

TEST REPORT

ACCORDING TO: FCC 47CFR part 27

FOR:

Airspan Networks Inc.

Base station

Model: MacroMAXe 2510 Mid

This report is in conformity with ISO/ IEC 17025. The "A2LA Accredited" symbol endorsement applies only to the tests and calibrations that are listed in the scope of Hermon Laboratories accreditation. The test results relate only to the items tested. This test report shall not be reproduced in any form except in full with the written approval of Hermon Laboratories Ltd.

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1 Applicant information

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Telephone: +1 561 893 8686
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E-mail: zlevi@airspan.com
Contact name: Mr. Zion Levi

2 Equipment under test attributes

Product name: Base station
Model(s): MacroMAXe 2510 Mid
Serial number: 51D1A1111113
Hardware version: A5
Software release: 13_9_50_015
Receipt date: 11/16/2010

3 Manufacturer information

Manufacturer name: Airspan Networks Inc.
Address: 777 Yamato Rd, Suite 310, Boca Raton 33431, Florida, USA
Telephone: +1 561 893 8686
Fax: +1 561 893 8671
E-Mail: zlevi@airspan.com
Contact name: Mr. Zion Levi

4 Test details

Project ID: 21406
Location: Hermon Laboratories Ltd. Harakevet Industrial Zone, Binyamina 30500, Israel
Test started: 11/16/2010
Test completed: 11/21/2010
Test specification(s): FCC 47CFR part 27

5 Tests summary

Test	Status
Transmitter characteristics	
Transmitter characteristics	
Section 27.50(h), Peak output power at RF antenna connector	Pass
Section 27.50(h)(4), Spectral power density	Pass
Section 2.1091, 27.52, RF safety	Pass, exhibit provided in Application for certification
Section 27.53(m)(2), Spurious emissions at RF antenna connector	Pass
Section 27.53(m)(2), Band edge emissions at RF antenna connector	Pass
Section 27.53(m)(2), Radiated spurious emissions	Pass
Section 27.54, Frequency stability	Pass
Section 2.1049, Occupied bandwidth	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. S. Samokha, test engineer	November 21, 2010	
Reviewed by:	Mrs. M. Cherniavsky, certification engineer	November 29, 2010	
Approved by:	Mr. M. Nikishin, EMC and Radio group manager	November 30, 2010	

6 EUT description

6.1 General information

A base station radio, MacroMAXe 2510 Mid, is part of a WiMAX broadband fixed cellular wireless access system. The system provides a radio link between an end-user (a subscriber) and a network to give high-speed data access. The MacroMAXe's transceiver/receiver (up to 64 QAM modulation, data rate up to 46 Mbps) uses OFDM and operating in TDD duplexing mode, equipped with a 18 dBi external antenna.

The MacroMAXe is installed outdoors and typically is mounted on a pole. The Subscriber transmits and receives traffic to and from the base station respectively. The transceiver provides subscribers with "always-on" Internet, high speed data only, or data and voice (VoIP) services and is configured with a unique base station reference number, preventing the ProST Subscriber from relocating to another subscriber premises without authorization.

6.2 Ports and lines

Port type	Port description	Conn. from	Conn. to	Qty.	Cable type	Cable length	Indoor / outdoor
Power	DC power	DC power supply	EUT	1	Unshielded	10	Outdoor
Signal	Ethernet	ETH2 port	ETH3 port	1	Shielded	1.5	Outdoor
Signal	Ethernet	ETH1 port	PC laptop	1	Shielded	10	Outdoor
Signal	Antenna	EUT	GPS external antenna	1	Coax	5	Outdoor
RF	Antenna	EUT	Termination 50 Ohm	4	Coax	NA	Outdoor
Signal	RS-232	EUT	Laptop	1	Unshielded	2	For maintenance only

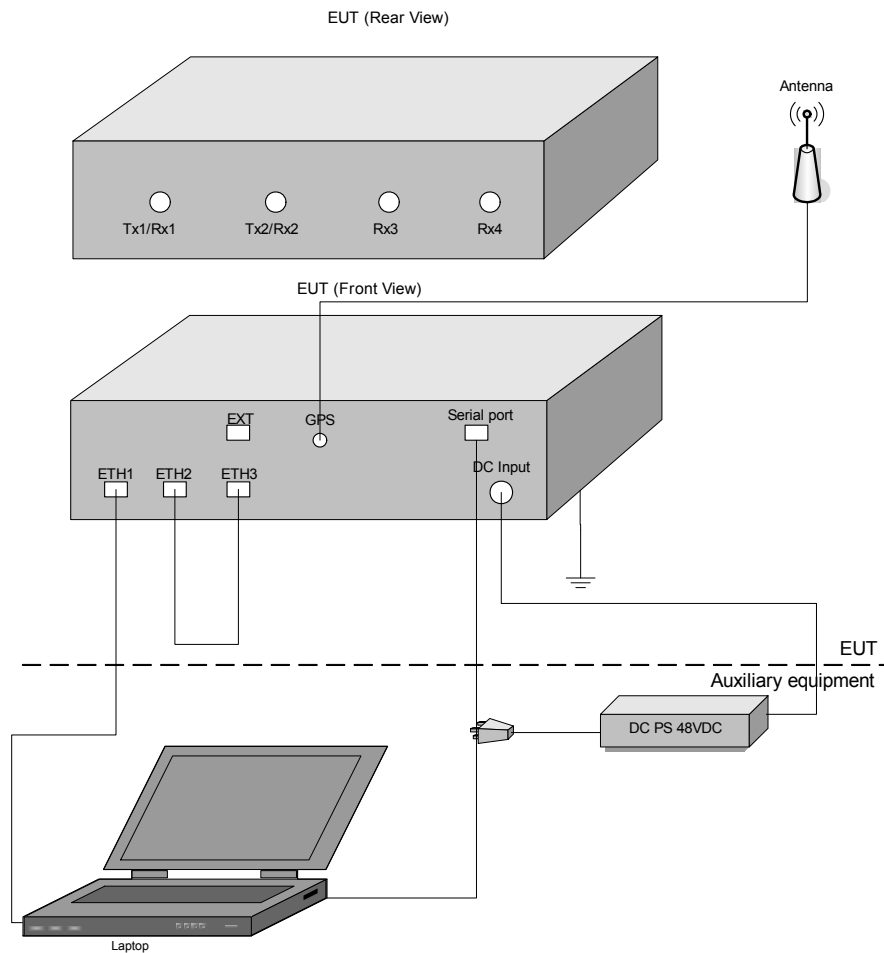
6.3 Support and test equipment

Description	Manufacturer	Model number	Serial number
DC power supply	Horizon Electronics	DHR3655D	767469
Laptop	IBM	X31	99-TXWYC
GPS Antenna	Trimble	P/N 57861-00	01880177

6.4 Changes made in the EUT

No changes were implemented.

6.5 Test configuration



6.6 Transmitter characteristics

Type of equipment					
V	Stand-alone (Equipment with or without its own control provisions)				
	Combined equipment (Equipment where the radio part is fully integrated within another type of equipment)				
	Plug-in card (Equipment intended for a variety of host systems)				
Intended use		Condition of use			
V	fixed	Always at a distance more than 2 m from all people			
	mobile	Always at a distance more than 20 cm from all people			
	portable	May operate at a distance closer than 20 cm to human body			
Assigned frequency range		2560.0 – 2632.0 MHz			
Operating frequency range		2563.0 – 2629.0 MHz for 3.5 MHz OBW and 5 MHz OBW 2566.0 – 2626.0 MHz for 7 MHz OBW and 10 MHz OBW			
RF channel spacing		3.5, 5, 7, 10 MHz			
Maximum rated output power		At transmitter 50 Ω RF output connector (aggregate power of both RF chains)			
		43.06 dBm – 3.5 MHz OBW 43.04 dBm – 5 MHz OBW 43.28 dBm – 7 MHz OBW 43.28 dBm – 10 MHz OBW			
		EIRP density dBm / MHz (aggregate power of both RF chains) with maximum declared antenna gain			
		48.82 dBm – 3.5 MHz OBW 46.92 dBm – 5 MHz OBW 45.81 dBm – 7 MHz OBW 43.58 dBm – 10 MHz OBW			
Is transmitter output power variable?		No			
		V	Yes	continuous variable	
				stepped variable with stepsize	0.5 dB
				minimum RF power	0 dBm
				maximum RF power	43.28 dBm
Antenna connection					
unique coupling	V	standard connector	Integral		
			with temporary RF connector		
			without temporary RF connector		
Antenna/s technical characteristics					
Type	Manufacturer	Model number	Gain		
Dual Polarized 65° Sector Antenna, Fixed Tilt	Alpha Wireless	AW3007	18 dBi		
Dual Polarized 90° Sector Antenna, Fixed Tilt	Alpha Wireless	AW3008	17 dBi		
Transmitter aggregate data rate/s, Mbps					
Transmitter 99% power bandwidth	Type of modulation				
		QPSK	16QAM	64QAM	
	3.5 MHz	4	9	14	
	5 MHz	7	14	23	
	7 MHz	8	17	28	
10 MHz	13	27	46		
Type of multiplexing		OFDMA/TDD			
Modulating test signal (baseband)		PRBS			
Maximum transmitter duty cycle in normal use		75%			
Transmitter power source					
V	DC	Nominal rated voltage	48 VDC via DC power supply		
Common power source for transmitter and receiver		V	yes no		

Test specification:		Section 2.1049, Occupied bandwidth	
Test procedure:		47 CFR, Section 2.1049	
Test mode:		Compliance	Verdict: PASS
Date:		11/16/2010	
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

7 Transmitter tests according to 47CFR part 27

7.1 Occupied bandwidth test

7.1.1 General

This test was performed to measure transmitter occupied bandwidth. Specification test limits are given in Table 7.1.1.

Table 7.1.1 Occupied bandwidth limits

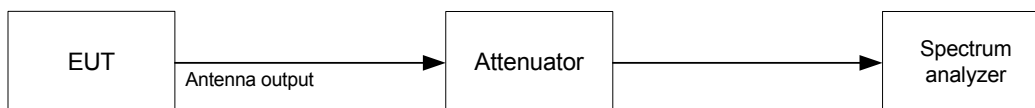
Assigned frequency, MHz	Modulation envelope reference points*, dBc	Maximum allowed bandwidth, kHz
2560.0 – 2632.0	26	NA

* - Modulation envelope reference points are provided in terms of attenuation below the unmodulated 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 the unmodulated carrier and the reference peak power level was measured.
- 7.1.2.3 The EUT was set to transmit the normally modulated carrier.
- 7.1.2.4 The transmitter occupied bandwidth was measured with spectrum analyzer as a frequency delta between the reference points on modulation envelope and provided in Table 7.1.2 and the associated plots.

Figure 7.1.1 Occupied bandwidth test setup



Test specification:		Section 2.1049, Occupied bandwidth	
Test procedure:		47 CFR, Section 2.1049	
Test mode:	Compliance	Verdict:	PASS
Date:	11/16/2010		
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Table 7.1.2 Occupied bandwidth test results

DETECTOR USED: Average
RESOLUTION BANDWIDTH: 30 kHz
VIDEO BANDWIDTH: 300 kHz
MODULATION ENVELOPE REFERENCE POINTS: 26 dBc
MODULATING SIGNAL: PRBS
EBW: 3.5 MHz

Carrier frequency, MHz	Occupied bandwidth, kHz	Limit, kHz	Margin, kHz	Verdict
QPSK 4 Mbps				
2563.000	3239.6	NA	NA	Pass
2593.000	3239.0	NA	NA	Pass
2629.000	3240.1	NA	NA	Pass
64QAM 14 Mbps				
2563.000	3234.7	NA	NA	Pass
2593.000	3234.6	NA	NA	Pass
2629.000	3234.4	NA	NA	Pass

DETECTOR USED: Average
RESOLUTION BANDWIDTH: 100 kHz
VIDEO BANDWIDTH: 1000 kHz
MODULATION ENVELOPE REFERENCE POINTS: 26 dBc
MODULATING SIGNAL: PRBS
EBW: 5 MHz

Carrier frequency, MHz	Occupied bandwidth, kHz	Limit, kHz	Margin, kHz	Verdict
QPSK 7 Mbps				
2563.000	4565.5	NA	NA	Pass
2593.000	4565.1	NA	NA	Pass
2629.000	4565.6	NA	NA	Pass
64QAM 23 Mbps				
2563.000	4551.8	NA	NA	Pass
2593.000	4551.0	NA	NA	Pass
2629.000	4551.9	NA	NA	Pass

Test specification:		Section 2.1049, Occupied bandwidth	
Test procedure:		47 CFR, Section 2.1049	
Test mode:	Compliance	Verdict:	PASS
Date:	11/16/2010		
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Table 7.1.2 Occupied bandwidth test results (continued)

DETECTOR USED: Average
RESOLUTION BANDWIDTH: 300 kHz
VIDEO BANDWIDTH: 3000 kHz
MODULATION ENVELOPE REFERENCE POINTS: 26 dBc
MODULATING SIGNAL: PRBS
EBW: 7 MHz

Carrier frequency, MHz	Occupied bandwidth, kHz	Limit, kHz	Margin, kHz	Verdict
QPSK 8 Mbps				
2566.000	6480.4	NA	NA	Pass
2596.000	6480.1	NA	NA	Pass
2626.000	6479.9	NA	NA	Pass
64QAM 28 Mbps				
2566.000	6421.9	NA	NA	Pass
2596.000	6423.2	NA	NA	Pass
2626.000	6422.1	NA	NA	Pass

DETECTOR USED: Average
RESOLUTION BANDWIDTH: 300 kHz
VIDEO BANDWIDTH: 3000 kHz
MODULATION ENVELOPE REFERENCE POINTS: 26 dBc
MODULATING SIGNAL: PRBS
EBW: 10 MHz

Carrier frequency, MHz	Occupied bandwidth, kHz	Limit, kHz	Margin, kHz	Verdict
QPSK 13 Mbps				
2566.000	9086.1	NA	NA	Pass
2596.000	9082.5	NA	NA	Pass
2626.000	9084.6	NA	NA	Pass
64QAM 46 Mbps				
2566.000	9084.1	NA	NA	Pass
2596.000	9034.2	NA	NA	Pass
2626.000	9033.2	NA	NA	Pass

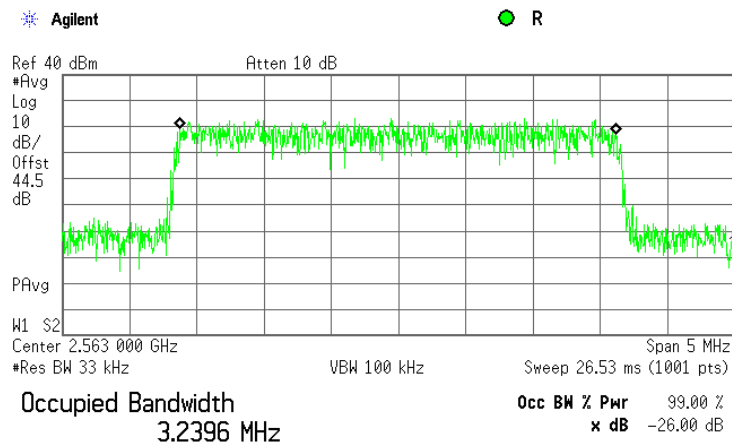
Reference numbers of test equipment used

HL 2780	HL 2953	HL 3439	HL 3442				
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Full description is given in Appendix A.

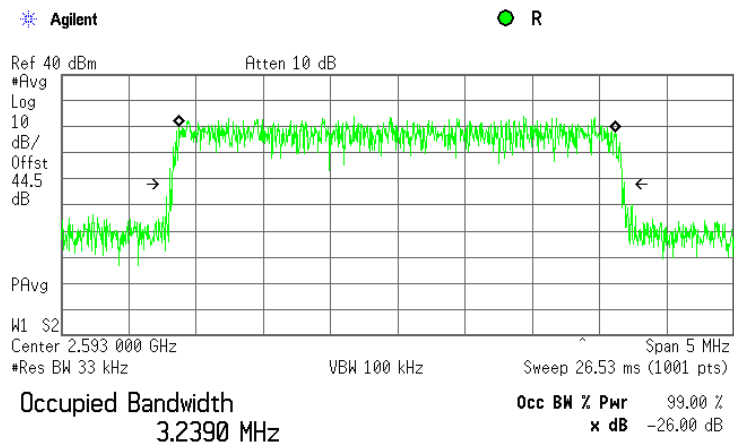
Test specification: Section 2.1049, Occupied bandwidth			
Test procedure: 47 CFR, Section 2.1049			
Test mode: Compliance	Verdict: PASS		
Date: 11/16/2010			
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Plot 7.1.1 Occupied bandwidth test results at mid frequency, 3.5 MHz EBW, QPSK



Transmit Freq Error -6.603 kHz
x dB Bandwidth 3.382 MHz*

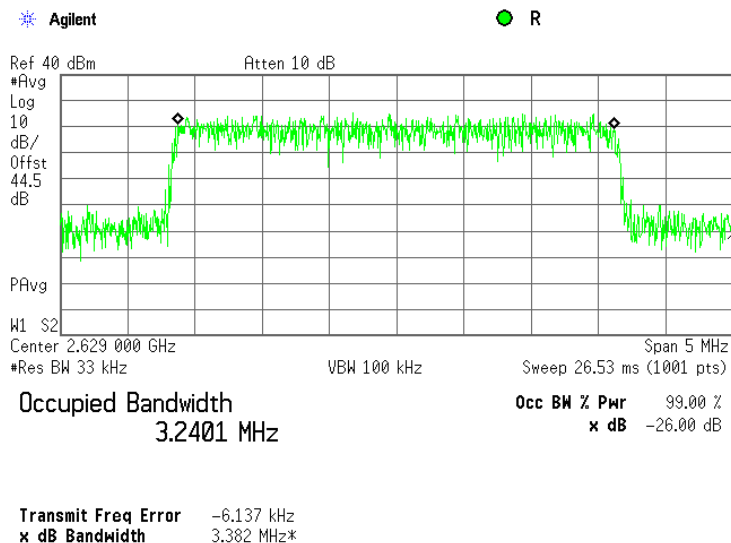
Plot 7.1.2 Occupied bandwidth test results at mid frequency, 3.5 MHz EBW, QPSK



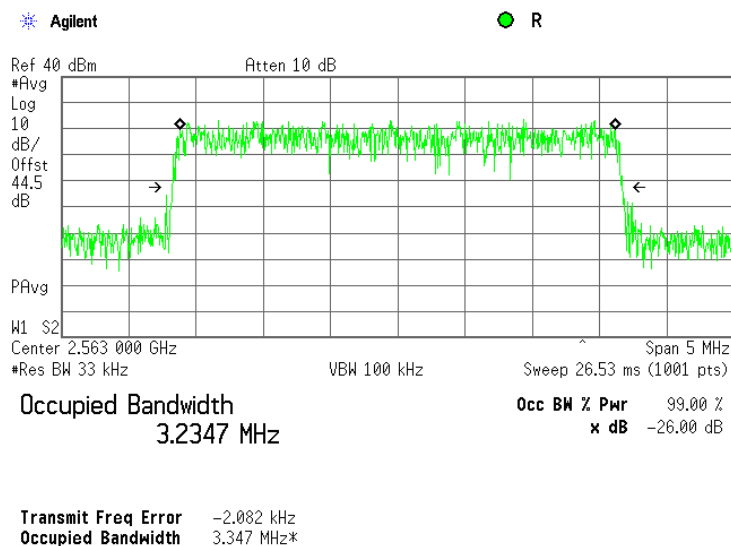
Transmit Freq Error -6.302 kHz
Occupied Bandwidth 3.382 MHz*

Test specification:		Section 2.1049, Occupied bandwidth	
Test procedure:		47 CFR, Section 2.1049	
Test mode:	Compliance	Verdict: PASS	
Date:	11/16/2010		
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Plot 7.1.3 Occupied bandwidth test results at high frequency, 3.5 MHz EBW, QPSK

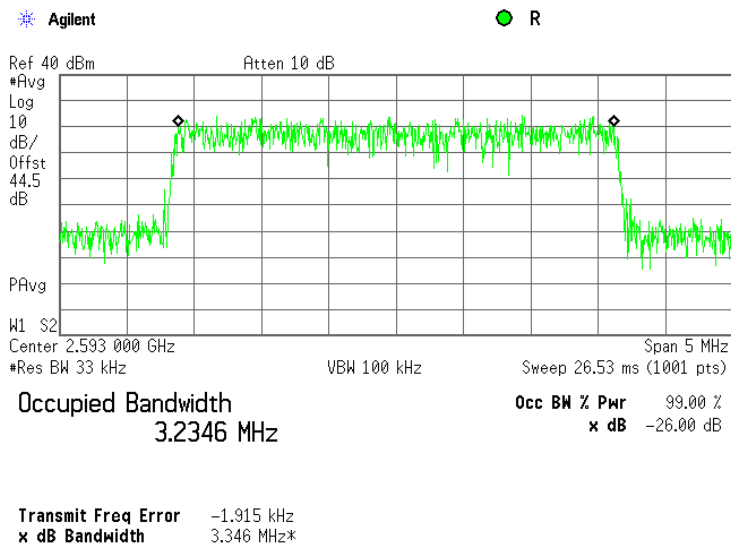


Plot 7.1.4 Occupied bandwidth test results at low frequency, 3.5 MHz EBW, 64QAM

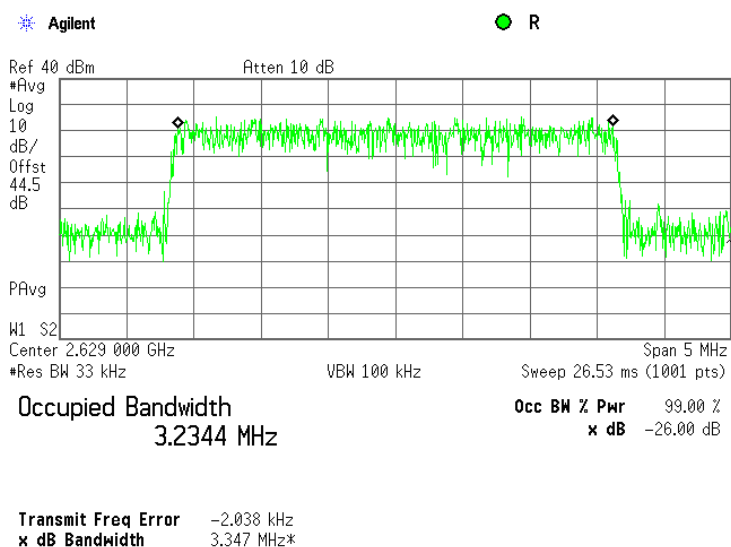


Test specification: Section 2.1049, Occupied bandwidth			
Test procedure: 47 CFR, Section 2.1049			
Test mode: Compliance	Verdict: PASS		
Date: 11/16/2010			
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Plot 7.1.5 Occupied bandwidth test results at mid frequency, 3.5 MHz EBW, 64QAM

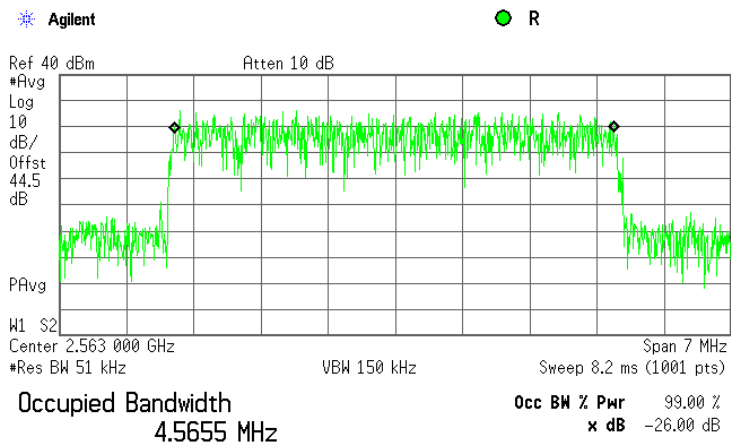


Plot 7.1.6 Occupied bandwidth test results at high frequency, 3.5 MHz EBW, 64QAM



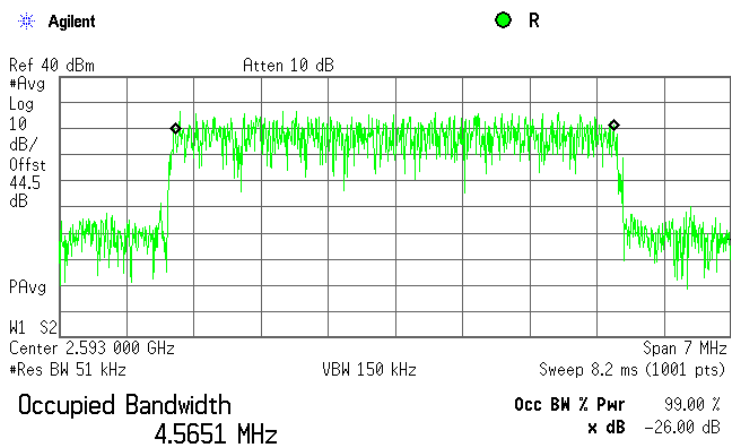
Test specification:	Section 2.1049, Occupied bandwidth		
Test procedure:	47 CFR, Section 2.1049		
Test mode:	Compliance	Verdict:	PASS
Date:	11/16/2010		
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Plot 7.1.7 Occupied bandwidth test results at low frequency, 5 MHz EBW, QPSK



Transmit Freq Error -10.199 kHz
x dB Bandwidth 4.737 MHz*

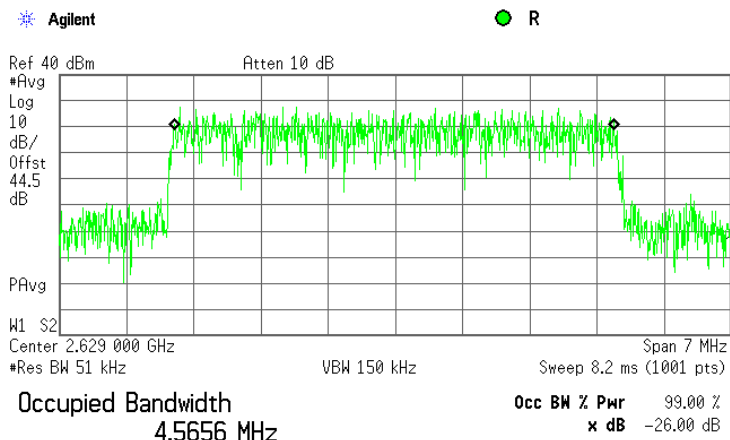
Plot 7.1.8 Occupied bandwidth test results at mid frequency, 5 MHz EBW, QPSK



Transmit Freq Error -9.597 kHz
x dB Bandwidth 4.736 MHz*

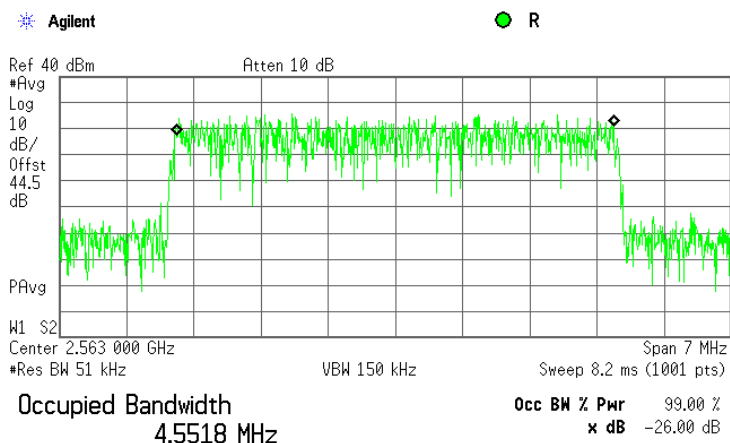
Test specification:		Section 2.1049, Occupied bandwidth	
Test procedure:		47 CFR, Section 2.1049	
Test mode:		Compliance	Verdict: PASS
Date:		11/16/2010	
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Plot 7.1.9 Occupied bandwidth test results at high frequency, 5 MHz EBW, QPSK



Transmit Freq Error -9.943 kHz
x dB Bandwidth 4.736 MHz*

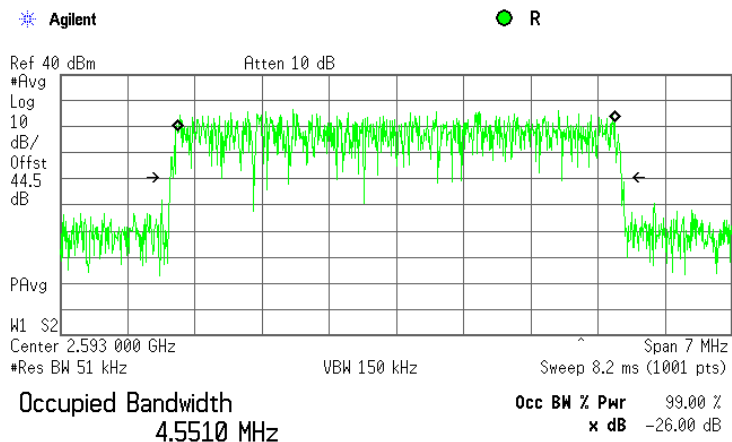
Plot 7.1.10 Occupied bandwidth test results at low frequency, 5 MHz EBW, 64QAM



Transmit Freq Error -1.907 kHz
x dB Bandwidth 4.702 MHz*

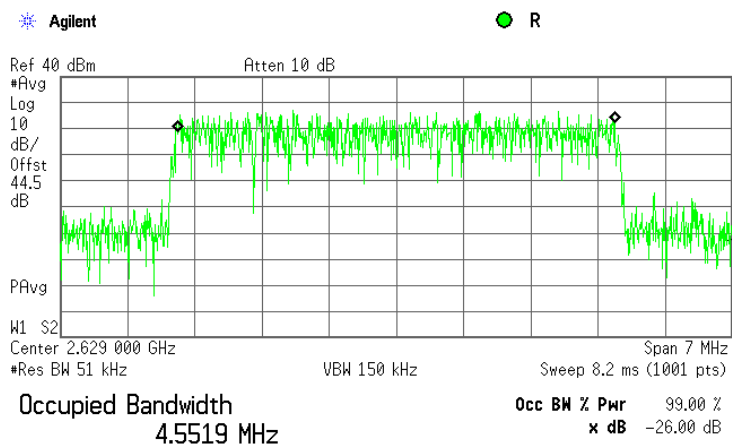
Test specification: Section 2.1049, Occupied bandwidth			
Test procedure: 47 CFR, Section 2.1049			
Test mode: Compliance		Verdict: PASS	
Date: 11/16/2010			
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Plot 7.1.11 Occupied bandwidth test results at mid frequency, 5 MHz EBW, 64QAM



Transmit Freq Error -1.373 kHz
Occupied Bandwidth 4.702 MHz*

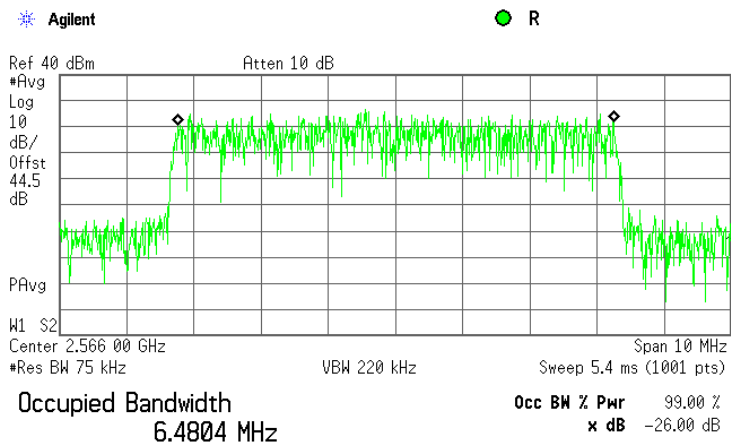
Plot 7.1.12 Occupied bandwidth test results at high frequency, 5 MHz EBW, 64QAM



Transmit Freq Error -1.893 kHz
x dB Bandwidth 4.703 MHz*

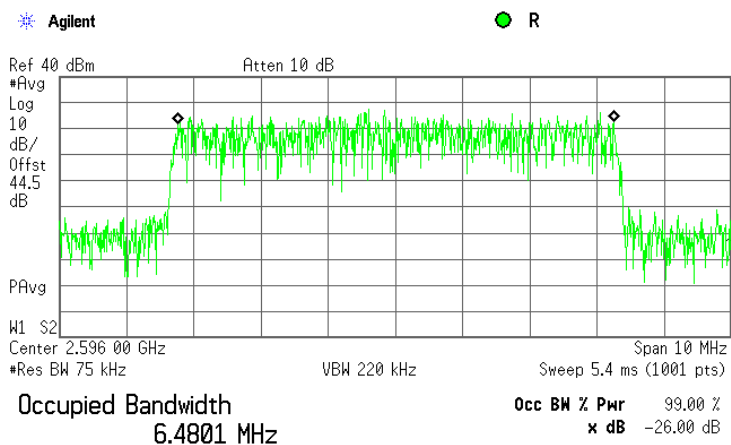
Test specification:		Section 2.1049, Occupied bandwidth	
Test procedure:		47 CFR, Section 2.1049	
Test mode:		Compliance	Verdict: PASS
Date:		11/16/2010	
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Plot 7.1.13 Occupied bandwidth test results at low frequency, 7 MHz EBW, QPSK



Transmit Freq Error 5.783 kHz
x dB Bandwidth 6.722 MHz*

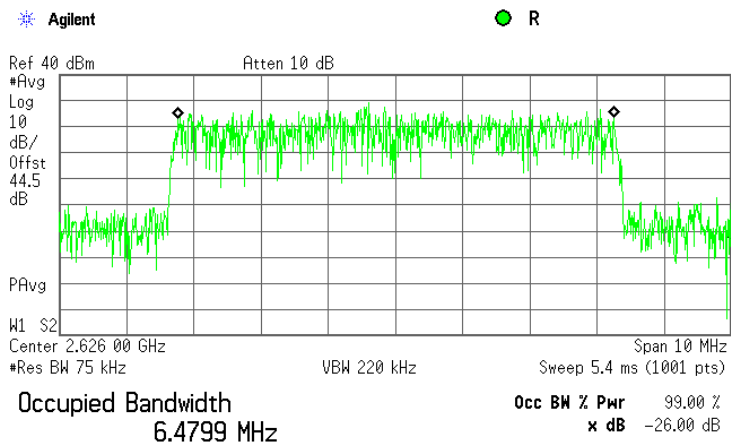
Plot 7.1.14 Occupied bandwidth test results at mid frequency, 7 MHz EBW, QPSK



Transmit Freq Error 8.215 kHz
x dB Bandwidth 6.721 MHz*

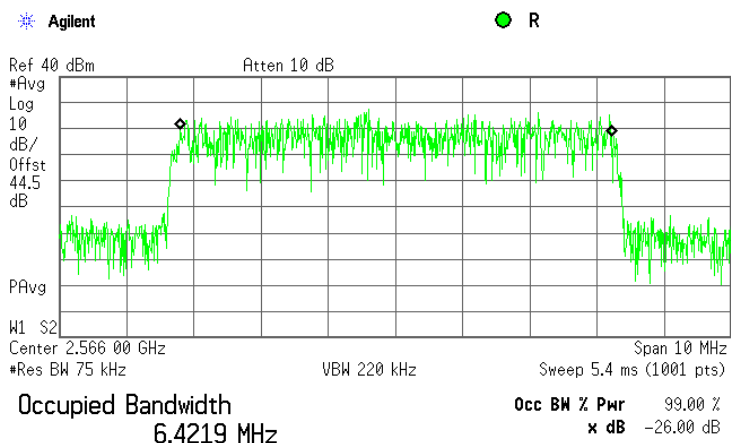
Test specification:	Section 2.1049, Occupied bandwidth		
Test procedure:	47 CFR, Section 2.1049		
Test mode:	Compliance	Verdict:	PASS
Date:	11/16/2010		
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Plot 7.1.15 Occupied bandwidth test results at high frequency, 7 MHz EBW, QPSK



Transmit Freq Error 9.084 kHz
x dB Bandwidth 6.719 MHz*

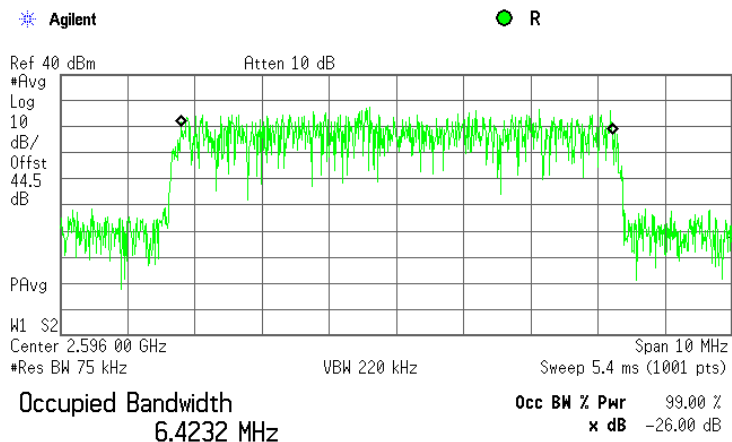
Plot 7.1.16 Occupied bandwidth test results at low frequency, 7 MHz EBW, 64QAM



Transmit Freq Error 6.702 kHz
x dB Bandwidth 6.723 MHz*

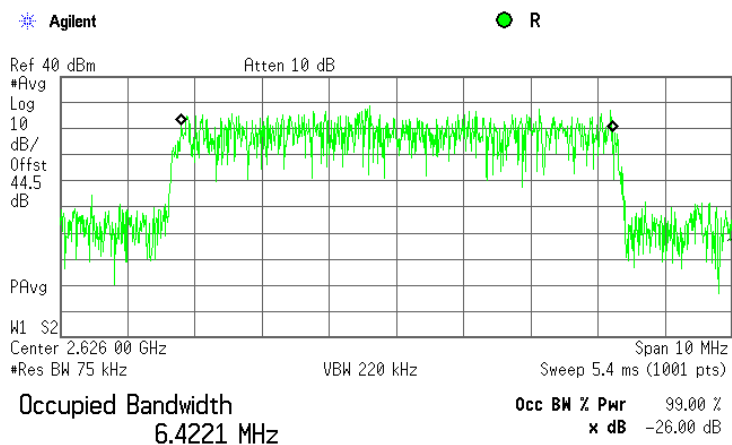
Test specification:	Section 2.1049, Occupied bandwidth		
Test procedure:	47 CFR, Section 2.1049		
Test mode:	Compliance	Verdict:	PASS
Date:	11/16/2010		
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Plot 7.1.17 Occupied bandwidth test results at mid frequency, 7 MHz EBW, 64QAM



Transmit Freq Error 6.974 kHz
x dB Bandwidth 6.726 MHz*

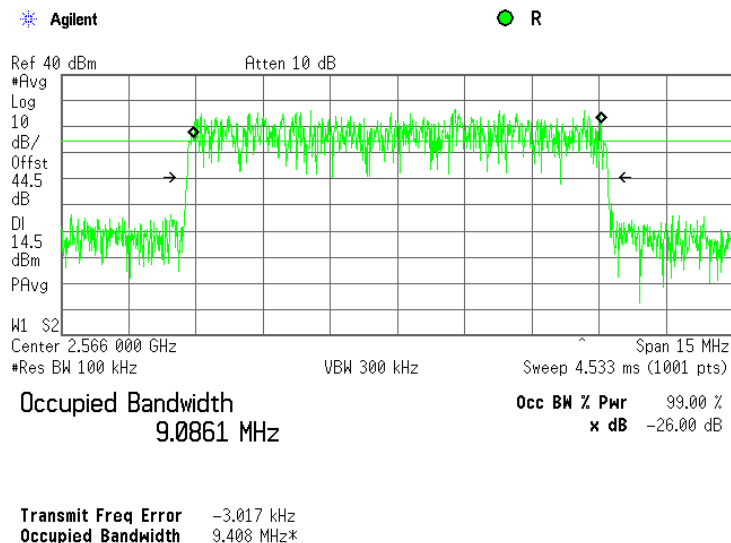
Plot 7.1.18 Occupied bandwidth test results at high frequency, 7 MHz EBW, 64QAM



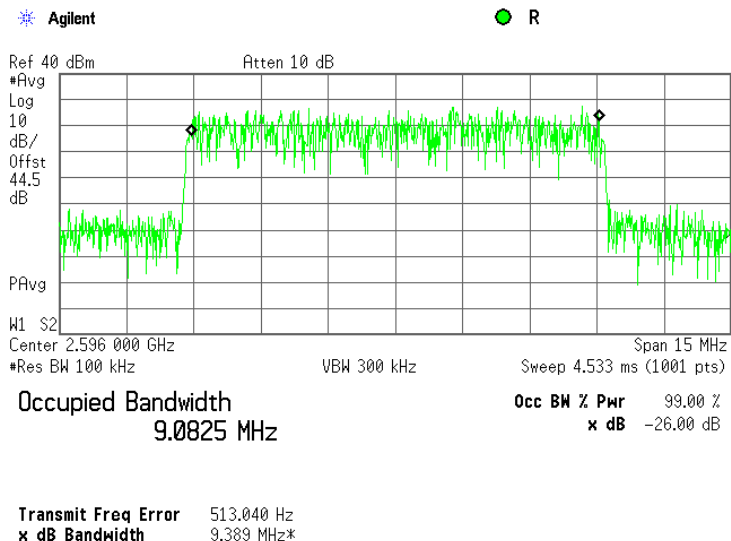
Transmit Freq Error 6.792 kHz
x dB Bandwidth 6.724 MHz*

Test specification: Section 2.1049, Occupied bandwidth			
Test procedure: 47 CFR, Section 2.1049			
Test mode: Compliance	Verdict: PASS		
Date: 11/16/2010			
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Plot 7.1.19 Occupied bandwidth test results at low frequency, 10 MHz EBW, QPSK

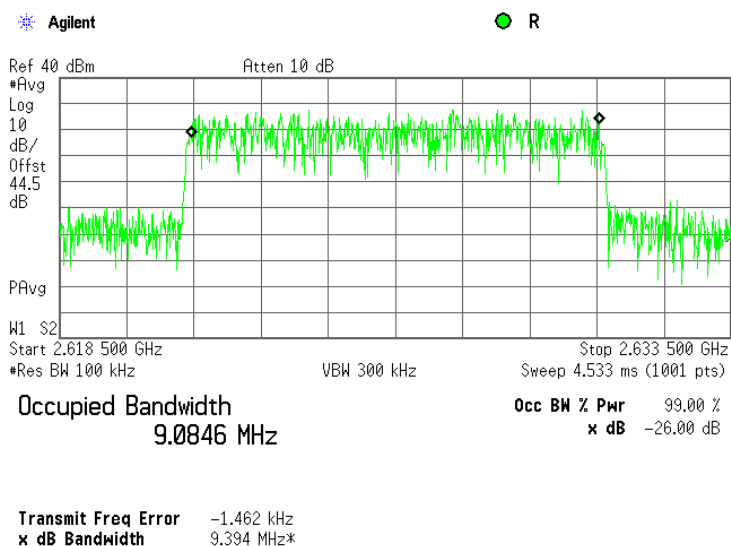


Plot 7.1.20 Occupied bandwidth test results at mid frequency, 10 MHz EBW, QPSK

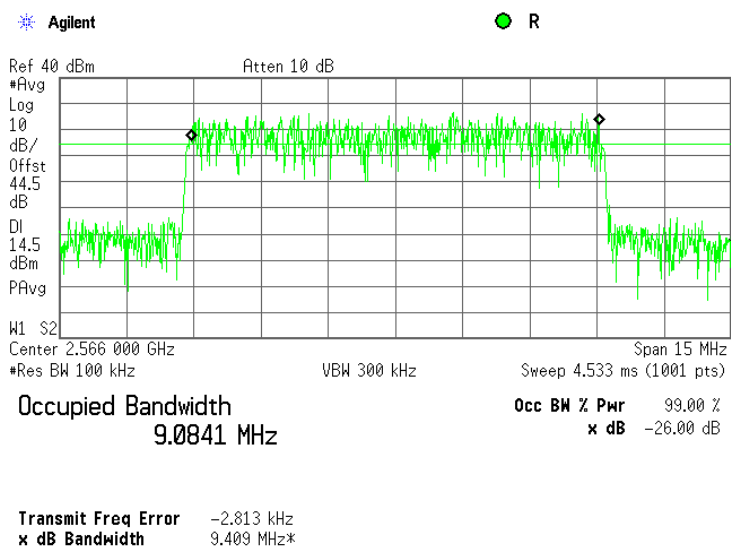


Test specification:		Section 2.1049, Occupied bandwidth	
Test procedure:		47 CFR, Section 2.1049	
Test mode:		Compliance	Verdict: PASS
Date:		11/16/2010	
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Plot 7.1.21 Occupied bandwidth test results at high frequency, 10 MHz EBW, QPSK

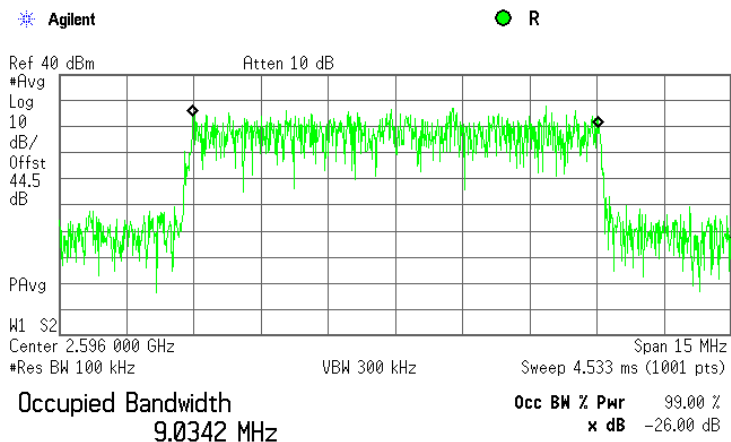


Plot 7.1.22 Occupied bandwidth test results at low frequency, 10 MHz EBW, 64QAM



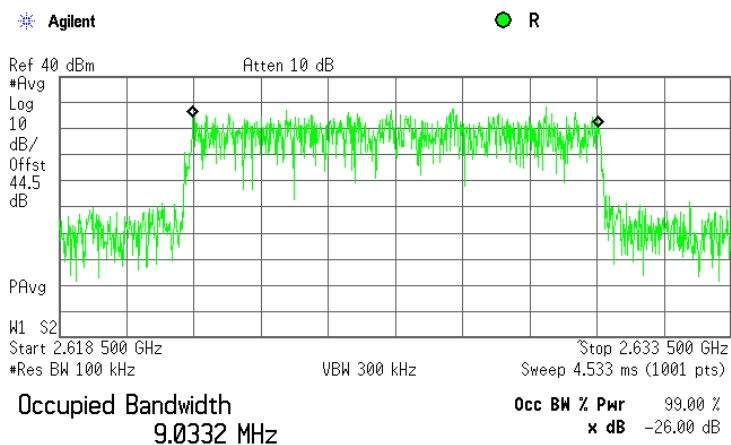
Test specification:		Section 2.1049, Occupied bandwidth	
Test procedure:		47 CFR, Section 2.1049	
Test mode:		Compliance	Verdict: PASS
Date:		11/16/2010	
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Plot 7.1.23 Occupied bandwidth test results at mid frequency, 10 MHz EBW, 64QAM



Transmit Freq Error 7.354 kHz
x dB Bandwidth 9.367 MHz*

Plot 7.1.24 Occupied bandwidth test results at high frequency, 10 MHz EBW, 64QAM



Transmit Freq Error 6.060 kHz
x dB Bandwidth 9.368 MHz*

Test specification:		Section 27.50(h), Peak output power	
Test procedure:		Section 27.50(h)	
Test mode:		Compliance	Verdict: PASS
Date:		11/16/2010	
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

7.2 Peak output power test

7.2.1 General

This test was performed to measure the peak output power at 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 peak output power, dBm
2560.0 – 2632.0	$63 + 10\log(X/Y) + 10\log(360/\text{beamwidth})$
	Maximum peak power density dBm/100 kHz
	$\text{EIRP} + 10\log(0.1/Y)$

*- X is the actual channel width in MHz, Y is either

- 1) 6 MHz if prior to transition or the station is in the MBS following transition or
- 2) 5.5 MHz if the station is in the LBS and UBS following transition, and
- 3) beamwidth is the total horizontal plane beam width of the individual transmitting antenna for the station or any sector measured at the half-power points.

7.2.2 Test procedure

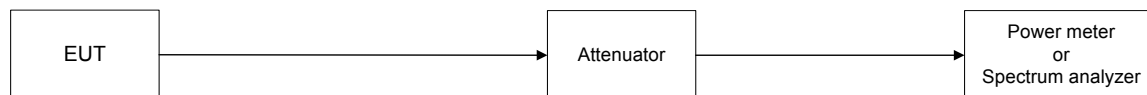
7.2.2.1 The EUT was set up as shown in Figure 7.2.1, energized and its proper operation was checked.

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

7.2.2.3 The peak output power was measured with power meter as provided in Table 7.2.2 to Table 7.2.5.

7.2.2.4 The power spectral density was measured with spectrum analyzer as provided in Table 7.2.6 to Table 7.2.9 and the associated plots.

Figure 7.2.1 Peak output power test setup



Test specification:		Section 27.50(h), Peak output power	
Test procedure:		Section 27.50(h)	
Test mode:		Compliance	Verdict: PASS
Date:		11/16/2010	
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Table 7.2.2 Peak output power test results

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATING SIGNAL: PRBS
TRANSMITTER OUTPUT POWER SETTINGS: Maximum
DUTY CYCLE: 59%
EBW: 3.5 MHz
TRANSMITTER OUTPUT POWER SETTINGS: 40 dBm
MAXIMUM ANTENNA GAIN: 18 dBi

Carrier frequency, MHz	Power Meter reading RF#1, dBm	Power Meter reading RF#2, dBm	Total RF power**, dBm	Antenna gain, dBi	Total EIRP*, dBm	Limit***, dBm	Margin, dB	Verdict
QPSK 4 Mbps								
2563.00	40.04	40.06	43.06	18.0	61.06	67.75	-6.69	Pass
2593.00	39.97	40.11	43.05	18.0	61.05	67.75	-6.70	Pass
2629.00	40.01	40.07	43.05	18.0	61.05	67.75	-6.70	Pass
64QAM 14 Mbps								
2563.00	39.87	40.03	42.96	18.0	60.98	67.75	-6.77	Pass
2593.00	39.85	40.04	42.96	18.0	60.96	67.75	-6.79	Pass
2629.00	40.02	40.07	43.06	18.0	61.07	67.75	-6.68	Pass

* - EIRP total, dBm = Total RF power**, dBm + Antenna Gain, dBi

** - Total RF power, dBm = $10 \log\{10^{[P(\text{dBm}, \text{RF}\#1)/10]} + 10^{[P(\text{dBm}, \text{RF}\#2)/10]}\}$

*** - See Table 7.2.11

MAXIMUM ANTENNA GAIN: 17 dBi

Carrier frequency, MHz	Power Meter reading RF#1, dBm	Power Meter reading RF#2, dBm	Total RF power**, dBm	Antenna gain, dBi	Total EIRP*, dBm	Limit***, dBm	Margin, dB	Verdict
QPSK 4 Mbps								
2563.00	40.04	40.06	43.06	17.0	60.06	66.34	-6.28	Pass
2593.00	39.97	40.11	43.05	17.0	60.05	66.34	-6.29	Pass
2629.00	40.01	40.07	43.05	17.0	60.05	66.34	-6.29	Pass
64QAM 14 Mbps								
2563.00	39.87	40.03	42.96	17.0	59.98	66.34	-6.36	Pass
2593.00	39.85	40.04	42.96	17.0	59.96	66.34	-6.38	Pass
2629.00	40.02	40.07	43.06	17.0	60.07	66.34	-6.27	Pass

* - EIRP total, dBm = Total RF power**, dBm + Antenna Gain, dBi

** - Total RF power, dBm = $10 \log\{10^{[P(\text{dBm}, \text{RF}\#1)/10]} + 10^{[P(\text{dBm}, \text{RF}\#2)/10]}\}$

*** - See Table 7.2.11

Test specification:	Section 27.50(h), Peak output power		
Test procedure:	Section 27.50(h)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/16/2010		
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Table 7.2.3 Peak output power test results

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATING SIGNAL: PRBS
TRANSMITTER OUTPUT POWER SETTINGS: Maximum
DUTY CYCLE: 59%
EBW: 5 MHz
TRANSMITTER OUTPUT POWER SETTINGS: 40 dBm
MAXIMUM ANTENNA GAIN: 18 dBi

Carrier frequency, MHz	Power Meter reading RF#1, dBm	Power Meter reading RF#2, dBm	Total RF power**, dBm	Antenna gain, dBi	Total EIRP*, dBm	Limit***, dBm	Margin, dB	Verdict
QPSK 7 Mbps								
2563.00	39.91	40.06	43.00	18.0	61.00	69.23	-8.23	Pass
2593.00	39.88	40.09	43.00	18.0	61.01	69.23	-8.22	Pass
2629.00	39.93	40.03	42.99	18.0	60.99	69.23	-8.24	Pass
64QAM 23 Mbps								
2563.00	39.91	40.13	43.03	18.0	61.05	69.23	-8.18	Pass
2593.00	39.95	40.02	43.00	18.0	61.00	69.23	-8.23	Pass
2629.00	39.98	40.07	43.04	18.0	61.05	69.23	-8.18	Pass

* - EIRP total, dBm = Total RF power**, dBm + Antenna Gain, dBi

** - Total RF power , dBm = $10 \log\{10^{[P(\text{dBm}, \text{RF}\#1)/10]} + 10^{[P(\text{dBm}, \text{RF}\#2)/10]}\}$

*** - See Table 7.2.11

MAXIMUM ANTENNA GAIN: 17 dBi

Carrier frequency, MHz	Power Meter reading RF#1, dBm	Power Meter reading RF#2, dBm	Total RF power**, dBm	Antenna gain, dBi	Total EIRP*, dBm	Limit***, dBm	Margin, dB	Verdict
QPSK 7 Mbps								
2563.00	39.91	40.06	43.00	17.0	60.00	67.82	-7.82	Pass
2593.00	39.88	40.09	43.00	17.0	60.01	67.82	-7.81	Pass
2629.00	39.93	40.03	42.99	17.0	59.99	67.82	-7.83	Pass
64QAM 23 Mbps								
2563.00	39.91	40.13	43.03	17.0	60.05	67.82	-7.77	Pass
2593.00	39.95	40.02	43.00	17.0	60.00	67.82	-7.82	Pass
2629.00	39.98	40.07	43.04	17.0	60.05	67.82	-7.77	Pass

* - EIRP total, dBm = Total RF power**, dBm + Antenna Gain, dBi

** - Total RF power , dBm = $10 \log\{10^{[P(\text{dBm}, \text{RF}\#1)/10]} + 10^{[P(\text{dBm}, \text{RF}\#2)/10]}\}$

*** - See Table 7.2.11

Test specification:		Section 27.50(h), Peak output power	
Test procedure:		Section 27.50(h)	
Test mode:		Compliance	Verdict: PASS
Date:		11/16/2010	
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Table 7.2.4 Peak output power test results

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATING SIGNAL: PRBS
TRANSMITTER OUTPUT POWER SETTINGS: Maximum
DUTY CYCLE: 59%
EBW: 7 MHz
TRANSMITTER OUTPUT POWER SETTINGS: 40 dBm
MAXIMUM ANTENNA GAIN: 18 dBi

- Carrier frequency, MHz	Power Meter reading RF#1, dBm	Power Meter reading RF#2, dBm	Total RF power**, dBm	Antenna gain, dBi	Total EIRP*, dBm	Limit***, dBm	Margin, dB	Verdict
QPSK 8 Mbps								
2566.00	39.79	39.93	42.87	18.0	60.87	67.71	-6.84	Pass
2596.00	39.93	40.02	42.99	18.0	61.00	67.72	-6.71	Pass
2626.00	40.04	40.13	43.10	18.0	61.10	67.71	-6.62	Pass
64QAM 28 Mbps								
2566.00	39.85	39.88	42.88	18.0	60.89	67.71	-6.82	Pass
2596.00	39.93	40.02	42.99	18.0	60.99	67.72	-6.73	Pass
2626.00	40.12	40.41	43.28	18.0	61.29	67.71	-6.42	Pass

* - EIRP total, dBm = Total RF power**, dBm + Antenna Gain, dBi

** - Total RF power, dBm = $10 \log\{10^{[P(\text{dBm}, \text{RF}\#1)/10]} + 10^{[P(\text{dBm}, \text{RF}\#2)/10]}\}$

*** - See Table 7.2.11

MAXIMUM ANTENNA GAIN: 17 dBi

- Carrier frequency, MHz	Power Meter reading RF#1, dBm	Power Meter reading RF#2, dBm	Total RF power**, dBm	Antenna gain, dBi	Total EIRP*, dBm	Limit***, dBm	Margin, dB	Verdict
QPSK 8 Mbps								
2566.00	39.79	39.93	42.87	17.0	59.87	66.31	-6.43	Pass
2596.00	39.93	40.02	42.99	17.0	60.00	66.31	-6.31	Pass
2626.00	40.04	40.13	43.10	17.0	60.10	66.31	-6.21	Pass
64QAM 28 Mbps								
2566.00	39.85	39.88	42.88	17.0	59.89	66.31	-6.41	Pass
2596.00	39.93	40.02	42.99	17.0	59.99	66.31	-6.32	Pass
2626.00	40.12	40.41	43.28	17.0	60.29	66.31	-6.01	Pass

* - EIRP total, dBm = Total RF power**, dBm + Antenna Gain, dBi

** - Total RF power, dBm = $10 \log\{10^{[P(\text{dBm}, \text{RF}\#1)/10]} + 10^{[P(\text{dBm}, \text{RF}\#2)/10]}\}$

*** - See Table 7.2.11

Test specification:		Section 27.50(h), Peak output power	
Test procedure:		Section 27.50(h)	
Test mode:		Compliance	Verdict: PASS
Date:		11/16/2010	
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Table 7.2.5 Peak output power test results

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATING SIGNAL: PRBS
TRANSMITTER OUTPUT POWER SETTINGS: Maximum
DUTY CYCLE: 59%
EBW: 10 MHz
MAXIMUM ANTENNA GAIN: 18 dBi

- Carrier frequency, MHz	Power Meter reading RF#1, dBm	Power Meter reading RF#2, dBm	Total RF power**, dBm	Antenna gain, dBi	Total EIRP*, dBm	Limit***, dBm	Margin, dB	Verdict
QPSK 13 Mbps								
2566.00	39.59	39.84	42.73	18.0	60.73	69.22	-8.49	Pass
2596.00	39.96	39.98	42.98	18.0	61.00	69.20	-8.20	Pass
2626.00	40.03	39.97	43.01	18.0	61.01	69.20	-8.19	Pass
64QAM 46 Mbps								
2566.00	39.85	39.88	42.88	18.0	60.89	69.22	-8.33	Pass
2596.00	39.93	40.02	42.99	18.0	60.99	69.20	-8.21	Pass
2626.00	40.12	40.41	43.28	18.0	61.29	69.20	-7.90	Pass

* - EIRP total, dBm = Total RF power**, dBm + Antenna Gain, dBi

** - Total RF power, dBm = $10 \log\{10^{[P(\text{dBm}, \text{RF}\#1)/10]} + 10^{[P(\text{dBm}, \text{RF}\#2)/10]}\}$

*** - See Table 7.2.11

MAXIMUM ANTENNA GAIN: 17 dBi

- Carrier frequency, MHz	Power Meter reading RF#1, dBm	Power Meter reading RF#2, dBm	Total RF power**, dBm	Antenna gain, dBi	Total EIRP*, dBm	Limit***, dBm	Margin, dB	Verdict
QPSK 13 Mbps								
2566.00	39.59	39.84	42.73	17.0	59.73	67.81	-8.08	Pass
2596.00	39.96	39.98	42.98	17.0	60.00	67.79	-7.79	Pass
2626.00	40.03	39.97	43.01	17.0	60.01	67.79	-7.78	Pass
64QAM 46 Mbps								
2566.00	39.85	39.88	42.88	17.0	59.89	67.81	-7.92	Pass
2596.00	39.93	40.02	42.99	17.0	59.99	67.79	-7.80	Pass
2626.00	40.12	40.41	43.28	17.0	60.29	67.79	-7.49	Pass

* - EIRP total, dBm = Total RF power**, dBm + Antenna Gain, dBi

** - Total RF power, dBm = $10 \log\{10^{[P(\text{dBm}, \text{RF}\#1)/10]} + 10^{[P(\text{dBm}, \text{RF}\#2)/10]}\}$

*** - See Table 7.2.11

Reference numbers of test equipment used

HL 3301	HL 3302	HL 3768					
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Full description is given in Appendix A.

Test specification:	Section 27.50(h), Peak output power		
Test procedure:	Section 27.50(h)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/16/2010		
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Table 7.2.6 Power spectral density test results

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
RESOLUTION BANDWIDTH: 100 kHz
VIDEO BANDWIDTH: 1000 kHz
MODULATING SIGNAL: PRBS
CHANNEL BANDWIDTH: 3.5 MHz
TRANSMITTER OUTPUT POWER SETTINGS: 40 dBm
DUTY CYCLE: 100%
MAXIMUM ANTENNA GAIN: 18 dBi

- Carrier frequency, MHz	SA reading, RF #1 dBm/100kHz	SA reading, RF #2 dBm/100kHz	SA reading PSD**, dBm/100kHz	Antenna gain, dBi	Total PSD*, dBm/100kHz	Limit***, dBm	Margin, dB	Verdict
QPSK 4 Mbps								
2563.00	26.63	26.06	29.36	18.00	47.36	49.97	-2.60	Pass
2593.00	26.19	26.62	29.42	18.00	47.42	49.97	-2.55	Pass
2629.00	26.95	27.34	30.16	18.00	48.16	49.97	-1.81	Pass
64QAM 14 Mbps								
2563.00	27.16	26.38	29.80	18.00	47.81	49.97	-2.16	Pass
2593.00	26.70	27.10	29.91	18.00	47.91	49.97	-2.05	Pass
2629.00	27.93	27.65	30.80	18.00	48.82	49.97	-1.15	Pass

* - Total PSD, dBm/100kHz = SA reading***, dBm/100kHz + Antenna Gain, dBi

** - SA reading, dBm/100kHz = $10 \log\{10^{[P(\text{dBm}, \text{RF}\#1)/10]} + 10^{[P(\text{dBm}, \text{RF}\#2)/10]}\}$

*** - See Table 7.2.12

MAXIMUM ANTENNA GAIN: 17 dBi

- Carrier frequency, MHz	SA reading, RF #1 dBm/100kHz	SA reading, RF #2 dBm/100kHz	SA reading PSD**, dBm/100kHz	Antenna gain, dBi	Total PSD*, dBm/100kHz	Limit***, dBm	Margin, dB	Verdict
QPSK 4 Mbps								
2563.00	26.63	26.06	29.36	17.0	46.36	48.56	-2.19	Pass
2593.00	26.19	26.62	29.42	17.0	46.42	48.56	-2.14	Pass
2629.00	26.95	27.34	30.16	17.0	47.16	48.56	-1.40	Pass
64QAM 14 Mbps								
2563.00	27.16	26.38	29.80	17.0	46.81	48.56	-1.74	Pass
2593.00	26.70	27.10	29.91	17.0	46.91	48.56	-1.64	Pass
2629.00	27.93	27.65	30.80	17.0	47.82	48.56	-0.74	Pass

* - Total PSD, dBm/100kHz = SA reading***, dBm/100kHz + Antenna Gain, dBi

** - SA reading, dBm/100kHz = $10 \log\{10^{[P(\text{dBm}, \text{RF}\#1)/10]} + 10^{[P(\text{dBm}, \text{RF}\#2)/10]}\}$

*** - See Table 7.2.12

Test specification:		Section 27.50(h), Peak output power	
Test procedure:		Section 27.50(h)	
Test mode:	Compliance	Verdict:	PASS
Date:	11/16/2010		
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Table 7.2.7 Power spectral density test results

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
RESOLUTION BANDWIDTH: 100 kHz
VIDEO BANDWIDTH: 1000 kHz
MODULATING SIGNAL: PRBS
CHANNEL BANDWIDTH: 5 MHz
TRANSMITTER OUTPUT POWER SETTINGS: 40 dBm
DUTY CYCLE: 100%
MAXIMUM ANTENNA GAIN: 18 dBi

- Carrier frequency, MHz	SA reading, RF #1 dBm/100kHz	SA reading, RF #2 dBm/100kHz	SA reading PSD**, dBm/100kHz	Antenna gain, dBi	Total PSD*, dBm/100kHz	Limit***, dBm	Margin, dB	Verdict
QPSK 7 Mbps								
2563.00	23.45	24.15	26.82	18.00	44.82	51.45	-6.62	Pass
2593.00	23.97	24.86	27.45	18.00	45.46	51.45	-5.98	Pass
2629.00	25.30	25.80	28.57	18.00	46.57	51.45	-4.88	Pass
64QAM 23 Mbps								
2563.00	23.81	24.50	27.18	18.00	45.19	51.45	-6.25	Pass
2593.00	24.49	25.25	27.90	18.00	45.90	51.45	-5.55	Pass
2629.00	25.63	26.15	28.91	18.00	46.92	51.45	-4.53	Pass

* - Total PSD, dBm/100kHz = SA reading***, dBm/100kHz + Antenna Gain, dBi

** - SA reading, dBm/100kHz = $10 \log\{10^{[P(\text{dBm}, \text{RF}\#1)/10]} + 10^{[P(\text{dBm}, \text{RF}\#2)/10]}\}$

*** - See Table 7.2.12

MAXIMUM ANTENNA GAIN: 17 dBi

- Carrier frequency, MHz	SA reading, RF #1 dBm/100kHz	SA reading, RF #2 dBm/100kHz	SA reading PSD**, dBm/100kHz	Antenna gain, dBi	Total PSD*, dBm/100kHz	Limit***, dBm	Margin, dB	Verdict
QPSK 7 Mbps								
2563.00	23.45	24.15	26.82	17.0	43.82	50.04	-6.22	Pass
2593.00	23.97	24.86	27.45	17.0	44.46	50.04	-5.57	Pass
2629.00	25.30	25.80	28.57	17.0	45.57	50.04	-4.47	Pass
64QAM 23 Mbps								
2563.00	23.81	24.50	27.18	17.0	44.19	50.04	-5.84	Pass
2593.00	24.49	25.25	27.90	17.0	44.90	50.04	-5.14	Pass
2629.00	25.63	26.15	28.91	17.0	45.92	50.04	-4.12	Pass

* - Total PSD, dBm/100kHz = SA reading***, dBm/100kHz + Antenna Gain, dBi

** - SA reading, dBm/100kHz = $10 \log\{10^{[P(\text{dBm}, \text{RF}\#1)/10]} + 10^{[P(\text{dBm}, \text{RF}\#2)/10]}\}$

*** - See Table 7.2.12

Test specification:		Section 27.50(h), Peak output power	
Test procedure:		Section 27.50(h)	
Test mode:	Compliance	Verdict:	PASS
Date:	11/16/2010		
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Table 7.2.8 Power spectral density test results

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
RESOLUTION BANDWIDTH: 100 kHz
VIDEO BANDWIDTH: 1000 kHz
MODULATING SIGNAL: PRBS
CHANNEL BANDWIDTH: 7 MHz
TRANSMITTER OUTPUT POWER SETTINGS: 40 dBm
DUTY CYCLE: 100%
MAXIMUM ANTENNA GAIN: 18 dBi

- Carrier frequency, MHz	SA reading, RF #1 dBm/100kHz	SA reading, RF #2 dBm/100kHz	SA reading PSD**, dBm/100kHz	Antenna gain, dBi	Total PSD*, dBm/100kHz	Limit***, dBm	Margin, dB	Verdict
QPSK 8 Mbps								
2566.00	22.67	23.45	26.09	18.00	44.09	46.92	-2.84	Pass
2596.00	23.32	23.68	26.51	18.00	44.53	46.92	-2.39	Pass
2626.00	24.44	24.70	27.58	18.00	45.58	46.92	-1.34	Pass
64QAM 28 Mbps								
2566.00	22.92	23.66	26.32	18.00	44.33	46.92	-2.59	Pass
2596.00	23.71	23.77	26.75	18.00	44.75	46.92	-2.17	Pass
2626.00	24.66	24.90	27.79	18.00	45.81	46.92	-1.12	Pass

* - Total PSD, dBm/100kHz = SA reading***, dBm/100kHz + Antenna Gain, dBi

** - SA reading, dBm/100kHz = $10 \log\{10^{[P(\text{dBm}, \text{RF}\#1)/10]} + 10^{[P(\text{dBm}, \text{RF}\#2)/10]}\}$

*** - See Table 7.2.12

MAXIMUM ANTENNA GAIN: 17 dBi

- Carrier frequency, MHz	SA reading, RF #1 dBm/100kHz	SA reading, RF #2 dBm/100kHz	SA reading PSD**, dBm/100kHz	Antenna gain, dBi	Total PSD*, dBm/100kHz	Limit***, dBm	Margin, dB	Verdict
QPSK 8 Mbps								
2566.00	22.67	23.45	26.09	17.0	43.09	45.51	-2.43	Pass
2596.00	23.32	23.68	26.51	17.0	43.53	45.51	-1.98	Pass
2626.00	24.44	24.70	27.58	17.0	44.58	45.51	-0.93	Pass
64QAM 28 Mbps								
2566.00	22.92	23.66	26.32	17.0	43.33	45.51	-2.18	Pass
2596.00	23.71	23.77	26.75	17.0	43.75	45.51	-1.76	Pass
2626.00	24.66	24.90	27.79	17.0	44.81	45.51	-0.71	Pass

* - Total PSD, dBm/100kHz = SA reading***, dBm/100kHz + Antenna Gain, dBi

** - SA reading, dBm/100kHz = $10 \log\{10^{[P(\text{dBm}, \text{RF}\#1)/10]} + 10^{[P(\text{dBm}, \text{RF}\#2)/10]}\}$

*** - See Table 7.2.12

Test specification:		Section 27.50(h), Peak output power	
Test procedure:		Section 27.50(h)	
Test mode:		Compliance	Verdict: PASS
Date:		11/16/2010	
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Table 7.2.9 Power spectral density test results

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
RESOLUTION BANDWIDTH: 100 kHz
VIDEO BANDWIDTH: 300 kHz
MODULATING SIGNAL: PRBS
CHANNEL BANDWIDTH: 10 MHz
TRANSMITTER OUTPUT POWER SETTINGS: 40 dBm
DUTY CYCLE: 100%
MAXIMUM ANTENNA GAIN: 18 dBi

- Carrier frequency, MHz	SA reading, RF #1 dBm/100kHz	SA reading, RF #2 dBm/100kHz	SA reading PSD**, dBm/100kHz	Antenna gain, dBi	Total PSD*, dBm/100kHz	Limit***, dBm	Margin, dB	Verdict
QPSK 14 Mbps								
2566.00	21.14	21.23	24.20	18.00	42.20	48.43	-6.23	Pass
2596.00	21.51	21.49	24.51	18.00	42.53	48.41	-5.88	Pass
2626.00	22.12	21.99	25.07	18.00	43.07	48.40	-5.34	Pass
64QAM 46 Mbps								
2566.00	21.59	21.65	24.63	18.00	42.65	48.43	-5.78	Pass
2596.00	21.90	21.93	24.93	18.00	42.93	48.41	-5.48	Pass
2626.00	22.63	22.48	25.57	18.00	43.58	48.40	-4.82	Pass

* - Total PSD, dBm/100kHz = SA reading***, dBm/100kHz + Antenna Gain, dBi

** - SA reading, dBm/100kHz = $10 \log\{10^{[P(\text{dBm}, \text{RF}\#1)/10]} + 10^{[P(\text{dBm}, \text{RF}\#2)/10]}\}$

*** - See Table 7.2.12

MAXIMUM ANTENNA GAIN: 17 dBi

- Carrier frequency, MHz	SA reading, RF #1 dBm/100kHz	SA reading, RF #2 dBm/100kHz	SA reading PSD**, dBm/100kHz	Antenna gain, dBi	Total PSD*, dBm/100kHz	Limit***, dBm	Margin, dB	Verdict
QPSK 14 Mbps								
2566.00	21.14	21.23	24.20	17.0	41.20	47.02	-5.82	Pass
2596.00	21.51	21.49	24.51	17.0	41.53	47.00	-5.47	Pass
2626.00	22.12	21.99	25.07	17.0	42.07	47.00	-4.93	Pass
64QAM 46 Mbps								
2566.00	21.59	21.65	24.63	17.0	41.65	47.02	-5.37	Pass
2596.00	21.90	21.93	24.93	17.0	41.93	47.00	-5.07	Pass
2626.00	22.63	22.48	25.57	17.0	42.58	47.00	-4.41	Pass

* - Total PSD, dBm/100kHz = SA reading***, dBm/100kHz + Antenna Gain, dBi

** - SA reading, dBm/100kHz = $10 \log\{10^{[P(\text{dBm}, \text{RF}\#1)/10]} + 10^{[P(\text{dBm}, \text{RF}\#2)/10]}\}$

*** - See Table 7.2.12

Reference numbers of test equipment used

HL 2909	HL 3437	HL 3442	HL 3559				
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Full description is given in Appendix A.

Test specification:		Section 27.50(h), Peak output power	
Test procedure:		Section 27.50(h)	
Test mode:		Compliance	Verdict: PASS
Date:		11/16/2010	
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Table 7.2.10 Pre-transition frequency channels assignment

Channel	Channel BW, MHz	Peak power limit, dBm	Power density limit, dBm/100kHz
3.5 MHz Single Channel			
2563 MHz: EBS Ch. C2	3234.7	63+10log(OBW/6.0)+10log(360/beamwidth)	EIRP+10log(0.1/6.0)
2593.0 MHz: EBS Ch. D4	3234.6	63+10log(OBW/6.0)+10log(360/beamwidth)	EIRP+10log(0.1/6.0)
2629 MHz: BRS Ch. F3	3234.4	63+10log(OBW/6.0)+10log(360/beamwidth)	EIRP+10log(0.1/6.0)
5 MHz Single Channel			
2563 MHz: EBS Ch. C2	4551.8	63+10log(OBW/6.0)+10log(360/beamwidth)	EIRP+10log(0.1/6.0)
2593.0 MHz: EBS Ch. D4	4551.0	63+10log(OBW/6.0)+10log(360/beamwidth)	EIRP+10log(0.1/6.0)
2629 MHz: BRS Ch. F3	4551.9	63+10log(OBW/6.0)+10log(360/beamwidth)	EIRP+10log(0.1/6.0)
7 MHz Dual Channel			
2566.0 MHz: EBS Ch. C2+ EBS Ch. D2	6421.9	63+10log(OBW/12.0)+10log(360/beamwidth)	EIRP+10log(0.1/12.0)
2596.0 MHz: EBS Ch. D4+ BRS Ch. E1	6423.2	63+10log(OBW/12.0)+10log(360/beamwidth)	EIRP+10log(0.1/12.0)
2626.0 MHz: BRS Ch. E3+ BRS Ch. F3	6422.1	63+10log(OBW/12.0)+10log(360/beamwidth)	EIRP+10log(0.1/12.0)
10 MHz Dual Channel			
2566.0 MHz: EBS Ch. C2+ EBS Ch. D2	9084.1	63+10log(OBW/12.0)+10log(360/beamwidth)	EIRP+10log(0.1/12.0)
2596.0 MHz: EBS Ch. D4+ BRS Ch. E1	9034.2	63+10log(OBW/12.0)+10log(360/beamwidth)	EIRP+10log(0.1/12.0)
2626.0 MHz: BRS Ch. E3+ BRS Ch. F3	9033.2	63+10log(OBW/12.0)+10log(360/beamwidth)	EIRP+10log(0.1/12.0)

Test specification:	Section 27.50(h), Peak output power		
Test procedure:	Section 27.50(h)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/16/2010		
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Table 7.2.11 EIRP limits

Channel	Channel BW, MHz	EIRP limit, dBm	
		17 dBi, 90° beamwidth	18 dBi, 65° beamwidth
3.5 MHz Single Channel			
2563 MHz: EBS Ch. C2	6.0	66.34	67.75
2593.0 MHz: EBS Ch. D4	6.0	66.34	67.75
2629 MHz: BRS Ch. F3	6.0	66.34	67.75
5 MHz Single Channel			
2563 MHz: EBS Ch. C2	6.0	67.82	69.23
2593.0 MHz: EBS Ch. D4	6.0	67.82	69.23
2629 MHz: BRS Ch. F3	6.0	67.82	69.23
7 MHz Dual Channel			
2566.0 MHz: EBS Ch. C2+ EBS Ch. D2	12.0	66.31	67.71
2596.0 MHz EBS Ch. D4+ BRS Ch. E1	12.0	66.31	67.72
2626.0 MHz BRS Ch. E3+ BRS Ch. F3	12.0	66.31	67.71
10 MHz Dual Channel			
2566.0 MHz: EBS Ch. C2+ EBS Ch. D2	12.0	67.81	69.22
2596.0 MHz EBS Ch. D4+ BRS Ch. E1	12.0	67.79	69.20
2626.0 MHz BRS Ch. E3+ BRS Ch. F3	12.0	67.79	69.20

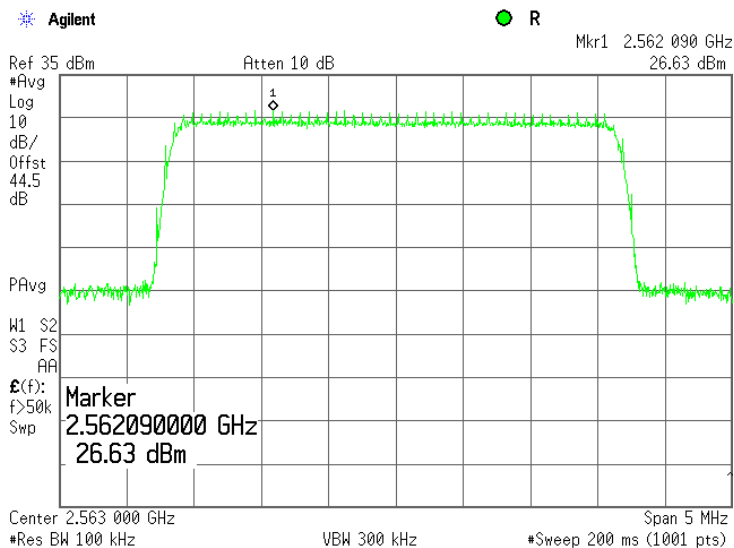
Test specification:		Section 27.50(h), Peak output power	
Test procedure:		Section 27.50(h)	
Test mode:	Compliance	Verdict: PASS	
Date:	11/16/2010		
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Table 7.2.12 Power spectral density limits

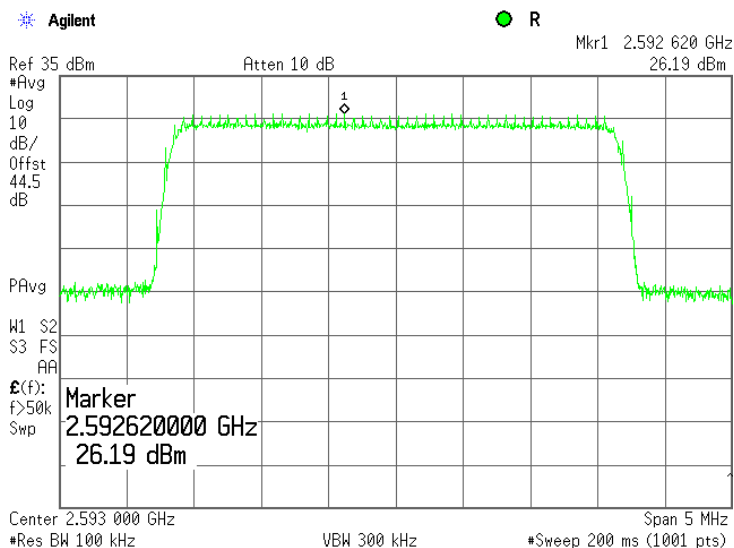
Channel	Channel BW, MHz	Power spectral density, dBm/100kHz	
		17 dBi, 90° beamwidth	18 dBi, 65° beamwidth
3.5 MHz Single Channel			
2563 MHz: EBS Ch. C2	6.0	48.56	49.97
2593.0 MHz: EBS Ch. D4	6.0	48.56	49.97
2629 MHz: BRS Ch. F3	6.0	48.56	49.97
5 MHz Single Channel			
2563 MHz: EBS Ch. C2	6.0	50.04	51.45
2593.0 MHz: EBS Ch. D4	6.0	50.04	51.45
2629 MHz: BRS Ch. F3	6.0	50.04	51.45
7 MHz Dual Channel			
2566.0 MHz: EBS Ch. C2+ EBS Ch. D2	12.0	45.51	46.92
2596.0 MHz EBS Ch. D4+ BRS Ch. E1	12.0	45.51	46.92
2626.0 MHz BRS Ch. E3+ BRS Ch. F3	12.0	45.51	46.92
10 MHz Dual Channel			
2566.0 MHz: EBS Ch. C2+ EBS Ch. D2	12.0	47.02	48.43
2596.0 MHz EBS Ch. D4+ BRS Ch. E1	12.0	47.00	48.41
2626.0 MHz BRS Ch. E3+ BRS Ch. F3	12.0	47.00	48.40

Test specification:	Section 27.50(h), Peak output power		
Test procedure:	Section 27.50(h)		
Test mode:	Compliance	Verdict: PASS	
Date:	11/16/2010		
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Plot 7.2.1 Power spectral density test results at low frequency, QPSK, 3.5 MHz EBW, Antenna 1

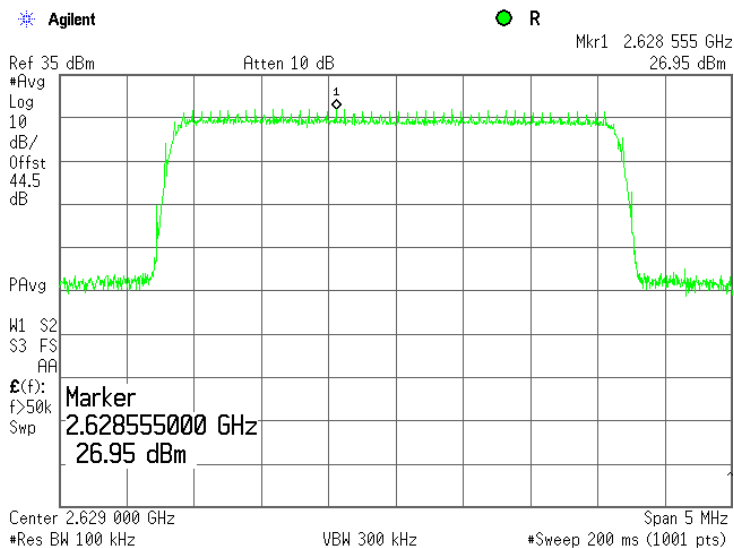


Plot 7.2.2 Power spectral density test results at mid frequency, QPSK, 3.5 MHz EBW, Antenna 1

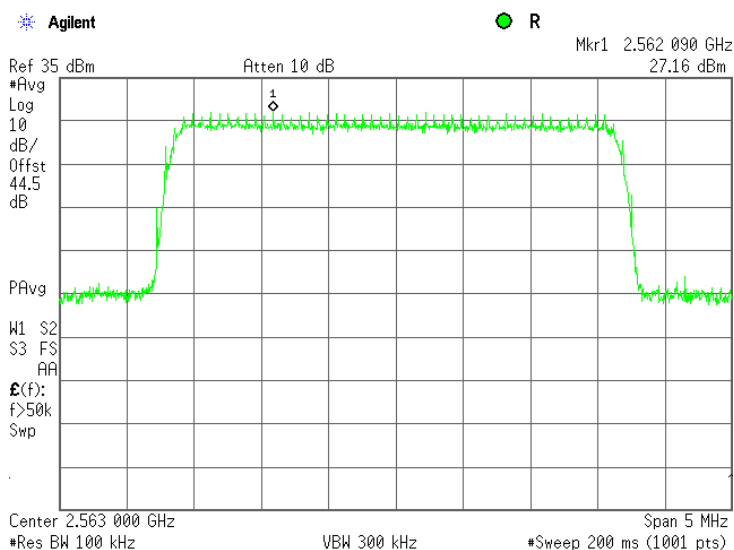


Test specification: Section 27.50(h), Peak output power			
Test procedure: Section 27.50(h)			
Test mode: Compliance		Verdict: PASS	
Date: 11/16/2010			
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Plot 7.2.3 Power spectral density test results at high frequency, QPSK, 3.5 MHz EBW, Antenna 1

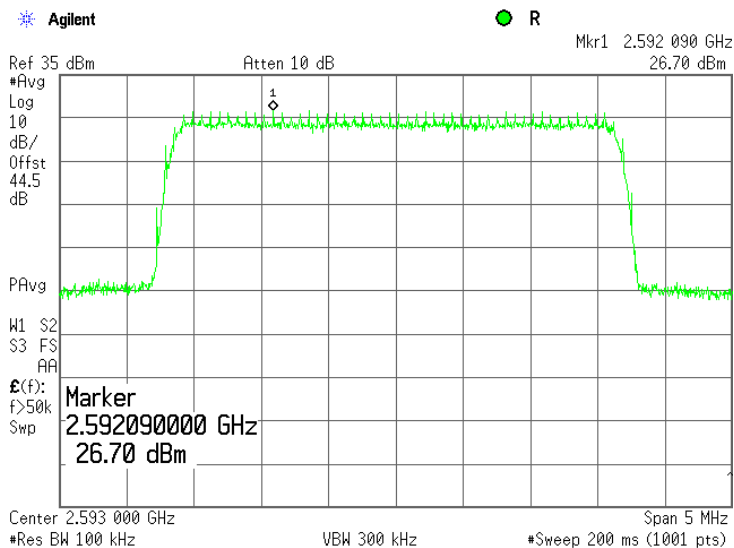


Plot 7.2.4 Power spectral density test results at low frequency, 64QAM, 3.5 MHz EBW, Antenna 1

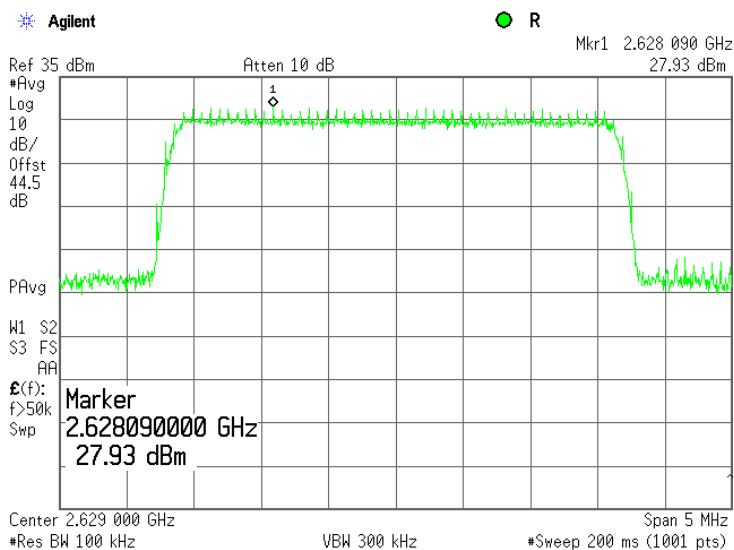


Test specification:	Section 27.50(h), Peak output power		
Test procedure:	Section 27.50(h)		
Test mode:	Compliance	Verdict: PASS	
Date:	11/16/2010		
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Plot 7.2.5 Power spectral density test results at mid frequency, 64QAM, 3.5 MHz EBW, Antenna 1

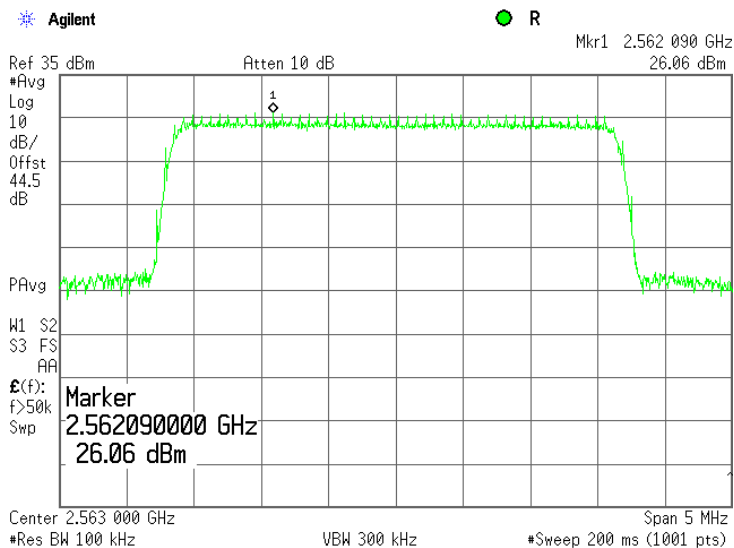


Plot 7.2.6 Power spectral density test results at high frequency, 64QAM, 3.5 MHz EBW, Antenna 1

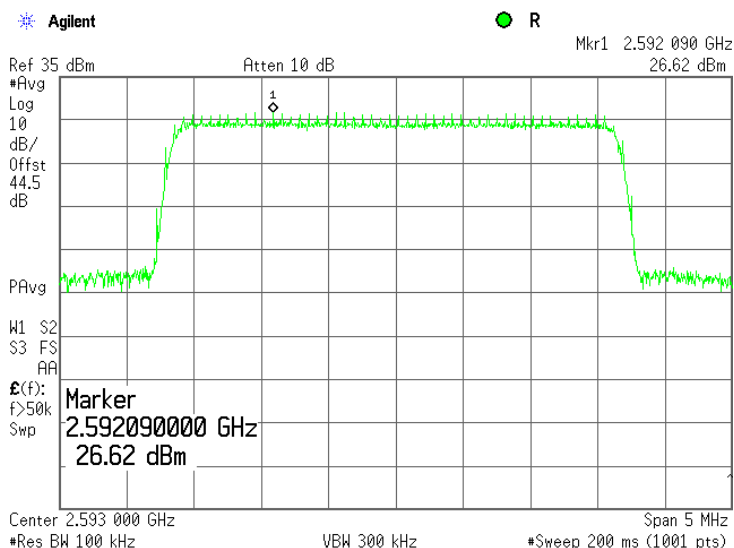


Test specification:		Section 27.50(h), Peak output power	
Test procedure:		Section 27.50(h)	
Test mode:	Compliance	Verdict: PASS	
Date:	11/16/2010		
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Plot 7.2.7 Power spectral density test results at low frequency, QPSK, 3.5 MHz EBW, Antenna 2

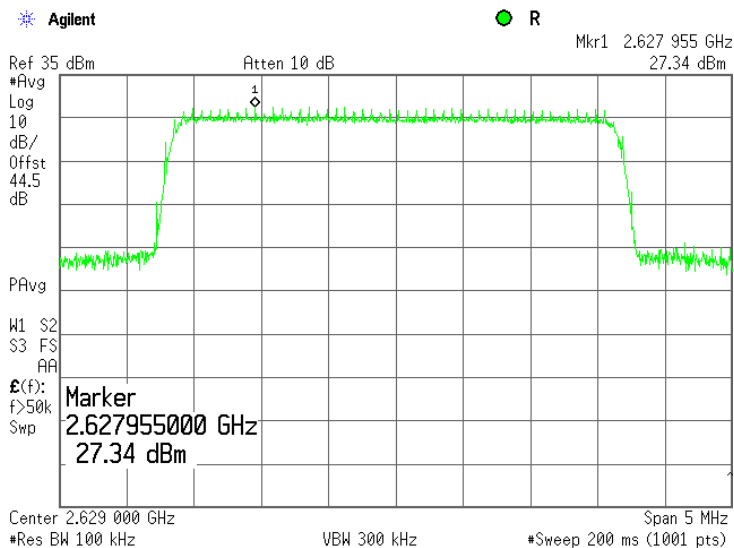


Plot 7.2.8 Power spectral density test results at mid frequency, QPSK, 3.5 MHz EBW, Antenna 2

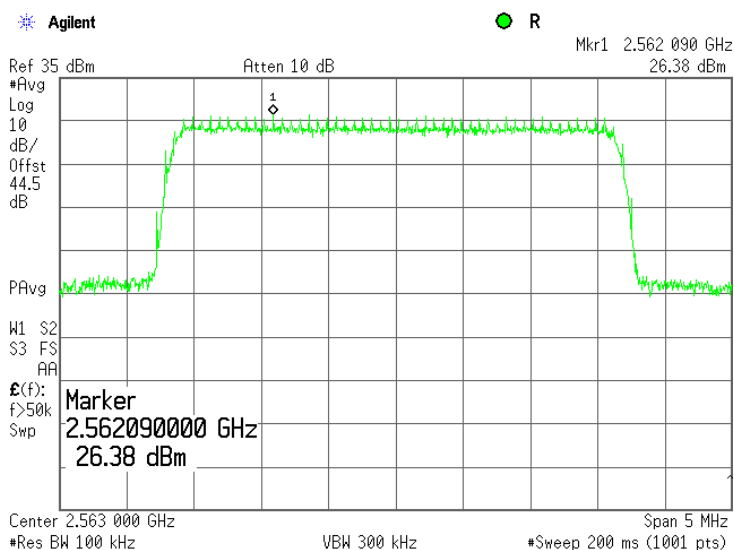


Test specification:		Section 27.50(h), Peak output power	
Test procedure:		Section 27.50(h)	
Test mode:	Compliance	Verdict: PASS	
Date:	11/16/2010		
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Plot 7.2.9 Power spectral density test results at high frequency, QPSK, 3.5 MHz EBW, Antenna 2

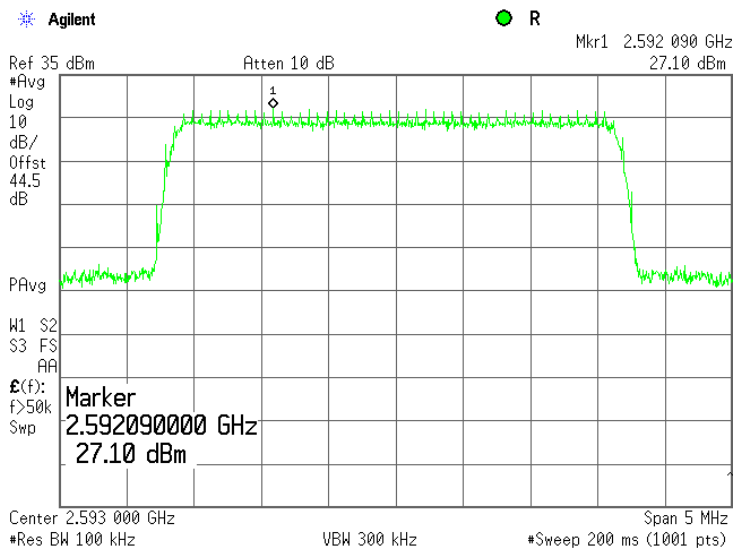


Plot 7.2.10 Power spectral density test results at low frequency, 64QAM, 3.5 MHz EBW, Antenna 2

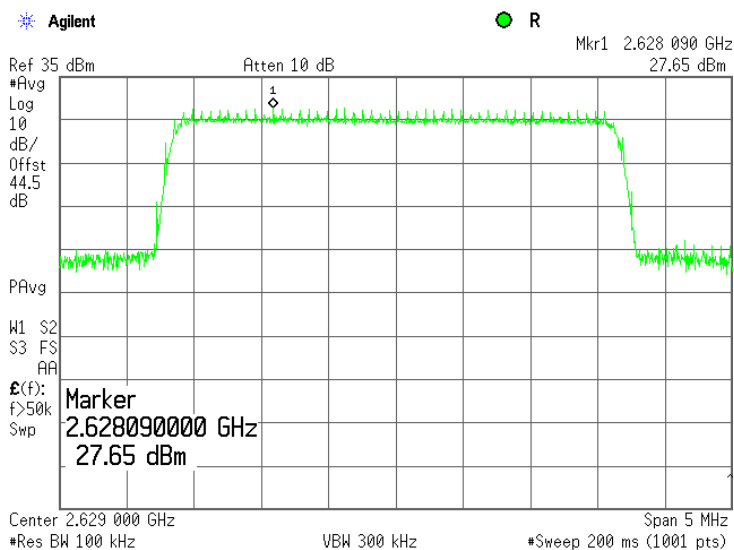


Test specification:		Section 27.50(h), Peak output power	
Test procedure:		Section 27.50(h)	
Test mode:	Compliance	Verdict: PASS	
Date:	11/16/2010		
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Plot 7.2.11 Power spectral density test results at mid frequency, 64QAM, 3.5 MHz EBW, Antenna 2

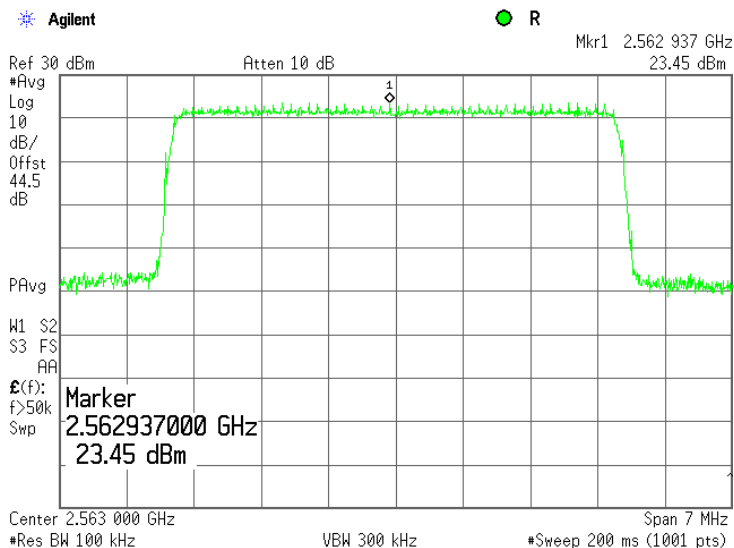


Plot 7.2.12 Power spectral density test results at high frequency, 64QAM, 3.5 MHz EBW, Antenna 2

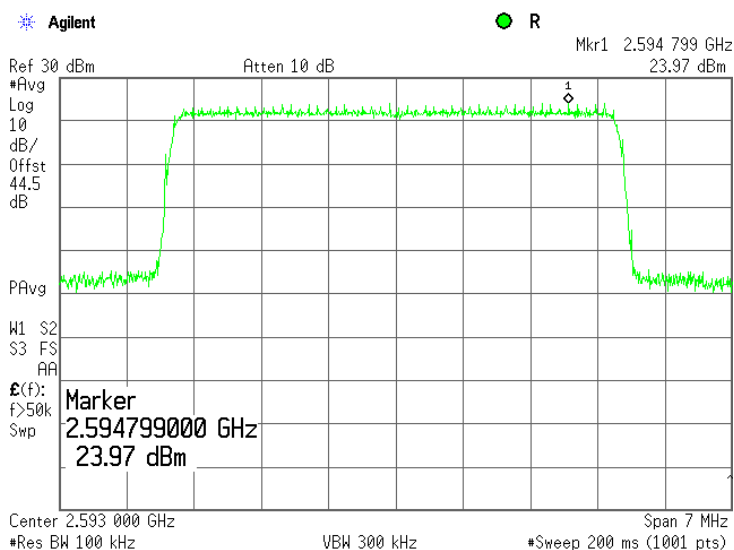


Test specification: Section 27.50(h), Peak output power			
Test procedure: Section 27.50(h)			
Test mode: Compliance	Verdict: PASS		
Date: 11/16/2010			
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Plot 7.2.13 Power spectral density test results at low frequency, QPSK, 5 MHz EBW, Antenna 1

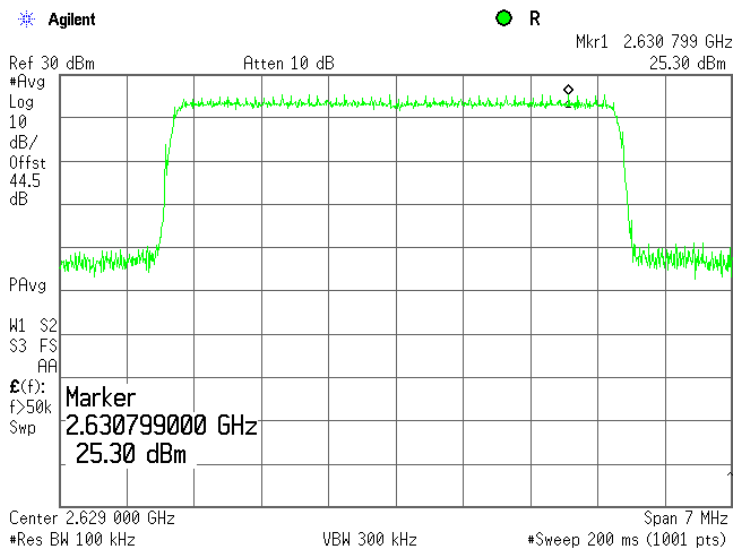


Plot 7.2.14 Power spectral density test results at mid frequency, QPSK, 5 MHz EBW, Antenna 1

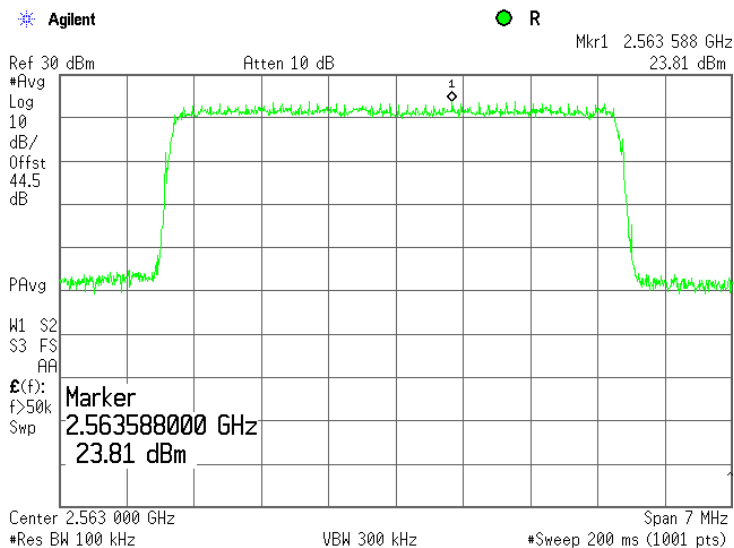


Test specification:	Section 27.50(h), Peak output power		
Test procedure:	Section 27.50(h)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/16/2010		
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Plot 7.2.15 Power spectral density test results at high frequency, QPSK, 5 MHz EBW, Antenna 1

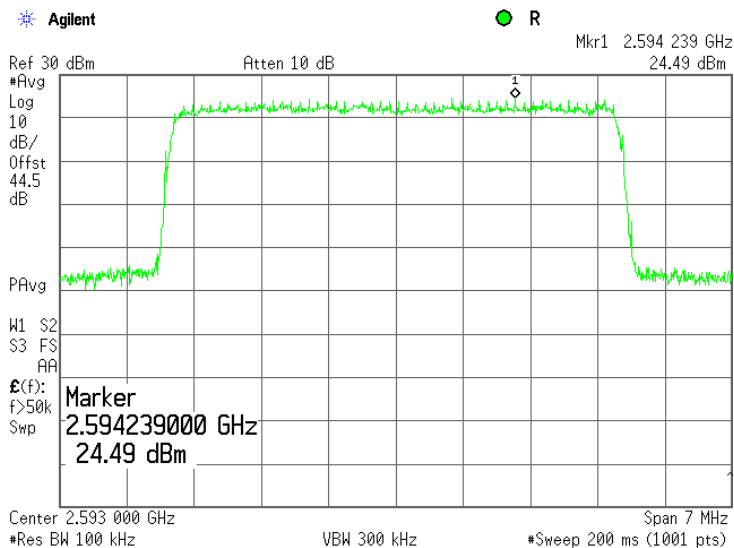


Plot 7.2.16 Power spectral density test results at low frequency, 64QAM, 5 MHz EBW, Antenna 1

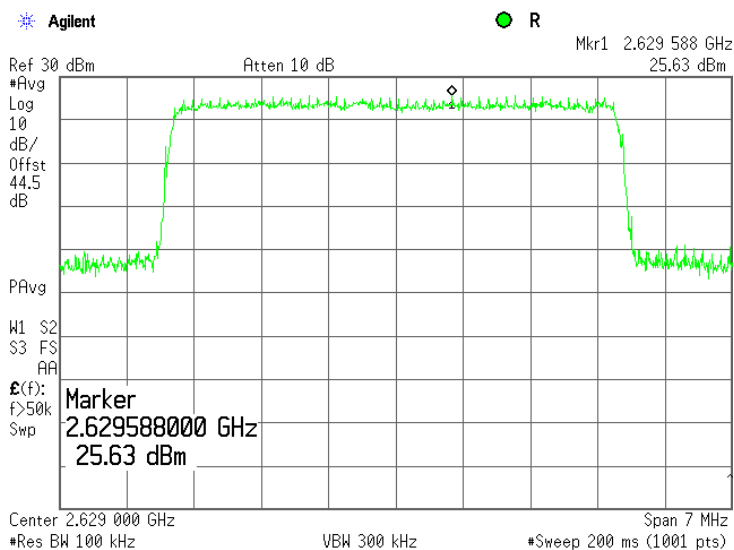


Test specification:	Section 27.50(h), Peak output power		
Test procedure:	Section 27.50(h)		
Test mode:	Compliance	Verdict: PASS	
Date:	11/16/2010		
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Plot 7.2.17 Power spectral density test results at mid frequency, 64QAM, 5 MHz EBW, Antenna 1

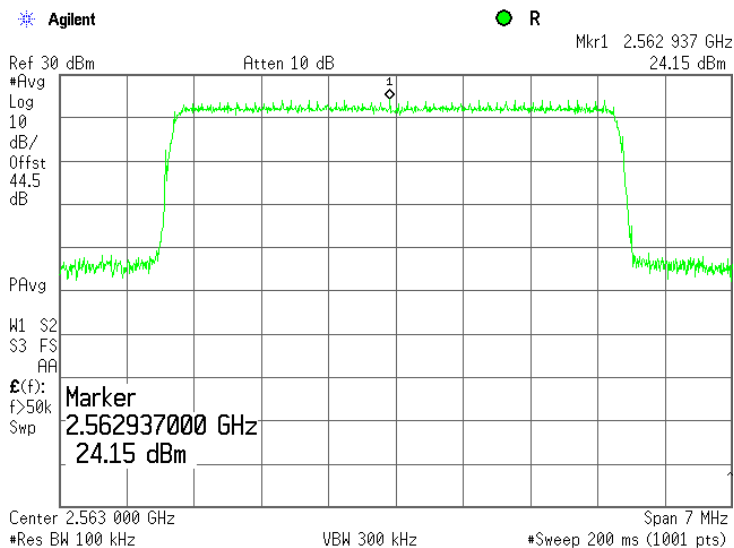


Plot 7.2.18 Power spectral density test results at high frequency, 64QAM, 5 MHz EBW, Antenna 1

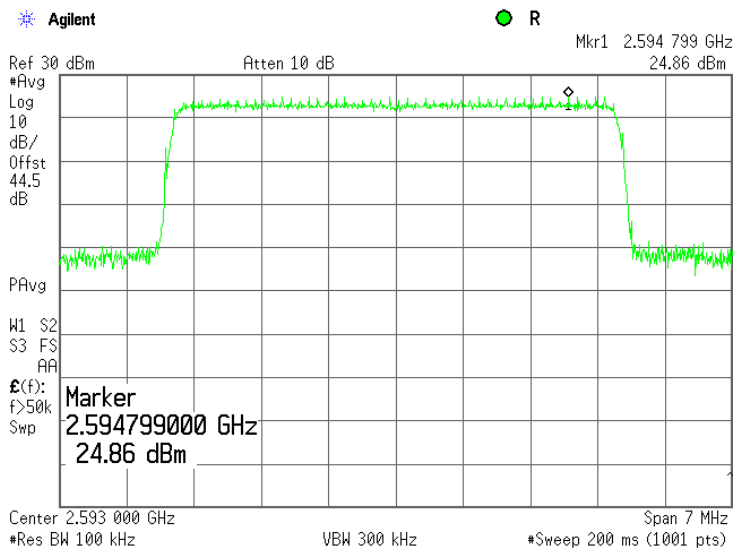


Test specification:	Section 27.50(h), Peak output power		
Test procedure:	Section 27.50(h)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/16/2010		
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Plot 7.2.19 Power spectral density test results at low frequency, QPSK, 5 MHz EBW, Antenna 2

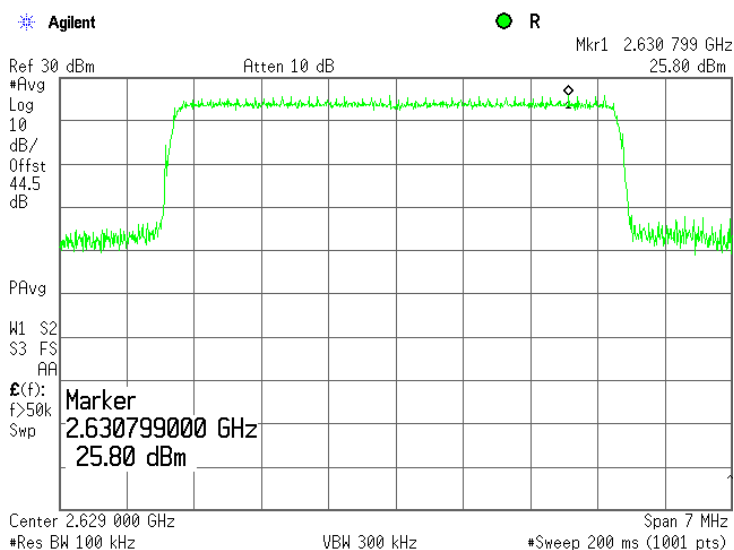


Plot 7.2.20 Power spectral density test results at mid frequency, QPSK, 5 MHz EBW, Antenna 2

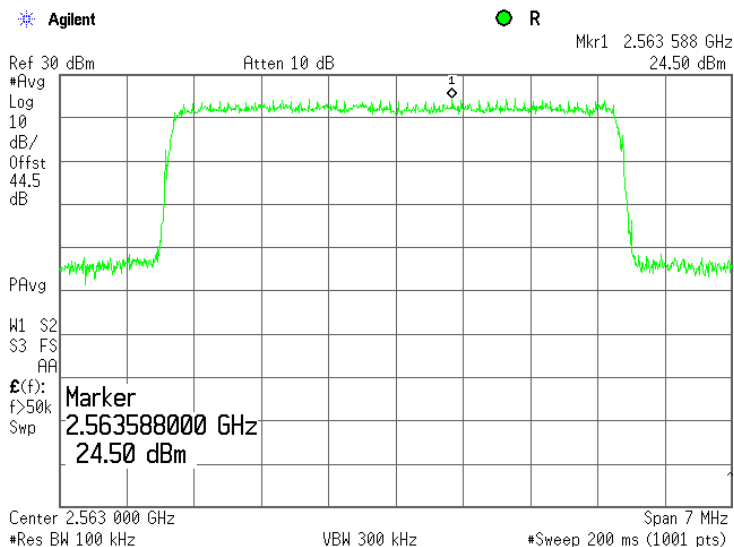


Test specification:		Section 27.50(h), Peak output power	
Test procedure:		Section 27.50(h)	
Test mode:		Compliance	Verdict: PASS
Date:		11/16/2010	
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Plot 7.2.21 Power spectral density test results at high frequency, QPSK, 5 MHz EBW, Antenna 2

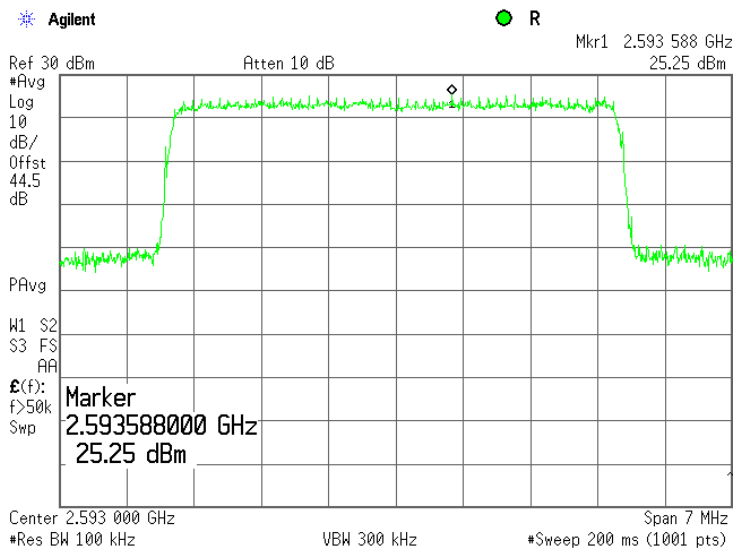


Plot 7.2.22 Power spectral density test results at low frequency, 64QAM, 5 MHz EBW, Antenna 2

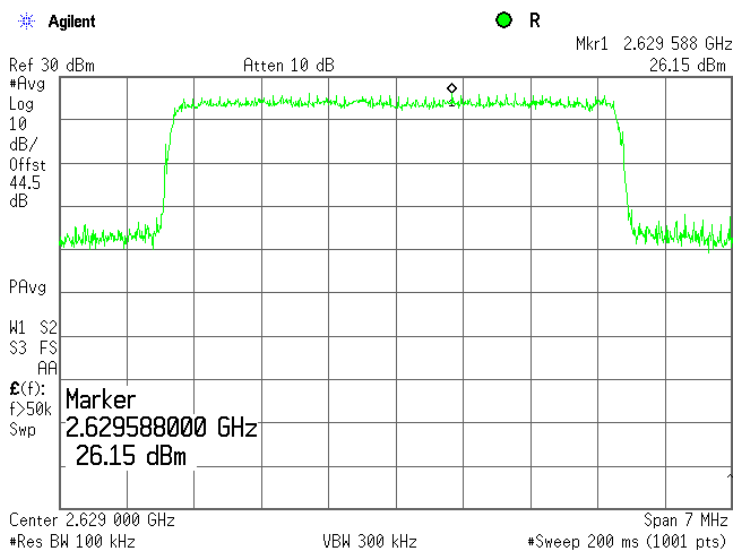


Test specification:	Section 27.50(h), Peak output power		
Test procedure:	Section 27.50(h)		
Test mode:	Compliance	Verdict: PASS	
Date:	11/16/2010		
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Plot 7.2.23 Power spectral density test results at mid frequency, 64QAM, 5 MHz EBW, Antenna 2

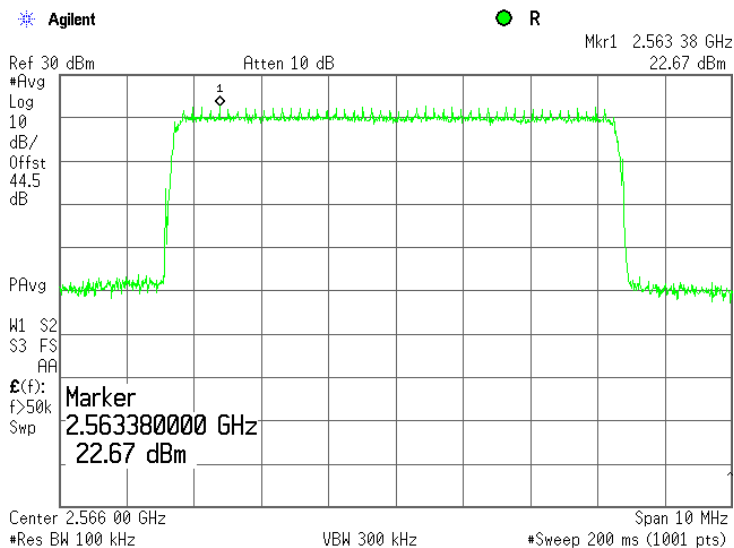


Plot 7.2.24 Power spectral density test results at high frequency, 64QAM, 5 MHz EBW, Antenna 2

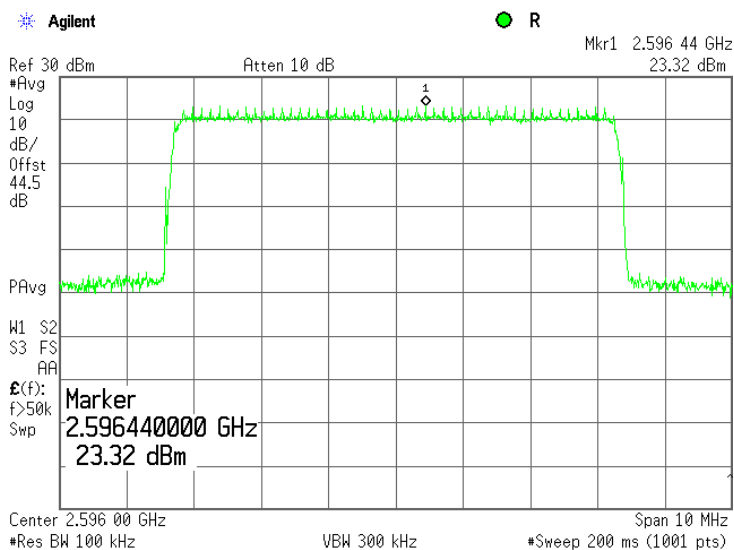


Test specification:	Section 27.50(h), Peak output power		
Test procedure:	Section 27.50(h)		
Test mode:	Compliance	Verdict: PASS	
Date:	11/16/2010		
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Plot 7.2.25 Power spectral density test results at low frequency, QPSK, 7 MHz EBW, Antenna 1

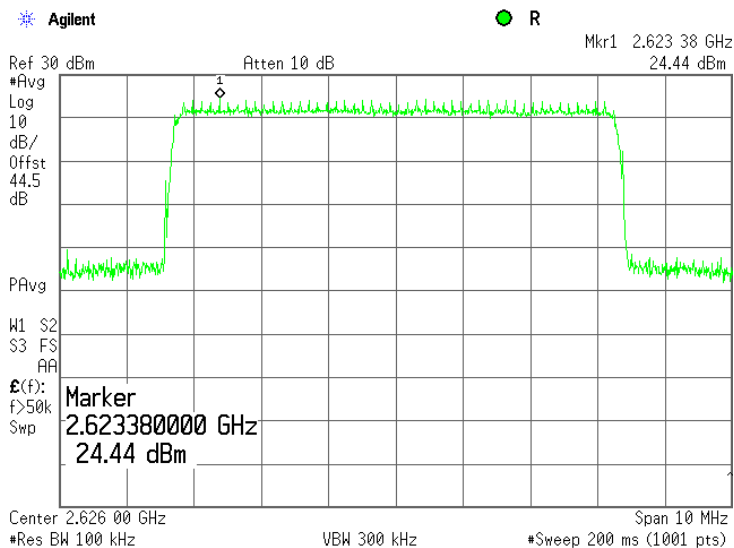


Plot 7.2.26 Power spectral density test results at mid frequency, QPSK, 7 MHz EBW, Antenna 1

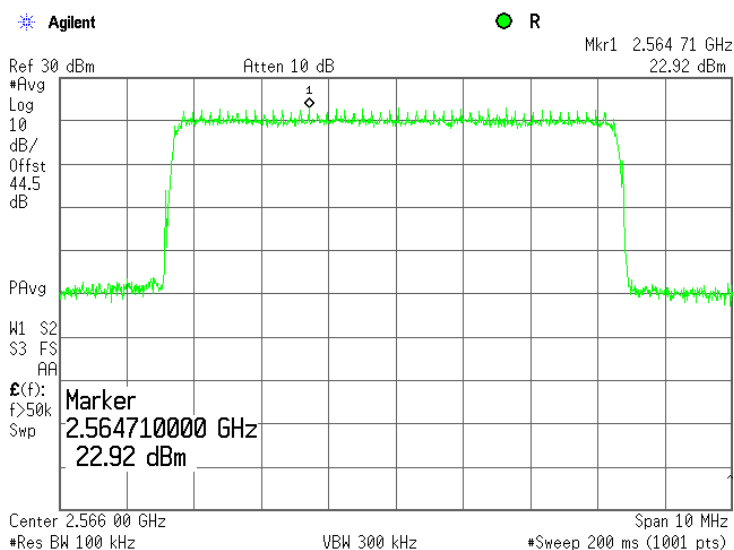


Test specification:		Section 27.50(h), Peak output power	
Test procedure:		Section 27.50(h)	
Test mode:		Compliance	Verdict: PASS
Date:		11/16/2010	
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Plot 7.2.27 Power spectral density test results at high frequency, QPSK, 7 MHz EBW, Antenna 1

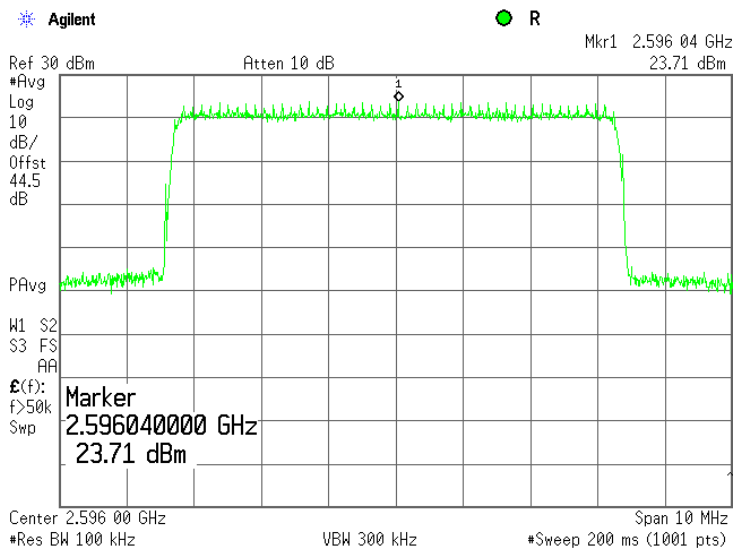


Plot 7.2.28 Power spectral density test results at low frequency, 64QAM, 7 MHz EBW, Antenna 1

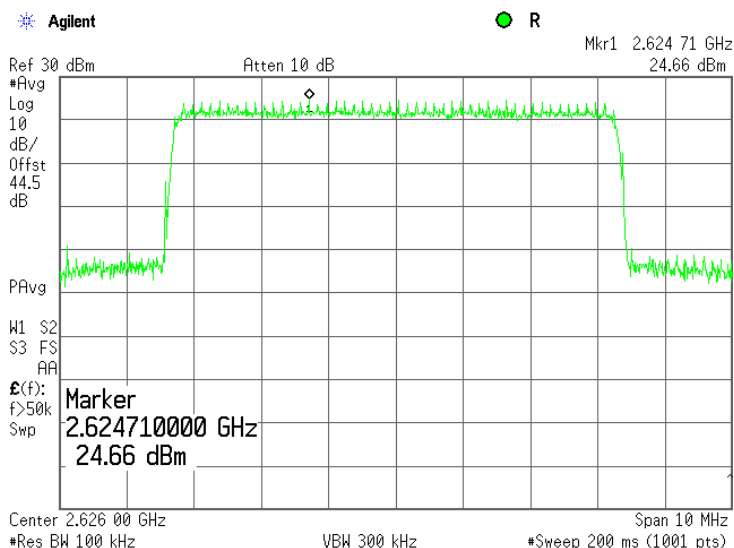


Test specification:		Section 27.50(h), Peak output power	
Test procedure:		Section 27.50(h)	
Test mode:	Compliance	Verdict: PASS	
Date:	11/16/2010		
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Plot 7.2.29 Power spectral density test results at mid frequency, 64QAM, 7 MHz EBW, Antenna 1

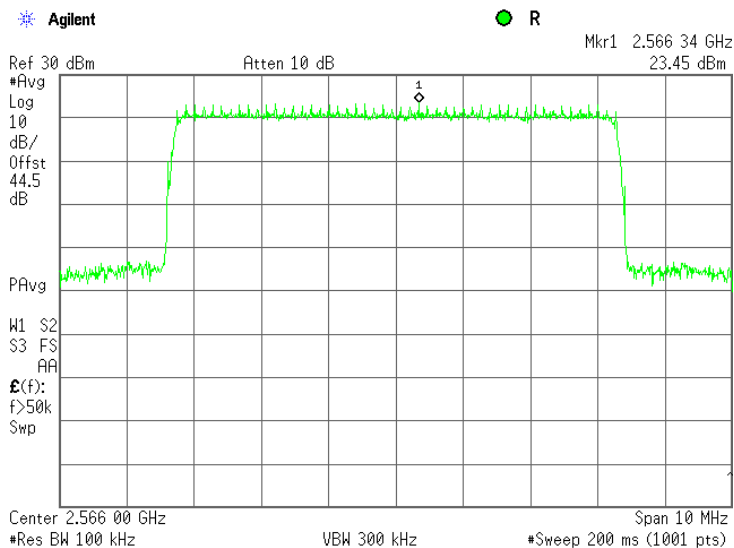


Plot 7.2.30 Power spectral density test results at high frequency, 64QAM, 7 MHz EBW, Antenna 1

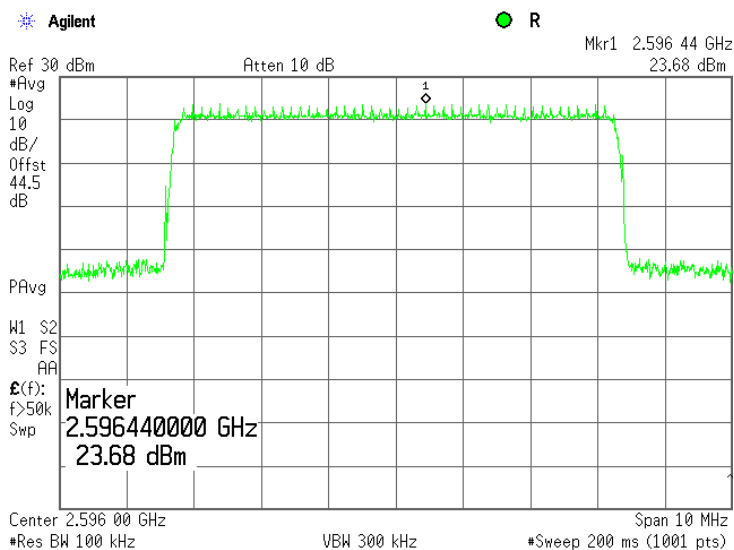


Test specification: Section 27.50(h), Peak output power			
Test procedure: Section 27.50(h)			
Test mode: Compliance		Verdict: PASS	
Date: 11/16/2010			
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Plot 7.2.31 Power spectral density test results at low frequency, QPSK, 7 MHz EBW, Antenna 2

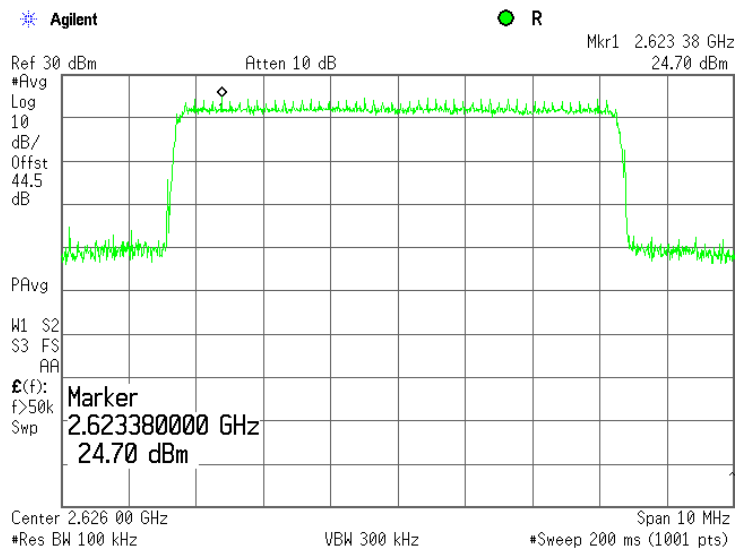


Plot 7.2.32 Power spectral density test results at mid frequency, QPSK, 7 MHz EBW, Antenna 2

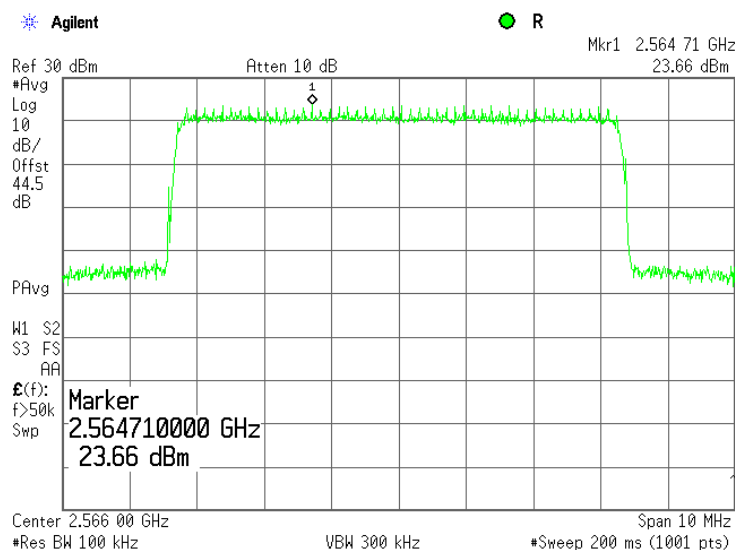


Test specification:		Section 27.50(h), Peak output power	
Test procedure:		Section 27.50(h)	
Test mode:	Compliance	Verdict: PASS	
Date:	11/16/2010		
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Plot 7.2.33 Power spectral density test results at high frequency, QPSK, 7 MHz EBW, Antenna 2

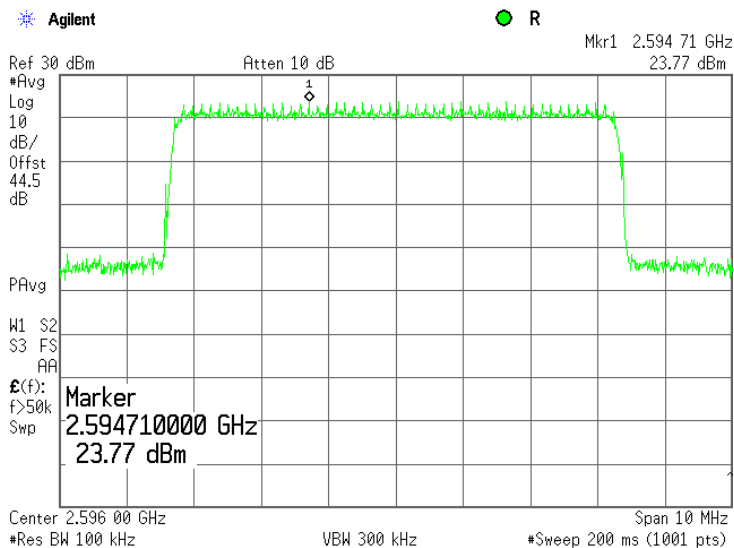


Plot 7.2.34 Power spectral density test results at low frequency, 64QAM, 7 MHz EBW, Antenna 2

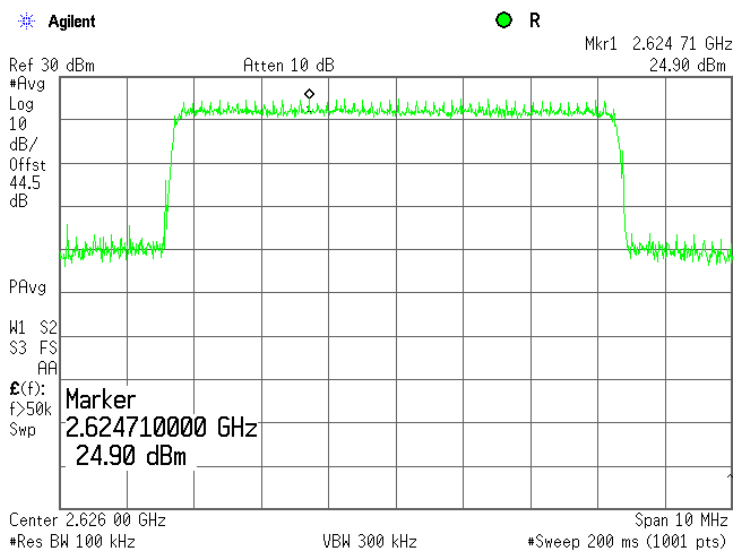


Test specification: Section 27.50(h), Peak output power			
Test procedure: Section 27.50(h)			
Test mode: Compliance		Verdict: PASS	
Date: 11/16/2010			
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Plot 7.2.35 Power spectral density test results at mid frequency, 64QAM, 7 MHz EBW, Antenna 2

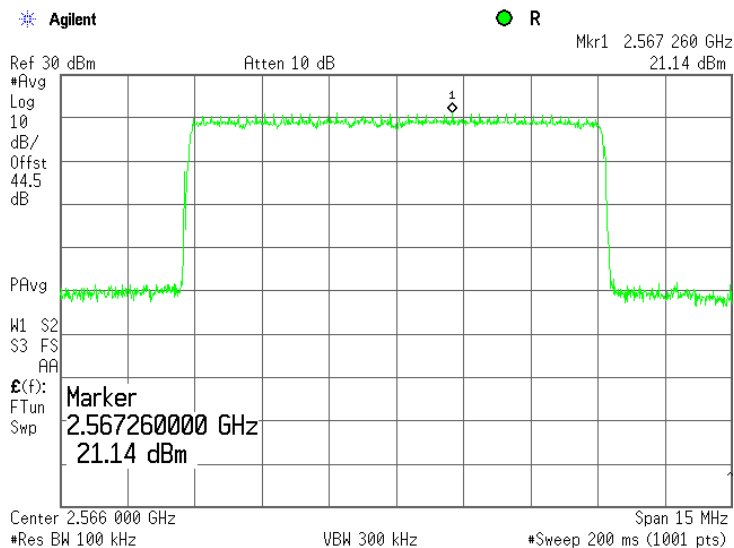


Plot 7.2.36 Power spectral density test results at high frequency, 64QAM, 7 MHz EBW, Antenna 2

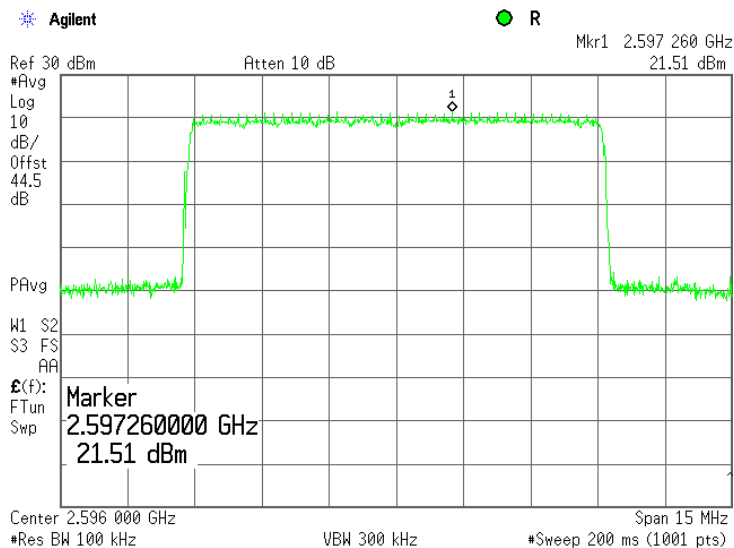


Test specification:		Section 27.50(h), Peak output power	
Test procedure:		Section 27.50(h)	
Test mode:	Compliance	Verdict: PASS	
Date:	11/16/2010		
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Plot 7.2.37 Power spectral density test results at low frequency, QPSK, 10 MHz EBW, Antenna 1

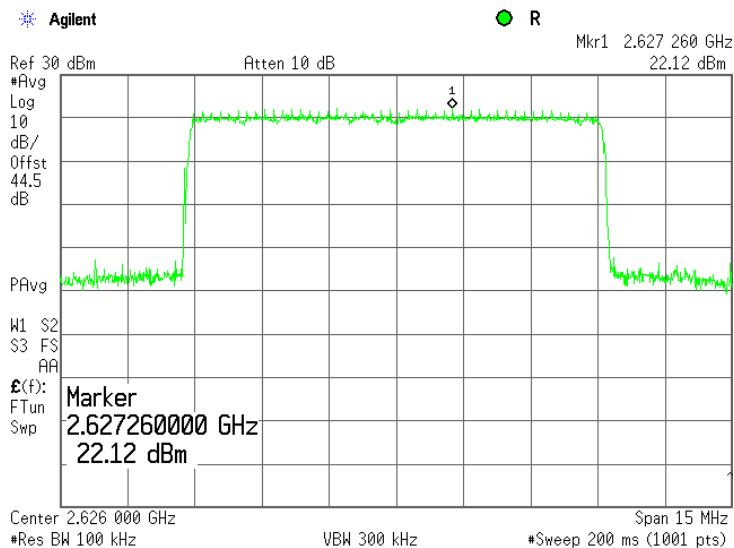


Plot 7.2.38 Power spectral density test results at mid frequency, QPSK, 10 MHz EBW, Antenna 1

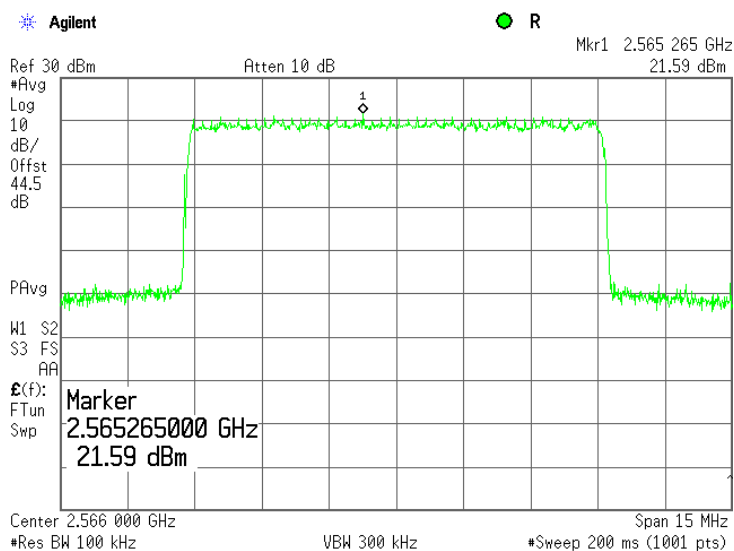


Test specification:		Section 27.50(h), Peak output power	
Test procedure:		Section 27.50(h)	
Test mode:	Compliance	Verdict: PASS	
Date:	11/16/2010		
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Plot 7.2.39 Power spectral density test results at high frequency, QPSK, 10 MHz EBW, Antenna 1

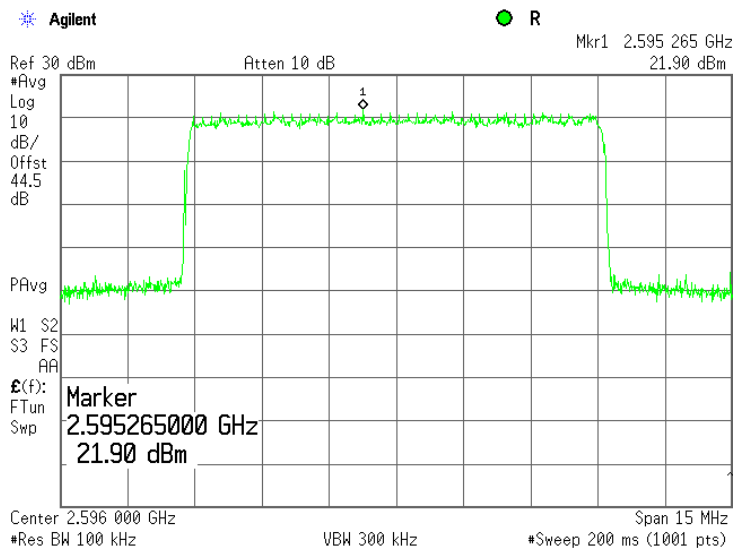


Plot 7.2.40 Power spectral density test results at low frequency, 64QAM, 10 MHz EBW, Antenna 1

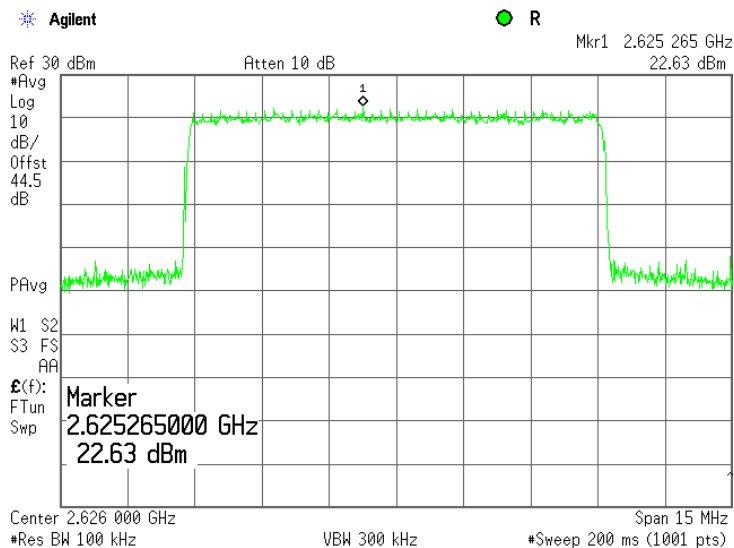


Test specification:		Section 27.50(h), Peak output power	
Test procedure:		Section 27.50(h)	
Test mode:	Compliance	Verdict: PASS	
Date:	11/16/2010		
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Plot 7.2.41 Power spectral density test results at mid frequency, 64QAM, 10 MHz EBW, Antenna 1

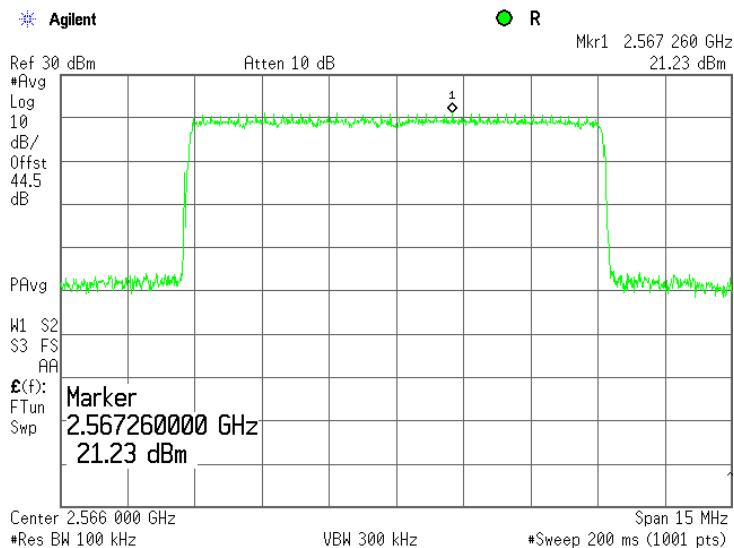


Plot 7.2.42 Power spectral density test results at high frequency, 64QAM, 10 MHz EBW, Antenna 1

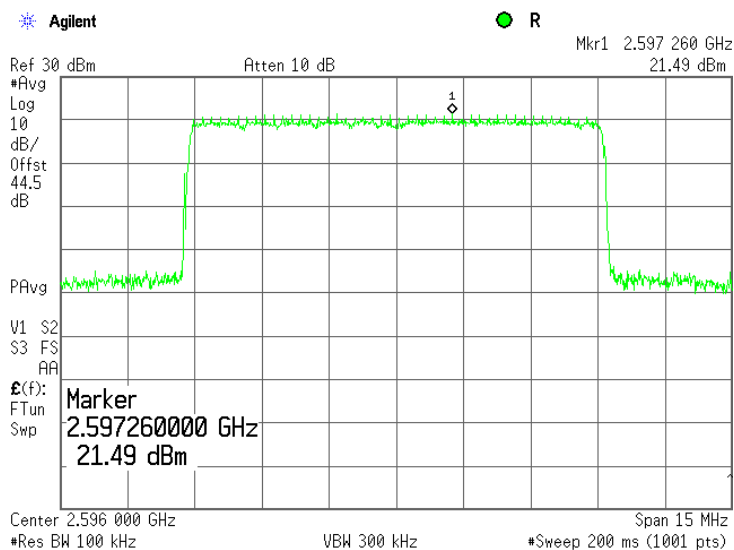


Test specification:		Section 27.50(h), Peak output power	
Test procedure:		Section 27.50(h)	
Test mode:	Compliance	Verdict: PASS	
Date:	11/16/2010		
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Plot 7.2.43 Power spectral density test results at low frequency, QPSK, 10 MHz EBW, Antenna 2

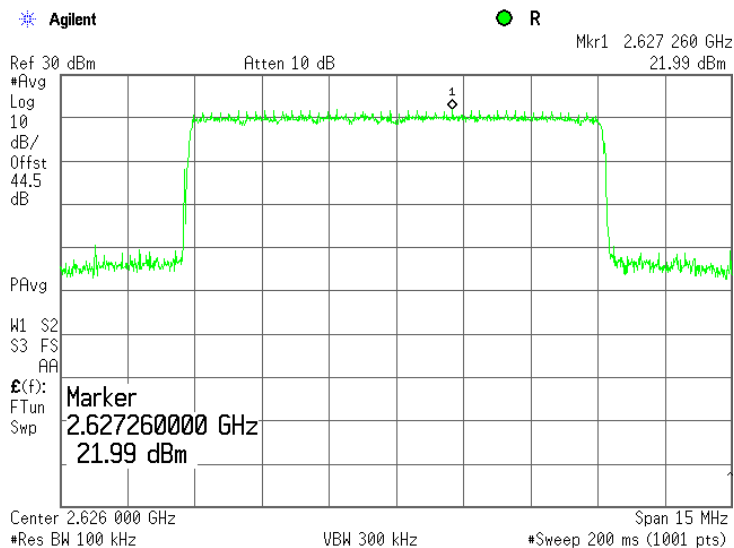


Plot 7.2.44 Power spectral density test results at mid frequency, QPSK, 10 MHz EBW, Antenna 2

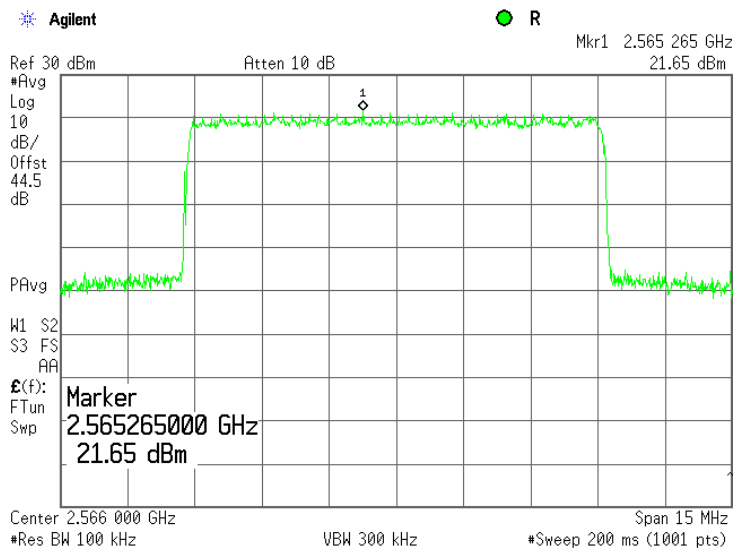


Test specification: Section 27.50(h), Peak output power			
Test procedure: Section 27.50(h)			
Test mode: Compliance		Verdict: PASS	
Date: 11/16/2010			
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Plot 7.2.45 Power spectral density test results at high frequency, QPSK, 10 MHz EBW, Antenna 2

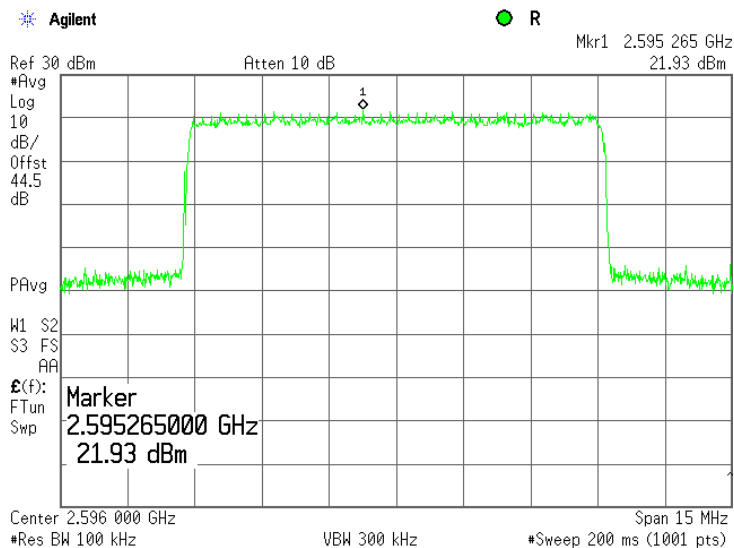


Plot 7.2.46 Power spectral density test results at low frequency, 64QAM, 10 MHz EBW, Antenna 2

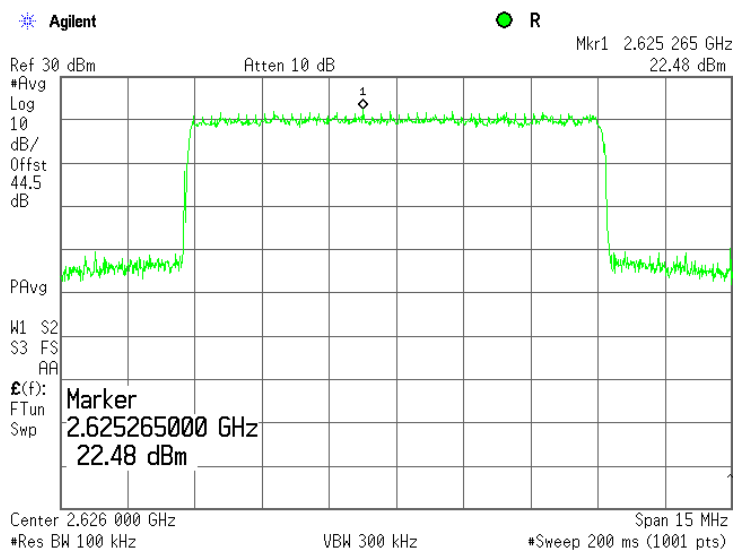


Test specification:	Section 27.50(h), Peak output power		
Test procedure:	Section 27.50(h)		
Test mode:	Compliance	Verdict: PASS	
Date:	11/16/2010		
Temperature: 23.7 °C	Air Pressure: 1015 hPa	Relative Humidity: 43 %	Power Supply: 48 VDC
Remarks:			

Plot 7.2.47 Power spectral density test results at mid frequency, 64QAM, 10 MHz EBW, Antenna 2



Plot 7.2.48 Power spectral density test results at high frequency, 64QAM, 10 MHz EBW, Antenna 2



Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/17/2010		
Temperature: 23.9 °C	Air Pressure: 1014 hPa	Relative Humidity: 41 %	Power Supply: 48 VDC
Remarks:			

7.3 Conducted spurious emissions at the band edges (emission mask)

7.3.1 General

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

Table 7.3.1 Spurious emission limits

Channel	Frequency range	Attenuation below carrier, dBc	Limit, dBm
Channel bandwidth 3.5 MHz			
2563.0	2556.0 – 2560.0 2566.0 – 2570.0	43+ 10*Log (P*)	-13.0
2593.0	2586.0 – 2590.0 2596.0 – 2600.0	43+ 10*Log (P*)	-13.0
2629.0	2622.0 – 2626.0 2632.0 – 2636.0	43+ 10*Log (P*)	-13.0
Channel bandwidth 5 MHz			
2563.0	2556.0 – 2560.0 2566.0 – 2570.0	43+ 10*Log (P*)	-13.0
2593.0	2586.0 – 2590.0 2596.0 – 2600.0	43+ 10*Log (P*)	-13.0
2629.0	2622.0 – 2626.0 2632.0 – 2636.0	43+ 10*Log (P*)	-13.0
Channel bandwidth 7 MHz			
2566.0	2556.0 – 2560.0 2572.0 – 2576.0	43+ 10*Log (P*)	-13.0
2596.0	2586.0 – 2590.0 2602.0 – 2606.0	43+ 10*Log (P*)	-13.0
2626.0	2616.0 – 2620.0 2632.0 – 2636.0	43+ 10*Log (P*)	-13.0
Channel bandwidth 10 MHz			
2566.0	2556.0 – 2560.0 2572.0 – 2576.0	43+ 10*Log (P*)	-13.0
2596.0	2586.0 – 2590.0 2602.0 – 2606.0	43+ 10*Log (P*)	-13.0
2626.0	2616.0 – 2620.0 2632.0 – 2636.0	43+ 10*Log (P*)	-13.0

* - P is transmitter output power in Watts

7.3.2 Test procedure

7.3.2.1 The EUT was set up as shown in Figure 7.3.1 or Figure 7.3.2, energized and its proper operation was checked.

7.3.2.2 The spurious emissions were measured with spectrum analyzer as provided in the associated plots.

7.3.2.3 The worst case results are provided in the associated tables and shown in the associated plots.

Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict: PASS	
Date:	11/17/2010		
Temperature: 23.9 °C	Air Pressure: 1014 hPa	Relative Humidity: 41 %	Power Supply: 48 VDC
Remarks:			

Figure 7.3.1 Spurious emission test setup for single output

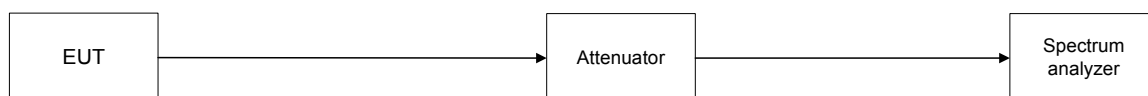
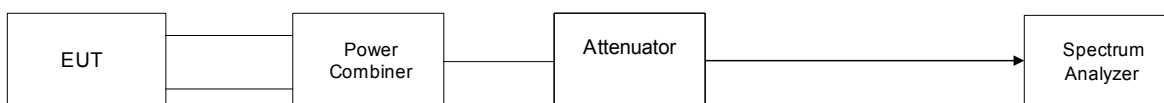


Figure 7.3.2 Spurious emission test setup for combined outputs



Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges			
Test procedure:	Section 27.53(m)(2)			
Test mode:	Compliance	Verdict:		PASS
Date:	11/17/2010			
Temperature: 23.9 °C	Air Pressure: 1014 hPa	Relative Humidity: 41 %	Power Supply: 48 VDC	
Remarks:				

Table 7.3.2 Spurious emission at the band edges test results (combined output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
 INVESTIGATED FREQUENCY RANGE: See Table 7.3.1
 DETECTOR USED: Average
 VIDEO BANDWIDTH: ≥ Resolution bandwidth
 MODULATING SIGNAL: PRBS
 TRANSMITTER OUTPUT POWER: Maximum

Frequency offset, ± MHz	SA reading, dBm low range	SA reading, dBm high range	RBW, kHz	Integration BW, kHz	Limit, dBm	Verdict
3.5 MHz EBW						
Low carrier frequency 2563.0 MHz, QPSK (Output power = 39.87 dBm)						
3.5	-17.27	-16.31	100	1000	-13.0	Pass
4.5	-17.48	-20.00	100	1000	-13.0	
5.5	-21.84	-29.62	100	1000	-13.0	
6.5	-30.59	-27.92	100	1000	-13.0	
Low carrier frequency 2563.0 MHz, 64QAM (Output power = 39.84 dBm)						
3.5	-17.70	-19.27	100	1000	-13.0	Pass
4.5	-18.00	-23.41	100	1000	-13.0	
5.5	-24.53	-29.85	100	1000	-13.0	
6.5	-30.03	-27.82	100	1000	-13.0	
Mid carrier frequency 2593.0 MHz, QPSK (Output power = 39.81 dBm)						
3.5	-17.35	-16.91	100	1000	-13.0	Pass
4.5	-17.37	-19.49	100	1000	-13.0	
5.5	-21.74	-26.44	100	1000	-13.0	
6.5	-28.16	-26.00	100	1000	-13.0	
Mid carrier frequency 2593.0 MHz, 64QAM (Output power = 39.85 dBm)						
3.5	-20.00	-20.14	100	1000	-13.0	Pass
4.5	-19.93	-23.20	100	1000	-13.0	
5.5	-25.50	-29.21	100	1000	-13.0	
6.5	-29.49	-26.79	100	1000	-13.0	
High carrier frequency 2629.0 MHz, QPSK (Output power = 40.73 dBm)						
3.5	-17.26	-18.82	100	1000	-13.0	Pass
4.5	-19.17	-23.15	100	1000	-13.0	
5.5	-23.78	-27.41	100	1000	-13.0	
6.5	-27.68	-25.29	100	1000	-13.0	
High carrier frequency 2629.0 MHz, 64QAM (Output power = 40.62 dBm)						
3.5	-17.82	-19.94	100	1000	-13.0	Pass
4.5	-19.43	-23.03	100	1000	-13.0	
5.5	-23.70	-27.47	100	1000	-13.0	
6.5	23.78	-25.78	100	1000	-13.0	

Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges			
Test procedure:	Section 27.53(m)(2)			
Test mode:	Compliance	Verdict:		PASS
Date:	11/17/2010			
Temperature: 23.9 °C	Air Pressure: 1014 hPa	Relative Humidity: 41 %	Power Supply: 48 VDC	
Remarks:				

Table 7.3.3 Spurious emission at the band edges test results (combined output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
 INVESTIGATED FREQUENCY RANGE: See Table 7.3.1
 DETECTOR USED: Average
 VIDEO BANDWIDTH: ≥ Resolution bandwidth
 MODULATING SIGNAL: PRBS
 TRANSMITTER OUTPUT POWER: Maximum

Frequency offset, ± MHz	SA reading, dBm low range	SA reading, dBm high range	RBW, kHz	Integration BW, kHz	Limit, dBm	Verdict
5 MHz EBW						
Low carrier frequency 2563.0 MHz, QPSK (Output power = 39.34 dBm)						
3.5	-28.20	-17.32	100	1000	-13.0	Pass
4.5	-25.29	-16.78	100	1000	-13.0	
5.5	-23.72	-21.63	100	1000	-13.0	
6.5	-26.34	-26.74	100	1000	-13.0	
Low carrier frequency 2563.0 MHz, 64QAM (Output power = 39.40 dBm)						
3.5	-27.76	-17.83	100	1000	-13.0	Pass
4.5	-25.70	-19.13	100	1000	-13.0	
5.5	-23.56	-21.88	100	1000	-13.0	
6.5	-24.82	-25.83	100	1000	-13.0	
Mid carrier frequency 2593.0 MHz, QPSK (Output power = 39.96 dBm)						
3.5	-26.73	-16.10	100	1000	-13.0	Pass
4.5	-24.10	-14.89	100	1000	-13.0	
5.5	-20.53	-19.23	100	1000	-13.0	
6.5	-23.71	-23.83	100	1000	-13.0	
Mid carrier frequency 2593.0 MHz, 64QAM (Output power = 39.95 dBm)						
3.5	-25.49	-16.15	100	1000	-13.0	Pass
4.5	-23.01	-16.16	100	1000	-13.0	
5.5	-20.39	-18.20	100	1000	-13.0	
6.5	-20.49	-22.78	100	1000	-13.0	
High carrier frequency 2629.0 MHz, QPSK (Output power = 40.86 dBm)						
3.5	-19.16	-14.69	100	1000	-13.0	Pass
4.5	-18.43	-14.48	100	1000	-13.0	
5.5	-18.07	-18.16	100	1000	-13.0	
6.5	-18.99	-23.15	100	1000	-13.0	
High carrier frequency 2629.0 MHz, 64QAM (Output power = 40.71 dBm)						
3.5	-20.66	-16.23	100	1000	-13.0	Pass
4.5	-23.24	-15.61	100	1000	-13.0	
5.5	-22.56	-21.45	100	1000	-13.0	
6.5	-23.98	-27.05	100	1000	-13.0	

Test specification: Section 27.53(m)(2), Conducted spurious emissions at the band edges			
Test procedure: Section 27.53(m)(2)			
Test mode:	Compliance	Verdict: PASS	
Date:	11/17/2010		
Temperature: 23.9 °C	Air Pressure: 1014 hPa	Relative Humidity: 41 %	Power Supply: 48 VDC
Remarks:			

Table 7.3.4 Spurious emission at the band edges test results (combined output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
 INVESTIGATED FREQUENCY RANGE: See Table 7.3.1
 DETECTOR USED: Average
 VIDEO BANDWIDTH: ≥ Resolution bandwidth
 MODULATING SIGNAL: PRBS
 TRANSMITTER OUTPUT POWER: Maximum

Frequency offset, ± MHz	SA reading, dBm low range	SA reading, dBm high range	RBW, kHz	Integration BW, kHz	Limit, dBm	Verdict
7 MHz EBW						
Low carrier frequency 2566.0 MHz, QPSK (Output power = 39.71 dBm)						
6.5	-22.27	-14.43	100	1000	-13.0	Pass
7.5	-20.55	-17.37	100	1000	-13.0	
8.5	-19.42	-17.08	100	1000	-13.0	
9.5	-20.52	-25.21	100	1000	-13.0	
Low carrier frequency 2566.0 MHz, 64QAM (Output power = 38.67 dBm)						
6.5	-21.57	-17.10	100	1000	-13.0	Pass
7.5	-20.85	-19.42	100	1000	-13.0	
8.5	-20.86	-18.68	100	1000	-13.0	
9.5	-23.40	-24.83	100	1000	-13.0	
Mid carrier frequency 2596.0 MHz, QPSK (Output power = 40.57 dBm)						
6.5	-21.52	-16.34	100	1000	-13.0	Pass
7.5	-20.98	-19.02	100	1000	-13.0	
8.5	-21.34	-22.63	100	1000	-13.0	
9.5	-23.00	-26.59	100	1000	-13.0	
Mid carrier frequency 2596.0 MHz, 64QAM (Output power = 40.73 dBm)						
6.5	-21.47	-17.35	300	1000	-13.0	Pass
7.5	-19.53	-20.62	300	1000	-13.0	
8.5	-20.31	-20.20	300	1000	-13.0	
9.5	-22.19	-25.10	300	1000	-13.0	
High carrier frequency 2626.0 MHz, QPSK (Output power = 41.54 dBm)						
6.5	-17.74	-14.78	300	1000	-13.0	Pass
7.5	-18.25	-17.76	300	1000	-13.0	
8.5	-16.93	-18.51	300	1000	-13.0	
9.5	-19.39	-24.08	300	1000	-13.0	
High carrier frequency 2626.0 MHz, 64QAM (Output power = 41.71 dBm)						
6.5	-16.49	-14.69	300	1000	-13.0	Pass
7.5	-15.55	-18.10	300	1000	-13.0	
8.5	-15.75	-15.88	300	1000	-13.0	
9.5	-17.11	-22.13	300	1000	-13.0	

Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges			
Test procedure:	Section 27.53(m)(2)			
Test mode:	Compliance	Verdict:		PASS
Date:	11/17/2010			
Temperature: 23.9 °C	Air Pressure: 1014 hPa	Relative Humidity: 41 %	Power Supply: 48 VDC	
Remarks:				

Table 7.3.5 Spurious emission at the band edges test results (combined output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
 INVESTIGATED FREQUENCY RANGE: See Table 7.3.1
 DETECTOR USED: Average
 VIDEO BANDWIDTH: ≥ Resolution bandwidth
 MODULATING SIGNAL: PRBS
 TRANSMITTER OUTPUT POWER: Maximum

Frequency offset, ± MHz	SA reading, dBm low range	SA reading, dBm high range	RBW, kHz	Integration BW, kHz	Limit, dBm	Verdict
10 MHz EBW						
Low carrier frequency 2566.0 MHz, QPSK (Output power = 39.85 dBm)						
6.5	-15.00	-15.31	100	1000	-13.0	Pass
7.5	-15.11	-17.65	100	1000	-13.0	
8.5	-15.14	-15.81	100	1000	-13.0	
9.5	-15.79	-17.02	100	1000	-13.0	
Low carrier frequency 2566.0 MHz, 64QAM (Output power = 39.86 dBm)						
6.5	-15.21	-15.78	100	1000	-13.0	Pass
7.5	-14.66	-17.92	100	1000	-13.0	
8.5	-14.70	-16.56	100	1000	-13.0	
9.5	-15.97	-17.66	100	1000	-13.0	
Mid carrier frequency 2596.0 MHz, QPSK (Output power = 39.57 dBm)						
6.5	-25.99	-17.81	100	1000	-13.0	Pass
7.5	-26.77	-19.14	100	1000	-13.0	
8.5	-22.21	-18.10	100	1000	-13.0	
9.5	-19.32	-18.18	100	1000	-13.0	
Mid carrier frequency 2596.0 MHz, 64QAM (Output power = 39.69 dBm)						
6.5	-22.72	-18.07	300	1000	-13.0	Pass
7.5	-25.00	-18.88	300	1000	-13.0	
8.5	-22.55	-17.48	300	1000	-13.0	
9.5	-19.71	-18.32	300	1000	-13.0	
High carrier frequency 2626.0 MHz, QPSK (Output power = 39.92 dBm)						
6.5	-21.16	-17.95	300	1000	-13.0	Pass
7.5	-23.49	-19.97	300	1000	-13.0	
8.5	-22.23	-20.38	300	1000	-13.0	
9.5	-19.66	-21.25	300	1000	-13.0	
High carrier frequency 2626.0 MHz, 64QAM (Output power = 40.07 dBm)						
6.5	-21.70	-18.14	300	1000	-13.0	Pass
7.5	-23.95	-18.57	300	1000	-13.0	
8.5	-22.86	-19.49	300	1000	-13.0	
9.5	-19.42	-20.79	300	1000	-13.0	

Reference numbers of test equipment used

HL 2909	HL 3437	HL 3442	HL 3559				
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Full description is given in Appendix A.

Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/17/2010		
Temperature: 23.9 °C	Air Pressure: 1014 hPa	Relative Humidity: 41 %	Power Supply: 48 VDC
Remarks:			

Table 7.3.6 Spurious emission at the band edges test results (single output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
 INVESTIGATED FREQUENCY RANGE: See Table 7.3.1
 DETECTOR USED: Average
 VIDEO BANDWIDTH: ≥ Resolution bandwidth
 MODULATING SIGNAL: PRBS
 TRANSMITTER OUTPUT POWER: Maximum

Frequency offset, ± MHz	SA reading, dBm low range	SA reading, dBm high range	RBW, kHz	Integration BW, kHz	Limit, dBm	Verdict
3.5MHz EBW						
Low carrier frequency 2563.0 MHz, QPSK (Output power = 40.31 dBm)						
3.5	-16.00	-15.63	100	1000	-13.0	Pass
4.5	-19.39	-18.68	100	1000	-13.0	
5.5	-22.26	-23.10	100	1000	-13.0	
6.5	-23.21	-23.35	100	1000	-13.0	
Low carrier frequency 2563.0 MHz, 64QAM (Output power = 40.23 dBm)						
3.5	-16.36	-18.06	100	1000	-13.0	Pass
4.5	-21.03	-20.05	100	1000	-13.0	
5.5	-23.72	-25.70	100	1000	-13.0	
6.5	-26.52	-26.11	100	1000	-13.0	
Mid carrier frequency 2593.0 MHz, QPSK (Output power = 39.67 dBm)						
3.5	-18.85	-20.07	100	1000	-13.0	Pass
4.5	-23.39	-22.86	100	1000	-13.0	
5.5	-26.20	-26.67	100	1000	-13.0	
6.5	-27.07	-27.16	100	1000	-13.0	
Mid carrier frequency 2593.0 MHz, 64QAM (Output power = 39.60 dBm)						
3.5	-19.19	-20.99	100	1000	-13.0	Pass
4.5	-23.99	-23.40	100	1000	-13.0	
5.5	-26.11	-26.78	100	1000	-13.0	
6.5	-27.64	-27.43	100	1000	-13.0	
High carrier frequency 2629.0 MHz, QPSK (Output power = 40.08 dBm)						
3.5	-15.24	-15.14	100	1000	-13.0	Pass
4.5	-19.97	-18.46	100	1000	-13.0	
5.5	-23.68	-24.38	100	1000	-13.0	
6.5	-24.94	-24.46	100	1000	-13.0	
High carrier frequency 2629.0 MHz, 64QAM (Output power = 39.98 dBm)						
3.5	-16.12	-16.85	100	1000	-13.0	Pass
4.5	-21.18	-19.65	100	1000	-13.0	
5.5	-24.41	-24.91	100	1000	-13.0	
6.5	-26.25	-25.38	100	1000	-13.0	

Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/17/2010		
Temperature: 23.9 °C	Air Pressure: 1014 hPa	Relative Humidity: 41 %	Power Supply: 48 VDC
Remarks:			

Table 7.3.7 Spurious emission at the band edges test results (single output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
 INVESTIGATED FREQUENCY RANGE: See Table 7.3.1
 DETECTOR USED: Average
 VIDEO BANDWIDTH: ≥ Resolution bandwidth
 MODULATING SIGNAL: PRBS
 TRANSMITTER OUTPUT POWER: Maximum

frequency offset, ± MHz	SA reading, dBm low range	SA reading, dBm high range	RBW, kHz	Integration BW, kHz	Limit, dBm	Verdict
5 MHz EBW						
Low carrier frequency 2563.0 MHz, QPSK (Output power = 39.79 dBm)						
3.5	-16.31	-15.21	100	1000	-13.0	Pass
4.5	-18.71	-17.82	100	1000	-13.0	
5.5	-20.67	-21.02	100	1000	-13.0	
6.5	-23.08	-25.94	100	1000	-13.0	
Low carrier frequency 2563.0 MHz, 64QAM (Output power = 39.70 dBm)						
3.5	-15.50	-14.82	100	1000	-13.0	Pass
4.5	-18.52	-17.18	100	1000	-13.0	
5.5	-21.23	-20.32	100	1000	-13.0	
6.5	-24.09	-26.11	100	1000	-13.0	
Mid carrier frequency 2593.0 MHz, QPSK (Output power = 39.50 dBm)						
3.5	-16.10	-13.93	100	1000	-13.0	Pass
4.5	-18.38	-16.32	100	1000	-13.0	
5.5	-20.63	-19.84	100	1000	-13.0	
6.5	-24.28	-24.37	100	1000	-13.0	
Mid carrier frequency 2593.0 MHz, 64QAM (Output power = 39.67 dBm)						
3.5	-16.99	-16.68	100	1000	-13.0	Pass
4.5	-20.05	-18.21	100	1000	-13.0	
5.5	-22.12	-21.42	100	1000	-13.0	
6.5	-24.70	-25.66	100	1000	-13.0	
High carrier frequency 2629.0 MHz, QPSK (Output power = 40.05 dBm)						
3.5	-15.27	-13.79	100	1000	-13.0	Pass
4.5	-17.10	-15.83	100	1000	-13.0	
5.5	-19.21	-19.55	100	1000	-13.0	
6.5	-22.09	-22.65	100	1000	-13.0	
High carrier frequency 2629.0 MHz, 64QAM (Output power = 39.91 dBm)						
3.5	-15.93	-13.93	100	1000	-13.0	Pass
4.5	-18.13	-15.53	100	1000	-13.0	
5.5	-18.88	-19.61	100	1000	-13.0	
6.5	-23.94	-23.24	100	1000	-13.0	

Test specification: Section 27.53(m)(2), Conducted spurious emissions at the band edges			
Test procedure: Section 27.53(m)(2)			
Test mode:	Compliance	Verdict: PASS	
Date:	11/17/2010		
Temperature: 23.9 °C	Air Pressure: 1014 hPa	Relative Humidity: 41 %	Power Supply: 48 VDC
Remarks:			

Table 7.3.8 Spurious emission at the band edges test results (single output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
 INVESTIGATED FREQUENCY RANGE: See Table 7.3.1
 DETECTOR USED: Average
 VIDEO BANDWIDTH: ≥ Resolution bandwidth
 MODULATING SIGNAL: PRBS
 TRANSMITTER OUTPUT POWER: Maximum

Frequency offset, ± MHz	SA reading, dBm low range	SA reading, dBm high range	RBW, kHz	Integration BW, kHz	Limit, dBm	Verdict
7 MHz EBW						
Low carrier frequency 2566.0 MHz, QPSK (Output power = 39.84 dBm)						
6.5	-19.31	-20.07	100	1000	-13.0	Pass
7.5	-19.50	-21.21	100	1000	-13.0	
8.5	-22.71	-22.77	100	1000	-13.0	
9.5	-23.14	-23.18	100	1000	-13.0	
Low carrier frequency 2566.0 MHz, 64QAM (Output power = 39.88 dBm)						
6.5	-19.70	-20.08	100	1000	-13.0	Pass
7.5	-19.68	-22.42	100	1000	-13.0	
8.5	-22.08	-23.15	100	1000	-13.0	
9.5	-23.90	-24.08	100	1000	-13.0	
Mid carrier frequency 2596.0 MHz, QPSK (Output power = 39.71 dBm)						
6.5	-20.35	-19.55	100	1000	-13.0	Pass
7.5	-21.36	-22.19	100	1000	-13.0	
8.5	-22.61	-23.47	100	1000	-13.0	
9.5	-24.52	-26.05	100	1000	-13.0	
Mid carrier frequency 2596.0 MHz, 64QAM (Output power = 39.75 dBm)						
6.5	-20.93	-19.38	300	1000	-13.0	Pass
7.5	-20.57	-23.38	300	1000	-13.0	
8.5	-23.29	-22.98	300	1000	-13.0	
9.5	-24.75	-25.81	300	1000	-13.0	
High carrier frequency 2626.0 MHz, QPSK (Output power = 39.67 dBm)						
6.5	-20.63	-19.84	300	1000	-13.0	Pass
7.5	-20.56	-22.46	300	1000	-13.0	
8.5	-23.30	-22.79	300	1000	-13.0	
9.5	-24.47	-24.81	300	1000	-13.0	
High carrier frequency 2626.0 MHz, 64QAM (Output power = 39.72 dBm)						
6.5	-20.42	-18.87	300	1000	-13.0	Pass
7.5	-19.70	-21.70	300	1000	-13.0	
8.5	-22.17	-22.40	300	1000	-13.0	
9.5	-24.23	-24.19	300	1000	-13.0	

Test specification: Section 27.53(m)(2), Conducted spurious emissions at the band edges			
Test procedure: Section 27.53(m)(2)			
Test mode: Compliance	Verdict: PASS		
Date: 11/17/2010			
Temperature: 23.9 °C	Air Pressure: 1014 hPa	Relative Humidity: 41 %	Power Supply: 48 VDC
Remarks:			

Table 7.3.9 Spurious emission at the band edges test results (single output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
 INVESTIGATED FREQUENCY RANGE: See Table 7.3.1
 DETECTOR USED: Average
 VIDEO BANDWIDTH: ≥ Resolution bandwidth
 MODULATING SIGNAL: PRBS
 TRANSMITTER OUTPUT POWER: Maximum

Frequency offset, ± MHz	SA reading, dBm low range	SA reading, dBm high range	RBW, kHz	Integration BW, kHz	Limit, dBm	Verdict
10 MHz EBW						
Low carrier frequency 2566.0 MHz, QPSK (Output power = 40.02 dBm)						
6.5	-14.09	-14.47	100	1000	-13.0	Pass
7.5	-16.87	-16.57	100	1000	-13.0	
8.5	-18.64	-17.94	100	1000	-13.0	
9.5	-17.42	-19.06	100	1000	-13.0	
Low carrier frequency 2566.0 MHz, 64QAM (Output power = 39.98 dBm)						
6.5	-14.63	-14.96	100	1000	-13.0	Pass
7.5	-17.59	-17.24	100	1000	-13.0	
8.5	-19.57	-18.55	100	1000	-13.0	
9.5	-17.96	-19.62	100	1000	-13.0	
Mid carrier frequency 2596.0 MHz, QPSK (Output power = 39.81 dBm)						
6.5	-13.72	-14.24	100	1000	-13.0	Pass
7.5	-16.52	-17.15	100	1000	-13.0	
8.5	-17.81	-17.92	100	1000	-13.0	
9.5	-17.02	-19.57	100	1000	-13.0	
Mid carrier frequency 2596.0 MHz, 64QAM (Output power = 39.78 dBm)						
6.5	-13.68	-14.38	300	1000	-13.0	Pass
7.5	-16.34	-17.97	300	1000	-13.0	
8.5	-18.09	-18.88	300	1000	-13.0	
9.5	-17.40	-20.24	300	1000	-13.0	
High carrier frequency 2626.0 MHz, QPSK (Output power = 39.60 dBm)						
6.5	-14.77	-16.28	300	1000	-13.0	Pass
7.5	-17.33	-20.19	300	1000	-13.0	
8.5	-19.26	-21.12	300	1000	-13.0	
9.5	-17.87	-23.00	300	1000	-13.0	
High carrier frequency 2626.0 MHz, 64QAM (Output power = 39.68 dBm)						
6.5	-14.89	-16.25	300	1000	-13.0	Pass
7.5	-17.74	-19.27	300	1000	-13.0	
8.5	-19.16	-20.94	300	1000	-13.0	
9.5	-18.09	-23.31	300	1000	-13.0	

Reference numbers of test equipment used

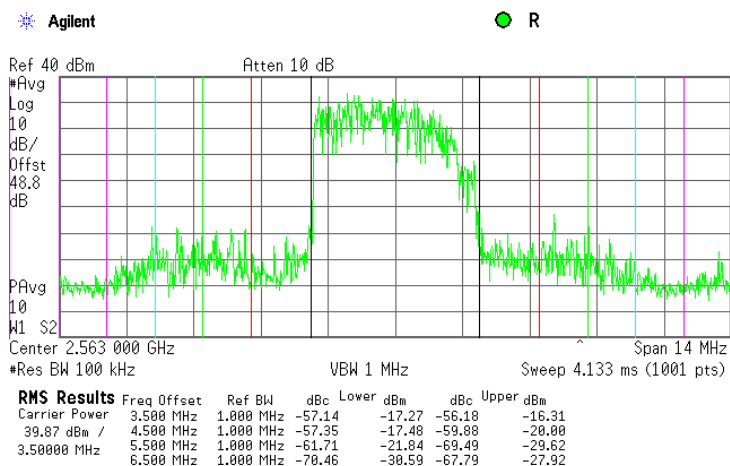
HL 1906	HL 2015	HL 2254	HL 2953	HL 3433	HL 3434	HL 3818	
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Full description is given in Appendix A.

Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/17/2010		
Temperature: 23.9 °C	Air Pressure: 1014 hPa	Relative Humidity: 41 %	Power Supply: 48 VDC
Remarks:			

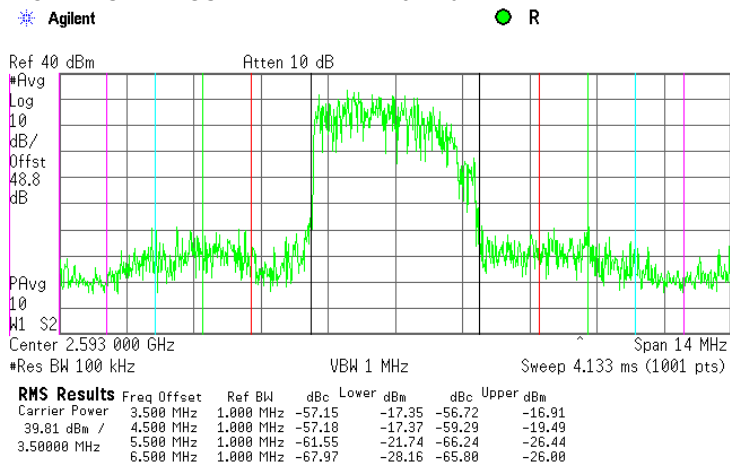
Plot 7.3.1 Emission mask test results at low carrier frequency, 3.5 MHz EBW (combined output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: QPSK
MODULATING SIGNAL: PRBS
BIT RATE: 4 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum



Plot 7.3.2 Emission mask test results at mid carrier frequency, 3.5 MHz EBW (combined output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: QPSK
MODULATING SIGNAL: PRBS
BIT RATE: 4 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum



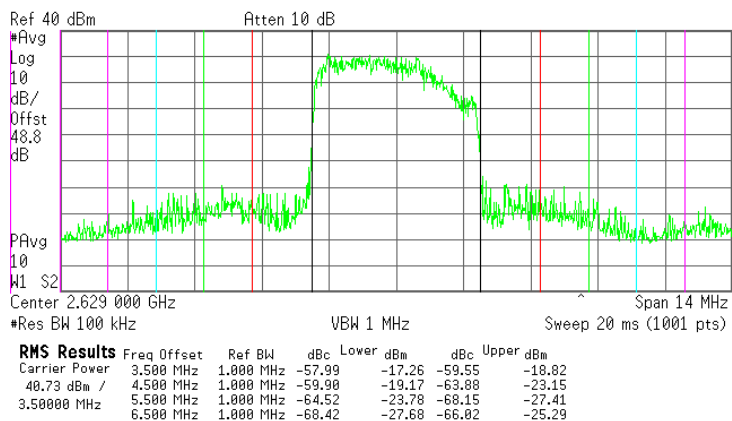
Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/17/2010		
Temperature: 23.9 °C	Air Pressure: 1014 hPa	Relative Humidity: 41 %	Power Supply: 48 VDC
Remarks:			

Plot 7.3.3 Emission mask test results at high carrier frequency, 3.5 MHz EBW (combined output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: QPSK
MODULATING SIGNAL: PRBS
BIT RATE: 4 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R

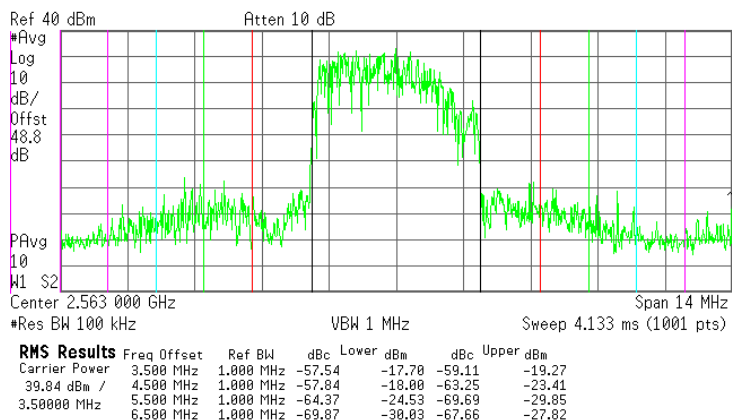


Plot 7.3.4 Emission mask test results at low carrier frequency, 3.5 MHz EBW (combined output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: 64QAM
MODULATING SIGNAL: PRBS
BIT RATE: 14 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R



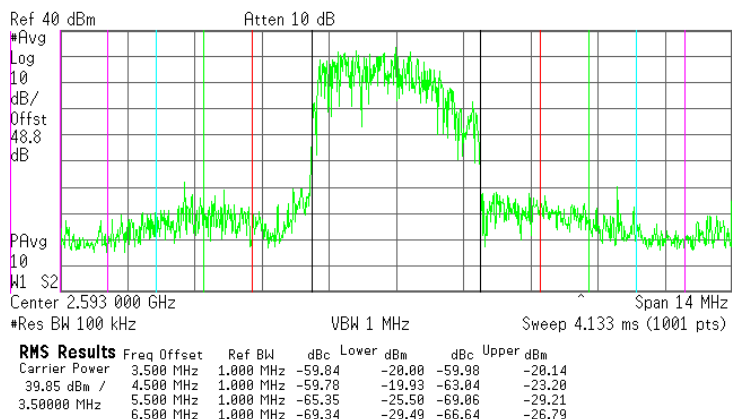
Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/17/2010		
Temperature: 23.9 °C	Air Pressure: 1014 hPa	Relative Humidity: 41 %	Power Supply: 48 VDC
Remarks:			

Plot 7.3.5 Emission mask test results at mid carrier frequency, 3.5 MHz EBW (combined output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: 64QAM
MODULATING SIGNAL: PRBS
BIT RATE: 14 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R

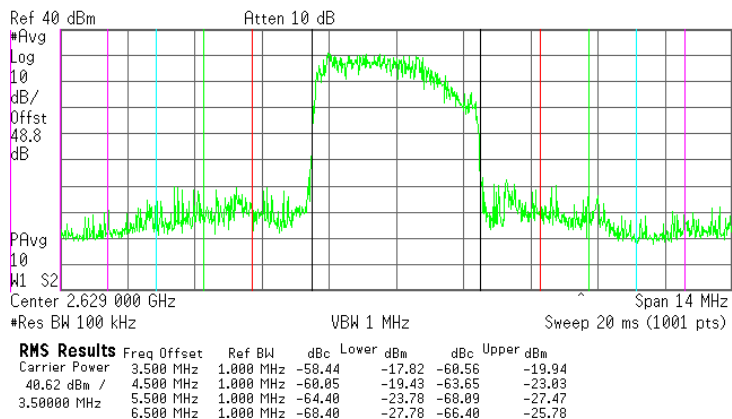


Plot 7.3.6 Emission mask test results at high carrier frequency, 3.5 MHz EBW (combined output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: 64QAM
MODULATING SIGNAL: PRBS
BIT RATE: 14 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R



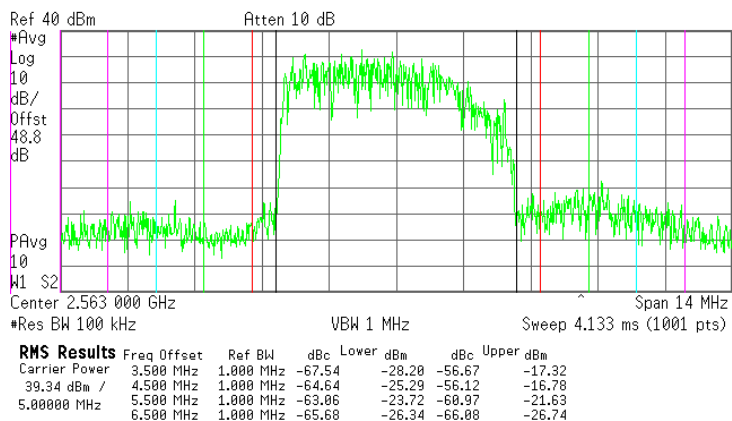
Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/17/2010		
Temperature: 23.9 °C	Air Pressure: 1014 hPa	Relative Humidity: 41 %	Power Supply: 48 VDC
Remarks:			

Plot 7.3.7 Emission mask test results at low carrier frequency, 5 MHz EBW (combined output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: QPSK
MODULATING SIGNAL: PRBS
BIT RATE: 7 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R

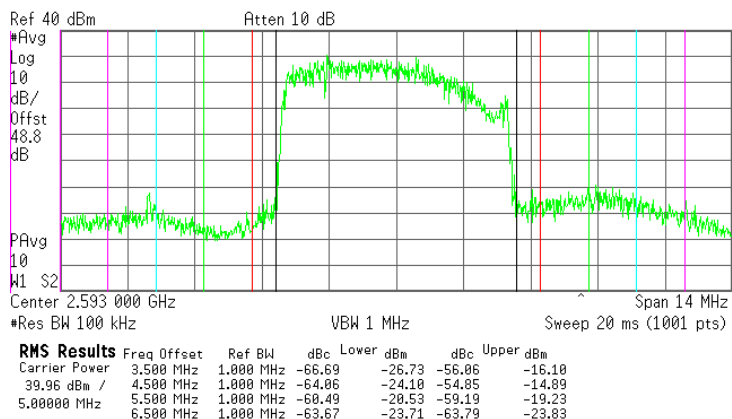


Plot 7.3.8 Emission mask test results at mid carrier frequency, 5 MHz EBW (combined output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: QPSK
MODULATING SIGNAL: PRBS
BIT RATE: 7 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R



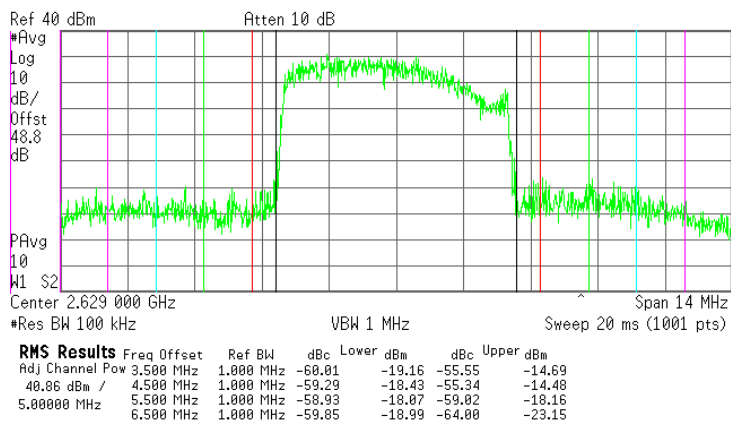
Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/17/2010		
Temperature: 23.9 °C	Air Pressure: 1014 hPa	Relative Humidity: 41 %	Power Supply: 48 VDC
Remarks:			

Plot 7.3.9 Emission mask test results at high carrier frequency, 5 MHz EBW (combined output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: QPSK
MODULATING SIGNAL: PRBS
BIT RATE: 7 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R

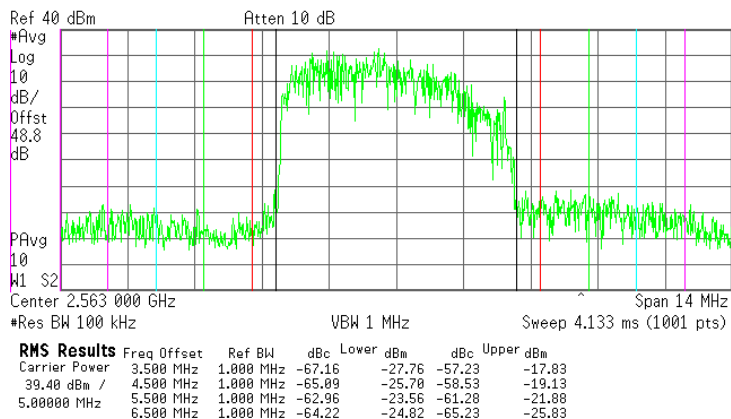


Plot 7.3.10 Emission mask test results at low carrier frequency, 5 MHz EBW (combined output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: 64QAM
MODULATING SIGNAL: PRBS
BIT RATE: 23 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R



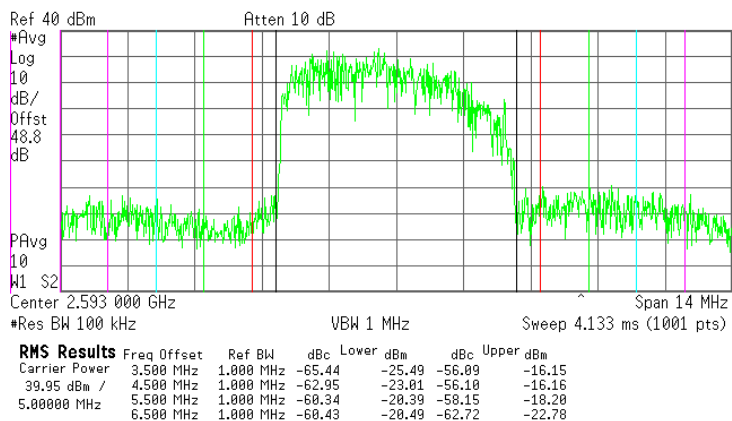
Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/17/2010		
Temperature: 23.9 °C	Air Pressure: 1014 hPa	Relative Humidity: 41 %	Power Supply: 48 VDC
Remarks:			

Plot 7.3.11 Emission mask test results at mid carrier frequency, 5 MHz EBW (combined output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: 64QAM
MODULATING SIGNAL: PRBS
BIT RATE: 23 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R

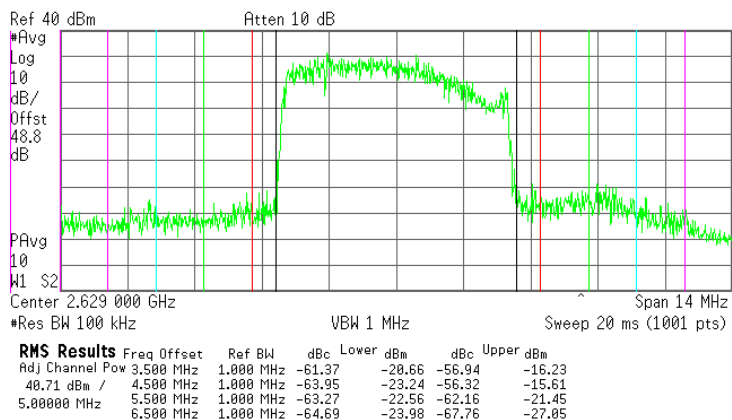


Plot 7.3.12 Emission mask test results at high carrier frequency 5 MHz EBW (combined output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: 64QAM
MODULATING SIGNAL: PRBS
BIT RATE: 23 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R



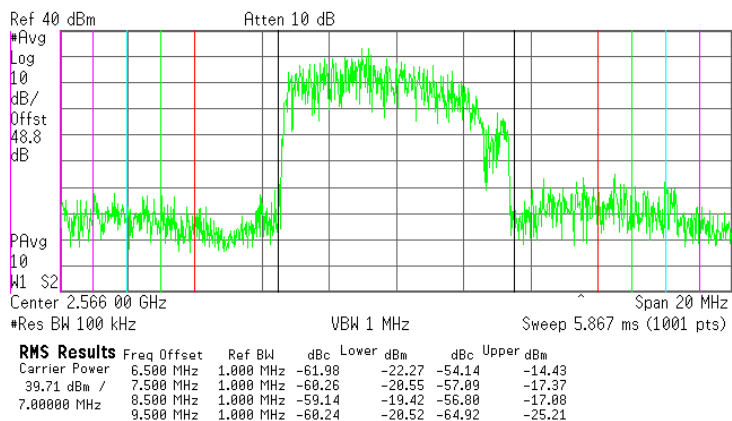
Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/17/2010		
Temperature: 23.9 °C	Air Pressure: 1014 hPa	Relative Humidity: 41 %	Power Supply: 48 VDC
Remarks:			

Plot 7.3.13 Emission mask test results at low carrier frequency, 7 MHz EBW (combined output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: QPSK
MODULATING SIGNAL: PRBS
BIT RATE: 8 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R

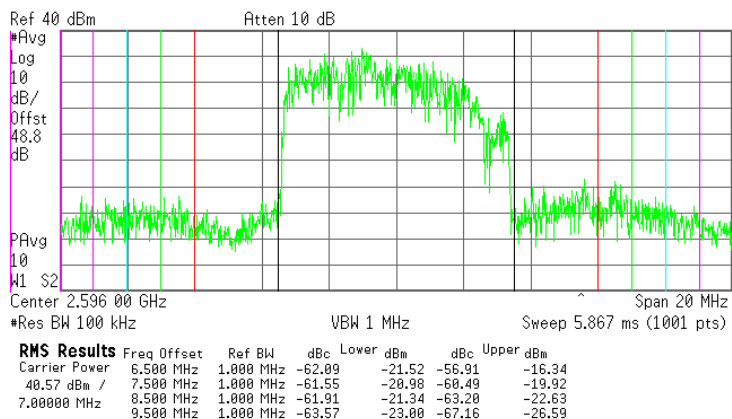


Plot 7.3.14 Emission mask test results at mid carrier frequency, 7 MHz EBW (combined output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: QPSK
MODULATING SIGNAL: PRBS
BIT RATE: 8 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R



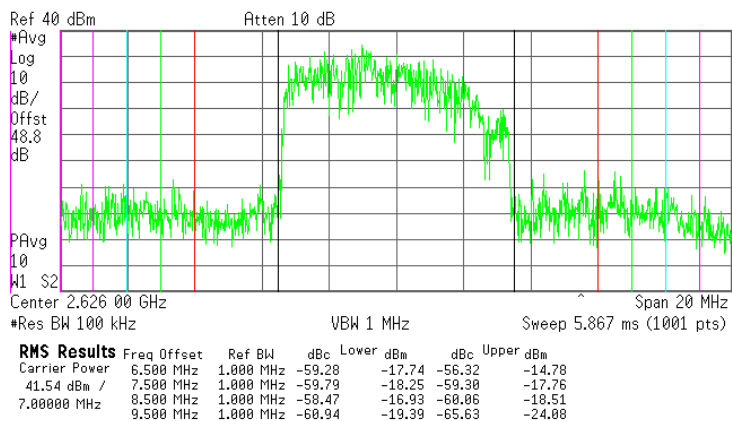
Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/17/2010		
Temperature: 23.9 °C	Air Pressure: 1014 hPa	Relative Humidity: 41 %	Power Supply: 48 VDC
Remarks:			

Plot 7.3.15 Emission mask test results at high carrier frequency, 7 MHz EBW (combined output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: QPSK
MODULATING SIGNAL: PRBS
BIT RATE: 8 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R

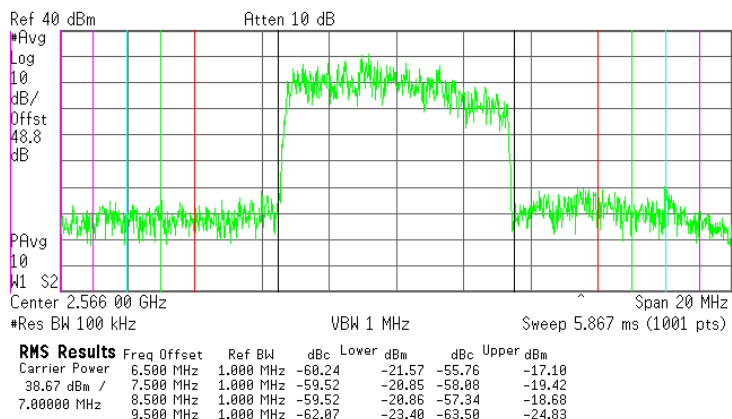


Plot 7.3.16 Emission mask test results at low carrier frequency, 7 MHz EBW (combined output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: 64QAM
MODULATING SIGNAL: PRBS
BIT RATE: 28 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R



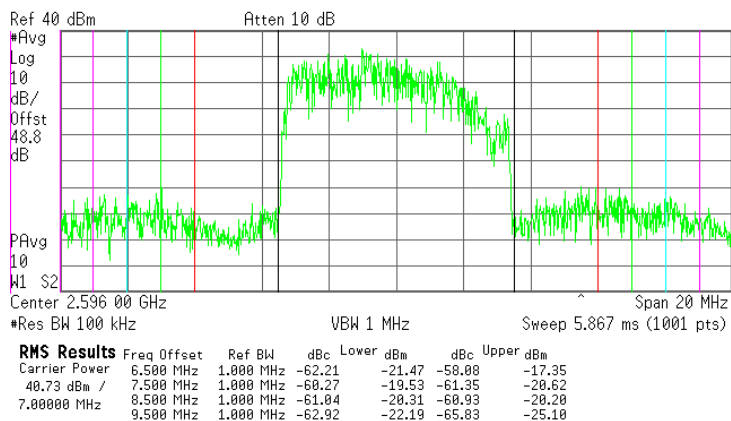
Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/17/2010		
Temperature: 23.9 °C	Air Pressure: 1014 hPa	Relative Humidity: 41 %	Power Supply: 48 VDC
Remarks:			

Plot 7.3.17 Emission mask test results at mid carrier frequency, 7 MHz EBW (combined output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: 64QAM
MODULATING SIGNAL: PRBS
BIT RATE: 28 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

Agilent

R

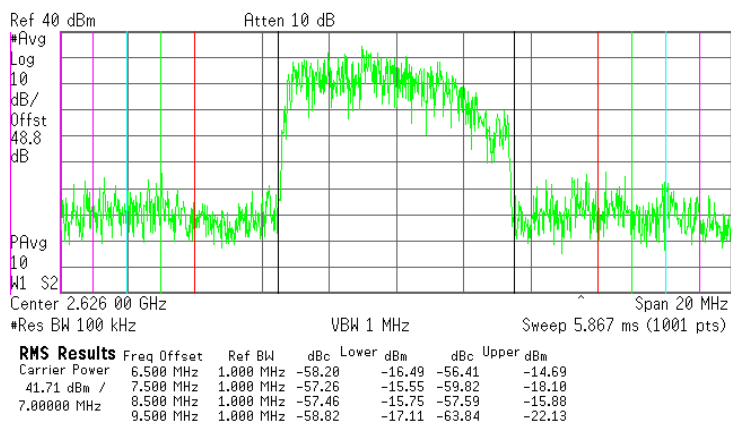


Plot 7.3.18 Emission mask test results at high carrier frequency, 10 MHz EBW (combined output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: 64QAM
MODULATING SIGNAL: PRBS
BIT RATE: 28 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

Agilent

R



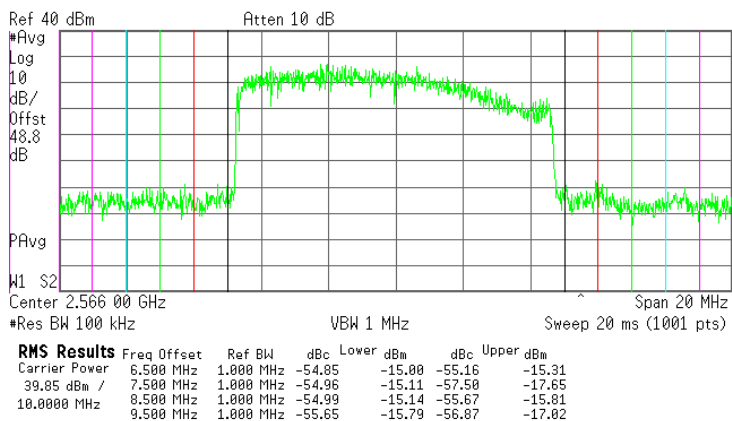
Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/17/2010		
Temperature: 23.9 °C	Air Pressure: 1014 hPa	Relative Humidity: 41 %	Power Supply: 48 VDC
Remarks:			

Plot 7.3.19 Emission mask test results at low carrier frequency, 10 MHz EBW (combined output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: QPSK
MODULATING SIGNAL: PRBS
BIT RATE: 13 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

Agilent

R

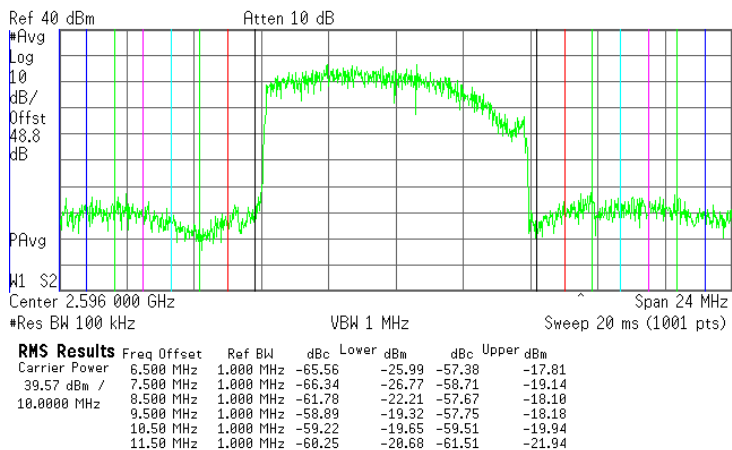


Plot 7.3.20 Emission mask test results at mid carrier frequency, 10 MHz EBW (combined output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: QPSK
MODULATING SIGNAL: PRBS
BIT RATE: 13 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

Agilent

R



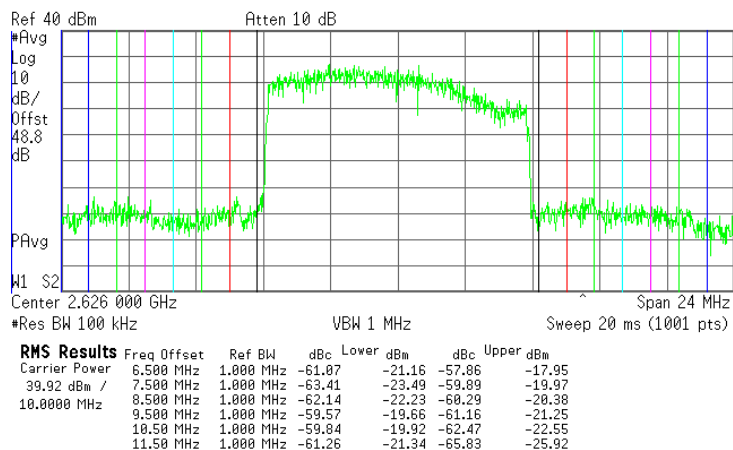
Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/17/2010		
Temperature: 23.9 °C	Air Pressure: 1014 hPa	Relative Humidity: 41 %	Power Supply: 48 VDC
Remarks:			

Plot 7.3.21 Emission mask test results at high carrier frequency, 10 MHz EBW (combined output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: QPSK
MODULATING SIGNAL: PRBS
BIT RATE: 13 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R

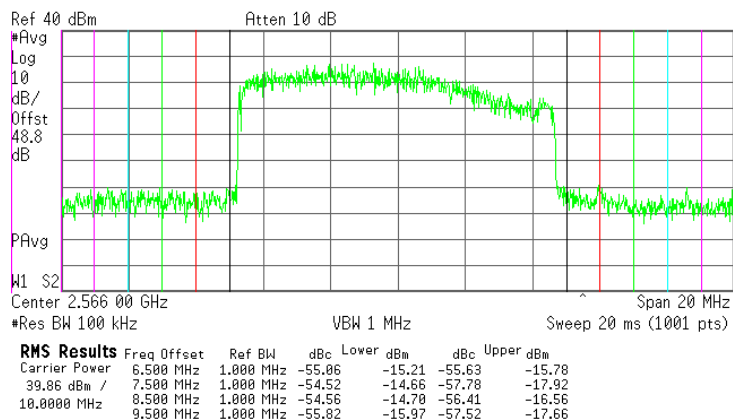


Plot 7.3.22 Emission mask test results at low carrier frequency, 10 MHz EBW (combined output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: 64QAM
MODULATING SIGNAL: PRBS
BIT RATE: 46 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R



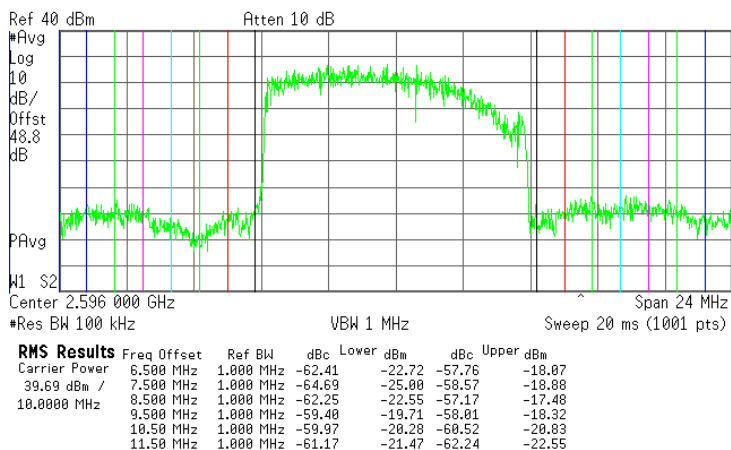
Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/17/2010		
Temperature: 23.9 °C	Air Pressure: 1014 hPa	Relative Humidity: 41 %	Power Supply: 48 VDC
Remarks:			

Plot 7.3.23 Emission mask test results at mid carrier frequency, 10 MHz EBW (combined output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: 64QAM
MODULATING SIGNAL: PRBS
BIT RATE: 46 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R

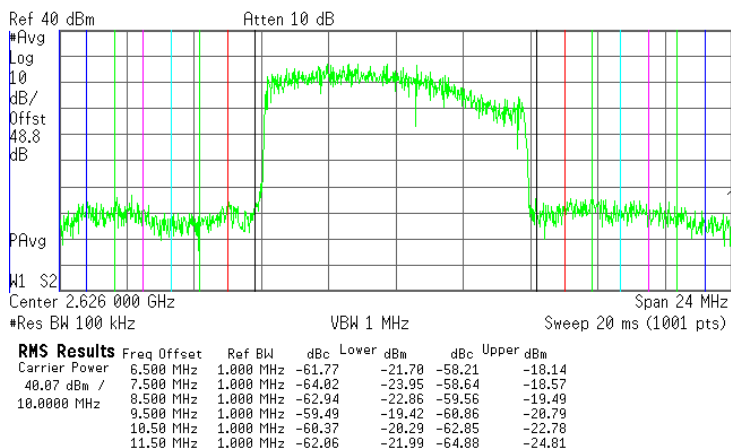


Plot 7.3.24 Emission mask test results at high carrier frequency, 10 MHz EBW (combined output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: 64QAM
MODULATING SIGNAL: PRBS
BIT RATE: 46 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R



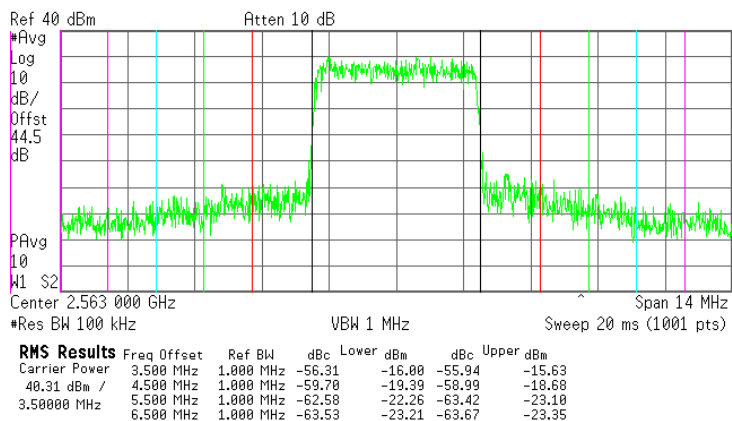
Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/17/2010		
Temperature: 23.9 °C	Air Pressure: 1014 hPa	Relative Humidity: 41 %	Power Supply: 48 VDC
Remarks:			

Plot 7.3.25 Emission mask test results at low carrier frequency, 3.5 MHz EBW (single output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: QPSK
MODULATING SIGNAL: PRBS
BIT RATE: 4 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R

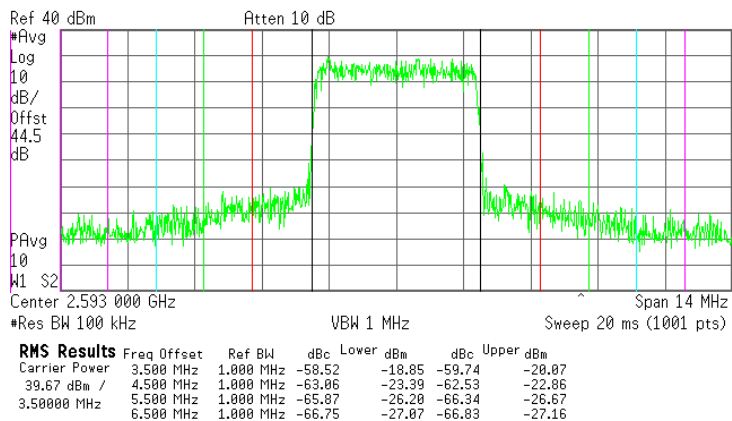


Plot 7.3.26 Emission mask test results at mid carrier frequency, 3.5 MHz EBW (single output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: QPSK
MODULATING SIGNAL: PRBS
BIT RATE: 4 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R



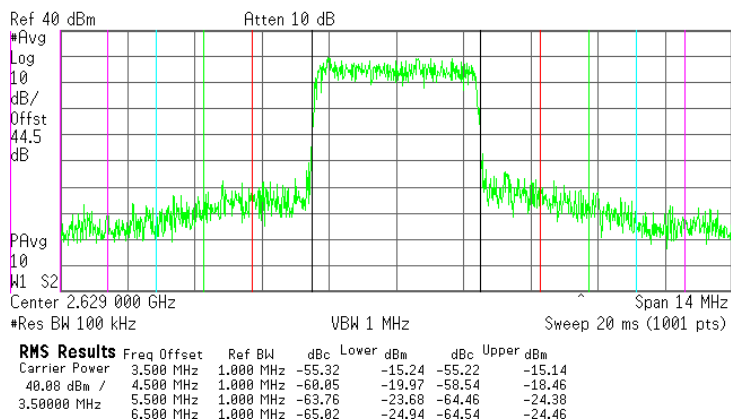
Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/17/2010		
Temperature: 23.9 °C	Air Pressure: 1014 hPa	Relative Humidity: 41 %	Power Supply: 48 VDC
Remarks:			

Plot 7.3.27 Emission mask test results at high carrier frequency, 3.5 MHz EBW (single output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: QPSK
MODULATING SIGNAL: PRBS
BIT RATE: 4 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R

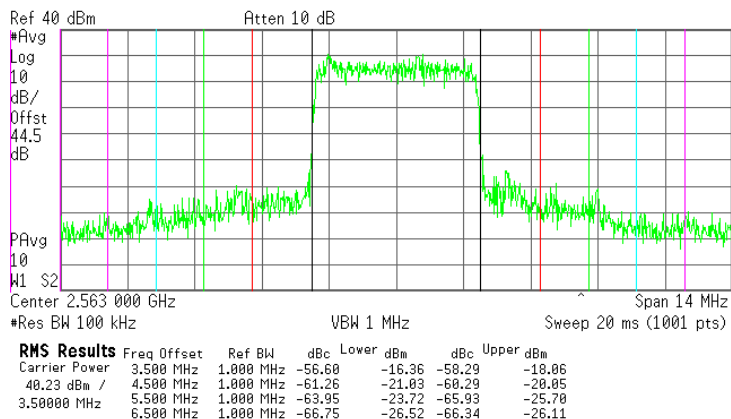


Plot 7.3.28 Emission mask test results at low carrier frequency, 3.5 MHz EBW (single output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: 64QAM
MODULATING SIGNAL: PRBS
BIT RATE: 14 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R



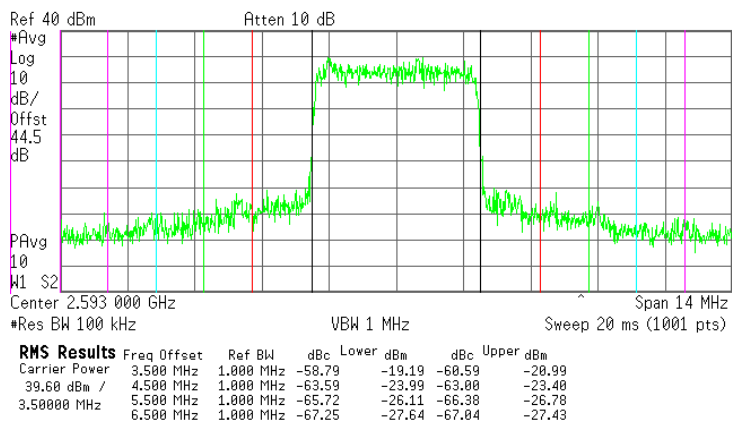
Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/17/2010		
Temperature: 23.9 °C	Air Pressure: 1014 hPa	Relative Humidity: 41 %	Power Supply: 48 VDC
Remarks:			

Plot 7.3.29 Emission mask test results at mid carrier frequency, 3.5 MHz EBW (single output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: 64QAM
MODULATING SIGNAL: PRBS
BIT RATE: 14 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

Agilent

R

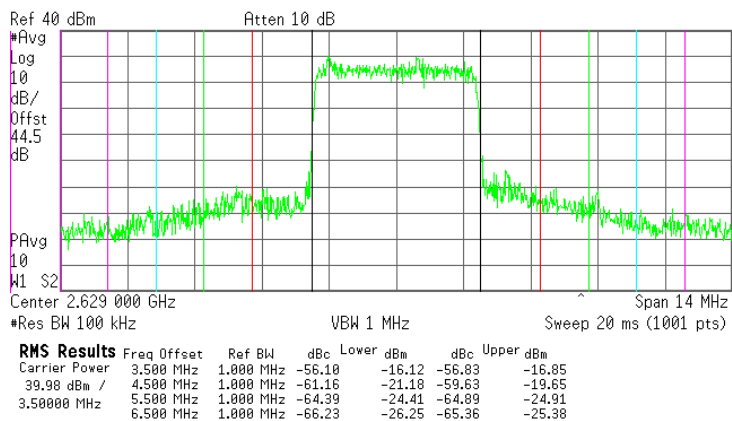


Plot 7.3.30 Emission mask test results at high carrier frequency, 3.5 MHz EBW (single output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: 64QAM
MODULATING SIGNAL: PRBS
BIT RATE: 14 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

Agilent

R



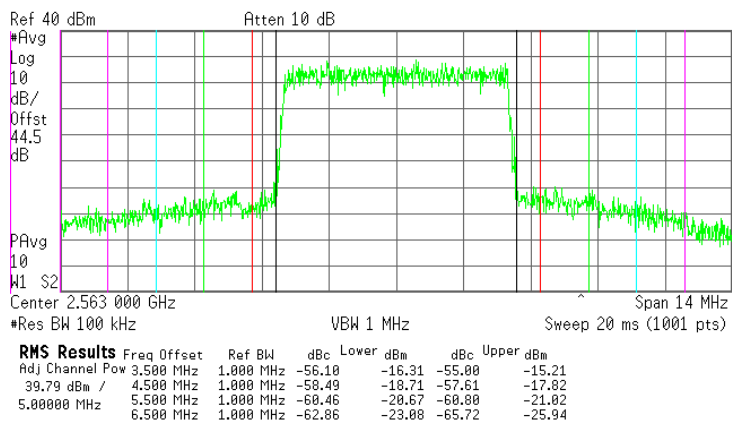
Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/17/2010		
Temperature: 23.9 °C	Air Pressure: 1014 hPa	Relative Humidity: 41 %	Power Supply: 48 VDC
Remarks:			

Plot 7.3.31 Emission mask test results at low carrier frequency, 5 MHz EBW (single output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: QPSK
MODULATING SIGNAL: PRBS
BIT RATE: 7 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R

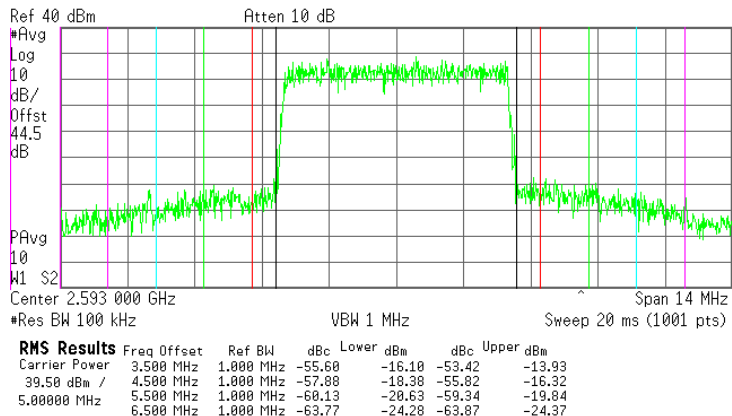


Plot 7.3.32 Emission mask test results at mid carrier frequency, 5 MHz EBW (single output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: QPSK
MODULATING SIGNAL: PRBS
BIT RATE: 7 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R



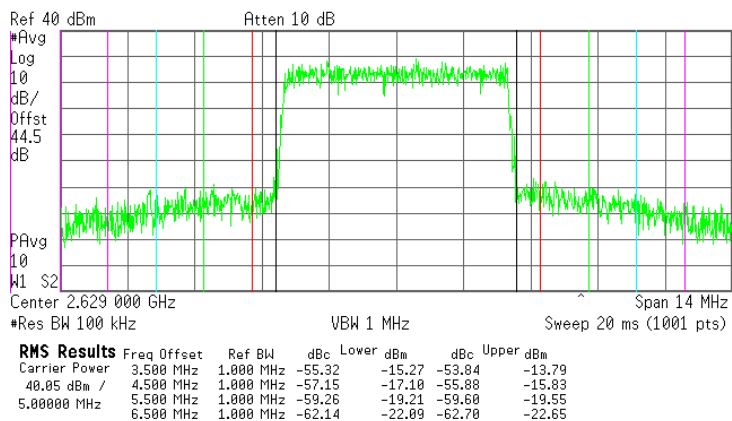
Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/17/2010		
Temperature: 23.9 °C	Air Pressure: 1014 hPa	Relative Humidity: 41 %	Power Supply: 48 VDC
Remarks:			

Plot 7.3.33 Emission mask test results at high carrier frequency, 5 MHz EBW (single output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: QPSK
MODULATING SIGNAL: PRBS
BIT RATE: 7 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R

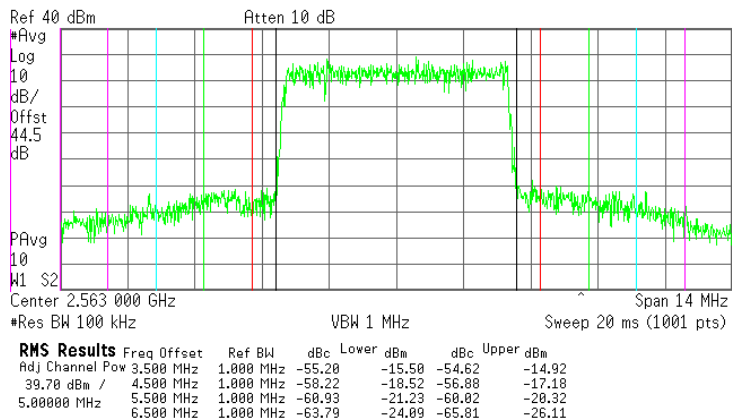


Plot 7.3.34 Emission mask test results at low carrier frequency, 5 MHz EBW (single output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: 64QAM
MODULATING SIGNAL: PRBS
BIT RATE: 23 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R



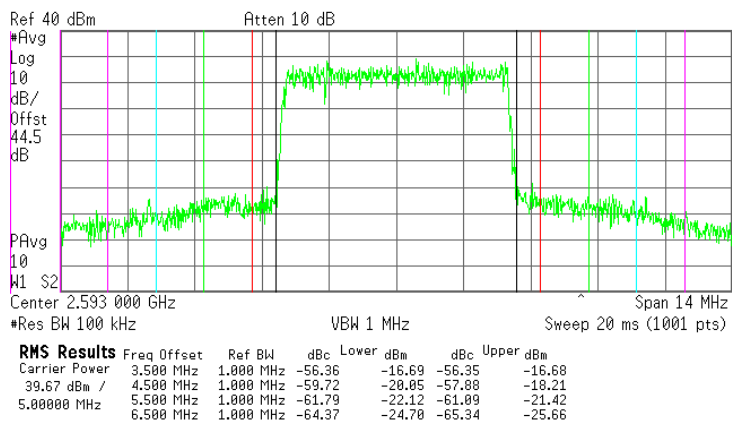
Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/17/2010		
Temperature: 23.9 °C	Air Pressure: 1014 hPa	Relative Humidity: 41 %	Power Supply: 48 VDC
Remarks:			

Plot 7.3.35 Emission mask test results at mid carrier frequency, 5 MHz EBW (single output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: 64QAM
MODULATING SIGNAL: PRBS
BIT RATE: 23 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R

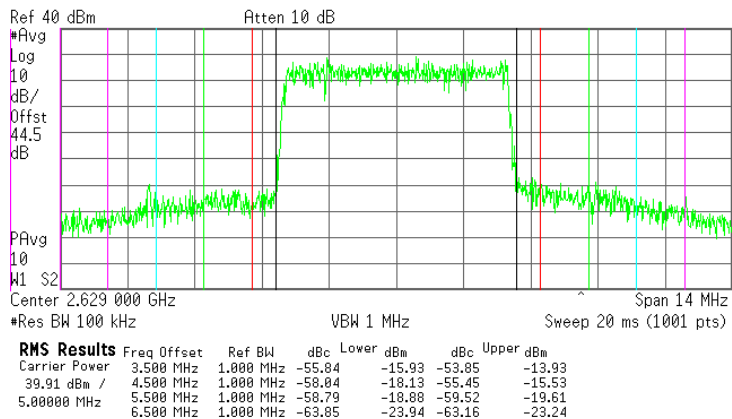


Plot 7.3.36 Emission mask test results at high carrier frequency 5 MHz EBW (single output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: 64QAM
MODULATING SIGNAL: PRBS
BIT RATE: 23 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R



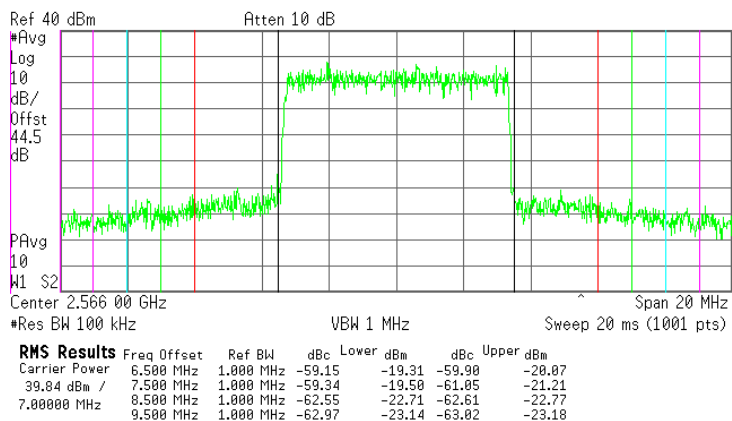
Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/17/2010		
Temperature: 23.9 °C	Air Pressure: 1014 hPa	Relative Humidity: 41 %	Power Supply: 48 VDC
Remarks:			

Plot 7.3.37 Emission mask test results at low carrier frequency, 7 MHz EBW (single output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: QPSK
MODULATING SIGNAL: PRBS
BIT RATE: 8 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R

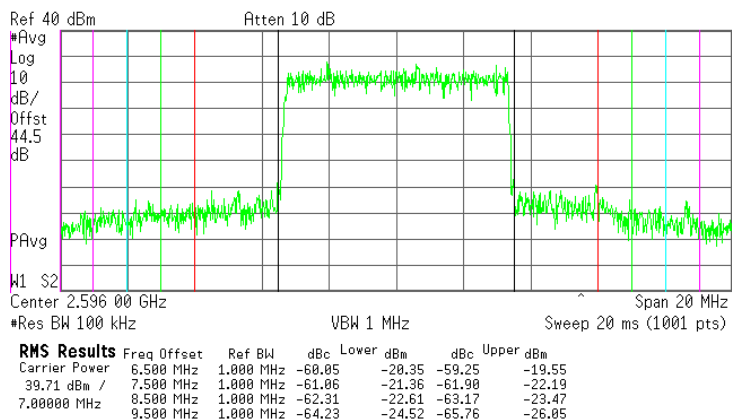


Plot 7.3.38 Emission mask test results at mid carrier frequency, 7 MHz EBW (single output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: QPSK
MODULATING SIGNAL: PRBS
BIT RATE: 8 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R



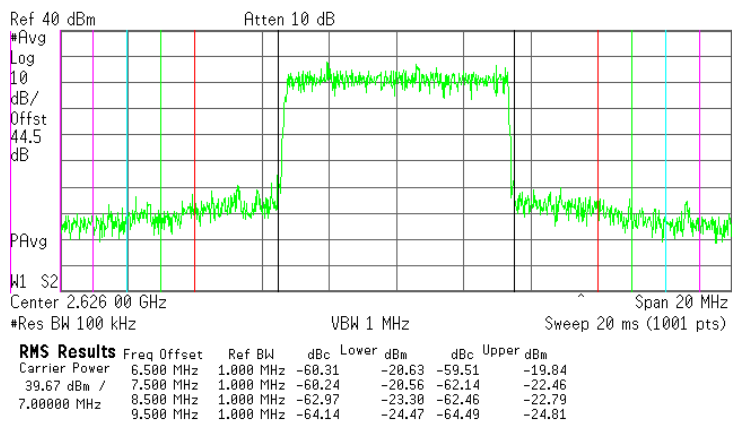
Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/17/2010		
Temperature: 23.9 °C	Air Pressure: 1014 hPa	Relative Humidity: 41 %	Power Supply: 48 VDC
Remarks:			

Plot 7.3.39 Emission mask test results at high carrier frequency, 7 MHz EBW (single output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: QPSK
MODULATING SIGNAL: PRBS
BIT RATE: 8 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R

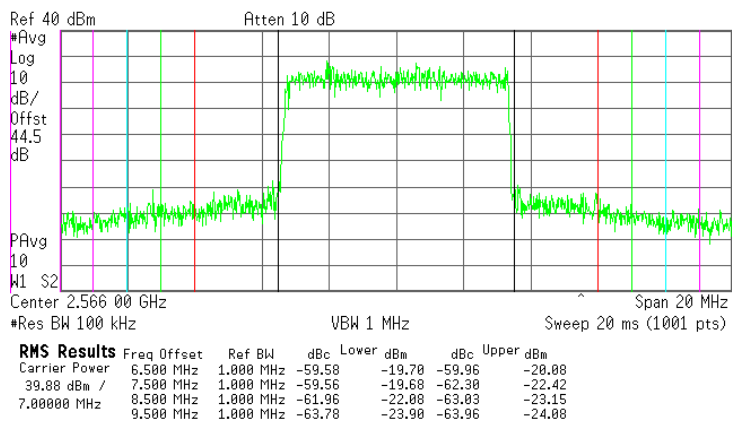


Plot 7.3.40 Emission mask test results at low carrier frequency, 7 MHz EBW (single output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: 64QAM
MODULATING SIGNAL: PRBS
BIT RATE: 28 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R



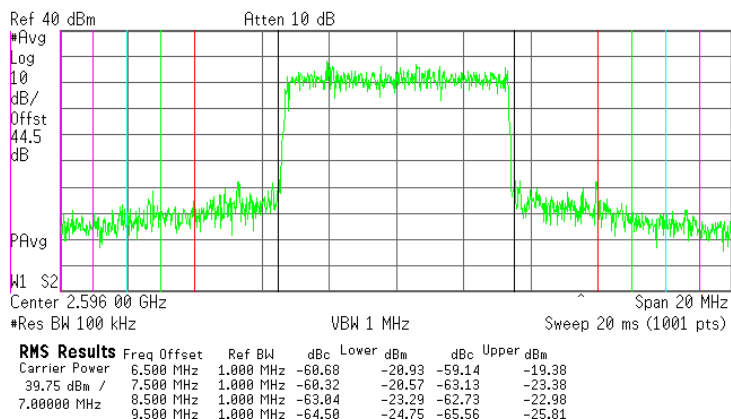
Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/17/2010		
Temperature: 23.9 °C	Air Pressure: 1014 hPa	Relative Humidity: 41 %	Power Supply: 48 VDC
Remarks:			

Plot 7.3.41 Emission mask test results at mid carrier frequency, 7 MHz EBW (single output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: 64QAM
MODULATING SIGNAL: PRBS
BIT RATE: 28 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R

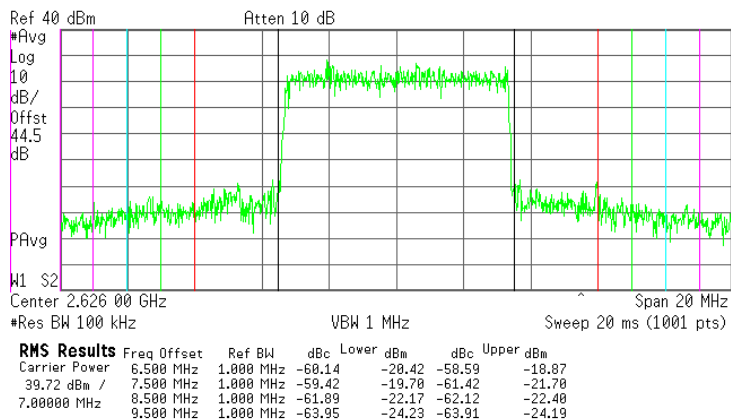


Plot 7.3.42 Emission mask test results at high carrier frequency, 7 MHz EBW (single output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: 64QAM
MODULATING SIGNAL: PRBS
BIT RATE: 28 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R



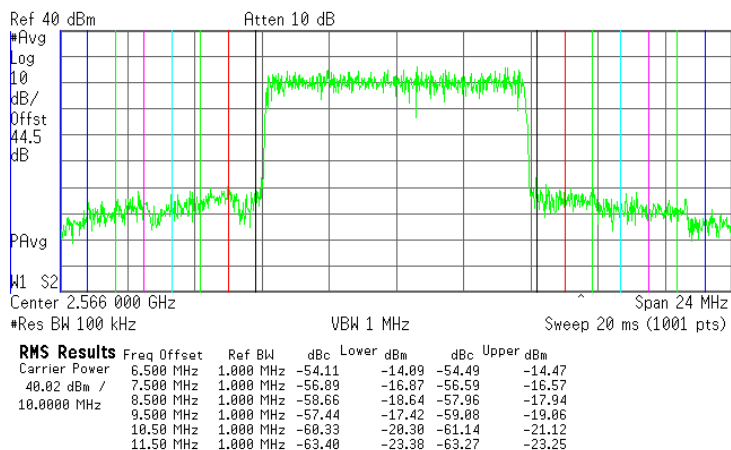
Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/17/2010		
Temperature: 23.9 °C	Air Pressure: 1014 hPa	Relative Humidity: 41 %	Power Supply: 48 VDC
Remarks:			

Plot 7.3.43 Emission mask test results at low carrier frequency, 10 MHz EBW (single output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: QPSK
MODULATING SIGNAL: PRBS
BIT RATE: 13 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R

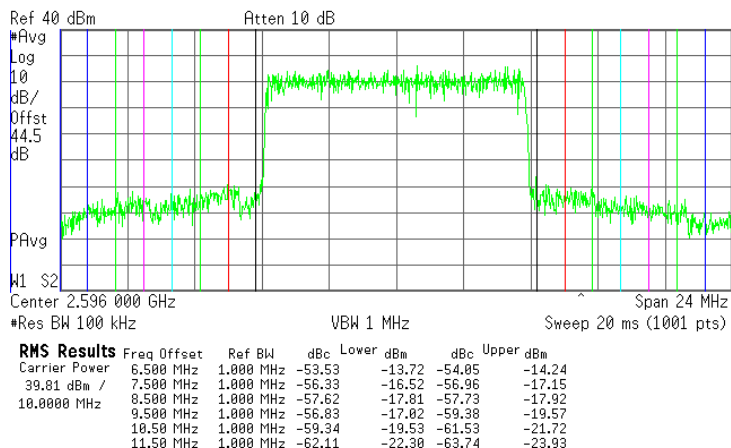


Plot 7.3.44 Emission mask test results at mid carrier frequency, 10 MHz EBW (single output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: QPSK
MODULATING SIGNAL: PRBS
BIT RATE: 13 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R



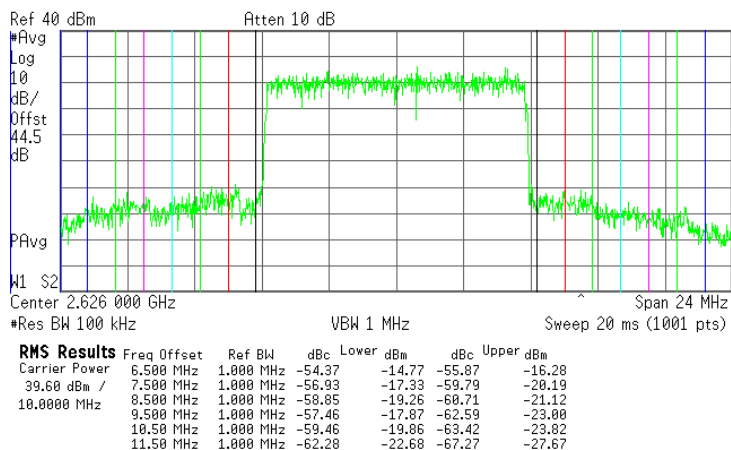
Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/17/2010		
Temperature: 23.9 °C	Air Pressure: 1014 hPa	Relative Humidity: 41 %	Power Supply: 48 VDC
Remarks:			

Plot 7.3.45 Emission mask test results at high carrier frequency, 10 MHz EBW (single output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: QPSK
MODULATING SIGNAL: PRBS
BIT RATE: 13 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R

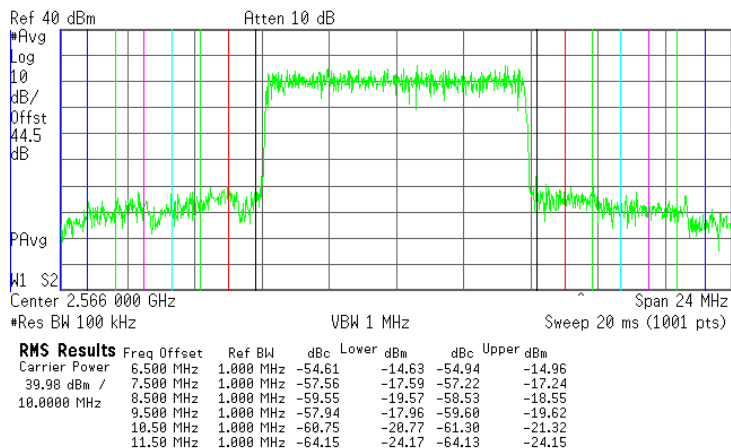


Plot 7.3.46 Emission mask test results at low carrier frequency, 10 MHz EBW (single output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: 64QAM
MODULATING SIGNAL: PRBS
BIT RATE: 46 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R



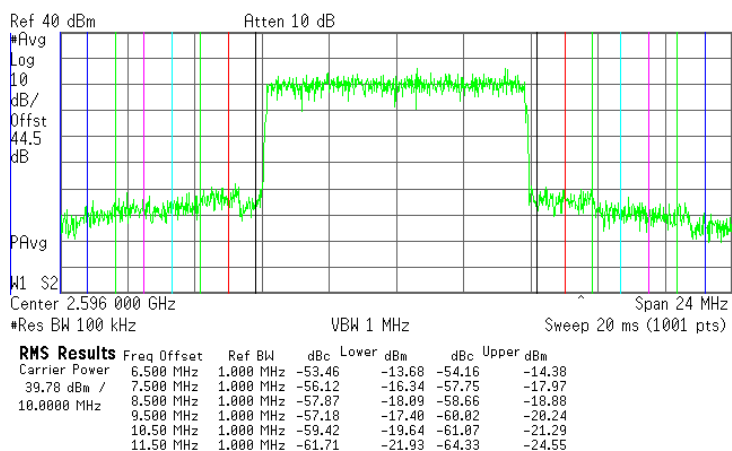
Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/17/2010		
Temperature: 23.9 °C	Air Pressure: 1014 hPa	Relative Humidity: 41 %	Power Supply: 48 VDC
Remarks:			

Plot 7.3.47 Emission mask test results at mid carrier frequency, 10 MHz EBW (single output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: 64QAM
MODULATING SIGNAL: PRBS
BIT RATE: 46 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R

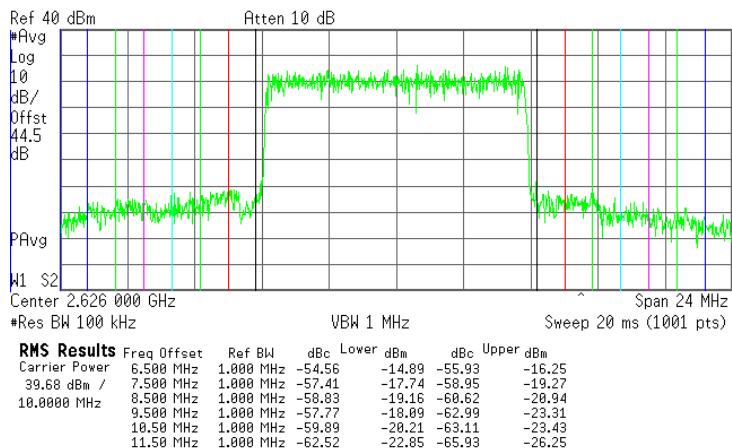


Plot 7.3.48 Emission mask test results at high carrier frequency, 10 MHz EBW (single output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
DETECTOR USED: Average
MODULATION: 64QAM
MODULATING SIGNAL: PRBS
BIT RATE: 46 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

✱ Agilent

● R



Test specification:		Section 27.53(m)(2), Radiated spurious emissions	
Test procedure:		Section 27.53(m)(2)	
Test mode:	Compliance	Verdict:	PASS
Date:	11/21/2010		
Temperature: 23.2°C	Air Pressure: 1015 hPa	Relative Humidity: 61%	Power Supply: 48 VDC
Remarks:			

7.4 Radiated spurious emission measurements

7.4.1 General

This test was performed to measure radiated spurious emissions from the EUT. Specification test limits are given in Table 7.4.1.

Table 7.4.1 Radiated spurious emission test limits

Frequency, MHz	Attenuation below carrier, dBc	ERP of spurious, dBm	Equivalent field strength limit @ 3m, dB(μV/m)***
0.009 – 10 th harmonic*	43+10logP**	-13	84.4

* - Excluding the in band emission within ± 250 % of the authorized bandwidth from the carrier

** - P is transmitter output power in Watts

*** - Equivalent field strength limit was calculated from maximum allowed ERP of spurious as follows:
 $E = \sqrt{30 \times P \times 1.64} / r$, where P is ERP in Watts, 1.64 is numeric gain of ideal dipole and r is antenna to EUT distance in meters

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

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

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

7.4.2.3 The worst test results (the lowest margins) were recorded in Table 7.4.2 and shown in the associated plots.

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

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

7.4.3.2 The specified frequency range was investigated with antenna connected to spectrum analyzer. To find maximum radiation the turntable was rotated 360° and the measuring antenna height was swept from 1 to 4 m in both, vertical and horizontal, polarizations.

7.4.3.3 The worst test results (the lowest margins) were recorded in Table 7.4.2 and shown in the associated plots.

Test specification: Section 27.53(m)(2), Radiated spurious emissions			
Test procedure: Section 27.53(m)(2)			
Test mode: Compliance		Verdict: PASS	
Date: 11/21/2010			
Temperature: 23.2°C	Air Pressure: 1015 hPa	Relative Humidity: 61%	Power Supply: 48 VDC
Remarks:			

Figure 7.4.1 Setup for spurious emission field strength measurements in 9 kHz to 30 MHz band

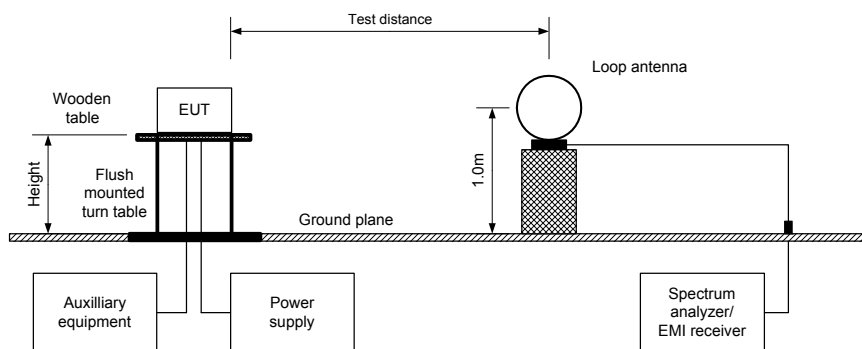
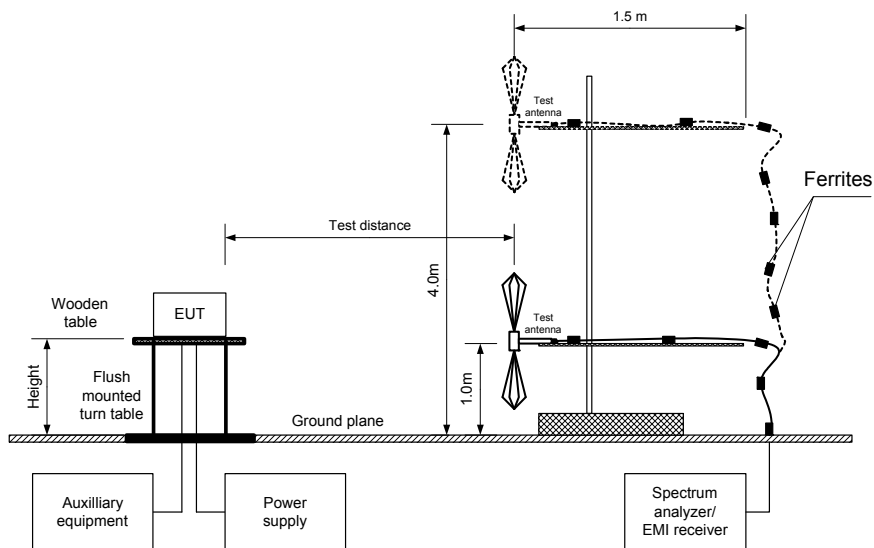


Figure 7.4.2 Setup for spurious emission field strength measurements above 30 MHz



Test specification:		Section 27.53(m)(2), Radiated spurious emissions	
Test procedure:		Section 27.53(m)(2)	
Test mode:	Compliance	Verdict:	PASS
Date:	11/21/2010		
Temperature: 23.2°C	Air Pressure: 1015 hPa	Relative Humidity: 61%	Power Supply: 48 VDC
Remarks:			

Table 7.4.2 Spurious emission field strength test results

ASSIGNED FREQUENCY RANGE: 2560 - 2632 MHz
 TEST DISTANCE: 3 m
 TEST SITE: Semi anechoic chamber
 EUT HEIGHT: 0.8 m
 INVESTIGATED FREQUENCY RANGE: 0.009 – 26500 MHz
 DETECTOR USED: Peak
 VIDEO BANDWIDTH: > Resolution bandwidth
 TEST ANTENNA TYPE: Active loop (9 kHz – 30 MHz)
 Biconilog (30 MHz – 1000 MHz)
 Double ridged guide (above 1000 MHz)
 MODULATION: QPSK
 MODULATING SIGNAL: PRBS
 BIT RATE: 4 Mbps
 TRANSMITTER OUTPUT POWER: Maximum

Frequency, MHz	Field strength, dB(μV/m)	Limit, dB(μV/m)	Margin, dB*	RBW, kHz	Antenna polarization	Antenna height, m	Turn-table position**, degrees
Low carrier frequency, 2563 MHz							
All spurious were found at least 20 dB below the specified limit							
Mid carrier frequency, 2593 MHz							
All spurious were found at least 20 dB below the specified limit							
High carrier frequency, 2629 MHz							
All spurious were found at least 20 dB below the specified limit							

*- Margin = Field strength of spurious – calculated field strength limit.

**-. EUT front panel refers to 0 degrees position of turntable.

Reference numbers of test equipment used

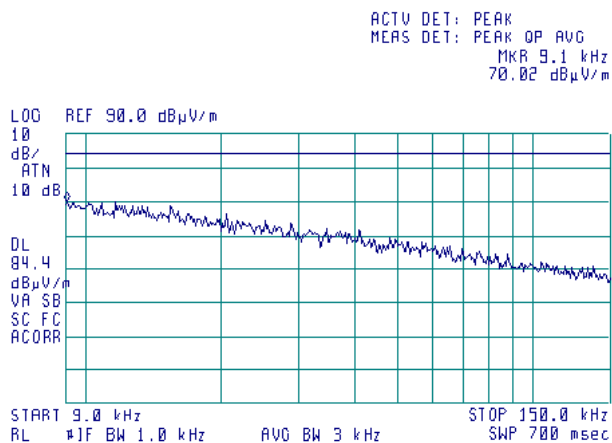
HL 0446	HL 0521	HL 0604	HL 0768	HL 1424	HL 1984	HL 2870	HL 2871
HL 3534	HL 3535	HL 3622					

Full description is given in Appendix A.

Test specification:		Section 27.53(m)(2), Radiated spurious emissions	
Test procedure:		Section 27.53(m)(2)	
Test mode:		Compliance	Verdict: PASS
Date:		11/21/2010	
Temperature: 23.2°C	Air Pressure: 1015 hPa	Relative Humidity: 61%	Power Supply: 48 VDC
Remarks:			

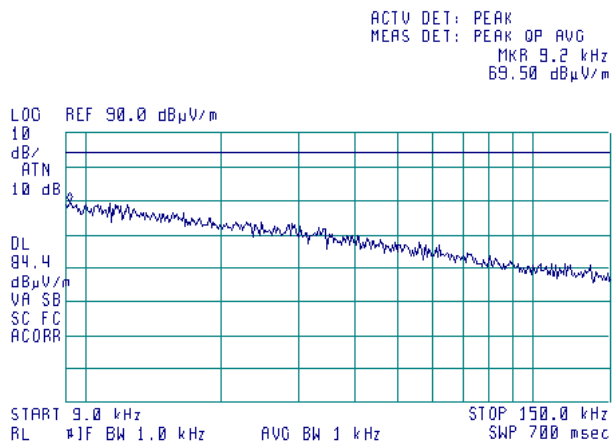
Plot 7.4.1 Radiated emission measurements in 9 - 150 kHz range

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



Plot 7.4.2 Radiated emission measurements in 9 - 150 kHz range

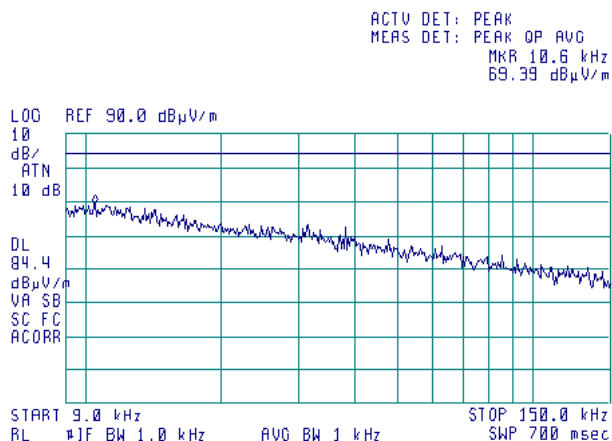
TEST SITE: Semi anechoic chamber
CARRIER FREQUENCY: Mid
ANTENNA POLARIZATION: Vertical and Horizontal
TEST DISTANCE: 3 m



Test specification:		Section 27.53(m)(2), Radiated spurious emissions	
Test procedure:		Section 27.53(m)(2)	
Test mode:		Compliance	Verdict: PASS
Date:		11/21/2010	
Temperature: 23.2°C	Air Pressure: 1015 hPa	Relative Humidity: 61%	Power Supply: 48 VDC
Remarks:			

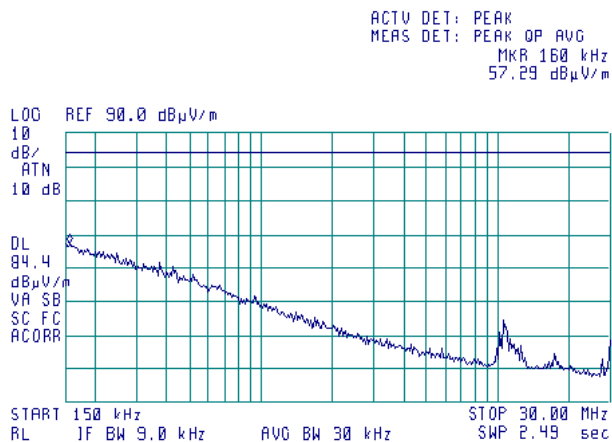
Plot 7.4.3 Radiated emission measurements in 9 - 150 kHz range

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



Plot 7.4.4 Radiated emission measurements in 0.15 - 30 MHz range

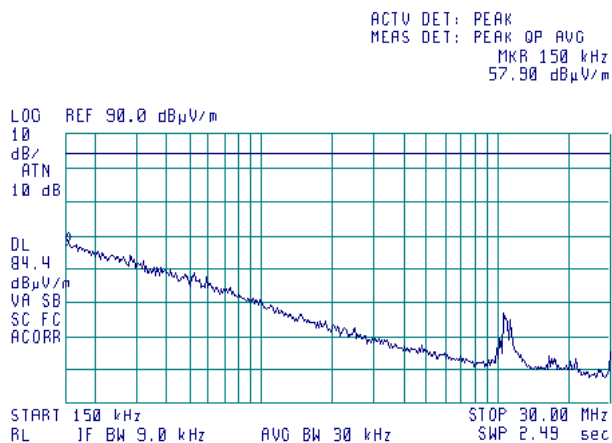
TEST SITE: Semi anechoic chamber
CARRIER FREQUENCY: Low
ANTENNA POLARIZATION: Vertical and Horizontal
TEST DISTANCE: 3 m



Test specification:		Section 27.53(m)(2), Radiated spurious emissions	
Test procedure:		Section 27.53(m)(2)	
Test mode:		Compliance	Verdict: PASS
Date:		11/21/2010	
Temperature: 23.2°C	Air Pressure: 1015 hPa	Relative Humidity: 61%	Power Supply: 48 VDC
Remarks:			

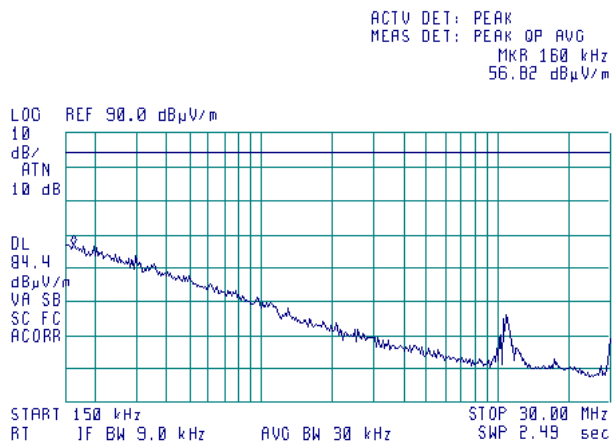
Plot 7.4.5 Radiated emission measurements in 0.15 - 30 MHz range

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



Plot 7.4.6 Radiated emission measurements in 0.15 - 30 MHz range

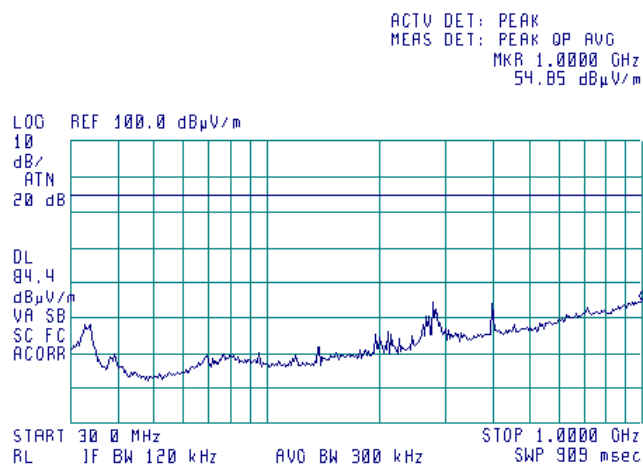
TEST SITE: Semi anechoic chamber
CARRIER FREQUENCY: High
ANTENNA POLARIZATION: Vertical and Horizontal
TEST DISTANCE: 3 m



Test specification:		Section 27.53(m)(2), Radiated spurious emissions	
Test procedure:		Section 27.53(m)(2)	
Test mode:		Compliance	Verdict: PASS
Date:		11/21/2010	
Temperature: 23.2°C	Air Pressure: 1015 hPa	Relative Humidity: 61%	Power Supply: 48 VDC
Remarks:			

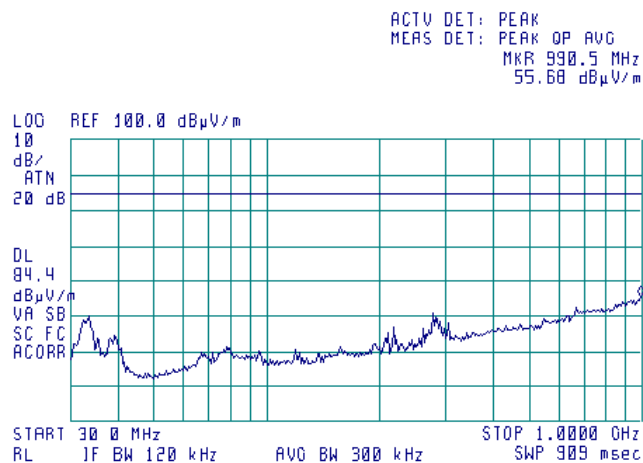
Plot 7.4.7 Radiated emission measurements in 30 - 1000 MHz range

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



Plot 7.4.8 Radiated emission measurements in 30 - 1000 MHz range

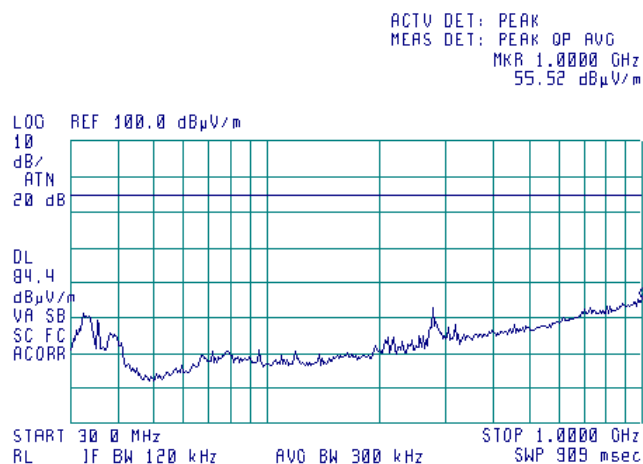
TEST SITE: Semi anechoic chamber
CARRIER FREQUENCY: Mid
ANTENNA POLARIZATION: Vertical and Horizontal
TEST DISTANCE: 3 m



Test specification:		Section 27.53(m)(2), Radiated spurious emissions	
Test procedure:		Section 27.53(m)(2)	
Test mode:	Compliance	Verdict:	PASS
Date:	11/21/2010		
Temperature: 23.2°C	Air Pressure: 1015 hPa	Relative Humidity: 61%	Power Supply: 48 VDC
Remarks:			

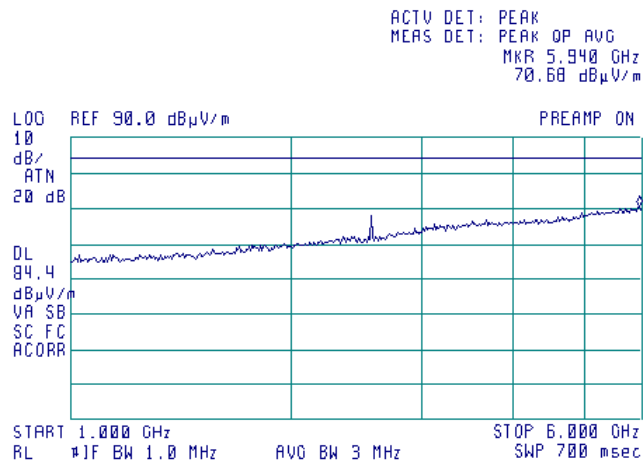
Plot 7.4.9 Radiated emission measurements in 30 - 1000 MHz range

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



Plot 7.4.10 Radiated emission measurements in 1000 - 6000 MHz range

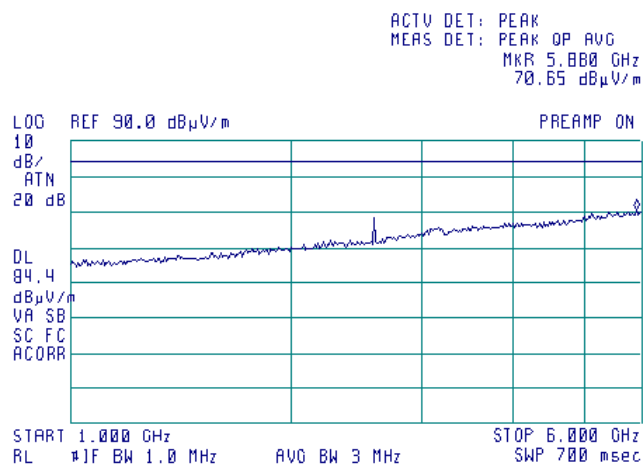
TEST SITE: Semi anechoic chamber
CARRIER FREQUENCY: Low
ANTENNA POLARIZATION: Vertical and Horizontal
TEST DISTANCE: 3 m



Test specification:		Section 27.53(m)(2), Radiated spurious emissions	
Test procedure:		Section 27.53(m)(2)	
Test mode:	Compliance	Verdict:	PASS
Date:	11/21/2010		
Temperature: 23.2°C	Air Pressure: 1015 hPa	Relative Humidity: 61%	Power Supply: 48 VDC
Remarks:			

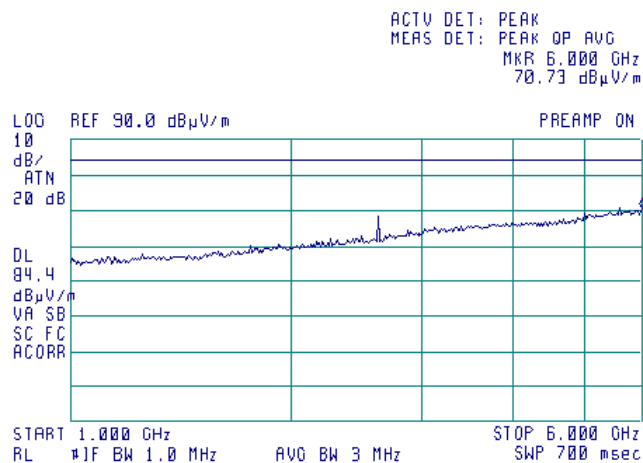
Plot 7.4.11 Radiated emission measurements in 1000 – 6000 MHz range

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



Plot 7.4.12 Radiated emission measurements in 1000 – 6000 MHz range

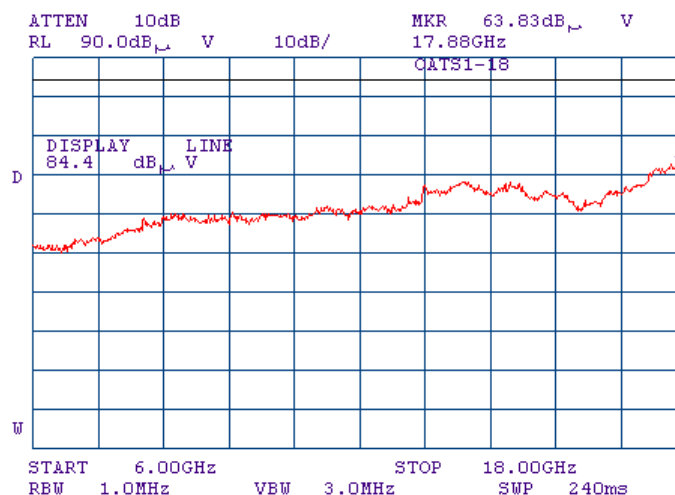
TEST SITE: Semi anechoic chamber
CARRIER FREQUENCY: High
ANTENNA POLARIZATION: Vertical and Horizontal
TEST DISTANCE: 3 m



Test specification:		Section 27.53(m)(2), Radiated spurious emissions	
Test procedure:		Section 27.53(m)(2)	
Test mode:		Compliance	Verdict: PASS
Date:		11/21/2010	
Temperature: 23.2°C	Air Pressure: 1015 hPa	Relative Humidity: 61%	Power Supply: 48 VDC
Remarks:			

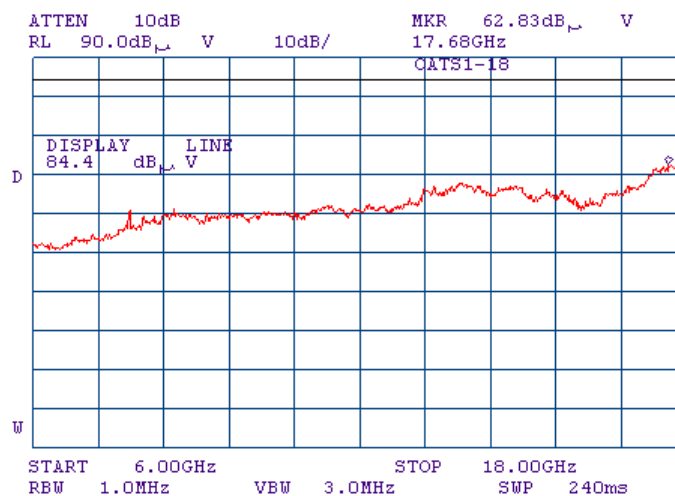
Plot 7.4.13 Radiated emission measurements in 6000 – 18000 MHz range

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



Plot 7.4.14 Radiated emission measurements in 6000 – 18000 MHz range

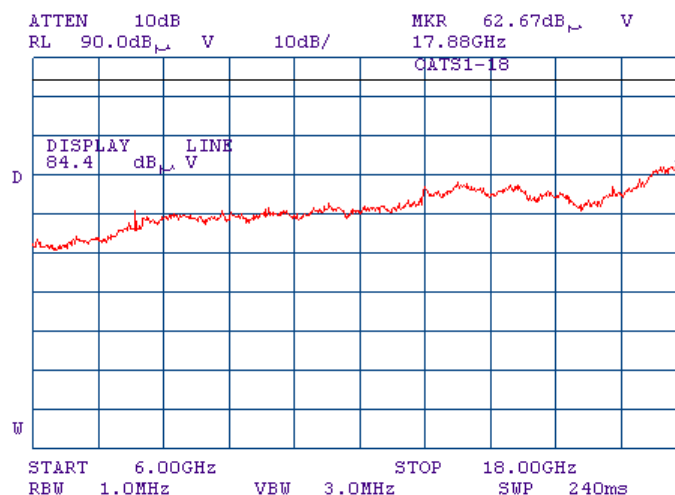
TEST SITE: Semi anechoic chamber
CARRIER FREQUENCY: Mid
ANTENNA POLARIZATION: Vertical and Horizontal
TEST DISTANCE: 3 m



Test specification:		Section 27.53(m)(2), Radiated spurious emissions	
Test procedure:		Section 27.53(m)(2)	
Test mode:		Compliance	Verdict: PASS
Date:		11/21/2010	
Temperature: 23.2°C	Air Pressure: 1015 hPa	Relative Humidity: 61%	Power Supply: 48 VDC
Remarks:			

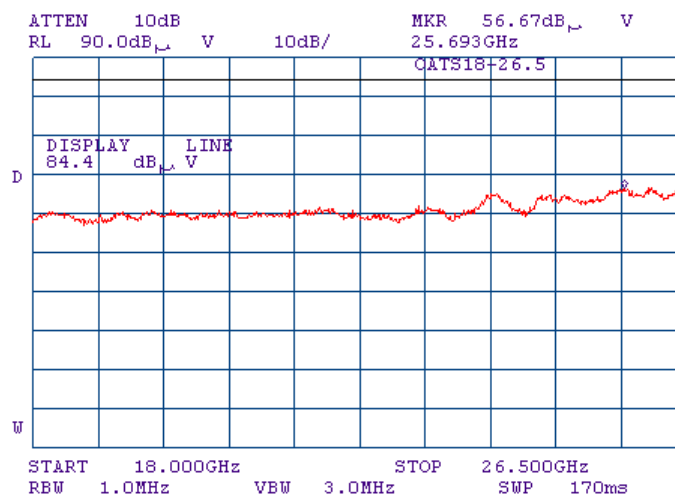
Plot 7.4.15 Radiated emission measurements in 6000 – 18000 MHz range

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



Plot 7.4.16 Radiated emission measurements in 18000 – 26500 MHz range

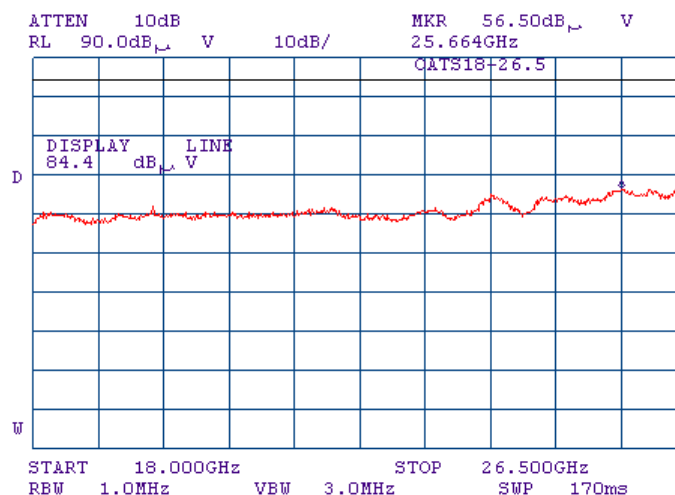
TEST SITE: OATS
CARRIER FREQUENCY: Low
ANTENNA POLARIZATION: Vertical and Horizontal
TEST DISTANCE: 3 m



Test specification:		Section 27.53(m)(2), Radiated spurious emissions	
Test procedure:		Section 27.53(m)(2)	
Test mode:		Compliance	Verdict: PASS
Date:		11/21/2010	
Temperature: 23.2°C	Air Pressure: 1015 hPa	Relative Humidity: 61%	Power Supply: 48 VDC
Remarks:			

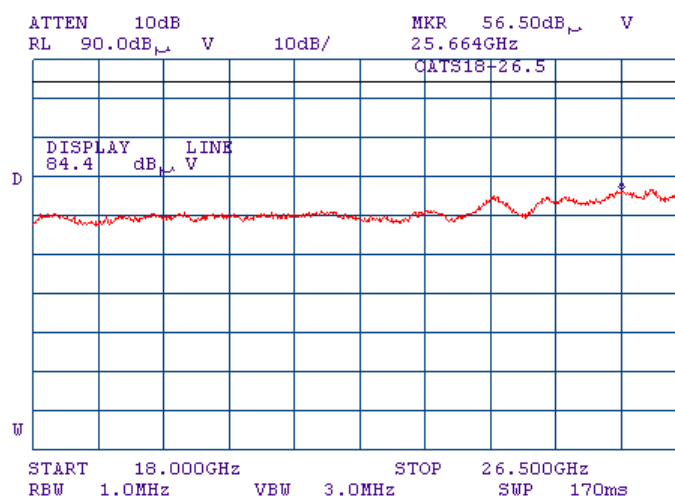
Plot 7.4.17 Radiated emission measurements in 18000 – 26500 MHz range

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



Plot 7.4.18 Radiated emission measurements in 18000 – 26500 MHz range

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



Test specification:		Section 27.53(m)(2), Conducted spurious emissions	
Test procedure:		Section 27.53(m)(2)	
Test mode:	Compliance	Verdict:	PASS
Date:	11/17/2010		
Temperature: 23.9°C	Air Pressure: 1014 hPa	Relative Humidity: 41%	Power Supply: 48 VDC
Remarks:			

7.5 Spurious emissions at RF antenna connector test

7.5.1 General

This test was performed to measure spurious emissions at RF antenna connector. Specification test limits are given in Table 7.5.1.

Table 7.5.1 Spurious emission limits

Frequency, MHz	Attenuation below carrier, dBc	ERP of spurious, dBm
0.009 – 10th harmonic*	43+10logP*	-13.0

* - P is transmitter output power in Watts

7.5.2 Test procedure

7.5.2.1 The EUT was set up as shown in Figure 7.5.1 or Figure 7.5.2, energized and its proper operation was checked.

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

7.5.2.3 The spurious emission was measured with spectrum analyzer as provided in Table 7.5.2 and associated plots.

Figure 7.5.1 Spurious emission test setup, single output

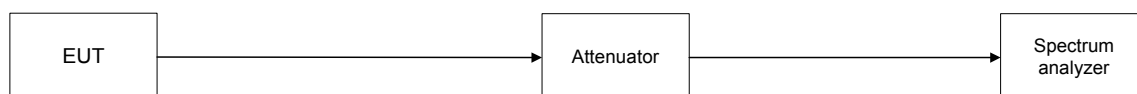
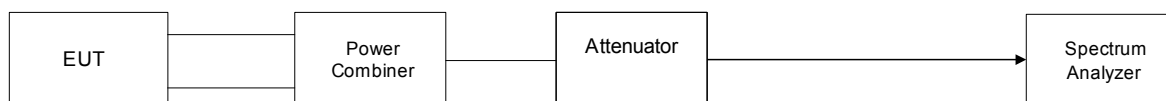


Figure 7.5.2 Spurious emission test setup, combined output



Test specification:		Section 27.53(m)(2), Conducted spurious emissions	
Test procedure:		Section 27.53(m)(2)	
Test mode:	Compliance	Verdict:	PASS
Date:	11/17/2010		
Temperature: 23.9°C	Air Pressure: 1014 hPa	Relative Humidity: 41%	Power Supply: 48 VDC
Remarks:			

Table 7.5.2 Spurious emission test results (combined output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
 INVESTIGATED FREQUENCY RANGE: 0.009 – 26500 MHz
 (except:
 2556.0 – 2570.0 MHz for low channel
 2586.0 – 2600.0 MHz for mid channel
 2622.0 – 2636.0 MHz for high channel)
 See NOTE 2

DETECTOR USED: Average
 VIDEO BANDWIDTH: ≥ Resolution bandwidth
 MODULATION: QPSK
 MODULATING SIGNAL: PRBS
 BIT RATE: 4 Mbps
 EBW: 3.5 MHz (See NOTE 1)
 TRANSMITTER OUTPUT POWER SETTINGS: **Maximum**
 TRANSMITTER OUTPUT POWER: 27.96 dBm at low frequency
 26.07 dBm at mid frequency
 28.46 dBm at high frequency

Frequency, MHz	SA reading, dBm	Attenuator, dB	Cable loss, dB	RBW, kHz	Spurious emission, dBm	Limit, dBm	Margin, dB*	Verdict
Low carrier frequency								
No emissions were found								Pass
Mid carrier frequency								
No emissions were found								Pass
High carrier frequency								
No emissions were found								Pass

*- Margin = Spurious emission – specification limit.

NOTE 1: Spurious emissions test was performed at 3.5 MHz EBW with QPSK modulation as configuration that produces maximum power spectral density.

NOTE 2: For band edge emissions please see emission mask test report.

Test specification:	Section 27.53(m)(2), Conducted spurious emissions		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/17/2010		
Temperature: 23.9°C	Air Pressure: 1014 hPa	Relative Humidity: 41%	Power Supply: 48 VDC
Remarks:			

Table 7.5.3 Spurious emission test results (single output)

ASSIGNED FREQUENCY RANGE: 2560.0 – 2632.0 MHz
 INVESTIGATED FREQUENCY RANGE: 0.009 – 26500 MHz
 (except:
 2556.0 – 2570.0 MHz for low channel
 2586.0 – 2600.0 MHz for mid channel
 2622.0 – 2636.0 MHz for high channel)
 See NOTE 2

DETECTOR USED: Average
 VIDEO BANDWIDTH: ≥ Resolution bandwidth
 MODULATION: QPSK
 MODULATING SIGNAL: PRBS
 BIT RATE: 4 Mbps
 EBW: 3.5 MHz (See NOTE 1)
 TRANSMITTER OUTPUT POWER SETTINGS: Maximum
 TRANSMITTER OUTPUT POWER: 27.96 dBm at low frequency
 26.07 dBm at mid frequency
 28.46 dBm at high frequency

Frequency, MHz	SA reading, dBm	Attenuator, dB	Cable loss, dB	RBW, kHz	Spurious emission, dBm	Limit, dBm	Margin, dB*	Verdict
Low carrier frequency								
No emissions were found								Pass
Mid carrier frequency								
No emissions were found								Pass
High carrier frequency								
No emissions were found								Pass

*- Margin = Spurious emission – specification limit.

NOTE 1: Spurious emissions test was performed at 3.5 MHz EBW with QPSK modulation as configuration that produces maximum power spectral density.

NOTE 2: For band edge emissions please see emission mask test report.

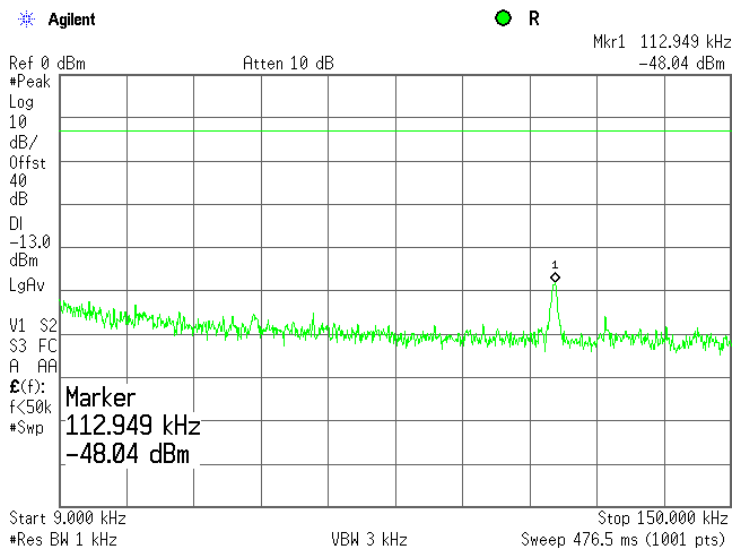
Reference numbers of test equipment used

HL 1906	HL 2015	HL 2254	HL 2953	HL 3322	HL 3433	HL 3434	HL 3559
HL 3787	HL 3818						

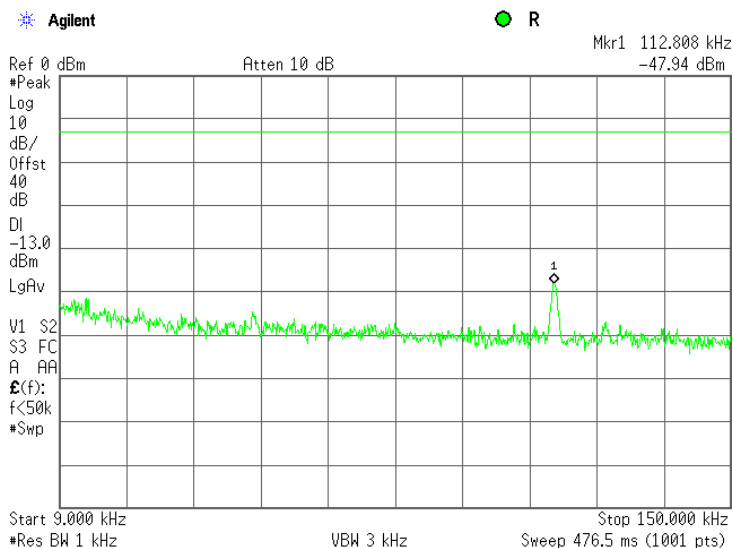
Full description is given in Appendix A.

Test specification:	Section 27.53(m)(2), Conducted spurious emissions		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/17/2010		
Temperature: 23.9°C	Air Pressure: 1014 hPa	Relative Humidity: 41%	Power Supply: 48 VDC
Remarks:			

Plot 7.5.1 Spurious emission measurements in 9 - 150 kHz range at low carrier frequency, single output

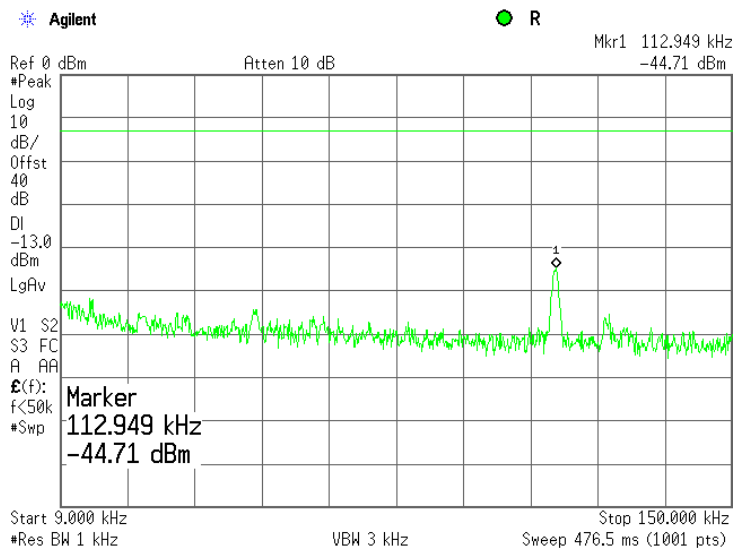


Plot 7.5.2 Spurious emission measurements in 9 - 150 kHz range at mid carrier frequency, single output

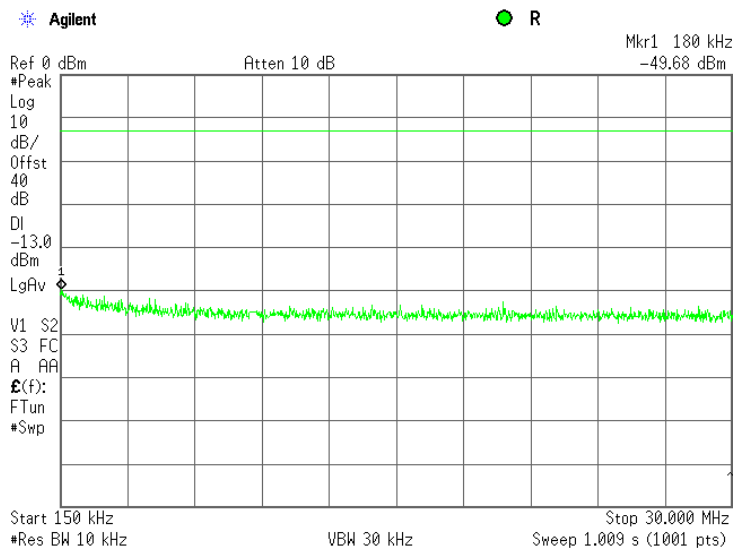


Test specification:	Section 27.53(m)(2), Conducted spurious emissions		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/17/2010		
Temperature: 23.9°C	Air Pressure: 1014 hPa	Relative Humidity: 41%	Power Supply: 48 VDC
Remarks:			

Plot 7.5.3 Spurious emission measurements in 9 - 150 kHz range at high carrier frequency, single output

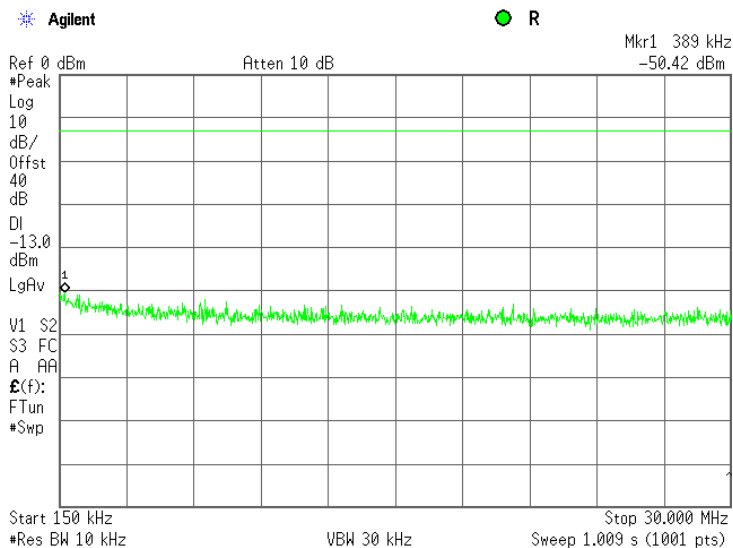


Plot 7.5.4 Spurious emission measurements in 0.15 - 30.0 MHz range at low carrier frequency, single output

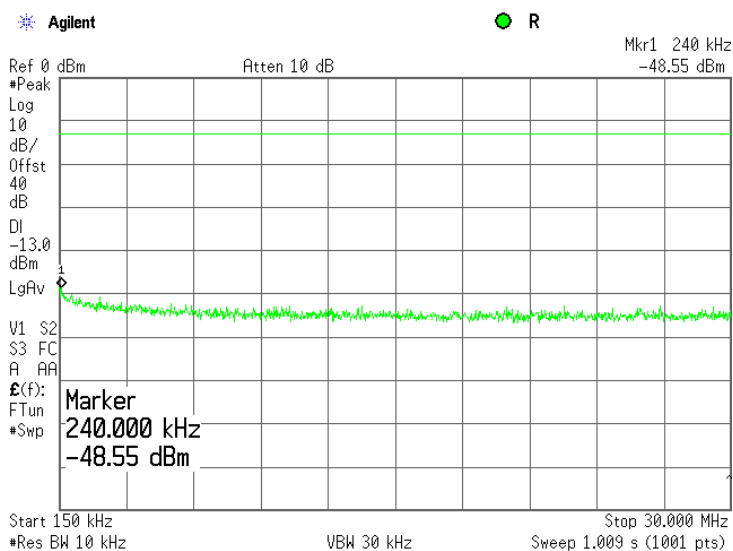


Test specification:		Section 27.53(m)(2), Conducted spurious emissions	
Test procedure:		Section 27.53(m)(2)	
Test mode:		Compliance	Verdict: PASS
Date:		11/17/2010	
Temperature: 23.9°C	Air Pressure: 1014 hPa	Relative Humidity: 41%	Power Supply: 48 VDC
Remarks:			

Plot 7.5.5 Spurious emission measurements in 0.15 - 30.0 MHz range at mid carrier frequency, single output

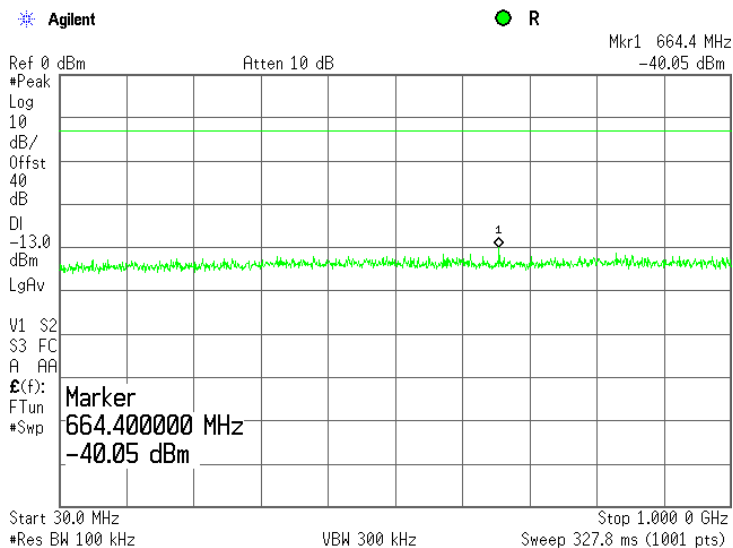


Plot 7.5.6 Spurious emission measurements in 0.15 - 30.0 MHz range at high carrier frequency, single output

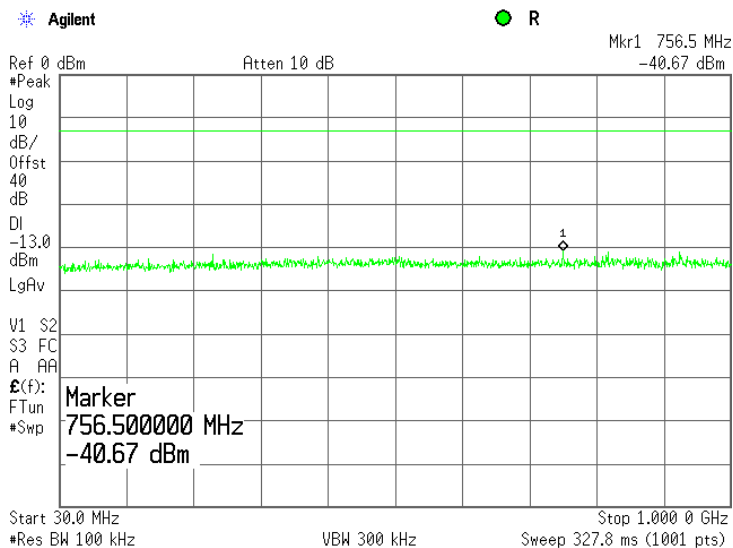


Test specification:	Section 27.53(m)(2), Conducted spurious emissions		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/17/2010		
Temperature: 23.9°C	Air Pressure: 1014 hPa	Relative Humidity: 41%	Power Supply: 48 VDC
Remarks:			

Plot 7.5.7 Spurious emission measurements in 30.0 – 1000.0 MHz range at low carrier frequency, single output

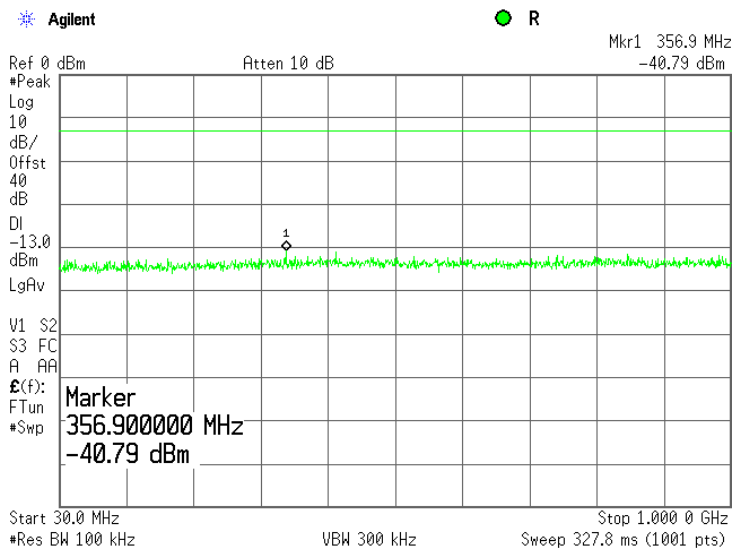


Plot 7.5.8 Spurious emission measurements in 30.0 – 1000.0 MHz range at mid carrier frequency, single output

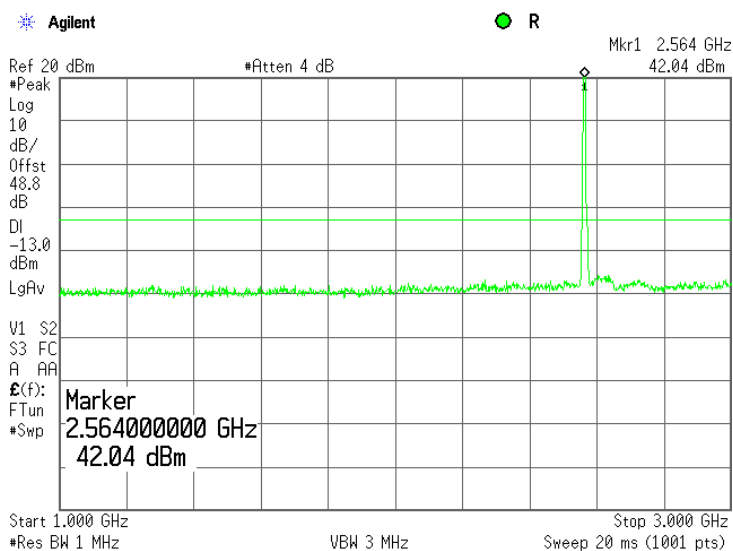


Test specification:	Section 27.53(m)(2), Conducted spurious emissions		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/17/2010		
Temperature: 23.9°C	Air Pressure: 1014 hPa	Relative Humidity: 41%	Power Supply: 48 VDC
Remarks:			

Plot 7.5.9 Spurious emission measurements in 30.0 – 1000.0 MHz range at high carrier frequency, single output

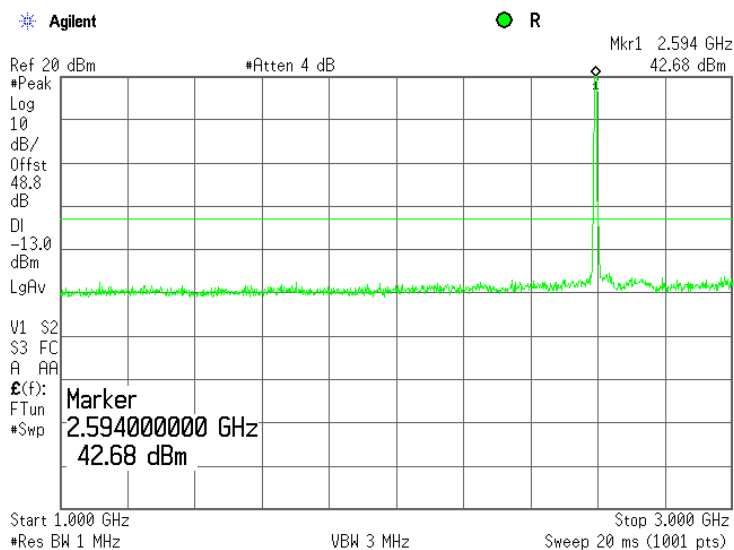


Plot 7.5.10 Spurious emission measurements in 1000.0 – 3000.0 MHz range at low carrier frequency, single output

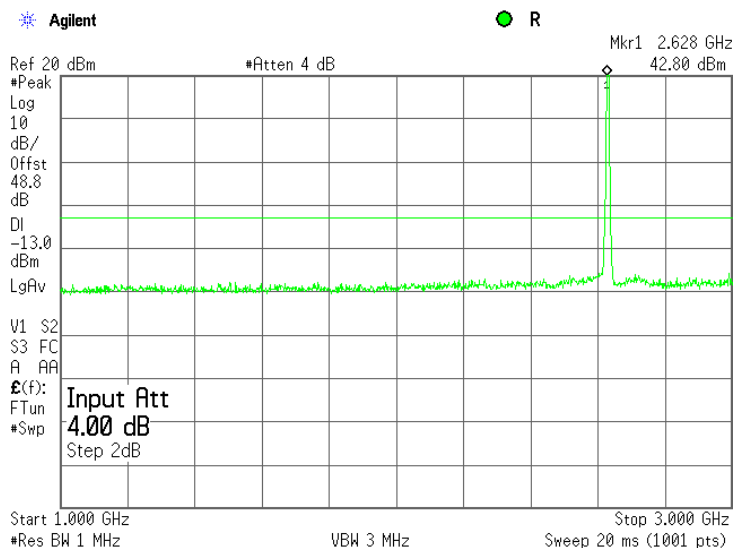


Test specification:		Section 27.53(m)(2), Conducted spurious emissions	
Test procedure:		Section 27.53(m)(2)	
Test mode:		Compliance	Verdict: PASS
Date:		11/17/2010	
Temperature: 23.9°C	Air Pressure: 1014 hPa	Relative Humidity: 41%	Power Supply: 48 VDC
Remarks:			

Plot 7.5.11 Spurious emission measurements in 1000.0 – 3000.0 MHz range at mid carrier frequency, single output

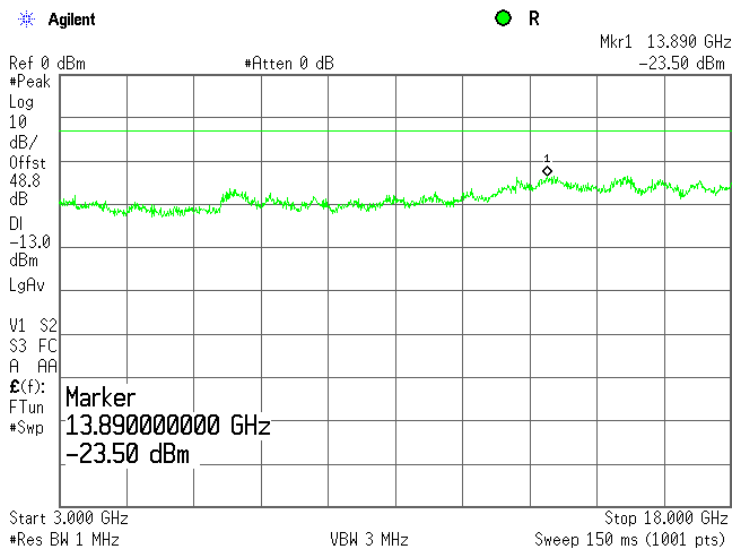


Plot 7.5.12 Spurious emission measurements in 1000.0 – 3000.0 MHz at high carrier frequency, single output

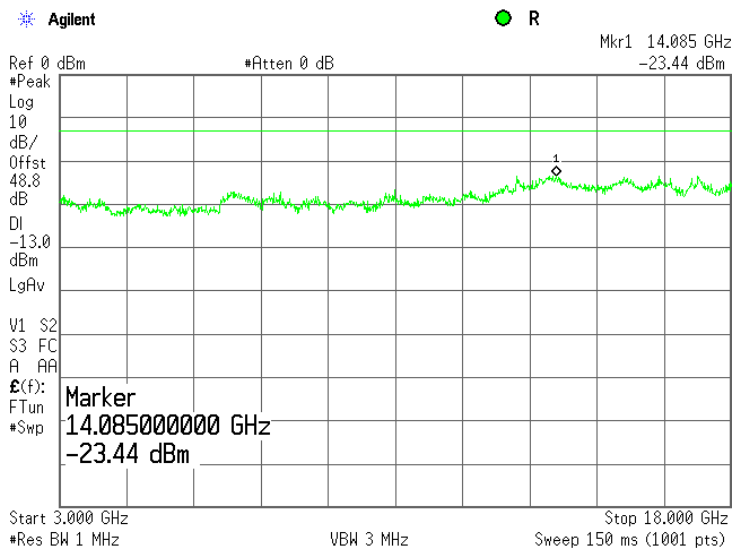


Test specification:		Section 27.53(m)(2), Conducted spurious emissions	
Test procedure:		Section 27.53(m)(2)	
Test mode:		Compliance	Verdict: PASS
Date:		11/17/2010	
Temperature: 23.9°C	Air Pressure: 1014 hPa	Relative Humidity: 41%	Power Supply: 48 VDC
Remarks:			

Plot 7.5.13 Spurious emission measurements in 3000 – 18000 MHz range at low carrier frequency, single output

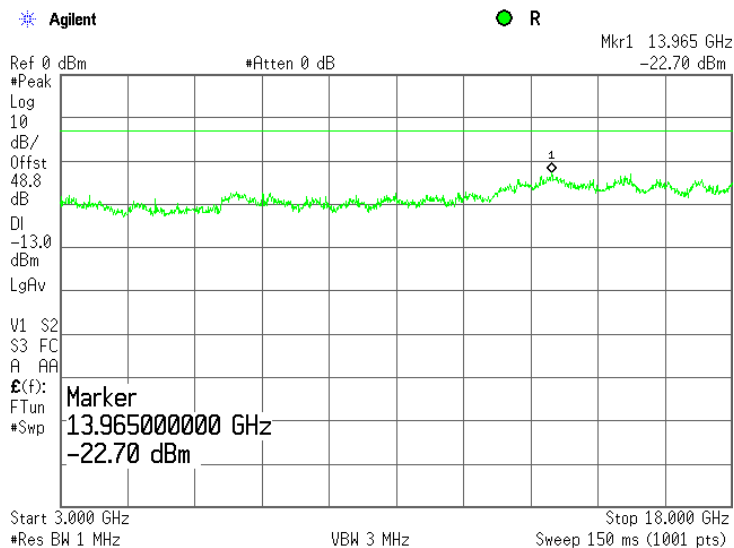


Plot 7.5.14 Spurious emission measurements in 3000 – 18000 MHz range at mid carrier frequency, single output

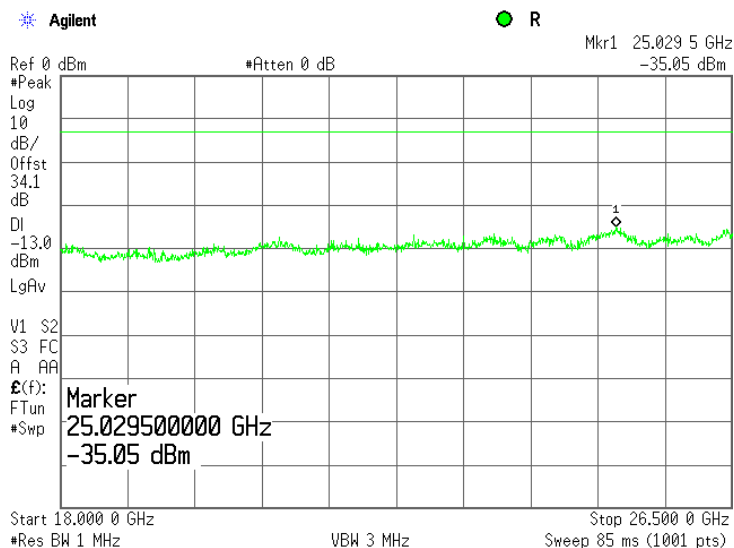


Test specification:	Section 27.53(m)(2), Conducted spurious emissions		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/17/2010		
Temperature: 23.9°C	Air Pressure: 1014 hPa	Relative Humidity: 41%	Power Supply: 48 VDC
Remarks:			

Plot 7.5.15 Spurious emission measurements in 3000 – 18000 MHz range at high carrier frequency, single output

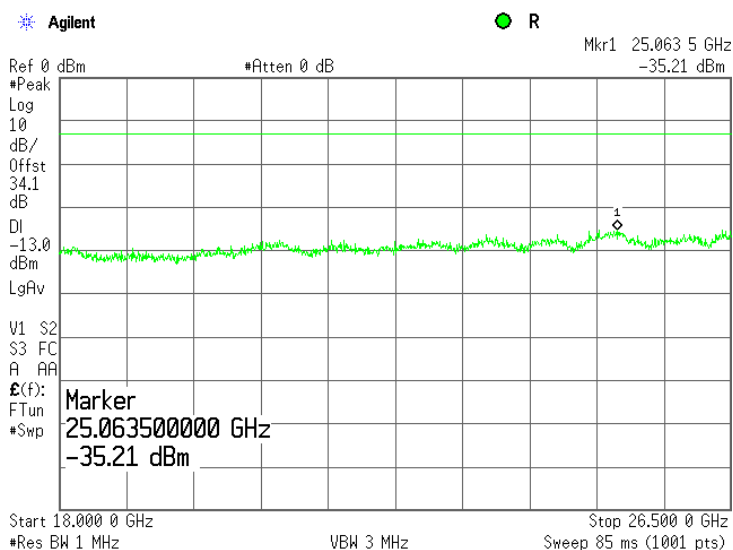


Plot 7.5.16 Spurious emission measurements in 18000 – 26500 MHz range at low carrier frequency, single output

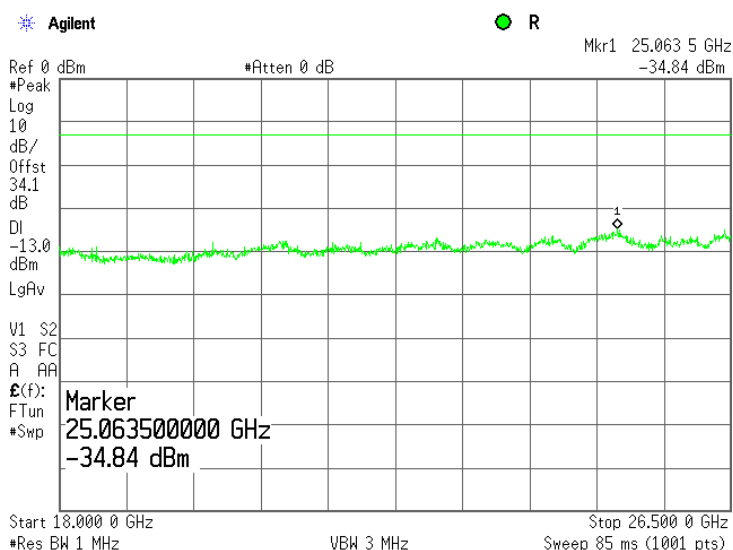


Test specification:		Section 27.53(m)(2), Conducted spurious emissions	
Test procedure:		Section 27.53(m)(2)	
Test mode:		Compliance	Verdict: PASS
Date:		11/17/2010	
Temperature: 23.9°C	Air Pressure: 1014 hPa	Relative Humidity: 41%	Power Supply: 48 VDC
Remarks:			

Plot 7.5.17 Spurious emission measurements in 18000 – 26500 MHz range at mid carrier frequency, single output

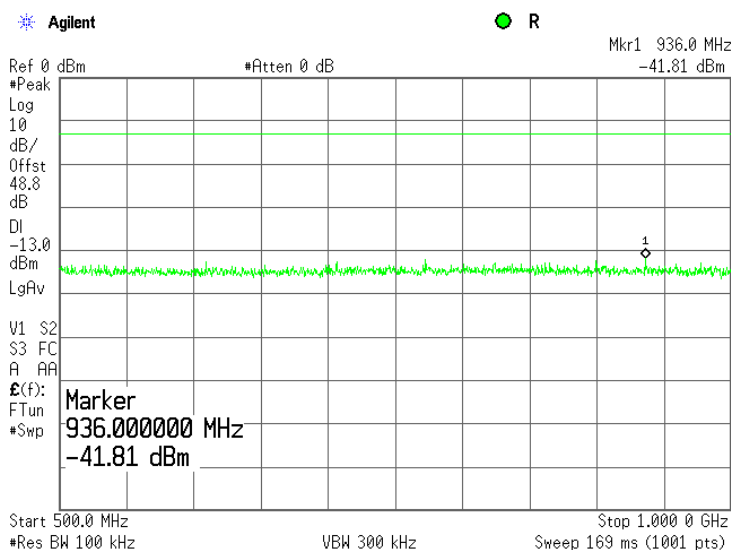


Plot 7.5.18 Spurious emission measurements in 18000 – 26500 MHz range at high carrier frequency, single output

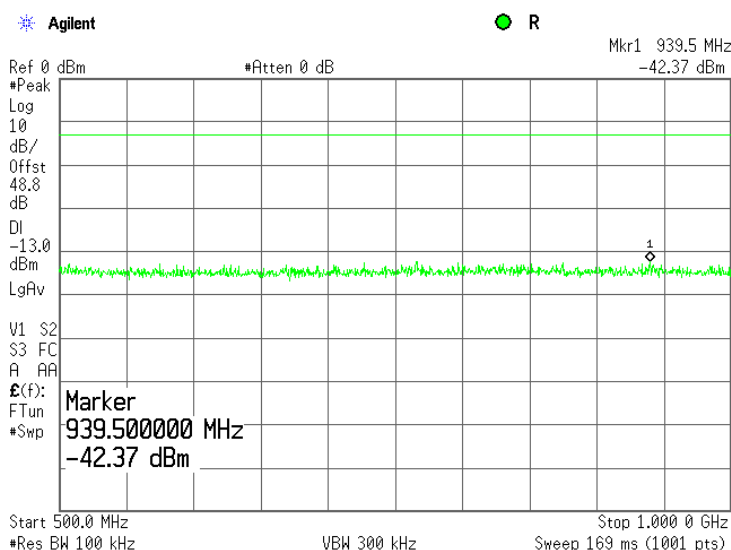


Test specification:	Section 27.53(m)(2), Conducted spurious emissions		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	11/17/2010		
Temperature: 23.9°C	Air Pressure: 1014 hPa	Relative Humidity: 41%	Power Supply: 48 VDC
Remarks:			

Plot 7.5.19 Spurious emission measurements in 500.0 – 1000.0 MHz range at low carrier frequency, combined outputs

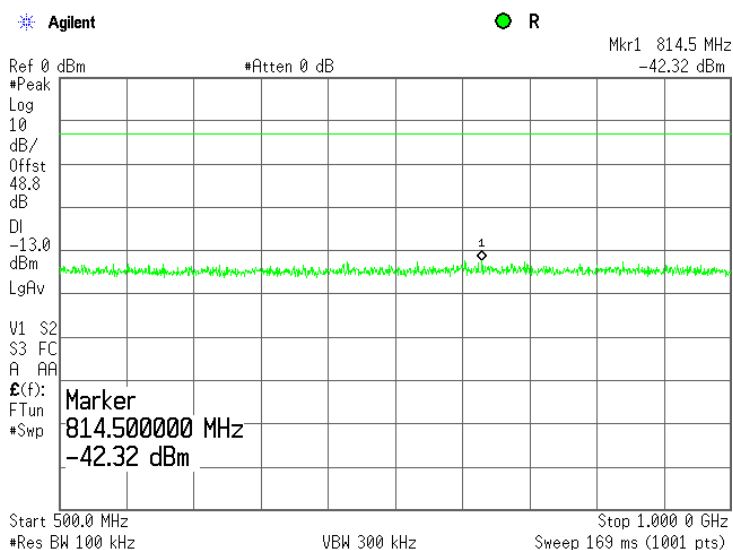


Plot 7.5.20 Spurious emission measurements in 500.0 – 1000.0 MHz range at mid carrier frequency, combined outputs



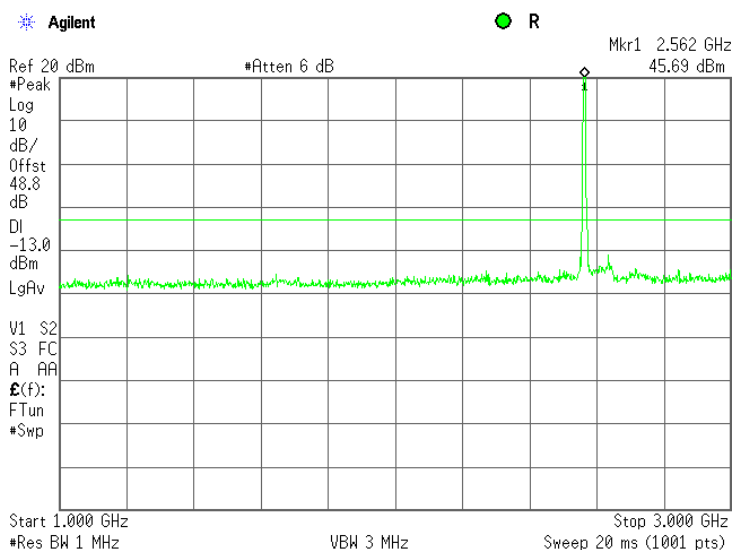
Test specification:		Section 27.53(m)(2), Conducted spurious emissions	
Test procedure:		Section 27.53(m)(2)	
Test mode:		Compliance	Verdict: PASS
Date:		11/17/2010	
Temperature: 23.9°C	Air Pressure: 1014 hPa	Relative Humidity: 41%	Power Supply: 48 VDC
Remarks:			

Plot 7.5.21 Spurious emission measurements in 500.0 – 1000.0 MHz range at high carrier frequency, combined outputs

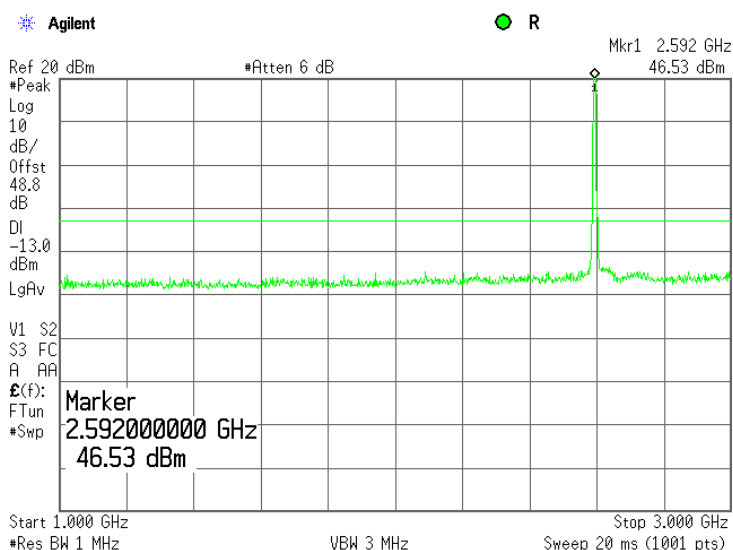


Test specification:		Section 27.53(m)(2), Conducted spurious emissions	
Test procedure:		Section 27.53(m)(2)	
Test mode:		Compliance	Verdict: PASS
Date:		11/17/2010	
Temperature: 23.9°C	Air Pressure: 1014 hPa	Relative Humidity: 41%	Power Supply: 48 VDC
Remarks:			

Plot 7.5.22 Spurious emission measurements in 1000.0 – 3000.0 MHz range at low carrier frequency, combined outputs

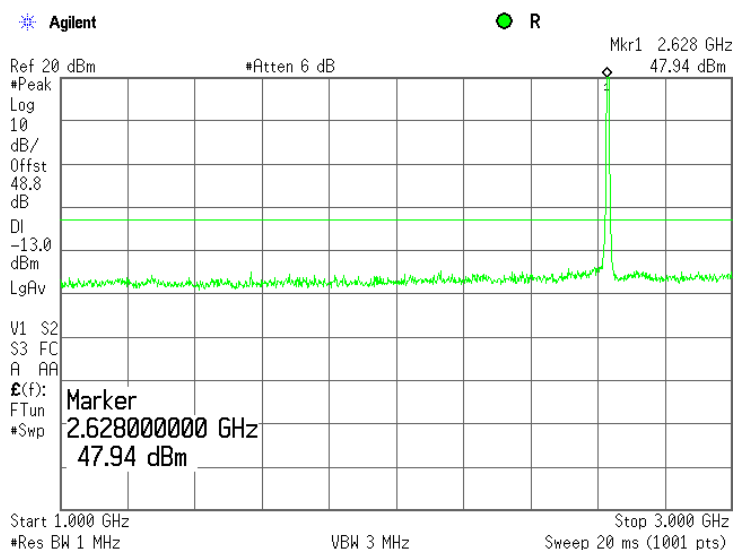


Plot 7.5.23 Spurious emission measurements in 1000.0 – 3000.0 MHz range at mid carrier frequency, combined outputs



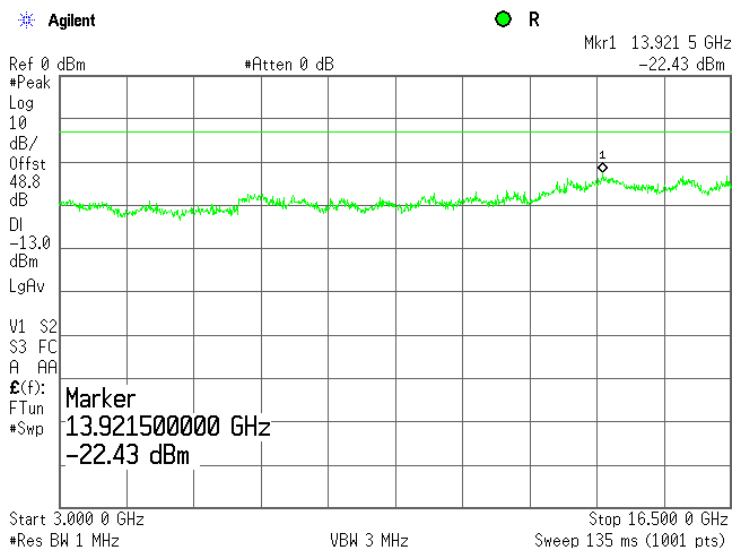
Test specification:		Section 27.53(m)(2), Conducted spurious emissions	
Test procedure:		Section 27.53(m)(2)	
Test mode:		Compliance	Verdict: PASS
Date:		11/17/2010	
Temperature: 23.9°C	Air Pressure: 1014 hPa	Relative Humidity: 41%	Power Supply: 48 VDC
Remarks:			

Plot 7.5.24 Spurious emission measurements in 1000.0 – 3000.0 MHz range at high carrier frequency, combined outputs

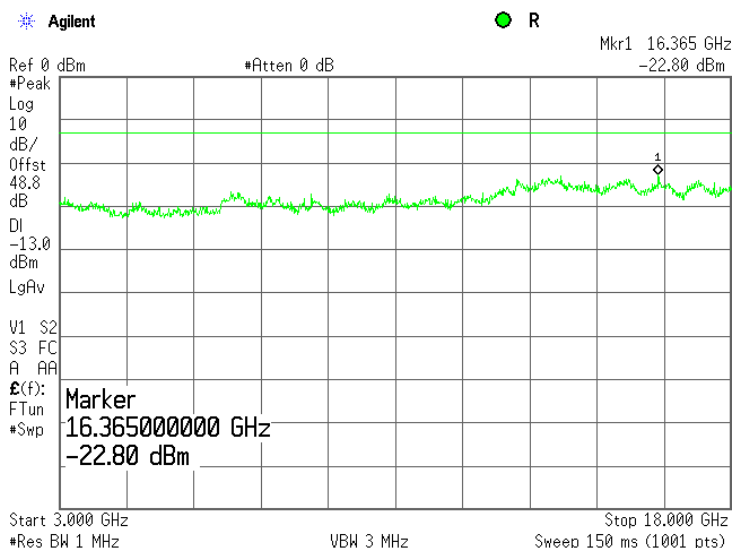


Test specification:		Section 27.53(m)(2), Conducted spurious emissions	
Test procedure:		Section 27.53(m)(2)	
Test mode:		Compliance	Verdict: PASS
Date:		11/17/2010	
Temperature: 23.9°C	Air Pressure: 1014 hPa	Relative Humidity: 41%	Power Supply: 48 VDC
Remarks:			

Plot 7.5.25 Spurious emission measurements in 3000 – 18000 MHz range at low carrier frequency, combined outputs

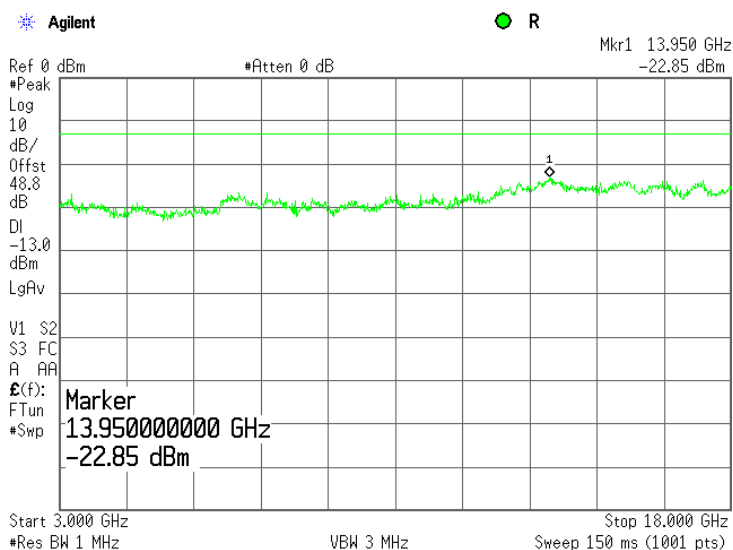


Plot 7.5.26 Spurious emission measurements in 3000 – 18000 MHz range at mid carrier frequency, combined outputs



Test specification:		Section 27.53(m)(2), Conducted spurious emissions	
Test procedure:		Section 27.53(m)(2)	
Test mode:		Compliance	Verdict: PASS
Date:		11/17/2010	
Temperature: 23.9°C	Air Pressure: 1014 hPa	Relative Humidity: 41%	Power Supply: 48 VDC
Remarks:			

Plot 7.5.27 Spurious emission measurements in 3000 – 18000 MHz range at high carrier frequency, combined outputs



Test specification:		Section 27.54, Frequency stability	
Test procedure:		47 CFR, Section 2.1055	
Test mode:		Compliance	Verdict: PASS
Date:		11/18/2010	
Temperature: 23.4°C	Air Pressure: 1016 hPa	Relative Humidity: 48 %	Power Supply: 48 VDC
Remarks:			

7.6 Frequency stability test

7.6.1 General

This test was performed to measure frequency stability of transmitter RF carrier. Specification test limits are given in Table 7.6.1.

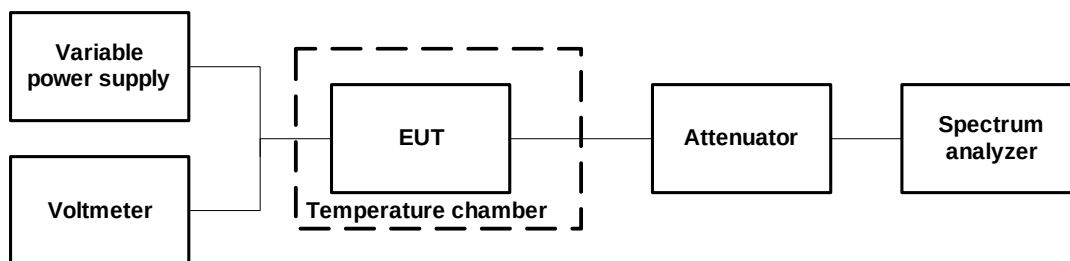
Table 7.6.1 Frequency stability limits

Assigned frequency, MHz	Maximum allowed frequency displacement
2560.0 – 2632.0	The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

7.6.2 Test procedure

- 7.6.2.1 The EUT was set up as shown in Figure 7.6.1, energized and its proper operation was checked.
- 7.6.2.2 The EUT power was turned off. Temperature within test chamber was set to +30°C and a period of time sufficient to stabilize all of the oscillator circuit components was allowed.
- 7.6.2.3 The EUT was powered on and carrier frequency was measured at start up moment and then every minute until frequency had been stabilized or 10 minutes elapsed whichever reached the last. The EUT was powered off.
- 7.6.2.4 The above procedure was repeated at 0°C and at the lowest test temperature.
- 7.6.2.5 The EUT was powered on and carrier frequency was measured at start up moment and at the end of stabilization period at the rest of test temperatures and voltages. The EUT was powered off.
- 7.6.2.6 Frequency displacement was calculated and compared with the limit as provided in Table 7.6.2.

Figure 7.6.1 Frequency stability test setup



Test specification:	Section 27.54, Frequency stability			
Test procedure:	47 CFR, Section 2.1055			
Test mode:	Compliance	Verdict: PASS		
Date:	11/18/2010			
Temperature: 23.4°C	Air Pressure: 1016 hPa	Relative Humidity: 48 %	Power Supply: 48 VDC	
Remarks:				

Table 7.6.2 Frequency stability test results

ASSIGNED FREQUENCY BAND: 2560.0 – 2632.0 MHz
 NOMINAL POWER VOLTAGE: 48 VDC
 TEMPERATURE STABILIZATION PERIOD: 20 min
 POWER DURING TEMPERATURE TRANSITION: Off
 SPECTRUM ANALYZER MODE: Counter
 RESOLUTION BANDWIDTH: 3 kHz
 VIDEO BANDWIDTH: 9.1 kHz
 MODULATION: Unmodulated

T, °C	Voltage, V	Frequency, MHz							Max frequency drift Hz	
		Start up	1 st min	2 nd min	3 rd min	4 th min	5 th min	10 th min	Positive	Negative
Low carrier frequency 2563.0 MHz										
-30	nominal	2563.000589	2563.000578	2563.000564	2563.000562	2563.000557	2563.000552	2563.000531	1036	0
-20	nominal	2563.001204	NA	NA	NA	NA	NA	2563.000686	1651	0
-10	nominal	2563.000519	NA	NA	NA	NA	NA	2563.000427	966	0
0	nominal	2563.000998	2563.000581	2563.000488	2563.000443	2563.000409	2563.000323	2563.000188	1445	0
10	nominal	2562.999878	NA	NA	NA	NA	NA	2562.999884	331	0
20	15%	2562.999607	NA	NA	NA	NA	NA	2562.999657	104	0
20	nominal	2562.999762	NA	NA	NA	NA	NA	2562.999553	209	0
20	-15%	2562.999335	NA	NA	NA	NA	NA	2562.999421	0	-218
30	nominal	2562.999836	2562.999845	2562.999842	2562.999878	2562.999827	2562.999761	2562.999643	325	0
40	nominal	2563.000162	NA	NA	NA	NA	NA	2562.999193	609	-360
50	nominal	2562.999877	NA	NA	NA	NA	NA	2563.000121	568	0
Mid carrier frequency 2593.0 MHz										
-30	nominal	2593.000645	2593.000621	2593.000617	2593.000605	2593.000621	2593.000585	2593.005670	6272	0
-20	nominal	2593.000629	NA	NA	NA	NA	NA	2593.000645	1247	0
-10	nominal	2593.000469	NA	NA	NA	NA	NA	2593.000457	1071	0
0	nominal	2593.000116	2593.000121	2593.000083	2593.000076	2593.000062	2593.000041	2592.999994	723	0
10	nominal	2592.999932	NA	NA	NA	NA	NA	2592.999866	534	0
20	15%	2592.999642	NA	NA	NA	NA	NA	2592.999571	244	0
20	nominal	2592.999583	NA	NA	NA	NA	NA	2592.999398	185	0
20	-15%	2592.999421	NA	NA	NA	NA	NA	2592.999453	55	0
30	nominal	2592.999646	2592.999628	2592.999629	2592.999615	2592.999577	2592.999582	2592.999572	248	0
40	nominal	2592.999999	NA	NA	NA	NA	NA	2593.000152	754	0
50	nominal	2593.000131	NA	NA	NA	NA	NA	2593.000017	733	0
High carrier frequency 2629.0 MHz										
-30	nominal	2629.001463	2629.000952	2629.000929	2629.000991	2629.000832	2629.000822	2629.000721	2092	0
-20	nominal	2629.000661	NA	NA	NA	NA	NA	2629.000686	1315	0
-10	nominal	2629.000981	NA	NA	NA	NA	NA	2629.000566	1610	0
0	nominal	2629.000051	2629.000011	2628.999985	2628.999998	2628.999977	2629.000006	2628.999962	680	0
10	nominal	2629.000471	NA	NA	NA	NA	NA	2628.999929	1100	0
20	15%	2628.999846	NA	NA	NA	NA	NA	2628.999646	475	0
20	nominal	2628.999437	NA	NA	NA	NA	NA	2628.999371	66	0
20	-15%	2628.999435	NA	NA	NA	NA	NA	2628.999294	64	-77
30	nominal	2628.999592	2628.999598	2628.999586	2628.999618	2628.999606	2628.999631	2628.999663	292	0
40	nominal	2628.999803	NA	NA	NA	NA	NA	2628.999988	617	0
50	nominal	2628.999979	NA	NA	NA	NA	NA	2628.999912	608	0

* - Reference frequency

Table 7.6.3 Maximum frequency displacement

Channel	Maximum frequency displacement			
	ppm		Hz	
	Negative	Positive	Negative	Positive
Low (2563.0 MHz)	0.14	0.65	360	1651
Mid (2593.0 MHz)	0	2.42	0	6272
High (2629.0 MHz)	0.029	0.79	77	2092

Test specification:		Section 27.54, Frequency stability			
Test procedure:		47 CFR, Section 2.1055			
Test mode:		Compliance		Verdict: PASS	
Date:		11/18/2010			
Temperature: 23.4°C		Air Pressure: 1016 hPa		Relative Humidity: 48 %	
				Power Supply: 48 VDC	
Remarks:					

Table 7.6.4 Transmission occupied bandwidth with frequency drift test results

Lower measured* band edge, MHz	Upper measured* band edge, MHz	Lower calculated** band edge, MHz	Upper calculated** band edge, MHz	Lower specified band edge, MHz	Upper specified band edge, MHz	Lower margin***, MHz	Upper margin***, MHz	Verdict
3.5 MHz BW								
QPSK								
2561.300000	2564.665000	2561.299640	2564.666651	2560.000000	2566.000000	1.299640	-1.333349	Pass
2591.305000	2594.685000	2591.305000	2594.691272	2590.000000	2596.000000	1.305000	-1.308728	Pass
2627.295000	2630.665000	2627.294923	2630.667092	2626.000000	2632.000000	1.294923	-1.332908	Pass
64QAM								
2561.300000	2564.665000	2561.299640	2564.666651	2560.000000	2566.000000	1.299640	-1.333349	Pass
2591.300000	2594.685000	2591.300000	2594.691272	2590.000000	2596.000000	1.300000	-1.308728	Pass
2627.305000	2630.690000	2627.304923	2630.692092	2626.000000	2632.000000	1.304923	-1.307908	Pass
5 MHz BW								
QPSK								
2560.620000	2565.345000	2560.619640	2565.346651	2560.000000	2566.000000	0.619640	-0.653349	Pass
2590.613000	2595.345000	2590.613000	2595.351272	2590.000000	2596.000000	0.613000	-0.648728	Pass
2626.613000	2631.359000	2626.612923	2631.361092	2626.000000	2632.000000	0.612923	-0.638908	Pass
64QAM								
2560.620000	2565.359000	2560.619640	2565.360651	2560.000000	2566.000000	0.619640	-0.639349	Pass
2590.613000	2595.366000	2590.613000	2595.372272	2590.000000	2596.000000	0.613000	-0.627728	Pass
2626.613000	2631.373000	2626.612923	2631.375092	2626.000000	2632.000000	0.612923	-0.624908	Pass
7 MHz BW								
QPSK								
2562.610000	2569.330000	2562.609640	2569.331651	2560.000000	2572.000000	2.609640	-2.668349	Pass
2592.610000	2599.340000	2592.610000	2599.346272	2590.000000	2602.000000	2.610000	-2.653728	Pass
2622.600000	2629.330000	2622.599923	2629.332092	2620.000000	2632.000000	2.599923	-2.667908	Pass
64QAM								
2562.600000	2569.360000	2562.599640	2569.361651	2560.000000	2572.000000	2.599640	-2.638349	Pass
2592.610000	2599.330000	2592.610000	2599.336272	2590.000000	2602.000000	2.610000	-2.663728	Pass
2622.610000	2629.340000	2622.609923	2629.342092	2620.000000	2632.000000	2.609923	-2.657908	Pass
10 MHz BW								
QPSK								
2561.335000	2570.710000	2561.334640	2570.711651	2560.000000	2572.000000	1.334640	-1.288349	Pass
2591.320000	2600.725000	2591.320000	2600.731272	2590.000000	2602.000000	1.320000	-1.268728	Pass
2621.290000	2630.725000	2621.289923	2630.727092	2620.000000	2632.000000	1.289923	-1.272908	Pass
64QAM								
2561.320000	2570.725000	2561.319640	2570.726651	2560.000000	2572.000000	1.319640	-1.273349	Pass
2591.335000	2600.600000	2591.335000	2600.606272	2590.000000	2602.000000	1.335000	-1.393728	Pass
2621.245000	2630.725000	2621.244923	2630.727092	2620.000000	2632.000000	1.244923	-1.272908	Pass

* - Measured under normal test conditions at 26 dBc points

** - Measured band edge with proper drift addition

*** - Margin = Calculated band edge – specified band edge

Reference numbers of test equipment used

HL 1474	HL 3767	HL 3818					
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Full description is given in Appendix A.

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-10	29-Jun-11
0521	EMI Receiver (Spectrum Analyzer) with RF filter section 9 kHz-6.5 GHz	Hewlett Packard	8546A	3617A 00319, 3448A002 53	25-Aug-10	25-Aug-11
0604	Antenna BiconiLog Log-Periodic/T Bow-TIE, 26 - 2000 MHz	EMCO	3141	9611-1011	11-Jan-10	11-Jan-11
0768	Antenna Standard Gain Horn, 18-26.5 GHz, WR-42, 25 dB gain	Quinstar Technology	QWH-4200-BA	110	23-Dec-08	23-Dec-11
1424	Spectrum Analyzer, 30 Hz- 40 GHz	Agilent Technologies	8564EC	3946A002 19	31-Aug-10	31-Aug-11
1474	Cable, 1 m	Harbour Industries	MIL 17/60-RG142	1474	01-Sep-10	01-Sep-11
1906	Power Divider, 0.5-18.0 GHz, 80 W	Omni Spectra	2090-6204-00	1906	01-Dec-08	01-Dec-10
1984	Antenna, Double-Ridged Waveguide Horn, 1-18 GHz, 300 W	EMC Test Systems	3115	9911-5964	11-Jun-10	11-Jun-11
2015	Power Divider, 0.5-18.0 GHz, 80 W	Omni Spectra	2090-6204-00	2015	01-Dec-08	01-Dec-10
2254	Cable 40 GHz, 0.8 m, blue	Rhophase Microwave Limited	KPS-1503A-800-KPS	W4907	13-Jun-10	13-Jun-11
2780	EMC analyzer, 100 Hz to 26.5 GHz	Agilent Technologies	E7405A	MY451024 62	07-Jul-10	07-Jul-11
2870	Microwave Cable Assembly, 18 GHz, 6.4 m, SMA - SMA	Huber-Suhner	198-9155-00	2870	04-Aug-10	04-Aug-11
2871	Microwave Cable Assembly, 18 GHz, 6.4 m, SMA - SMA	Huber-Suhner	198-8155-00	2871	14-Sep-10	14-Sep-11
2909	Spectrum analyzer, ESA-E, 100 Hz to 26.5 GHz	Agilent Technologies	E4407B	MY414447 62	07-May-10	07-May-11
2953	Cable, RF, 18 GHz, 1.2 m, SMA-SMA	Gore	10020014	NA	04-Oct-10	04-Oct-11
3301	Power Meter, P-series, 50 MHz to 40 GHz	Agilent Technologies	N1911A	MY451010 57	14-Dec-09	14-Dec-10
3302	Power sensor, P-Series, 50 MHz to 40 GHz, -35/30 to 20 dBm	Agilent Technologies	N1922A	MY452405 86	14-Dec-09	14-Dec-10
3322	Attenuator DC to 22 GHz, 30 dB, 50 W	Aeroflex / Weinschel	86-30-12	448	14-Sep-10	14-Sep-11
3433	Test Cable , DC-18 GHz, 1.5 m, SMA - SMA	Mini-Circuits	CBL-5FT-SMSM+	25679	07-Mar-10	07-Mar-11
3434	Test Cable , DC-18 GHz, 1.5 m, SMA - SMA	Mini-Circuits	CBL-5FT-SMSM+	25683	07-Mar-10	07-Mar-11
3437	Precision Fixed Attenuator, 50 Ohm, 5 W, 10 dB, DC to 18 GHz	Mini-Circuits	BW-S10W5+	NA	07-Mar-10	07-Mar-11
3439	Precision Fixed Attenuator, 50 Ohm, 5 W, 20 dB, DC to 18 GHz	Mini-Circuits	BW-S20W5+	NA	07-Mar-10	07-Mar-11

HL No	Description	Manufacturer	Model	Ser. No.	Last Cal.	Due Cal.
3442	Precision Fixed Attenuator, 50 Ohm, 5 W, 20 dB, DC to 18 GHz	Mini-Circuits	BW-S20W5+	NA	07-Mar-10	07-Mar-11
3534	Amplifier, low noise, 6 to 18 GHz	Quinstar Technology	QLJ-06184040-J0	11159001002	06-Dec-09	06-Dec-10
3535	Amplifier, low noise, 18 to 40 GHz	Quinstar Technology	QLJ-18404537-J0	11159003001	06-Dec-09	06-Dec-10
3559	Cable 40 GHz, SMA-SMA, 0.95 m, Blue	Gore	PHASEFL EX	03771245	13-Jun-10	13-Jun-11
3622	Cable RF, 6.0 m, N type-N type, DC-6.5 GHz	Alpha Wire	RG 214/U	NA	27-May-10	27-May-11
3767	Attenuator, N-type, 20 dB, DC to 18 GHz, 5 W	Mini-Circuits	BW-N20W5+	NA	31-Aug-10	31-Aug-11
3768	Attenuator, N-type, 20 dB, DC to 18 GHz, 5 W	Mini-Circuits	BW-N20W5+	NA	31-Aug-10	31-Aug-11
3787	Precision Fixed Attenuator, 50 Ohm, 5 W, 10 dB, DC to 18 GHz	Mini-Circuits	BW-S10W5+	NA	07-Dec-09	07-Dec-10
3818	PSA Series Spectrum Analyzer, 3 Hz- 44 GHz	Agilent Technologies	E4446A	MY48250288	26-Sep-10	26-Sep-11

9 APPENDIX B Measurement uncertainties

Expanded uncertainty at 95% confidence in Hermon Labs EMC measurements

Test description	Expanded uncertainty
Transmitter tests	
Carrier power conducted at antenna connector	± 1.7 dB
Carrier power radiated (substitution method)	± 4.5 dB
Occupied bandwidth	$\pm 8\%$
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
Spurious emissions radiated 30 MHz – 40 GHz (substitution method)	± 4.5 dB
Frequency error	30 – 300 MHz: ± 50.5 Hz (1.68 ppm) 300 – 1000 MHz: ± 168 Hz (0.56 ppm)
Transient frequency behaviour	187 Hz $\pm 13.9\%$
Duty cycle, timing (Tx ON / OFF) and average factor measurements	$\pm 1.0\%$

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, IC 2186A-2 for anechoic chamber, IC 2186A-3 for full-anechoic chamber for RE measurements above 1 GHz), certified by VCCI, Japan (the registration numbers are R-808 for OATS, R-1082 for anechoic chamber, G-27 for full-anechoic chamber for RE measurements above 1 GHz, C-845 for conducted emissions site, T-1606 for conducted emissions at telecommunication ports), 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). The FCC Designation Number is US1003.

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11 APPENDIX D Specification references

FCC 47CFR part 27: 2009	Miscellaneous wireless communications services
FCC 47CFR part 1: 2009	Practice and procedure
FCC 47CFR part 2: 2009	Frequency allocations and radio treaty matters; general rules and regulations
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.

12 APPENDIX E Test equipment correction factors

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

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

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

Antenna factor
Standard gain horn antenna
Quinstar Technology
Model QWH
Ser.No.110, HL 0768

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

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

Antenna factor
Biconilog antenna EMCO Model 3141
Ser.No.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	580	20.6	1320	27.8
28	7.8	600	21.3	1340	28.3
30	7.8	620	21.5	1360	28.2
40	7.2	640	21.2	1380	27.9
60	7.1	660	21.4	1400	27.9
70	8.5	680	21.9	1420	27.9
80	9.4	700	22.2	1440	27.8
90	9.8	720	22.2	1460	27.8
100	9.7	740	22.1	1480	28.0
110	9.3	760	22.3	1500	28.5
120	8.8	780	22.6	1520	28.9
130	8.7	800	22.7	1540	29.6
140	9.2	820	22.9	1560	29.8
150	9.8	840	23.1	1580	29.6
160	10.2	860	23.4	1600	29.5
170	10.4	880	23.8	1620	29.3
180	10.4	900	24.1	1640	29.2
190	10.3	920	24.1	1660	29.4
200	10.6	940	24.0	1680	29.6
220	11.6	960	24.1	1700	29.8
240	12.4	980	24.5	1720	30.3
260	12.8	1000	24.9	1740	30.8
280	13.7	1020	25.0	1760	31.1
300	14.7	1040	25.2	1780	31.0
320	15.2	1060	25.4	1800	30.9
340	15.4	1080	25.6	1820	30.7
360	16.1	1100	25.7	1840	30.6
380	16.4	1120	26.0	1860	30.6
400	16.6	1140	26.4	1880	30.6
420	16.7	1160	27.0	1900	30.6
440	17.0	1180	27.0	1920	30.7
460	17.7	1200	26.7	1940	30.9
480	18.1	1220	26.5	1960	31.2
500	18.5	1240	26.5	1980	31.6
520	19.1	1260	26.5	2000	32.0
540	19.5	1280	26.6		
560	19.8	1300	27.0		

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

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

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

Cable loss
Cable coaxial, Huber-Suhner, 18 GHz, 6.4 m, SMA - SMA, model 198-9155-00,
HL 2870

Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB
10	0.09	5750	2.49	12000	3.71
30	0.17	6000	2.53	12250	3.81
100	0.32	6250	2.58	12500	3.84
250	0.49	6500	2.64	12750	3.88
500	0.70	6750	2.69	13000	3.92
750	0.86	7000	2.75	13250	3.96
1000	1.00	7250	2.80	13500	3.98
1250	1.11	7500	2.87	13750	4.01
1500	1.23	7750	2.93	14000	4.03
1750	1.34	8000	2.94	14250	4.09
2000	1.41	8250	3.00	14500	4.08
2250	1.51	8500	3.04	14750	4.10
2500	1.59	8750	3.08	15000	4.15
2750	1.68	9000	3.14	15250	4.22
3000	1.76	9250	3.16	15500	4.31
3250	1.83	9500	3.22	15750	4.42
3500	1.91	9750	3.26	16000	4.48
3750	1.97	10000	3.36	16250	4.54
4000	2.05	10250	3.41	16500	4.56
4250	2.11	10500	3.46	16750	4.57
4500	2.18	10750	3.50	17000	4.59
4750	2.24	11000	3.54	17250	4.66
5000	2.30	11250	3.58	17500	4.70
5250	2.36	11500	3.63	17750	4.76
5500	2.43	11750	3.66	18000	4.72

Cable loss
Cable coaxial, Huber-Suhner, 18 GHz, 6.4 m, SMA - SMA, model 198-8155-00,
HL 2871

Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB
10	0.12	5750	2.34	12000	3.55
30	0.14	6000	2.39	12250	3.61
100	0.27	6250	2.46	12500	3.67
250	0.45	6500	2.52	12750	3.74
500	0.63	6750	2.58	13000	3.79
750	0.76	7000	2.64	13250	3.82
1000	0.89	7250	2.68	13500	3.83
1250	1.01	7500	2.73	13750	3.83
1500	1.12	7750	2.78	14000	3.88
1750	1.23	8000	2.83	14250	3.93
2000	1.32	8250	2.88	14500	3.96
2250	1.41	8500	2.94	14750	4.01
2500	1.49	8750	2.97	15000	4.00
2750	1.58	9000	3.02	15250	4.01
3000	1.66	9250	3.07	15500	4.00
3250	1.73	9500	3.13	15750	4.13
3500	1.80	9750	3.18	16000	4.22
3750	1.87	10000	3.21	16250	4.29
4000	1.93	10250	3.26	16500	4.29
4250	2.01	10500	3.30	16750	4.32
4500	2.06	10750	3.36	17000	4.37
4750	2.12	11000	3.39	17250	4.45
5000	2.17	11250	3.44	17500	4.49
5250	2.24	11500	3.48	17750	4.53
5500	2.29	11750	3.52	18000	4.55

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

**Test Cable, Mini-Circuits, CBL-5FT-SMSM+, SMA-SMA, 18 GHz, 1.5 m, S/N 25679
Mini-Circuits, HL 3433**

Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB
10.0	0.06	9000	2.01
100	0.17	9500	2.06
500	0.41	10000	2.05
1000	0.58	10500	2.18
1500	0.72	11000	2.26
2000	0.86	11500	2.28
2500	0.96	12000	2.43
3000	1.04	12500	2.53
3500	1.13	13000	2.52
4000	1.23	13500	2.56
4500	1.31	14000	2.60
5000	1.41	14500	2.59
5500	1.49	15000	2.67
6000	1.55	15500	2.76
6500	1.63	16000	2.86
7000	1.71	16500	2.91
7500	1.78	17000	2.95
8000	1.86	17500	3.02
8500	1.92	18000	3.07

Cable loss

**Test Cable, Mini-Circuits, CBL-5FT-SMSM+, SMA-SMA, 18 GHz, 1.5 m, S/N 25683
Mini-Circuits, HL 3434**

Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB
10.0	0.06	9000	1.96
100	0.16	9500	2.01
500	0.40	10000	2.01
1000	0.57	10500	2.14
1500	0.72	11000	2.21
2000	0.85	11500	2.24
2500	0.95	12000	2.36
3000	1.03	12500	2.47
3500	1.11	13000	2.46
4000	1.21	13500	2.50
4500	1.29	14000	2.53
5000	1.39	14500	2.53
5500	1.46	15000	2.62
6000	1.52	15500	2.70
6500	1.60	16000	2.80
7000	1.68	16500	2.86
7500	1.75	17000	2.88
8000	1.83	17500	2.94
8500	1.88	18000	3.00

Cable loss
Cable coaxial, GORE, PHASEFLEX, 40 GHz, 0.95 m, SMA-SMA, S/N 03771245
HL 3559

Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss,dB
30	0.08	10000	0.96	20500	1.59	31000	2.24
100	0.10	10500	0.99	21000	1.63	31500	2.71
500	0.22	11000	1.02	21500	1.70	32000	2.47
1000	0.32	11500	1.07	22000	1.71	32500	2.37
1500	0.40	12000	1.13	22500	1.60	33000	2.35
2000	0.41	12500	1.16	23000	1.58	33500	2.34
2500	0.44	13000	1.26	23500	1.64	34000	2.31
3000	0.53	13500	1.26	24000	1.68	34500	2.43
3500	0.54	14000	1.22	24500	1.79	35000	2.45
4000	0.62	14500	1.26	25000	1.86	35500	2.48
4500	0.62	15000	1.27	25500	1.77	36000	3.60
5000	0.67	15500	1.29	26000	1.78	36500	2.62
5500	0.70	16000	1.39	26500	1.83	37000	2.45
6000	0.72	16500	1.50	27000	1.87	37500	2.47
6500	0.76	17000	1.49	27500	1.97	38000	2.38
7000	0.83	17500	1.37	28000	2.69	38500	2.41
7500	0.85	18000	1.40	28500	1.94	39000	2.56
8000	0.89	18500	1.41	29000	2.02	39500	2.71
8500	0.91	19000	1.48	29500	2.05	40000	2.69
9000	0.95	19500	1.61	30000	2.11		
9500	0.96	20000	1.59	30500	2.11		

Cable loss
Cable coaxial, RG-214/U, N type-N type, 6 m
Alpha Wire, HL 3622

Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB
10	0.13	2100	2.95	4400	4.99
30	0.24	2200	2.99	4500	5.00
50	0.32	2300	3.11	4600	5.17
100	0.47	2400	3.16	4700	5.18
200	0.70	2500	3.31	4800	5.33
300	0.88	2600	3.36	4900	5.34
400	1.05	2700	3.46	5000	5.50
500	1.21	2800	3.52	5100	5.56
600	1.36	2900	3.65	5200	5.76
700	1.49	3000	3.70	5300	5.76
800	1.63	3100	3.82	5400	5.85
900	1.72	3200	3.88	5500	5.88
1000	1.84	3300	3.99	5600	5.96
1100	1.96	3400	4.08	5700	6.02
1200	2.06	3500	4.19	5800	6.06
1300	2.15	3600	4.28	5900	6.14
1400	2.28	3700	4.42	6000	6.17
1500	2.35	3800	4.40	6100	6.28
1600	2.43	3900	4.51	6200	6.36
1700	2.57	4000	4.62	6300	6.47
1800	2.62	4100	4.70	6400	6.51
1900	2.75	4200	4.78	6500	6.65
2000	2.80	4300	4.83		

13 APPENDIX F Abbreviations and acronyms

A	ampere
AC	alternating current
A/m	ampere per meter
AM	amplitude modulation
AVRG	average (detector)
CBW	channel bandwidth
cm	centimeter
dB	decibel
dBm	decibel referred to one milliwatt
dB(μ V)	decibel referred to one microvolt
dB(μ V/m)	decibel referred to one microvolt per meter
dB(μ A)	decibel referred to one microampere
DC	direct current
EBW	emission bandwidth
EIRP	equivalent isotropically radiated power
ERP	effective radiated power
EUT	equipment under test
F	frequency
GHz	gigahertz
GND	ground
H	height
HL	Hermon laboratories
Hz	hertz
k	kilo
kHz	kilohertz
LO	local oscillator
m	meter
MHz	megahertz
min	minute
mm	millimeter
ms	millisecond
μ s	microsecond
NA	not applicable
NB	narrow band
OATS	open area test site
Ω	Ohm
QP	quasi-peak
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