



TEST DATA


Test Data Number: 3193847MIN-001M
Project Number: 3193847

Testing performed on the
AWS Module – FWP-A810000MOD
to
47 CFR, Part 27:2008

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: 
Simon Khazon

Date: November 25, 2009

Reviewed by: 
Norman Shpilsher

Date: November 25, 2009



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1.0 DESCRIPTION OF THE SAMPLE (EUT)

Model:	AWS Module – FWP-A810000MOD
Type of EUT:	Indoor Fiber / Coaxial 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 27:2008 <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 27	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 the low frequency (2.111MHz), middle frequency (2.132MHz), and upper frequency (2.154MHz) of the operating band.
2. Testing was performed in frequency range from 30MHz to 22GHz. EUT tuned frequencies 2.111MHz, 2.132MHz, and 2.154MHz were excluded from the table 2.
3. 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

Tables 1-2 show detected Radiated Emissions.

Graphs 1 to 18 show the EUT peak Radiated Emissions.

No Emissions were detected above 18GHz (see graphs 13-18)

No emissions were chosen for substitution measurements as the maximum emission is more than 20dB below the reference limit.



TILE Instrument Control System EMI Measurement Software

Radiated Emissions from 30MHz to 1GHz

Date: 11-16/17-2009

Company: LGC Wireless/ADC Telecommunications Inc.
Model: AWS Module
Test Engineer: Richard Blonigen/Simon Khazon
Standard: FCC Part 27
Test Site: 3m Anechoic Chamber, 3m measurement distance
Note: The table shows the worst case radiated emissions
 Measurements were taken using a Peak detector

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 2111MHz						
30.069 MHz	V	23.1	21.1	44.2	82.2	-38.0
36.58 MHz	V	26.2	17.3	43.4	82.2	-38.8
53.758 MHz	V	35.4	9.0	44.3	82.2	-37.9
54.105 MHz	V	35.0	8.9	43.9	82.2	-38.3
844.39 MHz	V	18.5	25.0	43.4	82.2	-38.8
Operating Frequency 2132MHz						
34.294 MHz	V	24.4	18.5	42.9	82.2	-39.3
53.412 MHz	V	35.3	9.1	44.4	82.2	-37.8
54.52 MHz	V	33.9	8.8	42.6	82.2	-39.6
838.73 MHz	V	20.2	24.9	45.1	82.2	-37.1
843.68 MHz	V	28.8	24.9	53.8	82.2	-28.5
337.4 MHz	H	25.5	17.1	42.6	82.2	-39.6
437.15 MHz	H	23.8	19.8	43.6	82.2	-38.6
500.18 MHz	H	27.2	20.6	47.7	82.2	-34.5
875.51 MHz	H	22.2	25.2	47.3	82.2	-34.9
Operating Frequency 2154MHz						
36.58 MHz	V	25.7	17.3	43.0	82.2	-39.2
62.555 MHz	V	33.9	7.5	41.4	82.2	-40.8
500.18 MHz	V	22.0	20.6	42.5	82.2	-39.7
829.53 MHz	V	20.7	24.7	45.4	82.2	-36.8
937.75 MHz	V	18.3	25.7	44.0	82.2	-38.2
368.57 MHz	H	24.4	18.2	42.6	82.2	-39.6
500.18 MHz	H	25.9	20.6	46.5	82.2	-35.8
583.99 MHz	H	21.2	22.1	43.3	82.2	-38.9
875.51 MHz	H	20.5	25.2	45.7	82.2	-36.5
937.75 MHz	H	18.9	25.7	44.6	82.2	-37.6



TILE Instrument Control System EMI Measurement Software

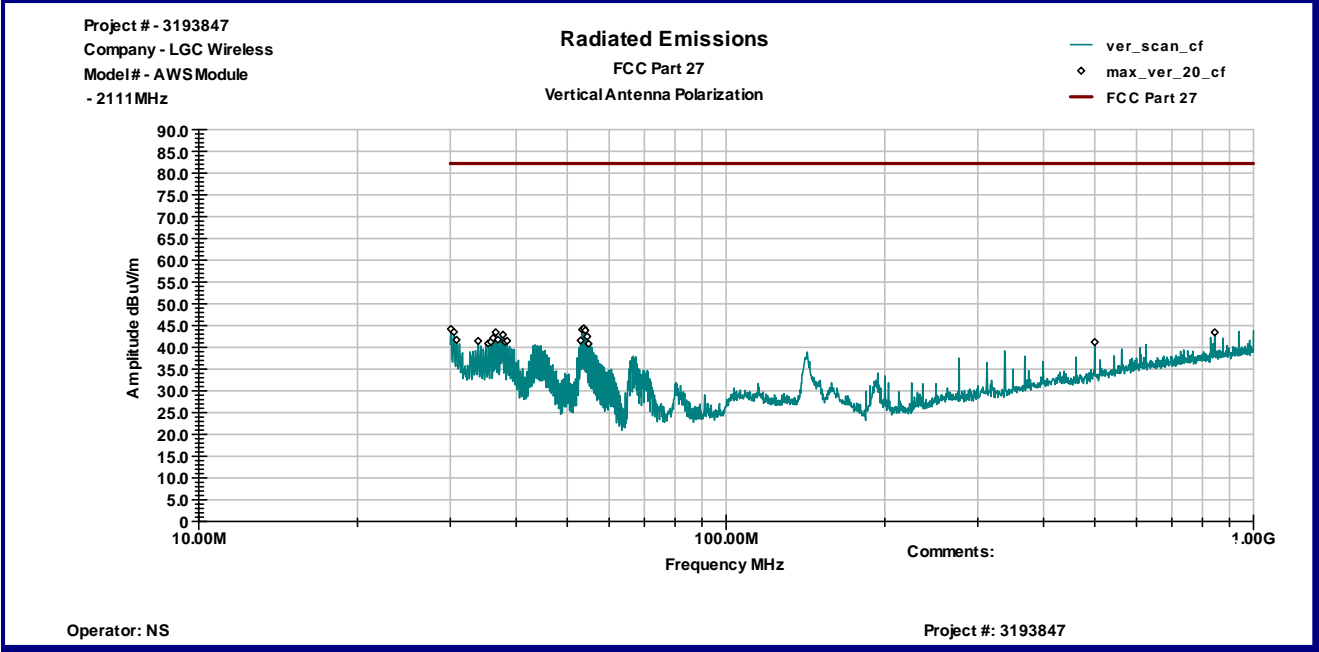
Radiated Emissions from 1GHz to 18GHz

Date: 11-16/17-2009

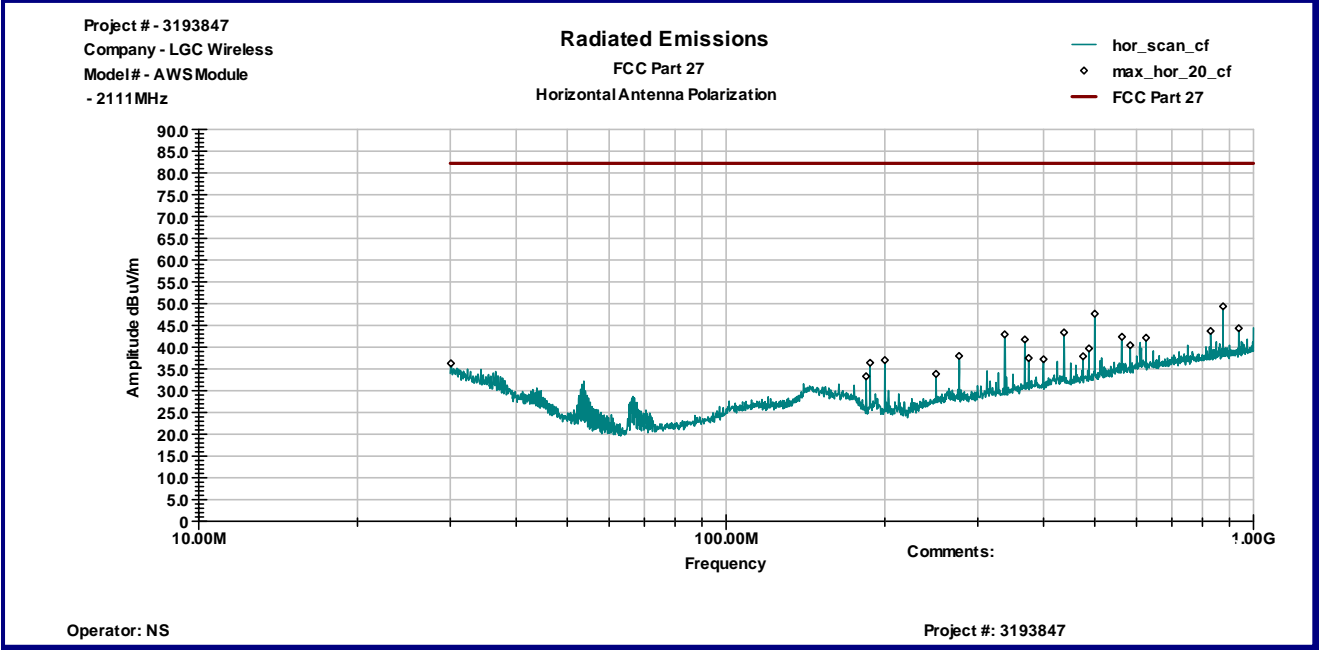
Company: LGC Wireless/ADC Telecommunications Inc.
Model: AWS Module
Test Engineer: Richard Blonigen/Simon Khazon
Standard: FCC Part 27
Test Site: 3m Anechoic Chamber, 3m measurement distance
Note: The table shows the worst case radiated emissions
 All measurements were taken using a Peak detector

Table # 2

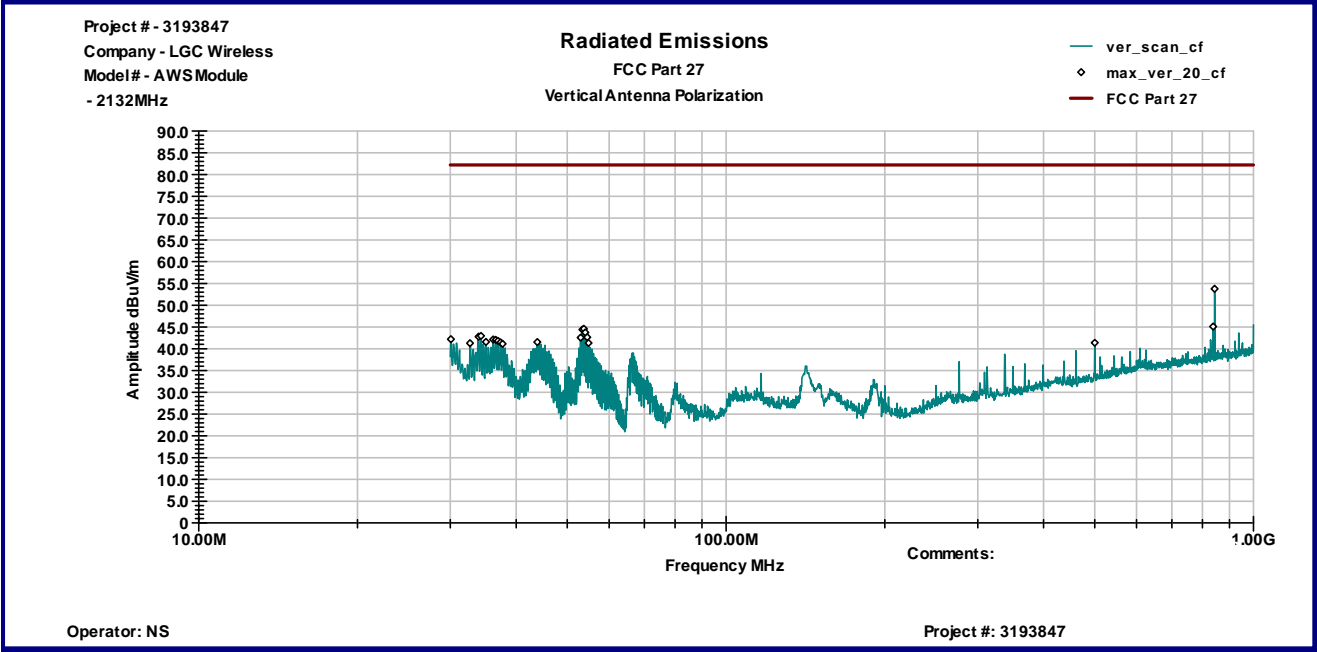
Frequency MHz	Antenna Polarity	Reading dBµV	Total C.F. dB1/m	Pre-Amp. Gain (dB)	Total at 3m dBµV/m	QP Limit dBµV/m	Margin dB
Operating Frequency 2111 MHz							
1.2482 GHz	V	62.5	27.5	42.6	47.4	82.2	-34.8
1.9996 GHz	V	55.9	31.0	43.3	43.7	82.2	-38.6
4.3966 GHz	V	50.0	38.3	42.4	46.0	82.2	-36.2
14.828 GHz	V	43.2	50.9	40.8	53.3	82.2	-28.9
17.997 GHz	V	41.7	56.7	41.3	57.0	82.2	-25.2
Operating Frequency 2132 MHz							
1.2482 GHz	H	64.3	27.5	42.6	49.1	82.2	-33.1
1.4726 GHz	H	55.8	28.5	42.7	41.6	82.2	-40.6
2.1968 GHz	H	50.8	31.7	43.2	39.3	82.2	-42.9
3.1352 GHz	H	51.4	34.5	43.4	42.5	82.2	-39.7
4.3966 GHz	H	53.6	38.3	42.4	49.6	82.2	-32.6
14.464 GHz	H	42.6	51.9	40.8	53.8	82.2	-28.4
17.901 GHz	H	42.2	56.2	41.3	57.1	82.2	-25.1
Operating Frequency 2154 MHz							
1.2482 GHz	V	61.7	27.5	42.6	46.6	82.2	-35.6
1.9996 GHz	V	55.5	31.0	43.3	43.2	82.2	-39.0
2.2512 GHz	V	52.5	31.9	43.2	41.2	82.2	-41.0
3.9716 GHz	V	46.9	37.0	42.9	41.0	82.2	-41.2
4.3966 GHz	V	49.6	38.3	42.4	45.6	82.2	-36.6
14.736 GHz	V	42.9	51.2	40.8	53.3	82.2	-28.9
17.956 GHz	V	42.7	56.5	41.3	57.8	82.2	-24.4
Operating Frequency 2154 MHz							
1.2482 GHz	H	61.6	27.5	42.6	46.5	82.2	-35.7
3.1352 GHz	H	51.1	34.5	43.4	42.3	82.2	-40.0
4.3966 GHz	H	53.2	38.3	42.4	49.1	82.2	-33.1
14.797 GHz	H	44.1	51.0	40.8	54.4	82.2	-27.9
17.976 GHz	H	41.6	56.6	41.3	56.9	82.2	-25.3
Operating Frequency 2154 MHz							
1.2482 GHz	V	62.8	27.5	42.6	47.7	82.2	-34.5
1.9996 GHz	V	53.8	31.0	43.3	41.6	82.2	-40.6
2.2512 GHz	V	51.4	31.9	43.2	40.1	82.2	-42.1
3.3188 GHz	V	48.1	35.1	43.4	39.9	82.2	-42.3
4.4408 GHz	V	49.8	38.5	42.3	45.9	82.2	-36.3
14.872 GHz	V	44.1	50.7	40.8	54.0	82.2	-28.2
17.976 GHz	V	42.5	56.6	41.3	57.7	82.2	-24.5
Operating Frequency 2154 MHz							
1.2482 GHz	H	64.1	27.5	42.6	48.9	82.2	-33.3
2.1254 GHz	H	53.5	31.5	43.2	41.7	82.2	-40.5
4.4408 GHz	H	51.2	38.5	42.3	47.3	82.2	-34.9
14.77 GHz	H	43.8	51.1	40.8	54.1	82.2	-28.1
17.949 GHz	H	41.8	56.4	41.3	56.9	82.2	-25.3



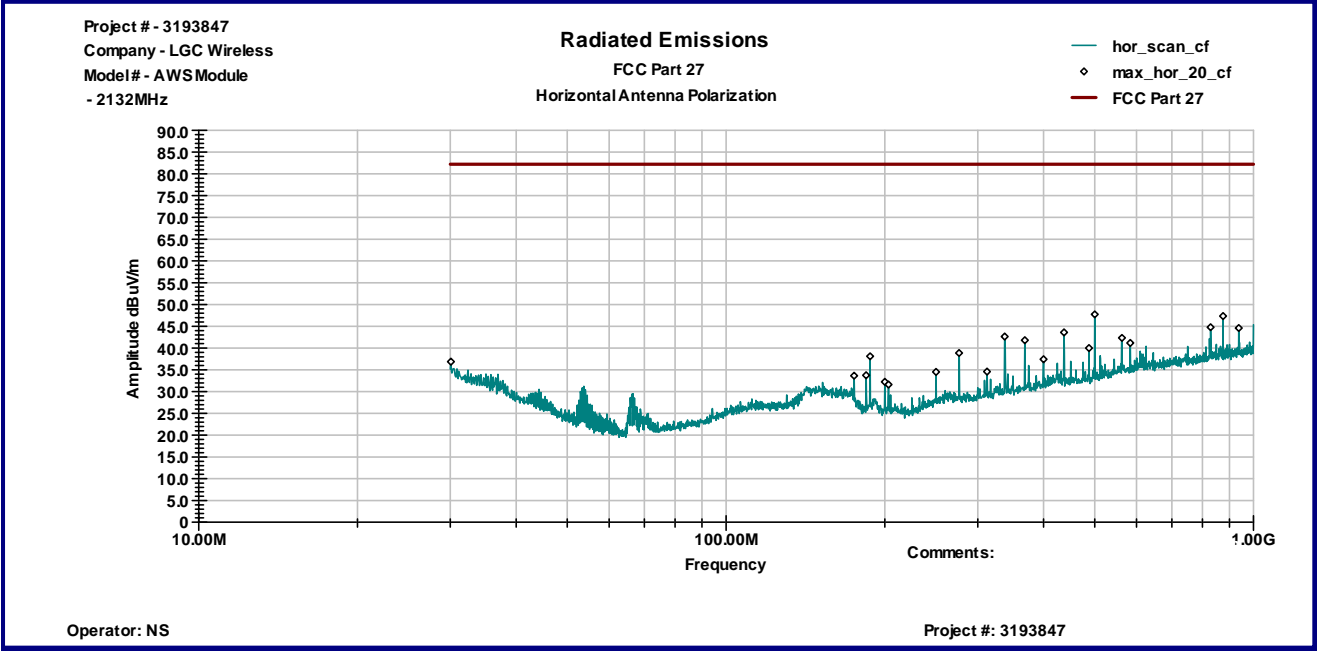
Graph 1



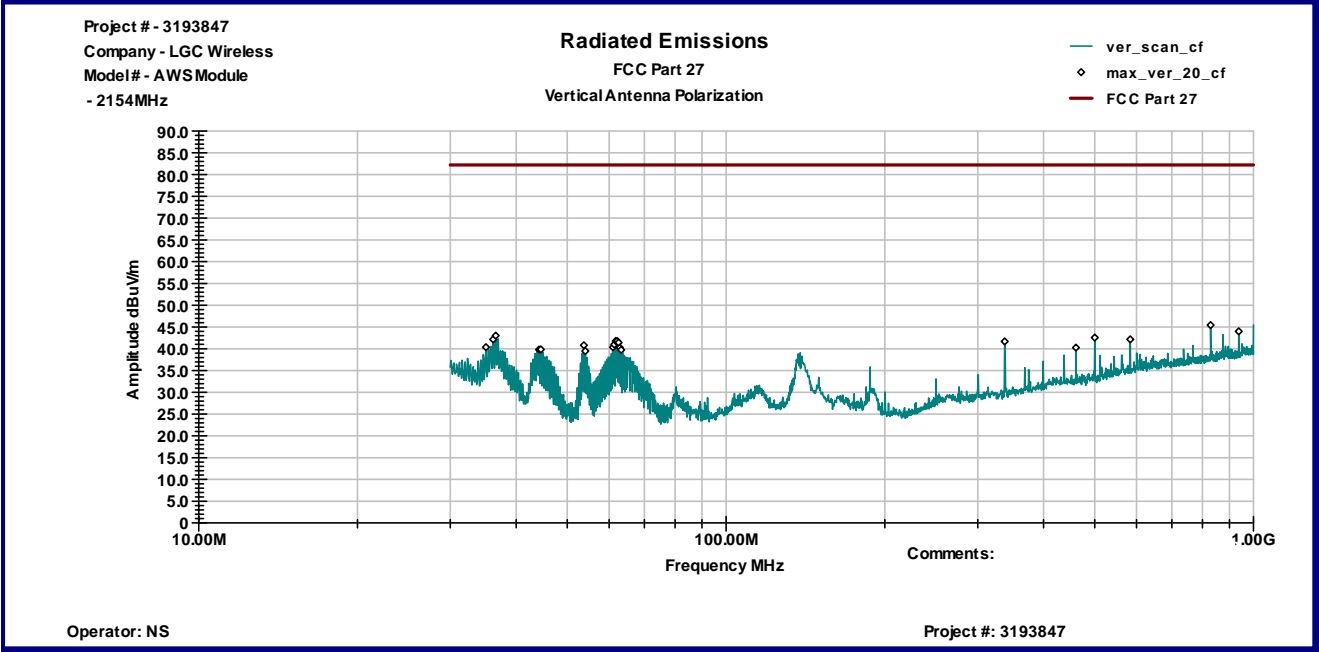
Graph 2



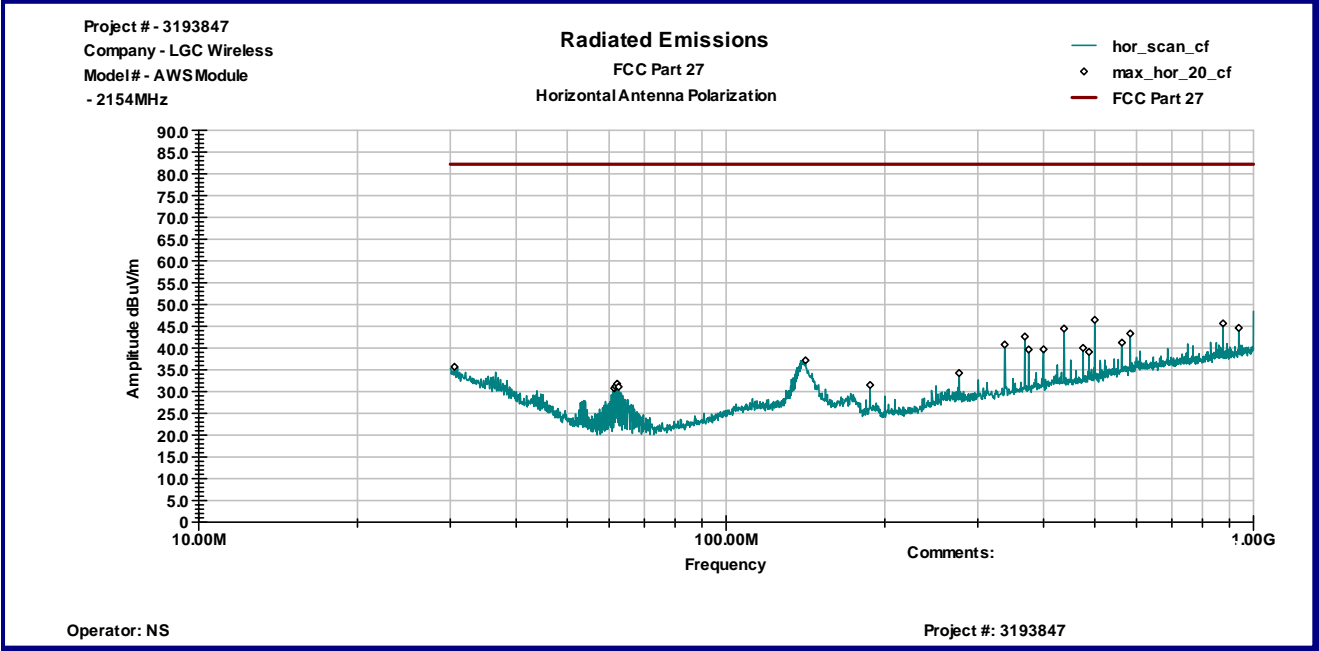
Graph 3



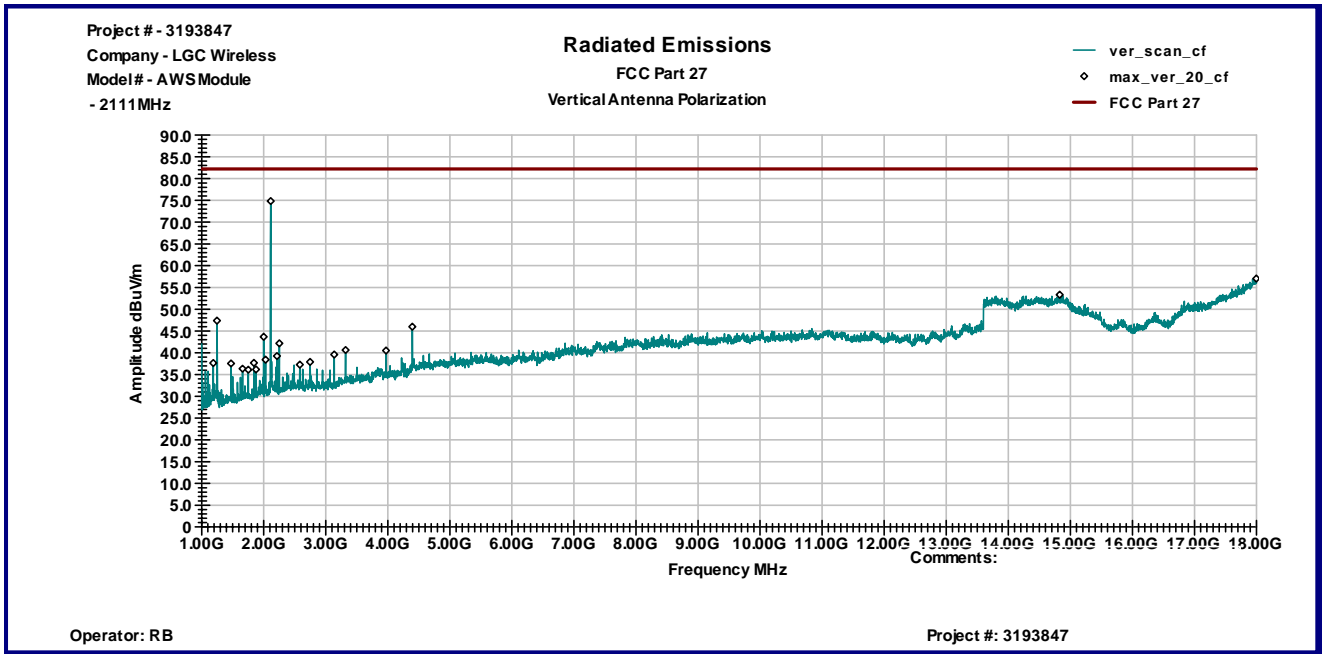
Graph 4



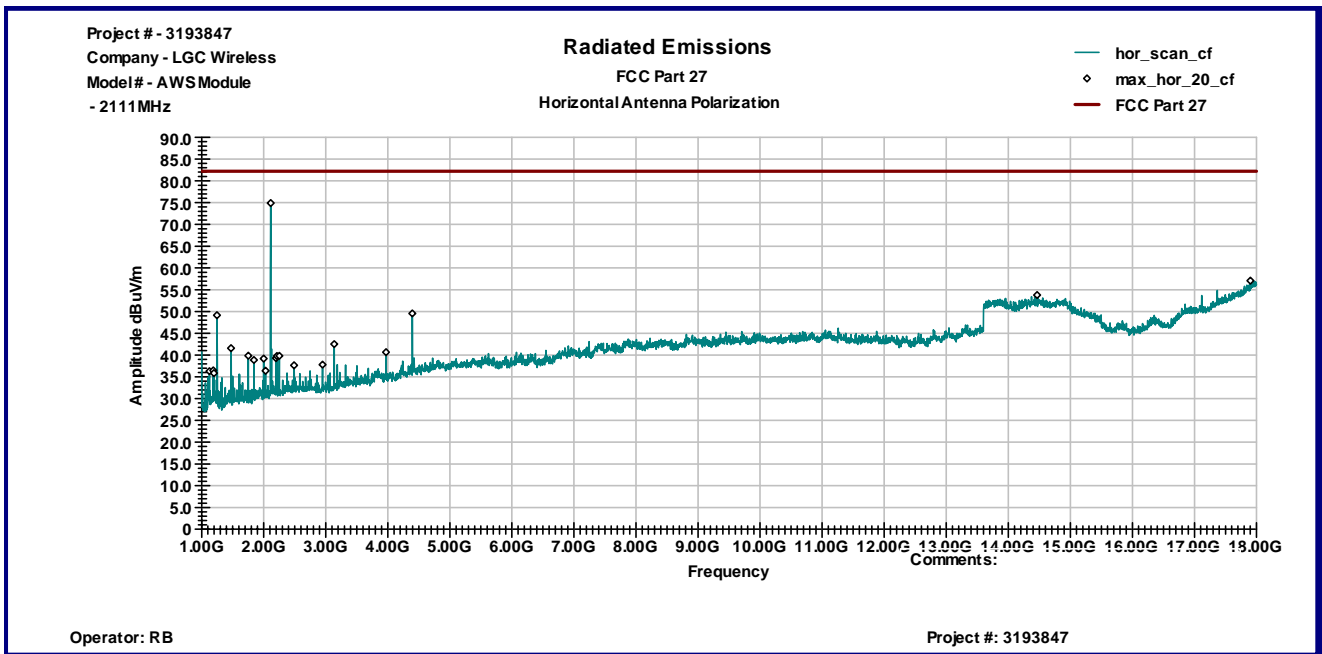
Graph 5



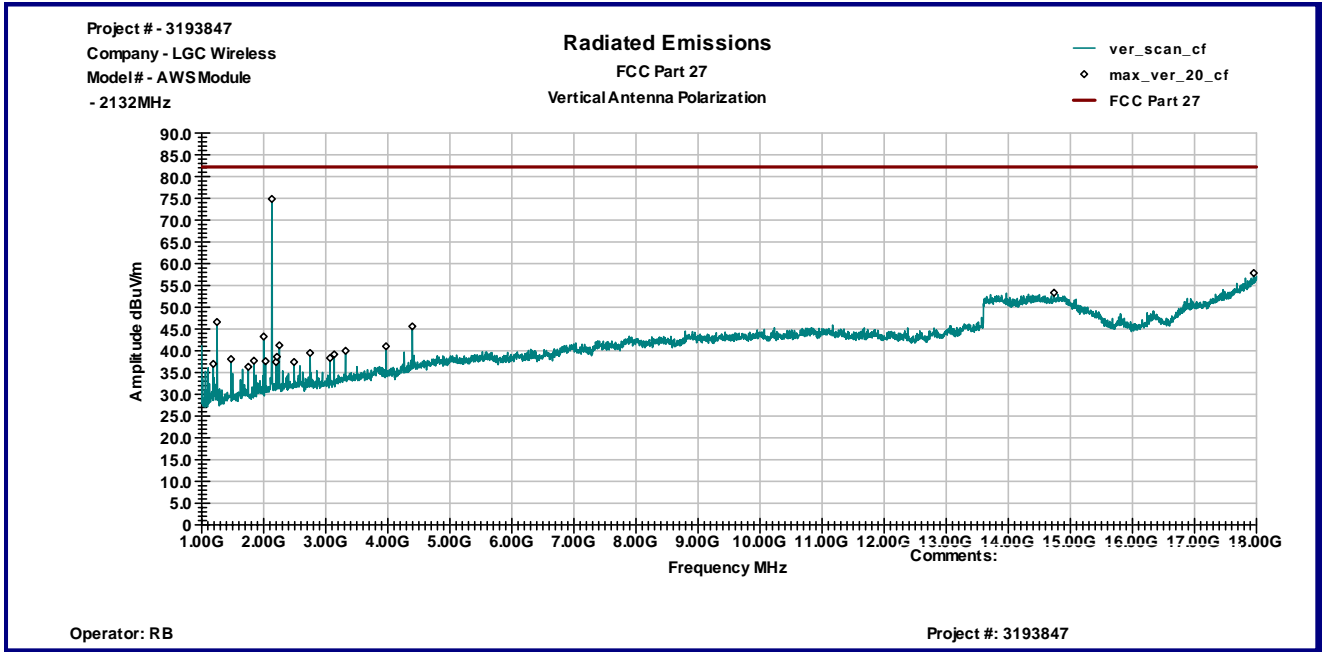
Graph 6



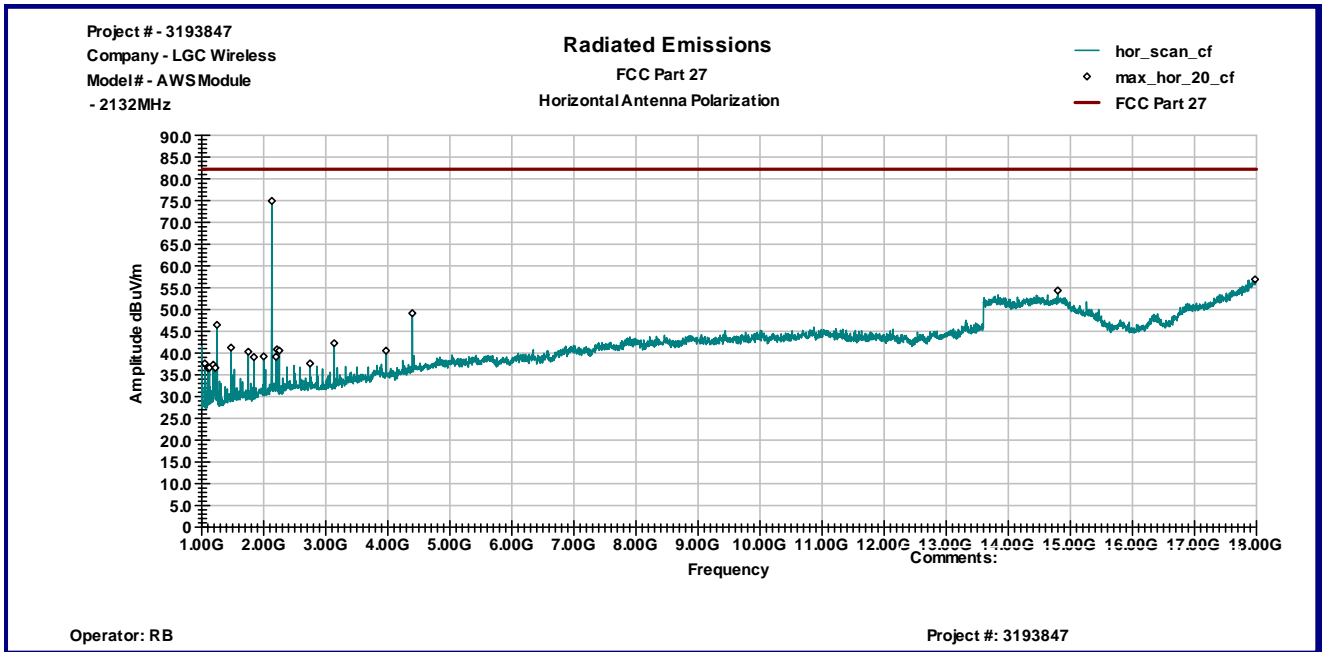
Graph 7



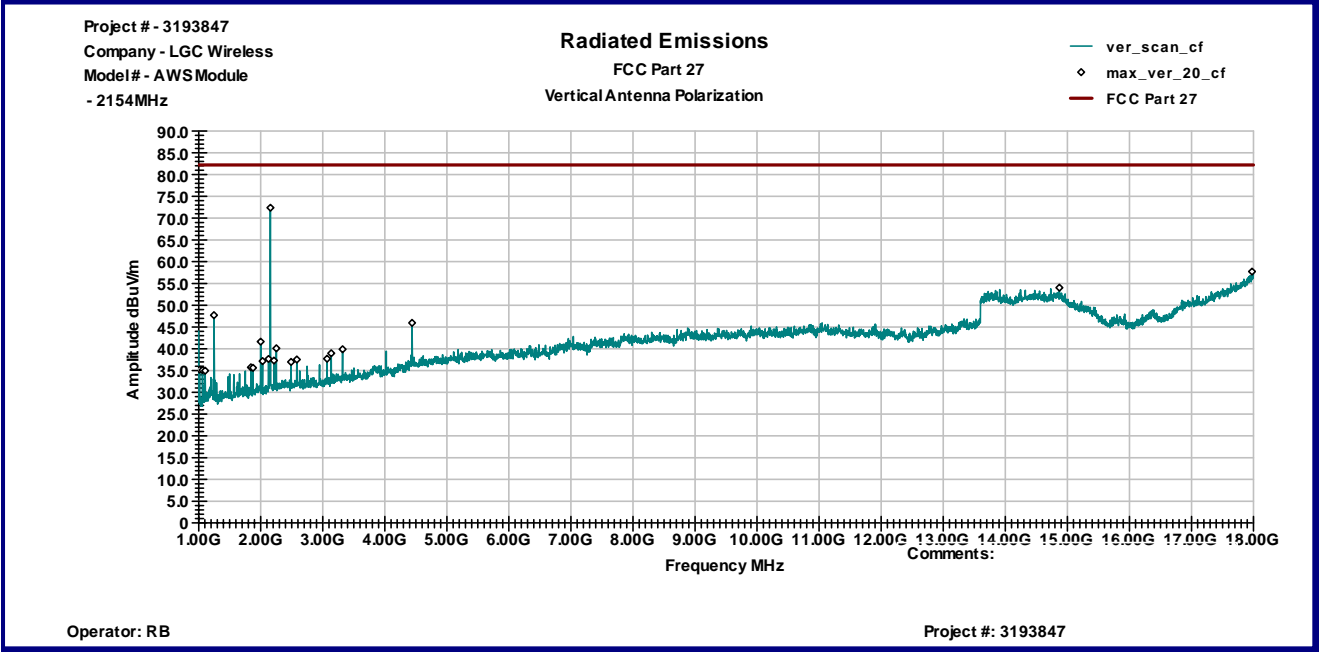
Graph 8



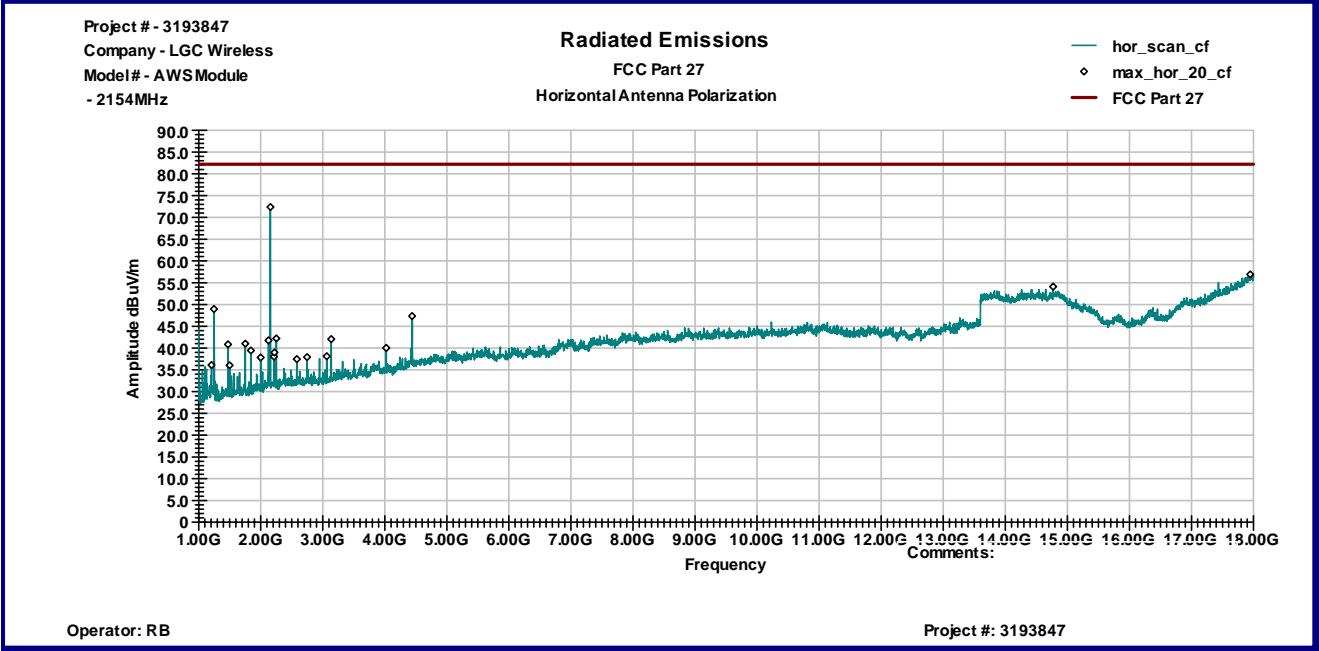
Graph 9



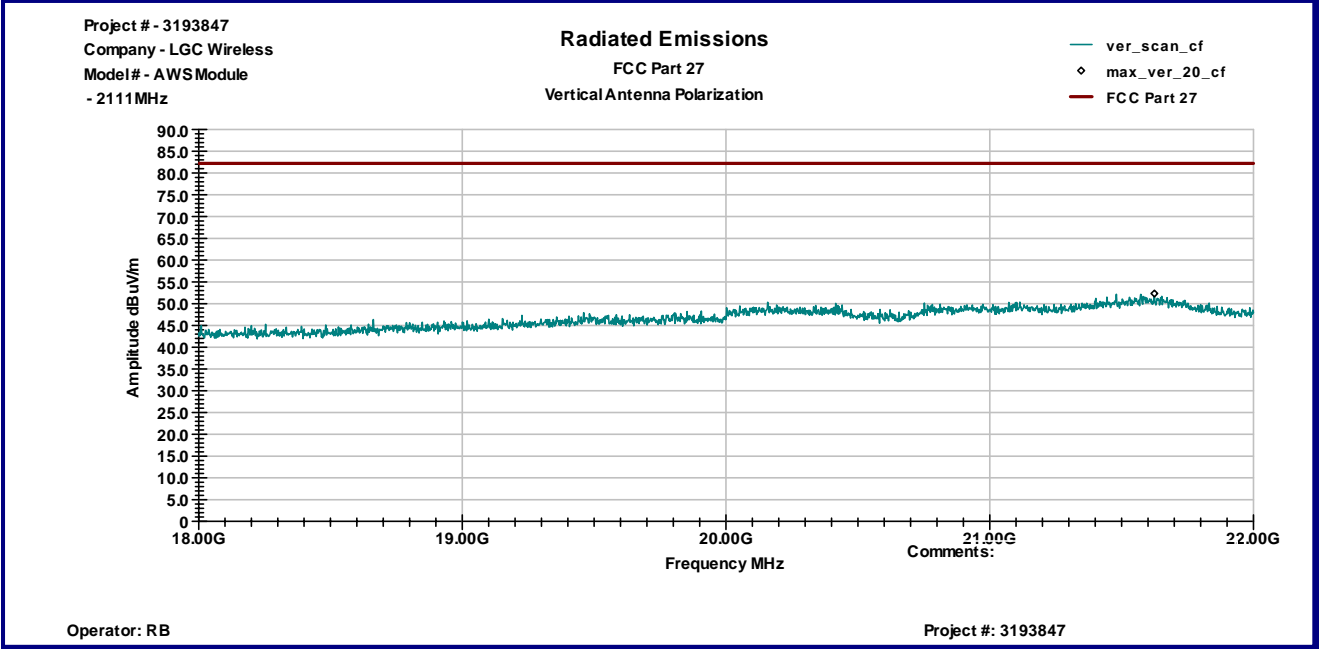
Graph 10



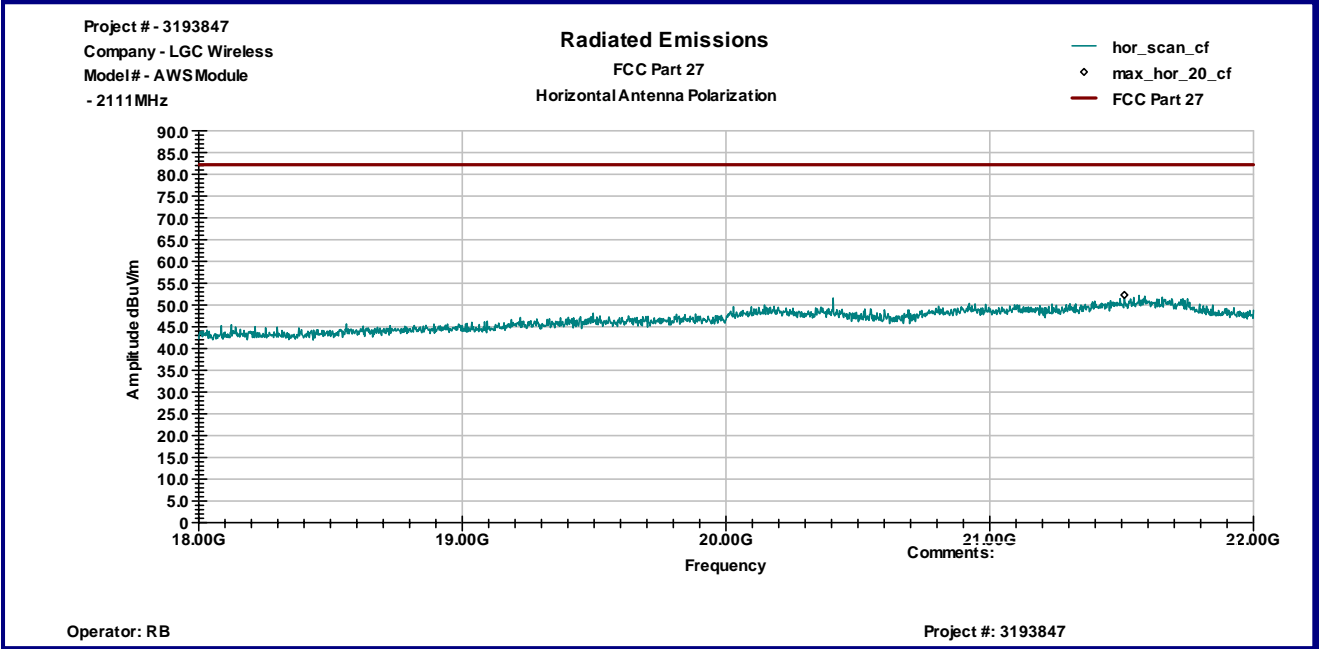
Graph 11



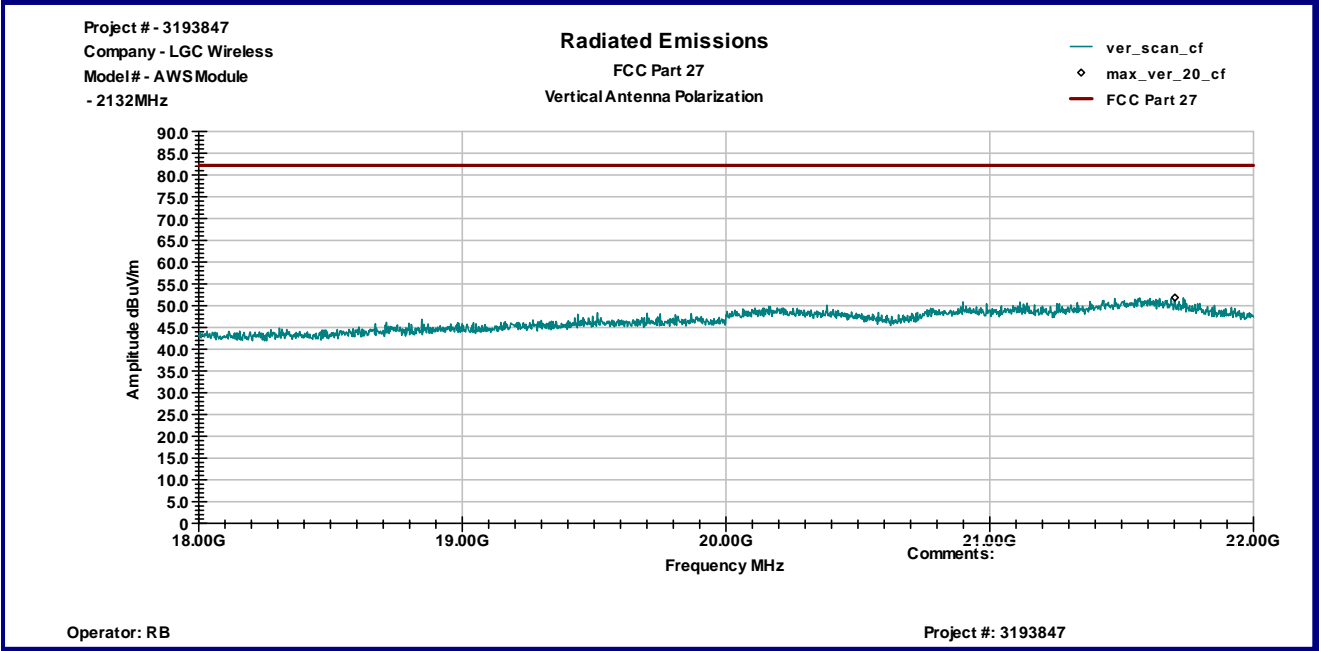
Graph 12



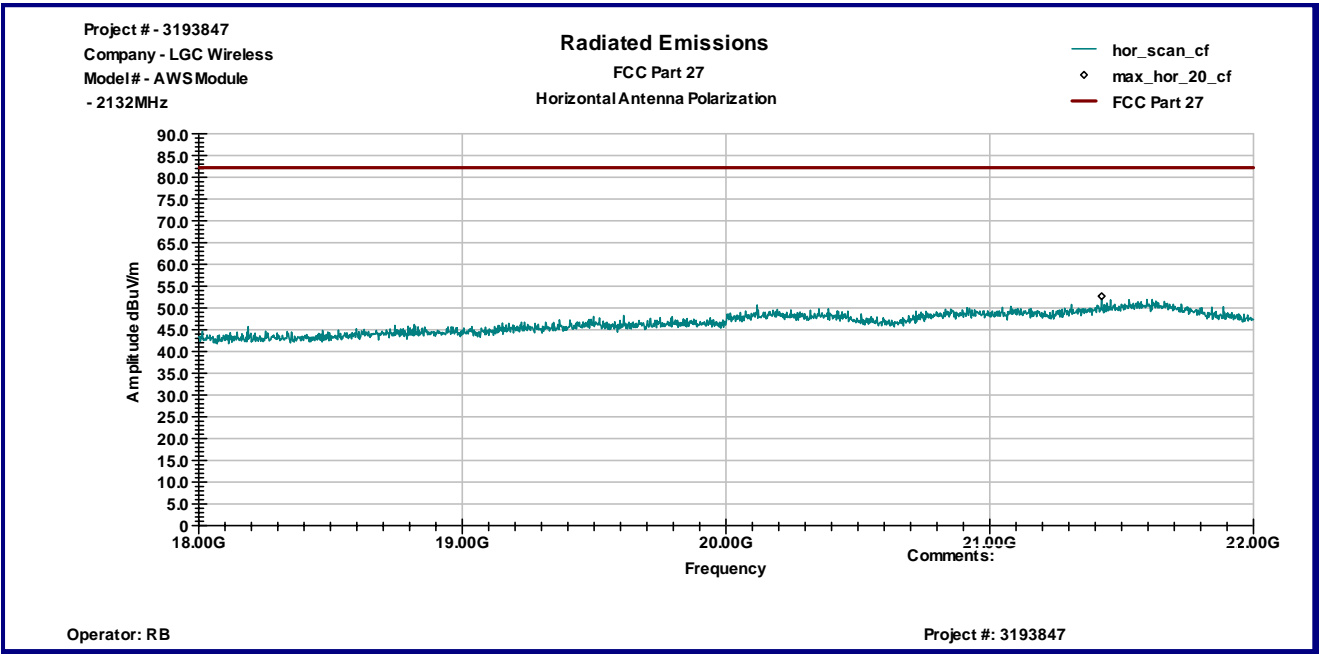
Graph 13



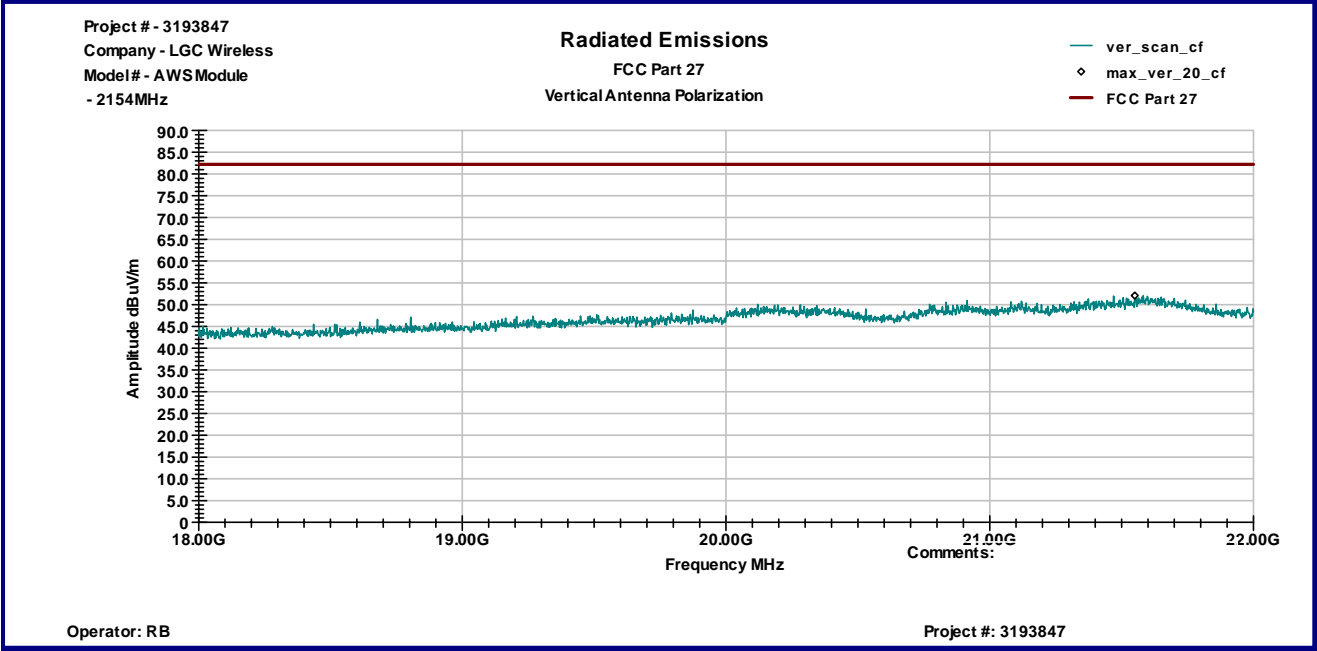
Graph 14



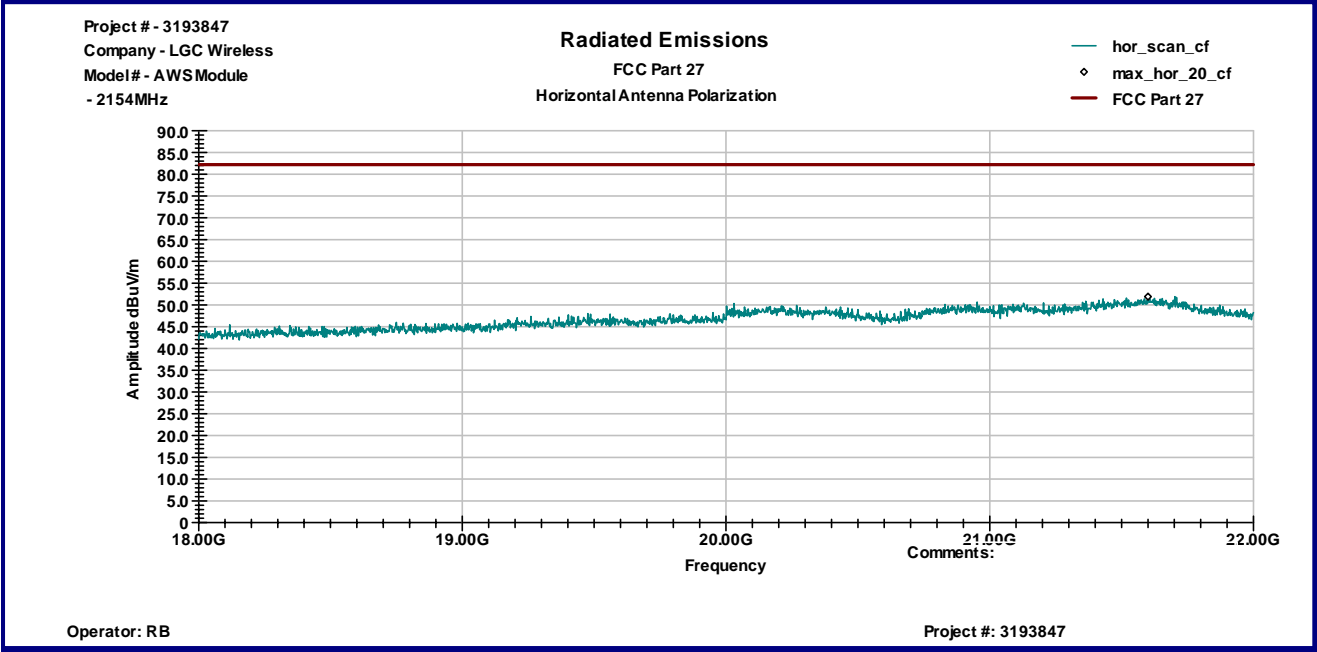
Graph 15



Graph 16



Graph 17



Graph 18



3.1 Environmental conditions

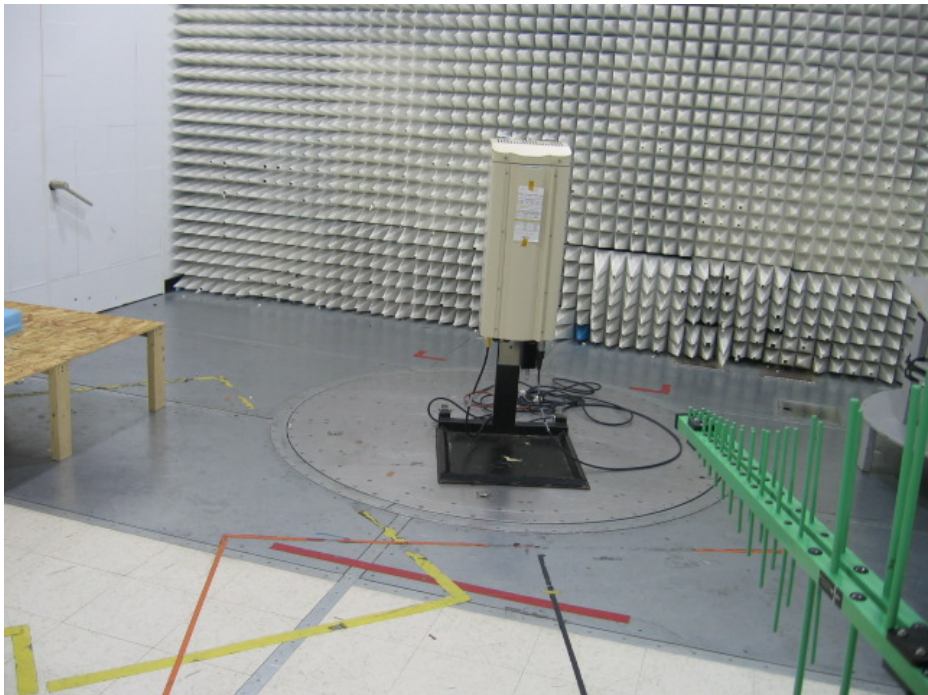
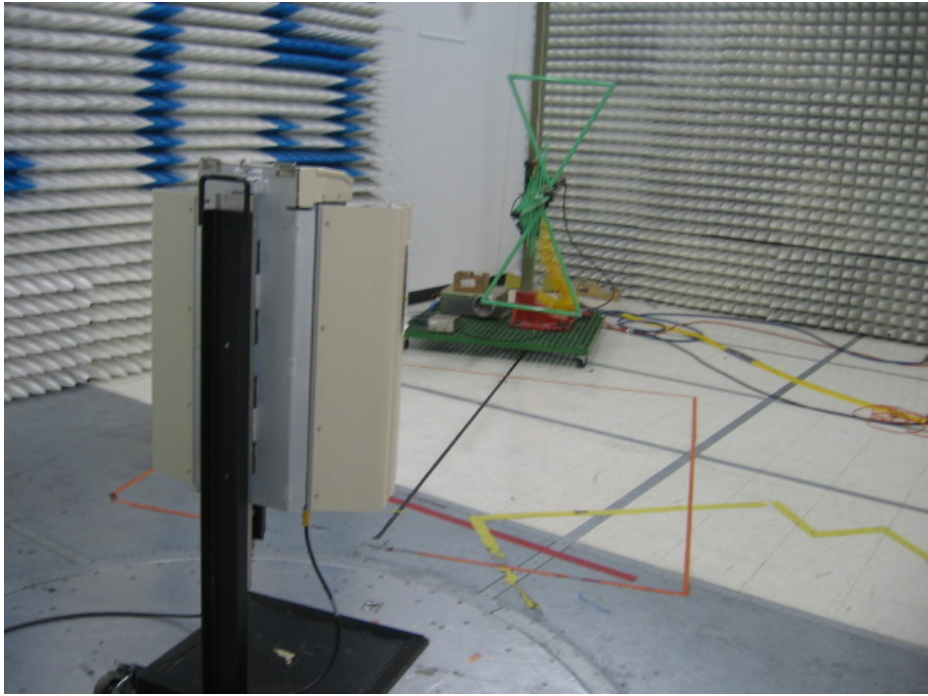
During the measurement the environmental conditions were within the listed ranges:

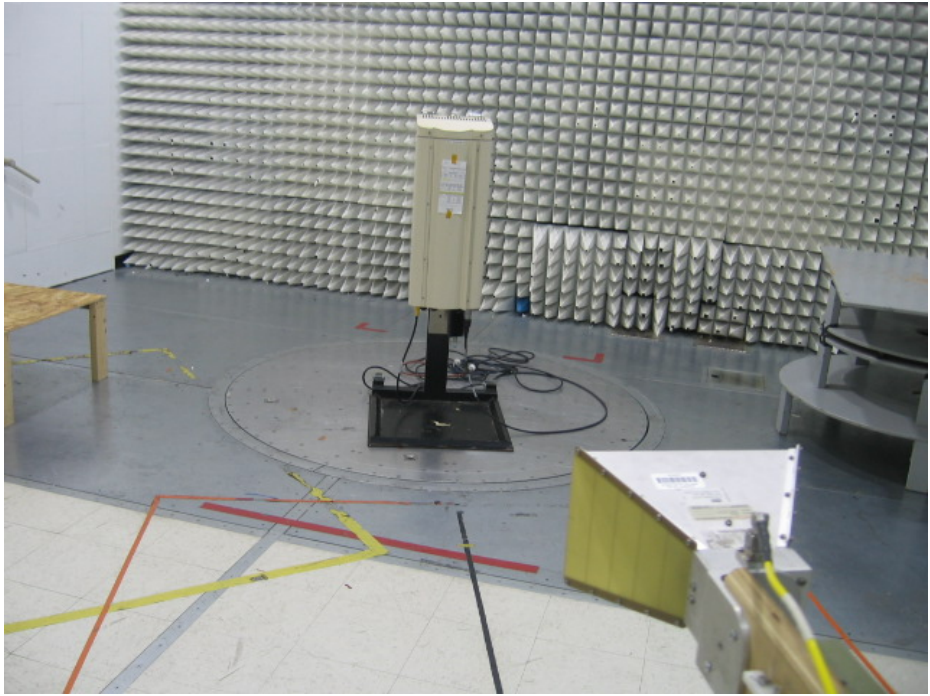
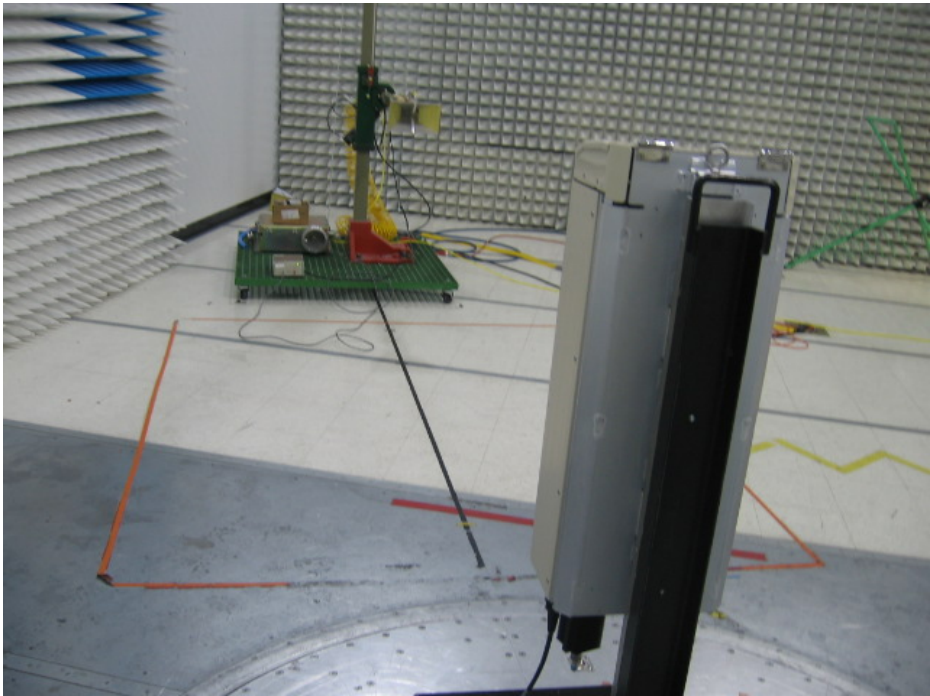
Temperature: 15-35 ° C

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
Spectrum Analyzer	R & S	FSP 40	100024	12559	09/10/2010	<input checked="" type="checkbox"/>
Spectrum Analyzer	R & S	ESCI	100358	12909	05/18/2010	<input checked="" type="checkbox"/>
Bicono-Log Antenna	Schaffner-Chase	CBL 6112 B	2468	14459	09/22/2010	<input checked="" type="checkbox"/>
Bicono-Log Antenna	Schaffner-Chase	CBL 6112 B	2630	14459	10/02/2010	<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 checked="" type="checkbox"/>
Loop Antenna	A.H.Systems	SAS-200/562	215	9817	05/21/2010	<input type="checkbox"/>
Loop Antenna	ETS	6512	00060486	19942	08/10/2010	<input type="checkbox"/>
Monopole Antenna	A.H.Systems	SAS-200/550-1	692	9986	05/27/2010	<input type="checkbox"/>
LISN	Fischer Custom Communications	FCC-LISN-50-50-4	115	9944	11/06/2010	<input type="checkbox"/>
LISN	Fischer Custom Communications	FCC-TLISN-T4	15333.01	9671	04/28/2010	<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	03/31/2010	<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 checked="" 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 checked="" type="checkbox"/>



Annex 1: Antenna Conducted Emissions

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1.1 Test Regulations

27.50	Power limits
27.53	Emission limits
27.54	Frequency stability

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 27

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 – AWS - 2110 to 2155 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 27.50 RF Power Limits

Test Summary:

- The requirements are: **MET** NOT MET
- Minimum margin of compliance is 3.22 dB at 2148.0 MHz (10 MHz LTE)

Test Location:

- Intertek (Oakdale, MN)

Test Distance:

- 3 Meters
- 10 Meters

- **Conducted measurement**

Test Limit:

100 Watts or 50 dBm Limit

Test Data:

Below

Date: 20 November, 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 W-CDMA, 1.4, 3, 5, 10, 15 and 20 MHz LTE signal. 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 31.0 dB to compensate for cable loss and attenuator between the EUT and the power meter.

<u>W-CDMA</u>	<u>45.81 Watts</u>
Carrier Frequency	Carrier Output
2113 MHz	<u>46.23</u> dBm
2132.5 MHz	<u>46.45</u> dBm
2152 MHz	<u>46.61</u> dBm

<u>1.4 LTE</u>	<u>46.24 Watts</u>
Carrier Frequency	Carrier Output
2113 MHz	<u>46.30</u> dBm
2132.5 MHz	<u>46.35</u> dBm
2152 MHz	<u>46.65</u> dBm

<u>3 LTE</u>	<u>47.86 Watts</u>
Carrier Frequency	Carrier Output
2113 MHz	<u>46.44</u> dBm
2132.5 MHz	<u>46.75</u> dBm
2152 MHz	<u>46.80</u> dBm

<u>5 LTE</u>	<u>46.77 Watts</u>
Carrier Frequency	Carrier Output
2113 MHz	<u>46.53</u> dBm
2132.5 MHz	<u>46.31</u> dBm
2152 MHz	<u>46.70</u> dBm

<u>10 LTE</u>	<u>47.64 Watts</u>
Carrier Frequency	Carrier Output
2117 MHz	<u>46.40</u> dBm
2132.5 MHz	<u>46.60</u> dBm
2148 MHz	<u>46.78</u> dBm

<u>15 LTE</u>	<u>45.5 Watts</u>
Carrier Frequency	Carrier Output
2120 MHz	<u>46.20</u> dBm
2132.5 MHz	<u>46.58</u> dBm
2145 MHz	<u>46.48</u> dBm

<u>20 LTE</u>	<u>44.16 Watts</u>
Carrier Frequency	Carrier Output
2132.5 MHz	<u>46.45</u> dBm

2.1.2 27.54 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:

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Test Data:

Below

Date: 18 November, 2009

Frequency Tolerance Test

HOST	REMOTE			
Input Voltage	Input Voltage	Carrier Frequency	Measured Frequency	Meets Requirements?
21 VDC	100 VAC	2110.200 MHz	2110.200 MHz	Yes
48 VDC	170 VAC	2110.200 MHz	2110.200 MHz	Yes
60 VDC	240 VAC	2110.200 MHz	2110.200 MHz	Yes
21 VDC	100 VAC	2132.500 MHz	2132.500 MHz	Yes
48 VDC	170 VAC	2132.500 MHz	2132.500 MHz	Yes
60 VDC	240 VAC	2132.500 MHz	2132.500 MHz	Yes
21 VDC	100 VAC	2154.800 MHz	2154.800 MHz	Yes
48 VDC	170 VAC	2154.800 MHz	2154.800 MHz	Yes
60 VDC	240 VAC	2154.800 MHz	2154.800 MHz	Yes
Temperature		Carrier Frequency	Measured Frequency	Meets Requirements?
-30 Deg. C		2110.200 MHz	2110.200 MHz	Yes
-20 Deg. C		2110.200 MHz	2110.200 MHz	Yes
-10 Deg. C		2110.200 MHz	2110.200 MHz	Yes
0 Deg. C		2110.200 MHz	2110.200 MHz	Yes
10 Deg. C		2110.200 MHz	2110.200 MHz	Yes
20 Deg. C		2110.200 MHz	2110.200 MHz	Yes
30 Deg. C		2110.200 MHz	2110.200 MHz	Yes
40 Deg. C		2110.200 MHz	2110.200 MHz	Yes
50 Deg. C		2110.200 MHz	2110.200 MHz	Yes
-30 Deg. C		2132.500 MHz	2132.500 MHz	Yes
-20 Deg. C		2132.500 MHz	2132.500 MHz	Yes
-10 Deg. C		2132.500 MHz	2132.500 MHz	Yes
0 Deg. C		2132.500 MHz	2132.500 MHz	Yes
10 Deg. C		2132.500 MHz	2132.500 MHz	Yes
20 Deg. C		2132.500 MHz	2132.500 MHz	Yes
30 Deg. C		2132.500 MHz	2132.500 MHz	Yes
40 Deg. C		2132.500 MHz	2132.500 MHz	Yes
50 Deg. C		2132.500 MHz	2132.500 MHz	Yes
-30 Deg. C		2154.800 MHz	2154.800 MHz	Yes
-20 Deg. C		2154.800 MHz	2154.800 MHz	Yes
-10 Deg. C		2154.800 MHz	2154.800 MHz	Yes
0 Deg. C		2154.800 MHz	2154.800 MHz	Yes
10 Deg. C		2154.800 MHz	2154.800 MHz	Yes
20 Deg. C		2154.800 MHz	2154.800 MHz	Yes
30 Deg. C		2154.800 MHz	2154.800 MHz	Yes
40 Deg. C		2154.800 MHz	2154.800 MHz	Yes
50 Deg. C		2154.800 MHz	2154.800 MHz	Yes

2.1.3 27.53 Emission Limitations

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

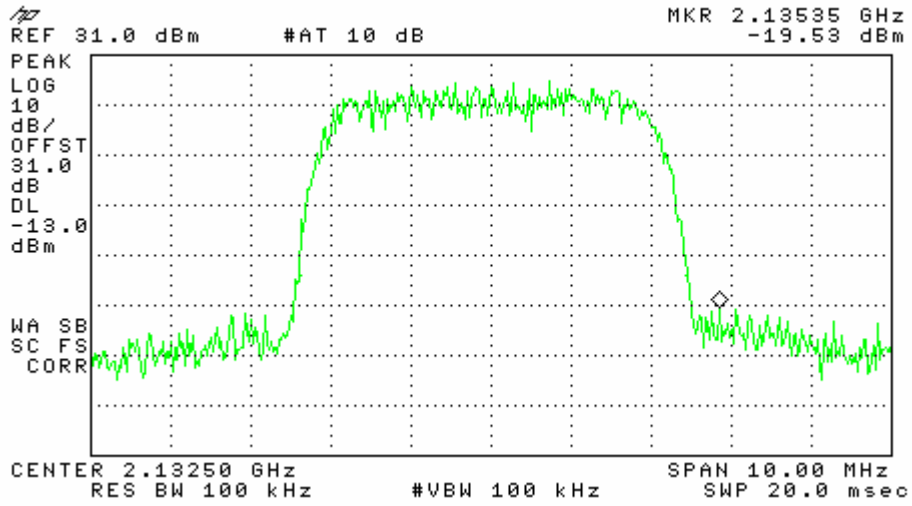
Test Data:

Conducted Emissions
Intermodulation Test
Occupied Bandwidth

Date: 20 November, 2009

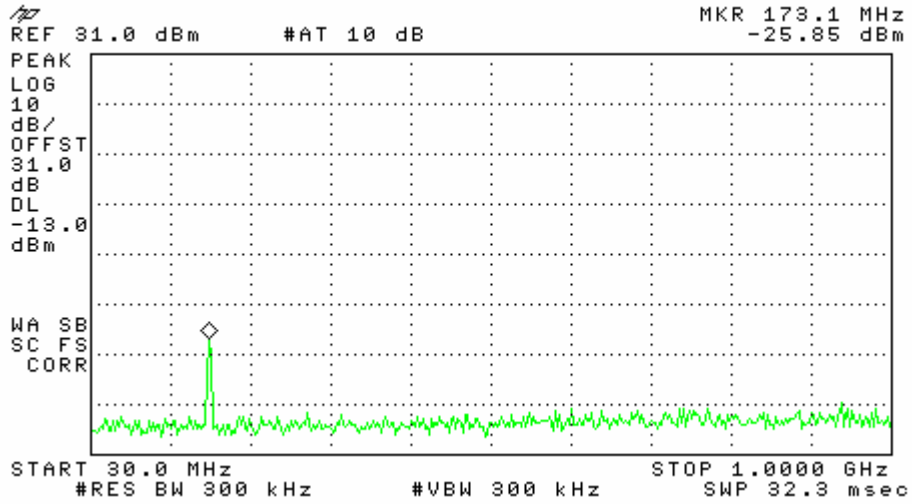
Below

Conducted Emissions WCDMA AWS
 Center: 2132.5 MHz Span: 10 MHz RBW/VBW: 100 kHz



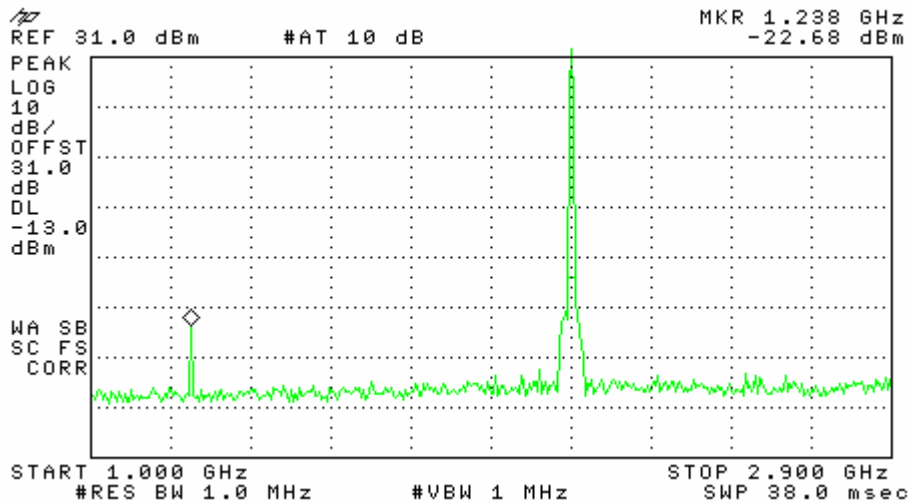
RL

Conducted Emissions WCDMA AWS
 Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



RL

Conducted Emissions WCDMA AWS
 Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz



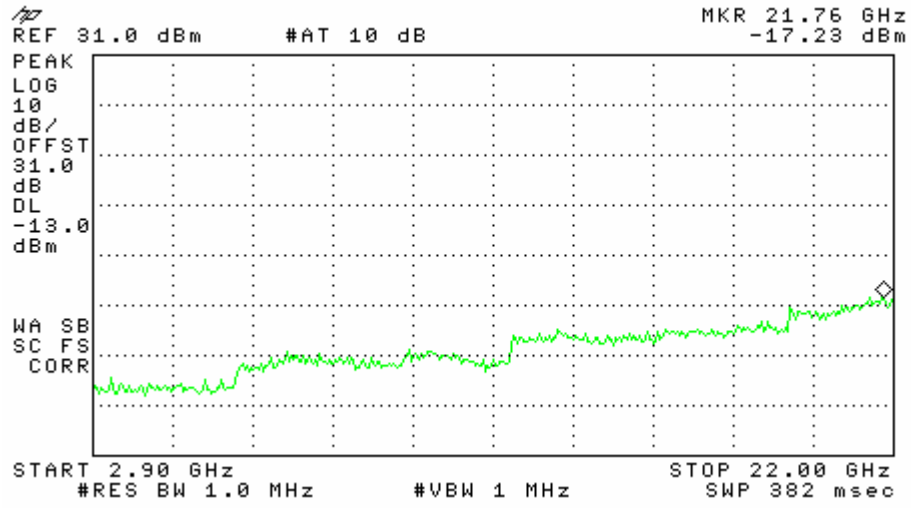
RL

Conducted Emissions
Span: 2.9 GHz to 22 GHz

WCDMA

AWS

RBW/VBW: 1 MHz

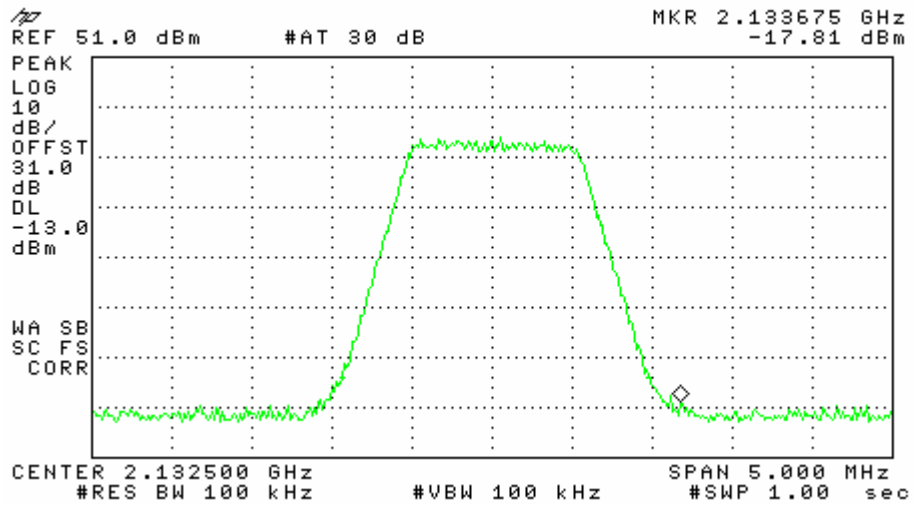


RL

Conducted Emissions
Center: 2132.5 MHz

LTE 1.4 MHz Channel Bandwidth
Span: 5 MHz

AWS
RBW/VBW: 100 kHz

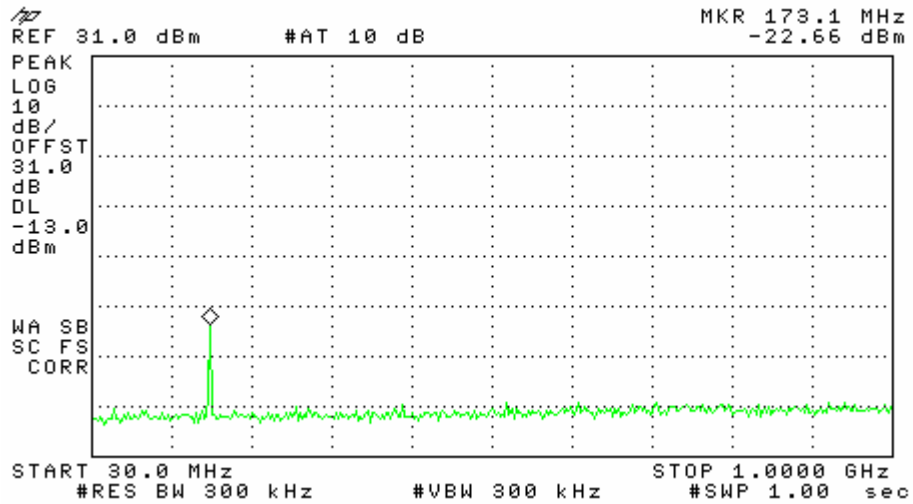


RL

Conducted Emissions
Span: 30 MHz to 1 GHz

LTE 1.4 MHz Channel Bandwidth
RBW/VBW: 300 kHz

AWS

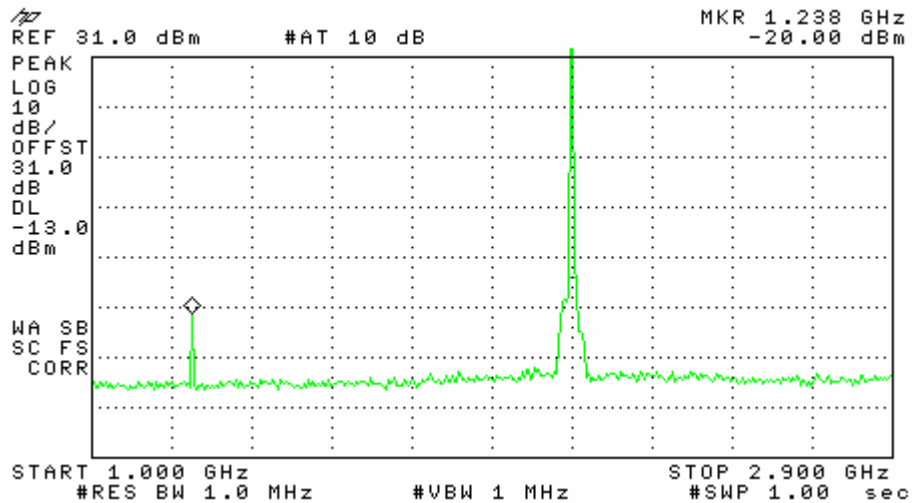


RL

Conducted Emissions
Span: 1 GHz to 2.9GHz

LTE 1.4 MHz Channel Bandwidth
RBW/VBW: 1 MHz

AWS



RL

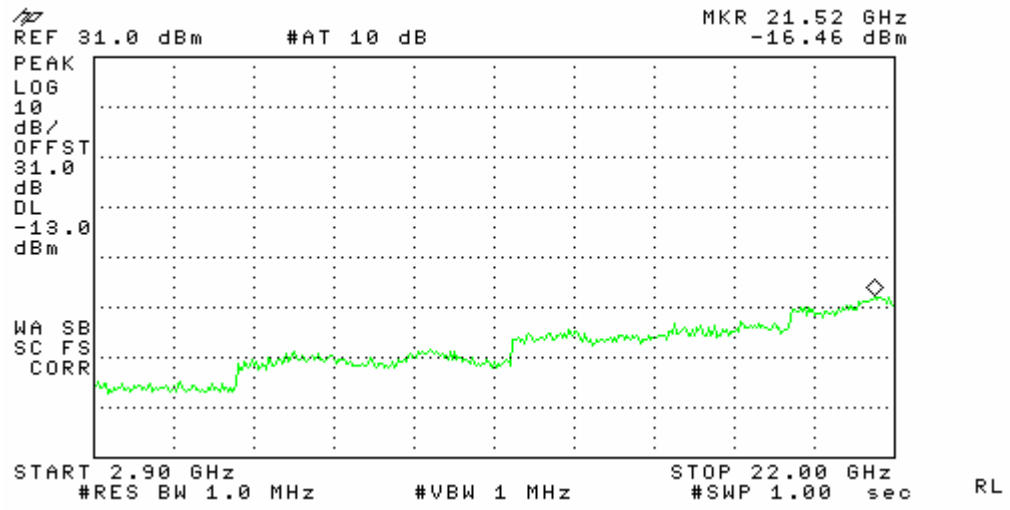
Conducted Emissions

LTE 1.4 MHz Channel Bandwidth

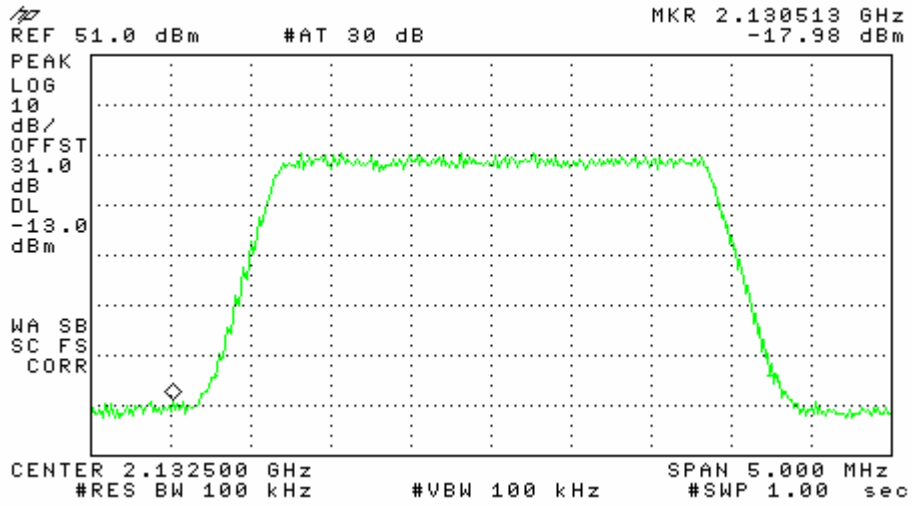
AWS

Span: 2.9 GHz to 22 GHz

RBW/VBW: 1 MHz



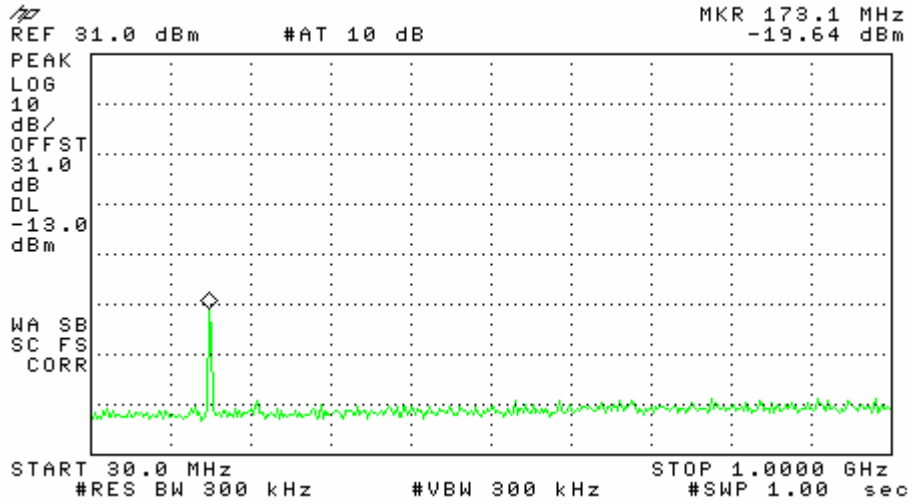
Conducted Emissions AWS
Center: 2132.5 MHz Span: 5 MHz RBW/VBW: 100 kHz



RL

Conducted Emissions LTE 3 MHz Channel Bandwidth
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz

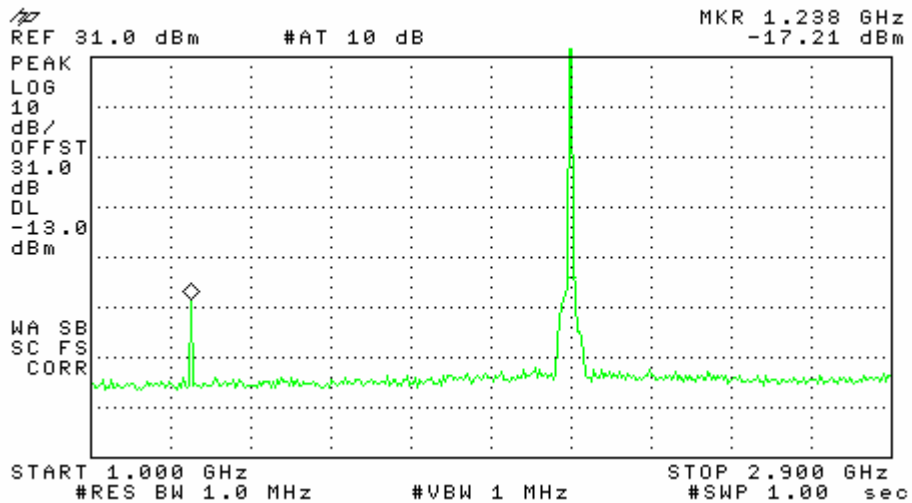
AWS



RL

Conducted Emissions LTE 3 MHz Channel Bandwidth
Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz

AWS



RL

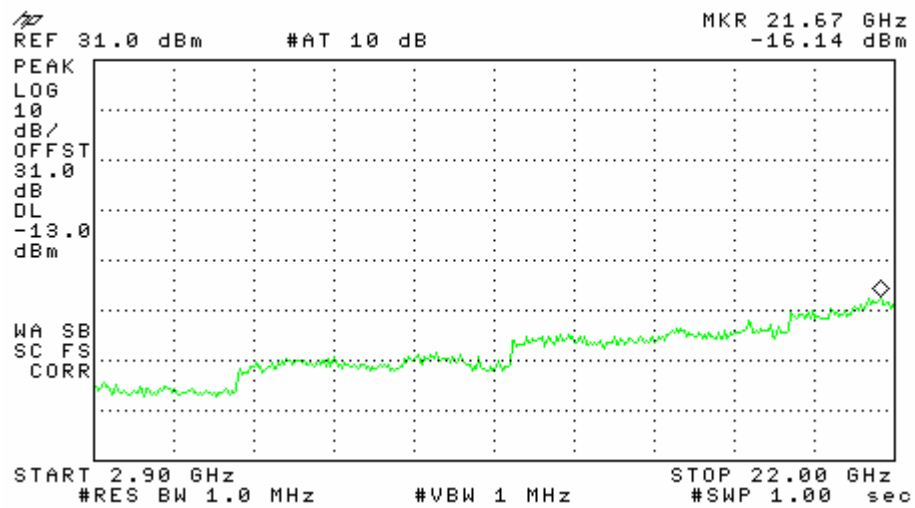
Conducted Emissions

LTE 3 MHz Channel Bandwidth

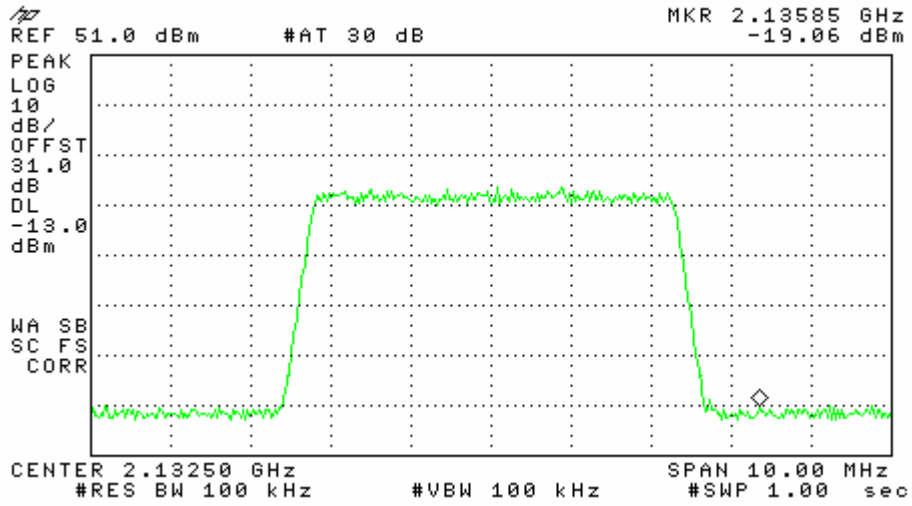
AWS

Span: 2.9 GHz to 22 GHz

RBW/VBW: 1 MHz



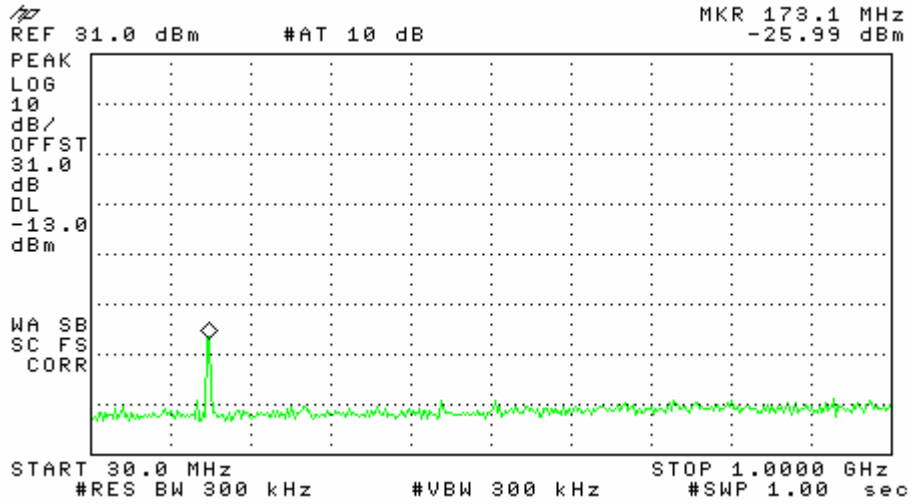
Conducted Emissions AWS
Center: 2132.5 MHz Span: 10 MHz RBW/VBW: 100 kHz



RL

Conducted Emissions LTE 5 MHz Channel Bandwidth
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz

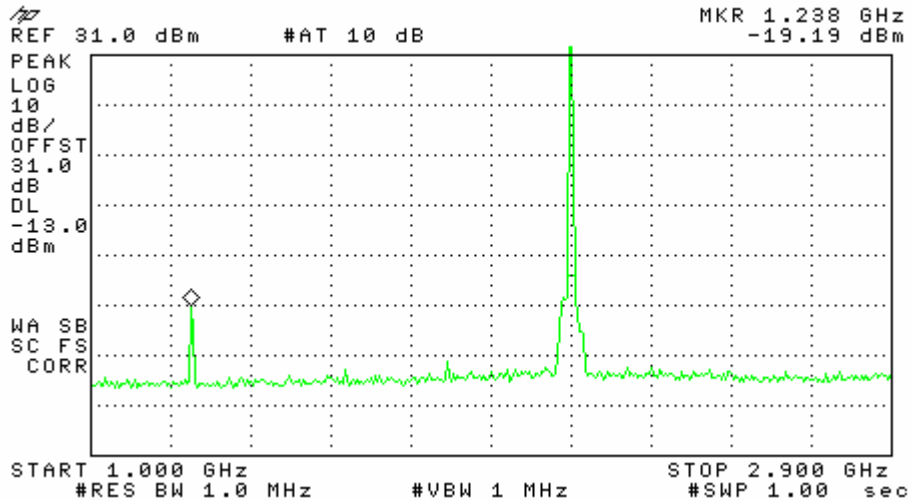
AWS



RL

Conducted Emissions LTE 5 MHz Channel Bandwidth
Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz

AWS



RL

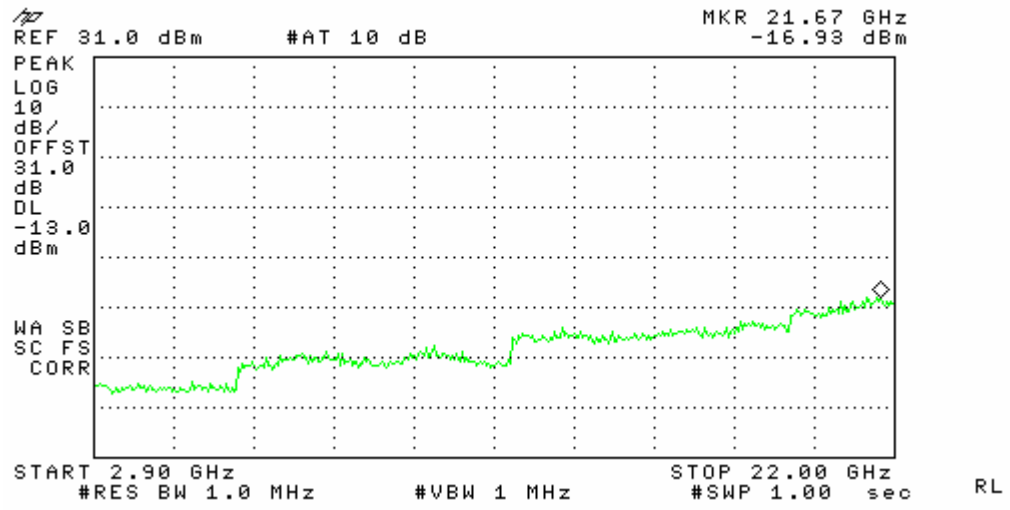
Conducted Emissions

LTE 5 MHz Channel Bandwidth

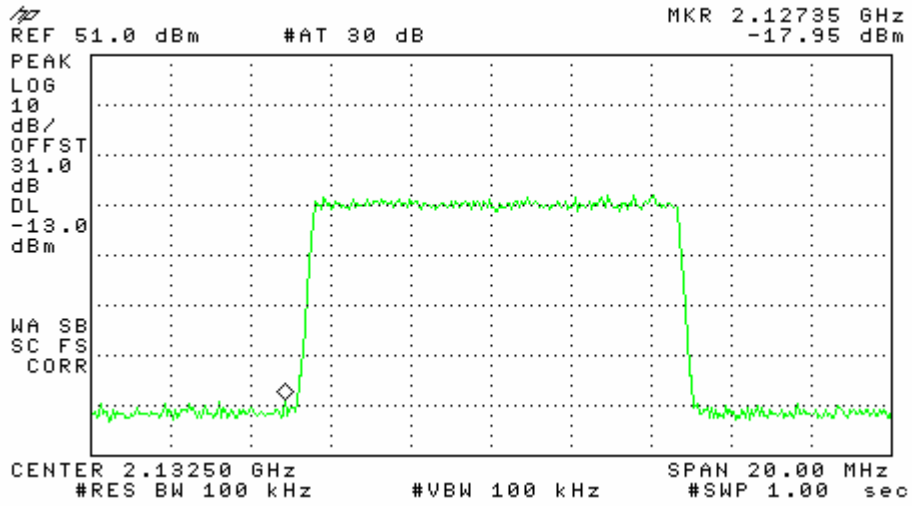
AWS

Span: 2.9 GHz to 22 GHz

RBW/VBW: 1 MHz



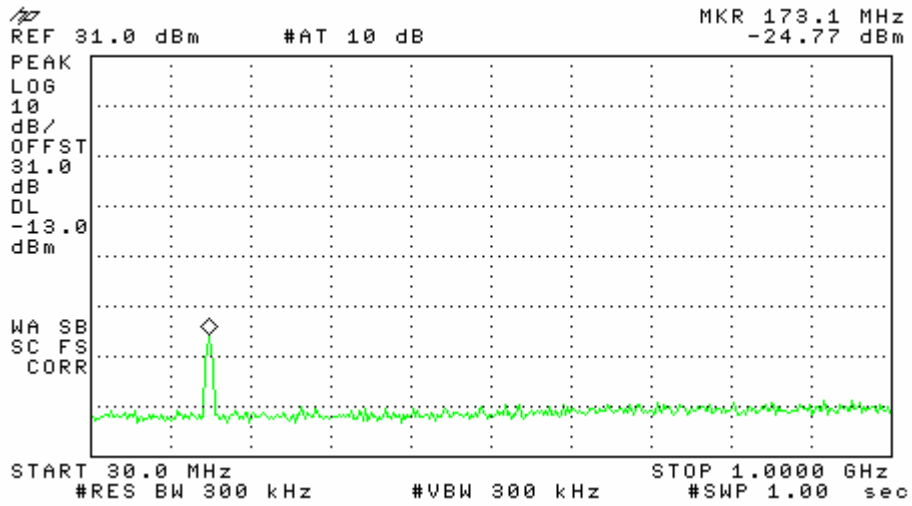
Conducted Emissions AWS
Center: 2132.5 MHz Span: 20MHz RBW/VBW: 100 kHz



RL

Conducted Emissions LTE 10 MHz Channel Bandwidth
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz

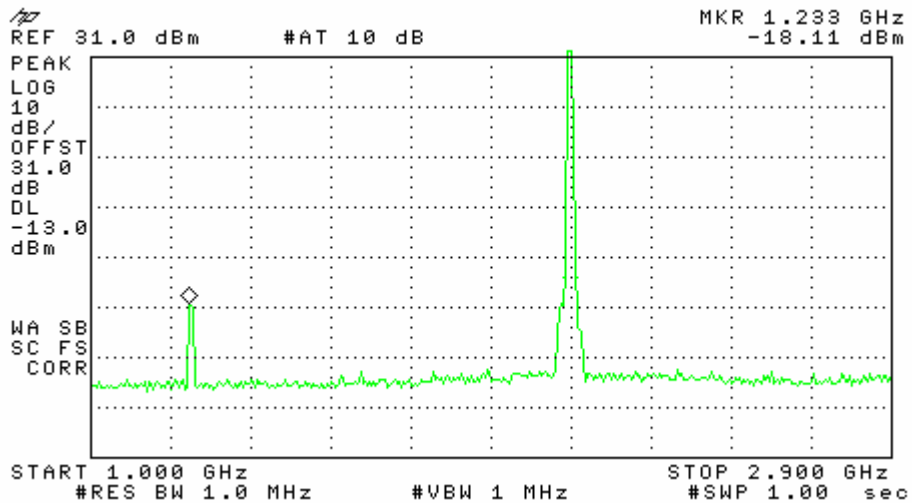
AWS



RL

Conducted Emissions LTE 10 MHz Channel Bandwidth
Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz

AWS



RL

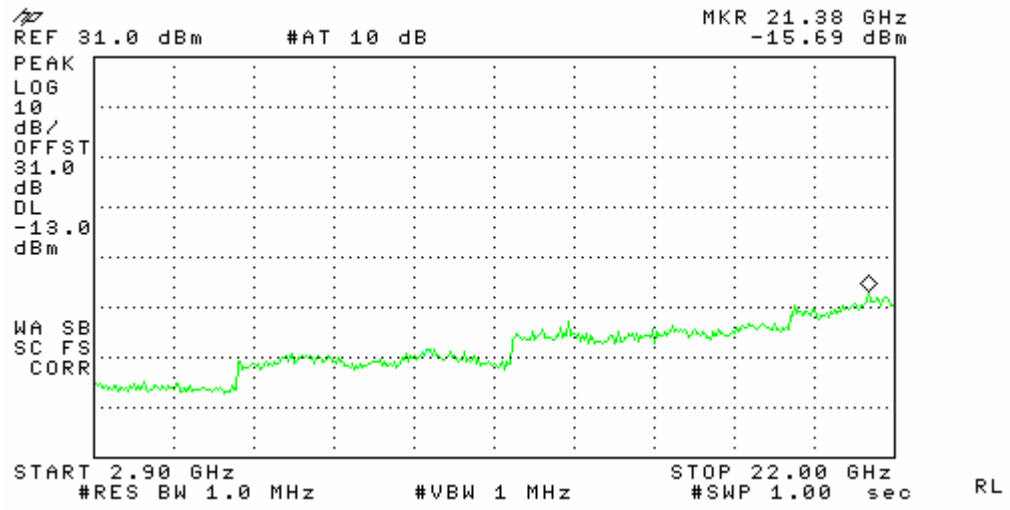
Conducted Emissions

LTE 10 MHz Channel Bandwidth

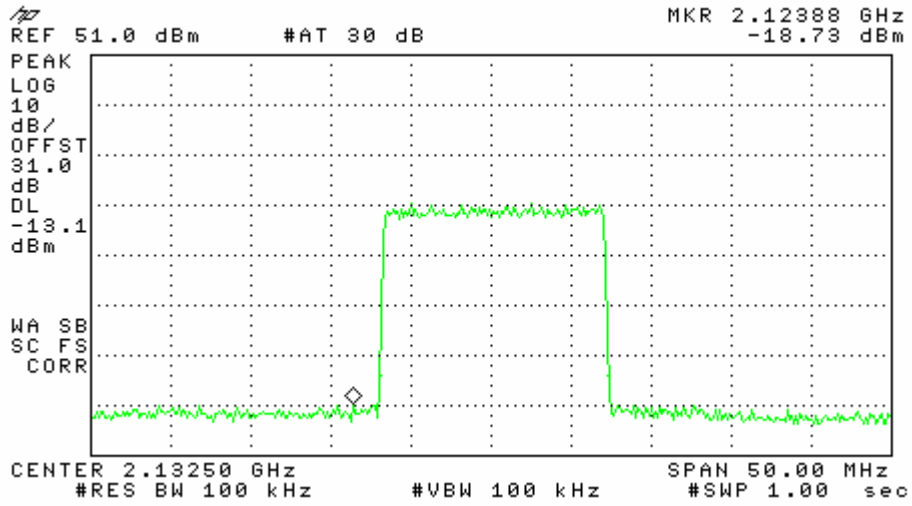
AWS

Span: 2.9 GHz to 22 GHz

RBW/VBW: 1 MHz



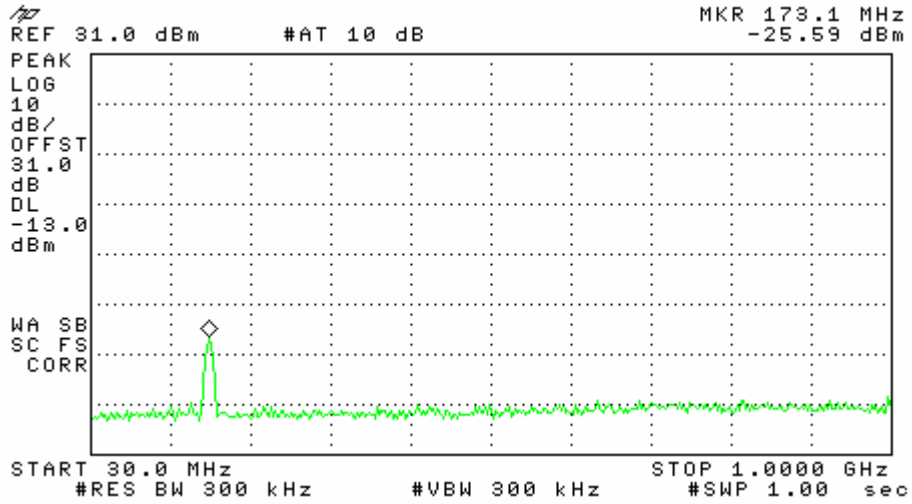
Conducted Emissions AWS
Center: 2132.5 MHz Span: 50 MHz RBW/VBW: 100 kHz



RL

Conducted Emissions LTE 15 MHz Channel Bandwidth
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz

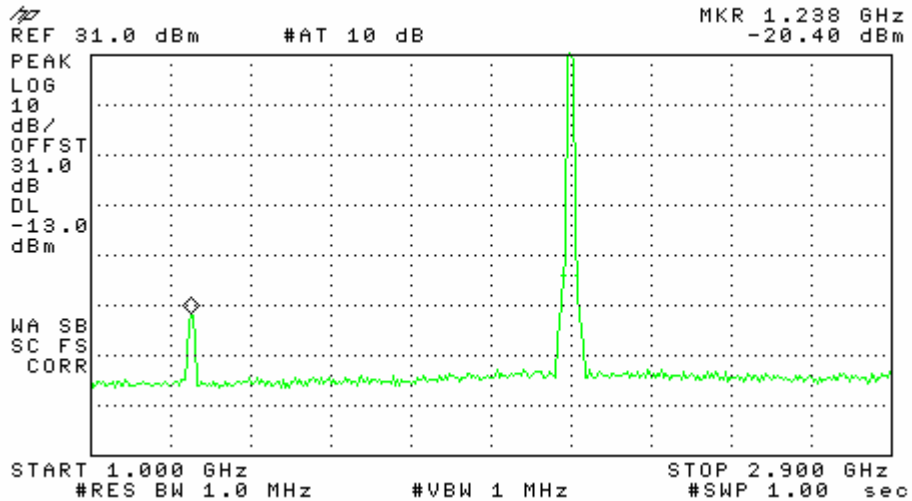
AWS



RL

Conducted Emissions LTE 15 MHz Channel Bandwidth
Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz

AWS



RL

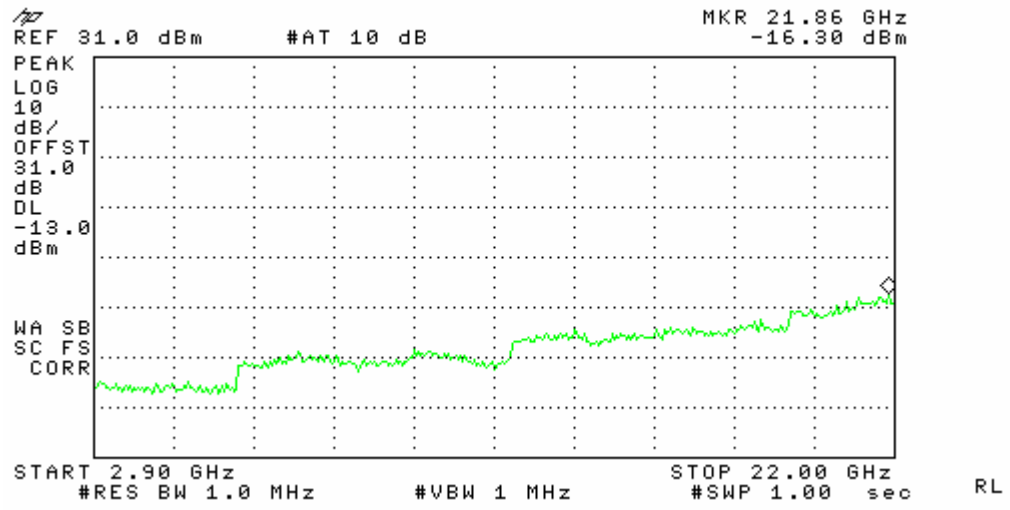
Conducted Emissions

LTE 15 MHz Channel Bandwidth

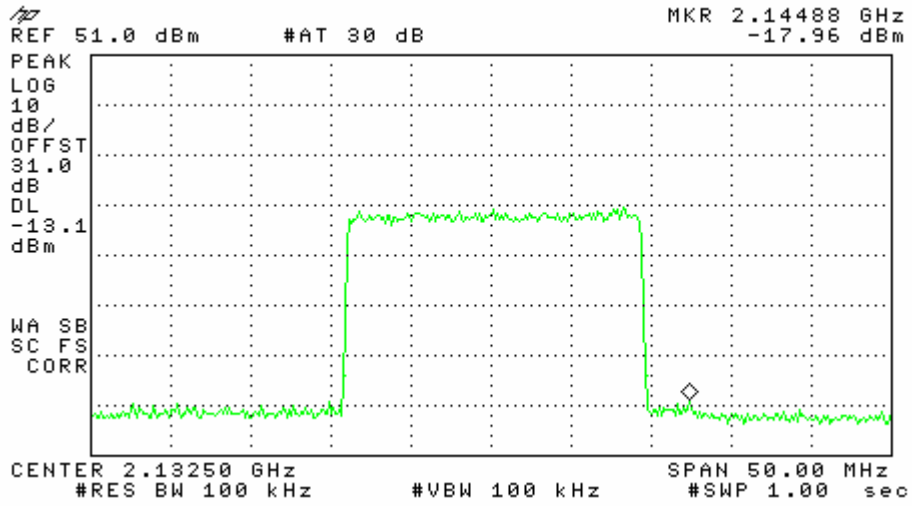
AWS

Span: 2.9 GHz to 22 GHz

RBW/VBW: 1 MHz



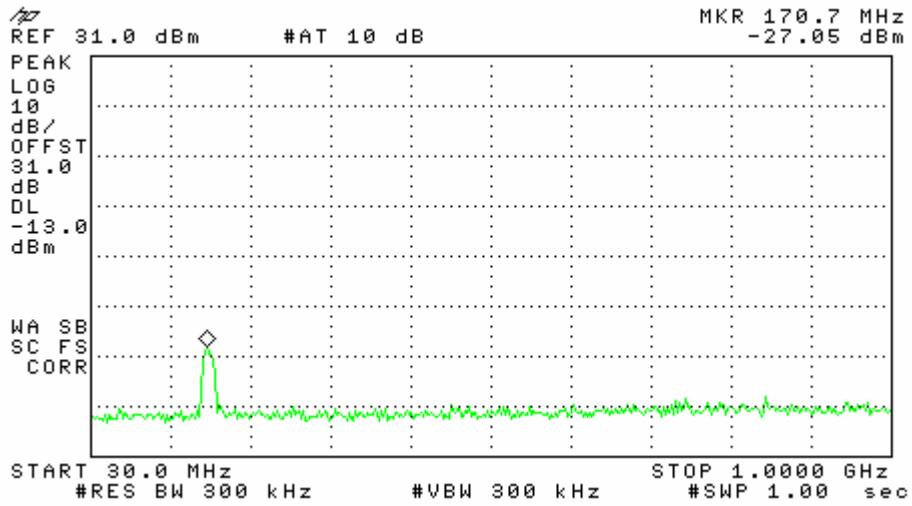
Conducted Emissions AWS
Center: 2132.5 MHz Span: 50MHz RBW/VBW: 100 kHz



RL

Conducted Emissions LTE 20 MHz Channel Bandwidth
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz

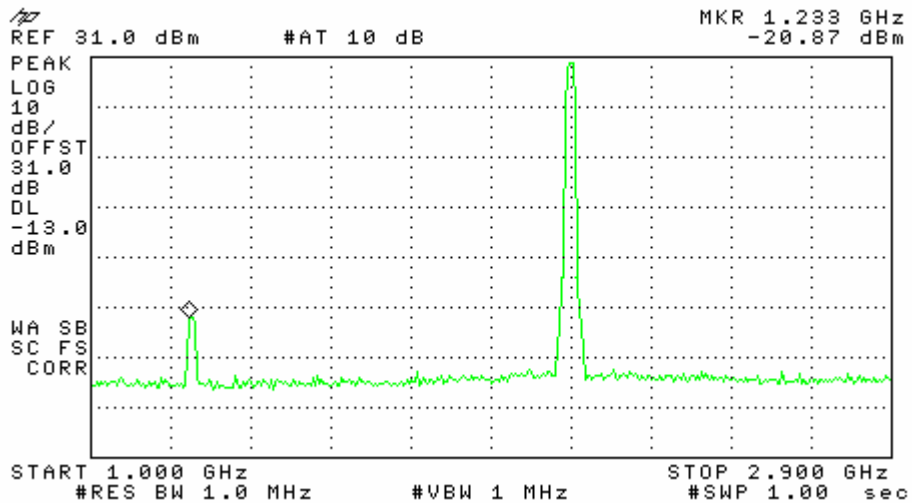
AWS



RL

Conducted Emissions LTE 20 MHz Channel Bandwidth
Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz

AWS



RL

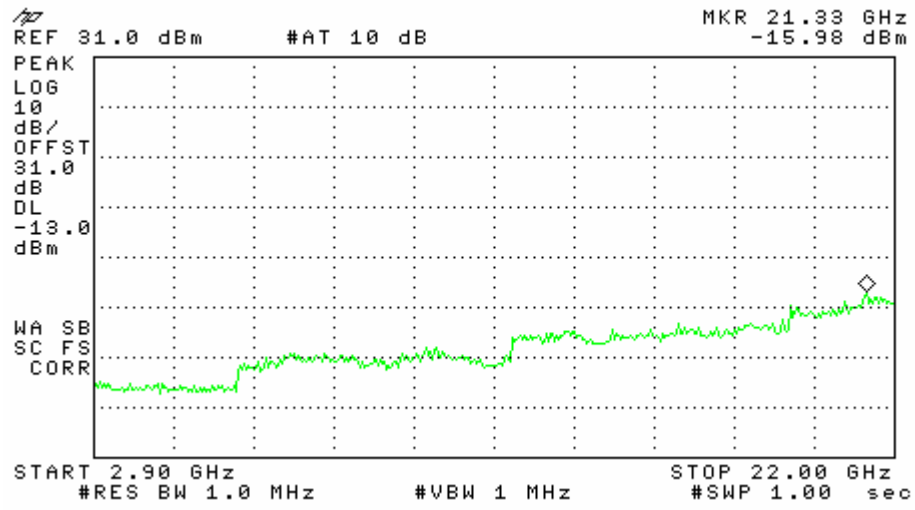
Conducted Emissions

LTE 20 MHz Channel Bandwidth

AWS

Span: 2.9 GHz to 22 GHz

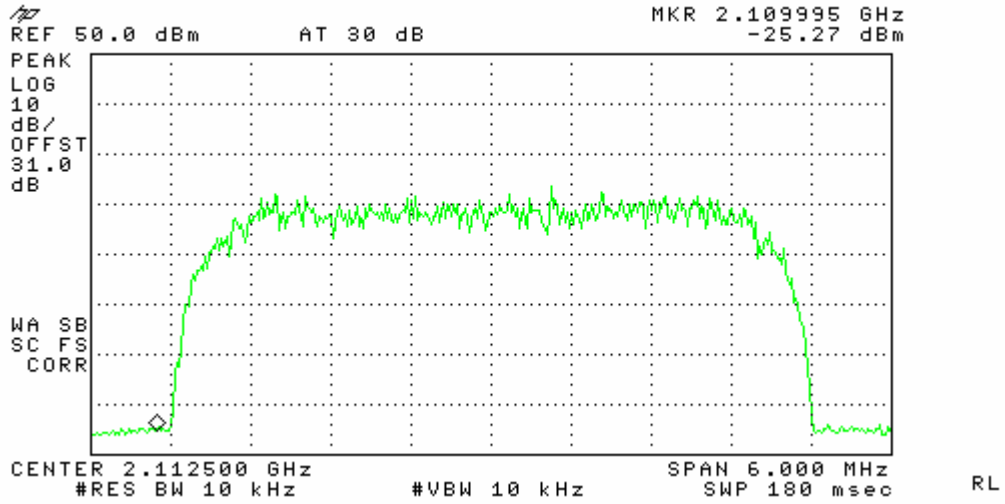
RBW/VBW: 1 MHz



RL

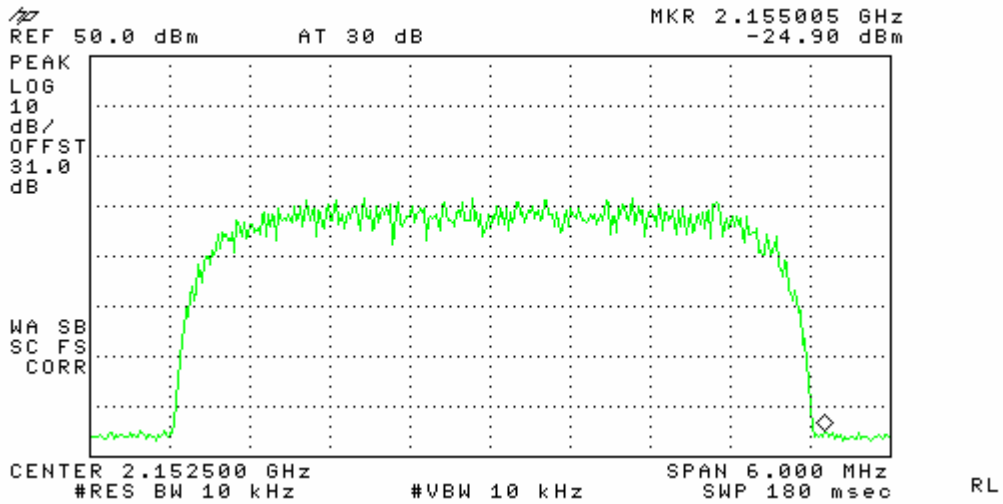
Band_Edge WCDMA
Center: 2112.5 MHz Span: 6 MHz

AWS
RBW: 10 kHz VBW: 10 kHz

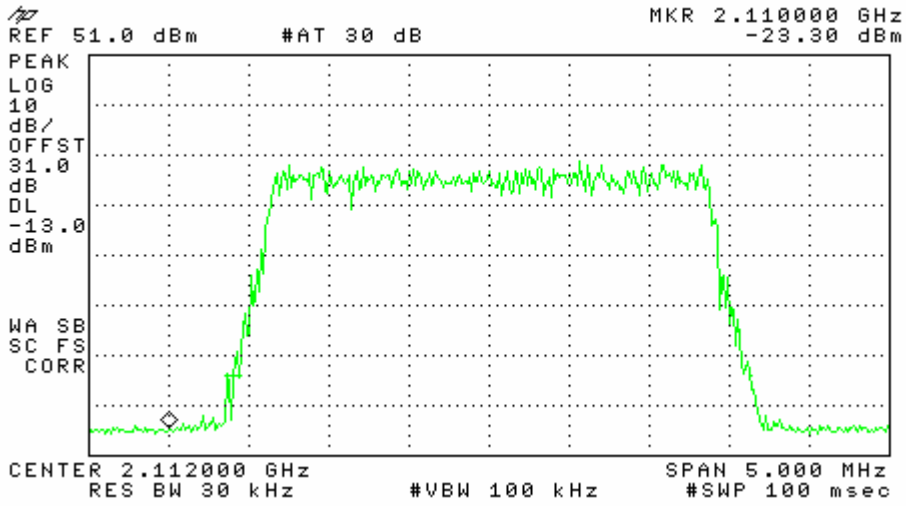


Band_Edge WCDMA
Center: 2152.5 MHz Span: 6 MHz

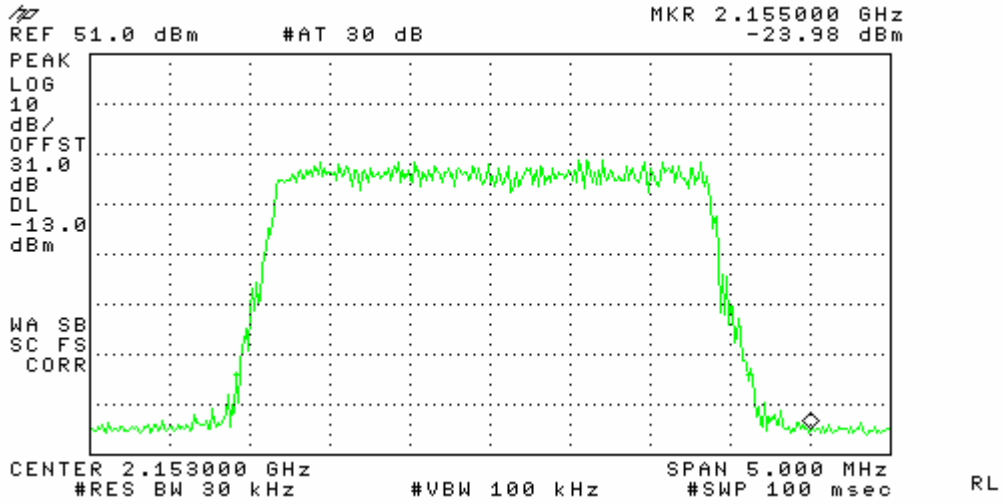
AWS
RBW: 10 kHz VBW: 10 kHz



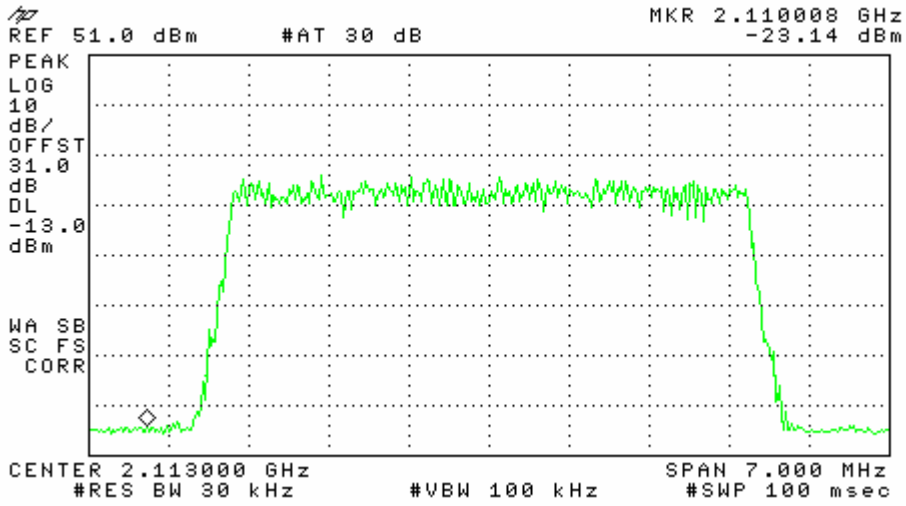
Band_Edge LTE 3 MHz Channel Bandwidth AWS
Center: 2112 MHz Span: 5 MHz RBW: 30 kHz VBW: 100 kHz



Band_Edge LTE 3MHz Channel Bandwidth AWS
Center: 2153 MHz Span: 5 MHz RBW: 30 kHz VBW: 100 kHz

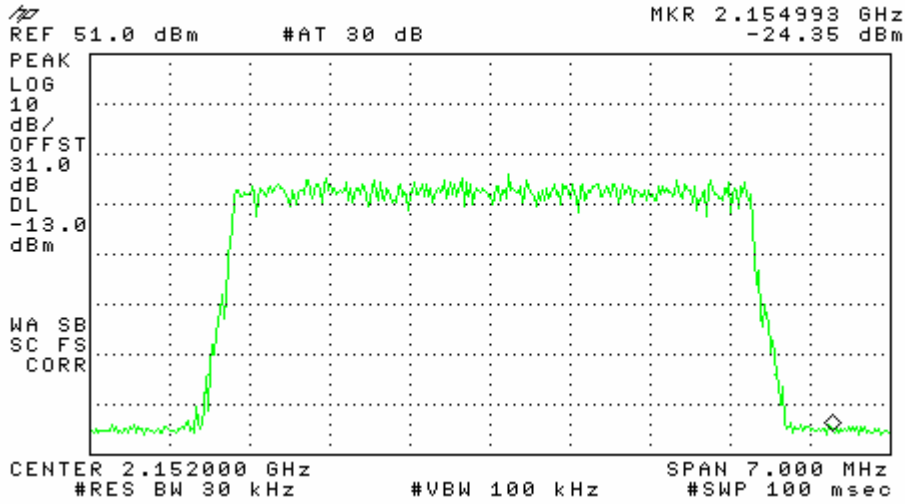


Band_Edge LTE 5 MHz Channel Bandwidth AWS
Center: 2113 MHz Span: 7 MHz RBW: 30 kHz VBW: 100 kHz



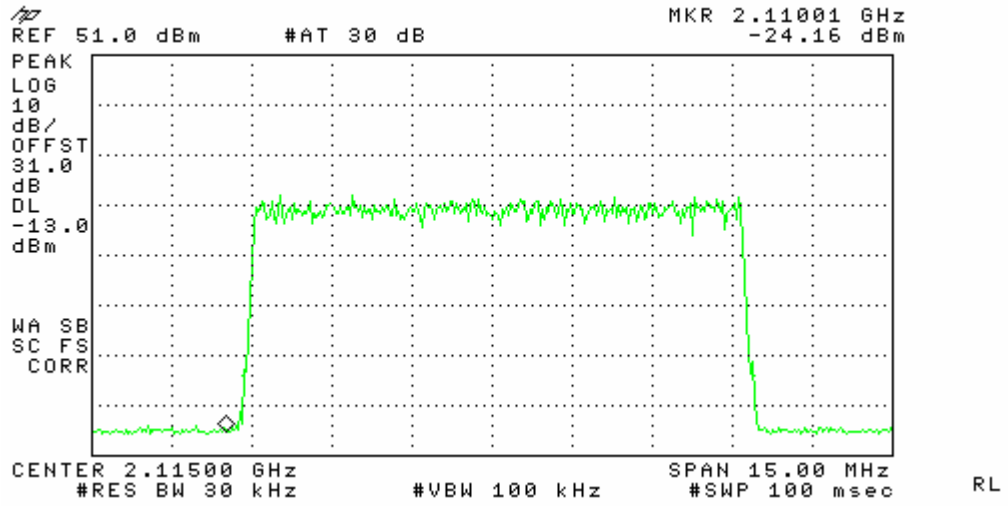
RL

Band_Edge LTE 5 MHz Channel Bandwidth AWS
Center: 2152 MHz Span: 7 MHz RBW: 30 kHz VBW: 100 kHz

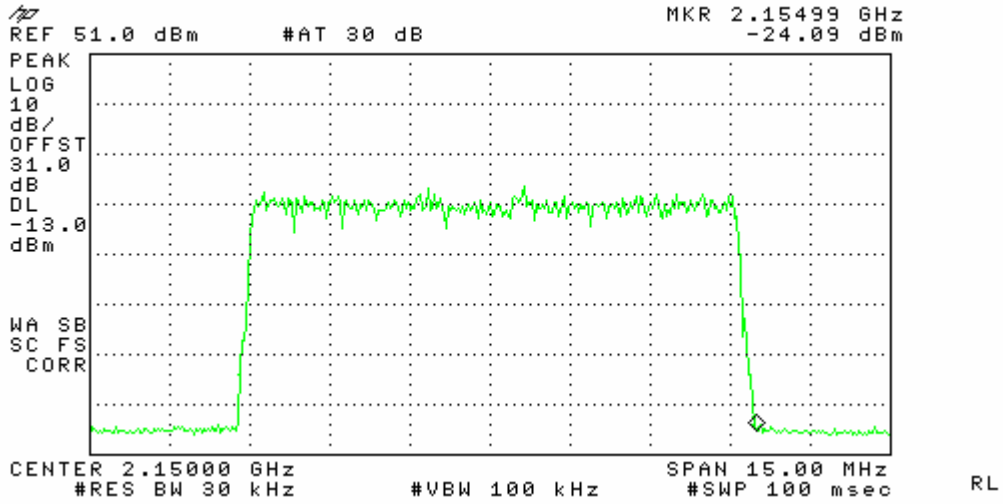


RL

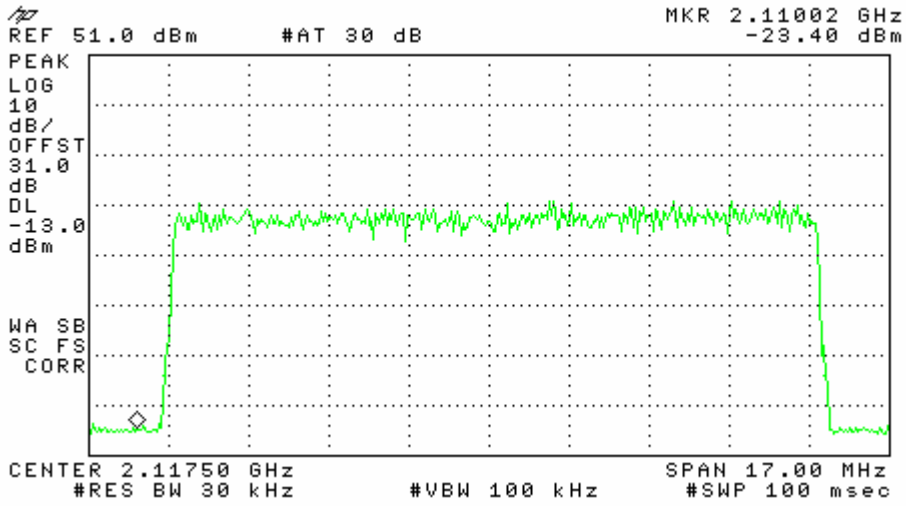
Band_Edge LTE 10 MHz Channel Bandwidth AWS
Center: 2115 MHz Span: 15 MHz RBW: 30 kHz VBW: 100 kHz



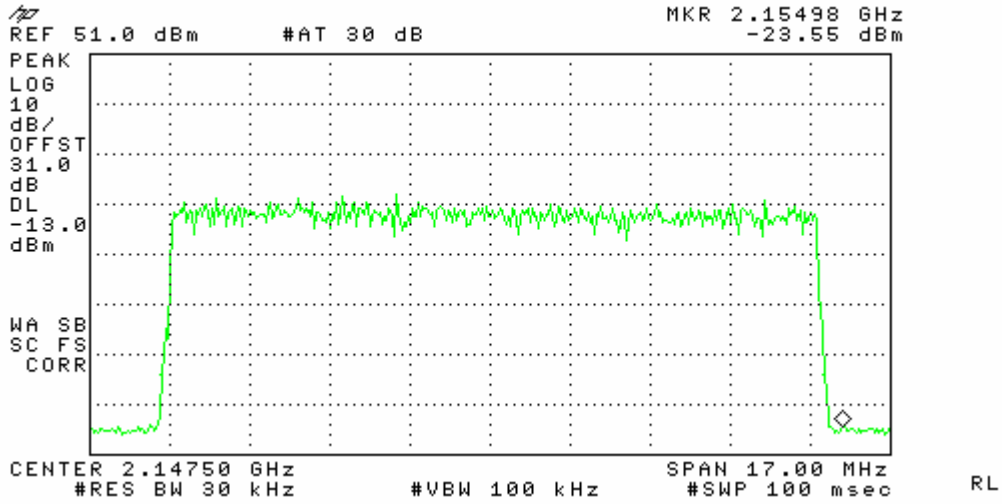
Band_Edge LTE 10 MHz Channel Bandwidth AWS
Center: 2150 MHz Span: 15 MHz RBW: 30 kHz VBW: 100 kHz



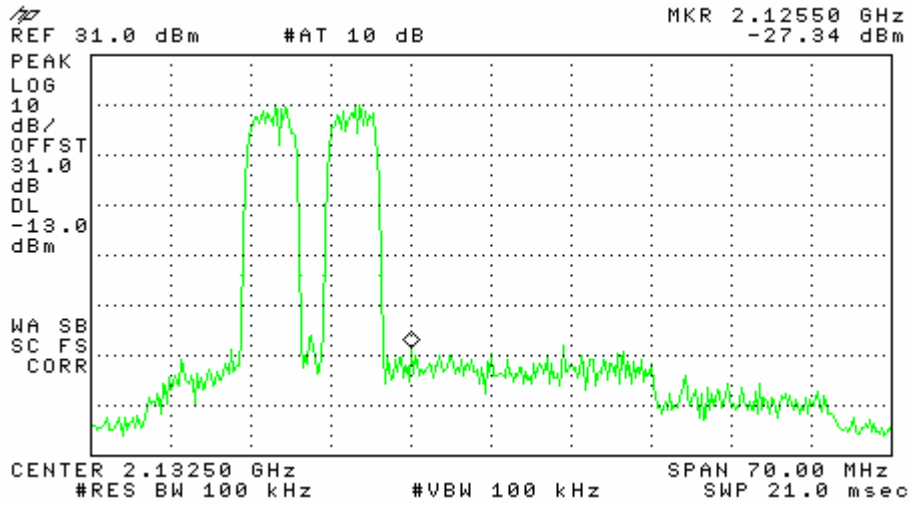
Band_Edge LTE 15 MHz Channel Bandwidth AWS
Center: 2117.5 MHz Span: 17 MHz RBW: 30 kHz VBW: 100 kHz



Band_Edge LTE 15 MHz Channel Bandwidth AWS
Center: 2147.5 MHz Span: 17 MHz RBW: 30 kHz VBW: 100 kHz

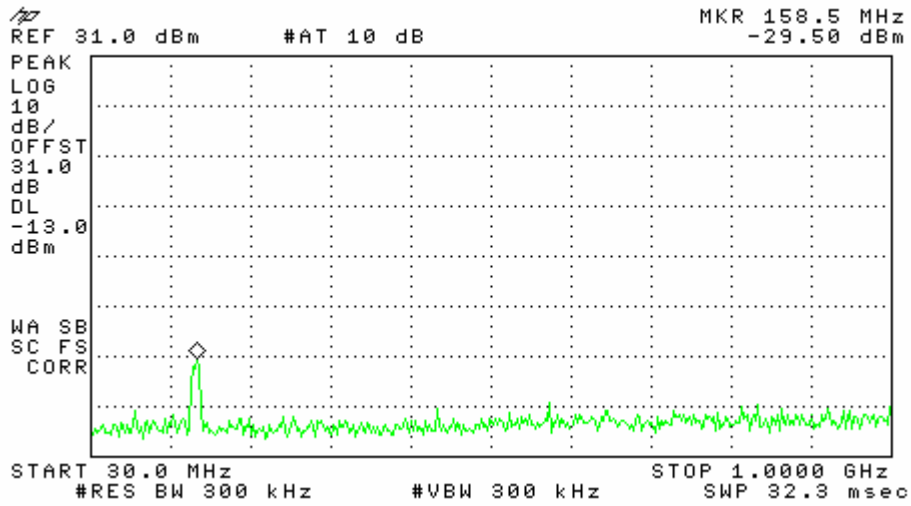


Intermodulation WCDMA_Low AWS ABCDE
Center: 2132.5 MHz Span: 70 MHz RBW/VBW: 100 kHz



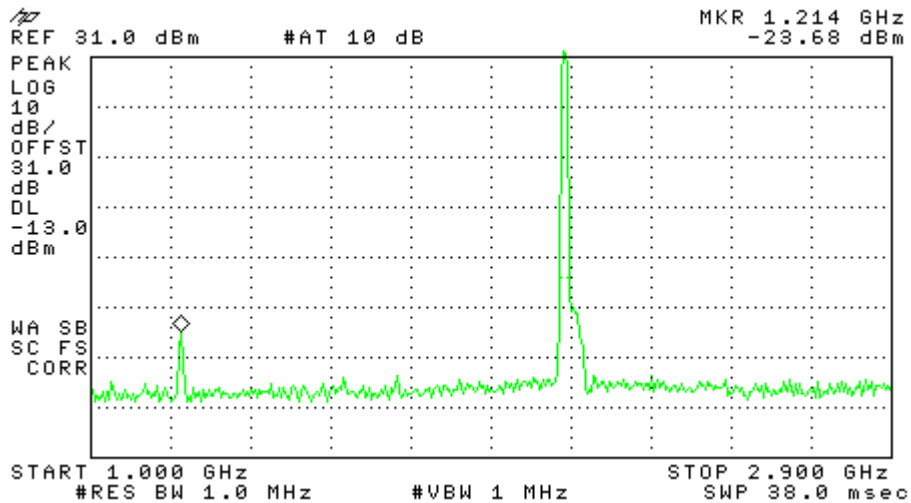
RL

Intermodulation WCDMA_Low AWS ABCDE
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



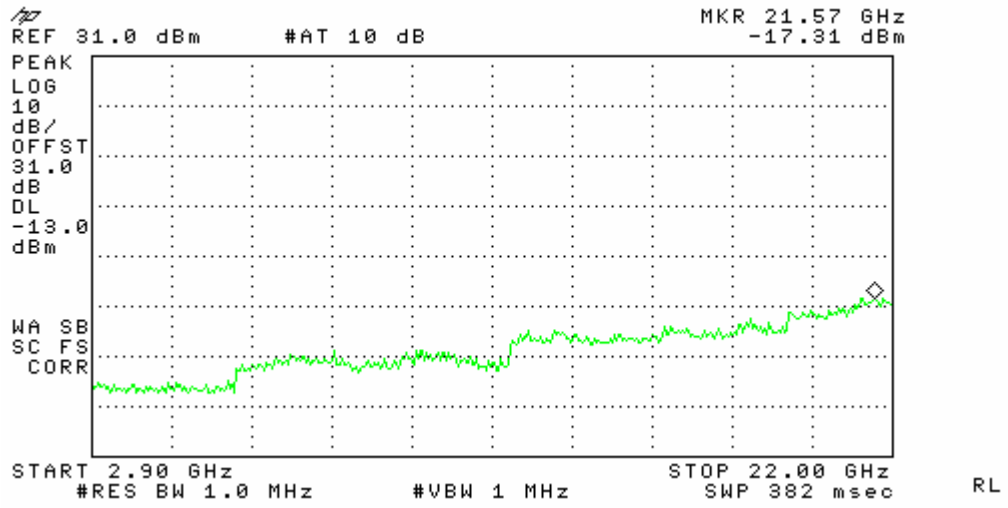
RL

Intermodulation WCDMA_Low AWS ABCDE
Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz



RL

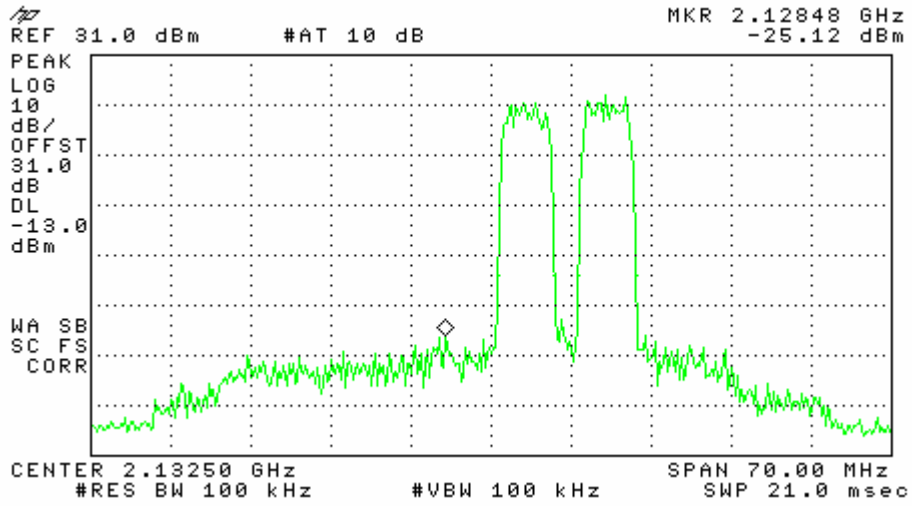
Intermodulation WCDMA_Low AWS ABCDE
Span: 2.9 GHz to 22 GHz RBW/VBW: 1 MHz



Intermodulation
Center: 2132.5 MHz

WCDMA_High
Span: 70 MHz

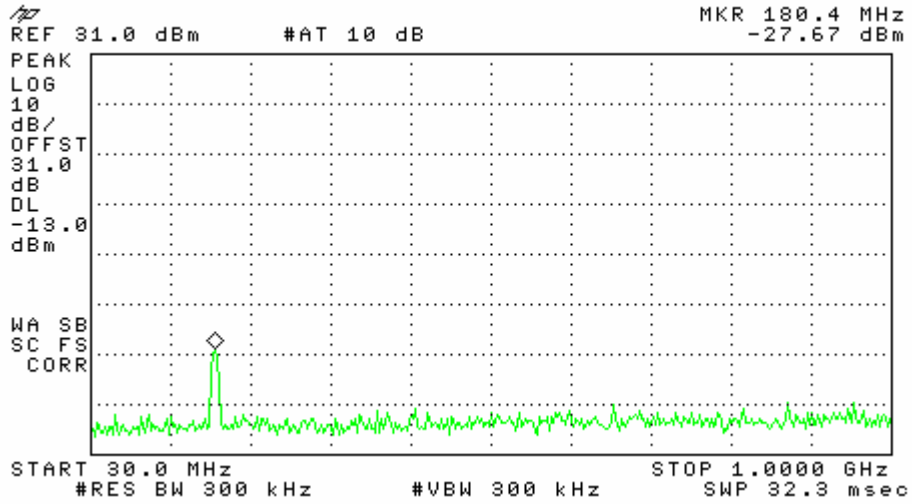
AWS ABCDE
RBW/VBW: 100 kHz



RL

Intermodulation
Span: 30 MHz to 1 GHz

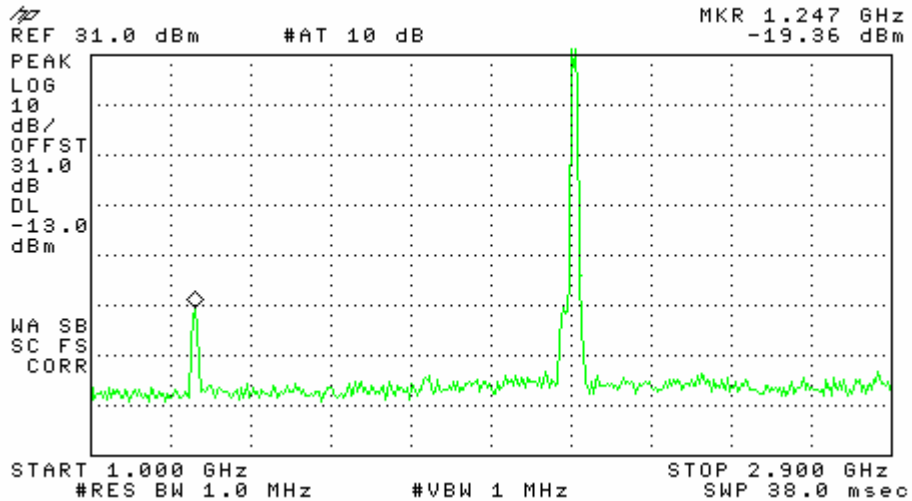
WCDMA_High AWS ABCDE
RBW/VBW: 300 kHz



RL

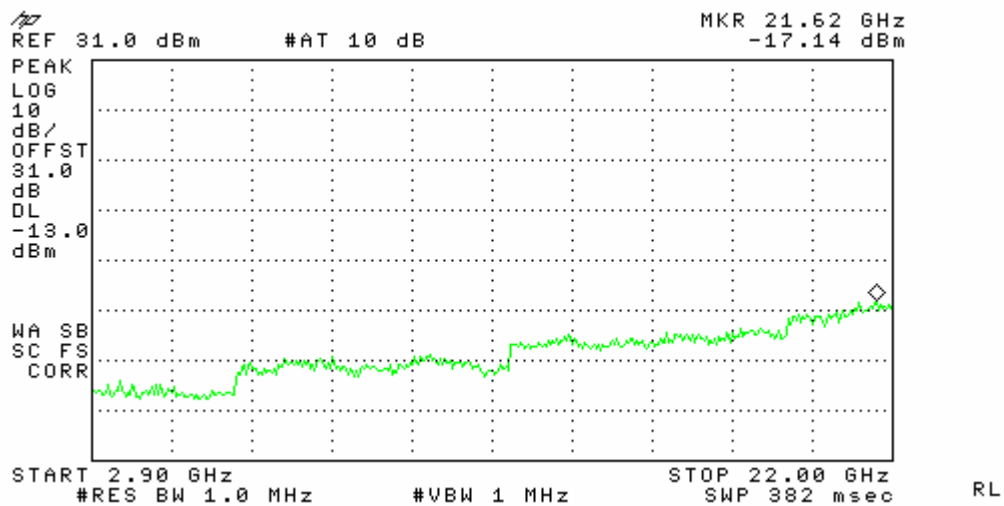
Intermodulation
Span: 1 GHz to 2.9 GHz

WCDMA_High AWS ABCDE
RBW/VBW: 1 MHz

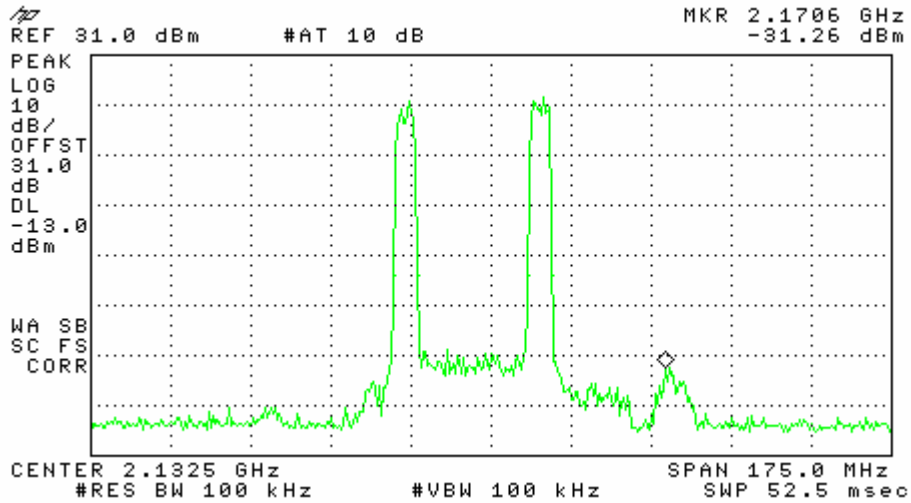


RL

Intermodulation WCDMA_High AWS ABCDE
Span: 2.9 GHz to 22 GHz RBW/VBW: 1 MHz

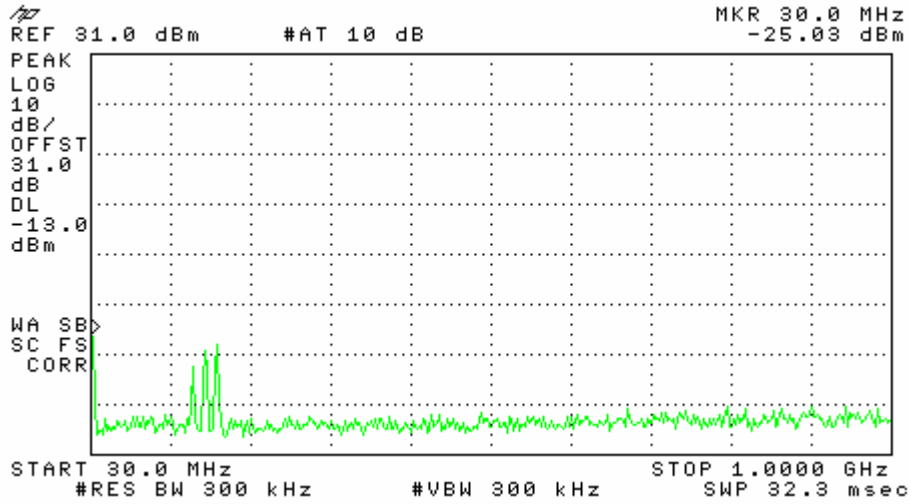


Intermodulation WCDMA_Apart AWS ABCDE
Center: 2132.5 MHz Span: 175 MHz RBW/VBW: 100 kHz



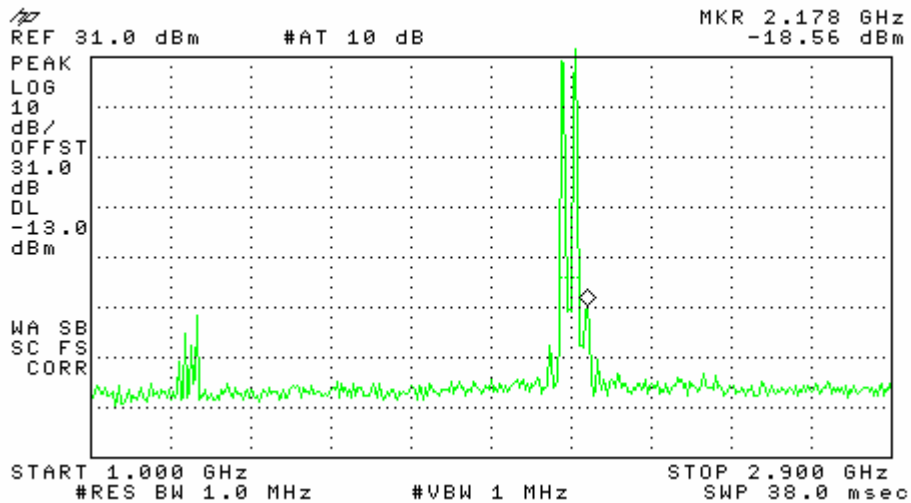
RL

Intermodulation WCDMA_Apart AWS ABCDE
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



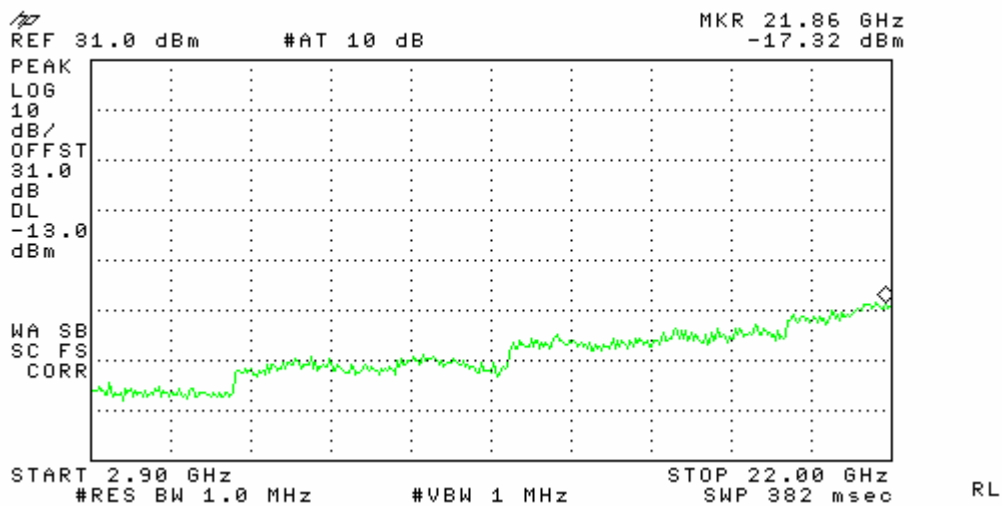
RL

Intermodulation WCDMA_Apart AWS ABCDE
Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz

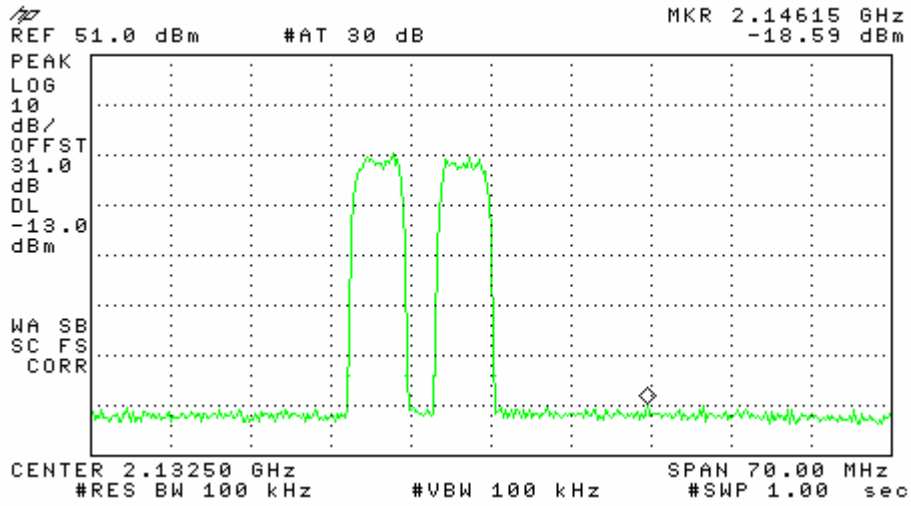


RL

Intermodulation WCDMA_Apart AWS ABCDE
Span: 2.9 GHz to 22 GHz RBW/VBW: 1 MHz

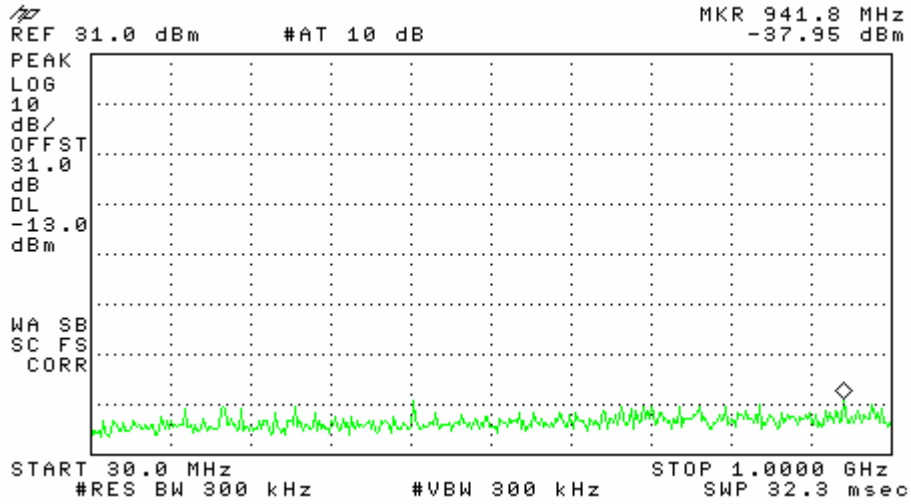


Intermodulation WCDMA_Low AWS BCDEF
Center: 2132.5 MHz Span: 70 MHz RBW/VBW: 100 kHz



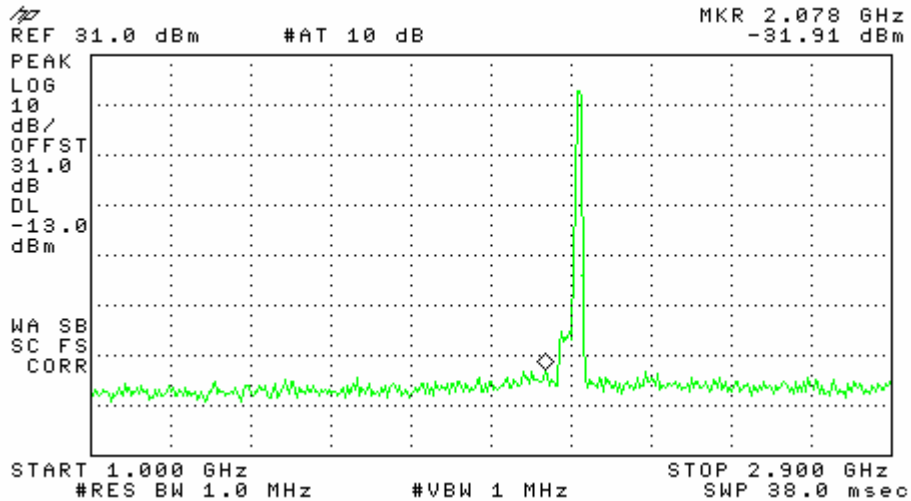
RL

Intermodulation WCDMA_Low AWS BCDEF
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



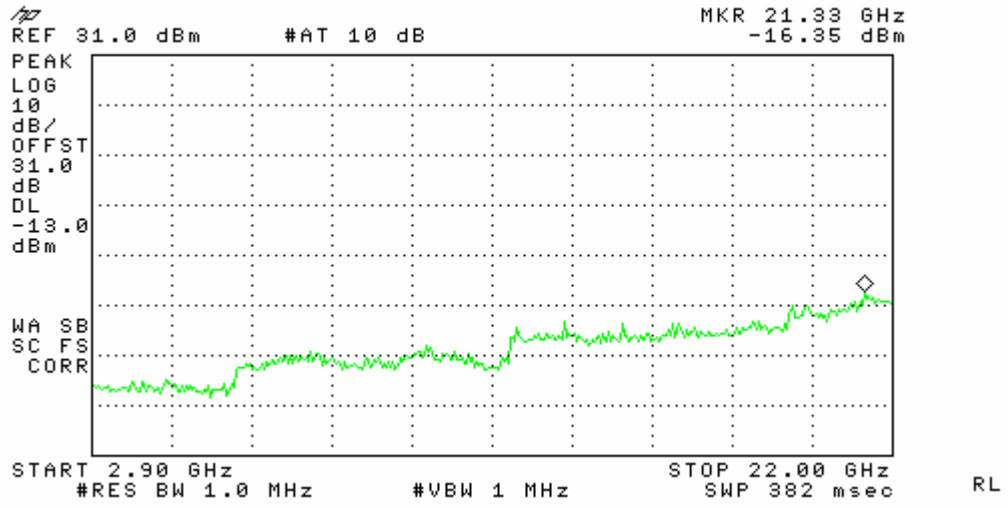
RL

Intermodulation WCDMA_Low AWS BCDEF
Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz



RL

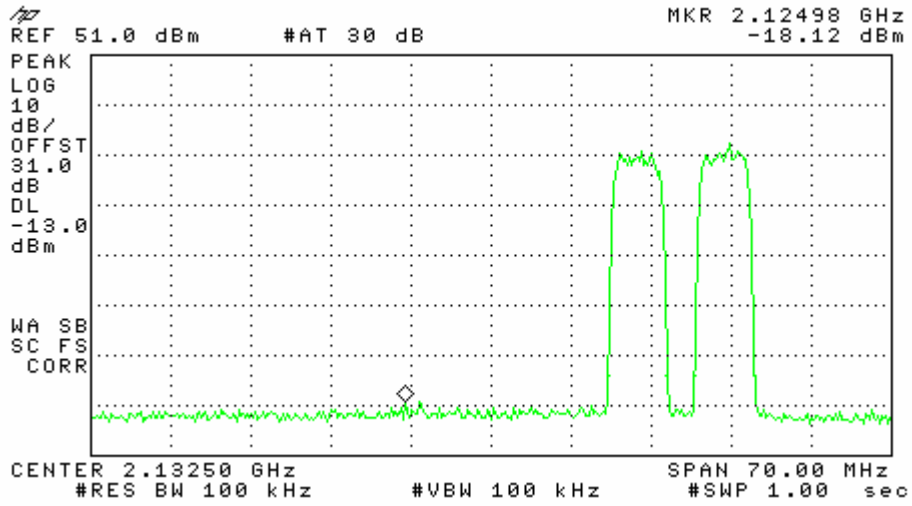
Intermodulation WCDMA_Low AWS BCDEF
Span: 2.9 GHz to 22 GHz RBW/VBW: 1 MHz



Intermodulation
Center: 2132.5 MHz

WCDMA_High
Span: 70 MHz

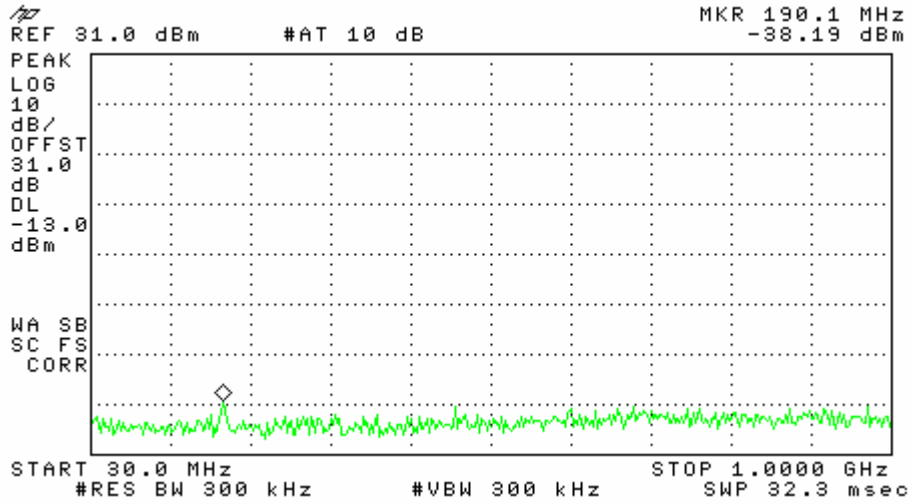
AWS BCDEF
RBW/VBW: 100 kHz



RL

Intermodulation
Span: 30 MHz to 1 GHz

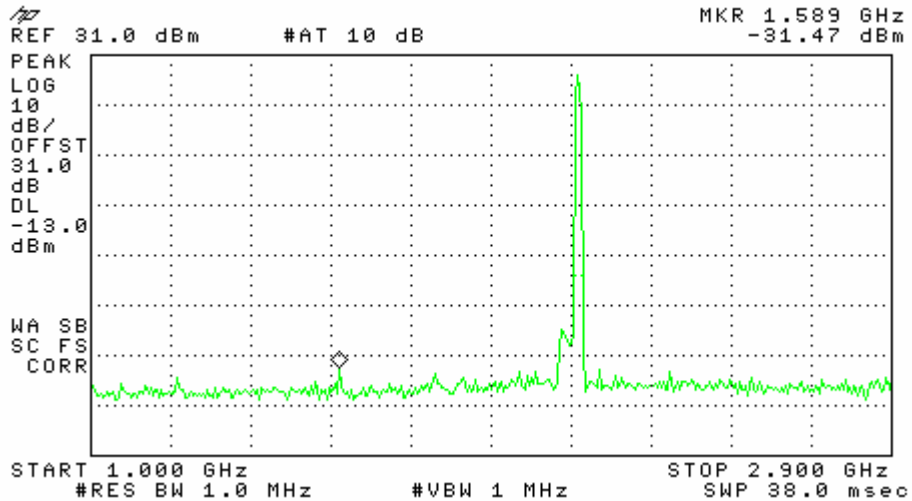
WCDMA_High AWS BCDEF
RBW/VBW: 300 kHz



RL

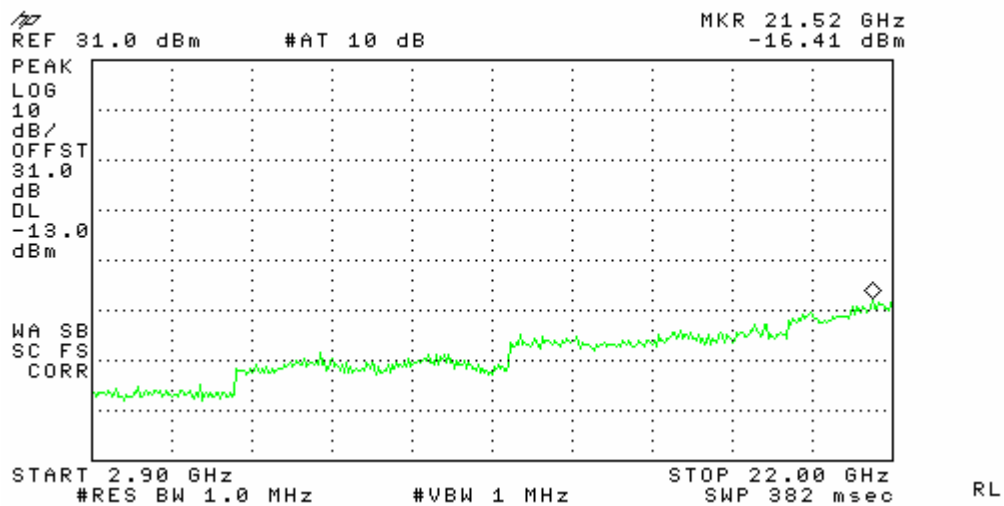
Intermodulation
Span: 1 GHz to 2.9 GHz

WCDMA_High AWS BCDEF
RBW/VBW: 1 MHz



RL

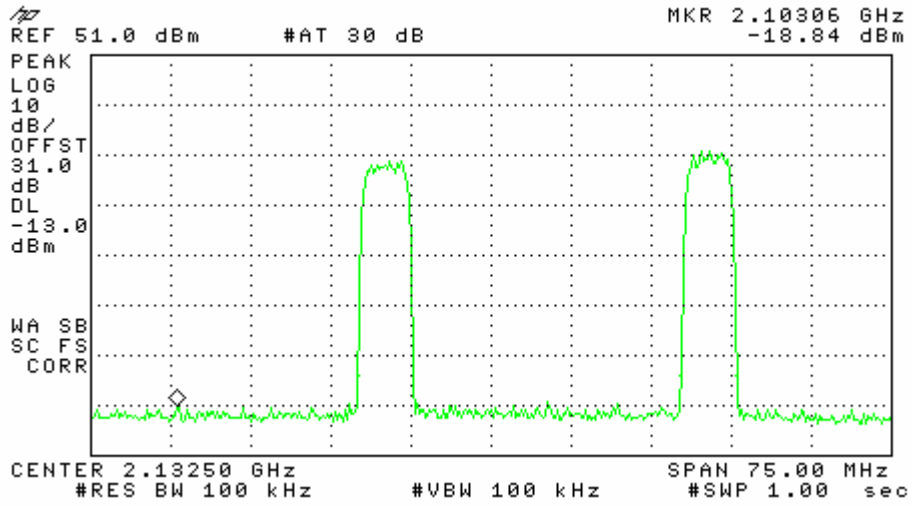
Intermodulation WCDMA_High AWS BCDEF
Span: 2.9 GHz to 22 GHz RBW/VBW: 1 MHz



Intermodulation
Center: 2132.5 MHz

WCDMA_Apart
Span: 75 MHz

AWS BCDEF
RBW/VBW: 100 kHz

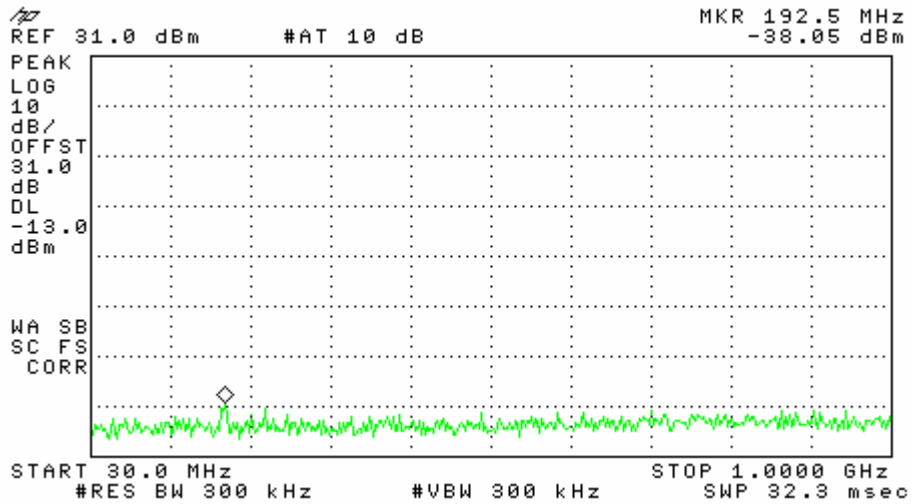


RL

Intermodulation
Span: 30 MHz to 1 GHz

WCDMA_Apart

AWS BCDEF
RBW/VBW: 300 kHz

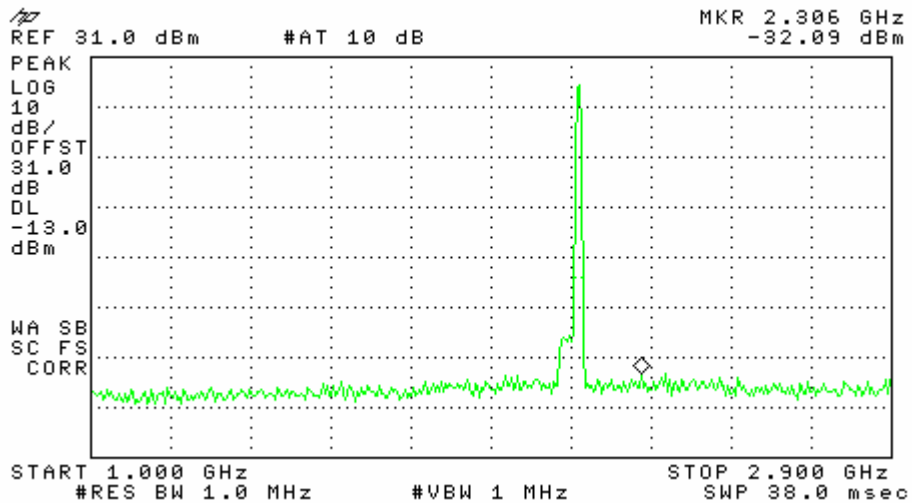


RL

Intermodulation
Span: 1 GHz to 2.9 GHz

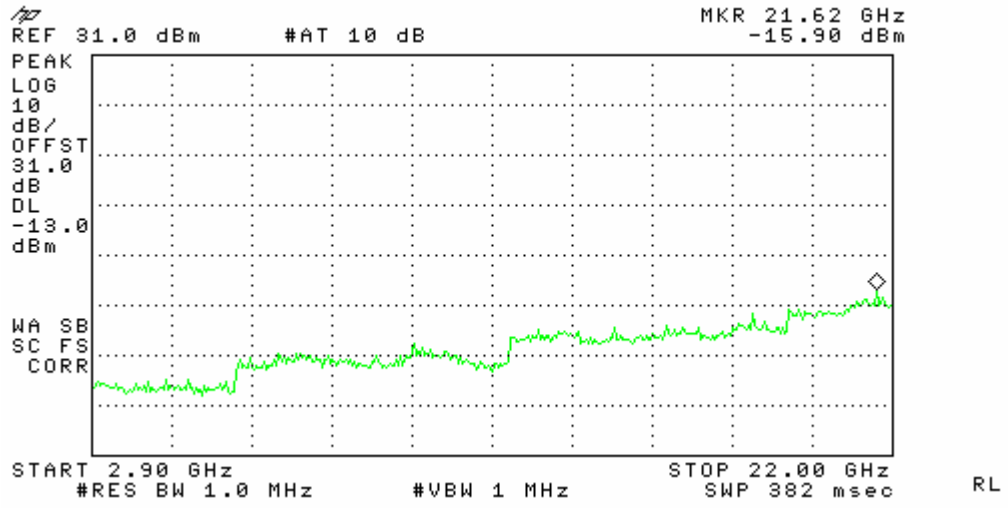
WCDMA_Apart

AWS BCDEF
RBW/VBW: 1 MHz

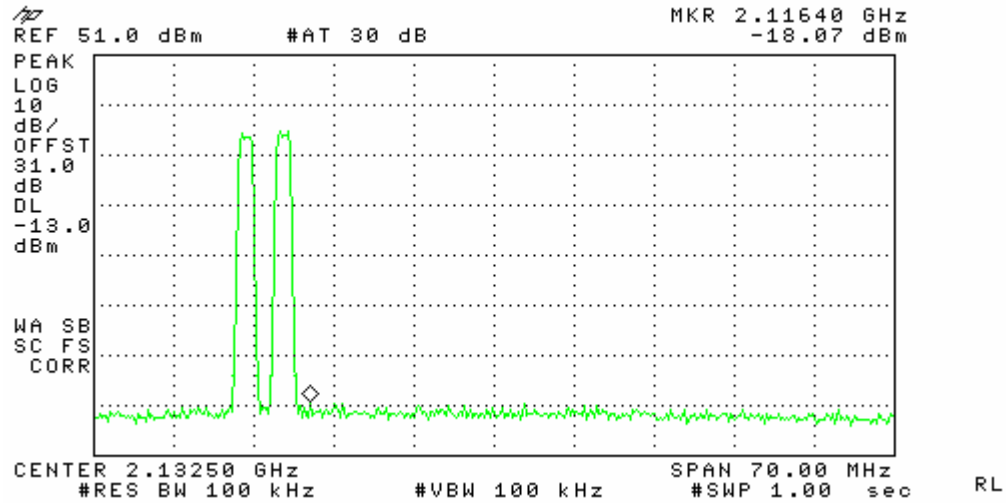


RL

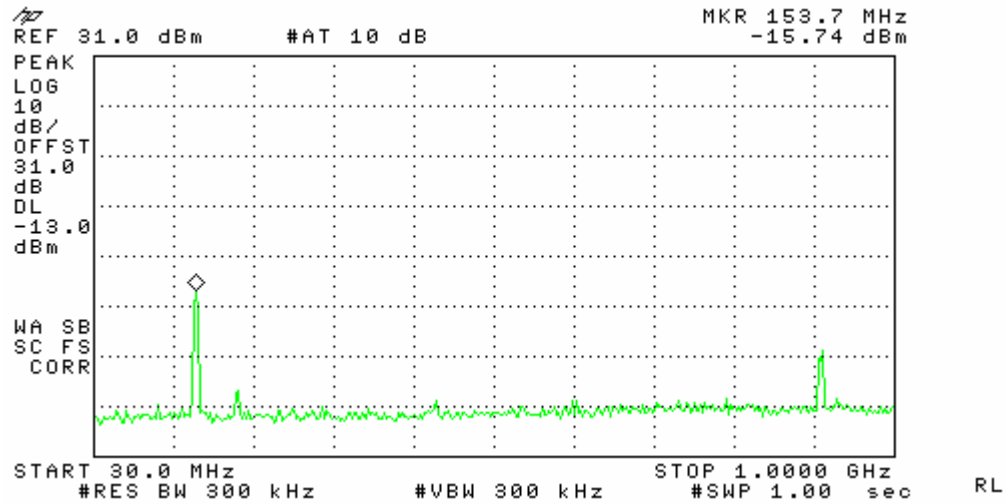
Intermodulation WCDMA_Apart AWS BCDEF
Span: 2.9 GHz to 22 GHz RBW/VBW: 1 MHz



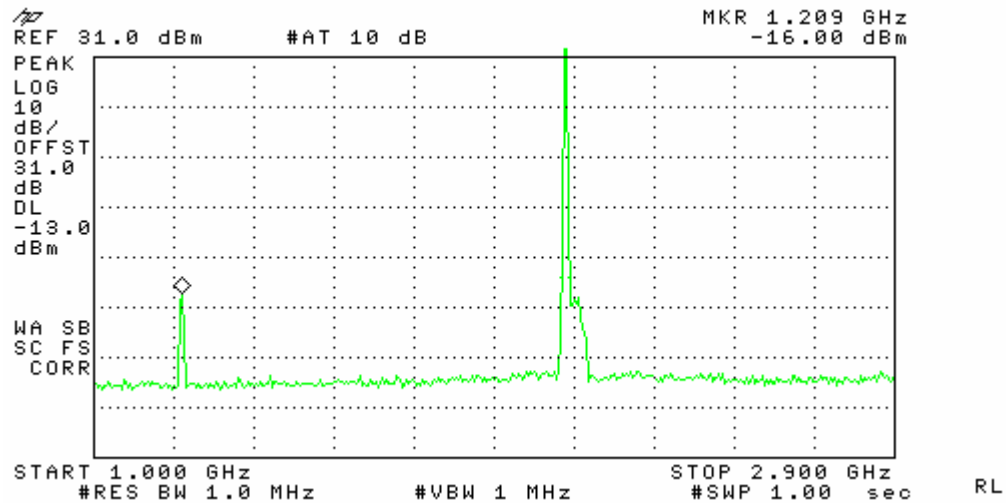
Intermodulation LTE 1.4 MHz Channel Bandwidth **Low** AWS_ABCDE
Center: 2132.5 MHz Span: 70 MHz RBW/VBW: 100 kHz



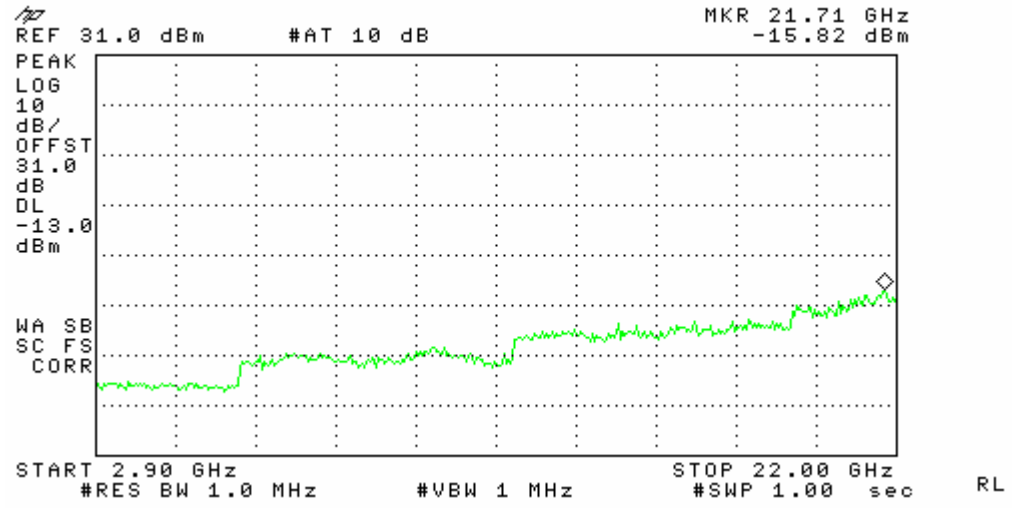
Intermodulation LTE 1.4 MHz Channel Bandwidth **Low** AWS_ABCDE
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



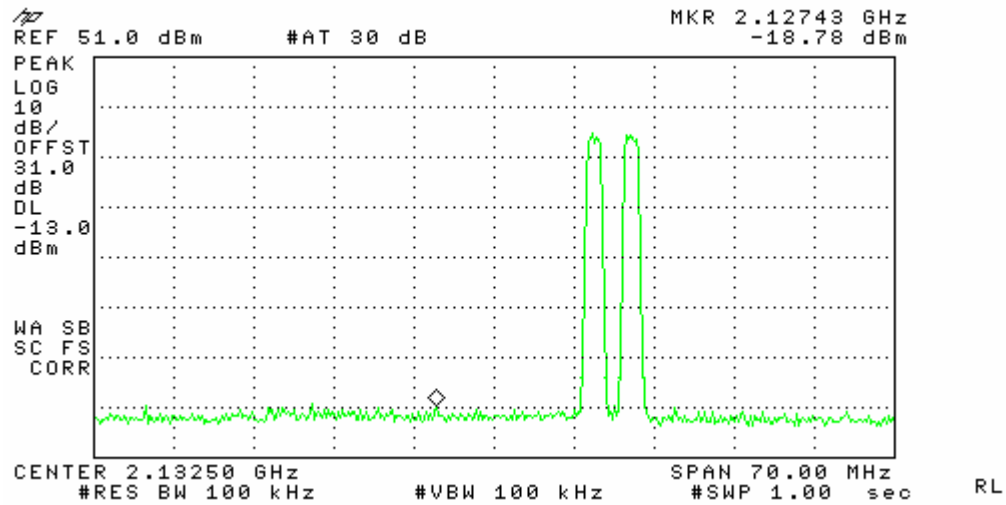
Intermodulation LTE 1.4 MHz Channel Bandwidth **Low** AWS_ABCDE
Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz



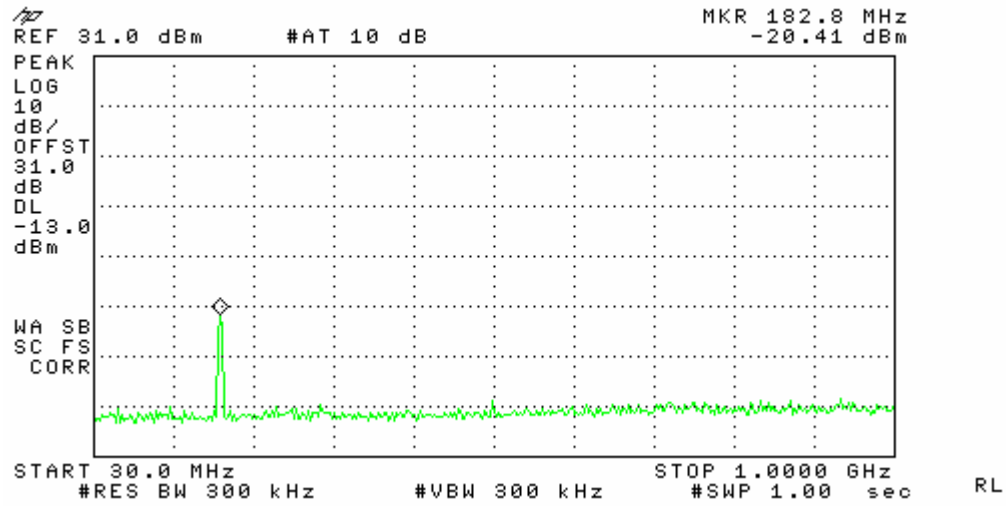
Intermodulation LTE 1.4 MHz Channel Bandwidth _Low AWS_ABCDE
Span: 2.9 GHz to 22 GHz RBW/VBW: 1 MHz



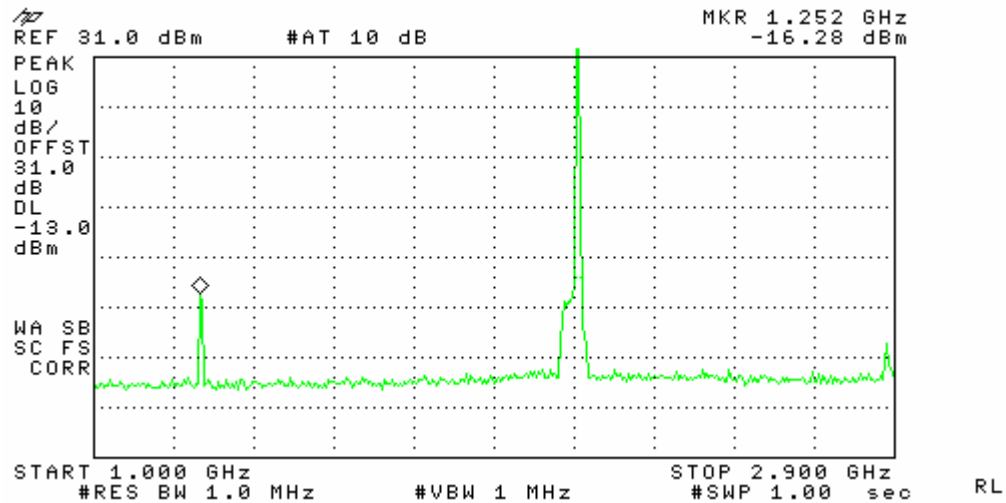
Intermodulation LTE 1.4 MHz Channel Bandwidth_High AWS_ABCDE
Center: 2132.5 MHz Span: 70 MHz RBW/VBW: 100 kHz



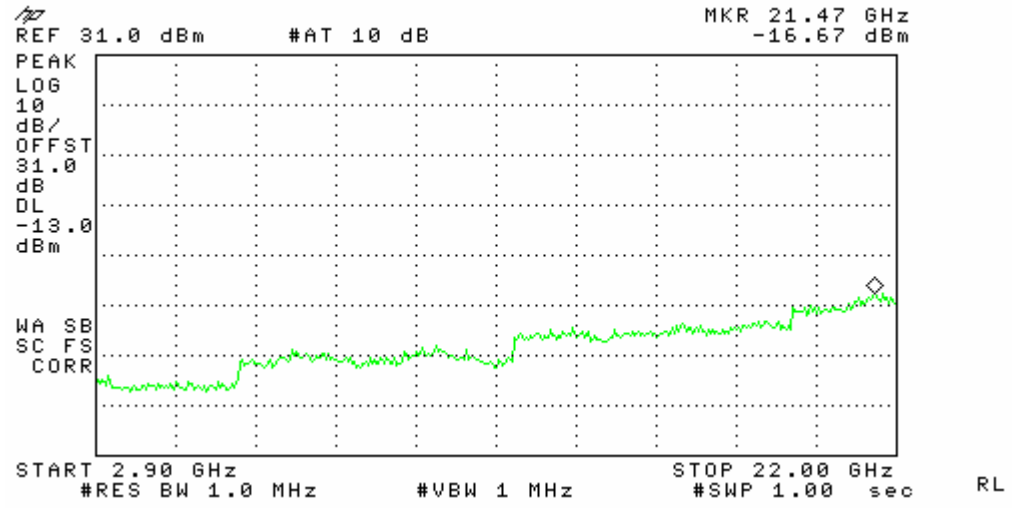
Intermodulation LTE 1.4 MHz Channel Bandwidth_High AWS_ABCDE
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



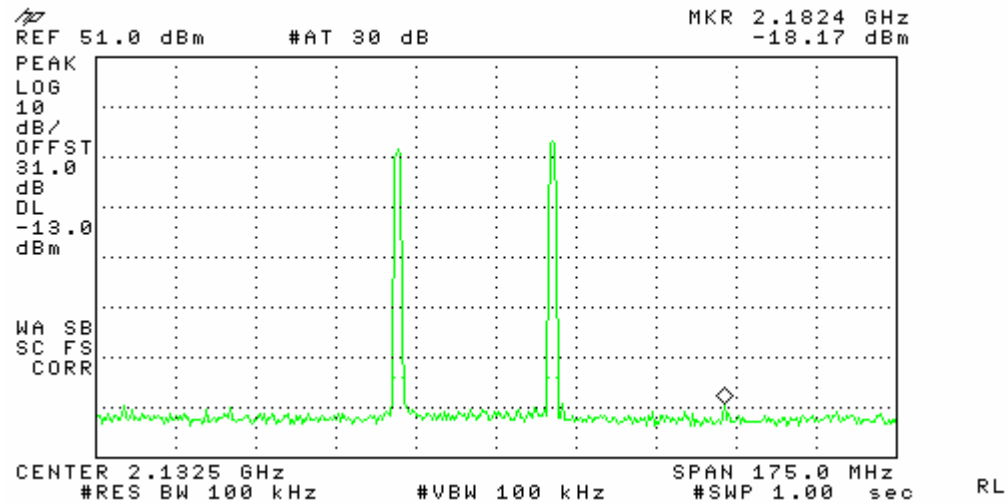
Intermodulation LTE 1.4 MHz Channel Bandwidth_High AWS_ABCDE
Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz



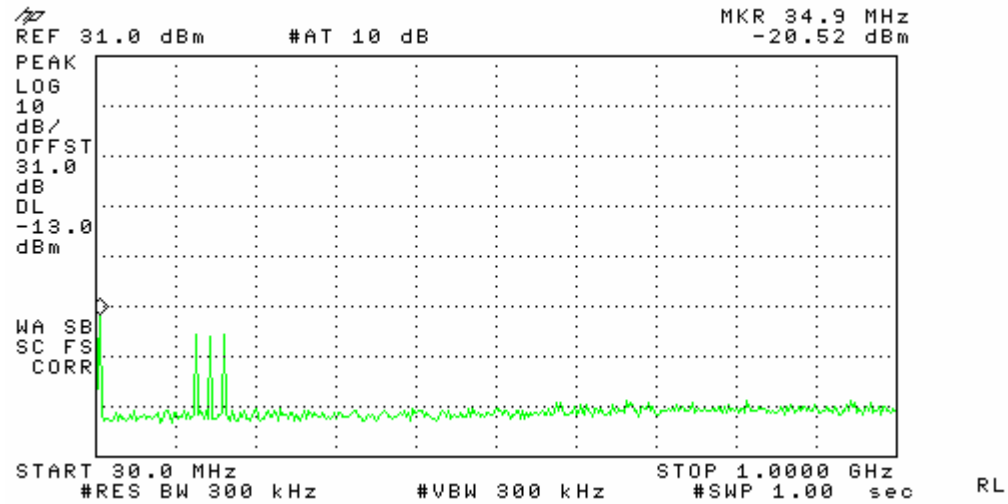
Intermodulation LTE 1.4 MHz Channel Bandwidth _High AWS_ABCDE
Span: 2.9 GHz to 22 GHz RBW/VBW: 1 MHz



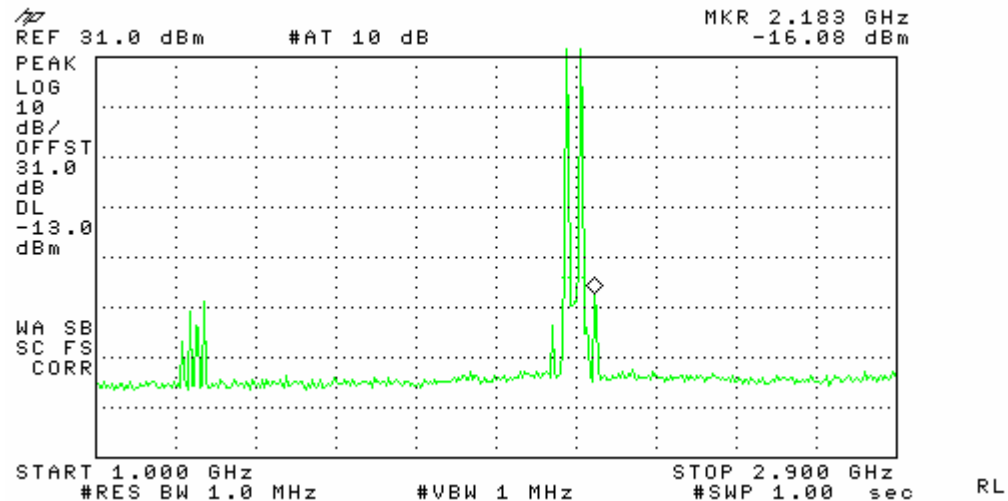
Intermodulation LTE 1.4 MHz Channel Bandwidth _Apart AWS_ABCDE
Center: 2132.5 MHz Span: 175 MHz RBW/VBW: 100 kHz



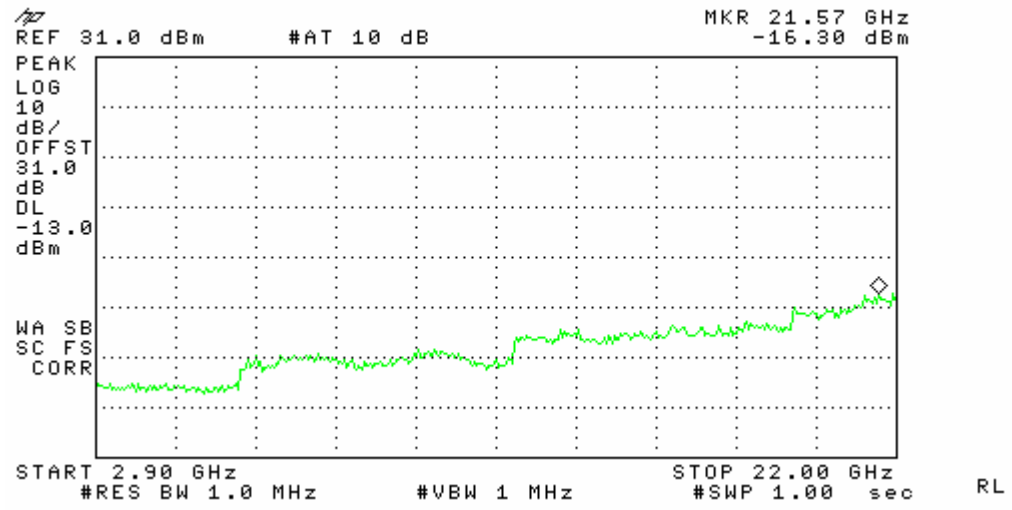
Intermodulation LTE 1.4 MHz Channel Bandwidth _Apart AWS_ABCDE
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



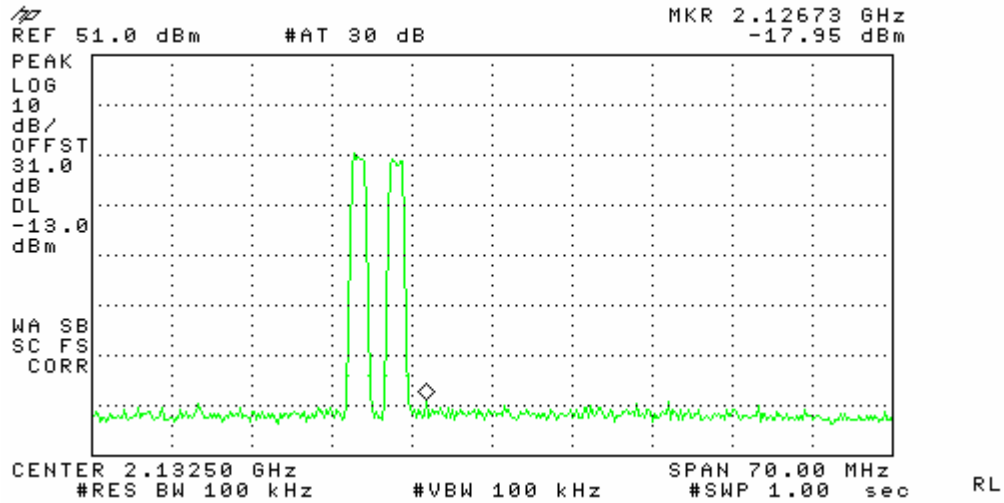
Intermodulation LTE 1.4 MHz Channel Bandwidth _Apart AWS_ABCDE
Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz



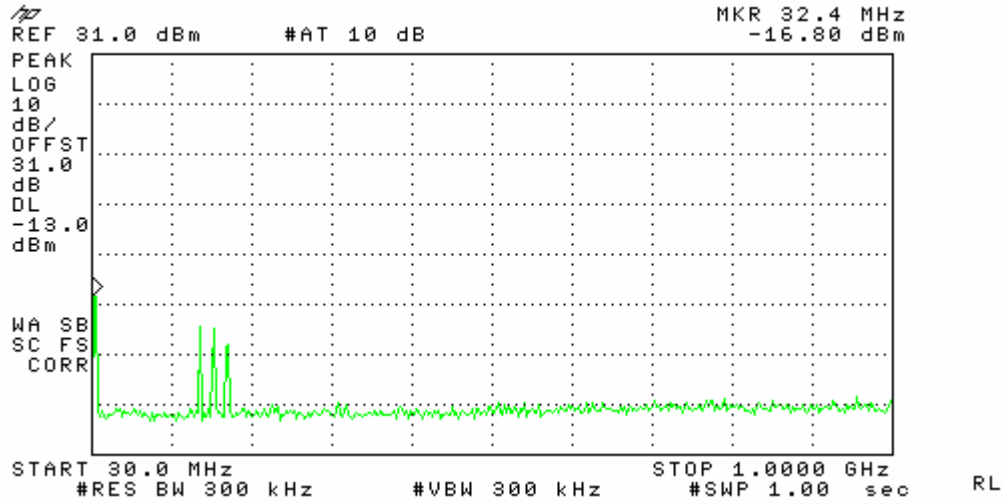
Intermodulation LTE 1.4 MHz Channel Bandwidth _Apart AWS_ABCDE
Span: 2.9 GHz to 22 GHz RBW/VBW: 1 MHz



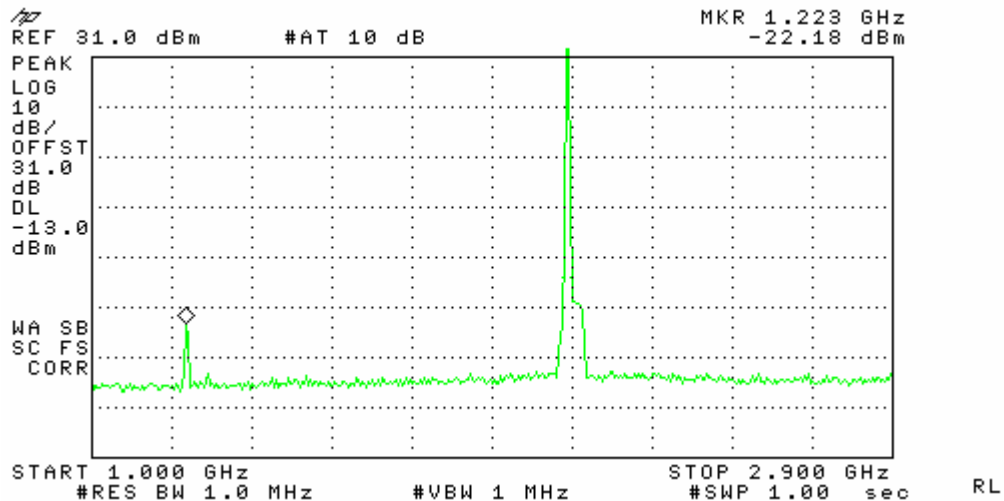
Intermodulation LTE 1.4 MHz Channel Bandwidth_Low AWS BCDEF
Center: 2132.5 MHz Span: 70 MHz RBW/VBW: 100 kHz



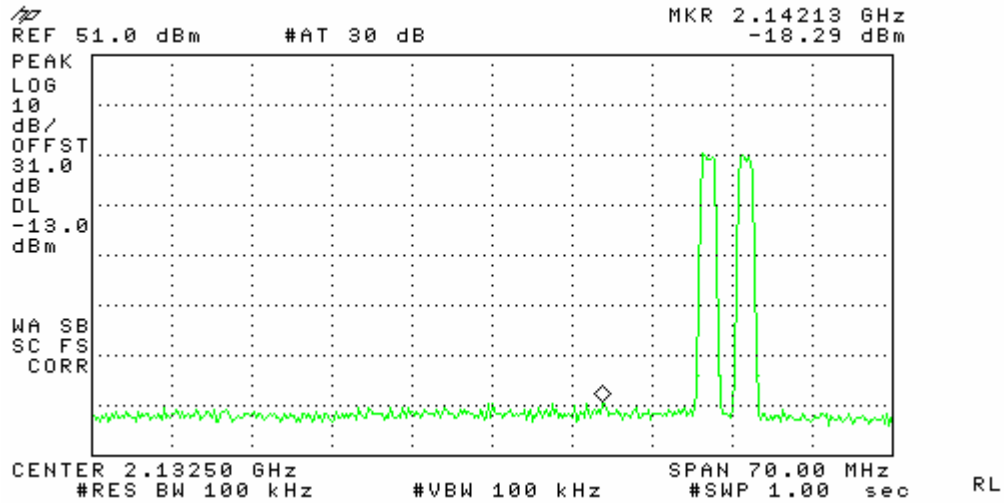
Intermodulation LTE 1.4 MHz Channel Bandwidth_Low AWS BCDEF
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



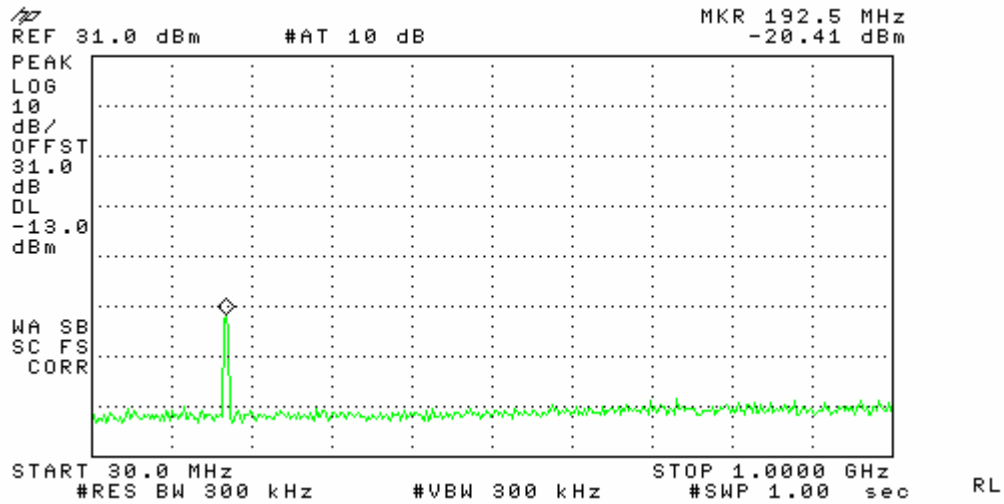
Intermodulation LTE 1.4 MHz Channel Bandwidth_Low AWS BCDEF
Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz



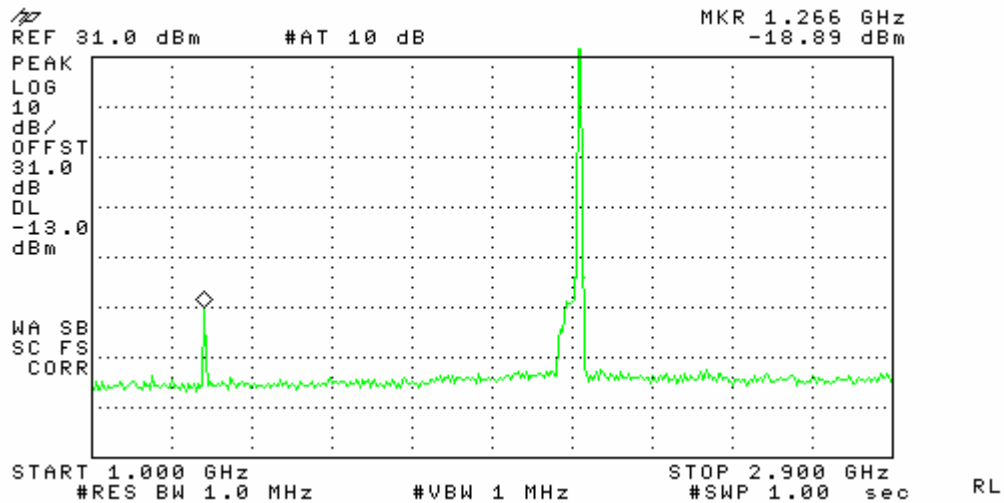
Intermodulation LTE 1.4 MHz Channel Bandwidth_High AWS BCDEF
 Center: 2132.5 MHz Span: 70 MHz RBW/VBW: 100 kHz



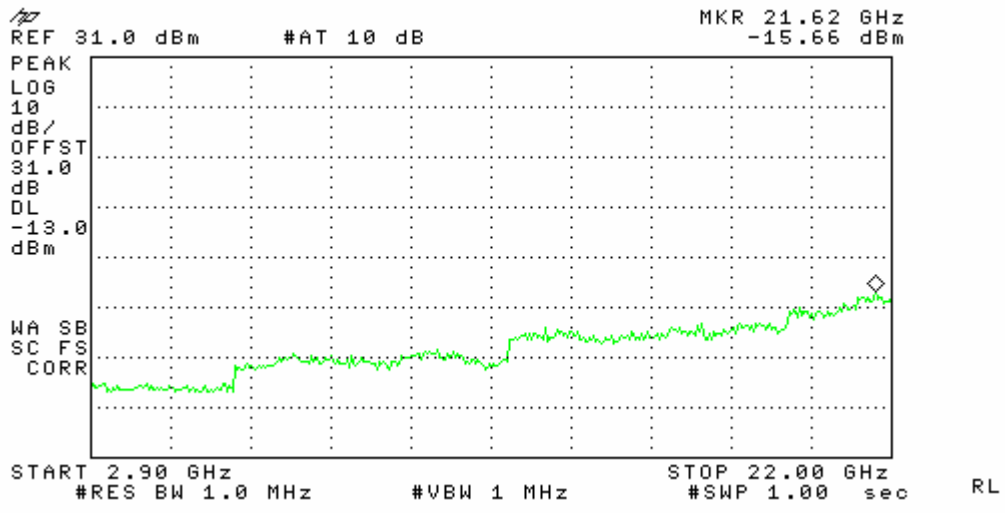
Intermodulation LTE 1.4 MHz Channel Bandwidth_High AWS BCDEF
 Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



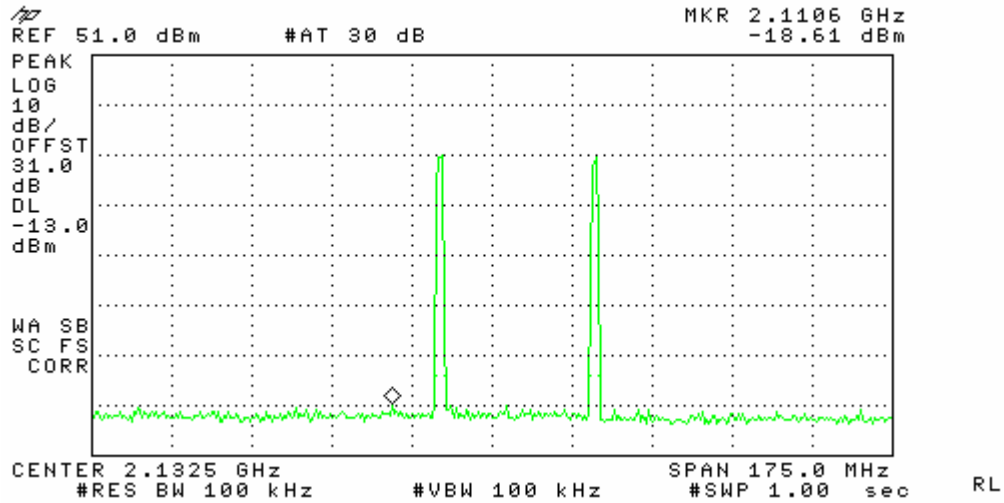
Intermodulation LTE 1.4 MHz Channel Bandwidth_High AWS BCDEF
 Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz



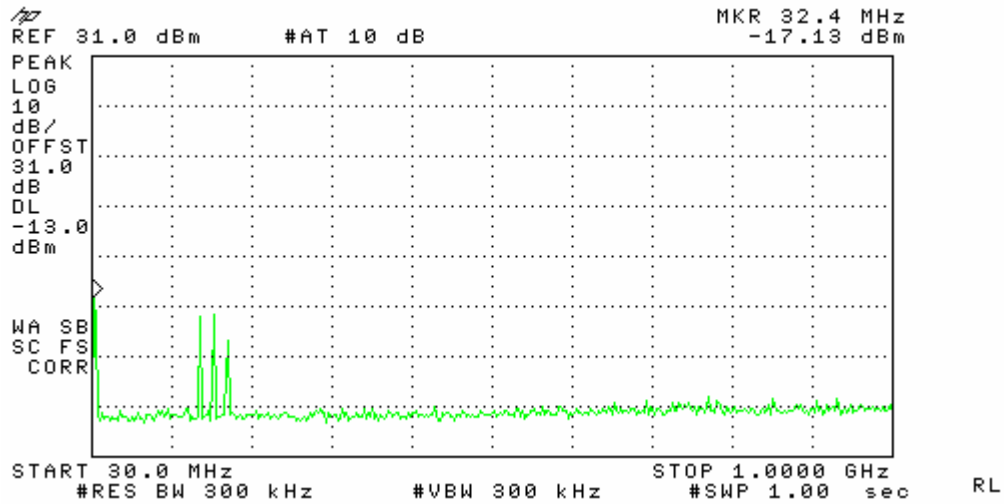
Intermodulation LTE 1.4 MHz Channel Bandwidth_High AWS BCDEF
Span: 2.9 GHz to 22 GHz RBW/VBW: 1 MHz



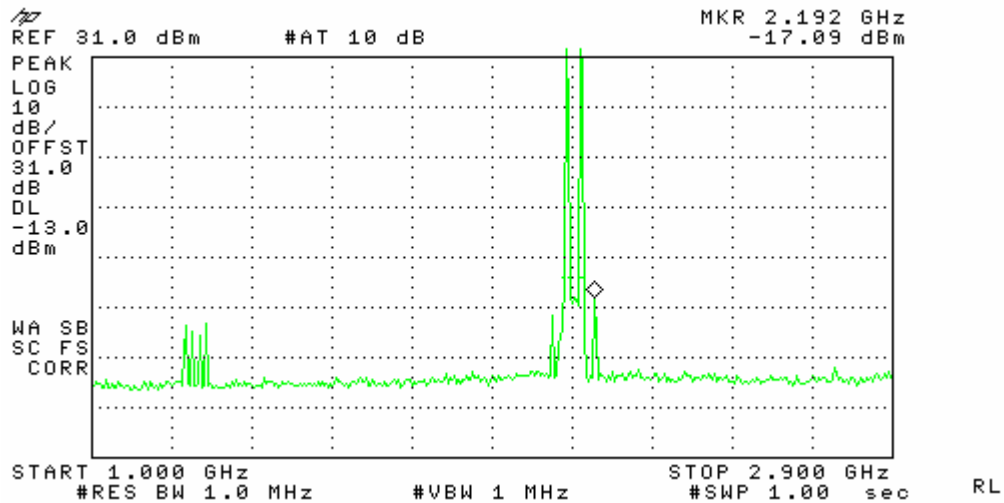
Intermodulation LTE 1.4 MHz Channel Bandwidth _Apart AWS BCDEF
 Center: 2132.5 MHz Span: 175 MHz RBW/VBW: 100 kHz



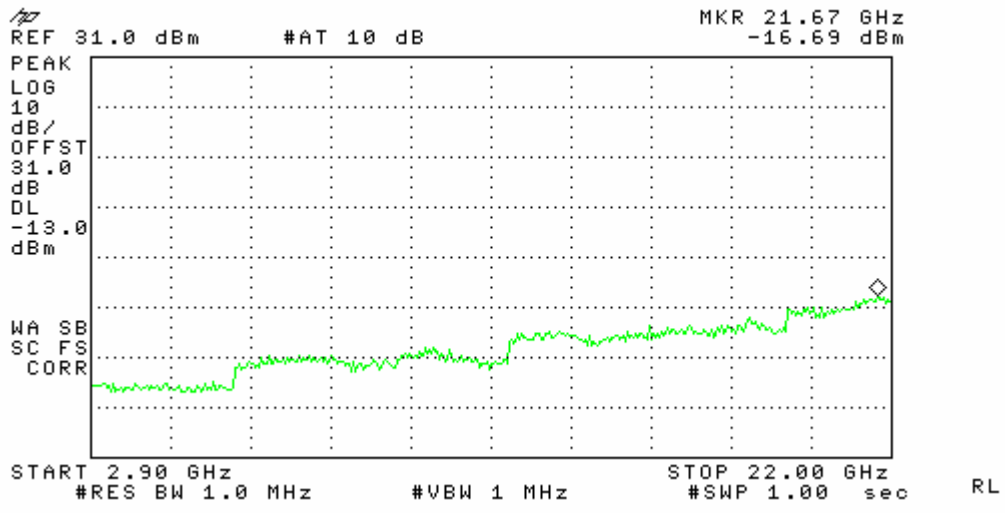
Intermodulation LTE 1.4 MHz Channel Bandwidth _Apart AWS BCDEF
 Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



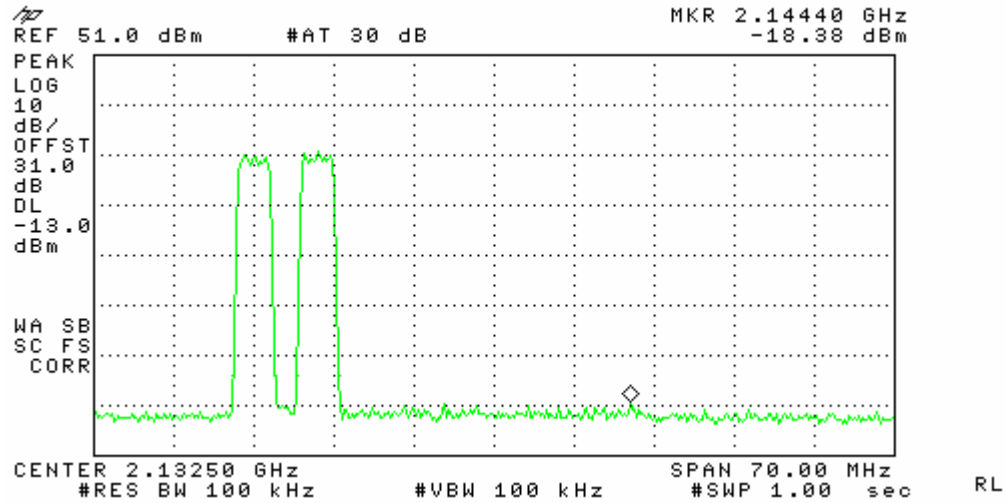
Intermodulation LTE 1.4 MHz Channel Bandwidth _Apart AWS BCDEF
 Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz



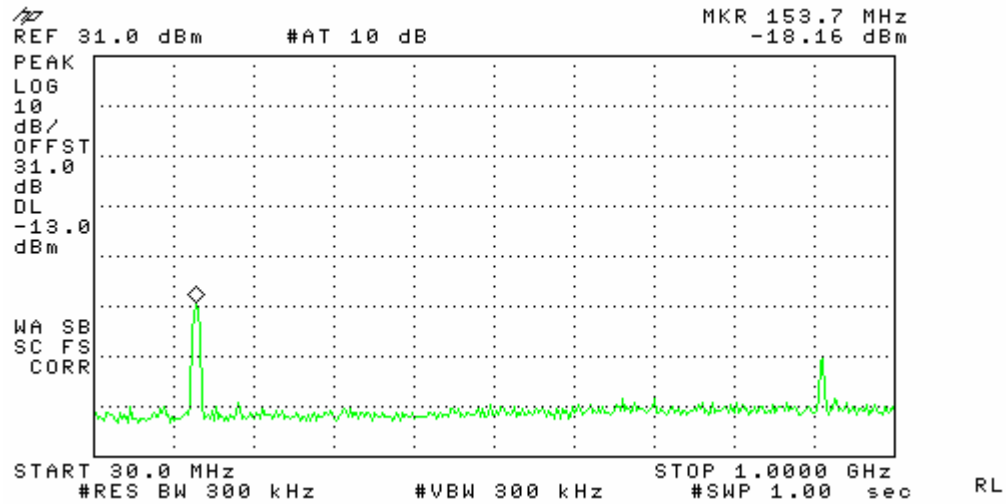
Intermodulation LTE 1.4 MHz Channel Bandwidth _Apart AWS BCDEF
Span: 2.9 GHz to 22 GHz RBW/VBW: 1 MHz



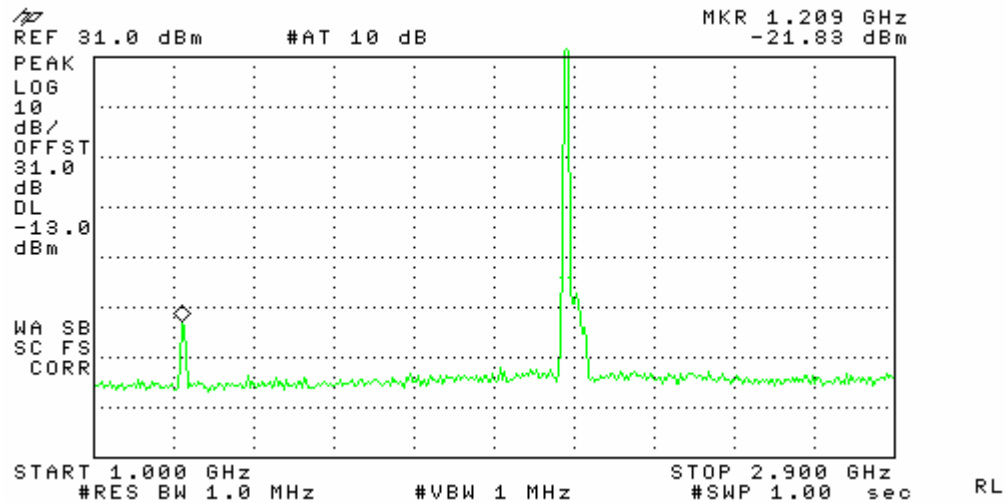
Intermodulation LTE 3 MHz Channel Bandwidth **Low** AWS_ABCDE
 Center: 2132.5 MHz Span: 70 MHz RBW/VBW: 100 kHz



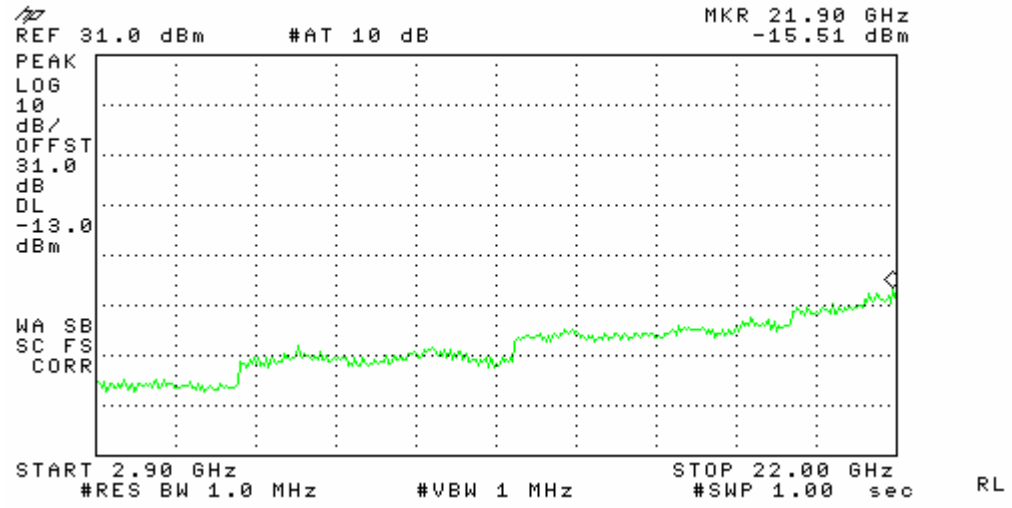
Intermodulation LTE 3MHz Channel Bandwidth **Low**AWS_ABCDE
 Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



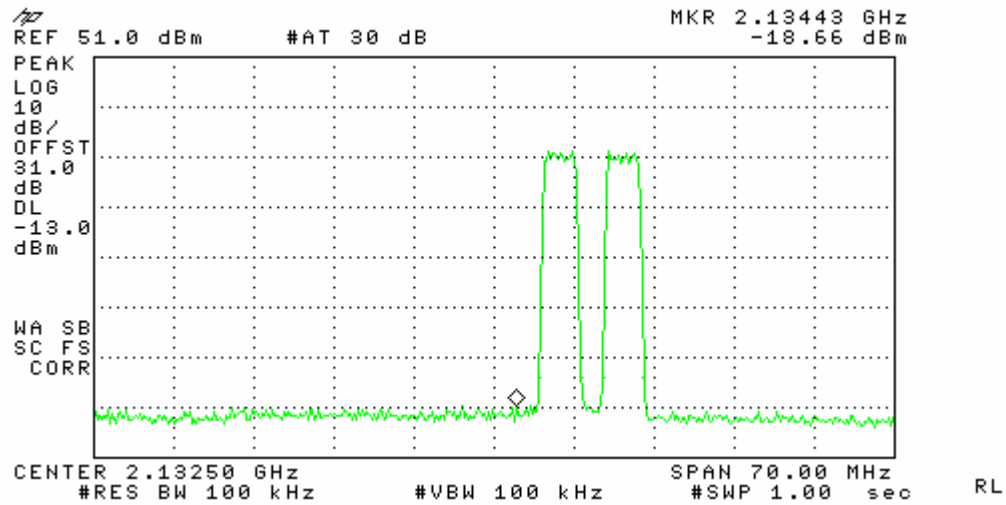
Intermodulation LTE 3 MHz Channel Bandwidth **Low** AWS_ABCDE
 Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz



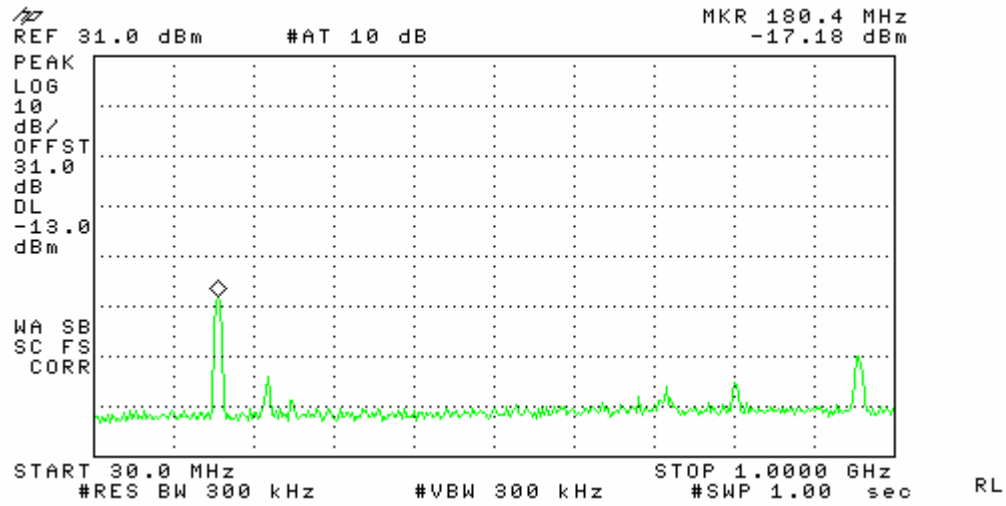
Intermodulation LTE 3 MHz Channel Bandwidth_Low AWS_ABCDE
Span: 2.9 GHz to 22 GHz RBW/VBW: 1 MHz



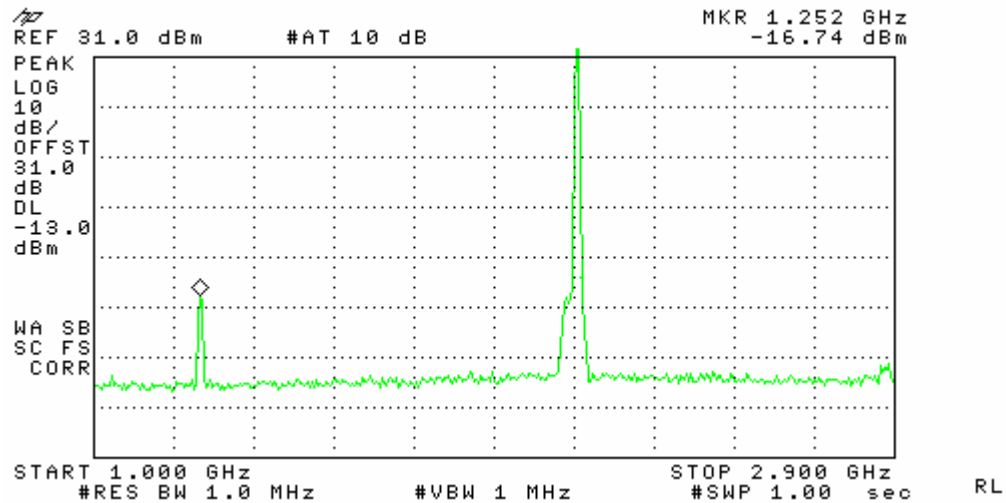
Intermodulation LTE 3 MHz Channel Bandwidth_High AWS_ABCDE
 Center: 2132.5 MHz Span: 70 MHz RBW/VBW: 100 kHz



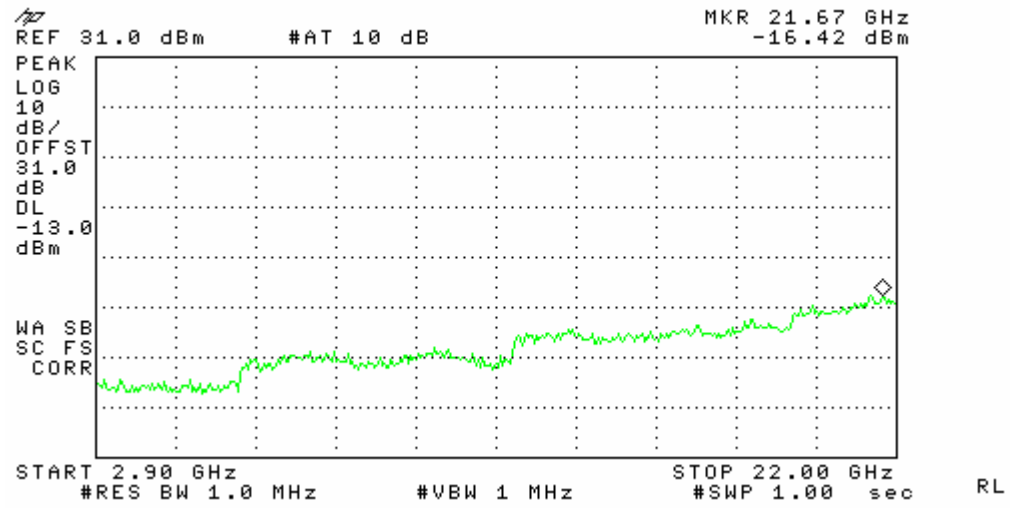
Intermodulation LTE 3 MHz Channel Bandwidth_High AWS_ABCDE
 Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



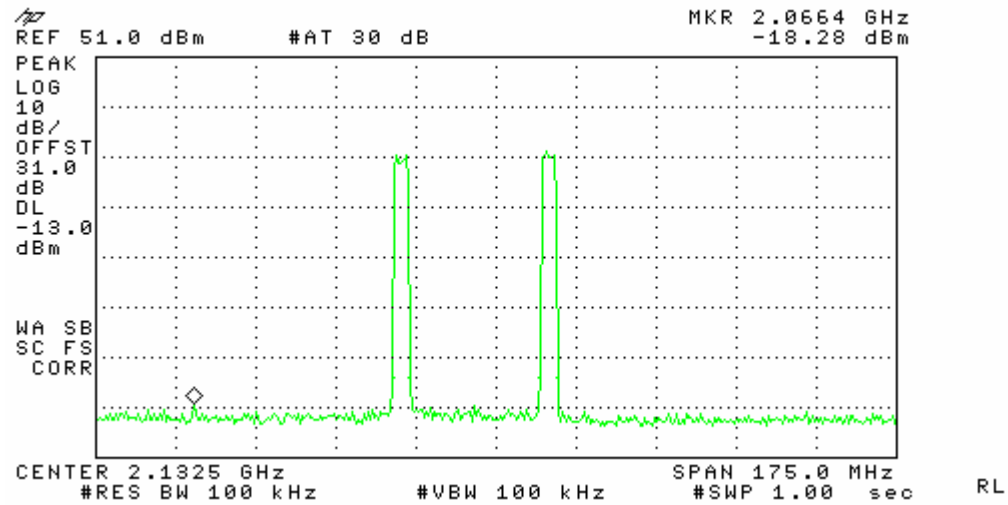
Intermodulation LTE 3 MHz Channel Bandwidth_High AWS_ABCDE
 Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz



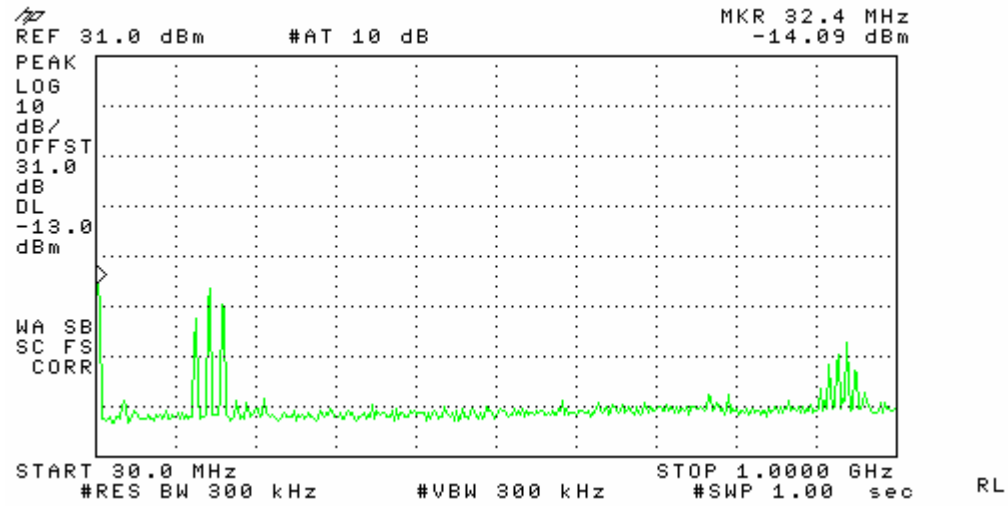
Intermodulation LTE 3 MHz Channel Bandwidth_High AWS_ABCDE
Span: 2.9 GHz to 22 GHz RBW/VBW: 1 MHz



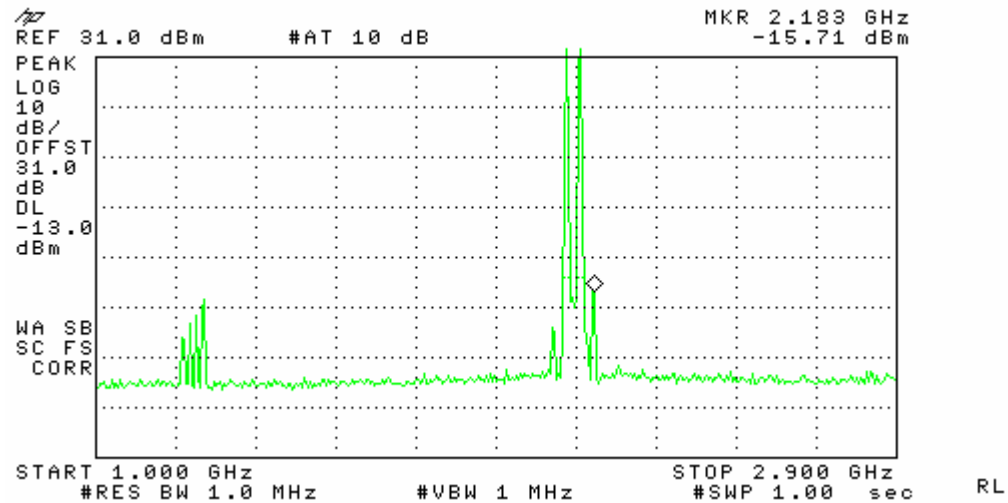
Intermodulation LTE 3 MHz Channel Bandwidth _Apart AWS_ABCDE
Center: 2132.5 MHz Span: 175 MHz RBW/VBW: 100 kHz



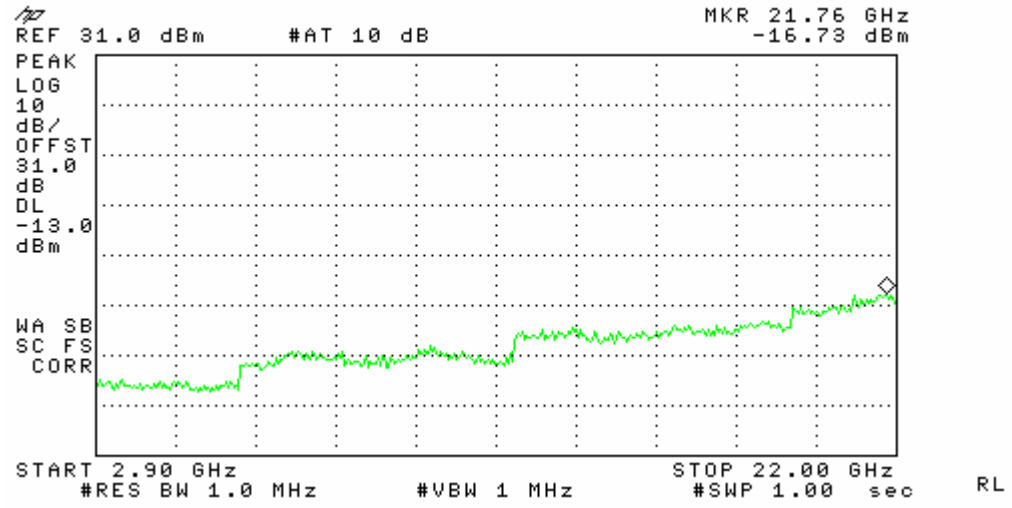
Intermodulation LTE 3 MHz Channel Bandwidth _Apart AWS_ABCDE
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



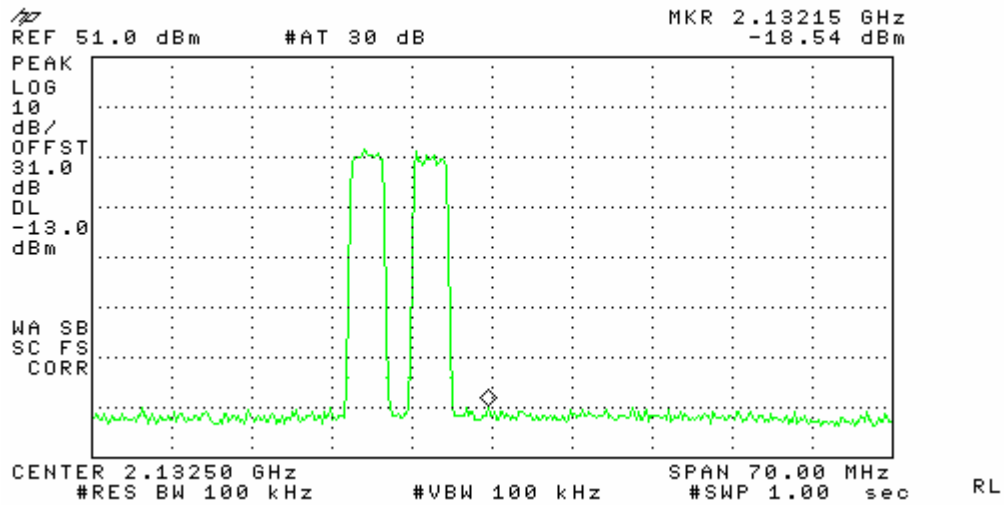
Intermodulation LTE 3 MHz Channel Bandwidth _Apart AWS_ABCDE
Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz



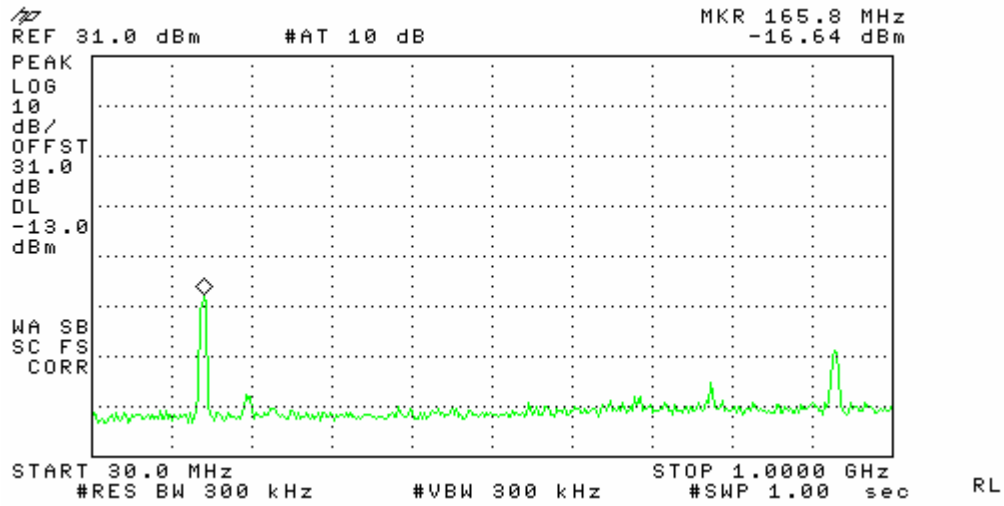
Intermodulation LTE 3 MHz Channel Bandwidth _Apart AWS_ABCDE
Span: 2.9 GHz to 22 GHz RBW/VBW: 1 MHz



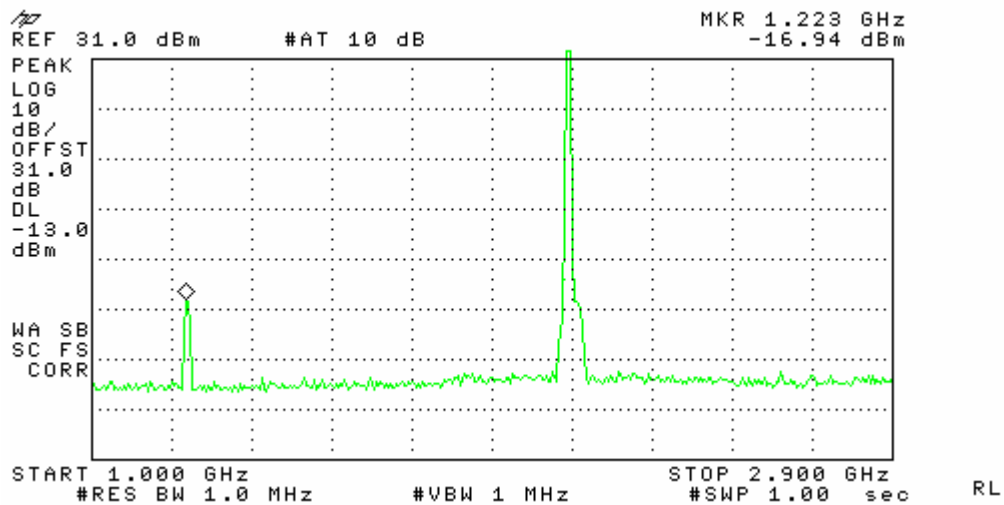
Intermodulation LTE 3 MHz Channel Bandwidth_Low AWS_BCDEF
 Center: 2132.5 MHz Span: 70 MHz RBW/VBW: 100 kHz



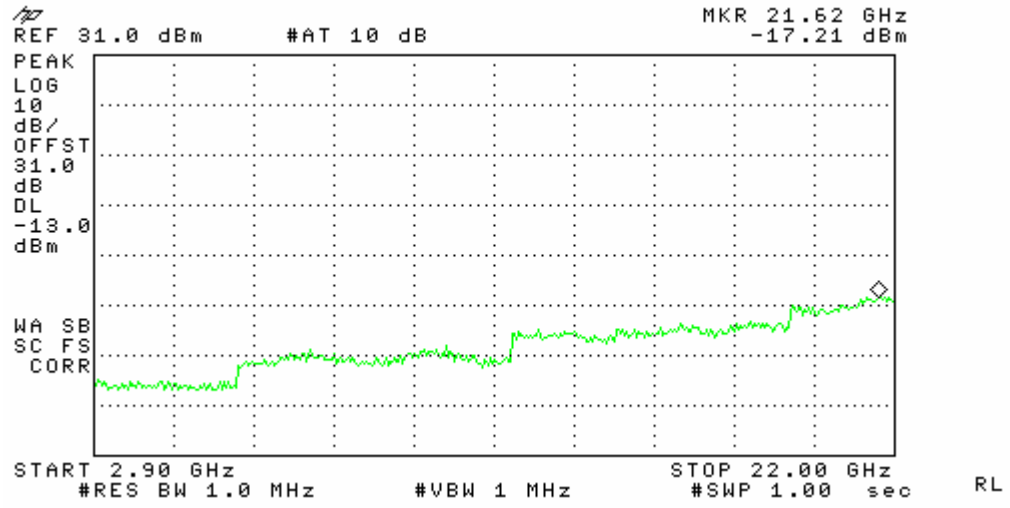
Intermodulation LTE 3MHz Channel Bandwidth_LowAWS_BCDEF
 Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



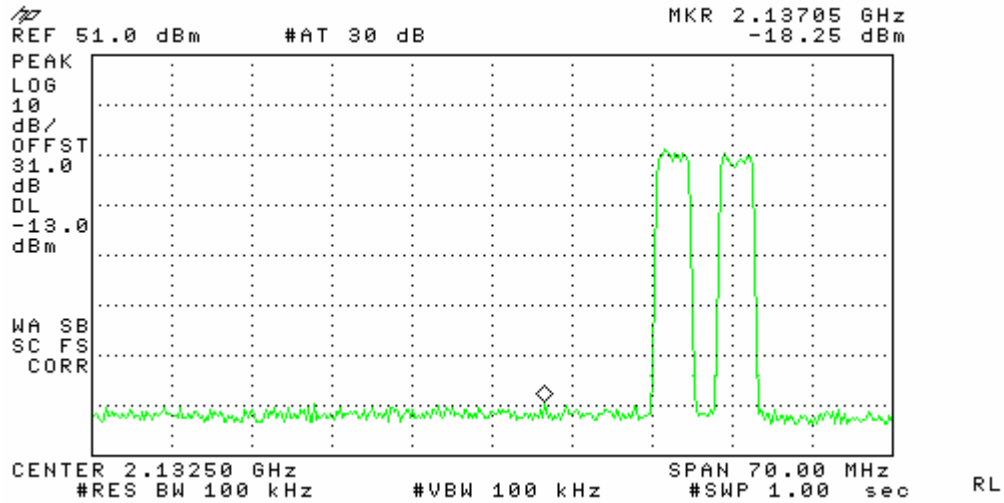
Intermodulation LTE 3 MHz Channel Bandwidth_Low AWS_BCDEF
 Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz



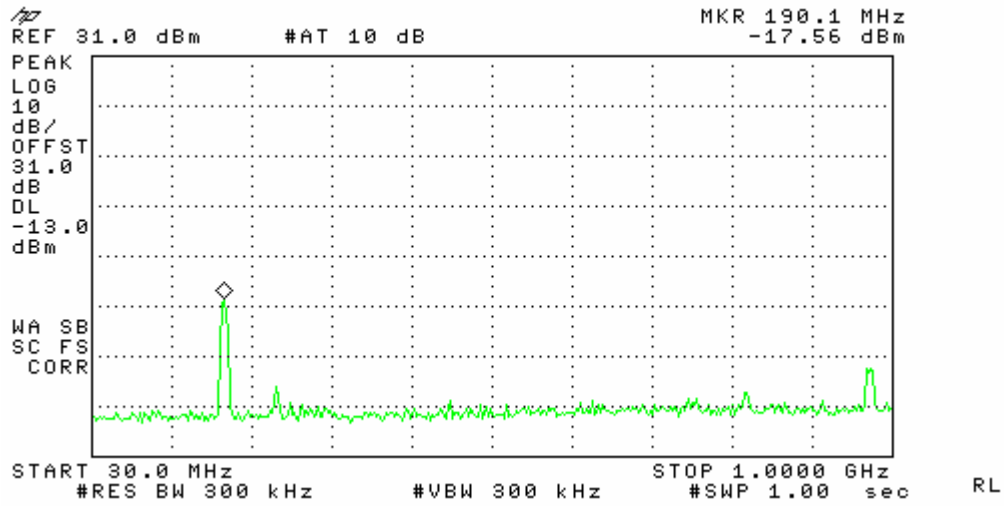
Intermodulation LTE 3 MHz Channel Bandwidth_Low AWS_BCDEF
Span: 2.9 GHz to 22 GHz RBW/VBW: 1 MHz



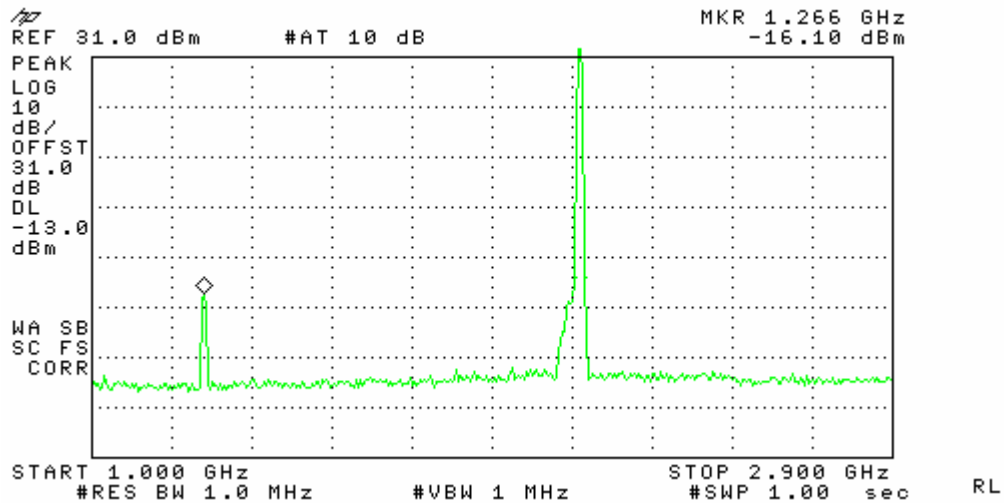
Intermodulation LTE 3 MHz Channel Bandwidth_High AWS_BCDEF
Center: 2132.5 MHz Span: 70 MHz RBW/VBW: 100 kHz



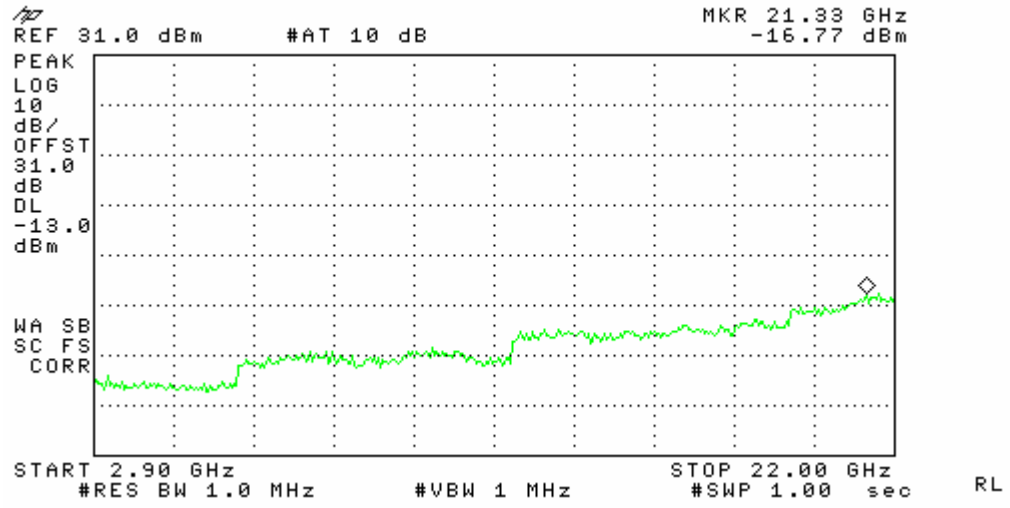
Intermodulation LTE 3 MHz Channel Bandwidth_High AWS_BCDEF
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



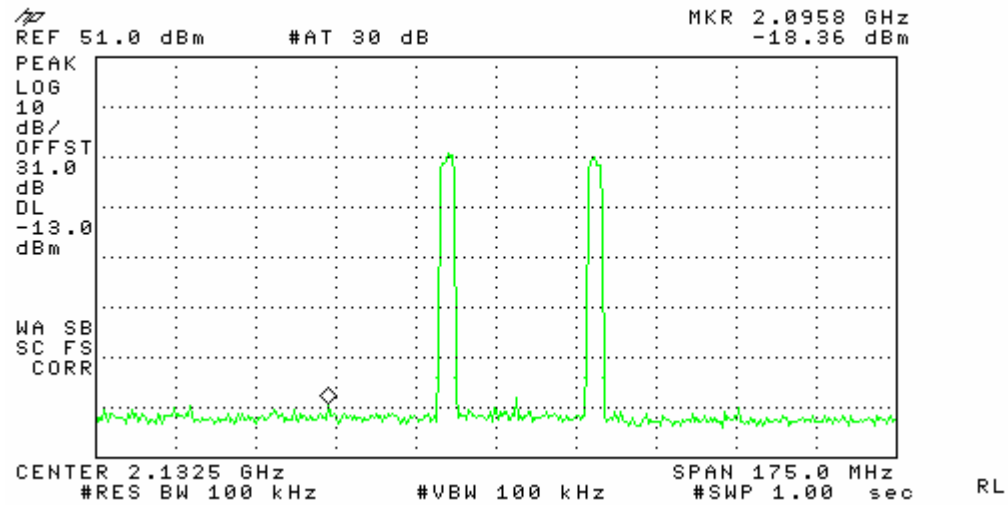
Intermodulation LTE 3 MHz Channel Bandwidth_High AWS_BCDEF
Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz



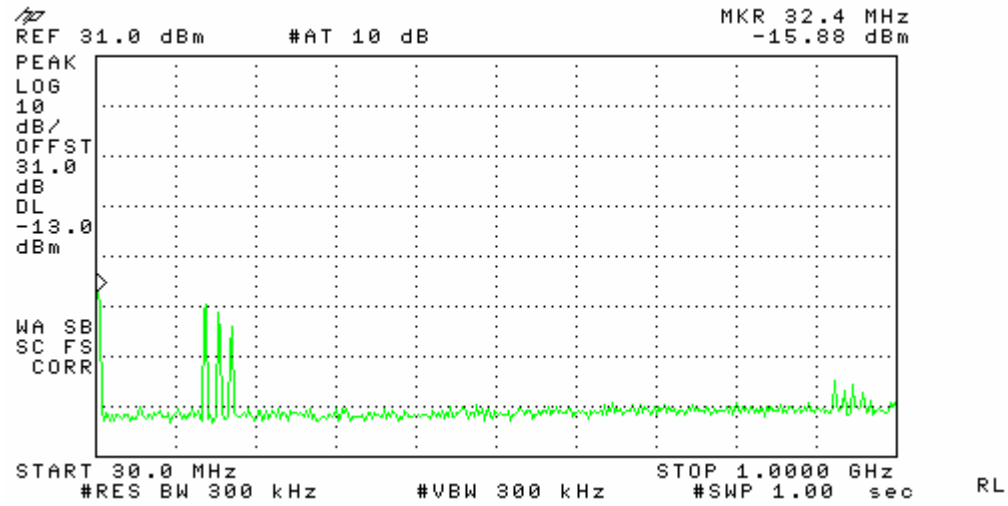
Intermodulation LTE 3 MHz Channel Bandwidth_High AWS_BCDEF
Span: 2.9 GHz to 22 GHz RBW/VBW: 1 MHz



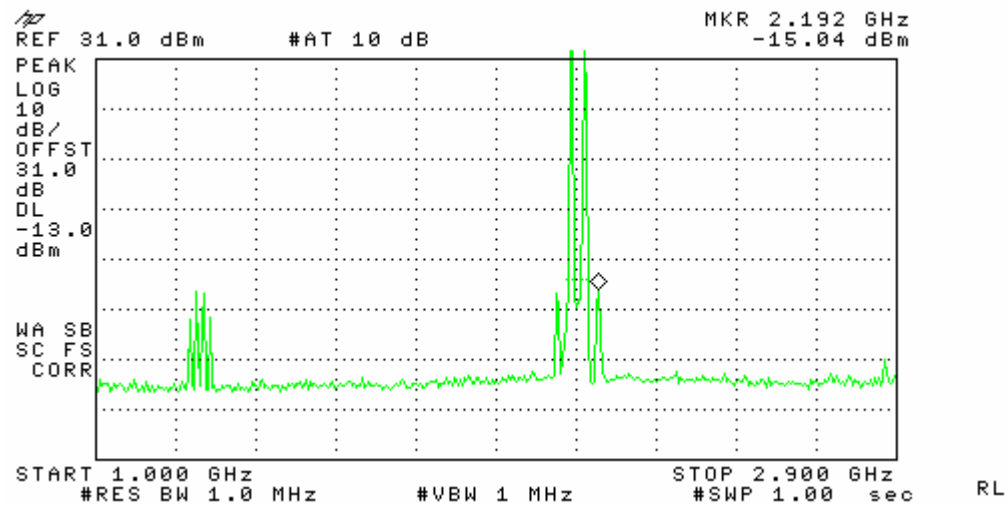
Intermodulation LTE 3 MHz Channel Bandwidth _Apart AWS_BCDEF
 Center: 2132.5 MHz Span: 175 MHz RBW/VBW: 100 kHz



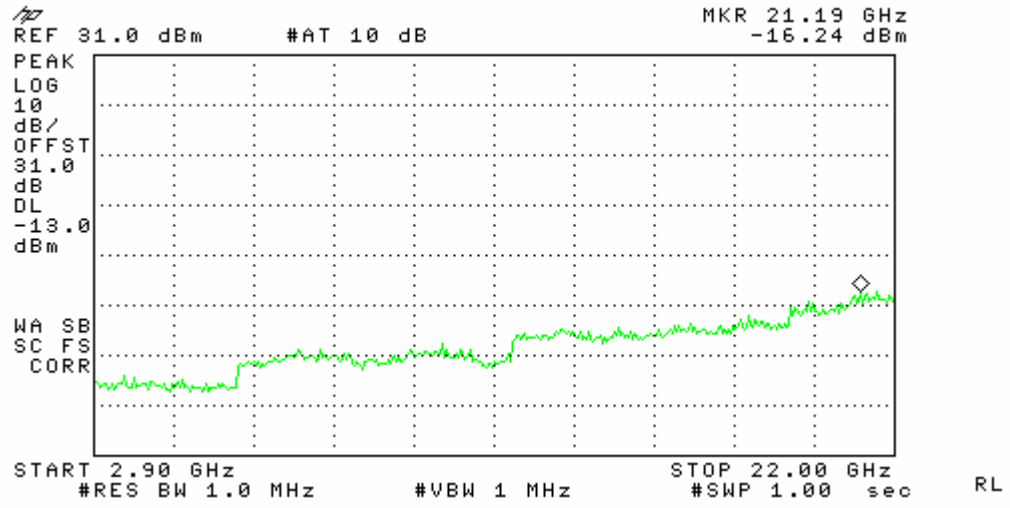
Intermodulation LTE 3 MHz Channel Bandwidth _Apart AWS_BCDEF
 Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



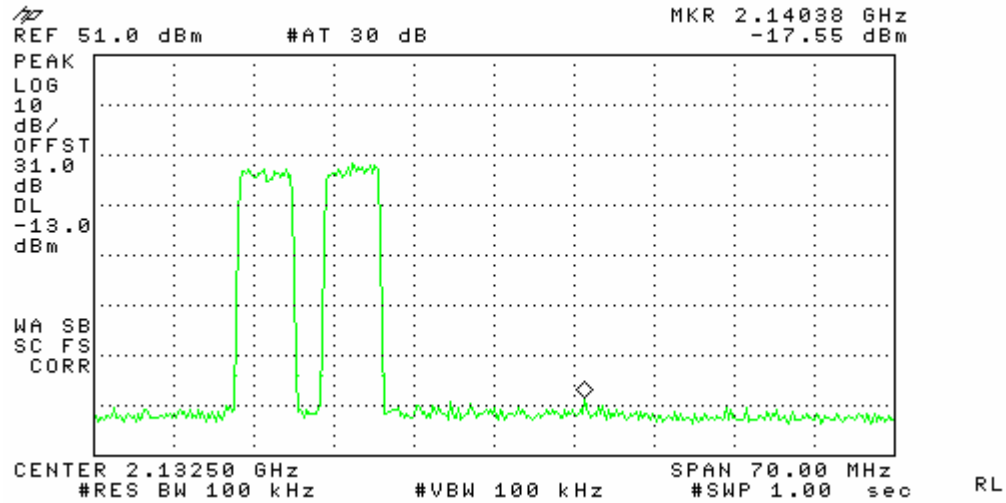
Intermodulation LTE 3 MHz Channel Bandwidth _Apart AWS_BCDEF
 Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz



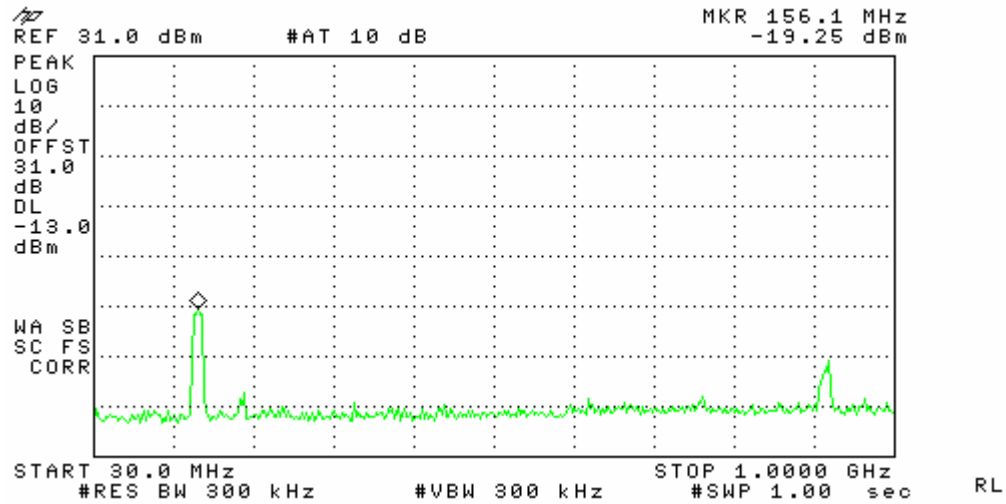
Intermodulation LTE 3 MHz Channel Bandwidth_Apart AWS_BCDEF
Span: 2.9 GHz to 22 GHz RBW/VBW: 1 MHz



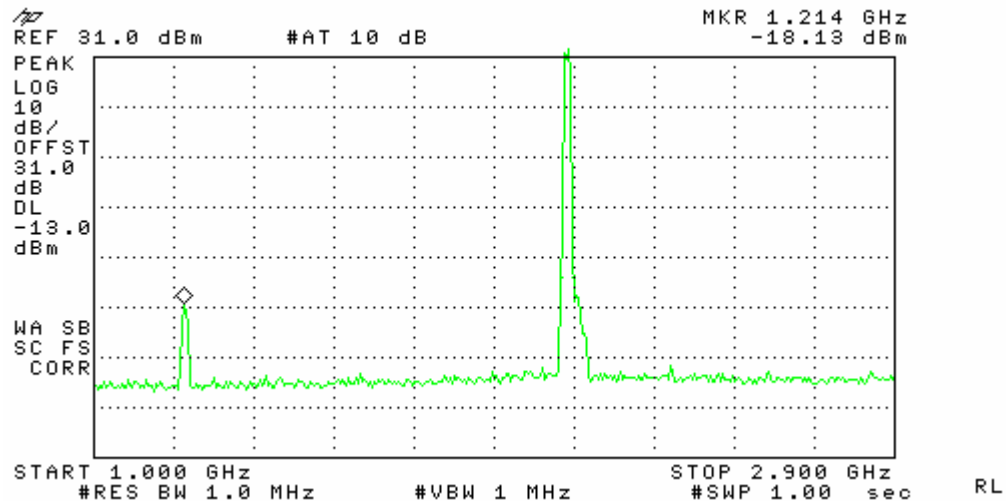
Intermodulation LTE 5 MHz Channel Bandwidth_Low AWS_ABCDE
Center: 2132.5 MHz Span: 70 MHz RBW/VBW: 100 kHz



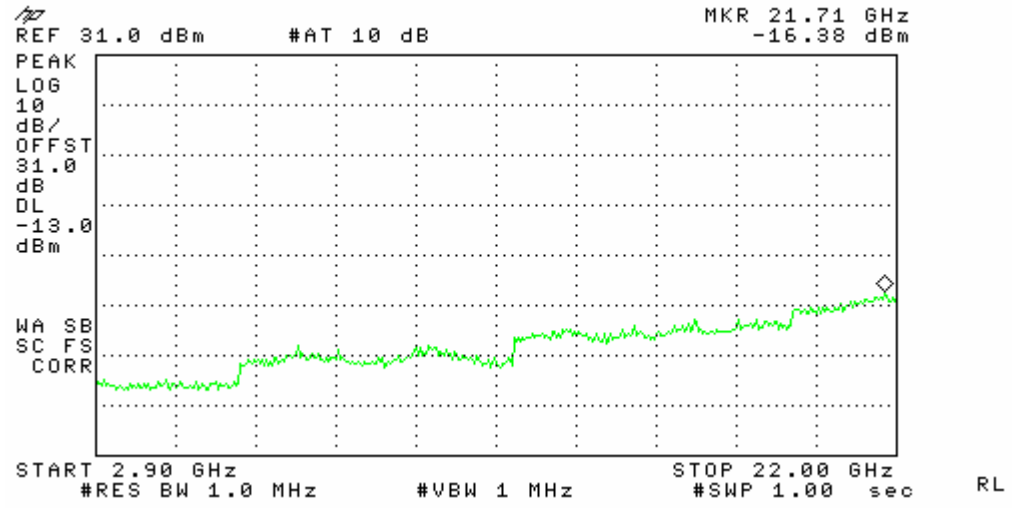
Intermodulation LTE 5 MHz Channel Bandwidth_Low AWS_ABCDE
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



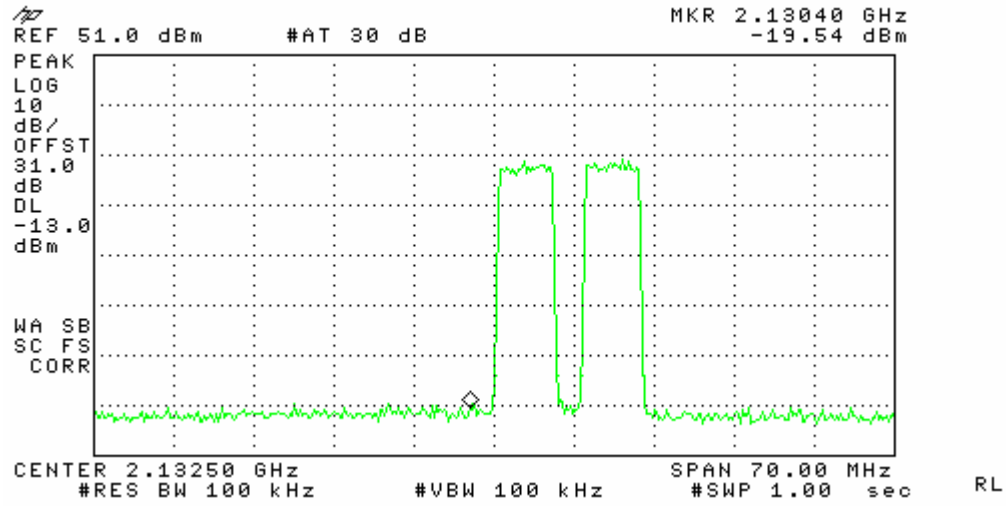
Intermodulation LTE 5 MHz Channel Bandwidth_Low AWS_ABCDE
Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz



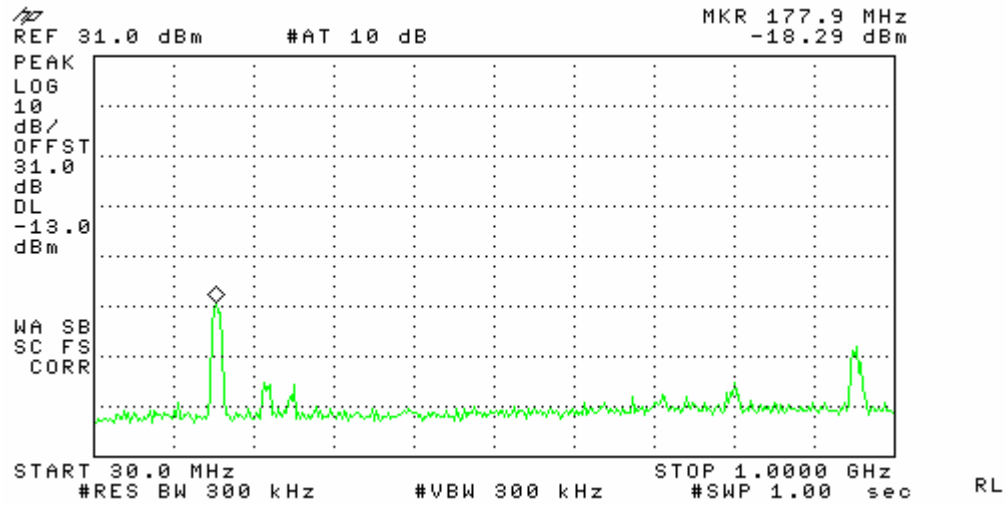
Intermodulation LTE 5 MHz Channel Bandwidth_Low AWS_ABCDE
Span: 2.9 GHz to 22 GHz RBW/VBW: 1 MHz



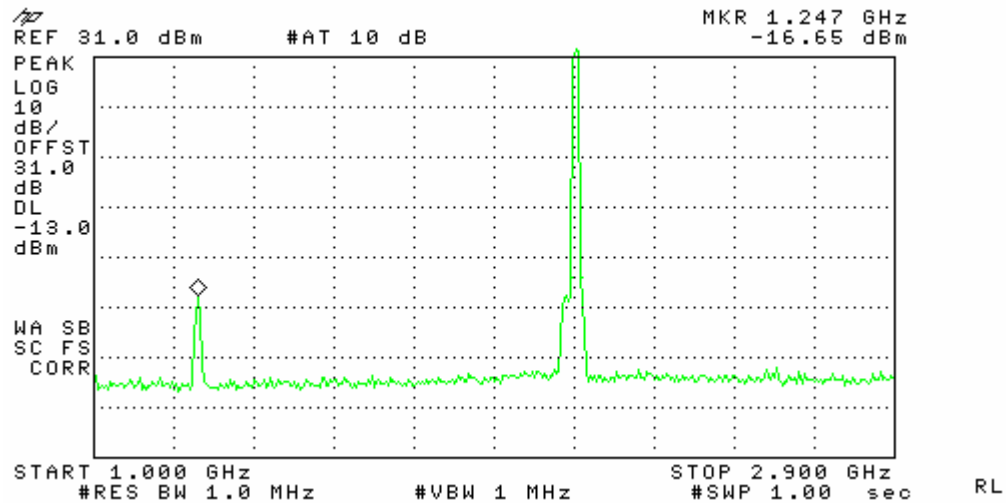
Intermodulation LTE 5 MHz Channel Bandwidth_High AWS_ABCDE
Center: 2132.5 MHz Span: 70 MHz RBW/VBW: 100 kHz



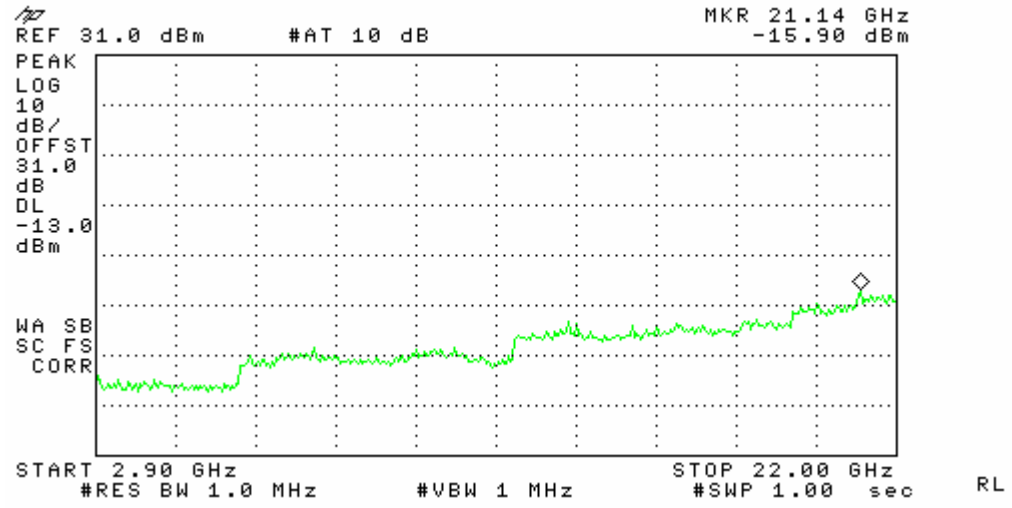
Intermodulation LTE 5 MHz Channel Bandwidth_High AWS_ABCDE
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



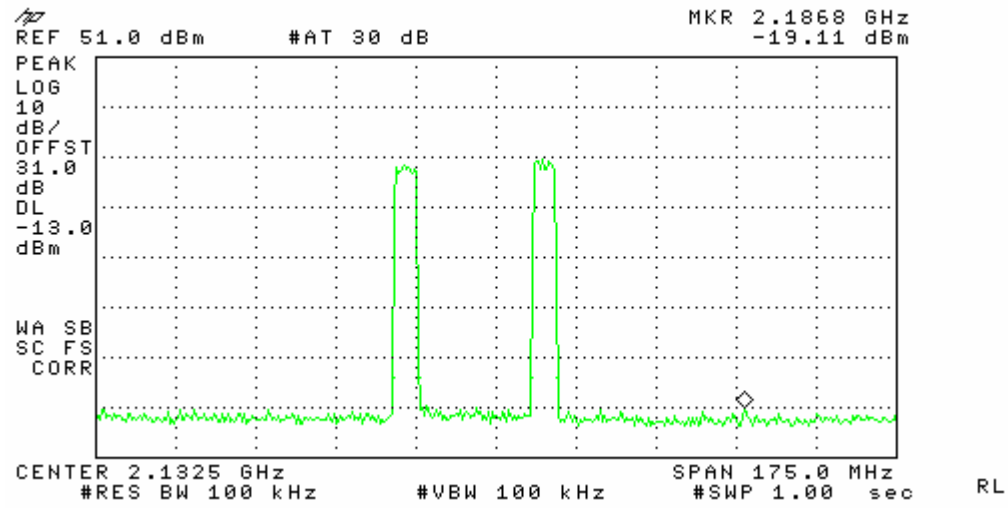
Intermodulation LTE 5 MHz Channel Bandwidth_High AWS_ABCDE
Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz



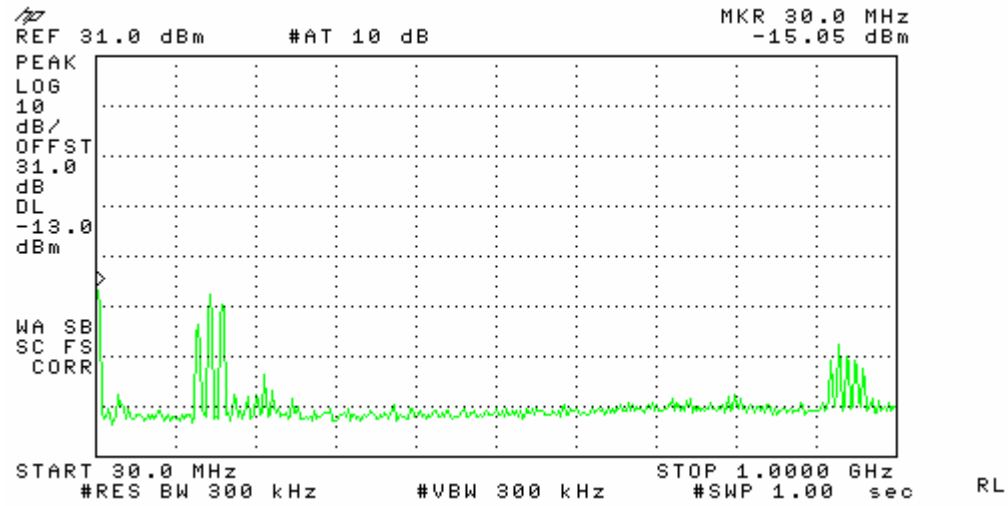
Intermodulation LTE 5 MHz Channel Bandwidth_High AWS_ABCDE
Span: 2.9 GHz to 22 GHz RBW/VBW: 1 MHz



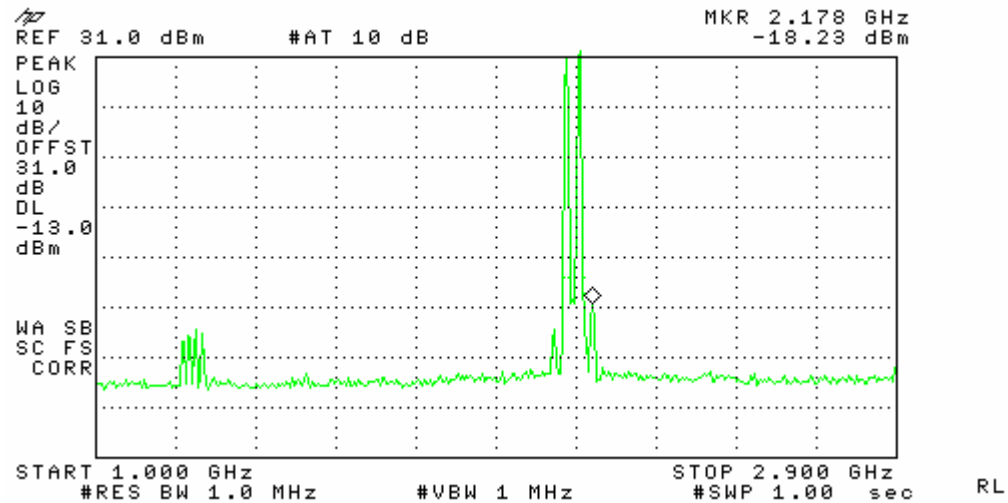
Intermodulation LTE 5 MHz Channel Bandwidth _Apart AWS_ABCDE
 Center: 2132.5 MHz Span: 175 MHz RBW/VBW: 100 kHz



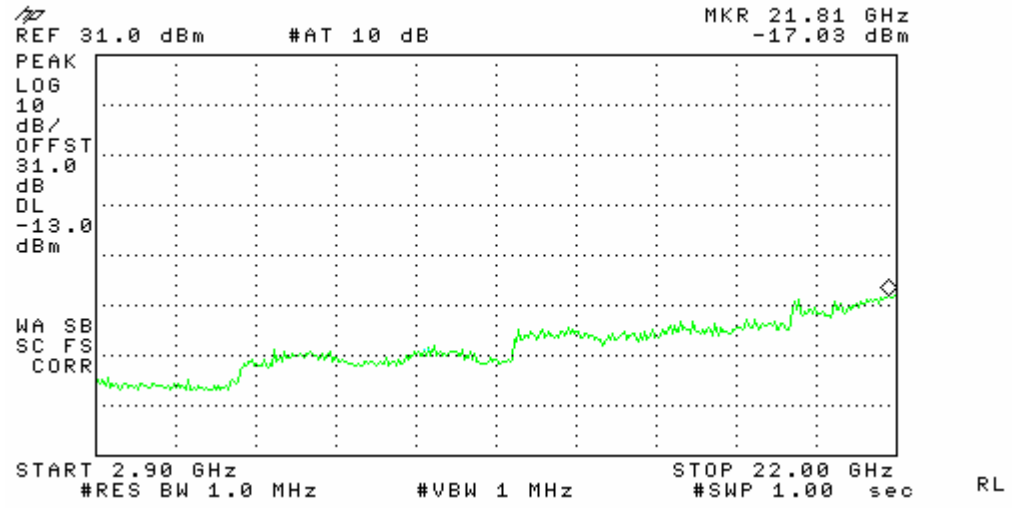
Intermodulation LTE 5 MHz Channel Bandwidth _Apart AWS_ABCDE
 Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



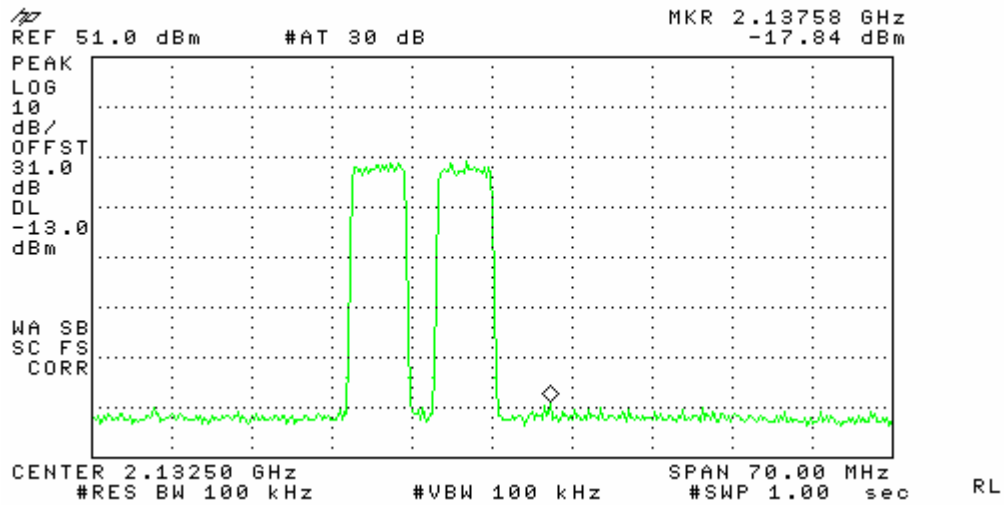
Intermodulation LTE 5 MHz Channel Bandwidth _Apart AWS_ABCDE
 Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz



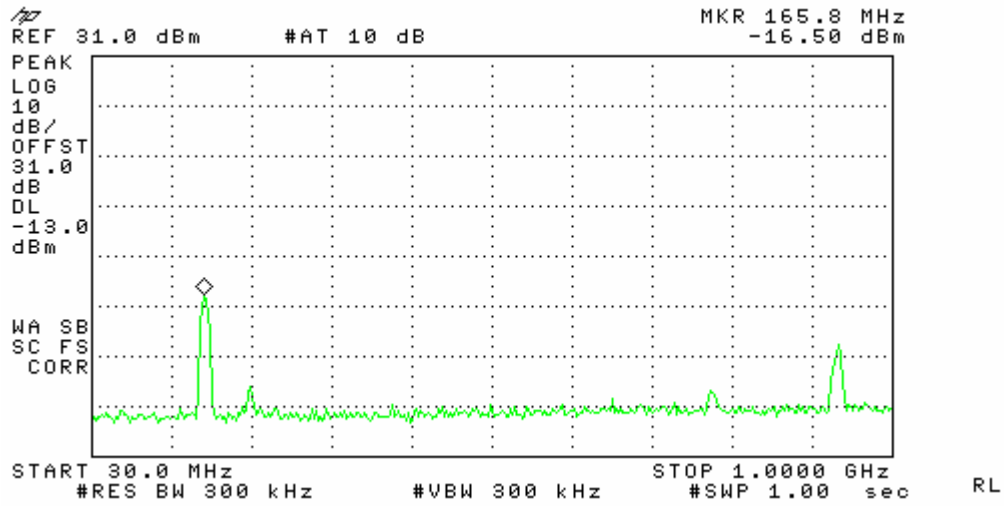
Intermodulation LTE 5 MHz Channel Bandwidth _Apart AWS_ABCDE
Span: 2.9 GHz to 22 GHz RBW/VBW: 1 MHz



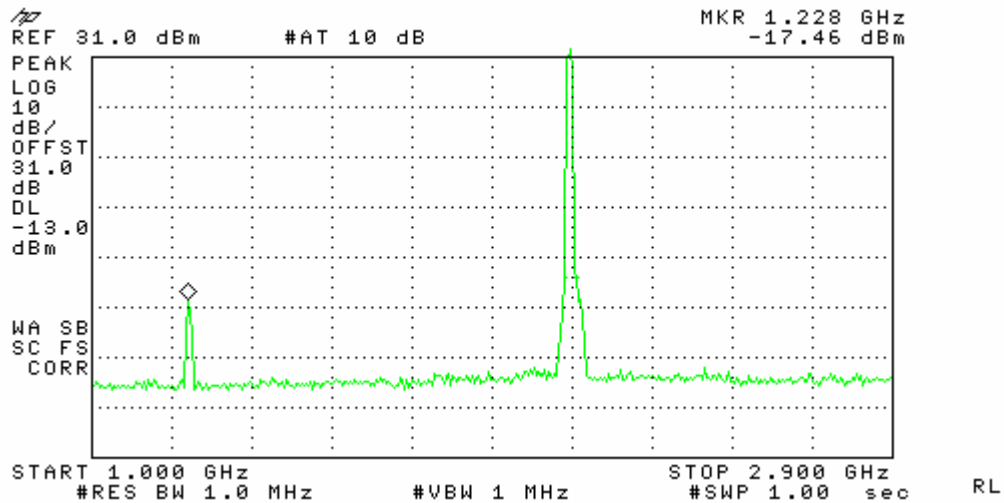
Intermodulation LTE 5 MHz Channel Bandwidth_Low AWS_BCDEF
Center: 2132.5 MHz Span: 70 MHz RBW/VBW: 100 kHz



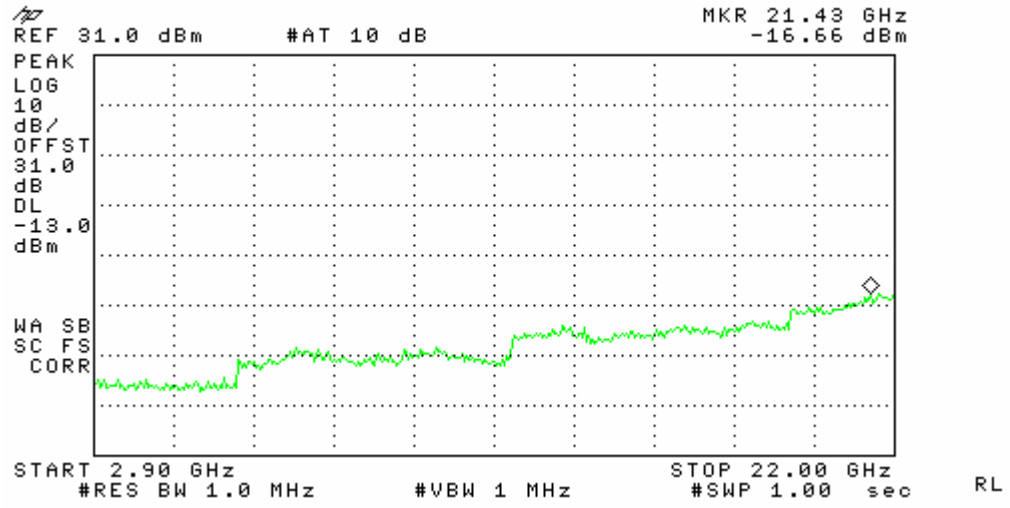
Intermodulation LTE 5 MHz Channel Bandwidth_Low AWS_BCDEF
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



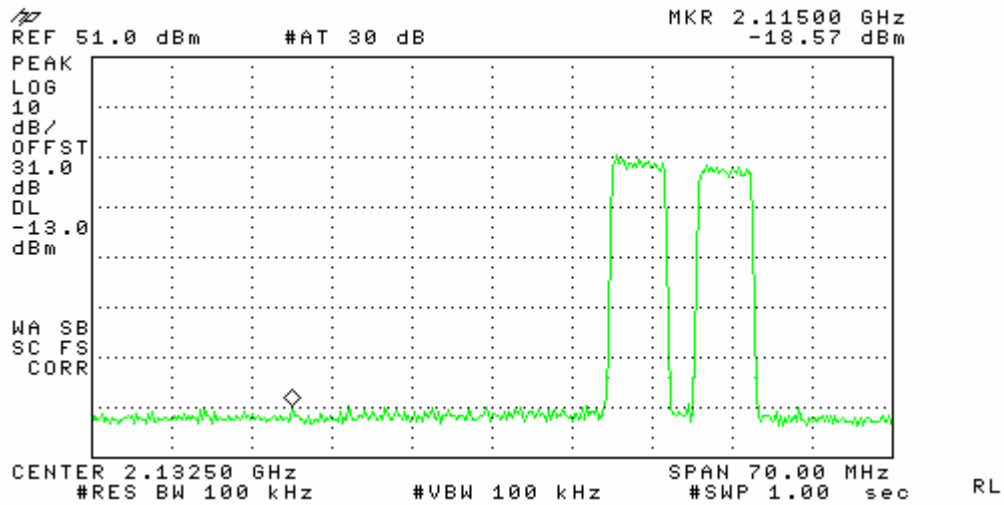
Intermodulation LTE 5 MHz Channel Bandwidth_Low AWS_BCDEF
Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz



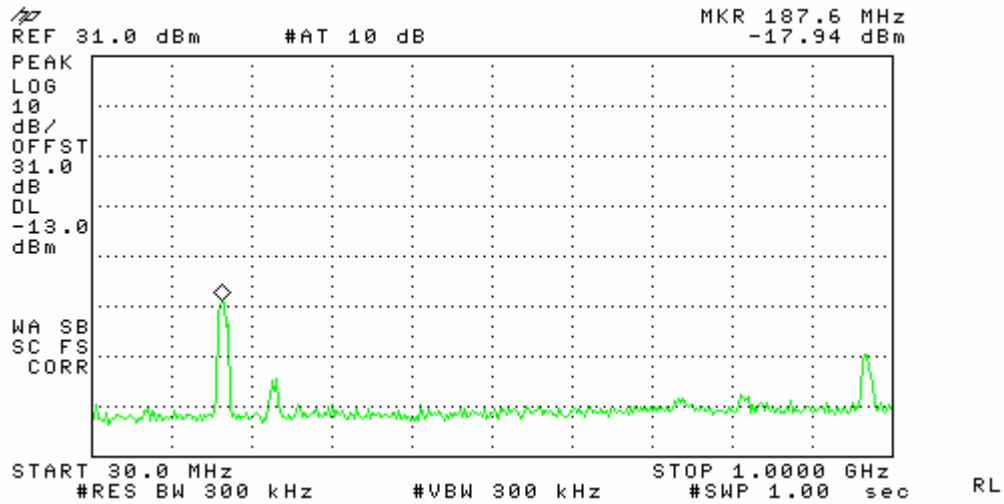
Intermodulation LTE 5 MHz Channel Bandwidth_Low AWS_BCDEF
Span: 2.9 GHz to 22 GHz RBW/VBW: 1 MHz



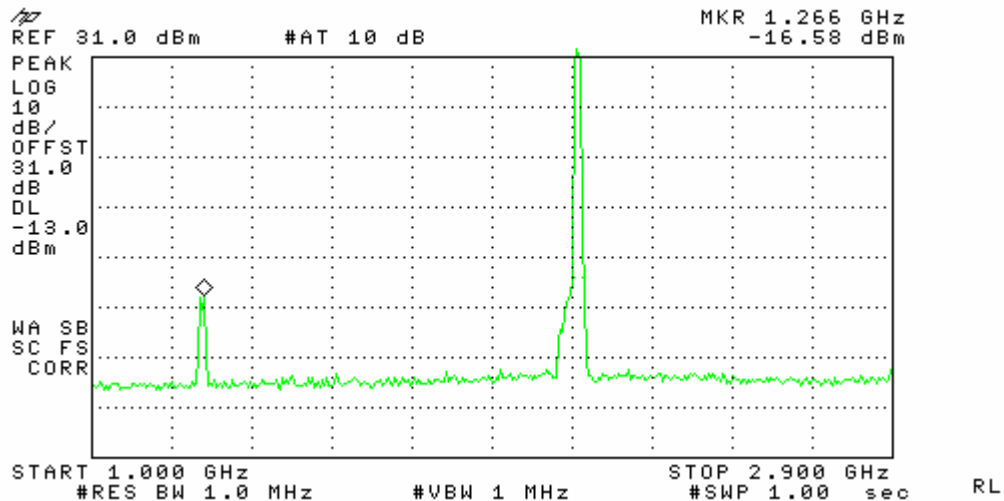
Intermodulation LTE 5 MHz Channel Bandwidth_High AWS_BCDEF
Center: 2132.5 MHz Span: 70 MHz RBW/VBW: 100 kHz



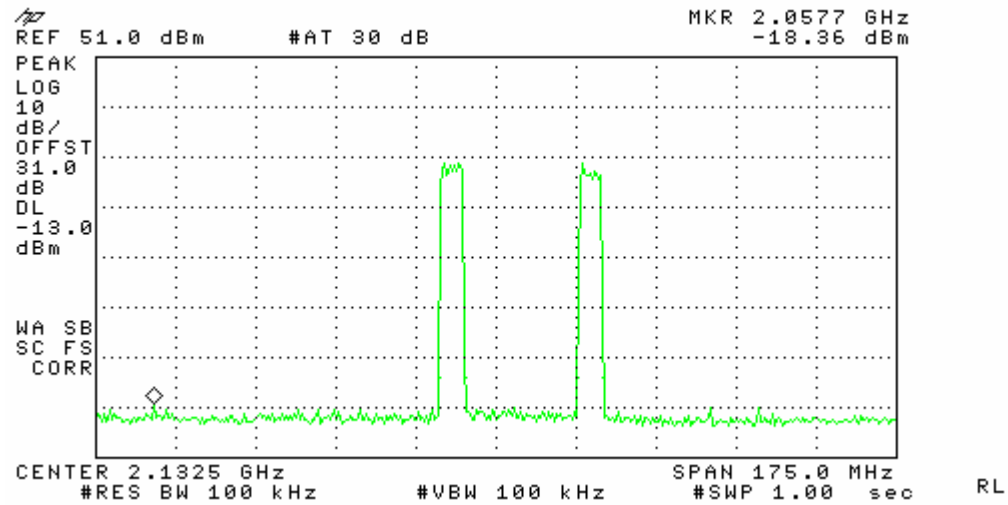
Intermodulation LTE 5 MHz Channel Bandwidth_High AWS_BCDEF
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



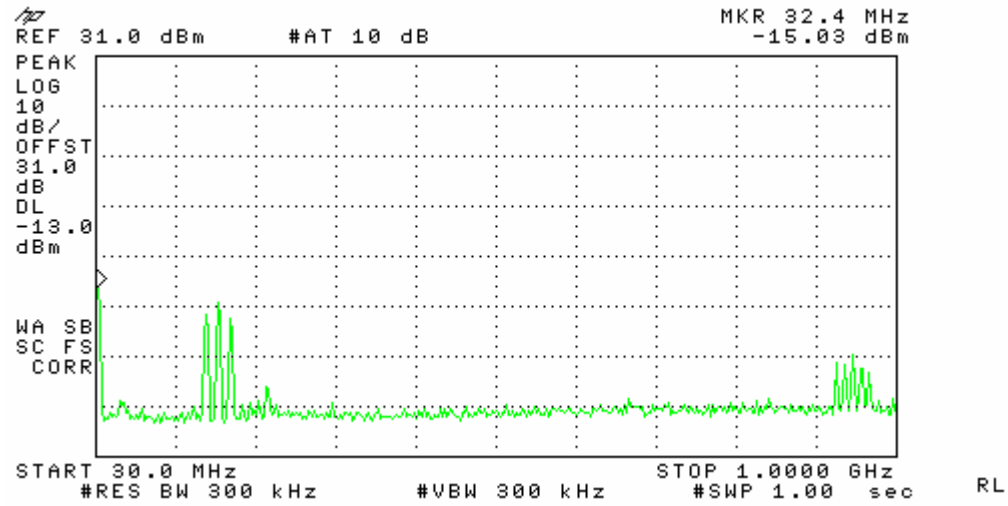
Intermodulation LTE 5 MHz Channel Bandwidth_High AWS_BCDEF
Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz



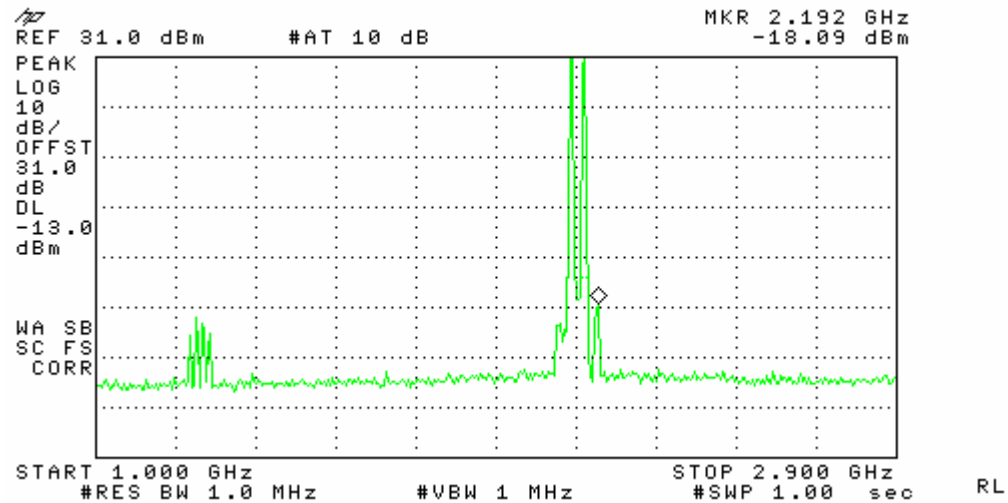
Intermodulation LTE 5 MHz Channel Bandwidth _Apart AWS_BCDEF
Center: 2132.5 MHz Span: 175 MHz RBW/VBW: 100 kHz



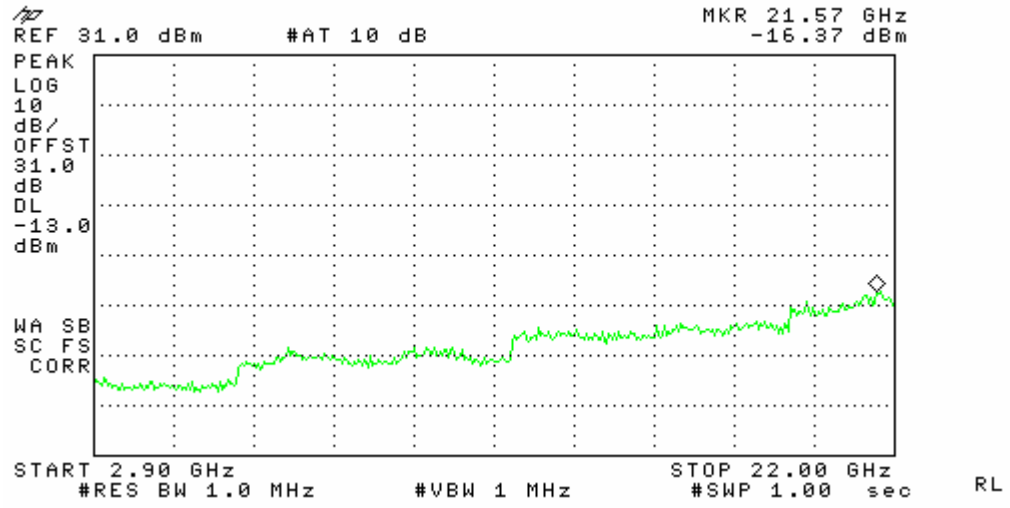
Intermodulation LTE 5 MHz Channel Bandwidth _Apart AWS_BCDEF
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



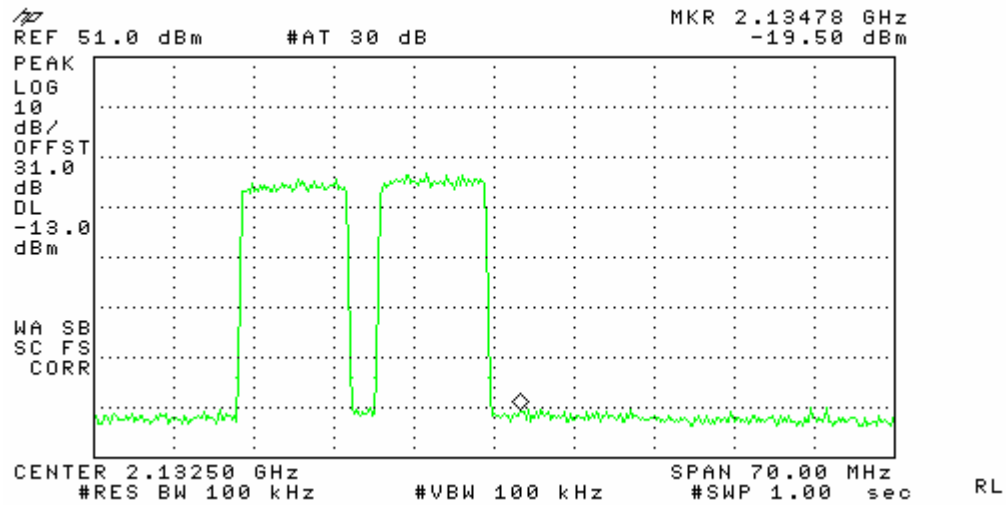
Intermodulation LTE 5 MHz Channel Bandwidth _Apart AWS_BCDEF
Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz



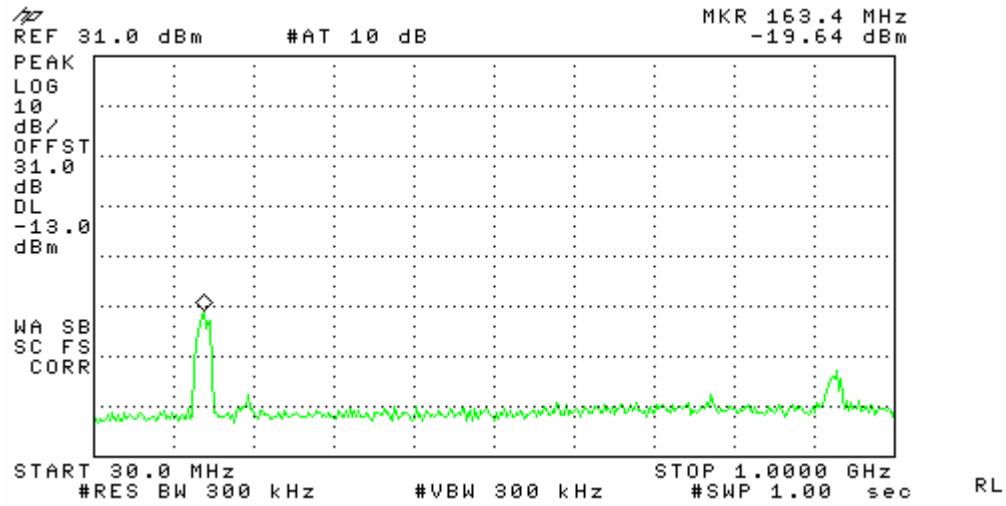
Intermodulation LTE 5 MHz Channel Bandwidth_Apart AWS_BCDEF
Span: 2.9 GHz to 22 GHz RBW/VBW: 1 MHz



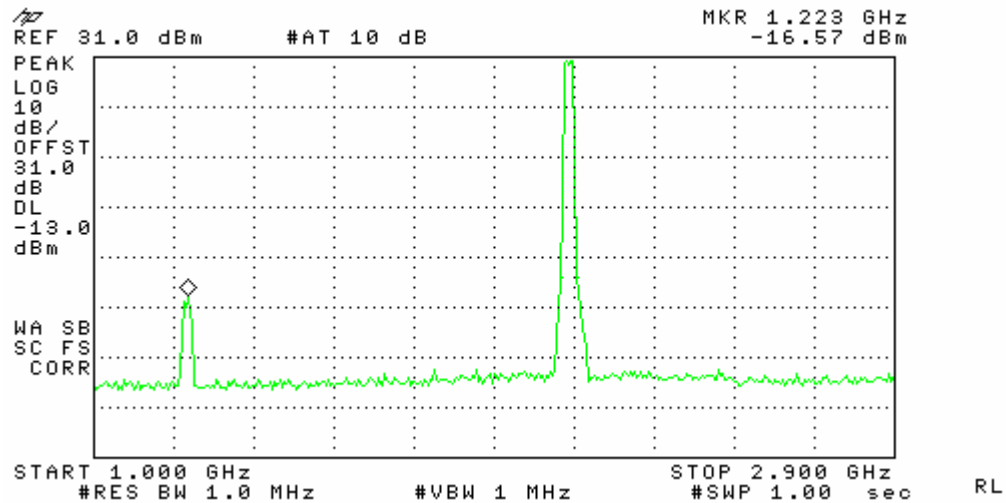
Intermodulation LTE 10 MHz Channel Bandwidth_Low AWS_ABCDE
Center: 2132.5 MHz Span: 70 MHz RBW/VBW: 100 kHz



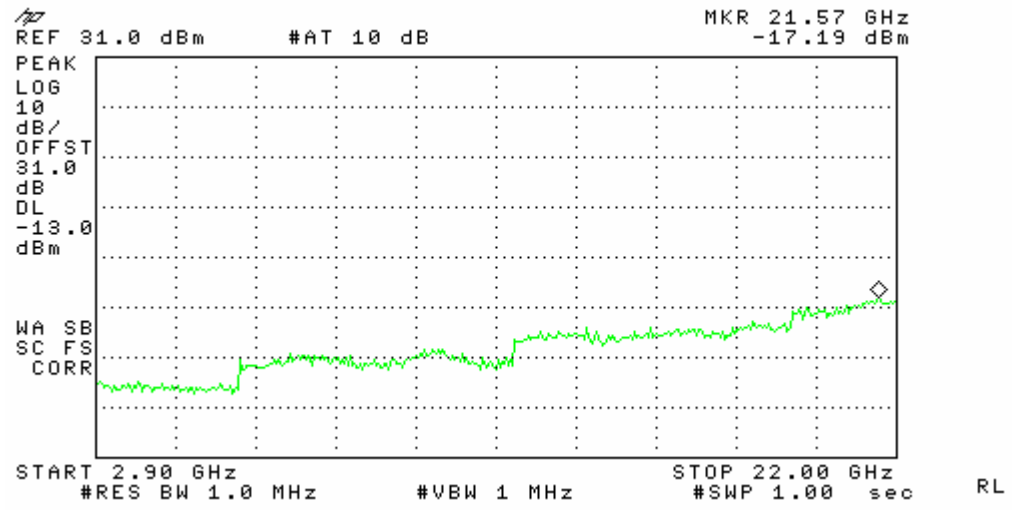
Intermodulation LTE 10 MHz Channel Bandwidth_Low AWS_ABCDE
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



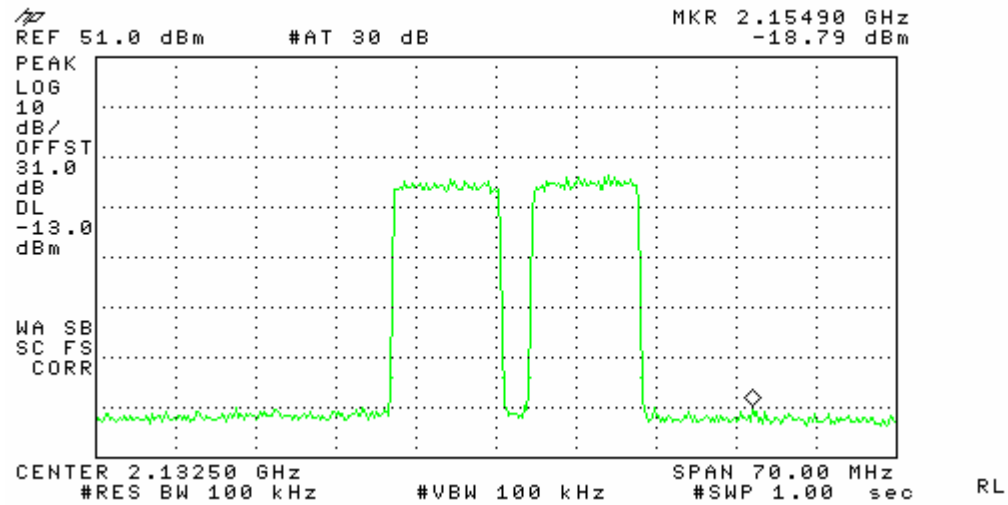
Intermodulation LTE 10 MHz Channel Bandwidth_Low AWS_ABCDE
Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz



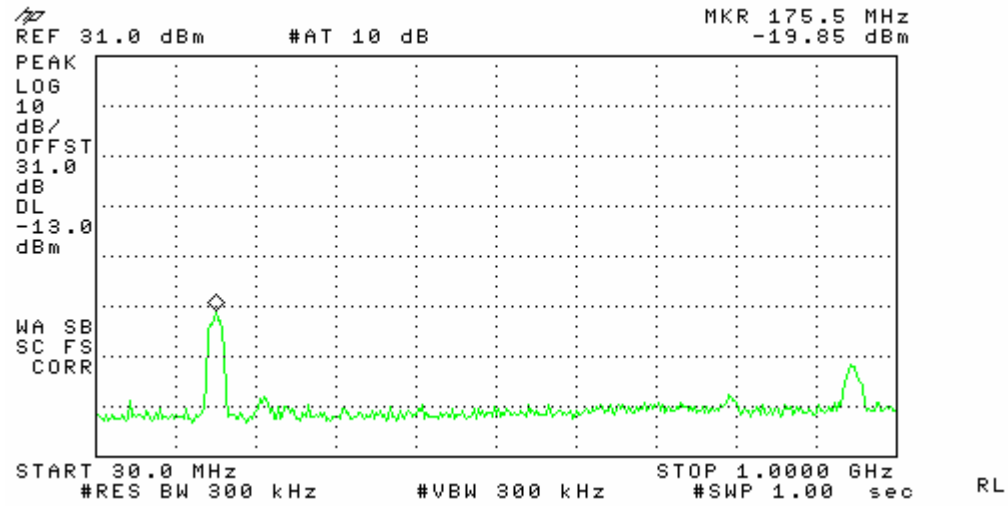
Intermodulation LTE 10 MHz Channel Bandwidth_Low AWS_ABCDE
Span: 2.9 GHz to 22 GHz RBW/VBW: 1 MHz



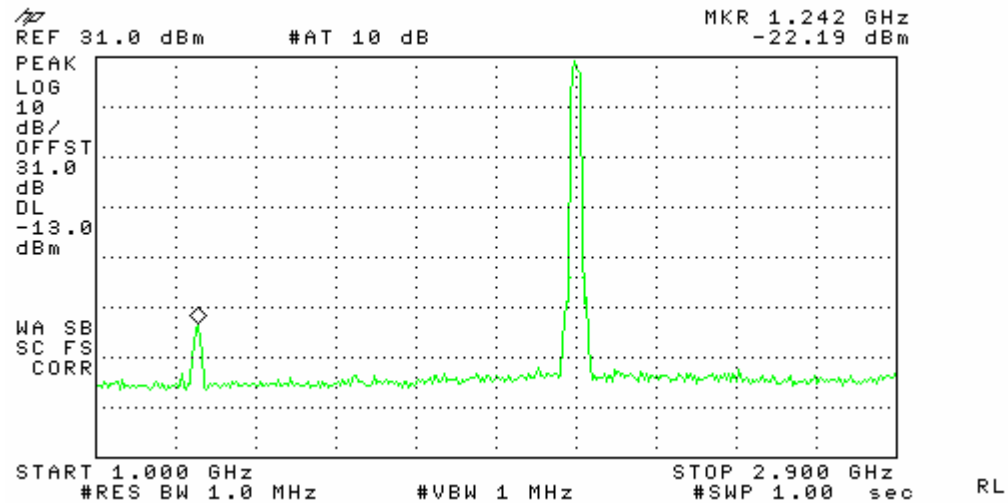
Intermodulation LTE 10 MHz Channel Bandwidth_High AWS_ABCDE
Center: 2132.5 MHz Span: 70 MHz RBW/VBW: 100 kHz



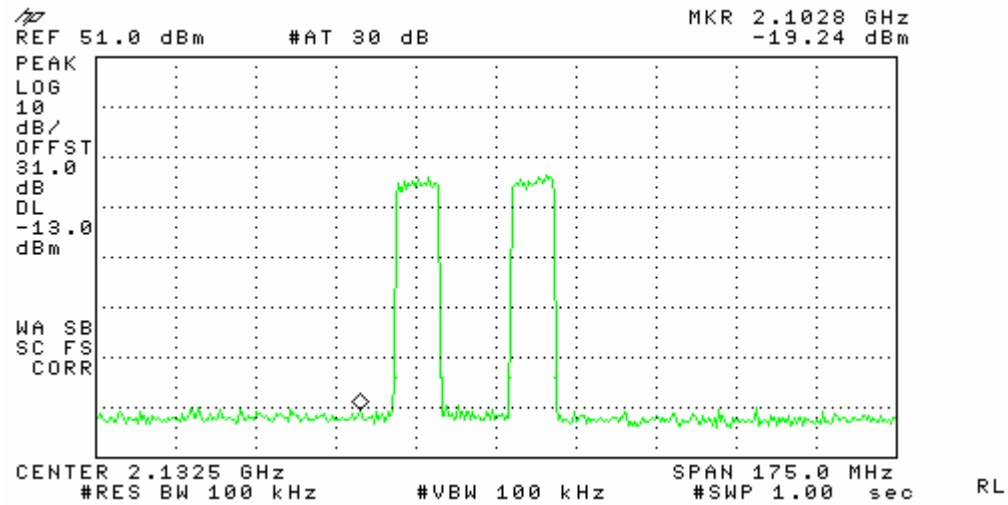
Intermodulation LTE 10 MHz Channel Bandwidth_High AWS_ABCDE
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



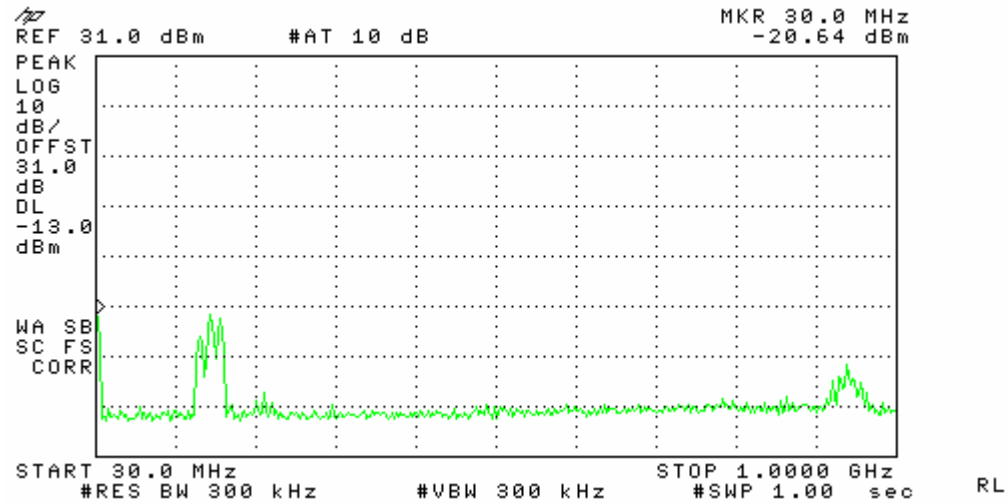
Intermodulation LTE 10 MHz Channel Bandwidth_High AWS_ABCDE
Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz



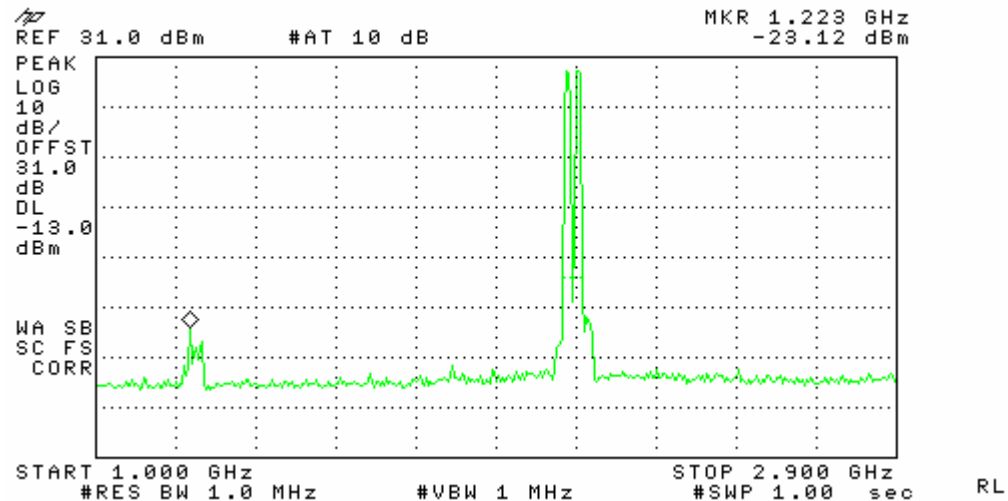
Intermodulation LTE 10 MHz Channel Bandwidth_Apart AWS_ABCDE
Center: 2132.5 MHz Span: 175 MHz RBW/VBW: 100 kHz



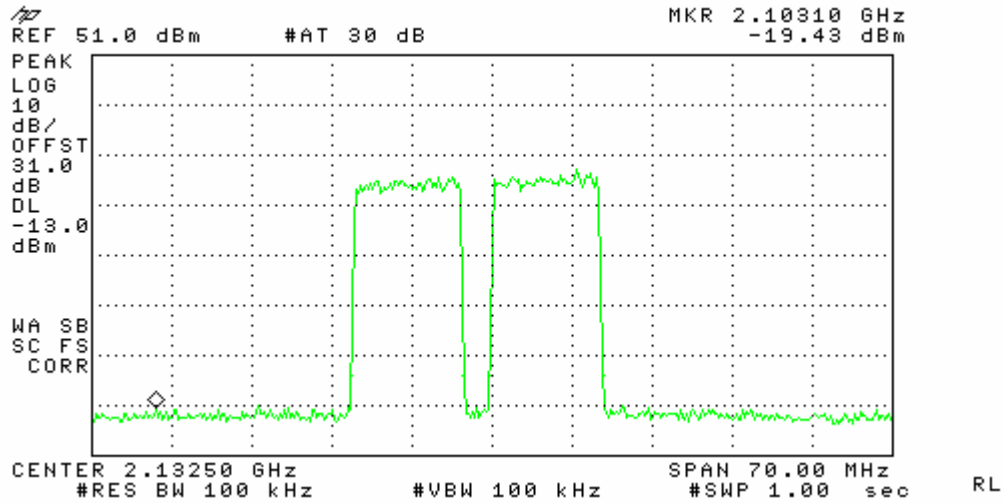
Intermodulation LTE 10 MHz Channel Bandwidth_Apart AWS_ABCDE
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



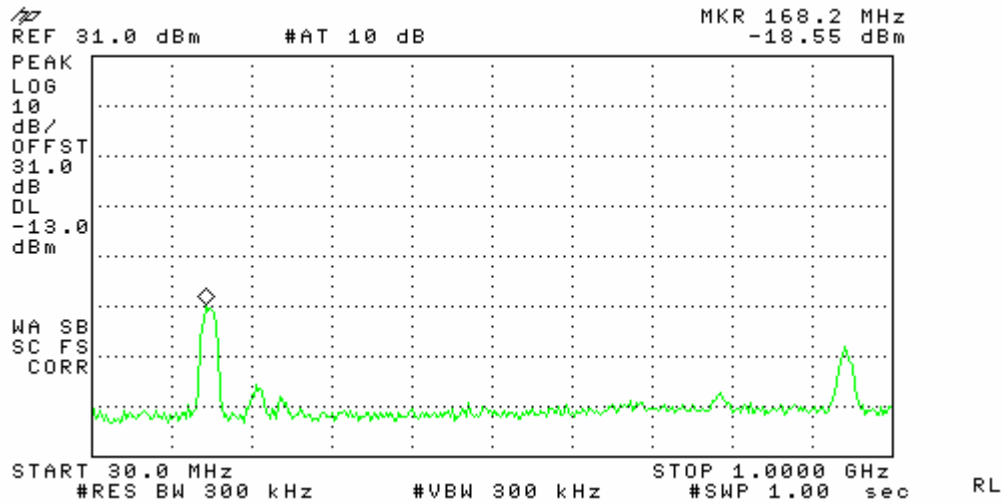
Intermodulation LTE 10 MHz Channel Bandwidth_Apart AWS_ABCDE
Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz



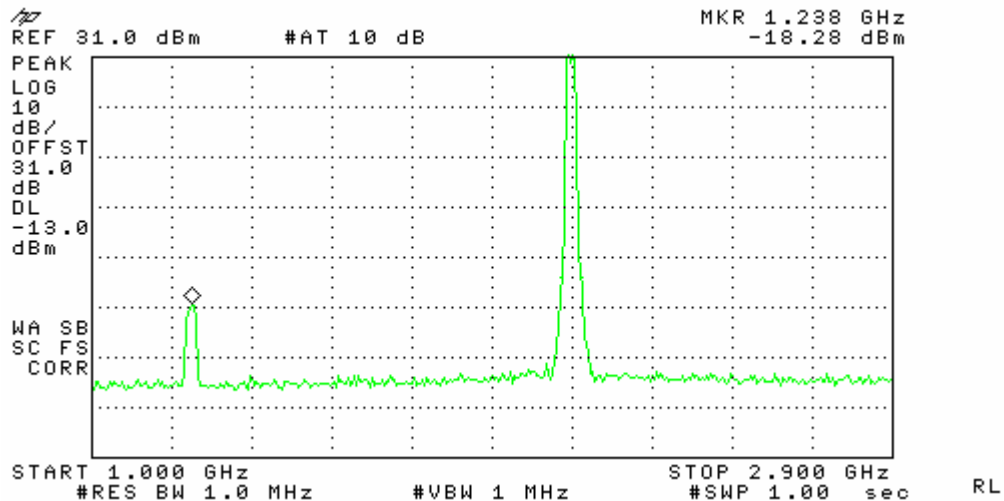
Intermodulation LTE 10 MHz Channel Bandwidth_Low AWS_BCDEF
Center: 2132.5 MHz Span: 70 MHz RBW/VBW: 100 kHz



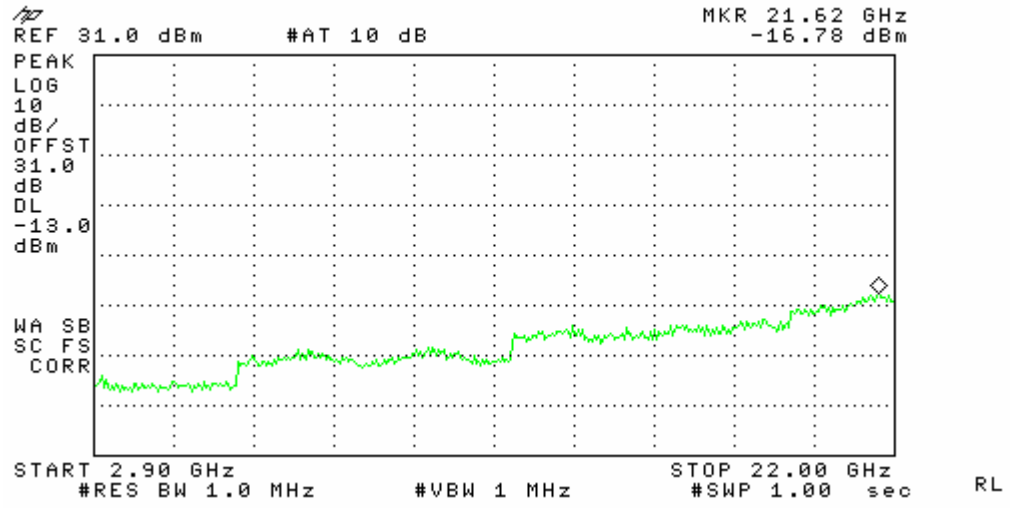
Intermodulation LTE 10 MHz Channel Bandwidth_Low AWS_BCDEF
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



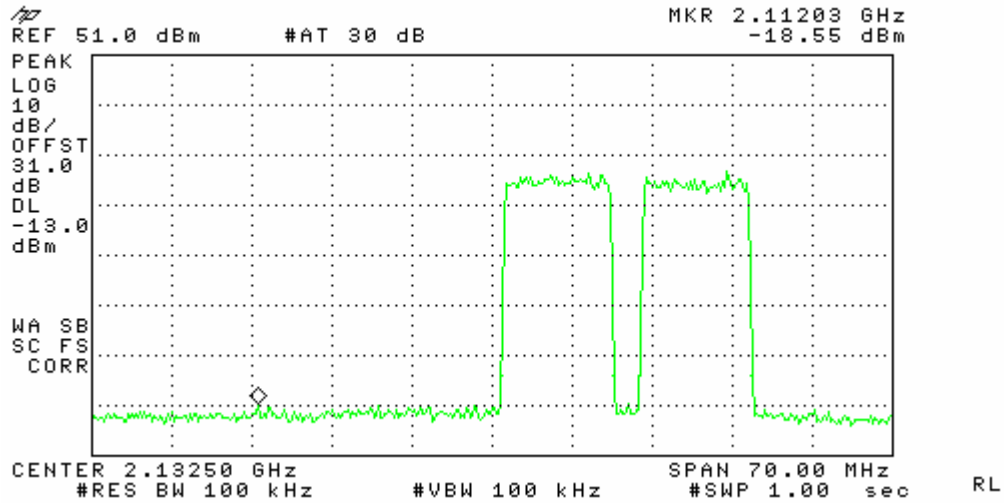
Intermodulation LTE 10 MHz Channel Bandwidth_Low AWS_BCDEF
Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz



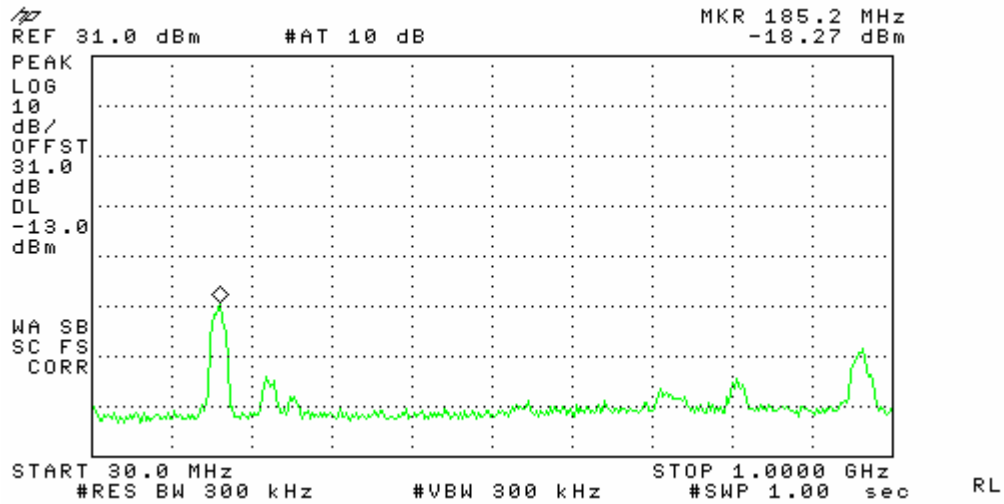
Intermodulation LTE 10 MHz Channel Bandwidth_Low AWS_BCDEF
Span: 2.9 GHz to 22 GHz RBW/VBW: 1 MHz



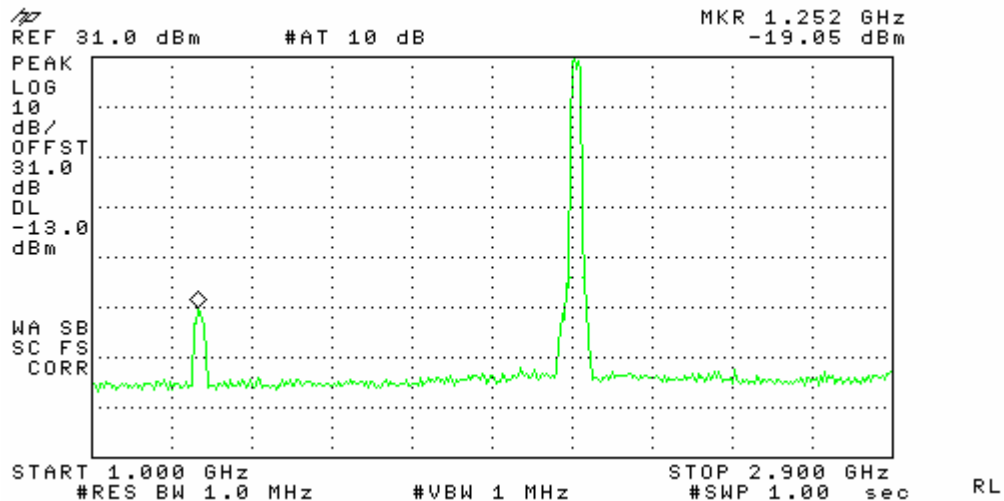
Intermodulation LTE 10 MHz Channel Bandwidth_High AWS_BCDEF
Center: 2132.5 MHz Span: 70 MHz RBW/VBW: 100 kHz



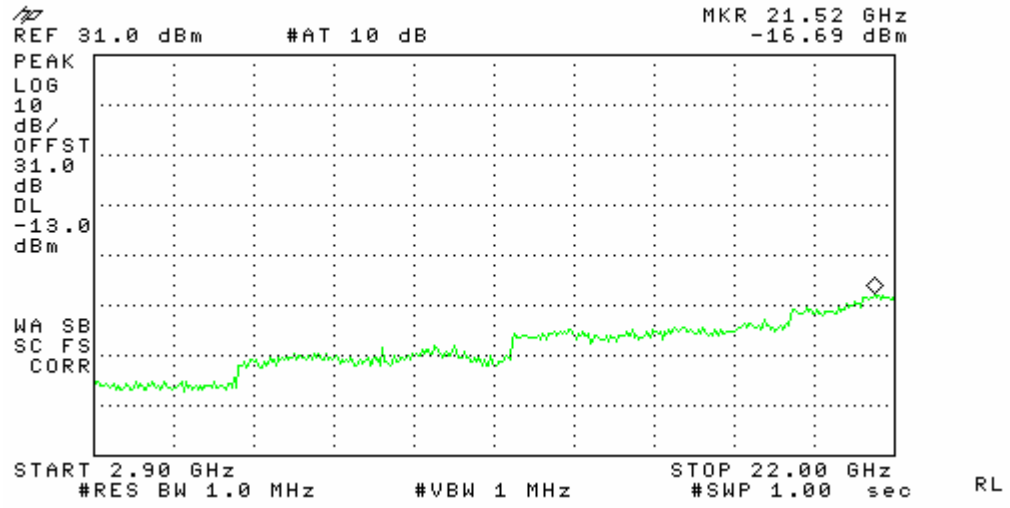
Intermodulation LTE 10 MHz Channel Bandwidth_High AWS_BCDEF
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



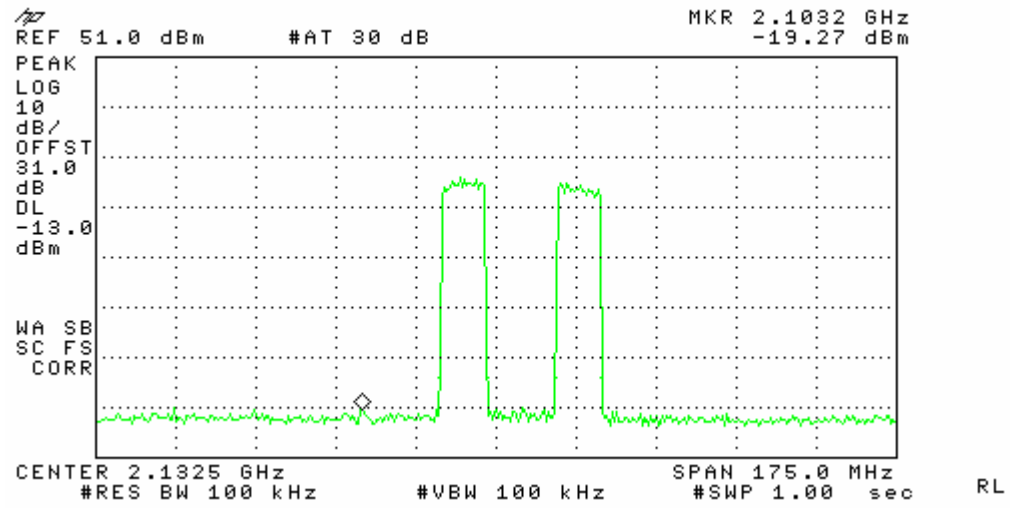
Intermodulation LTE 10 MHz Channel Bandwidth_High AWS_BCDEF
Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz



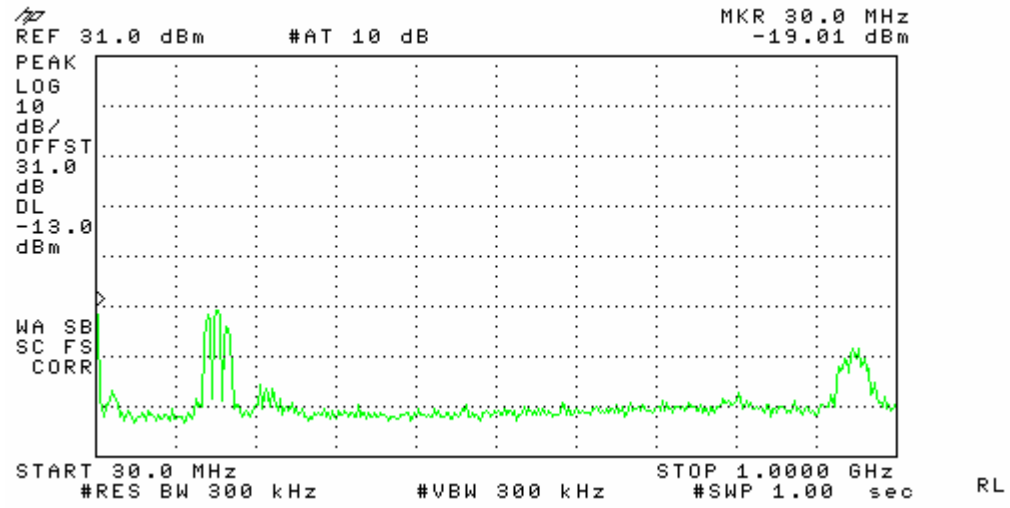
Intermodulation LTE 10 MHz Channel Bandwidth_High AWS_BCDEF
Span: 2.9 GHz to 22 GHz RBW/VBW: 1 MHz



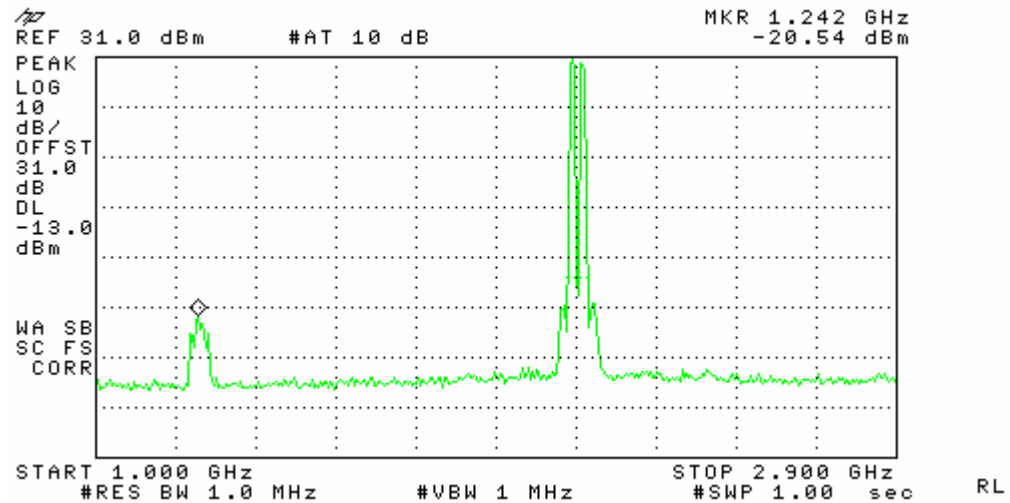
Intermodulation LTE 10 MHz Channel Bandwidth_Apart AWS_BCDEF
Center: 2132.5 MHz Span: 175 MHz RBW/VBW: 100 kHz



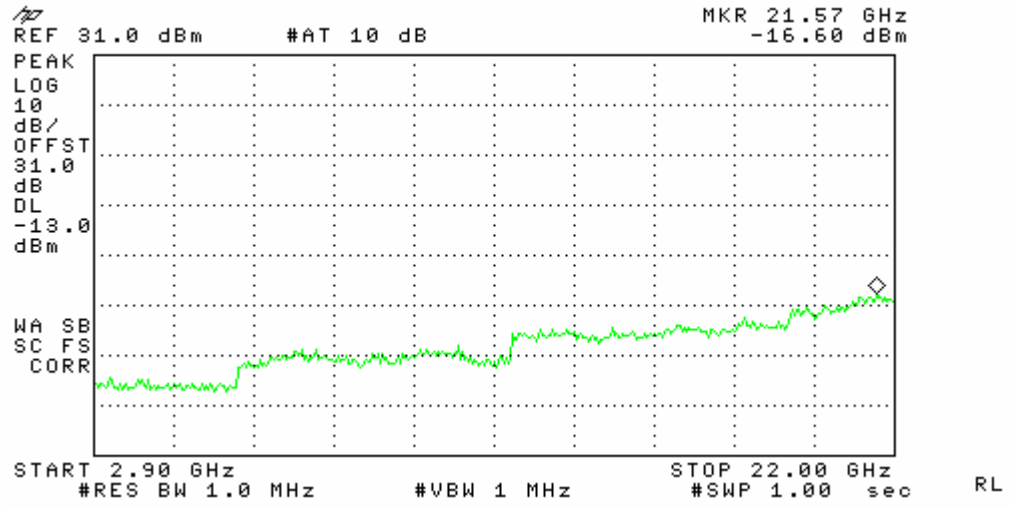
Intermodulation LTE 10 MHz Channel Bandwidth_Apart AWS_BCDEF
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



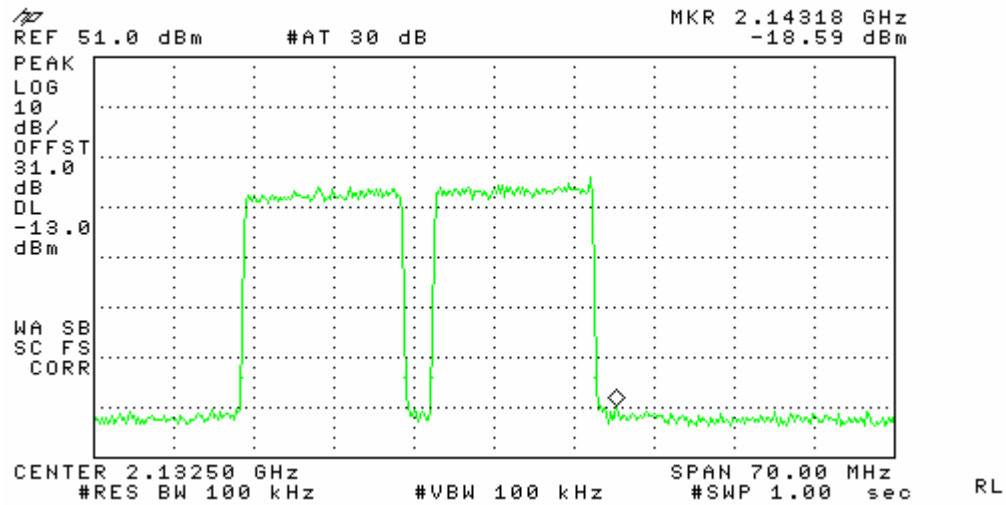
Intermodulation LTE 10 MHz Channel Bandwidth_Apart AWS_BCDEF
Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz



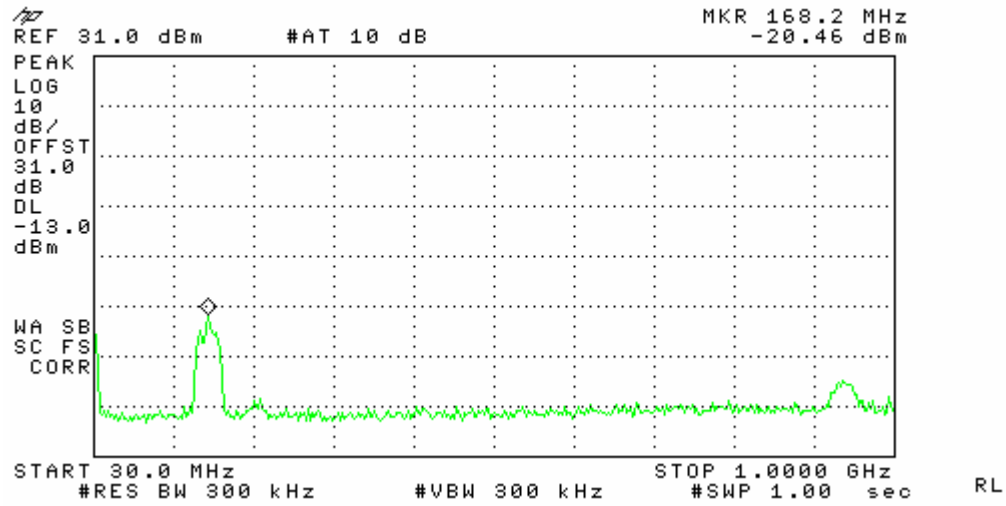
Intermodulation LTE 10 MHz Channel Bandwidth_Apart AWS_BCDEF
Span: 2.9 GHz to 22 GHz RBW/VBW: 1 MHz



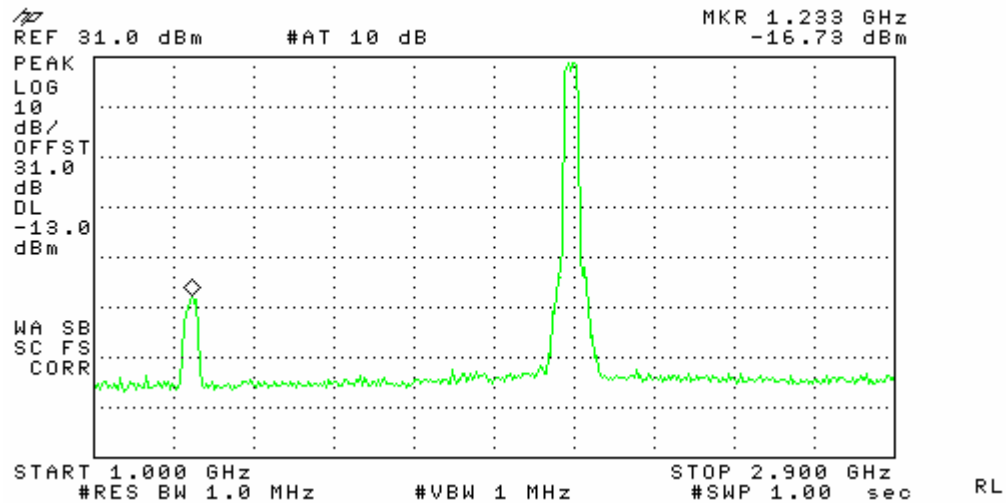
Intermodulation LTE 15 MHz Channel Bandwidth_Low AWS_ABCDE
Center: 2132.5 MHz Span: 70 MHz RBW/VBW: 100 kHz



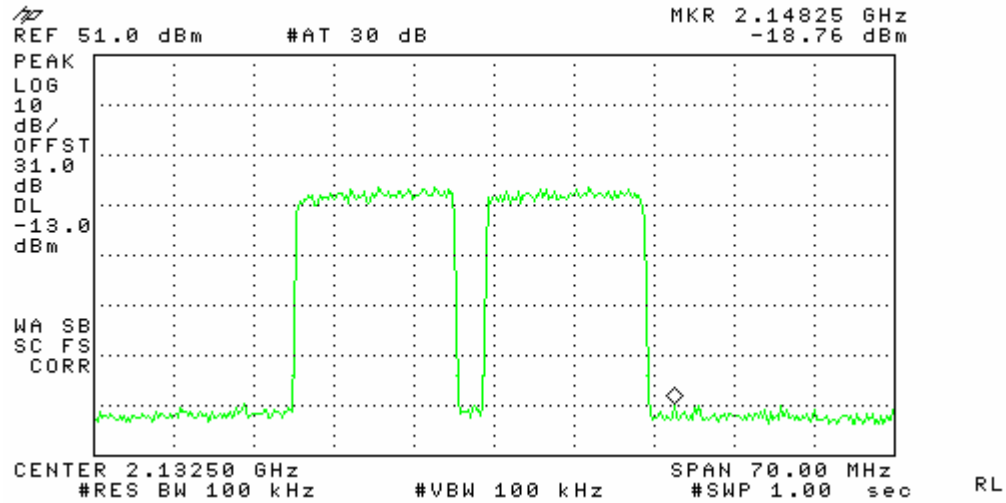
Intermodulation LTE 15 MHz Channel Bandwidth_Low AWS_ABCDE
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



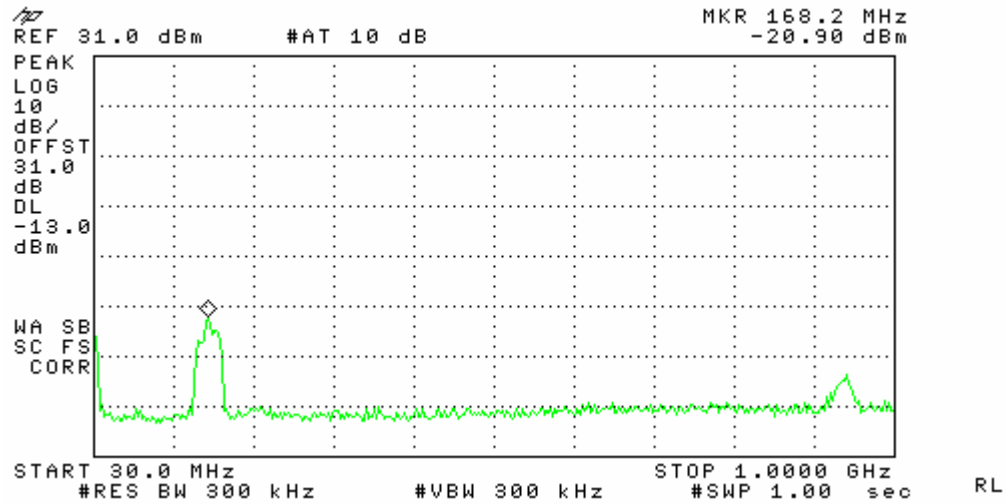
Intermodulation LTE 15 MHz Channel Bandwidth_Low AWS_ABCDE
Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz



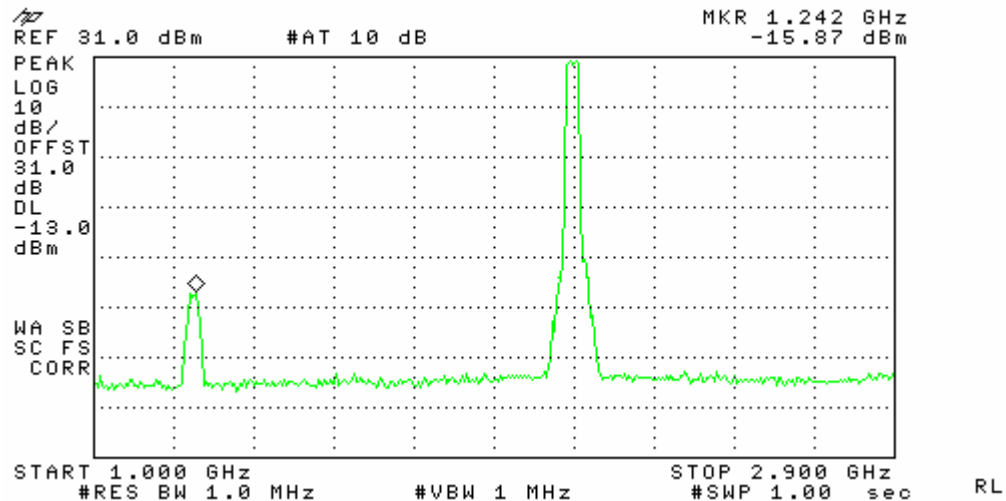
Intermodulation LTE 15 MHz Channel Bandwidth_High AWS_ABCDE
 Center: 2132.5 MHz Span: 70 MHz RBW/VBW: 100 kHz



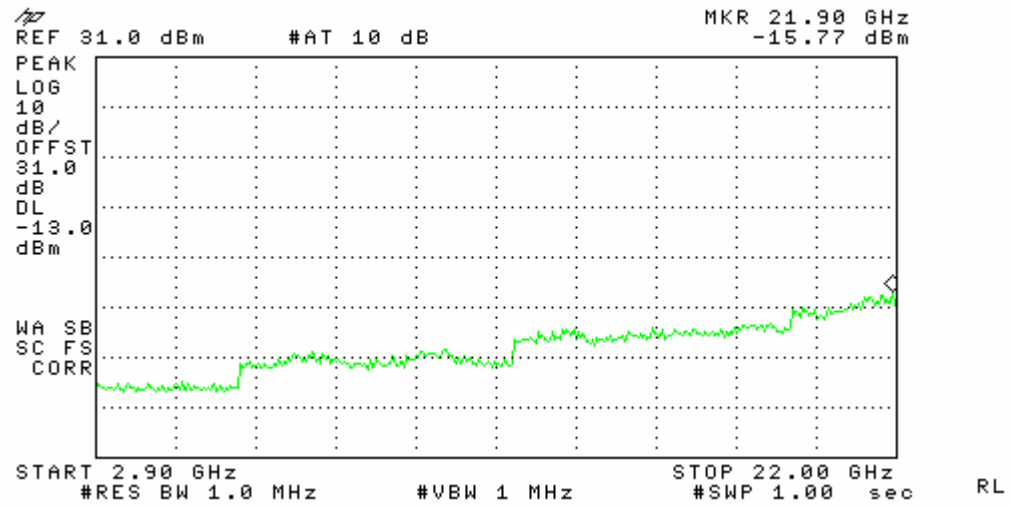
Intermodulation LTE 15 MHz Channel Bandwidth_High AWS_ABCDE
 Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



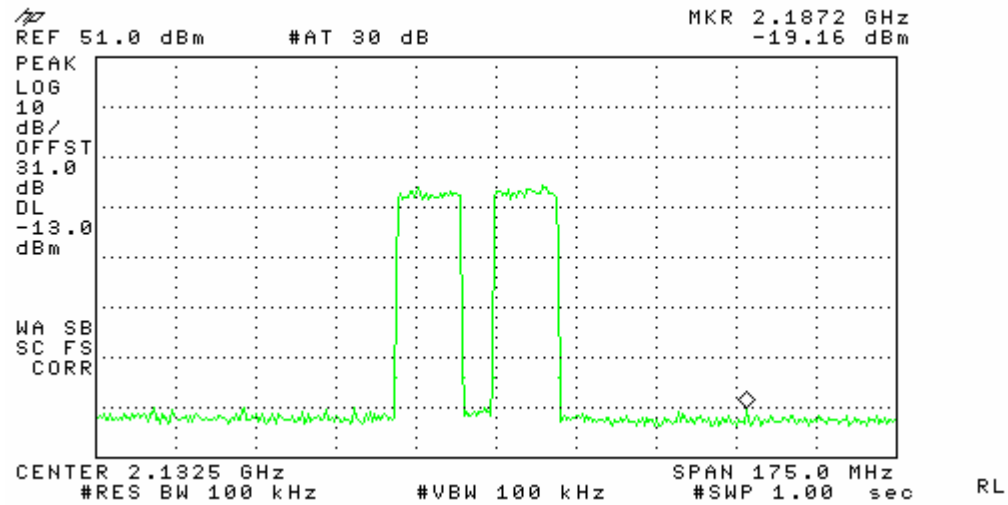
Intermodulation LTE 15 MHz Channel Bandwidth_High AWS_ABCDE
 Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz



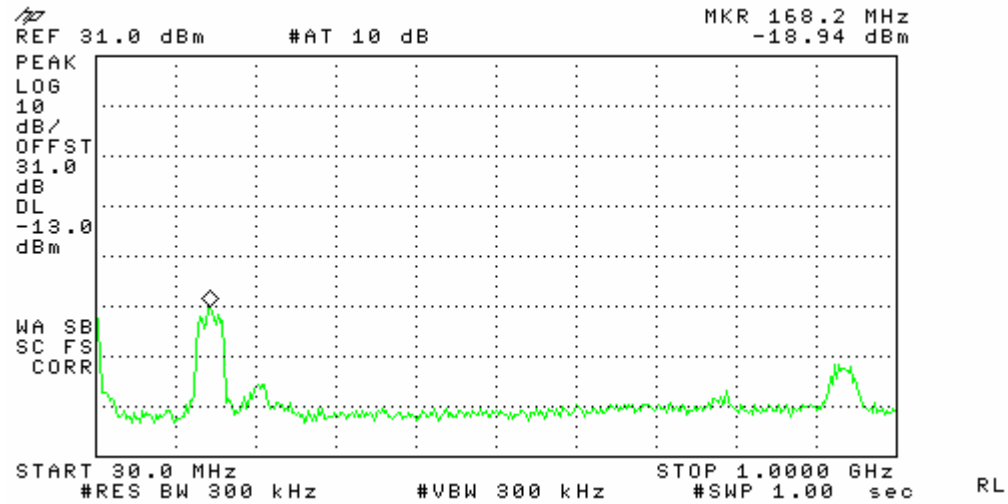
Intermodulation LTE 15 MHz Channel Bandwidth_High AWS_ABCDE
Span: 2.9 GHz to 22 GHz RBW/VBW: 1 MHz



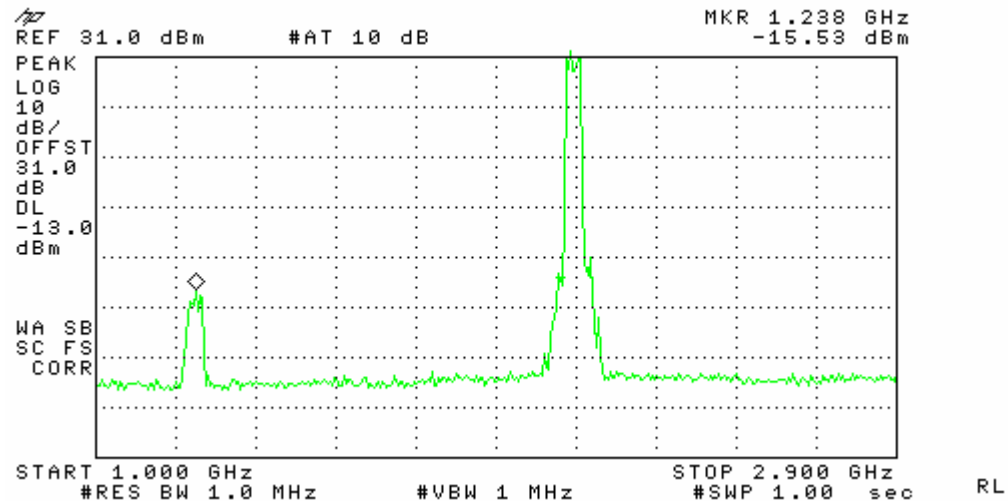
Intermodulation LTE 15 MHz Channel Bandwidth_Apart AWS_ABCDE
Center: 2132.5 MHz Span: 175 MHz RBW/VBW: 100 kHz



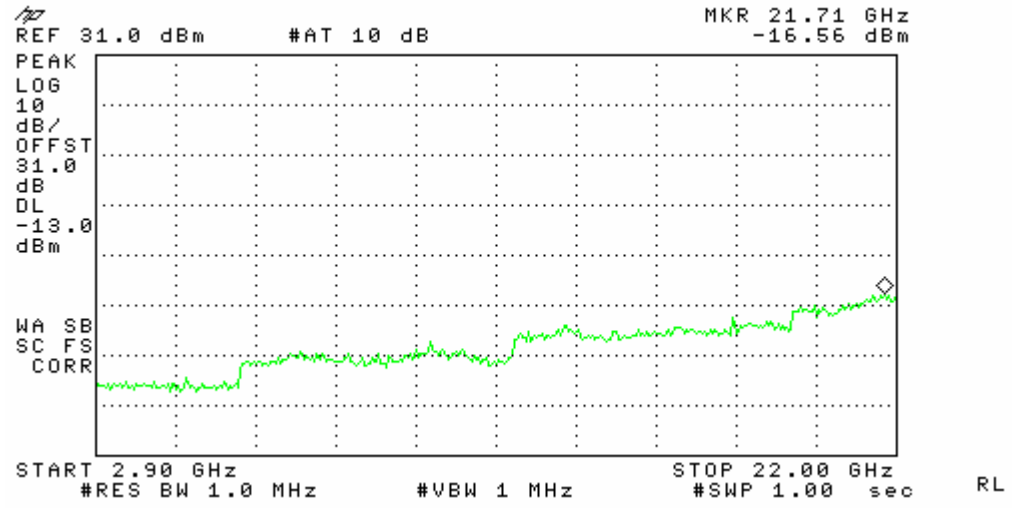
Intermodulation LTE 15 MHz Channel Bandwidth_Apart AWS_ABCDE
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



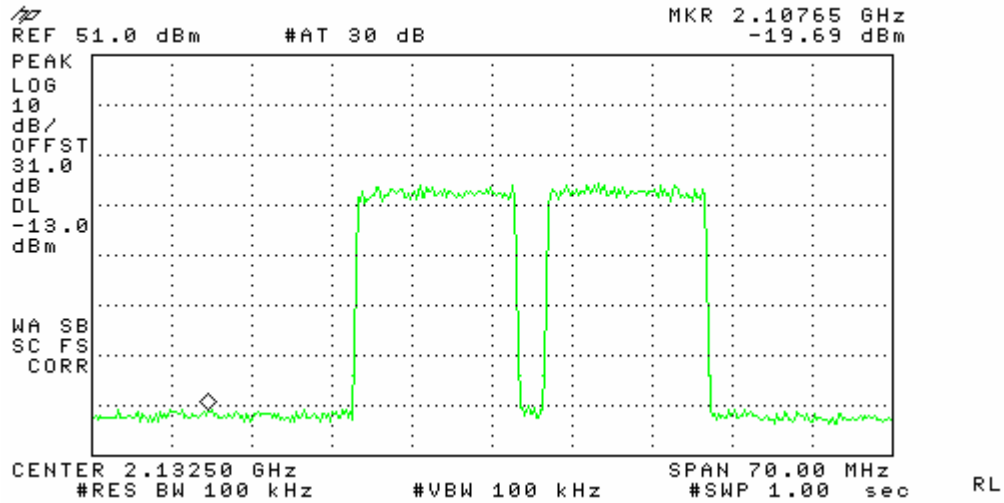
Intermodulation LTE 15 MHz Channel Bandwidth_Apart AWS_ABCDE
Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz



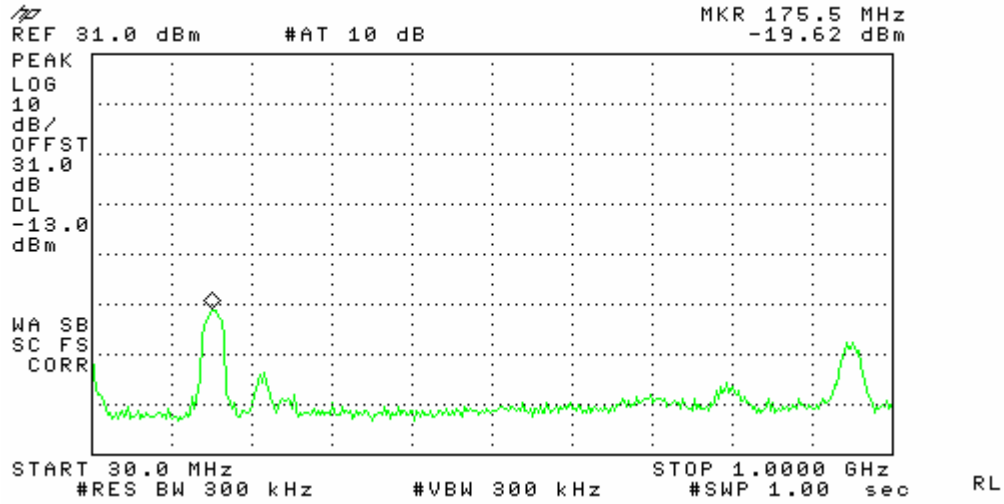
Intermodulation LTE 15 MHz Channel Bandwidth_Apart AWS_ABCDE
Span: 2.9 GHz to 22 GHz RBW/VBW: 1 MHz



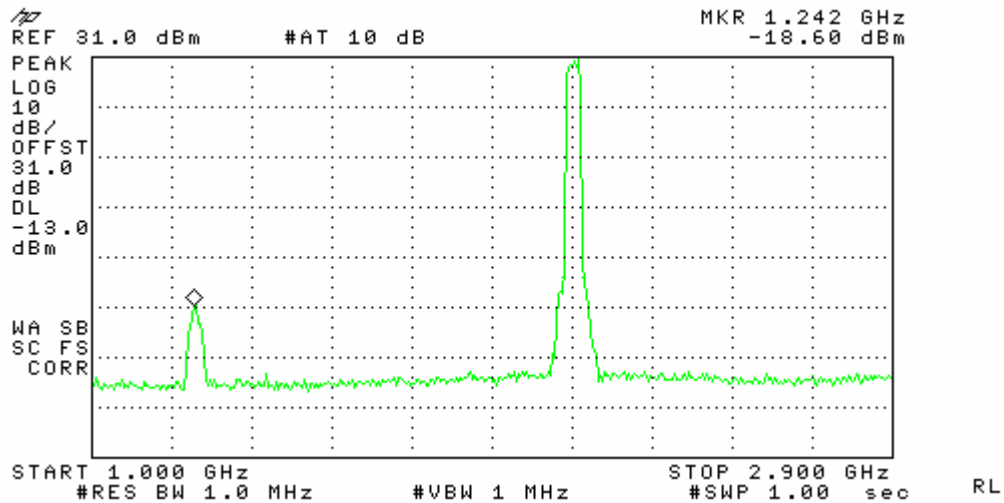
Intermodulation LTE 15 MHz Channel Bandwidth_Low AWS_BCDEF
Center: 2132.5 MHz Span: 70 MHz RBW/VBW: 100 kHz



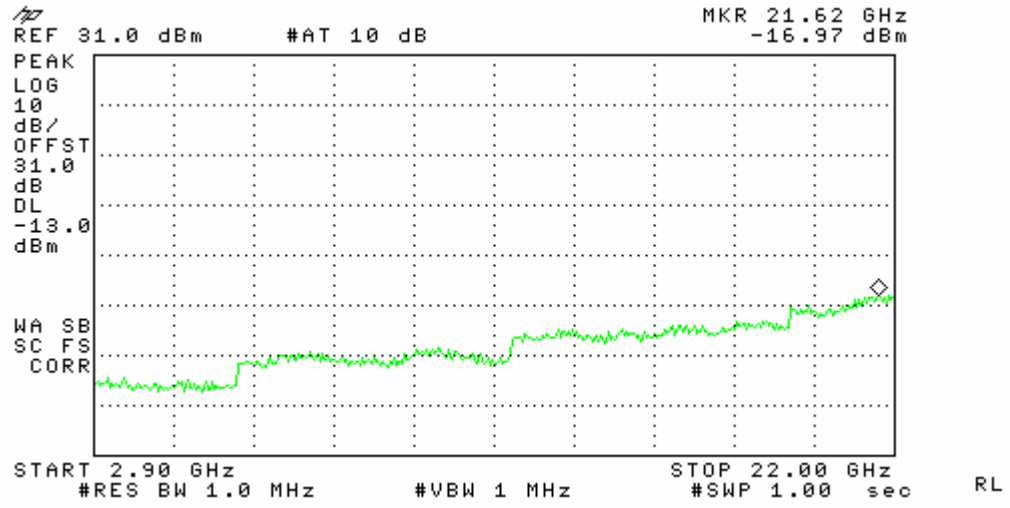
Intermodulation LTE 15 MHz Channel Bandwidth_Low AWS_BCDEF
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



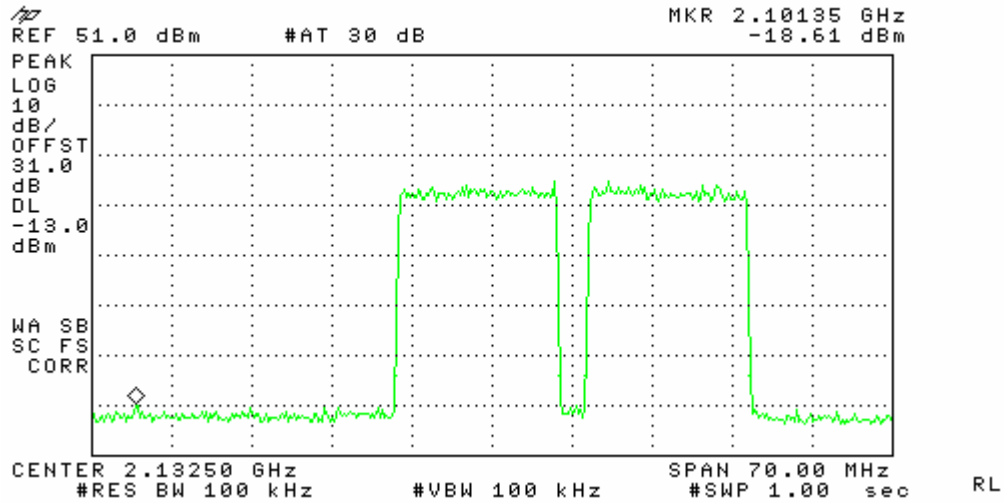
Intermodulation LTE 15 MHz Channel Bandwidth_Low AWS_BCDEF
Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz



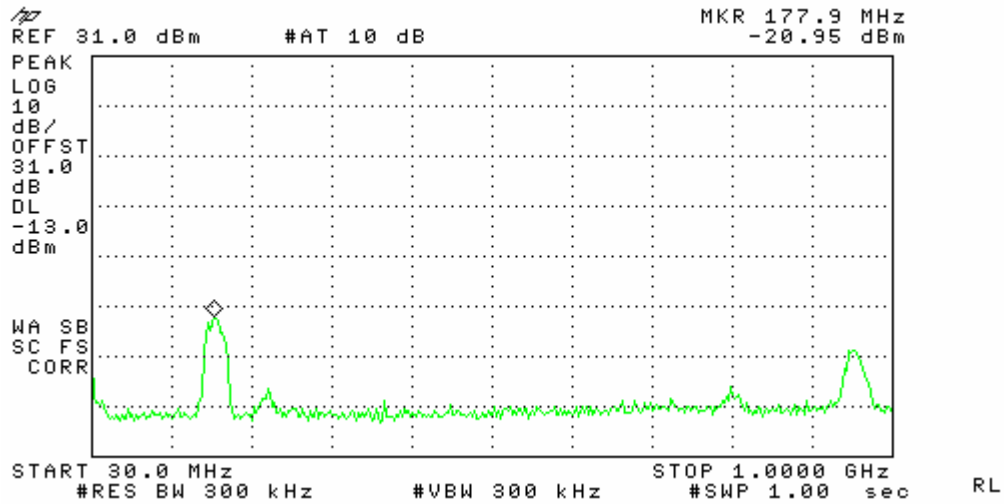
Intermodulation LTE 15 MHz Channel Bandwidth_Low AWS_BCDEF
Span: 2.9 GHz to 22 GHz RBW/VBW: 1 MHz



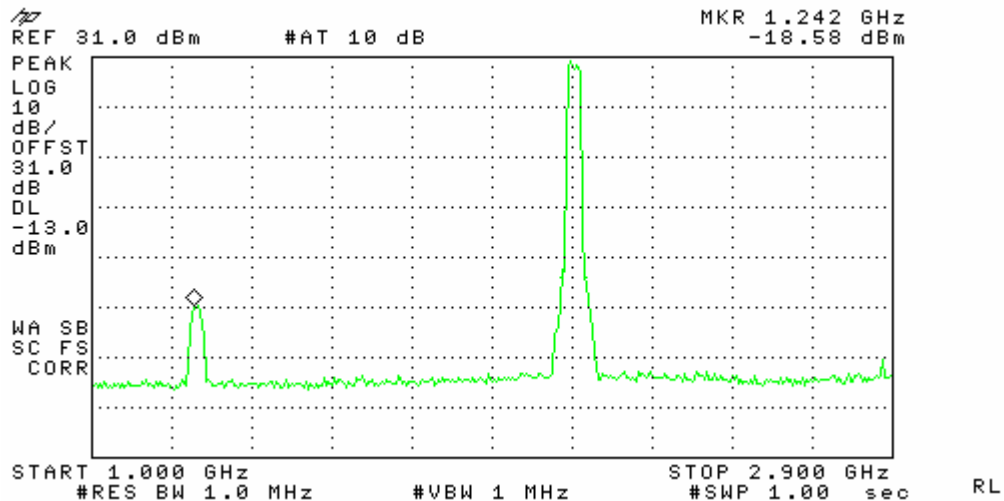
Intermodulation LTE 15 MHz Channel Bandwidth_High AWS_BCDEF
Center: 2132.5 MHz Span: 70 MHz RBW/VBW: 100 kHz



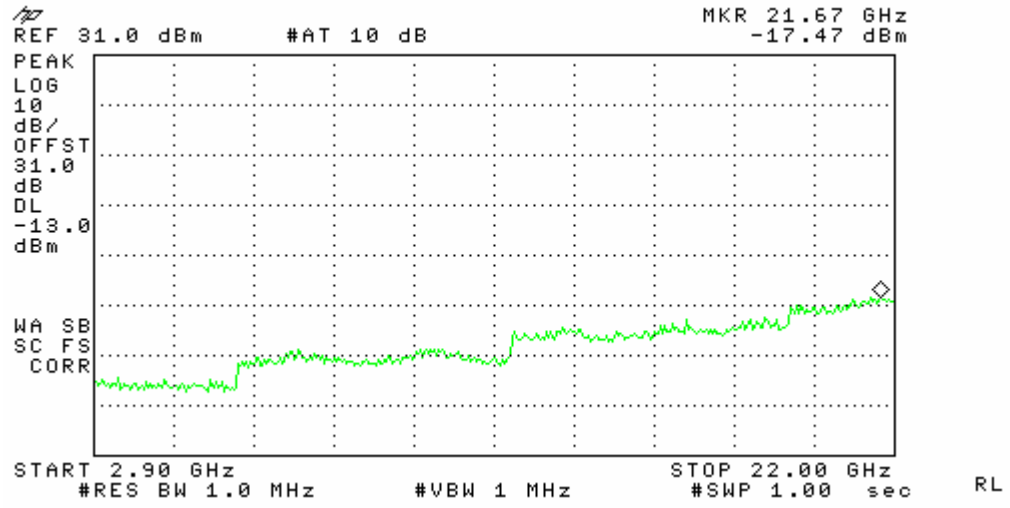
Intermodulation LTE 15 MHz Channel Bandwidth_High AWS_BCDEF
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



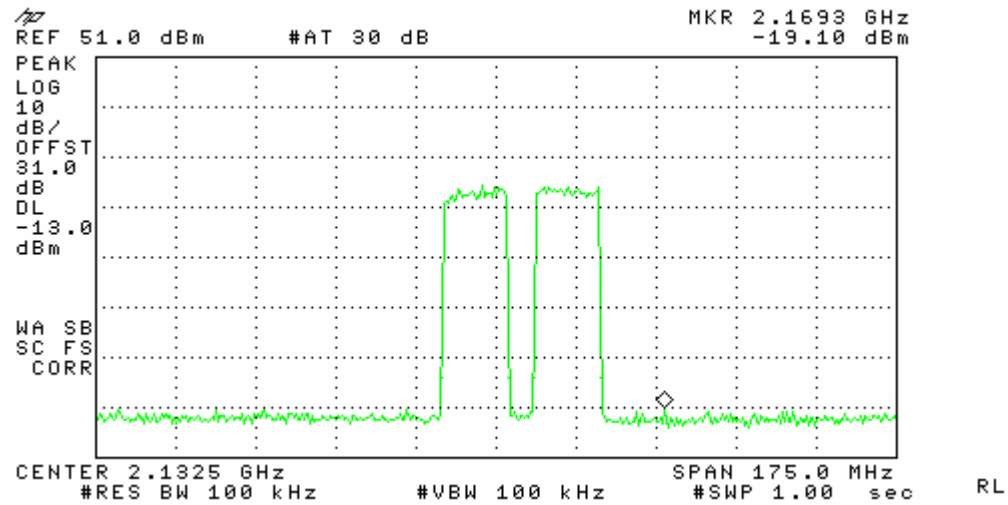
Intermodulation LTE 15 MHz Channel Bandwidth_High AWS_BCDEF
Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz



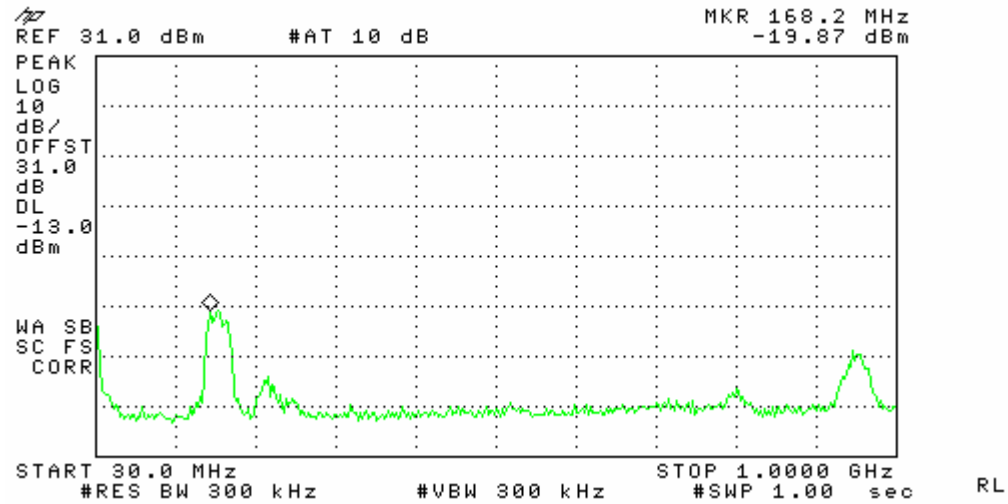
Intermodulation LTE 15 MHz Channel Bandwidth_High AWS_BCDEF
Span: 2.9 GHz to 22 GHz RBW/VBW: 1 MHz



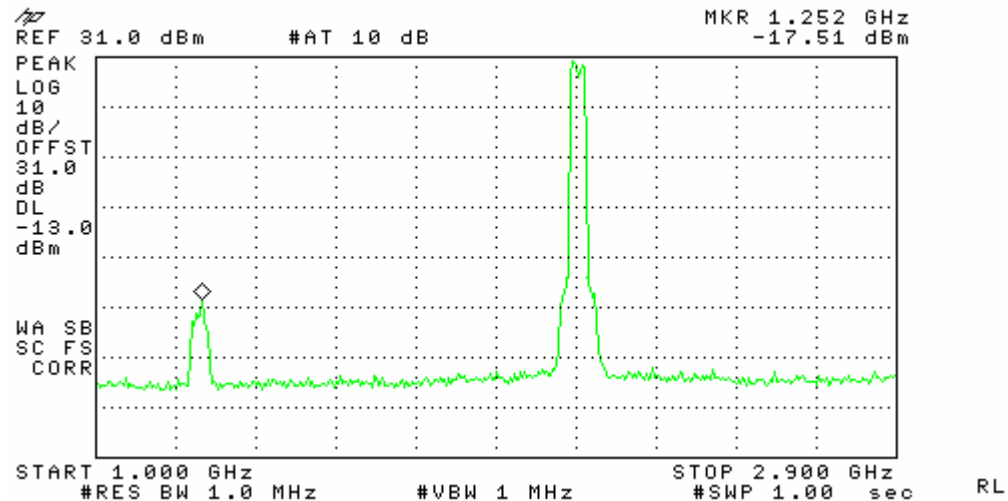
Intermodulation LTE 15 MHz Channel Bandwidth_Apart AWS_BCDEF
 Center: 2132.5 MHz Span: 175 MHz RBW/VBW: 100 kHz



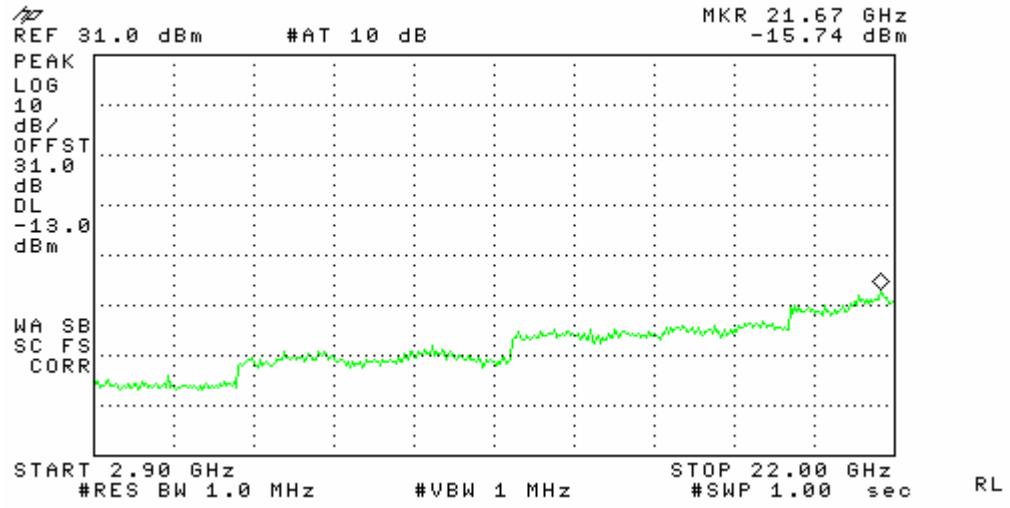
Intermodulation LTE 15 MHz Channel Bandwidth_Apart AWS_BCDEF
 Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz



Intermodulation LTE 15 MHz Channel Bandwidth_Apart AWS_BCDEF
 Span: 1 GHz to 2.9 GHz RBW/VBW: 1 MHz

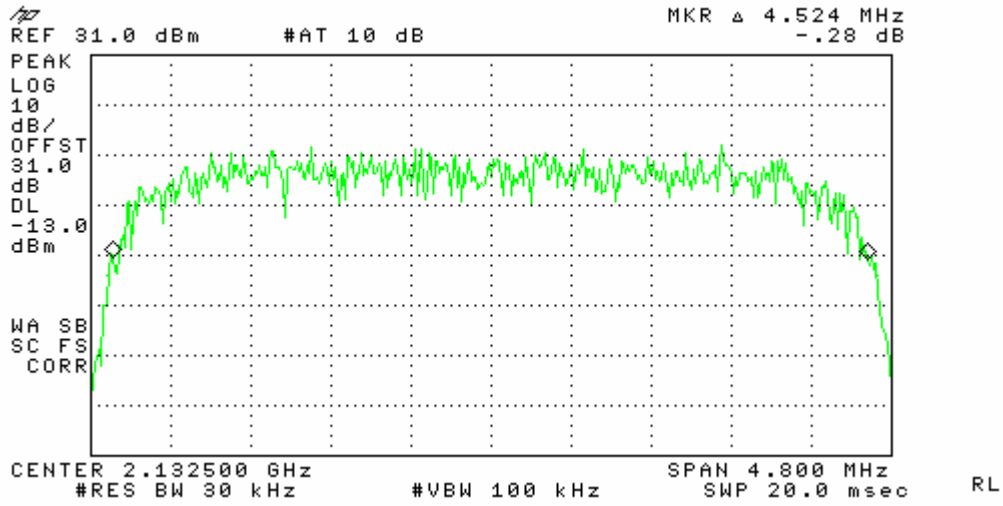


Intermodulation LTE 15 MHz Channel Bandwidth_Apart AWS_BCDEF
Span: 2.9 GHz to 22 GHz RBW/VBW: 1 MHz



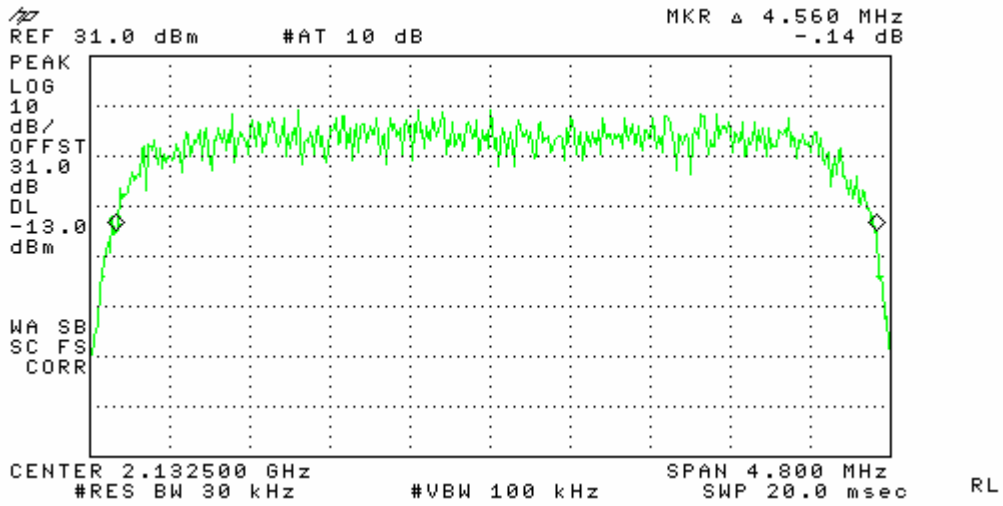
Occupied Bandwidth
Span: 4.8 MHz

WCDMA_Signal_In AWS
RBW: 30 kHz VBW: 100 kHz



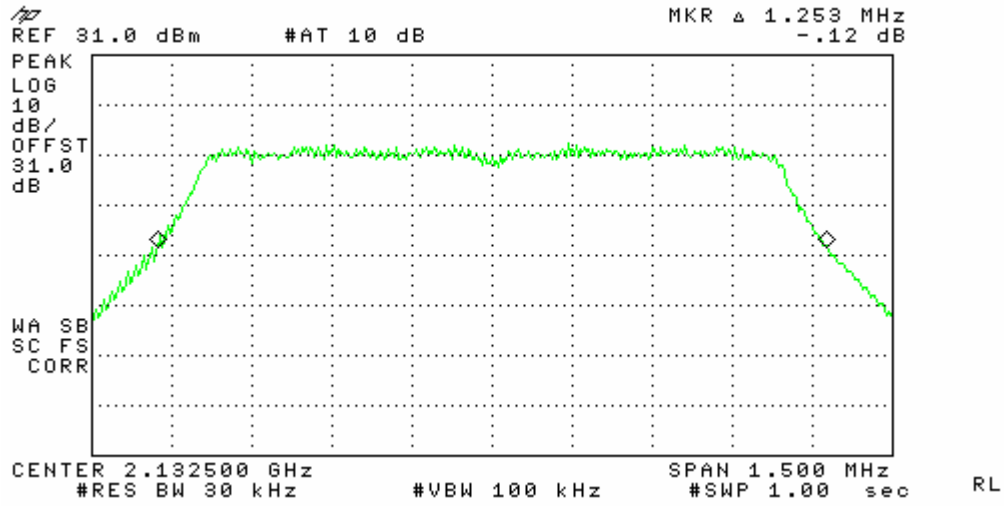
Occupied Bandwidth
Span: 4.8 MHz

WCDMA_Signal_Out AWS
RBW: 30 kHz VBW: 100 kHz



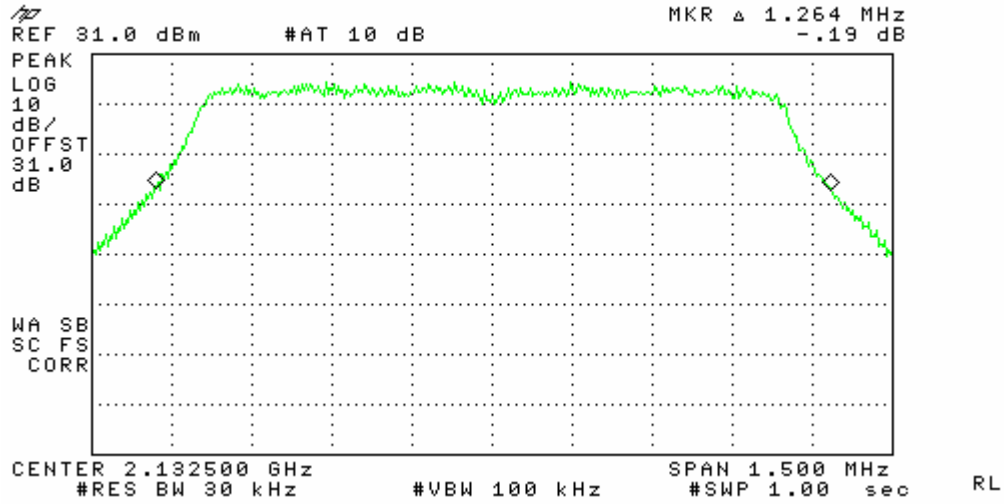
Occupied Bandwidth
Span: 1.50 MHz

LTE 1.4 MHz Channel Bandwidth_Signal_In
RBW: 30 kHz VBW: 100 kHz



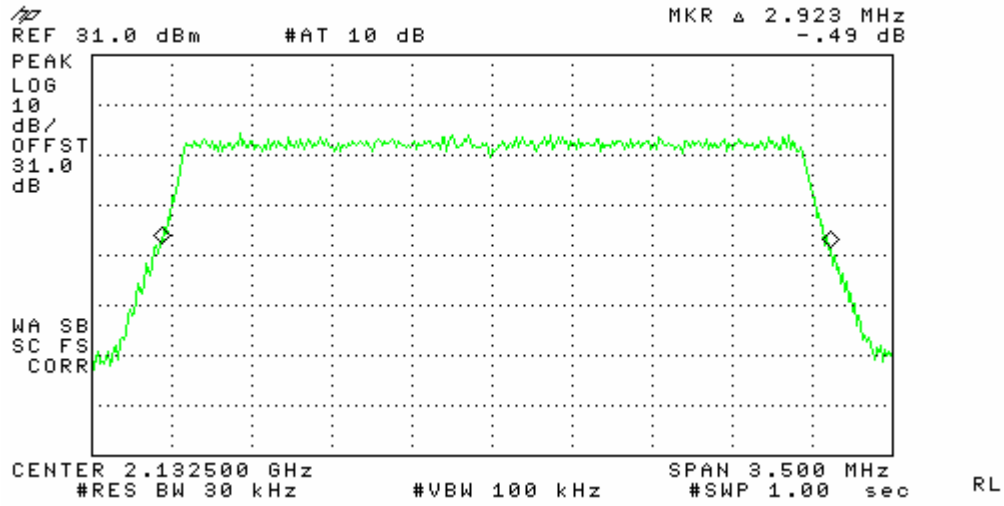
Occupied Bandwidth
Span: 1.50 MHz

LTE 1.4 MHz Channel Bandwidth_Signal_Out
RBW: 30 kHz VBW: 100 kHz



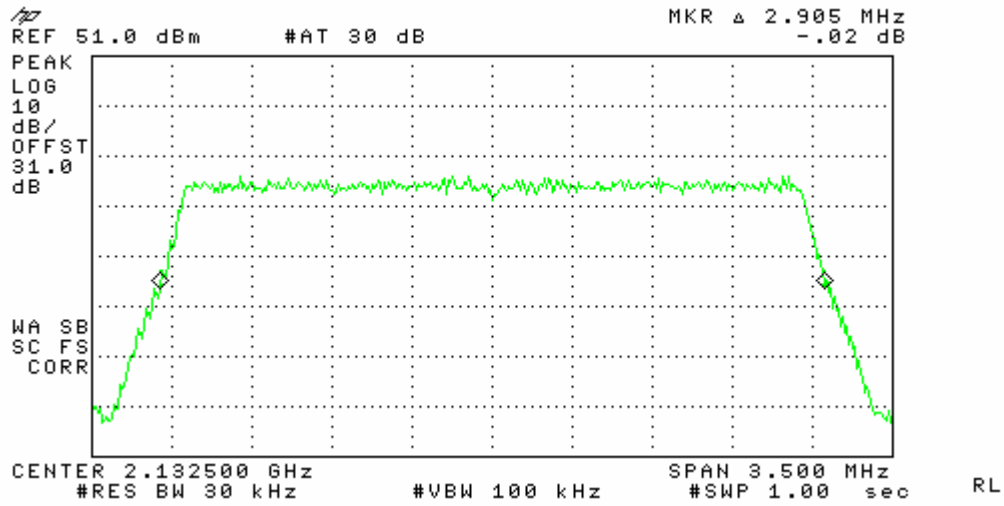
Occupied Bandwidth
Span: 3.5 MHz

LTE 3 MHz Channel Bandwidth_Signal_In
RBW: 30kHz VBW: 100 kHz



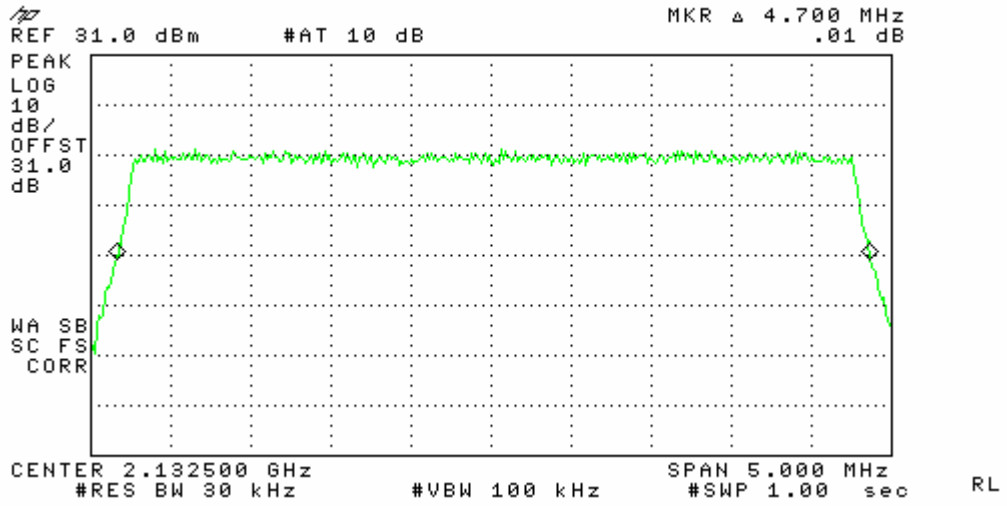
Occupied Bandwidth
Span: 3.5 MHz

LTE 3 MHz Channel Bandwidth_Signal_Out
RBW: 30 kHz VBW: 100 kHz



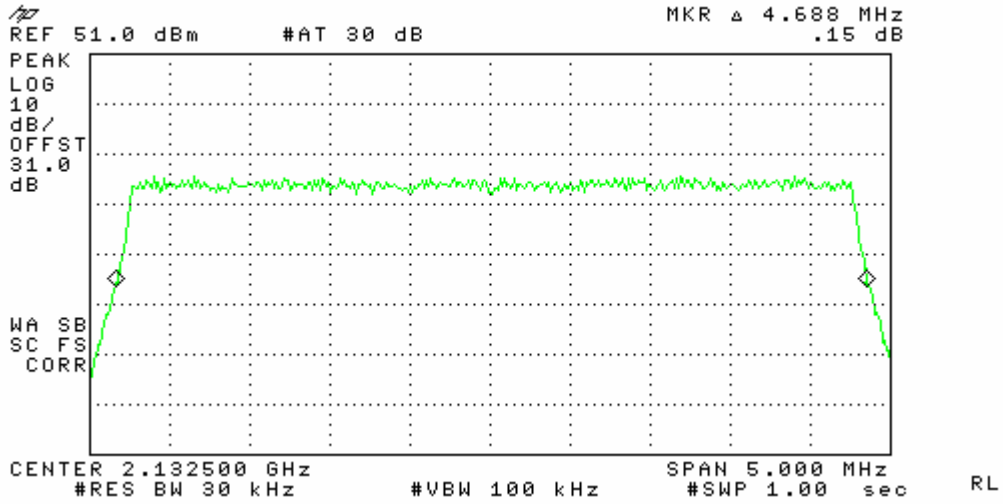
Occupied Bandwidth
Span: 5 MHz

LTE 5 MHz Channel Bandwidth_Signal_In
RBW: 30 kHz VBW: 100 kHz



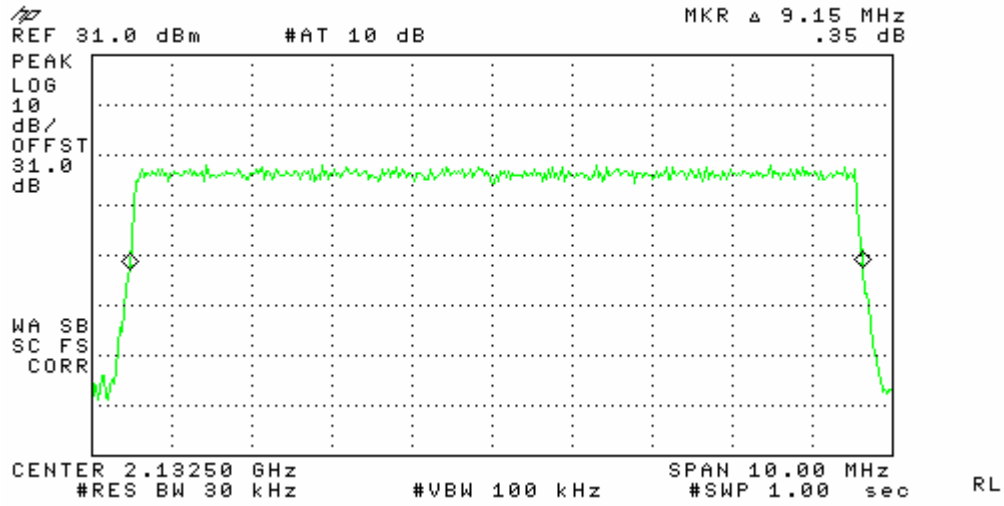
Occupied Bandwidth
Span: 5 MHz

LTE 5 MHz Channel Bandwidth_Signal_Out
RBW: 30 kHz VBW: 100 kHz



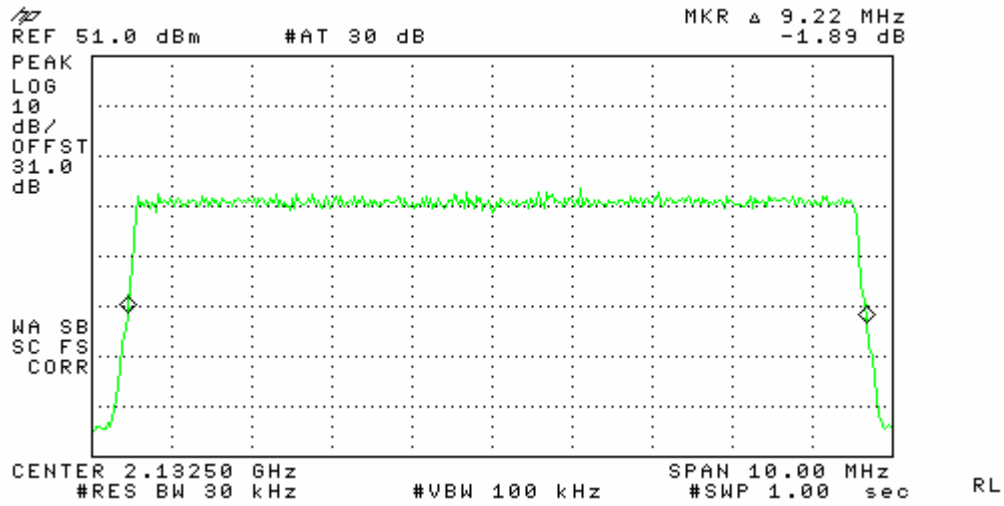
Occupied Bandwidth
Span: 10 MHz

LTE 10 MHz Channel Bandwidth_Signal_In
RBW: 30 kHz VBW: 100 kHz



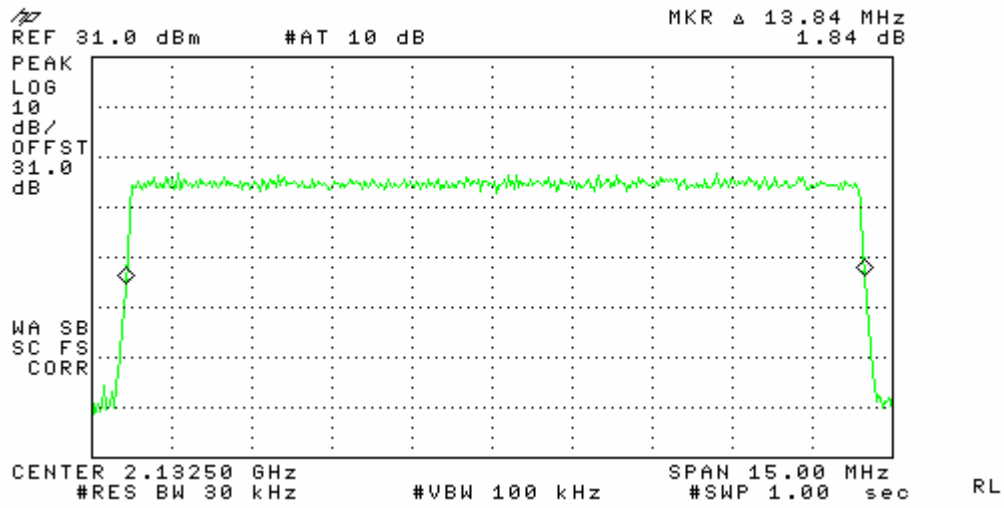
Occupied Bandwidth
Span: 10 MHz

LTE 10 MHz Channel Bandwidth_Signal_Out
RBW: 30 kHz VBW: 100



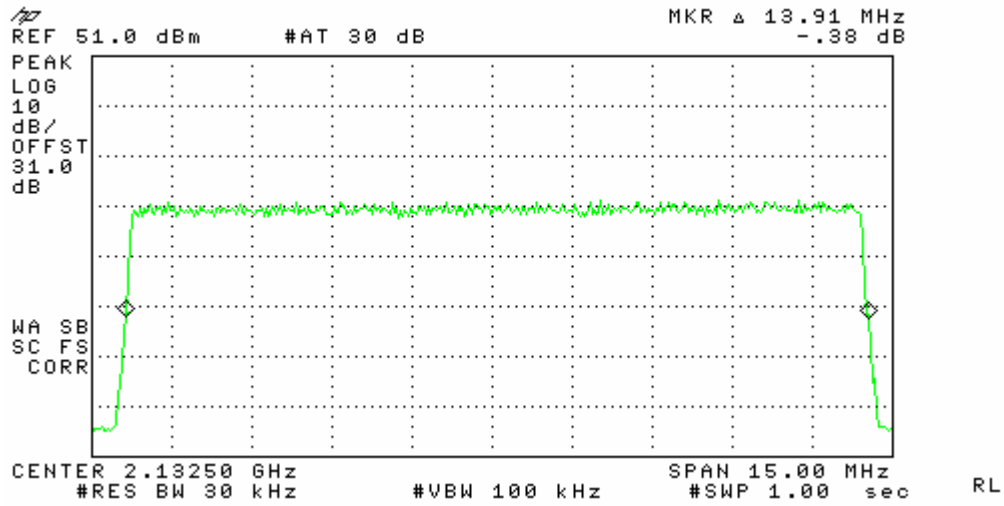
Occupied Bandwidth
Span: 15 MHz

LTE 15 MHz Channel Bandwidth_Signal_In
RBW: 30 kHz VBW: 100 kHz



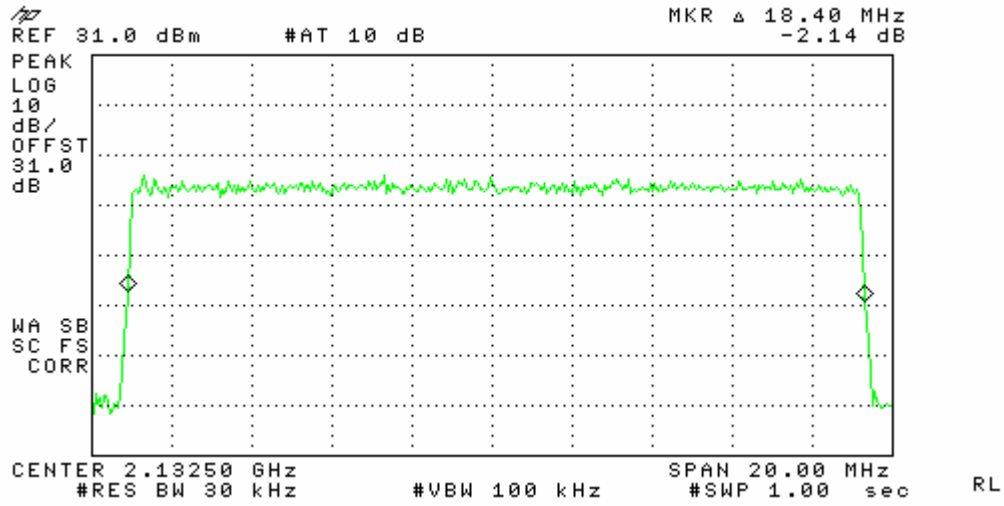
Occupied Bandwidth
Span: 15 MHz

LTE 15 MHz Channel Bandwidth_Signal_Out
RBW: 30 kHz VBW: 100 kHz



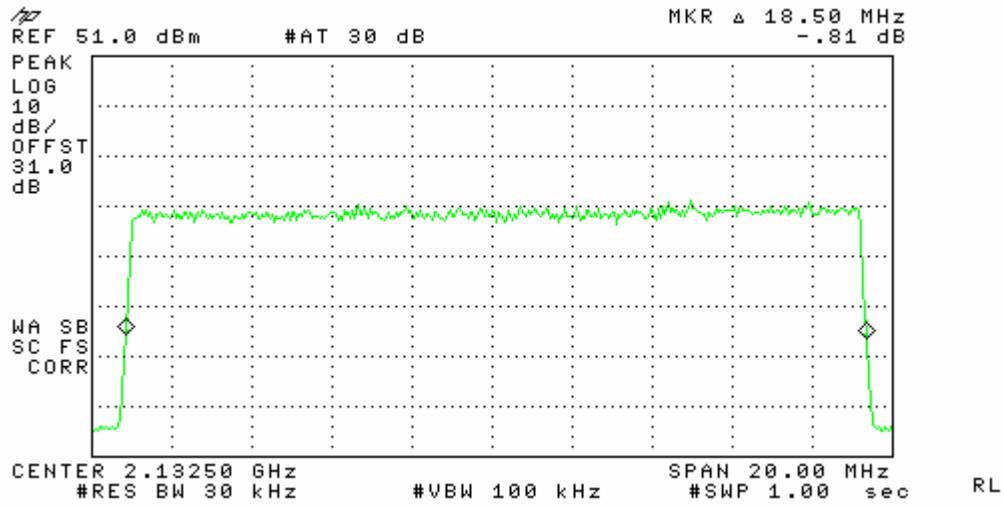
Occupied Bandwidth
Span: 20 MHz

LTE 20 MHz Channel Bandwidth_Signal_In
RBW: 30 kHz VBW: 100 kHz



Occupied Bandwidth
Span: 20 MHz

LTE 20 MHz Channel Bandwidth_Signal_Out
RBW: 30 kHz VBW: 100 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:

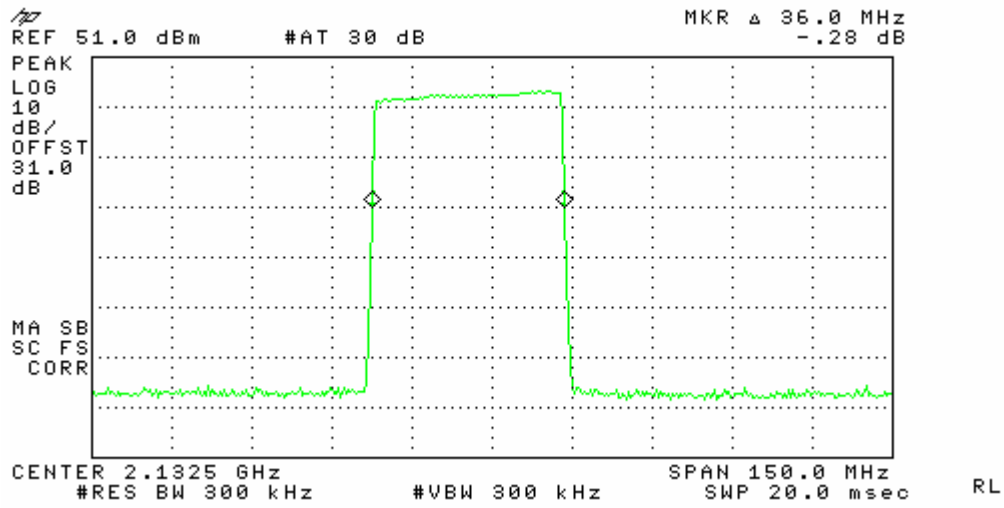
Below

Date: 20 November, 2009

IC_RSS_131_Section_4.2
Center: 2132.5 MHz

20_dB_Passband
Span: 150 MHz

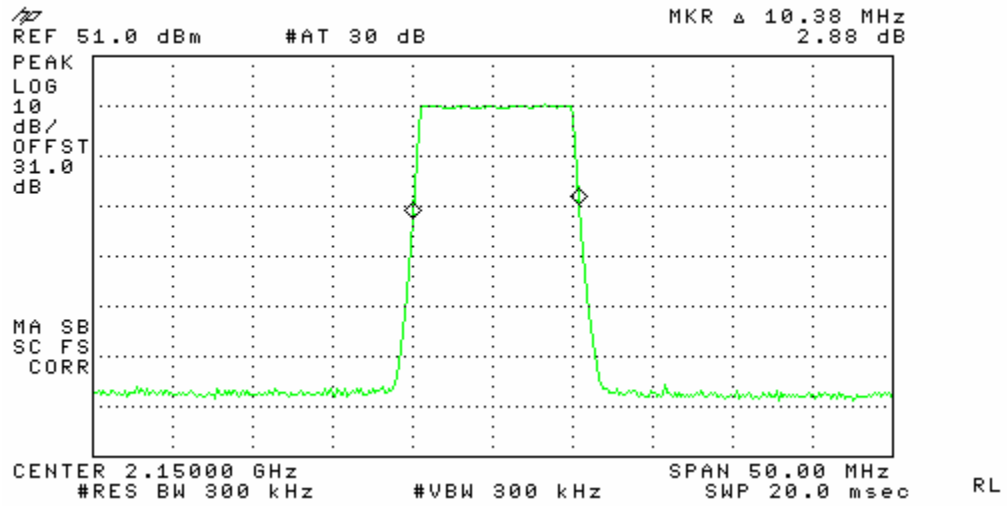
AWS ABCDE
RBW/VBW: 300 kHz



IC_RSS_131_Section_4.2
Center: 2150 MHz

20_dB_Passband
Span: 50 MHz

AWS F
RBW/VBW: 300 kHz



3.1.2 4.3.1 Mean Output Power – Multi-channel Enhancer

Test Summary:

- The requirements are: **MET** NOT MET
- $P_{\text{mean}} = + 46.12 \text{ dBm}$ or 40.93 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:

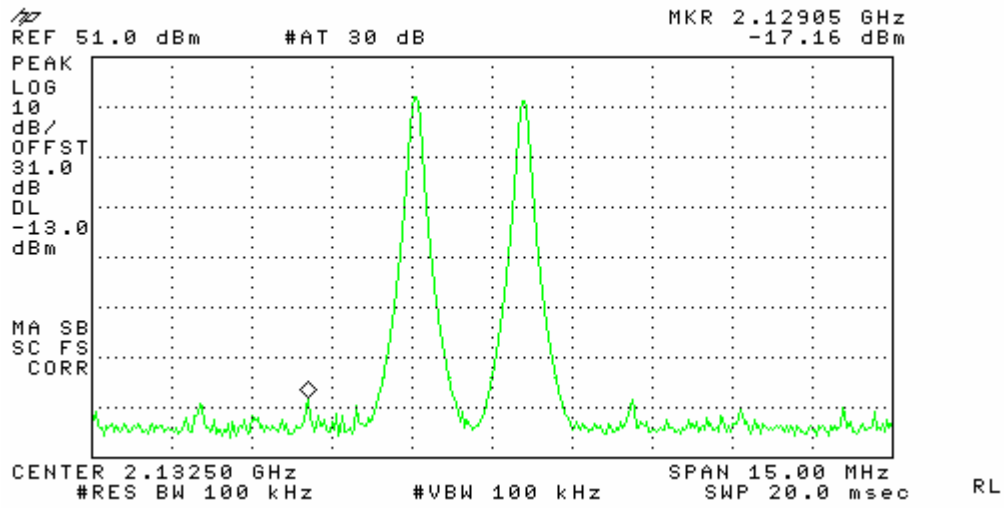
Below

Date: 20 November, 2009

IC_RSS_131_Section_4.3
Center: 2132.5 MHz

Mean_Output_Power_Spurious_Peak
Span: 15 MHz RBW/VBW: 100 kHz

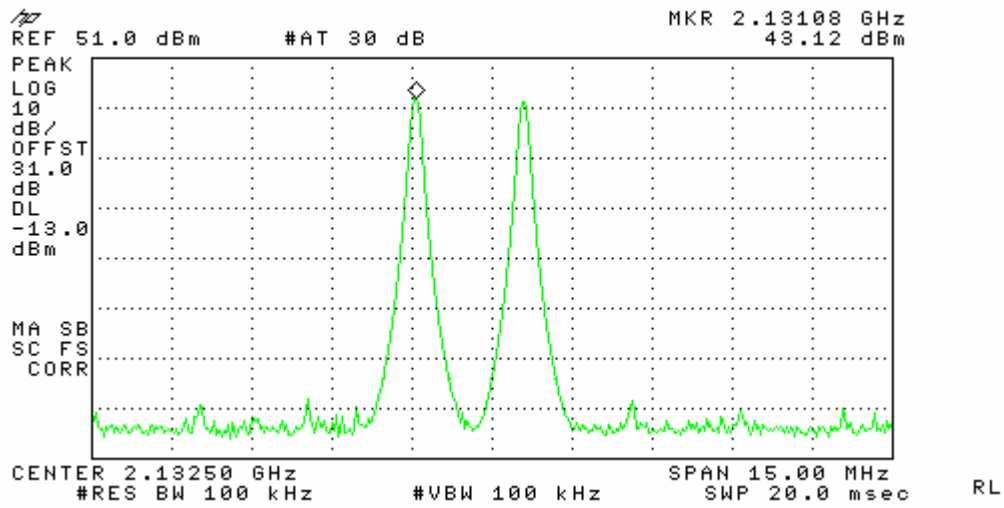
AWS



IC_RSS_131_Section_4.3
Center: 2132.5 MHz

Mean_Output_Power_Signal_Peak
Span: 15 MHz RBW/VBW: 100 kHz

AWS



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 –19.99 dBm at 2.046 GHz.

Test Location:

- Intertek (Oakdale, MN)

Test Distance:

- 3 Meters
- 10 Meters

■ Conducted measurement

Test Limit:

-43 dBW or –13 dBm

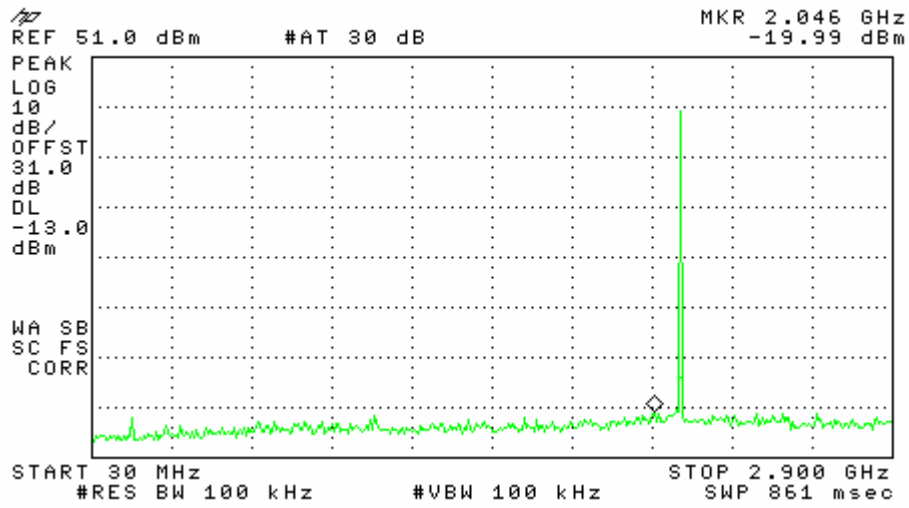
Test Data:

Below

Date: 20 November, 2009

IC_RSS_131_Section_4.4 Spurious_Emissions_Multi-Channel_Enhancer
Span: 30 MHz to 2.9 GHz RBW/VBW: 100 kHz

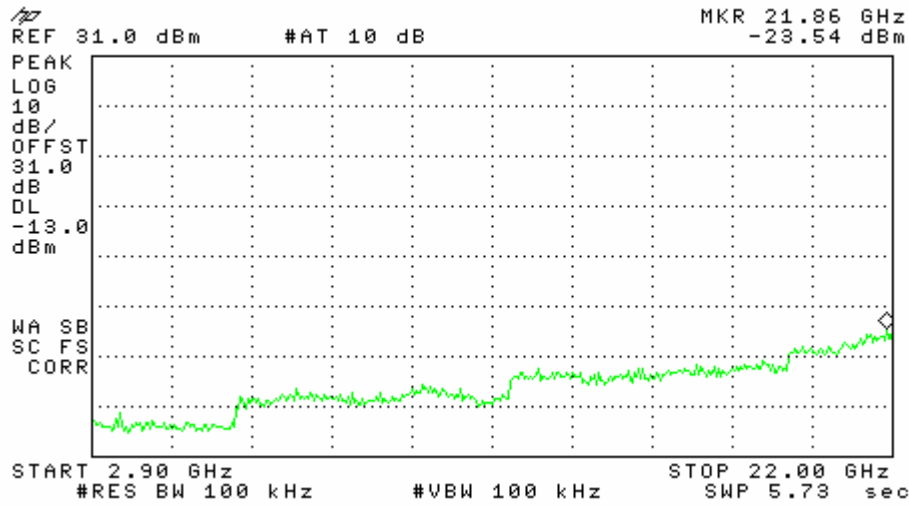
AWS



RL

IC_RSS_131_Section_4.4 Spurious_Emissions_Multi-Channel_Enhancer
Span: 2.9 MHz to 22 GHz RBW/VBW: 100 kHz

AWS



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: 18 November, 2009

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

HOST	REMOTE			
Input Voltage	Input Voltage	Carrier Frequency	Measured Frequency	Meets Requirements?
21 VDC	100 VAC	2110.200 MHz	2110.200 MHz	Yes
48 VDC	170 VAC	2110.200 MHz	2110.200 MHz	Yes
60 VDC	240 VAC	2110.200 MHz	2110.200 MHz	Yes
21 VDC	100 VAC	2132.500 MHz	2132.500 MHz	Yes
48 VDC	170 VAC	2132.500 MHz	2132.500 MHz	Yes
60 VDC	240 VAC	2132.500 MHz	2132.500 MHz	Yes
21 VDC	100 VAC	2154.800 MHz	2154.800 MHz	Yes
48 VDC	170 VAC	2154.800 MHz	2154.800 MHz	Yes
60 VDC	240 VAC	2154.800 MHz	2154.800 MHz	Yes
Temperature		Carrier Frequency	Measured Frequency	Meets Requirements?
-30 Deg. C		2110.200 MHz	2110.200 MHz	Yes
-20 Deg. C		2110.200 MHz	2110.200 MHz	Yes
-10 Deg. C		2110.200 MHz	2110.200 MHz	Yes
0 Deg. C		2110.200 MHz	2110.200 MHz	Yes
10 Deg. C		2110.200 MHz	2110.200 MHz	Yes
20 Deg. C		2110.200 MHz	2110.200 MHz	Yes
30 Deg. C		2110.200 MHz	2110.200 MHz	Yes
40 Deg. C		2110.200 MHz	2110.200 MHz	Yes
50 Deg. C		2110.200 MHz	2110.200 MHz	Yes
-30 Deg. C		2132.500 MHz	2132.500 MHz	Yes
-20 Deg. C		2132.500 MHz	2132.500 MHz	Yes
-10 Deg. C		2132.500 MHz	2132.500 MHz	Yes
0 Deg. C		2132.500 MHz	2132.500 MHz	Yes
10 Deg. C		2132.500 MHz	2132.500 MHz	Yes
20 Deg. C		2132.500 MHz	2132.500 MHz	Yes
30 Deg. C		2132.500 MHz	2132.500 MHz	Yes
40 Deg. C		2132.500 MHz	2132.500 MHz	Yes
50 Deg. C		2132.500 MHz	2132.500 MHz	Yes
-30 Deg. C		2154.800 MHz	2154.800 MHz	Yes
-20 Deg. C		2154.800 MHz	2154.800 MHz	Yes
-10 Deg. C		2154.800 MHz	2154.800 MHz	Yes
0 Deg. C		2154.800 MHz	2154.800 MHz	Yes
10 Deg. C		2154.800 MHz	2154.800 MHz	Yes
20 Deg. C		2154.800 MHz	2154.800 MHz	Yes
30 Deg. C		2154.800 MHz	2154.800 MHz	Yes
40 Deg. C		2154.800 MHz	2154.800 MHz	Yes
50 Deg. C		2154.800 MHz	2154.800 MHz	Yes

4.0 TEST EQUIPMENT

Number	Description	Manufacturer	Model	ADC Serial Number	Cal Due	Used
1	Spectrum Analyzer	HP	8593E	MC54593	9-29-10	<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	Aeroflex	3414	NA	1-16-11	<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.