HERMON LABORATORIES

839.01
Electrical

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TEST REPORT

ACCORDING TO: FCC 47CFR part 15 subpart C § 15.247 and subpart B

FOR:

Telematics Wireless Ltd.

Water meter reader

Model: DTMW LCD

Table of contents

1 Applicant information

Client name:	Telematics Wireless Ltd.
Address:	26 Hamelaha street, POB 1911, Holon, 58117, Israel
Telephone:	+972 3557 5767
Fax:	+972 3557 5753
E-mail:	slavas@tlmw.com
Contact name:	Mr. Slava Snitkovsky

2 Equipment under test attributes

Product name:	Water meter reader
Product type:	Transceiver
Model(s):	DTMW LCD
Serial number:	04535847
Hardware version:	A
Software release:	02.07.4P
Receipt date	12/1/2009

3 Manufacturer information

Manufacturer name:	Telematics Wireless Ltd.
Address:	26 Hamelaha street, POB 1911, Holon, 58117, Israel
Telephone:	+972 3557 5767
Fax:	+972 3557 5753
E-Mail:	slavas@tlmw.com
Contact name:	Mr. Slava Snitkovsky

4 Test details

Project ID:	20263
Location:	Hermon Laboratories Ltd. Harakevet Industrial Zone, Binyamina 30500, Israel
Test started:	12/1/2009
Test completed:	12/22/2009
Test specification(s):	FCC 47CFR part 15:2008, subpart C §15.247; subpart B §15.109

5 Tests summary

Test	Status
Transmitter characteristics	
Section 15.247(a)2, 6 dB bandwidth	Pass
Section 15.247(b)3, Peak output power	Pass
FCC section 15.247(i), RF exposure	Pass, the exhibit to the application of certification is provided
Section 15.247(c), Radiated spurious emissions	Pass
Section 15.247(e), Peak power density	Pass
FCC section 15.203, Antenna requirement	Pass
Section 15.207(a), Conducted emission	Not required
Unintentional emissions	
Section 15.109, Radiated emission	Pass

Testing was completed against all relevant requirements of the test standard. The results obtained indicate that the product under test complies in full with the requirements tested.
The test results relate only to the items tested. Pass/ fail decision was based on nominal values.

	Name and Title	Date	Signature
Tested by:	Mrs. E. Pitt, test engineer	December 22, 2009	
Reviewed by:	Mrs. M. Cherniavsky, certification engineer	December 27, 2009	
Approved by:	Mr. M. Nikishin, EMC and radio group manager	December 28, 2009	

6 EUT description

6.1 General information

The EUT, DTMW LCD, is actually a water odometer, offering Automatic Meter Reading – AMR. The device is a 2-Way RF communicator built-in water meter.
The EUT consists of the following units: RF transmitter & receiver with integral antenna and a microcontroller plus simple digital logic, which control the operational modes of the unit. The meter readings are displayed on an internal LCD unit and are transmitted by its RF part to a collecting unit. In addition the specific parameters can be programmed via the RF link.

The EUT is powered from two 3.6 VDC lithium internal batteries. The tests were performed with the EUT using new batteries.

6.2 Operating frequencies

Source	Frequency, MHz
Tx	905.43 - 923.55 MHz
Stand-by mode	14.487

6.3 Changes made in the EUT

No changes were implemented in the EUT.

6.4 Transmitter characteristics

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

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

Assigned frequency range	902-928 MHz
Operating frequency range	905.43 - 923.55 MHz
RF channel spacing	3.62 MHz

Maximum rated output power	At transmitter 50 Ω RF output connector	NA
	Effective radiated power (for equipment with no RF connector)	15 dBm (FSK) 19.7 dBm (PSK)

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

Antenna connection			
unique coupling	standard connector	X integral	with temporary RF connector
			X without temporary RF connector

Antenna/s technical characteristics			
Type	Manufacturer	Model number	Gain
Integral	Telematics Wireless Ltd.	Printed inverted F antenna	1 dBi

Transmitter aggregate data rate/s	120 kbps (FSK modulated), 60 kbps (PSK modulated)				
Transmitter aggregate symbol (baud) rate/s	900 kbit (PSK modulation)				
Type of modulation	FSK, PSK				
Modulating test signal (baseband)	PRBS				
Maximum transmitter duty cycle in normal use	1%				
Transmitter duty cycle supplied for test	15%	**Tx ON time**	7.5 msec	**Period**	84 msec

Transmitter power source						
X	Battery	**Nominal rated voltage**	3.6VDC	Battery type	Lithium	
	DC	**Nominal rated voltage**	VDC			
	AC mains	**Nominal rated voltage**	VAC	Frequency	Hz	

Common power source for transmitter and receiver	X	yes	no

Test specification:	Section 15.247(a)2, 6 dB bandwidth		
Test procedure:	FR Vol.62, page 26243, Section 15.247(a)2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:56:46 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 V DC
Remarks:			

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

7.1 Minimum 6 dB bandwidth

7.1.1 General

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

Table 7.1.1 The 6 dB bandwidth limits

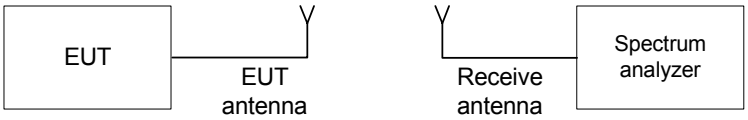
Assigned frequency, MHz	Modulation envelope reference points*, dBc	Minimum bandwidth, kHz
902.0 – 928.0	6.0	500.0
2400.0 – 2483.5		
5725.0 – 5850.0		

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

7.1.2 Test procedure

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

Figure 7.1.1 The 6 dB bandwidth test setup



Test specification:	**Section 15.247(a)2, 6 dB bandwidth**		
Test procedure:	FR Vol.62, page 26243, Section 15.247(a)2		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	12/22/2009 9:56:46 AM		
Temperature: 22.7 ºC	**Air Pressure:** 1022 hPa	**Relative Humidity:** 45 %	**Power Supply:** 3.6 V DC
Remarks:			

Table 7.1.2 The 6 dB bandwidth test results

ASSIGNED FREQUENCY BAND: 902-928 MHz
DETECTOR USED: Peak
SWEEP MODE: Single
SWEEP TIME: Auto
RESOLUTION BANDWIDTH: 100 kHz
VIDEO BANDWIDTH: 300 kHz
MODULATION ENVELOPE REFERENCE POINTS: 6.0 dBc
MODULATION: FSK / PSK
MODULATING SIGNAL: PRBS

Carrier frequency, MHz	6 dB bandwidth, kHz	Limit, kHz	Margin, kHz	Verdict
PSK modulation				
905.43	1020	500	520	Pass
914.50	945	500	445	Pass
923.55	950	500	450	Pass
FSK modulation				
905.43	795	500	295	Pass
914.50	785	500	285	Pass
923.55	790	500	290	Pass

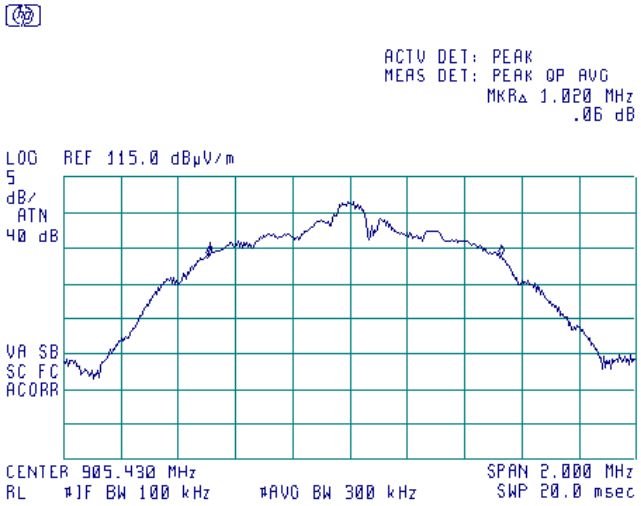
Reference numbers of test equipment used

HL 0521	HL 0604	HL 3121	HL 3616					

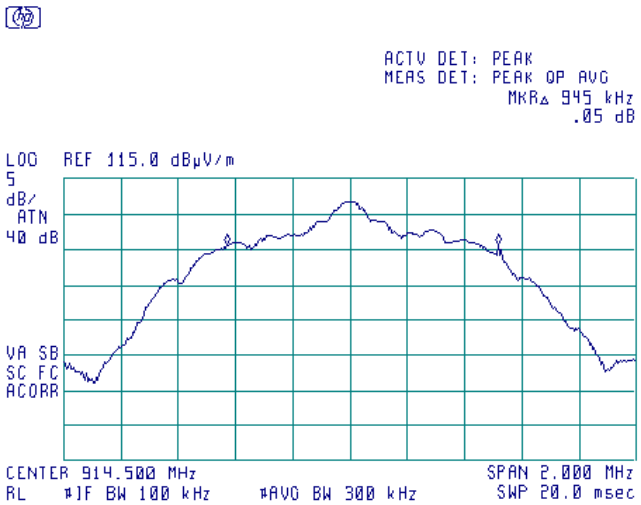
Full description is given in Appendix A.

Test specification:	Section 15.247(a)2, 6 dB bandwidth		
Test procedure:	FR Vol.62, page 26243, Section 15.247(a)2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:56:46 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 V DC
Remarks:			

Plot 7.1.1 The 6 dB bandwidth test result at low frequency PSK

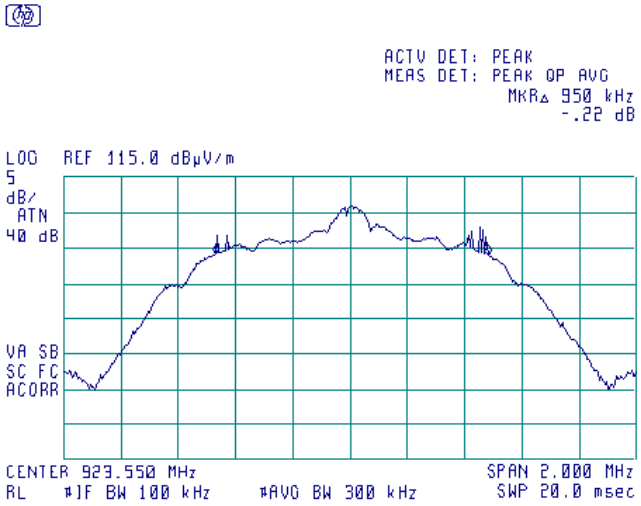


Plot 7.1.2 The 6 dB bandwidth test result at mid frequency PSK

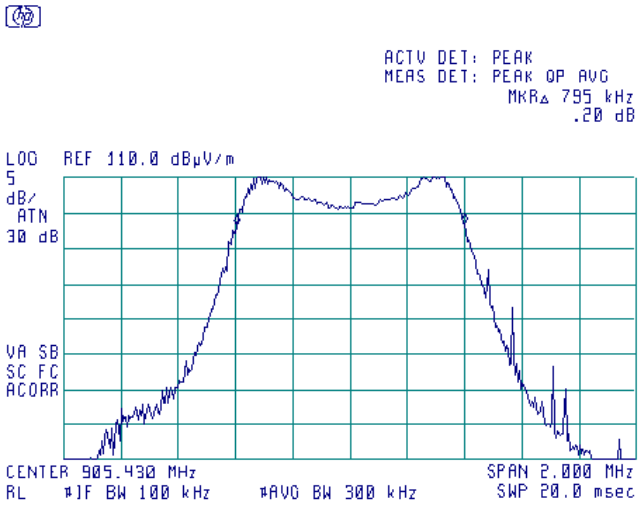


Test specification:	Section 15.247(a)2, 6 dB bandwidth		
Test procedure:	FR Vol.62, page 26243, Section 15.247(a)2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:56:46 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 V DC
Remarks:			

Plot 7.1.3 The 6 dB bandwidth test result at high frequency PSK

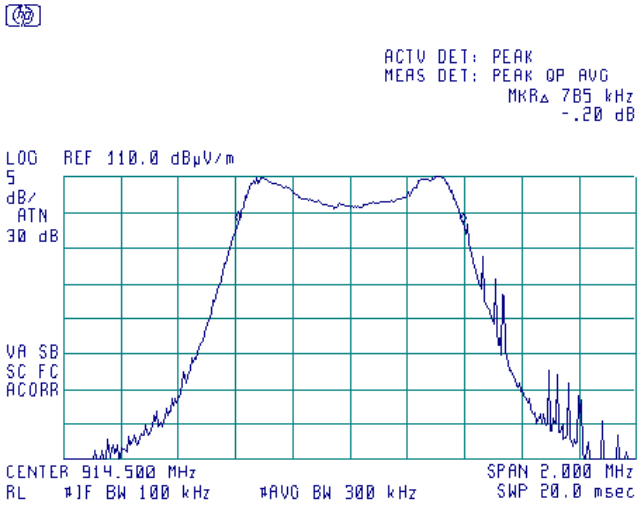


Plot 7.1.4 The 6 dB bandwidth test result at low frequency FSK

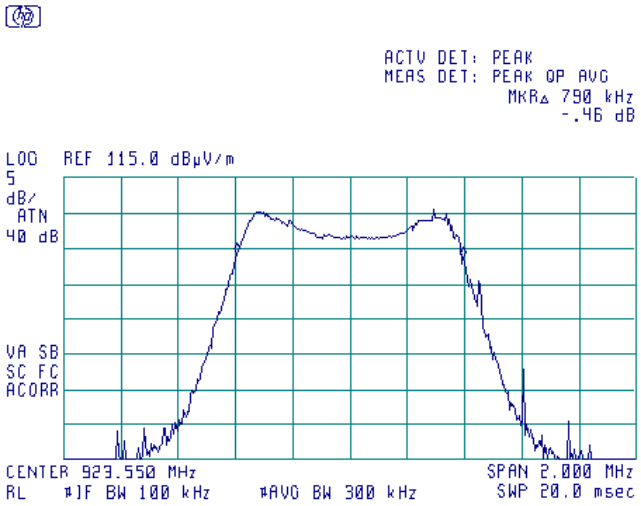


Test specification:	Section 15.247(a)2, 6 dB bandwidth		
Test procedure:	FR Vol.62, page 26243, Section 15.247(a)2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:56:46 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 V DC
Remarks:			

Plot 7.1.5 The 6 dB bandwidth test result at mid frequency FSK



Plot 7.1.6 The 6 dB bandwidth test result at high frequency FSK



Test specification:	Section 15.247(b)3, Peak output power		
Test procedure:	FR Vol.62, page 26243, Section 15.247(b)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:58:32 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

7.2 Peak output power

7.2.1 General

This test was performed to measure the maximum peak output power radiated by transmitter. Specification test limits are given in Table 7.2.1.

Table 7.2.1 Peak output power limits

Assigned frequency range, MHz	Maximum antenna gain, dBi	Peak output power*		Equivalent field strength limit @ 3m, dB(μV/m)**
		W	dBm	
902.0 – 928.0	6.0	1.0	30.0	131.2
2400.0 – 2483.5				
5725.0 – 5850.0				

*- The limit is provided in terms of conducted RF power at the antenna connector. 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.

**- Equivalent field strength limit was calculated from the peak output power as follows: E=sqrt(30×P×G)/r, where P is peak output power in Watts, r is antenna to EUT distance in meters and G is transmitter antenna gain in dBi.

7.2.2 Test procedure

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

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

7.2.2.3 The resolution bandwidth of spectrum analyzer was set wider than 6 dB bandwidth of the EUT and the field strength of the EUT carrier frequency was measured with antenna connected to spectrum analyzer/ EMI receiver. To find maximum radiation the turntable was rotated 360^0 and the measuring antenna height was swept in both vertical and horizontal polarizations.

7.2.2.4 The maximum field strength of the EUT carrier frequency was measured as provided in Table 7.2.2 and associated plots.

7.2.2.5 The maximum peak output power was calculated from the field strength of carrier as follows:

$$P = (E \times d)^2 / (30 \times G),$$

where P is the peak output power in W, E is the field strength in V/m, d is the test distance and G is the transmitter numeric antenna gain over an isotropic radiator.

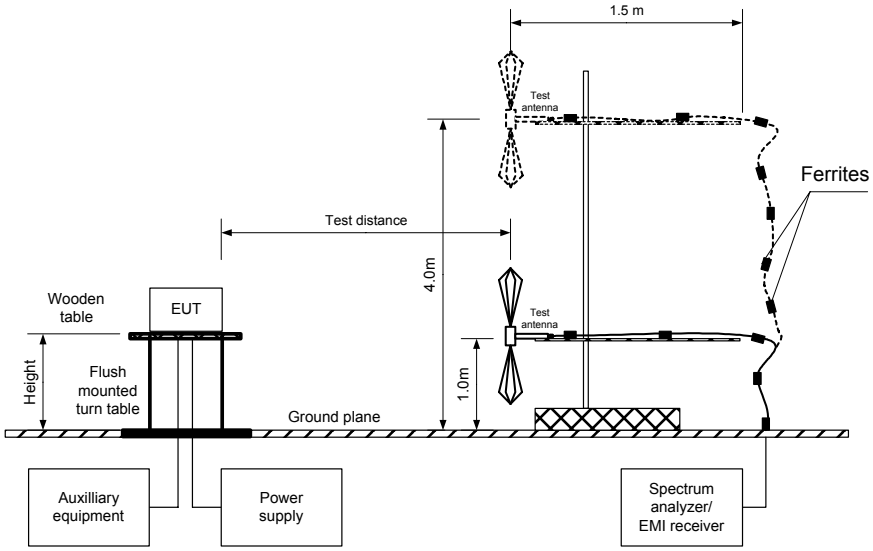
The above equation was converted in logarithmic units for 3 m test distance:

Peak output power in dBm = Field strength in dB(μV/m) - Transmitter antenna gain in dBi – 95.2 dB

7.2.2.6 The worst test results (the lowest margins) were recorded in Table 7.2.2.

Test specification:	Section 15.247(b)3, Peak output power		
Test procedure:	FR Vol.62, page 26243, Section 15.247(b)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:58:32 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

Figure 7.2.1 Setup for carrier field strength measurements



Test specification:	**Section 15.247(b)3, Peak output power**		
Test procedure:	FR Vol.62, page 26243, Section 15.247(b)		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	12/22/2009 9:58:32 AM		
Temperature: 22.7 ºC	**Air Pressure:** 1022 hPa	**Relative Humidity:** 45 %	**Power Supply:** 3.6 VDC
Remarks:			

Table 7.2.2 Peak output power test results

ASSIGNED FREQUENCY: 902-928 MHz
TEST DISTANCE: 3 m
TEST SITE: Semi anechoic chamber
EUT HEIGHT: 0.8 m
DETECTOR USED: Peak
TEST ANTENNA TYPE: Biconilog (30 MHz – 1000 MHz)
Double ridged guide (above 1000 MHz)
MODULATION: FSK / PSK
MODULATING SIGNAL: PRBS
TRANSMITTER OUTPUT POWER SETTINGS: Maximum
DETECTOR USED: Peak
EUT 6 dB BANDWIDTH: 1.020 MHz
RESOLUTION BANDWIDTH: 3 MHz
VIDEO BANDWIDTH: 3 MHz

Frequency, MHz	Field strength, dB(µV/m)	Antenna polarization	Antenna height, m	Azimuth, degrees*	EUT antenna gain, dBi	Peak output power, dBm**	Limit, dBm	Margin, dB***	Verdict
PSK modulation									
905.43	114.76	V	1.3	175	1	18.56	30	-11.44	Pass
914.50	115.36	V	1.3	175	1	19.16	30	-10.84	Pass
923.55	115.85	V	1.3	175	1	19.65	30	-10.35	Pass
FSK modulation									
905.43	110.83	V	1.3	175	1	14.63	30	-15.37	Pass
914.50	110.57	V	1.3	175	1	14.37	30	-15.63	Pass
923.55	111.16	V	1.3	175	1	14.96	30	-15.04	Pass

*- EUT front panel refer to 0 degrees position of turntable.
**- Peak output power was calculated from the field strength of carrier as follows: $P = (E \times d)^2 / (30 \times G)$,
where P is the peak output power in W, E is the field strength in V/m, d is the test distance in meters and G is the transmitter numeric antenna gain over an isotropic radiator. The above equation was converted in logarithmic units for 3 m test distance: *Peak output power in dBm = Field strength in dB(µV/m) - Transmitter antenna gain in dBi – 95.2 dB*
***- Margin = Peak output power – specification limit.

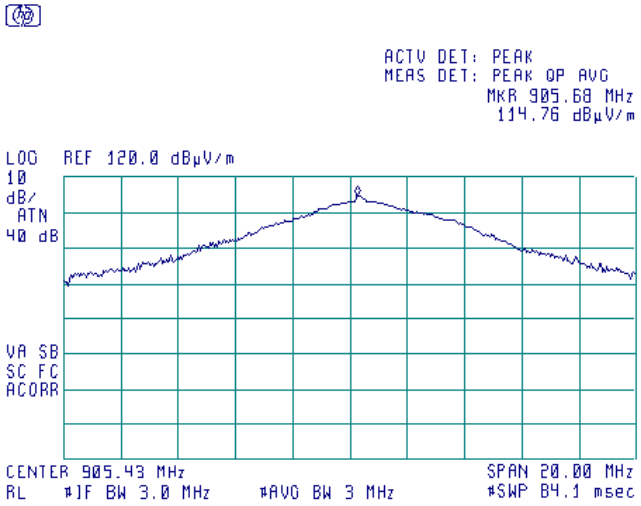
Reference numbers of test equipment used

HL 0521	HL 0604	HL 3121	HL 3616				

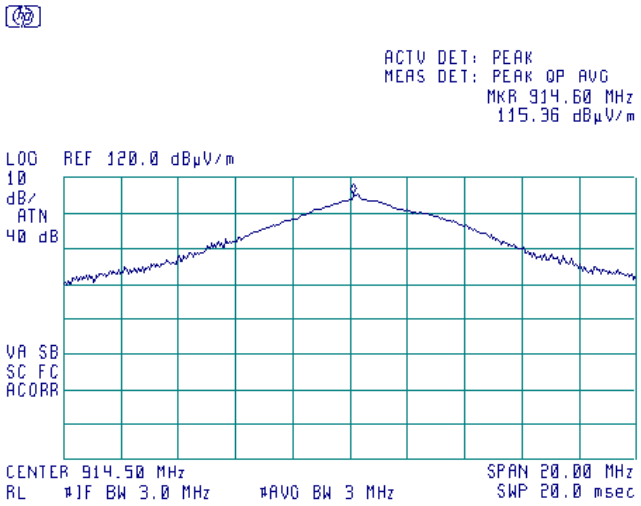
Full description is given in Appendix A.

Test specification:	Section 15.247(b)3, Peak output power		
Test procedure:	FR Vol.62, page 26243, Section 15.247(b)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:58:32 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

Plot 7.2.1 Field strength of carrier at low frequency PSK

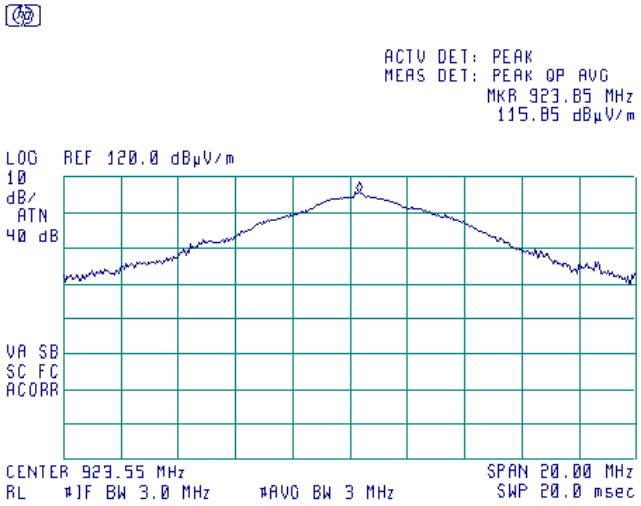


Plot 7.2.2 Field strength of carrier at mid frequency PSK

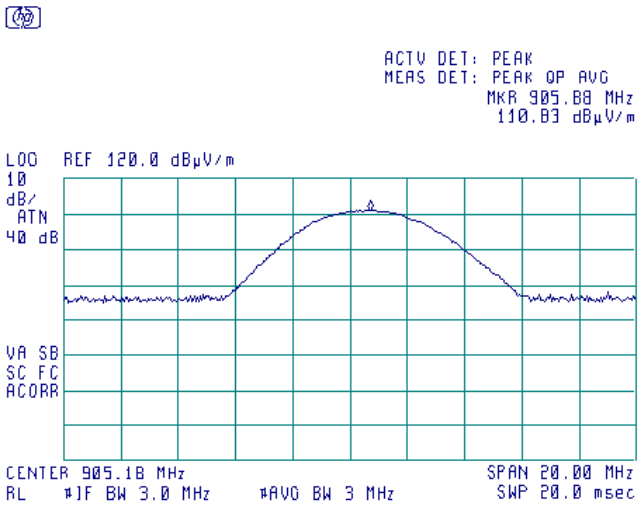


Test specification:	Section 15.247(b)3, Peak output power		
Test procedure:	FR Vol.62, page 26243, Section 15.247(b)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:58:32 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

Plot 7.2.3 Field strength of carrier at high frequency PSK

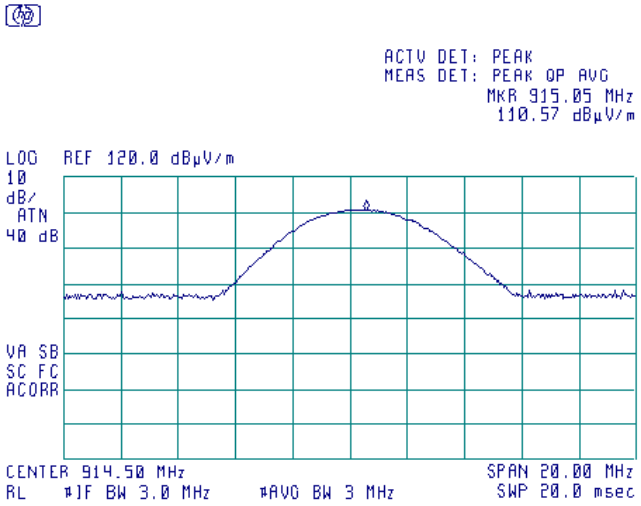


Plot 7.2.4 Peak output power at low frequency FSK

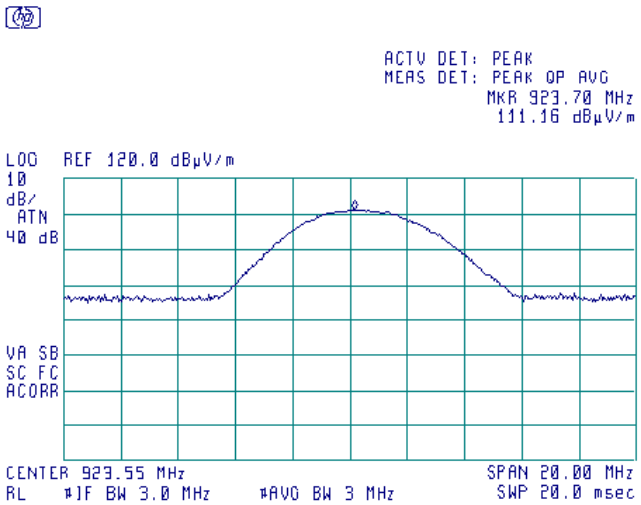


Test specification:	Section 15.247(b)3, Peak output power		
Test procedure:	FR Vol.62, page 26243, Section 15.247(b)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:58:32 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

Plot 7.2.5 Peak output power at mid frequency FSK



Plot 7.2.6 Peak output power at high frequency FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

7.3 Field strength of spurious emissions

7.3.1 General

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

Table 7.3.1 Radiated spurious emissions limits

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

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

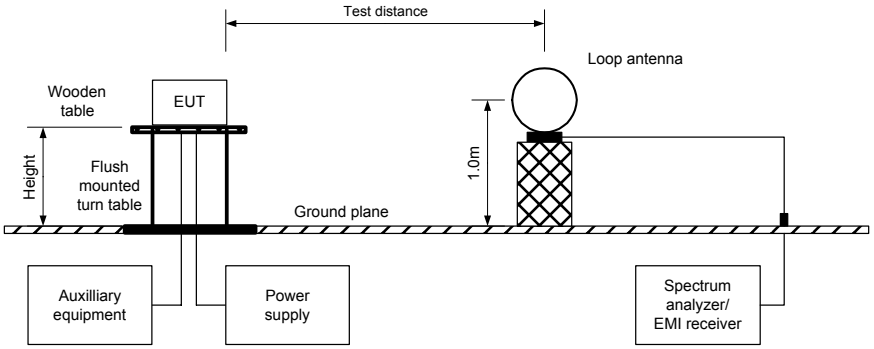
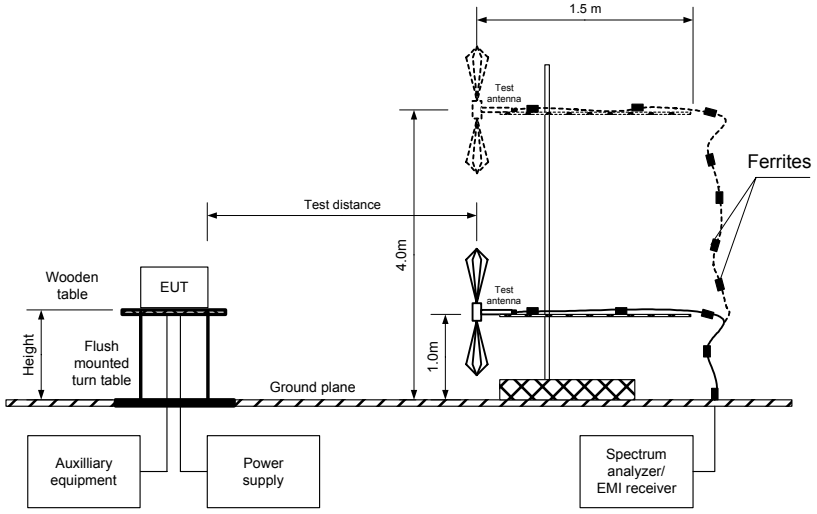


Figure 7.3.2 Setup for spurious emission field strength measurements above 30 MHz



Test specification:	**Section 15.247(c), Radiated spurious emissions**		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	**Air Pressure:** 1022 hPa	**Relative Humidity:** 45 %	**Power Supply:** 3.6 VDC
Remarks:			

Table 7.3.2 Field strength of emissions outside restricted bands

ASSIGNED FREQUENCY: 902-928 MHz
INVESTIGATED FREQUENCY RANGE: 0.009 -9280 MHz
TEST DISTANCE: 3 m
MODULATION: FSK / PSK
MODULATING SIGNAL: PRBS
TRANSMITTER OUTPUT POWER SETTINGS: Maximum
DETECTOR USED: Peak
TEST ANTENNA TYPE: Active loop (9 kHz – 30 MHz)
Biconical (30 MHz – 200 MHz)
Log periodic (200 MHz – 1000 MHz)
Biconilog (30 MHz – 1000 MHz)
Double ridged guide (above 1000 MHz)

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
PSK modulation									
Low carrier frequency 905.43 MHz									
1810.86	62.21	V	145	226	111.35	49.14	20.0	29.14	Pass
7243.44	47.17	V	125	317		64.18		44.18	
Mid carrier frequency 914.50 MHz									
1829.00	65.16	V	145	226	113.45	48.29	20.0	28.29	Pass
5487.00	66.00	V	160	311		47.45		27.25	
High carrier frequency 923.55 MHZ									
1847.10	57.98	V	145	226	113.70	55.72	20.0	35.72	Pass
5541.30	65.59	V	160	311		48.11		28.11	
6464.85	59.50	V	125	334		54.20		34.20	
FSK modulation									
Low carrier frequency 905.43 MHz									
1810.86	56.19	V	145	226	110.35	54.16	20.0	34.16	Pass
7243.44	44.67	V	125	317		65.68		45.68	
Mid carrier frequency 914.50 MHz									
1829.00	60.64	V	145	226	110.97	50.33	20.0	30.33	Pass
5487.00	51.33	V	160	311		59.64		39.64	
High carrier frequency 923.55 MHZ									
1847.10	56.85	V	145	226	111.28	54.43	20.0	34.43	Pass
5541.30	55.50	V	160	311		55.78		35.78	
6464.85	50.00	V	125	334		61.28		41.28	

*- 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:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	**Air Pressure:** 1022 hPa	**Relative Humidity:** 45 %	**Power Supply:** 3.6 VDC
Remarks:			

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

ASSIGNED FREQUENCY: 902-928 MHz
INVESTIGATED FREQUENCY RANGE: 1000 - 9280 MHz
TEST DISTANCE: 3 m
MODULATING SIGNAL: PRBS
TRANSMITTER OUTPUT POWER SETTINGS: Maximum
TEST ANTENNA TYPE Double ridged guid

Frequency, MHz	Antenna		Azimuth, degrees*	Peak field strength(VBW=3 MHz)			Average field strength(VBW=3 MHz)				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***	
PSK modulation											
Low carrier frequency 905.43 MHz											
2716.29	V	160	226	62.33	74	-11.67	62.33	45.852	54	-8.148	
3621.72	V	125	334	60.67	74	-13.33	60.67	44.192	54	-9.808	
4527.15	V	125	328	61.83	74	-12.17	61.83	45.352	54	-8.648	Pass
5432.58	V	160	311	63.50	74	-10.5	63.50	47.022	54	-6.978	
8148.87	V	145	290	53.17	74	-20.83	53.17	36.692	54	-17.31	
Mid carrier frequency 914.50 MHz											
2743.50	V	160	226	66.95	74	-7.05	66.95	50.472	54	-3.528	
365800	V	125	334	61.33	74	-12.67	61.33	44.852	54	-9.148	
4572.50	V	125	328	61.50	74	-12.50	61.50	45.022	54	-8.978	Pass
7316.00	V	125	317	48.17	74	-25.83	48.17	31.692	54	-22.31	
8230.50	V	145	290	53.00	74	-21.00	53.00	36.522	54	-17.48	
High carrier frequency 923.55 MHZ											
2770.65	V	160	226	60.02	74	-13.98	60.02	43.542	54	-10.46	
3694.20	V	125	334	62.38	74	-11.62	62.38	45.902	54	-8.098	
4617.75	V	125	328	68.54	74	-5.46	68.54	52.062	54	-1.938	Pass
7388.40	V	125	317	53.17	74	-20.83	53.17	36.692	54	-17.31	
8311.95	V	145	290	53.17	74	-20.83	53.17	36.692	54	-17.31	
FSK modulation											
Low carrier frequency 905.43 MHz											
2716.29	V	160	226	55.91	74	-18.09	55.91	39.432	54	-14.57	
3621.72	V	125	334	52.33	74	-21.67	52.33	35.852	54	-18.15	
4527.15	V	125	328	53.83	74	-20.17	53.83	37.352	54	-16.65	Pass
5432.58	V	160	311	57.50	74	-16.50	57.50	41.022	54	-12.98	
8148.87	V	145	290	52.00	74	-22.00	52.00	35.522	54	-18.48	
Mid carrier frequency 914.50 MHz											
2743.50	V	160	226	58.57	74	-15.43	58.57	42.092	54	-11.91	
365800	V	125	334	54.00	74	-20.00	54.00	37.522	54	-16.48	
4572.50	V	125	328	53.00	74	-21.00	53.00	36.522	54	-17.48	Pass
7316.00	V	125	317	44.50	74	-29.50	44.50	28.022	54	-25.98	
8230.50	V	145	290	51.33	74	-22.67	51.33	34.852	54	-19.15	
High carrier frequency 923.55 MHZ											
2770.65	V	160	226	57.21	74	-16.79	57.21	40.732	54	-13.27	
3694.20	V	125	334	54.83	74	-19.17	54.83	38.352	54	-15.65	
4617.75	V	125	328	52.50	74	-21.50	52.50	36.022	54	-17.98	Pass
7388.40	V	125	317	45.17	74	-28.83	45.17	28.692	54	-25.31	
8311.95	V	145	290	51.33	74	-22.67	51.33	34.852	54	-19.15	

*- 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.

Test specification:	**Section 15.247(c), Radiated spurious emissions**		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	**Air Pressure:** 1022 hPa	**Relative Humidity:** 45 %	**Power Supply:** 3.6 VDC
Remarks:			

Table 7.3.4 Average factor calculation

Transmission pulse		Transmission burst		Transmission train duration, ms	Average factor, dB
Duration, ms	Period, ms	Duration, ms	Period, ms		
7.5	84	NA	NA	NA	-16.478

*- 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:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	**Air Pressure:** 1022 hPa	**Relative Humidity:** 45 %	**Power Supply:** 3.6 VDC
Remarks:			

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

ASSIGNED FREQUENCY:	902-928 MHz
INVESTIGATED FREQUENCY RANGE:	0.009 – 1000 MHz
TEST DISTANCE:	3 m
MODULATION:	FSK / PSK
MODULATING SIGNAL:	PRBS
DUTY CYCLE:	100 %
TRANSMITTER OUTPUT POWER:	Maximum
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) Biconical (30 MHz – 200 MHz) Log periodic (200 MHz – 1000 MHz) Biconilog (30 MHz – 1000 MHz)

Frequency MHz	Peak emission, dB(µV/m)	Quasi-peak			Antenna polarization	Antenna height, m	Turn-table position**, degrees	Verdict
		Measured emission, dB(µV/m)	Limit, dB(µV/m)	Margin, dB*				
All signals at least 20 dB below limit								Pass

Table 7.3.6 Restricted bands

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

Reference numbers of test equipment used

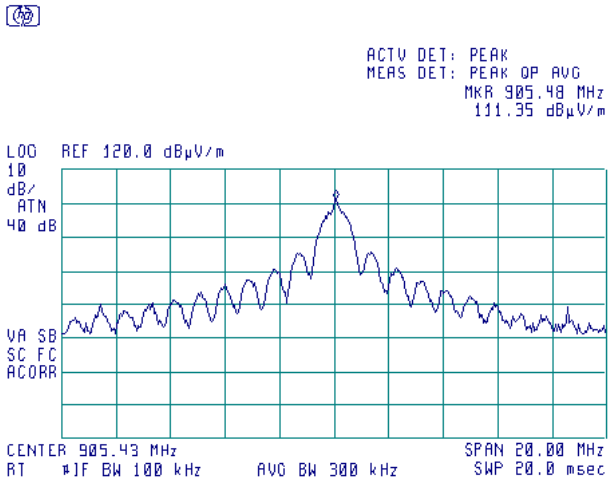
HL 0446	HL 0521	HL 0604	HL 1984	HL 3121	HL 3122	HL 3344	HL 3346
HL 3531	HL 3534	HL 3616					

Full description is given in Appendix A.

Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

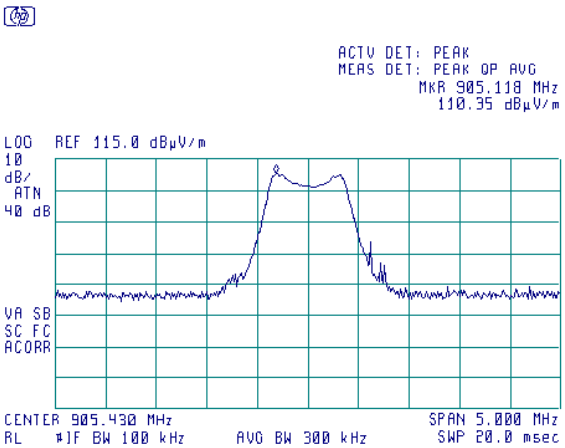
Plot 7.3.1 Radiated emission measurements at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical &Horizontal
MODULATION: PSK



Plot 7.3.2 Radiated emission measurements at the low carrier frequency

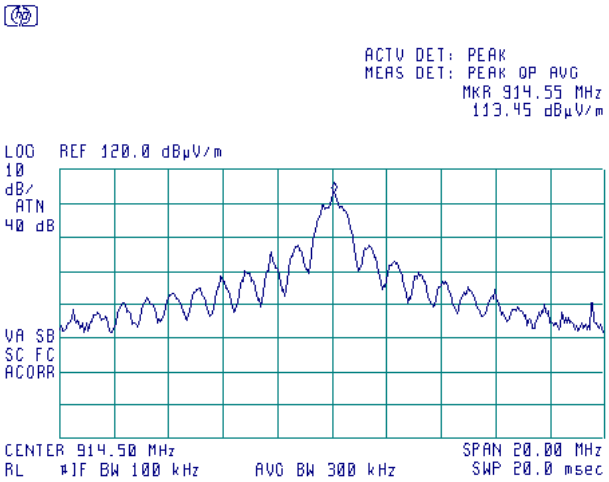
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical &Horizontal
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

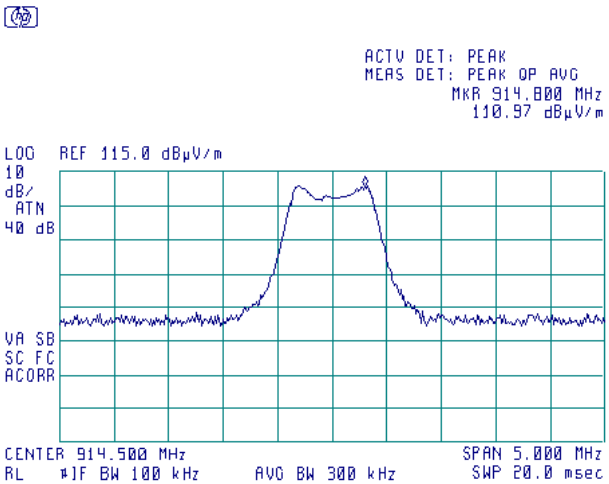
Plot 7.3.3 Radiated emission measurements at the mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical &Horizontal
MODULATION: PSK



Plot 7.3.4 Radiated emission measurements at the mid carrier frequency

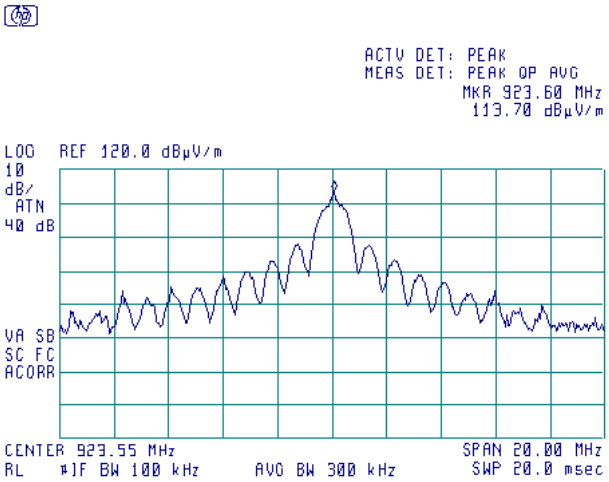
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical &Horizontal
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

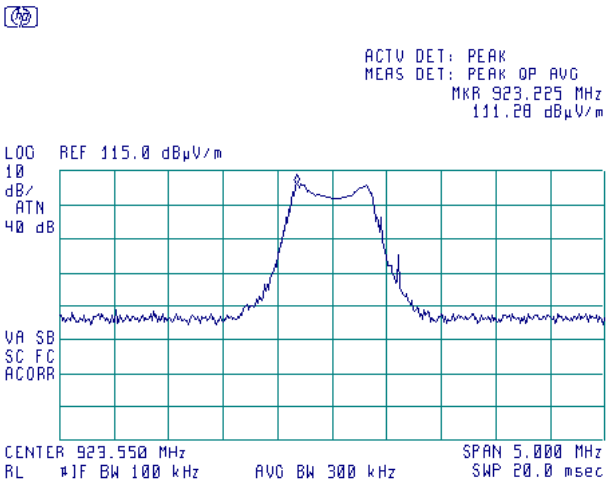
Plot 7.3.5 Radiated emission measurements at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical &Horizontal
MODULATION: PSK



Plot 7.3.6 Radiated emission measurements at the high carrier frequency

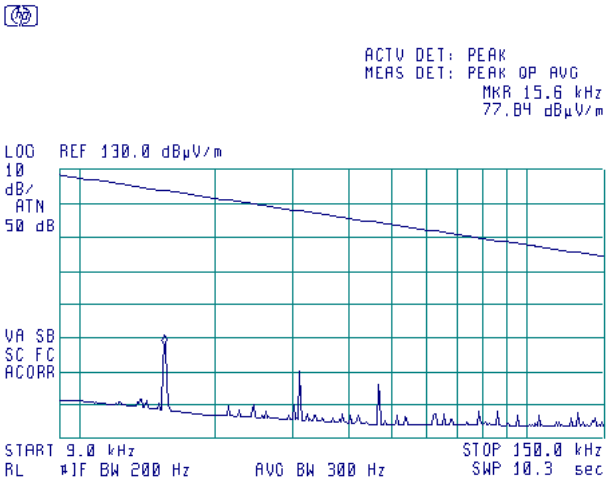
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical &Horizontal
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

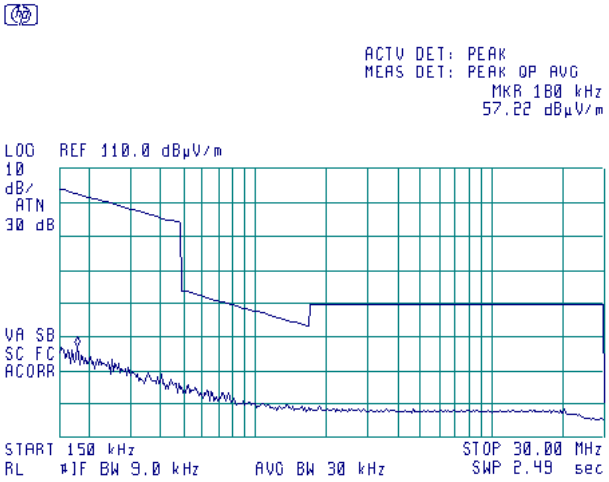
Plot 7.3.7 Radiated emission measurements from 9 to 150 kHz at the low, mid, high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
MODULATION: PSK/FSK



Plot 7.3.8 Radiated emission measurements from 0.15 to 30 MHz at the low, mid, high carrier frequency

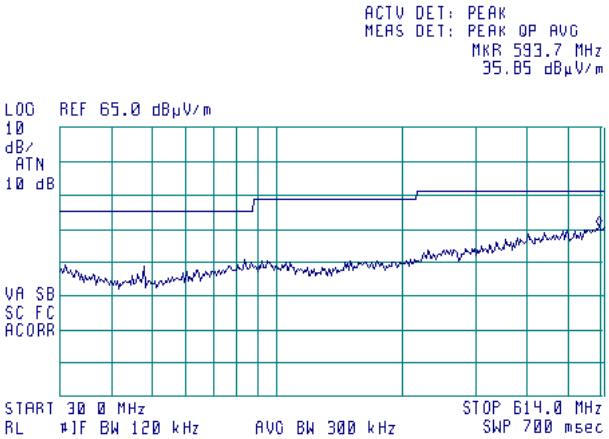
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
MODULATION: PSK/FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

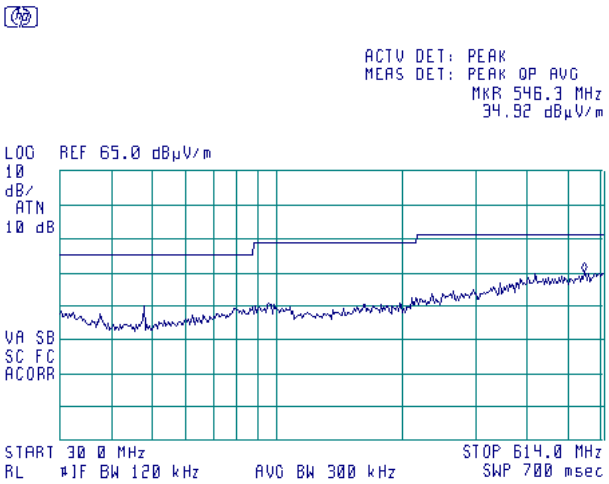
Plot 7.3.9 Radiated emission measurements from 30 to 614 MHz at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: PSK/ FSK



Plot 7.3.10 Radiated emission measurements from 30 to 614 MHz at the mid carrier frequency

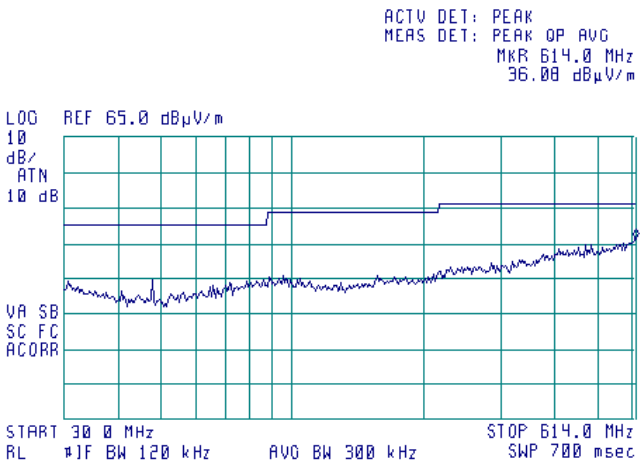
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: PSK/FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

Plot 7.3.11 Radiated emission measurements from 30 to 614 MHz at the high carrier frequency

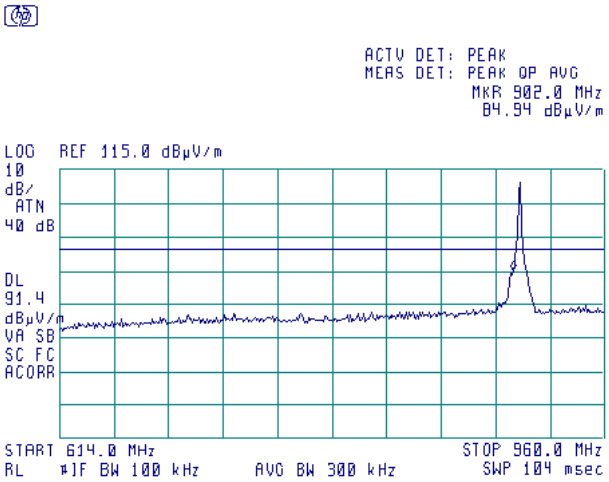
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: PSK/FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

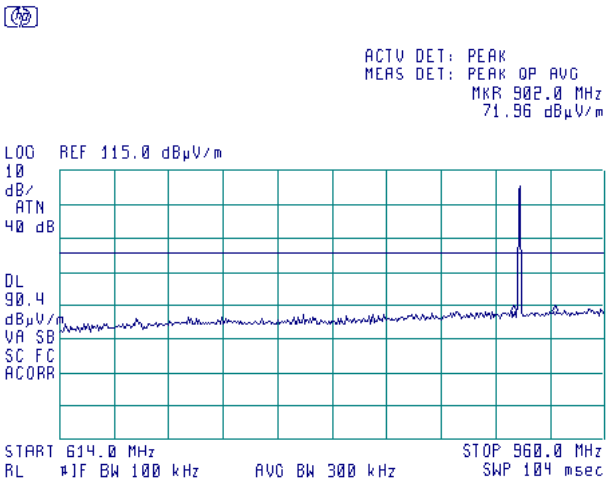
Plot 7.3.12 Radiated emission measurements from 614 to 960 MHz at the low carrier frequency

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



Plot 7.3.13 Radiated emission measurements from 614 to 960 MHz at the low carrier frequency

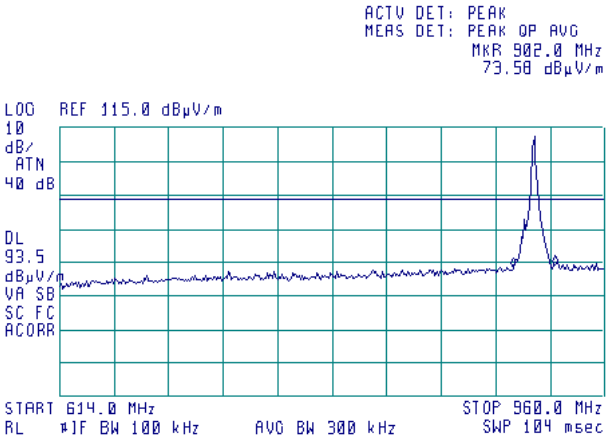
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

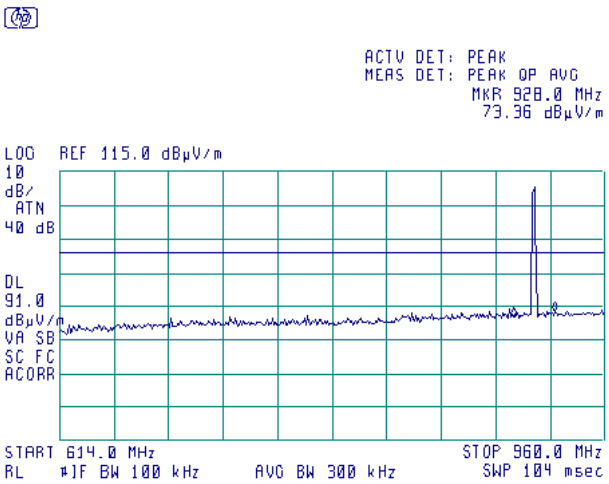
Plot 7.3.14 Radiated emission measurements from 614 to 960 MHz at the mid carrier frequency

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



Plot 7.3.15 Radiated emission measurements from 614 to 960 MHz at the mid carrier frequency

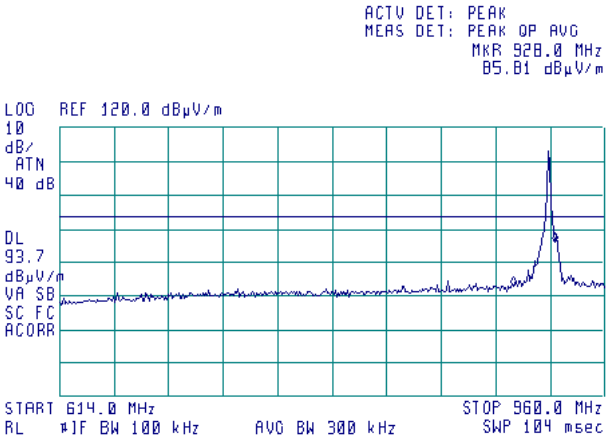
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

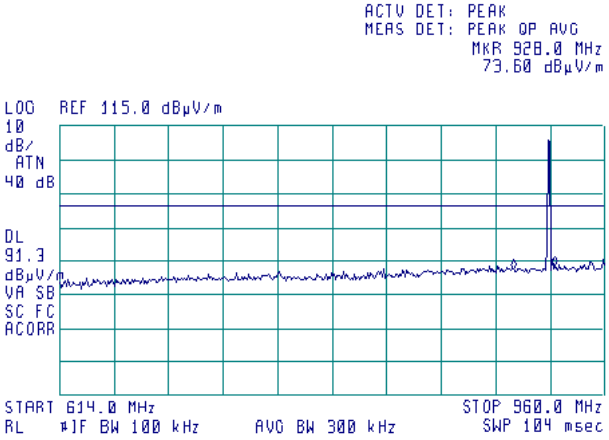
Plot 7.3.16 Radiated emission measurements from 614 to 960 MHz at the high carrier frequency

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



Plot 7.3.17 Radiated emission measurements from 614 to 960 MHz at the high carrier frequency

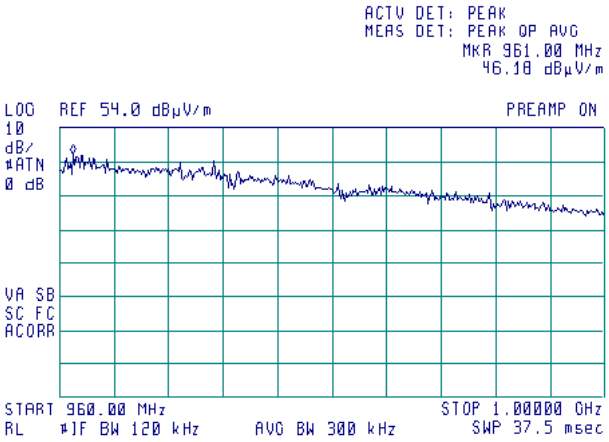
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

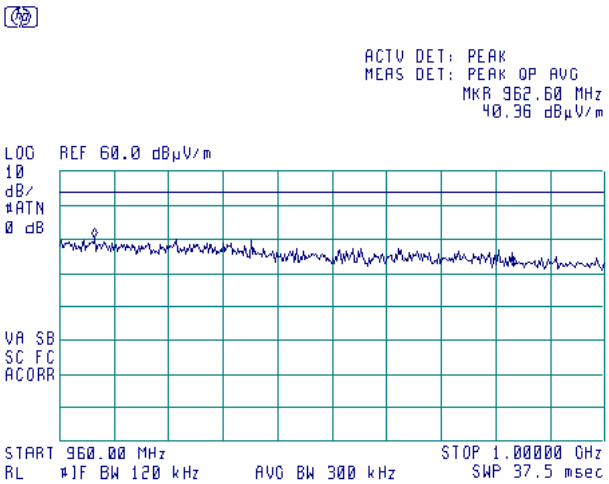
Plot 7.3.18 Radiated emission measurements from 960 to 1000 MHz at the low carrier frequency

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



Plot 7.3.19 Radiated emission measurements from 960 to 1000 MHz at the low carrier frequency

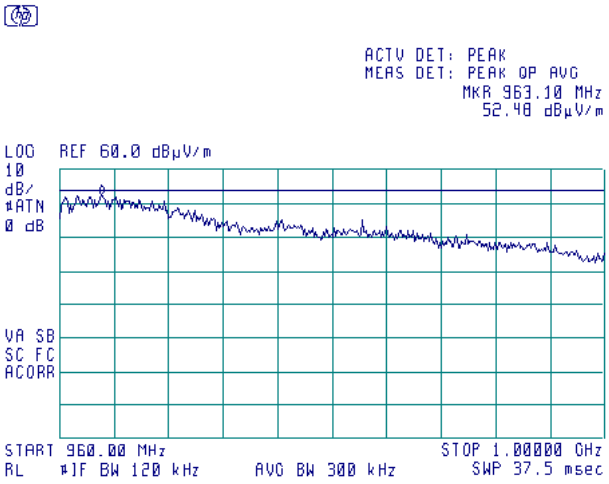
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

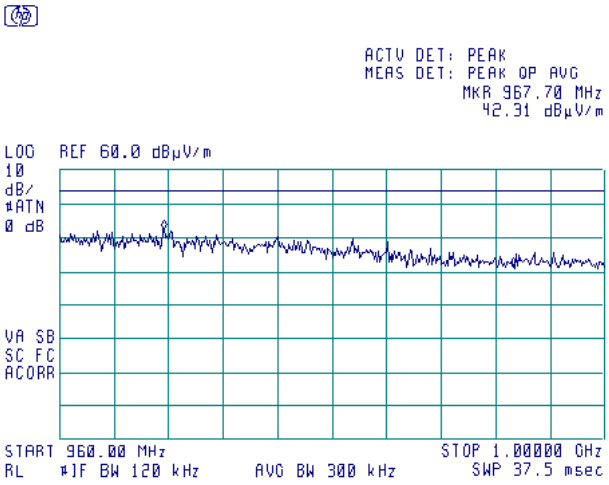
Plot 7.3.20 Radiated emission measurements from 960 to 1000 MHz at the mid carrier frequency

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



Plot 7.3.21 Radiated emission measurements from 960 to 1000 MHz at the mid carrier frequency

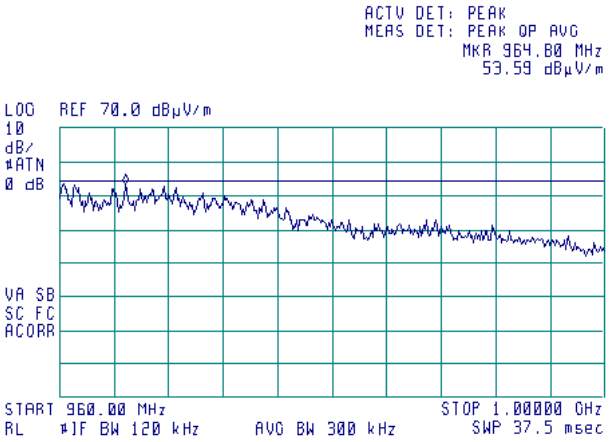
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

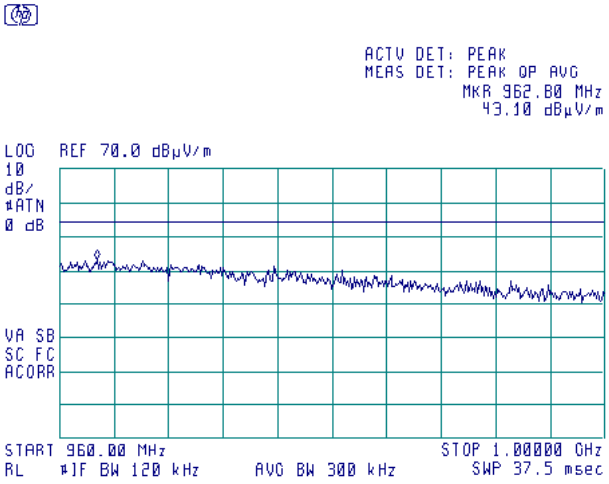
Plot 7.3.22 Radiated emission measurements from 960 to 1000 MHz at the high carrier frequency

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



Plot 7.3.23 Radiated emission measurements from 960 to 1000 MHz at the high carrier frequency

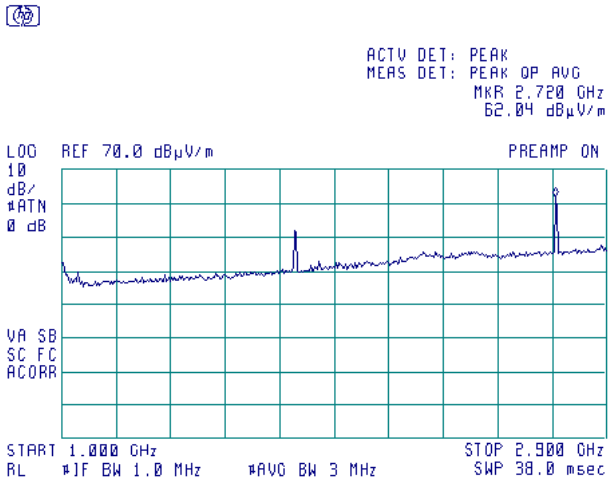
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

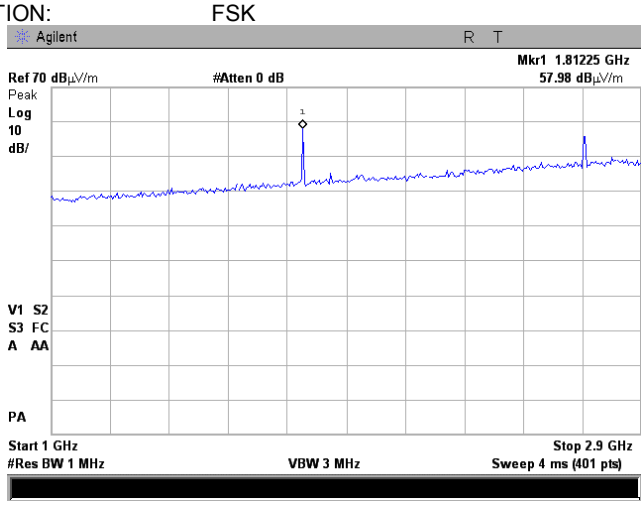
Plot 7.3.24 Radiated emission measurements from 1000 to 2900 MHz at the low carrier frequency

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



Plot 7.3.25 Radiated emission measurements from 1000 to 2900 MHz at the low carrier frequency

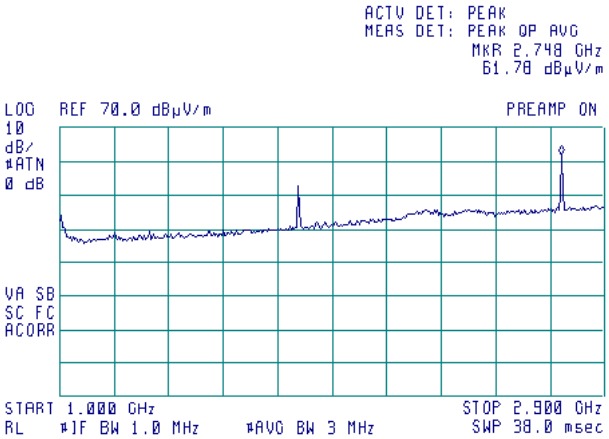
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

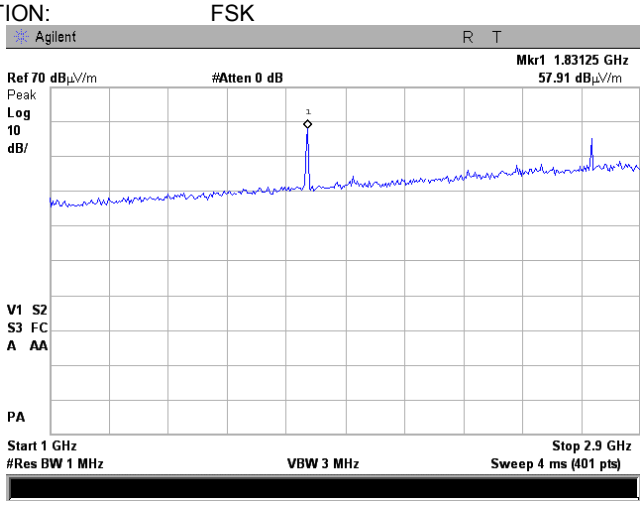
Plot 7.3.26 Radiated emission measurements from 1000 to 2900 MHz at the mid carrier frequency

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



Plot 7.3.27 Radiated emission measurements from 1000 to 2900 MHz at the mid carrier frequency

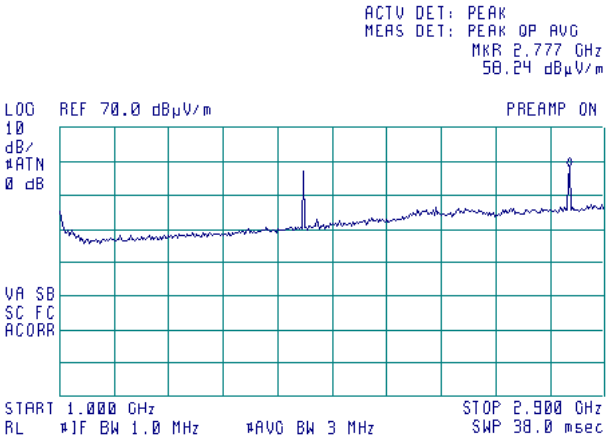
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

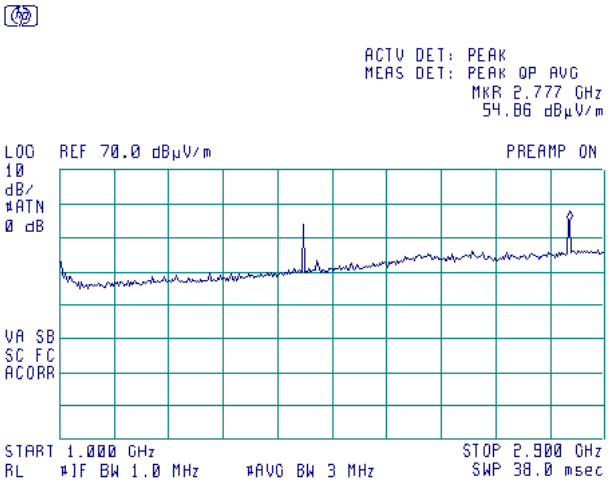
Plot 7.3.28 Radiated emission measurements from 1000 to 2900 MHz at the high carrier frequency

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



Plot 7.3.29 Radiated emission measurements from 1000 to 2900 MHz at the high carrier frequency

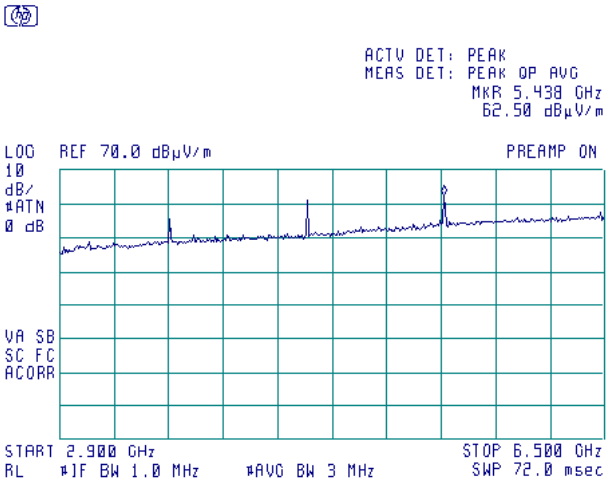
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

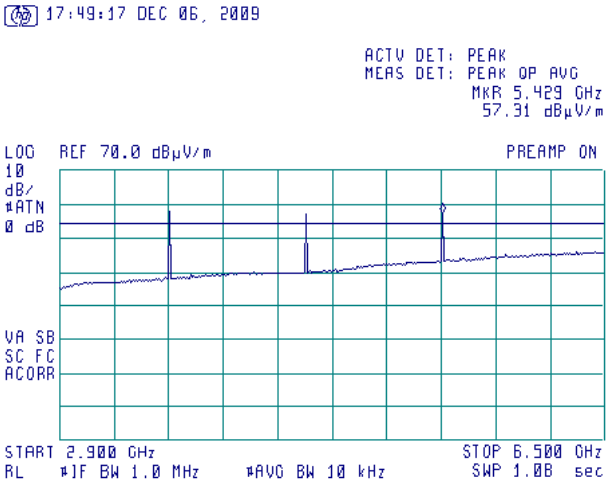
Plot 7.3.30 Radiated emission measurements from 2900 to6500 MHz at the low carrier frequency, VBW=3 MHz

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



Plot 7.3.31 Radiated emission measurements from 2900 to6500 MHz at the low carrier frequency, VBW=10 kHz

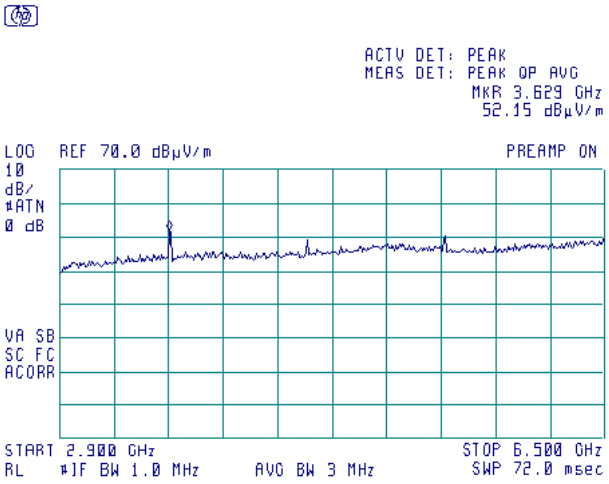
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: PSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

Plot 7.3.32 Radiated emission measurements from 2900 to6500 MHz at the low carrier frequency

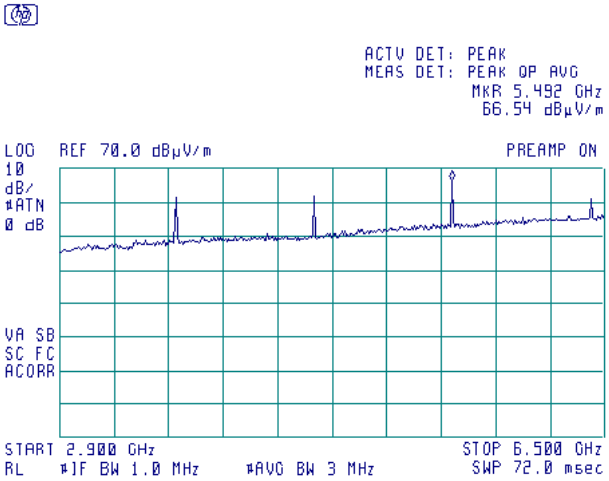
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

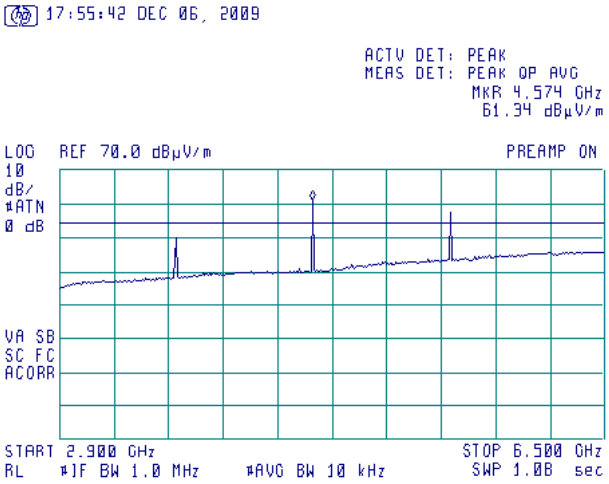
Plot 7.3.33 Radiated emission measurements from 2900 to 6500 MHz at the mid carrier frequency, VBW=3 MHz

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



Plot 7.3.34 Radiated emission measurements from 2900 to 6500 MHz at the mid carrier frequency, VBW=10 kHz

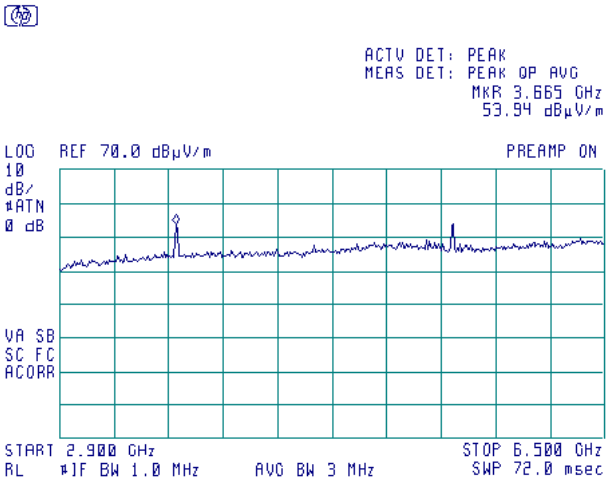
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: PSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

Plot 7.3.35 Radiated emission measurements from 2900 to 6500 MHz at the mid carrier frequency

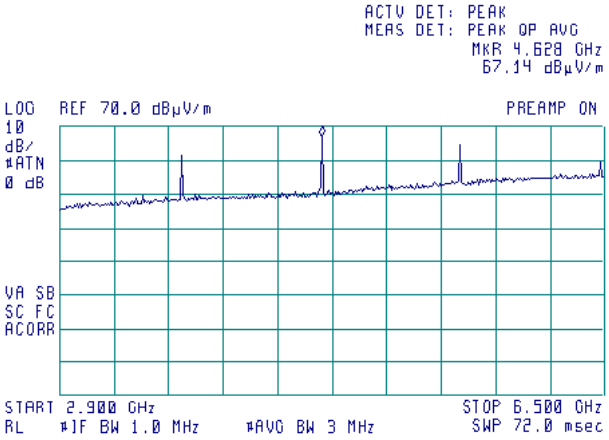
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

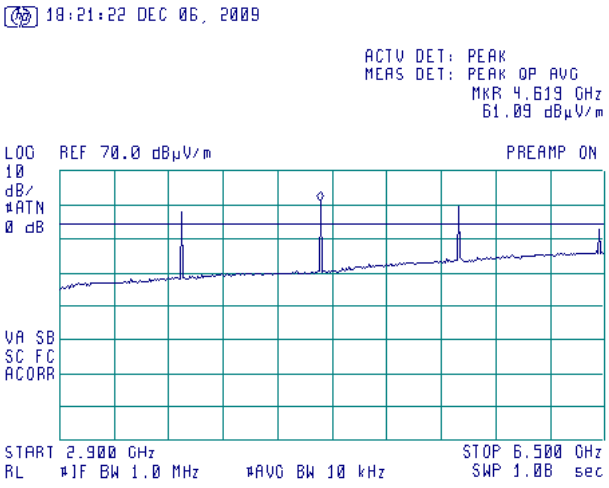
Plot 7.3.36 Radiated emission measurements from 2900 to 6500 MHz at the high carrier frequency, VBW=3 MHz

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



Plot 7.3.37 Radiated emission measurements from 2900 to 6500 MHz at the high carrier frequency, VBW=10 kHz

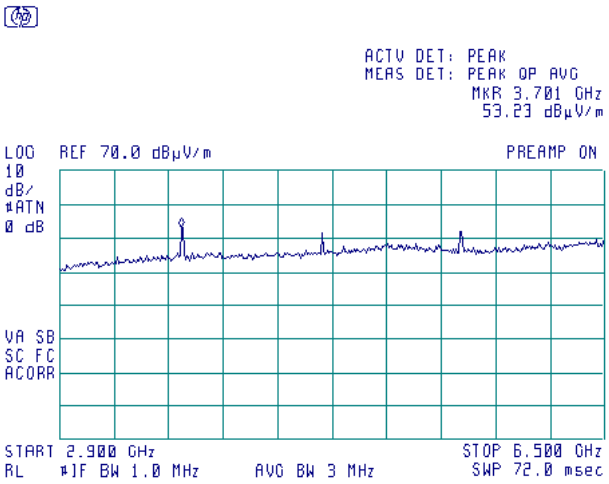
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: PSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

Plot 7.3.38 Radiated emission measurements from 2900 to 6500 MHz at the high carrier frequency

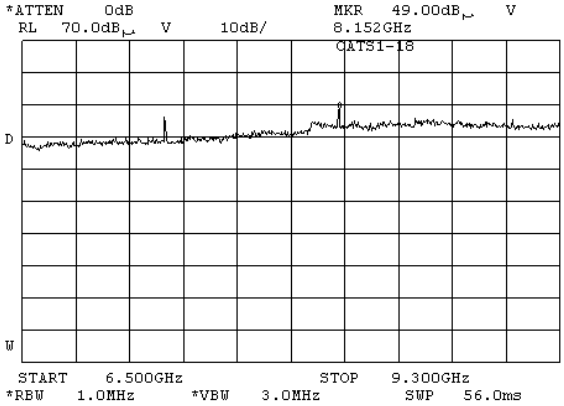
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

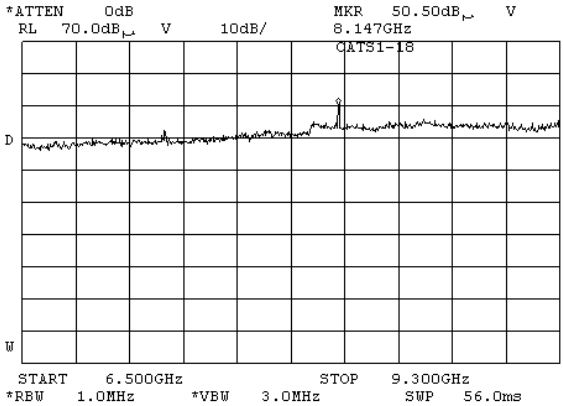
Plot 7.3.39 Radiated emission measurements from 6500 to 9300 MHz at the low carrier frequency

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



Plot 7.3.40 Radiated emission measurements from 6500 to 9300 MHz at the low carrier frequency

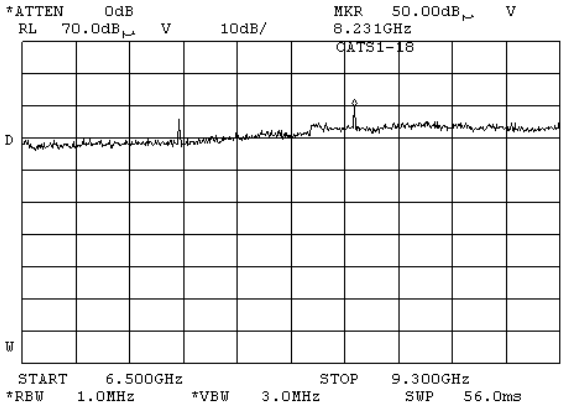
TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

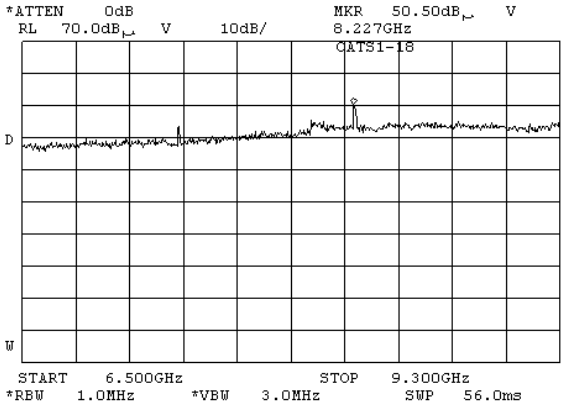
Plot 7.3.41 Radiated emission measurements from 6500 to 9300 MHz at the middle carrier frequency

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



Plot 7.3.42 Radiated emission measurements from 6500 to 9300 MHz at the middle carrier frequency

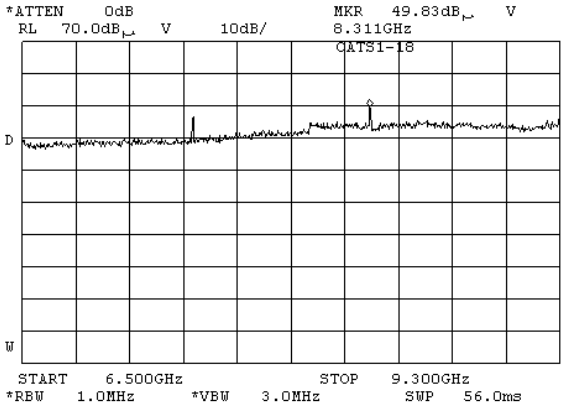
TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

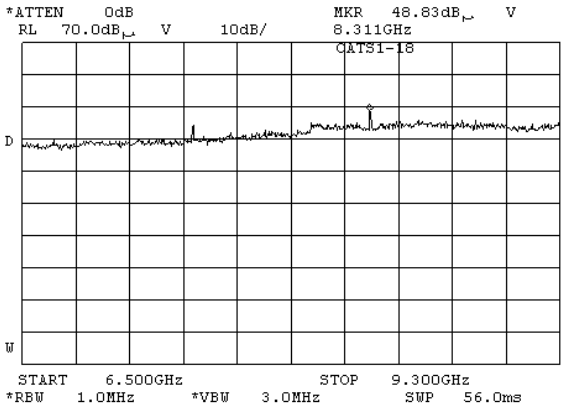
Plot 7.3.43 Radiated emission measurements from 6500 to 9300 MHz at the high carrier frequency

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



Plot 7.3.44 Radiated emission measurements from 6500 to 9300 MHz at the high carrier frequency

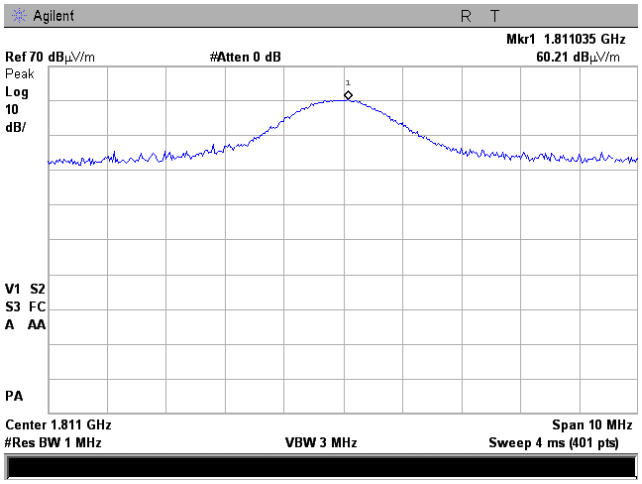
TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

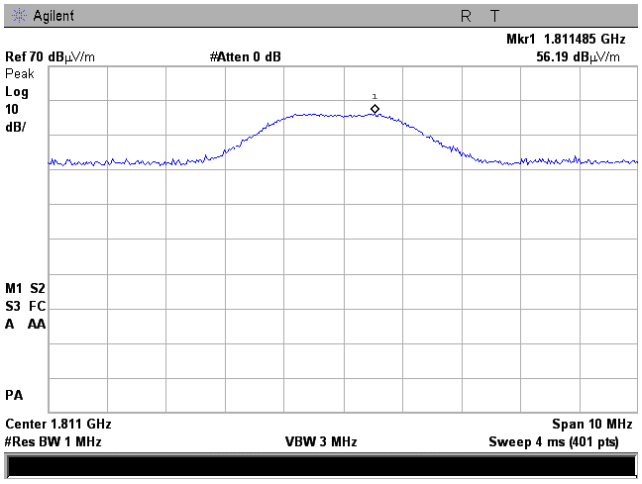
Plot 7.3.45 Radiated emission measurements at the second harmonic of low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
MODULATION: PSK



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

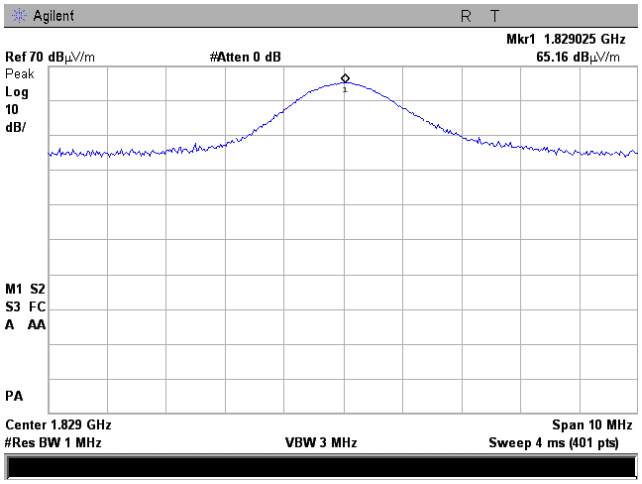
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

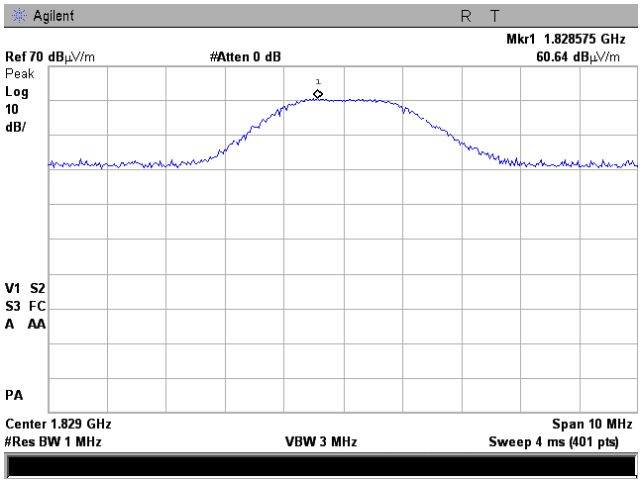
Plot 7.3.47 Radiated emission measurements at the second harmonic of mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
MODULATION: PSK



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

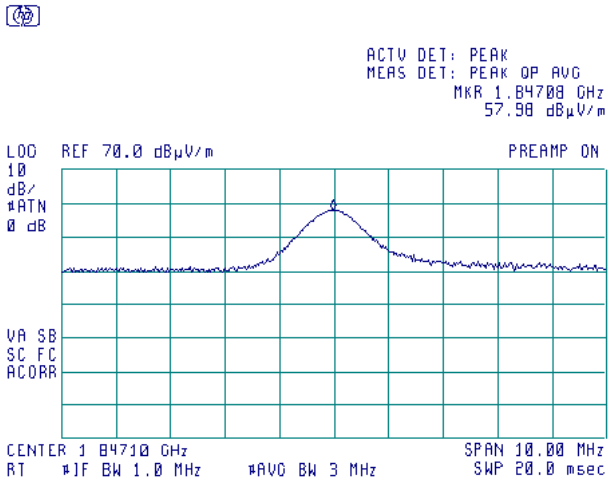
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

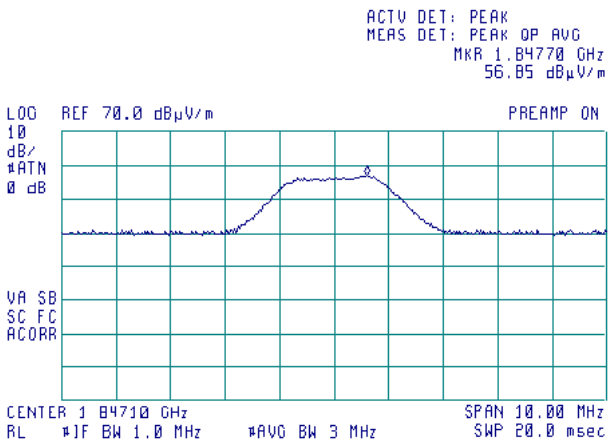
Plot 7.3.49 Radiated emission measurements at the second harmonic of high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
MODULATION: PSK



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

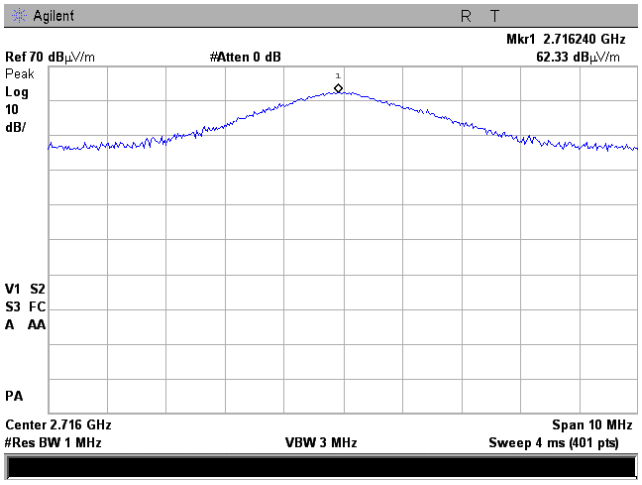
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

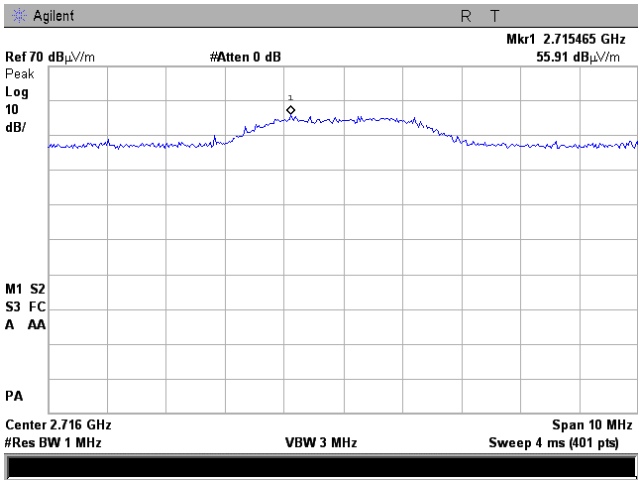
Plot 7.3.51 Radiated emission measurements at the third harmonic of low carrier frequency

TEST SITE: Anechoic chamber
TEST DISTANCE: 3 m
MODULATION: PSK



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

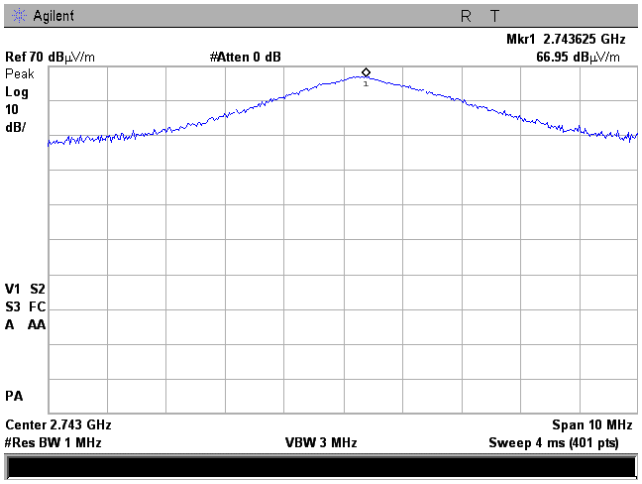
TEST SITE: Anechoic chamber
TEST DISTANCE: 3 m
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

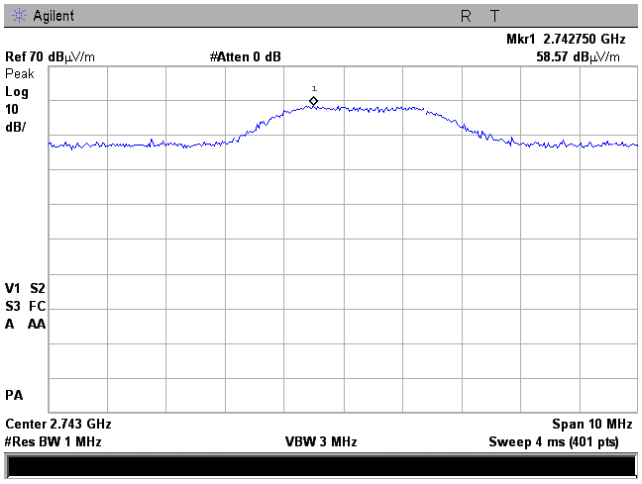
Plot 7.3.53 Radiated emission measurements at the third harmonic of mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
MODULATION: PSK



Plot 7.3.54 Radiated emission measurements at the third harmonic of mid carrier frequency

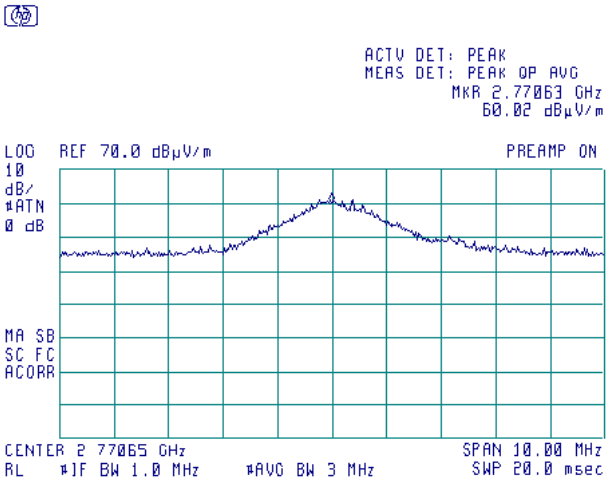
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

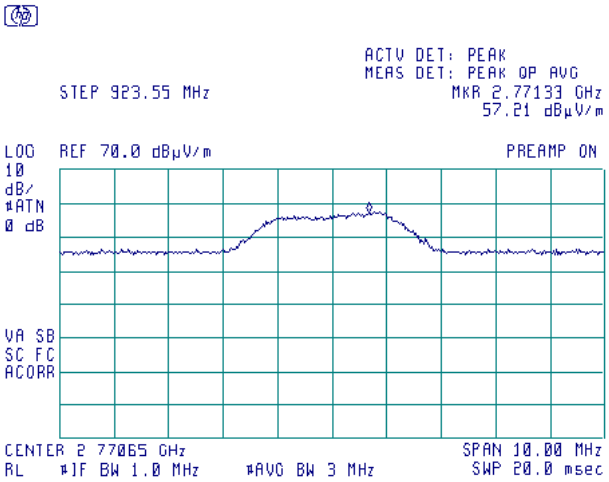
Plot 7.3.55 Radiated emission measurements at the third harmonic of high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
MODULATION: PSK



Plot 7.3.56 Radiated emission measurements at the third harmonic of high carrier frequency

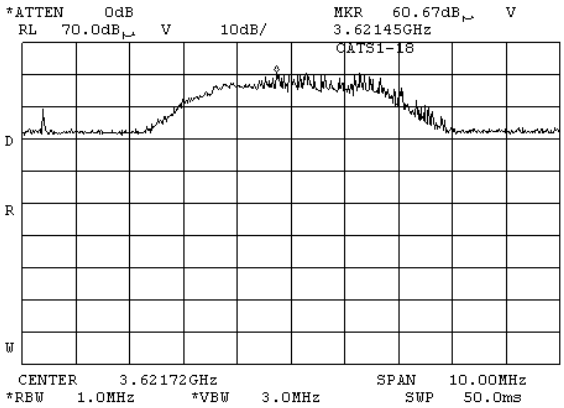
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

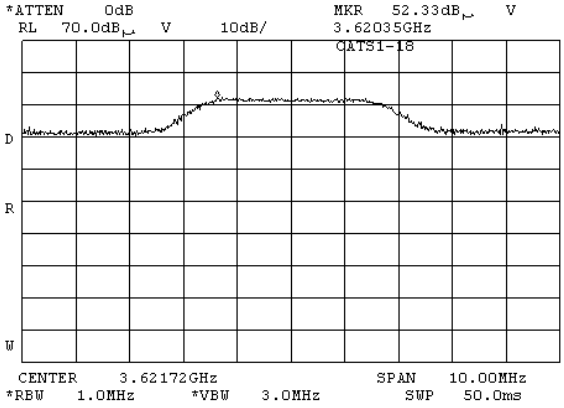
Plot 7.3.57 Radiated emission measurements at the fourth harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: PSK



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

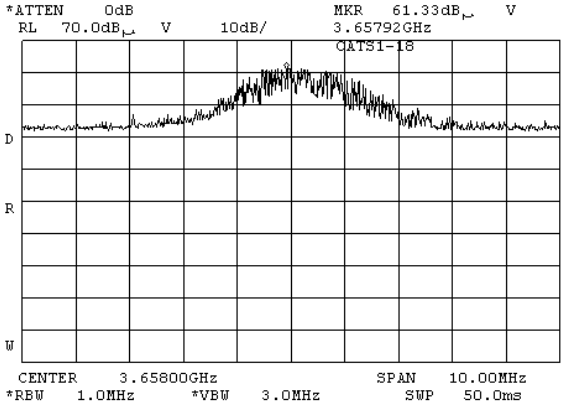
TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

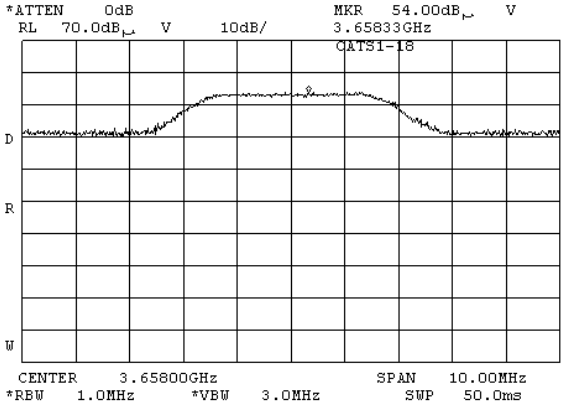
Plot 7.3.59 Radiated emission measurements at the fourth harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: PSK



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

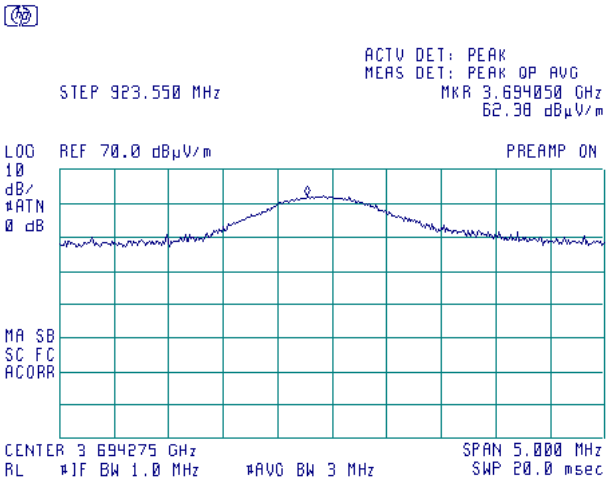
TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

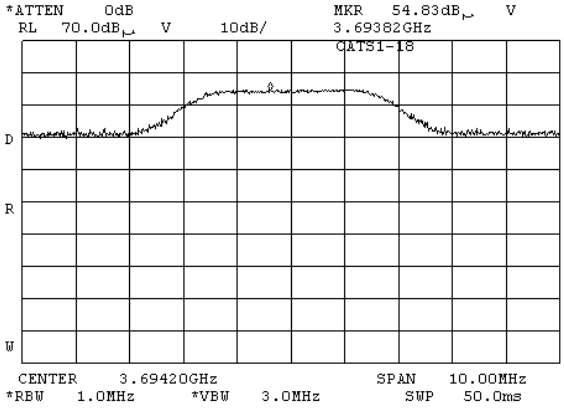
Plot 7.3.61 Radiated emission measurements at the fourth harmonic of high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
MODULATION: PSK



Plot 7.3.62 Radiated emission measurements at the fourth harmonic of high carrier frequency

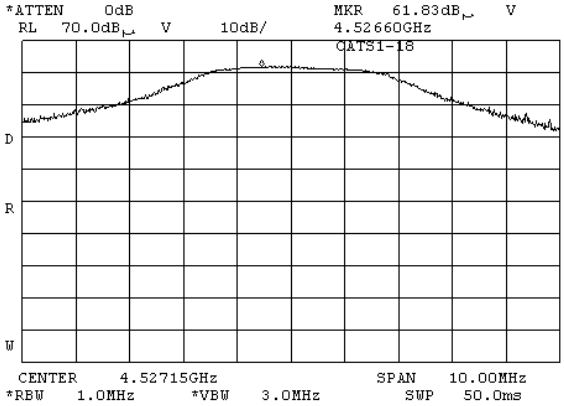
TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

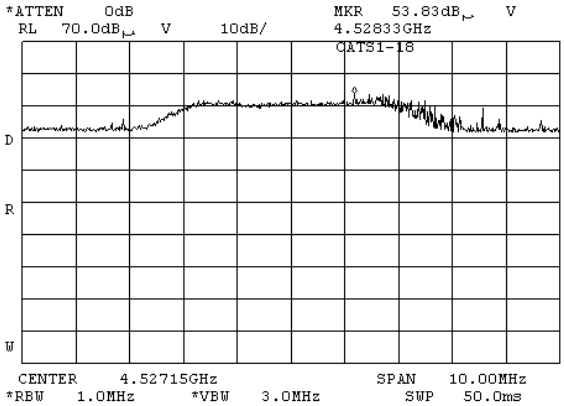
Plot 7.3.63 Radiated emission measurements at the fifth harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: PSK



Plot 7.3.64 Radiated emission measurements at the fifth harmonic of low carrier frequency

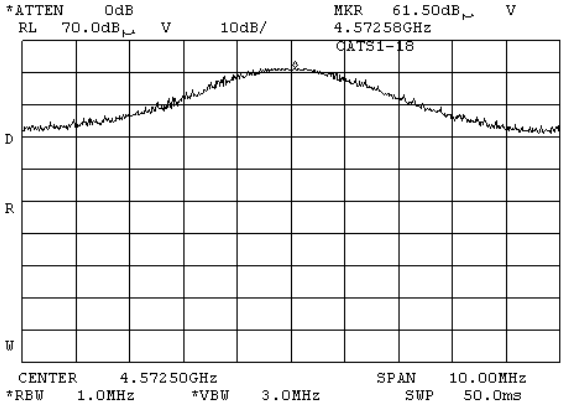
TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

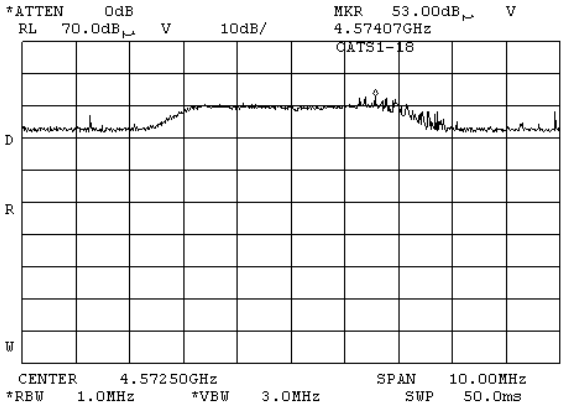
Plot 7.3.65 Radiated emission measurements at the fifth harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: PSK



Plot 7.3.66 Radiated emission measurements at the fifth harmonic of mid carrier frequency

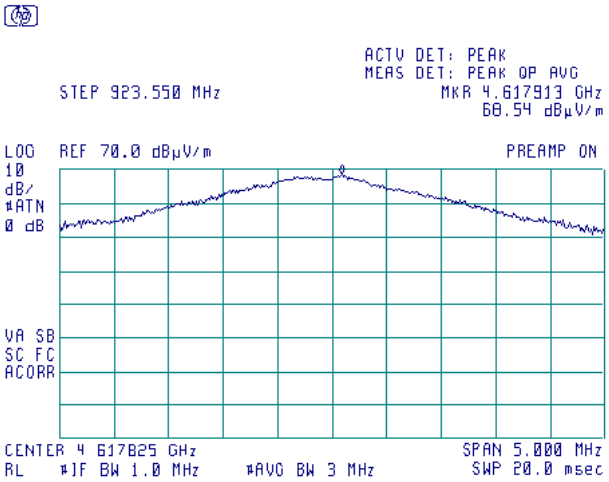
TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

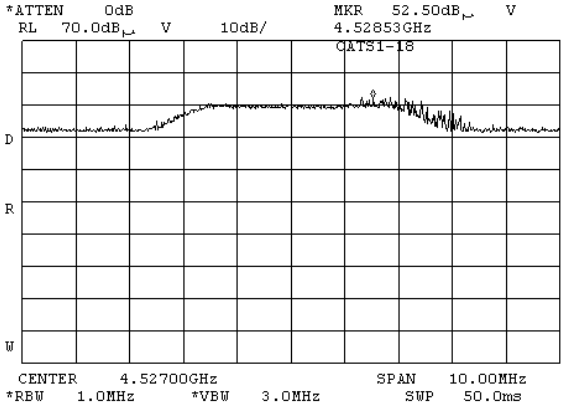
Plot 7.3.67 Radiated emission measurements at the fifth harmonic of high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
MODULATION: PSK



Plot 7.3.68 Radiated emission measurements at the fifth harmonic of high carrier frequency

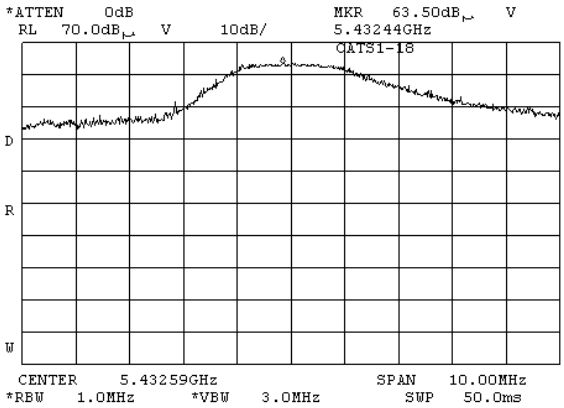
TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

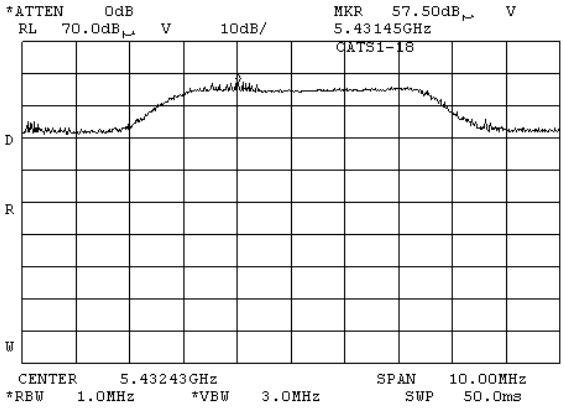
Plot 7.3.69 Radiated emission measurements at the sixth harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: PSK



Plot 7.3.70 Radiated emission measurements at the sixth harmonic of low carrier frequency

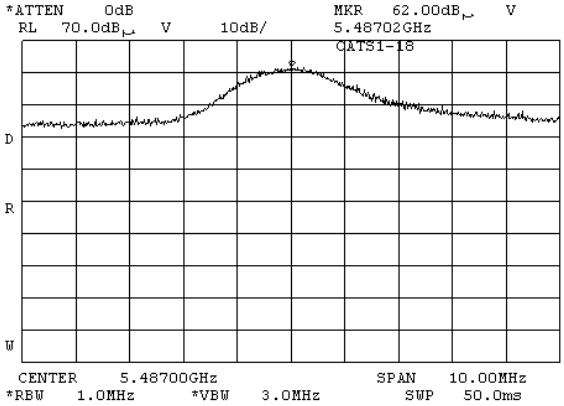
TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

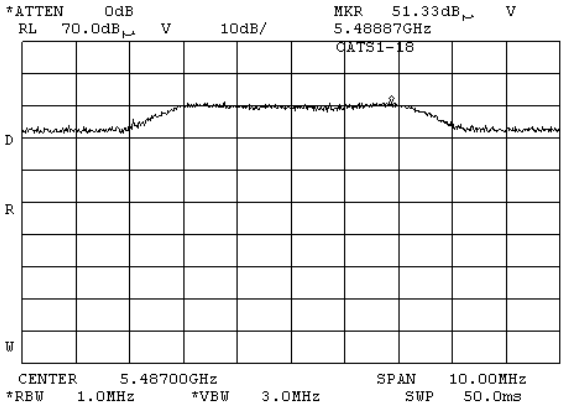
Plot 7.3.71 Radiated emission measurements at the sixth harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: PSK



Plot 7.3.72 Radiated emission measurements at the sixth harmonic of mid carrier frequency

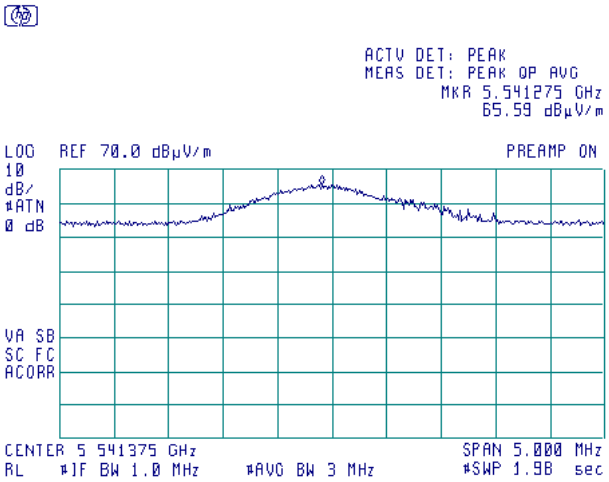
TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

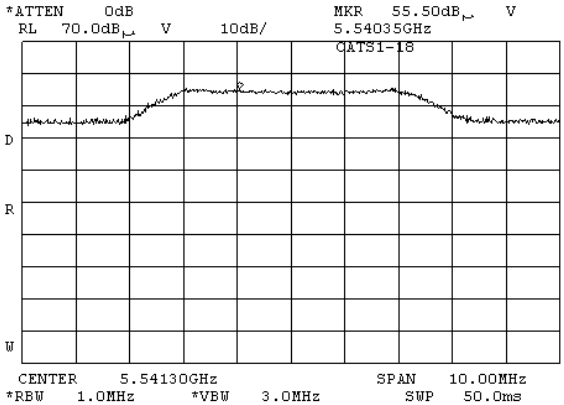
Plot 7.3.73 Radiated emission measurements at the sixth harmonic of high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
MODULATION: PSK



Plot 7.3.74 Radiated emission measurements at the sixth harmonic of high carrier frequency

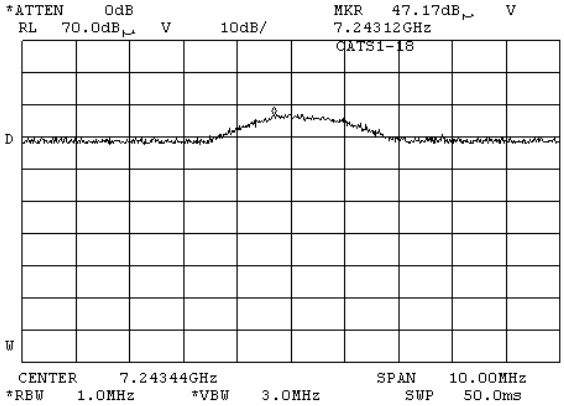
TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

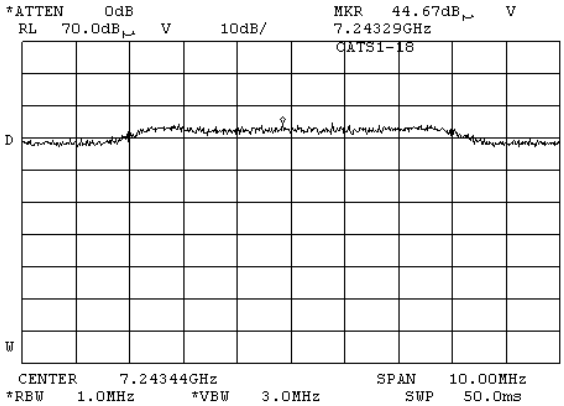
Plot 7.3.75 Radiated emission measurements at the eighth harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: PSK



Plot 7.3.76 Radiated emission measurements at the eighth harmonic of low carrier frequency

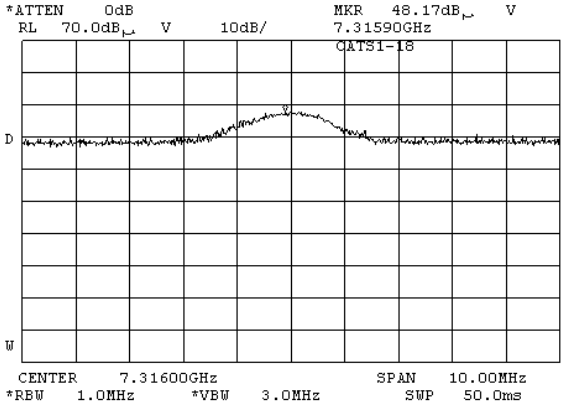
TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

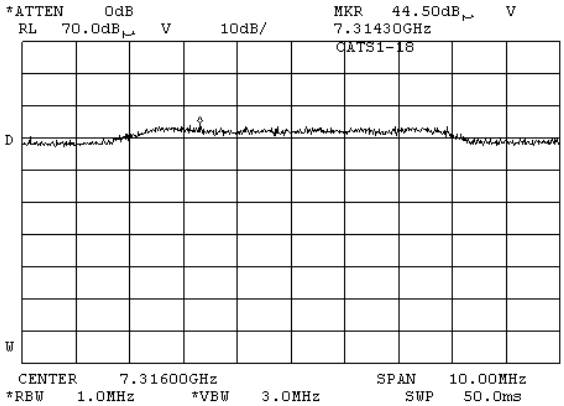
Plot 7.3.77 Radiated emission measurements at the eighth harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: PSK



Plot 7.3.78 Radiated emission measurements at the eighth harmonic of mid carrier frequency

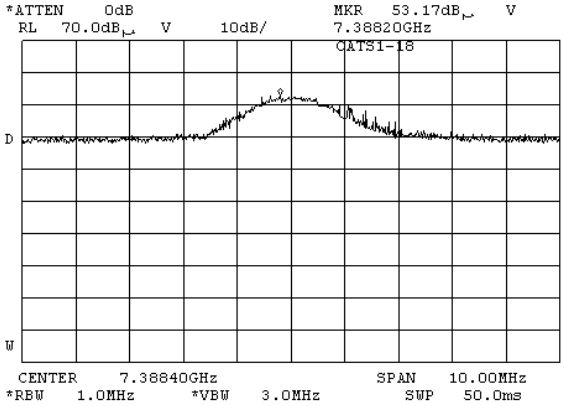
TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

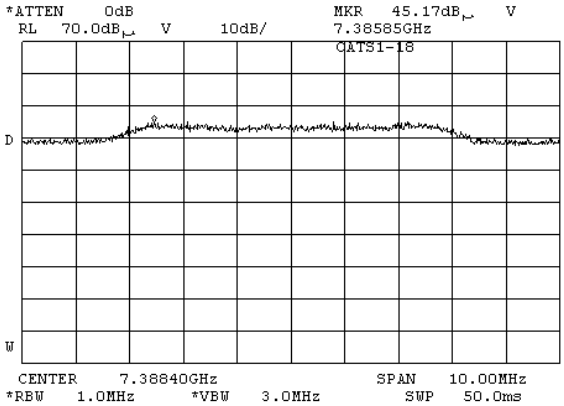
Plot 7.3.79 Radiated emission measurements at the eighth harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: PSK



Plot 7.3.80 Radiated emission measurements at the eighth harmonic of high carrier frequency

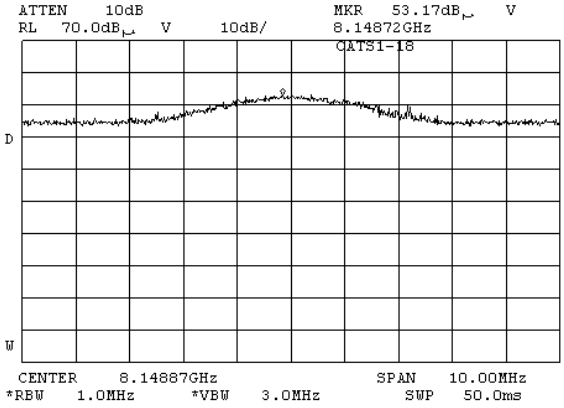
TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

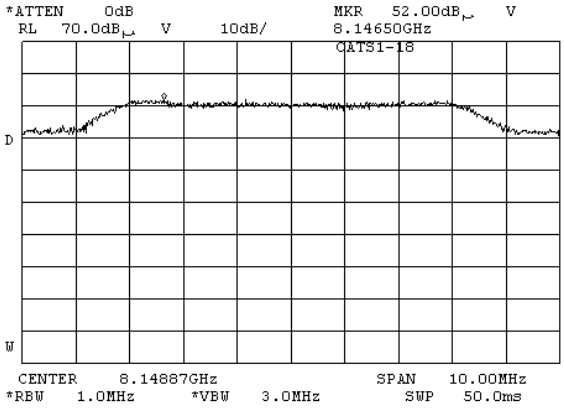
Plot 7.3.81 Radiated emission measurements at the ninth harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: PSK



Plot 7.3.82 Radiated emission measurements at the ninth harmonic of low carrier frequency

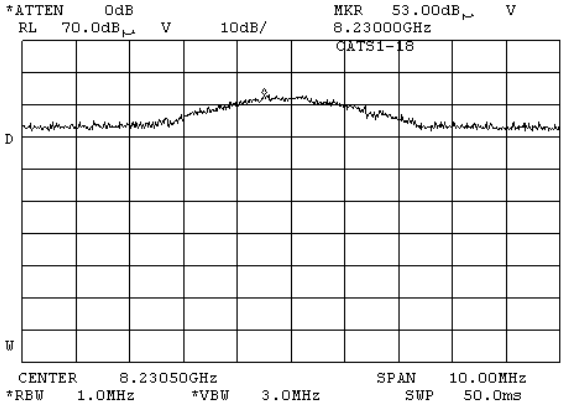
TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

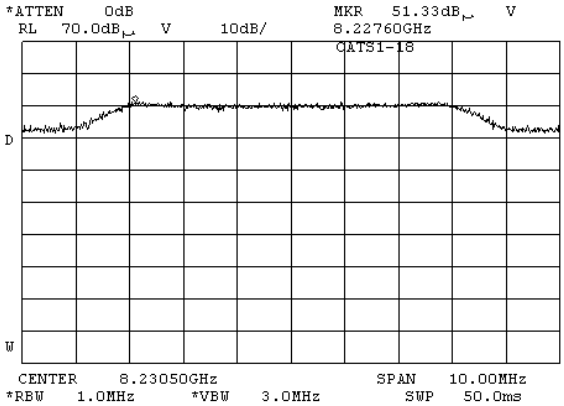
Plot 7.3.83 Radiated emission measurements at the ninth harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: PSK



Plot 7.3.84 Radiated emission measurements at the ninth harmonic of mid carrier frequency

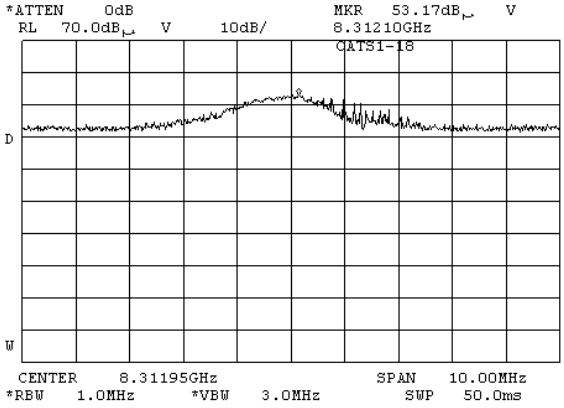
TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: FSK



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

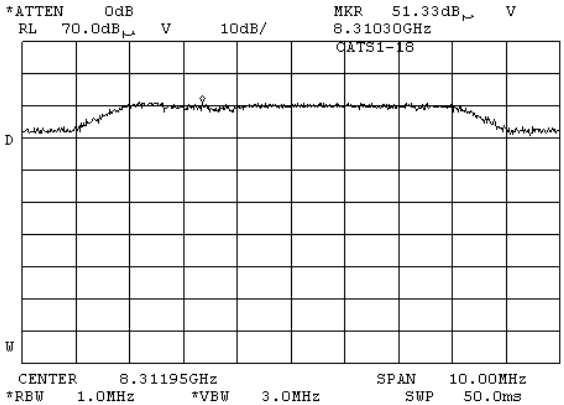
Plot 7.3.85 Radiated emission measurements at the ninth harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: PSK



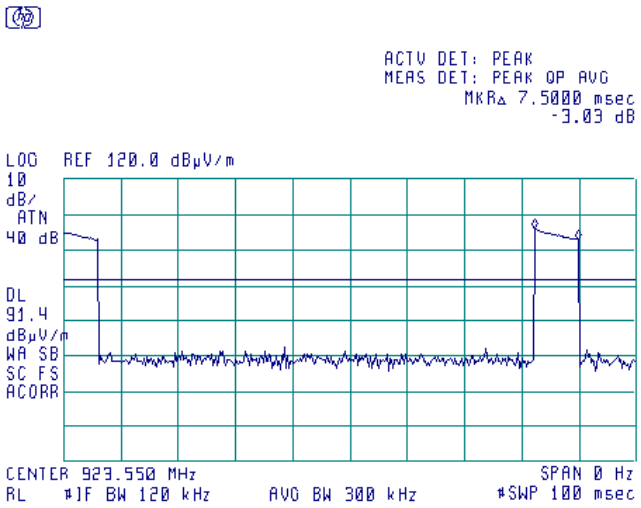
Plot 7.3.86 Radiated emission measurements at the ninth harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
MODULATION: FSK

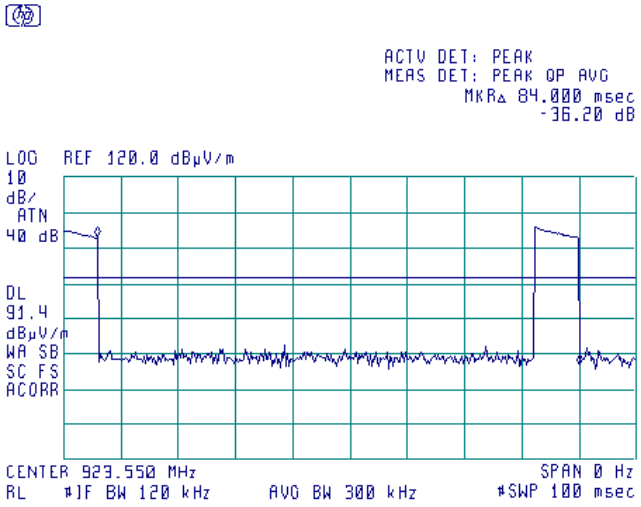


Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/22/2009 9:48:12 AM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: 3.6 VDC
Remarks:			

Plot 7.3.87 Transmission pulse duration



Plot 7.3.88 Transmission pulse period



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:	12/1/2009 2:55:29 PM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

7.4 Peak spectral power density

7.4.1 General

This test was performed to measure the peak spectral power density radiated by the transmitter RF antenna. Specification test limits are given in Table 7.4.1.

Table 7.4.1 Peak spectral power density limits

Assigned frequency range, MHz	Measurement bandwidth, kHz	Peak spectral power density, dBm	Equivalent field strength limit @ 3m, dB(μV/m)*
902.0 – 928.0	3.0	8.0	103.2
2400.0 – 2483.5			
5725.0 – 5850.0			

* - Equivalent field strength limit was calculated from the peak spectral power density as follows: E=sqrt(30×P)/r, where P is peak spectral power density and r is antenna to EUT distance in meters.

7.4.2 Test procedure for field strength measurements

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.

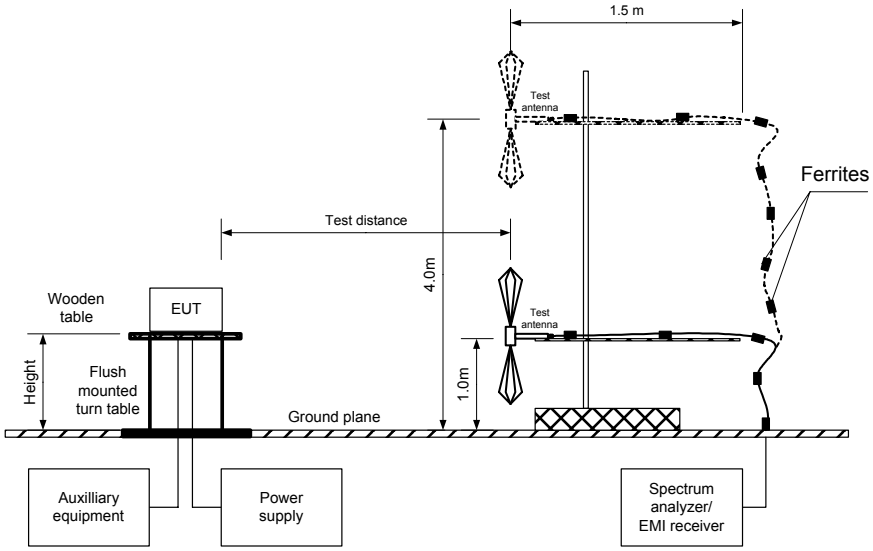
7.4.2.3 The field strength of the EUT carrier frequency was measured with antenna connected to spectrum analyzer/ EMI receiver. To find maximum radiation the turntable was rotated 360^0 and the measuring antenna height was swept in both vertical and horizontal polarizations.

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

7.4.2.5 The peak of emission was zoomed with span set just wide enough to capture the emission peak area and sweep time was set equal to span width divided by resolution bandwidth. Spectrum analyzer was set in peak hold mode, sufficient number of sweeps was allowed for trace stabilization and peak spectral power density was measured as provided in Table 7.4.2 and associated plots.

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:	12/1/2009 2:55:29 PM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

Figure 7.4.1 Setup for carrier field strength measurements



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:	12/1/2009 2:55:29 PM		
Temperature: 22.7 ºC	**Air Pressure:** 1022 hPa	**Relative Humidity:** 45 %	**Power Supply:** Battery
Remarks:			

Table 7.4.2 Field strength measurement of peak spectral power density

ASSIGNED FREQUENCY:	902-928 MHz
TEST DISTANCE:	3 m
TEST SITE:	Semi anechoic chamber
EUT HEIGHT:	0.8 m
DETECTOR USED:	Peak
RESOLUTION BANDWIDTH:	3 kHz
VIDEO BANDWIDTH:	10 kHz
TEST ANTENNA TYPE:	Biconilog (30 MHz – 1000 MHz) Double ridged guide (above 1000 MHz)
MODULATION:	FSK / PSK
MODULATING SIGNAL:	PRBS
TRANSMITTER OUTPUT POWER:	Maximum

Frequency, MHz	Field strength, dB(µV/m)	EUT antenna gain, dBi	Limit, dB(µV/m)	Margin, dB*	Antenna polarization	Antenna height, m	Turn-table position**, degrees
PSK modulation							
905.43	102.00	1	103.2	-2.20	V	1.3	175
914.50	102.06	1	103.2	-2.14	V	1.3	175
923.55	103.63	1	103.2	-0.57	V	1.3	175
FSK modulation							
905.43	101.00	1	103.2	-3.20	V	1.3	175
914.50	100.66	1	103.2	-3.54	V	1.3	175
923.55	101.24	1	103.2	-2.96	V	1.3	175

*- Margin = Field strength - EUT antenna gain - calculated field strength limit.
**- EUT front panel refer to 0 degrees position of turntable.

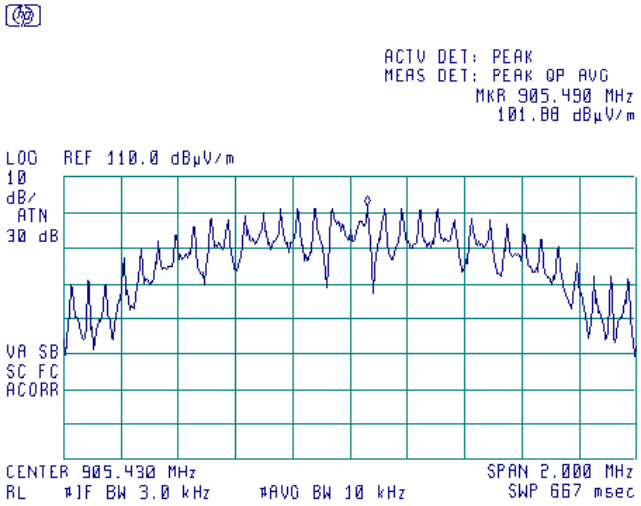
Reference numbers of test equipment used

HL 0521	HL 0604	HL 3121	HL 3616				

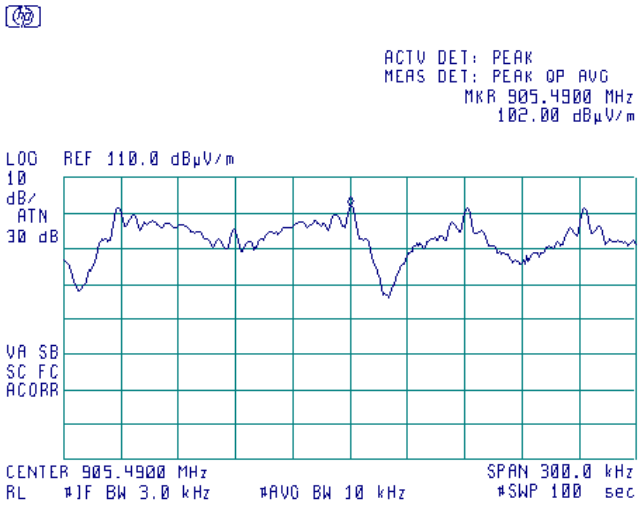
Full description is given in Appendix A.

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:	12/1/2009 2:55:29 PM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

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

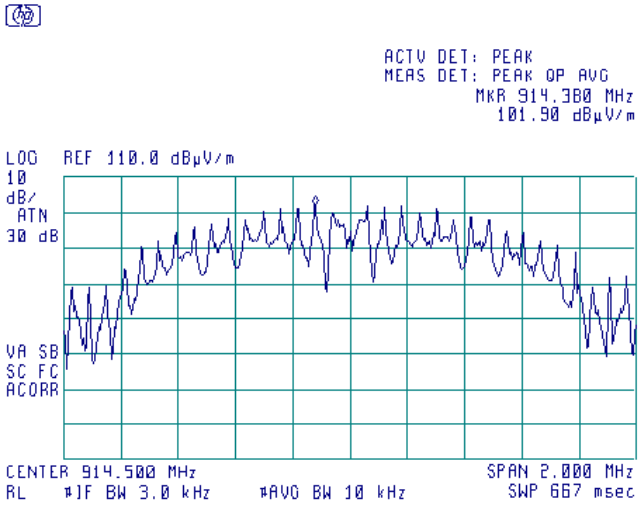


Plot 7.4.2 Peak spectral power density at low frequency zoomed at the peak, PSK modulation

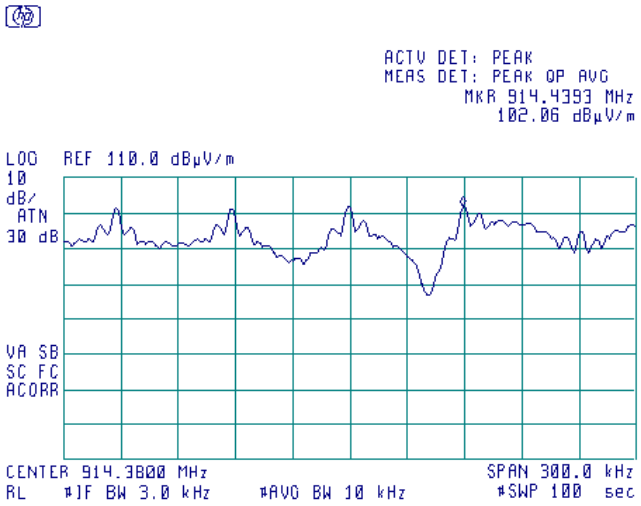


Test specification:	Section 15.247(d), Peak power density		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(d)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/1/2009 2:55:29 PM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

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

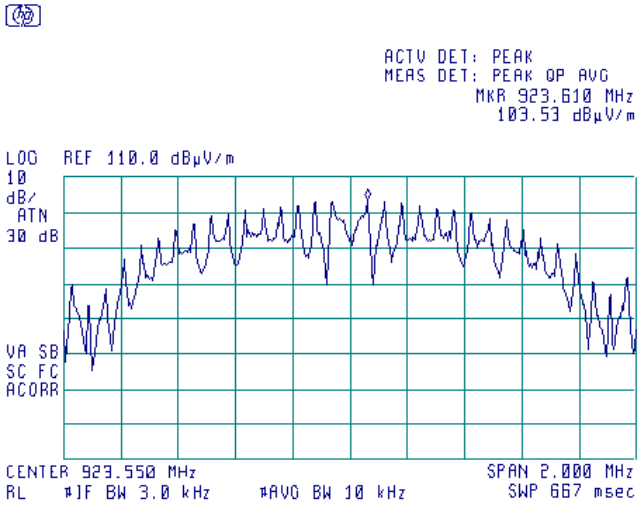


Plot 7.4.4 Peak spectral power density at mid frequency zoomed at the peak, PSK modulation

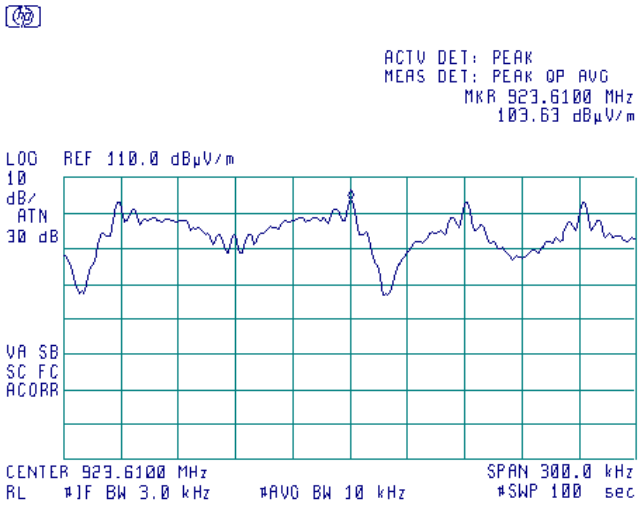


Test specification:	Section 15.247(d), Peak power density		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(d)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/1/2009 2:55:29 PM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

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

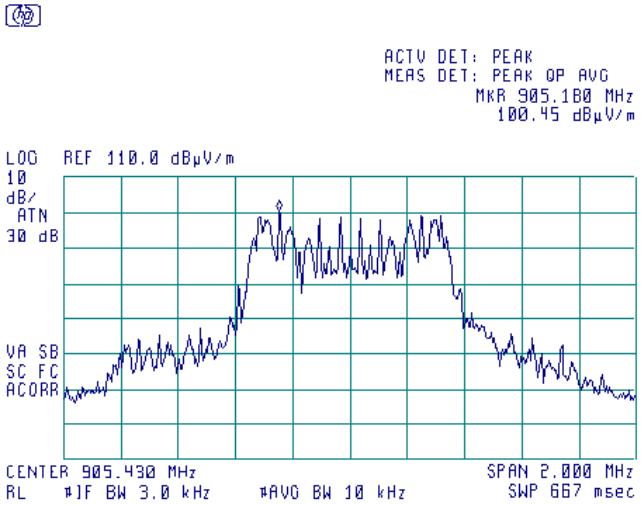


Plot 7.4.6 Peak spectral power density at high frequency zoomed at the peak, PSK modulation

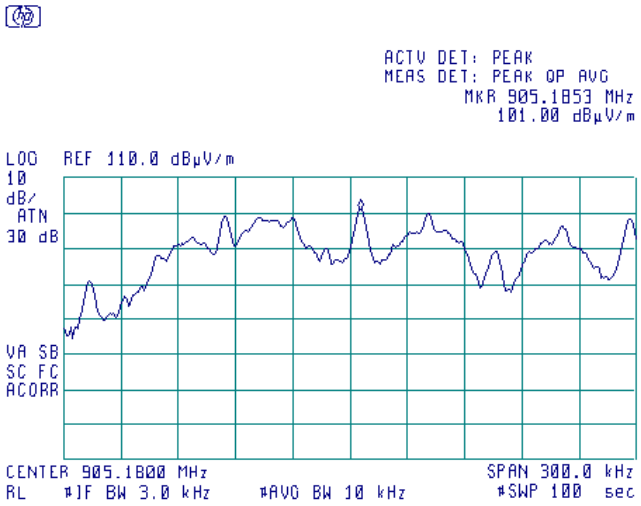


Test specification:	Section 15.247(d), Peak power density		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(d)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/1/2009 2:55:29 PM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

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

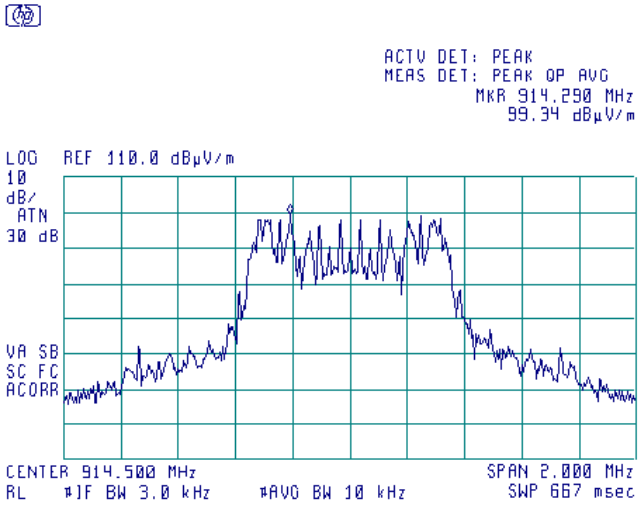


Plot 7.4.8 Peak spectral power density at low frequency zoomed at the peak, FSK modulation

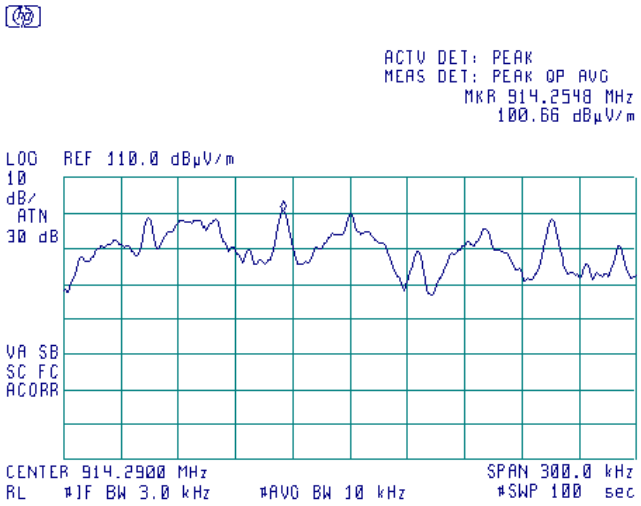


Test specification:	Section 15.247(d), Peak power density		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(d)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/1/2009 2:55:29 PM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

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

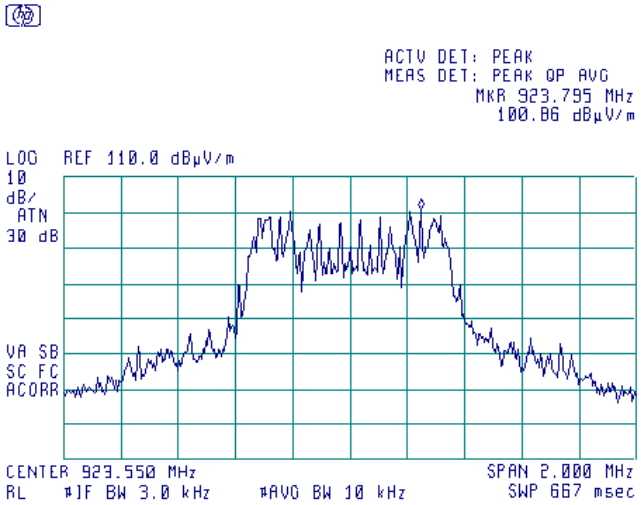


Plot 7.4.10 Peak spectral power density at mid frequency zoomed at the peak, FSK modulation

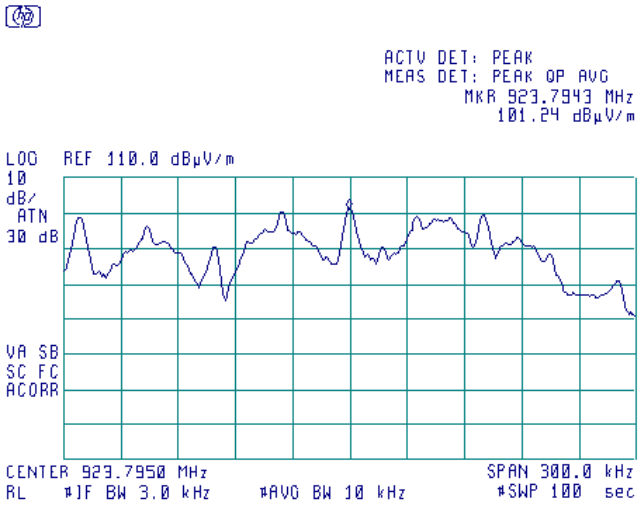


Test specification:	Section 15.247(d), Peak power density		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(d)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	12/1/2009 2:55:29 PM		
Temperature: 22.7 ºC	Air Pressure: 1022 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

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



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



Test specification:	**Section 15.203, Antenna requirement**		
Test procedure:	Visual inspection		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	12/22/2009 10:15:18 AM		
Temperature: 22.7 ºC	**Air Pressure:** 1022 hPa	**Relative Humidity:** 45 %	**Power Supply:** 3.6 VDC
Remarks:			

7.5 Antenna requirements

The EUT was verified for compliance with antenna requirements. A transmitter shall be designed to ensure that no antenna other than that furnished by the responsible party will be used with the device. It may be either permanently attached or employs a unique antenna connector for every antenna proposed for use with the EUT. This requirement does not apply to professionally installed transmitters.
The rationale for compliance with the above requirements was either visual inspection results or supplier declaration. The summary of results is provided in Table 7.5.1.

Table 7.5.1 Antenna requirements

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

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:	12/22/2009 10:30:59 AM		
Temperature: 22.4 ºC	Air Pressure: 1015 hPa	Relative Humidity: 46 %	Power Supply: 3.6 VDC
Remarks:			

8 Emission tests according to 47CFR part 15 subpart B requirements

8.1 Radiated emission measurements

8.1.1 General

This test was performed to measure radiated emissions from the EUT enclosure. Specification test limits are given in Table 8.1.1.

Table 8.1.1 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.

8.1.2 Test procedure

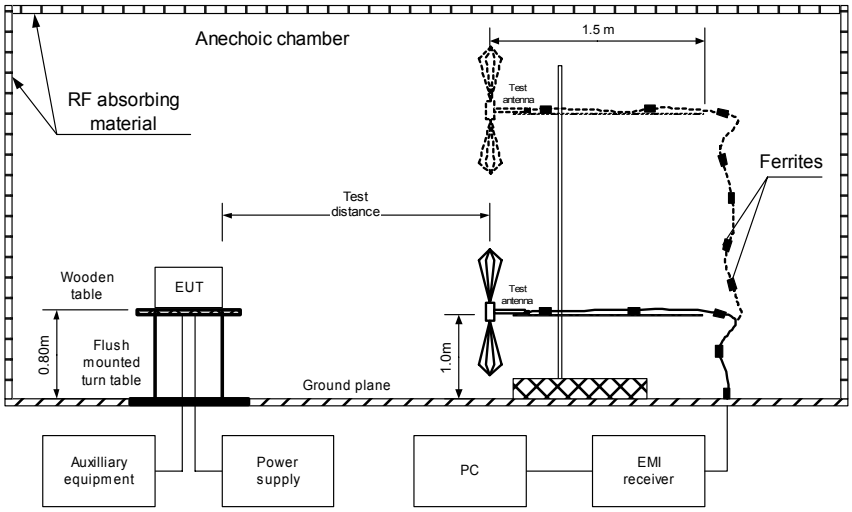
8.1.2.1 The EUT was set up as shown in Figure 8.1.1 and associated photograph/s, energized and the performance check was conducted.

8.1.2.2 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.

8.1.2.3 The worst test results (the lowest margins) were recorded in Table 8.1.2 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:	12/22/2009 10:30:59 AM		
Temperature: 22.4 ºC	Air Pressure: 1015 hPa	Relative Humidity: 46 %	Power Supply: 3.6 VDC
Remarks:			

Figure 8.1.1 Setup for radiated emission measurements in anechoic chamber, 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:	12/22/2009 10:30:59 AM		
Temperature: 22.4 ºC	**Air Pressure:** 1015 hPa	**Relative Humidity:** 46 %	**Power Supply:** 3.6 VDC
Remarks:			

Table 8.1.2 Radiated emission test results

EUT SET UP: TABLE-TOP
LIMIT: Class B
EUT OPERATING MODE: Receive / Stand-by
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*				
No emissions were found								Pass

TEST SITE: SEMI ANECHOIC CHAMBER
TEST DISTANCE: 3 m
DETECTORS USED: PEAK / AVERAGE
FREQUENCY RANGE: 1000 MHz – 2900 MHz
RESOLUTION BANDWIDTH: 1000 kHz

Frequency, MHz	Peak			Average			Antenna polarization	Antenna height, m	Turn-table position**, degrees	Verdict
	Measured emission, dB(µV/m)	Limit, dB(µV/m)	Margin, dB*	Measured emission, dB(µV/m)	Limit, dB(µV/m)	Margin, dB*				
No 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

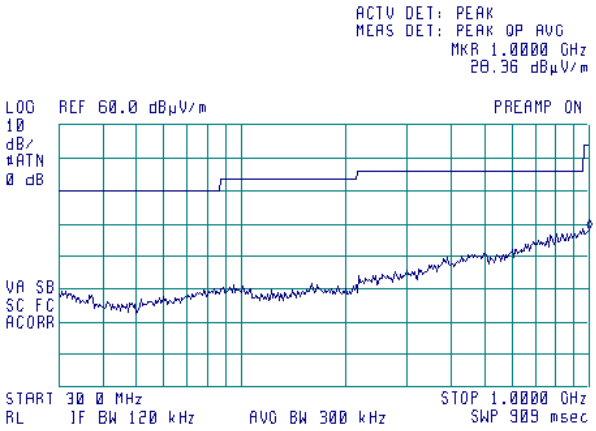
HL 0521	HL 0604	HL 1984	HL 2871	HL 3616			

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:	12/22/2009 10:30:59 AM		
Temperature: 22.4 ºC	Air Pressure: 1015 hPa	Relative Humidity: 46 %	Power Supply: 3.6 VDC
Remarks:			

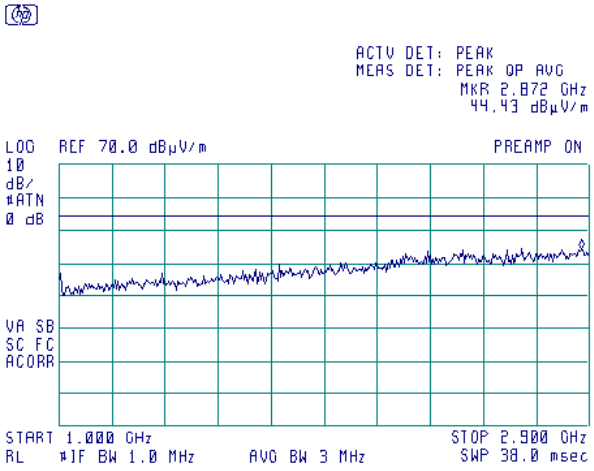
Plot 8.1.1 Radiated emission measurements in 30 - 1000 MHz range

TEST SITE:	Semi anechoic chamber
LIMIT:	Class B
TEST DISTANCE:	3 m
ANTENNA POLARIZATION	Vertical & Horizintal
EUT OPERATING MODE:	Receive



Plot 8.1.2 Radiated emission measurements above 1000 MHz, vertical antenna polarization

TEST SITE:	Semi anechoic chamber
LIMIT:	Class B
TEST DISTANCE:	3 m
ANTENNA POLARIZATION	Vertical & Horizintal
EUT OPERATING MODE:	Receive



9 APPENDIX A Test equipment and ancillaries used for tests

HL No	Description	Manufacturer	Model	Ser. No.	Last Cal.	Due Cal.
0446	Antenna, Loop, Active, 10 kHz - 30 MHz	EMCO	6502	2857	29-Jun-09	29-Jun-10
0521	EMI Receiver (Spectrum Analyzer) with RF filter section 9 kHz-6.5 GHz	Hewlett Packard	8546A	3617A 00319, 3448A002 53	27-Aug-09	27-Aug-10
0604	Antenna BiconiLog Log-Periodic/T Bow-TIE, 26 - 2000 MHz	EMCO	3141	9611-1011	11-Jan-09	11-Jan-10
1984	Antenna, Double-Ridged Waveguide Horn, 1-18 GHz, 300 W	EMC Test Systems	3115	9911-5964	24-Aug-09	24-Aug-10
2871	Microwave Cable Assembly, 18 GHz, 6.4 m, SMA - SMA	Huber-Suhner	198-8155-00	2871	16-Sep-09	16-Sep-10
3121	Microwave Cable Assembly, 18 GHz, 6.4 m, SMA - SMA	Huber-Suhner	198-9155-00	3121	30-Dec-08	30-Dec-09
3122	Microwave Cable Assembly, 18 GHz, 6.4 m, SMA - SMA	Huber-Suhner	198-9155-00	3122	30-Dec-08	30-Dec-09
3344	High Pass Filter, 50 Ohm, 3400 to 9900 MHz	Mini-Circuits	VHF-3100+	NA	05-Oct-09	05-Oct-10
3346	High Pass Filter, 50 Ohm, 5000 to 11000 MHz	Mini-Circuits	VHF-4600+	NA	05-Oct-09	05-Oct-10
3531	Amplifier, low noise, 2 to 8 GHz	Quinstar Technology	QLJ-02084040 -J0	111590020 02	06-Dec-09	06-Dec-10
3534	Amplifier, low noise, 6 to 18 GHz	Quinstar Technology	QLJ-06184040 -J0	111590010 02	06-Dec-09	06-Dec-10
3616	Cable RF, 6.5 m, N type-N type, DC-6.5 GHz	Suhner Switzerland	Rg 214/U	NA	02-Dec-09	02-Dec-10

10 APPENDIX B Measurement uncertainties

Expanded uncertainty at 95% confidence in Hermon Labs EMC measurements

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

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

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

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

11 APPENDIX C Test laboratory description

Tests were performed at Hermon Laboratories Ltd., which is a fully independent, private, EMC, safety, environmental and telecommunication testing facility.
Hermon Laboratories is listed by the Federal Communications Commission (USA) for all parts of Code of Federal Regulations 47 (CFR 47), Registration Numbers 90624 for OATS and 90623 for the anechoic chamber; by Industry Canada for electromagnetic emissions (file numbers IC 2186A-1 for OATS and IC 2186A-2 for anechoic chamber), certified by VCCI, Japan (the registration numbers are R-808 for OATS, R-1082 for anechoic chamber, C-845 for conducted emissions site), has a status of a Telefication - Listed Testing Laboratory, Certificate No. L138/00. The laboratory is accredited by American Association for Laboratory Accreditation (USA) according to ISO/IEC 17025 for electromagnetic compatibility, product safety, telecommunications testing and environmental simulation (for exact scope please refer to Certificate No. 839.01).

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12 APPENDIX D Specification references

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

13 APPENDIX E Test equipment correction factors

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

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

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

Antenna factor

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

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

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

Antenna factor
Double-ridged wave guide horn antenna
Model 3115, S/N 9911-5964, HL1984

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

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

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

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

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

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

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

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

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

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

14 APPENDIX F Abbreviations and acronyms

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

END OF DOCUMENT