

TEST REPORT

ACCORDING TO: FCC CFR 47 PART 90 SUBPART S and PART 15 SUBPART B

FOR:

Motorola Israel Ltd.

Car phone

Product name: Spirit iDEN

Trade name: M710

Model: F321501GNAA

FCC ID:AZ492FT5854

IC:109U-92 FT5854

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1 Applicant information

Client name: Motorola Israel Ltd.
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Telephone: +972 3565 8888
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E-mail: alexb@motorola.com
Contact name: Mr. Alex Babaladze

2 Equipment under test attributes

Product name: Car phone
Product name: Spirit iDEN
Trade name: M710
EUT model: FLN3643A
Kit (including the EUT) model: F321501GNAA
Serial number: 089SGiJ0053
Receipt date 7/02/2006

3 Manufacturer information

Manufacturer name: Motorola Israel Ltd.
Address: 3 Kremenetski street, P.O.B. 25016, 67899 Tel Aviv, Israel
Telephone: +972 3565 8888
Fax: +972 3565 8888
E-Mail: alexb@motorola.com
Contact name: Mr. Alex Babaladze

4 Test details

Project ID: 17112
Location: Hermon Laboratories Ltd. P.O.Box 23, Binyamina
30500, Israel
Test started: 7/02/2006
Test completed: 7/05/2006
Test specification(s): 47CFR part 90, subpart S, part 15 subpart B
Test suite: FCC_90_HH_with_RF_connector (7/15/2004 12:13:21 AM, modified)

5 Tests summary

Test	Status
Transmitter characteristics	
Section 90.635, RF output power	Pass
Section 90.209, 90.691 Occupied bandwidth	Pass
Section 90.691, Emission mask	Pass
Section 90.691, Radiated spurious emissions	Pass
Section 90.691, Conducted spurious emissions	Pass
Section 90.213, Frequency stability	Pass
Section 2.1091, RF radiation exposure evaluation	Not required
Unintentional emissions	
Section 15.107, Conducted emission at AC power port	Pass
Section 15.109, Radiated emission	Pass
Section 15.111, Conducted emission at receiver antenna port	Not required

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. A. Lane, test engineer	July 5, 2006	
Reviewed by:	Mrs. M. Cherniavsky, certification engineer	July 6, 2006	
Approved by:	Mr. M. Nikishin, EMC and Radio group leader	July 7, 2006	

6 EUT description

6.1 General information

The EUT, Spirit iDEN, trade name M710, model number FLN3643A is a car phone. The kit number F321501GNAA (including the EUT), supplied to the customer, is described in Table 6.3 below.

6.2 Ports and lines

Port type	Port description	Connected		Connector type	Qty.	Cable type	Cable length
		From	To				
Power & signal	DC+signal	EUT	Octobus cable	Terminal block	1	Octobus cable, non-detachable	

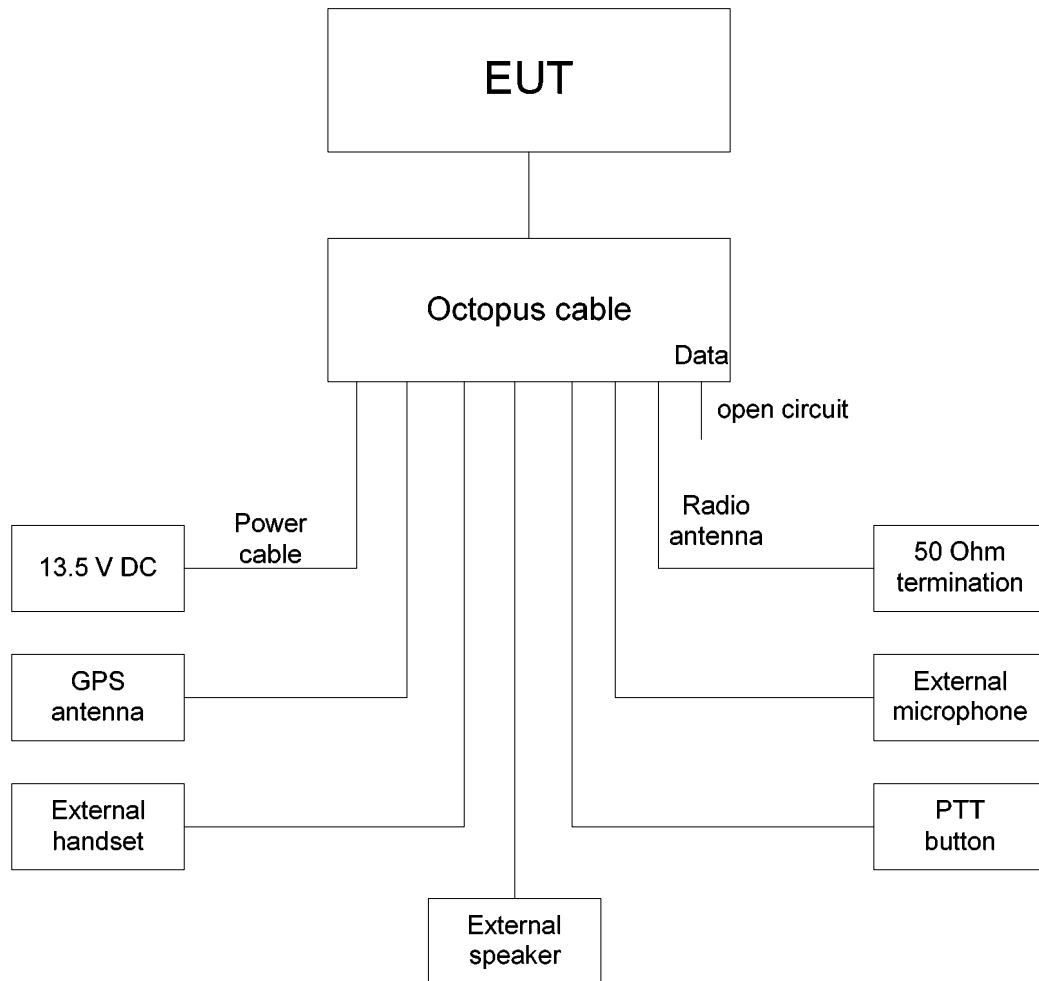
6.3 Support and test equipment

Description	Manufacturer	Model number	Serial number
External microphone	Motorola	FTN6949A	NA
External speaker	Motorola	FTN7136A	205012206
External handset +cradle	Motorola	NA	NA
PTT button	Motorola	FLN9299B	0206B
Antenna GPS	Motorola	A84725	NA
Power cable	Motorola	FKN8408A	NA

6.4 Changes made in the EUT

No changes were implemented.

6.5 Test configuration



6.6 Transmitter characteristics

Type of equipment					
V	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			
V	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		806-825 / 896 – 901 MHz			
Operating frequency range		806.01-824.98 / 896.01 – 900.98 MHz			
RF channel spacing		12.5 kHz			
Maximum rated output power		At transmitter 50 Ω RF output connector			26.9 dBm/26.3 dBm
		Effective radiated power (for equipment with no RF connector)			dBm
Is transmitter output power variable?		No			
	V	Yes		continuous variable	
			V	stepped variable with stepsize	5 dB
				minimum RF power	22 dBm
				maximum RF power	26.9 dBm/26.3 dBm
Antenna connection					
unique coupling	V	standard connector	integral	with temporary RF connector without temporary RF connector	
Antenna/s technical characteristics					
Type	Manufacturer		Model number		Gain
Dual band 800/900	NA		NA		For reference only: +5 dBi - iDEN
Transmitter 99% power bandwidth		18.3 kHz, 43.3 kHz, 68.3 kHz, 93.3 kHz (refer to Annex 1 of this test report)			
Type of modulation		QPSK, 16QAM, 64QAM			
Type of multiplexing		TDMA			
Modulating test signal (baseband)		iDEN			
Maximum transmitter duty cycle in normal use		67%	Tx ON time	60 msec	Period 90 msec
Transmitter duty cycle supplied for test		33.33%	Tx ON time	30 msec	Period 90 msec
Emission designator: 18K3D7W, 43K3D7D, 68K3D7D, 93K3D7D (refer to attached Modulation Characteristics)					
Transmitter power source					
	Battery	Nominal rated voltage	VDC	Battery type	
V	DC	Nominal rated voltage	12 VDC		
	AC mains	Nominal rated voltage	VAC	Frequency	Hz

Test specification:		Section 90.635(d), Maximum output power	
Test procedure:		47 CFR, Section 2.1046; TIA/EIA-603-A, Section 2.2.1	
Test mode:		Compliance	Verdict: PASS
Date & Time:		7/11/2006 9:49 AM	
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

7 Transmitter tests according to 47CFR part 90 requirements

7.1 RF output power test

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. The test results are provided in Table 7.1.2 and the associated plots.

Table 7.1.1 Peak output power limits

Assigned frequency range, MHz	Maximum peak output power	
	W	dBm
806-825/896-901	100	50.0

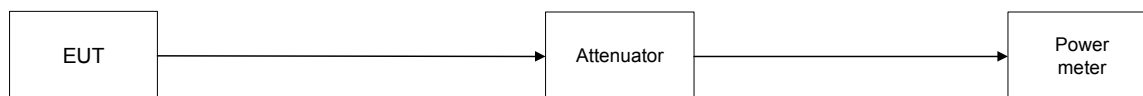
7.1.2 Test procedure

7.1.2.1 The EUT was set up as shown in Figure 7.1.1, energized and its proper operation was checked.

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

7.1.2.3 The peak output power was measured with a power meter as provided in Table 7.1.2 and associated plots.

Figure 7.1.1 Peak output power test setup



Photograph 7.1.1 Peak output power test setup



Test specification:		Section 90.635(d), Maximum output power	
Test procedure:		47 CFR, Section 2.1046; TIA/EIA-603-A, Section 2.2.1	
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/11/2006 9:49 AM		
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Table 7.1.2 Average output power test results

OPERATING FREQUENCY RANGE: 806-825/896-901 MHz
DETECTOR USED: POWER METER
RESOLUTION BANDWIDTH: NA
VIDEO BANDWIDTH: NA
MODULATION: 16QAM
MODULATING SIGNAL: iden
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

Carrier frequency, MHz	Power meter reading, dBm	External attenuation, dB	Average factor dB *	RF output power, dBm	Limit, dBm	Margin, dB	Verdict
806.01250	17.46	included	7.71	25.17	50	-24.83	Pass
813.51250	17.43	included	7.71	25.14	50	-24.86	Pass
824.98750	17.36	included	7.71	25.07	50	-24.93	Pass
896.01875	17.21	included	7.76	24.97	50	-25.03	Pass
898.51875	17.18	included	7.76	24.94	50	-25.06	Pass
900.98125	17.16	included	7.76	24.92	50	-25.08	Pass

Reference numbers of test equipment used

HL 2875	HL 2909						
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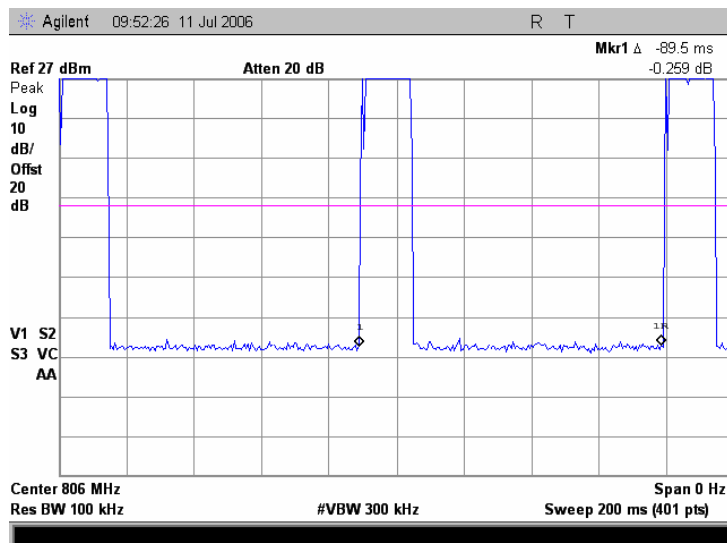
Full description is given in Appendix A.

Average factor was added to power meter reading to compensate for the TDM transmission.

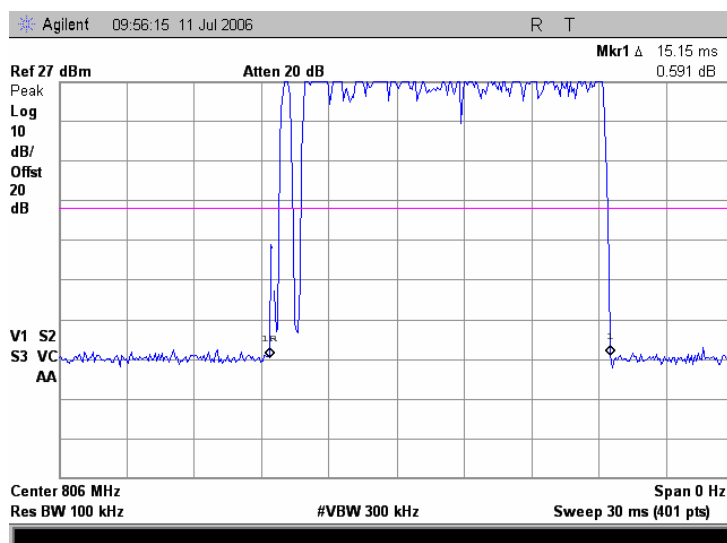
*average factor=10*log (pulse width/pulse period)

Test specification:		Section 90.635(d), Maximum output power	
Test procedure:		47 CFR, Section 2.1046; TIA/EIA-603-A, Section 2.2.1	
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/11/2006 9:49 AM		
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Plot 7.1.1 TDM period at iDEN 800

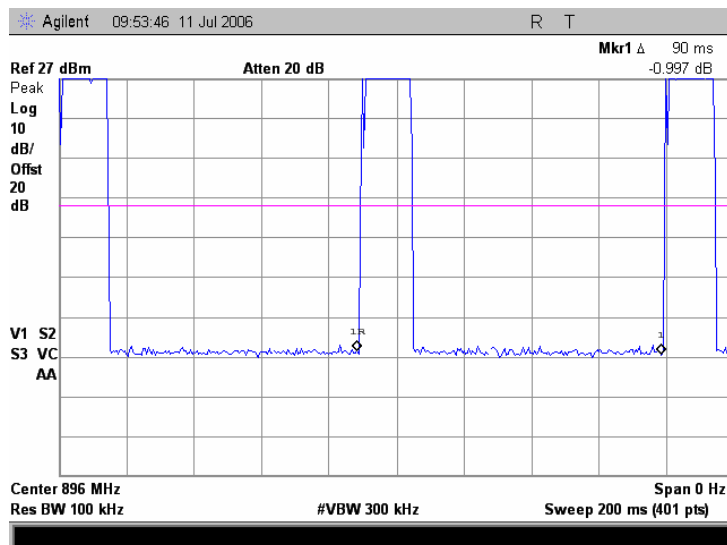


Plot 7.1.2 TDM pulse width at iDEN 800

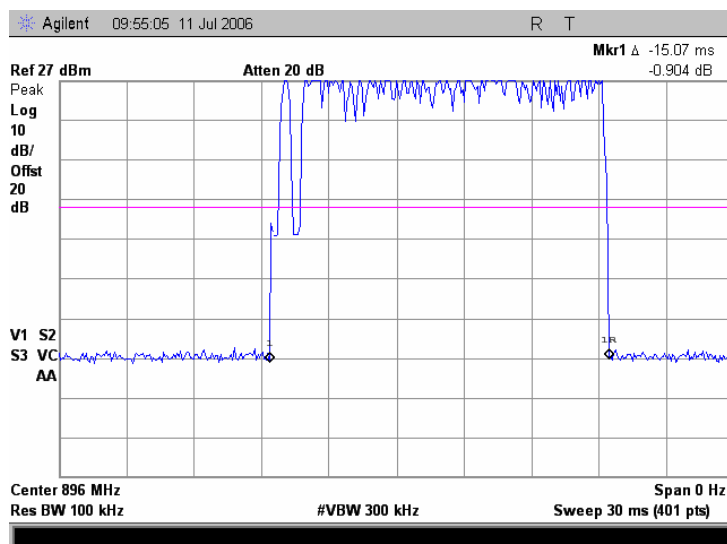


Test specification:	Section 90.635(d), Maximum output power		
Test procedure:	47 CFR, Section 2.1046; TIA/EIA-603-A, Section 2.2.1		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/11/2006 9:49 AM		
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Plot 7.1.3 TDM period at iDEN 900



Plot 7.1.4 TDM pulse width at iDEN 900



Test specification:		Sections 90.209, 90.691, Occupied bandwidth	
Test procedure:		47 CFR, Section 2.1049	
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/3/2006 4:15:09 PM		
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 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. The test results are provided in Table 7.2.2 and the associated plots.

Table 7.2.1 Occupied bandwidth limits

Assigned frequency, MHz	Modulation envelope reference points*, dBc	Maximum allowed bandwidth, kHz
806-825/896-901	26	20/25**

* - Modulation envelope reference points are provided in terms of attenuation below the unmodulated carrier.

** - Note: Refer to Annex 1 of this test report.

7.2.2 Test procedure

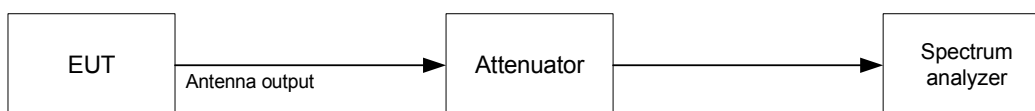
7.2.2.1 The EUT was set up as shown in Figure 7.2.1, energized and its proper operation was checked.

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 provided in Table 7.2.2 and the associated plots.

Figure 7.2.1 Occupied bandwidth test setup



Photograph 7.2.1 Occupied bandwidth test setup



Test specification:		Sections 90.209, 90.691, Occupied bandwidth	
Test procedure:		47 CFR, Section 2.1049	
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/3/2006 4:15:09 PM		
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Table 7.2.2 Occupied bandwidth test results

DETECTOR USED: Peak hold
RESOLUTION BANDWIDTH: 1 MHz
VIDEO BANDWIDTH: 3 MHz
MODULATION ENVELOPE REFERENCE POINTS: 26 dBc
MODULATION: 16QAM
MODULATING SIGNAL: iDEN

Carrier frequency, MHz	Occupied bandwidth, kHz	Limit, kHz	Margin, kHz	Verdict
806.01250	17.95	20	-2.05	Pass
813.51250	17.85	20	-2.15	Pass
824.98750	17.95	20	-2.05	Pass
896.01875	Refer to Annex 1, Annex 2 of this test report			
898.51875				
900.98125				

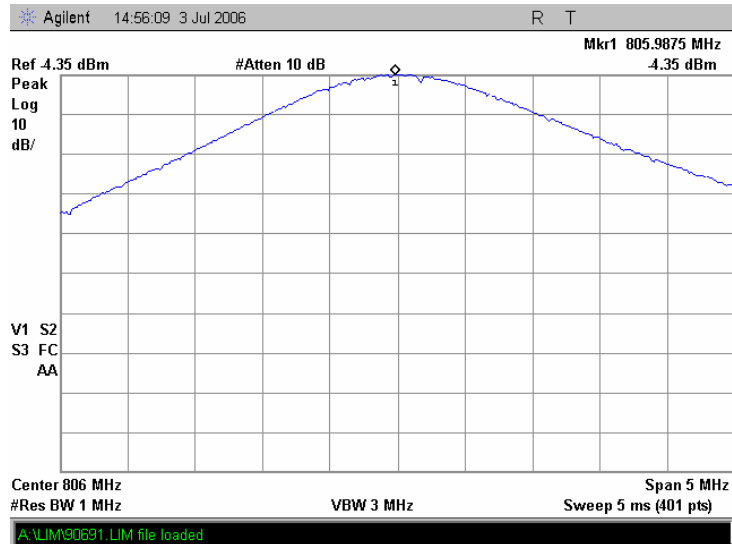
Reference numbers of test equipment used

HL 2909	HL 2634						
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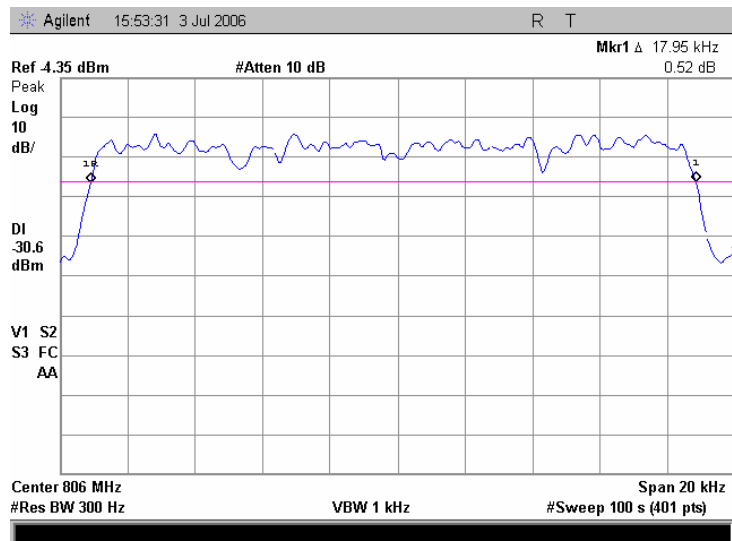
Full description is given in Appendix A.

Test specification:		Sections 90.209, 90.691, Occupied bandwidth	
Test procedure:		47 CFR, Section 2.1049	
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/3/2006 4:15:09 PM		
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Plot 7.2.1 Reference peak power level at low frequency, iDEN 800

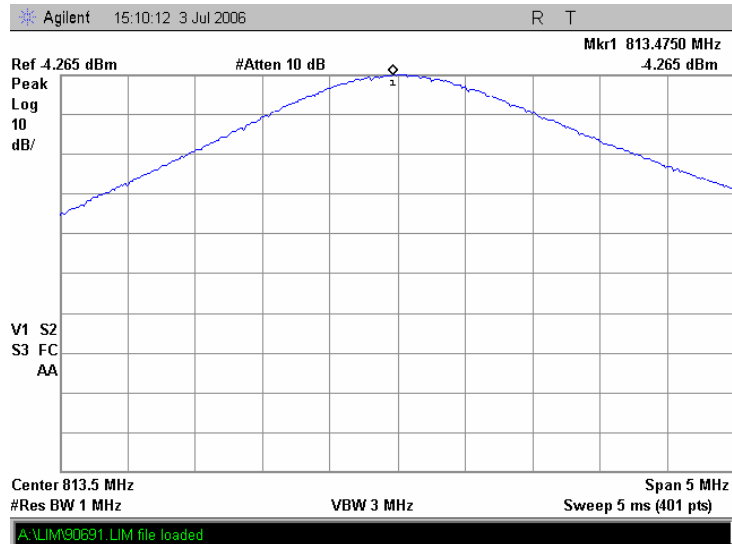


Plot 7.2.2 Occupied bandwidth test result at low frequency, iDEN 800

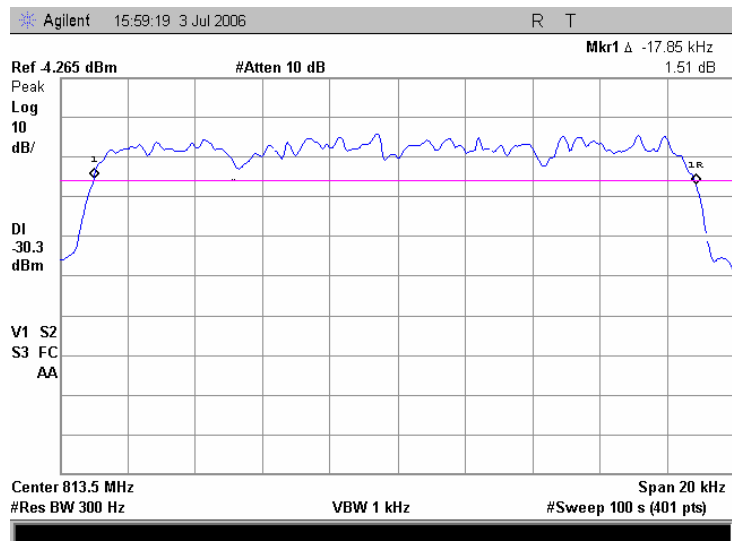


Test specification:		Sections 90.209, 90.691, Occupied bandwidth	
Test procedure:		47 CFR, Section 2.1049	
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/3/2006 4:15:09 PM		
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Plot 7.2.3 Reference peak power level at mid frequency, iDEN 800

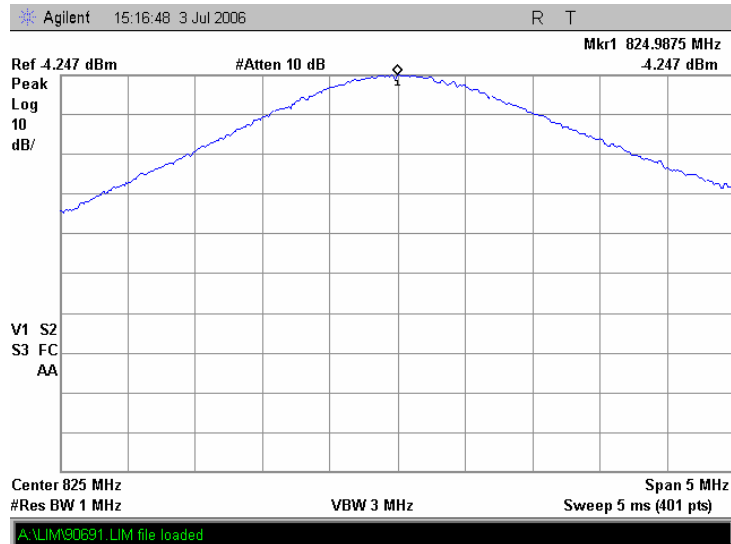


Plot 7.2.4 Occupied bandwidth test result at mid frequency, iDEN 800

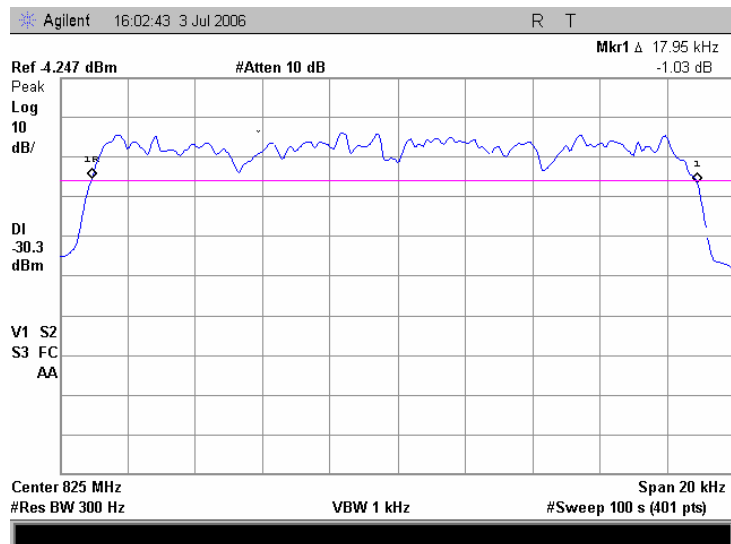


Test specification:		Sections 90.209, 90.691, Occupied bandwidth	
Test procedure:		47 CFR, Section 2.1049	
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/3/2006 4:15:09 PM		
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Plot 7.2.5 Reference peak power level at high frequency, iDEN 800

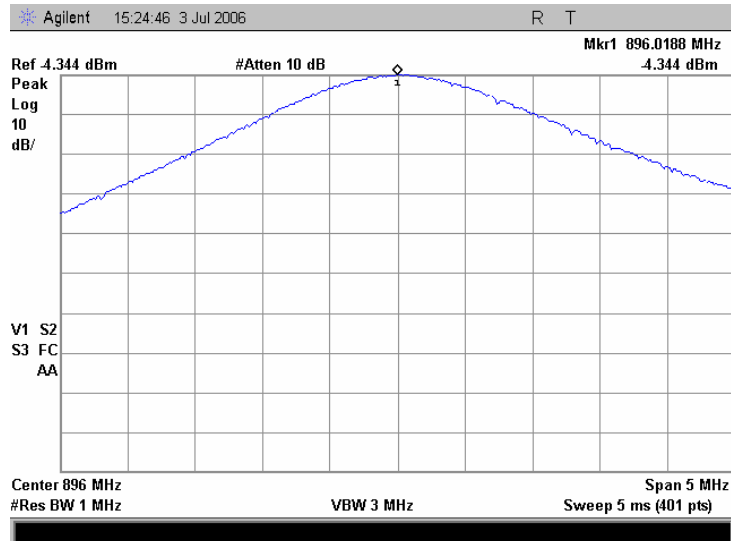


Plot 7.2.6 Occupied bandwidth test result at high frequency, iDEN 800

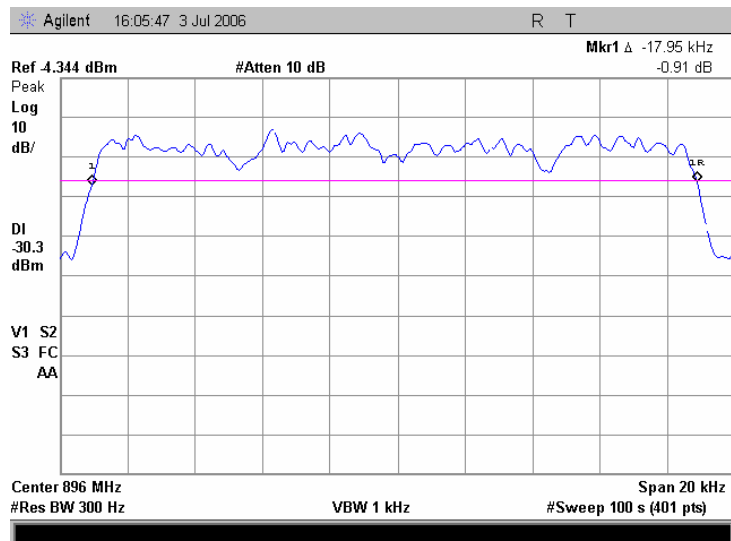


Test specification:		Sections 90.209, 90.691, Occupied bandwidth	
Test procedure:		47 CFR, Section 2.1049	
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/3/2006 4:15:09 PM		
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Plot 7.2.7 Reference peak power level at low frequency, iDEN 900

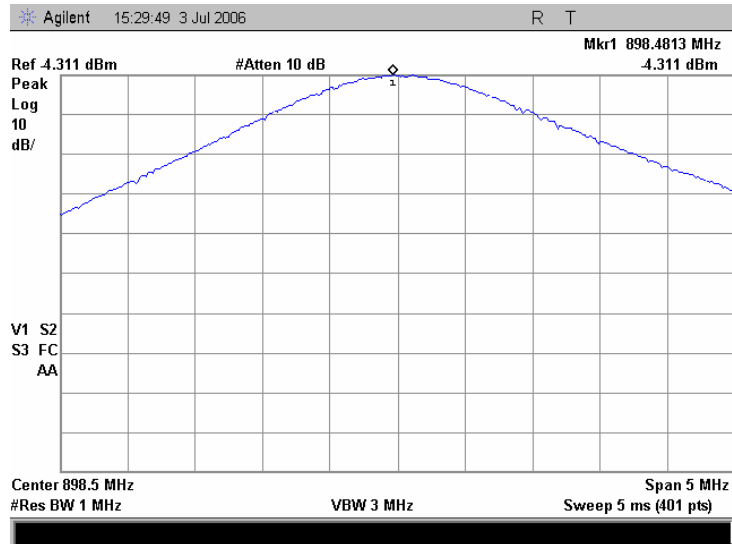


Plot 7.2.8 Occupied bandwidth test result at low frequency, iDEN 900

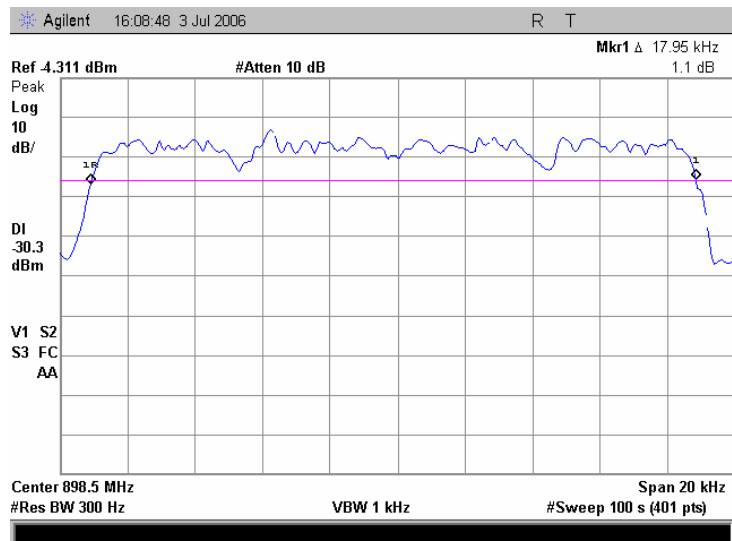


Test specification:		Sections 90.209, 90.691, Occupied bandwidth	
Test procedure:		47 CFR, Section 2.1049	
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/3/2006 4:15:09 PM		
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Plot 7.2.9 Reference peak power level at mid frequency, iDEN 900

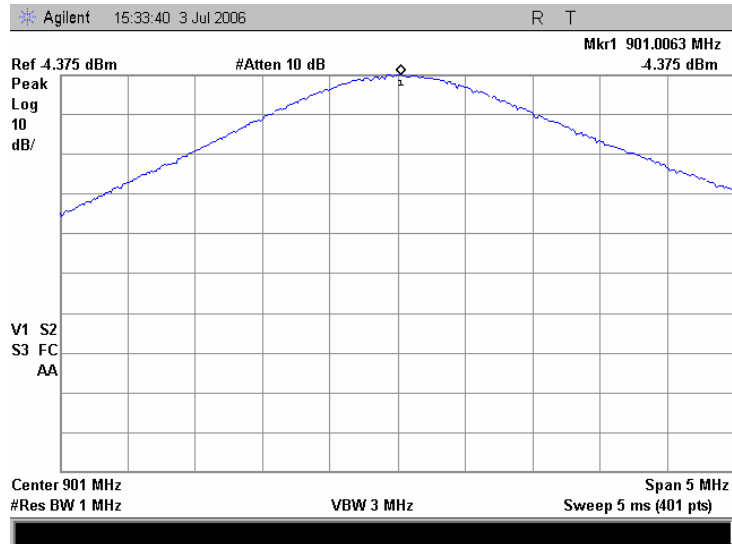


Plot 7.2.10 Occupied bandwidth test result at mid frequency, iDEN 900

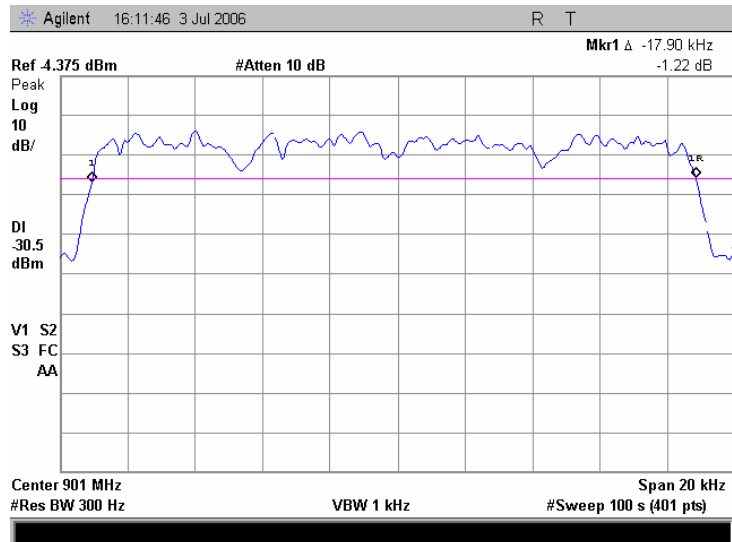


Test specification:		Sections 90.209, 90.691, Occupied bandwidth	
Test procedure:		47 CFR, Section 2.1049	
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/3/2006 4:15:09 PM		
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Plot 7.2.11 reference peak power level at high frequency, iDEN 900



Plot 7.2.12 Occupied bandwidth test result at high frequency, iDEN 900



Test specification:		Section 90.210, 90.669, 90.691, Emission mask	
Test procedure:		47 CFR, Sections 2.1051, 2.1047 and 90.210(m); TIA/EIA-603-A, Section 2.2.13	
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/3/2006 3:42:18 PM		
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

7.3 Emission mask test

7.3.1 General

This test was performed to measure emission mask at RF antenna connector. Specification test limits are given in Table 7.3.1. The test results are provided in the plots of Annex 2– this measurement data were taken from the i760 FCC ID:AZ489FT5844 which is being used in the M710 product.

Table 7.3.1 Emission mask limits

Frequency displacement from carrier	Attenuation below carrier, dBc
Emission mask according to 90.691	
0 – 12.5 kHz	0
12.5-15.2 kHz	36.0 – 80.0*
More than 15.2 kHz	50+10logP(W) or 80.0 whichever is the lesser

* - linearly increase with frequency according to: $116 \cdot \log(f/6.1)$.

** - emission mask includes carrier modulation envelope within ± 250 % of the authorized bandwidth; the frequency range removed beyond ± 250 % of the authorized bandwidth from carrier was investigated as spurious emission

Test specification:		Section 90.210, Radiated spurious emissions	
Test procedure:		47 CFR, Sections 2.1053 and 90.210(m); TIA/EIA-603-A, Section 2.2.12	
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/4/2006 12:26:16 PM		
Temperature: 25 °C	Air Pressure: 1012 hPa	Relative Humidity: 43 %	Power Supply: 12 VDC
Remarks:			

7.4 Radiated spurious emission measurements

7.4.1 General

This test was performed to measure radiated spurious emissions from the EUT. Specification test limits are given in Table 7.4.1.

Table 7.4.1 Radiated spurious emission test limits

Frequency, MHz	Attenuation below carrier, dBc	ERP of spurious, dBm	Equivalent field strength limit @ 3m, dB(μV/m)***
0.009 – 10th harmonic*	50+10logP**	-20	77.4

* - Excluding the in band emission within ± 250 % of the authorized bandwidth from the carrier

** - P is transmitter output power in Watts

*** - Equivalent field strength limit was calculated from maximum allowed ERP of spurious as follows:
 $E = \sqrt{30 \times P \times 1.64} / r$, 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. To find maximum radiation the turntable was rotated 360° and the measuring antenna was rotated around its vertical axis.

7.4.2.3 The worst test results (the lowest margins) were recorded in Table 7.4.2 and shown in the associated plots.

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

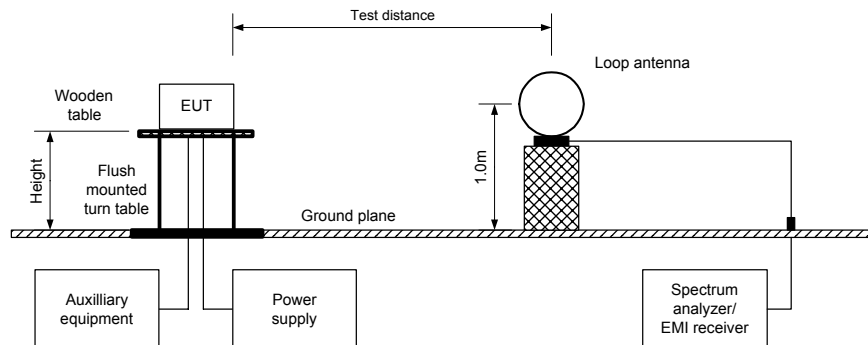
7.4.3.1 The EUT was set up as shown in Figure 7.4.2, energized and the performance check was conducted.

7.4.3.2 The specified frequency range was investigated with antenna connected to spectrum analyzer. To find maximum radiation the turntable was rotated 360° and the measuring antenna height was swept from 1 to 4 m in both, vertical and horizontal, polarizations.

7.4.3.3 The worst test results (the lowest margins) were recorded in Table 7.4.2 and shown in the associated plots.

Test specification:	Section 90.210, Radiated spurious emissions		
Test procedure:	47 CFR, Sections 2.1053 and 90.210(m); TIA/EIA-603-A, Section 2.2.12		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/4/2006 12:26:16 PM		
Temperature: 25 °C	Air Pressure: 1012 hPa	Relative Humidity: 43 %	Power Supply: 12 VDC
Remarks:			

Figure 7.4.1 Setup for spurious emission field strength measurements in 9 kHz to 30 MHz band

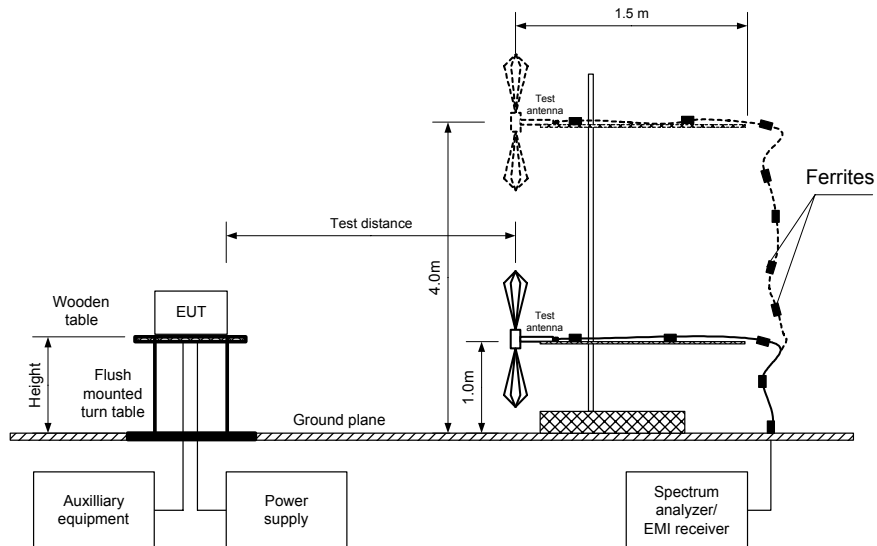


Photograph 7.4.1 Setup for spurious emission field strength measurements in 9 kHz to 30 MHz band



Test specification:	Section 90.210, Radiated spurious emissions		
Test procedure:	47 CFR, Sections 2.1053 and 90.210(m); TIA/EIA-603-A, Section 2.2.12		
Test mode:	Compliance	Verdict: PASS	
Date & Time:	7/4/2006 12:26:16 PM		
Temperature: 25 °C	Air Pressure: 1012 hPa	Relative Humidity: 43 %	Power Supply: 12 VDC
Remarks:			

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



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



Test specification:	Section 90.210, Radiated spurious emissions		
Test procedure:	47 CFR, Sections 2.1053 and 90.210(m); TIA/EIA-603-A, Section 2.2.12		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/4/2006 12:26:16 PM		
Temperature: 25 °C	Air Pressure: 1012 hPa	Relative Humidity: 43 %	Power Supply: 12 VDC
Remarks:			

Table 7.4.2 Spurious emission field strength test results

ASSIGNED FREQUENCY RANGE: 806-824/896-901 MHz
 TEST DISTANCE: 3 m
 TEST SITE: OATS
 EUT HEIGHT: 0.8 m
 INVESTIGATED FREQUENCY RANGE: 0.009 – 10000 MHz
 DETECTOR USED: Peak
 VIDEO BANDWIDTH: > Resolution bandwidth
 TEST ANTENNA TYPE: Active loop (9 kHz – 30 MHz)
 Biconilog (30 MHz – 1000 MHz)
 Double ridged guide (above 1000 MHz)
 MODULATION: 16QAM
 MODULATING SIGNAL: IDEN
 BIT RATE: 54 Mbps
 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
All spurious were found at least 20 dB below the limit							

Verdict: Pass

*- 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

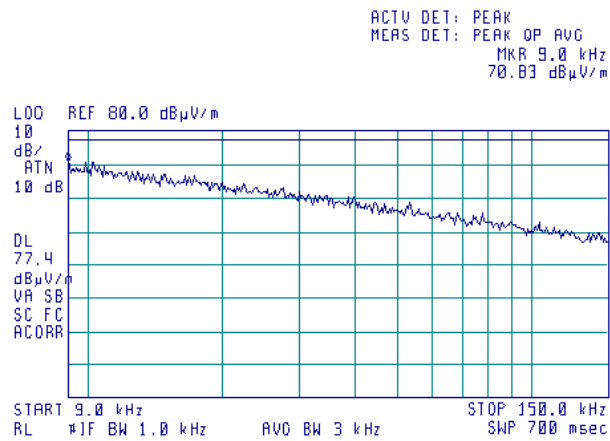
HL 0038	HL 0091	HL 0287	HL 0446	HL 1424	HL 1425	HL 1553	HL 1566
HL 1849	HL 1850	HL 1942	HL 1984	HL 2109	HL 2254	HL 2259	HL 2400
HL 2432	HL 2697						

Full description is given in Appendix A.

Test specification:	Section 90.210, Radiated spurious emissions		
Test procedure:	47 CFR, Sections 2.1053 and 90.210(m); TIA/EIA-603-A, Section 2.2.12		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/4/2006 12:26:16 PM		
Temperature: 25 °C	Air Pressure: 1012 hPa	Relative Humidity: 43 %	Power Supply: 12 VDC
Remarks:			

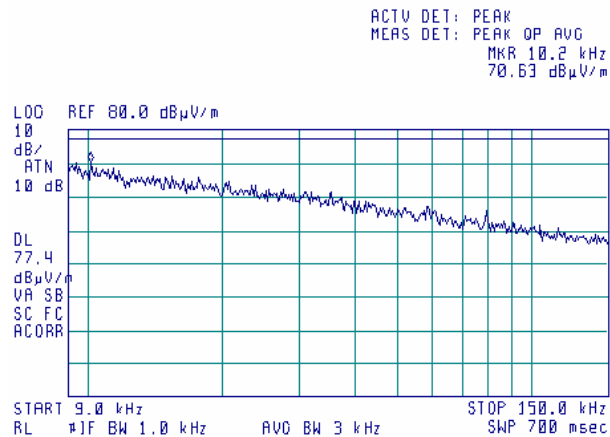
Plot 7.4.1 Radiated emission measurements in 9 - 150 kHz range

TEST SITE: Fully anechoic chamber
CARRIER FREQUENCY: IDEN 800 Low
ANTENNA POLARIZATION: Vertical
TEST DISTANCE: 3 m



Plot 7.4.2 Radiated emission measurements in 9 - 150 kHz range

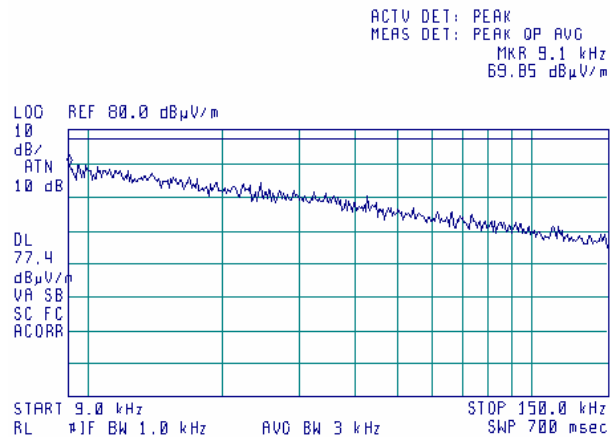
TEST SITE: Fully anechoic chamber
CARRIER FREQUENCY: IDEN 800 Mid
ANTENNA POLARIZATION: Vertical
TEST DISTANCE: 3 m



Test specification:	Section 90.210, Radiated spurious emissions		
Test procedure:	47 CFR, Sections 2.1053 and 90.210(m); TIA/EIA-603-A, Section 2.2.12		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/4/2006 12:26:16 PM		
Temperature: 25 °C	Air Pressure: 1012 hPa	Relative Humidity: 43 %	Power Supply: 12 VDC
Remarks:			

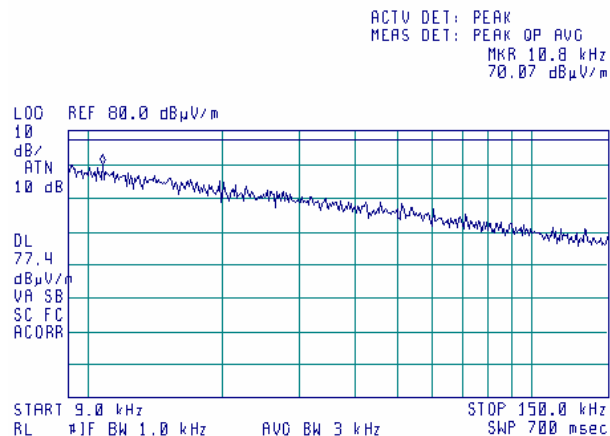
Plot 7.4.3 Radiated emission measurements in 9 - 150 kHz range

TEST SITE: Fully anechoic chamber
CARRIER FREQUENCY: IDEN 800 High
ANTENNA POLARIZATION: Vertical
TEST DISTANCE: 3 m



Plot 7.4.4 Radiated emission measurements in 9 - 150 kHz range

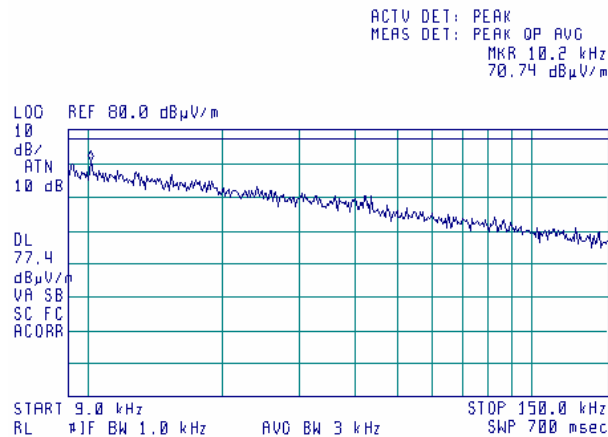
TEST SITE: Fully anechoic chamber
CARRIER FREQUENCY: IDEN 900 Low
ANTENNA POLARIZATION: Vertical
TEST DISTANCE: 3 m



Test specification:	Section 90.210, Radiated spurious emissions		
Test procedure:	47 CFR, Sections 2.1053 and 90.210(m); TIA/EIA-603-A, Section 2.2.12		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/4/2006 12:26:16 PM		
Temperature: 25 °C	Air Pressure: 1012 hPa	Relative Humidity: 43 %	Power Supply: 12 VDC
Remarks:			

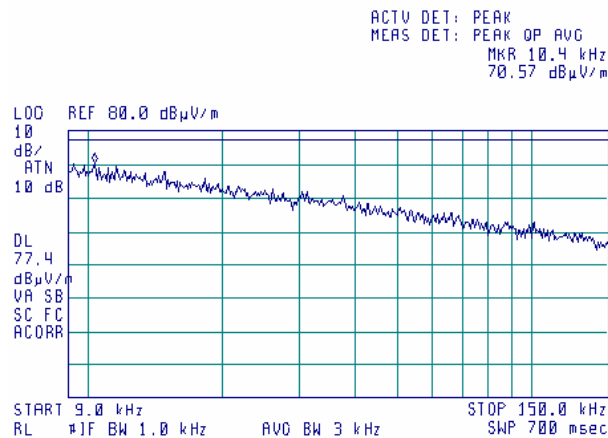
Plot 7.4.5 Radiated emission measurements in 9 - 150 kHz range

TEST SITE: Fully anechoic chamber
CARRIER FREQUENCY: IDEN 900 Mid
ANTENNA POLARIZATION: Vertical
TEST DISTANCE: 3 m



Plot 7.4.6 Radiated emission measurements in 9 - 150 kHz range

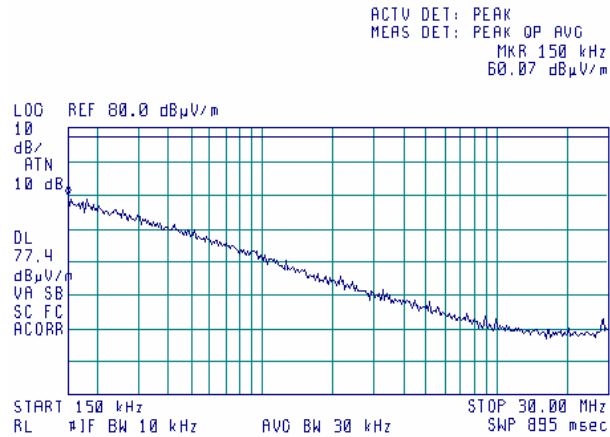
TEST SITE: Fully anechoic chamber
CARRIER FREQUENCY: IDEN 900 High
ANTENNA POLARIZATION: Vertical
TEST DISTANCE: 3 m



Test specification:	Section 90.210, Radiated spurious emissions		
Test procedure:	47 CFR, Sections 2.1053 and 90.210(m); TIA/EIA-603-A, Section 2.2.12		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/4/2006 12:26:16 PM		
Temperature: 25 °C	Air Pressure: 1012 hPa	Relative Humidity: 43 %	Power Supply: 12 VDC
Remarks:			

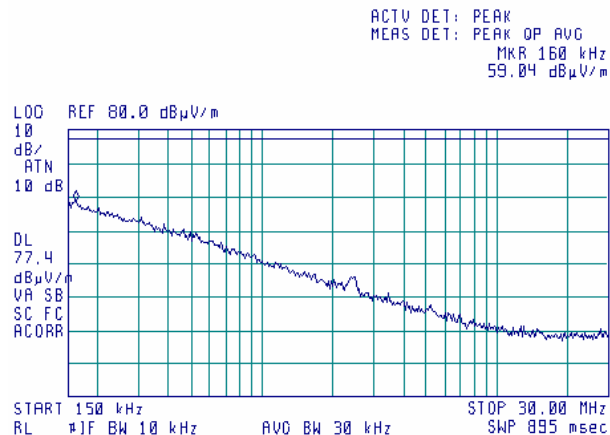
Plot 7.4.7 Radiated emission measurements in 0.15 - 30 MHz range

TEST SITE: Fully anechoic chamber
 CARRIER FREQUENCY: IDEN 800 Low
 ANTENNA POLARIZATION: Vertical
 TEST DISTANCE: 3 m



Plot 7.4.8 Radiated emission measurements in 0.15 - 30 MHz range

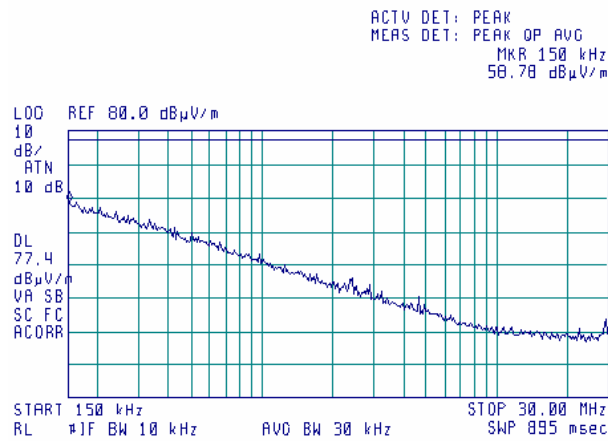
TEST SITE: Fully anechoic chamber
 CARRIER FREQUENCY: IDEN 800 Mid
 ANTENNA POLARIZATION: Vertical
 TEST DISTANCE: 3 m



Test specification:	Section 90.210, Radiated spurious emissions		
Test procedure:	47 CFR, Sections 2.1053 and 90.210(m); TIA/EIA-603-A, Section 2.2.12		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/4/2006 12:26:16 PM		
Temperature: 25 °C	Air Pressure: 1012 hPa	Relative Humidity: 43 %	Power Supply: 12 VDC
Remarks:			

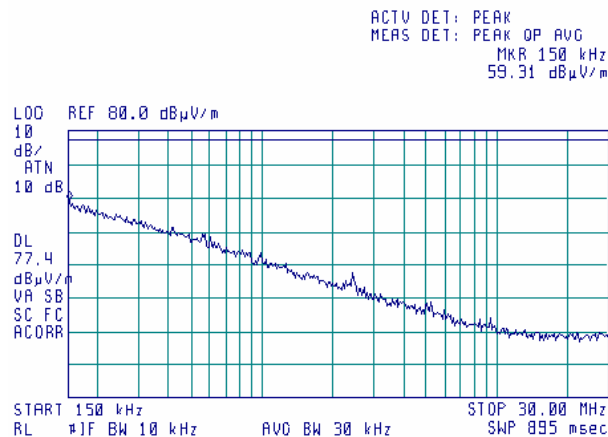
Plot 7.4.9 Radiated emission measurements in 0.15 - 30 MHz range

TEST SITE: Fully anechoic chamber
CARRIER FREQUENCY: IDEN 800 High
ANTENNA POLARIZATION: Vertical
TEST DISTANCE: 3 m



Plot 7.4.10 Radiated emission measurements in 0.15 - 30 MHz range

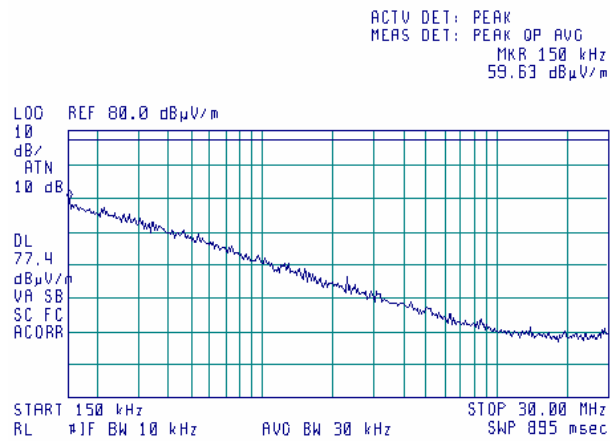
TEST SITE: Fully anechoic chamber
CARRIER FREQUENCY: IDEN 900 Low
ANTENNA POLARIZATION: Vertical
TEST DISTANCE: 3 m



Test specification:	Section 90.210, Radiated spurious emissions		
Test procedure:	47 CFR, Sections 2.1053 and 90.210(m); TIA/EIA-603-A, Section 2.2.12		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/4/2006 12:26:16 PM		
Temperature: 25 °C	Air Pressure: 1012 hPa	Relative Humidity: 43 %	Power Supply: 12 VDC
Remarks:			

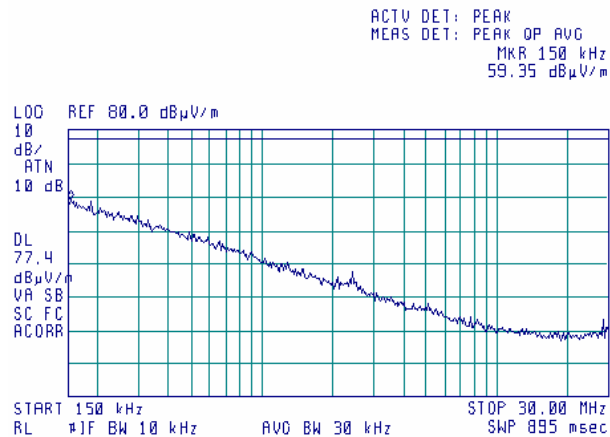
Plot 7.4.11 Radiated emission measurements in 0.15 - 30 MHz range

TEST SITE: Fully anechoic chamber
CARRIER FREQUENCY: IDEN 900 Mid
ANTENNA POLARIZATION: Vertical
TEST DISTANCE: 3 m



Plot 7.4.12 Radiated emission measurements in 0.15 - 30 MHz range

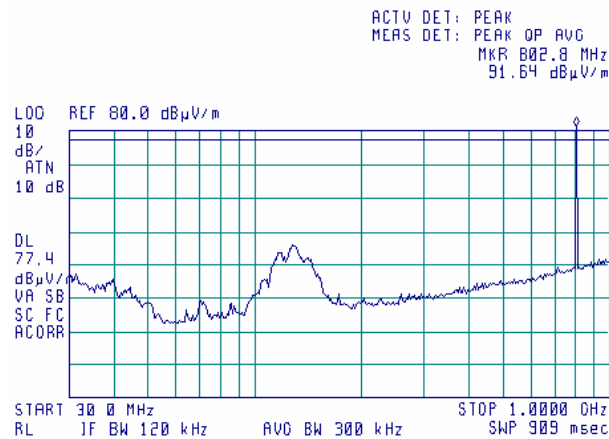
TEST SITE: Fully anechoic chamber
CARRIER FREQUENCY: IDEN 900 High
ANTENNA POLARIZATION: Vertical
TEST DISTANCE: 3 m



Test specification:		Section 90.210, Radiated spurious emissions	
Test procedure:		47 CFR, Sections 2.1053 and 90.210(m); TIA/EIA-603-A, Section 2.2.12	
Test mode:		Compliance	Verdict: PASS
Date & Time:		7/4/2006 12:26:16 PM	
Temperature: 25 °C	Air Pressure: 1012 hPa	Relative Humidity: 43 %	Power Supply: 12 VDC
Remarks:			

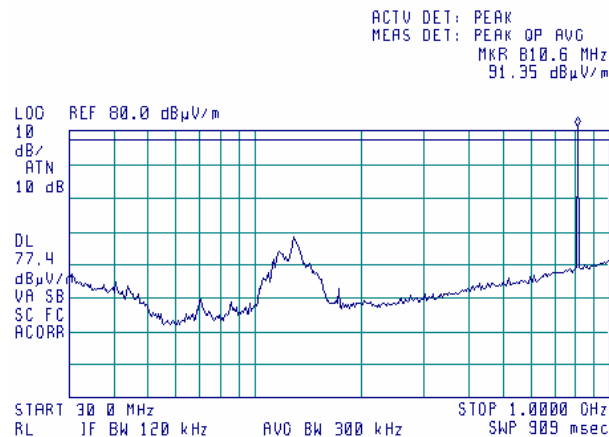
Plot 7.4.13 Radiated emission measurements in 30 - 1000 MHz range

TEST SITE: Fully anechoic chamber
CARRIER FREQUENCY: IDEN 800 Low
ANTENNA POLARIZATION: Vertical and Horizontal
TEST DISTANCE: 3 m



Plot 7.4.14 Radiated emission measurements in 0.15 - 30 MHz range

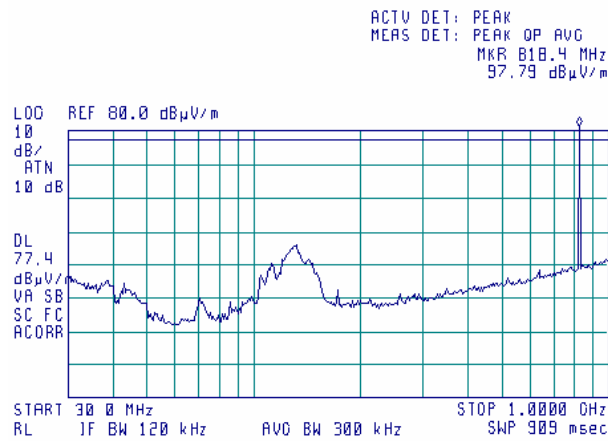
TEST SITE: Fully anechoic chamber
CARRIER FREQUENCY: IDEN 800 Mid
ANTENNA POLARIZATION: Vertical and Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 90.210, Radiated spurious emissions		
Test procedure:	47 CFR, Sections 2.1053 and 90.210(m); TIA/EIA-603-A, Section 2.2.12		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/4/2006 12:26:16 PM		
Temperature: 25 °C	Air Pressure: 1012 hPa	Relative Humidity: 43 %	Power Supply: 12 VDC
Remarks:			

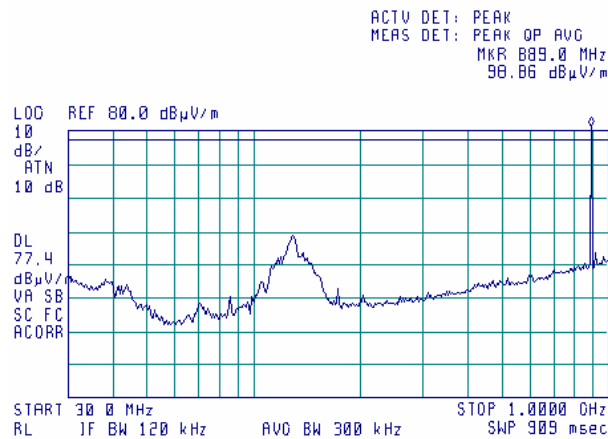
Plot 7.4.15 Radiated emission measurements in 30 - 1000 MHz range

TEST SITE: Fully anechoic chamber
CARRIER FREQUENCY: IDEN 800 High
ANTENNA POLARIZATION: Vertical and Horizontal
TEST DISTANCE: 3 m



Plot 7.4.16 Radiated emission measurements in 30 - 1000 MHz range

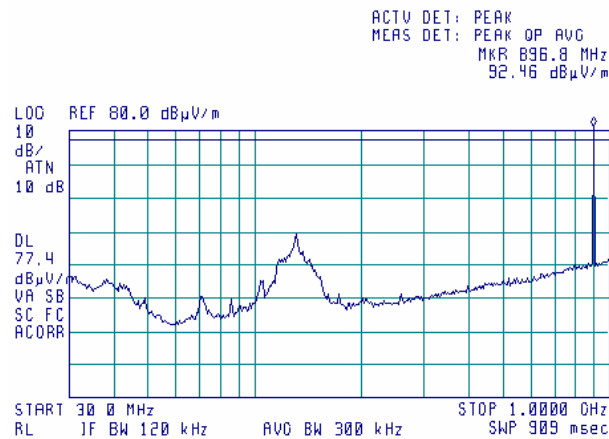
TEST SITE: Fully anechoic chamber
CARRIER FREQUENCY: IDEN 900 Low
ANTENNA POLARIZATION: Vertical and Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 90.210, Radiated spurious emissions		
Test procedure:	47 CFR, Sections 2.1053 and 90.210(m); TIA/EIA-603-A, Section 2.2.12		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/4/2006 12:26:16 PM		
Temperature: 25 °C	Air Pressure: 1012 hPa	Relative Humidity: 43 %	Power Supply: 12 VDC
Remarks:			

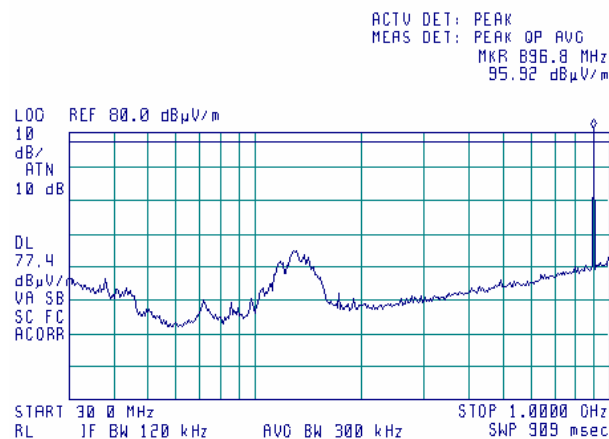
Plot 7.4.17 Radiated emission measurements in 30 - 1000 MHz range

TEST SITE: Fully anechoic chamber
CARRIER FREQUENCY: IDEN 900 Mid
ANTENNA POLARIZATION: Vertical and Horizontal
TEST DISTANCE: 3 m



Plot 7.4.18 Radiated emission measurements in 30 - 1000 MHz range

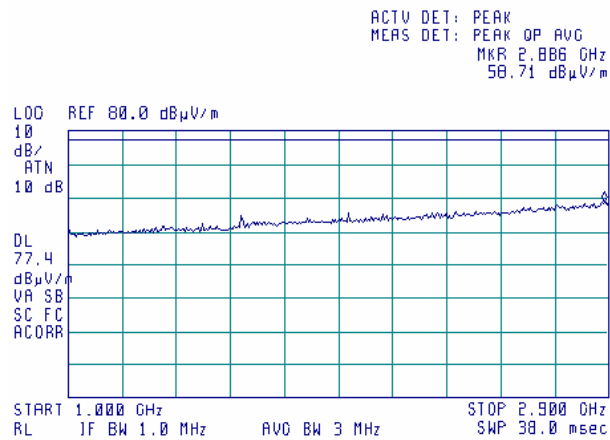
TEST SITE: Fully anechoic chamber
CARRIER FREQUENCY: IDEN 900 High
ANTENNA POLARIZATION: Vertical and Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 90.210, Radiated spurious emissions		
Test procedure:	47 CFR, Sections 2.1053 and 90.210(m); TIA/EIA-603-A, Section 2.2.12		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/4/2006 12:26:16 PM		
Temperature: 25 °C	Air Pressure: 1012 hPa	Relative Humidity: 43 %	Power Supply: 12 VDC
Remarks:			

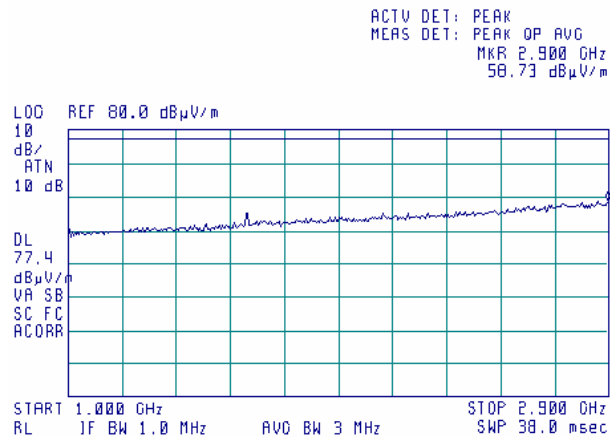
Plot 7.4.19 Radiated emission measurements in 1000 – 2900 MHz range

TEST SITE: Fully anechoic chamber
CARRIER FREQUENCY: IDEN 800 Low
ANTENNA POLARIZATION: Vertical and Horizontal
TEST DISTANCE: 3 m



Plot 7.4.20 Radiated emission measurements in 1000 – 2900 MHz range

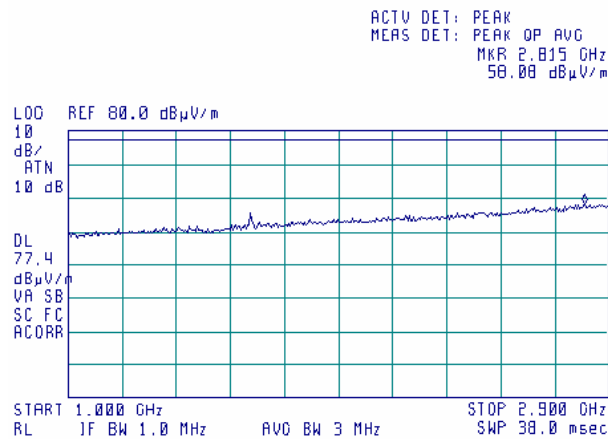
TEST SITE: Fully anechoic chamber
CARRIER FREQUENCY: IDEN 800 Mid
ANTENNA POLARIZATION: Vertical and Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 90.210, Radiated spurious emissions		
Test procedure:	47 CFR, Sections 2.1053 and 90.210(m); TIA/EIA-603-A, Section 2.2.12		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/4/2006 12:26:16 PM		
Temperature: 25 °C	Air Pressure: 1012 hPa	Relative Humidity: 43 %	Power Supply: 12 VDC
Remarks:			

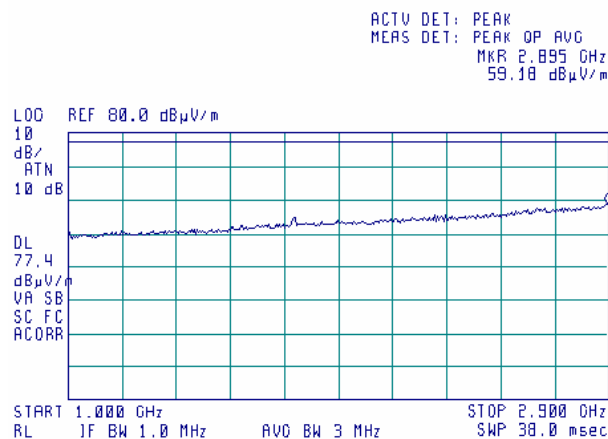
Plot 7.4.21 Radiated emission measurements in 1000 – 2900 MHz range

TEST SITE: Fully anechoic chamber
CARRIER FREQUENCY: IDEN 800 High
ANTENNA POLARIZATION: Vertical and Horizontal
TEST DISTANCE: 3 m



Plot 7.4.22 Radiated emission measurements in 1000 – 2900 MHz range

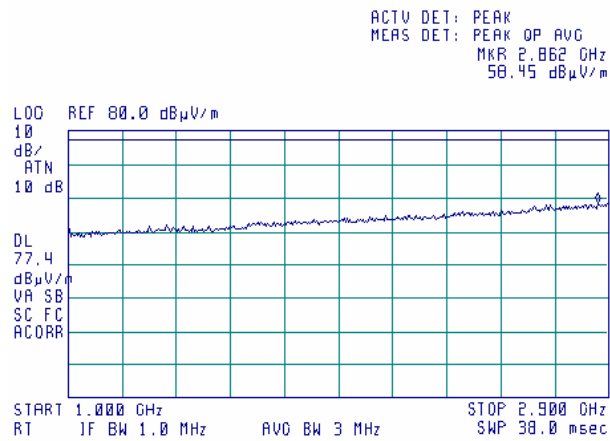
TEST SITE: Fully anechoic chamber
CARRIER FREQUENCY: IDEN 900 Low
ANTENNA POLARIZATION: Vertical and Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 90.210, Radiated spurious emissions		
Test procedure:	47 CFR, Sections 2.1053 and 90.210(m); TIA/EIA-603-A, Section 2.2.12		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/4/2006 12:26:16 PM		
Temperature: 25 °C	Air Pressure: 1012 hPa	Relative Humidity: 43 %	Power Supply: 12 VDC
Remarks:			

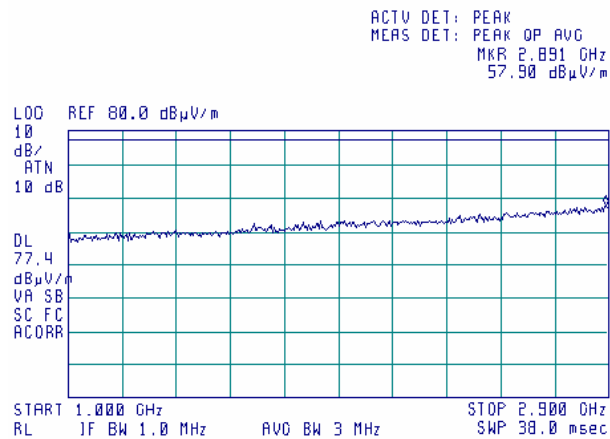
Plot 7.4.23 Radiated emission measurements in 1000 – 2900 MHz range

TEST SITE: Fully anechoic chamber
CARRIER FREQUENCY: IDEN 900 Mid
ANTENNA POLARIZATION: Vertical and Horizontal
TEST DISTANCE: 3 m



Plot 7.4.24 Radiated emission measurements in 1000 – 2900 MHz range

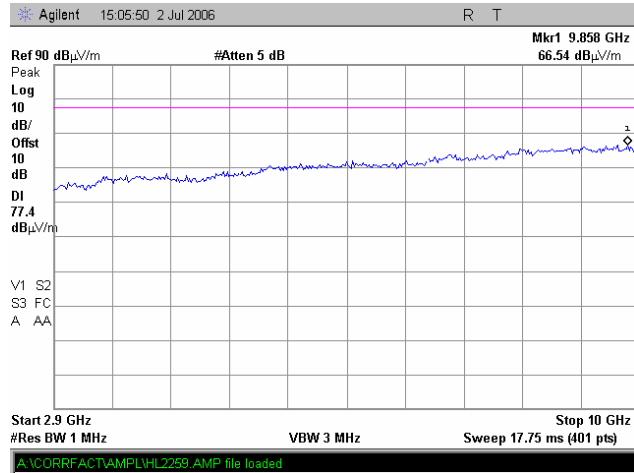
TEST SITE: Fully anechoic chamber
CARRIER FREQUENCY: IDEN 900 High
ANTENNA POLARIZATION: Vertical and Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 90.210, Radiated spurious emissions		
Test procedure:	47 CFR, Sections 2.1053 and 90.210(m); TIA/EIA-603-A, Section 2.2.12		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/4/2006 12:26:16 PM		
Temperature: 25 °C	Air Pressure: 1012 hPa	Relative Humidity: 43 %	Power Supply: 12 VDC
Remarks:			

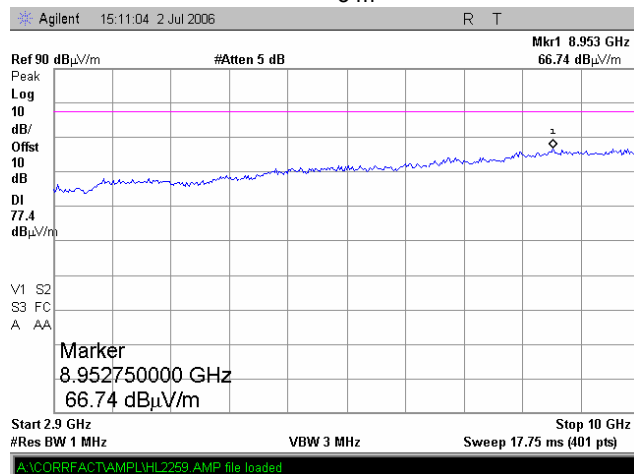
Plot 7.4.25 Radiated emission measurements in 2900 – 10000 MHz range

TEST SITE: Fully anechoic chamber
CARRIER FREQUENCY: IDEN 800 Low
ANTENNA POLARIZATION: Vertical and Horizontal
TEST DISTANCE: 3 m



Plot 7.4.26 Radiated emission measurements in 2900 – 10000 MHz range

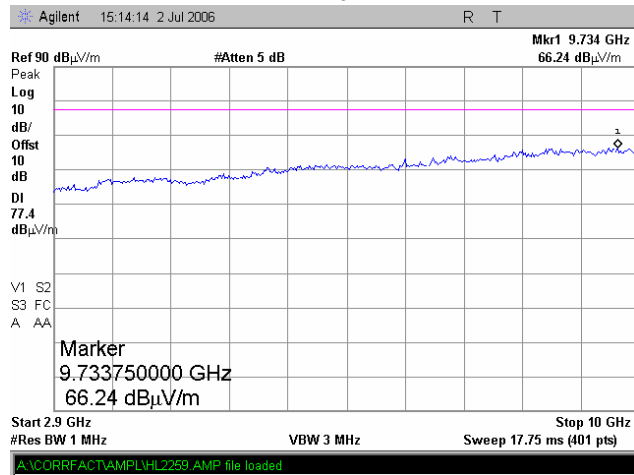
TEST SITE: Fully anechoic chamber
CARRIER FREQUENCY: IDEN 800 Mid
ANTENNA POLARIZATION: Vertical and Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 90.210, Radiated spurious emissions		
Test procedure:	47 CFR, Sections 2.1053 and 90.210(m); TIA/EIA-603-A, Section 2.2.12		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/4/2006 12:26:16 PM		
Temperature: 25 °C	Air Pressure: 1012 hPa	Relative Humidity: 43 %	Power Supply: 12 VDC
Remarks:			

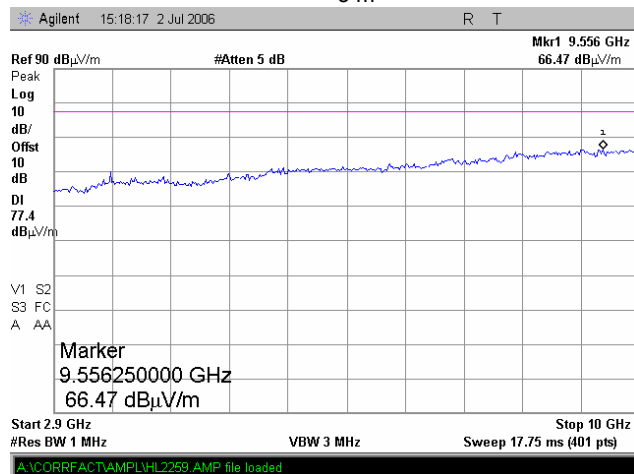
Plot 7.4.27 Radiated emission measurements in 2900 – 10000 MHz range

TEST SITE: Fully anechoic chamber
CARRIER FREQUENCY: IDEN 800 High
ANTENNA POLARIZATION: Vertical and Horizontal
TEST DISTANCE: 3 m



Plot 7.4.28 Radiated emission measurements in 2900 – 10000 MHz range

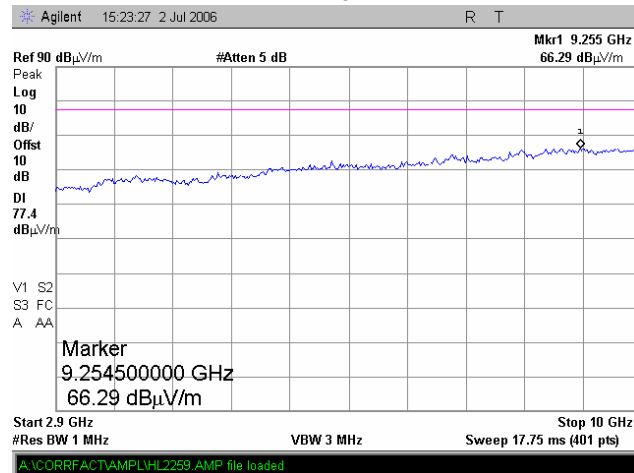
TEST SITE: Fully anechoic chamber
CARRIER FREQUENCY: IDEN 900 Low
ANTENNA POLARIZATION: Vertical and Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 90.210, Radiated spurious emissions		
Test procedure:	47 CFR, Sections 2.1053 and 90.210(m); TIA/EIA-603-A, Section 2.2.12		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/4/2006 12:26:16 PM		
Temperature: 25 °C	Air Pressure: 1012 hPa	Relative Humidity: 43 %	Power Supply: 12 VDC
Remarks:			

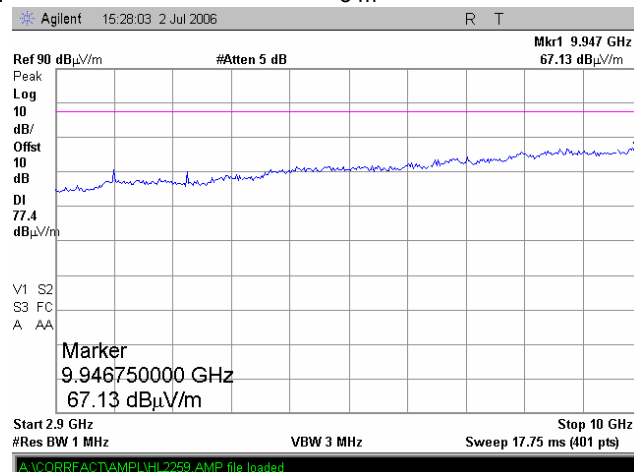
Plot 7.4.29 Radiated emission measurements in 2900 – 10000 MHz range

TEST SITE: Fully anechoic chamber
CARRIER FREQUENCY: IDEN 900 Mid
ANTENNA POLARIZATION: Vertical and Horizontal
TEST DISTANCE: 3 m



Plot 7.4.30 Radiated emission measurements in 2900 – 10000 MHz range

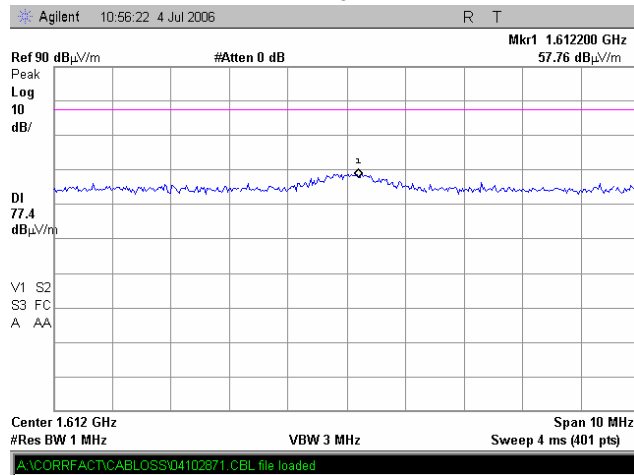
TEST SITE: Fully anechoic chamber
CARRIER FREQUENCY: IDEN 900 High
ANTENNA POLARIZATION: Vertical and Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 90.210, Radiated spurious emissions		
Test procedure:	47 CFR, Sections 2.1053 and 90.210(m); TIA/EIA-603-A, Section 2.2.12		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/4/2006 12:26:16 PM		
Temperature: 25 °C	Air Pressure: 1012 hPa	Relative Humidity: 43 %	Power Supply: 12 VDC
Remarks:			

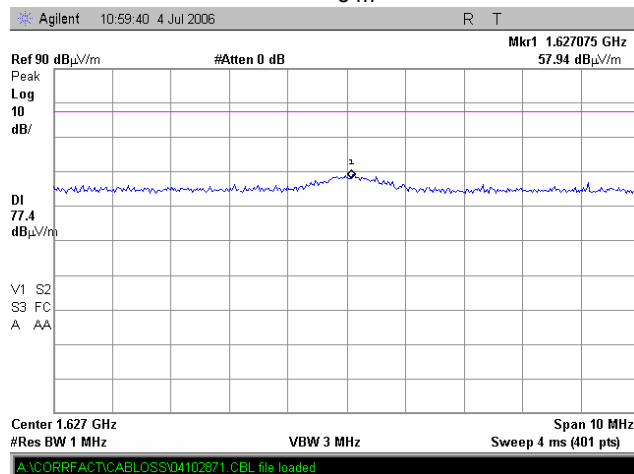
Plot 7.4.31 Radiated emission measurements at the 2nd harmonic iDEN 800

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



Plot 7.4.32 Radiated emission measurements at the 2nd harmonic iDEN 800

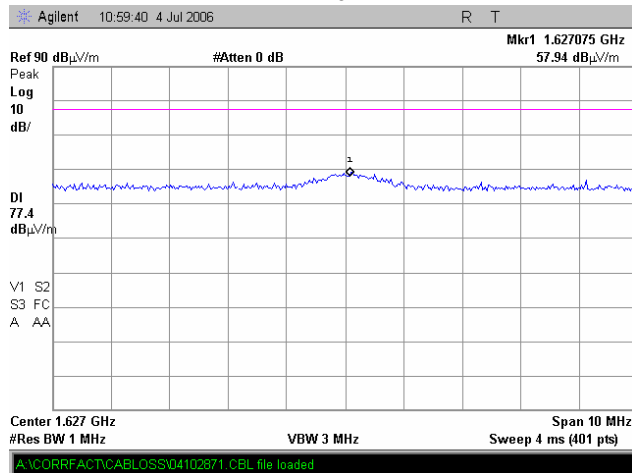
TEST SITE: OATS
CARRIER FREQUENCY: Mid
ANTENNA POLARIZATION: Vertical & Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 90.210, Radiated spurious emissions		
Test procedure:	47 CFR, Sections 2.1053 and 90.210(m); TIA/EIA-603-A, Section 2.2.12		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/4/2006 12:26:16 PM		
Temperature: 25 °C	Air Pressure: 1012 hPa	Relative Humidity: 43 %	Power Supply: 12 VDC
Remarks:			

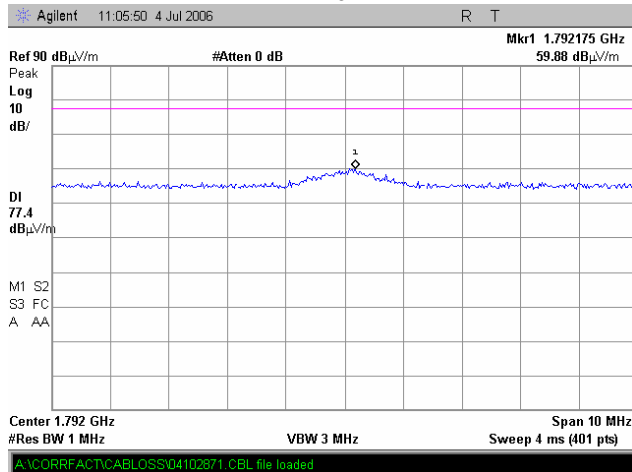
Plot 7.4.33 Radiated emission measurements at the 2nd harmonic iDEN 800

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



Plot 7.4.34 Radiated emission measurements at the 2nd harmonic iDEN 900

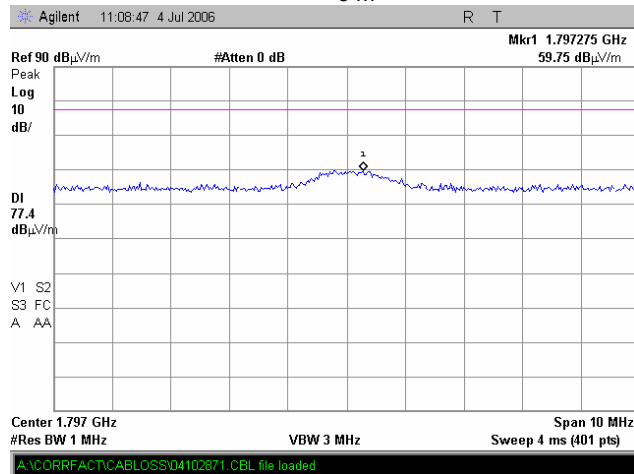
TEST SITE: OATS
CARRIER FREQUENCY: Low
ANTENNA POLARIZATION: Vertical & Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 90.210, Radiated spurious emissions		
Test procedure:	47 CFR, Sections 2.1053 and 90.210(m); TIA/EIA-603-A, Section 2.2.12		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/4/2006 12:26:16 PM		
Temperature: 25 °C	Air Pressure: 1012 hPa	Relative Humidity: 43 %	Power Supply: 12 VDC
Remarks:			

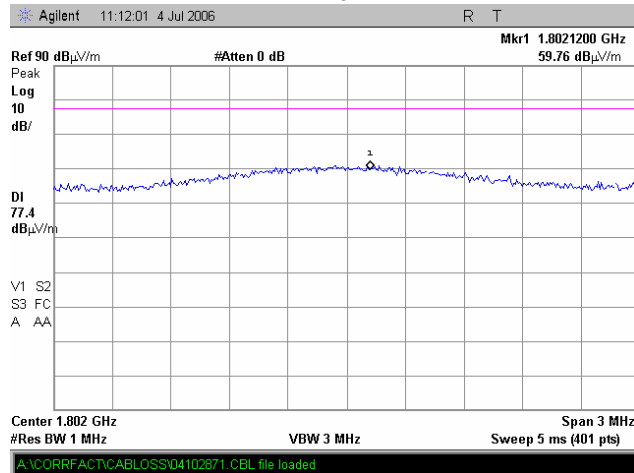
Plot 7.4.35 Radiated emission measurements at the 2nd harmonic iDEN 900

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



Plot 7.4.36 Radiated emission measurements at the 2nd harmonic iDEN 900

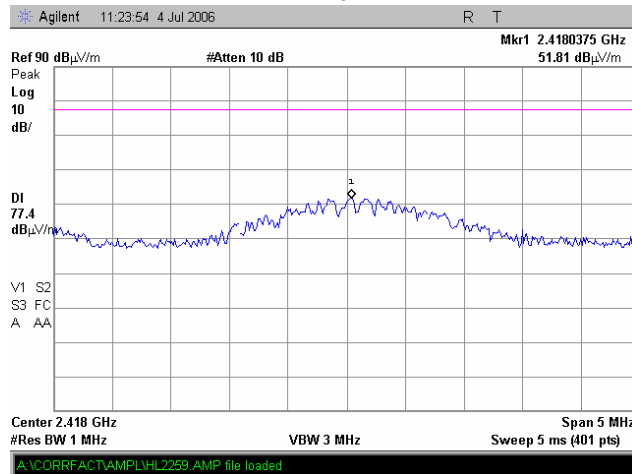
TEST SITE: OATS
CARRIER FREQUENCY: High
ANTENNA POLARIZATION: Vertical & Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 90.210, Radiated spurious emissions		
Test procedure:	47 CFR, Sections 2.1053 and 90.210(m); TIA/EIA-603-A, Section 2.2.12		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/4/2006 12:26:16 PM		
Temperature: 25 °C	Air Pressure: 1012 hPa	Relative Humidity: 43 %	Power Supply: 12 VDC
Remarks:			

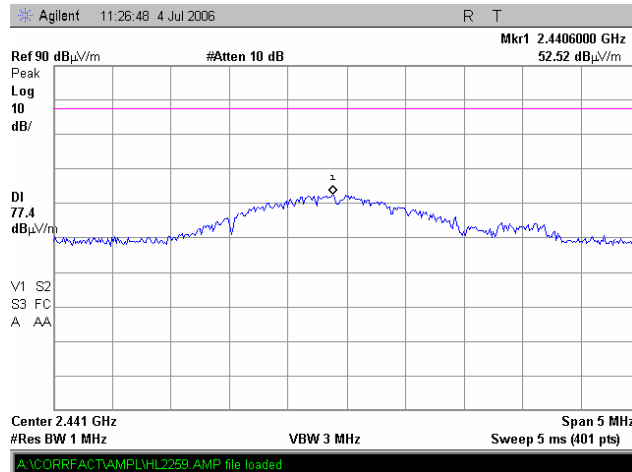
Plot 7.4.37 Radiated emission measurements at the 3rd harmonic iDEN 800

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



Plot 7.4.38 Radiated emission measurements at the 3rd harmonic iDEN 800

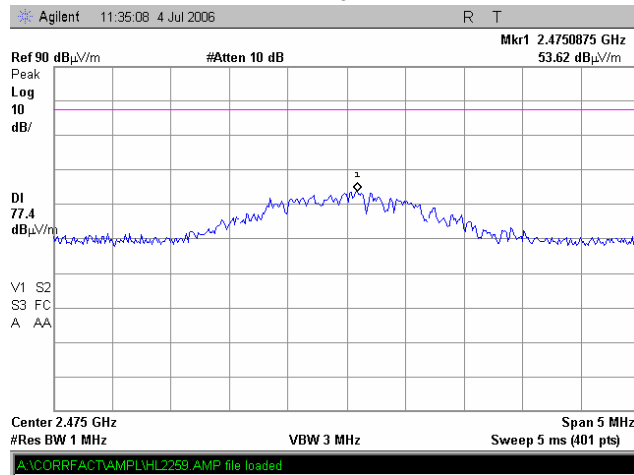
TEST SITE: OATS
CARRIER FREQUENCY: Mid
ANTENNA POLARIZATION: Vertical & Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 90.210, Radiated spurious emissions		
Test procedure:	47 CFR, Sections 2.1053 and 90.210(m); TIA/EIA-603-A, Section 2.2.12		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/4/2006 12:26:16 PM		
Temperature: 25 °C	Air Pressure: 1012 hPa	Relative Humidity: 43 %	Power Supply: 12 VDC
Remarks:			

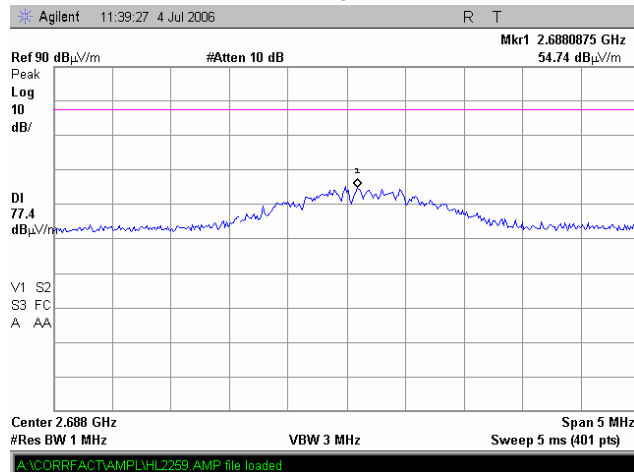
Plot 7.4.39 Radiated emission measurements at the 3rd harmonic iDEN 800

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



Plot 7.4.40 Radiated emission measurements at the 3rd harmonic iDEN 900

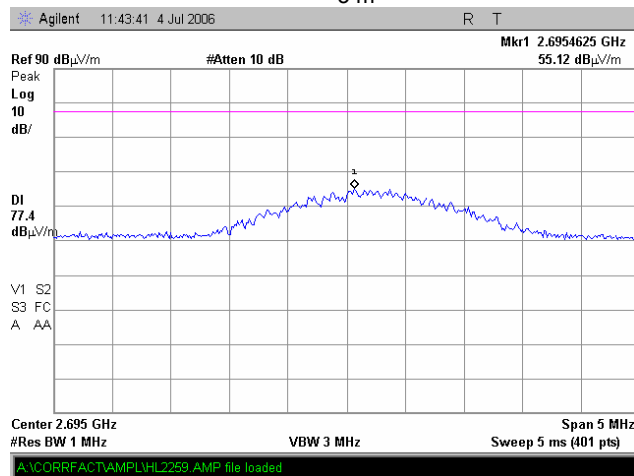
TEST SITE: OATS
CARRIER FREQUENCY: Low
ANTENNA POLARIZATION: Vertical & Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 90.210, Radiated spurious emissions		
Test procedure:	47 CFR, Sections 2.1053 and 90.210(m); TIA/EIA-603-A, Section 2.2.12		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/4/2006 12:26:16 PM		
Temperature: 25 °C	Air Pressure: 1012 hPa	Relative Humidity: 43 %	Power Supply: 12 VDC
Remarks:			

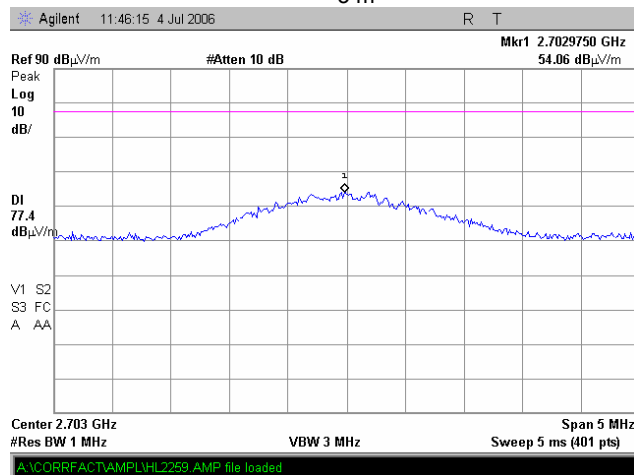
Plot 7.4.41 Radiated emission measurements at the 3rd harmonic iDEN 900

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



Plot 7.4.42 Radiated emission measurements at the 3rd harmonic iDEN 900

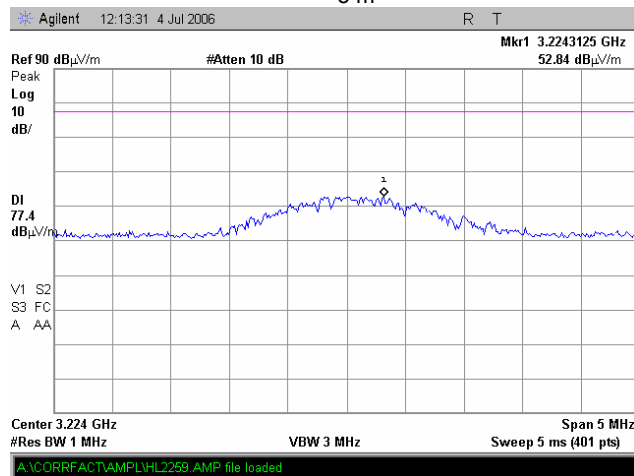
TEST SITE: OATS
CARRIER FREQUENCY: High
ANTENNA POLARIZATION: Vertical & Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 90.210, Radiated spurious emissions		
Test procedure:	47 CFR, Sections 2.1053 and 90.210(m); TIA/EIA-603-A, Section 2.2.12		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/4/2006 12:26:16 PM		
Temperature: 25 °C	Air Pressure: 1012 hPa	Relative Humidity: 43 %	Power Supply: 12 VDC
Remarks:			

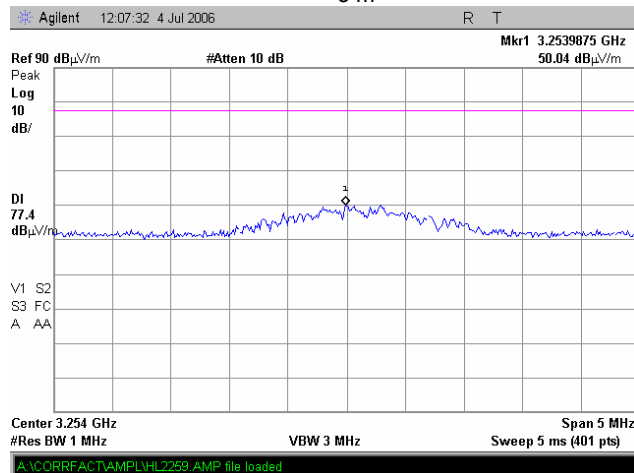
Plot 7.4.43 Radiated emission measurements at the 4th harmonic iDEN 800

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



Plot 7.4.44 Radiated emission measurements at the 4th harmonic iDEN 800

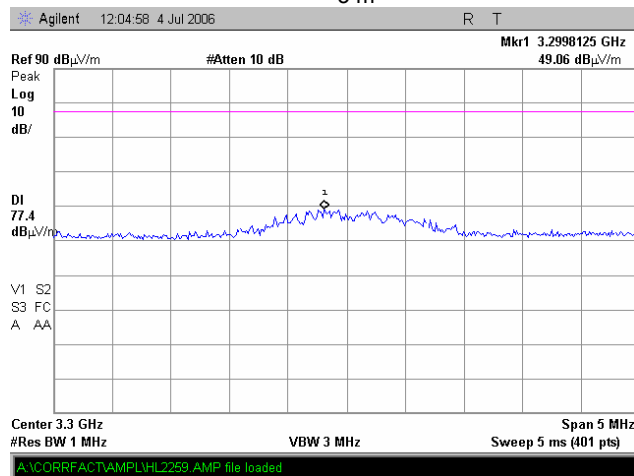
TEST SITE: OATS
CARRIER FREQUENCY: Mid
ANTENNA POLARIZATION: Vertical & Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 90.210, Radiated spurious emissions		
Test procedure:	47 CFR, Sections 2.1053 and 90.210(m); TIA/EIA-603-A, Section 2.2.12		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/4/2006 12:26:16 PM		
Temperature: 25 °C	Air Pressure: 1012 hPa	Relative Humidity: 43 %	Power Supply: 12 VDC
Remarks:			

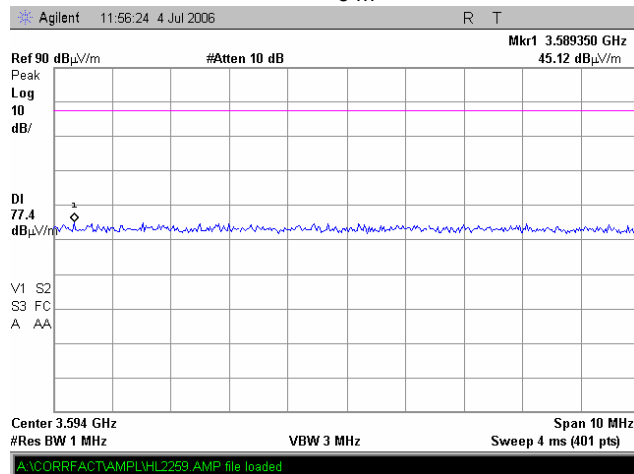
Plot 7.4.45 Radiated emission measurements at the 4th harmonic iDEN 800

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



Plot 7.4.46 Radiated emission measurements at the 4th harmonic iDEN 900

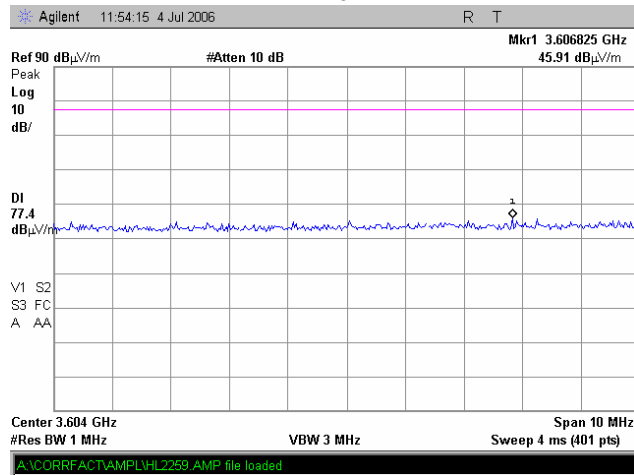
TEST SITE: OATS
CARRIER FREQUENCY: Low
ANTENNA POLARIZATION: Vertical & Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 90.210, Radiated spurious emissions		
Test procedure:	47 CFR, Sections 2.1053 and 90.210(m); TIA/EIA-603-A, Section 2.2.12		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/4/2006 12:26:16 PM		
Temperature: 25 °C	Air Pressure: 1012 hPa	Relative Humidity: 43 %	Power Supply: 12 VDC
Remarks:			

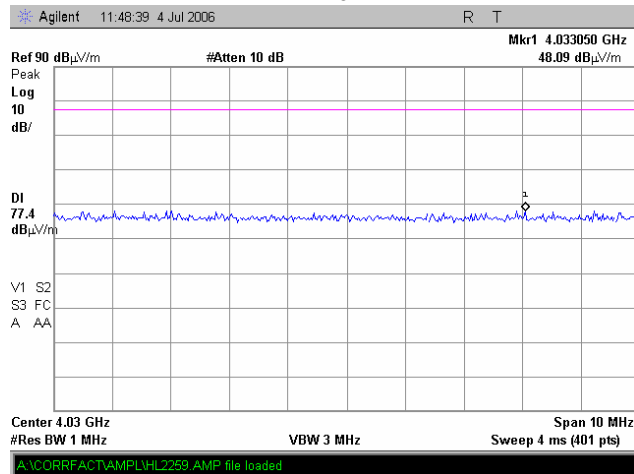
Plot 7.4.47 Radiated emission measurements at the 4th harmonic iDEN 900

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



Plot 7.4.48 Radiated emission measurements at the 4th harmonic iDEN 900

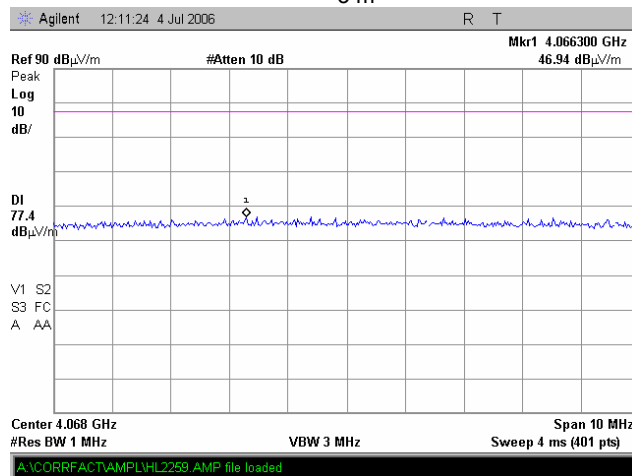
TEST SITE: OATS
CARRIER FREQUENCY: High
ANTENNA POLARIZATION: Vertical & Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 90.210, Radiated spurious emissions		
Test procedure:	47 CFR, Sections 2.1053 and 90.210(m); TIA/EIA-603-A, Section 2.2.12		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/4/2006 12:26:16 PM		
Temperature: 25 °C	Air Pressure: 1012 hPa	Relative Humidity: 43 %	Power Supply: 12 VDC
Remarks:			

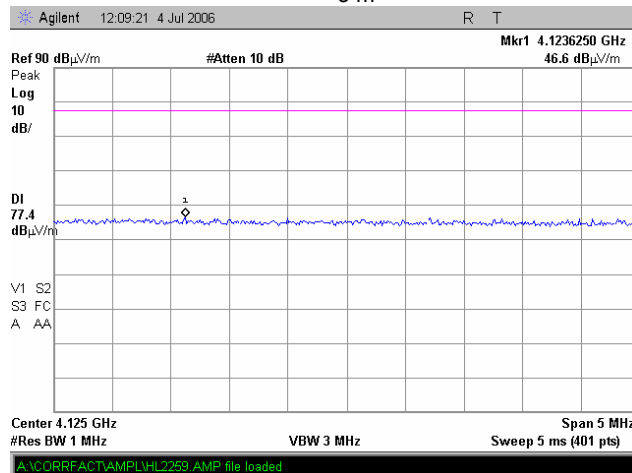
Plot 7.4.49 Radiated emission measurements at the 5th harmonic iDEN 800

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



Plot 7.4.50 Radiated emission measurements at the 5th harmonic iDEN 800

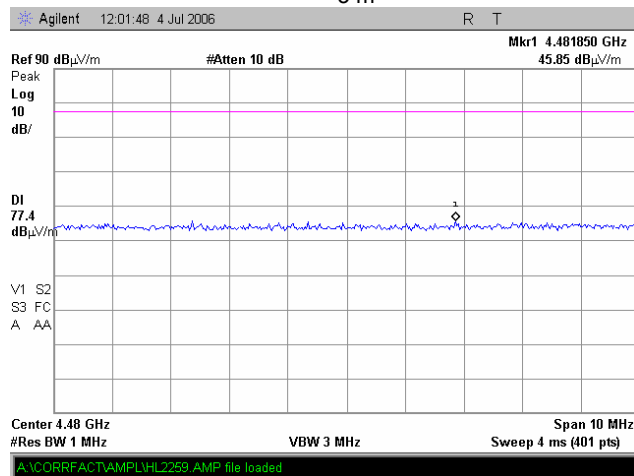
TEST SITE: OATS
CARRIER FREQUENCY: Mid
ANTENNA POLARIZATION: Vertical & Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 90.210, Radiated spurious emissions		
Test procedure:	47 CFR, Sections 2.1053 and 90.210(m); TIA/EIA-603-A, Section 2.2.12		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/4/2006 12:26:16 PM		
Temperature: 25 °C	Air Pressure: 1012 hPa	Relative Humidity: 43 %	Power Supply: 12 VDC
Remarks:			

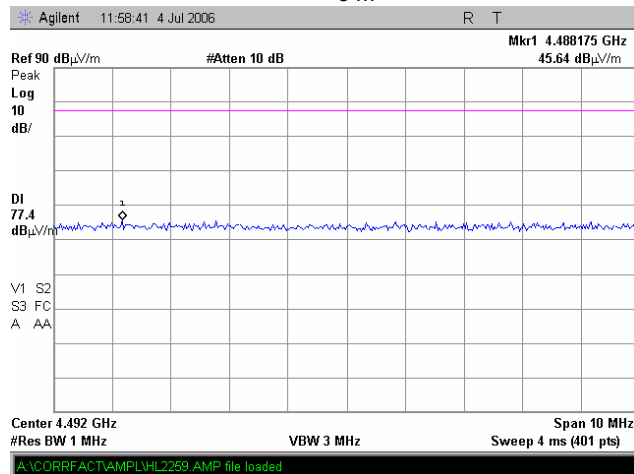
Plot 7.4.51 Radiated emission measurements at the 5th harmonic iDEN 800

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



Plot 7.4.52 Radiated emission measurements at the 5th harmonic iDEN 900

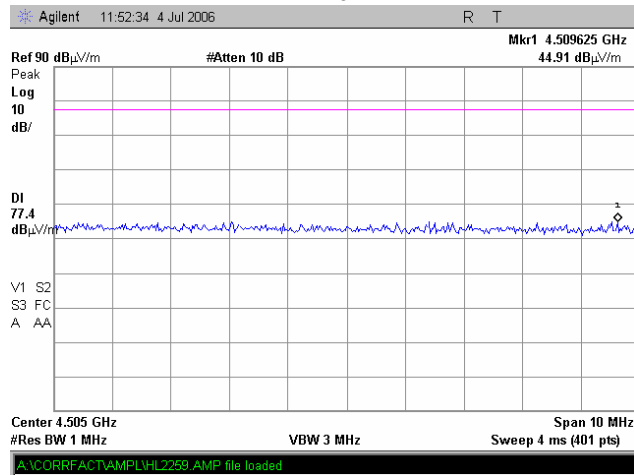
TEST SITE: OATS
CARRIER FREQUENCY: Low
ANTENNA POLARIZATION: Vertical & Horizontal
TEST DISTANCE: 3 m



Test specification:	Section 90.210, Radiated spurious emissions		
Test procedure:	47 CFR, Sections 2.1053 and 90.210(m); TIA/EIA-603-A, Section 2.2.12		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/4/2006 12:26:16 PM		
Temperature: 25 °C	Air Pressure: 1012 hPa	Relative Humidity: 43 %	Power Supply: 12 VDC
Remarks:			

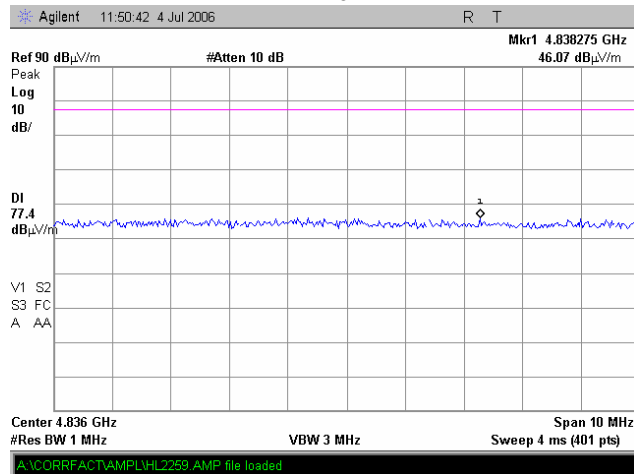
Plot 7.4.53 Radiated emission measurements at the 5th harmonic iDEN 900

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



Plot 7.4.54 Radiated emission measurements at the 5th harmonic iDEN 900

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



Test specification:	Section 90.210, Conducted spurious emissions		
Test procedure:	47 CFR, Sections 2.1051 and 90.210(m); TIA/EIA-603-A, Section 2.2.13		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/3/2006 2:00:49 PM		
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

7.5 Spurious emissions at RF antenna connector test

7.5.1 General

This test was performed to measure spurious emissions at RF antenna connector. Specification test limits are given in Table 7.5.1. The test results are provided in Table 7.5.2 and associated plots.

Table 7.5.1 Spurious emission limits

Frequency, MHz	Attenuation below carrier, dBc	ERP of spurious, dBm
0.009 – 10th harmonic*	43+10logP** (mask B, C)	-13.0
0.009 – 10th harmonic*	50+10logP** (mask D)	-20.0

* - 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

** - P is transmitter output power in Watts

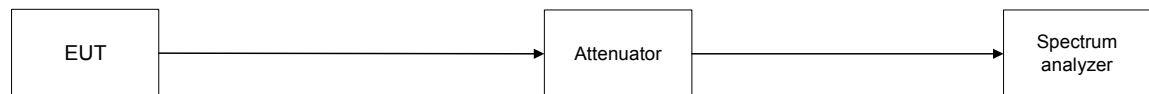
7.5.2 Test procedure

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 was adjusted to produce maximum available for end user RF output power.

7.5.2.3 The spurious emission was measured with spectrum analyzer as provided in Table 7.5.2 and associated plots.

Figure 7.5.1 Spurious emission test setup



Photograph 7.5.1 Spurious emission test setup



Test specification:		Section 90.210, Conducted spurious emissions			
Test procedure:		47 CFR, Sections 2.1051 and 90.210(m); TIA/EIA-603-A, Section 2.2.13			
Test mode:		Compliance		Verdict: PASS	
Date & Time:		7/3/2006 2:00:49 PM			
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %		Power Supply: 12 VDC	
Remarks:					

Table 7.5.2 Spurious emission test results

ASSIGNED FREQUENCY RANGE: 808-824/896-901 MHz
INVESTIGATED FREQUENCY RANGE: 0.009 – 10000 MHz
DETECTOR USED: Peak
VIDEO BANDWIDTH: ≥ Resolution bandwidth
MODULATION: 16QAM
MODULATING SIGNAL: iden
BIT RATE: Mbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

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 iden 800									
1612	-31.23	included	included	1000	-31.23	61.23	46	-15.23	Pass
2418	-29.54	included	included	1000	-29.54	59.54	46	-13.54	Pass
Low carrier frequency iden 900									
1792	-30.01	included	included	1000	-30.01	60.01	46	-14.01	Pass
2688	-33.31	included	included	1000	-33.31	63.31	46	-17.31	Pass
Mid carrier frequency iden 800									
1627	-30.66	included	included	1000	-30.66	60.66	46	-14.66	Pass
2441	-29.18	included	included	1000	-29.18	59.18	46	-13.18	Pass
Mid carrier frequency iden 900									
1797	-30.03	included	included	1000	-30.03	60.03	46	-14.03	Pass
2695	-34.01	included	included	1000	-34.01	64.01	46	-18.01	Pass
High carrier frequency iden 800									
1650	-30.19	included	included	1000	-30.19	60.19	46	-14.19	Pass
2475	-29.99	included	included	1000	-29.99	59.99	46	-13.99	Pass
High carrier frequency iden 900									
1802	-30.40	included	included	1000	-30.40	60.40	46	-14.40	Pass
2703	-33.88	included	included	1000	-33.88	63.88	46	-17.88	Pass

*- Margin = Spurious emission – specification limit.

** - transmitter output power is 0.4 W.

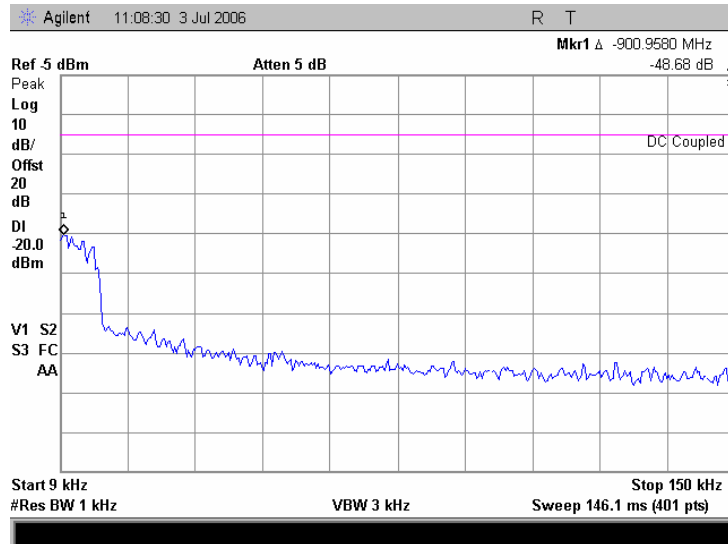
Reference numbers of test equipment used

HL 2634	HL 2909						
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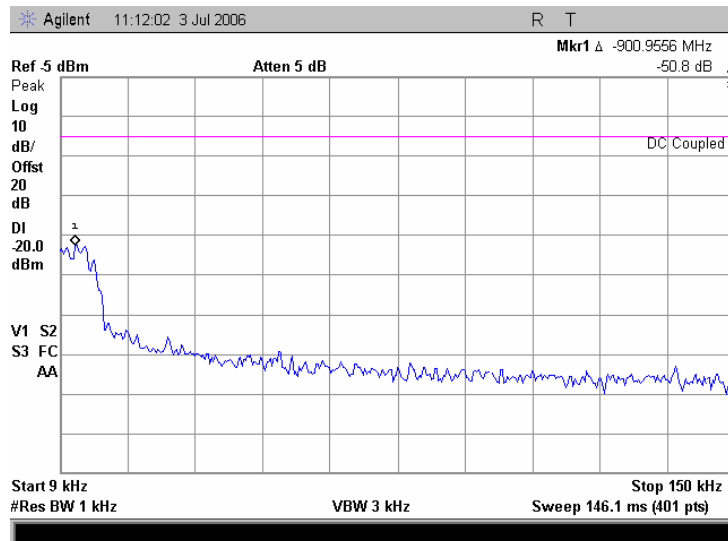
Full description is given in Appendix A.

Test specification:		Section 90.210, Conducted spurious emissions	
Test procedure:		47 CFR, Sections 2.1051 and 90.210(m); TIA/EIA-603-A, Section 2.2.13	
Test mode:		Compliance	Verdict: PASS
Date & Time:		7/3/2006 2:00:49 PM	
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Plot 7.5.1 Spurious emission measurements in 9 - 150 kHz range at low carrier frequency, iDEN 800

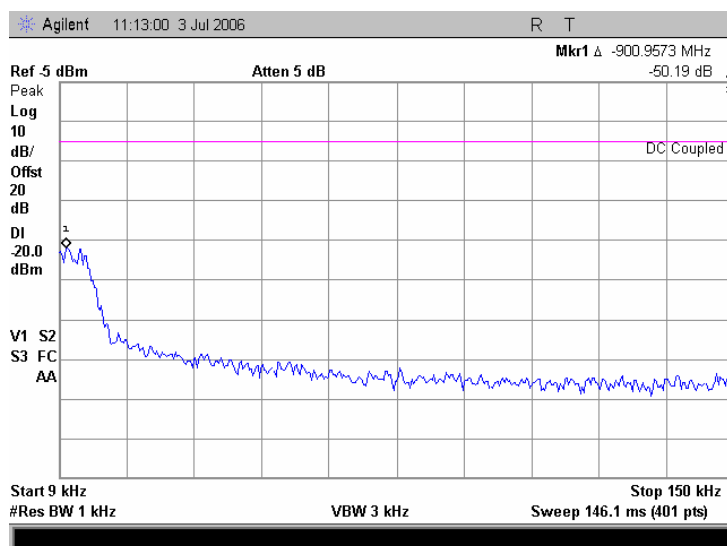


Plot 7.5.2 Spurious emission measurements in 9 - 150 kHz range at mid carrier frequency, iDEN 800

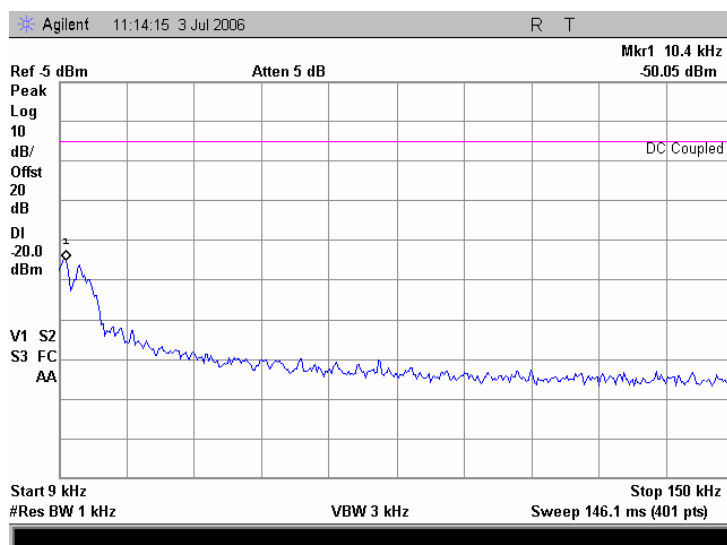


Test specification:	Section 90.210, Conducted spurious emissions		
Test procedure:	47 CFR, Sections 2.1051 and 90.210(m); TIA/EIA-603-A, Section 2.2.13		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/3/2006 2:00:49 PM		
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Plot 7.5.3 Spurious emission measurements in 9 - 150 kHz range at high carrier frequency, iDEN 800

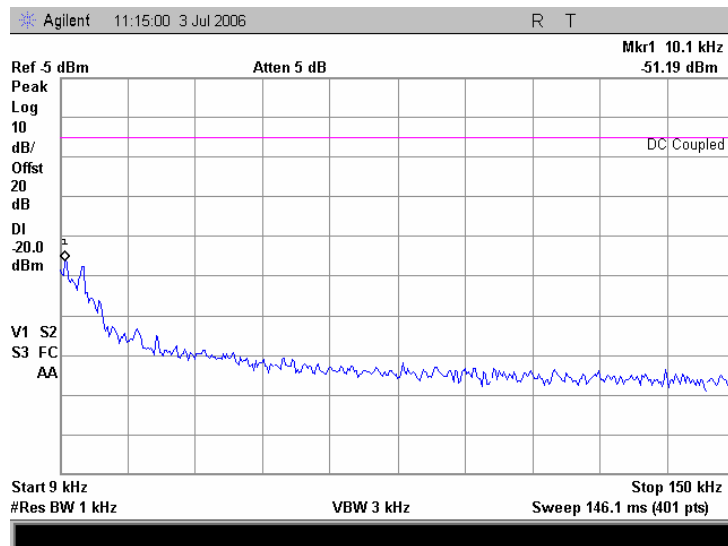


Plot 7.5.4 Spurious emission measurements in 9 - 150 kHz range at low carrier frequency, iDEN 900

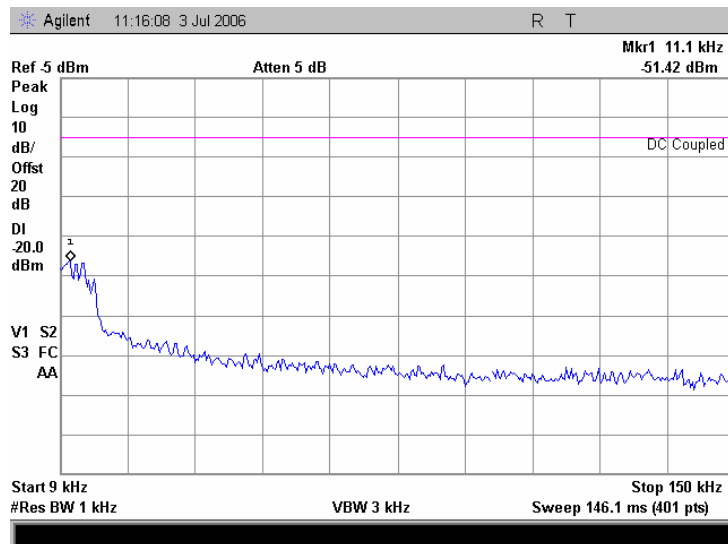


Test specification:	Section 90.210, Conducted spurious emissions		
Test procedure:	47 CFR, Sections 2.1051 and 90.210(m); TIA/EIA-603-A, Section 2.2.13		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/3/2006 2:00:49 PM		
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Plot 7.5.5 Spurious emission measurements in 9 - 150 kHz range at mid carrier frequency, iDEN 900

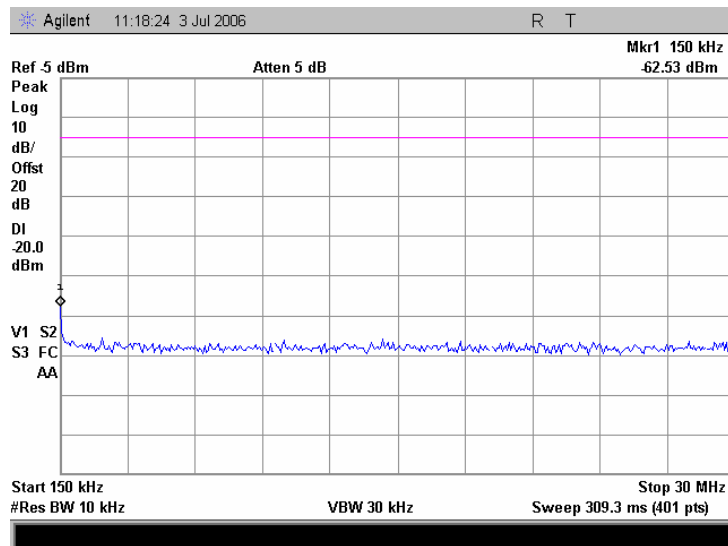


Plot 7.5.6 Spurious emission measurements in 9 - 150 kHz range at high carrier frequency, iDEN 900

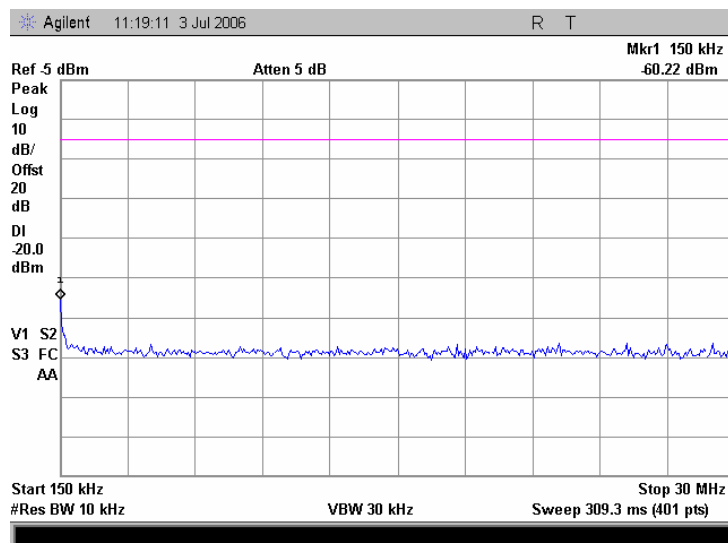


Test specification:	Section 90.210, Conducted spurious emissions		
Test procedure:	47 CFR, Sections 2.1051 and 90.210(m); TIA/EIA-603-A, Section 2.2.13		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/3/2006 2:00:49 PM		
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Plot 7.5.7 Spurious emission measurements in 0.15 - 30.0 MHz range at low carrier frequency, iDEN 800

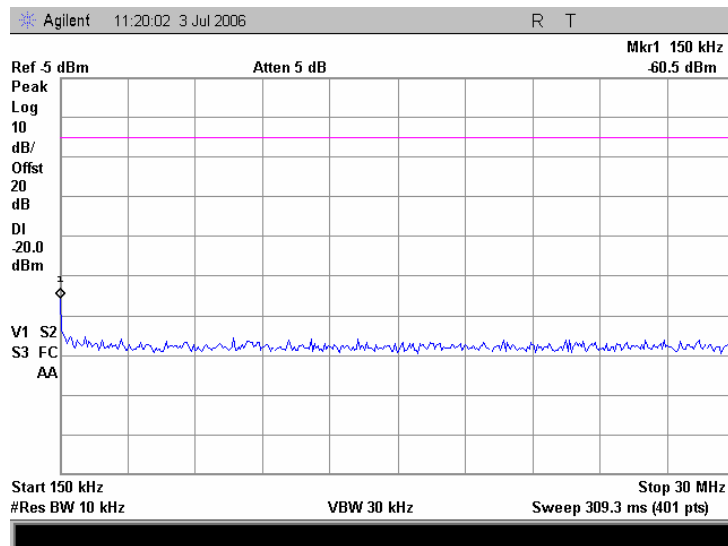


Plot 7.5.8 Spurious emission measurements in 0.15 - 30.0 MHz range at mid carrier frequency, iDEN 800

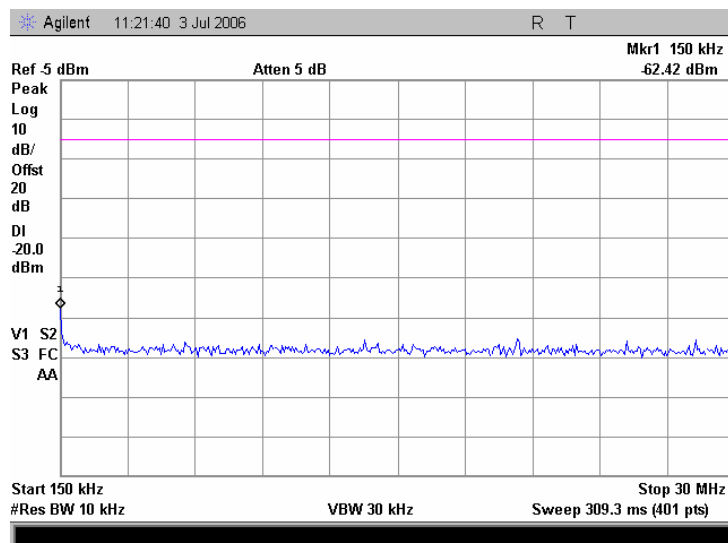


Test specification:	Section 90.210, Conducted spurious emissions		
Test procedure:	47 CFR, Sections 2.1051 and 90.210(m); TIA/EIA-603-A, Section 2.2.13		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/3/2006 2:00:49 PM		
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Plot 7.5.9 Spurious emission measurements in 0.15 – 30.0 MHz range at high carrier frequency, iDEN 800

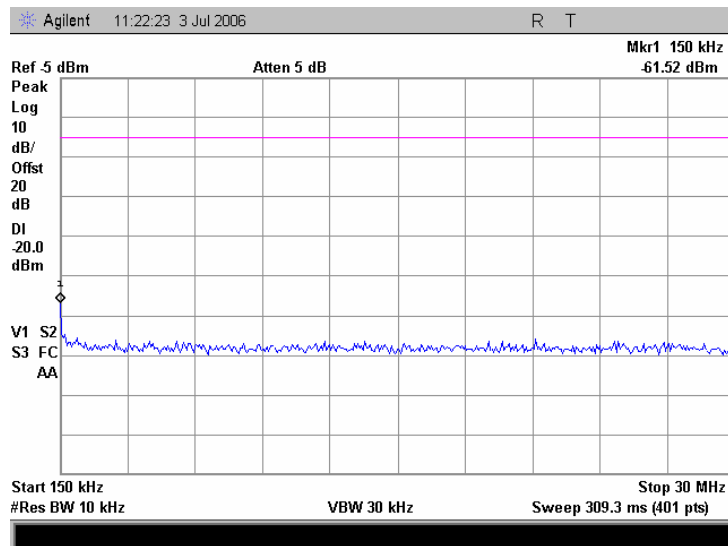


Plot 7.5.10 Spurious emission measurements in 0.15 - 30.0 MHz range at low carrier frequency, iDEN 900

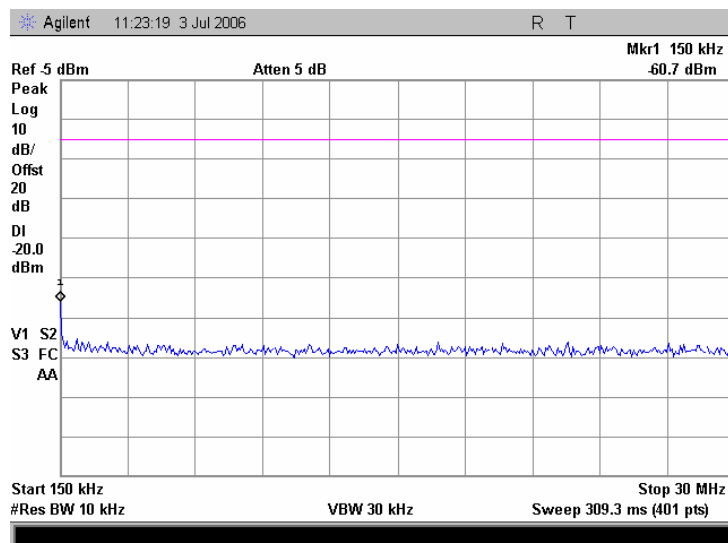


Test specification:		Section 90.210, Conducted spurious emissions	
Test procedure:		47 CFR, Sections 2.1051 and 90.210(m); TIA/EIA-603-A, Section 2.2.13	
Test mode:		Compliance	Verdict: PASS
Date & Time:		7/3/2006 2:00:49 PM	
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Plot 7.5.11 Spurious emission measurements in 0.15 - 30.0 MHz range at mid carrier frequency, iDEN 900

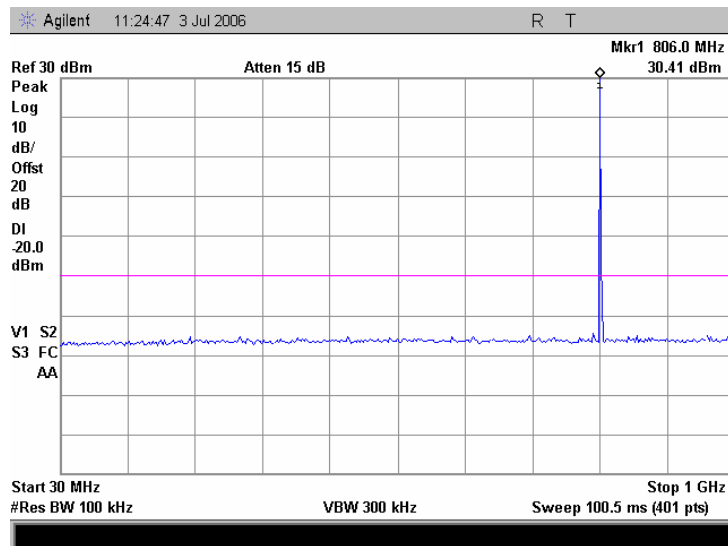


Plot 7.5.12 Spurious emission measurements in 0.15 - 30.0 MHz range at high carrier frequency, iDEN 900

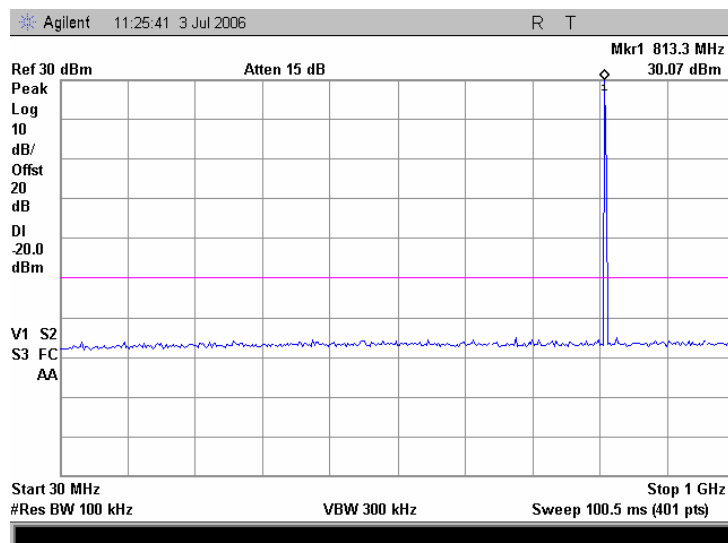


Test specification:	Section 90.210, Conducted spurious emissions		
Test procedure:	47 CFR, Sections 2.1051 and 90.210(m); TIA/EIA-603-A, Section 2.2.13		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/3/2006 2:00:49 PM		
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Plot 7.5.13 Spurious emission measurements in 30.0 - 1000 MHz range at low carrier frequency, iDEN 800

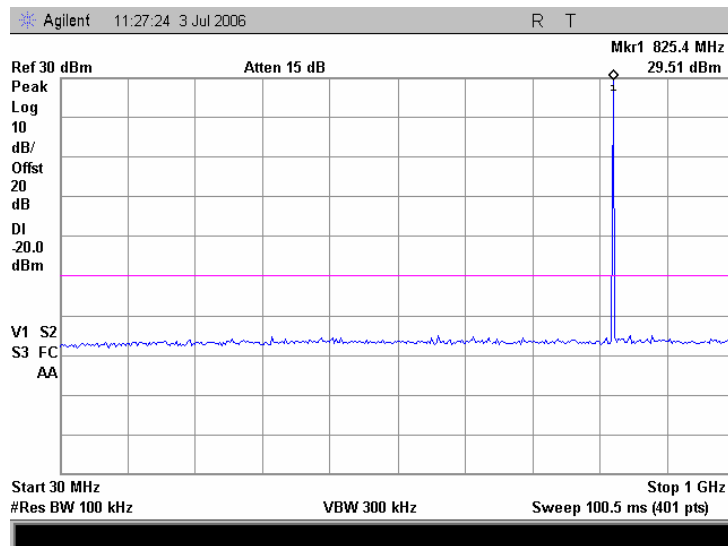


Plot 7.5.14 Spurious emission measurements in 30.0 - 1000 MHz range at mid carrier frequency, iDEN 800

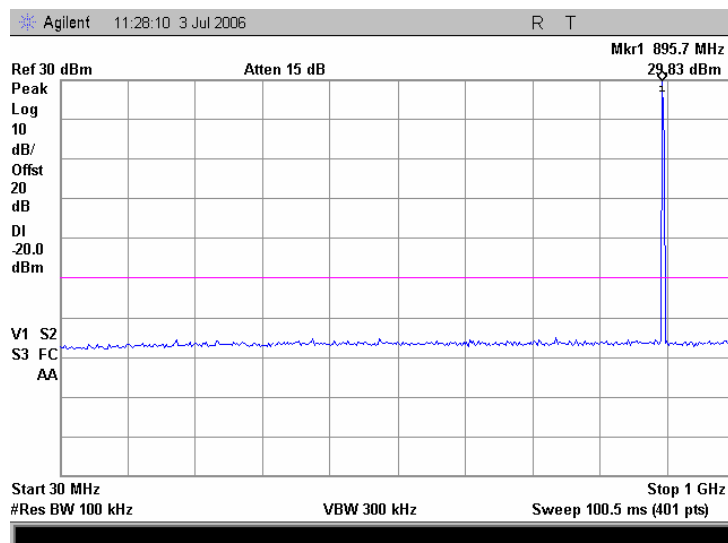


Test specification:		Section 90.210, Conducted spurious emissions	
Test procedure:		47 CFR, Sections 2.1051 and 90.210(m); TIA/EIA-603-A, Section 2.2.13	
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/3/2006 2:00:49 PM		
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Plot 7.5.15 Spurious emission measurements in 30.0 - 1000 MHz range at high carrier frequency, iDEN 800

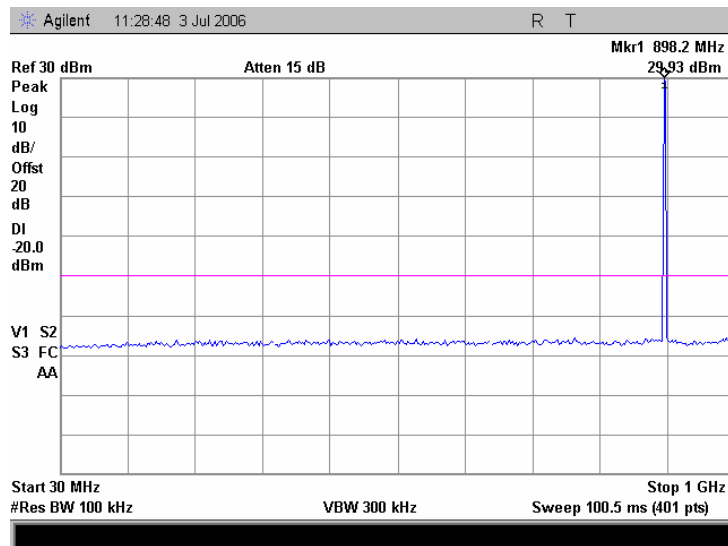


Plot 7.5.16 Spurious emission measurements in 30.0 - 1000 MHz range at low carrier frequency, iDEN 900

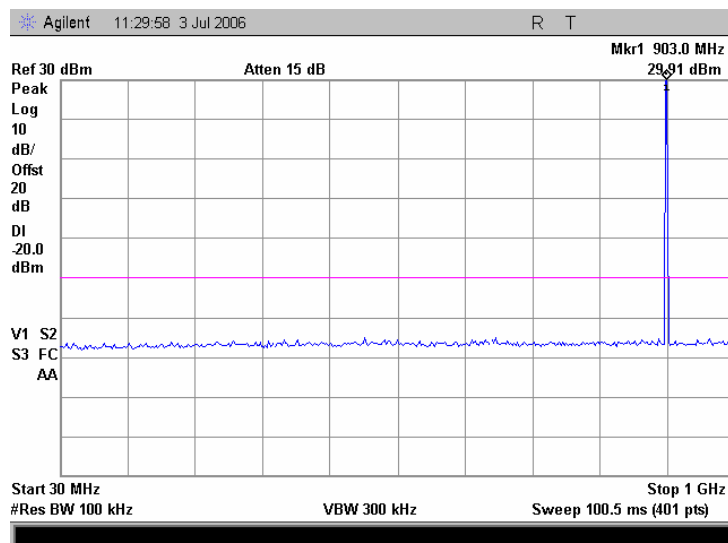


Test specification:	Section 90.210, Conducted spurious emissions		
Test procedure:	47 CFR, Sections 2.1051 and 90.210(m); TIA/EIA-603-A, Section 2.2.13		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/3/2006 2:00:49 PM		
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Plot 7.5.17 Spurious emission measurements in 30.0 - 1000 MHz range at mid carrier frequency, iDEN 900

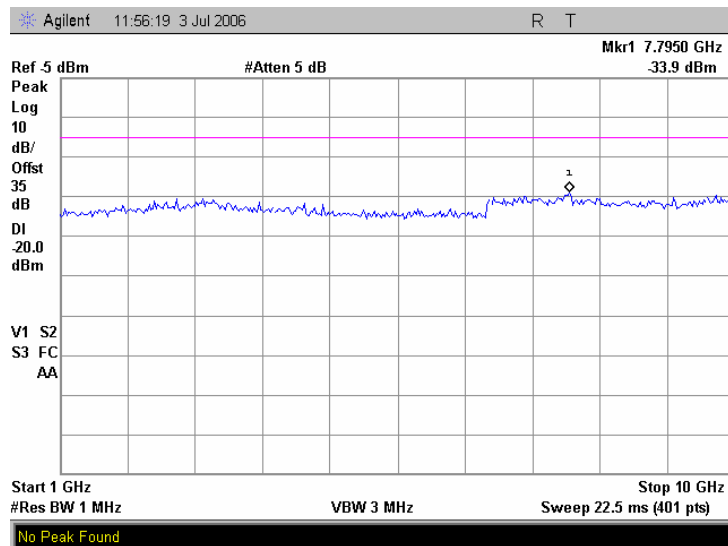


Plot 7.5.18 Spurious emission measurements in 30.0 - 1000 MHz range at high carrier frequency, iDEN 900

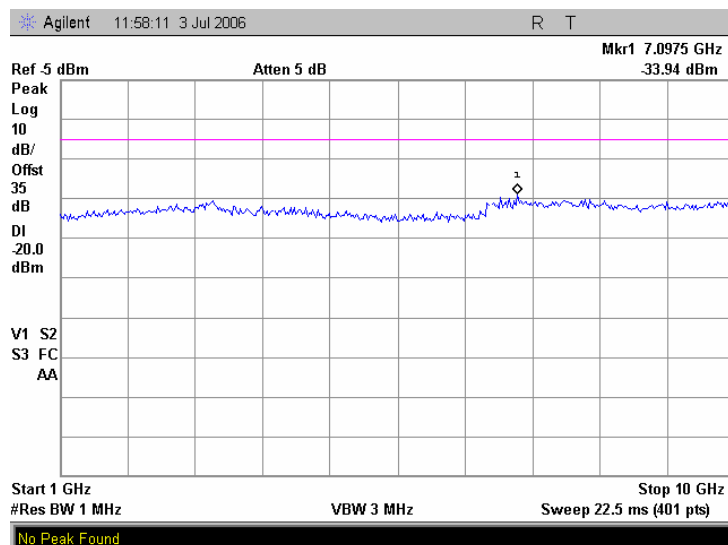


Test specification:	Section 90.210, Conducted spurious emissions		
Test procedure:	47 CFR, Sections 2.1051 and 90.210(m); TIA/EIA-603-A, Section 2.2.13		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/3/2006 2:00:49 PM		
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Plot 7.5.19 Spurious emission measurements in 1000 - 10000 MHz range at low carrier frequency, iDEN 800

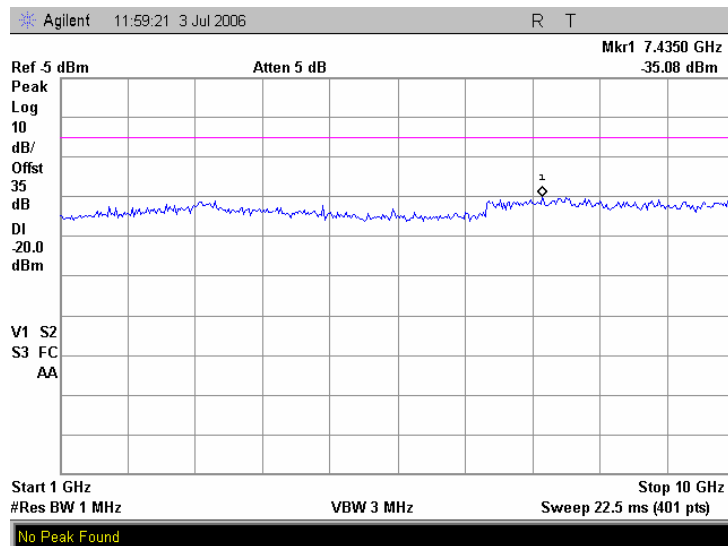


Plot 7.5.20 Spurious emission measurements in 1000 - 10000 MHz at mid carrier frequency, iDEN 800

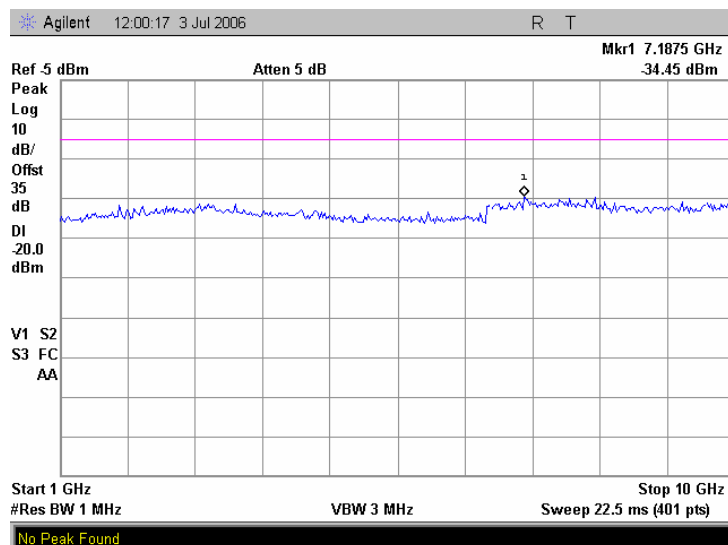


Test specification:	Section 90.210, Conducted spurious emissions		
Test procedure:	47 CFR, Sections 2.1051 and 90.210(m); TIA/EIA-603-A, Section 2.2.13		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/3/2006 2:00:49 PM		
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Plot 7.5.21 Spurious emission measurements in 1000 - 10000 MHz at high carrier frequency, iDEN 800

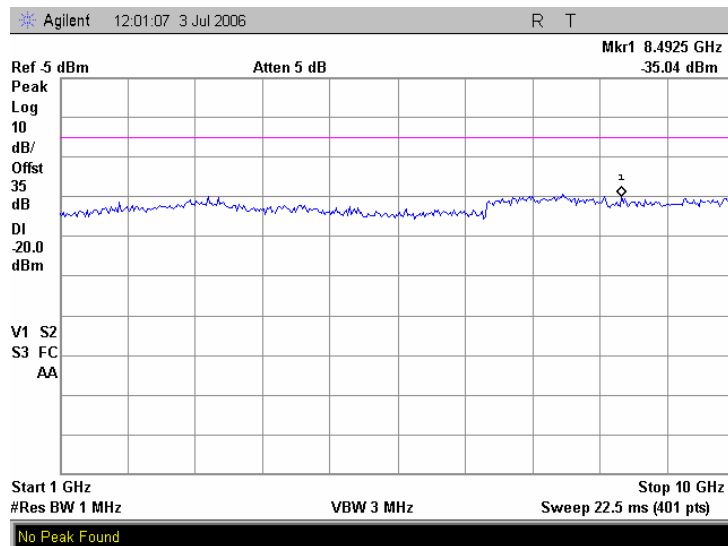


Plot 7.5.22 Spurious emission measurements in 1000 - 10000 MHz range at low carrier frequency, iDEN 900

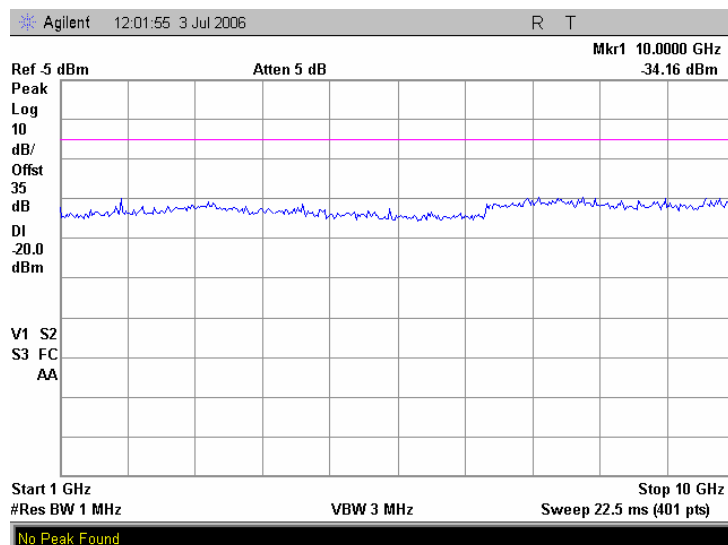


Test specification:	Section 90.210, Conducted spurious emissions		
Test procedure:	47 CFR, Sections 2.1051 and 90.210(m); TIA/EIA-603-A, Section 2.2.13		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/3/2006 2:00:49 PM		
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Plot 7.5.23 Spurious emission measurements in 1000 - 10000 MHz at mid carrier frequency, iDEN 900

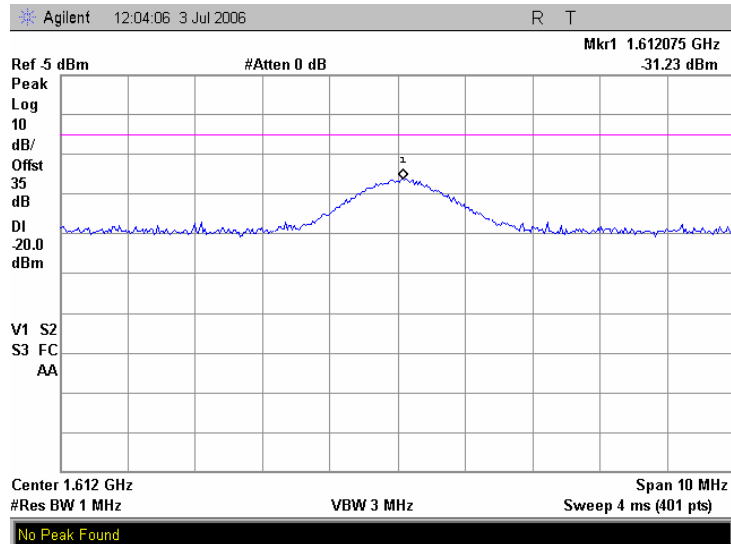


Plot 7.5.24 Spurious emission measurements in 1000 - 10000 MHz at high carrier frequency, iDEN 900

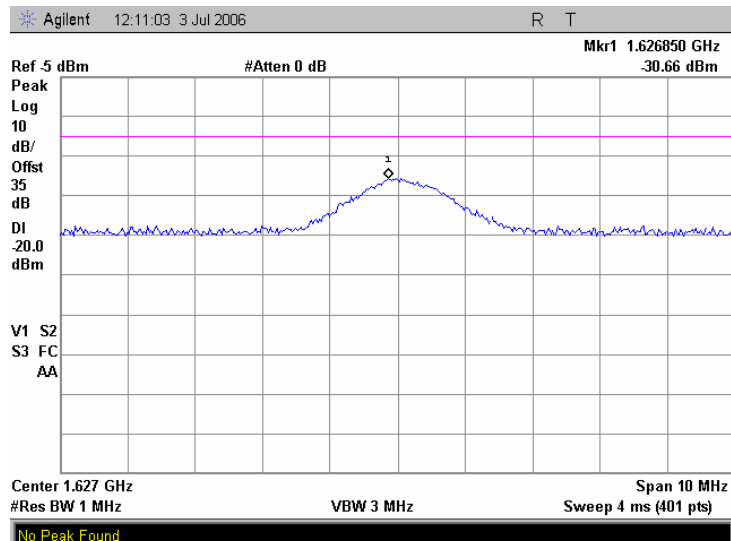


Test specification:	Section 90.210, Conducted spurious emissions		
Test procedure:	47 CFR, Sections 2.1051 and 90.210(m); TIA/EIA-603-A, Section 2.2.13		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/3/2006 2:00:49 PM		
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Plot 7.5.25 Conducted spurious emission measurements at the 2nd harmonic of low carrier frequency, iDEN 800

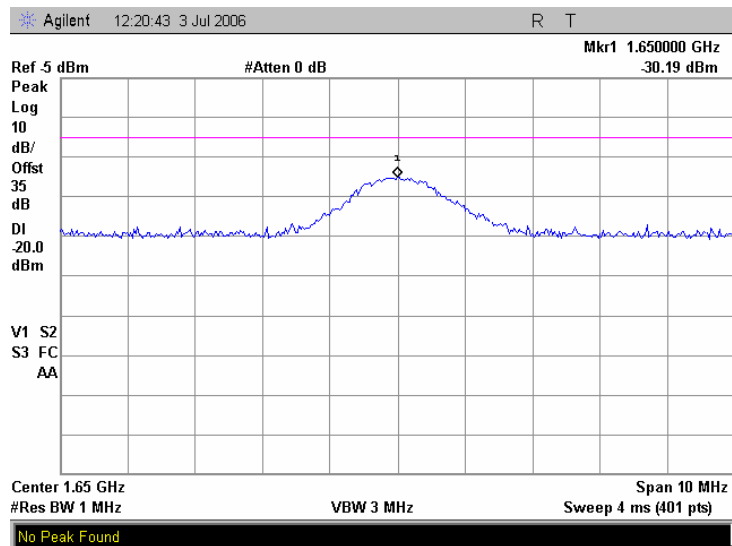


Plot 7.5.26 Conducted spurious emission measurements at the 2nd harmonic of mid carrier frequency, iDEN 800

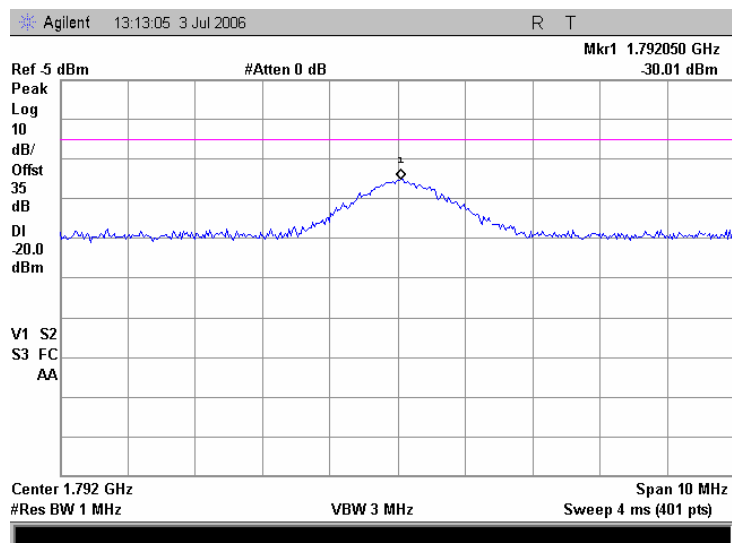


Test specification:	Section 90.210, Conducted spurious emissions		
Test procedure:	47 CFR, Sections 2.1051 and 90.210(m); TIA/EIA-603-A, Section 2.2.13		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/3/2006 2:00:49 PM		
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Plot 7.5.27 Conducted spurious emission measurements at the 2nd harmonic of high carrier frequency, iDEN 800

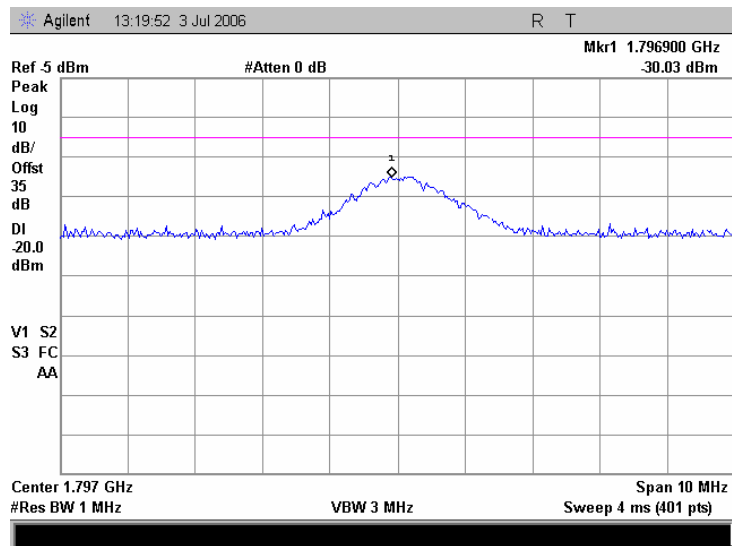


Plot 7.5.28 Conducted spurious emission measurements at the 2nd harmonic of low carrier frequency, iDEN 900

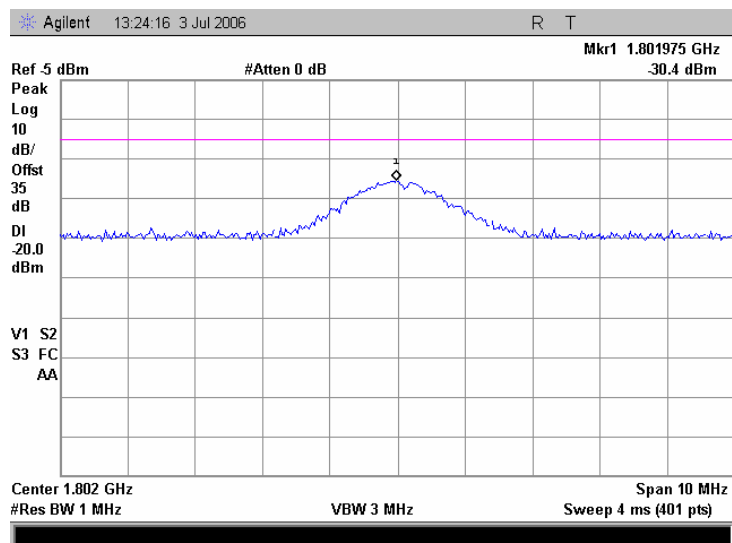


Test specification:	Section 90.210, Conducted spurious emissions		
Test procedure:	47 CFR, Sections 2.1051 and 90.210(m); TIA/EIA-603-A, Section 2.2.13		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/3/2006 2:00:49 PM		
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Plot 7.5.29 Conducted spurious emission measurements at the 2nd harmonic of mid carrier frequency, iDEN 900

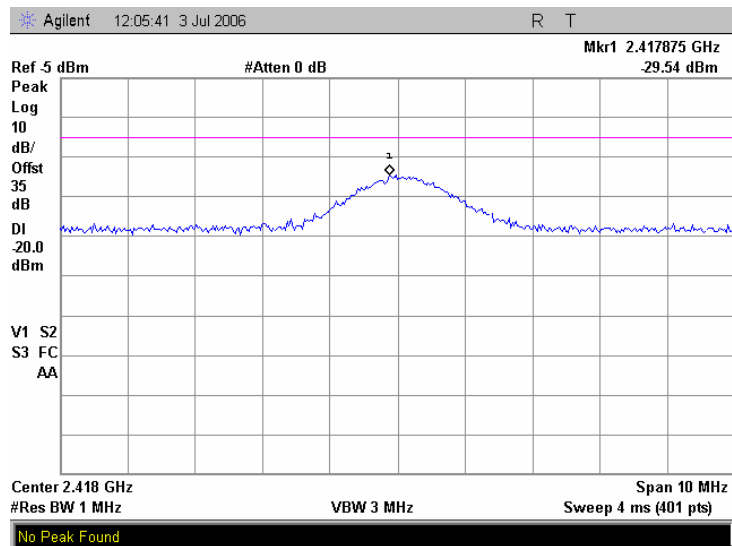


Plot 7.5.30 Conducted spurious emission measurements at the 2nd harmonic of high carrier frequency, iDEN 900

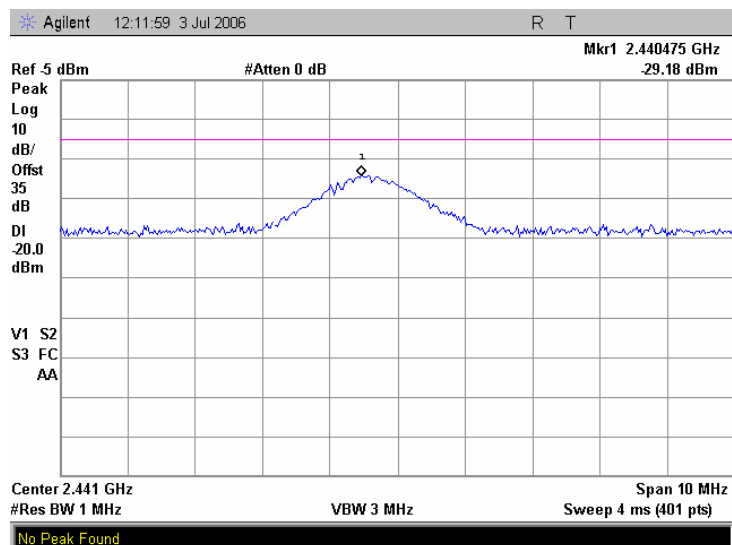


Test specification:	Section 90.210, Conducted spurious emissions		
Test procedure:	47 CFR, Sections 2.1051 and 90.210(m); TIA/EIA-603-A, Section 2.2.13		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/3/2006 2:00:49 PM		
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Plot 7.5.31 Conducted spurious emission measurements at the 3rd harmonic of low carrier frequency, iDEN 800

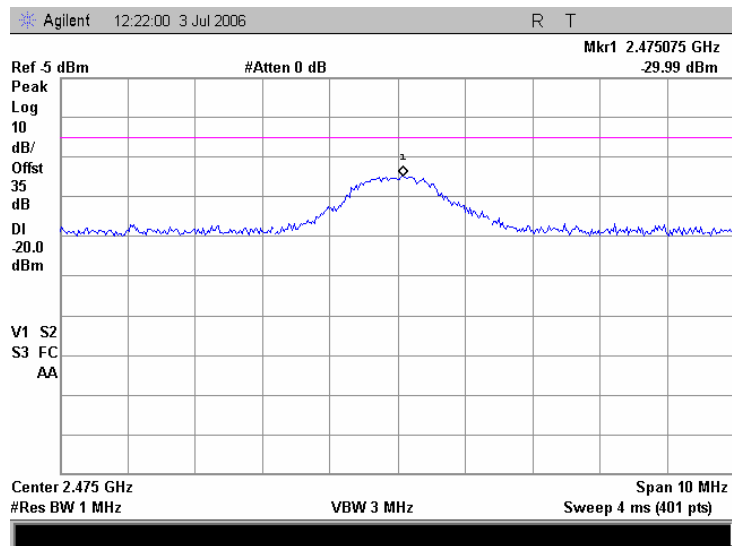


Plot 7.5.32 Conducted spurious emission measurements at the 3rd harmonic of mid carrier frequency, iDEN 800

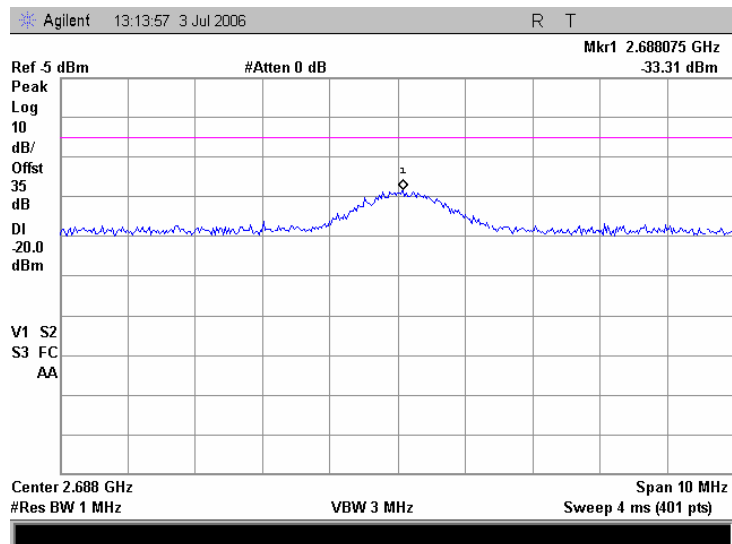


Test specification:	Section 90.210, Conducted spurious emissions		
Test procedure:	47 CFR, Sections 2.1051 and 90.210(m); TIA/EIA-603-A, Section 2.2.13		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/3/2006 2:00:49 PM		
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Plot 7.5.33 Conducted spurious emission measurements at the 3rd harmonic of high carrier frequency, iDEN 800

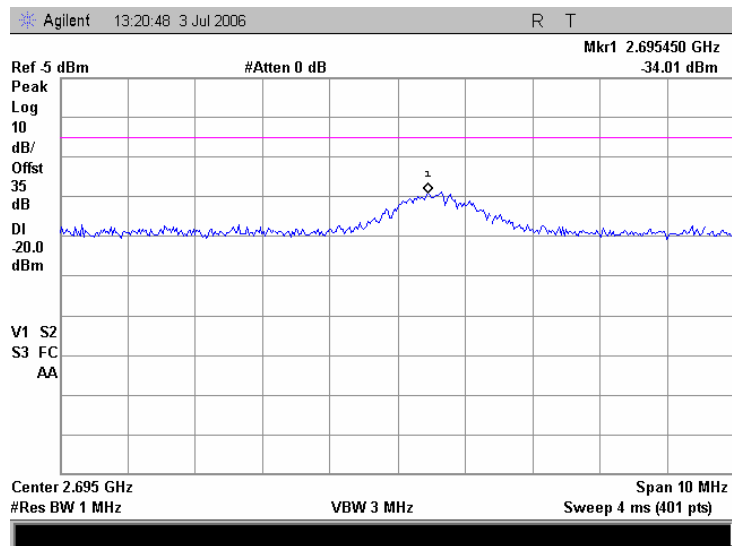


Plot 7.5.34 Conducted spurious emission measurements at the 3rd harmonic of low carrier frequency, iDEN 900

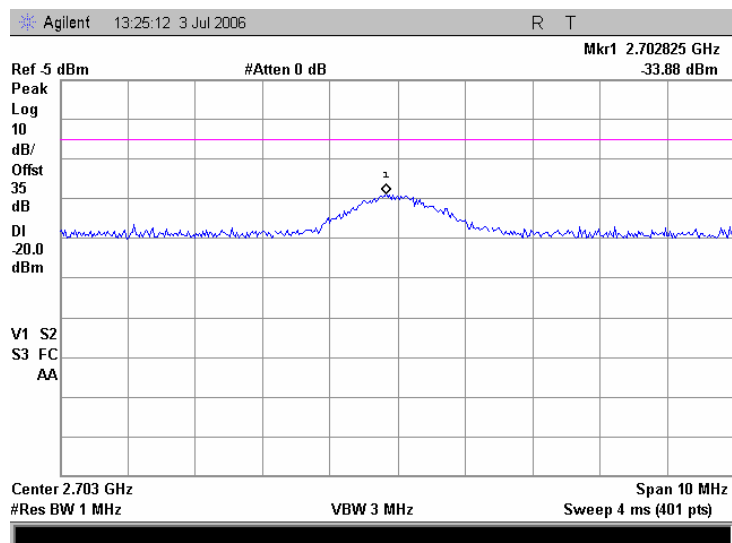


Test specification:	Section 90.210, Conducted spurious emissions		
Test procedure:	47 CFR, Sections 2.1051 and 90.210(m); TIA/EIA-603-A, Section 2.2.13		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/3/2006 2:00:49 PM		
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Plot 7.5.35 Conducted spurious emission measurements at the 3rd harmonic of mid carrier frequency, iDEN 900

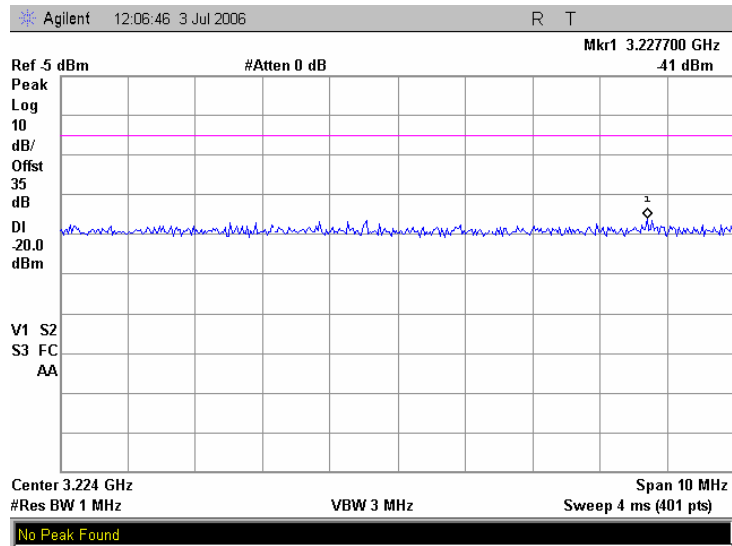


Plot 7.5.36 Conducted spurious emission measurements at the 3rd harmonic of high carrier frequency, iDEN 900

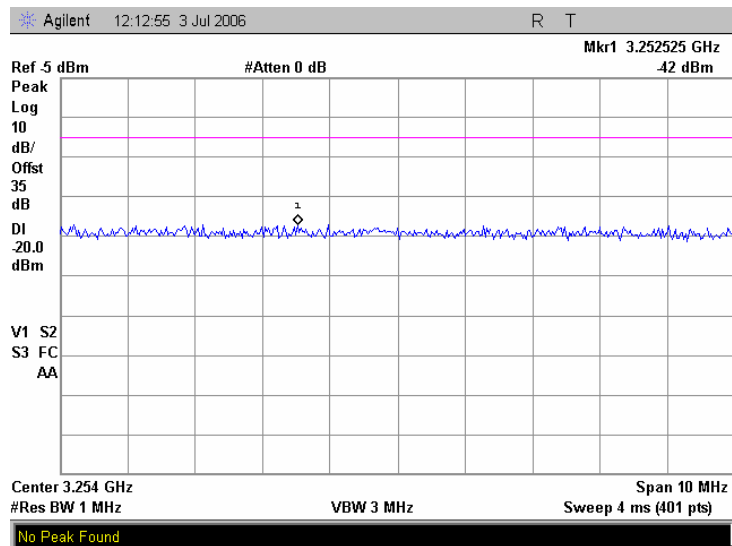


Test specification:	Section 90.210, Conducted spurious emissions		
Test procedure:	47 CFR, Sections 2.1051 and 90.210(m); TIA/EIA-603-A, Section 2.2.13		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/3/2006 2:00:49 PM		
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Plot 7.5.37 Conducted spurious emission measurements at the 4th harmonic of low carrier frequency, iDEN 800

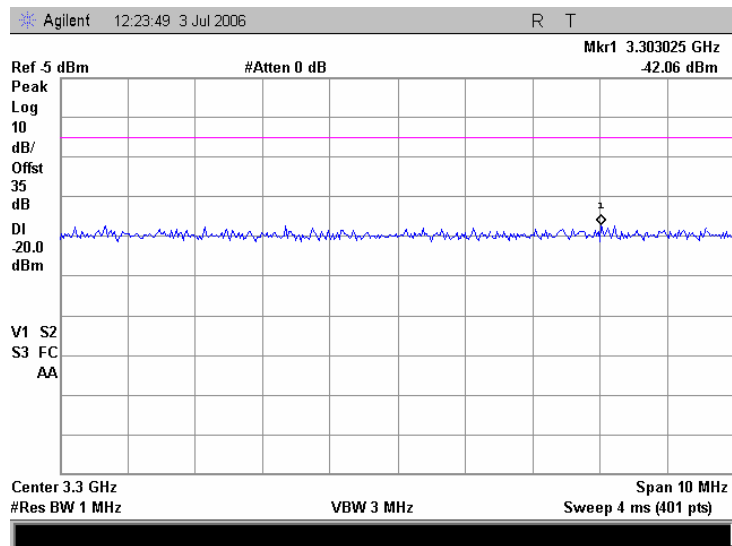


Plot 7.5.38 Conducted spurious emission measurements at the 4th harmonic of mid carrier frequency, iDEN 800

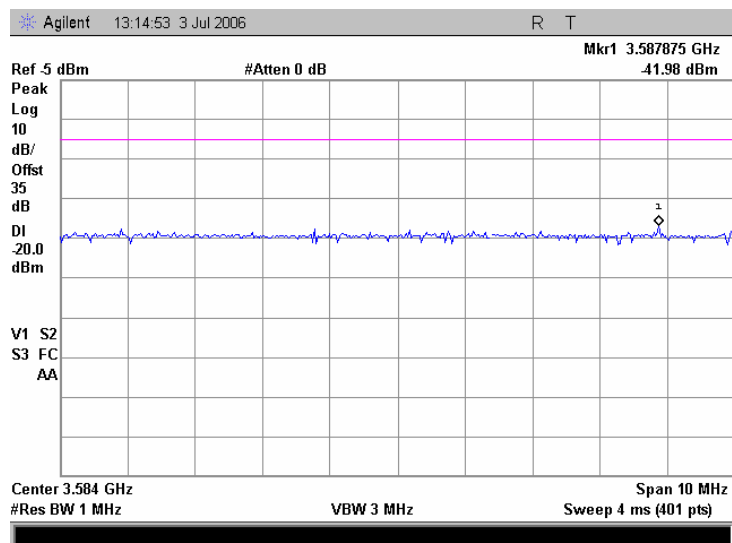


Test specification:	Section 90.210, Conducted spurious emissions		
Test procedure:	47 CFR, Sections 2.1051 and 90.210(m); TIA/EIA-603-A, Section 2.2.13		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/3/2006 2:00:49 PM		
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Plot 7.5.39 Conducted spurious emission measurements at the 4th harmonic of high carrier frequency, iDEN 800

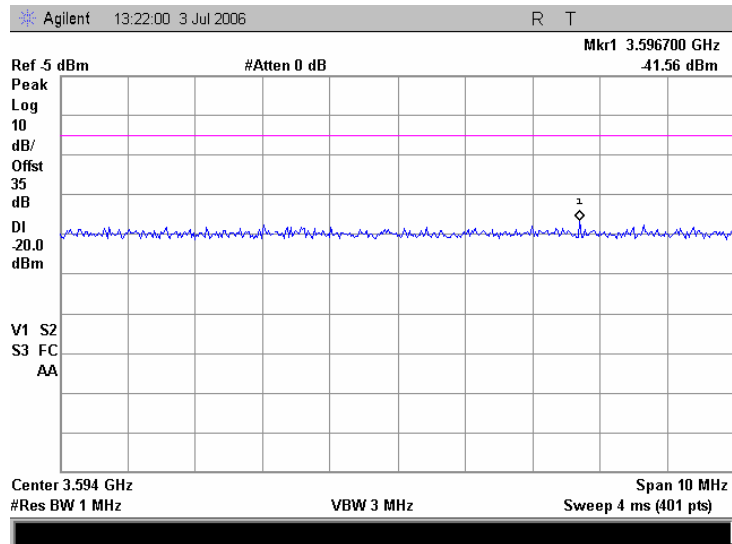


Plot 7.5.40 Conducted spurious emission measurements at the 4th harmonic of low carrier frequency, iDEN 900

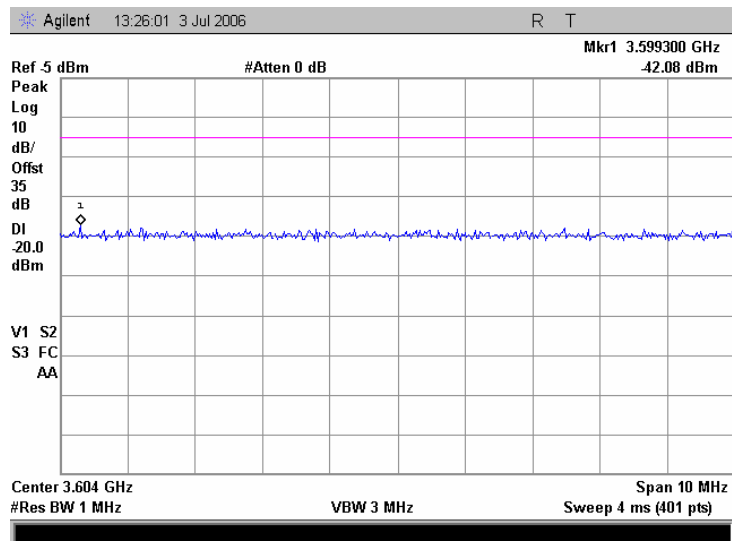


Test specification:	Section 90.210, Conducted spurious emissions		
Test procedure:	47 CFR, Sections 2.1051 and 90.210(m); TIA/EIA-603-A, Section 2.2.13		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/3/2006 2:00:49 PM		
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Plot 7.5.41 Conducted spurious emission measurements at the 4th harmonic of mid carrier frequency, iDEN 900

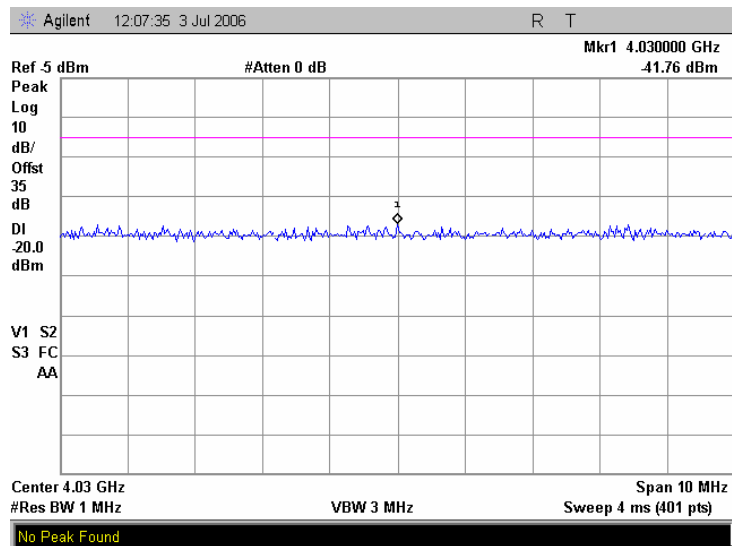


Plot 7.5.42 Conducted spurious emission measurements at the 4th harmonic of high carrier frequency, iDEN 900

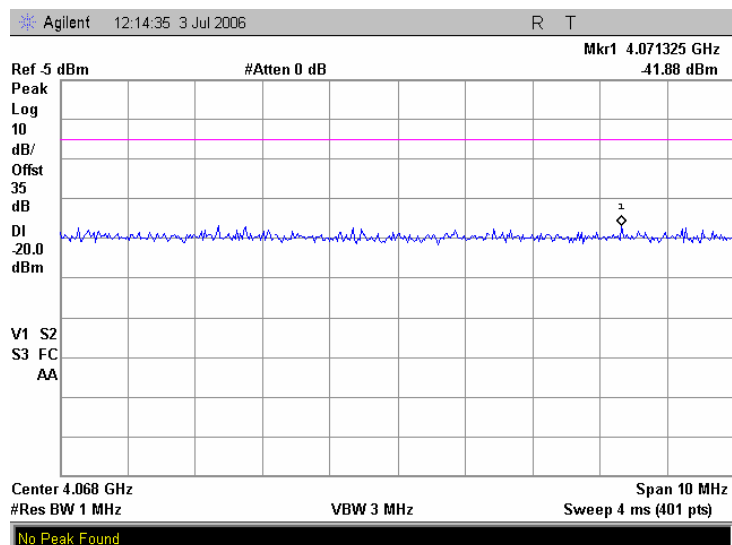


Test specification:	Section 90.210, Conducted spurious emissions		
Test procedure:	47 CFR, Sections 2.1051 and 90.210(m); TIA/EIA-603-A, Section 2.2.13		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/3/2006 2:00:49 PM		
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Plot 7.5.43 Conducted spurious emission measurements at the 5th harmonic of low carrier frequency, iDEN 800

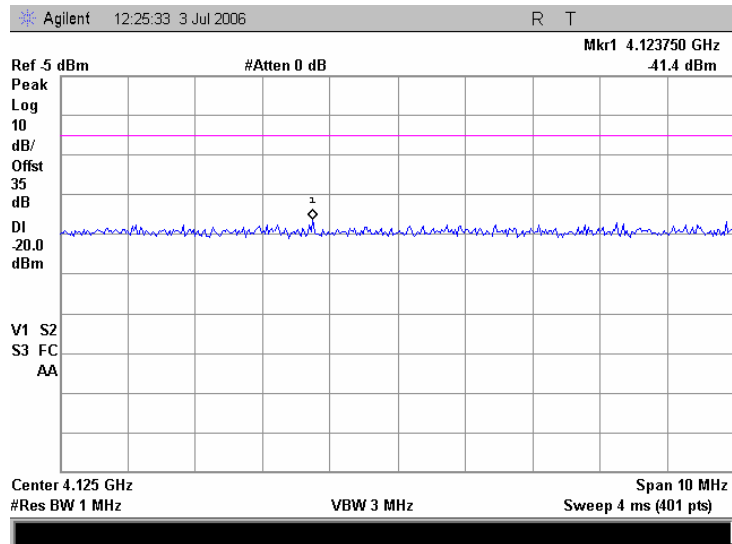


Plot 7.5.44 Conducted spurious emission measurements at the 5th harmonic of mid carrier frequency, iDEN 800

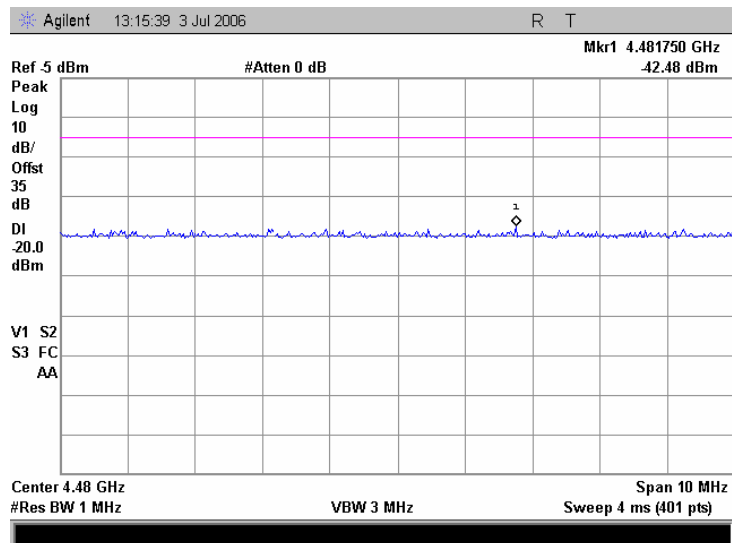


Test specification:	Section 90.210, Conducted spurious emissions		
Test procedure:	47 CFR, Sections 2.1051 and 90.210(m); TIA/EIA-603-A, Section 2.2.13		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/3/2006 2:00:49 PM		
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Plot 7.5.45 Conducted spurious emission measurements at the 5th harmonic of high carrier frequency, iDEN 800

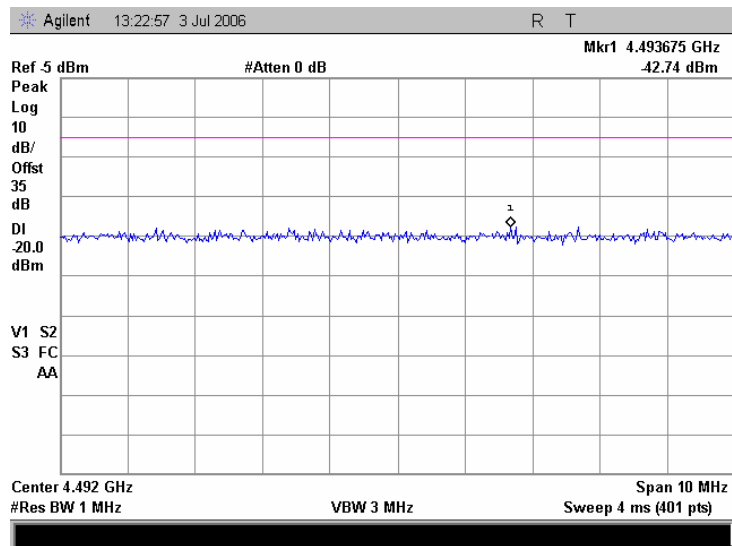


Plot 7.5.46 Conducted spurious emission measurements at the 5th harmonic of low carrier frequency, iDEN 900

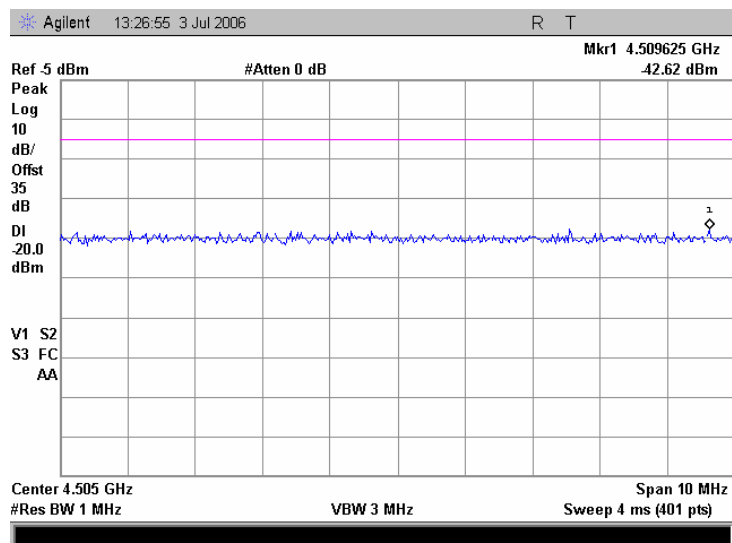


Test specification:	Section 90.210, Conducted spurious emissions		
Test procedure:	47 CFR, Sections 2.1051 and 90.210(m); TIA/EIA-603-A, Section 2.2.13		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/3/2006 2:00:49 PM		
Temperature: 25°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Plot 7.5.47 Conducted spurious emission measurements at the 5th harmonic of mid carrier frequency, iDEN 900



Plot 7.5.48 Conducted spurious emission measurements at the 5th harmonic of high carrier frequency, iDEN 900



Test specification:		Section 90.213, Frequency stability	
Test procedure:		47 CFR, Section 2.1055; TIA/EIA-603-A Section 2.2.2	
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/17/2006 5:19:29 PM		
Temperature: 23 °C	Air Pressure: 1008 hPa	Relative Humidity: 49 %	Power Supply: 12 VDC
Remarks:			

7.6 Frequency stability test

7.6.1 General

This test was performed to measure frequency stability of transmitter RF carrier. Specification test limits are given in Table 7.6.1. The test results are provided in Table 7.6.2.

Table 7.6.1 Frequency stability limits

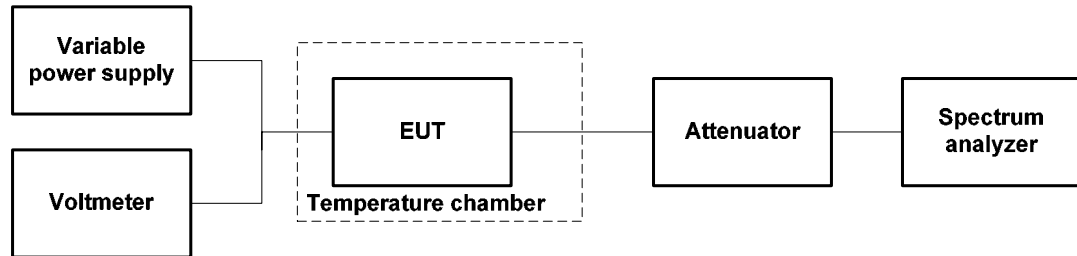
Assigned frequency, MHz	Maximum allowed frequency displacement	
	ppm	Hz
806.0125	1.5	1209
813.5125	2.5	2034
824.9875	2.5	2062
896.01875	1.5	1344
898.51875		1348
900.98125		1351

7.6.2 Test procedure

- 7.6.2.1 The EUT was set up as shown in Figure 7.6.1, energized and its proper operation was checked.
- 7.6.2.2 The EUT 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.
- 7.6.2.3 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.
- 7.6.2.4 The above procedure was repeated at 0°C and at the lowest test temperature.
- 7.6.2.5 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.
- 7.6.2.6 Frequency displacement was calculated and compared with the limit as provided in Table 7.6.2.

Test specification:	Section 90.213, Frequency stability		
Test procedure:	47 CFR, Section 2.1055; TIA/EIA-603-A Section 2.2.2		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	5/17/2006 5:19:29 PM		
Temperature: 23 °C	Air Pressure: 1008 hPa	Relative Humidity: 49 %	Power Supply: 12 VDC
Remarks:			

Figure 7.6.1 Frequency stability test setup



Photograph 7.6.1 Frequency stability test setup



Test specification:	Section 90.213, Frequency stability		
Test procedure:	47 CFR, Section 2.1055; TIA/EIA-603-A Section 2.2.2		
Test mode:	Compliance	Verdict: PASS	
Date & Time:	5/17/2006 5:19:29 PM		
Temperature: 23 °C	Air Pressure: 1008 hPa	Relative Humidity: 49 %	Power Supply: 12 VDC
Remarks:			

Table 7.6.2 Frequency stability test results

OPERATING FREQUENCY: 806-824 MHz
NOMINAL POWER VOLTAGE: 12 V
TEMPERATURE STABILIZATION PERIOD: 20 min
POWER DURING TEMPERATURE TRANSITION: Off
SPECTRUM ANALYZER MODE: Counter
RESOLUTION BANDWIDTH: 300 Hz
VIDEO BANDWIDTH: 1000 Hz
MODULATION: 16QAM

T, °C	Voltage, V	Frequency, MHz							Max frequency drift, Hz		Limit, Hz	Margin, Hz	Verdict
		Start up	1 st min	2 nd min	3 rd min	4 th min	5 th min	10 th min	Positive	Negative			
Low frequency 806.0125 MHz													
-30	nominal	806.011906	806.011937	806.011937	806.012000	806.011969	806.011969	806.012063	0	-531	1209	-678	Pass
-20	nominal	806.012312	NA	NA	NA	NA	NA	806.012188	0	-250		-959	Pass
-10	nominal	806.012710	NA	NA	NA	NA	NA	806.012630	273	0		-936	Pass
0	nominal	806.013050	806.013050	806.013025	806.013025	806.013025	806.013025	806.013000	613	0		-596	Pass
10	nominal	806.012625	NA	NA	NA	NA	NA	806.012625	188	0		-1021	Pass
20	48	806.012500	NA	NA	NA	NA	NA	806.012594	157	0		-1052	Pass
20	nominal	806.012500	NA	NA	NA	NA	NA	806.012437	63	0		-1146	Pass
20	-15%	806.012437	NA	NA	NA	NA	NA	806.012469	31	0		-1178	Pass
30	nominal	806.012563	806.012531	806.012531	806.012594	806.012531	806.012531	806.012647	210	0		-999	Pass
40	nominal	806.012625	NA	NA	NA	NA	NA	806.012563	187	0		-1022	Pass
50	nominal	806.012531	NA	NA	NA	NA	NA	806.012281	94	-156		-1053	Pass
Mid frequency 813.5125 MHz													
-30	nominal	813.512031	813.511969	813.512000	813.512031	813.51203	813.512000	813.512000	0	-500	2034	-1534	Pass
-20	nominal	813.512219	NA	NA	NA	NA	NA	813.512188	0	-281		-1753	Pass
-10	nominal	813.512630	NA	NA	NA	NA	NA	813.512585	161	0		-1873	Pass
0	nominal	813.512900	813.512900	813.512925	813.512900	813.512900	813.512875	813.512875	456	0		-1578	Pass
10	nominal	813.512563	NA	NA	NA	NA	NA	813.512594	125	0		-1909	Pass
20	48	813.512500	NA	NA	NA	NA	NA	813.512625	156	0		-1878	Pass
20	nominal	813.512437	NA	NA	NA	NA	NA	813.512469	0	-31		-2003	Pass
20	-15%	813.512469	NA	NA	NA	NA	NA	813.512500	31	0		-2003	Pass
30	nominal	813.512563	813.512594	813.512531	813.512625	813.512594	813.512594	813.512594	157	0		-1877	Pass
40	nominal	813.512687	NA	NA	NA	NA	NA	813.512594	218	0		-1816	Pass
50	nominal	813.512219	NA	NA	NA	NA	NA	813.512125	0	-344		-1690	Pass
High frequency 824.9875 MHz													
-30	nominal	824.986969	824.986969	824.987000	824.987063	824.987000	824.987031	824.987000	0	-531	2062	-1531	Pass
-20	nominal	824.987156	NA	NA	NA	NA	NA	824.987188	0	-344		-1718	Pass
-10	nominal	824.987650	NA	NA	NA	NA	NA	824.987585	151	0		-1911	Pass
0	nominal	824.987850	824.987750	824.987800	824.987825	824.987875	824.987800	824.987775	376	0		-1686	Pass
10	nominal	824.987594	NA	NA	NA	NA	NA	824.987625	125	0		-1937	Pass
20	48V	824.987469	NA	NA	NA	NA	NA	824.987531	31	-31		-2031	Pass
20	nominal	824.987438	NA	NA	NA	NA	NA	824.987500	0	-62		-2000	Pass
20	-15%	824.986656	NA	NA	NA	NA	NA	824.987469	0	-843		-1219	Pass
30	nominal	824.987562	824.987594	824.987625	824.987625	824.987625	824.987625	824.987594	125	0		-1937	Pass
40	nominal	824.987500	NA	NA	NA	NA	NA	824.987594	94	0		-1968	Pass
50	nominal	824.987000	NA	NA	NA	NA	NA	824.987063	0	-500		-1562	Pass

* - Reference frequency

** - Battery operating end point specified by the manufacturer.

Test specification:	Section 90.213, Frequency stability		
Test procedure:	47 CFR, Section 2.1055; TIA/EIA-603-A Section 2.2.2		
Test mode:	Compliance	Verdict: PASS	
Date & Time:	5/17/2006 5:19:29 PM		
Temperature: 23 °C	Air Pressure: 1008 hPa	Relative Humidity: 49 %	Power Supply: 12 VDC
Remarks:			

OPERATING FREQUENCY: 896-902 MHz
NOMINAL POWER VOLTAGE: 12 V
TEMPERATURE STABILIZATION PERIOD: 20 min
POWER DURING TEMPERATURE TRANSITION: Off
SPECTRUM ANALYZER MODE: Counter
RESOLUTION BANDWIDTH: 300 Hz
VIDEO BANDWIDTH: 1000 Hz
MODULATION: 16QAM

T, °C	Voltage, V	Frequency, MHz							Max frequency drift, Hz		Limit, Hz	Margin, Hz	Verdict
		Start up	1 st min	2 nd min	3 rd min	4 th min	5 th min	10 th min	Positive	Negative			
Low frequency 896.01875 MHz													
-30	nominal	896.018469	896.018531	896.018563	896.018594	896.018594	896.018594	896.018594	0	-250	1344	-1094	Pass
-20	nominal	896.018500	NA	NA	NA	NA	NA	896.018437	0	-281		-1063	Pass
-10	nominal	896.018855	NA	NA	NA	NA	NA	896.018900	182	0		-1162	Pass
0	nominal	896.019060	896.018985	896.019010	896.018985	896.019010	896.019010	896.018885	342	0		-1002	Pass
10	nominal	896.018875	NA	NA	NA	NA	NA	896.018875	156	0		-1188	Pass
20	48	896.018781	NA	NA	NA	NA	NA	896.018781	63	0		-1281	Pass
20	nominal	896.018781	NA	NA	NA	NA	NA	896.018719*	63	0		-1281	Pass
20	-15%	896.018781	NA	NA	NA	NA	NA	896.018781	63	0		-1281	Pass
30	nominal	896.018813	896.018875	896.018844	896.018875	896.018844	896.018844	896.018844	157	0		-1187	Pass
40	nominal	896.018781	NA	NA	NA	NA	NA	896.018781	63	0		-1281	Pass
50	nominal	896.018344	NA	NA	NA	NA	NA	896.018250	0	-469	-875	Pass	
Mid frequency 898.51875 MHz													
-30	nominal	898.518562	898.518562	898.518625	898.518656	898.518625	898.518625	898.518594	0	-188	1348	-1160	Pass
-20	nominal	898.518438	NA	NA	NA	NA	NA	898.518406	0	-344		-1004	Pass
-10	nominal	898.518855	NA	NA	NA	NA	NA	898.518855	106	0		-1242	Pass
0	nominal	898.518960	898.518960	898.518985	898.518935	898.518935	898.518935	898.518835	236	0		-1112	Pass
10	nominal	898.518781	NA	NA	NA	NA	NA	898.518938	188	0		-1160	Pass
20	48	898.518750	NA	NA	NA	NA	NA	898.518750	0	0		-1348	Pass
20	nominal	898.518750	NA	NA	NA	NA	NA	898.518750*	0	0		-1348	Pass
20	-15%	898.518750	NA	NA	NA	NA	NA	898.518750	0	0		-1348	Pass
30	nominal	898.518906	898.518844	898.518875	898.518844	898.518875	898.518875	898.518875	157	0		-1191	Pass
40	nominal	898.518781	NA	NA	NA	NA	NA	898.518813	63	0		-1285	Pass
50	nominal	898.518313	NA	NA	NA	NA	NA	898.518187	0	-563	-785	Pass	
High frequency 900.98125 MHz													
-30	nominal	900.981094	900.981125	900.981063	900.981094	900.981125	900.981062	900.981031	0	-157	1351	-1194	Pass
-20	nominal	900.980719	NA	NA	NA	NA	NA	900.980906	0	-469		-882	Pass
-10	nominal	900.981400	NA	NA	NA	NA	NA	900.981355	212	0		-1139	Pass
0	nominal	900.981360	900.981360	900.981360	900.981410	900.981385	900.981360	900.981360	222	0		-1129	Pass
10	nominal	900.981313	NA	NA	NA	NA	NA	900.981375	187	0		-1164	Pass
20	48	900.981281	NA	NA	NA	NA	NA	900.981288	100	0		-1251	Pass
20	nominal	900.981250	NA	NA	NA	NA	NA	900.981188*	62	0		-1289	Pass
20	-15%	900.981250	NA	NA	NA	NA	NA	900.981341	153	0		-1198	Pass
30	nominal	900.981313	900.981375	900.981375	900.981375	900.981375	900.981406	900.981437	249	0		-1102	Pass
40	nominal	900.981219	NA	NA	NA	NA	NA	900.981375	187	0		-1164	Pass
50	nominal	900.980781	NA	NA	NA	NA	NA	900.980781	0	-407	-944	Pass	

* - Reference frequency

** - Battery operating end point specified by the manufacturer

Reference numbers of test equipment used

HL 1508	HL 1653	HL 2368				
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Full description is given in Appendix A.

Test specification:		Section 15.107, Conducted emission at AC power port	
Test procedure:		ANSI C63.4, Sections 11.5 and 12.1.3	
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/5/2006 2:46:17 PM		
Temperature: 24 °C	Air Pressure: hPa	Relative Humidity: 43 %	Power Supply: 12 VDC
Remarks:			

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

8.1 Conducted emissions

8.1.1 General

This test was performed to measure common mode conducted emissions at the mains power port. Specification test limits are given in Table 8.1.1. The worst test results (the lowest margins) were recorded in Table 8.1.2 and shown in the associated plots.

Table 8.1.1 Limits for conducted emissions

Frequency, MHz	Class B limit, dB(μV)		Class A limit, dB(μV)	
	QP	AVRG	QP	AVRG
0.15 - 0.5	66 - 56*	56 - 46*	79	66
0.5 - 5.0	56	46	73	60
5.0 - 30	60	50	73	60

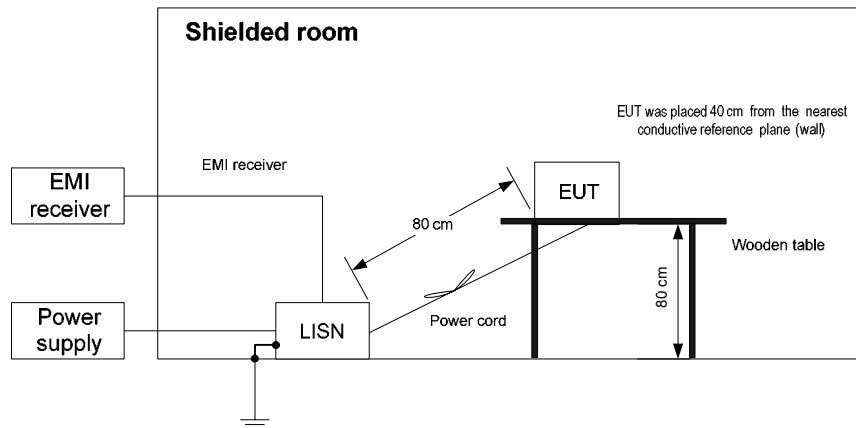
* The limit decreases linearly with the logarithm of frequency.

8.1.2 Test procedure

- 8.1.2.1 The EUT was set up as shown in Figure 8.1.1 and associated photographs, energized and the performance check was conducted.
- 8.1.2.2 The measurements were performed at power terminals with the LISN, connected to a spectrum analyzer in the frequency range referred to in Table 8.1.2. Unused coaxial connector of the LISN was terminated with 50 Ohm. Quasi-peak and average detectors were used throughout the testing.
- 8.1.2.3 The position of the device cables was varied to determine maximum emission level.

Test specification:		Section 15.107, Conducted emission at AC power port	
Test procedure:		ANSI C63.4, Sections 11.5 and 12.1.3	
Test mode:		Compliance	Verdict: PASS
Date & Time:		7/5/2006 2:46:17 PM	
Temperature: 24 °C	Air Pressure: hPa	Relative Humidity: 43 %	Power Supply: 12 VDC
Remarks:			

Figure 8.1.1 Setup for conducted emission measurements, table-top equipment



Photograph 8.1.1 Setup for conducted emission measurements



Test specification:		Section 15.107, Conducted emission at AC power port	
Test procedure:		ANSI C63.4, Sections 11.5 and 12.1.3	
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/5/2006 2:46:17 PM		
Temperature: 24 °C	Air Pressure: hPa	Relative Humidity: 43 %	Power Supply: 12 VDC
Remarks:			

Table 8.1.2 Conducted emission test results

LINE: AC mains
LIMIT: Class B
EUT OPERATING MODE: Receive / Stand-by
EUT SET UP: TABLE-TOP
TEST SITE: SHIELDED ROOM
DETECTORS USED: PEAK / QUASI-PEAK / AVERAGE
FREQUENCY RANGE: 150 kHz - 30 MHz
RESOLUTION BANDWIDTH: 9 kHz

Frequency, MHz	Peak emission, dB(μV)	Quasi-peak			Average			Line ID	Verdict
		Measured emission, dB(μV)	Limit, dB(μV)	Margin, dB*	Measured emission, dB(μV)	Limit, dB(μV)	Margin, dB*		
0.150000	60.32	52.36	66.00	-13.64	16.87	56.00	-39.13	L1	Pass
0.227783	49.66	39.01	62.59	-23.58	10.64	52.59	-41.95		
0.452870	43.23	32.23	56.88	-24.65	5.13	46.88	-41.75		
10.533625	30.33	26.25	60.00	-33.75	19.54	50.00	-30.46		
0.150000	62.25	54.92	66.00	-11.08	24.36	56.00	-31.64	L2	Pass
0.209333	50.46	39.77	63.29	-23.52	13.68	53.29	-39.61		
0.457846	44.13	35.18	56.79	-21.61	6.55	46.79	-40.24		
0.500000	43.21	33.99	56.00	-22.01	6.38	46.00	-39.62		
15.826931	32.74	30.85	60.00	-29.15	28.19	50.00	-21.81		

*- Margin = Measured emission - specification limit.

Reference numbers of test equipment used

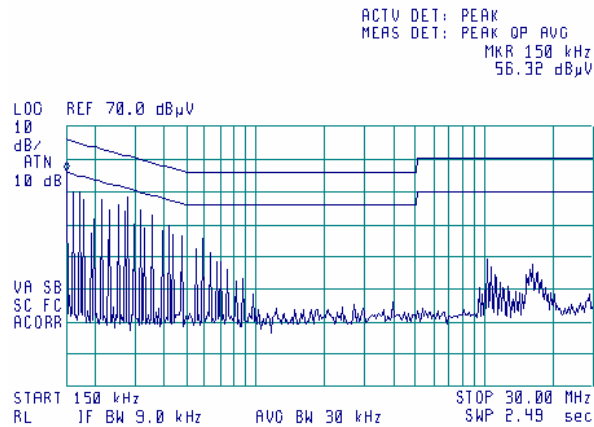
HL 0163	HL 0787	HL 1430	HL 1502	HL 1510	HL 2358		
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Full description is given in Appendix A.

Test specification:	Section 15.107, Conducted emission at AC power port		
Test procedure:	ANSI C63.4, Sections 11.5 and 12.1.3		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/5/2006 2:46:17 PM		
Temperature: 24 °C	Air Pressure: hPa	Relative Humidity: 43 %	Power Supply: 12 VDC
Remarks:			

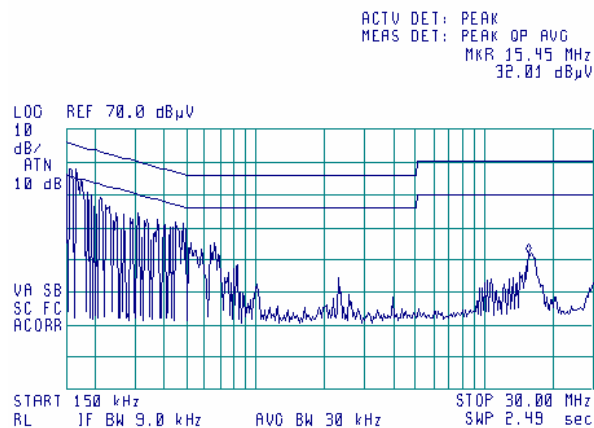
Plot 8.1.1 Conducted emission measurements

LINE: L1
LIMIT: Class B
EUT OPERATING MODE: Receive / Stand-by
LIMIT: QUASI-PEAK, AVERAGE
DETECTOR: PEAK



Plot 8.1.2 Conducted emission measurements

LINE: L2
LIMIT: Class B
EUT OPERATING MODE: Receive / Stand-by
LIMIT: QUASI-PEAK, AVERAGE
DETECTOR: PEAK



Test specification:		Section 15.109, Radiated emission	
Test procedure:		ANSI C63.4, Sections 11.6 and 12.1.4	
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/4/2006 3:00:29 PM		
Temperature: 24°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

8.2 Radiated emission measurements

8.2.1 General

This test was performed to measure radiated emissions from the EUT enclosure. Specification test limits are given in Table 8.2.1.

Table 8.2.1 Radiated emission test limits

Frequency, MHz	Class B limit, dB(μV/m)		Class A limit, dB(μV/m)	
	10 m distance	3 m distance	10 m distance	3 m distance
30 - 88	29.5*	40.0	39.0	49.5*
88 - 216	33.0*	43.5	43.5	54.0*
216 - 960	35.5*	46.0	46.4	56.9*
Above 960	43.5*	54.0	49.5	60.0*

* The limit for test distance other than specified was calculated using the inverse linear distance extrapolation factor as follows: $\text{Lim}_{S_2} = \text{Lim}_{S_1} + 20 \log (S_1/S_2)$, where S_1 and S_2 – standard defined and test distance respectively in meters.

8.2.2 Test procedure for measurements in semi-anechoic chamber

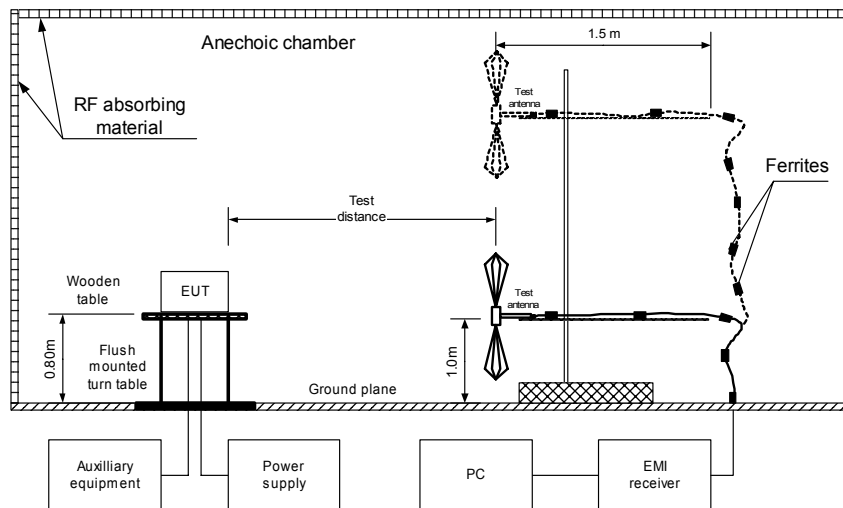
8.2.2.1 The EUT was set up as shown in Figure 8.2.1 and associated photograph, energized and the performance check was conducted.

8.2.2.2 The specified frequency range was investigated with biconilog antenna connected to EMI receiver. To find maximum radiation the turntable was rotated 360°, the measuring antenna height was changed from 1 to 4 m, its polarization was switched from vertical to horizontal and the EUT cables position was varied.

8.2.2.3 The worst test results (the lowest margins) were recorded in Table 8.2.2 and shown in the associated plots.

Test specification: Section 15.109, Radiated emission			
Test procedure: ANSI C63.4, Sections 11.6 and 12.1.4			
Test mode: Compliance		Verdict: PASS	
Date & Time: 7/4/2006 3:00:29 PM			
Temperature: 24°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Figure 8.2.1 Setup for radiated emission measurements in anechoic chamber, table-top equipment



Photograph 8.2.1 Setup for preliminary radiated emission measurements



Test specification:		Section 15.109, Radiated emission	
Test procedure:		ANSI C63.4, Sections 11.6 and 12.1.4	
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/4/2006 3:00:29 PM		
Temperature: 24°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Table 8.2.2 Radiated emission test results

EUT SET UP: TABLE-TOP
LIMIT: Class B
EUT OPERATING MODE: Receive / Stand-by
TEST SITE: SEMI ANECHOIC CHAMBER
TEST DISTANCE: 3 m
DETECTORS USED: PEAK / QUASI-PEAK
FREQUENCY RANGE: 30 MHz – 1000 MHz
RESOLUTION BANDWIDTH: 120 kHz

Frequency, MHz	Peak emission, dB(μV/m)	Quasi-peak			Antenna polarization	Antenna height, m	Turn-table position**, degrees	Verdict
		Measured emission, dB(μV/m)	Limit, dB(μV/m)	Margin, dB*				
129.000000	44.20	41.77	43.50	-1.73	H	1.2	220	Pass
131.250000	43.83	41.75	43.50	-1.75	H	1.5	130	
147.000000	35.41	32.67	43.50	-10.83	V	1.5	30	
172.071250	37.69	35.74	43.50	-7.76	H	1.2	208	
258.056500	35.92	35.03	46.00	-10.97	H	1.5	115	
516.157500	37.01	35.58	46.00	-10.42	H	2.0	142	

TEST SITE: SEMI ANECHOIC CHAMBER
TEST DISTANCE: 3 m
DETECTORS USED: PEAK / AVERAGE
FREQUENCY RANGE: 1000 MHz – 6500 MHz
RESOLUTION BANDWIDTH: 1000 kHz

REGULATION BANDWIDTH:					100 KHz			
Frequency, MHz	Peak emission, dB(μV/m)	Average			Antenna polarization	Antenna height, m	Turn-table position**, degrees	Verdict
		Measured emission, dB(μV/m)	Limit, dB(μV/m)	Margin, dB*				
No spurious were found								Pass

*- Margin = Measured emission - specification limit.

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

Reference numbers of test equipment used

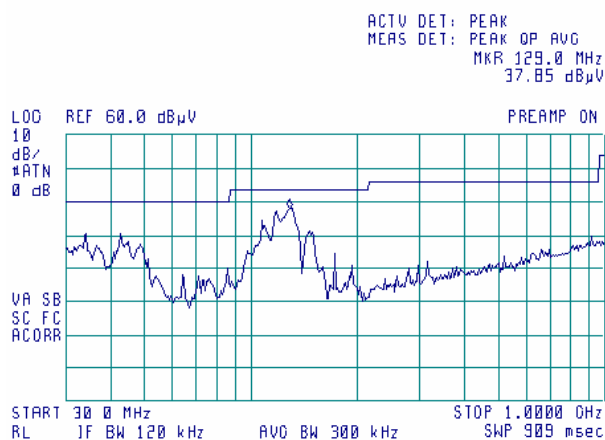
HL 0521	HL 0589	HL 0592	HL 0593	HL 0594	HL 0604	HL 1947	HL 2009
HL 2432							

Full description is given in Appendix A.

Test specification:	Section 15.109, Radiated emission		
Test procedure:	ANSI C63.4, Sections 11.6 and 12.1.4		
Test mode:	Compliance	Verdict:	PASS
Date & Time:	7/4/2006 3:00:29 PM		
Temperature: 24°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

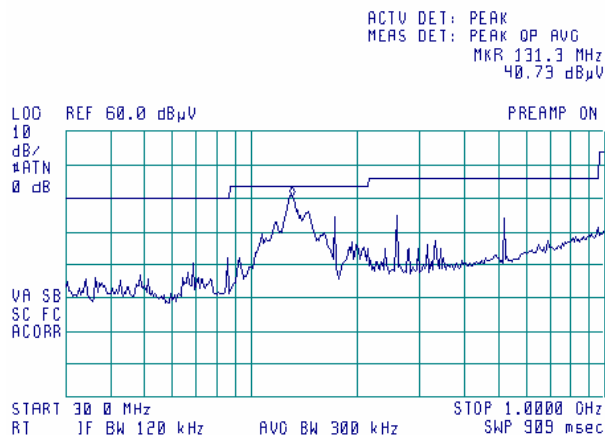
Plot 8.2.1 Radiated emission measurements in 30 - 1000 MHz range, vertical antenna polarization

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



Plot 8.2.2 Radiated emission measurements in 30 - 1000 MHz range, horizontal antenna polarization

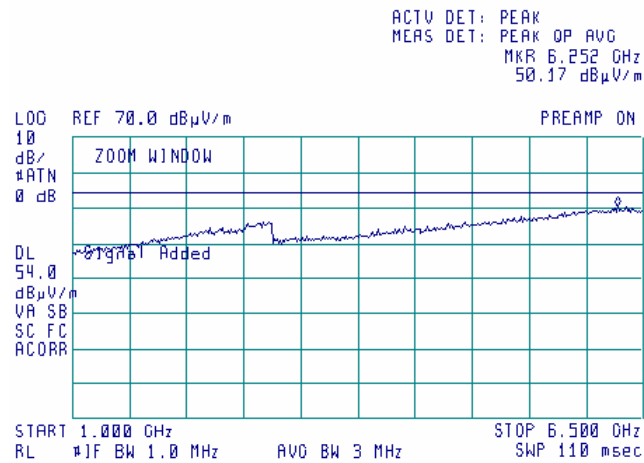
TEST SITE: Semi anechoic chamber
LIMIT: Class B
TEST DISTANCE: 3 m
EUT OPERATING MODE: Receive / Stand-by



Test specification:		Section 15.109, Radiated emission	
Test procedure:		ANSI C63.4, Sections 11.6 and 12.1.4	
Test mode:		Compliance	Verdict: PASS
Date & Time:		7/4/2006 3:00:29 PM	
Temperature: 24°C	Air Pressure: 1010 hPa	Relative Humidity: 48 %	Power Supply: 12 VDC
Remarks:			

Plot 8.2.3 Radiated emission measurements above 1000 MHz, vertical & horizontal antenna polarization

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



9 APPENDIX A Test equipment and ancillaries used for tests

HL No	Description	Manufacturer	Model	Ser. No.	Last Cal.	Due Cal.
0038	Antenna Mast, 1-4 meter, motorized	HL	AM - 1	028	02-Feb-06	02-Feb-07
0091	Position Controller, for Antenna Mast + Turn Table, OFTS	HL	CRL-2	032	20-Apr-06	20-Apr-07
0163	LISN FCC/VDE/MIL-STD	Electro-Metrics	ANS 25/2	1314	01-Oct-05	01-Oct-06
0287	Turntable, Motorized Diameter, 2 m (OATS)	HL	TMD-2	042	11-Nov-05	11-Nov-06
0446	Antenna, Loop active, 10kHz-30MHz	EMCO	6502	2857	28-Jun-06	28-Jun-07
0521	EMI Receiver (Spectrum Analyzer) with RF filter section 9 kHz-6.5 GHz	Hewlett Packard	8546A	3617A 00319, 3448A002 53	26-Sep-05	26-Sep-06
0589	Cable Coaxial, GORE A2P01POL118, 2.3 m	HL	GORE-3	176	02-Dec-05	02-Dec-06
0592	Position Controller	HL	L2-SR3000 (HL CRL-3)	100	18-May-06	18-May-07
0593	Antenna Mast, 1-4 m Pneumatic	Madgesh	AM-F1	101	02-Feb-06	02-Feb-07
0594	Turn Table FOR ANECHOIC CHAMBER flush mount d=1.2 m Pneumatic	HL	TT-WDC1	102	26-Jan-06	26-Jan-07
0604	Antenna BiconiLog Log-Periodic/T Bow-TIE 26 - 2000 MHz	EMCO	3141	9611-1011	10-Jan-06	10-Jan-07
0787	Transient Limiter	Hewlett Packard	11947A	3107A018 77	21-Nov-05	21-Nov-06
1424	Spectrum Analyzer, 30 Hz- 40 GHz	Agilent Technologies	8564EC	3946A002 19	30-Aug-05	30-Aug-06
1425	EMI Receiver, 9 kHz - 2.9 GHz, System: HL1426, HL1427	Agilent Technologies	8542E	3710A002 22, 3705A002 04	01-Sep-05	01-Sep-06
1430	EMI Receiver, 9 kHz - 2.9 GHz, System: HL1431, HL1432	Agilent Technologies	8542E	3807A002 62,3705A0 0217	01-Sep-05	01-Sep-06
1502	Cable RF, 6 m	Belden	M17/167 MIL-C-17	1502	02-Dec-05	02-Dec-06
1508	Cable RF, 2 m, BNC/BNC	Telequis	RG-58 C/U	1508	28-Feb-06	28-Feb-07
1510	Cable RF, 8 m	Belden	M17/167 MIL-C-17	1510	02-Dec-05	02-Dec-06
1553	Cable RF, 3.5 m	Alpha Wire	RG-214	1553	02-Dec-05	02-Dec-06
1566	Cable RF, 2 m	Huber-Suhner	Sucoflex 104PE	13094/4PE	02-Dec-05	02-Dec-06
1653	Analyzer EMC 9 kHz - 1.5 GHz	Agilent Technologies	E7401A	US394402 81	06-Feb-06	06-Feb-07
1849	Antenna mast with polarity control (Small Anechoic chamber)	Sh. I. Machines	AM-F4	1849	18-Jan-06	18-Jan-07
1850	Turntable	Sh. I. Machines	TT-M-3	1850	11-Nov-05	11-Nov-06
1942	Cable 18GHz, 4 m, blue	Rhophase Microwave Limited	SPS-1803A-4000-NPS	T4658	01-Jan-06	01-Jan-07

HL No	Description	Manufacturer	Model	Ser. No.	Last Cal.	Due Cal.
1947	Cable 18GHz, 6.5 m, blue	Rhophase Microwave Limited	NPS-1803A-6500-NPS	T4974	17-Oct-05	17-Oct-06
1984	Antenna, Double-Ridged Waveguide Horn, 1-18 GHz, 300 W, N-type	EMC Test Systems	3115	9911-5964	03-Mar-06	03-Mar-07
2009	Cable RF, 8 m	Alpha Wire	RG-214	C-56	02-Dec-05	02-Dec-06
2109	Anechoic Chamber 6(L) x 5.5(W) x 2.95(H) m	HL	AC-2	2109	11-Nov-05	11-Nov-06
2254	Cable 40GHz, 0.8 m, blue	Rhophase Microwave Limited	KPS-1503A-800-KPS	W4907	21-Jun-06	21-Jun-07
2259	Amplifier Low Noise 2-20 GHz	Sophia Wireless	LNA0220-C	0223	05-Nov-05	05-Nov-06
2358	Power Supply, 2 X 0-36VDC / 5A, 5VDC / 5A	Horizon Electronics	DHR3655 D	767469	07-Apr-06	07-Apr-07
2368	Pressure Gauge 0-6 bar / 0.2 bar	Wika	6/0.2	2368	01-Jan-06	01-Jan-07
2400	Cable 40GHz, 1.5 m, green	Rhophase Microwave Limited	KPS-1503A-1500-KPS	X2946	21-Jun-06	21-Jun-07
2432	Antenna, Double-Ridged Waveguide Horn 1-18 GHz	EMC Test Systems	3115	00027177	03-Mar-06	03-Mar-07
2634	Power Supply, 0-36.0 VDC, 0-12.0 A	NEMIC-LAMBDA	UP36-12	2634	29-Aug-05	29-Aug-06
2697	Antenna, 30 MHz - 3.0 GHz,	Sunol Sciences Corp. Pleasanton, California USA	JB3	A022805	10-Jan-06	10-Jan-07
2909	Spectrum analyzer, ESA-E, 100 Hz to 26.5 GHz	Agilent Technologies	E4407B	MY414447 62	10-Apr-06	10-Apr-07

10 APPENDIX B Measurement uncertainties

Expanded uncertainty at 95% confidence in Hermon Labs EMC measurements

Test description	Expanded uncertainty
Transmitter tests	
Carrier power conducted at antenna connector	± 1.7 dB
Carrier power radiated (substitution method)	± 4.5 dB
Occupied bandwidth	$\pm 8\%$
Conducted emissions at RF antenna connector	9 kHz to 2.9 GHz: ± 2.6 dB 2.9 GHz to 6.46 GHz: ± 3.5 dB 6.46 GHz to 13.2 GHz: ± 4.3 dB 13.2 GHz to 22.0 GHz: ± 5.0 dB 22.0 GHz to 26.8 GHz: ± 5.5 dB 26.8 GHz to 40.0 GHz: ± 4.8 dB
Spurious emissions radiated 30 MHz – 40 GHz (substitution method)	± 4.5 dB
Frequency error	30 – 300 MHz: ± 50.5 Hz (1.68 ppm) 300 – 1000 MHz: ± 168 Hz (0.56 ppm)
Transient frequency behaviour	187 Hz $\pm 13.9\%$
Duty cycle, timing (Tx ON / OFF) and average factor measurements	$\pm 1.0\%$
Unintentional radiator tests	
Conducted emissions with LISN	9 kHz to 150 kHz: ± 3.9 dB 150 kHz to 30 MHz: ± 3.8 dB
Radiated emissions at 3 m measuring distance Horizontal polarization	Biconilog antenna: ± 5.3 dB Biconical antenna: ± 5.0 dB Log periodic antenna: ± 5.3 dB Double ridged horn antenna: ± 5.3 dB
Vertical polarization	Biconilog antenna: ± 6.0 dB Biconical antenna: ± 5.7 dB Log periodic antenna: ± 6.0 dB Double ridged horn antenna: ± 6.0 dB

The test equipment has been calibrated according to its recommended procedures and is within the manufacturer's published limit of error. The standards and instruments used in the calibration system conform to the present requirements of ISO/IEC 17025 (or alternately ANSI/NCSL Z540-1).

The laboratory calibrates its measurement standards by a third party (traceable to NIST, USA) on a regular basis according to equipment manufacturer requirements. The Hermon Labs EMC measurements uncertainty is given in the table above.

11 APPENDIX C Test facility description

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

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12 APPENDIX D Specification references

47CFR part 90: 2005	Private land mobile radio services
47CFR part 15: 2005	Radio frequency devices
47CFR part 1: 2005	Practice and procedure
47CFR part 2: 2005	Frequency allocations and radio treaty matters; general rules and regulations
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.
ANSI/TIA/EIA-603-A:2001	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards

13 APPENDIX E Abbreviations and acronyms

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

14 APPENDIX F Test equipment correction factors

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

Antenna factor

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

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

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

Antenna factor
Double-ridged guide horn antenna
Model 3115, serial number: 00027177, HL2432

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(μ V) to convert it into field intensity in dB(μ V/m).



Antenna calibration
Sunol Sciences Inc., model JB3, serial number A022805

Frequency, MHz	ACF, dB	Gain, dBi	Num gain	Frequency, MHz	ACF, dB	Gain, dBi	Num gain	Frequency, MHz	ACF, dB	Gain, dBi	Num gain	Frequency, MHz	ACF, dB	Gain, dBi	Num gain	Frequency, MHz	ACF, dB	Gain, dBi	Num gain
30	22.2	-22.5	0.01	520	19.7	6.3	4.27	1215	24.9	7.0	5.05	1810	28.3	7.1	5.08	2405	30.9	6.9	4.93
35	18.5	-17.4	0.02	525	19.7	6.5	4.42	1220	24.9	7.0	4.99	1815	28.5	6.9	4.91	2410	30.9	6.9	4.89
40	14.7	-12.5	0.06	530	19.6	6.6	4.57	1225	25.1	6.9	4.91	1820	28.6	6.8	4.74	2415	31.0	6.9	4.85
45	11.3	-8.1	0.16	535	19.7	6.5	4.48	1230	25.2	6.8	4.92	1825	28.7	6.8	4.76	2420	31.0	6.8	4.82
45	11.3	-8.1	0.16	540	19.9	6.4	4.40	1235	25.1	7.0	4.96	1830	28.7	6.8	4.76	2425	31.1	6.8	4.81
50	8.9	-4.7	0.34	545	19.9	6.5	4.45	1240	25.0	7.1	5.09	1835	28.7	6.7	4.72	2430	31.0	6.9	4.87
55	7.9	-2.8	0.52	550	19.9	6.5	4.51	1245	25.0	7.1	5.12	1840	28.8	6.7	4.69	2435	31.0	6.9	4.88
60	7.8	-2.1	0.62	555	19.9	6.6	4.60	1250	25.0	7.1	5.15	1845	28.6	6.9	4.90	2440	31.2	6.8	4.74
70	9.0	-1.0	0.64	565	19.9	6.7	4.70	1260	24.9	7.3	5.36	1855	28.5	7.0	5.07	2450	31.0	7.0	4.96
75	8.8	-1.1	0.78	570	20.0	6.7	4.71	1265	25.0	7.3	5.31	1860	28.6	7.0	5.01	2455	31.0	7.0	5.01
80	8.4	-0.2	0.97	575	20.1	6.7	4.71	1270	25.1	7.2	5.26	1865	28.5	7.1	5.17	2460	30.9	7.2	5.19
85	8.0	0.8	1.20	580	20.1	6.7	4.71	1275	25.3	7.0	5.05	1870	28.4	7.3	5.33	2465	31.1	6.9	4.95
90	8.2	1.1	1.29	585	20.1	6.8	4.79	1280	25.5	6.8	4.84	1875	28.4	7.2	5.28	2470	31.3	6.8	4.76
95	9.2	0.5	1.13	590	20.1	6.9	4.88	1285	25.4	7.0	4.97	1880	28.5	7.2	5.22	2475	31.4	6.7	4.69
100	10.6	-0.4	0.92	595	20.2	6.8	4.82	1290	25.3	7.1	5.10	1885	28.5	7.2	5.22	2480	31.3	6.8	4.79
105	11.7	-1.1	0.78	700	20.3	6.8	4.76	1295	25.3	7.2	5.22	1890	28.6	7.2	5.21	2485	31.1	7.0	5.00
110	12.6	-1.6	0.70	705	20.4	6.8	4.75	1300	25.2	7.3	5.33	1895	28.6	7.2	5.24	2490	31.1	7.0	4.99
115	13.3	-1.9	0.65	710	20.5	6.8	4.75	1305	25.3	7.2	5.21	1900	28.6	7.2	5.27	2495	31.2	7.0	4.99
120	13.9	-2.1	0.62	715	20.5	6.8	4.80	1310	25.5	7.1	5.09	1905	28.5	7.3	5.36	2500	30.9	7.2	5.27
125	14.2	-2.0	0.63	720	20.5	6.9	4.85	1315	25.4	7.2	5.23	1910	28.5	7.4	5.45	2505	31.1	7.1	5.15
130	14.2	-1.7	0.68	725	20.6	6.8	4.81	1320	25.3	7.3	5.36	1915	28.5	7.3	5.38	2510	31.0	7.2	5.22
135	13.8	-1.0	0.79	730	20.7	6.8	4.77	1325	25.5	7.2	5.21	1920	28.6	7.3	5.31	2515	31.0	7.2	5.26
140	13.4	0.8	1.04	735	20.9	6.8	4.65	1330	25.6	7.0	5.06	1925	28.6	7.3	5.35	2520	31.2	7.0	5.05
145	13.1	0.3	1.08	740	21.0	6.6	4.53	1335	25.7	7.1	5.07	1930	28.6	7.3	5.38	2525	31.2	7.4	5.54
150	12.9	0.8	1.21	745	21.0	6.6	4.59	1340	25.7	7.1	5.09	1935	28.5	7.4	5.54	2530	31.0	7.3	5.37
155	12.7	1.3	1.34	750	21.0	6.7	4.64	1345	25.7	7.1	5.13	1940	28.4	7.6	6.70	2535	31.2	7.0	5.06
160	12.7	1.6	1.44	755	21.0	6.8	4.74	1350	25.7	7.1	5.17	1945	28.5	7.5	5.69	2540	31.2	7.1	5.09
170	12.2	2.6	1.83	765	21.1	6.8	4.73	1360	25.9	6.9	4.95	1955	28.6	7.5	5.67	2550	31.0	7.3	5.36
175	11.5	3.3	2.13	770	21.3	6.7	4.64	1365	26.3	7.0	4.95	1965	28.6	7.5	5.65	2555	31.0	7.2	5.30
180	11.6	3.7	2.36	775	21.3	6.7	4.68	1370	26.0	7.0	4.96	1965	28.7	7.4	5.47	2560	31.0	7.4	5.47
185	11.5	4.0	2.54	780	21.3	6.7	4.72	1375	26.0	7.0	5.01	1970	28.9	7.2	5.29	2565	30.8	7.6	5.70
190	11.6	4.2	2.61	785	21.3	6.8	4.77	1380	26.0	7.0	5.06	1975	28.9	7.2	5.22	2570	31.1	7.3	5.37
195	12.1	3.9	2.47	790	21.3	6.8	4.82	1385	26.0	7.0	4.99	1980	29.0	7.1	5.16	2575	31.0	7.0	4.96
200	12.2	3.1	2.07	795	21.4	6.8	4.79	1390	26.1	6.9	4.79	1985	29.1	7.1	5.11	2580	31.6	6.9	4.87
205	12.0	4.4	2.76	800	21.5	6.8	4.77	1395	26.2	6.9	4.94	1990	29.1	7.0	5.06	2585	31.6	6.8	4.79
210	11.0	5.6	3.66	805	21.6	6.7	4.71	1400	26.2	7.0	4.96	1995	29.1	7.1	5.09	2590	31.6	6.9	4.88
215	11.3	5.6	3.69	810	21.7	6.7	4.65	1405	26.1	7.0	5.02	2000	29.1	7.1	5.11	2595	31.5	7.0	4.97
220	11.6	5.5	3.52	815	21.7	6.7	4.72	1410	26.1	7.1	5.09	2005	29.1	7.1	5.16	2600	31.6	6.9	4.86
225	11.7	5.5	3.55	820	21.7	6.8	4.80	1415	26.2	7.0	5.02	2010	29.1	7.1	5.15	2605	31.3	7.2	5.30
230	11.9	5.6	3.67	825	21.7	6.8	4.82	1420	26.3	7.0	4.98	2015	29.2	7.1	5.13	2610	31.4	7.1	5.15
235	12.1	5.5	3.56	830	21.7	6.9	4.85	1425	26.2	7.1	5.10	2020	29.2	7.1	5.18	2615	31.7	6.9	4.88
240	12.3	5.5	3.64	835	21.8	6.8	4.82	1430	26.1	7.2	5.25	2025	29.3	7.1	5.08	2620	31.6	7.0	4.97
245	12.3	5.7	3.71	840	21.9	6.8	4.80	1435	26.1	7.2	5.24	2030	29.3	7.0	5.05	2625	31.4	7.1	5.17
250	12.3	5.9	3.88	845	21.9	6.8	4.83	1440	26.2	7.2	5.24	2035	29.3	7.1	5.07	2630	31.6	7.0	5.00
255	12.5	5.9	3.85	850	21.9	6.9	4.86	1445	26.3	7.1	5.11	2040	29.3	7.1	5.13	2635	31.8	6.8	4.82
260	12.7	5.8	3.83	855	22.0	6.8	4.80	1450	26.5	7.0	4.98	2045	29.2	7.2	5.23	2640	31.7	7.0	4.98
265	13.2	5.5	3.54	860	22.1	6.8	4.74	1455	26.4	7.1	5.07	2050	29.2	7.2	5.27	2645	31.7	6.9	4.93
270	13.7	5.2	3.27	865	22.0	6.9	4.92	1460	26.4	7.1	5.17	2055	29.3	7.2	5.21	2650	31.8	6.9	4.85
275	13.7	5.3	3.39	870	21.9	7.1	5.11	1465	26.4	7.2	5.19	2060	29.5	7.0	5.02	2655	31.8	6.9	4.85
280	13.7	5.4	3.50	875	22.0	7.1	5.08	1470	26.4	7.2	5.22	2065	29.4	7.1	5.08	2660	31.7	7.0	5.02
285	13.7	5.6	3.61	880	22.1	7.0	5.05	1475	26.4	7.1	5.17	2070	29.4	7.1	5.10	2665	32.0	6.7	4.71
290	13.7	5.7	3.72	885	22.1	7.0	5.06	1480	26.5	7.0	5.12	2075	29.5	7.0	5.07	2670	32.0	6.7	4.67
295	13.8	5.8	3.77	890	22.1	7.0	5.06	1485	26.5	7.1	5.14	2080	29.8	6.8	4.76	2675	31.9	6.8	4.81
300	13.9	5.8	3.81	895	22.2	7.1	5.09	1490	26.5	7.1	5.17	2085	29.7	6.9	4.89	2680	31.7	7.0	5.04
305	14.0	5.9	3.85	900	22.2	7.1	5.12	1495	26.5	7.2	5.24	2090	29.7	6.9	4.86	2685	31.9	6.8	4.83
310	14.1	5.9	3.88	905	22.3	7.1	5.09	1500	26.5	7.2	5.31	2095	29.8	6.8	4.78	2690	32.1	6.7	4.72
315	14.3	5.9	3.89	910	22.3	7.0	5.05	1505	26.5	7.2	5.27	2100	29.9	6.8	4.75	2695	32.1	6.7	4.71
320	14.4	5.9	3.90	915	22.4	7.0	4.99	1510	26.6	7.2	5.33	2105	29.8	6.8	4.81	2700	32.0	6.8	4.81
325	14.5	5.9	3.92	920	22.6	6.9	4.92	1515	26.6	7.2	5.30	2110	29.9	6.8	4.78	2705	32.0	6.8	4.80
330	14.6	5.9	3.93	925	22.7	6.9	4.85	1520	26.5	7.3	5.38	2115	29.9	6.8	4.76	2710	32.1	6.8	4.79
340	14.7	6.2	4.12	935	22.8	6.8	4.83	1530	26.6	7.3	5.36	2125	29.9	6.9	4.89	2720	32.4	6.5	4.47
345	14.9	6.1	4.06	940	22.8	6.9	4.89	1535	26.6	7.4	5.44	2130	29.9	6.9	4.90	2725	32.2	6.7	4.63
350	15.1	6.0	3.99	945	22.8	6.9	4.87	1540	26.5	7.4	5.53	2135	29.8	6.9	4.94	2730	31.9	7.0	5.05
360	15.6	5.8	3.78	955	23.0	6.8	4.81	1550	26.5	7.5	5.63	2145	29.9	6.8	4.92	2740	31.6	7.1	5.46
365	15.5	5.9	3.89	960	23.1	6.8	4.77	1555	26.7	7.3	5.39	2150	29.9	7.0	4.98	2745	31.9	7.0	5.06
370	15.5	6.0	4.01	965	23.1	6.7	4.73	1560	26.9	7.1	5.16	2155	29.8	7.1	5.10	2750	32.0	6.9	4.94
375	15.6	6.1	4.03	970	23.2	6.7	4.69	1565	26.9	7.2	5.23	2160	29.8	7.1	5.09	2755	32.0	7.0	5.06
380	15.7	6.1	4.05	975	23.3	6.6	4.62	15											

Cable loss

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

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

Cable loss
Cable coaxial, 6 m, model: M17/167 MIL-C-17, HL 1502

Frequency, MHz	Cable loss, dB
0.1	0.02
1	0.07
3	0.15
5	0.17
10	0.26
30	0.43
50	0.57
80	0.72
100	0.81
300	1.48
500	2.00
800	2.70
1000	3.09

Cable loss
Cable M17/167 MIL-C-17, HL 1510

No.	Frequency, MHz	Cable loss, dB
1	0.1	0.05
2	1	0.09
3	3	0.16
4	5	0.18
5	10	0.27
6	30	0.44
7	50	0.58
8	80	0.69
9	100	0.82
10	300	1.48
11	500	2.01
12	800	2.65
13	1000	3.12

Cable loss
RF cable 3.5 m, Alpha Wire, model RG-214, S/N 149, HL 1553

No.	Frequency, MHz	Cable loss, dB	Measurement uncertainty, dB
1	1	0.01	±0.05
2	10	0.07	
3	30	0.12	
4	50	0.22	
5	100	0.26	
6	200	0.40	
7	300	0.52	
8	400	0.60	
9	500	0.70	
10	600	0.77	
11	700	0.84	
12	800	1.00	
13	900	1.00	
14	1000	1.05	
15	2000	1.70	

Cable loss
Cable RF, 2m, model: Sucoflex 104PE, S/N 13094/4PE, HL 1566

No.	Frequency, MHz	Cable loss, dB	Tolerance, dB	Measurement uncertainty, dB
1	30	0.10	≤ 5.0	±0.12
2	50	0.13		
3	100	0.20		
4	300	0.33		
5	500	0.45		
6	800	0.60		
7	1000	0.65		
8	1500	0.91		
9	2000	1.08		
10	2500	1.19		
11	3000	1.28		
12	3500	1.49		
13	4000	1.63		
14	4500	1.63	≤ 5.0	±0.17
15	5000	1.66		
16	5500	1.88		
17	6000	1.96		
18	6500	1.93		
19	7000	2.07		
20	7500	2.37		
21	8000	2.34		
22	8500	2.64		
23	9000	2.68		
24	9500	2.64		
25	10000	2.70		
26	10500	2.84		
27	11000	2.88		
28	11500	3.19		
29	12000	3.15		
30	12500	3.20	≤ 5.0	±0.26
31	13000	3.22		
32	13500	3.47		
33	14000	3.41		
34	14500	3.59		
35	15000	3.79		
36	15500	4.24		
37	16000	4.12		
38	16500	4.46		
39	17000	4.50		
40	17500	4.49		
41	18000	4.45		

Cable loss
Cable 18 GHz, 4 m, blue, model: SPS-1803A-4000-NPS, S/N T4658, HL 1942

Frequency, GHz	Cable loss, dB
0.03	0.21
0.05	0.26
0.10	0.36
0.20	0.50
0.30	0.61
0.40	0.70
0.50	0.78
0.60	0.85
0.70	0.93
0.80	0.99
0.90	1.04
1.00	1.10
1.10	1.16
1.20	1.22
1.30	1.26
1.40	1.31
1.50	1.35
1.60	1.41
1.70	1.45
1.80	1.49
1.90	1.53
2.00	1.57
2.10	1.61
2.20	1.65
2.30	1.69
2.40	1.72
2.50	1.76
2.60	1.79
2.70	1.83
2.80	1.87
2.90	1.90
3.10	1.97
3.30	2.04
3.50	2.11
3.70	2.18
3.90	2.24
4.10	2.31
4.30	2.38
4.50	2.43
4.70	2.53
4.90	2.53
5.10	2.63
5.30	2.65
5.50	2.72
5.70	2.76
5.90	2.79

Frequency, GHz	Cable loss, dB
6.10	2.88
6.30	2.90
6.50	2.97
6.70	3.02
6.90	3.04
7.10	3.07
7.30	3.12
7.50	3.13
7.70	3.19
7.90	3.24
8.10	3.30
8.30	3.36
8.50	3.45
8.70	3.41
8.90	3.45
9.10	3.42
9.30	3.55
9.50	3.48
9.70	3.58
9.90	3.61
10.10	3.66
10.30	3.68
10.50	3.70
10.70	3.70
10.90	3.75
11.10	3.78
11.30	3.86
11.50	3.98
11.70	4.10
11.90	4.12
12.10	4.09
12.40	4.13
13.00	4.23
13.50	4.35
14.00	4.40
14.50	4.44
15.00	4.57
15.50	4.66
16.00	4.64
16.50	4.66
17.00	4.75
17.50	4.85
18.00	4.93

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

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

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

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

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

Cable loss
Cable 40 GHz, 0.8 m, blue, model: KPS-1503A-800-KPS, S/N W4907, HL 2254

Frequency, GHz	Cable loss, dB	Frequency, GHz	Cable loss, dB	Frequency, GHz	Cable loss, dB
0.03	0.04	5.10	0.80	15.00	1.49
0.05	0.07	5.30	0.83	15.50	1.49
0.10	0.09	5.50	0.83	16.00	1.46
0.20	0.15	5.70	0.84	16.50	1.47
0.30	0.19	5.90	0.87	17.00	1.50
0.40	0.25	6.10	0.86	17.50	1.57
0.50	0.29	6.30	0.89	18.00	1.63
0.60	0.33	6.50	0.90	18.50	1.57
0.70	0.37	6.70	0.89	19.00	1.63
0.80	0.41	6.90	0.93	19.50	1.65
0.90	0.44	7.10	0.92	20.00	1.64
1.00	0.45	7.30	0.95	20.50	1.75
1.10	0.48	7.50	0.96	21.00	1.72
1.20	0.51	7.70	0.97	21.50	1.78
1.30	0.53	7.90	1.01	22.00	1.76
1.40	0.54	8.10	1.00	22.50	1.72
1.50	0.57	8.30	1.05	23.00	1.83
1.60	0.59	8.50	1.04	23.50	1.80
1.70	0.04	8.70	1.07	24.00	1.90
1.80	0.07	8.90	1.11	24.50	1.81
1.90	0.09	9.10	1.09	25.00	1.98
2.00	0.15	9.30	1.14	25.50	1.91
2.10	0.19	9.50	1.12	26.00	2.02
2.20	0.25	9.70	1.15	26.50	1.92
2.30	0.29	9.90	1.16	27.00	1.97
2.40	0.33	10.10	1.16	28.00	2.02
2.50	0.37	10.30	1.19	29.00	1.95
2.60	0.41	10.50	1.14	30.00	1.94
2.70	0.44	10.70	1.19	31.00	2.11
2.80	0.45	10.90	1.17	32.00	2.17
2.90	0.48	11.10	1.13	33.00	2.27
3.10	0.61	11.30	1.20	34.00	2.27
3.30	0.64	11.50	1.13	35.00	2.29
3.50	0.65	11.70	1.20	36.00	2.35
3.70	0.68	11.90	1.18	37.00	2.37
3.90	0.69	12.10	1.14	38.00	2.40
4.10	0.71	12.40	1.19	39.00	2.57
4.30	0.73	13.00	1.34	40.00	2.36
4.50	0.75	13.50	1.33		
4.70	0.77	14.00	1.48		
4.90	0.79	14.50	1.45		

Cable loss

Cable coaxial, 40GHz, 1.5 m, green, Rhophase Microwave Limited, model: KPS-1503A-1500-KPS, HL 2400

Frequency, GHz	Cable loss, dB	Frequency, GHz	Cable loss, dB	Frequency, GHz	Cable loss, dB
0.03	0.06	6.5	1.46	15.50	2.34
0.05	0.08	6.7	1.49	16.00	2.34
0.1	0.15	6.9	1.50	16.50	2.40
0.2	0.23	7.1	1.51	17.00	2.46
0.3	0.29	7.3	1.55	17.50	2.54
0.5	0.37	7.5	1.56	18.00	2.61
0.7	0.46	7.7	1.58	18.50	2.59
0.9	0.53	7.9	1.60	19.00	2.59
1.1	0.58	8.1	1.61	19.50	2.67
1.3	0.65	8.3	1.68	20.00	2.62
1.5	0.66	8.5	1.68	20.50	2.73
1.7	0.72	8.7	1.75	21.00	2.71
1.9	0.76	8.9	1.74	21.50	2.78
2.1	0.79	9.1	1.81	22.00	2.83
2.3	0.85	9.3	1.79	22.50	2.81
2.5	0.90	9.5	1.86	23.50	2.91
2.7	0.91	9.7	1.85	24.00	2.97
2.9	0.97	9.9	1.87	24.50	2.98
3.1	0.97	10.1	1.88	25.00	2.97
3.3	1.03	10.30	1.82	25.50	3.03
3.5	1.06	10.50	1.92	26.00	3.04
3.7	1.10	10.70	1.86	26.50	3.11
3.9	1.13	10.90	1.96	27.00	2.97
4.1	1.16	11.10	1.90	28.00	3.15
4.3	1.18	11.30	1.99	29.00	3.07
4.5	1.21	11.50	1.95	30.00	3.13
4.7	1.23	11.70	2.00	31.00	3.13
4.9	1.26	11.90	2.01	32.00	3.18
5.1	1.28	12.10	1.99	33.00	3.31
5.3	1.31	12.40	2.06	34.00	3.32
5.5	1.32	13.00	2.11	35.00	3.37
5.7	1.36	13.50	2.17	36.00	3.36
5.9	1.37	14.00	2.36	37.00	3.46
6.1	1.38	14.50	2.32	39.00	3.49
6.3	1.44	15.00	2.30	40.00	3.52

Annex 1 to the test report MOTRAD_FCC.17112

Modulation Characteristics and Necessary Bandwidth -- Pursuant 47 CFR 2.1033(c) 13, 2.1047(d) & 2.202

- 6a.2.1 Digitally encoded digital data is transmitted in groups of four sub-channels at a 4 kHz rate using M-ary symbols mapped to predetermined fixed magnitude and phase components within 1 of 3 constellations associated with a particular modulation scheme. One to four groups of four sub-channel streams are combined using frequency division multiplexing to form the modulated waveform. Figure 6-3 illustrates symbol mapping to one of the four QPSK sub-channels constellations. Figure 6-4 illustrates symbol mapping to one of the four 16QAM sub-channels constellation. Figure 6-5 illustrates symbol mapping to one of the four 64QAM sub-channels constellation. For Quad-QPSK modulation, this mapping adjusts the amplitude and phase variations of the baseband signal to one of 4 points on the constellation. For Quad-16QAM modulation, this mapping adjusts the amplitude and phase variations of the baseband signal to one of 16 points on the constellation. For Quad-64 modulation, this mapping adjusts the amplitude and phase variations of the baseband signal to one of 64 points on the constellation.

The bandwidth of the modulating signals is limited by the pair of modulation limiting low pass filters within the modem block function of U801. These filters serve to limit out-of-band and spurious emissions due to modulation. The necessary bandwidth of the sub-channels is limited to 4.8 kHz by the pair of modulation limiting low pass filters. The transfer response of these filters is depicted in Figure 6-1 where the filter excess bandwidth coefficient of 0.2 is shown. This excess bandwidth leads to the necessary bandwidth calculation of $(1 + 0.2) \times (4 \text{ kHz}) = 4.8 \text{ kHz}$. Since the sub-channels are spaced 4.5 kHz apart, and the groups that each contain 4 sub-channels are spaced apart in integer multiples of 25 kHz, the necessary bandwidth of the composite 4 sub-channel symbol streams (single group) is $4.8 + (3 \times 4.5) = 18.3 \text{ kHz}$ and the necessary bandwidth of the entire waveform depends on the number and combination of groups transmitted.

Table 6-2 illustrates all group combinations and corresponding bandwidths.

Case	Description (Figure)	Number of Groups	Number Of Sub-channels	Emission Designator
1	When Transmitting Voice, data or fax on one 25kHz channel (6.2.1)	1	4	18K3D7W
2	When Transmitting data on 2 adjacent 25kHz channels (6-2 (Adjacent))	2	8	43K3D7D
3	When Transmitting data on 3 adjacent 25kHz channels (6-3)	3	12	68K3D7D
4	When Transmitting data on the 2 outer 25kHz channels of 4 25kHz channels (6-2(outer))	2	8	93K3D7D
	When Transmitting data on 4 adjacent 25kHz channels (6-4)	4	16	93K3D7D

Table 6-2: Waveform Description of all transmitted cases.

The designator for emissions in case 2 and 3 is determined by adding $N \times 25$ to the first 2 digits, when N = the number of channels. The designator for case 4 is determined by adding 3×25 to the first 2

digits because the outer channels are 3 channels apart. D is used for the last character when only data is transmitted, not telephony.

The limits for the masks are based on either 47 CFR 90.210(g) Emission Mask G or the EA SMR emission mask 90.691(a). Each Figure is identified as to the mask used.

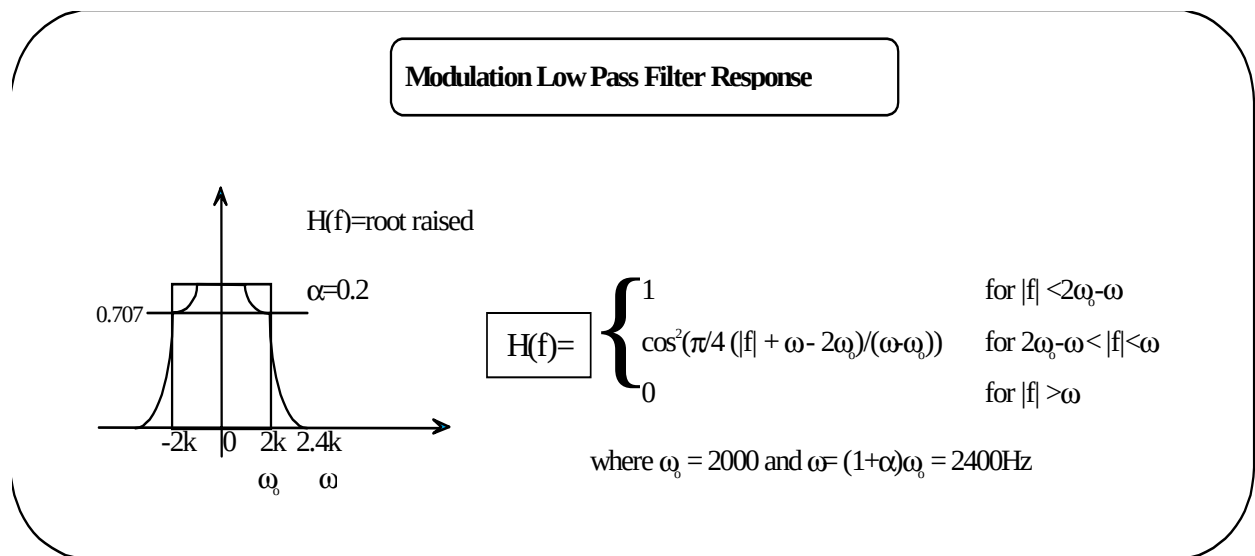


Figure 6a-1: Modulation Low Pass Filter Response

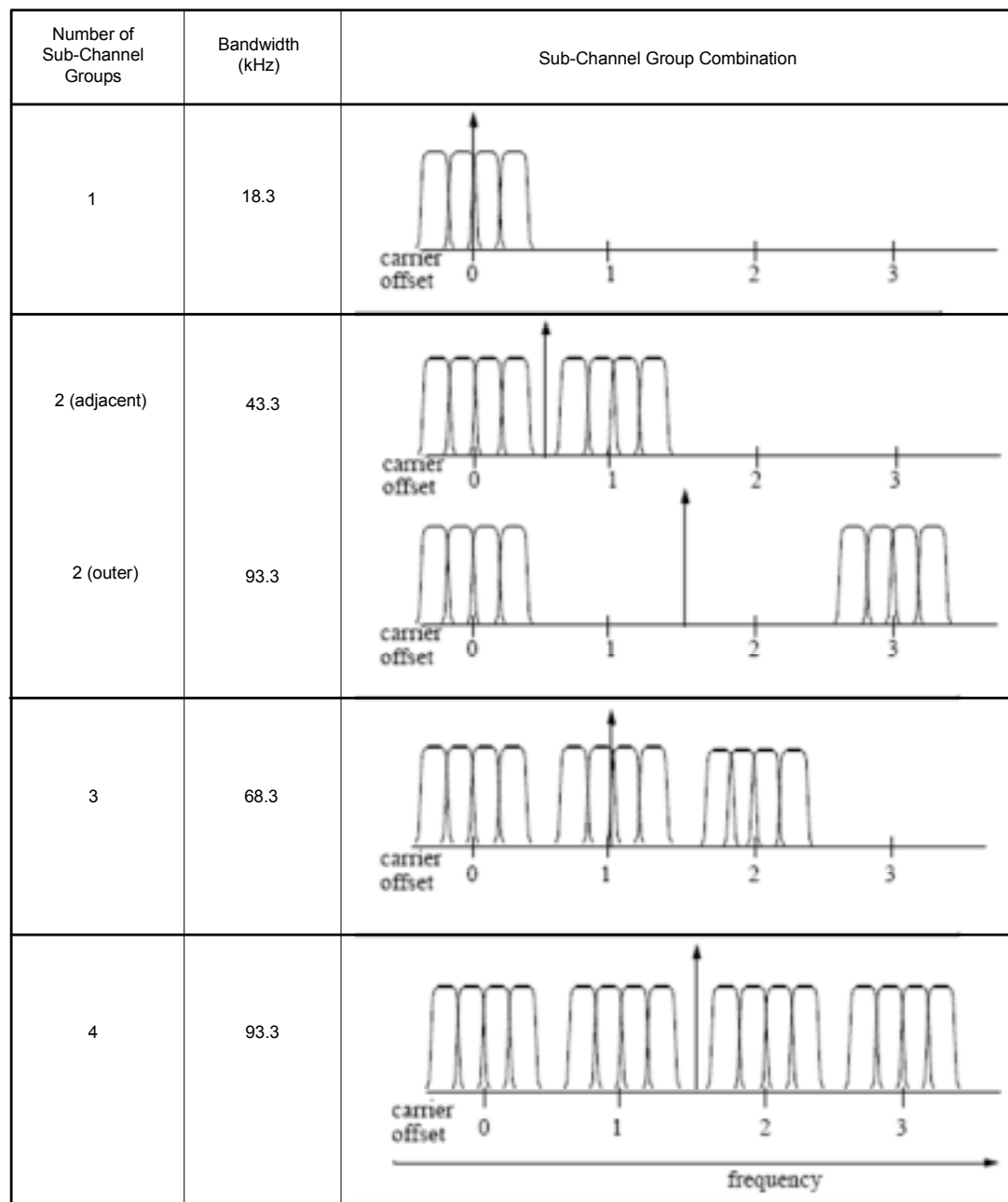


Figure 6a-2: Sub-Channel Group Combination Bandwidths

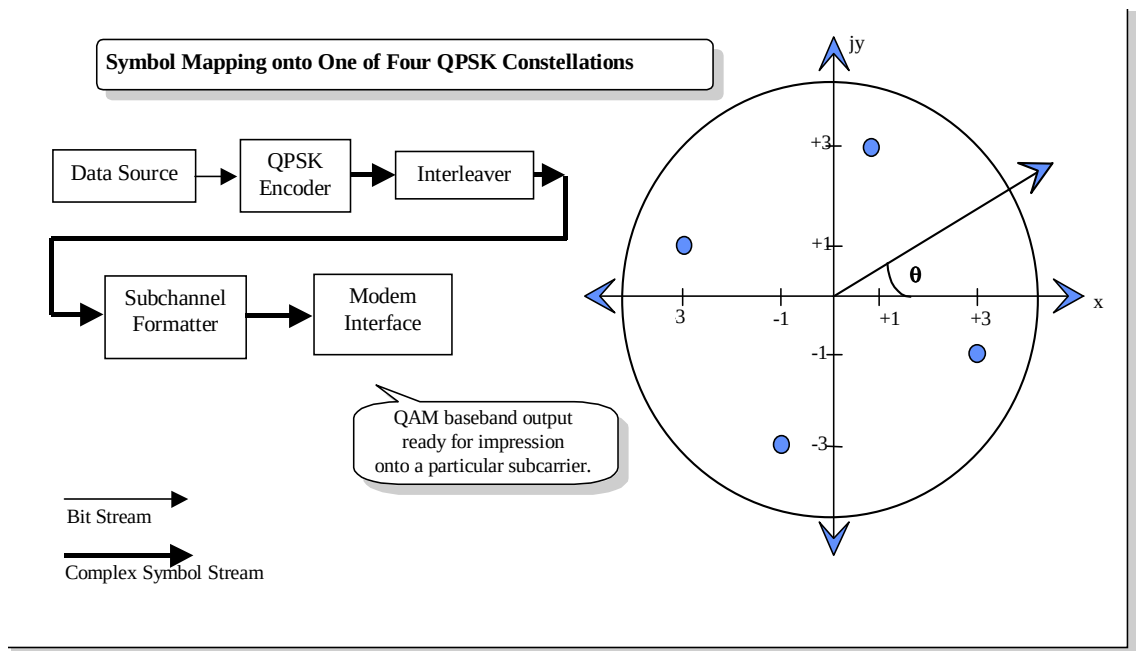


Figure 6a-3. Symbol Mapping onto One of Four QPSK Constellations

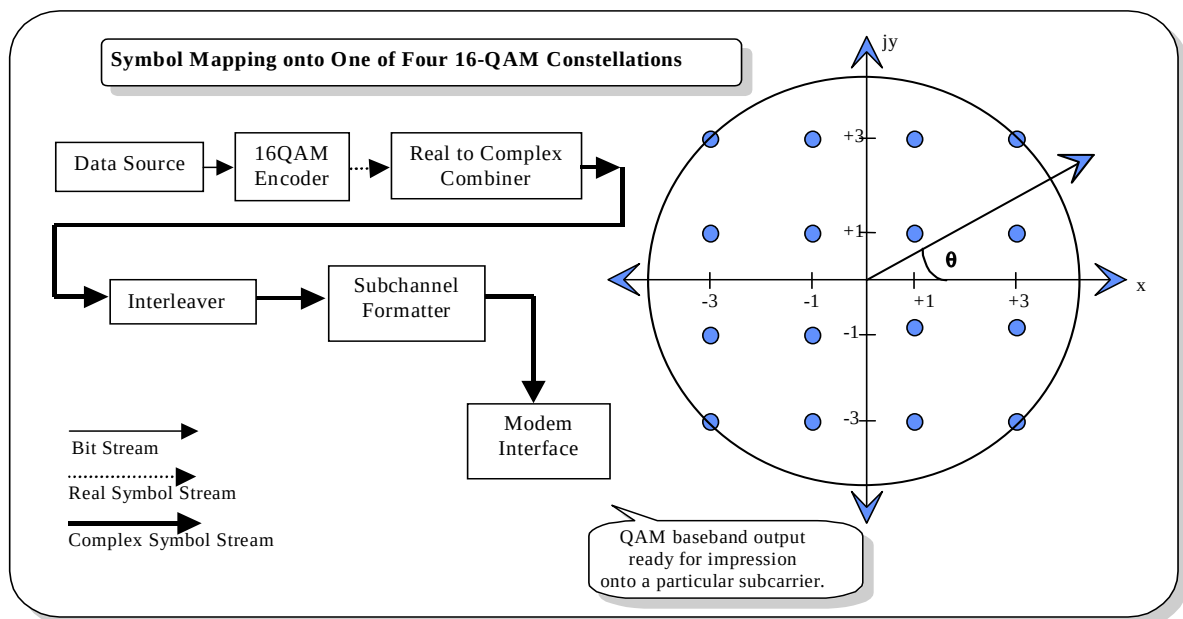


Figure 6a-4. Symbol Mapping onto One of Four 16-QAM Constellations

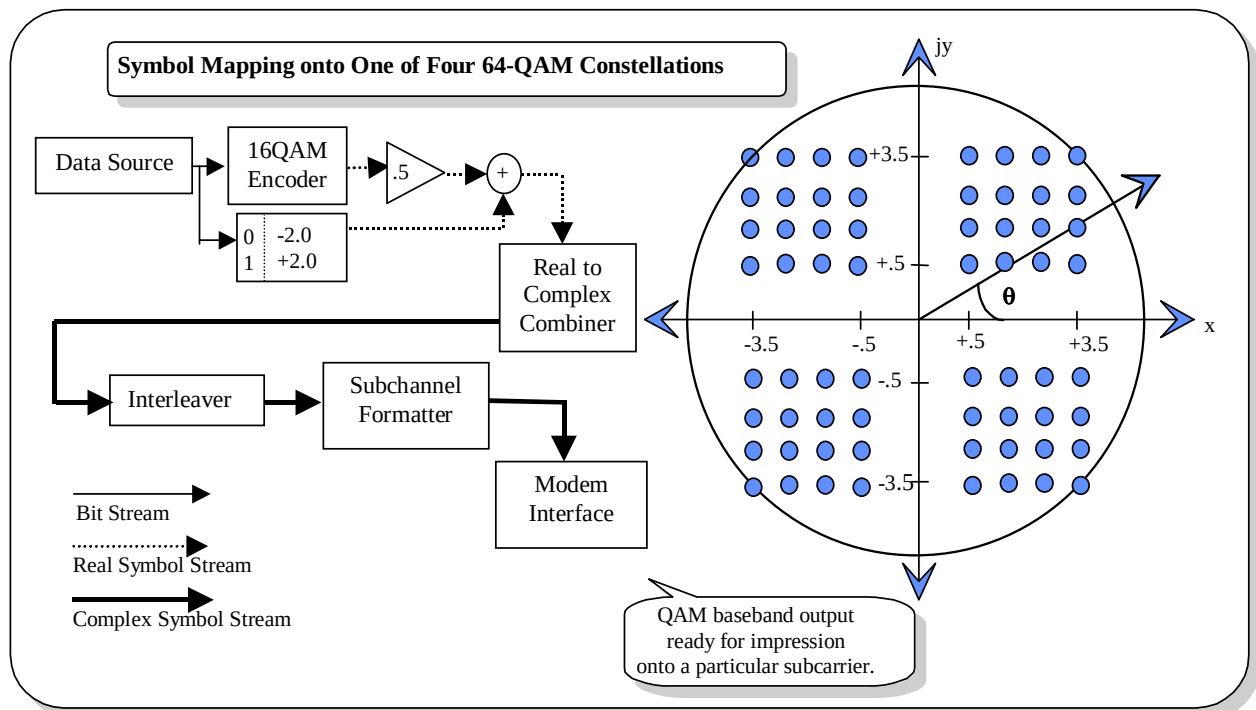


Figure 6a-5. Symbol Mapping onto One of Four 64-QAM Constellations

**Annex 2 to the test report MOTRAD_FCC.17112,
copy of i760 FCC ID:AZ489FT5844 original application**

6a.2.2 Emission Designator 18K3D7W - iDEN 800 MHz Band Measured data

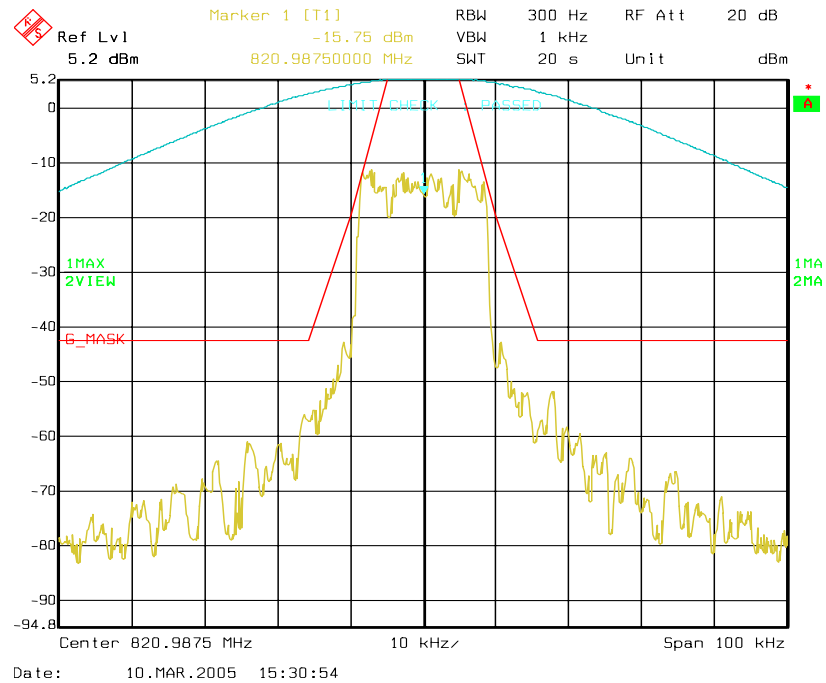


Figure 6a-6 . iDEN 800 MHz Band, QPSK, Maximum Power, Emission Mask G

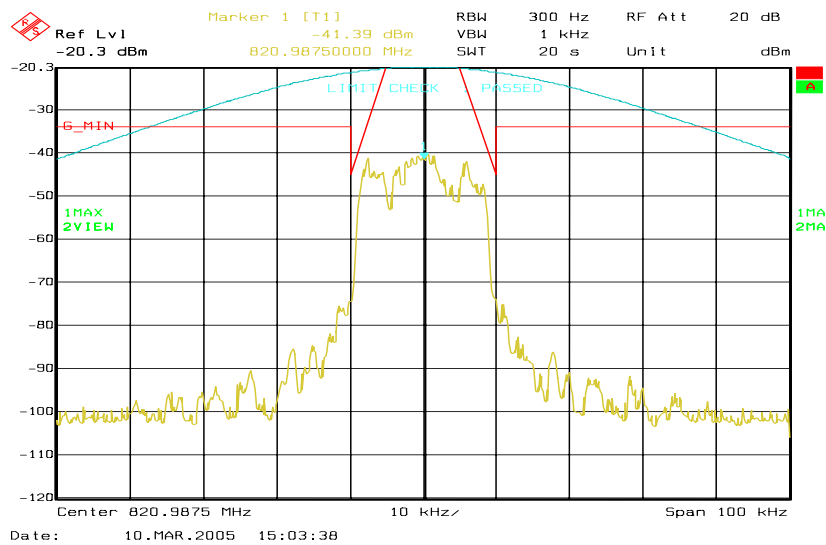


Figure 6a-7. iDEN 800 MHz Band, QPSK, Minimum Power, Emission Mask G

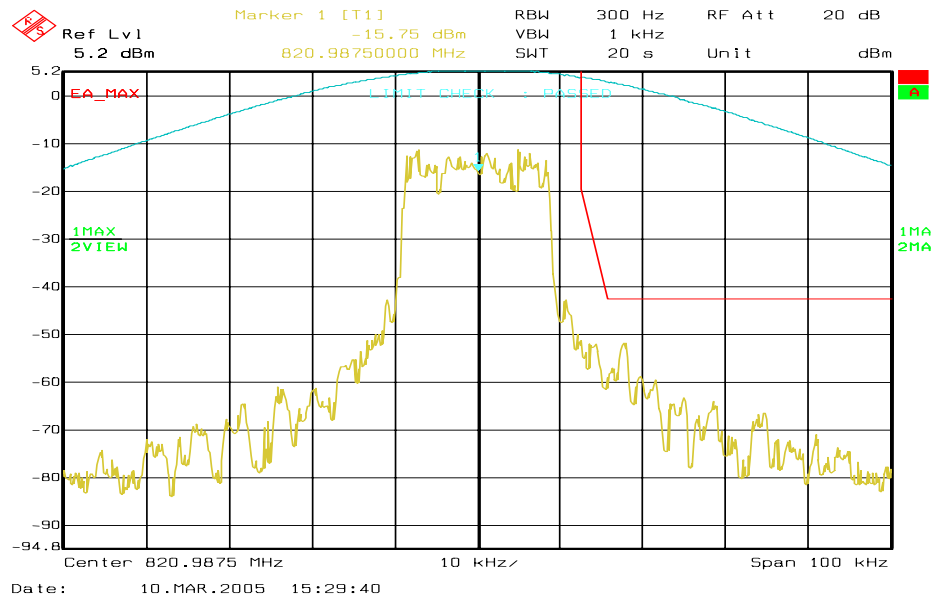


Figure 6a-8 . iDEN 800 MHz Band, Quad-QPSK, Maximum Power, EA Emission Mask

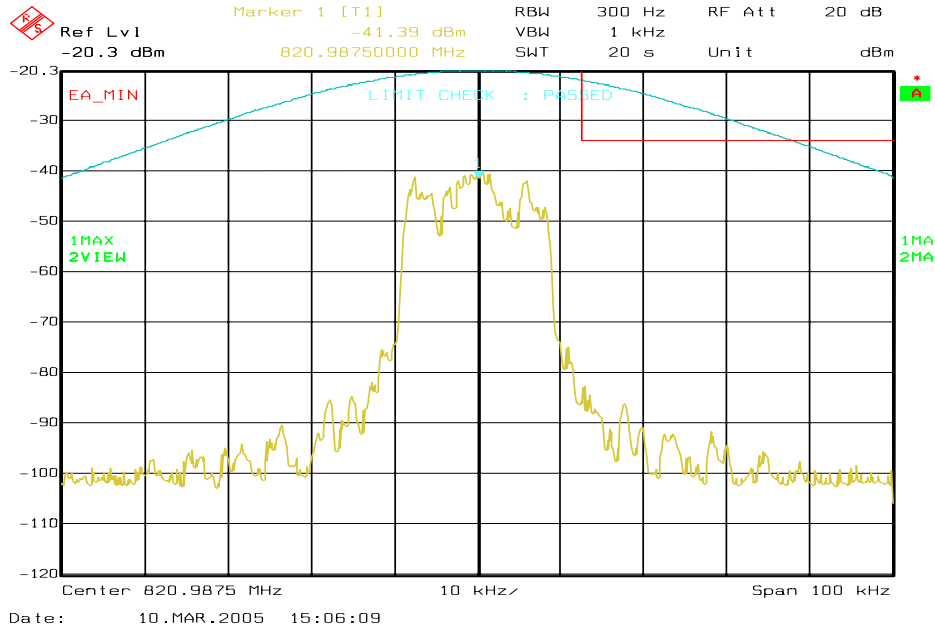


Figure 6a- 9. iDEN 800 MHz Band, QPSK, Minimum Power, EA Emission Mask

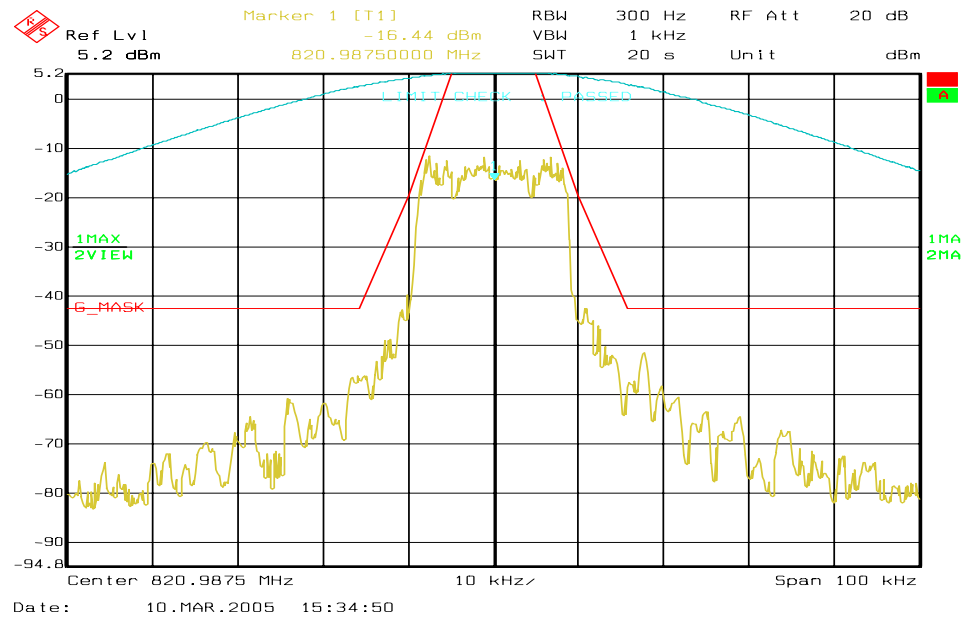


Figure 6a-10 . iDEN 800 MHz Band, QAM16, Maximum Power, Emission Mask G

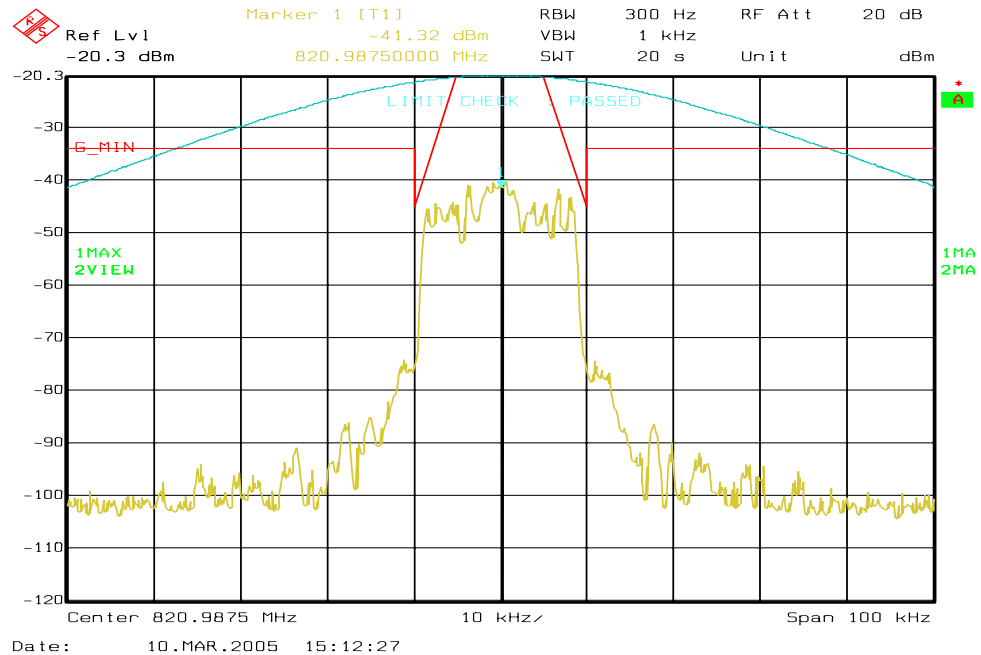


Figure 6a-11 . iDEN 800 MHz Band, QAM16, Minimum Power, Emission Mask G

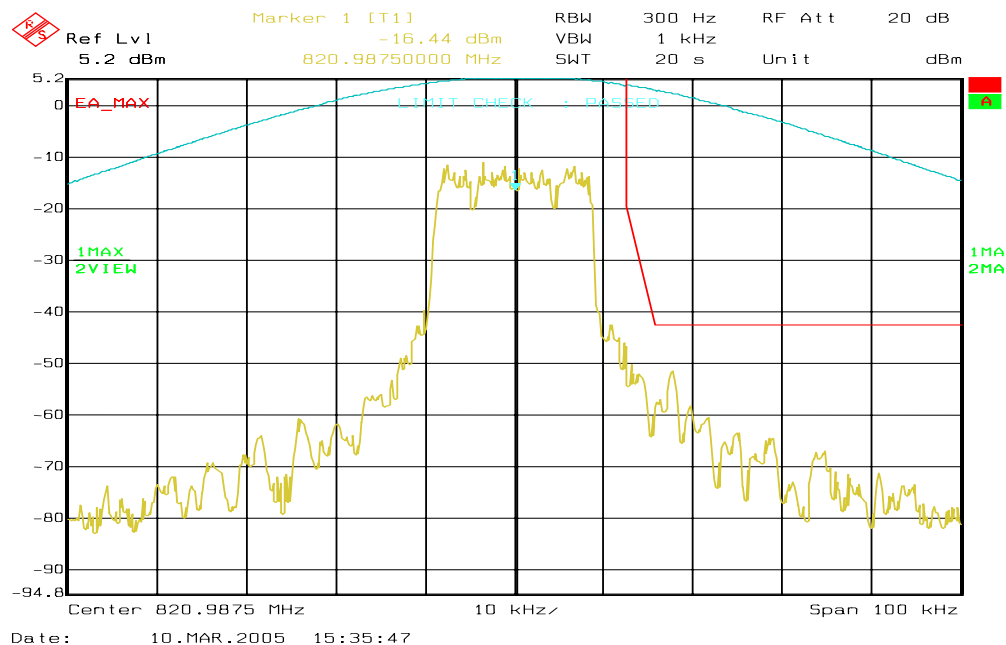


Figure 6a-12 . iDEN 800 MHz Band, QAM16, Maximum Power, EA Emission Mask

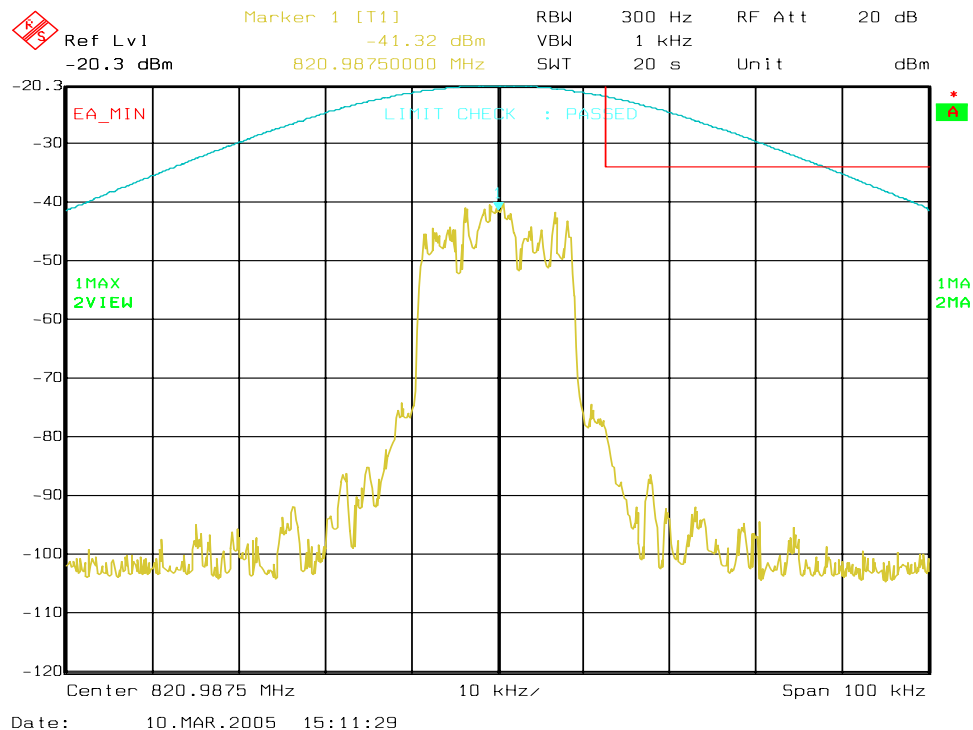


Figure 6a-13 . iDEN 800 MHz Band, QAM16, Minimum Power, EA Emission Mask

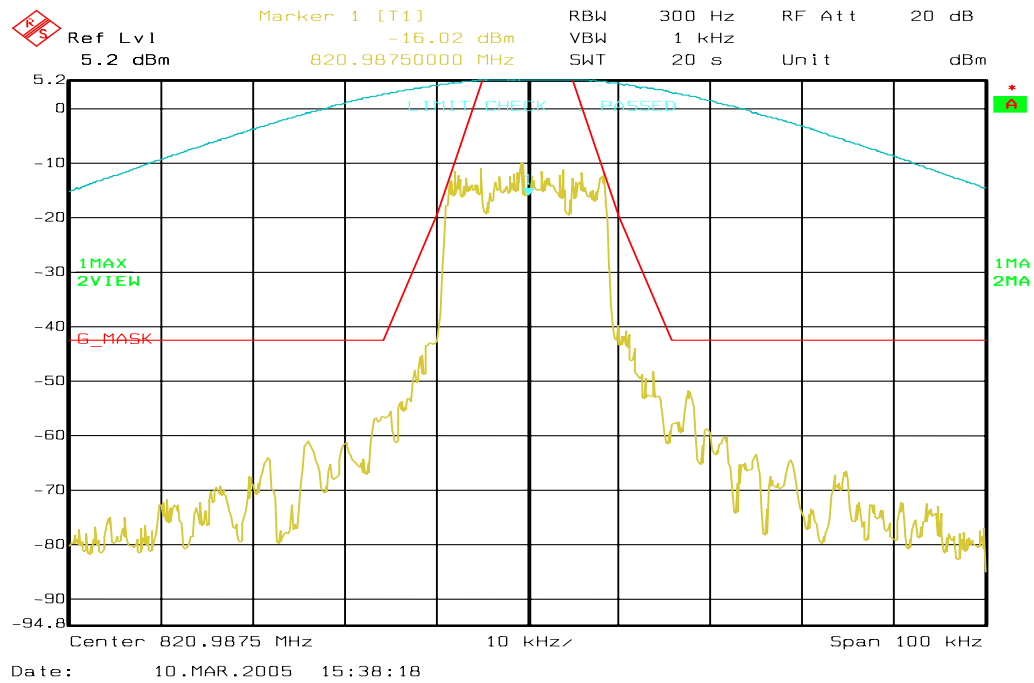


Figure 6a-14 . iDEN 800 MHz Band, QAM64, Maximum Power, Emission Mask G

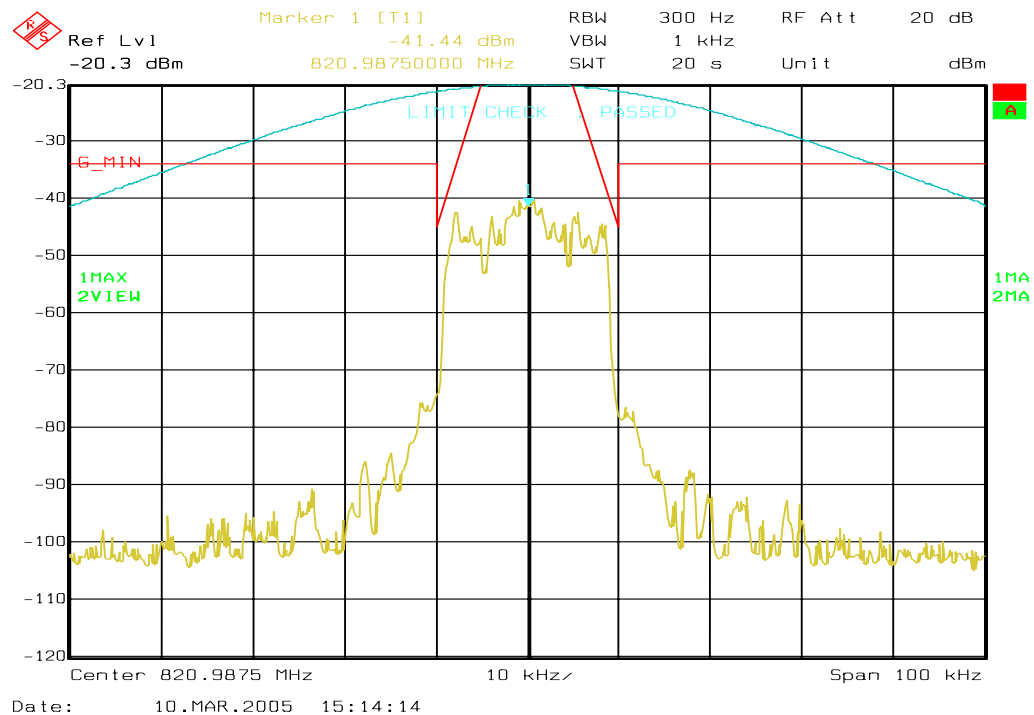


Figure 6a-15 . iDEN 800 MHz Band, QAM64, Minimum Power, Emission Mask G

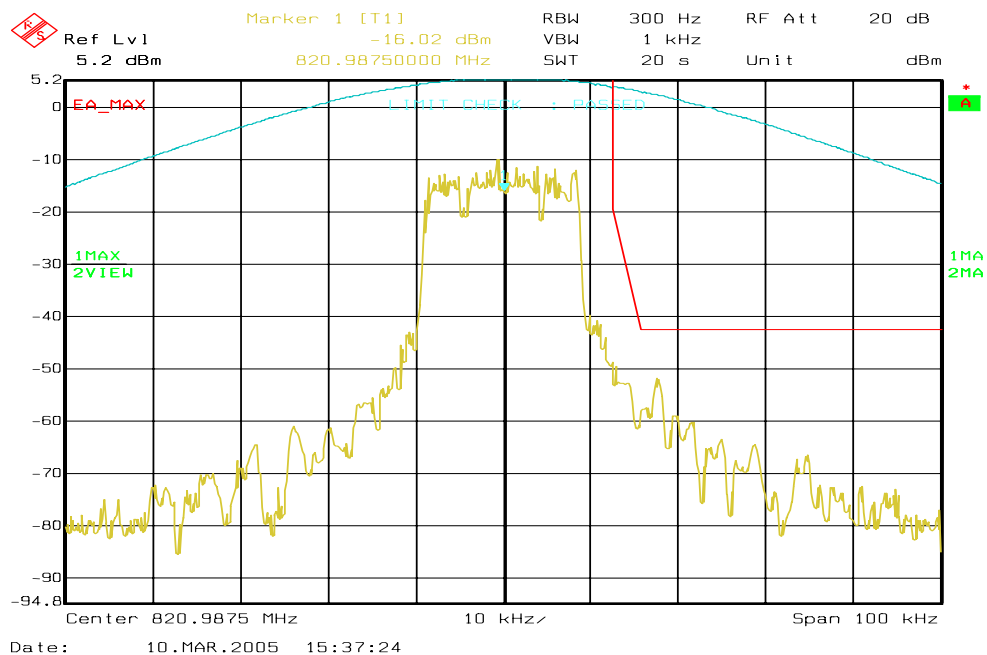


Figure 6a-16 . iDEN 800 MHz Band, QAM64, Maximum Power, EA Emission Mask

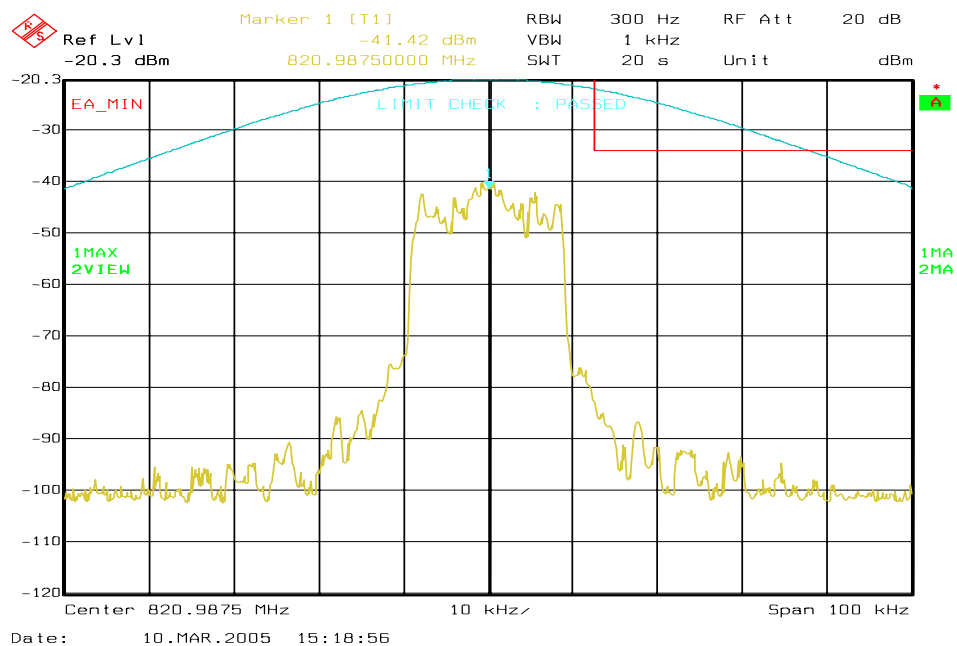


Figure 6a-17 . iDEN 800 MHz Band, QAM64, Minimum Power, EA Emission Mask

6a.2.3 Emission Designator 18K3D7W - iDEN 900 MHz Band Measured Data

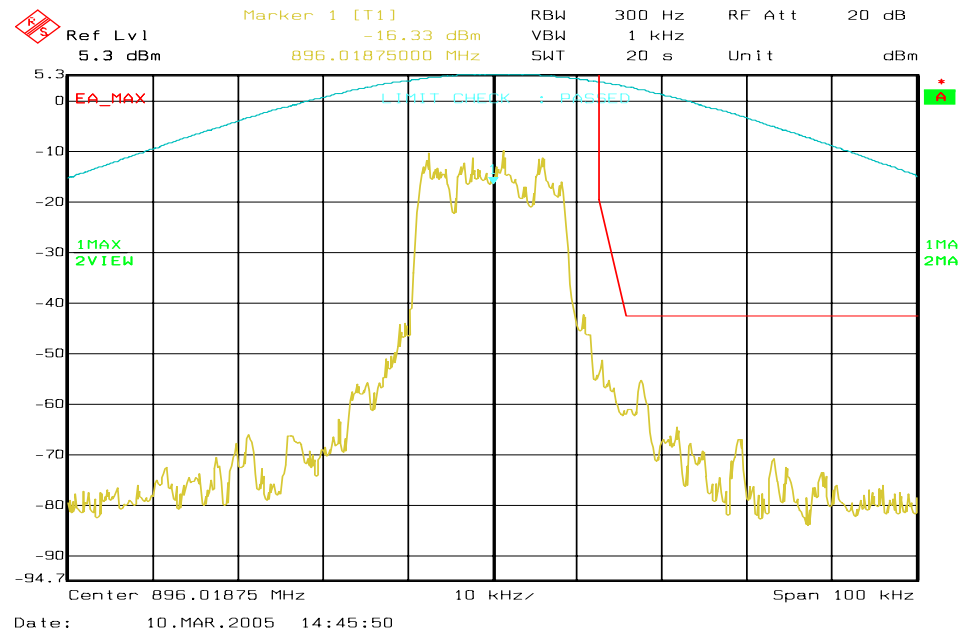


Figure 6a-18 . iDEN 900 MHz Band, Quad-QPSK, Maximum Power, EA Emission Mask

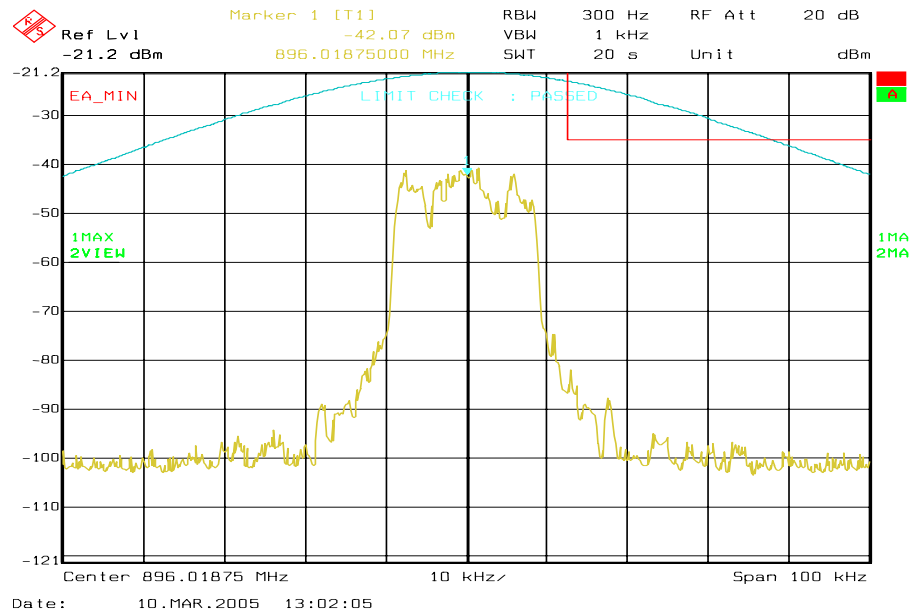


Figure 6a-19 . iDEN 900 MHz Band, Quad-QPSK, Minimum Power, EA Emission Mask

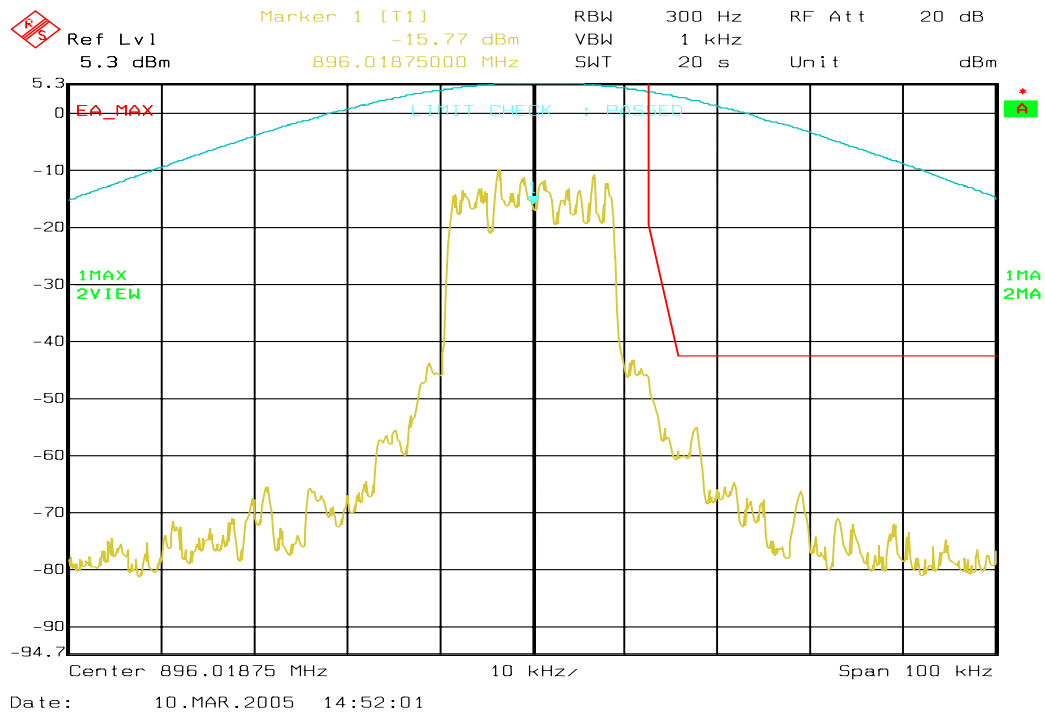


Figure 6a-20 . iDEN 900 MHz Band, QAM16, Maximum Power, EA Emission Mask

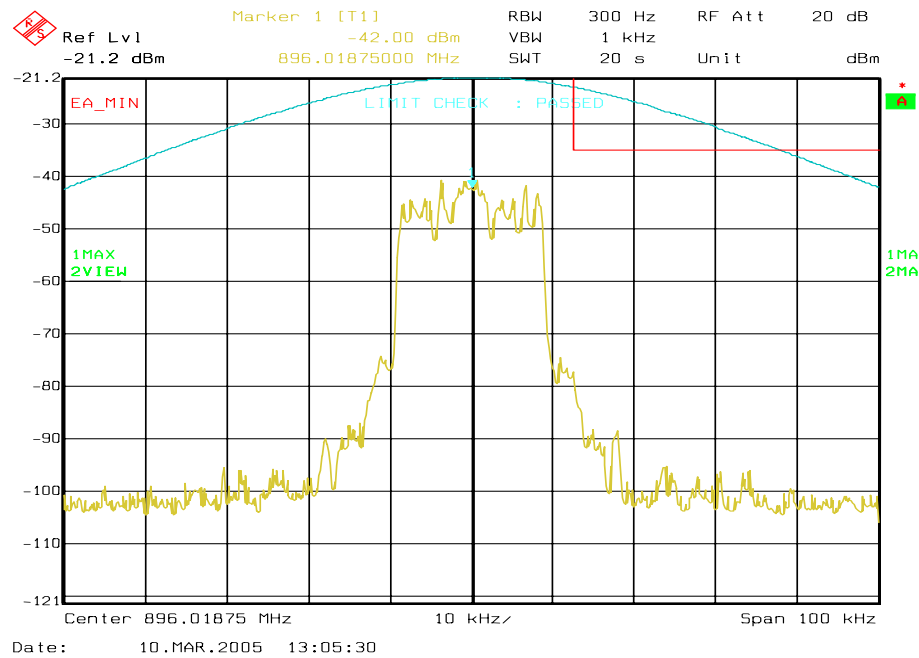


Figure 6a-21 . iDEN 900 MHz Band, QAM16, Minimum Power, EA Emission Mask

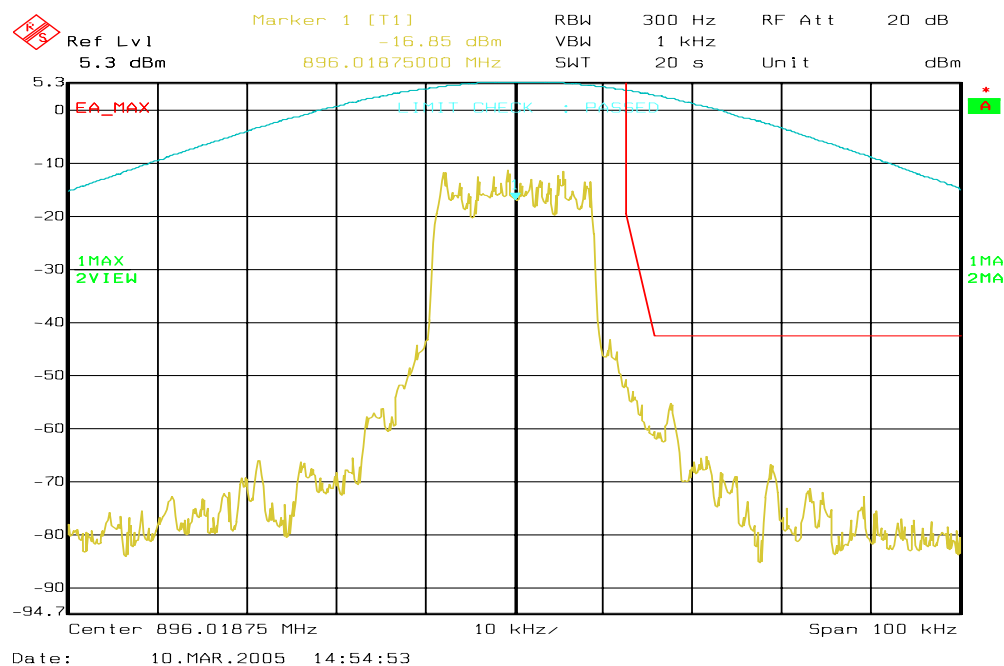


Figure 6a-22 . iDEN 900 MHz Band, QAM64, Maximum Power, EA Emission Mask

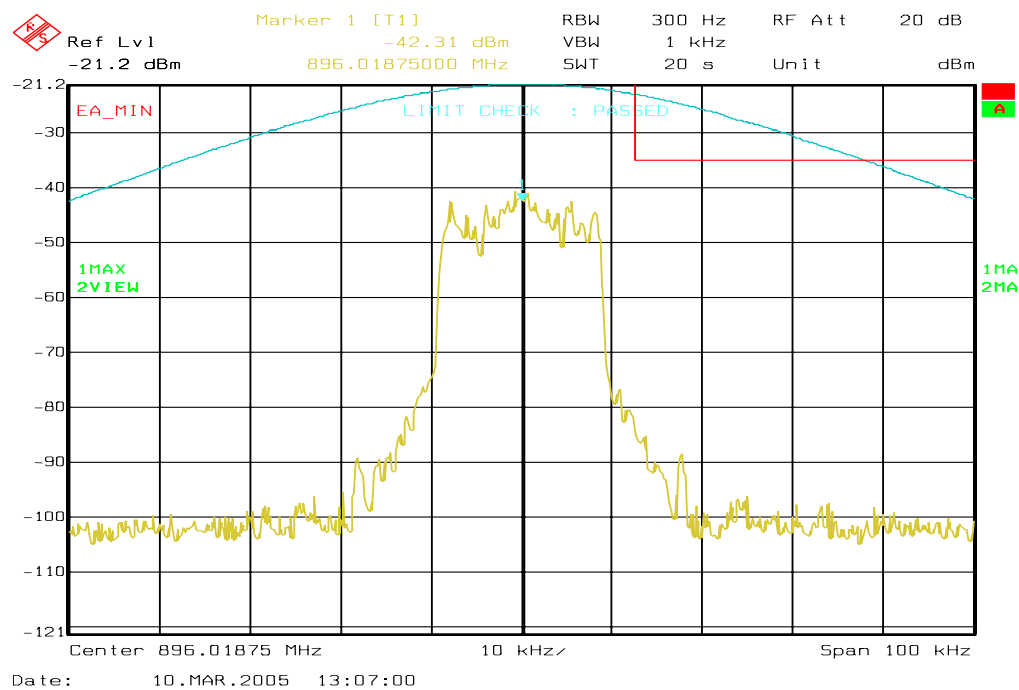


Figure 6a-23 . iDEN 900 MHz Band, QAM64, Minimum Power, EA Emission Mask

6a.2.4 Emission Designator 18K3D7W - WiDEN25 800 MHz Band

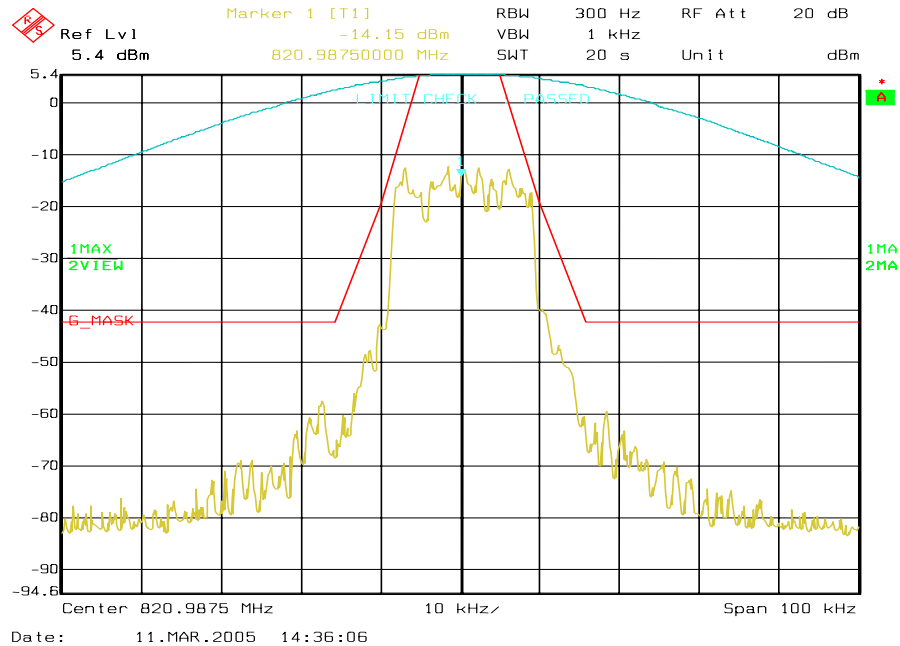


Figure 6a-24 . WiDEN25 800 MHz Band, Quad-QPSK, Maximum Power, Emission Mask G

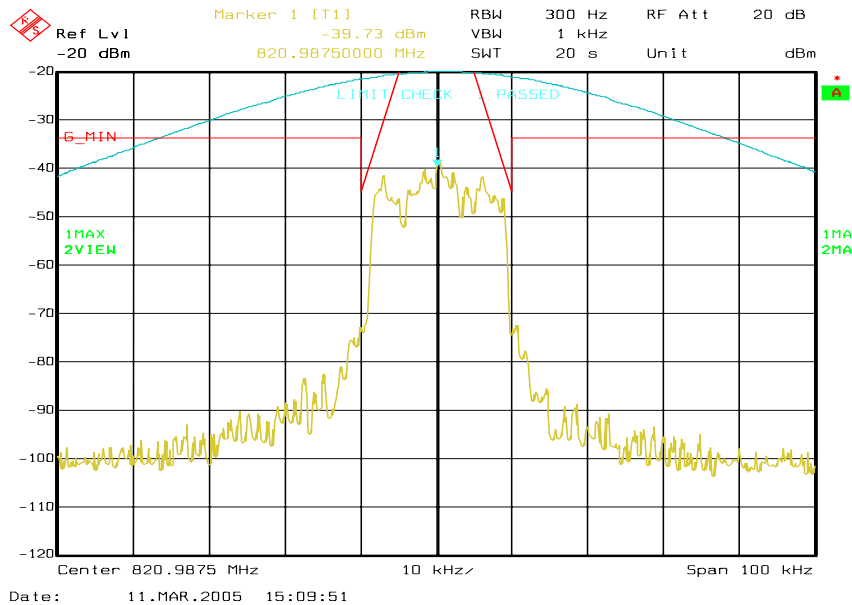


Figure 6a-25 . WiDEN25 800 MHz Band, Quad-QPSK, Minimum Power, Emission Mask G

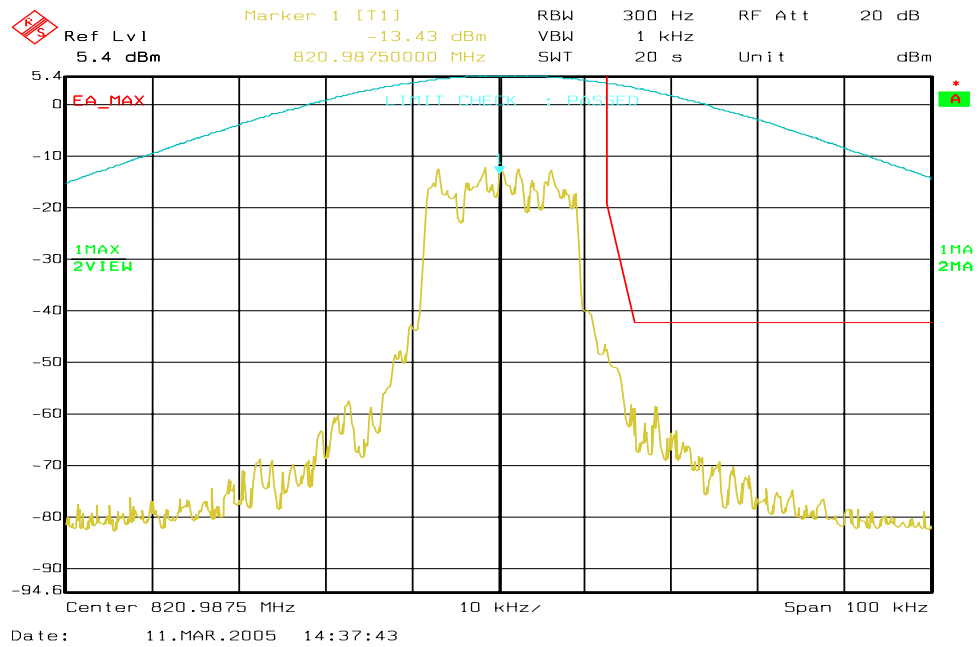


Figure 6a-26 . WiDEN25 800 MHz Band, Quad-QPSK, Maximum Power, EA Emission Mask

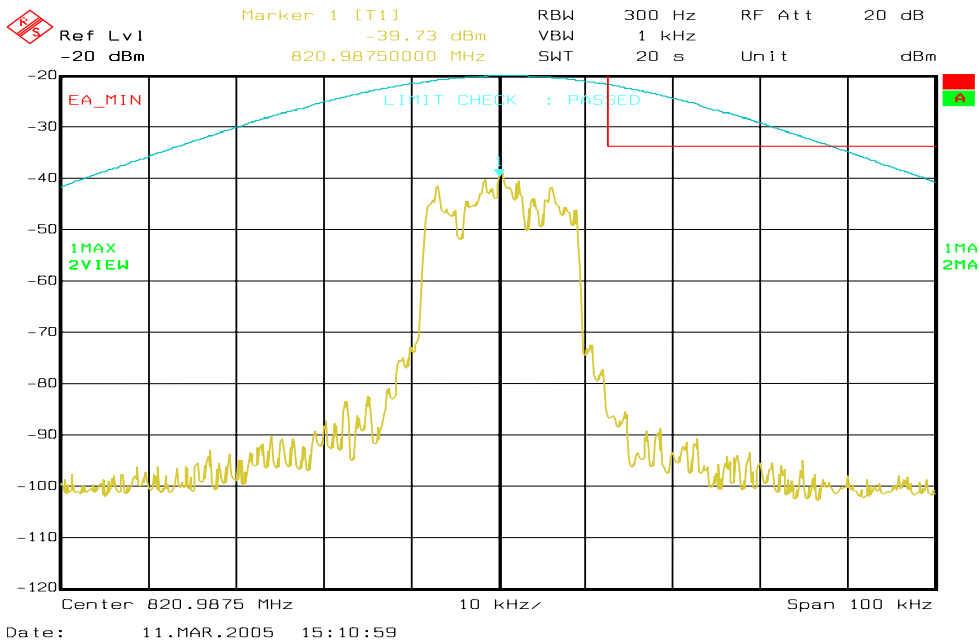


Figure 6a- 27. WiDEN25 800 MHz Band, Quad-QPSK, Minimum Power, EA Emission Mask

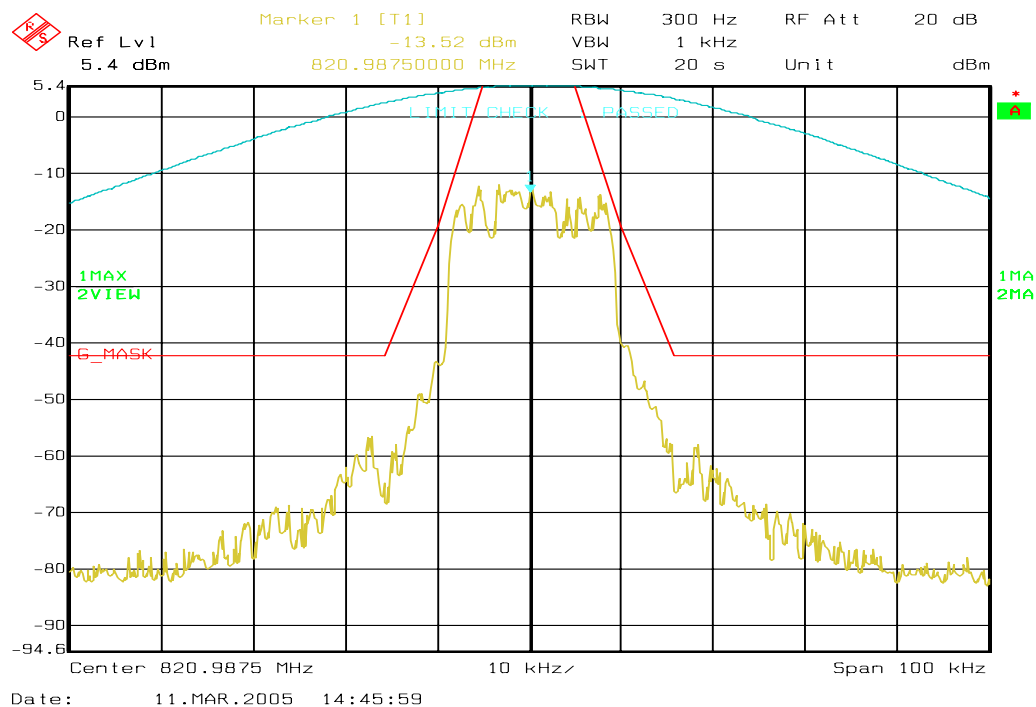


Figure 6a-28 . WiDEN25 800 MHz Band, QAM16, Maximum Power, Emission Mask G

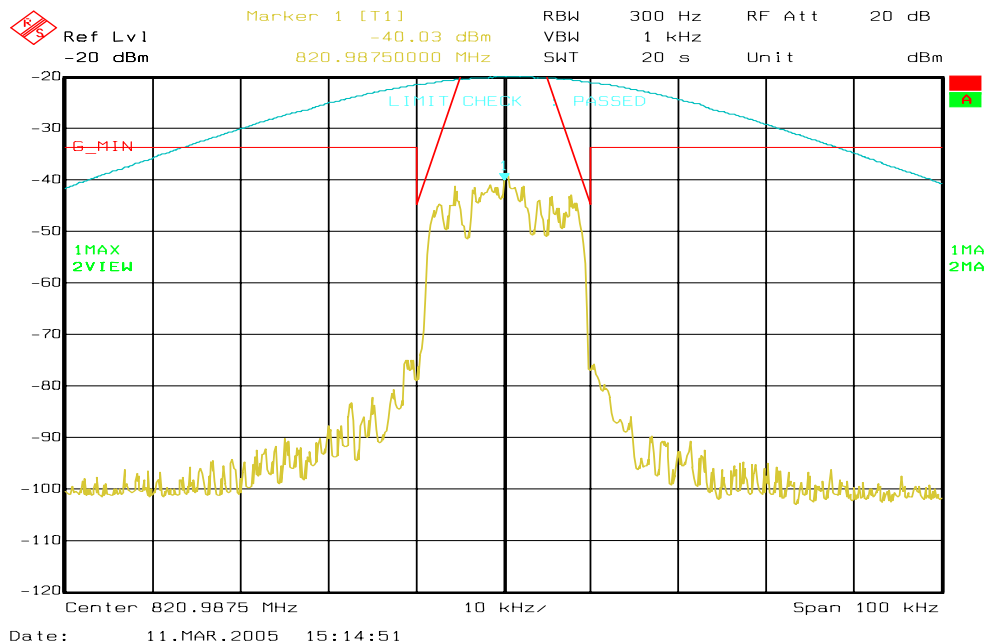


Figure 6a-29 . WiDEN25 800 MHz Band, QAM16, Minimum Power, Emission Mask G

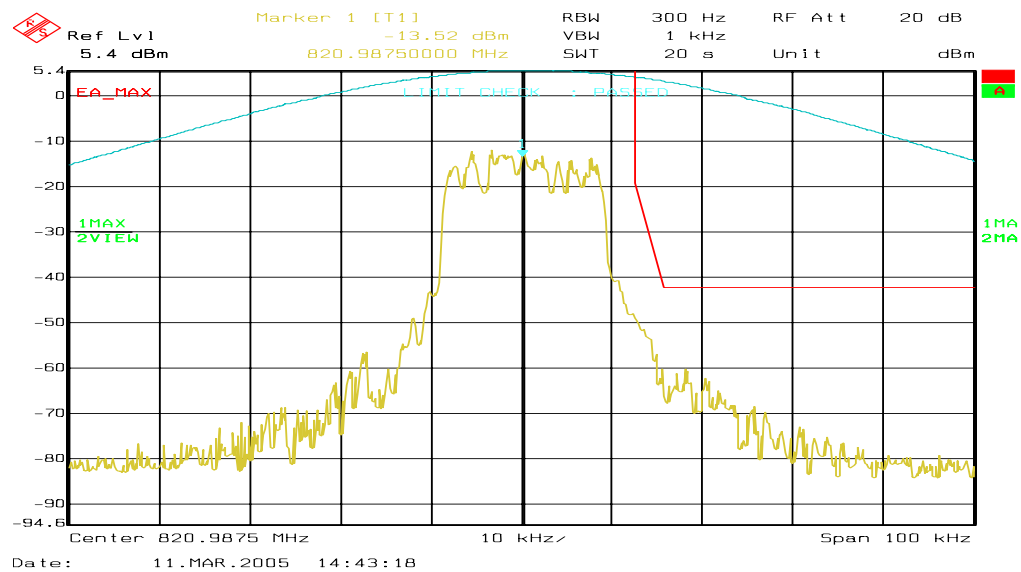


Figure 6a-30 . WiDEN25 800 MHz Band, QAM16, Maximum Power, EA Emission Mask

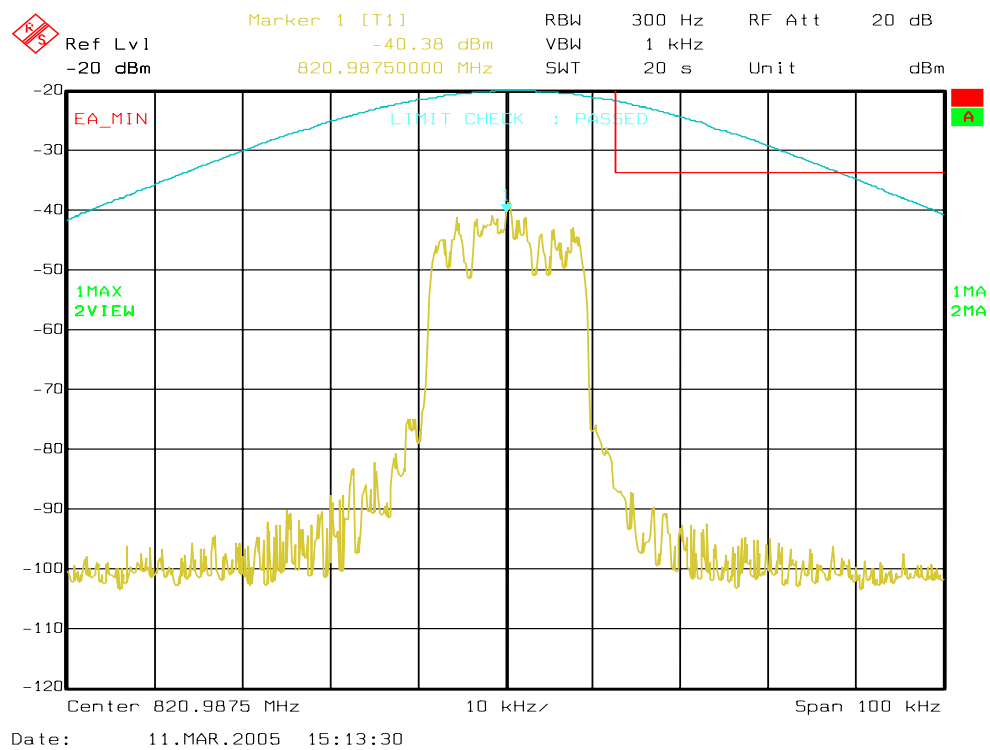


Figure 6a-31 . WiDEN25 800 MHz Band, QAM16, Minimum Power, EA Emission Mask

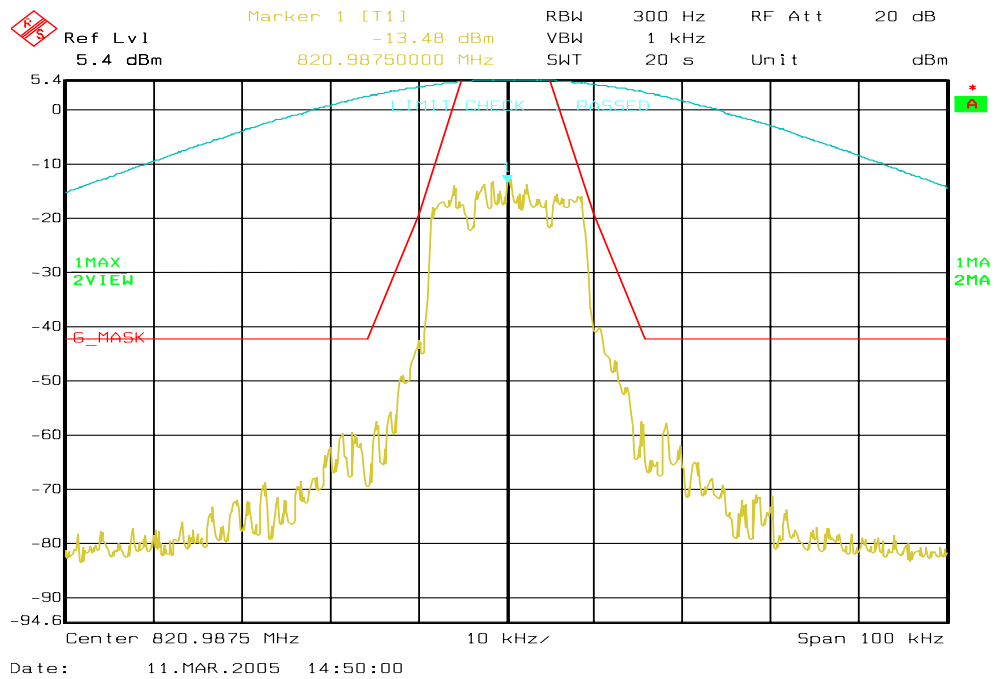


Figure 6a-32 . WiDEN25 800 MHz Band, QAM64, Maximum Power, Emission Mask G

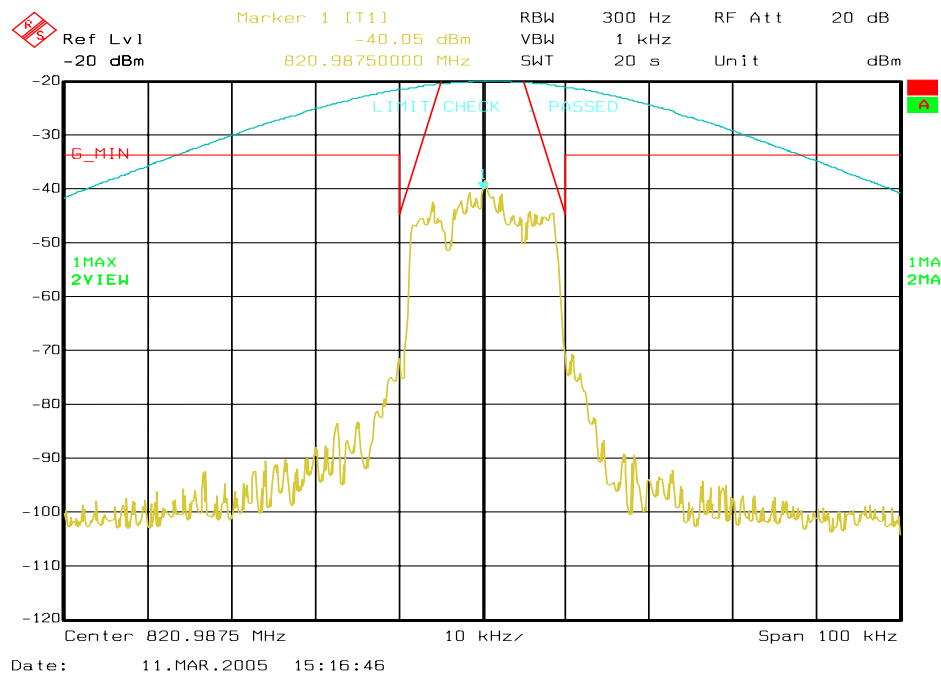


Figure 6a-33 . WiDEN25 800 MHz Band, QAM64, Minimum Power, Emission Mask G

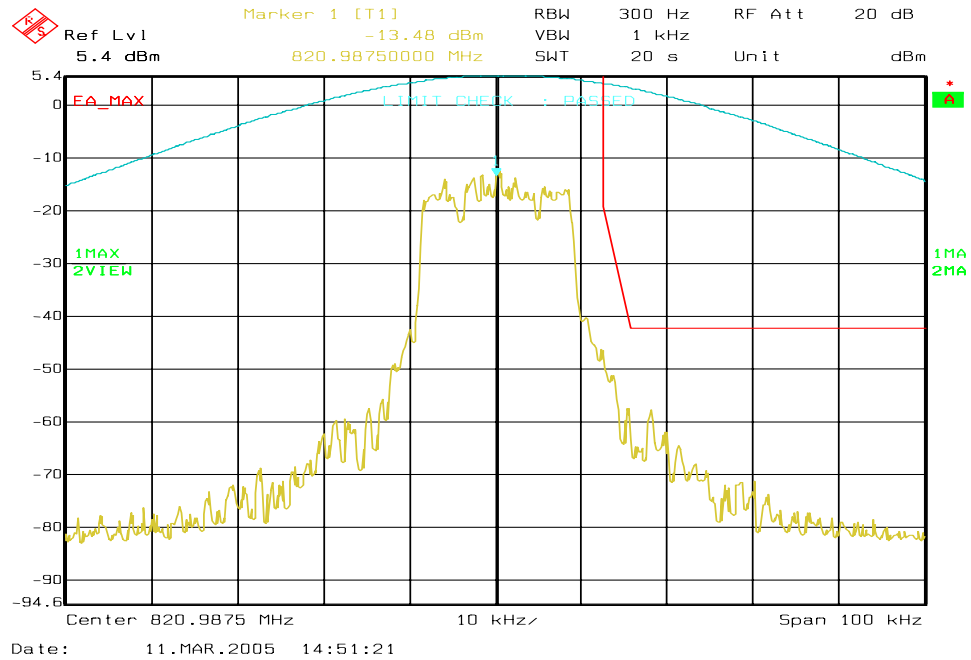


Figure 6a-34 . WiDEN25 800 MHz Band, QAM64, Maximum Power, EA Emission Mask

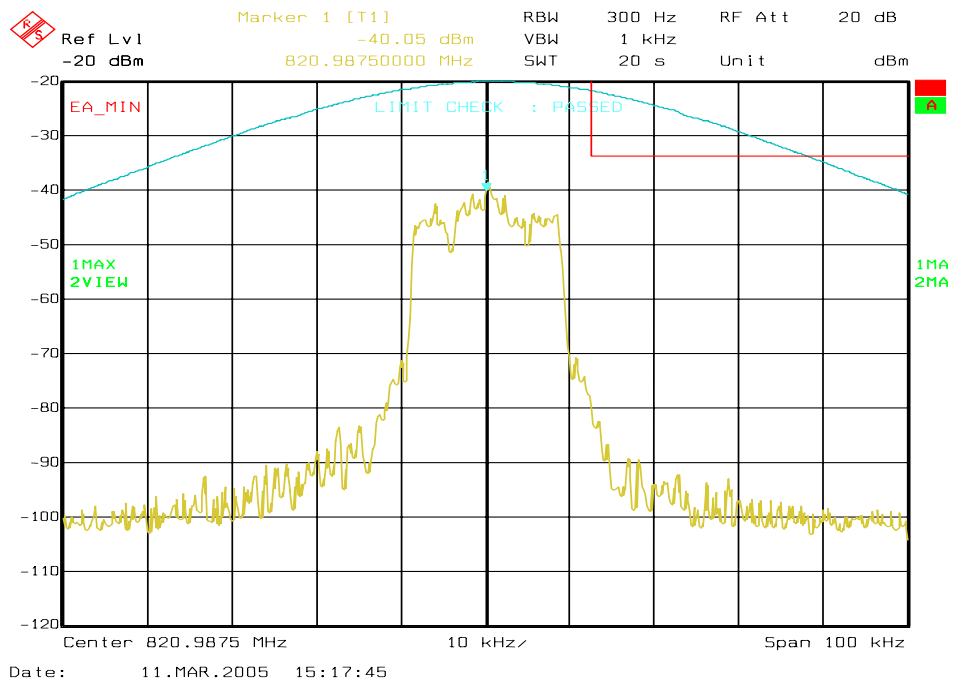


Figure 6a-35 . WiDEN25 800 MHz Band, QAM64, Minimum Power, EA Emission Mask

6.a.2.5 Emission Designator 43K3D7D - WiDEN50 800 MHz Band

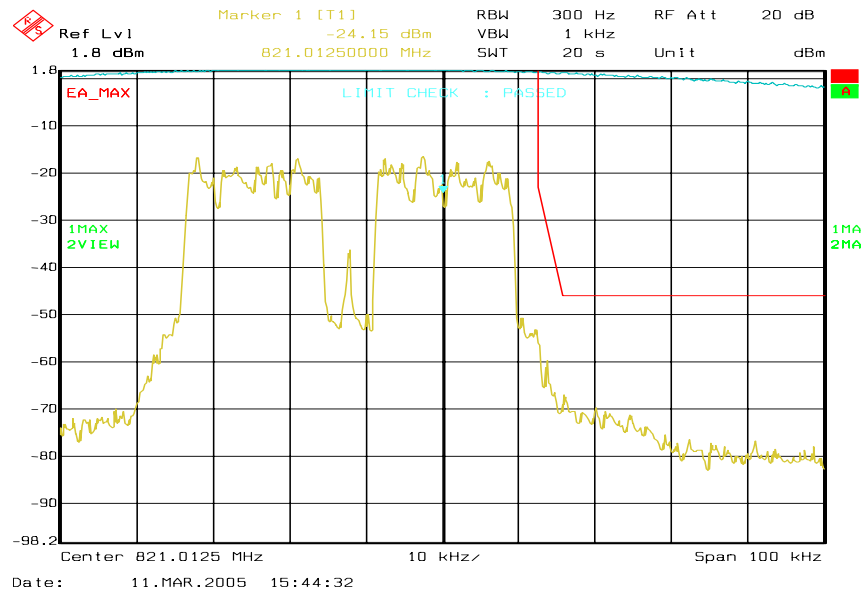


Figure 6a-36 . WiDEN50 800 MHz Band, Continuous Quad-QPSK, Maximum Power, EA Emission Mask

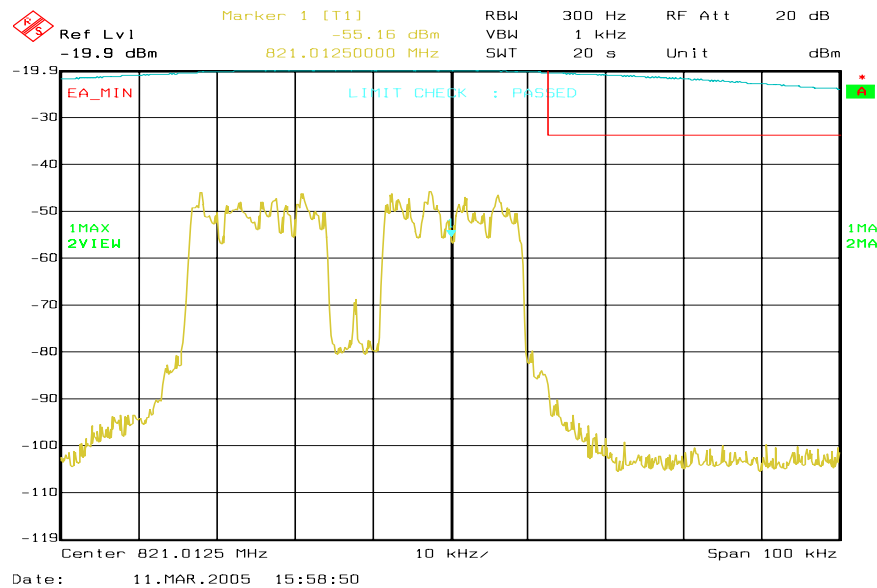


Figure 6a-37 . WiDEN50 800 MHz Band, Continuous Quad-QPSK, Minimum Power, EA Emission Mask

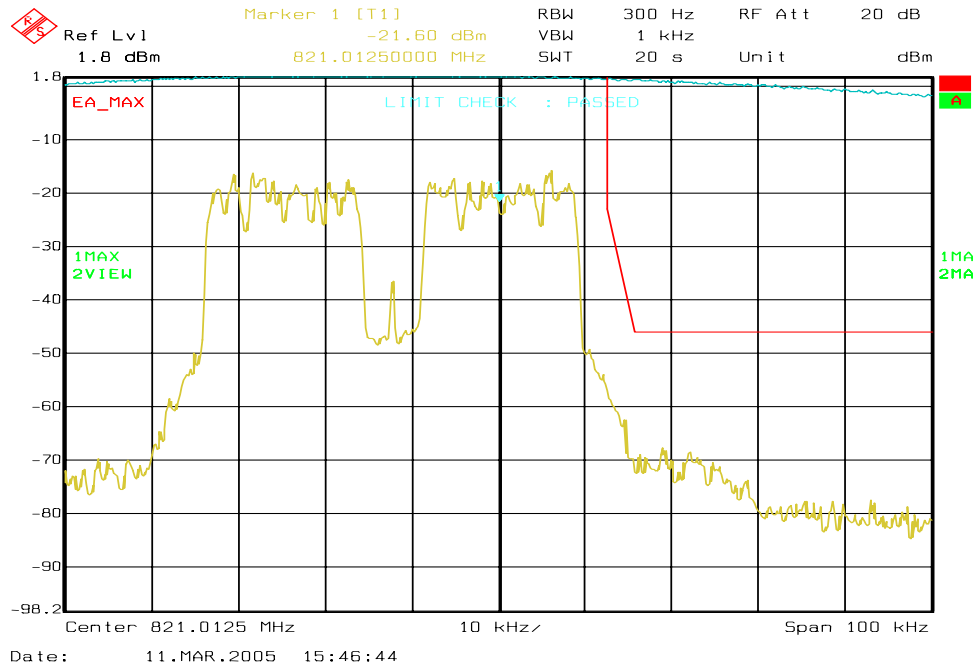


Figure 6a- 38. WiDEN50 800 MHz Band, Continuous QAM16, Maximum Power, EA Emission Mask

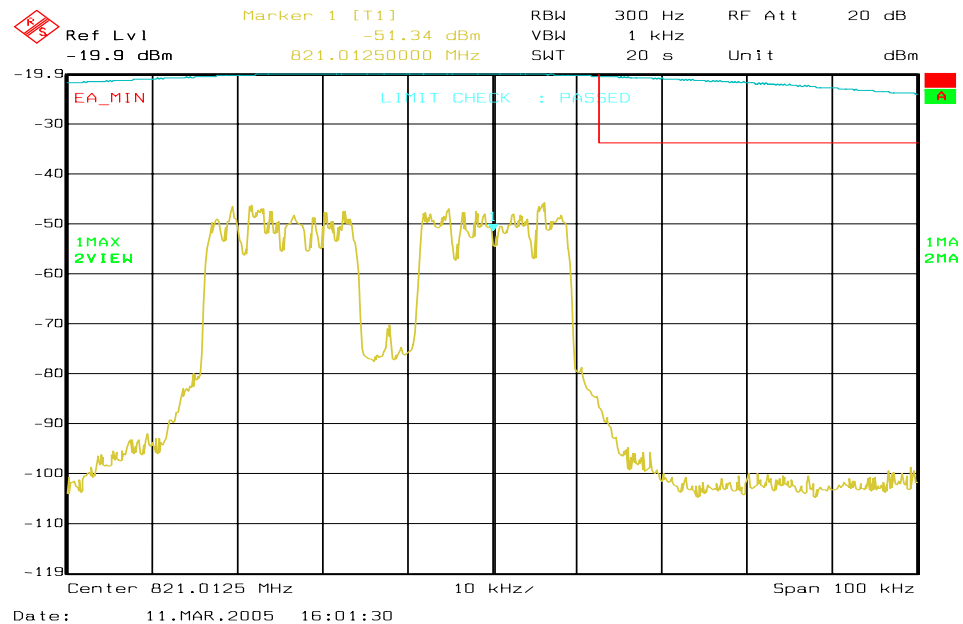


Figure 6a-39 . WiDEN50 800 MHz Band, Continuous QAM16, Minimum Power, EA Emission Mask

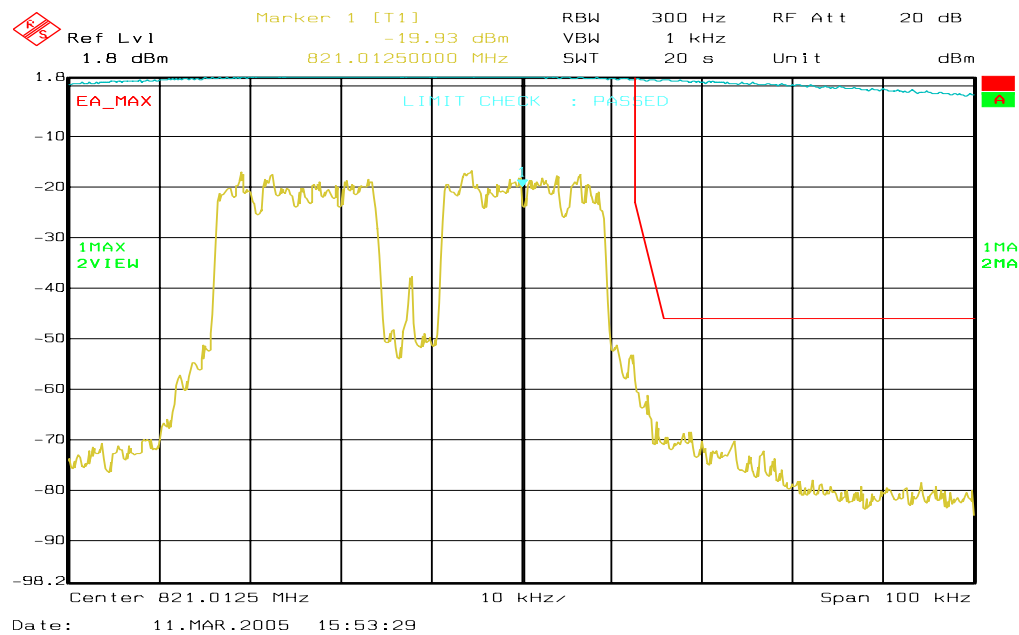


Figure 6a-40 . WiDEN50 800 MHz Band, Continuous QAM64, Maximum Power, EA Emission Mask

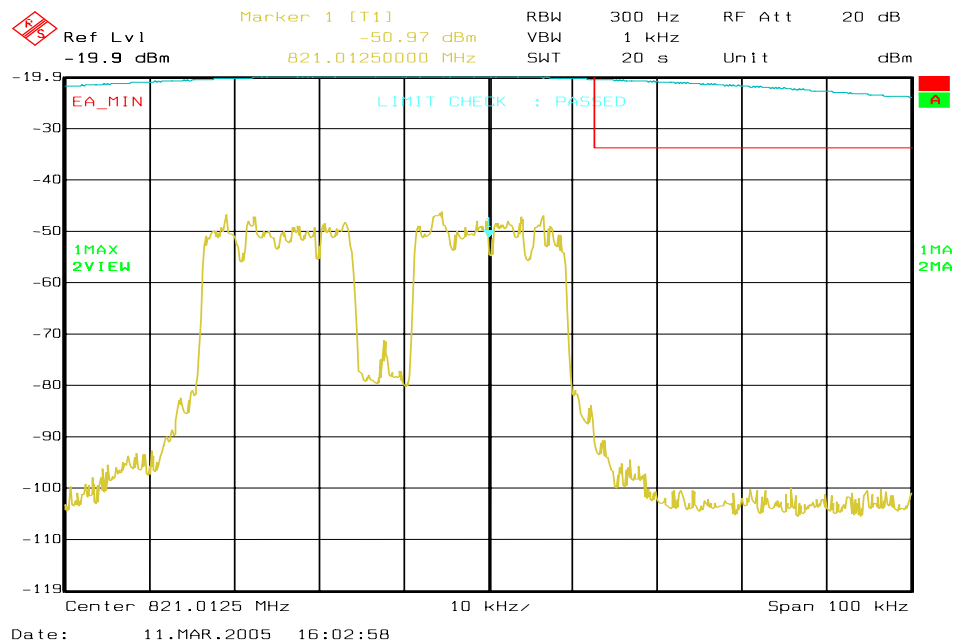


Figure 6a-41 . WiDEN50 800 MHz Band, Continuous QAM64, Minimum Power, EA Emission Mask

6a.2.6 Emission Designator 68K3D7D - WiDEN75 800 MHz Band

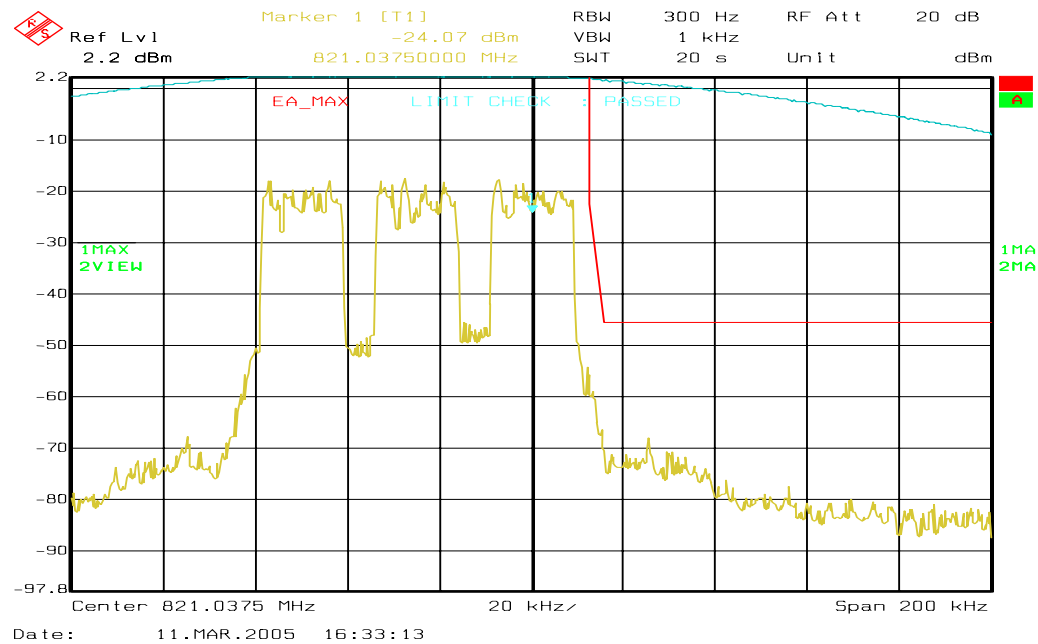


Figure 6a-42 . WiDEN75 800 MHz Band, Quad-QPSK, Maximum Power, EA Emission Mask

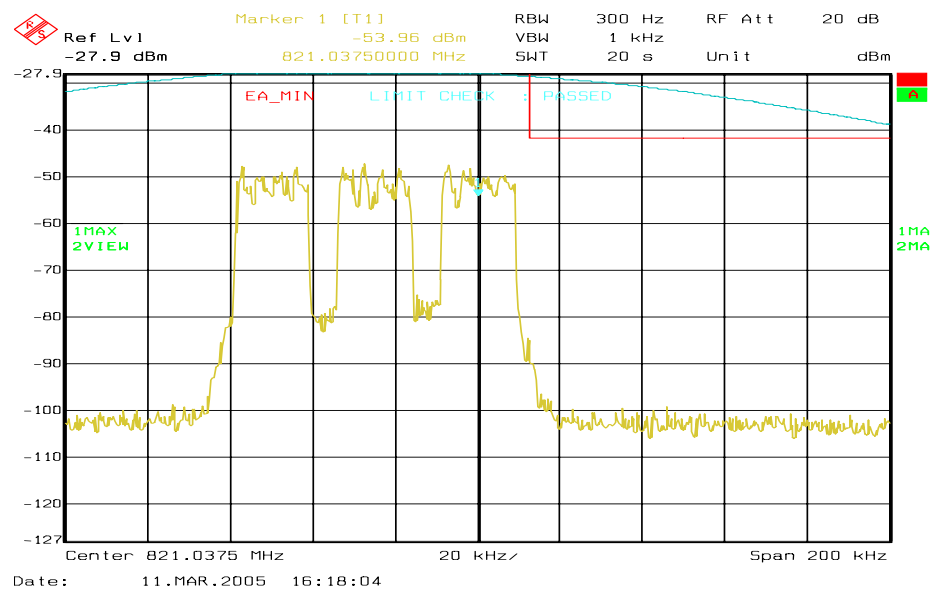


Figure 6a-43 . WiDEN75 800 MHz Band, Quad-QPSK, Minimum Power, EA Emission Mask

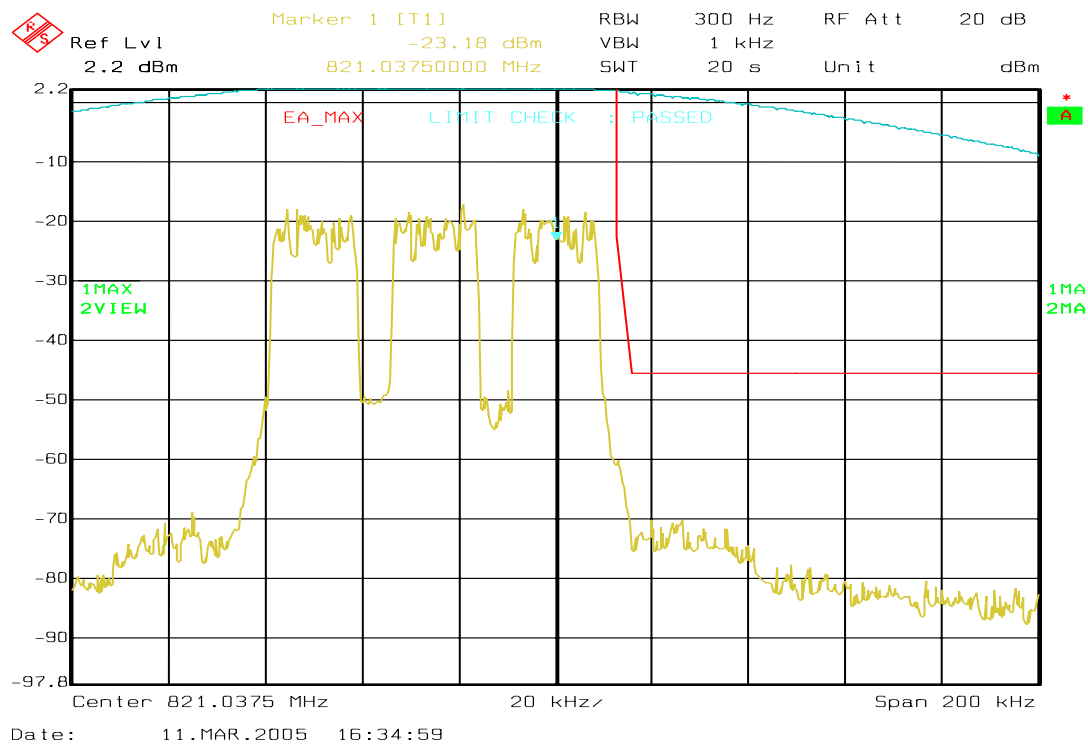


Figure 6a-44 . WiDEN75 800 MHz Band, QAM16, Maximum Power, EA Emission Mask

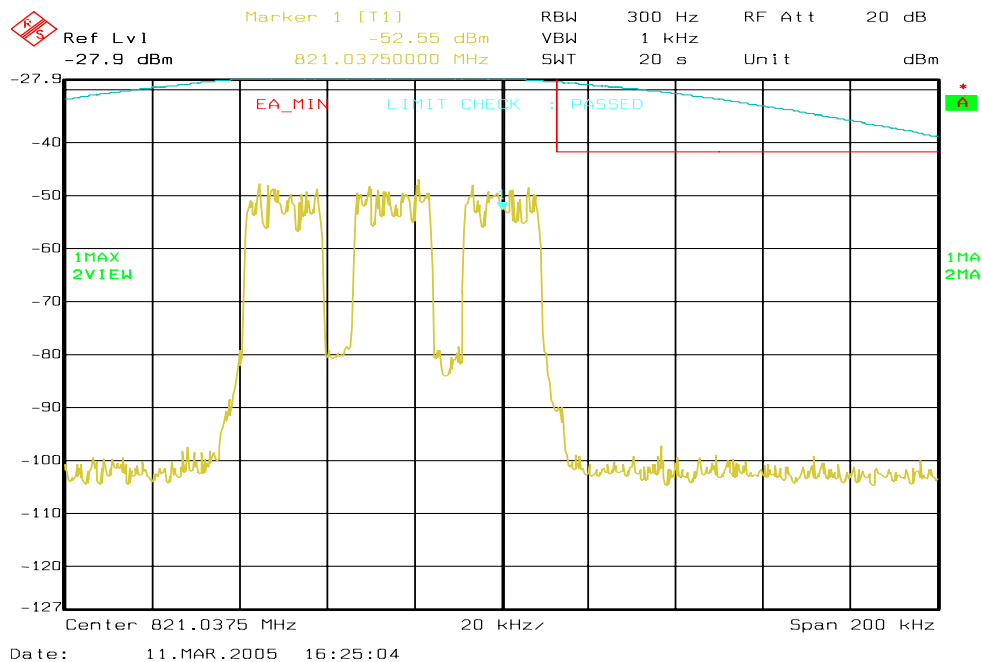


Figure 6a-45 . WiDEN75 800 MHz Band, QAM16, Minimum Power, EA Emission Mask

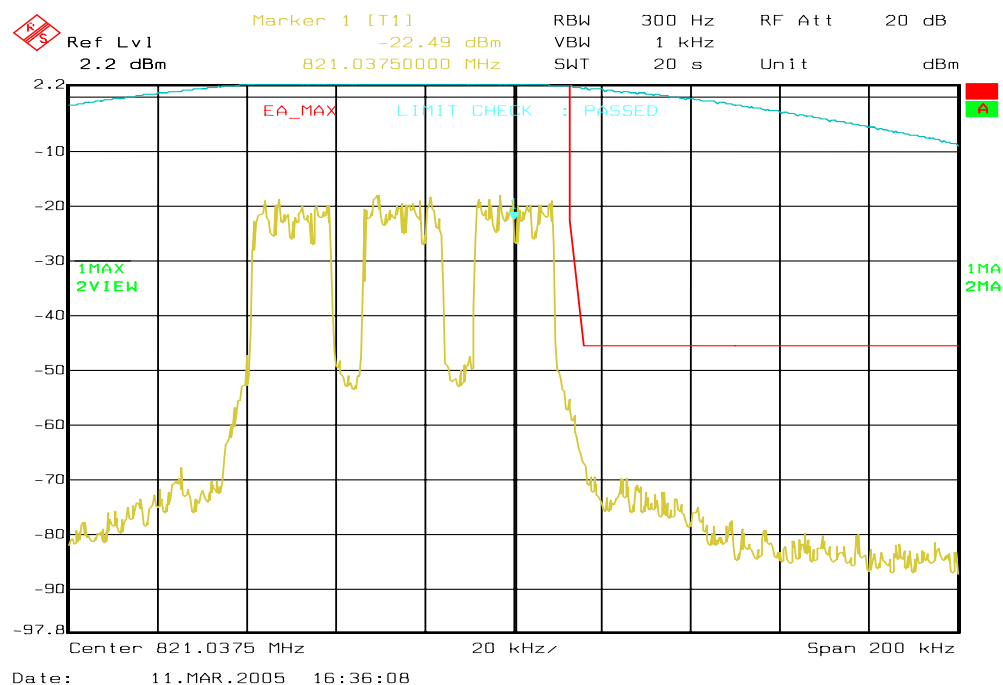


Figure 6a-46 . WiDEN75 800 MHz Band, QAM64, Maximum Power, EA Emission Mask

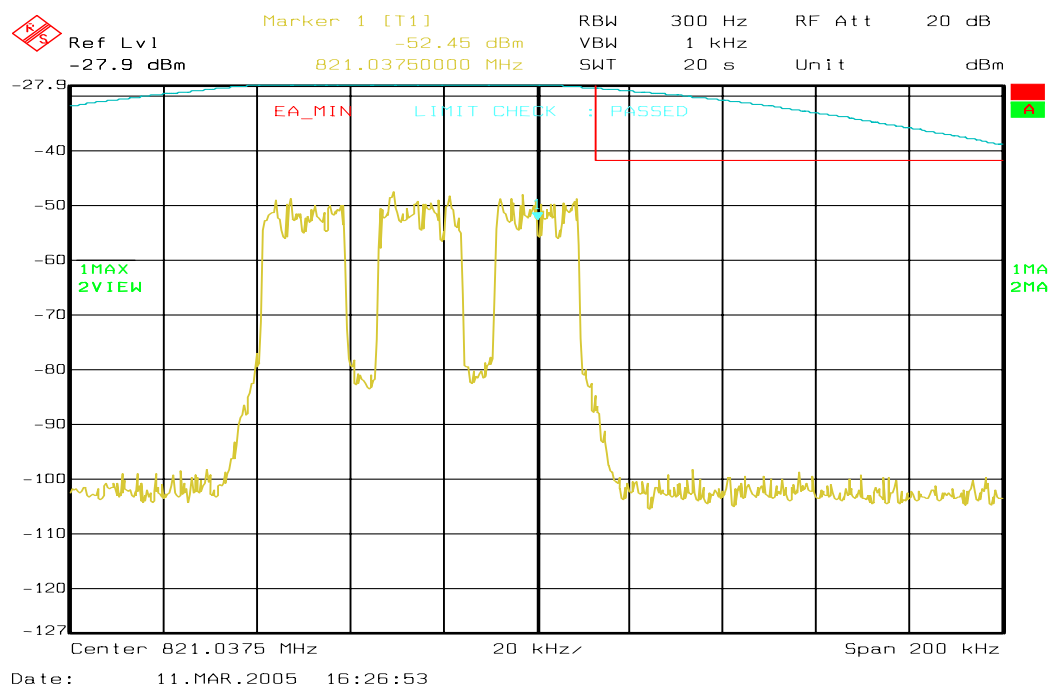


Figure 6a-47 . WiDEN75 800 MHz Band, QAM64, Minimum Power, EA Emission Mask

6a.2.7 Emission Designator 93K3D7D - WiDEN100 800 MHz Band

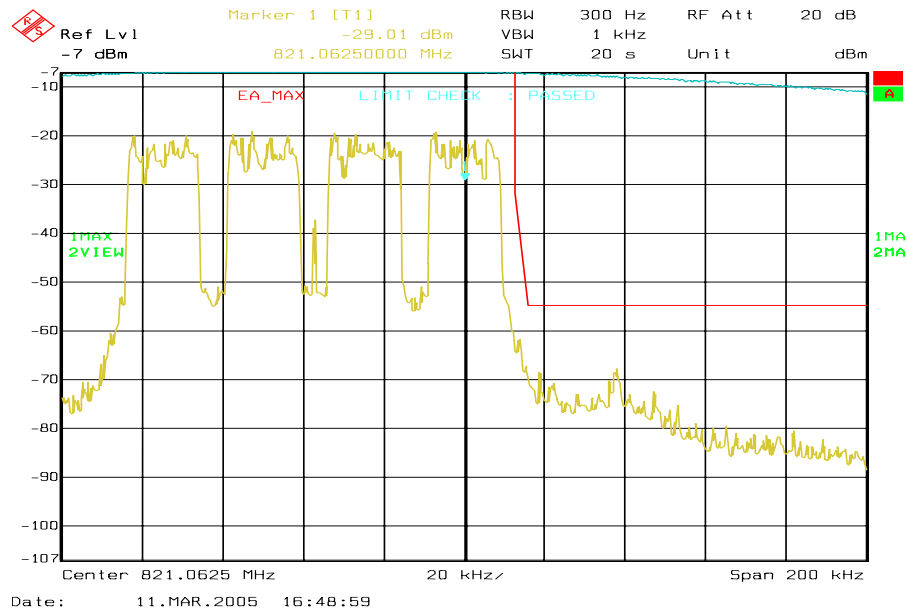


Figure 6a-48 . WiDEN100 800 MHz Band, Quad-QPSK, Maximum Power, EA Emission Mask

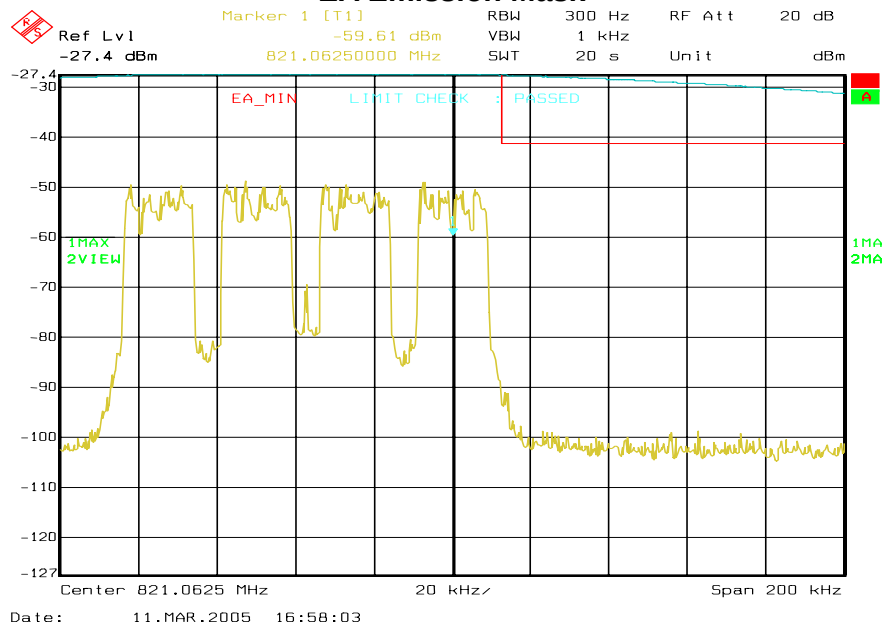


Figure 6a-49 . WiDEN100 800 MHz Band, Quad-QPSK, Minimum Power, EA Emission Mask

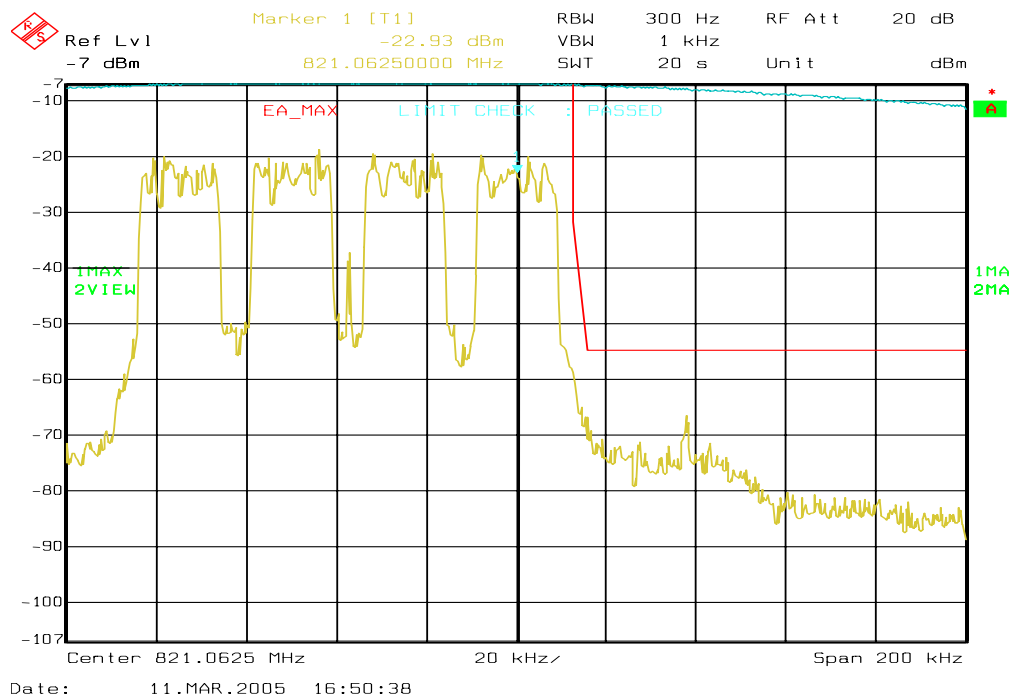


Figure 6a-50 . WiDEN100 800 MHz Band, QAM16, Maximum Power, EA Emission Mask

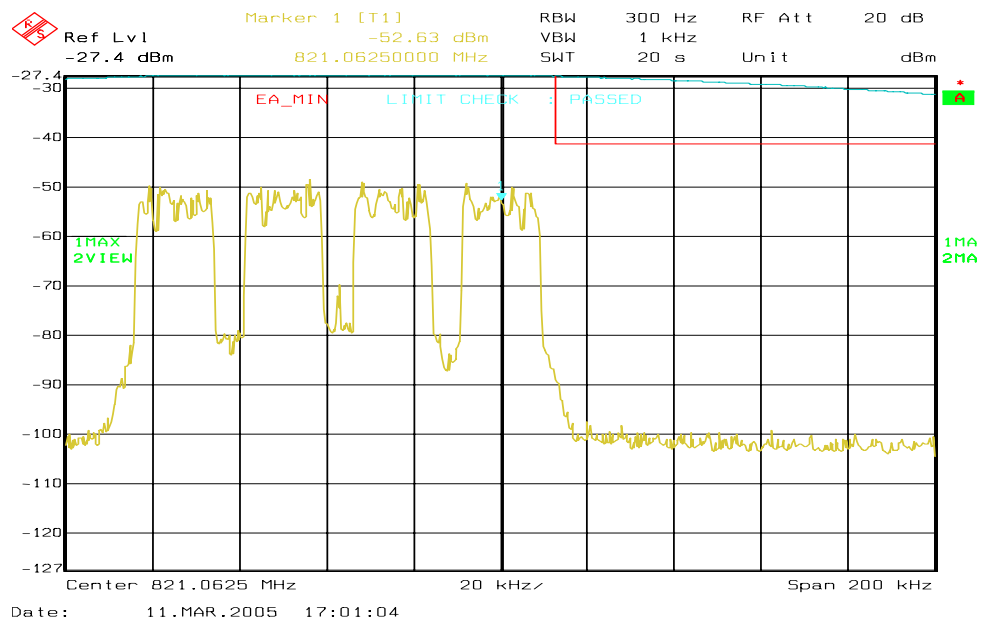


Figure 6a-51 . WiDEN100 800 MHz Band, QAM16, Minimum Power, EA Emission Mask

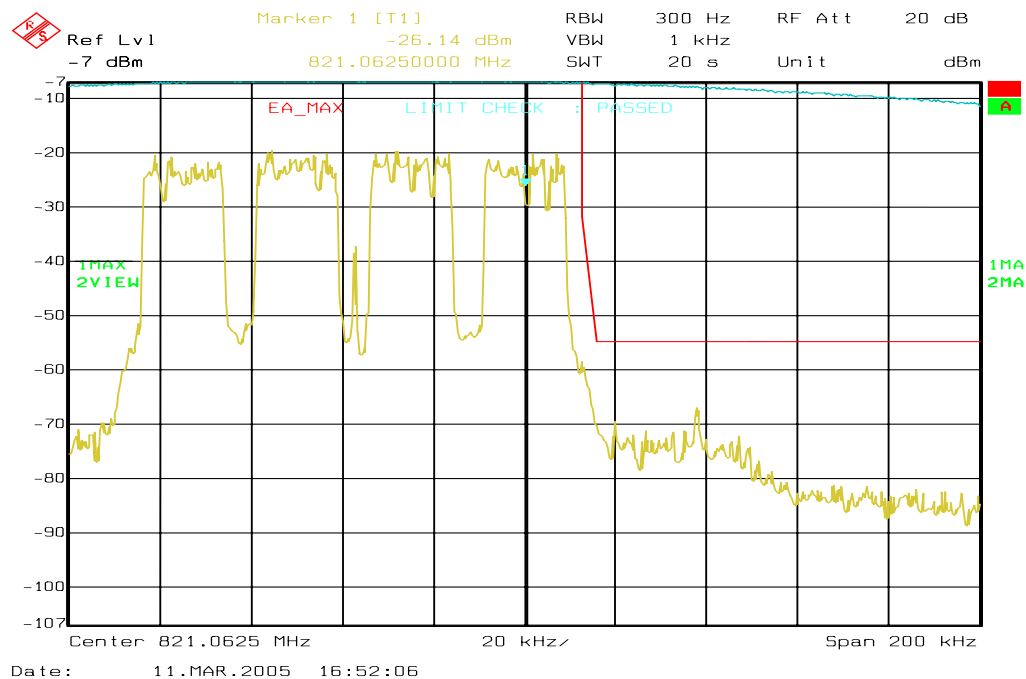


Figure 6a-52 . WiDEN100 800 MHz Band, QAM64, Maximum Power, EA Emission Mask

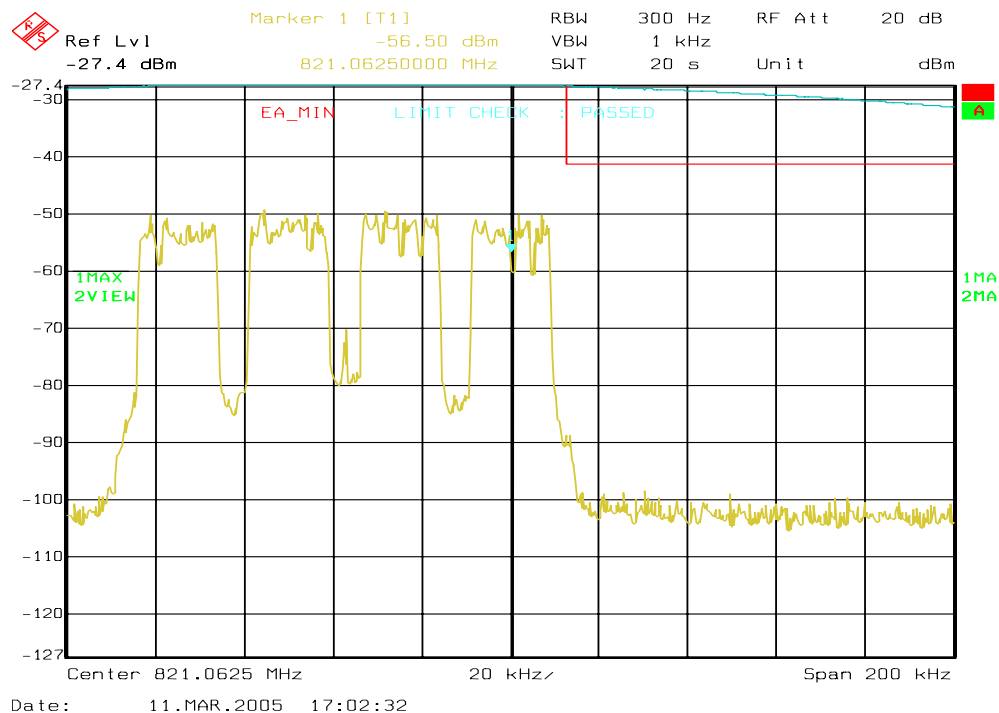


Figure 6a-53 . WiDEN100 800 MHz Band, QAM64, Minimum Power, EA Emission Mask

6a.2.8 Emission Designator 93K3D7D - WiDEN50_Split 800 MHz Band

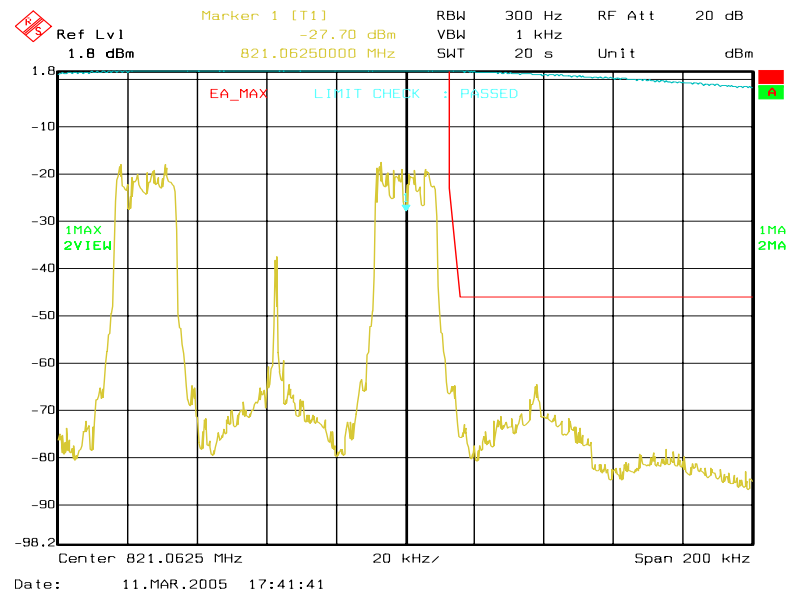


Figure 6a-54 . WiDEN_50_Split 800 MHz Band, Quad-QPSK, Maximum Power, EA Emission Mask

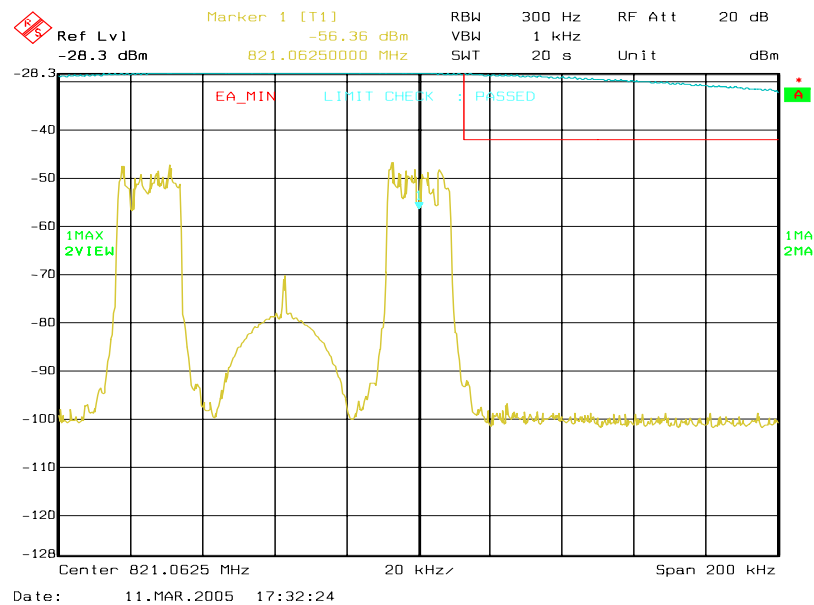


Figure 6a-55 . WiDEN_50_Split 800 MHz Band, Quad-QPSK, Minimum Power, EA Emission Mask

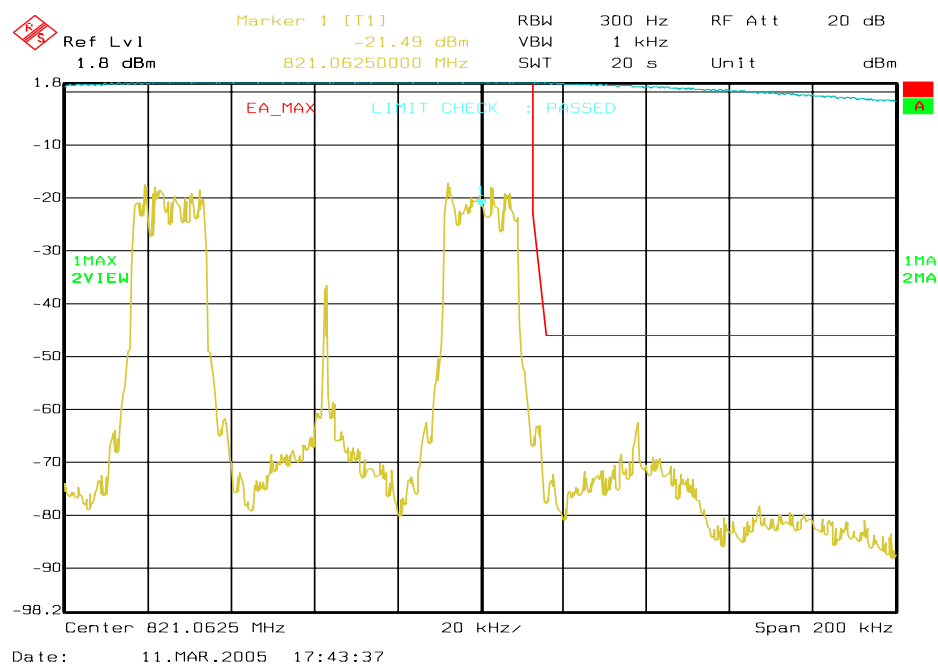


Figure 6a-56 . WiDEN_50_Split 800 MHz Band, QAM16, Maximum Power, EA Emission Mask

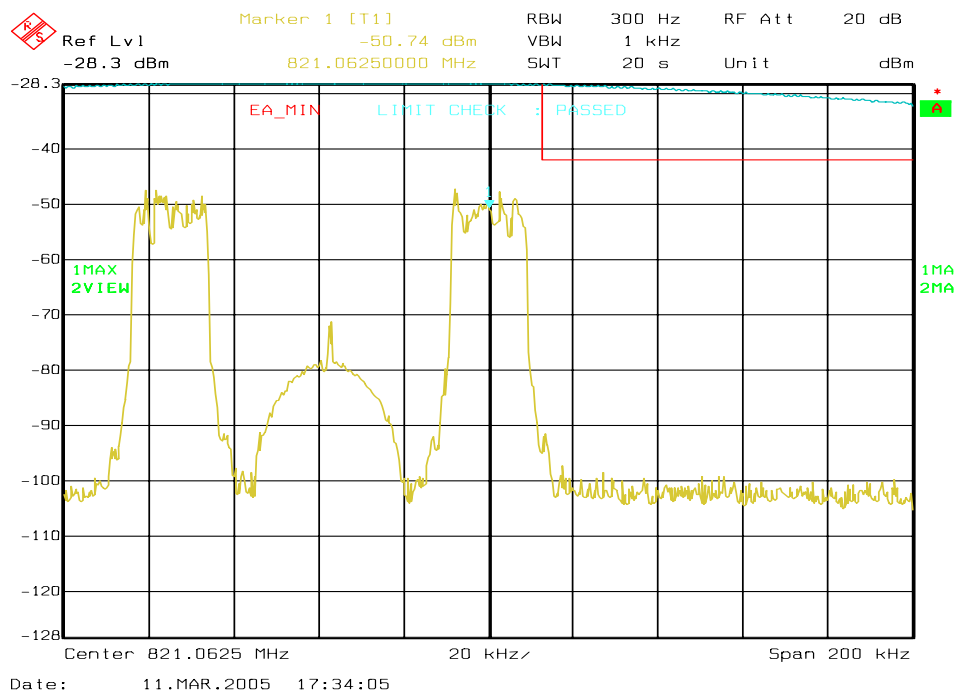


Figure 6a-57 . WiDEN_50_Split 800 MHz Band, QAM16, Minimum Power, EA Emission Mask

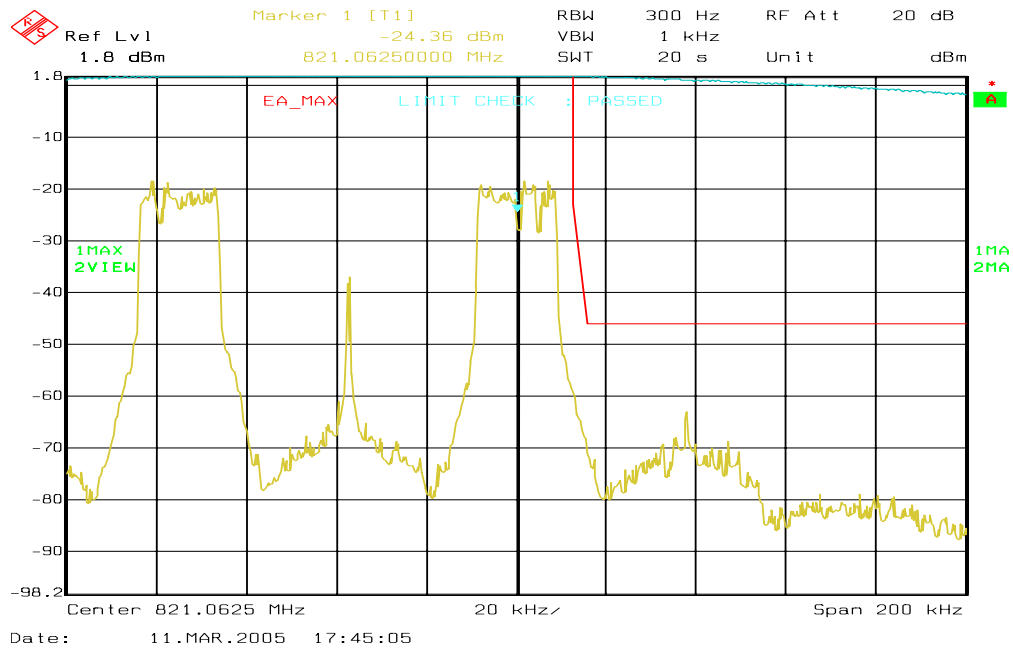


Figure 6a-58 . WiDEN_50_Split 800 MHz Band, QAM64, Maximum Power, EA Emission Mask

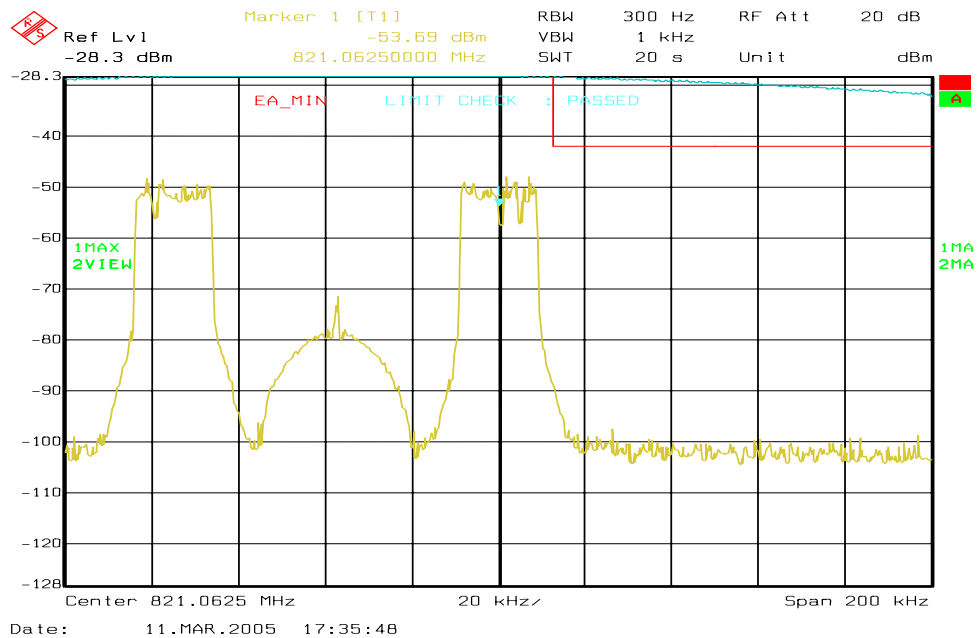


Figure 6a-59 . WiDEN_50_Split 800 MHz Band, QAM64, Minimum Power, EA Emission Mask

6a.2.9 Emission Designator 18K3D7W - WiDEN25 900 MHz Band

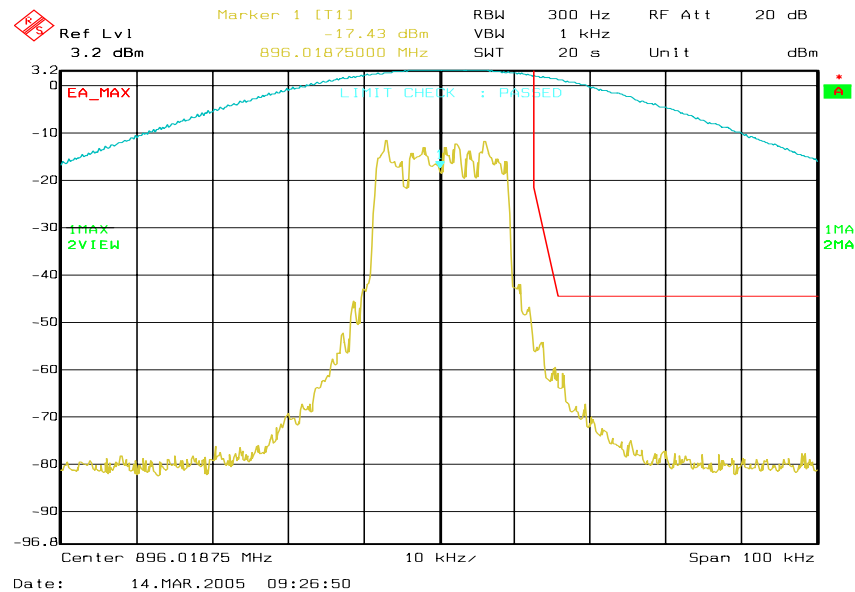


Figure 6a-60 . WiDEN25 900 MHz Band, Quad-QPSK, Maximum Power, EA Emission Mask

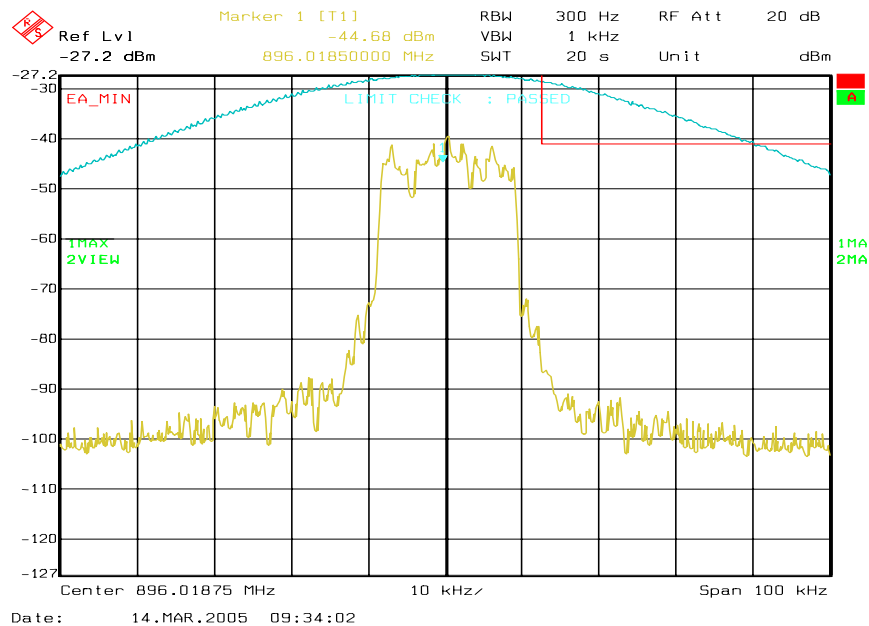


Figure 6a-61 . WiDEN25 900 MHz Band, Quad-QPSK, Minimum Power, EA Emission Mask

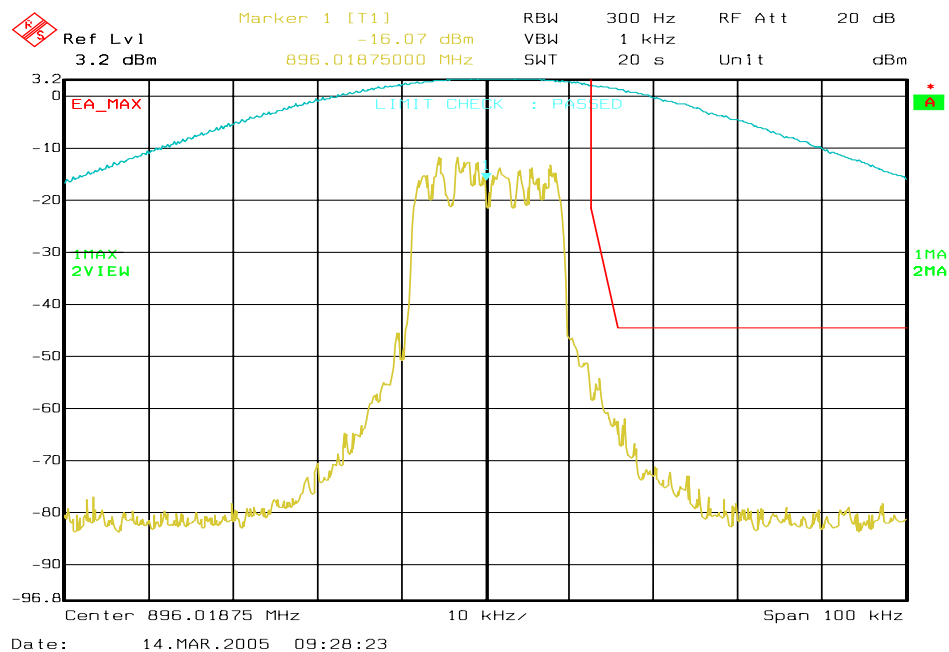


Figure 6a-62 . WiDEN25 900 MHz Band, QAM16, Maximum Power, EA Emission Mask

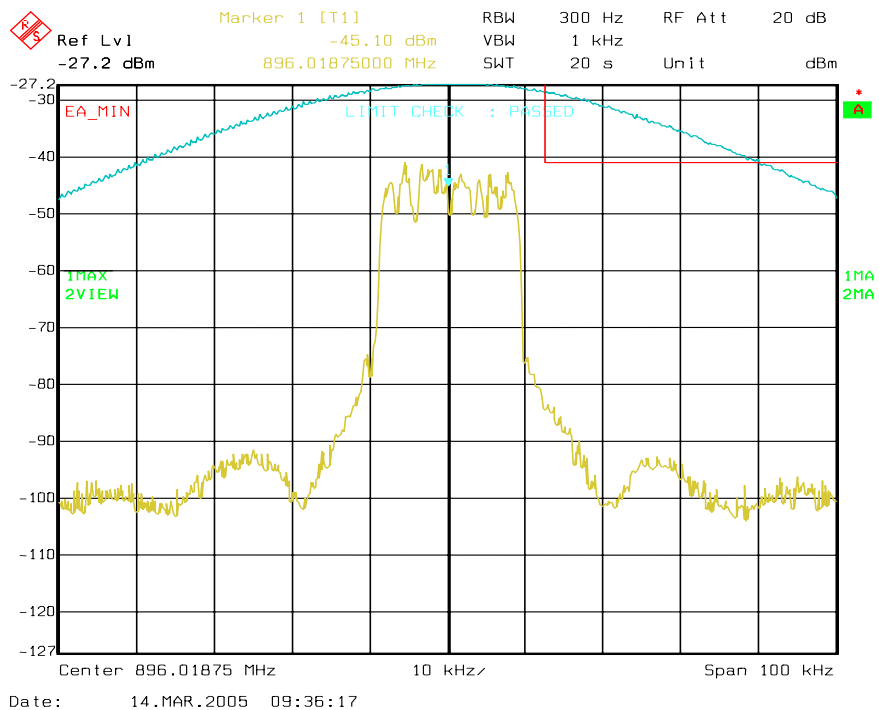


Figure 6a-63 . WiDEN25 900 MHz Band, QAM16, Minimum Power, EA Emission Mask

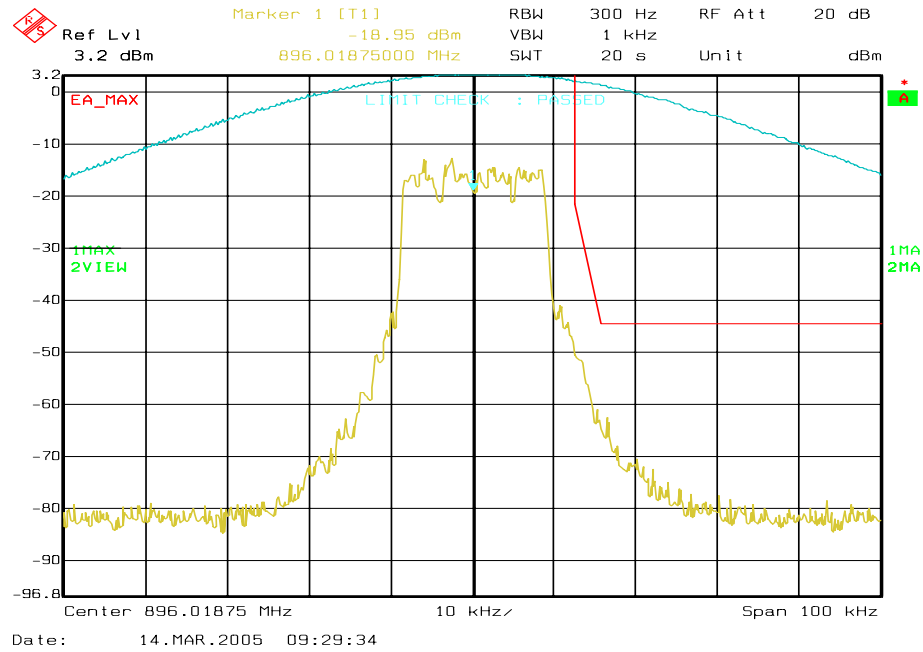


Figure 6a-64 . WiDEN25 900 MHz Band, QAM64, Maximum Power, EA Emission Mask

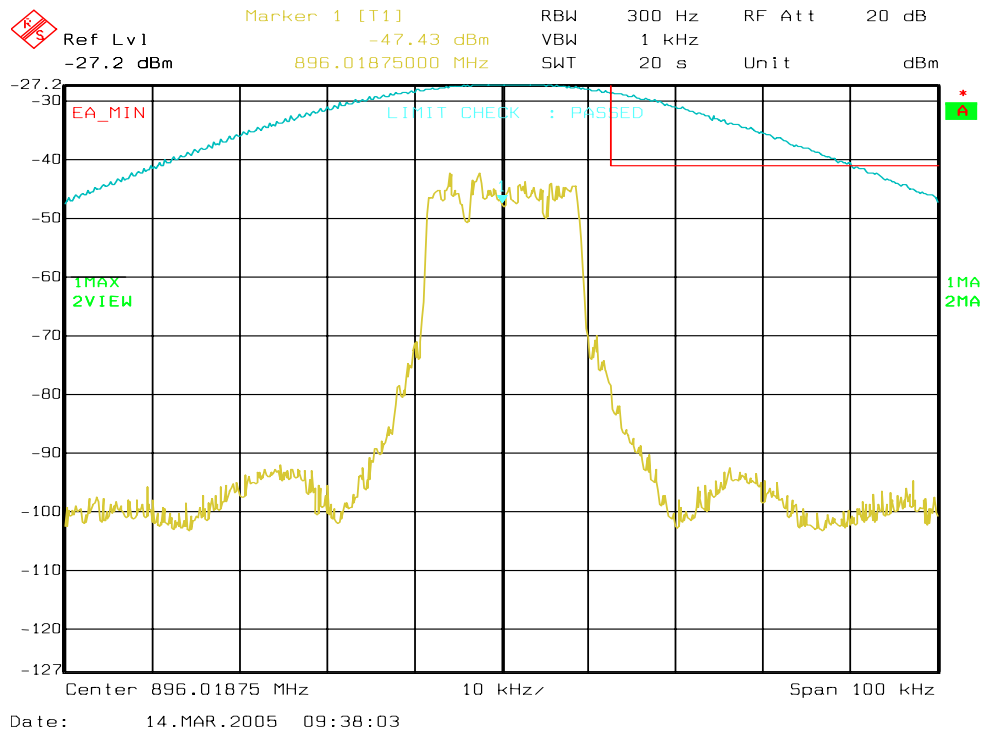


Figure 6a-65 . WiDEN25 900 MHz Band, QAM64, Minimum Power, EA Emission Mask

6a.2.10

Emission Designator 43K3D7D - WiDEN50 900 MHz Band

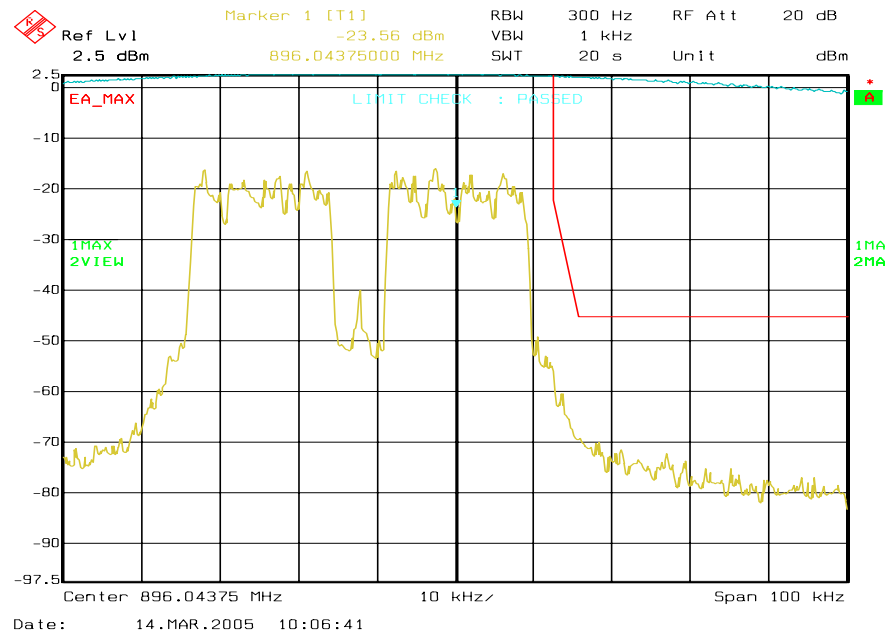


Figure 6a-66 . WiDEN50 900 MHz Band, Continuous Quad-QPSK, Maximum Power, EA Emission Mask

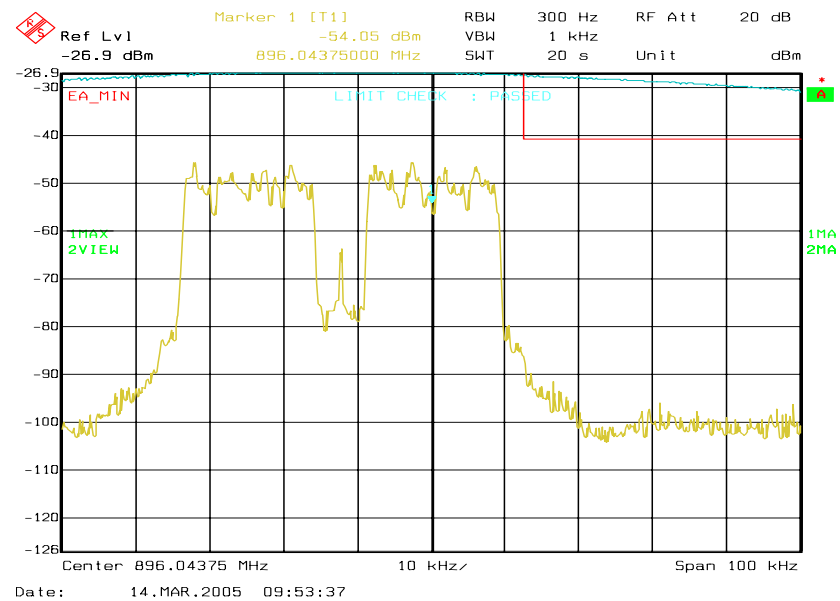


Figure 6a-67 . WiDEN50 900 MHz Band, Continuous Quad-QPSK, Minimum Power, EA Emission Mask

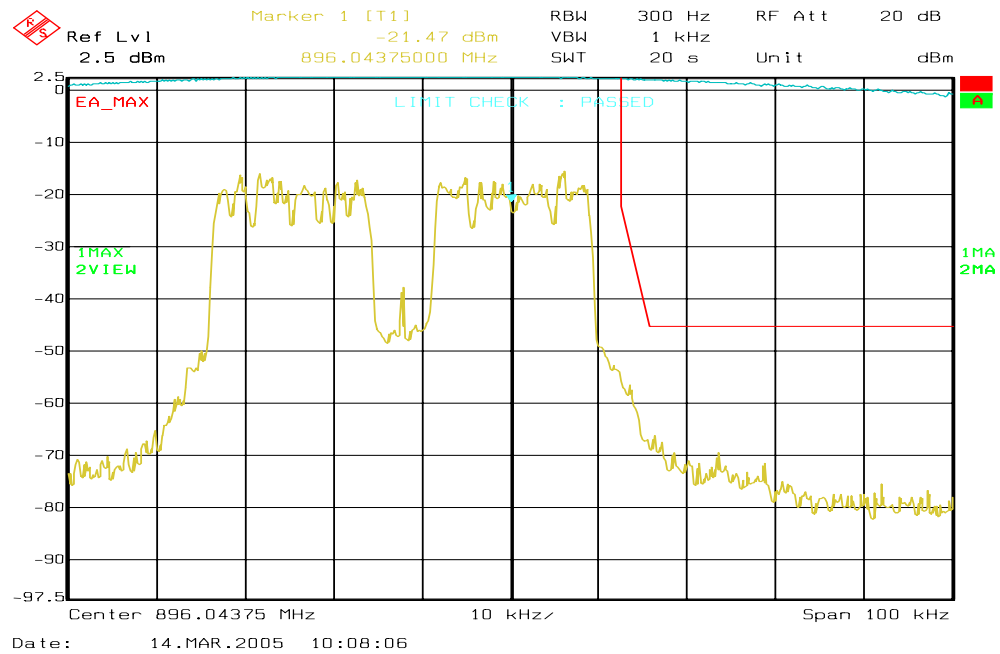


Figure 6a-68 . WiDEN50 900 MHz Band, Continuous QAM16, Maximum Power, EA Emission Mask

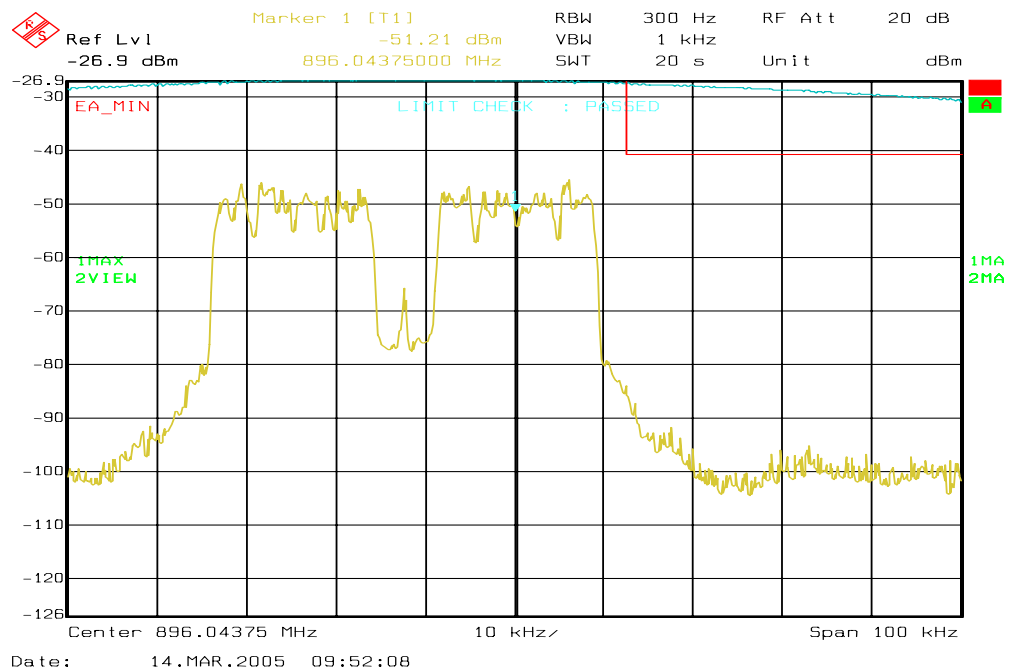


Figure 6a-69 . WiDEN50 900 MHz Band, Continuous QAM16, Minimum Power, EA Emission Mask

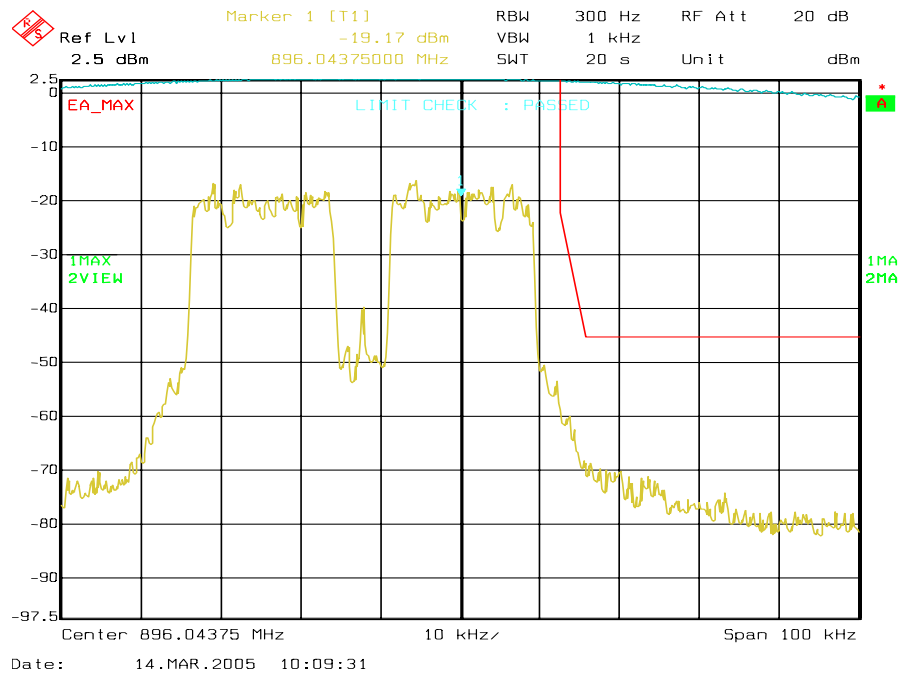


Figure 6a- 70. WiDEN50 900 MHz Band, Continuous QAM64, Maximum Power, EA Emission Mask

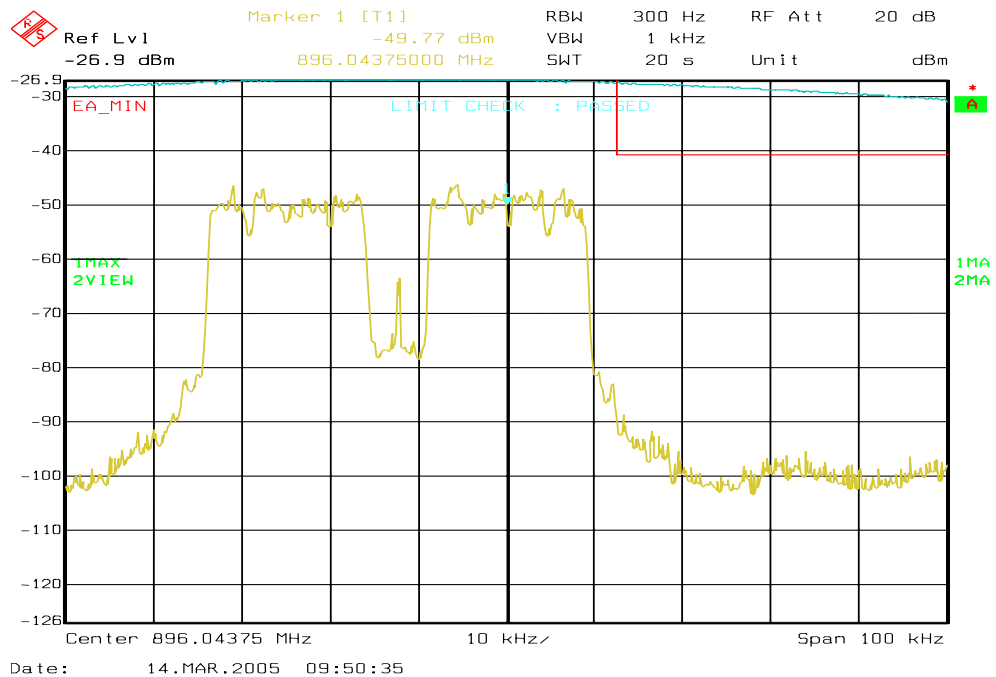


Figure 6a-71 . WiDEN50 900 MHz Band, Continuous QAM64, Minimum Power, EA Emission Mask

6a.2.11 Emission Designator 68K3D7D - WiDEN75 900 MHz Band

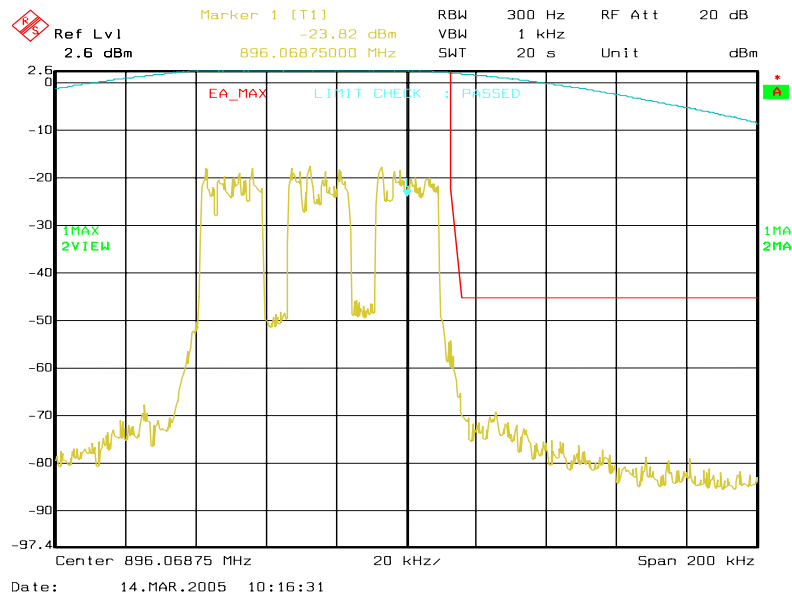


Figure 6a-72 . WiDEN75 900 MHz Band, Quad-QPSK, Maximum Power, EA Emission Mask

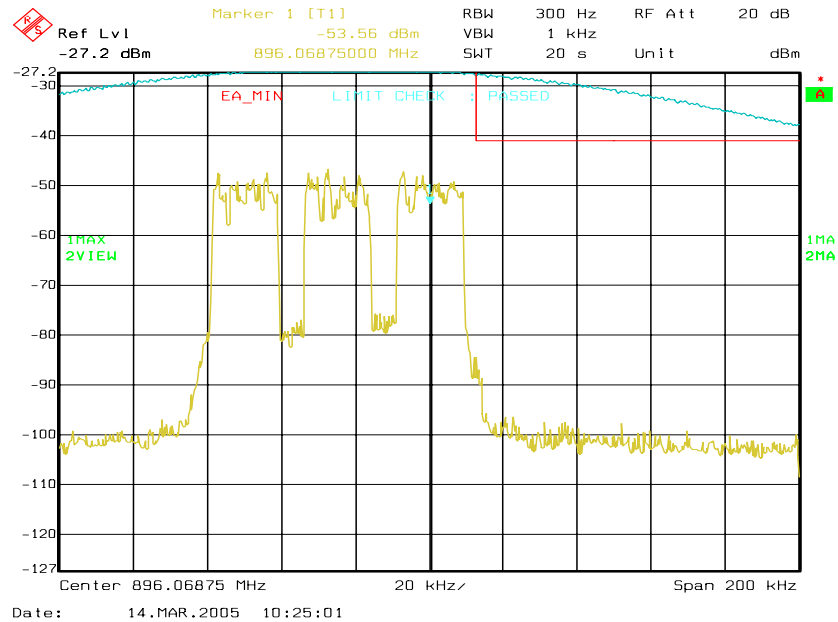


Figure 6a-73 . WiDEN75 900 MHz Band, Quad-QPSK, Minimum Power, EA Emission Mask

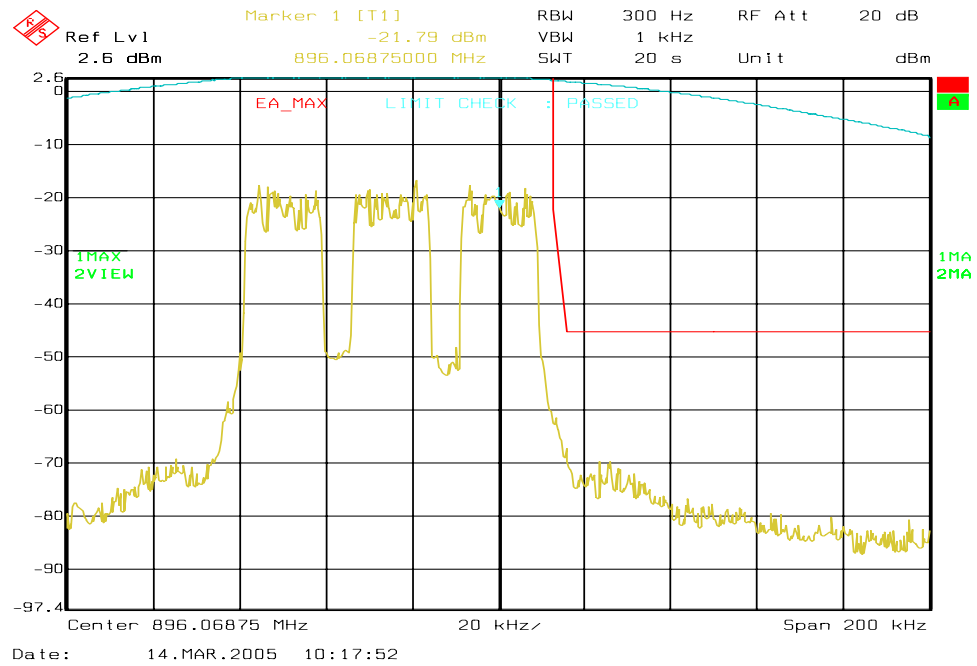


Figure 6a-74 . WiDEN75 900 MHz Band, QAM16, Maximum Power, EA Emission Mask

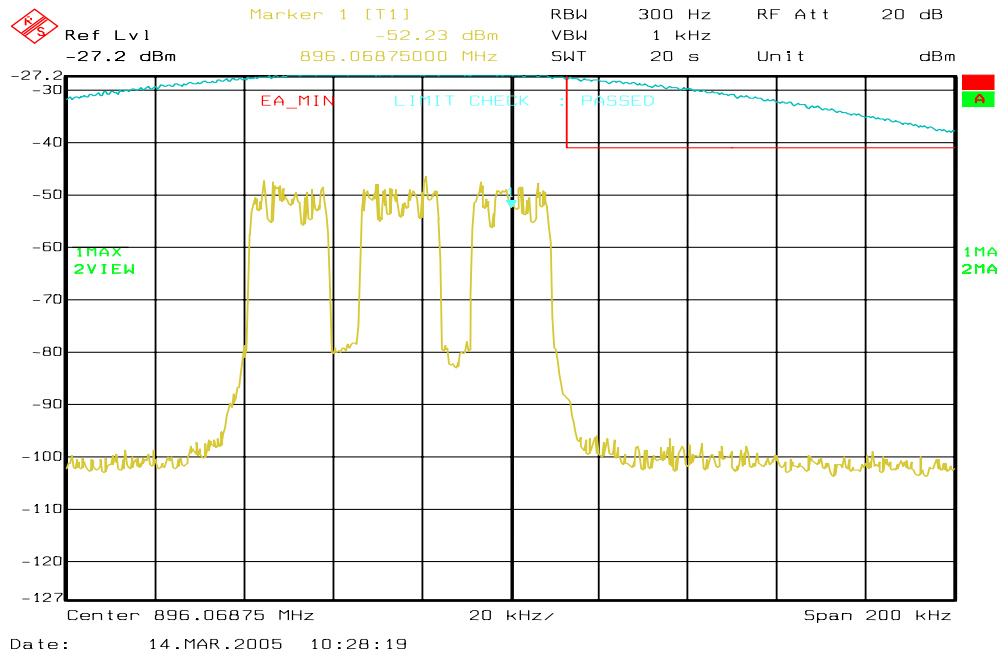


Figure 6a-75 . WiDEN75 900 MHz Band, QAM16, Minimum Power, EA Emission Mask

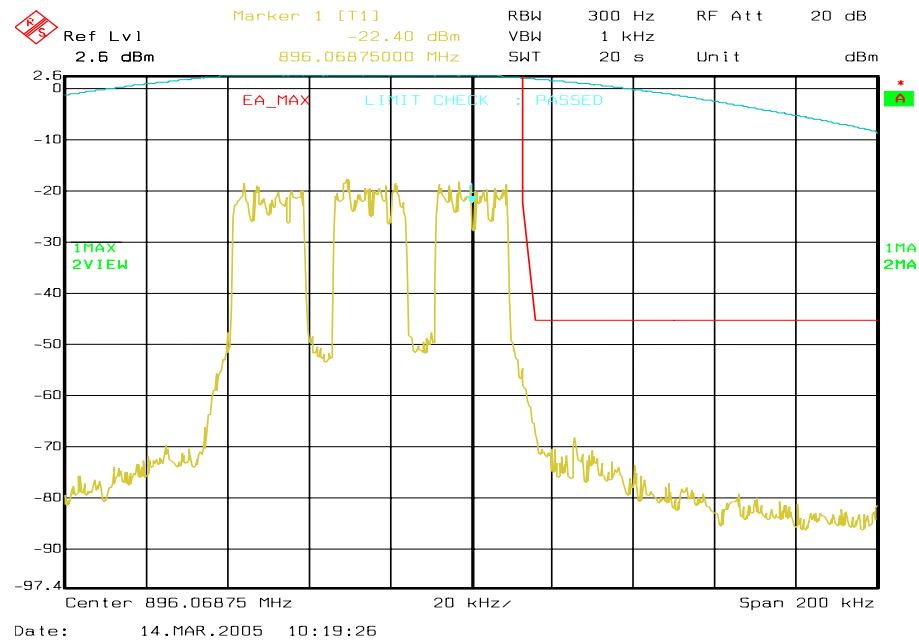


Figure 6a-76 . WiDEN75 900 MHz Band, QAM64, Maximum Power, EA Emission Mask

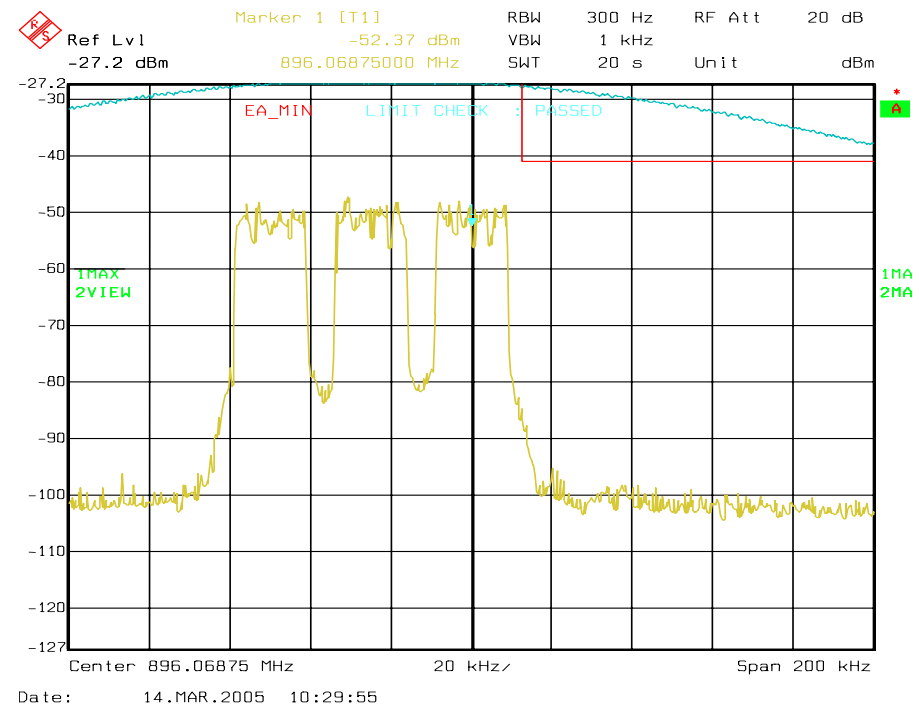


Figure 6a-77 . WiDEN75 900 MHz Band, QAM64, Minimum Power, EA Emission Mask

6a.2.12 Emission Designator 93K3D7D - WiDEN100 900 MHz Band

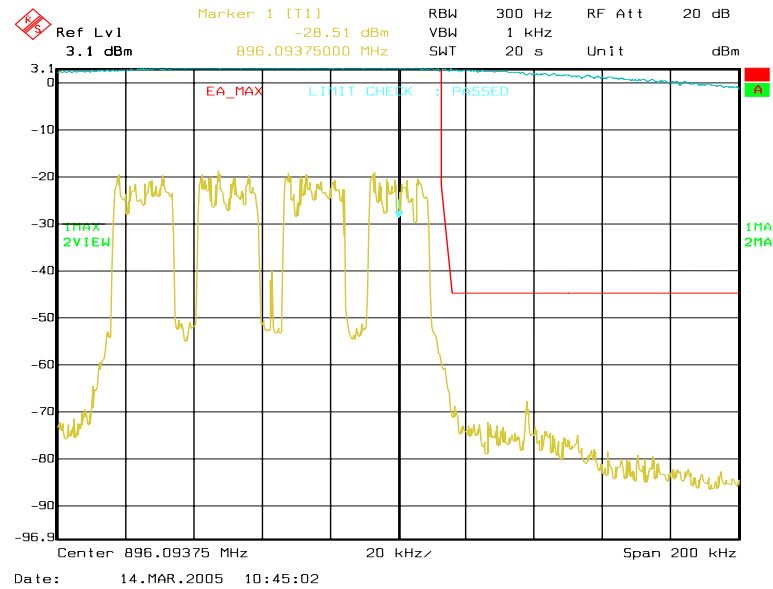


Figure 6a-78 . WiDEN100 900 MHz Band, Quad-QPSK, Maximum Power, EA Emission Mask

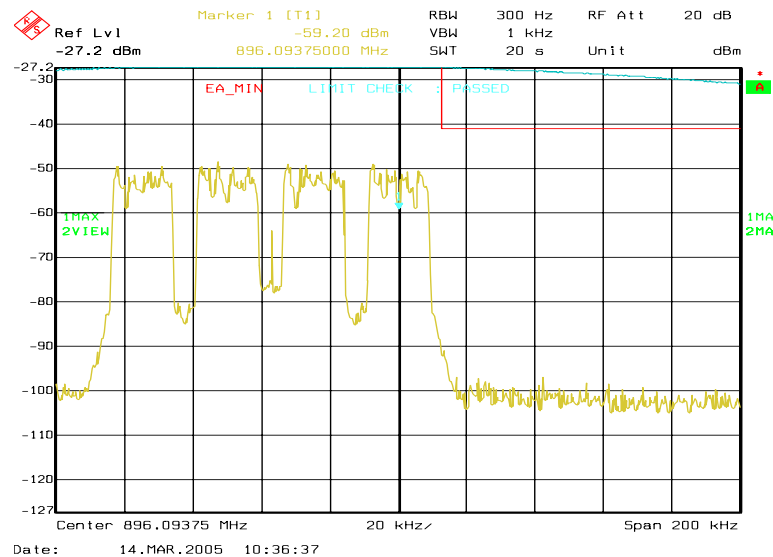


Figure 6a-79 . WiDEN100 900 MHz Band, Quad-QPSK, Minimum Power, EA Emission Mask

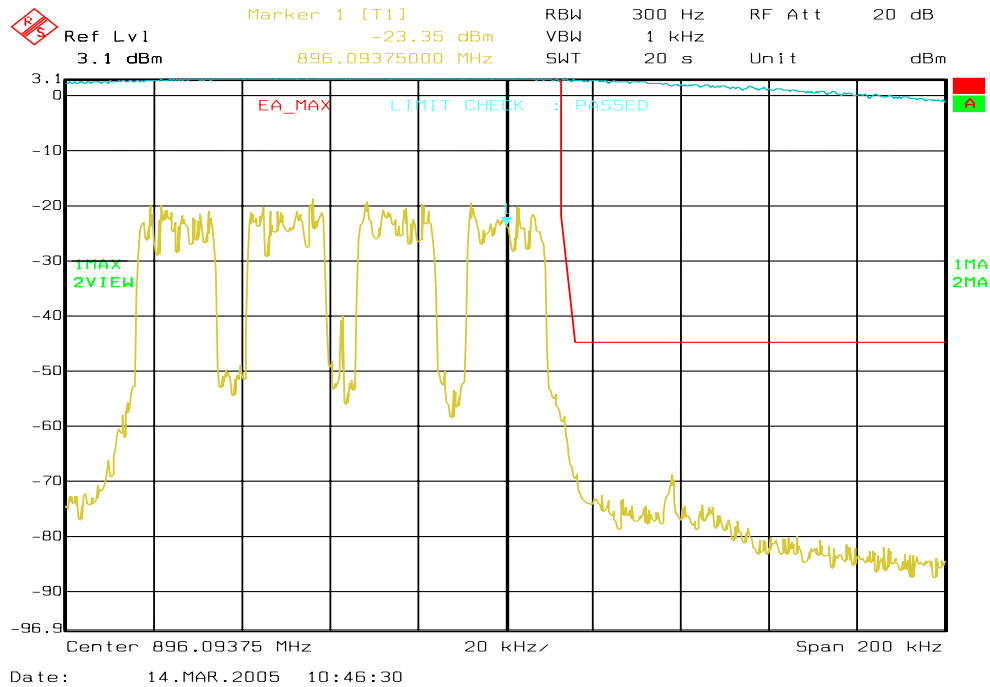


Figure 6a-80 . WiDEN100 900 MHz Band, QAM16, Maximum Power, EA Emission Mask

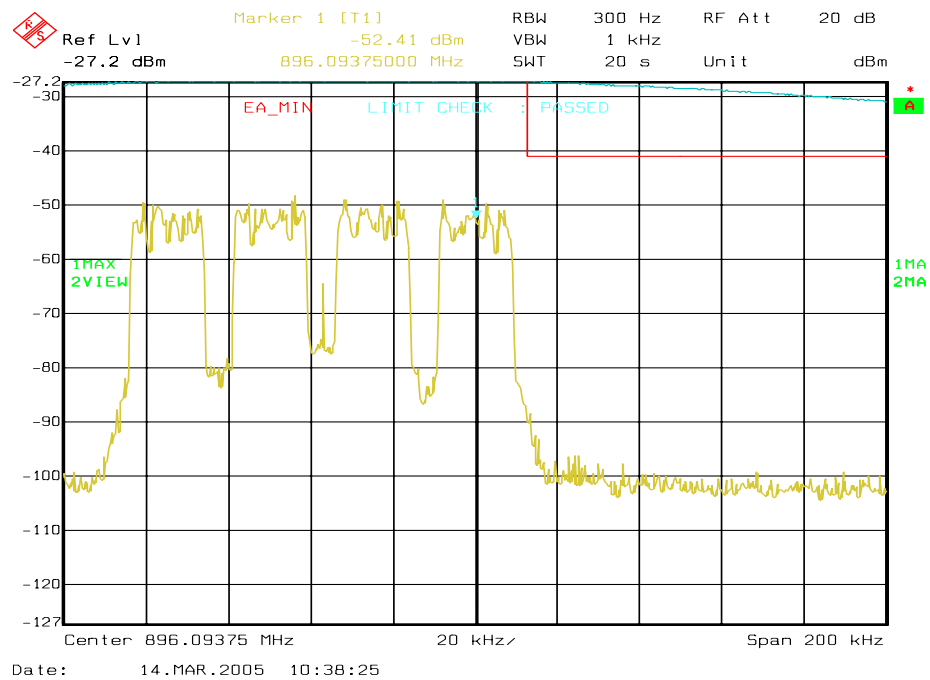


Figure 6a-81 . WiDEN100 900 MHz Band, QAM16, Minimum Power, EA Emission Mask

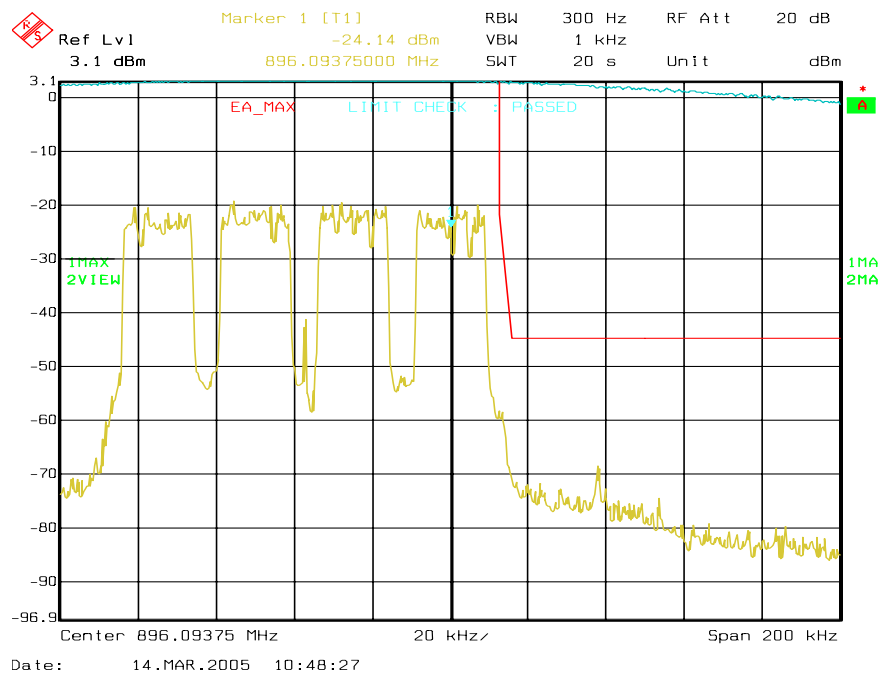


Figure 6a-82 . WiDEN100 900 MHz Band, QAM64, Maximum Power, EA Emission Mask

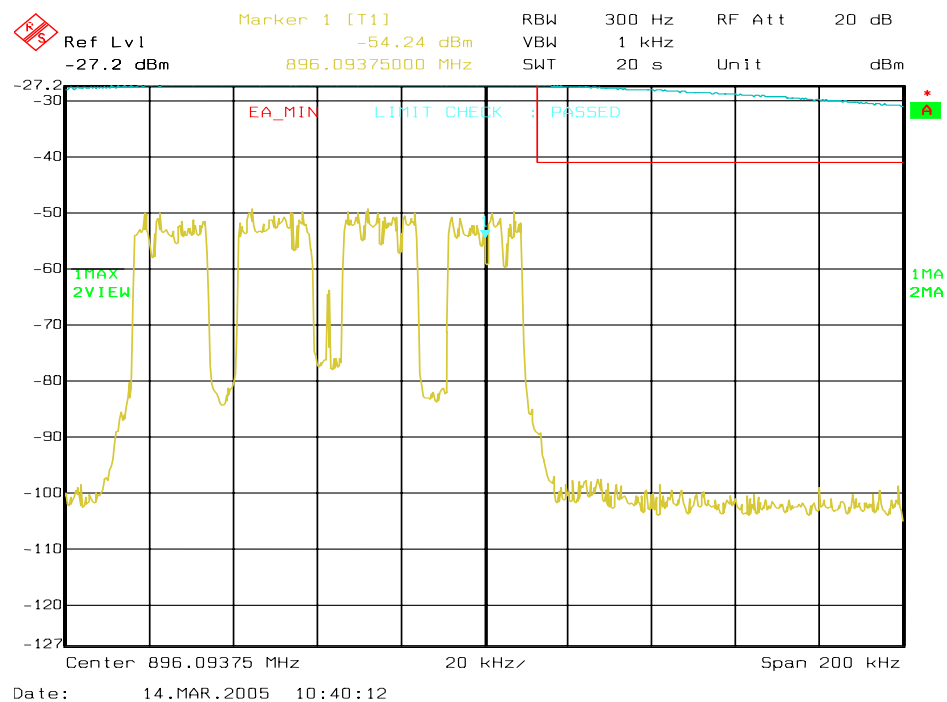


Figure 6a-83 . WiDEN100 900 MHz Band, QAM64, Minimum Power, EA Emission Mask

6a.2.13 Emission Designator 93K3D7D - WiDEN50_Split 900 MHz Band

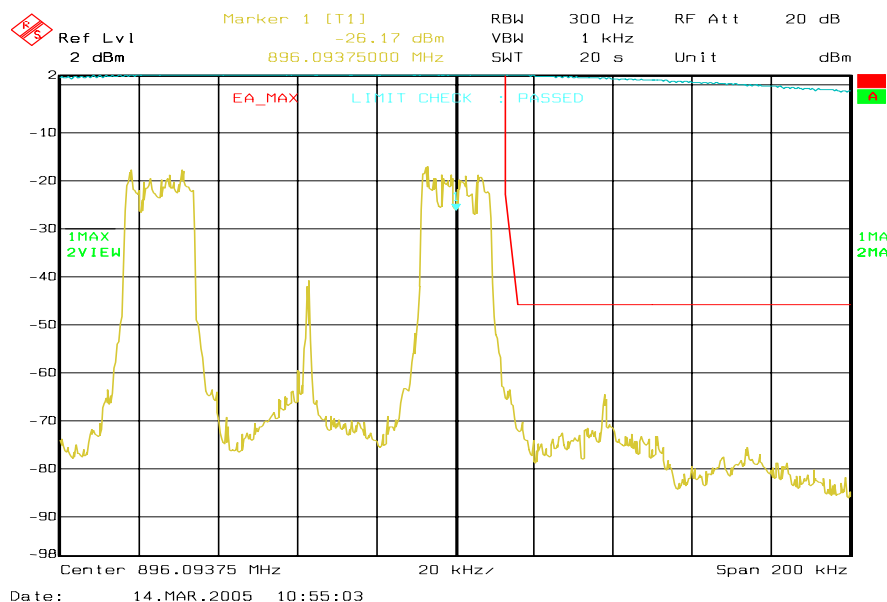


Figure 6a-84 . WiDEN_50_Split 900 MHz Band, Quad-QPSK, Maximum Power, EA Emission Mask

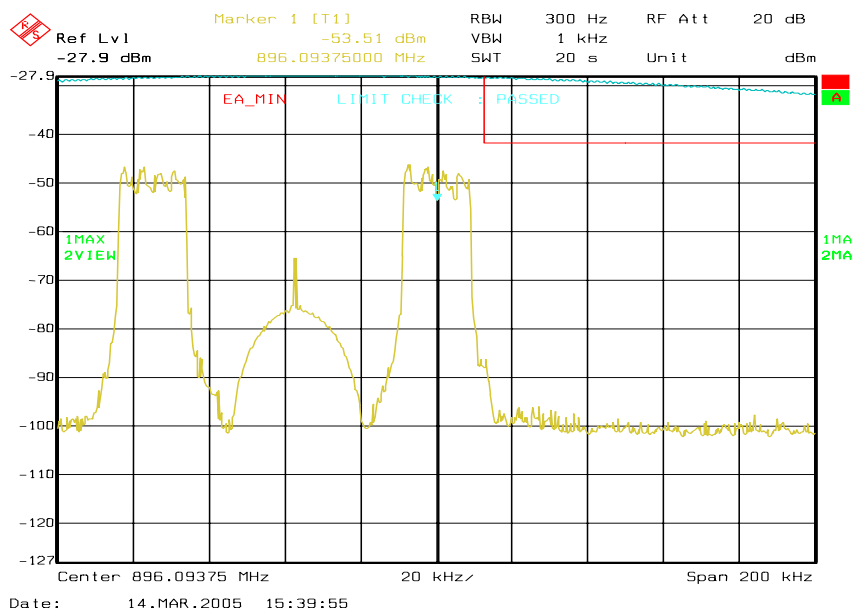


Figure 6a-85 . WiDEN_50_Split 900 MHz Band, Quad-QPSK, Minimum Power, EA Emission Mask

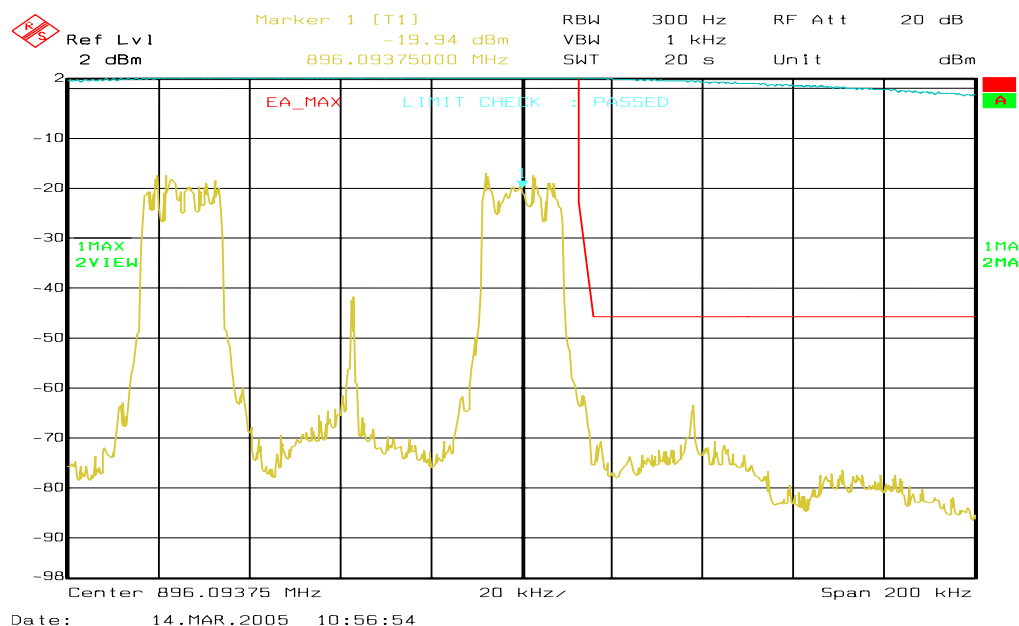


Figure 6a-86 . WiDEN_50_Split 900 MHz Band, QAM16, Maximum Power, EA Emission Mask

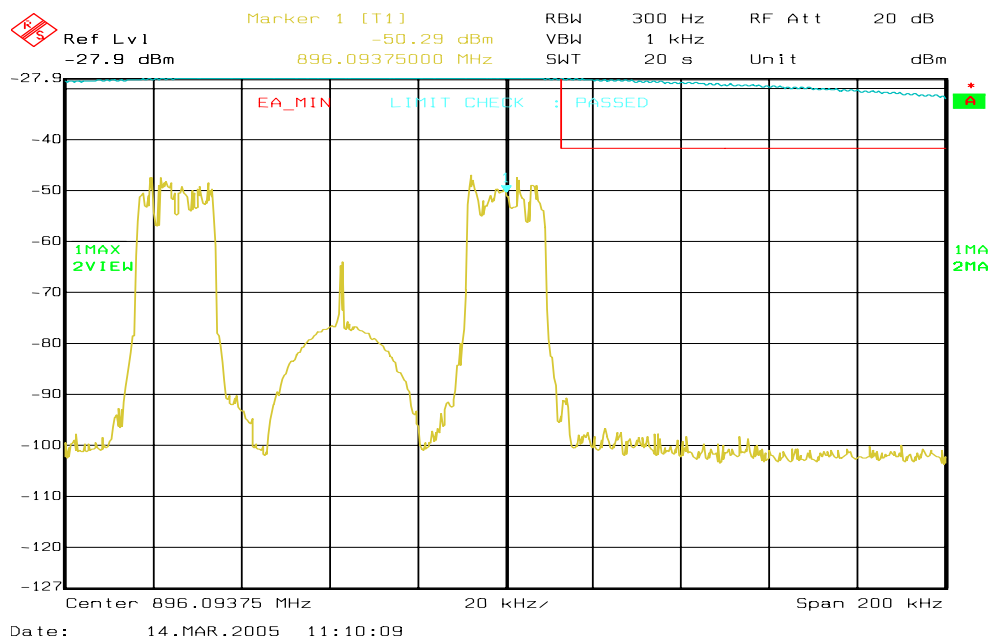


Figure 6a-87 . WiDEN_50_Split 900 MHz Band, QAM16, Minimum Power, EA Emission Mask

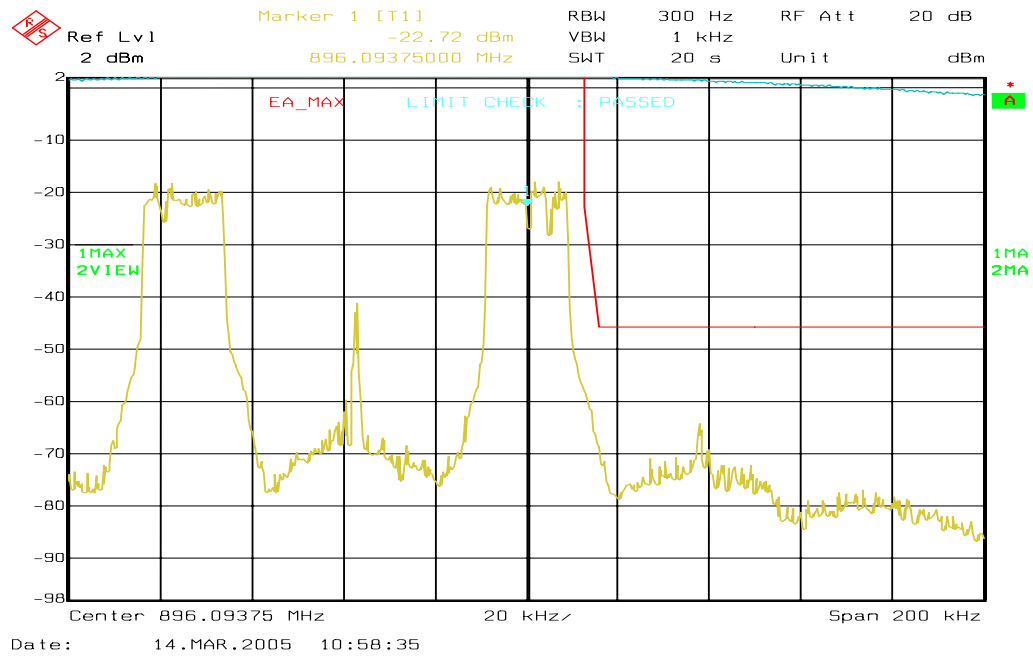


Figure 6a-88 . WiDEN_50_Split 900 MHz Band, QAM64, Maximum Power, EA Emission Mask

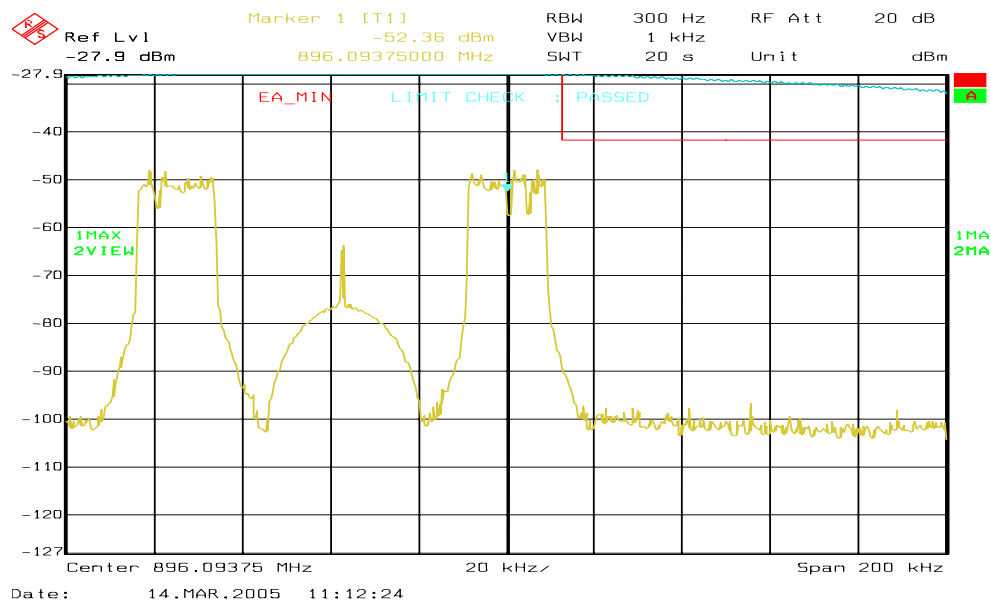


Figure 6a-89 . WiDEN_50_Split 900 MHz Band, QAM64, Minimum Power, EA Emission Mask