HERMON LABORATORIES

839.01
Electrical

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TEST REPORT

ACCORDING TO: FCC 47CFR part 15 subpart C § 15.247 and RSS-210 issue 7, Annex 8

FOR:

Flextronics Special Business Solutions Ltd.

Client (slave) transceiver

Models: MWS-1000, VXT1025, WAP-5831

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1 Applicant information

Client name:	Flextronics Special Business Solutions Ltd.
Address:	1 Hatasia street, Ramat Gavriel Ind. Zone, Migdal Haemek 23108, Israel
Telephone:	+972 4644 8212
Fax:	+972 4604 0850
E-mail:	menashe.ezra@celeno.com
Contact name:	Mr. Menashe Ezra

2 Equipment under test attributes

Product name:	Client (slave) transceiver
Model(s):	MWS-1000
Serial number:	540086-002
Hardware version:	0A
Receipt date	7/5/2009

3 Manufacturer information

Manufacturer name:	Flextronics Special Business Solutions Ltd.
Address:	1 Hatasia street, Ramat Gavriel Ind. Zone, Migdal Haemek 23108, Israel
Telephone:	+972 4644 8212
Fax:	+972 4604 0850
E-Mail:	menashe.ezra@celeno.com
Contact name:	Mr. Menashe Ezra

4 Test details

Project ID:	19764
Location:	Hermon Laboratories Ltd. Harakevet Industrial Zone, Binyamina 30500, Israel
Test started:	7/5/2009
Test completed:	8/27/2009
Test specification(s):	FCC 47CFR part 15, 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(i), RSS-Gen section 5.5, RF exposure	Pass, the exhibit to the application of certification is provided
FCC section 15.247(d), RSS-210 section A8.5, Conducted spurious emissions	Not required
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

Testing was completed against all relevant requirements of the test standard. The results obtained indicate that the product under test complies in full with the requirements tested.
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. L. Markel, test engineer	August 27, 2009	
Reviewed by:	Mrs. M. Cherniavsky, certification engineer	September 13, 2009	
Approved by:	Mr. M. Nikishin, EMC and Radio group leader	September 30, 2009	

6 EUT description

6.1 General information

The EUT is a slave transceiver of broadband wireless transceivers system. It provides high capacity connectivity of up to 54 Mbps. The EUT is powered from mains via AC/DC power adapter and utilizes 2 internal printed antennas. No simultaneous operation of 2 antennas is possible.

According to the manufacturer's declaration of identity the models MWS-1000, VXT1025, WAP-5831 are electronically and electrically identical, the base model MWSB-1000 was tested.

6.2 Ports and lines

Port type	Port description	Conn. from	Conn. to	Qty.	Cable type	Cable length	Indoor / outdoor
Power	DC Power	EUT	AC/DC adaptor	1	Unshielded	1.5	Indoor
Signal	Ethernet	EUT	Laptop	1	FTP	10	Indoor
Power	AC Power	AC mains	AC/DC adaptor	1	NA	NA	Indoor

6.3 Support and test equipment

Description	Manufacturer	Model number	Serial number
Laptop	HP	HSTNN-105c	6080B0140601
AC/DC Adaptor	HP	DC359A	592C70AMFSL MOB
Mouse	Microsoft	X802382-004	NA
AC/DC Adaptor	DVE	DSC-6PFA-05	SP-228793

6.4 Changes made in the EUT

No changes were implemented in the EUT.

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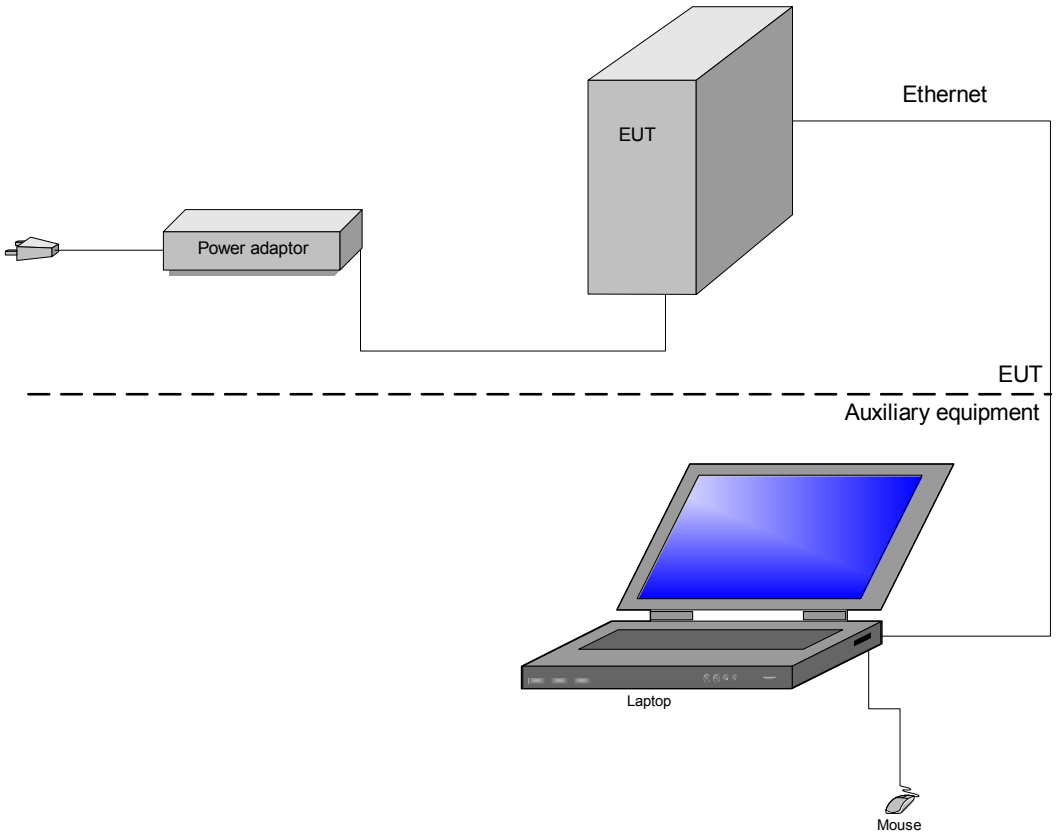
6.5 Test configuration



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
	Fixed	Always at a distance more than 2 m from all people
V	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	5725 -5850 MHz
Operating frequency range	5745 - 5825 MHz
RF channel bandwidth	20 MHz
Maximum rated output power	At transmitter 50 Ω RF output connector: 24 dBm

Is transmitter output power variable?	V	No		
		Yes		continuous variable
				stepped variable with stepsize
			minimum RF power	
			maximum RF power	24 dBm

Antenna connection			
unique coupling	standard connector	V Integral	V with temporary RF connector
			without temporary RF connector

Antenna/s technical characteristics			
Type	Manufacturer	Model number	Antenna gain
Printed	Celeno Communications Ltd.	NA	2 dBi
Printed	Celeno Communications Ltd.	NA	2 dBi

Transmitter 99% power bandwidth	Transmitter aggregate data rate/s, MBps	Type of modulation
20 MHz	6	BPSK
	9	BPSK
	12	QPSK
	18	QPSK
	24	16QAM
	36	16QAM
	48	64QAM
	54	64QAM

Modulating test signal (baseband)	OFDM
Maximum transmitter duty cycle in normal use	5.5%
Maximum transmitter duty cycle for test purposes	100%

Transmitter power source					
		Nominal rated voltage		Battery type	
V	DC	**Nominal rated voltage**	6 VDC via AC/DC adaptor		
V	AC mains	**Nominal rated voltage**	120 VAC	Frequency	60 Hz

Common power source for transmitter and receiver	V	yes	no

Test specification:	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:	8/16/2009 4:28:52 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

7 Transmitter tests according to 47CFR part 15 subpart C 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

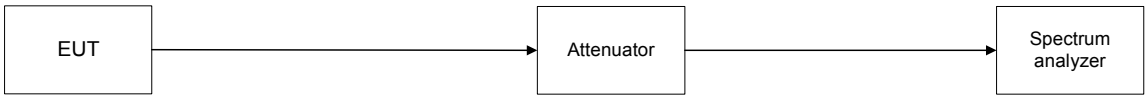
Assigned frequency, MHz	Modulation envelope reference points*, dBc	Minimum bandwidth, kHz
902.0 – 928.0	6.0	500.0
2400.0 – 2483.5		
5725.0 – 5850.0		

* - 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 Scale/Div of spectrum analyzer was set to 6 dB, the peak of emission was found and set to the reference level.
7.1.2.4 The transmitter minimum 6 dB bandwidth was measured with spectrum analyzer RBW=100 kHz as frequency delta between reference points on modulation envelope and provided in Table 7.1.2 and the associated plots.

Figure 7.1.1 The 6 dB bandwidth test setup



Test specification:	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:	8/16/2009 4:28:52 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

Table 7.1.2 The 6 dB bandwidth test results

ASSIGNED FREQUENCY BAND:	5725.00 – 5850.00 MHz
DETECTOR USED:	Peak
SWEEP MODE:	Max Hold
SWEEP TIME:	Auto
RESOLUTION BANDWIDTH:	100 kHz
VIDEO BANDWIDTH:	300 kHz
MODULATION ENVELOPE REFERENCE POINTS:	6.0 dBc
MODULATING SIGNAL:	PRBS
MODULATION:	After it was verified that other intermediate modulations with the corresponding bit rates comply with the limit only plots of the lowest and highest bit rates were provided in the test report

MODULATION: BPSK
BIT RATE: 6 Mbps

Carrier frequency, MHz	6 dB bandwidth, kHz	Limit, kHz	Margin, kHz	Verdict
Low frequency				
5745.00	16600.00	500.0	-16100.00	Pass
Mid frequency				
5785.00	16600.00	500.0	-16100.00	Pass
High frequency				
5825.00	16550.00	500.0	-16050.00	Pass

MODULATION: 64QAM
BIT RATE: 54 Mbps

Carrier frequency, MHz	6 dB bandwidth, kHz	Limit, kHz	Margin, kHz	Verdict
Low frequency				
5745.00	16600.00	500.0	-16100.00	Pass
Mid frequency				
5785.00	16600.00	500.0	-16100.00	Pass
High frequency				
5825.00	16600.00	500.0	-16100.00	Pass

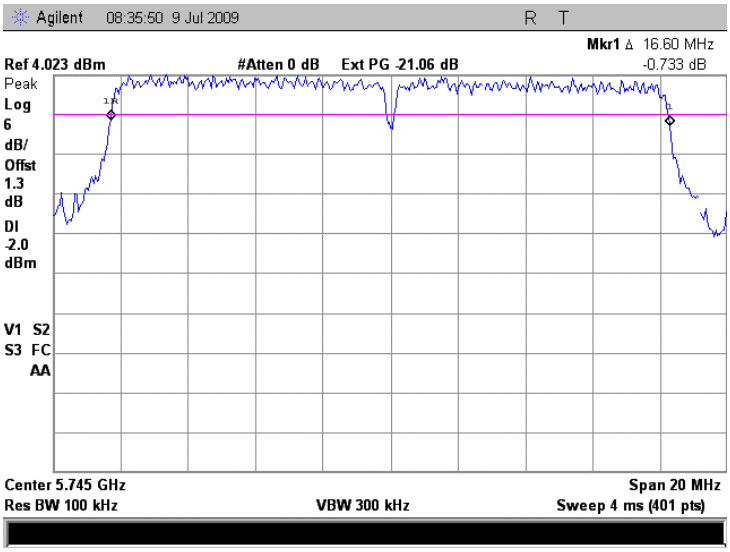
Reference numbers of test equipment used

HL 2909	HL 2952	HL 3439						

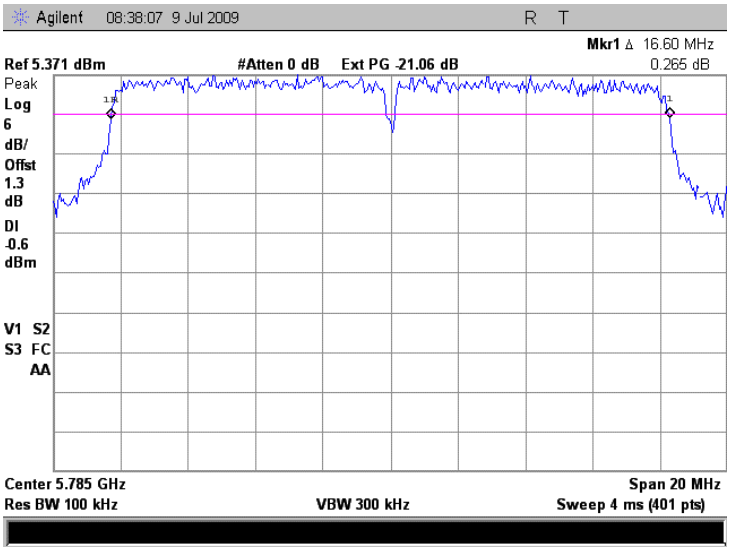
Full description is given in Appendix A.

Test specification:	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:	8/16/2009 4:28:52 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

Plot 7.1.1 The 6 dB bandwidth test result at low frequency, BPSK modulation, 6 Mbps

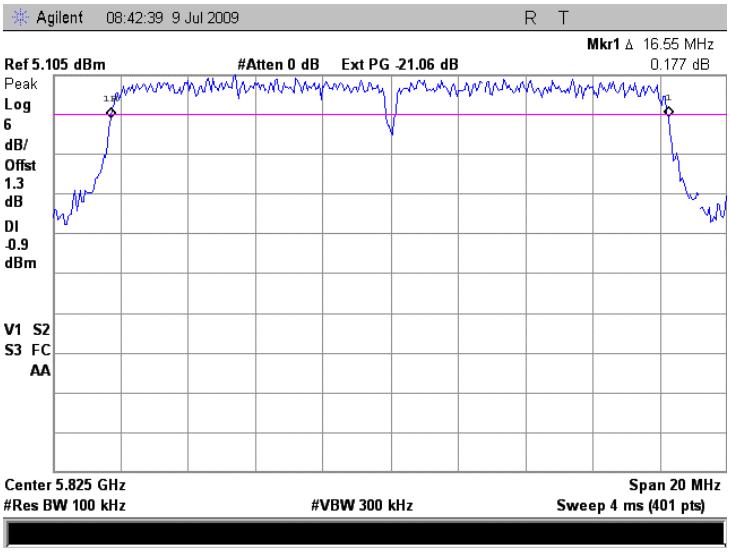


Plot 7.1.2 The 6 dB bandwidth test result at mid frequency, BPSK modulation, 6 Mbps



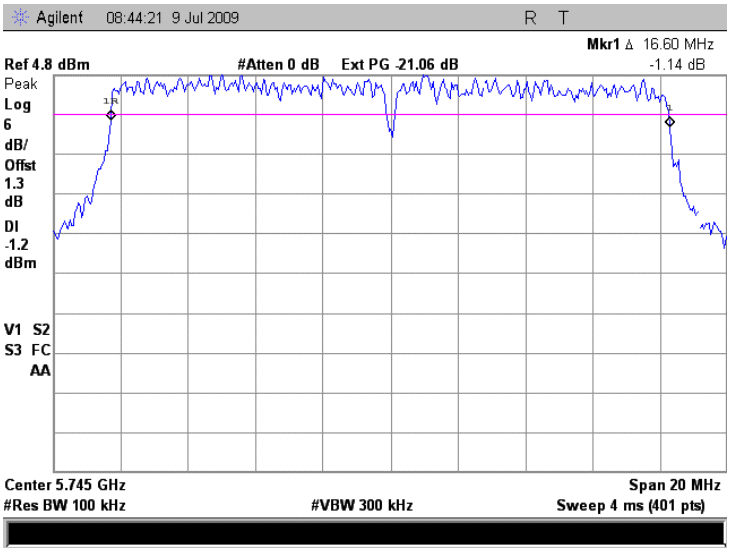
Test specification:	Section 15.247(a)(2), RSS-210 section A8.2(a), 6 dB bandwidth		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(a)(2)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	8/16/2009 4:28:52 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

Plot 7.1.3 The 6 dB bandwidth test result at high frequency, BPSK modulation, 6 Mbps

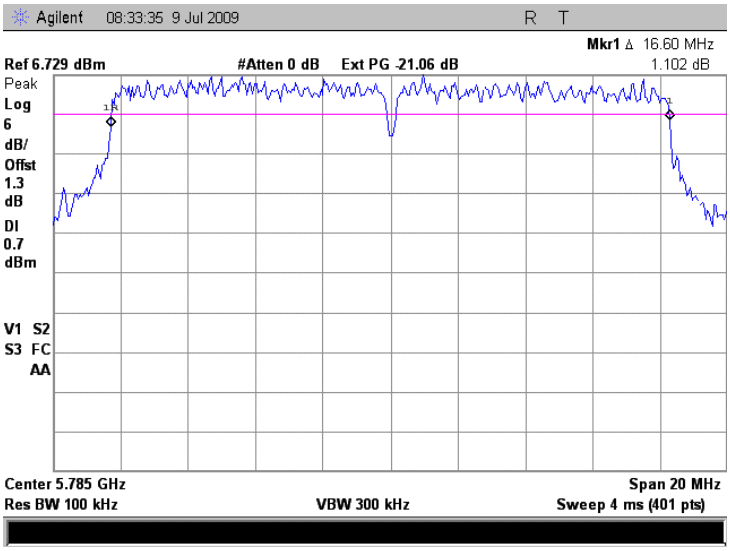


Test specification:	Section 15.247(a)(2), RSS-210 section A8.2(a), 6 dB bandwidth		
Test procedure:	FCC New Guidance on Measurements for DTS in section 15.247(a)(2)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	8/16/2009 4:28:52 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

Plot 7.1.4 The 6 dB bandwidth test result at low frequency, 64QAM modulation, 54 Mbps

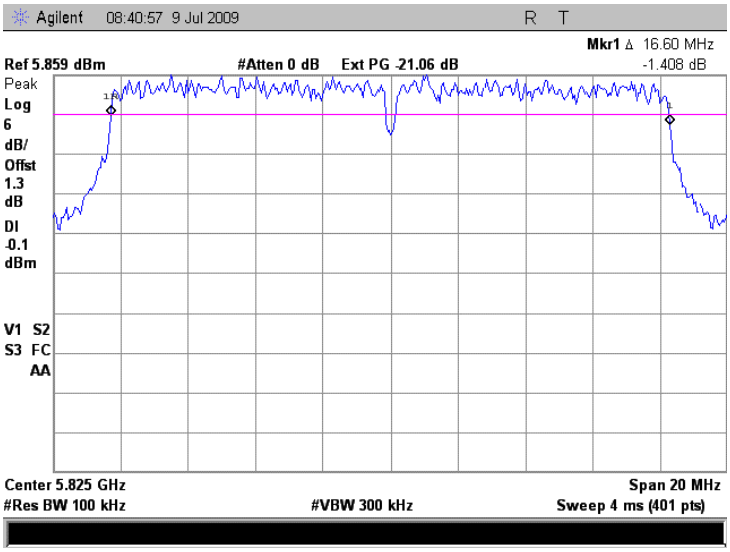


Plot 7.1.5 The 6 dB bandwidth test result at mid frequency 64QAM modulation, 54 Mbps



Test specification:	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:	8/16/2009 4:28:52 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

Plot 7.1.6 The 6 dB bandwidth test result at high frequency, 64QAM modulation, 54 Mbps



Test specification:	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 1		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	8/26/2009 11:24:54 AM		
Temperature: 26.2 ºC	Air Pressure: 1009 hPa	Relative Humidity: 38 %	Power Supply: 6 VDC
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
5725.0 – 5850.0	6.0	1.0	30.0

*- 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.

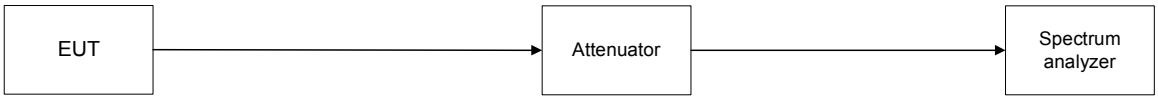
7.2.2 Test procedure

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 resolution bandwidth of spectrum analyzer was set wider than 6 dB bandwidth of the EUT and the maximum peak output power was measured with Peak Power Meter as provided in Table 7.2.2 and the associated plots.

Figure 7.2.1 Peak output power test setup



Test specification:	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 1		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	8/26/2009 11:24:54 AM		
Temperature: 26.2 ºC	Air Pressure: 1009 hPa	Relative Humidity: 38 %	Power Supply: 6 VDC
Remarks:			

Table 7.2.2 Peak output power test results

ASSIGNED FREQUENCY:	5725.00 – 5850.00 MHz
MODULATION:	BPSK / QPSK / 16QAM / 64QAM
MODULATING SIGNAL:	PRBS
BIT RATE:	6 / 9 / 12 / 18 / 24 / 36 / 48 / 54 Mbps
TRANSMITTER OUTPUT POWER SETTINGS:	Maximum
DETECTOR USED:	Peak Power Meter
RESOLUTION BANDWIDTH:	NA
VIDEO BANDWIDTH:	NA
ANTENNA:	1

Carrier frequency, MHz	Power meter reading, dBm	Corresponding average power, dBm	Cable loss dB	Peak output power, dBm	Limit, dBm	Margin*, dB	Verdict
BIT RATE: 6 Mbps BPSK							
5745.00	23.58	18.69	Included	23.58	30.00	-6.42	Pass
5785.00	23.97	20.01	Included	23.97	30.00	-6.03	Pass
5825.00	24.00	19.67	Included	24.00	30.00	-6.00	Pass
BIT RATE: 9 Mbps BPSK							
5745.00	23.66	18.64	Included	23.66	30.00	-6.34	Pass
5785.00	23.85	20.01	Included	23.85	30.00	-6.15	Pass
5825.00	23.97	19.54	Included	23.97	30.00	-6.03	Pass
BIT RATE: 12 Mbps QPSK							
5745.00	23.50	18.81	Included	23.50	30.00	-6.50	Pass
5785.00	23.93	19.76	Included	23.93	30.00	-6.07	Pass
5825.00	23.95	19.67	Included	23.95	30.00	-6.05	Pass
BIT RATE: 18 Mbps QPSK							
5745.00	23.59	18.68	Included	23.59	30.00	-6.41	Pass
5785.00	23.61	19.83	Included	23.61	30.00	-6.39	Pass
5825.00	23.87	19.74	Included	23.87	30.00	-6.13	Pass
BIT RATE: 24 Mbps 16QAM							
5745.00	23.84	18.77	Included	23.84	30.00	-6.16	Pass
5785.00	24.03	19.75	Included	24.03	30.00	-5.97	Pass
5825.00	24.01	19.89	Included	24.01	30.00	-5.99	Pass
BIT RATE: 36 Mbps 16QAM							
5745.00	23.48	18.68	Included	23.48	30.00	-6.52	Pass
5785.00	23.74	19.66	Included	23.74	30.00	-6.26	Pass
5825.00	23.93	19.70	Included	23.93	30.00	-6.07	Pass
BIT RATE: 48 Mbps 64QAM							
5745.00	23.63	18.76	Included	23.63	30.00	-6.37	Pass
5785.00	23.74	20.14	Included	23.74	30.00	-6.26	Pass
5825.00	23.85	19.54	Included	23.85	30.00	-6.15	Pass
BIT RATE: 54 Mbps 64QAM							
5745.00	23.80	18.69	Included	23.80	30.00	-6.20	Pass
5785.00	23.84	19.68	Included	23.84	30.00	-6.16	Pass
5825.00	23.91	19.83	Included	23.91	30.00	-6.09	Pass

* - Margin = Peak output power – specification limit.

Test specification:	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 1		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	8/26/2009 11:24:54 AM		
Temperature: 26.2 ºC	Air Pressure: 1009 hPa	Relative Humidity: 38 %	Power Supply: 6 VDC
Remarks:			

Table 7.2.3 Peak output power test results

ASSIGNED FREQUENCY: 5725.00 – 5850.00 MHz
MODULATION: BPSK / QPSK / 16QAM / 64QAM
MODULATING SIGNAL: PRBS
BIT RATE: 6 / 9 / 12 / 18 / 24 / 36 / 48 / 54 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum
DETECTOR USED: Peak Power Meter
RESOLUTION BANDWIDTH: NA
VIDEO BANDWIDTH: NA
ANTENNA: 2

Carrier frequency, MHz	Power meter reading, dBm	Corresponding average power, dBm	External attenuation, dB	Peak output power, dBm	Limit, dBm	Margin*, dB	Verdict
BIT RATE: 6 Mbps BPSK							
5745.00	22.66	18.44	Included	22.66	30.00	-7.34	Pass
5785.00	23.07	19.18	Included	23.07	30.00	-6.93	Pass
5825.00	23.46	19.34	Included	23.46	30.00	-6.54	Pass
BIT RATE: 9 Mbps BPSK							
5745.00	22.83	18.60	Included	22.83	30.00	-7.17	Pass
5785.00	22.95	19.33	Included	22.95	30.00	-7.05	Pass
5825.00	23.62	19.50	Included	23.62	30.00	-6.38	Pass
BIT RATE: 12 Mbps QPSK							
5745.00	22.87	18.26	Included	22.87	30.00	-7.13	Pass
5785.00	23.06	19.24	Included	23.06	30.00	-6.94	Pass
5825.00	23.59	19.41	Included	23.59	30.00	-6.41	Pass
BIT RATE: 18 Mbps QPSK							
5745.00	22.51	18.39	Included	22.51	30.00	-7.49	Pass
5785.00	23.08	19.34	Included	23.08	30.00	-6.92	Pass
5825.00	23.47	19.20	Included	23.47	30.00	-6.53	Pass
BIT RATE: 24 Mbps 16QAM							
5745.00	22.77	18.29	Included	22.77	30.00	-7.23	Pass
5785.00	23.14	19.17	Included	23.14	30.00	-6.86	Pass
5825.00	23.57	19.32	Included	23.57	30.00	-6.43	Pass
BIT RATE: 36 Mbps 16QAM							
5745.00	22.59	18.30	Included	22.59	30.00	-7.41	Pass
5785.00	23.11	19.15	Included	23.11	30.00	-6.89	Pass
5825.00	23.40	19.26	Included	23.40	30.00	-6.60	Pass
BIT RATE: 48 Mbps 64QAM							
5745.00	22.52	18.42	Included	22.52	30.00	-7.48	Pass
5785.00	23.04	19.16	Included	23.04	30.00	-6.96	Pass
5825.00	23.70	19.21	Included	23.70	30.00	-6.30	Pass
BIT RATE: 54 Mbps 64QAM							
5745.00	22.69	18.37	Included	22.69	30.00	-7.31	Pass
5785.00	23.13	19.15	Included	23.13	30.00	-6.87	Pass
5825.00	23.50	19.06	Included	23.50	30.00	-6.50	Pass

* - Margin = Peak output power – specification limit.

Reference numbers of test equipment used

HL 3301	HL 3302	HL 3435	HL 3437				

Full description is given in Appendix A.

Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

7.3 Field strength of spurious emissions

7.3.1 General

This test was performed to measure field strength of spurious emissions from the EUT. Specification test limits are given in Table 7.3.1.

Table 7.3.1 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 – 10thharmonic	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.

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

7.3.2.1 The EUT was set up as shown in Figure 7.3.1, energized and the performance check was conducted.

7.3.2.2 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.

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

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

7.3.3.1 The EUT was set up as shown in Figure 7.3.2, energized and the performance check was conducted.

7.3.3.2 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.

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

Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

Figure 7.3.1 Setup for spurious emission field strength measurements below 30 MHz

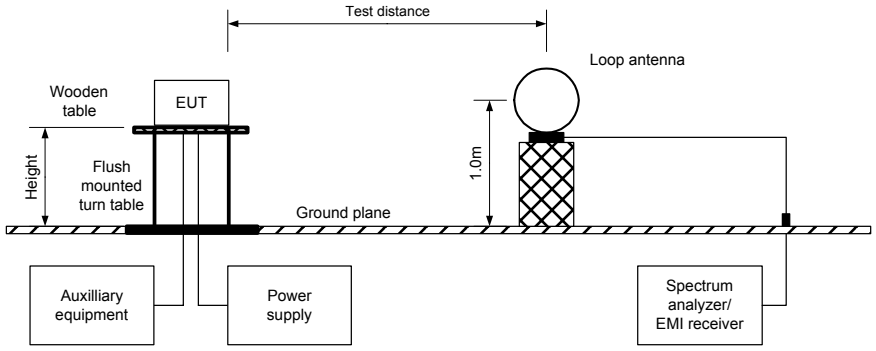
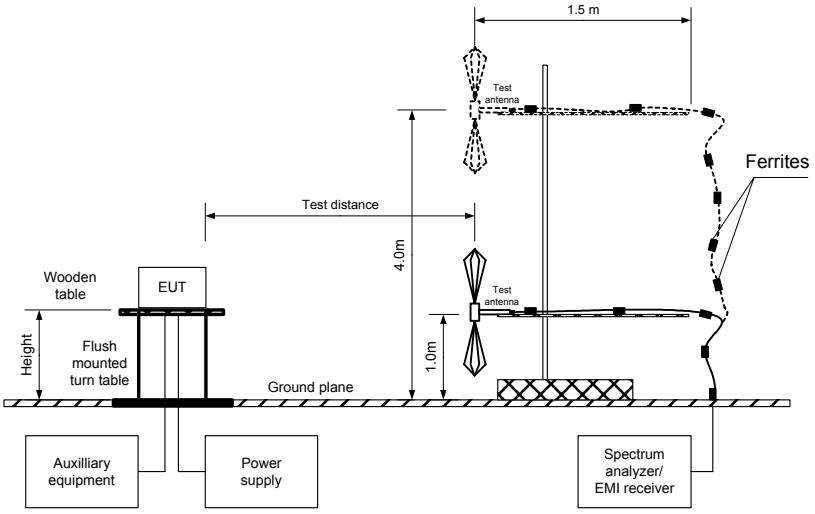


Figure 7.3.2 Setup for spurious emission field strength measurements above 30 MHz



Test specification:	**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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	**Air Pressure:** 1006 hPa	**Relative Humidity:** 44 %	**Power Supply:** 6 VDC
Remarks:			

Table 7.3.2 Field strength of emissions outside restricted bands

ASSIGNED FREQUENCY RANGE:	5725.00 – 5850.00 MHz
INVESTIGATED FREQUENCY RANGE:	0.009 – 40000 MHz
TEST DISTANCE:	3 m
MODULATION:	16QAM
MODULATING SIGNAL:	PRBS
BIT RATE:	24 Mbps
DUTY CYCLE:	100 %
TRANSMITTER OUTPUT POWER SETTINGS:	Maximum
TRANSMITTER OUTPUT POWER:	23.84 dBm at low carrier frequency 24.03 dBm at mid carrier frequency 24.01 dBm at high carrier frequency
DETECTOR USED:	Peak
RESOLUTION BANDWIDTH:	100 kHz
VIDEO BANDWIDTH:	300 kHz
TEST ANTENNA TYPE:	Active loop (9 kHz – 30 MHz) Biconilog (30 MHz – 1000 MHz) Double ridged guide (above 1000 MHz)

Frequency MHz	Field strengtl of spurious, dB(µV/m)	Antenna polarization	Antenna height, m	Azimuth, degrees*	Field strengtl of carrier, dB(µV/m)	Attenuation below carrier, dBc	Limit, dBc	Margin, dB**	Verdict
Low carrier frequency									
17230.75	57.30	V	1.1	090	108.4	51.10	20.0	-31.10	Pass
28733.70	51.67	V	1.1	100		56.73		-36.73	
Mid carrier frequency									
17360.00	58.27	V	1.1	080	108.5	50.23	20.0	-30.23	Pass
23137.75	60.30	V	1.1	110		48.20		-18.20	
28919.80	49.83	V	1.1	090		58.67		-38.67	
High carrier frequency									
17472.75	61.19	V	1.1	090	106.3	45.11	20.0	-25.11	Pass
23303.00	58.38	V	1.1	110		47.92		-17.92	
29122.70	46.83	V	1.1	100		59.47		-29.47	

*- EUT front panel refers to 0 degrees position of turntable.
**- Margin = Attenuation below carrier – specification limit.

Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

Table 7.3.3 Field strength of spurious emissions above 1 GHz within restricted bands

ASSIGNED FREQUENCY RANGE:	5725.00 – 5850.00 MHz
INVESTIGATED FREQUENCY RANGE:	0.009 – 40000 MHz
TEST DISTANCE:	3 m
MODULATION:	16QAM
MODULATING SIGNAL:	PRBS
BIT RATE:	24 Mbps
DUTY CYCLE:	100 %
TRANSMITTER OUTPUT POWER SETTINGS:	Maximum
TRANSMITTER OUTPUT POWER:	23.84 dBm at low carrier frequency 24.03 dBm at mid carrier frequency 24.01 dBm at high carrier frequency
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=10/30 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											
4596.00	V	1.2	160	64.18	74.00	-9.82	55.02	29.92	54.00	-24.08	Pass
9192.000	H	1.3	260	49.72	74.00	-24.28	46.84	21.74	54.00	-22.26	
11489.375	V	1.1	090	73.32	74.00	-0.68	54.98	29.88	54.00	-24.12	
22982.00	V	1.0	120	73.89	74.00	-0.11	61.79	36.69	54.00	-17.31	
Mid carrier frequency											
4627.980	V	1.2	160	63.40	74.00	-10.60	53.67	28.57	54.00	-25.43	Pass
11569.250	V	1.1	090	73.38	74.00	-0.62	57.10	32.00	54.00	-22.00	
High carrier frequency											
1333.00	V	1.0	180	49.20	74.00	-24.80	46.60	21.50	54.00	-32.50	Pass
4659.963	V	1.2	160	63.33	74.00	-10.67	54.94	29.84	54.00	-24.16	
9320.015	H	1.3	260	47.67	74.00	-26.33	43.63	18.53	54.00	-35.47	
11649.75	V	1.1	080	73.08	74.00	-0.92	58.24	33.14	54.00	-20.86	

*- 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.

Table 7.3.4 Average factor calculation

Transmission pulse		Transmission burst		Transmission train duration, ms	Average factor, dB**
Duration, ms*	Period, ms*	Duration, ms	Period, ms		
1	18	NA	NA	NA	-25.1

* - declared by the manufacturer
**- 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: $$Average\ factor = 20 \times \log_{10}\left(\frac{Pulse\ duration}{Pulse\ period} \times \frac{Burst\ duration}{100\,ms} \times Number\ of\ bursts\ within\ 100\,ms\right)$$

Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

Table 7.3.5 Field strength of spurious emissions below 1 GHz within restricted bands

ASSIGNED FREQUENCY RANGE:	5725.00 – 5850.00 MHz
INVESTIGATED FREQUENCY RANGE:	0.009 – 40000 MHz
TEST DISTANCE:	3 m
MODULATION:	16QAM
MODULATING SIGNAL:	PRBS
BIT RATE:	24 Mbps
DUTY CYCLE:	100 %
TRANSMITTER OUTPUT POWER SETTINGS:	Maximum
TRANSMITTER OUTPUT POWER:	23.84 dBm at low carrier frequency 24.03 dBm at mid carrier frequency 24.01 dBm at high carrier frequency
RESOLUTION BANDWIDTH:	0.2 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								
266.70	41.50	38.40	46.00	-7.60	V	1.0	270	Pass
400.00	40.50	38.60	46.00	-7.40	V	1.2	090	
Mid carrier frequency								
400.00	39.70	37.80	46.00	-8.20	H	1.0	080	Pass

Note: All other found emissions were from the digital part of the EUT, the results are given in ALVEMC_FCC.19837 test report.

*- Margin = Measured emission - specification limit.
**- EUT front panel refer to 0 degrees position of turntable.

Table 7.3.6 Restricted bands

MHz	MHz	MHz	MHz	MHz	GHz
0.09 - 0.11	8.37625 - 8.38675	73 - 74.6	399.9 - 410	2690 - 2900	10.6 - 12.7
0.495 - 0.505	8.41425 - 8.41475	74.8 - 75.2	608 - 614	3260 - 3267	13.25 - 13.4
2.1735 - 2.1905	12.29 - 12.293	108 - 121.94	960 - 1240	3332 - 3339	14.47 - 14.5
4.125 - 4.128	12.51975 - 12.52025	123 - 138	1300 - 1427	3345.8 - 3358	15.35 - 16.2
4.17725 - 4.17775	12.57675 - 12.57725	149.9 - 150.05	1435 - 1626.5	3600 - 4400	17.7 - 21.4
4.20725 - 4.20775	13.36 - 13.41	156.52475 - 156.52525	1645.5 - 1646.5	4500 - 5150	22.01 - 23.12
6.215 - 6.218	16.42 - 16.423	156.7 - 156.9	1660 - 1710	5350 – 5460	23.6 - 24
6.26775 - 6.26825	16.69475 - 16.69525	162.0125 - 167.17	1718.8 - 1722.2	7250 - 7750	31.2 - 31.8
6.31175 - 6.31225	16.80425 - 16.80475	167.72 - 173.2	2200 - 2300	8025 – 8500	36.43 - 36.5
8.291 - 8.294	25.5 - 25.67	240 - 285	2310 - 2390	9000 - 9200	Above 38.6
8.362 - 8.366	37.5 - 38.25	322 - 335.4	2483.5 - 2500	9300 - 9500	

Reference numbers of test equipment used

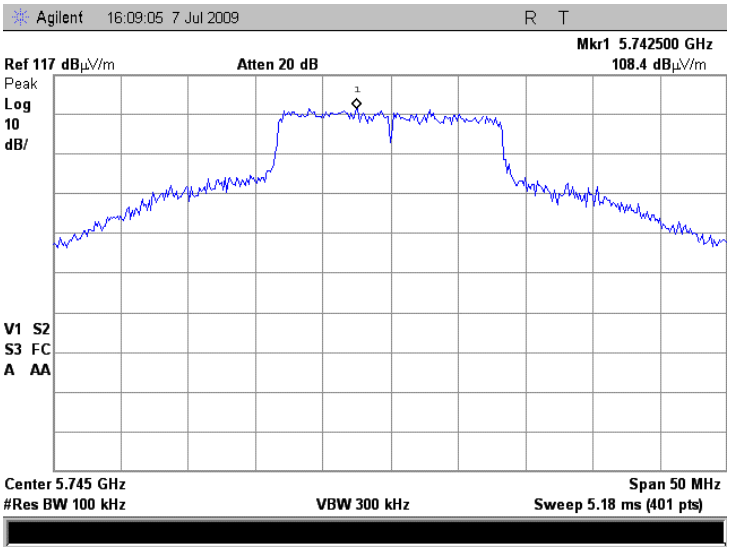
HL 0446	HL 0521	HL 0604	HL 1424	HL 1984	HL 2387	HL 2432	HL 2882
HL 2909	HL 3121	HL 3123	HL 3531	HL 3533	HL 3535	HL 3616	

Full description is given in Appendix A.

Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

Plot 7.3.1 Radiated emission measurements at the low carrier frequency

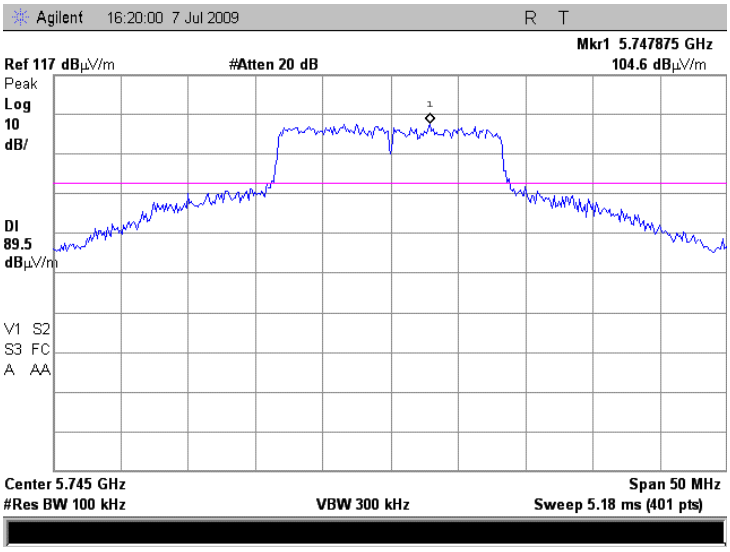
TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical



Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

Plot 7.3.2 Radiated emission measurements at the low carrier frequency

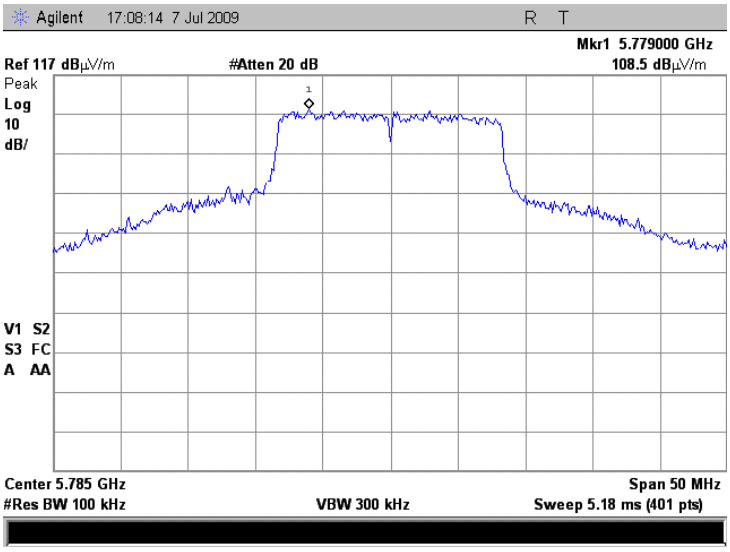
TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal



Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

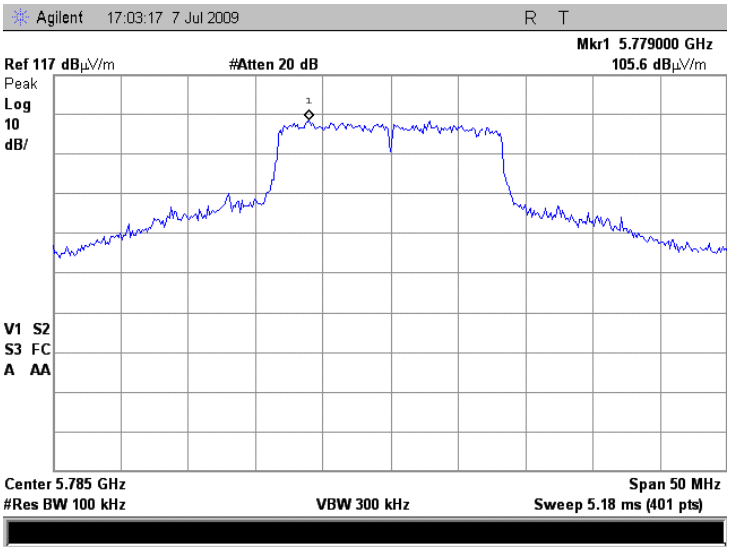
Plot 7.3.3 Radiated emission measurements at the mid carrier frequency

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



Plot 7.3.4 Radiated emission measurements at the mid carrier frequency

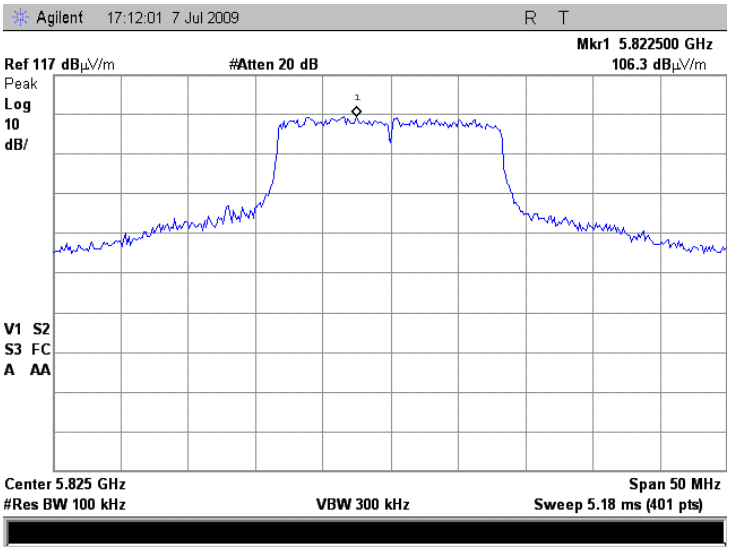
TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal



Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

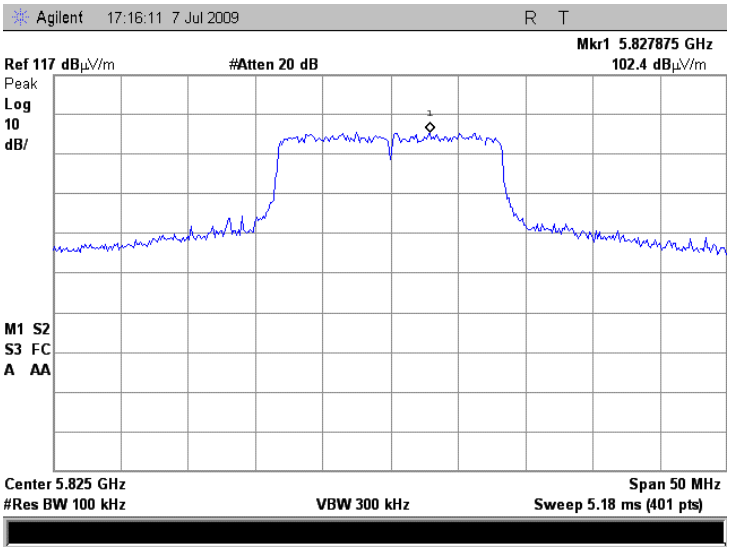
Plot 7.3.5 Radiated emission measurements at the high carrier frequency

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



Plot 7.3.6 Radiated emission measurements at the high carrier frequency

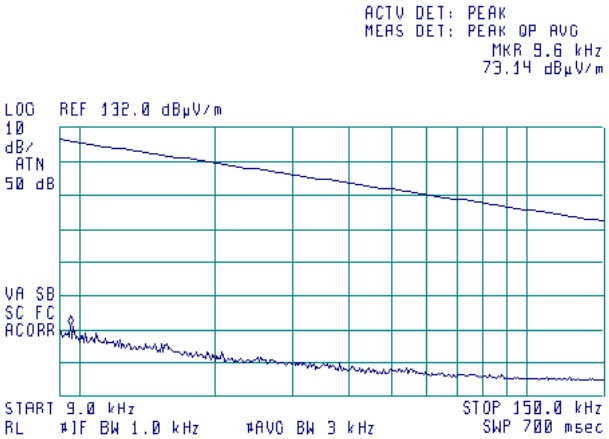
TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal



Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

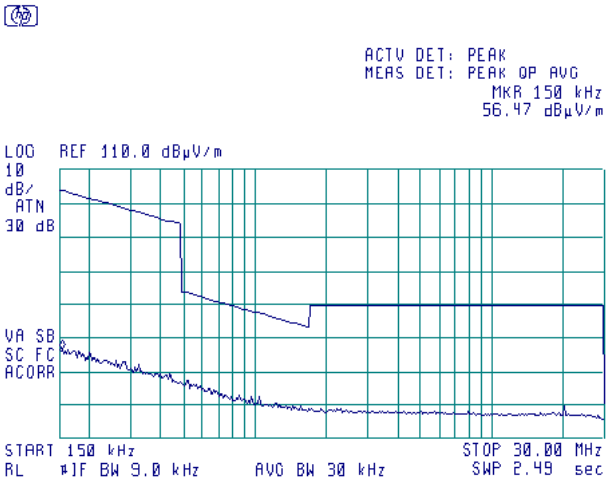
Plot 7.3.7 Radiated emission measurements from 9 to 150 kHz

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
CHANNEL: Low, Mid & High



Plot 7.3.8 Radiated emission measurements from 0.15 to 30 MHz

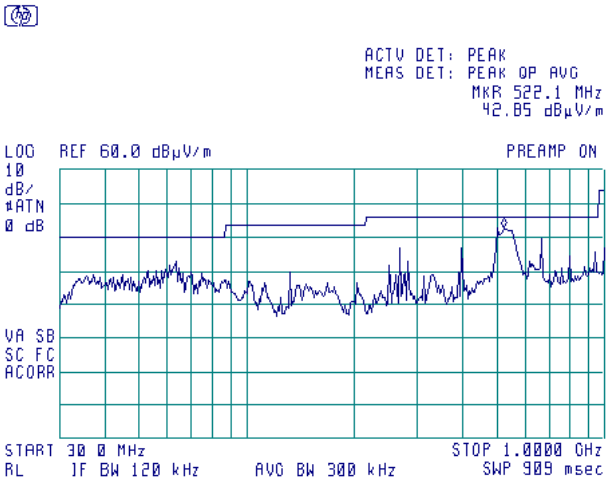
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
CHANNEL: Low, Mid & High



Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

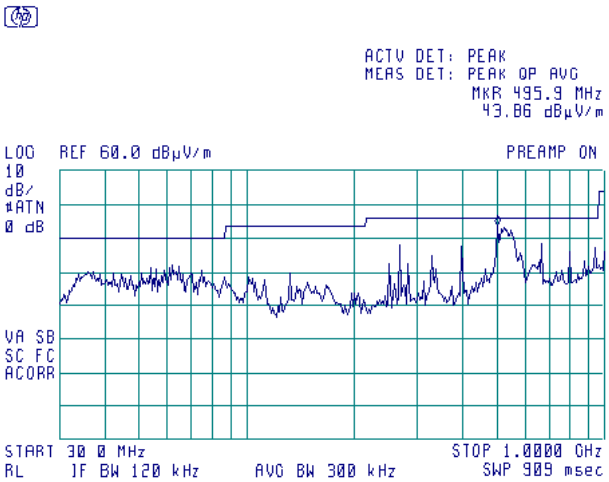
Plot 7.3.9 Radiated emission measurements from 30 to 1000 MHz at the low carrier frequency

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



Plot 7.3.10 Radiated emission measurements from 30 to 1000 MHz at the mid carrier frequency

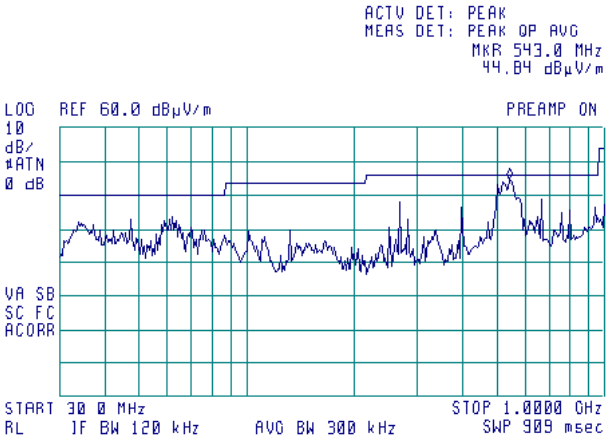
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

Plot 7.3.11 Radiated emission measurements from 30 to 1000 MHz at the high carrier frequency

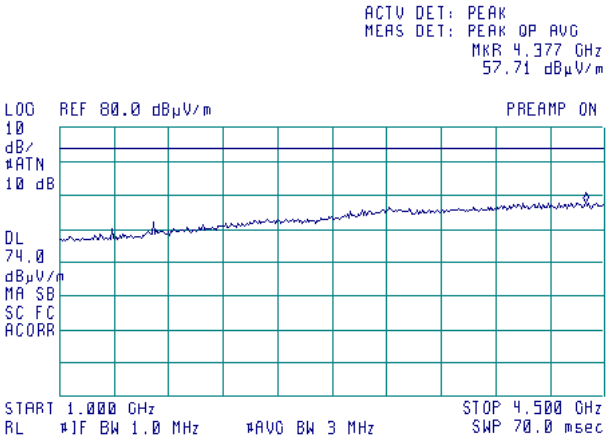
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

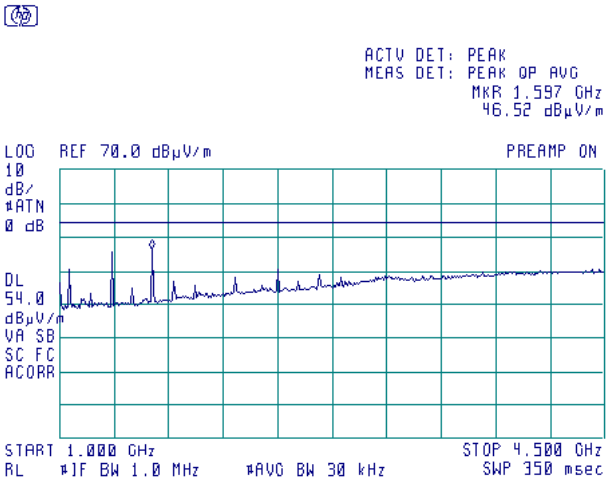
Plot 7.3.12 Radiated emission measurements from 1000 to 4500 MHz at the low carrier frequency

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



Plot 7.3.13 Radiated emission measurements from 1000 to 4500 MHz at the low carrier frequency

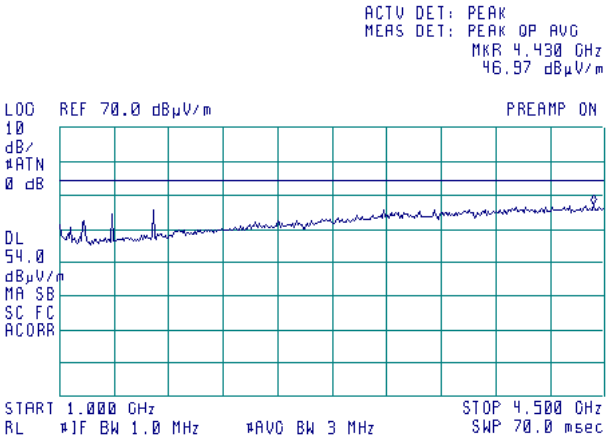
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: VBW = 30 kHz



Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

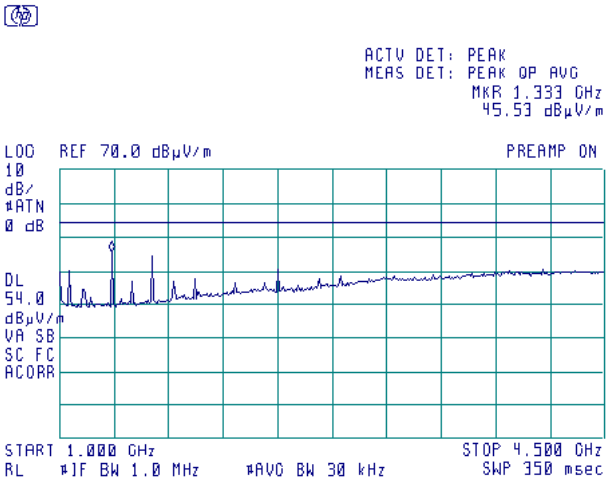
Plot 7.3.14 Radiated emission measurements from 1000 to 4500 MHz at the mid carrier frequency

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



Plot 7.3.15 Radiated emission measurements from 1000 to 4500 MHz at the mid carrier frequency

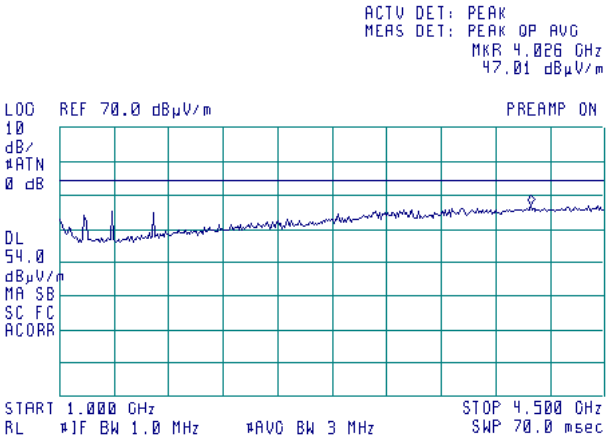
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: VBW = 30 kHz



Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

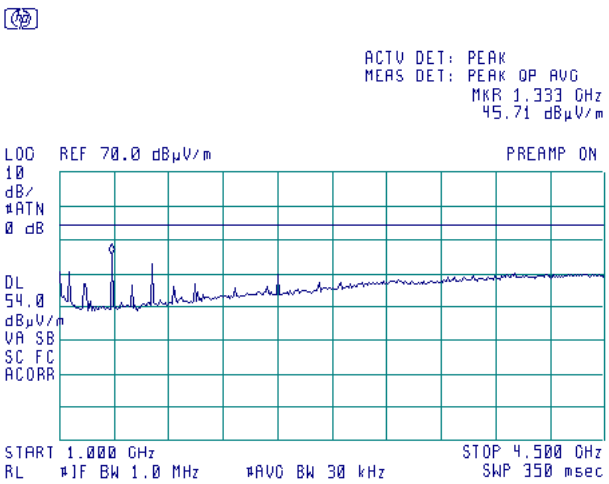
Plot 7.3.16 Radiated emission measurements from 1000 to 4500 MHz at the high carrier frequency

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



Plot 7.3.17 Radiated emission measurements from 1000 to 4500 MHz at the high carrier frequency

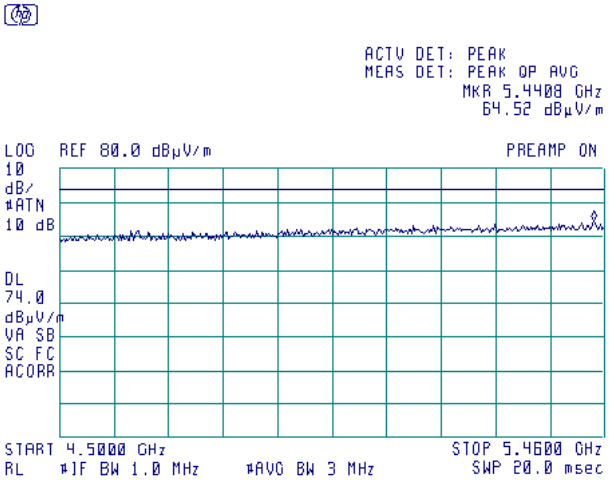
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: VBW = 30 kHz



Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

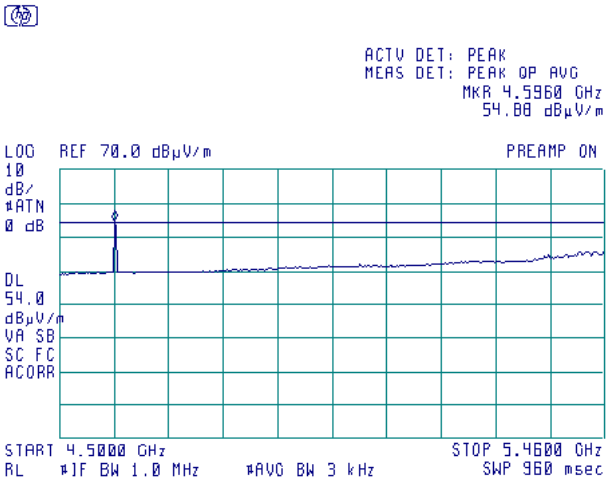
Plot 7.3.18 Radiated emission measurements from 4500 to 5460 MHz at the low carrier frequency

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



Plot 7.3.19 Radiated emission measurements from 4500 to 5460 MHz at the low carrier frequency

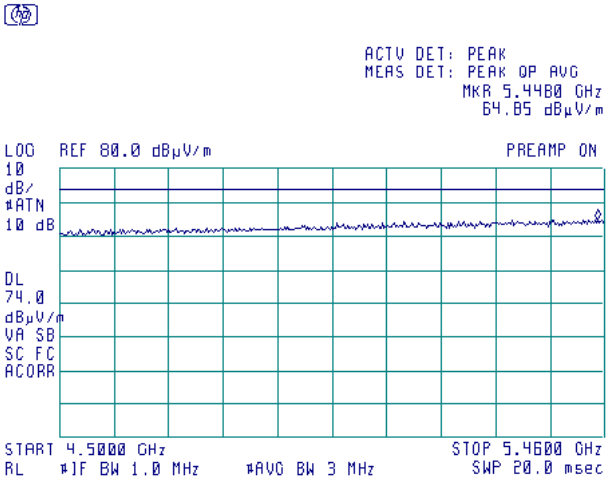
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: VBW = 3 kHz



Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

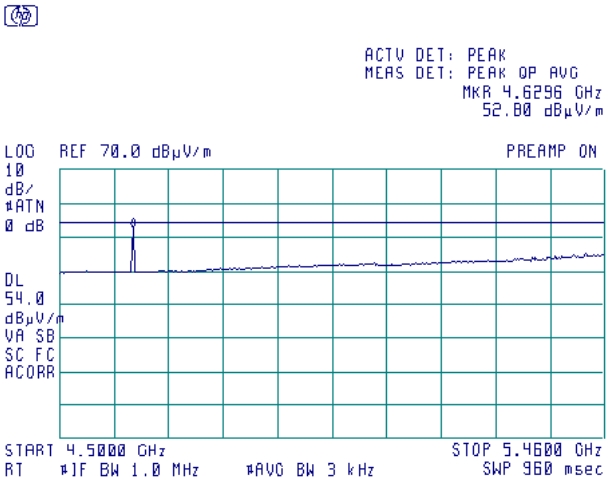
Plot 7.3.20 Radiated emission measurements from 4500 to 5460MHz at the mid carrier frequency

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



Plot 7.3.21 Radiated emission measurements from 4500 to 5460MHz at the mid carrier frequency

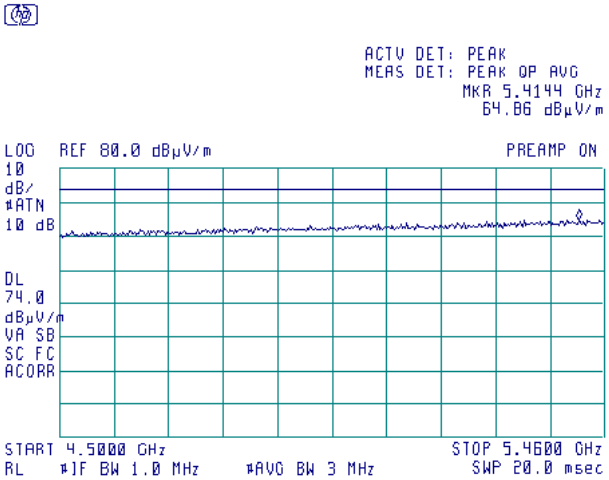
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: VBW = 3 kHz



Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

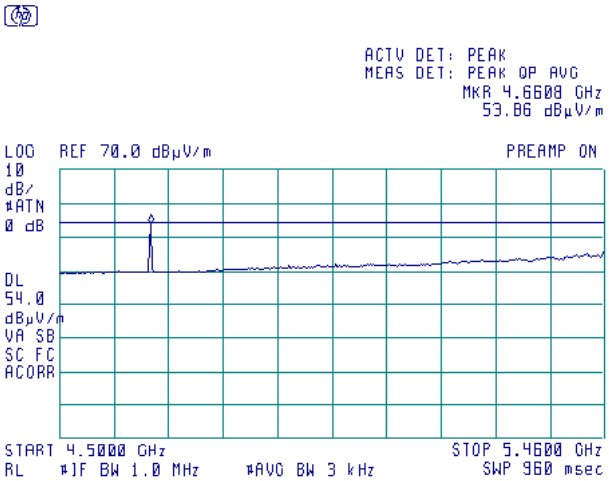
Plot 7.3.22 Radiated emission measurements from 4500 to 5460 MHz at the high carrier frequency

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



Plot 7.3.23 Radiated emission measurements from 4500 to 5460 MHz at the high carrier frequency

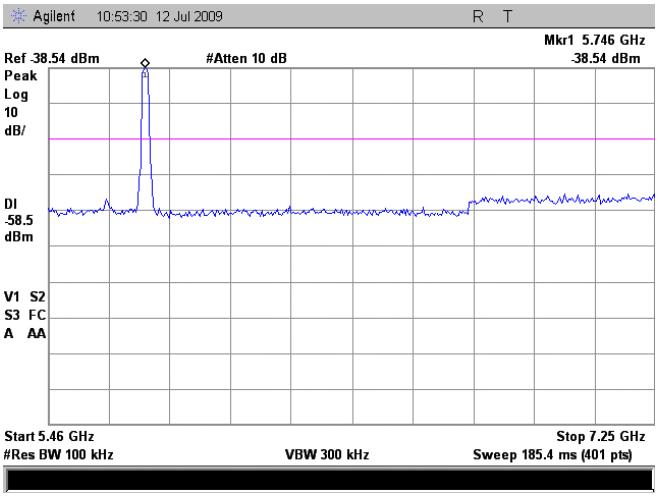
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: VBW = 3 kHz



Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

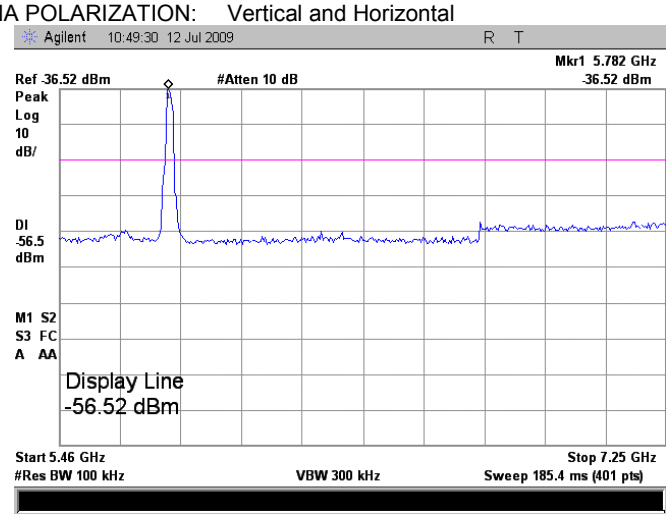
Plot 7.3.24 Radiated emission measurements from 5460 to 7250 MHz at the low carrier frequency

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



Plot 7.3.25 Radiated emission measurements from 5460 to 7250 MHz at the mid carrier frequency

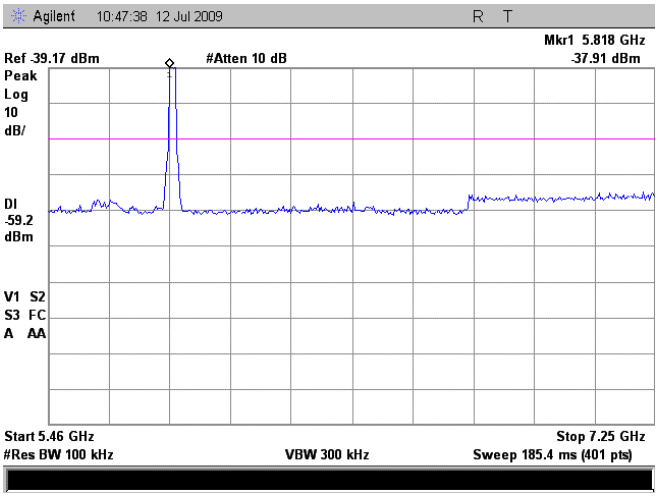
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

Plot 7.3.26 Radiated emission measurements from 5460 to 7250 MHz at the high carrier frequency

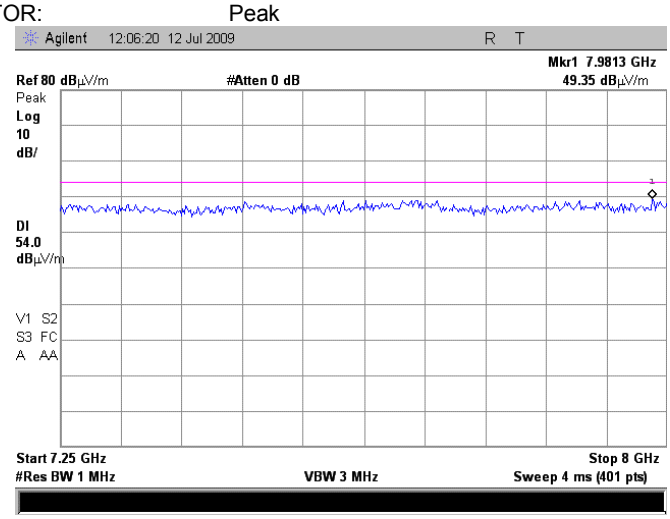
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

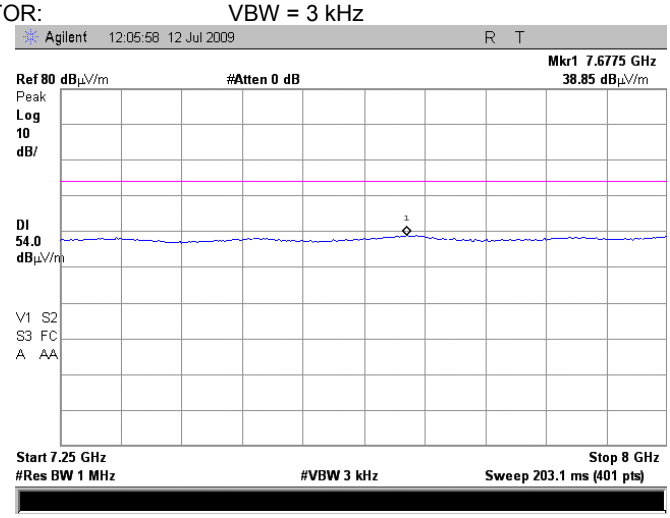
Plot 7.3.27 Radiated emission measurements from 7250 to 8000 MHz at the low carrier frequency

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



Plot 7.3.28 Radiated emission measurements from 7250 to 8000 MHz at the low carrier frequency

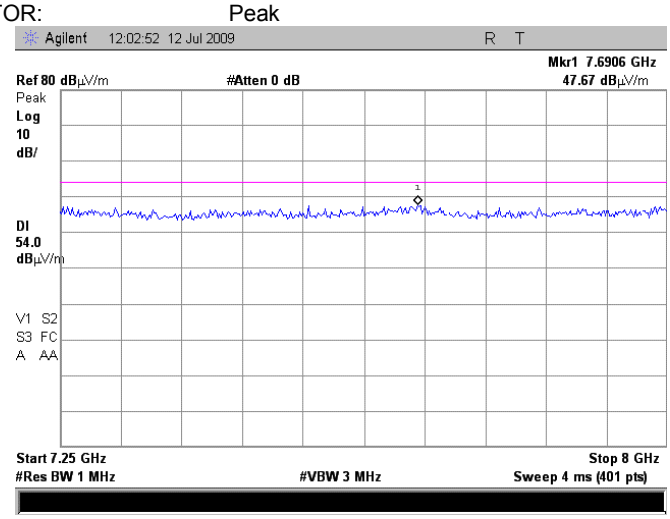
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: VBW = 3 kHz



Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

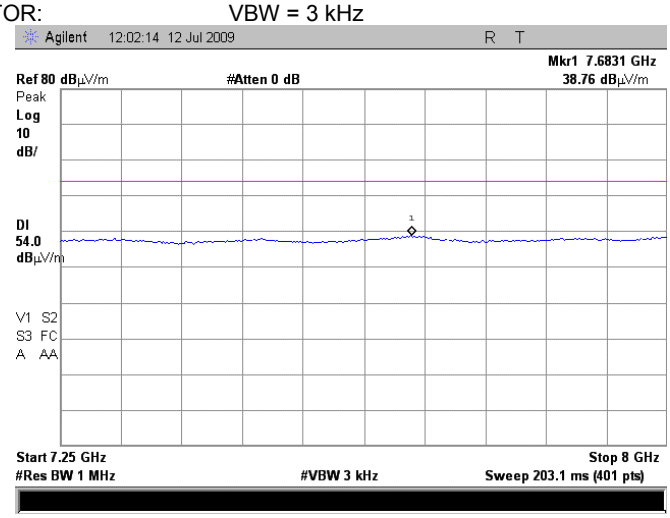
Plot 7.3.29 Radiated emission measurements from 7250 to 8000 MHz at the mid carrier frequency

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



Plot 7.3.30 Radiated emission measurements from 7250 to 8000 MHz at the mid carrier frequency

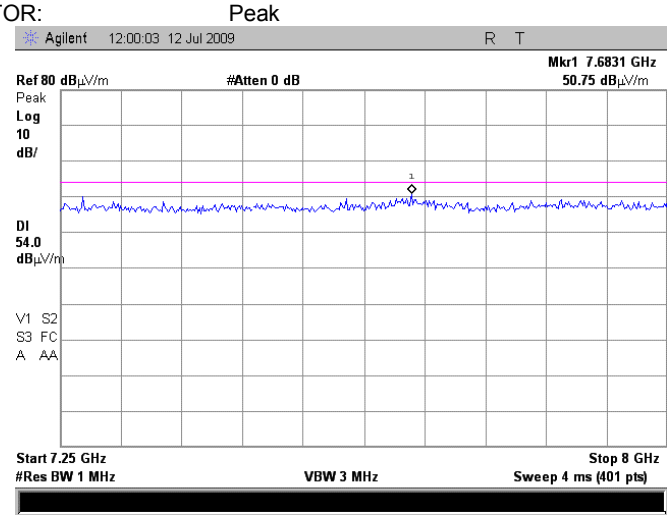
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: VBW = 3 kHz



Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

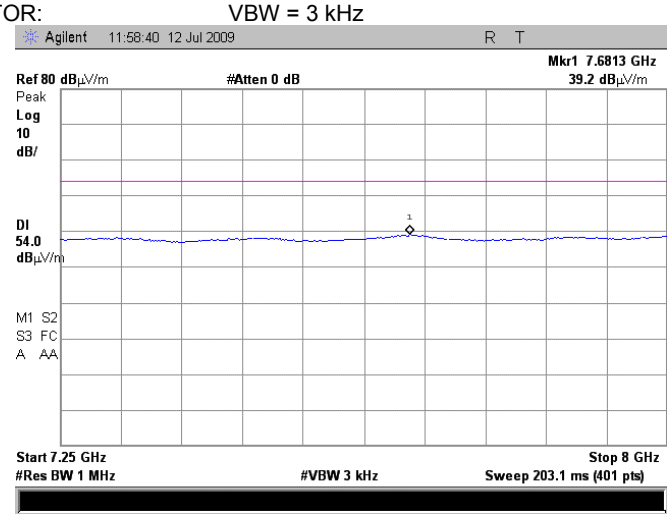
Plot 7.3.31 Radiated emission measurements from 7250 to 8000 MHz at the high carrier frequency

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



Plot 7.3.32 Radiated emission measurements from 7250 to 8000 MHz at the high carrier frequency

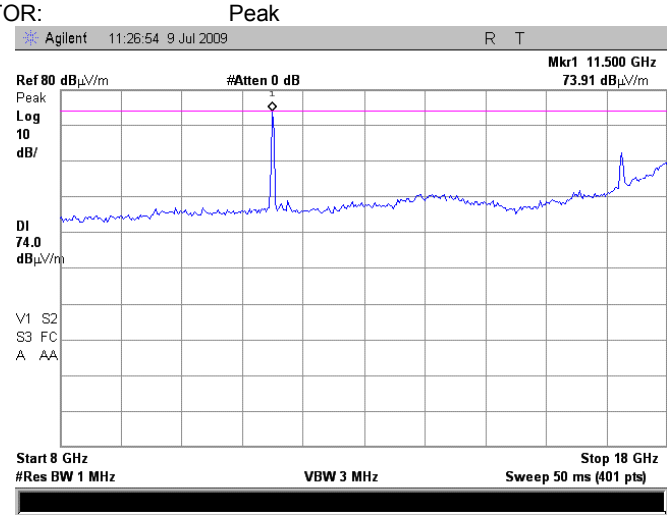
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: VBW = 3 kHz



Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

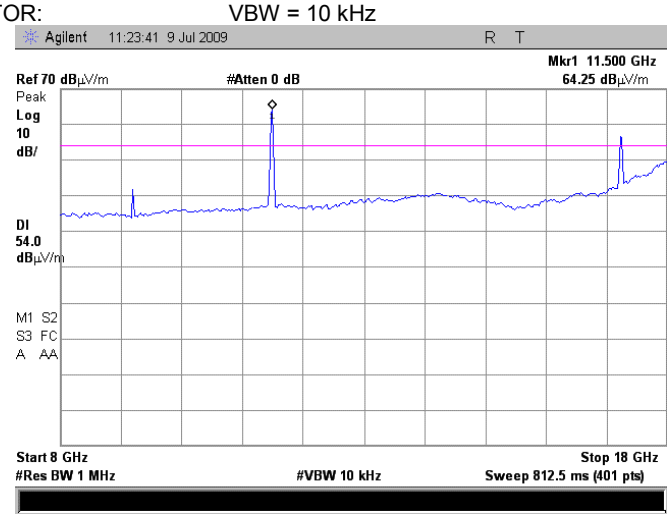
Plot 7.3.33 Radiated emission measurements from 8000 to 18000 MHz at the low carrier frequency

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



Plot 7.3.34 Radiated emission measurements from 8000 to 18000 MHz at the low carrier frequency

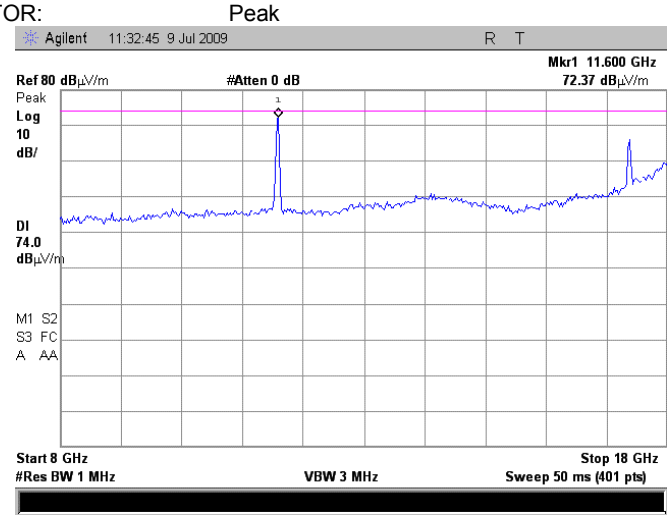
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: VBW = 10 kHz



Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

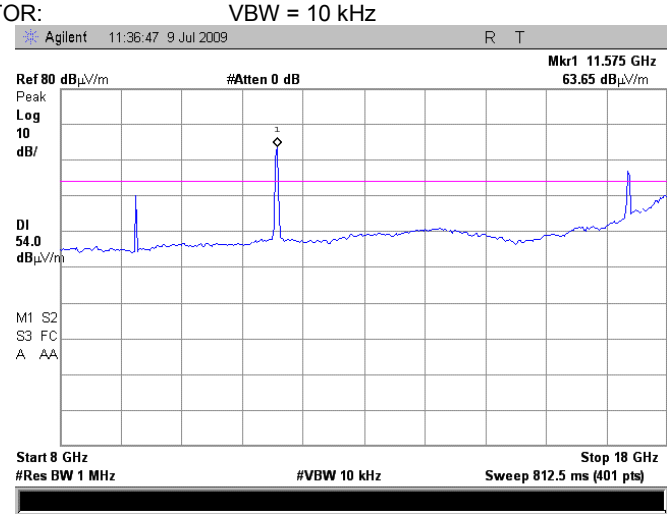
Plot 7.3.35 Radiated emission measurements from 8000 to 18000 MHz at the mid carrier frequency

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



Plot 7.3.36 Radiated emission measurements from 8000 to 18000 MHz at the mid carrier frequency

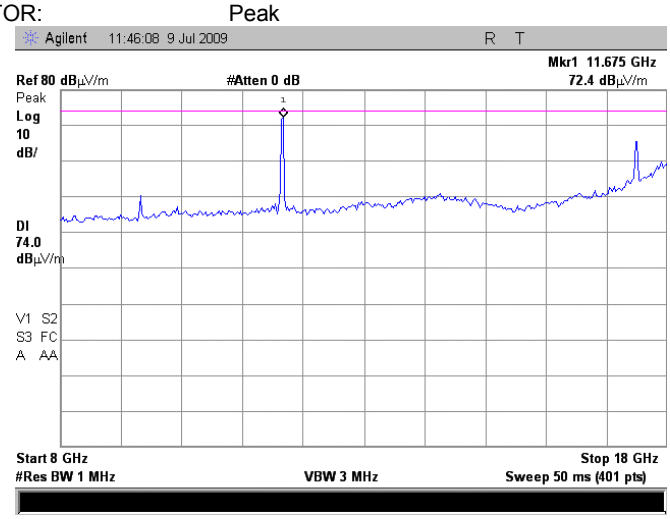
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: VBW = 10 kHz



Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

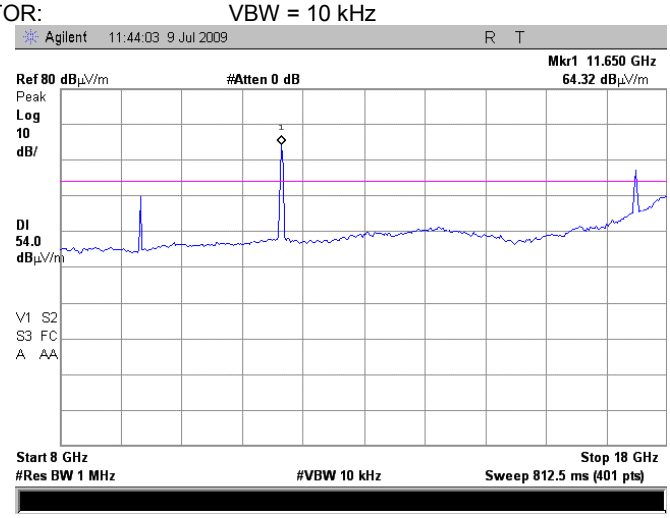
Plot 7.3.37 Radiated emission measurements from 8000 to 18000 MHz at the high carrier frequency

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



Plot 7.3.38 Radiated emission measurements from 8000 to 18000 MHz at the high carrier frequency

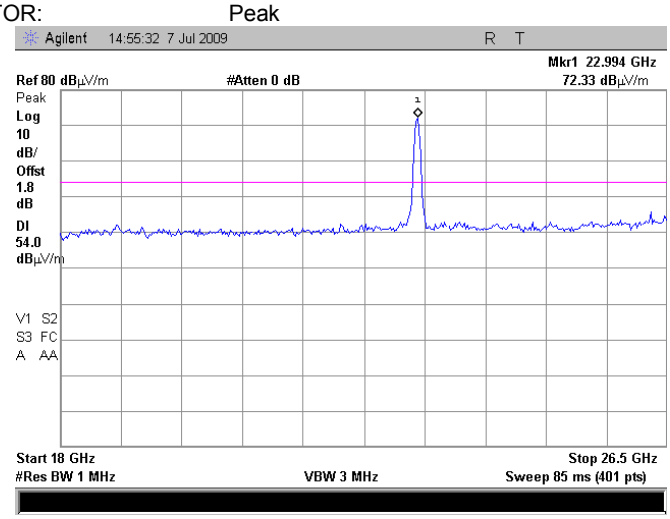
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: VBW = 10 kHz



Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

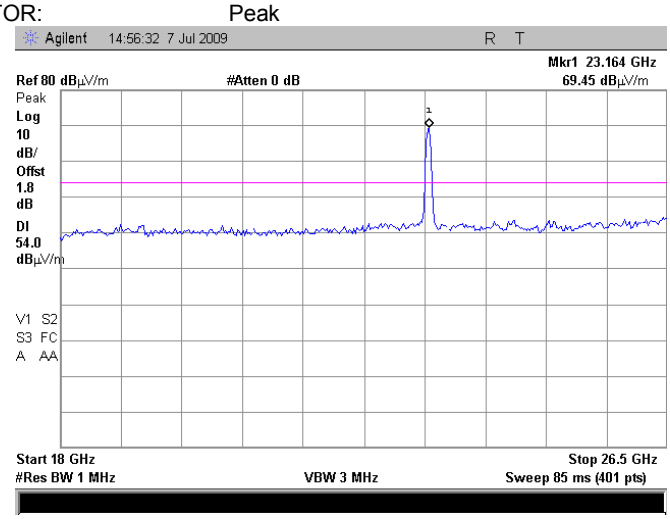
Plot 7.3.39 Radiated emission measurements from 18000 to 26500 MHz at the low carrier frequency

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



Plot 7.3.40 Radiated emission measurements from 18000 to 26500 MHz at the mid carrier frequency

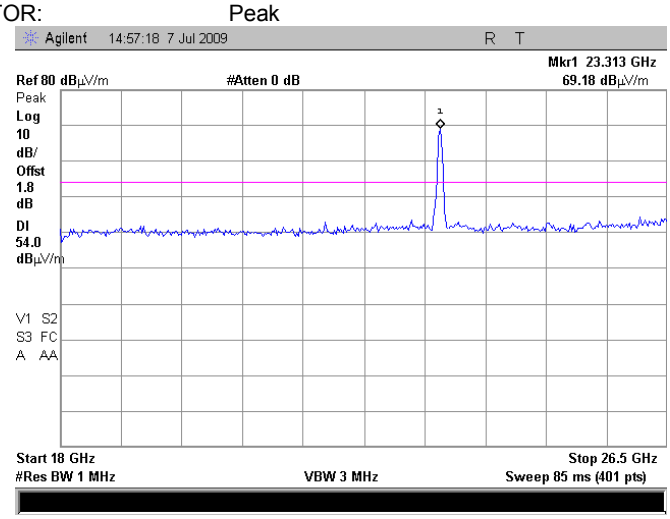
TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak



Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

Plot 7.3.41 Radiated emission measurements from 18000 to 26500 MHz at the high carrier frequency

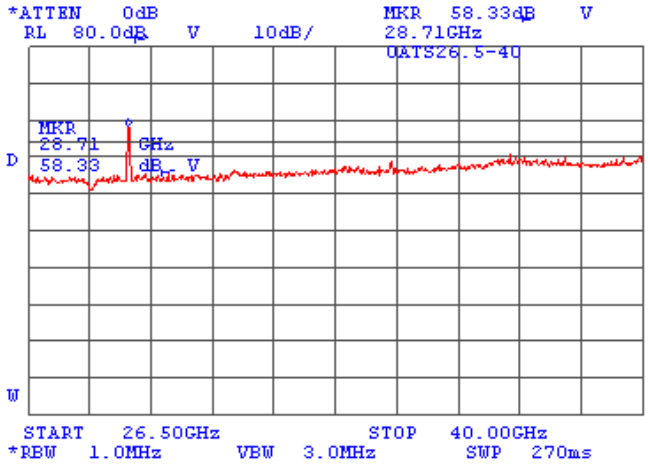
TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
DETECTOR: Peak



Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

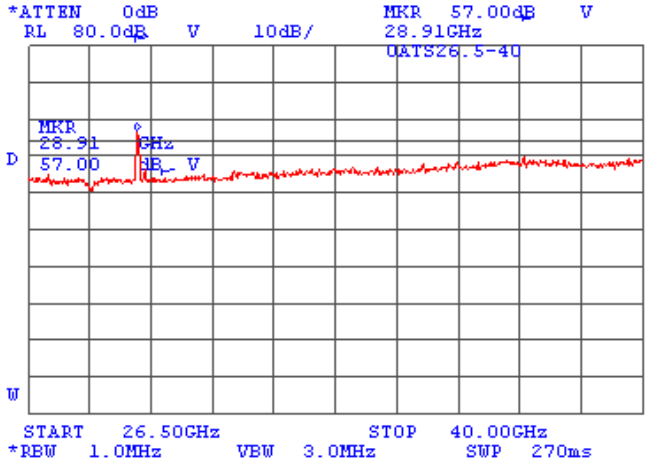
Plot 7.3.42 Radiated emission measurements from 26500 to 40000 MHz at the low carrier frequency

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



Plot 7.3.43 Radiated emission measurements from 26500 to 40000 MHz at the mid carrier frequency

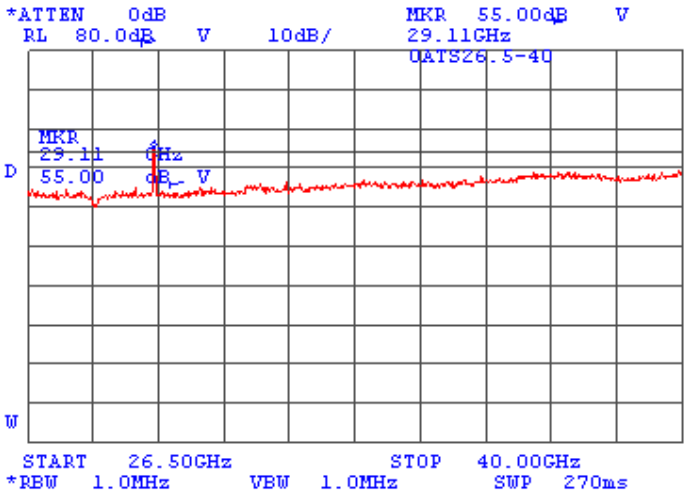
TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

Plot 7.3.44 Radiated emission measurements from 26500 to 40000 MHz at the high carrier frequency

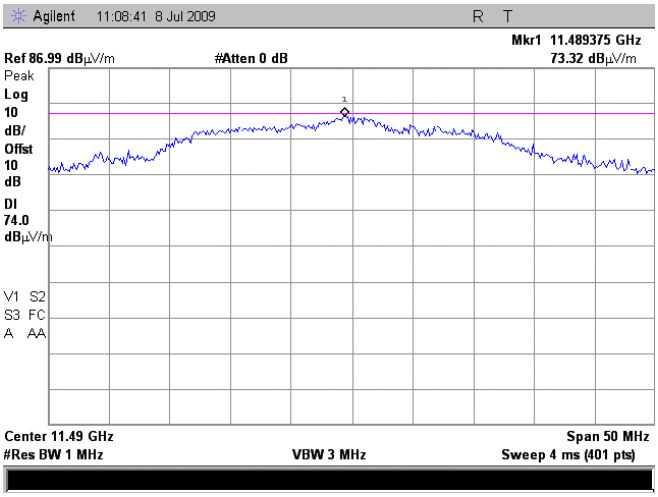
TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

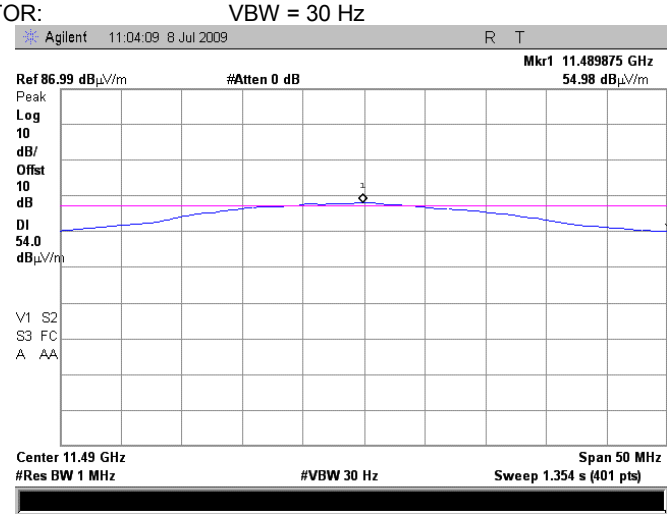
Plot 7.3.45 Radiated emission measurements at the second harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
DETECTOR: Peak



Plot 7.3.46 Radiated emission measurements at the second harmonic of low carrier frequency

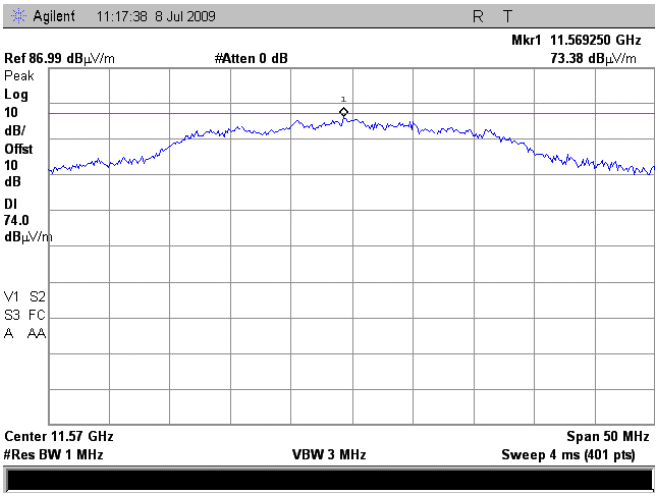
TEST SITE: OATS
TEST DISTANCE: 3 m
DETECTOR: VBW = 30 Hz



Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

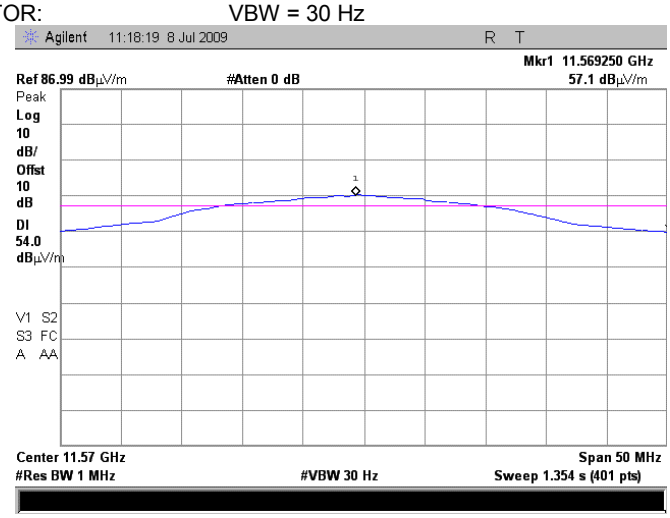
Plot 7.3.47 Radiated emission measurements at the second harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
DETECTOR: Peak



Plot 7.3.48 Radiated emission measurements at the second harmonic of mid carrier frequency

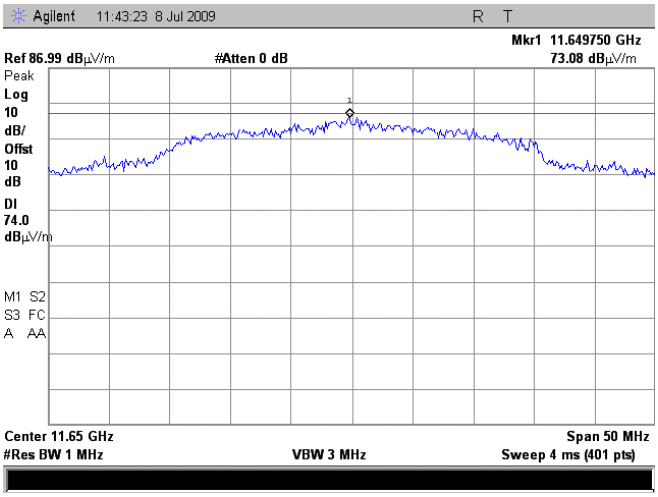
TEST SITE: OATS
TEST DISTANCE: 3 m
DETECTOR: VBW = 30 Hz



Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

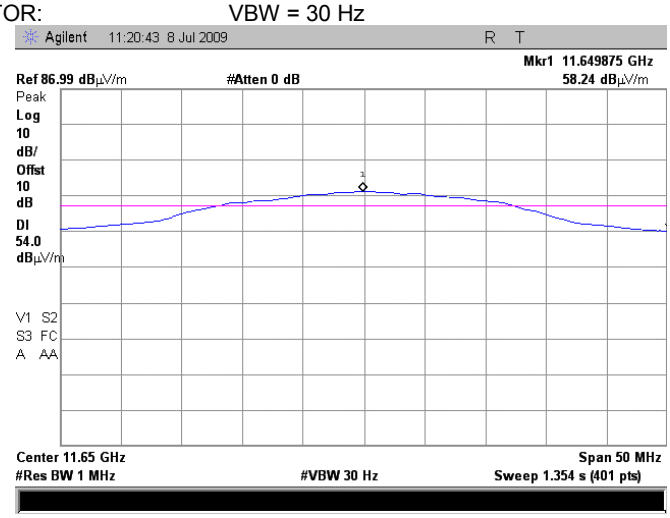
Plot 7.3.49 Radiated emission measurements at the second harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
DETECTOR: Peak



Plot 7.3.50 Radiated emission measurements at the second harmonic of high carrier frequency

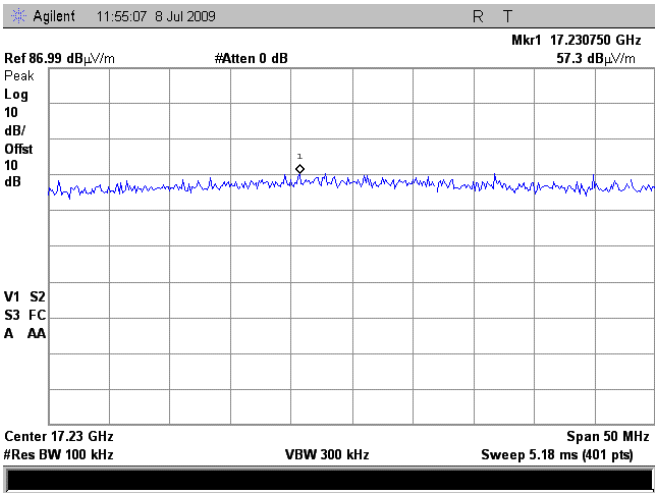
TEST SITE: OATS
TEST DISTANCE: 3 m
DETECTOR: VBW = 30 Hz



Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

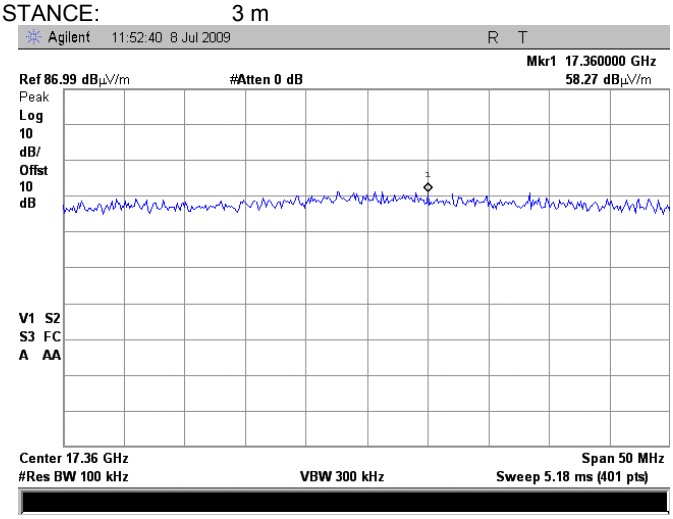
Plot 7.3.51 Radiated emission measurements at the third harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m



Plot 7.3.52 Radiated emission measurements at the third harmonic of mid carrier frequency

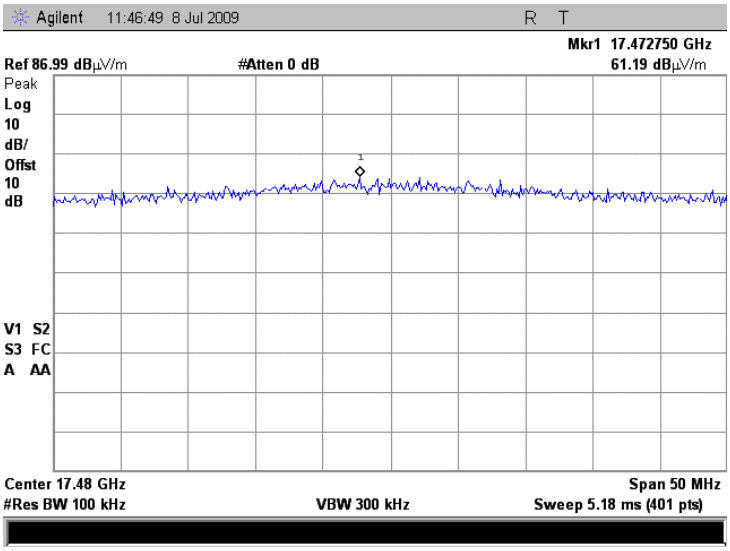
TEST SITE: OATS
TEST DISTANCE: 3 m



Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

Plot 7.3.53 Radiated emission measurements at the third harmonic of high carrier frequency

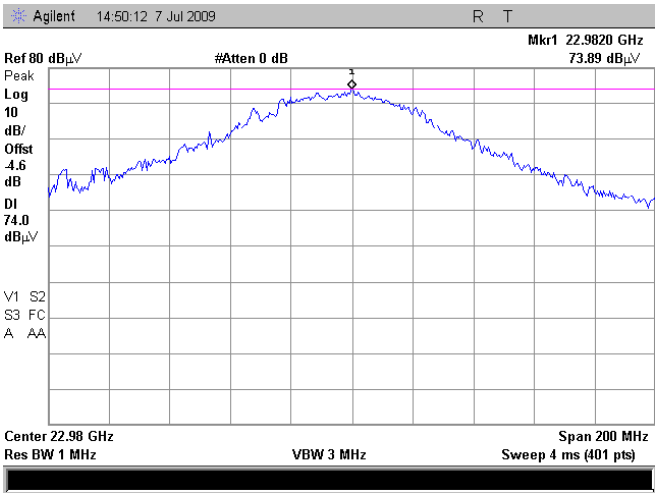
TEST SITE: OATS
TEST DISTANCE: 3 m



Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

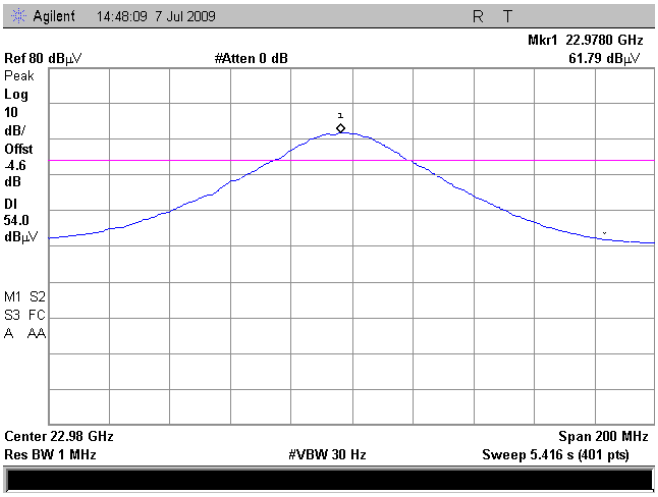
Plot 7.3.54 Radiated emission measurements at the fourth harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
DETECTOR: Peak



Plot 7.3.55 Radiated emission measurements at the fourth harmonic of low carrier frequency

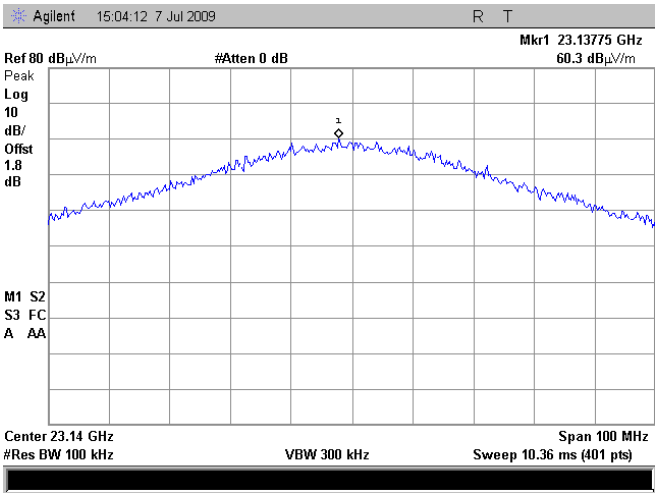
TEST SITE: OATS
TEST DISTANCE: 3 m
DETECTOR: VBW = 30 Hz



Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

Plot 7.3.56 Radiated emission measurements at the fourth harmonic of mid carrier frequency

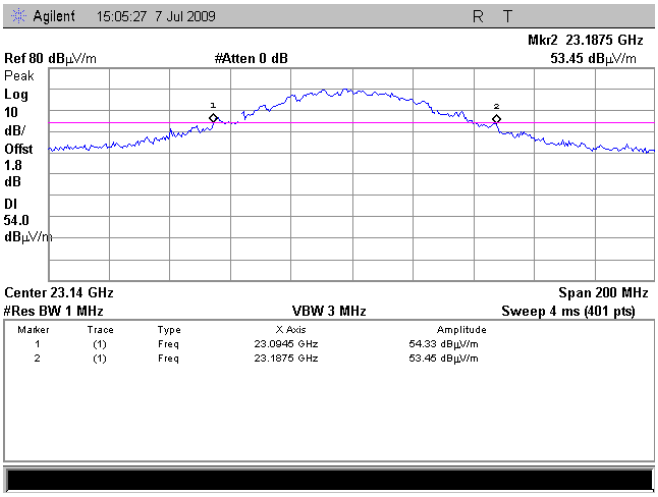
TEST SITE: OATS
TEST DISTANCE: 3 m



Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

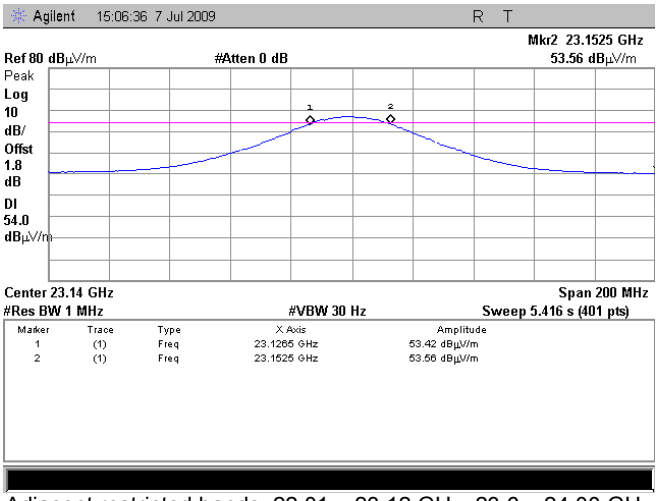
Plot 7.3.57 Radiated emission measurements at the fourth harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m



Plot 7.3.58 Radiated emission measurements at the fourth harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m

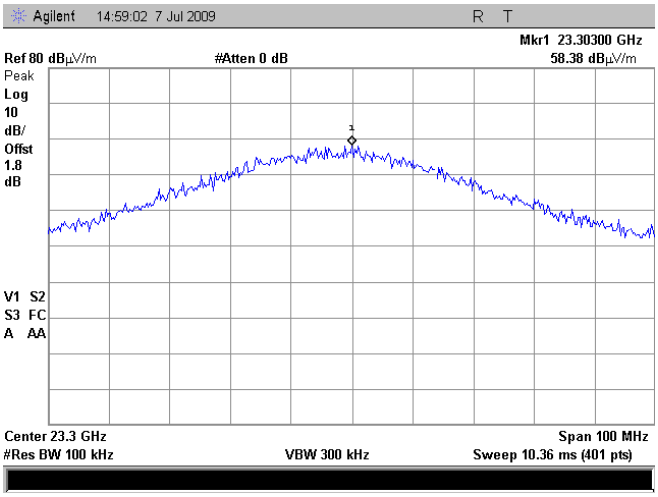


Adjacent restricted bands: 22.01 – 23.12 GHz; 23.6 – 24.00 GHz

Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

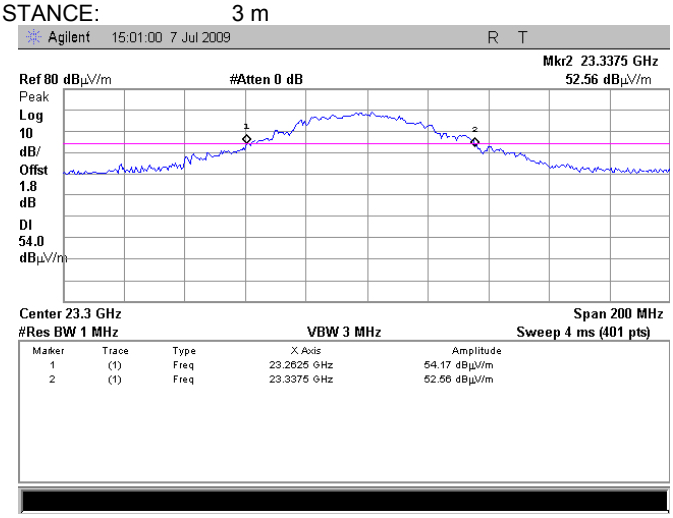
Plot 7.3.59 Radiated emission measurements at the fourth harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m



Plot 7.3.60 Radiated emission measurements at the fourth harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m

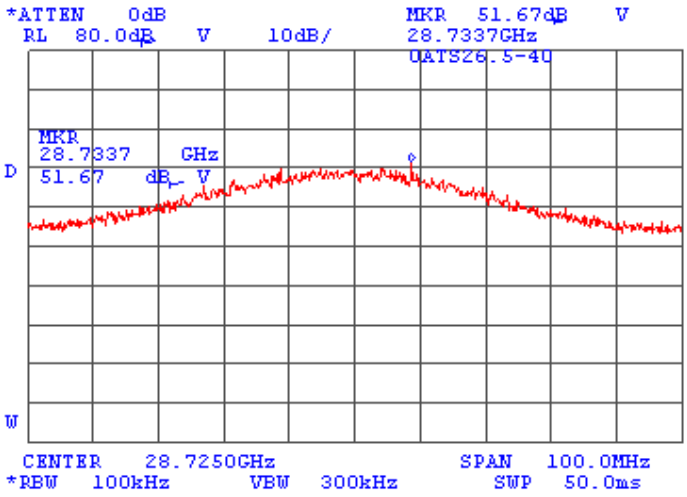


Adjacent restricted bands: 22.01 – 23.12 GHz; 23.6 – 24.00 GHz

Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

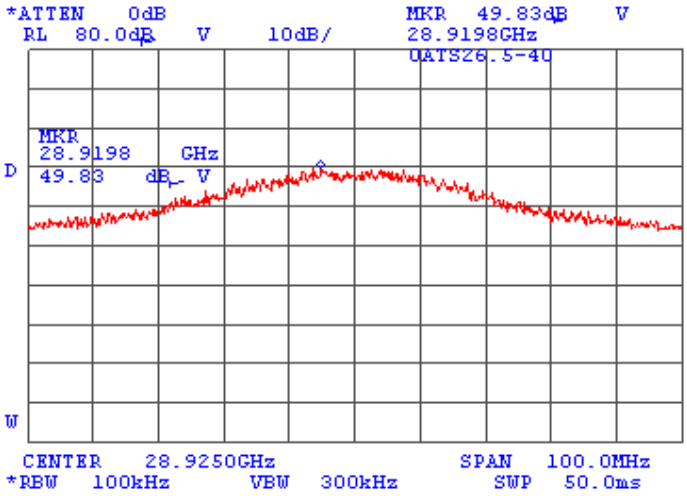
Plot 7.3.61 Radiated emission measurements at the fifth harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m



Plot 7.3.62 Radiated emission measurements at the fifth harmonic of mid carrier frequency

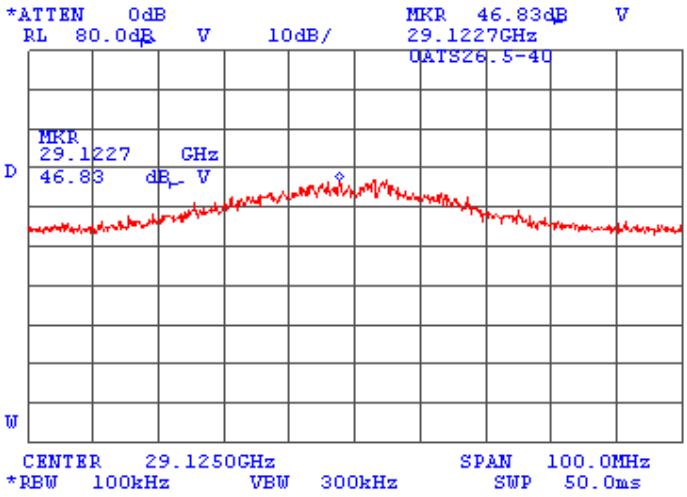
TEST SITE: OATS
TEST DISTANCE: 3 m



Test specification:	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:	8/16/2009 5:04:36 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

Plot 7.3.63 Radiated emission measurements at the fifth harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

7.4 Peak spectral power density

7.4.1 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 7.4.1.

Table 7.4.1 Peak spectral power density limits

Assigned frequency range, MHz	Measurement bandwidth, kHz	Peak spectral power density, dBm
5725.00 – 5850.00	3.0	8.0

7.4.2 Test procedure

7.4.2.1 The EUT was set up as shown in Figure 7.4.1, energized and its proper operation was checked.

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

7.4.2.3 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.

7.4.2.4 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 7.4.2 and the associated plots.

Figure 7.4.1 Peak spectral power density test setup

Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

Table 7.4.2 Peak spectral power density test results

ASSIGNED FREQUENCY: 5725.00 – 5850.00 MHz
MODULATING SIGNAL: PRBS
TRANSMITTER OUTPUT POWER SETTINGS: Maximum
DETECTOR USED: Peak
RESOLUTION BANDWIDTH: 3 kHz
VIDEO BANDWIDTH: 300 kHz
NOTE: Worst case results provided for both antennas

Carrier frequency, MHz	Spectrum analyzer reading, dBm	External attenuation dB	Cable loss dB	Peak power density, dB(mW/3 kHz)	Limit, dBm	Margin*, dB	Verdict
16QAM 36 Mbps							
5745.00	-5.742	Included	Included	-5.742	8.0	13.742	Pass
16QAM 24 Mbps							
5785.00	-5.204	Included	Included	-5.204	8.0	13.204	Pass
16QAM 36 Mbps							
5825.00	-5.350	Included	Included	-5.350	8.0	13.350	Pass

* - Margin = Peak power density – specification limit.

Reference numbers of test equipment used

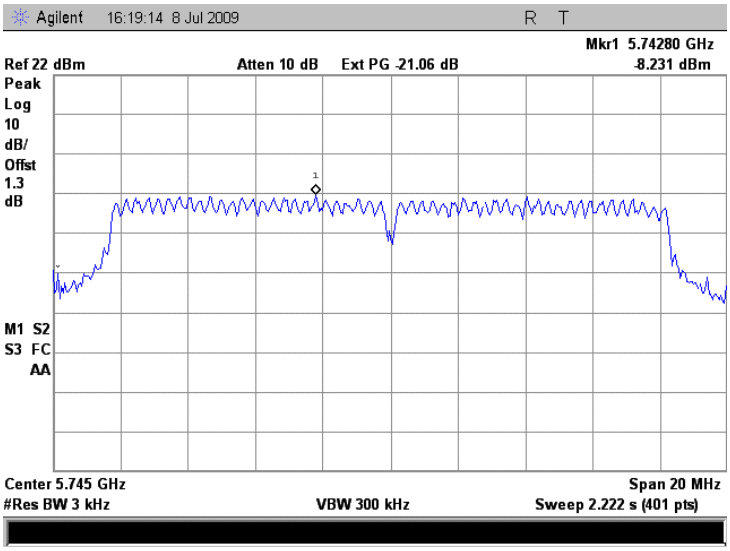
HL 2909	HL 2953	HL 3442					

Full description is given in Appendix A.

Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

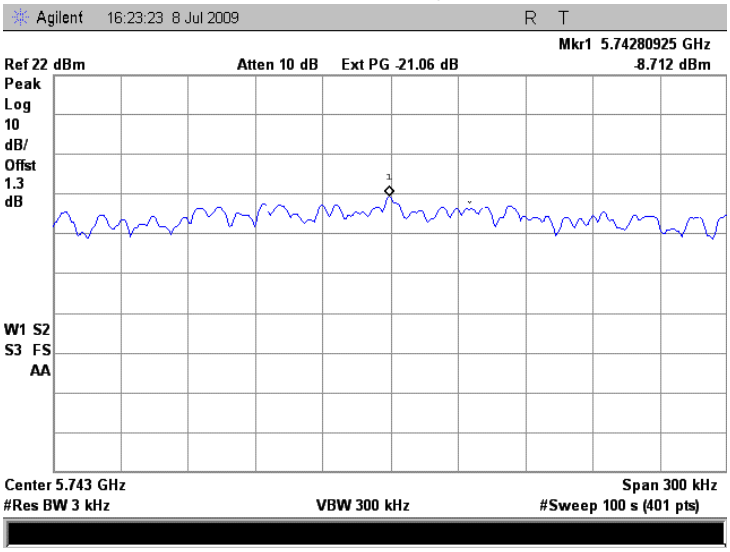
Plot 7.4.1 Peak spectral power density at low frequency within 6 dB band

Antenna	1
Modulation	BPSK
Bit Rate	6 Mbps



Plot 7.4.2 Peak spectral power density at low frequency zoomed at the peak

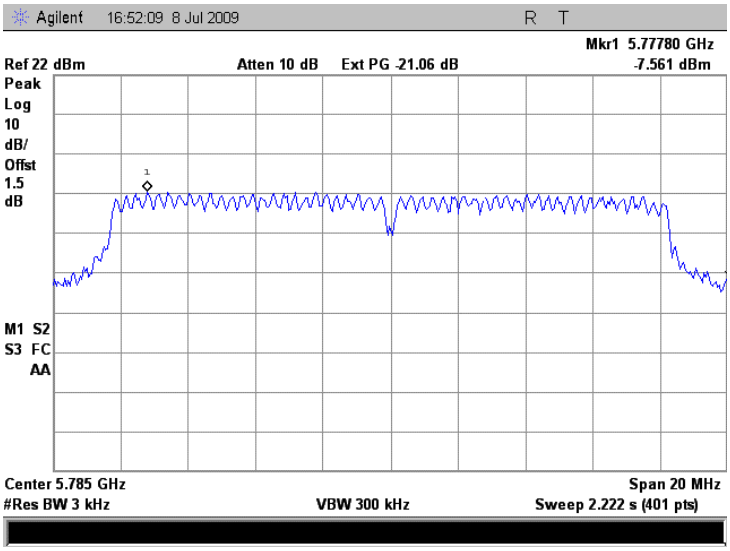
Antenna	1
Modulation	BPSK
Bit Rate	6 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

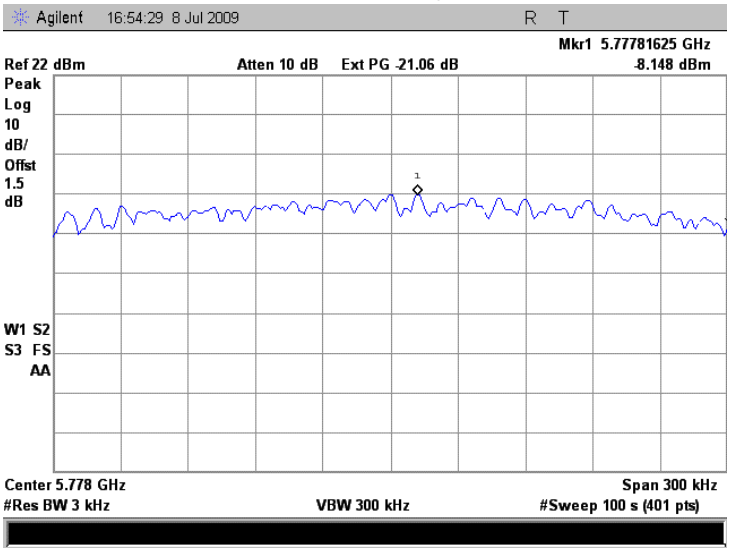
Plot 7.4.3 Peak spectral power density at mid frequency within 6 dB band

Antenna	1
Modulation	BPSK
Bit Rate	6 Mbps



Plot 7.4.4 Peak spectral power density at mid frequency zoomed at the peak

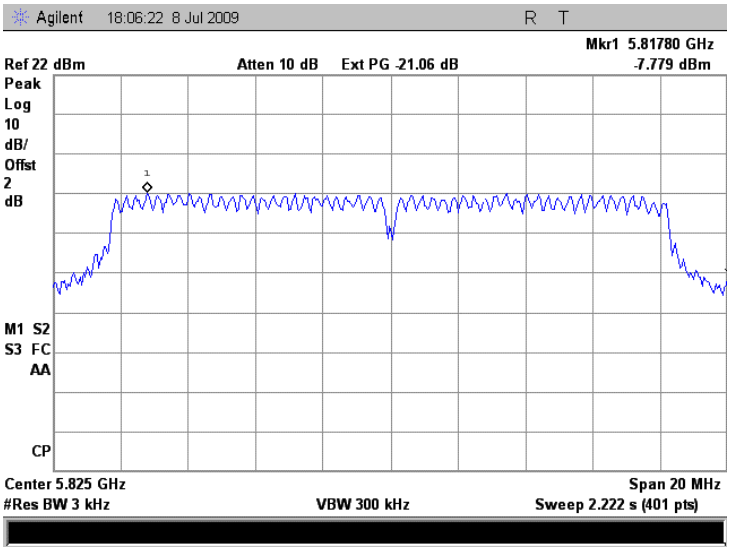
Antenna	1
Modulation	BPSK
Bit Rate	6 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

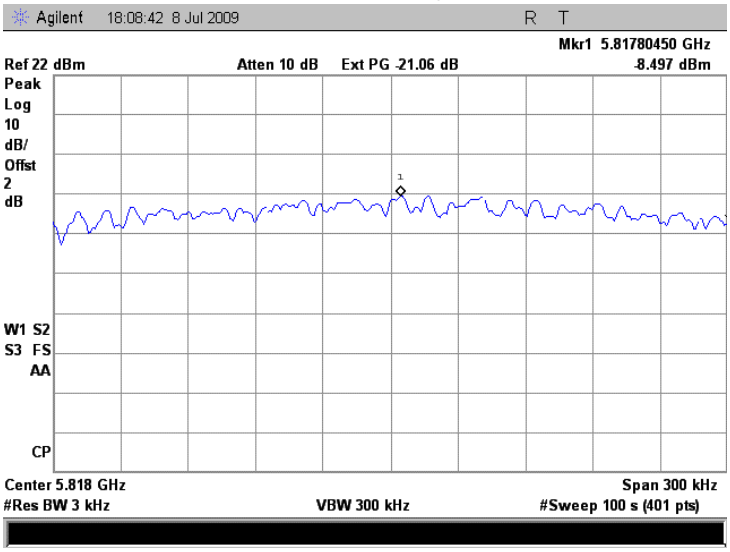
Plot 7.4.5 Peak spectral power density at high frequency within 6 dB band

Antenna	1
Modulation	BPSK
Bit Rate	6 Mbps



Plot 7.4.6 Peak spectral power density at high frequency zoomed at the peak

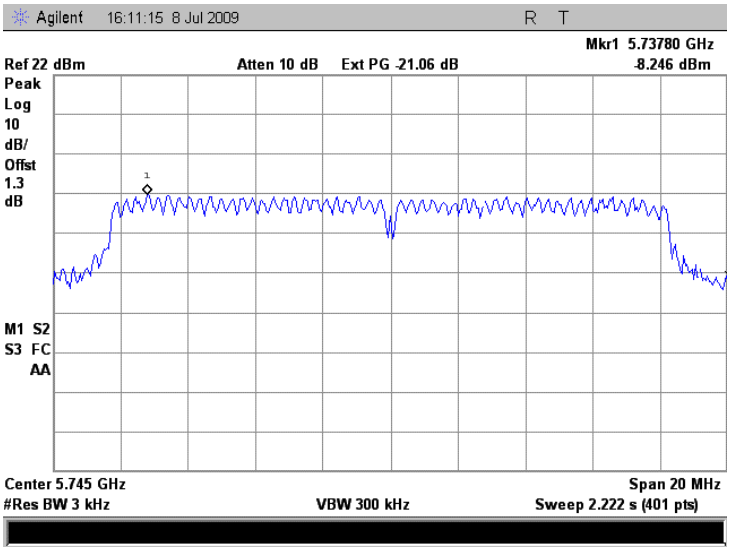
Antenna	1
Modulation	BPSK
Bit Rate	6 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

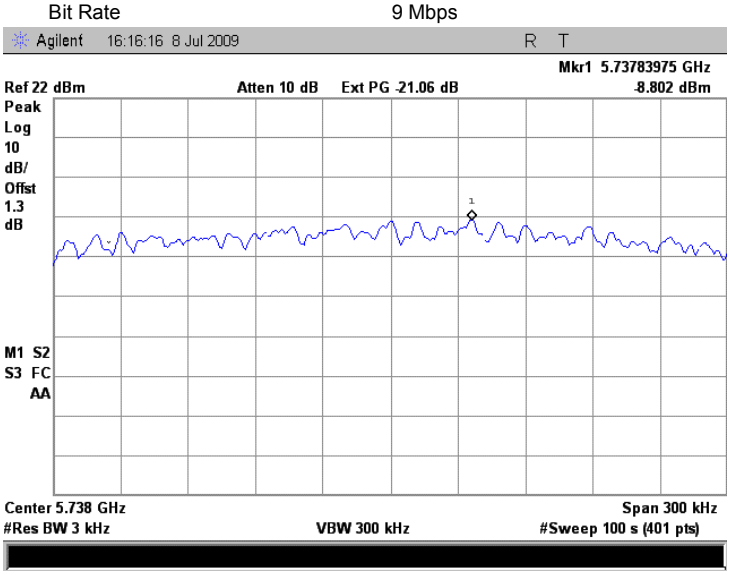
Plot 7.4.7 Peak spectral power density at low frequency within 6 dB band

Antenna	1
Modulation	BPSK
Bit Rate	9 Mbps



Plot 7.4.8 Peak spectral power density at low frequency zoomed at the peak

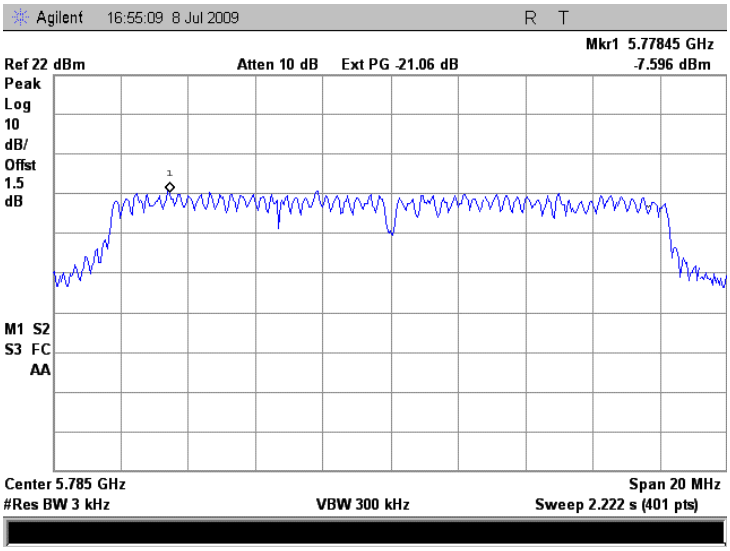
Antenna	1
Modulation	BPSK
Bit Rate	9 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

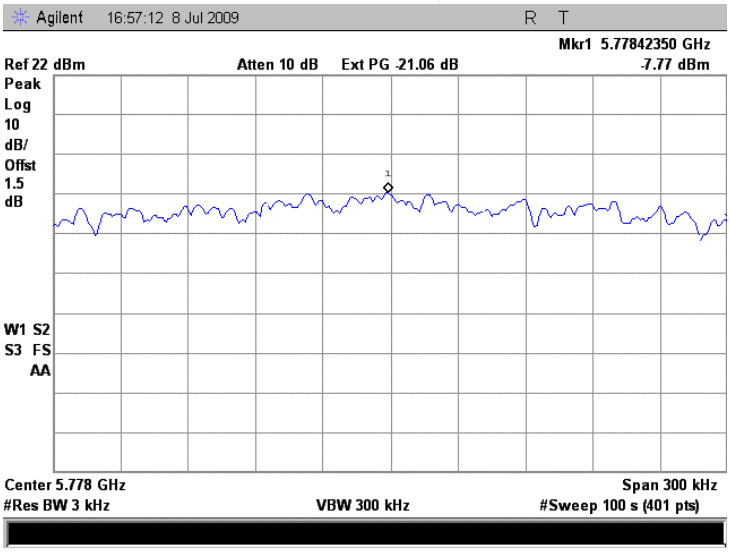
Plot 7.4.9 Peak spectral power density at mid frequency within 6 dB band

Antenna	1
Modulation	BPSK
Bit Rate	9 Mbps



Plot 7.4.10 Peak spectral power density at mid frequency zoomed at the peak

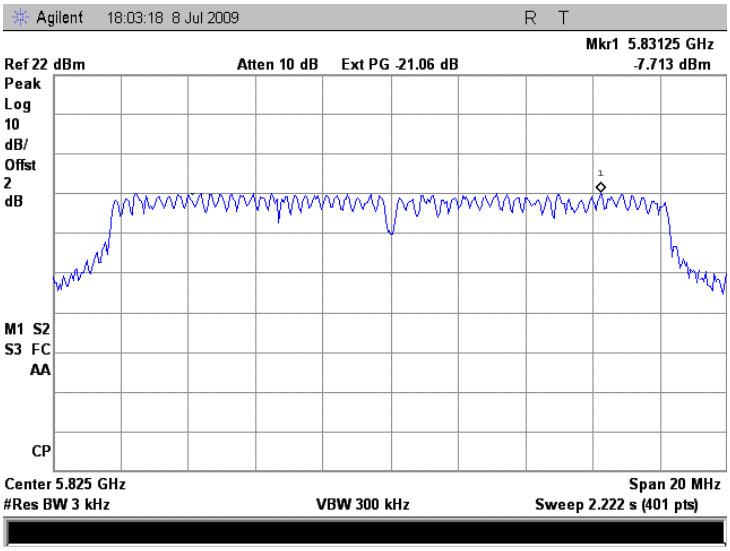
Antenna	1
Modulation	BPSK
Bit Rate	9 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

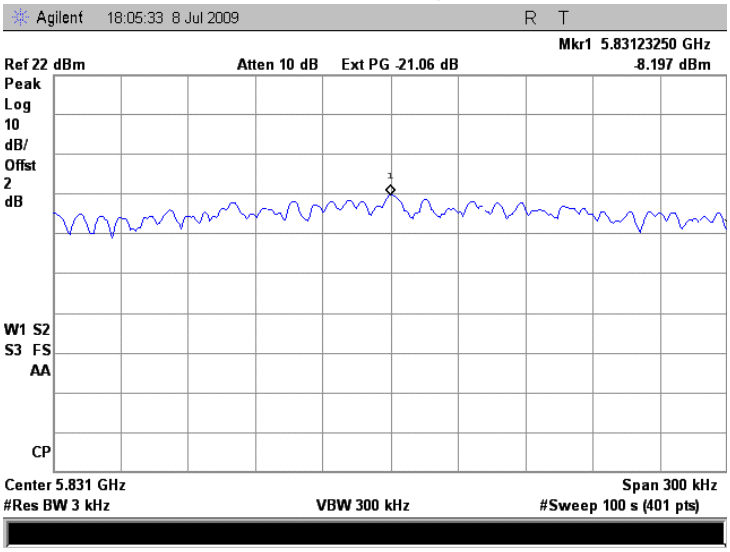
Plot 7.4.11 Peak spectral power density at high frequency within 6 dB band

Antenna	1
Modulation	BPSK
Bit Rate	9 Mbps



Plot 7.4.12 Peak spectral power density at high frequency zoomed at the peak

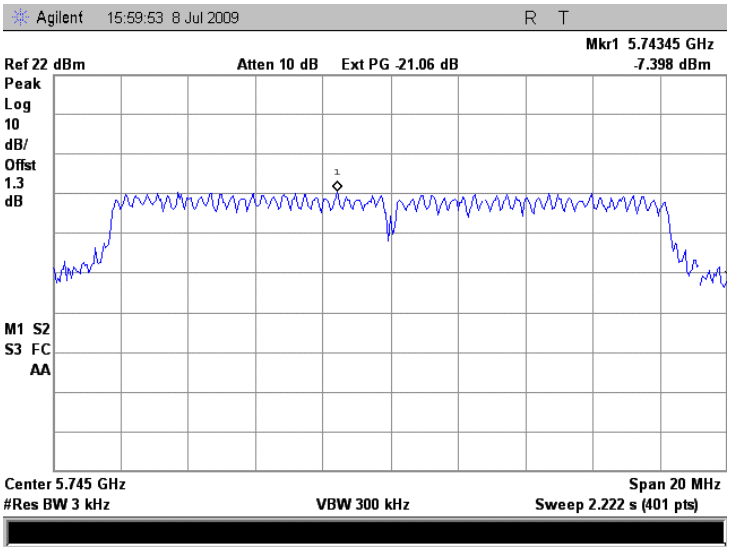
Antenna	1
Modulation	BPSK
Bit Rate	9 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

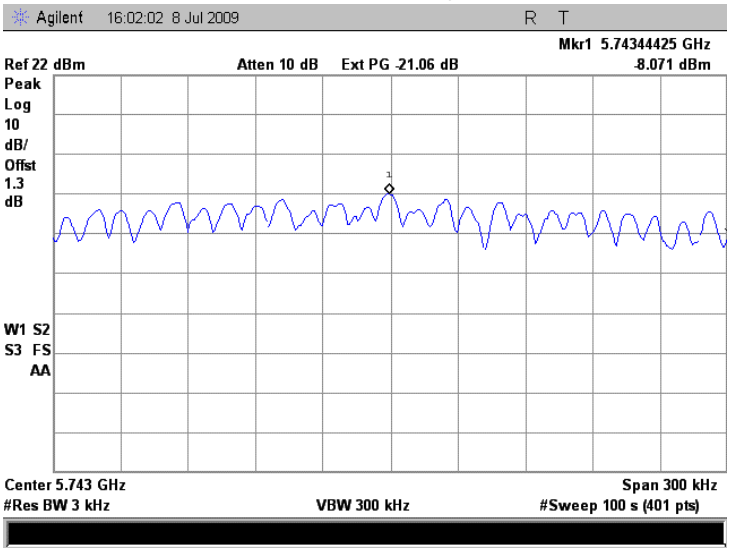
Plot 7.4.13 Peak spectral power density at low frequency within 6 dB band

Antenna	1
Modulation	QPSK
Bit Rate	12 Mbps



Plot 7.4.14 Peak spectral power density at low frequency zoomed at the peak

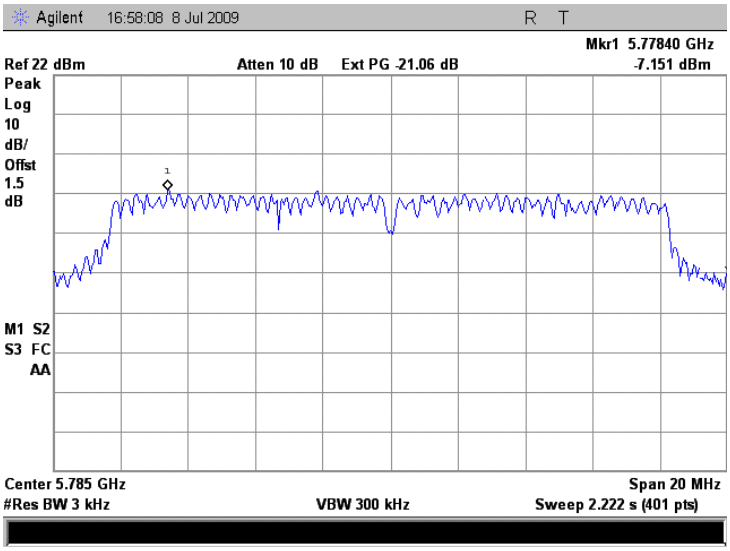
Antenna	1
Modulation	QPSK
Bit Rate	12 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

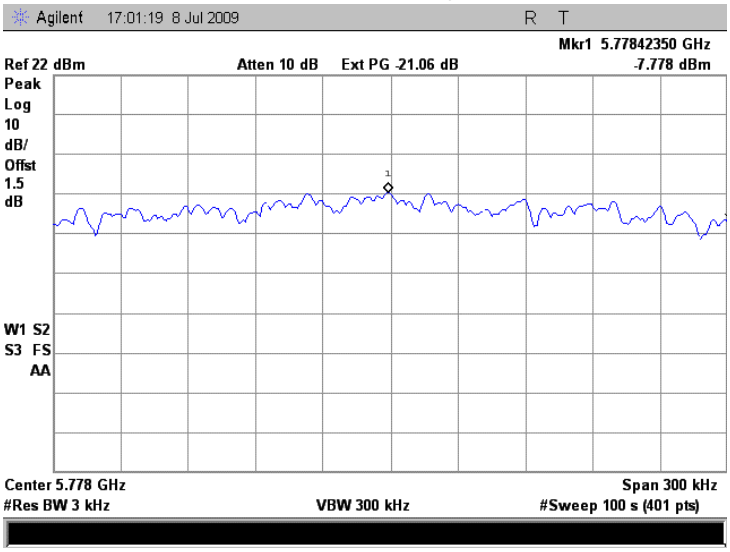
Plot 7.4.15 Peak spectral power density at mid frequency within 6 dB band

Antenna	1
Modulation	QPSK
Bit Rate	12 Mbps



Plot 7.4.16 Peak spectral power density at mid frequency zoomed at the peak

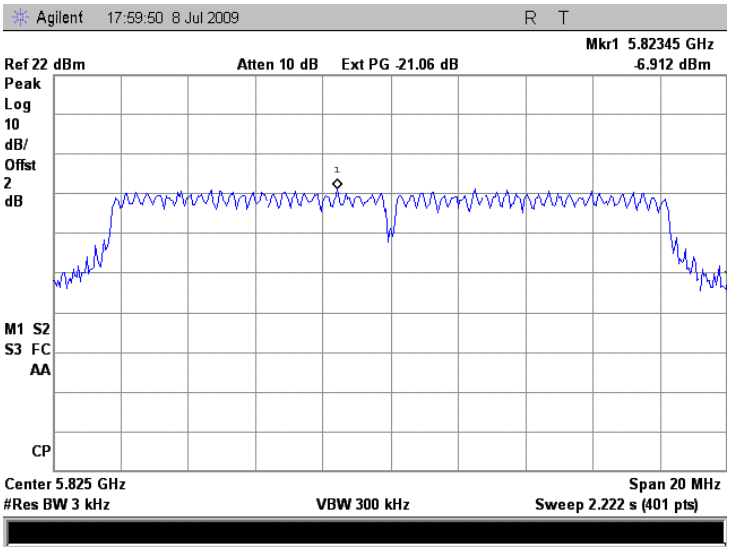
Antenna	1
Modulation	QPSK
Bit Rate	12 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

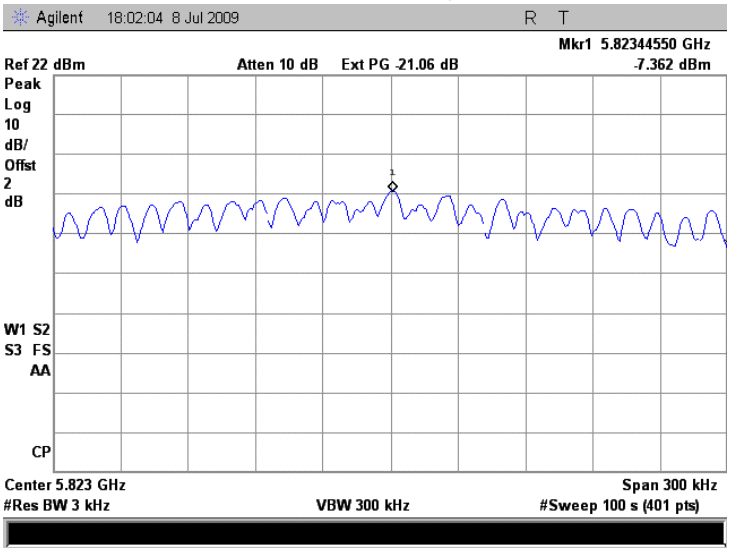
Plot 7.4.17 Peak spectral power density at high frequency within 6 dB band

Antenna	1
Modulation	QPSK
Bit Rate	12 Mbps



Plot 7.4.18 Peak spectral power density at high frequency zoomed at the peak

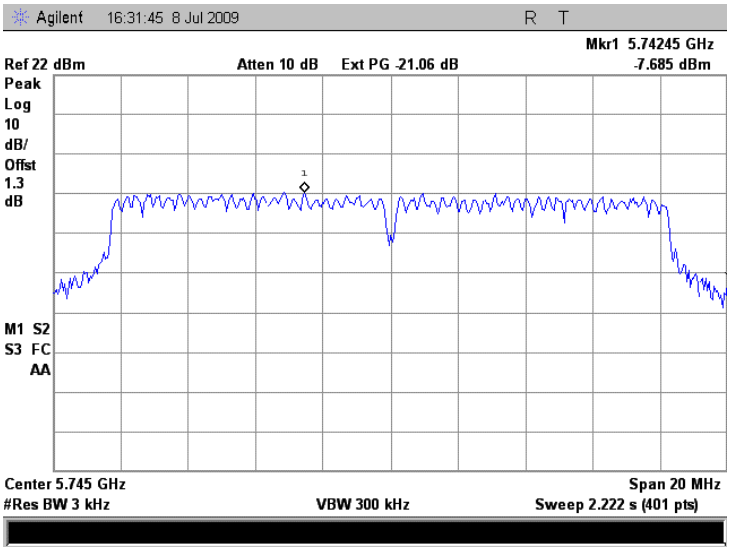
Antenna	1
Modulation	QPSK
Bit Rate	12 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

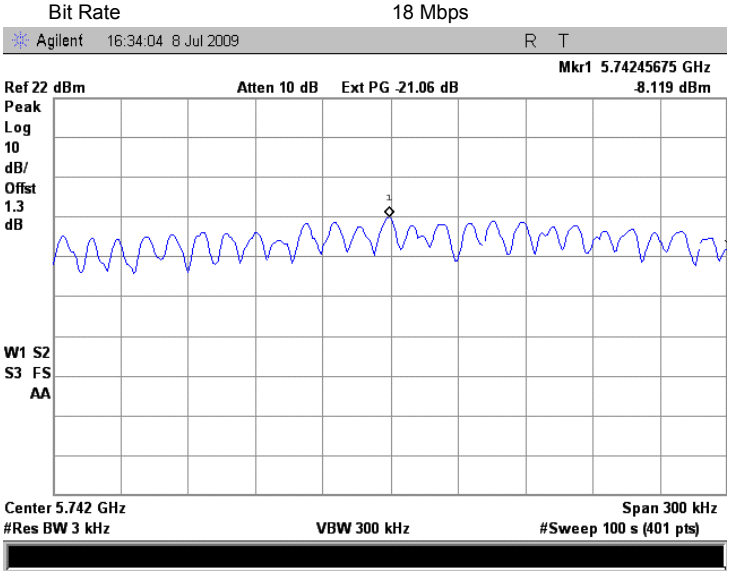
Plot 7.4.19 Peak spectral power density at low frequency within 6 dB band

Antenna	1
Modulation	QPSK
Bit Rate	18 Mbps



Plot 7.4.20 Peak spectral power density at low frequency zoomed at the peak

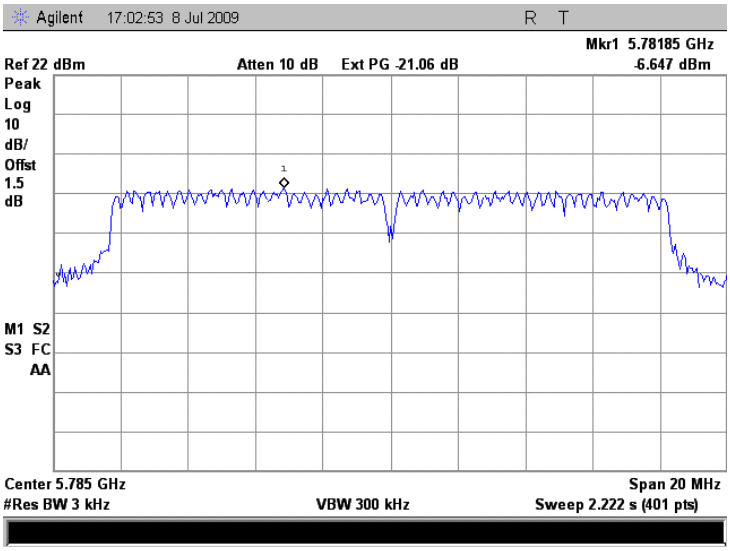
Antenna	1
Modulation	QPSK
Bit Rate	18 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

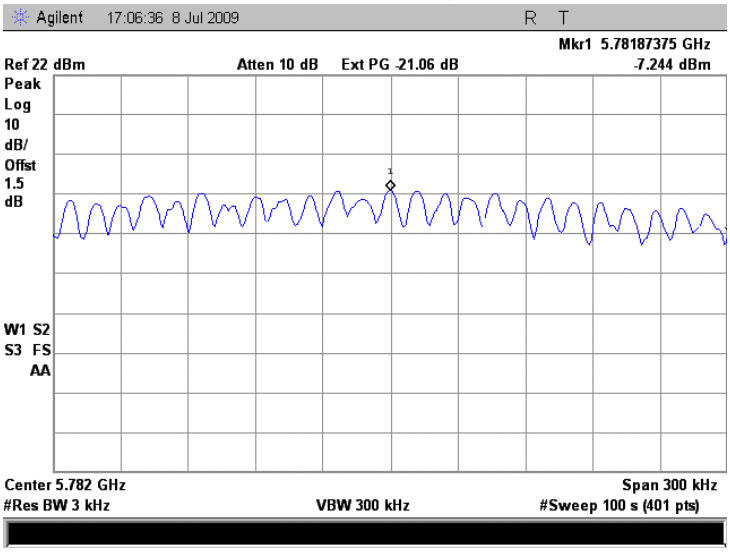
Plot 7.4.21 Peak spectral power density at mid frequency within 6 dB band

Antenna	1
Modulation	QPSK
Bit Rate	18 Mbps



Plot 7.4.22 Peak spectral power density at mid frequency zoomed at the peak

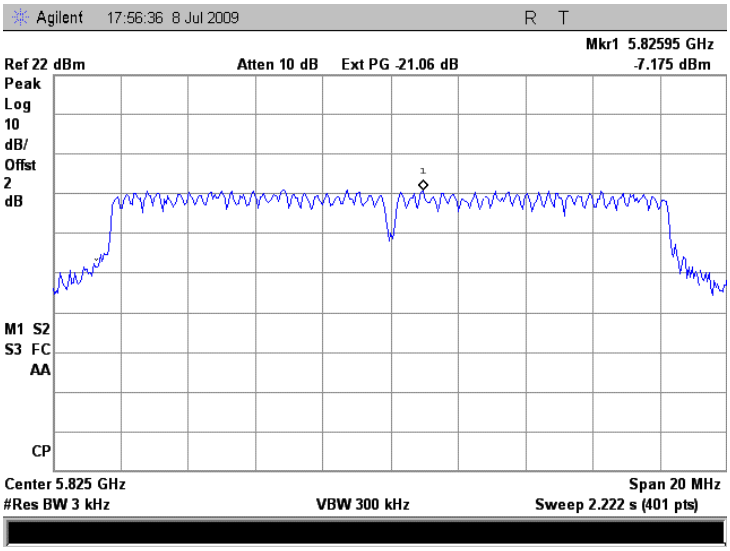
Antenna	1
Modulation	QPSK
Bit Rate	18 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

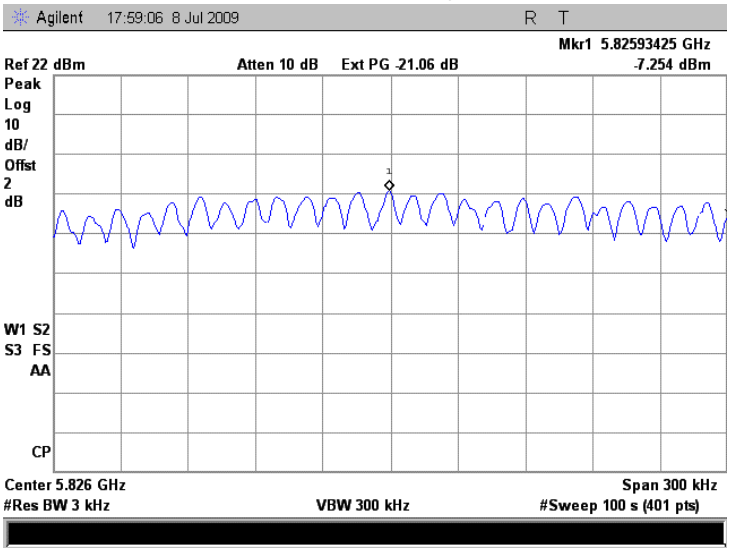
Plot 7.4.23 Peak spectral power density at high frequency within 6 dB band

Antenna	1
Modulation	QPSK
Bit Rate	18 Mbps



Plot 7.4.24 Peak spectral power density at high frequency zoomed at the peak

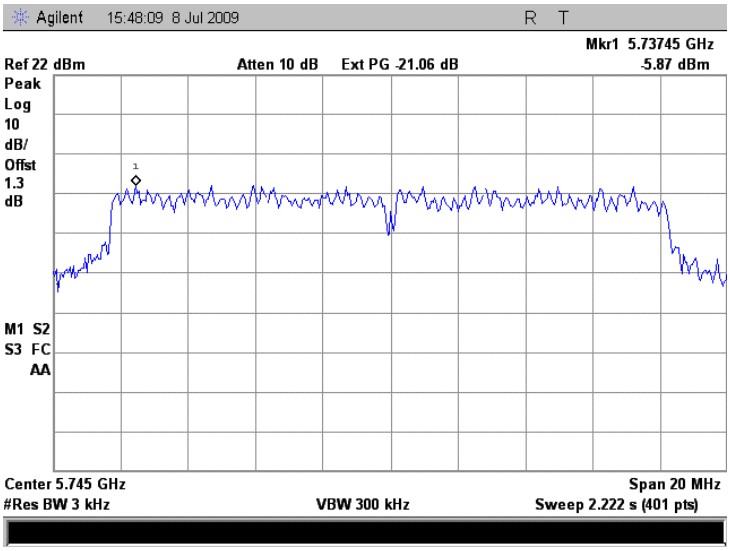
Antenna	1
Modulation	QPSK
Bit Rate	18 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

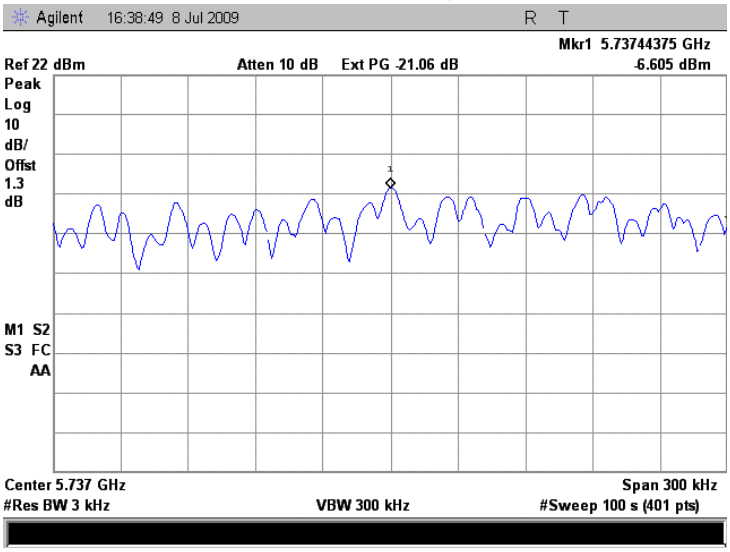
Plot 7.4.25 Peak spectral power density at low frequency within 6 dB band

Antenna	1
Modulation	16QAM
Bit Rate	24 Mbps



Plot 7.4.26 Peak spectral power density at low frequency zoomed at the peak

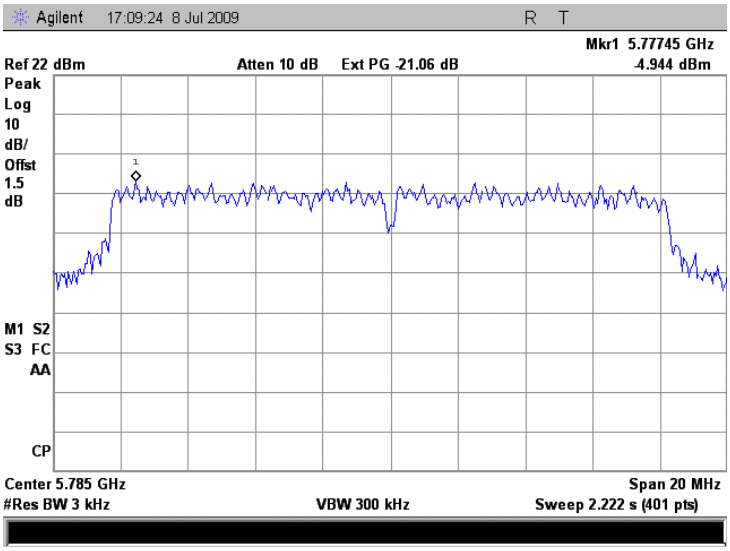
Antenna	1
Modulation	16QAM
Bit Rate	24 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

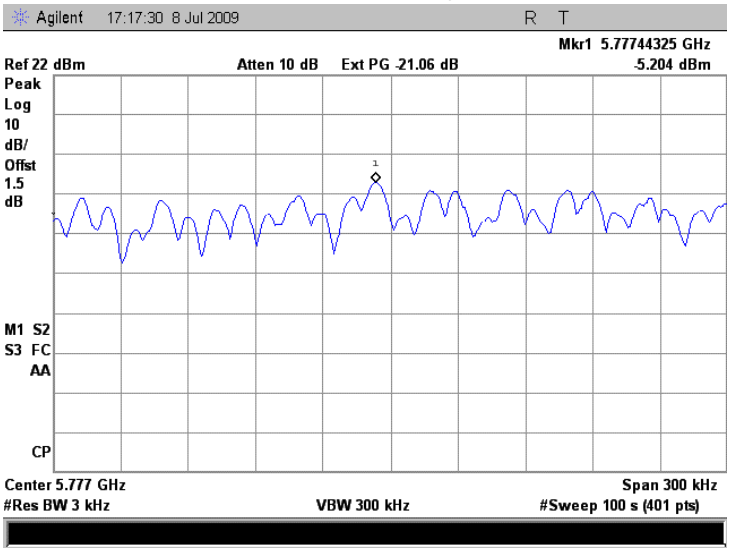
Plot 7.4.27 Peak spectral power density at mid frequency within 6 dB band

Antenna	1
Modulation	16QAM
Bit Rate	24 Mbps



Plot 7.4.28 Peak spectral power density at mid frequency zoomed at the peak

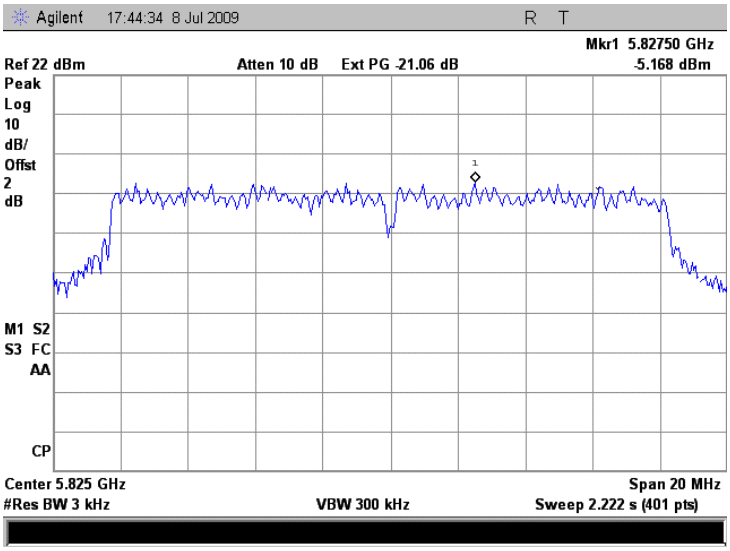
Antenna	1
Modulation	16QAM
Bit Rate	24 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

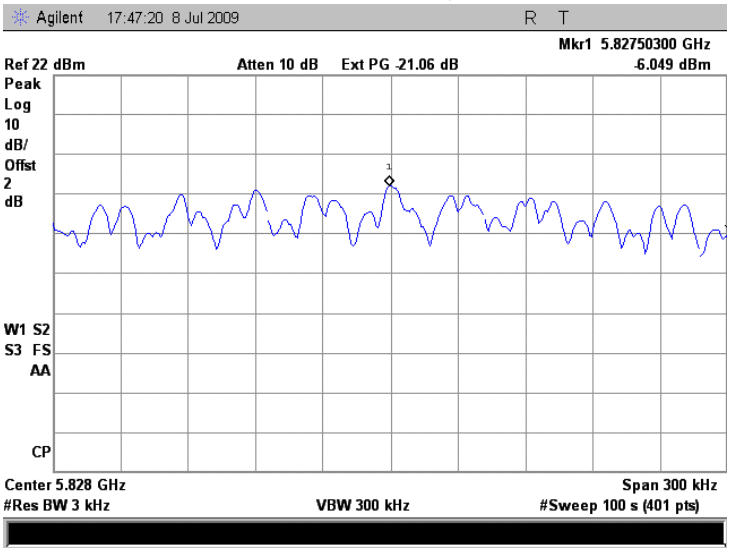
Plot 7.4.29 Peak spectral power density at high frequency within 6 dB band

Antenna	1
Modulation	16QAM
Bit Rate	24 Mbps



Plot 7.4.30 Peak spectral power density at high frequency zoomed at the peak

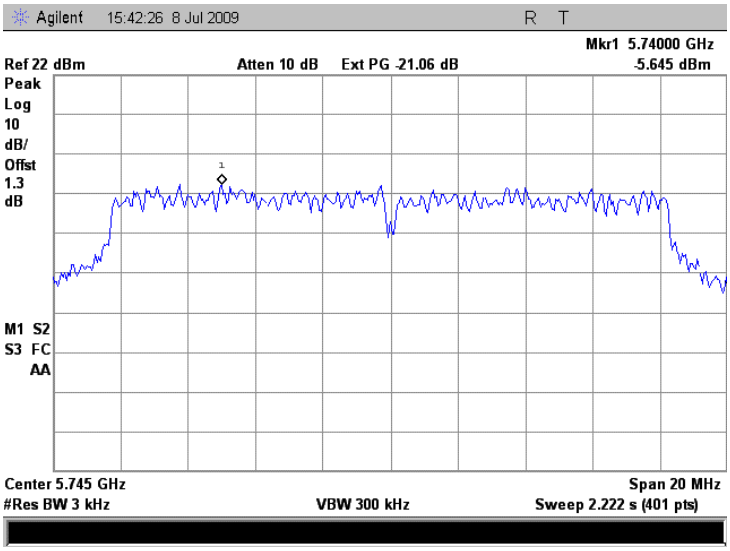
Antenna	1
Modulation	16QAM
Bit Rate	24 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

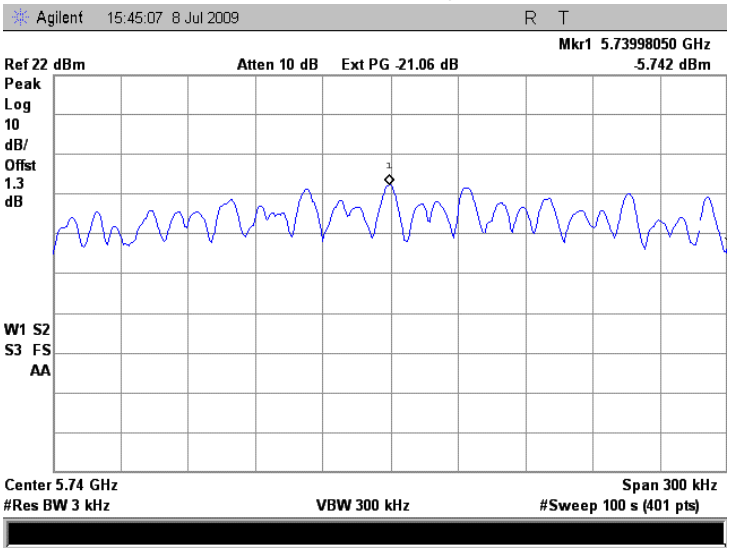
Plot 7.4.31 Peak spectral power density at low frequency within 6 dB band

Antenna	1
Modulation	16QAM
Bit Rate	36 Mbps



Plot 7.4.32 Peak spectral power density at low frequency zoomed at the peak

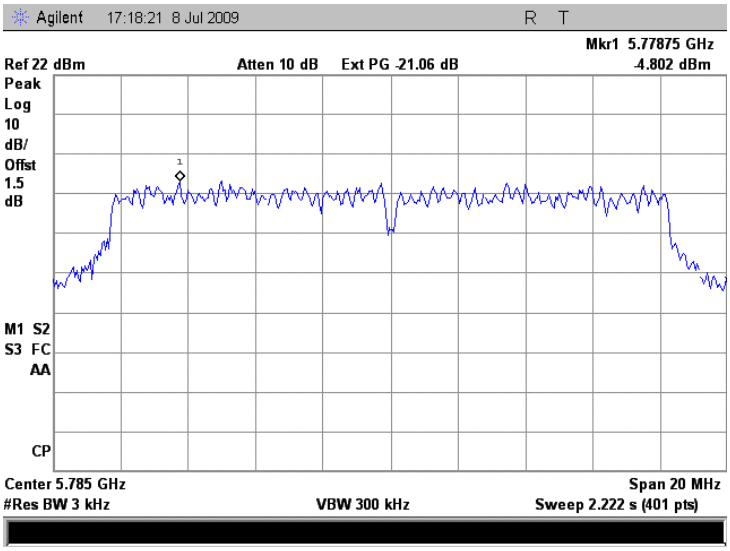
Antenna	1
Modulation	16QAM
Bit Rate	36 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

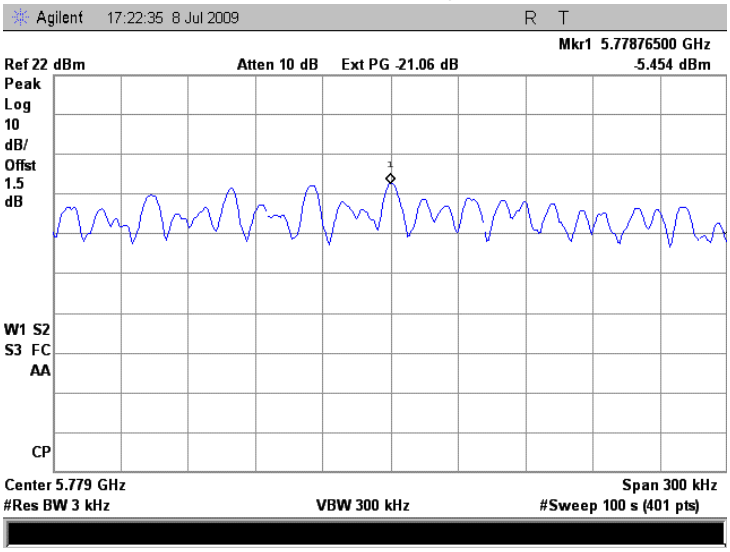
Plot 7.4.33 Peak spectral power density at mid frequency within 6 dB band

Antenna	1
Modulation	16QAM
Bit Rate	36 Mbps



Plot 7.4.34 Peak spectral power density at mid frequency zoomed at the peak

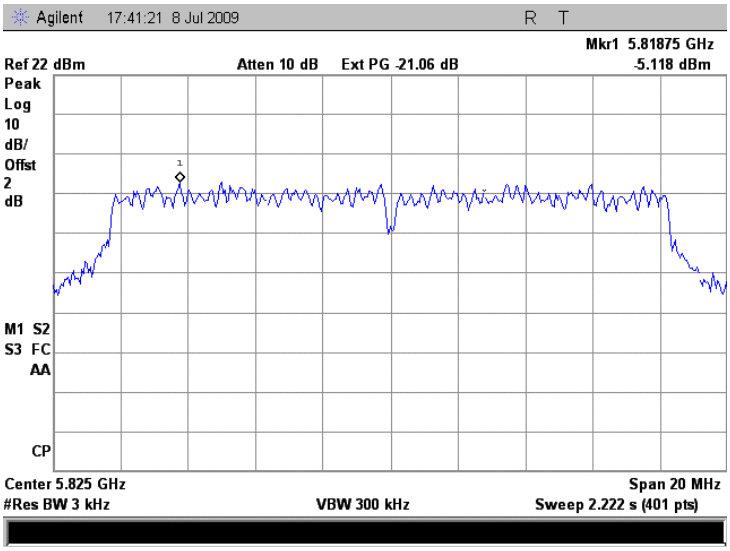
Antenna	1
Modulation	16QAM
Bit Rate	36 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

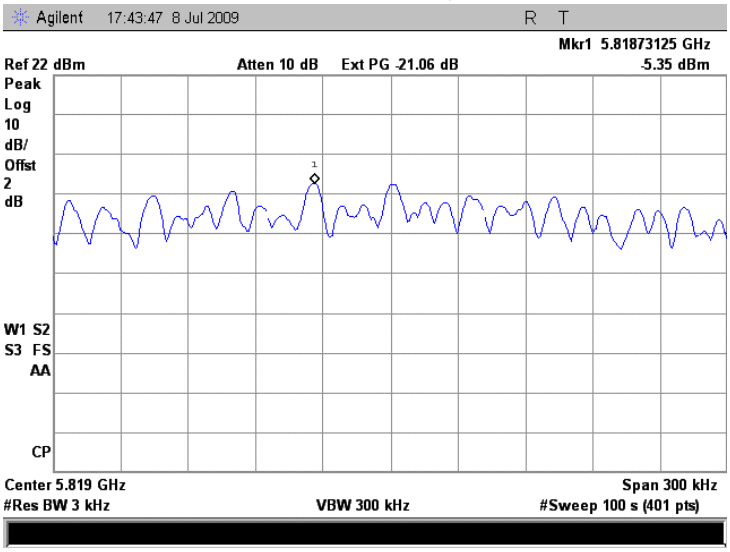
Plot 7.4.35 Peak spectral power density at high frequency within 6 dB band

Antenna	1
Modulation	16QAM
Bit Rate	36 Mbps



Plot 7.4.36 Peak spectral power density at high frequency zoomed at the peak

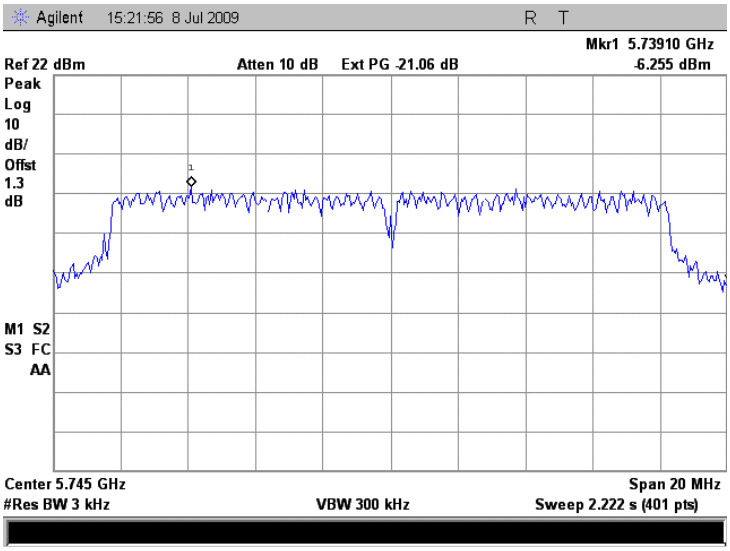
Antenna	1
Modulation	16QAM
Bit Rate	36 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

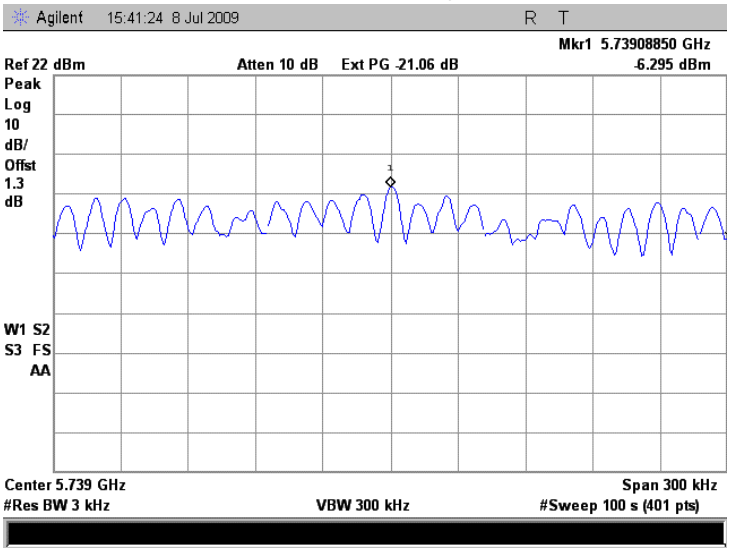
Plot 7.4.37 Peak spectral power density at low frequency within 6 dB band

Antenna	1
Modulation	64QAM
Bit Rate	48 Mbps



Plot 7.4.38 Peak spectral power density at low frequency zoomed at the peak

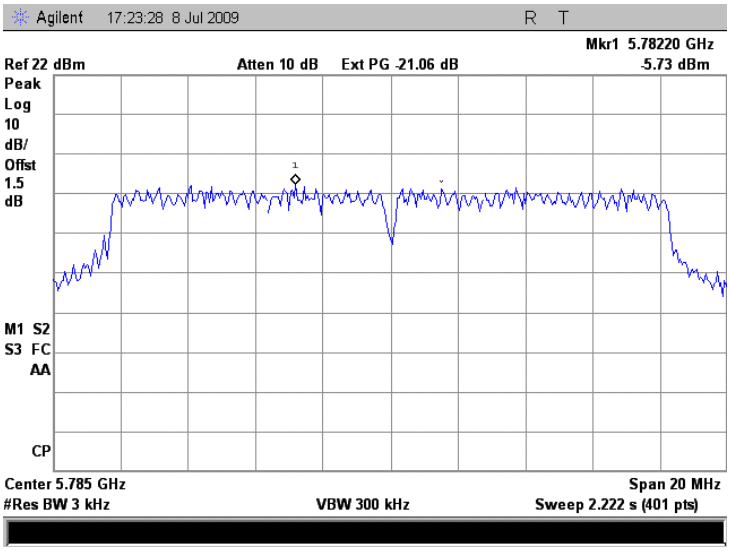
Antenna	1
Modulation	64QAM
Bit Rate	48 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

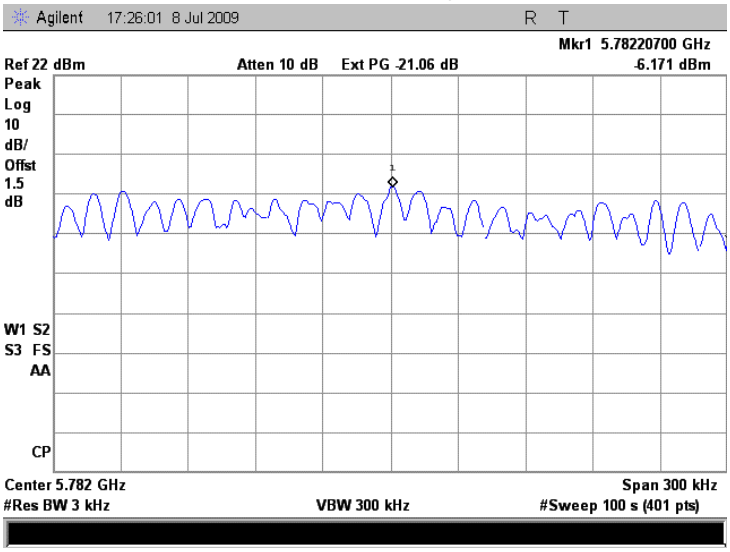
Plot 7.4.39 Peak spectral power density at mid frequency within 6 dB band

Antenna	1
Modulation	64QAM
Bit Rate	48 Mbps



Plot 7.4.40 Peak spectral power density at mid frequency zoomed at the peak

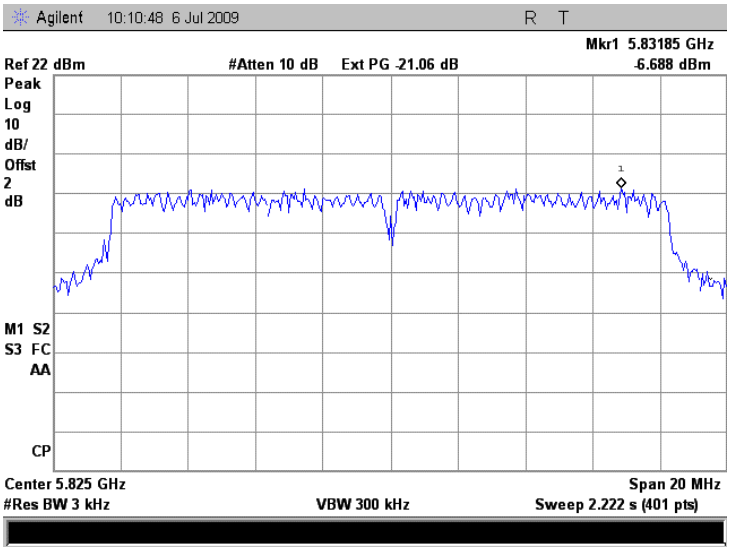
Antenna	1
Modulation	64QAM
Bit Rate	48 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

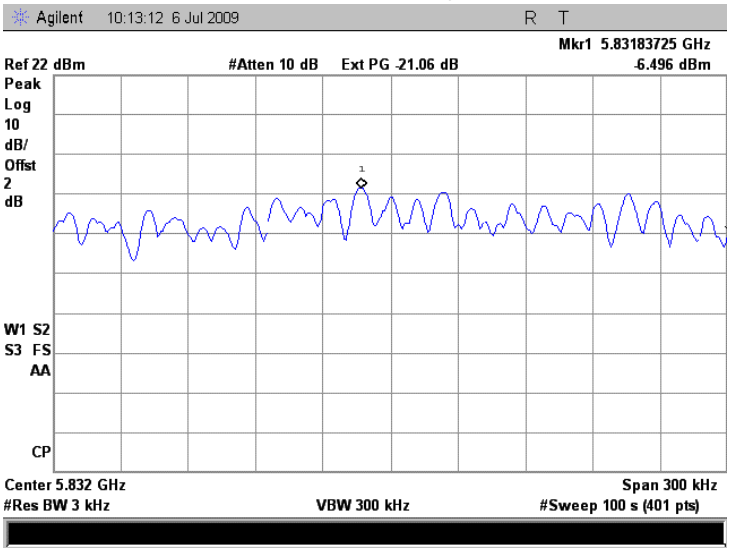
Plot 7.4.41 Peak spectral power density at high frequency within 6 dB band

Antenna	1
Modulation	64QAM
Bit Rate	48 Mbps



Plot 7.4.42 Peak spectral power density at high frequency zoomed at the peak

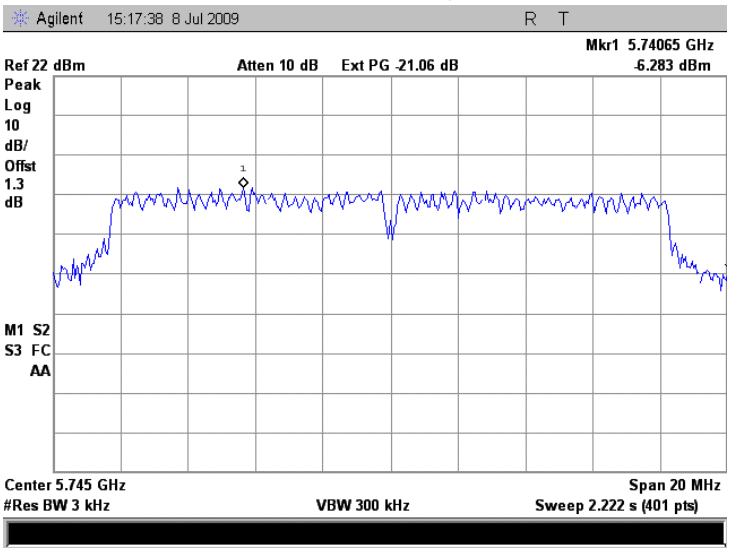
Antenna	1
Modulation	64QAM
Bit Rate	48 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

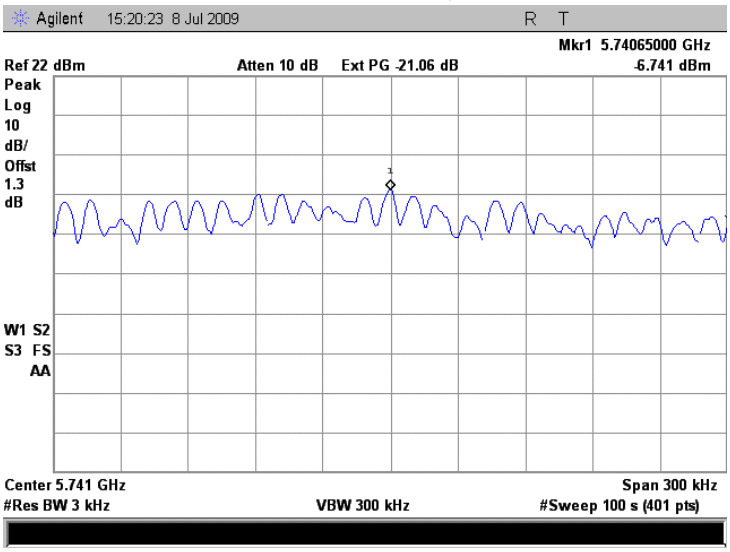
Plot 7.4.43 Peak spectral power density at low frequency within 6 dB band

Antenna	1
Modulation	64QAM
Bit Rate	54 Mbps



Plot 7.4.44 Peak spectral power density at low frequency zoomed at the peak

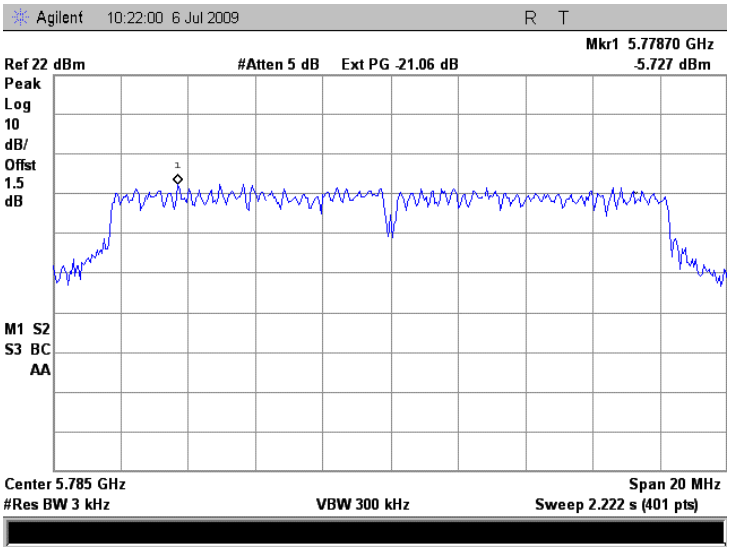
Antenna	1
Modulation	64QAM
Bit Rate	54 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

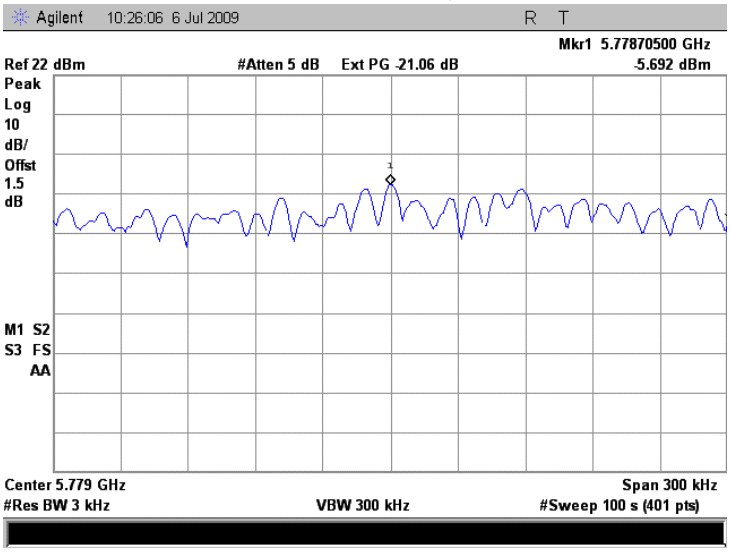
Plot 7.4.45 Peak spectral power density at mid frequency within 6 dB band

Antenna	1
Modulation	64QAM
Bit Rate	54 Mbps



Plot 7.4.46 Peak spectral power density at mid frequency zoomed at the peak

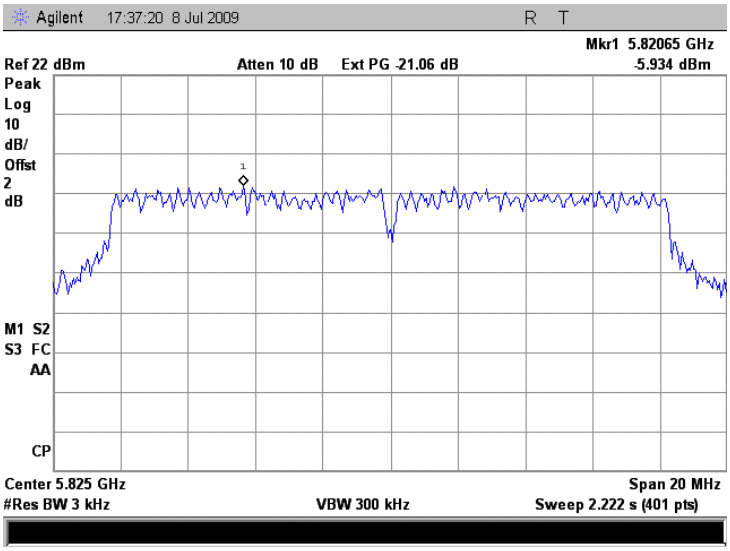
Antenna	1
Modulation	64QAM
Bit Rate	54 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

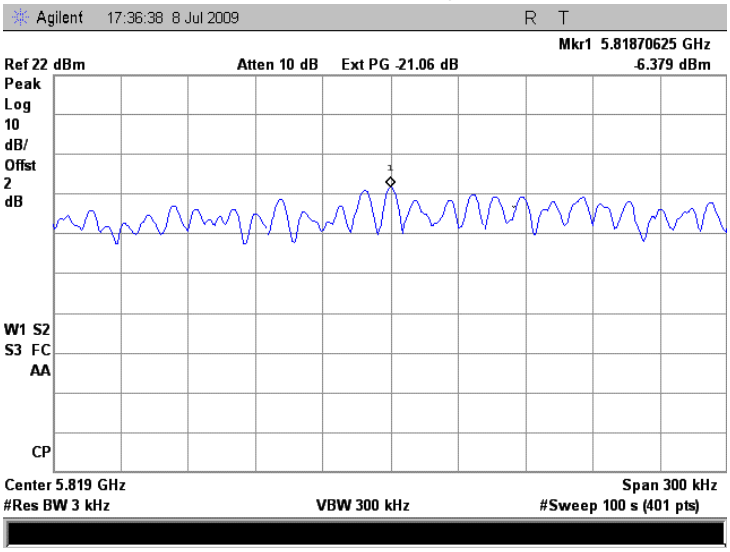
Plot 7.4.47 Peak spectral power density at high frequency within 6 dB band

Antenna	1
Modulation	64QAM
Bit Rate	54 Mbps



Plot 7.4.48 Peak spectral power density at high frequency zoomed at the peak

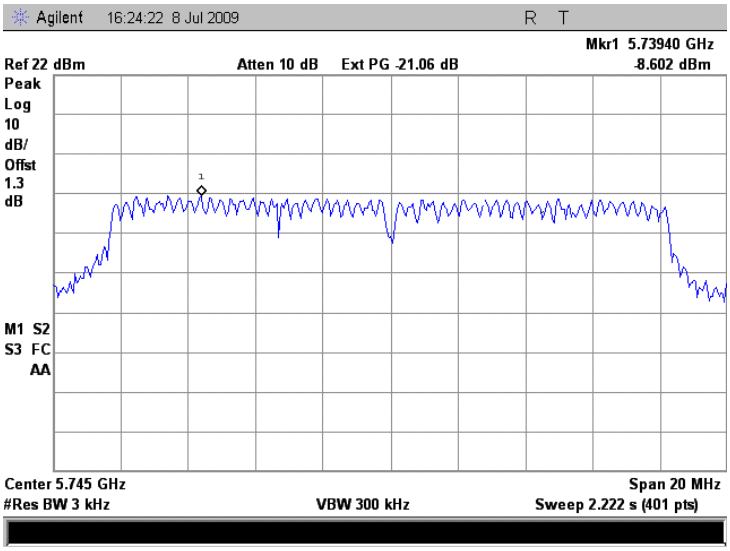
Antenna	1
Modulation	64QAM
Bit Rate	54 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

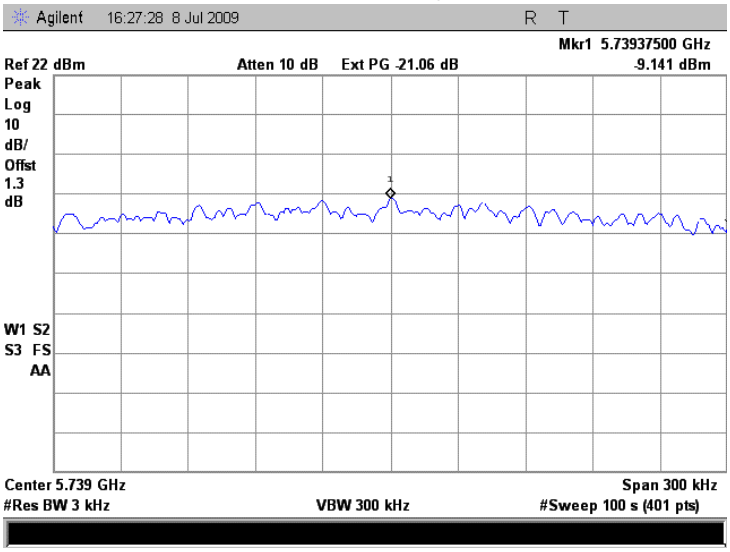
Plot 7.4.49 Peak spectral power density at low frequency within 6 dB band

Antenna	2
Modulation	BPSK
Bit Rate	6 Mbps



Plot 7.4.50 Peak spectral power density at low frequency zoomed at the peak

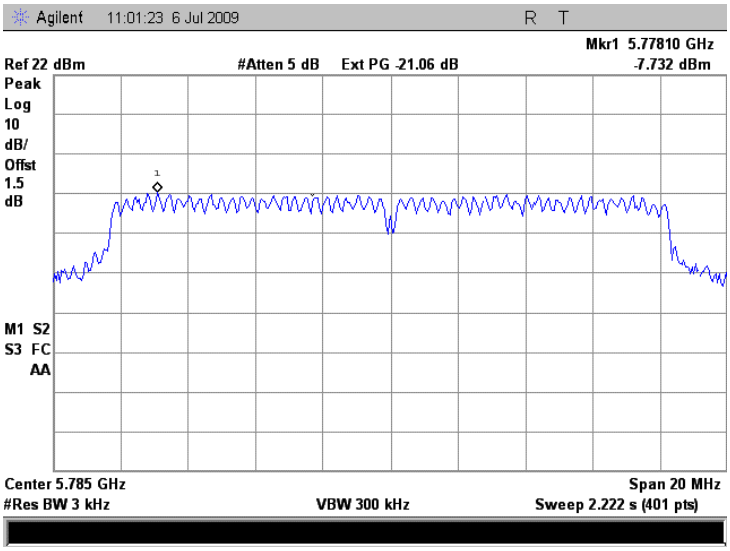
Antenna	2
Modulation	BPSK
Bit Rate	6 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

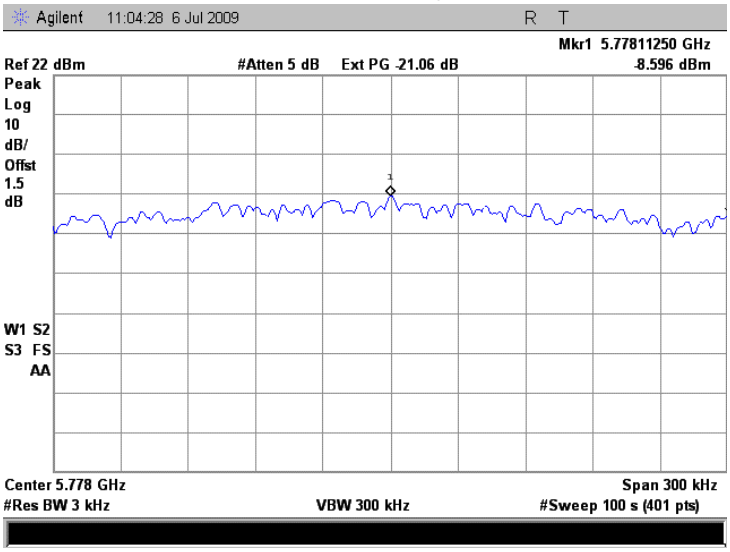
Plot 7.4.51 Peak spectral power density at mid frequency within 6 dB band

Antenna	2
Modulation	BPSK
Bit Rate	6 Mbps



Plot 7.4.52 Peak spectral power density at mid frequency zoomed at the peak

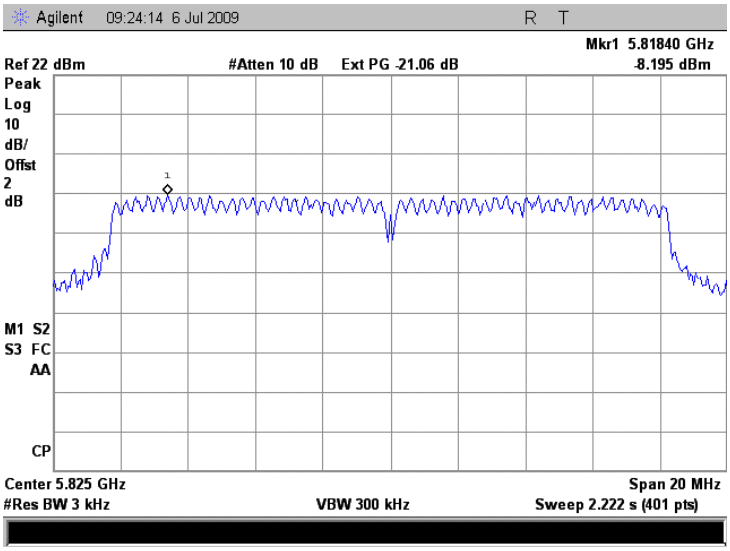
Antenna	2
Modulation	BPSK
Bit Rate	6 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

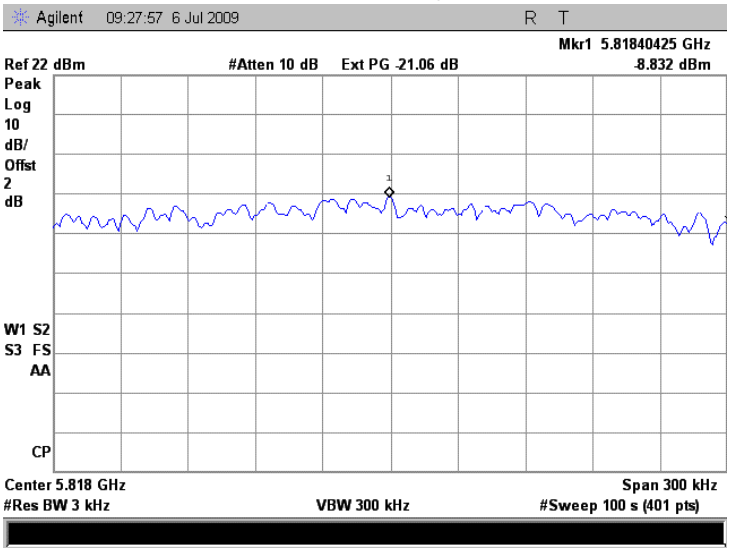
Plot 7.4.53 Peak spectral power density at high frequency within 6 dB band

Antenna	2
Modulation	BPSK
Bit Rate	6 Mbps



Plot 7.4.54 Peak spectral power density at high frequency zoomed at the peak

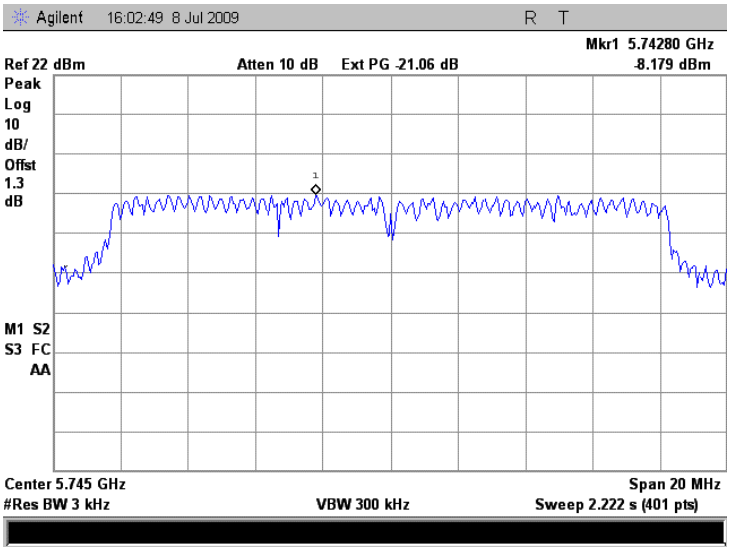
Antenna	2
Modulation	BPSK
Bit Rate	6 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

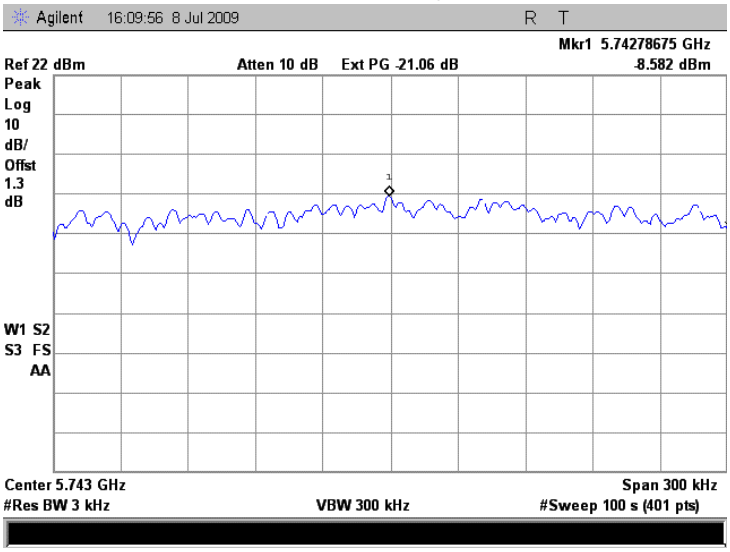
Plot 7.4.55 Peak spectral power density at low frequency within 6 dB band

Antenna	2
Modulation	BPSK
Bit Rate	9 Mbps



Plot 7.4.56 Peak spectral power density at low frequency zoomed at the peak

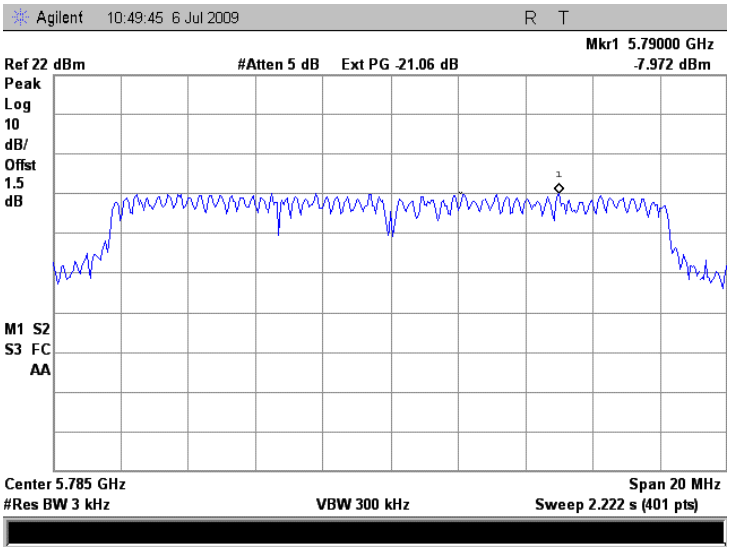
Antenna	2
Modulation	BPSK
Bit Rate	9 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

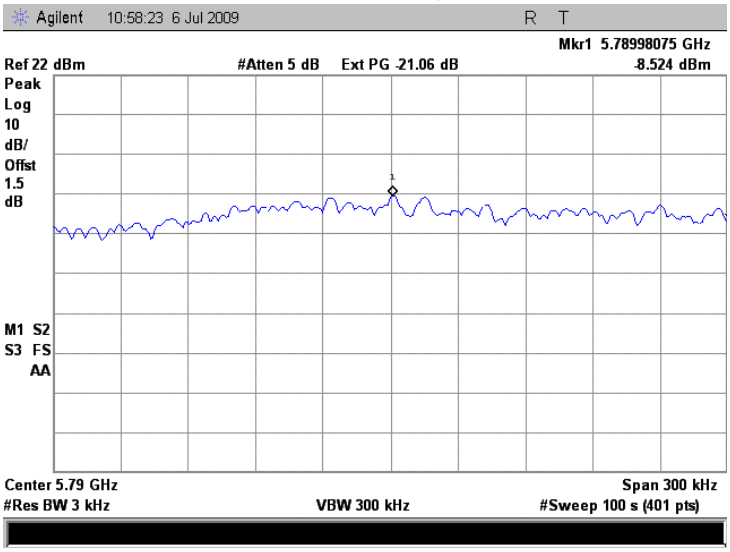
Plot 7.4.57 Peak spectral power density at mid frequency within 6 dB band

Antenna	2
Modulation	BPSK
Bit Rate	9 Mbps



Plot 7.4.58 Peak spectral power density at mid frequency zoomed at the peak

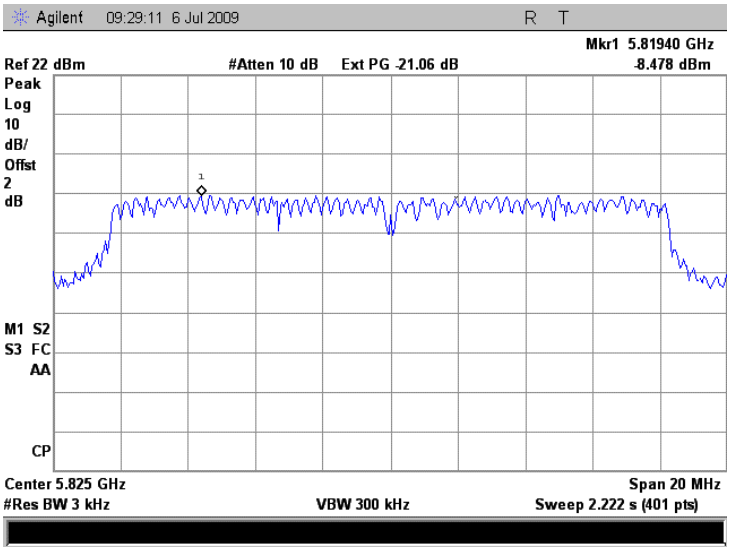
Antenna	2
Modulation	BPSK
Bit Rate	9 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

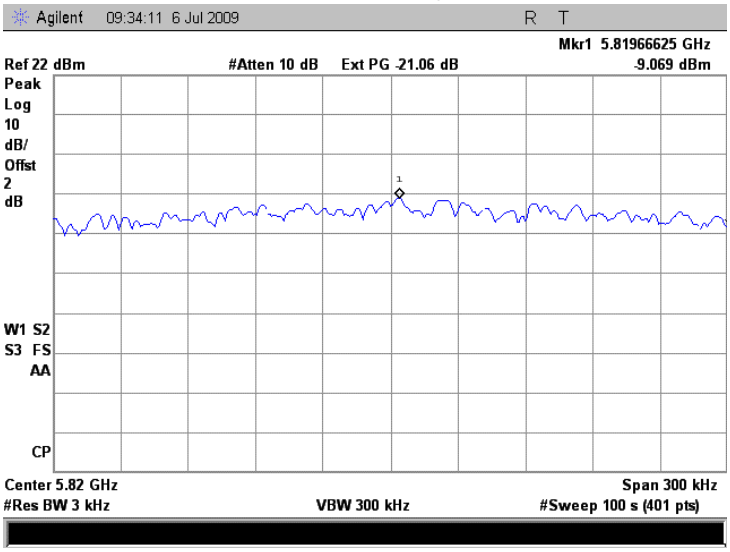
Plot 7.4.59 Peak spectral power density at high frequency within 6 dB band

Antenna	2
Modulation	BPSK
Bit Rate	9 Mbps



Plot 7.4.60 Peak spectral power density at high frequency zoomed at the peak

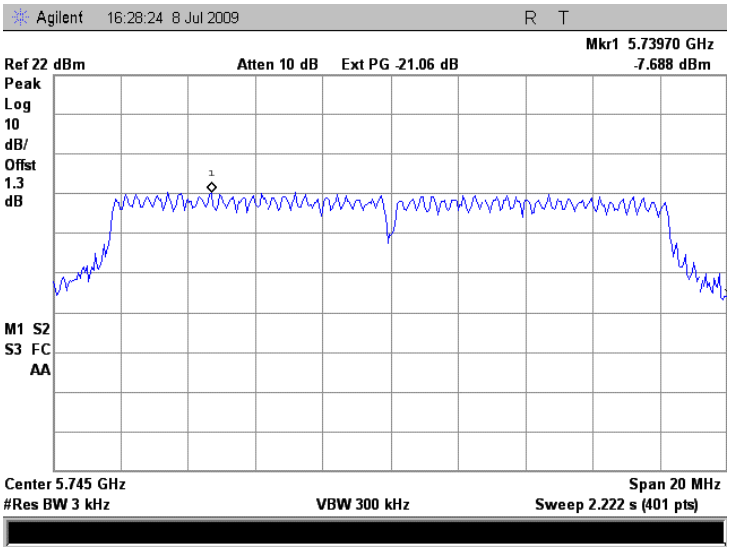
Antenna	2
Modulation	BPSK
Bit Rate	9 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

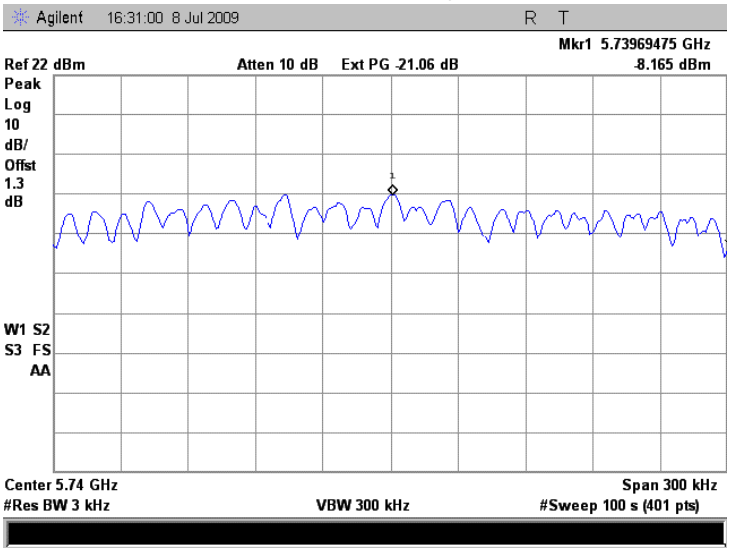
Plot 7.4.61 Peak spectral power density at low frequency within 6 dB band

Antenna	2
Modulation	QPSK
Bit Rate	12 Mbps



Plot 7.4.62 Peak spectral power density at low frequency zoomed at the peak

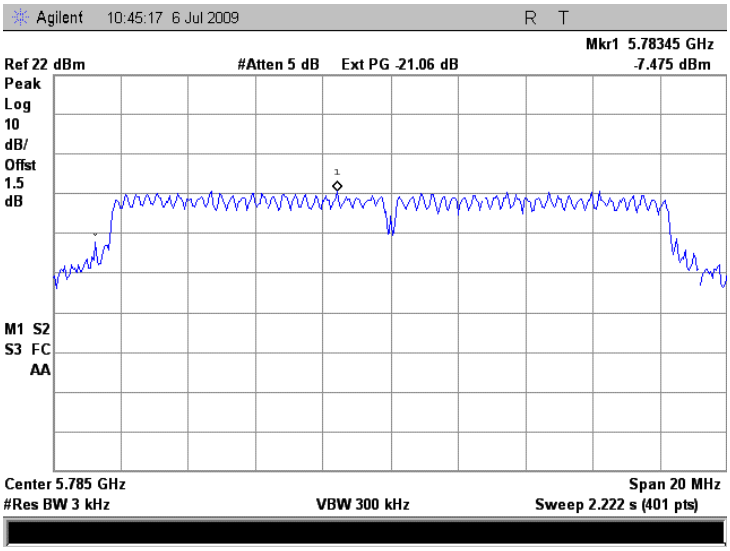
Antenna	2
Modulation	QPSK
Bit Rate	12 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

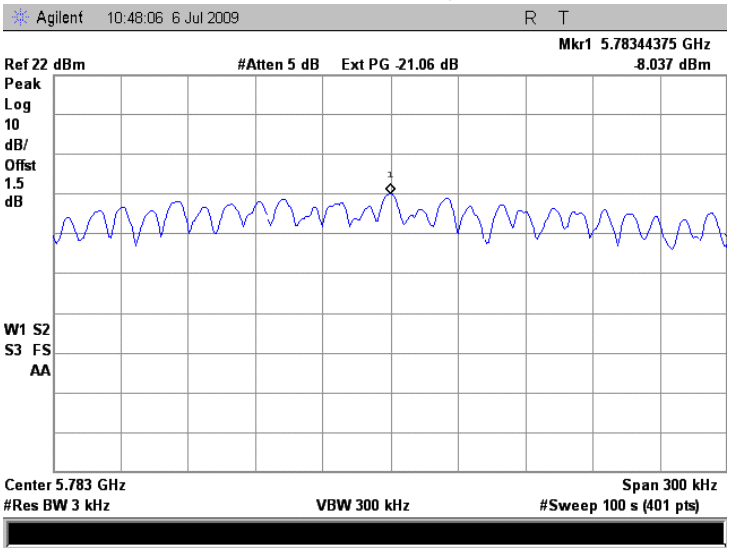
Plot 7.4.63 Peak spectral power density at mid frequency within 6 dB band

Antenna	2
Modulation	QPSK
Bit Rate	12 Mbps



Plot 7.4.64 Peak spectral power density at mid frequency zoomed at the peak

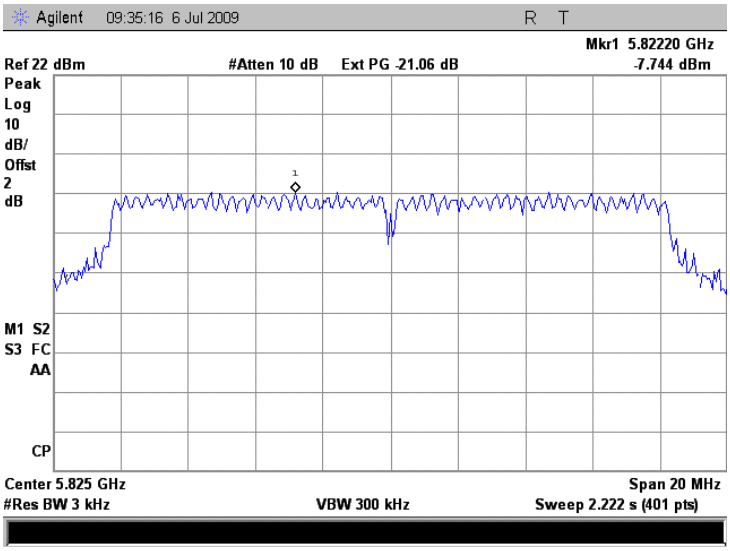
Antenna	2
Modulation	QPSK
Bit Rate	12 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

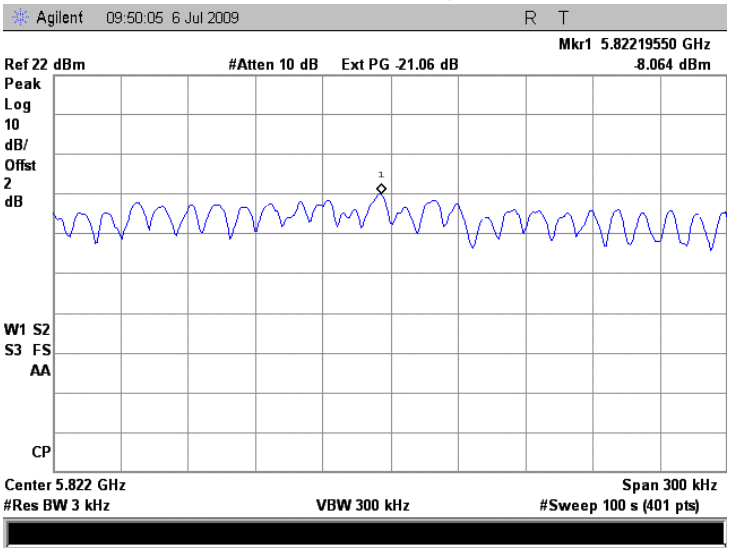
Plot 7.4.65 Peak spectral power density at high frequency within 6 dB band

Antenna	2
Modulation	QPSK
Bit Rate	12 Mbps



Plot 7.4.66 Peak spectral power density at high frequency zoomed at the peak

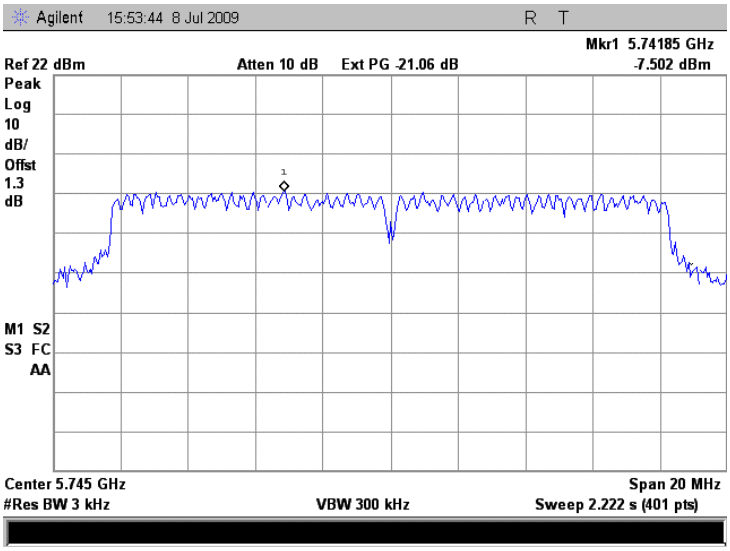
Antenna	2
Modulation	QPSK
Bit Rate	12 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

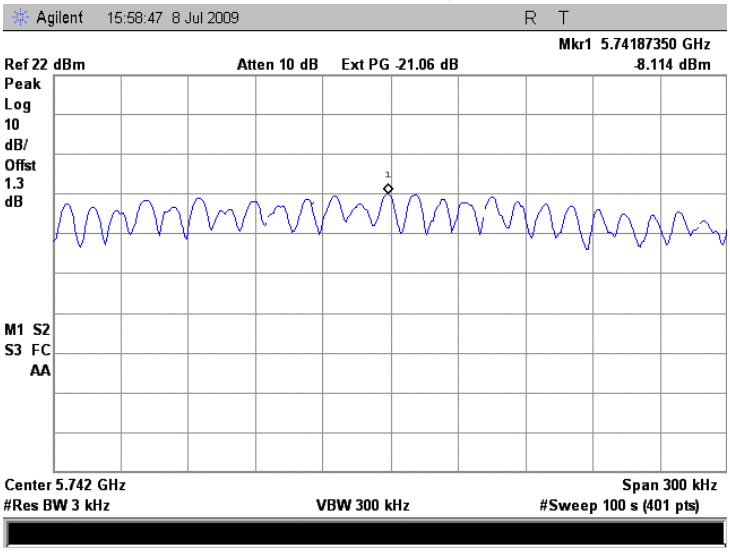
Plot 7.4.67 Peak spectral power density at low frequency within 6 dB band

Antenna	2
Modulation	QPSK
Bit Rate	18 Mbps



Plot 7.4.68 Peak spectral power density at low frequency zoomed at the peak

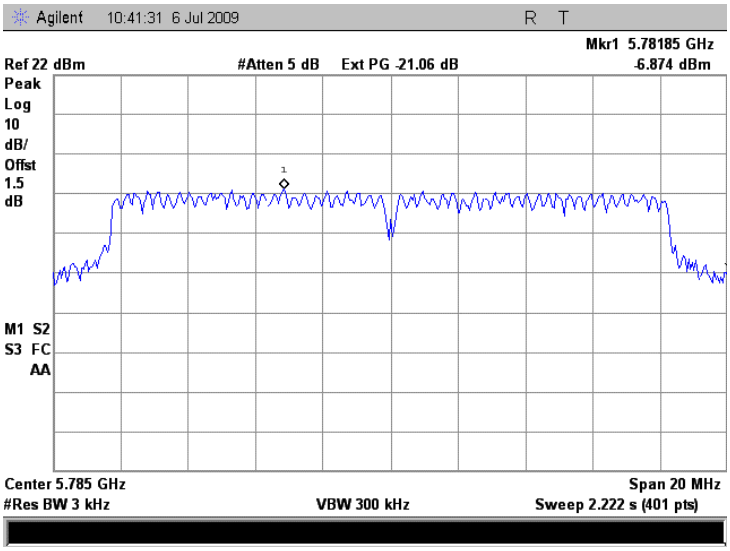
Antenna	2
Modulation	QPSK
Bit Rate	18 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

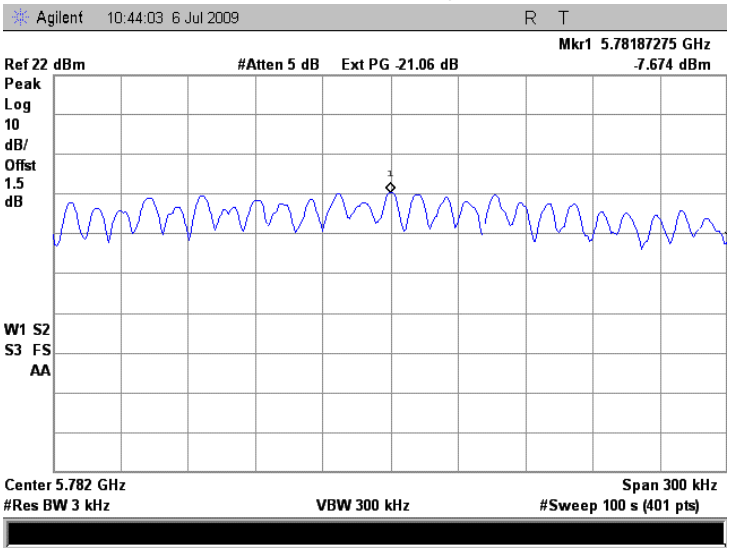
Plot 7.4.69 Peak spectral power density at mid frequency within 6 dB band

Antenna	2
Modulation	QPSK
Bit Rate	18 Mbps



Plot 7.4.70 Peak spectral power density at mid frequency zoomed at the peak

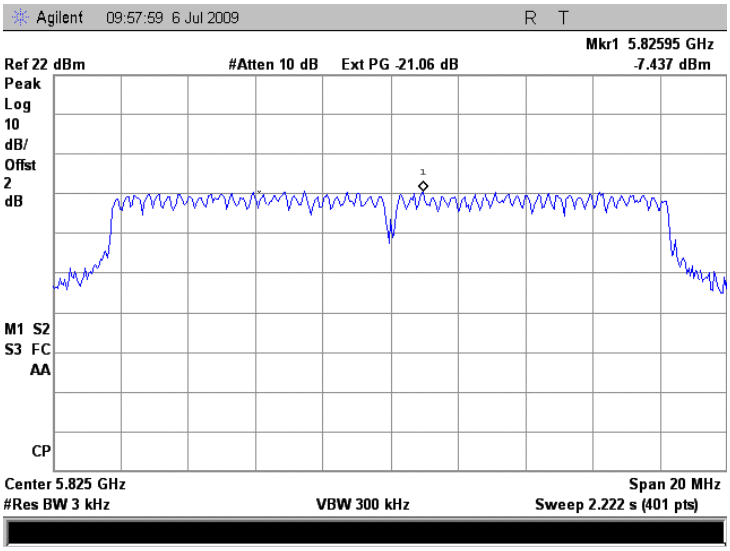
Antenna	2
Modulation	QPSK
Bit Rate	18 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

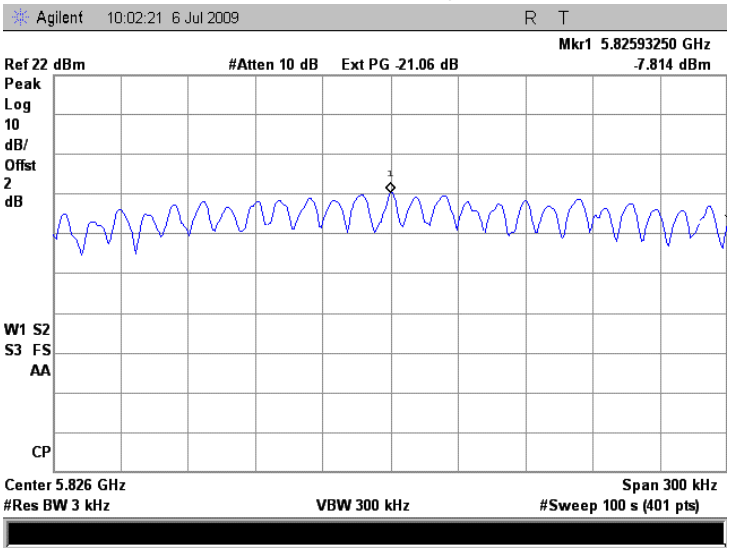
Plot 7.4.71 Peak spectral power density at high frequency within 6 dB band

Antenna	2
Modulation	QPSK
Bit Rate	18 Mbps



Plot 7.4.72 Peak spectral power density at high frequency zoomed at the peak

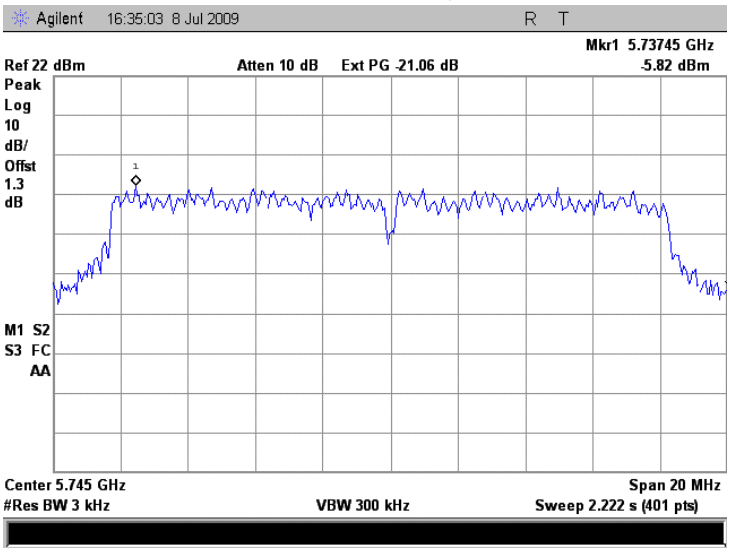
Antenna	2
Modulation	QPSK
Bit Rate	18 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

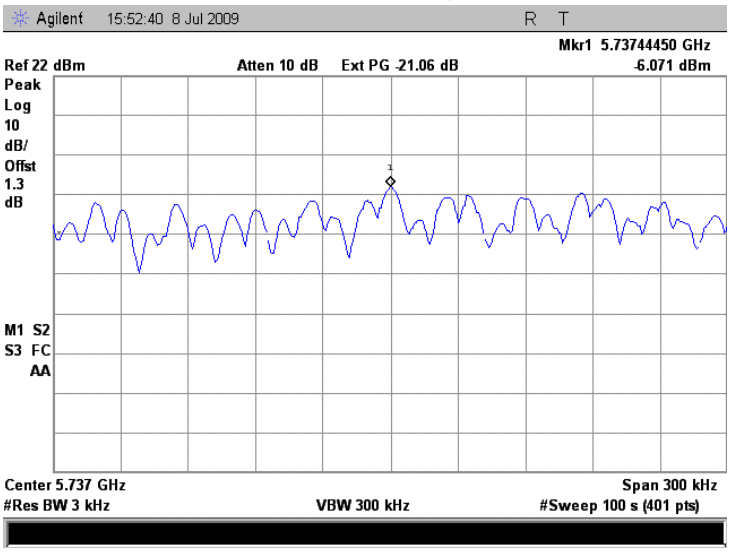
Plot 7.4.73 Peak spectral power density at low frequency within 6 dB band

Antenna	2
Modulation	16QAM
Bit Rate	24 Mbps



Plot 7.4.74 Peak spectral power density at low frequency zoomed at the peak

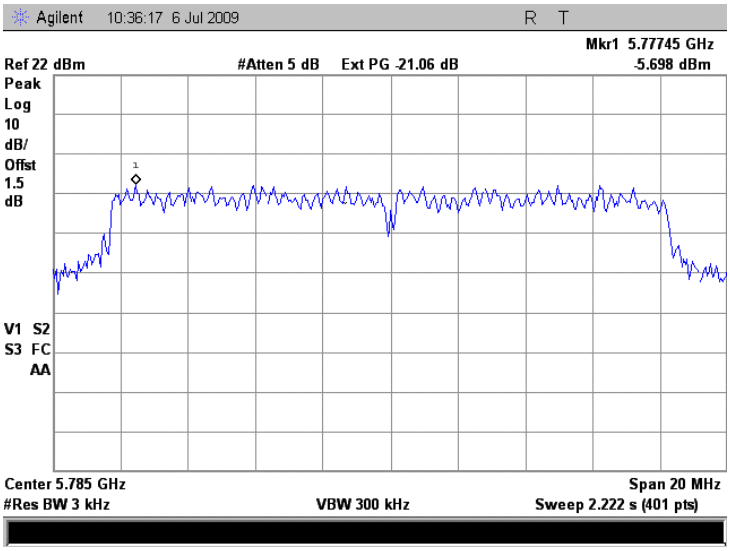
Antenna	2
Modulation	16QAM
Bit Rate	24 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

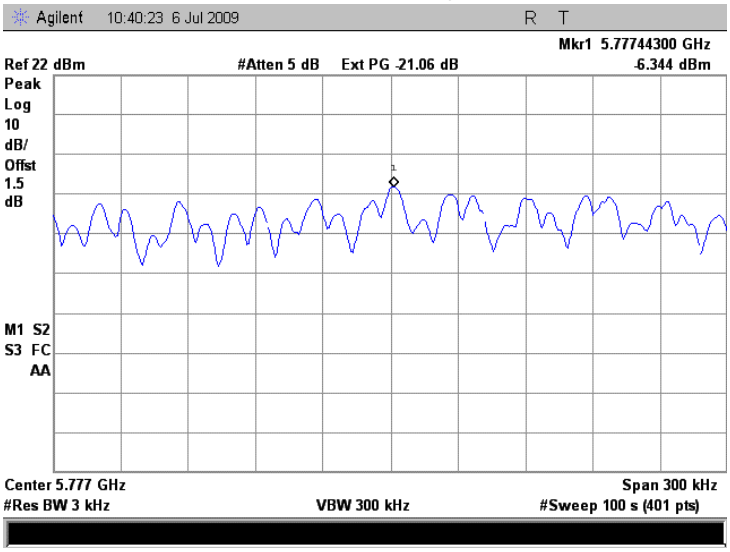
Plot 7.4.75 Peak spectral power density at mid frequency within 6 dB band

Antenna	2
Modulation	16QAM
Bit Rate	24 Mbps



Plot 7.4.76 Peak spectral power density at mid frequency zoomed at the peak

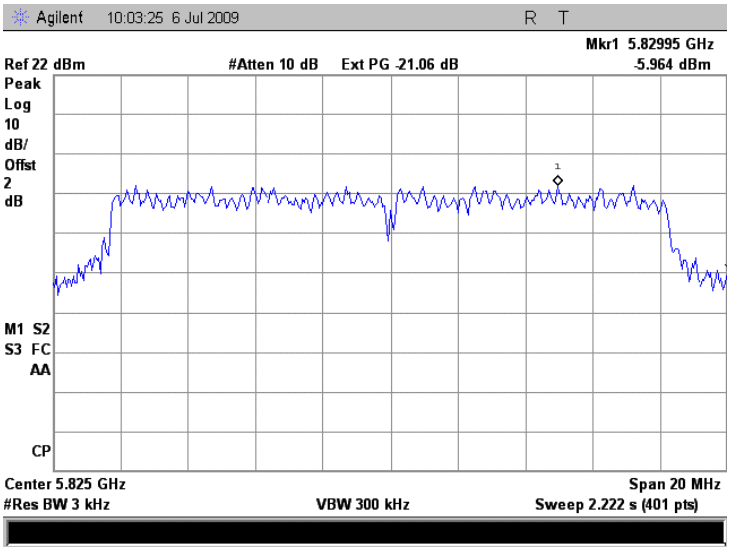
Antenna	2
Modulation	16QAM
Bit Rate	24 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

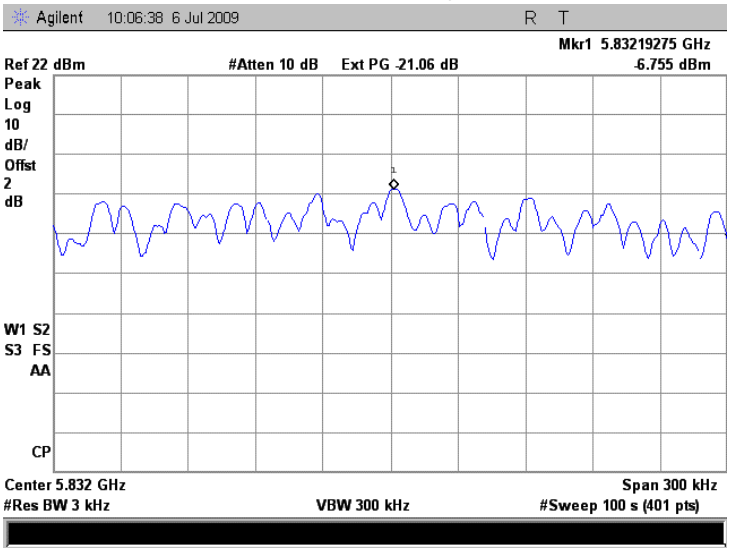
Plot 7.4.77 Peak spectral power density at high frequency within 6 dB band

Antenna	2
Modulation	16QAM
Bit Rate	24 Mbps



Plot 7.4.78 Peak spectral power density at high frequency zoomed at the peak

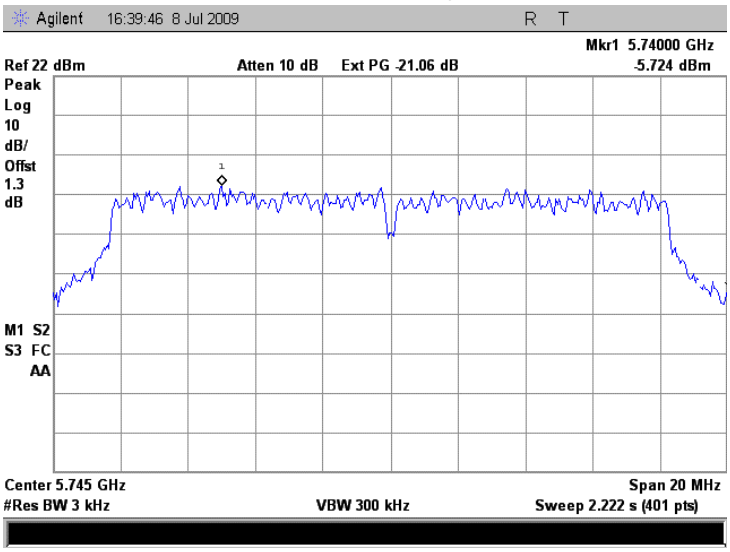
Antenna	2
Modulation	16QAM
Bit Rate	24 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

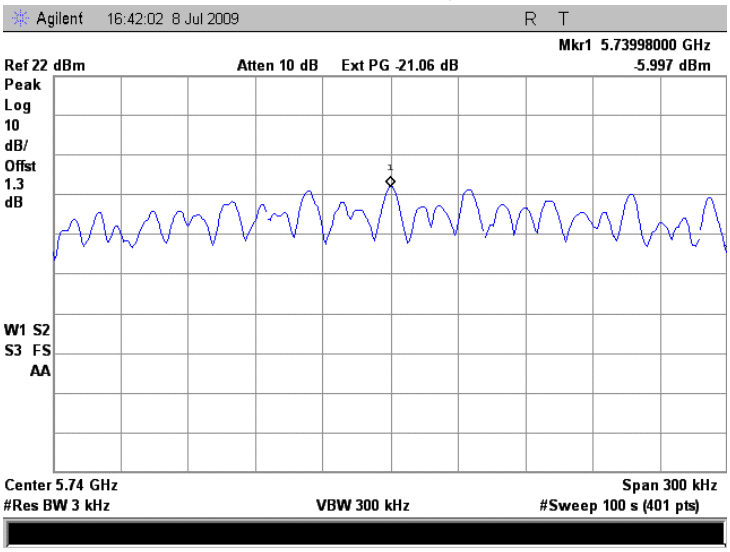
Plot 7.4.79 Peak spectral power density at low frequency within 6 dB band

Antenna	2
Modulation	16QAM
Bit Rate	36 Mbps



Plot 7.4.80 Peak spectral power density at low frequency zoomed at the peak

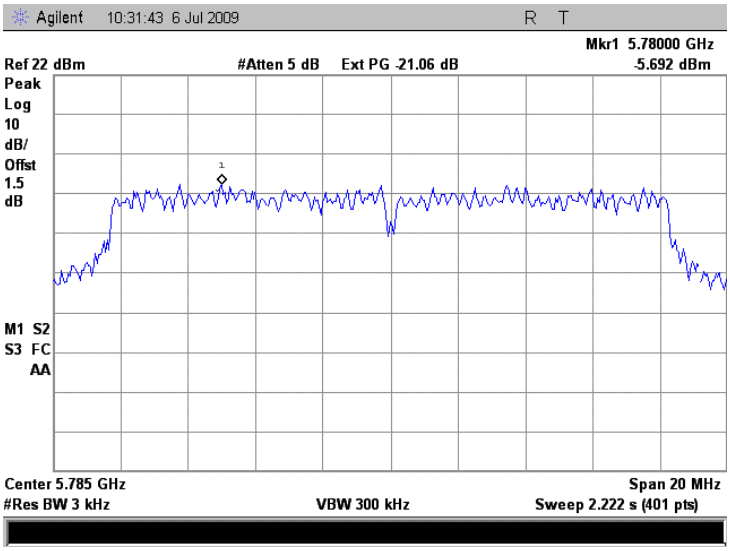
Antenna	2
Modulation	16QAM
Bit Rate	36 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

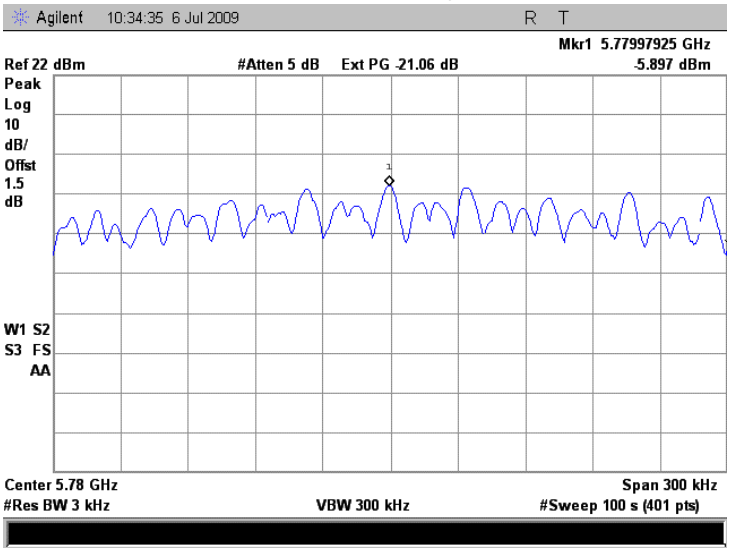
Plot 7.4.81 Peak spectral power density at mid frequency within 6 dB band

Antenna	2
Modulation	16QAM
Bit Rate	36 Mbps



Plot 7.4.82 Peak spectral power density at mid frequency zoomed at the peak

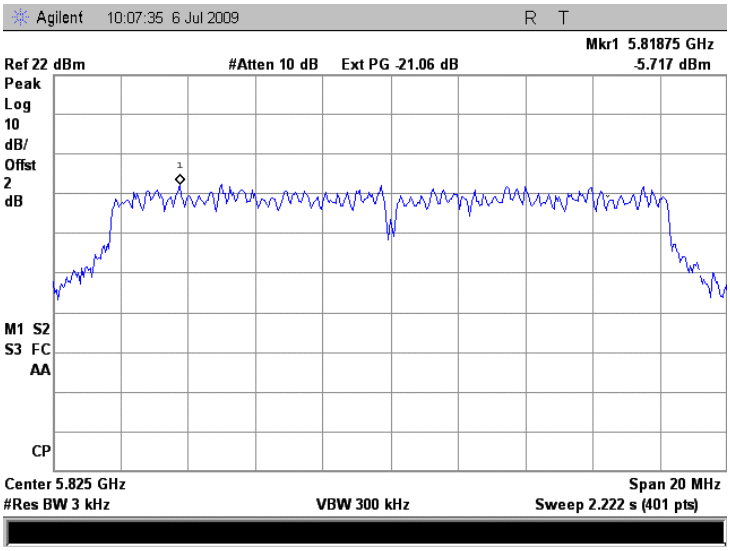
Antenna	2
Modulation	16QAM
Bit Rate	36 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

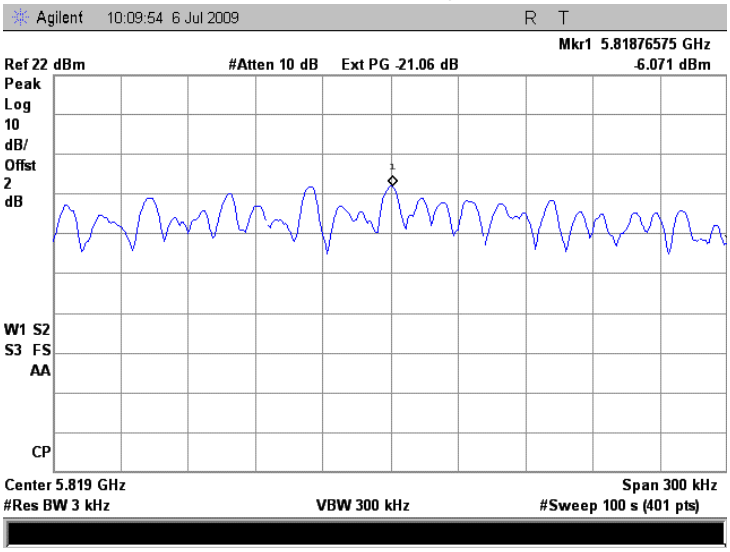
Plot 7.4.83 Peak spectral power density at high frequency within 6 dB band

Antenna	2
Modulation	16QAM
Bit Rate	36 Mbps



Plot 7.4.84 Peak spectral power density at high frequency zoomed at the peak

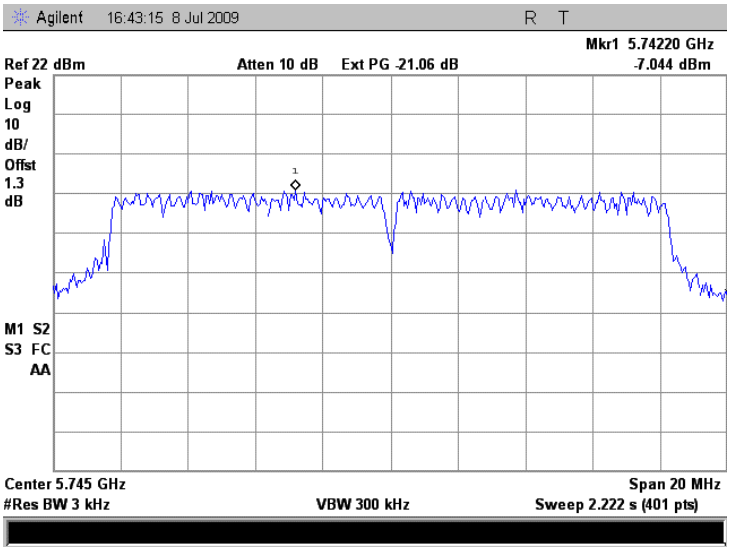
Antenna	2
Modulation	16QAM
Bit Rate	36 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

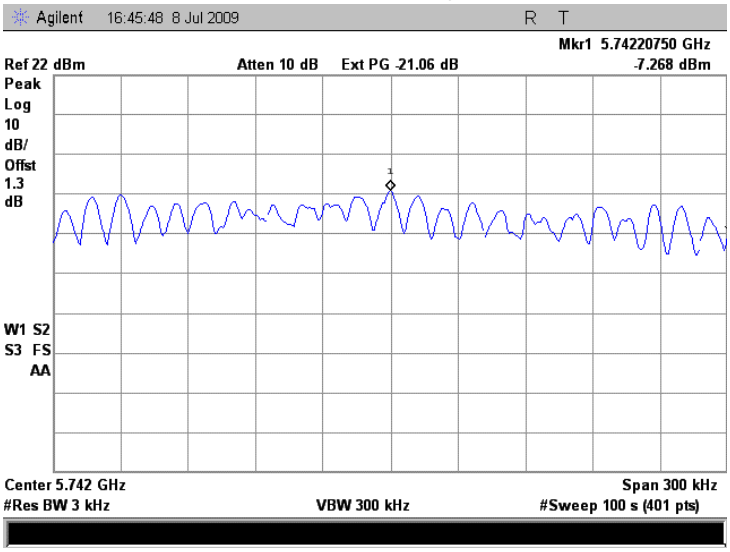
Plot 7.4.85 Peak spectral power density at low frequency within 6 dB band

Antenna	2
Modulation	64QAM
Bit Rate	48 Mbps



Plot 7.4.86 Peak spectral power density at low frequency zoomed at the peak

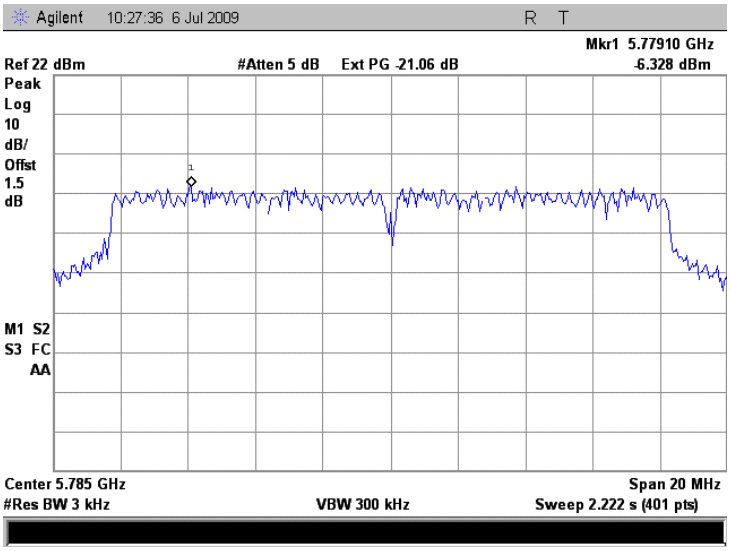
Antenna	2
Modulation	64QAM
Bit Rate	48 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

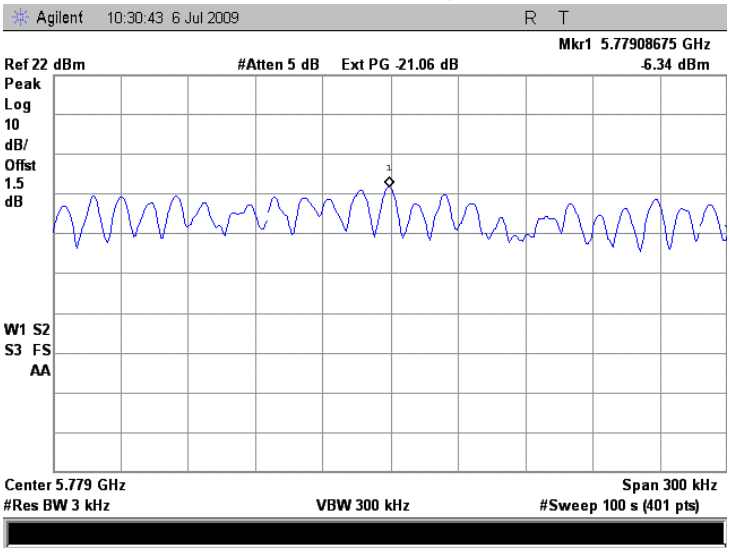
Plot 7.4.87 Peak spectral power density at mid frequency within 6 dB band

Antenna	2
Modulation	64QAM
Bit Rate	48 Mbps



Plot 7.4.88 Peak spectral power density at mid frequency zoomed at the peak

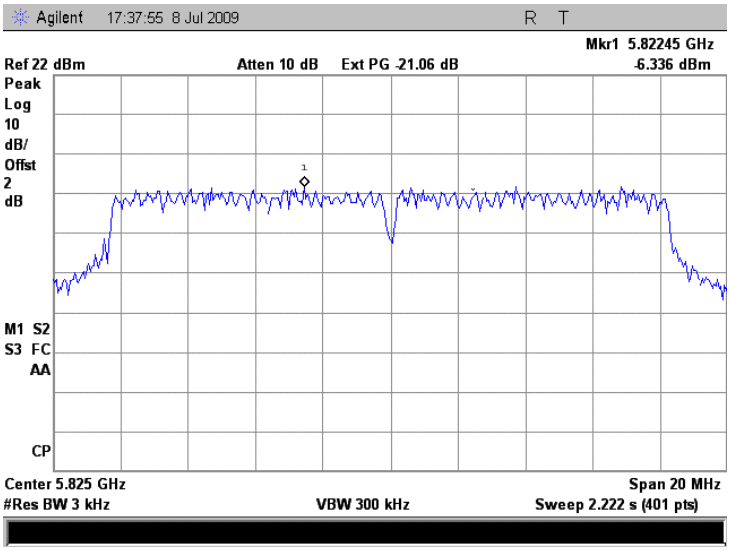
Antenna	2
Modulation	64QAM
Bit Rate	48 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

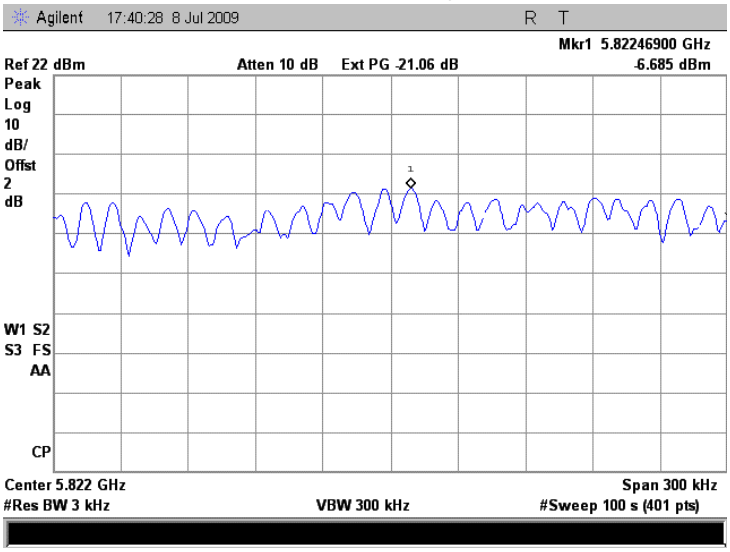
Plot 7.4.89 Peak spectral power density at high frequency within 6 dB band

Antenna	2
Modulation	64QAM
Bit Rate	48 Mbps



Plot 7.4.90 Peak spectral power density at high frequency zoomed at the peak

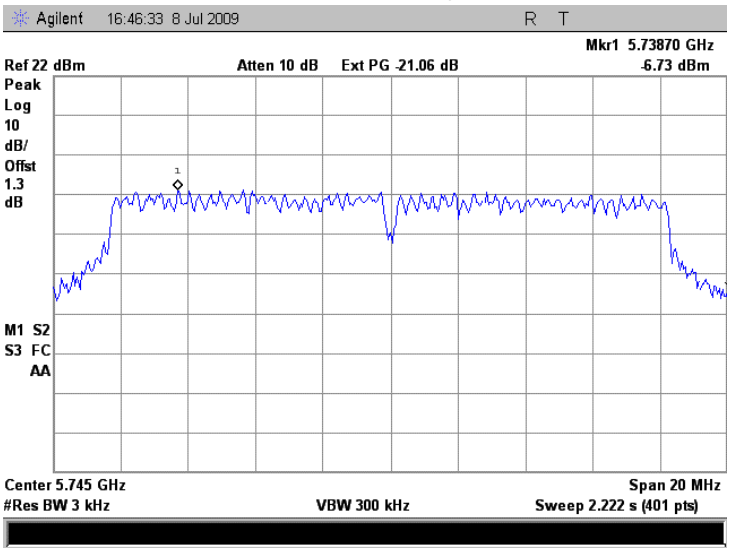
Antenna	2
Modulation	64QAM
Bit Rate	48 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

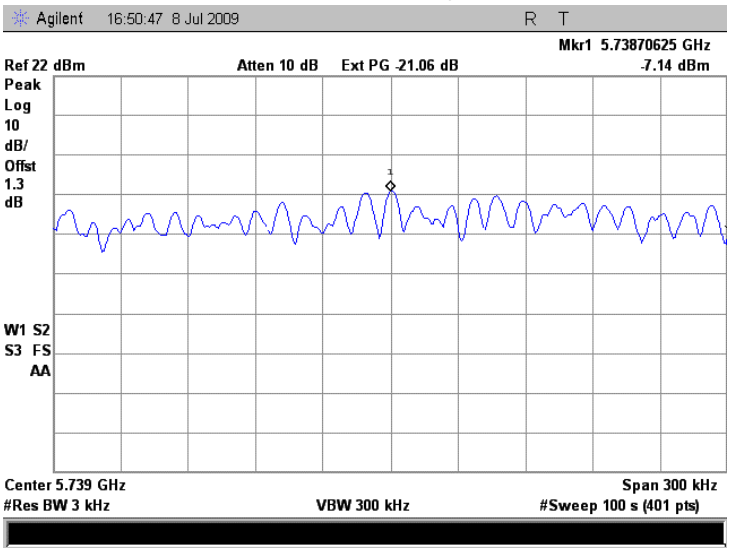
Plot 7.4.91 Peak spectral power density at low frequency within 6 dB band

Antenna	2
Modulation	64QAM
Bit Rate	54 Mbps



Plot 7.4.92 Peak spectral power density at low frequency zoomed at the peak

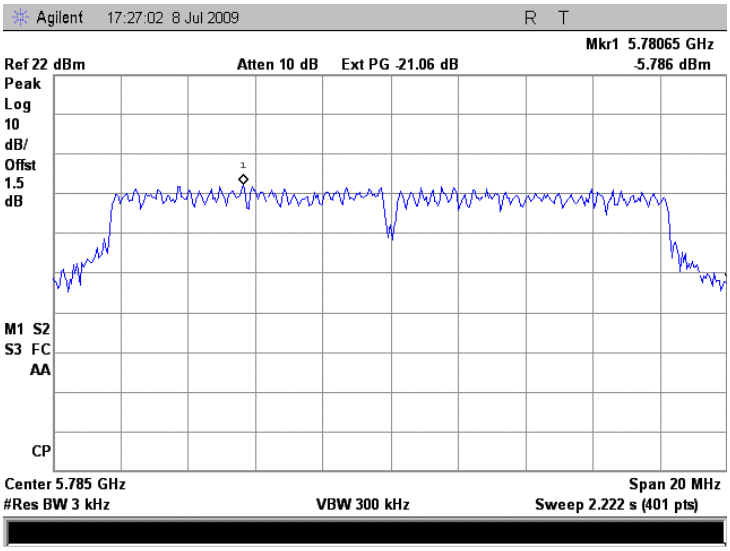
Antenna	2
Modulation	64QAM
Bit Rate	54 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

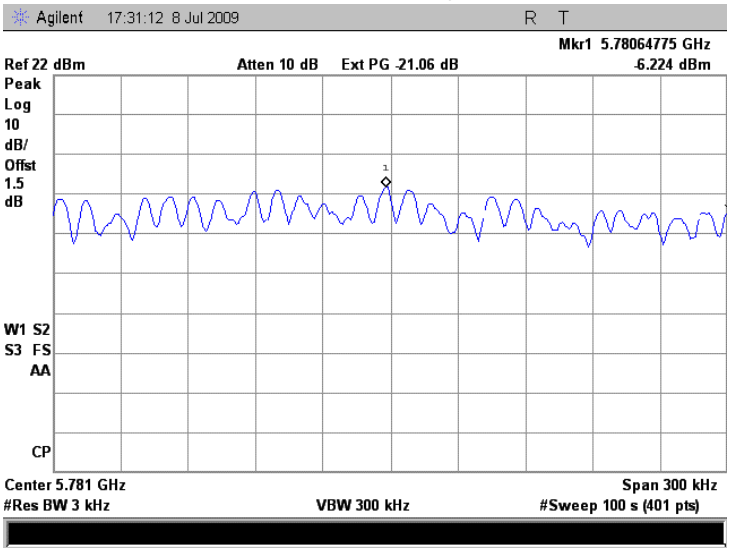
Plot 7.4.93 Peak spectral power density at mid frequency within 6 dB band

Antenna	2
Modulation	64QAM
Bit Rate	54 Mbps



Plot 7.4.94 Peak spectral power density at mid frequency zoomed at the peak

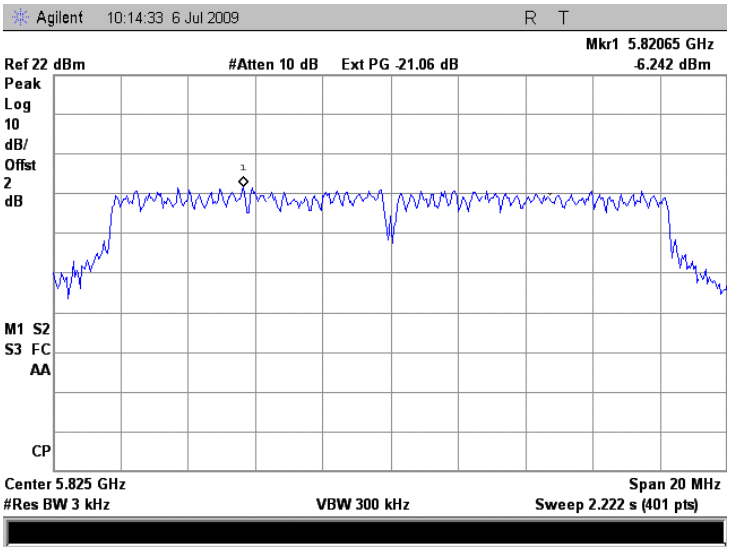
Antenna	2
Modulation	64QAM
Bit Rate	54 Mbps



Test specification:	Section 15.247(e), RSS-210 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:	8/16/2009 4:31:33 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

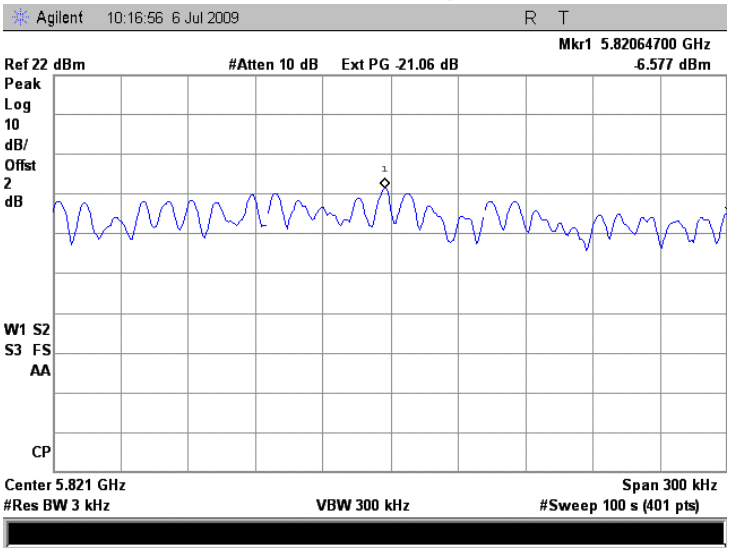
Plot 7.4.95 Peak spectral power density at high frequency within 6 dB band

Antenna	2
Modulation	64QAM
Bit Rate	54 Mbps



Plot 7.4.96 Peak spectral power density at high frequency zoomed at the peak

Antenna	2
Modulation	64QAM
Bit Rate	54 Mbps



Test specification:	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:	8/27/2009 11:39:20 AM		
Temperature: 24.8 ºC	Air Pressure: 1008 hPa	Relative Humidity: 48 %	Power Supply: 120 VAC
Remarks:			

7.5 Conducted emissions

7.5.1 General

This test was performed to measure common mode conducted emissions at the power port. Specification test limits are given in Table 7.5.1.

Table 7.5.1 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.

7.5.2 Test procedure

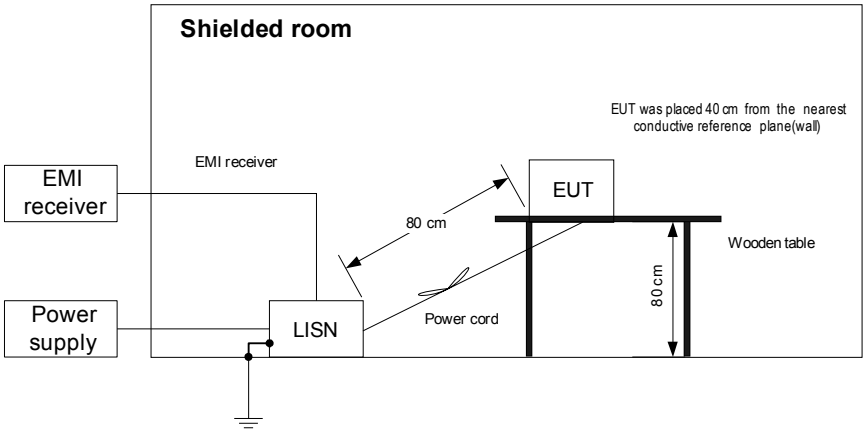
7.5.2.1 The EUT was set up as shown in Figure 7.5.1, energized and the performance check was conducted.

7.5.2.2 The measurements were performed at power terminals with the LISN, connected to a spectrum analyzer in the frequency range referred to in Table 7.5.2. Unused coaxial connector of the LISN was terminated with 50 Ohm. Quasi-peak and average detectors were used throughout the testing.

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

7.5.2.4 The worst test results (the lowest margins) were recorded in Table 7.5.2 and shown in the associated plots.

Figure 7.5.1 Setup for conducted emission measurements, table-top equipment



Test specification:	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:	8/27/2009 11:39:20 AM		
Temperature: 24.8 ºC	Air Pressure: 1008 hPa	Relative Humidity: 48 %	Power Supply: 120 VAC
Remarks:			

Table 7.5.2 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*		
0.156800	47.17	46.13	65.67	-19.54	33.40	55.67	-22.27	L1	Pass
0.314500	40.26	38.51	59.87	-21.36	28.05	49.87	-21.82		
0.402950	43.21	37.78	57.81	-20.03	25.46	47.81	-22.35		
0.824510	36.14	29.81	56.00	-26.19	13.24	46.00	-32.76		
1.041525	39.86	34.55	56.00	-21.45	22.31	46.00	-23.69		
2.558815	35.54	26.75	56.00	-29.25	12.33	46.00	-33.67		
0.156175	49.00	44.47	65.70	-21.23	31.44	55.70	-24.26	L2	Pass
0.404600	44.02	40.56	57.78	-17.22	29.94	47.78	-17.84		
0.494425	38.11	29.94	56.10	-26.16	14.95	46.10	-31.15		

*- Margin = Measured emission - specification limit.

Reference numbers of test equipment used

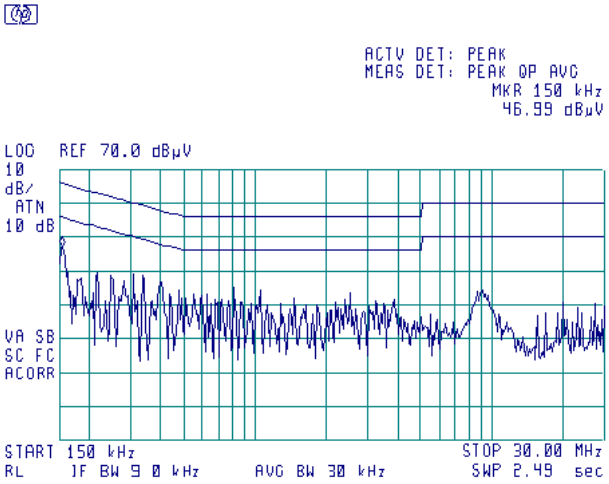
HL 0447	HL 0580	HL 1430	HL 1513	HL 3174	HL 3612		

Full description is given in Appendix A.

Test specification:	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:	8/27/2009 11:39:20 AM		
Temperature: 24.8 ºC	Air Pressure: 1008 hPa	Relative Humidity: 48 %	Power Supply: 120 VAC
Remarks:			

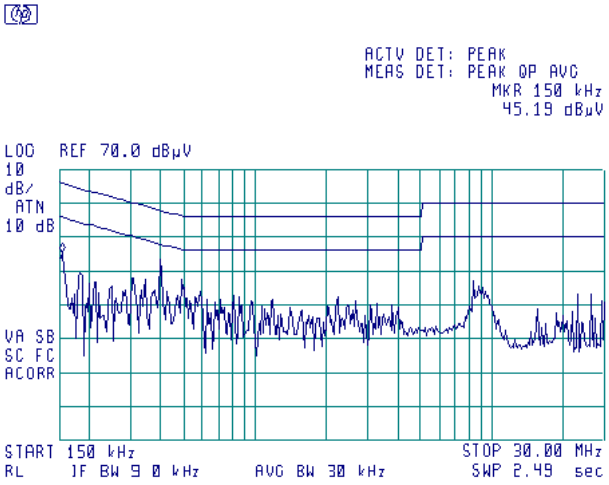
Plot 7.5.1 Conducted emission measurements

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



Plot 7.5.2 Conducted emission measurements

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



Test specification:	Section 15.203, RSS-Gen, section 7.1.4, Antenna requirement		
Test procedure:	Visual inspection		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	8/16/2009 4:40:38 PM		
Temperature: 25.3 ºC	Air Pressure: 1006 hPa	Relative Humidity: 44 %	Power Supply: 6 VDC
Remarks:			

7.6 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 7.6.1.

Table 7.6.1 Antenna requirements

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

Photograph 7.6.1 Antenna assembly

8 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-09	29-Jun-10
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	8546A	3617A 00319, 3448A002 53	27-Aug-09	27-Aug-10
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
1424	Spectrum Analyzer, 30 Hz- 40 GHz	Agilent Technologies	8564EC	3946A002 19	28-Sep-08	28-Sep-09
1430	EMI Receiver, 9 kHz - 2.9 GHz, System: HL1431, HL1432	Agilent Technologies	8542E	3807A002 62,3705A0 0217	31-Aug-09	31-Aug-10
1513	Cable RF, 8 m, BNC/BNC	Belden	M17/167 MIL-C-17	1513	01-Sep-09	01-Sep-10
1984	Antenna, Double-Ridged Waveguide Horn, 1-18 GHz, 300 W	EMC Test Systems	3115	9911-5964	23-Jan-09	23-Jan-10
2387	Filter Bandpass, 8-14 GHz	Hermon Laboratories	FBP8-14	2387	05-Jun-07	05-Oct-09
2432	Antenna, Double-Ridged Waveguide Horn 1-18 GHz	EMC Test Systems	3115	00027177	23-Jan-09	23-Jan-10
2882	Cable, 18 GHz N-type, M-F, 3 m	Bird	TC-MNFN-3.0	211539 001	04-Feb-09	04-Feb-10
2909	Spectrum analyzer, ESA-E, 100 Hz to 26.5 GHz	Agilent Technologies	E4407B	MY414447 62	07-May-09	07-May-10
2952	Cable, RF, 18 GHz, 1.2 m, SMA-SMA	Gore	10020014	NA	05-Oct-08	05-Oct-09
2953	Cable, RF, 18 GHz, 1.2 m, SMA-SMA	Gore	10020014	NA	05-Oct-08	05-Oct-09
3121	Microwave Cable Assembly, 18 GHz, 6.4 m, SMA - SMA	Huber-Suhner	198-9155-00	3121	07-Dec-08	07-Dec-09
3123	Microwave Cable Assembly, 18 GHz, 6.4 m, SMA - SMA	Huber-Suhner	198-9155-00	3123	01-Jan-09	01-Jan-10
3174	Attenuator, N-type, 10 dB, DC to 18 GHz, 5 W	Mini-Circuits	BW-N10W5+	NA	07-May-09	07-May-10
3301	Power Meter, P-series, 50 MHz to 40 GHz	Agilent Technologies	N1911A	MY451010 57	03-Dec-08	03-Dec-09
3302	Power sensor, P-Series, 50 MHz to 40 GHz, -35/30 to 20 dBm	Agilent Technologies	N1922A	MY452405 86	05-Dec-08	05-Dec-09
3435	Precision Fixed Attenuator, 50 Ohm, 5 W, 10 dB, DC to 18 GHz	Mini-Circuits	BW-S10W5+	NA	08-Mar-09	08-Mar-10
3437	Precision Fixed Attenuator, 50 Ohm, 5 W, 10 dB, DC to 18 GHz	Mini-Circuits	BW-S10W5+	NA	08-Mar-09	08-Mar-10
3439	Precision Fixed Attenuator, 50 Ohm, 5 W, 20 dB, DC to 18 GHz	Mini-Circuits	BW-S20W5+	NA	08-Mar-09	08-Mar-10
3442	Precision Fixed Attenuator, 50 Ohm, 5 W, 20 dB, DC to 18 GHz	Mini-Circuits	BW-S20W5+	NA	08-Mar-09	08-Mar-10
3531	Amplifier, low noise, 2 to 8 GHz	Quinstar Technology	QLJ-02084040 -J0	111590020 02	07-Dec-08	07-Dec-09
3533	Amplifier, low noise, 6 to 18 GHz	Quinstar Technology	QLJ-06184040 -J0	111590010 01	07-Dec-08	07-Dec-09

HL No	Description	Manufacturer	Model	Ser. No.	Last Cal.	Due Cal.
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

9 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

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.

10 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), Registration Numbers 90624 for OATS and 90623 for the anechoic chamber; 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), has a status of a Telefication - Listed Testing Laboratory, Certificate No. L138/00. 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).

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website: www.hermonlabs.com

Person for contact: Mr. Alex Usoskin, CEO.

11 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 (All frequency bands), Category I Equipment
RSS-Gen Issue 2: 2007	General Requirements and Information for the Certification of Radiocommunication Equipment

12 APPENDIX E Test equipment correction factors

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

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.

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

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, HL1984

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).

Antenna factor
Double-ridged guide horn antenna
Model 3115, serial number: 00027177, HL 2432

Frequency, MHz	Antenna factor. dB(1/m)
1000.0	24.7
1500.0	25.7
2000.0	27.8
2500.0	28.9
3000.0	30.7
3500.0	31.8
4000.0	33.0
4500.0	32.8
5000.0	34.2
5500.0	34.9
6000.0	35.2
6500.0	35.4
7000.0	36.3
7500.0	37.3
8000.0	37.5
8500.0	38.0
9000.0	38.3
9500.0	38.3
10000.0	38.7
10500.0	38.7
11000.0	38.9
11500.0	39.5
12000.0	39.5
12500.0	39.4
13000.0	40.5
13500.0	40.8
14000.0	41.5
14500.0	41.3
15000.0	40.2
15500.0	38.7
16000.0	38.5
16500.0	39.8
17000.0	41.9
17500.0	45.8
18000.0	49.1

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, Bird, 18 GHz, N-type, M-F, model TC-MNFN-3.0, S/N 211539 001
HL 2882

Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB
10	0.08	5750	1.78	12000	2.57
30	0.12	6000	1.84	12250	2.62
100	0.22	6250	1.87	12500	2.66
250	0.35	6500	1.92	12750	2.68
500	0.49	6750	1.96	13000	2.67
750	0.60	7000	2.01	13250	2.75
1000	0.68	7250	2.08	13500	2.77
1250	0.78	7500	2.12	13750	2.90
1500	0.85	7750	2.19	14000	3.00
1750	0.92	8000	2.22	14250	3.12
2000	0.98	8250	2.28	14500	2.98
2250	1.06	8500	2.29	14750	3.03
2500	1.11	8750	2.27	15000	2.99
2750	1.19	9000	2.28	15250	2.99
3000	1.25	9250	2.26	15500	2.98
3250	1.30	9500	2.29	15750	2.98
3500	1.34	9750	2.33	16000	2.99
3750	1.40	10000	2.34	16250	3.05
4000	1.45	10250	2.41	16500	3.11
4250	1.51	10500	2.46	16750	3.18
4500	1.54	10750	2.48	17000	3.23
4750	1.59	11000	2.48	17250	3.21
5000	1.63	11250	2.52	17500	3.22
5250	1.68	11500	2.53	17750	3.22
5500	1.72	11750	2.56	18000	3.25

Cable loss
Cable coaxial, Gore, 18 GHz, 1.2 m, SMA-SMA, S/N 10020014
HL 2952

Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB
10	0.03	5750	0.97	12000	1.50
30	0.05	6000	1.01	12250	1.45
100	0.11	6250	1.03	12500	1.48
250	0.19	6500	1.06	12750	1.57
500	0.26	6750	1.08	13000	1.51
750	0.32	7000	1.10	13250	1.64
1000	0.38	7250	1.13	13500	1.60
1250	0.43	7500	1.13	13750	1.63
1500	0.47	7750	1.21	14000	1.59
1750	0.53	8000	1.20	14250	1.66
2000	0.55	8250	1.24	14500	1.60
2250	0.59	8500	1.29	14750	1.65
2500	0.63	8750	1.23	15000	1.72
2750	0.66	9000	1.27	15250	1.68
3000	0.69	9250	1.27	15500	1.73
3250	0.72	9500	1.29	15750	1.70
3500	0.75	9750	1.30	16000	1.82
3750	0.78	10000	1.38	16250	1.79
4000	0.82	10250	1.44	16500	1.81
4250	0.84	10500	1.47	16750	1.91
4500	0.86	10750	1.45	17000	1.92
4750	0.90	11000	1.50	17250	1.98
5000	0.91	11250	1.46	17500	2.05
5250	0.94	11500	1.47	17750	2.04
5500	0.96	11750	1.44	18000	2.05

Cable loss
Cable coaxial, Gore, 25.5 GHz, 1.2 m, SMA-SMA, S/N 10020014
HL 2953

Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB
10	0.06	8750	1.28	18000	1.84
30	0.06	9000	1.30	18250	1.91
100	0.12	9250	1.35	18500	1.94
250	0.19	9500	1.34	18750	1.92
500	0.27	9750	1.36	19000	1.95
750	0.34	10000	1.33	19250	2.00
1000	0.40	10250	1.38	19500	1.96
1250	0.45	10500	1.39	19750	2.02
1500	0.50	10750	1.39	20000	1.92
1750	0.54	11000	1.43	20250	2.04
2000	0.57	11250	1.42	20500	2.00
2250	0.60	11500	1.48	20750	2.09
2500	0.64	11750	1.49	21000	2.01
2750	0.67	12000	1.59	21250	2.07
3000	0.70	12250	1.50	21500	2.20
3250	0.74	12500	1.55	21750	2.10
3500	0.76	12750	1.55	22000	2.24
3750	0.80	13000	1.61	22250	2.25
4000	0.83	13250	1.62	22500	2.12
4250	0.85	13500	1.56	22750	2.05
4500	0.87	13750	1.61	23000	2.10
4750	0.91	14000	1.57	23250	2.03
5000	0.92	14250	1.66	23500	2.08
5250	0.96	14500	1.58	23750	2.14
5500	0.99	14750	1.69	24000	2.16
5750	0.99	15000	1.71	24250	2.25
6000	1.03	15250	1.74	24500	2.17
6250	1.05	15500	1.75	24750	2.32
6500	1.07	15750	1.72	25000	2.32
6750	1.08	16000	1.89	25250	2.32
7000	1.12	16250	1.79	25500	2.41
7250	1.13	16500	1.84	25750	2.31
7500	1.15	16750	1.82	26000	2.28
7750	1.20	17000	1.79	26250	2.32
8000	1.20	17250	1.78	26500	2.29
8250	1.23	17500	1.85		
8500	1.27	17750	1.83		

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 3123

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	1.97	7400	3.12	11200	3.90	15100	4.74
30	0.17	3700	1.97	7500	3.13	11300	3.93	15200	4.70
50	0.25	3800	2.03	7600	3.16	11400	3.88	15300	4.73
100	0.32	3900	2.04	7700	3.18	11500	3.87	15400	4.78
200	0.46	4000	2.10	7800	3.20	11600	3.90	15500	4.75
300	0.58	4100	1.97	7900	3.23	11700	3.86	15600	4.76
400	0.65	4200	1.97	8000	3.25	11800	3.88	15700	4.75
500	0.74	4300	2.03	8100	3.26	11900	3.86	15800	4.78
600	0.82	4400	2.04	8200	3.28	12000	3.89	15900	4.79
700	0.89	4500	2.10	8300	3.31	12100	3.94	16000	4.73
800	0.95	4600	1.97	8400	3.31	12200	3.92	16100	4.78
900	1.01	4700	1.97	8500	3.32	12300	3.96	16200	4.84
1000	1.07	4800	2.03	8600	3.34	12400	4.01	16300	4.90
1100	1.11	4900	2.04	8700	3.35	12500	4.07	16400	4.87
1200	1.17	5000	2.10	8800	3.37	12600	4.08	16500	4.90
1300	1.22	5100	2.53	8900	3.39	12700	4.17	16600	4.98
1400	1.27	5200	2.55	9000	3.42	12800	4.26	16700	5.05
1500	1.29	5300	2.60	9100	3.43	12900	4.16	16800	5.04
1600	1.35	5400	2.61	9200	3.51	13000	4.21	16900	5.02
1700	1.40	5500	2.64	9300	3.52	13100	4.24	17000	5.09
1800	1.44	5600	2.70	9400	3.54	13200	4.27	17100	5.07
1900	1.51	5700	2.67	9500	3.63	13300	4.31	17200	5.10
2000	1.49	5800	2.71	9600	3.61	13400	4.33	17300	5.13
2100	1.55	5900	2.74	9700	3.71	13500	4.25	17400	5.23
2200	1.58	6000	2.80	9800	3.66	13600	4.27	17500	5.21
2300	1.62	6100	2.79	9900	3.77	13700	4.33	17600	5.22
2400	1.72	6200	2.81	10000	3.75	13800	4.33	17700	5.36
2500	1.76	6300	2.83	10100	3.77	13900	4.31	17800	5.35
2600	1.78	6400	2.86	10200	3.80	14000	4.30	17900	5.45
2700	1.80	6500	2.88	10300	3.79	14100	4.30	18000	5.43
2800	1.86	6600	2.90	10400	3.87	14200	4.31		
2900	1.90	6700	2.92	10500	3.83	14300	4.37		
3000	1.90	6800	2.98	10600	3.88	14400	4.35		
3100	1.97	6900	2.98	10700	3.86	14600	4.53		
3200	1.97	7000	3.00	10800	3.87	14700	4.50		
3300	2.03	7100	3.02	10900	3.90	14800	4.62		
3400	2.04	7200	3.04	11000	3.84	14900	4.65		
3500	2.10	7300	3.06	11100	3.88	15000	4.79		

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

Cable loss
Cable coaxial, RG-214/U, N type-N type, 6.5 m
Suhner Switzerland, HL 3616

Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB
10	0.13	1750	2.66	3550	4.44	5350	6.08
30	0.25	1800	2.72	3600	4.46	5400	6.12
50	0.32	1850	2.78	3650	4.59	5450	6.17
100	0.48	1900	2.81	3700	4.60	5500	6.25
150	0.60	1950	2.86	3750	4.72	5550	6.31
200	0.71	2000	2.94	3800	4.72	5600	6.35
250	0.81	2050	2.97	3850	4.86	5650	6.41
300	0.91	2100	3.01	3900	4.85	5700	6.50
350	1.00	2150	3.06	3950	4.99	5750	6.52
400	1.07	2200	3.11	4000	4.90	5800	6.57
450	1.14	2250	3.16	4050	5.04	5850	6.61
500	1.23	2300	3.21	4100	5.01	5900	6.71
550	1.30	2350	3.26	4150	5.10	5950	6.70
600	1.37	2400	3.31	4200	5.08	6000	6.75
650	1.44	2450	3.35	4250	5.18	6050	6.74
700	1.50	2500	3.39	4300	5.14	6100	6.84
750	1.58	2550	3.46	4350	5.22	6150	6.87
800	1.64	2600	3.48	4400	5.21	6200	6.93
850	1.69	2650	3.55	4450	5.29	6250	6.96
900	1.77	2700	3.59	4500	5.31	6300	7.02
950	1.79	2750	3.66	4550	5.39	6350	7.04
1000	1.87	2800	3.68	4600	5.41	6400	7.10
1050	1.92	2850	3.75	4650	5.49	6450	7.11
1100	1.98	2900	3.79	4700	5.52	6500	7.19
1150	2.05	2950	3.86	4750	5.60		
1200	2.09	3000	3.89	4800	5.64		
1250	2.15	3050	3.94	4850	5.73		
1300	2.21	3100	3.98	4900	5.70		
1350	2.27	3150	4.03	4950	5.73		
1400	2.33	3200	4.06	5000	5.75		
1450	2.38	3250	4.12	5050	5.83		
1500	2.44	3300	4.14	5100	5.82		
1550	2.48	3350	4.22	5150	5.91		
1600	2.52	3400	4.24	5200	5.92		
1650	2.56	3450	4.31	5250	5.98		
1700	2.62	3500	4.35	5300	6.01		

13 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
ITE	information technology equipment
k	kilo
kHz	kilohertz
LISN	line impedance stabilization network
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