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TEST REPORT

ACCORDING TO: FCC part 15 subpart C, §15.247 and subpart B

FOR:

Airspan Networks (Israel) Ltd.

Radio unit

Models: SPR 5.8 GHz TDD Ext,
SPR 5.8 GHz TDD V-pol,
BSR 5.8 GHz TDD V-pol

Table of contents

1 Applicant information

Client name:	Airspan Networks (Israel) Ltd.
Address:	1, Harava street, "Unitronics" building, POB 199, Airport City, 70100, Israel
Telephone:	+972 3977 7444
Fax:	+972 3977 7400
E-mail:	zlevi@Airspan.com
Contact name:	Mr. Zion Levi

2 Equipment under test attributes

Product name:	Subscriber Premises Radio unit
Model(s):	SPR 5.8 GHz TDD Ext., SPR 5.8 GHz TDD V-pol, BSR 5.8 GHz TDD V-pol
Receipt date	10/21/2004

3 Manufacturer information

Manufacturer name:	Airspan Networks (Israel) Ltd.
Address:	1, Harava street, "Unitronics" building, POB 199, Airport City, 70100, Israel
Telephone:	+972 3977 7444
Fax:	+972 3977 7400
E-Mail:	zlevi@Airspan.com
Contact name:	Mr. Zion Levi

4 Test details

Project ID:	16117
Location:	Hermon Laboratories Ltd. P.O.Box 23, Binyamina 30500, Israel
Test performed:	7/1/2003; 10/25/2004
Test specification(s):	FCC part 15 subpart C, §15.247; §15.207; subpart B, §§15.107, 15.109
Test suite:	FCC_15.247_FHSS_with_RF_connector (5/4/2004 10:54:02 AM, modified)

5 Tests summary

Test	Status
Transmitter characteristics	
Section 15.247(a)1, 20 dB bandwidth	Pass
Section 15.247(b), Peak output power	Pass
Section 15.247(d), Peak power density	Pass
Section 15.247(c), Emissions at band edges	Pass
Section 15.247(c), Conducted spurious emissions	Pass
Section 15.247(c), Radiated spurious emissions	Pass
Section 15.247(a)1, Minimum channel separation	Pass
Section 15.247(a)1, Number of hopping frequencies	Not required
Section 15.247(f), Average time of occupancy	Pass
Section 15.247(b)(5), RF exposure	Provided in documentation for Application
Section 15.203, Antenna requirements	Checked
Section 15.207(a), Conducted emission	Pass
Unintentional emissions	
Section 15.107, Conducted emission at AC power port	Pass
Section 15.109, Radiated emission	Pass
Section 15.111, Conducted emission at receiver antenna port	Not required

Testing was completed against all relevant requirements of the test standard. 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. M. Lerman, test engineer	October 25, 2004	
Reviewed by:	Mrs. M. Cherniavsky, certification engineer	January 13, 2005	
	Mr. M. Nikishin, EMC group leader	January 16, 2005	
Approved by:	Mr. A. Usoskin, C.E.O.	January 16, 2005	

6 EUT description

6.1 General information

The EUT, SPR 5.8 GHz TDD (subscriber premises radio unit) or BSR 5.8 GHz TDD (base station radio), is a part of a broadband fixed cellular wireless access system WipLL. The system provides a radio link between an end-user (a subscriber) and a network to give high-speed data access. The EUT, an outdoor unit, is a hybrid system (digital modulation with frequency hopping), operating in 5726 MHz to 5849 MHz range.
The SPR 5.8 GHz is equipped with a 23 dBi gain flat plane external antenna or with an 16 dBi gain flat plane internal antenna.
The BSR 5.8 GHz is equipped with an 11 dBi gain flat plane internal antenna.
The EUT is connected to a subscriber data adapter (SDA), which provides 48 V DC power.

6.2 Ports and lines

Port type	Port description	Connected		Connector type	Qty.	Cable type	Cable length	Indoor / outdoor
		From	To					
Signal	DATA & PWR	EUT	SDA	d-Type 15pin	1	UTP	10m*	Outdoor
RF	Antenna	EUT	Antenna	n-Type	1	Coax	1m**	Outdoor

*-May be up to 30m.
**-May be up to 100m.

6.3 Support and test equipment

Description	Manufacturer	Model number	Serial number
Subscriber data adaptor	Airspan	SDA-4H	09200011 C0
Laptop	DELL	TS30G	7407346BYK
Antena 5.15 – 5.875 GHz	Wireless Edge	MT485002	03194
Subscriber Premises Radio unit	Airspan	SPR 5.8GHz TDD Ext.	518C480017

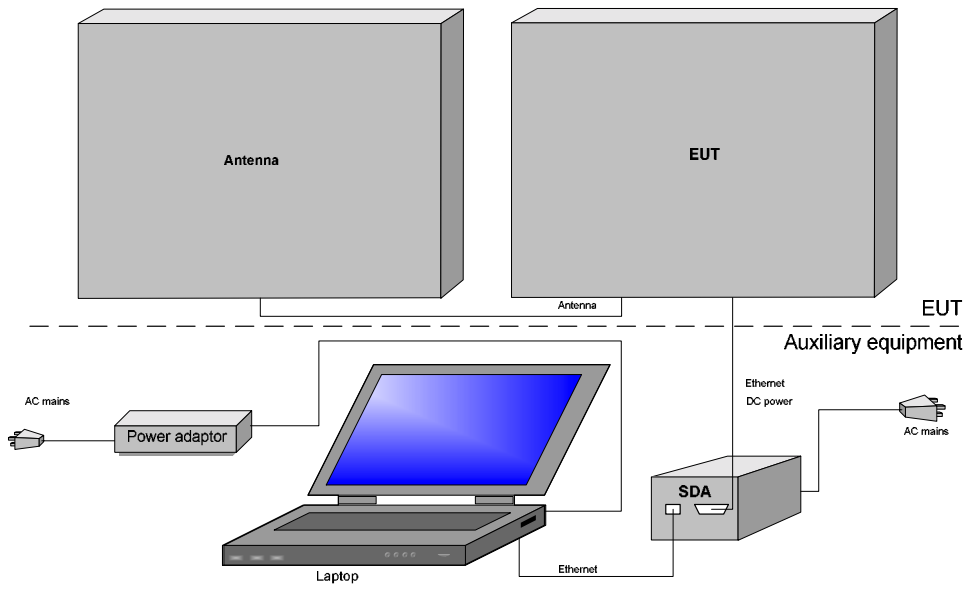
6.4 Operating frequencies

Source	Frequency, MHz			
Digital portion	20	48		
Receiver	6	356	5376 - 5499	5726 - 5849
Transmitter	6	356	5376 - 5499	5726 - 5849

6.5 Changes made in the EUT

No changes were implemented.

6.6 Test configuration



6.7 Transmitter characteristics

Type of equipment							
X	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)						
	Other:						
Operating frequency range	5726 - 5849 MHz						
Spread spectrum technique used							
	Frequency hopping (FHSS)						
	Digitally modulated						
X	Combined						
Spread spectrum parameters							
Dig. Mod.	chip sequence length (bits)						
	spectrum width (MHz)						
FHSS	total number of hops (units)	62					
	dwell time (milliseconds)	380					
	max. separation of hops (MHz)	2					
Transmitter aggregate data rate (bits per second)	1.33 and 4 Mbit/s						
Normal test signal	PRBS						
Maximum rated output power							
At transmitter permanent external 50 Ω rf output connector (dBm)	21 dBm						
Effective radiated power (for equipment with integral antenna) (dBm)							
Is transmitter output power variable?		No					
	X	Yes		continuous variable			
				stepped variable			
				stepsize (dB):.....			
				minimum RF power (dBm):.....			
				maximum RF power (dBm):.....			

Transmitter power source							
	Battery	**Nominal rated voltage (VDC)**					
	Nickel Cadmium						
	Lithium						
	Other						
X	**DC**	**Nominal rated voltage (VDC)**	30 – 55 VDC				
	AC mains	**Nominal rated voltage (VAC)**					
Is there common power source for transmitter and receiver			**X**	yes		no	

Antenna technical characteristics						
			Type	**Manufacturer**	**Model number**	**Gain**
Integral	X	with temporary RF connector	Flat panel	Airspan OEM	NA	11 dBi
		without temporary RF connector		Airspan OEM	NA	16 dBi
External			Flat panel	Wireless Edge	MT485002	23 dBi

External antenna connection - NA				
X	standard connector	n-Type	unique coupling	

Test specification:	Section 15.247(a)1, 20 dB bandwidth		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	11/1/2004 4:09:15 PM		
Temperature: 23 ºC	Air Pressure: 1012 hPa	Relative Humidity: 46 %	Power Supply: 48 VDC
Remarks: Final new modulation			

7 Transmitter tests according to 47CFR part 15 subpart C requirements

7.1 20 dB bandwidth

7.1.1 General

This test was performed to measure 20 dB bandwidth of the transmitter hopping channel. Specification test limits are given in Table 7.1.1.

Table 7.1.1 20 dB bandwidth limits

Assigned frequency, MHz	Minimum bandwidth, kHz	Modulation envelope reference points*, dBc
5725.0 – 5850.0	Any admissible	20

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

7.1.2 Test procedure

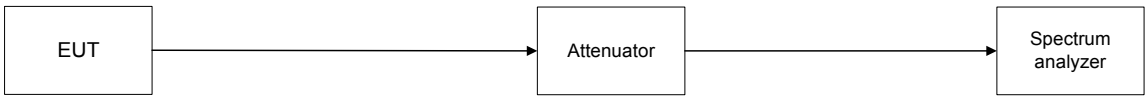
7.1.2.1 The EUT was set up as shown in Figure 7.1.1, energized and its proper operation was checked.

7.1.2.2 The EUT was set to transmit modulated carrier at maximum data rate.

7.1.2.3 The transmitter bandwidth was measured with spectrum analyzer as frequency delta between reference points on modulation envelope and provided in Table 7.1.2 and associated plot.

7.1.2.4 The test was repeated for each data rate and each modulation format.

Figure 7.1.1 20 dB bandwidth test setup



Test specification:	Section 15.247(a)1, 20 dB bandwidth		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	11/1/2004 4:09:15 PM		
Temperature: 23 ºC	Air Pressure: 1012 hPa	Relative Humidity: 46 %	Power Supply: 48 VDC
Remarks: Final new modulation			

Table 7.1.2 20 dB bandwidth test results

ASSIGNED FREQUENCY BAND: 5725 - 5850 MHz
DETECTOR USED: Peak
SWEEP TIME: Auto
RESOLUTION BANDWIDTH: ≥ 1% of the 20 dB bandwidth
VIDEO BANDWIDTH: ≥ RBW
MODULATION ENVELOPE REFERENCE POINTS: 20.0 dBc
MODULATING SIGNAL: PRBS
FREQUENCY HOPPING: Disabled

Carrier frequency, MHz	Type of modulation	Data rate, Mbps	Symbol rate, Msymbols/s	20 dB bandwidth, kHz	Limit, kHz	Margin, kHz	Verdict
Low frequency							
5726.0	FSK	1	1	1192	NA	NA	Pass
		2	1	1192	NA	NA	Pass
		3	1	1192	NA	NA	Pass
		1.33	1.33	1650	NA	NA	Pass
		4	1.33	1650	NA	NA	Pass
Mid frequency							
5779	FSK	1	1	1200	NA	NA	Pass
		2	1	1200	NA	NA	Pass
		3	1	1200	NA	NA	Pass
		1.33	1.33	1658	NA	NA	Pass
		4	1.33	1658	NA	NA	Pass
High frequency							
5849	FSK	1	1	1208	NA	NA	Pass
		2	1	1208	NA	NA	Pass
		3	1	1208	NA	NA	Pass
		1.33	1.33	1650	NA	NA	Pass
		4	1.33	1658	NA	NA	Pass

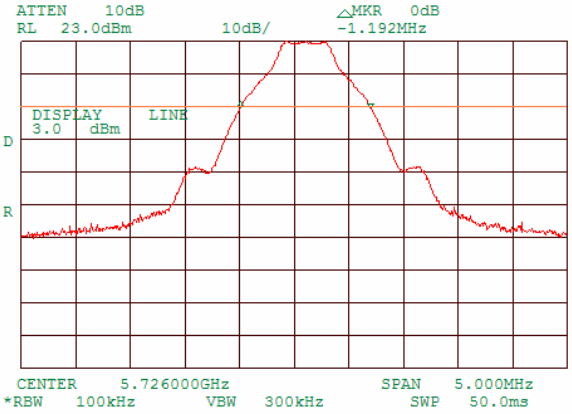
Reference numbers of test equipment used

HL 1424	HL 2399							

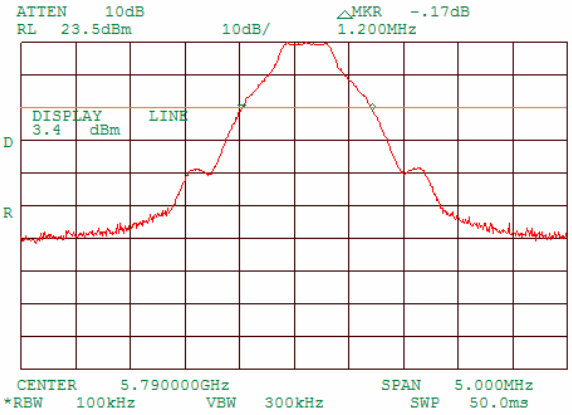
Full description is given in Appendix A.

Test specification:	Section 15.247(a)1, 20 dB bandwidth		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	11/1/2004 4:09:15 PM		
Temperature: 23 ºC	Air Pressure: 1012 hPa	Relative Humidity: 46 %	Power Supply: 48 VDC
Remarks: Final new modulation			

Plot 7.1.1 The 20 dB bandwidth test result at low frequency at 1 Mbps

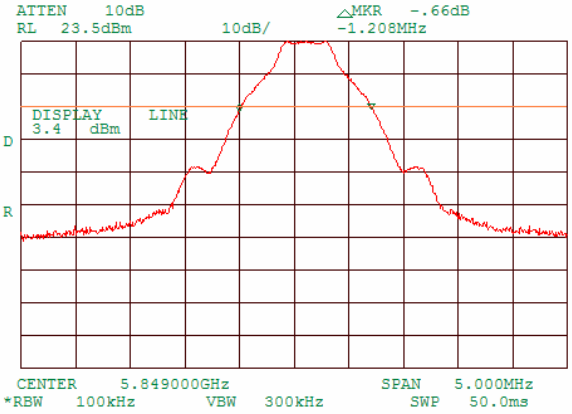


Plot 7.1.2 The 20 dB bandwidth test result at mid frequency 1 Mbps

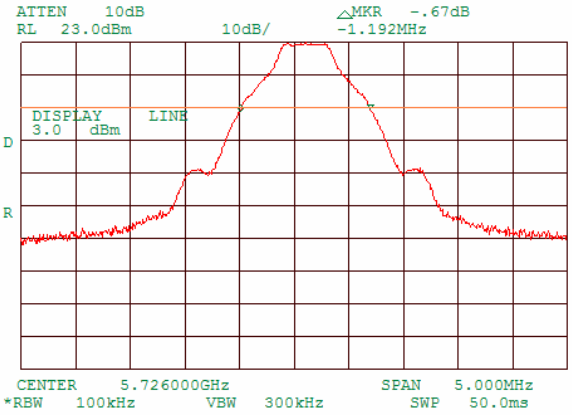


Test specification:	Section 15.247(a)1, 20 dB bandwidth		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	11/1/2004 4:09:15 PM		
Temperature: 23 ºC	Air Pressure: 1012 hPa	Relative Humidity: 46 %	Power Supply: 48 VDC
Remarks: Final new modulation			

Plot 7.1.3 The 20 dB bandwidth test result at high frequency 1 Mbps

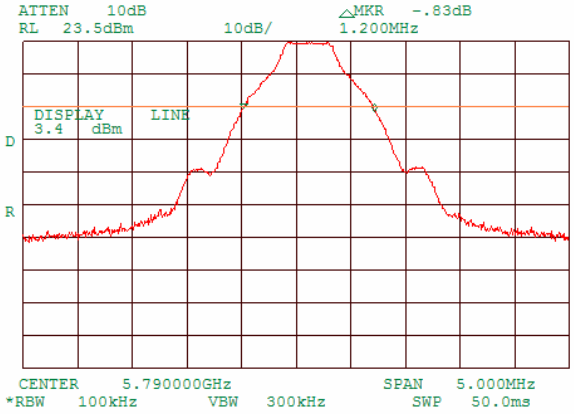


Plot 7.1.4 The 20 dB bandwidth test result at low frequency at 2 Mbps

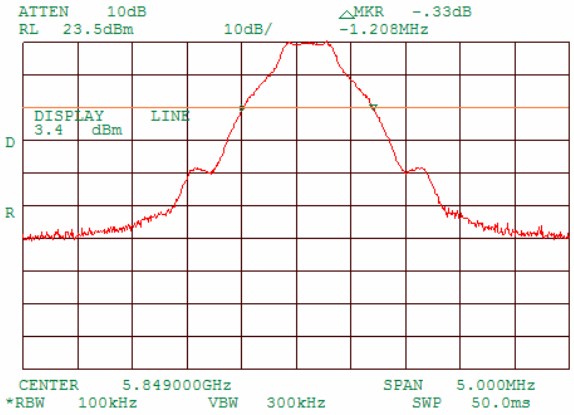


Test specification:	Section 15.247(a)1, 20 dB bandwidth		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	11/1/2004 4:09:15 PM		
Temperature: 23 ºC	Air Pressure: 1012 hPa	Relative Humidity: 46 %	Power Supply: 48 VDC
Remarks: Final new modulation			

Plot 7.1.5 The 20 dB bandwidth test result at mid frequency 2 Mbps

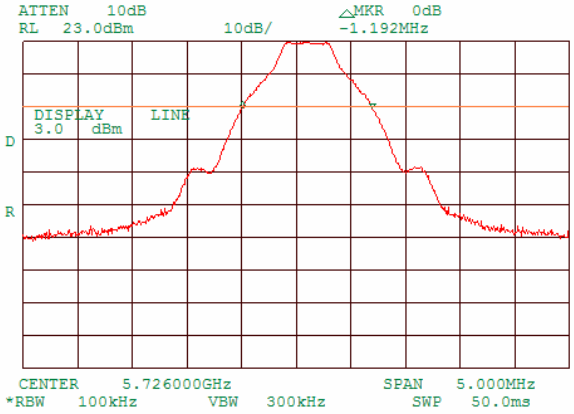


Plot 7.1.6 The 20 dB bandwidth test result at high frequency 2 Mbps

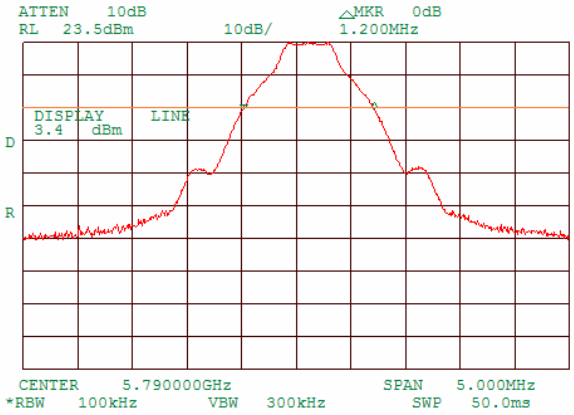


Test specification:	Section 15.247(a)1, 20 dB bandwidth		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	11/1/2004 4:09:15 PM		
Temperature: 23 ºC	Air Pressure: 1012 hPa	Relative Humidity: 46 %	Power Supply: 48 VDC
Remarks: Final new modulation			

Plot 7.1.7 The 20 dB bandwidth test result at low frequency at 3 Mbps

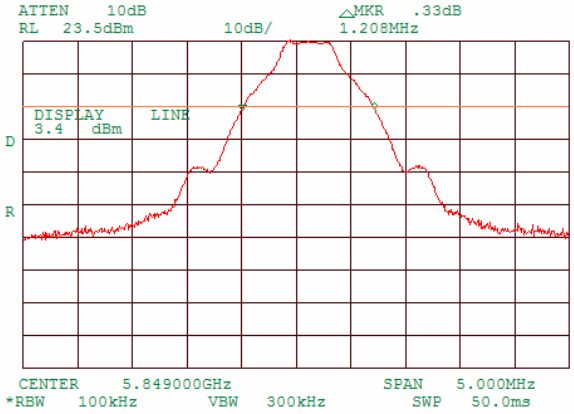


Plot 7.1.8 The 20 dB bandwidth test result at mid frequency 3 Mbps

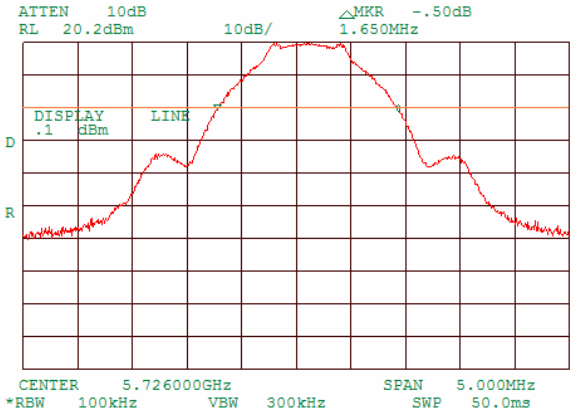


Test specification:	Section 15.247(a)1, 20 dB bandwidth		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	11/1/2004 4:09:15 PM		
Temperature: 23 ºC	Air Pressure: 1012 hPa	Relative Humidity: 46 %	Power Supply: 48 VDC
Remarks: Final new modulation			

Plot 7.1.9 The 20 dB bandwidth test result at high frequency 3 Mbps

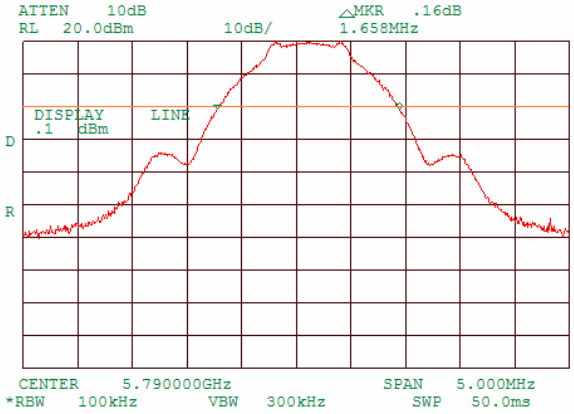


Plot 7.1.10 The 20 dB bandwidth test result at low frequency at 1.33 Mbps

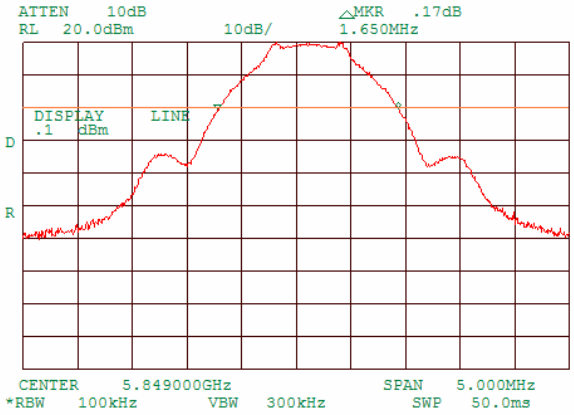


Test specification:	Section 15.247(a)1, 20 dB bandwidth		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	11/1/2004 4:09:15 PM		
Temperature: 23 ºC	Air Pressure: 1012 hPa	Relative Humidity: 46 %	Power Supply: 48 VDC
Remarks: Final new modulation			

Plot 7.1.11 The 20 dB bandwidth test result at mid frequency 1.33 Mbps

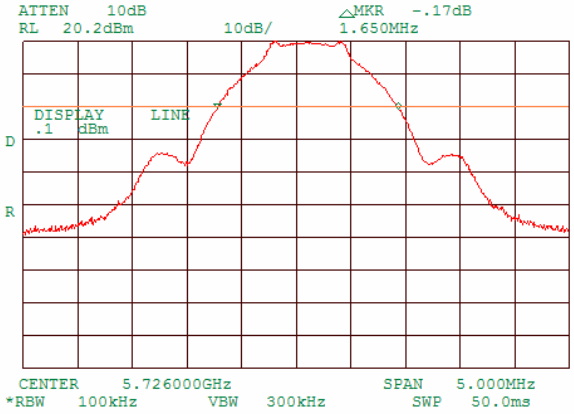


Plot 7.1.12 The 20 dB bandwidth test result at high frequency 1.33 Mbps

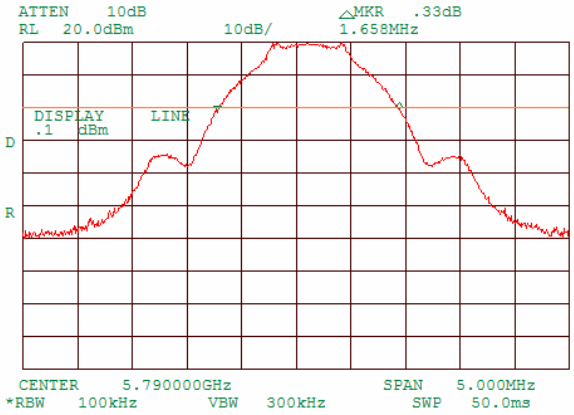


Test specification:	Section 15.247(a)1, 20 dB bandwidth		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	11/1/2004 4:09:15 PM		
Temperature: 23 ºC	Air Pressure: 1012 hPa	Relative Humidity: 46 %	Power Supply: 48 VDC
Remarks: Final new modulation			

Plot 7.1.13 The 20 dB bandwidth test result at low frequency at 4 Mbps

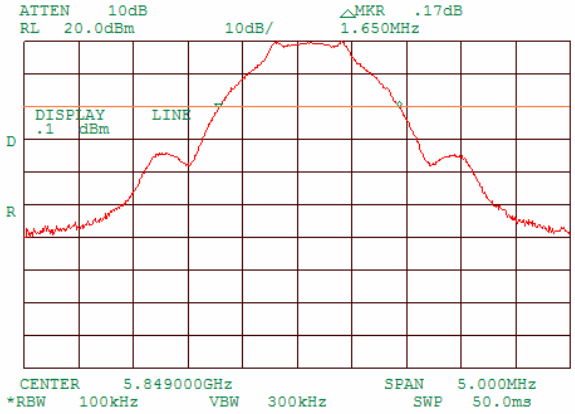


Plot 7.1.14 The 20 dB bandwidth test result at mid frequency 4 Mbps



Test specification:	**Section 15.247(a)1, 20 dB bandwidth**		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	11/1/2004 4:09:15 PM		
Temperature: 23 ºC	**Air Pressure:** 1012 hPa	**Relative Humidity:** 46 %	**Power Supply:** 48 VDC
Remarks: Final new modulation			

Plot 7.1.15 The 20 dB bandwidth test result at high frequency 4 Mbps



Test specification:	Section 15.247(b), Peak output power		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	11/1/2004 3:46:51 PM		
Temperature: 23 ºC	Air Pressure: 1012 hPa	Relative Humidity: 46 %	Power Supply: 48 VDC
Remarks: Final version with new modulation			

7.2 Peak output power

7.2.1 General

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

Table 7.2.1 Peak output power limits

Assigned frequency range, MHz	Peak output power*		Maximum antenna gain, dBi
	W	dBm	
902.0 – 928.0	0.125	21.0	6.0*
2400.0 – 2483.5	0.125 (<75 hopping channels) 1.0 (≥75 hopping channels)	21.0 (<75 hopping channels) 30.0 (≥75 hopping channels)	
5725.0 – 5850.0	1.0	30.0	

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

- by 1 dB for every 3 dB that the directional gain of antenna exceeds 6 dBi for fixed point-to-point transmitters operate in 2400-2483.5 MHz band;
- without any corresponding reduction for fixed point-to-point transmitters operate in 5725-5850 MHz band;
- by the amount in dB that the directional gain of antenna exceeds 6 dBi for the rest of transmitters.

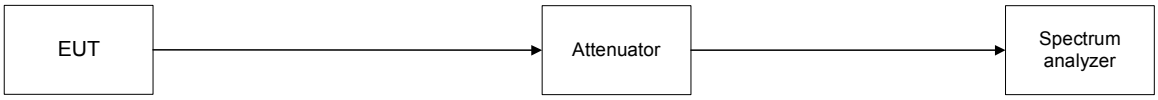
7.2.2 Test procedure

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

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

7.2.2.3 The frequency span of spectrum analyzer was set approximately 5 times wider than 20 dB bandwidth of the EUT and the resolution bandwidth was set wider than 20 dB bandwidth of the EUT. The spectrum analyzer trace was allowed to stabilize and the maximum peak output power was measured as provided in Table 7.2.2 and associated plots.

Figure 7.2.1 Peak output power test setup



Test specification:	**Section 15.247(b), Peak output power**		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	11/1/2004 3:46:51 PM		
Temperature: 23 ºC	**Air Pressure:** 1012 hPa	**Relative Humidity:** 46 %	**Power Supply:** 48 VDC
Remarks: Final version with new modulation			

Table 7.2.2 Peak output power test results

ASSIGNED FREQUENCY: 5725 – 5850 MHz
MODULATION: FSK
MODULATING SIGNAL: PRBS
BIT RATE: 1, 2, 3, 1.33 and 4 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum
DETECTOR USED: Peak
EUT 20 dB BANDWIDTH: 1.66 MHz
RESOLUTION BANDWIDTH: 2 MHz
VIDEO BANDWIDTH: 3 MHz
FREQUENCY HOPPING: Disabled

Carrier frequency, MHz	External attenuation, dB	Cable loss, dB	RF power at Tx output connector, dBm	External antena cable loss*, dB	"SPR 5.8GHz TDD Ext" peak output power, dBm	Limit**, dBm	Margin***, dB	Verdict
1 Mbps								
5726	30	2.11	17.67	8.52	9.15	13	-3.85	Pass
5790	30	2.11	17.33	8.52	8.81	13	-4.19	Pass
5849	30	2.11	17.33	8.52	8.81	13	-4.19	Pass
2 Mbps								
5790	30	2.11	17.33	8.52	8.81	13	-4.19	Pass
3 Mbps								
5790	30	2.11	17.33	8.52	8.81	13	-4.19	Pass
1.33 Mbps								
5726	30	2.11	21.00	8.52	12.48	13	-0.52	Pass
5790	30	2.11	20.83	8.52	12.31	13	-0.69	Pass
5849	30	2.11	20.83	8.52	12.31	13	-0.69	Pass
4 Mbps								
5790	30	2.11	20.67	8.52	12.15	13	-0.85	Pass

1) *The EUT, model number SPR 5.8GHz TDD Ext, is equipped with 24 m length cable, LMR-400, with 8.52 dB cable loss. The full information is provided in User Manual of Application for Certification.

**For the "SPR 5.8GHz TDD Ext" utilizing the 23 dBi gain external antenna the limit was reduced by the amount antenna gain exceeds 6 dBi:
23 dBi – 6 dBi = 17 dB;
30 dBm – 17 dB = 13 dBm
*** - Margin = Peak output power – specification limit.

2) The EUT, model number BSR 5.8GHz TDD V-pol, is equipped with 11 dBi internal antenna.
3) The EUT, model number SPR 5.8GHz TDD V-pol, is equipped with 16 dBi internal antenna. The Tx maximum output power 20 dBm is factory set and according to the manufacturer's declaration cannot be changed by user.

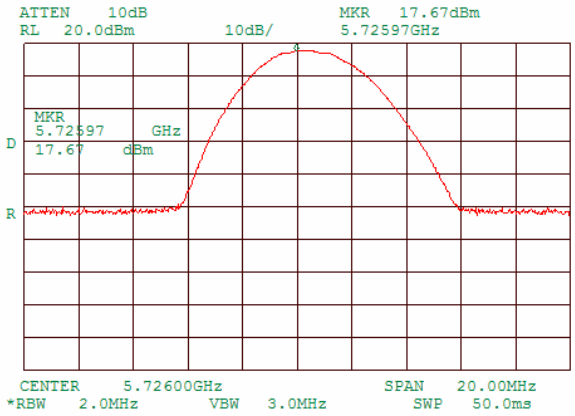
Reference numbers of test equipment used

HL 1424	HL 1651	HL 2399					

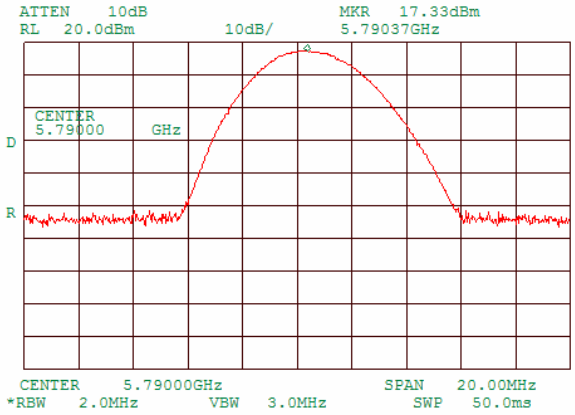
Full description is given in Appendix A.

Test specification:	Section 15.247(b), Peak output power		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	11/1/2004 3:46:51 PM		
Temperature: 23 ºC	Air Pressure: 1012 hPa	Relative Humidity: 46 %	Power Supply: 48 VDC
Remarks: Final version with new modulation			

Plot 7.2.1 Peak output power at low frequency at 1 Mbps

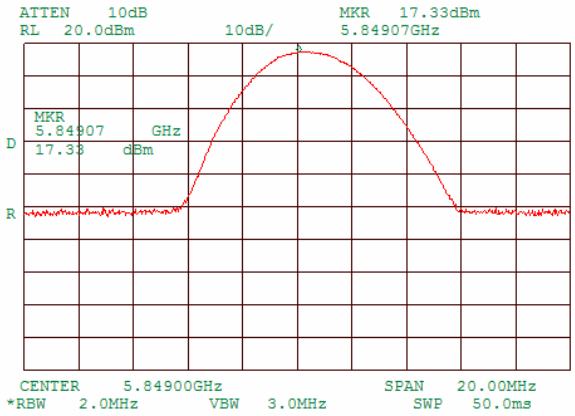


Plot 7.2.2 Peak output power at mid frequency 1 Mbps

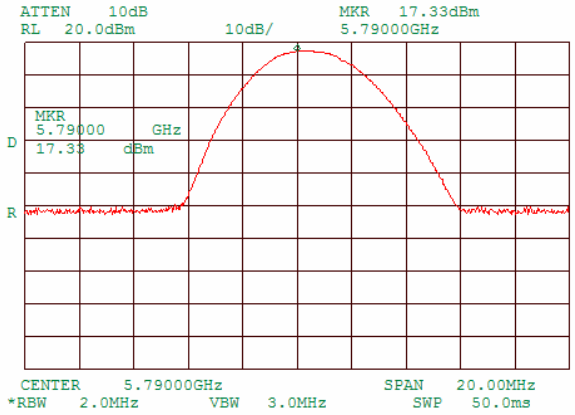


Test specification:	Section 15.247(b), Peak output power		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	11/1/2004 3:46:51 PM		
Temperature: 23 ºC	Air Pressure: 1012 hPa	Relative Humidity: 46 %	Power Supply: 48 VDC
Remarks: Final version with new modulation			

Plot 7.2.3 Peak output power at high frequency 1 Mbps

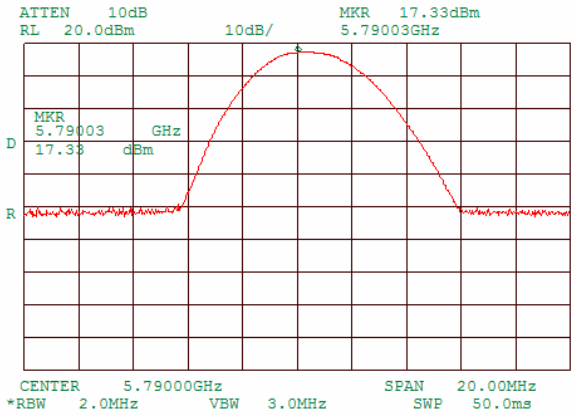


Plot 7.2.4 Peak output power at mid frequency 2 Mbps

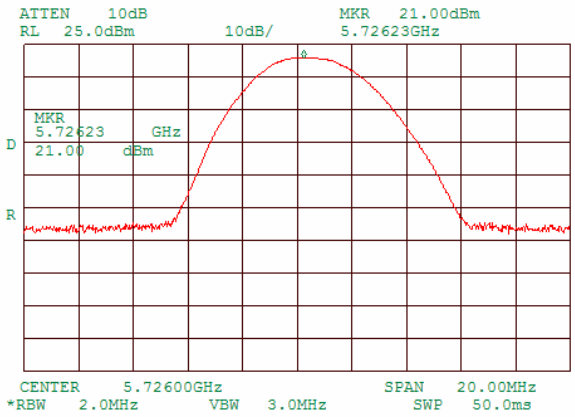


Test specification:	Section 15.247(b), Peak output power		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	11/1/2004 3:46:51 PM		
Temperature: 23 ºC	Air Pressure: 1012 hPa	Relative Humidity: 46 %	Power Supply: 48 VDC
Remarks: Final version with new modulation			

Plot 7.2.5 Peak output power at mid frequency 3 Mbps

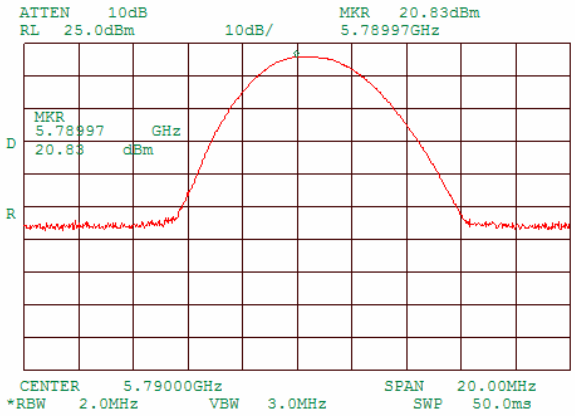


Plot 7.2.6 Peak output power at low frequency at 1.33 Mbps

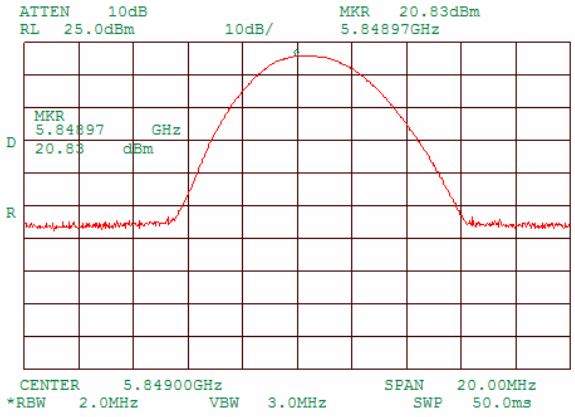


Test specification:	Section 15.247(b), Peak output power		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	11/1/2004 3:46:51 PM		
Temperature: 23 ºC	Air Pressure: 1012 hPa	Relative Humidity: 46 %	Power Supply: 48 VDC
Remarks: Final version with new modulation			

Plot 7.2.7 Peak output power at mid frequency 1.33 Mbps

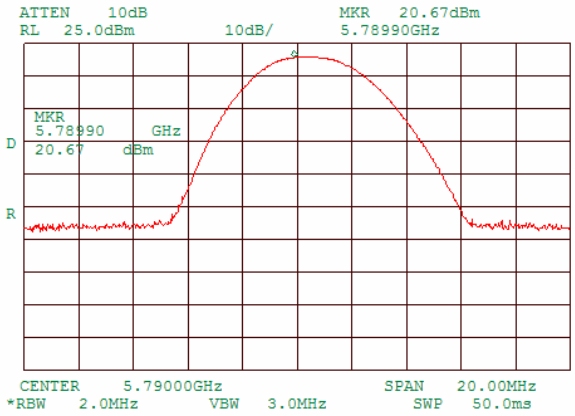


Plot 7.2.8 Peak output power at high frequency 1.33 Mbps



Test specification:	**Section 15.247(b), Peak output power**		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	11/1/2004 3:46:51 PM		
Temperature: 23 ºC	**Air Pressure:** 1012 hPa	**Relative Humidity:** 46 %	**Power Supply:** 48 VDC
Remarks: Final version with new modulation			

Plot 7.2.9 Peak output power at mid frequency 4 Mbps



Test specification:	Section 15.247(c), Emissions at band edges		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/24/2004 5:57:03 PM		
Temperature: ºC	Air Pressure: hPa	Relative Humidity: %	Power Supply: 48 V DC
Remarks:			

7.3 Band edge emissions at RF antenna connector

7.3.1 General

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

Table 7.3.1 Band edge emission limits

Assigned frequency, MHz	Attenuation below carrier*, dBc
902.0 – 928.0	20.0
2400.0 – 2483.5	
5725.0 – 5850.0	

* - Band edge emission limit is provided in terms of attenuation below the peak of modulated carrier measured with the same resolution bandwidth.

7.3.2 Test procedure

7.3.2.1 The EUT was set up as shown in Figure 7.3.1, energized normally modulated at the maximum data rate with its hopping function disabled and its proper operation was checked.

7.3.2.2 The EUT was adjusted to produce maximum available to end user RF output power at the lowest carrier frequency.

7.3.2.3 The spectrum analyzer span was set to capture the carrier frequency and associated modulation products. The resolution bandwidth was set wider than 1 % of the frequency span.

7.3.2.4 The spectrum analyzer was set in max hold mode and allowed trace to stabilize. The highest emission level within the authorized band was measured.

7.3.2.5 The maximum band edge emission and modulation product outside of the band were measured as provided in Table 7.3.2 and associated plots and referenced to the highest emission level measured within the authorized band.

7.3.2.6 The above procedure was repeated with the EUT adjusted to produce maximum RF output power at the highest carrier frequency.

7.3.2.7 The above procedure was repeated with the frequency hopping function enabled.

Figure 7.3.1 Band edge emission test setup

Test specification:	**Section 15.247(c), Emissions at band edges**		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	10/24/2004 5:57:03 PM		
Temperature: ºC	**Air Pressure:** hPa	**Relative Humidity:** %	**Power Supply:** 48 V DC
Remarks:			

Table 7.3.2 Band edge emission test results

ASSIGNED FREQUENCY RANGE: 5725.0 – 5850.0 MHz
DETECTOR USED: Peak
MODULATION: FSK
MODULATING SIGNAL: PRBS
BIT RATE: 3 and 4 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum
RESOLUTION BANDWIDTH: ≥ 1% of the span
VIDEO BANDWIDTH: ≥ RBW

Frequency, MHz	Band edge emission, dBm	Emission at carrier, dBm	Attenuation below carrier, dBc	Limit, dBc	Margin, dB*	Verdict
3 Mbps						
Frequency hopping disabled						
5725.0	-47.00	-7.5	-39.50	20	-59.50	Pass
5850.0	-50.32	-7.0	-43.32		-63.32	
Frequency hopping enabled						
5725.0	-48.16	-8.0	-40.16	20	-60.16	Pass
5850.0	-51.65	-7.3	-44.35		-64.35	
4 Mbps						
Frequency hopping disabled						
5725.0	-36.67	-7.5	-29.17	20	-49.17	Pass
5850.0	-44.83	-7.5	-37.33		-57.33	
Frequency hopping enabled						
5725.0	-37.67	-7.5	-30.17	20	-50.17	Pass
5850.0	-46.67	-7.5	-39.17		-59.17	

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

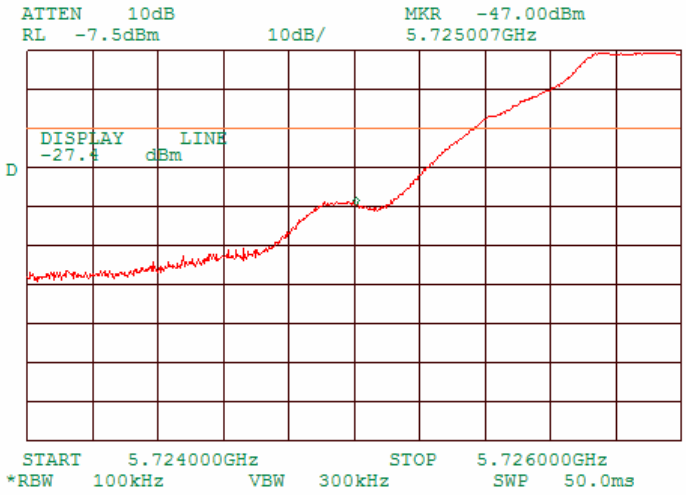
Reference numbers of test equipment used

HL 1424	HL 2399						

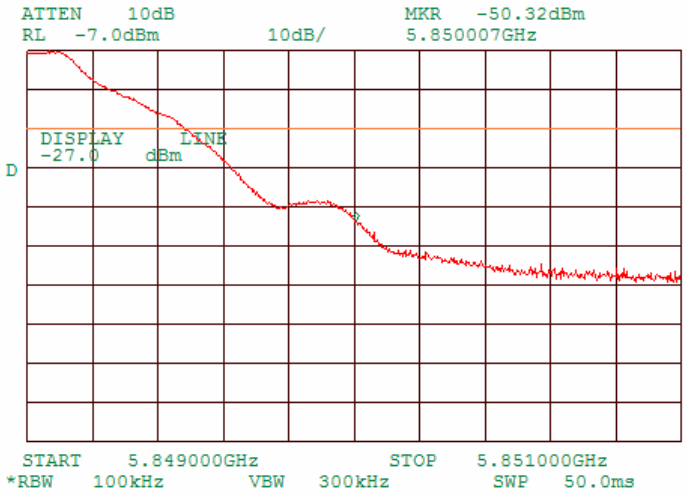
Full description is given in Appendix A.

Test specification:	Section 15.247(c), Emissions at band edges		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/24/2004 5:57:03 PM		
Temperature: ºC	Air Pressure: hPa	Relative Humidity: %	Power Supply: 48 V DC
Remarks:			

Plot 7.3.1 The highest emission level at low carrier frequency at 3 Mbps (hopping disabled)

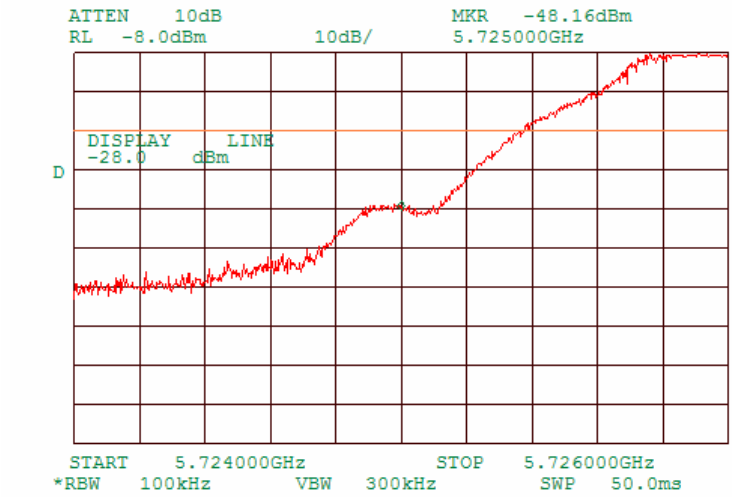


Plot 7.3.2 The highest emission level at high carrier frequency at 3 Mbps (hopping disabled)

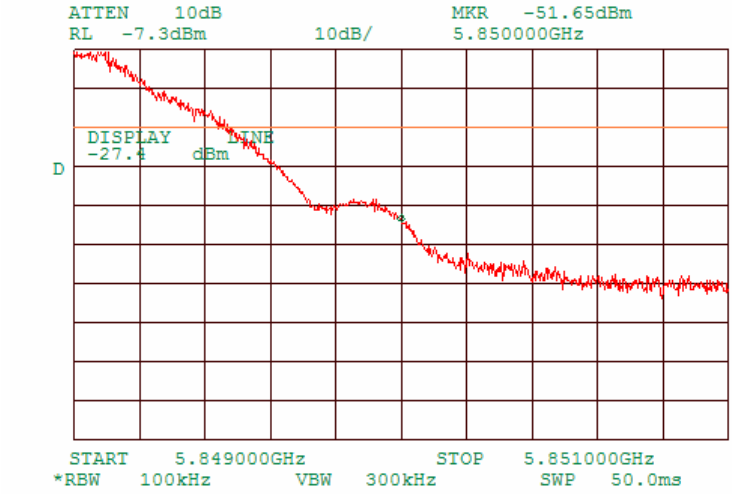


Test specification:	Section 15.247(c), Emissions at band edges		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/24/2004 5:57:03 PM		
Temperature: ºC	Air Pressure: hPa	Relative Humidity: %	Power Supply: 48 V DC
Remarks:			

Plot 7.3.3 The highest band edge emission at low carrier frequency at 3 Mbps (hopping enabled)

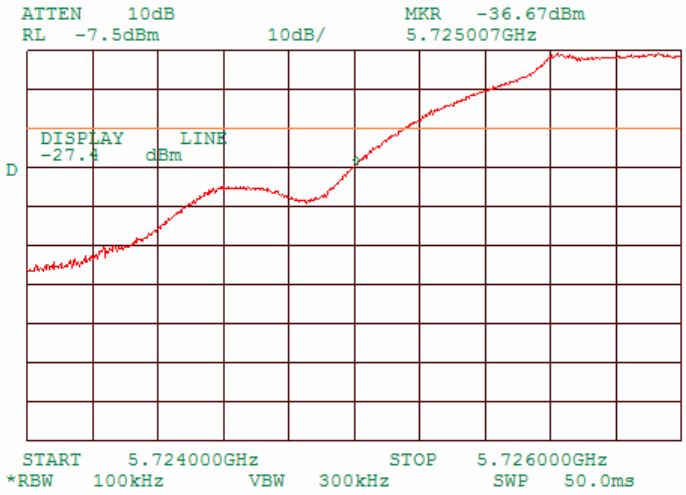


Plot 7.3.4 The highest band edge emission at high carrier frequency at 3 Mbps (hopping enabled)

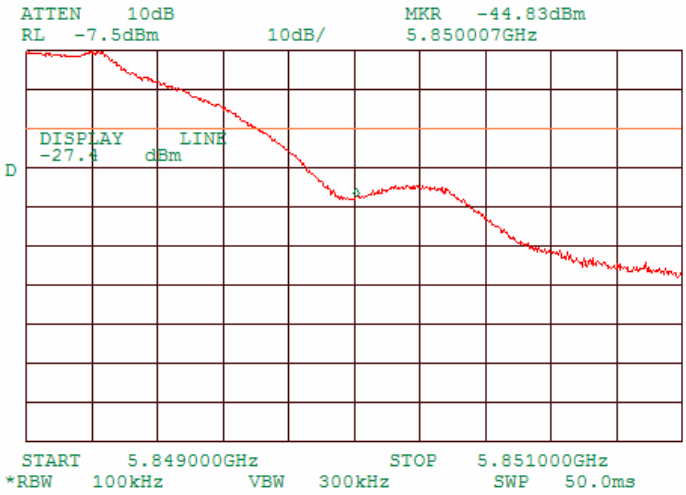


Test specification:	Section 15.247(c), Emissions at band edges		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/24/2004 5:57:03 PM		
Temperature: ºC	Air Pressure: hPa	Relative Humidity: %	Power Supply: 48 V DC
Remarks:			

Plot 7.3.5 The highest emission level at low carrier frequency at 4 Mbps (hopping disabled)

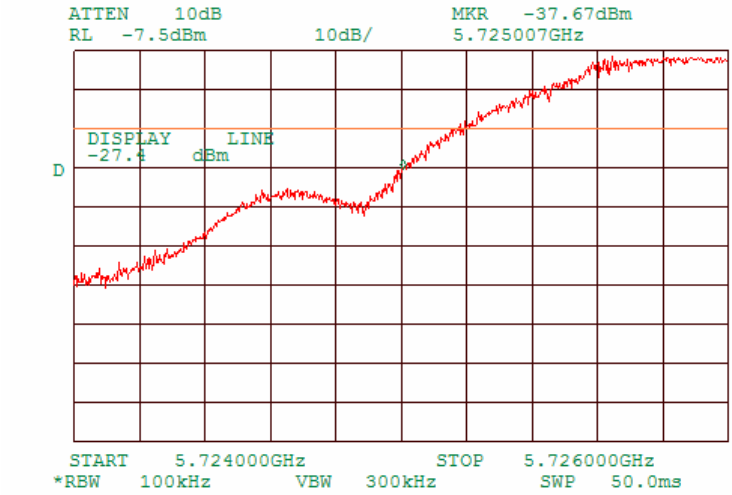


Plot 7.3.6 The highest emission level at high carrier frequency at 4 Mbps (hopping disabled)

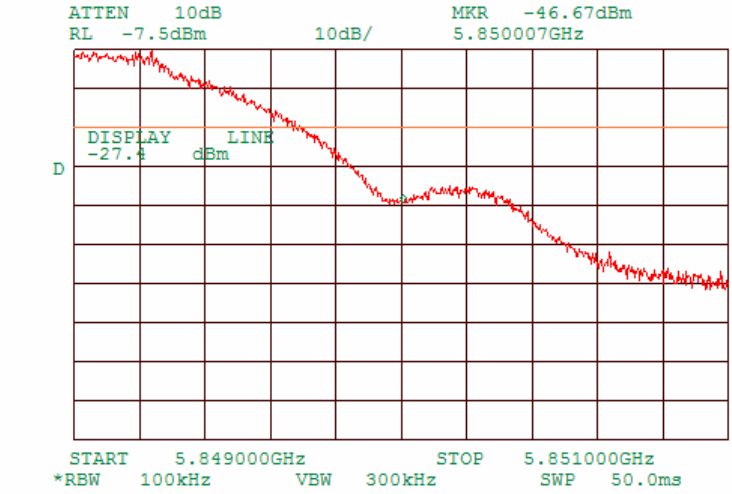


Test specification:	Section 15.247(c), Emissions at band edges		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/24/2004 5:57:03 PM		
Temperature: ºC	Air Pressure: hPa	Relative Humidity: %	Power Supply: 48 V DC
Remarks:			

Plot 7.3.7 The highest band edge emission at low carrier frequency at 4 Mbps (hopping enabled)



Plot 7.3.8 The highest band edge emission at high carrier frequency at 4 Mbps (hopping enabled)



Test specification:	Section 15.247(c), Conducted spurious emission		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/1/2003 4:03:01 PM		
Temperature: 24 °C	Air Pressure: 1011 hPa	Relative Humidity: 44 %	Power Supply: 120 V AC
Remarks:			

7.4 Spurious emissions at RF antenna connector

7.4.1 General

This test was performed to measure spurious emissions at RF antenna connector. Specification test limits according to FCC part 15 section 15.247(c) are given in Table 7.4.1. The test results are provided in Table 7.4.2 and associated plots.

Table 7.4.1 Spurious emission limits

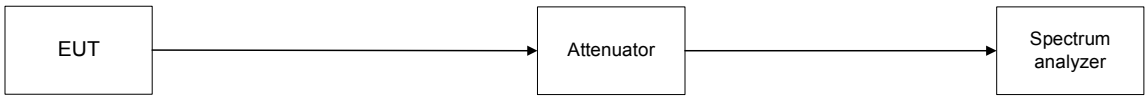
Frequency*, MHz	Attenuation below carrier*, dBc
0.009 – 10th harmonic	20.0

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

7.4.2 Test procedure

7.4.2.1 The EUT was set up as shown in Figure 7.4.1, energized and its proper operation was checked.
7.4.2.2 The EUT was adjusted to produce maximum available to end user RF output power.
7.4.2.3 The highest emission level within the authorized band was measured.
7.4.2.4 The spurious emission was measured with spectrum analyzer as provided in Table 7.4.2 Spurious emission test resultsand associated plots and referenced to the highest emission level measured within the authorized band.

Figure 7.4.1 Spurious emission test setup



Test specification:	**Section 15.247(c), Conducted spurious emission**		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	7/1/2003 4:03:01 PM		
Temperature: 24 ºC	**Air Pressure:** 1011 hPa	**Relative Humidity:** 44 %	**Power Supply:** 120 V AC
Remarks:			

Table 7.4.2 Spurious emission test results

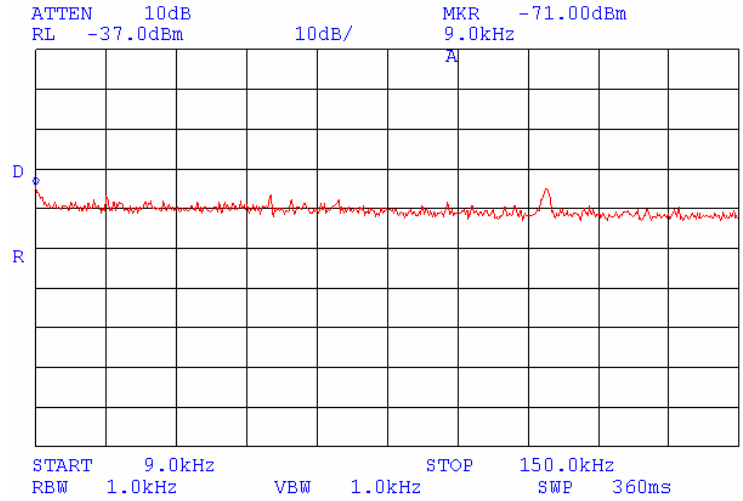
ASSIGNED FREQUENCY RANGE:	5.725 MHz – 5850 MHz
INVESTIGATED FREQUENCY RANGE:	0.009 – 40000 MHz
DETECTOR USED:	Peak
RESOLUTION BANDWIDTH:	100 kHz
VIDEO BANDWIDTH:	300 kHz
MODULATION:	FSK
MODULATING SIGNAL:	PRBS
BIT RATE:	3 Mbps
TRANSMITTER OUTPUT POWER SETTINGS:	Maximum

Frequency, MHz	Spurious emission, dBm	Emission at carrier, dBm	Attenuation below carrier, dBc	Limit, dBc	Verdict
No spurious emissions were found				20	Pass

Test specification:	Section 15.247(c), Conducted spurious emission		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/1/2003 4:03:01 PM		
Temperature: 24 °C	Air Pressure: 1011 hPa	Relative Humidity: 44 %	Power Supply: 120 V AC
Remarks:			

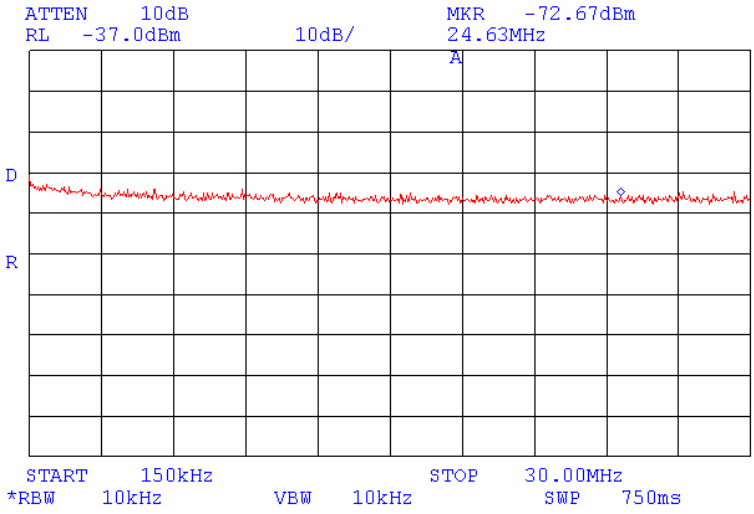
Plot 7.4.1 Conducted spurious emission measurements

Carrier frequencies: 5.726 GHz (low), 5.8 GHz (middle); 5.849 GHz (high)
Bit rate: 3 Mbit/s
Frequency range: 9 – 150 kHz



Plot 7.4.2 Conducted spurious emission measurements

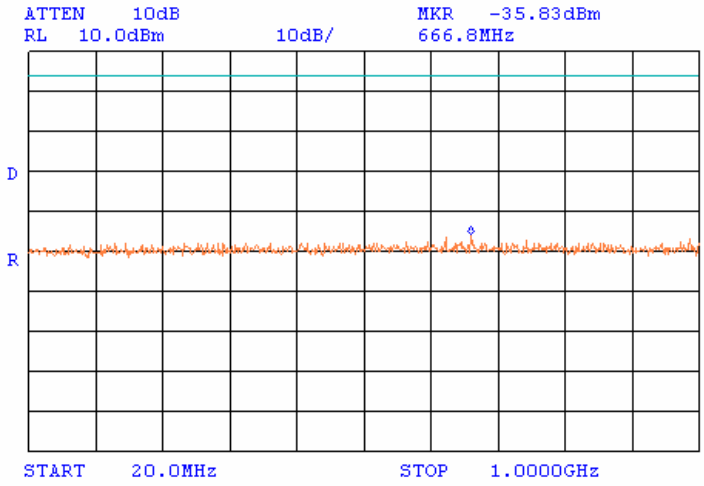
Carrier frequencies: 5.726 GHz (low), 5.8 GHz (middle); 5.849 GHz (high)
Bit rate: 3 Mbit/s
Frequency range: 150 kHz – 30 MHz



Test specification:	Section 15.247(c), Conducted spurious emission		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/1/2003 4:03:01 PM		
Temperature: 24 °C	Air Pressure: 1011 hPa	Relative Humidity: 44 %	Power Supply: 120 V AC
Remarks:			

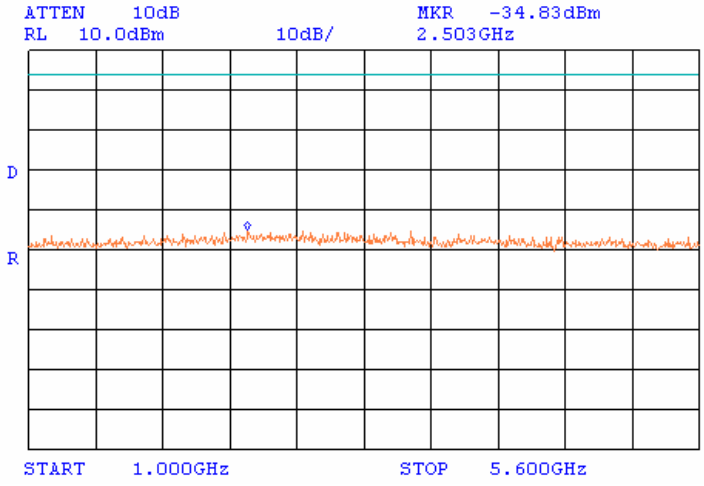
Plot 7.4.3 Conducted spurious emission measurements

F_{LOW}: 5.726 GHz
Bit rate: 3 Mbit/s
Frequency range: 20 MHz – 1 GHz



Plot 7.4.4 Conducted spurious emission measurements

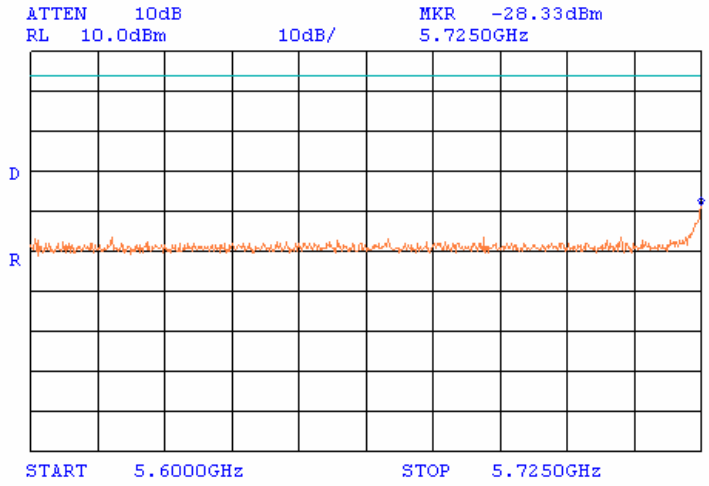
F_{LOW}: 5.726 GHz
Bit rate: 3 Mbit/s
Frequency range: 1 – 5.6 GHz



Test specification:	Section 15.247(c), Conducted spurious emission		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/1/2003 4:03:01 PM		
Temperature: 24 °C	Air Pressure: 1011 hPa	Relative Humidity: 44 %	Power Supply: 120 V AC
Remarks:			

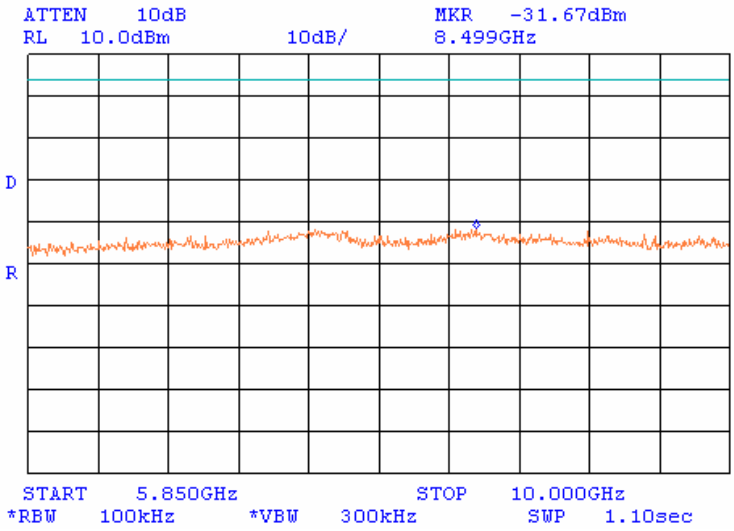
Plot 7.4.5 Conducted spurious emission measurements

F_{LOW}: 5.726 GHz
Bit rate: 3 Mbit/s
Frequency range: 5.6 – 5.725 GHz



Plot 7.4.6 Conducted spurious emission measurements

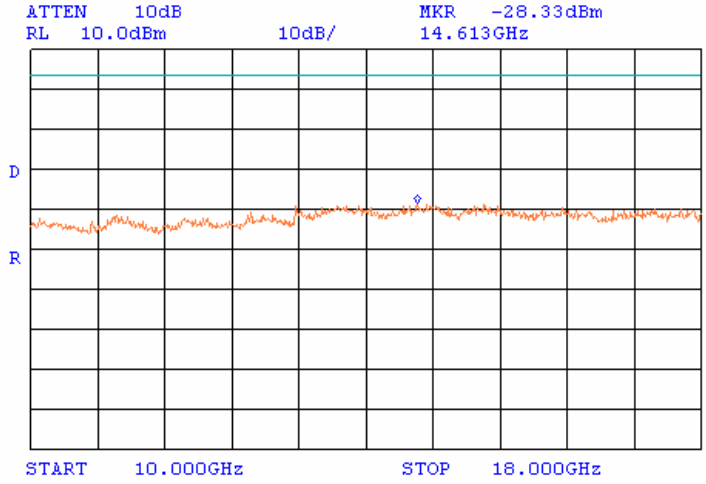
F_{LOW}: 5.726 GHz
Bit rate: 3 Mbit/s
Frequency range: 5.85 – 10 GHz



Test specification:	Section 15.247(c), Conducted spurious emission		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/1/2003 4:03:01 PM		
Temperature: 24 °C	Air Pressure: 1011 hPa	Relative Humidity: 44 %	Power Supply: 120 V AC
Remarks:			

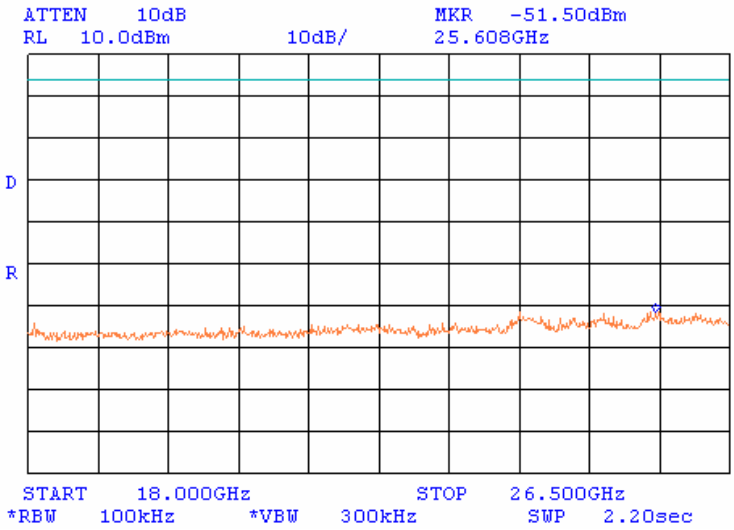
Plot 7.4.7 Conducted spurious emission measurements

F_{LOW}: 5.726 GHz
Bit rate: 3 Mbit/s
Frequency range: 10 – 18 GHz



Plot 7.4.8 Conducted spurious emission measurements

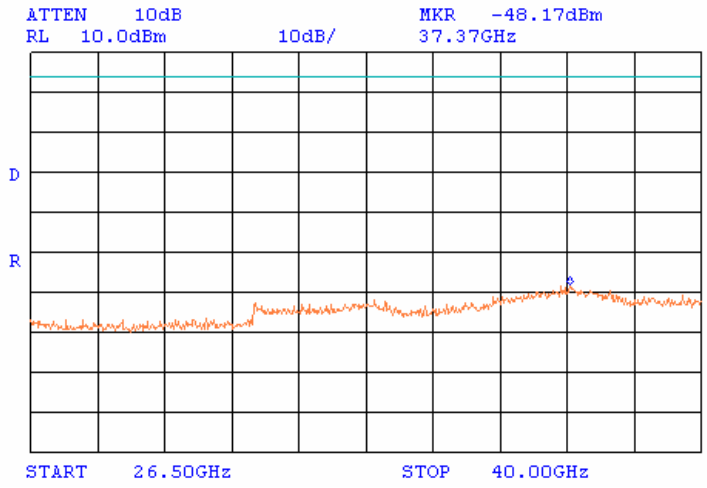
F_{LOW}: 5.726 GHz
Bit rate: 3 Mbit/s
Frequency range: 18 – 26.5 GHz



Test specification:	Section 15.247(c), Conducted spurious emission		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/1/2003 4:03:01 PM		
Temperature: 24 °C	Air Pressure: 1011 hPa	Relative Humidity: 44 %	Power Supply: 120 V AC
Remarks:			

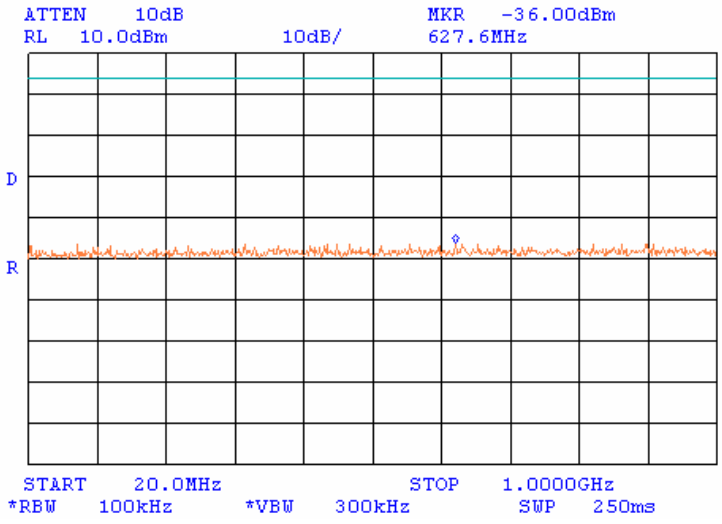
Plot 7.4.9 Conducted spurious emission measurements

F_{LOW}: 5.726 GHz
Bit rate: 3 Mbit/s
Frequency range: 26.5 – 40 GHz



Plot 7.4.10 Conducted spurious emission measurements

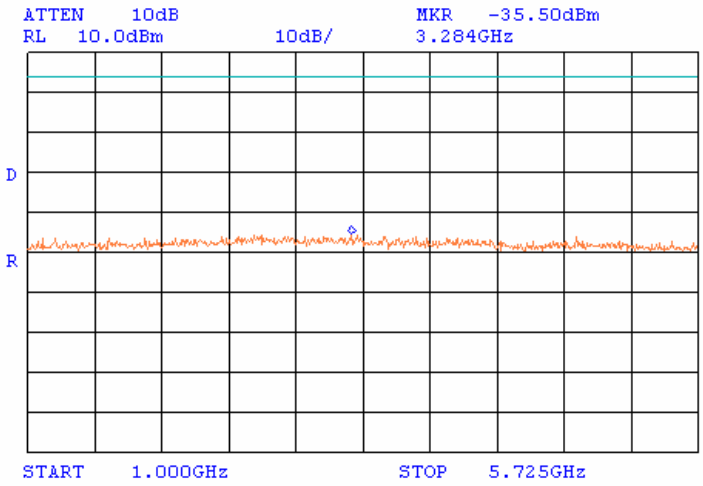
F_{MIDDLE}: 5.8 GHz
Bit rate: 3 Mbit/s
Frequency range: 20 MHz – 1 GHz



Test specification:	Section 15.247(c), Conducted spurious emission		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/1/2003 4:03:01 PM		
Temperature: 24 °C	Air Pressure: 1011 hPa	Relative Humidity: 44 %	Power Supply: 120 V AC
Remarks:			

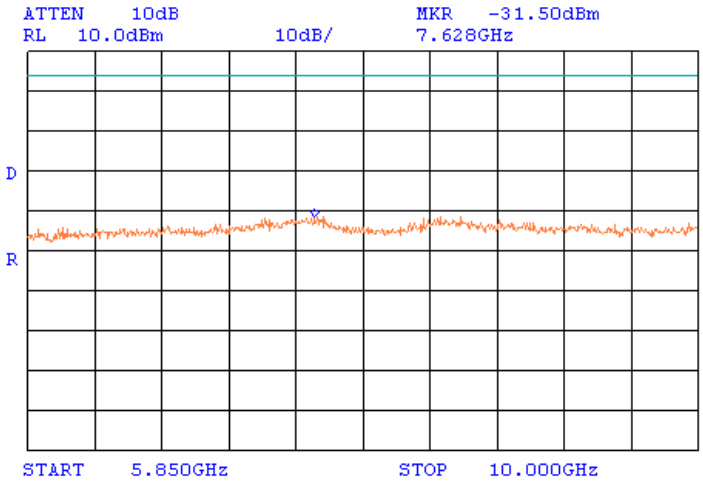
Plot 7.4.11 Conducted spurious emission measurements

F_{MIDDLE}:	5.8 GHz
Bit rate:	3 Mbit/s
Frequency range:	1 – 5.725 GHz



Plot 7.4.12 Conducted spurious emission measurements

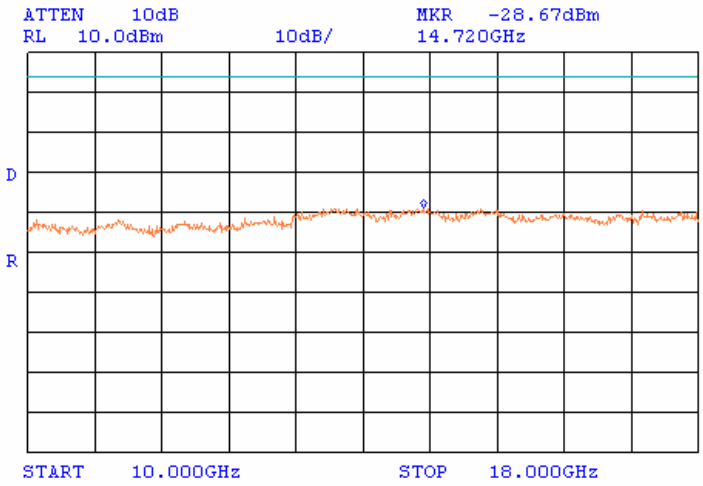
F_{MIDDLE}:	5.8 GHz
Bit rate:	3 Mbit/s
Frequency range:	5.85 – 10 GHz



Test specification:	Section 15.247(c), Conducted spurious emission		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/1/2003 4:03:01 PM		
Temperature: 24 °C	Air Pressure: 1011 hPa	Relative Humidity: 44 %	Power Supply: 120 V AC
Remarks:			

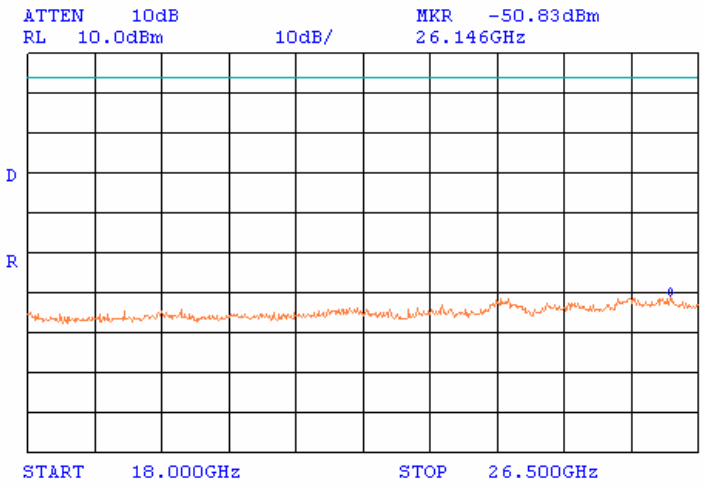
Plot 7.4.13 Conducted spurious emission measurements

F_{MIDDLE}:	5.8 GHz
Bit rate:	3 Mbit/s
Frequency range:	10 – 18 GHz



Plot 7.4.14 Conducted spurious emission measurements

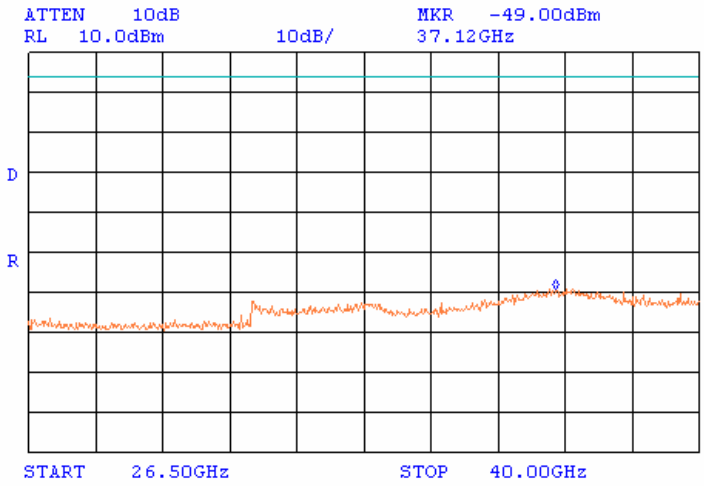
F_{MIDDLE}:	5.8 GHz
Bit rate:	3 Mbit/s
Frequency range:	18 – 26.5 GHz



Test specification:	Section 15.247(c), Conducted spurious emission		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/1/2003 4:03:01 PM		
Temperature: 24 °C	Air Pressure: 1011 hPa	Relative Humidity: 44 %	Power Supply: 120 V AC
Remarks:			

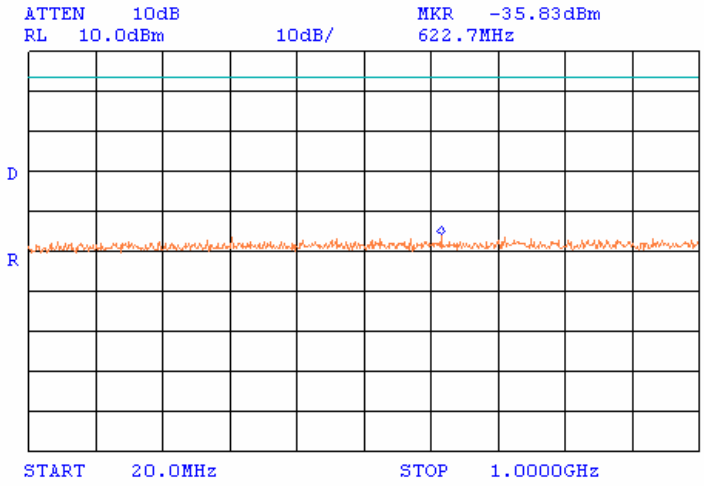
Plot 7.4.15 Conducted spurious emission measurements

F_{MIDDLE}:	5.8 GHz
Bit rate:	3 Mbit/s
Frequency range:	26.5 – 40 GHz



Plot 7.4.16 Conducted spurious emission measurements

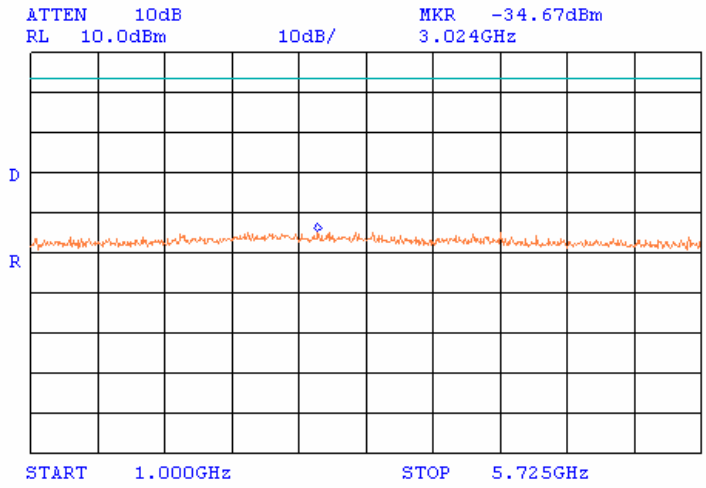
F_{HIGH}:	5.849 GHz
Bit rate:	3 Mbit/s
Frequency range:	20 MHz – 1 GHz



Test specification:	Section 15.247(c), Conducted spurious emission		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/1/2003 4:03:01 PM		
Temperature: 24 °C	Air Pressure: 1011 hPa	Relative Humidity: 44 %	Power Supply: 120 V AC
Remarks:			

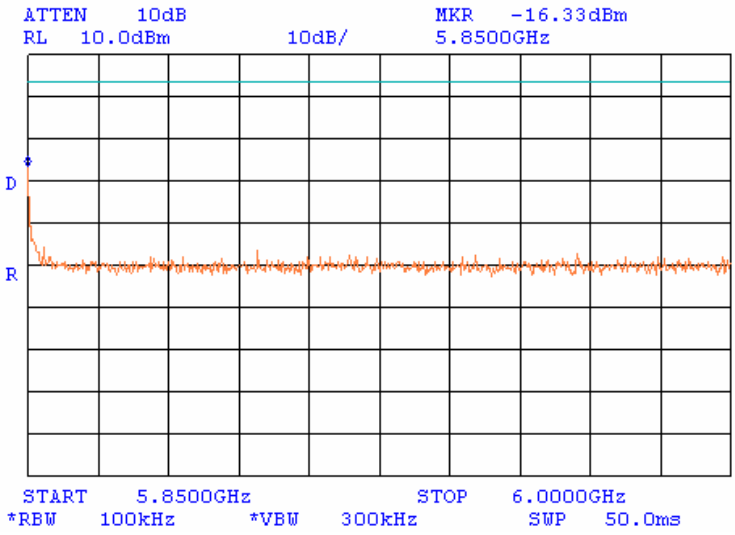
Plot 7.4.17 Conducted spurious emission measurements

F_{HIGH}:	5.849 GHz
Bit rate:	3 Mbit/s
Frequency range:	1 – 5.725 GHz



Plot 7.4.18 Conducted spurious emission measurements

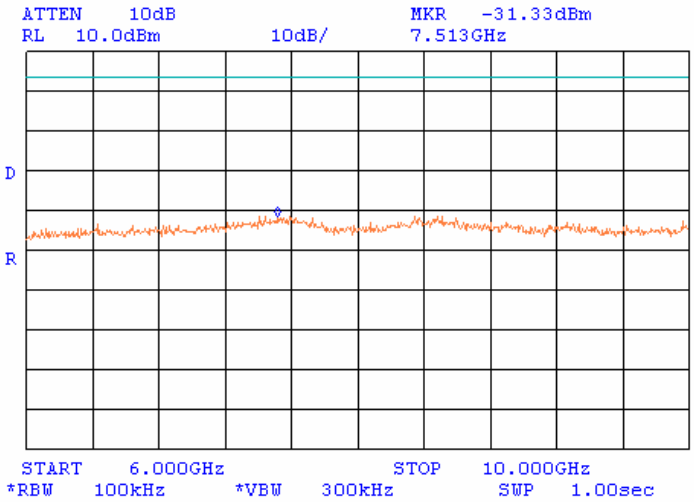
F_{HIGH}:	5.849 GHz
Bit rate:	3 Mbit/s
Frequency range:	5.85 – 6 GHz



Test specification:	Section 15.247(c), Conducted spurious emission		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/1/2003 4:03:01 PM		
Temperature: 24 °C	Air Pressure: 1011 hPa	Relative Humidity: 44 %	Power Supply: 120 V AC
Remarks:			

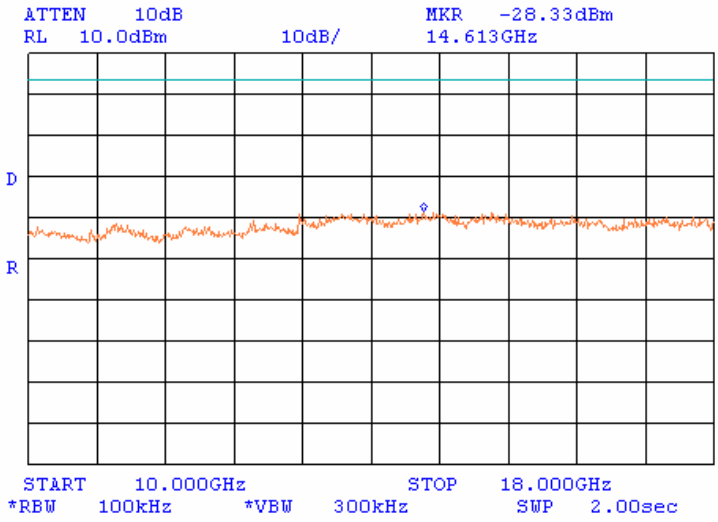
Plot 7.4.19 Conducted spurious emission measurements

F_{HIGH}:	5.849 GHz
Bit rate:	3 Mbit/s
Frequency range:	6 – 10 GHz



Plot 7.4.20 Conducted spurious emission measurements

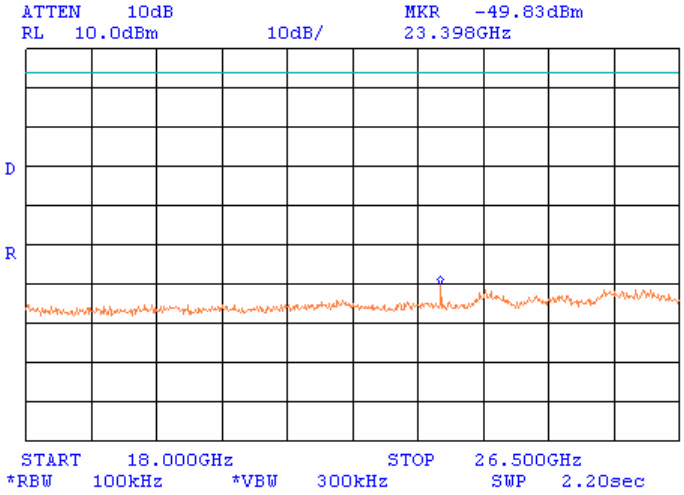
F_{HIGH}:	5.849 GHz
Bit rate:	3 Mbit/s
Frequency range:	10 – 18 GHz



Test specification:	Section 15.247(c), Conducted spurious emission		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/1/2003 4:03:01 PM		
Temperature: 24 °C	Air Pressure: 1011 hPa	Relative Humidity: 44 %	Power Supply: 120 V AC
Remarks:			

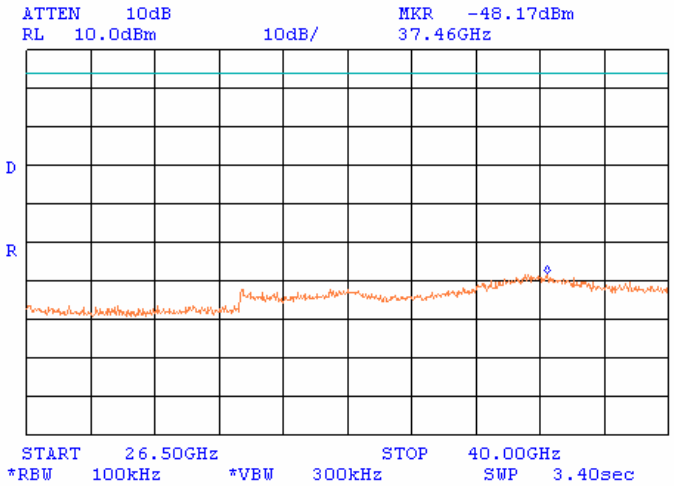
Plot 7.4.21 Conducted spurious emission measurements

F_{HIGH}: 5.849 GHz
Bit rate: 3 Mbit/s
Frequency range: 18 – 26.5 GHz



Plot 7.4.22 Conducted spurious emission measurements

F_{HIGH}: 5.849 GHz
Bit rate: 3 Mbit/s
Frequency range: 26.5 – 40 GHz



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 ºC	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

7.5 Field strength of spurious emissions

7.5.1 General

This test was performed to measure field strength of spurious emissions from the EUT. Specification test limits are given in Table 7.5.1.

Table 7.5.1 Radiated spurious emissions limits

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

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

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

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

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

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

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

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

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

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

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

7.5.3.1 The EUT was set up as shown in Figure 7.5.2, energized and the performance check was conducted.

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

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

Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 ºC	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

Figure 7.5.1 Setup for spurious emission field strength measurements below 30 MHz

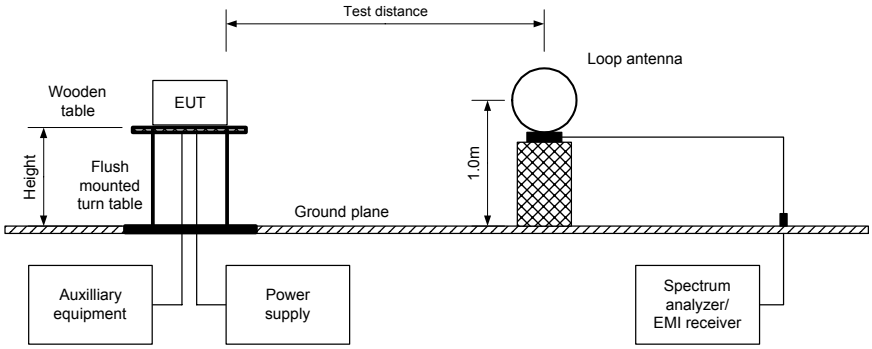
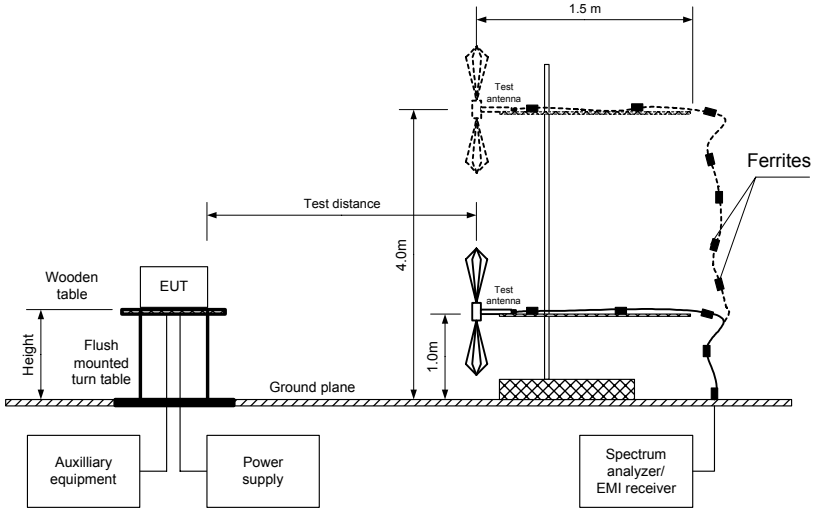


Figure 7.5.2 Setup for spurious emission field strength measurements above 30 MHz



Test specification:	**Section 15.247(c), Radiated spurious emissions**		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 ºC	**Air Pressure:** 1012 hPa	**Relative Humidity:** 45 %	**Power Supply:** 48 VDC
Remarks:			

Table 7.5.2 Field strength of emissions outside restricted bands

EUT:	**SPR 5.8 TDD Ext**
ASSIGNED FREQUENCY:	5725 - 5850 MHz
INVESTIGATED FREQUENCY RANGE:	0.009 - 40000 MHz
POWER SETTING:	21 dBm (maximum output power software defined)
TEST DISTANCE:	3 m
MODULATION:	FSK
MODULATING SIGNAL:	PRBS
BIT RATE:	1 Mbps
DUTY CYCLE:	100 %
TRANSMITTER OUTPUT POWER:	139.41 dBuV/m at low carrier frequency 141.17 dBuV/m at mid carrier frequency 140.47 dBuV/m at high carrier frequency
DETECTOR USED:	Peak
RESOLUTION BANDWIDTH:	100 kHz
VIDEO BANDWIDTH:	300 kHz
TEST ANTENNA TYPE:	Active loop (9 kHz – 30 MHz) Biconilog (30 MHz – 1000 MHz) Double ridged guide (above 1000 MHz)
FREQUENCY HOPPING:	Disabled

Frequency, MHz	Field strength of spurious, dB(µV/m)	Antenna polarization	Antenna height, m	Azimuth, degrees*	Field strength of carrier, dB(µV/m)	Attenuation below carrier, dBc	Limit, dBc	Margin, dB**	Verdict
Low carrier frequency									
17177.65	58.33	V	1.2	230	139.41	81.08	20.0	61.08	Pass
22904.50	40.17	V	1.1	300		99.24		79.24	
28628.75	48.67	V	1.1	324		90.74		70.74	
34353.88	45.98	V	1.0	221		93.43		73.43	
Mid carrier frequency									
17399.60	71.54	V	1.2	247	141.17	67.87	20.0	47.87	Pass
23200.62	31.45	V	1.5	315		107.96		87.96	
28992.57	55.31	V	1.1	300		84.10		64.10	
34797.77	44.56	V	1.0	256		94.85		74.85	
High carrier frequency									
17546.60	77.12	V	1.1	220	140.47	62.29	20.0	42.29	Pass
23394.87	33.59	V	1.3	241		105.82		85.82	
29243.55	59.56	V	1.0	320		79.85		59.85	
35094.85	45.76	V	1.0	342		93.65		73.65	

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

Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 ºC	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

Table 7.5.3 Field strength of spurious emissions above 1 GHz within restricted bands

EUT:	**SPR 5.8 TDD Ext**
ASSIGNED FREQUENCY:	5725 - 5850 MHz
INVESTIGATED FREQUENCY RANGE:	1 - 40000 MHz
POWER SETTING:	21 dBm (maximum output power software defined)
TEST DISTANCE:	3 m
MODULATION:	FSK
MODULATING SIGNAL:	PRBS
BIT RATE:	1 Mbps
DUTY CYCLE:	100 %
TRANSMITTER OUTPUT POWER:	139.41 dBuV/m at low carrier frequency 141.17 dBuV/m at mid carrier frequency 140.47 dBuV/m at high carrier frequency
DETECTOR USED:	Peak
RESOLUTION BANDWIDTH:	1000 kHz
TEST ANTENNA TYPE:	Double ridged guide
FREQUENCY HOPPING:	Disabled

Frequency, MHz	Antenna		Azimuth, degrees*	Peak field strength(VBW=3 MHz)			Average field strength(VBW=10 Hz)				Verdict
	Polarization	Height, m		Measured, dB(µV/m)	Limit, dB(µV/m)	Margin, dB**	Measured, dB(µV/m)	Calculated, dB(µV/m)	Limit, dB(µV/m)	Margin, dB***	
Low carrier frequency											
22904.50	V	1.1	330	40.17	74	-33.83	31.17	31.17	54	22.83	Pass

*****- EUT front panel refers to 0 degrees position of turntable.
******- Margin = Measured field strength - specification limit.
***- Margin = Calculated field strength - specification limit,
where Calculated field strength = Measured field strength + average factor.

Table 7.5.4 Average factor calculation

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

*- Average factor was calculated as follows

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

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

Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 ºC	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

Table 7.5.5 Field strength of spurious emissions below 1 GHz within restricted bands

EUT:	**SPR 5.8 TDD Ext**
ASSIGNED FREQUENCY:	5725 - 5850 MHz
INVESTIGATED FREQUENCY RANGE:	0.009 - 1000 MHz
POWER SETTING:	21 dBm (maximum output power software defined)
TEST DISTANCE:	3 m
MODULATION:	FSK
MODULATING SIGNAL:	PRBS
BIT RATE:	1 Mbps
DUTY CYCLE:	100 %
TRANSMITTER OUTPUT POWER:	139.41 dBuV/m at low carrier frequency 141.17 dBuV/m at mid carrier frequency 140.47 dBuV/m at high carrier frequency
RESOLUTION BANDWIDTH:	0.2 kHz (9 kHz – 150 kHz) 9.0 kHz (150 kHz – 30 MHz) 120 kHz (30 MHz – 1000 MHz)
VIDEO BANDWIDTH:	> Resolution bandwidth
TEST ANTENNA TYPE:	Active loop (9 kHz – 30 MHz) Biconilog (30 MHz – 1000 MHz)
FREQUENCY HOPPING:	Disabled

Frequency, MHz	Peak emission, dB(µV/m)	Quasi-peak			Antenna polarization	Antenna height, m	Turn-table position**, degrees	Verdict
		Measured emission, dB(µV/m)	Limit, dB(µV/m)	Margin, dB*				
Low carrier frequency								
No spurious emissions were found								Pass
Mid carrier frequency								
No spurious emissions were found								Pass
High carrier frequency								
No spurious emissions were found								Pass

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

Reference numbers of test equipment used

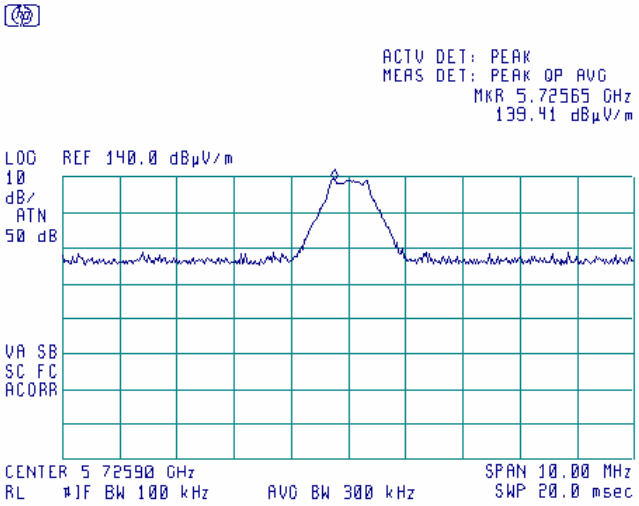
HL 0410	HL 0411	HL 0446	HL 0465	HL 0521	HL 0589	HL 0592	HL 0593
HL 0594	HL 0604	HL 1424	HL 1947	HL 1984	HL 2009	HL 2259	HL 2260

Full description is given in Appendix A.

Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

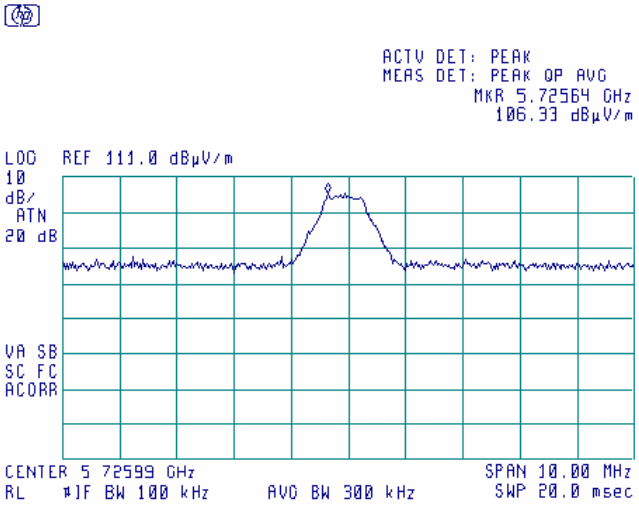
Plot 7.5.1 Radiated emission measurements at the low carrier frequency

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



Plot 7.5.2 Radiated emission measurements at the low carrier frequency

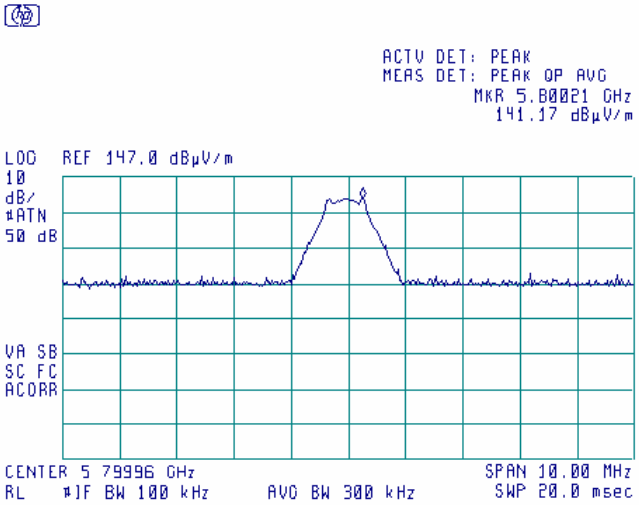
TEST SITE: anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

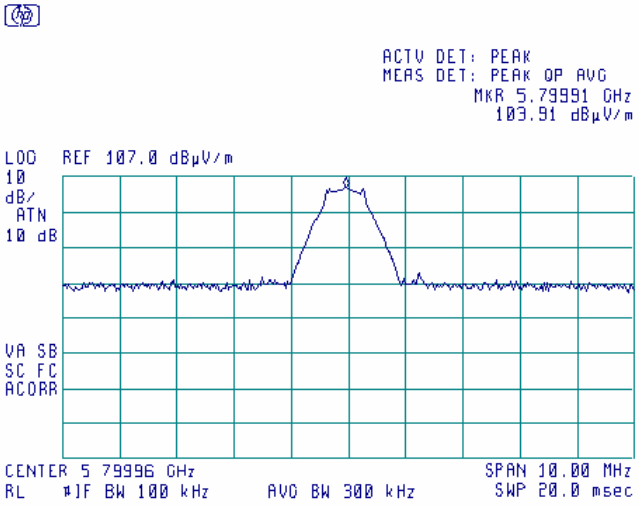
Plot 7.5.3 Radiated emission measurements at the mid carrier frequency

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



Plot 7.5.4 Radiated emission measurements at the mid carrier frequency

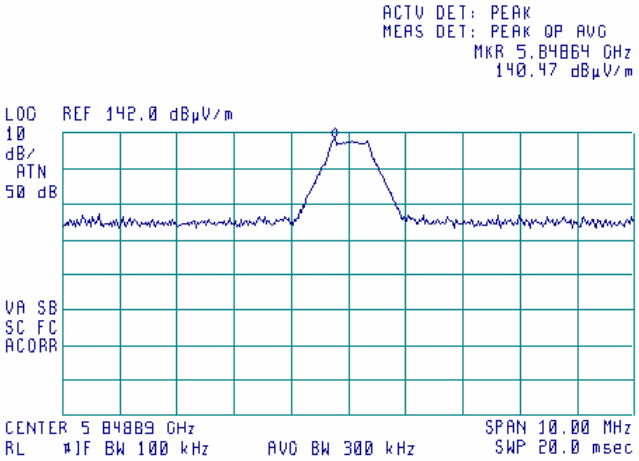
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

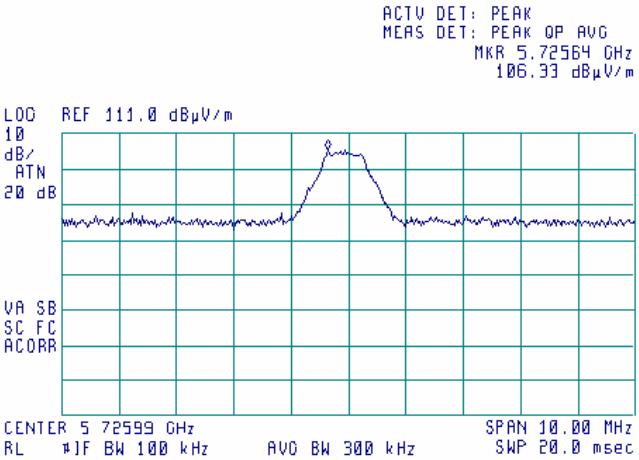
Plot 7.5.5 Radiated emission measurements at the high carrier frequency

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



Plot 7.5.6 Radiated emission measurements at the high carrier frequency

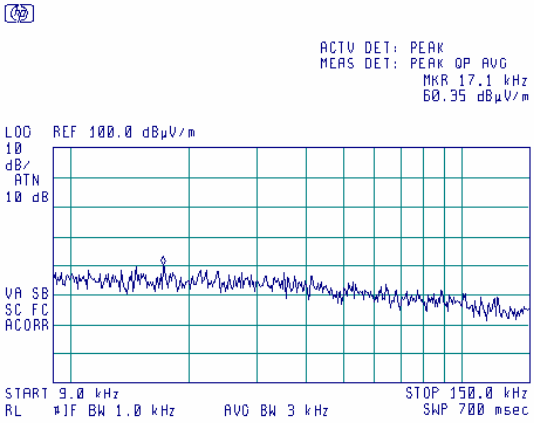
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

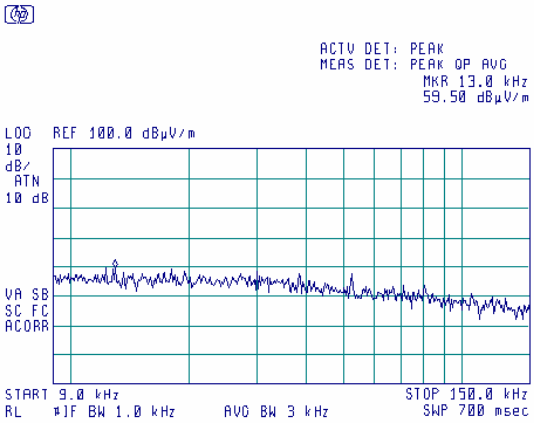
Plot 7.5.7 Radiated emission measurements from 9 to 150 kHz at the low carrier frequency

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



Plot 7.5.8 Radiated emission measurements from 9 to 150 kHz at the mid carrier frequency

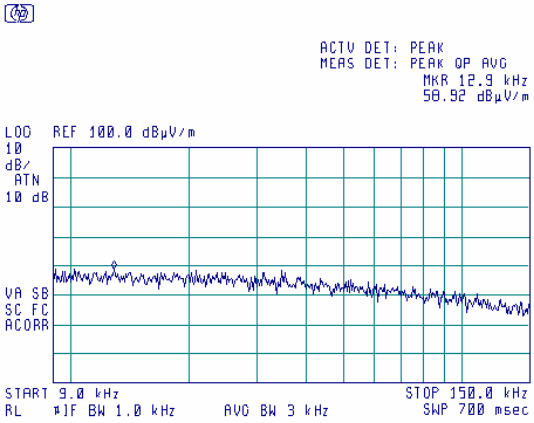
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

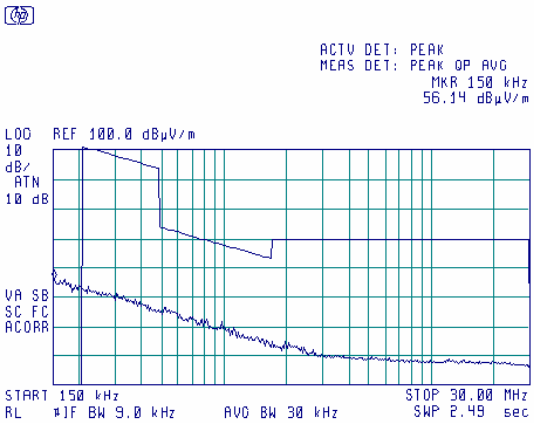
Plot 7.5.9 Radiated emission measurements from 9 to 150 kHz at the high carrier frequency

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



Plot 7.5.10 Radiated emission measurements from 0.15 to 30 MHz at the low carrier frequency

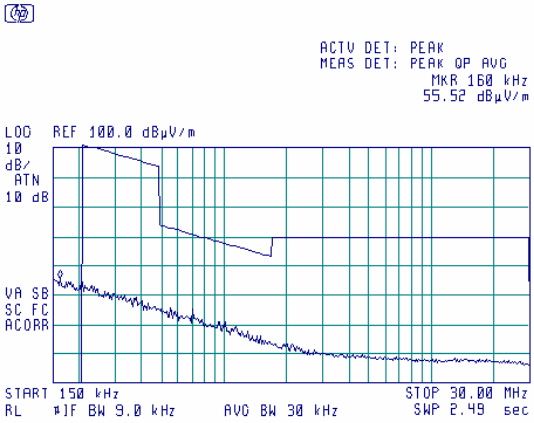
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

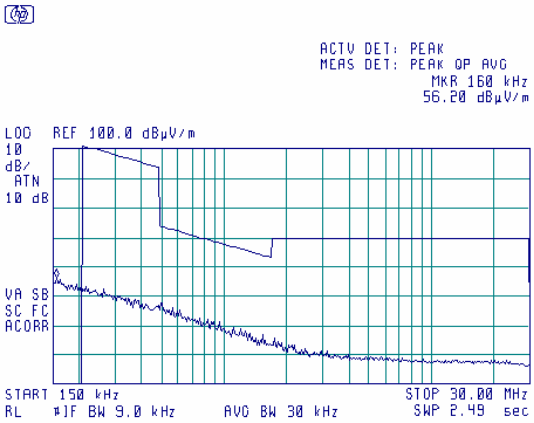
Plot 7.5.11 Radiated emission measurements from 0.15 to 30 MHz at the mid carrier frequency

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



Plot 7.5.12 Radiated emission measurements from 0.15 to 30 MHz at the high carrier frequency

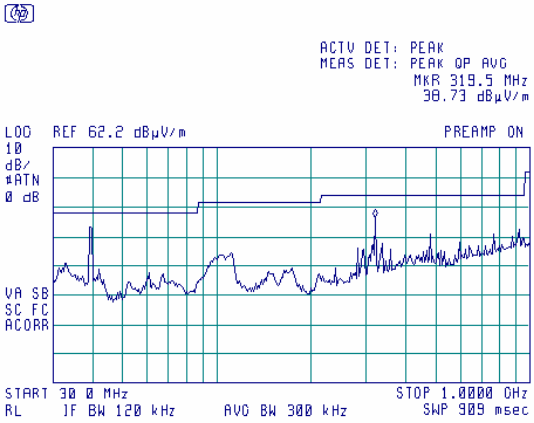
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

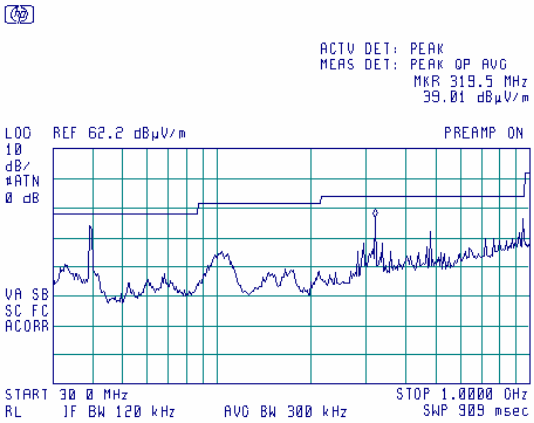
Plot 7.5.13 Radiated emission measurements from 30 to 1000 MHz at the low carrier frequency

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



Plot 7.5.14 Radiated emission measurements from 30 to 1000 MHz at the mid carrier frequency

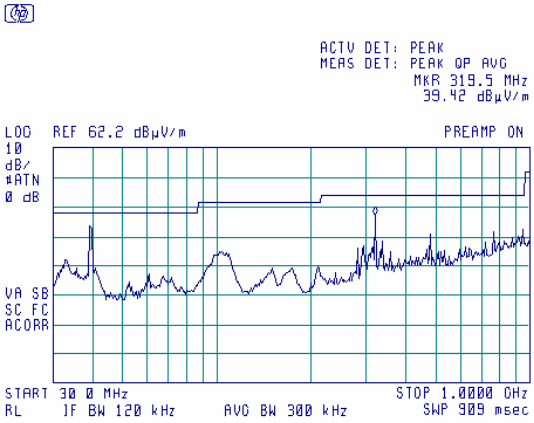
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

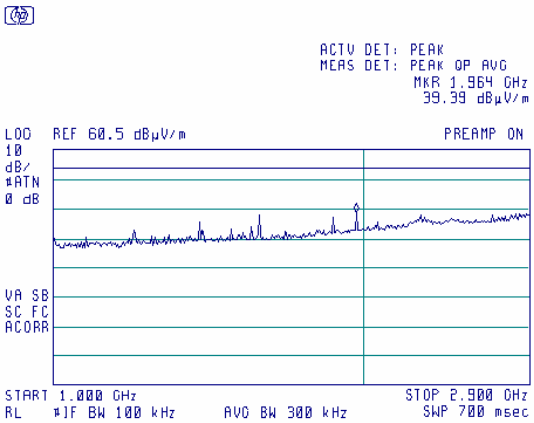
Plot 7.5.15 Radiated emission measurements from 30 to 1000 MHz at the high carrier frequency

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



Plot 7.5.16 Radiated emission measurements from 1000 to 2900 MHz at the low carrier frequency

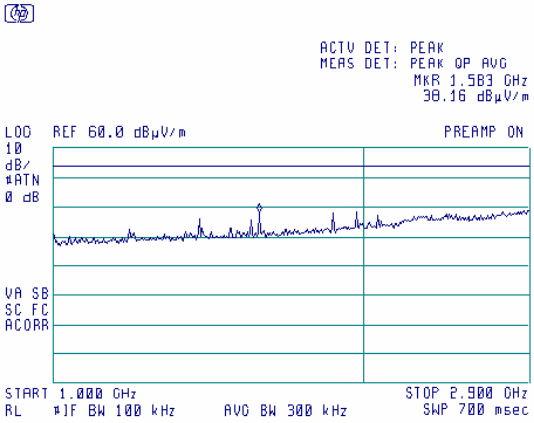
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

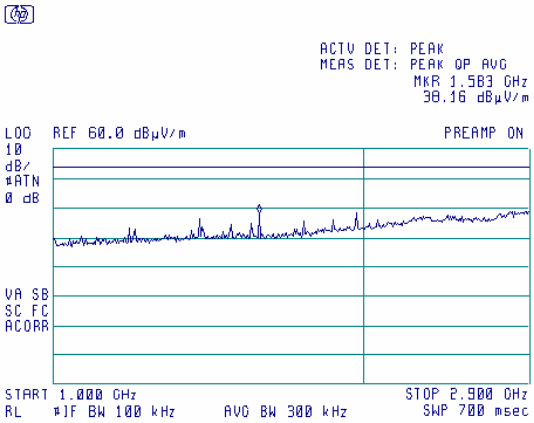
Plot 7.5.17 Radiated emission measurements from 1000 to 2900 MHz at the mid carrier frequency

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



Plot 7.5.18 Radiated emission measurements from 1000 to 2900 MHz at the high carrier frequency

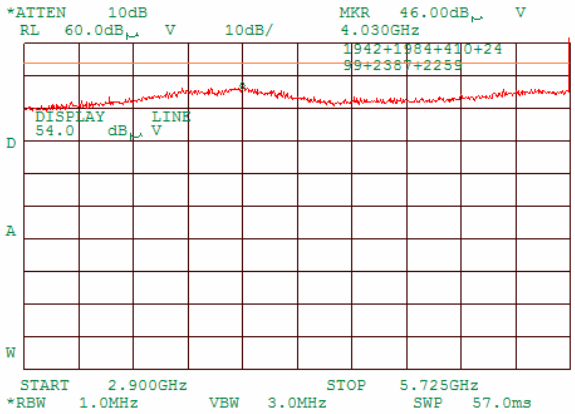
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

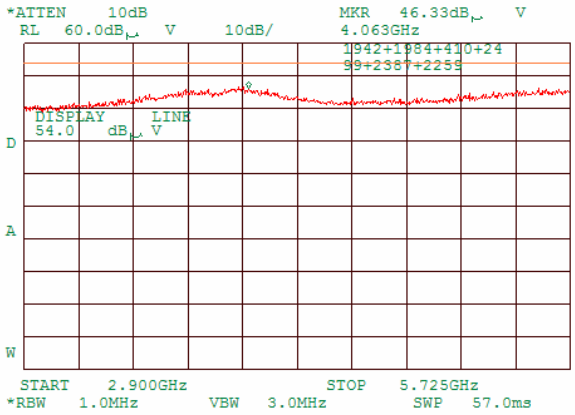
Plot 7.5.19 Radiated emission measurements from 2900 to 5725 MHz at the low carrier frequency

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



Plot 7.5.20 Radiated emission measurements from 2900 to 5725 MHz at the mid carrier frequency

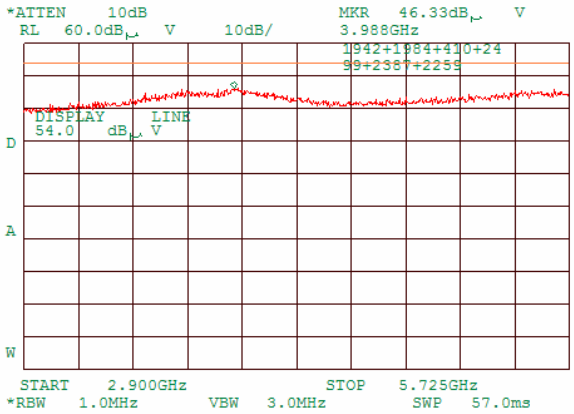
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

Plot 7.5.21 Radiated emission measurements from 2900 to 5725 MHz at the high carrier frequency

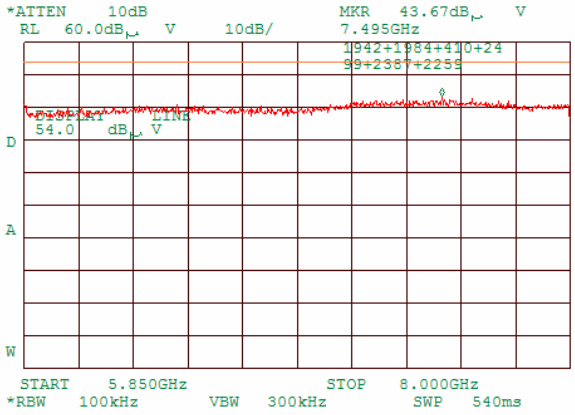
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

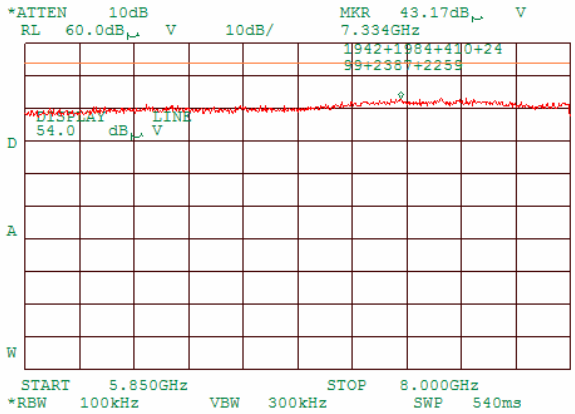
Plot 7.5.22 Radiated emission measurements from 5850 to 8000 MHz at the low carrier frequency

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



Plot 7.5.23 Radiated emission measurements from 5850 to 8000 MHz at the mid carrier frequency

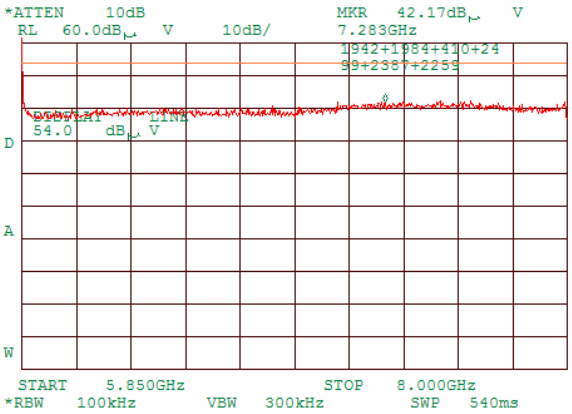
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

Plot 7.5.24 Radiated emission measurements from 5850 to 8000 MHz at the high carrier frequency

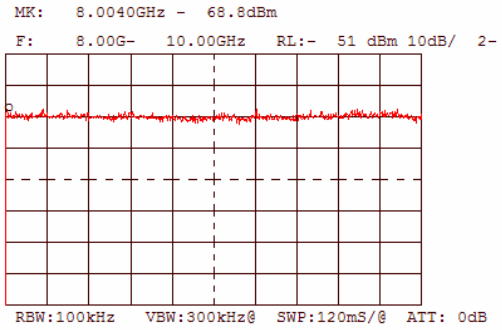
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

Plot 7.5.25 Radiated emission measurements from 8000 to 10000 MHz at the low carrier frequency

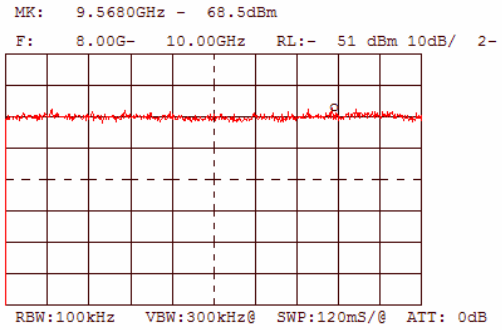
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

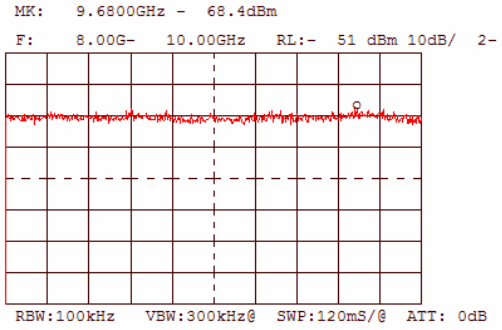
Plot 7.5.26 Radiated emission measurements from 8000 to 10000 MHz at the mid carrier frequency

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



Plot 7.5.27 Radiated emission measurements from 8000 to 10000 MHz at the high carrier frequency

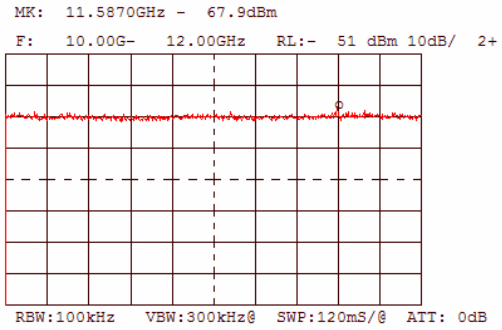
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

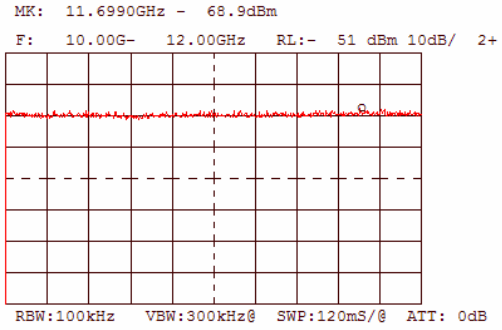
Plot 7.5.28 Radiated emission measurements from 10000 to 12000 MHz at the low carrier frequency

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



Plot 7.5.29 Radiated emission measurements from 10000 to 12000 MHz at the mid carrier frequency

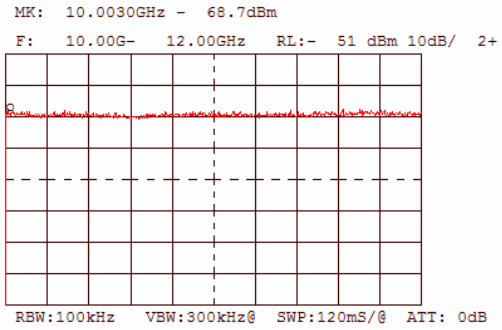
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

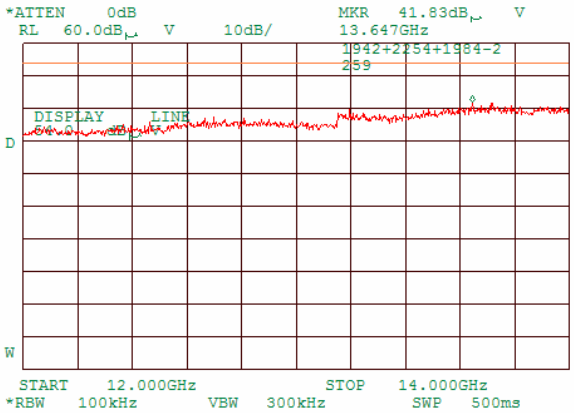
Plot 7.5.30 Radiated emission measurements from 10000 to 12000 MHz at the high carrier frequency

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



Plot 7.5.31 Radiated emission measurements from 12000 to 14000 MHz at the low carrier frequency

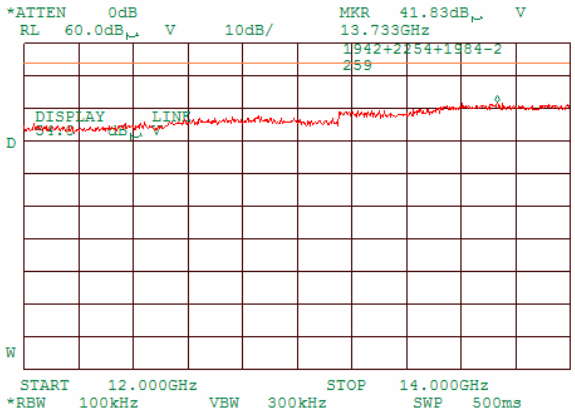
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

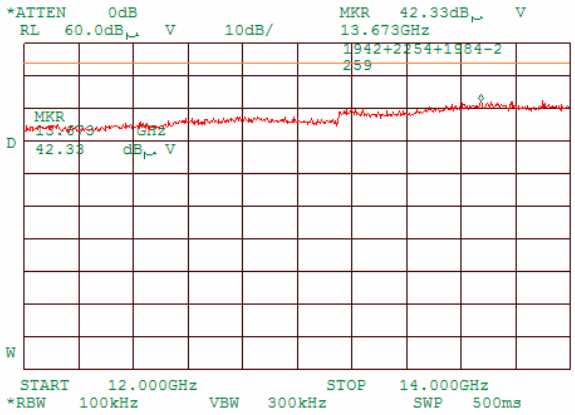
Plot 7.5.32 Radiated emission measurements from 12000 to 14000 MHz at the mid carrier frequency

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



Plot 7.5.33 Radiated emission measurements from 12000 to 14000 MHz at the high carrier frequency

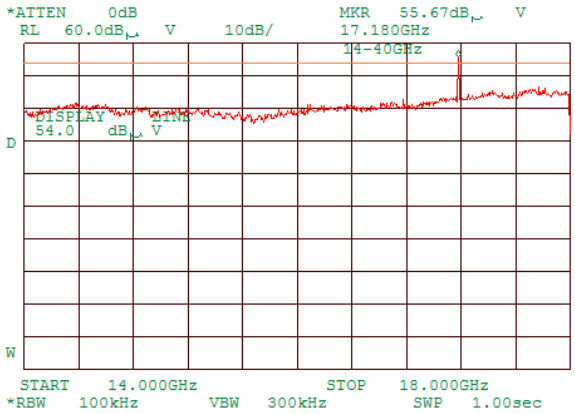
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

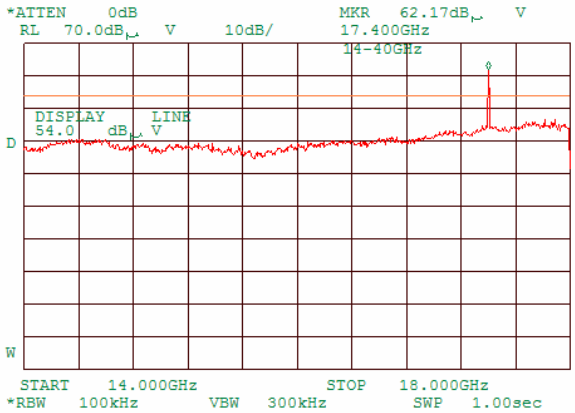
Plot 7.5.34 Radiated emission measurements from 14000 to 18000 MHz at the low carrier frequency

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



Plot 7.5.35 Radiated emission measurements from 14000 to 18000 MHz at the mid carrier frequency

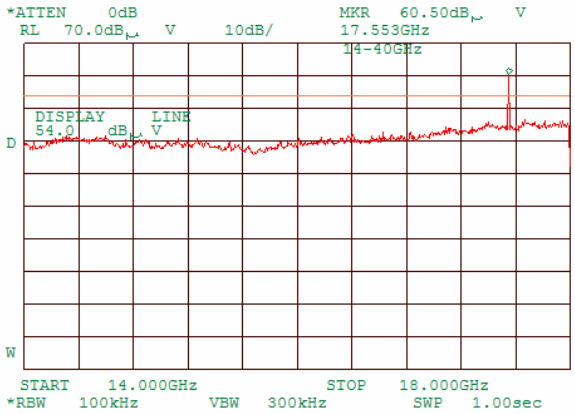
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

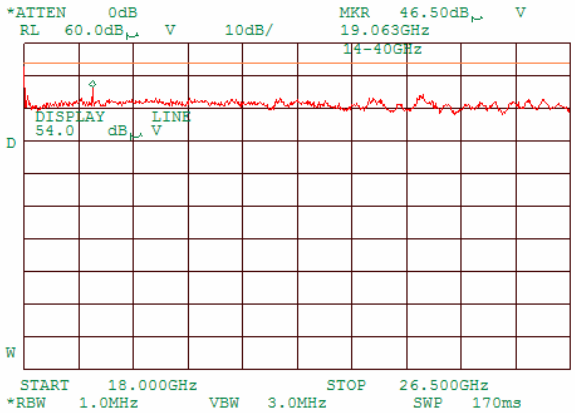
Plot 7.5.36 Radiated emission measurements from 14000 to 18000 MHz at the high carrier frequency

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



Plot 7.5.37 Radiated emission measurements from 18000 to 26500 MHz at the low carrier frequency

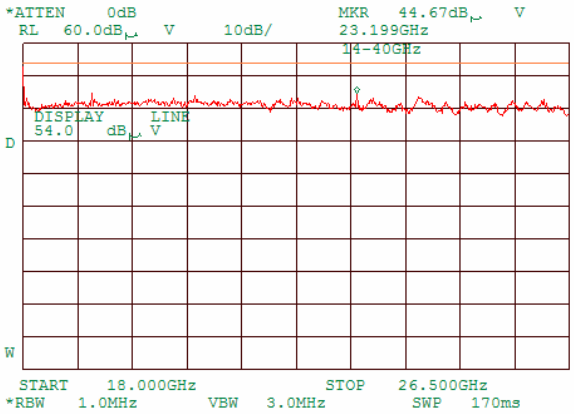
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

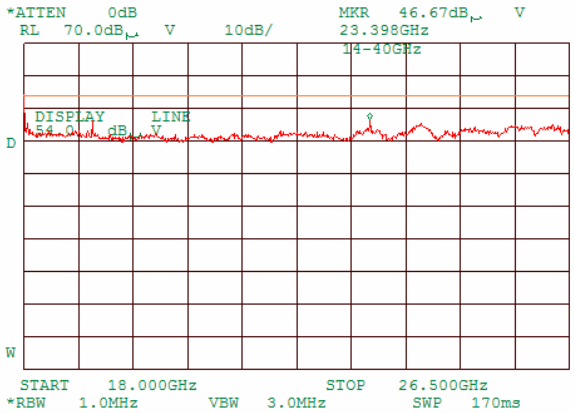
Plot 7.5.38 Radiated emission measurements from 18000 to 26500 MHz at the mid carrier frequency

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



Plot 7.5.39 Radiated emission measurements from 18000 to 26500 MHz at the high carrier frequency

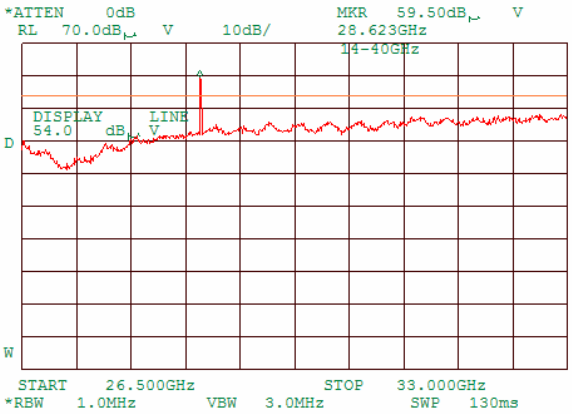
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

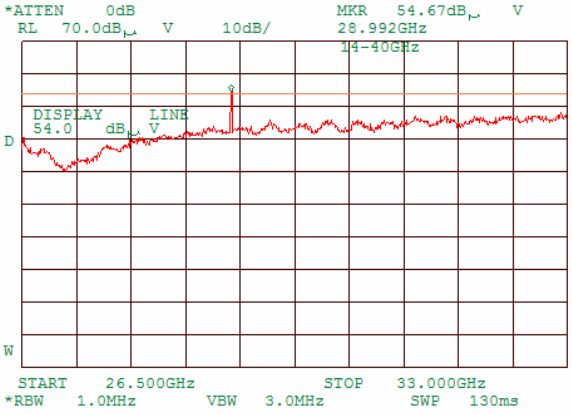
Plot 7.5.40 Radiated emission measurements from 26500 to 33000 MHz at the low carrier frequency

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



Plot 7.5.41 Radiated emission measurements from 26500 to 33000 MHz at the mid carrier frequency

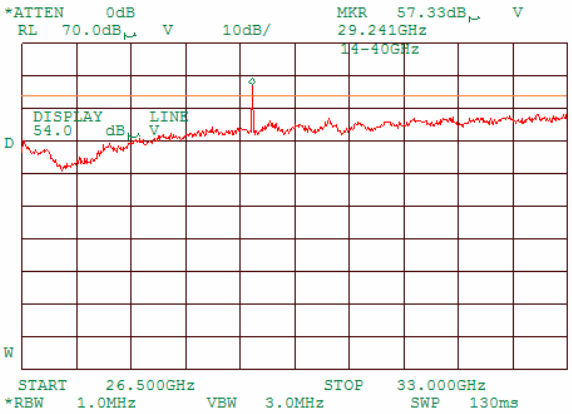
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

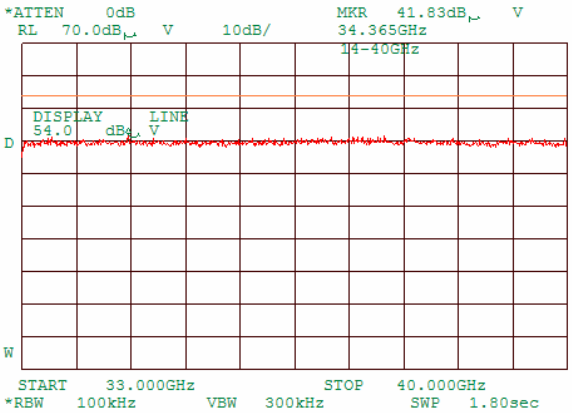
Plot 7.5.42 Radiated emission measurements from 26500 to 33000 MHz at the high carrier frequency

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



Plot 7.5.43 Radiated emission measurements from 33000 to 40000 MHz at the low carrier frequency

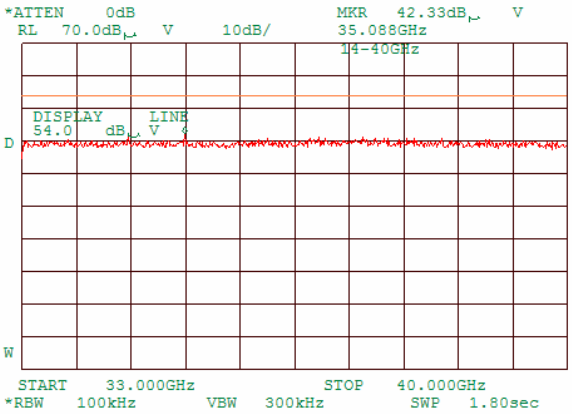
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

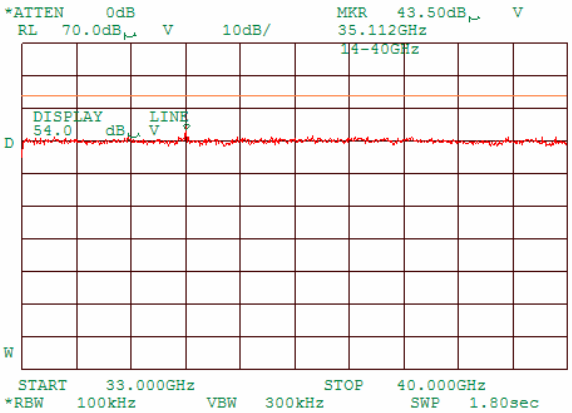
Plot 7.5.44 Radiated emission measurements from 33000 to 40000 MHz at the mid carrier frequency

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



Plot 7.5.45 Radiated emission measurements from 33000 to 40000 MHz at the high carrier frequency

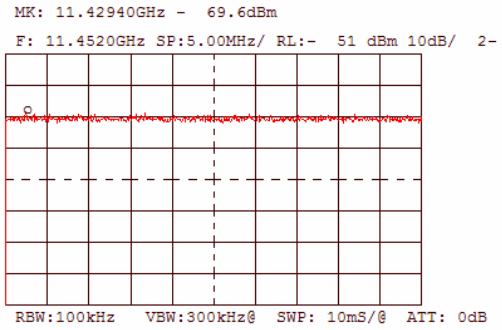
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

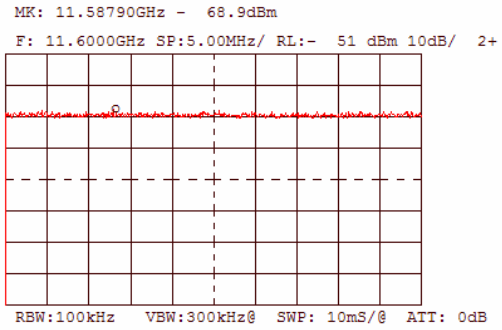
Plot 7.5.46 Radiated emission measurements at the second harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m



Plot 7.5.47 Radiated emission measurements at the second harmonic of mid carrier frequency

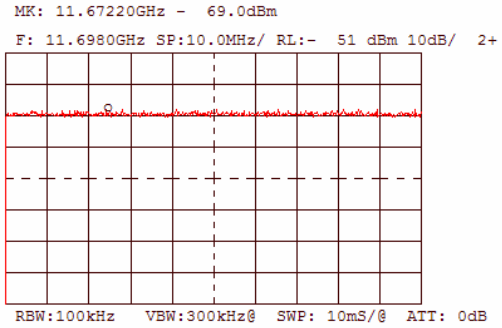
TEST SITE: OATS
TEST DISTANCE: 3 m



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

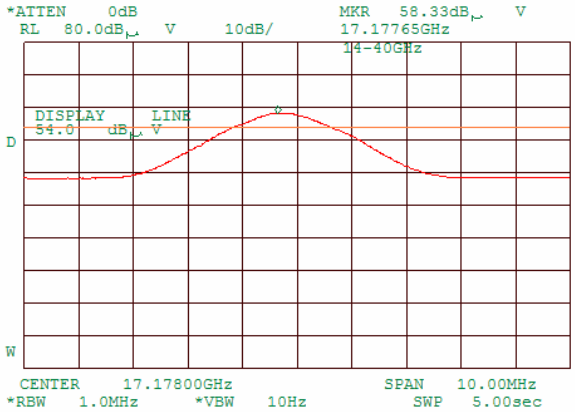
Plot 7.5.48 Radiated emission measurements at the second harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m



Plot 7.5.49 Radiated emission measurements at the third harmonic of low carrier frequency

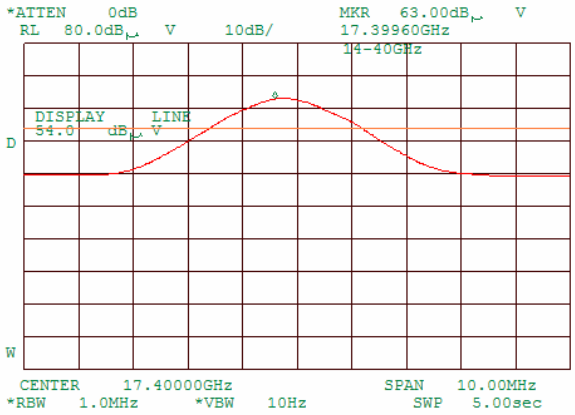
TEST SITE: OATS
TEST DISTANCE: 3 m



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

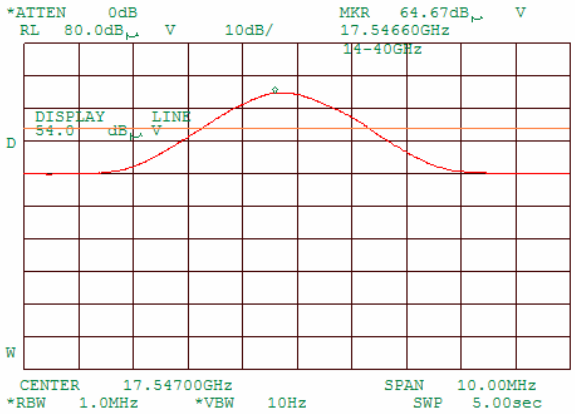
Plot 7.5.50 Radiated emission measurements at the third harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m



Plot 7.5.51 Radiated emission measurements at the third harmonic of high carrier frequency

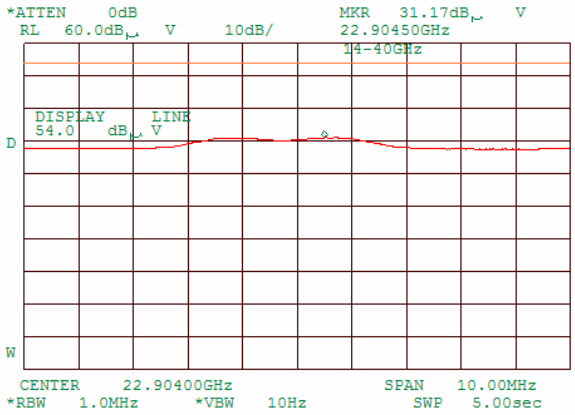
TEST SITE: OATS
TEST DISTANCE: 3 m



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 ºC	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

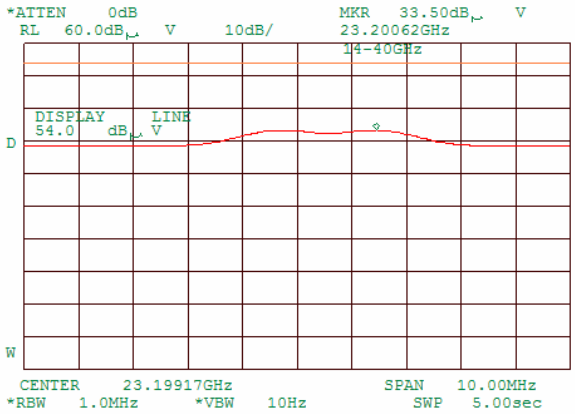
Plot 7.5.52 Radiated emission measurements at the forth harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m



Plot 7.5.53 Radiated emission measurements at the forth harmonic of mid carrier frequency

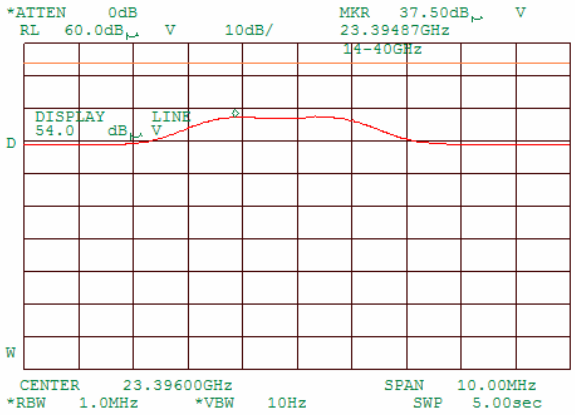
TEST SITE: OATS
TEST DISTANCE: 3 m



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

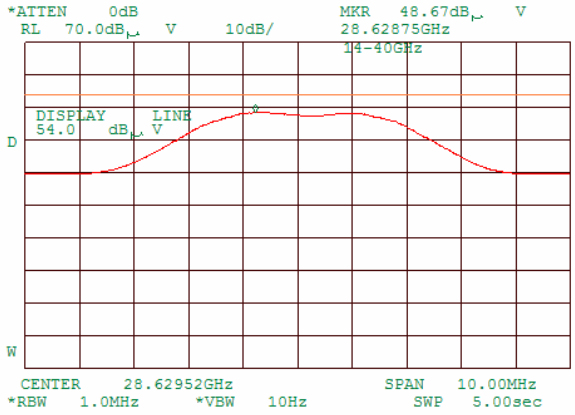
Plot 7.5.54 Radiated emission measurements at the forth harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m



Plot 7.5.55 Radiated emission measurements at the fifth harmonic of low carrier frequency

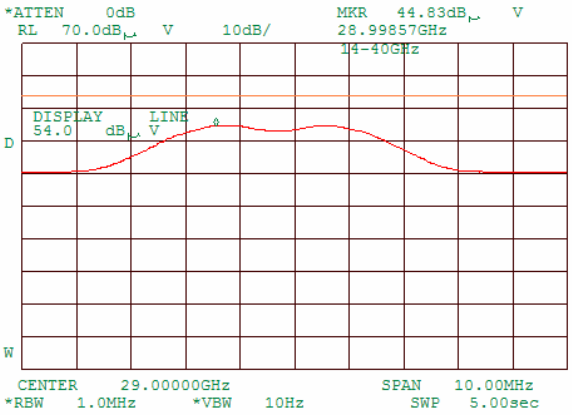
TEST SITE: OATS
TEST DISTANCE: 3 m



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

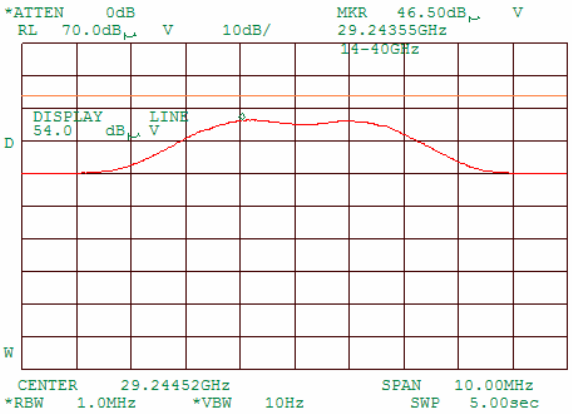
Plot 7.5.56 Radiated emission measurements at the fifth harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m



Plot 7.5.57 Radiated emission measurements at the fifth harmonic of high carrier frequency

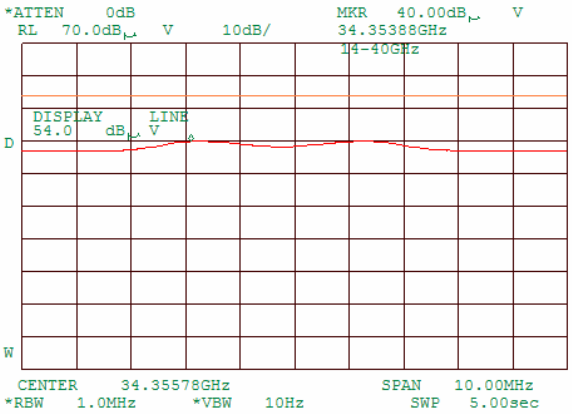
TEST SITE: OATS
TEST DISTANCE: 3 m



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

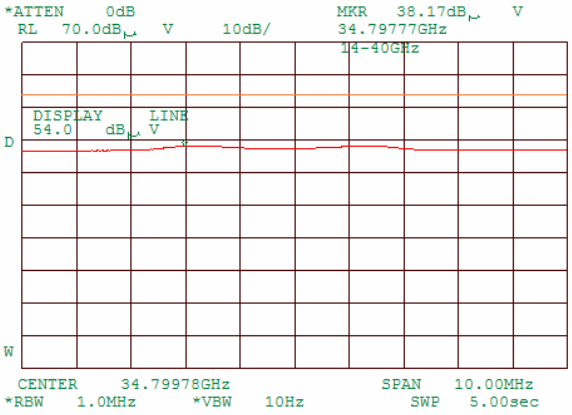
Plot 7.5.58 Radiated emission measurements at the sixth harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m



Plot 7.5.59 Radiated emission measurements at the sixth harmonic of mid carrier frequency

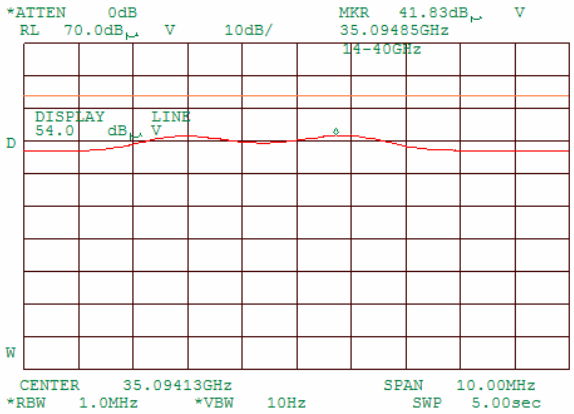
TEST SITE: OATS
TEST DISTANCE: 3 m



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

Plot 7.5.60 Radiated emission measurements at the sixth harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 ºC	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

Table 7.5.6 Field strength of spurious emissions within restricted bands

EUT:	**BSR 5.8 TDD V-pol (with 11 dBi internal antenna)**
ASSIGNED FREQUENCY:	5725 - 5850 MHz
POWER SETTING:	21 dBm (maximum output power software defined)
TEST DISTANCE:	3 m
MODULATION:	FSK
MODULATING SIGNAL:	PRBS
BIT RATE:	3 Mbps
DUTY CYCLE:	100 %
DETECTOR USED:	Peak
RESOLUTION BANDWIDTH:	120 kHz in 30 – 1000 MHz range, 1000 kHz above 1 GHz
VIDEO BANDWIDTH:	1 MHz above 1 GHz, 30 MHz in 30 – 1000 MHz range
TEST ANTENNA TYPE:	Biconilog in 30 – 1000 MHz range, Double ridged guide above 1 GHz

Frequency, MHz	Antenna		Azimuth, degrees*	Peak field strength			Average field strength(VBW=10 Hz)			Verdict
	Polarization	Height, m		Measured, dB(µV/m)	Limit, dB(µV/m)	Margin, dB	Measured, dB(µV/m)	Limit, dB(µV/m)	Margin, dB***	
Low carrier frequency										
1234	V	1.0	0	44.0	74	30	NA	54	10	Pass
22903	V	1.0	0	45.0	74	29	NA	54	9	Pass
Mid carrier frequency										
125	V	1.0	0	28.9	43.5**	14.6	NA	NA	NA	Pass
128	V	1.0	0	31.9	43.5**	11.6	NA	NA	NA	Pass
150	V	1.0	0	32.9	43.5**	10.6	NA	NA	NA	Pass
240	V	1.0	0	28.5	46.0**	17.5	NA	NA	NA	Pass
960	V	1.0	0	43.3	54.0**	10.7	NA	NA	NA	Pass
High carrier frequency										
1152	V	1.0	0	45.3	74	28.7	NA	54	8.7	Pass

*****- EUT front panel refers to 0 degrees position of turntable.
******- quasi-peak specification limit
***- Margin = Peak field strength - average limit

Reference numbers of test equipment used

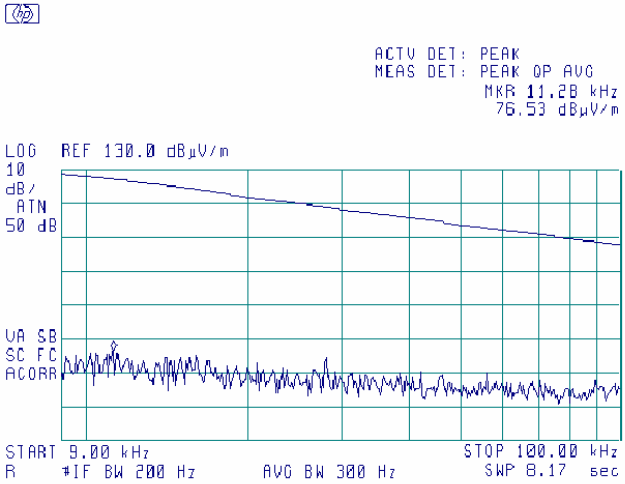
HL 0041	HL 0446	HL 0465	HL 0521	HL 0589	HL 0604	HL 0768
HL 0769	HL 1004	HL 1200	HL 1424	HL 1566	HL 1940	HL 1942
HL 2009	HL 2259	HL 2260	HL 2261	HL 2273	HL 2274	HL 2387

Full description is given in Appendix A.

Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

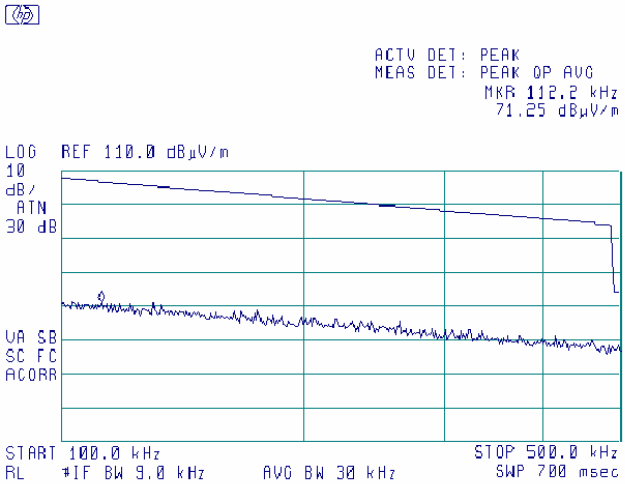
Plot 7.5.61 Radiated spurious emission measurements

EUT: BSR 5.8 TDD V-pol
Carrier frequencies: 5.726 GHz (low), 5.8 GHz (middle); 5.849 GHz (high)
Frequency range: 9 – 100 kHz



Plot 7.5.62 Radiated spurious emission measurements

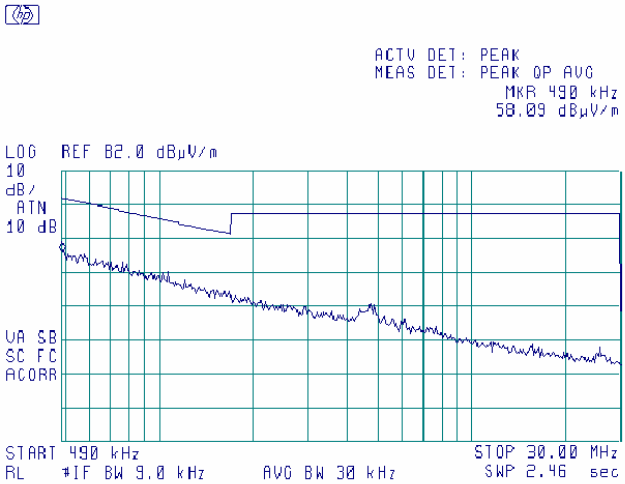
EUT: BSR 5.8 TDD V-pol
Carrier frequencies: 5.726 GHz (low), 5.8 GHz (middle); 5.849 GHz (high)
Frequency range: 100 – 500 kHz



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 ºC	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

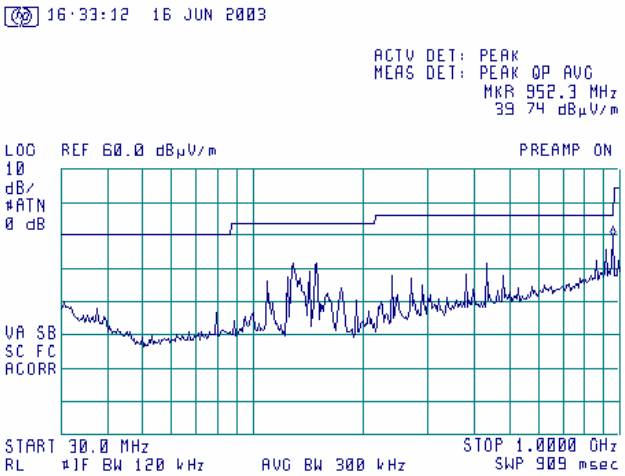
Plot 7.5.63 Radiated spurious emission measurements

EUT: BSR 5.8 TDD V-pol
Carrier frequencies: 5.726 GHz (low), 5.8 GHz (middle); 5.849 GHz (high)
Frequency range: 490 kHz – 30 MHz



Plot 7.5.64 Radiated spurious emission measurements

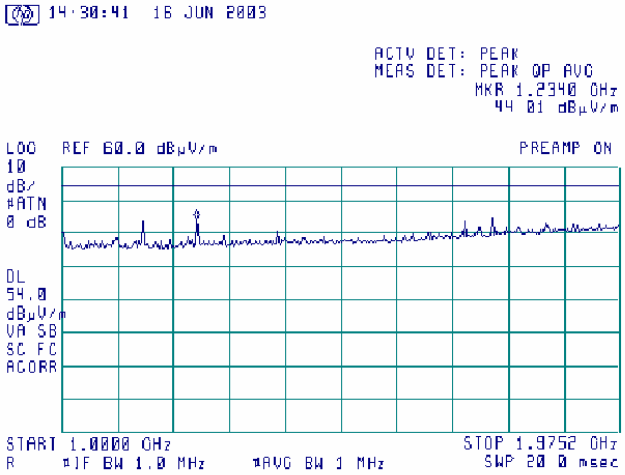
EUT: BSR 5.8 TDD V-pol
Carrier frequencies: 5.726 GHz (low), 5.8 GHz (middle); 5.849 GHz (high)
Frequency range: 30 MHz– 1 GHz



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

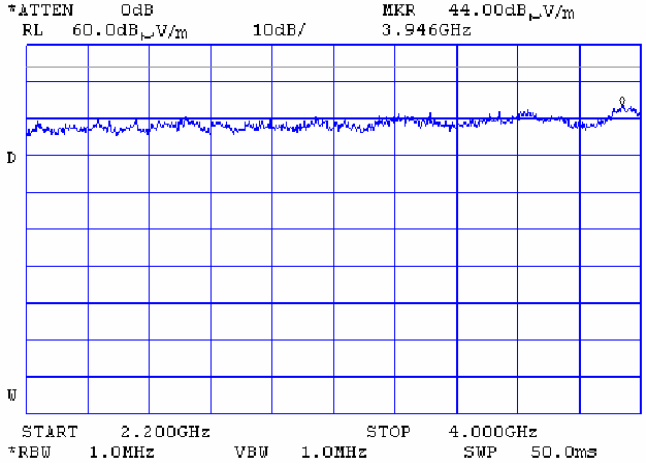
Plot 7.5.65 Radiated spurious emission measurements in restricted bands

EUT: BSR 5.8 TDD V-pol
F_{LOW}: 5.726 GHz
Frequency range: 1 – 1.97 GHz



Plot 7.5.66 Radiated spurious emission measurements in restricted bands

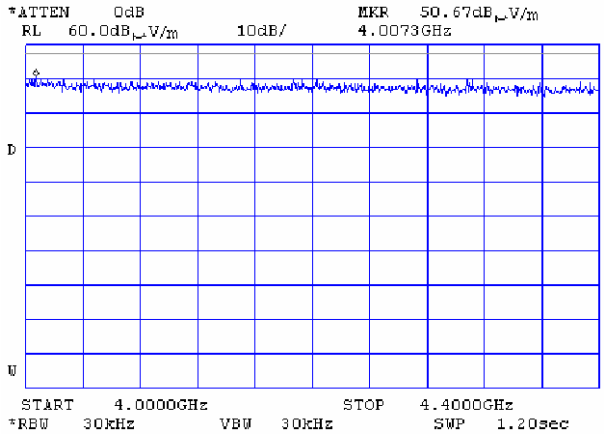
EUT: BSR 5.8 TDD V-pol
F_{LOW}: 5.726 GHz
Frequency range: 2.2 – 4 GHz



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

Plot 7.5.67 Radiated spurious emission measurements in restricted bands

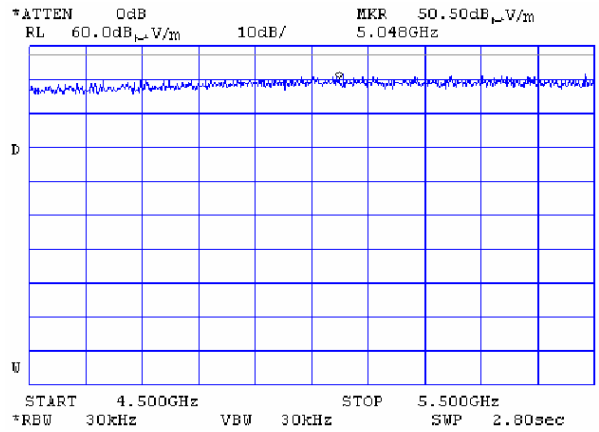
EUT:	BSR 5.8 TDD V-pol
F_{LOW}:	5.726 GHz
Frequency range:	4 – 4.4 GHz



Limit (average) for radiated spurious emissions in restricted bands is 57.5 dB(µV/m) at 2 m test distance

Plot 7.5.68 Radiated spurious emission measurements in restricted bands

EUT:	BSR 5.8 TDD V-pol
F_{LOW}:	5.726 GHz
Frequency range:	4.5 – 5.5 GHz

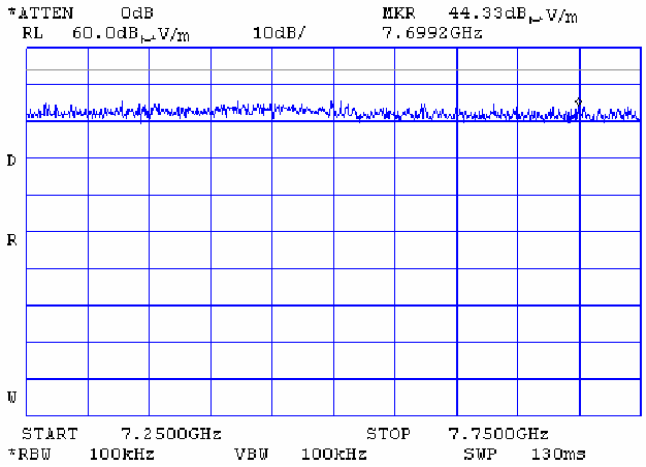


Limit (average) for radiated spurious emissions in restricted bands is 57.5 dB(µV/m) at 2 m test distance

Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

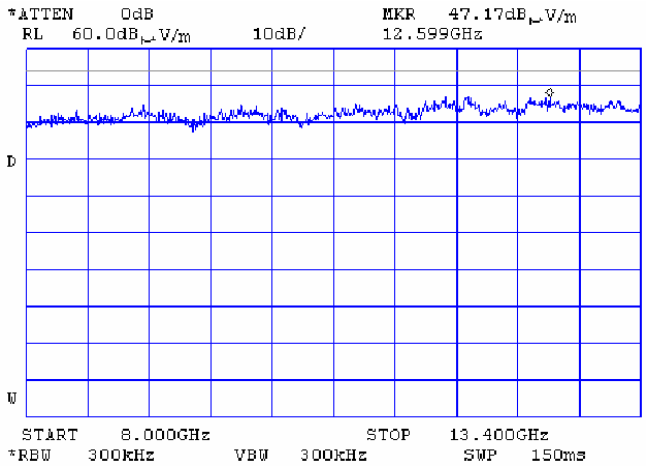
Plot 7.5.69 Radiated spurious emission measurements in restricted bands

EUT: BSR 5.8 TDD V-pol
F_{LOW}: 5.726 GHz
Frequency range: 7.25 – 7.75 GHz



Plot 7.5.70 Radiated spurious emission measurements in restricted bands

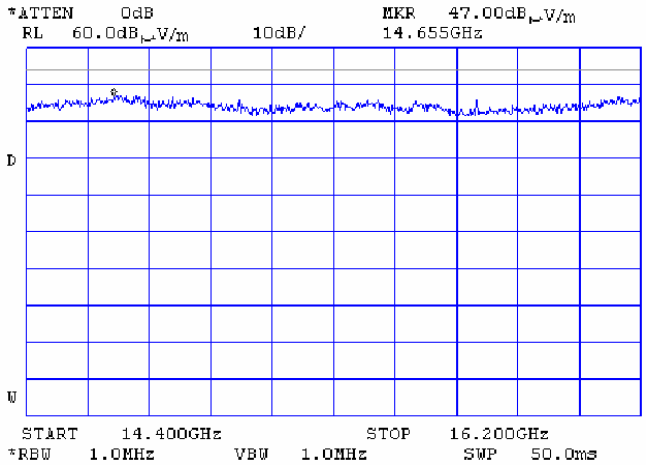
EUT: BSR 5.8 TDD V-pol
F_{LOW}: 5.726 GHz
Frequency range: 8 – 13.4 GHz



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

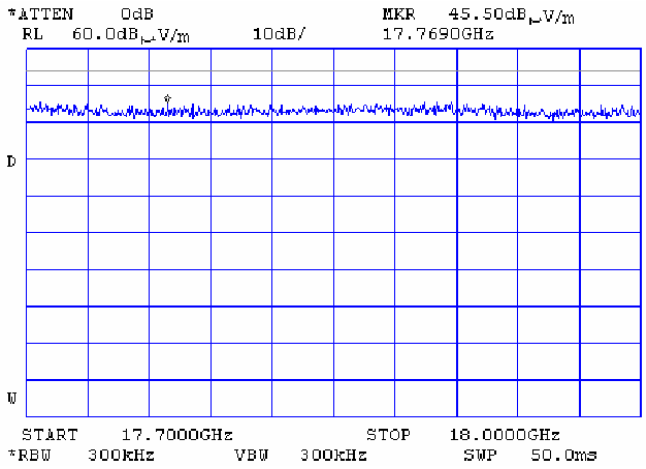
Plot 7.5.71 Radiated spurious emission measurements in restricted bands

EUT: BSR 5.8 TDD V-pol
F_{LOW}: 5.726 GHz
Frequency range: 14.4 – 16.2 GHz



Plot 7.5.72 Radiated spurious emission measurements in restricted bands

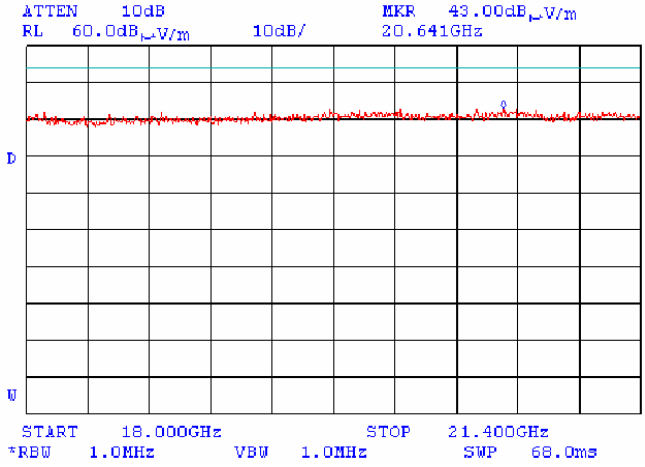
EUT: BSR 5.8 TDD V-pol
F_{LOW}: 5.726 GHz
Frequency range: 17.7 – 18 GHz



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

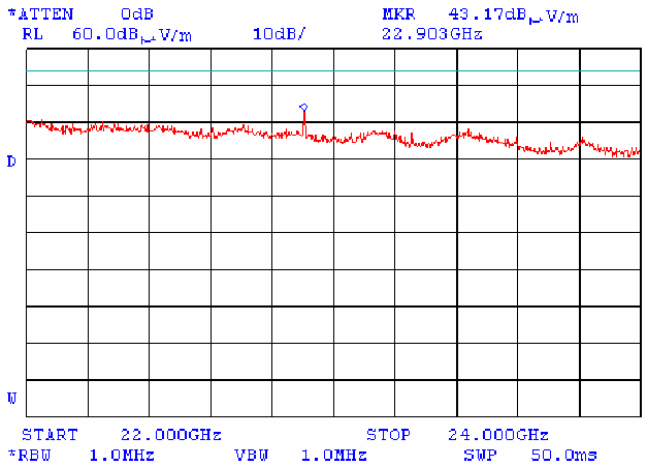
Plot 7.5.73 Radiated spurious emission measurements in restricted bands

EUT: BSR 5.8 TDD V-pol
F_{LOW}: 5.726 GHz
Frequency range: 18 – 21.4 GHz



Plot 7.5.74 Radiated spurious emission measurements in restricted bands

EUT: BSR 5.8 TDD V-pol
F_{LOW}: 5.726 GHz
Frequency range: 22 – 24 GHz

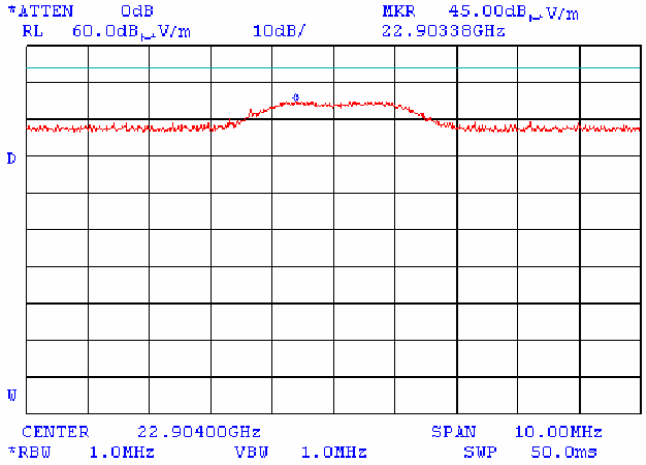


No spurious emissions except 4th harmonic were found

Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

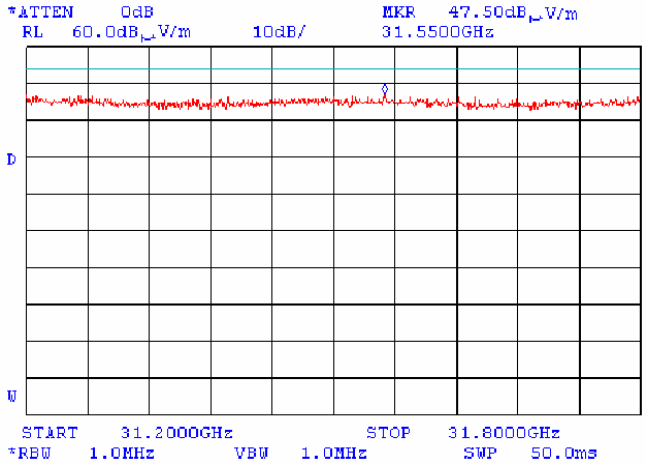
Plot 7.5.75 Radiated spurious emission measurements in restricted bands

EUT:	BSR 5.8 TDD V-pol
F_{LOW}:	5.726 GHz
Center frequency:	22.904 GHz



Plot 7.5.76 Radiated spurious emission measurements in restricted bands

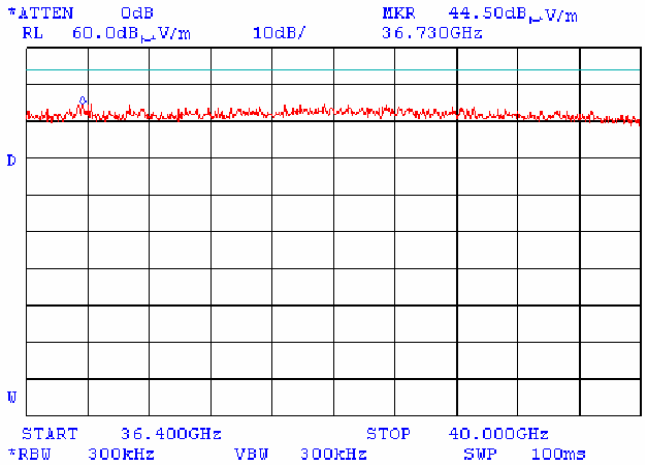
EUT:	BSR 5.8 TDD V-pol
F_{LOW}:	5.726 GHz
Frequency range:	31.2 – 31.8 GHz



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

Plot 7.5.77 Radiated spurious emission measurements in restricted bands

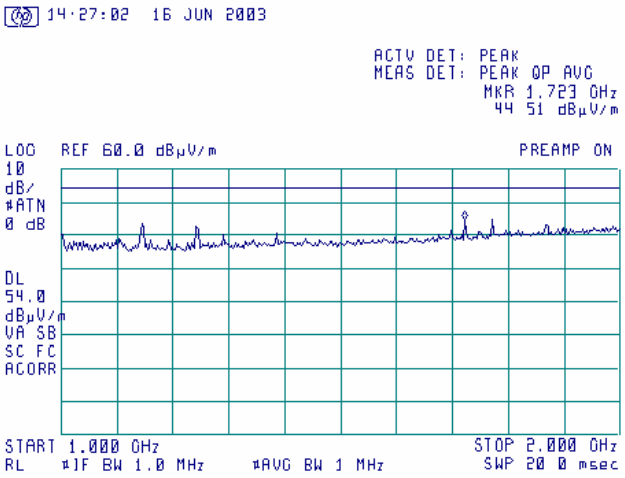
EUT:	BSR 5.8 TDD V-pol
F_{LOW}:	5.726 GHz
Frequency range:	36.4 – 40 GHz



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

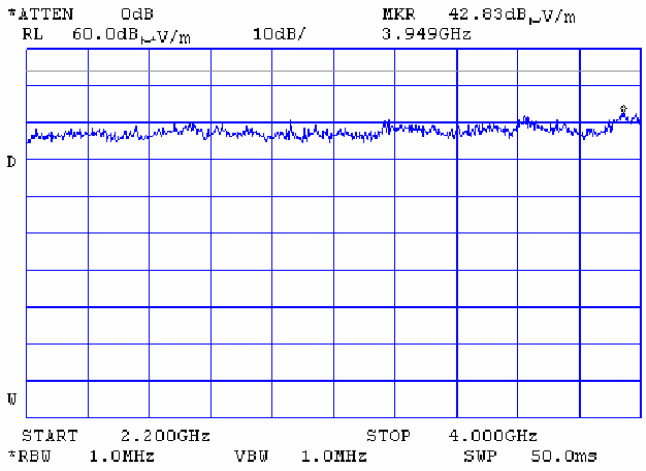
Plot 7.5.78 Radiated spurious emission measurements in restricted bands

EUT: BSR 5.8 TDD V-pol
F_{MIDDLE}: 5.8 GHz
Frequency range: 1 – 2 GHz



Plot 7.5.79 Radiated spurious emission measurements in restricted bands

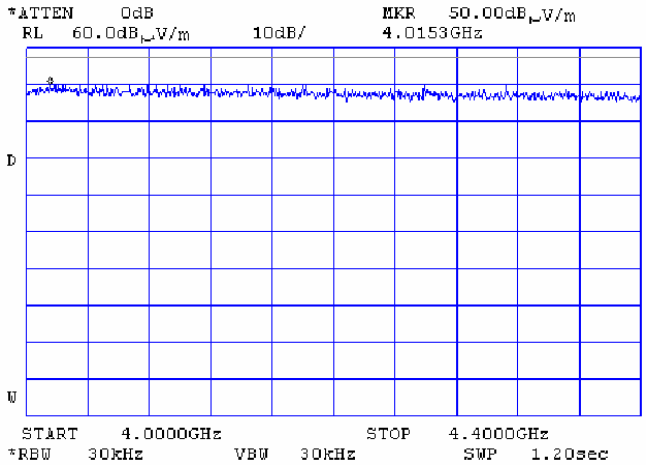
EUT: BSR 5.8 TDD V-pol
F_{MIDDLE}: 5.8 GHz
Frequency range: 2.2 – 4 GHz



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

Plot 7.5.80 Radiated spurious emission measurements in restricted bands

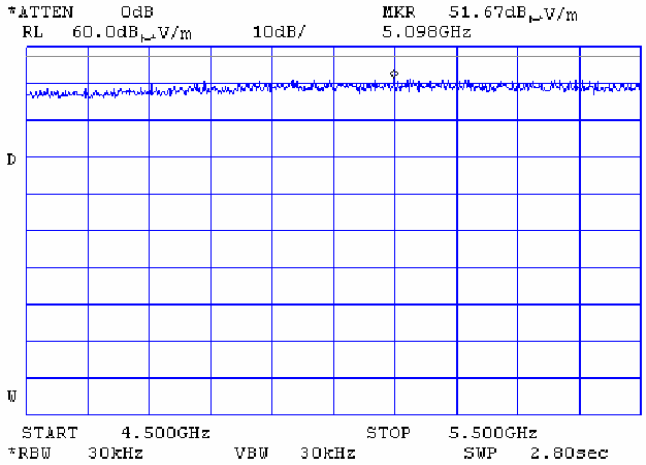
EUT: BSR 5.8 TDD V-pol
F_{MIDDLE}: 5.8 GHz
Frequency range: 4 – 4.4 GHz



Limit (average) for radiated spurious emissions in restricted bands is 57.5 dB(µV/m) at 2 m test distance
No spurious emissions were found

Plot 7.5.81 Radiated spurious emission measurements in restricted bands

EUT: BSR 5.8 TDD V-pol
F_{MIDDLE}: 5.8 GHz
Frequency range: 4.5 – 5.5 GHz

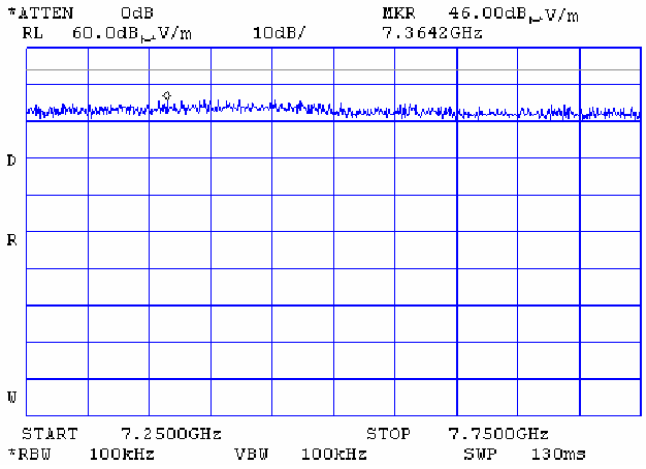


Limit (average) for radiated spurious emissions in restricted bands is 57.5 dB(µV/m) at 2 m test distance
No spurious emissions were found

Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

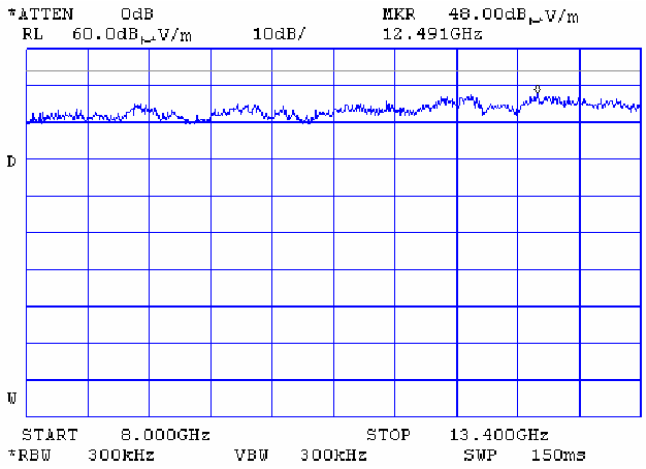
Plot 7.5.82 Radiated spurious emission measurements in restricted bands

EUT: BSR 5.8 TDD V-pol
F_{MIDDLE}: 5.8 GHz
Frequency range: 7.25 – 7.75 GHz



Plot 7.5.83 Radiated spurious emission measurements in restricted bands

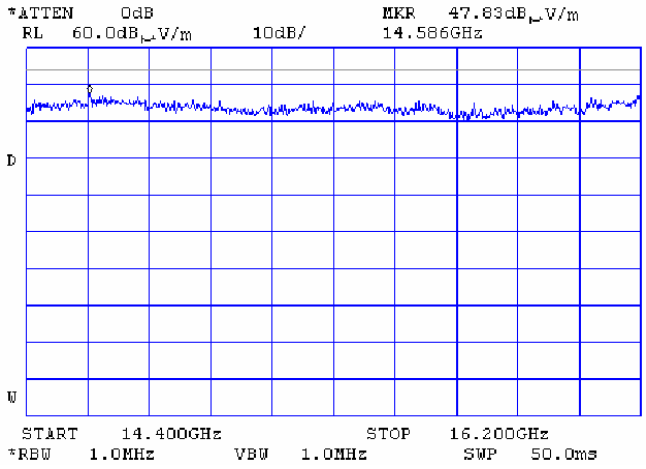
EUT: BSR 5.8 TDD V-pol
F_{MIDDLE}: 5.8 GHz
Frequency range: 8 – 13.4 GHz



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

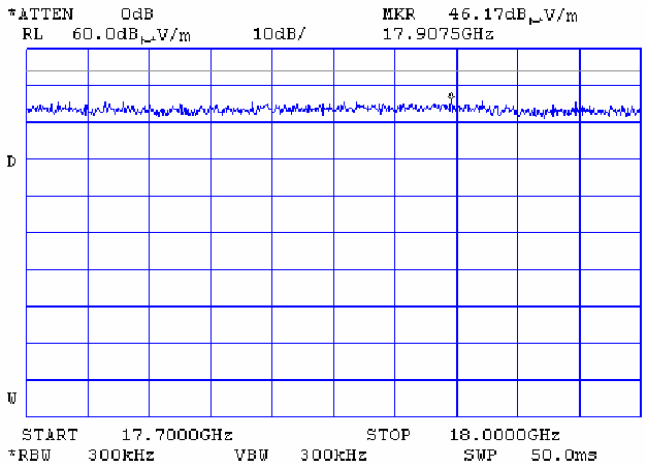
Plot 7.5.84 Radiated spurious emission measurements in restricted bands

EUT: BSR 5.8 TDD V-pol
F_{MIDDLE}: 5.8 GHz
Frequency range: 14.4 – 16.2 GHz



Plot 7.5.85 Radiated spurious emission measurements in restricted bands

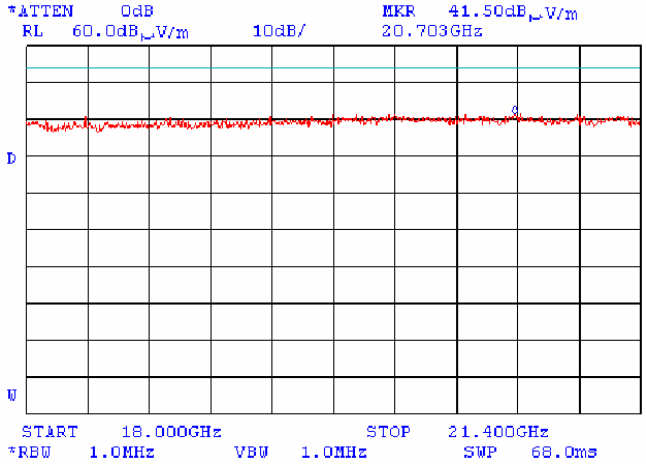
EUT: BSR 5.8 TDD V-pol
F_{MIDDLE}: 5.8 GHz
Frequency range: 17.7 – 18 GHz



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

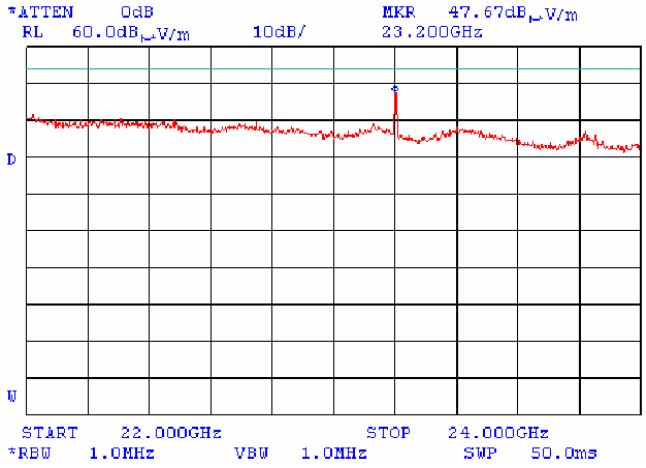
Plot 7.5.86 Radiated spurious emission measurements in restricted bands

EUT: BSR 5.8 TDD V-pol
F_{MIDDLE}: 5.8 GHz
Frequency range: 18 – 21.4 GHz



Plot 7.5.87 Radiated spurious emission measurements in restricted bands

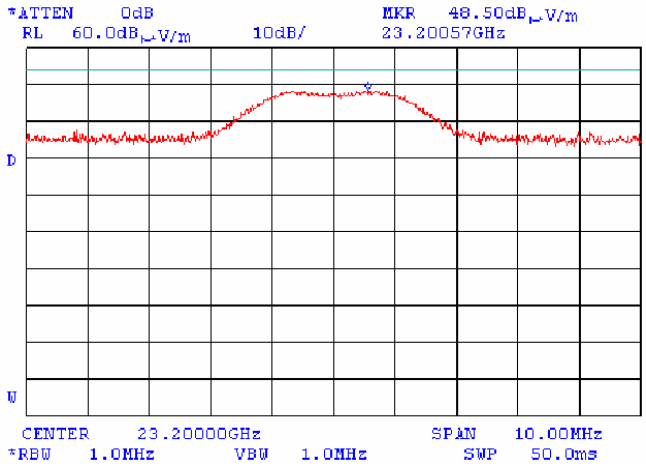
EUT: BSR 5.8 TDD V-pol
F_{MIDDLE}: 5.8 GHz
Frequency range: 22 – 24 GHz



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

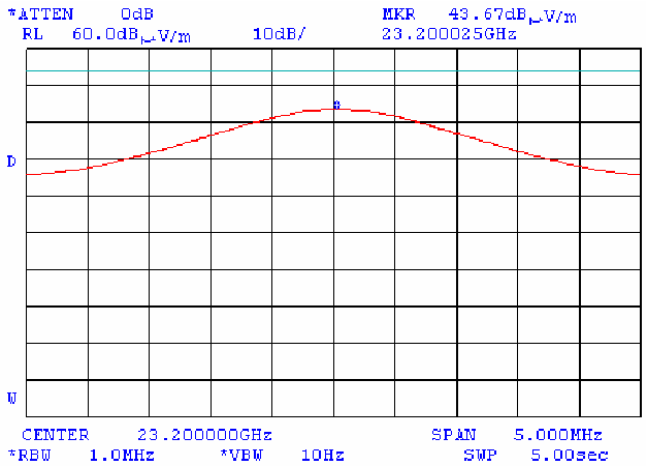
Plot 7.5.88 Radiated spurious emission measurements in restricted bands

EUT: BSR 5.8 TDD V-pol
F_{MIDDLE}: 5.8 GHz
Center frequency: 23.2 GHz



Plot 7.5.89 Radiated spurious emission measurements in restricted bands

EUT: BSR 5.8 TDD V-pol
F_{LOW}: 5.8 GHz
Center frequency: 23.2 GHz

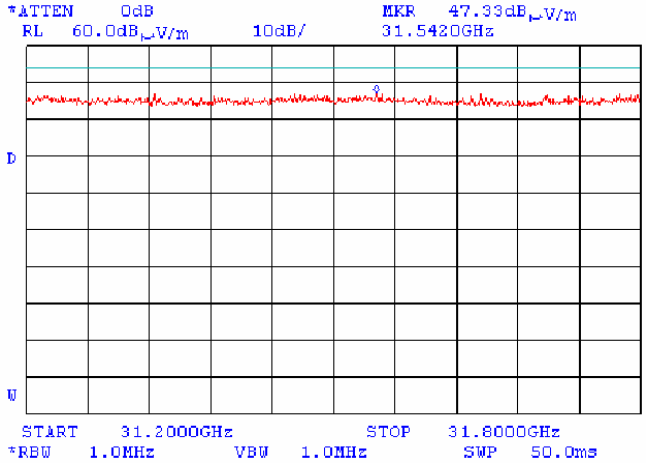


E_{aver} = 43.67 dB(µV/m)

Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

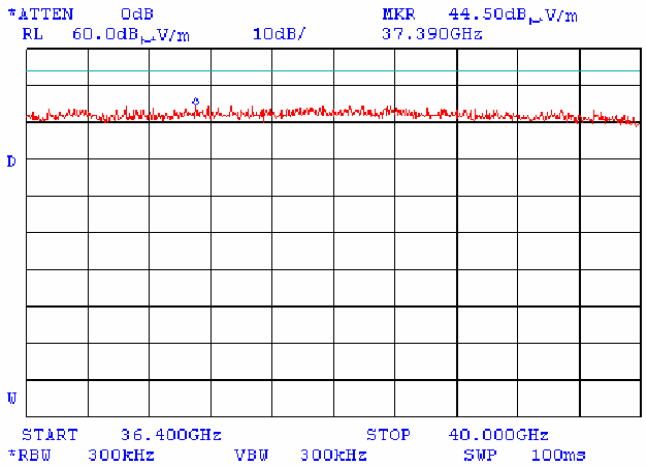
Plot 7.5.90 Radiated spurious emission measurements in restricted bands

EUT: BSR 5.8 TDD V-pol
F_{MIDDLE}: 5.8 GHz
Frequency range: 31.2 – 31.8 GHz



Plot 7.5.91 Radiated spurious emission measurements in restricted bands

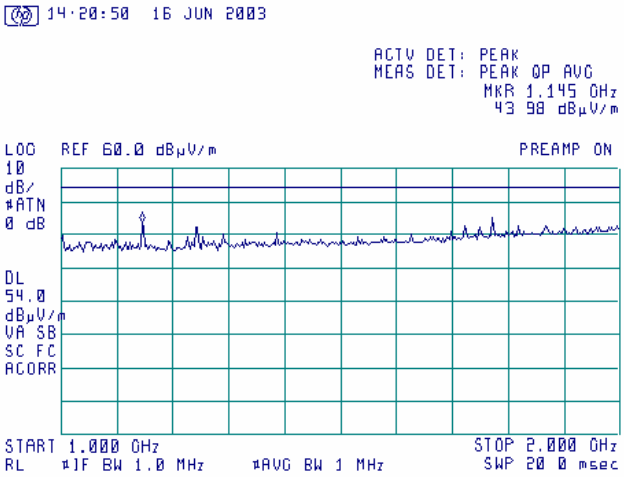
EUT: BSR 5.8 TDD V-pol
F_{MIDDLE}: 5.8 GHz
Frequency range: 36.4 – 40 GHz



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

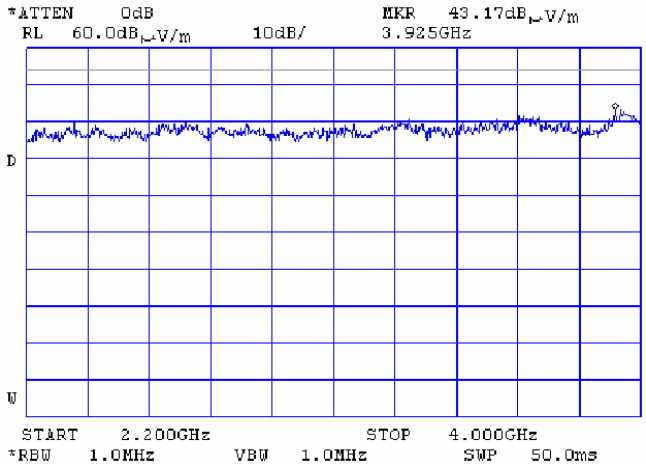
Plot 7.5.92 Radiated spurious emission measurements in restricted bands

EUT: BSR 5.8 TDD V-pol
F_{HIGH}: 5.849 GHz
Frequency range: 1 – 2 GHz



Plot 7.5.93 Radiated spurious emission measurements in restricted bands

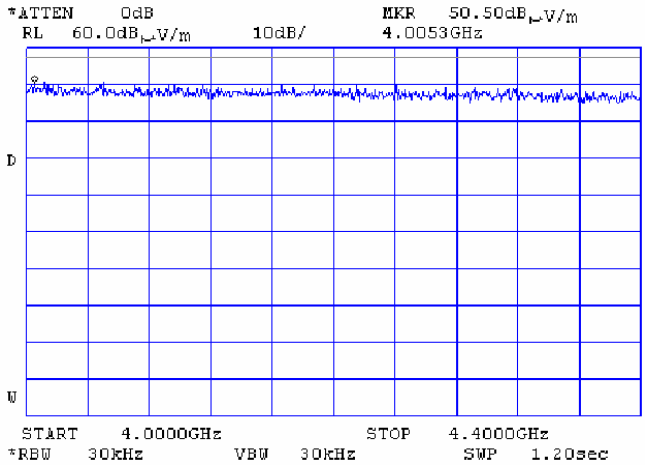
EUT: BSR 5.8 TDD V-pol
F_{HIGH}: 5.849 GHz
Frequency range: 2.2 – 4 GHz



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

Plot 7.5.94 Radiated spurious emission measurements in restricted bands

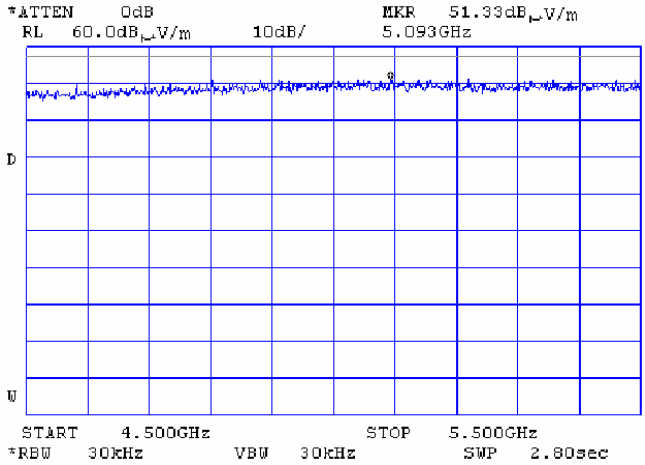
EUT: BSR 5.8 TDD V-pol
F_{HIGH}: 5.849 GHz
Frequency range: 4 – 4.4 GHz



Limit (average) for radiated spurious emissions in restricted bands is 57.5 dB(µV/m) at 2 m test distance
No spurious emissions were found

Plot 7.5.95 Radiated spurious emission measurements in restricted bands

EUT: BSR 5.8 TDD V-pol
F_{HIGH}: 5.849 GHz
Frequency range: 4.5 – 5.5 GHz

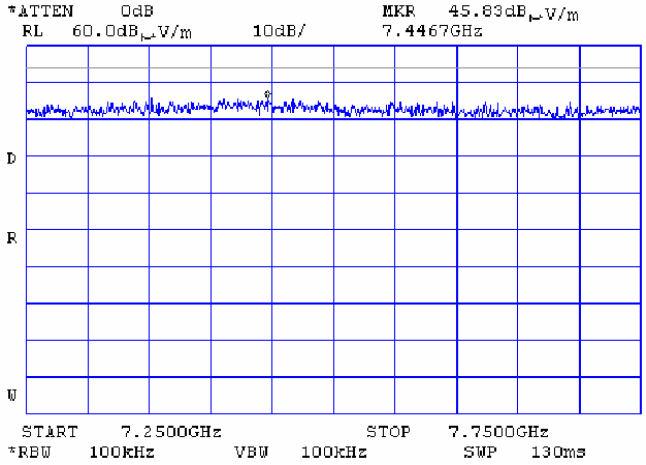


Limit (average) for radiated spurious emissions in restricted bands is 57.5 dB(µV/m) at 2 m test distance
No spurious emissions were found

Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

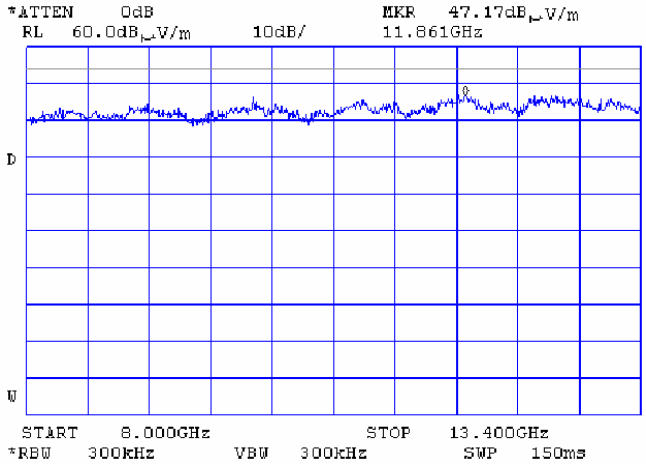
Plot 7.5.96 Radiated spurious emission measurements in restricted bands

EUT: BSR 5.8 TDD V-pol
F_{HIGH}: 5.849 GHz
Frequency range: 7.25 – 7.75 GHz



Plot 7.5.97 Radiated spurious emission measurements in restricted bands

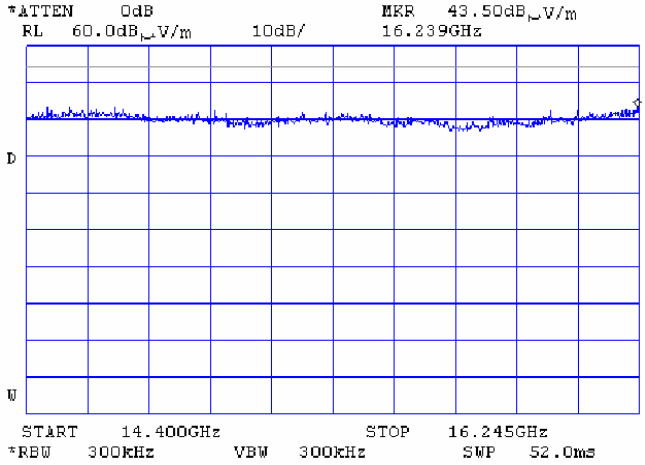
EUT: BSR 5.8 TDD V-pol
F_{HIGH}: 5.849 GHz
Frequency range: 8 – 13.4 GHz



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

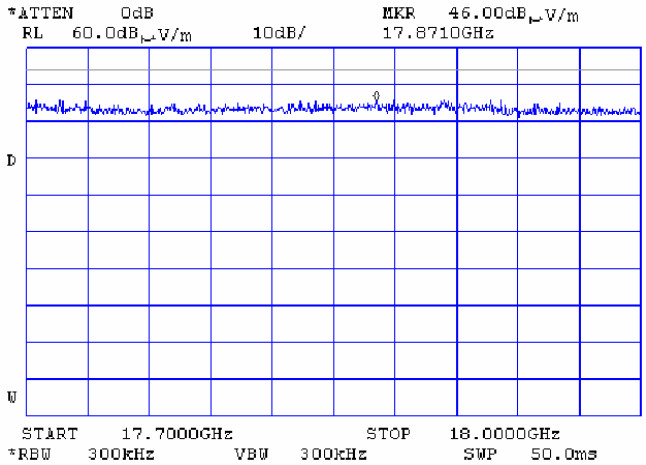
Plot 7.5.98 Radiated spurious emission measurements in restricted bands

EUT: BSR 5.8 TDD V-pol
F_{HIGH}: 5.849 GHz
Frequency range: 14.4 – 16.245 GHz



Plot 7.5.99 Radiated spurious emission measurements in restricted bands

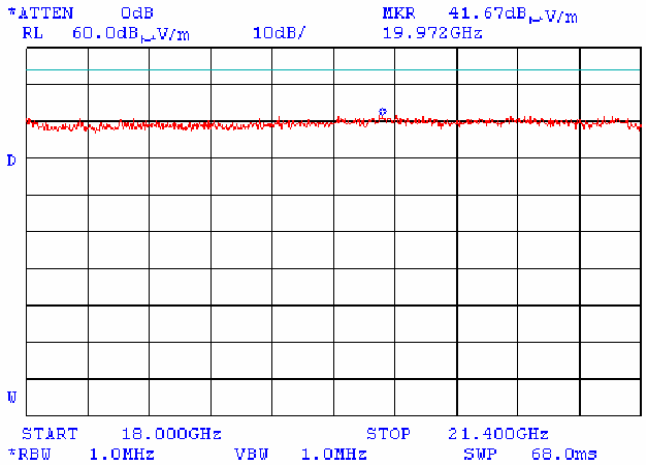
EUT: BSR 5.8 TDD V-pol
F_{HIGH}: 5.849 GHz
Frequency range: 17.7 – 18 GHz



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

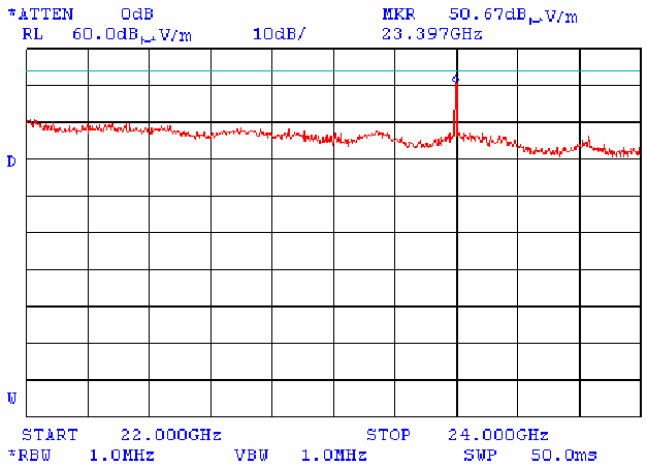
Plot 7.5.100 Radiated spurious emission measurements in restricted bands

EUT:	BSR 5.8 TDD V-pol
F_{HIGH}:	5.849 GHz
Frequency range:	18 – 21.4 GHz



Plot 7.5.101 Radiated spurious emission measurements in restricted bands

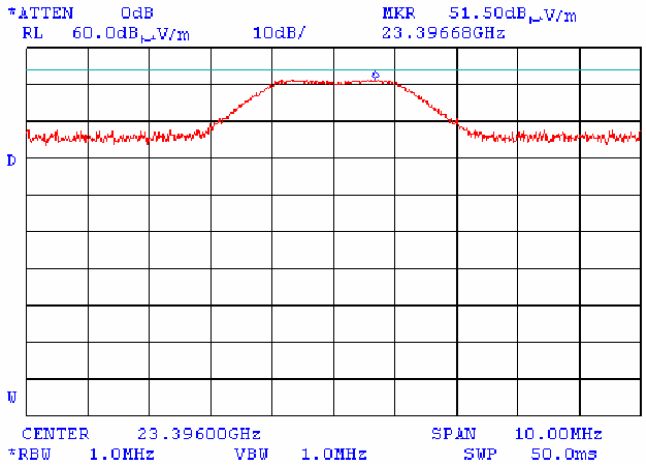
EUT:	BSR 5.8 TDD V-pol
F_{HIGH}:	5.849 GHz
Frequency range:	22 – 24 GHz



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

Plot 7.5.102 Radiated spurious emission measurements in restricted bands

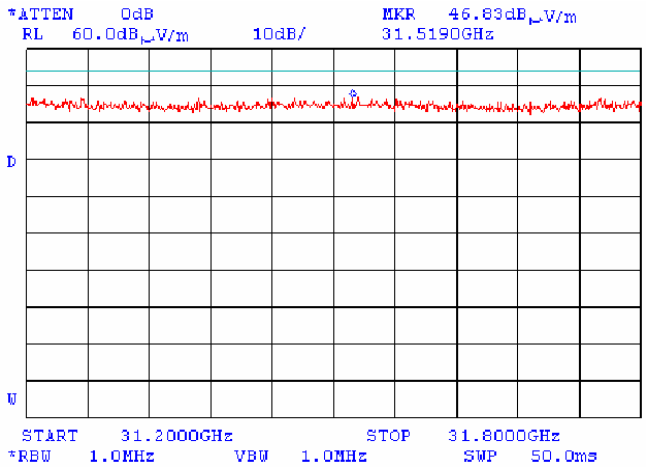
EUT:	BSR 5.8 TDD V-pol
F_{HIGH}:	5.849 GHz
Center frequency:	23.396 GHz



E_{peak} = 51.5 dB(µV/m)

Plot 7.5.103 Radiated spurious emission measurements in restricted bands

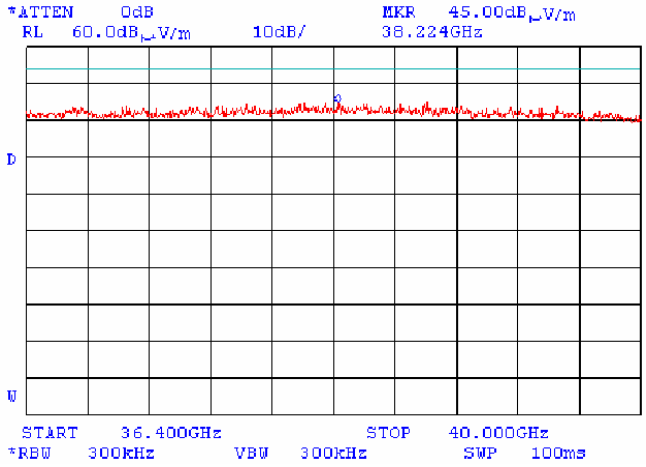
EUT:	BSR 5.8 TDD V-pol
F_{HIGH}:	5.849 GHz
Frequency range:	31.2 – 31.8 GHz



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

Plot 7.5.104 Radiated spurious emission measurements in restricted bands

EUT:	BSR 5.8 TDD V-pol
F_{HIGH}:	5.849 GHz
Frequency range:	36.4 – 40 GHz



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 ºC	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

Table 7.5.7 Field strength of spurious emissions within restricted bands

EUT:	**SPR 5.8 TDD V-pol (with 16 dBi internal antenna)**
ASSIGNED FREQUENCY:	5725 - 5850 MHz
POWER SETTING:	20 dBm (maximum output power defined via software)
TEST DISTANCE:	3 m
MODULATION:	FSK
MODULATING SIGNAL:	PRBS
BIT RATE:	3 Mbps
DUTY CYCLE:	100 %
DETECTOR USED:	Peak
RESOLUTION BANDWIDTH:	120 kHz in 30 – 1000 MHz range, 1000 kHz above 1 GHz
VIDEO BANDWIDTH:	1 MHz above 1 GHz, 30 MHz in 30 – 1000 MHz range
TEST ANTENNA TYPE:	Biconilog in 30 – 1000 MHz range, Double ridged guide above 1 GHz

Frequency, MHz	Antenna		Azimuth, degrees*	Peak field strength			Average field strength(VBW=10 Hz)			Verdict
	Polarization	Height, m		Measured, dB(µV/m)	Limit, dB(µV/m)	Margin, dB	Measured, dB(µV/m)	Limit, dB(µV/m)	Margin, dB	
Low carrier frequency										
1515	V	1.0	0	43.6	74	30.4	NA	54	10.4***	Pass
22903	V	1.0	0	56.0	74	18.0	52.7	54	1.3	Pass
Mid carrier frequency										
280	V	1.0	0	26.5	46**	19.5	NA	NA	NA	Pass
1515	V	1.0	0	43.0	74	31.0	NA	54	11.0***	Pass
High carrier frequency										
1513	V	1.0	0	43.0	74	31.0	NA	54	11.0***	Pass

*- EUT front panel refers to 0 degrees position of turntable.
**- quasi-peak specification limit
***- Margin = Peak field strength - average limit

Reference numbers of test equipment used

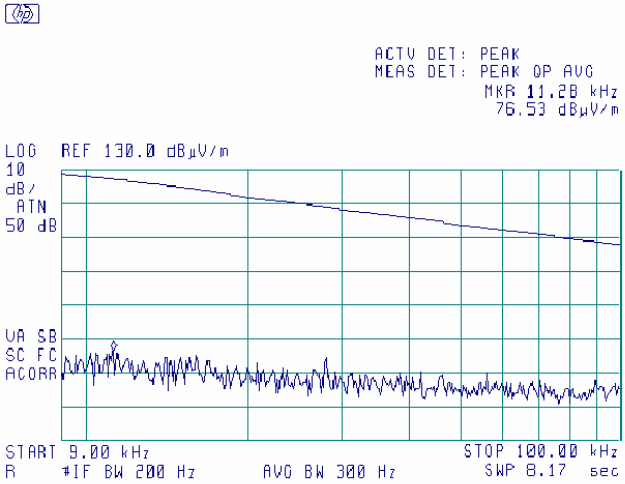
HL 0041	HL 0446	HL 0465	HL 0521	HL 0589	HL 0604	HL 0768
HL 0769	HL 1004	HL 1200	HL 1424	HL 1566	HL 1940	HL 1942
HL 2009	HL 2259	HL 2260	HL 2261	HL 2273	HL 2274	HL 2387

Full description is given in Appendix A.

Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

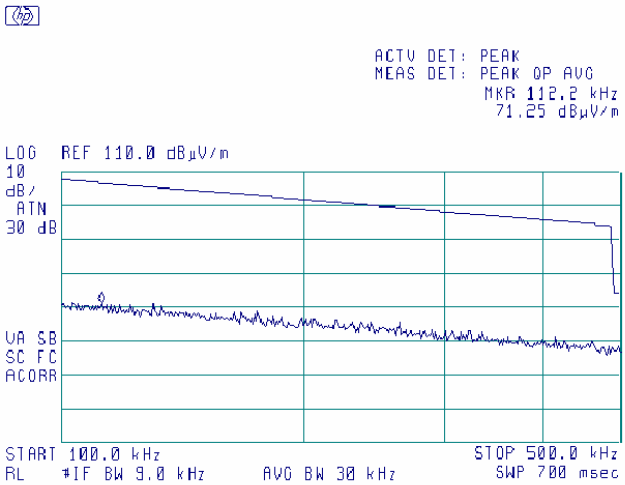
Plot 7.5.105 Radiated spurious emission measurements

EUT: SPR 5.8 TDD V-pol
Carrier frequencies: 5.726 GHz (low), 5.8 GHz (middle); 5.849 GHz (high)
Frequency range: 9 – 100 kHz



Plot 7.5.106 Radiated spurious emission measurements

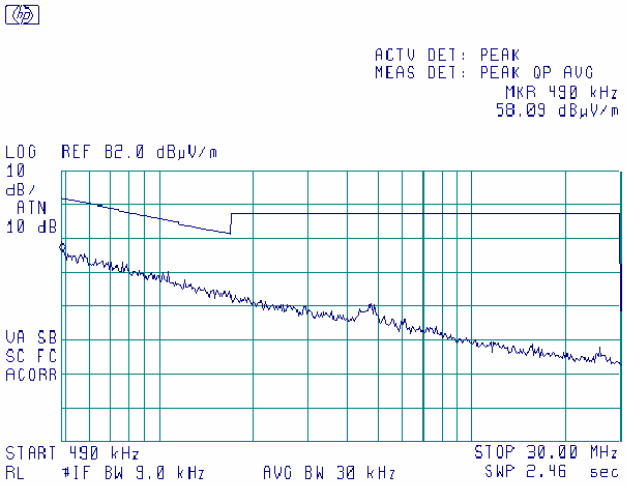
EUT: SPR 5.8 TDD V-pol
Carrier frequencies: 5.726 GHz (low), 5.8 GHz (middle); 5.849 GHz (high)
Frequency range: 100 – 500 kHz



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

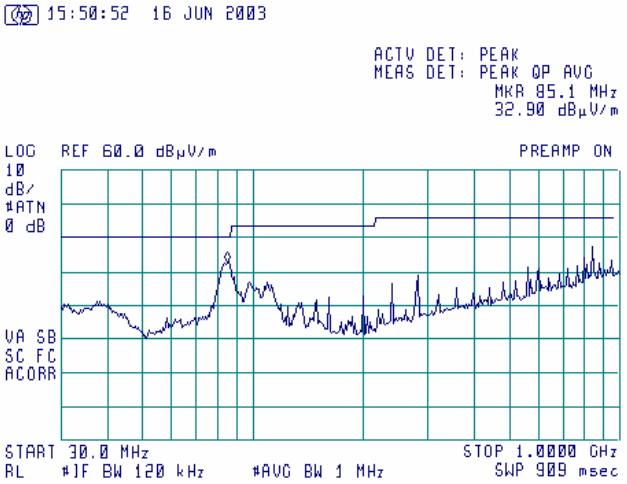
Plot 7.5.107 Radiated spurious emission measurements

EUT: SPR 5.8 TDD V-pol
Carrier frequencies: 5.726 GHz (low), 5.8 GHz (middle); 5.849 GHz (high)
Frequency range: 490 kHz – 30 MHz



Plot 7.5.108 Radiated spurious emission measurements

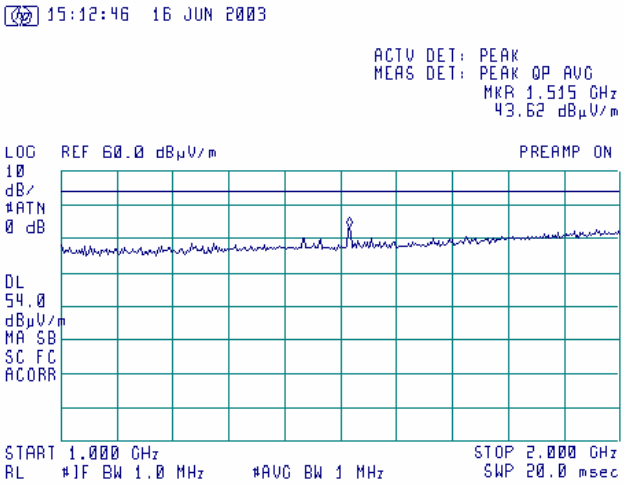
EUT: SPR 5.8 TDD V-pol
Carrier frequencies: 5.726 GHz (low), 5.8 GHz (middle); 5.849 GHz (high)
Frequency range: 30 MHz– 1 GHz



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

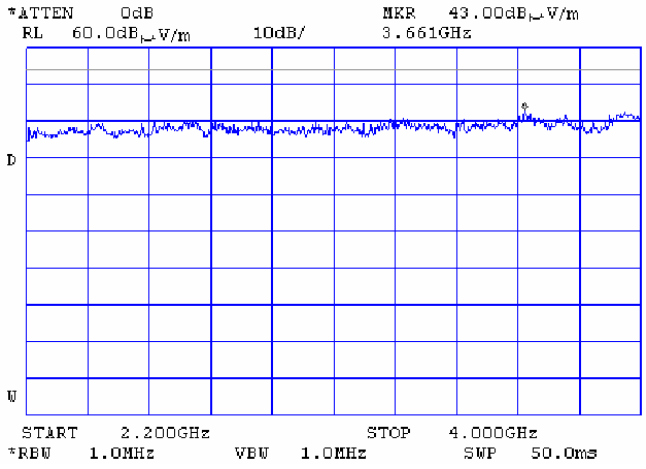
Plot 7.5.109 Radiated spurious emission measurements in restricted bands

EUT:	SPR 5.8 TDD V-pol
F_{LOW}:	5.726 GHz
Frequency range:	1 – 2 GHz



Plot 7.5.110 Radiated spurious emission measurements in restricted bands

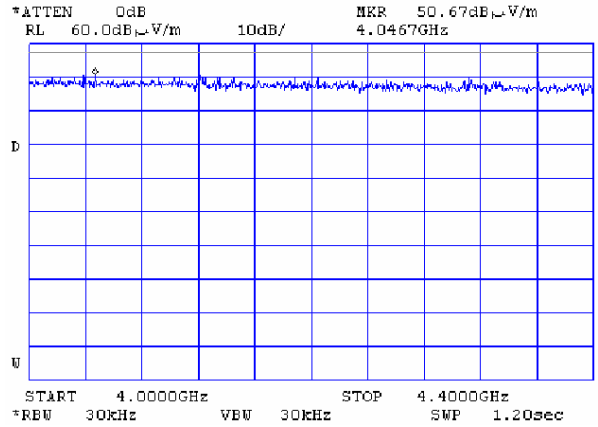
EUT:	SPR 5.8 TDD V-pol
F_{LOW}:	5.726 GHz
Frequency range:	2.2 – 4 GHz



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

Plot 7.5.111 Radiated spurious emission measurements in restricted bands

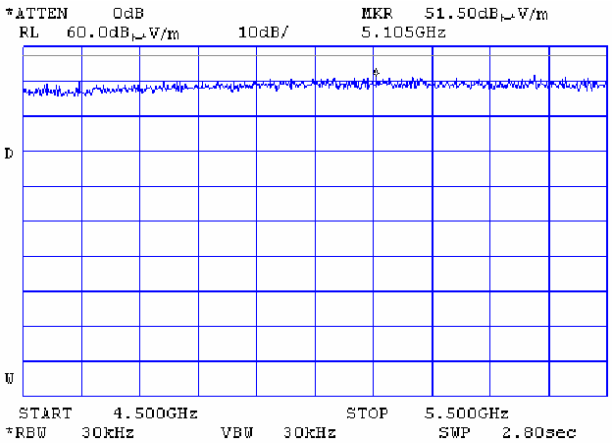
EUT: SPR 5.8 TDD V-pol
F_{LOW}: 5.726 GHz
Frequency range: 4 – 4.4 GHz



Limit (average) for radiated spurious emissions in restricted bands is 57.5 dB(µV/m) at 2 m test distance
No spurious emissions were found

Plot 7.5.112 Radiated spurious emission measurements in restricted bands

EUT: SPR 5.8 TDD V-pol
F_{LOW}: 5.726 GHz
Frequency range: 4.5 – 5.5 GHz

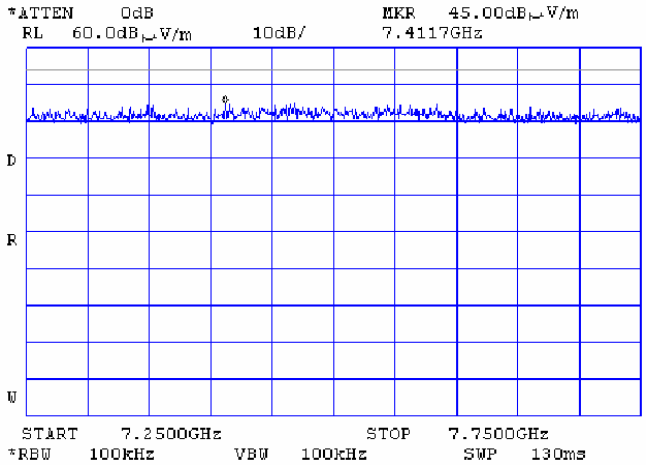


Limit (average) for radiated spurious emissions in restricted bands is 57.5 dB(µV/m) at 2 m test distance
No spurious emissions were found

Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

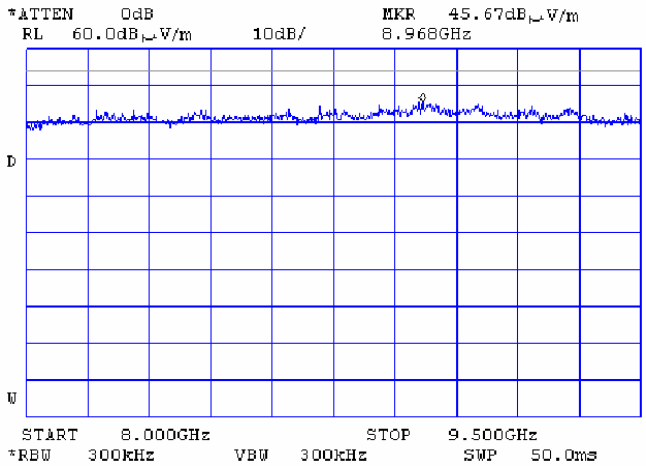
Plot 7.5.113 Radiated spurious emission measurements in restricted bands

EUT: SPR 5.8 TDD V-pol
F_{LOW}: 5.726 GHz
Frequency range: 7.25 – 7.75 GHz



Plot 7.5.114 Radiated spurious emission measurements in restricted bands

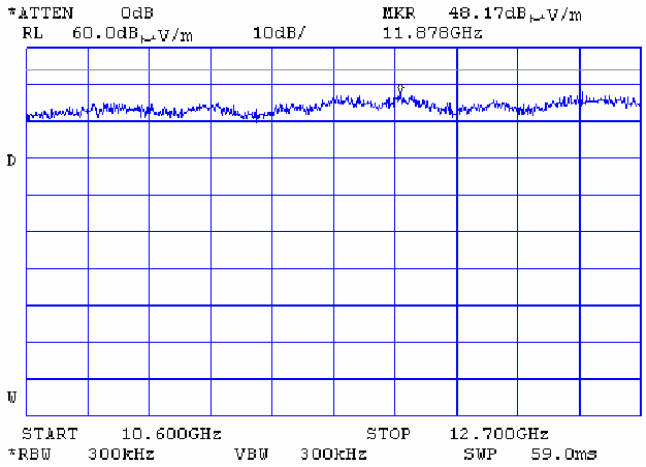
EUT: SPR 5.8 TDD V-pol
F_{LOW}: 5.726 GHz
Frequency range: 8 – 9.5 GHz



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

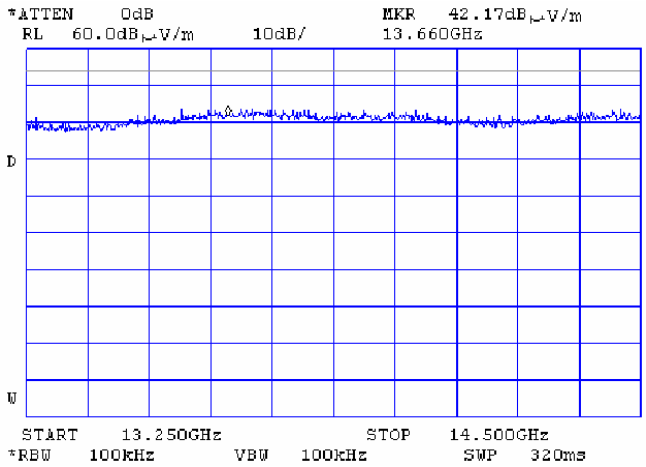
Plot 7.5.115 Radiated spurious emission measurements in restricted bands

EUT: SPR 5.8 TDD V-pol
F_{LOW}: 5.726 GHz
Frequency range: 10.6 – 12.7 GHz



Plot 7.5.116 Radiated spurious emission measurements in restricted bands

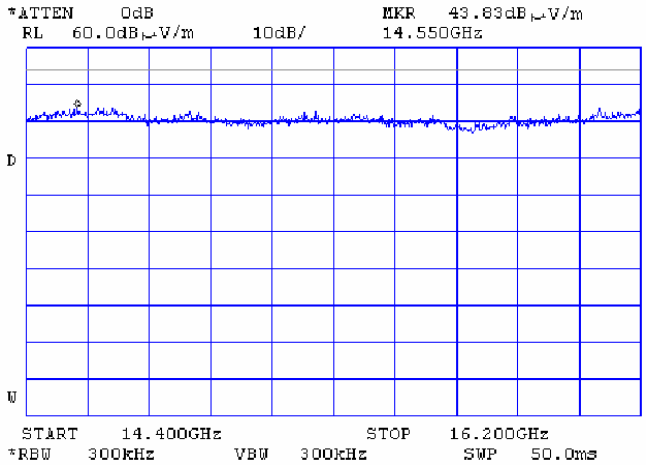
EUT: SPR 5.8 TDD V-pol
F_{LOW}: 5.726 GHz
Frequency range: 13.25 – 14.5 GHz



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

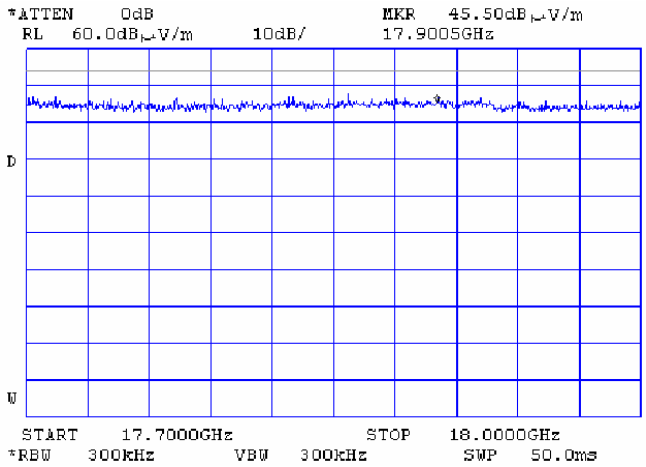
Plot 7.5.117 Radiated spurious emission measurements in restricted bands

EUT: SPR 5.8 TDD V-pol
F_{LOW}: 5.726 GHz
Frequency range: 14.4 – 16.2 GHz



Plot 7.5.118 Radiated spurious emission measurements in restricted bands

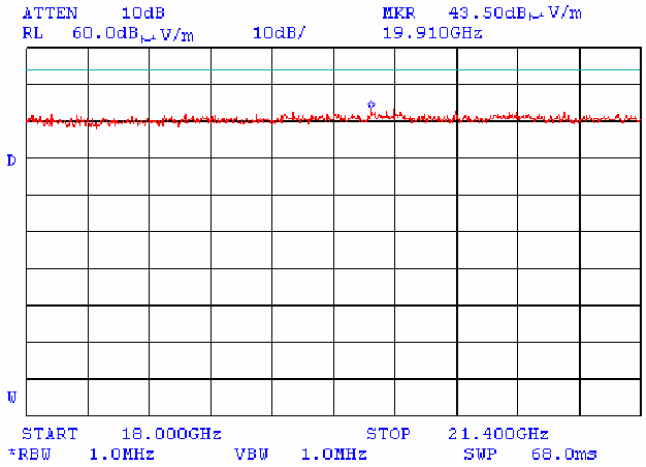
EUT: SPR 5.8 TDD V-pol
F_{LOW}: 5.726 GHz
Frequency range: 17.7 – 18 GHz



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

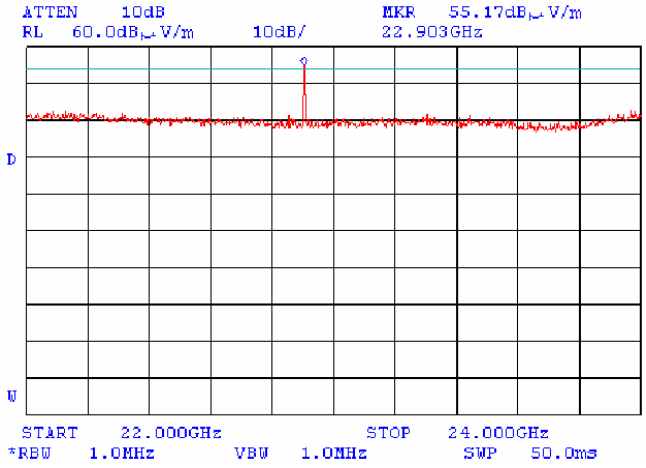
Plot 7.5.119 Radiated spurious emission measurements in restricted bands

EUT: SPR 5.8 TDD V-pol
F_{LOW}: 5.726 GHz
Frequency range: 18 – 21.4 GHz



Plot 7.5.120 Radiated spurious emission measurements in restricted bands

EUT: SPR 5.8 TDD V-pol
F_{LOW}: 5.726 GHz
Frequency range: 22 – 24 GHz

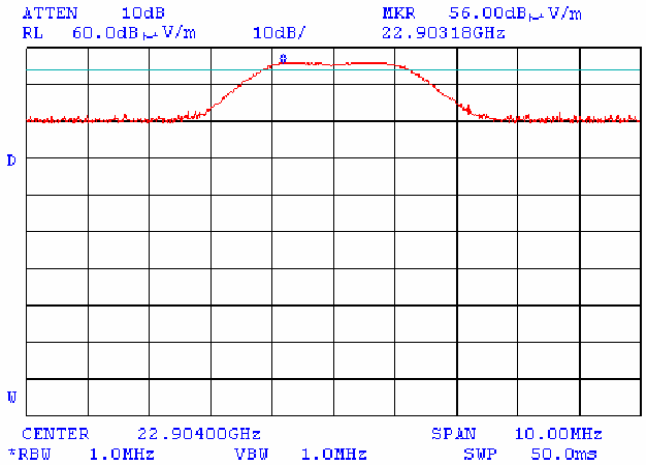


Limit (average) for radiated spurious emissions in restricted bands is 54 dB(µV/m)
No spurious emissions except 4th harmonic were found

Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

Plot 7.5.121 Radiated spurious emission measurements in restricted bands

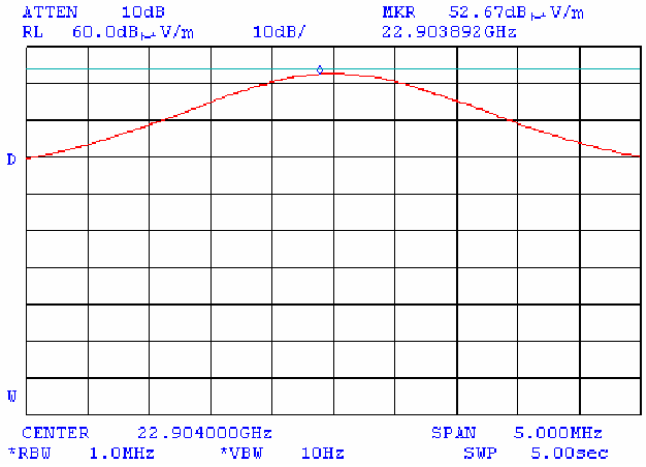
EUT: SPR 5.8 TDD V-pol
F_{LOW}: 5.726 GHz
Center frequency: 22.904 GHz



Peak limit for radiated emission is 74 dB(µV/m)
E_{peak} = 56 dB(µV/m)

Plot 7.5.122 Radiated spurious emission measurements in restricted bands

EUT: SPR 5.8 TDD V-pol
F_{LOW}: 5.726 GHz
Center frequency: 22.904 GHz

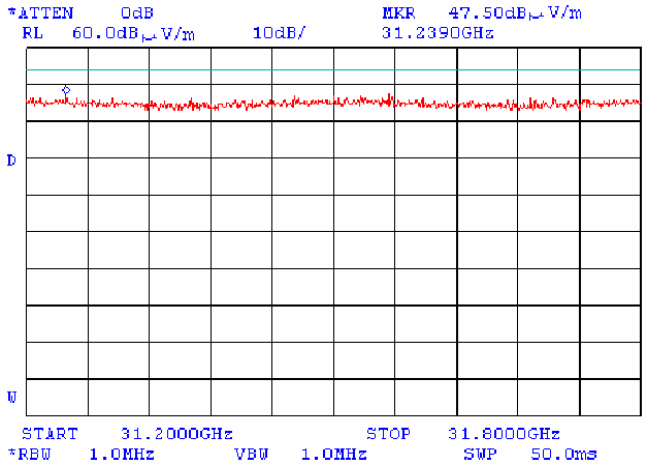


Limit (average) for radiated spurious emissions in restricted bands is 54 dB(µV/m)
E_{aver} = 52.67 dB(µV/m)

Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

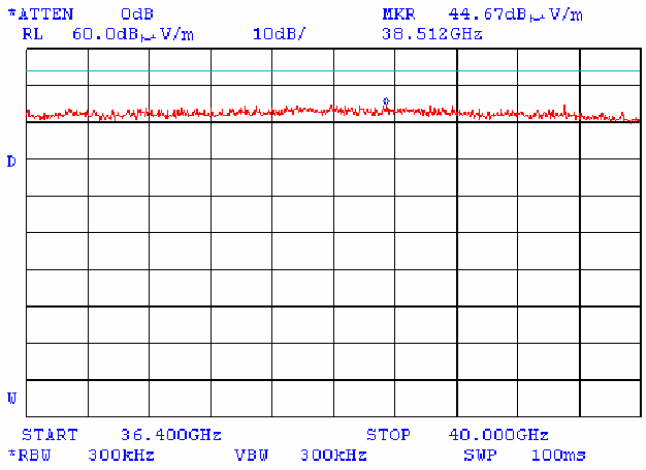
Plot 7.5.123 Radiated spurious emission measurements in restricted bands

EUT: SPR 5.8 TDD V-pol
F_{LOW}: 5.726 GHz
Frequency range: 31.2 – 31.8 GHz



Plot 7.5.124 Radiated spurious emission measurements in restricted bands

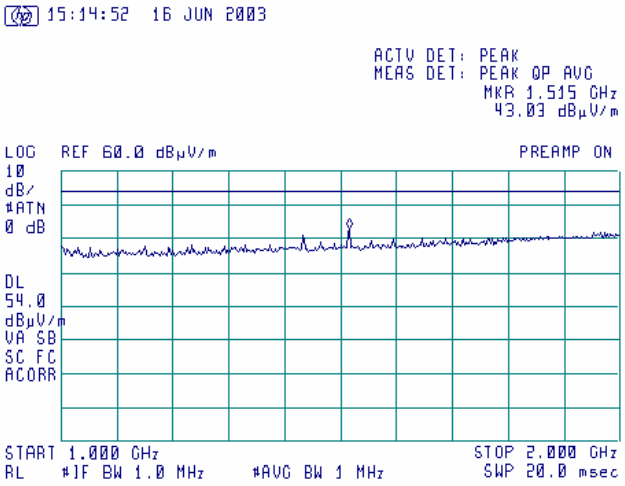
EUT: SPR 5.8 TDD V-pol
F_{LOW}: 5.726 GHz
Frequency range: 36.4 – 40 GHz



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

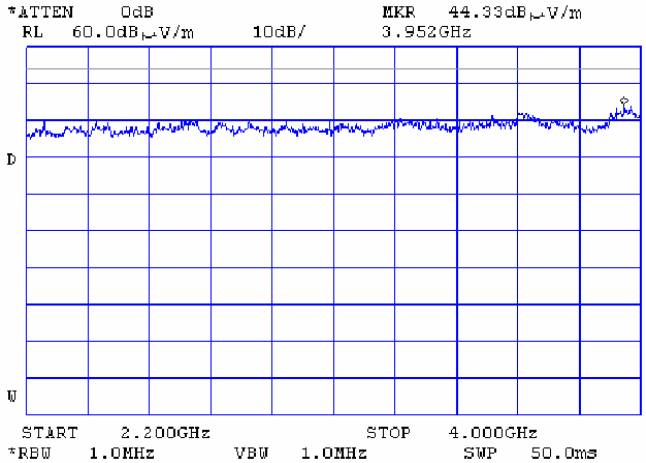
Plot 7.5.125 Radiated spurious emission measurements in restricted bands

EUT:	SPR 5.8 TDD V-pol
F_{MIDDLE}:	5.8 GHz
Frequency range:	1 – 2 GHz



Plot 7.5.126 Radiated spurious emission measurements in restricted bands

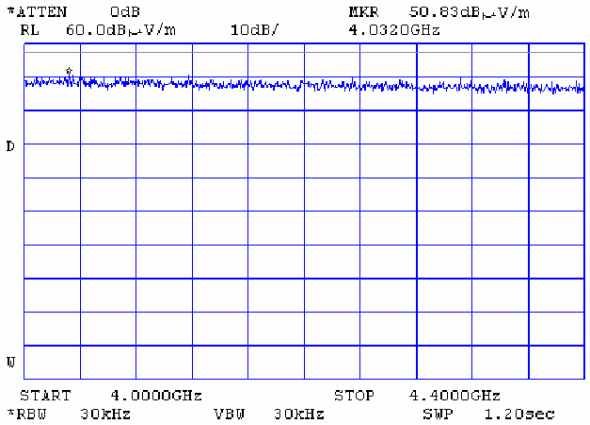
EUT:	SPR 5.8 TDD V-pol
F_{MIDDLE}:	5.8 GHz
Frequency range:	2.2 – 4 GHz



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

Plot 7.5.127 Radiated spurious emission measurements in restricted bands

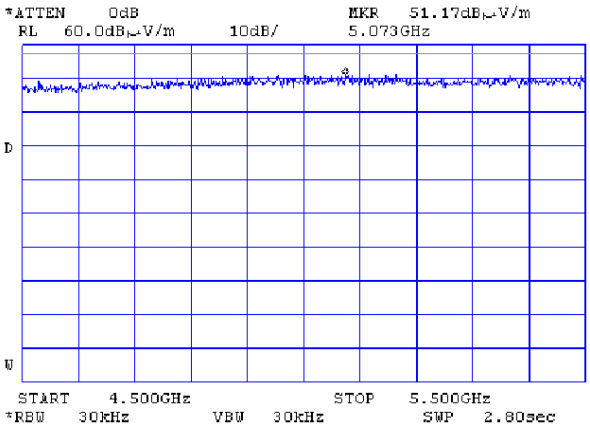
EUT: SPR 5.8 TDD V-pol
F_{MIDDLE}: 5.8 GHz
Frequency range: 4 – 4.4 GHz



Limit (average) for radiated spurious emissions in restricted bands is 57.5 dB(µV/m) at 2 m test distance
No spurious emissions were found

Plot 7.5.128 Radiated spurious emission measurements in restricted bands

EUT: SPR 5.8 TDD V-pol
F_{MIDDLE}: 5.8 GHz
Frequency range: 4.5 – 5.5 GHz

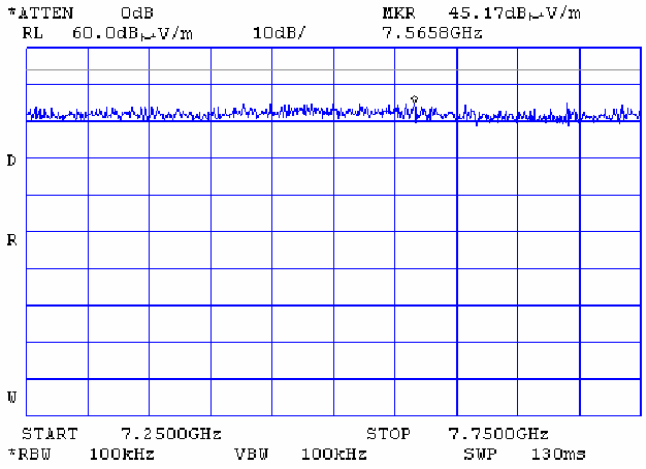


Limit (average) for radiated spurious emissions in restricted bands is 57.5 dB(µV/m) at 2 m test distance
No spurious emissions were found

Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

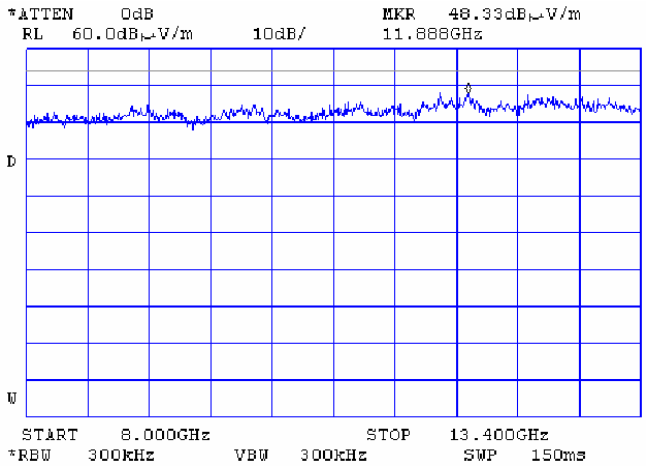
Plot 7.5.129 Radiated spurious emission measurements in restricted bands

EUT: SPR 5.8 TDD V-pol
F_{MIDDLE}: 5.8 GHz
Frequency range: 7.25 – 7.75 GHz



Plot 7.5.130 Radiated spurious emission measurements in restricted bands

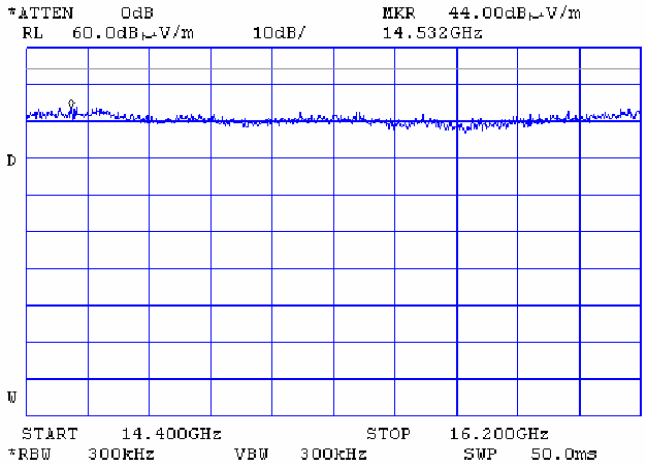
EUT: SPR 5.8 TDD V-pol
F_{MIDDLE}: 5.8 GHz
Frequency range: 8 – 13.4 GHz



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

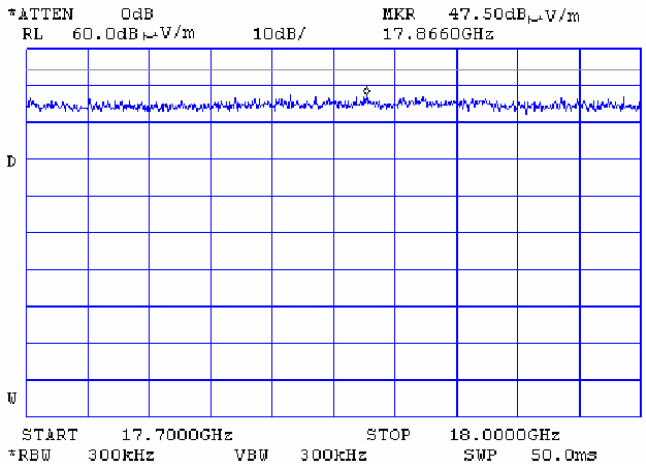
Plot 7.5.131 Radiated spurious emission measurements in restricted bands

EUT: SPR 5.8 TDD V-pol
F_{MIDDLE}: 5.8 GHz
Frequency range: 14.4 – 16.2 GHz



Plot 7.5.132 Radiated spurious emission measurements in restricted bands

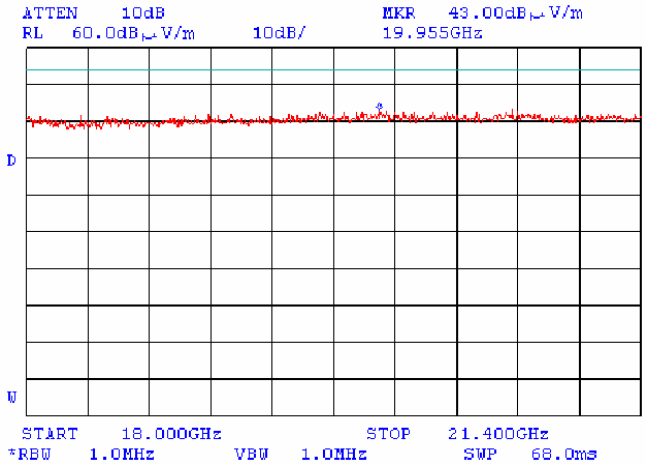
EUT: SPR 5.8 TDD V-pol
F_{MIDDLE}: 5.8 GHz
Frequency range: 17.7 – 18 GHz



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

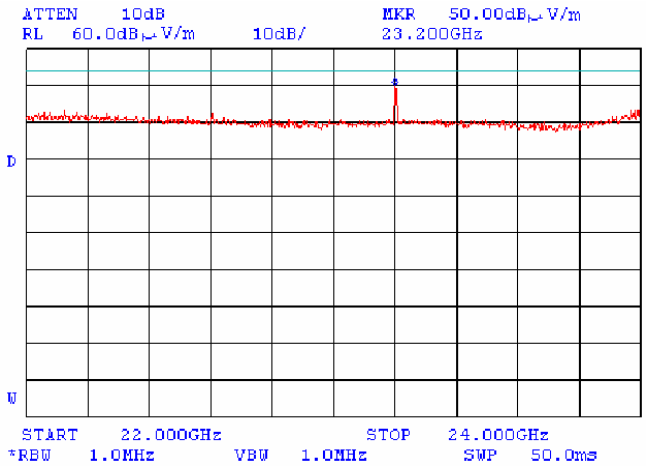
Plot 7.5.133 Radiated spurious emission measurements in restricted bands

EUT: SPR 5.8 TDD V-pol
F_{MIDDLE}: 5.8 GHz
Frequency range: 18 – 21.4 GHz



Plot 7.5.134 Radiated spurious emission measurements in restricted bands

EUT: SPR 5.8 TDD V-pol
F_{MIDDLE}: 5.8 GHz
Frequency range: 22 – 24 GHz

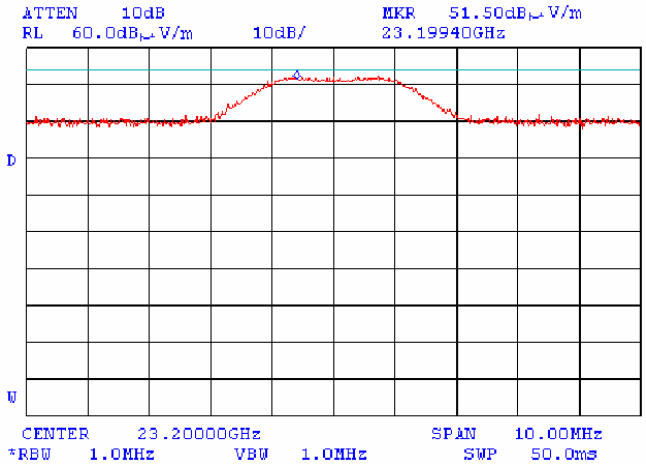


No spurious emissions except 4th harmonic were found

Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

Plot 7.5.135 Radiated spurious emission measurements in restricted bands

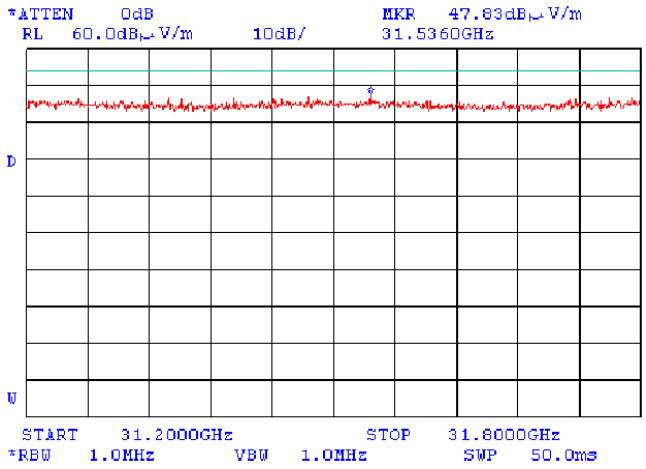
EUT: SPR 5.8 TDD V-pol
F_{MIDDLE}: 5.8 GHz
Center frequency: 23.2 GHz



Limit (average) for radiated spurious emissions in restricted bands is 54 dB(µV/m)
E_{peak} = 51.5 dB(µV/m)

Plot 7.5.136 Radiated spurious emission measurements in restricted bands

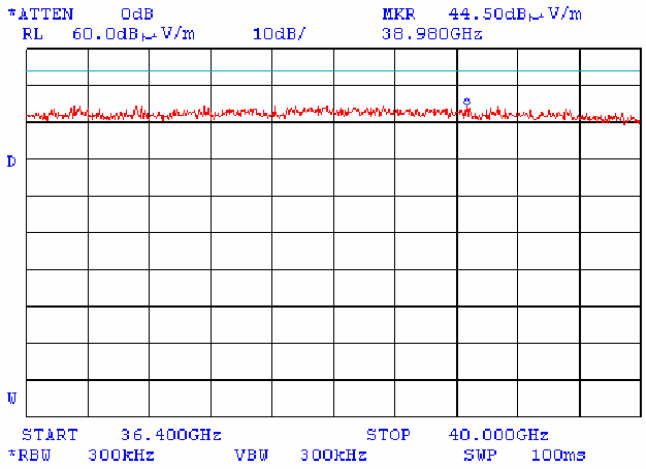
EUT: SPR 5.8 TDD V-pol
F_{MIDDLE}: 5.8 GHz
Frequency range: 31.2 – 31.8 GHz



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

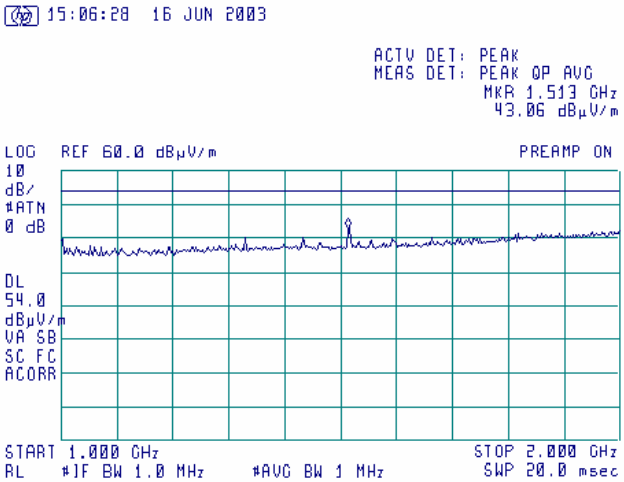
Plot 7.5.137 Radiated spurious emission measurements in restricted bands

EUT:	SPR 5.8 TDD V-pol
F_{MIDDLE}:	5.8 GHz
Frequency range:	36.4 – 40 GHz



Plot 7.5.138 Radiated spurious emission measurements in restricted bands

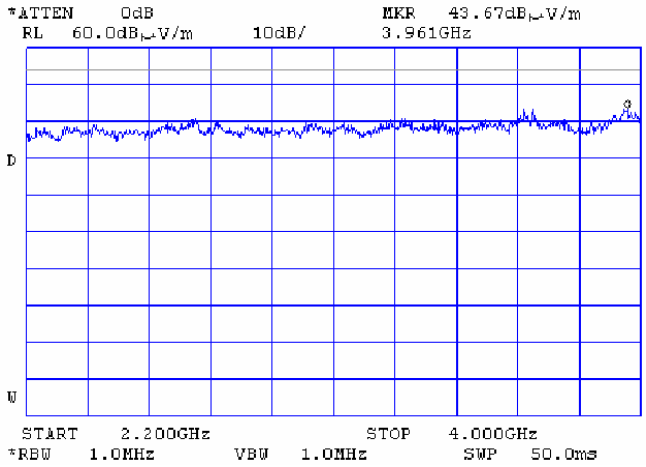
EUT:	SPR 5.8 TDD V-pol
F_{HIGH}:	5.849 GHz
Frequency range:	1 – 2 GHz



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

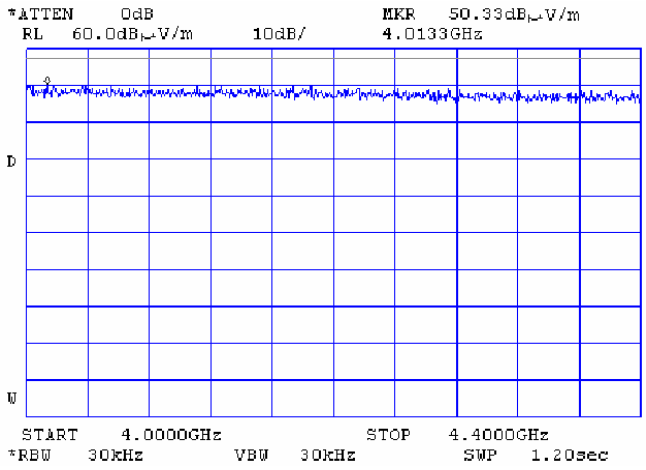
Plot 7.5.139 Radiated spurious emission measurements in restricted bands

EUT: SPR 5.8 TDD V-pol
F_{HIGH}: 5.849 GHz
Frequency range: 2.2 – 4 GHz



Plot 7.5.140 Radiated spurious emission measurements in restricted bands

EUT: SPR 5.8 TDD V-pol
F_{HIGH}: 5.849 GHz
Frequency range: 4 – 4.4 GHz

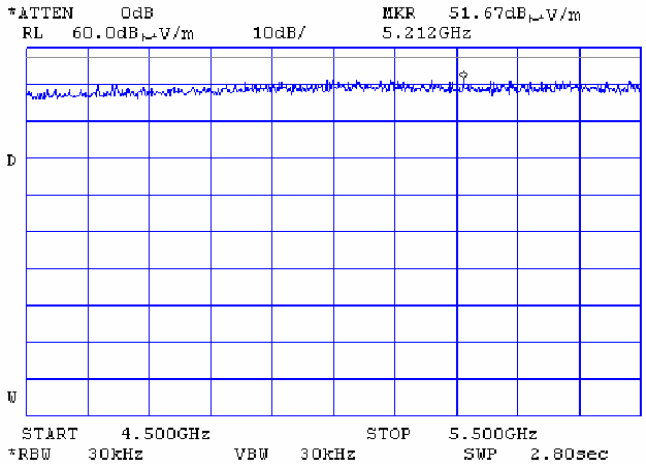


Limit (average) for radiated spurious emissions in restricted bands is 57.5 dB(µV/m) at 2 m test distance
No spurious emissions were found

Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

Plot 7.5.141 Radiated spurious emission measurements in restricted bands

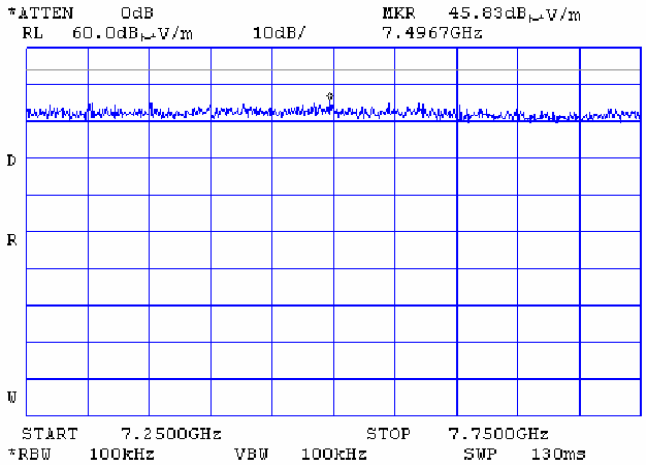
EUT: SPR 5.8 TDD V-pol
F_{HIGH}: 5.849 GHz
Frequency range: 4.5 – 5.5 GHz



Limit (average) for radiated spurious emissions in restricted bands is 57.5 dB(µV/m) at 2 m test distance
No spurious emissions were found

Plot 7.5.142 Radiated spurious emission measurements in restricted bands

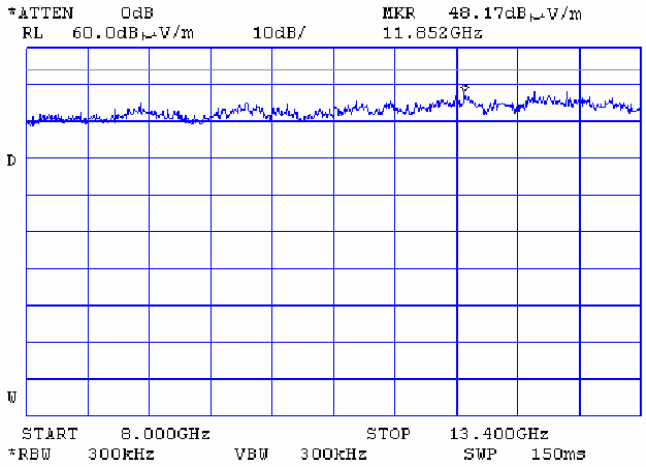
EUT: SPR 5.8 TDD V-pol
F_{HIGH}: 5.849 GHz
Frequency range: 7.25 – 7.75 GHz



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

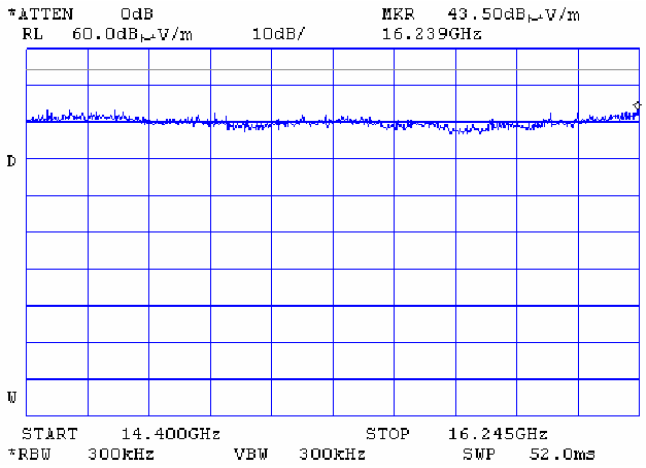
Plot 7.5.143 Radiated spurious emission measurements in restricted bands

EUT: SPR 5.8 TDD V-pol
F_{HIGH}: 5.849 GHz
Frequency range: 8 – 13.4 GHz



Plot 7.5.144 Radiated spurious emission measurements in restricted bands

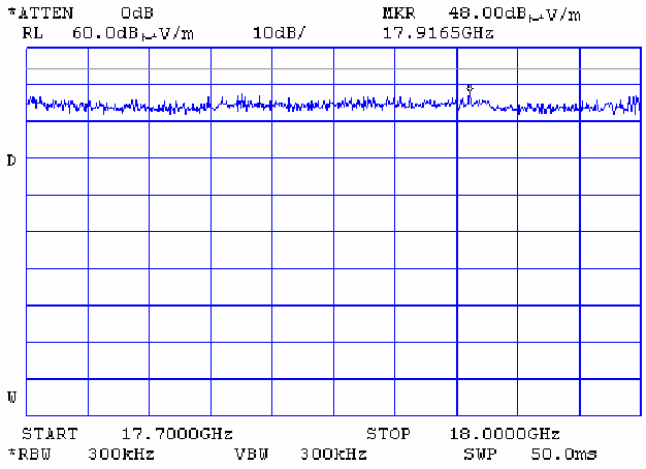
EUT: SPR 5.8 TDD V-pol
F_{HIGH}: 5.849 GHz
Frequency range: 14.4 – 16.245 GHz



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

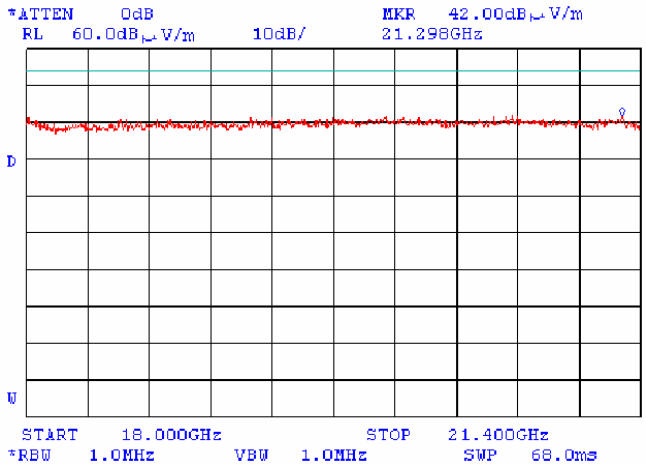
Plot 7.5.145 Radiated spurious emission measurements in restricted bands

EUT: SPR 5.8 TDD V-pol
F_{HIGH}: 5.849 GHz
Frequency range: 17.7 – 18 GHz



Plot 7.5.146 Radiated spurious emission measurements in restricted bands

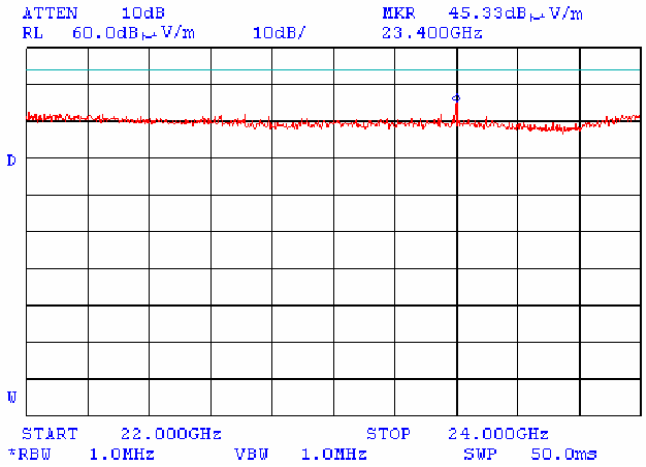
EUT: SPR 5.8 TDD V-pol
F_{HIGH}: 5.849 GHz
Frequency range: 18 – 21.4 GHz



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

Plot 7.5.147 Radiated spurious emission measurements in restricted bands

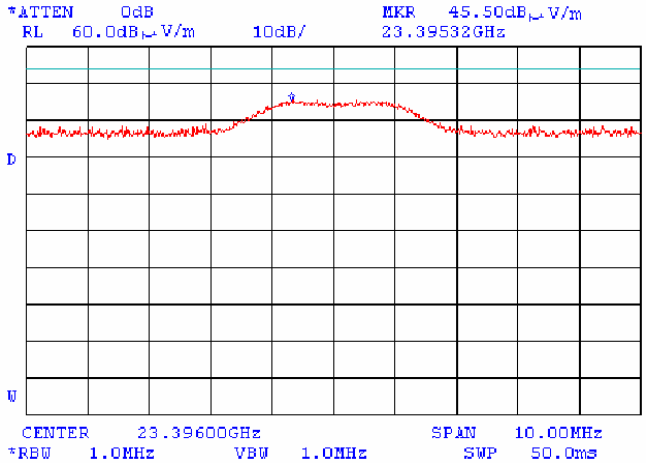
EUT: SPR 5.8 TDD V-pol
F_{HIGH}: 5.849 GHz
Frequency range: 22 – 24 GHz



Limit (average) for radiated spurious emissions in restricted bands is 54 dB(µV/m)
No spurious emissions except 4th harmonic were found

Plot 7.5.148 Radiated spurious emission measurements in restricted bands

EUT: SPR 5.8 TDD V-pol
F_{HIGH}: 5.849 GHz
Center frequency: 23.396 GHz

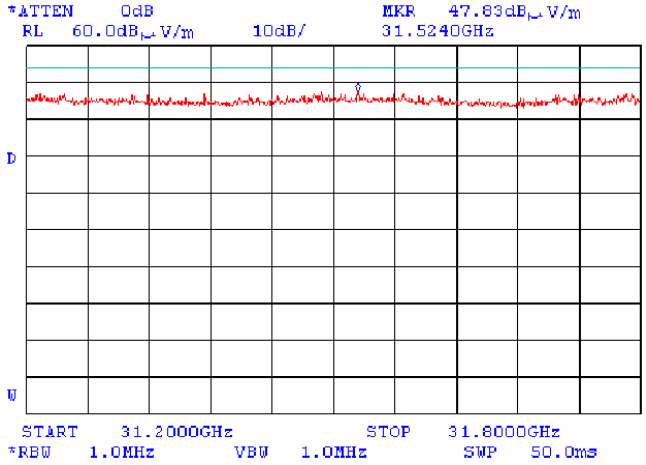


E_{peak} = 45.5 dB(µV/m)

Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:30:32 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

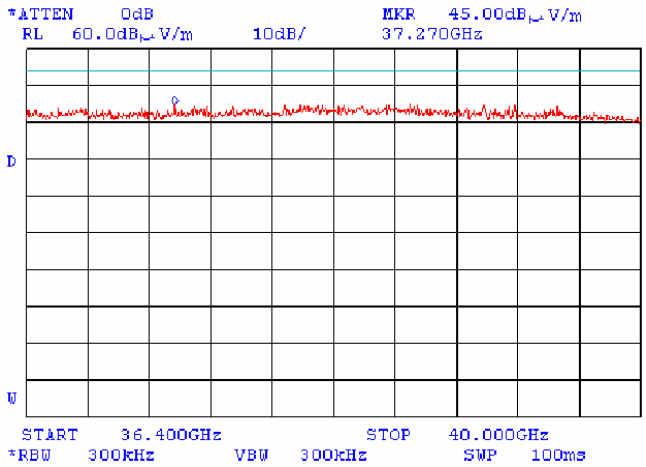
Plot 7.5.149 Radiated spurious emission measurements in restricted bands

EUT:	SPR 5.8 TDD V-pol
F_{HIGH}:	5.849 GHz
Frequency range:	31.2 – 31.8 GHz



Plot 7.5.150 Radiated spurious emission measurements in restricted bands

Mode:	Hopping
F_{HIGH}:	5.849 GHz
Bit rate:	3 Mbit/s
Frequency range:	36.4 – 40 GHz



Test specification:	Section 15.247(d), Peak power density		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(d)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 4:03:01 PM		
Temperature: 24 ºC	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

7.6 Peak spectral power density

7.6.1 General

This test was performed to measure the peak spectral power density at the transmitter RF antenna connector. Specification test limits are given in Table 7.6.1.

Table 7.6.1 Peak spectral power density limits

Assigned frequency range, MHz	Measurement bandwidth, kHz	Peak spectral power density, dBm
2400.0 – 2483.5	3.0	8.0

7.6.2 Test procedure

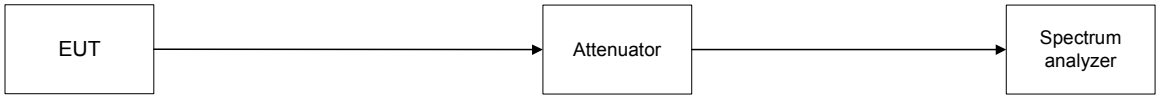
7.6.2.1 The EUT was set up as shown in Figure 7.6.1, energized and its proper operation was checked.

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

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

7.6.2.4 The peak of emission was zoomed with span set just wide enough to capture the emission peak area and sweep time was set equal to span width divided by resolution bandwidth. Spectrum analyzer was set in peak hold mode, sufficient number of sweeps was allowed for trace stabilization and peak spectral power density was measured as provided in Table 7.6.2 and associated plots.

Figure 7.6.1 Peak spectral power density test setup



Test specification:	Section 15.247(d), Peak power density		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(d)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 4:03:01 PM		
Temperature: 24 ºC	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

Table 7.6.2 Peak spectral power density test results

ASSIGNED FREQUENCY: 5725 - 5850 MHz
MODULATION: FSK
MODULATING SIGNAL: PRBS
BIT RATE: 1, 2, 3, 1.33 and 4 Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum
TRANSMITTER OUTPUT POWER: 17.67 dBm at low carrier frequency at 1 MBps symbol rate
21.00 dBm at low carrier frequency at 1.33 MBps symbol rate
17.33 dBm at mid carrier frequency at 1 MBps symbol rate
20.67 dBm at mid carrier frequency at 1.33 MBps symbol rate
17.33 dBm at high carrier frequency at 1 MBps symbol rate
20.83 dBm at high carrier frequency at 1.33 MBps symbol rate
DETECTOR USED: Peak
RESOLUTION BANDWIDTH: 3 kHz
VIDEO BANDWIDTH: 10 kHz

Carrier frequency, MHz	Spectrum analyzer reading, dBm	External attenuation, dB	Cable loss, dB	Peak power density, dB(mW/3 kHz)	Limit, dBm	Margin*, dB	Verdict
1 MBps							
5726	NA	30	2.11	7.17	8	-0.83	Pass
2 MBps							
5726	NA	30	2.11	7.64	8	-0.36	Pass
5790	NA	30	2.11	8.00	8	0.00	Pass
5849	NA	30	2.11	7.00	8	-1.00	Pass
3 MBps							
5790	NA	30	2.11	7.67	8	-0.33	Pass
1.33 MBps							
5726	NA	30	2.11	7.20	8	-0.80	Pass
4 MBps							
5726	NA	30	2.11	7.87	8	-0.13	Pass
5790	NA	30	2.11	7.87	8	-0.13	Pass
5849	NA	30	2.11	7.20	8	-0.80	Pass

* - Margin = Peak power density – specification limit.

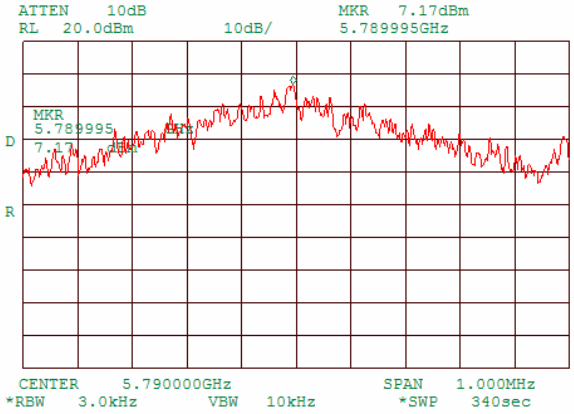
Reference numbers of test equipment used

HL 1424	HL 1651	HL 2399					

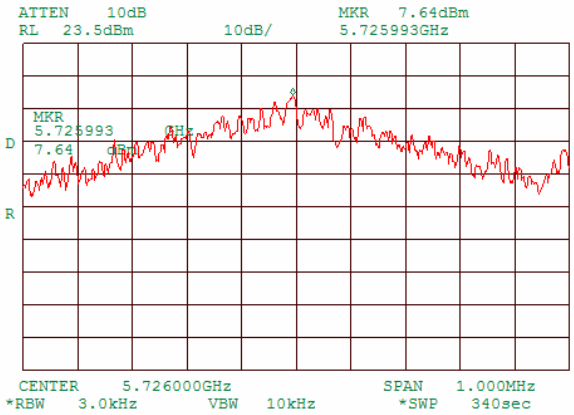
Full description is given in Appendix A.

Test specification:	Section 15.247(d), Peak power density		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(d)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 4:03:01 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

Plot 7.6.1 Peak spectral power density at mid frequency within 6 dB band at 1 Mbps

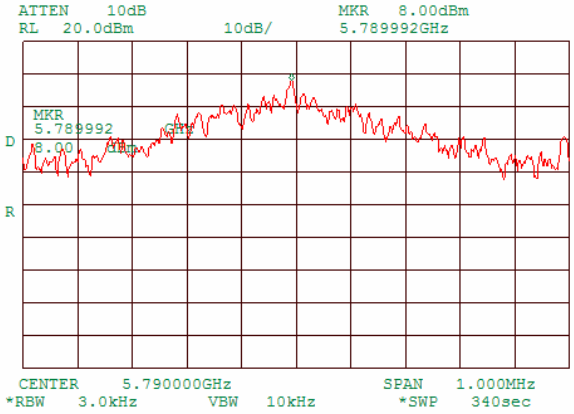


Plot 7.6.2 Peak spectral power density at low frequency within 6 dB band at 2 Mbps

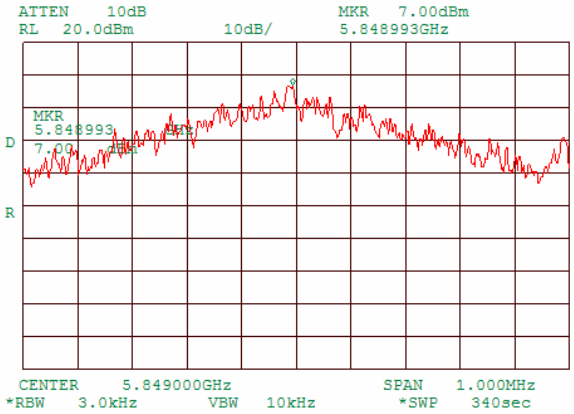


Test specification:	Section 15.247(d), Peak power density		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(d)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 4:03:01 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

Plot 7.6.3 Peak spectral power density at mid frequency within 6 dB band at 2 Mbps

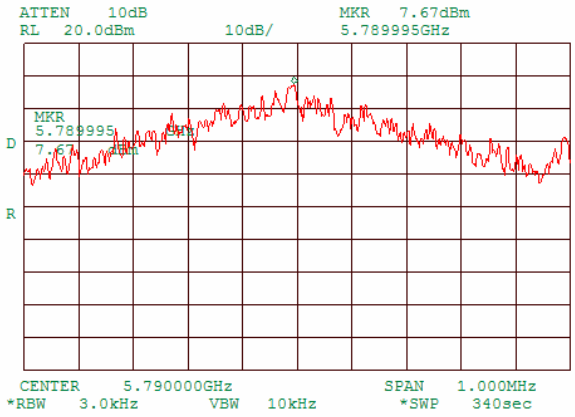


Plot 7.6.4 Peak spectral power density at high frequency within 6 dB band at 2 Mbps

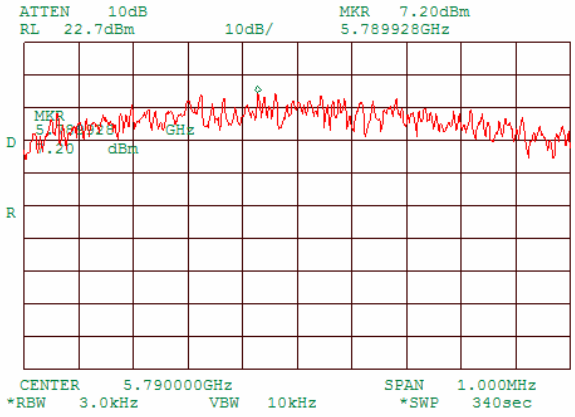


Test specification:	Section 15.247(d), Peak power density		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(d)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 4:03:01 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

Plot 7.6.5 Peak spectral power density at mid frequency within 6 dB band at 3 Mbps

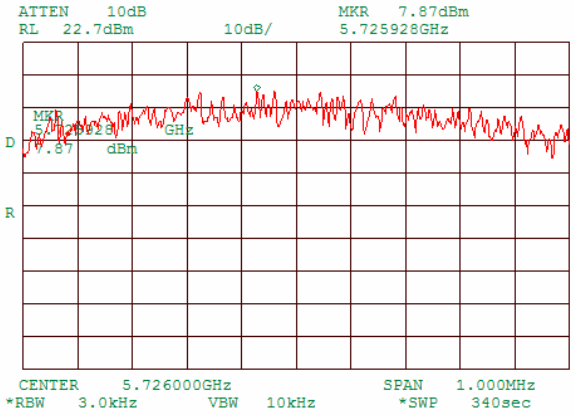


Plot 7.6.6 Peak spectral power density at mid frequency within 6 dB band at 1.33 Mbps

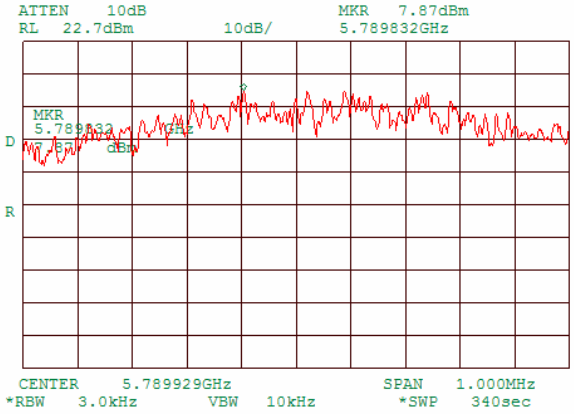


Test specification:	Section 15.247(d), Peak power density		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(d)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 4:03:01 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

Plot 7.6.7 Peak spectral power density at low frequency within 6 dB band at 4 Mbps

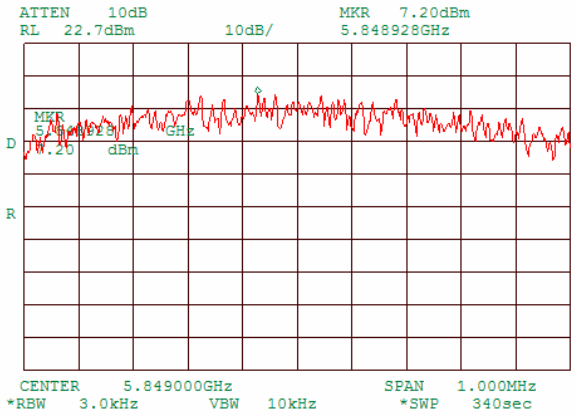


Plot 7.6.8 Peak spectral power density at mid frequency within 6 dB band at 4 Mbps



Test specification:	Section 15.247(d), Peak power density		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(d)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 4:03:01 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 45 %	Power Supply: 48 VDC
Remarks:			

Plot 7.6.9 Peak spectral power density at high frequency within 6 dB band at 4 Mbps



Test specification:	Section 15.247(a)(1), Carrier frequency separation		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/1/2003 4:03:01 PM		
Temperature: 24 ºC	Air Pressure: 1011 hPa	Relative Humidity: 44 %	Power Supply: 120 V AC
Remarks:			

7.7 Carrier frequency separation

7.7.1 General

This test was performed to measure frequency separation between the peaks of adjacent channels. Specification test limits are given in Table 7.7.1.

Table 7.7.1 Carrier frequency separation limits

Assigned frequency range, MHz	Carrier frequency separation
5725 – 5850	25 kHz or 20 dB bandwidth of the hopping channel, whichever is greater

7.7.2 Test procedure

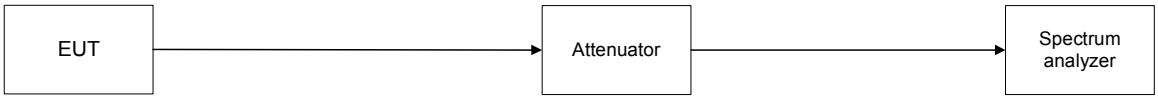
7.7.2.1 The EUT was set up as shown in Figure 7.7.1, energized with frequency hopping function enabled and its proper operation was checked.

7.7.2.2 The spectrum analyzer span was set to capture the carrier frequency and both of adjacent channels, the lower and the higher. The resolution bandwidth was set wider than 1 % of the frequency span.

7.7.2.3 The spectrum analyzer was set in max hold mode and allowed trace to stabilize.

7.7.2.4 The frequency separation between the peaks of adjacent channels was measured as provided in Table 7.7.2 and associated plots.

Figure 7.7.1 Carrier frequency separation test setup



Test specification:	Section 15.247(a)(1), Carrier frequency separation		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/1/2003 4:03:01 PM		
Temperature: 24 °C	Air Pressure: 1011 hPa	Relative Humidity: 44 %	Power Supply: 120 V AC
Remarks:			

Table 7.7.2 Carrier frequency separation test results

ASSIGNED FREQUENCY:	5725 – 5850 MHz
MODULATION:	FSK
MODULATING SIGNAL:	PRBS
BIT RATE:	4 Mbps
DETECTOR USED:	Peak
RESOLUTION BANDWIDTH:	≥ 1% of the span
VIDEO BANDWIDTH:	≥ RBW
FREQUENCY HOPPING:	Enabled
20 dB BANDWIDTH:	1658 kHz

Carrier frequency separation, kHz	Limit, kHz	Margin*	Verdict
2000	1658	342	Pass

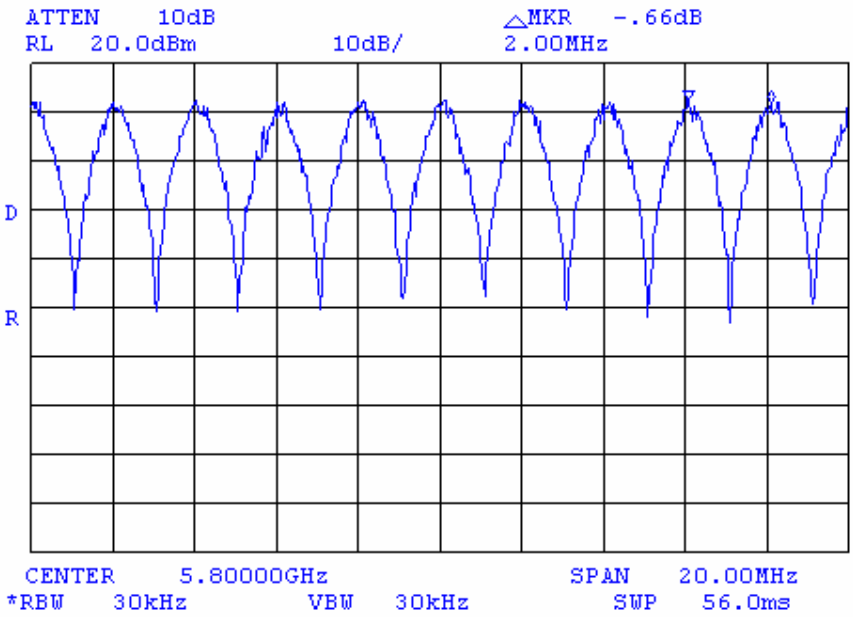
* - Margin = Carrier frequency separation – specification limit.

Reference numbers of test equipment used

HL 1424	HL 1650	HL 1651	HL 2254				

Full description is given in Appendix A.

Plot 7.7.1 Carrier frequency separation



Test specification:	Section 15.247(a)(1)(iii), Average time of occupancy		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/1/2003 4:03:01 PM		
Temperature: 25 ºC	Air Pressure: 1011 hPa	Relative Humidity: 39 %	Power Supply: 120 VAC
Remarks:			

7.8 Average time of occupancy

7.8.1 General

This test was performed to calculate the average time of occupancy (dwell time) on any frequency channel of the EUT. Specification test limits are given in Table 7.8.1.

Table 7.8.1 Average time of occupancy limits

Assigned frequency range, MHz	Maximum average time of occupancy, s	Investigated period, s	Number of hopping frequencies
5725 - 5850	0.4	0.4 × N	N

7.8.2 Test procedure

7.8.2.1 The EUT was set up as shown in Figure 7.8.1 , energized with frequency hopping function enabled and its proper operation was checked.

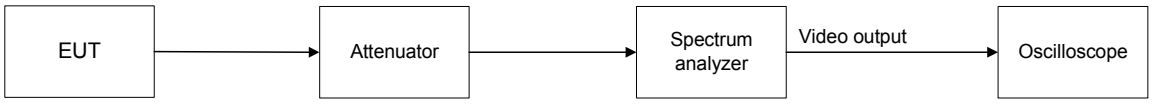
7.8.2.2 The spectrum analyzer span was set to zero centered on a hopping channel.

7.8.2.3 The single transmission duration and period were measured with oscilloscope.

7.8.2.4 The average time of occupancy was calculated as the single transmission time multiplied by the investigated period and divided by the single transmission period.

7.8.2.5 The test was repeated at each data rate and modulation type as provided in Table 7.8.2 and associated plots.

Figure 7.8.1 Average time of occupancy test setup



Test specification:	Section 15.247(a)(1)(iii), Average time of occupancy		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/1/2003 4:03:01 PM		
Temperature: 25 ºC	Air Pressure: 1011 hPa	Relative Humidity: 39 %	Power Supply: 120 VAC
Remarks:			

Table 7.8.2 Average time of occupancy test results

OPERATING FREQUENCY RANGE: 5726 – 5849 MHz
MODULATION: FSK
DETECTOR USED: Peak
RESOLUTION BANDWIDTH: 2 MHz
VIDEO BANDWIDTH: 3 MHz
NUMBER OF HOPPING FREQUENCIES: 62
INVESTIGATED PERIOD: 24.8 s
FREQUENCY HOPPING: Enabled

Single transmission duration, ms	Single transmission period, ms	Average time of occupancy*, s	Limit, s	Margin, s**	Verdict
49.8	52	0.383	0.4	0.017	Pass

* - Average time of occupancy = Single transmission duration × (Investigated period / Channels number/Single transmission period).
** - Margin = Average time of occupancy – specification limit.

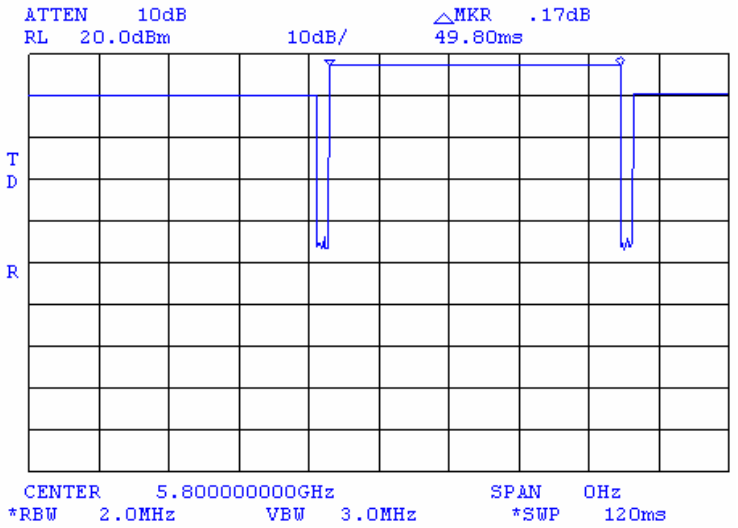
Reference numbers of test equipment used

HL 1424	HL 1650	HL 1651	HL 2254				

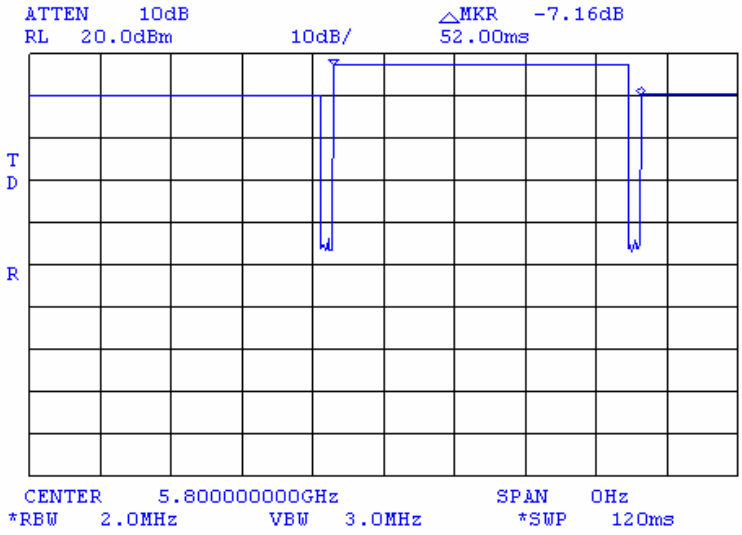
Full description is given in Appendix A.

Test specification:	Section 15.247(a)(1)(iii), Average time of occupancy		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/1/2003 4:03:01 PM		
Temperature: 25 °C	Air Pressure: 1011 hPa	Relative Humidity: 39 %	Power Supply: 120 VAC
Remarks:			

Plot 7.8.1 Single transmission duration measurement



Plot 7.8.2 Single transmission period measurement



Test specification:	Section 15.207(a), 15.107 Conducted emission		
Test procedure:	ANSI C63.4, Section 13.1.3; Sections 11.5 and 12.1.3		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/1/2003 4:03:01 PM		
Temperature: 24 ºC	Air Pressure: 1011 hPa	Relative Humidity: 44 %	Power Supply: 120 V AC
Remarks:			

7.9 Conducted emissions

7.9.1 General

This test was performed to measure common mode conducted emissions at the power port. Specification test limits are given in Table 7.9.1. The worst test results (the lowest margins) were recorded in Table 7.9.2 and shown in the associated plots.

Table 7.9.1 Limits for conducted emissions

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

* The limit decreases linearly with the logarithm of frequency.

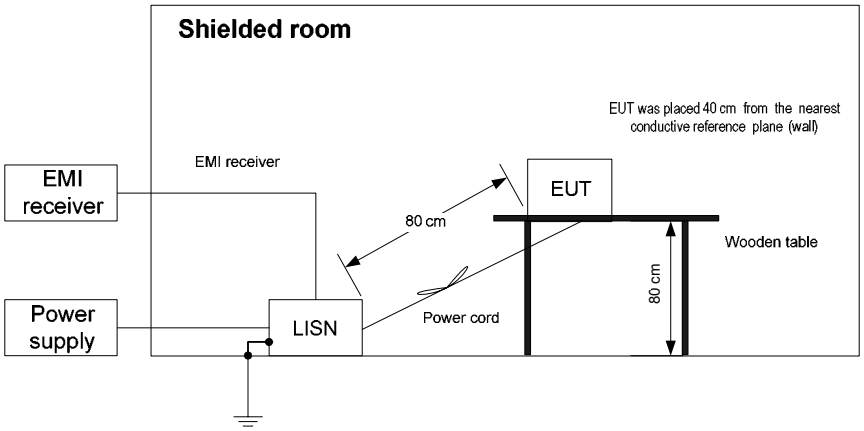
7.9.2 Test procedure

7.9.2.1 The EUT was set up as shown in Figure 7.9.1 and associated photographs, energized and the performance check was conducted.

7.9.2.2 The measurements were performed at power terminals with the LISN, connected to a spectrum analyzer in the frequency range referred to in Table 7.9.2. Unused coaxial connector of the LISN was terminated with 50 Ohm. Quasi-peak and average detectors were used throughout the testing.

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

Figure 7.9.1 Setup for conducted emission measurements, table-top equipment



Test specification:	Section 15.207(a), 15.107 Conducted emission		
Test procedure:	ANSI C63.4, Section 13.1.3; Sections 11.5 and 12.1.3		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/1/2003 4:03:01 PM		
Temperature: 24 ºC	Air Pressure: 1011 hPa	Relative Humidity: 44 %	Power Supply: 120 V AC
Remarks:			

Table 7.9.2 Conducted emission test results

DETECTOR USED: QUASI-PEAK, AVERAGE
FREQUECNY RANGE: 150 kHz – 30 MHz
OPERATION MODE: TRANSMITTING
RESOLUTION BANDWIDTH: 9 kHz

EUT: SPR 5.8GHz TDD

Frequency, MHz	Quasi-peak			Average			Line ID	Verdict
	Measured emission, dB(µV)	Limit, dB(µV)	Margin, dB*	Measured emission, dB(µV)	Limit, dB(µV)	Margin, dB*		
0.180771	55.62	64.50	-8.88	43.91	54.50	-10.59	L1	Pass
0.240515	46.44	62.10	-15.66	36.25	52.10	-15.85		
3.825606	39.22	56.00	-16.78	38.89	46.00	-7.11		
4.207961	44.84	56.00	-11.16	44.48	46.00	-1.52		
4.973320	41.67	56.00	-14.33	41.16	46.00	-4.84		
13.395018	41.38	60.00	-18.62	36.89	50.00	-13.11		
0.180670	55.57	64.50	-8.93	41.89	54.50	-12.61	L2	Pass
0.240510	46.29	62.10	-15.81	33.99	52.10	-18.11		
4.200023	45.25	56.00	-10.75	44.67	46.00	-1.33		
4.582186	43.12	56.00	-12.88	42.40	46.00	-3.60		
4.963644	42.22	56.00	-13.78	41.64	46.00	-4.36		
13.746861	42.24	60.00	-17.76	37.38	50.00	-12.62		

*- Margin = Measured emission - specification limit.

Test specification:	Section 15.207(a), 15.107 Conducted emission		
Test procedure:	ANSI C63.4, Section 13.1.3; Sections 11.5 and 12.1.3		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/1/2003 4:03:01 PM		
Temperature: 24 ºC	Air Pressure: 1011 hPa	Relative Humidity: 44 %	Power Supply: 120 V AC
Remarks:			

EUT: BSR 5.8GHz TDD

Frequency, MHz	Quasi-peak			Average			Line ID	Verdict
	Measured emission, dB(µV)	Limit, dB(µV)	Margin, dB*	Measured emission, dB(µV)	Limit, dB(µV)	Margin, dB*		
0.180670	55.08	64.50	-9.42	43.53	54.50	-10.97	L1	Pass
0.241080	46.51	62.07	-15.56	35.34	52.07	-16.73		
4.197543	44.81	56.00	-11.19	44.66	46.00	-1.34		
4.579390	43.03	56.00	-12.97	42.06	46.00	-3.94		
4.960468	42.05	56.00	-13.95	41.86	46.00	-4.14		
13.979360	43.71	60.00	-16.29	38.57	50.00	-11.43		
0.181025	54.80	64.49	-9.69	43.77	54.49	-10.72	L2	Pass
0.240493	46.65	62.10	-15.45	35.88	52.10	-16.22		
3.811215	38.54	56.00	-17.46	38.28	46.00	-7.72		
4.192390	43.89	56.00	-12.11	43.61	46.00	-2.39		
14.099443	43.91	60.00	-16.09	38.43	50.00	-11.57		

*- Margin = Measured emission - specification limit.

Reference numbers of test equipment used

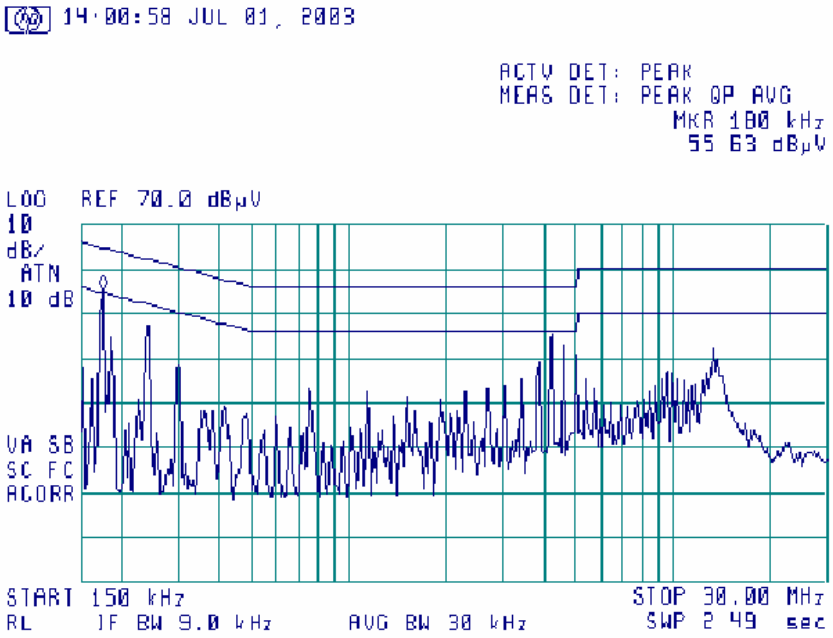
HL 0163	HL 0672	HL 0787	HL 1430	HL 1502	HL 1510		

Full description is given in Appendix A.

Test specification:	Section 15.207(a), 15.107 Conducted emission		
Test procedure:	ANSI C63.4, Section 13.1.3; Sections 11.5 and 12.1.3		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/1/2003 4:03:01 PM		
Temperature: 24 °C	Air Pressure: 1011 hPa	Relative Humidity: 44 %	Power Supply: 120 V AC
Remarks:			

Plot 7.9.1 Conducted emission measurements at "SPR 5.8 GHz TDD" AC mains

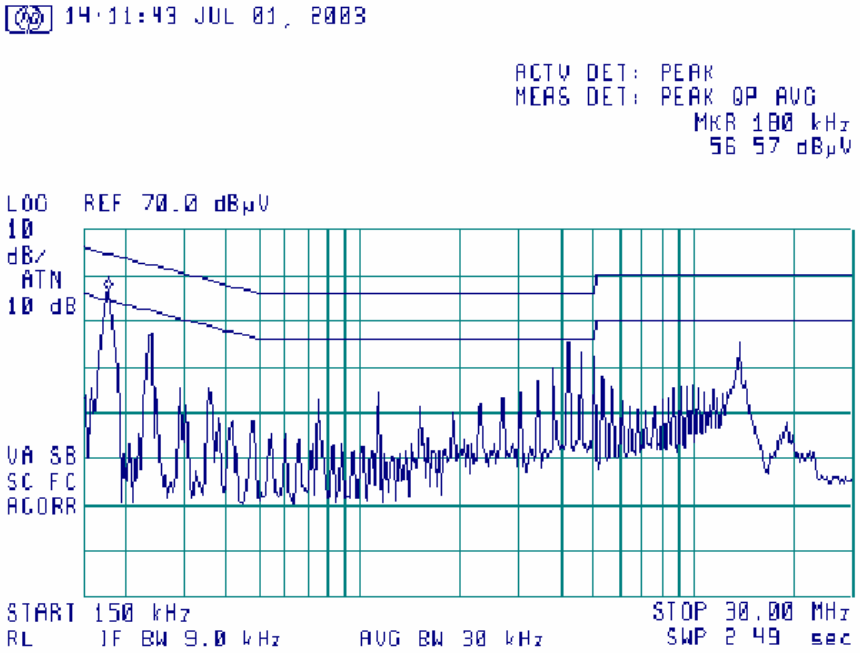
LINE: L1
EUT OPERATING MODE: Transmit
LIMIT: QUASI-PEAK, AVERAGE
DETECTOR: PEAK



Test specification:	Section 15.207(a), 15.107 Conducted emission		
Test procedure:	ANSI C63.4, Section 13.1.3; Sections 11.5 and 12.1.3		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/1/2003 4:03:01 PM		
Temperature: 24 °C	Air Pressure: 1011 hPa	Relative Humidity: 44 %	Power Supply: 120 V AC
Remarks:			

Plot 7.9.2 Conducted emission measurements at "SPR 5.8 GHz TDD" AC mains

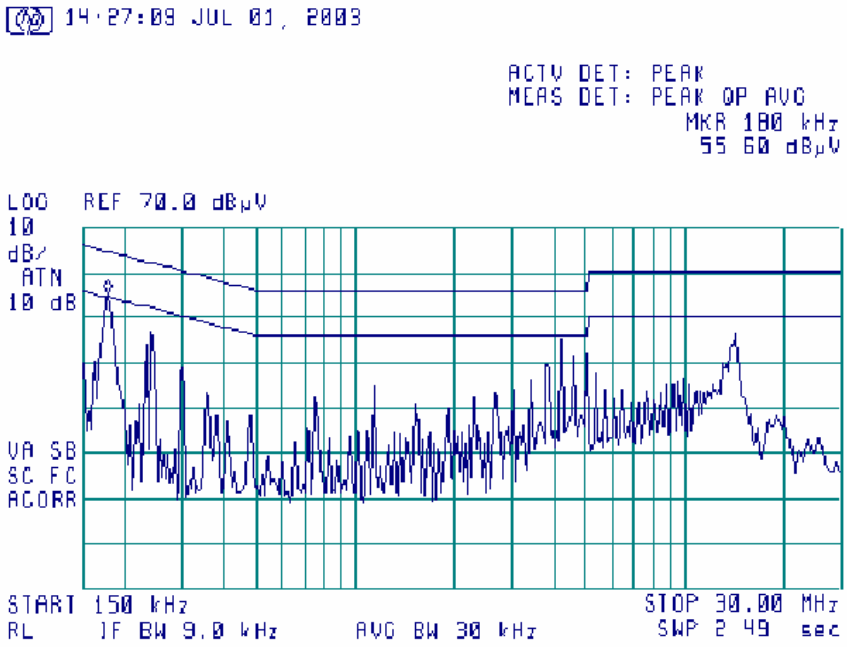
LINE:	L2
EUT OPERATING MODE:	Transmit
LIMIT:	QUASI-PEAK, AVERAGE
DETECTOR:	PEAK



Test specification:	Section 15.207(a), 15.107 Conducted emission		
Test procedure:	ANSI C63.4, Section 13.1.3; Sections 11.5 and 12.1.3		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/1/2003 4:03:01 PM		
Temperature: 24 °C	Air Pressure: 1011 hPa	Relative Humidity: 44 %	Power Supply: 120 V AC
Remarks:			

Plot 7.9.3 Conducted emission measurements at "BSR 5.8 GHz TDD" AC mains

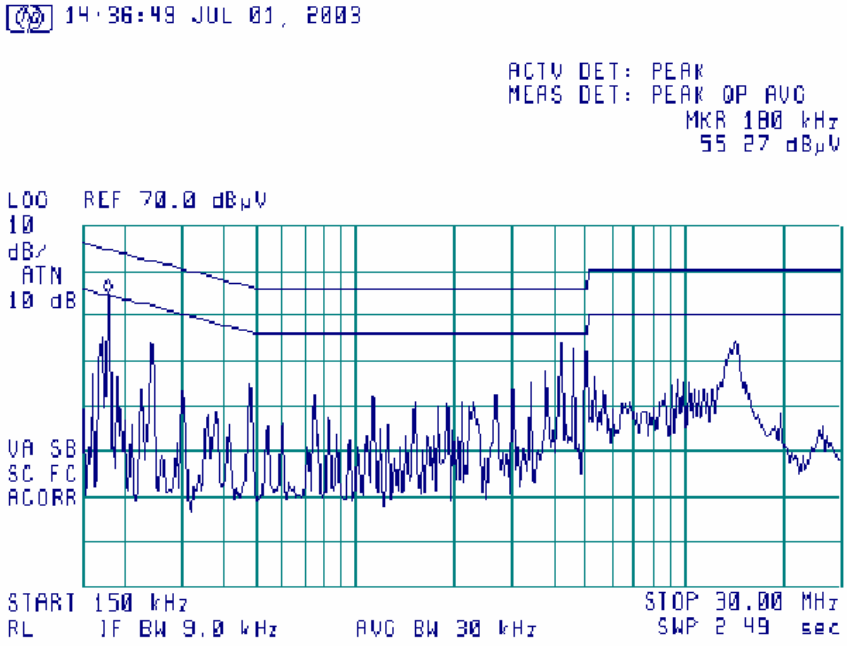
LINE: L1
EUT OPERATING MODE: Transmit
LIMIT: QUASI-PEAK, AVERAGE
DETECTOR: PEAK



Test specification:	Section 15.207(a), 15.107 Conducted emission		
Test procedure:	ANSI C63.4, Section 13.1.3; Sections 11.5 and 12.1.3		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/1/2003 4:03:01 PM		
Temperature: 24 °C	Air Pressure: 1011 hPa	Relative Humidity: 44 %	Power Supply: 120 V AC
Remarks:			

Plot 7.9.4 Conducted emission measurements at "BSR 5.8 GHz TDD" AC mains

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



Test specification:	Section 15.109, Radiated emission		
Test procedure:	ANSI C63.4, Sections 11.6 and 12.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:24:17 PM		
Temperature: 24 ºC	Air Pressure: 1012 hPa	Relative Humidity: 39 %	Power Supply: 48 VDC
Remarks:			

7.10 Unintentional radiated emission tests according to 47CFR part 15 subpart B requirements

7.10.1 General

This test was performed to measure radiated emissions from the EUT enclosure. Specification test limits are given in Table 7.10.1.

Table 7.10.1 Radiated emission test limits

Frequency, MHz	Class B limit, dB(μV/m)		Class A limit, dB(μV/m)	
	10 m distance	3 m distance	10 m distance	3 m distance
30 - 88	29.5*	40.0	39.0	49.5*
88 - 216	33.0*	43.5	43.5	54.0*
216 - 960	35.5*	46.0	46.4	56.9*
Above 960	43.5*	54.0	49.5	60.0*

* The limit for test distance other than specified was calculated using the inverse linear distance extrapolation factor as follows: $Lim_{S2} = Lim_{S1} + 20 \log (S_1/S_2)$,
where S_1 and S_2 – standard defined and test distance respectively in meters.

7.10.2 Test procedure for measurements in semi-anechoic chamber

7.10.2.1 The EUT was set up as shown in Figure 7.10.1 and associated photograph/s, energized and the performance check was conducted.

7.10.2.2 The specified frequency range was investigated with biconilog antenna connected to EMI receiver. To find maximum radiation the turntable was rotated 360^0, the measuring antenna height was changed from 1 to 4 m, its polarization was switched from vertical to horizontal and the EUT cables position was varied.

7.10.2.3 The worst test results (the lowest margins) were recorded in Table 7.10.2 and shown in the associated plots.

7.10.3 Test procedure for measurements at OATS

7.10.3.1 The EUT was set up as shown in Figure 7.10.1 and associated photograph/s, energized and the performance check was conducted.

7.10.3.2 Preliminary measurements were performed in the anechoic chamber at 3 m test distance. The specified frequency range was investigated with biconical and log periodic antennas connected to EMI receiver. To find maximum radiation the turntable was rotated 360^0, the measuring antenna height was changed, its polarization was switched from vertical to horizontal and the EUT cables position was varied.

7.10.3.3 The EUT was set up as shown in Figure 7.10.2, energized and the performance check was conducted.

7.10.3.4 Final measurements were performed at the open area test site at 10 m test distance. The EUT wires and cables were arranged to produce maximum emission as it was found during preliminary measurements. The frequencies yield the worst test results (the lowest margins) during preliminary testing were investigated with biconilog antenna connected to EMI receiver. To find maximum radiation the turntable was rotated 360^0, the measuring antenna height was changed from 1 to 4 m and its polarization was changed from vertical to horizontal. At frequencies where high ambient noise was encountered, the final measurements were taken in the anechoic chamber at 3 m distance.

7.10.3.5 The worst test results (the lowest margins) were recorded in Table 7.10.2 and shown in the associated plots.

Test specification:	Section 15.109, Radiated emission		
Test procedure:	ANSI C63.4, Sections 11.6 and 12.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:24:17 PM		
Temperature: 24 ºC	Air Pressure: 1012 hPa	Relative Humidity: 39 %	Power Supply: 48 VDC
Remarks:			

Figure 7.10.1 Setup for radiated emission measurements in anechoic chamber, table-top equipment

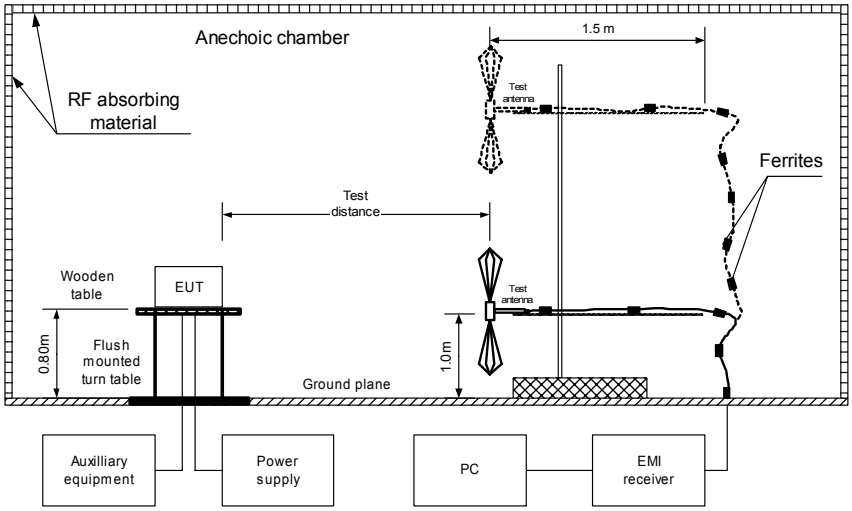
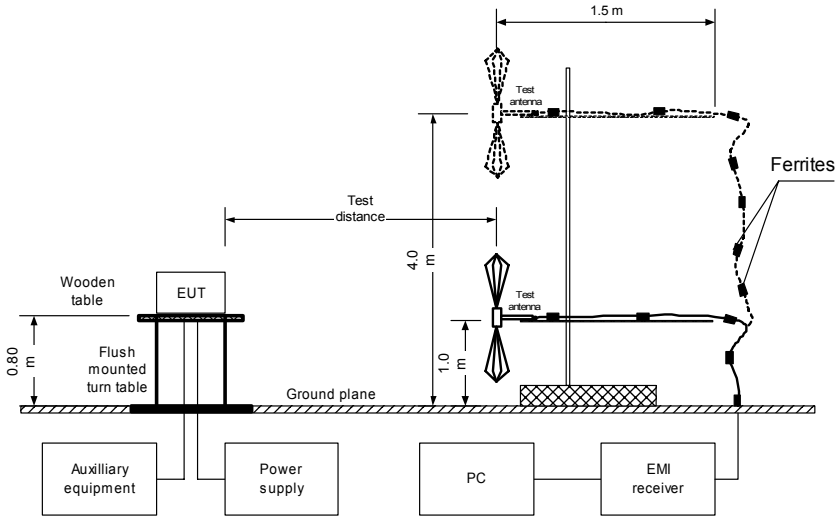


Figure 7.10.2 Setup for radiated emission measurements at OATS, table-top equipment



Test specification:	**Section 15.109, Radiated emission**		
Test procedure:	ANSI C63.4, Sections 11.6 and 12.1.4		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	10/25/2004 3:24:17 PM		
Temperature: 24 ºC	**Air Pressure:** 1012 hPa	**Relative Humidity:** 39 %	**Power Supply:** 48 VDC
Remarks:			

Table 7.10.2 Radiated emission test results

EUT SET UP: TABLE-TOP
LIMIT: Class B
EUT OPERATING MODE: Receive
TEST SITE: SEMI ANECHOIC CHAMBER
TEST DISTANCE: 3 m
DETECTORS USED: PEAK / QUASI-PEAK
FREQUENCY RANGE: 30 MHz – 1000 MHz
RESOLUTION BANDWIDTH: 120 kHz

Frequency, MHz	Peak emission, dB(µV/m)	Quasi-peak			Antenna polarization	Antenna height, m	Turn-table position**, degrees	Verdict
		Measured emission, dB(µV/m)	Limit, dB(µV/m)	Margin, dB*				
40.088300	34.06	30.76	40.00	-9.24	V	1	236	Pass
101.760463	32.69	29.81	43.50	-13.69	V	1	103	
293.396400	33.18	31.20	46.00	-14.80	V	1	50	
320.100000	40.54	38.37	46.00	-7.63	V	1	333	
480.000200	35.94	33.22	46.00	-12.78	V	1	161	
875.013000	40.06	32.49	46.00	-13.51	H	1	286	
948.147000	41.92	33.22	46.00	-12.78	V	1	178	

TEST SITE: OATS
TEST DISTANCE: 3 m
DETECTORS USED: PEAK / AVERAGE
FREQUENCY RANGE: 1000 MHz – 33 GHz
RESOLUTION BANDWIDTH: 1000 kHz

Frequency, MHz	Peak emission, dB(µV/m)	Average			Antenna polarization	Antenna height, m	Turn-table position**, degrees	Verdict
		Measured emission, dB(µV/m)	Limit, dB(µV/m)	Margin, dB*				
1389.00433	41.76	39.13	54.00	-14.87	H	1.8	230	Pass
1584.00500	41.94	38.46	54.00	-15.54	V	1.4	98	
1872.00250	44.69	41.09	54.00	-12.91	V	1.0	288	
1968.00151	41.84	37.42	54.00	-16.58	H	1.0	45	
19067.6300	42.67	37.83	54.00	-16.17	V	1.0	234	

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

Reference numbers of test equipment used

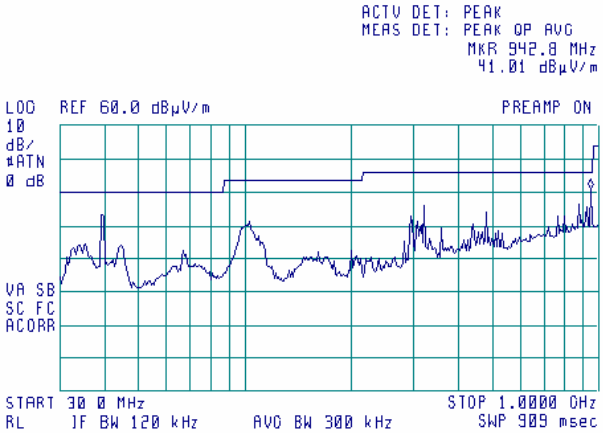
HL 0421	HL 0465	HL 0589	HL 0604	HL 1947	HL 1984	HL 2009	

Full description is given in Appendix A.

Test specification:	Section 15.109, Radiated emission		
Test procedure:	ANSI C63.4, Sections 11.6 and 12.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:24:17 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 39 %	Power Supply: 48 VDC
Remarks:			

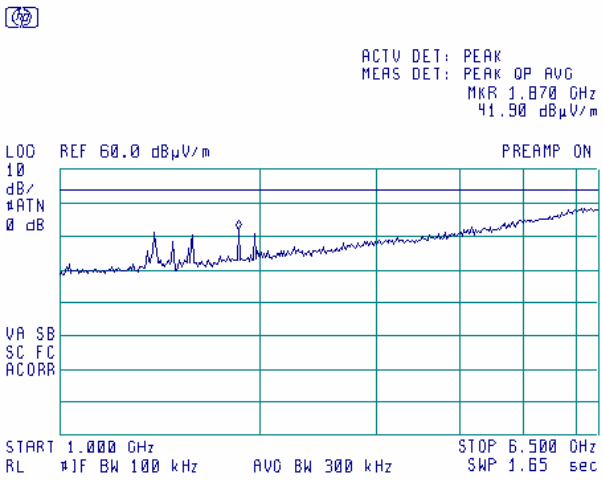
Plot 7.10.1 Radiated emission measurements in 30- 1000 MHz range, vertical and horizontal antenna polarization

TEST SITE: Semi anechoic chamber
LIMIT: Class B
TEST DISTANCE: 3 m
EUT OPERATING MODE: Receive



Plot 7.10.2 Radiated emission measurements 1000 to 6500 MHz, vertical and horizontal antenna polarization

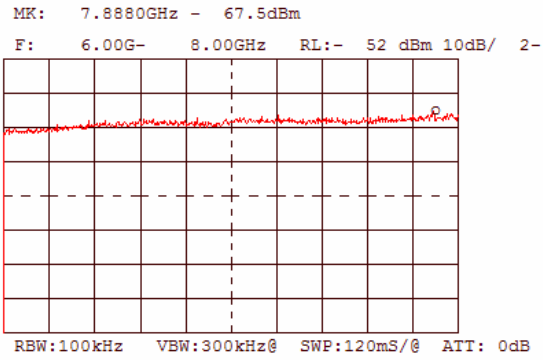
TEST SITE: Semi anechoic chamber
LIMIT: Class B
TEST DISTANCE: 3 m
EUT OPERATING MODE: Receive



Test specification:	Section 15.109, Radiated emission		
Test procedure:	ANSI C63.4, Sections 11.6 and 12.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:24:17 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 39 %	Power Supply: 48 VDC
Remarks:			

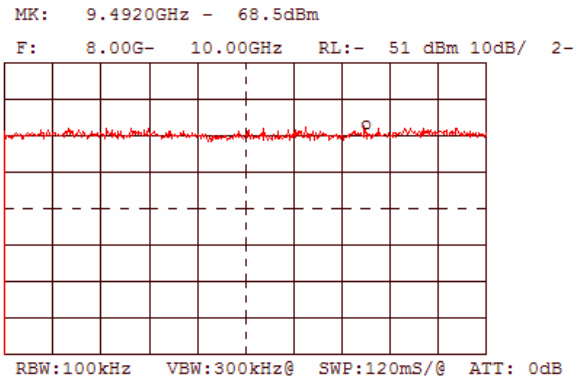
Plot 7.10.3 Radiated emission measurements 6000 to 8000 MHz, vertical and horizontal antenna polarization

TEST SITE:	Semi anechoic chamber
LIMIT:	Class B
TEST DISTANCE:	3 m
EUT OPERATING MODE:	Receive



Plot 7.10.4 Radiated emission measurements 8000 to 10000 MHz, vertical and horizontal antenna polarization

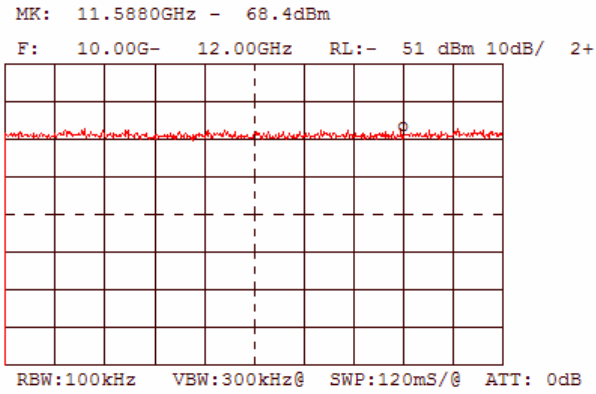
TEST SITE:	Semi anechoic chamber
LIMIT:	Class B
TEST DISTANCE:	3 m
EUT OPERATING MODE:	Receive



Test specification:	Section 15.109, Radiated emission		
Test procedure:	ANSI C63.4, Sections 11.6 and 12.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:24:17 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 39 %	Power Supply: 48 VDC
Remarks:			

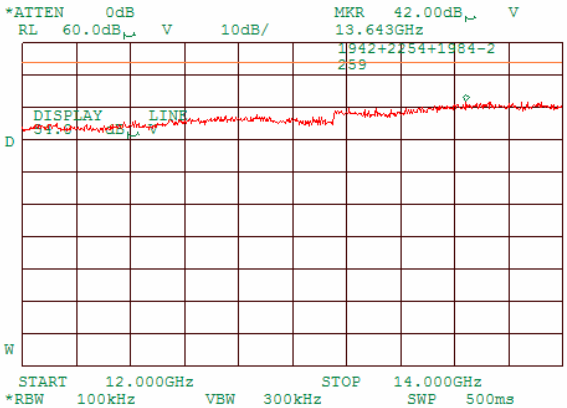
Plot 7.10.5 Radiated emission measurements 10000 to 12000 MHz, vertical and horizontal antenna polarization

TEST SITE:	Semi anechoic chamber
LIMIT:	Class B
TEST DISTANCE:	3 m
EUT OPERATING MODE:	Receive



Plot 7.10.6 Radiated emission measurements 12000 to 14000 MHz, vertical and horizontal antenna polarization

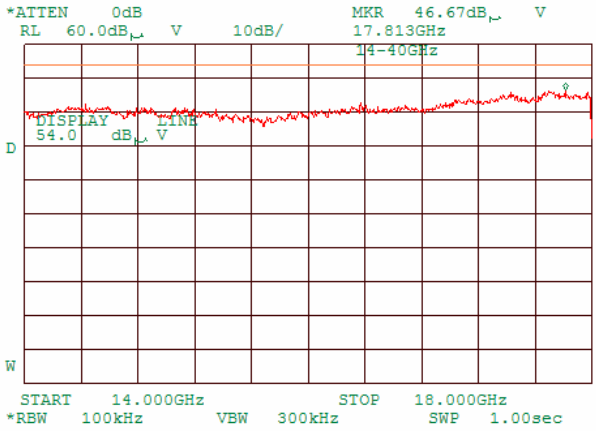
TEST SITE:	Semi anechoic chamber
LIMIT:	Class B
TEST DISTANCE:	3 m
EUT OPERATING MODE:	Receive



Test specification:	Section 15.109, Radiated emission		
Test procedure:	ANSI C63.4, Sections 11.6 and 12.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:24:17 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 39 %	Power Supply: 48 VDC
Remarks:			

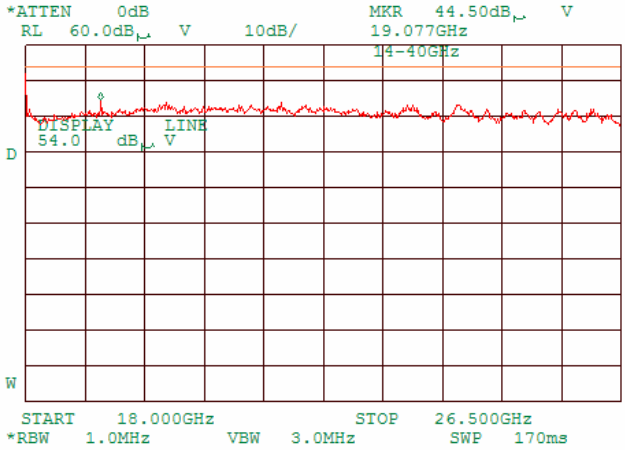
Plot 7.10.7 Radiated emission measurements 14000 to 18000 MHz, vertical and horizontal antenna polarization

TEST SITE:	Semi anechoic chamber
LIMIT:	Class B
TEST DISTANCE:	3 m
EUT OPERATING MODE:	Receive



Plot 7.10.8 Radiated emission measurements 18000 to 26500 MHz, vertical and horizontal antenna polarization

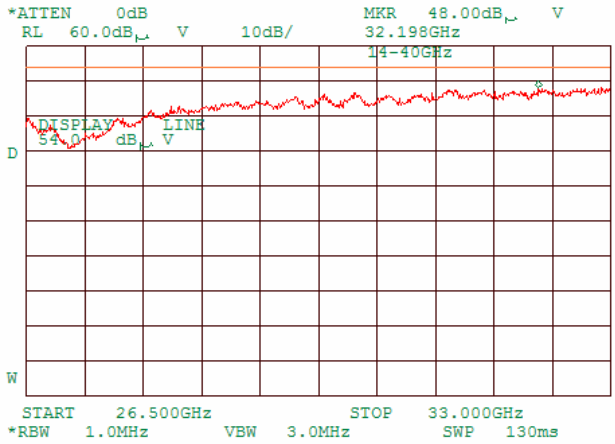
TEST SITE:	Semi anechoic chamber
LIMIT:	Class B
TEST DISTANCE:	3 m
EUT OPERATING MODE:	Receive



Test specification:	Section 15.109, Radiated emission		
Test procedure:	ANSI C63.4, Sections 11.6 and 12.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	10/25/2004 3:24:17 PM		
Temperature: 24 °C	Air Pressure: 1012 hPa	Relative Humidity: 39 %	Power Supply: 48 VDC
Remarks:			

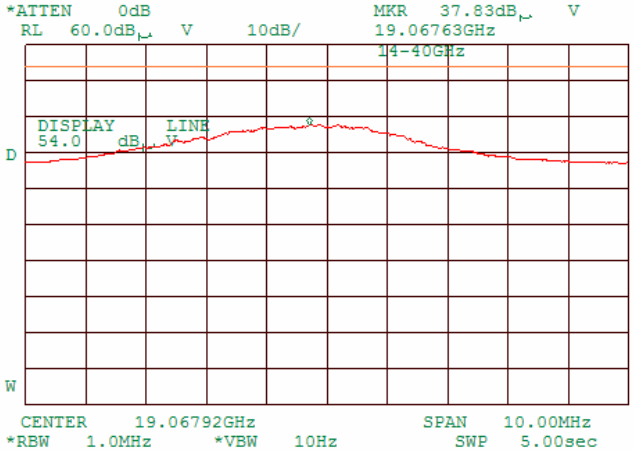
Plot 7.10.9 Radiated emission measurements 26500 to 33000 MHz, vertical and horizontal antenna polarization

TEST SITE: Semi anechoic chamber
LIMIT: Class B
TEST DISTANCE: 3 m
EUT OPERATING MODE: Receive



Plot 7.10.10 Radiated emission measurements at 19.06763 GHz the low carrier frequency

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



8 APPENDIX A Test equipment and ancillaries used for tests

HL No	Description	Manufacturer	Model	Ser. No.	Last Cal.	Due Cal.
0041	Antenna, Double Ridged Guide (horn), 1 - 18 GHz	Electro-Metrics	RGA 50/60	2811	30-Dec-04	30-Dec-05
0163	LISN FCC/VDE/MIL-STD	Electro-Metrics	ANS 25/2	1314	01-Oct-04	01-Oct-05
0410	Cable, Coax, Microwave, DC-18 GHz, N-N, 1 m	Gore	PFP01P0 1039.4	9338767	17-Oct-04	17-Oct-05
0411	Cable, Coax, Microwave, DC-18 GHz, N-N, 2 m	Gore	36Q01Q0 10788	9338768	17-Oct-04	17-Oct-05
0421	Oscilloscope, CRT storage, 100 MHz	Tektronix	466	B151907	17-Oct-04	17-Oct-05
0446	Antenna, Loop active, 10kHz-30MHz	EMCO	6502	2857	28-Jun-04	28-Jun-05
0465	Anechoic Chamber 9(L) x 6.5(W) x 5.5(H) m	HL	AC - 1	023	10-Oct-04	10-Oct-05
0521	EMI Receiver (Spectrum Analyzer) with RF filter section 9 kHz-2.9 GHz	Hewlett Packard	8546A	3617A 00319, 3448A002 53	10-Oct-04	10-Oct-05
0589	Cable Coaxial, GORE A2P01POL118, 2.3 m	HL	GORE-3	176	02-Dec-04	02-Dec-05
0592	Position Controller	HL	L2-SR3000 (HL CRL-3)	100	02-Dec-04	02-Dec-05
0593	Antenna Mast, 1-4 m Pneumatic	Madgesh	AM-F1	101	02-Dec-04	02-Dec-05
0594	Turn Table FOR ANECHOIC CHAMBER flush mount d=1.2 m Pneumatic	HL	TT-WDC1	102	02-Dec-04	02-Dec-05
0604	Antenna BiconiLog Log-Periodic/T Bow-TIE 26 - 2000 MHz	EMCO	3141	9611-1011	10-Jan-05	10-Jan-06
0672	Shielded Room 4,6(L) x 4,2(W) x 2,4(H) m	HL	SR - 3	027	10-Jan-05	10-Jan-06
0768	Antenna Standard Gain Horn,18-26.5 GHz, WR-42, K-band, Gain - 25 dB	Quinstar Technology	QWH-4200-BA	110	10-Jan-05	10-Jan-06
0769	Antenna Standard Gain Horn, 26.5-40 GHz, WR28, Ka band, Gain 25 dB	Quinstar Technology	QWH-2800-BA	112	10-Jan-05	10-Jan-06
0787	Transient Limiter	Hewlett Packard	11947A	3107A018 77	21-Nov-04	21-Nov-05
1004	Cable Coaxial , ANDREW PSWJ4 , 6m	HL	ANDREW -6	163	02-Dec-04	02-Dec-05
1200	Quadruplexer 1-12 GHz (1-2 GHz; 2-4GHz;4-8 GHz; 8-12GHz)	Elettronica S.p.A. - Roma	UE 84	D/00240	21-Jul-04	21-Jul-05
1424	Spectrum Analyzer, 30 Hz- 40 GHz	Agilent Technologies (HP)	8564EC	3946A002 19	30-Aug-04	30-Aug-05
1430	EMI Receiver, 9 kHz - 2.9 GHz, System: HL1431, HL1432	Agilent Technologies (HP)	8542E	3807A002 62,3705A0 0217	01-Sep-04	01-Sep-05
1502	Cable RF, 6 m	Belden	M17/167 MIL-C-17	1502	02-Dec-04	02-Dec-05
1510	Cable RF, 8 m	Belden	M17/167 MIL-C-17	1510	02-Dec-04	02-Dec-05
1566	Cable RF, 2 m	Huber-Suhner	Sucoflex 104PE	13094/4PE	02-Dec-04	02-Dec-05
1650	Attenuators Set (2, 3, 5, 20 dB), DC-18 GHz	M/A-COM	2082	1650	03-Jan-05	03-Jan-06
1651	Attenuators Set (2, 3, 5, 20 dB), DC-18 GHz	M/A-COM	2082	1651	03-Jan-05	03-Jan-06

HL No	Description	Manufacturer	Model	Ser. No.	Last Cal.	Due Cal.
1940	Cable 40GHz, 1.5 m, blue	Rhophase Microwave Limited	KPS-1503A-1500-KPS	T4663	03-Jan-05	03-Jan-06
1942	Cable 18GHz, 4 m, blue	Rhophase Microwave Limited	SPS-1803A-4000-NPS	T4658	17-Oct-04	17-Oct-05
1947	Cable 18GHz, 6.5 m, blue	Rhophase Microwave Limited	NPS-1803A-6500-NPS	T4974	17-Oct-04	17-Oct-05
1984	Antenna, Double-Ridged Waveguide Horn, 1-18 GHz, 300 W, N-type	EMC Test Systems	3115	9911-5964	21-Jul-04	21-Jul-05
2009	Cable RF, 8 m	Alpha Wire	RG-214	C-56	02-Dec-04	02-Dec-05
2254	Cable 40GHz, 0.8 m, blue	Rhophase Microwave Limited	KPS-1503A-800-KPS	W4907	21-Jul-04	21-Jul-05
2259	Amplifier Low Noise 2-20 GHz	Sophia Wireless	LNA0220-C	0223	05-Nov-04	05-Nov-05
2260	Amplifier Low Noise 14-33 GHz	Sophia Wireless	LNA28-B	0233	05-Nov-04	05-Nov-05
2261	Amplifier Low Noise 33-40 GHz	Sophia Wireless	LNA38-B	0234	05-Nov-04	05-Nov-05
2273	Power Supply 11V for HL2258, HL2259, HL2260, HL2261	HL	S-11	2273	16-Dec-04	16-Dec-05
2274	Power Supply 11V for HL2258, HL2259, HL2260, HL2261	HL	S-11		16-Dec-04	16-Dec-05
2387	Filter Bandpass, 8-14 GHz	HL	FBP8-14	2387	16-Dec-04	16-Dec-05
2399	Cable 40GHz, 1.5 m, blue	Rhophase Microwave Limited	KPS-1503A-1500-KPS	X2945	16-Dec-04	16-Dec-05

9 APPENDIX B Measurement uncertainties

Expanded uncertainty at 95% confidence in Hermon Labs EMC measurements

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

The test equipment has been calibrated according to its recommended procedures and is within the manufacturer's published limit of error. The standards and instruments used in the calibration system conform to the present requirements of ISO/IEC 17025 (or alternately ANSI/NCSL Z540-1).
The laboratory calibrates its measurement standards by a third party (traceable to NIST, USA) on a regular basis according to equipment manufacturer requirements. The Hermon Labs EMC measurements uncertainty is given in the table above.
Person for contact: Mr. Alex Usoskin, QA manager.

10 APPENDIX C Test facility description

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

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website: www.hermonlabs.com

Person for contact: Mr. Alex Usoskin, QA manager.

11 APPENDIX D Specification references

47CFR part 15: 2004	Radio Frequency Devices.
Public notice DA 00- 705: 2000	Filing and measurement guidelines for frequency hopping spread spectrum systems.
ANSI C63.2: 1996	American National Standard for Instrumentation-Electromagnetic Noise and Field Strength, 10 kHz to 40 GHz-Specifications.
ANSI C63.4: 2001	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 Abbreviations and acronyms

A	ampere
AC	alternating current
A/m	ampere per meter
AM	amplitude modulation
AVRG	average (detector)
cm	centimeter
dB	decibel
dBm	decibel referred to one milliwatt
dB(μV)	decibel referred to one microvolt
dB(μV/m)	decibel referred to one microvolt per meter
dB(μA)	decibel referred to one microampere
dBΩ	decibel referred to one Ohm
DC	direct current
DTS	digital transmission system
EIRP	equivalent isotropically radiated power
ERP	effective radiated power
EUT	equipment under test
F	frequency
FHSS	frequency hopping spread spectrum
GHz	gigahertz
GND	ground
H	height
HL	Hermon laboratories
Hz	hertz
ITE	information technology equipment
k	kilo
kHz	kilohertz
LISN	line impedance stabilization network
LO	local oscillator
m	meter
MHz	megahertz
min	minute
mm	millimeter
ms	millisecond
μs	microsecond
NA	not applicable
NT	not tested
OATS	open area test site
Ω	Ohm
PCB	printed circuit board
PM	pulse modulation
PS	power supply
ppm	part per million (10^{-6})
QP	quasi-peak
RE	radiated emission
RF	radio frequency
rms	root mean square
Rx	receive
s	second
T	temperature
Tx	transmit
V	volt
VA	volt-ampere

13 APPENDIX F Test equipment correction factors

Correction factor
Line impedance stabilization network
Model ANS-25/2
Electro-Metrics, HL 0163

Frequency, MHz	Correction factor, dB	Frequency, MHz	Correction factor, dB
0.01	4.7	3.0	0.1
0.02	2.1	4.0	0.1
0.03	1.1	5.0	0.1
0.04	0.7	6.0	0.1
0.05	0.5	10.0	0.1
0.1	0.2	12.0	0.1
0.2	0.1	16.0	0.1
0.4	0.1	18.0	0.1
0.6	0.1	20.0	0.1
0.8	0.1	25.0	0.1
1.0	0.1	28.0	0.1
2.0	0.1	30.0	0.1

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

Antenna factor

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

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

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

Antenna factor
Double-ridged wave guide horn antenna
EMC Test Systems, model 3115, serial no: 9911-5964, HL 1984

Frequency, MHz	Antenna gain, dBi	Antenna factor. dB(1/m)
1000.0	5.8	24.5
1500.0	9.0	24.8
2000.0	8.6	27.7
2500.0	9.5	28.7
3000.0	8.9	30.8
3500.0	8.2	32.9
4000.0	9.6	32.7
4500.0	11.2	32.1
5000.0	10.6	33.6
5500.0	9.8	35.3
6000.0	10.1	35.7
6500.0	10.7	35.8
7000.0	10.9	36.2
7500.0	10.5	37.2
8000.0	11.1	37.2
8500.0	10.8	38.1
9000.0	10.7	38.6
9500.0	11.5	38.3
10000.0	11.8	38.4
10500.0	12.3	38.3
11000.0	12.3	38.8
11500.0	11.5	39.9
12000.0	12.2	39.6
12500.0	12.6	39.5
13000.0	12.0	40.5
13500.0	11.7	41.1
14000.0	11.7	41.5
14500.0	12.7	40.8
15000.0	14.2	39.5
15500.0	16.0	38.1
16000.0	16.2	38.1
16500.0	14.5	40.1
17000.0	12.2	42.6
17500.0	9.7	45.4
18000.0	6.6	48.7

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

Antenna Factor
Active Loop Antenna
EMC Test Systems, model 6502, serial number 2857, HL 0446

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

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

Antenna factor
Standard gain horn antenna
Quinstar Technology
Model QWH
Ser.No.112, HL 0768, 0769, 0770

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

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

Antenna factor
Double ridged guide antenna
Model RGA-50/60
S/N 2811, HL 0041

Frequency, MHz	Antenna factor, dB(1/m)
1000	24.3
1500	25.4
2000	28.4
2500	29.2
3000	30.5
3500	31.6
4000	33.7
4500	32.2
5000	34.5
5500	34.5
6000	34.6
6500	35.3
7000	35.5
7500	35.9
8000	36.6
8500	37.3
9000	37.7
9500	37.7
10000	38.2
10500	38.5
11000	39.0
11500	40.1
12000	40.2
12500	39.3
13000	39.9
13500	40.6
14000	41.1
14500	40.5
15000	39.9
15500	37.8
16000	39.1
16500	41.1
17000	41.7
17500	45.1
18000	44.3

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

Cable loss
Cable coaxial, 6 m, model: M17/167 MIL-C-17, HL 1502

Frequency, MHz	Cable loss, dB
0.1	0.02
1	0.07
3	0.15
5	0.17
10	0.26
30	0.43
50	0.57
80	0.72
100	0.81
300	1.48
500	2.00
800	2.70
1000	3.09

Cable loss
Cable M17/167 MIL-C-17, HL 1510

No.	Frequency, MHz	Cable loss, dB
1	0.1	0.05
2	1	0.09
3	3	0.16
4	5	0.18
5	10	0.27
6	30	0.44
7	50	0.58
8	80	0.69
9	100	0.82
10	300	1.48
11	500	2.01
12	800	2.65
13	1000	3.12

Cable loss
Cable 18 GHz, 6.5 m, blue, model: NPS-1803A-6500-NPS, S/N T4974, HL 1947

Frequency, GHz	Cable loss, dB
0.03	0.30
0.05	0.38
0.10	0.53
0.20	0.74
0.30	0.91
0.40	1.05
0.50	1.18
0.60	1.29
0.70	1.40
0.80	1.50
0.90	1.59
1.00	1.68
1.10	1.77
1.20	1.86
1.30	1.94
1.40	2.01
1.50	2.08
1.60	2.16
1.70	2.22
1.80	2.29
1.90	2.36
2.00	2.42
2.10	2.48
2.20	2.54
2.30	2.60
2.40	2.66
2.50	2.71
2.60	2.77
2.70	2.83
2.80	2.89
2.90	2.95
3.10	3.06
3.30	3.17
3.50	3.28
3.70	3.39
3.90	3.51
4.10	3.62
4.30	3.76
4.50	3.87
4.70	4.01
4.90	4.10
5.10	4.21
5.30	4.31
5.50	4.43
5.70	4.56
5.90	4.71

Frequency, GHz	Cable loss, dB
6.10	4.87
6.30	4.95
6.50	4.94
6.70	4.88
6.90	4.87
7.10	4.83
7.30	4.85
7.50	4.86
7.70	4.91
7.90	4.96
8.10	5.03
8.30	5.08
8.50	5.13
8.70	5.21
8.90	5.22
9.10	5.34
9.30	5.35
9.50	5.52
9.70	5.51
9.90	5.66
10.10	5.70
10.30	5.78
10.50	5.79
10.70	5.82
10.90	5.86
11.10	5.94
11.30	6.06
11.50	6.21
11.70	6.44
11.90	6.61
12.10	6.76
12.40	6.68
13.00	6.66
13.50	6.81
14.00	6.90
14.50	6.90
15.00	6.97
15.50	7.17
16.00	7.28
16.50	7.27
17.00	7.38
17.50	7.68
18.00	7.92

Cable loss
RF cable 8 m, model RG-214, HL 2009

No.	Frequency, MHz	Cable loss, dB	Tolerance (Specification), dB	Measurement uncertainty, dB
1	1	0.10	NA	±0.12
2	10	0.14		
3	30	0.25		
4	50	0.34		
5	100	0.53		
6	300	0.99		
7	500	1.31		
8	800	1.73		
9	1000	1.98		
10	1100	2.11		
11	1200	2.21		
12	1300	2.35		
13	1400	2.46		
14	1500	2.55		
15	1600	2.68		
16	1700	2.78		
17	1800	2.88		
18	1900	2.98		
19	2000	3.09		

Cable loss
Cable coaxial, 40GHz, 1.5 m, Blue, Rhophase Microwave Limited, model: KPS-1503A-1500-KPS, HL 2399

Frequency, GHz	Cable loss, dB	Frequency, GHz	Cable loss, dB	Frequency, GHz	Cable loss, dB
0.03	0.07	6.5	1.57	15.50	2.50
0.05	0.10	6.7	1.60	16.00	2.51
0.1	0.16	6.9	1.55	16.50	2.58
0.2	0.26	7.1	1.65	17.00	2.65
0.3	0.33	7.3	1.65	17.50	2.73
0.5	0.38	7.5	1.70	18.00	2.74
0.7	0.41	7.7	1.71	18.50	2.67
0.9	0.58	7.9	1.73	19.00	2.67
1.1	0.64	8.1	1.79	19.50	2.74
1.3	0.70	8.3	1.81	20.00	2.69
1.5	0.75	8.5	1.84	20.50	2.80
1.7	0.79	8.7	1.85	21.00	2.82
1.9	0.83	8.9	1.90	21.50	2.87
2.1	0.88	9.1	1.95	22.00	2.87
2.3	0.93	9.3	1.93	22.50	2.92
2.5	0.97	9.5	1.98	23.50	3.04
2.7	1.01	9.7	1.96	24.00	3.05
2.9	1.04	9.9	2.03	24.50	3.03
3.1	1.08	10.1	1.99	25.00	3.11
3.3	1.14	10.30	2.02	25.50	3.10
3.5	1.17	10.50	2.02	26.00	3.17
3.7	1.21	10.70	2.02	26.50	3.11
3.9	1.24	10.90	2.08	27.00	3.16
4.1	1.26	11.10	2.02	28.00	3.19
4.3	1.26	11.30	2.09	29.00	3.19
4.5	1.29	11.50	2.05	30.00	3.30
4.7	1.34	11.70	2.11	31.00	3.31
4.9	1.34	11.90	2.11	32.00	3.35
5.1	1.40	12.10	2.12	33.00	3.46
5.3	1.43	12.40	2.17	34.00	3.45
5.5	1.45	13.00	2.29	35.00	3.49
5.7	1.47	13.50	2.31	36.00	3.54
5.9	1.40	14.00	2.43	37.00	3.62
6.1	1.53	14.50	2.43	39.00	3.69
6.3	1.55	15.00	2.46	40.00	3.75