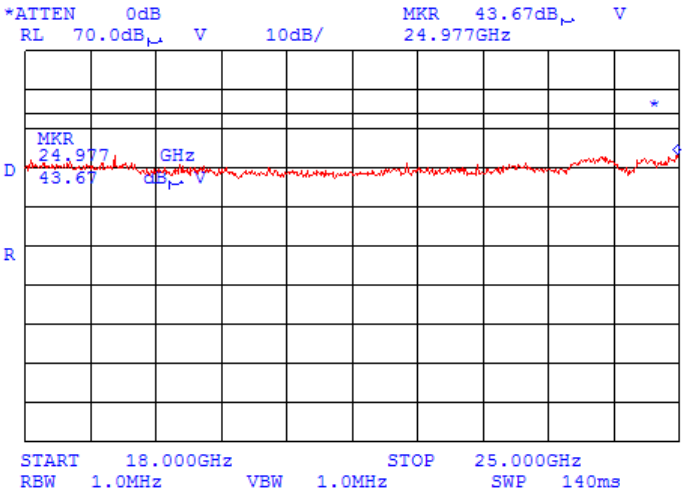
Plot 7.4.60 Radiated emission measurements from 18000 to 25000 MHz at the low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



Plot 7.4.61 Radiated emission measurements from 18000 to 25000 MHz at the mid carrier frequency

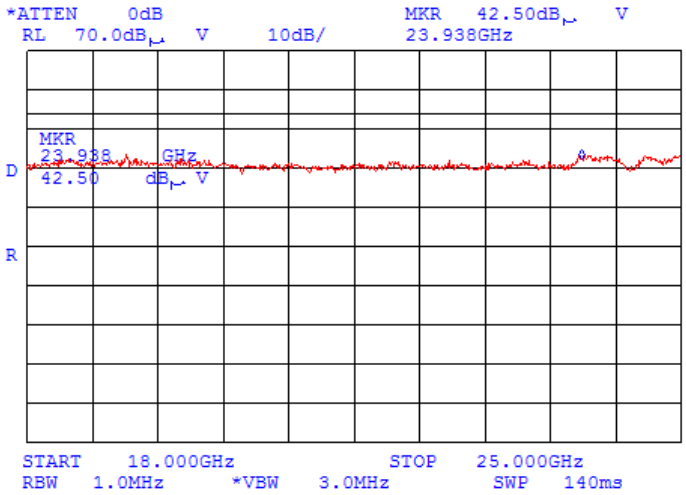
TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

Plot 7.4.62 Radiated emission measurements from 18000 to 25000 MHz at the high carrier frequency

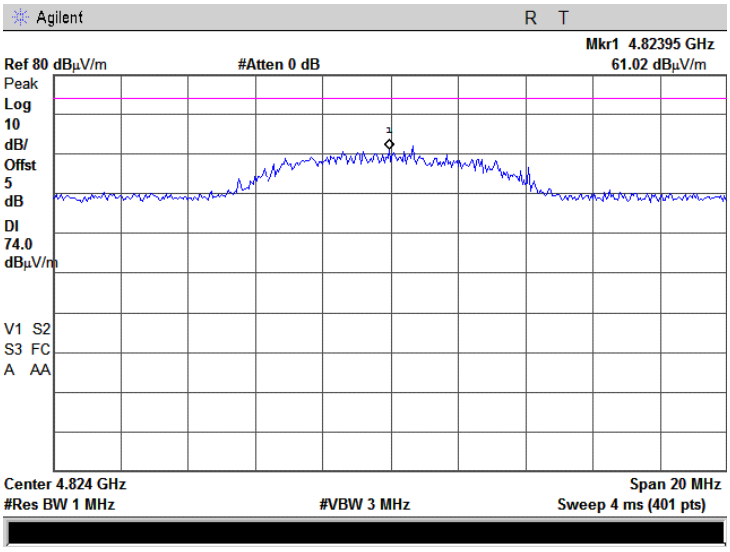
TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

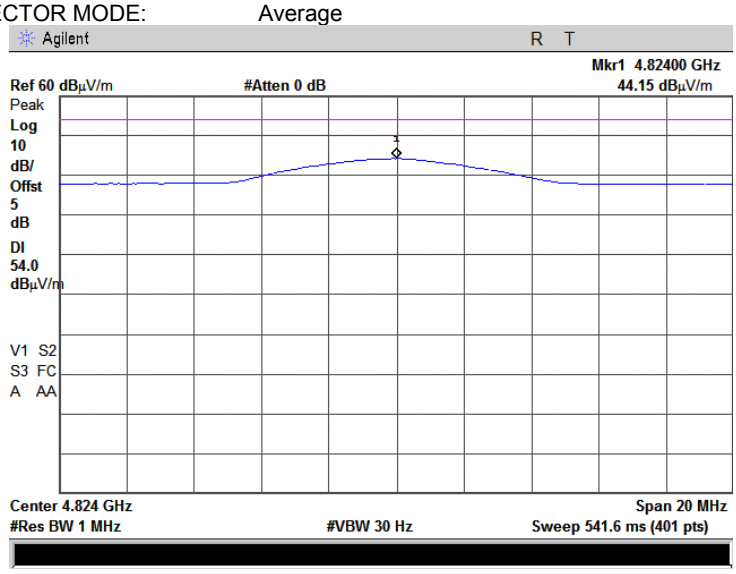
Plot 7.4.63 Radiated emission measurements at the second harmonic of low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
DETECTOR MODE: Peak



Plot 7.4.64 Radiated emission measurements at the second harmonic of low carrier frequency

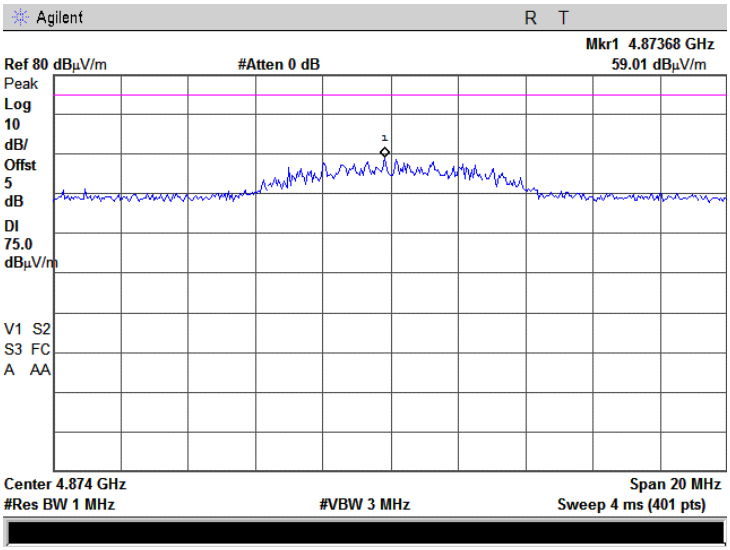
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
DETECTOR MODE: Average



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

Plot 7.4.65 Radiated emission measurements at the second harmonic of mid carrier frequency

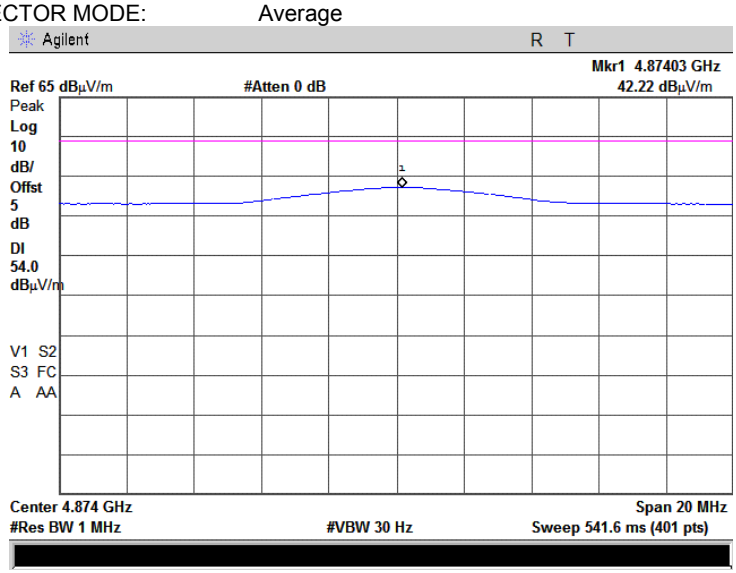
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
DETECTOR MODE: Peak



The specified limit is 74 dBuV/m

Plot 7.4.66 Radiated emission measurements at the second harmonic of mid carrier frequency

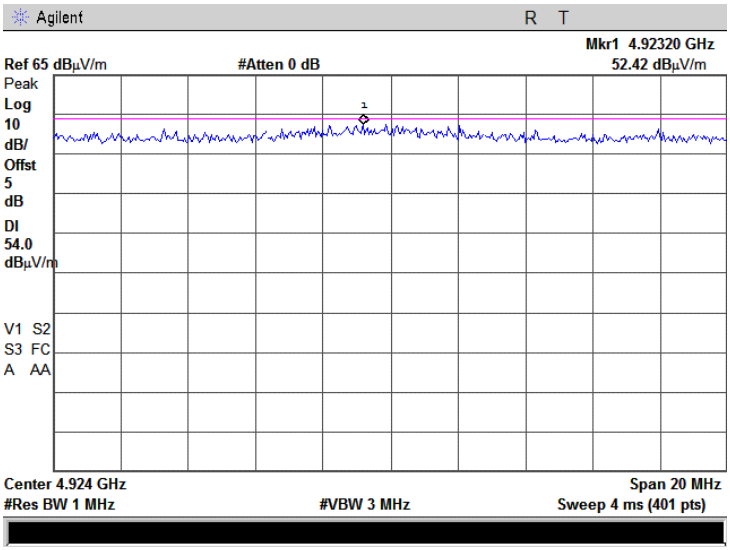
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
DETECTOR MODE: Average



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

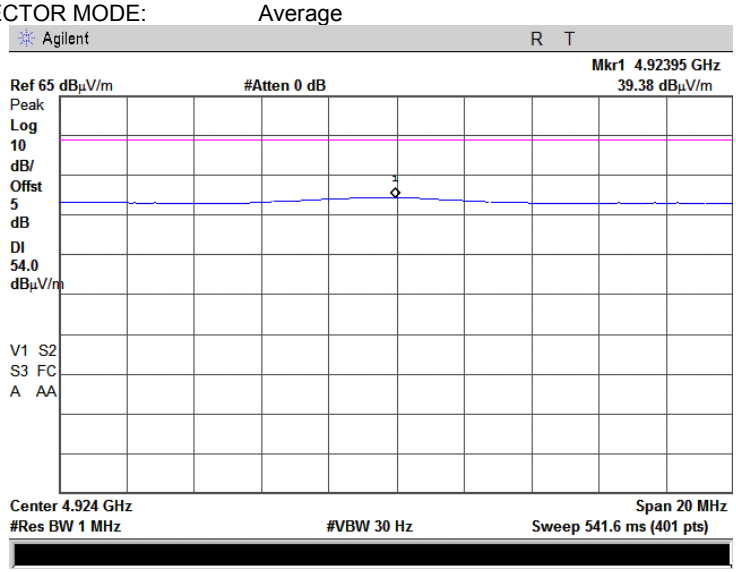
Plot 7.4.67 Radiated emission measurements at the second harmonic of high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
DETECTOR MODE: Peak



Plot 7.4.68 Radiated emission measurements at the second harmonic of high carrier frequency

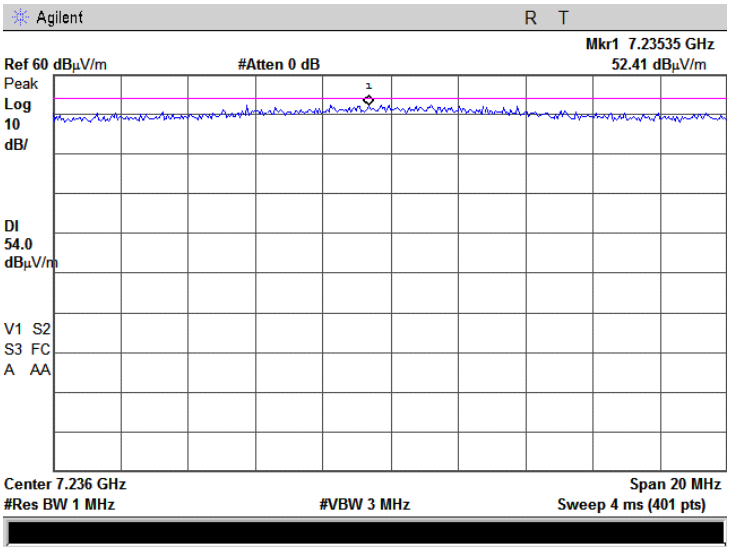
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
DETECTOR MODE: Average



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

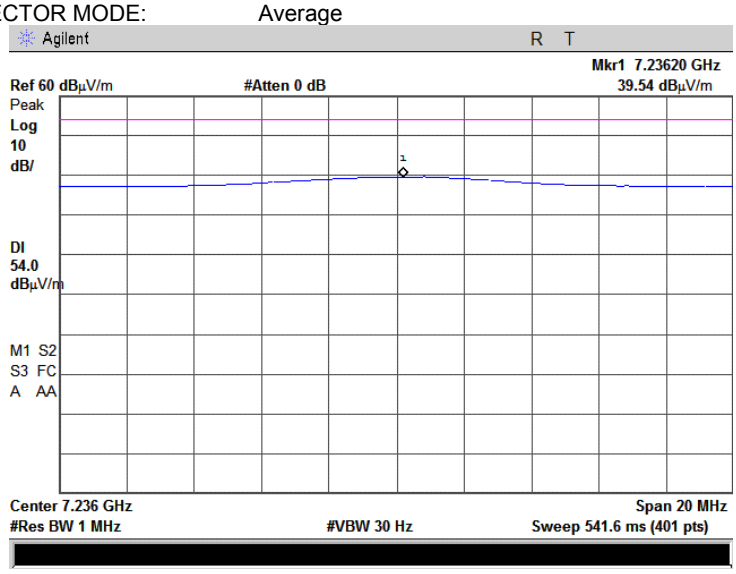
Plot 7.4.69 Radiated emission measurements at the third harmonic of low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
DETECTOR MODE: Peak



Plot 7.4.70 Radiated emission measurements at the third harmonic of low carrier frequency

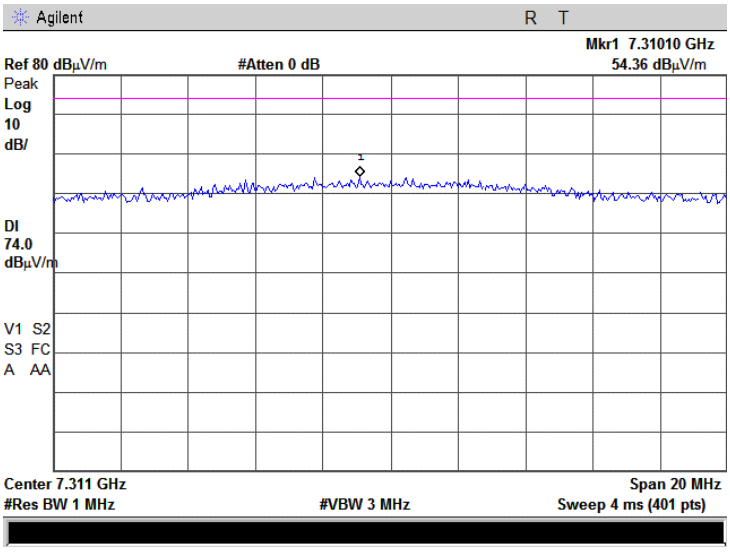
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
DETECTOR MODE: Average



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

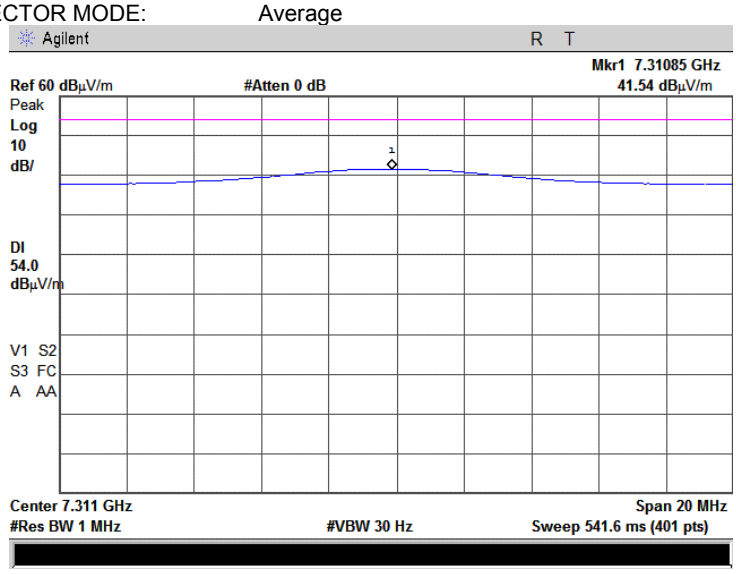
Plot 7.4.71 Radiated emission measurements at the third harmonic of mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
DETECTOR MODE: Peak



Plot 7.4.72 Radiated emission measurements at the third harmonic of mid carrier frequency

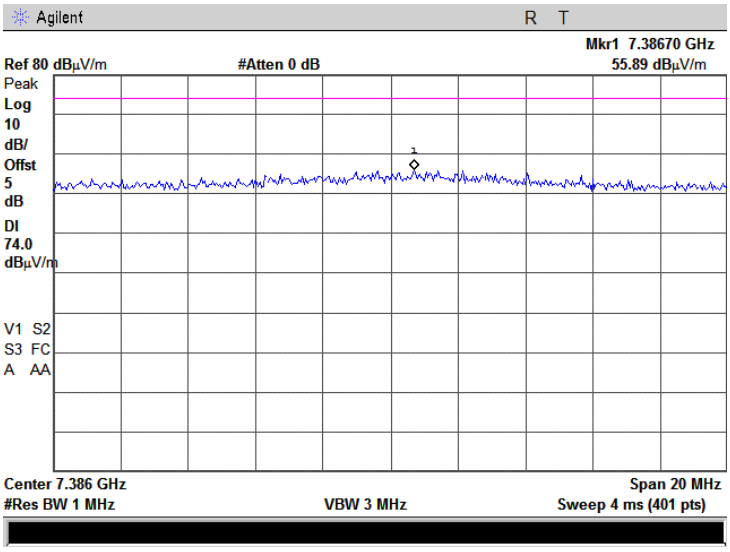
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
DETECTOR MODE: Average



Test specification:	FCC section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(c)/ ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/26/2009 9:16:47 PM		
Temperature: 23ºC	Air Pressure: 1011 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

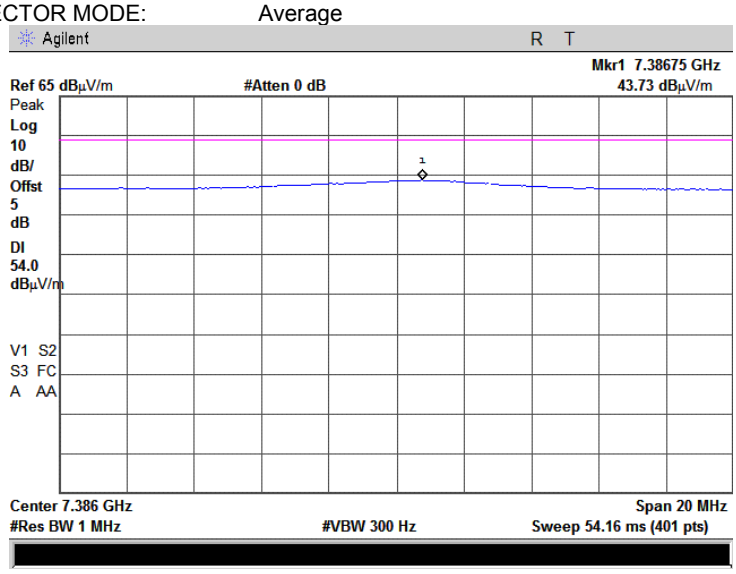
Plot 7.4.73 Radiated emission measurements at the third harmonic of high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
DETECTOR MODE: Peak



Plot 7.4.74 Radiated emission measurements at the third harmonic of high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
DETECTOR MODE: Average



Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

7.5 Peak spectral power density

7.5.1 General

This test was performed to measure the peak spectral power density at the transmitter RF antenna connector. Specification test limits are given in Table 7.5.1.

Table 7.5.1 Peak spectral power density limits

Assigned frequency range, MHz	Measurement bandwidth, kHz	Peak spectral power density, dBm
2400 – 2483.5	3.0	8.0

7.5.2 Test procedure

7.5.2.1 The EUT was set up as shown in Figure 7.5.1, energized and its proper operation was checked.

7.5.2.2 The EUT was adjusted to produce maximum available to end user RF output power.

7.5.2.3 The frequency span of spectrum analyzer was set to capture the entire 6 dB band of the transmitter, in peak hold mode with resolution bandwidth set to 3.0 kHz, video bandwidth wider than resolution bandwidth, auto sweep time and sufficient number of sweeps was allowed for trace stabilization. The spectrum lines spacing was verified to be wider than 3 kHz. Otherwise the resolution bandwidth was reduced until individual spectrum lines were resolved and the power of individual spectrum lines was integrated over 3 kHz band.

7.5.2.4 The peak of emission was zoomed with span set just wide enough to capture the emission peak area and sweep time was set equal to span width divided by resolution bandwidth. Spectrum analyzer was set in peak hold mode, sufficient number of sweeps was allowed for trace stabilization and peak spectral power density was measured as provided in Table 7.5.2 and associated plots.

Figure 7.5.1 Peak spectral power density test setup

Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

Table 7.5.2 Peak spectral power density test results

ASSIGNED FREQUENCY RANGE: 2400 – 2483.5 MHz
TRANSMITTER OUTPUT POWER: Maximum
DETECTOR USED: Peak
RESOLUTION BANDWIDTH: 3 kHz
VIDEO BANDWIDTH: 10 kHz

Modulation, Bit rate, Mbps	Spectrum analyzer reading, dBm		Total peak spectral power density, dBm/3 kHz*	Limit, dBm	Margin**, dBm	Verdict
	Antenna 1	Antenna 2				
5 MHz BW, Low channel						
BPSK, 3.25	-7.03	-7.29	-4.15	8.00	-12.15	Pass
64QAM, 32.5	-7.99	-6.17	-3.98	8.00	-11.98	Pass
5 MHz BW, Mid channel						
BPSK, 3.25	-6.29	-7.7	-3.93	8.00	-11.93	Pass
64QAM, 32.5	-7.11	-7.97	-4.51	8.00	-12.51	Pass
5 MHz BW, High channel						
BPSK, 3.25	-8.9	-6.08	-4.25	8.00	-12.25	Pass
64QAM, 32.5	-9.99	-6.78	-5.08	8.00	-13.08	Pass
10 MHz BW, Low channel						
BPSK, 6.5	-10.32	-9.55	-6.91	8.00	-14.91	Pass
64QAM, 65	-9.52	-10.14	-6.81	8.00	-14.81	Pass
10 MHz BW, Mid channel						
BPSK, 6.5	-9.68	-11.69	-7.56	8.00	-15.56	Pass
64QAM, 65	-10.07	-11.4	-7.67	8.00	-15.67	Pass
10 MHz BW, High channel						
BPSK, 6.5	-12.01	-9.27	-7.42	8.00	-15.42	Pass
64QAM, 65	-12.61	-9.26	-7.61	8.00	-15.61	Pass
20 MHz BW, Low channel						
BPSK, 13	-11.29	-13.82	-9.36	8.00	-17.36	Pass
64QAM, 130	-12.19	-10.52	-8.26	8.00	-16.26	Pass
20 MHz BW, Mid channel						
BPSK, 13	-11.22	-13.3	-9.13	8.00	-17.13	Pass
64QAM, 130	-12.91	-15.21	-10.90	8.00	-18.90	Pass
20 MHz BW, High channel						
BPSK, 13	-14.62	-11.41	-9.71	8.00	-17.71	Pass
64QAM, 130	-15.01	-11.62	-9.98	8.00	-17.98	Pass

* - The total peak spectral power density is the sum of measured at 2 antenna outputs
** - Margin = Peak power density – specification limit.

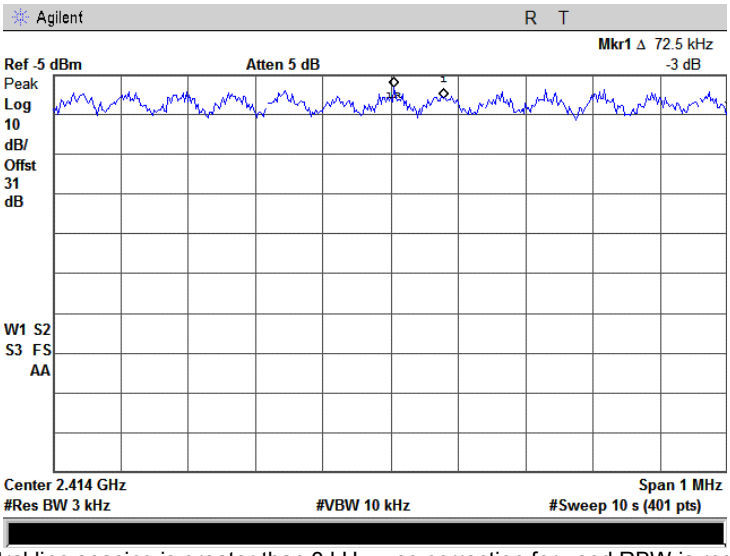
Reference numbers of test equipment used

HL 2909	HL 3175	HL 3179	HL 3180	HL 3385			

Full description is given in Appendix A.

Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

Plot 7.5.1 Peak spectral power density – spectral line spacing

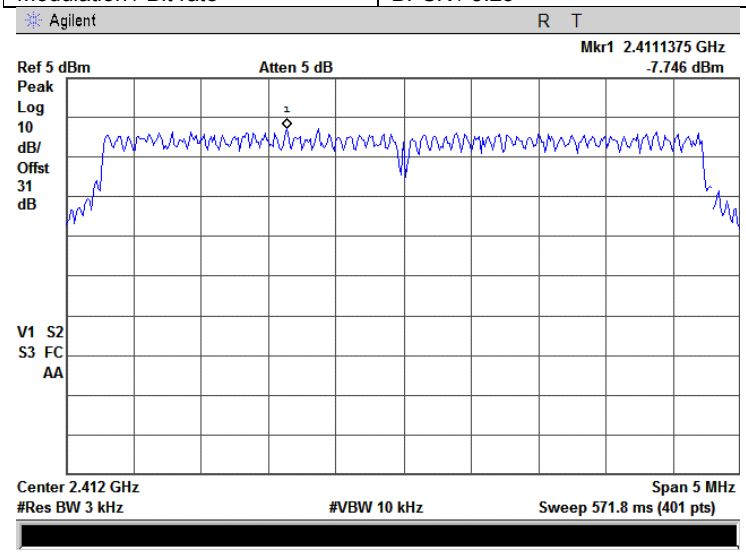


Spectral line spacing is greater than 3 kHz – no correction for used RBW is required

Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

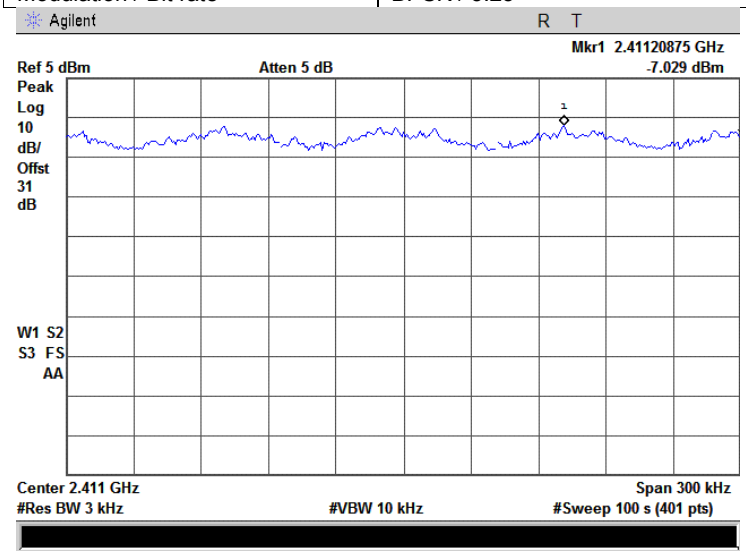
Plot 7.5.2 Peak spectral power density at low frequency within 6 dB band, antenna 1

Emission Bandwidth	5 MHz
Modulation / Bit rate	BPSK / 3.25



Plot 7.5.3 Peak spectral power density at low frequency zoomed at the peak, antenna 1

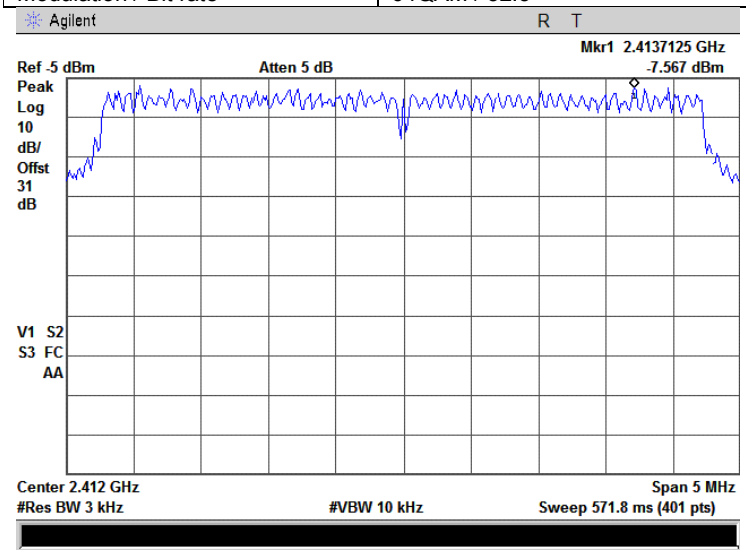
Emission Bandwidth	5 MHz
Modulation / Bit rate	BPSK / 3.25



Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

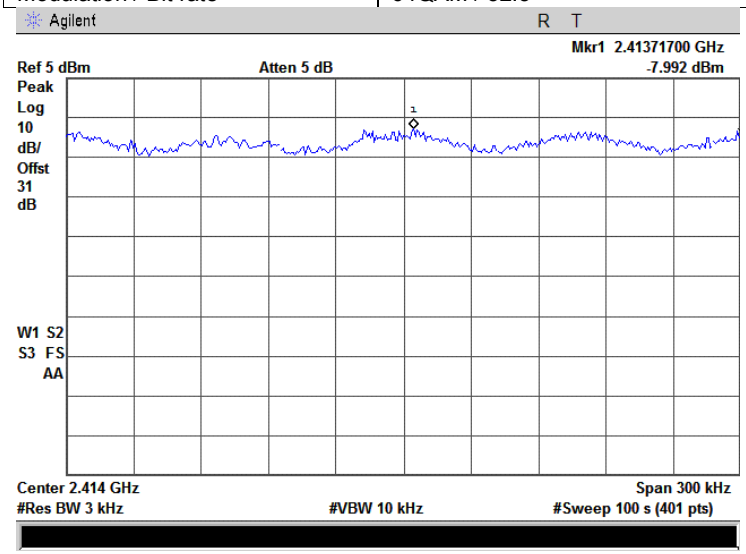
Plot 7.5.4 Peak spectral power density at low frequency within 6 dB band, antenna 1

Emission Bandwidth	5 MHz
Modulation / Bit rate	64QAM / 32.5



Plot 7.5.5 Peak spectral power density at low frequency zoomed at the peak, antenna 1

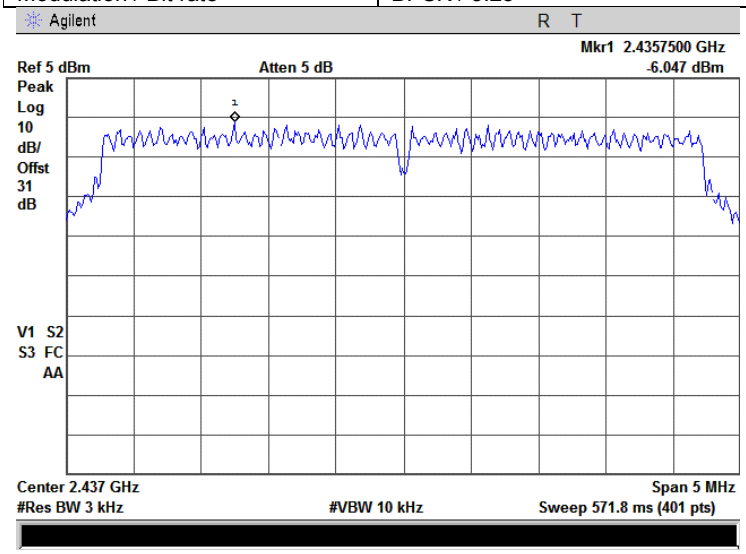
Emission Bandwidth	5 MHz
Modulation / Bit rate	64QAM / 32.5



Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

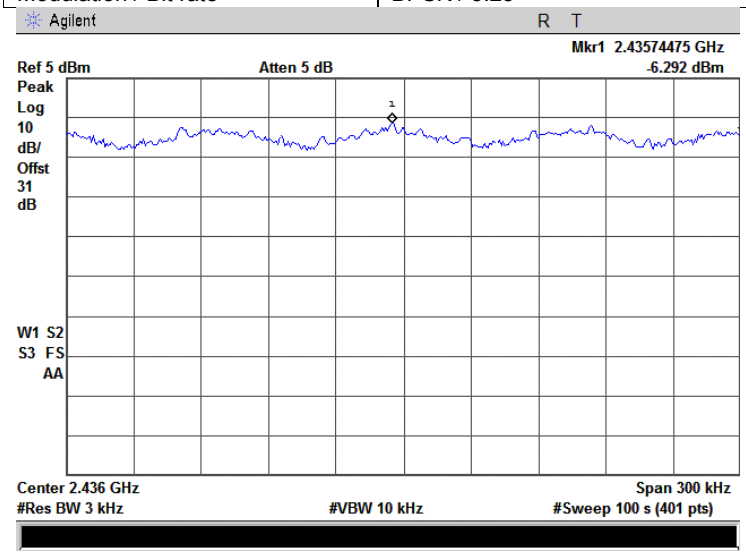
Plot 7.5.6 Peak spectral power density at mid frequency within 6 dB band, antenna 1

Emission Bandwidth	5 MHz
Modulation / Bit rate	BPSK / 3.25



Plot 7.5.7 Peak spectral power density at mid frequency zoomed at the peak, antenna 1

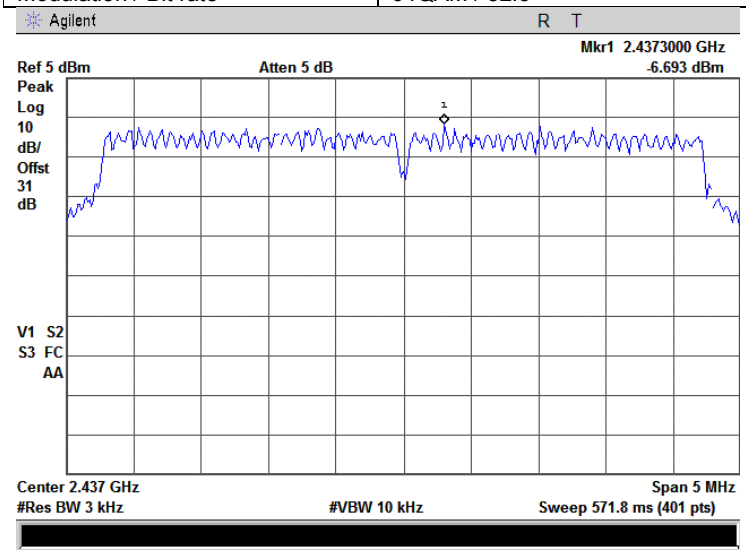
Emission Bandwidth	5 MHz
Modulation / Bit rate	BPSK / 3.25



Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

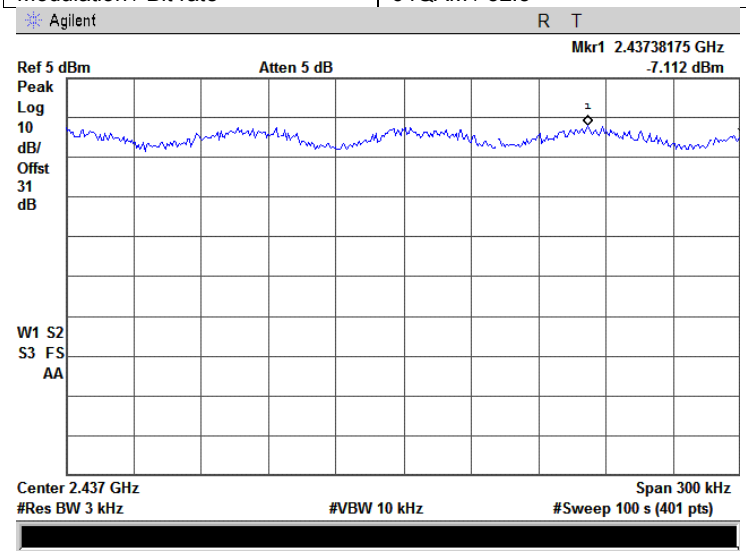
Plot 7.5.8 Peak spectral power density at mid frequency within 6 dB band, antenna 1

Emission Bandwidth	5 MHz
Modulation / Bit rate	64QAM / 32.5



Plot 7.5.9 Peak spectral power density at mid frequency zoomed at the peak, antenna 1

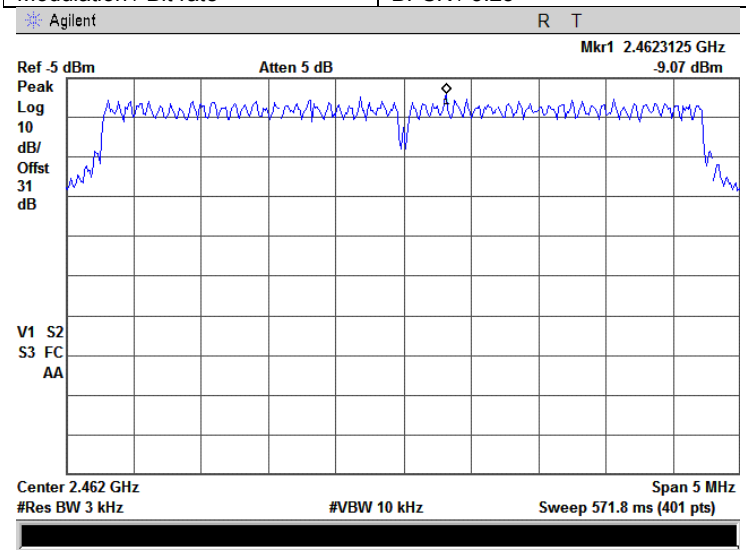
Emission Bandwidth	5 MHz
Modulation / Bit rate	64QAM / 32.5



Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

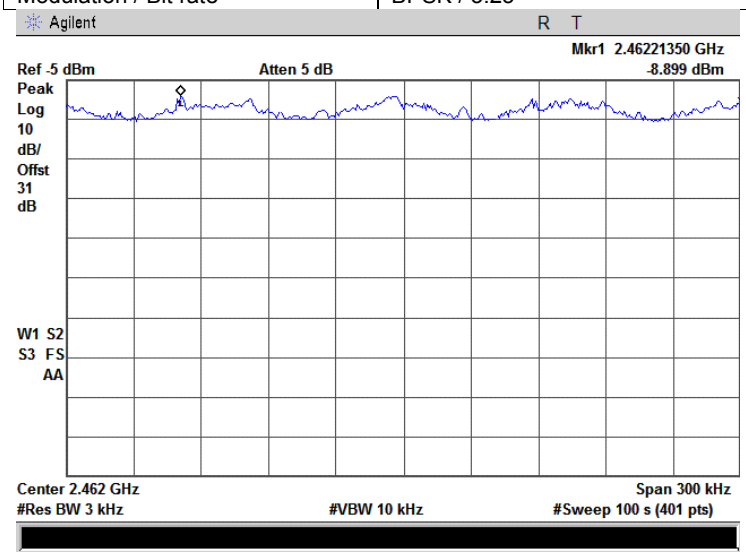
Plot 7.5.10 Peak spectral power density at high frequency within 6 dB band, antenna 1

Emission Bandwidth	5 MHz
Modulation / Bit rate	BPSK / 3.25



Plot 7.5.11 Peak spectral power density at high frequency zoomed at the peak, antenna 1

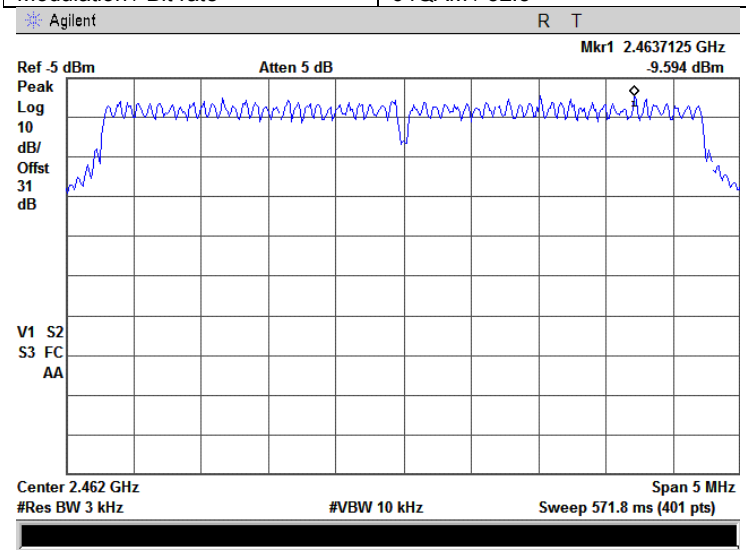
Emission Bandwidth	5 MHz
Modulation / Bit rate	BPSK / 3.25



Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

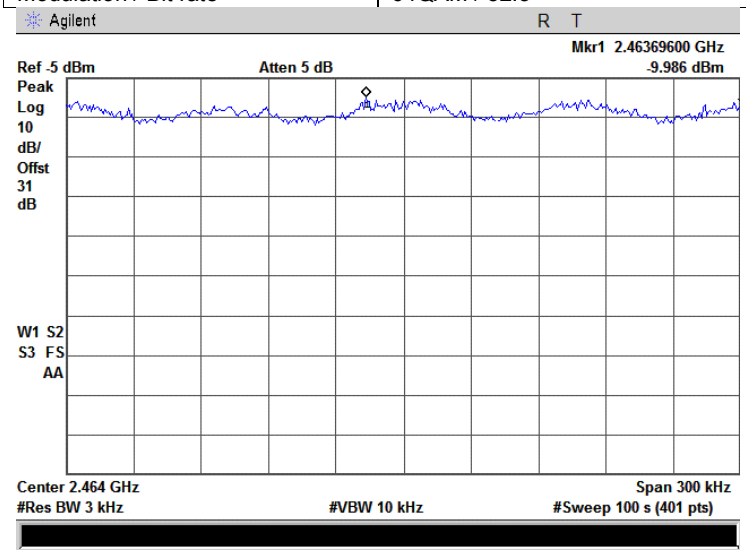
Plot 7.5.12 Peak spectral power density at high frequency within 6 dB band, antenna 1

Emission Bandwidth	5 MHz
Modulation / Bit rate	64QAM / 32.5



Plot 7.5.13 Peak spectral power density at high frequency zoomed at the peak, antenna 1

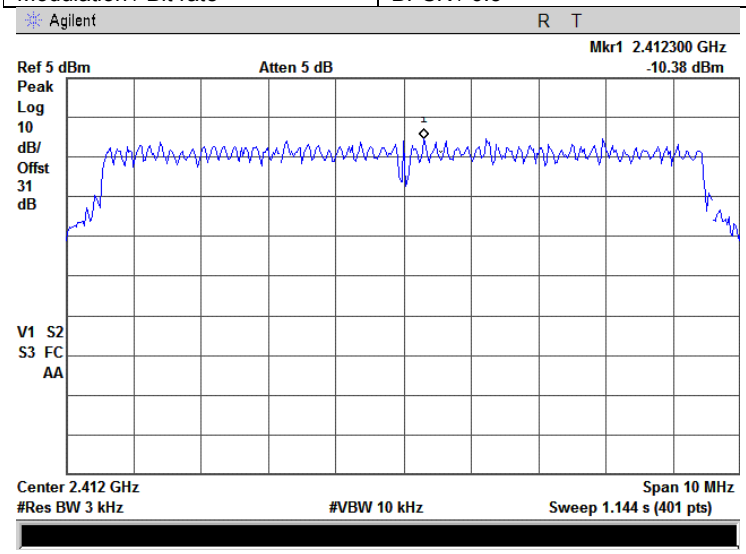
Emission Bandwidth	5 MHz
Modulation / Bit rate	64QAM / 32.5



Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

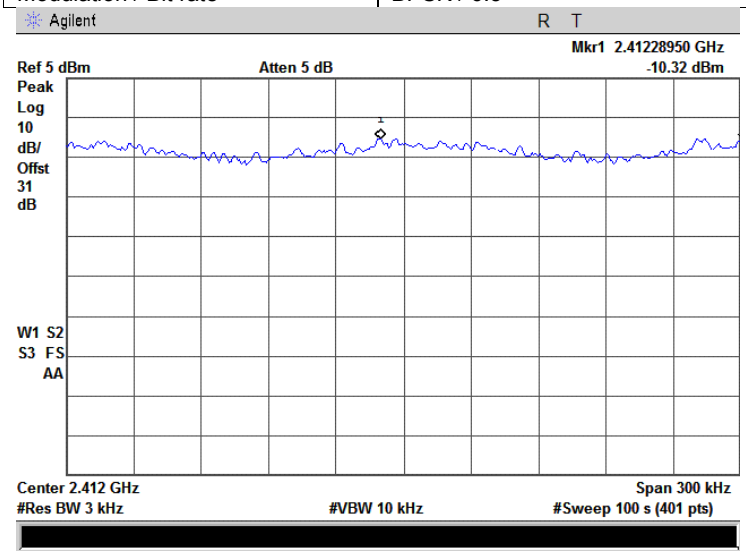
Plot 7.5.14 Peak spectral power density at low frequency within 6 dB band, antenna 1

Emission Bandwidth	10 MHz
Modulation / Bit rate	BPSK / 6.5



Plot 7.5.15 Peak spectral power density at low frequency zoomed at the peak, antenna 1

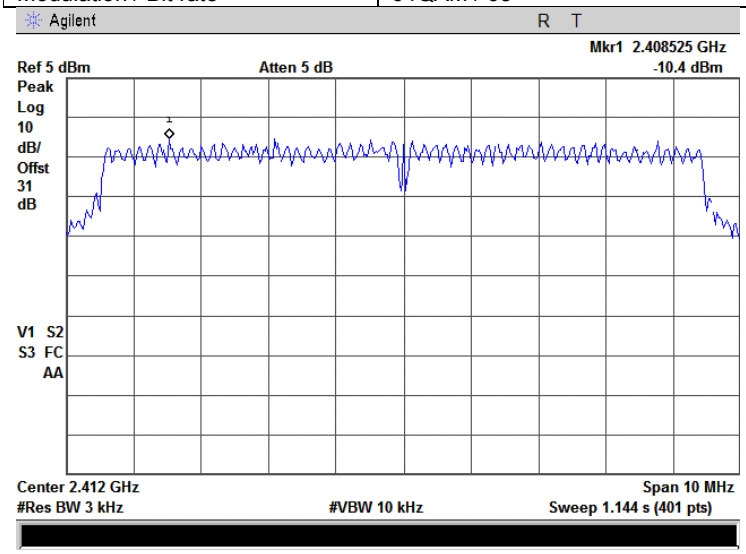
Emission Bandwidth	10 MHz
Modulation / Bit rate	BPSK / 6.5



Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

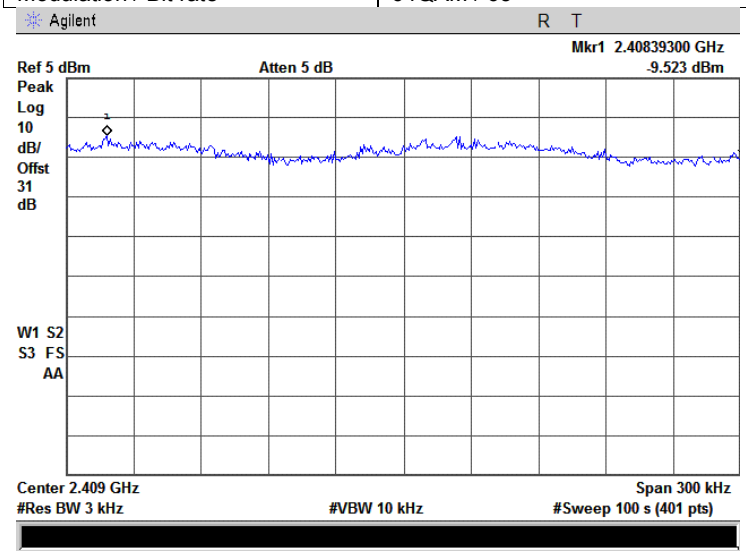
Plot 7.5.16 Peak spectral power density at low frequency within 6 dB band, antenna 1

Emission Bandwidth	10 MHz
Modulation / Bit rate	64QAM / 65



Plot 7.5.17 Peak spectral power density at low frequency zoomed at the peak, antenna 1

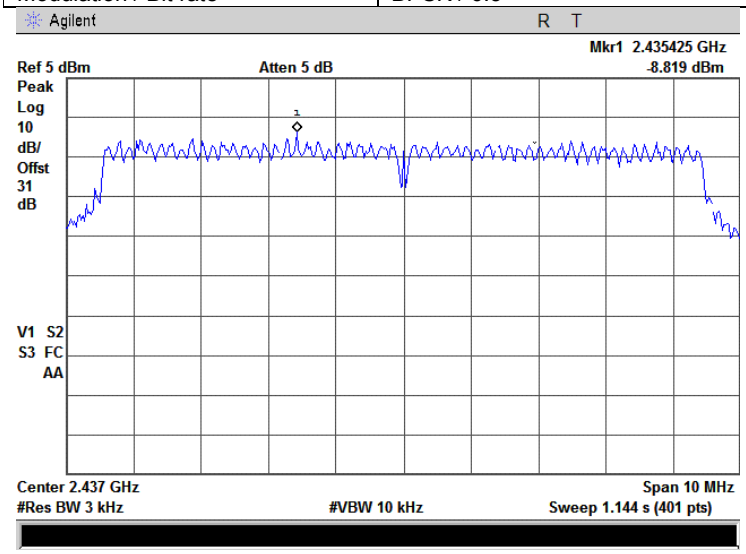
Emission Bandwidth	10 MHz
Modulation / Bit rate	64QAM / 65



Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

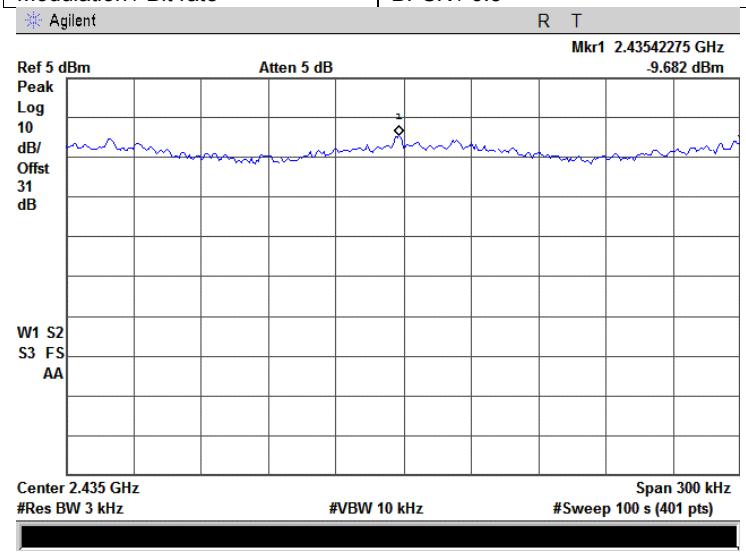
Plot 7.5.18 Peak spectral power density at mid frequency within 6 dB band, antenna 1

Emission Bandwidth	10 MHz
Modulation / Bit rate	BPSK / 6.5



Plot 7.5.19 Peak spectral power density at mid frequency zoomed at the peak, antenna 1

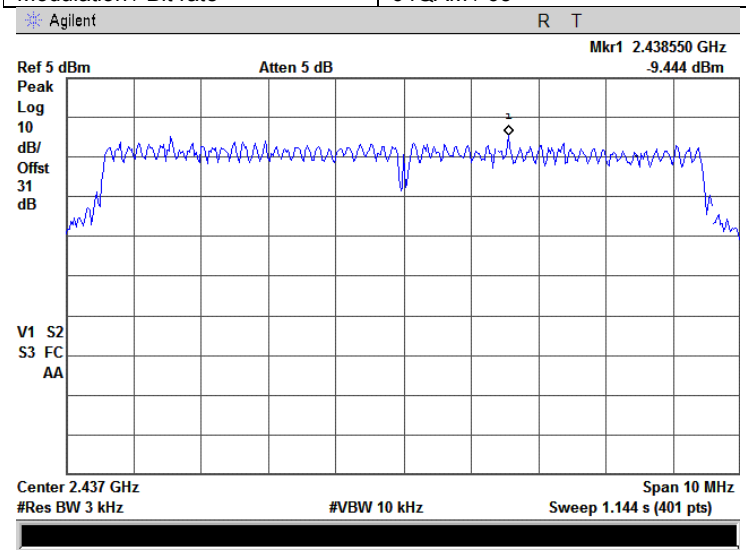
Emission Bandwidth	10 MHz
Modulation / Bit rate	BPSK / 6.5



Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

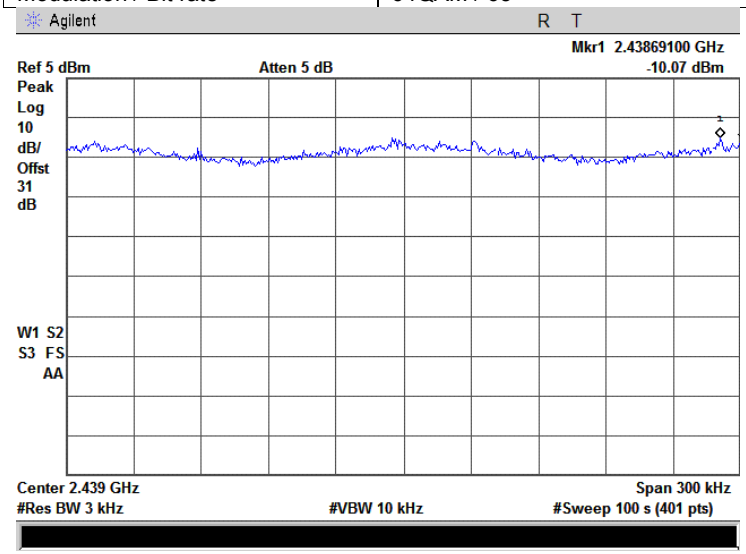
Plot 7.5.20 Peak spectral power density at mid frequency within 6 dB band, antenna 1

Emission Bandwidth	10 MHz
Modulation / Bit rate	64QAM / 65



Plot 7.5.21 Peak spectral power density at mid frequency zoomed at the peak, antenna 1

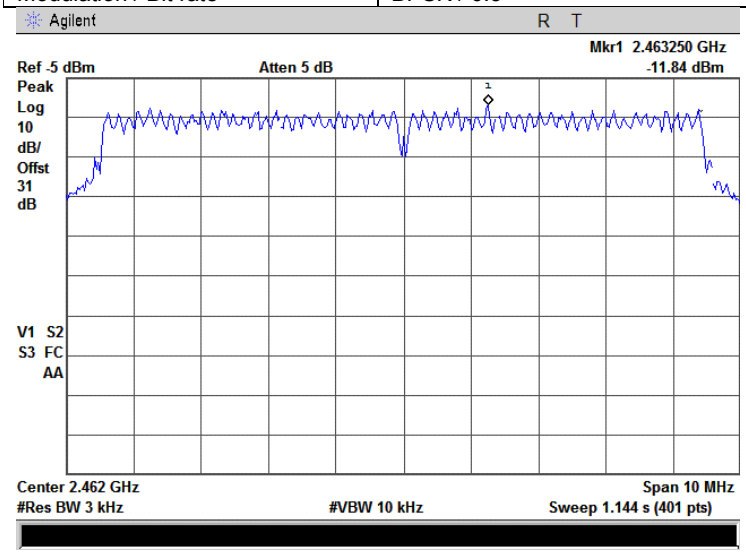
Emission Bandwidth	10 MHz
Modulation / Bit rate	64QAM / 65



Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

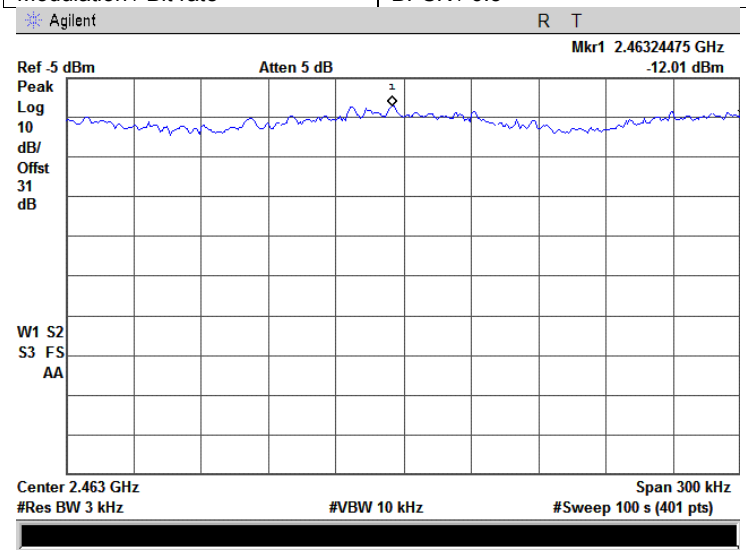
Plot 7.5.22 Peak spectral power density at high frequency within 6 dB band, antenna 1

Emission Bandwidth	10 MHz
Modulation / Bit rate	BPSK / 6.5



Plot 7.5.23 Peak spectral power density at high frequency zoomed at the peak, antenna 1

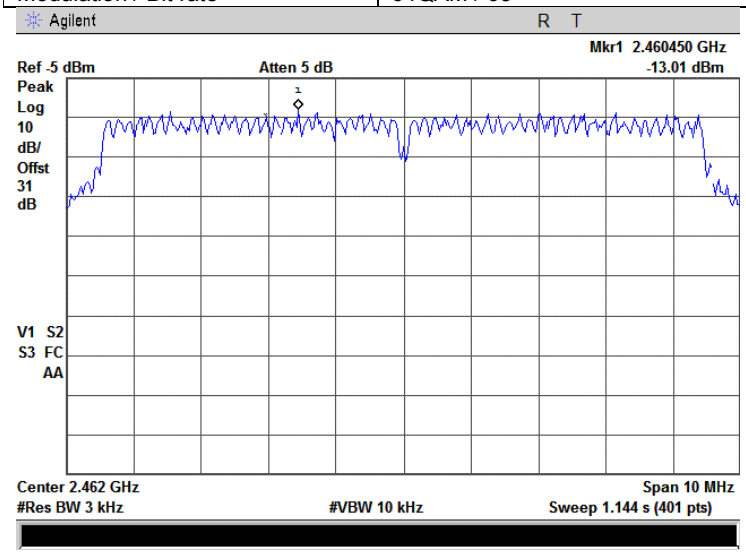
Emission Bandwidth	10 MHz
Modulation / Bit rate	BPSK / 6.5



Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

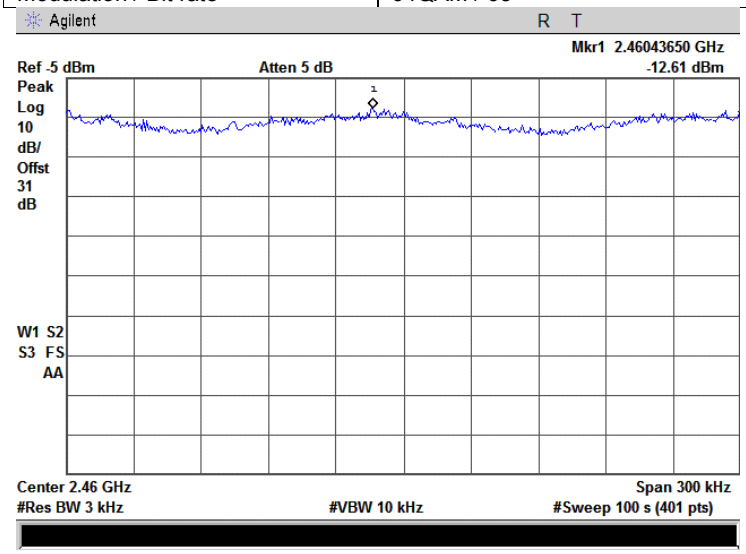
Plot 7.5.24 Peak spectral power density at high frequency within 6 dB band, antenna 1

Emission Bandwidth	10 MHz
Modulation / Bit rate	64QAM / 65



Plot 7.5.25 Peak spectral power density at high frequency zoomed at the peak, antenna 1

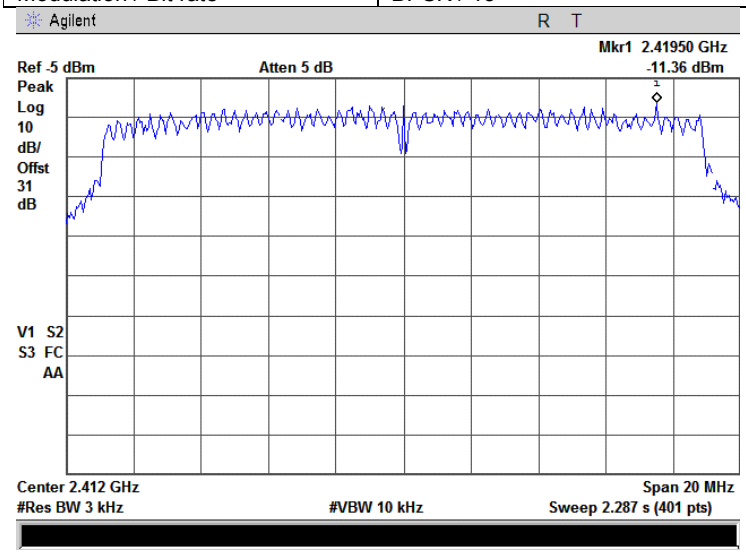
Emission Bandwidth	10 MHz
Modulation / Bit rate	64QAM / 65



Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

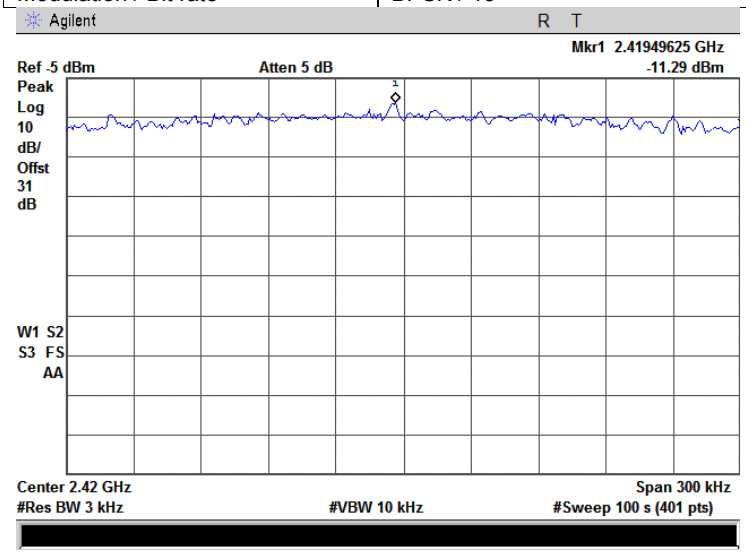
Plot 7.5.26 Peak spectral power density at low frequency within 6 dB band, antenna 1

Emission Bandwidth	20 MHz
Modulation / Bit rate	BPSK / 13



Plot 7.5.27 Peak spectral power density at low frequency zoomed at the peak, antenna 1

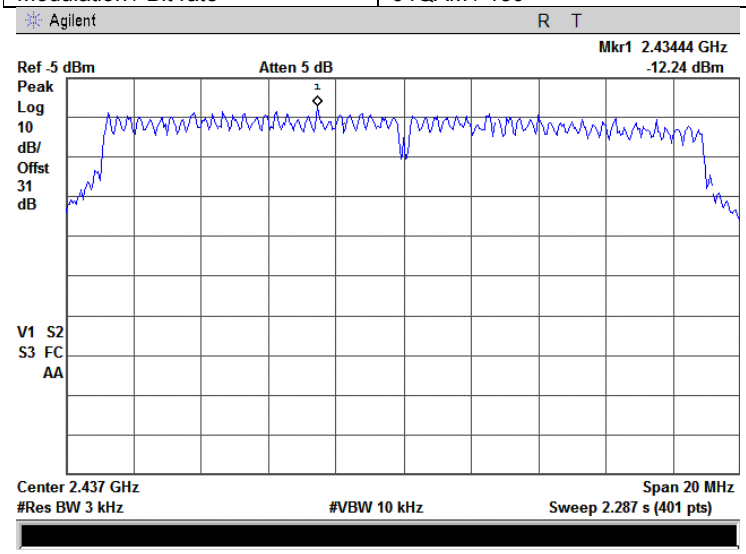
Emission Bandwidth	20 MHz
Modulation / Bit rate	BPSK / 13



Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

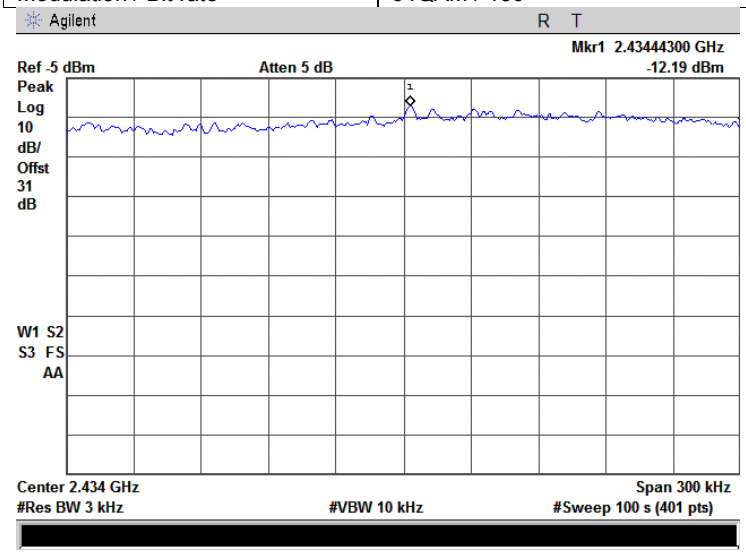
Plot 7.5.28 Peak spectral power density at low frequency within 6 dB band, antenna 1

Emission Bandwidth	20 MHz
Modulation / Bit rate	64QAM / 130



Plot 7.5.29 Peak spectral power density at low frequency zoomed at the peak, antenna 1

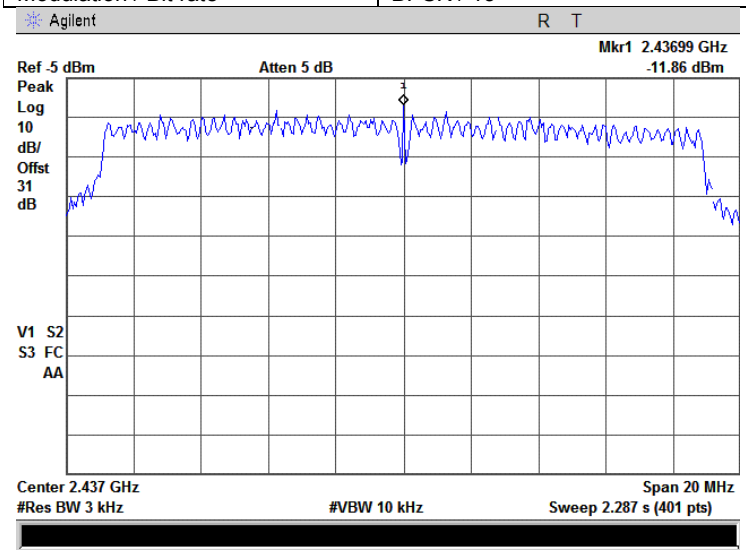
Emission Bandwidth	20 MHz
Modulation / Bit rate	64QAM / 130



Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

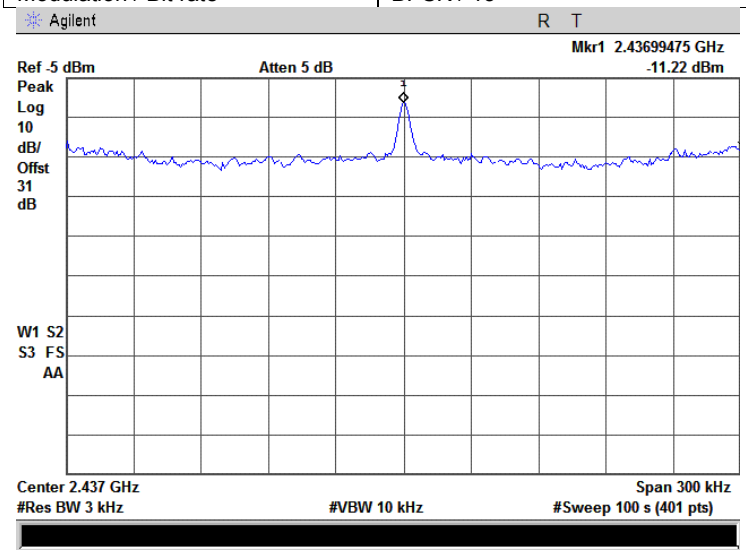
Plot 7.5.30 Peak spectral power density at mid frequency within 6 dB band, antenna 1

Emission Bandwidth	20 MHz
Modulation / Bit rate	BPSK / 13



Plot 7.5.31 Peak spectral power density at mid frequency zoomed at the peak, antenna 1

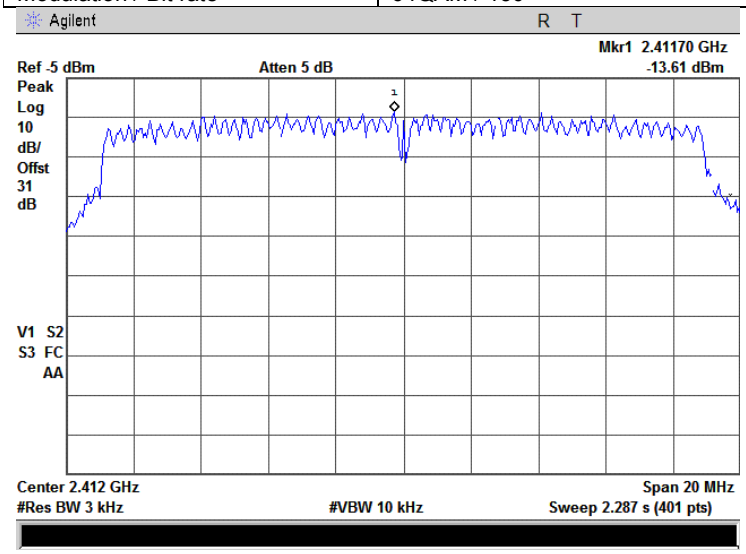
Emission Bandwidth	20 MHz
Modulation / Bit rate	BPSK / 13



Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

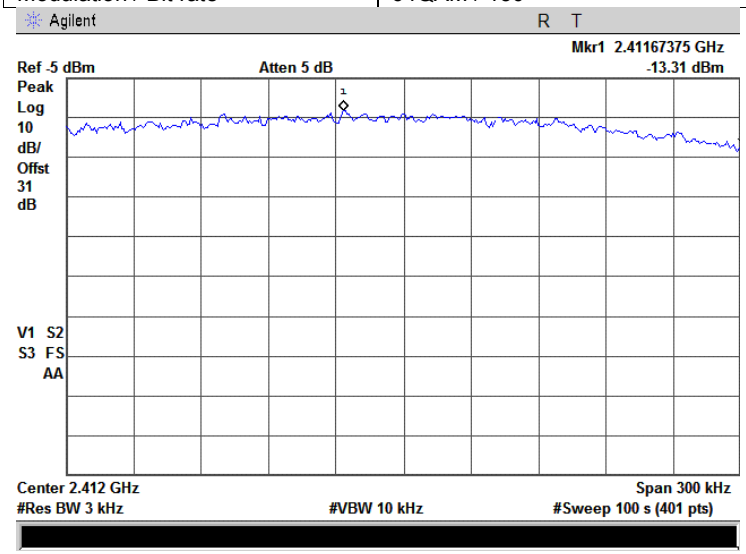
Plot 7.5.32 Peak spectral power density at mid frequency within 6 dB band, antenna 1

Emission Bandwidth	20 MHz
Modulation / Bit rate	64QAM / 130



Plot 7.5.33 Peak spectral power density at mid frequency zoomed at the peak, antenna 1

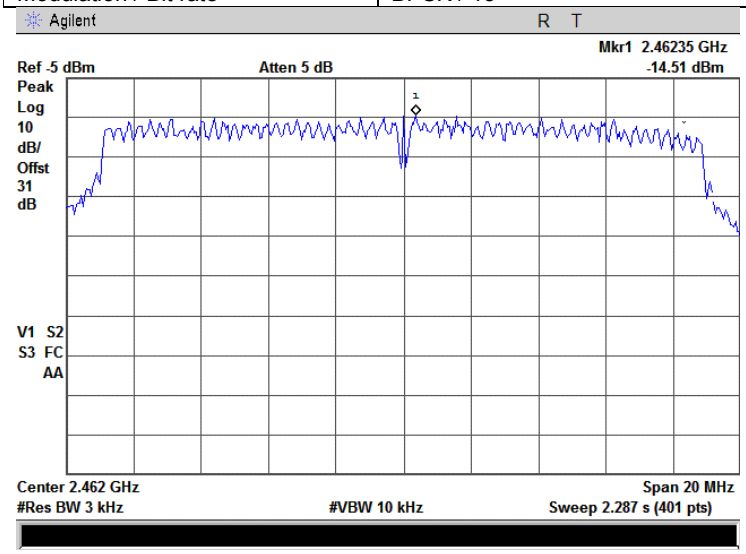
Emission Bandwidth	20 MHz
Modulation / Bit rate	64QAM / 130



Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

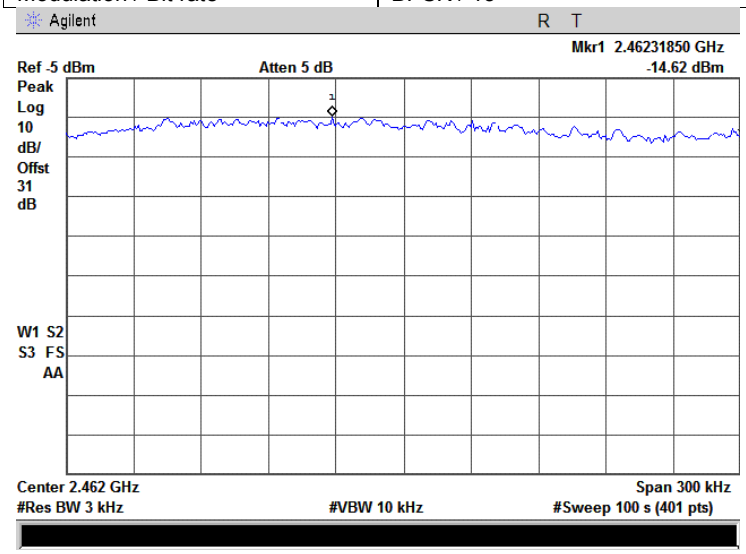
Plot 7.5.34 Peak spectral power density at high frequency within 6 dB band, antenna 1

Emission Bandwidth	20 MHz
Modulation / Bit rate	BPSK / 13



Plot 7.5.35 Peak spectral power density at high frequency zoomed at the peak, antenna 1

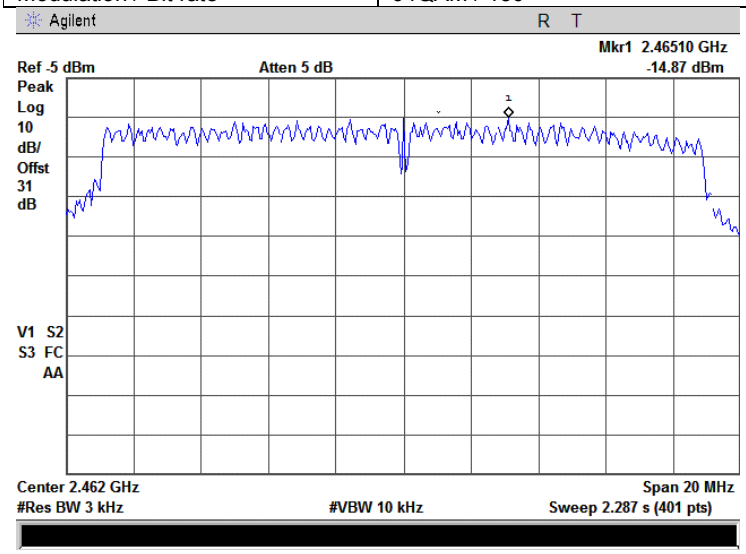
Emission Bandwidth	20 MHz
Modulation / Bit rate	BPSK / 13



Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

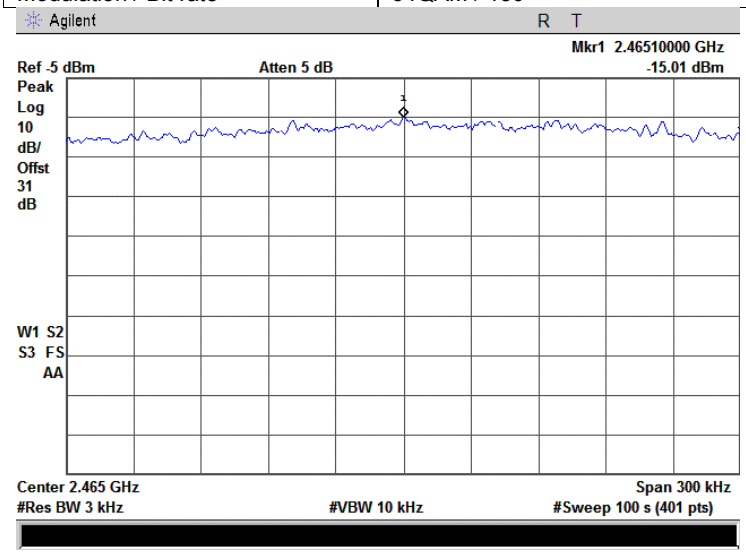
Plot 7.5.36 Peak spectral power density at high frequency within 6 dB band, antenna 1

Emission Bandwidth	20 MHz
Modulation / Bit rate	64QAM / 130



Plot 7.5.37 Peak spectral power density at high frequency zoomed at the peak, antenna 1

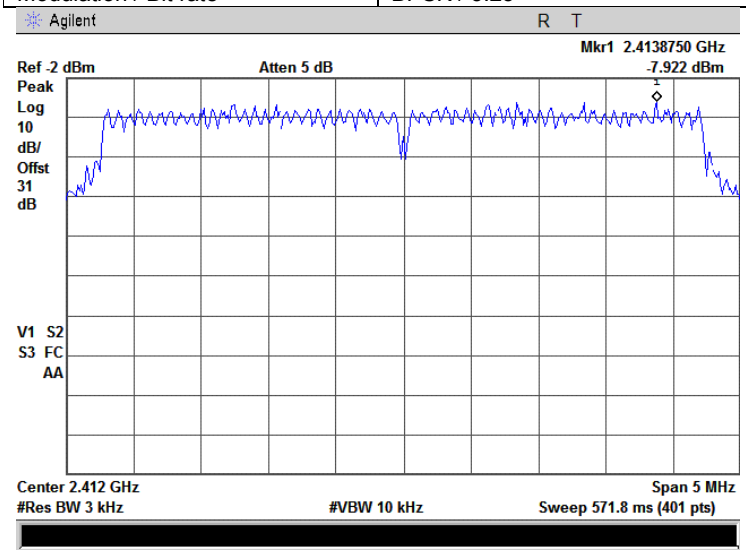
Emission Bandwidth	20 MHz
Modulation / Bit rate	64QAM / 130



Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

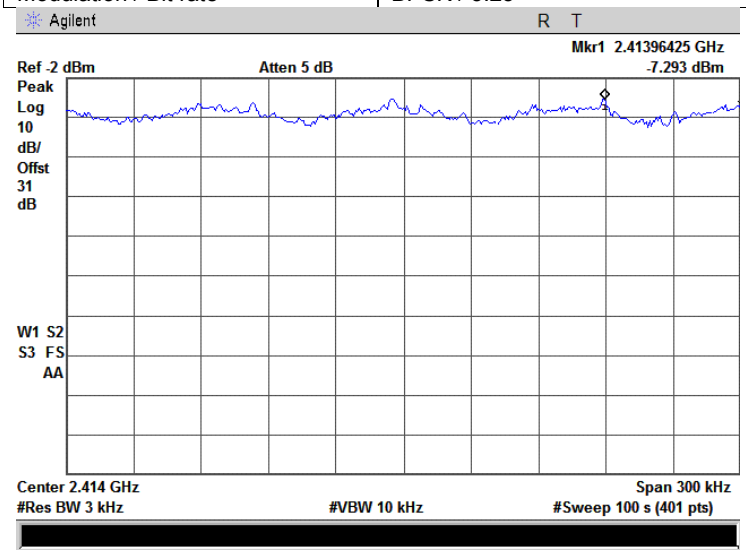
Plot 7.5.38 Peak spectral power density at low frequency within 6 dB band, antenna 2

Emission Bandwidth	5 MHz
Modulation / Bit rate	BPSK / 3.25



Plot 7.5.39 Peak spectral power density at low frequency zoomed at the peak, antenna 2

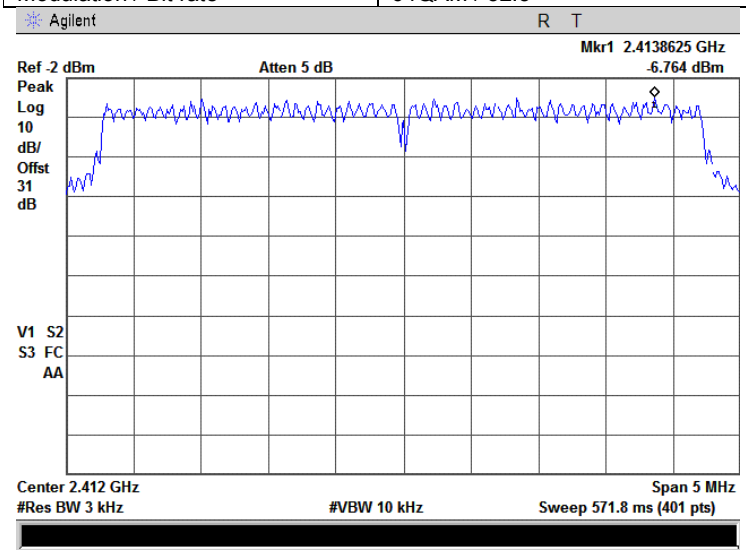
Emission Bandwidth	5 MHz
Modulation / Bit rate	BPSK / 3.25



Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

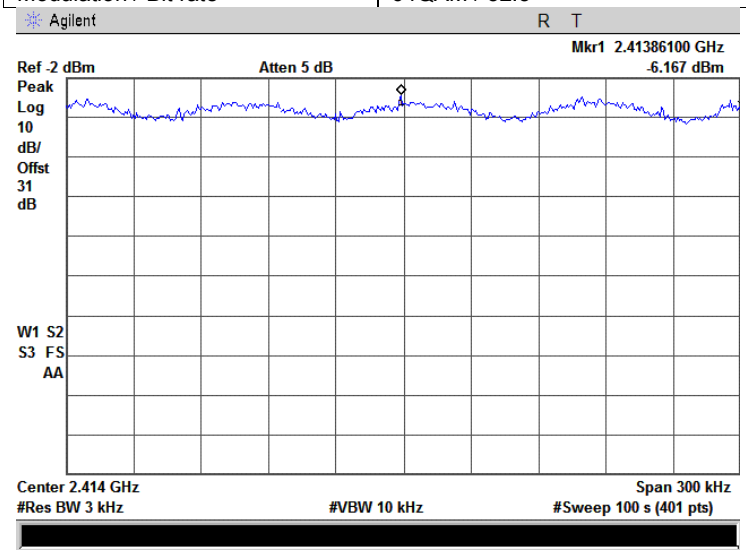
Plot 7.5.40 Peak spectral power density at low frequency within 6 dB band, antenna 2

Emission Bandwidth	5 MHz
Modulation / Bit rate	64QAM / 32.5



Plot 7.5.41 Peak spectral power density at low frequency zoomed at the peak, antenna 2

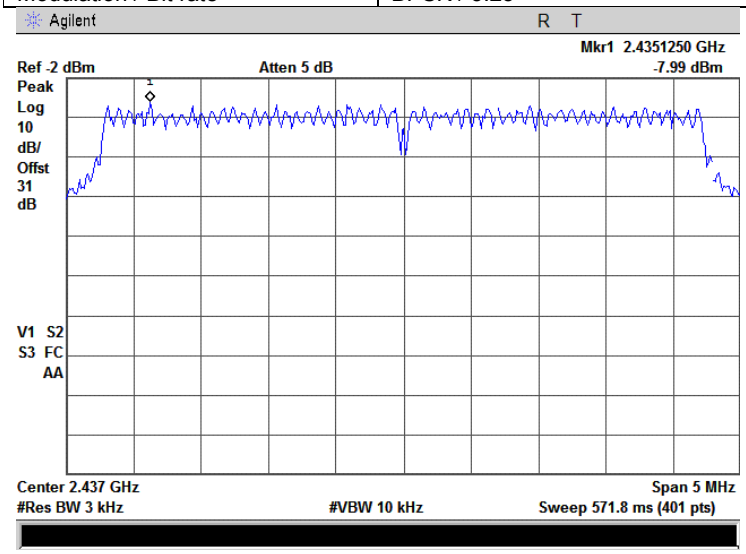
Emission Bandwidth	5 MHz
Modulation / Bit rate	64QAM / 32.5



Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

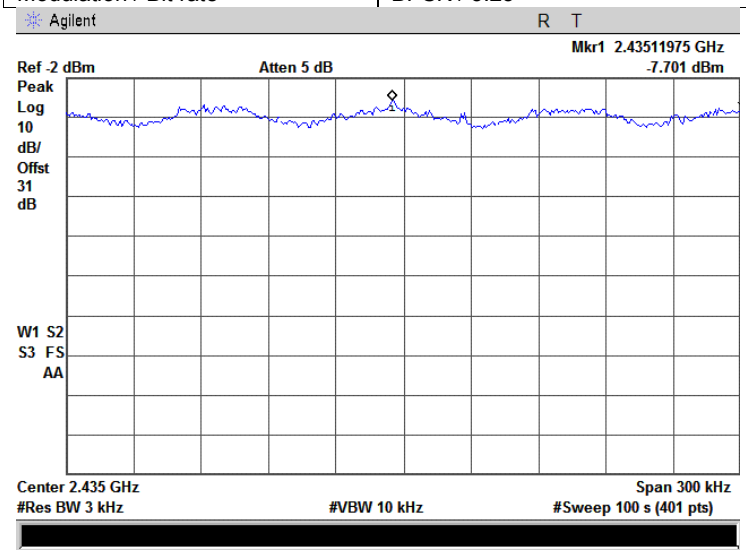
Plot 7.5.42 Peak spectral power density at mid frequency within 6 dB band, antenna 2

Emission Bandwidth	5 MHz
Modulation / Bit rate	BPSK / 3.25



Plot 7.5.43 Peak spectral power density at mid frequency zoomed at the peak, antenna 2

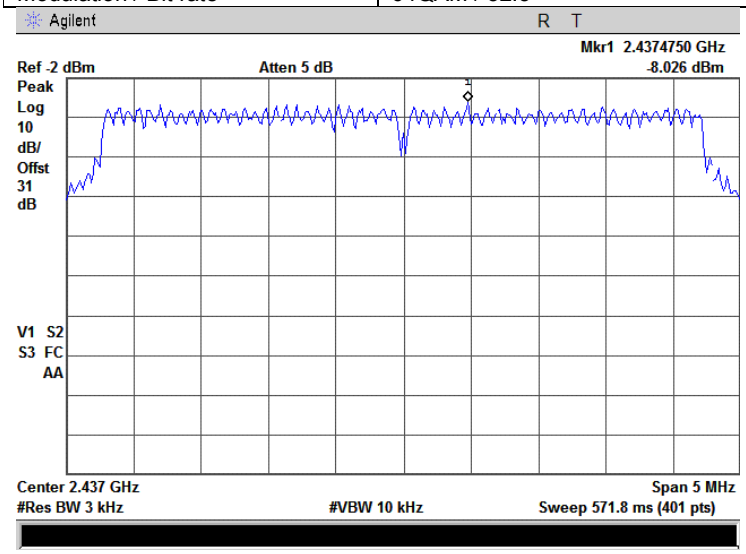
Emission Bandwidth	5 MHz
Modulation / Bit rate	BPSK / 3.25



Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

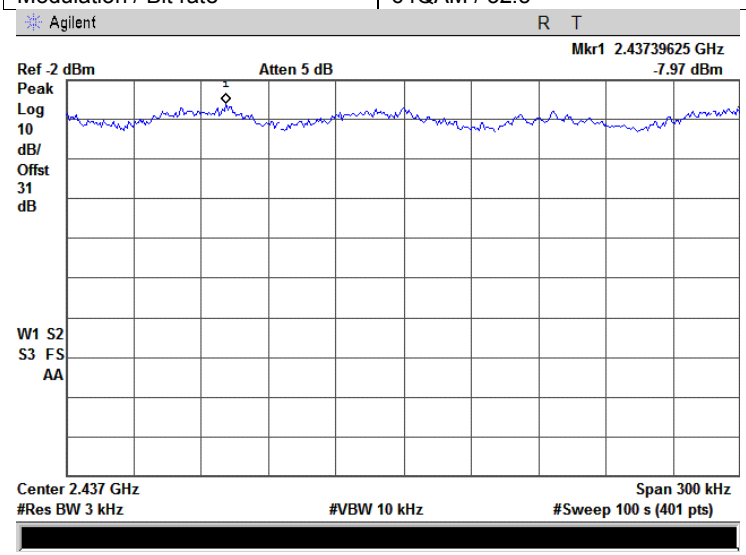
Plot 7.5.44 Peak spectral power density at mid frequency within 6 dB band, antenna 2

Emission Bandwidth	5 MHz
Modulation / Bit rate	64QAM / 32.5



Plot 7.5.45 Peak spectral power density at mid frequency zoomed at the peak, antenna 2

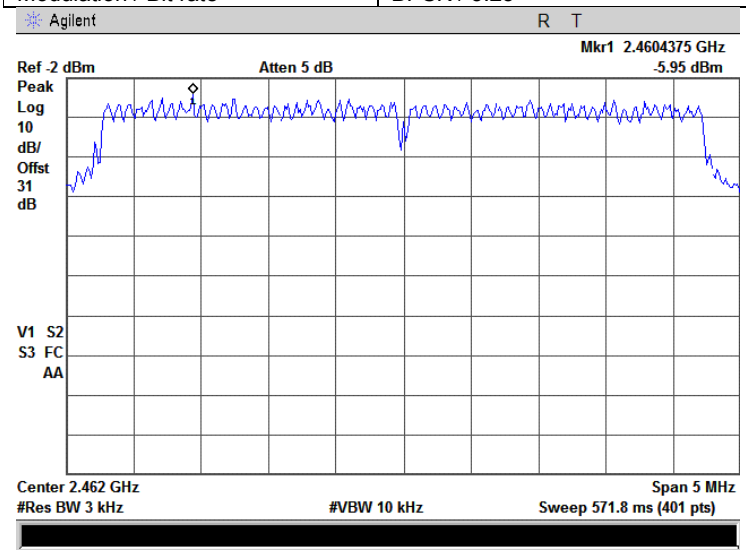
Emission Bandwidth	5 MHz
Modulation / Bit rate	64QAM / 32.5



Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

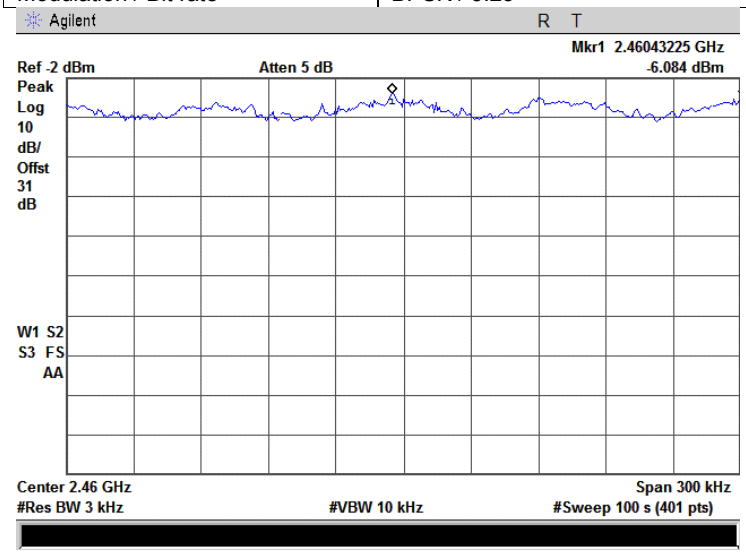
Plot 7.5.46 Peak spectral power density at high frequency within 6 dB band, antenna 2

Emission Bandwidth	5 MHz
Modulation / Bit rate	BPSK / 3.25



Plot 7.5.47 Peak spectral power density at high frequency zoomed at the peak, antenna 2

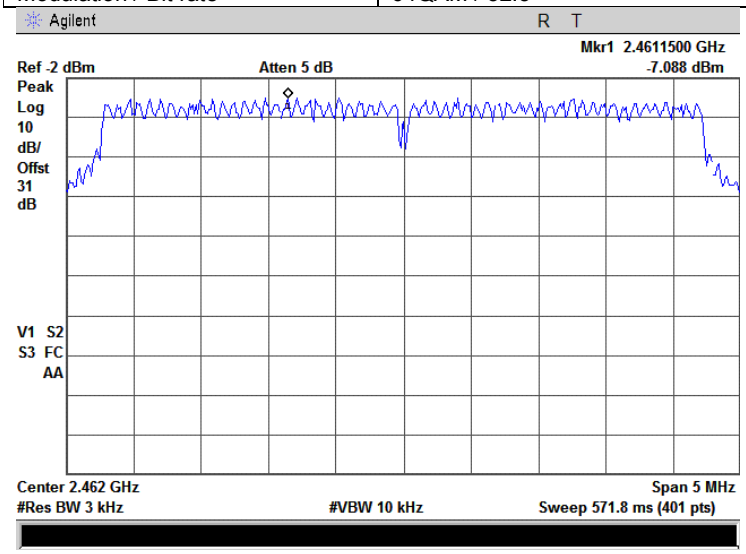
Emission Bandwidth	5 MHz
Modulation / Bit rate	BPSK / 3.25



Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

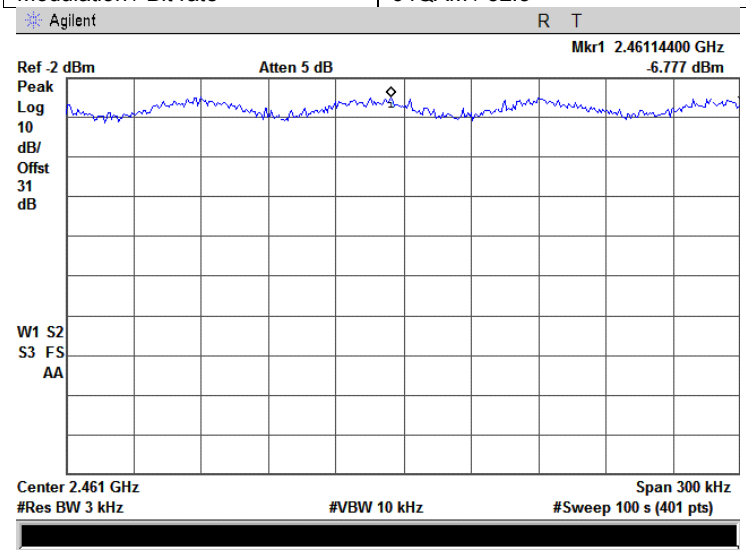
Plot 7.5.48 Peak spectral power density at high frequency within 6 dB band, antenna 2

Emission Bandwidth	5 MHz
Modulation / Bit rate	64QAM / 32.5



Plot 7.5.49 Peak spectral power density at high frequency zoomed at the peak, antenna 2

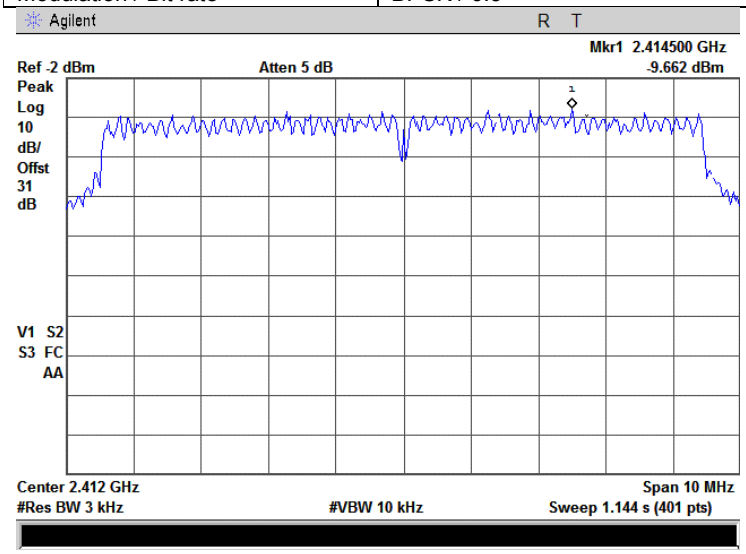
Emission Bandwidth	5 MHz
Modulation / Bit rate	64QAM / 32.5



Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

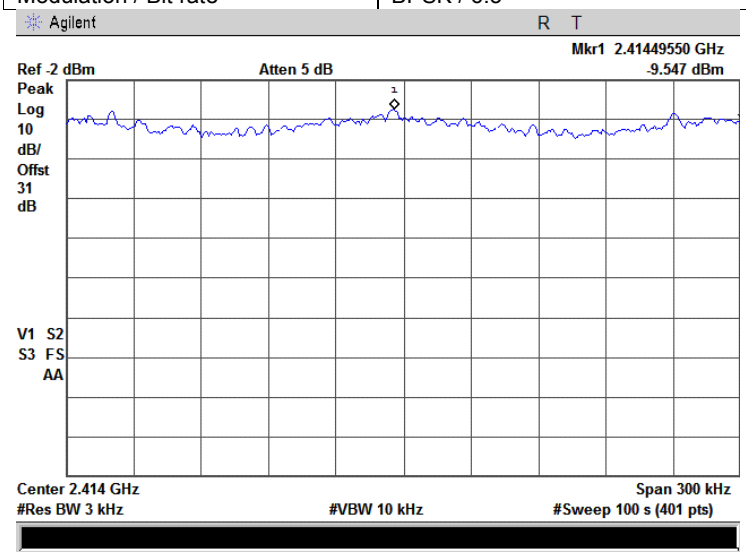
Plot 7.5.50 Peak spectral power density at low frequency within 6 dB band, antenna 2

Emission Bandwidth	10 MHz
Modulation / Bit rate	BPSK / 6.5



Plot 7.5.51 Peak spectral power density at low frequency zoomed at the peak, antenna 2

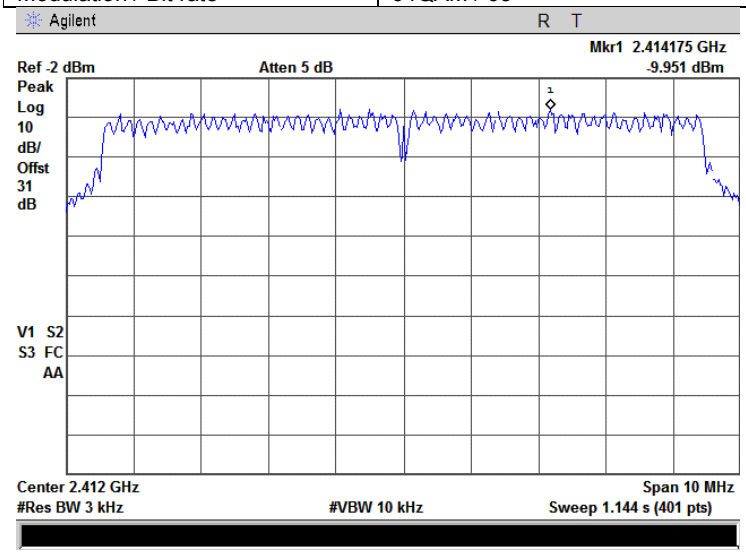
Emission Bandwidth	10 MHz
Modulation / Bit rate	BPSK / 6.5



Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

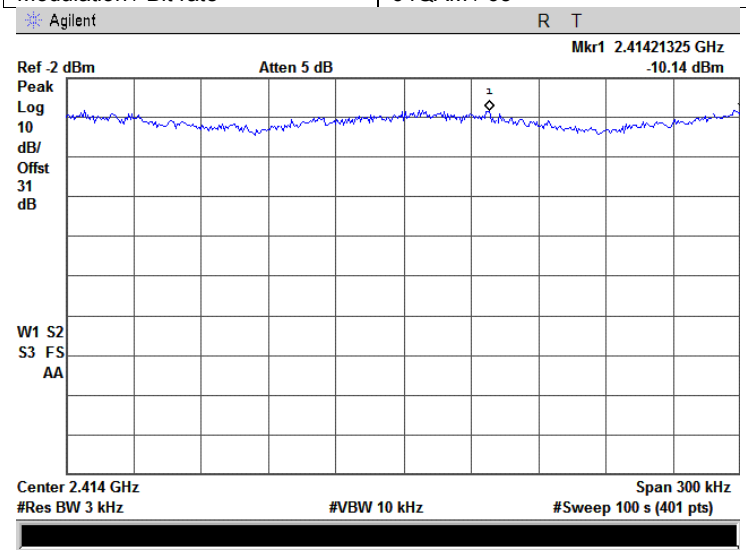
Plot 7.5.52 Peak spectral power density at low frequency within 6 dB band, antenna 2

Emission Bandwidth	10 MHz
Modulation / Bit rate	64QAM / 65



Plot 7.5.53 Peak spectral power density at low frequency zoomed at the peak, antenna 2

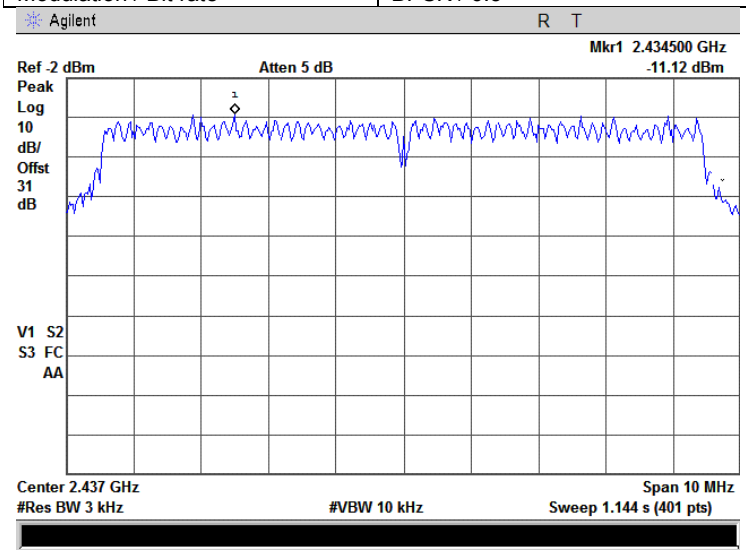
Emission Bandwidth	10 MHz
Modulation / Bit rate	64QAM / 65



Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

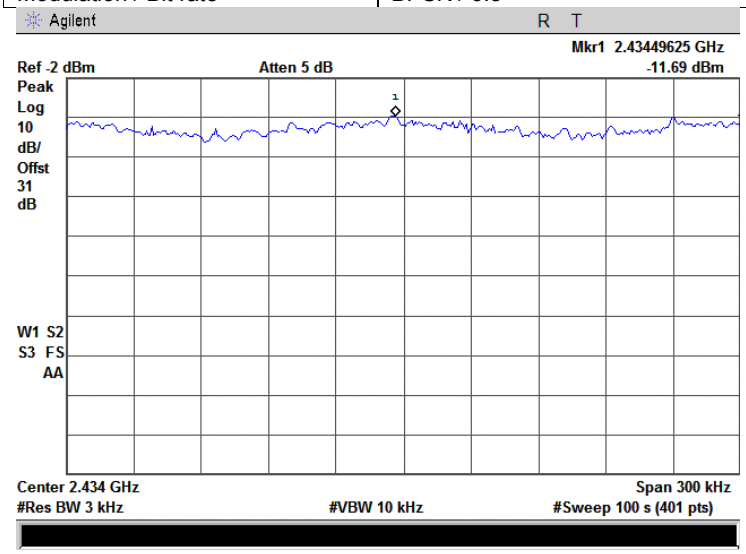
Plot 7.5.54 Peak spectral power density at mid frequency within 6 dB band, antenna 2

Emission Bandwidth	10 MHz
Modulation / Bit rate	BPSK / 6.5



Plot 7.5.55 Peak spectral power density at mid frequency zoomed at the peak, antenna 2

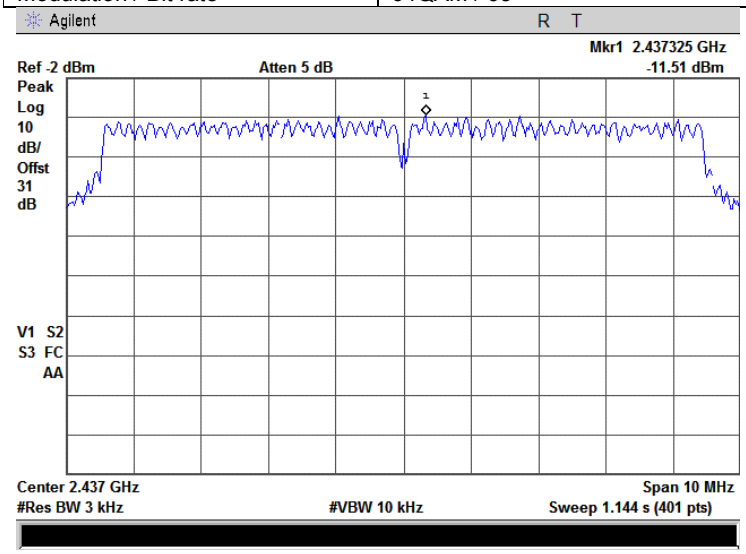
Emission Bandwidth	10 MHz
Modulation / Bit rate	BPSK / 6.5



Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

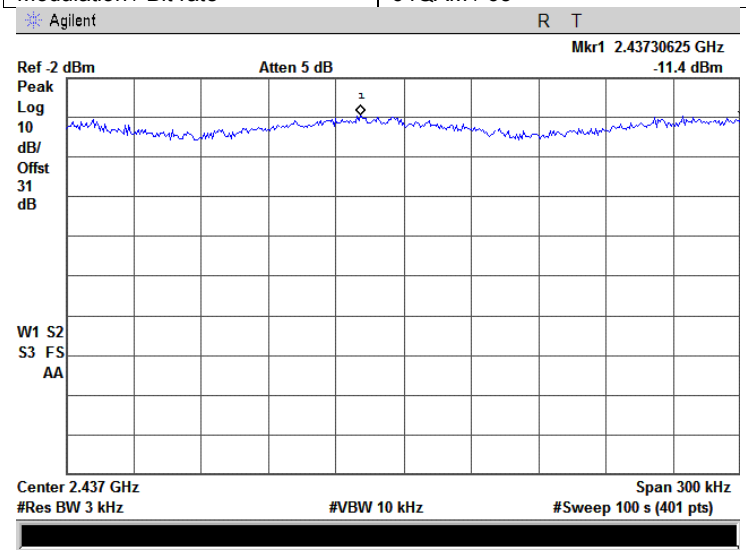
Plot 7.5.56 Peak spectral power density at mid frequency within 6 dB band, antenna 2

Emission Bandwidth	10 MHz
Modulation / Bit rate	64QAM / 65



Plot 7.5.57 Peak spectral power density at mid frequency zoomed at the peak, antenna 2

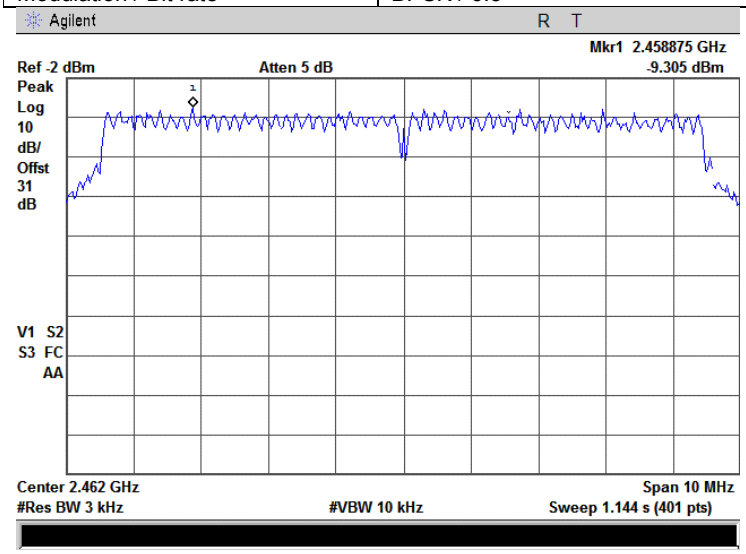
Emission Bandwidth	10 MHz
Modulation / Bit rate	64QAM / 65



Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

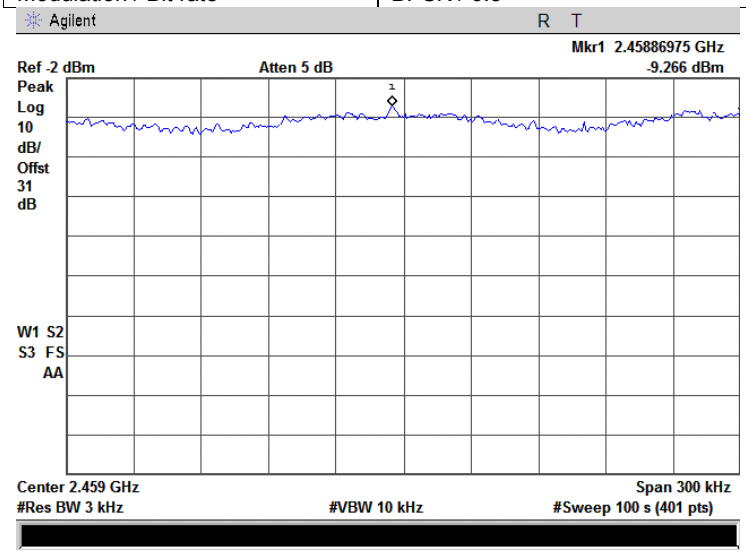
Plot 7.5.58 Peak spectral power density at high frequency within 6 dB band, antenna 2

Emission Bandwidth	10 MHz
Modulation / Bit rate	BPSK / 6.5



Plot 7.5.59 Peak spectral power density at high frequency zoomed at the peak, antenna 2

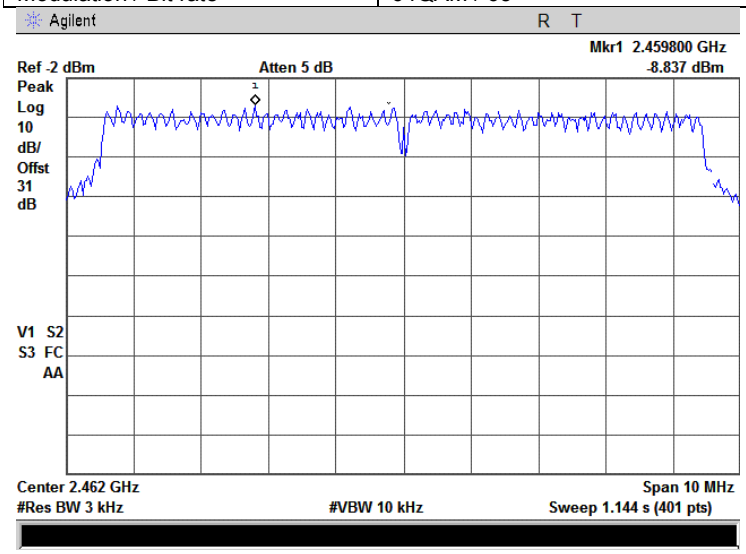
Emission Bandwidth	10 MHz
Modulation / Bit rate	BPSK / 6.5



Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

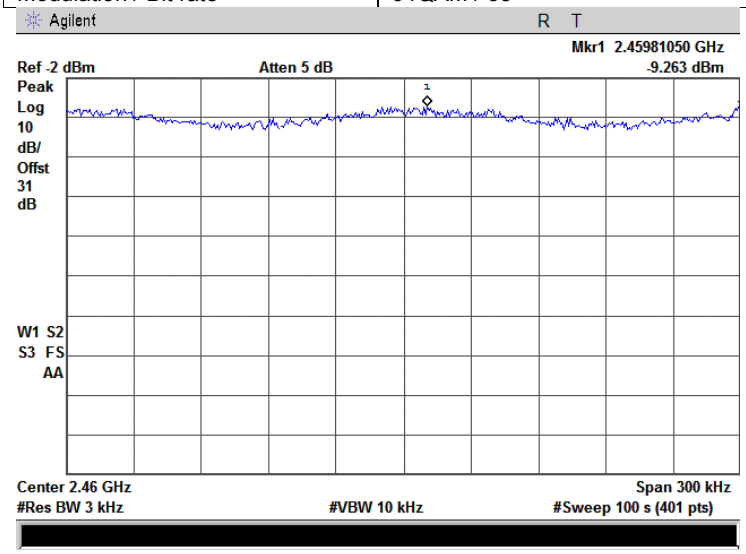
Plot 7.5.60 Peak spectral power density at high frequency within 6 dB band, antenna 2

Emission Bandwidth	10 MHz
Modulation / Bit rate	64QAM / 65



Plot 7.5.61 Peak spectral power density at high frequency zoomed at the peak, antenna 2

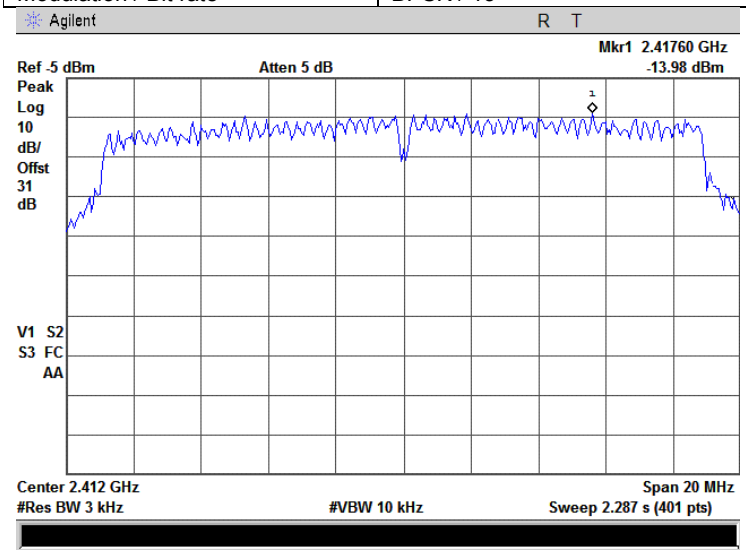
Emission Bandwidth	10 MHz
Modulation / Bit rate	64QAM / 65



Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

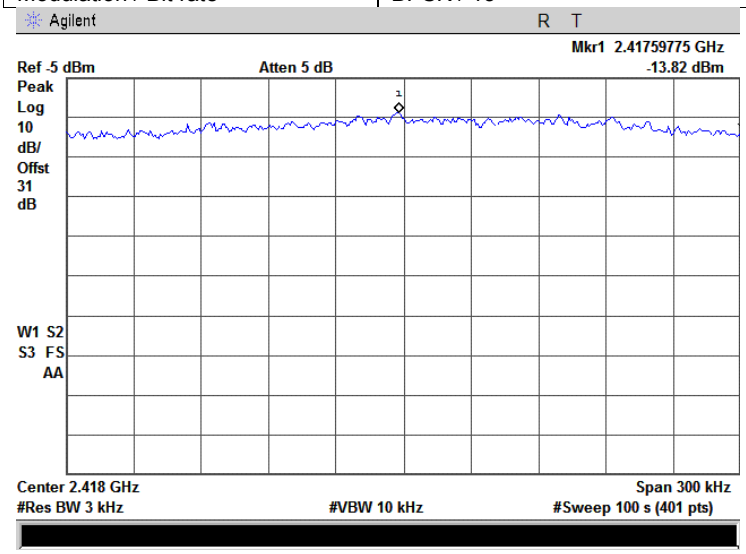
Plot 7.5.62 Peak spectral power density at low frequency within 6 dB band, antenna 2

Emission Bandwidth	20 MHz
Modulation / Bit rate	BPSK / 13



Plot 7.5.63 Peak spectral power density at low frequency zoomed at the peak, antenna 2

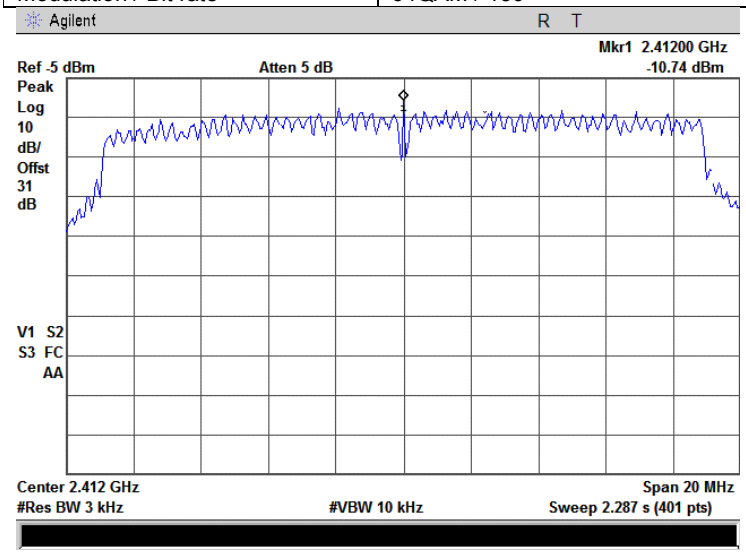
Emission Bandwidth	20 MHz
Modulation / Bit rate	BPSK / 13



Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

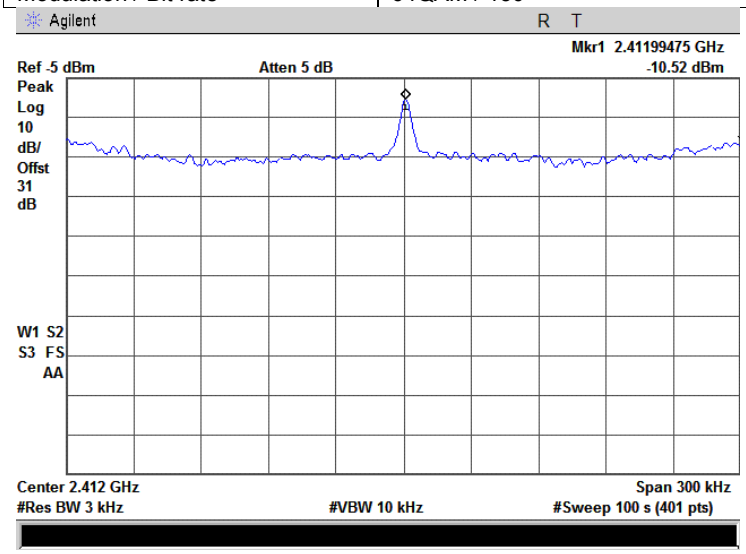
Plot 7.5.64 Peak spectral power density at low frequency within 6 dB band, antenna 2

Emission Bandwidth	20 MHz
Modulation / Bit rate	64QAM / 130



Plot 7.5.65 Peak spectral power density at low frequency zoomed at the peak, antenna 2

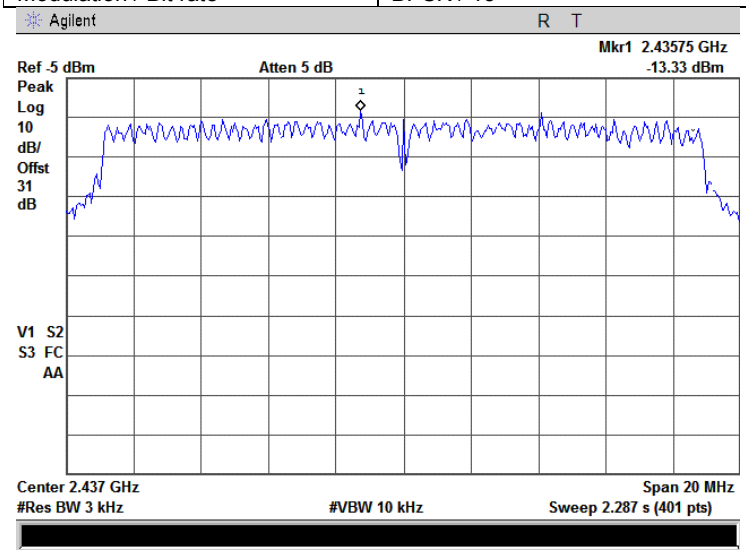
Emission Bandwidth	20 MHz
Modulation / Bit rate	64QAM / 130



Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

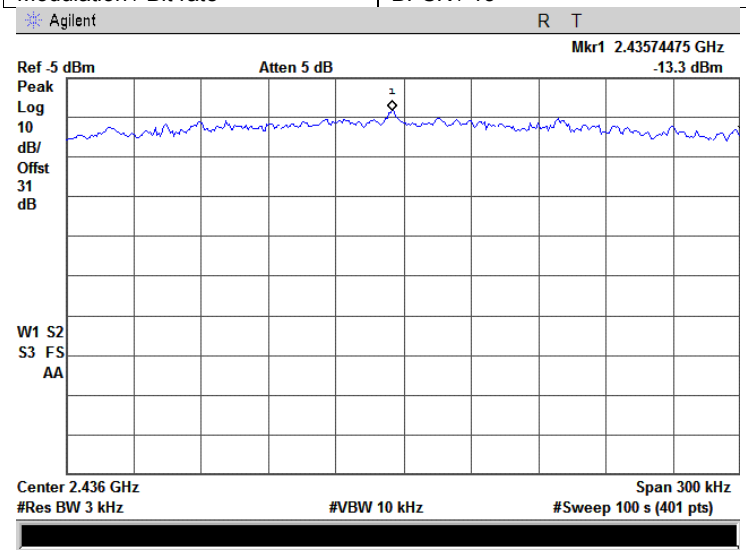
Plot 7.5.66 Peak spectral power density at mid frequency within 6 dB band, antenna 2

Emission Bandwidth	20 MHz
Modulation / Bit rate	BPSK / 13



Plot 7.5.67 Peak spectral power density at mid frequency zoomed at the peak, antenna 2

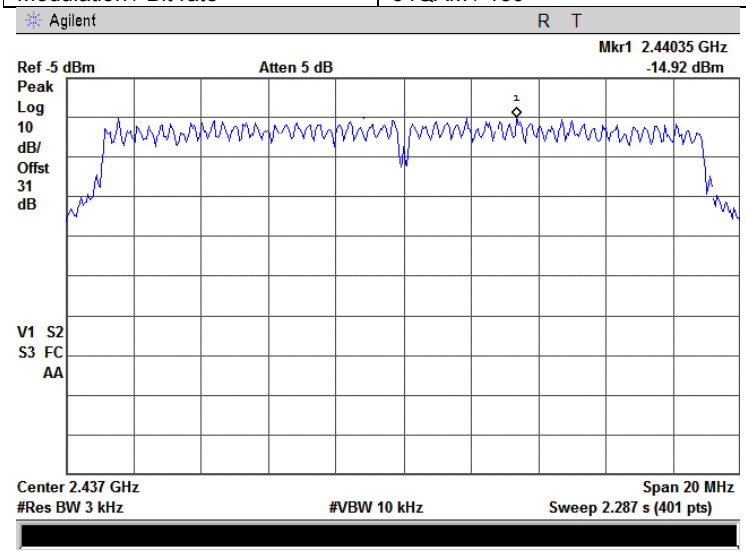
Emission Bandwidth	20 MHz
Modulation / Bit rate	BPSK / 13



Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

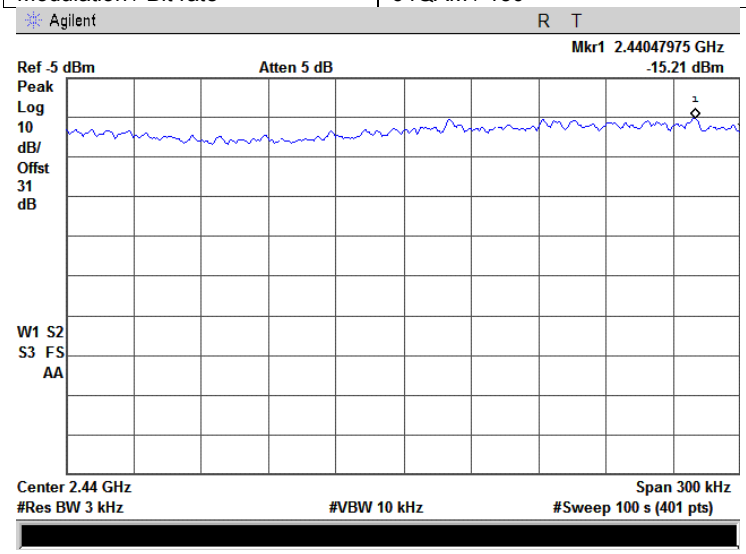
Plot 7.5.68 Peak spectral power density at mid frequency within 6 dB band, antenna 2

Emission Bandwidth	20 MHz
Modulation / Bit rate	64QAM / 130



Plot 7.5.69 Peak spectral power density at mid frequency zoomed at the peak, antenna 2

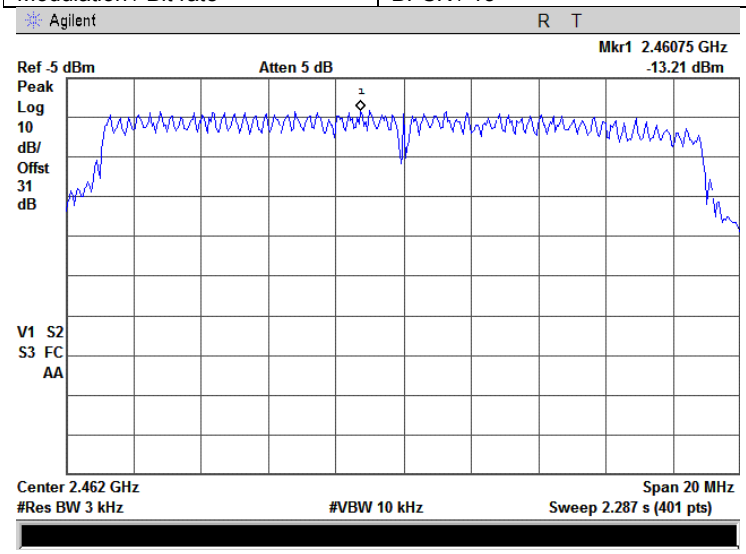
Emission Bandwidth	20 MHz
Modulation / Bit rate	64QAM / 130



Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

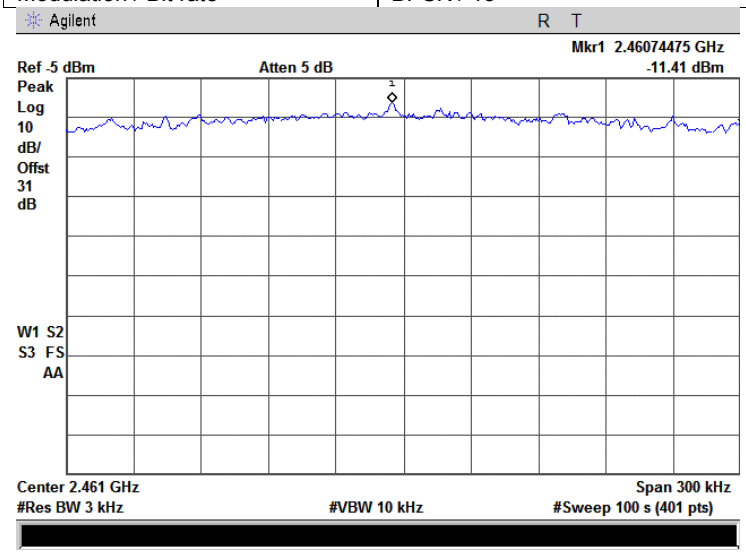
Plot 7.5.70 Peak spectral power density at high frequency within 6 dB band, antenna 2

Emission Bandwidth	20 MHz
Modulation / Bit rate	BPSK / 13



Plot 7.5.71 Peak spectral power density at high frequency zoomed at the peak, antenna 2

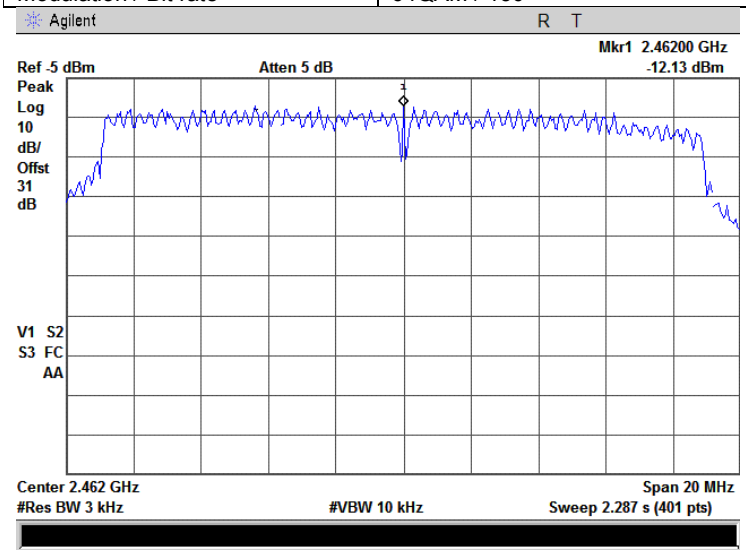
Emission Bandwidth	20 MHz
Modulation / Bit rate	BPSK / 13



Test specification:	Section 15.247(e), RSS-210 section A8.2(b), Peak power density		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(d), Option 2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

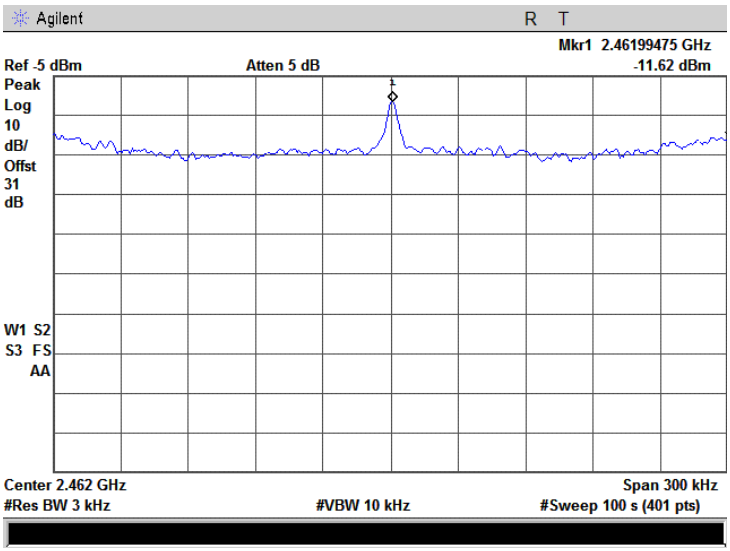
Plot 7.5.72 Peak spectral power density at high frequency within 6 dB band, antenna 2

Emission Bandwidth	20 MHz
Modulation / Bit rate	64QAM / 130



Plot 7.5.73 Peak spectral power density at high frequency zoomed at the peak, antenna 2

Emission Bandwidth	20 MHz
Modulation / Bit rate	64QAM / 130



Test specification:	FCC section 15.207(a), RSS-Gen section 7.2.2, Conducted emission		
Test procedure:	ANSI C63.4, Section 13.1.3		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 3:10:56 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

7.6 Conducted emissions

7.6.1 General

This test was performed to measure common mode conducted emissions at the power port. Specification test limits are given in Table 7.6.1.

Table 7.6.1 Limits for conducted emissions

Frequency, MHz	Class B limit, dB(µV)	
	QP	AVRG
0.15 - 0.5	66 - 56*	56 - 46*
0.5 - 5.0	56	46
5.0 - 30	60	50

* The limit decreases linearly with the logarithm of frequency.

7.6.2 Test procedure

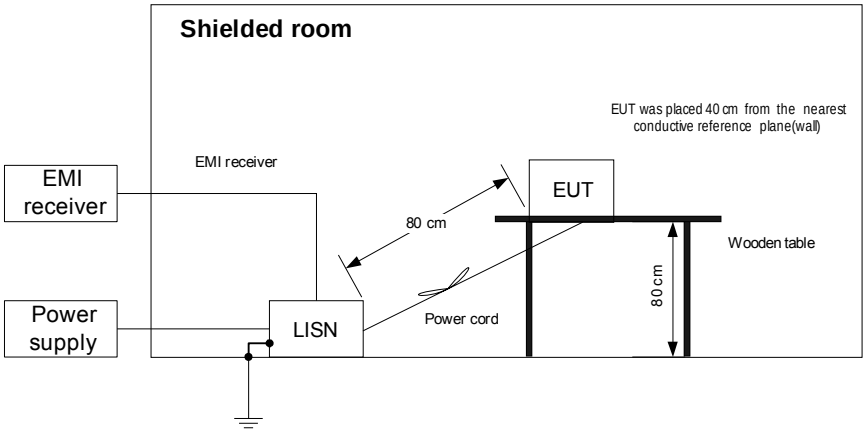
7.6.2.1 The EUT was set up as shown in Figure 7.6.1, energized and the performance check was conducted.

7.6.2.2 The measurements were performed at power terminals with the LISN, connected to a spectrum analyzer in the frequency range referred to in Table 7.6.2. Unused coaxial connector of the LISN was terminated with 50 Ohm. Quasi-peak and average detectors were used throughout the testing.

7.6.2.3 The position of the device cables was varied to determine maximum emission level.

7.6.2.4 The worst test results (the lowest margins) were recorded in Table 7.6.2 and shown in the associated plots.

Figure 7.6.1 Setup for conducted emission measurements, table-top equipment



Test specification:	**FCC section 15.207(a), RSS-Gen section 7.2.2, Conducted emission**		
Test procedure:	ANSI C63.4, Section 13.1.3		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	2/27/2009 3:10:56 PM		
Temperature: 23ºC	**Air Pressure:** 1013 hPa	**Relative Humidity:** 48%	**Power Supply:** 120 VAC
Remarks:			

Table 7.6.2 Conducted emission test results

LINE: AC mains
EUT OPERATING MODE: Transmit
EUT SET UP: TABLE-TOP
TEST SITE: SHIELDED ROOM
DETECTORS USED: PEAK / QUASI-PEAK / AVERAGE
FREQUENCY RANGE: 150 kHz - 30 MHz
RESOLUTION BANDWIDTH: 9 kHz

Frequency, MHz	Peak emission, dB(µV)	Quasi-peak			Average			Line ID	Verdict
		Measured emission, dB(µV)	Limit, dB(µV)	Margin, dB*	Measured emission, dB(µV)	Limit, dB(µV)	Margin, dB*		
0.153465	54.65	51.20	65.83	-14.63	47.81	55.83	-8.02	L1	Pass
0.226840	47.59	47.00	62.62	-15.62	43.65	52.62	-8.97		
0.454575	44.59	43.95	56.85	-12.90	43.95	46.85	-2.90		
3.637068	42.93	42.23	56.00	-13.77	41.40	46.00	-4.60		
4.016220	42.97	42.11	56.00	-13.89	41.05	46.00	-4.95		
4.395125	42.55	41.81	56.00	-14.19	40.59	46.00	-5.41		
0.153525	53.59	50.50	65.83	-15.33	48.39	55.83	-7.44	L2	Pass
0.226900	47.42	46.78	62.62	-15.84	44.02	52.62	-8.60		
0.454610	44.42	44.04	56.85	-12.81	43.95	46.85	-2.90		
3.637910	43.72	43.14	56.00	-12.86	42.25	46.00	-3.75		
4.016510	43.94	43.19	56.00	-12.81	41.95	46.00	-4.05		
4.394608	44.07	43.07	56.00	-12.93	41.22	46.00	-4.78		

*****- Margin = Measured emission - specification limit.

Reference numbers of test equipment used

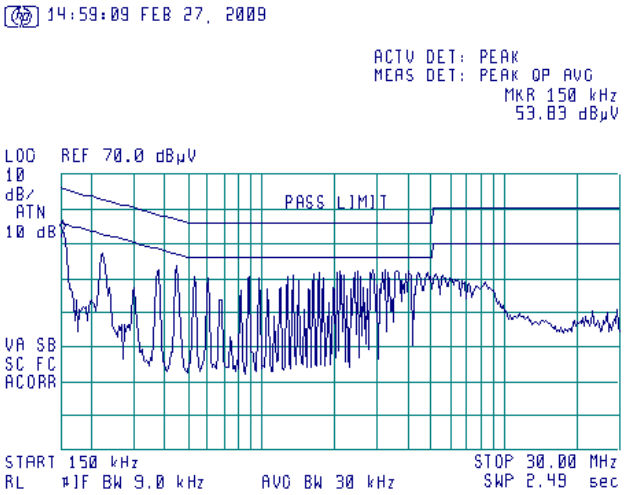
HL 0447	HL 0580	HL 1503	HL 1430	HL 3170	HL 3612		

Full description is given in Appendix A.

Test specification:	FCC section 15.207(a), RSS-Gen section 7.2.2, Conducted emission		
Test procedure:	ANSI C63.4, Section 13.1.3		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 3:10:56 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

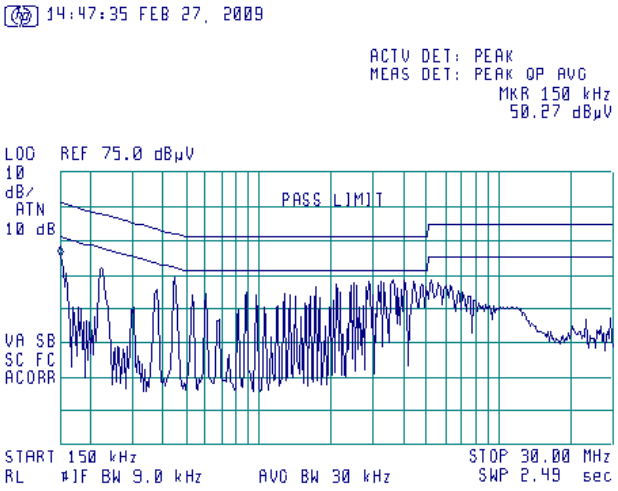
Plot 7.6.1 Conducted emission measurements

LINE: L1
EUT OPERATING MODE: Transmit
LIMIT: QUASI-PEAK, AVERAGE
DETECTOR: PEAK



Plot 7.6.2 Conducted emission measurements

LINE: L2
EUT OPERATING MODE: Transmit
LIMIT: QUASI-PEAK, AVERAGE
DETECTOR: PEAK



Test specification:	FCC section 15.203, RSS-Gen section 7.1.4, Antenna requirement		
Test procedure:	Visual inspection		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/27/2009 3:51:12 PM		
Temperature: 23ºC	Air Pressure: 1013 hPa	Relative Humidity: 48%	Power Supply: 120 VAC
Remarks:			

7.7 Antenna requirements

The EUT was verified for compliance with antenna requirements. A transmitter shall be designed to ensure that no antenna other than that furnished by the responsible party will be used with the device. It may be either permanently attached or employs a unique antenna connector for every antenna proposed for use with the EUT. This requirement does not apply to professionally installed transmitters.
The rationale for compliance with the above requirements was either visual inspection results or supplier declaration. The summary of results is provided in Table 7.7.1.

Table 7.7.1 Antenna requirements

Requirement	Rationale	Verdict
The transmitter antenna is permanently attached	NA	Comply
The transmitter employs a unique antenna connector	NA	
The transmitter requires professional installation	Supplier declaration	

Photograph 7.7.1 Antenna connectors

Photograph 7.7.2 Antenna assembly

Test specification:	RSS-Gen Section 7.2.3.2, Receiver spurious emission		
Test procedure:	RSS-Gen, Section 4.10		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

8 Receiver tests

8.1 Receiver spurious emissions at RF antenna connector

8.1.1 General

This test was performed to measure spurious emissions at RF antenna connector of receiver. Specification test limits are given in Table 8.1.1.

Table 8.1.1 Receiver spurious emission limits

Frequency range, MHz	Maximum ERP, nW	Maximum ERP, dBm	Measurement bandwidth, (min) kHz
30 – 1000	2	-57	4
1000 - 15000	5	-53	4

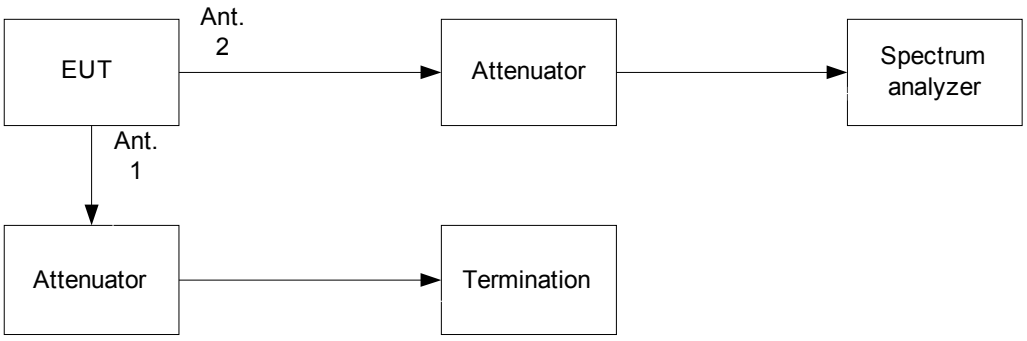
8.1.2 Test procedure

8.1.2.1 The EUT was set up as shown in Figure 8.1.1, energized and its proper operation was checked.

8.1.2.2 The EUT was set in receive mode.

8.1.2.3 Spurious emission was measured with spectrum analyzer as provided in Table 8.1.2 and the associated plots.

Figure 8.1.1 Receiver spurious emission test set up



Test specification:	**RSS-Gen Section 7.2.3.2, Receiver spurious emission**		
Test procedure:	RSS-Gen, Section 4.10		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	**Air Pressure:** 1018 hPa	**Relative Humidity:** 45%	**Power Supply:** 120 VAC
Remarks:			

Table 8.1.2 Receiver spurious emission test results

ASSIGNED FREQUENCY RANGE: 2400 – 2483.5 MHz
DETECTOR USED: Peak
RESOLUTION BANDWIDTH: 120 kHz in the 30 – 1000 MHz frequency range;
1000 kHz in the 1000 – 15000 MHz frequency range
VIDEO BANDWIDTH: > RBW

Receive frequency, MHz	Unwanted frequency, MHz	Unwanted emission, dBm	Unwanted emission limit, dBm	Margin, dB	Verdict
Antenna 1					
2437.0	933.33	-73.35	-57.0	-16.35	Pass
	957.75	-76.42	-57.0	-19.42	Pass
	974.65	-73.31	-57.0	-16.31	Pass
	1356.1	-67.82	-53.0	-14.82	Pass
Antenna 2					
2437.0	933.25	-84.82	-57.0	-27.82	Pass
	974.75	-84.32	-57.0	-27.32	Pass

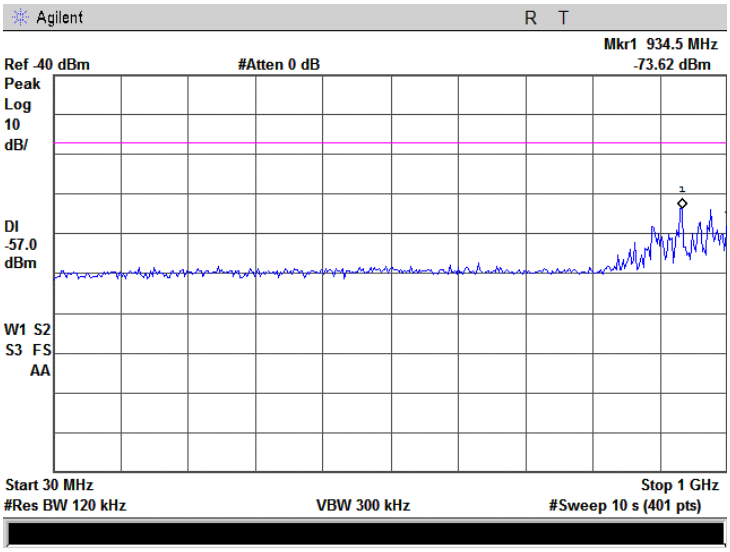
Reference numbers of test equipment used

HL 2909	HL 3386						

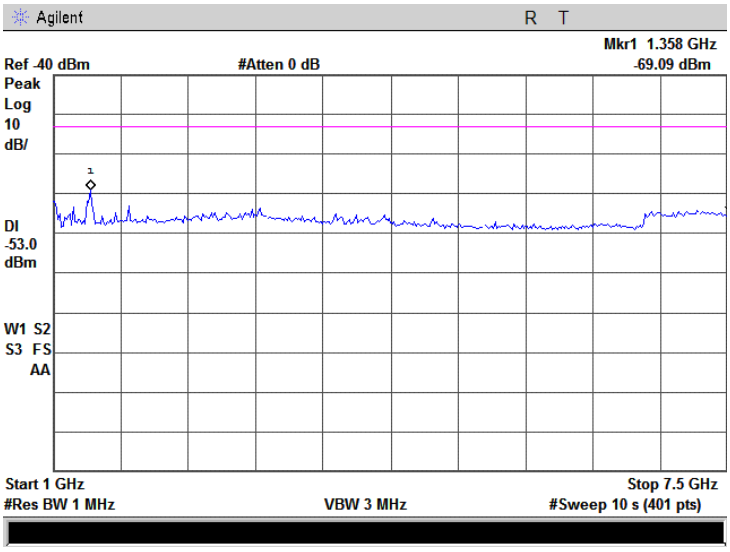
Full description is given in Appendix A.

Test specification:	RSS-Gen Section 7.2.3.2, Receiver spurious emission		
Test procedure:	RSS-Gen, Section 4.10		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

Plot 8.1.1 Receiver spurious emission test results in 30 – 1000 MHz range at antenna 1

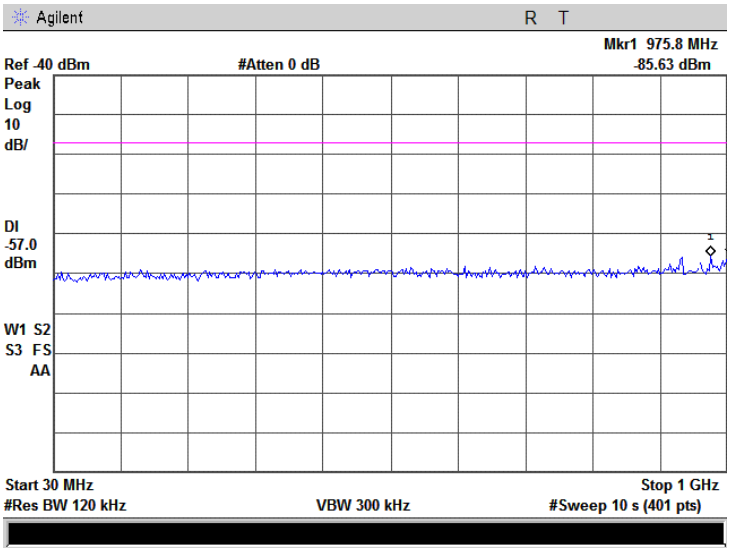


Plot 8.1.2 Receiver spurious emission test results in 1.0 – 15.0 GHz range at antenna 1

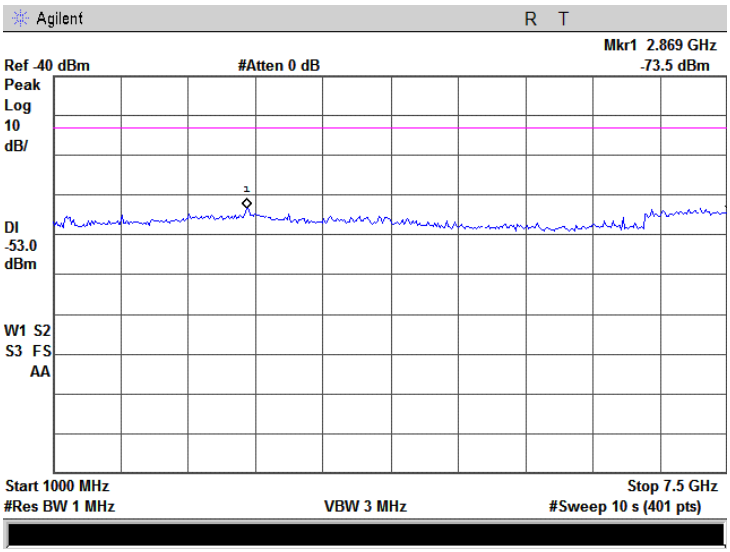


Test specification:	RSS-Gen Section 7.2.3.2, Receiver spurious emission		
Test procedure:	RSS-Gen, Section 4.10		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	2/24/2009 11:02:09 PM		
Temperature: 23ºC	Air Pressure: 1018 hPa	Relative Humidity: 45%	Power Supply: 120 VAC
Remarks:			

Plot 8.1.3 Receiver spurious emission test results in 30 – 1000 MHz range at antenna 2



Plot 8.1.4 Receiver spurious emission test results in 1.0 – 15.0 GHz range at antenna 2



9 APPENDIX A Test equipment and ancillaries used for tests

HL No	Description	Manufacturer	Model	Ser. No.	Last Cal.	Due Cal.
0446	Antenna, Loop, Active, 10 kHz - 30 MHz	EMCO	6502	2857	29-Jun-08	29-Jun-09
0447	LISN, 16/2, 300V RMS, 50 Ohm/50 uH + 5 Ohm, STD CISPR 16-1	Hermon Laboratories	LISN 16 - 1	066	04-Nov-08	04-Nov-09
0521	EMI Receiver (Spectrum Analyzer) with RF filter section 9 kHz-6.5 GHz	Hewlett Packard Co	8546A	3617A 00319, 3448A002 53	29-Aug-08	29-Aug-09
0580	DC block adaptor 10 kHz - 2.2 GHz	Anritsu	MA8601 A	580	23-Nov-08	23-Nov-09
0604	Antenna BiconiLog Log-Periodic/T Bow-TIE, 26 - 2000 MHz	EMCO	3141	9611-1011	11-Jan-09	11-Jan-10
0768	Antenna Standard Gain Horn,18-26.5 GHz, WR-42, 25 dB gain	Quinstar Technology	QWH-4200-BA	110	08-Dec-06	08-Dec-09
1424	Spectrum Analyzer, 30 Hz- 40 GHz	Agilent Technologies	8564EC	3946A002 19	30-Dec-08	30-Dec-09
1430	EMI Receiver, 9 kHz - 2.9 GHz, System: HL1431, HL1432	Agilent Technologies	8542E	3807A002 62,3705A0 0217	31-Aug-08	31-Aug-09
1503	Cable RF, 6 m, BNC/BNC	Belden	M17/167 MIL-C-17	1503	30-Dec-08	30-Dec-09
1984	Antenna, Double-Ridged Waveguide Horn, 1-18 GHz, 300 W	EMC Test Systems	3115	9911-5964	23-Jan-09	23-Jan-10
2015	Power Divider, 0.5-18.0 GHz, 80 W	Omni Spectra	2090-6204-00	2015	01-Dec-08	01-Dec-09
2254	Cable 40 GHz, 0.8 m, blue	Rhophase Microwave Limited	KPS-1503A-800-KPS	W4907	10-Jun-08	10-Jun-09
2387	Filter Bandpass, 8-14 GHz	Hermon Laboratories	FBP8-14	2387	05-Jun-07	05-Jun-09
2909	Spectrum analyzer, ESA-E, 100 Hz to 26.5 GHz	Agilent Technologies	E4407B	MY414447 62	07-May-08	07-May-09
3121	Microwave Cable Assembly, 18 GHz, 6.4 m, SMA - SMA	Huber-Suhner	198-9155-00	3121	07-Dec-08	07-Dec-09
3122	Microwave Cable Assembly, 18 GHz, 6.4 m, SMA - SMA	Huber-Suhner	198-9155-00	3122	07-Dec-08	07-Dec-09
3170	Attenuator, N-type, 10 dB, DC to 6 GHz, 1 W	Mini-Circuits	UNAT-10+	15542	07-May-08	07-May-09
3175	Attenuator, N-type, 10 dB, DC to 18 GHz, 5 W	Mini-Circuits	BW-N10W5+	0708	07-May-08	07-May-09
3179	Attenuator, N-type, 20 dB, DC to 18 GHz, 5 W	Mini-Circuits	BW-N20W5+	0651	07-May-08	07-May-09
3180	Attenuator, N-type, 20 dB, DC to 18 GHz, 5 W	Mini-Circuits	BW-N20W5+	0651	07-May-08	07-May-09

HL No	Description	Manufacturer	Model	Ser. No.	Last Cal.	Due Cal.
3206	Cable 40 GHz, 0.6 m	Gore	GOR245	05118336	10-Jun-08	10-Jun-09
3301	Power Meter, P-series, 50 MHz to 40 GHz	Agilent Technologies	N1911A	MY45101057	03-Dec-08	03-Dec-09
3302	Power sensor, P-Series, 50 MHz to 40 GHz, -35/30 to 20 dBm	Agilent Technologies	N1922A	MY45240586	05-Dec-08	05-Dec-09
3344	High Pass Filter, 50 Ohm, 3400 to 9900 MHz	Mini-Circuits	VHF-3100+	NA	29-Oct-08	29-Oct-09
3356	Low Pass Filter, 50 Ohm, DC to 1800 MHz	Mini-Circuits	VLF-1800+	NA	26-Oct-08	26-Oct-09
3385	Microwave Cable Assembly, 18.0 GHz, 1.0 m, N type/N type	Suhner Sucoflex	104EA	3385	07-Dec-08	07-Dec-09
3386	Microwave Cable Assembly, 26.5 GHz, 1.0 m, N type/N type	Suhner Sucoflex	104EA	3386	04-Feb-09	04-Feb-10
3435	Precision Fixed Attenuator, 50 Ohm, 5 W, 10 dB, DC to 18 GHz	Mini-Circuits	BW-S10W5+	NA	09-Mar-08	09-Mar-09
3437	Precision Fixed Attenuator, 50 Ohm, 5 W, 10 dB, DC to 18 GHz	Mini-Circuits	BW-S10W5+	NA	09-Mar-08	09-Mar-09
3442	Precision Fixed Attenuator, 50 Ohm, 5 W, 20 dB, DC to 18 GHz	Mini-Circuits	BW-S20W5+	NA	09-Mar-08	09-Mar-09
3455	Medium Power Fixed Coaxial Attenuator DC to 40 GHz, 20 dB, 5 W	Aeroflex / Weinschel	75A-20-12	1182	17-Mar-08	17-Mar-09
3472	Cable, Coax, Microwave, DC-18 GHz, SMA-SMA, 1.0 m	Gore	GORE 65474	1003478	12-May-08	12-May-09
3473	Cable, Coax, Microwave, DC-18 GHz, SMA-SMA, 0.6 m	Gore	GORE 65474	1003478	12-May-08	12-May-09
3532	Amplifier, low noise, 2 to 8 GHz	Quinstar Technology	QLJ-02084040-J0	11159002001	23-Nov-08	23-Nov-09
3533	Amplifier, low noise, 6 to 18 GHz	Quinstar Technology	QLJ-06184040-J0	11159001001	07-Dec-08	07-Dec-09
3535	Amplifier, low noise, 18 to 40 GHz	Quinstar Technology	QLJ-18404537-J0	11159003001	07-Dec-08	07-Dec-09
3612	Cable RF, 17.5 m, N type-N type	Teldor	RG-214/U	NA	17-Nov-08	17-Nov-09
3616	Cable RF, 6.5 m, N type-N type, DC-6.5 GHz	Suhner Switzerland	Rg 214/U	NA	07-Dec-08	07-Dec-09

10 APPENDIX B Measurement uncertainties

Expanded uncertainty at 95% confidence in Hermon Labs EMC measurements

Test description	Expanded uncertainty
Conducted carrier power at RF antenna connector	Below 12.4 GHz: ± 1.7 dB 12.4 GHz to 40 GHz: ± 2.3 dB
Conducted emissions at RF antenna connector	9 kHz to 2.9 GHz: ± 2.6 dB 2.9 GHz to 6.46 GHz: ± 3.5 dB 6.46 GHz to 13.2 GHz: ± 4.3 dB 13.2 GHz to 22.0 GHz: ± 5.0 dB 22.0 GHz to 26.8 GHz: ± 5.5 dB 26.8 GHz to 40.0 GHz: ± 4.8 dB
Occupied bandwidth	± 8.0 %
Duty cycle, timing (Tx ON / OFF) and average factor measurements	± 1.0 %
Conducted emissions with LISN	9 kHz to 150 kHz: ± 3.9 dB 150 kHz to 30 MHz: ± 3.8 dB
Radiated emissions at 3 m measuring distance Horizontal polarization Vertical polarization	 Biconilog antenna: ± 5.3 dB Biconical antenna: ± 5.0 dB Log periodic antenna: ± 5.3 dB Double ridged horn antenna: ± 5.3 dB Biconilog antenna: ± 6.0 dB Biconical antenna: ± 5.7 dB Log periodic antenna: ± 6.0 dB Double ridged horn antenna: ± 6.0 dB

Hermon Laboratories is accredited by A2LA for calibration according to present requirements of ISO/IEC 17025 and NCSL Z540-1. The accreditation is granted to perform calibration of parameters that are listed in the Scope of Hermon Laboratories Accreditation.

Hermon Laboratories calibrates its reference and transfer standards by calibration laboratories accredited to ISO/IEC 17025 by a mutually recognized Accreditation Body or by a recognized national metrology institute. All reference and transfer standards used in the calibration system are traceable to national or international standards.

In-house calibration of all test and measurement equipment is performed on a regular basis according to Hermon Laboratories calibration procedures, manufacturer calibration/verification procedures or procedures defined in the relevant standards. The Hermon Laboratories test and measurement equipment is calibrated within the tolerances specified by the manufacturers and/or by the relevant standards.

11 APPENDIX C Test laboratory description

Tests were performed at Hermon Laboratories Ltd., which is a fully independent, private, EMC, safety, environmental and telecommunication testing facility. Hermon Laboratories is listed by the Federal Communications Commission (USA) for all parts of Code of Federal Regulations 47 (CFR 47) and by Industry Canada for electromagnetic emissions (file numbers IC 2186A-1 for OATS and IC 2186A-2 for anechoic chamber), certified by VCCI, Japan (the registration numbers are R-808 for OATS, R-1082 for anechoic chamber, C-845 for conducted emissions site), assessed by TNO Certification EP&S (Netherlands) for a number of EMC, telecommunications, environmental, safety standards, and by AMTAC (UK) for safety of medical devices. The laboratory is accredited by American Association for Laboratory Accreditation (USA) according to ISO/IEC 17025 for electromagnetic compatibility, product safety, telecommunications testing and environmental simulation (for exact scope please refer to Certificate No. 839.01).

Address: P.O. Box 23, Binyamina 30500, Israel.
Telephone: +972 4628 8001
Fax: +972 4628 8277
e-mail: mail@hermonlabs.com
website: www.hermonlabs.com

Person for contact: Mr. Alex Usoskin, CEO.

12 APPENDIX D Specification references

FCC 47CFR part 15: 2008	Radio Frequency Devices.
FR Vol.62	Federal Register, Volume 62, May 13, 1997
FCC New Guidance:2004	FCC New Guidance on Measurements for DTS
ANSI C63.2: 1996	American National Standard for Instrumentation-Electromagnetic Noise and Field Strength, 10 kHz to 40 GHz-Specifications.
ANSI C63.4: 2003	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.
RSS-210 Issue 7: 2007	Low Power Licence- Exempt Radiocommunication Devices
RSS-Gen Issue 2: 2007	General Requirements and Information for the Certification of Radiocommunication Equipment

13 APPENDIX E Test equipment correction factors

Antenna Factor
Active Loop Antenna
EMC Test Systems, model 6502, S/N 2857, HL 0446

Frequency, MHz	Magnetic Antenna Factor, dB(S/m)	Electric Antenna Factor, dB(1/m)
0.009	-32.8	18.7
0.010	-33.8	17.7
0.020	-38.3	13.2
0.050	-41.1	10.4
0.075	-41.3	10.2
0.100	-41.6	9.9
0.150	-41.7	9.8
0.250	-41.6	9.9
0.500	-41.8	9.7
0.750	-41.9	9.6
1.000	-41.4	10.1
2.000	-41.5	10.0
3.000	-41.4	10.1
4.000	-41.4	10.1
5.000	-41.5	10.0
10.000	-41.9	9.6
15.000	-41.9	9.6
20.000	-42.2	9.3
25.000	-42.8	8.7
30.000	-44.0	7.5

Antenna factor in dB(S/m) is to be added to receiver meter reading in dB(μV) to convert it into field intensity in dB(μA/m).
Antenna factor in dB(1/m) is to be added to receiver meter reading in dB(μV) to convert it into field intensity in dB(μV/m).

Antenna factor
Standard gain horn antenna
Quinstar Technology
Model QWH, Ser.No.112, HL 0768

Frequency min, GHz	Frequency max, GHz	Antenna factor, dB(1/m)
18.000	26.500	32.01
26.500	40.000	35.48
40.000	60.000	39.03
60.000	90.000	42.55
90.000	140.000	46.23
140.000	220.000	50.11

Antenna factor in dB(1/m) is to be added to receiver meter reading in dB(μV) to convert it into field intensity in dB(μV/m).

Antenna factor

Biconilog antenna EMCO, model 3141, serial number 1011, HL 0604

Frequency, MHz	Antenna factor, dB(1/m)	Frequency, MHz	Antenna factor, dB(1/m)	Frequency, MHz	Antenna factor, dB(1/m)
26	7.8	560	19.8	1300	27.0
28	7.8	580	20.6	1320	27.8
30	7.8	600	21.3	1340	28.3
40	7.2	620	21.5	1360	28.2
60	7.1	640	21.2	1380	27.9
70	8.5	660	21.4	1400	27.9
80	9.4	680	21.9	1420	27.9
90	9.8	700	22.2	1440	27.8
100	9.7	720	22.2	1460	27.8
110	9.3	740	22.1	1480	28.0
120	8.8	760	22.3	1500	28.5
130	8.7	780	22.6	1520	28.9
140	9.2	800	22.7	1540	29.6
150	9.8	820	22.9	1560	29.8
160	10.2	840	23.1	1580	29.6
170	10.4	860	23.4	1600	29.5
180	10.4	880	23.8	1620	29.3
190	10.3	900	24.1	1640	29.2
200	10.6	920	24.1	1660	29.4
220	11.6	940	24.0	1680	29.6
240	12.4	960	24.1	1700	29.8
260	12.8	980	24.5	1720	30.3
280	13.7	1000	24.9	1740	30.8
300	14.7	1020	25.0	1760	31.1
320	15.2	1040	25.2	1780	31.0
340	15.4	1060	25.4	1800	30.9
360	16.1	1080	25.6	1820	30.7
380	16.4	1100	25.7	1840	30.6
400	16.6	1120	26.0	1860	30.6
420	16.7	1140	26.4	1880	30.6
440	17.0	1160	27.0	1900	30.6
460	17.7	1180	27.0	1920	30.7
480	18.1	1200	26.7	1940	30.9
500	18.5	1220	26.5	1960	31.2
520	19.1	1240	26.5	1980	31.6
540	19.5	1260	26.5	2000	32.0
		1280	26.6		

Antenna factor in dB(1/m) is to be added to receiver meter reading in dB(μV) to convert it into field intensity in dB(μV/m).

Antenna factor
Double-ridged wave guide horn antenna
Model 3115, S/N 9911-5964, HL 1984

Frequency, MHz	Antenna factor, dB(1/m)
1000.0	24.7
1500.0	25.7
2000.0	27.6
2500.0	28.9
3000.0	31.2
3500.0	32.0
4000.0	32.5
4500.0	32.7
5000.0	33.6
5500.0	35.1
6000.0	35.4
6500.0	34.9
7000.0	36.1
7500.0	37.8
8000.0	38.0
8500.0	38.1
9000.0	39.1
9500.0	38.3
10000.0	38.6
10500.0	38.2
11000.0	38.7
11500.0	39.5
12000.0	40.0
12500.0	40.4
13000.0	40.5
13500.0	41.1
14000.0	41.6
14500.0	41.7
15000.0	38.7
15500.0	38.2
16000.0	38.8
16500.0	40.5
17000.0	42.5
17500.0	45.9
18000.0	49.4

Antenna factor in dB(1/m) is to be added to receiver meter reading in dB(μV) to convert it into field intensity in dB(μV/m).

Cable loss
Cable coaxial, 6 m, model: M17/167 MIL-C-17, HL 1503

Frequency, MHz	Cable loss, dB
0.15	0.043
1	0.077
3	0.139
5	0.169
10	0.248
30	0.430
50	0.561
75	0.697
100	0.822
300	1.446
500	1.901
800	2.663
1000	2.829
1500	3.569
2000	4.179

Cable loss
Cable 40 GHz, 0.8 m, blue, model: KPS-1503A-800-KPS, S/N W4907, HL 2254

Frequency, GHz	Cable loss, dB	Frequency, GHz	Cable loss, dB	Frequency, GHz	Cable loss, dB
0.03	0.04	5.10	0.80	15.00	1.49
0.05	0.07	5.30	0.83	15.50	1.49
0.10	0.09	5.50	0.83	16.00	1.46
0.20	0.15	5.70	0.84	16.50	1.47
0.30	0.19	5.90	0.87	17.00	1.50
0.40	0.25	6.10	0.86	17.50	1.57
0.50	0.29	6.30	0.89	18.00	1.63
0.60	0.33	6.50	0.90	18.50	1.57
0.70	0.37	6.70	0.89	19.00	1.63
0.80	0.41	6.90	0.93	19.50	1.65
0.90	0.44	7.10	0.92	20.00	1.64
1.00	0.45	7.30	0.95	20.50	1.75
1.10	0.48	7.50	0.96	21.00	1.72
1.20	0.51	7.70	0.97	21.50	1.78
1.30	0.53	7.90	1.01	22.00	1.76
1.40	0.54	8.10	1.00	22.50	1.72
1.50	0.57	8.30	1.05	23.00	1.83
1.60	0.59	8.50	1.04	23.50	1.80
1.70	0.04	8.70	1.07	24.00	1.90
1.80	0.07	8.90	1.11	24.50	1.81
1.90	0.09	9.10	1.09	25.00	1.98
2.00	0.15	9.30	1.14	25.50	1.91
2.10	0.19	9.50	1.12	26.00	2.02
2.20	0.25	9.70	1.15	26.50	1.92
2.30	0.29	9.90	1.16	27.00	1.97
2.40	0.33	10.10	1.16	28.00	2.02
2.50	0.37	10.30	1.19	29.00	1.95
2.60	0.41	10.50	1.14	30.00	1.94
2.70	0.44	10.70	1.19	31.00	2.11
2.80	0.45	10.90	1.17	32.00	2.17
2.90	0.48	11.10	1.13	33.00	2.27
3.10	0.61	11.30	1.20	34.00	2.27
3.30	0.64	11.50	1.13	35.00	2.29
3.50	0.65	11.70	1.20	36.00	2.35
3.70	0.68	11.90	1.18	37.00	2.37
3.90	0.69	12.10	1.14	38.00	2.40
4.10	0.71	12.40	1.19	39.00	2.57
4.30	0.73	13.00	1.34	40.00	2.36
4.50	0.75	13.50	1.33		
4.70	0.77	14.00	1.48		
4.90	0.79	14.50	1.45		

Cable loss
Microwave Cable Assembly, 18 GHz, 6.4 m, SMA – SMA, Huber-Suhner, model 198-9155-00
HL 3121

Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB
10	0.08	3600	2.10	7400	3.08	11200	3.85	15100	4.58
30	0.18	3700	2.14	7500	3.11	11300	3.85	15200	4.60
50	0.26	3800	2.18	7600	3.14	11400	3.86	15300	4.63
100	0.34	3900	2.19	7700	3.16	11500	3.86	15400	4.65
200	0.47	4000	2.25	7800	3.18	11600	3.87	15500	4.71
300	0.59	4100	2.25	7900	3.20	11700	3.85	15600	4.70
400	0.66	4200	2.28	8000	3.22	11800	3.96	15700	4.69
500	0.75	4300	2.35	8100	3.26	11900	3.92	15800	4.71
600	0.83	4400	2.35	8200	3.27	12000	3.92	15900	4.74
700	0.90	4500	2.38	8300	3.29	12100	3.94	16000	4.69
800	0.96	4600	2.43	8400	3.30	12200	3.94	16100	4.72
900	1.02	4700	2.43	8500	3.31	12300	3.99	16200	4.71
1000	1.07	4800	2.45	8600	3.33	12400	4.02	16300	4.74
1100	1.12	4900	2.48	8700	3.35	12500	4.10	16400	4.74
1200	1.15	5000	2.55	8800	3.36	12600	4.09	16500	4.75
1300	1.22	5100	2.54	8900	3.38	12700	4.15	16600	4.78
1400	1.28	5200	2.56	9000	3.40	12800	4.15	16700	4.86
1500	1.29	5300	2.58	9100	3.41	12900	4.08	16800	4.84
1600	1.36	5400	2.61	9200	3.45	13000	4.21	16900	4.83
1700	1.40	5500	2.64	9300	3.48	13100	4.19	17000	4.86
1800	1.45	5600	2.69	9400	3.52	13200	4.29	17100	4.83
1900	1.51	5700	2.67	9500	3.54	13300	4.24	17200	4.90
2000	1.50	5800	2.71	9600	3.59	13400	4.26	17300	4.91
2100	1.56	5900	2.73	9700	3.59	13500	4.26	17400	4.94
2200	1.59	6000	2.75	9800	3.62	13600	4.29	17500	4.93
2300	1.63	6100	2.81	9900	3.70	13700	4.35	17600	4.93
2400	1.73	6200	2.80	10000	3.70	13800	4.31	17700	5.00
2500	1.73	6300	2.82	10100	3.72	13900	4.29	17800	5.01
2600	1.78	6400	2.85	10200	3.73	14000	4.32	17900	5.00
2700	1.84	6500	2.87	10300	3.75	14100	4.33	18000	5.00
2800	1.84	6600	2.90	10400	3.76	14200	4.34		
2900	1.91	6700	2.91	10500	3.77	14300	4.36		
3000	1.91	6800	2.94	10600	3.79	14400	4.38		
3100	1.97	6900	2.96	10700	3.80	14600	4.42		
3200	1.98	7000	2.98	10800	3.81	14700	4.42		
3300	2.04	7100	3.01	10900	3.81	14800	4.55		
3400	2.04	7200	3.02	11000	3.83	14900	4.55		
3500	2.10	7300	3.04	11100	3.84	15000	4.55		

Cable loss
Microwave Cable Assembly, 18 GHz, 6.4 m, SMA – SMA, Huber-Suhner, model 198-9155-00
HL 3122

Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB
10	0.11	3600	2.08	7400	3.07	11200	3.92	15100	4.61
30	0.17	3700	2.12	7500	3.09	11300	3.95	15200	4.58
50	0.23	3800	2.15	7600	3.14	11400	3.93	15300	4.62
100	0.32	3900	2.18	7700	3.15	11500	3.93	15400	4.62
200	0.47	4000	2.21	7800	3.19	11600	3.94	15500	4.65
300	0.58	4100	2.24	7900	3.22	11700	3.97	15600	4.66
400	0.66	4200	2.27	8000	3.20	11800	3.98	15700	4.66
500	0.74	4300	2.31	8100	3.21	11900	4.08	15800	4.72
600	0.81	4400	2.31	8200	3.24	12000	4.03	15900	4.78
700	0.88	4500	2.36	8300	3.27	12100	4.06	16000	4.89
800	0.95	4600	2.37	8400	3.32	12200	4.05	16100	4.95
900	1.00	4700	2.40	8500	3.35	12300	4.16	16200	4.92
1000	1.06	4800	2.43	8600	3.35	12400	4.18	16300	4.95
1100	1.11	4900	2.45	8700	3.33	12500	4.20	16400	5.02
1200	1.16	5000	2.50	8800	3.37	12600	4.22	16500	5.04
1300	1.21	5100	2.51	8900	3.39	12700	4.23	16600	5.06
1400	1.26	5200	2.55	9000	3.45	12800	4.28	16700	5.17
1500	1.31	5300	2.56	9100	3.46	12900	4.26	16800	5.16
1600	1.35	5400	2.59	9200	3.47	13000	4.28	16900	5.19
1700	1.39	5500	2.62	9300	3.46	13100	4.28	17000	5.23
1800	1.44	5600	2.65	9400	3.50	13200	4.28	17100	5.30
1900	1.47	5700	2.67	9500	3.50	13300	4.29	17200	5.26
2000	1.52	5800	2.71	9600	3.53	13400	4.34	17300	5.30
2100	1.55	5900	2.72	9700	3.52	13500	4.31	17400	5.30
2200	1.60	6000	2.73	9800	3.54	13600	4.35	17500	5.36
2300	1.63	6100	2.76	9900	3.56	13700	4.36	17600	5.40
2400	1.67	6200	2.78	10000	3.57	13800	4.37	17700	5.47
2500	1.70	6300	2.81	10100	3.60	13900	4.41	17800	5.56
2600	1.74	6400	2.85	10200	3.69	14000	4.42	17900	5.45
2700	1.78	6500	2.87	10300	3.69	14100	4.45	18000	5.47
2800	1.83	6600	2.87	10400	3.67	14200	4.49		
2900	1.85	6700	2.90	10500	3.70	14300	4.55		
3000	1.89	6800	2.91	10600	3.70	14400	4.62		
3100	1.92	6900	2.96	10700	3.76	14600	4.54		
3200	1.96	7000	2.99	10800	3.88	14700	4.58		
3300	1.99	7100	3.01	10900	3.88	14800	4.57		
3400	2.03	7200	3.04	11000	3.85	14900	4.65		
3500	2.06	7300	3.08	11100	3.85	15000	4.64		

Cable loss
Cable coaxial, GORE-TEX, GOR245, 40 GHz, 0.6 m, SMA-SMA, S/N 05118336
HL 3206

Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss,dB	Frequency, MHz	Cable loss,dB
10	0.09	5000	0.85	10200	1.24	15500	1.55	31500	2.24
30	0.09	5100	0.86	10300	1.25	15600	1.50	32000	2.21
50	0.10	5200	0.87	10400	1.24	15700	1.56	32500	2.19
100	0.14	5300	0.88	10500	1.20	15800	1.50	33000	2.24
200	0.18	5400	0.89	10600	1.23	15900	1.58	33500	2.26
300	0.22	5500	0.90	10700	1.25	16000	1.56	34000	2.25
400	0.26	5600	0.92	10800	1.28	16100	1.59	34500	2.28
500	0.29	5700	0.93	10900	1.35	16200	1.57	35000	2.27
600	0.31	5800	0.93	11000	1.30	16300	1.59	35500	2.31
700	0.33	5900	0.95	11100	1.31	16400	1.57	36000	2.36
800	0.35	6000	0.93	11200	1.31	16500	1.60	36500	2.39
900	0.38	6100	0.97	11300	1.35	16600	1.60	37000	2.39
1000	0.39	6200	0.95	11400	1.32	16700	1.63	37500	2.41
1100	0.41	6300	0.99	11500	1.38	16800	1.66	38000	2.40
1200	0.42	6400	0.98	11600	1.33	16900	1.64	38500	2.40
1300	0.45	6500	0.99	11700	1.37	17000	1.66	39000	2.54
1400	0.46	6600	0.99	11800	1.36	17100	1.65	39500	2.39
1500	0.48	6700	0.99	11900	1.42	17200	1.67	40000	2.48
1600	0.49	6800	0.99	12000	1.34	17300	1.66		
1700	0.50	6900	1.02	12100	1.41	17400	1.69		
1800	0.52	7000	1.02	12200	1.36	17500	1.66		
1900	0.53	7100	1.06	12300	1.40	17600	1.69		
2000	0.53	7200	1.05	12400	1.34	17700	1.70		
2100	0.54	7300	1.02	12500	1.39	17800	1.74		
2200	0.55	7400	1.03	12600	1.40	17900	1.67		
2300	0.56	7500	1.04	12700	1.42	18000	1.72		
2400	0.57	7600	1.05	12800	1.37	18500	1.72		
2500	0.59	7700	1.10	12900	1.39	19000	1.78		
2600	0.60	7800	1.11	13000	1.40	19500	1.77		
2700	0.62	7900	1.10	13100	1.42	20000	1.82		
2800	0.62	8000	1.10	13200	1.41	20500	1.82		
2900	0.65	8100	1.10	13300	1.43	21000	1.94		
3000	0.65	8200	1.10	13400	1.45	21500	1.92		
3100	0.66	8300	1.16	13500	1.45	22000	2.07		
3200	0.67	8400	1.15	13600	1.54	22500	1.90		
3300	0.69	8500	1.20	13700	1.54	23000	1.96		
3400	0.70	8600	1.19	13800	1.49	23500	1.88		
3500	0.71	8700	1.15	13900	1.50	24000	1.96		
3600	0.71	8800	1.16	14000	1.50	24500	1.96		
3700	0.73	8900	1.19	14100	1.52	25000	2.10		
3800	0.74	9000	1.18	14200	1.60	25500	2.05		
3900	0.75	9100	1.23	14300	1.57	26000	2.05		
4000	0.76	9200	1.20	14400	1.57	26500	2.05		
4100	0.76	9300	1.20	14600	1.50	27000	1.97		
4200	0.78	9400	1.19	14700	1.54	27500	2.09		
4300	0.79	9500	1.23	14800	1.51	28000	2.10		
4400	0.80	9600	1.21	14900	1.54	28500	2.05		
4500	0.80	9700	1.22	15000	1.57	29000	2.08		
4600	0.82	9800	1.20	15100	1.56	29500	1.94		
4700	0.82	9900	1.18	15200	1.51	30000	2.11		
4800	0.83	10000	1.20	15300	1.56	30500	2.25		
4900	0.85	10100	1.23	15400	1.54	31000	2.23		

Cable loss
Cable coaxial, RG-214/U, N type-N type, 17 m
Teldor, HL 3612

Frequency, GHz	Cable loss, dB
0.1	0.05
0.5	0.07
1	0.10
3	0.22
5	0.29
10	0.39
30	0.68
50	0.90
100	1.27
150	1.58
200	1.80
250	2.12
300	2.36
350	2.60
400	2.82
450	2.99
500	3.23
550	3.40
600	3.56
650	3.71
700	3.90
750	4.04
800	4.23
850	4.39
900	4.55
950	4.65
1000	4.79

Correction factor
Line impedance stabilization network
Model LISN 16 - 1
Hermon Laboratories, HL 0447

Frequency, kHz	Correction factor, dB
10	4.9
15	2.86
20	1.83
25	1.25
30	0.91
35	0.69
40	0.53
50	0.35
60	0.25
70	0.18
80	0.14
90	0.11
100	0.09
125	0.06
150	0.04

The correction factor in dB is to be added to meter readings of an interference analyzer or a spectrum analyzer.

14 APPENDIX F Abbreviations and acronyms

A	ampere
AC	alternating current
A/m	ampere per meter
AM	amplitude modulation
AVRG	average (detector)
BB	broad band
cm	centimeter
dB	decibel
dBm	decibel referred to one milliwatt
dB(μV)	decibel referred to one microvolt
dB(μV/m)	decibel referred to one microvolt per meter
dB(μA)	decibel referred to one microampere
dBΩ	decibel referred to one Ohm
DC	direct current
EIRP	equivalent isotropically radiated power
ERP	effective radiated power
EUT	equipment under test
F	frequency
GHz	gigahertz
GND	ground
H	height
HL	Hermon laboratories
Hz	hertz
k	kilo
kHz	kilohertz
LO	local oscillator
m	meter
MHz	megahertz
min	minute
mm	millimeter
ms	millisecond
μs	microsecond
NA	not applicable
NB	narrow band
NT	not tested
OATS	open area test site
Ω	Ohm
QP	quasi-peak
PCB	printed circuit board
PM	pulse modulation
PS	power supply
RE	radiated emission
RF	radio frequency
rms	root mean square
Rx	receive
s	second
T	temperature
Tx	transmit
V	volt
VA	volt-ampere

END OF DOCUMENT