HERMON LABORATORIES

839.01
Electrical

Hermon Laboratories Ltd.
P.O.Box 23, Binyamina 30500, Israel
Tel. +972 4628 8001
Fax. +972 4628 8277
E-mail: mail@hermonlabs.com

TEST REPORT

ACCORDING TO: FCC part 24

FOR:

Motorola Israel Ltd.

1X CDMA dual band 800&1900 MHz module

Model:C24

Model number:F6490

HERMON LABORATORIES

Table of contents

HERMON LABORATORIES

1 Applicant information

Client name:	Motorola Israel Ltd.
Address:	3 Kremenetski street, P.O.B. 25016, 67899 Tel Aviv, Israel
Telephone:	+972 3565 8888
Fax:	+972 3565 9968
E-mail:	buh002@motorola.com
Contact name:	Mr. Udi Hadar

2 Equipment under test attributes

Product name:	1X CDMA dual band 800 & 1900 MHz module
Product type:	Transceiver
Model(s):	C24
Model number:	F6490
Receipt date	9/8/2008

3 Manufacturer information

Client name:	Motorola Israel Ltd.
Address:	3 Kremenetski street, P.O.B. 25016, 67899 Tel Aviv, Israel
Telephone:	+972 3565 8888
Fax:	+972 3565 9968
E-mail:	buh002@motorola.com
Contact name:	Mr. Udi Hadar

4 Test details

Project ID:	19062
Location:	Hermon Laboratories Ltd. P.O.Box 23, Binyamina 30500, Israel
Test started:	9/8/2008
Test completed:	10/15/2008
Test specification(s):	FCC 47 CFR part 24:2007

5 Tests summary

Test	Status
Transmitter characteristics	
Section 24.232, RF output power	Pass
Section 24.238(b), 2.1049, Occupied bandwidth	Pass
Section 24.238, Spurious emissions at antenna terminal	Pass
Section 24.238, Emissions at band edges	Pass
Section 24.238, Radiated spurious emissions	Pass
Section 24.235, Frequency stability	Pass

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

	Name and Title	Date	Signature
Tested by:	Mr. S. Samokha, test engineer	October 15, 2008	
Reviewed by:	Mrs. M. Cherniavsky, certification engineer	October 15, 2008	
Approved by:	Mr. M. Nikishin, EMC and radio group leader	October 16, 2008	

6 EUT description

6.1 General information

The EUT, C24, is a dual band (800/1900 MHz) 1X CDMA transceiver, high-speed, which enables seamless connectivity for today's fastest-growing M2M applications. It also has an integrated sGPS receiver. The C24, a single engine capable of multiple software configurations, is designed for flexibility to meet the specific needs of its customers around the globe.
The EUT is powered by 120 VAC/3.8 VDC wall-outlet adapter.
Throughout the testing the EUT was installed into an evaluation board.

6.2 Support and test equipment

Description	Manufacturer	Model number	Serial number
Evaluation board	Motorola	FCN554OC	8488899V01-P3
RF splitter	Omni Spectra	2090-6204-00	2011
Laptop	Lenovo	3000N100	NA
Base station (universal radio communication tester)	Rohde&Schwarz	CMU2000	104515
AC/DC adapter	Motorola	FMP5202A	0534610-0838738-B-R

6.3 Changes made in the EUT

No changes were implemented in the EUT.

6.4 Transmitter characteristics

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

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	1850 – 1910 MHz			
Operating frequency range	1851.25 – 1908.75 MHz			
RF channel spacing	1.25 MHz			
Maximum rated output power	At transmitter 50 Ω RF output connector			30 dBm
	Effective radiated power (for equipment with no RF connector)			
Is transmitter output power variable?		No		
	X	Yes		
			continuous variable	
			X stepped variable with stepsize	1 dB
			minimum RF power	-60 dBm
			maximum RF power	30 dBm

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

Transmitter 99% power bandwidth	1.25 MHz						
Transmitter aggregate data rate/s	9.6 kbps, 14.4 kbps, 153.6 kbps, 230.4 kbps, 307.2 kbps						
Type of multiplexing	CDMA						
Modulating test signal (baseband)	PRBS						
Maximum transmitter duty cycle in normal use	100 %						
Transmitter power source							
X DC	**Nominal rated voltage**	3.6 V (3.3V - 4.2V) via 120 VAC wall-outlet adapter					
Common power source for transmitter and receiver			X	yes		no	

Test specification:	Section 24.232, Peak output power		
Test procedure:	FCC part 24, Section 24.232		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

7 Transmitter tests according to 47CFR part 24 requirements

7.1 Peak output power

7.1.1 General

This test was performed to measure the peak output power at RF antenna connector. Specification test limits are given in Table 7.1.1.

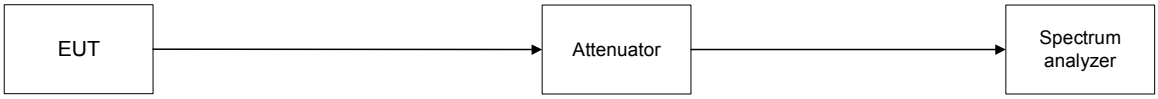
Table 7.1.1 Peak output power limits

Assigned frequency range, MHz	Maximum peak output power	
	W	dBm
1850 - 1910	2.0	33.0

7.1.2 Test procedure

7.1.2.1 The EUT was set up as shown in Figure 7.1.1, energized and its proper operation was checked.
7.1.2.2 The EUT was adjusted to produce maximum available to the end user RF output power.
7.1.2.3 The peak output power was measured with spectrum analyzer as provided in Table 7.1.2 and associated plots.

Figure 7.1.1 Peak output power test setup



Test specification:	**Section 24.232, Peak output power**		
Test procedure:	FCC part 24, Section 24.232		
Test mode:	Compliance	**Verdict:**	PASS
Date:	9/10/2008		
Temperature: 25ºC	**Air Pressure:** 1014 hPa	**Relative Humidity:** 43 %	**Power Supply:** 3.8 VDC
Remarks:			

Table 7.1.2 Peak output power test results

OPERATING FREQUENCY RANGE:	1850-1910MHz
DETECTOR USED:	Peak
RESOLUTION BANDWIDTH:	1 MHz
VIDEO BANDWIDTH:	3 MHz
MODULATION:	O-QPSK/H-PSK
MODULATING SIGNAL:	PRBS
BIT RATE:	307.6 kbps
TRANSMITTER OUTPUT POWER:	Maximum

Carrier frequency, MHz	Spectrum analyzer reading, dBm	External attenuation, dB	Cable loss, dB	RF output power, dBm	Limit, dBm	Margin, dB	Verdict
RC3 SO 55 H-PSK Bit rate FULL							
1851.25	28.42	Included	Included	28.42	33.0	-4.58	Pass
1880.00	28.10	Included	Included	28.10	33.0	-4.90	Pass
1908.75	27.79	Included	Included	27.79	33.0	-5.21	Pass
RC3 SO 55 H-PSK Bit rate HALF							
1851.25	28.38	Included	Included	28.38	33.0	-4.62	Pass
1880.00	28.07	Included	Included	28.07	33.0	-4.93	Pass
1908.75	27.93	Included	Included	27.93	33.0	-5.07	Pass
RC3 SO 55 H-PSK Bit rate FULL							
1851.25	28.55	Included	Included	28.55	33.0	-4.45	Pass
1880.00	28.04	Included	Included	28.04	33.0	-4.96	Pass
1908.75	27.78	Included	Included	27.78	33.0	-5.22	Pass
RC3 SO 2 O-QPSK Bit rate FULL							
1851.25	28.63	Included	Included	28.63	33.0	-4.37	Pass
1880.00	28.21	Included	Included	28.21	33.0	-4.79	Pass
1908.75	27.93	Included	Included	27.93	33.0	-5.07	Pass
RC1 SO 55 O-QPSK Bit rate FULL							
1851.25	28.72	Included	Included	28.72	33.0	-4.28	Pass
1880.00	28.35	Included	Included	28.35	33.0	-4.65	Pass
1908.75	28.11	Included	Included	28.11	33.0	-4.89	Pass
RC1 SO 2 O-QPSK Bit rate FULL 9.6							
1851.25	28.77	Included	Included	28.77	33.0	-4.23	Pass
1880.00	28.69	Included	Included	28.69	33.0	-4.31	Pass
1908.75	27.98	Included	Included	27.98	33.0	-5.02	Pass

Reference numbers of test equipment used

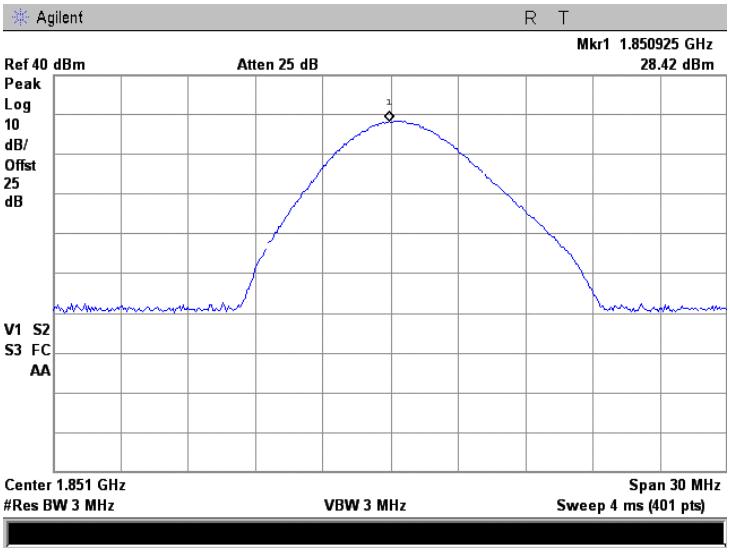
HL 2011	HL 2634	HL 2780	HL 3439				

Full description is given in Appendix A.

Test specification:	**Section 24.232, Peak output power**		
Test procedure:	FCC part 24, Section 24.232		
Test mode:	Compliance	**Verdict:**	PASS
Date:	9/10/2008		
Temperature: 25ºC	**Air Pressure:** 1014 hPa	**Relative Humidity:** 43 %	**Power Supply:** 3.8 VDC
Remarks:			

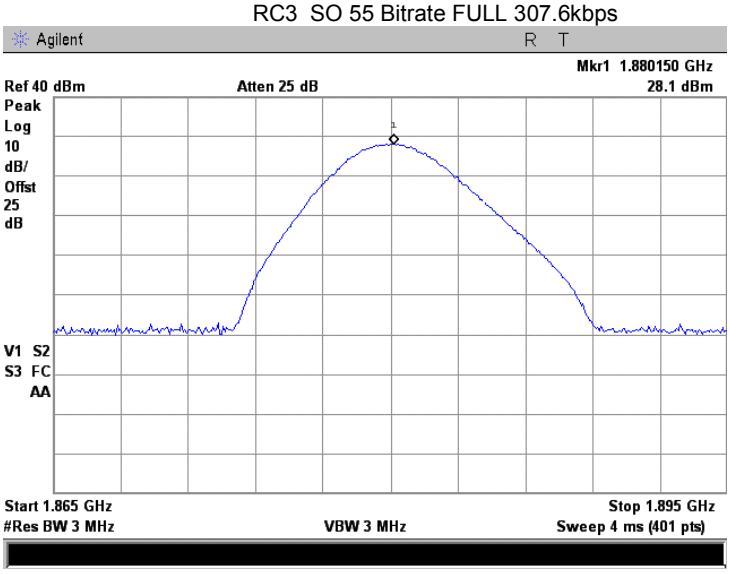
Plot 7.1.1 RF power output test results at low frequency

NOTE RC3 SO 55 Bitrate FULL 307.6kbps



Plot 7.1.2 RF power output test results at mid frequency

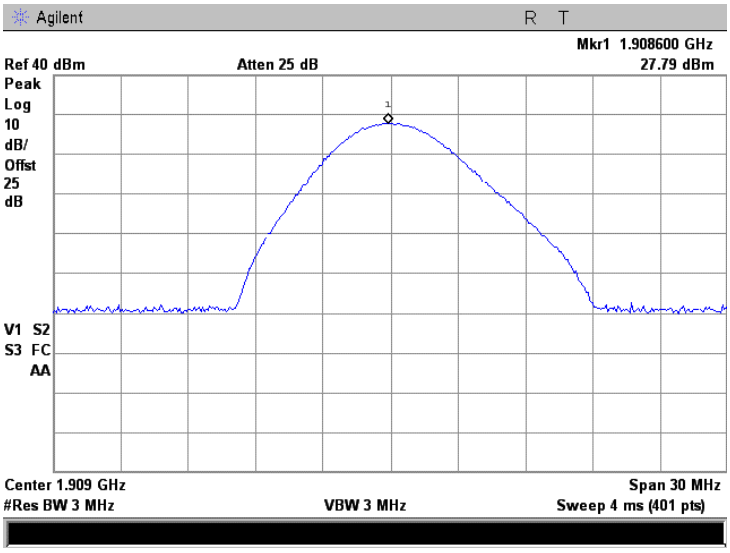
NOTE RC3 SO 55 Bitrate FULL 307.6kbps



Test specification:	Section 24.232, Peak output power		
Test procedure:	FCC part 24, Section 24.232		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

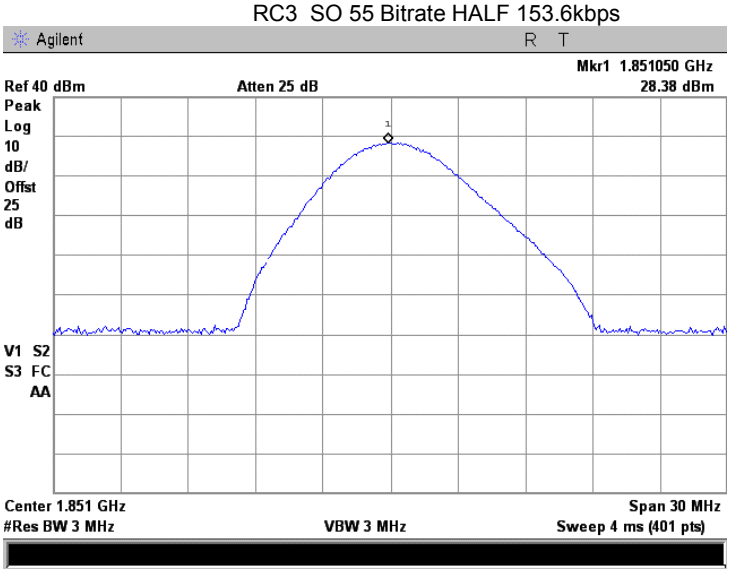
Plot 7.1.3 RF power output test results at high frequency

NOTE RC3 SO 55 Bitrate FULL 307.6kbps



Plot 7.1.4 RF power output test results at low frequency

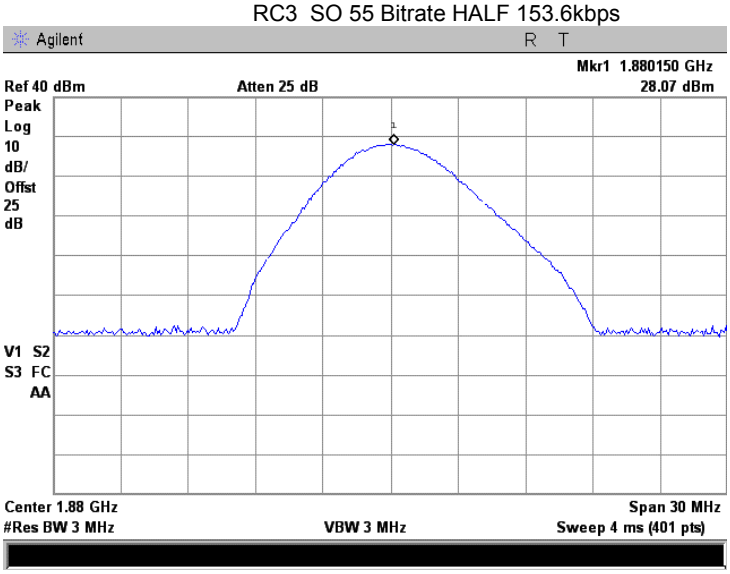
NOTE RC3 SO 55 Bitrate HALF 153.6kbps



Test specification:	Section 24.232, Peak output power		
Test procedure:	FCC part 24, Section 24.232		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

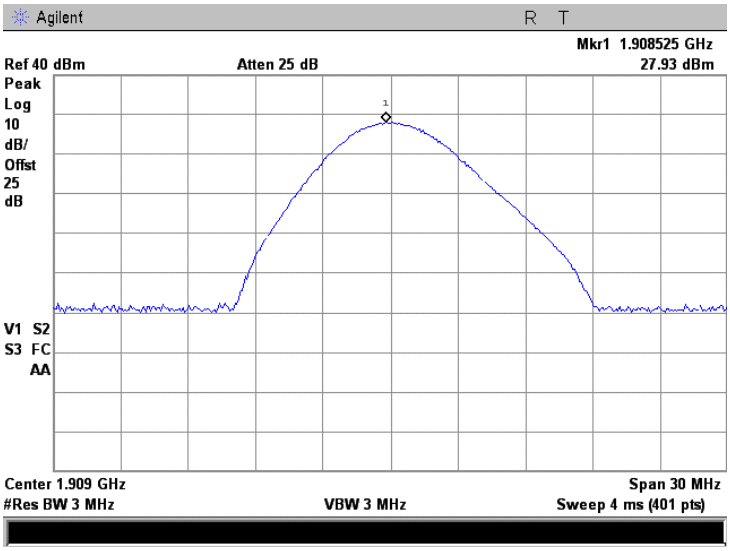
Plot 7.1.5 RF power output test results at mid frequency

NOTE RC3 SO 55 Bitrate HALF 153.6kbps



Plot 7.1.6 RF power output test results at high frequency

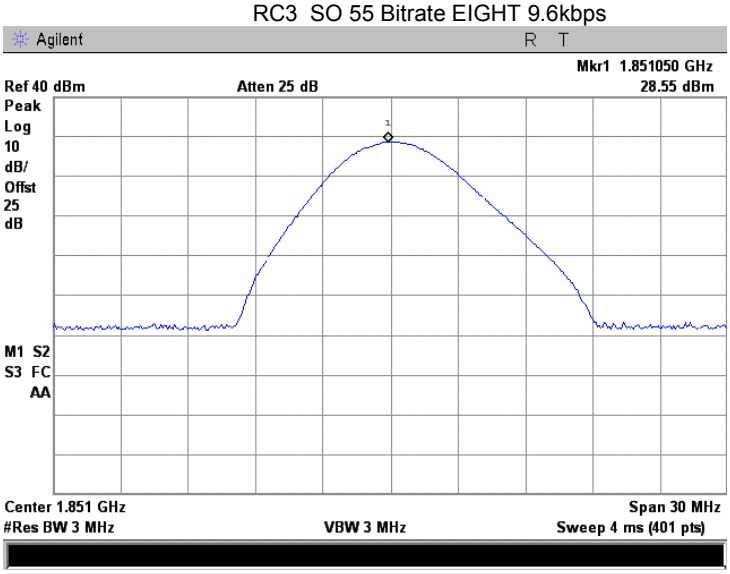
NOTE RC3 SO 55 Bitrate HALF 153.6kbps



Test specification:	Section 24.232, Peak output power		
Test procedure:	FCC part 24, Section 24.232		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

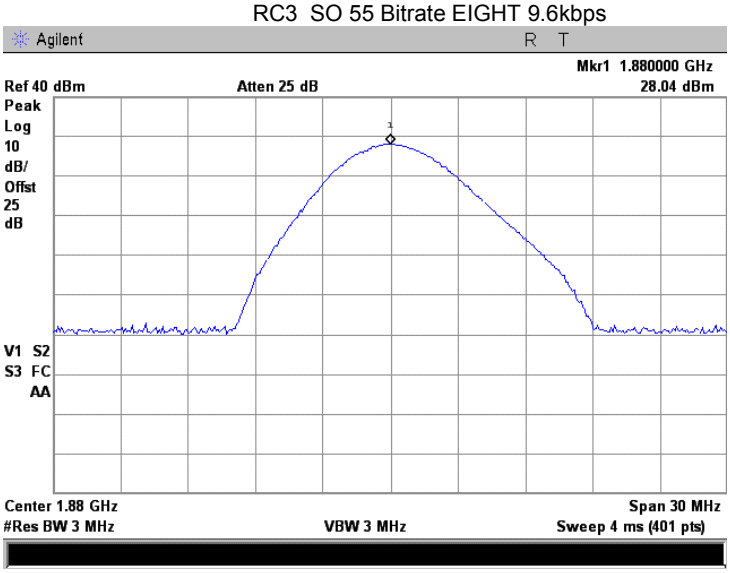
Plot 7.1.7 RF power output test results at low frequency

NOTE RC3 SO 55 Bitrate EIGHT 9.6kbps



Plot 7.1.8 RF power output test results at mid frequency

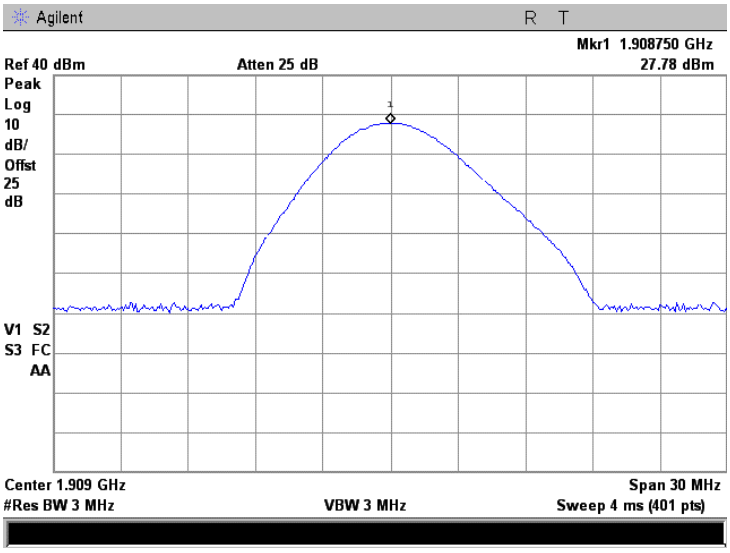
NOTE RC3 SO 55 Bitrate EIGHT 9.6kbps



Test specification:	Section 24.232, Peak output power		
Test procedure:	FCC part 24, Section 24.232		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

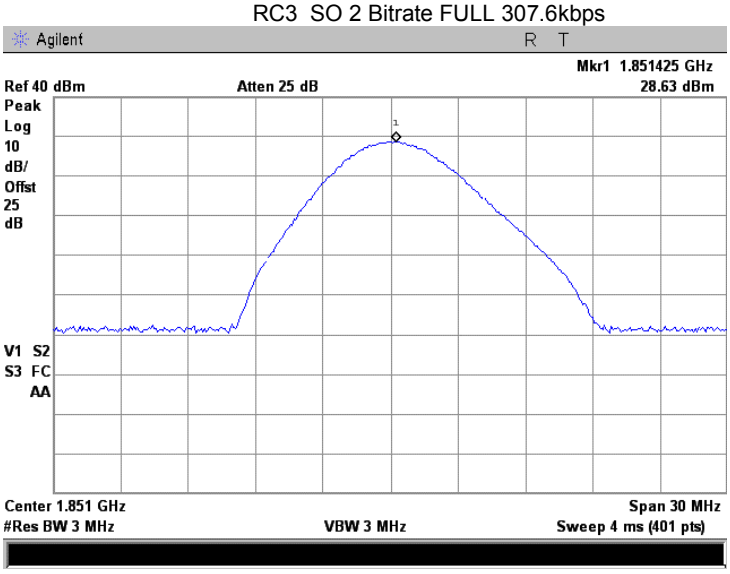
Plot 7.1.9 RF power output test results at high frequency

NOTE RC3 SO 55 Bitrate EIGHT 9.6kbps



Plot 7.1.10 RF power output test results at low frequency

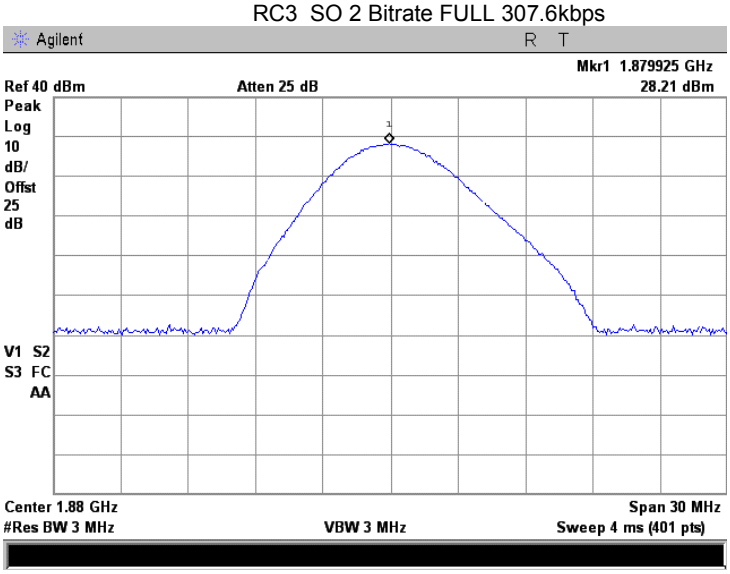
NOTE RC3 SO 2 Bitrate FULL 307.6kbps



Test specification:	Section 24.232, Peak output power		
Test procedure:	FCC part 24, Section 24.232		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

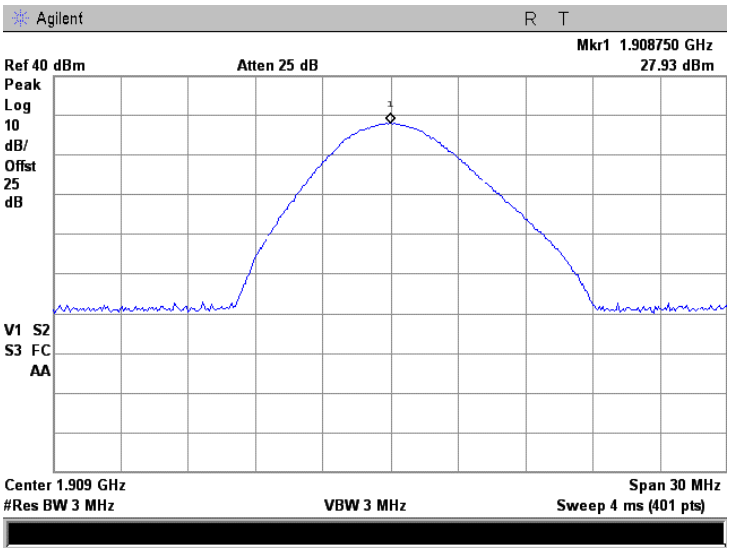
Plot 7.1.11 RF power output test results at mid frequency

NOTE RC3 SO 2 Bitrate FULL 307.6kbps



Plot 7.1.12 RF power output test results at high frequency

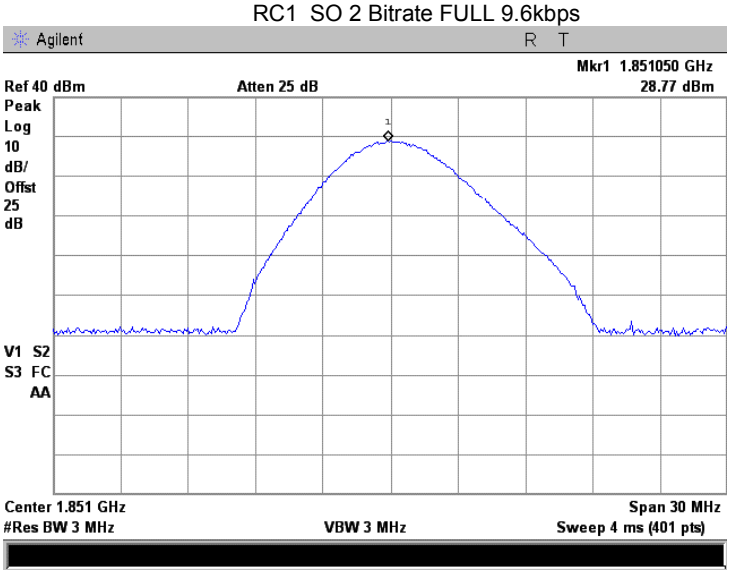
NOTE RC3 SO 2 Bitrate FULL 307.6kbps



Test specification:	Section 24.232, Peak output power		
Test procedure:	FCC part 24, Section 24.232		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

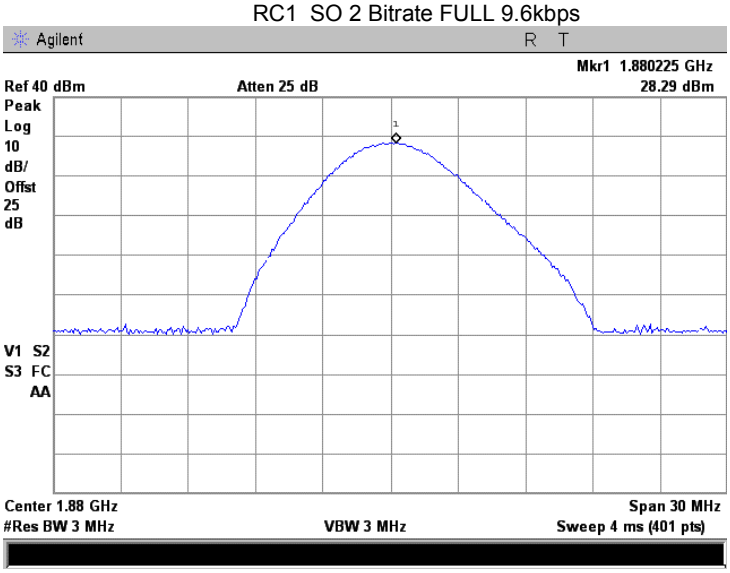
Plot 7.1.13 RF power output test results at low frequency

NOTE RC1 SO 2 Bitrate FULL 9.6kbps



Plot 7.1.14 RF power output test results at mid frequency

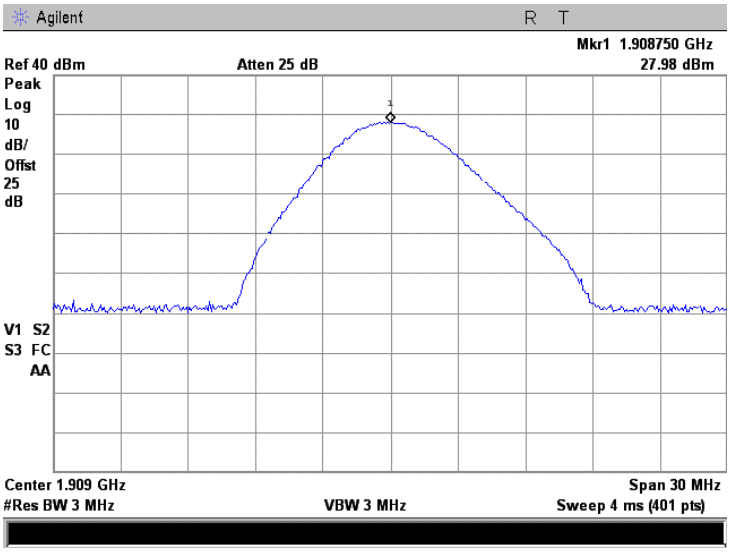
NOTE RC1 SO 2 Bitrate FULL 9.6kbps



Test specification:	Section 24.232, Peak output power		
Test procedure:	FCC part 24, Section 24.232		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

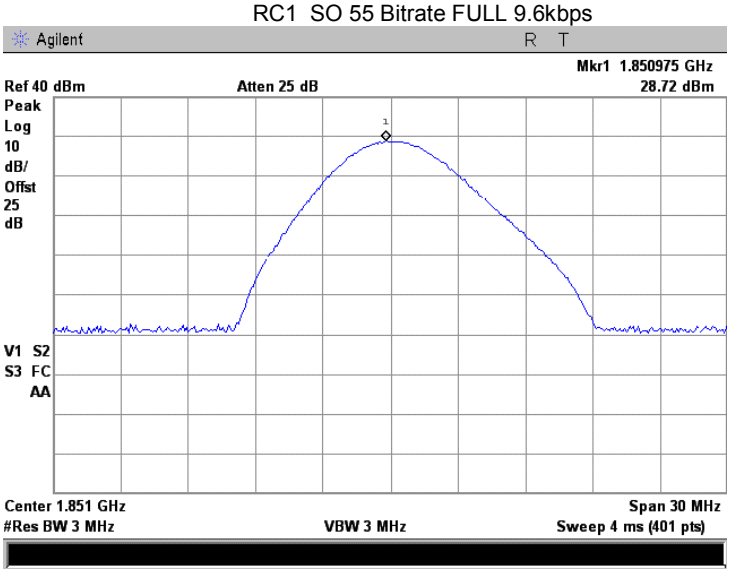
Plot 7.1.15 RF power output test results at high frequency

NOTE RC1 SO 2 Bitrate FULL 9.6kbps



Plot 7.1.16 RF power output test results at low frequency

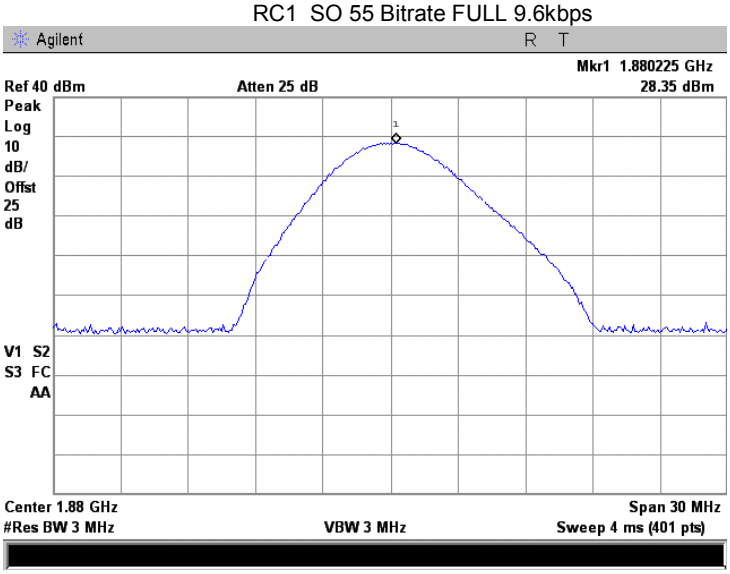
NOTE RC1 SO 55 Bitrate FULL 9.6kbps



Test specification:	Section 24.232, Peak output power		
Test procedure:	FCC part 24, Section 24.232		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

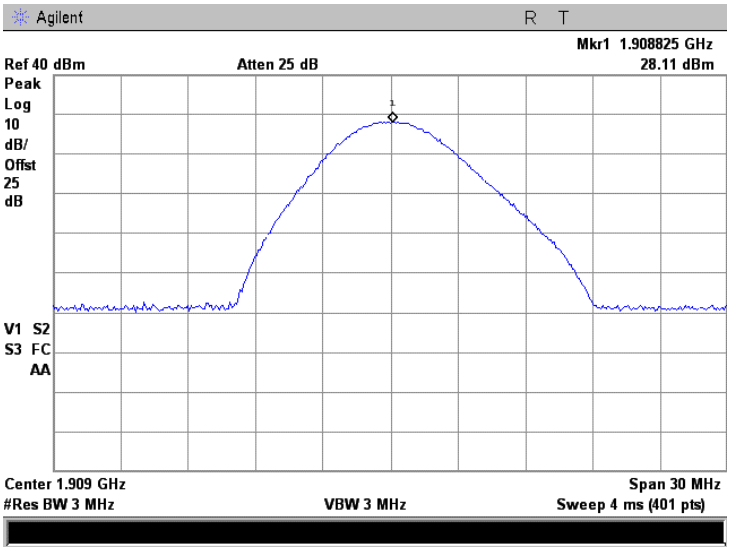
Plot 7.1.17 RF power output test results at mid frequency

NOTE RC1 SO 55 Bitrate FULL 9.6kbps



Plot 7.1.18 RF power output test results at high frequency

NOTE RC1 SO 55 Bitrate FULL 9.6kbps



Test specification:	Section 24.238(b), Occupied bandwidth		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

7.2 Occupied bandwidth test

7.2.1 General

This test was performed to measure transmitter occupied bandwidth. Specification test limits are given in Table 7.2.1

Table 7.2.1 Occupied bandwidth limits

Assigned frequency, MHz	Modulation envelope reference points*, dBc
1850 – 1910	26

* - Modulation envelope reference points are provided in terms of attenuation below the unmodulated 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 the unmodulated carrier and the reference peak power level was measured.
7.2.2.3 The EUT was set to transmit the normally modulated carrier.
7.2.2.4 The transmitter occupied bandwidth was measured with spectrum analyzer as a frequency delta between the reference points on modulation envelope and the results provided in Table 7.2.2 and the associated plots.

Figure 7.2.1 Occupied bandwidth test setup

Test specification:	**Section 24.238(b), Occupied bandwidth**		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	**Verdict:**	PASS
Date:	9/15/2008		
Temperature: 25ºC	**Air Pressure:** 1011 hPa	**Relative Humidity:** 48 %	**Power Supply:** 3.8 VDC
Remarks:			

Table 7.2.2 Occupied bandwidth test results

DETECTOR USED:	Peak hold
RESOLUTION BANDWIDTH:	3 kHz
VIDEO BANDWIDTH:	10 kHz
MODULATION ENVELOPE REFERENCE POINTS:	26 dBc
MODULATION:	CDMA
MODULATING SIGNAL:	PRBS

Carrier frequency, MHz	Occupied bandwidth, kHz
RC3 SO 55 H-PSK Bitrate FULL 307.6kbps	
1851.25	1235.0
1880.00	1230.0
1909.75	1235.0
RC3 SO 55 H-PSK Bitrate HALF 153.6kbps	
1851.25	1240.0
1880.00	1235.0
1909.75	1220.0
RC3 SO 55 H-PSK Bitrate EIGHT 9.6kbps	
1851.25	1240.0
1880.00	1230.0
1909.75	1250.0
RC3 SO 2 H-PSK Bitrate FULL 307.6kbps	
1851.25	1240.0
1880.00	1235.0
1909.75	1240.0
RC1 SO 55 O-QPSK Bitrate FULL 9.6kbps	
1851.25	1245.0
1880.00	1240.0
1909.75	1240.0
RC1 SO 2 O-QPSK Bitrate FULL 9.6kbps	
1851.25	1245.0
1880.00	1245.0
1909.75	1225.0

Reference numbers of test equipment used

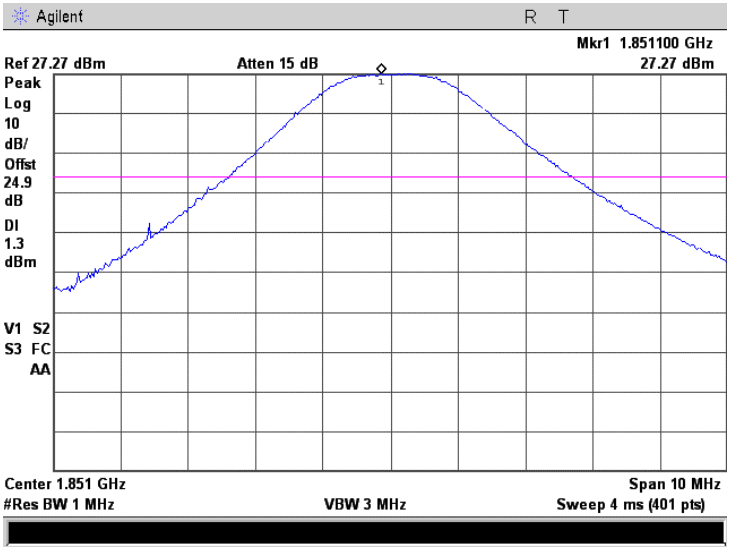
HL 2910	HL 2912	HL 3001	HL 3178	HL 3182		

Full description is given in Appendix A.

Test specification:	Section 24.238(b), Occupied bandwidth		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

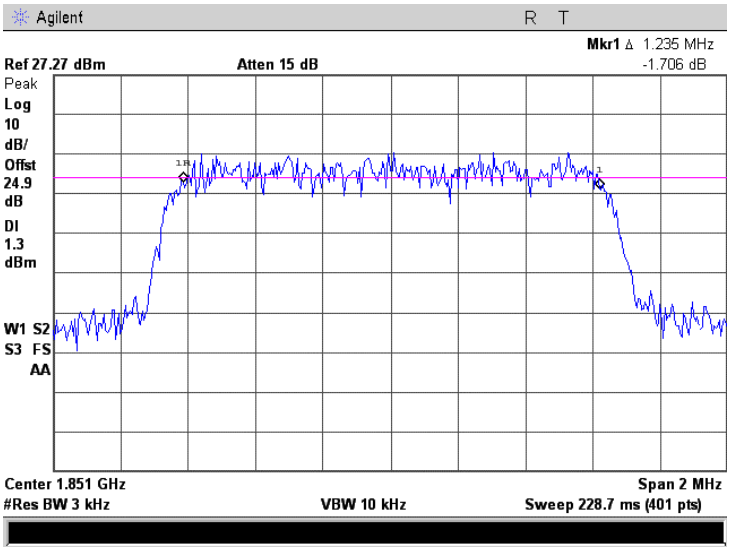
Plot 7.2.1 Occupied bandwidth test result at low frequency, reference level

NOTE RC3 SO 55 H-PSK Bitrate FULL 307.6kbps



Plot 7.2.2 Occupied bandwidth test result at low frequency

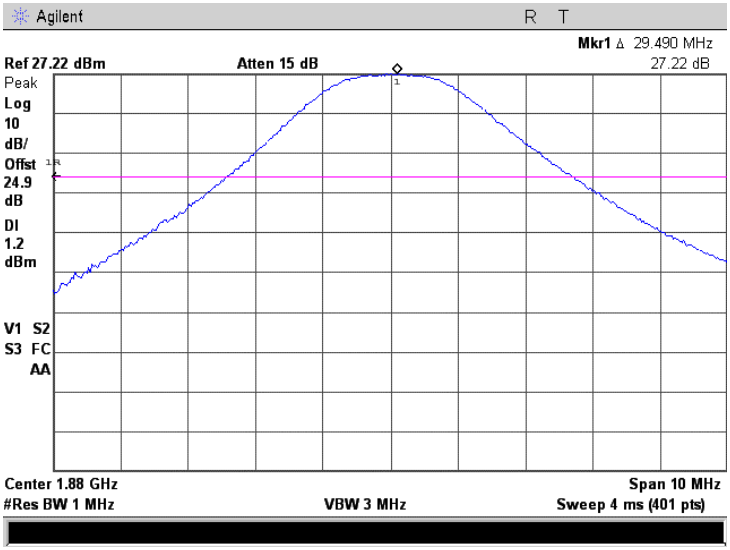
NOTE RC3 SO 55 H-PSK Bitrate FULL 307.6kbps



Test specification:	Section 24.238(b), Occupied bandwidth		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

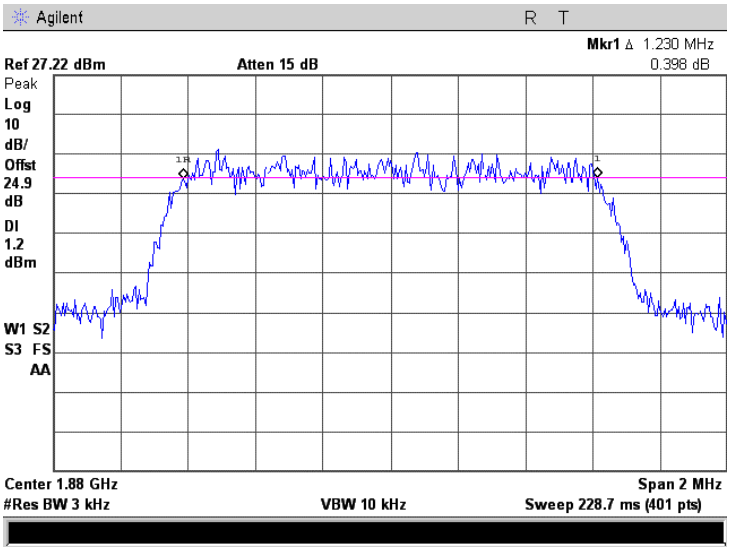
Plot 7.2.3 Occupied bandwidth test result at mid frequency, reference level

NOTE RC3 SO 55 H-PSK Bitrate FULL 307.6kbps



Plot 7.2.4 Occupied bandwidth test result at mid frequency

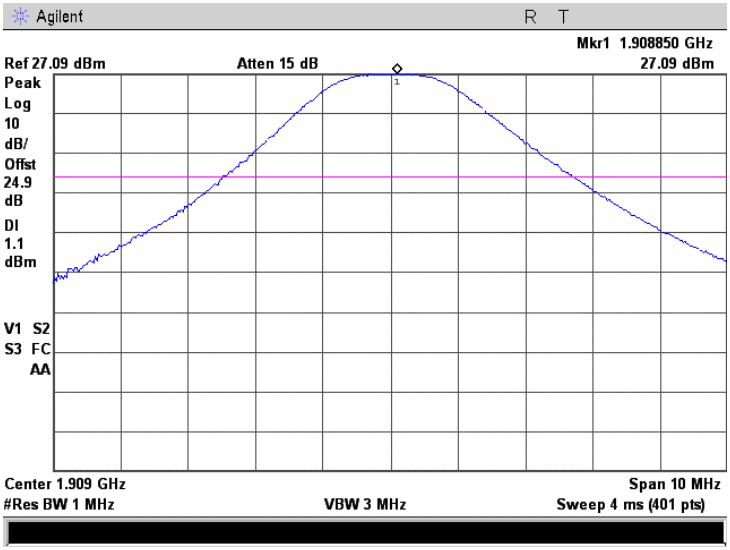
NOTE RC3 SO 55 H-PSK Bitrate FULL 307.6kbps



Test specification:	Section 24.238(b), Occupied bandwidth		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

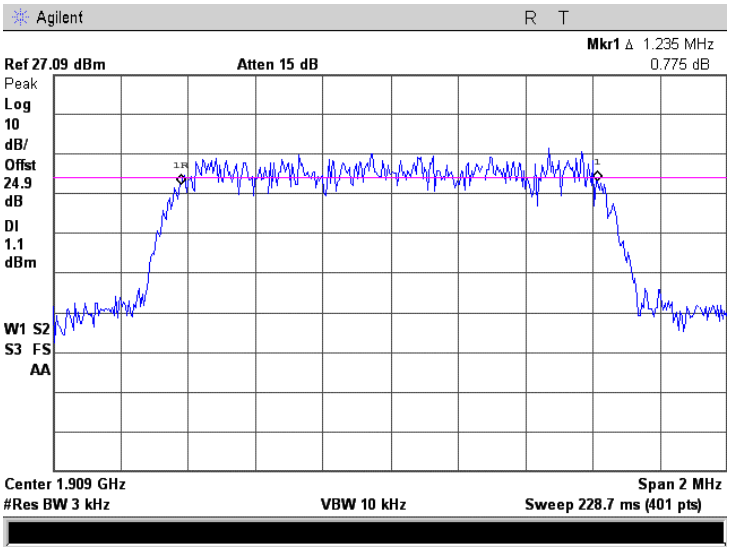
Plot 7.2.5 Occupied bandwidth test result at high frequency, reference level

NOTE RC3 SO 55 H-PSK Bitrate FULL 307.6kbps



Plot 7.2.6 Occupied bandwidth test result at high frequency

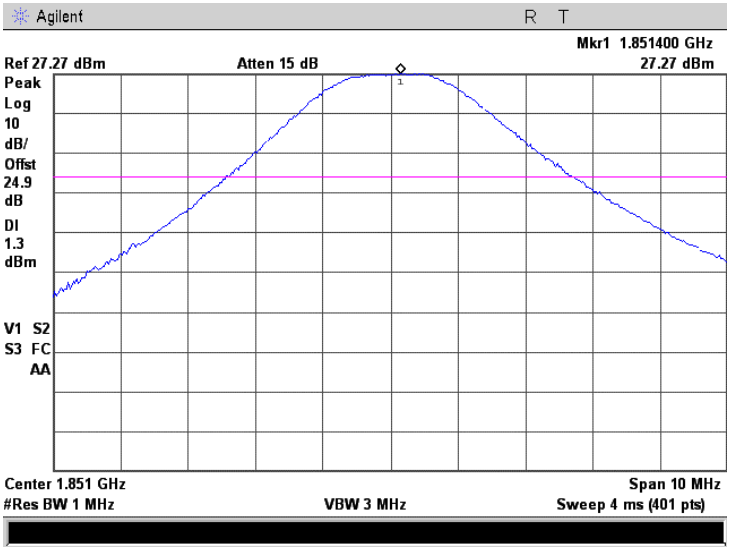
NOTE RC3 SO 55 H-PSK Bitrate FULL 307.6kbps



Test specification:	Section 24.238(b), Occupied bandwidth		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

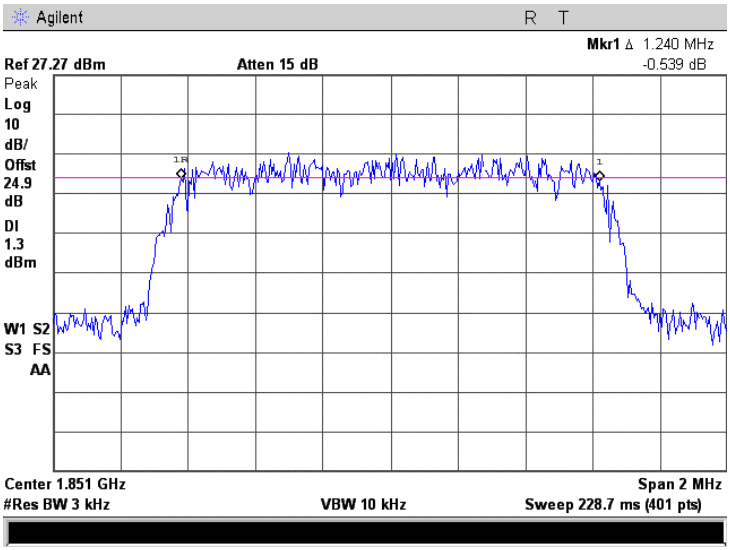
Plot 7.2.7 Occupied bandwidth test result at low frequency, reference level

NOTE RC3 SO 55 H-PSK Bitrate HALF 153.6kbps



Plot 7.2.8 Occupied bandwidth test result at low frequency

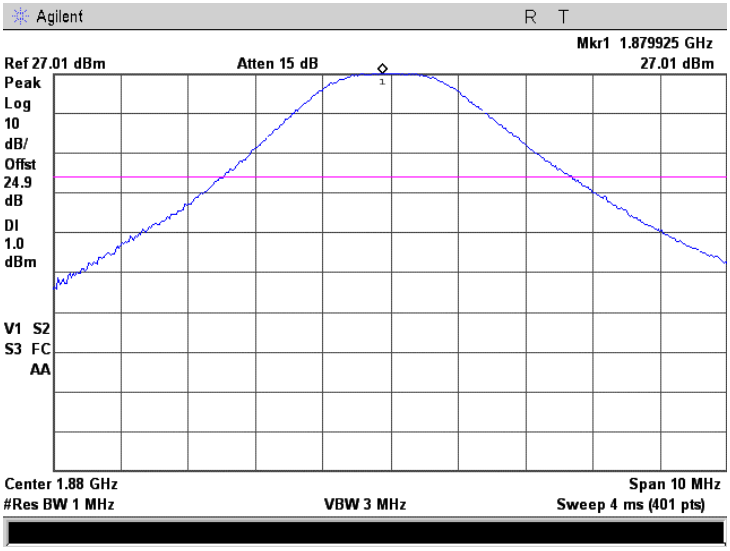
NOTE RC3 SO 55 H-PSK Bitrate HALF 153.6kbps



Test specification:	Section 24.238(b), Occupied bandwidth		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

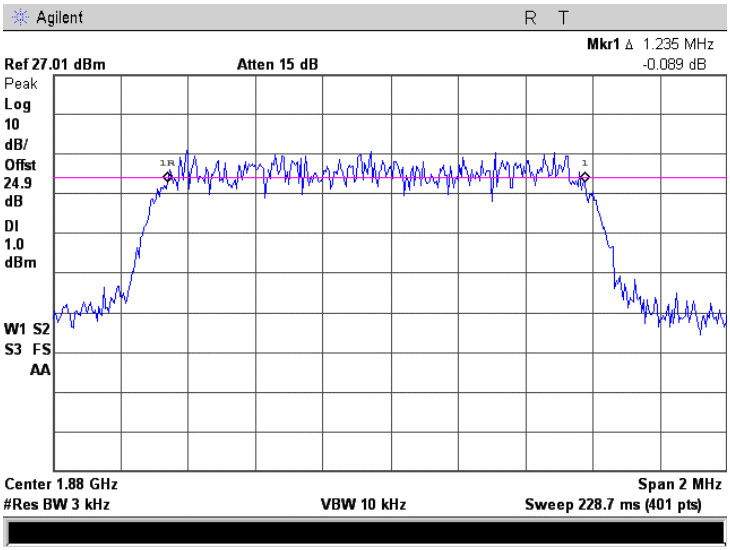
Plot 7.2.9 Occupied bandwidth test result at mid frequency, reference level

NOTE RC3 SO 55 H-PSK Bitrate FULL HALF 153.6kbps



Plot 7.2.10 Occupied bandwidth test result at mid frequency

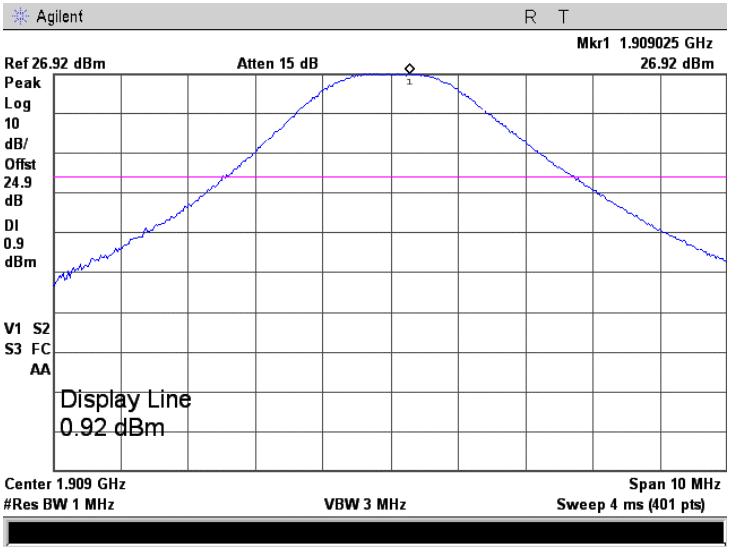
NOTE RC3 SO 55 H-PSK Bitrate FULL HALF 153.6kbps



Test specification:	Section 24.238(b), Occupied bandwidth		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

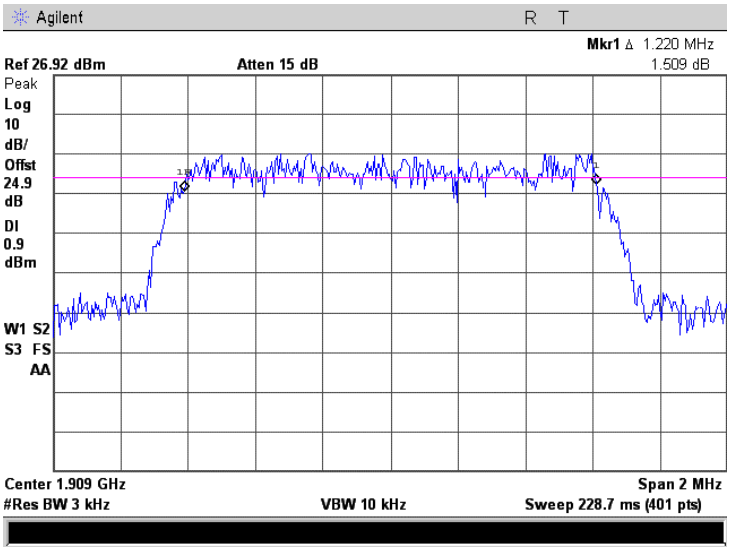
Plot 7.2.11 Occupied bandwidth test result at high frequency, reference level

NOTE RC3 SO 55 H-PSK Bitrate HALF 153.6kbps



Plot 7.2.12 Occupied bandwidth test result at high frequency

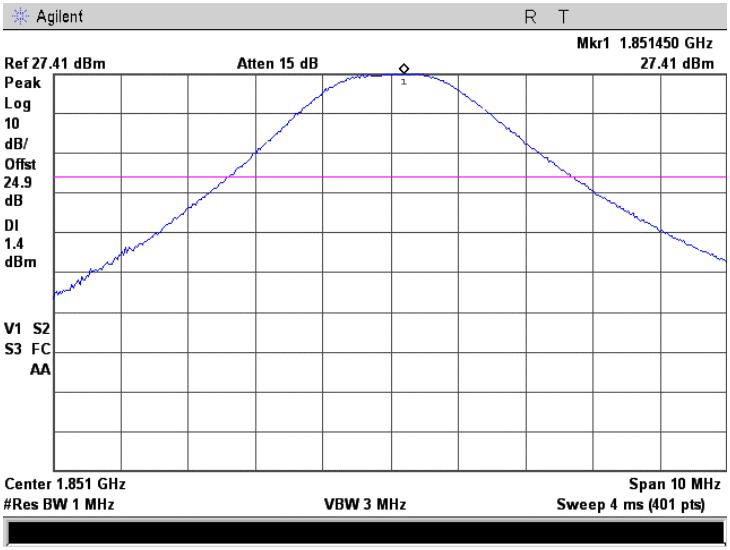
NOTE RC3 SO 55 H-PSK Bitrate HALF 153.6kbps



Test specification:	Section 24.238(b), Occupied bandwidth		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

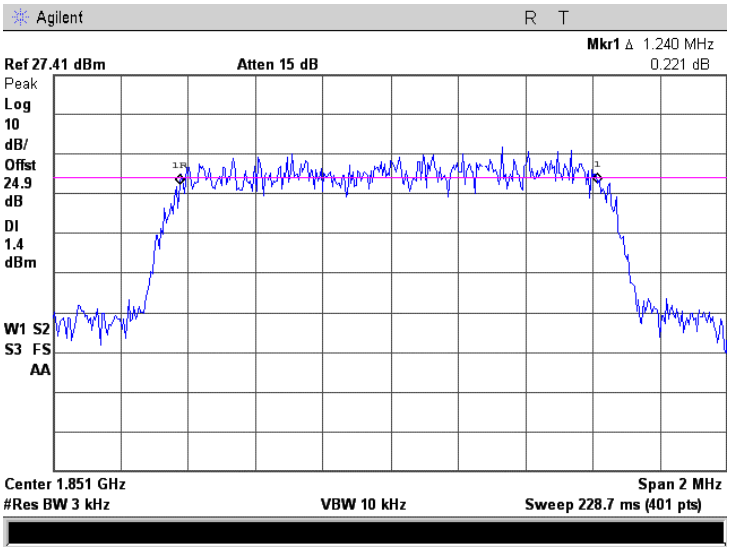
Plot 7.2.13 Occupied bandwidth test result at low frequency, reference level

NOTE RC3 SO 55 H-PSK Bitrate EIGHT 9.6kbps



Plot 7.2.14 Occupied bandwidth test result at low frequency

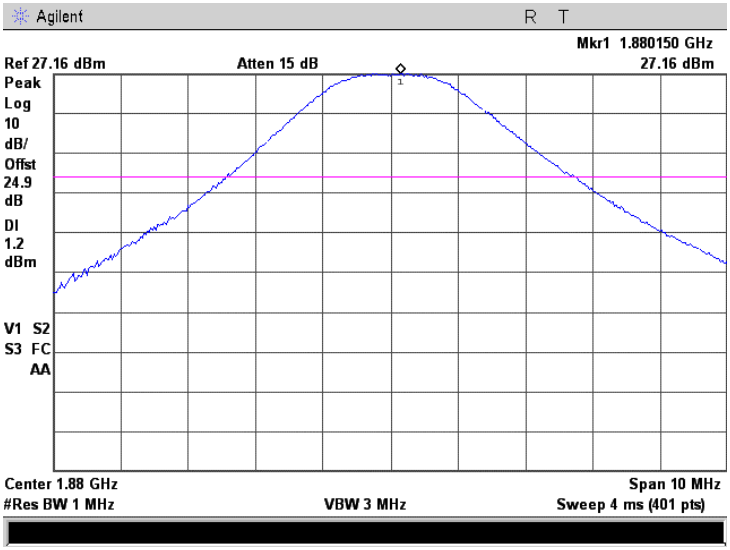
NOTE RC3 SO 55 H-PSK Bitrate EIGHT 9.6kbps



Test specification:	Section 24.238(b), Occupied bandwidth		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

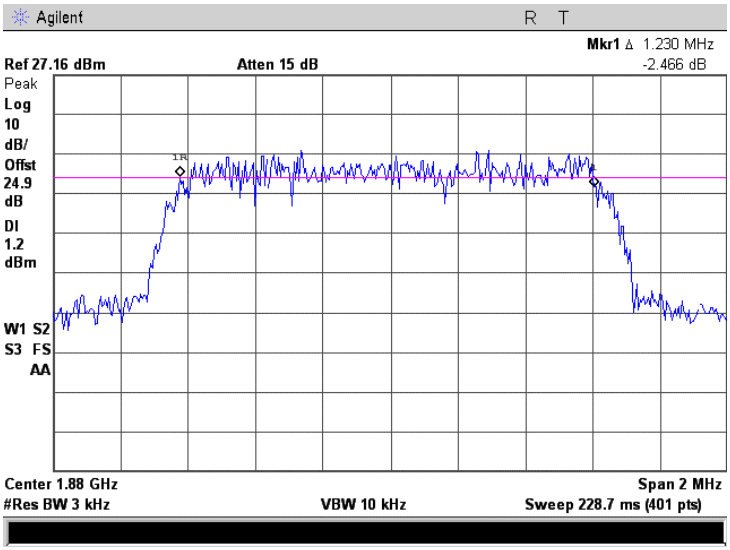
Plot 7.2.15 Occupied bandwidth test result at mid frequency, reference level

NOTE RC3 SO 55 H-PSK Bitrate EIGHT 9.6kbps



Plot 7.2.16 Occupied bandwidth test result at mid frequency

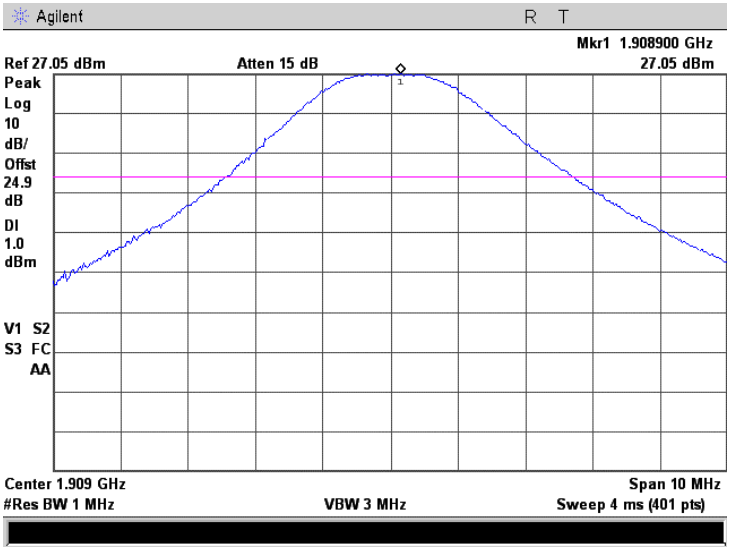
NOTE RC3 SO 55 H-PSK Bitrate EIGHT 9.6kbps



Test specification:	Section 24.238(b), Occupied bandwidth		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

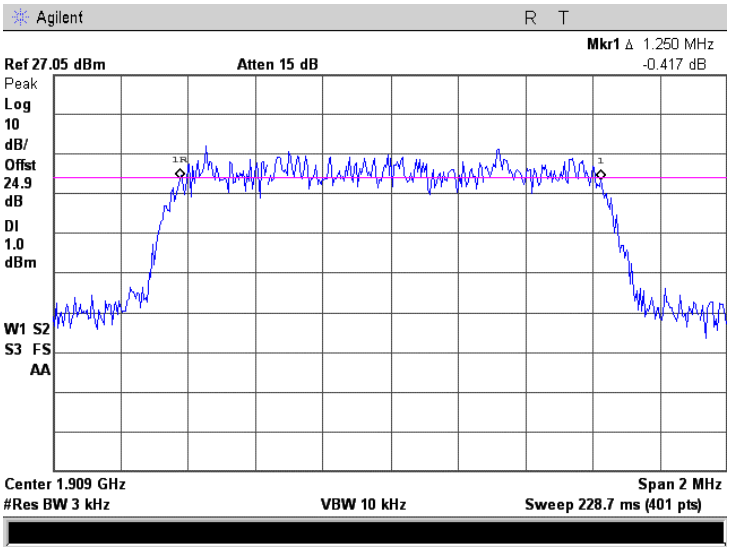
Plot 7.2.17 Occupied bandwidth test result at high frequency, reference level

NOTE RC3 SO 55 H-PSK Bitrate EIGHT 9.6kbps



Plot 7.2.18 Occupied bandwidth test result at high frequency

NOTE RC3 SO 55 H-PSK Bitrate EIGHT 9.6kbps



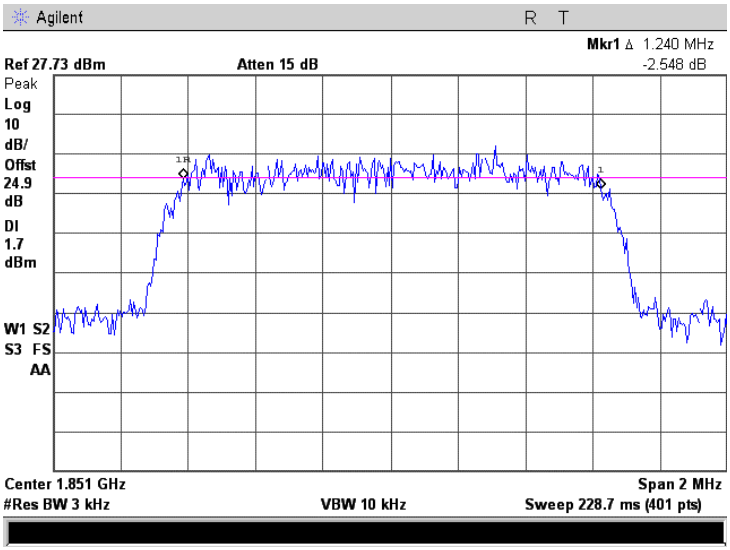
Test specification:	Section 24.238(b), Occupied bandwidth		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

Plot 7.2.19 Occupied bandwidth test result at low frequency, reference level

NOTE RC3 SO 2 O-QPSK Bitrate FULL 307.6kbps

Plot 7.2.20 Occupied bandwidth test result at low frequency

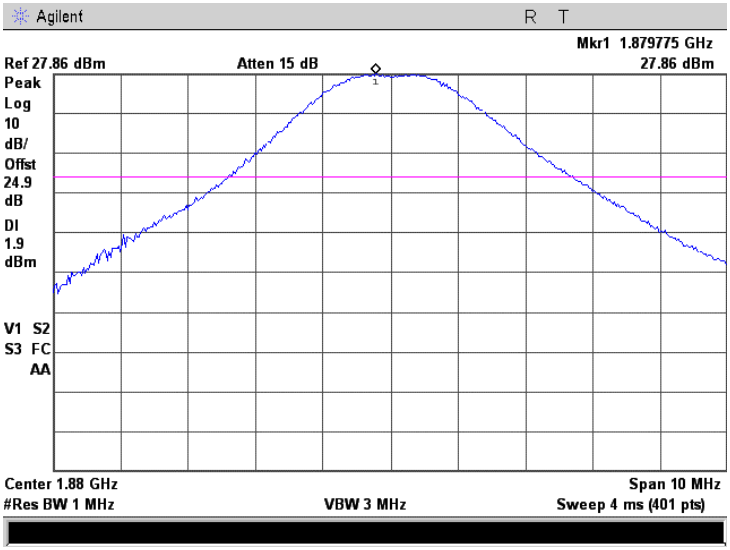
NOTE RC3 SO 2 O-QPSK Bitrate FULL 307.6kbps



Test specification:	Section 24.238(b), Occupied bandwidth		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

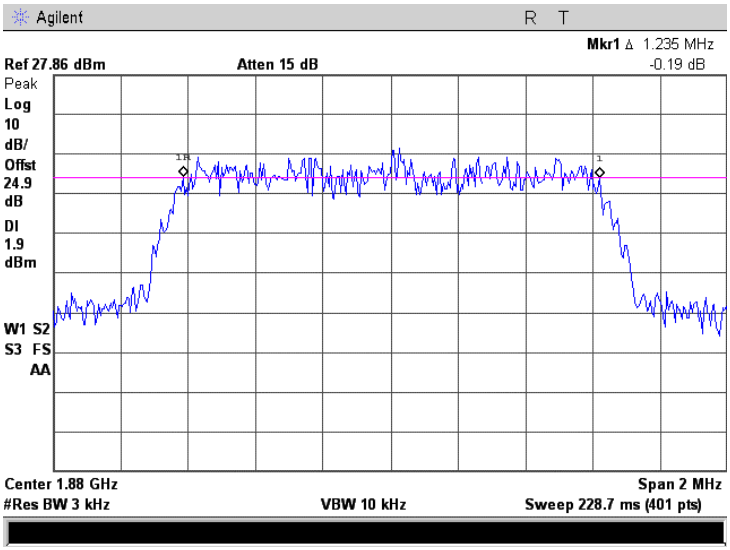
Plot 7.2.21 Occupied bandwidth test result at mid frequency, reference level

NOTE RC3 SO 2 O-QPSK Bitrate FULL 307.6kbps



Plot 7.2.22 Occupied bandwidth test result at mid frequency

NOTE RC3 SO 2 O-QPSK Bitrate FULL 307.6kbps



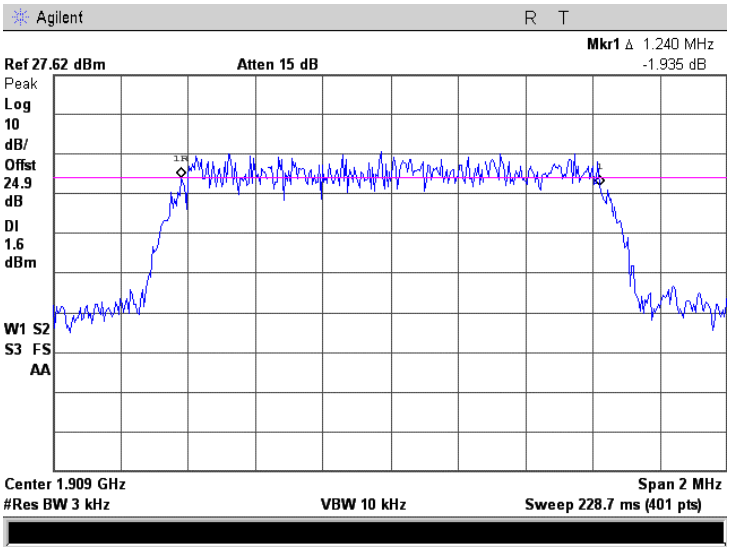
Test specification:	Section 24.238(b), Occupied bandwidth		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

Plot 7.2.23 Occupied bandwidth test result at high frequency, reference level

NOTE RC3 SO 2 O-QPSK Bitrate FULL 307.6kbps

Plot 7.2.24 Occupied bandwidth test result at high frequency

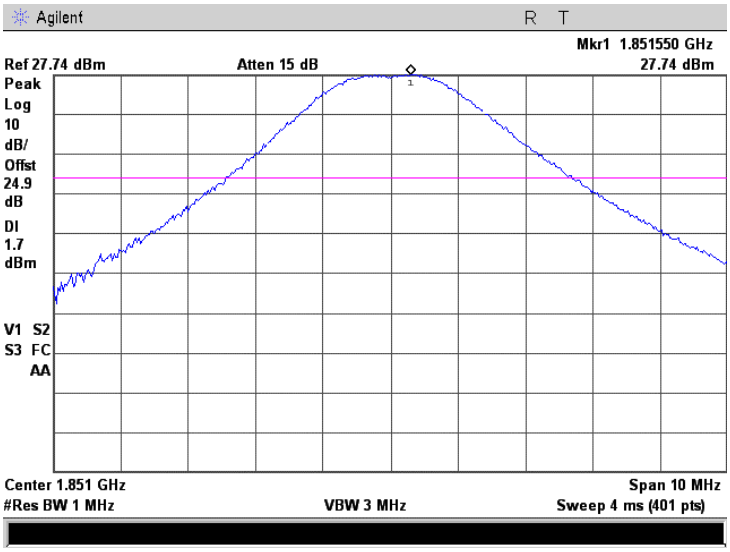
NOTE RC3 SO 2 O-QPSK Bitrate FULL 307.6kbps



Test specification:	Section 24.238(b), Occupied bandwidth		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

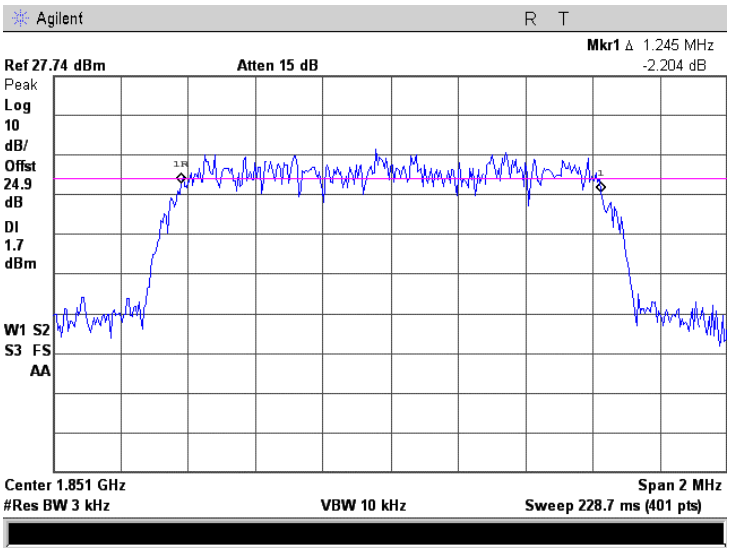
Plot 7.2.25 Occupied bandwidth test result at low frequency, reference level

NOTE RC1 SO 55 O-QPSK Bitrate FULL 9.6kbps



Plot 7.2.26 Occupied bandwidth test result at low frequency

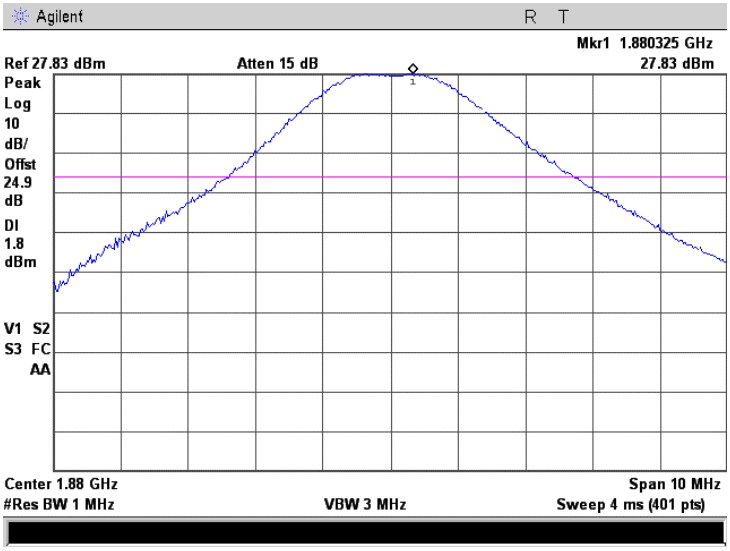
NOTE RC1 SO 55 O-QPSK Bitrate FULL 9.6kbps



Test specification:	Section 24.238(b), Occupied bandwidth		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

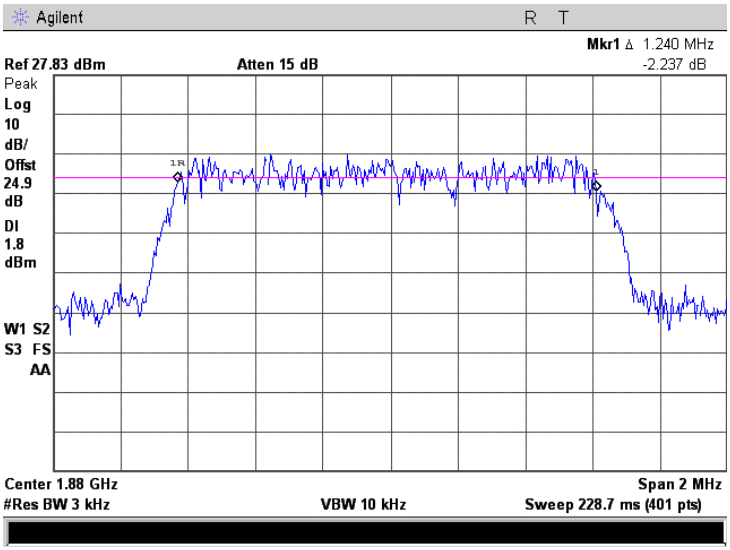
Plot 7.2.27 Occupied bandwidth test result at mid frequency, reference level

NOTE RC1 SO 55 O-QPSK Bitrate FULL 9.6kbps



Plot 7.2.28 Occupied bandwidth test result at mid frequency

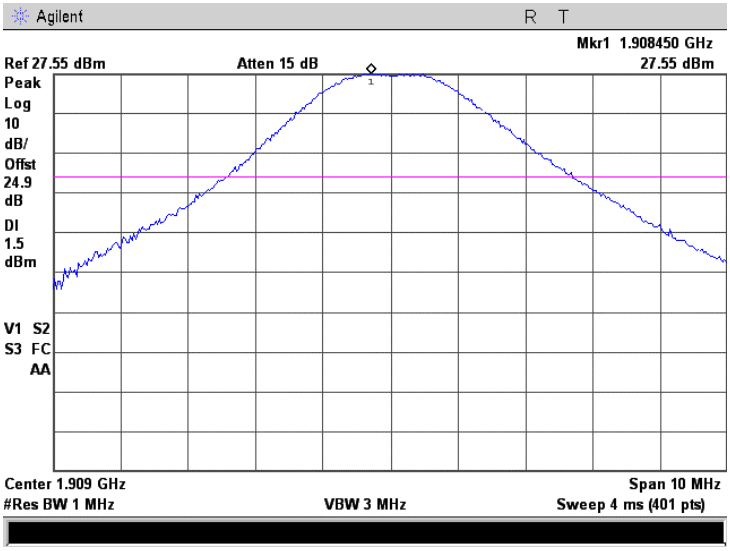
NOTE RC1 SO 55 O-QPSK Bitrate FULL 9.6kbps



Test specification:	Section 24.238(b), Occupied bandwidth		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

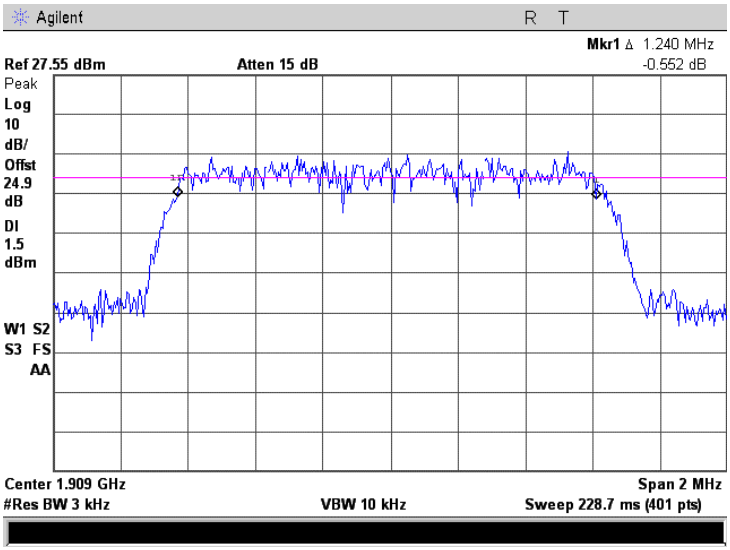
Plot 7.2.29 Occupied bandwidth test result at high frequency, reference level

NOTE RC1 SO 55 O-QPSK Bitrate FULL 9.6kbps



Plot 7.2.30 Occupied bandwidth test result at high frequency

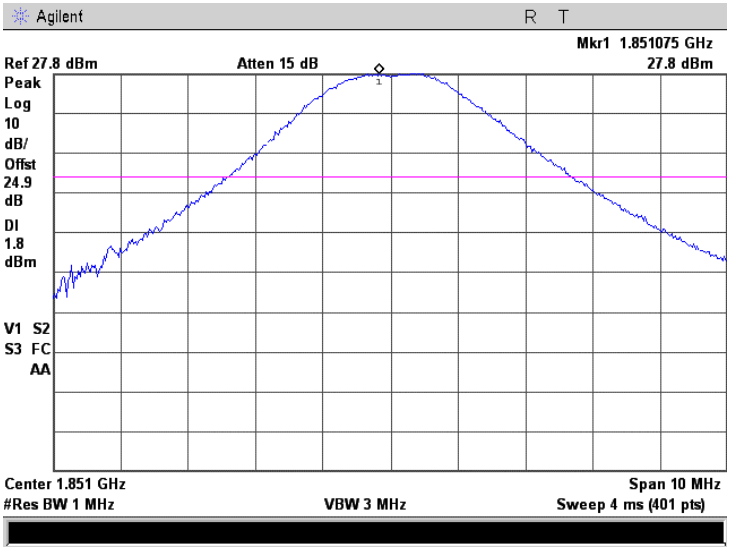
NOTE RC1 SO 55 O-QPSK Bitrate FULL 9.6kbps



Test specification:	Section 24.238(b), Occupied bandwidth		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

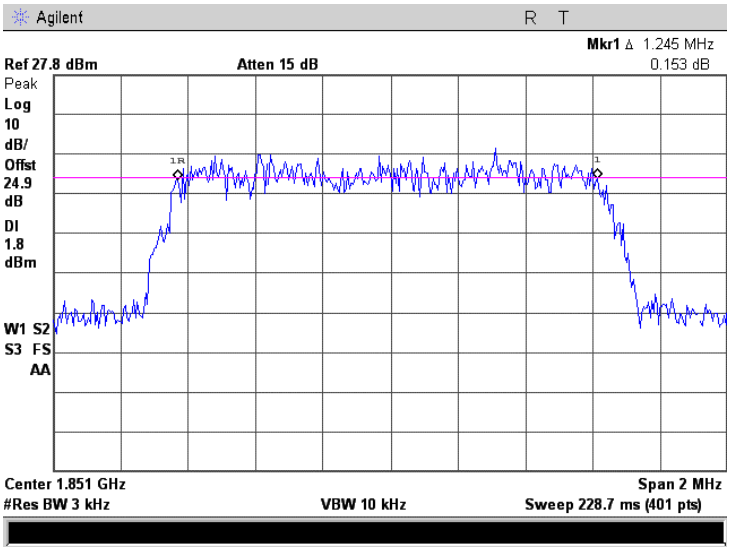
Plot 7.2.31 Occupied bandwidth test result at low frequency, reference level

NOTE RC1 SO 2 O-QPSK Bitrate FULL 9.6kbps



Plot 7.2.32 Occupied bandwidth test result at low frequency

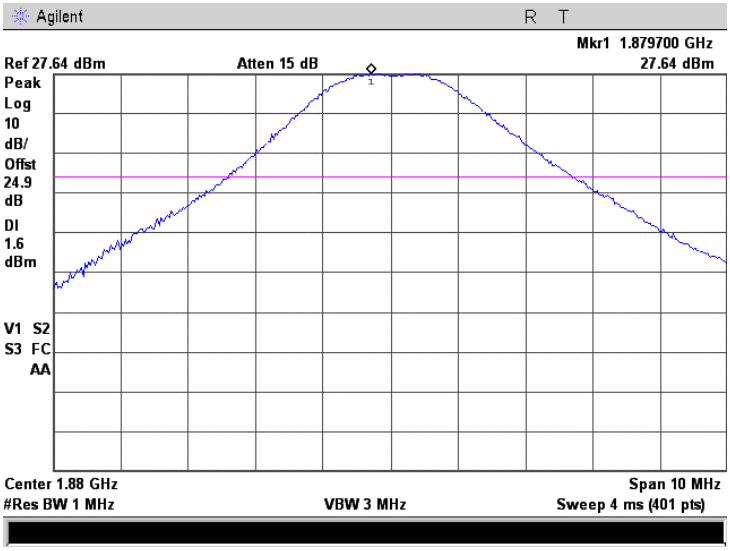
NOTE RC1 SO 2 O-QPSK Bitrate FULL 9.6kbps



Test specification:	Section 24.238(b), Occupied bandwidth		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

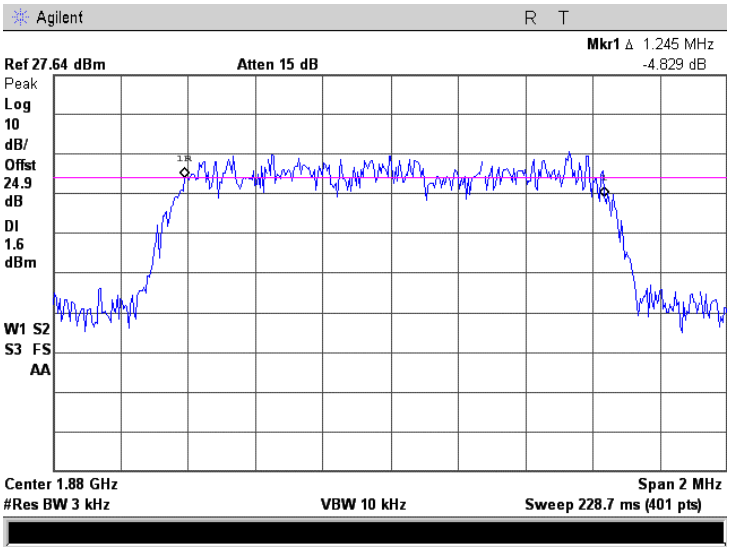
Plot 7.2.33 Occupied bandwidth test result at mid frequency, reference level

NOTE RC1 SO 2 O-QPSK Bitrate FULL 9.6kbps



Plot 7.2.34 Occupied bandwidth test result at mid frequency

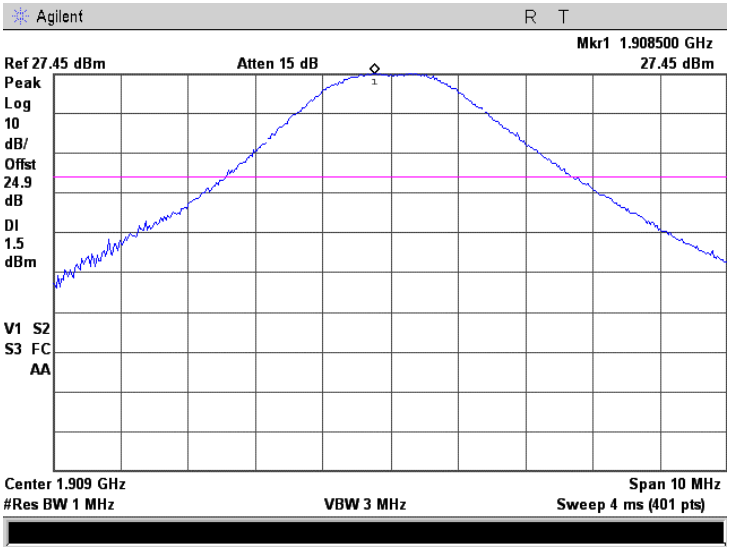
NOTE RC1 SO 2 O-QPSK Bitrate FULL 9.6kbps



Test specification:	Section 24.238(b), Occupied bandwidth		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

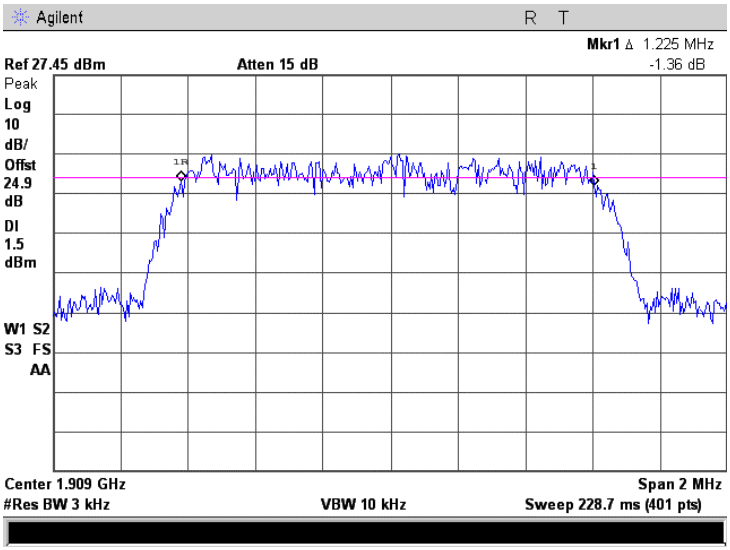
Plot 7.2.35 Occupied bandwidth test result at high frequency, reference level

NOTE RC1 SO 2 O-QPSK Bitrate FULL 9.6kbps



Plot 7.2.36 Occupied bandwidth test result at high frequency

NOTE RC1 SO 2 O-QPSK Bitrate FULL 9.6kbps



Test specification:	Section 24.238, Spurious emission at antenna terminal		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/18/2008		
Temperature: 25ºC	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

7.3 Spurious emissions at RF antenna connector test

7.3.1 General

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

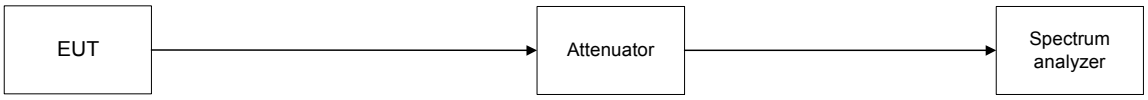
Table 7.3.1 Spurious emission limits

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

7.3.2 Test procedure

7.3.2.1 The EUT was set up as shown in Figure 7.3.1, energized and its proper operation was checked.
7.3.2.2 The EUT was adjusted to produce maximum available for end user RF output power.
7.3.2.3 The spurious emission was measured with spectrum analyzer as provided in Table 7.3.2 and associated plots.

Figure 7.3.1 Spurious emission test setup



Test specification:	**Section 24.238, Spurious emission at antenna terminal**		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	**Verdict:**	PASS
Date:	9/18/2008		
Temperature: 25ºC	**Air Pressure:** 1010 hPa	**Relative Humidity:** 48 %	**Power Supply:** 3.8 VDC
Remarks:			

Table 7.3.2 Spurious emission test results

ASSIGNED FREQUENCY RANGE: 1850-1910MHz
INVESTIGATED FREQUENCY RANGE: 0.009-20000MHz
DETECTOR USED: Peak
VIDEO BANDWIDTH: ≥ Resolution bandwidth
MODULATION: CDMA
MODULATING SIGNAL: PRBS
TRANSMITTER OUTPUT POWER SETTINGS: Maximum
TRANSMITTER OUTPUT POWER: 28.42dBm at low frequency
28.10dBm at mid frequency
27.79dBm at high frequency

Frequency, MHz	SA reading, dBm	Attenuator, dB	Cable loss, dB	RBW, kHz	Spurious emission, dBm	Attenuation below carrier, dBc	Limit, dBc	Margin, dB*	Verdict
Low carrier frequency									
1849.99	-24.50	Included	Included	30.0	-24.50	52.92	41.42	11.50	Pass
3702.450	-28.33	Included	Included	1000.0	-28.33	56.43	41.42	15.01	Pass
Mid carrier frequency									
3760.550	-35.00	Included	Included	1000.0	-35.00	63.10	41.10	22.00	Pass
High carrier frequency									
1910.00	-23.00	Included	Included	30.0	-23.00	50.79	40.79	10.00	Pass
3816.880	-29.50	Included	Included	1000.0	-29.50	57.29	40.79	16.50	Pass

*****- Margin = Spurious emission – specification limit.

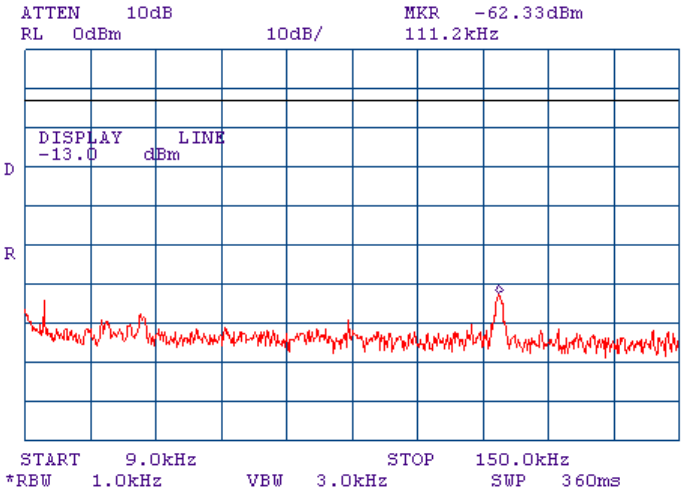
Reference numbers of test equipment used

HL 2011	HL 2634	HL 2780	HL 2869	HL 2952		

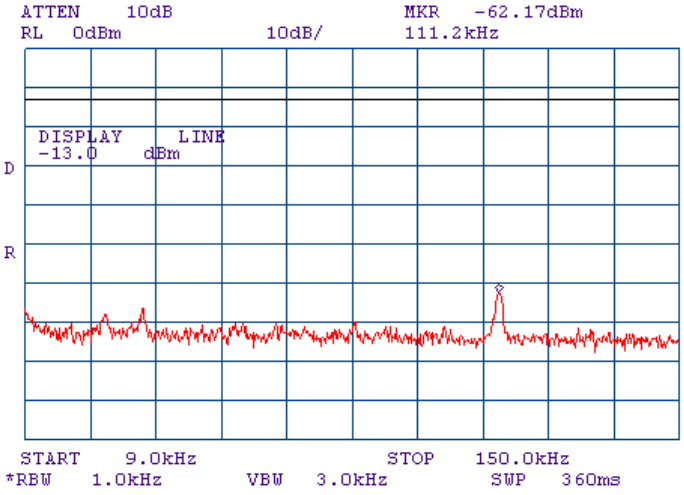
Full description is given in Appendix A.

Test specification:	Section 24.238, Spurious emission at antenna terminal		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/18/2008		
Temperature: 25ºC	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

Plot 7.3.1 Spurious emission measurements in 9 - 150 kHz range at low carrier frequency

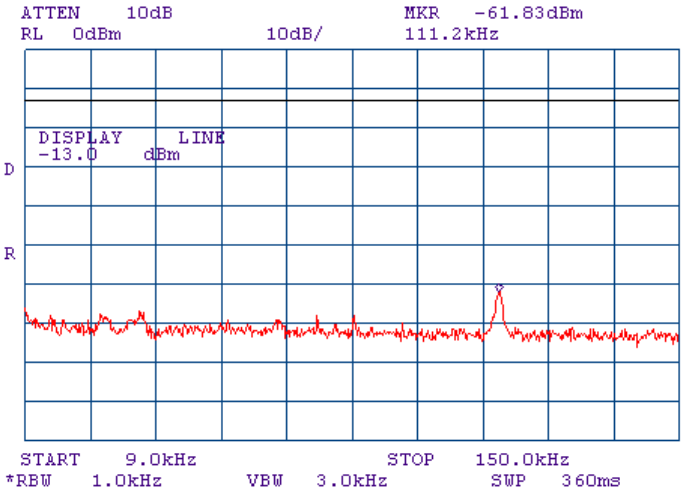


Plot 7.3.2 Spurious emission measurements in 9 - 150 kHz range at mid carrier frequency

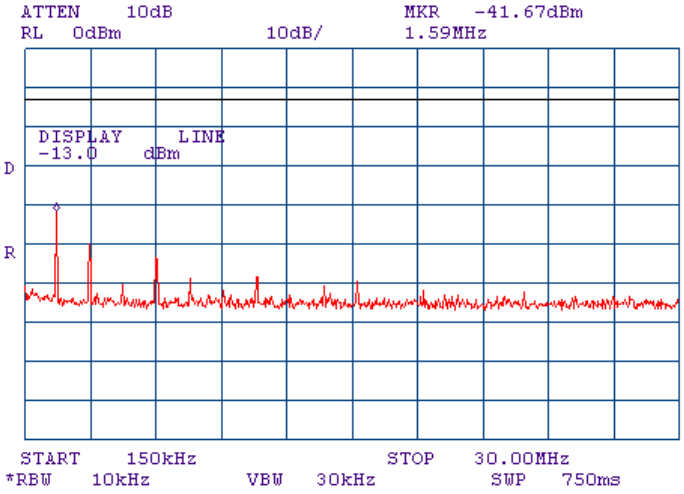


Test specification:	Section 24.238, Spurious emission at antenna terminal		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/18/2008		
Temperature: 25ºC	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

Plot 7.3.3 Spurious emission measurements in 9 - 150 kHz range at high carrier frequency

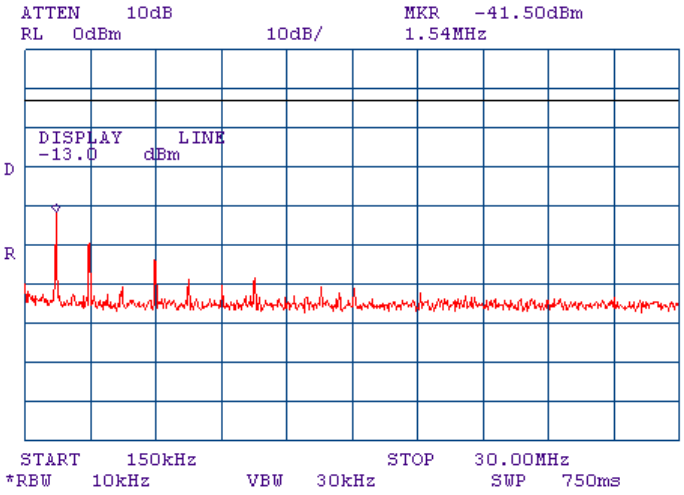


Plot 7.3.4 Spurious emission measurements in 0.15 - 30.0 MHz range at low carrier frequency



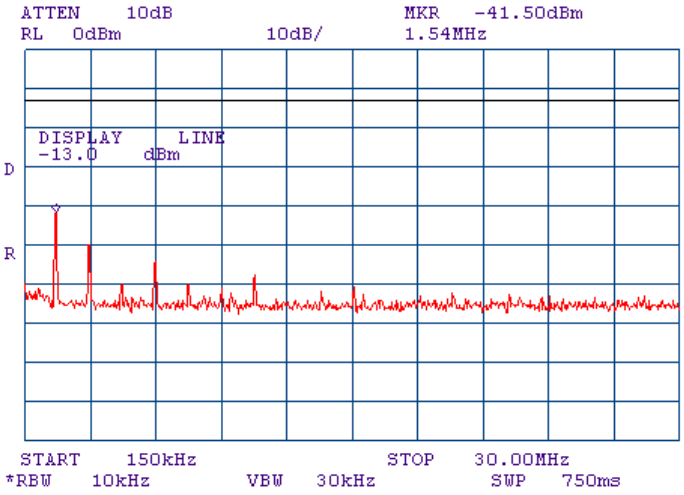
Test specification:	Section 24.238, Spurious emission at antenna terminal		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/18/2008		
Temperature: 25ºC	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

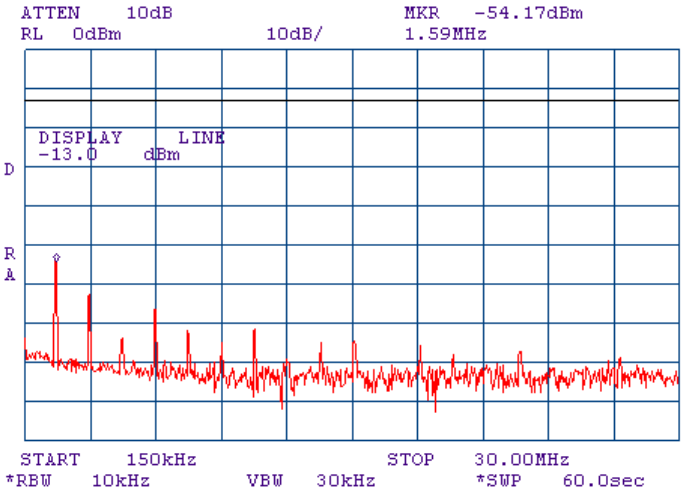
Plot 7.3.5 Spurious emission measurements in 0.15 - 30.0 MHz range at mid carrier frequency



Test specification:	Section 24.238, Spurious emission at antenna terminal		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/18/2008		
Temperature: 25ºC	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

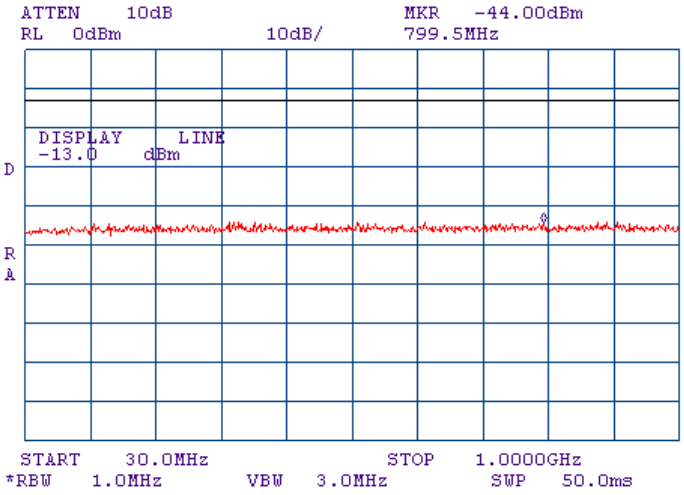
Plot 7.3.6 Spurious emission measurements in 0.15 – 30.0 MHz range at high carrier frequency



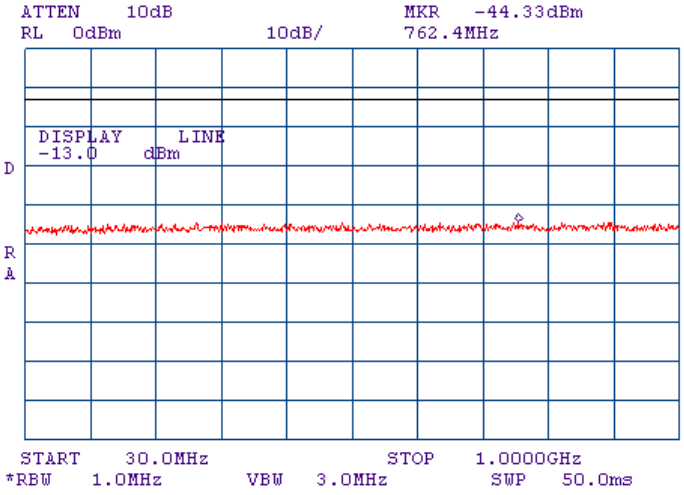


Test specification:	Section 24.238, Spurious emission at antenna terminal		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/18/2008		
Temperature: 25ºC	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

Plot 7.3.7 Spurious emission measurements in 30.0 - 1000 MHz range at low carrier frequency

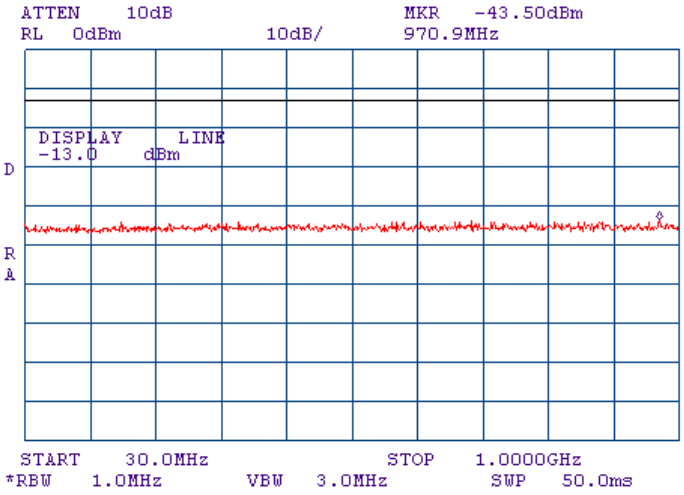


Plot 7.3.8 Spurious emission measurements in 30.0 - 1000 MHz range at mid carrier frequency



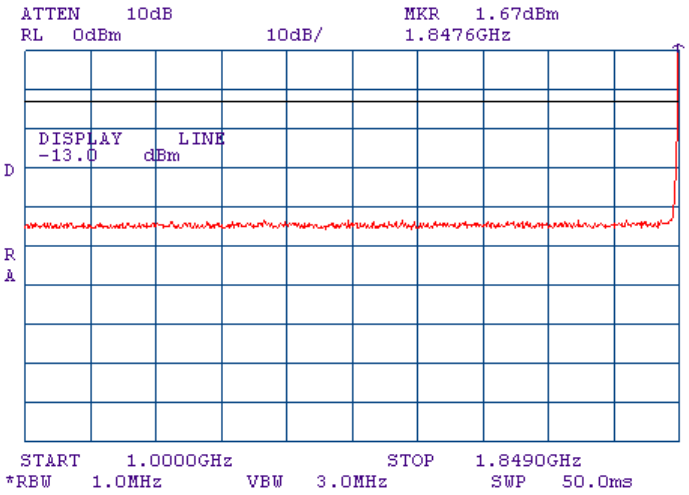
Test specification:	Section 24.238, Spurious emission at antenna terminal		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/18/2008		
Temperature: 25ºC	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

Plot 7.3.9 Spurious emission measurements in 30.0 - 1000 MHz range at high carrier frequency



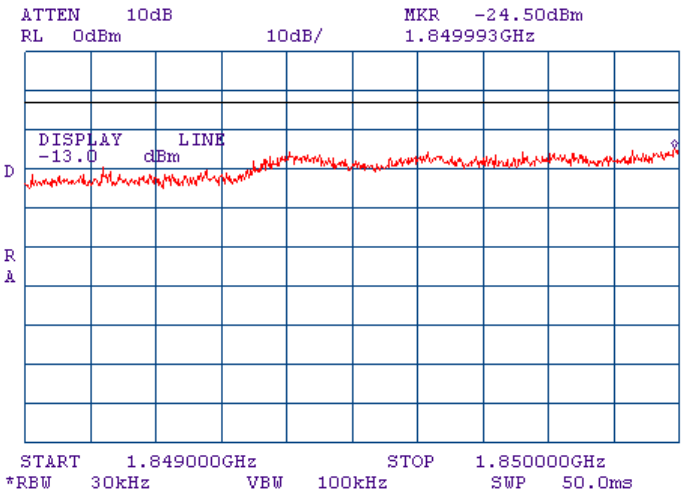
Test specification:	Section 24.238, Spurious emission at antenna terminal		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/18/2008		
Temperature: 25ºC	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

Plot 7.3.10 Spurious emission measurements in 1000 -1849 MHz range at low carrier frequency



Plot 7.3.11 Spurious emission measurements in 1849 -1850 MHz range at low carrier frequency

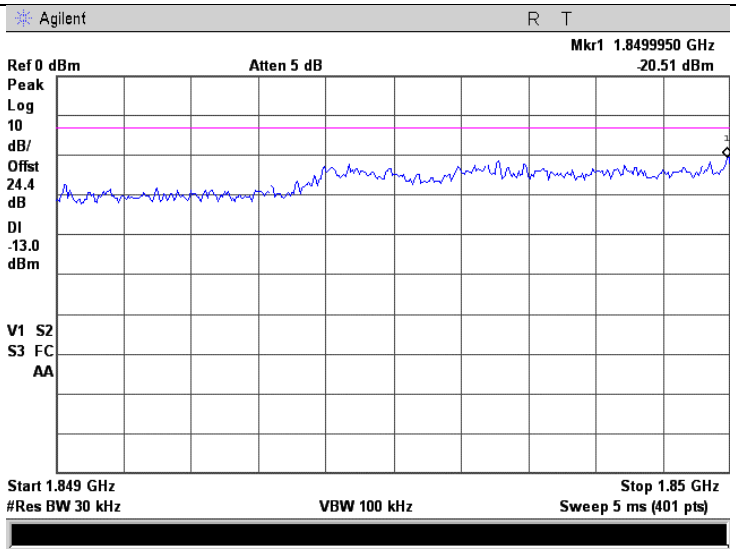
RC3 SO 55 H-PSK Bit rate FULL



Test specification:	Section 24.238, Spurious emission at antenna terminal		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/18/2008		
Temperature: 25ºC	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

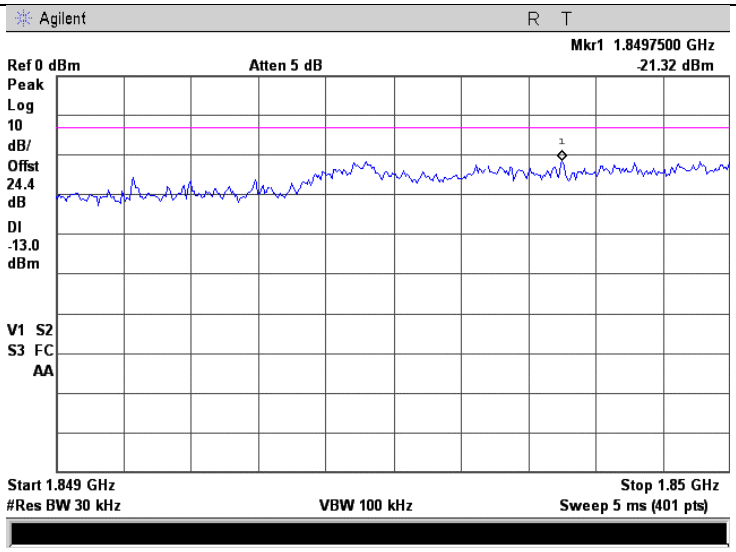
Plot 7.3.12 Spurious emission measurements in 1849 -1850 MHz range at low carrier frequency

RC3 SO 55 H-PSK Bitrate HALF



Plot 7.3.13 Spurious emission measurements in 1849 -1850 MHz range at low carrier frequency

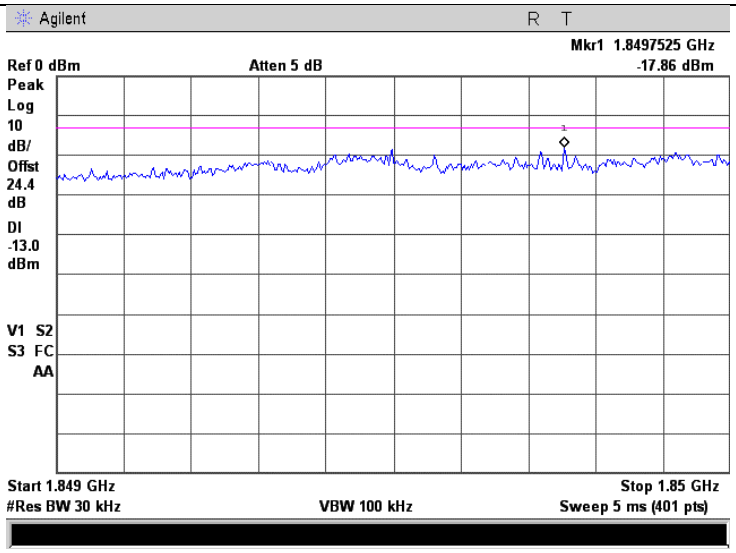
RC3 SO 55 H-PSK Bitrate EIGHT



Test specification:	Section 24.238, Spurious emission at antenna terminal		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/18/2008		
Temperature: 25ºC	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

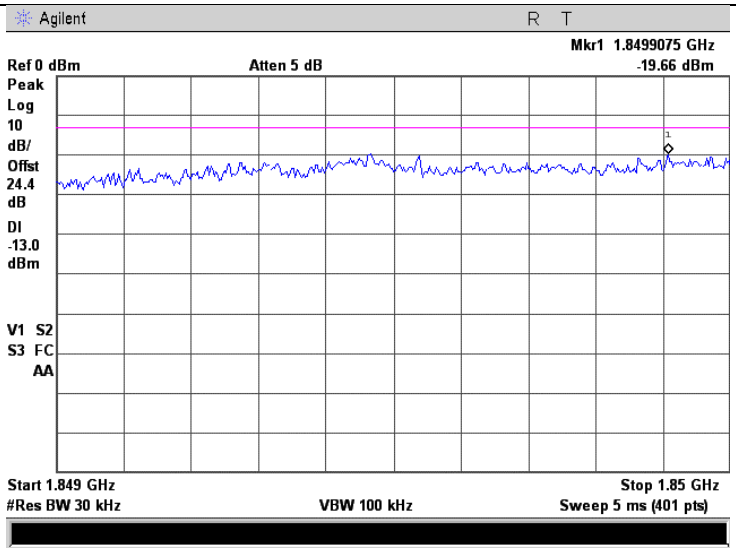
Plot 7.3.14 Spurious emission measurements in 1849 -1850 MHz range at low carrier frequency

RC3 SO 2 O-H-PSK Bitrate FULL



Plot 7.3.15 Spurious emission measurements in 1849 -1850 MHz range at low carrier frequency

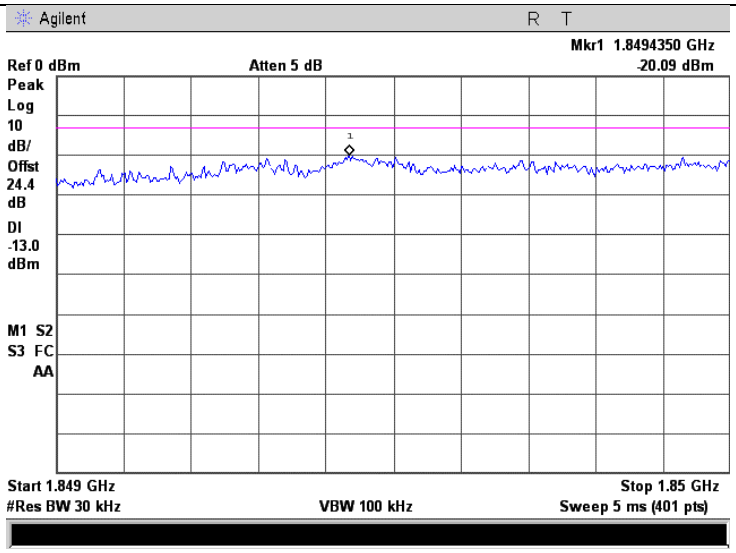
RC1 SO 55 O-QPSK Bitrate FULL



Test specification:	Section 24.238, Spurious emission at antenna terminal		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/18/2008		
Temperature: 25ºC	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

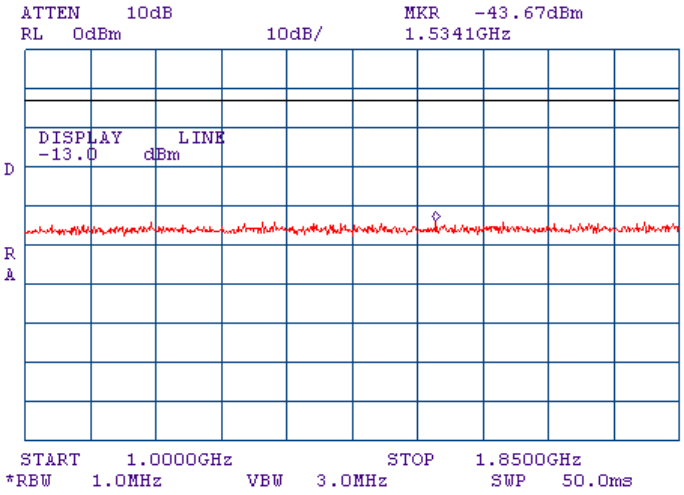
Plot 7.3.16 Spurious emission measurements in 1849 -1850 MHz range at low carrier frequency

RC1 SO 2 O-QPSK Bitrate FULL

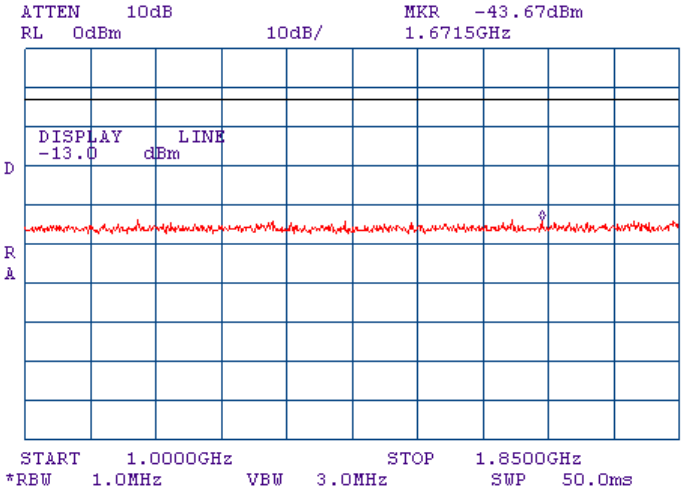


Test specification:	Section 24.238, Spurious emission at antenna terminal		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/18/2008		
Temperature: 25ºC	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

Plot 7.3.17 Spurious emission measurements in 1000 – 1850 MHz range at mid carrier frequency

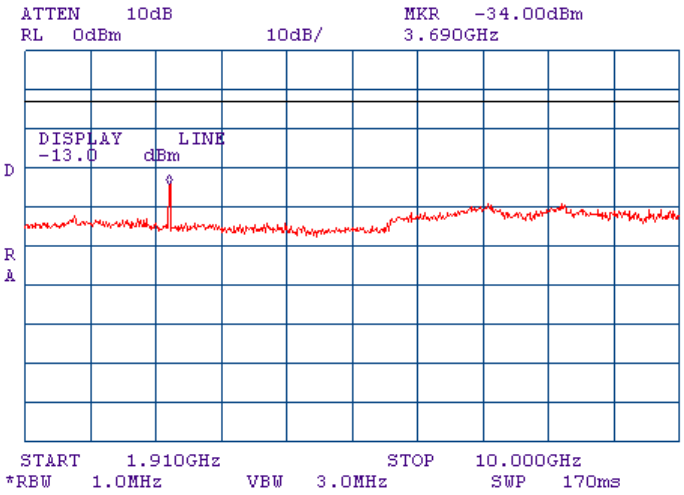


Plot 7.3.18 Spurious emission measurements in 1000 – 1850 MHz range at high carrier frequency

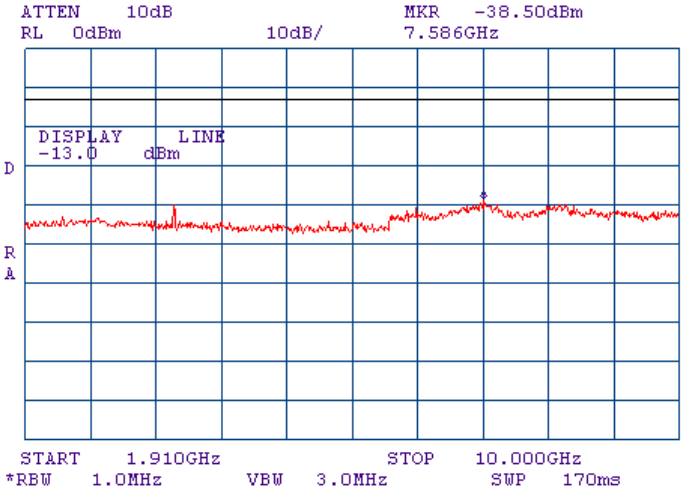


Test specification:	Section 24.238, Spurious emission at antenna terminal		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/18/2008		
Temperature: 25ºC	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

Plot 7.3.19 Spurious emission measurements in 1910 -10000 MHz range at low carrier frequency



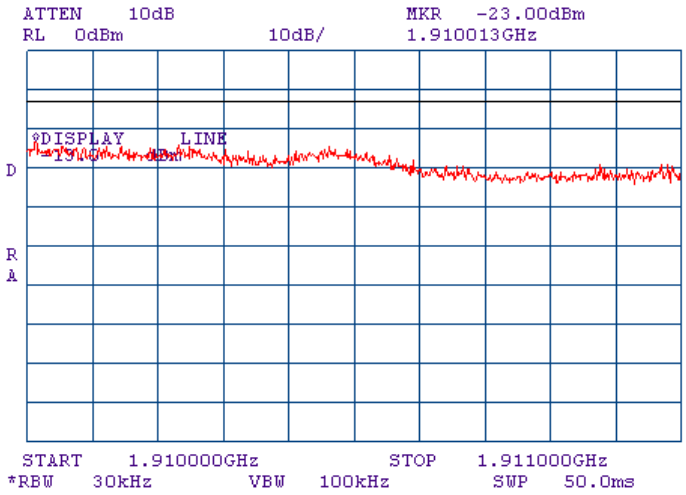
Plot 7.3.20 Spurious emission measurements in 1910 - 10000MHz range at mid carrier frequency



Test specification:	Section 24.238, Spurious emission at antenna terminal		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/18/2008		
Temperature: 25ºC	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

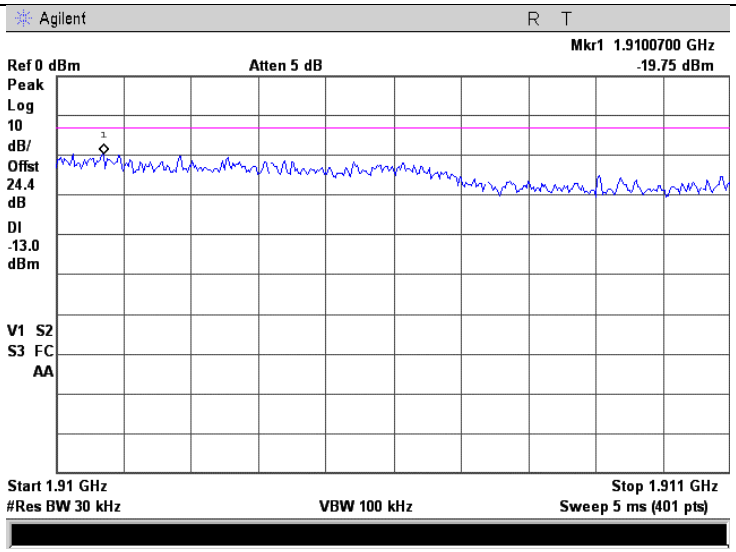
Plot 7.3.21 Spurious emission measurements in 1910 – 1911 MHz range at high carrier frequency

RC3 SO 55 H-PSK Bit rate FULL



Plot 7.3.22 Spurious emission measurements in 1910 – 1911 MHz range at high carrier frequency

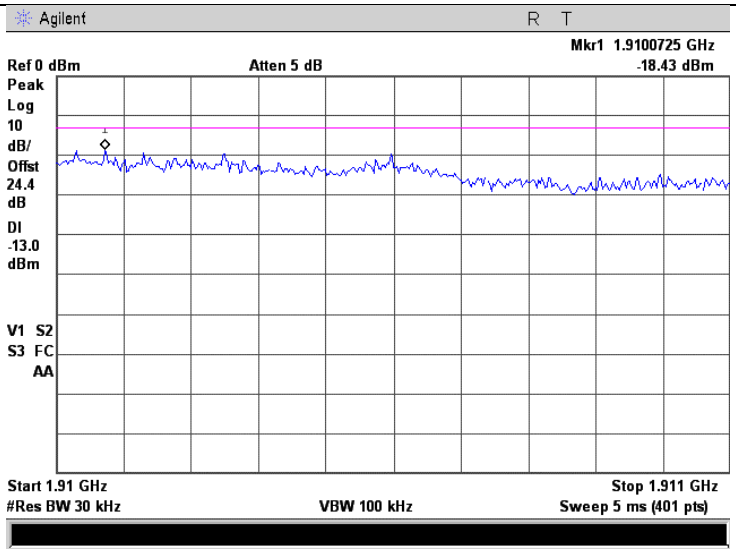
RC3 SO 55 H-PSK Bitrate HALF



Test specification:	Section 24.238, Spurious emission at antenna terminal		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/18/2008		
Temperature: 25ºC	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

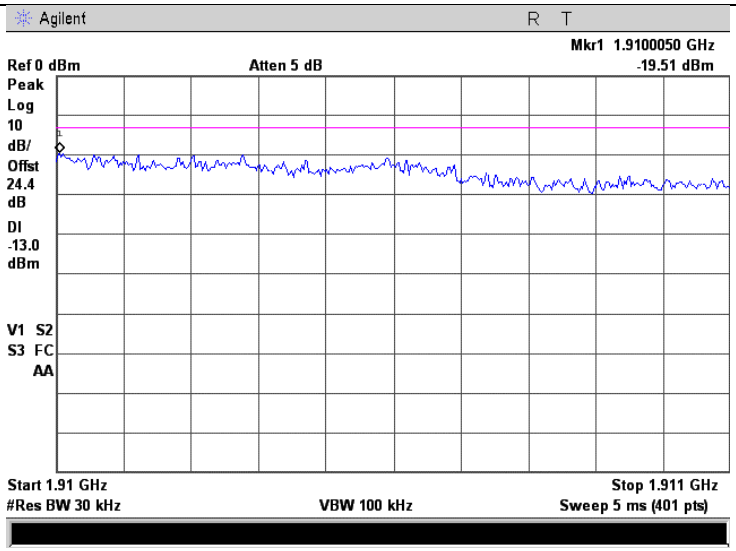
Plot 7.3.23 Spurious emission measurements in 1910 – 1911 MHz range at high carrier frequency

RC3 SO 55 H-PSK Bitrate EIGHT



Plot 7.3.24 Spurious emission measurements in 1910 – 1911 MHz range at high carrier frequency

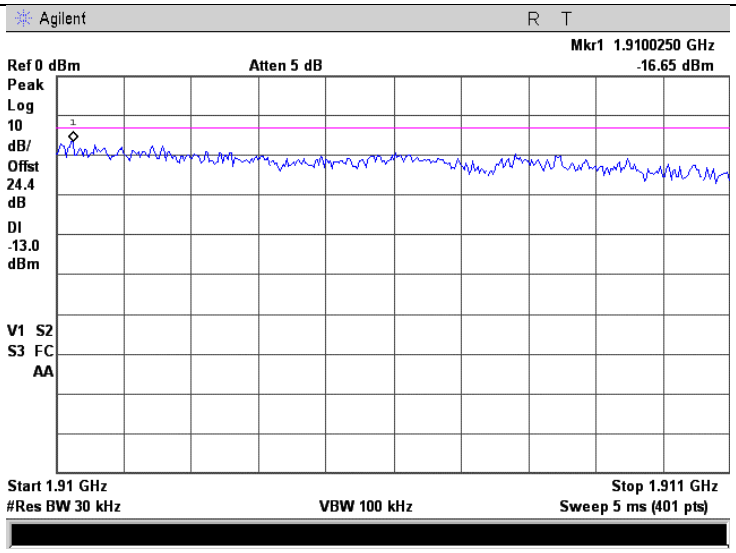
RC3 SO 2 O-H-PSK Bitrate FULL



Test specification:	Section 24.238, Spurious emission at antenna terminal		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/18/2008		
Temperature: 25ºC	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

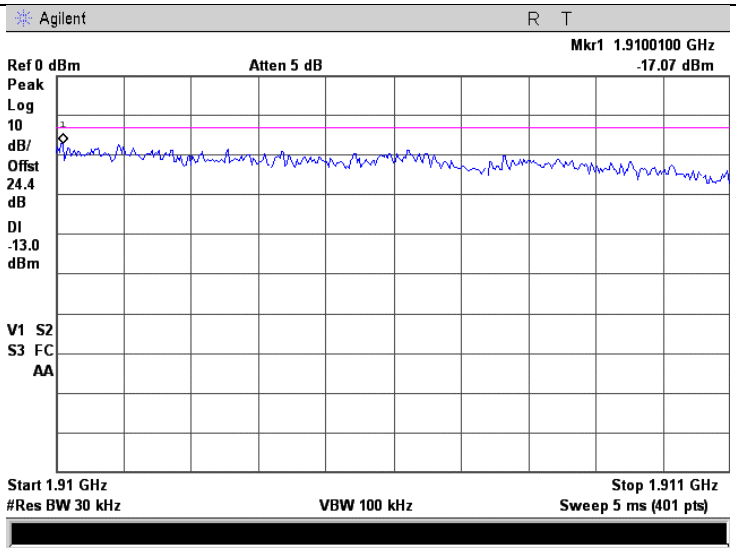
Plot 7.3.25 Spurious emission measurements in 1910 – 1911 MHz range at high carrier frequency

RC1 SO 55 O-QPSK Bitrate FULL



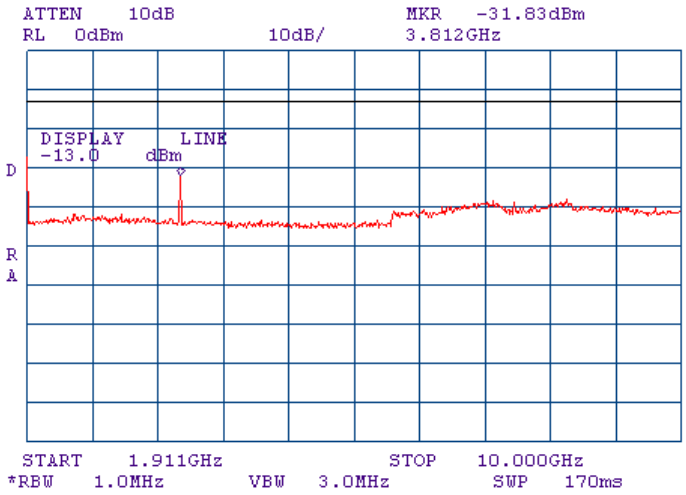
Plot 7.3.26 Spurious emission measurements in 1910 – 1911 MHz range at high carrier frequency

RC1 SO 2 O-QPSK Bitrate FULL

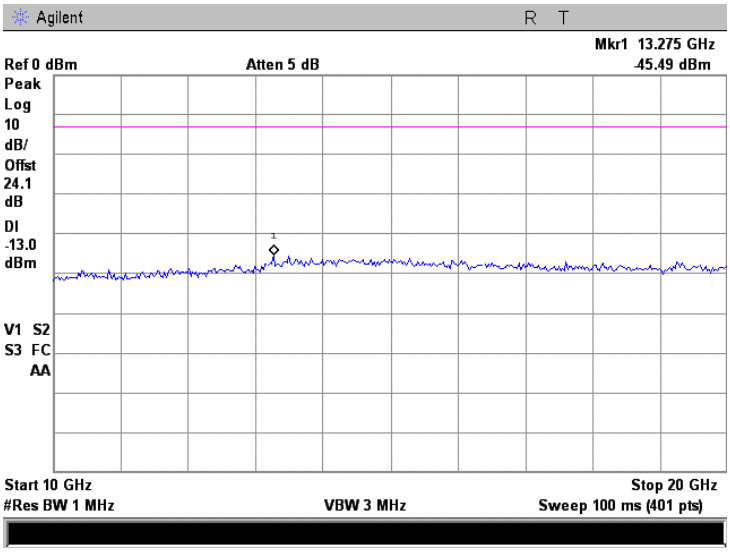


Test specification:	Section 24.238, Spurious emission at antenna terminal		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/18/2008		
Temperature: 25ºC	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

Plot 7.3.27 Spurious emission measurements in 1911 – 10000 MHz range at high carrier frequency

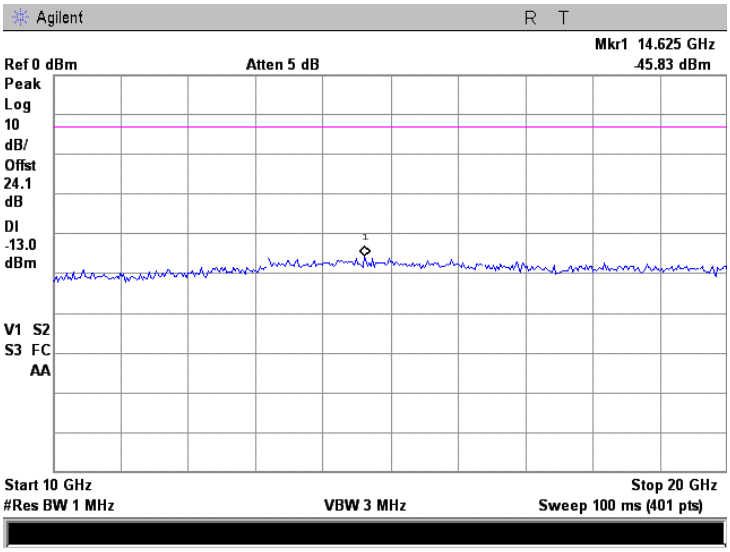


Plot 7.3.28 Spurious emission measurements in 10000 -20000 MHz range at low carrier frequency

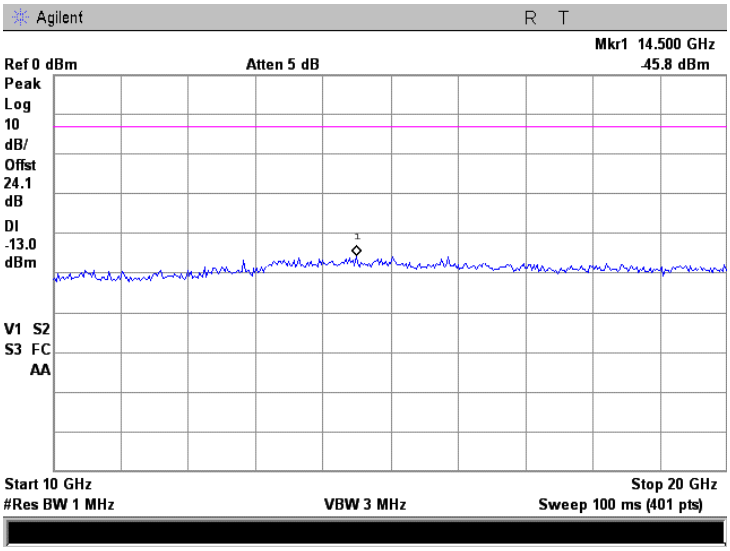


Test specification:	Section 24.238, Spurious emission at antenna terminal		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/18/2008		
Temperature: 25ºC	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

Plot 7.3.29 Spurious emission measurements in 10000 – 20000 MHz range at mid carrier frequency

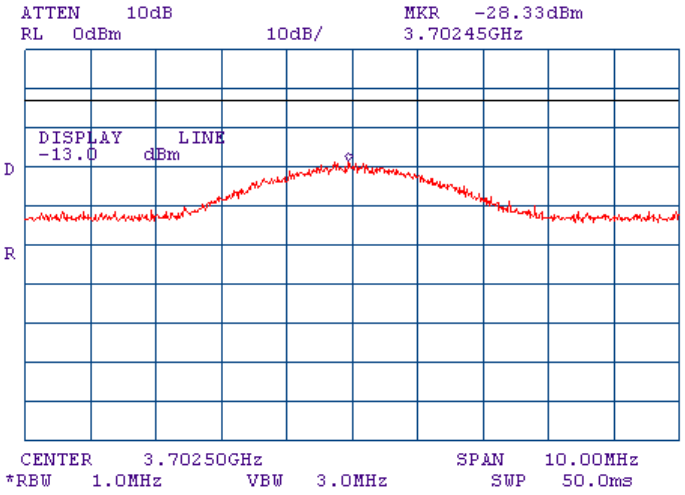


Plot 7.3.30 Spurious emission measurements in 10000 – 20000 MHz range at high carrier frequency

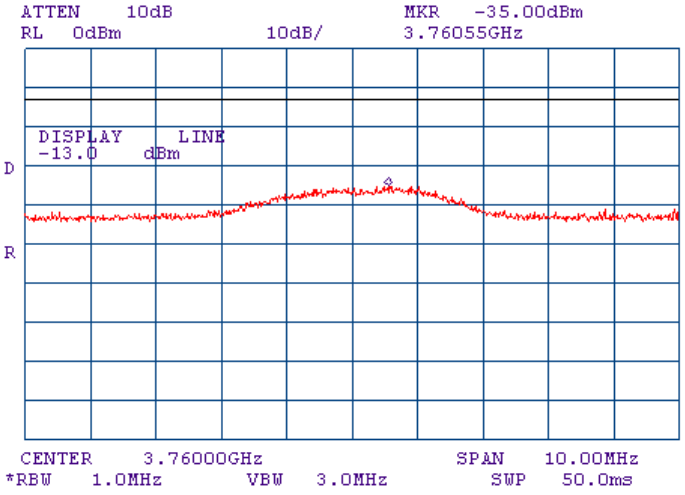


Test specification:	Section 24.238, Spurious emission at antenna terminal		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/18/2008		
Temperature: 25ºC	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

Plot 7.3.31 Conducted spurious emission measurements at the 2nd harmonic of low carrier frequency

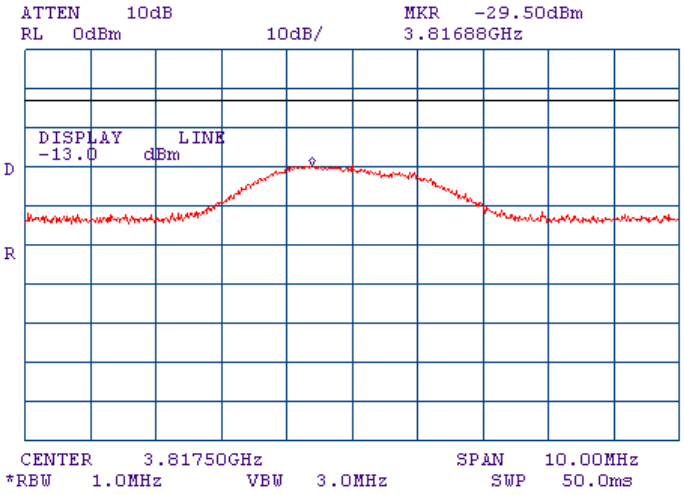


Plot 7.3.32 Conducted spurious emission measurements at the 2nd harmonic of mid carrier frequency

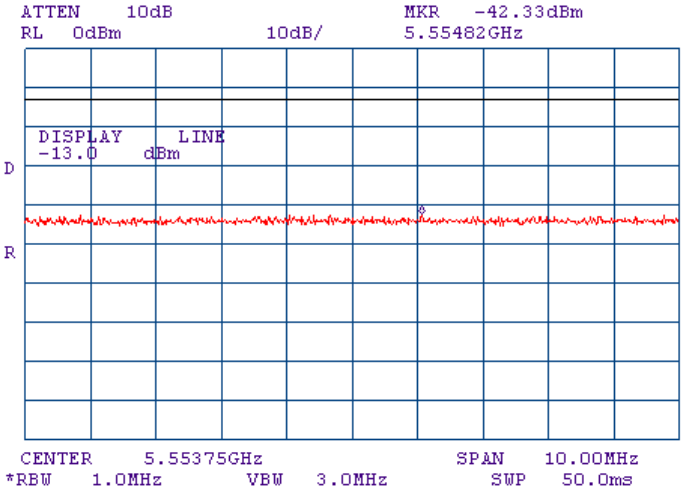


Test specification:	Section 24.238, Spurious emission at antenna terminal		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/18/2008		
Temperature: 25ºC	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

Plot 7.3.33 Conducted spurious emission measurements at the 2nd harmonic of high carrier frequency

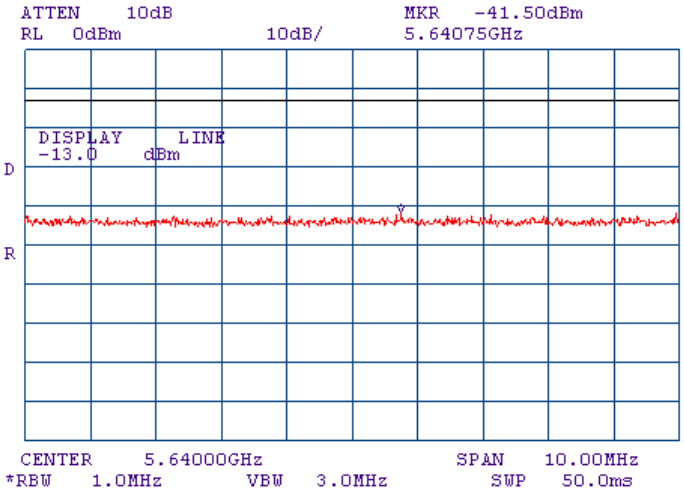


Plot 7.3.34 Conducted spurious emission measurements at the 3rd harmonic of low carrier frequency

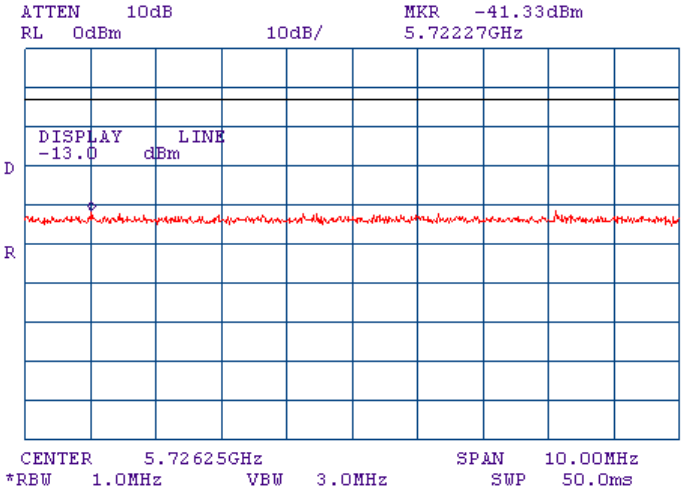


Test specification:	Section 24.238, Spurious emission at antenna terminal		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/18/2008		
Temperature: 25ºC	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

Plot 7.3.35 Conducted spurious emission measurements at the 3rd harmonic of mid carrier frequency

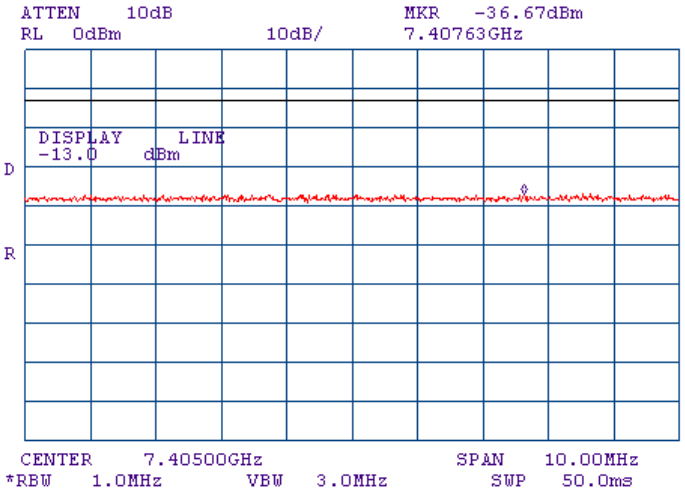


Plot 7.3.36 Conducted spurious emission measurements at the 3rd harmonic of high carrier frequency

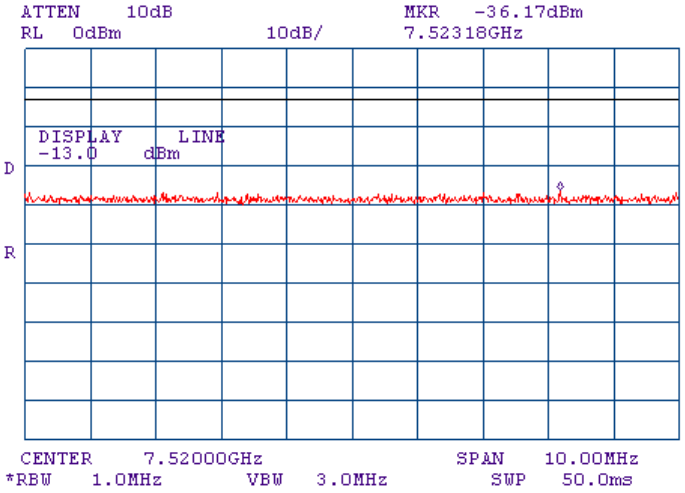


Test specification:	Section 24.238, Spurious emission at antenna terminal		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/18/2008		
Temperature: 25ºC	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

Plot 7.3.37 Conducted spurious emission measurements at the 4th harmonic of low carrier frequency

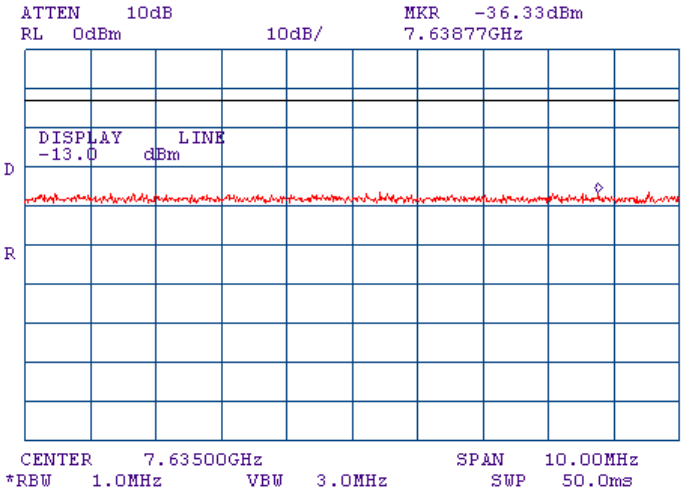


Plot 7.3.38 Conducted spurious emission measurements at the 4th harmonic of mid carrier frequency

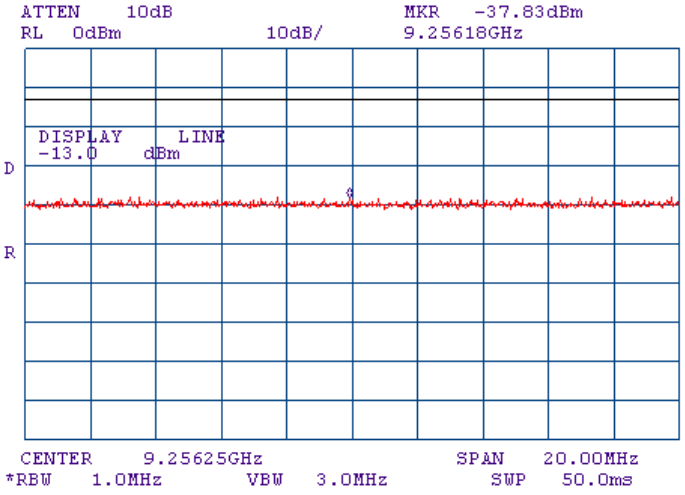


Test specification:	Section 24.238, Spurious emission at antenna terminal		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/18/2008		
Temperature: 25ºC	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

Plot 7.3.39 Conducted spurious emission measurements at the 4th harmonic of high carrier frequency

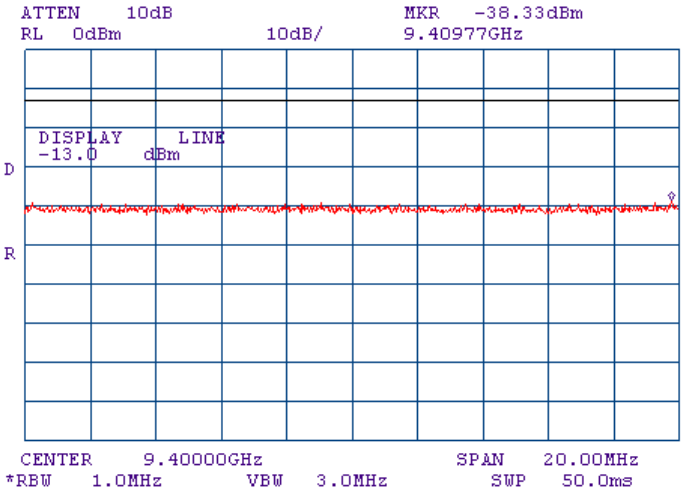


Plot 7.3.40 Conducted spurious emission measurements at the 5th harmonic of low carrier frequency

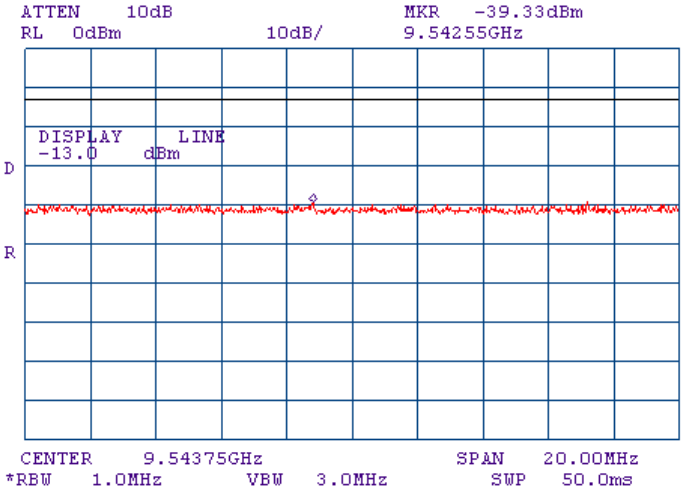


Test specification:	Section 24.238, Spurious emission at antenna terminal		
Test procedure:	FCC part 24, Section 24.238		
Test mode:	Compliance	Verdict:	PASS
Date:	9/18/2008		
Temperature: 25ºC	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

Plot 7.3.41 Conducted spurious emission measurements at the 5th harmonic of mid carrier frequency



Plot 7.3.42 Conducted spurious emission measurements at the 5th harmonic of high carrier frequency



Test specification:	Section 24.238, Radiated spurious emissions		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

7.4 Field strength of spurious emissions

7.4.1 General

This test was performed to measure field strength of spurious emissions from the EUT. Specification test limit is given in Table 7.4.1.

Table 7.4.1 Radiated spurious emissions limits

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

* - P is transmitter output power in Watts.
** - Equivalent field strength limit was calculated from maximum allowed ERP of spurious as follows: E=sqrt(30×P×1.64)/r, where P is ERP in Watts, 1.64 is numeric gain of ideal dipole and r is antenna to EUT distance in meters.

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

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

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

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

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

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

7.4.3.2 The specified frequency range was investigated with antenna connected to spectrum analyzer/ 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.

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

Test specification:	Section 24.238, Radiated spurious emissions		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

Figure 7.4.1 Setup for spurious emission field strength measurements below 30 MHz

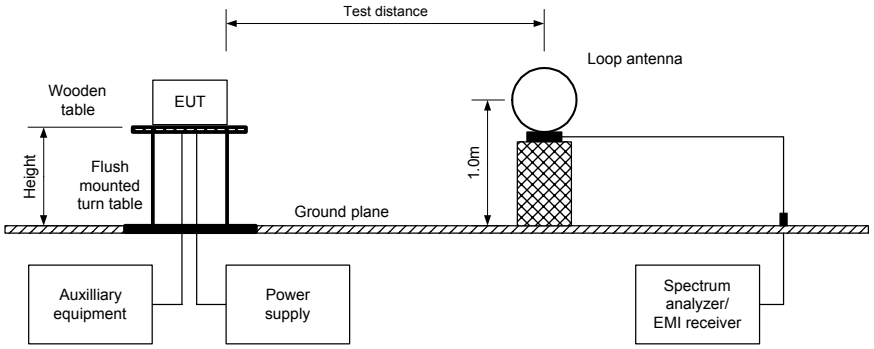
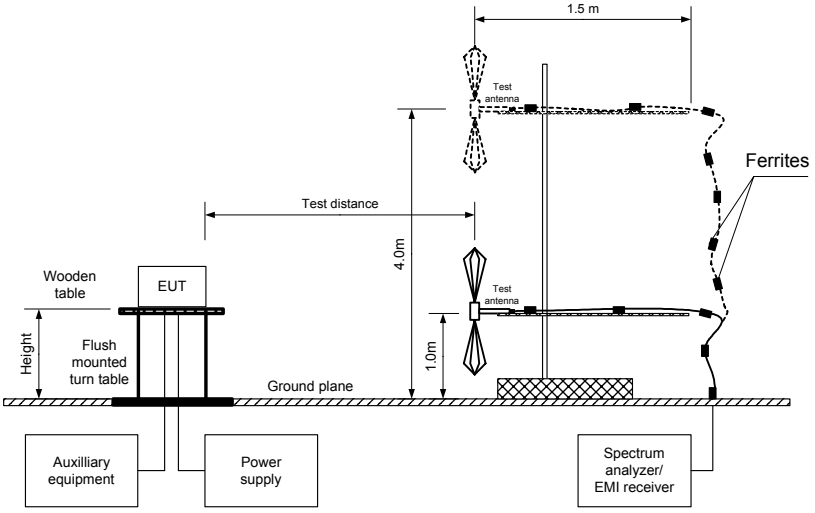


Figure 7.4.2 Setup for spurious emission field strength measurements above 30 MHz



Test specification:	**Section 24.238, Radiated spurious emissions**		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	**Verdict:**	PASS
Date:	9/10/2008		
Temperature: 25ºC	**Air Pressure:** 1014 hPa	**Relative Humidity:** 43 %	**Power Supply:** 3.8 VDC
Remarks:			

Table 7.4.2 Spurious emission field strength test results

ASSIGNED FREQUENCY RANGE:	1850-1910MHz
TEST DISTANCE:	3 m
TEST SITE:	Semi anechoic chamber / OATS
EUT HEIGHT:	0.8 m
INVESTIGATED FREQUENCY RANGE:	0.009 – 20000 MHz
DETECTOR USED:	Peak
VIDEO BANDWIDTH:	> Resolution bandwidth
TEST ANTENNA TYPE:	Active loop (9 kHz – 30 MHz) Biconilog (30 MHz – 1000 MHz) Double ridged guide (above 1000 MHz)
MODULATION:	CDMA
MODULATING SIGNAL:	H-PSK
TRANSMITTER OUTPUT POWER SETTINGS:	Maximum
NOTE	RC 3, SO 55, Bitrate FULL 307.6kbps

Frequency, MHz	Field strength, dB(μV/m)	Limit, dB(μV/m)	Margin, dB*	RBW, kHz	Antenna polarization	Antenna height, m	Turn-table position**, degrees
Low carrier frequency 1851.25 MHz							
All spurious were found at least 20 dB bellow the specified limit							
Mid carrier frequency 1880.00 MHz							
All spurious were found at least 20 dB bellow the specified limit							
High carrier frequency 1908.75 MHz							
All spurious were found at least 20 dB bellow the specified limit							

*****- Margin = Field strength of spurious – calculated field strength limit.
******- EUT front panel refers to 0 degrees position of turntable.

Reference numbers of test equipment used

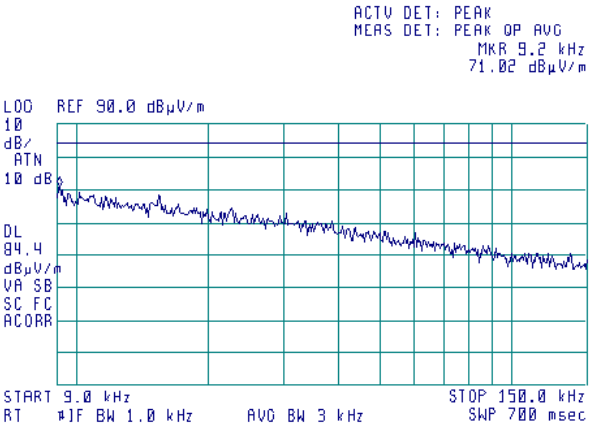
HL 0446	HL 0521	HL 0554	HL 0604	HL 0768	HL 1984	HL 1947	HL 2432
HL 2634	HL 2909	HL 3123	HL 3207				

Full description is given in Appendix A.

Test specification:	Section 24.238, Radiated spurious emissions		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

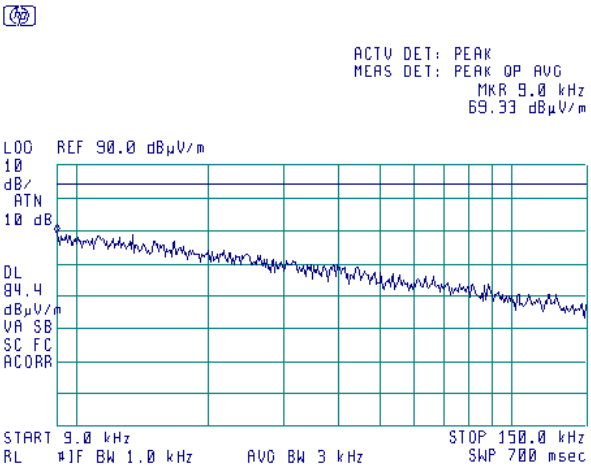
Plot 7.4.1 Radiated emission measurements in 9 - 150 kHz range

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



Plot 7.4.2 Radiated emission measurements in 9 - 150 kHz range

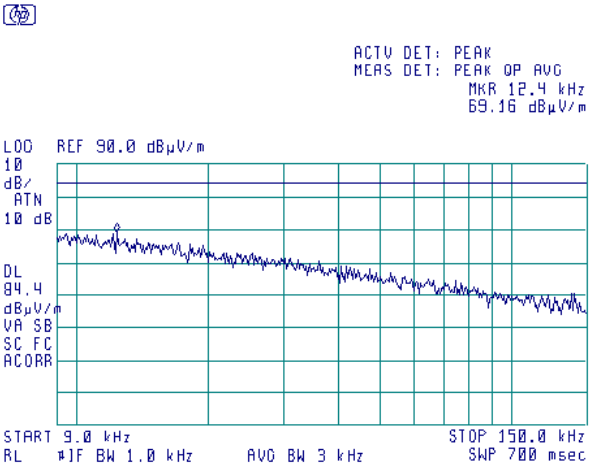
TEST SITE:	Semi anechoic chamber
CARRIER FREQUENCY:	Mid
ANTENNA POLARIZATION:	Vertical and Horizontal
TEST DISTANCE:	3 m



Test specification:	Section 24.238, Radiated spurious emissions		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

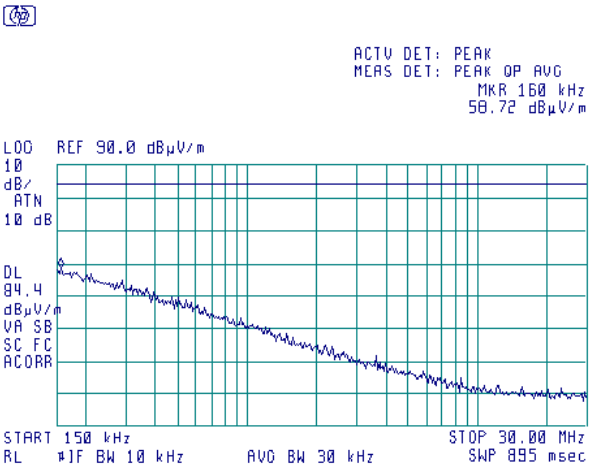
Plot 7.4.3 Radiated emission measurements in 9 - 150 kHz range

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



Plot 7.4.4 Radiated emission measurements in 0.15 - 30 MHz range

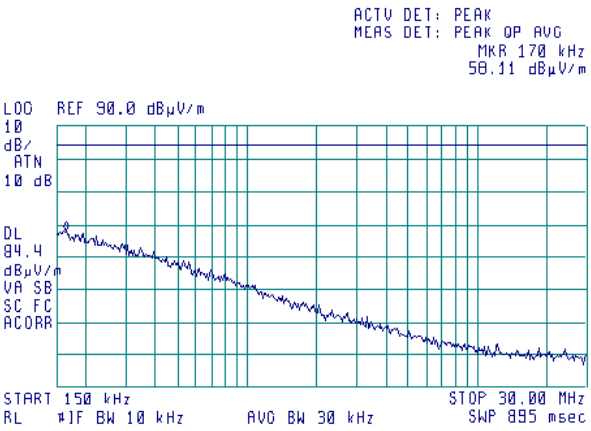
TEST SITE:	Semi anechoic chamber
CARRIER FREQUENCY:	Low
ANTENNA POLARIZATION:	Vertical and Horizontal
TEST DISTANCE:	3 m



Test specification:	Section 24.238, Radiated spurious emissions		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

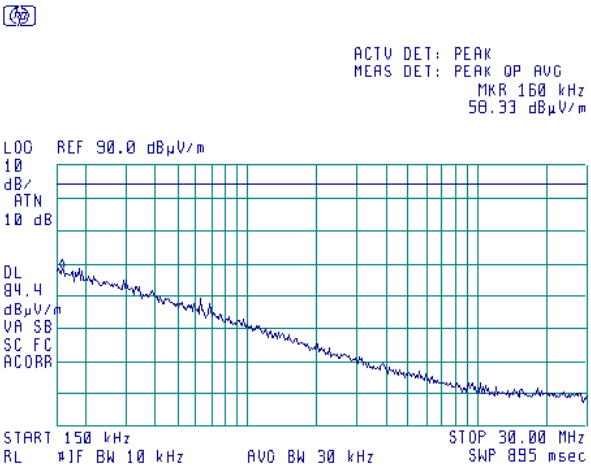
Plot 7.4.5 Radiated emission measurements in 0.15 - 30 MHz range

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



Plot 7.4.6 Radiated emission measurements in 0.15 - 30 MHz range

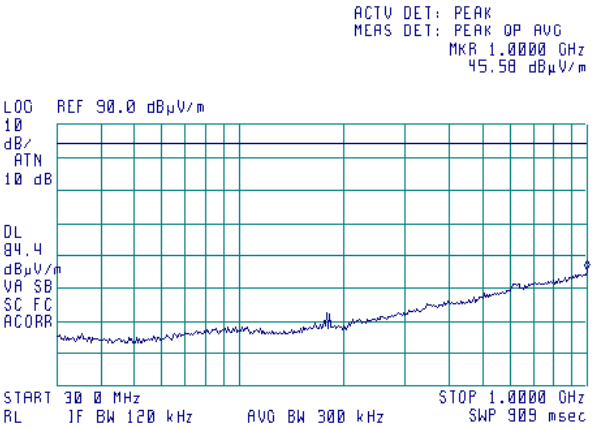
TEST SITE:	Semi anechoic chamber
CARRIER FREQUENCY:	High
ANTENNA POLARIZATION:	Vertical and Horizontal
TEST DISTANCE:	3 m



Test specification:	Section 24.238, Radiated spurious emissions		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

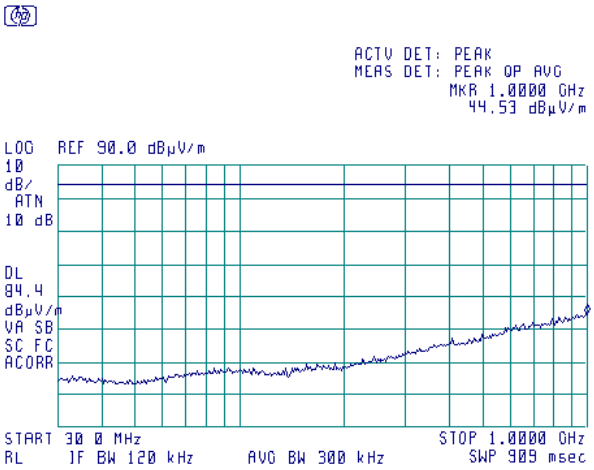
Plot 7.4.7 Radiated emission measurements in 30 - 1000 MHz range

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



Plot 7.4.8 Radiated emission measurements in 30 - 1000 MHz range

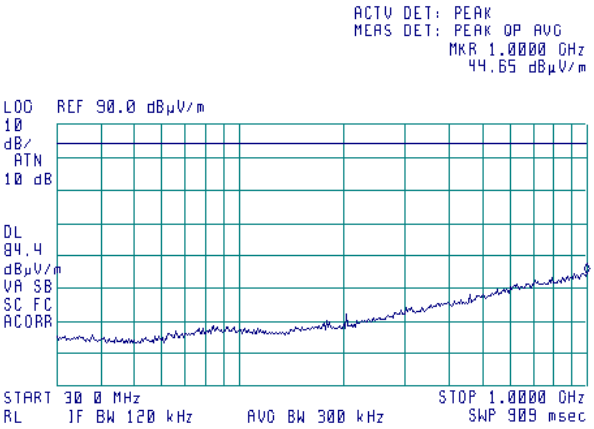
TEST SITE:	Semi anechoic chamber
CARRIER FREQUENCY:	Mid
ANTENNA POLARIZATION:	Vertical and Horizontal
TEST DISTANCE:	3 m



Test specification:	Section 24.238, Radiated spurious emissions		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

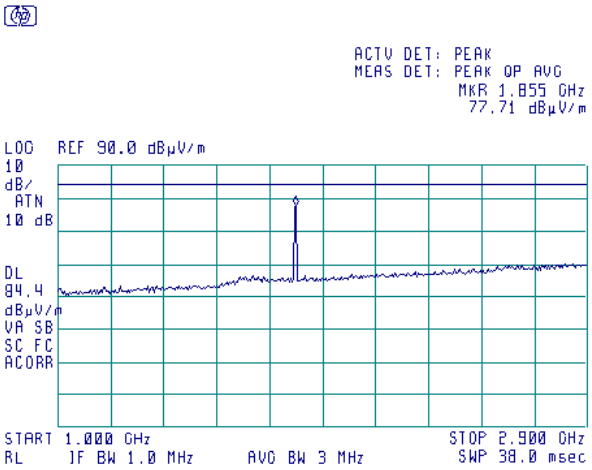
Plot 7.4.9 Radiated emission measurements in 30 - 1000 MHz range

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



Plot 7.4.10 Radiated emission measurements in 1000 – 2900 MHz range

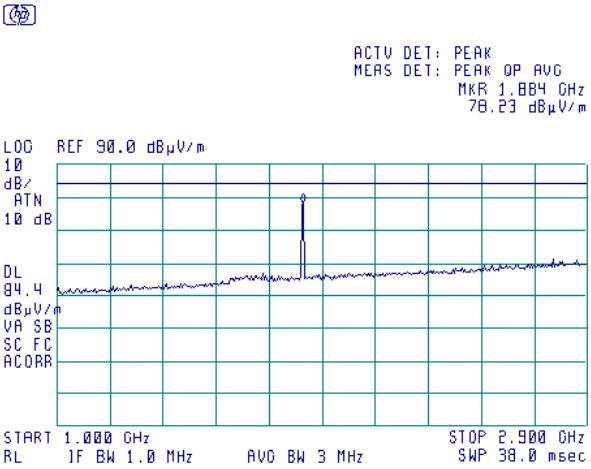
TEST SITE:	Semi anechoic chamber
CARRIER FREQUENCY:	Low
ANTENNA POLARIZATION:	Vertical and Horizontal
TEST DISTANCE:	3 m



Test specification:	Section 24.238, Radiated spurious emissions		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

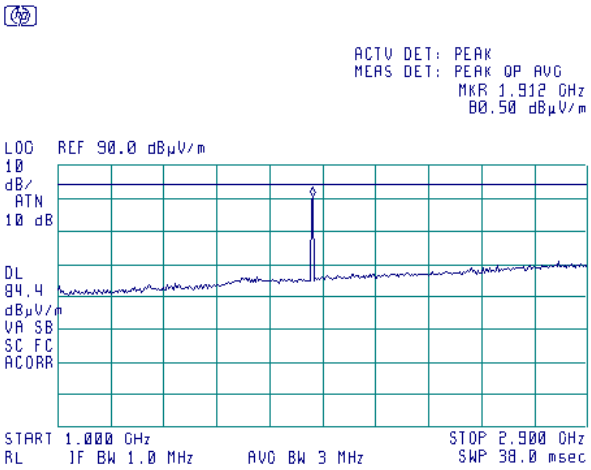
Plot 7.4.11 Radiated emission measurements in 1000 – 2900 MHz range

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



Plot 7.4.12 Radiated emission measurements in 1000 – 2900 MHz range

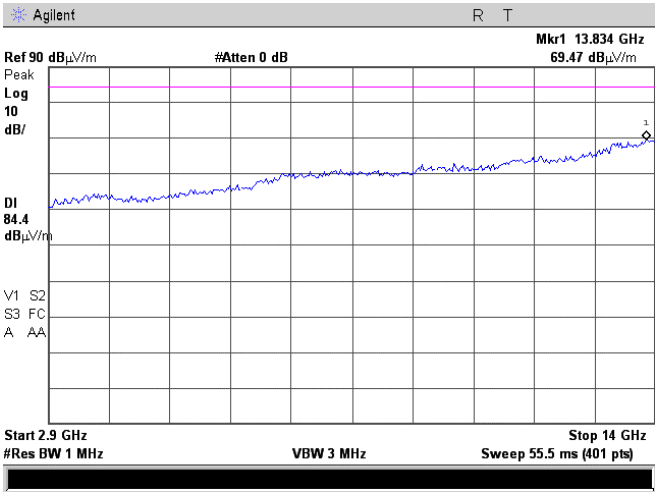
TEST SITE:	Semi anechoic chamber
CARRIER FREQUENCY:	High
ANTENNA POLARIZATION:	Vertical and Horizontal
TEST DISTANCE:	3 m



Test specification:	**Section 24.238, Radiated spurious emissions**		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	**Verdict:**	PASS
Date:	9/10/2008		
Temperature: 25ºC	**Air Pressure:** 1014 hPa	**Relative Humidity:** 43 %	**Power Supply:** 3.8 VDC
Remarks:			

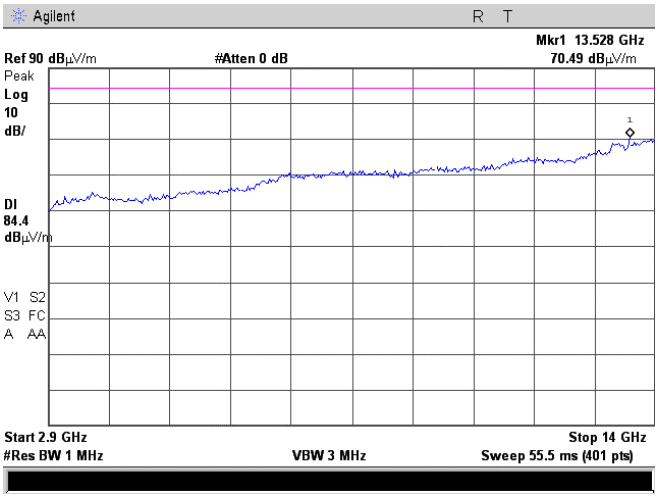
Plot 7.4.13 Radiated emission measurements in 2900 - 14000 MHz range

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



Plot 7.4.14 Radiated emission measurements in 2900 - 14000 MHz range

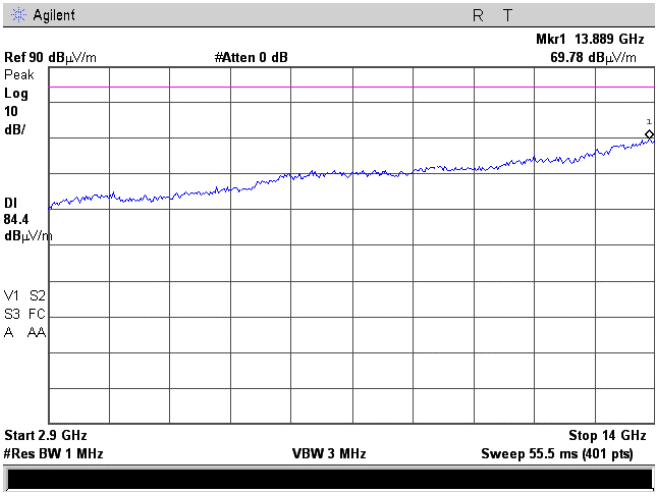
TEST SITE:	Semi anechoic chamber
CARRIER FREQUENCY:	Mid
ANTENNA POLARIZATION:	Vertical and Horizontal
TEST DISTANCE:	3 m



Test specification:	Section 24.238, Radiated spurious emissions		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

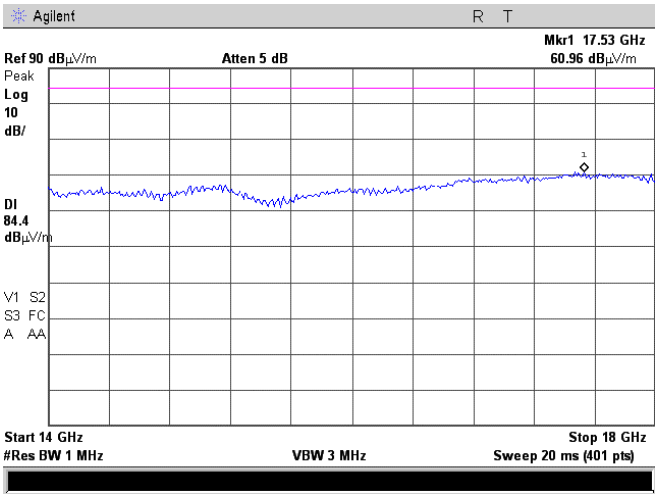
Plot 7.4.15 Radiated emission measurements in 2900 - 14000 MHz range

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



Plot 7.4.16 Radiated emission measurements in 14000 - 18000 MHz range

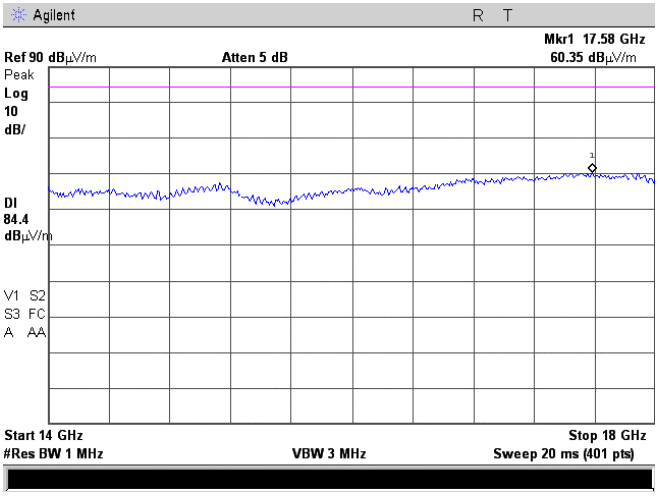
TEST SITE:	OATS
CARRIER FREQUENCY:	Low
ANTENNA POLARIZATION:	Vertical and Horizontal
TEST DISTANCE:	3 m



Test specification:	Section 24.238, Radiated spurious emissions		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

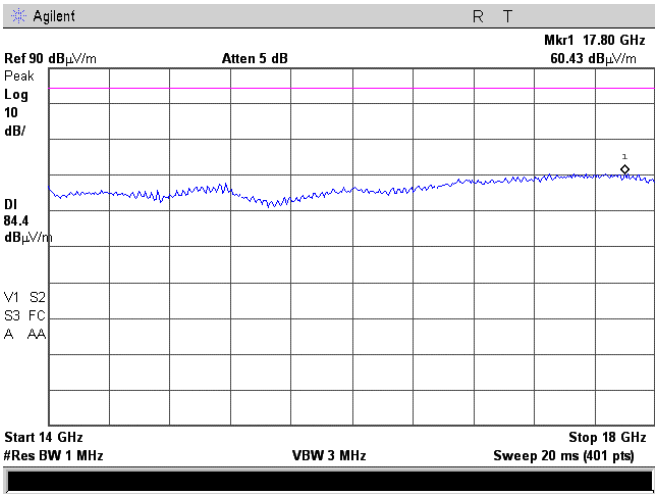
Plot 7.4.17 Radiated emission measurements in 14000 - 18000 MHz range

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



Plot 7.4.18 Radiated emission measurements in 14000 - 18000 MHz range

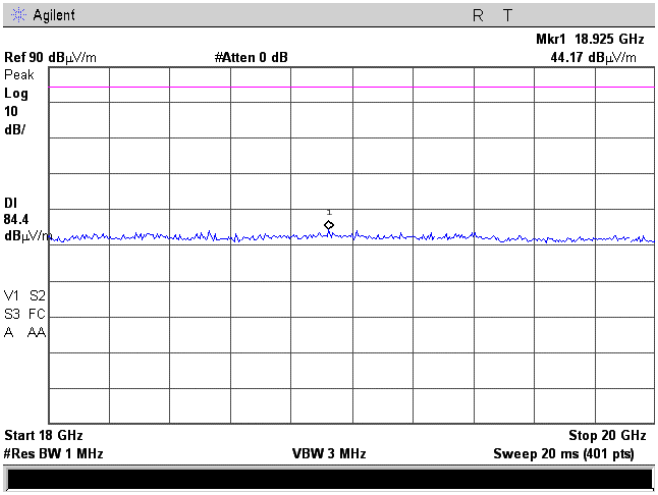
TEST SITE: OATS
CARRIER FREQUENCY: High
ANTENNA POLARIZATION: Vertical and Horizontal
TEST DISTANCE: 3 m



Test specification:	**Section 24.238, Radiated spurious emissions**		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	**Verdict:**	PASS
Date:	9/10/2008		
Temperature: 25ºC	**Air Pressure:** 1014 hPa	**Relative Humidity:** 43 %	**Power Supply:** 3.8 VDC
Remarks:			

Plot 7.4.19 Radiated emission measurements in 18000 – 20000 MHz range

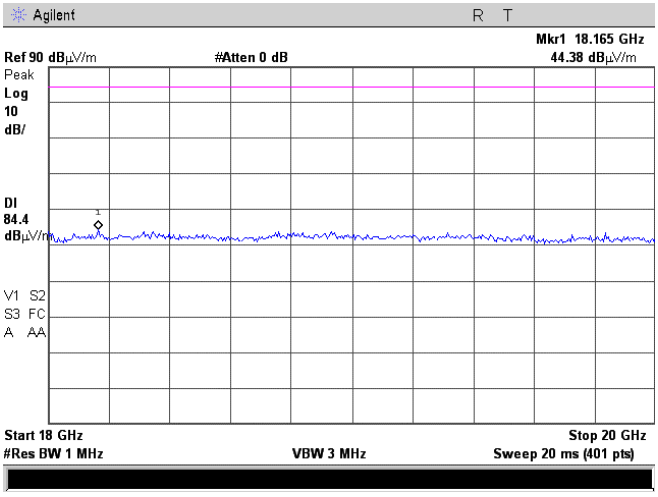
TEST SITE:	OATS
CARRIER FREQUENCY:	Low
ANTENNA POLARIZATION:	Vertical and Horizontal
TEST DISTANCE:	3 m



Test specification:	**Section 24.238, Radiated spurious emissions**		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	**Verdict:**	PASS
Date:	9/10/2008		
Temperature: 25ºC	**Air Pressure:** 1014 hPa	**Relative Humidity:** 43 %	**Power Supply:** 3.8 VDC
Remarks:			

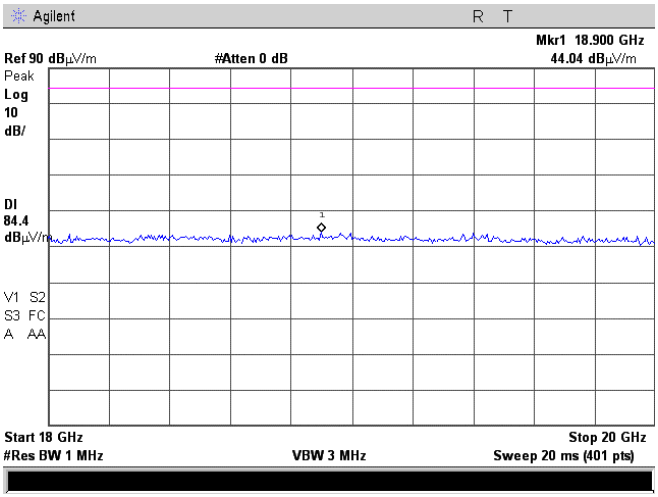
Plot 7.4.20 Radiated emission measurements in 18000 – 20000 MHz range

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



Plot 7.4.21 Radiated emission measurements in 18000 – 20000 MHz range

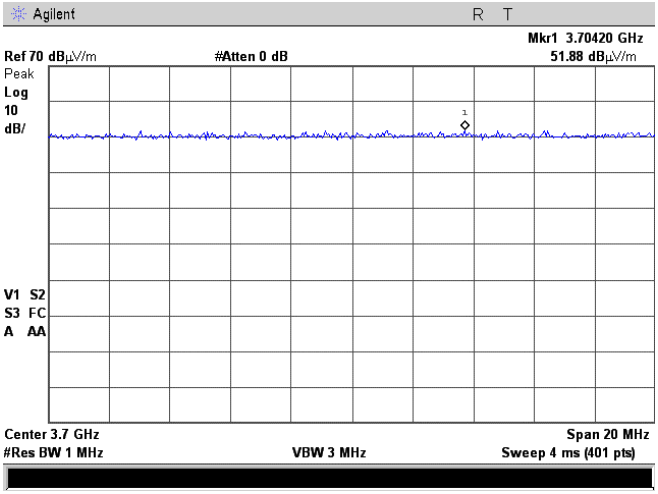
TEST SITE: OATS
CARRIER FREQUENCY: High
ANTENNA POLARIZATION: Vertical and Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 24.238, Radiated spurious emissions		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

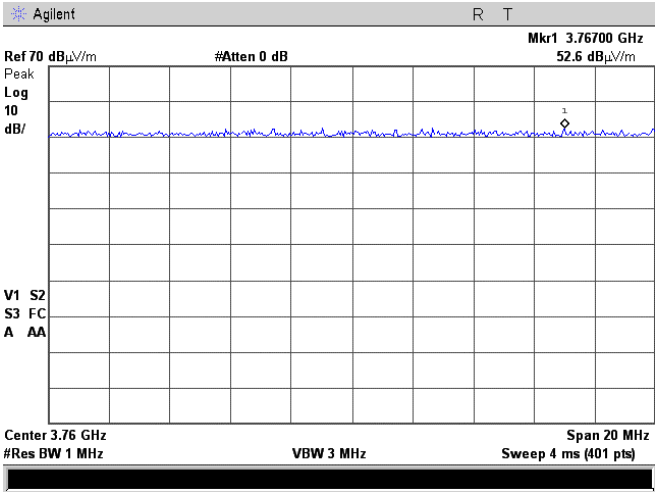
Plot 7.4.22 Radiated emission measurements at the 2nd harmonic

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



Plot 7.4.23 Radiated emission measurements at the 2nd harmonic

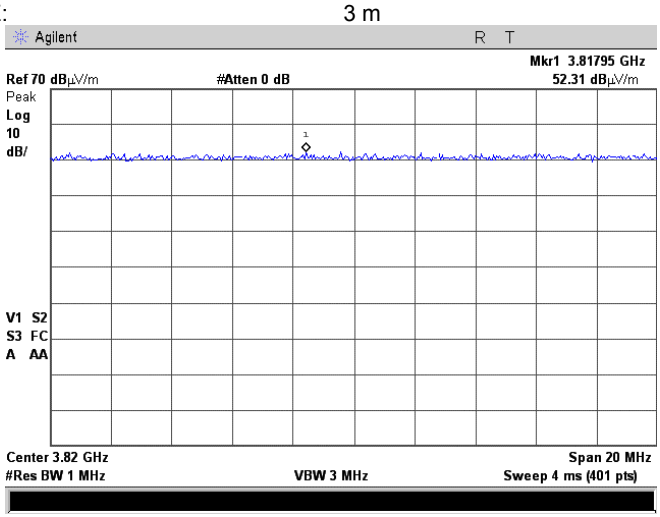
TEST SITE: Semi anechoic chamber
CARRIER FREQUENCY: Mid
ANTENNA POLARIZATION: Vertical & Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 24.238, Radiated spurious emissions		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

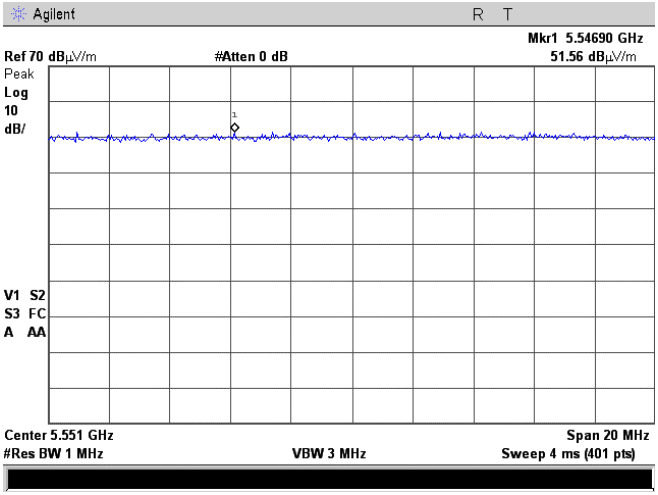
Plot 7.4.24 Radiated emission measurements at the 2nd harmonic

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



Plot 7.4.25 Radiated emission measurements at the 3rd harmonic

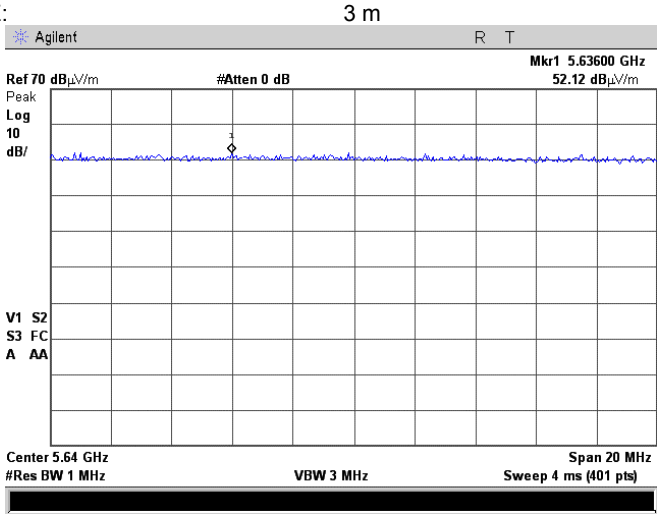
TEST SITE: Semi anechoic chamber
CARRIER FREQUENCY: Low
ANTENNA POLARIZATION: Vertical & Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 24.238, Radiated spurious emissions		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

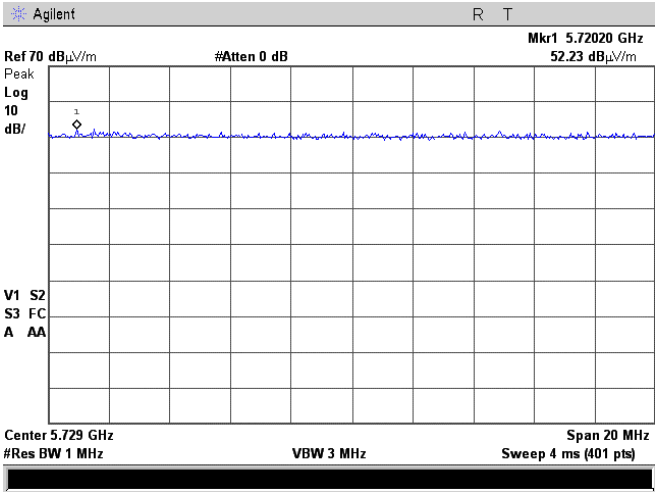
Plot 7.4.26 Radiated emission measurements at the 3rd harmonic

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



Plot 7.4.27 Radiated emission measurements at the 3rd harmonic

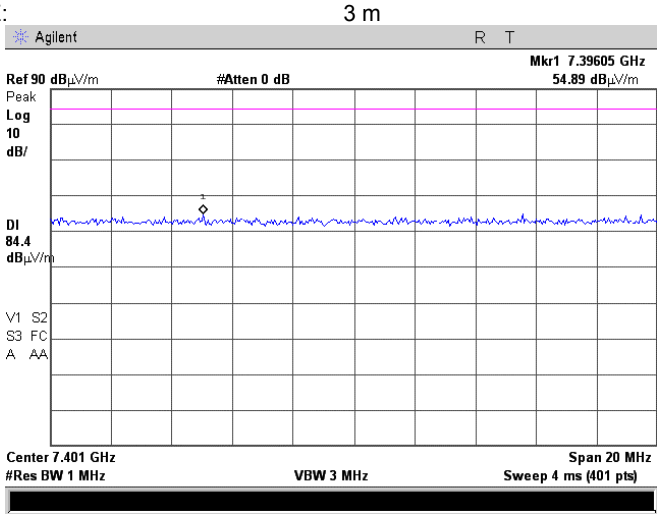
TEST SITE: Semi anechoic chamber
CARRIER FREQUENCY: High
ANTENNA POLARIZATION: Vertical & Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 24.238, Radiated spurious emissions		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

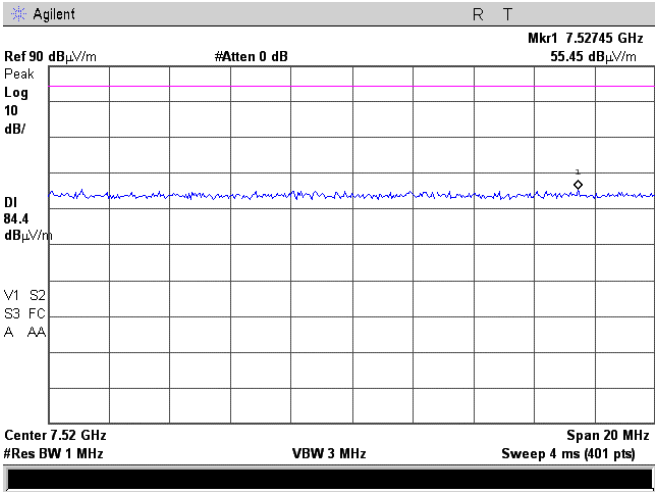
Plot 7.4.28 Radiated emission measurements at the 4th harmonic

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



Plot 7.4.29 Radiated emission measurements at the 4th harmonic

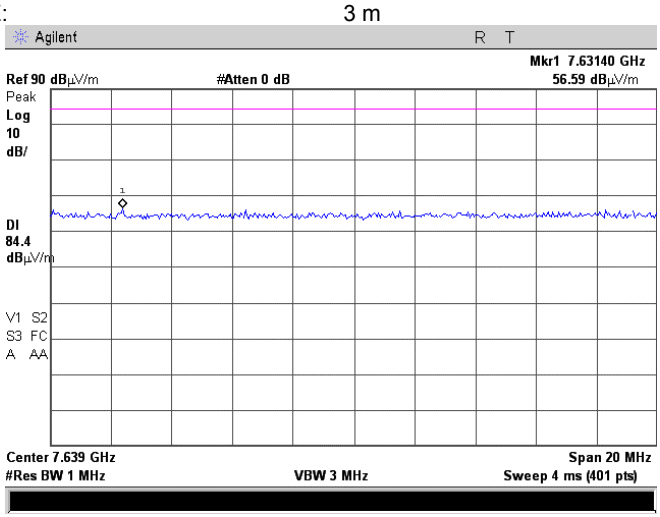
TEST SITE: OATS
CARRIER FREQUENCY: Mid
ANTENNA POLARIZATION: Vertical & Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 24.238, Radiated spurious emissions		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

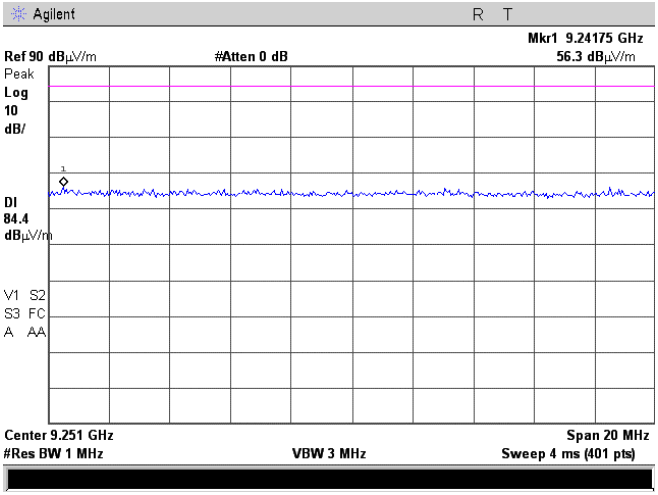
Plot 7.4.30 Radiated emission measurements at the 4th harmonic

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



Plot 7.4.31 Radiated emission measurements at the 5th harmonic

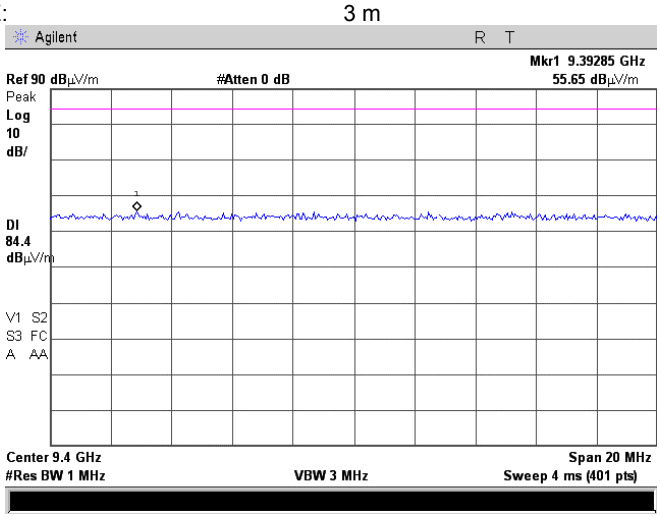
TEST SITE: OATS
CARRIER FREQUENCY: Low
ANTENNA POLARIZATION: Vertical & Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 24.238, Radiated spurious emissions		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

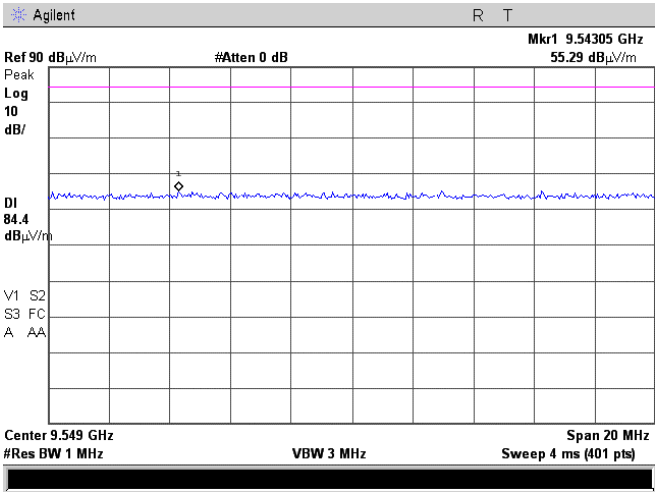
Plot 7.4.32 Radiated emission measurements at the 5th harmonic

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



Plot 7.4.33 Radiated emission measurements at the 5th harmonic

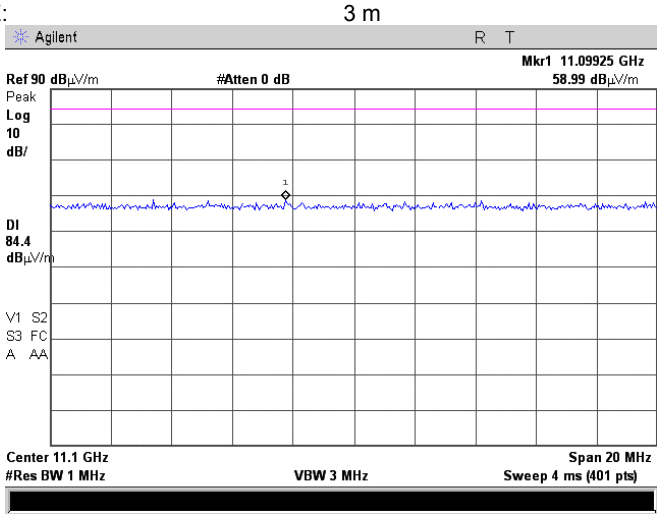
TEST SITE:	OATS
CARRIER FREQUENCY:	High
ANTENNA POLARIZATION:	Vertical & Horizontal
TEST DISTANCE:	3 m



Test specification:	Section 24.238, Radiated spurious emissions		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

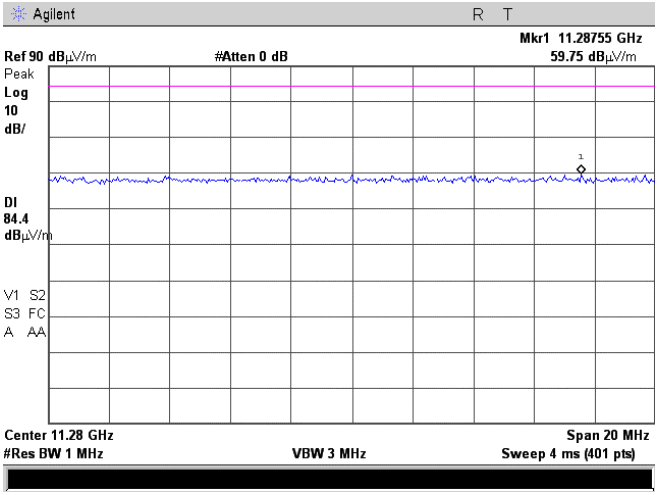
Plot 7.4.34 Radiated emission measurements at the 6th harmonic

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



Plot 7.4.35 Radiated emission measurements at the 6th harmonic

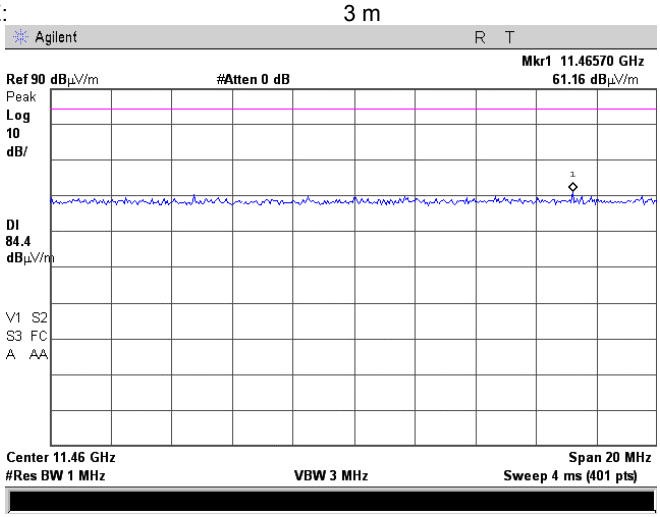
TEST SITE: OATS
CARRIER FREQUENCY: Mid
ANTENNA POLARIZATION: Vertical & Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 24.238, Radiated spurious emissions		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

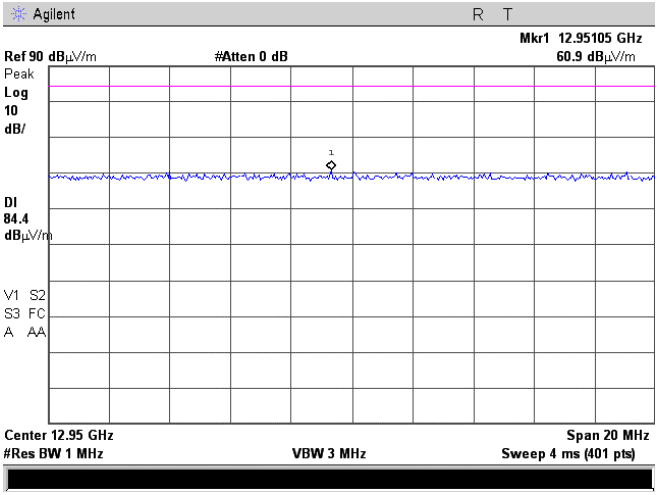
Plot 7.4.36 Radiated emission measurements at the 6th harmonic

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



Plot 7.4.37 Radiated emission measurements at the 7th harmonic

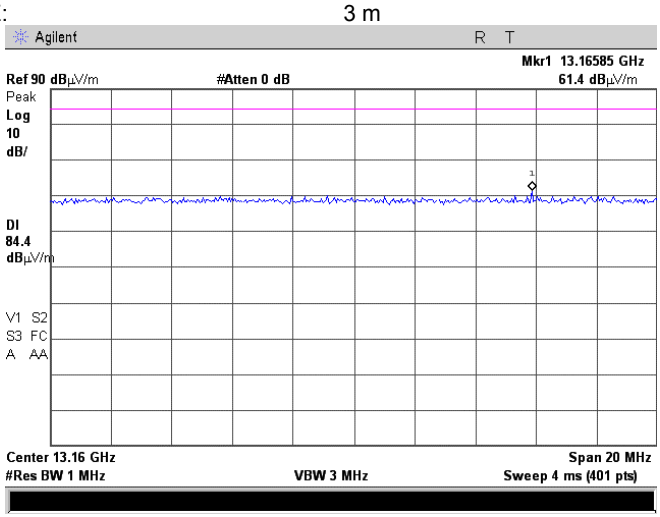
TEST SITE: OATS
CARRIER FREQUENCY: Low
ANTENNA POLARIZATION: Vertical & Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 24.238, Radiated spurious emissions		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

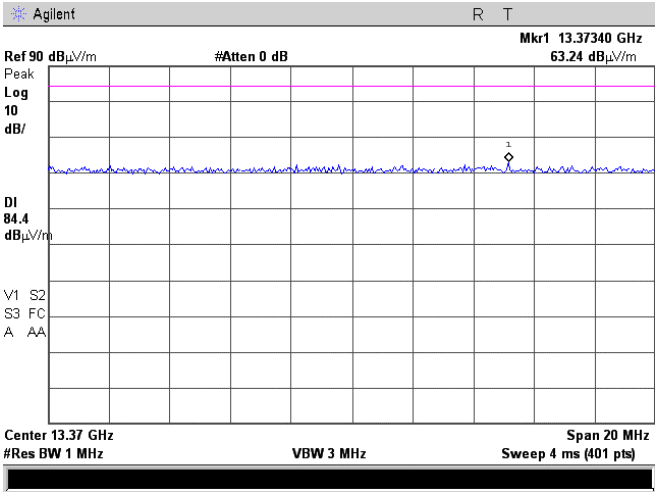
Plot 7.4.38 Radiated emission measurements at the 7th harmonic

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



Plot 7.4.39 Radiated emission measurements at the 7th harmonic

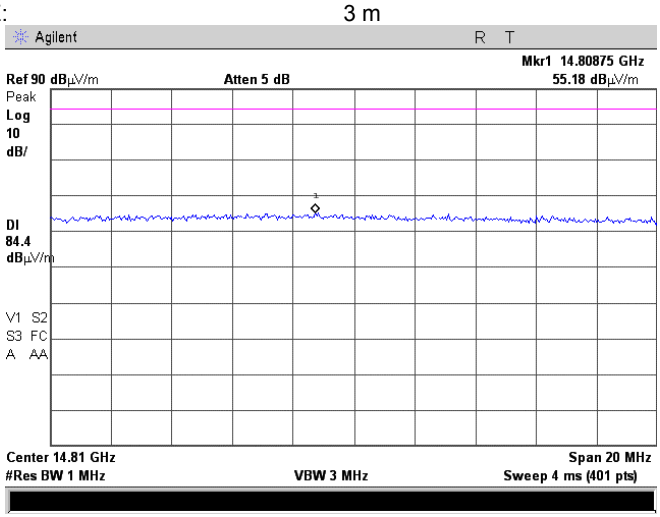
TEST SITE: OATS
CARRIER FREQUENCY: High
ANTENNA POLARIZATION: Vertical & Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 24.238, Radiated spurious emissions		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

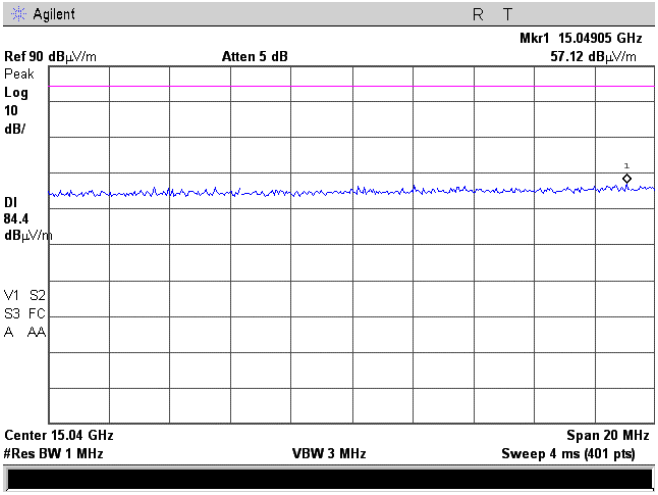
Plot 7.4.40 Radiated emission measurements at the 8th harmonic

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



Plot 7.4.41 Radiated emission measurements at the 8th harmonic

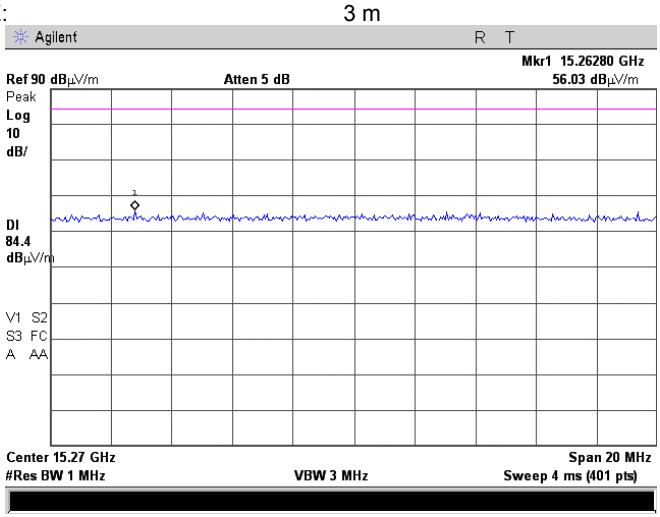
TEST SITE: OATS
CARRIER FREQUENCY: Mid
ANTENNA POLARIZATION: Vertical & Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 24.238, Radiated spurious emissions		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

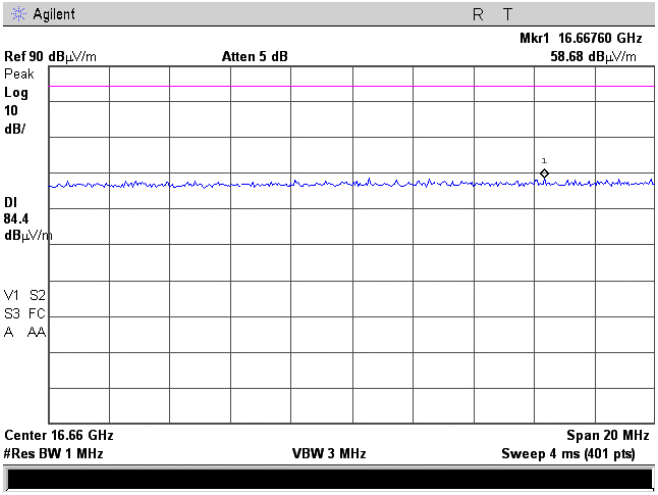
Plot 7.4.42 Radiated emission measurements at the 8th harmonic

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



Plot 7.4.43 Radiated emission measurements at the 9th harmonic

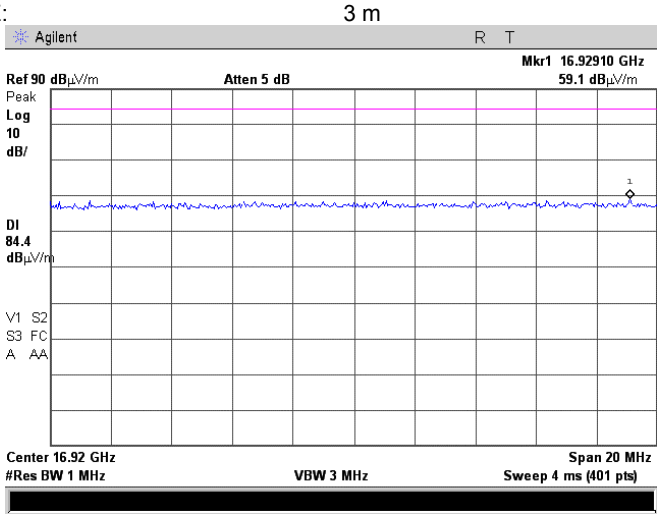
TEST SITE: OATS
CARRIER FREQUENCY: Low
ANTENNA POLARIZATION: Vertical & Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 24.238, Radiated spurious emissions		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

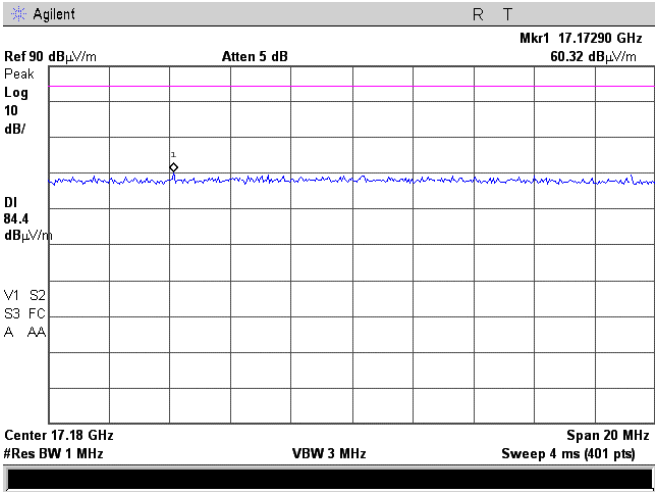
Plot 7.4.44 Radiated emission measurements at the 9th harmonic

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



Plot 7.4.45 Radiated emission measurements at the 9th harmonic

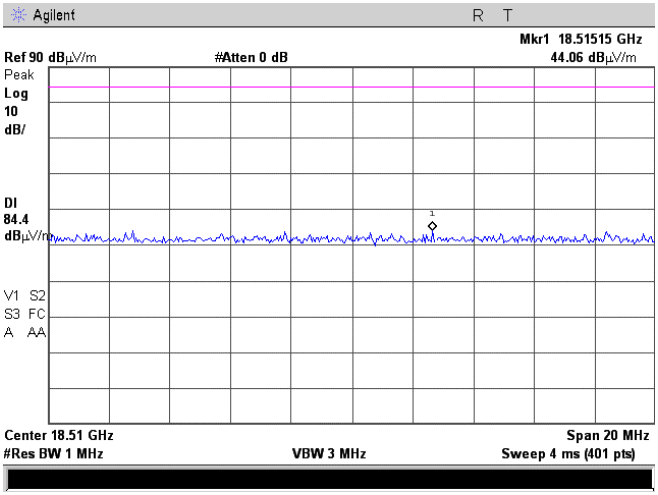
TEST SITE: OATS
CARRIER FREQUENCY: High
ANTENNA POLARIZATION: Vertical & Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 24.238, Radiated spurious emissions		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

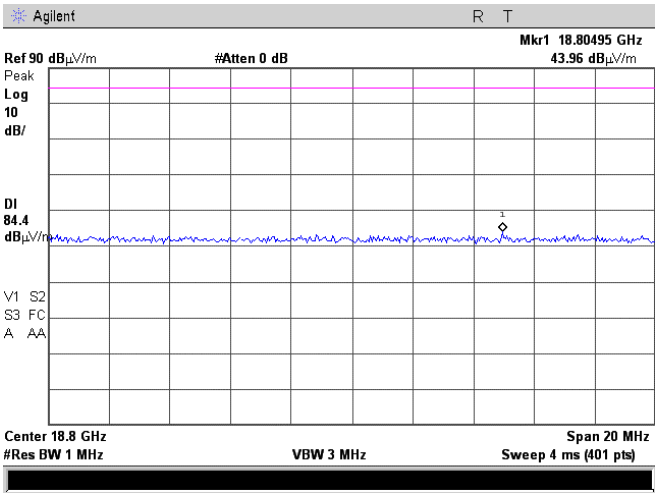
Plot 7.4.46 Radiated emission measurements at the 10th harmonic

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



Plot 7.4.47 Radiated emission measurements at the 10th harmonic

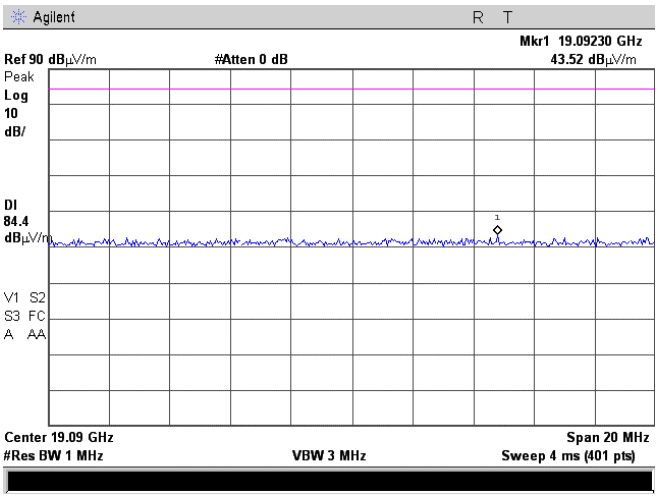
TEST SITE: OATS
CARRIER FREQUENCY: Mid
ANTENNA POLARIZATION: Vertical & Horizontal
TEST DISTANCE: 3 m



Test specification:	**Section 24.238, Radiated spurious emissions**		
Test procedure:	Public notice DA 00-705		
Test mode:	Compliance	**Verdict:**	PASS
Date:	9/10/2008		
Temperature: 25ºC	**Air Pressure:** 1014 hPa	**Relative Humidity:** 43 %	**Power Supply:** 3.8 VDC
Remarks:			

Plot 7.4.48 Radiated emission measurements at the 10th harmonic

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



Test specification:	Section 24.235, Frequency stability test		
Test procedure:	FCC part 24, Section 24.235, part 2 section 2.1055		
Test mode:	Compliance	Verdict:	PASS
Date:	9/16/2008		
Temperature: 24ºC	Air Pressure: 1008 hPa	Relative Humidity: 46 %	Power Supply: 3.8 VDC
Remarks:			

7.5 Frequency stability test

7.5.1 General

This test was performed to measure frequency stability of transmitter RF carrier. Specification test limits are given in Table 7.5.1.

Table 7.5.1 Frequency stability limits

Assigned frequency, MHz	Limits
1850.25	26 dBc points including frequency tolerance shall remain within the authorized frequency block
1880.00	
1909.75	

7.5.2 Test procedure

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

7.5.2.2 The EUT power was turned off. Temperature within test chamber was set to +30˚C and a period of time sufficient to stabilize all of the oscillator circuit components was allowed.

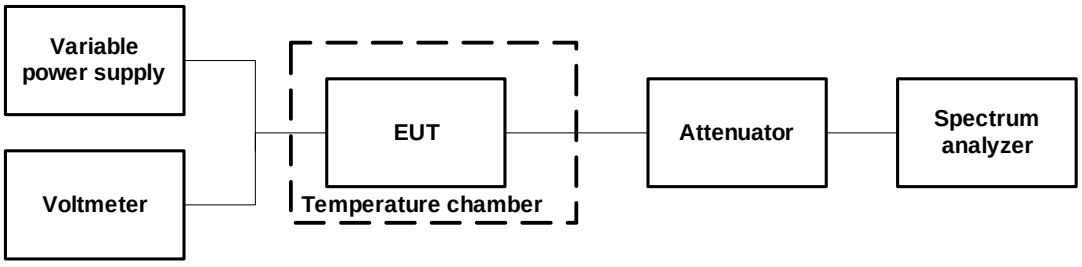
7.5.2.3 The EUT was powered on and carrier frequency was measured at start up moment and then every minute until frequency had been stabilized or 10 minutes elapsed whichever reached the last. The EUT was powered off.

7.5.2.4 The above procedure was repeated at 0˚C and at the lowest test temperature.

7.5.2.5 The EUT was powered on and carrier frequency was measured at start up moment and at the end of stabilization period at the rest of test temperatures and voltages. The EUT was powered off.

7.5.2.6 Frequency displacement was calculated and compared with the limit as provided in Table 7.5.2

Figure 7.5.1 Frequency stability test setup



Test specification:	**Section 24.235, Frequency stability test**		
Test procedure:	FCC part 24, Section 24.235, part 2 section 2.1055		
Test mode:	Compliance	**Verdict:**	PASS
Date:	9/16/2008		
Temperature: 24ºC	**Air Pressure:** 1008 hPa	**Relative Humidity:** 46 %	**Power Supply:** 3.8 VDC
Remarks:			

Table 7.5.2 Frequency stability test results

OPERATING FREQUENCY: 1851.25 – 1908.75 MHz
NOMINAL POWER VOLTAGE: 3.8Vdc
TEMPERATURE STABILIZATION PERIOD: 20 min
POWER DURING TEMPERATURE TRANSITION: Off
SPECTRUM ANALYZER MODE: Counter
RESOLUTION BANDWIDTH: 1kHz
VIDEO BANDWIDTH: 300Hz
MODULATION: CDMA

T, ºC	Voltage, V	Frequency, MHz							lax frequency drift, H	
		Start up	1st min	2nd min	3rd min	4th min	5th min	10th min	Positive	Negative
Low carrier frequency										
-30	nominal	1851.251855	1851.251910	1851.251855	1851.251855	1851.251855	1851.251855	1851.252160	7710	0
-20	nominal	1851.250360	NA	NA	NA	NA	NA	1851.250500	6050	0
-10	nominal	1851.250220	NA	NA	NA	NA	NA	1851.250920	6470	0
0	nominal	1851.251560	1851.251528	1851.251502	1851.248755	1851.248821	1851.249215	1851.252400	7950	0
10	nominal	1851.250440	NA	NA	NA	NA	NA	1851.251600	7150	0
20	+15%	1851.250475	NA	NA	NA	NA	NA	1851.252995	8545	0
20	nominal	1851.243330	NA	NA	NA	NA	NA	1851.244450*	0	-1120
20	-15%l	1851.247500	NA	NA	NA	NA	NA	1851.252260	7810	0
30	nominal	1851.251560	1851.251160	1851.250730	1851.250660	1851.250345	1851.250125	1851.246095	7110	0
40	nominal	1851.252200	NA	NA	NA	NA	NA	1851.252400	7950	0
50	nominal	1851.249315	NA	NA	NA	NA	NA	1851.251420	6970	0
Mid carrier frequency										
-30	nominal	1879.999658	1879.999693	1879.999705	1879.999716	1879.999731	1879.999749	1879.999795	0	-1372
-20	nominal	1879.999800	NA	NA	NA	NA	NA	1879.996860	0	-4170
-10	nominal	1879.997980	NA	NA	NA	NA	NA	1879.999800	0	-3050
0	nominal	1880.007720	1879.999833	1879.999575	1879.999320	1879.999789	1880.001280	1879.998480	6690	-2550
10	nominal	1880.001835	NA	NA	NA	NA	NA	1879.999455	805	-1575
20	+15%	1879.998090	NA	NA	NA	NA	NA	1880.004810	3780	-2940
20	nominal	1880.003130	NA	NA	NA	NA	NA	1880.001030*	2100	0
20	-15%l	1880.000020	NA	NA	NA	NA	NA	1879.996240	0	-4790
30	nominal	1880.000351	1880.000403	1880.000451	1880.000513	1880.000604	1880.000651	1880.000716	0	-679
40	nominal	1880.004280	NA	NA	NA	NA	NA	1880.000860	1880	-170
50	nominal	1880.007480	NA	NA	NA	NA	NA	1880.000580	6450	-450
High carrier frequency										
-30	nominal	1908.750220	1908.750310	1908.750395	1908.750463	1908.750523	1908.750760	1908.752320	0	-2630
-20	nominal	1908.749100	NA	NA	NA	NA	NA	1908.751060	0	-3750
-10	nominal	1908.748680	NA	NA	NA	NA	NA	1908.749520	0	-4170
0	nominal	1908.751555	1908.751423	1908.751362	1908.751080	1908.750918	1908.750833	1908.750720	0	-2130
10	nominal	1908.750860	NA	NA	NA	NA	NA	1908.753435	585	-1990
20	+15%	1908.754250	NA	NA	NA	NA	NA	1908.750470	1400	-2380
20	nominal	1908.754815	NA	NA	NA	NA	NA	1908.752850*	1965	0
20	-15%l	1908.751280	NA	NA	NA	NA	NA	1908.751835	0	-1570
30	nominal	1908.751365	1908.751335	1908.751310	1908.751300	1908.751300	1908.751290	1908.751280	0	-1570
40	nominal	1908.751660	NA	NA	NA	NA	NA	1908.755620	2770	-1190
50	nominal	1908.757580	NA	NA	NA	NA	NA	1908.758840	5990	0

* - Reference frequency

Reference numbers of test equipment used

HL 0493	HL 2011	HL 2634	HL 2780	HL 2869	HL 2952	HL 3439	

Full description is given in Appendix A.

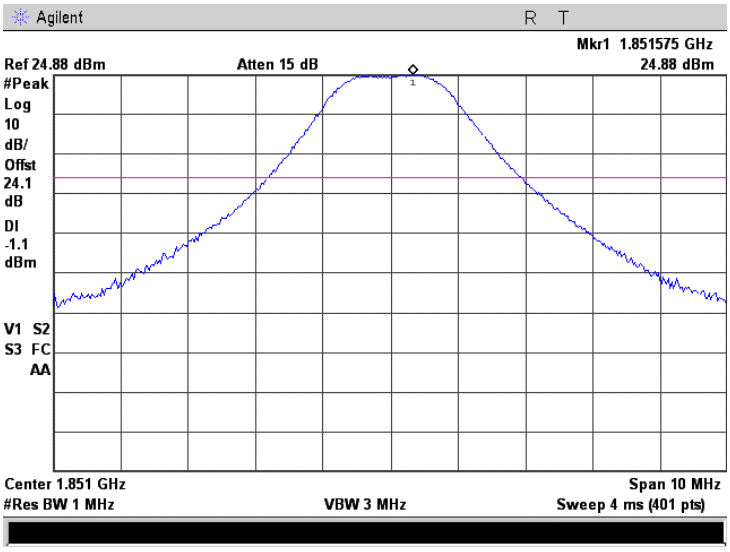
Test specification:	**Section 24.235, Frequency stability test**		
Test procedure:	FCC part 24, Section 24.235, part 2 section 2.1055		
Test mode:	Compliance	**Verdict:**	PASS
Date:	9/16/2008		
Temperature: 24ºC	**Air Pressure:** 1008 hPa	**Relative Humidity:** 46 %	**Power Supply:** 3.8 VDC
Remarks:			

Table 7.5.3 Transmitter operating range including frequency drift

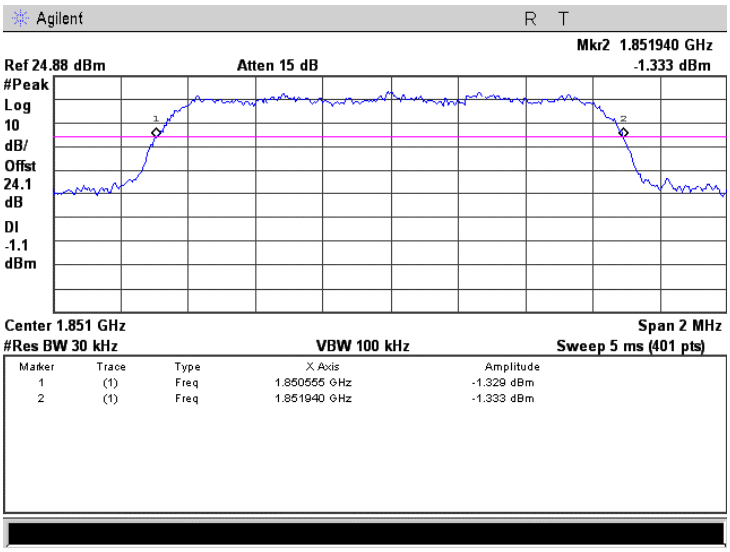
Carrier frequency, MHz	Lower reference point, MHz	Upper reference point, MHz	Maximum negative drift, Hz	Maximum positive drift, Hz	Frequency tolerance, MHz	Limit, MHz	Margin, kHz	Verdict
1851.25	1850.555	NA	1120	8545	1850.553880	1850	553.8	Pass
1908.75	NA	1909.450	4170	5990	1909.455990	1910	455.9	Pass

Test specification:	Section 24.235, Frequency stability test		
Test procedure:	FCC part 24, Section 24.235, part 2 section 2.1055		
Test mode:	Compliance	Verdict:	PASS
Date:	9/16/2008		
Temperature: 24°C	Air Pressure: 1008 hPa	Relative Humidity: 46 %	Power Supply: 3.8 VDC
Remarks:			

Plot 7.5.1 Transmitter band edges at the low frequency

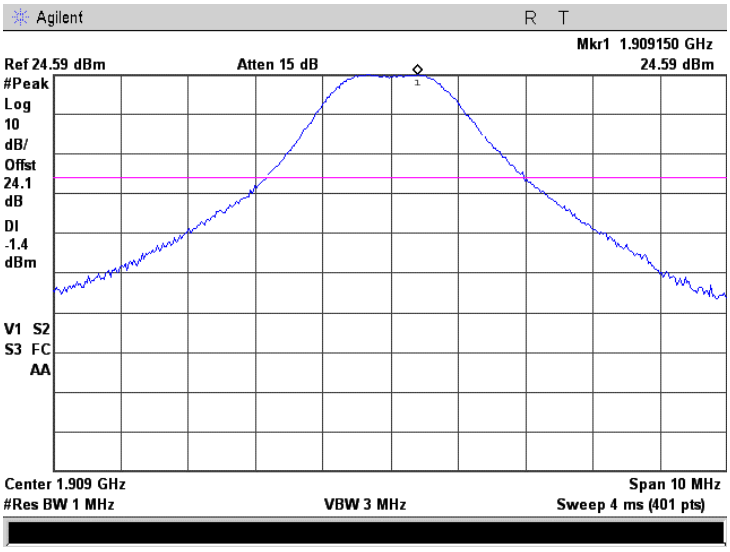


Plot 7.5.2 Transmitter band edges at the low frequency

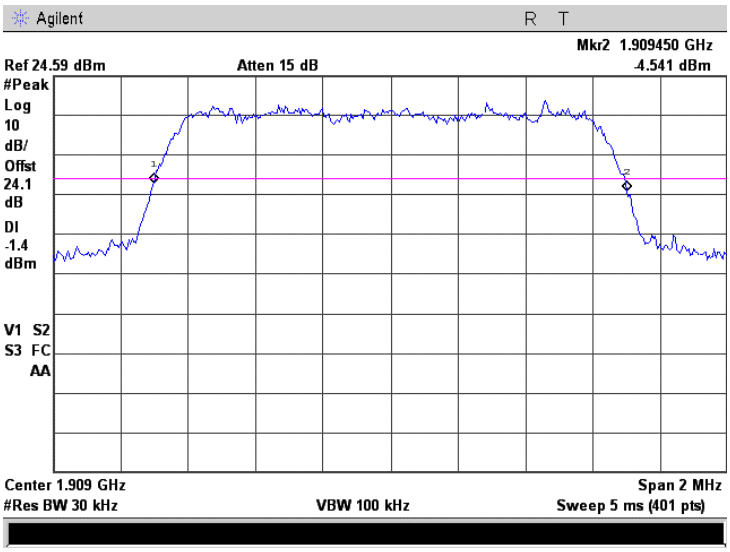


Test specification:	Section 24.235, Frequency stability test		
Test procedure:	FCC part 24, Section 24.235, part 2 section 2.1055		
Test mode:	Compliance	Verdict:	PASS
Date:	9/16/2008		
Temperature: 24°C	Air Pressure: 1008 hPa	Relative Humidity: 46 %	Power Supply: 3.8 VDC
Remarks:			

Plot 7.5.3 Transmitter band edges at the high frequency



Plot 7.5.4 Transmitter band edges at the high frequency



8 APPENDIX A Test equipment and ancillaries used for tests

HL No	Description	Manufacturer	Model	Ser. No.	Last Cal.	Due Cal.
0446	Antenna, Loop, Active, 10 kHz - 30 MHz	EMCO	6502	2857	29-Jun-08	29-Jun-09
0493	Temperature Chamber -45…175 deg C	Thermotron	S-1.2 Mini-Max	14016	19-May-08	19-May-09
0521	EMI Receiver (Spectrum Analyzer) with RF filter section 9 kHz-6.5 GHz	Hewlett Packard Co	8546A	3617A 00319, 3448A00253	29-Aug-08	29-Aug-09
0554	Amplifier, 2-18 GHz RF	Miteq	AFD4	104300	28-Feb-08	28-Feb-09
0604	Antenna BiconiLog Log-Periodic/T Bow-TIE, 26 - 2000 MHz	EMCO	3141	9611-1011	10-Jan-08	10-Jan-09
1947	Cable 18GHz, 6.5 m, blue	Rhophase Microwave Limited	NPS-1803A-6500-NPS	T4974	01-Jan-08	01-Jan-09
1984	Antenna, Double-Ridged Waveguide Horn, 1-18 GHz, 300 W	EMC Test Systems	3115	9911-5964	03-Mar-08	03-Mar-09
2011	Power Divider, 0.5-18.0 GHz, 80 W	Omni Spectra	2090-6204-00	2011	05-Dec-07	05-Dec-08
2432	Antenna, Double-Ridged Waveguide Horn 1-18 GHz	EMC Test Systems	3115	00027177	03-Mar-08	03-Mar-09
2634	Power Supply, 0-36.0 VDC, 0-12.0 A	NEMIC-LAMBDA	UP36-12	2634	25-Aug-08	25-Aug-09
2780	EMC analyzer, 100 Hz to 26.5 GHz	Agilent Technologies	E7405A	MY45102406	11-Jun-07	11-Jun-09
2869	Cable, 18 GHz, 1.2 m, SMA - SMA, Right Angle	Gore	NA	91P72073	11-Feb-08	11-Feb-09
2909	Spectrum analyzer, ESA-E, 100 Hz to 26.5 GHz	Agilent Technologies	E4407B	MY41444762	07-May-07	07-May-09
2910	Cable 18 GHz, 3 m, SMA-SMA	Gore	NA	989370	01-Jan-08	01-Jan-09
2912	Cable 18 GHz, 1.5 m, SMA-SMA	Gore	NA	91P72067	01-Jan-08	01-Jan-09
2952	Cable, RF, 18 GHz, 1.2 m, SMA-SMA	Gore	10020014	NA	05-Oct-08	05-Oct-09
3001	EMC Analyzer, 9 kHz to 3 GHz	Agilent Technologies	E7402A	US39440180	22-Nov-07	22-Nov-08
3123	Microwave Cable Assembly, 18 GHz, 6.4 m, SMA - SMA	Huber-Suhner	198-9155-00	3123	13-Dec-07	13-Dec-08
3178	Attenuator, N-type, 20 dB, DC to 18 GHz, 5 W	Mini-Circuits	BW-N20W5+	0651	07-May-08	07-May-09
3182	Attenuator, N-type, 10 dB, DC to 6 GHz, 1 W	Mini-Circuits	UNAT-10+	15542	07-May-08	07-May-09
3207	Cable 40GHz, 1.2 m	Gore	GOR245	05118337	10-Jun-08	10-Jun-09
3210	Oven	Associated	NA	NA	20-Jun-07	20-Jun-08
3439	Precision Fixed Attenuator, 50 Ohm, 5 W, 20 dB, DC to 18 GHz	Mini-Circuits	BW-S20W5+	NA	09-Mar-08	09-Mar-09

9 APPENDIX B Measurement uncertainties

Expanded uncertainty at 95% confidence in Hermon Labs EMC measurements

Test description	Expanded uncertainty
Conducted emissions at mains port with LISN and HP 8542E or HP 8546A receiver	9 kHz to 150 kHz: ± 3.9 dB 150 kHz to 30 MHz: ± 3.8 dB
Radiated emissions at 10 m measuring distance Horizontal polarization Vertical polarization	 Biconilog antenna: ± 5.0 dB Biconical antenna: ± 5.0 dB Log periodic antenna: ± 5.1 dB Double ridged horn antenna: ± 5.3 dB Biconilog antenna: ± 5.5 dB Biconical antenna: ± 5.5 dB Log periodic antenna: ± 5.6 dB Double ridged horn antenna: ± 5.8 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) and by Industry Canada for electromagnetic emissions (file numbers IC 2186A-1 for OATS and IC 2186A-2 for anechoic chamber), certified by VCCI, Japan (the registration numbers are R-808 for OATS, R-1082 for anechoic chamber, C-845 for conducted emissions site), assessed by TNO Certification EP&S (Netherlands) for a number of EMC, telecommunications, environmental, safety standards, and by AMTAC (UK) for safety of medical devices. The laboratory is accredited by American Association for Laboratory Accreditation (USA) according to ISO/IEC 17025 for electromagnetic compatibility, product safety, telecommunications testing and environmental simulation (for exact scope please refer to Certificate No. 839.01).

Address: P.O. Box 23, Binyamina 30500, Israel.
Telephone: +972 4628 8001
Fax: +972 4628 8277
e-mail: mail@hermonlabs.com
website: www.hermonlabs.com

Person for contact: Mr. Alex Usoskin, CEO.

11 APPENDIX D Specification references

47CFR part 24: 2007	Personal Communications Services
47CFR part 15:2007	Radio Frequency Devices
ANSI C63.2: 1996	American National Standard for Instrumentation-Electromagnetic Noise and Field Strength, 10 kHz to 40 GHz-Specifications.
ANSI C63.4: 2003	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

12 APPENDIX E Test equipment correction factors

Antenna factor

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Cable loss
Cable coaxial, Gore, 18 GHz, 1.1 m, SMA - SMA, model Right Angle, S/N 91P72071
HL 2869

Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB
10	0.06	5750	0.87	12000	1.30
30	0.06	6000	0.87	12250	1.33
100	0.10	6250	0.89	12500	1.35
250	0.18	6500	0.92	12750	1.36
500	0.25	6750	0.94	13000	1.38
750	0.27	7000	0.98	13250	1.41
1000	0.34	7250	0.99	13500	1.39
1250	0.35	7500	1.02	13750	1.41
1500	0.42	7750	1.03	14000	1.42
1750	0.44	8000	1.04	14250	1.46
2000	0.49	8250	1.04	14500	1.39
2250	0.52	8500	1.08	14750	1.46
2500	0.55	8750	1.08	15000	1.40
2750	0.59	9000	1.12	15250	1.47
3000	0.61	9250	1.12	15500	1.36
3250	0.64	9500	1.15	15750	1.49
3500	0.67	9750	1.14	16000	1.51
3750	0.69	10000	1.19	16250	1.60
4000	0.70	10250	1.20	16500	1.56
4250	0.74	10500	1.23	16750	1.66
4500	0.76	10750	1.24	17000	1.71
4750	0.77	11000	1.24	17250	1.78
5000	0.79	11250	1.25	17500	1.75
5250	0.82	11500	1.28	17750	1.77
5500	0.84	11750	1.29	18000	1.86

Cable loss
Cable coaxial, Gore, 18 GHz, 3m, SMA-SMA, S/N 989370
HL 2910

Frequency, GHz	Cable loss, dB	Frequency, GHz	Cable loss, dB	Frequency, GHz	Cable loss, dB
10	0.07	5750	2.97	12000	5.05
30	0.19	6000	2.91	12250	4.44
100	0.36	6250	3.23	12500	4.82
250	0.53	6500	3.42	12750	5.22
500	0.77	6750	3.17	13000	5.02
750	0.94	7000	3.56	13250	5.00
1000	1.10	7250	3.77	13500	5.09
1250	1.19	7500	3.48	13750	4.70
1500	1.35	7750	3.81	14000	5.03
1750	1.51	8000	3.82	14250	5.17
2000	1.57	8250	3.62	14500	4.92
2250	1.69	8500	3.95	14750	4.91
2500	1.76	8750	4.00	15000	5.03
2750	1.83	9000	3.80	15250	4.93
3000	2.02	9250	4.09	15500	5.28
3250	2.17	9500	4.12	15750	5.60
3500	2.13	9750	4.11	16000	5.16
3750	2.23	10000	4.36	16250	5.45
4000	2.40	10250	4.75	16500	5.78
4250	2.31	10500	4.61	16750	5.47
4500	2.52	10750	4.26	17000	5.21
4750	2.77	11000	4.62	17250	5.53
5000	2.82	11250	4.55	17500	5.53
5250	2.77	11500	4.59	17750	5.71
5500	3.04	11750	5.20	18000	5.77

Cable loss
Cable coaxial, Gore, 18 GHz, 1.5 m, SMA-SMA, S/N 91P72067
HL 2912

Frequency, GHz	Cable loss, dB	Frequency, GHz	Cable loss, dB	Frequency, GHz	Cable loss, dB
10	0.07	5750	1.56	12000	2.23
30	0.10	6000	1.48	12250	2.14
100	0.17	6250	1.55	12500	2.19
250	0.28	6500	1.52	12750	2.14
500	0.43	6750	1.57	13000	2.24
750	0.52	7000	1.59	13250	2.19
1000	0.59	7250	1.64	13500	2.24
1250	0.66	7500	1.66	13750	2.14
1500	0.72	7750	1.78	14000	2.29
1750	0.81	8000	1.87	14250	2.41
2000	0.82	8250	1.78	14500	2.48
2250	0.94	8500	1.79	14750	2.31
2500	0.94	8750	1.88	15000	2.45
2750	0.99	9000	2.01	15250	2.55
3000	1.03	9250	1.90	15500	2.75
3250	1.15	9500	1.90	15750	2.75
3500	1.13	9750	1.90	16000	2.68
3750	1.17	10000	2.03	16250	2.73
4000	1.19	10250	2.04	16500	2.82
4250	1.31	10500	2.26	16750	2.79
4500	1.24	10750	2.09	17000	2.87
4750	1.30	11000	2.05	17250	2.80
5000	1.31	11250	2.15	17500	2.90
5250	1.41	11500	2.34	17750	2.82
5500	1.41	11750	2.34	18000	2.90

Cable loss
Cable coaxial, Gore, 18 GHz, 1.2 m, SMA-SMA, S/N 10020014
HL 2952

Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB	Frequency, MHz	Cable loss, dB
10	0.03	5750	0.97	12000	1.50
30	0.05	6000	1.01	12250	1.45
100	0.11	6250	1.03	12500	1.48
250	0.19	6500	1.06	12750	1.57
500	0.26	6750	1.08	13000	1.51
750	0.32	7000	1.10	13250	1.64
1000	0.38	7250	1.13	13500	1.60
1250	0.43	7500	1.13	13750	1.63
1500	0.47	7750	1.21	14000	1.59
1750	0.53	8000	1.20	14250	1.66
2000	0.55	8250	1.24	14500	1.60
2250	0.59	8500	1.29	14750	1.65
2500	0.63	8750	1.23	15000	1.72
2750	0.66	9000	1.27	15250	1.68
3000	0.69	9250	1.27	15500	1.73
3250	0.72	9500	1.29	15750	1.70
3500	0.75	9750	1.30	16000	1.82
3750	0.78	10000	1.38	16250	1.79
4000	0.82	10250	1.44	16500	1.81
4250	0.84	10500	1.47	16750	1.91
4500	0.86	10750	1.45	17000	1.92
4750	0.90	11000	1.50	17250	1.98
5000	0.91	11250	1.46	17500	2.05
5250	0.94	11500	1.47	17750	2.04
5500	0.96	11750	1.44	18000	2.05

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	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, GORE-TEX, GOR245, 40 GHz, 1.2 m, SMA-SMA, S/N 05118337, HL 3207

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	0.17	5000	1.54	10200	2.26	15500	2.77	31500	4.07
30	0.14	5100	1.54	10300	2.26	15600	2.78	32000	4.03
50	0.16	5200	1.56	10400	2.24	15700	2.81	32500	3.93
100	0.22	5300	1.59	10500	2.23	15800	2.81	33000	4.00
200	0.30	5400	1.60	10600	2.25	15900	2.84	33500	4.09
300	0.38	5500	1.61	10700	2.31	16000	2.91	34000	4.08
400	0.44	5600	1.63	10800	2.34	16100	2.92	34500	4.13
500	0.48	5700	1.66	10900	2.38	16200	2.88	35000	4.15
600	0.54	5800	1.68	11000	2.38	16300	2.90	35500	4.18
700	0.58	5900	1.68	11100	2.38	16400	2.93	36000	4.22
800	0.62	6000	1.71	11200	2.37	16500	2.92	36500	4.25
900	0.65	6100	1.71	11300	2.38	16600	2.97	37000	4.26
1000	0.69	6200	1.73	11400	2.40	16700	3.02	37500	4.40
1100	0.73	6300	1.75	11500	2.41	16800	3.02	38000	4.40
1200	0.76	6400	1.76	11600	2.44	16900	3.01	38500	4.52
1300	0.78	6500	1.78	11700	2.44	17000	3.04	39000	4.54
1400	0.81	6600	1.77	11800	2.44	17100	3.08	39500	4.36
1500	0.85	6700	1.79	11900	2.45	17200	3.05	40000	4.48
1600	0.87	6800	1.80	12000	2.46	17300	3.06		
1700	0.90	6900	1.83	12100	2.45	17400	3.06		
1800	0.93	7000	1.84	12200	2.45	17500	3.07		
1900	0.96	7100	1.86	12300	2.48	17600	3.08		
2000	0.95	7200	1.88	12400	2.49	17700	3.09		
2100	0.98	7300	1.86	12500	2.51	17800	3.12		
2200	1.00	7400	1.87	12600	2.53	17900	3.09		
2300	1.02	7500	1.90	12700	2.51	18000	3.08		
2400	1.04	7600	1.91	12800	2.52	18500	3.11		
2500	1.06	7700	1.95	12900	2.54	19000	3.14		
2600	1.08	7800	1.98	13000	2.56	19500	3.20		
2700	1.11	7900	1.99	13100	2.56	20000	3.24		
2800	1.14	8000	1.98	13200	2.59	20500	3.31		
2900	1.15	8100	1.98	13300	2.59	21000	3.38		
3000	1.17	8200	2.00	13400	2.60	21500	3.44		
3100	1.19	8300	2.01	13500	2.65	22000	3.45		
3200	1.20	8400	2.05	13600	2.71	22500	3.45		
3300	1.24	8500	2.07	13700	2.71	23000	3.47		
3400	1.26	8600	2.08	13800	2.69	23500	3.47		
3500	1.27	8700	2.09	13900	2.67	24000	3.54		
3600	1.28	8800	2.09	14000	2.68	24500	3.62		
3700	1.32	8900	2.10	14100	2.68	25000	3.73		
3800	1.32	9000	2.12	14200	2.74	25500	3.77		
3900	1.35	9100	2.12	14300	2.77	26000	3.71		
4000	1.36	9200	2.15	14400	2.80	26500	3.73		
4100	1.39	9300	2.13	14600	2.74	27000	3.73		
4200	1.40	9400	2.16	14700	2.73	27500	3.78		
4300	1.41	9500	2.17	14800	2.75	28000	3.81		
4400	1.43	9600	2.17	14900	2.75	28500	3.81		
4500	1.47	9700	2.18	15000	2.77	29000	3.80		
4600	1.46	9800	2.16	15100	2.76	29500	3.81		
4700	1.49	9900	2.17	15200	2.76	30000	3.89		
4800	1.50	10000	2.20	15300	2.77	30500	4.03		
4900	1.52	10100	2.22	15400	2.79	31000	4.01		

13 APPENDIX F Abbreviations and acronyms

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

END OF DOCUMENT