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TEST REPORT

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

FOR:

Telematics Wireless Ltd.

Water reader

Model:Booster

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1 Applicant information

Client name:	Telematics Wireless Ltd.
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Telephone:	+972 3557 5767
Fax:	+972 3557 5753
E-mail:	slavas@telematics-wireless.com
Contact name:	Mr. Slava Snitkovsky

2 Equipment under test attributes

Product name:	Water reader (Booster)
Product type:	Transceiver
Model(s):	Booster
Serial number:	000023
Hardware version:	B
Software release:	A206
Receipt date	1/8/2007

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@telematics-wireless.com
Contact name:	Mr. Slava Snitkovsky

4 Test details

Project ID:	17650
Location:	Hermon Laboratories Ltd. Harakevet Industrial Zone, Binyamina 30500, Israel
Test started:	1/08/2007
Test completed:	5/07/2007
Test specification(s):	FCC 47CFR part 15, subpart C, §15.247; subpart B

5 Tests summary

Test	Status
Transmitter characteristics according to FCC 15.247 (DTS)	
Section 15.247(a)2, 6 dB bandwidth	Pass
Section 15.247(b)3, Peak output power	Pass
Section 15.247(e)(i), RF exposure	Pass, the exhibit to the application of certification is provided
Section 15.247(d), Peak power density	Pass
Section 15.207(a), Conducted emission	Not required
Transmitter characteristics according to FCC 15.247 (FHSS)	
Section 15.247(a)1, 20 dB bandwidth	Pass
Section 15.247(a)1, Frequency separation	Pass
Section 15.247(a)1, Number of hopping frequencies	Pass
Section 15.247(a)1, Average time of occupancy	Pass
Section 15.247(b), Peak output power	Pass
Section 15.247(b)5, RF exposure	Pass, the exhibit to the application of certification is provided
Section 15.247(c), Emissions at band edges	Pass
Section 15.247(c), Radiated spurious emissions	Pass
Section 15.207(a), Conducted emission	Not required
Unintentional emissions	
Section 15.107, Conducted emission at AC power port	Not required
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.

This test report replaces the previously issued test report identified by Doc ID:TELRAD_FCC.17650.

	Name and Title	Date	Signature
Tested by:	Mr. A. Adelberg, test engineer	May 7, 2007	
Reviewed by:	Mrs. M. Cherniavsky, certification engineer	May 27, 2007	
Approved by:	Mr. M. Nikishin, EMC and Radio group leader	May 30, 2007	

6 EUT description

6.1 General information

The product is a transceiver operatiing in three transmit modes: in 905.25-924.75 MHz range (FHSS and DTS) and @915 MHz (DTS) without simultaneous operation.

EUT operational modes overview:

Mode number	Modulation technique	Low frequency	Mid frequency	High frequency
5	Frequency-hopping spread spectrum (FHSS)	905.25	915.00	924.75
2	Direct-Sequence Spread Spectrum (DSSS)	905.25	915.00	924.75
3	Direct-Sequence Spread Spectrum (DSSS)	–	915.00	–

6.2 Transmitter characteristics for operation in 905.25-924.75 MHz

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	905.25-924.75 MHz
RF channel spacing	NA

Maximum rated output power	At transmitter 50 Ω RF output connector	NA
	Effective radiated power (for equipment with no RF connector)	7.63 dBm (DTS) 29.54 dBm (FHSS)

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
Unique coupling (“external”) for FHSS	Telematics Wireless	Inverted F antenna	4 dBi
(“internal”) for DTS	Telematics Wireless	Printed λ/4	4 dBi

Transmitter aggregate data rate/s	60 kbps (FHSS), 120 kbps (DTS)				
Transmitter aggregate symbol (baud) rate/s	NA				
Type of modulation	FSK				
Modulating test signal (baseband)	PRBS				
Maximum transmitter duty cycle in normal use	0.1%				
Transmitter duty cycle supplied for test (DTS)	2.7%	**Tx ON time**	13.55 msec	**Period**	500.6 msec
Transmitter duty cycle supplied for test (FHSS)	1.23%	**Tx ON time**	6.15 msec	**Period**	502.5 msec

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

Common power source for transmitter and receiver	X	yes	no

Spread spectrum technique used		Frequency hopping (FHSS)
	X	Digital transmission system (DTS)
		Hybrid

Spread spectrum parameters for transmitters tested per FCC 15.247 only		
DSSS	Chip sequence length	15 bits
	Spectrum width	2 MHz
FHSS	Total number of hops	54
	Bandwidth per hop	230 kHz
	Max. separation of hops	350 kHz

6.3 Transmitter characteristics for operation @915 MHz

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	915 MHz
RF channel spacing	NA

Maximum rated output power	At transmitter 50 Ω RF output connector	NA
	Effective radiated power (for equipment with no RF connector)	8.2 dBm

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
Unique coupling (“external”)	Telematics wireless	Inverted F antenna	4 dBi

Transmitter aggregate data rate/s	120 kbps					
Transmitter aggregate symbol (baud) rate/s	NA					
Type of modulation	FSK					
Modulating test signal (baseband)	PRBS					
Maximum transmitter duty cycle in normal use	0.1%					
Transmitter duty cycle supplied for test	2.7%	**Tx ON time**	13.55 msec	**Period**	500.6 msec	

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

Common power source for transmitter and receiver	X	yes	no

Spread spectrum technique used		Frequency hopping (FHSS)
	X	Digital transmission system (DTS)
		Hybrid

Spread spectrum parameters for transmitters tested per FCC 15.247 only		
DSSS	Chip sequence length	15 bits
	Spectrum width	2 MHz

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:	5/7/2007 10:33:09 AM		
Temperature: 26ºC	Air Pressure: 1012 hPa	Relative Humidity: 37%	Power Supply: 3.6 V DC
Remarks:			

7 Transmitter tests according to 47CFR part 15 subpart C §15.247 (DTS) 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.

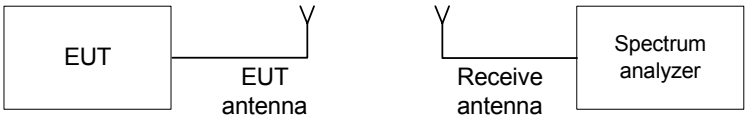
7.1.2 Test procedure

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:	5/7/2007 10:33:09 AM		
Temperature: 26ºC	**Air Pressure:** 1012 hPa	**Relative Humidity:** 37%	**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
MODULATING SIGNAL:	PRBS
BIT RATE:	120 kbps

Carrier frequency, MHz	6 dB bandwidth, kHz	Limit, kHz	Margin, kHz	Verdict
Mode 2				
Low frequency				
905.25	605	500	105	Pass
Mid frequency				
915.00	610	500	110	Pass
High frequency				
924.75	605	500	105	Pass
Mode 3				
Mid frequency				
915.00	530	500	30	Pass

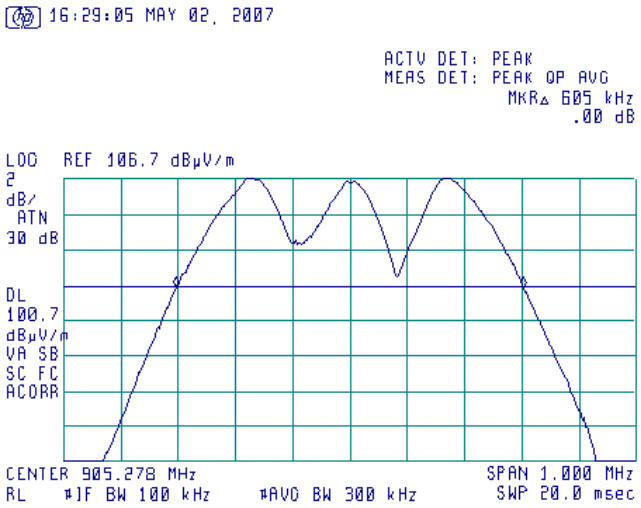
Reference numbers of test equipment used

HL 0569	HL 1430	HL 1365	HL 1947					

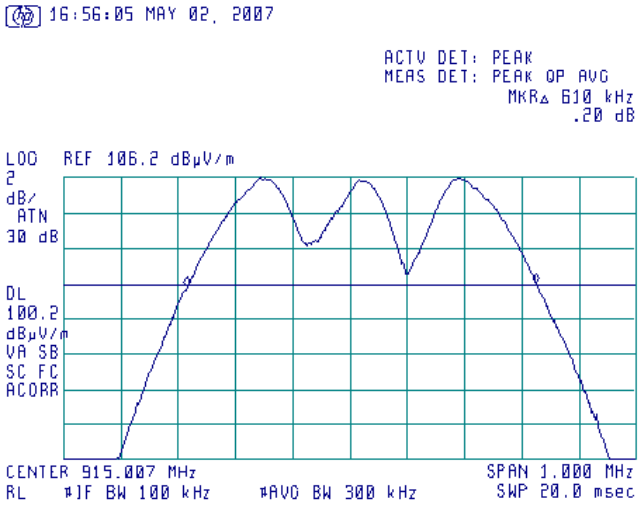
Full description is given in Appendix A.

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:	5/7/2007 10:33:09 AM		
Temperature: 26ºC	Air Pressure: 1012 hPa	Relative Humidity: 37%	Power Supply: 3.6 V DC
Remarks:			

Plot 7.1.1 The 6 dB bandwidth test result at low frequency, mode 2

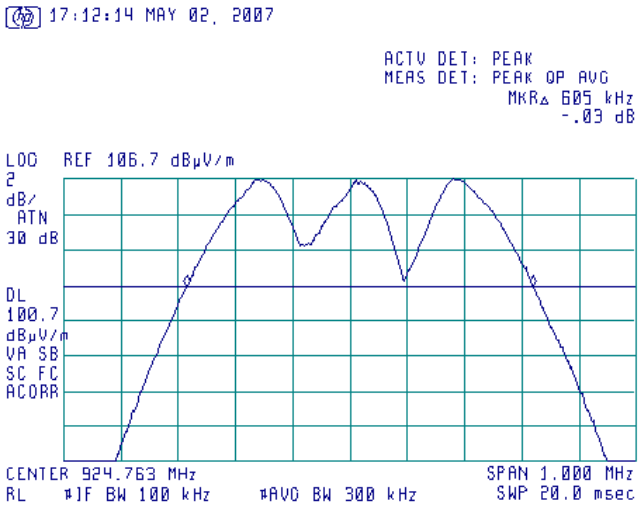


Plot 7.1.2 The 6 dB bandwidth test result at mid frequency, mode 2

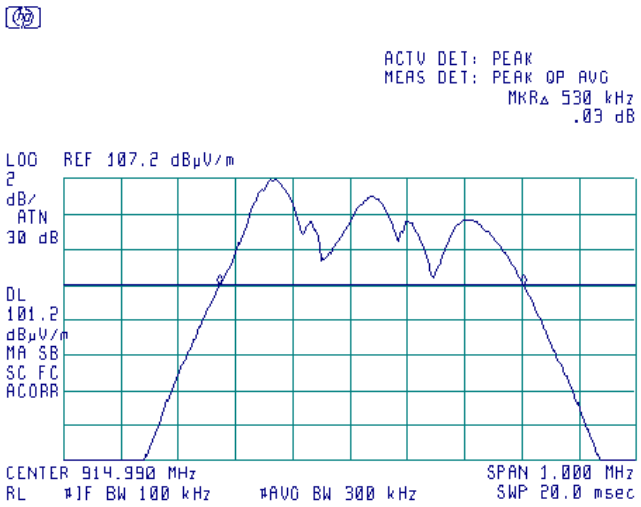


Test specification:	Section 15.247(a)2, 6 dB bandwidth		
Test procedure:	FR Vol.62, page 26243, Section 15.247(a)2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/7/2007 10:33:09 AM		
Temperature: 26ºC	Air Pressure: 1012 hPa	Relative Humidity: 37%	Power Supply: 3.6 V DC
Remarks:			

Plot 7.1.3 The 6 dB bandwidth test result at high frequency, mode 2



Plot 7.1.4 The 6 dB bandwidth test result at high frequency, mode 3



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:	5/8/2007 11:01:46 AM		
Temperature: 25ºC	Air Pressure: 1013 hPa	Relative Humidity: 42%	Power Supply: 3.6 V DC
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:

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

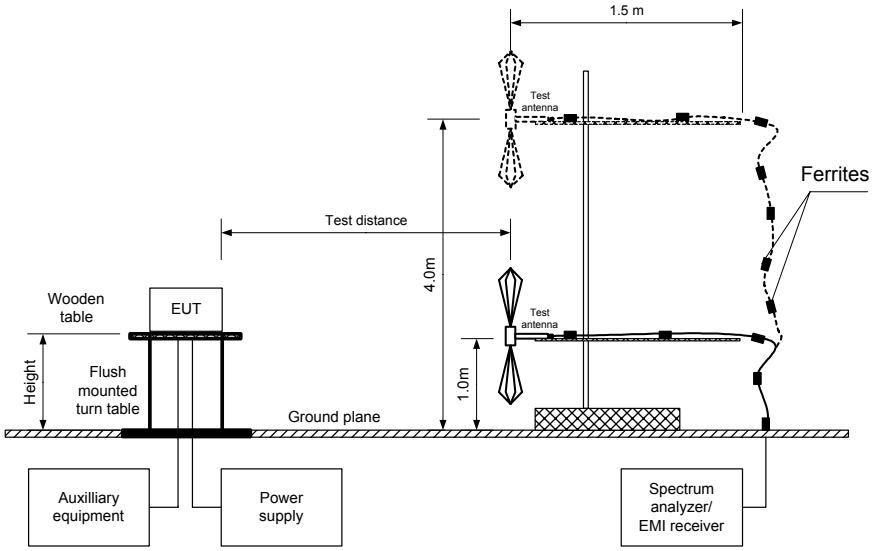
where P is the peak output power in W, E is the field strength in V/m, d is the test distance and G is the transmitter numeric antenna gain over an isotropic radiator.
The above equation was converted in logarithmic units for 3 m test distance:

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:	5/8/2007 11:01:46 AM		
Temperature: 25ºC	Air Pressure: 1013 hPa	Relative Humidity: 42%	Power Supply: 3.6 V DC
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:	5/8/2007 11:01:46 AM		
Temperature: 25ºC	**Air Pressure:** 1013 hPa	**Relative Humidity:** 42%	**Power Supply:** 3.6 V DC
Remarks:			

Table 7.2.2 Peak output power test results

ASSIGNED FREQUENCY:	902 – 928 MHz
TEST DISTANCE:	3 m
TEST SITE:	OATS
EUT HEIGHT:	0.8 m
DETECTOR USED:	Peak
TEST ANTENNA TYPE:	Biconilog (30 MHz – 1000 MHz)
MODULATION:	FSK
MODULATING SIGNAL:	PRBS
BIT RATE:	120 kbps
TRANSMITTER OUTPUT POWER SETTINGS:	Maximum
DETECTOR USED:	Peak
EUT 6 dB BANDWIDTH:	0.6 MHz
RESOLUTION BANDWIDTH:	1 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
Mode 2									
905.103	106.21	Vertical	1.0	123	4.0	6.98	30.0	-23.02	Pass
914.875	106.44	Vertical	1.0	117	4.0	7.21	30.0	-22.79	Pass
924.600	106.86	Vertical	1.0	123	4.0	7.63	30.0	-22.37	Pass
Mode 3									
914.857	107.44	Vertical	1.0	147	4.0	8.21	30.0	-21.79	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.

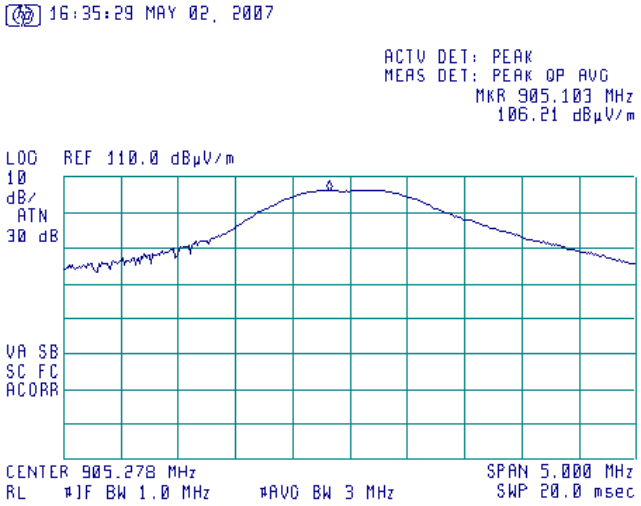
Reference numbers of test equipment used

HL 0415	HL 0569	HL 0812	HL 1430				

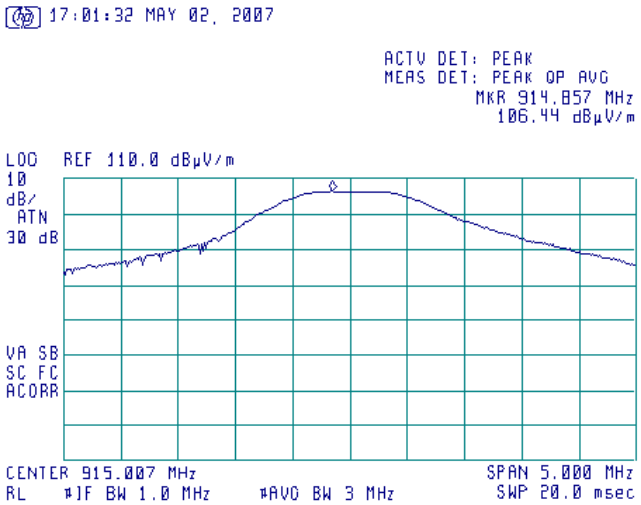
Full description is given in Appendix A.

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:	5/8/2007 11:01:46 AM		
Temperature: 25ºC	Air Pressure: 1013 hPa	Relative Humidity: 42%	Power Supply: 3.6 V DC
Remarks:			

Plot 7.2.1 Field strength of carrier at low frequency, mode 2

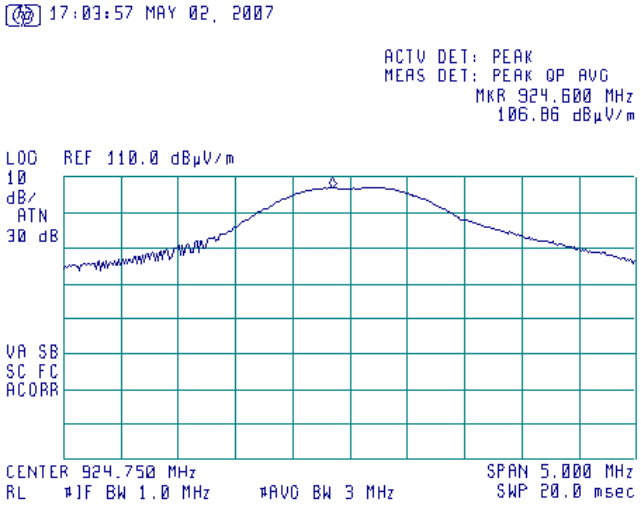


Plot 7.2.2 Field strength of carrier at mid frequency, mode 2

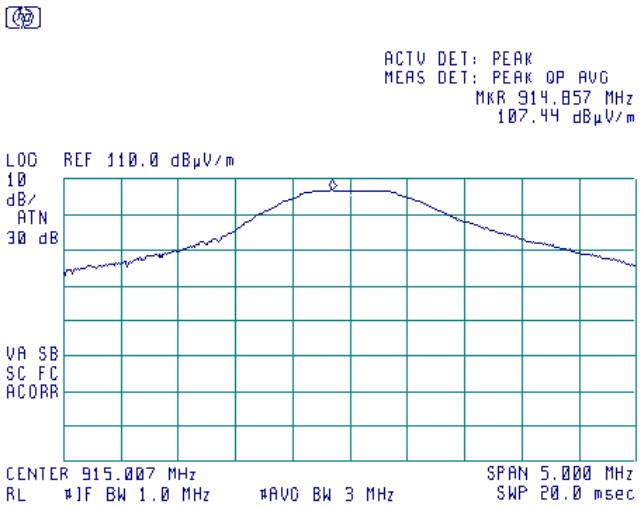


Test specification:	Section 15.247(b)3, Peak output power		
Test procedure:	FR Vol.62, page 26243, Section 15.247(b)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/8/2007 11:01:46 AM		
Temperature: 25ºC	Air Pressure: 1013 hPa	Relative Humidity: 42%	Power Supply: 3.6 V DC
Remarks:			

Plot 7.2.3 Field strength of carrier at high frequency, mode 2



Plot 7.2.4 Field strength of carrier at carrier frequency, mode 3



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:	5/7/2007 10:31:26 AM		
Temperature: 26ºC	Air Pressure: 1012 hPa	Relative Humidity: 37%	Power Supply: 3.6 V DC
Remarks:			

7.3 Peak spectral power density

7.3.1 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 7.3.1.

Table 7.3.1 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.

7.3.2 Test procedure for field strength measurements

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

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

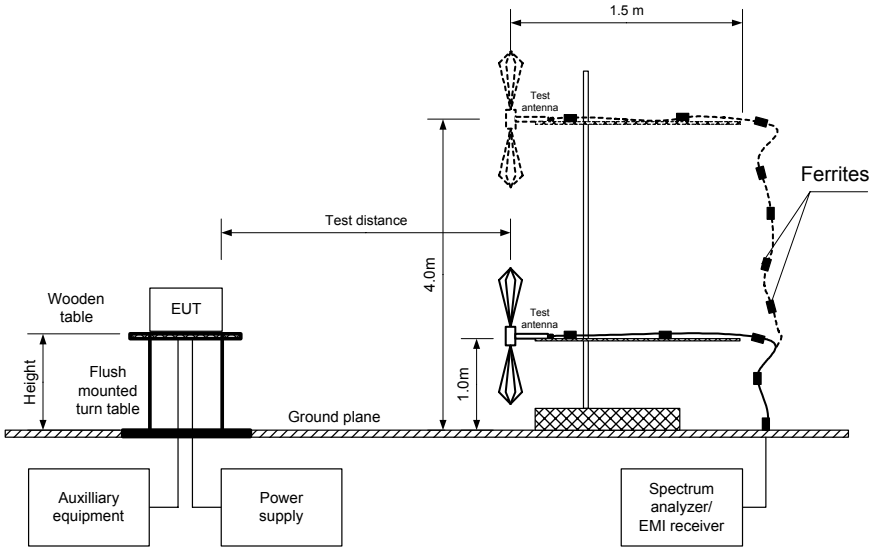
7.3.2.3 The field strength of the EUT carrier frequency was measured with antenna connected to spectrum analyzer/ EMI receiver. To find maximum radiation the turntable was rotated 360^0 and the measuring antenna height was swept in both vertical and horizontal polarizations.

7.3.2.4 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.

7.3.2.5 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 7.3.2 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:	5/7/2007 10:31:26 AM		
Temperature: 26ºC	Air Pressure: 1012 hPa	Relative Humidity: 37%	Power Supply: 3.6 V DC
Remarks:			

Figure 7.3.1 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:	5/7/2007 10:31:26 AM		
Temperature: 26ºC	**Air Pressure:** 1012 hPa	**Relative Humidity:** 37%	**Power Supply:** 3.6 V DC
Remarks:			

Table 7.3.2 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)
MODULATION: FSK
MODULATING SIGNAL: PRBS
BIT RATE: 120 kbps
TRANSMITTER OUTPUT POWER SETTINGS: 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
Mode 2							
905.4410	103.43	4.0	103.23	-3.81	Vertical	1.0	115
914.8515	104.39	4.0	103.23	-2.81	Vertical	1.0	120
924.9425	104.07	4.0	103.23	-3.16	Vertical	1.0	101
Mode 3							
914.8500	105.28	4.0	103.23	-1.95	Vertical	1.0	218

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

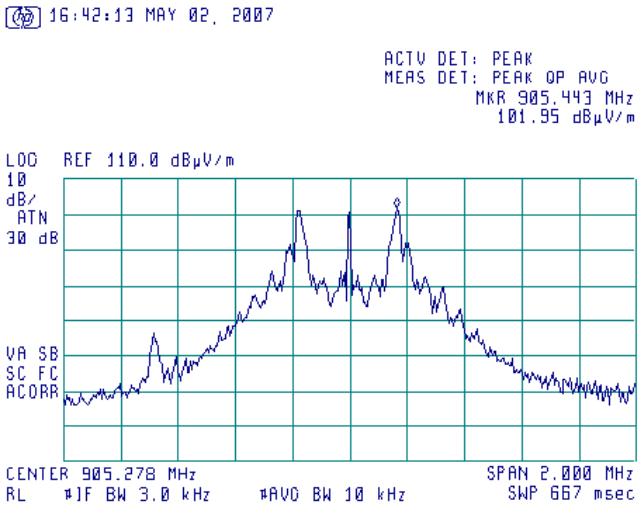
Reference numbers of test equipment used

HL 0521	HL 0589	HL 604	HL 2009				

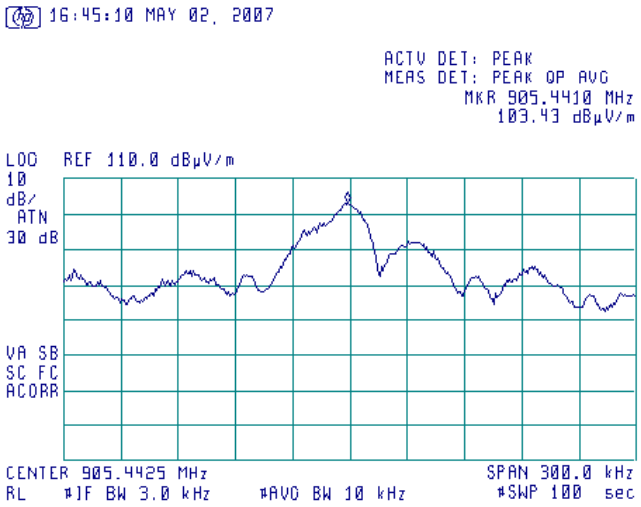
Full description is given in Appendix A.

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:	5/7/2007 10:31:26 AM		
Temperature: 26ºC	Air Pressure: 1012 hPa	Relative Humidity: 37%	Power Supply: 3.6 V DC
Remarks:			

Plot 7.3.1 Peak spectral power density at low frequency within 6 dB band, mode 2

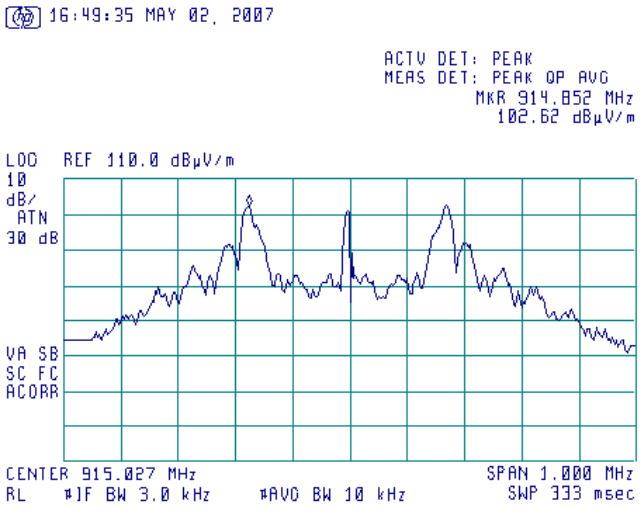


Plot 7.3.2 Peak spectral power density at low frequency zoomed at the peak, mode 2

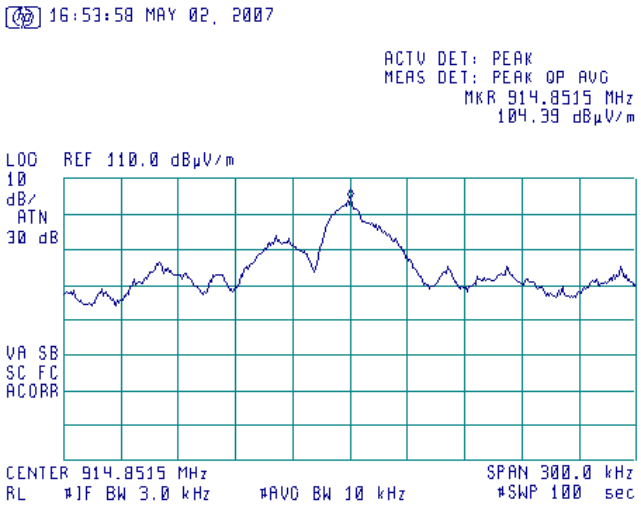


Test specification:	Section 15.247(d), Peak power density		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(d)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/7/2007 10:31:26 AM		
Temperature: 26ºC	Air Pressure: 1012 hPa	Relative Humidity: 37%	Power Supply: 3.6 V DC
Remarks:			

Plot 7.3.3 Peak spectral power density at mid frequency within 6 dB band, mode 2

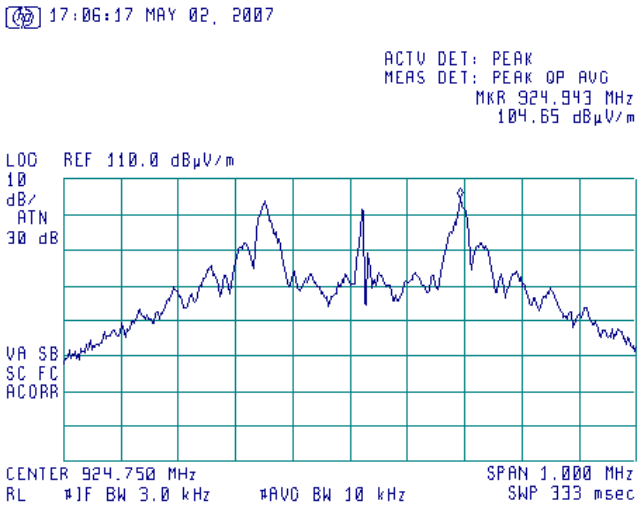


Plot 7.3.4 Peak spectral power density at mid frequency zoomed at the peak, mode 2

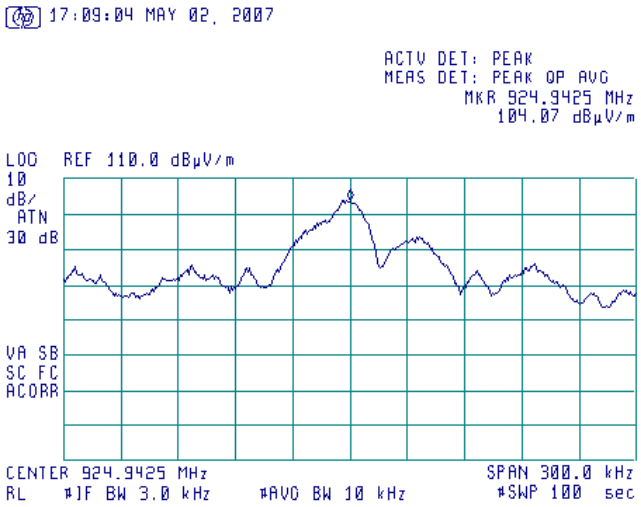


Test specification:	Section 15.247(d), Peak power density		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(d)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/7/2007 10:31:26 AM		
Temperature: 26ºC	Air Pressure: 1012 hPa	Relative Humidity: 37%	Power Supply: 3.6 V DC
Remarks:			

Plot 7.3.5 Peak spectral power density at high frequency within 6 dB band, mode 2

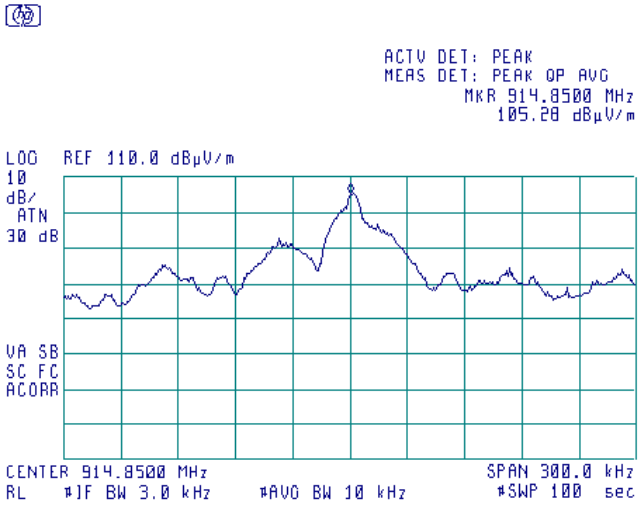


Plot 7.3.6 Peak spectral power density at high frequency zoomed at the peak, mode 2

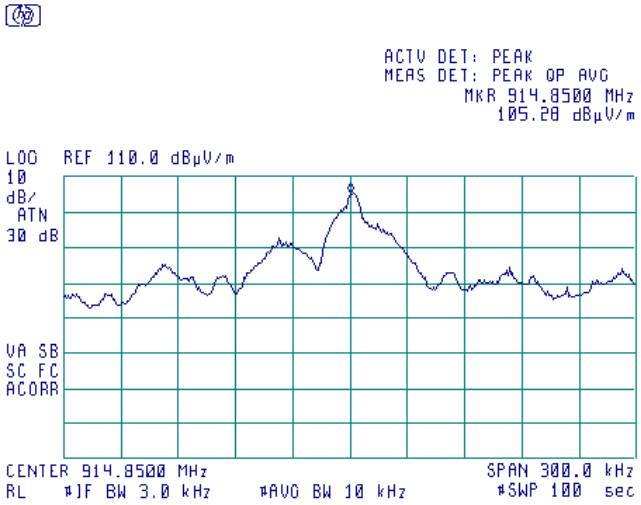


Test specification:	Section 15.247(d), Peak power density		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(d)		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/7/2007 10:31:26 AM		
Temperature: 26ºC	Air Pressure: 1012 hPa	Relative Humidity: 37%	Power Supply: 3.6 V DC
Remarks:			

Plot 7.3.7 Peak spectral power density at high frequency within 6 dB band, mode 3



Plot 7.3.8 Peak spectral power density at high frequency zoomed at the peak, mode 3



Test specification:	Section 15.247(a)1, 20 dB bandwidth		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:35:15 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

8 Transmitter tests according to 47CFR part 15 subpart C §15.247 (FHSS) requirements

8.1 20 dB bandwidth

8.1.1 General

This test was performed to measure 20 dB bandwidth of the transmitter's hopping channel. Specification test limits are given in Table 8.1.1.

Table 8.1.1 The 20 dB bandwidth limits

Assigned frequency, MHz	Minimum bandwidth, kHz	Modulation envelope reference points*, dBc
902.0 – 928.0	250	20

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

8.1.2 Test procedure

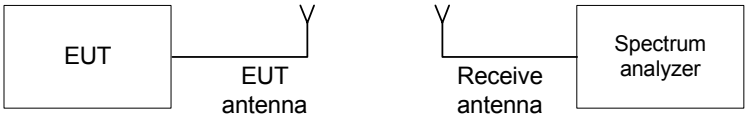
8.1.2.1 The EUT was set up as shown in Figure 8.1.1, energized and its proper operation was checked.

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

8.1.2.3 The transmitter bandwidth was measured with spectrum analyzer as frequency delta between reference points on modulation envelope and provided in Table 8.1.2 and associated plot.

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

Figure 8.1.1 The 20 dB bandwidth test setup



Test specification:	**Section 15.247(a)1, 20 dB bandwidth**		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	5/4/2007 3:35:15 PM		
Temperature: 24ºC	**Air Pressure:** 1007 hPa	**Relative Humidity:** 48%	**Power Supply:** 3.6 V DC
Remarks:			

Table 8.1.2 The 20 dB bandwidth test results

ASSIGNED FREQUENCY BAND: 902 – 928 MHz
DETECTOR USED: Peak
BIT RATE: 60 kbps
SWEEP TIME: Auto
RESOLUTION BANDWIDTH: ≥ 1% of the 20 dB bandwidth
VIDEO BANDWIDTH: ≥ RBW
MODULATION ENVELOPE REFERENCE POINTS: 20.0 dBc
FREQUENCY HOPPING: Disabled

Carrier frequency, MHz	Type of modulation	20 dB bandwidth, kHz	Limit, kHz	Margin, kHz	Verdict
Low frequency					
905.25	FSK	215	250	35	Pass
Mid frequency					
916.30	FSK	195	250	55	Pass
High frequency					
924.75	FSK	225	250	25	Pass

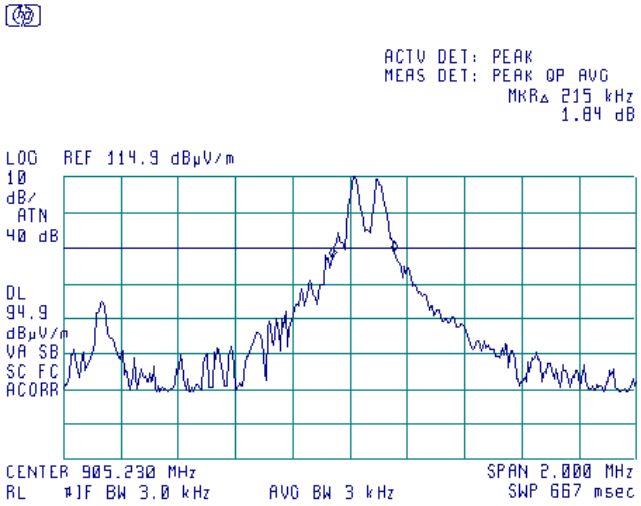
Reference numbers of test equipment used

HL 0521	HL 0589	HL 0604	HL 2009					

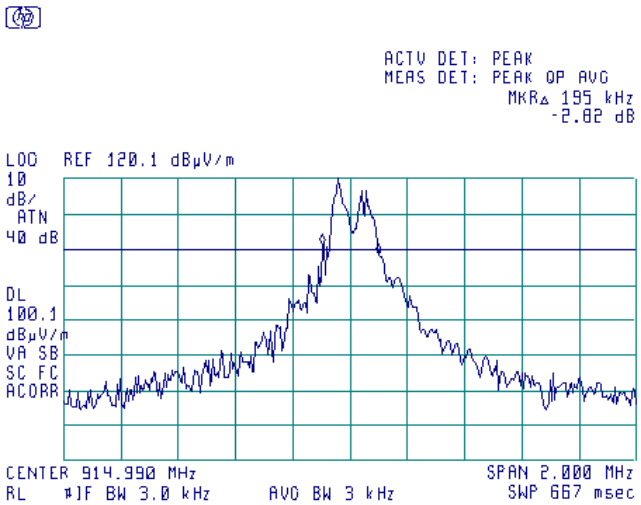
Full description is given in Appendix A.

Test specification:	Section 15.247(a)1, 20 dB bandwidth		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:35:15 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

Plot 8.1.1 The 20 dB bandwidth test result at low frequency

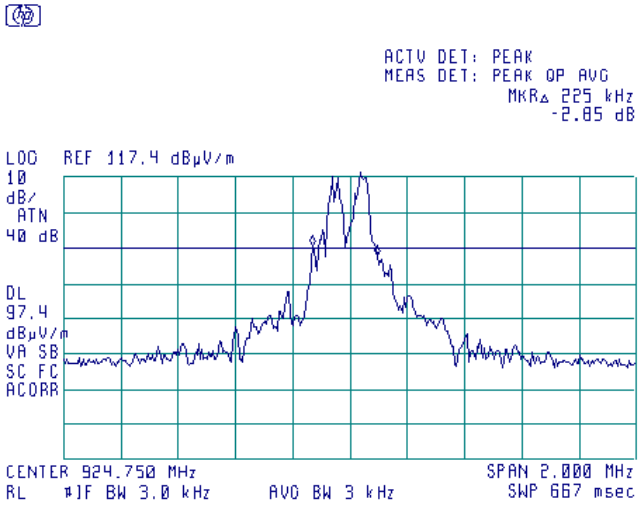


Plot 8.1.2 The 20 dB bandwidth test result at mid frequency



Test specification:	Section 15.247(a)1, 20 dB bandwidth		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:35:15 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

Plot 8.1.3 The 20 dB bandwidth test result at high frequency



Test specification:	Section 15.247(a)1, Frequency separation		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:36:22 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

8.2 Carrier frequency separation

8.2.1 General

This test was performed to measure frequency separation between the peaks of adjacent channels. Specification test limits are given in Table 8.2.1.

Table 8.2.1 Carrier frequency separation limits

Assigned frequency range, MHz	Carrier frequency separation
902.0 – 928.0	25 kHz or 20 dB bandwidth of the hopping channel, whichever is greater
2400.0 – 2483.5	
5725.0 – 5850.0	

8.2.2 Test procedure

8.2.2.1 The EUT was set up as shown in Figure 8.2.1, energized with frequency hopping function enabled and its proper operation was checked.

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

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

8.2.2.4 The frequency separation between the peaks of adjacent channels was measured as provided in Table 8.2.2 and associated plots.

Figure 8.2.1 Carrier frequency separation test setup

Test specification:	Section 15.247(a)1, Frequency separation		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:36:22 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

Table 8.2.2 Carrier frequency separation test results

ASSIGNED FREQUENCY BAND:	902 – 928 MHz
MODULATION:	FSK
MODULATING SIGNAL:	PRBS
BIT RATE:	60 kbps
DETECTOR USED:	Peak
RESOLUTION BANDWIDTH:	≥ 1% of the span
VIDEO BANDWIDTH:	≥ RBW
FREQUENCY HOPPING:	Enabled
20 dB BANDWIDTH:	200 kHz

Carrier frequency separation, kHz	Limit, kHz	Margin*	Verdict
318	225	93	Pass

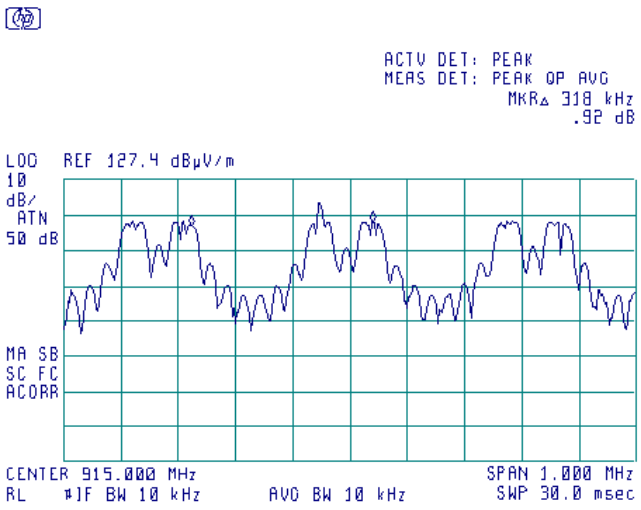
* - Margin = Carrier frequency separation – specification limit.

Reference numbers of test equipment used

HL 0521	HL 0589	HL 0604	HL 2009				

Full description is given in Appendix A.

Plot 8.2.1 Carrier frequency separation



Test specification:	Section 15.247(a)1, Number of hopping frequencies		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:44:08 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

8.3 Number of hopping frequencies

8.3.1 General

This test was performed to calculate the number of hopping frequencies used by the EUT. Specification test limits are given in Table 8.3.1.

Table 8.3.1 Minimum number of hopping frequencies

Assigned frequency range, MHz	Number of hopping frequencies
902.0 – 928.0	**50 (if the 20 dB bandwidth is less than 250 kHz)** 25 (if the 20 dB bandwidth is 250 kHz or greater)
2400.0 – 2483.5	15
5725.0 – 5850.0	75

8.3.2 Test procedure

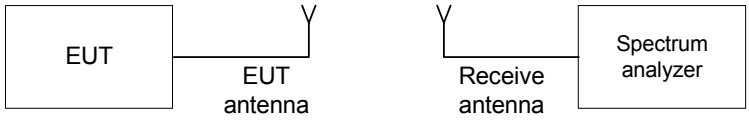
8.3.2.1 The EUT was set up as shown in Figure 8.3.1, energized with frequency hopping function enabled and its proper operation was checked.

8.3.2.2 Initially the spectrum analyzer span was set equal to frequency band of operation and the resolution bandwidth was set wider than 1 % of the frequency span. If the separate hopping channels were not clearly resolved the frequency band of operation was broken to sections and the resolution bandwidth was set wider than 1 % of the frequency span of each section.

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

8.3.2.4 The number of frequency hopping channels was calculated as provided in Table 8.3.2 and associated plots.

Figure 8.3.1 Hopping frequencies test setup



Test specification:	Section 15.247(a)1, Number of hopping frequencies		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:44:08 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

Table 8.3.2 Hopping frequencies test results

ASSIGNED FREQUENCY BAND:	902 – 928 MHz
MODULATION:	FSK
MODULATING SIGNAL:	PRBS
BIT RATE:	60 kbps
DETECTOR USED:	Peak
RESOLUTION BANDWIDTH:	≥ 1% of the span
VIDEO BANDWIDTH:	≥ RBW
FREQUENCY HOPPING:	Enabled

Number of hopping frequencies	Minimum number of hopping frequencies	Margin*	Verdict
54	50	4	Pass

* - Margin = Number of hopping frequencies – Minimum number of hopping frequencies.

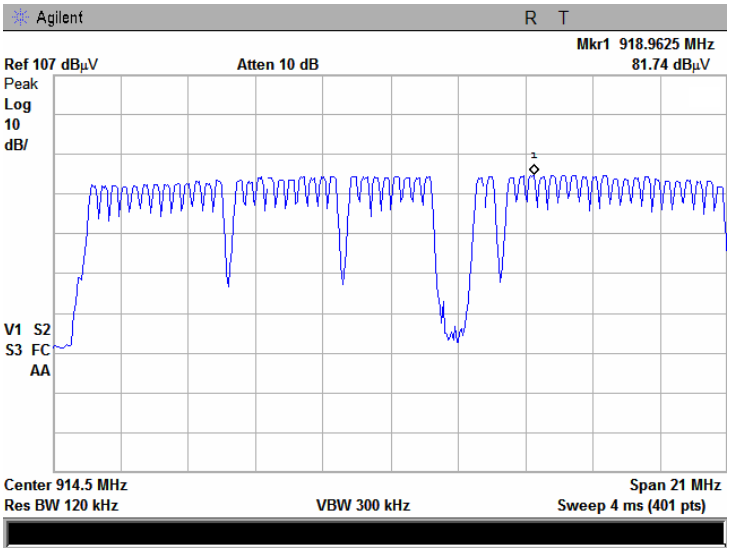
Reference numbers of test equipment used

HL 1365	HL 1947	HL 2432	HL 2780				

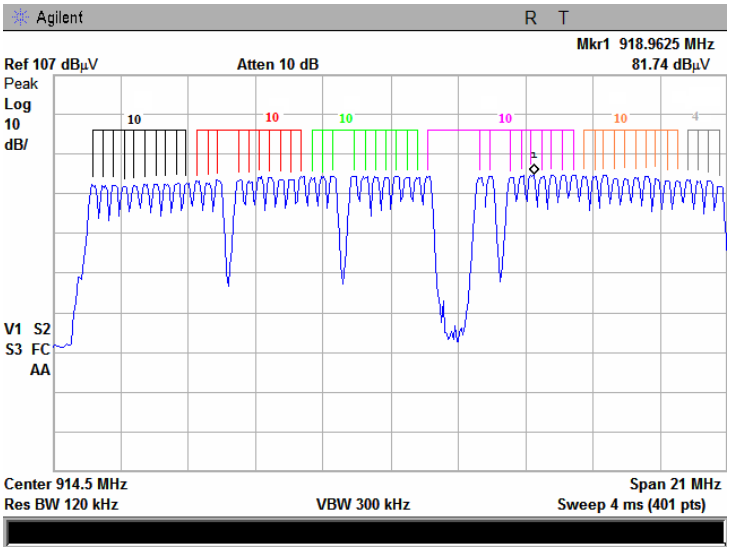
Full description is given in Appendix A.

Test specification:	Section 15.247(a)1, Number of hopping frequencies		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:44:08 PM		
Temperature: 24°C	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

Plot 8.3.1 Number of hopping frequencies



Plot 8.3.2 Number of hopping frequencies



Test specification:	Section 15.247(a)1, Average time of occupancy		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:45:10 PM		
Temperature: ºC	Air Pressure: hPa	Relative Humidity: %	Power Supply:
Remarks:			

8.4 Average time of occupancy

8.4.1 General

This test was performed to calculate the average time of occupancy (dwell time) on any frequency channel of the EUT. Specification test limits are given in Table 8.4.1.

Table 8.4.1 Average time of occupancy limits

Assigned frequency range, MHz	Maximum average time of occupancy, s	Investigated period, s	Number of hopping frequencies
902.0 – 928.0	**0.4**	**20.0**	**≥ 50**
902.0 – 928.0	0.4	10.0	< 50
2400.0 – 2483.5	0.4	0.4 × N	N (≥ 15)
5725.0 – 5850.0	0.4	30.0	≥ 75

8.4.2 Test procedure

8.4.2.1 The EUT was set up as shown in Figure 8.4.1, energized with frequency hopping function enabled and its proper operation was checked.

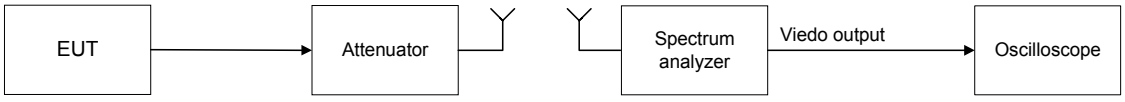
8.4.2.2 The spectrum analyzer span was set to zero centered on a hopping channel.

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

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

8.4.2.5 The test was repeated at each data rate and modulation type as provided in Table 8.4.2 and associated plots.

Figure 8.4.1 Average time of occupancy test setup



Test specification:	Section 15.247(a)1, Average time of occupancy		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:45:10 PM		
Temperature: ºC	Air Pressure: hPa	Relative Humidity: %	Power Supply:
Remarks:			

Table 8.4.2 Average time of occupancy test results

ASSIGNED FREQUENCY BAND:	902 – 928 MHz
MODULATION:	FSK
DETECTOR USED:	Peak
RESOLUTION BANDWIDTH:	1 MHz
VIDEO BANDWIDTH:	3 MHz
NUMBER OF HOPPING FREQUENCIES:	54
INVESTIGATED PERIOD:	20 s
FREQUENCY HOPPING:	Enabled

Carrier frequency MHz	Single transmission duration, ms	Single transmission period, ms	Average time of occupancy*, m	Bit rate Mbps	Symbol rate Msymbol/s	Limit, ms	Margin ms**	Verdict
905.25	5.7	500	228	NA	NA	400	-172	Pass

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

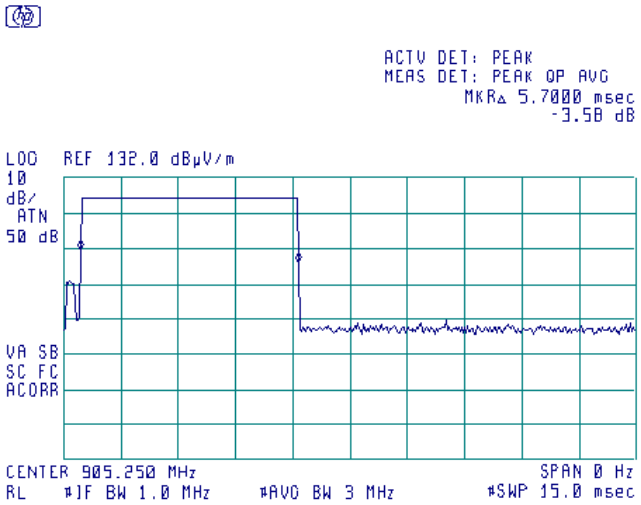
Reference numbers of test equipment used

HL 0521	HL 0589	HL 0604	HL 2009				

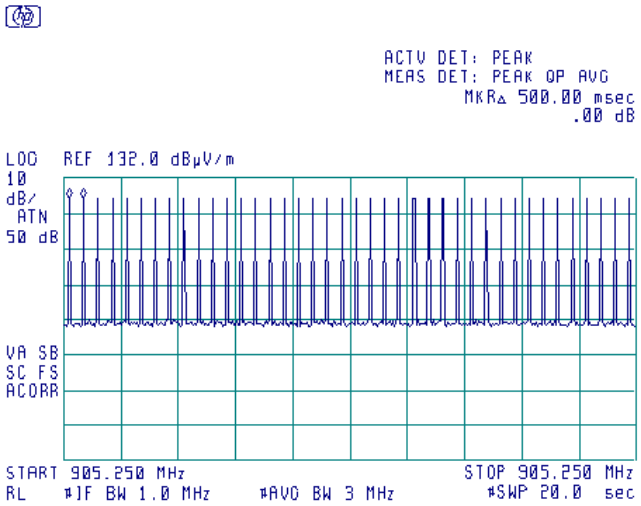
Full description is given in Appendix A.

Test specification:	Section 15.247(a)1, Average time of occupancy		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:45:10 PM		
Temperature: ºC	Air Pressure: hPa	Relative Humidity: %	Power Supply:
Remarks:			

Plot 8.4.1 Single transmission duration



Plot 8.4.2 Single transmission period



Test specification:	Section 15.247(b), Peak output power		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:46:43 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

8.5 Peak output power

8.5.1 General

This test was performed to measure the maximum peak output power radiated by transmitter. Specification test limits are given in Table 8.5.1.

Table 8.5.1 Peak output power limits

Assigned frequency range, MHz	Peak output power*		Equivalent field strength limit @ 3m, dB(μV/m)*	Maximum antenna gain, dBi
	W	dBm		
902.0 – 928.0	**1.0**	**30.0**	**125.23**	6.0*
2400.0 – 2483.5	0.125 (<75 hopping channels) 1.0 (≥75 hopping channels)	21.0(<75 hopping channels) 30.0 (≥75 hopping channels)	122.2 (<75 hopping channels) 131.2 (≥75 hopping channels)	
5725.0 – 5850.0	1.0	30.0	131.2	

*- 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.
**- 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.

8.5.2 Test procedure

8.5.2.1 The EUT was set up as shown in Figure 8.5.1, energized and its proper operation was checked.

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

8.5.2.3 The frequency span of spectrum analyzer was set approximately 5 times wider than 20 dB bandwidth of the EUT and the resolution bandwidth was set wider than 20 dB bandwidth of the EUT. To find maximum radiation the turntable was rotated 360^0 and the measuring antenna height was swept in both vertical and horizontal polarizations.

8.5.2.4 The maximum field strength of the EUT carrier frequency was measured as provided in Table 8.5.2 and associated plots.

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

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

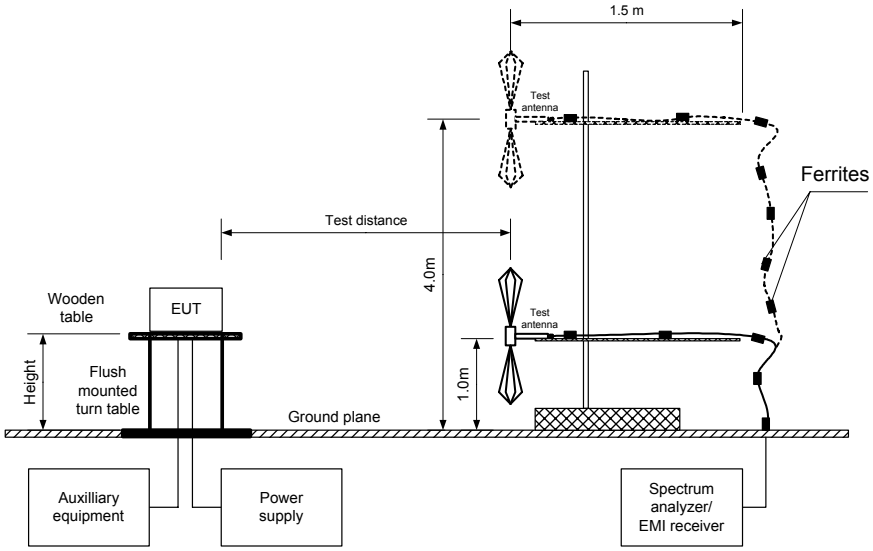
where P is the peak output power in W, E is the field strength in V/m, d is the test distance and G is the transmitter numeric antenna gain over an isotropic radiator.
The above equation was converted in logarithmic units for 3 m test distance:

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

8.5.2.6 The worst test results (the lowest margins) were recorded in Table 8.5.2.

Test specification:	**Section 15.247(b), Peak output power**		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	5/4/2007 3:46:43 PM		
Temperature: 24ºC	**Air Pressure:** 1007 hPa	**Relative Humidity:** 48%	**Power Supply:** 3.6 V DC
Remarks:			

Figure 8.5.1 Setup for carrier field strength measurements



Test specification:	**Section 15.247(b), Peak output power**		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	5/4/2007 3:46:43 PM		
Temperature: 24ºC	**Air Pressure:** 1007 hPa	**Relative Humidity:** 48%	**Power Supply:** 3.6 V DC
Remarks:			

Table 8.5.2 Peak output power test results

ASSIGNED FREQUENCY BAND:	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
MODULATING SIGNAL:	PRBS
TRANSMITTER OUTPUT POWER SETTINGS:	Maximum
DETECTOR USED:	Peak
EUT 20 dB BANDWIDTH:	200 kHz
RESOLUTION BANDWIDTH:	1 MHz
VIDEO BANDWIDTH:	3 MHz
FREQUENCY HOPPING:	Disabled
NUMBER OF FREQUENCY HOPPING CHANNELS:	54

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
905.33	126.57	Vertical	1.0	355	4	27.34	30.00	-2.66	Pass
915.03	128.13	Vertical	1.0	358	4	28.90	30.00	-1.10	Pass
924.75	128.77	Vertical	1.1	0	4	29.54	30.00	-0.46	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.

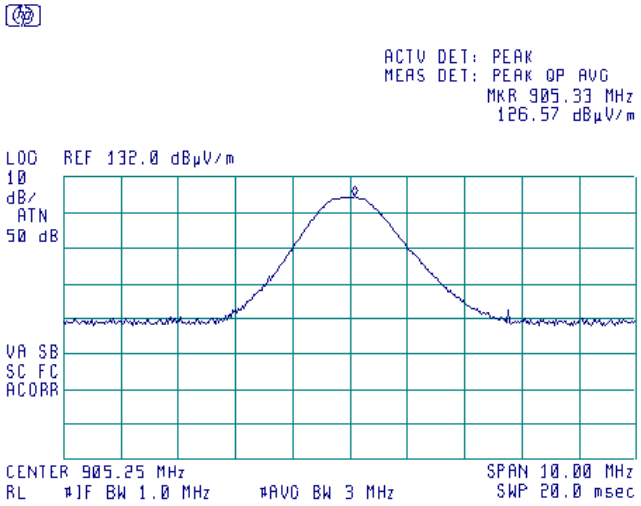
Reference numbers of test equipment used

HL 0521	HL 0589	HL 0604	HL 2009				

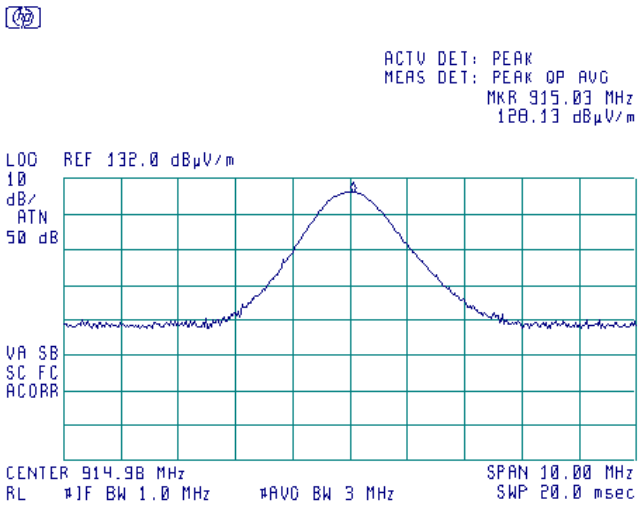
Full description is given in Appendix A.

Test specification:	Section 15.247(b), Peak output power		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:46:43 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

Plot 8.5.1 Field strength of carrier at low frequency

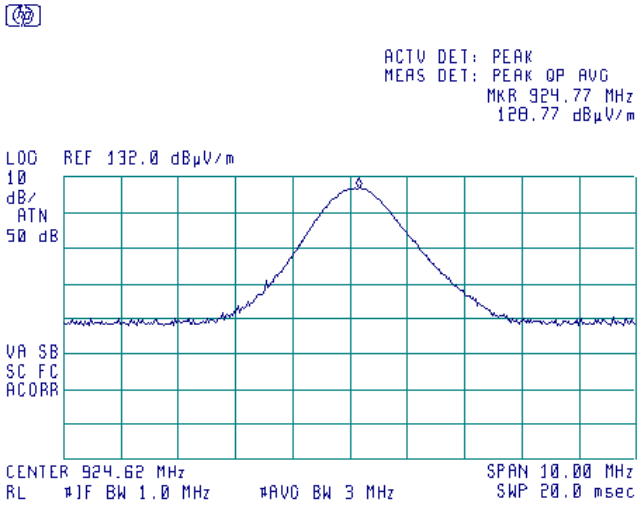


Plot 8.5.2 Field strength of carrier at mid frequency



Test specification:	Section 15.247(b), Peak output power		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:46:43 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

Plot 8.5.3 Field strength of carrier at high frequency



Test specification:	Section 15.247(c), Emissions at band edges		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/7/2007 9:40:51 AM		
Temperature: 26ºC	Air Pressure: 1012 hPa	Relative Humidity: 37%	Power Supply: 3.6 V DC
Remarks:			

8.6 Band edge radiated emissions

8.6.1 General

This test was performed to measure emissions, radiated from the EUT at the assigned frequency band edges. Specification test limits are given in Table 8.6.1.

Table 8.6.1 Band edge emission limits

Assigned frequency, MHz	Attenuation below carrier*, dBc	Field strength at 3 m within restricted bands, dB(µV/m)	
		Peak	Average
902.0 – 928.0	20.0	74.0	54.0
2400.0 – 2483.5			
5725.0 – 5850.0			

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

8.6.2 Test procedure

8.6.2.1 The EUT was set up as shown in Figure 8.6.1, energized normally modulated at the maximum data rate with its hopping function disabled and its proper operation was checked.

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

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

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

8.6.2.5 The maximum band edge emission and modulation product outside of the band were measured as provided in Table 8.6.2 and associated plots and referenced to the highest emission level measured within the authorized band.

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

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

Figure 8.6.1 Band edge emission test setup

Test specification:	**Section 15.247(c), Emissions at band edges**		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	5/7/2007 9:40:51 AM		
Temperature: 26ºC	**Air Pressure:** 1012 hPa	**Relative Humidity:** 37%	**Power Supply:** 3.6 V DC
Remarks:			

Table 8.6.2 Band edge emission test results

ASSIGNED FREQUENCY RANGE: 902 – 928 MHz
DETECTOR USED: Peak
MODULATION: FSK
MODULATING SIGNAL: PRBS
TRANSMITTER OUTPUT POWER SETTINGS: Maximum
RESOLUTION BANDWIDTH: ≥ 1% of the span
VIDEO BANDWIDTH: ≥ RBW

Frequency, MHz	Band edge emission, dBm	Emission at carrier, dBm	Attenuation below carrier, dBc	Limit, dBc	Margin, dB*	Verdict
Frequency hopping disabled						
904.810	85.10	105.20	20.1	20.0	0.1	Pass
925.119	89.60	110.50	20.9	20.0	0.9	Pass
Frequency hopping enabled						
904.819	83.30	103.40	20.1	20.0	0.1	Pass
925.120	85.60	106.40	20.8	20.0	0.8	Pass

*- Margin = Attenuation below carrier – specification limit.

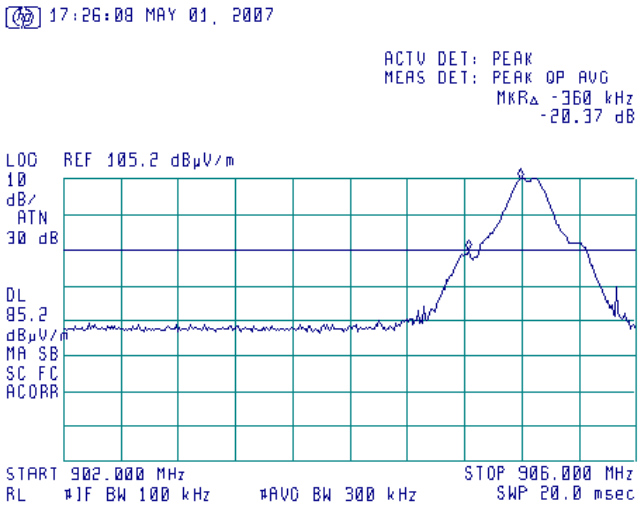
Reference numbers of test equipment used

HL 0784	HL 0813	HL 1430	HL 1552				

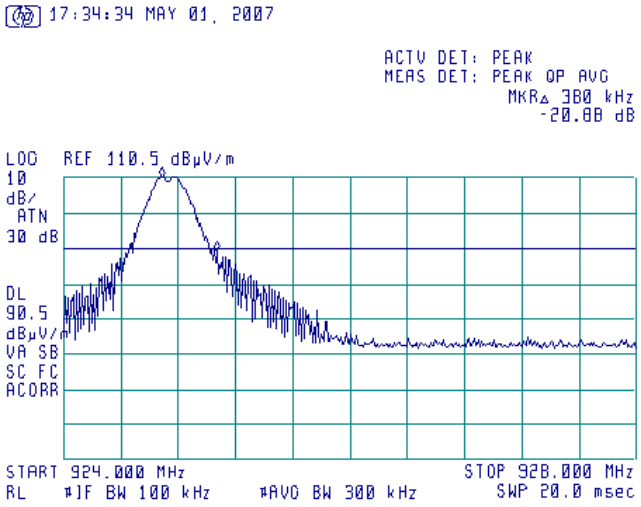
Full description is given in Appendix A.

Test specification:	Section 15.247(c), Emissions at band edges		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/7/2007 9:40:51 AM		
Temperature: 26ºC	Air Pressure: 1012 hPa	Relative Humidity: 37%	Power Supply: 3.6 V DC
Remarks:			

Plot 8.6.1 The highest band edge emission at low carrier frequency with hopping function disabled

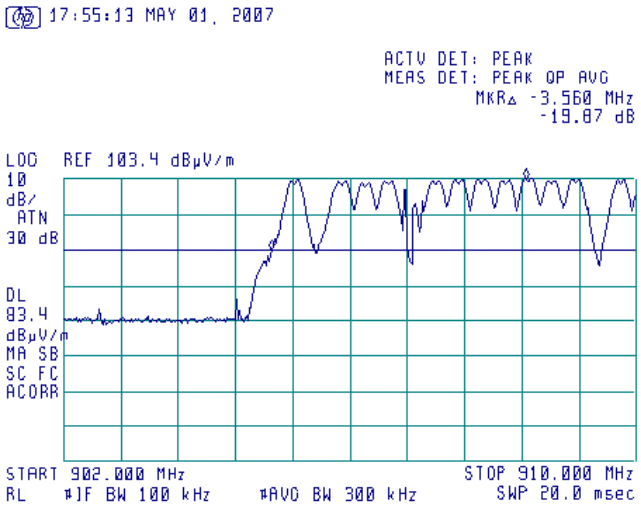


Plot 8.6.2 The highest band edge emission at high carrier frequency with hopping function disabled

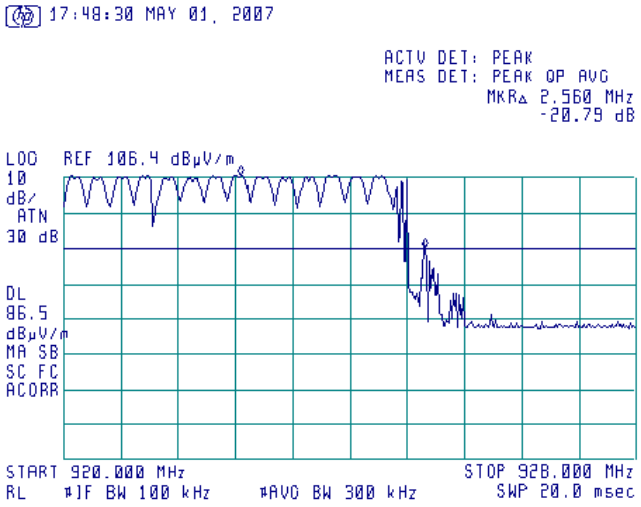


Test specification:	Section 15.247(c), Emissions at band edges		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/7/2007 9:40:51 AM		
Temperature: 26ºC	Air Pressure: 1012 hPa	Relative Humidity: 37%	Power Supply: 3.6 V DC
Remarks:			

Plot 8.6.3 The highest band edge emission at low carrier frequency with hopping function enabled



Plot 8.6.4 The highest band edge emission at high carrier frequency with hopping function enabled



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

8.7 Field strength of spurious emissions

8.7.1 General

This test was performed to measure field strength of spurious emissions from the EUT. Specification test limits are given in Table 8.7.1.

Table 8.7.1 Radiated spurious emissions limits

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

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

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

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

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

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

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

8.7.2.1 The EUT was set up as shown in Figure 8.7.1, energized and the performance check was conducted.

8.7.2.2 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.

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

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

8.7.3.1 The EUT was set up as shown in Figure 8.7.2, energized and the performance check was conducted.

8.7.3.2 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.

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

Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

Figure 8.7.1 Setup for spurious emission field strength measurements below 30 MHz

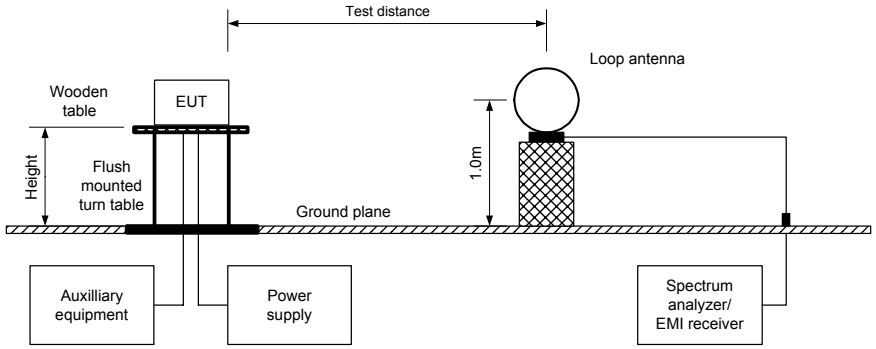
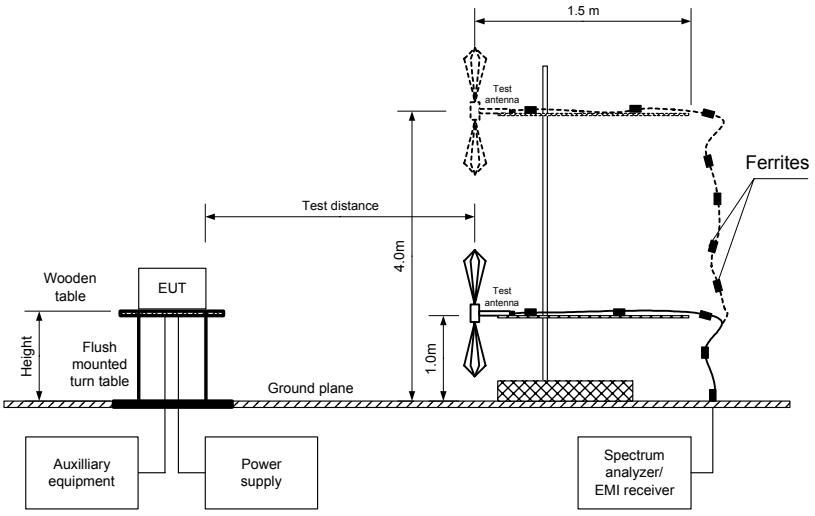


Figure 8.7.2 Setup for spurious emission field strength measurements above 30 MHz



Test specification:	**Section 15.247(c), Radiated spurious emissions**		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	**Air Pressure:** 1007 hPa	**Relative Humidity:** 48%	**Power Supply:** 3.6 V DC
Remarks:			

Table 8.7.2 Field strength of emissions outside restricted bands

ASSIGNED FREQUENCY BAND: 902 - 928 MHz
INVESTIGATED FREQUENCY RANGE: 0.009 - 10000 MHz
TEST DISTANCE: 3 m
MODULATION: **Mode 5 (FHSS)**
MODULATING SIGNAL: PRBS
TRANSMITTER OUTPUT POWER SETTINGS: Maximum
DETECTOR USED: Peak
RESOLUTION BANDWIDTH: 100 kHz
VIDEO BANDWIDTH: 300 kHz
TEST ANTENNA TYPE: Active loop (9 kHz – 30 MHz)
Biconilog (30 MHz – 1000 MHz)
Double ridged guide (above 1000 MHz)
FREQUENCY HOPPING: Disabled

Frequency MHz	Field strength of spurious, dB(µV/m)	Antenna polarization	Antenna height, m	Azimuth, degrees*	Field strength of carrier, dB(µV/m)	Attenuation below carrier, dBc	Limit, dBc	Margin, dB**	Verdict
Low carrier frequency									
1810.475	65.09	V	1	124	125.07	59.98	20.0	39.98	Pass
6336.3825	57.60	V	1	112		67.47		47.47	
Mid carrier frequency									
1830.135	59.00	V	1	120	127.69	68.69	20.0	48.69	Pass
5489.685	66.52	V	1	176		61.17		41.17	
6404.63	53.78	V	1	112		73.91		53.91	
High carrier frequency									
1849.635	65.99	V	1	119	127.72	61.73	20.0	41.73	Pass
5548.195	69.32	V	1	136		58.40		38.40	
6472.89	50.44	V	1	119		77.28		57.28	

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

MODULATION: **Mode 3 (DSSS)**

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
5488.925	44.32	V	1	266	107.21	62.89	20.00	42.89	Pass

Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

Table 8.7.3 Field strength of spurious emissions above 1 GHz within restricted bands

ASSIGNED FREQUENCY: 902 – 928 MHz
INVESTIGATED FREQUENCY RANGE: 1000 - 10000 MHz
TEST DISTANCE: 3 m
MODULATION: **Mode 5 (FHSS)**
MODULATING SIGNAL: PRBS
BIT RATE: 60 kbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum
DETECTOR USED: Peak
RESOLUTION BANDWIDTH: 1000 kHz
TEST ANTENNA TYPE: Double ridged guide
FREQUENCY HOPPING: Disabled

Frequency MHz	Antenna Polarization	Antenna Height m	Azimuth Degrees*	Peak field strength(VBW=3 MHz Measured dB(µV/m)	Peak field strength(VBW=3 MHz Limit, dB(µV/m	Peak field strength(VBW=3 MHz Margin, dB**	Average field strength(VBW=1 kHz) Measured dB(µV/m)	Average field strength(VBW=1 kHz) Calculated dB(µV/m)	Average field strength(VBW=1 kHz) Limit, dB(µV/m	Average field strength(VBW=1 kHz) Margin dB***	Verdict
Low carrier frequency											
1153.250	V	1.0	123	71.49	74.00	-2.51	68.95	44.73	54.00	-9.27	Pass
2715.488	V	1.1	118	54.51	74.00	-19.49	51.50	27.28	54.00	-26.72	
3620.713	V	1.0	125	57.52	74.00	-16.48	55.31	31.09	54.00	-22.91	
4526.188	V	1.0	122	62.94	74.00	-11.06	58.26	34.04	54.00	-19.96	
5432.225	H	1.3	251	58.28	74.00	-15.72	55.39	31.17	54.00	-22.83	
7242.638	V	1.0	176	54.63	74.00	-19.37	48.20	23.98	54.00	-30.02	
Mid carrier frequency											
1171.880	V	1.0	119	69.13	74.00	-4.87	65.77	41.55	54.00	-12.45	Pass
2744.875	V	1.1	127	57.14	74.00	-16.86	55.69	31.47	54.00	-22.53	
3659.750	V	1.0	132	54.59	74.00	-19.41	52	27.78	54.00	-26.22	
4575.525	V	1.0	154	62.83	74.00	-11.17	60.41	36.19	54.00	-17.81	
7319.538	V	1.0	112	52.87	74.00	-21.13	46.65	22.43	54.00	-31.57	
High carrier frequency											
1189.500	V	1.1	120	68.46	74.00	-5.54	55.06	30.84	54.00	-23.16	Pass
2774.225	V	1.0	131	49.71	74.00	-24.29	44.13	19.91	54.00	-34.09	
3698.763	V	1.0	130	51.86	74.00	-22.14	49.18	24.96	54.00	-29.04	
4623.850	V	1.0	112	62.58	74.00	-11.42	61.51	37.29	54.00	-16.71	
7398.263	V	1.0	171	51.16	74.00	-22.84	45.99	21.77	54.00	-32.23	

MODULATION: **Mode 3 (DSSS)**
BIT RATE: 120 kbps

Frequency MHz	Antenna Polarization	Antenna Height m	Azimuth Degrees*	Peak field strength(VBW=3 MHz Measured dB(µV/m)	Peak field strength(VBW=3 MHz Limit, dB(µV/m	Peak field strength(VBW=3 MHz Margin, dB**	Average field strength(VBW=1 kHz) Measured dB(µV/m)	Average field strength(VBW=1 kHz) Calculated dB(µV/m)	Average field strength(VBW=1 kHz) Limit, dB(µV/m	Average field strength(VBW=1 kHz) Margin dB***	Verdict
2744.650	V	1.0	287	50.32	74.00	-23.68	31.94	14.58	54.00	-39.42	Pass

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

Test specification:	**Section 15.247(c), Radiated spurious emissions**		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	**Air Pressure:** 1007 hPa	**Relative Humidity:** 48%	**Power Supply:** 3.6 V DC
Remarks:			

Table 8.7.4 Average factor calculation for FHSS modulation

Transmission pulse		Average factor, dB
Duration, ms	Period, ms	
6.15	502.5	-24.22

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

Table 8.7.5 Average factor calculation for DSSS modulation

Transmission pulse		Average factor, dB
Duration, ms	Period, ms	
13.55	500.6	-17.36

Table 8.7.6 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:	FHSS and DSSS
MODULATING SIGNAL:	PRBS
BIT RATE:	60 / 120 kbps
TRANSMITTER OUTPUT POWER SETTINGS:	Maximum
RESOLUTION BANDWIDTH:	1 kHz (9 kHz – 150 kHz) 9.0 kHz (150 kHz – 30 MHz) 120 kHz (30 MHz – 1000 MHz)
VIDEO BANDWIDTH:	> Resolution bandwidth
TEST ANTENNA TYPE:	Active loop (9 kHz – 30 MHz) Biconilog (30 MHz – 1000 MHz)
FREQUENCY HOPPING:	Disabled

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

*- Margin = Measured emission - specification limit.

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

Test specification:	**Section 15.247(c), Radiated spurious emissions**		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	**Air Pressure:** 1007 hPa	**Relative Humidity:** 48%	**Power Supply:** 3.6 V DC
Remarks:			

Table 8.7.7 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	

EUT Operational modes overview:

Mode number	Modulation technique	Low frequency	Mid frequency	High frequency
5	Frequency-hopping spread spectrum (FHSS)	905.25	915.00	924.75
2	Direct-Sequence Spread Spectrum (DSSS)	905.25	915.00	924.75
3	Direct-Sequence Spread Spectrum (DSSS)	–	915.00	–

Harmonic distribution:

Harmonic #	Low carrier, MHz	Mid carrier, MHz	High carrier, MHz
1	**905.25**	**915.00**	**924.75**
2	1810.50	1830.00	1849.50
3	2715.75	2745.00	2774.25
4	3621.00	3660.00	3699.00
5	4526.25	4575.00	4623.75
6	5431.50	5490.00	5548.50
7	6336.75	6405.00	6473.25
8	7242.00	7320.00	7398.00
9	8147.25	8235.00	8322.75
10	9052.50	9150.00	9247.50

Legend:

Outside restricted band harmonic
Within restricted band harmonic

Reference numbers of test equipment used

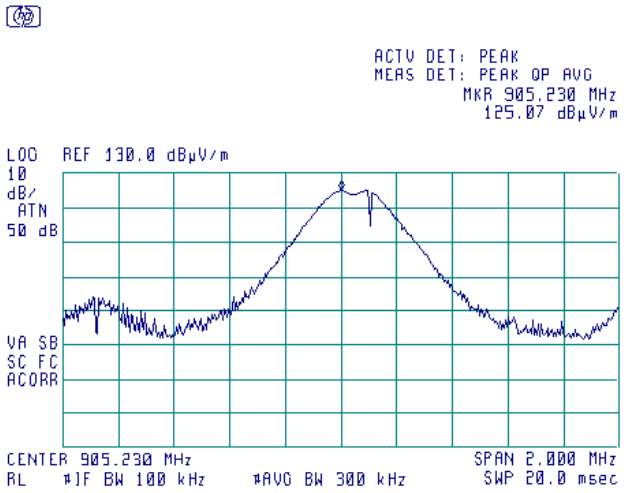
HL 0410	HL 0521	HL 0589	HL 0604	HL 1200	HL 1365	HL 1947	HL 2009
HL 2259	HL 2432	HL 2780					

Full description is given in Appendix A.

Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

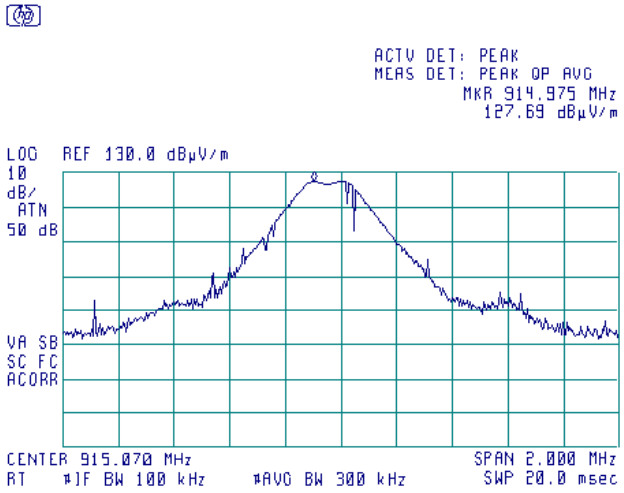
Plot 8.7.1 Radiated emission measurements at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and horizontal
OPERATIONAL MODE: Mode 5 (FHSS)



Plot 8.7.2 Radiated emission measurements at the mid carrier frequency

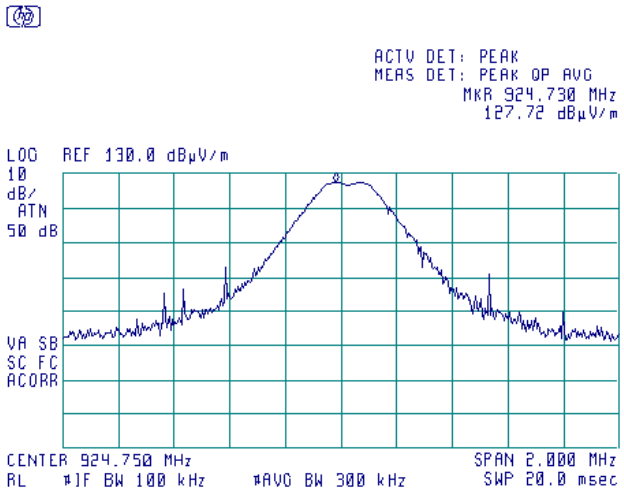
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and horizontal
OPERATIONAL MODE: Mode 5 (FHSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

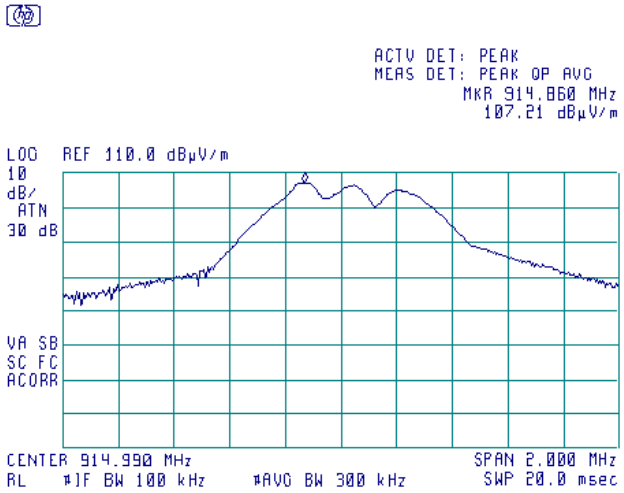
Plot 8.7.3 Radiated emission measurements at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and horizontal
OPERATIONAL MODE: Mode 5 (FHSS)



Plot 8.7.4 Radiated emission measurements at the mid carrier frequency

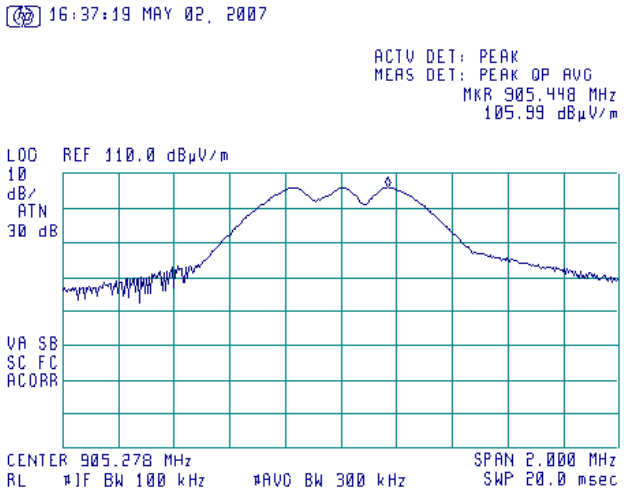
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and horizontal
OPERATIONAL MODE: Mode 3 (DSSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

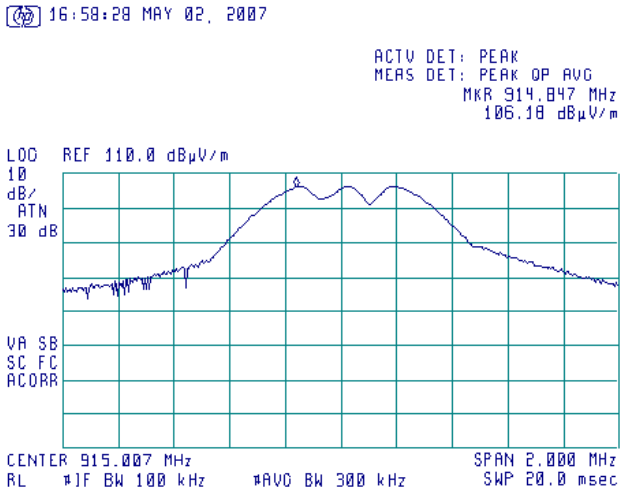
Plot 8.7.5 Radiated emission measurements at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and horizontal
OPERATIONAL MODE: Mode 2 (DSSS)



Plot 8.7.6 Radiated emission measurements at the mid carrier frequency

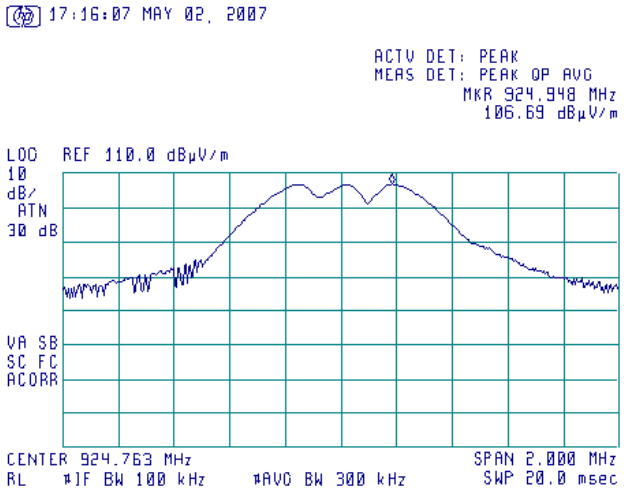
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and horizontal
OPERATIONAL MODE: Mode 2 (DSSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

Plot 8.7.7 Radiated emission measurements at the high carrier frequency

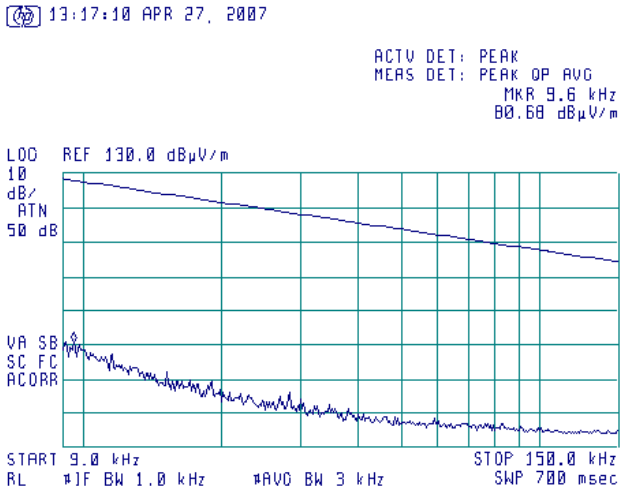
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and horizontal
OPERATIONAL MODE: Mode 2 (DSSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

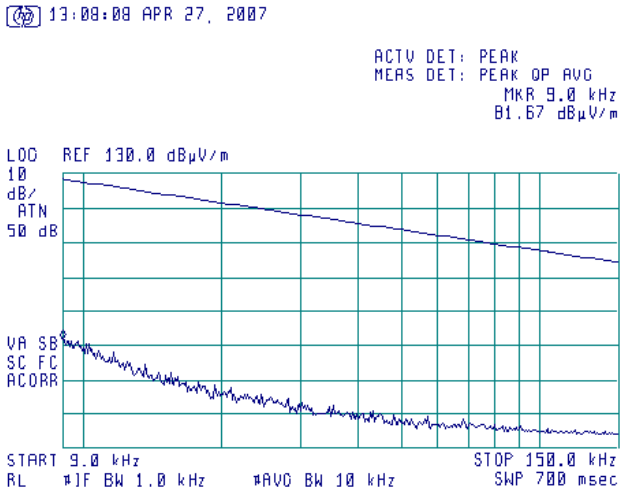
Plot 8.7.8 Radiated emission measurements from 9 to 150 kHz at the low carrier frequency

TEST SITE: Anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: Mode 5 (FHSS)



Plot 8.7.9 Radiated emission measurements from 9 to 150 kHz at the mid carrier frequency

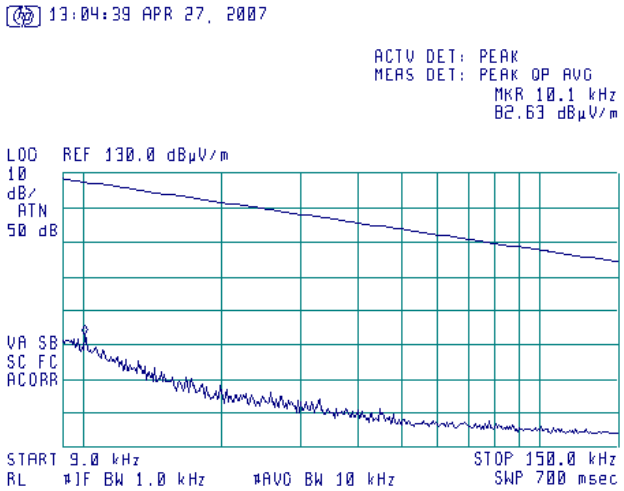
TEST SITE: Anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: Mode 5 (FHSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

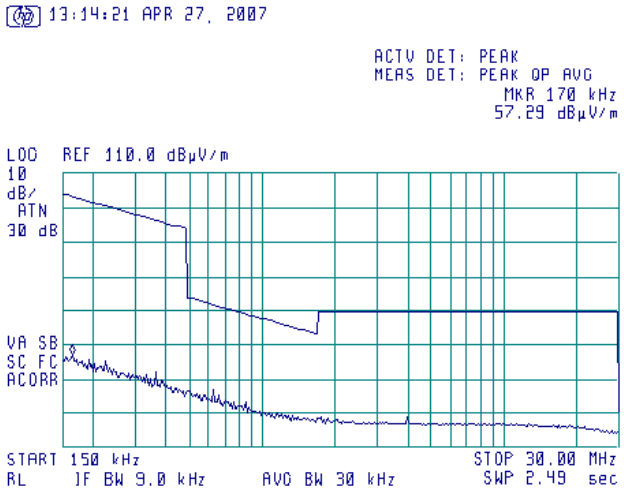
Plot 8.7.10 Radiated emission measurements from 9 to 150 kHz at the high carrier frequency

TEST SITE: Anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: Mode 5 (FHSS)



Plot 8.7.11 Radiated emission measurements from 0.15 to 30 MHz at the low carrier frequency

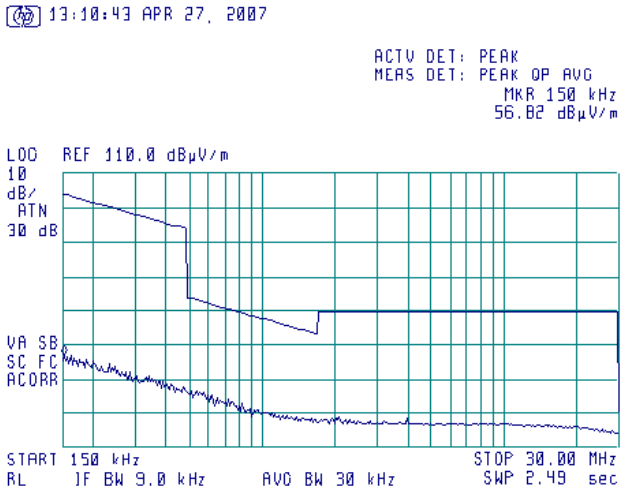
TEST SITE: Anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: Mode 5 (FHSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

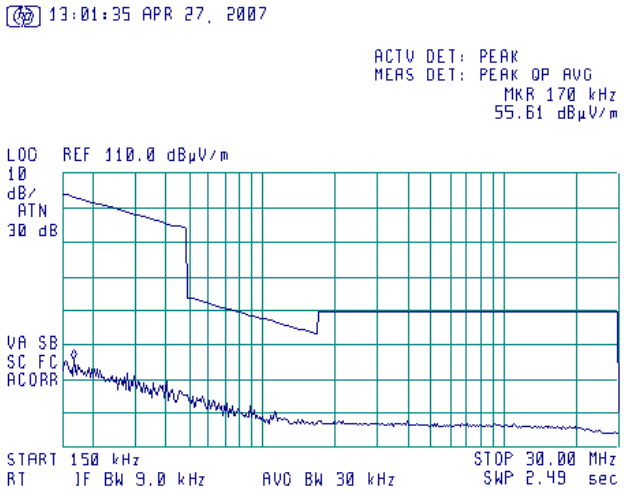
Plot 8.7.12 Radiated emission measurements from 0.15 to 30 MHz at the mid carrier frequency

TEST SITE: Anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: Mode 5 (FHSS)



Plot 8.7.13 Radiated emission measurements from 0.15 to 30 MHz at the high carrier frequency

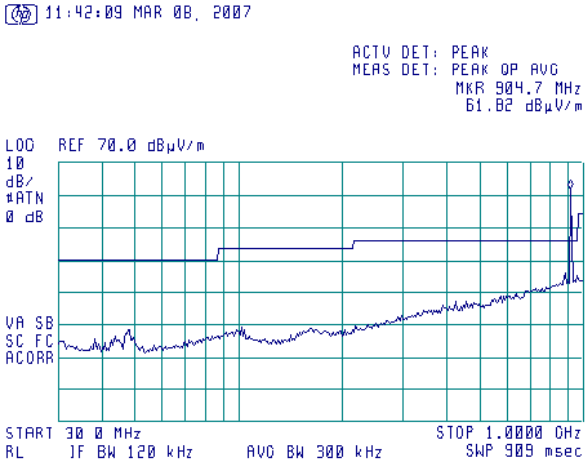
TEST SITE: Anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: Mode 5 (FHSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

Plot 8.7.14 Radiated emission measurements from 30 to 1000 MHz at the low carrier frequency

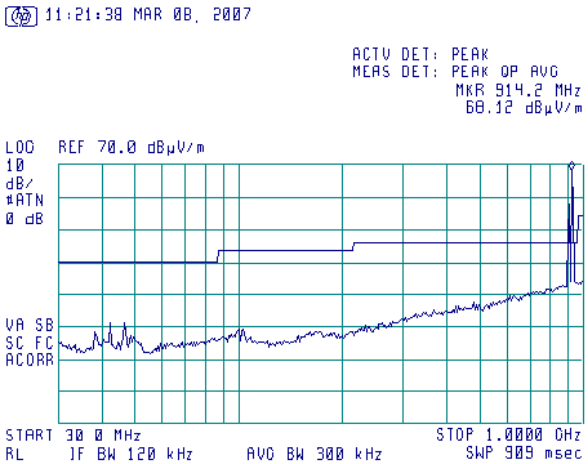
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 5 (FHSS)



Note: Due to large span used, frequency appears off. Actual frequency of fundamental is 905.25 MHz

Plot 8.7.15 Radiated emission measurements from 30 to 1000 MHz at the mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 5 (FHSS)

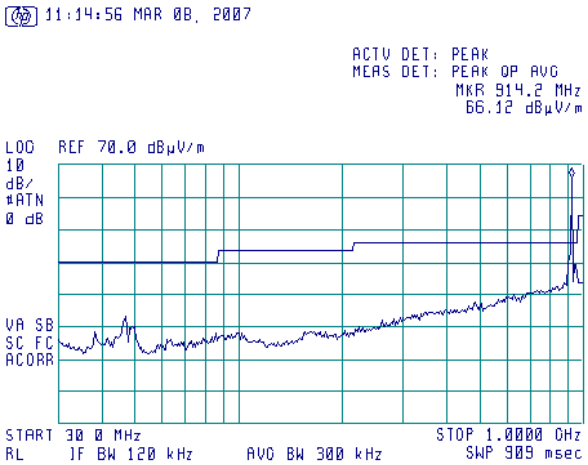


Note: Due to large span used, frequency appears off. Actual frequency of fundamental is 915 MHz

Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

Plot 8.7.16 Radiated emission measurements from 30 to 1000 MHz at the high carrier frequency

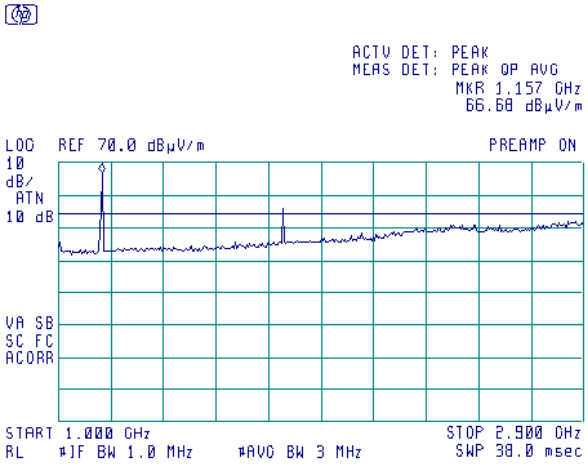
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 5 (FHSS)



Note: Due to large span used, frequency appears off. Actual frequency of fundamental is 924.75 MHz

Plot 8.7.17 Radiated emission measurements from 1000 to 2900 MHz at the low carrier frequency

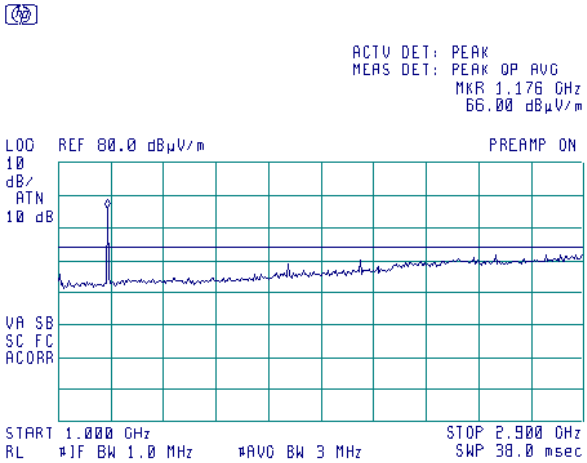
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 5 (FHSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

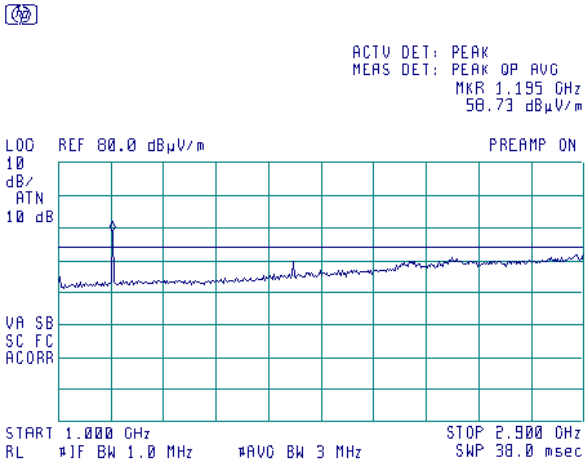
Plot 8.7.18 Radiated emission measurements from 1000 to 2900 MHz at the mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 5 (FHSS)



Plot 8.7.19 Radiated emission measurements from 1000 to 2900 MHz at the high carrier frequency

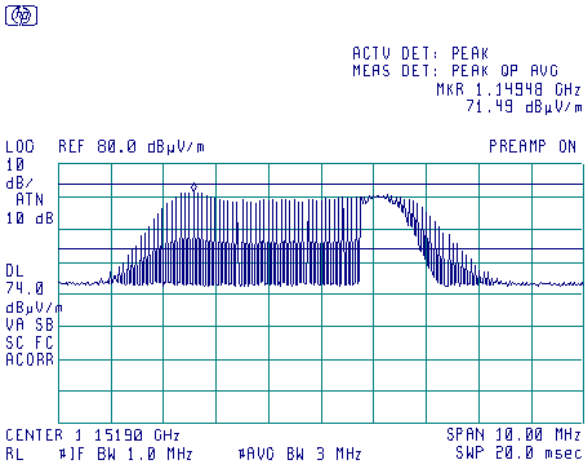
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 5 (FHSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

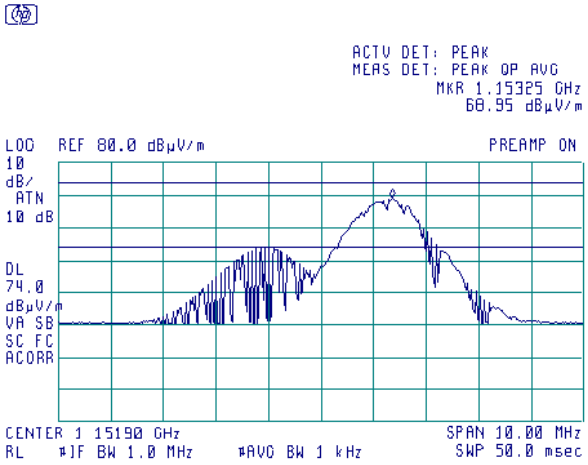
Plot 8.7.20 Radiated emission measurements at 1.15 GHz at the low carrier frequency

TEST SITE:	Semi anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal
OPERATIONAL MODE:	Mode 5 (FHSS)
DETECTOR:	Peak



Plot 8.7.21 Radiated emission measurements at 1.15 GHz at the low carrier frequency

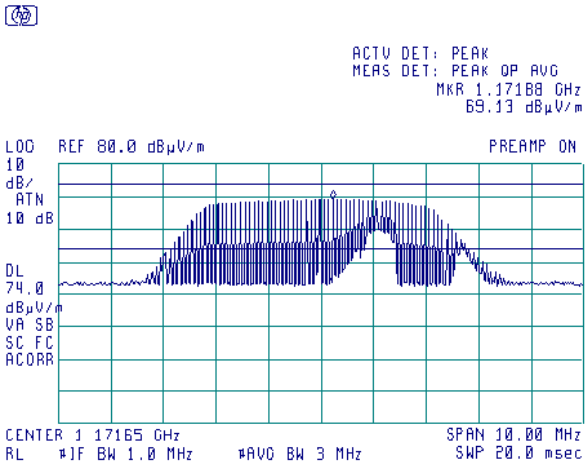
TEST SITE:	Semi anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal
OPERATIONAL MODE:	Mode 5 (FHSS)
DETECTOR:	Average



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

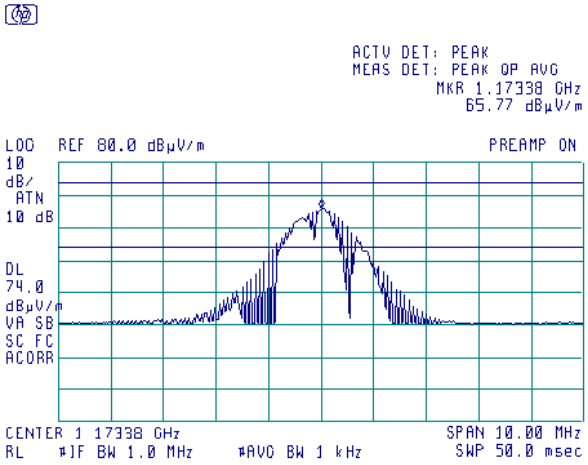
Plot 8.7.22 Radiated emission measurements at 1.17 GHz at the mid carrier frequency

TEST SITE:	Semi anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal
OPERATIONAL MODE:	Mode 5 (FHSS)
DETECTOR:	Peak



Plot 8.7.23 Radiated emission measurements at 1.17 GHz at the mid carrier frequency

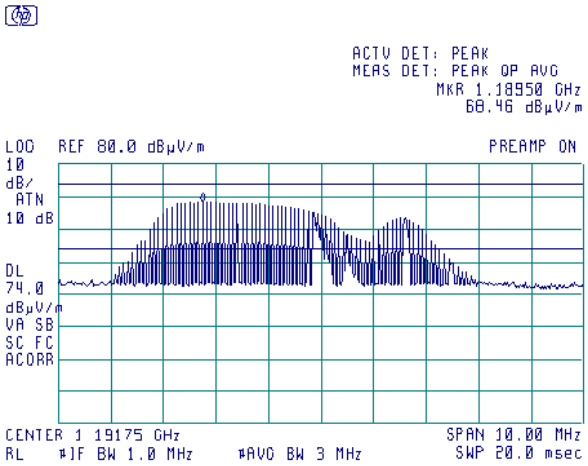
TEST SITE:	Semi anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal
OPERATIONAL MODE:	Mode 5 (FHSS)
DETECTOR:	Average



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

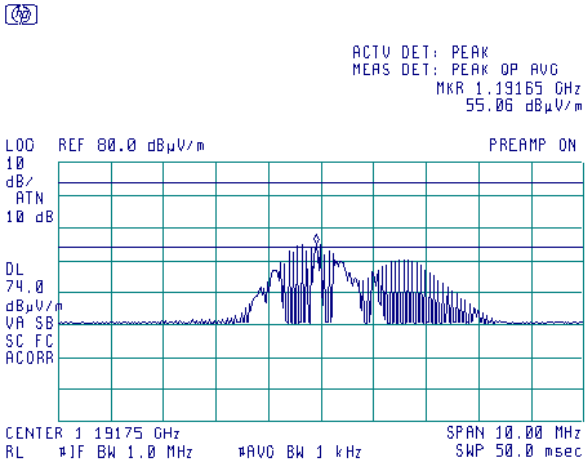
Plot 8.7.24 Radiated emission measurements at 1.19 GHz at the high carrier frequency

TEST SITE:	Semi anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal
OPERATIONAL MODE:	Mode 5 (FHSS)
DETECTOR:	Peak



Plot 8.7.25 Radiated emission measurements at 1.19 GHz at the high carrier frequency

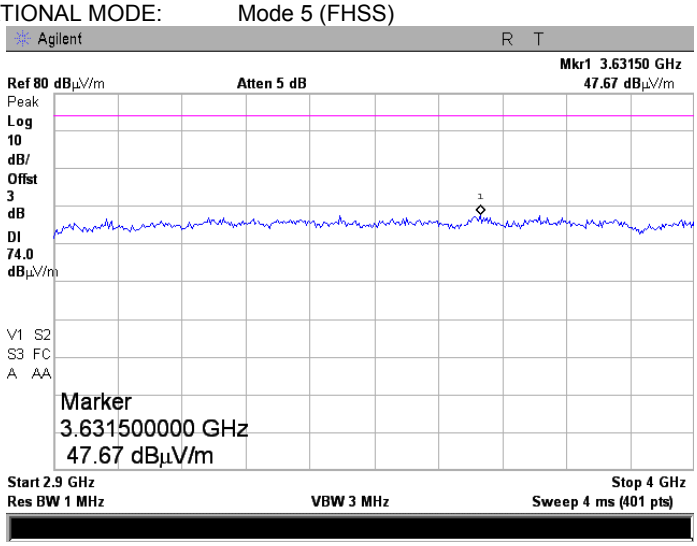
TEST SITE:	Semi anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal
OPERATIONAL MODE:	Mode 5 (FHSS)
DETECTOR:	Average



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

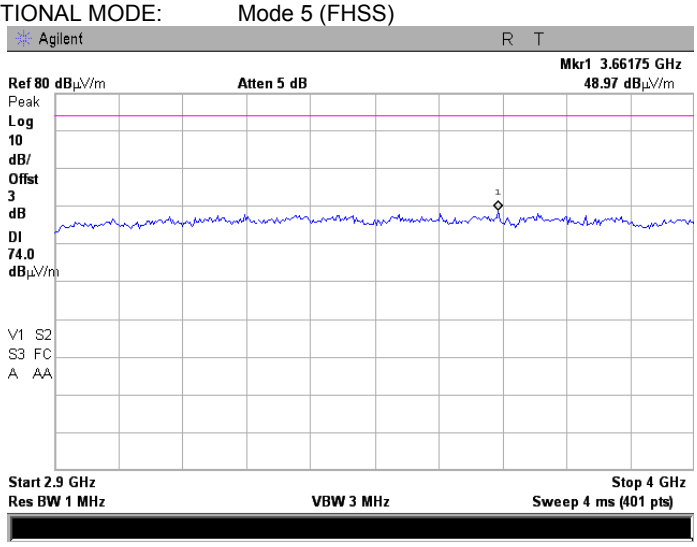
Plot 8.7.26 Radiated emission measurements from 2900 to 4000 MHz at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 5 (FHSS)



Plot 8.7.27 Radiated emission measurements from 2900 to 4000 MHz at the mid carrier frequency

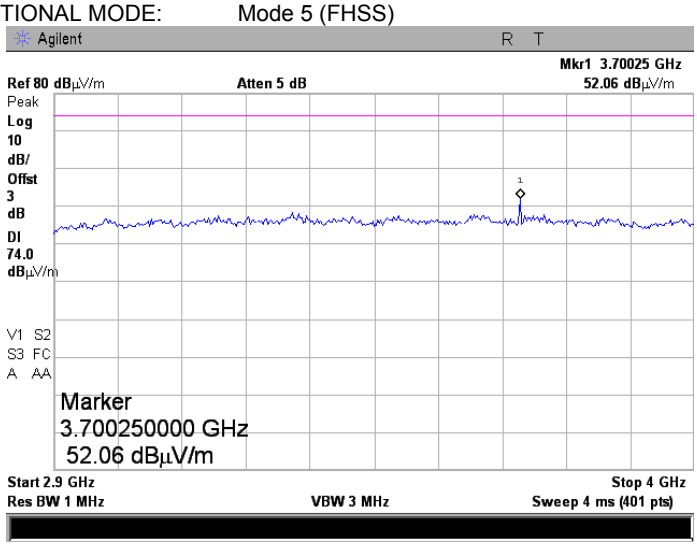
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 5 (FHSS)



Test specification:	**Section 15.247(c), Radiated spurious emissions**		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	**Verdict:**	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	**Air Pressure:** 1007 hPa	**Relative Humidity:** 48%	**Power Supply:** 3.6 V DC
Remarks:			

Plot 8.7.28 Radiated emission measurements from 2900 to 4000 MHz at the high carrier frequency

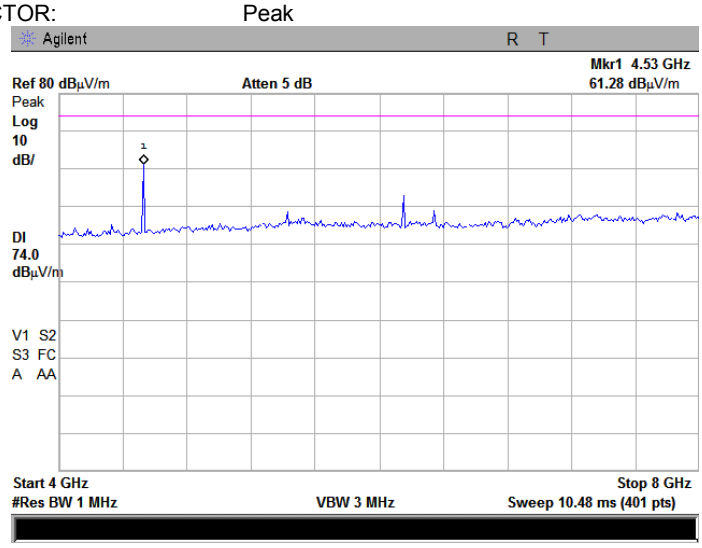
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 5 (FHSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24°C	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

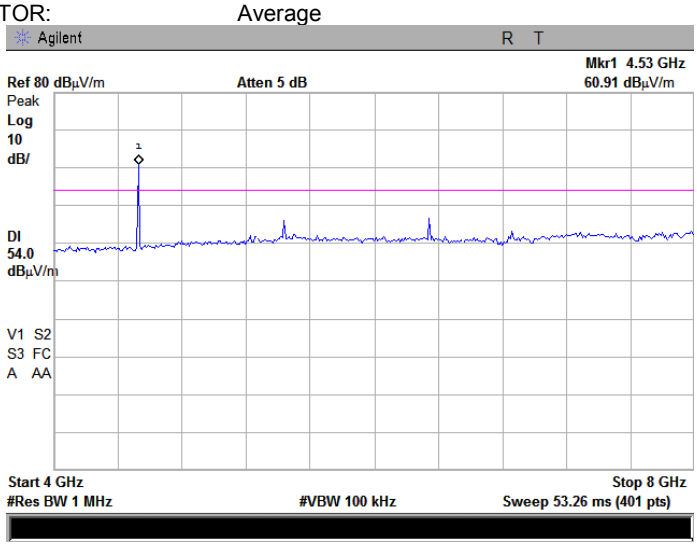
Plot 8.7.29 Radiated emission measurements from 4000 to 8000 MHz at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 5 (FHSS)
DETECTOR: Peak



Plot 8.7.30 Radiated emission measurements from 4000 to 8000 MHz at the low carrier frequency

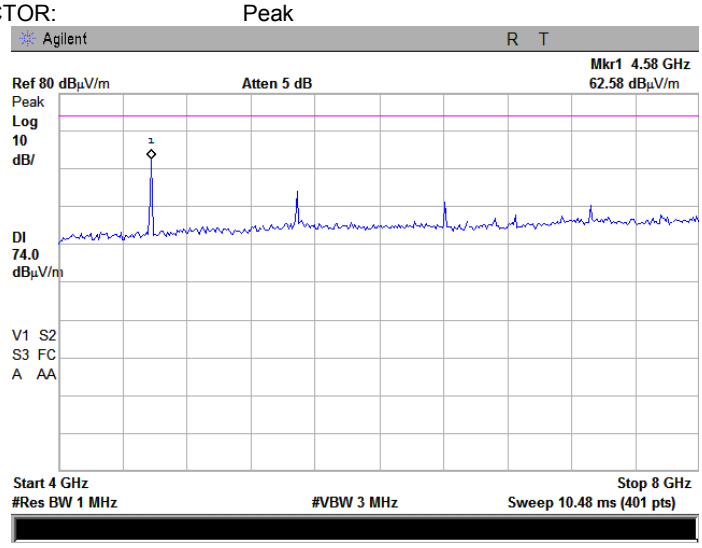
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 5 (FHSS)
DETECTOR: Average



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24°C	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

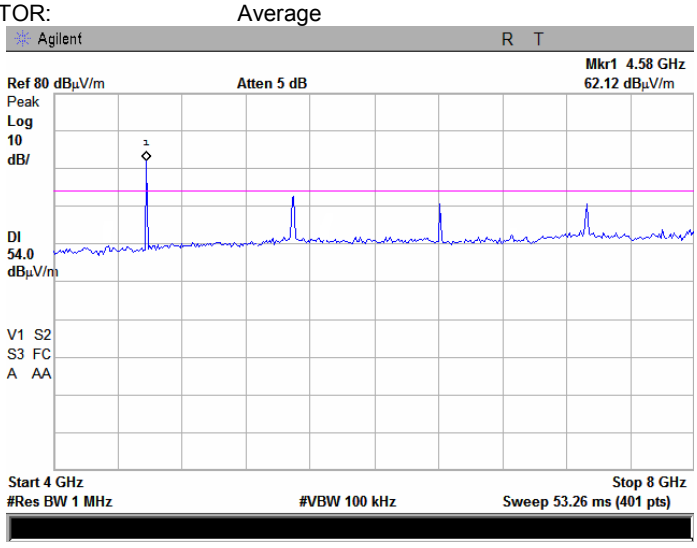
Plot 8.7.31 Radiated emission measurements from 4000 to 8000 MHz at the mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 5 (FHSS)
DETECTOR: Peak



Plot 8.7.32 Radiated emission measurements from 4000 to 8000 MHz at the mid carrier frequency

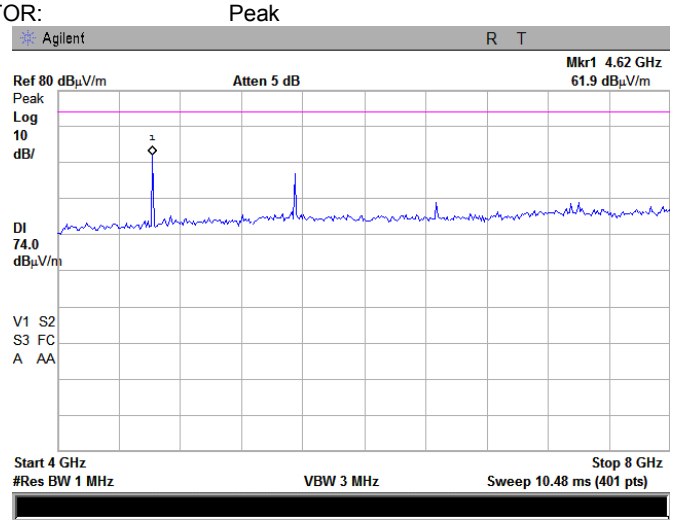
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 5 (FHSS)
DETECTOR: Average



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

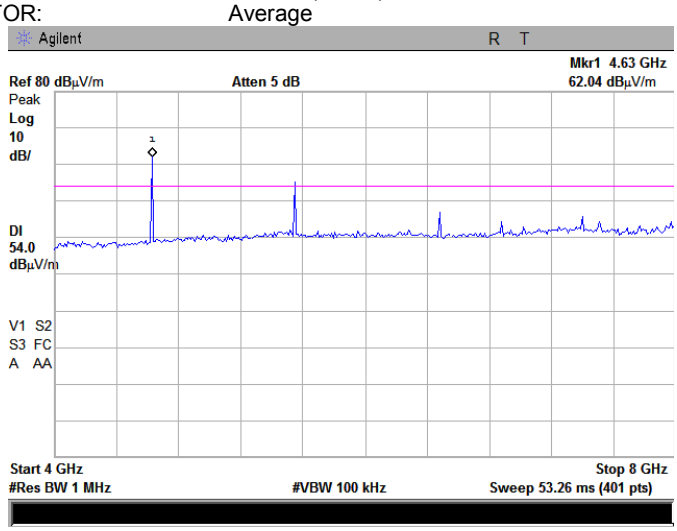
Plot 8.7.33 Radiated emission measurements from 4000 to 8000 MHz at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 5 (FHSS)
DETECTOR: Peak



Plot 8.7.34 Radiated emission measurements from 4000 to 8000 MHz at the high carrier frequency

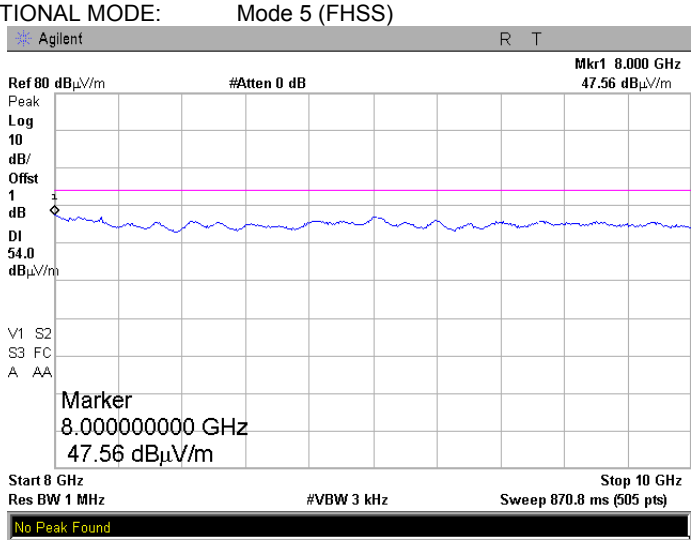
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 5 (FHSS)
DETECTOR: Average



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

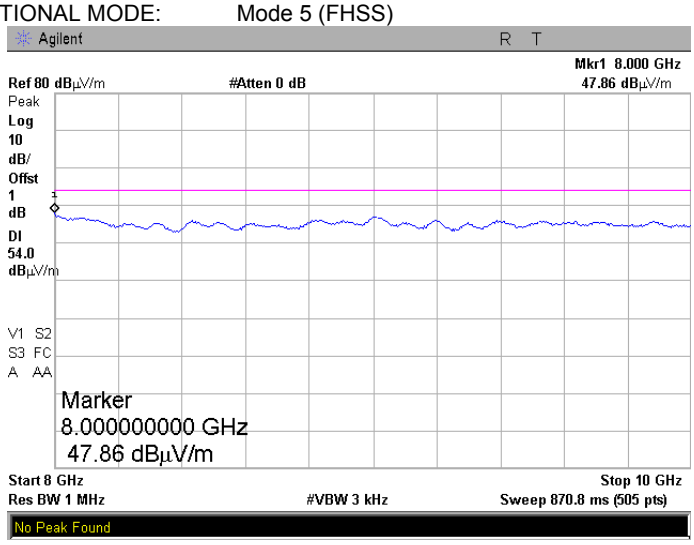
Plot 8.7.35 Radiated emission measurements from 8000 to 10000 MHz at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 5 (FHSS)



Plot 8.7.36 Radiated emission measurements from 8000 to 10000 MHz at the mid carrier frequency

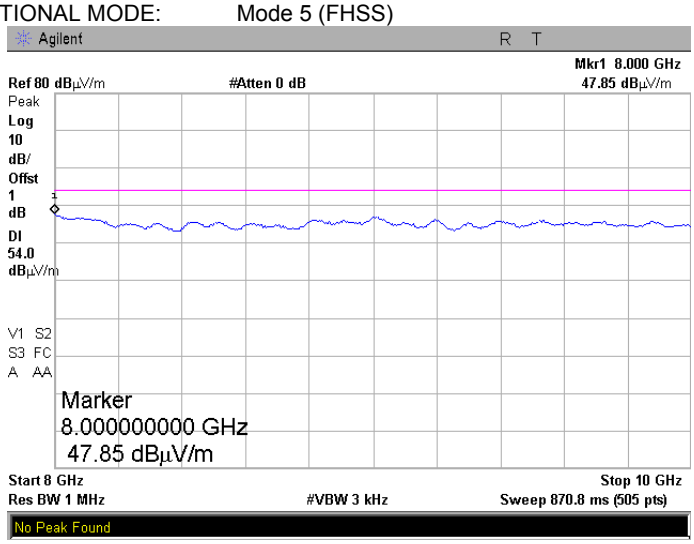
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 5 (FHSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

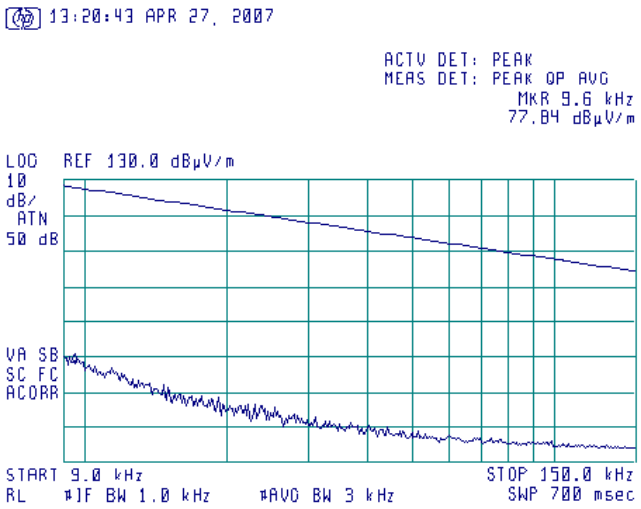
Plot 8.7.37 Radiated emission measurements from 8000 to 10000 MHz at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 5 (FHSS)



Plot 8.7.38 Radiated emission measurements from 9 to 150 kHz at the mid carrier frequency

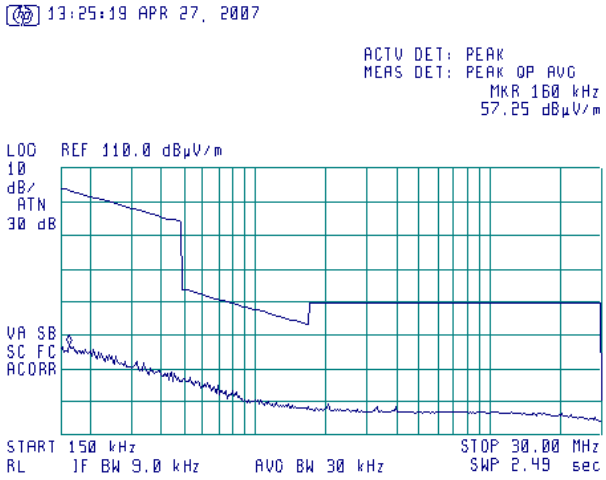
TEST SITE: Anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: Mode 3 (DSSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

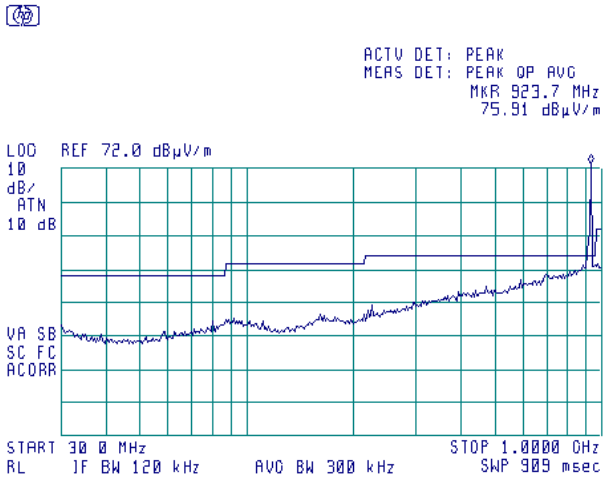
Plot 8.7.39 Radiated emission measurements from 0.15 to 30 MHz at the mid carrier frequency

TEST SITE: Anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: Mode 3 (DSSS)



Plot 8.7.40 Radiated emission measurements from 30 to 1000 MHz at the mid carrier frequency

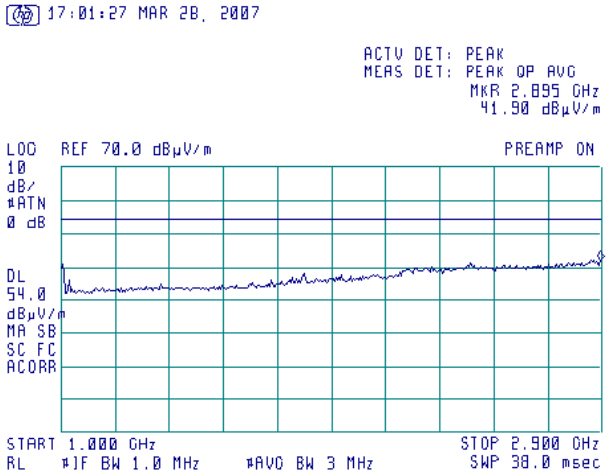
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 3 (DSSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

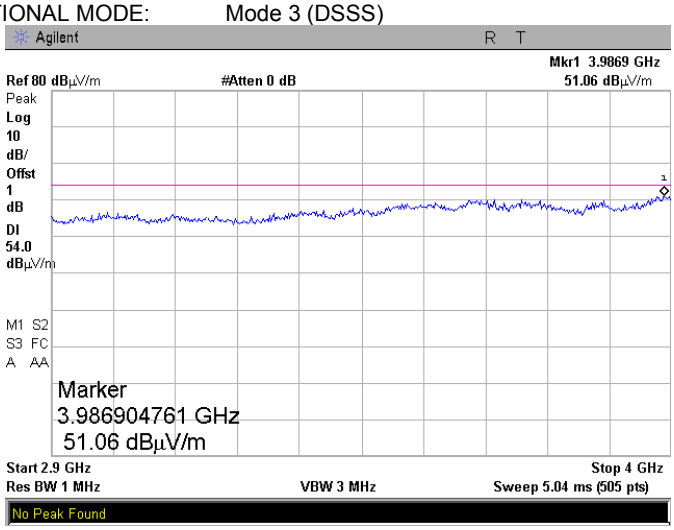
Plot 8.7.41 Radiated emission measurements from 1000 to 2900 MHz at the mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 3 (DSSS)



Plot 8.7.42 Radiated emission measurements from 2900 to 4000 MHz at the mid carrier frequency

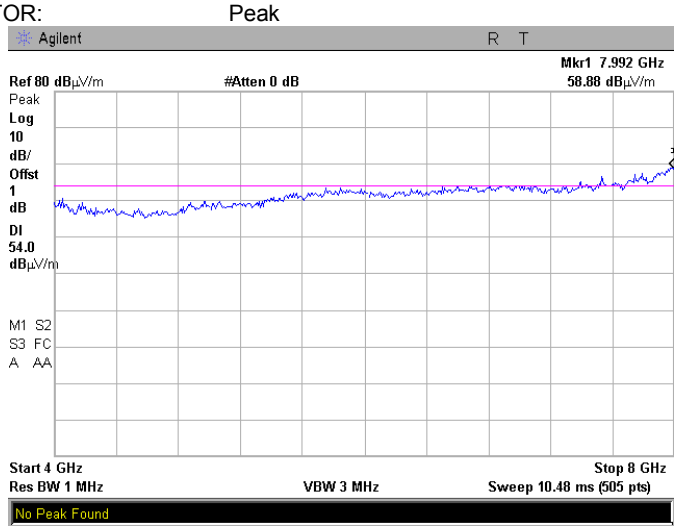
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 3 (DSSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

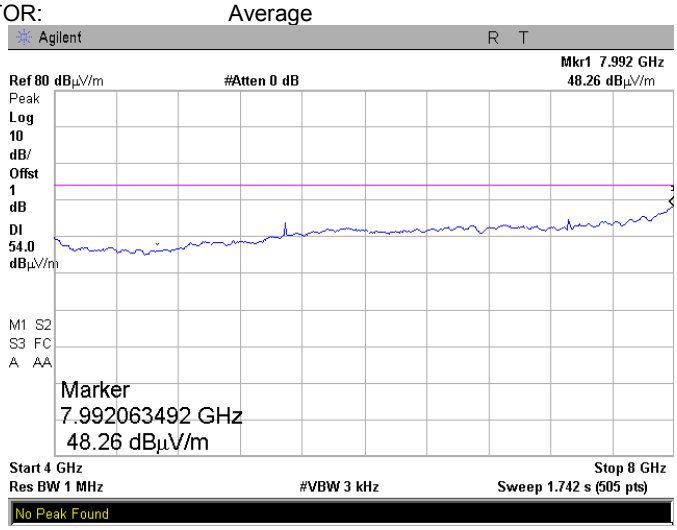
Plot 8.7.43 Radiated emission measurements from 4000 to 8000 MHz at the mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 3 (DSSS)
DETECTOR: Peak



Plot 8.7.44 Radiated emission measurements from 4000 to 8000 MHz at the mid carrier frequency

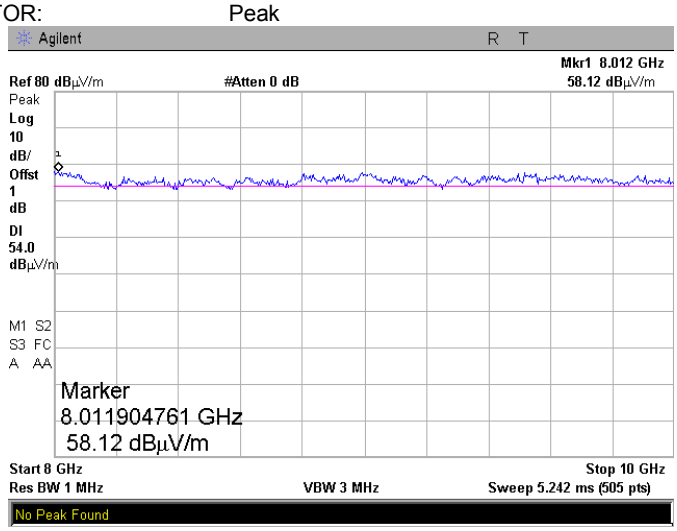
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 3 (DSSS)
DETECTOR: Average



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

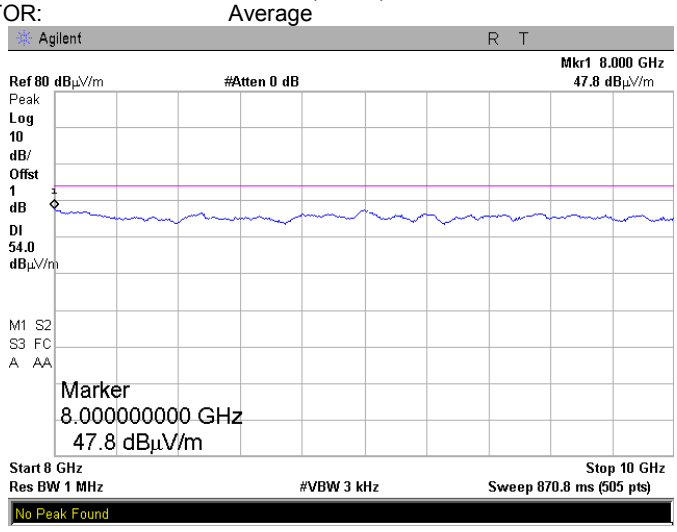
Plot 8.7.45 Radiated emission measurements from 8000 to 10000 MHz at the mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 3 (DSSS)
DETECTOR: Peak



Plot 8.7.46 Radiated emission measurements from 8000 to 10000 MHz at the mid carrier frequency

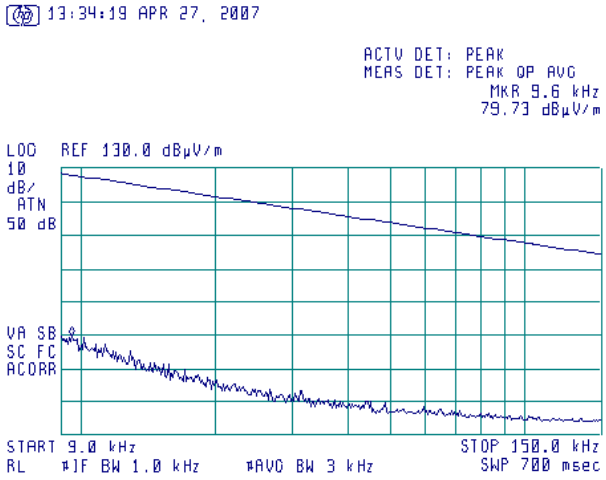
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 3 (DSSS)
DETECTOR: Average



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

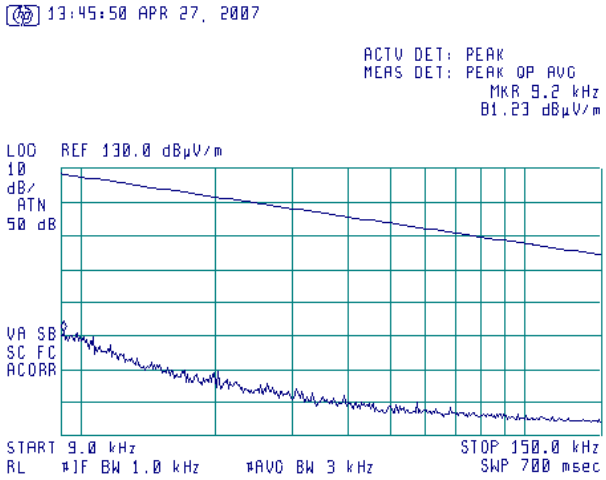
Plot 8.7.47 Radiated emission measurements from 9 to 150 kHz at the low carrier frequency

TEST SITE: Anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: Mode 2 (DSSS)



Plot 8.7.48 Radiated emission measurements from 9 to 150 kHz at the mid carrier frequency

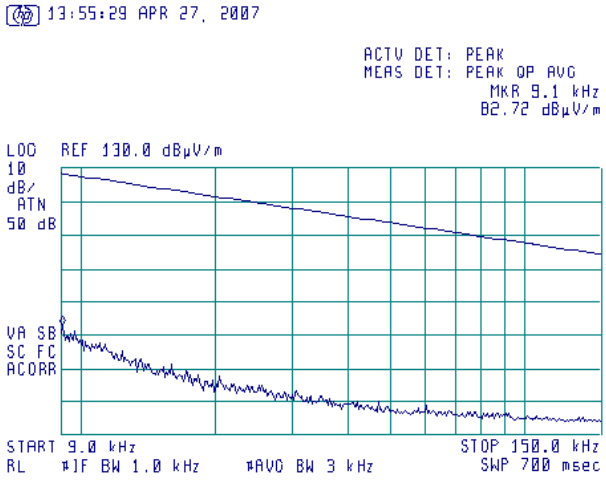
TEST SITE: Anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: Mode 2 (DSSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

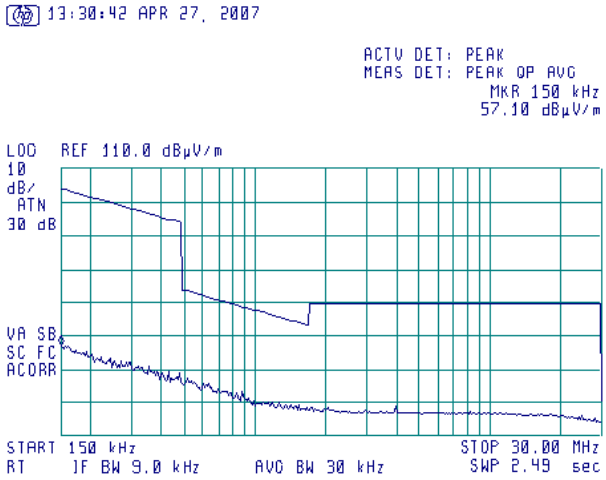
Plot 8.7.49 Radiated emission measurements from 9 to 150 kHz at the high carrier frequency

TEST SITE: Anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: Mode 2 (DSSS)



Plot 8.7.50 Radiated emission measurements from 0.15 to 30 MHz at the low carrier frequency

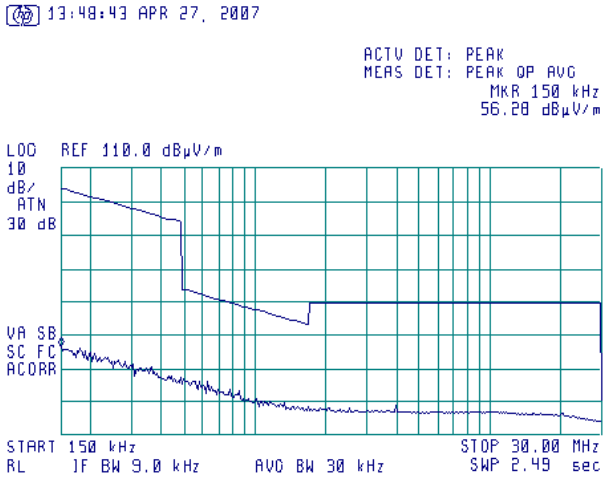
TEST SITE: Anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: Mode 2 (DSSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

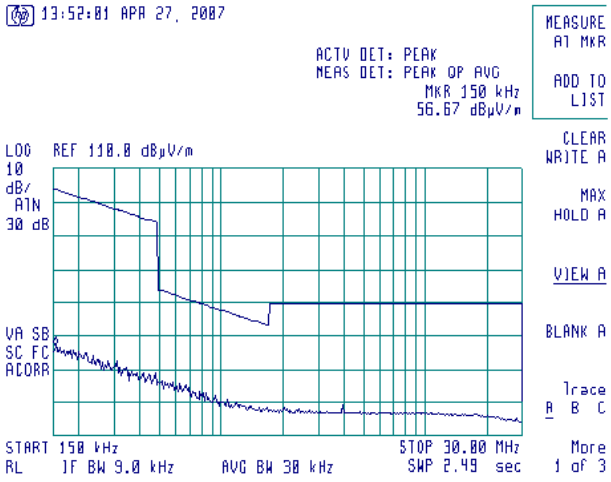
Plot 8.7.51 Radiated emission measurements from 0.15 to 30 MHz at the mid carrier frequency

TEST SITE: Anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: Mode 2 (DSSS)



Plot 8.7.52 Radiated emission measurements from 0.15 to 30 MHz at the high carrier frequency

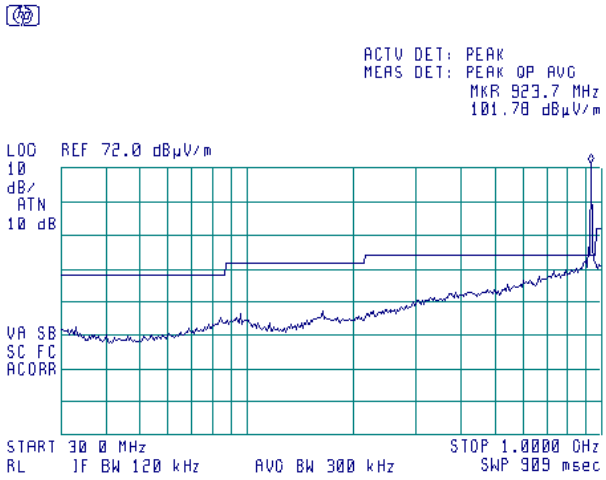
TEST SITE: Anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: Mode 2 (DSSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

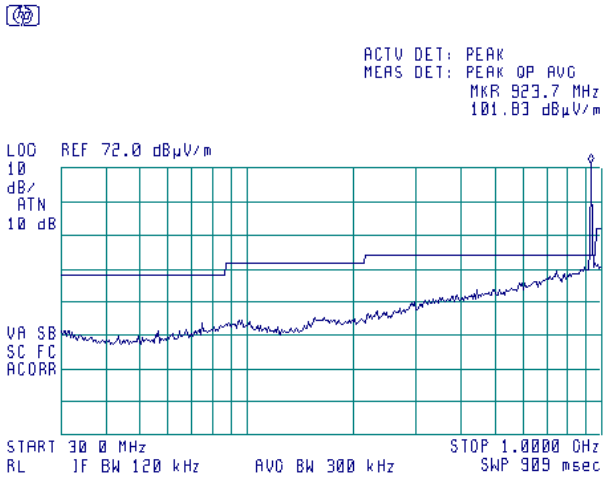
Plot 8.7.53 Radiated emission measurements from 30 to 1000 MHz at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 2 (DSSS)



Plot 8.7.54 Radiated emission measurements from 30 to 1000 MHz at the mid carrier frequency

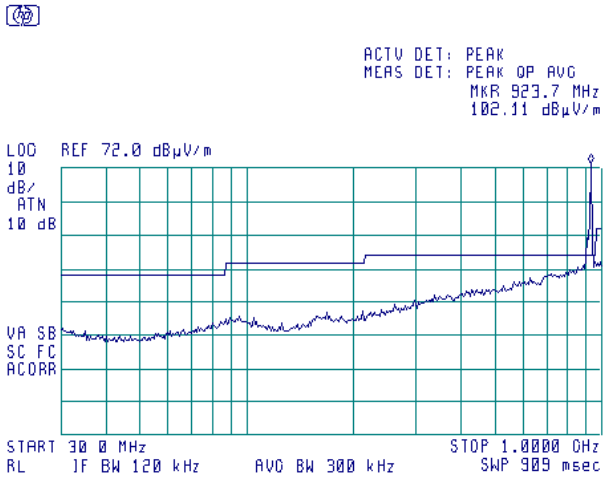
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 2 (DSSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

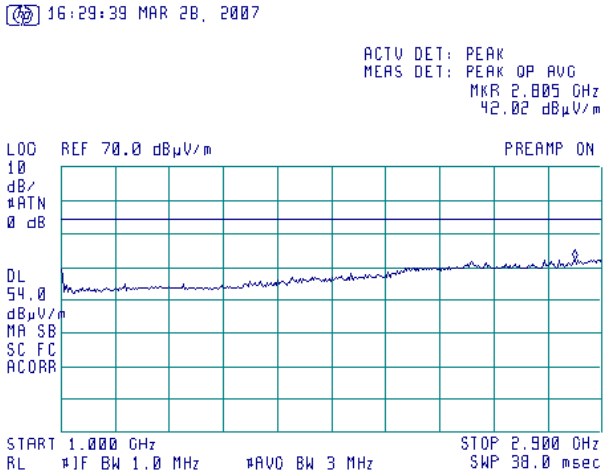
Plot 8.7.55 Radiated emission measurements from 30 to 1000 MHz at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 2 (DSSS)



Plot 8.7.56 Radiated emission measurements from 1000 to 2900 MHz at the low carrier frequency

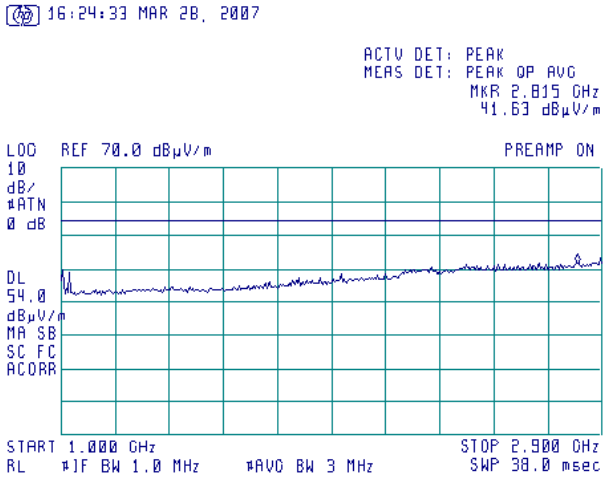
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 2 (DSSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

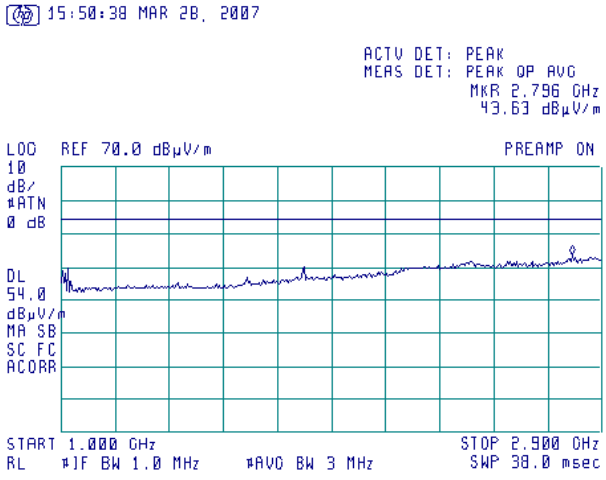
Plot 8.7.57 Radiated emission measurements from 1000 to 2900 MHz at the mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 2 (DSSS)



Plot 8.7.58 Radiated emission measurements from 1000 to 2900 MHz at the high carrier frequency

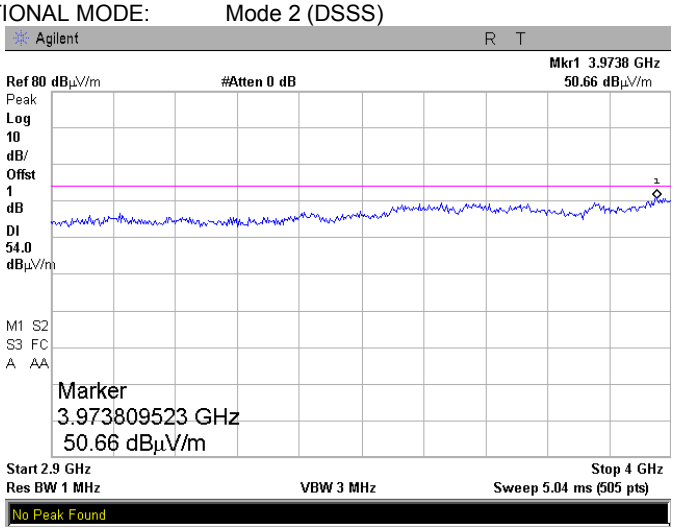
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 2 (DSSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

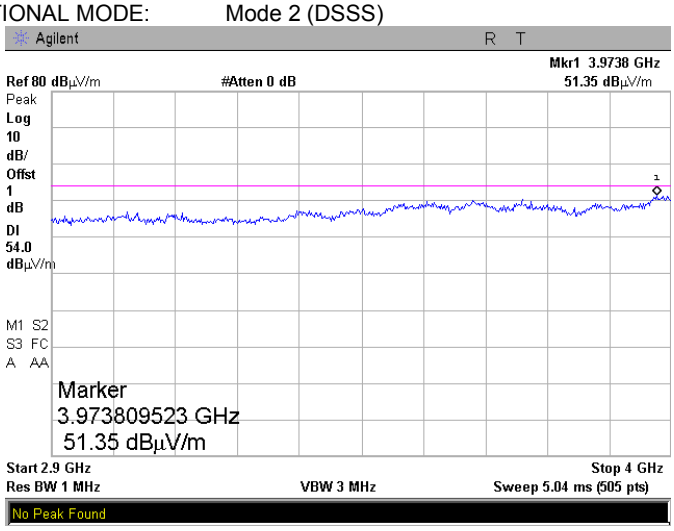
Plot 8.7.59 Radiated emission measurements from 2900 to 4000 MHz at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 2 (DSSS)



Plot 8.7.60 Radiated emission measurements from 2900 to 4000 MHz at the mid carrier frequency

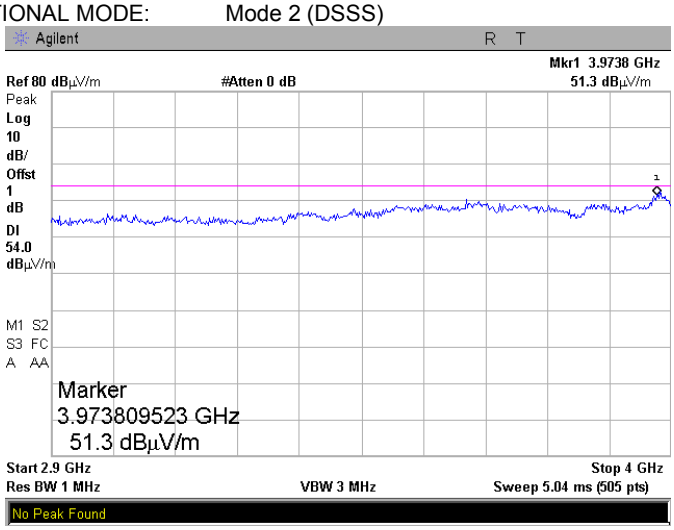
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 2 (DSSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

Plot 8.7.61 Radiated emission measurements from 2900 to 4000 MHz at the high carrier frequency

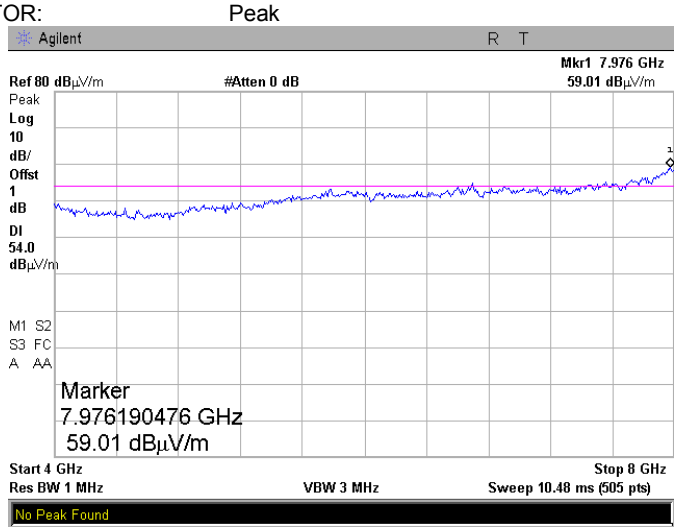
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 2 (DSSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

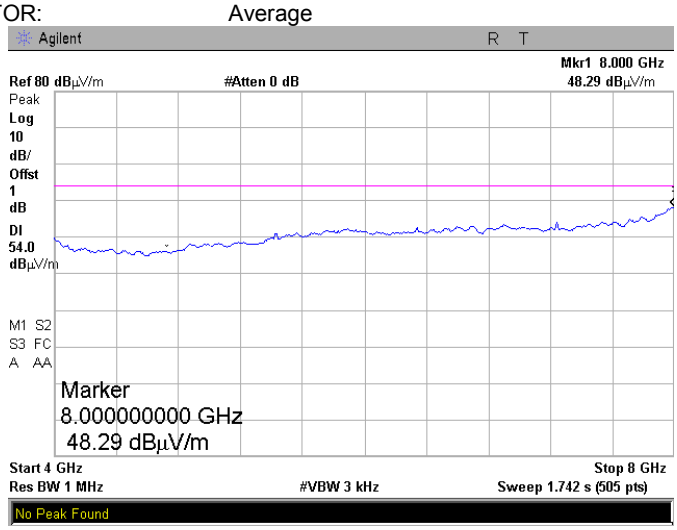
Plot 8.7.62 Radiated emission measurements from 4000 to 8000 MHz at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 2 (DSSS)
DETECTOR: Peak



Plot 8.7.63 Radiated emission measurements from 4000 to 8000 MHz at the low carrier frequency

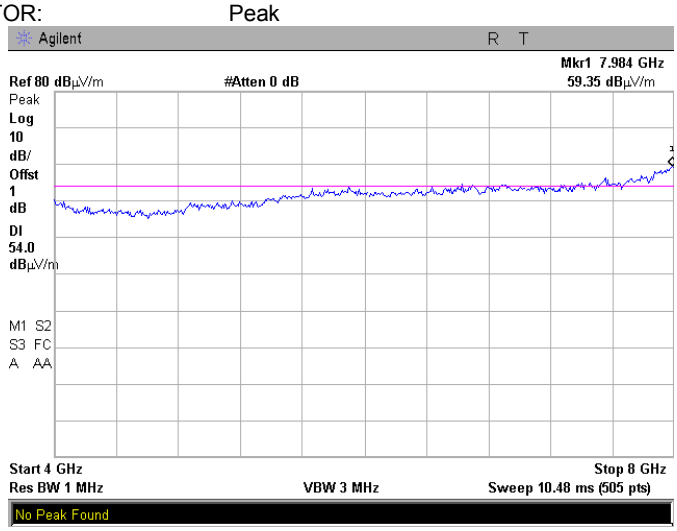
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 2 (DSSS)
DETECTOR: Average



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

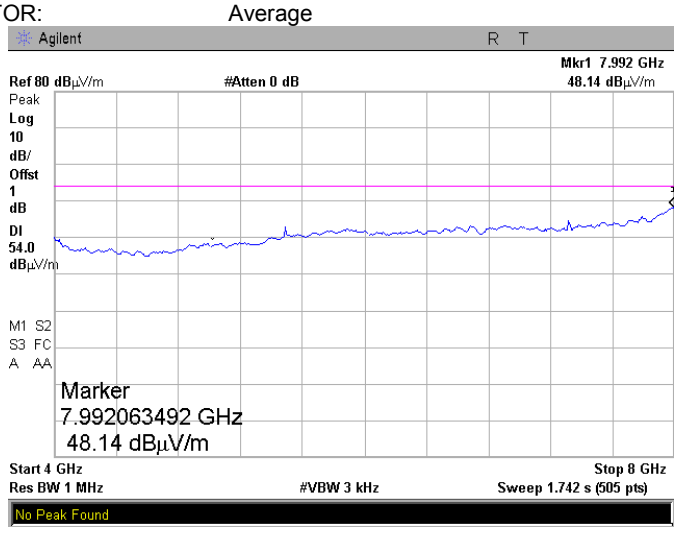
Plot 8.7.64 Radiated emission measurements from 4000 to 8000 MHz at the mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 2 (DSSS)
DETECTOR: Peak



Plot 8.7.65 Radiated emission measurements from 4000 to 8000 MHz at the mid carrier frequency

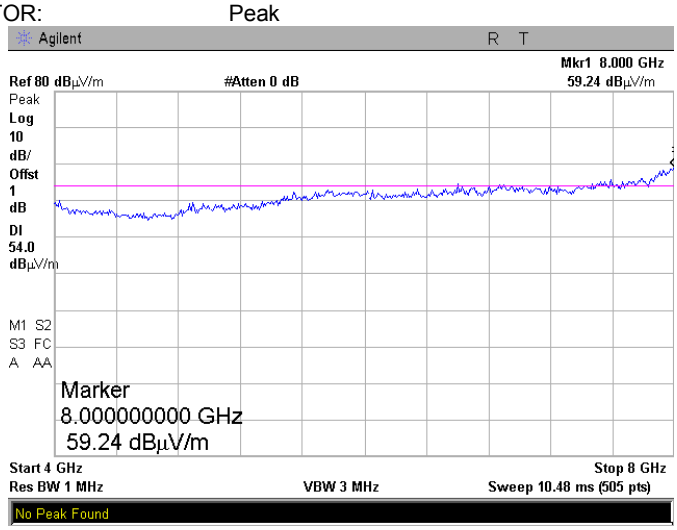
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 2 (DSSS)
DETECTOR: Average



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

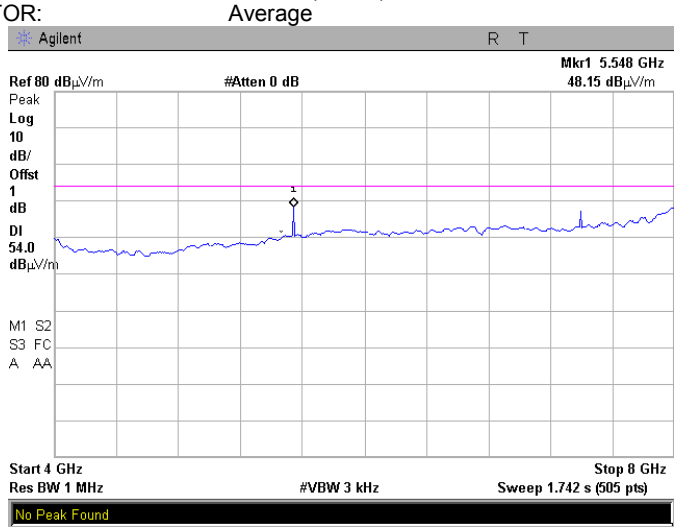
Plot 8.7.66 Radiated emission measurements from 4000 to 8000 MHz at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 2 (DSSS)
DETECTOR: Peak



Plot 8.7.67 Radiated emission measurements from 4000 to 8000 MHz at the high carrier frequency

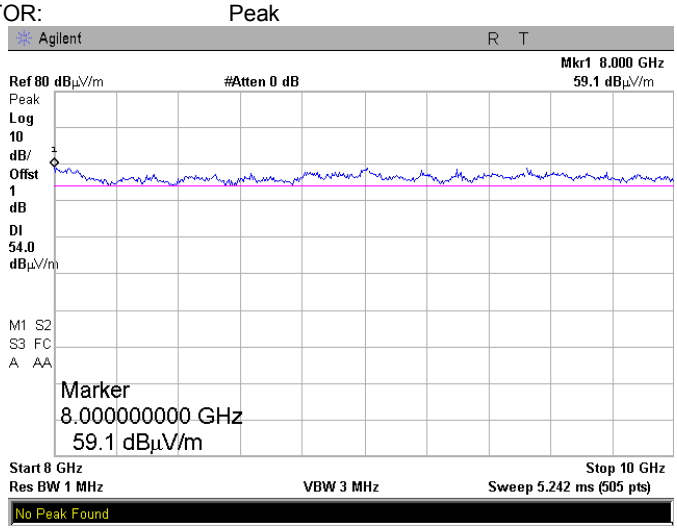
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 2 (DSSS)
DETECTOR: Average



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

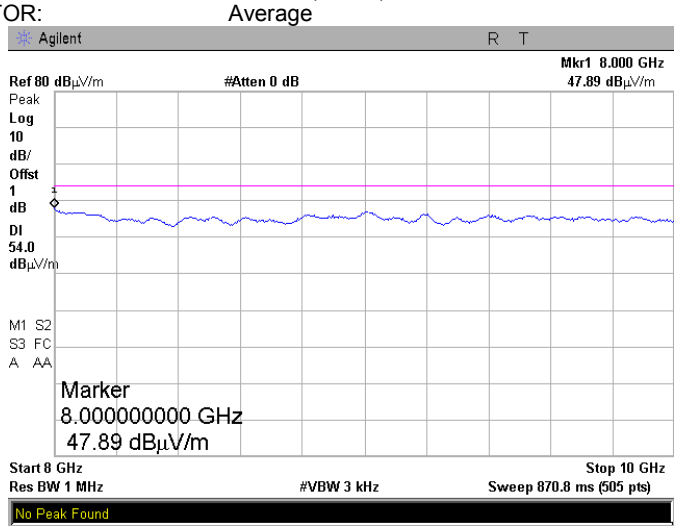
Plot 8.7.68 Radiated emission measurements from 8000 to 10000 MHz at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 2 (DSSS)
DETECTOR: Peak



Plot 8.7.69 Radiated emission measurements from 8000 to 10000 MHz at the low carrier frequency

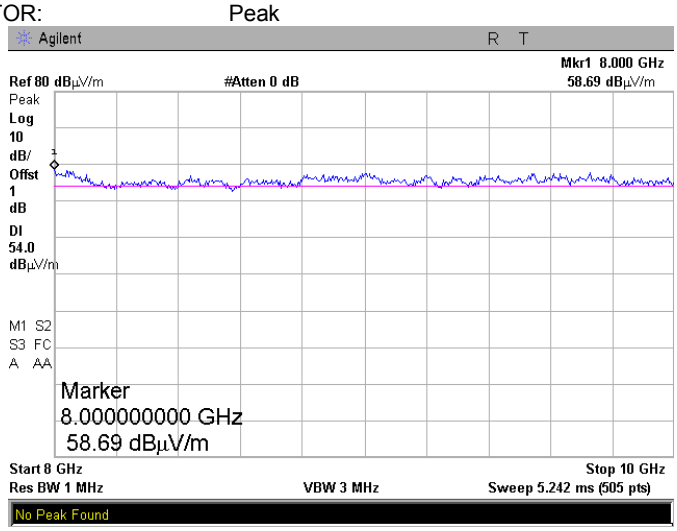
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 2 (DSSS)
DETECTOR: Average



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

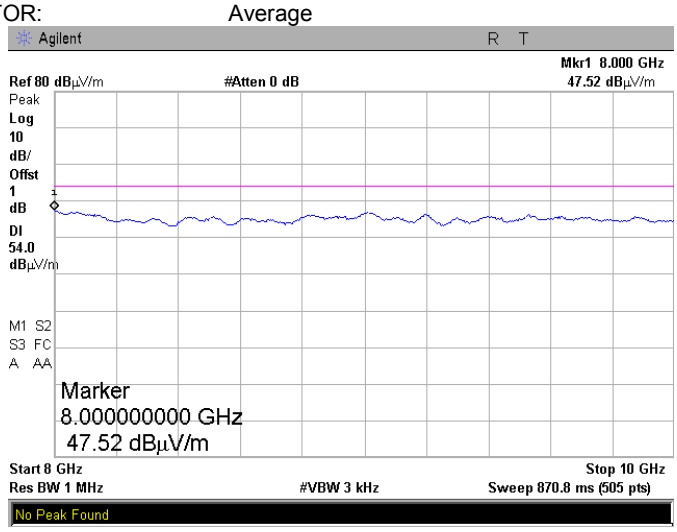
Plot 8.7.70 Radiated emission measurements from 8000 to 10000 MHz at the mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 2 (DSSS)
DETECTOR: Peak



Plot 8.7.71 Radiated emission measurements from 8000 to 10000 MHz at the mid carrier frequency

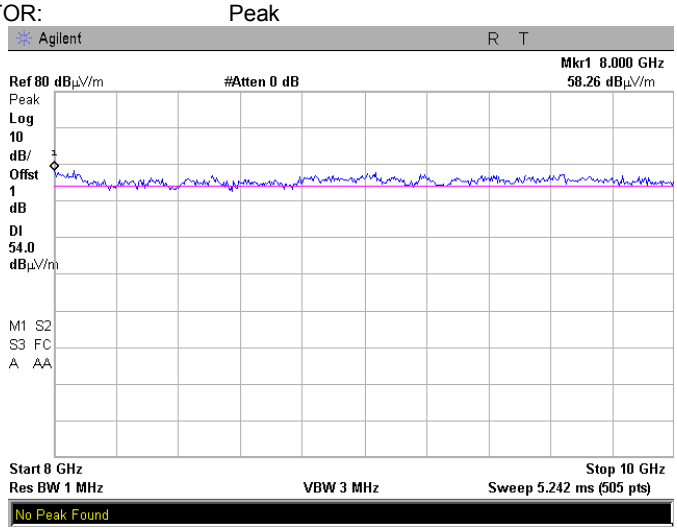
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 2 (DSSS)
DETECTOR: Average



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

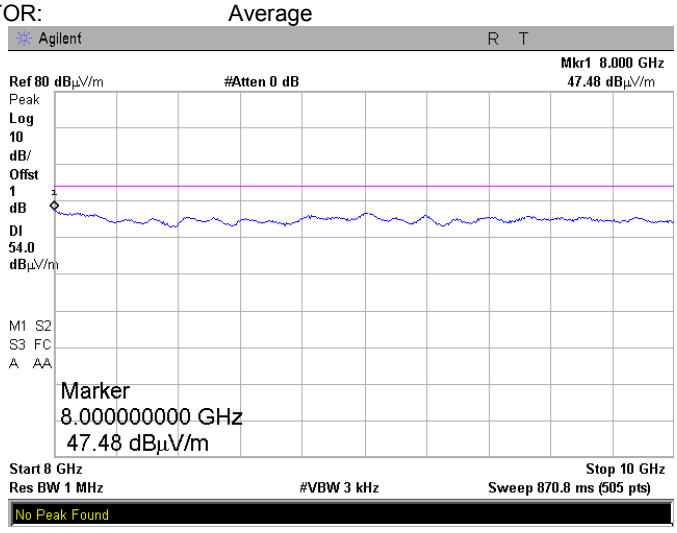
Plot 8.7.72 Radiated emission measurements from 8000 to 10000 MHz at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 2 (DSSS)
DETECTOR: Peak



Plot 8.7.73 Radiated emission measurements from 8000 to 10000 MHz at the high carrier frequency

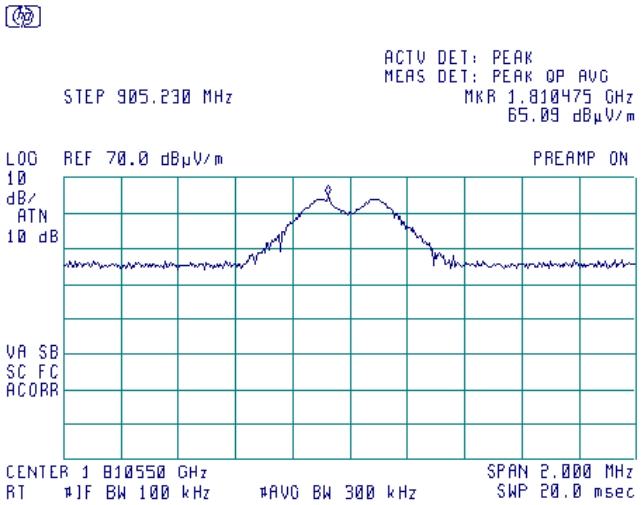
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: Mode 2 (DSSS)
DETECTOR: Average



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

Plot 8.7.74 Radiated emission measurements at the second harmonic of low carrier frequency

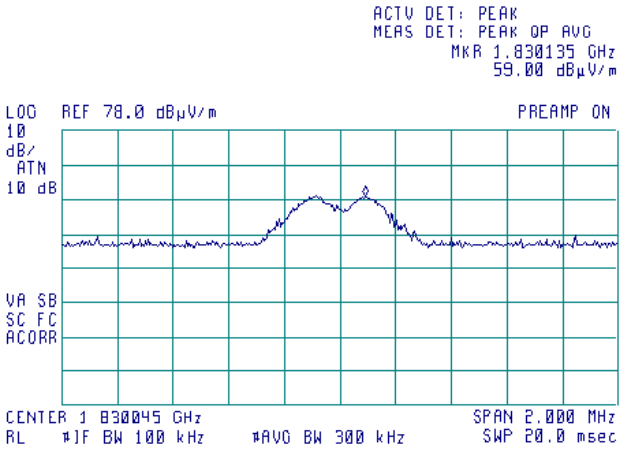
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

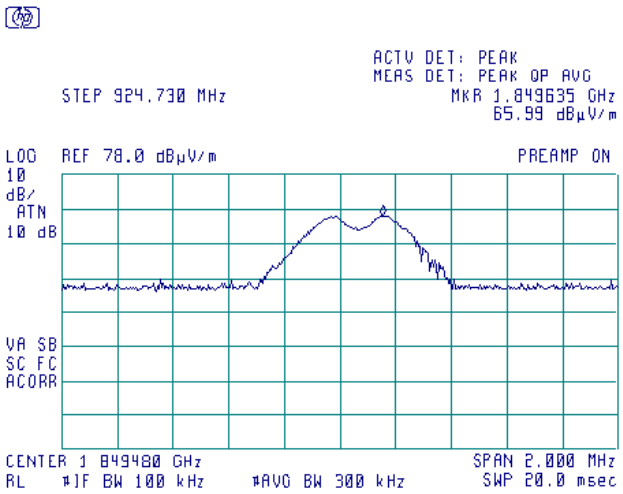
Plot 8.7.75 Radiated emission measurements at the second harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)



Plot 8.7.76 Radiated emission measurements at the second harmonic of high carrier frequency

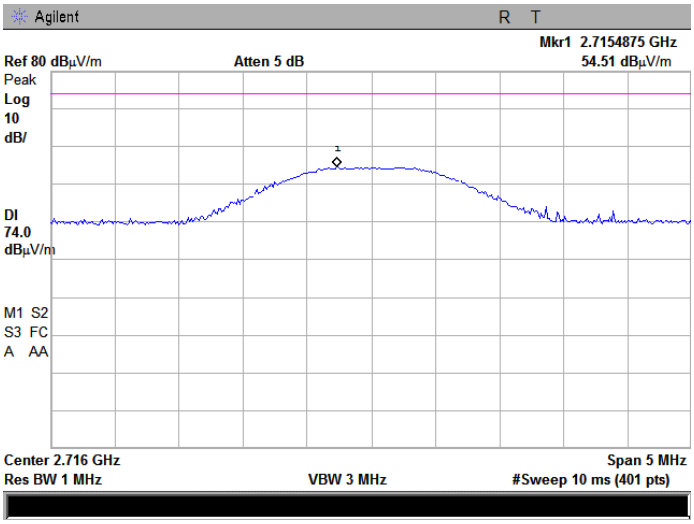
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

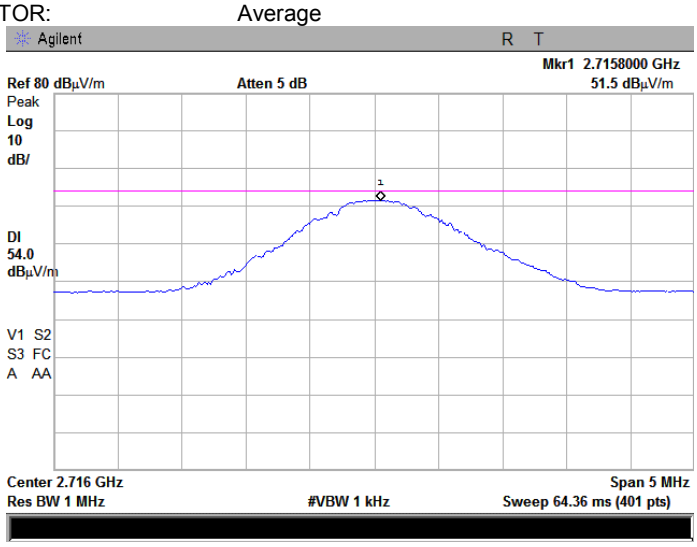
Plot 8.7.77 Radiated emission measurements at the third harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)
DETECTOR: Peak



Plot 8.7.78 Radiated emission measurements at the third harmonic of low carrier frequency

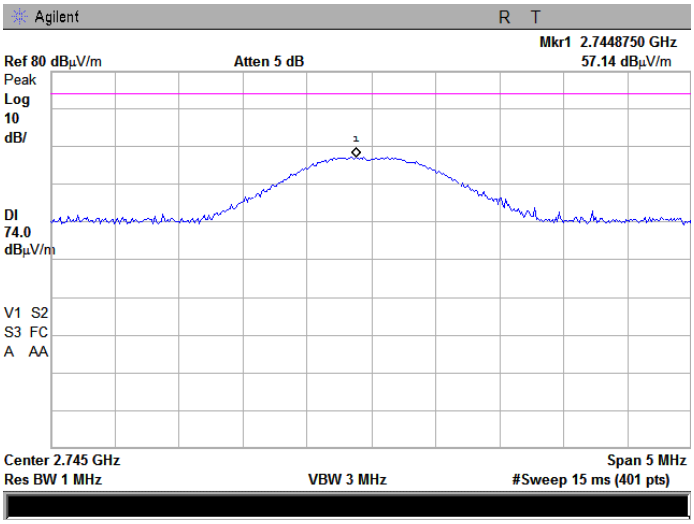
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)
DETECTOR: Average



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24°C	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

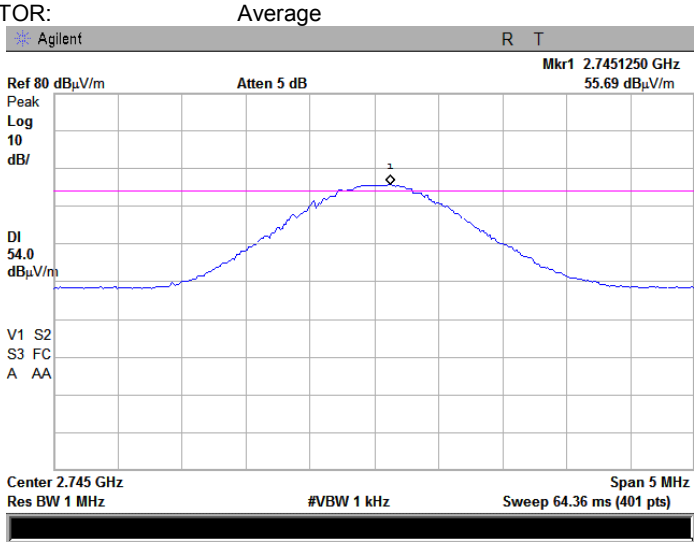
Plot 8.7.79 Radiated emission measurements at the third harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)
DETECTOR: Peak



Plot 8.7.80 Radiated emission measurements at the third harmonic of mid carrier frequency

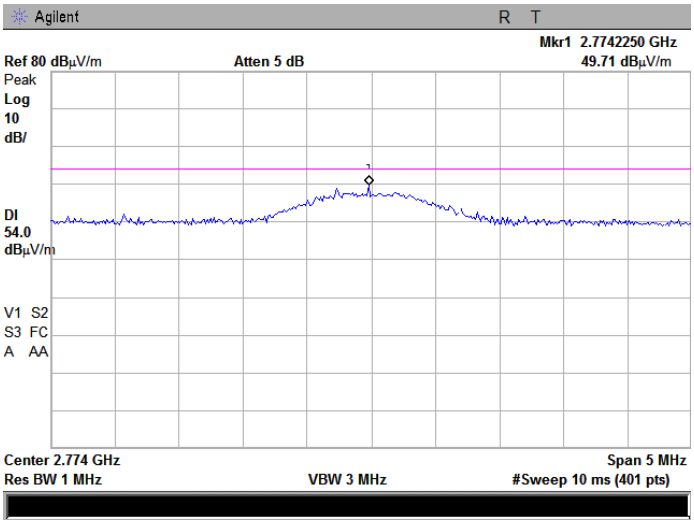
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)
DETECTOR: Average



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24°C	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

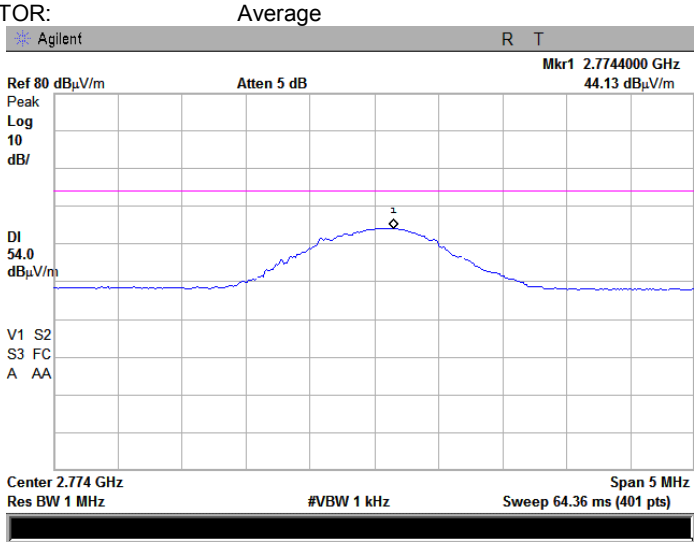
Plot 8.7.81 Radiated emission measurements at the third harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)
DETECTOR: Peak



Plot 8.7.82 Radiated emission measurements at the third harmonic of high carrier frequency

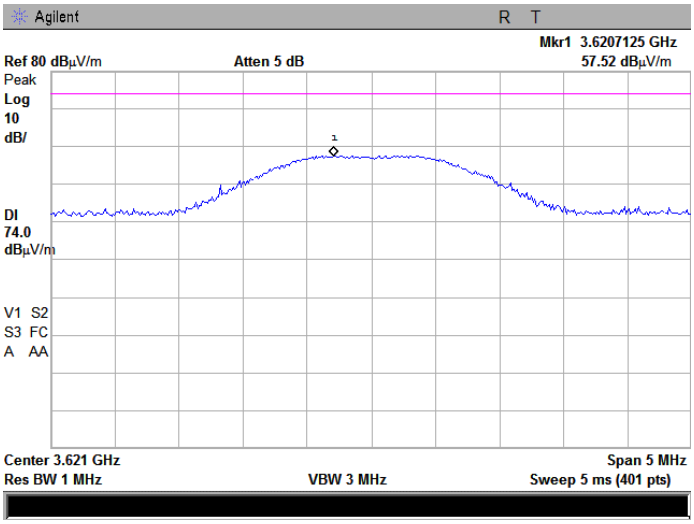
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)
DETECTOR: Average



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

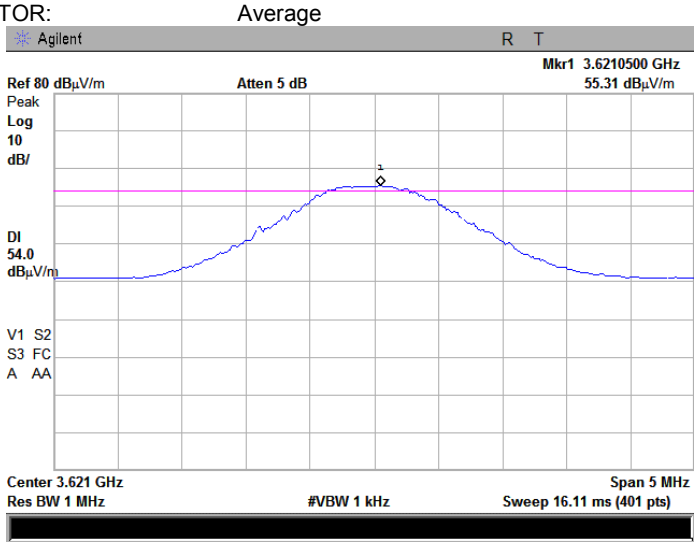
Plot 8.7.83 Radiated emission measurements at the forth harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)
DETECTOR: Peak



Plot 8.7.84 Radiated emission measurements at the forth harmonic of low carrier frequency

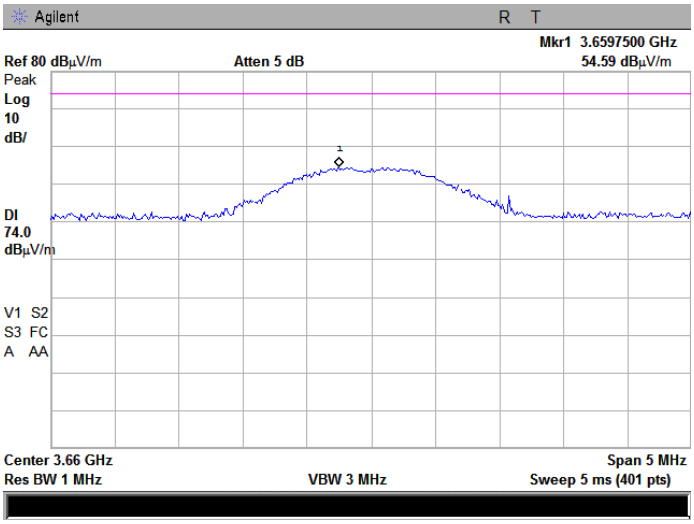
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)
DETECTOR: Average



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

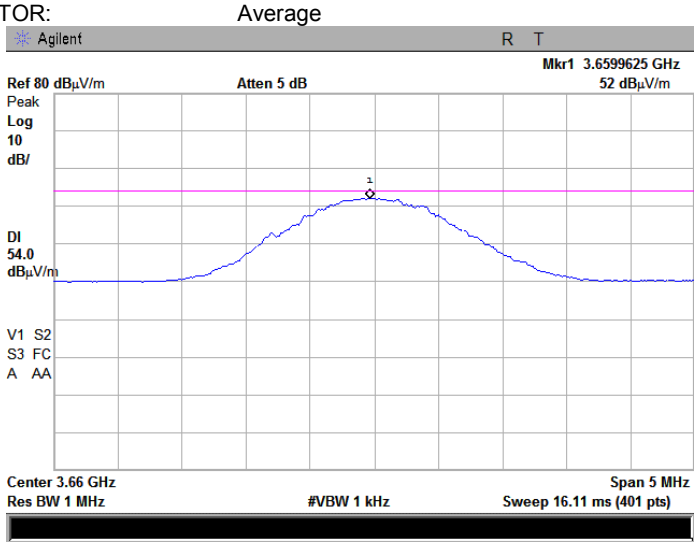
Plot 8.7.85 Radiated emission measurements at the forth harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)
DETECTOR: Peak



Plot 8.7.86 Radiated emission measurements at the forth harmonic of mid carrier frequency

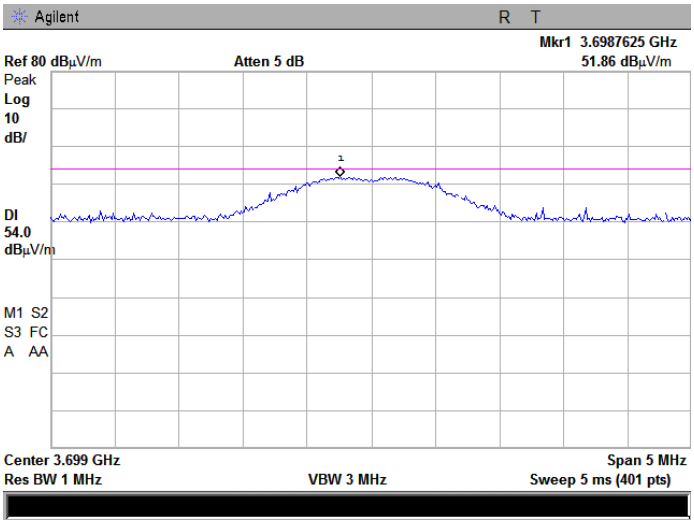
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)
DETECTOR: Average



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

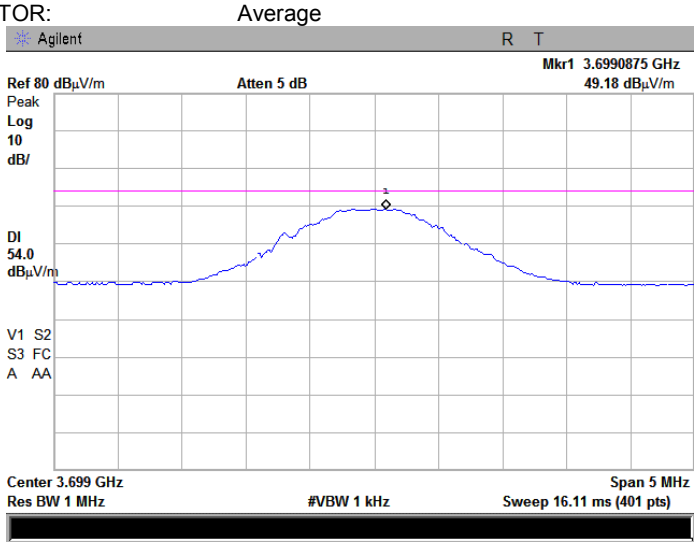
Plot 8.7.87 Radiated emission measurements at the forth harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)
DETECTOR: Peak



Plot 8.7.88 Radiated emission measurements at the forth harmonic of high carrier frequency

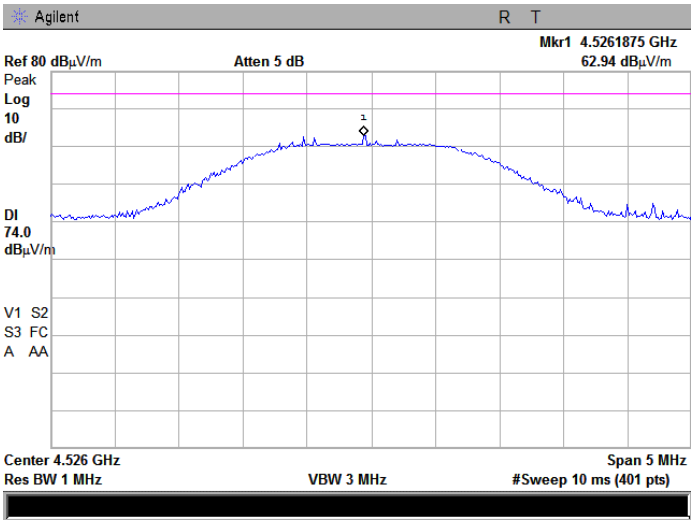
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)
DETECTOR: Average



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

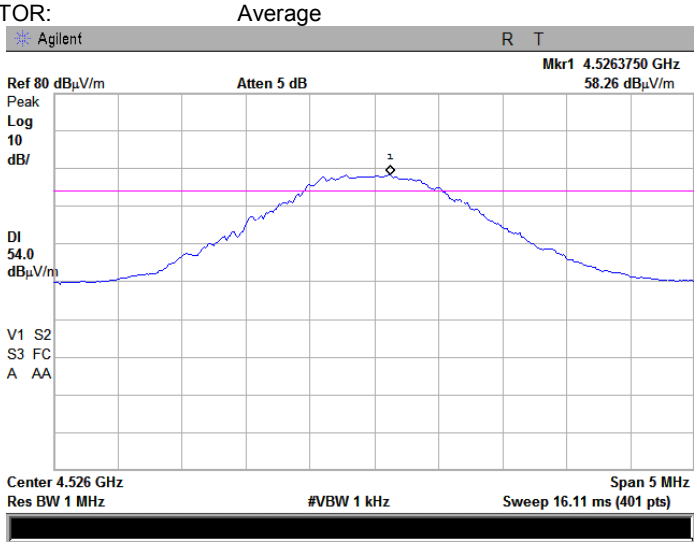
Plot 8.7.89 Radiated emission measurements at the fifth harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)
DETECTOR: Peak



Plot 8.7.90 Radiated emission measurements at the fifth harmonic of low carrier frequency

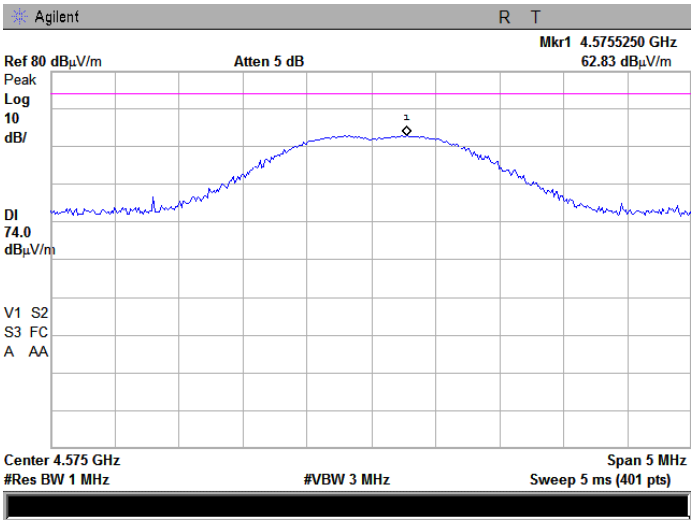
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)
DETECTOR: Average



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24°C	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

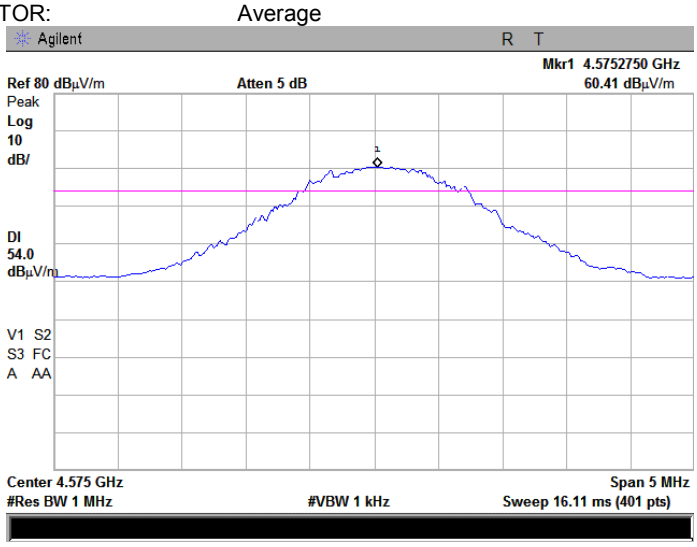
Plot 8.7.91 Radiated emission measurements at the fifth harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)
DETECTOR: Peak



Plot 8.7.92 Radiated emission measurements at the fifth harmonic of mid carrier frequency

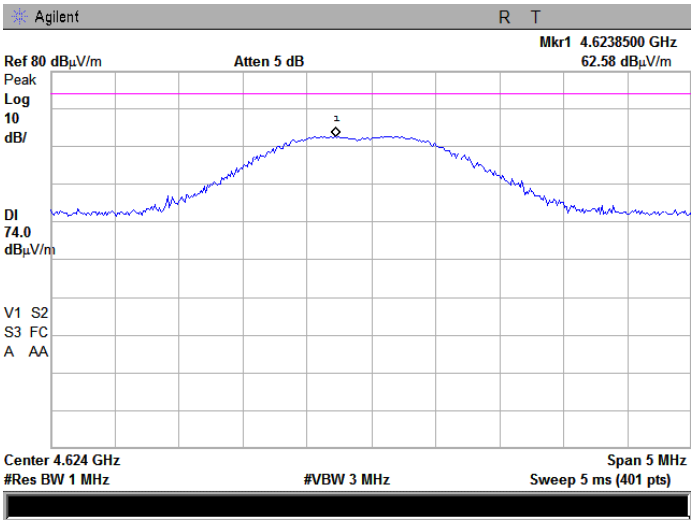
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)
DETECTOR: Average



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24°C	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

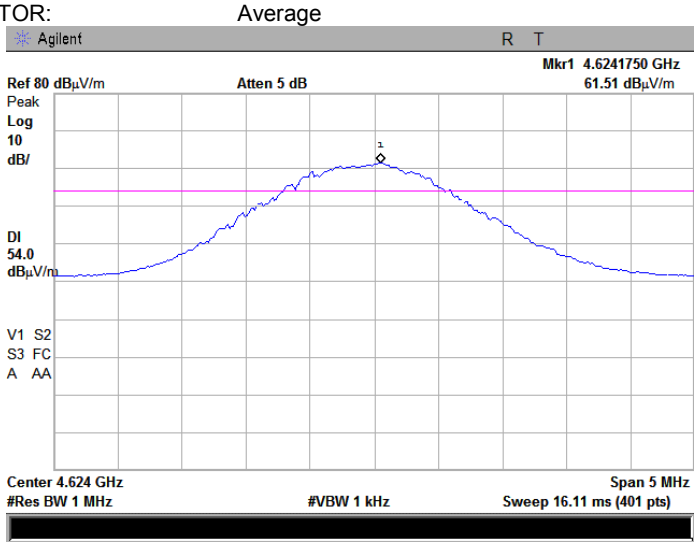
Plot 8.7.93 Radiated emission measurements at the fifth harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)
DETECTOR: Peak



Plot 8.7.94 Radiated emission measurements at the fifth harmonic of high carrier frequency

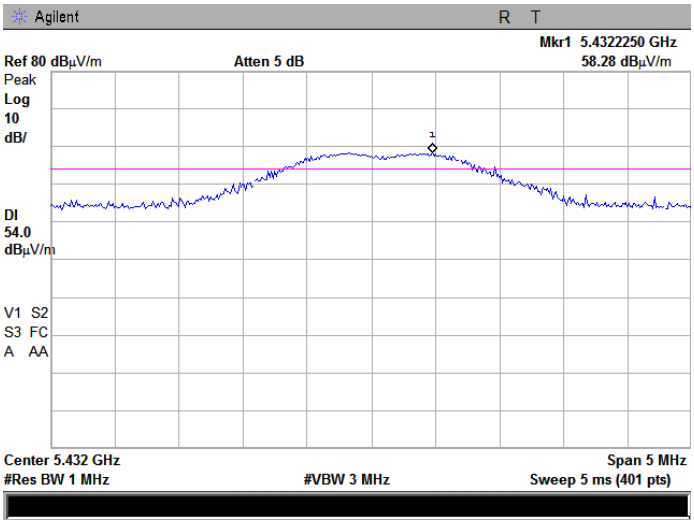
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)
DETECTOR: Average



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24°C	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

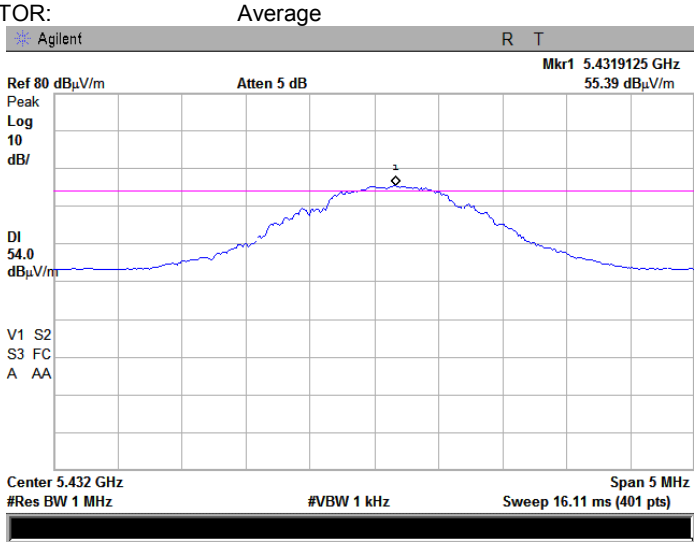
Plot 8.7.95 Radiated emission measurements at the sixth harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)
DETECTOR: Peak



Plot 8.7.96 Radiated emission measurements at the sixth harmonic of low carrier frequency

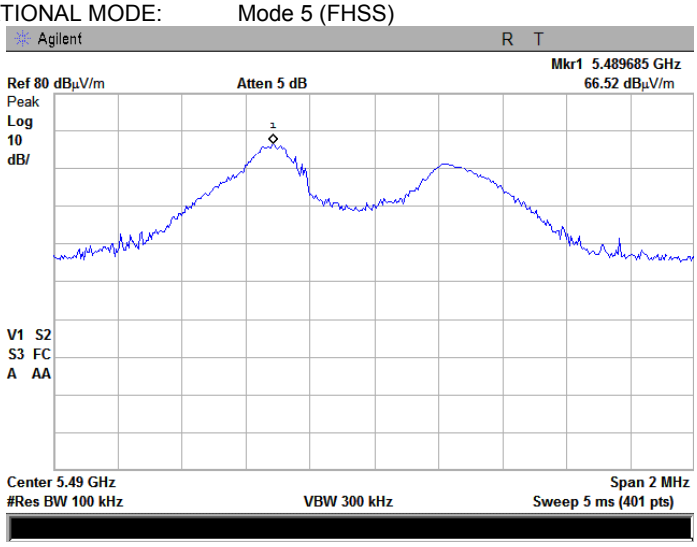
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)
DETECTOR: Average



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24°C	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

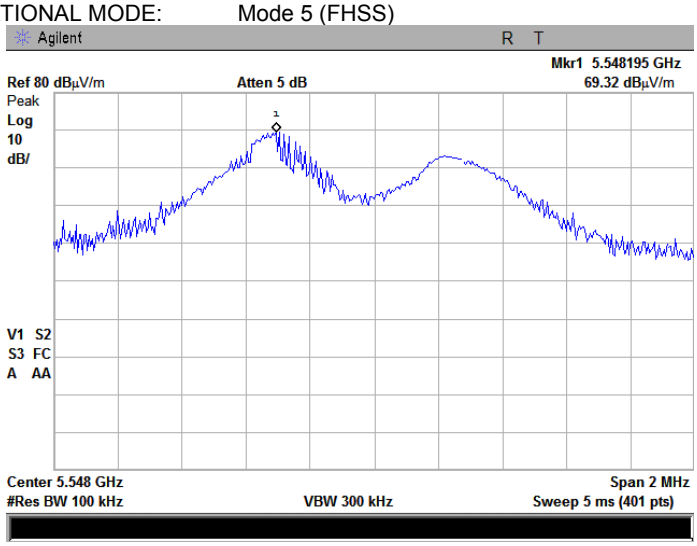
Plot 8.7.97 Radiated emission measurements at the sixth harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)



Plot 8.7.98 Radiated emission measurements at the sixth harmonic of high carrier frequency

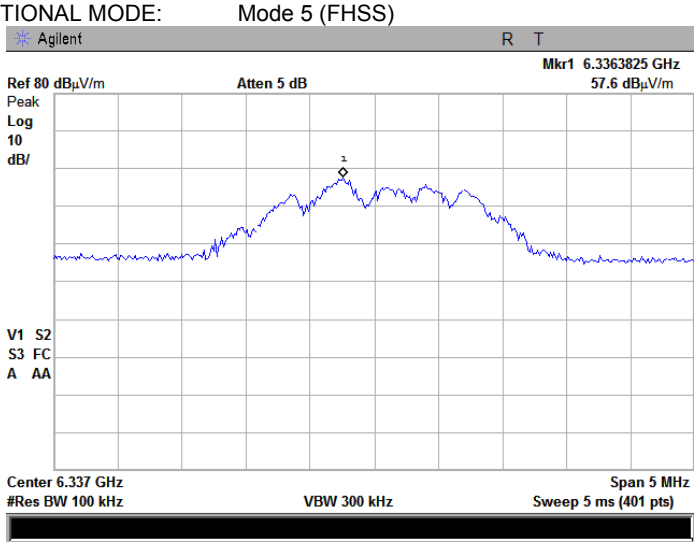
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24°C	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

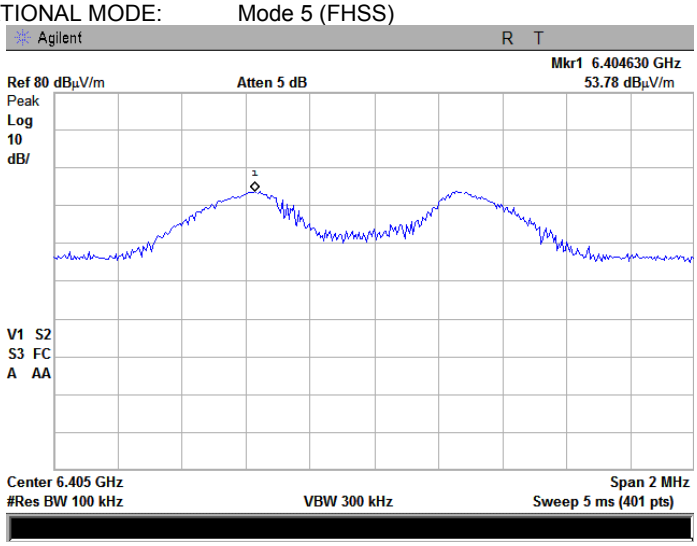
Plot 8.7.99 Radiated emission measurements at the seventh harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)



Plot 8.7.100 Radiated emission measurements at the seventh harmonic of mid carrier frequency

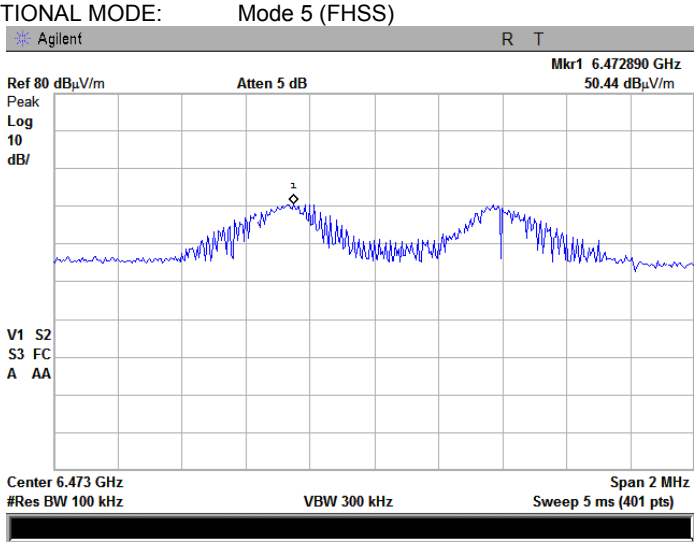
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

Plot 8.7.101 Radiated emission measurements at the seventh harmonic of high carrier frequency

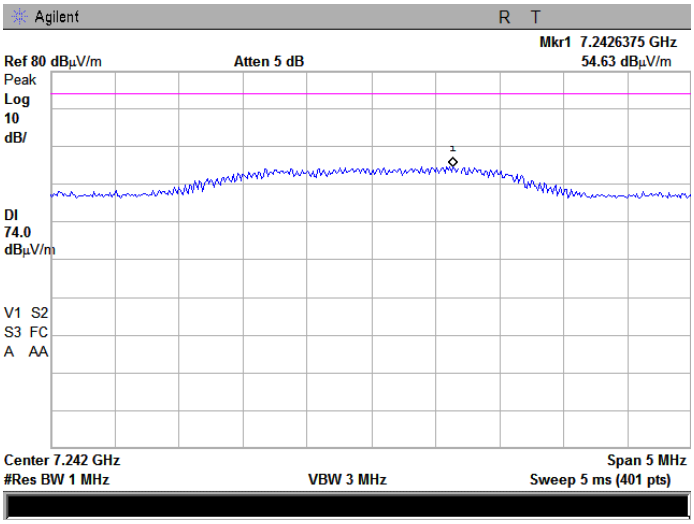
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24°C	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

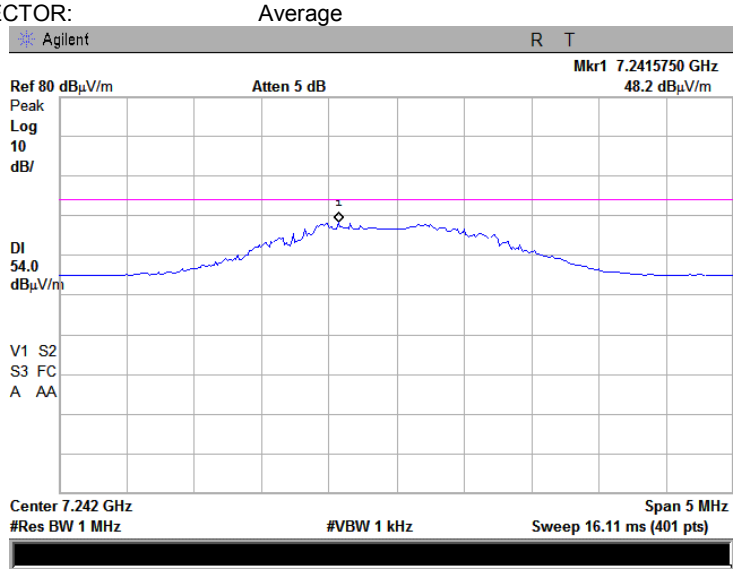
Plot 8.7.102 Radiated emission measurements at the eighth harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)
DETECTOR: Peak



Plot 8.7.103 Radiated emission measurements at the eighth harmonic of low carrier frequency

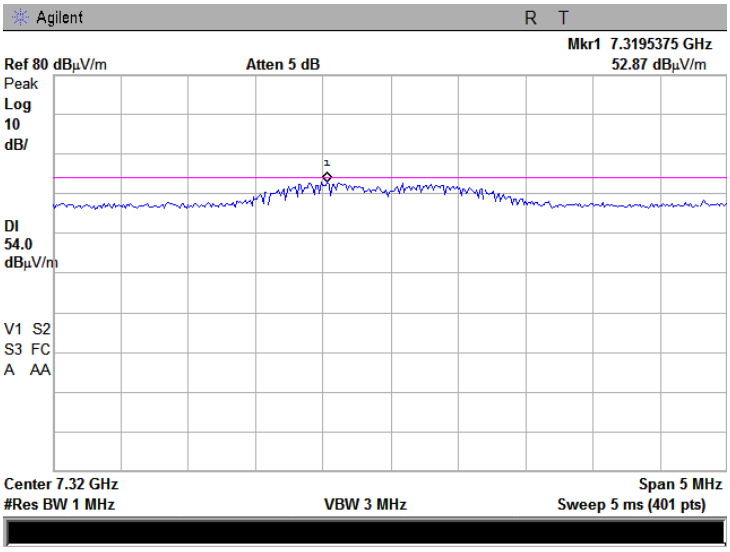
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)
DETECTOR: Average



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24°C	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

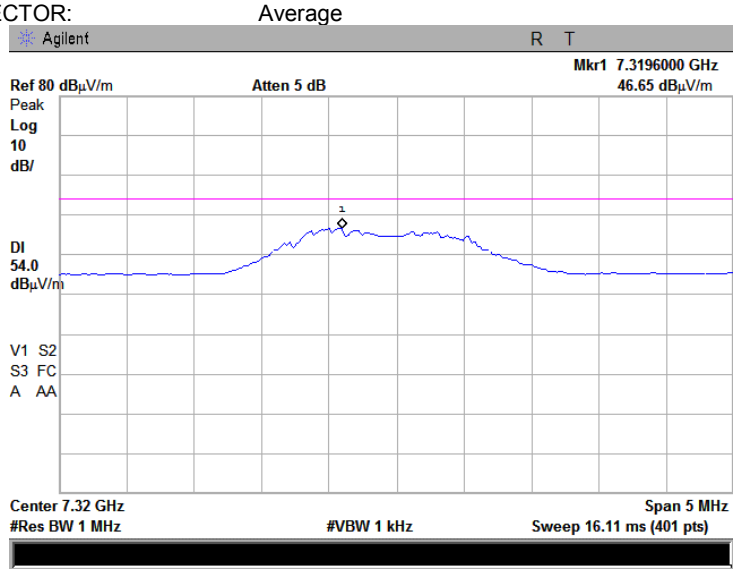
Plot 8.7.104 Radiated emission measurements at the eighth harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)
DETECTOR: Peak



Plot 8.7.105 Radiated emission measurements at the eighth harmonic of mid carrier frequency

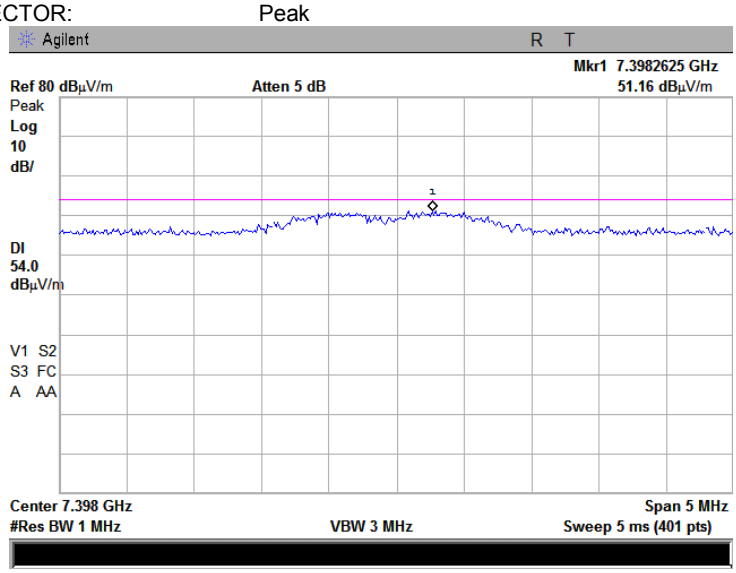
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)
DETECTOR: Average



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24°C	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

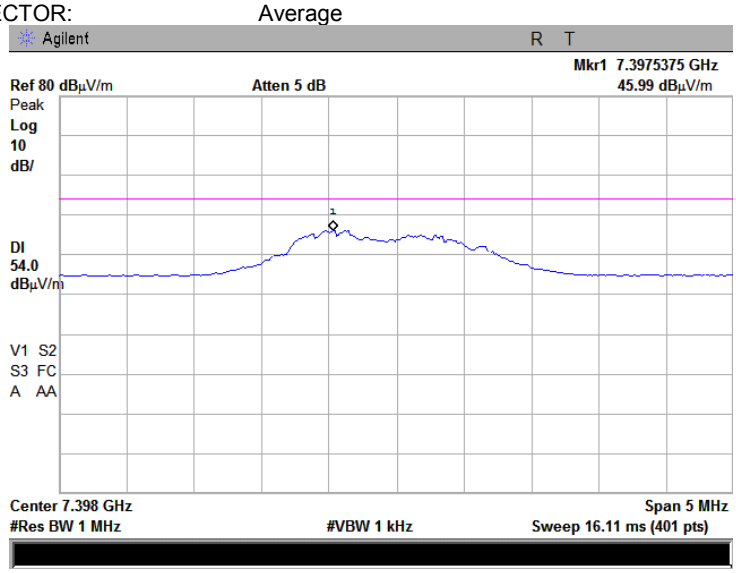
Plot 8.7.106 Radiated emission measurements at the eighth harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)
DETECTOR: Peak



Plot 8.7.107 Radiated emission measurements at the eighth harmonic of high carrier frequency

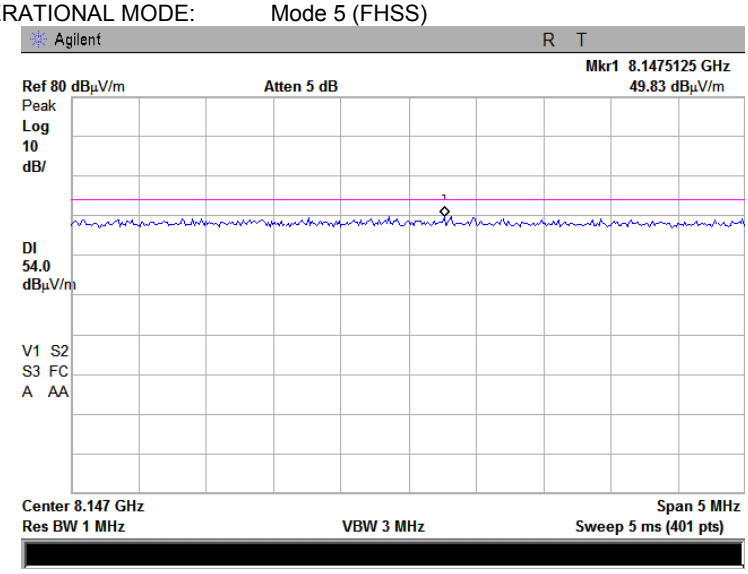
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)
DETECTOR: Average



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

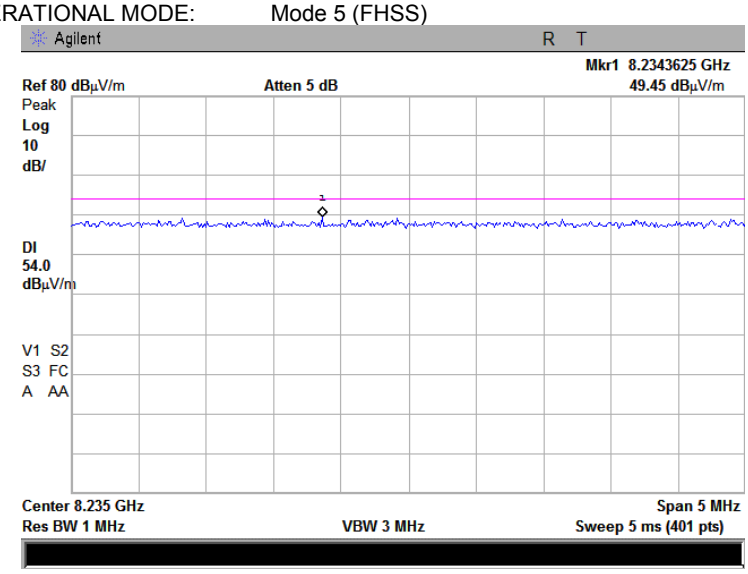
Plot 8.7.108 Radiated emission measurements at the ninth harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)



Plot 8.7.109 Radiated emission measurements at the ninth harmonic of mid carrier frequency

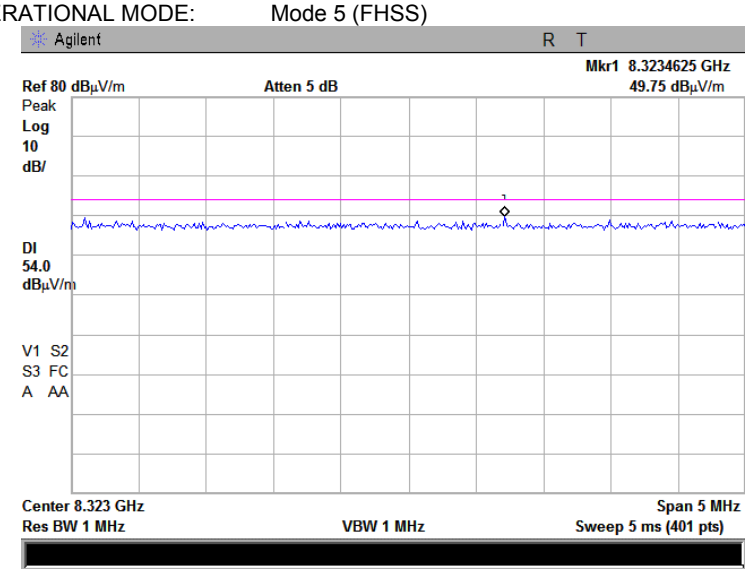
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

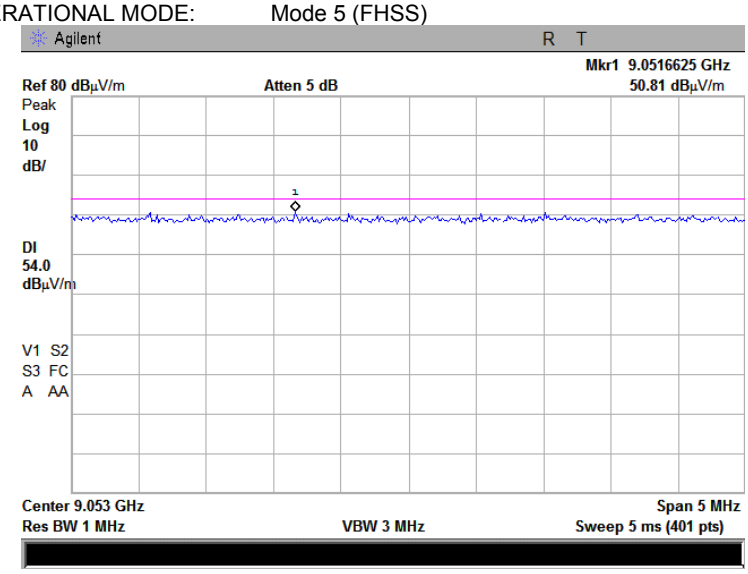
Plot 8.7.110 Radiated emission measurements at the ninth harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)



Plot 8.7.111 Radiated emission measurements at the tenth harmonic of low carrier frequency

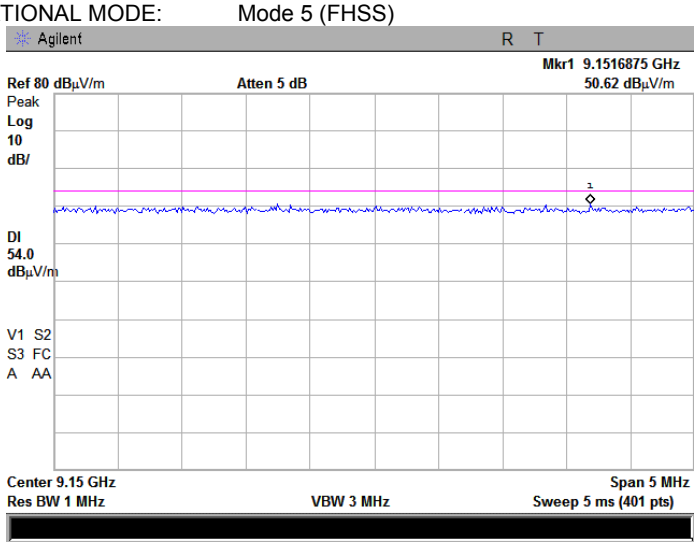
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

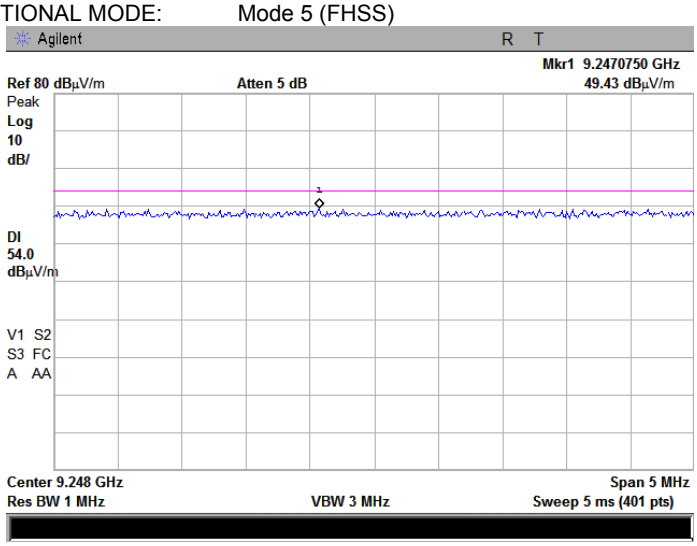
Plot 8.7.112 Radiated emission measurements at the tenth harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)



Plot 8.7.113 Radiated emission measurements at the tenth harmonic of high carrier frequency

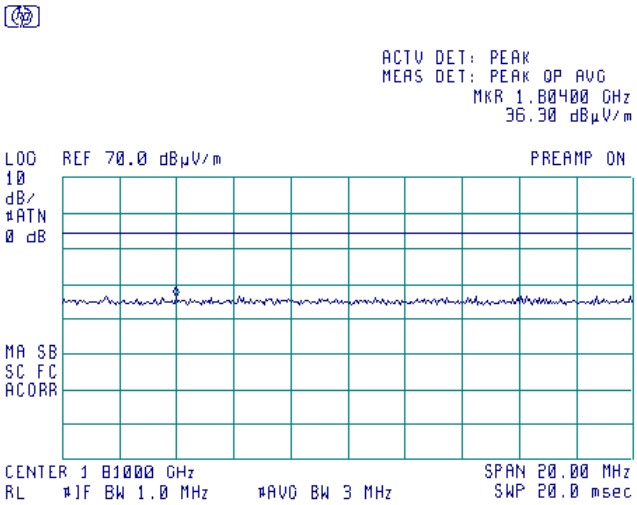
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 5 (FHSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

Plot 8.7.114 Radiated emission measurements at the second harmonic of low carrier frequency

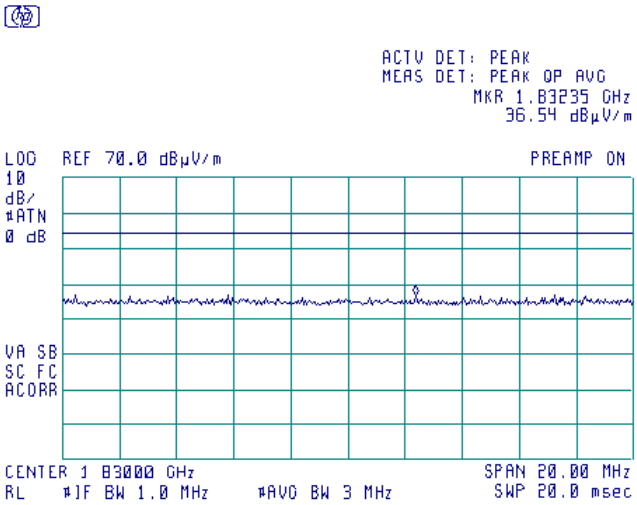
TEST SITE: Semi-Anechoic chamber
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 2 (DSSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

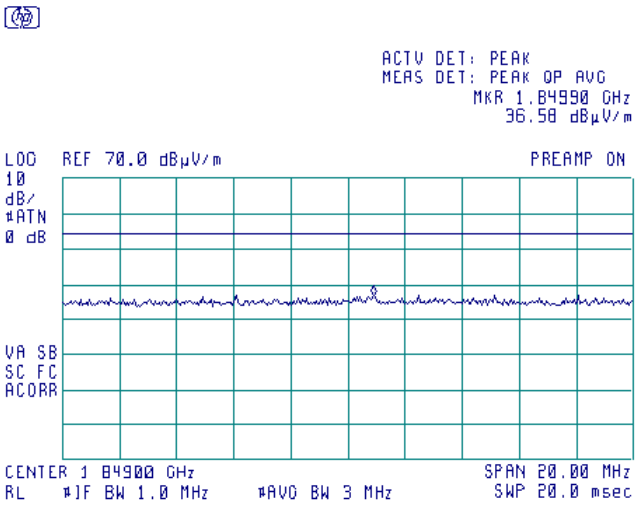
Plot 8.7.115 Radiated emission measurements at the second harmonic of mid carrier frequency

TEST SITE: Semi-Anechoic chamber
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 2 (DSSS)



Plot 8.7.116 Radiated emission measurements at the second harmonic of high carrier frequency

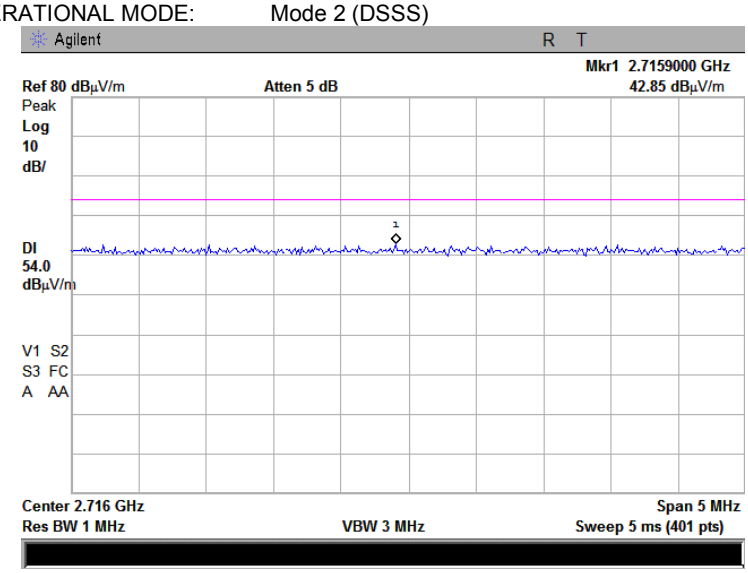
TEST SITE: Semi-Anechoic chamber
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 2 (DSSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

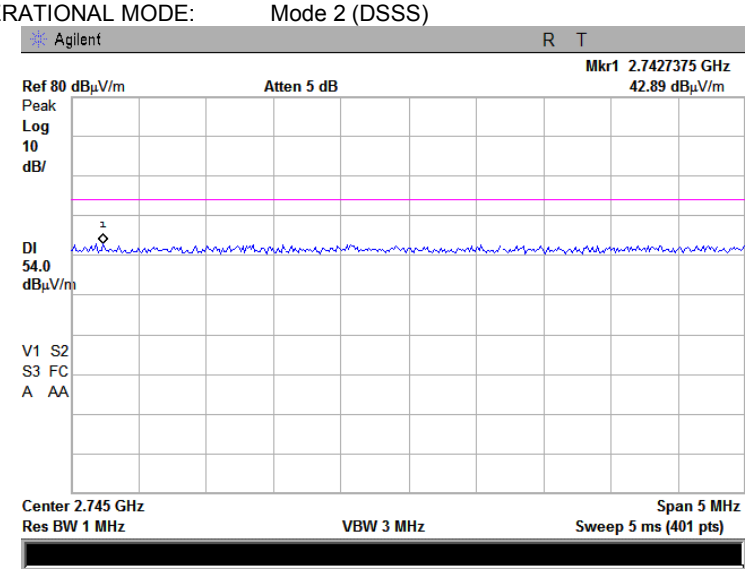
Plot 8.7.117 Radiated emission measurements at the third harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 2 (DSSS)



Plot 8.7.118 Radiated emission measurements at the third harmonic of mid carrier frequency

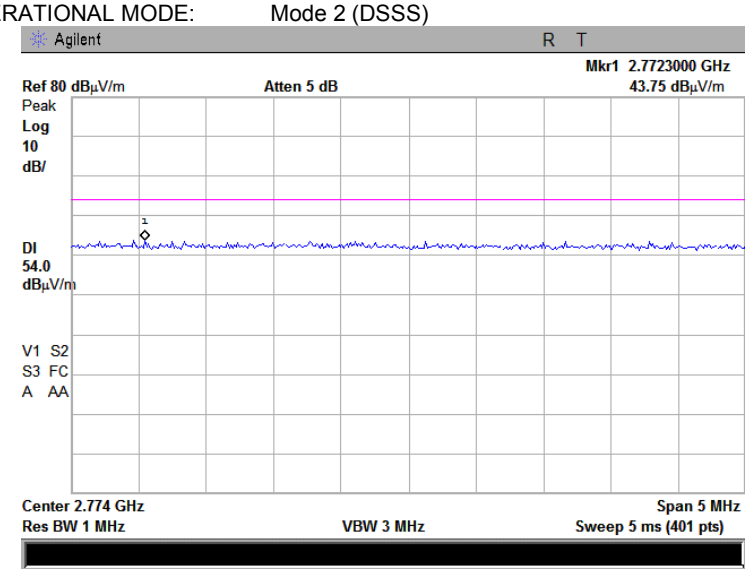
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 2 (DSSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

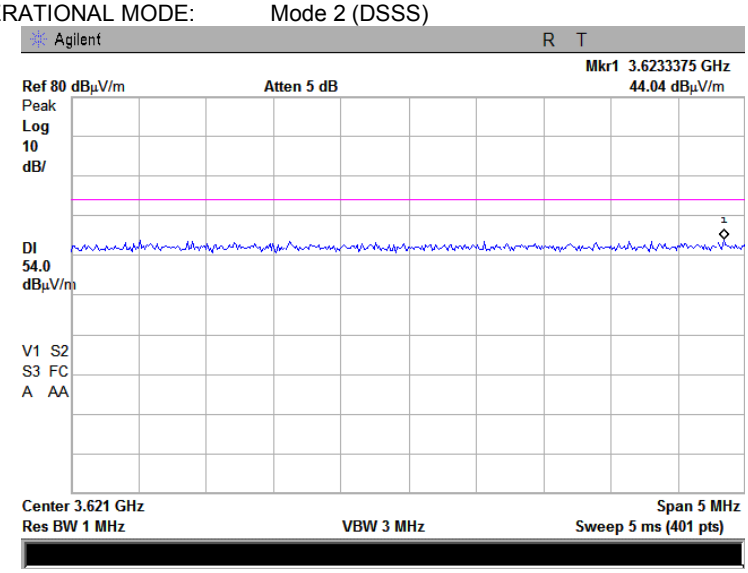
Plot 8.7.119 Radiated emission measurements at the third harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 2 (DSSS)



Plot 8.7.120 Radiated emission measurements at the forth harmonic of low carrier frequency

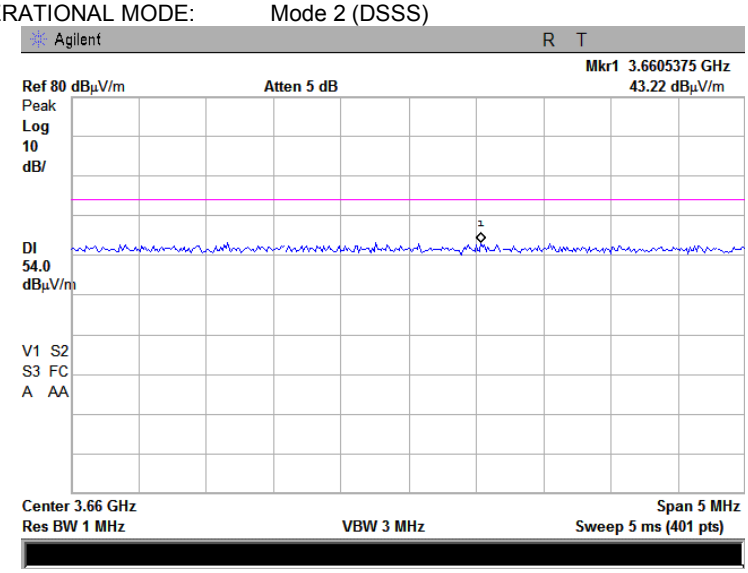
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 2 (DSSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

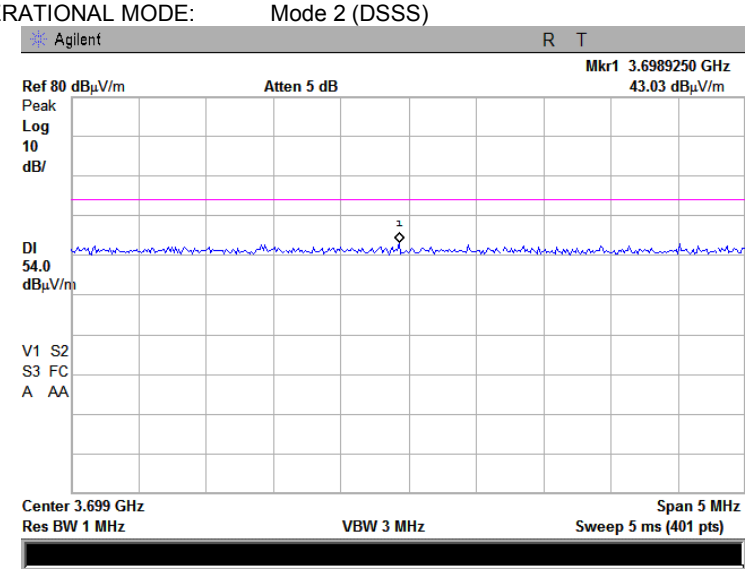
Plot 8.7.121 Radiated emission measurements at the forth harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 2 (DSSS)



Plot 8.7.122 Radiated emission measurements at the forth harmonic of high carrier frequency

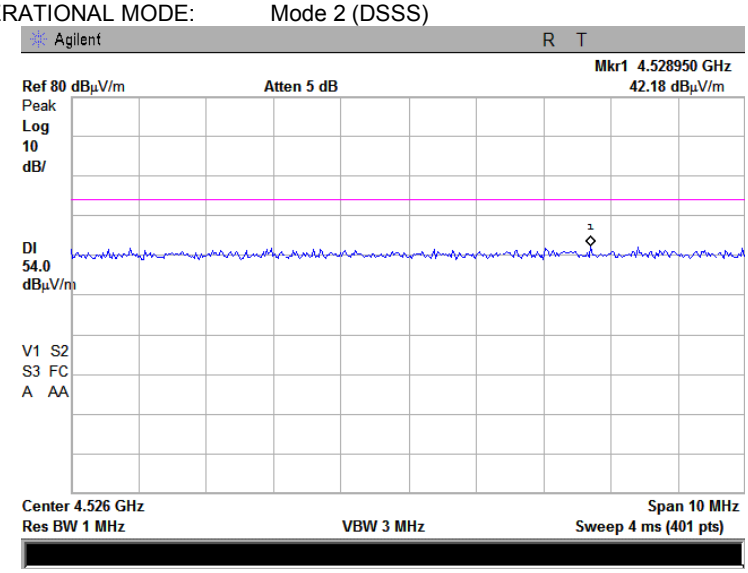
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 2 (DSSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

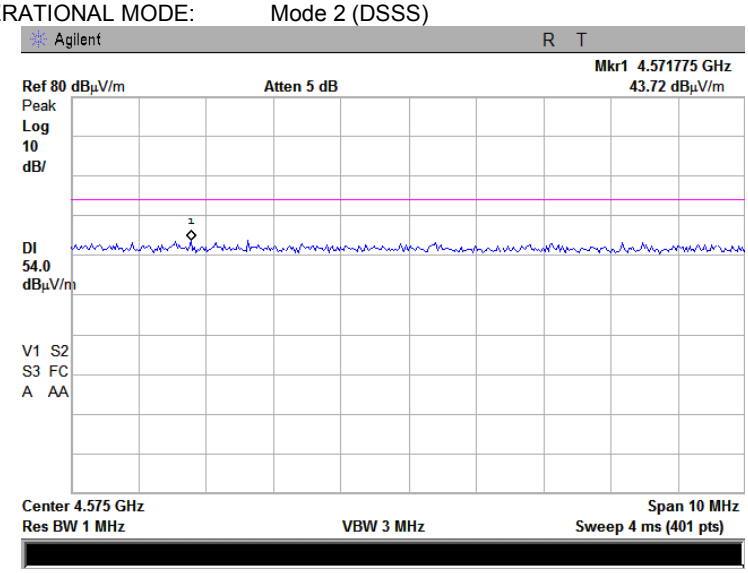
Plot 8.7.123 Radiated emission measurements at the fifth harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 2 (DSSS)



Plot 8.7.124 Radiated emission measurements at the fifth harmonic of mid carrier frequency

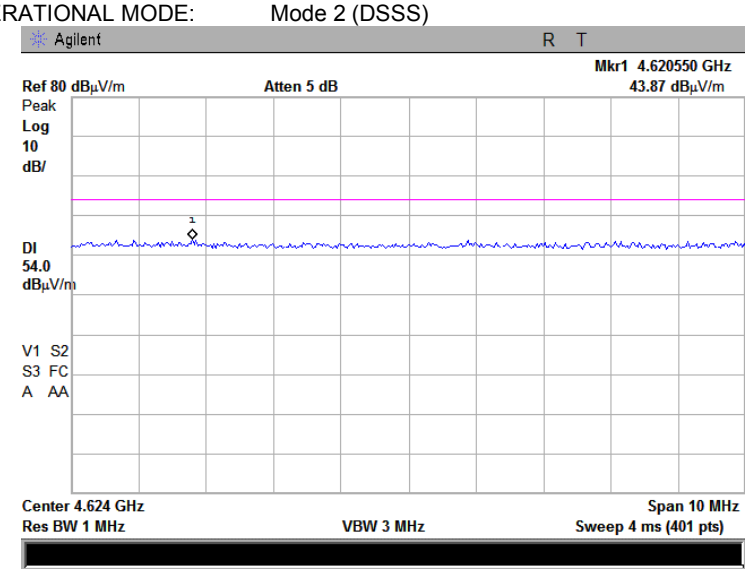
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 2 (DSSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24°C	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

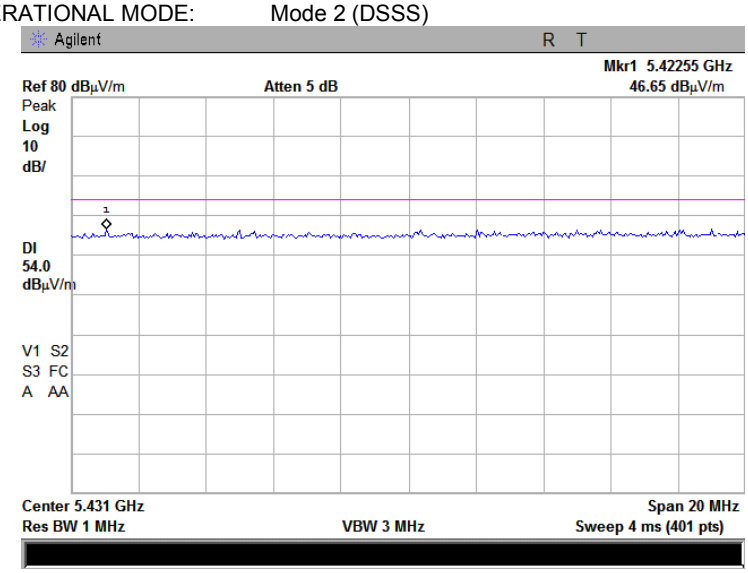
Plot 8.7.125 Radiated emission measurements at the fifth harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 2 (DSSS)



Plot 8.7.126 Radiated emission measurements at the sixth harmonic of low carrier frequency

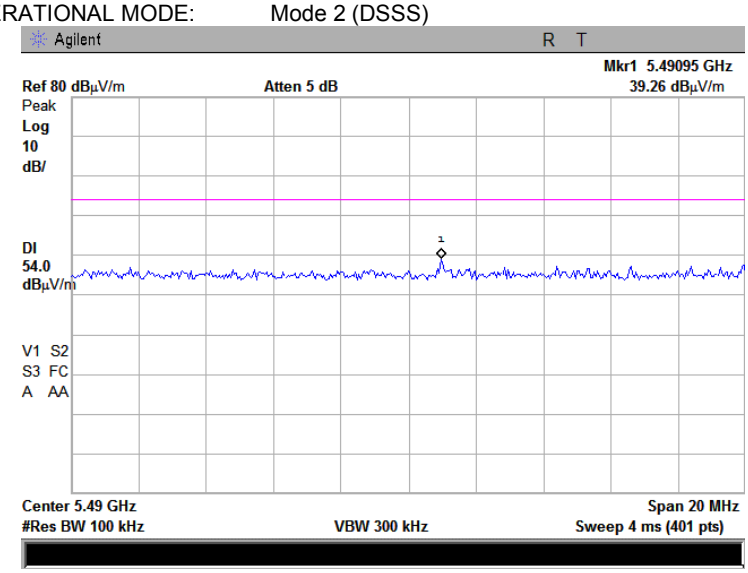
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 2 (DSSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24°C	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

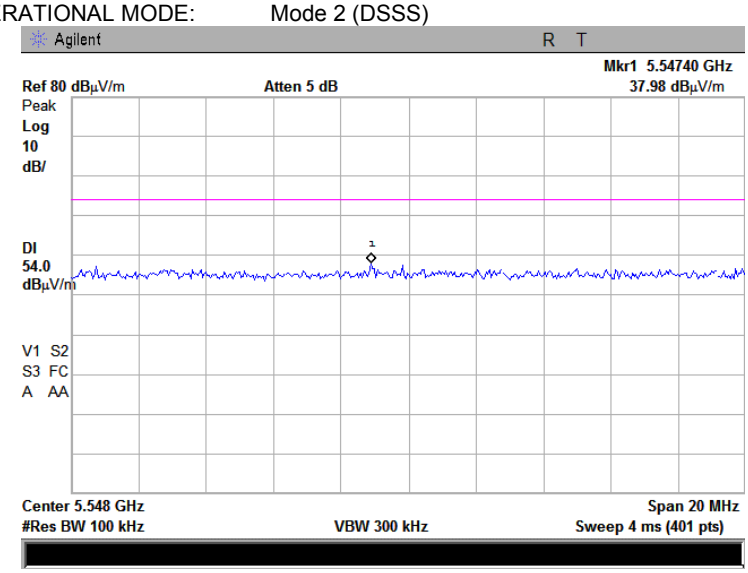
Plot 8.7.127 Radiated emission measurements at the sixth harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 2 (DSSS)



Plot 8.7.128 Radiated emission measurements at the sixth harmonic of high carrier frequency

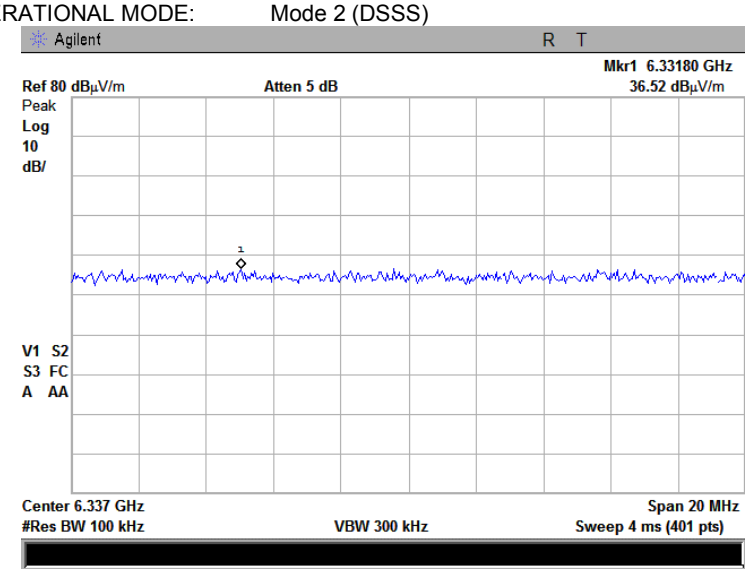
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 2 (DSSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

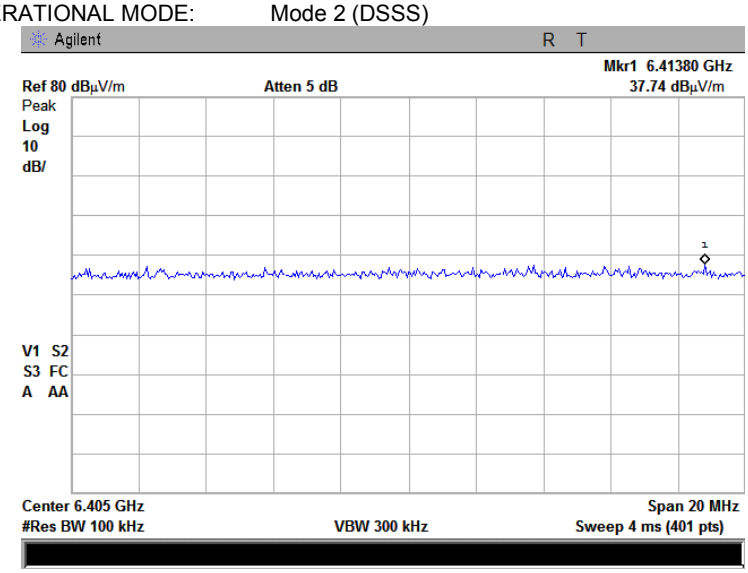
Plot 8.7.129 Radiated emission measurements at the seventh harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 2 (DSSS)



Plot 8.7.130 Radiated emission measurements at the seventh harmonic of mid carrier frequency

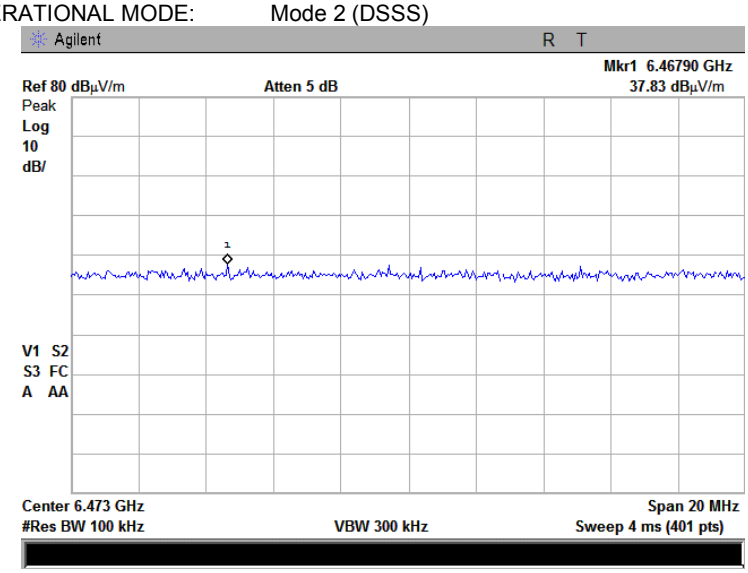
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 2 (DSSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24°C	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

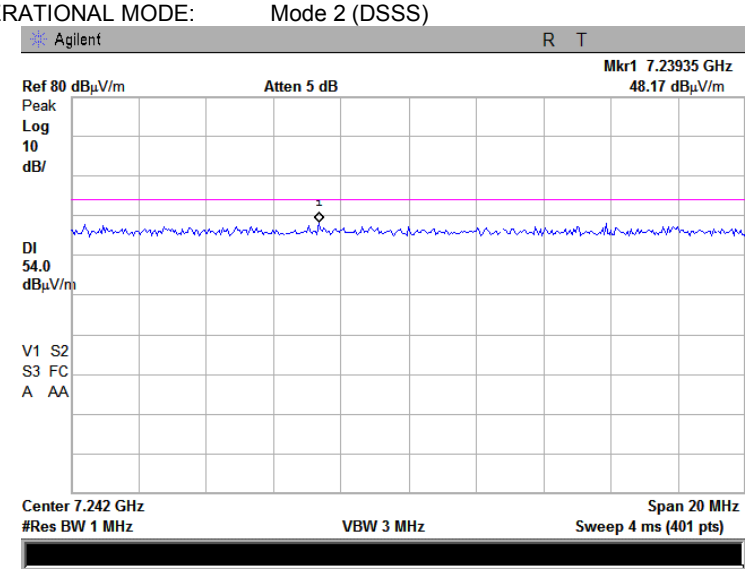
Plot 8.7.131 Radiated emission measurements at the seventh harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 2 (DSSS)



Plot 8.7.132 Radiated emission measurements at the eighth harmonic of low carrier frequency

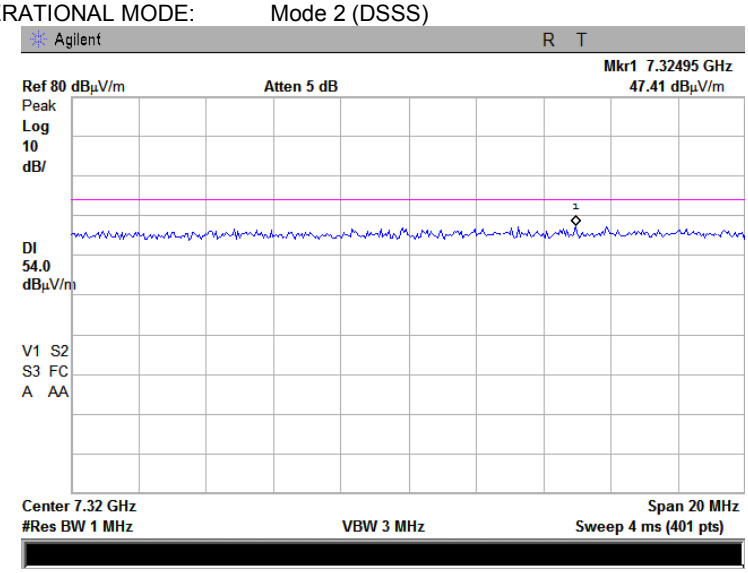
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 2 (DSSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24°C	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

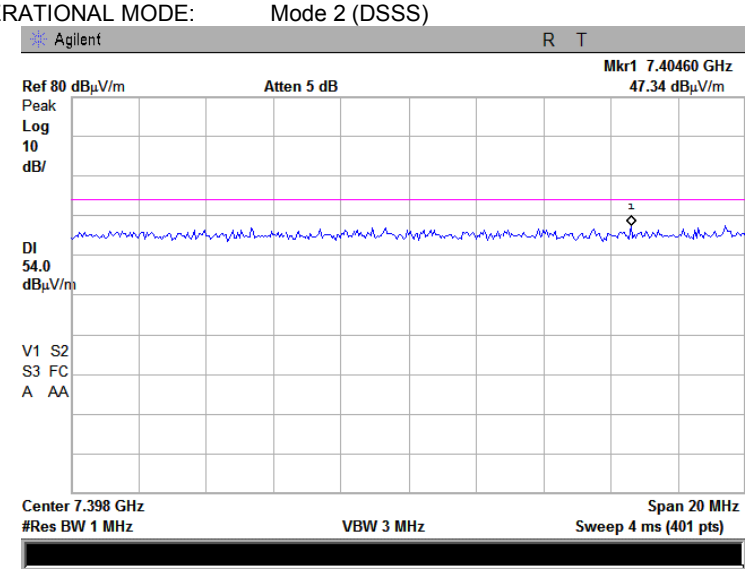
Plot 8.7.133 Radiated emission measurements at the eighth harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 2 (DSSS)



Plot 8.7.134 Radiated emission measurements at the eighth harmonic of high carrier frequency

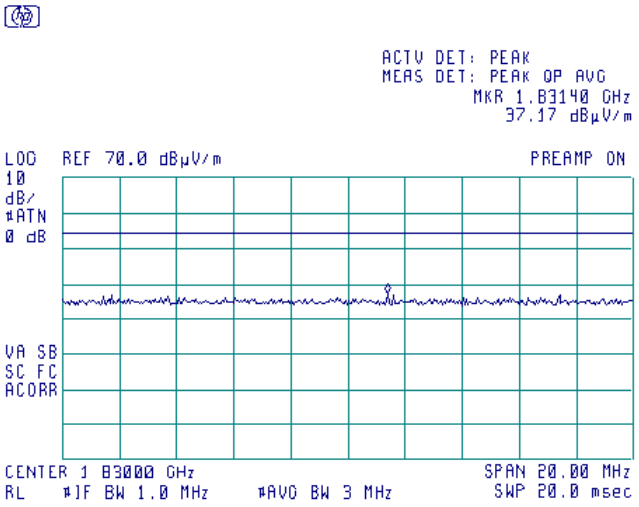
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 2 (DSSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

Plot 8.7.135 Radiated emission measurements at the second harmonic of mid carrier frequency

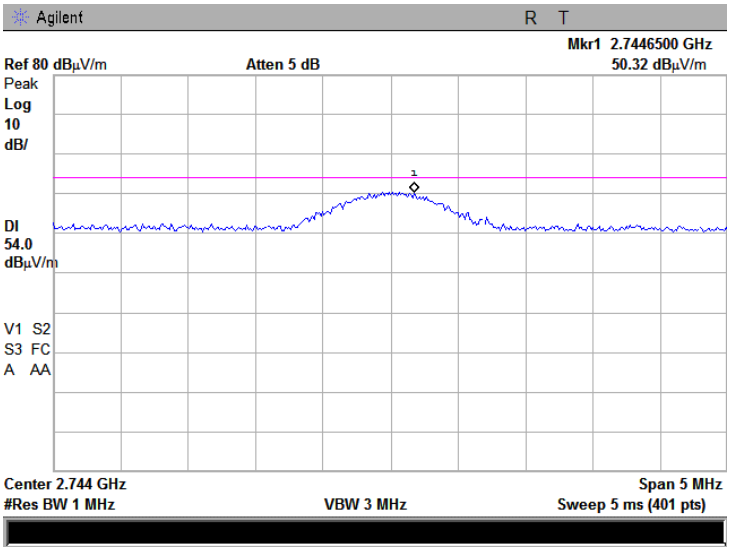
TEST SITE: Semi-Anechoic chamber
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 3 (DSSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24°C	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

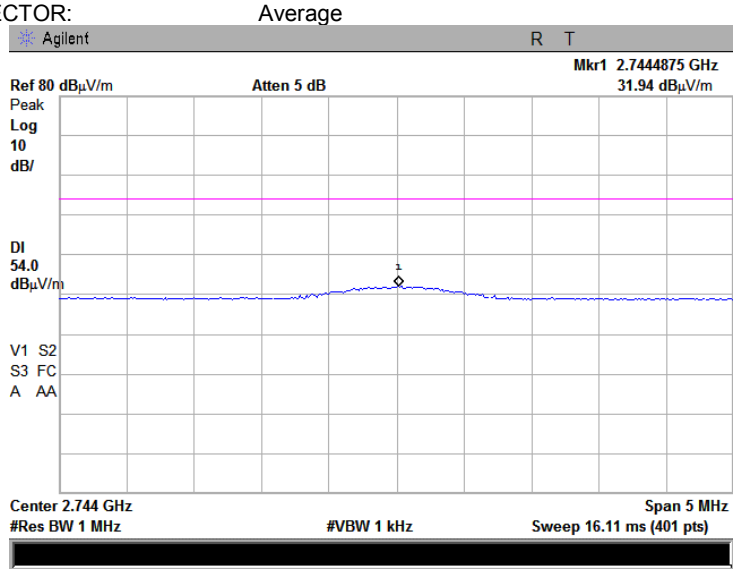
Plot 8.7.136 Radiated emission measurements at the third harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 3 (DSSS)
DETECTOR: Peak



Plot 8.7.137 Radiated emission measurements at the third harmonic of mid carrier frequency

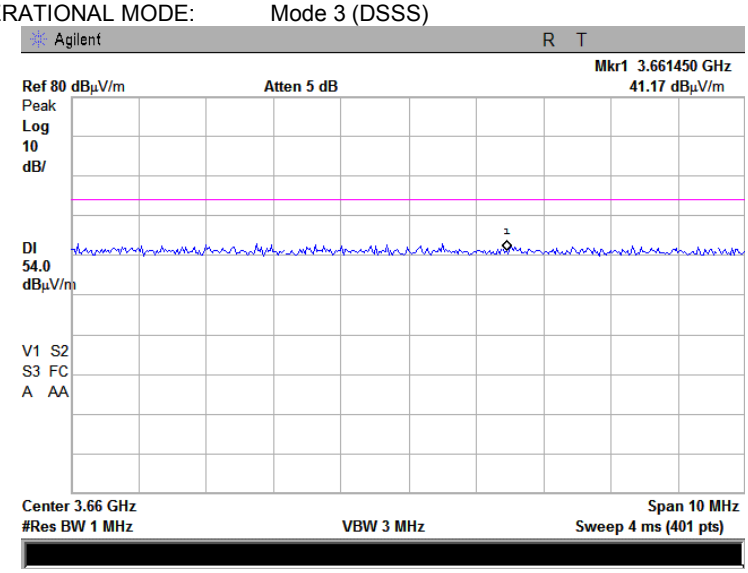
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 3 (DSSS)
DETECTOR: Average



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24°C	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

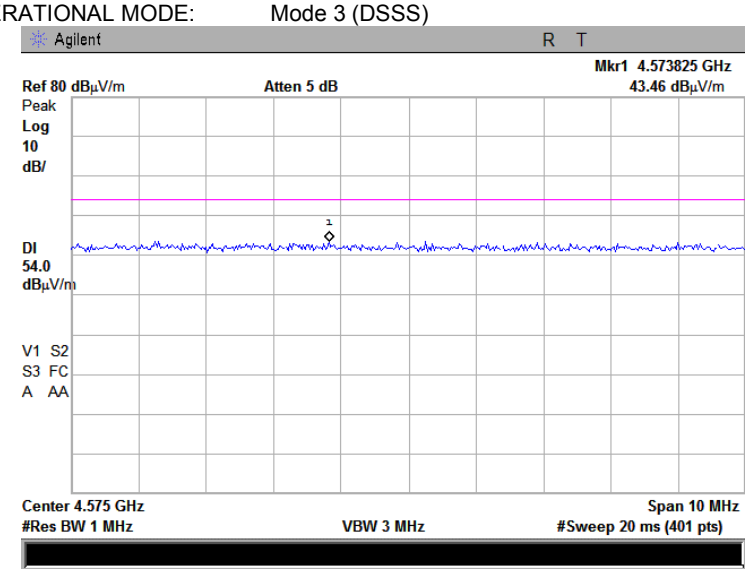
Plot 8.7.138 Radiated emission measurements at the forth harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 3 (DSSS)



Plot 8.7.139 Radiated emission measurements at the fifth harmonic of mid carrier frequency

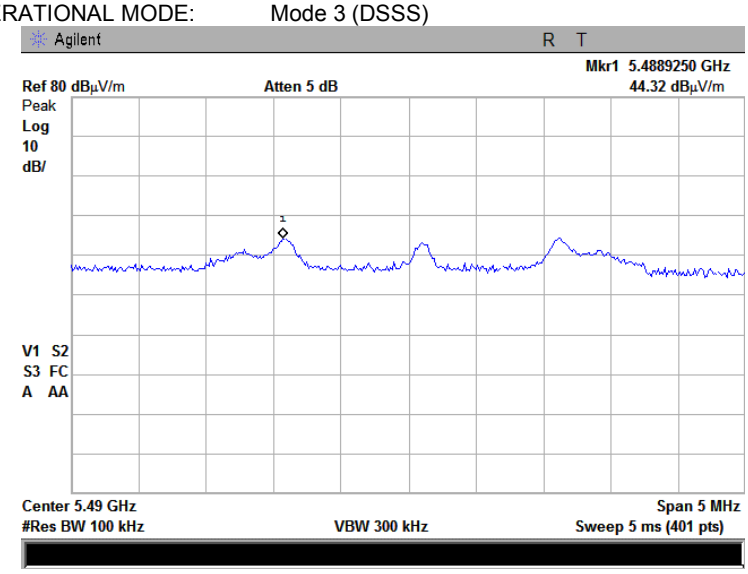
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 3 (DSSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24°C	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

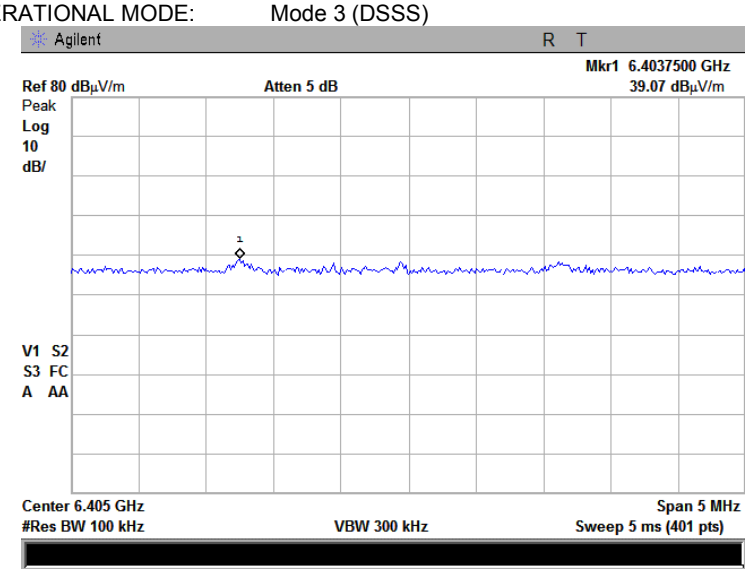
Plot 8.7.140 Radiated emission measurements at the sixth harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 3 (DSSS)



Plot 8.7.141 Radiated emission measurements at the seventh harmonic of mid carrier frequency

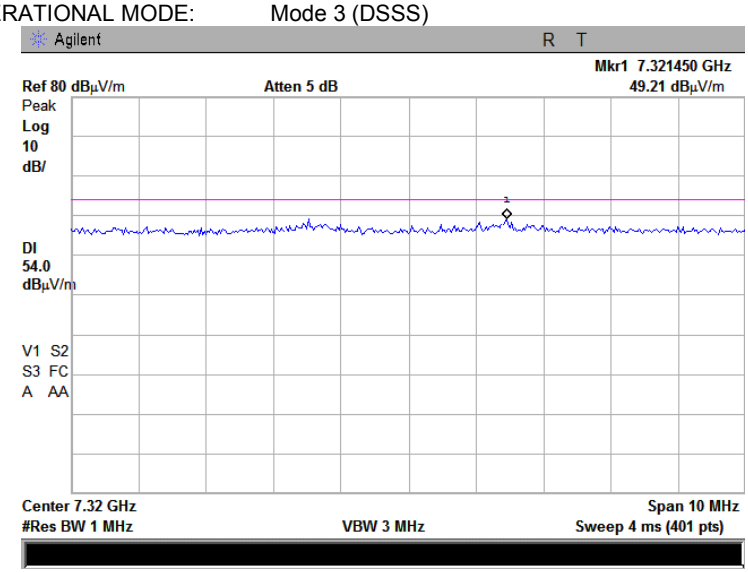
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 3 (DSSS)



Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

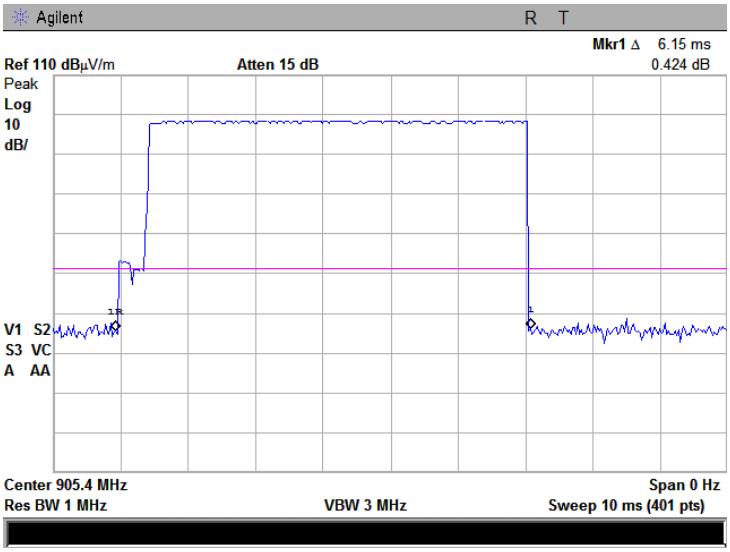
Plot 8.7.142 Radiated emission measurements at the eighth harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: Mode 3 (DSSS)

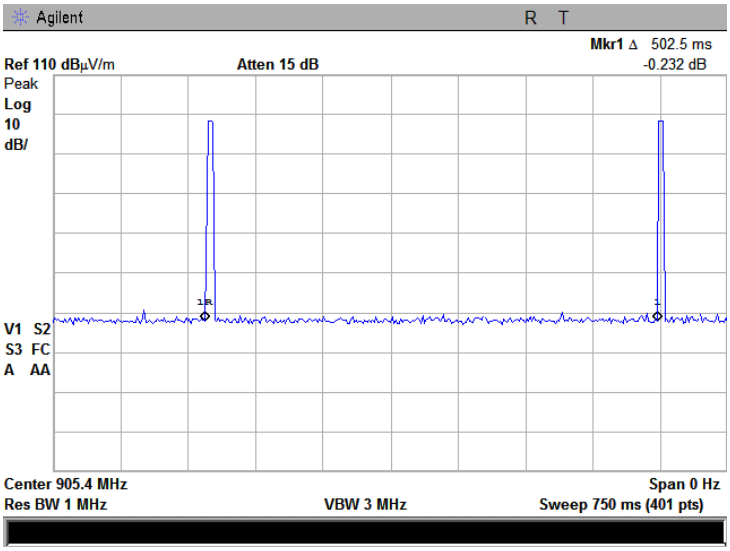


Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24ºC	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

Plot 8.7.143 Transmission pulse duration, FHSS

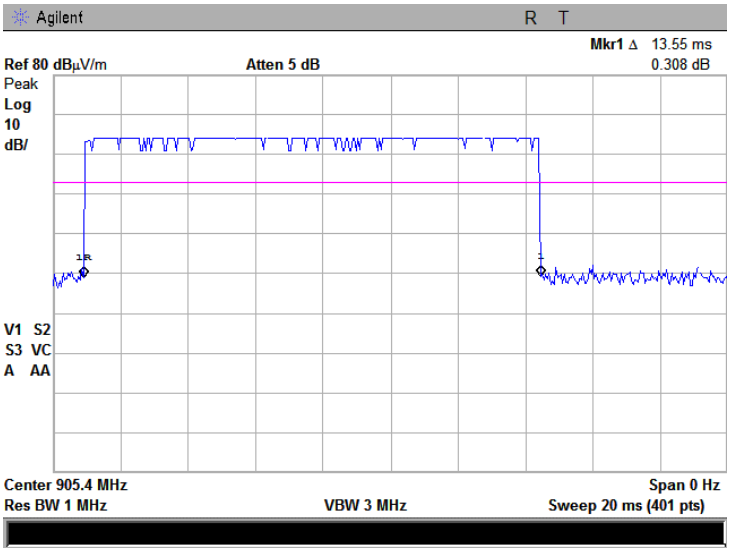


Plot 8.7.144 Transmission pulse period, FHSS

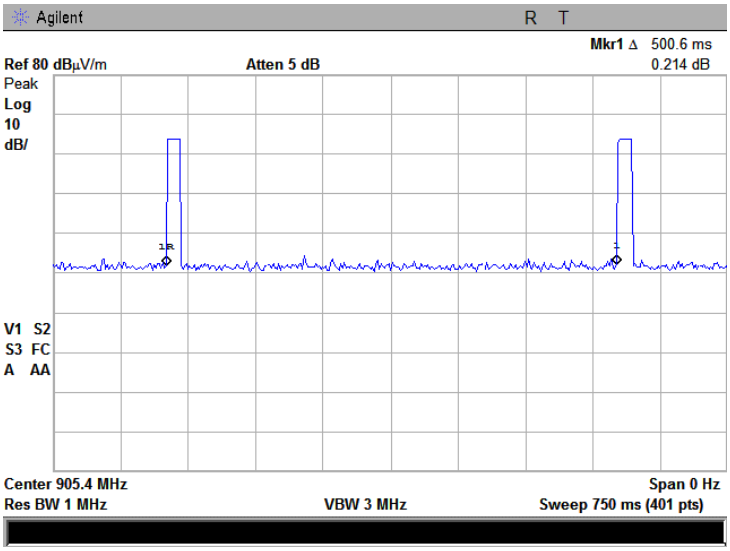


Test specification:	Section 15.247(c), Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/4/2007 3:32:44 PM		
Temperature: 24°C	Air Pressure: 1007 hPa	Relative Humidity: 48%	Power Supply: 3.6 V DC
Remarks:			

Plot 8.7.145 Transmission pulse duration, DSSS



Plot 8.7.146 Transmission pulse period, DSSS



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:	5/8/2007 10:20:41 AM		
Temperature: 25ºC	Air Pressure: 1013 hPa	Relative Humidity: 42%	Power Supply: 3.6 V DC
Remarks:			

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

9.1 Radiated emission measurements

9.1.1 General

This test was performed to measure radiated emissions from the EUT enclosure. Specification test limits are given in Table 9.1.1.

Table 9.1.1 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.

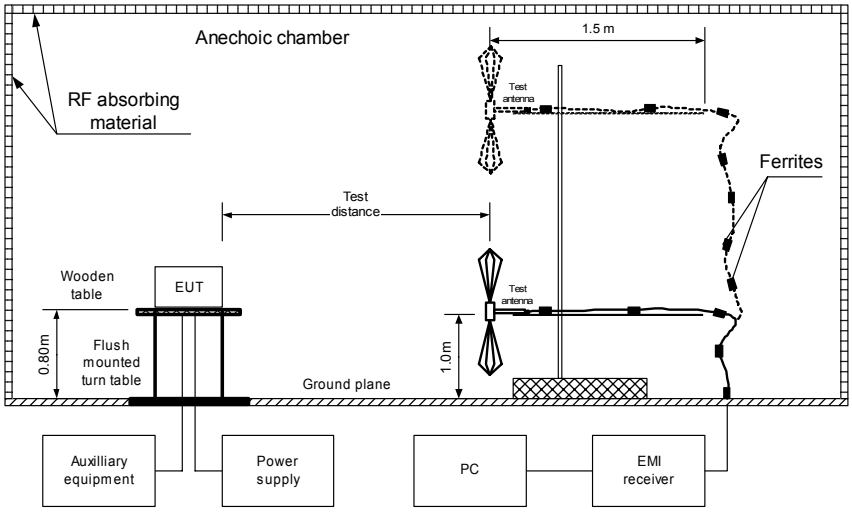
9.1.2 Test procedure for measurements in semi-anechoic chamber

9.1.2.1 The EUT was set up as shown in Figure 9.1.1 and associated photograph/s, energized and the performance check was conducted.

9.1.2.2 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.

9.1.2.3 The worst test results (the lowest margins) were recorded in Table 9.1.2 and shown in the associated plots.

Figure 9.1.1 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:	5/8/2007 10:20:41 AM		
Temperature: 25ºC	**Air Pressure:** 1013 hPa	**Relative Humidity:** 42%	**Power Supply:** 3.6 V DC
Remarks:			

Table 9.1.2 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 emission, dB(µV/m)	Average			Antenna polarization	Antenna height, m	Turn-table position**, degrees	Verdict
		Measured emission, dB(µV/m)	Limit, dB(µV/m)	Margin, dB*				
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

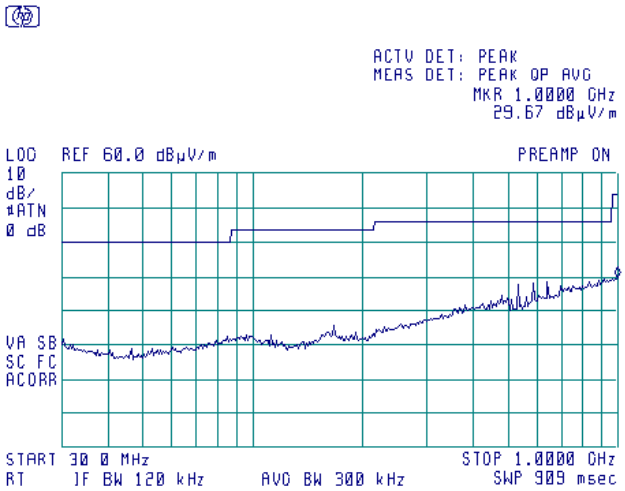
HL 0604	HL 0521	HL 0589	HL 1947	HL 1984	HL 2009		

Full description is given in Appendix A.

Test specification:	Section 15.109, Radiated emission		
Test procedure:	ANSI C63.4, Sections 11.6 and 12.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/8/2007 10:20:41 AM		
Temperature: 25ºC	Air Pressure: 1013 hPa	Relative Humidity: 42%	Power Supply: 3.6 V DC
Remarks:			

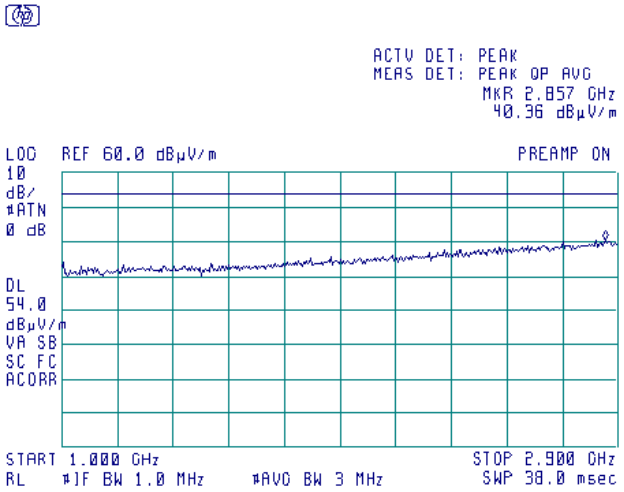
Plot 9.1.1 Radiated emission measurements in 30 - 1000 MHz range, vertical and horizontal antenna polarization

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



Plot 9.1.2 Radiated emission measurements above 1000 MHz, vertical and horizontal antenna polarization

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



10 APPENDIX A Test equipment and ancillaries used for tests

HL No	Description	Manufacturer	Model	Ser. No.	Last Cal.	Due Cal.
0410	Cable, Coax, Microwave, DC-18 GHz, N-N, 1 m	Gore	PFP01P01039.4	9338767	17-Oct-06	17-Oct-07
0415	Cable, Coax, RF, RG-214	HL	CC-3	056	02-Dec-06	02-Dec-07
0446	Antenna, Loop, Active, 10 kHz - 30 MHz	EMCO	6502	2857	28-Jun-06	28-Jun-07
0465	Anechoic Chamber 9(L) x 6.5(W) x 5.5(H) m	HL	AC - 1	023	23-Aug-05	23-Aug-08
0521	EMI Receiver (Spectrum Analyzer) with RF filter section 9 kHz-6.5 GHz	Hewlett Packard	8546A	3617A00319, 3448A00253	26-Sep-06	26-Sep-07
0569	Antenna, Log Periodic, 200 - 1000 MHz	Electro-Metrics	LPA 25/30	1953	10-Jan-07	10-Jan-08
0592	Position Controller	HL	L2-SR3000 (HL CRL-3)	100	18-May-07	18-May-08
0593	Antenna Mast, 1-4 m Pneumatic	Madgesh	AM-F1	101	02-Feb-07	02-Feb-08
0594	Turn Table FOR ANECHOIC CHAMBER flush mount d=1.2 m Pneumatic	HL	TT-WDC1	102	26-Jan-07	26-Jan-08
0589	Cable Coaxial, GORE A2P01POL118, 2.3 m	HL	GORE-3	176	02-Dec-06	02-Dec-07
0604	Antenna BiconiLog Log-Periodic/T Bow-TIE, 26 - 2000 MHz	EMCO	3141	9611-1011	10-Jan-07	10-Jan-08
0784	Antenna X-WING BILOG, 20 MHz - 2 GHz	Schaffner-Chase EMC	CBL6140A	1120	10-Jan-07	10-Jan-08
0812	Cable Coax, RG-214, 11.5 m, N-type connectors	HL	C214-11	148	02-Dec-06	02-Dec-07
0813	Cable Coax, RG-214, 12 m, N-type connectors	HL	C214-12	149	02-Dec-06	02-Dec-07
1200	Quadruplexer 1-12 GHz (1-2 GHz; 2-4GHz;4-8 GHz; 8-12GHz)	Elettronica S.p.A. - Roma	UE 84	D/00240	08-Feb-07	08-Feb-09
1365	Cable Coaxial, S-FLC 12-50, 5 m	HL	C214-5	1365	02-Dec-06	02-Dec-07
1430	EMI Receiver, 9 kHz - 2.9 GHz, System: HL1431, HL1432	Agilent Technologies	8542E	3807A00262,3705A00217	01-Sep-06	01-Sep-07
1552	Cable RF, 8 m	Alpha Wire	RG-214	1552	02-Dec-06	02-Dec-07
1947	Cable 18GHz, 6.5 m, blue	Rhophase Microwave Limited	NPS-1803A-6500-NPS	T4974	17-Oct-06	17-Oct-07
1984	Antenna, Double-Ridged Waveguide Horn, 1-18 GHz, 300 W	EMC Test Systems	3115	9911-5964	03-Mar-07	03-Mar-08
2009	Cable RF, 8 m	Alpha Wire	RG-214	C-56	20-May-07	20-May-08
2259	Amplifier Low Noise 2-20 GHz	Sophia Wireless	LNA0220-C	0223	05-Nov-06	05-Nov-07
2432	Antenna, Double-Ridged Waveguide Horn 1-18 GHz	EMC Test Systems	3115	00027177	03-Mar-07	03-Mar-08
2780	EMC analyzer, 100 Hz to 26.5 GHz	Agilent Technologies	E7405A	MY45102406	11-Jun-06	11-Jun-07

11 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.

12 APPENDIX C Test laboratory description

Tests were performed at Hermon Laboratories Ltd., which is a fully independent, private, EMC, safety, environmental and telecommunication testing facility. Hermon Laboratories is listed by the Federal Communications Commission (USA) for all parts of Code of Federal Regulations 47 (CFR 47) and by Industry Canada for electromagnetic emissions (file numbers IC 2186-1 for OATS and IC 2186-2 for anechoic chamber), certified by VCCI, Japan (the registration numbers are R-808 for OATS, R-1082 for anechoic chamber, C-845 for conducted emissions site), assessed by TNO Certification EP&S (Netherlands) for a number of EMC, telecommunications, environmental, safety standards, and by AMTAC (UK) for safety of medical devices. The laboratory is accredited by American Association for Laboratory Accreditation (USA) according to ISO/IEC 17025 for electromagnetic compatibility, product safety, telecommunications testing and environmental simulation (for exact scope please refer to Certificate No. 839.01) and approved by Israel Ministry of environmental protection, radiation hazards department (Permit number 1158).

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13 APPENDIX D Specification references

47CFR part 15: 2006	Radio Frequency Devices.
FR Vol.62	Federal Register, Volume 62, May 13, 1997
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.

14 APPENDIX E Test equipment correction factors

Antenna factor
Active loop antenna
Model 6502, S/N 2857, HL 0446

Frequency, MHz	Magnetic antenna factor, dB	Electric antenna factor, dB
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	9.8
0.750	-41.9	9.7
1.000	-41.4	10.1
2.000	-41.5	10.0
3.000	-41.4	10.2
4.000	-41.4	10.1
5.000	-41.5	10.1
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(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
Log periodic antenna
Electro-Metrics, model LPA-25/30
Ser.No.1953, HL 0569

Frequency MHz	Antenna Factor dB(1/m)	Frequency MHz	Antenna Factor dB(1/m)
200	15.2	625	25.2
225	15.1	650	25.8
250	16.3	675	27.2
275	17.2	700	27.6
300	19.6	725	27.6
325	18.4	750	27.6
350	19.0	775	28.0
375	20.0	800	28.2
400	20.9	825	29.4
425	21.3	850	29.9
450	22.1	875	30.0
475	22.7	900	30.4
500	23.2	925	30.6
525	23.9	950	30.8
550	24.2	975	31.6
575	24.6	1000	32.1
600	24.7		

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
Ser.No.1011, HL 0604

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

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

Antenna factor
Biconilog antenna
CHASE Model CBL6140A
Serial no: 1120, HL 0784

Frequency, MHz	Antenna factor, dB
30.0	4.3
35.0	7.3
40.0	8.8
45.0	9.3
50.0	9.6
60.0	9.9
70.0	9.2
80.0	7.6
90.0	7.6
100.0	8.8
120.0	7.2
125.0	7.5
140.0	7.7
150.0	7.9
160.0	11.4
175.0	8.6
180.0	8.8
200.0	9.8
250.0	12.5
300.0	12.2
350.0	14.8
400.0	16.1
450.0	16.5
500.0	17.6
550.0	18.3
600.0	18.5
650.0	19.8
700.0	20.1
750.0	20.8
800.0	21.2
850.0	22.0
900.0	22.2
950.0	23.2
1000.0	23.8

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

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

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

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

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

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

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

Cable loss
Cable GORE, HL 0410

No.	Frequency, GHz	Cable loss, dB
1	0.5	0.16
2	1	0.28
3	2	0.38
4	4	0.55
5	6	0.85
6	8	0.90
7	10	1.07
8	12	1.11
9	14	1.29
10	16	1.41
11	18	1.73

Cable loss
Cable RG-214, HL 0813

No.	Frequency, MHz	Cable loss, dB
1	10	0.15
2	20	0.40
3	30	0.51
4	40	0.61
5	50	0.68
6	60	0.76
7	70	0.80
8	80	0.92
9	90	0.96
10	100	0.99
11	200	1.60
12	300	1.85
13	400	2.25
14	500	2.43
15	600	2.80
16	700	3.14
17	800	3.34
18	900	3.75
19	1000	4.05
20	1200	4.41
21	1400	4.81
22	1600	5.18
23	1800	5.58
24	2000	6.09
25	2500	7.27
26	2900	8.01

Cable loss
Cable Coaxial, RG-58/RG-214, s/n 056, HL 0415
+ Cable Coaxial, RG-214, 11.5m, s/n 148, HL 0812

No.	Frequency, MHz	Cable loss, dB	Measured uncertainty, dB
1	20	0.73	±0.12
2	30	0.91	
3	50	1.2	
4	80	1.56	
5	100	1.76	
6	200	2.59	
7	300	3.26	
8	400	3.93	
9	500	4.42	
10	600	4.92	
11	700	5.36	
12	800	5.88	
13	900	6.41	
14	1000	6.71	
15	1500	8.63	
16	2000	10.39	

Cable loss
Cable Coaxial, GORE A2P01POL118, 2.3 m, model:GORE-3, HL 0589
+ Cable Coaxial, ANDREW PSWJ4, 6m, model: ANDREW-6, HL 1004

No.	Frequency, MHz	Cable loss, dB	Tolerance (Specification), dB	Measurement uncertainty, dB
1	30	0.33	≤ 6.5	±0.12
2	50	0.40		
3	100	0.57		
4	300	0.97		
5	500	1.25		
6	800	1.59		
7	1000	1.81		
8	1200	1.97		
9	1400	2.15		
10	1600	2.28		
11	1800	2.43		
12	2000	2.61		
13	2200	2.75		
14	2400	2.89		
15	2600	2.97		
16	2800	3.21	≤ 6.5	±0.12
17	3000	3.32		
18	3300	3.47		
19	3600	3.62		
20	3900	3.84		
21	4200	3.92		±0.17
22	4500	4.07		
23	4800	4.36		
24	5100	4.62		
25	5400	4.78		
26	5700	5.16		
27	6000	5.67		
28	6500	5.99		

Cable loss
Cable coaxial, RG-214, 5m, model: C214-5, HL 1365

No.	Frequency, MHz	Measured, dB	Measured uncertainty dB
1	1000	0.41	±0.12
2	1200	0.44	
3	1400	0.48	
4	1600	0.52	
5	1800	0.55	
6	2000	0.58	
7	2200	0.61	
8	2400	0.64	±0.17
9	2600	0.67	
10	2800	0.7	
11	3000	0.73	
12	3300	0.79	
13	3600	0.84	
14	3900	0.94	
15	4200	1.22	

Cable loss
RF cable 8 m, model RG-214, HL 1552

No.	Frequency, MHz	Cable loss, dB	Measurement uncertainty, dB	Notes
1	0.010	0.01	±0.05	
2	0.1	0.01		
3	1	0.03		
4	10	0.12		
5	20	0.23		
6	30	0.30		
7	40	0.32		
8	50	0.34		
9	60	0.39		
10	70	0.43		
11	80	0.48		
12	90	0.50		
13	100	0.55		
14	200	0.78		
15	300	1.04		
16	400	1.16		
17	500	1.33		
18	600	1.51		
19	700	1.65		
20	800	1.77		
21	900	1.92		
22	1000	2.04		
23	1200	2.26		
24	1400	2.49		
25	1600	2.74		
26	1800	2.94		
27	2000	3.18		
28	2500	3.65		
29	2900	4.08		

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

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

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

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

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

15 APPENDIX F Abbreviations and acronyms

A	ampere
AC	alternating current
AM	amplitude modulation
AVRG	average (detector)
bps	bit per second
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
EMC	electromagnetic compatibility
EUT	equipment under test
GHz	gigahertz
GND	ground
H	height
HL	Hermon laboratories
Hz	hertz
k	kilo
kHz	kilohertz
L	length
LISN	line impedance stabilization network
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
RE	radiated emission
RF	radio frequency
rms	root mean square
s	second
V	volt
W	width