



TEST DATA

Test Data Number: 3185844MIN-001
Project Number: 3185844

Testing performed on the
FlexWave Prism SMR 800/900MHz

to
47 CFR, Part 90:2008

For
LGS Wireless / ADC Telecommunications Inc.

Test Performed by:
Intertek Testing Services NA, Inc.
7250 Hudson Blvd., Suite 100
Oakdale, MN 55128

Test Authorized by:
LGS Wireless
541 E. Trimble Road
San Jose, CA 95131

Prepared by: *Norman Shpilsher*
Norman Shpilsher

Date: August 21, 2009

Reviewed by: *Uri Spector*
Uri Spector

Date: August 21, 2009



TABLE OF CONTENTS

1.0	DESCRIPTION OF THE SAMPLE (EUT)	3
2.0	TEST SUMMARY	4
2.1	Statement of the Measurement Uncertainty	4
3.0	TEST RESULTS	5
3.1	Environmental conditions	11
5.0	TEST EQUIPMENT	14
	ANNEX 1: ANTENNA CONDUCTED EMISSIONS	15



1.0 DESCRIPTION OF THE SAMPLE (EUT)

Model:	FlexWave Prism SMR 800/900MHz
Type of EUT:	Indoor/Outdoor Base Station Repeater
Serial Number:	N/A
Company:	LGS Wireless / ADC Telecommunications Inc.
Customer:	Sue Cyr
Address:	541 E. Trimble Road San Jose, CA 95131
Phone:	408-952-2445
Fax:	408-952-2645
Test Standards:	<input type="checkbox"/> EN 55022:2006 +A1:2007, Class █ <input type="checkbox"/> EN 55011:2007, Group █, Class █ <input checked="" type="checkbox"/> 47 CFR, Part 90:2008 <input type="checkbox"/> EN 55014-1:2006 <input type="checkbox"/> EN 61326-1:2006 <input type="checkbox"/> Class █ for Radiated and Conducted Emissions <input type="checkbox"/> EN 60601-1-2:2001 +A1:2006 <input type="checkbox"/> Class █ Radiated and Conducted Emissions <input type="checkbox"/> EN 61000-6-3:2007 <input type="checkbox"/> EN 61000-6-4:2007 <input type="checkbox"/> EN 61000-3-2:2006 <input type="checkbox"/> EN 61000-3-3:1995 +A1:2001 +A2:2006 <input type="checkbox"/> Other █



2.0 TEST SUMMARY

Referring to the performance criteria and the operating mode during the tests specified in this report, the equipment complies with the requirements according to the following standards.

TEST STANDARD	TEST	RESULT
Part 90	Spurious Enclosure Radiated Emissions	Pass

2.1 Statement of the Measurement Uncertainty

Note: The measured result in this report is within the specification limits by more than the measurement uncertainty; the measured result indicates that the product tested complies with the specification limit.

The expanded uncertainty ($k = 2$) for radiated emissions from 30 to 1000 MHz has been determined to be: ± 4 dB at 10m and ± 5.4 dB at 3m

The expanded uncertainty ($k = 2$) for conducted emissions from 150 kHz to 30 MHz has been determined to be:
 ± 2.6 dB

General notes:

1. Test was performed with the EUT tuned to 860MHz (the frequency range 851-869MHz, SMR 800) and tuned to 937.5MHz (the frequency range 935-940MHz, SMR 900)
Testing was performed in frequency range from 30MHz to 10GHz.
2. The Spurious Radiated Power limits of -13dBm was correlated with field strength reference level of 82.2dB μ V/m during field strength measurements at 3m measurement distance

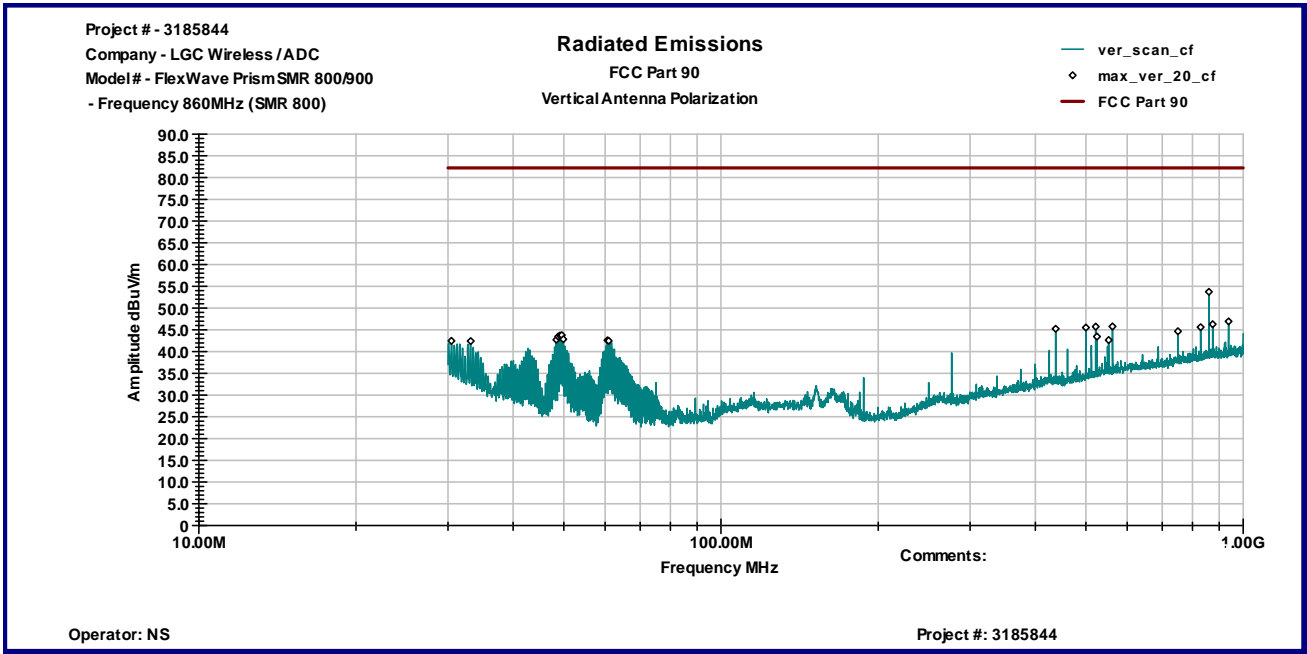


3.0 TEST RESULTS

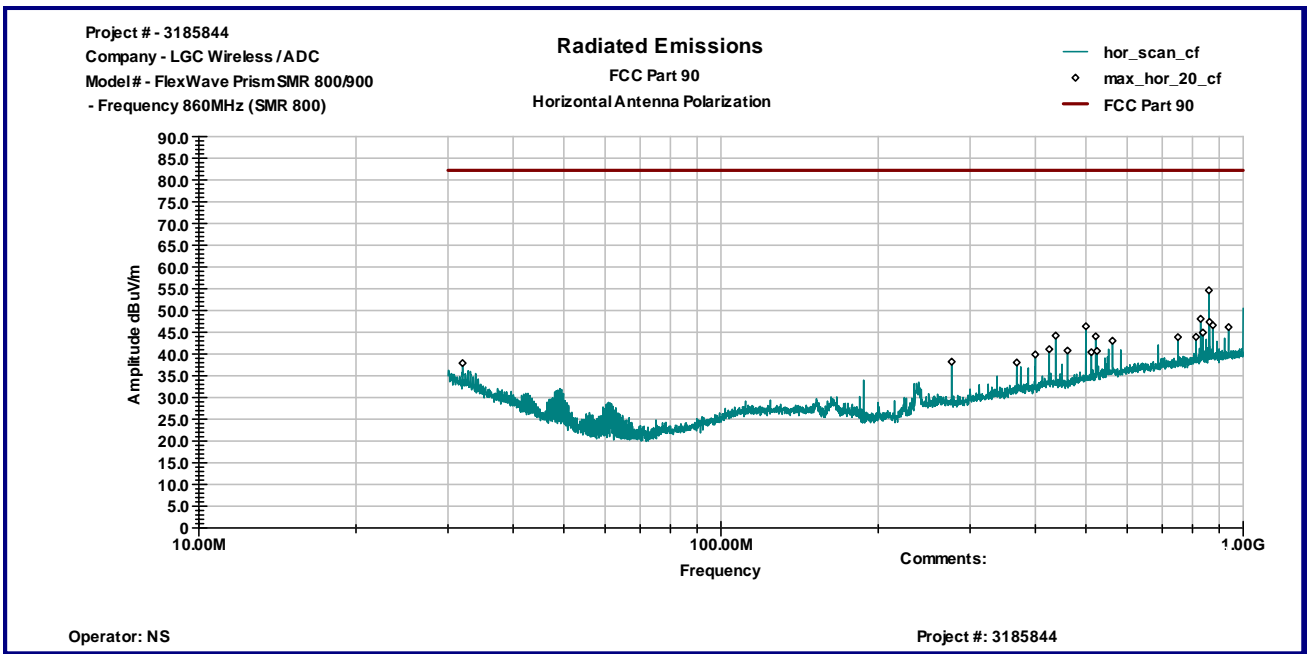
Table 1 and Graphs 1 to 18 show the EUT peak Radiated Emissions. No emissions with margin less than 20dB below the reference limit were detected, therefore no frequencies were chosen for substitution measurements.

Table # 1

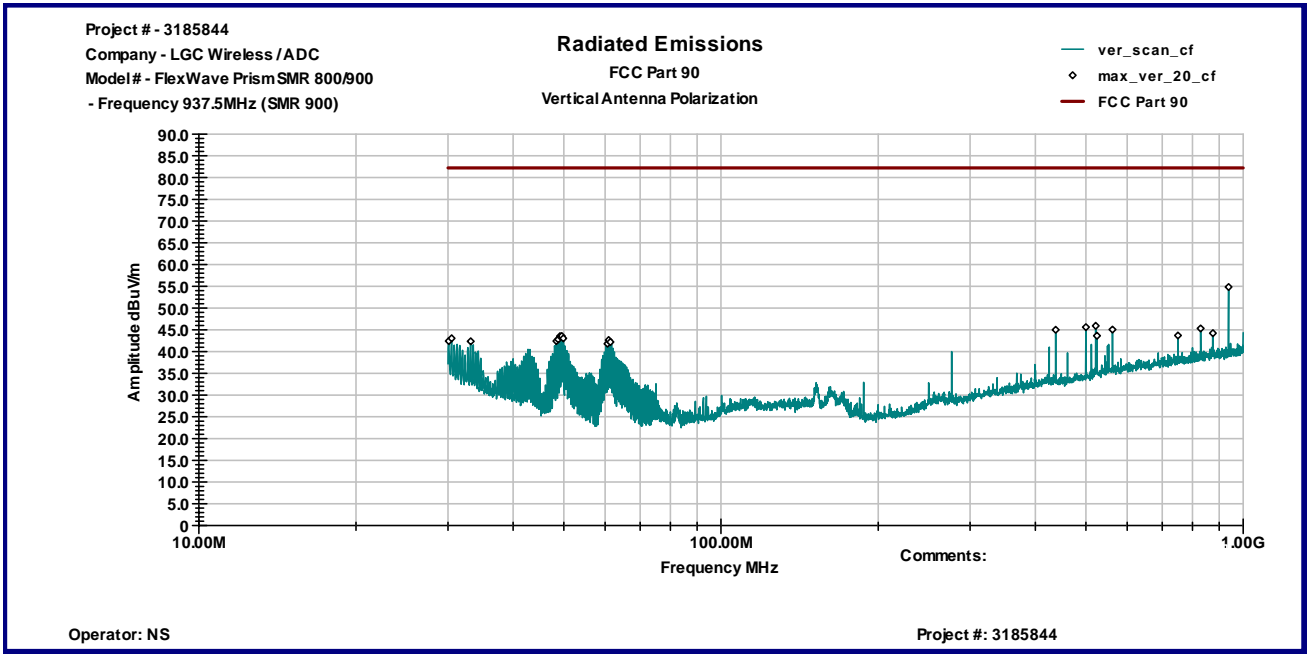
Frequency	Ant. Polarity	Peak Reading dB μ V	Ant.Factor dB1/m	Total at 3m dB μ V/m	QP Limit dB μ V/m	Margin dB
Operating Frequency 860MHz						
499.94 MHz	V	25.0	20.5	45.5	82.2	-36.7
522.19 MHz	V	24.7	21.0	45.7	82.2	-36.5
562.23 MHz	V	23.9	21.9	45.8	82.2	-36.4
829.47 MHz	V	20.9	24.7	45.6	82.2	-36.6
860.03 MHz	V	28.6	25.1	53.7	82.2	-28.5
937.9 MHz	V	21.2	25.7	46.9	82.2	-35.3
Operating Frequency 937.5MHz						
499.94 MHz	V	25.0	20.5	45.6	82.2	-36.6
522.19 MHz	V	24.9	21.0	45.9	82.2	-36.3
524.97 MHz	V	22.5	21.1	43.6	82.2	-38.6
562.23 MHz	V	23.1	21.9	45.0	82.2	-37.2
829.47 MHz	V	20.6	24.7	45.3	82.2	-36.9
937.9 MHz	V	29.1	25.7	54.8	82.2	-27.4
437.57 MHz	H	24.7	19.8	44.5	82.2	-37.7
829.47 MHz	H	22.7	24.7	47.5	82.2	-34.7
874.81 MHz	H	21.5	25.2	46.7	82.2	-35.5
937.9 MHz	H	29.3	25.7	55.0	82.2	-27.2



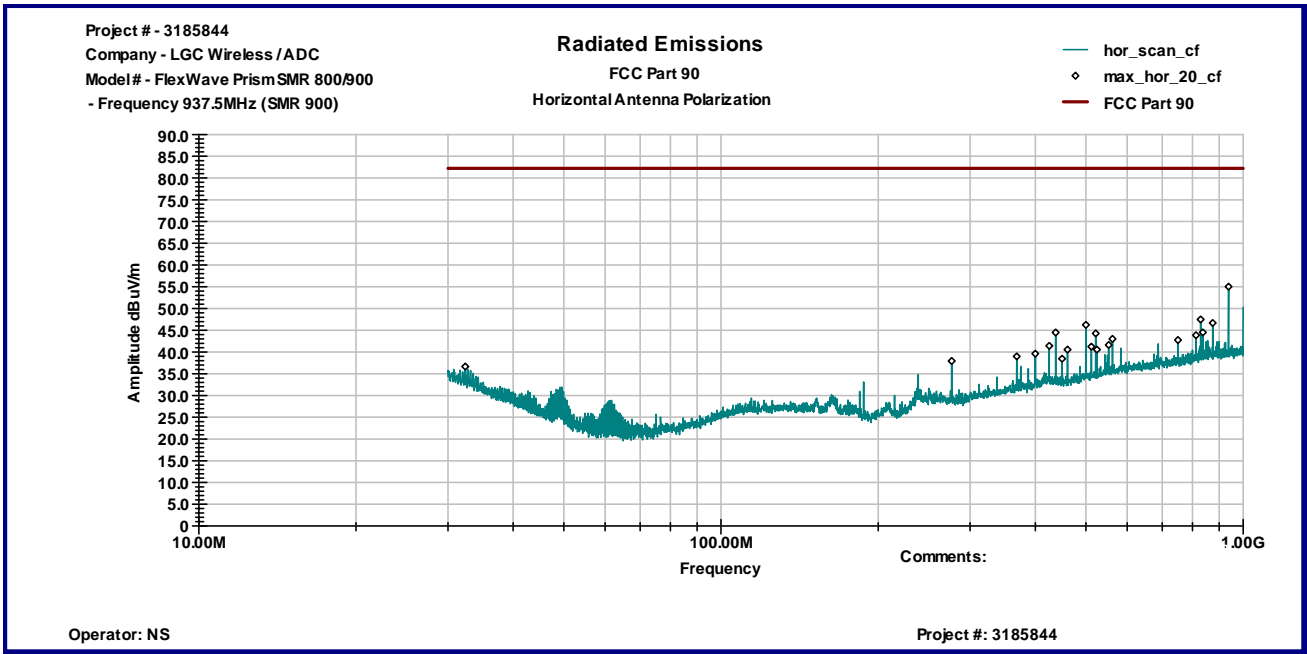
Graph 1



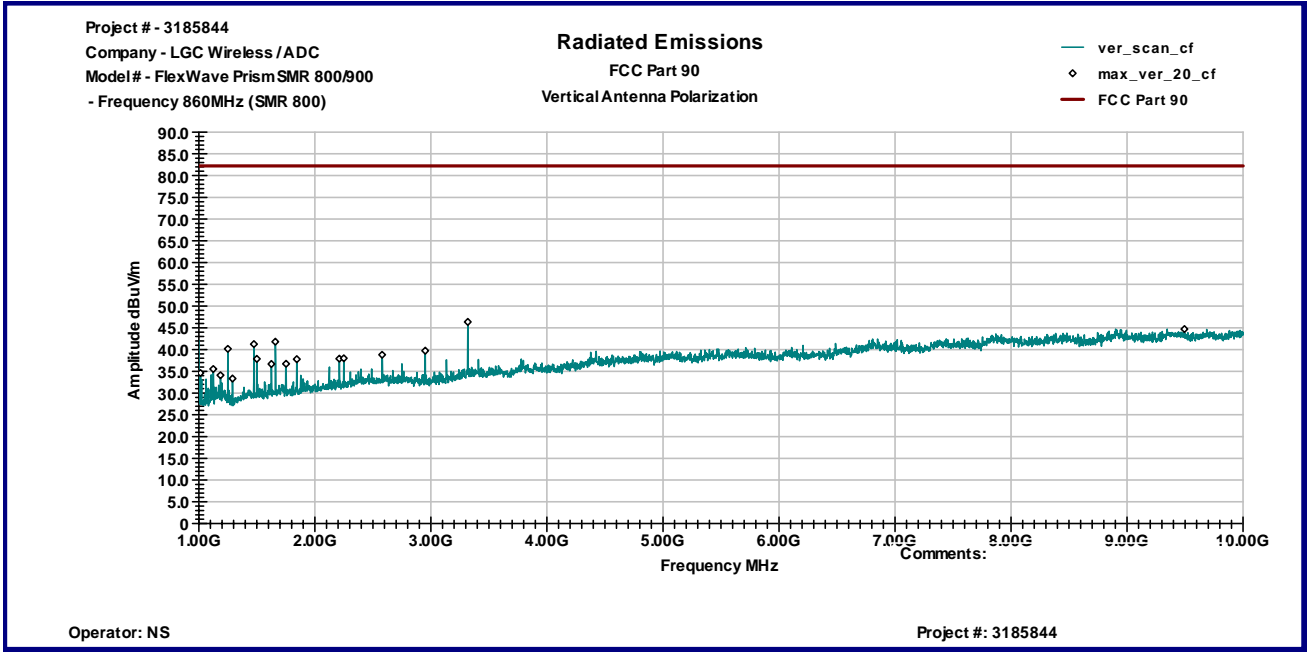
Graph 2



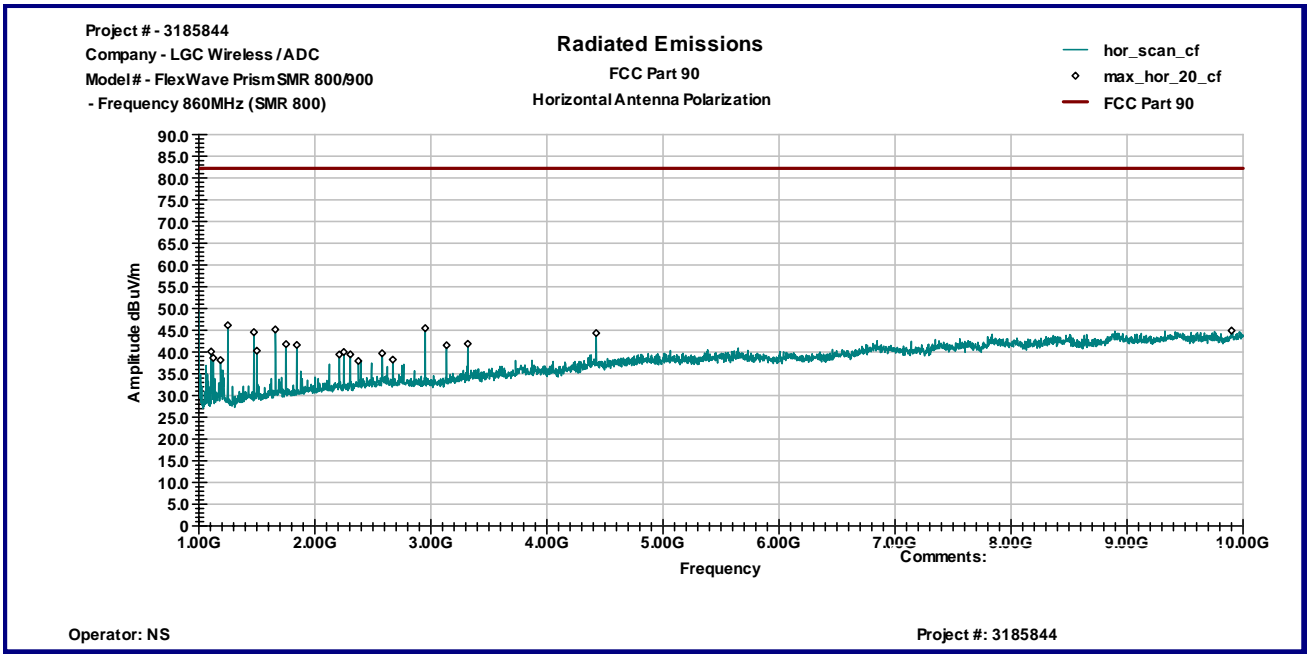
Graph 3



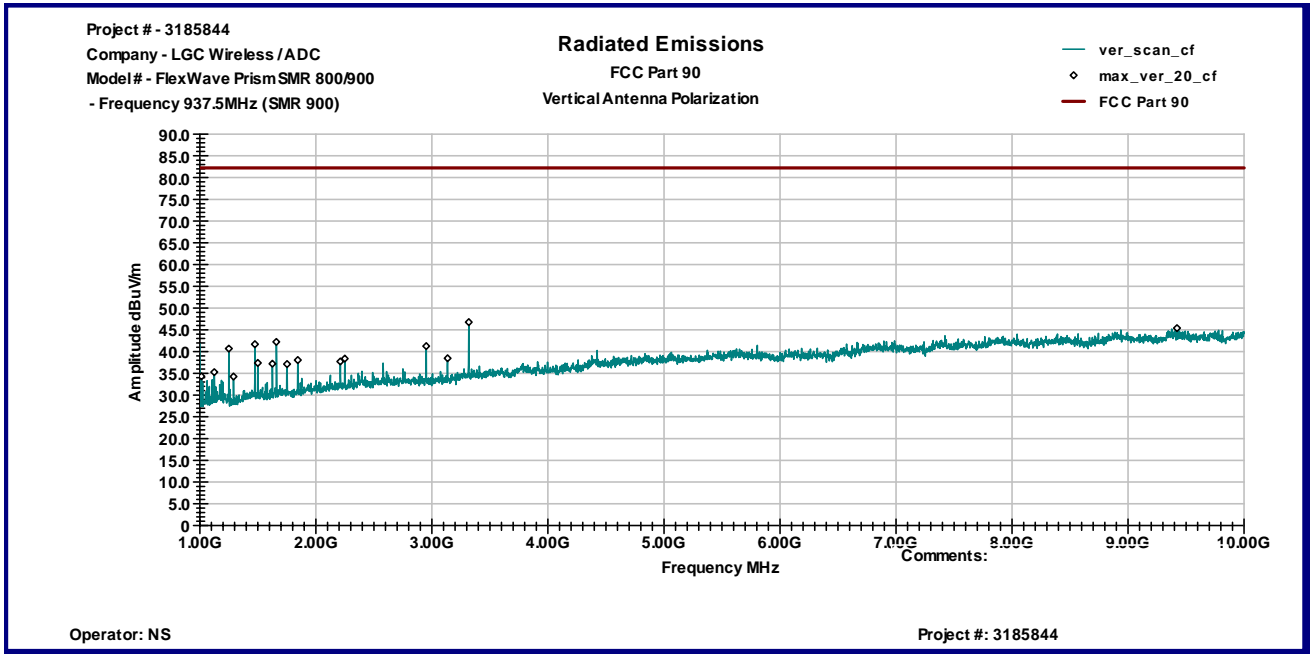
Graph 4



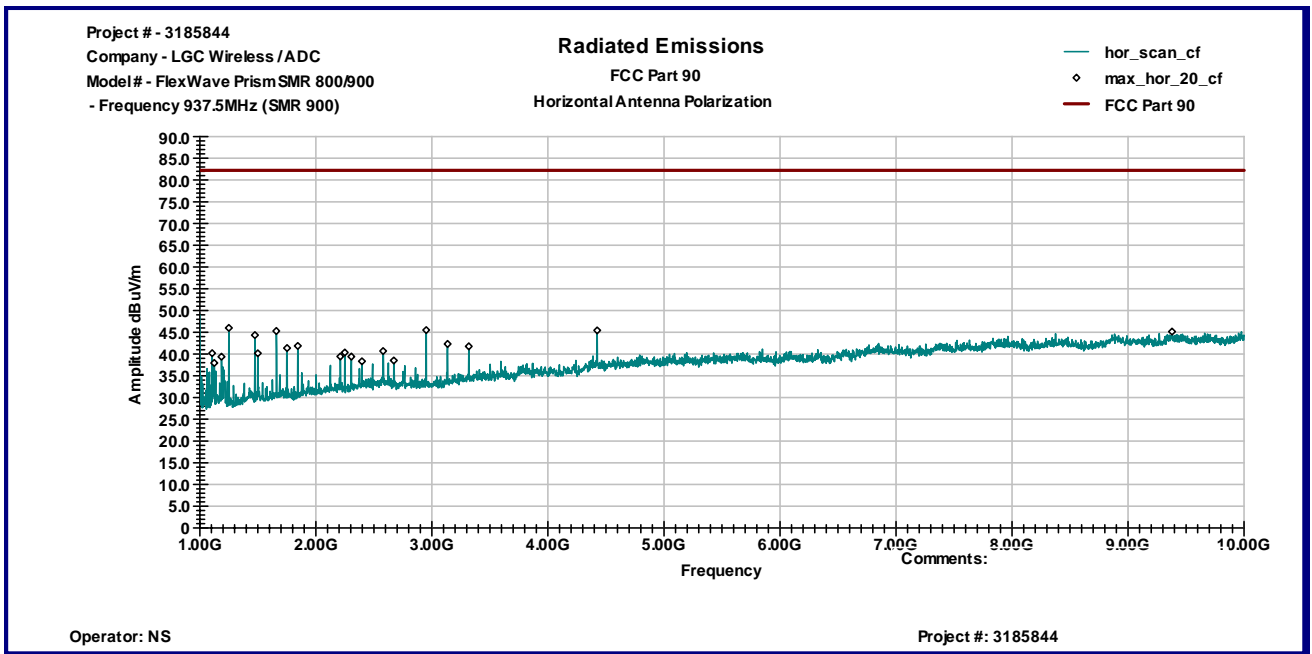
Graph 5



Graph 6



Graph 7



Graph 8

3.1 Environmental conditions

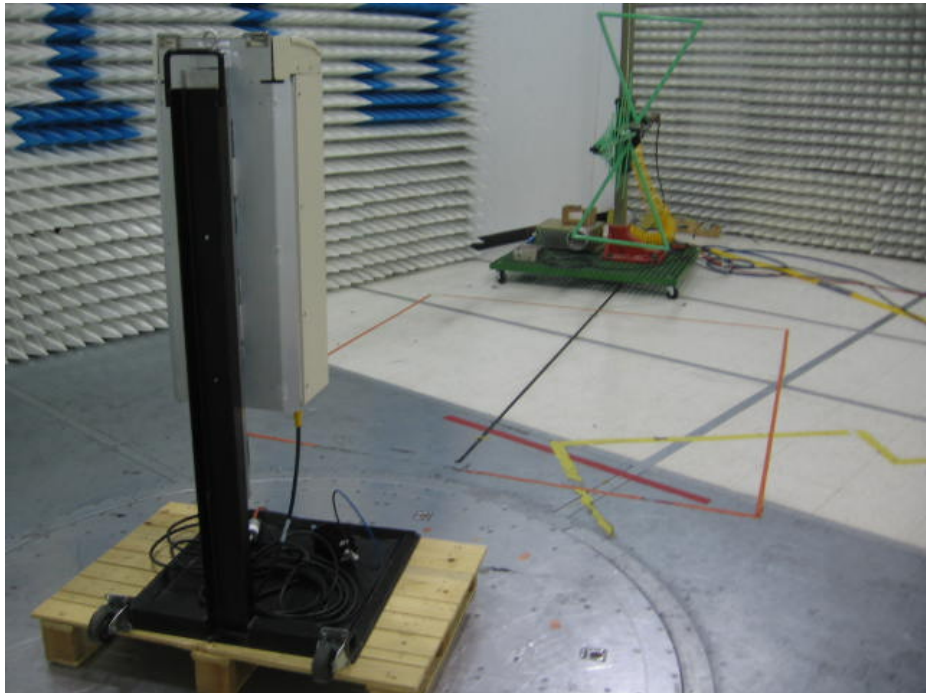
During the measurement the environmental conditions were within the listed ranges:

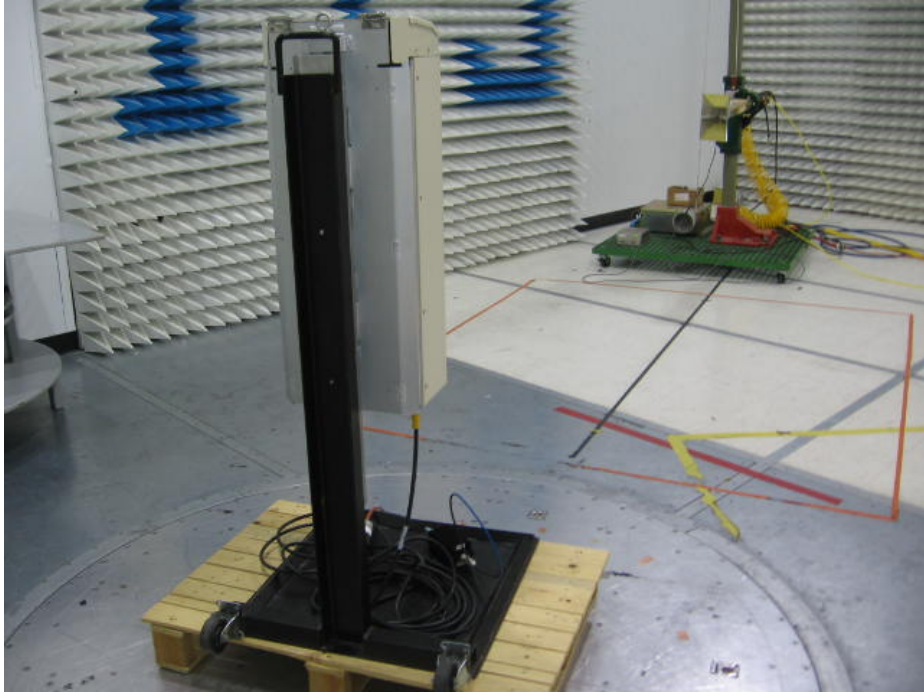
Temperature: 15-35 ° C

Humidity: 30-60 %

Atmospheric pressure: 86-106 kPa

4.0 PHOTOS







5.0 TEST EQUIPMENT

DESCRIPTION	MANUFACTURER	MODEL	SERIAL NO.	INTERTEK ID	CAL DUE	USED
Receiver RF Section	HP	85462A	3549A00306	9995	02/27/2010	<input type="checkbox"/>
RF Filter Section	HP	85460A	3448A00276	9937	02/27/2010	<input type="checkbox"/>
Spectrum Analyzer	R & S	FSP 40	100024	12559	08/22/2009	<input checked="" type="checkbox"/>
Spectrum Analyzer	R & S	ESCI	100358	12909	05/18/2010	<input checked="" type="checkbox"/>
Spectrum Analyzer	Agilent	E7402A	MY44212200	12660	11/13/2009	<input type="checkbox"/>
Bicono-Log Antenna	Schaffner-Chase	CBL 6112 B	2468	14459	08/27/2009	<input checked="" type="checkbox"/>
Bicono-Log Antenna	Schaffner-Chase	CBL 6112 B	2630	14459	09/26/2009	<input type="checkbox"/>
Horn Antenna	EMCO	3115	9507-4513	9936	03/04/2010	<input checked="" type="checkbox"/>
Horn Antenna	EMCO	3115	6579	15580	04/03/2010	<input type="checkbox"/>
Waveguide Horn Antenna	EMCO	3116	9904-2423	9705	08/06/2010	<input type="checkbox"/>
Loop Antenna	A.H.Systems	SAS-200/562	215	9817	05/26/2010	<input type="checkbox"/>
Monopole Antenna	A.H.Systems	SAS-200/550-1	692	9986	05/27/2010	<input type="checkbox"/>
Monopole Antenna	ETS-Lindgren	3310B	0071915	MIN-0054	11/14/2009	<input type="checkbox"/>
Field Monitor	NARDA	ELT-400	J-0039	12740	02/18/2010	<input type="checkbox"/>
B-Field Sensor	NARDA	BN 2300	J-0049	12769	02/18/2010	<input type="checkbox"/>
RF Current Probe	Fischer Custom Communications	F-33-2	330	15298	04/14/2010	<input type="checkbox"/>
Absorbing Clamp	Fischer Custom Communications	F-201	167	9964	03/03/2010	<input type="checkbox"/>
Absorbing Clamp	Fischer Custom Communications	F-201	213	9997	11/14/2009	<input type="checkbox"/>
Pre-Amplifier	MITEQ	AMF-5D-00501800-28-13P	1402232	172081	08/07/2010	<input checked="" type="checkbox"/>
Pre-Amplifier	MITEQ	AMF-6F-16002600-25-10P	1222383	MIN-0065	08/07/2010	<input type="checkbox"/>
Pre-Amplifier	MITEQ	AMF-6F-26004000-40-8P	13224444	MIN-0064	08/07/2010	<input type="checkbox"/>
Pre-Amplifier	HP	8447F OPT H64	3113A04974	9934	05/21/2010	<input type="checkbox"/>
System	TILE! Instrument Control		Ver. 3.4.K.29	15259	VBU	<input type="checkbox"/>
5001ix	California Instruments System	5001	55864, 55863, 55862, 72277	17672	11/14/2009	<input type="checkbox"/>
CTS 3.0.19	California Instruments Harmonic/Flicker Software	632		12723	11/14/2009	<input type="checkbox"/>



Annex 1: Antenna Conducted Emissions

Table of Contents

1.1	Test Regulations	2
1.2	Test Operation Mode	2
1.3	Configuration of the Device Under Test:	2
1.4	Product Options:	2
1.5	Cables:	2
1.6	Support Equipment	2
1.7	Deviations from Standard:	3
1.8	General Remarks:	3
1.9	Summary:	3
2.0	FCC Test Results.....	4
2.1.1	90.635 Limitations on Power and Antenna Height.....	4
2.1.2	90.213 Frequency Stability	6
2.1.3	90.669 Emission Limits.....	9
3.0	Industry Canada Test Results	22
3.1.1	4.2 Passband Gain and Bandwidth	22
3.1.2	4.3.1 Mean Output Power – Multi-channel Enhancer	24
3.1.3	4.4.1 Spurious Emissions – Multi-channel Enhancer.....	27
3.1.4	4.5 Frequency Stability of Band Translators.....	31
4.0	Test Equipment	34

1.1 Test Regulations

90.213 Frequency stability
90.635 Limitations on power and antenna height
90.669 Emission limits

IC RSS-131 Issue 2 Zone Enhancers for the Land Mobile Service

The emissions tests were performed according to the following regulations:

FCC Part 22

FCC Part 24

FCC Part 90

IC RSS-131 Issue 2

1.2 Test Operation Mode

Standby

Test Program

Practice Operation

Max composite in and out

1.3 Configuration of the Device Under Test:

Normal Operation – SMR - 851 to 869 MHz and 935 to 940 MHz

1.4 Product Options:

None

1.5 Cables:

Cable Type	Length	From	To
RF	> 3M	Ancillary Equip	EUT
RF	< 3M	EUT	50 Ohm Load
Power	< 3M	Power	Input Power
Fiber	> 3M	Ancillary Equip	EUT

1.6 Support Equipment

Description	Manufacturer	Model #	FCC ID #
Power Meter	HP	EPM-441A	
Signal Generator	Agilent	E4438C	
Attenuator	Aeroflex	86-30-12	

1.7 Deviations from Standard:

Modifications required to pass:

As indicated on the data sheet(s)

■ **None**

Test Specification Deviations; Additions to or Exclusions from:

As indicated in the Test Plan

■ **None**

1.8 General Remarks:

None.

1.9 Summary:

The requirements according to the technical regulations are

■ **met**

not Met

2.0 FCC TEST RESULTS

2.1.1 90.635 Limitations on Power and Antenna Height

Test Summary:

- The requirements are: **MET** NOT MET
- Minimum margin of compliance is 15.47 dB at 935.2 MHz (iDEN)

Test Location:

- Intertek (Oakdale, MN)

Test Distance:

- 3 Meters
- 10 Meters

- **Conducted measurement**

Test Limit:

500 Watts or 57 dBm Limit

Test Data:

Below

Date: 20 August, 2009

Conducted Output Power Test

*Note: The EUT is a fixed repeater and not a base station.

This measurement was made as a direct conducted emission measurement. The output from the EUT antenna connector was connected to the power meter. The carrier output, below, was conducted using a single iDEN signal generator. The power meter level was offset to compensate for attenuators and cable loss between the EUT and the power meter.

A signal was used at the low, mid and high parts of the selected band. The power meter level was offset by 33.8 dB to compensate for attenuators and cable loss between the EUT and the power meter.

<u>iDEN</u>	<u>9.71 Watts</u>
Carrier Frequency	Carrier Output
851.2 MHz	<u>38.83</u> dBm
860.0 MHz	<u>39.43</u> dBm
868.8 MHz	<u>39.87</u> dBm

<u>iDEN</u>	<u>8.67 Watts</u>
Carrier Frequency	Carrier Output
935.2 MHz	<u>39.38</u> dBm
937.5 MHz	<u>39.25</u> dBm
939.8 MHz	<u>38.88</u> dBm

2.1.2 90.213 Frequency Stability

Test Summary:

- The requirements are: ■ **MET** □ NOT MET
- The fundamental emission stays within the limit.
- Frequency measured over a temperature range of -30 to 50° C and an input voltage range of 100 to 240 VAC.

Test Location:

- Intertek (Oakdale, MN)

Test Distance:

- 3 Meters
- 10 Meters

■ **Conducted measurement**

Test Limit:

MINIMUM FREQUENCY STABILITY
[Parts per million (ppm)]

Frequency range (MHz)	Fixed and base stations	Mobile stations	
		Over 2 watts output power	2 watts or less output power
Below 25	^{1,2,3} 100	100	200
25-50	20	20	50
72-76	5	50
150-174	^{5,11} 5	⁶ 5	^{4,6} 50
220-222 ¹²	0.1	1.5	1.5
421-512	^{7,11,14} 2.5	⁸ 5	⁸ 5
806-821	¹⁴ 1.5	2.5	2.5
821-824	¹⁴ 1.0	1.5	1.5
851-866	1.5	2.5	2.5
866-869	1.0	1.5	1.5
896-901	¹⁴ 0.1	1.5	1.5
902-928	2.5	2.5	2.5
902-928 ¹³	2.5	2.5	2.5
929-930	1.5
935-940	0.1	1.5	1.5
1427-1435	⁹ 300	300	300
Above 2450 ¹⁰

Test Data:

Below

Date: 20 August, 2009

Frequency Tolerance Test

EUT SMR 800 MHz

HOST	REMOTE			
Input Voltage	Input Voltage	Carrier Frequency	Measured Frequency	Meets Requirements?
21 VDC	100 VAC	851.200 MHz	851.200 MHz	Yes
48 VDC	170 VAC	851.200 MHz	851.200 MHz	Yes
60 VDC	240 VAC	851.200 MHz	851.200 MHz	Yes
21 VDC	100 VAC	860.000 MHz	860.000 MHz	Yes
48 VDC	170 VAC	860.000 MHz	860.000 MHz	Yes
60 VDC	240 VAC	860.000 MHz	860.000 MHz	Yes
21 VDC	100 VAC	868.800 MHz	868.800 MHz	Yes
48 VDC	170 VAC	868.800 MHz	868.800 MHz	Yes
60 VDC	240 VAC	868.800 MHz	868.800 MHz	Yes
Temperature		Carrier Frequency	Measured Frequency	Meets Requirements?
-30 Deg. C		851.200 MHz	851.200 MHz	Yes
-20 Deg. C		851.200 MHz	851.200 MHz	Yes
-10 Deg. C		851.200 MHz	851.200 MHz	Yes
0 Deg. C		851.200 MHz	851.200 MHz	Yes
10 Deg. C		851.200 MHz	851.200 MHz	Yes
20 Deg. C		851.200 MHz	851.200 MHz	Yes
30 Deg. C		851.200 MHz	851.200 MHz	Yes
40 Deg. C		851.200 MHz	851.200 MHz	Yes
50 Deg. C		851.200 MHz	851.200 MHz	Yes
-30 Deg. C		860.000 MHz	860.000 MHz	Yes
-20 Deg. C		860.000 MHz	860.000 MHz	Yes
-10 Deg. C		860.000 MHz	860.000 MHz	Yes
0 Deg. C		860.000 MHz	860.000 MHz	Yes
10 Deg. C		860.000 MHz	860.000 MHz	Yes
20 Deg. C		860.000 MHz	860.000 MHz	Yes
30 Deg. C		860.000 MHz	860.000 MHz	Yes
40 Deg. C		860.000 MHz	860.000 MHz	Yes
50 Deg. C		860.000 MHz	860.000 MHz	Yes
-30 Deg. C		868.800 MHz	868.800 MHz	Yes
-20 Deg. C		868.800 MHz	868.800 MHz	Yes
-10 Deg. C		868.800 MHz	868.800 MHz	Yes
0 Deg. C		868.800 MHz	868.800 MHz	Yes
10 Deg. C		868.800 MHz	868.800 MHz	Yes
20 Deg. C		868.800 MHz	868.800 MHz	Yes
30 Deg. C		868.800 MHz	868.800 MHz	Yes
40 Deg. C		868.800 MHz	868.800 MHz	Yes
50 Deg. C		868.800 MHz	868.800 MHz	Yes

Frequency Tolerance Test

EUT SMR 900 MHz

HOST	REMOTE			
Input Voltage	Input Voltage	Carrier Frequency	Measured Frequency	Meets Requirements?
21 VDC	100 VAC	935.200 MHz	935.200 MHz	Yes
48 VDC	170 VAC	935.200 MHz	935.200 MHz	Yes
60 VDC	240 VAC	935.200 MHz	935.200 MHz	Yes
21 VDC	100 VAC	937.500 MHz	937.500 MHz	Yes
48 VDC	170 VAC	937.500 MHz	937.500 MHz	Yes
60 VDC	240 VAC	937.500 MHz	937.500 MHz	Yes
21 VDC	100 VAC	939.800 MHz	939.800 MHz	Yes
48 VDC	170 VAC	939.800 MHz	939.800 MHz	Yes
60 VDC	240 VAC	939.800 MHz	939.800 MHz	Yes
Temperature		Carrier Frequency	Measured Frequency	Meets Requirements?
-30 Deg. C		935.200 MHz	935.200 MHz	Yes
-20 Deg. C		935.200 MHz	935.200 MHz	Yes
-10 Deg. C		935.200 MHz	935.200 MHz	Yes
0 Deg. C		935.200 MHz	935.200 MHz	Yes
10 Deg. C		935.200 MHz	935.200 MHz	Yes
20 Deg. C		935.200 MHz	935.200 MHz	Yes
30 Deg. C		935.200 MHz	935.200 MHz	Yes
40 Deg. C		935.200 MHz	935.200 MHz	Yes
50 Deg. C		935.200 MHz	935.200 MHz	Yes
-30 Deg. C		937.500 MHz	937.500 MHz	Yes
-20 Deg. C		937.500 MHz	937.500 MHz	Yes
-10 Deg. C		937.500 MHz	937.500 MHz	Yes
0 Deg. C		937.500 MHz	937.500 MHz	Yes
10 Deg. C		937.500 MHz	937.500 MHz	Yes
20 Deg. C		937.500 MHz	937.500 MHz	Yes
30 Deg. C		937.500 MHz	937.500 MHz	Yes
40 Deg. C		937.500 MHz	937.500 MHz	Yes
50 Deg. C		937.500 MHz	937.500 MHz	Yes
-30 Deg. C		939.800 MHz	939.800 MHz	Yes
-20 Deg. C		939.800 MHz	939.800 MHz	Yes
-10 Deg. C		939.800 MHz	939.800 MHz	Yes
0 Deg. C		939.800 MHz	939.800 MHz	Yes
10 Deg. C		939.800 MHz	939.800 MHz	Yes
20 Deg. C		939.800 MHz	939.800 MHz	Yes
30 Deg. C		939.800 MHz	939.800 MHz	Yes
40 Deg. C		939.800 MHz	939.800 MHz	Yes
50 Deg. C		939.800 MHz	939.800 MHz	Yes

2.1.3 90.669 Emission Limits

Test Summary:

- The requirements are: **MET** NOT MET
- Out of band emissions were less than -13 dBm.
- Outside the emission bandwidth of the carrier, all emissions are attenuated at least 26 dB below the transmitter power.

Test Location:

- Intertek (Oakdale, MN)

Test Distance:

- 3 Meters
- 10 Meters

■ Conducted measurement

Test Limit:

Out of band emissions:

Attenuated below the transmitting power (P) by a factor of at least $43 + 10\log(P)$ dB, or -13 dBm.

Outside of the carrier emissions bandwidth:

26 dB below the transmitter power

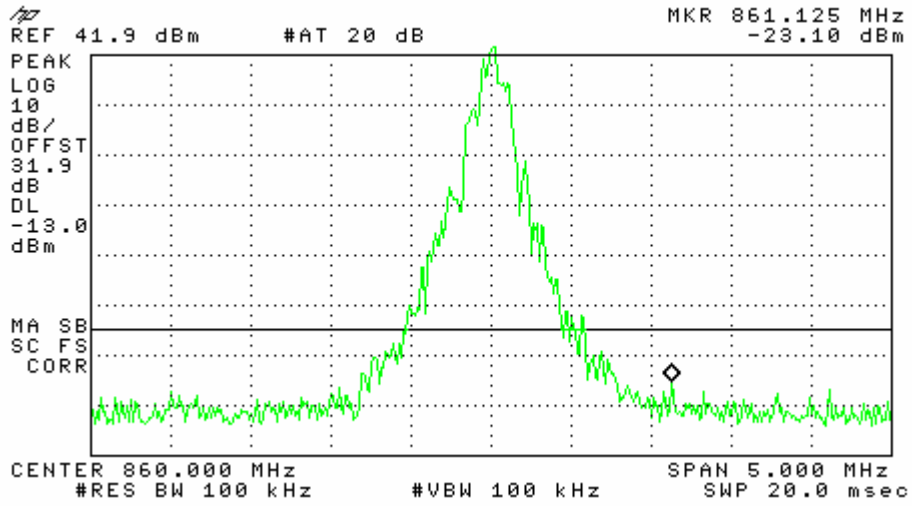
Test Data:

Conducted Emissions
Intermodulation Test
Occupied Bandwidth

Date: 20 August, 2009

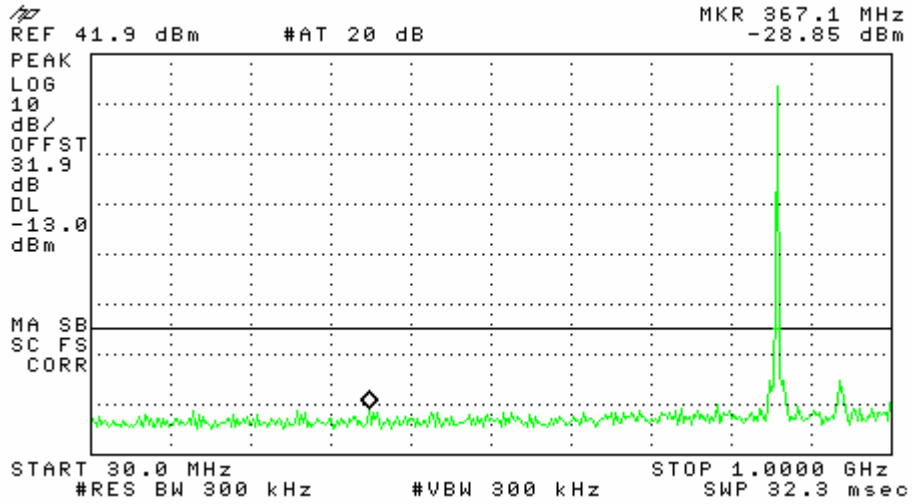
Below

Conducted Emissions IDEN SMR_800_MHz
Center: 860 MHz Span: 5 MHz RBW/VBW: 100 kHz



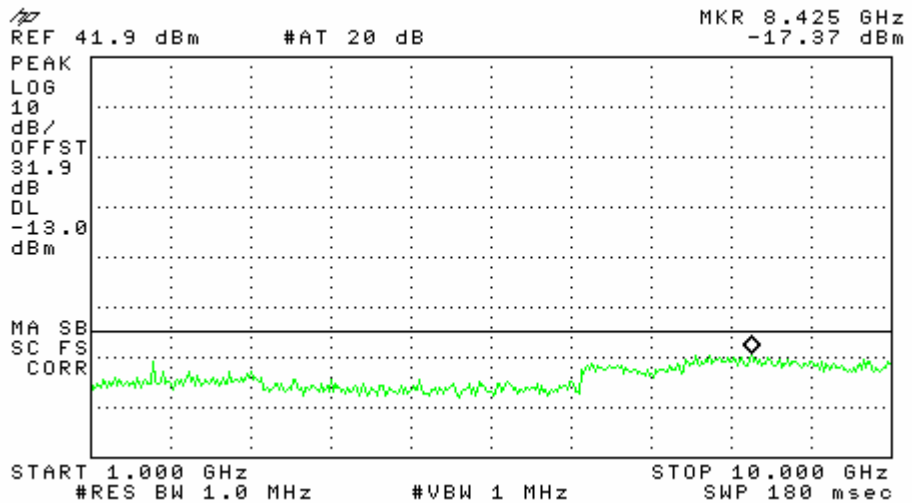
RL

Conducted Emissions IDEN SMR_800_MHz
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



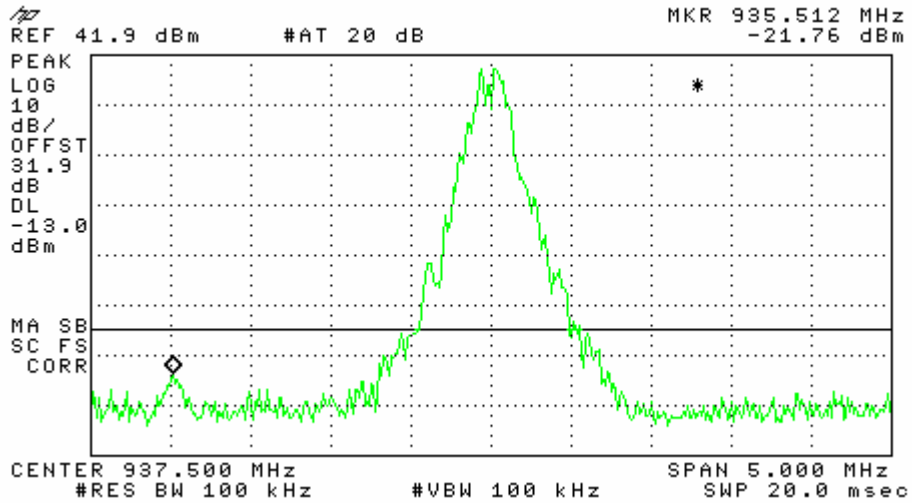
RL

Conducted Emissions IDEN SMR_800_MHz
Span: 1 GHz to 10 GHz RBW/VBW: 1 MHz



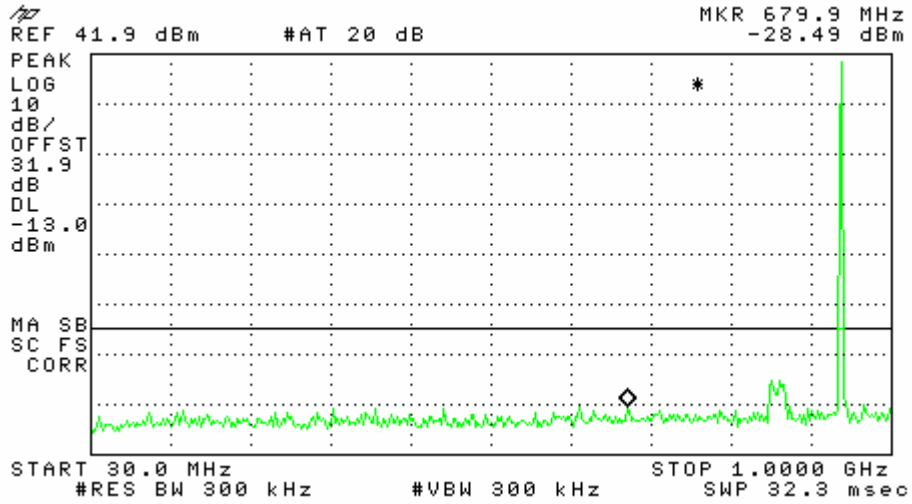
RL

Conducted Emissions IDEN SMR_900_MHz
Center: 937.5 MHz Span: 5 MHz RBW/VBW: 100 kHz



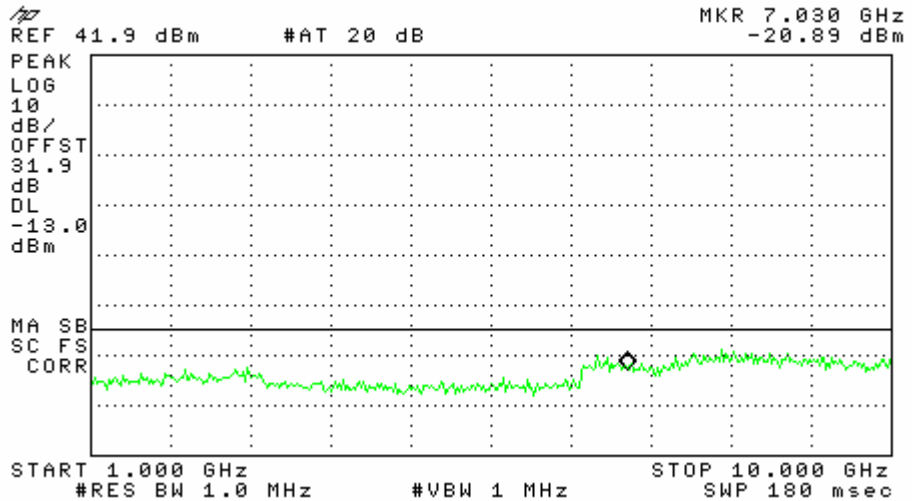
RL

Conducted Emissions IDEN SMR_900_MHz
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



RL

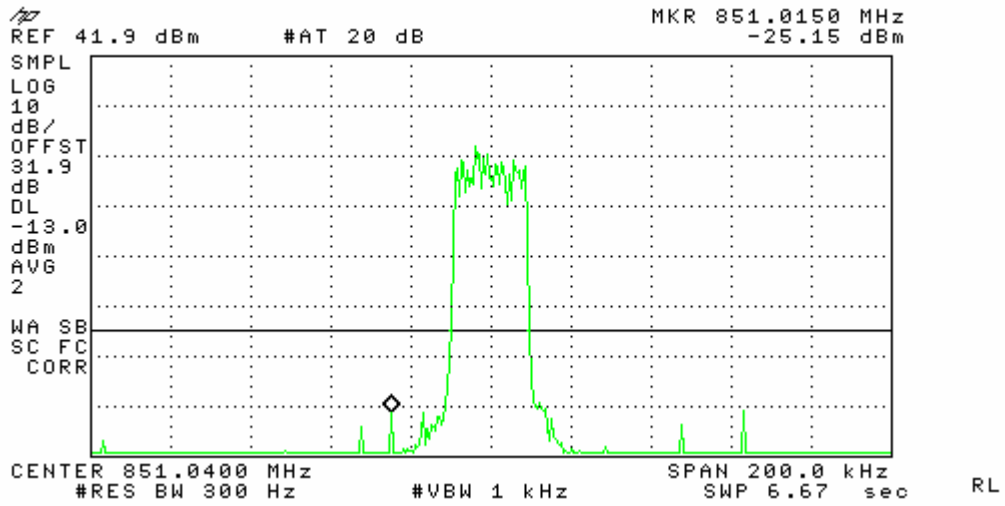
Conducted Emissions IDEN SMR_900_MHz
Span: 1 GHz to 10 GHz RBW/VBW: 1 MHz



RL

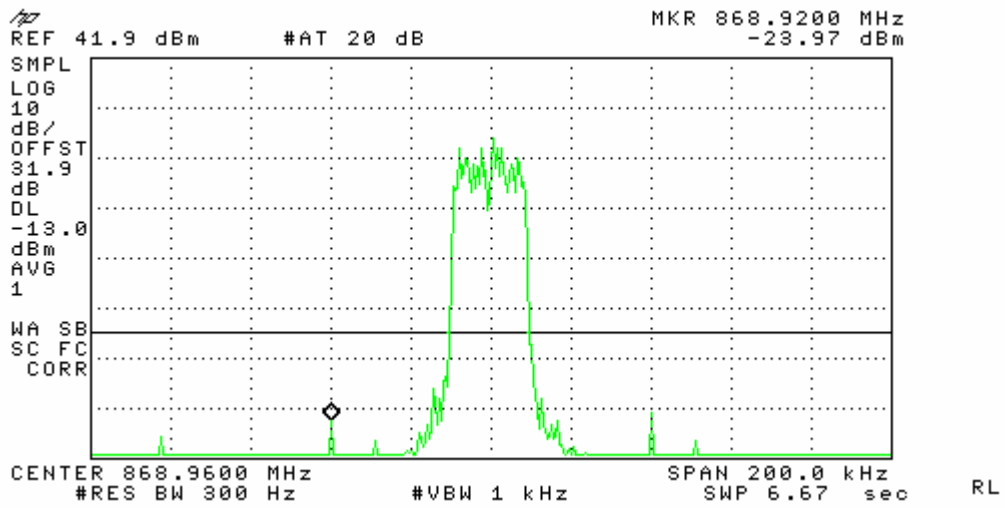
Band_Edge
Center: 851.04 MHz Span: 200 kHz

iDEN
RBW: 300 Hz VBW: 1 kHz



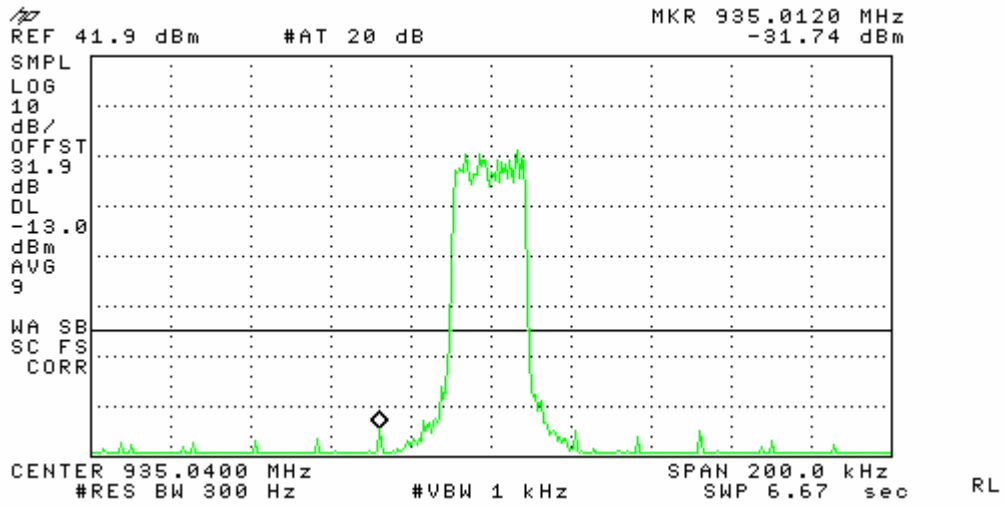
Band_Edge
Center: 868.96 MHz Span: 200 kHz

iDEN
RBW: 300 Hz VBW: 1 kHz



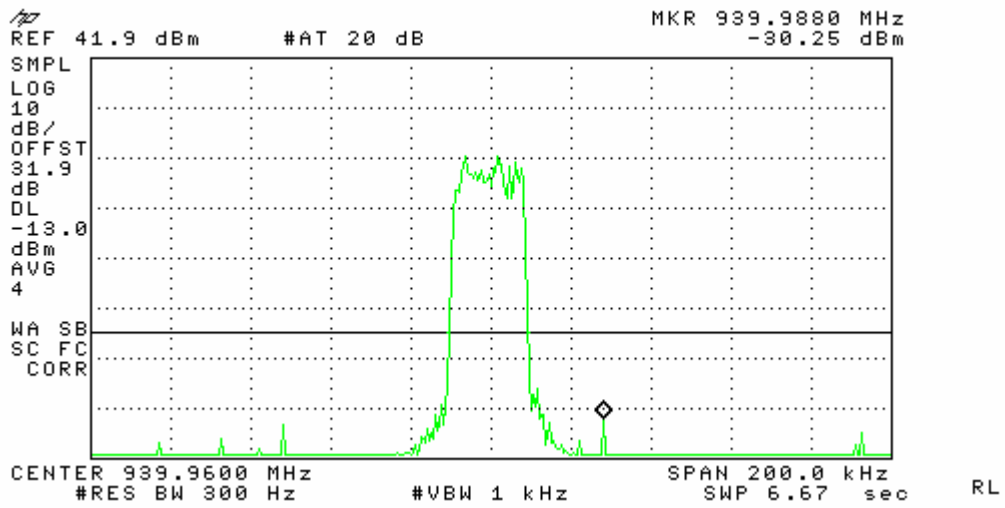
Band_Edge
Center: 935.04 MHz Span: 200 kHz

iDEN
RBW: 300 Hz VBW: 1 kHz

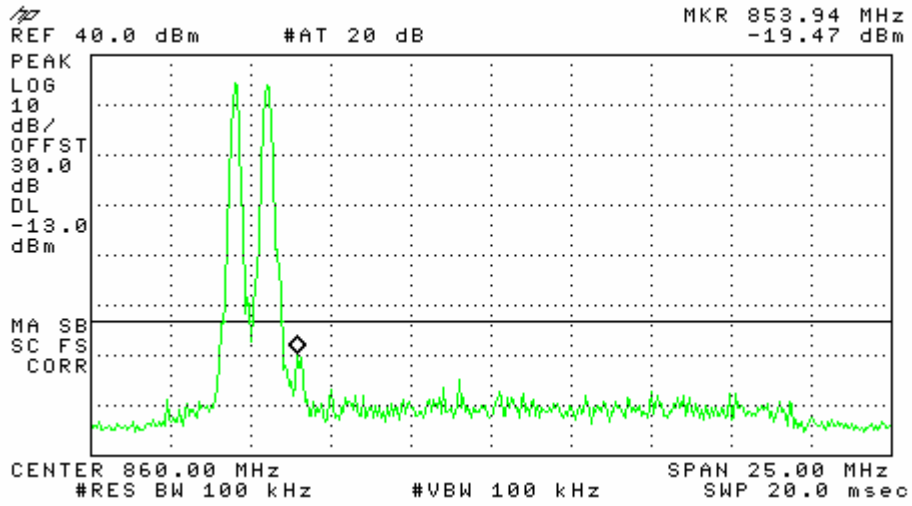


Band_Edge
Center: 939.96 MHz Span: 200 kHz

iDEN
RBW: 300 Hz VBW: 1 kHz

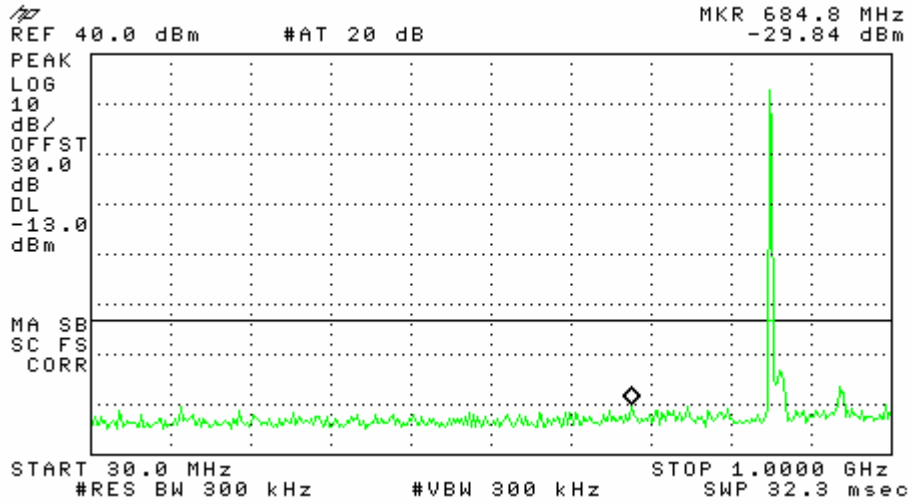


Intermodulation IDEN_Low SMR_800_MHz
Center: 860 MHz Span: 25 MHz RBW/VBW: 100 kHz



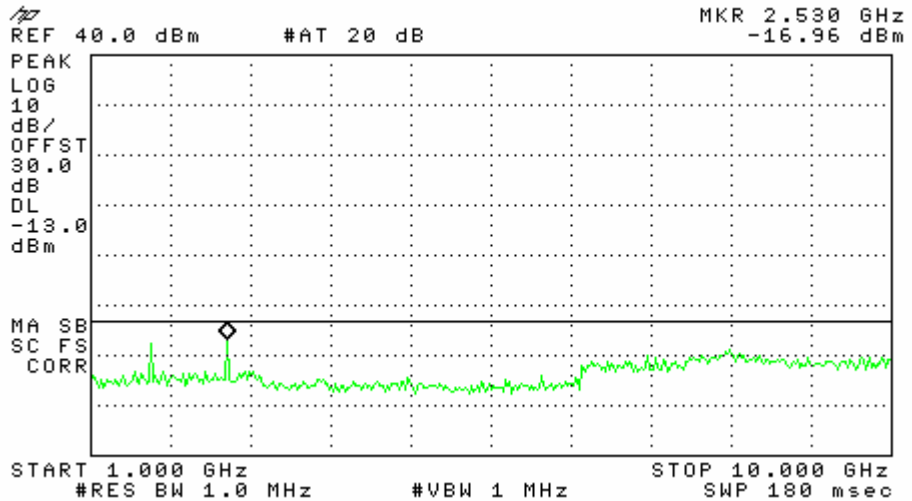
RL

Intermodulation IDEN_Low SMR_800_MHz
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



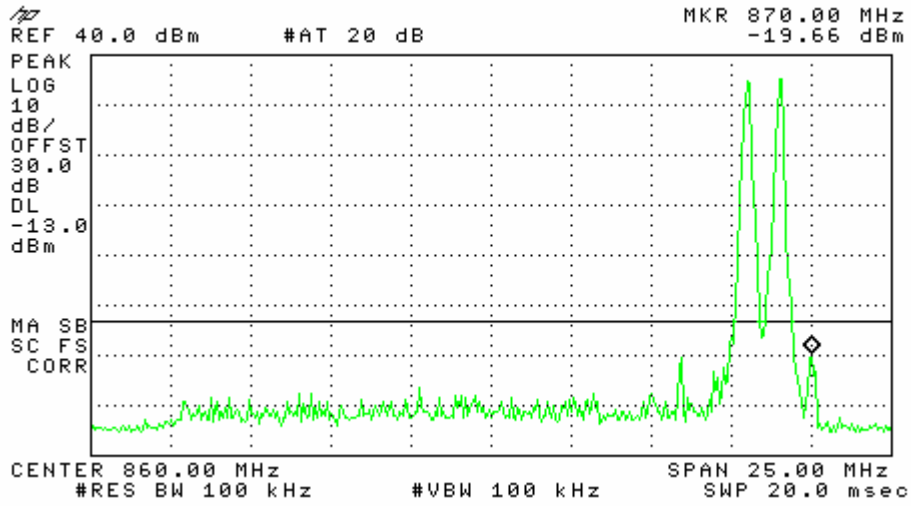
RL

Intermodulation IDEN_Low SMR_800_MHz
Span: 1 GHz to 10 GHz RBW/VBW: 1 MHz



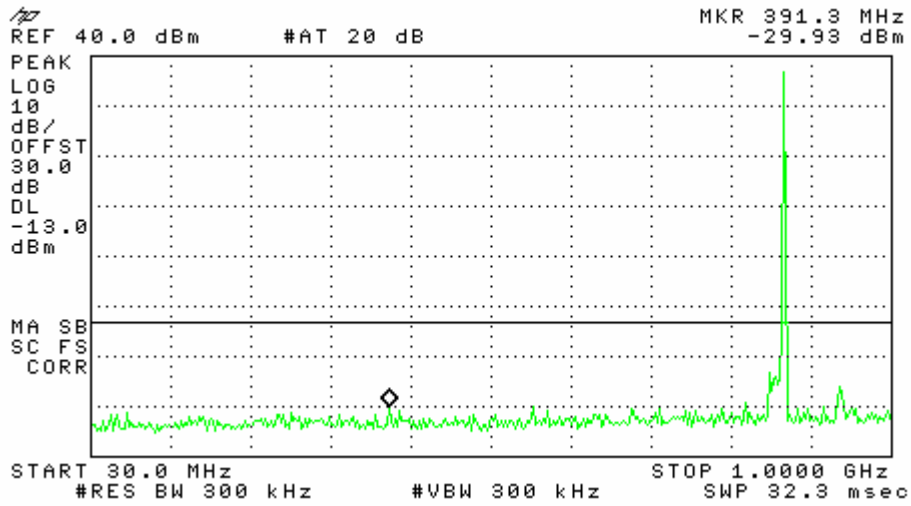
RL

Intermodulation IDEN_High SMR_800_MHz
Center: 860 MHz Span: 25 MHz RBW/VBW: 100 kHz



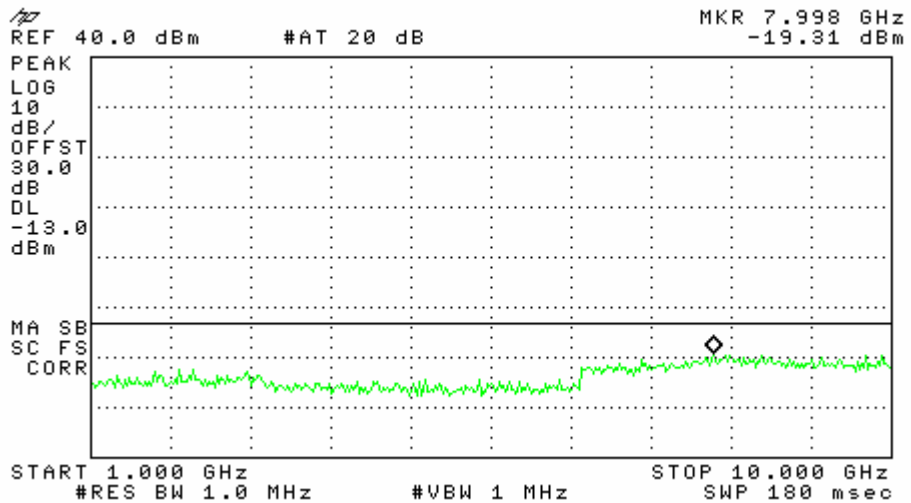
RL

Intermodulation IDEN_High SMR_800_MHz
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



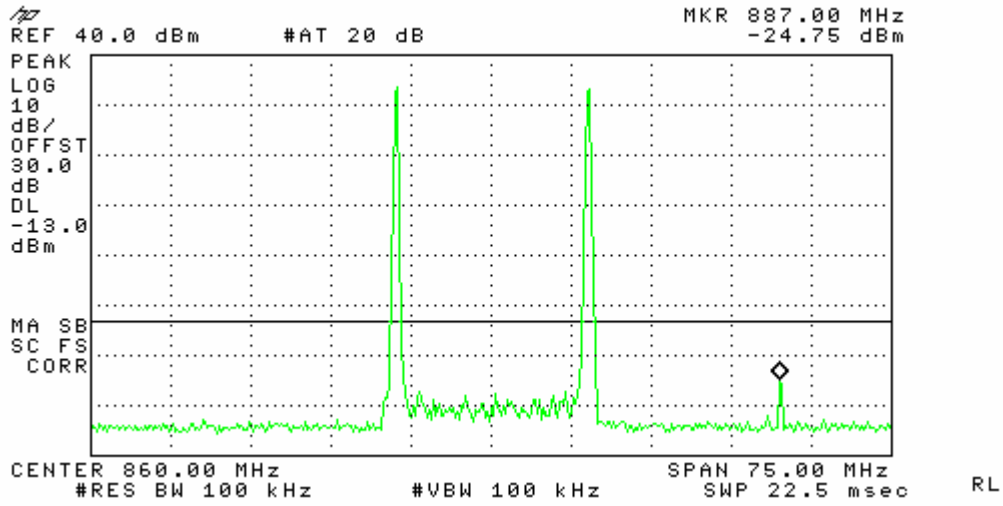
RL

Intermodulation IDEN_High SMR_800_MHz
Span: 1 GHz to 10 GHz RBW/VBW: 1 MHz

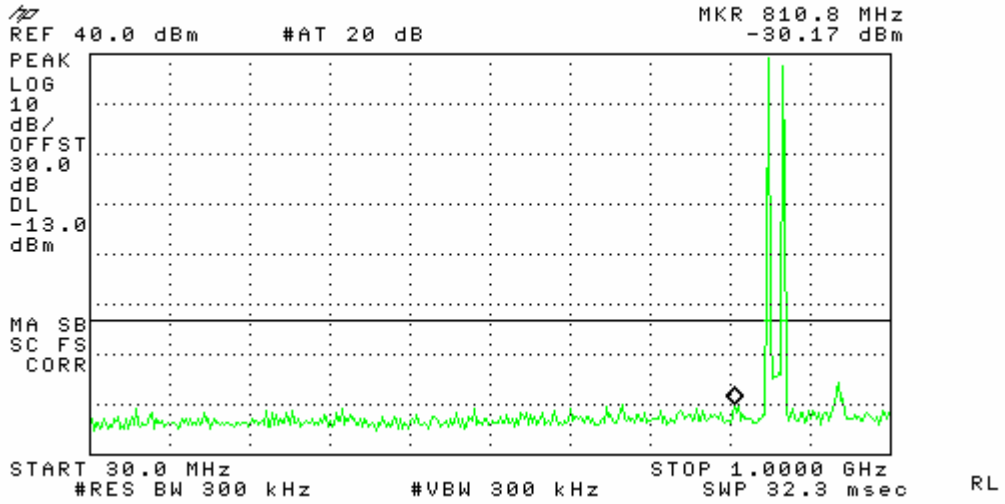


RL

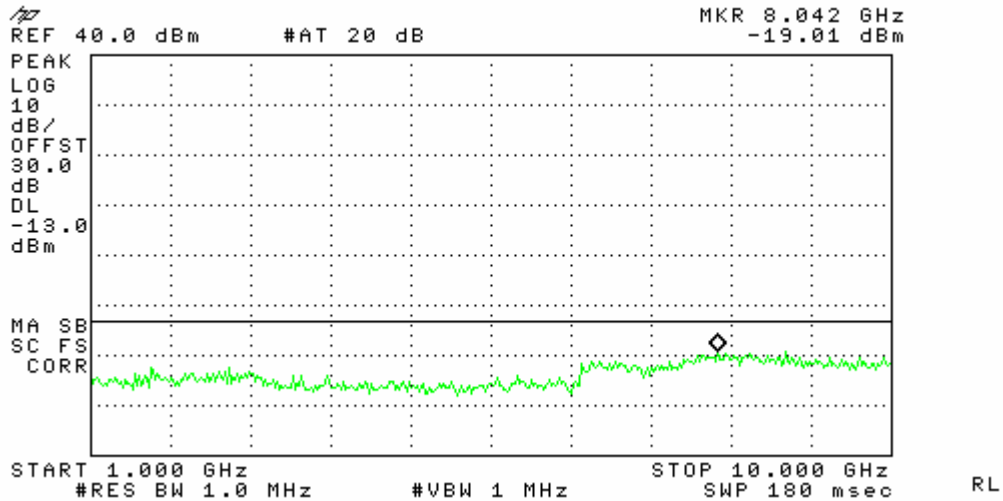
Intermodulation IDEN_Apart SMR_800_MHz
Center: 860 MHz Span: 75 MHz RBW/VBW: 100 kHz



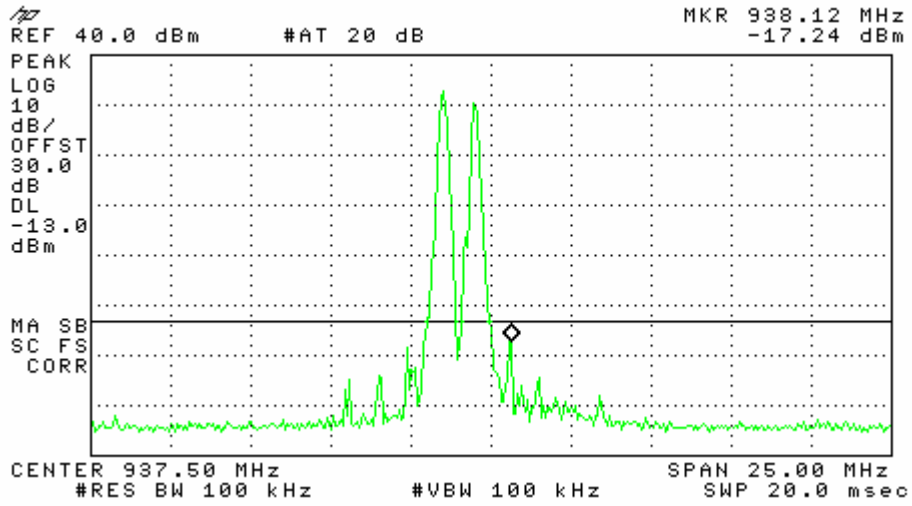
Intermodulation IDEN_Apart SMR_800_MHz
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



Intermodulation IDEN_Apart SMR_800_MHz
Span: 1 GHz to 10 GHz RBW/VBW: 1 MHz

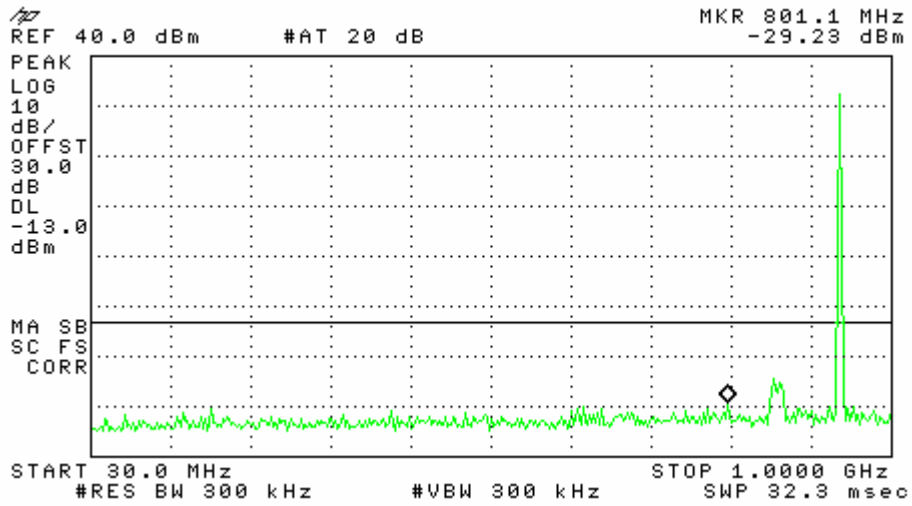


Intermodulation IDEN_Low SMR_900_MHz
Center: 937.5 MHz Span: 25 MHz RBW/VBW: 100 kHz



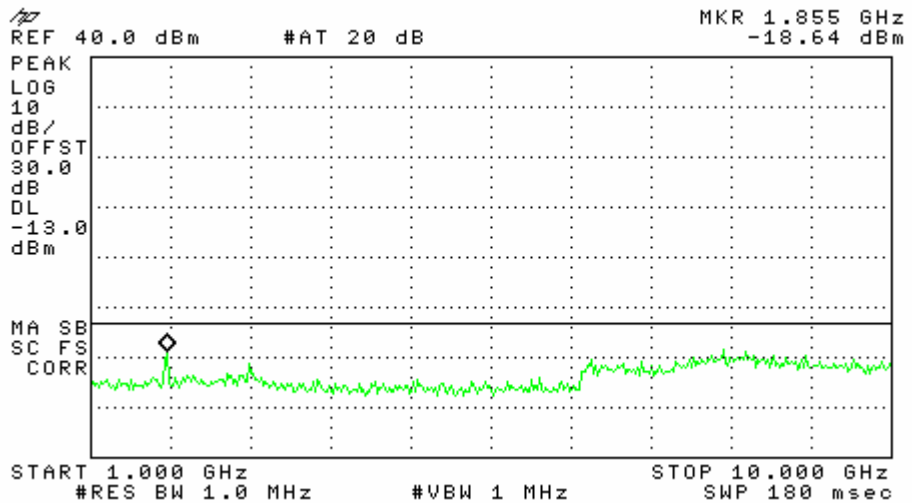
RL

Intermodulation IDEN_Low SMR_900_MHz
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



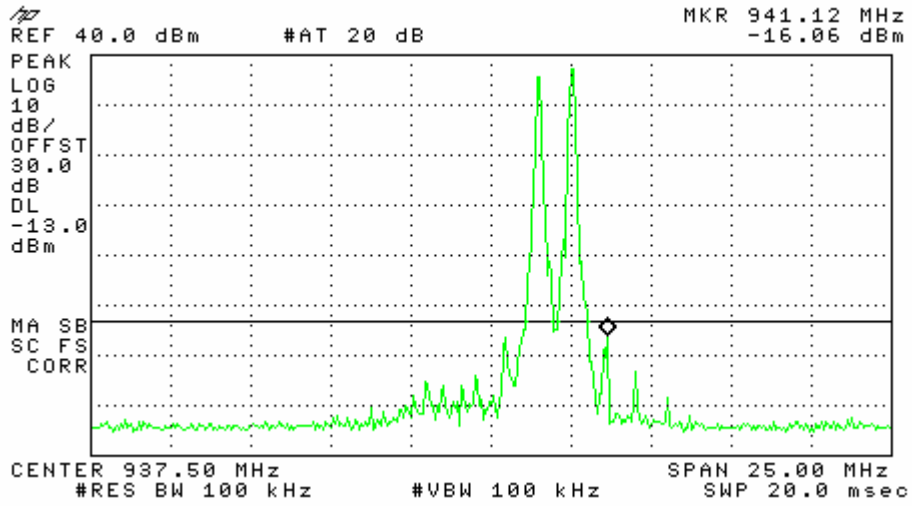
RL

Intermodulation IDEN_Low SMR_900_MHz
Span: 1 GHz to 10 GHz RBW/VBW: 1 MHz



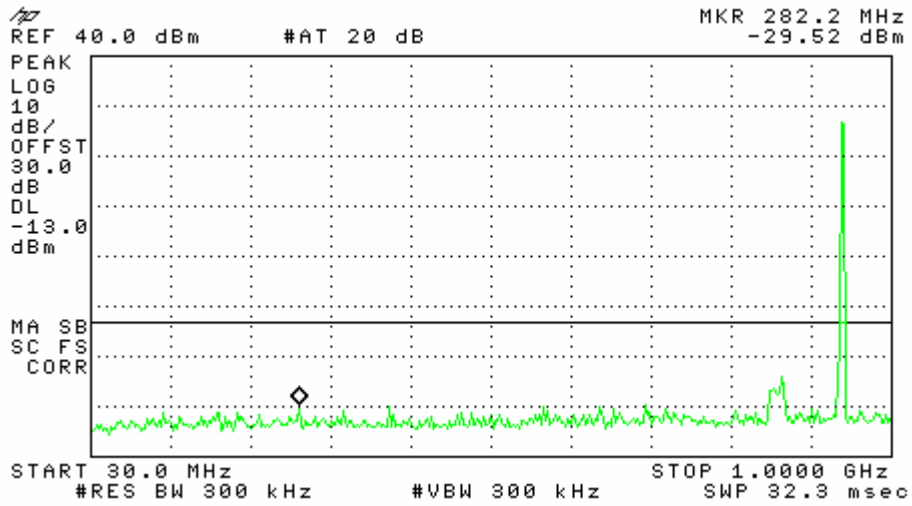
RL

Intermodulation iDEN_High SMR_900_MHz
Center: 937.5 MHz Span: 25 MHz RBW/VBW: 100 kHz



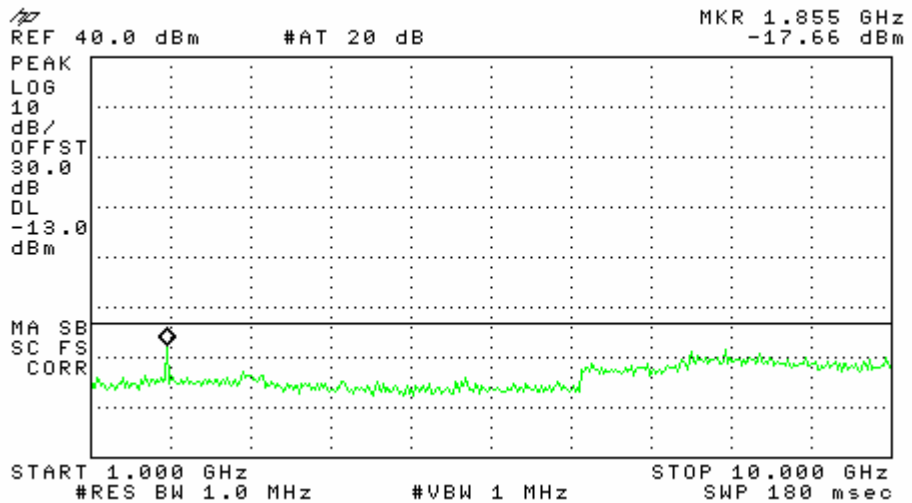
RL

Intermodulation iDEN_High SMR_900_MHz
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



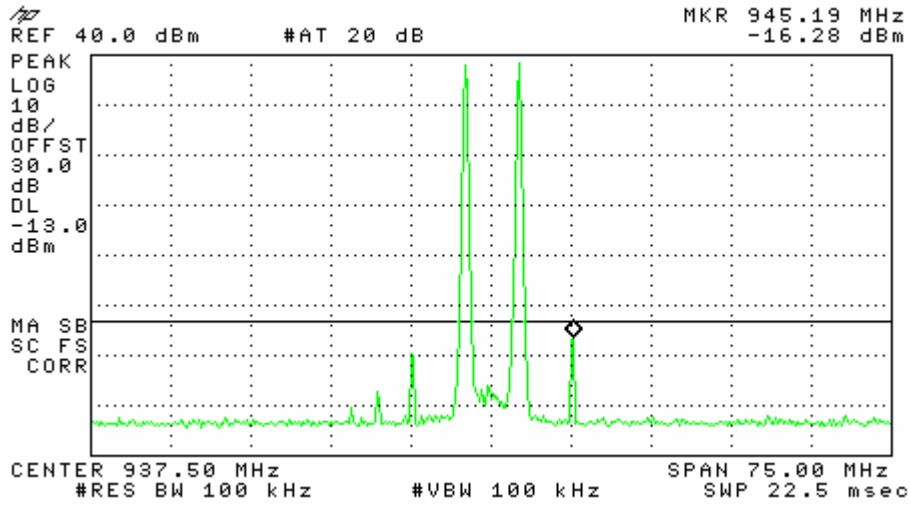
RL

Intermodulation iDEN_High SMR_900_MHz
Span: 1 GHz to 10 GHz RBW/VBW: 1 MHz



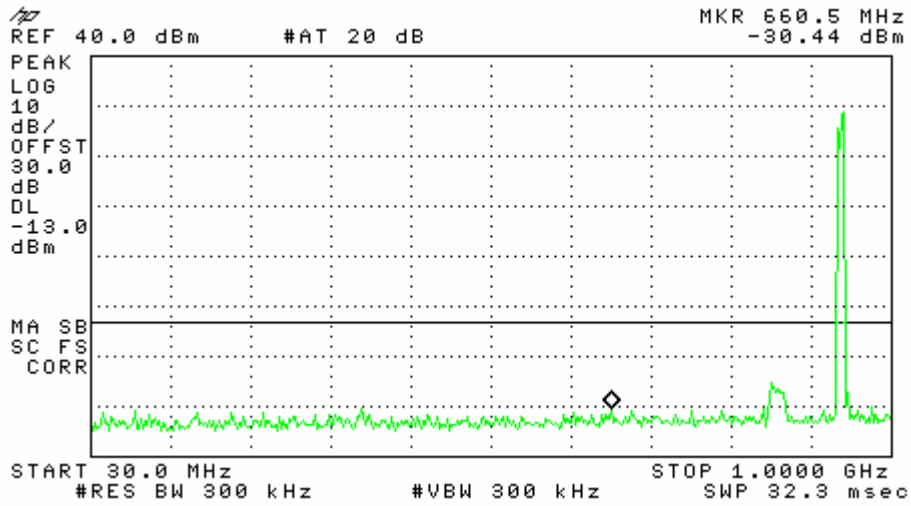
RL

Intermodulation iDEN_Apart SMR_900_MHz
Center: 937.5 MHz Span: 75 MHz RBW/VBW: 100 kHz



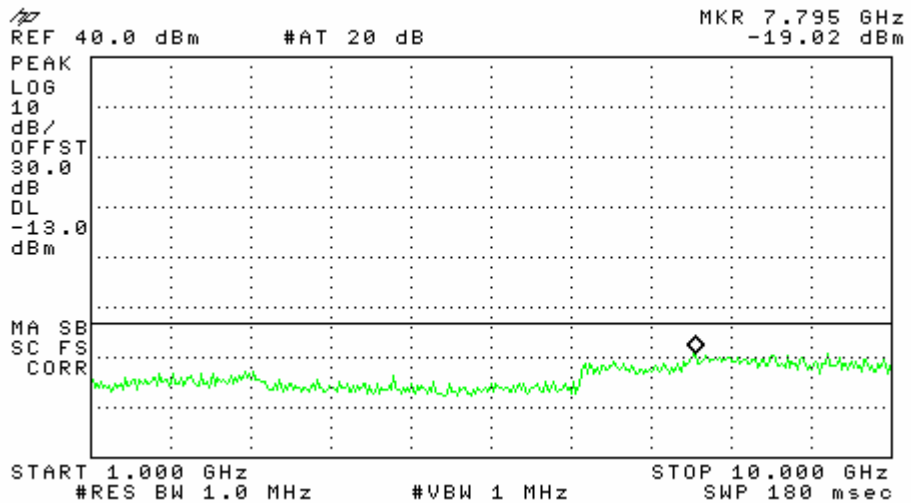
RL

Intermodulation iDEN_Apart SMR_900_MHz
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



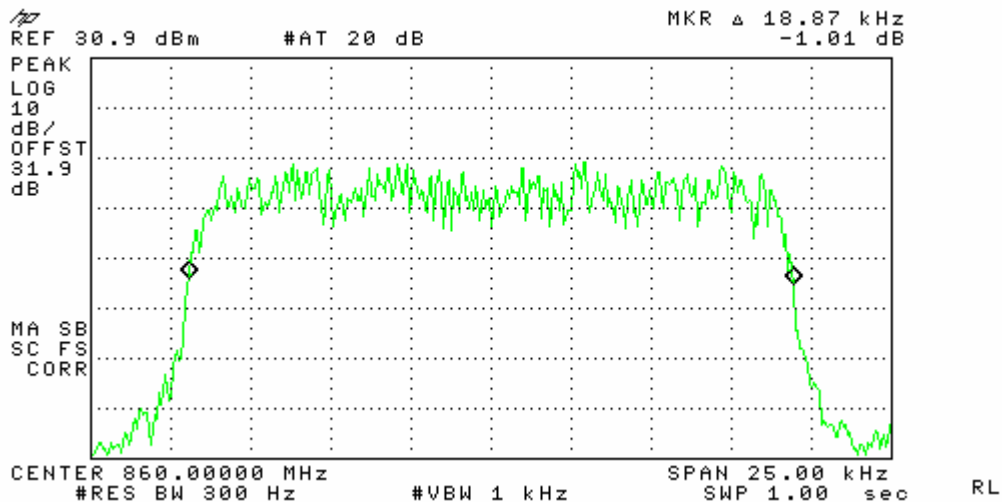
RL

Intermodulation iDEN_Apart SMR_900_MHz
Span: 1 GHz to 10 GHz RBW/VBW: 1 MHz

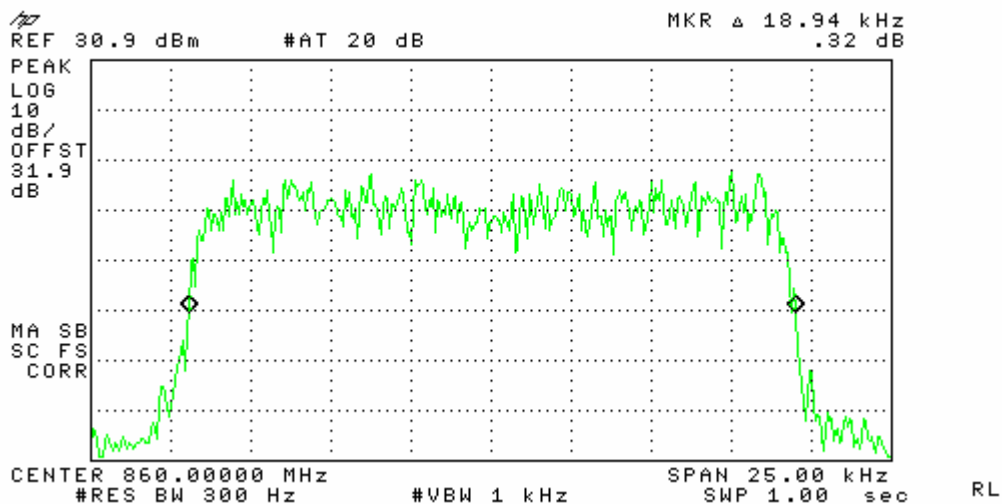


RL

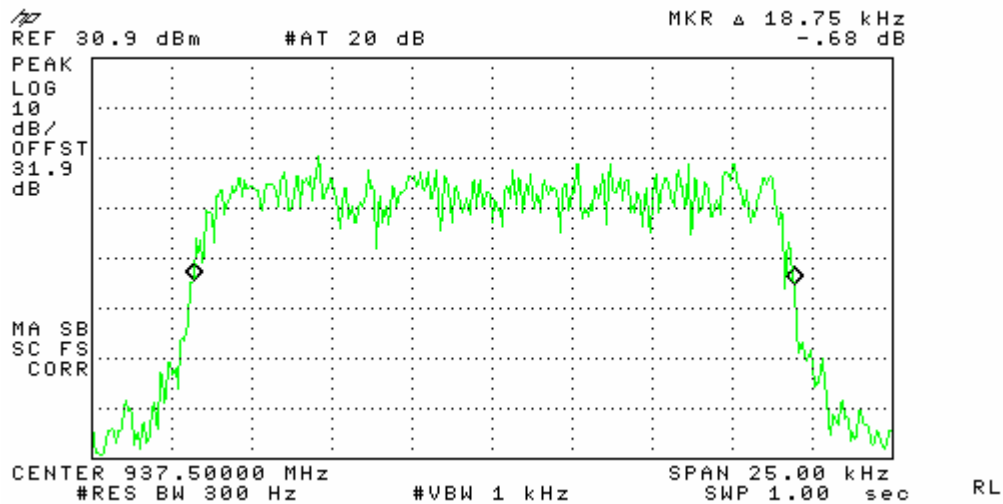
Occupied Bandwidth iDEN_Signal_In
Span: 25 kHz RBW: 300 Hz VBW: 1 kHz



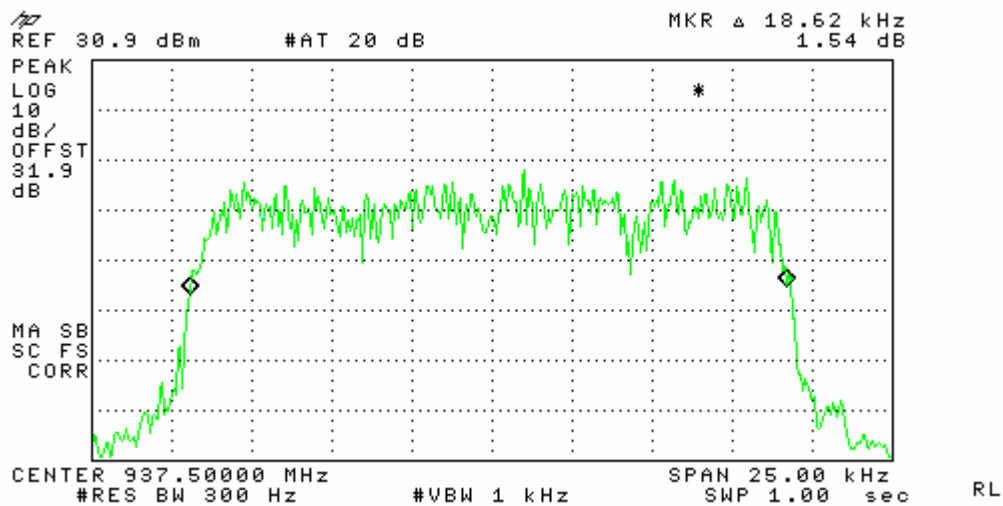
Occupied Bandwidth iDEN_Signal_Out
Span: 25 kHz RBW: 300 Hz VBW: 1 kHz



Occupied Bandwidth iDEN_Signal_In
Span: 25 kHz RBW: 300 Hz VBW: 1 kHz



Occupied Bandwidth iDEN_Signal_Out
Span: 25 kHz RBW: 300 Hz VBW: 1 kHz



3.0 INDUSTRY CANADA TEST RESULTS

3.1.1 4.2 Passband Gain and Bandwidth

Test Summary:

- The requirements are: **MET** NOT MET
- A plot of the 20 dB bandwidth was taken at the points where the gain had fallen by 20 dB. A measurement was taken to show the gain versus frequency response of the system, from the midband frequency f_0 of the passband up to at least $f_0 \pm 250\%$ the measured 20 dB bandwidth.

Test Location:

- Intertek (Oakdale, MN)

Test Distance:

- 3 Meters
- 10 Meters

- **Conducted measurement**

6.1 Test Limit:

Passband gain shall not exceed the nominal gain by more than 1.0 dB. The 20 dB bandwidth shall not exceed the nominal bandwidth that is stated by the manufacturer. Outside of the 20 dB bandwidth, the gain shall not exceed the gain at the 20 dB point.

Test Data:

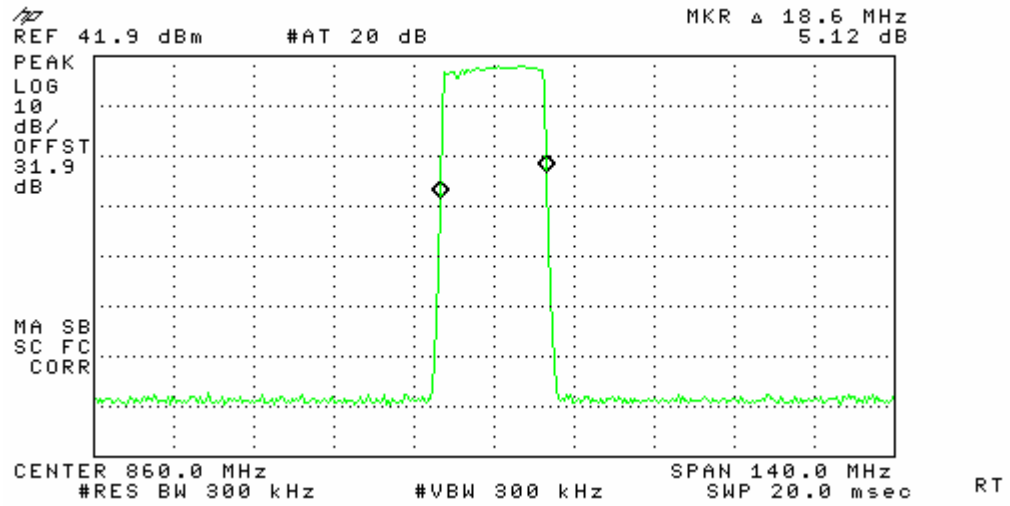
Below

Date: 20 August, 2009

IC_RSS_131_Section_4.2
Center: 860 MHz

20_dB_Passband
Span: 140 MHz

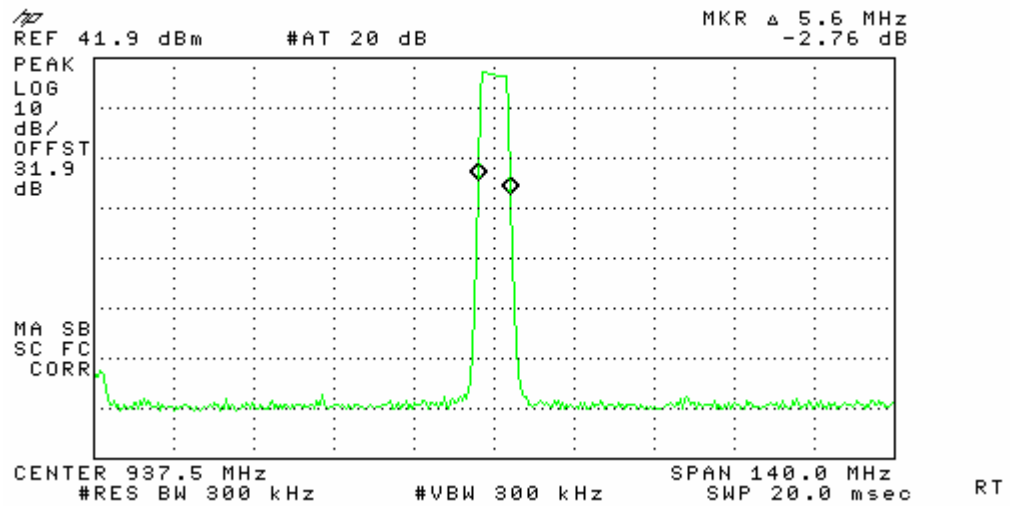
SMR_800_MHz
RBW/VBW: 300 kHz



IC_RSS_131_Section_4.2
Center: 937.5 MHz

20_dB_Passband
Span: 75 MHz

SMR_900_MHz
RBW/VBW: 300 kHz



3.1.2 4.3.1 Mean Output Power – Multi-channel Enhancer

Test Summary:

- The requirements are: **MET** NOT MET
- $P_{\text{mean}} = + 38.47 \text{ dBm}$ or 7.03 Watts

Test Location:

- Intertek (Oakdale, MN)

Test Distance:

- 3 Meters
- 10 Meters

- **Conducted measurement**

6.2 Test Limit:

The manufacturer's output power rating P_{rated} MUST NOT be greater than P_{mean} for all types of enhancers.

Test Data:

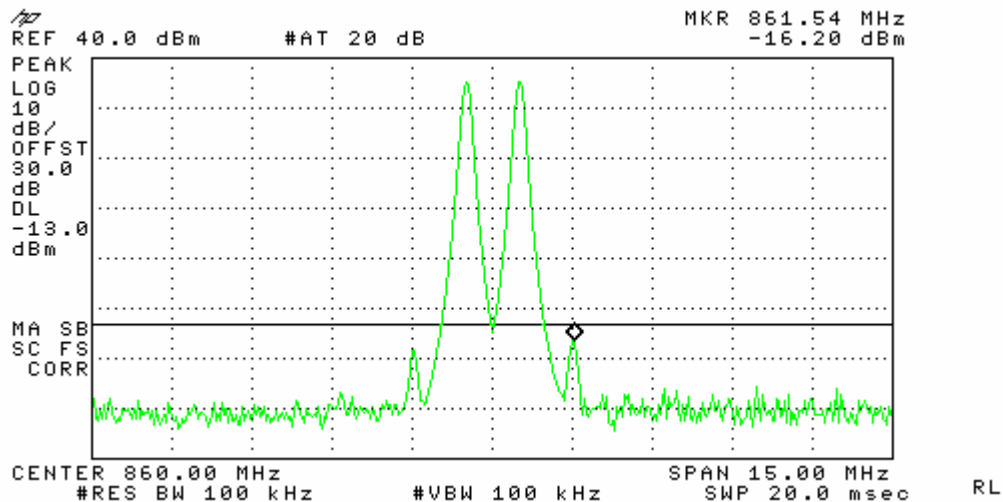
Below

Date: 20 August, 2009

IC_RSS_131_Section_4.3
Center: 860 MHz

Mean_Output_Power_Spurious_Peak
Span: 15 MHz

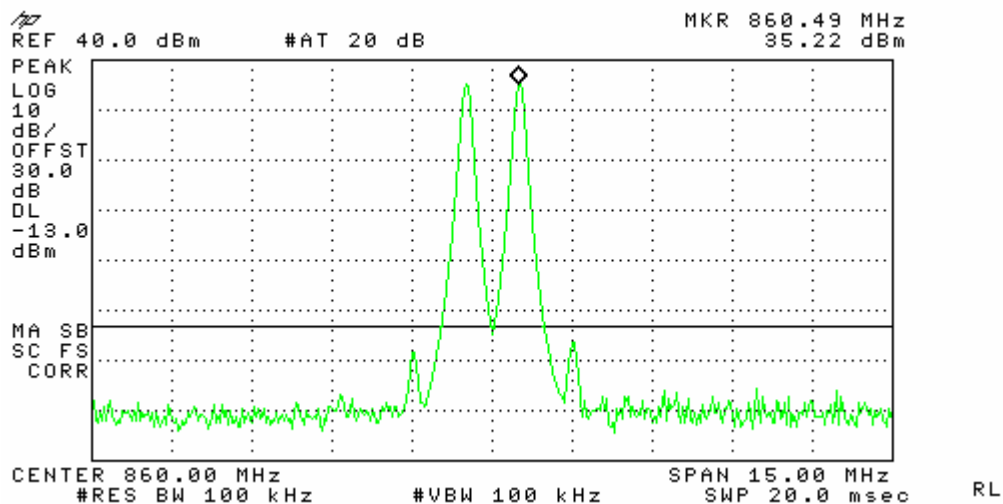
SMR_800_MHz
RBW/VBW: 100 kHz



IC_RSS_131_Section_4.3
Center: 860 MHz

Mean_Output_Power_Signal_Peak
Span: 15 MHz

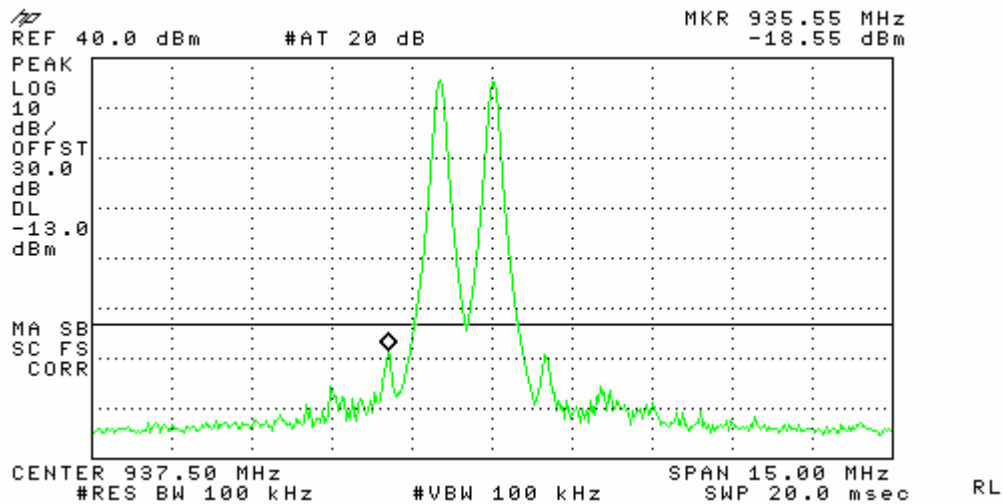
SMR_800_MHz
RBW/VBW: 100 kHz



IC_RSS_131_Section_4.3
Center: 937.5 MHz

Mean_Output_Power_Spurious_Peak
Span: 15 MHz

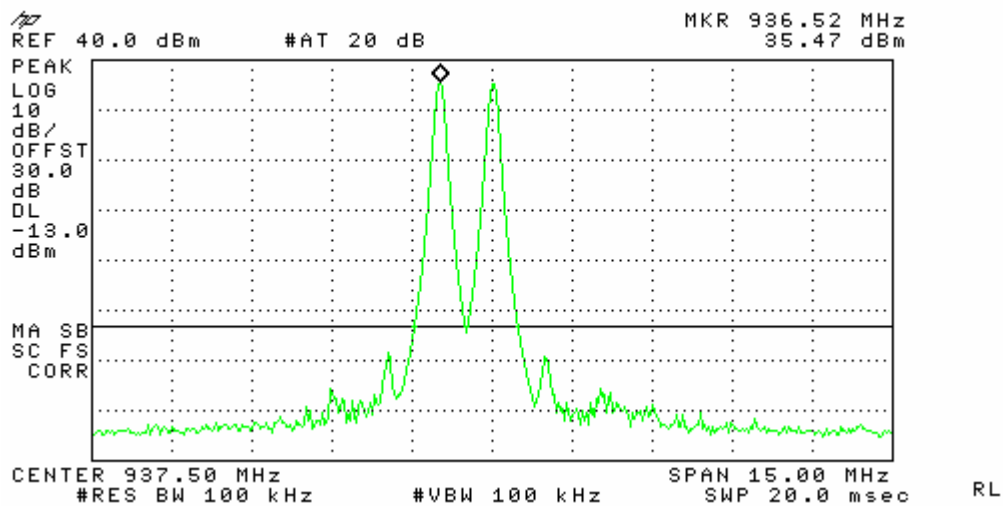
SMR_900_MHz
RBW/VBW: 100 kHz



IC_RSS_131_Section_4.3
Center: 937.5 MHz

Mean_Output_Power_Signal_Peak
Span: 15 MHz

SMR_900_MHz
RBW/VBW: 100 kHz



3.1.3 4.4.1 Spurious Emissions – Multi-channel Enhancer

Test Summary:

- The requirements are: **MET** NOT MET
- Enhancer is < 500 watts. Raised the input level to the EUT until the greater level of the intermodulation products at the enhancer output terminals, Po3 or Po4, equaled –43 dBW. The spurious emissions of the equipment under test were measured using the two-tone method, with the two tones Po1 and Po2 set to the required levels. Using a spectrum analyzer with a resolution bandwidth set at 100 kHz, a search for spurious emissions from 30 MHz to 10 times the highest RF passband frequency was conducted. The search omitted the band that contains the test tones and intermodulation products. The highest spurious emission was –23.17 dBm at 1.70 GHz.

Test Location:

- Intertek (Oakdale, MN)

Test Distance:

- 3 Meters
- 10 Meters

■ Conducted measurement

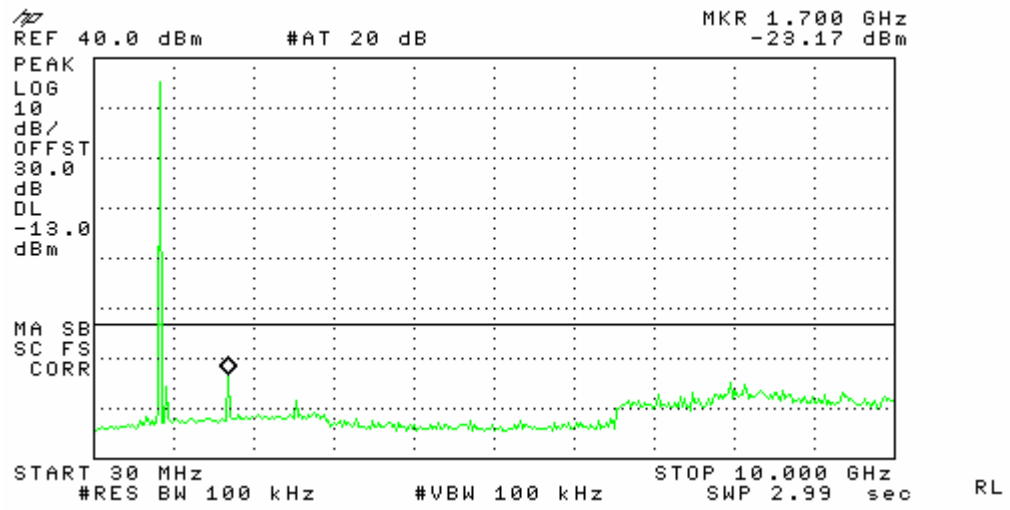
Test Limit:

-43 dBW or –13 dBm

Test Data:

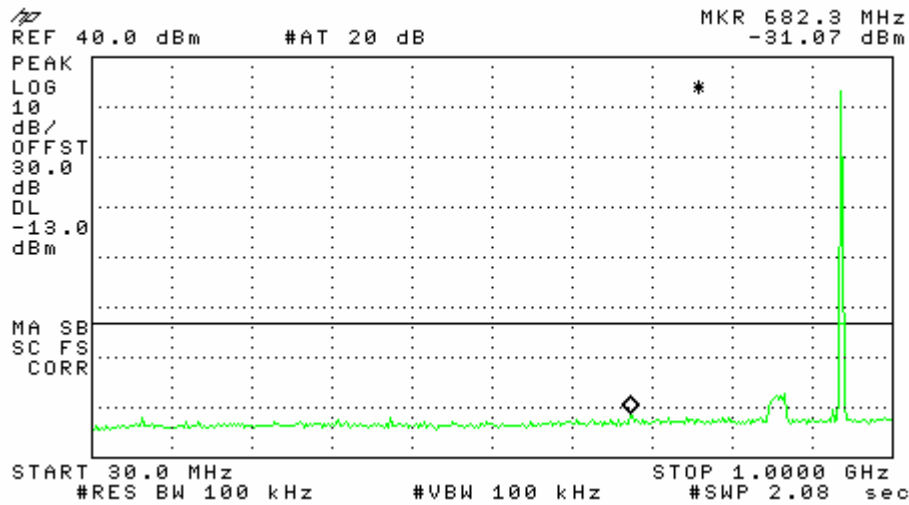
Below

Date: 20 August, 2009



IC_RSS_131_Section_4.4 Spurious_Emissions_Multi-Channel_Enhancer
Span: 30 MHz to 1 GHz RBW/VBW: 100 kHz

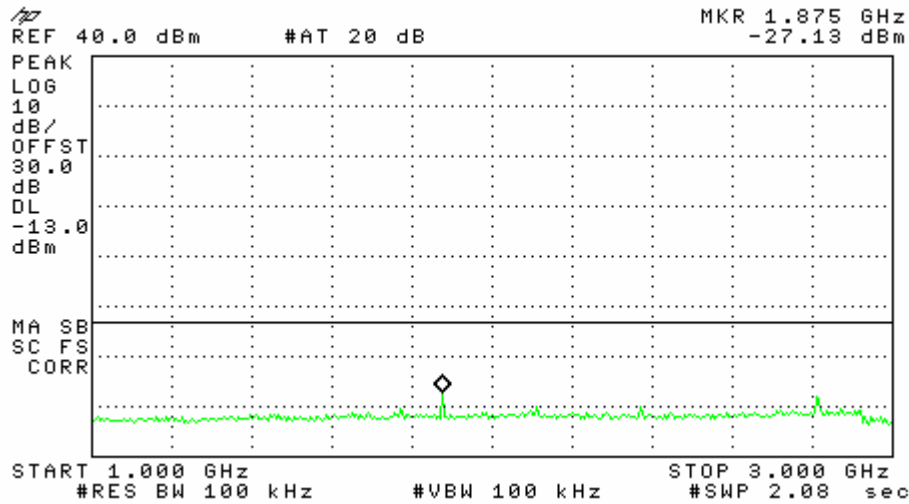
SMR_900_MHz



RL

IC_RSS_131_Section_4.4 Spurious_Emissions_Multi-Channel_Enhancer
Span: 1 GHz to 3 GHz RBW/VBW: 100 kHz

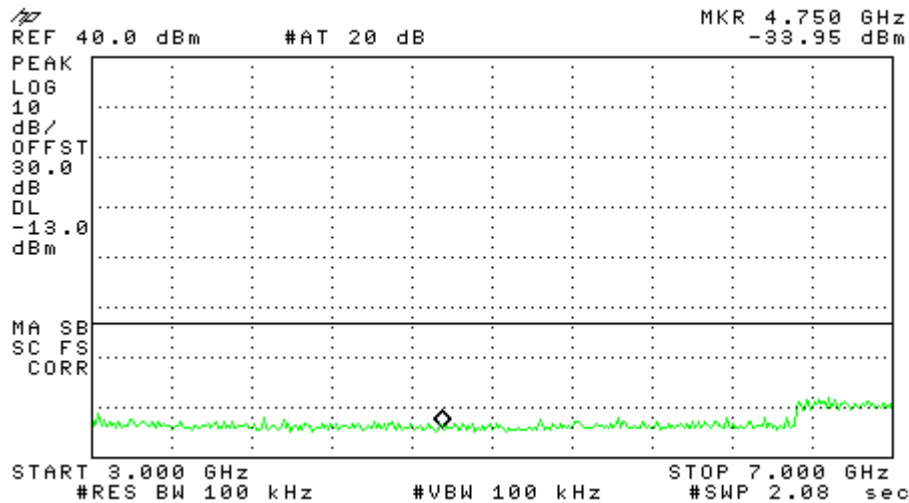
SMR_900_MHz



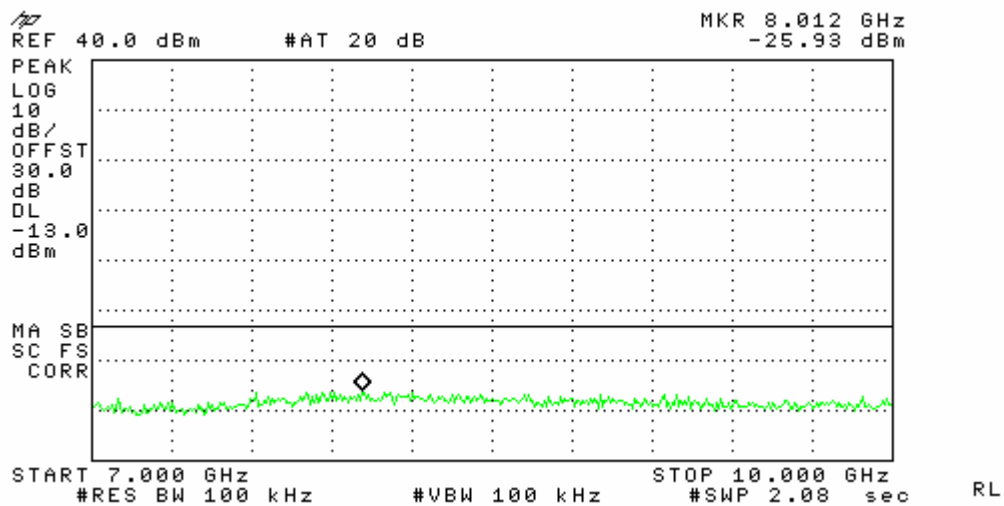
RL

IC_RSS_131_Section_4.4 Spurious_Emissions_Multi-Channel_Enhancer
Span: 3 GHz to 7 GHz RBW/VBW: 100 kHz

SMR_900_MHz



RL



3.1.4 4.5 Frequency Stability of Band Translators

Test Summary:

- The requirements are: **MET** NOT MET
- Frequency drift is < 1.5 parts per million (0.00015%) when monitored over extreme temperature and input voltage conditions.

Test Location:

- Intertek (Oakdale, MN)

Test Distance:

- 3 Meters
- 10 Meters

- **Conducted measurement**

Test Limit:

± 1.5 ppm

Test Data:

Below

Date: 20 August, 2009

Industry Canada
Section 4.5 – Frequency Tolerance Test
The frequency stability shall be within ± 1.5 parts per million (0.00015%)

EUT SMR 800 MHz

HOST	REMOTE			
Input Voltage	Input Voltage	Carrier Frequency	Measured Frequency	Meets Requirements?
21 VDC	100 VAC	851.200 MHz	851.200 MHz	Yes
48 VDC	170 VAC	851.200 MHz	851.200 MHz	Yes
60 VDC	240 VAC	851.200 MHz	851.200 MHz	Yes
21 VDC	100 VAC	860.000 MHz	860.000 MHz	Yes
48 VDC	170 VAC	860.000 MHz	860.000 MHz	Yes
60 VDC	240 VAC	860.000 MHz	860.000 MHz	Yes
21 VDC	100 VAC	868.800 MHz	868.800 MHz	Yes
48 VDC	170 VAC	868.800 MHz	868.800 MHz	Yes
60 VDC	240 VAC	868.800 MHz	868.800 MHz	Yes
Temperature		Carrier Frequency	Measured Frequency	Meets Requirements?
-30 Deg. C		851.200 MHz	851.200 MHz	Yes
-20 Deg. C		851.200 MHz	851.200 MHz	Yes
-10 Deg. C		851.200 MHz	851.200 MHz	Yes
0 Deg. C		851.200 MHz	851.200 MHz	Yes
10 Deg. C		851.200 MHz	851.200 MHz	Yes
20 Deg. C		851.200 MHz	851.200 MHz	Yes
30 Deg. C		851.200 MHz	851.200 MHz	Yes
40 Deg. C		851.200 MHz	851.200 MHz	Yes
50 Deg. C		851.200 MHz	851.200 MHz	Yes
-30 Deg. C		860.000 MHz	860.000 MHz	Yes
-20 Deg. C		860.000 MHz	860.000 MHz	Yes
-10 Deg. C		860.000 MHz	860.000 MHz	Yes
0 Deg. C		860.000 MHz	860.000 MHz	Yes
10 Deg. C		860.000 MHz	860.000 MHz	Yes
20 Deg. C		860.000 MHz	860.000 MHz	Yes
30 Deg. C		860.000 MHz	860.000 MHz	Yes
40 Deg. C		860.000 MHz	860.000 MHz	Yes
50 Deg. C		860.000 MHz	860.000 MHz	Yes
-30 Deg. C		868.800 MHz	868.800 MHz	Yes
-20 Deg. C		868.800 MHz	868.800 MHz	Yes
-10 Deg. C		868.800 MHz	868.800 MHz	Yes
0 Deg. C		868.800 MHz	868.800 MHz	Yes
10 Deg. C		868.800 MHz	868.800 MHz	Yes
20 Deg. C		868.800 MHz	868.800 MHz	Yes
30 Deg. C		868.800 MHz	868.800 MHz	Yes
40 Deg. C		868.800 MHz	868.800 MHz	Yes
50 Deg. C		868.800 MHz	868.800 MHz	Yes

Industry Canada
Section 4.5 – Frequency Tolerance Test
The frequency stability shall be within ± 1.5 parts per million (0.00015%)

EUT SMR 900 MHz

HOST	REMOTE			
Input Voltage	Input Voltage	Carrier Frequency	Measured Frequency	Meets Requirements?
21 VDC	100 VAC	935.200 MHz	935.200 MHz	Yes
48 VDC	170 VAC	935.200 MHz	935.200 MHz	Yes
60 VDC	240 VAC	935.200 MHz	935.200 MHz	Yes
21 VDC	100 VAC	937.500 MHz	937.500 MHz	Yes
48 VDC	170 VAC	937.500 MHz	937.500 MHz	Yes
60 VDC	240 VAC	937.500 MHz	937.500 MHz	Yes
21 VDC	100 VAC	939.800 MHz	939.800 MHz	Yes
48 VDC	170 VAC	939.800 MHz	939.800 MHz	Yes
60 VDC	240 VAC	939.800 MHz	939.800 MHz	Yes
Temperature		Carrier Frequency	Measured Frequency	Meets Requirements?
-30 Deg. C		935.200 MHz	935.200 MHz	Yes
-20 Deg. C		935.200 MHz	935.200 MHz	Yes
-10 Deg. C		935.200 MHz	935.200 MHz	Yes
0 Deg. C		935.200 MHz	935.200 MHz	Yes
10 Deg. C		935.200 MHz	935.200 MHz	Yes
20 Deg. C		935.200 MHz	935.200 MHz	Yes
30 Deg. C		935.200 MHz	935.200 MHz	Yes
40 Deg. C		935.200 MHz	935.200 MHz	Yes
50 Deg. C		935.200 MHz	935.200 MHz	Yes
-30 Deg. C		937.500 MHz	937.500 MHz	Yes
-20 Deg. C		937.500 MHz	937.500 MHz	Yes
-10 Deg. C		937.500 MHz	937.500 MHz	Yes
0 Deg. C		937.500 MHz	937.500 MHz	Yes
10 Deg. C		937.500 MHz	937.500 MHz	Yes
20 Deg. C		937.500 MHz	937.500 MHz	Yes
30 Deg. C		937.500 MHz	937.500 MHz	Yes
40 Deg. C		937.500 MHz	937.500 MHz	Yes
50 Deg. C		937.500 MHz	937.500 MHz	Yes
-30 Deg. C		939.800 MHz	939.800 MHz	Yes
-20 Deg. C		939.800 MHz	939.800 MHz	Yes
-10 Deg. C		939.800 MHz	939.800 MHz	Yes
0 Deg. C		939.800 MHz	939.800 MHz	Yes
10 Deg. C		939.800 MHz	939.800 MHz	Yes
20 Deg. C		939.800 MHz	939.800 MHz	Yes
30 Deg. C		939.800 MHz	939.800 MHz	Yes
40 Deg. C		939.800 MHz	939.800 MHz	Yes
50 Deg. C		939.800 MHz	939.800 MHz	Yes

4.0 TEST EQUIPMENT

Number	Description	Manufacturer	Model	ADC Serial Number	Cal Due	Used
1	Spectrum Analyzer	HP	8593E	MC54593	9-17-09	<input checked="" type="checkbox"/>
2	Power Meter	HP	437B	MC27754	5-29-10	<input checked="" type="checkbox"/>
3	Multimeter	Fluke	79	MC18758	6-15-11	<input checked="" type="checkbox"/>
4	Frequency Counter	HP	5347A	MC27548	5-19-10	<input checked="" type="checkbox"/>
5	Temperature Chamber	Thermotron	SE-600-3-3	MC48285	4-2-10	<input checked="" type="checkbox"/>
6	Signal Generator	Aeroflex	3413	MC57343	5-21-10	<input checked="" type="checkbox"/>
7	Signal Generator	Celerity	CS2010VSG	MC54254	10-7-09	<input checked="" type="checkbox"/>
8	RF Power Sensor	Agilent	8482H	MC27519	7-14-10	<input checked="" type="checkbox"/>
9	Variable Auto Transformer	Staco	1520CT	MC44655	CNR	<input checked="" type="checkbox"/>
10	Attenuator	Aeroflex	86-30-12	369	CNR	<input checked="" type="checkbox"/>

Equipment with a Calibration Not Required (CNR) listing is verified and compensated for with NIST traceable calibrated equipment.