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 22

FOR:

Motorola Israel Ltd.

1X CDMA dual band 800&1900 MHz module

Model:C24

Model number:F6490

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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 22:2007

5 Tests summary

Test	Status
Transmitter characteristics	
Section 22.913, RF output power	Pass
Section 22.917, 2.1049, Occupied bandwidth	Pass
Section 22.917, Spurious emissions at antenna terminal	Pass
Section 22.917, Emissions at band edges	Pass
Section 22.917, Radiated spurious emissions	Pass
Section 22.355, 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	824 – 849 MHz	
Operating frequency range	824.7 – 848.31 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 22.913, Peak output power**		
Test procedure:	FCC part 22, Section 22.913		
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 22 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.

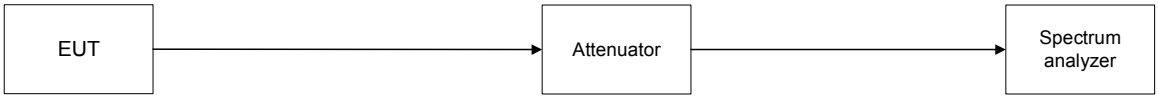
Table 7.1.1 Peak output power limits

Assigned frequency range, MHz	Maximum peak output power	
	W	dBm
824 – 849	7.0	38.45

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 22.913, Peak output power**		
Test procedure:	FCC part 22, Section 22.913		
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: 824-849MHz
DETECTOR USED: Peak
RESOLUTION BANDWIDTH: 3 MHz
VIDEO BANDWIDTH: 3 MHz
MODULATION: O-QPSK, H-PSC
MODULATING SIGNAL: PBSK
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 Bitrate FULL							
824.70	29.42	Included	Included	29.42	38.5	-9.08	Pass
836.52	29.07	Included	Included	29.07	38.5	-9.43	Pass
848.31	29.43	Included	Included	29.43	38.5	-9.07	Pass
RC3 SO 55 H-PSK Bitrate HALF							
824.70	29.35	Included	Included	29.35	38.5	-9.15	Pass
836.52	28.79	Included	Included	28.79	38.5	-9.71	Pass
848.31	29.14	Included	Included	29.14	38.5	-9.36	Pass
RC3 SO 5 H-PSK 5 Bitrate EIGHT							
824.70	29.49	Included	Included	29.49	38.5	-9.01	Pass
836.52	28.88	Included	Included	28.88	38.5	-9.62	Pass
848.31	29.29	Included	Included	29.29	38.5	-9.21	Pass
RC3 SO 2 O-QPSK Bitrate FULL							
824.70	29.44	Included	Included	29.44	38.5	-9.06	Pass
836.52	28.91	Included	Included	28.91	38.5	-9.59	Pass
848.31	29.11	Included	Included	29.11	38.5	-9.39	Pass
RC1 SO 55 O-QPSK Bitrate FULL							
824.70	29.64	Included	Included	29.64	38.5	-8.86	Pass
836.52	29.49	Included	Included	29.49	38.5	-9.01	Pass
848.31	29.55	Included	Included	29.55	38.5	-8.95	Pass
RC1 SO 2 O-QPSK Bitrate FULL							
824.70	29.56	Included	Included	29.56	38.5	-8.94	Pass
836.52	29.32	Included	Included	29.32	38.5	-9.18	Pass
848.31	29.55	Included	Included	29.55	38.5	-8.95	Pass

Reference numbers of test equipment used

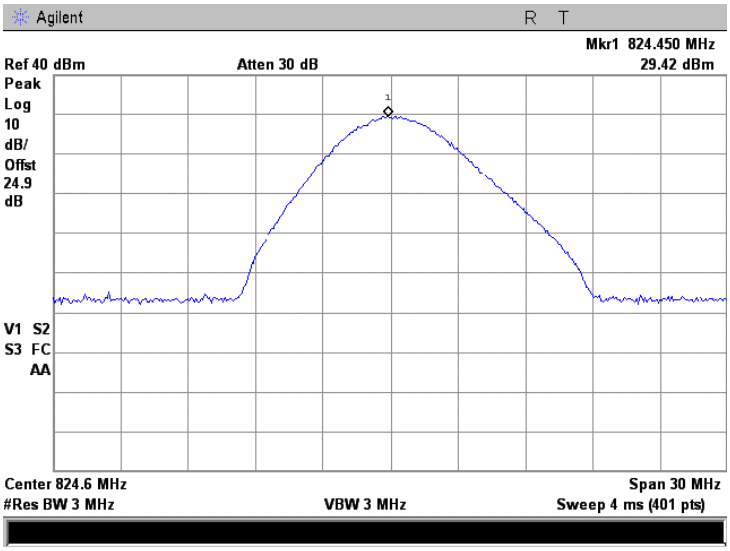
HL 2011	HL 2634	HL 2780	HL 3439				

Full description is given in Appendix A.

Test specification:	Section 22.913, Peak output power		
Test procedure:	FCC part 22, Section 22.913		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

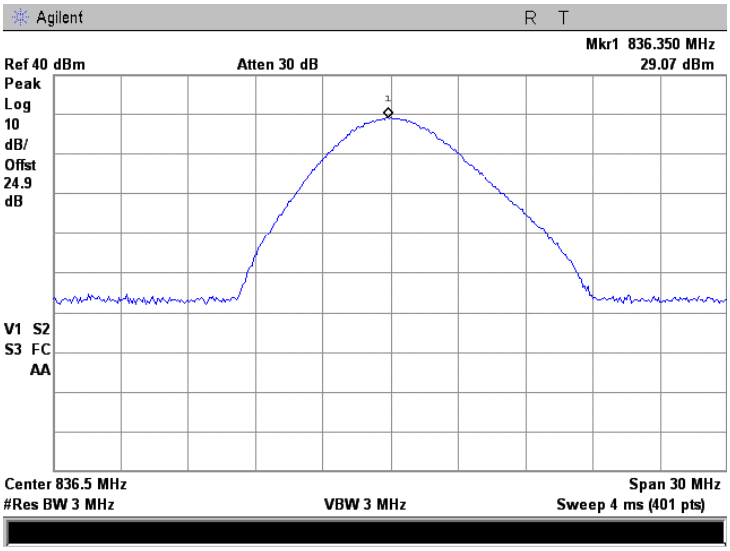
Plot 7.1.1 Peak output power test results at low frequency

NOTE RC3 SO 55 H-PSK Bitrate FULL



Plot 7.1.2 RF power output test results at mid frequency

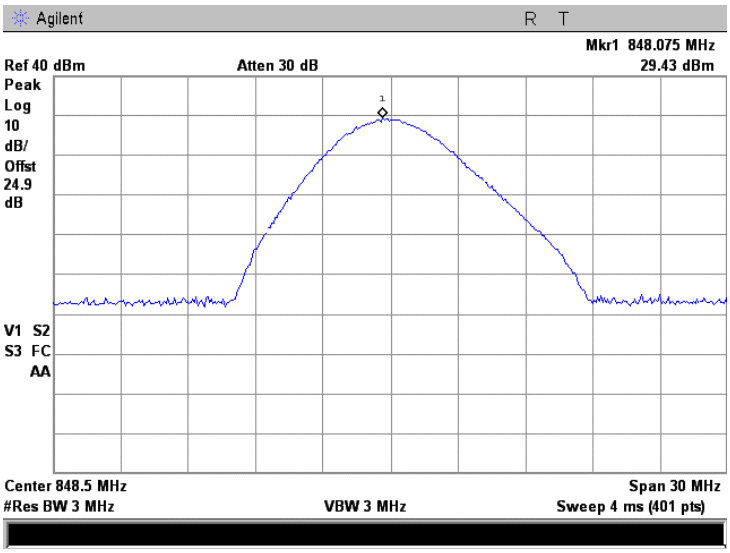
NOTE RC3 SO 55 H-PSK Bitrate FULL



Test specification:	Section 22.913, Peak output power		
Test procedure:	FCC part 22, Section 22.913		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

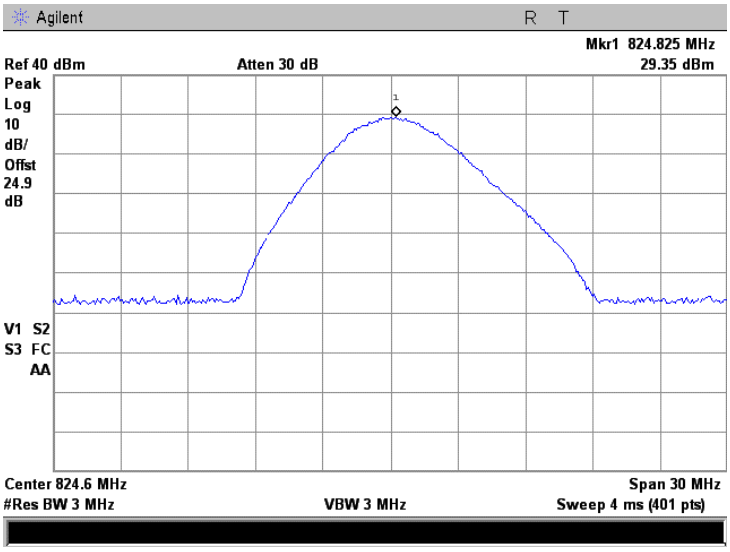
Plot 7.1.3 RF power output test results at high frequency

NOTE RC3 SO 55 H-PSK Bitrate FULL



Plot 7.1.4 RF power output test results at low frequency

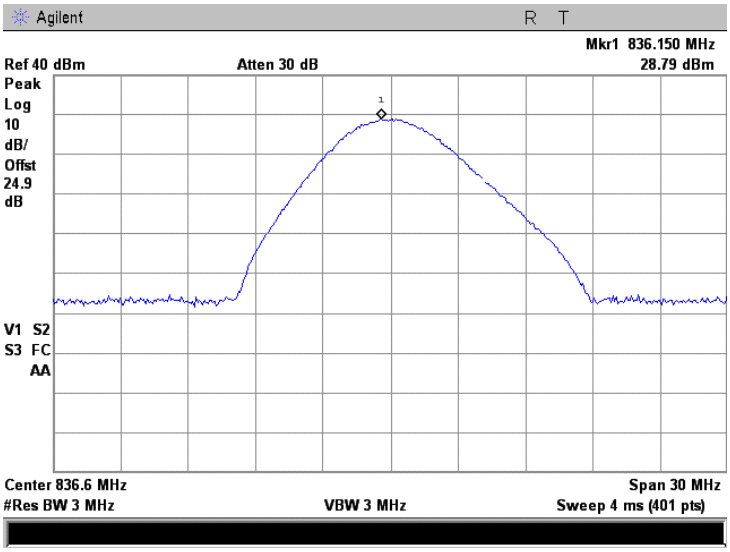
NOTE RC3 SO 55 H-PSK Bitrate HALF



Test specification:	Section 22.913, Peak output power		
Test procedure:	FCC part 22, Section 22.913		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

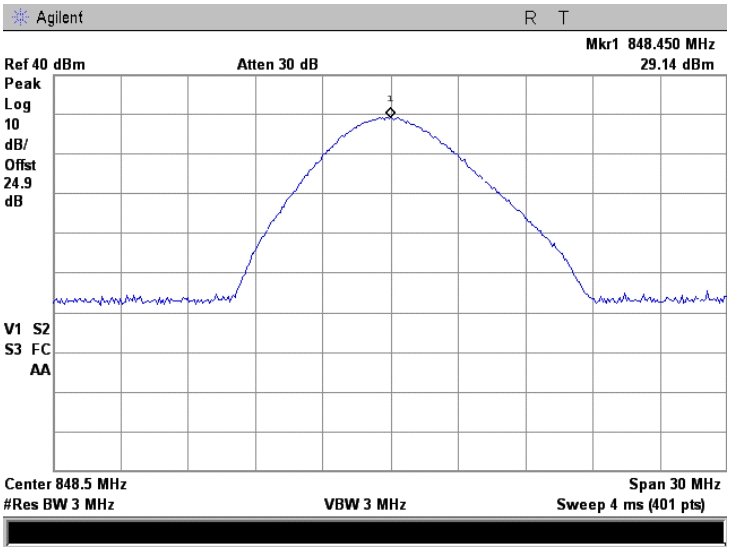
Plot 7.1.5 RF power output test results at mid frequency

NOTE RC3 SO 55 H-PSK Bitrate HALF



Plot 7.1.6 RF power output test results at high frequency

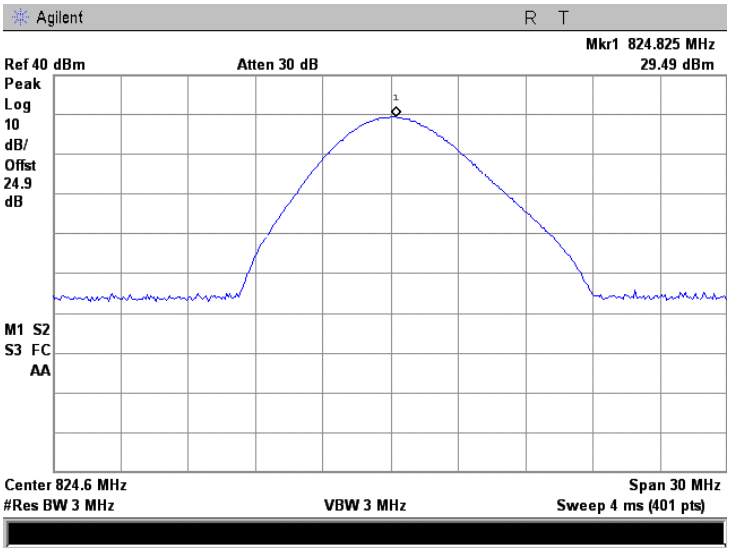
NOTE RC3 SO 55 H-PSK Bitrate HALF



Test specification:	Section 22.913, Peak output power		
Test procedure:	FCC part 22, Section 22.913		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

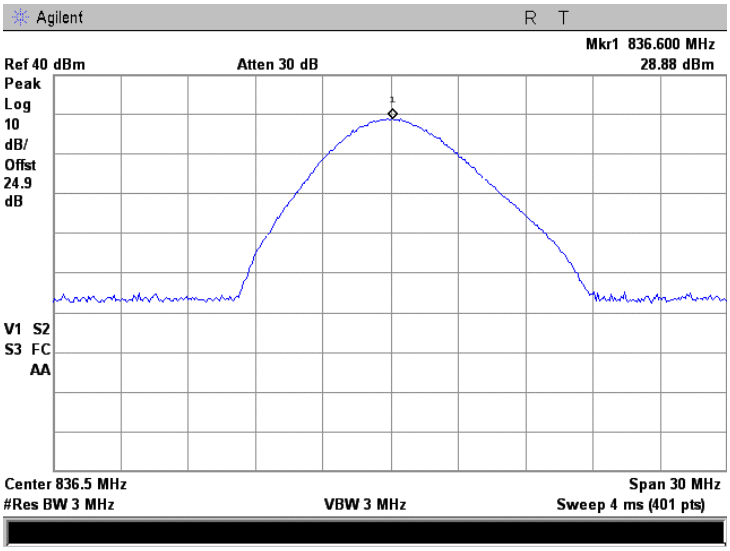
Plot 7.1.7 RF power output test results at low frequency

NOTE RC3 SO 55 H-PSK Bitrate EIGHT



Plot 7.1.8 RF power output test results at mid frequency

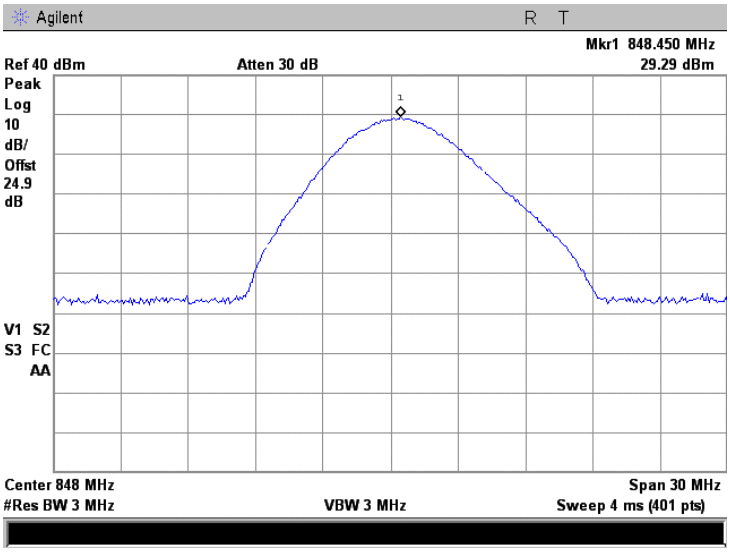
NOTE RC3 SO 55 H-PSK Bitrate EIGHT



Test specification:	Section 22.913, Peak output power		
Test procedure:	FCC part 22, Section 22.913		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

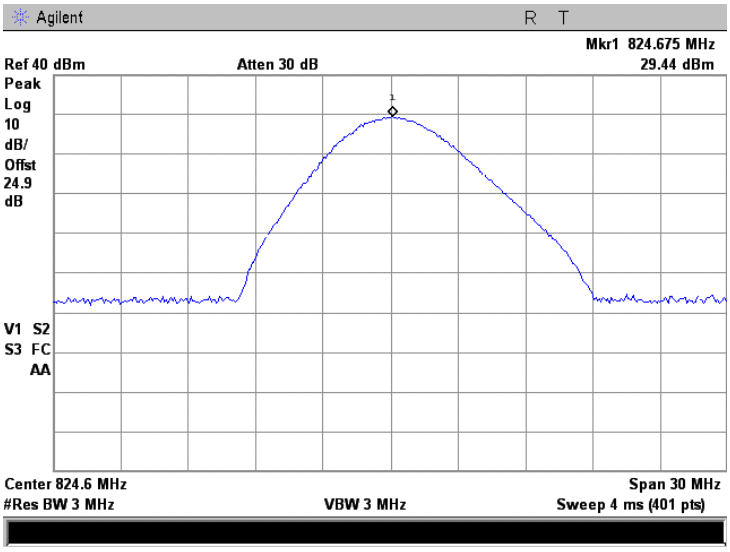
Plot 7.1.9 RF power output test results at high frequency

NOTE RC3 SO 55 H-PSK Bitrate EIGHT



Plot 7.1.10 RF power output test results at low frequency

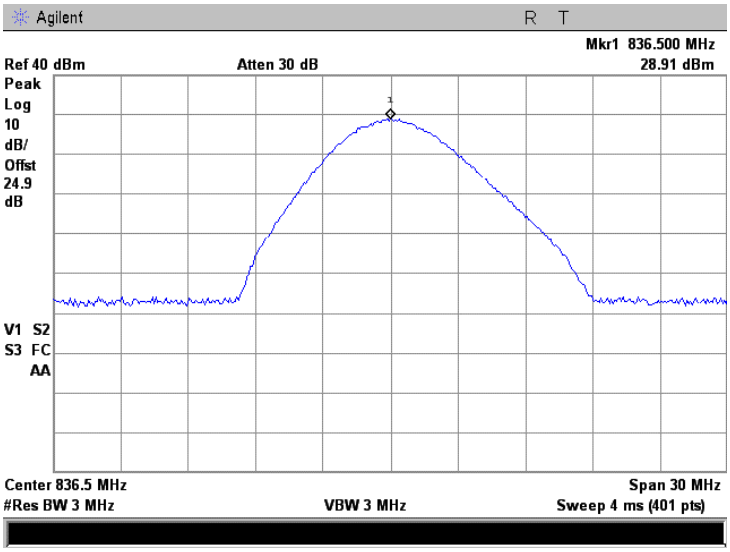
NOTE RC3 SO 2 H-PSK Bitrate FULL



Test specification:	Section 22.913, Peak output power		
Test procedure:	FCC part 22, Section 22.913		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

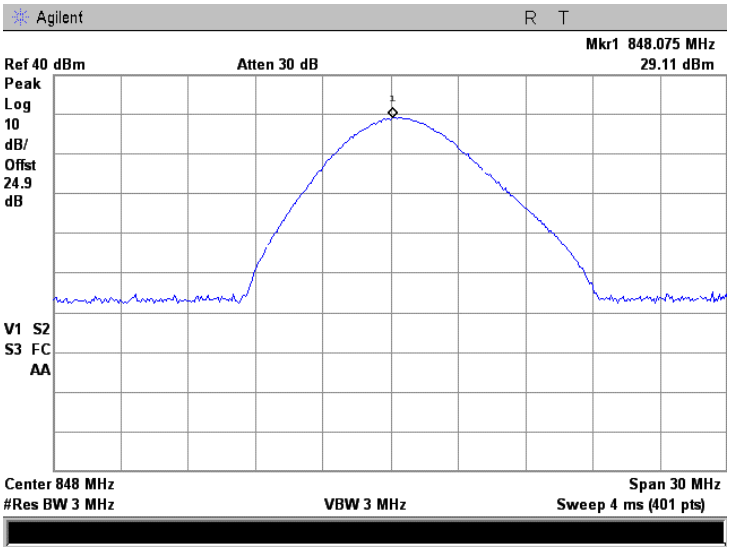
Plot 7.1.11 RF power output test results at mid frequency

NOTE RC3 SO 2 H-PSK Bitrate FULL



Plot 7.1.12 RF power output test results at high frequency

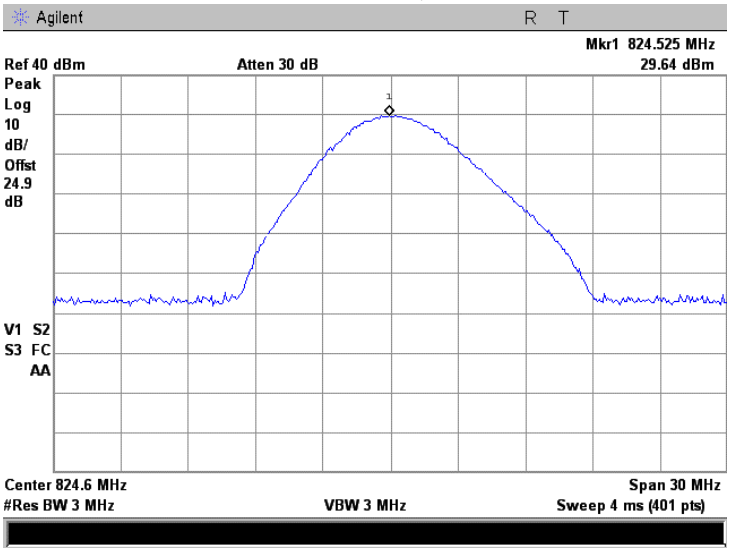
NOTE RC3 SO 2 H-PSK Bitrate FULL



Test specification:	Section 22.913, Peak output power		
Test procedure:	FCC part 22, Section 22.913		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

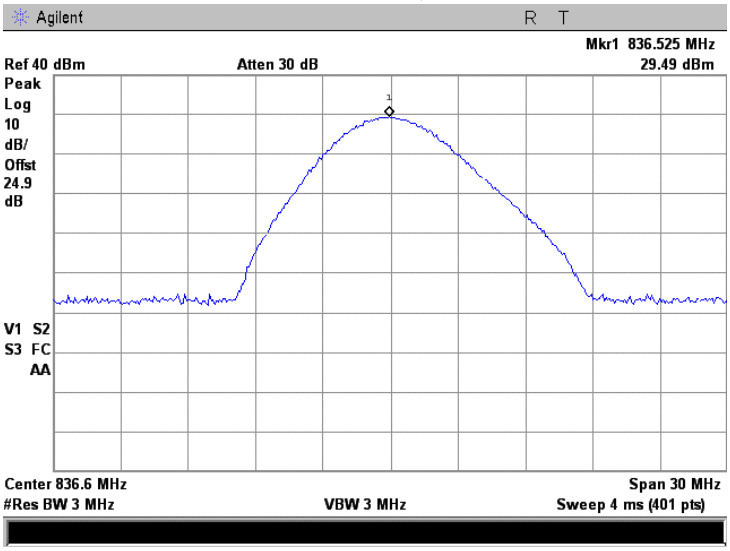
Plot 7.1.13 RF power output test results at low frequency

NOTE RC1 SO 55 O-QPSK Bitrate FULL



Plot 7.1.14 RF power output test results at mid frequency

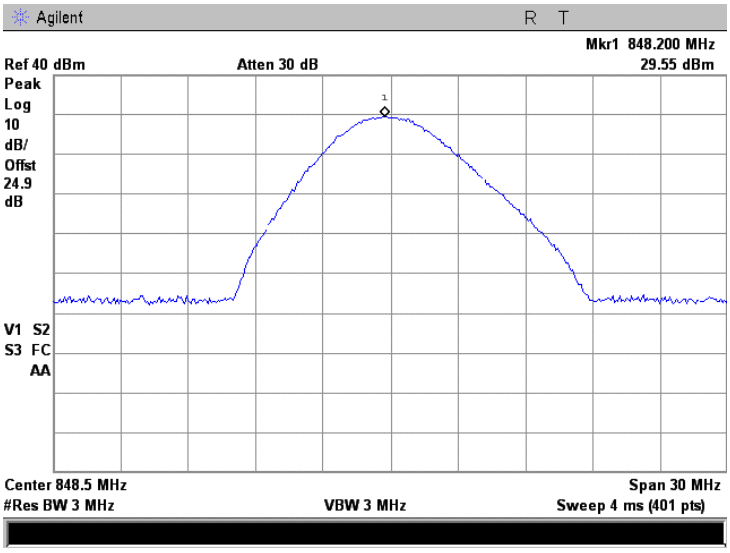
NOTE RC1 SO 55 O-QPSK Bitrate FULL



Test specification:	Section 22.913, Peak output power		
Test procedure:	FCC part 22, Section 22.913		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

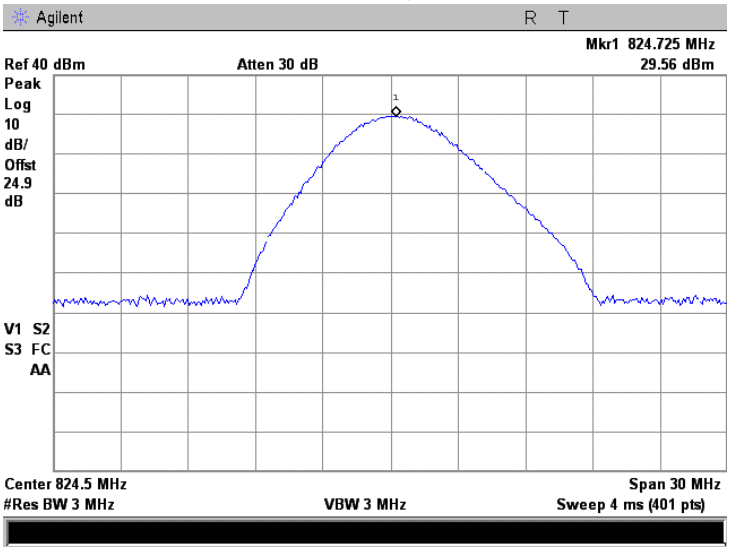
Plot 7.1.15 RF power output test results at high frequency

NOTE RC1 SO 55 O-QPSK Bitrate FULL



Plot 7.1.16 RF power output test results at low frequency

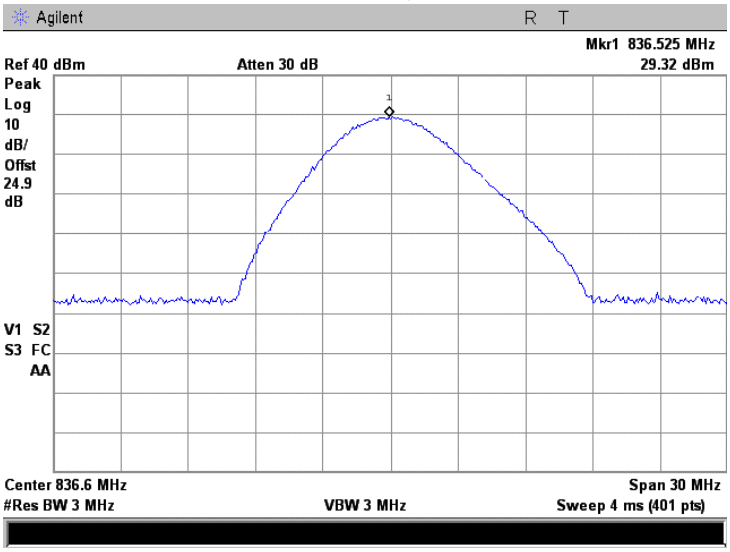
NOTE RC1 SO 2 O-QPSK Bitrate FULL



Test specification:	Section 22.913, Peak output power		
Test procedure:	FCC part 22, Section 22.913		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

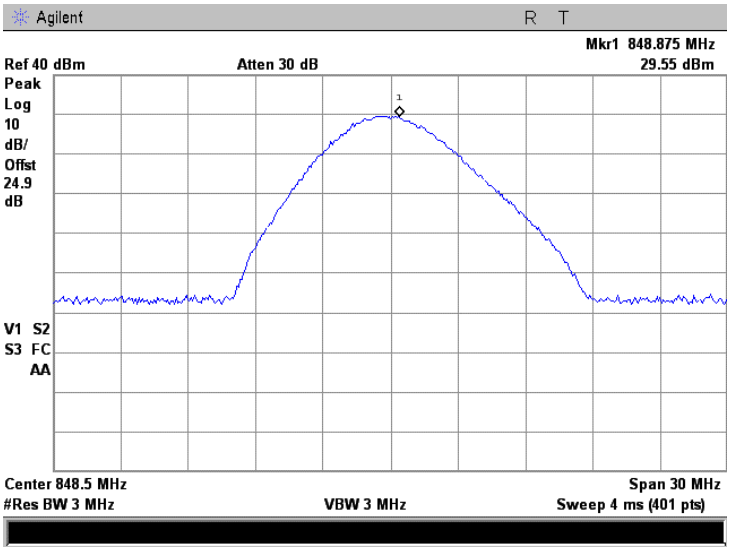
Plot 7.1.17 RF power output test results at mid frequency

NOTE RC1 SO 2 O-QPSK Bitrate FULL



Plot 7.1.18 RF power output test results at high frequency

NOTE RC1 SO 2 O-QPSK Bitrate FULL



Test specification:	Sections 22.917, 2.1049, Occupied bandwidth		
Test procedure:	FCC part 2, Section 2.1049		
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
824 - 849	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:	**Sections 22.917, 2.1049, Occupied bandwidth**		
Test procedure:	FCC part 2, Section 2.1049		
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	
824.70	1240.0
836.52	1250.0
848.31	1245.0
RC3 SO 55 H-PSK Bitrate HALF	
824.70	1245.0
836.52	1250.0
848.31	1250.0
RC3 SO 55 H-PSK Bitrate EIGHT ps	
824.70	1245.0
836.52	1235.0
848.31	1240.0
RC3 SO 2 H-PSK Bitrate FULL	
824.70	1215.0
836.52	1245.0
848.31	1235.0
RC1 SO 55 O-QPSK Bitrate FULL	
824.70	1230.0
836.52	1235.0
848.31	1215.0
RC1 SO 2 O-QPSK Bitrate FULL	
824.70	1225.0
836.52	1230.0
848.31	1230.0

Reference numbers of test equipment used

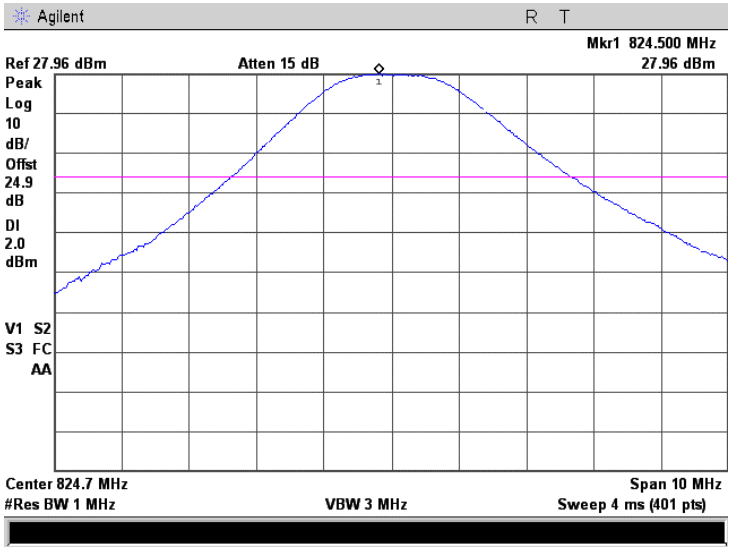
HL 2910	HL 2912	HL 3001	HL 3178	HL 3182			

Full description is given in Appendix A.

Test specification:	Sections 22.917, 2.1049, Occupied bandwidth		
Test procedure:	FCC part 2, Section 2.1049		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

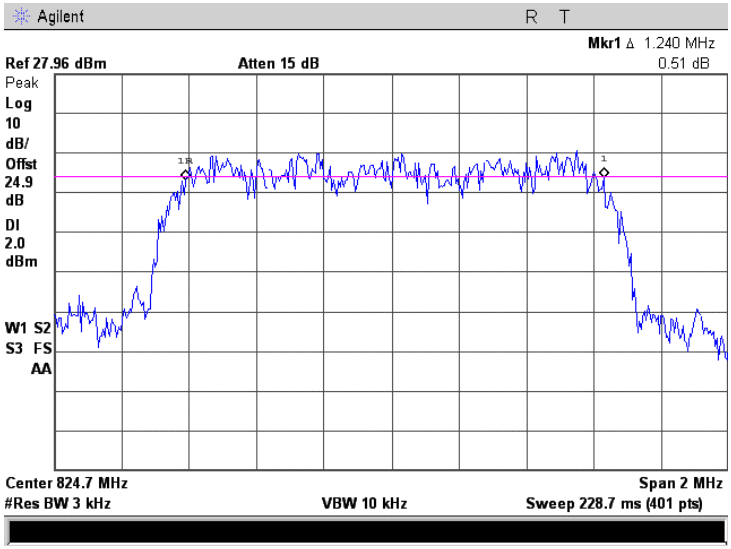
Plot 7.2.1 Occupied bandwidth test result at low frequency, reference level

NOTE RC3 SO 55 H-PSK Bitrate FULL 307.6kbps



Plot 7.2.2 Occupied bandwidth test result at low frequency

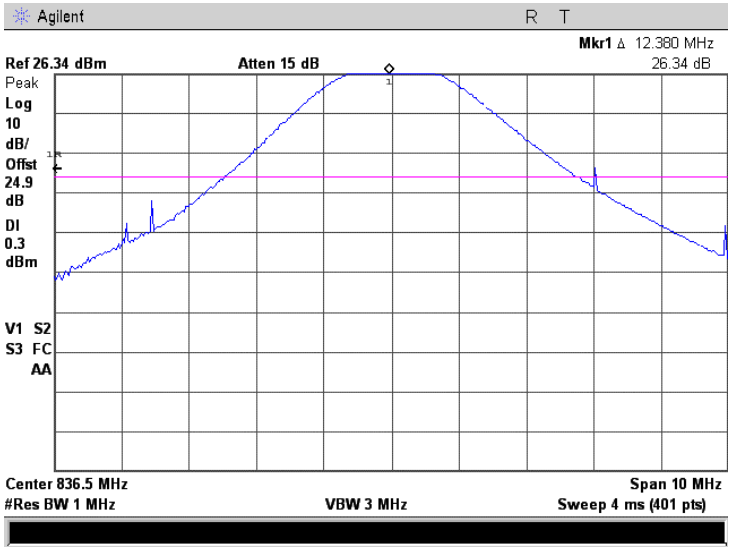
NOTE RC3 SO 55 H-PSK Bitrate FULL 307.6kbps



Test specification:	Sections 22.917, 2.1049, Occupied bandwidth		
Test procedure:	FCC part 2, Section 2.1049		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

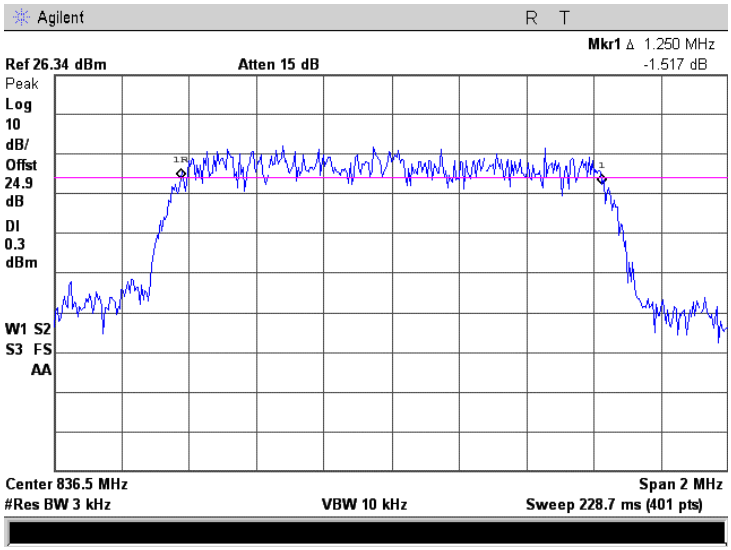
Plot 7.2.3 Occupied bandwidth test result at mid frequency, reference level

NOTE RC3 SO 55 H-PSK Bitrate FULL 307.6kbps



Plot 7.2.4 Occupied bandwidth test result at mid frequency

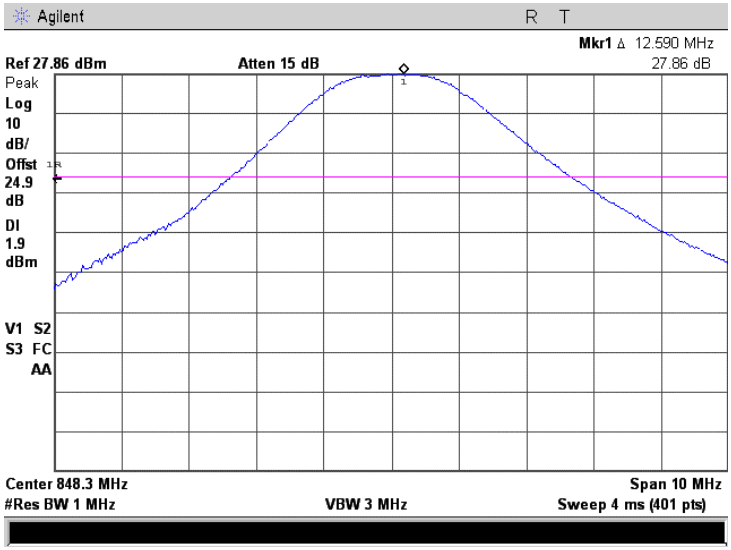
NOTE RC3 SO 55 H-PSK Bitrate FULL 307.6kbps



Test specification:	Sections 22.917, 2.1049, Occupied bandwidth		
Test procedure:	FCC part 2, Section 2.1049		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

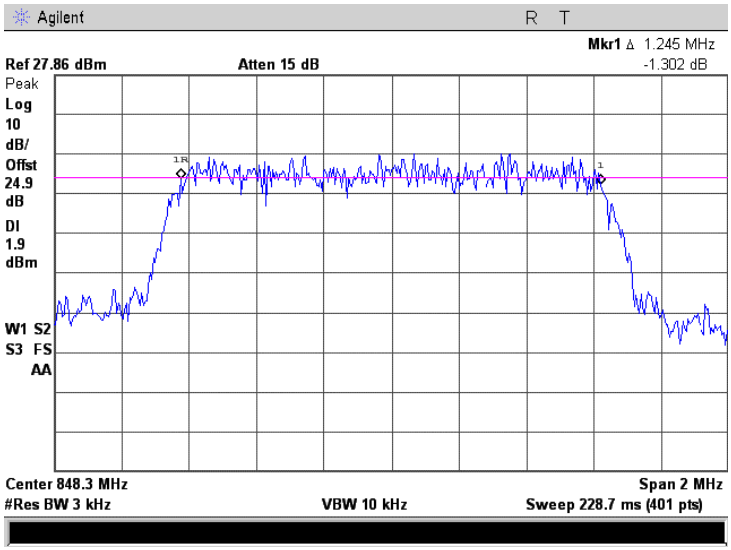
Plot 7.2.5 Occupied bandwidth test result at high frequency, reference level

NOTE RC3 SO 55 H-PSK Bitrate FULL 307.6kbps



Plot 7.2.6 Occupied bandwidth test result at high frequency

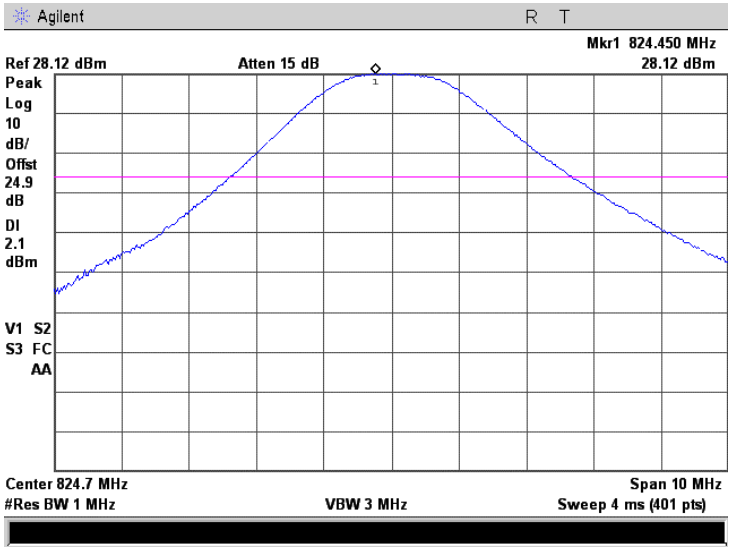
NOTE RC3 SO 55 H-PSK Bitrate FULL 307.6kbps



Test specification:	Sections 22.917, 2.1049, Occupied bandwidth		
Test procedure:	FCC part 2, Section 2.1049		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

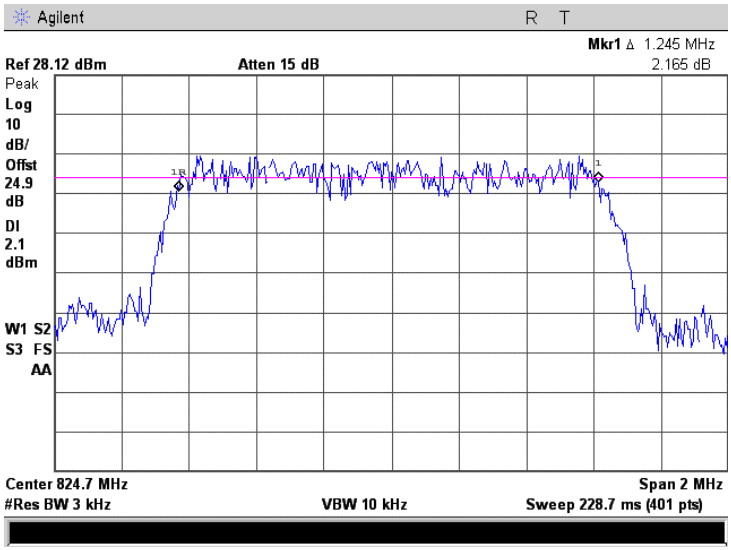
Plot 7.2.7 Occupied bandwidth test result at low frequency, reference level

NOTE RC3 SO 55 H-PSK Bitrate HALF 153.6kbps



Plot 7.2.8 Occupied bandwidth test result at low frequency

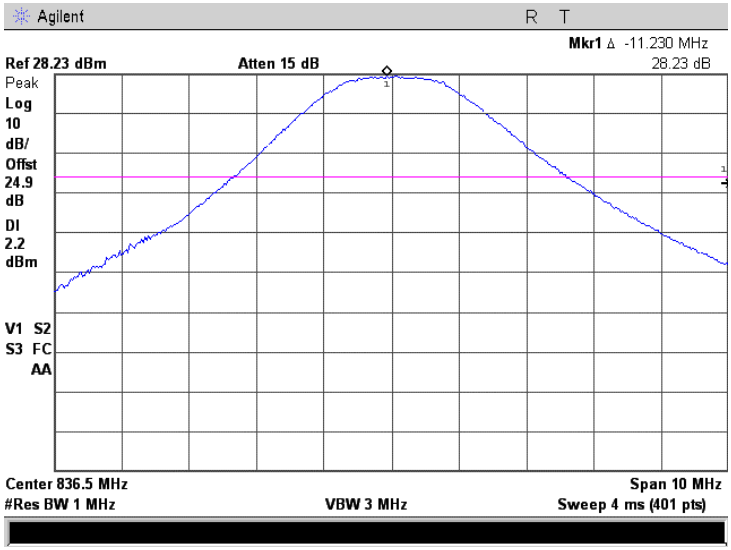
NOTE RC3 SO 55 H-PSK Bitrate HALF 153.6kbps



Test specification:	Sections 22.917, 2.1049, Occupied bandwidth		
Test procedure:	FCC part 2, Section 2.1049		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

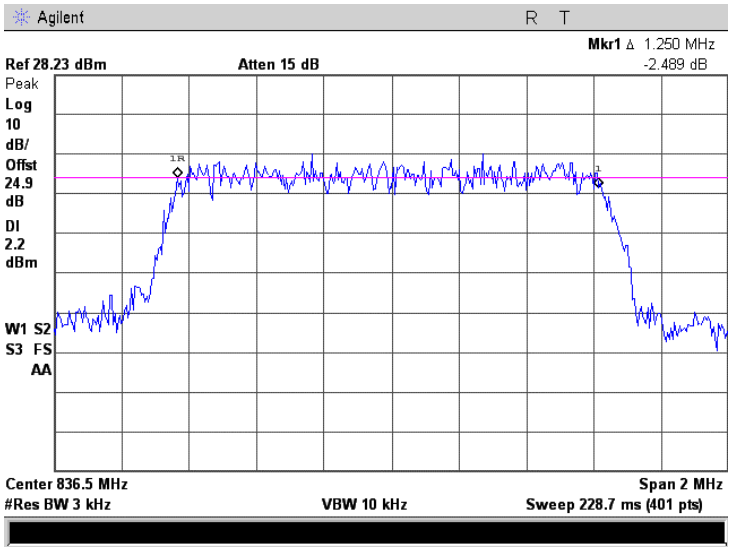
Plot 7.2.9 Occupied bandwidth test result at mid frequency, reference level

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



Plot 7.2.10 Occupied bandwidth test result at mid frequency

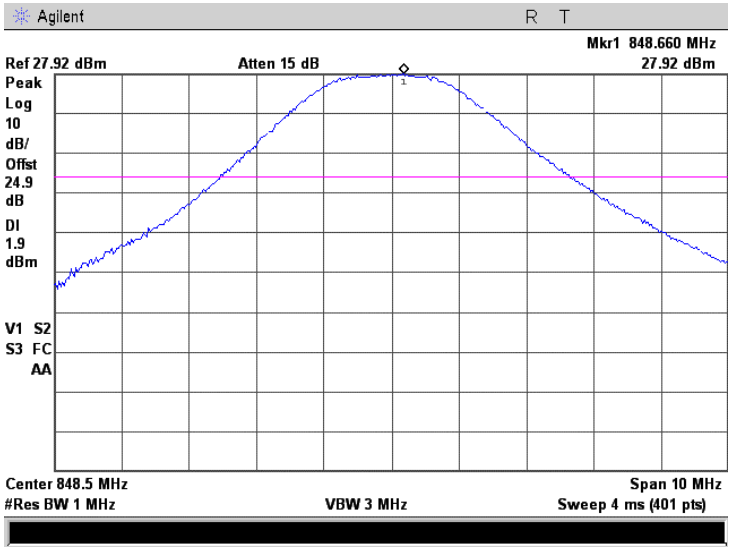
NOTE RC3 SO 55 H-PSK Bitrate FULL HALF 153.6kbps



Test specification:	Sections 22.917, 2.1049, Occupied bandwidth		
Test procedure:	FCC part 2, Section 2.1049		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

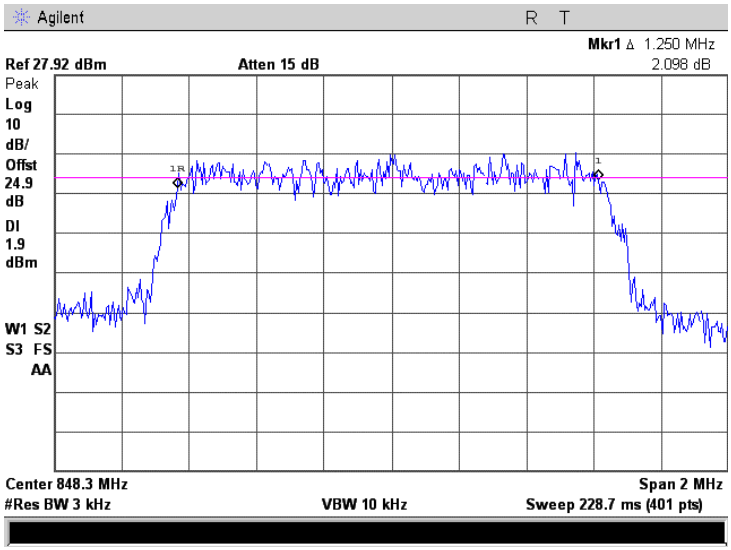
Plot 7.2.11 Occupied bandwidth test result at high frequency, reference level

NOTE RC3 SO 55 H-PSK Bitrate HALF 153.6kbps



Plot 7.2.12 Occupied bandwidth test result at high frequency

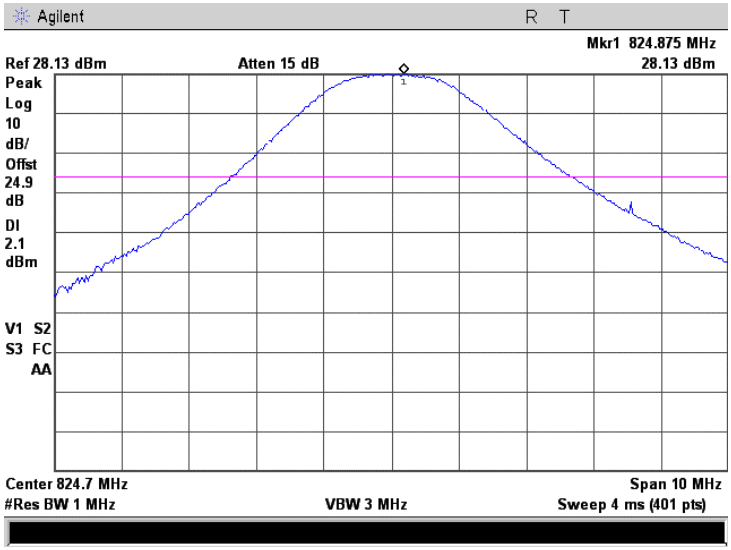
NOTE RC3 SO 55 H-PSK Bitrate HALF 153.6kbps



Test specification:	Sections 22.917, 2.1049, Occupied bandwidth		
Test procedure:	FCC part 2, Section 2.1049		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

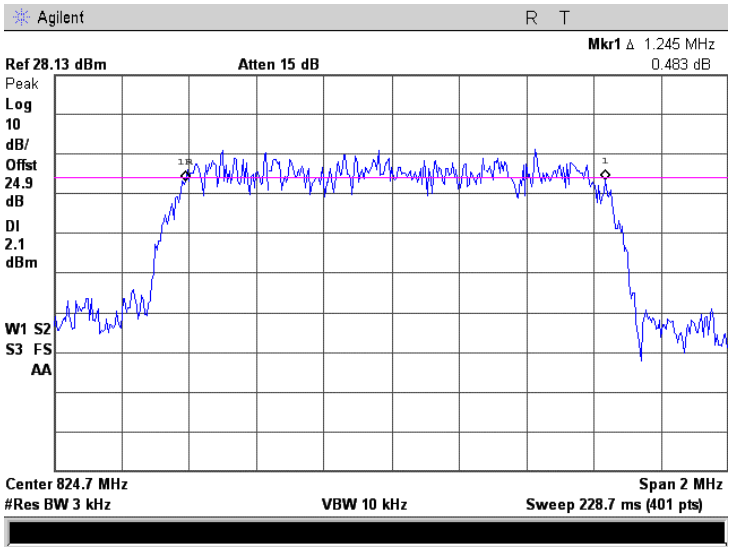
Plot 7.2.13 Occupied bandwidth test result at low frequency, reference level

NOTE RC3 SO 55 H-PSK Bitrate EIGHT 9.6kbps



Plot 7.2.14 Occupied bandwidth test result at low frequency

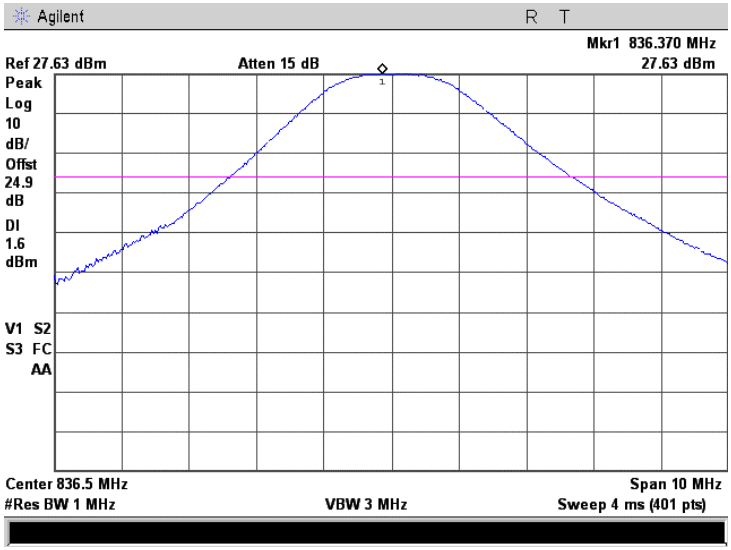
NOTE RC3 SO 55 H-PSK Bitrate EIGHT 9.6kbps



Test specification:	Sections 22.917, 2.1049, Occupied bandwidth		
Test procedure:	FCC part 2, Section 2.1049		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

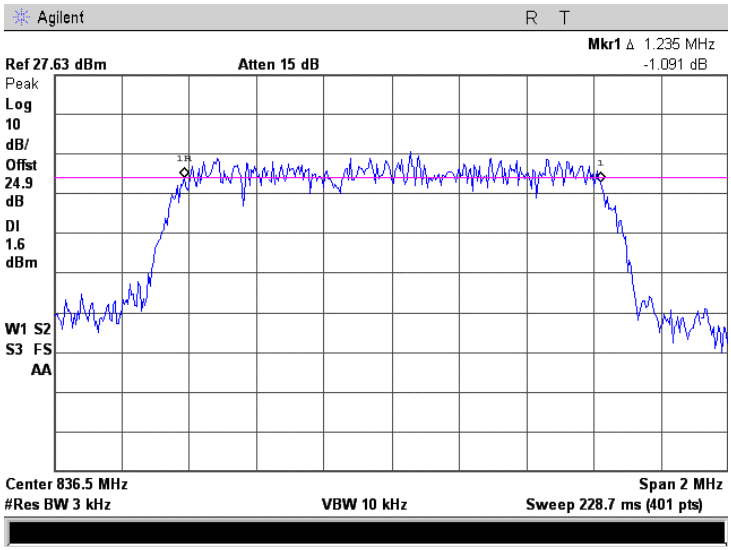
Plot 7.2.15 Occupied bandwidth test result at mid frequency, reference level

NOTE RC3 SO 55 H-PSK Bitrate EIGHT 9.6kbps



Plot 7.2.16 Occupied bandwidth test result at mid frequency

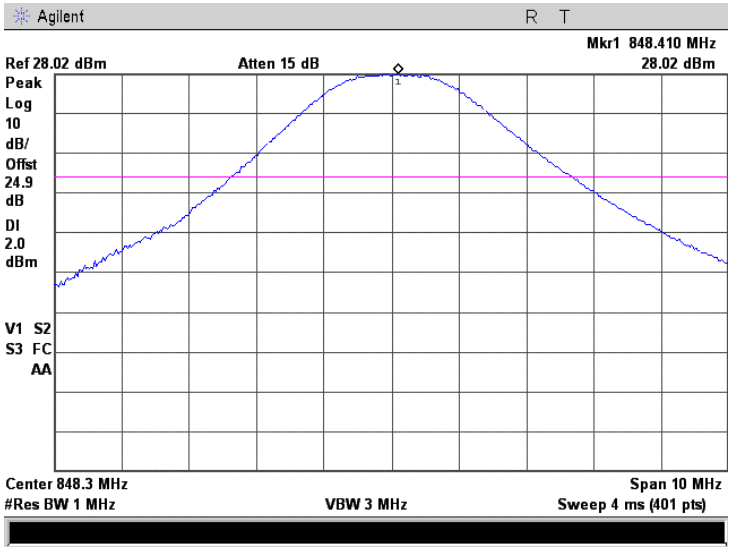
NOTE RC3 SO 55 H-PSK Bitrate EIGHT 9.6kbps



Test specification:	Sections 22.917, 2.1049, Occupied bandwidth		
Test procedure:	FCC part 2, Section 2.1049		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

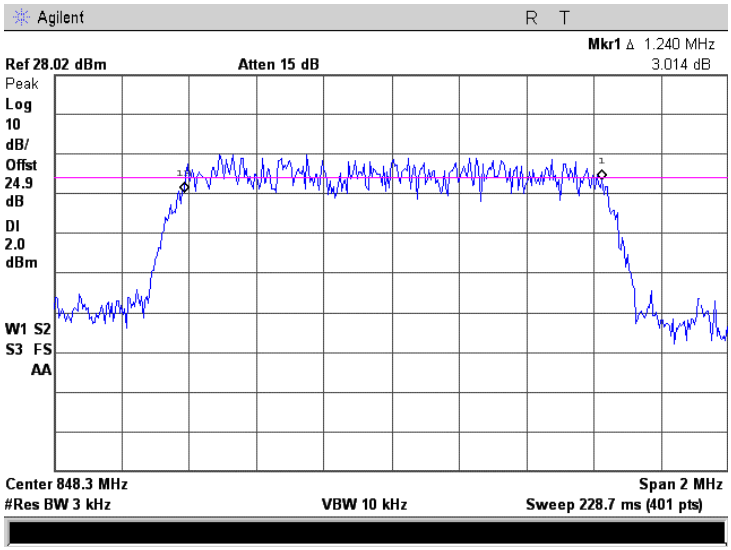
Plot 7.2.17 Occupied bandwidth test result at high frequency, reference level

NOTE RC3 SO 55 H-PSK Bitrate EIGHT 9.6kbps



Plot 7.2.18 Occupied bandwidth test result at high frequency

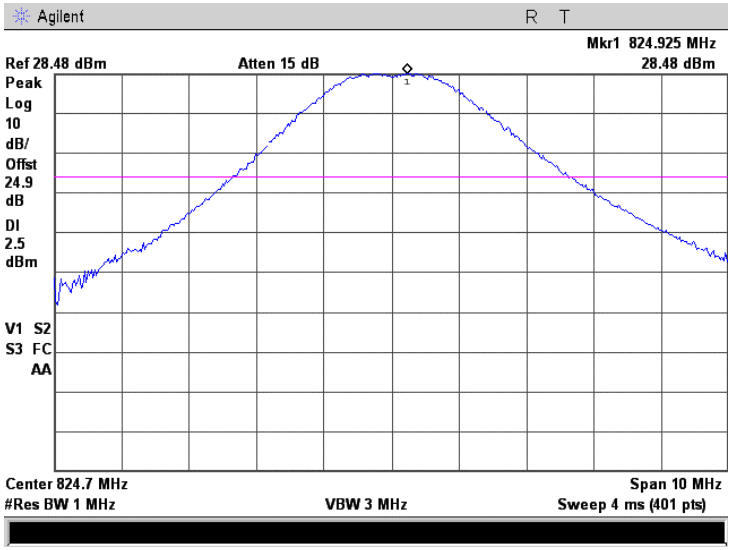
NOTE RC3 SO 55 H-PSK Bitrate EIGHT 9.6kbps



Test specification:	Sections 22.917, 2.1049, Occupied bandwidth		
Test procedure:	FCC part 2, Section 2.1049		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

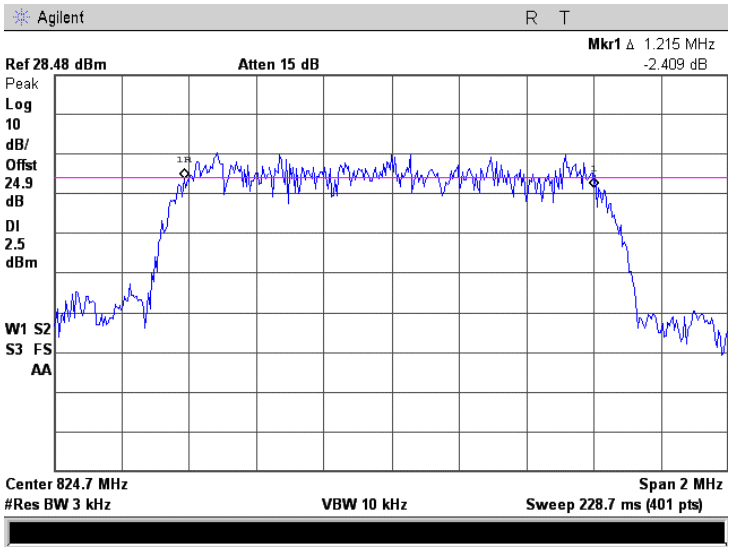
Plot 7.2.19 Occupied bandwidth test result at low frequency, reference level

NOTE RC3 SO 2 H-PSK Bitrate FULL 307.6kbps



Plot 7.2.20 Occupied bandwidth test result at low frequency

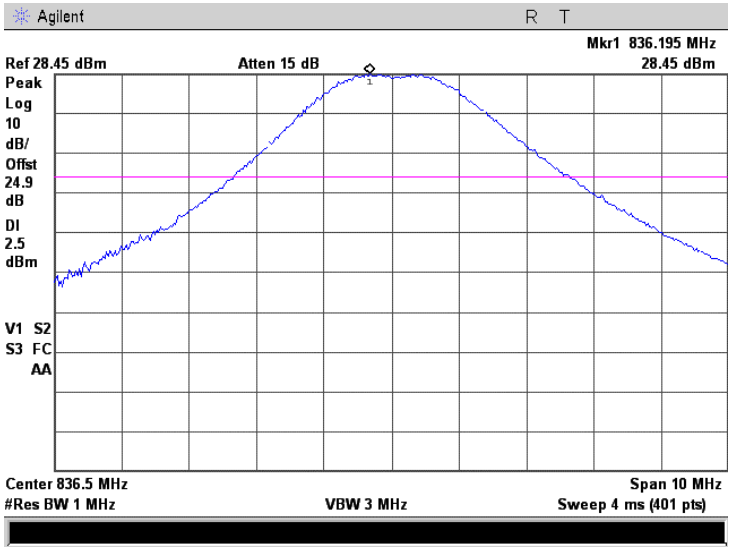
NOTE RC3 SO 2 H-PSK Bitrate FULL 307.6kbps



Test specification:	Sections 22.917, 2.1049, Occupied bandwidth		
Test procedure:	FCC part 2, Section 2.1049		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

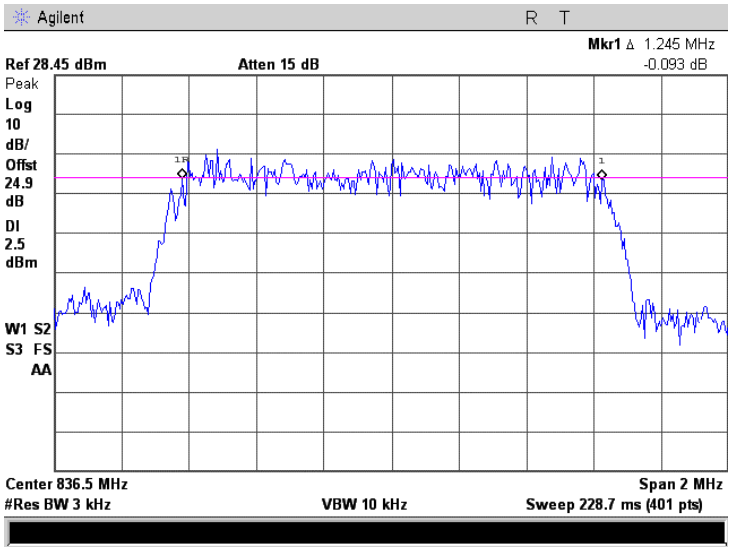
Plot 7.2.21 Occupied bandwidth test result at mid frequency, reference level

NOTE RC3 SO 2 H-PSK Bitrate FULL 307.6kbps



Plot 7.2.22 Occupied bandwidth test result at mid frequency

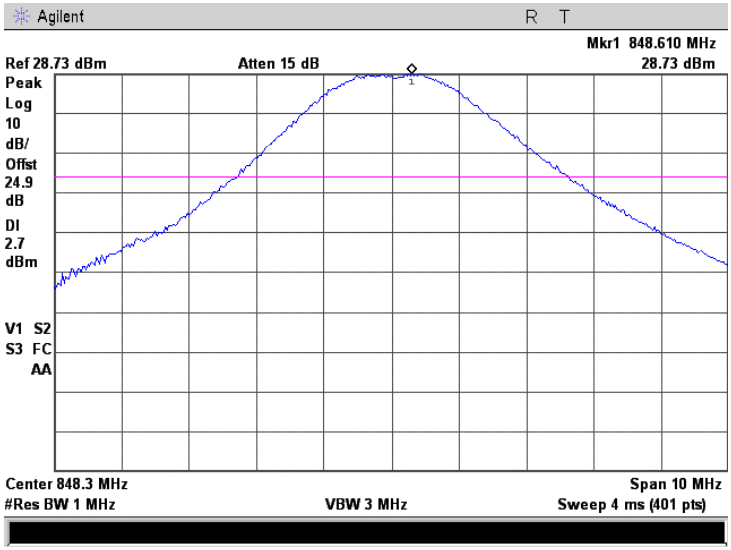
NOTE RC3 SO 2 H-PSK Bitrate FULL 307.6kbps



Test specification:	Sections 22.917, 2.1049, Occupied bandwidth		
Test procedure:	FCC part 2, Section 2.1049		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

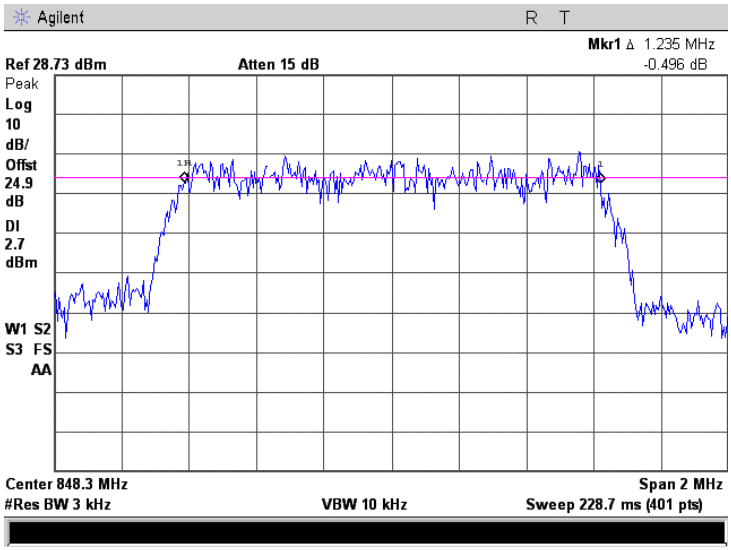
Plot 7.2.23 Occupied bandwidth test result at high frequency, reference level

NOTE RC3 SO 2 H-PSK Bitrate FULL 307.6kbps



Plot 7.2.24 Occupied bandwidth test result at high frequency

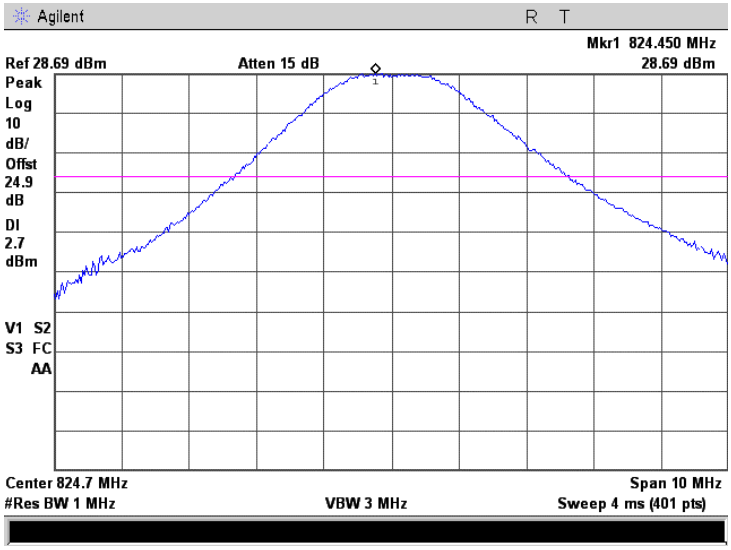
NOTE RC3 SO 2 H-PSK Bitrate FULL 307.6kbps



Test specification:	Sections 22.917, 2.1049, Occupied bandwidth		
Test procedure:	FCC part 2, Section 2.1049		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

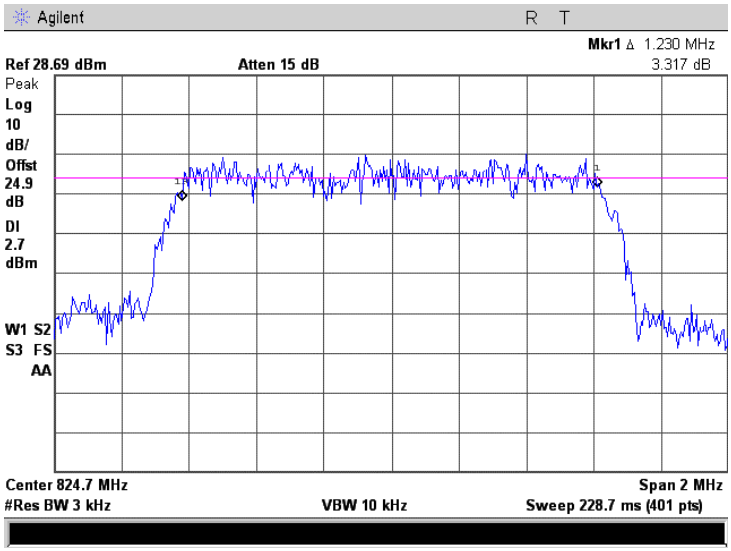
Plot 7.2.25 Occupied bandwidth test result at low frequency, reference level

NOTE RC1 SO 55 O-QPSK Bitrate FULL 9.6kbps



Plot 7.2.26 Occupied bandwidth test result at low frequency

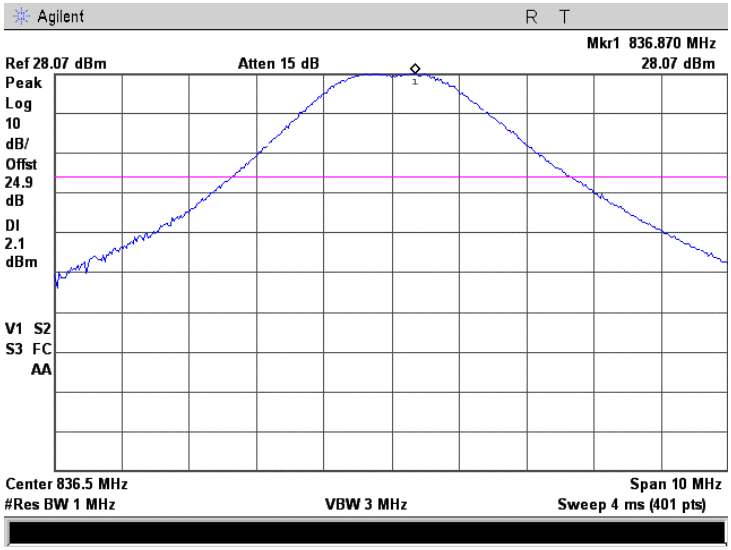
NOTE RC1 SO 55 O-QPSK Bitrate FULL 9.6kbps



Test specification:	Sections 22.917, 2.1049, Occupied bandwidth		
Test procedure:	FCC part 2, Section 2.1049		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

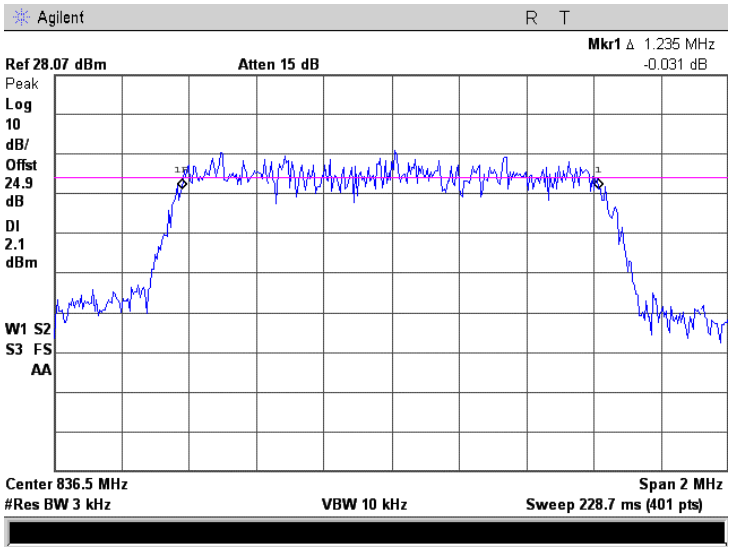
Plot 7.2.27 Occupied bandwidth test result at mid frequency, reference level

NOTE RC1 SO 55 O-QPSK Bitrate FULL 9.6kbps



Plot 7.2.28 Occupied bandwidth test result at mid frequency

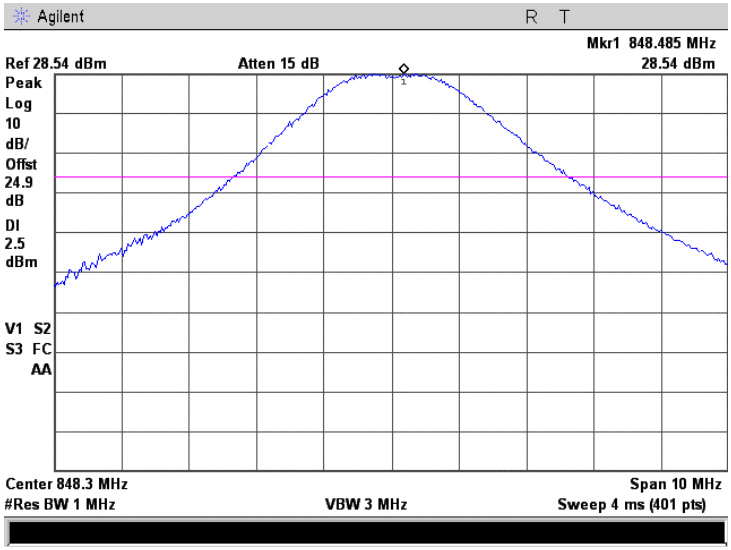
NOTE RC1 SO 55 O-QPSK Bitrate FULL 9.6kbps



Test specification:	Sections 22.917, 2.1049, Occupied bandwidth		
Test procedure:	FCC part 2, Section 2.1049		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

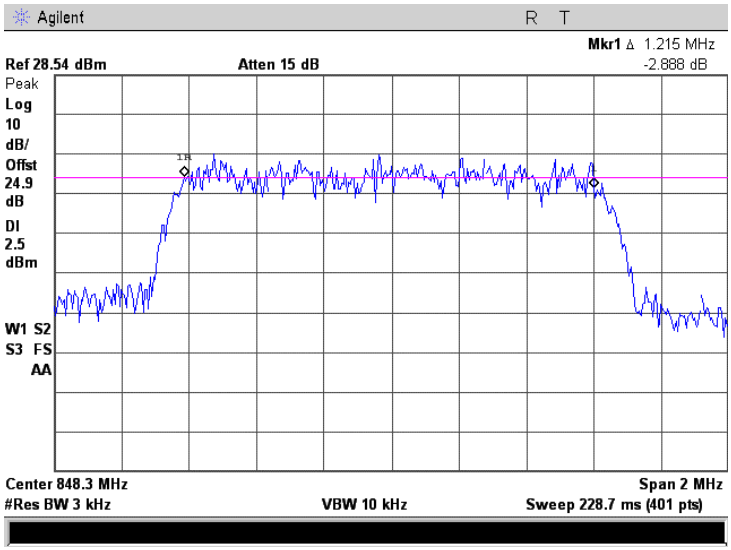
Plot 7.2.29 Occupied bandwidth test result at high frequency, reference level

NOTE RC1 SO 55 O-QPSK Bitrate FULL 9.6kbps



Plot 7.2.30 Occupied bandwidth test result at high frequency

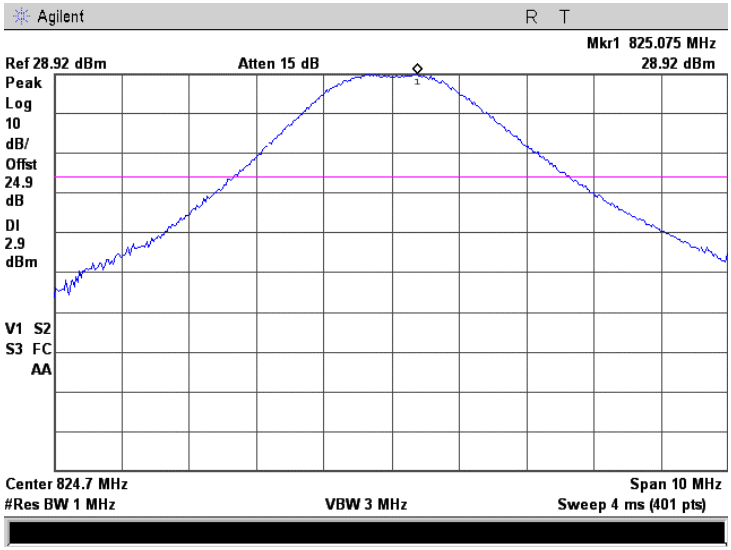
NOTE RC1 SO 55 O-QPSK Bitrate FULL 9.6kbps



Test specification:	Sections 22.917, 2.1049, Occupied bandwidth		
Test procedure:	FCC part 2, Section 2.1049		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

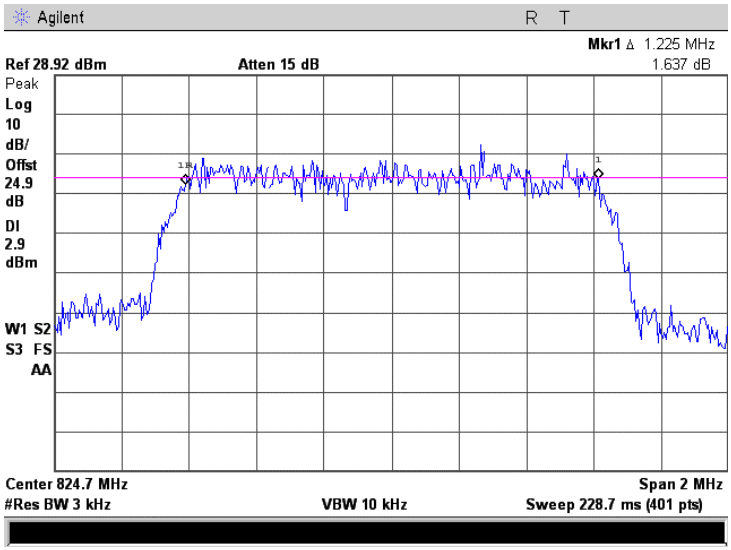
Plot 7.2.31 Occupied bandwidth test result at low frequency, reference level

NOTE RC1 SO 2 O-QPSK Bitrate FULL 9.6kbps



Plot 7.2.32 Occupied bandwidth test result at low frequency

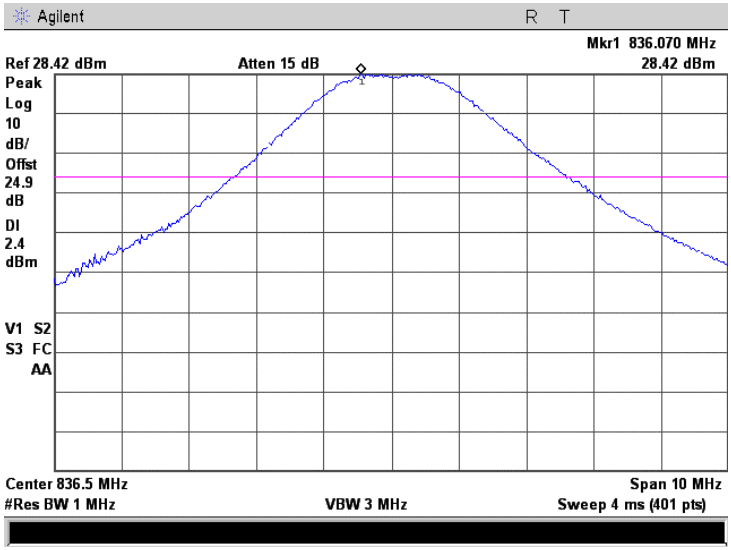
NOTE RC1 SO 2 O-QPSK Bitrate FULL 9.6kbps



Test specification:	Sections 22.917, 2.1049, Occupied bandwidth		
Test procedure:	FCC part 2, Section 2.1049		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

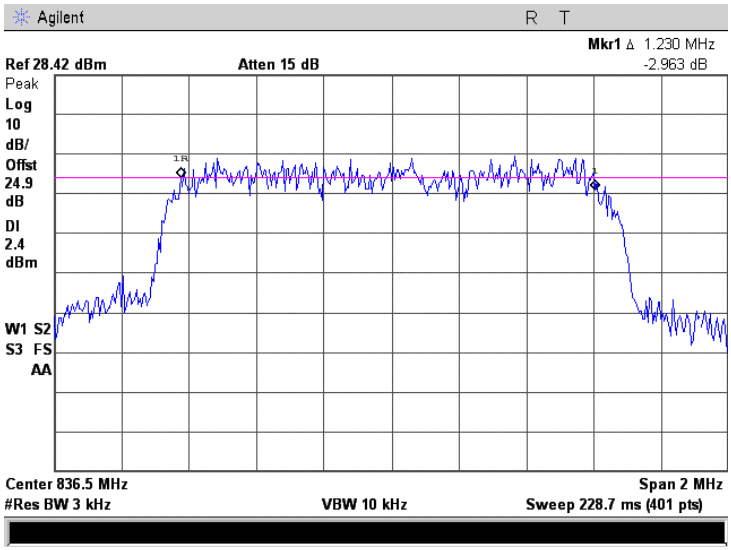
Plot 7.2.33 Occupied bandwidth test result at mid frequency, reference level

NOTE RC1 SO 2 O-QPSK Bitrate FULL 9.6kbps



Plot 7.2.34 Occupied bandwidth test result at mid frequency

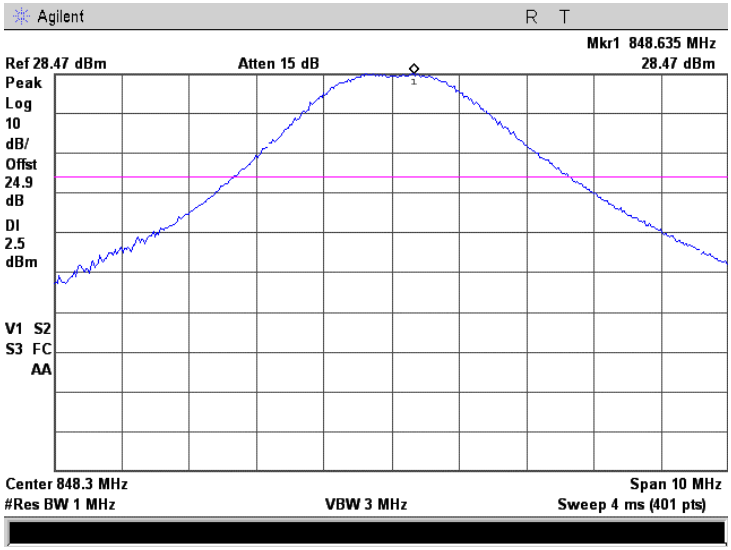
NOTE RC1 SO 2 O-QPSK Bitrate FULL 9.6kbps



Test specification:	Sections 22.917, 2.1049, Occupied bandwidth		
Test procedure:	FCC part 2, Section 2.1049		
Test mode:	Compliance	Verdict:	PASS
Date:	9/15/2008		
Temperature: 25ºC	Air Pressure: 1011 hPa	Relative Humidity: 48 %	Power Supply: 3.8 VDC
Remarks:			

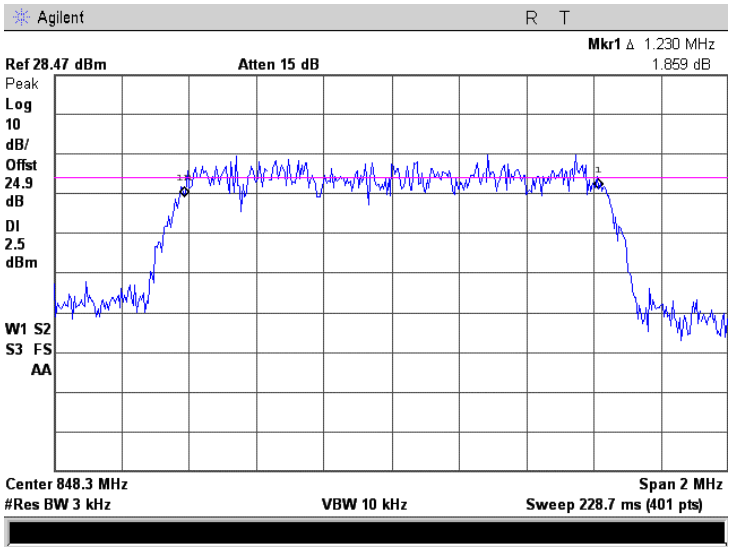
Plot 7.2.35 Occupied bandwidth test result at high frequency, reference level

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 22.917, Spurious emission at antenna terminal		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	10/15/2008		
Temperature: 23ºC	Air Pressure: 1009 hPa	Relative Humidity: 52 %	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

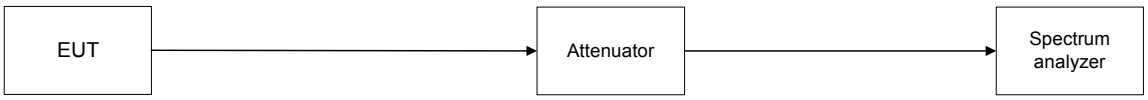
Frequency, MHz	Attenuation below carrier, dBc	ERP of spurious, dBm
0.009 – 10th harmonic*	43+10logP*	-13.0

- spurious emission limits do not apply to the in band emission within ± 250 % of the authorized bandwidth from the carrier; investigated in course of emission mask testing

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, Table 7.3.3, Table 7.3.4 and associated plots.

Figure 7.3.1 Spurious emission test setup



Test specification:	**Section 22.917, Spurious emission at antenna terminal**		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	**Verdict:**	PASS
Date:	10/15/2008		
Temperature: 23ºC	**Air Pressure:** 1009 hPa	**Relative Humidity:** 52 %	**Power Supply:** 3.8 VDC
Remarks:			

Table 7.3.2 Spurious emission test results

ASSIGNED FREQUENCY RANGE:	824-849 MHz
INVESTIGATED FREQUENCY RANGE:	0.009-9000 MHz
DETECTOR USED:	Peak
VIDEO BANDWIDTH:	≥ Resolution bandwidth
MODULATION:	CDMA
MODULATING SIGNAL:	PRBS
MAXIMUM BIT RATE:	307.6 Kbps
TRANSMITTER OUTPUT POWER SETTINGS:	Maximum
TRANSMITTER OUTPUT POWER:	29.42 dBm at low frequency 29.07 dBm at mid frequency 29.43 dBm 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									
1649.270	-36.83	Included	Included	1000.0	-36.83	66.19	42.36	23.83	Pass
2474.330	-35.33	Included	Included	1000.0	-35.33	64.69	42.36	22.33	Pass
Mid carrier frequency									
1672.970	-38.00	Included	Included	1000.0	-38.00	67.07	41.93	25.00	Pass
2509.630	-36.83	Included	Included	1000.0	-36.83	65.90	41.93	23.83	Pass
High carrier frequency									
1696.670	-36.00	Included	Included	1000.0	-36.00	65.43	42.33	23.00	Pass
2544.910	-37.00	Included	Included	1000.0	-37.00	66.43	42.33	24.00	Pass

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

Test specification:	Section 22.917, Spurious emission at antenna terminal		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	10/15/2008		
Temperature: 23ºC	Air Pressure: 1009 hPa	Relative Humidity: 52 %	Power Supply: 3.8 VDC
Remarks:			

Table 7.3.3 Band edge emission test results

ASSIGNED FREQUENCY RANGE: 824-849 MHz
INVESTIGATED FREQUENCY RANGE: 0.009-9000 MHz
DETECTOR USED: Peak
VIDEO BANDWIDTH: ≥ Resolution bandwidth
MODULATION: CDMA
MODULATING SIGNAL: PRBS
MAXIMUM BIT RATE: 307.6 Kbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum
TRANSMITTER OUTPUT POWER: 29.42 dBm at low frequency
29.07 dBm at mid frequency
29.43 dBm at high frequency

Frequency, MHz	SA reading, dBm	Attenuator and cable loss, dB	Correction factor*, dB	RBW, kHz	Spurious emission, dBm	Attenuation below carrier, dBc	Limit, dBc	Margin**, dB	Verdict
Low carrier frequency									
RC3 SO 55 H-PSK Bitrate FULL									
824.700	-27.54	Included	11.14	1.0	-16.40	45.82	42.42	3.40	Pass
RC3 SO 55 H-PSK Bitrate HALF									
824.700	-27.60	Included	11.14	1.0	-16.46	45.88	42.42	3.46	Pass
RC3 SO 55 H-PSK 5 Bitrate EIGHT									
824.700	-27.23	Included	11.14	1.0	-16.09	45.51	42.42	3.09	Pass
RC3 SO 2 O- H-PSK Bitrate FULL									
824.700	-27.37	Included	11.14	1.0	-16.23	45.65	42.42	3.23	Pass
RC1 SO 55 O-QPSK Bitrate FULL									
824.700	-27.29	Included	11.14	1.0	-16.15	45.57	42.42	3.15	Pass
RC1 SO 2 O-QPSK Bitrate FULL									
824.700	-26.83	Included	11.14	1.0	-15.69	45.11	42.42	2.69	Pass
High carrier frequency									
RC3 SO 55 H-PSK Bitrate FULL									
849.000	-24.18	Included	11.14	1.0	-13.04	42.47	42.43	0.04	Pass
RC3 SO 55 H-PSK Bitrate HALF									
849.000	-24.23	Included	11.14	1.0	-13.09	42.52	42.43	0.09	Pass
RC3 SO 55 H-PSK 5 Bitrate EIGHT									
849.000	-24.34	Included	11.14	1.0	-13.20	42.63	42.43	0.20	Pass
RC3 SO 2 O- H-PSK Bitrate FULL									
849.000	-24.28	Included	11.14	1.0	-13.14	42.57	42.43	0.14	Pass
RC1 SO 55 O-QPSK Bitrate FULL									
849.000	-24.42	Included	11.14	1.0	-13.28	42.71	42.43	0.28	Pass
RC1 SO 2 O-QPSK Bitrate FULL									
849.000	-24.81	Included	11.14	1.0	-13.67	43.10	42.43	0.67	Pass

***** - Correction factor = 10*log(13kHz/1kHz) = 11.14 dB
******- Margin = Spurious emission – specification limit.

Test specification:	**Section 22.917, Spurious emission at antenna terminal**		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	**Verdict:**	PASS
Date:	10/15/2008		
Temperature: 23ºC	**Air Pressure:** 1009 hPa	**Relative Humidity:** 52 %	**Power Supply:** 3.8 VDC
Remarks:			

Table 7.3.4 Peak to average ratio at carrier frequency

OPERATING FREQUENCY RANGE: 824-849 MHz
DETECTOR USED: Peak, Average
DETECTOR USED: Power Meter
MODULATION: O-QPSK, H-PSC
MODULATING SIGNAL: PBSK
BIT RATE: 307.6 kbps
TRANSMITTER OUTPUT POWER SETTINGS: Attenuator 5 dB

Carrier frequency, MHz	Power Meter reading, dBm			Limit, dBm	Margin 2**, dB	Verdict
	Peak	Average	Margin 1*,dB			
RC3 SO 55 H-PSK Bitrate FULL						
824.70	29.36	24.94	4.42	13	-8.58	Pass
848.31	29.33	24.62	4.71	13	-8.29	Pass
RC3 SO 55 H-PSK Bitrate HALF						
824.70	29.49	24.92	4.57	13	-8.43	Pass
848.31	29.44	24.63	4.81	13	-8.19	Pass
RC3 SO 5 H-PSK 5 Bitrate EIGHT						
824.70	29.29	24.62	4.67	13	-8.33	Pass
848.31	29.40	24.61	4.79	13	-8.21	Pass
RC3 SO 2 H-PSK Bitrate FULL						
824.70	29.46	24.89	4.67	13	-8.33	Pass
848.31	29.41	24.67	4.79	13	-8.21	Pass
RC1 SO 55 O-QPSK Bitrate FULL						
824.70	29.85	24.90	4.95	13	4.95	Pass
848.31	29.89	24.65	5.24	13	5.24	Pass
RC1 SO 2 O-QPSK Bitrate FULL						
824.70	29.95	24.98	4.97	13	4.95	Pass
848.31	29.82	24.64	5.18	13	5.24	Pass

* - Margin 1 = RF pear output power (dBm) – RF average output power (dBm)

** - Margin 2 = Margin 1 (dB) – specification limit (dB)

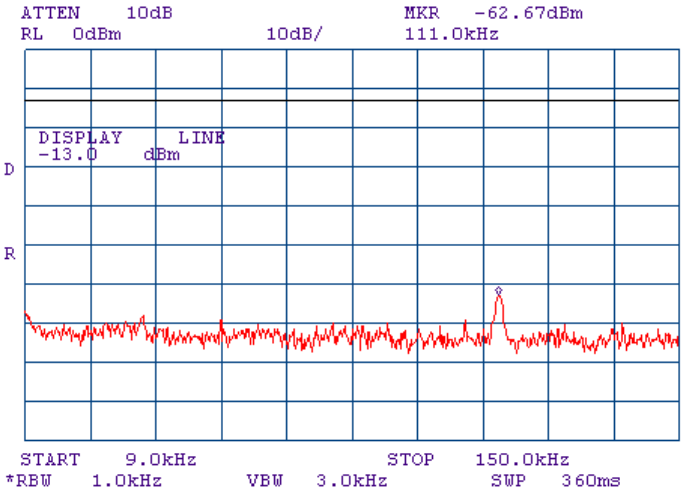
Reference numbers of test equipment used

HL 2011	HL 2634	HL 2780	HL 2869	HL 2952		

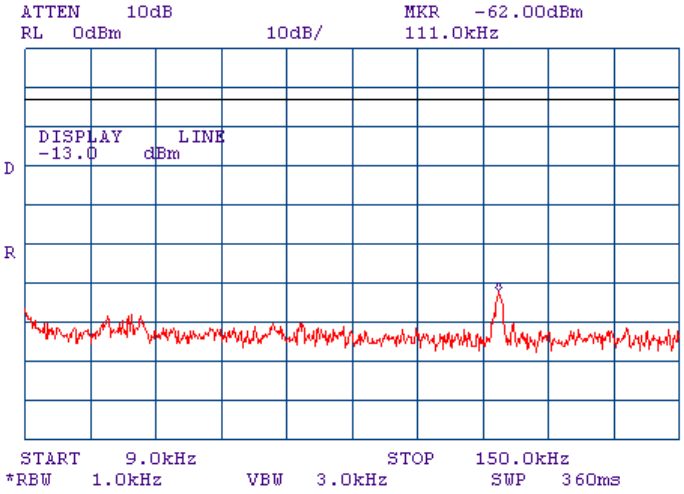
Full description is given in Appendix A.

Test specification:	Section 22.917, Spurious emission at antenna terminal		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	10/15/2008		
Temperature: 23ºC	Air Pressure: 1009 hPa	Relative Humidity: 52 %	Power Supply: 3.8 VDC
Remarks:			

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

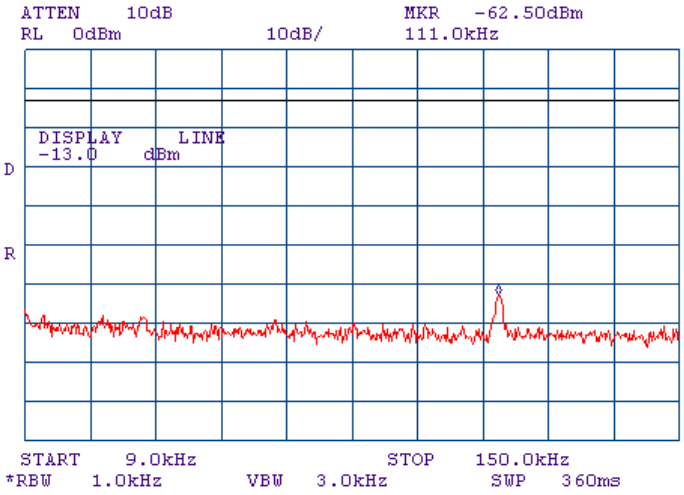


Plot 7.3.2 Spurious emission measurements in 9 - 150 kHz range at mid carrier frequency

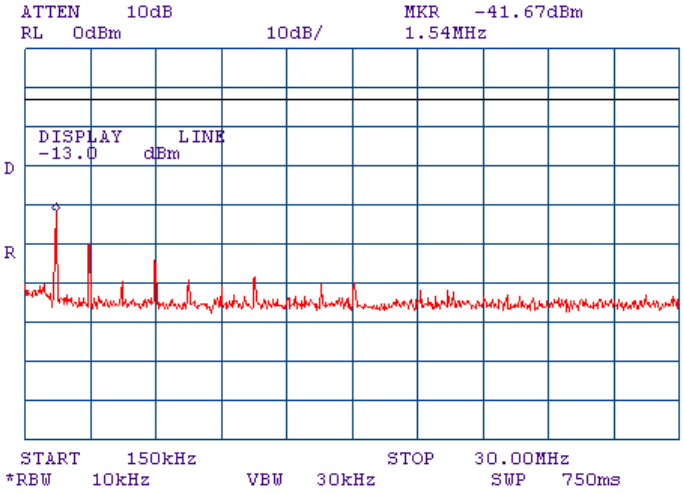


Test specification:	Section 22.917, Spurious emission at antenna terminal		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	10/15/2008		
Temperature: 23ºC	Air Pressure: 1009 hPa	Relative Humidity: 52 %	Power Supply: 3.8 VDC
Remarks:			

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

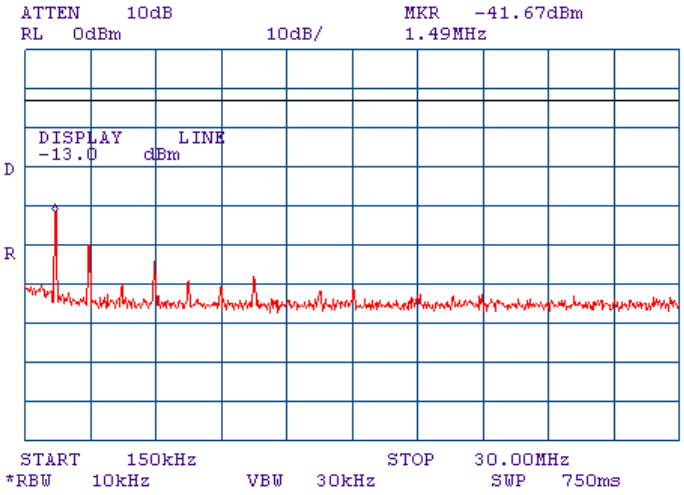


Plot 7.3.4 Spurious emission measurements in 0.15 - 30.0 MHz range at low carrier frequency

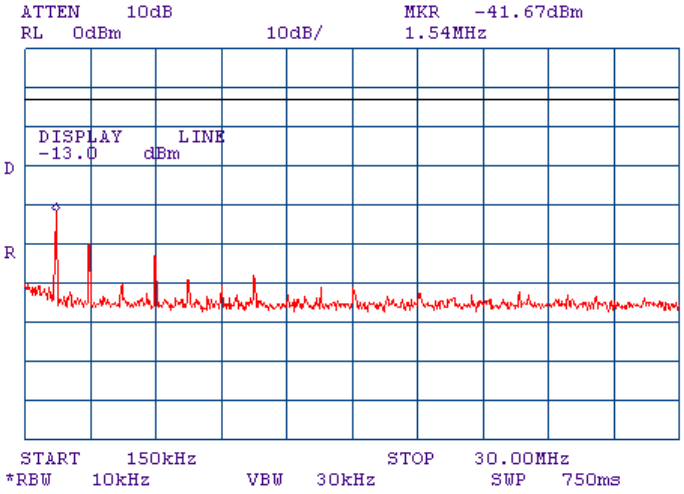


Test specification:	Section 22.917, Spurious emission at antenna terminal		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	10/15/2008		
Temperature: 23ºC	Air Pressure: 1009 hPa	Relative Humidity: 52 %	Power Supply: 3.8 VDC
Remarks:			

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

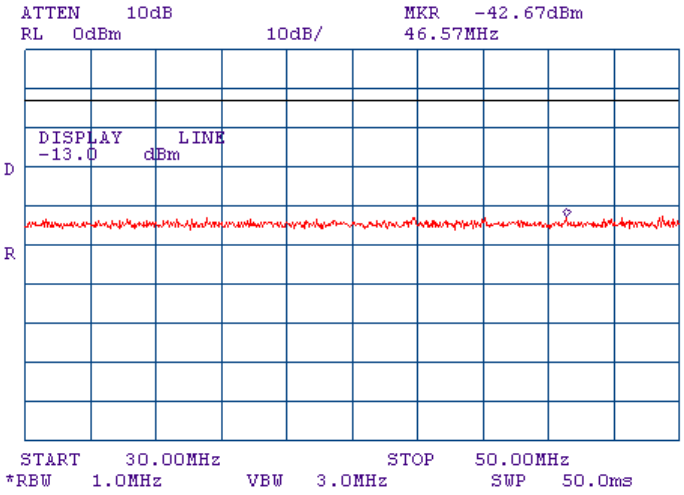


Plot 7.3.6 Spurious emission measurements in 0.15 – 30.0 MHz range at high carrier frequency

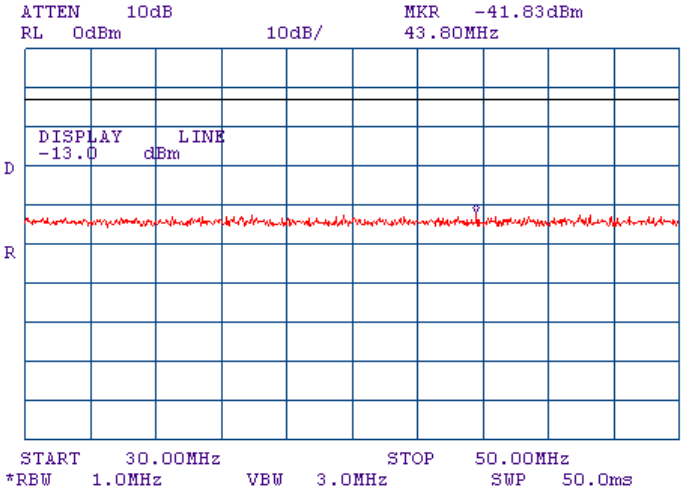


Test specification:	Section 22.917, Spurious emission at antenna terminal		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	10/15/2008		
Temperature: 23ºC	Air Pressure: 1009 hPa	Relative Humidity: 52 %	Power Supply: 3.8 VDC
Remarks:			

Plot 7.3.7 Spurious emission measurements in 30.0 - 500 MHz range at low carrier frequency

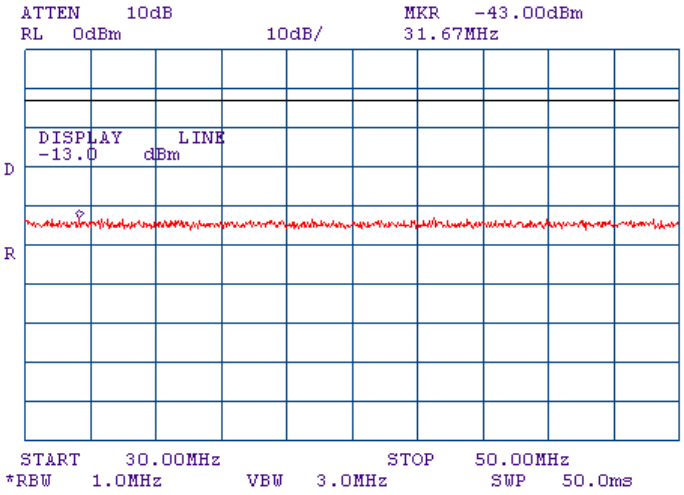


Plot 7.3.8 Spurious emission measurements in 30.0 - 500 MHz range at mid carrier frequency

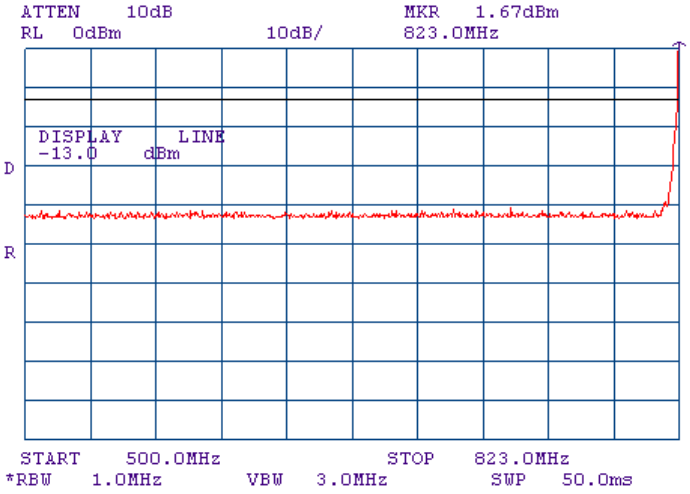


Test specification:	Section 22.917, Spurious emission at antenna terminal		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	10/15/2008		
Temperature: 23ºC	Air Pressure: 1009 hPa	Relative Humidity: 52 %	Power Supply: 3.8 VDC
Remarks:			

Plot 7.3.9 Spurious emission measurements in 30.0 - 500 MHz range at high carrier frequency

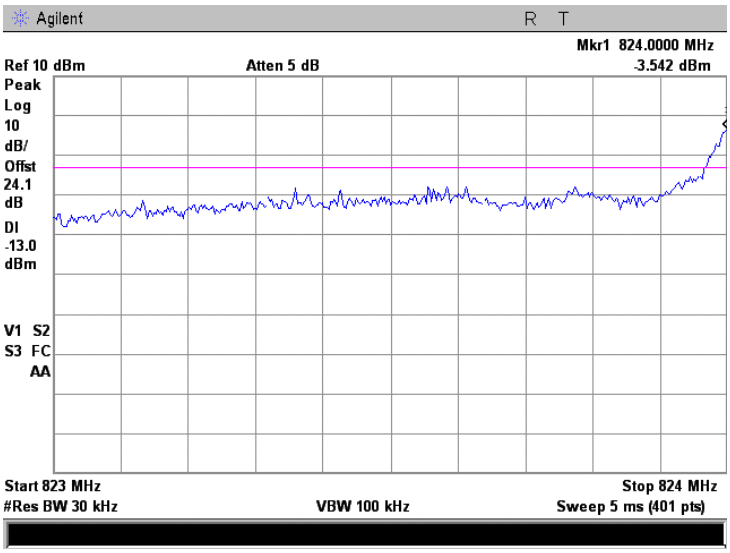


Plot 7.3.10 Spurious emission measurements in 500.0 – 823.0 MHz range at low carrier frequency



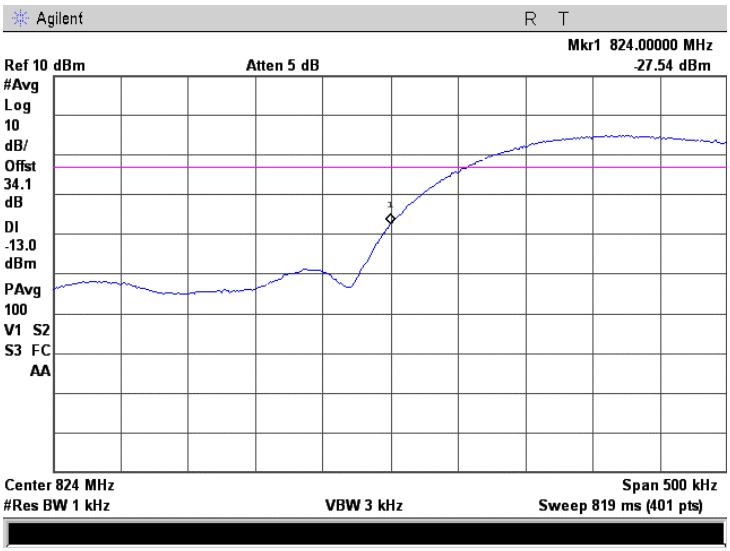
Test specification:	Section 22.917, Spurious emission at antenna terminal		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	10/15/2008		
Temperature: 23ºC	Air Pressure: 1009 hPa	Relative Humidity: 52 %	Power Supply: 3.8 VDC
Remarks:			

Plot 7.3.11 Spurious emission measurements in 823.0 – 824.0 MHz range at low carrier frequency



Plot 7.3.12 Low band edge emission measurements at low carrier frequency

MODE OF OPERATION RC3 SO 55 H-PSK Bitrate FULL 307.6kbps
DETECTOR Average

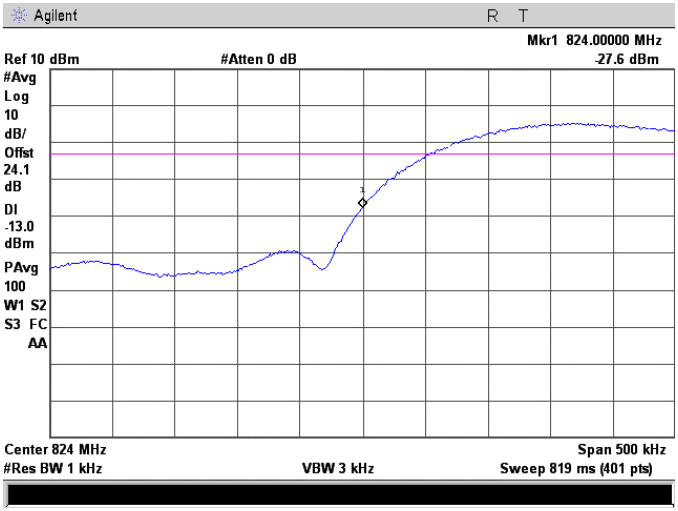


NOTE: SA Reading + 10log(13/1) = -27.54 + 11.14 = -16.40 dBm

Test specification:	Section 22.917, Spurious emission at antenna terminal		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	10/15/2008		
Temperature: 23ºC	Air Pressure: 1009 hPa	Relative Humidity: 52 %	Power Supply: 3.8 VDC
Remarks:			

Plot 7.3.13 Low band edge emission measurements at low carrier frequency

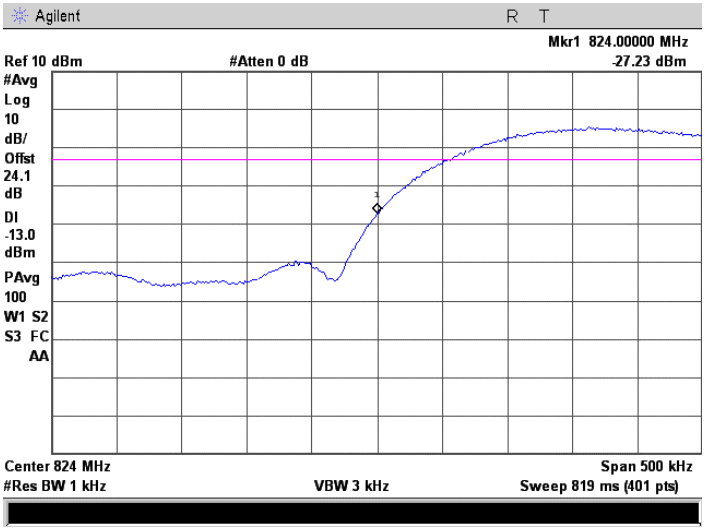
MODE OF OPERATION RC3 SO 55 H-PSK Bitrate HALF 153.6kbps
DETECTOR Average



NOTE: SA Reading + 10log(13/1) = -27.60 + 11.14 = - 16.46dBm

Plot 7.3.14 Low band edge emission measurements at low carrier frequency

MODE OF OPERATION RC3 SO 5 H-PSK 5 Bitrate EIGHT 9.6kbps
DETECTOR Average

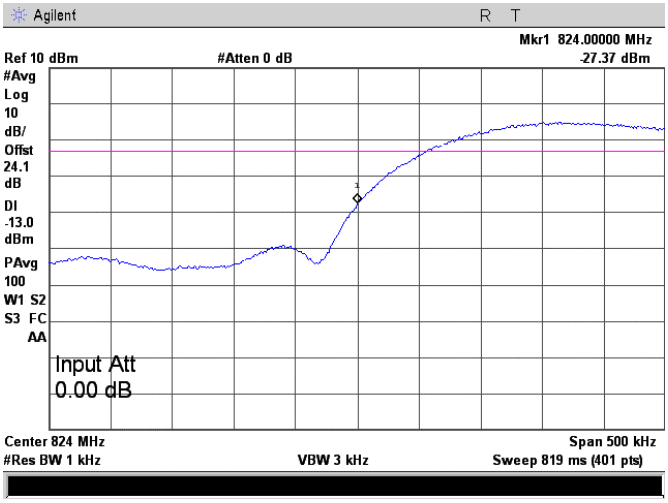


NOTE: SA Reading + 10log(13/1) = -27.23 + 11.14 = -16.09dBm

Test specification:	Section 22.917, Spurious emission at antenna terminal		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	10/15/2008		
Temperature: 23ºC	Air Pressure: 1009 hPa	Relative Humidity: 52 %	Power Supply: 3.8 VDC
Remarks:			

Plot 7.3.15 Low band edge emission measurements at low carrier frequency

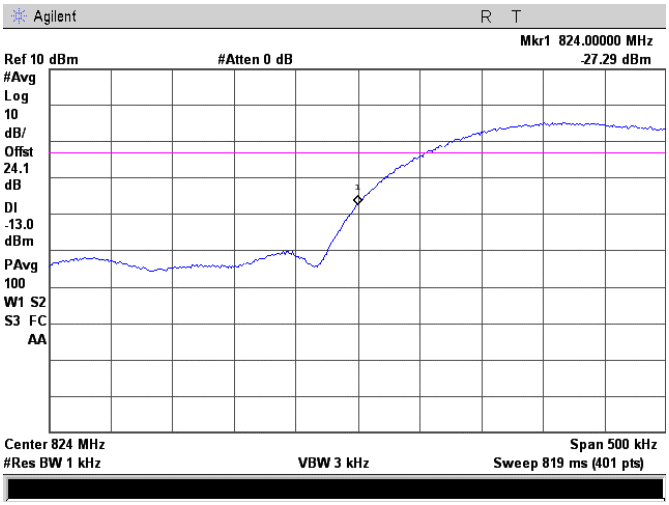
MODE OF OPERATION RC3 SO 2 O- H-PSK Bitrate FULL 307.6kbps
DETECTOR Average



NOTE: SA Reading + 10log(13/1) = -27.37 + 11.14 = -16.23dBm

Plot 7.3.16 Low band edge emission measurements at low carrier frequency

MODE OF OPERATION RC1 SO 55 O-QPSK Bitrate FULL 9.6kbps
DETECTOR Average

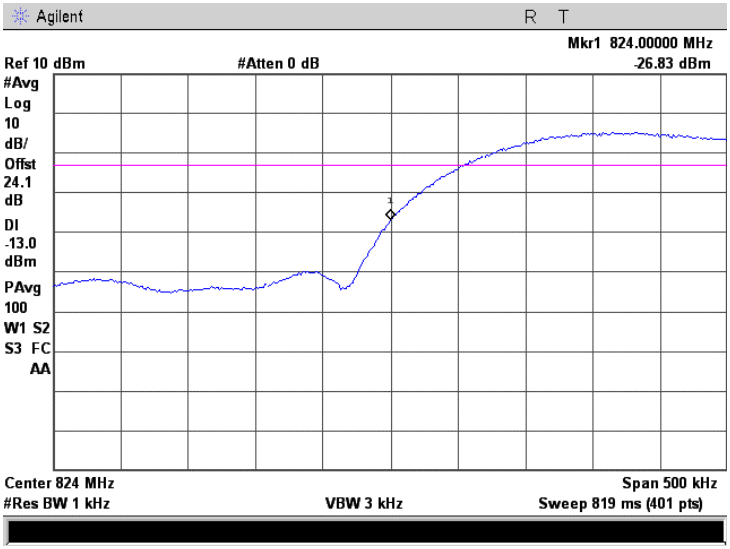


NOTE: SA Reading + 10log(13/1) = -27.29 + 11.14 = -16.15dBm

Test specification:	Section 22.917, Spurious emission at antenna terminal		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	10/15/2008		
Temperature: 23ºC	Air Pressure: 1009 hPa	Relative Humidity: 52 %	Power Supply: 3.8 VDC
Remarks:			

Plot 7.3.17 Low band edge emission measurements at low carrier frequency

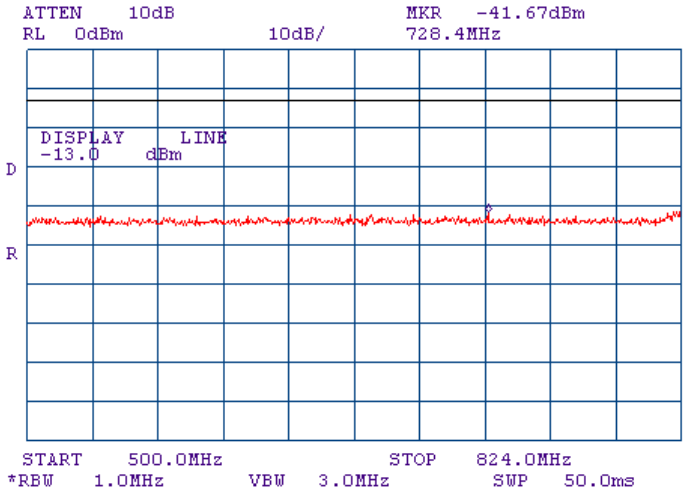
MODE OF OPERATION RC1 SO 2 O-QPSK Bitrate FULL 9.6kbps
DETECTOR Average



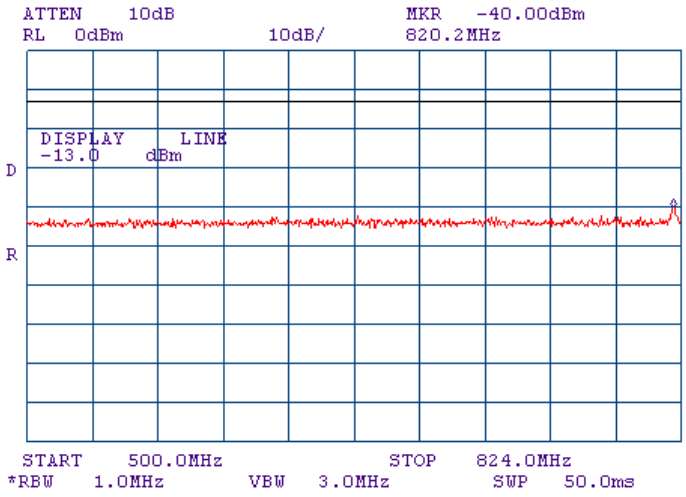
NOTE: SA Reading + 10log(13/1) = -26.83 + 11.14 = - 15.69dBm

Test specification:	Section 22.917, Spurious emission at antenna terminal		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	10/15/2008		
Temperature: 23ºC	Air Pressure: 1009 hPa	Relative Humidity: 52 %	Power Supply: 3.8 VDC
Remarks:			

Plot 7.3.18 Spurious emission measurements in 500.0 - 824 MHz range at mid carrier frequency

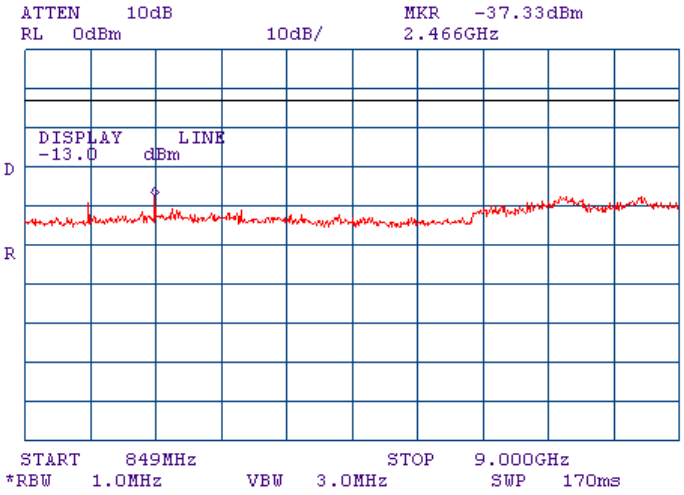


Plot 7.3.19 Spurious emission measurements in 500.0 - 824 MHz range at high carrier frequency

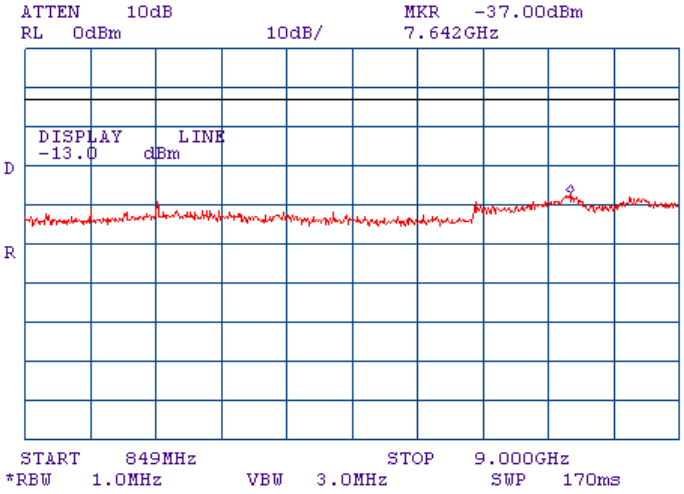


Test specification:	Section 22.917, Spurious emission at antenna terminal		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	10/15/2008		
Temperature: 23ºC	Air Pressure: 1009 hPa	Relative Humidity: 52 %	Power Supply: 3.8 VDC
Remarks:			

Plot 7.3.20 Spurious emission measurements in 849 - 9000 MHz range at low carrier frequency

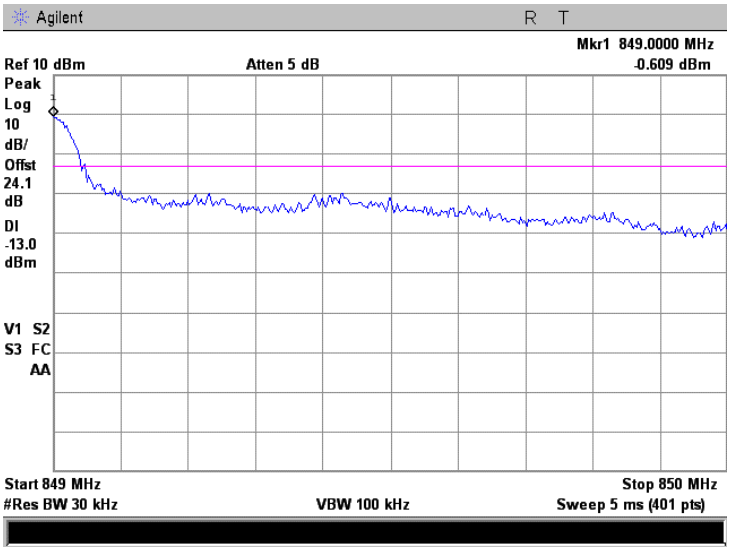


Plot 7.3.21 Spurious emission measurements in 849 – 9000 MHz range at mid carrier frequency



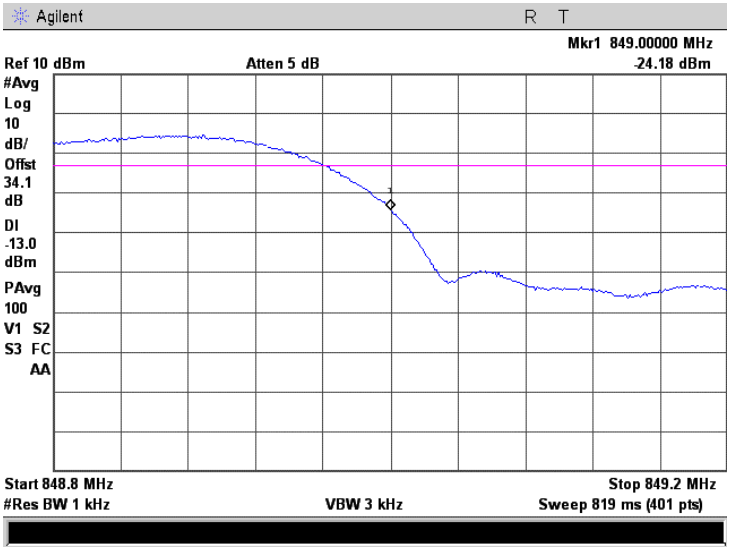
Test specification:	Section 22.917, Spurious emission at antenna terminal		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	10/15/2008		
Temperature: 23ºC	Air Pressure: 1009 hPa	Relative Humidity: 52 %	Power Supply: 3.8 VDC
Remarks:			

Plot 7.3.22 Spurious emission measurements in 849 – 850 MHz range at high carrier frequency



Plot 7.3.23 High band edge emission measurements at high carrier frequency

MODE OF OPERATION RC3 SO 55 H-PSK Bitrate FULL 307.6kbps
DETECTOR Average

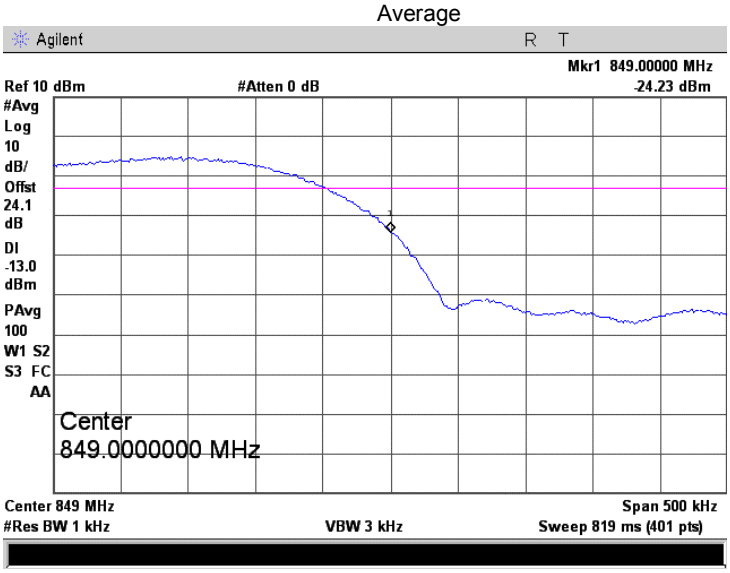


NOTE: SA Reading + 10log(13/1) = -24.18 + 11.14 = -13.04dBm

Test specification:	Section 22.917, Spurious emission at antenna terminal		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	10/15/2008		
Temperature: 23ºC	Air Pressure: 1009 hPa	Relative Humidity: 52 %	Power Supply: 3.8 VDC
Remarks:			

Plot 7.3.24 High band edge emission measurements at high carrier frequency

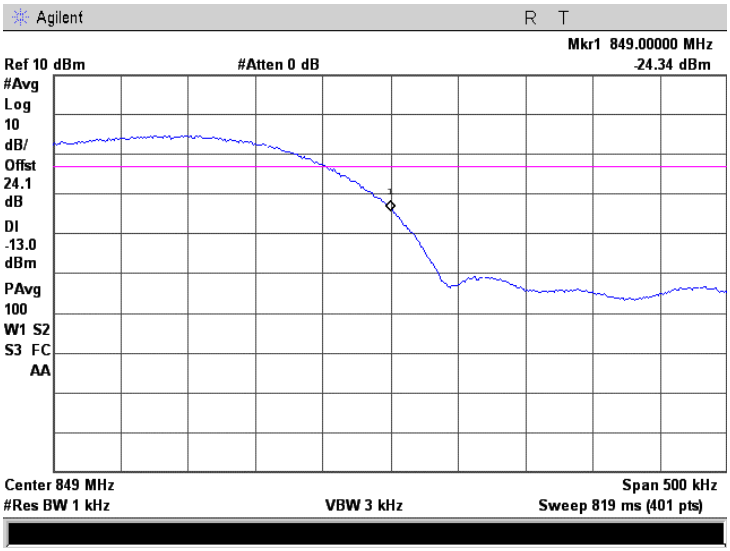
MODE OF OPERATION RC3 SO 55 H-PSK Bitrate HALF 153.6kbps
DETECTOR Average



NOTE: SA Reading + 10log(13/1) = -24.23 + 11.14 = -13.09 dBm

Plot 7.3.25 High band edge emission measurements at high carrier frequency

MODE OF OPERATION RC3 SO 5 H-PSK 5 Bitrate EIGHT 9.6kbps
DETECTOR Average

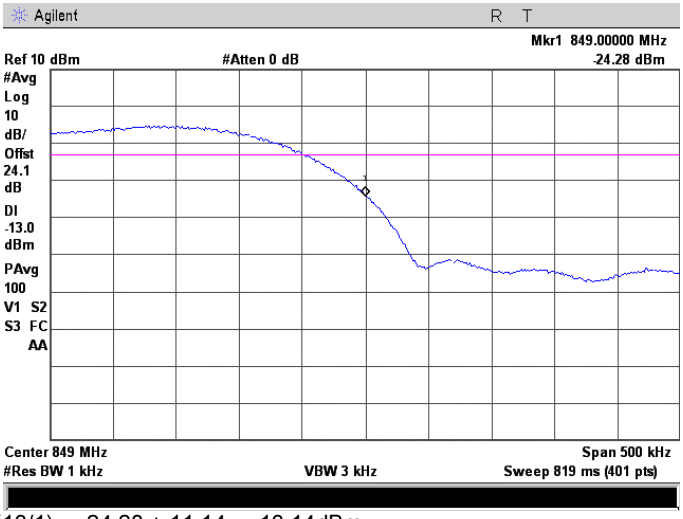


NOTE: SA Reading + 10log(13/1) = -24.34 + 11.14 = -13.20dBm

Test specification:	Section 22.917, Spurious emission at antenna terminal		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	10/15/2008		
Temperature: 23ºC	Air Pressure: 1009 hPa	Relative Humidity: 52 %	Power Supply: 3.8 VDC
Remarks:			

Plot 7.3.26 High band edge emission measurements at high carrier frequency

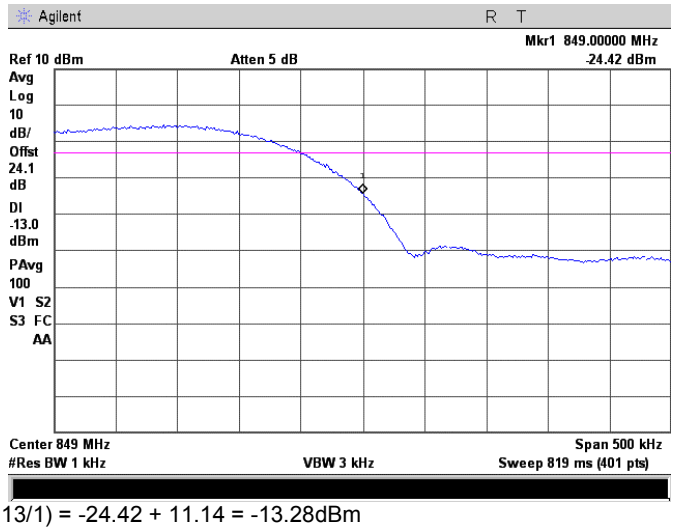
MODE OF OPERATION RC3 SO 2 O- H-PSK Bitrate FULL 307.6kbps
DETECTOR Average



NOTE: SA Reading + 10log(13/1) = -24.28 + 11.14 = -13.14dBm

Plot 7.3.27 High band edge emission measurements at high carrier frequency

MODE OF OPERATION RC1 SO 55 O-QPSK Bitrate FULL 9.6kbps
DETECTOR Average

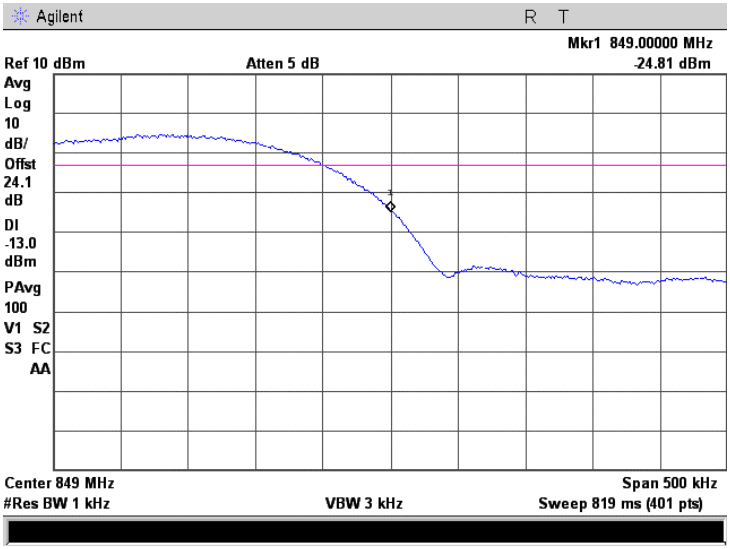


NOTE: SA Reading + 10log(13/1) = -24.42 + 11.14 = -13.28dBm

Test specification:	Section 22.917, Spurious emission at antenna terminal		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	10/15/2008		
Temperature: 23ºC	Air Pressure: 1009 hPa	Relative Humidity: 52 %	Power Supply: 3.8 VDC
Remarks:			

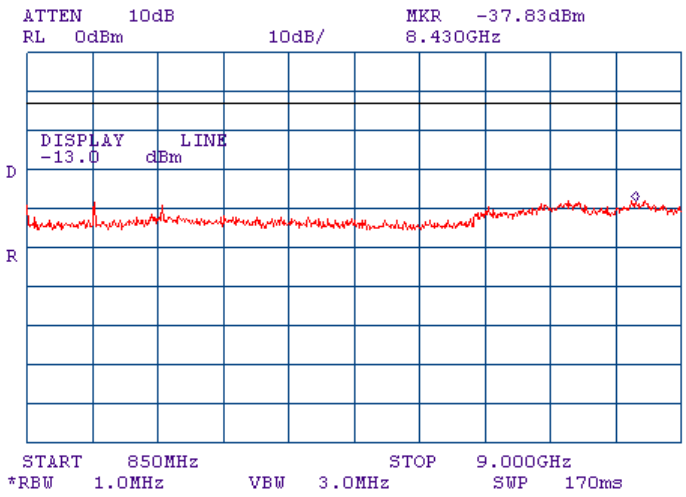
Plot 7.3.28 High band edge emission measurements at high carrier frequency

MODE OF OPERATION RC1 SO 2 O-QPSK Bitrate FULL 9.6kbps
DETECTOR Average



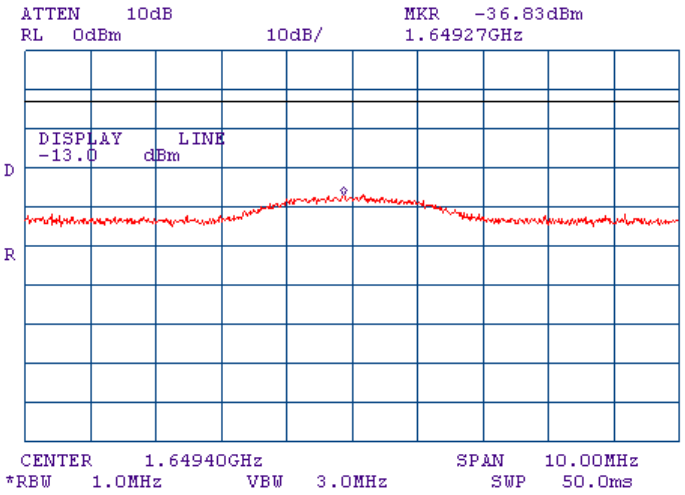
NOTE: SA Reading + 10log(13/1) = -24.81 + 11.14 = -13.67dBm

Plot 7.3.29 Spurious emission measurements in 850 – 9000 MHz range at high carrier frequency

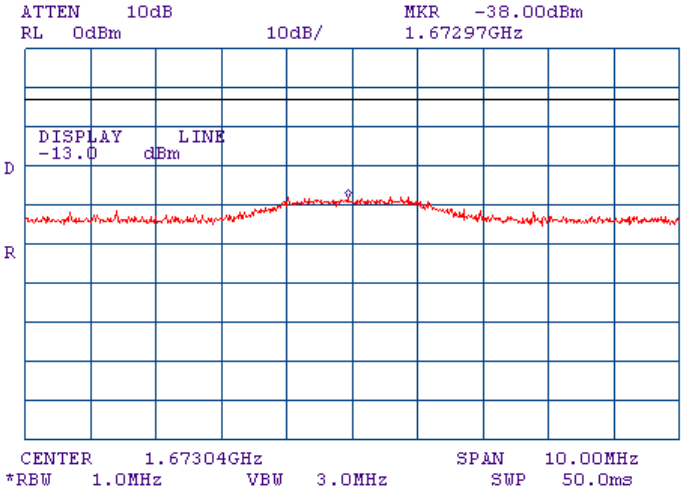


Test specification:	Section 22.917, Spurious emission at antenna terminal		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	10/15/2008		
Temperature: 23ºC	Air Pressure: 1009 hPa	Relative Humidity: 52 %	Power Supply: 3.8 VDC
Remarks:			

Plot 7.3.30 Conducted spurious emission measurements at the 2nd harmonic of low carrier frequency

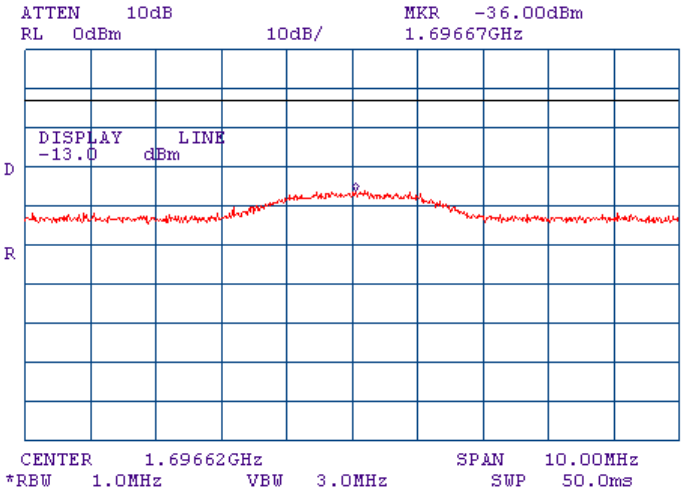


Plot 7.3.31 Conducted spurious emission measurements at the 2nd harmonic of mid carrier frequency

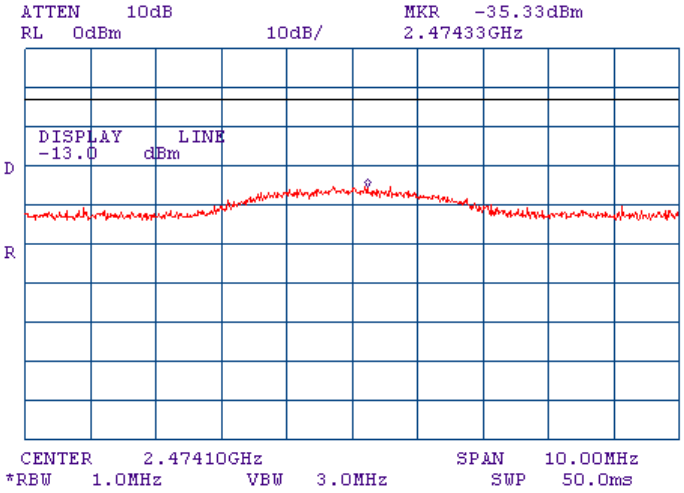


Test specification:	Section 22.917, Spurious emission at antenna terminal		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	10/15/2008		
Temperature: 23ºC	Air Pressure: 1009 hPa	Relative Humidity: 52 %	Power Supply: 3.8 VDC
Remarks:			

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

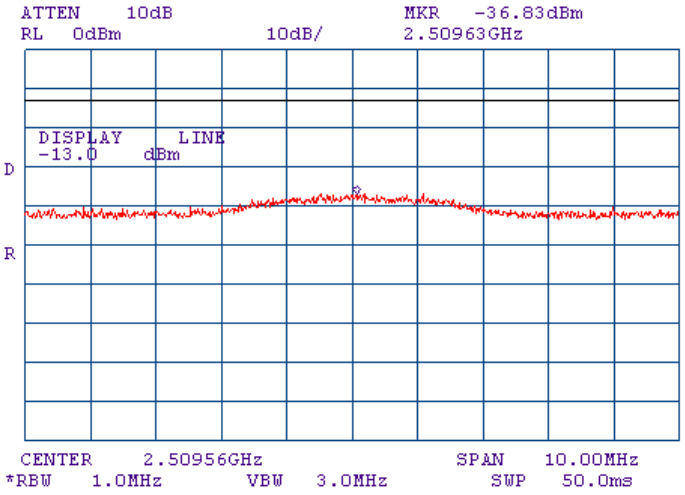


Plot 7.3.33 Conducted spurious emission measurements at the 3rd harmonic of low carrier frequency

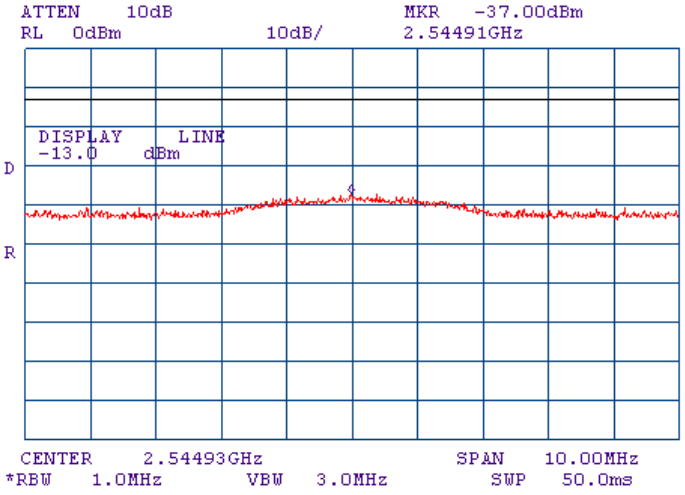


Test specification:	Section 22.917, Spurious emission at antenna terminal		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	10/15/2008		
Temperature: 23ºC	Air Pressure: 1009 hPa	Relative Humidity: 52 %	Power Supply: 3.8 VDC
Remarks:			

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

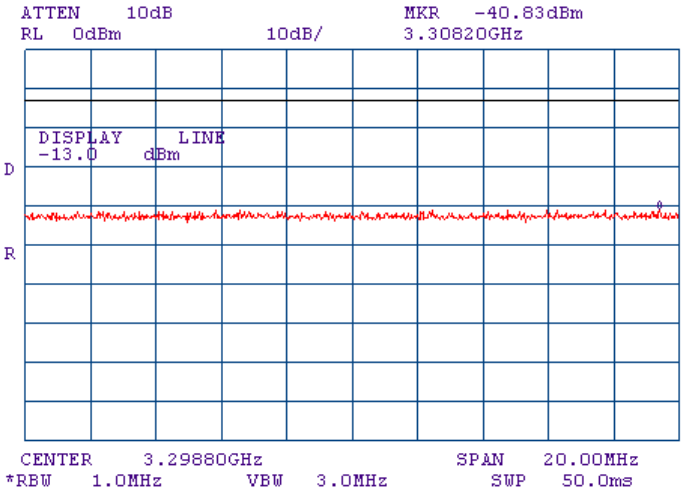


Plot 7.3.35 Conducted spurious emission measurements at the 3rd harmonic of high carrier frequency

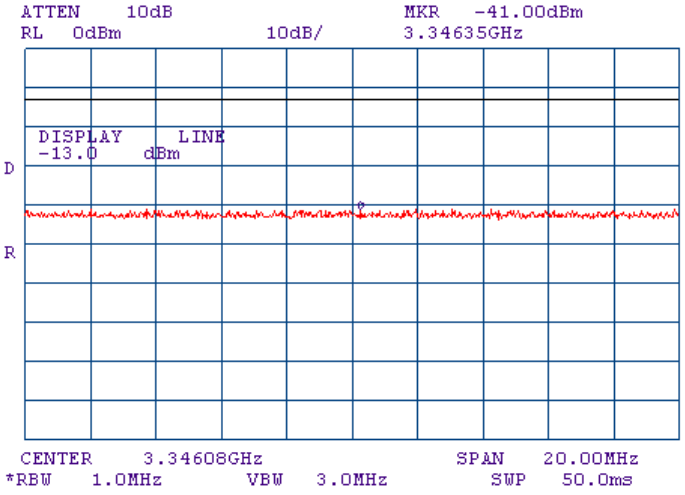


Test specification:	Section 22.917, Spurious emission at antenna terminal		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	10/15/2008		
Temperature: 23ºC	Air Pressure: 1009 hPa	Relative Humidity: 52 %	Power Supply: 3.8 VDC
Remarks:			

Plot 7.3.36 Conducted spurious emission measurements at the 4th harmonic of low carrier frequency

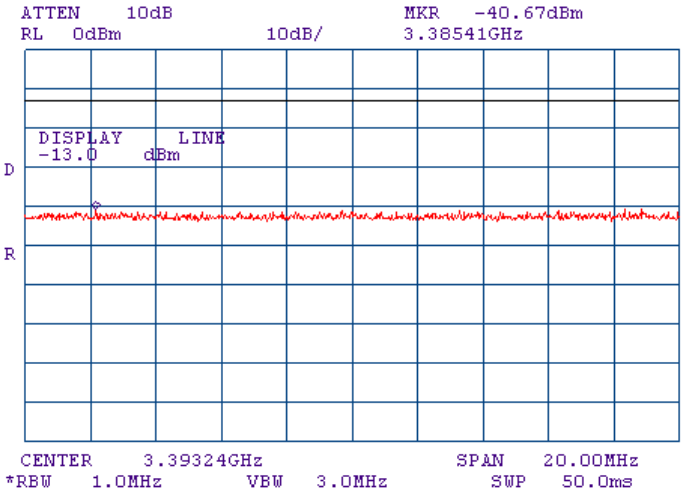


Plot 7.3.37 Conducted spurious emission measurements at the 4th harmonic of mid carrier frequency

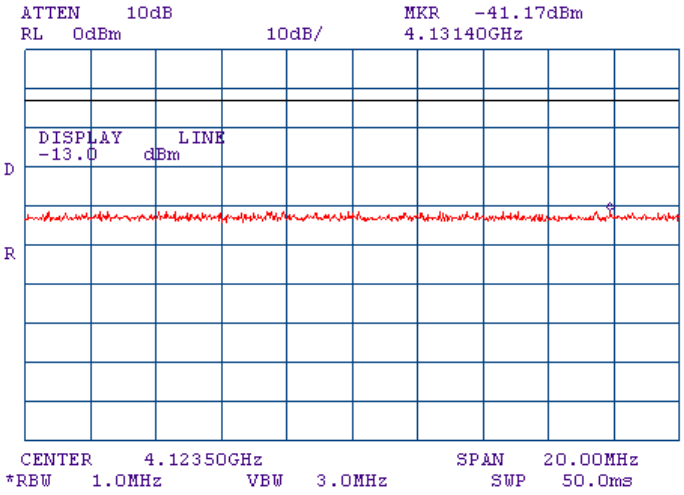


Test specification:	Section 22.917, Spurious emission at antenna terminal		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	10/15/2008		
Temperature: 23ºC	Air Pressure: 1009 hPa	Relative Humidity: 52 %	Power Supply: 3.8 VDC
Remarks:			

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

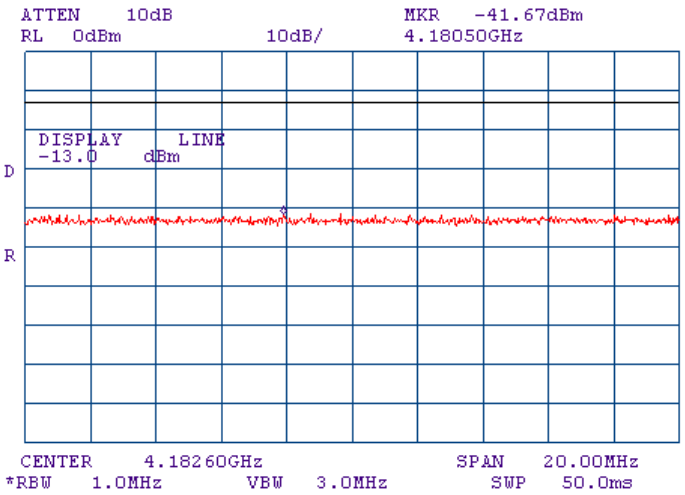


Plot 7.3.39 Conducted spurious emission measurements at the 5th harmonic of low carrier frequency

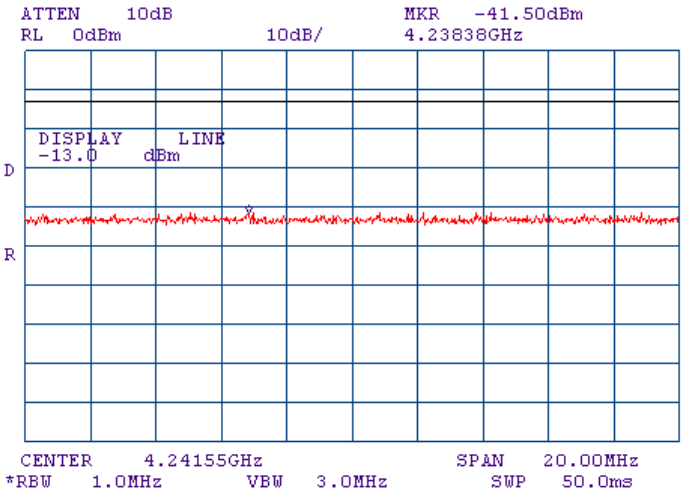


Test specification:	Section 22.917, Spurious emission at antenna terminal		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	10/15/2008		
Temperature: 23ºC	Air Pressure: 1009 hPa	Relative Humidity: 52 %	Power Supply: 3.8 VDC
Remarks:			

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



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



Test specification:	Section 22.917, Radiated spurious emissions		
Test procedure:	FCC part 22, Section 22.917		
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 in Figure 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 in Figure 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 22.917, Radiated spurious emissions		
Test procedure:	FCC part 22, Section 22.917		
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

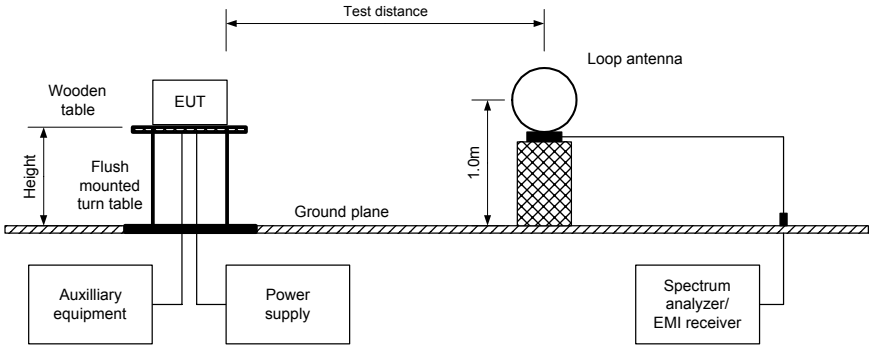
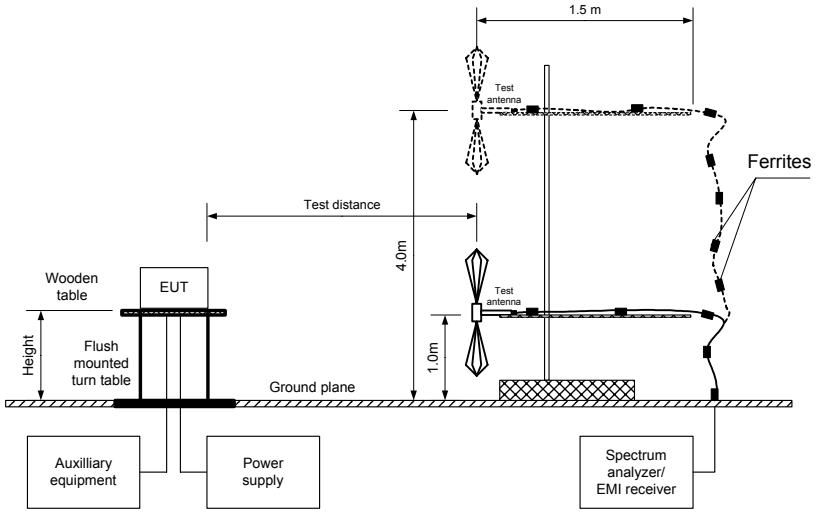


Figure 7.4.2 Setup for spurious emission field strength measurements above 30 MHz



Test specification:	**Section 22.917, Radiated spurious emissions**		
Test procedure:	FCC part 22, Section 22.917		
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: 824-849 MHz
TEST DISTANCE: 3 m
TEST SITE: Semi anechoic chamber / OATS
EUT HEIGHT: 0.8 m
INVESTIGATED FREQUENCY RANGE: 0.009 – 9000MHz
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: PRBS
BIT RATE: 307.6Kbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

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 824.70 MHz							
All spurious were found at least 20 dB bellow the specified limit							
Mid carrier frequency 836.52MHz							
All spurious were found at least 20 dB bellow the specified limit							
High carrier frequency 848.31MHz							
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

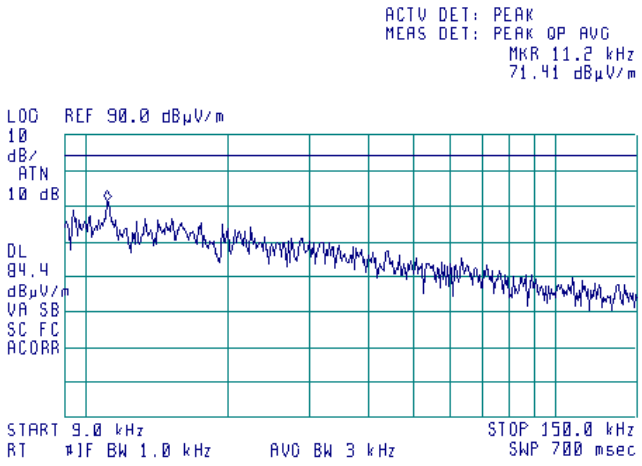
HL 0446	HL 0521	HL 0554	HL 0604	HL 1984	HL 1947	HL 2432	HL 2634
HL 2909	HL 3123						

Full description is given in Appendix A.

Test specification:	Section 22.917, Radiated spurious emissions		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

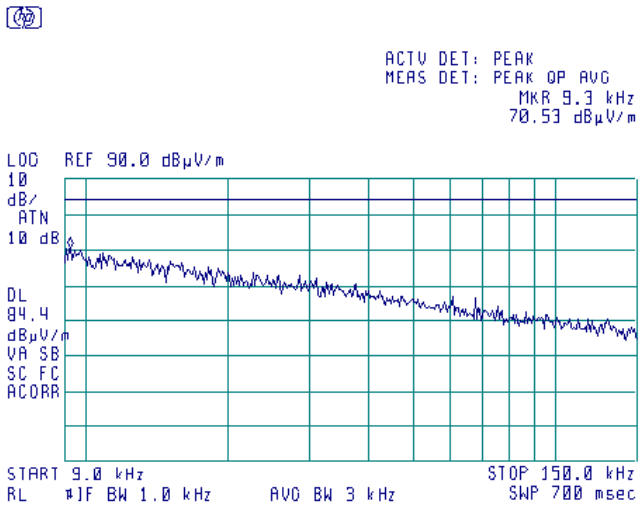
Plot 7.4.1 Radiated emission measurements in 9 - 150 kHz range

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

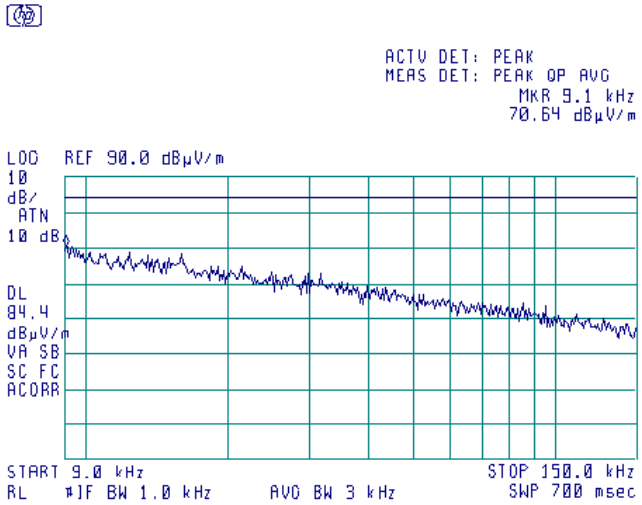
TEST SITE:	Semi anechoic chamber
CARRIER FREQUENCY:	Mid
ANTENNA POLARIZATION:	Vertical and Horizontal
TEST DISTANCE:	3 m



Test specification:	Section 22.917, Radiated spurious emissions		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

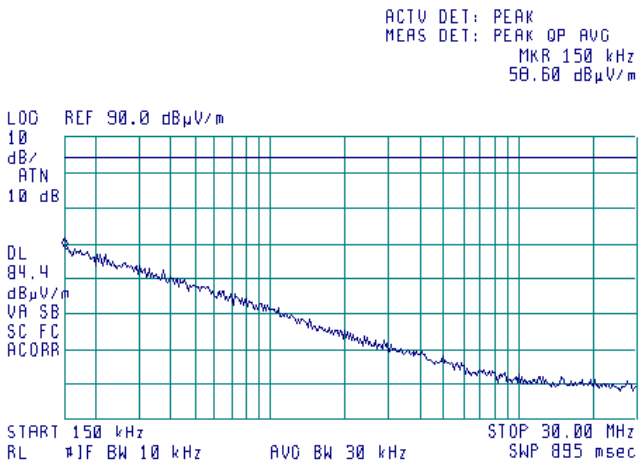
Plot 7.4.3 Radiated emission measurements in 9 - 150 kHz range

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

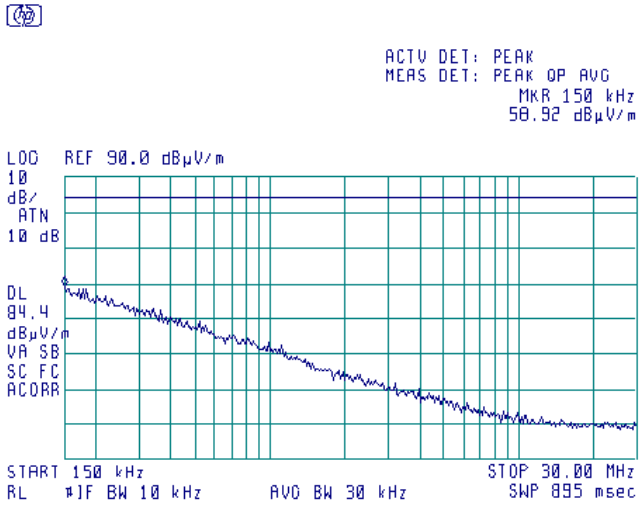
TEST SITE:	Semi anechoic chamber
CARRIER FREQUENCY:	Low
ANTENNA POLARIZATION:	Vertical and Horizontal
TEST DISTANCE:	3 m



Test specification:	Section 22.917, Radiated spurious emissions		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

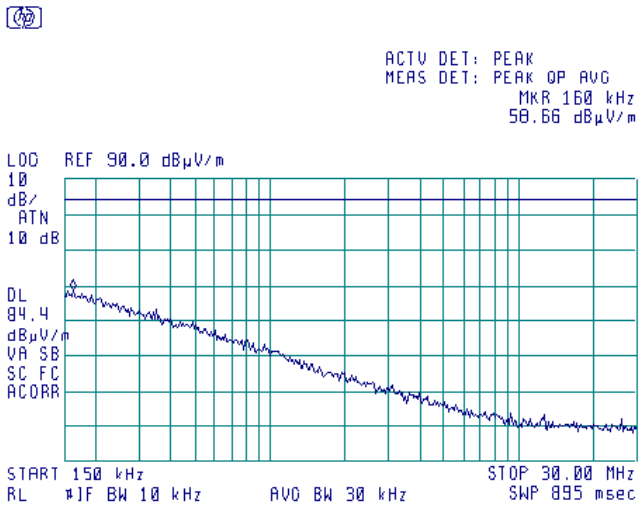
Plot 7.4.5 Radiated emission measurements in 0.15 - 30 MHz range

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

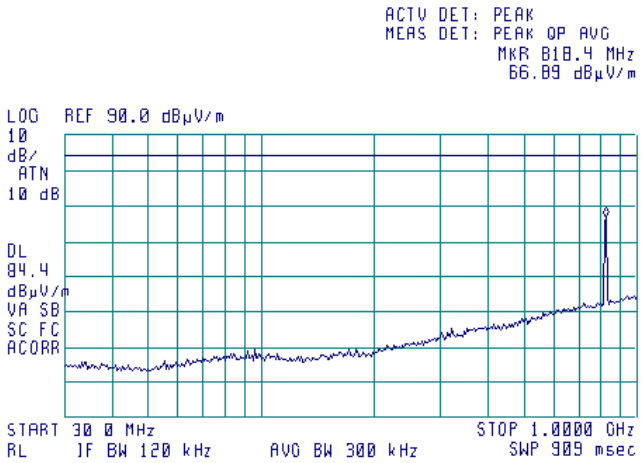
TEST SITE:	Semi anechoic chamber
CARRIER FREQUENCY:	High
ANTENNA POLARIZATION:	Vertical and Horizontal
TEST DISTANCE:	3 m



Test specification:	Section 22.917, Radiated spurious emissions		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

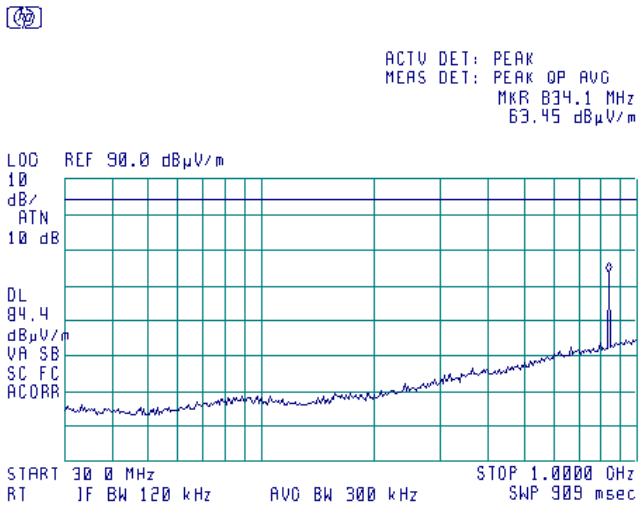
Plot 7.4.7 Radiated emission measurements in 30 - 1000 MHz range

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

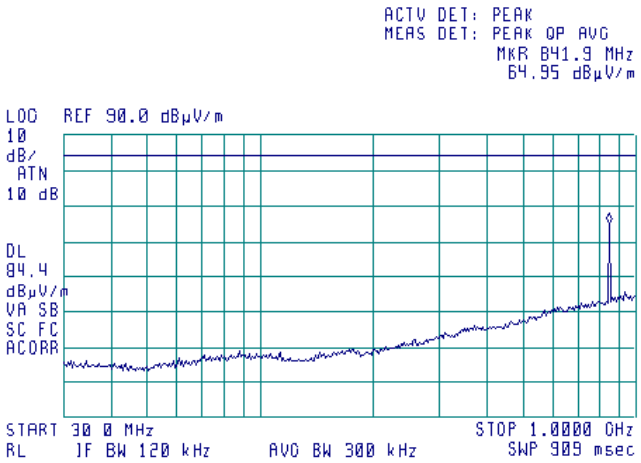
TEST SITE:	Semi anechoic chamber
CARRIER FREQUENCY:	Mid
ANTENNA POLARIZATION:	Vertical and Horizontal
TEST DISTANCE:	3 m



Test specification:	Section 22.917, Radiated spurious emissions		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

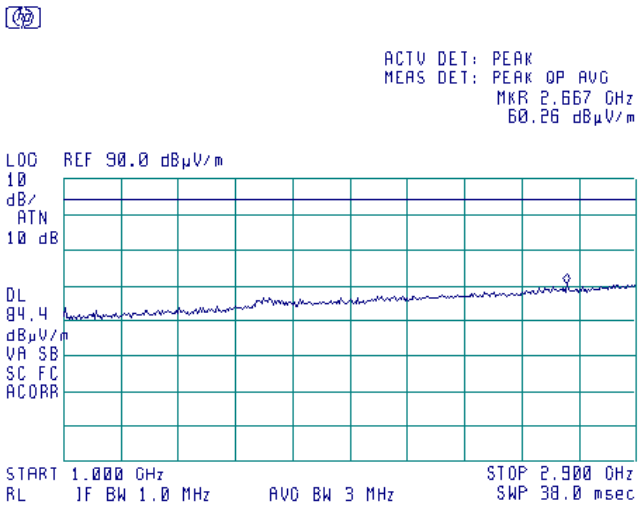
Plot 7.4.9 Radiated emission measurements in 30 - 1000 MHz range

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

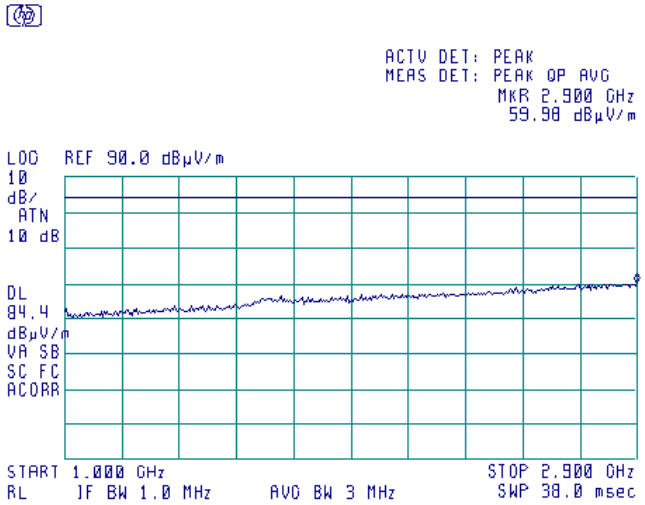
TEST SITE: Semi anechoic chamber
CARRIER FREQUENCY: Low
ANTENNA POLARIZATION: Vertical and Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 22.917, Radiated spurious emissions		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

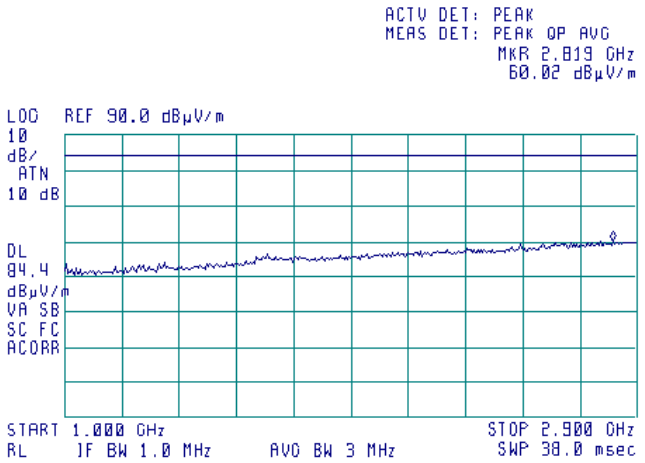
Plot 7.4.11 Radiated emission measurements in 1000 – 2900 MHz range

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

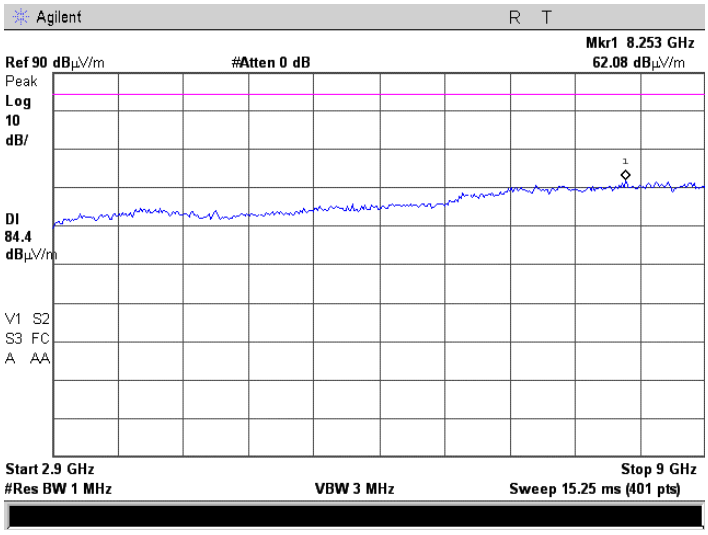
TEST SITE:	Semi anechoic chamber
CARRIER FREQUENCY:	High
ANTENNA POLARIZATION:	Vertical and Horizontal
TEST DISTANCE:	3 m



Test specification:	Section 22.917, Radiated spurious emissions		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

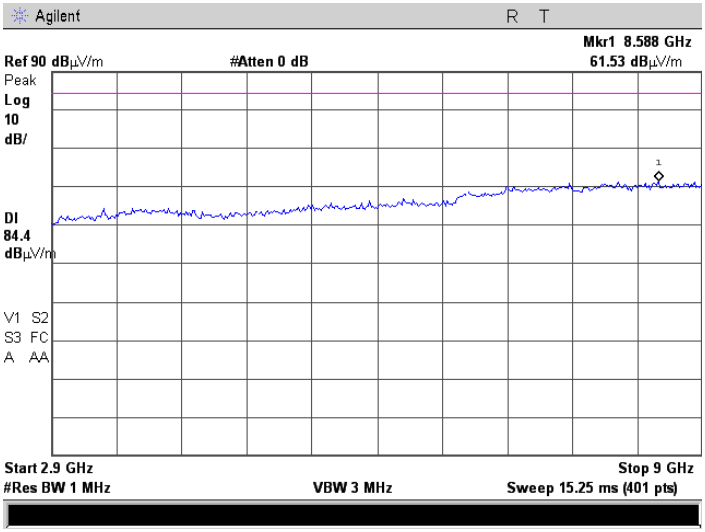
Plot 7.4.13 Radiated emission measurements in 2900 - 9000 MHz range

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 - 9000 MHz range

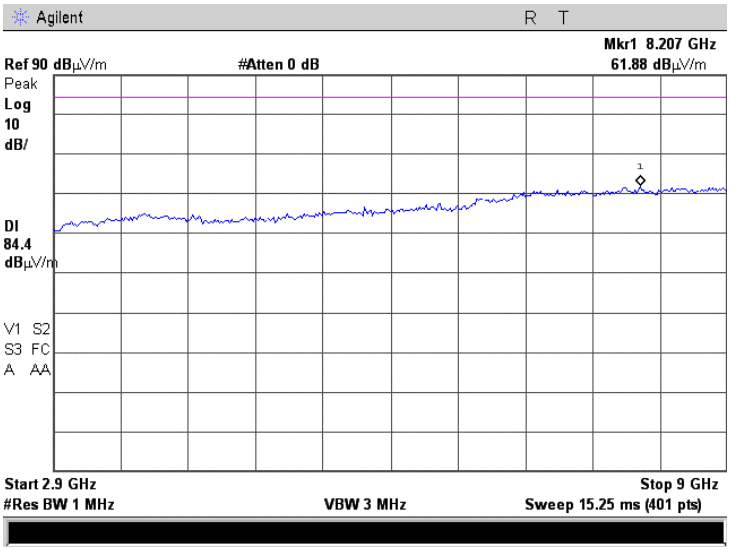
TEST SITE: Semi anechoic chamber
CARRIER FREQUENCY: Mid
ANTENNA POLARIZATION: Vertical and Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 22.917, Radiated spurious emissions		
Test procedure:	FCC part 22, Section 22.917		
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 - 9000 MHz range

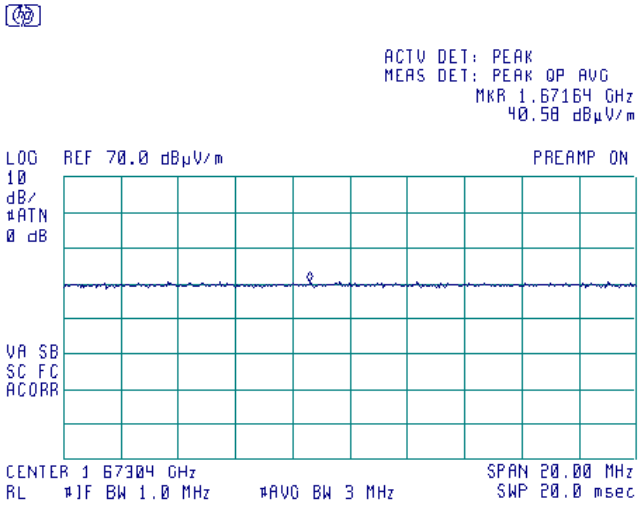
TEST SITE: Semi anechoic chamber
CARRIER FREQUENCY: High
ANTENNA POLARIZATION: Vertical and Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 22.917, Radiated spurious emissions		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

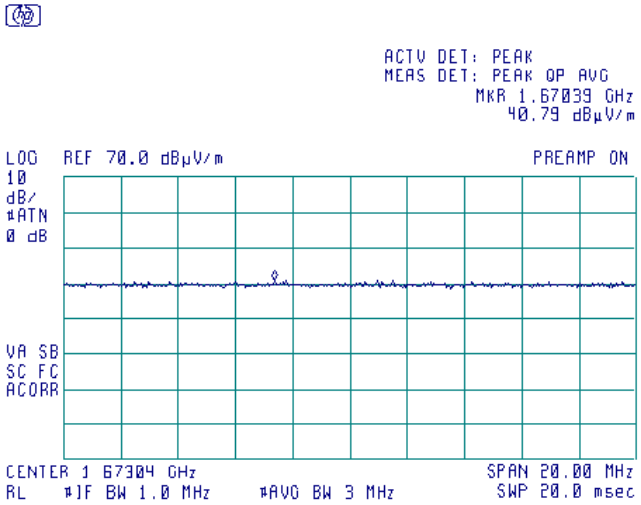
Plot 7.4.16 Radiated emission measurements at the 2nd harmonic

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



Plot 7.4.17 Radiated emission measurements at the 2nd harmonic

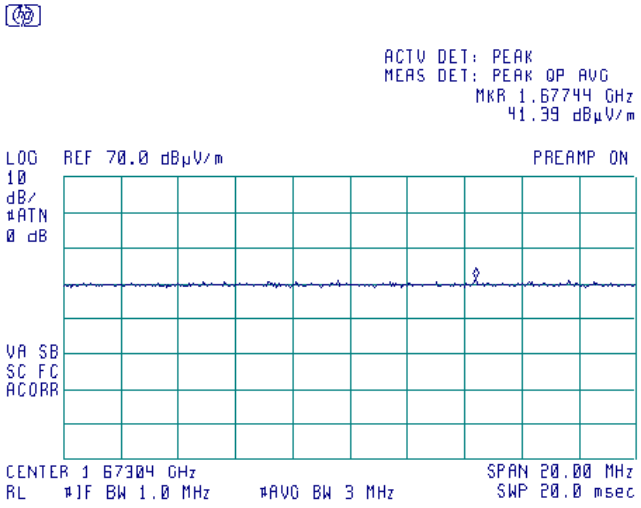
TEST SITE:	Semi anechoic chamber
CARRIER FREQUENCY:	Mid
ANTENNA POLARIZATION:	Vertical & Horizontal
TEST DISTANCE:	3 m



Test specification:	Section 22.917, Radiated spurious emissions		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

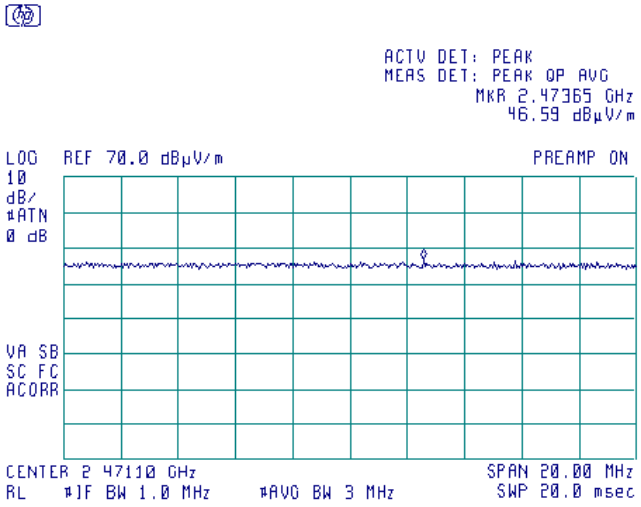
Plot 7.4.18 Radiated emission measurements at the 2nd harmonic

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



Plot 7.4.19 Radiated emission measurements at the 3rd harmonic

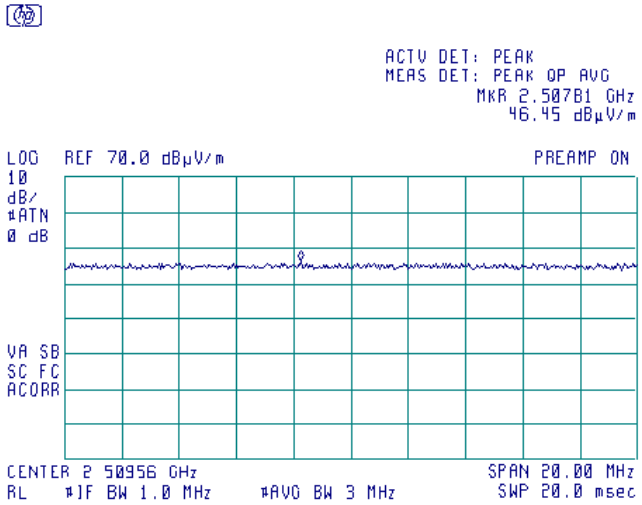
TEST SITE: Semi anechoic chamber
CARRIER FREQUENCY: Low
ANTENNA POLARIZATION: Vertical & Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 22.917, Radiated spurious emissions		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

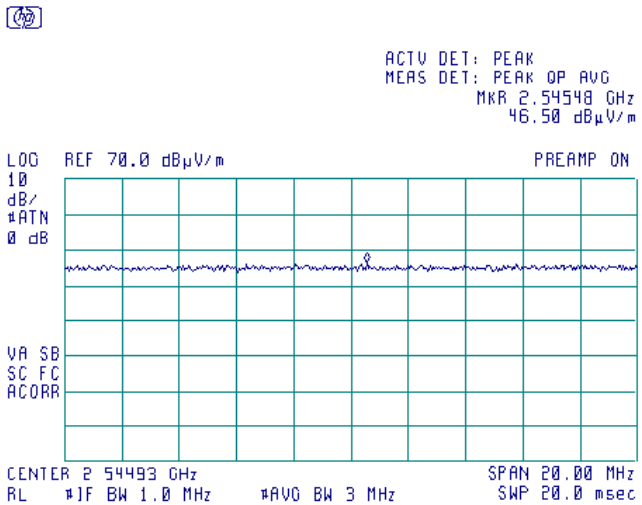
Plot 7.4.20 Radiated emission measurements at the 3rd harmonic

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



Plot 7.4.21 Radiated emission measurements at the 3rd harmonic

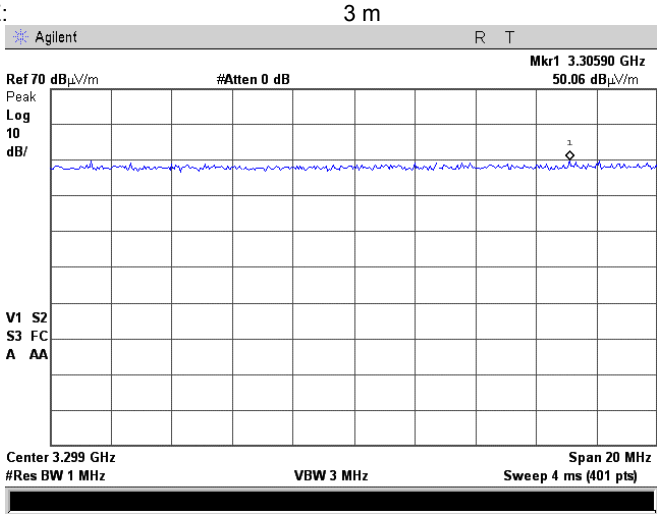
TEST SITE:	Semi anechoic chamber
CARRIER FREQUENCY:	High
ANTENNA POLARIZATION:	Vertical & Horizontal
TEST DISTANCE:	3 m



Test specification:	Section 22.917, Radiated spurious emissions		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

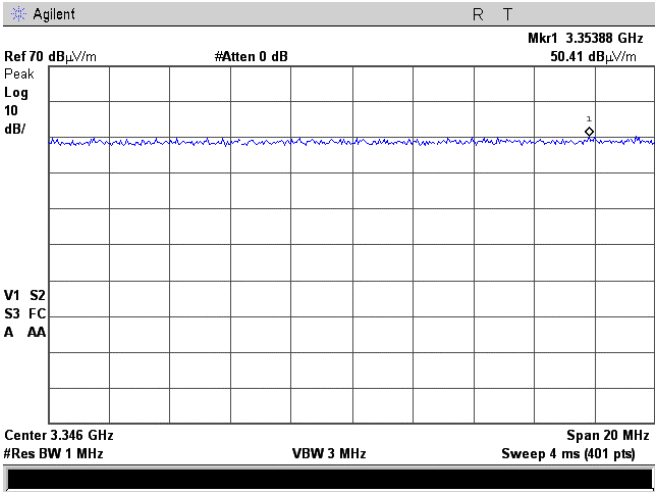
Plot 7.4.22 Radiated emission measurements at the 4th harmonic

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 4th harmonic

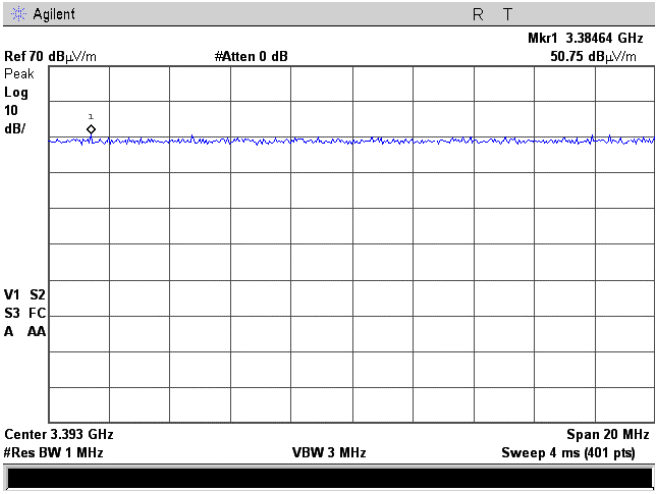
TEST SITE: Semi anechoic chamber
CARRIER FREQUENCY: Mid
ANTENNA POLARIZATION: Vertical & Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 22.917, Radiated spurious emissions		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

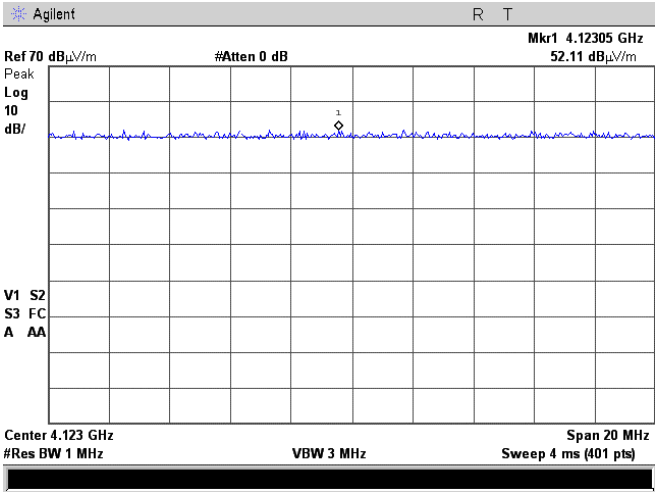
Plot 7.4.24 Radiated emission measurements at the 4th harmonic

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 5th harmonic

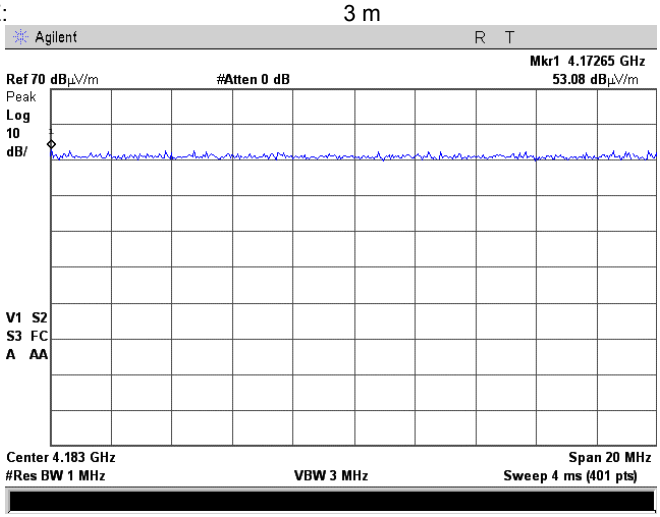
TEST SITE: Semi anechoic chamber
CARRIER FREQUENCY: Low
ANTENNA POLARIZATION: Vertical & Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 22.917, Radiated spurious emissions		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

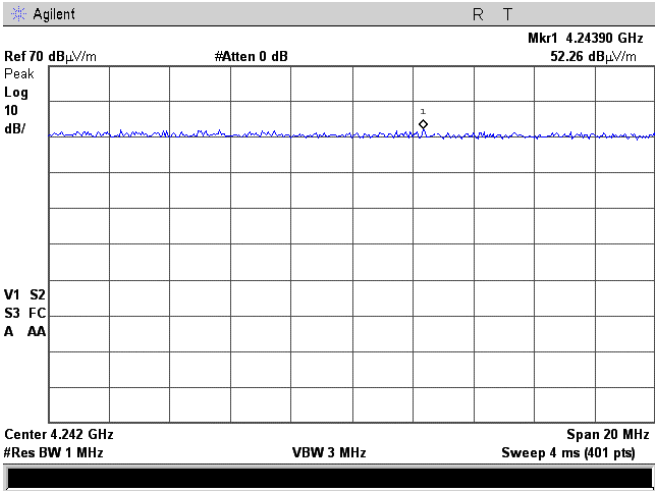
Plot 7.4.26 Radiated emission measurements at the 5th harmonic

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 5th harmonic

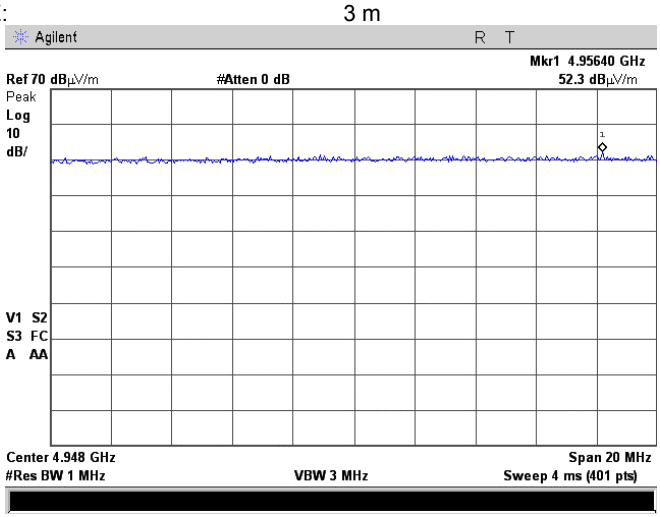
TEST SITE: Semi anechoic chamber
CARRIER FREQUENCY: High
ANTENNA POLARIZATION: Vertical & Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 22.917, Radiated spurious emissions		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

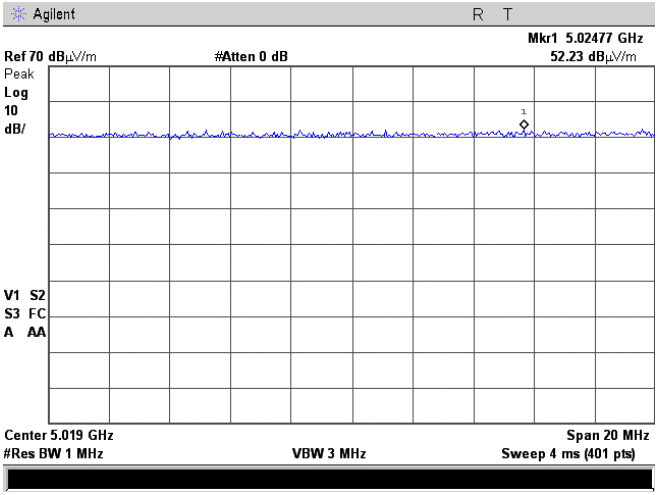
Plot 7.4.28 Radiated emission measurements at the 6th harmonic

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



Plot 7.4.29 Radiated emission measurements at the 6th harmonic

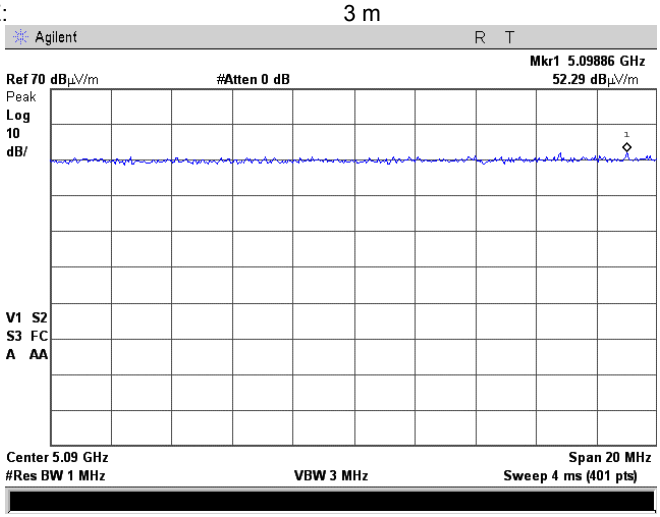
TEST SITE: Semi anechoic chamber
CARRIER FREQUENCY: Mid
ANTENNA POLARIZATION: Vertical & Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 22.917, Radiated spurious emissions		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

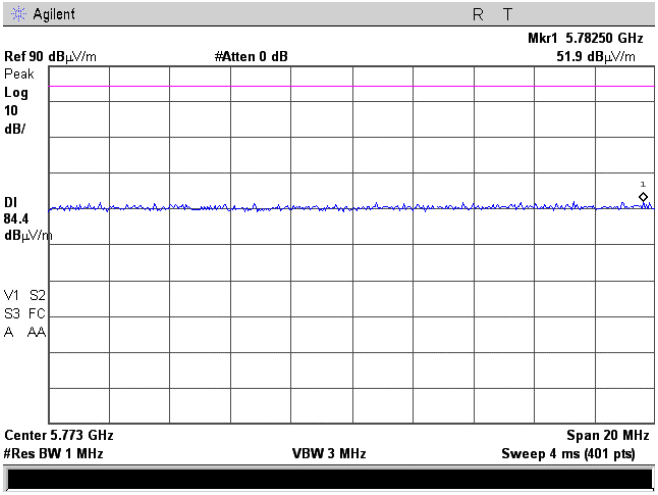
Plot 7.4.30 Radiated emission measurements at the 6th harmonic

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



Plot 7.4.31 Radiated emission measurements at the 7th harmonic

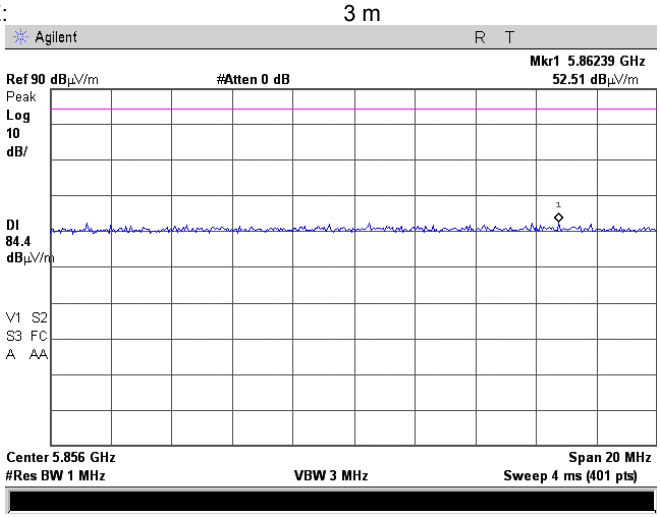
TEST SITE: Semi anechoic chamber
CARRIER FREQUENCY: Low
ANTENNA POLARIZATION: Vertical & Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 22.917, Radiated spurious emissions		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

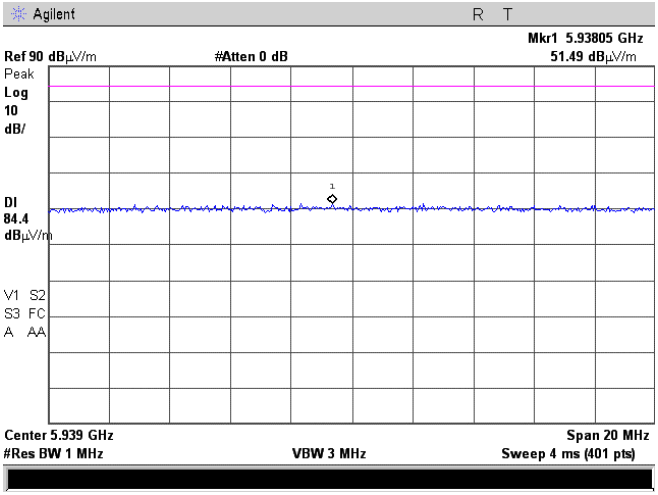
Plot 7.4.32 Radiated emission measurements at the 7th harmonic

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



Plot 7.4.33 Radiated emission measurements at the 7th harmonic

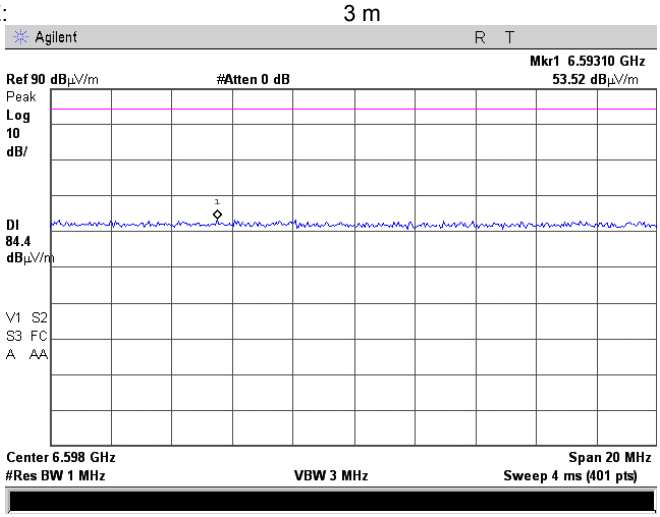
TEST SITE: Semi anechoic chamber
CARRIER FREQUENCY: High
ANTENNA POLARIZATION: Vertical & Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 22.917, Radiated spurious emissions		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

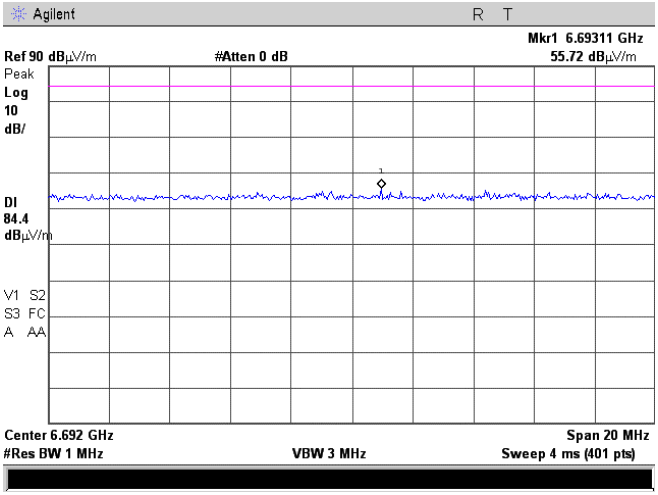
Plot 7.4.34 Radiated emission measurements at the 8th harmonic

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



Plot 7.4.35 Radiated emission measurements at the 8th harmonic

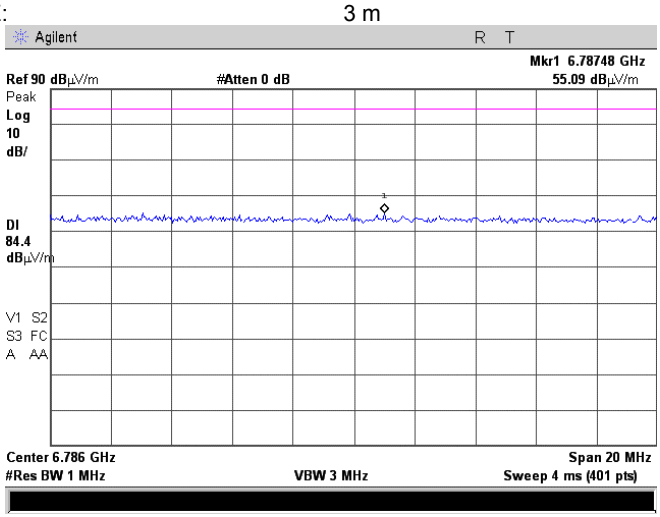
TEST SITE: Semi anechoic chamber
CARRIER FREQUENCY: Mid
ANTENNA POLARIZATION: Vertical & Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 22.917, Radiated spurious emissions		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

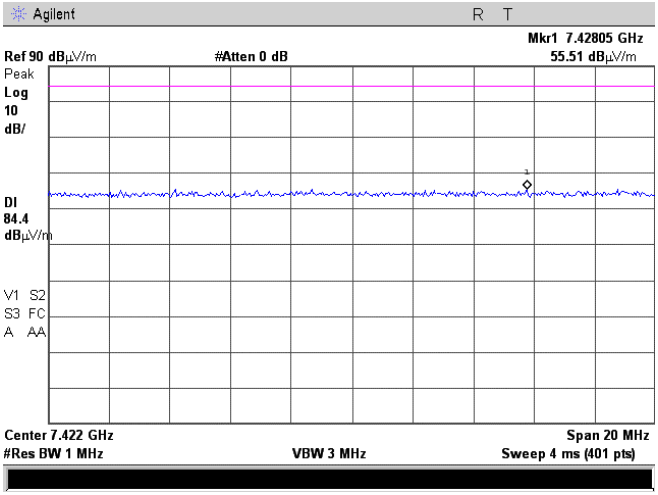
Plot 7.4.36 Radiated emission measurements at the 8th harmonic

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



Plot 7.4.37 Radiated emission measurements at the 9th harmonic

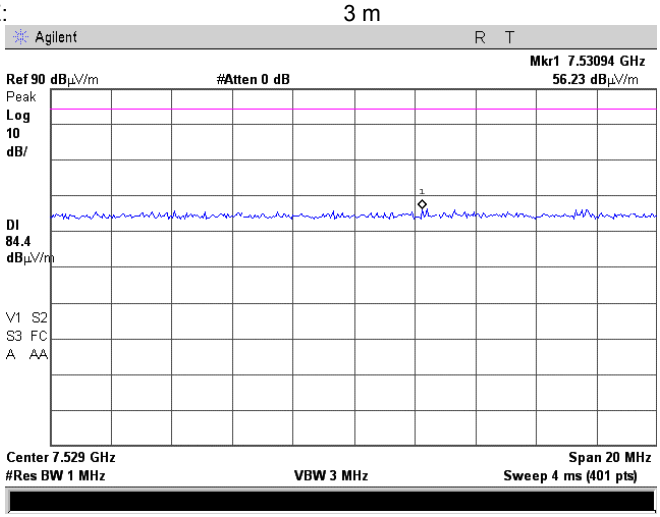
TEST SITE: OATS
CARRIER FREQUENCY: Low
ANTENNA POLARIZATION: Vertical & Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 22.917, Radiated spurious emissions		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

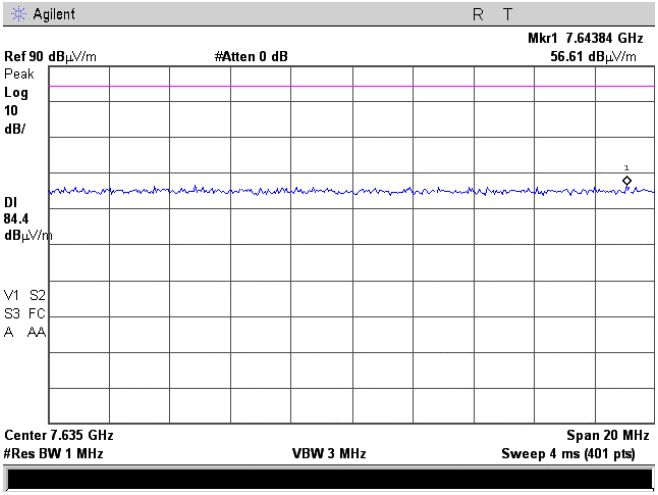
Plot 7.4.38 Radiated emission measurements at the 9th harmonic

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



Plot 7.4.39 Radiated emission measurements at the 9th harmonic

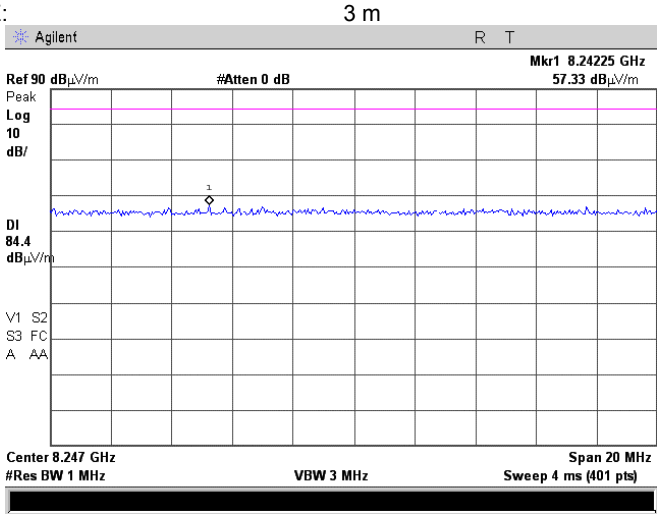
TEST SITE: OATS
CARRIER FREQUENCY: High
ANTENNA POLARIZATION: Vertical & Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 22.917, Radiated spurious emissions		
Test procedure:	FCC part 22, Section 22.917		
Test mode:	Compliance	Verdict:	PASS
Date:	9/10/2008		
Temperature: 25ºC	Air Pressure: 1014 hPa	Relative Humidity: 43 %	Power Supply: 3.8 VDC
Remarks:			

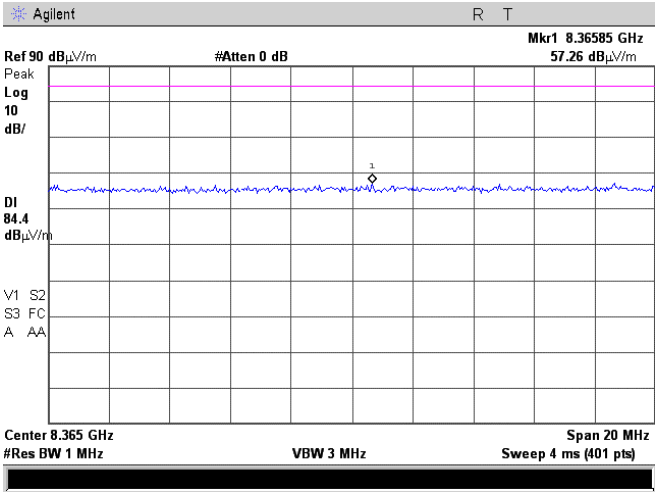
Plot 7.4.40 Radiated emission measurements at the 10th harmonic

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



Plot 7.4.41 Radiated emission measurements at the 10th harmonic

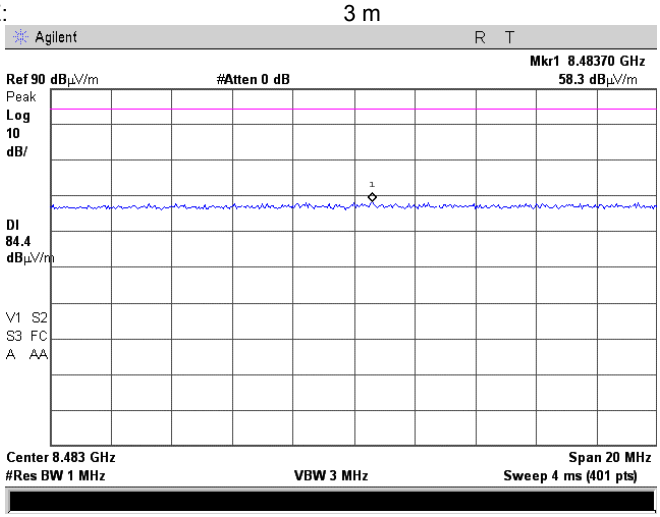
TEST SITE: OATS
CARRIER FREQUENCY: Mid
ANTENNA POLARIZATION: Vertical & Horizontal
TEST DISTANCE: 3 m



Test specification:	**Section 22.917, Radiated spurious emissions**		
Test procedure:	FCC part 22, Section 22.917		
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 10th harmonic

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



Test specification:	Section 22.355, Frequency stability test		
Test procedure:	FCC part 22, Section 22.355, part 2 section 2.1055		
Test mode:	Compliance	Verdict:	PASS
Date:	9/16/2008		
Temperature: 25ºC	Air Pressure: 1013 hPa	Relative Humidity: 45 %	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. The test results are provided in Table 7.5.2.

Table 7.5.1 Frequency stability limits

Assigned frequency, MHz	Limit, ppm	Limits, Hz
824.2	2.5	2061
836.4		2092
848.8		2122

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.

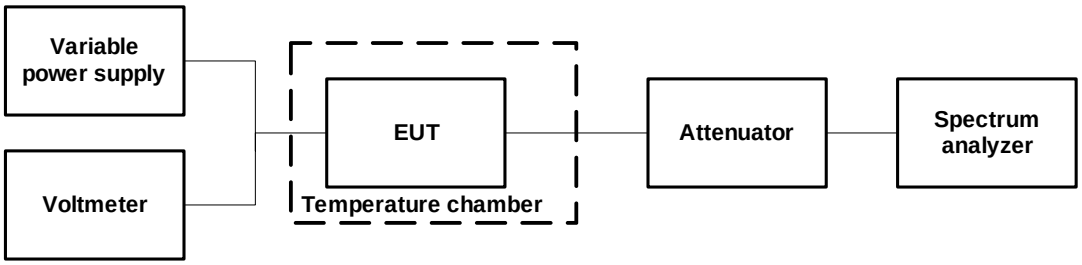
7.5.2.3 The EUT was powered on and carrier frequency was measured at start up moment and then every minute until frequency had been stabilized or 10 minutes elapsed whichever reached the last. The EUT was powered off.

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 22.355, Frequency stability test**		
Test procedure:	FCC part 22, Section 22.355, part 2 section 2.1055		
Test mode:	Compliance	**Verdict:**	PASS
Date:	9/16/2008		
Temperature: 25ºC	**Air Pressure:** 1013 hPa	**Relative Humidity:** 45 %	**Power Supply:** 3.8 VDC
Remarks:			

Table 7.5.2 Frequency stability test results

OPERATING FREQUENCY: 824 - 849 MHz
NOMINAL POWER VOLTAGE: 3.8 VDC
TEMPERATURE STABILIZATION PERIOD: 20 min
POWER DURING TEMPERATURE TRANSITION: Off
SPECTRUM ANALYZER MODE: Counter
RESOLUTION BANDWIDTH: 1 kHz
VIDEO BANDWIDTH: 300 Hz
MODULATION: modulated

T, ºC	Voltage, V	Frequency, MHz							Max frequency drift, Hz		Limit, Hz	Margin, Hz	Verdict
		Start up	1st min	2nd min	3rd min	4th min	5th min	10th min	Positive	Negative			
Low frequency													
-30	nominal	824.698755	824.698665	824.698607	824.698530	824.698480	824.698410	824.698355	469	0		-1592	Pass
-20	nominal	824.699160	NA	NA	NA	NA	NA	824.699120	874	0		-1187	Pass
-10	nominal	824.698820	NA	NA	NA	NA	NA	824.699065	779	0		-1282	Pass
0	nominal	824.698680	824.698350	824.698286	824.698288	824.698315	824.698380	824.698440	393	0		-1668	Pass
10	nominal	824.698595	NA	NA	NA	NA	NA	824.698885	599	0		-1462	Pass
20	15%	824.698375	NA	NA	NA	NA	NA	824.698695	409	0	2061	-1652	Pass
20	nominal	824.698950	NA	NA	NA	NA	NA	824.698287*	663	0		-1398	Pass
20	-15%	824.697640	NA	NA	NA	NA	NA	824.698100	0	-647		-1414	Pass
30	nominal	824.698199	824.698165	824.698132	824.698098	824.698055	824.697965	824.697915	0	-372		-1689	Pass
40	nominal	824.698345	NA	NA	NA	NA	NA	824.698700	414	0		-1647	Pass
50	nominal	824.698975	NA	NA	NA	NA	NA	824.698955	689	0		-1372	Pass
Mid frequency													
-30	nominal	836.522360	836.522410	836.522470	836.522540	836.522560	836.522610	836.522640	0	-595		-1497	Pass
-20	nominal	836.522340	NA	NA	NA	NA	NA	836.522260	0	-695		-1397	Pass
-10	nominal	836.522140	NA	NA	NA	NA	NA	836.522350	0	-815		-1277	Pass
0	nominal	836.522480	836.522530	836.522580	836.522610	836.522660	836.522766	836.522820	0	-475		-1617	Pass
10	nominal	836.522165	NA	NA	NA	NA	NA	836.522425	0	-790		-1302	Pass
20	15%	836.521995	NA	NA	NA	NA	NA	836.522195	0	-960	2092	-1132	Pass
20	nominal	836.522985	NA	NA	NA	NA	NA	836.522955*	30	0		-2062	Pass
20	-15%	836.523130	NA	NA	NA	NA	NA	836.522895	175	-60		-1917	Pass
30	nominal	836.523230	836.523210	836.523205	836.523195	836.523180	836.523170	836.523130	275	0		-1817	Pass
40	nominal	836.522900	NA	NA	NA	NA	NA	836.522820	0	-135		-1957	Pass
50	nominal	836.522795	NA	NA	NA	NA	NA	836.522915	0	-160		-1932	Pass
High frequency													
-30	nominal	848.309320	848.309390	848.309430	848.309460	848.309510	848.309550	848.309950	35	-595		-1527	Pass
-20	nominal	848.310060	NA	NA	NA	NA	NA	848.310380	465	0		-1657	Pass
-10	nominal	848.309680	NA	NA	NA	NA	NA	848.309678	0	-238		-1884	Pass
0	nominal	848.310600	848.310520	848.310460	848.310410	848.310415	848.310420	848.309940	685	0		-1437	Pass
10	nominal	848.310155	NA	NA	NA	NA	NA	848.309395	240	-520		-1602	Pass
20	15%	848.310030	NA	NA	NA	NA	NA	848.310437	522	0	2122	-1600	Pass
20	nominal	848.310410	NA	NA	NA	NA	NA	848.309915*	495	0		-1627	Pass
20	-15%	848.310360	NA	NA	NA	NA	NA	848.310475	560	0		-1562	Pass
30	nominal	848.310340	848.310320	848.310310	848.310310	848.310300	848.310290	848.310290	425	0		-1697	Pass
40	nominal	848.309960	NA	NA	NA	NA	NA	848.309820	45	-95		-2027	Pass
50	nominal	848.310400	NA	NA	NA	NA	NA	848.309455	485	-460		-1637	Pass

* - 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.

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
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 22:2007	Public Mobile 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		

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