HERMON LABORATORIES

ELECTRICAL TESTING
0839.01

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TEST REPORT

**ACCORDING TO: FCC 47CFR part 15 subpart C § 15.247 (FHSS),
RSS-210 issue 8 Annex 8**

FOR:

Telematics Wireless Ltd.

Wired booster

Model: 2WB-LG

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1 Applicant information

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

2 Equipment under test attributes

Product name:	Wired booster
Product type:	Transceiver
Model(s):	2WB-LG
Serial number:	06535059
Hardware version:	B
Software release:	1.020
Receipt date	7/4/2011

3 Manufacturer information

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

4 Test details

Project ID:	21915
Location:	Hermon Laboratories Ltd. Harakevet Industrial Zone, Binyamina 30500, Israel
Test started:	4/7/2011
Test completed:	6/26/2011
Test specification(s):	FCC 47CFR part 15:2010, subpart C §15.247 (FHSS); RSS-210 issue 8 Annex 8

5 Tests summary

Test	Status
Transmitter characteristics	
FCC Section 15.247(a)1, RSS-210 section A8.1(a), The 20 dB bandwidth	Pass
FCC Section 15.247(a)1, RSS-210 section A8.1(b), Frequency separation	Pass
FCC Section 15.247(a)1, RSS-210 section A8.1(c), Number of hopping frequencies	Pass
FCC Section 15.247(a)1, RSS-210 section A8.1(c), Average time of occupancy	Pass
FCC Section 15.247(b), RSS-210 section A8.4(1), Peak output power	Pass
FCC Section 15.247(d), RSS-210 section A8.5, Emissions at band edges	Pass
FCC Section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions	Pass
FCC Section 15.203, RSS-Gen section 7.1.2, Antenna requirements	Pass
FCC Section 15.207(a), RSS-Gen section 7.2.4, Conducted emission	Not required
FCC Section 15.247(i), RSS-Gen, section 5.5, RF exposure	Pass, the exhibit to the application of certification is provided

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.21915.

	Name and Title	Date	Signature
Tested by:	Mr. S. Samokha, test engineer	June 26, 2011	
Reviewed by:	Mrs. M. Cherniavsky, certification engineer	July 13, 2011	
Approved by:	Mr. M. Nikishin, EMC and Radio group manager	July 31, 2011	

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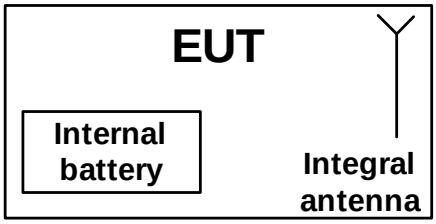
6 EUT description

6.1 General information

The EUT, model name 2WB-LG, is a 2Way wired booster endpoint. The 2WB-LG is compatible with the Landis & Gear network. The 2-Way transceiver is battery powered and connected to a pulse/encoder meter unit via a cable. A microcontroller provides the timing, control and data processing. The unit includes a built in antenna that is inaccessible to the user.

6.2 Test configuration



6.3 Changes made in the EUT

No changes were implemented in the EUT.

6.4 Transmitter characteristics

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

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

Assigned frequency range	902 – 928 MHz
Operating frequency range	902.3-927.8 MHz (FHSS wide channel) 904 – 927.9 MHz (FHSS narrow channel)

Maximum rated output power	At transmitter 50 Ω RF output connector	NA
	Peak output power	17.43 dBm (FHSS wide channel) 16.84 dBm (FHSS narrow channel)

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

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

Antenna/s technical characteristics			
Type	Manufacturer	Model number	Gain
Integral	Telematics Wireless Ltd.	Printed inverted F antenna	3 dBi

Transmitter aggregate data rate/s	9.6, 19.2, 38.4, 115.2 kbps
Transmitter aggregate symbol (baud) rate/s	NA
Modulating test signal (baseband)	PRBS
Modulation type	FSK, GFSK
Maximum transmitter duty cycle in normal use	1%
Transmitter duty cycle supplied for test (FHSS)	0.6%

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	

Spread spectrum parameters for transmitters tested per FCC 15.247 only		
FHSS	Total number of hops	86 wide channels, 240 narrow channels
	Bandwidth per hop	212.5 kHz
	Max. separation of hops	300 kHz

Test specification:	Section 15.247(a)1, (g), (h), RSS-210 section A8.1(a), Frequency hopping requirements		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	**Verdict:**	PASS
Date:	6/26/2011		
Temperature: 23.2 ºC	**Air Pressure:** 1005 hPa	**Relative Humidity:** 44 %	**Power Supply:** Battery
Remarks: FHSS 86 wide channels			

7 Transmitter tests according to 47CFR part 15 subpart C and RSS-210 Annex 8 requirements

7.1 Frequency hopping requirements

The EUT was verified for compliance with frequency hopping requirements listed below:

- The EUT shall hop to channel frequencies that are selected from a pseudorandomly ordered list;
- Each hopping frequency shall be used equally on the average;
- The EUT receiver shall have input bandwidth that match the hopping channel bandwidth of the corresponding transmitter and shall shift frequencies in synchronization with the transmitted signals;
- The coordination of frequency hopping systems in any other manner for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters is not permitted.

The rationale for compliance with the above requirements was either test results or supplier declaration. The summary of results is provided in Table 7.1.1.

Table 7.1.1 Frequency hopping requirements

Requirement	Rationale	Verdict
The EUT shall hop to channel frequencies that are selected from a pseudorandomly ordered list	Supplier declaration (refer to Table 7.1.2, Table 7.1.3)	Comply
Each hopping frequency shall be used equally on the average	Supplier declaration	Comply
The EUT receiver shall have input bandwidth that match the hopping channel bandwidth of the corresponding transmitter	Supplier declaration	Comply
The EUT receiver shall shift frequencies in synchronization with the transmitted signals	Supplier declaration	Comply
Each transmitter operates independently and there is no synchronization with other transmitters for purposes other than to avoid simultaneous channel occupancy	Supplier declaration	Comply

Test specification:	**Section 15.247(a)1, (g), (h), RSS-210 section A8.1(a), Frequency hopping requirements**		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	**Verdict:**	PASS
Date:	6/26/2011		
Temperature: 23.2 ºC	**Air Pressure:** 1005 hPa	**Relative Humidity:** 44 %	**Power Supply:** Battery
Remarks: FHSS 86 wide channels			

Table 7.1.2 Frequency hopping sequence, 86 wide channels

Frequency, MHz	Frequency Assignment	Frequency, MHz	Frequency Assignment	Frequency, MHz	Frequency Assignment	Frequency, MHz	Frequency Assignment
917.30	F1	917.00	F23	924.80	F45	923.60	F67
927.20	F2	903.20	F24	922.10	F46	915.80	F68
908.60	F3	926.90	F25	925.10	F47	907.10	F69
902.30	F4	908.30	F26	927.50	F48	915.50	F70
924.50	F5	920.30	F27	925.70	F49	917.60	F71
925.40	F6	906.20	F28	911.00	F50	907.40	F72
926.60	F7	911.30	F29	909.80	F51	914.60	F73
910.40	F8	905.60	F30	910.10	F52	909.20	F74
902.90	F9	918.50	F31	926.30	F53	920.90	F75
912.50	F10	904.10	F32	918.20	F54	906.80	F76
914.30	F11	905.00	F33	916.40	F55	914.00	F77
905.30	F12	913.40	F34	910.70	F56	923.30	F78
920.00	F13	919.40	F35	924.20	F57	915.20	F79
922.70	F14	917.90	F36	903.50	F58	921.50	F80
926.00	F15	905.90	F37	911.60	F59	908.00	F81
916.70	F16	919.70	F38	923.90	F60	902.60	F82
919.10	F17	909.50	F39	911.90	F61	922.40	F83
913.70	F18	916.10	F40	927.80	F62	903.80	F84
914.90	F19	921.80	F41	913.10	F63	920.60	F85
923.00	F20	921.20	F42	904.70	F64	912.80	F86
907.70	F21	904.40	F43	906.50	F65		
912.20	F22	918.80	F44	908.90	F66		

Test specification:	Section 15.247(a)1, (g), (h), RSS-210 section A8.1(a), Frequency hopping requirements		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	**Verdict:**	PASS
Date:	6/26/2011		
Temperature: 23.2 ºC	**Air Pressure:** 1005 hPa	**Relative Humidity:** 44 %	**Power Supply:** Battery
Remarks: FHSS 240 narrow channels			

Table 7.1.3 Frequency hopping sequence, 240 narrow channels

Frequency, MHz	Frequency Assignment	Frequency, MHz	Frequency Assignment	Frequency, MHz	Frequency Assignment	Frequency, MHz	Frequency Assignment
917.60	F1	906.50	F61	910.60	F121	914.20	F181
913.10	F2	922.60	F62	922.10	F122	927.10	F182
914.70	F3	925.50	F63	919.10	F123	904.30	F183
912.00	F4	908.70	F64	907.00	F124	923.50	F184
914.00	F5	920.10	F65	913.80	F125	924.60	F185
913.50	F6	905.30	F66	924.70	F126	919.20	F186
911.50	F7	918.70	F67	918.30	F127	924.00	F187
920.30	F8	907.90	F68	907.50	F128	921.90	F188
915.80	F9	926.90	F69	923.90	F129	925.70	F189
921.00	F10	927.20	F70	923.20	F130	917.10	F190
925.60	F11	919.30	F71	919.50	F131	910.40	F191
918.20	F12	920.80	F72	909.50	F132	908.50	F192
914.90	F13	927.00	F73	926.00	F133	914.80	F193
915.10	F14	913.00	F74	926.40	F134	919.70	F194
926.20	F15	922.20	F75	913.70	F135	906.70	F195
905.50	F16	916.20	F76	915.70	F136	913.40	F196
921.20	F17	922.00	F77	924.90	F137	914.10	F197
918.60	F18	904.20	F78	904.70	F138	916.70	F198
923.00	F19	916.10	F79	927.50	F139	920.70	F199
917.20	F20	920.00	F80	926.50	F140	913.60	F200
915.30	F21	910.90	F81	926.70	F141	909.60	F201
927.90	F22	923.40	F82	923.70	F142	908.60	F202
918.80	F23	907.30	F83	920.90	F143	906.10	F203
904.80	F24	917.40	F84	912.40	F144	911.00	F204
912.30	F25	926.10	F85	912.20	F145	921.70	F205
916.60	F26	910.30	F86	907.80	F146	916.30	F206
909.70	F27	921.30	F87	915.00	F147	922.80	F207
923.10	F28	927.80	F88	920.20	F148	919.40	F208
924.20	F29	922.70	F89	920.60	F149	911.40	F209
909.80	F30	906.00	F90	918.50	F150	927.70	F210
915.50	F31	912.50	F91	910.10	F151	925.20	F211
916.80	F32	920.40	F92	914.50	F152	911.60	F212
908.10	F33	921.10	F93	919.80	F153	918.10	F213
915.20	F34	905.70	F94	925.00	F154	909.10	F214
910.80	F35	922.90	F95	920.50	F155	909.00	F215
911.80	F36	904.60	F96	908.90	F156	926.30	F216
907.40	F37	907.10	F97	906.20	F157	923.60	F217
921.40	F38	919.60	F98	925.40	F158	917.50	F218
913.30	F39	918.90	F99	916.00	F159	927.60	F219
909.90	F40	926.80	F100	924.80	F160	912.60	F220

Test specification:	Section 15.247(a)1, (g), (h), RSS-210 section A8.1(a), Frequency hopping requirements		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	**Verdict:**	PASS
Date:	6/26/2011		
Temperature: 23.2 ºC	**Air Pressure:** 1005 hPa	**Relative Humidity:** 44 %	**Power Supply:** Battery
Remarks: FHSS 240 narrow channels			

Table 7.1.3 Frequency hopping sequence (continued)

Frequency, MHz	Frequency Assignment	Frequency, MHz	Frequency Assignment	Frequency, MHz	Frequency Assignment	Frequency, MHz	Frequency Assignment
916.50	F41	911.70	F101	914.60	F161	906.90	F221
918.40	F42	924.40	F102	915.90	F162	914.40	F222
909.20	F43	912.90	F103	905.10	F163	910.00	F223
915.40	F44	927.40	F104	918.00	F164	908.20	F224
923.80	F45	906.60	F105	904.50	F165	925.30	F225
921.80	F46	921.60	F106	906.40	F166	908.80	F226
908.00	F47	917.90	F107	905.00	F167	912.70	F227
904.90	F48	904.40	F108	907.60	F168	905.60	F228
905.40	F49	924.30	F109	922.30	F169	907.20	F229
926.60	F50	910.70	F110	913.20	F170	909.30	F230
906.80	F51	919.90	F111	905.20	F171	919.00	F231
925.10	F52	904.10	F112	910.50	F172	922.50	F232
910.20	F53	924.10	F113	917.30	F173	908.30	F233
911.30	F54	911.20	F114	925.90	F174	915.60	F234
917.00	F55	911.10	F115	912.10	F175	911.90	F235
908.40	F56	922.40	F116	907.70	F176	923.30	F236
916.90	F57	917.70	F117	913.90	F177	921.50	F237
905.90	F58	909.40	F118	914.30	F178	906.30	F238
917.80	F59	925.80	F119	912.80	F179	916.40	F239
905.80	F60	904.00	F120	927.30	F180	914.20	F240

Test specification:	Section 15.247(a)1, RSS-210 section A8.1(a), 20 dB bandwidth		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	5/8/2011		
Temperature: 23 ºC	Air Pressure: 1013 hPa	Relative Humidity: 47 %	Power Supply: Battery
Remarks:			

7.2 20 dB bandwidth

7.2.1 General

This test was performed to measure 20 dB bandwidth of the transmitter hopping channel. Specification test limits are given in Table 7.2.1.

Table 7.2.1 The 20 dB bandwidth limits

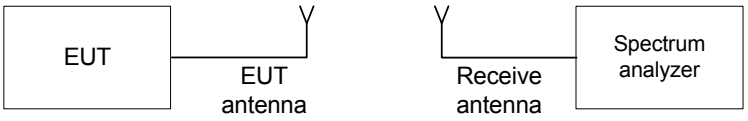
Assigned frequency, MHz	Maximum bandwidth, kHz	Modulation envelope reference points*, dBc
902.0 – 928.0	500	20
2400.0 – 2483.5	NA	
5725.0 – 5850.0	1000	

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

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 set to transmit modulated carrier at maximum data rate.
7.2.2.3 The transmitter bandwidth was measured with spectrum analyzer as frequency delta between reference points on modulation envelope and provided in Table 7.2.2 and associated plot.
7.2.2.4 The test was repeated for each data rate and each modulation format.

Figure 7.2.1 The 20 dB bandwidth test setup



Test specification:	Section 15.247(a)1, RSS-210 section A8.1(a), 20 dB bandwidth		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	5/8/2011		
Temperature: 23 ºC	Air Pressure: 1013 hPa	Relative Humidity: 47 %	Power Supply: Battery
Remarks:			

Table 7.2.2 The 20 dB bandwidth test results

ASSIGNED FREQUENCY BAND:	902 – 928 MHz
DETECTOR USED:	Peak
SWEEP TIME:	Auto
RESOLUTION BANDWIDTH:	≥ 1% of the 20 dB bandwidth
VIDEO BANDWIDTH:	≥ RBW
MODULATION ENVELOPE REFERENCE POINTS:	20.0 dBc
FREQUENCY HOPPING:	Disabled
MODULATION:	FSK
MODE:	FHSS 86 channels
CHANNEL SIPARATION:	300 kHz

Carrier frequency, MHz	Baud rate, bps	20 dB bandwidth, kHz	Limit, kHz	Margin, kHz	Verdict
902.3	9600	32.5	500	-467.5	Pass
902.3	19200	47.5	500	-452.5	Pass
902.3	38400	93.75	500	-406.25	Pass
915.0	9600	27.5	500	-472.5	Pass
915.0	19200	47.5	500	-452.5	Pass
915.0	38400	90.0	500	-410.0	Pass
927.8	9600	30.0	500	-470.0	Pass
927.8	19200	48.8	500	-451.2	Pass
927.8	38400	90.0	500	-410.0	Pass

Test specification:	Section 15.247(a)1, RSS-210 section A8.1(a), 20 dB bandwidth		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	5/8/2011		
Temperature: 23 ºC	Air Pressure: 1013 hPa	Relative Humidity: 47 %	Power Supply: Battery
Remarks:			

Table 7.2.3 The 20 dB bandwidth test results

ASSIGNED FREQUENCY BAND:	902 – 928 MHz
DETECTOR USED:	Peak
SWEEP TIME:	Auto
RESOLUTION BANDWIDTH:	≥ 1% of the 20 dB bandwidth
VIDEO BANDWIDTH:	≥ RBW
MODULATION ENVELOPE REFERENCE POINTS:	20.0 dBc
FREQUENCY HOPPING:	Disabled
MODULATION:	GFSK
MODE:	FHSS 86 channels
CHANNEL SIPARATION:	300 kHz

Carrier frequency, MHz	Baud rate, bps	20 dB bandwidth, kHz	Limit, kHz	Margin, kHz	Verdict
902.3	115200	212.5	500	-287.5	Pass
915.0	115200	202.5	500	-297.5	Pass
927.8	115200	200.0	500	-300.0	Pass

Test specification:	**Section 15.247(a)1, RSS-210 section A8.1(a), 20 dB bandwidth**		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	**Verdict:**	PASS
Date:	5/8/2011		
Temperature: 23 ºC	**Air Pressure:** 1013 hPa	**Relative Humidity:** 47 %	**Power Supply:** Battery
Remarks:			

Table 7.2.4 The 20 dB bandwidth test results

ASSIGNED FREQUENCY BAND: 902 – 928 MHz
DETECTOR USED: Peak
SWEEP TIME: Auto
RESOLUTION BANDWIDTH: ≥ 1% of the 20 dB bandwidth
VIDEO BANDWIDTH: ≥ RBW
MODULATION ENVELOPE REFERENCE POINTS: 20.0 dBc
FREQUENCY HOPPING: Disabled
MODULATION: FSK
MODE: FHSS 240 channels
CHANNEL SIPARATION: 100 kHz

Carrier frequency, MHz	Baud rate, bps	20 dB bandwidth, kHz	Limit, kHz	Margin, kHz	Verdict
904.0	9600	30.0	500	-470.0	Pass
904.0	19200	48.8	500	-451.2	Pass
904.0	38400	90.0	500	-410.0	Pass
927.9	9600	38.8	500	-461.2	Pass
927.9	19200	47.5	500	-452.5	Pass
927.9	38400	93.8	500	-406.2	Pass

Reference numbers of test equipment used

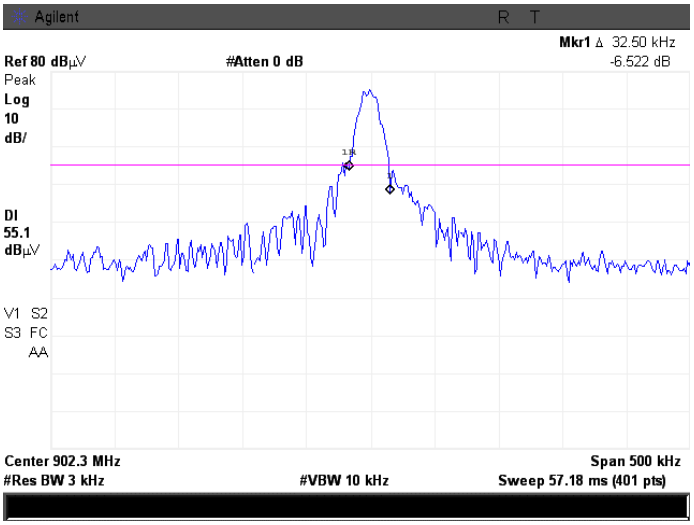
HL 0521	HL 0604	HL 2780	HL 2871	HL 3623				

Full description is given in Appendix A.

Test specification:	Section 15.247(a)1, RSS-210 section A8.1(a), 20 dB bandwidth		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	5/8/2011		
Temperature: 23 ºC	Air Pressure: 1013 hPa	Relative Humidity: 47 %	Power Supply: Battery
Remarks:			

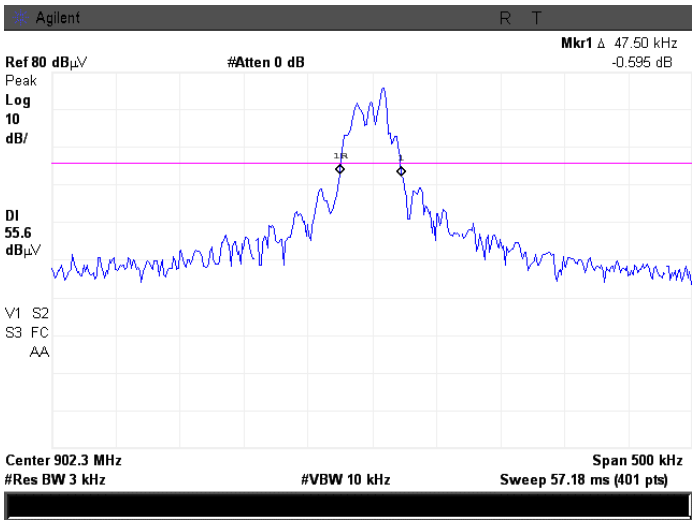
Plot 7.2.1 The 20 dB bandwidth test result at low frequency

CONFIGURATION: FHSS 86 channels
BAUD RATE: 9600 bps



Plot 7.2.2 The 20 dB bandwidth test result at low frequency

CONFIGURATION: FHSS 86 channels
BAUD RATE: 19200 bps



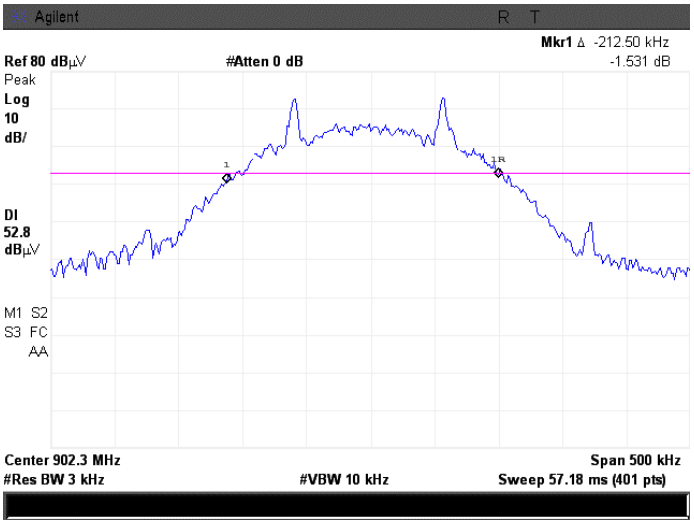
Test specification:	Section 15.247(a)1, RSS-210 section A8.1(a), 20 dB bandwidth		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	5/8/2011		
Temperature: 23 ºC	Air Pressure: 1013 hPa	Relative Humidity: 47 %	Power Supply: Battery
Remarks:			

Plot 7.2.3 The 20 dB bandwidth test result at low frequency

CONFIGURATION: FHSS 86 channels
BAUD RATE: 38400 bps

Plot 7.2.4 The 20 dB bandwidth test result at low frequency

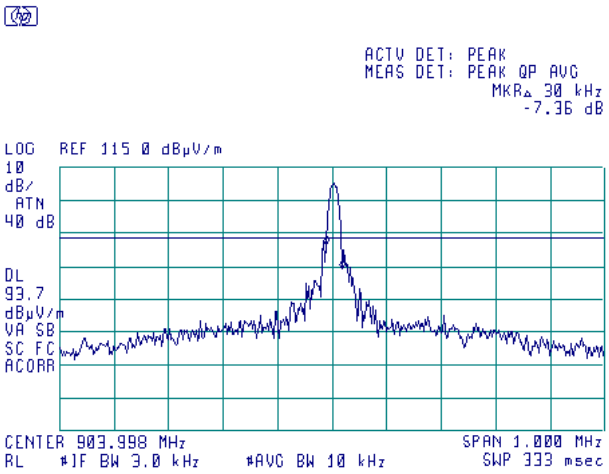
CONFIGURATION: FHSS 86 channels
BAUD RATE: 11520 bps



Test specification:	Section 15.247(a)1, RSS-210 section A8.1(a), 20 dB bandwidth		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	5/8/2011		
Temperature: 23 ºC	Air Pressure: 1013 hPa	Relative Humidity: 47 %	Power Supply: Battery
Remarks:			

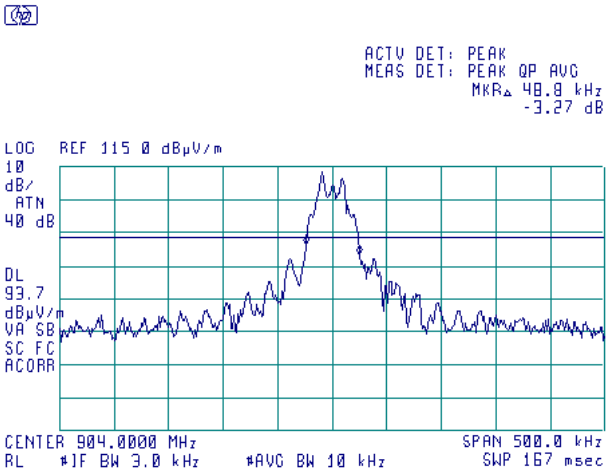
Plot 7.2.5 The 20 dB bandwidth test result at low frequency

CONFIGURATION: FHSS 240 channels
BAUD RATE: 9600 bps



Plot 7.2.6 The 20 dB bandwidth test result at low frequency

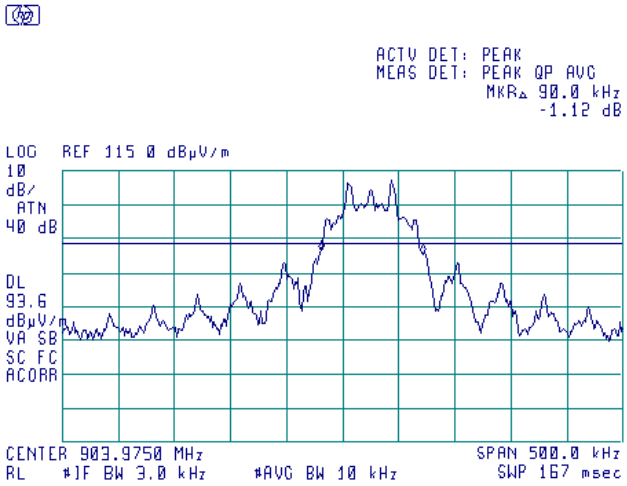
CONFIGURATION: FHSS 240 channels
BAUD RATE: 19200 bps



Test specification:	Section 15.247(a)1, RSS-210 section A8.1(a), 20 dB bandwidth		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	5/8/2011		
Temperature: 23 ºC	Air Pressure: 1013 hPa	Relative Humidity: 47 %	Power Supply: Battery
Remarks:			

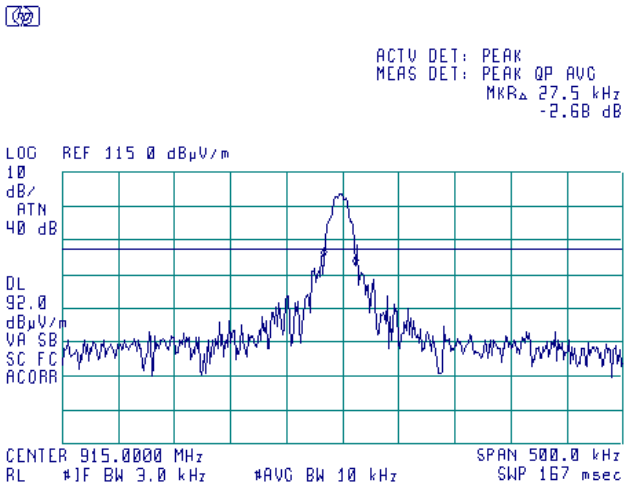
Plot 7.2.7 The 20 dB bandwidth test result at low frequency

CONFIGURATION: FHSS 240 channels
BAUD RATE: 38400 bps



Plot 7.2.8 The 20 dB bandwidth test result at mid frequency

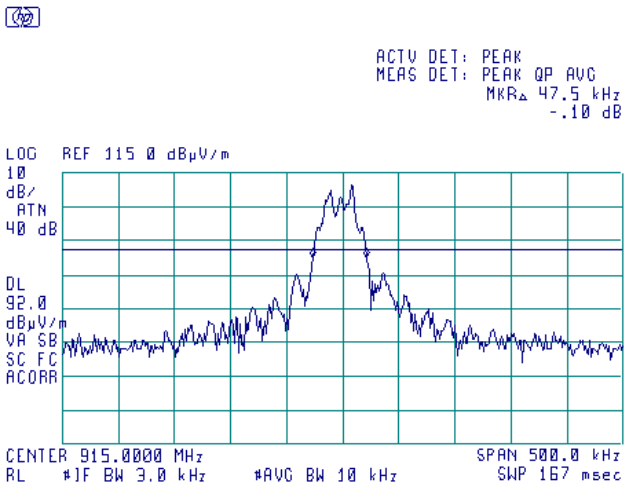
CONFIGURATION: FHSS 86 channels
BAUD RATE: 9600 bps



Test specification:	Section 15.247(a)1, RSS-210 section A8.1(a), 20 dB bandwidth		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	5/8/2011		
Temperature: 23 ºC	Air Pressure: 1013 hPa	Relative Humidity: 47 %	Power Supply: Battery
Remarks:			

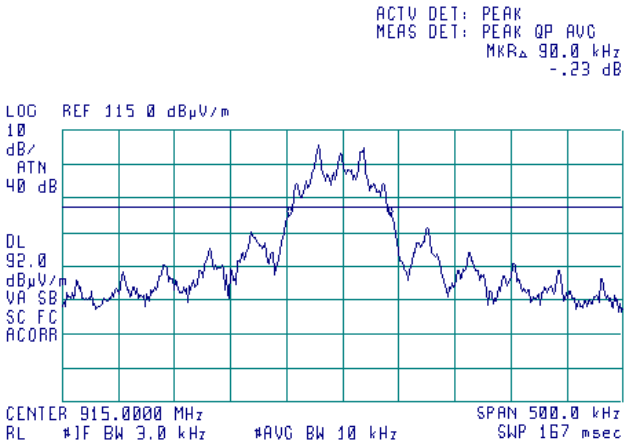
Plot 7.2.9 The 20 dB bandwidth test result at mid frequency

CONFIGURATION: FHSS 86 channels
BAUD RATE: 19200 bps



Plot 7.2.10 The 20 dB bandwidth test result at mid frequency

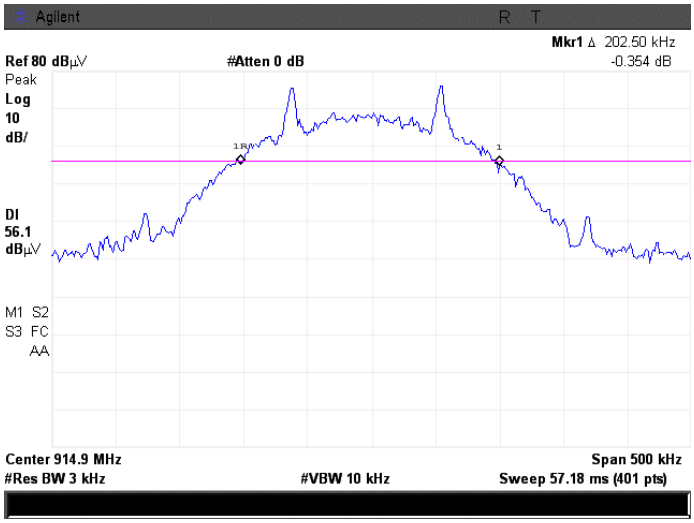
CONFIGURATION: FHSS 86 channels
BAUD RATE: 38400 bps



Test specification:	Section 15.247(a)1, RSS-210 section A8.1(a), 20 dB bandwidth		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	5/8/2011		
Temperature: 23 ºC	Air Pressure: 1013 hPa	Relative Humidity: 47 %	Power Supply: Battery
Remarks:			

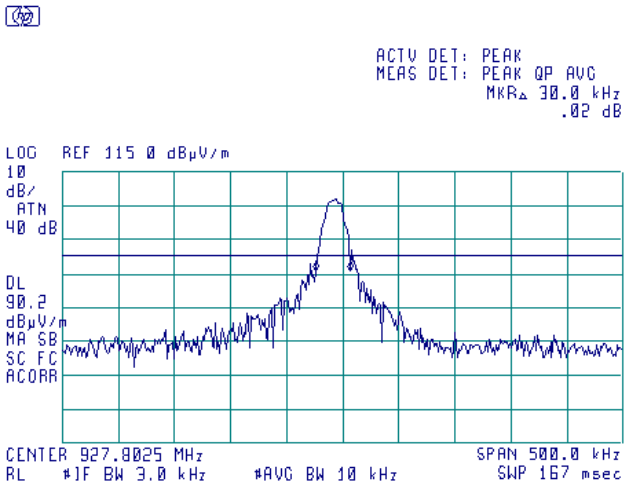
Plot 7.2.11 The 20 dB bandwidth test result at mid frequency

CONFIGURATION: FHSS 86 channels
BAUD RATE: 115200 bps



Plot 7.2.12 The 20 dB bandwidth test result at high frequency

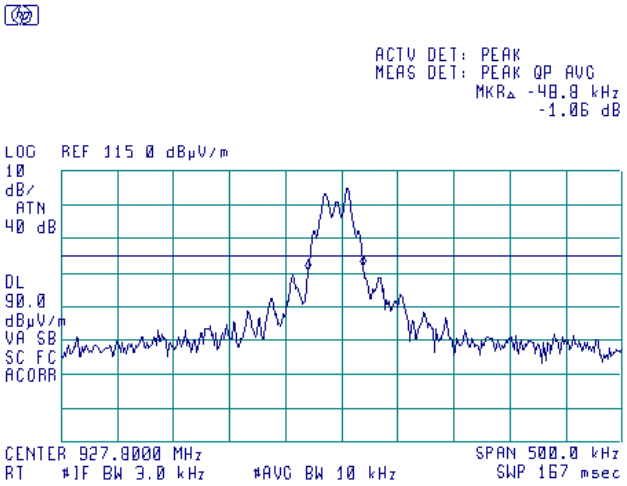
CONFIGURATION: FHSS 86 channels
BAUD RATE: 9600 bps



Test specification:	Section 15.247(a)1, RSS-210 section A8.1(a), 20 dB bandwidth		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	5/8/2011		
Temperature: 23 ºC	Air Pressure: 1013 hPa	Relative Humidity: 47 %	Power Supply: Battery
Remarks:			

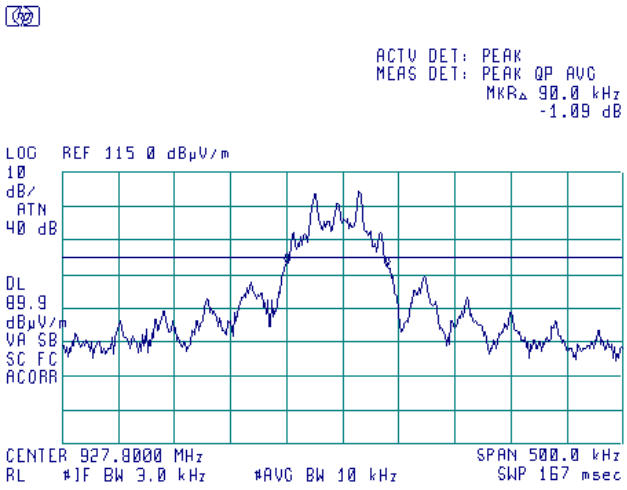
Plot 7.2.13 The 20 dB bandwidth test result at high frequency

CONFIGURATION: FHSS 86 channels
BAUD RATE: 19200 bps



Plot 7.2.14 The 20 dB bandwidth test result at high frequency

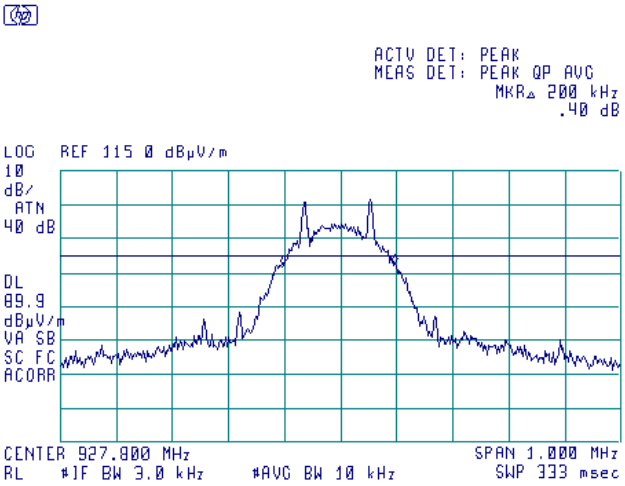
CONFIGURATION: FHSS 86 channels
BAUD RATE: 38400 bps



Test specification:	Section 15.247(a)1, RSS-210 section A8.1(a), 20 dB bandwidth		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	5/8/2011		
Temperature: 23 ºC	Air Pressure: 1013 hPa	Relative Humidity: 47 %	Power Supply: Battery
Remarks:			

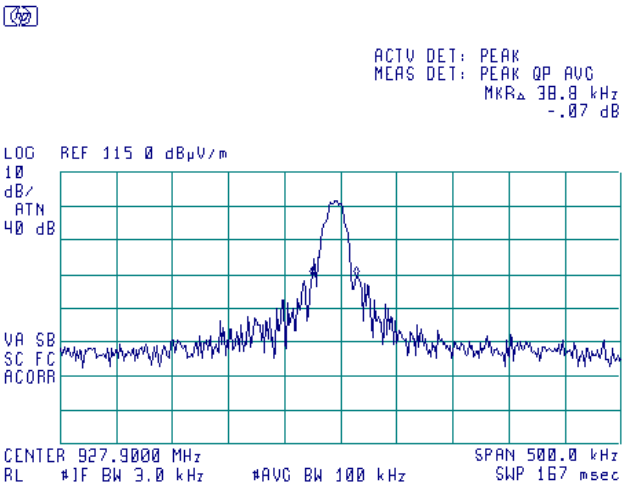
Plot 7.2.15 The 20 dB bandwidth test result at high frequency

CONFIGURATION: FHSS 86 channels
BAUD RATE: 115200 bps



Plot 7.2.16 The 20 dB bandwidth test result at high frequency

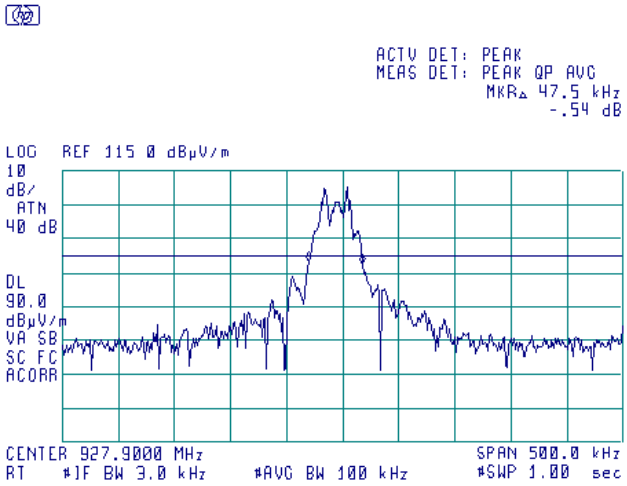
CONFIGURATION: FHSS 240 channels
BAUD RATE: 9600 bps



Test specification:	Section 15.247(a)1, RSS-210 section A8.1(a), 20 dB bandwidth		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	5/8/2011		
Temperature: 23 ºC	Air Pressure: 1013 hPa	Relative Humidity: 47 %	Power Supply: Battery
Remarks:			

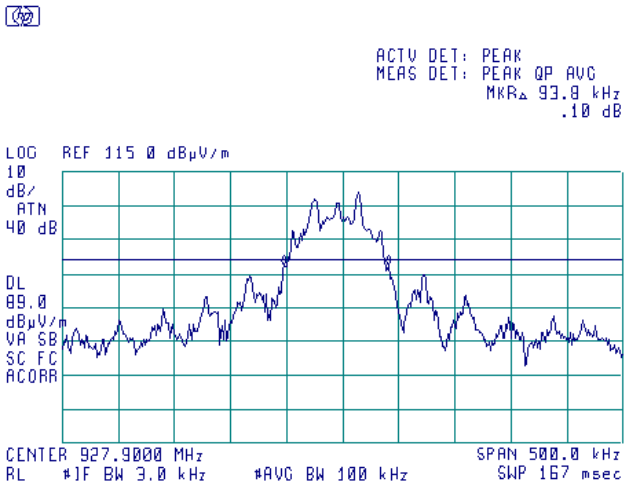
Plot 7.2.17 The 20 dB bandwidth test result at high frequency

CONFIGURATION: FHSS 240 channels
BAUD RATE: 19200 bps



Plot 7.2.18 The 20 dB bandwidth test result at high frequency

CONFIGURATION: FHSS 240 channels
BAUD RATE: 38400 bps



Test specification:	Section 15.247(a)1, RSS-210 section A8.1(b), Frequency separation		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	5/11/2011		
Temperature: 23 ºC	Air Pressure: 1012 hPa	Relative Humidity: 48 %	Power Supply: Battery
Remarks:			

7.3 Carrier frequency separation

7.3.1 General

This test was performed to measure frequency separation between the peaks of adjacent channels. Specification test limits are given in Table 7.3.1.

Table 7.3.1 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	

7.3.2 Test procedure

7.3.2.1 The EUT was set up as shown in Figure 7.3.1, energized with frequency hopping function enabled and its proper operation was checked.

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

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

7.3.2.4 The frequency separation between the peaks of adjacent channels was measured as provided in Table 7.3.2 and associated plots.

Figure 7.3.1 Carrier frequency separation test setup

Test specification:	Section 15.247(a)1, RSS-210 section A8.1(b), Frequency separation		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	5/11/2011		
Temperature: 23 ºC	Air Pressure: 1012 hPa	Relative Humidity: 48 %	Power Supply: Battery
Remarks:			

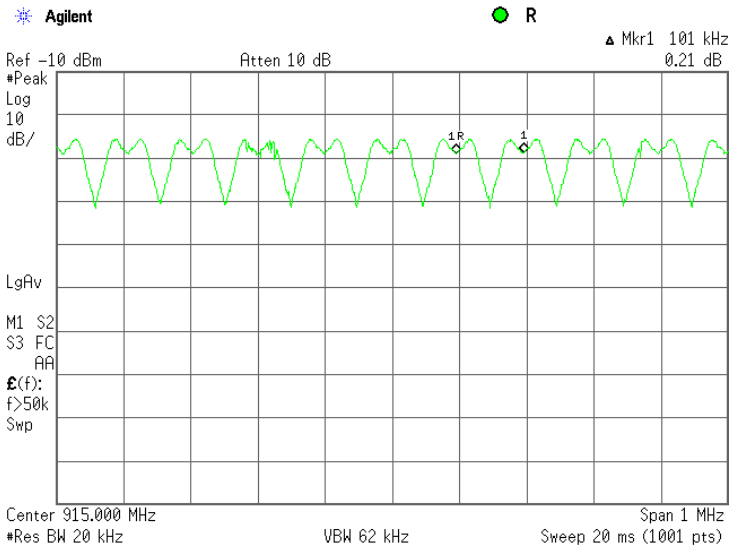
Table 7.3.2 Carrier frequency separation test results

ASSIGNED FREQUENCY RANGE:	902 – 928 MHz
MODE:	240 Channels
MODULATION:	FSK
BIT RATE:	38.4 kbps
DETECTOR USED:	Peak
RESOLUTION BANDWIDTH:	20 kHz
VIDEO BANDWIDTH:	≥ RBW
FREQUENCY HOPPING:	Enabled
20 dB BANDWIDTH:	93.8 kHz

Carrier frequency separation, kHz	Limit, kHz	Margin*	Verdict
101	93.8	7.2	Pass

* - Margin = Carrier frequency separation – specification limit.

Plot 7.3.1 Carrier frequency separation



Test specification:	Section 15.247(a)1, RSS-210 section A8.1(b), Frequency separation		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	5/11/2011		
Temperature: 23 ºC	Air Pressure: 1012 hPa	Relative Humidity: 48 %	Power Supply: Battery
Remarks:			

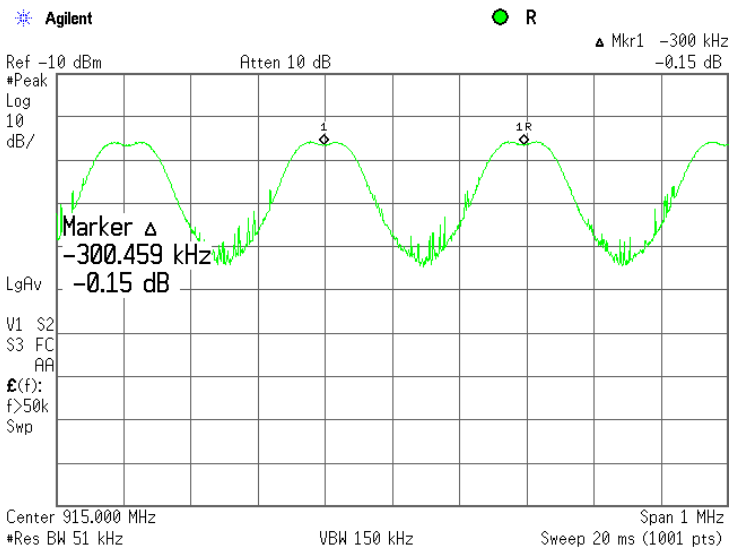
Table 7.3.3 Carrier frequency separation test results

ASSIGNED FREQUENCY RANGE:	902 – 928 MHz
MODE:	86 Channels
MODULATION:	GFSK
BIT RATE:	38.4 kbps
DETECTOR USED:	Peak
RESOLUTION BANDWIDTH:	51 KHz
VIDEO BANDWIDTH:	≥ RBW
FREQUENCY HOPPING:	Enabled
20 dB BANDWIDTH:	212.5 kHz

Carrier frequency separation, kHz	Limit, kHz	Margin*	Verdict
300.459	212.5	87.959	Pass

* - Margin = Carrier frequency separation – specification limit.

Plot 7.3.2 Carrier frequency separation



Reference numbers of test equipment used

HL 1451	HL 3818						

Full description is given in Appendix A.

Test specification:	Section 15.247(a)1, RSS-210 section A8.1(c), Number of hopping frequencies		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	**Verdict:**	PASS
Date:	5/11/2011		
Temperature: 23 ºC	**Air Pressure:** 1013 hPa	**Relative Humidity:** 47 %	**Power Supply:** Battery
Remarks:			

7.4 Number of hopping frequencies

7.4.1 General

This test was performed to calculate the number of hopping frequencies used by the EUT. Specification test limits are given in Table 7.4.1.

Table 7.4.1 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

7.4.2 Test procedure

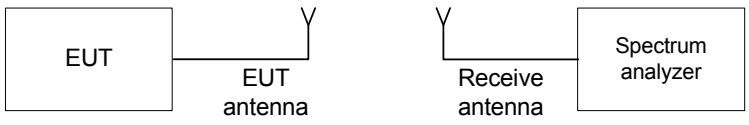
7.4.2.1 The EUT was set up as shown in Figure 7.4.1, energized with frequency hopping function enabled and its proper operation was checked.

7.4.2.2 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.

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

7.4.2.4 The number of frequency hopping channels was calculated as provided in Table 7.4.2, Table 7.4.3 and the associated plots.

Figure 7.4.1 Hopping frequencies test setup



Test specification:	**Section 15.247(a)1, RSS-210 section A8.1(c), Number of hopping frequencies**		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	**Verdict:**	PASS
Date:	5/11/2011		
Temperature: 23 ºC	**Air Pressure:** 1013 hPa	**Relative Humidity:** 47 %	**Power Supply:** Battery
Remarks:			

Table 7.4.2 Hopping frequencies test results

ASSIGNED FREQUENCY:	915 MHz
MODULATION:	FSK
CHANNELS:	240
BIT RATE:	38400 bps
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
240	50	190	Pass

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

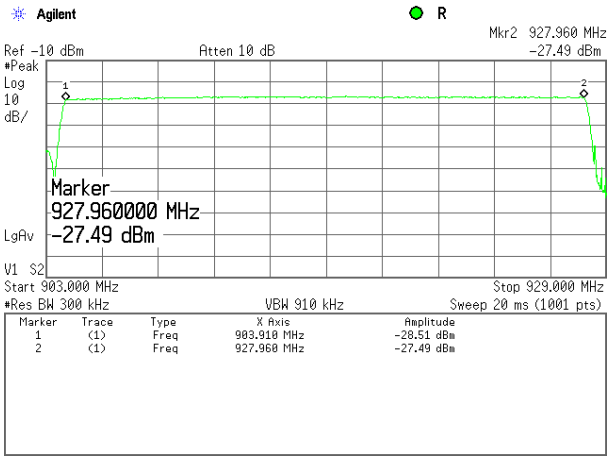
Reference numbers of test equipment used

HL 0337	HL 1451	HL 3818					

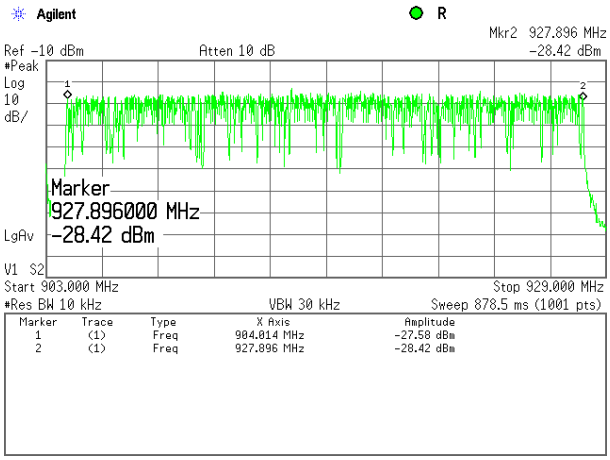
Full description is given in Appendix A.

Test specification:	Section 15.247(a)1, RSS-210 section A8.1(c), Number of hopping frequencies		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	5/11/2011		
Temperature: 23 ºC	Air Pressure: 1013 hPa	Relative Humidity: 47 %	Power Supply: Battery
Remarks:			

Plot 7.4.1 Number of hopping frequencies



Plot 7.4.2 Number of hopping frequencies



Test specification:	**Section 15.247(a)1, RSS-210 section A8.1(c), Number of hopping frequencies**		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	**Verdict:**	PASS
Date:	5/11/2011		
Temperature: 23 ºC	**Air Pressure:** 1013 hPa	**Relative Humidity:** 47 %	**Power Supply:** Battery
Remarks:			

Table 7.4.3 Hopping frequencies test results

ASSIGNED FREQUENCY:	915MHz
MODULATION:	FSK
Channels:	86
BIT RATE:	38400bps
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
86	50	36	Pass

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

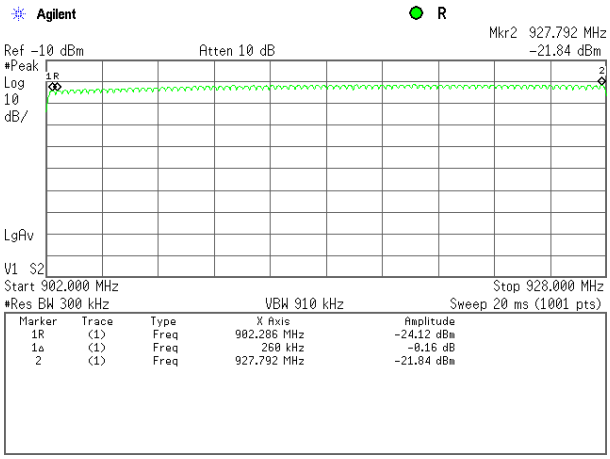
Reference numbers of test equipment used

HL 0337	HL 1451	HL 3818					

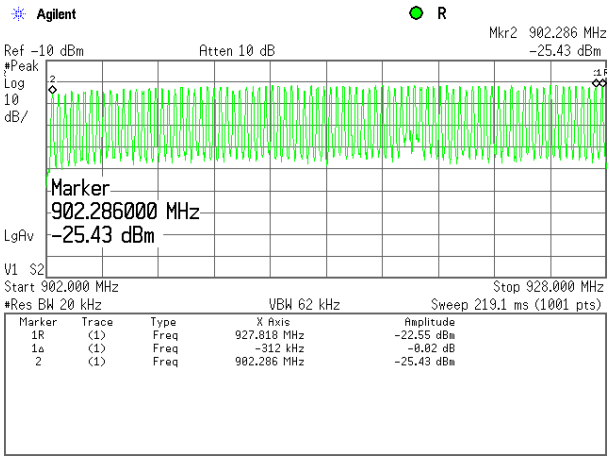
Full description is given in Appendix A.

Test specification:	Section 15.247(a)1, RSS-210 section A8.1(c), Number of hopping frequencies		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	5/11/2011		
Temperature: 23 ºC	Air Pressure: 1013 hPa	Relative Humidity: 47 %	Power Supply: Battery
Remarks:			

Plot 7.4.3 Number of hopping frequencies



Plot 7.4.4 Number of hopping frequencies



Test specification:	Section 15.247(a)1, RSS-210 section A8.1(c), Average time of occupancy		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	5/11/2011		
Temperature: 23 ºC	Air Pressure: 1013 hPa	Relative Humidity: 47 %	Power Supply: Battery
Remarks:			

7.5 Average time of occupancy

7.5.1 General

This test was performed to calculate the average time of occupancy (dwell time) on any frequency channel of the EUT. Specification test limits are given in Table 7.5.1.

Table 7.5.1 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

7.5.2 Test procedure

7.5.2.1 The EUT was set up as shown in Figure 7.5.1, energized with frequency hopping function enabled and its proper operation was checked.

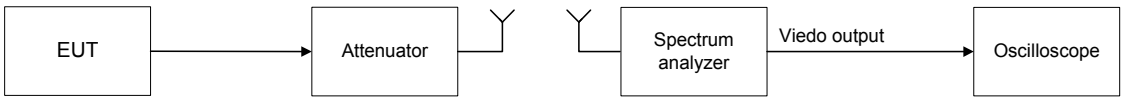
7.5.2.2 The spectrum analyzer span was set to zero centered on a hopping channel.

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

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

7.5.2.5 The test was repeated at each data rate and modulation type as provided in Table 7.5.2 and the associated plots.

Figure 7.5.1 Average time of occupancy test setup



Test specification:	Section 15.247(a)1, RSS-210 section A8.1(c), Average time of occupancy		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	5/11/2011		
Temperature: 23 ºC	Air Pressure: 1013 hPa	Relative Humidity: 47 %	Power Supply: Battery
Remarks:			

Table 7.5.2 Average time of occupancy test results

ASSIGNED FREQUENCY: 915 MHz
MODULATION: FSK
DETECTOR USED: Peak
RESOLUTION BANDWIDTH: 100 KHz
VIDEO BANDWIDTH: 300 KHz
NUMBER OF HOPPING FREQUENCIES: 240
INVESTIGATED PERIOD: 20 s
FREQUENCY HOPPING: Enabled

Carrier frequency, MHz	Single transmission duration, ms	Single transmission period, s	Average time of occupancy*, ms	Bit rate, bps	Limit, ms	Margin, ms**	Verdict
915	5.04	10.1	9.98	38400	400	-390.02	Pass

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

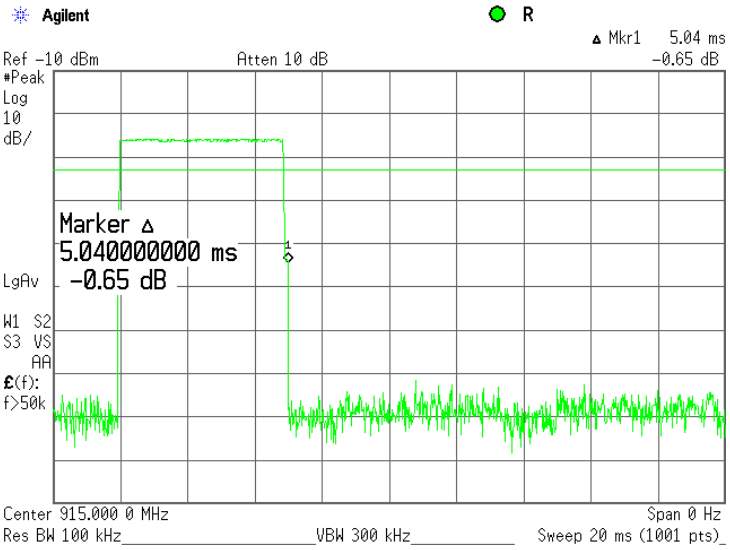
Reference numbers of test equipment used

HL 0337	HL 1451	HL 3818					

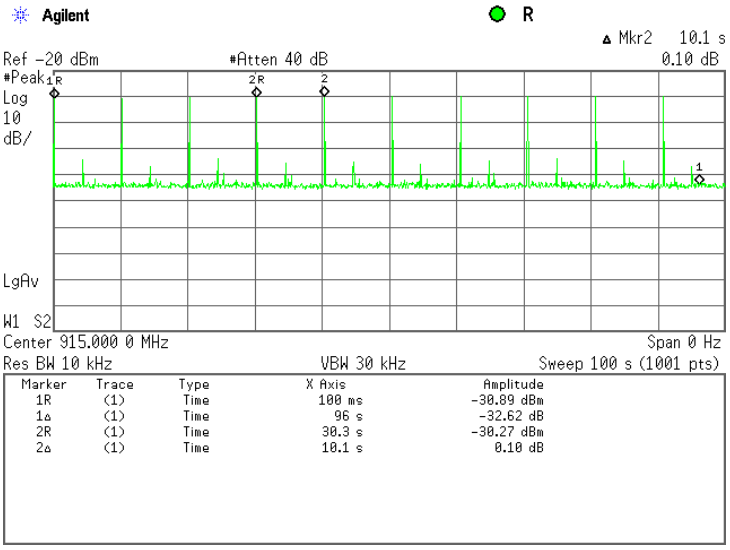
Full description is given in Appendix A.

Test specification:	Section 15.247(a)1, RSS-210 section A8.1(c), Average time of occupancy		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	5/11/2011		
Temperature: 23 ºC	Air Pressure: 1013 hPa	Relative Humidity: 47 %	Power Supply: Battery
Remarks:			

Plot 7.5.1 Single transmission duration



Plot 7.5.2 Single transmission period



Test specification:	Section 15.247(a)1, RSS-210 section A8.1(c), Average time of occupancy		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	5/11/2011		
Temperature: 23 ºC	Air Pressure: 1013 hPa	Relative Humidity: 47 %	Power Supply: Battery
Remarks:			

Table 7.5.3 Average time of occupancy test results

ASSIGNED FREQUENCY:	915 MHz
MODULATION:	FSK
DETECTOR USED:	Peak
RESOLUTION BANDWIDTH:	1 MHz
VIDEO BANDWIDTH:	3 MHz
NUMBER OF HOPPING FREQUENCIES:	86
INVESTIGATED PERIOD:	20 s
FREQUENCY HOPPING:	Enabled

Carrier frequency, MHz	Single transmission duration, ms	Single transmission period, s	Average time of occupancy*, ms	Bit rate, bps	Limit, ms	Margin, ms**	Verdict
915	5.04	3.384	29.79	38400	400	-370.21	Pass

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

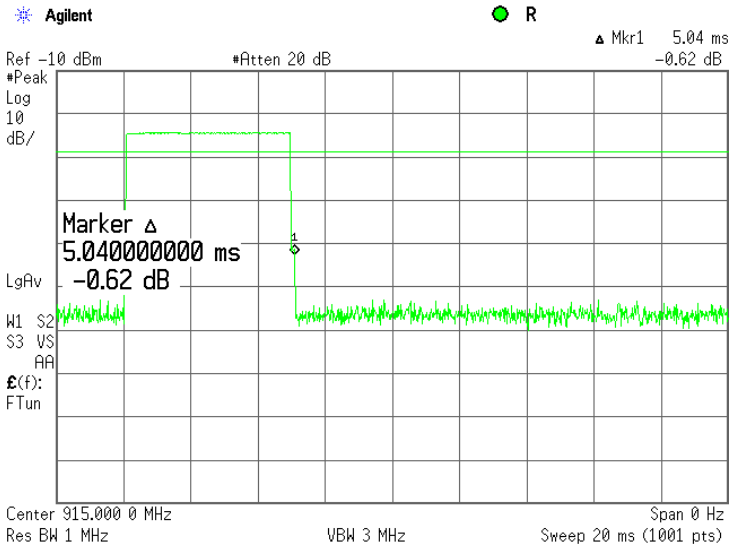
Reference numbers of test equipment used

HL 0337	HL 1451	HL 3818					

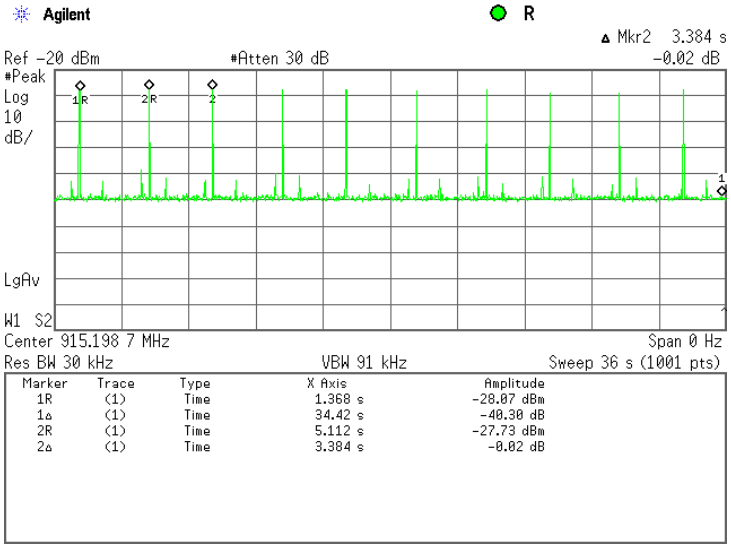
Full description is given in Appendix A.

Test specification:	Section 15.247(a)1, RSS-210 section A8.1(c), Average time of occupancy		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	5/11/2011		
Temperature: 23 ºC	Air Pressure: 1013 hPa	Relative Humidity: 47 %	Power Supply: Battery
Remarks:			

Plot 7.5.3 Single transmission duration



Plot 7.5.4 Single transmission period



Test specification:	Section 15.247(b), RSS-210 section A8.4(1), Peak output power		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	6/1/2011 - 6/26/2011		
Temperature: 23.3 ºC	Air Pressure: 1005 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

7.6 Peak output power

7.6.1 General

This test was performed to measure the maximum peak output power radiated by transmitter. Specification test limits are given in Table 7.6.1.

Table 7.6.1 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**	**125.2**	**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.

7.6.2 Test procedure

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

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

7.6.2.3 The frequency span of spectrum analyzer was set 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.

7.6.2.4 The maximum field strength of the EUT carrier frequency was measured as provided in Table 7.6.2 and the associated plots.

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

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

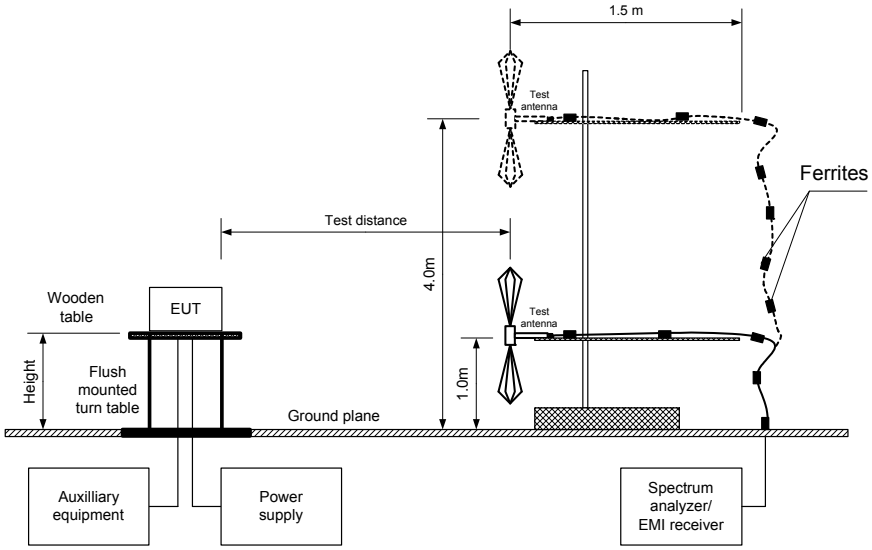
where P is the peak output power in W, E is the field strength in V/m, d is the test distance and G is the transmitter numeric antenna gain over an isotropic radiator.
The above equation was converted in logarithmic units for 3 m test distance:

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

7.6.2.6 The worst test results (the lowest margins) were recorded in Table 7.6.2.

Test specification:	Section 15.247(b), RSS-210 section A8.4(1), Peak output power		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	6/1/2011 - 6/26/2011		
Temperature: 23.3 ºC	Air Pressure: 1005 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

Figure 7.6.1 Setup for carrier field strength measurements



Test specification:	Section 15.247(b), RSS-210 section A8.4(1), Peak output power		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	6/1/2011 - 6/26/2011		
Temperature: 23.3 ºC	Air Pressure: 1005 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

Table 7.6.2 Peak output power test results

ASSIGNED FREQUENCY:	902-928 MHz
TEST DISTANCE:	3 m
TEST SITE:	Semi anechoic chamber
EUT HEIGHT:	0.8 m
DETECTOR USED:	Peak
TEST ANTENNA TYPE	Biconilog (30 MHz – 1000 MHz)
MODULATION:	FSK
TRANSMITTER OUTPUT POWER SETTINGS:	Maximum
DETECTOR USED:	Peak
RESOLUTION BANDWIDTH:	1 MHz
VIDEO BANDWIDTH:	3 MHz
FREQUENCY HOPPING:	Disabled

FHSS CONFIGURATION: 86 channels

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
Bit rate 9600 bps									
902.3	112.95	Vert	1.05	0	3.0	14.72	30.0	-15.28	Pass
915.0	111.99	Vert	1.1	187	3.0	13.76	30.0	-16.24	Pass
927.8	110.22	Vert	1.0	186	3.0	11.99	30.0	-18.01	Pass
Bit rate 19200 bps									
902.3	112.69	Vert	1.05	0	3.0	14.46	30.0	-15.54	Pass
915.0	112.01	Vert	1.0	192	3.0	13.78	30.0	-16.22	Pass
927.8	109.99	Vert	1.0	184	3.0	11.76	30.0	-18.24	Pass
Bit rate 38400 bps									
902.3	112.62	Vert	1.05	0	3.0	14.39	30.0	-15.61	Pass
915.0	111.96	Vert	1.0	188	3.0	13.73	30.0	-16.27	Pass
927.8	109.90	Vert	1.0	184	3.0	11.67	30.0	-18.33	Pass
Bit rate 115200 bps									
902.3	112.67	Vert	1.05	0	3.0	14.44	30.0	-15.56	Pass
914.9	115.66	Vert	1.0	65	3.0	17.43	30.0	-12.57	Pass
927.8	109.89	Vert	1.0	184	3.0	11.66	30.0	-18.34	Pass

Test specification:	Section 15.247(b), RSS-210 section A8.4(1), Peak output power		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	6/1/2011 - 6/26/2011		
Temperature: 23.3 ºC	Air Pressure: 1005 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

Table 7.6.2 Peak output power test results (continued)

FHSS CONFIGURATION: 240 channels

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
Bit rate 9600 bps									
904.0	113.67	Vert	1.05	211	3.0	15.44	30.0	-14.56	Pass
915.0	115.06	Vert	1.1	356	3.0	16.83	30.0	-13.17	Pass
927.9	109.81	Vert	1.1	180	3.0	11.58	30.0	-18.42	Pass
Bit rate 19200 bps									
904.0	113.67	Vert	1.1	214	3.0	15.44	30.0	-14.56	Pass
915.0	115.07	Vert	1.1	356	3.0	16.84	30.0	-13.16	Pass
927.9	109.92	Vert	1.1	188	3.0	11.69	30.0	-18.31	Pass
Bit rate 38400 bps									
904.0	113.56	Vert	1.05	195	3.0	15.33	30.0	-14.67	Pass
915.0	115.07	Vert	1.1	356	3.0	16.84	30.0	-13.16	Pass
927.9	109.98	Vert	1.1	188	3.0	11.75	30.0	-18.25	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.
Note: Maximum peak output power was obtained at U_{nom} ($115\%U_{nom}$, $85\%U_{nom}$) input power voltage.

Reference numbers of test equipment used

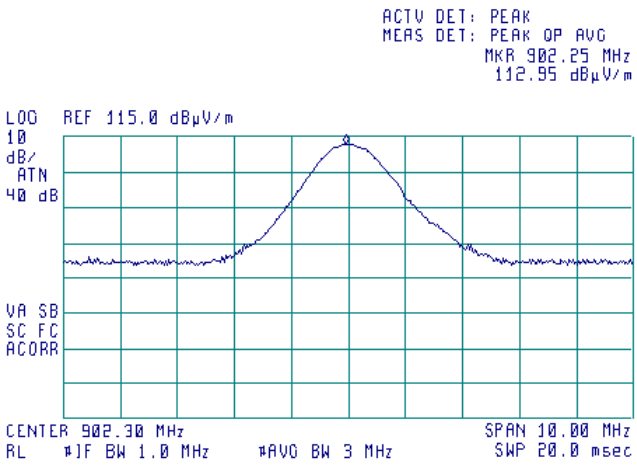
HL 0415	HL 0521	HL 0583	HL 0604	HL 0812	HL 1425	HL 2871	HL 3623

Full description is given in Appendix A.

Test specification:	Section 15.247(b), RSS-210 section A8.4(1), Peak output power		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	6/1/2011 - 6/26/2011		
Temperature: 23.3 ºC	Air Pressure: 1005 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

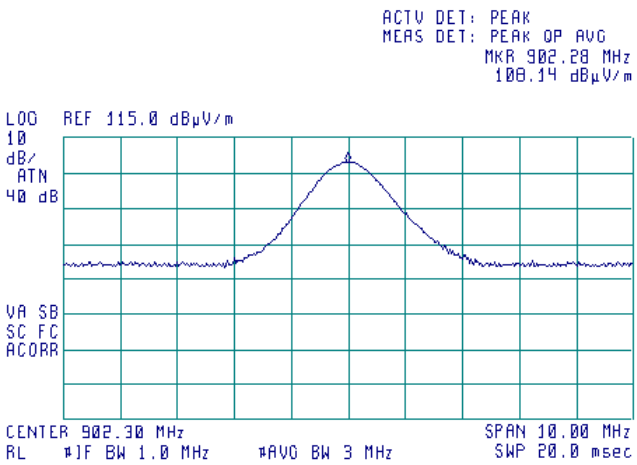
Plot 7.6.1 Field strength of carrier at low frequency

CONFIGURATION: FHSS 86 channels
BIT RATE: 9600 bps
ANTENNA POLARIZATION: Vertical



Plot 7.6.2 Field strength of carrier at low frequency

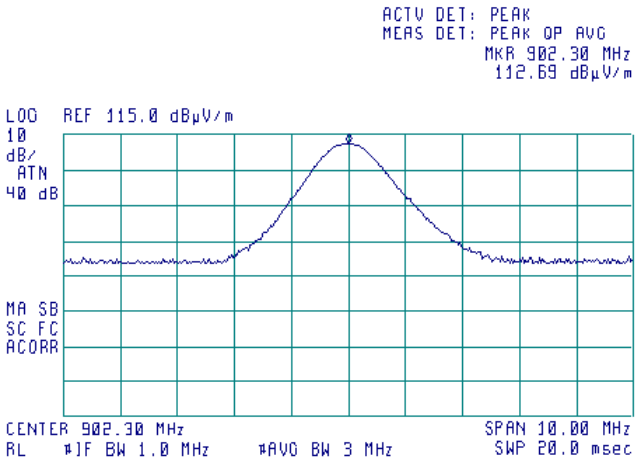
CONFIGURATION: FHSS 86 channels
BIT RATE: 9600 bps
ANTENNA POLARIZATION: Horizontal



Test specification:	Section 15.247(b), RSS-210 section A8.4(1), Peak output power		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	6/1/2011 - 6/26/2011		
Temperature: 23.3 ºC	Air Pressure: 1005 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

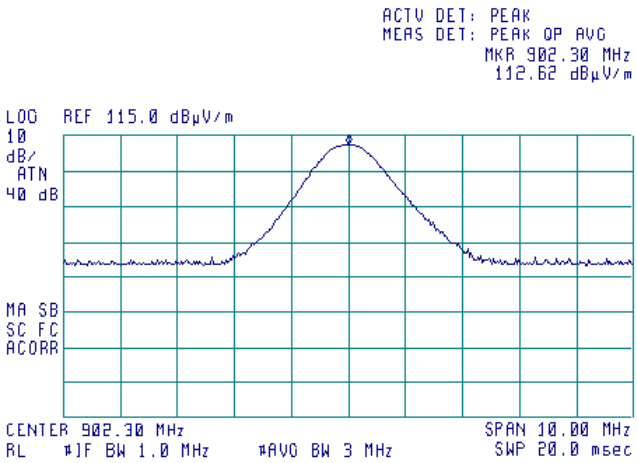
Plot 7.6.3 Field strength of carrier at low frequency

CONFIGURATION: FHSS 86 channels
BIT RATE: 19200 bps
ANTENNA POLARIZATION: Vertical and Horizontal



Plot 7.6.4 Field strength of carrier at low frequency

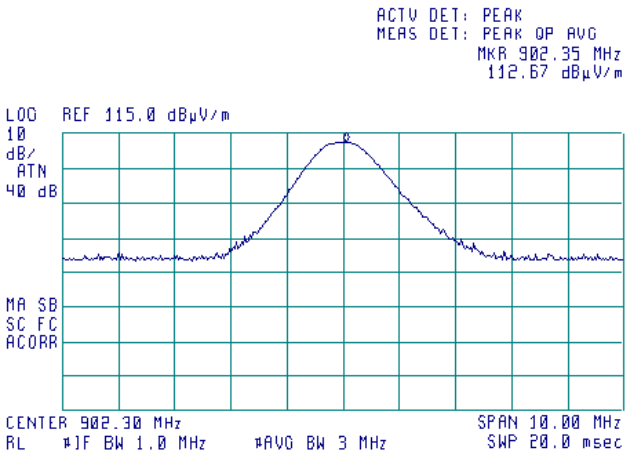
CONFIGURATION: FHSS 86 channels
BIT RATE: 38400 bps
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	Section 15.247(b), RSS-210 section A8.4(1), Peak output power		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	6/1/2011 - 6/26/2011		
Temperature: 23.3 ºC	Air Pressure: 1005 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

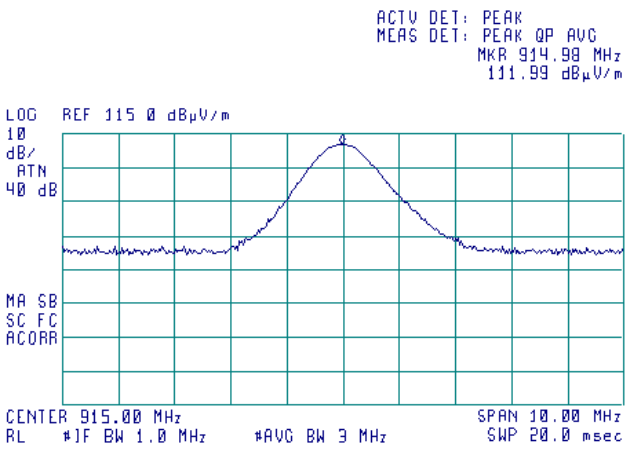
Plot 7.6.5 Field strength of carrier at low frequency

CONFIGURATION: FHSS 86 channels
BIT RATE: 115200 bps
ANTENNA POLARIZATION: Vertical and Horizontal



Plot 7.6.6 Field strength of carrier at mid frequency

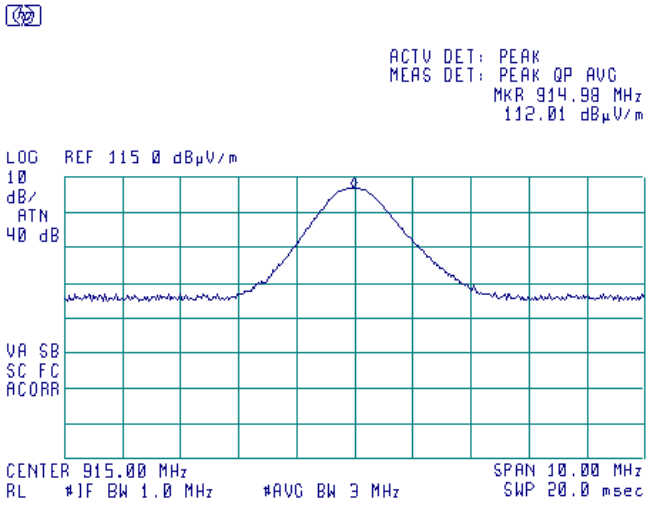
CONFIGURATION: FHSS 86 channels
BIT RATE: 9600 bps
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	Section 15.247(b), RSS-210 section A8.4(1), Peak output power		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	6/1/2011 - 6/26/2011		
Temperature: 23.3 ºC	Air Pressure: 1005 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

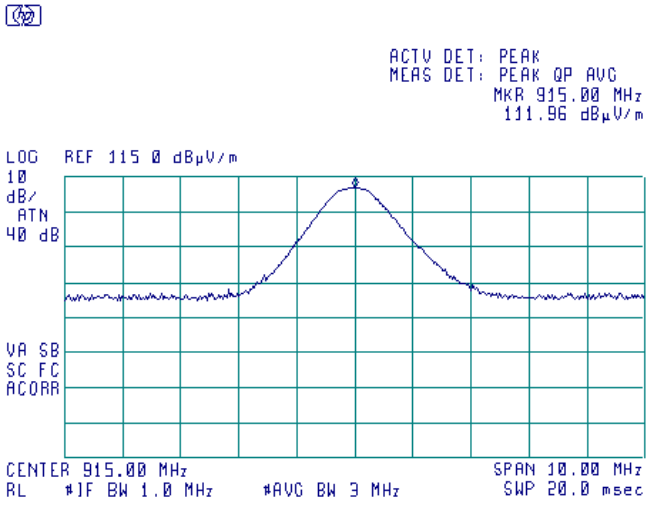
Plot 7.6.7 Field strength of carrier at mid frequency

CONFIGURATION: FHSS 86 channels
BIT RATE: 19200 bps
ANTENNA POLARIZATION: Vertical and Horizontal



Plot 7.6.8 Field strength of carrier at mid frequency

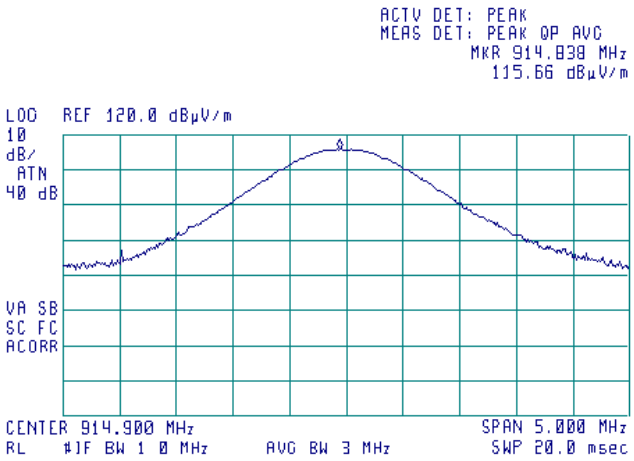
CONFIGURATION: FHSS 86 channels
BIT RATE: 38400 bps
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	Section 15.247(b), RSS-210 section A8.4(1), Peak output power		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	6/1/2011 - 6/26/2011		
Temperature: 23.3 ºC	Air Pressure: 1005 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

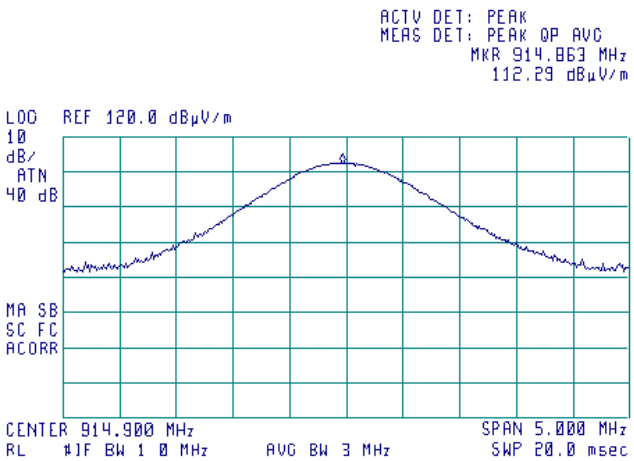
Plot 7.6.9 Field strength of carrier at mid frequency

CONFIGURATION: FHSS 86 channels
BIT RATE: 115200 bps
ANTENNA POLARIZATION: Vertical



Plot 7.6.10 Field strength of carrier at mid frequency

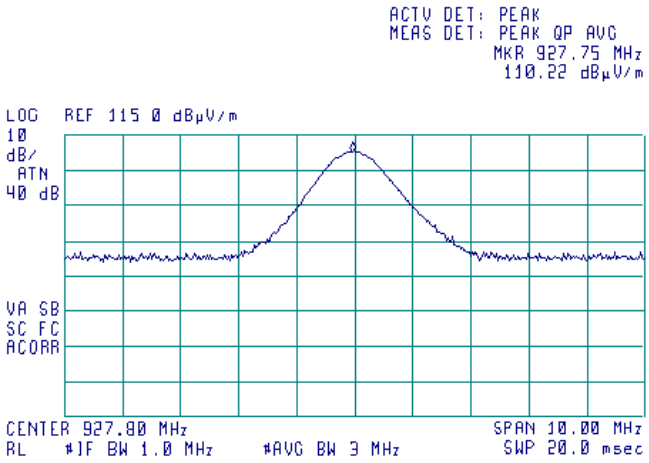
CONFIGURATION: FHSS 86 channels
BIT RATE: 115200 bps
ANTENNA POLARIZATION: Horizontal



Test specification:	Section 15.247(b), RSS-210 section A8.4(1), Peak output power		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	6/1/2011 - 6/26/2011		
Temperature: 23.3 ºC	Air Pressure: 1005 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

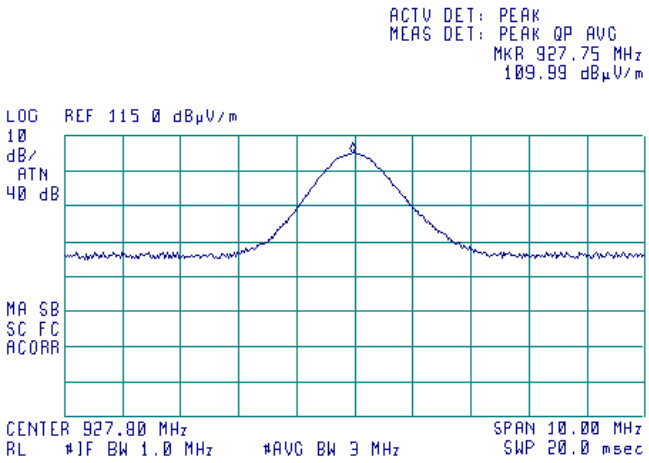
Plot 7.6.11 Field strength of carrier at high frequency

CONFIGURATION: FHSS 86 channels
BIT RATE: 9600 bps
ANTENNA POLARIZATION: Vertical and Horizontal



Plot 7.6.12 Field strength of carrier at high frequency

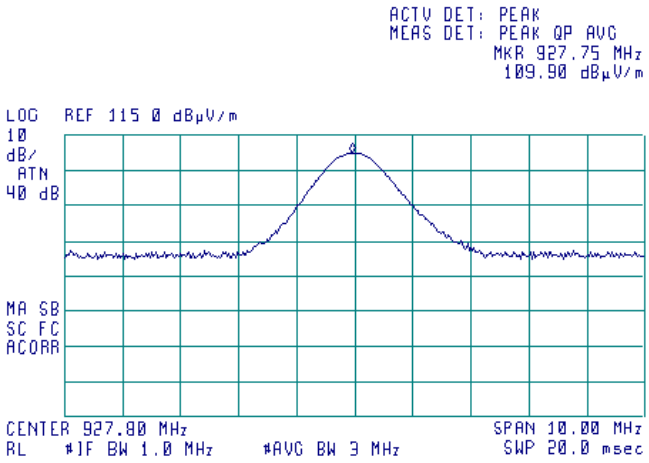
CONFIGURATION: FHSS 86 channels
BIT RATE: 19200 bps
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	Section 15.247(b), RSS-210 section A8.4(1), Peak output power		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	6/1/2011 - 6/26/2011		
Temperature: 23.3 ºC	Air Pressure: 1005 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

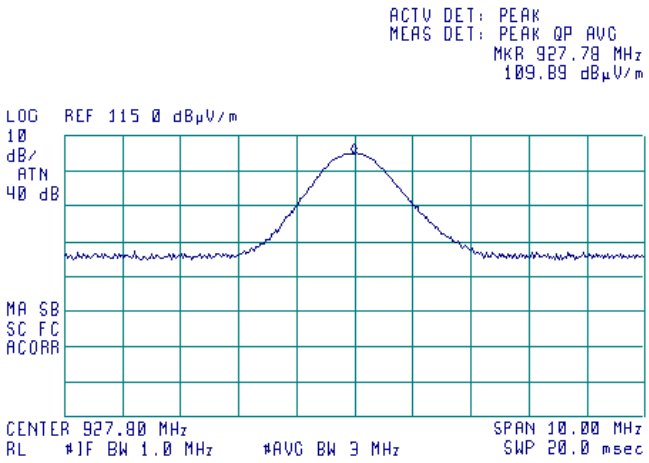
Plot 7.6.13 Field strength of carrier at high frequency

CONFIGURATION: FHSS 86 channels
BIT RATE: 38400 bps
ANTENNA POLARIZATION: Vertical and Horizontal



Plot 7.6.14 Field strength of carrier at high frequency

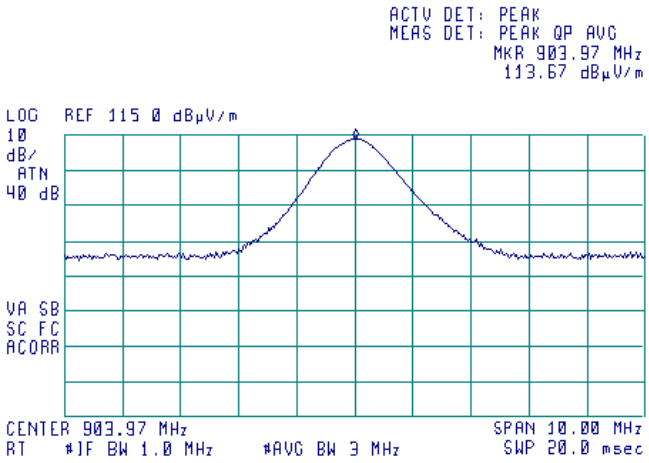
CONFIGURATION: FHSS 86 channels
BIT RATE: 115200 bps
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	Section 15.247(b), RSS-210 section A8.4(1), Peak output power		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	6/1/2011 - 6/26/2011		
Temperature: 23.3 ºC	Air Pressure: 1005 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

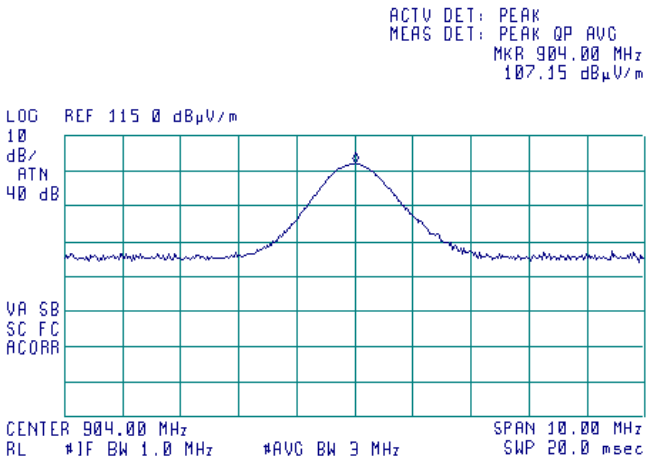
Plot 7.6.15 Field strength of carrier at low frequency

CONFIGURATION: FHSS 240 channels
BIT RATE: 9600 bps
ANTENNA POLARIZATION: Vertical



Plot 7.6.16 Field strength of carrier at low frequency

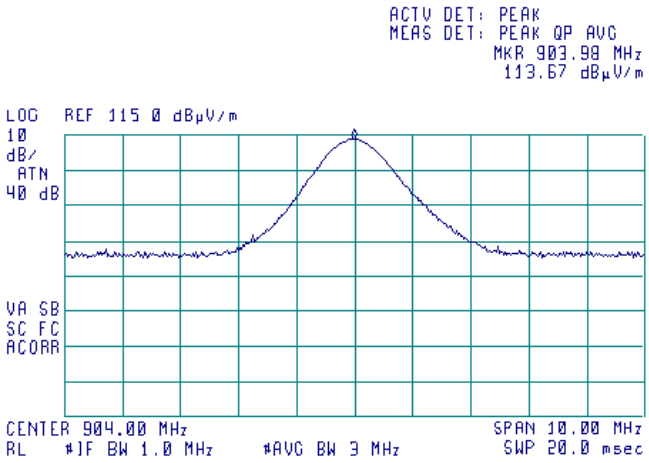
CONFIGURATION: FHSS 240 channels
BIT RATE: 9600 bps
ANTENNA POLARIZATION: Horizontal



Test specification:	Section 15.247(b), RSS-210 section A8.4(1), Peak output power		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	6/1/2011 - 6/26/2011		
Temperature: 23.3 ºC	Air Pressure: 1005 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

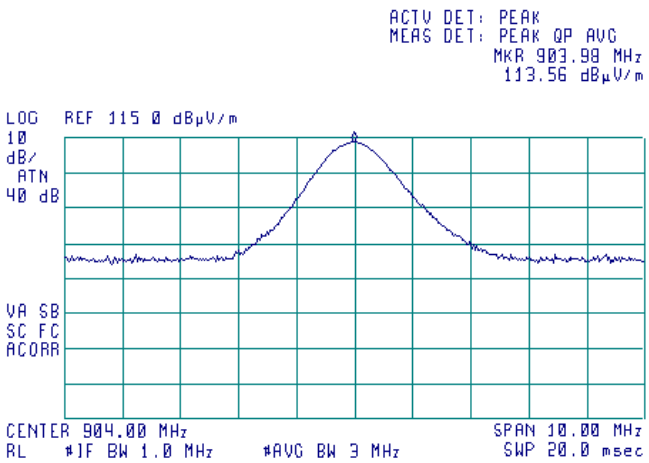
Plot 7.6.17 Field strength of carrier at low frequency

CONFIGURATION: FHSS 240 channels
BIT RATE: 19200 bps
ANTENNA POLARIZATION: Vertical and Horizontal



Plot 7.6.18 Field strength of carrier at low frequency

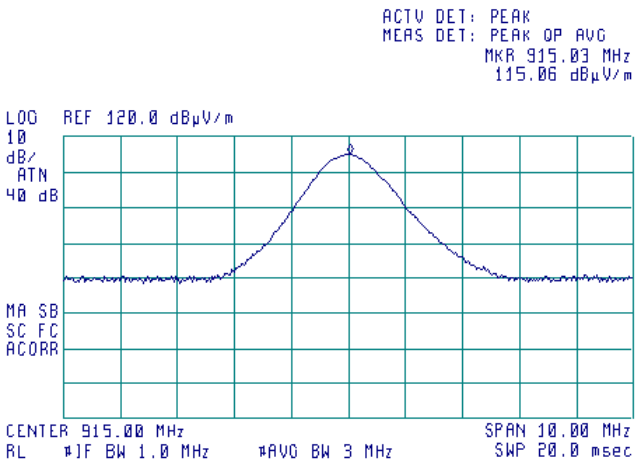
CONFIGURATION: FHSS 240 channels
BIT RATE: 38400 bps
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	Section 15.247(b), RSS-210 section A8.4(1), Peak output power		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	6/1/2011 - 6/26/2011		
Temperature: 23.3 ºC	Air Pressure: 1005 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

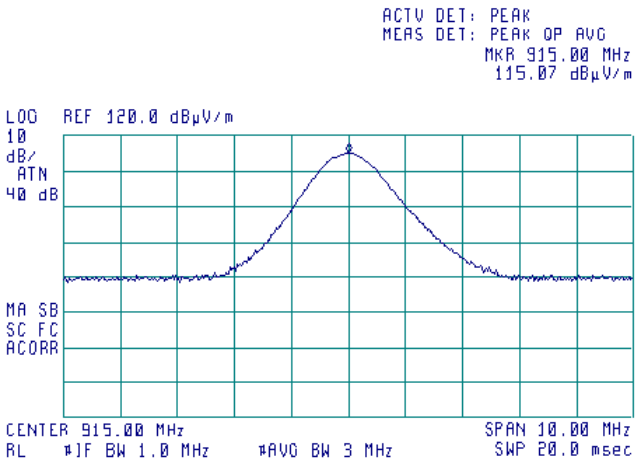
Plot 7.6.19 Field strength of carrier at mid frequency

CONFIGURATION: FHSS 240 channels
BIT RATE: 9600 bps
ANTENNA POLARIZATION: Vertical and Horizontal



Plot 7.6.20 Field strength of carrier at mid frequency

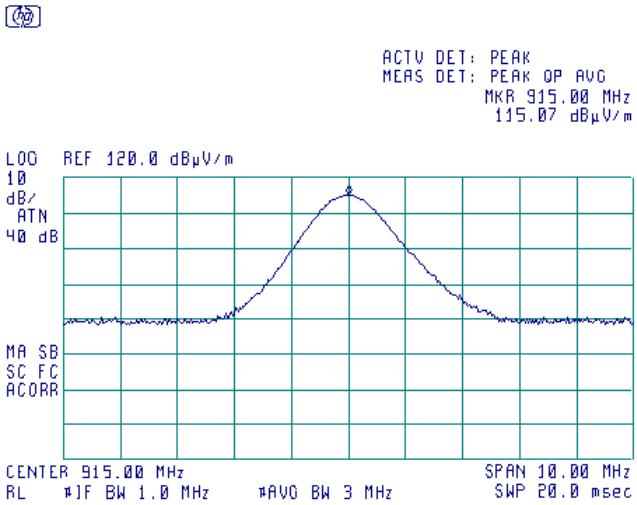
CONFIGURATION: FHSS 240 channels
BIT RATE: 19200 bps
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	Section 15.247(b), RSS-210 section A8.4(1), Peak output power		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	6/1/2011 - 6/26/2011		
Temperature: 23.3 ºC	Air Pressure: 1005 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

Plot 7.6.21 Field strength of carrier at mid frequency

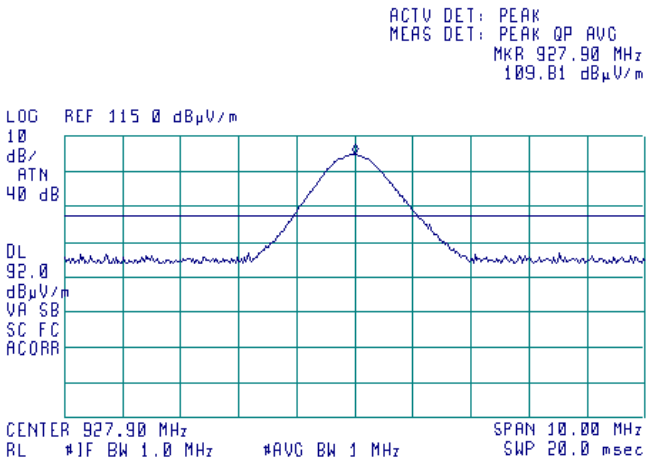
CONFIGURATION: FHSS 240 channels
BIT RATE: 38400 bps
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	Section 15.247(b), RSS-210 section A8.4(1), Peak output power		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	6/1/2011 - 6/26/2011		
Temperature: 23.3 ºC	Air Pressure: 1005 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

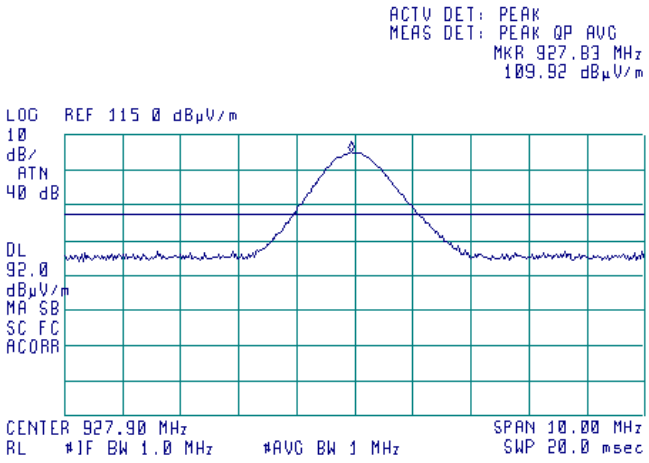
Plot 7.6.22 Field strength of carrier at high frequency

CONFIGURATION: FHSS 240 channels
BIT RATE: 9600 bps
ANTENNA POLARIZATION: Vertical and Horizontal



Plot 7.6.23 Field strength of carrier at high frequency

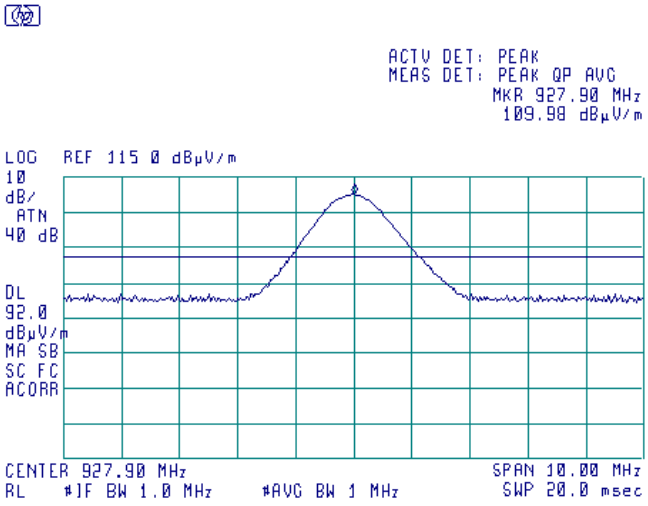
CONFIGURATION: FHSS 240 channels
BIT RATE: 19200 bps
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	Section 15.247(b), RSS-210 section A8.4(1), Peak output power		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	6/1/2011 - 6/26/2011		
Temperature: 23.3 ºC	Air Pressure: 1005 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

Plot 7.6.24 Field strength of carrier at high frequency

CONFIGURATION: FHSS 240 channels
BIT RATE: 38400 bps
ANTENNA POLARIZATION: Vertical and Horizontal



Test specification:	Section 15.247(d), RSS-210 section A8.5, Emissions at band edges		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	6/5/2011 - 6/26/2011		
Temperature: 23.5 ºC	Air Pressure: 1011 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

7.7 Band edge radiated emissions

7.7.1 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 7.7.1.

Table 7.7.1 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.

7.7.2 Test procedure

7.7.2.1 The EUT was set up as shown in Figure 7.7.1, energized normally modulated at the maximum data rate with its hopping function disabled and its proper operation was checked.

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

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

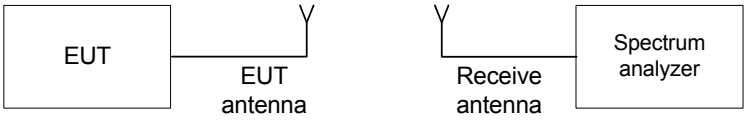
7.7.2.4 The spectrum analyzer was set in max hold mode and allowed trace to stabilize. The highest emission level within the authorized band was measured.

7.7.2.5 The maximum band edge emission and modulation product outside of the band were measured as provided in Table 7.7.2 and the associated plots and referenced to the highest emission level measured within the authorized band.

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

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

Figure 7.7.1 Band edge emission test setup



Test specification:	Section 15.247(d), RSS-210 section A8.5, Emissions at band edges		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	6/5/2011 - 6/26/2011		
Temperature: 23.5 ºC	Air Pressure: 1011 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

Table 7.7.2 Band edge emission test results

ASSIGNED FREQUENCY RANGE: 902 – 928 MHz
DETECTOR USED: Peak
MODULATING SIGNAL: PRBS
TRANSMITTER OUTPUT POWER SETTINGS: Maximum
RESOLUTION BANDWIDTH: ≥ 1% of the span
VIDEO BANDWIDTH: ≥ RBW
CONFIGURATION: FHSS 86 channels

MODULATION: FSK

Frequency, MHz	Bit rate, bps	Band edge emission, dBm	Emission at carrier, dBm	Attenuation below carrier, dBc	Limit, dBc	Margin, dB*	Verdict
Frequency hopping disabled							
902.3	9600	83.23	111.97	28.74	20.0	8.74	Pass
927.8		83.22		28.75		8.75	Pass
902.3	19200	83.58		28.39		8.39	Pass
927.8		84.02		27.95		7.95	Pass
902.3	38400	85.48		26.49		6.49	Pass
927.8		84.65		27.32		7.32	Pass
Frequency hopping enabled							
902.3	9600	83.76	111.97	28.21	20.0	8.21	Pass
927.8		75.57		36.40		16.40	Pass
902.3	19200	82.61		29.36		9.36	Pass
927.8		75.37		36.60		16.60	Pass
902.3	38400	90.52		21.45		1.45	Pass
927.8		76.72		35.25		15.25	Pass

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

MODULATION: GFSK
BIT RATE: 115200 bps

Frequency, MHz	Band edge emission, dBm	Emission at carrier, dBm	Attenuation below carrier, dBc	Limit, dBc	Margin, dB*	Verdict
Frequency hopping disabled						
902.3	72.49	111.76	39.48	20.0	19.48	Pass
927.8	75.31		36.66		16.66	
Frequency hopping enabled						
902.3	75.13	111.76	36.84	20.0	16.84	Pass
927.8	74.69		37.28		17.28	

Test specification:	Section 15.247(d), RSS-210 section A8.5, Emissions at band edges		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	6/5/2011 - 6/26/2011		
Temperature: 23.5 ºC	Air Pressure: 1011 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

Table 7.7.2 Band edge emission test results (continued)

CONFIGURATION: FHSS 240 channels
MODULATION: FSK

Frequency, MHz	Bit rate, bps	Band edge emission, dBm	Emission at carrier, dBm	Attenuation below carrier, dBc	Limit, dBc	Margin, dB*	Verdict
Frequency hopping disabled							
902.3	9600	70.40	113.72	41.57	20.0	21.57	Pass
927.8		75.86		36.11		16.11	Pass
902.3	19200	70.52		41.45		21.45	Pass
927.8		81.10		30.87		10.87	Pass
902.3	38400	70.59		41.38		21.38	Pass
927.8		84.34		27.63		7.63	Pass
Frequency hopping enabled							
902.3	9600	73.34	113.72	38.63	20.0	18.63	Pass
927.8		73.06		38.91		18.91	Pass
902.3	19200	72.83		39.14		19.14	Pass
927.8		72.97		39.00		19.00	Pass
902.3	38400	72.62		39.35		19.35	Pass
927.8		83.21		28.76		8.76	Pass

Reference numbers of test equipment used

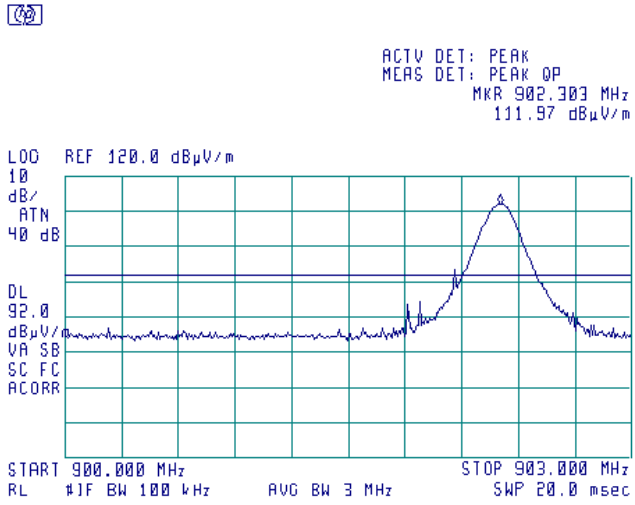
HL 0415	HL 0521	HL 0583	HL 0604	HL 0812	HL 1431	HL 2871	HL 3623

Full description is given in Appendix A.

Test specification:	Section 15.247(d), RSS-210 section A8.5, Emissions at band edges		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	6/5/2011 - 6/26/2011		
Temperature: 23.5 ºC	Air Pressure: 1011 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

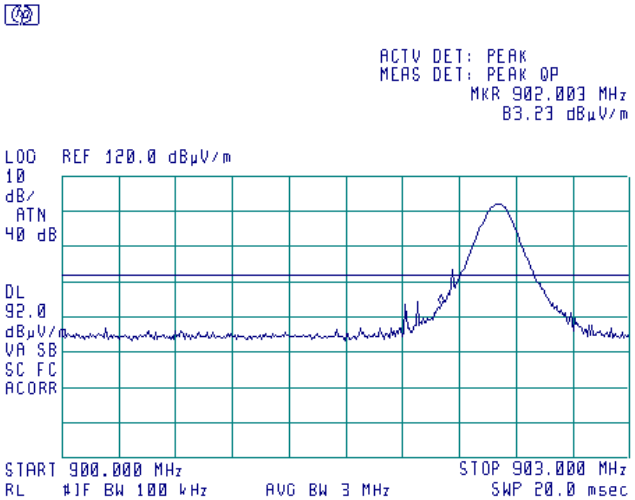
Plot 7.7.1 The highest emission level within the assigned band at low carrier frequency

CONFIGURATION: FHSS 86 channels
BIT RATE: 9600 bps



Plot 7.7.2 The highest band edge emission at low carrier frequency with hopping function disabled

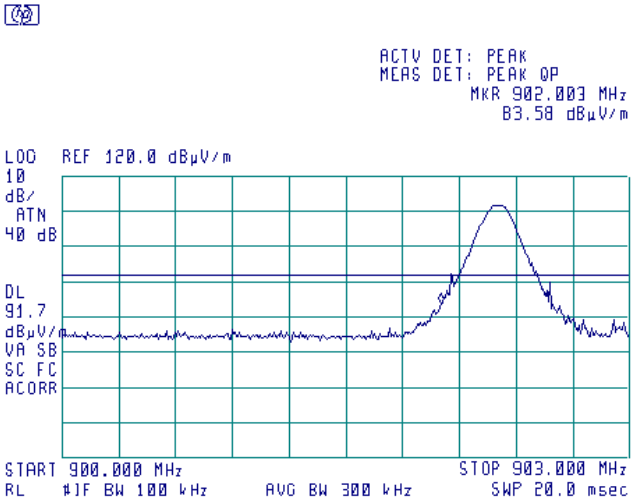
CONFIGURATION: FHSS 86 channels
BIT RATE: 9600 bps



Test specification:	Section 15.247(d), RSS-210 section A8.5, Emissions at band edges		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	6/5/2011 - 6/26/2011		
Temperature: 23.5 ºC	Air Pressure: 1011 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

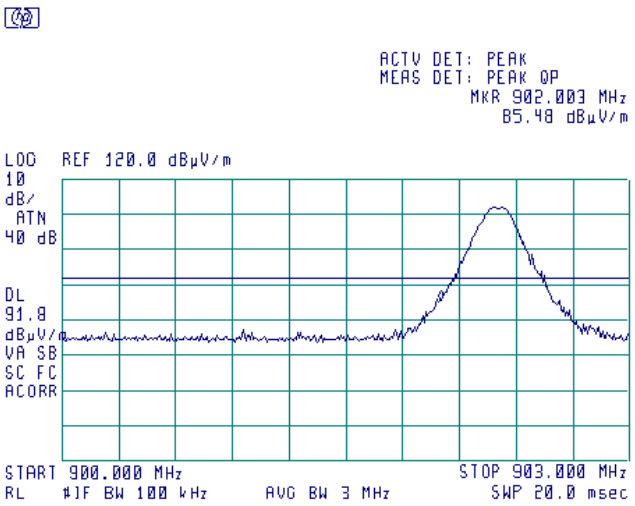
Plot 7.7.3 The highest band edge emission at low carrier frequency with hopping function disabled

CONFIGURATION: FHSS 86 channels
BIT RATE: 19200 bps



Plot 7.7.4 The highest band edge emission at low carrier frequency with hopping function disabled

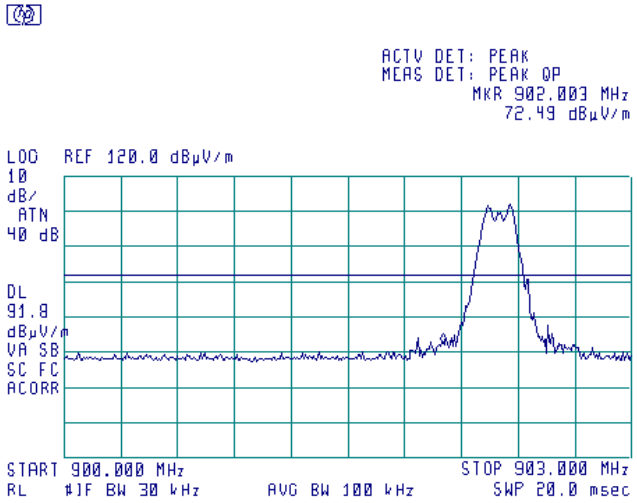
CONFIGURATION: FHSS 86 channels
BIT RATE: 38400 bps



Test specification:	Section 15.247(d), RSS-210 section A8.5, Emissions at band edges		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	6/5/2011 - 6/26/2011		
Temperature: 23.5 ºC	Air Pressure: 1011 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

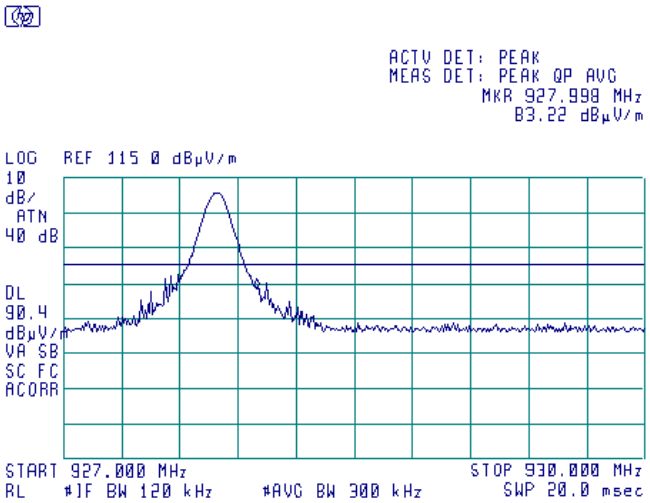
Plot 7.7.5 The highest band edge emission at low carrier frequency with hopping function disabled

CONFIGURATION: FHSS 86 channels
BIT RATE: 115200 bps



Plot 7.7.6 The highest band edge emission at high carrier frequency with hopping function disabled

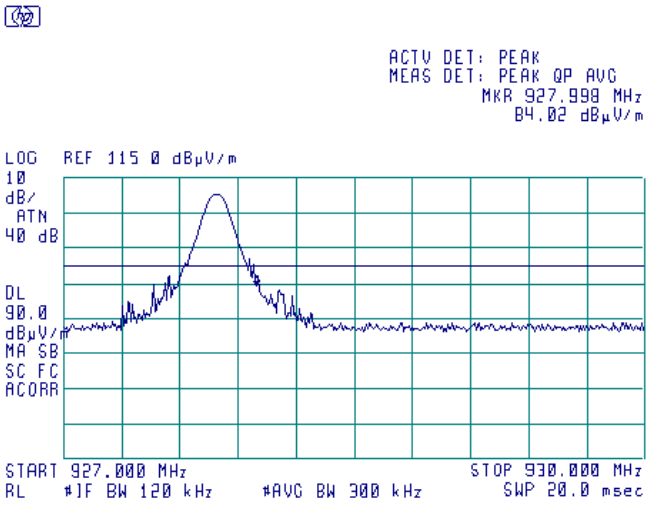
CONFIGURATION: FHSS 86 channels
BIT RATE: 9600 bps



Test specification:	Section 15.247(d), RSS-210 section A8.5, Emissions at band edges		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	6/5/2011 - 6/26/2011		
Temperature: 23.5 ºC	Air Pressure: 1011 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

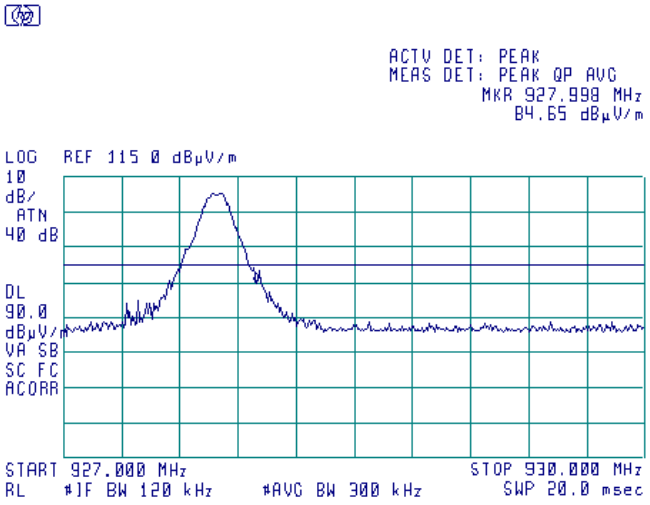
Plot 7.7.7 The highest band edge emission at high carrier frequency with hopping function disabled

CONFIGURATION: FHSS 86 channels
BIT RATE: 19200 bps



Plot 7.7.8 The highest band edge emission at high carrier frequency with hopping function disabled

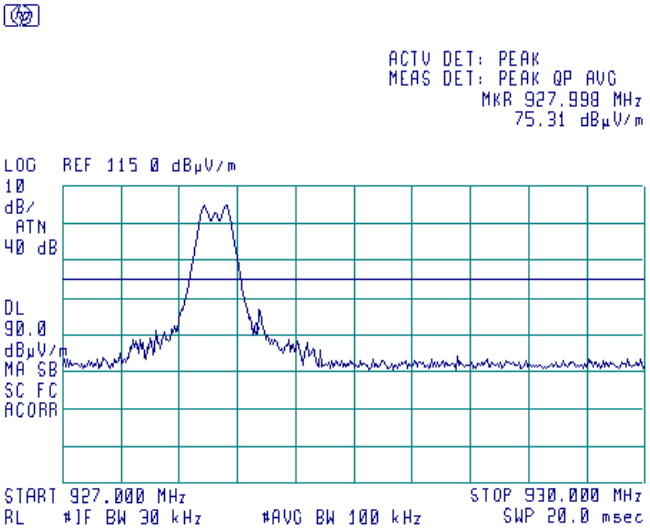
CONFIGURATION: FHSS 86 channels
BIT RATE: 38400 bps



Test specification:	Section 15.247(d), RSS-210 section A8.5, Emissions at band edges		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	6/5/2011 - 6/26/2011		
Temperature: 23.5 ºC	Air Pressure: 1011 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

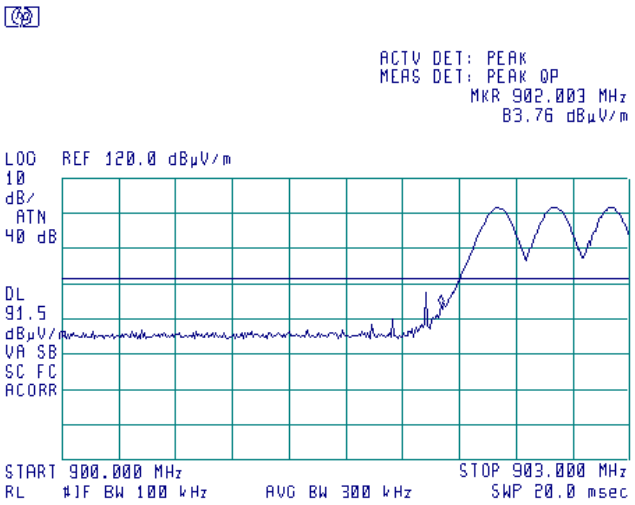
Plot 7.7.9 The highest band edge emission at high carrier frequency with hopping function disabled

CONFIGURATION: FHSS 86 channels
BIT RATE: 115200 bps



Plot 7.7.10 The highest band edge emission at low carrier frequency with hopping function enabled

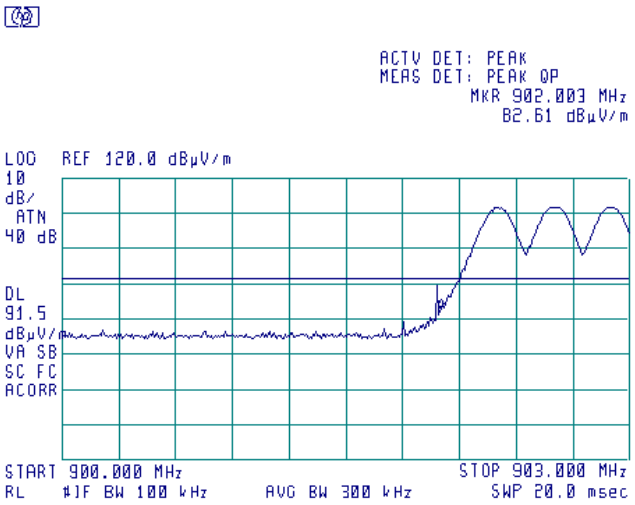
CONFIGURATION: FHSS 86 channels
BIT RATE: 9600 bps



Test specification:	Section 15.247(d), RSS-210 section A8.5, Emissions at band edges		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	6/5/2011 - 6/26/2011		
Temperature: 23.5 ºC	Air Pressure: 1011 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

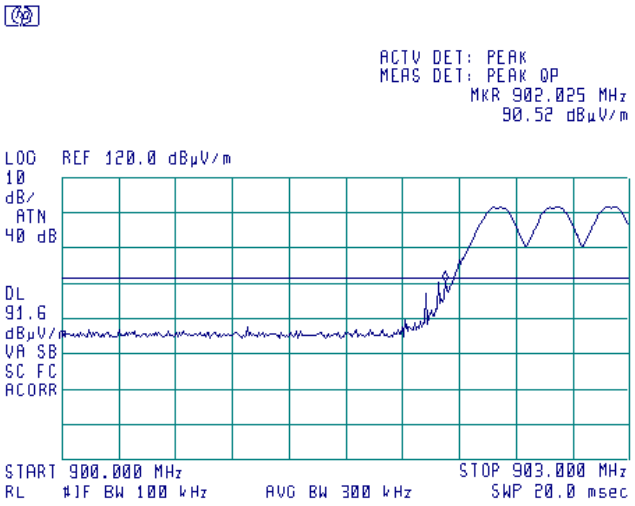
Plot 7.7.11 The highest band edge emission at low carrier frequency with hopping function enabled

CONFIGURATION: FHSS 86 channels
BIT RATE: 19200 bps



Plot 7.7.12 The highest band edge level at low carrier frequency with hopping function enabled

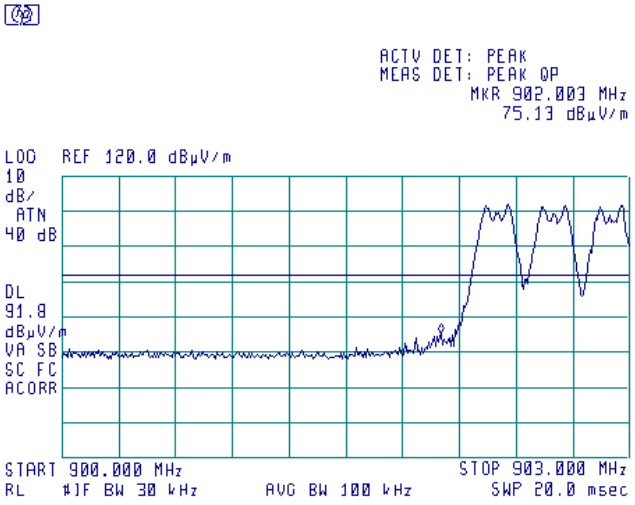
CONFIGURATION: FHSS 86 channels
BIT RATE: 38400 bps



Test specification:	Section 15.247(d), RSS-210 section A8.5, Emissions at band edges		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	6/5/2011 - 6/26/2011		
Temperature: 23.5 ºC	Air Pressure: 1011 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

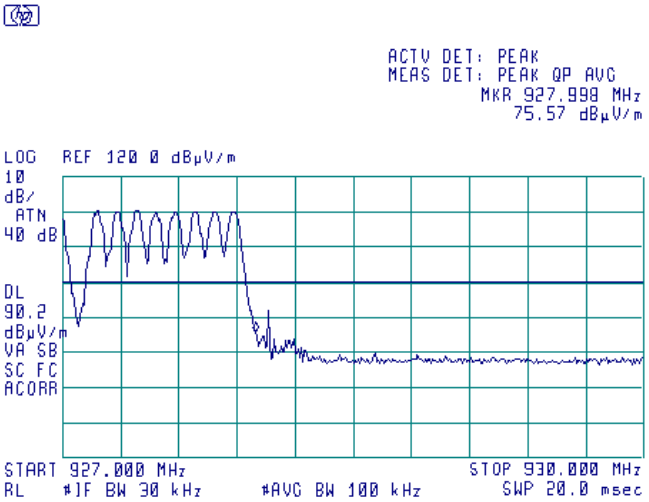
Plot 7.7.13 The highest band edge level at low carrier frequency with hopping function enabled

CONFIGURATION: FHSS 86 channels
BIT RATE: 115200 bps



Plot 7.7.14 The highest band edge level at high carrier frequency with hopping function enabled

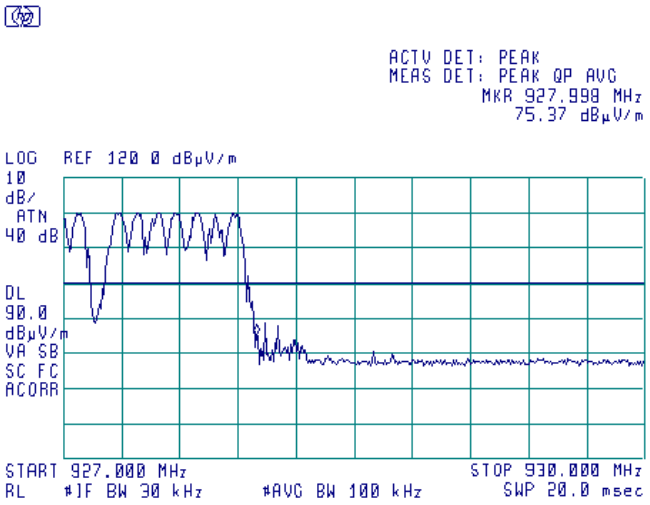
CONFIGURATION: FHSS 86 channels
BIT RATE: 9600 bps



Test specification:	Section 15.247(d), RSS-210 section A8.5, Emissions at band edges		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	6/5/2011 - 6/26/2011		
Temperature: 23.5 ºC	Air Pressure: 1011 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

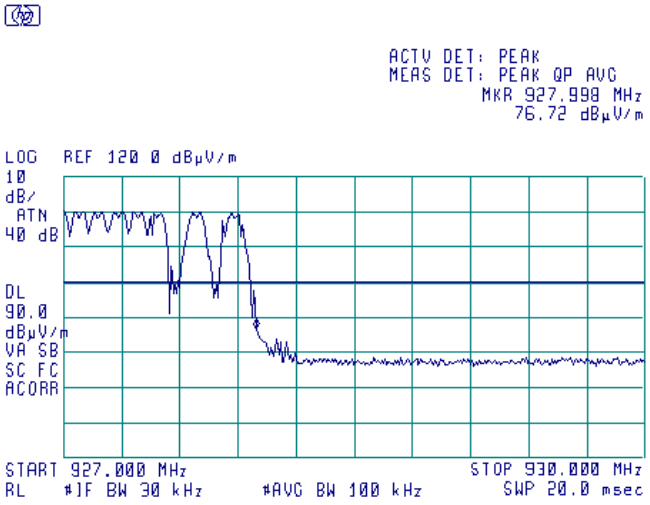
Plot 7.7.15 The highest band edge level at high carrier frequency with hopping function enabled

CONFIGURATION: FHSS 86 channels
BIT RATE: 19200 bps



Plot 7.7.16 The highest band edge level at high carrier frequency with hopping function enabled

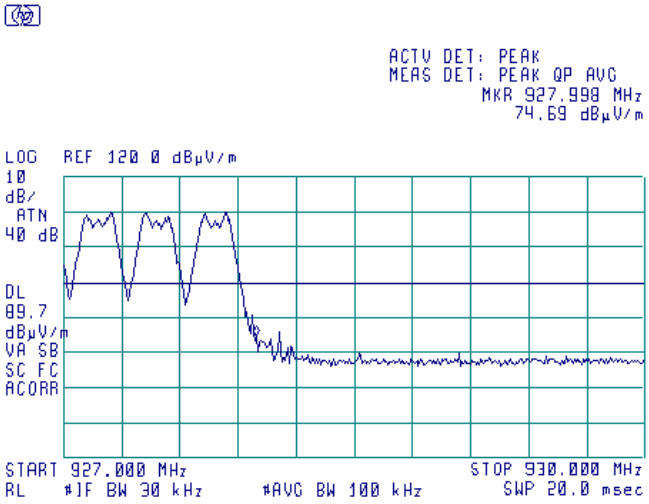
CONFIGURATION: FHSS 86 channels
BIT RATE: 38400 bps



Test specification:	Section 15.247(d), RSS-210 section A8.5, Emissions at band edges		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	6/5/2011 - 6/26/2011		
Temperature: 23.5 ºC	Air Pressure: 1011 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

Plot 7.7.17 The highest band edge level at high carrier frequency with hopping function enabled

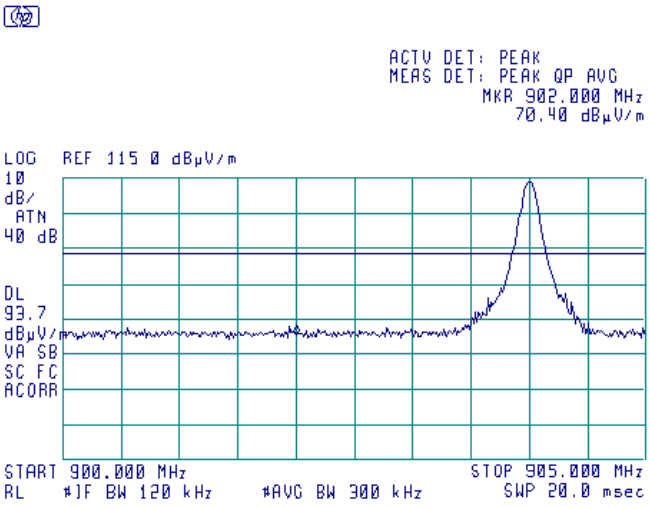
CONFIGURATION: FHSS 86 channels
BIT RATE: 115200 bps



Test specification:	Section 15.247(d), RSS-210 section A8.5, Emissions at band edges		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	6/5/2011 - 6/26/2011		
Temperature: 23.5 ºC	Air Pressure: 1011 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

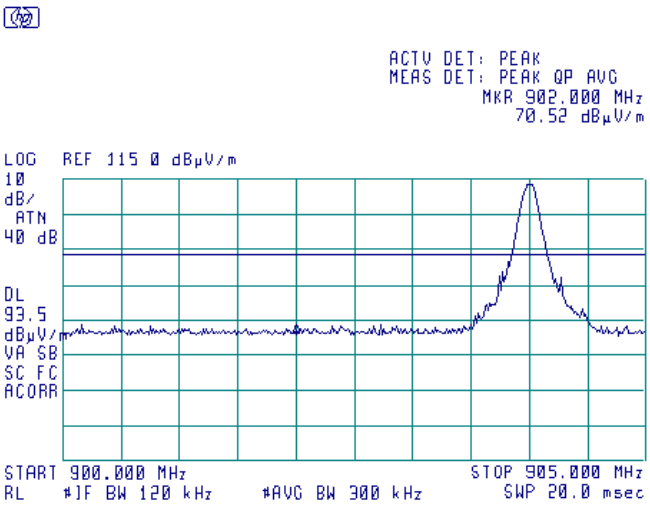
Plot 7.7.18 The highest band edge emission at low carrier frequency with hopping function disabled

CONFIGURATION: FHSS 240 channels
BIT RATE: 9600 bps



Plot 7.7.19 **The highest band edge emission at low carrier frequency with hopping function disabled**

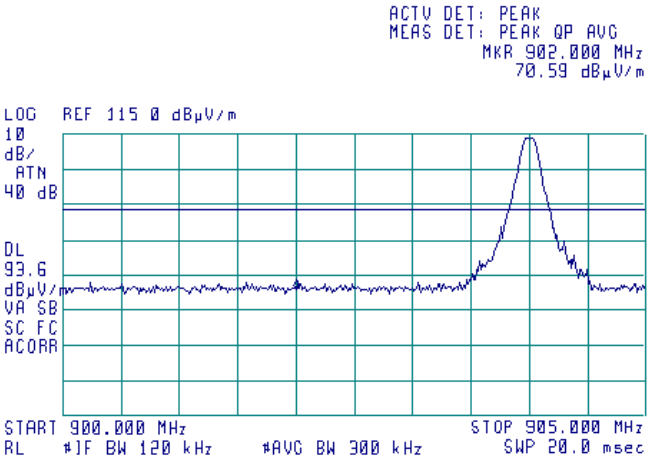
CONFIGURATION: FHSS 240 channels
BIT RATE: 19200 bps



Test specification:	Section 15.247(d), RSS-210 section A8.5, Emissions at band edges		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	6/5/2011 - 6/26/2011		
Temperature: 23.5 ºC	Air Pressure: 1011 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

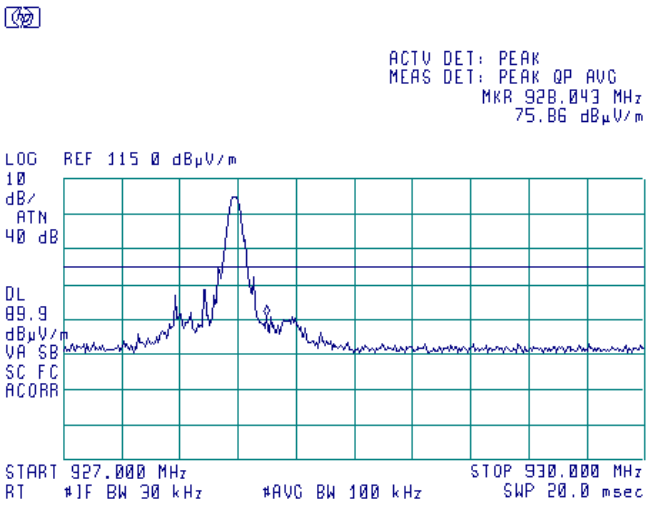
Plot 7.7.20 The highest band edge emission at low carrier frequency with hopping function disabled

CONFIGURATION: FHSS 240 channels
BIT RATE: 38400 bps



Plot 7.7.21 The highest band edge emission at high carrier frequency with hopping function disabled

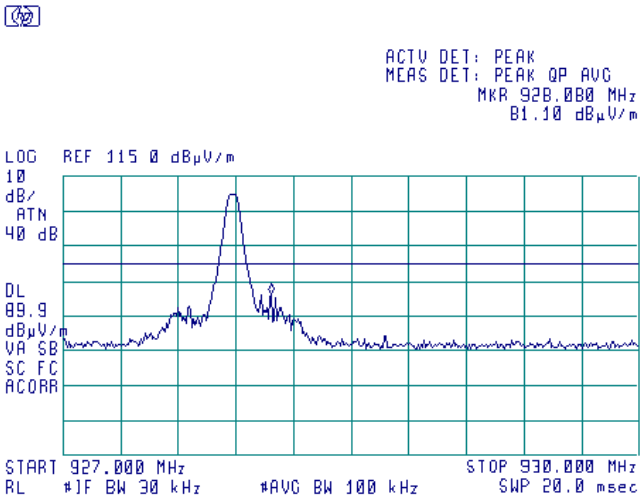
CONFIGURATION: FHSS 240 channels
BIT RATE: 9600 bps



Test specification:	Section 15.247(d), RSS-210 section A8.5, Emissions at band edges		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	6/5/2011 - 6/26/2011		
Temperature: 23.5 ºC	Air Pressure: 1011 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

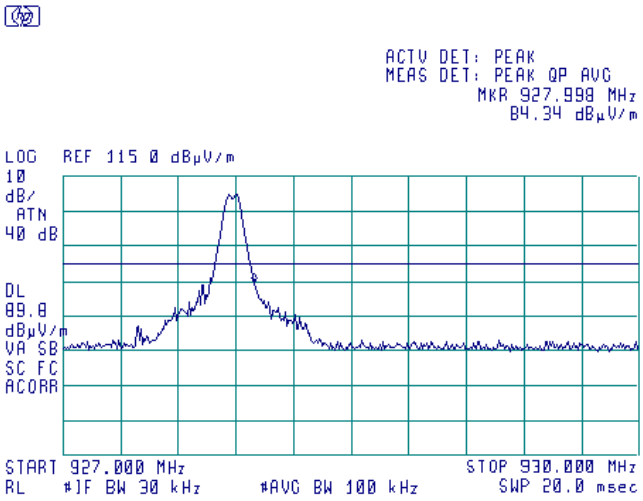
Plot 7.7.22 The highest band edge emission at high carrier frequency with hopping function disabled

CONFIGURATION: FHSS 240 channels
BIT RATE: 19200 bps



Plot 7.7.23 The highest band edge emission at high carrier frequency with hopping function disabled

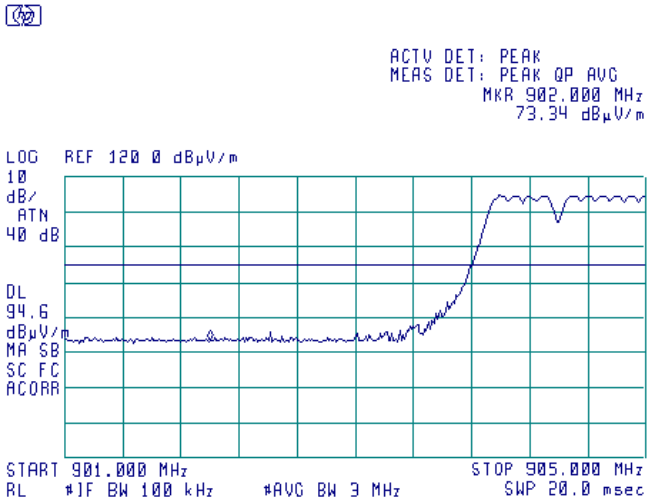
CONFIGURATION: FHSS 240 channels
BIT RATE: 38400 bps



Test specification:	Section 15.247(d), RSS-210 section A8.5, Emissions at band edges		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	6/5/2011 - 6/26/2011		
Temperature: 23.5 ºC	Air Pressure: 1011 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

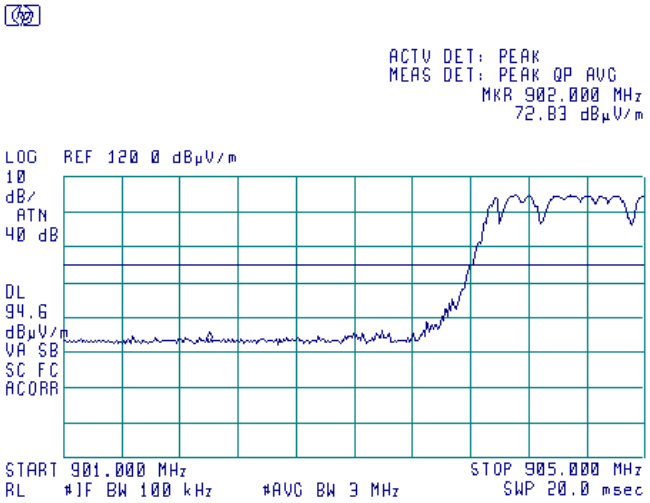
Plot 7.7.24 The highest band edge emission at low carrier frequency with hopping function enabled

CONFIGURATION: FHSS 240 channels
BIT RATE: 9600 bps



Plot 7.7.25 The highest band edge emission at low carrier frequency with hopping function enabled

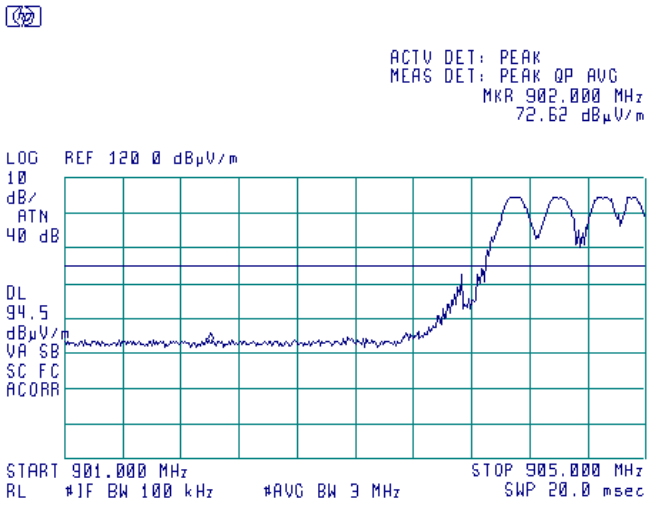
CONFIGURATION: FHSS 240 channels
BIT RATE: 19200 bps



Test specification:	Section 15.247(d), RSS-210 section A8.5, Emissions at band edges		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	6/5/2011 - 6/26/2011		
Temperature: 23.5 ºC	Air Pressure: 1011 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

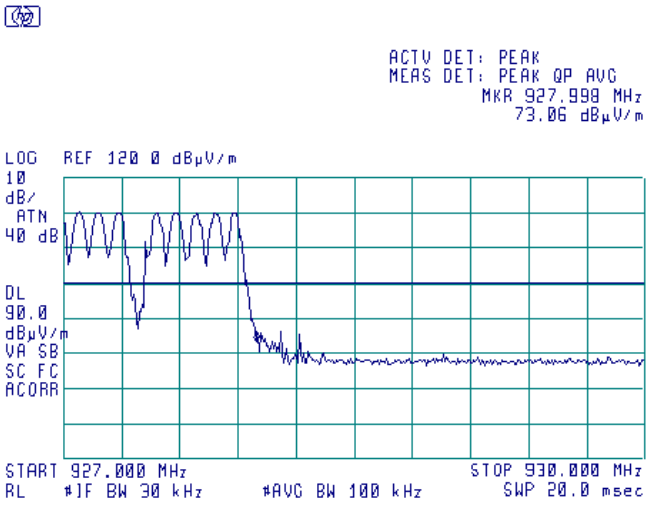
Plot 7.7.26 The highest band edge emission at low carrier frequency with hopping function enabled

CONFIGURATION: FHSS 240 channels
BIT RATE: 38400 bps



Plot 7.7.27 The highest band edge level at high carrier frequency with hopping function enabled

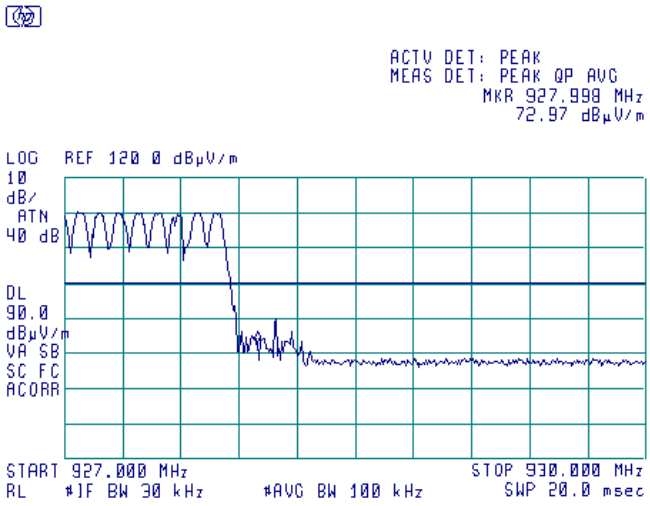
CONFIGURATION: FHSS 240 channels
BIT RATE: 9600 bps



Test specification:	Section 15.247(d), RSS-210 section A8.5, Emissions at band edges		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	6/5/2011 - 6/26/2011		
Temperature: 23.5 ºC	Air Pressure: 1011 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

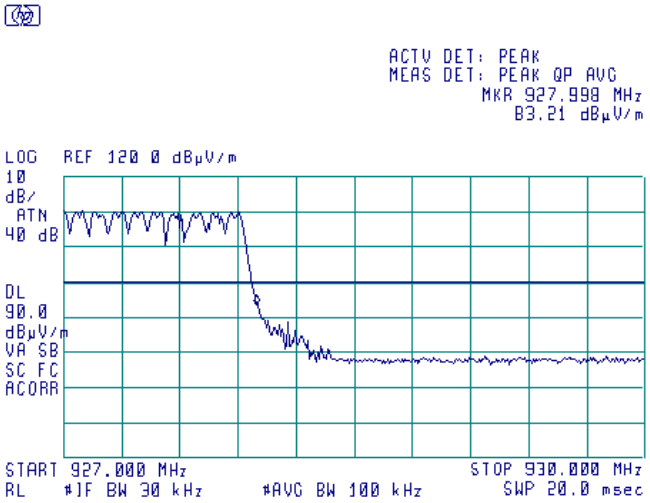
Plot 7.7.28 The highest band edge level at high carrier frequency with hopping function enabled

CONFIGURATION: FHSS 240 channels
BIT RATE: 19200 bps



Plot 7.7.29 The highest band edge level at high carrier frequency with hopping function enabled

CONFIGURATION: FHSS 240 channels
BIT RATE: 38400 bps



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

7.8 Field strength of spurious emissions

7.8.1 General

This test was performed to measure field strength of spurious emissions from the EUT. Specification test limits are given in Table 7.8.1.

Table 7.8.1 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.

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

7.8.2.1 The EUT was set up as shown in Figure 7.8.1, energized and the performance check was conducted.

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

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

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

7.8.3.1 The EUT was set up as shown in Figure 7.8.2, energized and the performance check was conducted.

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

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

Test specification:	Section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

Figure 7.8.1 Setup for spurious emission field strength measurements below 30 MHz

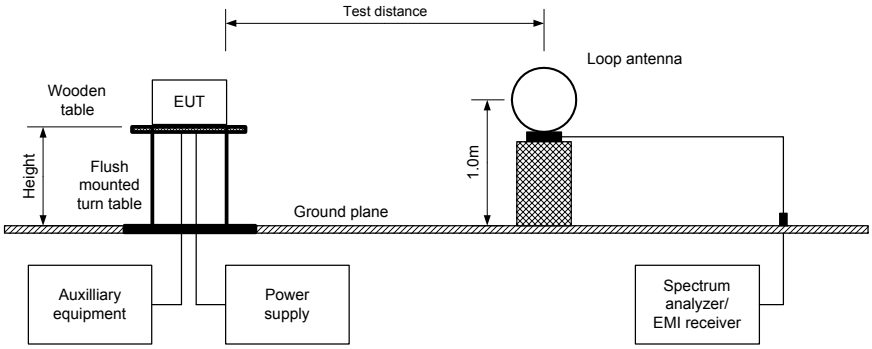
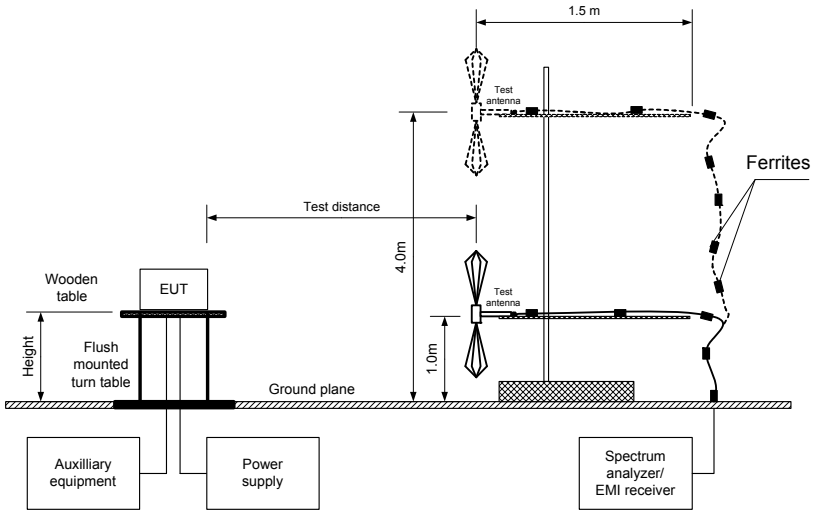


Figure 7.8.2 Setup for spurious emission field strength measurements above 30 MHz



Test specification:	Section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

Table 7.8.2 Field strength of emissions outside restricted bands

ASSIGNED FREQUENCY:	902 - 928 MHz
INVESTIGATED FREQUENCY RANGE:	0.009 - 10000 MHz
TEST DISTANCE:	3 m
MODULATION:	FHSS
MODULATING SIGNAL:	PRBS
BIT RATE:	115200 bps
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									
1804.613	77.05	Vert	1.0	214	112.79	35.74	20.0	-15.74	Pass
6316.120	62.84	Hor	1.0	46	111.44	48.60		-28.60	
7218.430	65.45	Vert	1.0	182	112.79	47.34		-27.34	
Mid carrier frequency									
1829.800	77.53	Vert	1.0	283	115.6	38.07	20.0	38.07	Pass
5489.350	62.65	Vert	1.0	43	115.6	52.95		52.95	
6404.225	57.50	Hor	1.0	46	114.08	56.58		56.58	
High carrier frequency									
1855.513	79.21	Vert	1.0	200	114.48	35.27	20.0	-15.27	Pass
5566.735	60.30	Vert	1.0	283	114.48	54.18		-34.18	
6494.590	58.31	Hor	1.1	54	111.21	52.90		-32.90	

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

Test specification:	**Section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions**		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	**Verdict:**	PASS
Date:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	**Air Pressure:** 1013 hPa	**Relative Humidity:** 44 %	**Power Supply:** Battery
Remarks:			

Table 7.8.3 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:	FHSS
MODULATING SIGNAL:	PRBS
BIT RATE:	115200 bps
TRANSMITTER OUTPUT POWER SETTINGS:	Maximum
DETECTOR USED:	Peak
RESOLUTION BANDWIDTH:	1000 kHz
TEST ANTENNA TYPE:	Double ridged guide
FREQUENCY HOPPING:	Disabled

Frequency MHz	Antenna		Azimuth degrees*	Peak field strength(VBW=3 MHz			Average field strength(VBW=1 kHz)				Verdict
	Polarization	Height m		Measured dB(µV/m)	Limit, dB(µV/m	Margin, dB**	Measured dB(µV/m)	Calculated dB(µV/m)	Limit, dB(µV/m	Margin dB***	
Low carrier frequency											
2706.808	Vert	1.2	60	64.00	74.0	-10.00	63.17	36.81	54.0	-17.19	Pass
3609.150	Vert	1.1	240	69.67	74.0	-4.33	69.50	43.14	54.0	-10.86	
4511.475	Vert	1.2	0	72.15	74.0	-1.85	71.82	45.46	54.0	-8.54	
5413.760	Vert	1.0	23	64.51	74.0	-9.49	61.23	34.87	54.0	-19.13	
8120.750	Vert	1.2	90	64.44	74.0	-9.56	63.78	37.42	54.0	-16.58	
9023.025	Vert	1.0	90	60.28	74.0	-13.72	58.98	32.62	54.0	-21.38	
Mid carrier frequency											
2744.592	Vert	1.2	210	65.67	74.0	-8.33	65.50	39.14	54.0	-14.86	Pass
3659.367	Vert	1.1	220	71.67	74.0	-2.33	71.33	44.97	54.0	-9.03	
4574.475	Vert	1.2	0	71.92	74.0	-2.08	71.73	45.37	54.0	-8.63	
7319.185	Vert	1.1	17	67.42	74.0	-6.58	66.50	40.14	54.0	-13.86	
8234.050	Vert	1.2	90	65.89	74.0	-8.11	64.87	38.51	54.0	-15.49	
High carrier frequency											
2783.308	Vert	1.2	60	65.67	74.0	-8.33	65.50	39.14	54.0	-14.86	Pass
3711.042	Vert	1.1	220	70.50	74.0	-3.50	70.33	43.97	54.0	-10.03	
4638.980	Vert	1.2	0	68.23	74.0	-5.77	67.95	41.59	54.0	-12.41	
7422.340	Vert	1.1	29	62.56	74.0	-11.44	61.15	34.79	54.0	-19.21	
8350.150	Vert	1.2	90	57.89	74.0	-16.11	55.98	29.62	54.0	-24.38	

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

Table 7.8.4 Average factor calculation

Transmission pulse		Transmission burst		Transmission train duration, ms	Average factor, dB
Duration, ms	Period, ms	Duration, ms	Period, ms		
4.8	419.8	NA	NA	NA	-26.36

*- Average factor was calculated as follows

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

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

Test specification:	Section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

Table 7.8.5 Field strength of spurious emissions below 1 GHz within restricted bands

ASSIGNED FREQUENCY:	902 – 928 MHz
INVESTIGATED FREQUENCY RANGE:	0.009 – 1000 MHz
TEST DISTANCE:	3 m
MODULATION:	FHSS
MODULATING SIGNAL:	PRBS
BIT RATE:	115200 bps
TRANSMITTER OUTPUT POWER SETTINGS:	Maximum
RESOLUTION BANDWIDTH:	0.2 kHz (9 kHz – 150 kHz) 9.0 kHz (150 kHz – 30 MHz) 120 kHz (30 MHz – 1000 MHz)
VIDEO BANDWIDTH:	> Resolution bandwidth
TEST ANTENNA TYPE:	Active loop (9 kHz – 30 MHz) Biconilog (30 MHz – 1000 MHz)
FREQUENCY HOPPING:	Disabled

Frequency MHz	Peak emission, dB(μV/m)	Quasi-peak			Antenna polarization	Antenna height, m	Turn-table position**, degrees	Verdict
		Measured emission dB(μV/m)	Limit, dB(μV/m)	Margin, dB*				
Low carrier frequency								
405.6	47	44.0	46.0	2.0	Vertical	1.1	73	Pass
Mid carrier frequency								
405.6	45.7	42.0	46.0	4.0	Vertical	1.1	100	Pass
High carrier frequency								
405.7	45.5	41.5	46.0	4.5	Vert	1.0	73	Pass

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

Table 7.8.6 Restricted bands

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

Reference numbers of test equipment used

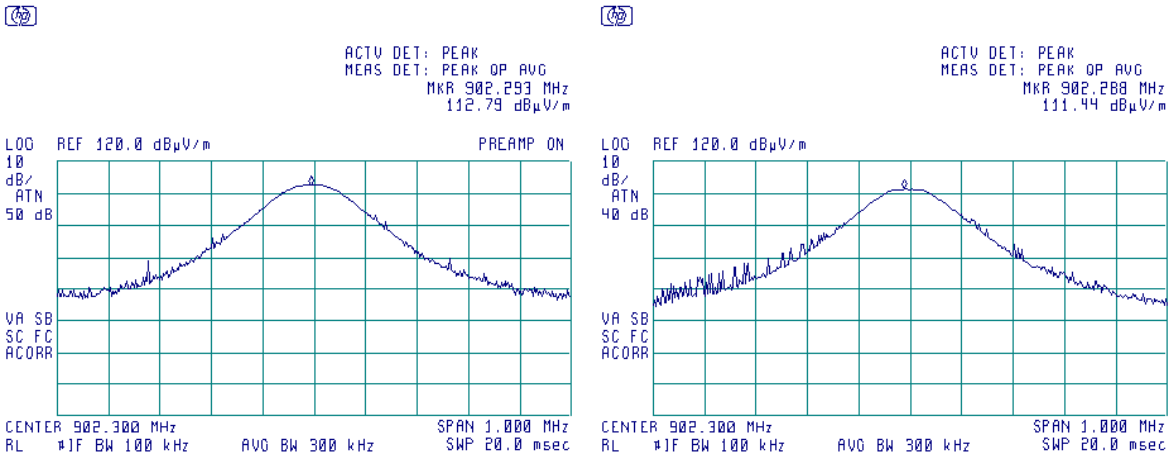
HL 0446	HL 0521	HL 0604	HL 1984	HL 2780	HL 2871	HL 3123	HL 3533
HL 3623	HL 3818	HL 3901					

Full description is given in Appendix A.

Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

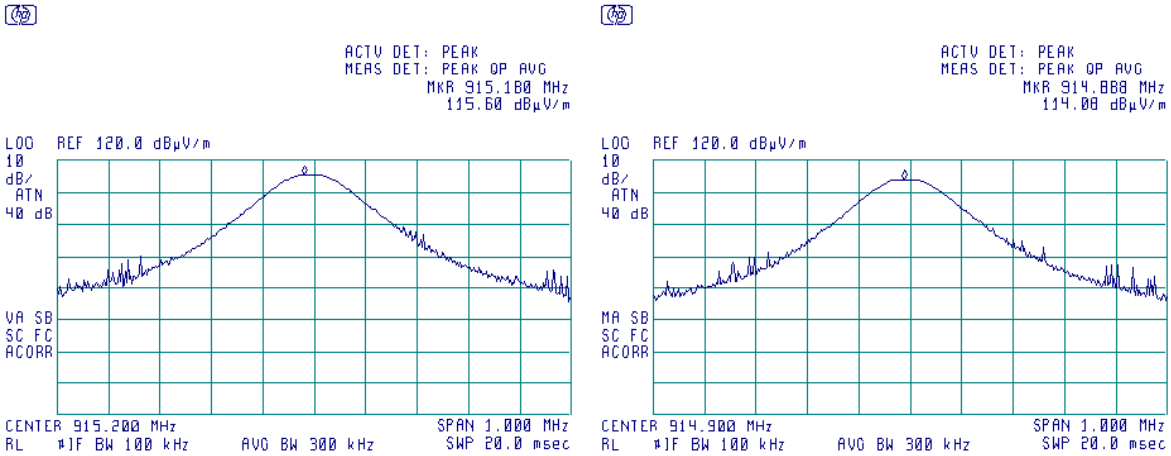
Plot 7.8.1 Radiated emission measurements at the low carrier frequency

TEST SITE:	Semi anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and horizontal
OPERATIONAL MODE:	FHSS
Vertical	Horizontal



Plot 7.8.2 Radiated emission measurements at the mid carrier frequency

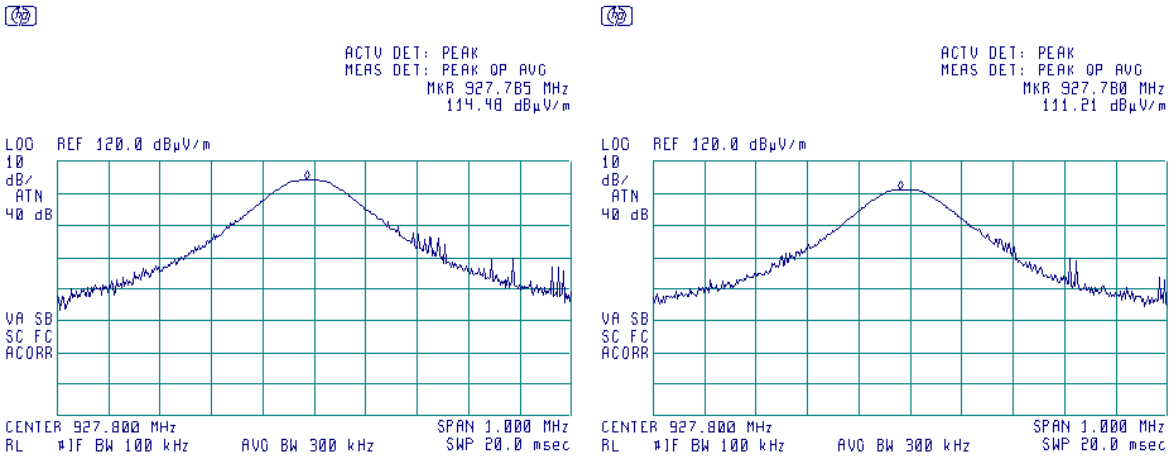
TEST SITE:	Semi anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and horizontal
OPERATIONAL MODE:	FHSS
Vertical	Horizontal



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

Plot 7.8.3 Radiated emission measurements at the high carrier frequency

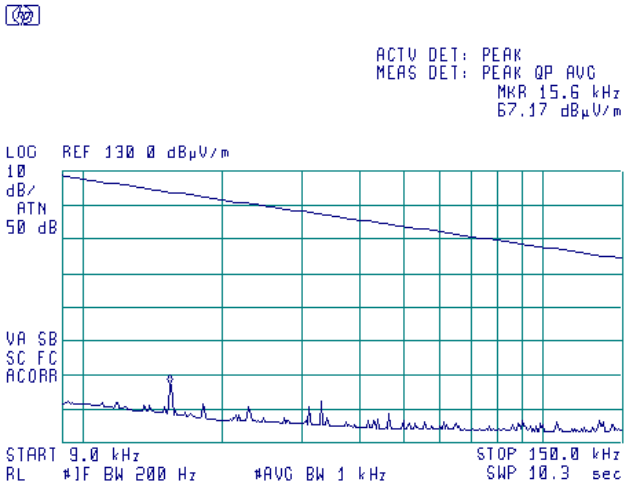
TEST SITE:	Semi anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and horizontal
OPERATIONAL MODE:	FHSS
Vertical	Horizontal



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

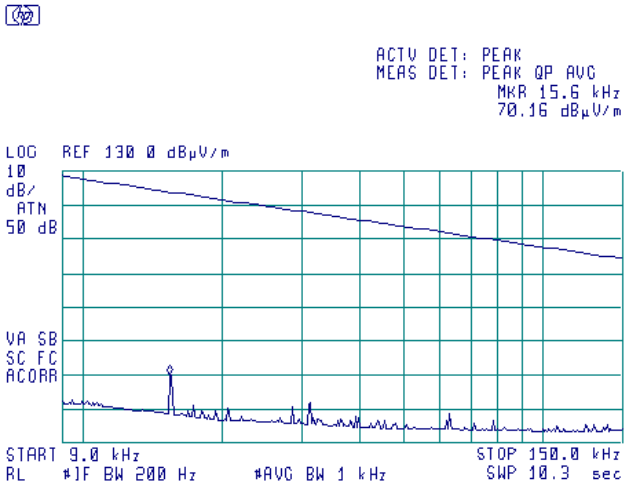
Plot 7.8.4 Radiated emission measurements from 9 to 150 kHz at the low carrier frequency

TEST SITE: Anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: FHSS



Plot 7.8.5 Radiated emission measurements from 9 to 150 kHz at the mid carrier frequency

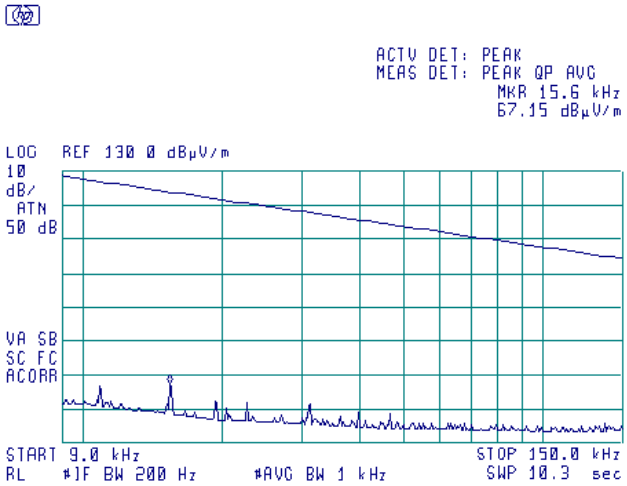
TEST SITE: Anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: FHSS



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

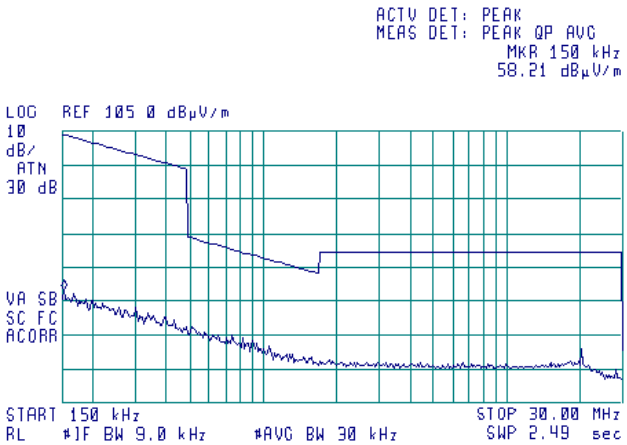
Plot 7.8.6 Radiated emission measurements from 9 to 150 kHz at the high carrier frequency

TEST SITE: Anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: FHSS



Plot 7.8.7 Radiated emission measurements from 0.15 to 30 MHz at the low carrier frequency

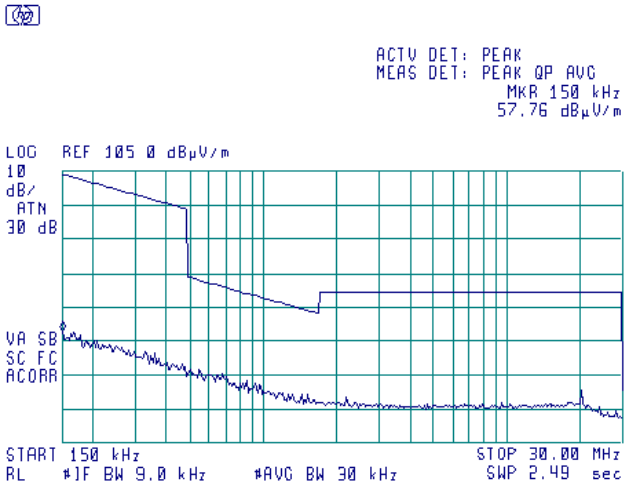
TEST SITE: Anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: FHSS



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

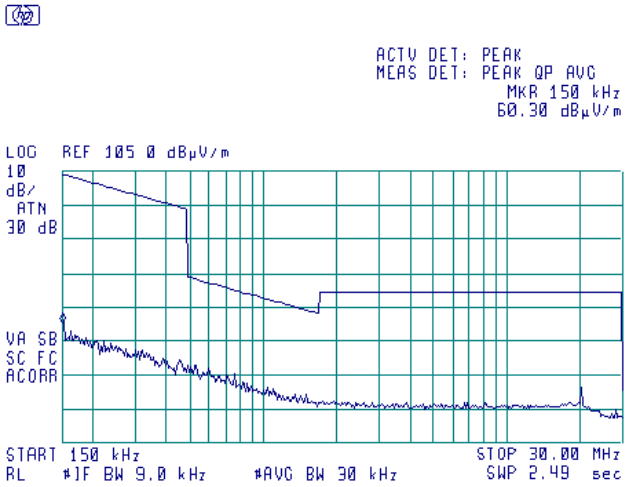
Plot 7.8.8 Radiated emission measurements from 0.15 to 30 MHz at the mid carrier frequency

TEST SITE: Anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: FHSS



Plot 7.8.9 Radiated emission measurements from 0.15 to 30 MHz at the high carrier frequency

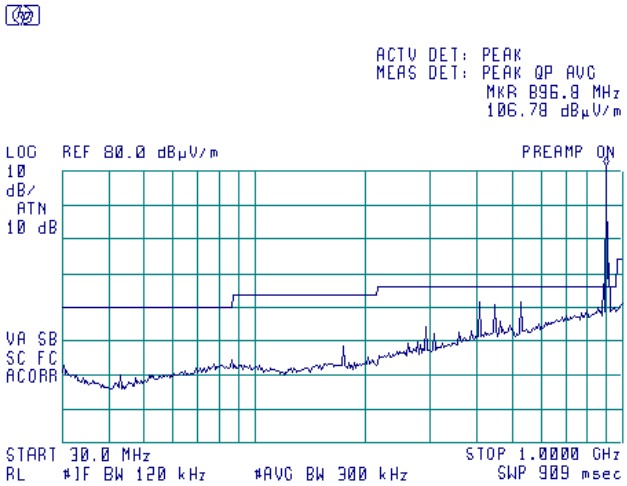
TEST SITE: Anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: FHSS



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

Plot 7.8.10 Radiated emission measurements from 30 to 1000 MHz at the low carrier frequency

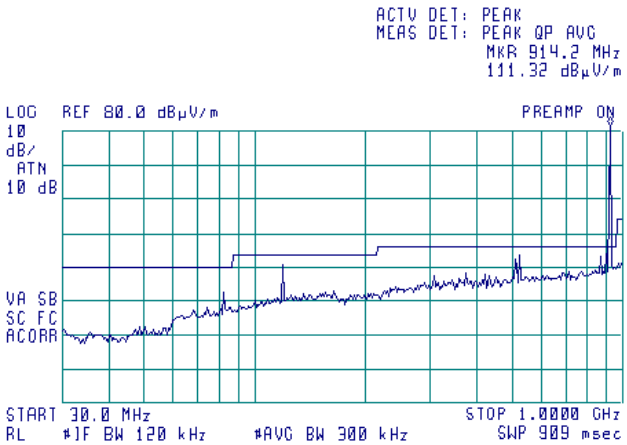
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: FHSS



Note: Due to large span used, the frequency is shifted. Actual frequency of fundamental is 902.3 MHz

Plot 7.8.11 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: FHSS

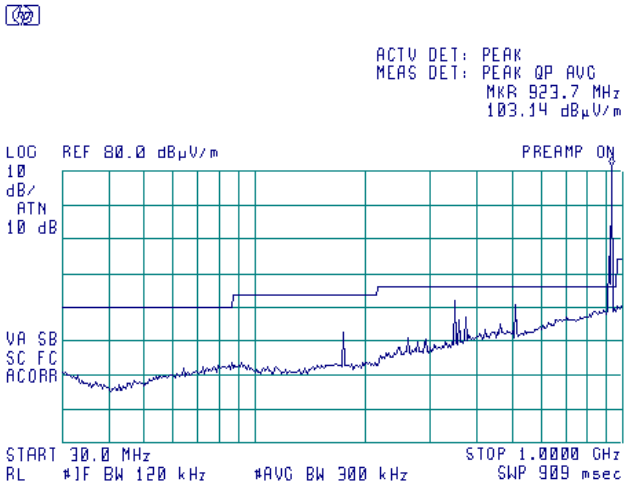


Note: Due to large span used, the frequency is shifted. Actual frequency of fundamental is 915 MHz

Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

Plot 7.8.12 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:	FHSS

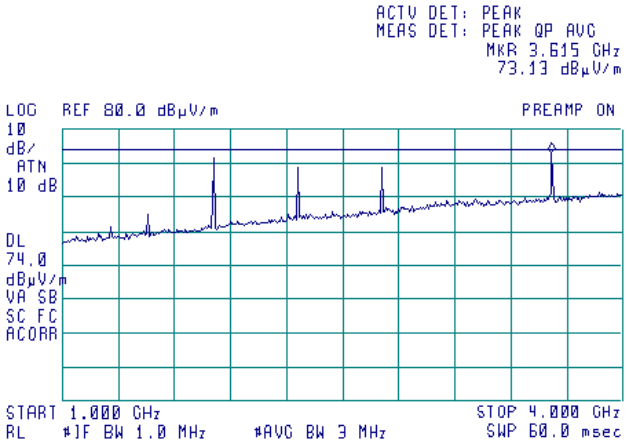


Note: Due to large span used, the frequency is shifted. Actual frequency of fundamental is 927.8 MHz

Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

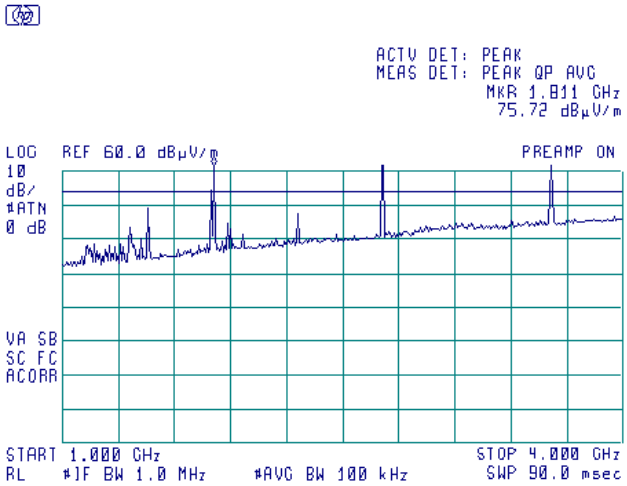
Plot 7.8.13 Radiated emission measurements from 1000 to 4000 MHz at the low carrier frequency

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



Plot 7.8.14 Radiated emission measurements from 1000 to 4000 MHz at the low carrier frequency

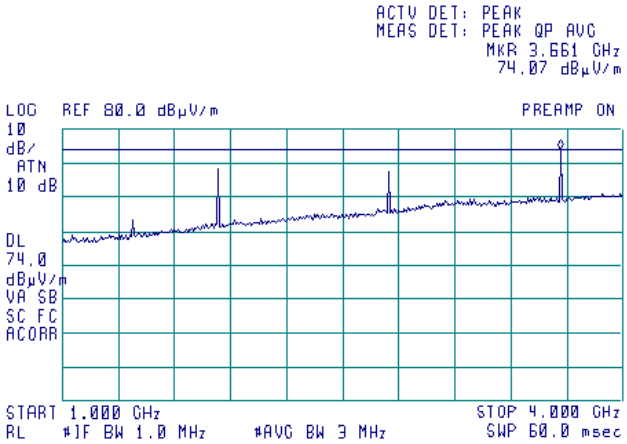
TEST SITE:	Semi anechoic chamber
TEST DISTANCE:	3 m
ANTENNA POLARIZATION:	Vertical and Horizontal
OPERATIONAL MODE:	FHSS
DETECTOR	Average



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

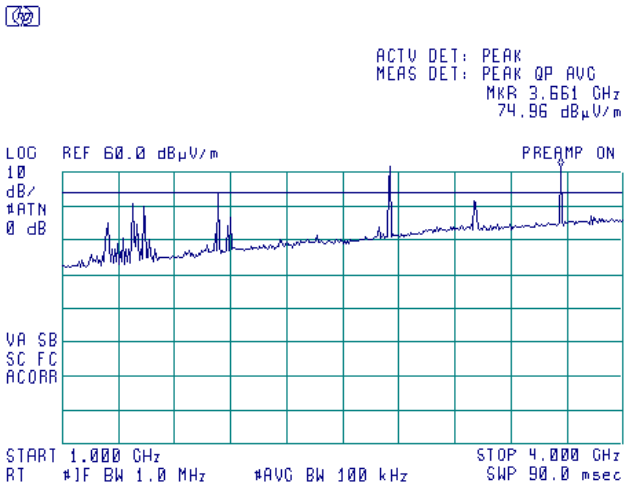
Plot 7.8.15 Radiated emission measurements from 1000 to 4000 MHz at the mid carrier frequency

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



Plot 7.8.16 Radiated emission measurements from 1000 to 4000 MHz at the mid carrier frequency

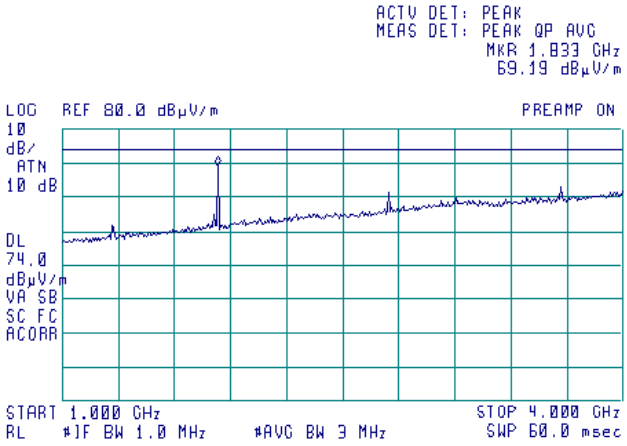
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: FHSS
DETECTOR Average



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

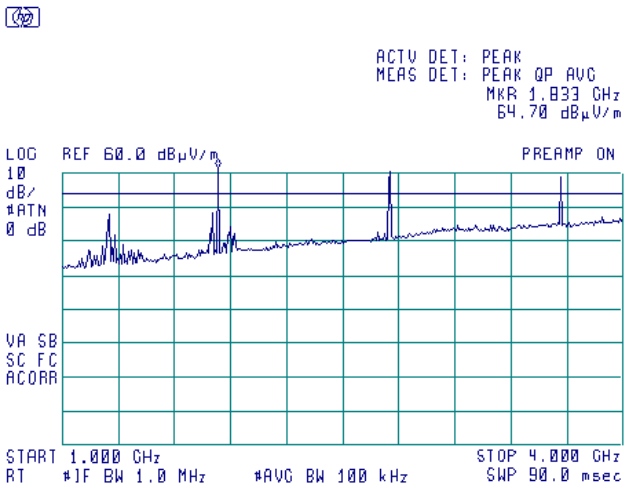
Plot 7.8.17 Radiated emission measurements from 1000 to 4000 MHz at the high carrier frequency

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



Plot 7.8.18 Radiated emission measurements from 1000 to 4000 MHz at the high carrier frequency

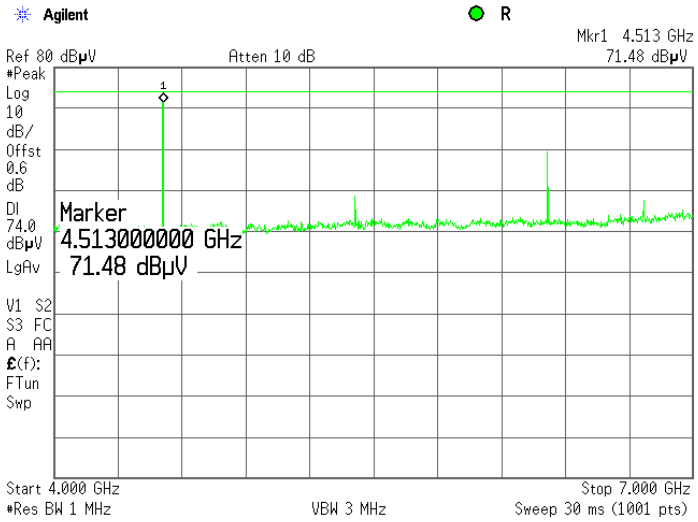
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: FHSS
DETECTOR Average



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

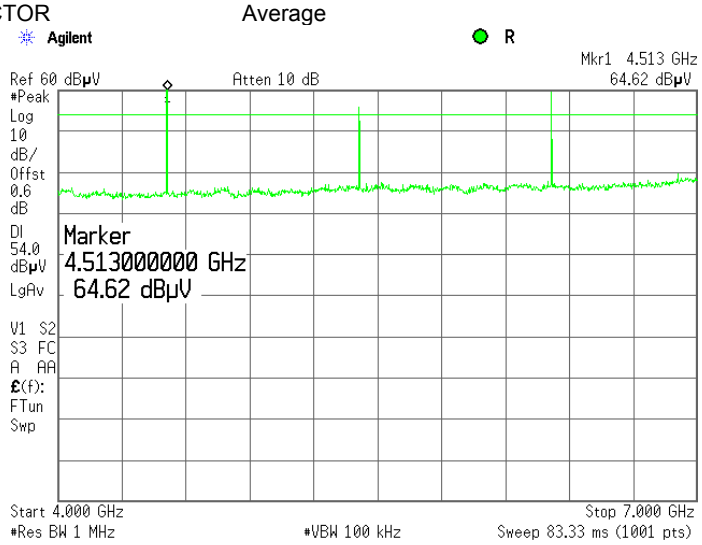
Plot 7.8.19 Radiated emission measurements from 4000 to 7000 MHz at the low carrier frequency

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



Plot 7.8.20 Radiated emission measurements from 4000 to 7000 MHz at the low carrier frequency

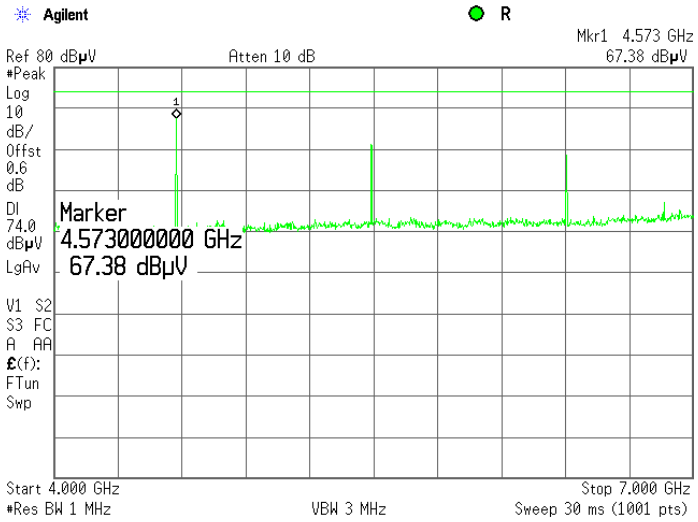
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: FHSS
DETECTOR Average



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

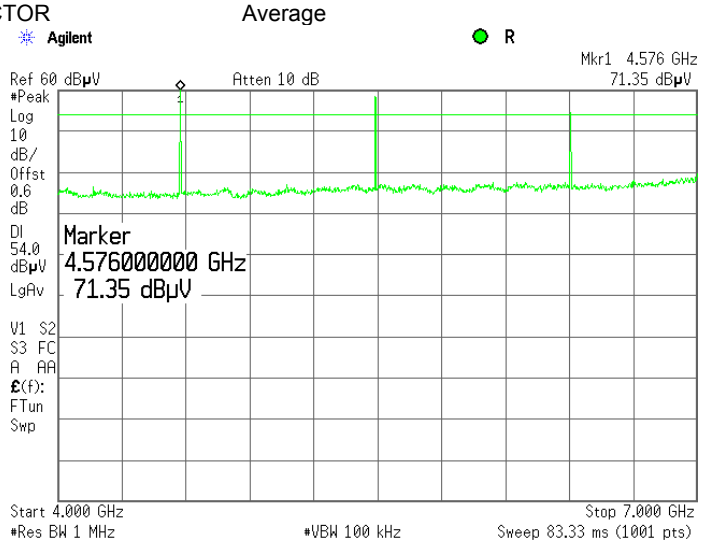
Plot 7.8.21 Radiated emission measurements from 4000 to 7000 MHz at the mid carrier frequency

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



Plot 7.8.22 Radiated emission measurements from 4000 to 7000 MHz at the mid carrier frequency

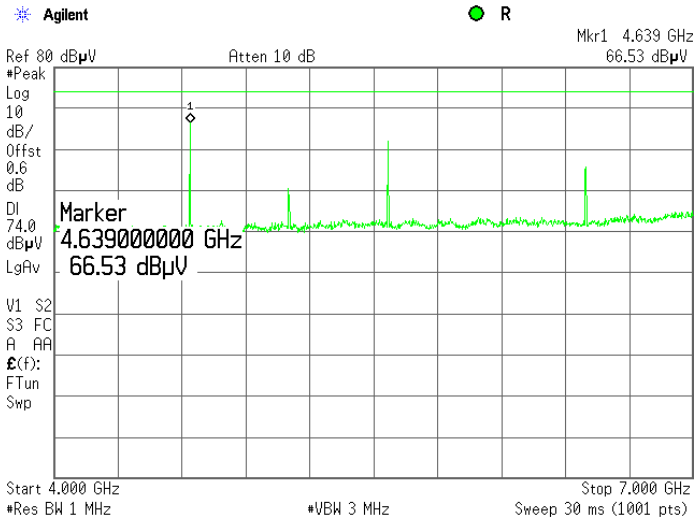
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: FHSS
DETECTOR Average



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

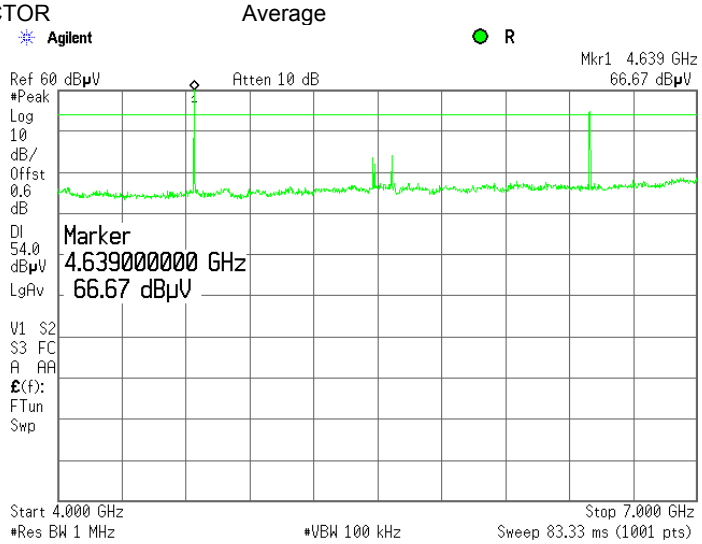
Plot 7.8.23 Radiated emission measurements from 4000 to 7000 MHz at the high carrier frequency

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



Plot 7.8.24 Radiated emission measurements from 4000 to 7000 MHz at the high carrier frequency

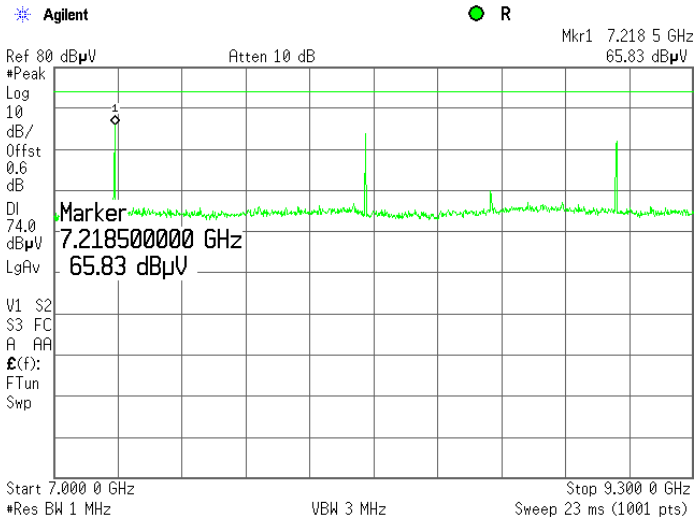
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: FHSS
DETECTOR Average



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

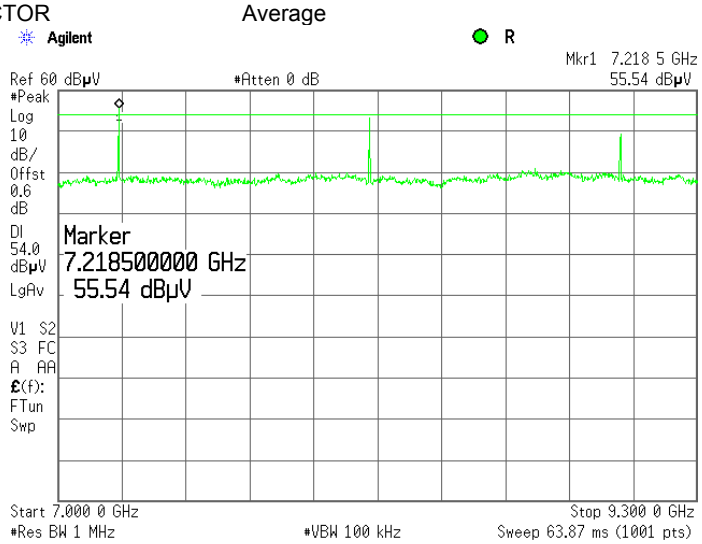
Plot 7.8.25 Radiated emission measurements from 7000 to 9300 MHz at the low carrier frequency

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



Plot 7.8.26 Radiated emission measurements from 7000 to 9300 MHz at the low carrier frequency

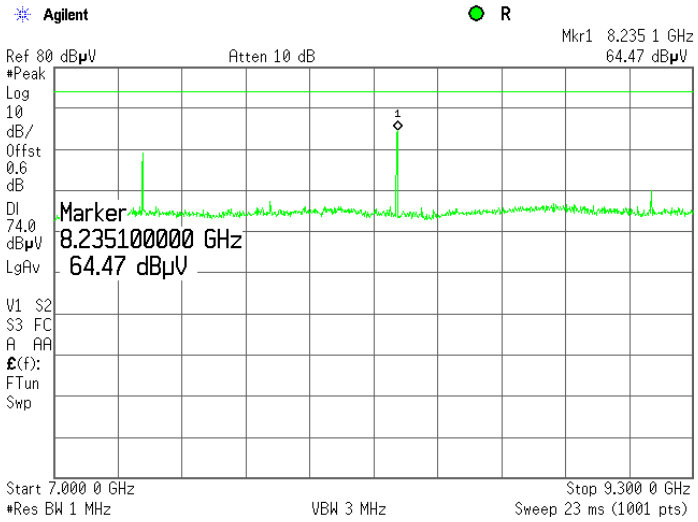
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: FHSS
DETECTOR Average



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

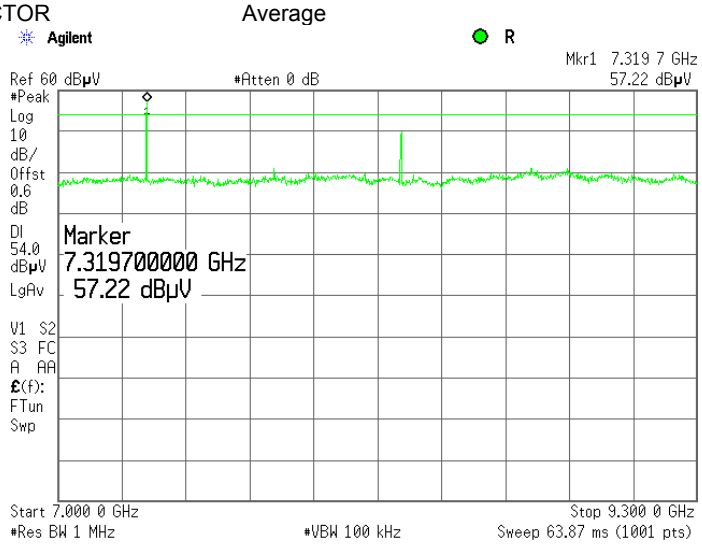
Plot 7.8.27 Radiated emission measurements from 7000 to 9300 MHz at the mid carrier frequency

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



Plot 7.8.28 Radiated emission measurements from 7000 to 9300 MHz at the mid carrier frequency

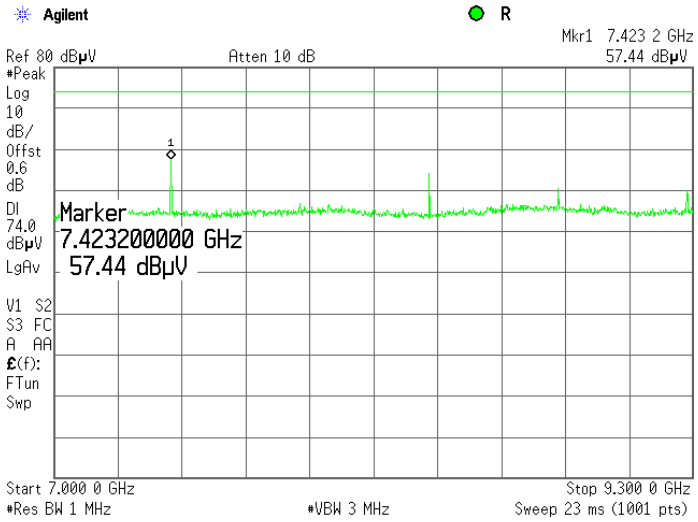
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: FHSS
DETECTOR Average



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

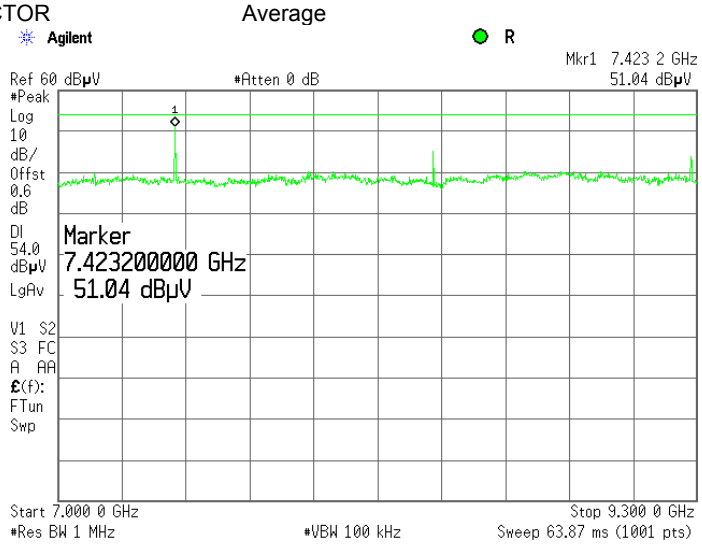
Plot 7.8.29 Radiated emission measurements from 7000 to 9300 MHz at the high carrier frequency

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



Plot 7.8.30 Radiated emission measurements from 7000 to 9300 MHz at the high carrier frequency

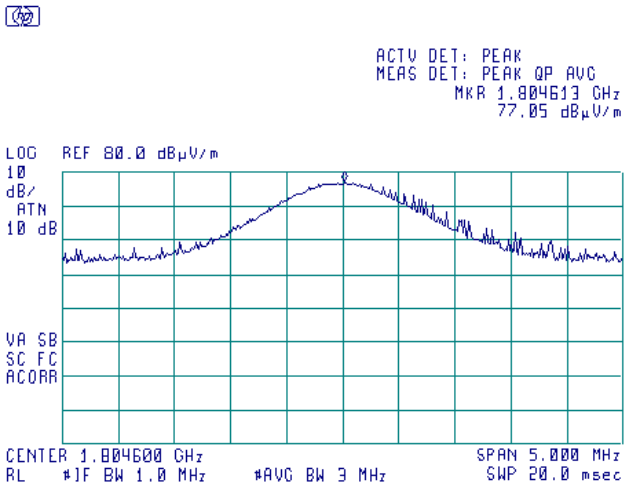
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal
OPERATIONAL MODE: FHSS
DETECTOR Average



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

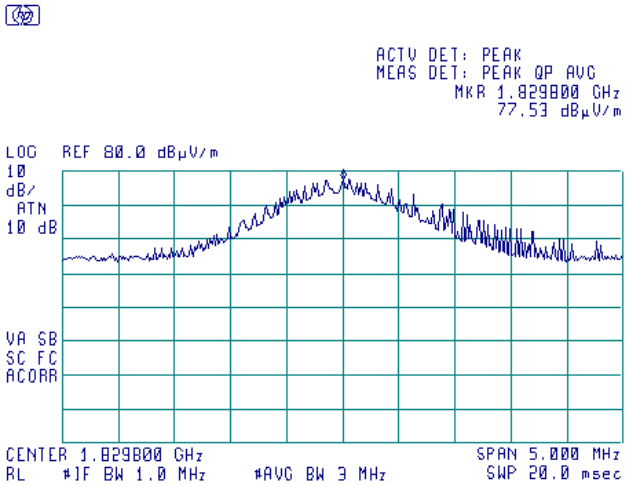
Plot 7.8.31 Radiated emission measurements at the second harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: FHSS



Plot 7.8.32 Radiated emission measurements at the second harmonic of mid carrier frequency

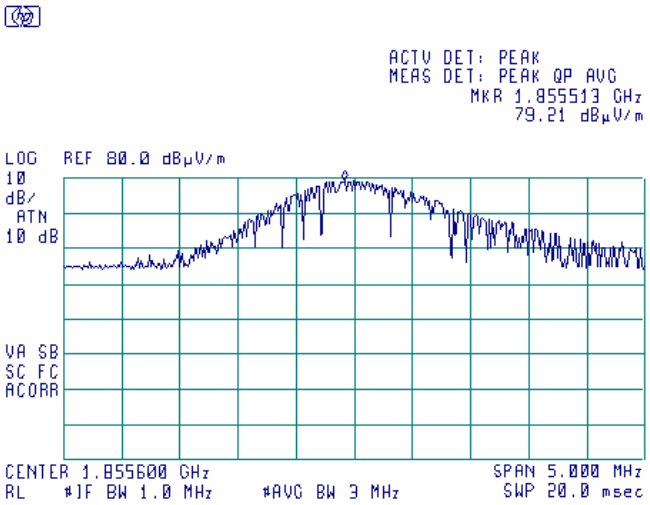
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: FHSS



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

Plot 7.8.33 Radiated emission measurements at the second harmonic of high carrier frequency

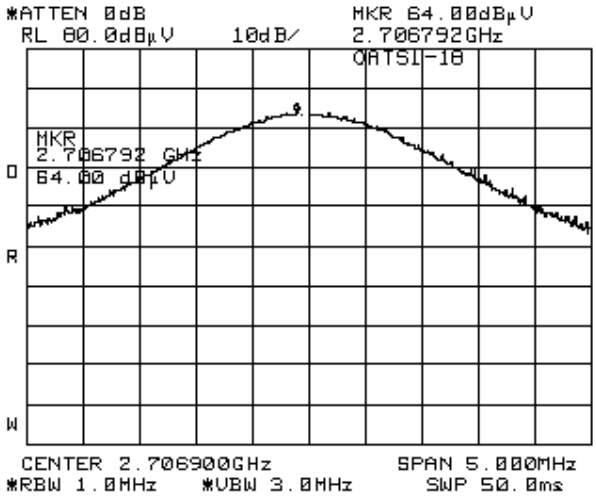
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: FHSS



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

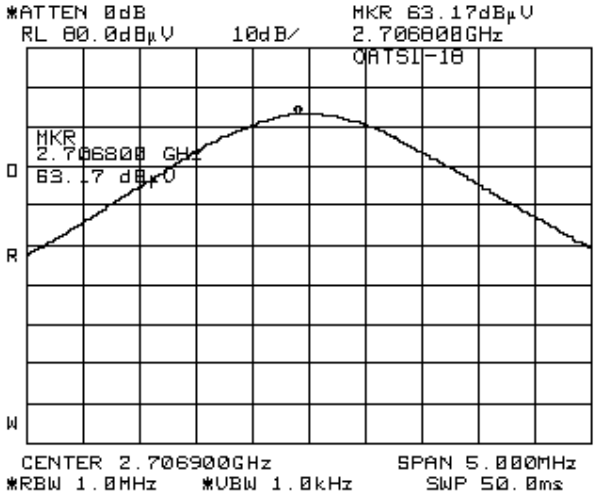
Plot 7.8.34 Radiated emission measurements at the third harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: FHSS
DETECTOR: Peak



Plot 7.8.35 Radiated emission measurements at the third harmonic of low carrier frequency

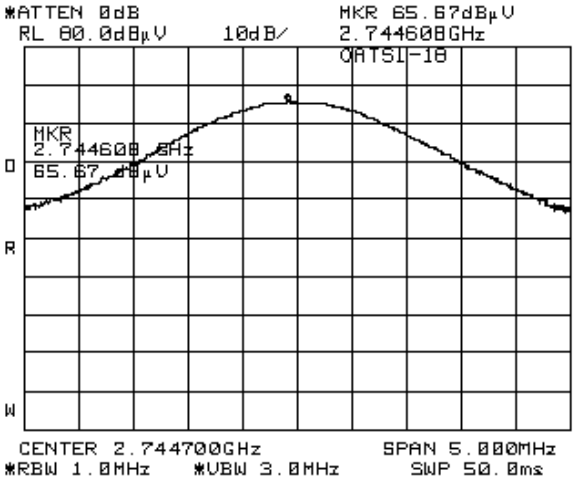
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: FHSS
DETECTOR: Average



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

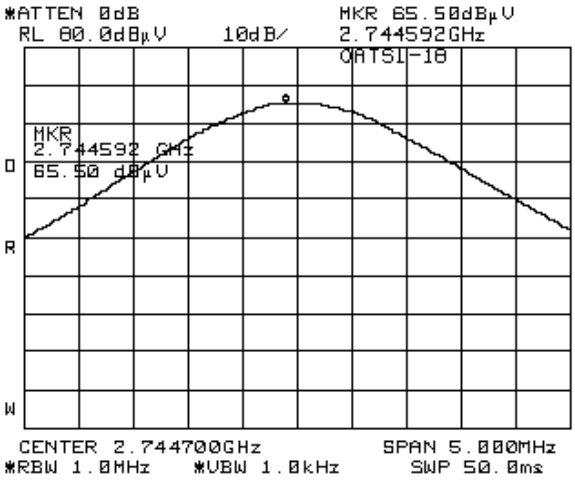
Plot 7.8.36 Radiated emission measurements at the third harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: FHSS
DETECTOR: Peak



Plot 7.8.37 Radiated emission measurements at the third harmonic of mid carrier frequency

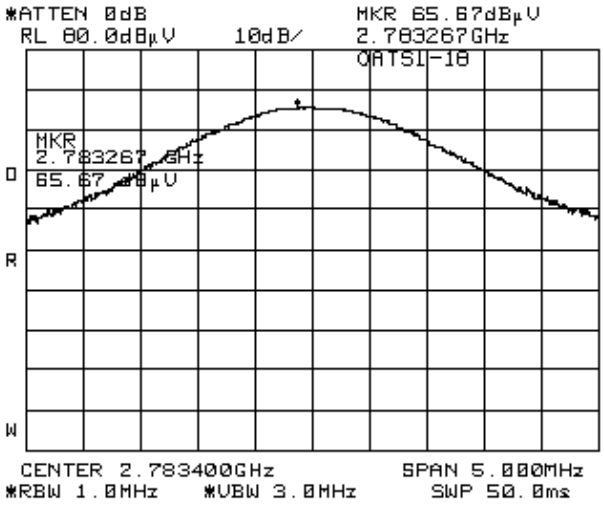
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: FHSS
DETECTOR: Average



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

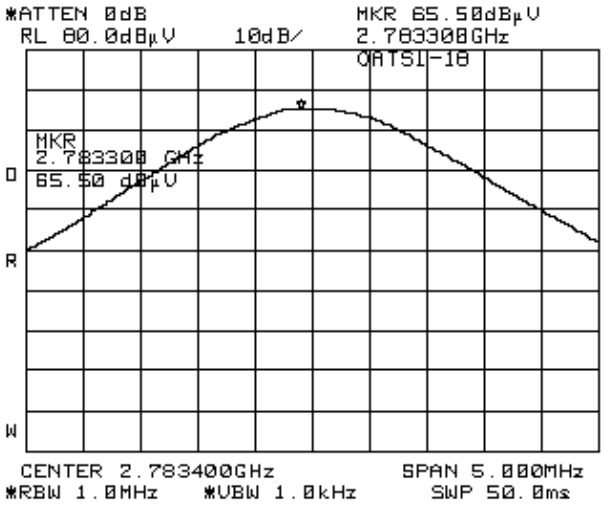
Plot 7.8.38 Radiated emission measurements at the third harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: FHSS
DETECTOR: Peak



Plot 7.8.39 Radiated emission measurements at the third harmonic of high carrier frequency

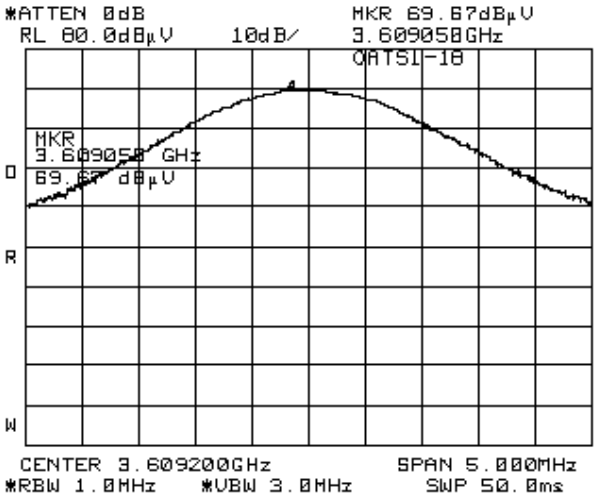
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: FHSS
DETECTOR: Average



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

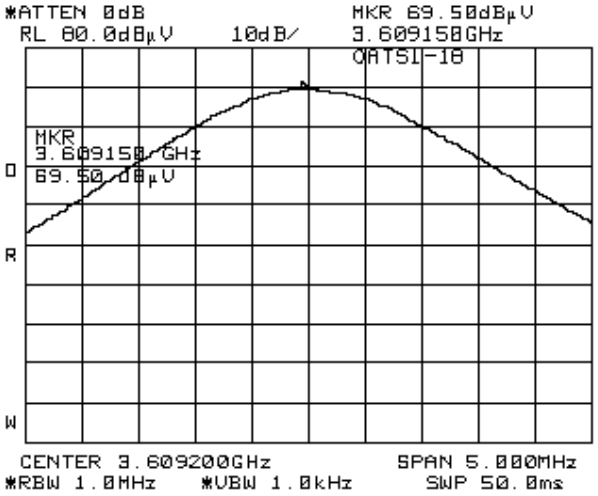
Plot 7.8.40 Radiated emission measurements at the fourth harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: FHSS
DETECTOR: Peak



Plot 7.8.41 Radiated emission measurements at the fourth harmonic of low carrier frequency

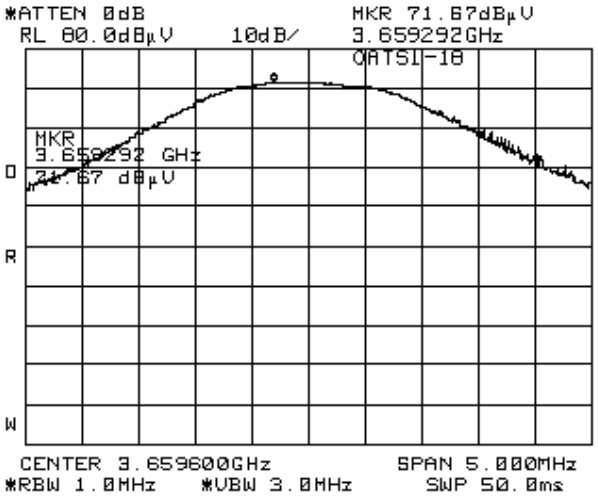
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: FHSS
DETECTOR: Average



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

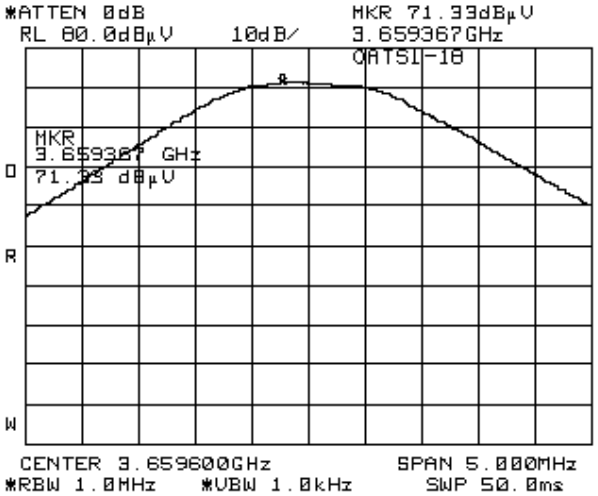
Plot 7.8.42 Radiated emission measurements at the fourth harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: FHSS
DETECTOR: Peak



Plot 7.8.43 Radiated emission measurements at the fourth harmonic of mid carrier frequency

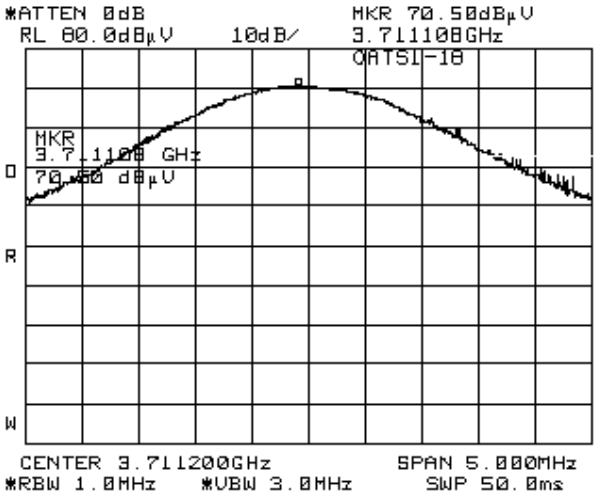
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: FHSS
DETECTOR: Average



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

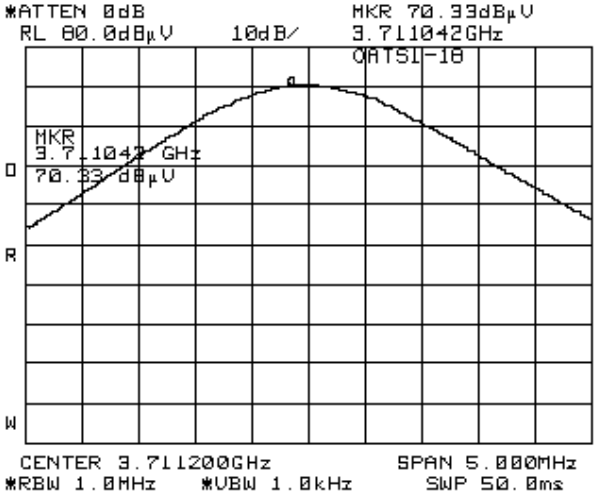
Plot 7.8.44 Radiated emission measurements at the fourth harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: FHSS
DETECTOR: Peak



Plot 7.8.45 Radiated emission measurements at the fourth harmonic of high carrier frequency

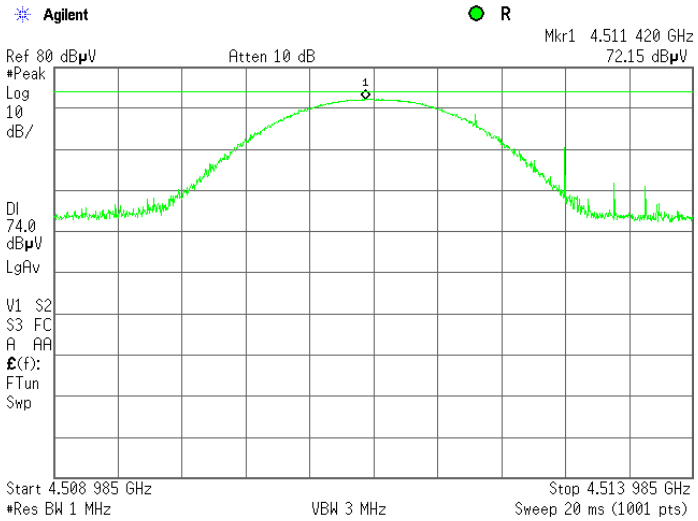
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: FHSS
DETECTOR: Average



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

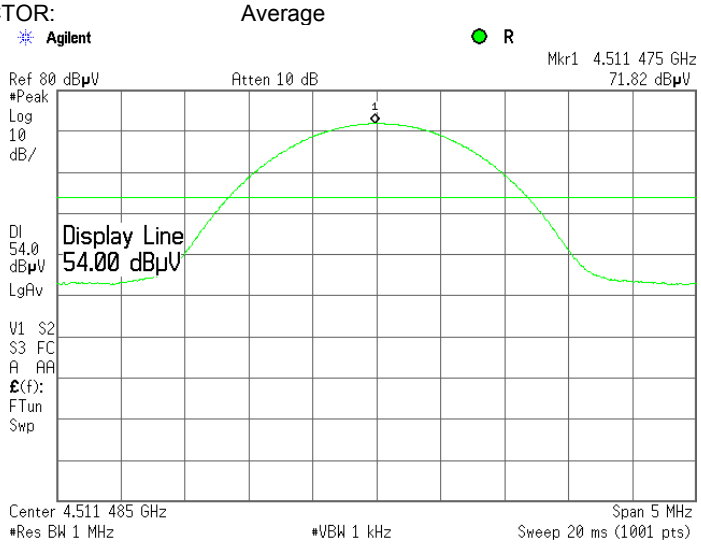
Plot 7.8.46 Radiated emission measurements at the fifth harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: FHSS
DETECTOR: Peak



Plot 7.8.47 Radiated emission measurements at the fifth harmonic of low carrier frequency

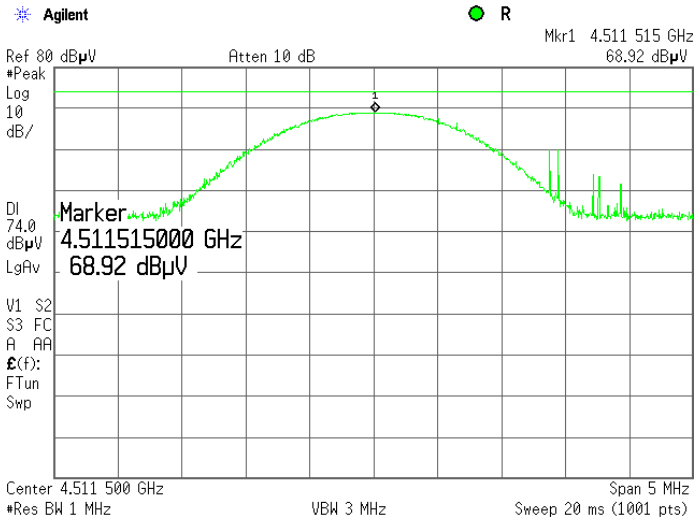
TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: FHSS
DETECTOR: Average



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

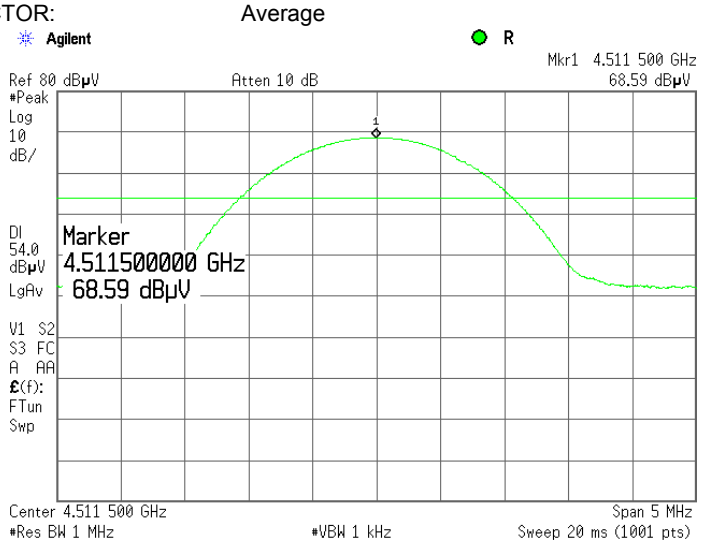
Plot 7.8.48 Radiated emission measurements at the fifth harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: FHSS
ANTENNA POLARIZATION: Horizontal
DETECTOR: Peak



Plot 7.8.49 Radiated emission measurements at the fifth harmonic of low carrier frequency

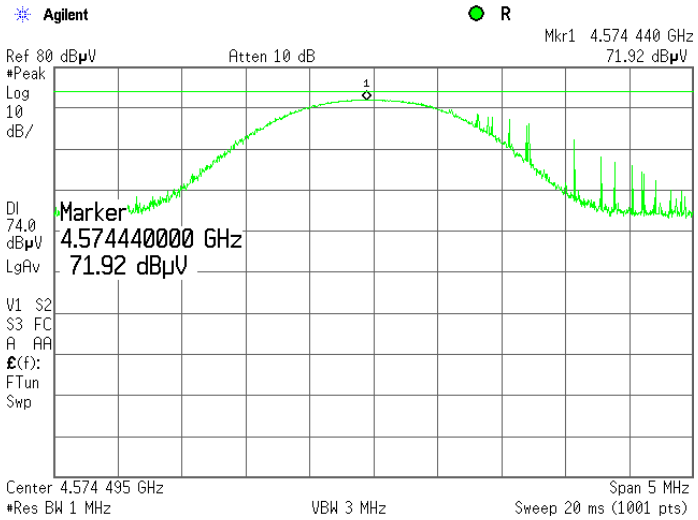
TEST SITE: OATS
TEST DISTANCE: 3 m
OPERATIONAL MODE: FHSS
ANTENNA POLARIZATION: Horizontal
DETECTOR: Average



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

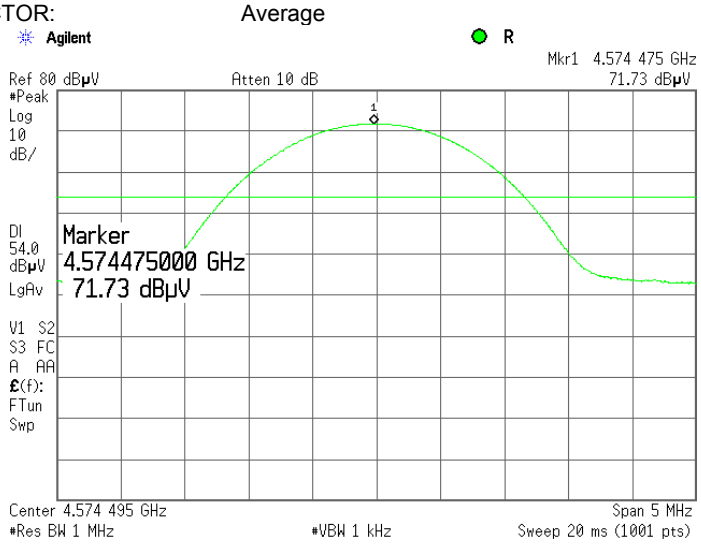
Plot 7.8.50 Radiated emission measurements at the fifth harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: FHSS
DETECTOR: Peak



Plot 7.8.51 Radiated emission measurements at the fifth harmonic of mid carrier frequency

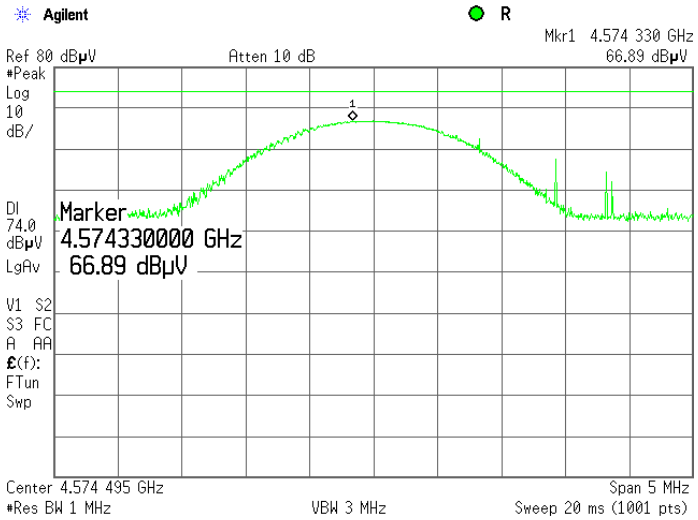
TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: FHSS
DETECTOR: Average



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

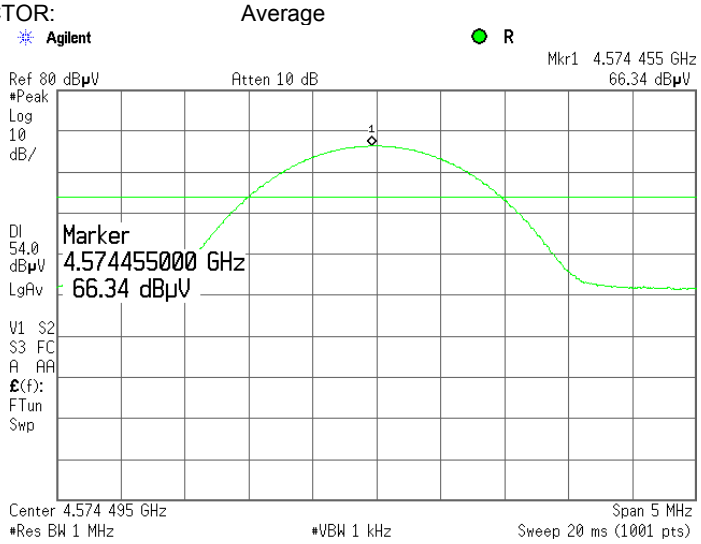
Plot 7.8.52 Radiated emission measurements at the fifth harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal
OPERATIONAL MODE: FHSS
DETECTOR: Peak



Plot 7.8.53 Radiated emission measurements at the fifth harmonic of mid carrier frequency

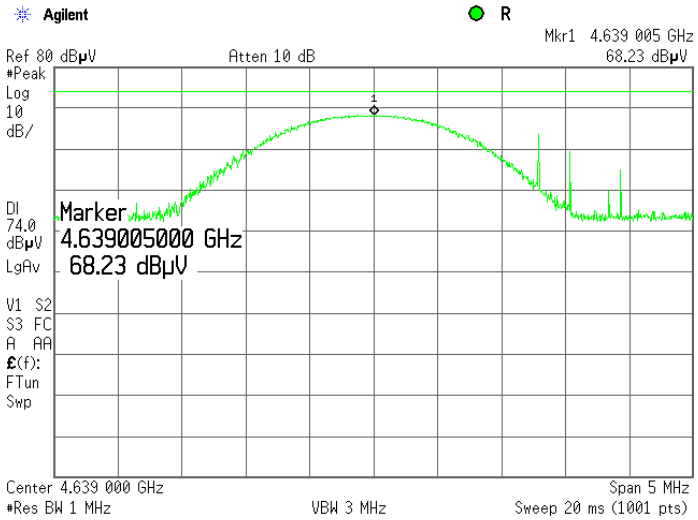
TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal
OPERATIONAL MODE: FHSS
DETECTOR: Average



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

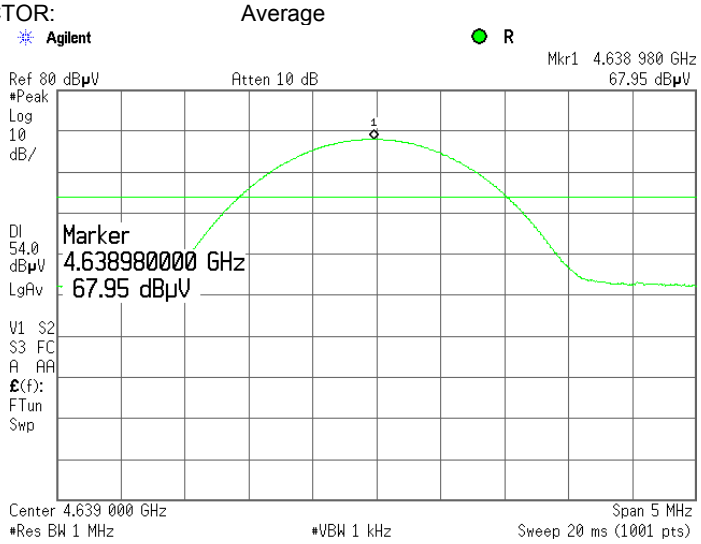
Plot 7.8.54 Radiated emission measurements at the fifth harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: FHSS
DETECTOR: Peak



Plot 7.8.55 Radiated emission measurements at the fifth harmonic of high carrier frequency

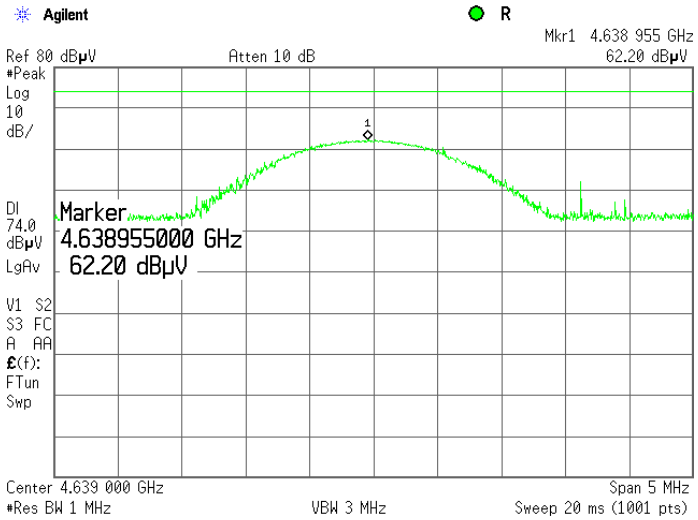
TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: FHSS
DETECTOR: Average



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

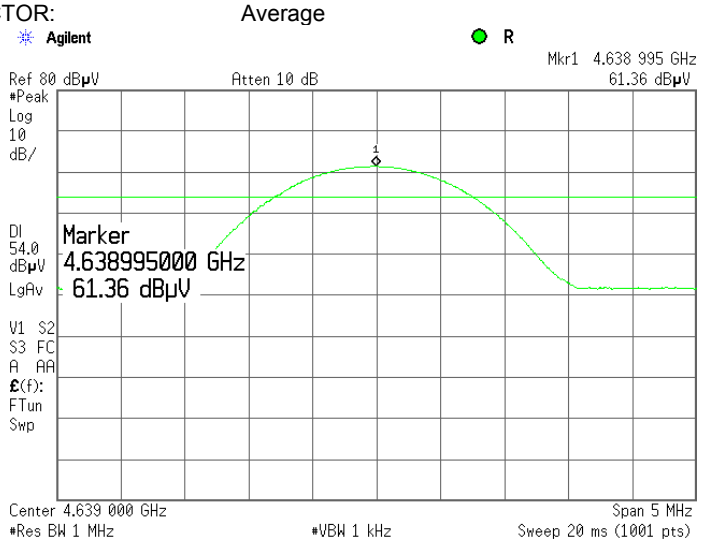
Plot 7.8.56 Radiated emission measurements at the fifth harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal
OPERATIONAL MODE: FHSS
DETECTOR: Peak



Plot 7.8.57 Radiated emission measurements at the fifth harmonic of high carrier frequency

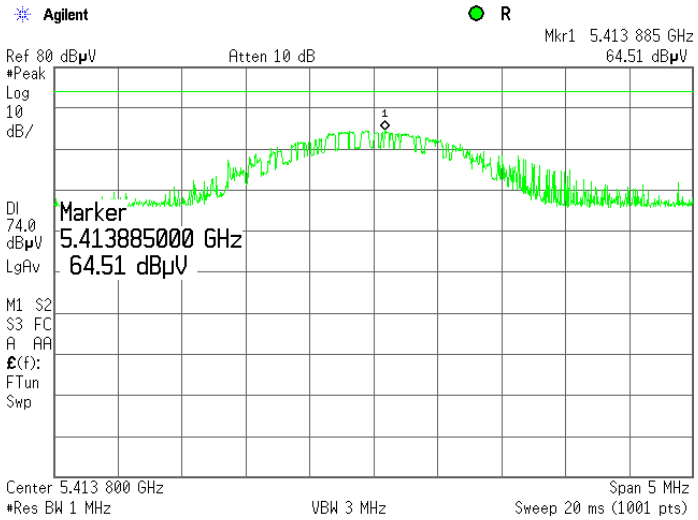
TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal
OPERATIONAL MODE: FHSS
DETECTOR: Average



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

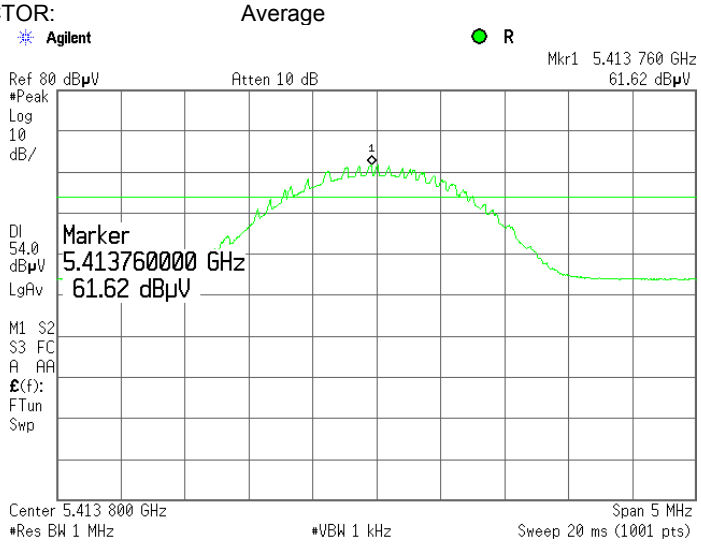
Plot 7.8.58 Radiated emission measurements at the sixth harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: FHSS
DETECTOR: Peak



Plot 7.8.59 Radiated emission measurements at the sixth harmonic of low carrier frequency

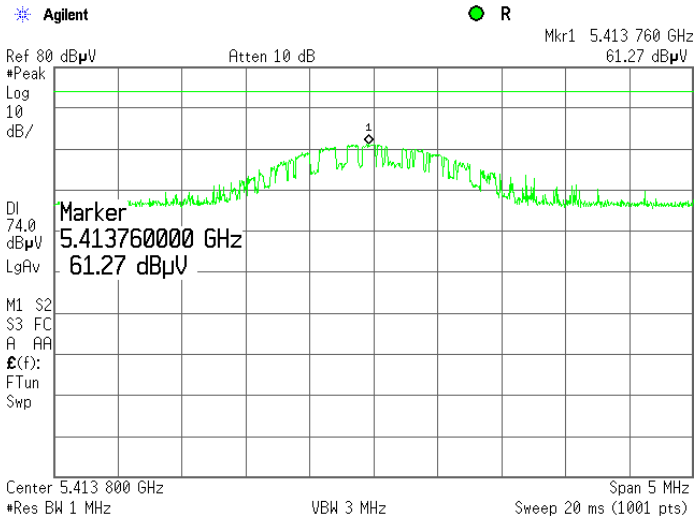
TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: FHSS
DETECTOR: Average



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

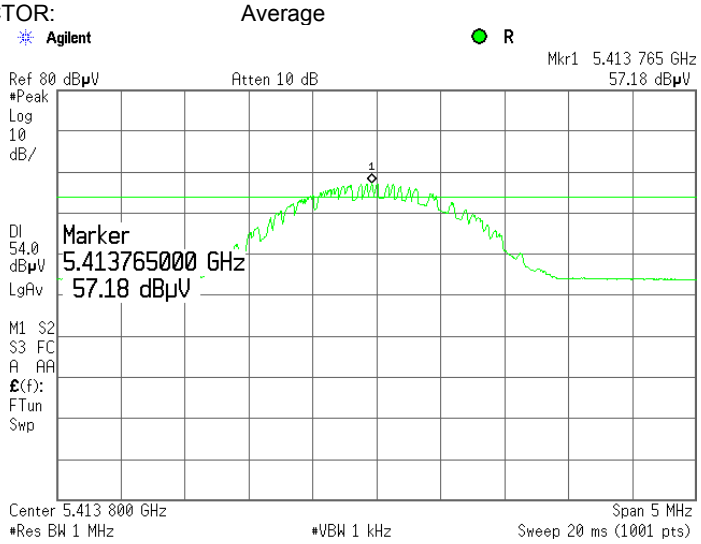
Plot 7.8.60 Radiated emission measurements at the sixth harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal
OPERATIONAL MODE: FHSS
DETECTOR: Peak



Plot 7.8.61 Radiated emission measurements at the sixth harmonic of low carrier frequency

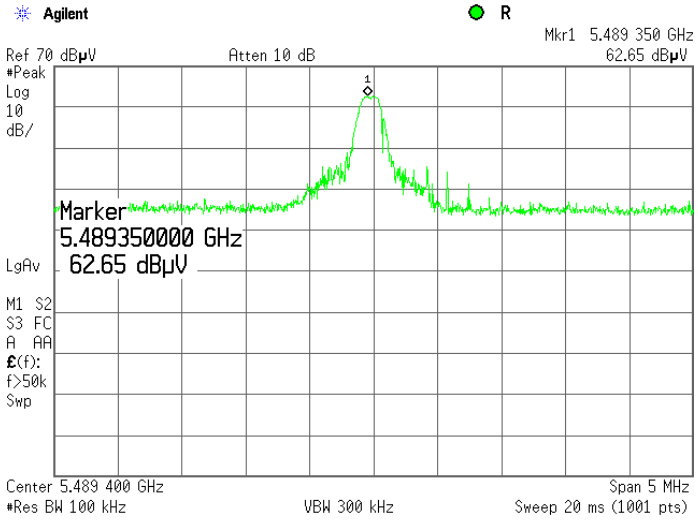
TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal
OPERATIONAL MODE: FHSS
DETECTOR: Average



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

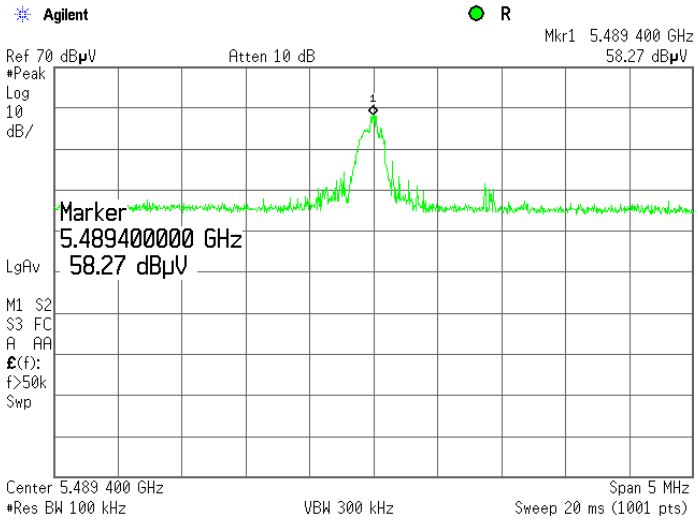
Plot 7.8.62 Radiated emission measurements at the sixth harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: FHSS



Plot 7.8.63 Radiated emission measurements at the sixth harmonic of mid carrier frequency

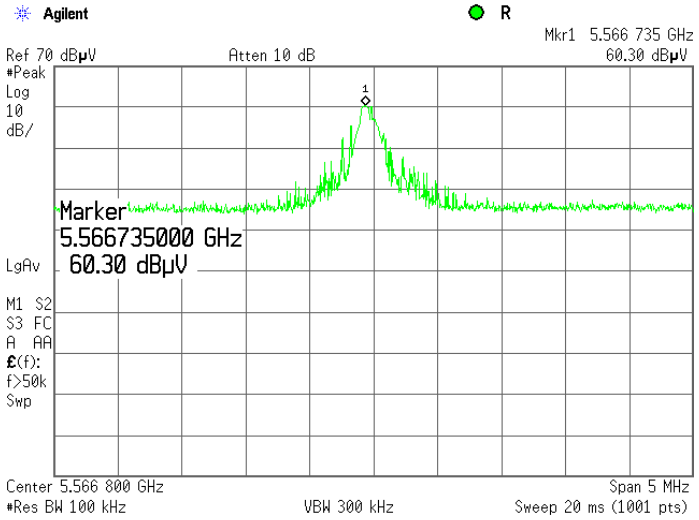
TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal
OPERATIONAL MODE: FHSS



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

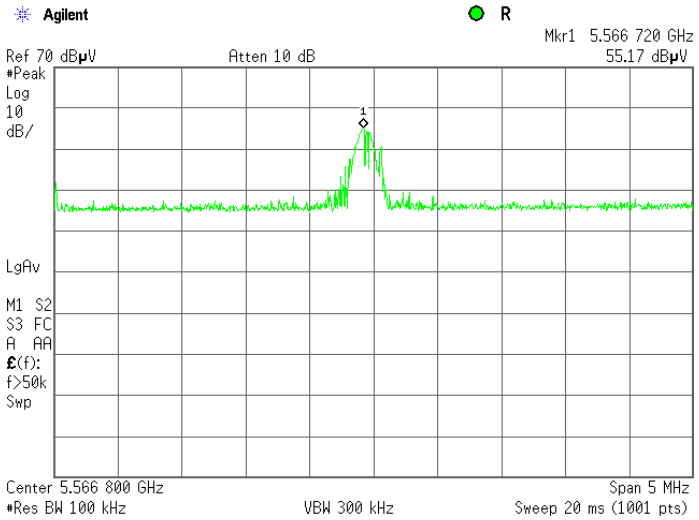
Plot 7.8.64 Radiated emission measurements at the sixth harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: FHSS



Plot 7.8.65 Radiated emission measurements at the sixth harmonic of high carrier frequency

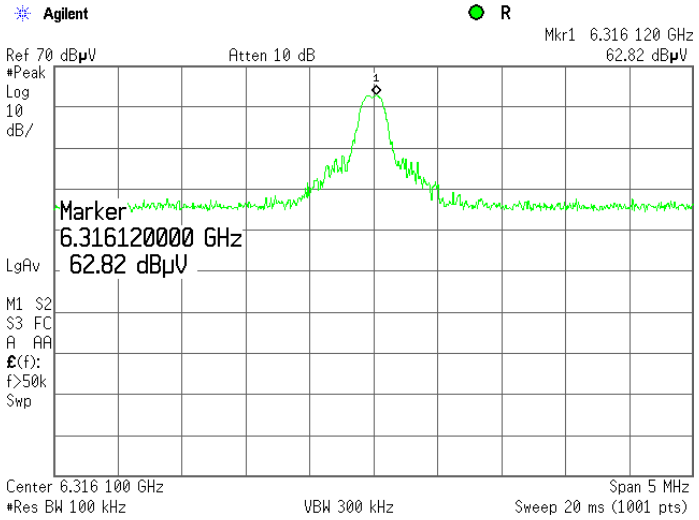
TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal
OPERATIONAL MODE: FHSS



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

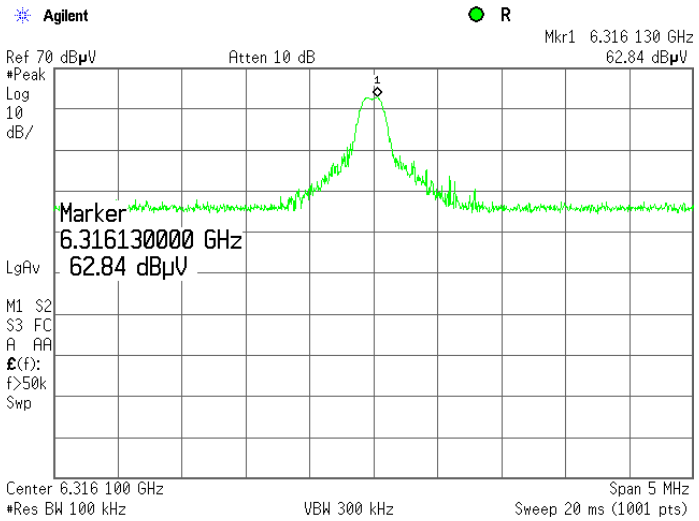
Plot 7.8.66 Radiated emission measurements at the seventh harmonic of low carrier frequency

TEST SITE: Semi Anechoic Chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: FHSS



Plot 7.8.67 Radiated emission measurements at the seventh harmonic of low carrier frequency

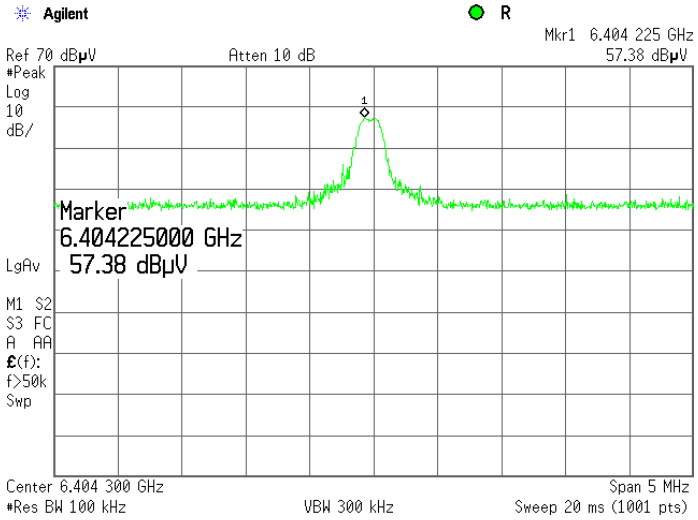
TEST SITE: Semi Anechoic Chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal
OPERATIONAL MODE: FHSS



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

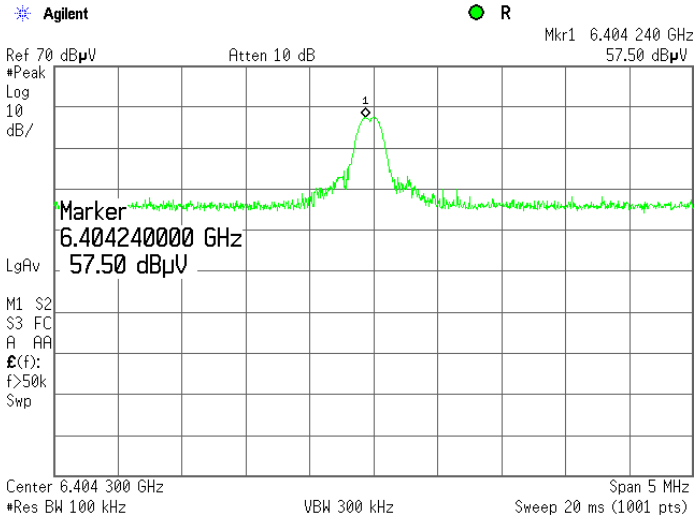
Plot 7.8.68 Radiated emission measurements at the seventh harmonic of mid carrier frequency

TEST SITE: Semi Anechoic Chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: FHSS



Plot 7.8.69 Radiated emission measurements at the seventh harmonic of mid carrier frequency

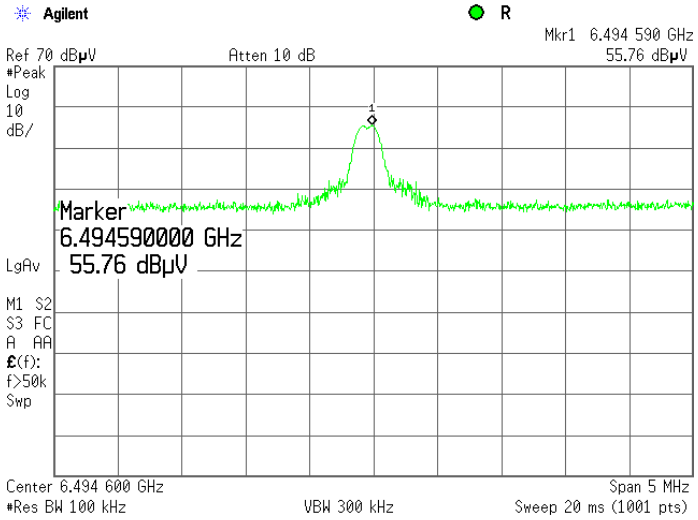
TEST SITE: Semi Anechoic Chamber
TEST DISTANCE: 3 m
OPERATIONAL MODE: FHSS
ANTENNA POLARIZATION: Horizontal



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

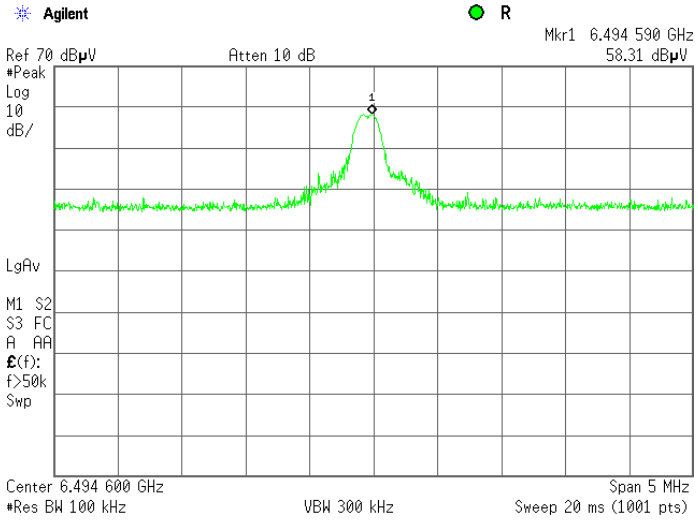
Plot 7.8.70 Radiated emission measurements at the seventh harmonic of high carrier frequency

TEST SITE: Semi Anechoic Chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: FHSS



Plot 7.8.71 Radiated emission measurements at the seventh harmonic of high carrier frequency

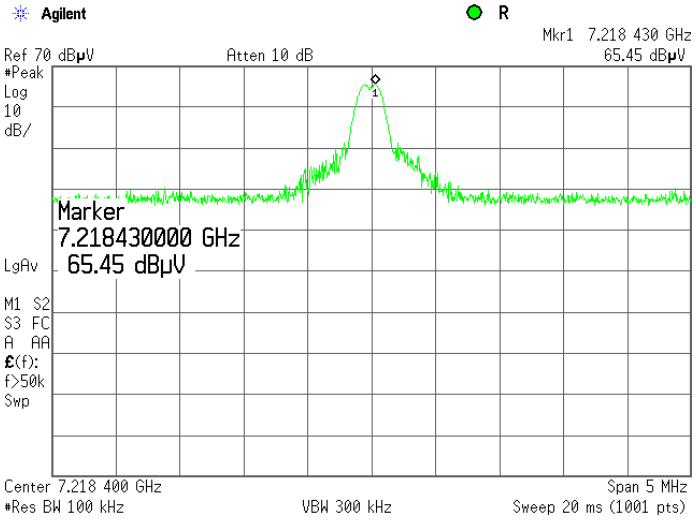
TEST SITE: Semi Anechoic Chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal
OPERATIONAL MODE: FHSS



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

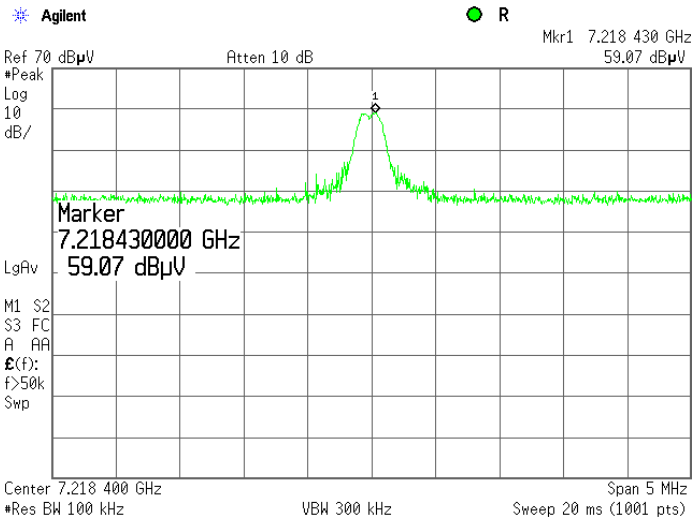
Plot 7.8.72 Radiated emission measurements at the eighth harmonic of low carrier frequency

TEST SITE: Semi Anechoic Chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: FHSS



Plot 7.8.73 Radiated emission measurements at the eighth harmonic of low carrier frequency

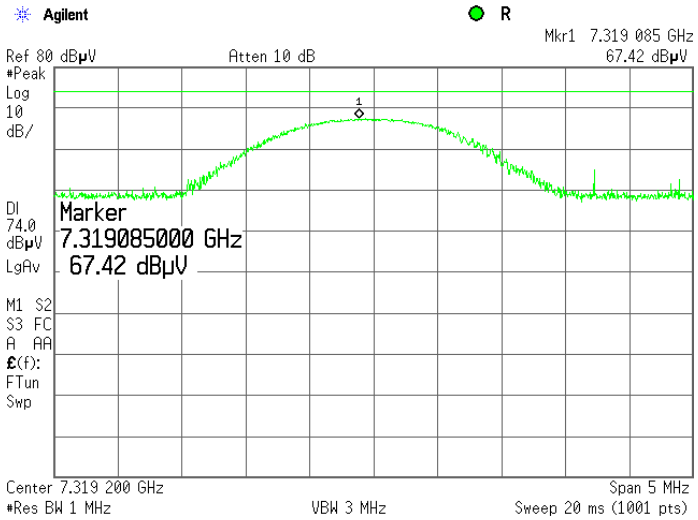
TEST SITE: Semi Anechoic Chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal
OPERATIONAL MODE: FHSS
DETECTOR: Peak



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

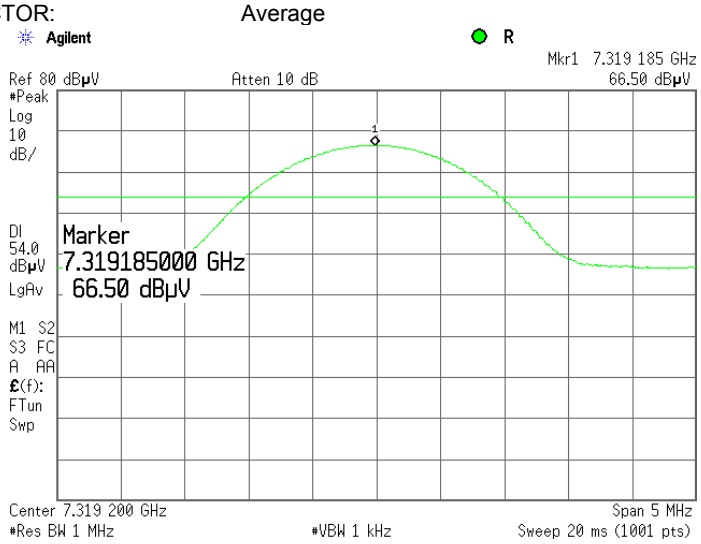
Plot 7.8.74 Radiated emission measurements at the eighth harmonic of mid carrier frequency

TEST SITE: Semi Anechoic Chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: FHSS
DETECTOR: Peak



Plot 7.8.75 Radiated emission measurements at the eighth harmonic of mid carrier frequency

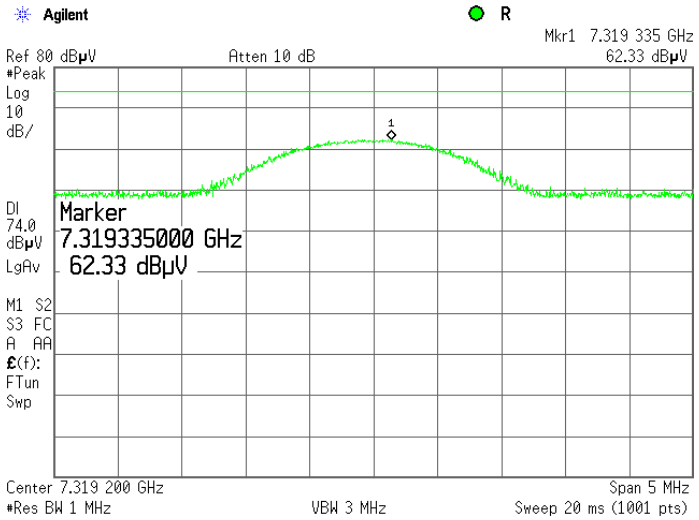
TEST SITE: Semi Anechoic Chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: FHSS
DETECTOR: Average



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

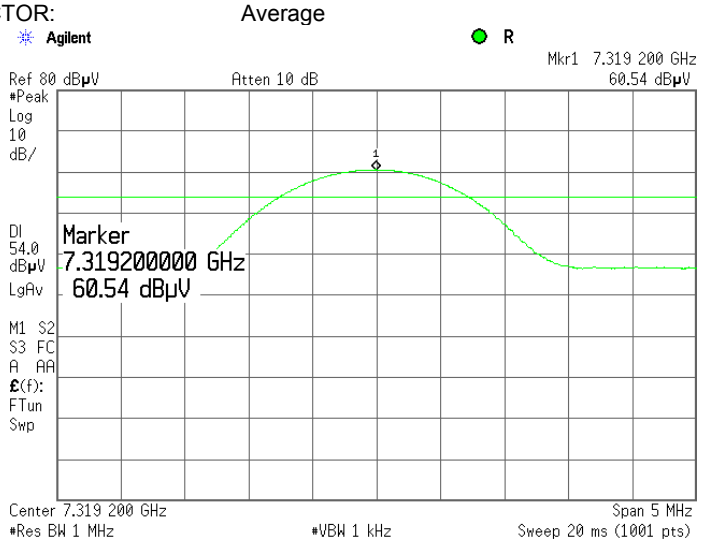
Plot 7.8.76 Radiated emission measurements at the eighth harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal
OPERATIONAL MODE: FHSS
DETECTOR: Peak



Plot 7.8.77 Radiated emission measurements at the eighth harmonic of mid carrier frequency

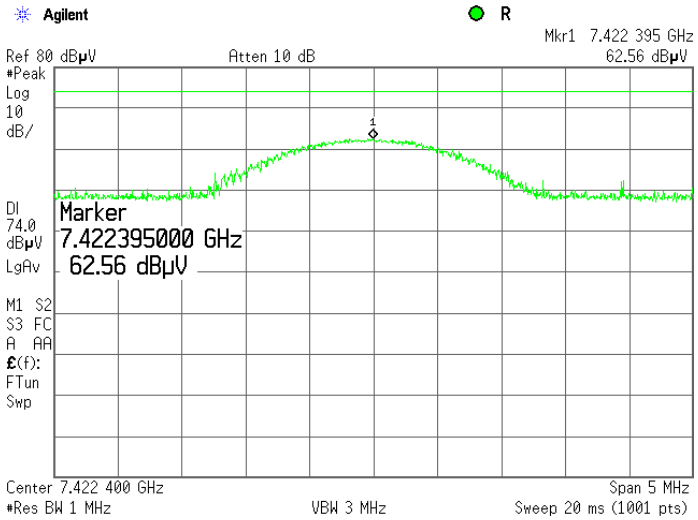
TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal
OPERATIONAL MODE: FHSS
DETECTOR: Average



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

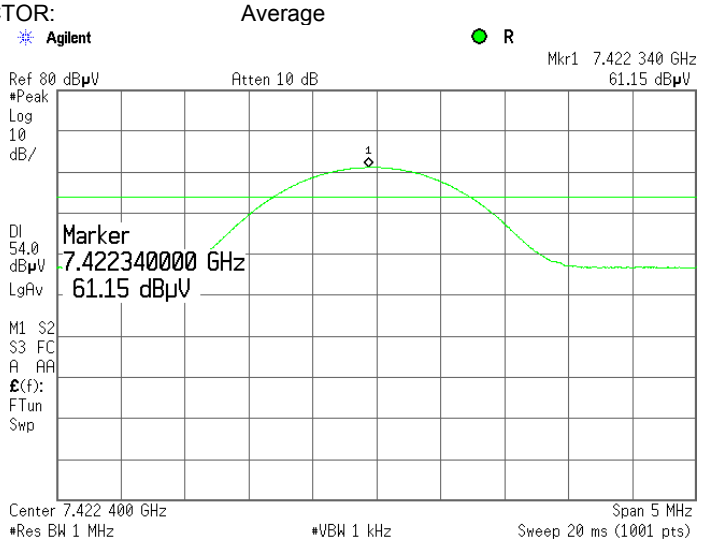
Plot 7.8.78 Radiated emission measurements at the eighth harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: FHSS
DETECTOR: Peak



Plot 7.8.79 Radiated emission measurements at the eighth harmonic of high carrier frequency

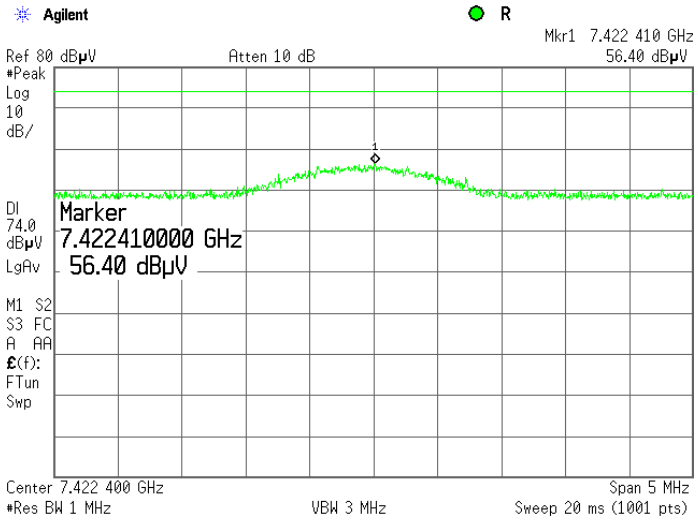
TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: FHSS
DETECTOR: Average



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

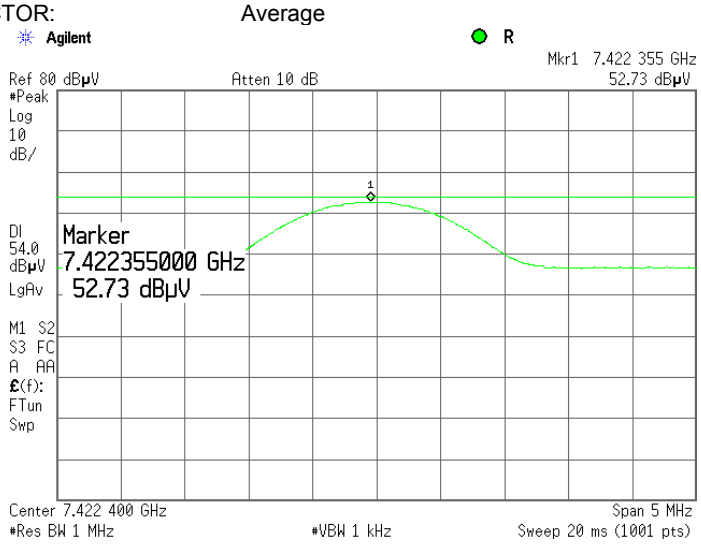
Plot 7.8.80 Radiated emission measurements at the eighth harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal
OPERATIONAL MODE: FHSS
DETECTOR: Peak



Plot 7.8.81 Radiated emission measurements at the eighth harmonic of high carrier frequency

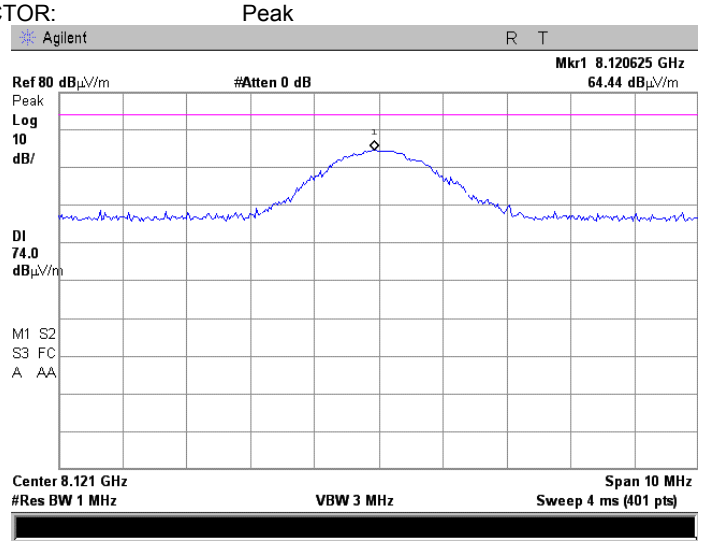
TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal
OPERATIONAL MODE: FHSS
DETECTOR: Average



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

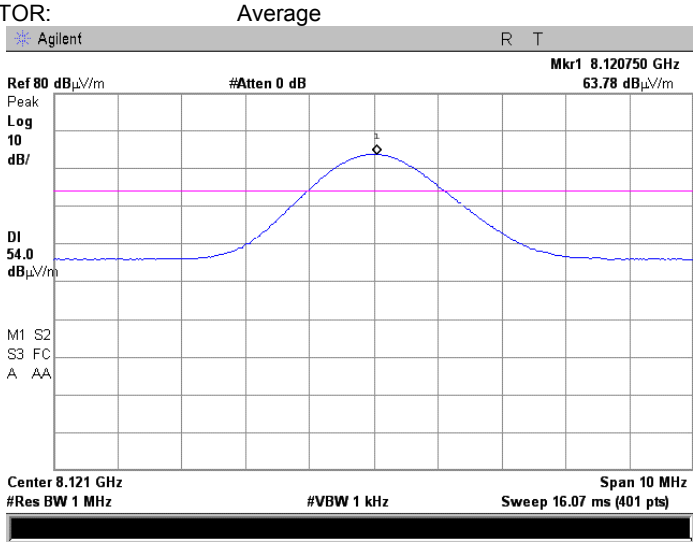
Plot 7.8.82 Radiated emission measurements at the ninth harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: FHSS
DETECTOR: Peak



Plot 7.8.83 Radiated emission measurements at the ninth harmonic of low carrier frequency

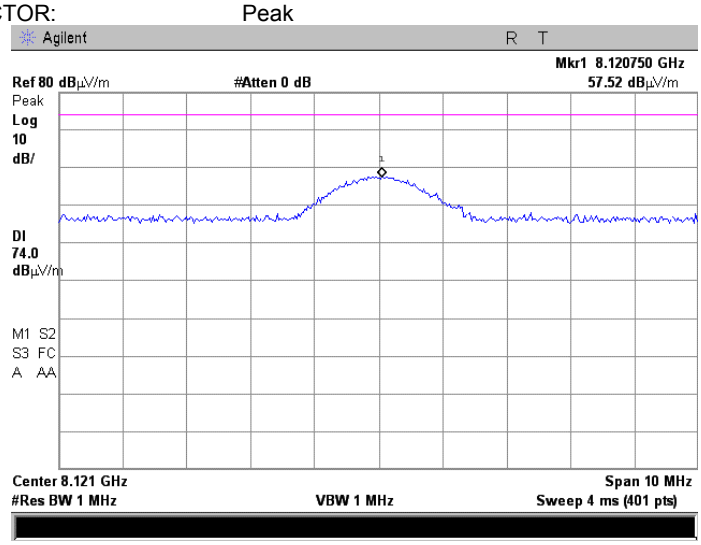
TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: FHSS
DETECTOR: Average



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

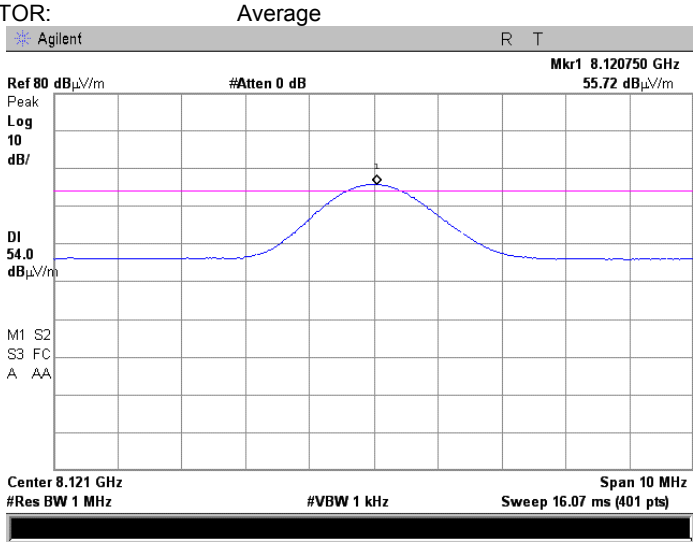
Plot 7.8.84 Radiated emission measurements at the ninth harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal
OPERATIONAL MODE: FHSS
DETECTOR: Peak



Plot 7.8.85 Radiated emission measurements at the ninth harmonic of low carrier frequency

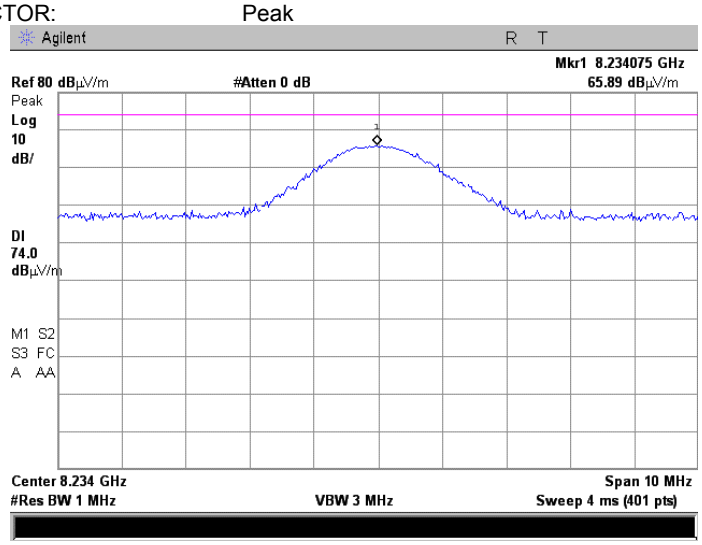
TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal
OPERATIONAL MODE: FHSS
DETECTOR: Average



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

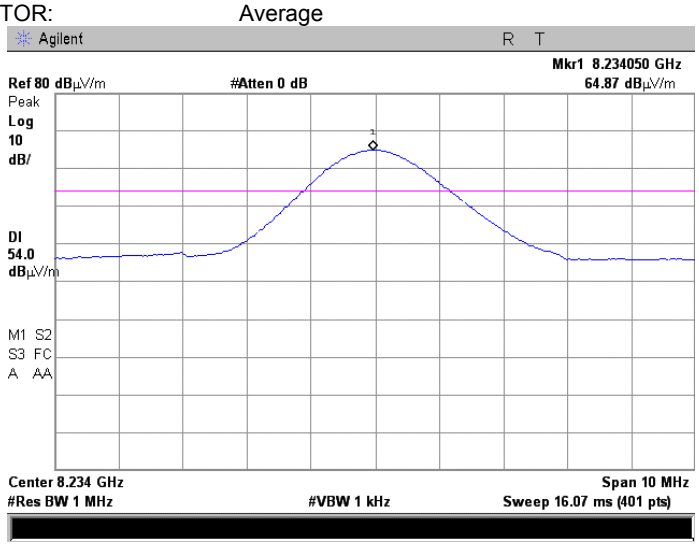
Plot 7.8.86 Radiated emission measurements at the ninth harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: FHSS
DETECTOR: Peak



Plot 7.8.87 Radiated emission measurements at the ninth harmonic of mid carrier frequency

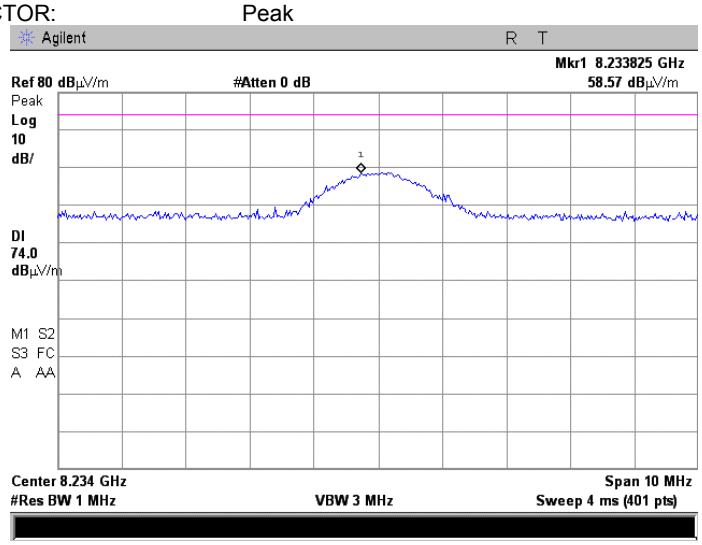
TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: FHSS
DETECTOR: Average



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

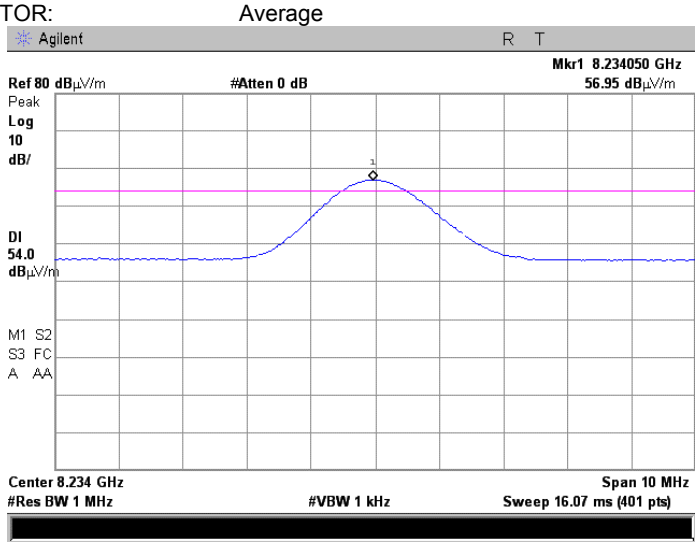
Plot 7.8.88 Radiated emission measurements at the ninth harmonic of mid carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal
OPERATIONAL MODE: FHSS
DETECTOR: Peak



Plot 7.8.89 Radiated emission measurements at the ninth harmonic of mid carrier frequency

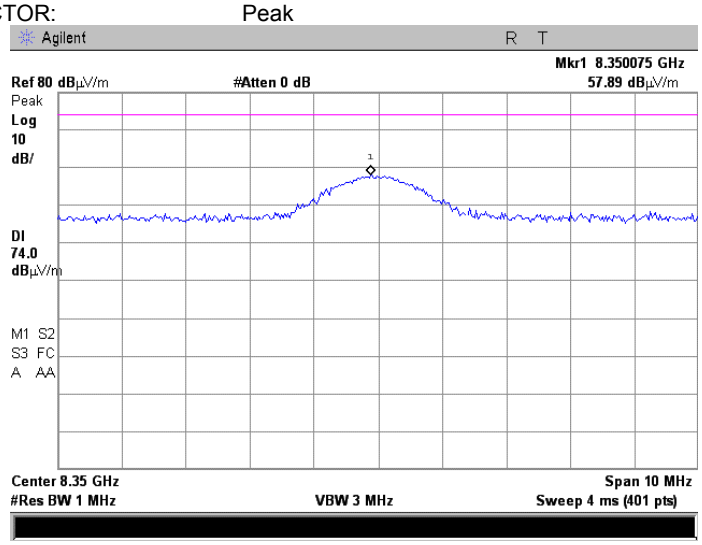
TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal
OPERATIONAL MODE: FHSS
DETECTOR: Average



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

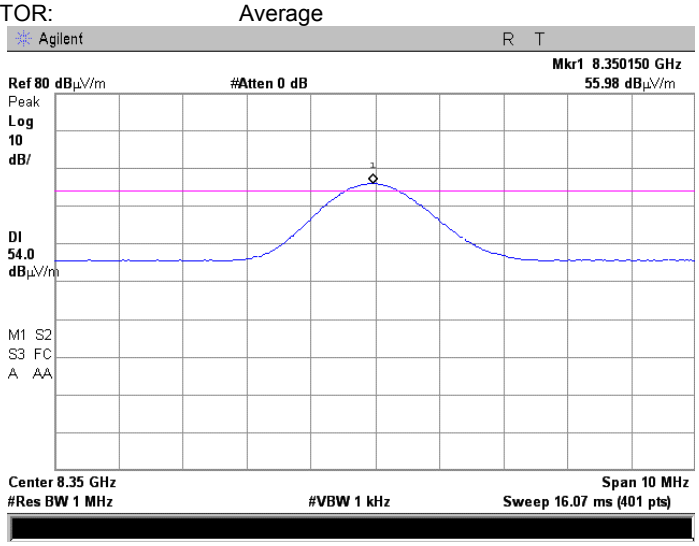
Plot 7.8.90 Radiated emission measurements at the ninth harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: FHSS
DETECTOR: Peak



Plot 7.8.91 Radiated emission measurements at the ninth harmonic of high carrier frequency

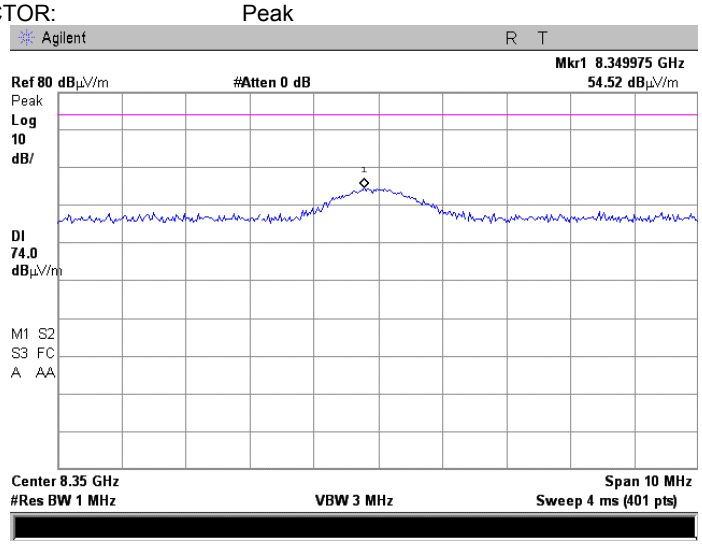
TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: FHSS
DETECTOR: Average



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

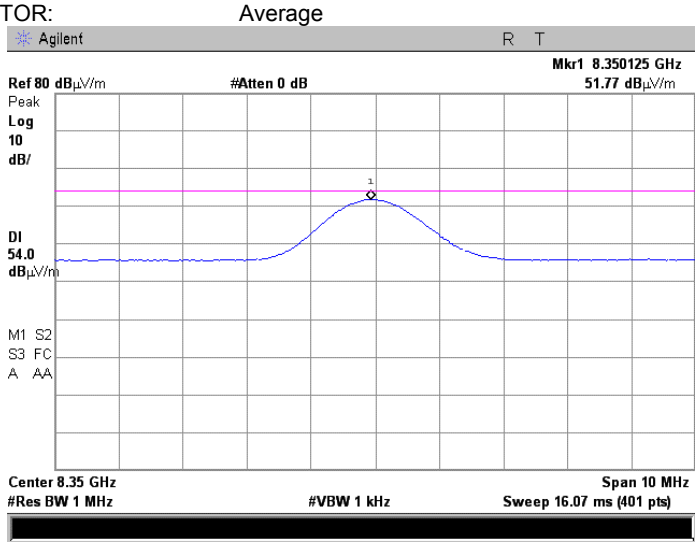
Plot 7.8.92 Radiated emission measurements at the ninth harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal
OPERATIONAL MODE: FHSS
DETECTOR: Peak



Plot 7.8.93 Radiated emission measurements at the ninth harmonic of high carrier frequency

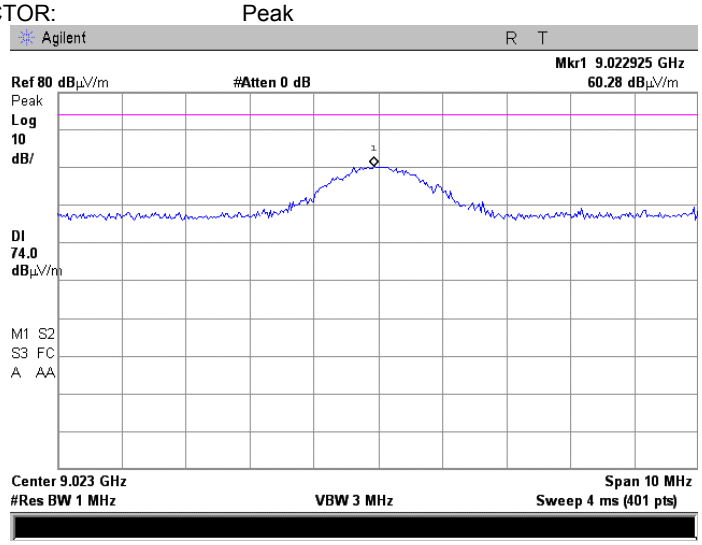
TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal
OPERATIONAL MODE: FHSS
DETECTOR: Average



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

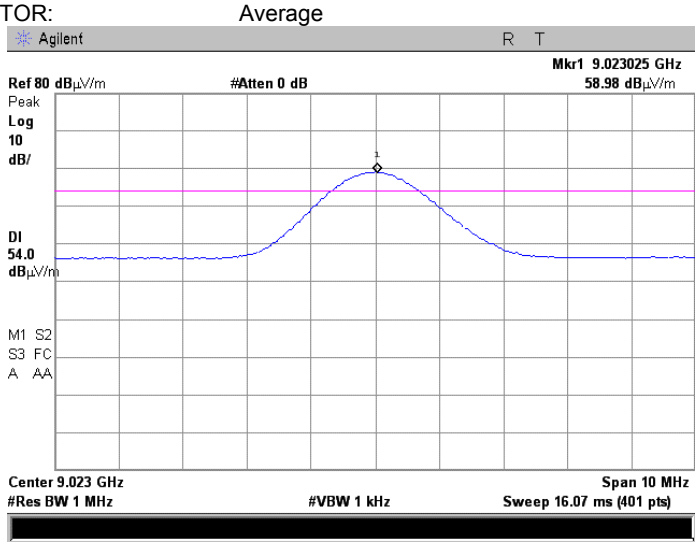
Plot 7.8.94 Radiated emission measurements at the tenth harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: FHSS
DETECTOR: Peak



Plot 7.8.95 Radiated emission measurements at the tenth harmonic of low carrier frequency

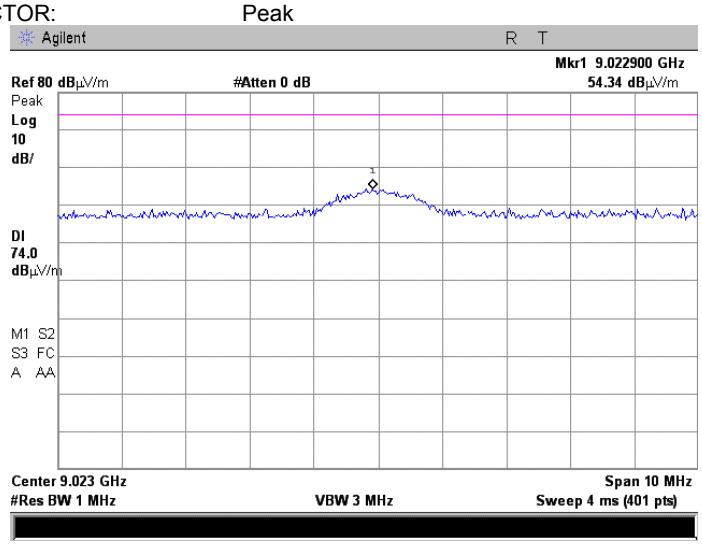
TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: FHSS
DETECTOR: Average



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

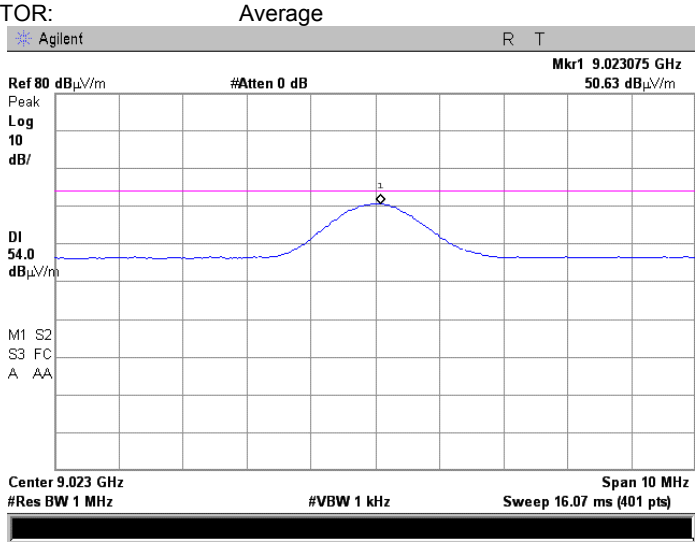
Plot 7.8.96 Radiated emission measurements at the tenth harmonic of low carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal
OPERATIONAL MODE: PSK
DETECTOR: Peak



Plot 7.8.97 Radiated emission measurements at the tenth harmonic of low carrier frequency

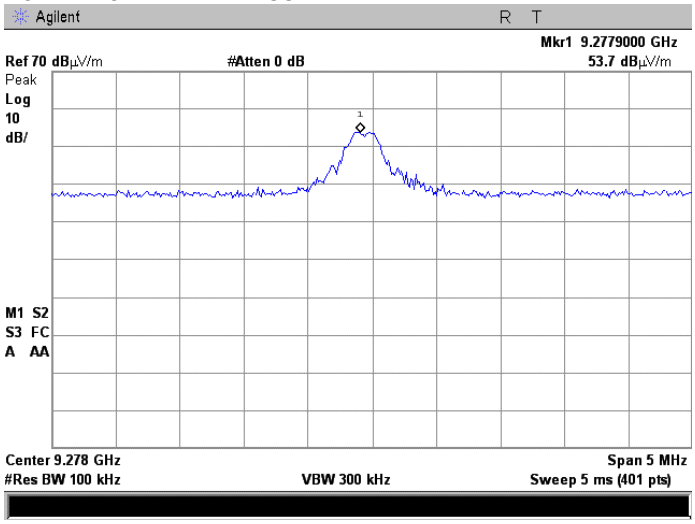
TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal
OPERATIONAL MODE: FHSS
DETECTOR: Average



Test specification:	Section 15.247(d), RSS-210 section A8.5, 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:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

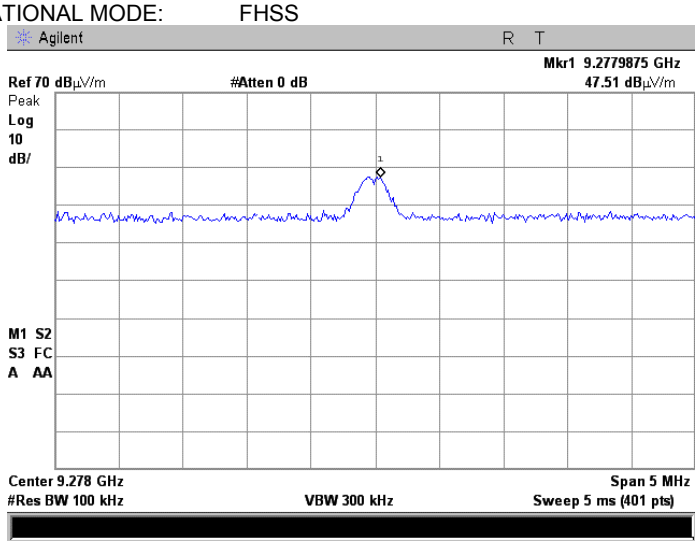
Plot 7.8.98 Radiated emission measurements at the tenth harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical
OPERATIONAL MODE: FHSS



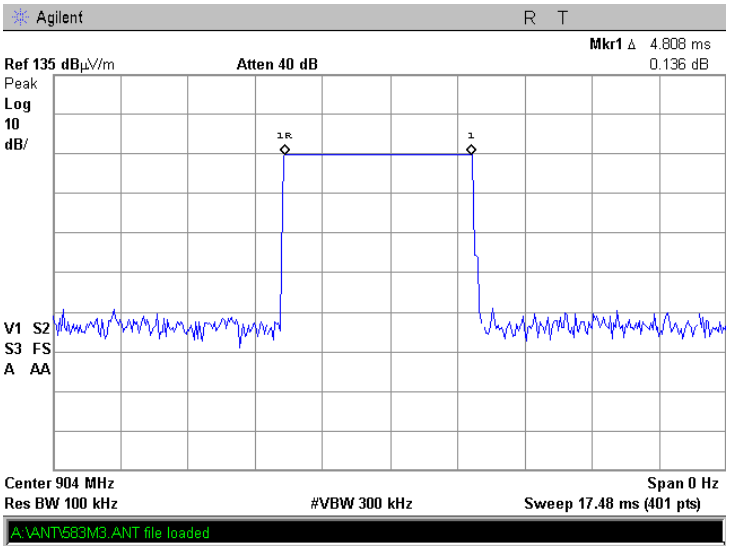
Plot 7.8.99 Radiated emission measurements at the tenth harmonic of high carrier frequency

TEST SITE: OATS
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal
OPERATIONAL MODE: FHSS

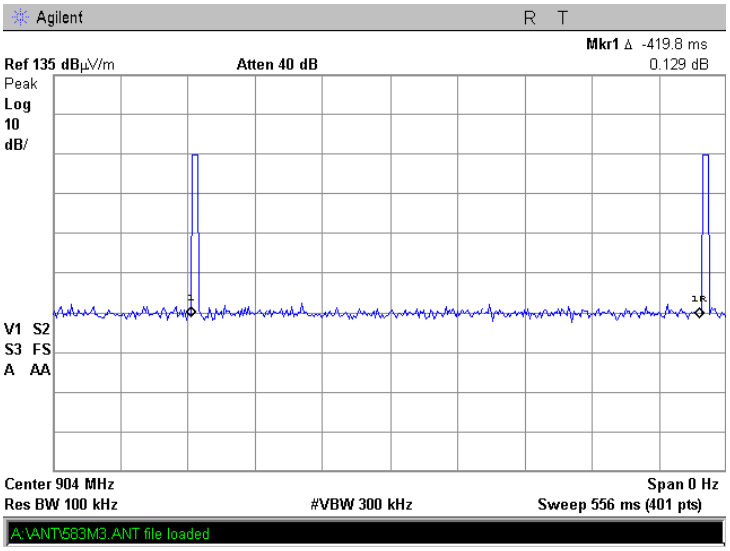


Test specification:	Section 15.247(d), RSS-210 section A8.5, Radiated spurious emissions		
Test procedure:	Public notice DA 00-705/ 47 CFR, Section 15.247(c) / ANSI C63.4, Section 13.1.4		
Test mode:	Compliance	Verdict:	PASS
Date:	6/1/2011 - 6/15/2011		
Temperature: 22.3 ºC	Air Pressure: 1013 hPa	Relative Humidity: 44 %	Power Supply: Battery
Remarks:			

Plot 7.8.100 Transmission pulse duration, FHSS



Plot 7.8.101 Transmission pulse period, FHSS



Test specification:	Section 15.203, RSS-Gen section 7.1.2, Antenna requirements		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	6/26/11		
Temperature: 23.5 ºC	Air Pressure: 1011 hPa	Relative Humidity: 45 %	Power Supply: Battery
Remarks:			

7.9 Antenna requirements

The EUT was verified for compliance with antenna requirements. A transmitter shall be designed to ensure that no antenna other than that furnished by the responsible party will be used with the device. It may be either permanently attached or employs a unique antenna connector for every antenna proposed for use with the EUT. This requirement does not apply to professionally installed transmitters.
The rationale for compliance with the above requirements was either visual inspection results or supplier declaration. The summary of results is provided in Table 7.9.1.

Table 7.9.1 Antenna requirements

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

8 APPENDIX A Test equipment and ancillaries used for tests

HL No	Description	Manufacturer	Model	Ser. No.	Last Cal./ Check	Due Cal./ Check
0337	Probe Set, Hand held, 5 probes	Electro-Metrics	EHFP-30	238	07-Jun-11	07-Jun-12
0415	Cable, Coax, RF, RG-214	Hermon Laboratories	CC-3	056	01-Dec-10	01-Dec-11
0446	Antenna, Loop, Active, 10 kHz - 30 MHz	EMCO	6502	2857	03-Jul-11	03-Jul-12
0521	EMI Receiver (Spectrum Analyzer) with RF filter section 9 kHz-6.5 GHz	Hewlett Packard	8546A	3617A 00319, 3448A002 53	25-Aug-10	25-Aug-11
0583	Antenna, Log Periodic, 200 - 1000 MHz	Hermon Laboratories	LP 200/1000	035	04-Jul-11	04-Jul-12
0604	Antenna BiconiLog Log-Periodic/T Bow-TIE, 26 - 2000 MHz	EMCO	3141	9611-1011	11-Jan-11	11-Jan-12
0812	Cable Coax, RG-214, 11.5 m, N-type connectors	Hermon Laboratories	C214-11	148	01-Dec-10	01-Dec-11
1425	EMI Receiver, 9 kHz - 2.9 GHz, System: HL1426, HL1427	Agilent Technologies	8542E	3710A002 22, 3705A002 04	24-Aug-10	24-Aug-11
1431	Receiver RF Section, 9 kHz-2.9 GHz, part of HL1430 system	Agilent Technologies	85422E	3080700262	25-Nov-10	25-Nov-11
1451	Cable, 1.5 m, N/N-Type	Harbour Industries	MIL 17/60-RG142	1451	01-Sep-10	01-Sep-11
1984	Antenna, Double-Ridged Waveguide Horn, 1-18 GHz, 300 W	EMC Test Systems	3115	9911-5964	16-Nov-10	16-Nov-11
2780	EMC analyzer, 100 Hz to 26.5 GHz	Agilent Technologies	E7405A	MY45102462	07-Jul-11	07-Jul-12
2871	Microwave Cable Assembly, 18 GHz, 6.4 m, SMA - SMA	Huber-Suhner	198-8155-00	2871	14-Sep-10	14-Sep-11
3123	Microwave Cable Assembly, 18 GHz, 5.0 m, SMA - SMA	Huber-Suhner	198-9155-00	3123	09-Jun-11	09-Jun-12
3533	Amplifier, low noise, 6 to 18 GHz	Quinstar Technology	QLJ-06184040-J0	11159001001	23-Dec-10	23-Dec-11
3623	Cable RF, 6.0 m, N type-N type, DC-6.5 GHz	Belden	MIL C-17	NA	19-May-11	19-May-12
3818	PSA Series Spectrum Analyzer, 3 Hz- 44 GHz	Agilent Technologies	E4446A	MY48250288	25-Sep-09	25-Sep-11
3901	Microwave Cable Assembly, 40.0 GHz, 3.5 m, SMA/SMA	Huber-Suhner	SUCOFLEX 102A	1225/2A	07-Feb-11	07-Feb-12

9 APPENDIX B Measurement uncertainties

Expanded uncertainty at 95% confidence in Hermon Labs EMC measurements

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

Hermon Laboratories is accredited by A2LA for calibration according to present requirements of ISO/IEC 17025 and NCSL Z540-1. The accreditation is granted to perform calibration of parameters that are listed in the Scope of Hermon Laboratories Accreditation.
Hermon Laboratories calibrates its reference and transfer standards by calibration laboratories accredited to ISO/IEC 17025 by a mutually recognized Accreditation Body or by a recognized national metrology institute. All reference and transfer standards used in the calibration system are traceable to national or international standards.
In-house calibration of all test and measurement equipment is performed on a regular basis according to Hermon Laboratories calibration procedures, manufacturer calibration/verification procedures or procedures defined in the relevant standards. The Hermon Laboratories test and measurement equipment is calibrated within the tolerances specified by the manufacturers and/or by the relevant standards.

10 APPENDIX C Test laboratory description

Tests were performed at Hermon Laboratories Ltd., which is a fully independent, private, EMC, safety, environmental and telecommunication testing facility.
Hermon Laboratories is listed by the Federal Communications Commission (USA) for all parts of Code of Federal Regulations 47 (CFR 47), Registration Numbers 90624 for OATS and 90623 for the anechoic chamber; by Industry Canada for electromagnetic emissions (file numbers IC 2186A-1 for OATS, IC 2186A-2 for anechoic chamber, IC 2186A-3 for full-anechoic chamber for RE measurements above 1 GHz), certified by VCCI, Japan (the registration numbers are R-808 for OATS, R-1082 for anechoic chamber, G-27 for full-anechoic chamber for RE measurements above 1 GHz, C-845 for conducted emissions site, T-1606 for conducted emissions at telecommunication ports), has a status of a Telefication - Listed Testing Laboratory, Certificate No. L138/00. The laboratory is accredited by American Association for Laboratory Accreditation (USA) according to ISO/IEC 17025 for electromagnetic compatibility, product safety, telecommunications testing and environmental simulation (for exact scope please refer to Certificate No. 839.01). The FCC Designation Number is US1003.

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11 APPENDIX D Specification references

FCC 47CFR part 15: 2010	Radio Frequency Devices
Public notice DA 00- 705: 2000	Filing and measurement guidelines for frequency hopping spread spectrum systems.
ANSI C63.2: 1996	American National Standard for Instrumentation-Electromagnetic Noise and Field Strength, 10 kHz to 40 GHz-Specifications
ANSI C63.4: 2003	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
RSS-210 Issue 8: 2010	Low Power Licence- Exempt Radiocommunication Devices
RSS-Gen Issue 3: 2010	General Requirements and Information for the Certification of Radiocommunication Equipment

12 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
Hermon Laboratories, model LP 200/1000
Ser.No.035, HL 0583

Frequency, MHz	Antenna factor, dB(1/m)
200	12.0
250	12.5
300	14.5
350	15.7
400	16.0
450	16.7
500	18.1
550	18.2
600	18.8
650	20.1
700	21.8
750	21.4
800	21.4
850	22.4
900	22.8
950	23.4
1000	24.6

The antenna factor shall be added to receiver reading in dBμV to obtain field strength in dBμV/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
Double-ridged wave guide horn antenna
Model 3115, S/N 9911-5964, HL1984

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

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

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

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

Cable loss
Microwave Cable Assembly, 18 GHz, 6.4 m, SMA – SMA, Huber-Suhner, model 198-9155-00
HL 3123

Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB
10	0.11	3600	1.97	7400	3.12	11200	3.90	15100	4.74
30	0.17	3700	1.97	7500	3.13	11300	3.93	15200	4.70
50	0.25	3800	2.03	7600	3.16	11400	3.88	15300	4.73
100	0.32	3900	2.04	7700	3.18	11500	3.87	15400	4.78
200	0.46	4000	2.10	7800	3.20	11600	3.90	15500	4.75
300	0.58	4100	1.97	7900	3.23	11700	3.86	15600	4.76
400	0.65	4200	1.97	8000	3.25	11800	3.88	15700	4.75
500	0.74	4300	2.03	8100	3.26	11900	3.86	15800	4.78
600	0.82	4400	2.04	8200	3.28	12000	3.89	15900	4.79
700	0.89	4500	2.10	8300	3.31	12100	3.94	16000	4.73
800	0.95	4600	1.97	8400	3.31	12200	3.92	16100	4.78
900	1.01	4700	1.97	8500	3.32	12300	3.96	16200	4.84
1000	1.07	4800	2.03	8600	3.34	12400	4.01	16300	4.90
1100	1.11	4900	2.04	8700	3.35	12500	4.07	16400	4.87
1200	1.17	5000	2.10	8800	3.37	12600	4.08	16500	4.90
1300	1.22	5100	2.53	8900	3.39	12700	4.17	16600	4.98
1400	1.27	5200	2.55	9000	3.42	12800	4.26	16700	5.05
1500	1.29	5300	2.60	9100	3.43	12900	4.16	16800	5.04
1600	1.35	5400	2.61	9200	3.51	13000	4.21	16900	5.02
1700	1.40	5500	2.64	9300	3.52	13100	4.24	17000	5.09
1800	1.44	5600	2.70	9400	3.54	13200	4.27	17100	5.07
1900	1.51	5700	2.67	9500	3.63	13300	4.31	17200	5.10
2000	1.49	5800	2.71	9600	3.61	13400	4.33	17300	5.13
2100	1.55	5900	2.74	9700	3.71	13500	4.25	17400	5.23
2200	1.58	6000	2.80	9800	3.66	13600	4.27	17500	5.21
2300	1.62	6100	2.79	9900	3.77	13700	4.33	17600	5.22
2400	1.72	6200	2.81	10000	3.75	13800	4.33	17700	5.36
2500	1.76	6300	2.83	10100	3.77	13900	4.31	17800	5.35
2600	1.78	6400	2.86	10200	3.80	14000	4.30	17900	5.45
2700	1.80	6500	2.88	10300	3.79	14100	4.30	18000	5.43
2800	1.86	6600	2.90	10400	3.87	14200	4.31		
2900	1.90	6700	2.92	10500	3.83	14300	4.37		
3000	1.90	6800	2.98	10600	3.88	14400	4.35		
3100	1.97	6900	2.98	10700	3.86	14600	4.53		
3200	1.97	7000	3.00	10800	3.87	14700	4.50		
3300	2.03	7100	3.02	10900	3.90	14800	4.62		
3400	2.04	7200	3.04	11000	3.84	14900	4.65		
3500	2.10	7300	3.06	11100	3.88	15000	4.79		

Cable loss
Cable coaxial, MIL C-17, N type-N type, 6 m
Belden, HL 3623

Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB
10	0.13	2600	4.38	5400	7.76
30	0.25	2700	4.53	5500	7.79
50	0.33	2800	4.64	5600	7.88
100	0.49	2900	4.79	5700	7.93
200	0.76	3000	4.93	5800	8.05
300	0.97	3100	5.02	5900	8.03
400	1.18	3200	5.18	6000	8.07
500	1.38	3300	5.27	6100	8.14
600	1.54	3400	5.41	6200	8.21
700	1.71	3500	5.57	6300	8.28
800	1.88	3600	5.65	6400	8.35
900	2.04	3700	5.82	6500	8.43
1000	2.19	3800	5.89		
1100	2.38	3900	6.02		
1200	2.61	4000	6.15		
1300	2.63	4100	6.26		
1400	2.79	4200	6.37		
1500	2.90	4300	6.52		
1600	3.08	4400	6.63		
1700	3.21	4500	6.74		
1800	3.31	4600	6.86		
1900	3.47	4700	6.98		
2000	3.59	4800	7.09		
2100	3.74	4900	7.17		
2200	3.86	5000	7.30		
2300	3.98	5100	7.41		
2400	4.12	5200	7.59		
2500	4.24	5300	7.71		

Cable loss
Microwave Cable Assembly, Huber-Suhner, 40 GHz, 3.5 m, SMA-SMA, S/N 1225/2A
HL 3901

Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB
10	0.09	9500	4.29	21000	6.67
100	0.41	10000	4.40	22000	6.92
500	0.93	10500	4.52	23000	7.00
1000	1.33	11000	4.64	24000	7.18
1500	1.63	11500	4.76	25000	7.29
2000	1.90	12000	4.87	26000	7.55
2500	2.12	12500	4.99	27000	7.70
3000	2.33	13000	5.11	28000	7.88
3500	2.50	13500	5.20	29000	8.02
4000	2.67	14000	5.31	30000	8.15
4500	2.82	14500	5.42	31000	8.35
5000	2.99	15000	5.51	32000	8.40
5500	3.16	15500	5.58	33000	8.62
6000	3.32	16000	5.68	34000	8.73
6500	3.51	16500	5.78	35000	8.78
7000	3.65	17000	5.91	36000	8.94
7500	3.79	17500	5.99	37000	9.21
8000	3.92	18000	6.07	38000	9.37
8500	4.04	19000	6.36	39000	9.45
9000	4.18	20000	6.49	40000	9.52

13 APPENDIX F Abbreviations and acronyms

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

END OF DOCUMENT