



Test Report Summary

FCC CFR 47, Part 27

Wireless Communications Service

Manufacturer: ADC Telecommunications

Name of Equipment: InterReach Fusion® PCS_AWS

Model Number(s): FSN-W1-1921-1

Manufacturer's Address: P.O. Box 1101
Minneapolis, MN 55440-1101

Test Report Number: MN081118_PCS

Test Date(s): 3-7 November, 2008 (ETL)
10 November, 2008 (ADC)

According to testing performed at Intertek, the above-mentioned unit is in accordance with the applicable electromagnetic compatibility (EMC) portions of the requirements defined in FCC Part 27.

It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical characteristics. Any modifications necessary for compliance made during testing on the above mentioned date(s) must be implemented in all production units for compliance to be maintained.

All testing was done in accordance with the Federal Communications Commission's CFR 47 Part 27 and the EUT fulfills the requirements of the Federal Communications Commission's CFR 47 Part 27.

Date: 18 November, 2008

Location: Intertek Testing Services (ETL)
7250 Hudson Blvd., Suite 100
Oakdale, MN 55128
Phone: (651) 730-1188
Fax: (651) 730-1282

ADC Telecommunications
1187 Park Place
Shakopee, MN 55379
Phone: (952) 403-8340
Fax: (952) 403-8858

Testing Conducted by (ADC):
And Report Written by:


Mark F. Miska
Compliance Engineer



EMC Emission – T E S T R E P O R T

Test Report File Number: MN081118_PCS **Date of Issue:** 18 November, 2008

Model Number(s): FSN-W1-1921-1

Product Name: InterReach Fusion® PCS_AWS

Product Type: Repeater

Applicant: ADC Telecommunications

Manufacturer: ADC Telecommunications

License Holder: ADC Telecommunications

Address: P.O. Box 1101
Minneapolis, MN 55440-1101

Test Result: **Positive** Negative

Test Project Number: 3166037MIN-001A
Reference(s)

Total pages including Appendices: 124



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2.0 REVISION DESCRIPTION

Rev	Total Pages	Date	Description
A	124	18 November, 2008	Original Release

3.0 DOCUMENTATION

3.1 Test Regulations

- 27.50 Power limits
- 27.53 Emission limits
- 27.54 Frequency stability

The emissions tests were performed according to the following regulations:

- FCC Part 22
- FCC Part 24
- FCC Part 27**
- FCC Part 90
- IC RSS-131 Issue 2

Environmental Conditions in the lab:

ADC

Temperature: 24° C
Relative Humidity: 21%
Atmospheric Pressure: 98.8 kPa

ETL

15-35° C
30-60%
86-106 kPa

Power Supply Utilized:

Power Supply System : 1 phase, 60 Hz, 120 VAC

3.2 Test Operation Mode

- Standby
- Test Program
- Practice Operation
- **Max composite in and out**

3.3 Configuration of the Device Under Test:

Normal Operation – AWS – 1710 to 1755 MHz and 2110 to 2155 MHz

3.4 Product Options:

None

3.5 EUT Specifications and Requirements:

Length: 11.13"
Width: 11.25"
Height: 2.13"
Weight: 5 pounds

3.6 Cables:

Cable Type	Length	From	To
RF	> 3M	Ancillary Equip	EUT
RF	< 3M	EUT	50 Ohm Load
Power (2)	< 3M	Power	Input Power (Ancillary)
Coax (75 Ohm)	> 3M	Ancillary Equip	EUT
Optical	< 3M	Ancillary Equip	Ancillary Equip

3.7 Power Requirements:

Voltage: 54 VDC
Amps: 1.1 A

3.8 Typical Installation and/or Operating Environment:

Indoor. System is typically employed as an indoor repeater.

3.9 Other Special Requirements:

None

3.10 EUT Software:

Revision Level: Version V.6 or greater
Description: Internet Explorer

3.11 EUT System Components

Description	Model #	Serial #	FCC ID #
Main Hub	FSN-W1-MH-2	None	
Expansion Hub	FSN-W1-EH-2	None	
Remote Access Unit	FSN-W1-1921-1	None	

3.12 Support Equipment

Description	Manufacturer	Model #	FCC ID #
Power Meter	HP	EPM-441A	
Signal Generator	Agilent	E4438C	

3.13 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**

3.14 General Remarks:

None.

3.15 Summary:

The requirements according to the technical regulations are

- met**

- not Met

The equipment under test does

- fulfill the general approval requirements mentioned in Section 3.1.**

- not fulfill the general approval requirements mentioned in Section 3.1.

4.0 TEST SET-UP DRAWINGS AND PHOTOS

[Table of Contents: Section 1.0](#)

4.1 Test Set-up Photo, Radiated Emissions



4.2 Test Set-up Photo, Radiated Emissions



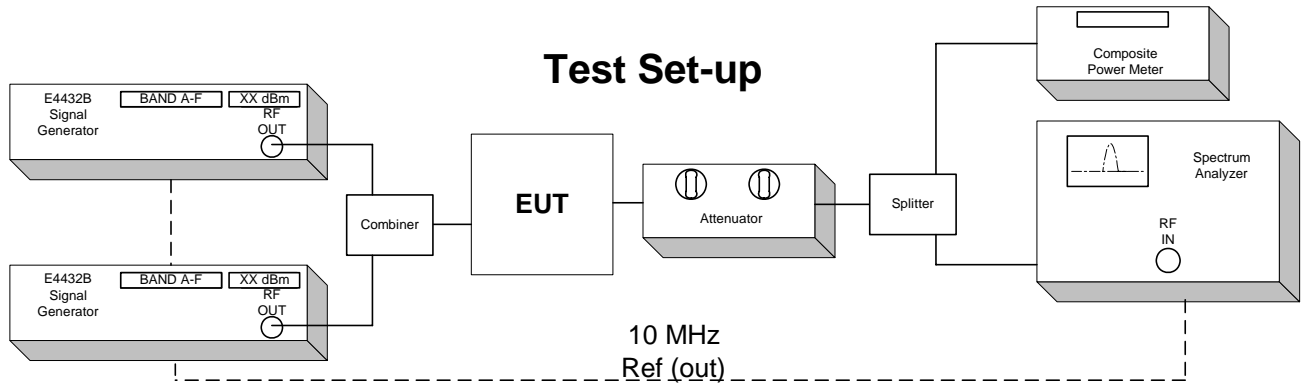
4.3 Test Set-up Drawings

Conducted and Radiated Emission Limits Test

Conducted Output Power Test

Inter-Modulation Test

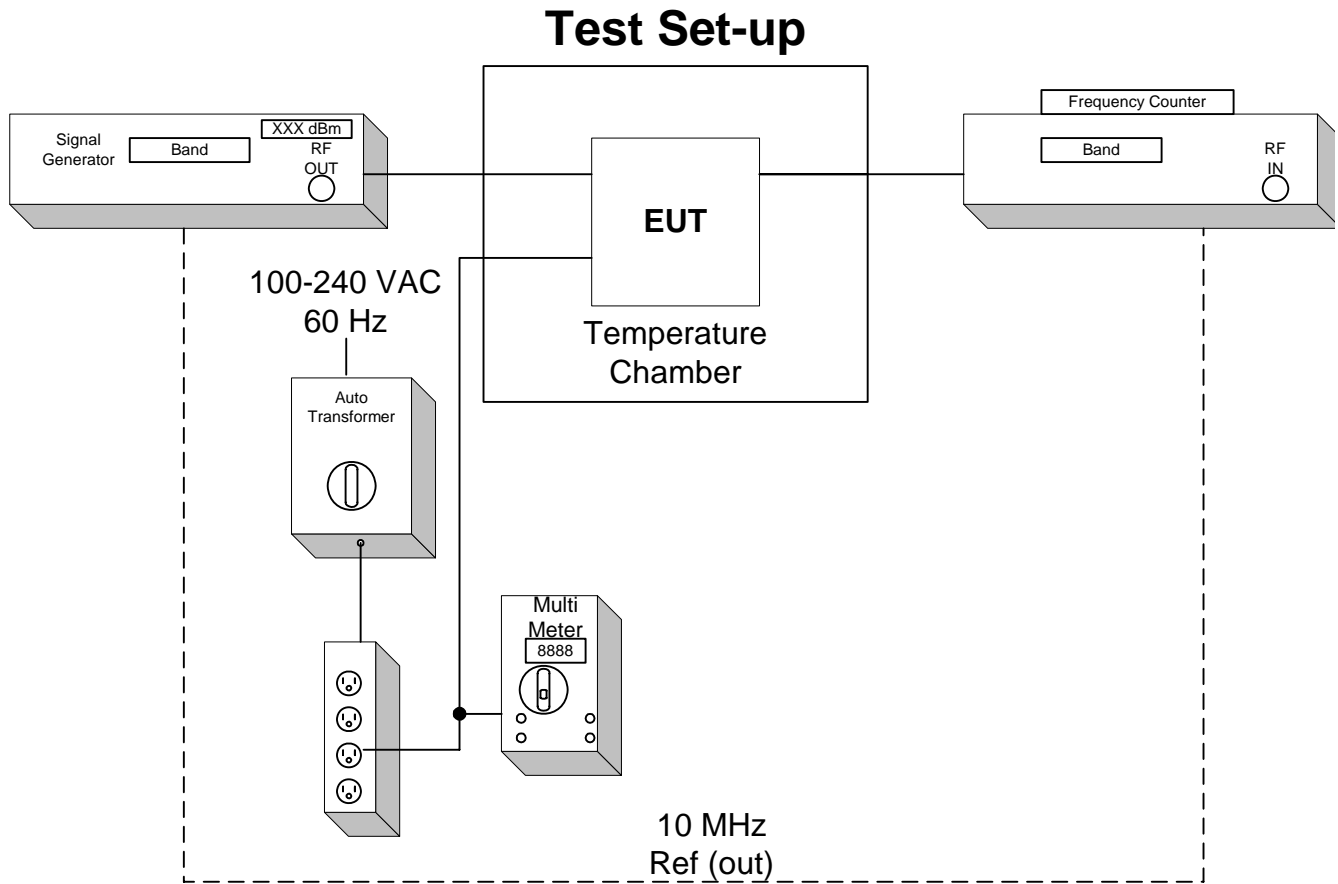
Occupied Bandwidth Modulation Test



Frequency Tolerance Test

The Main Hub and Expansion Hub EUT are specified for indoor use with temperature range of 0° to +45° C, and were tested within their range.

The Remote Access Unit EUT is specified for indoor use with temperature range of -25° to +45° C, and was tested with its range.



5.0 TEST RESULTS

5.1.1 27.50 RF Power Limits

Test Summary:

- The requirements are: **MET** NOT MET
- Minimum margin of compliance is 25.17 dB at 2132.5.0 MHz (TDMA)

Test Location:

- ETL (Oakdale, MN)
- ADC facility (Shakopee, MN)**

Test Distance:

- 3 Meters
- 10 Meters
- Conducted measurement**

Test Equipment (ADC):

1, 2, 6, 7, 13

Test Limit:

100 Watts or 50 dBm Limit

Test Data:

[Conducted Output Power; Section 7.2](#)

[Table of Contents; Section 1.0](#)

Test Engineer: Mark F. Miska

Date: 10 November, 2008

5.1.2 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 –25 to 45° C and an input voltage range of 100 to 240 VAC.

Test Location:

- ETL (Oakdale, MN)
- ADC facility (Shakopee, MN)**

Test Equipment (ADC):

3, 4, 5, 6, 9, 13

Test Limit:

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

Test Data:

[Frequency Stability; Section 7.3](#)

[Table of Contents; Section 1.0](#)

Test Engineer: Mark F. Miska

Date: 10 November, 2008

5.1.3 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:

- ETL (Oakdale, MN)
- ADC facility (Shakopee, MN)**

Test Equipment (ADC):

1, 2, 6, 7, 13

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; Section 7.1](#)

[Intermodulation; Section 7.4](#)

[Occupied Bandwidth; Section 7.5](#)

Radiated Emissions; ([Appendix B](#))

[Table of Contents; Section 1.0](#)

Test Engineer: Mark F. Miska

Date: 10 November, 2008

Date: 10 November, 2008

Date: 10 November, 2008

6.0 TEST EQUIPMENT

[Table of Contents: Section 1.0](#)

Number	Description	Manufacturer	Model	ADC Serial Number	Cal Due	Used
1	Spectrum Analyzer	HP	8563E	MC27690	6-5-09	<input checked="" type="checkbox"/>
2	Power Meter	HP	EPM-441A	MC27670	7-22-09	<input checked="" type="checkbox"/>
3	Multimeter	Fluke	87	MC17932	6-24-10	<input checked="" type="checkbox"/>
4	Frequency Counter	HP	5347A	MC27548	1-16-09	<input checked="" type="checkbox"/>
5	Temperature Chamber	Thermotron	SM-32C	MC18966	4-8-09	<input checked="" type="checkbox"/>
6	Signal Generator	Agilent	E4437B	967974	1-15-10	<input checked="" type="checkbox"/>
7	Signal Generator	Agilent	E4438C	1013210	2-9-09	<input checked="" type="checkbox"/>
8	Attenuator	Huber Suhner	6810.17.A	N/A	CNR	<input type="checkbox"/>
9	Variable Auto Transformer	Staco	1520CT	MC44655	CNR	<input checked="" type="checkbox"/>
10	Digital Barometer	Fisher Scientific	02-403	MC50719	10-28-09	<input checked="" type="checkbox"/>
11	Data Acquisition Unit	Fluke	Hydra	MC27549	10-8-08	<input type="checkbox"/>
12	Attenuator	Aeroflex	49-30-33	N/A	CNR	<input type="checkbox"/>
13	Attenuator	Aeroflex	86-30-12	N/A	CNR	<input type="checkbox"/>
14	LNA	Lucix Corp	C020200L 1603	N/A	CNR	<input type="checkbox"/>

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

7.0

APPENDIX A

Conducted Emissions Test Data

[Table of Contents: Section 1.0](#)

Test Engineer: Mark F. Miska

7.1 Conducted Emission Limits Test

[Table of Contents: Section 1.0](#)

[Back to Emission Limits: Section 5.1.3](#)

The out of band emissions were measured directly from the EUT antenna output in the RX and TX path using a spectrum analyzer from 30 MHz to the 10th harmonic of the highest carrier frequency. Test signals used are TDMA, CDMA, EDGE, GSM and WCDMA. The different signals were input one at a time to the EUT. In all cases, the out of band emissions were less than -13 dBm from the equation

$$(19\text{dBm} - [43 + 10\log(0.08\text{W})])$$

Band edge compliance is also demonstrated using a TDMA, CDMA, EDGE, GSM and WCDMA signal at the upper and lower limits of the band.

The Main Hub and Expansion units are Part 15 devices and have been tested and are compliant as such.

Industry practice has generally set the input signal power level. Test signal used was ≈ 0 dBm input to Main Hub in the TX Path.

Industry practice has generally set the input signal power level. Test signal used was ≈ -33 dBm input to RAU in the RX Path.

Industry practice has generally set the output signal power level.

Main Hub:	Expansion Hub:	Remote Access Unit (RAU):
Range: 100 - 240 VAC	Range: 100 - 240 VAC	Range: 54 VDC
Tested @: 120 VAC	Tested @: 120 VAC	Tested @: 54 VDC
Tested @: 0.4 A	Tested @: 0.9 A	Tested @: 1.1 A

Application details for 2.1033(c)(10), and 2.1033(c)(13):

System Power is limited by a limiting attenuation chip (ALC) in Wideband Main Hub with 30 dB of head room. Single channel operation, or multi-channel operation will not exceed nominal gain of the system.

PLL creates all the Local Oscillators that convert signal to IF and RF signals. When PLL is unlocked the band is shut down, this is to avoid transmission of any incorrect frequency.

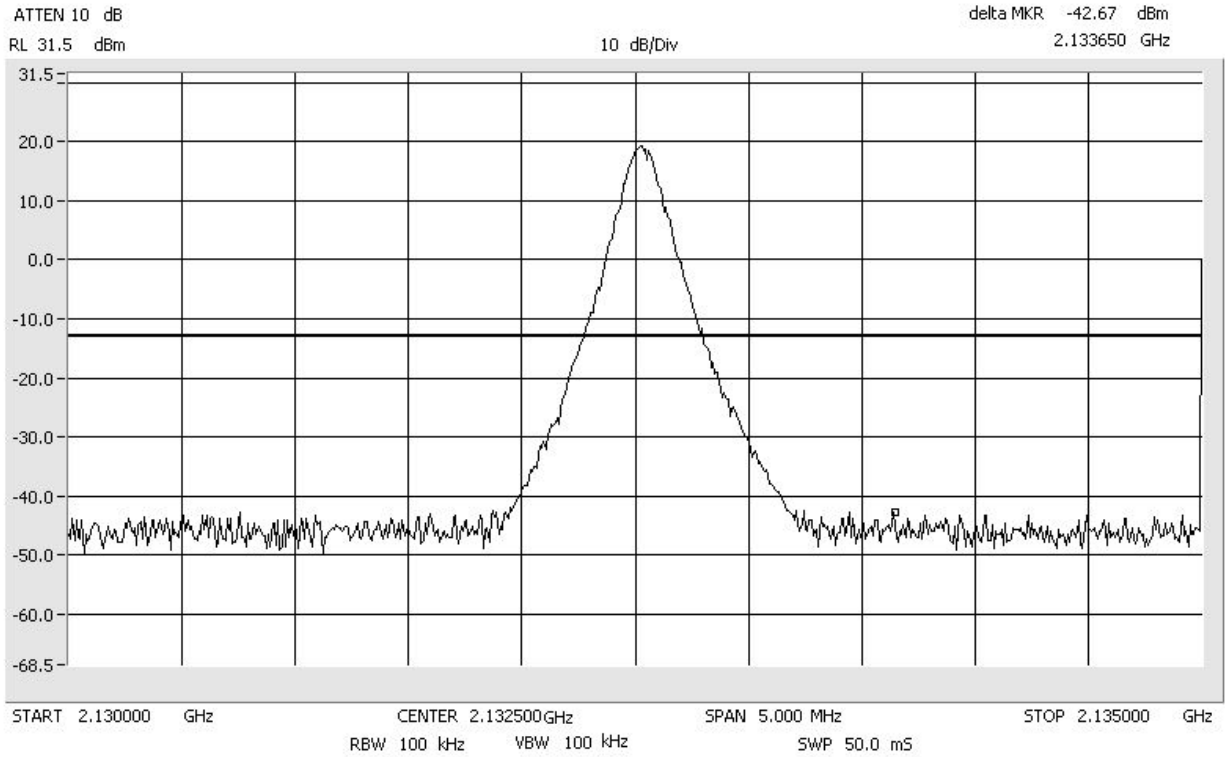
Internal to the electronics, the use of SAW filters provides for higher Q roll-off at band edges.

This equipment does not modulate the RF, so there is no modulation limiter. This equipment does not change the modulation of the RF or the occupied bandwidth of any channel. It transports the signal, as is, over an optical link. The RF input is not changed in the RF output.

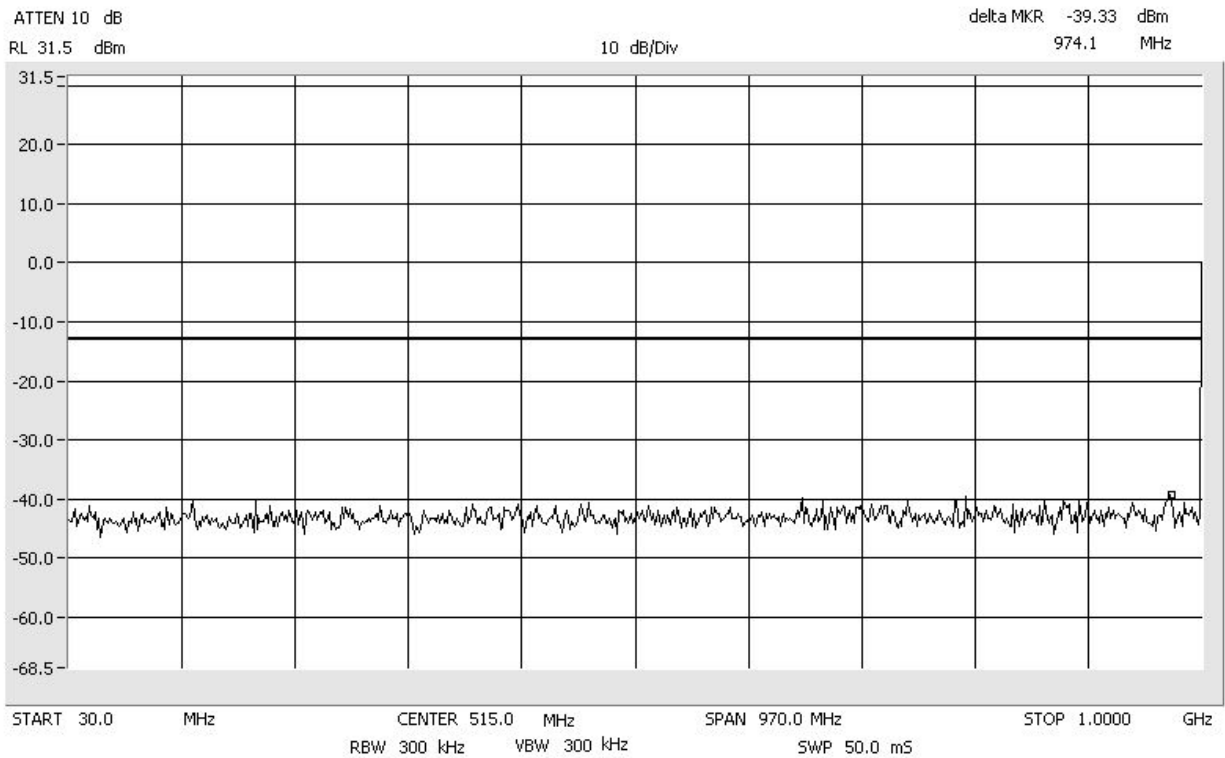
This is a constant gain device, so the setup controls the output. There is an overdrive and overpower limit control that prevents excess power.

Results:
Pass (See plots)

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

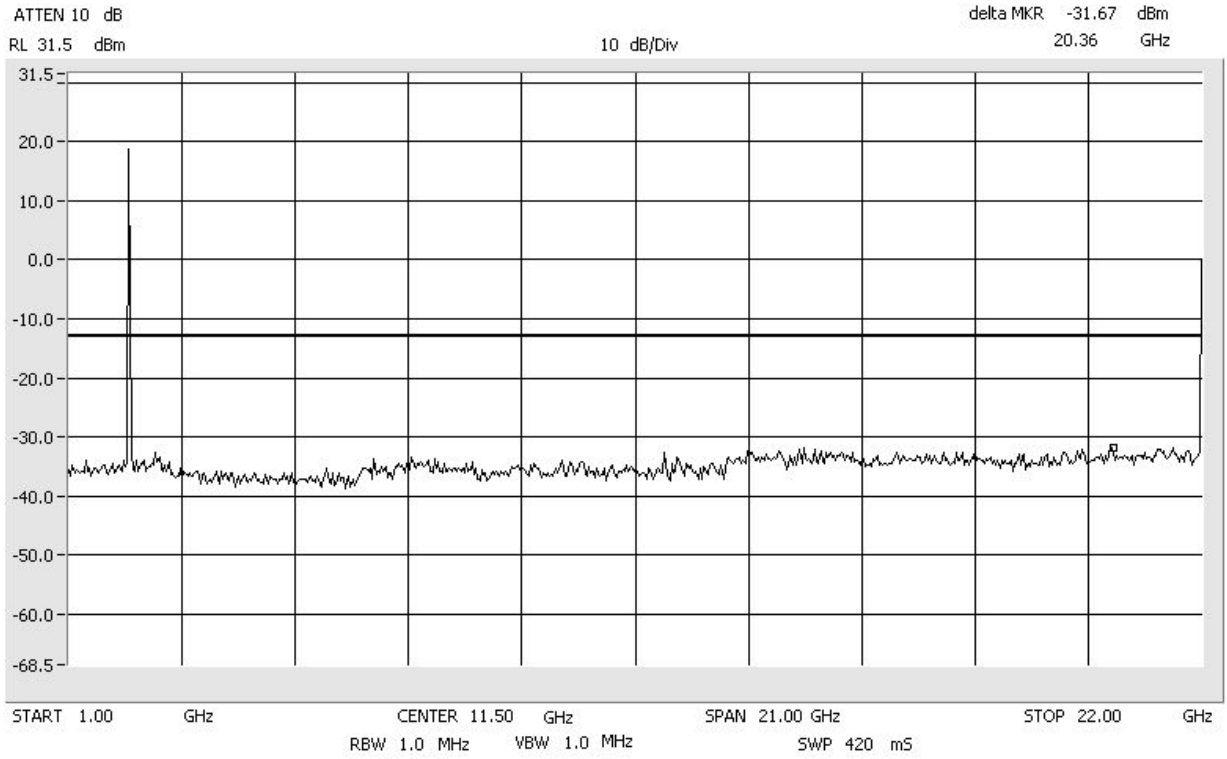


Conducted Emissions TDMA AWS
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz

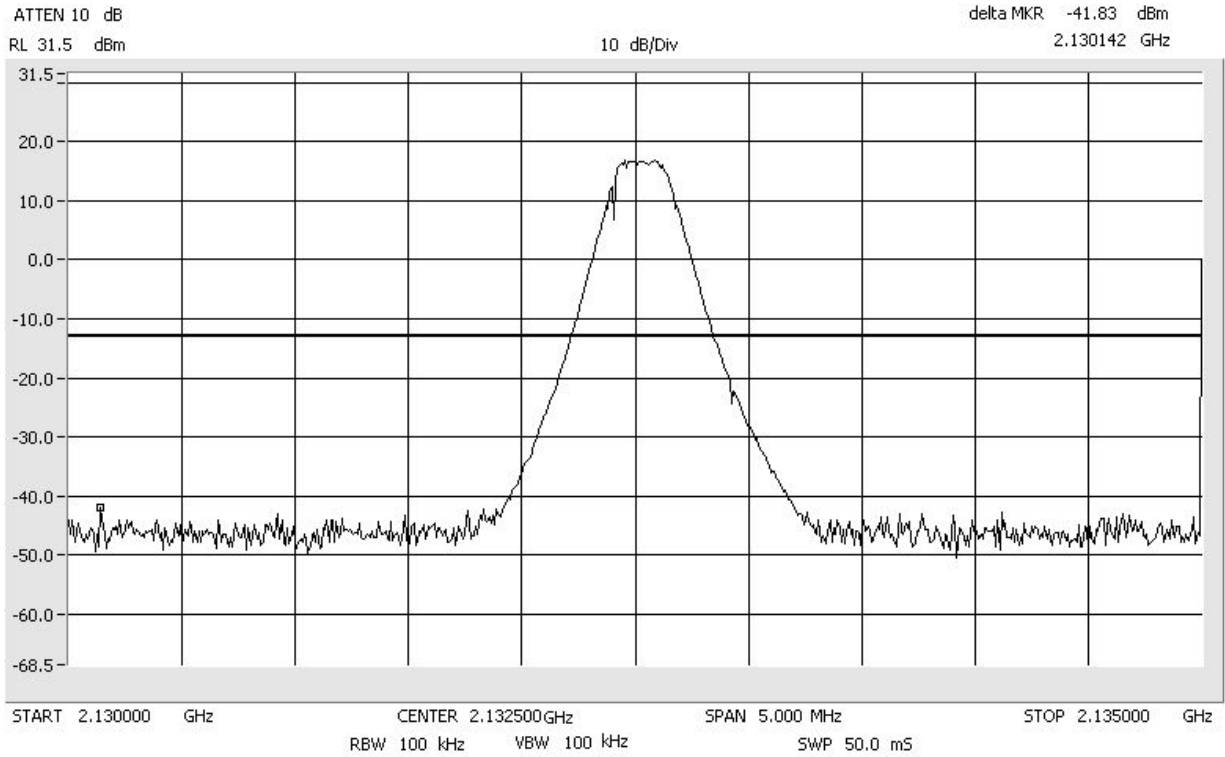


Conducted Emissions
Span: 1 GHz to 22 GHz

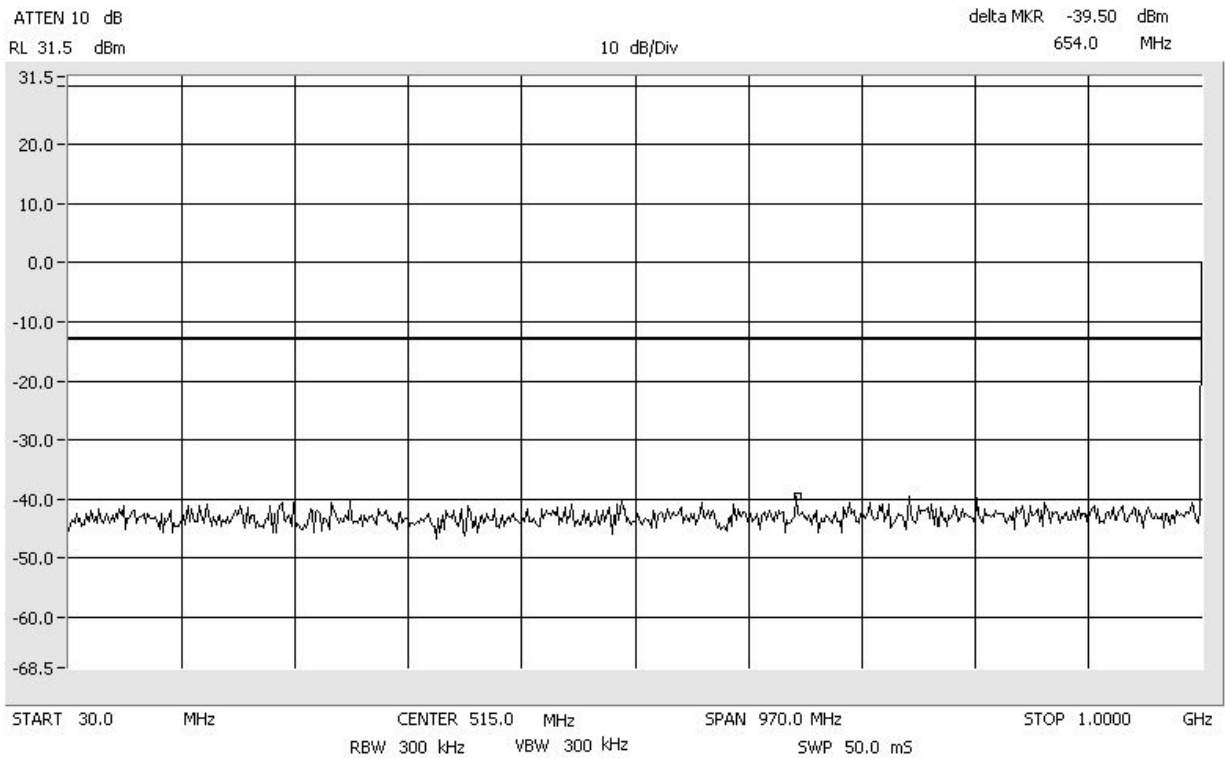
TDMA AWS
RBW/VBW: 1 MHz



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

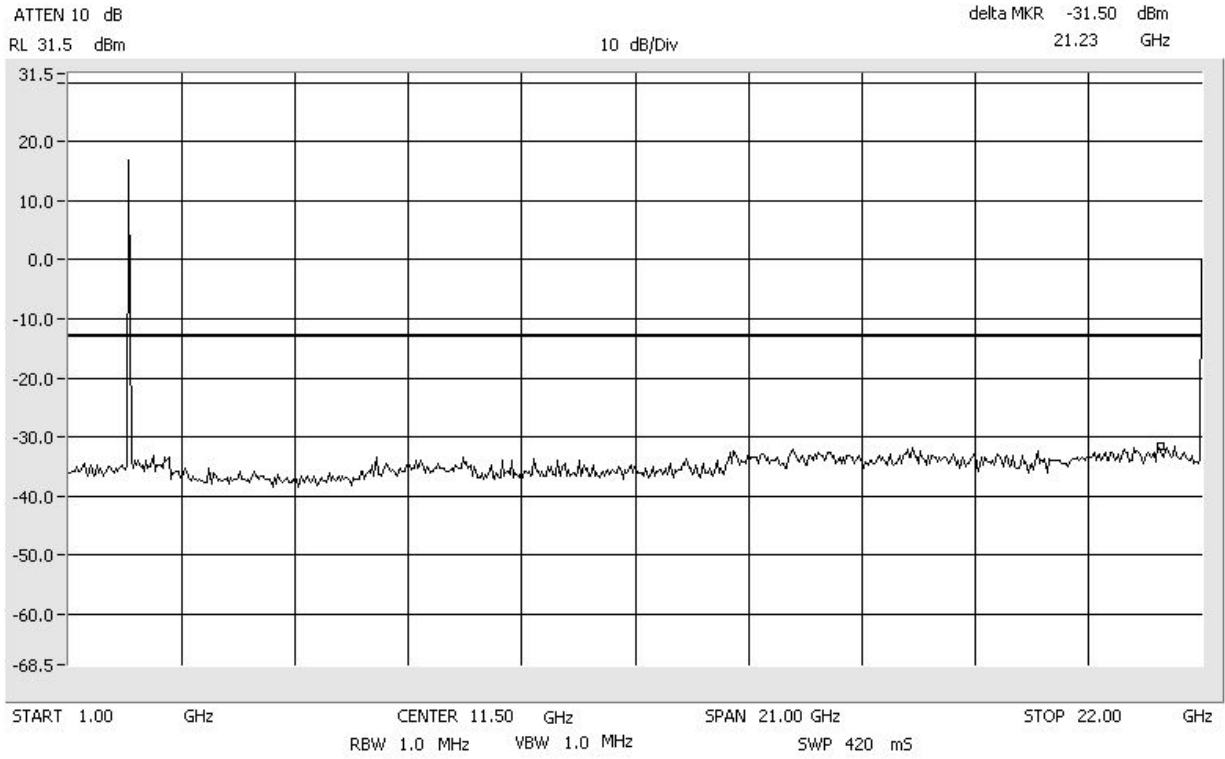


Conducted Emissions GSM AWS
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz

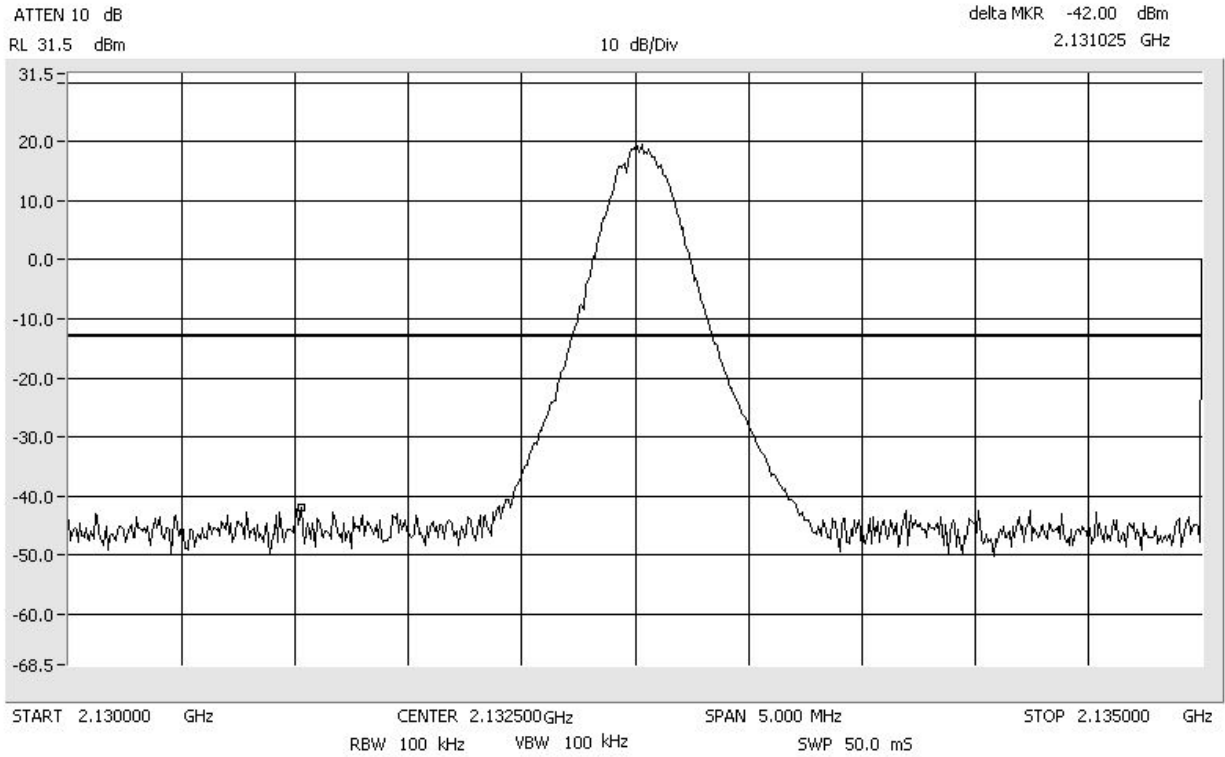


Conducted Emissions
Span: 1 GHz to 22 GHz

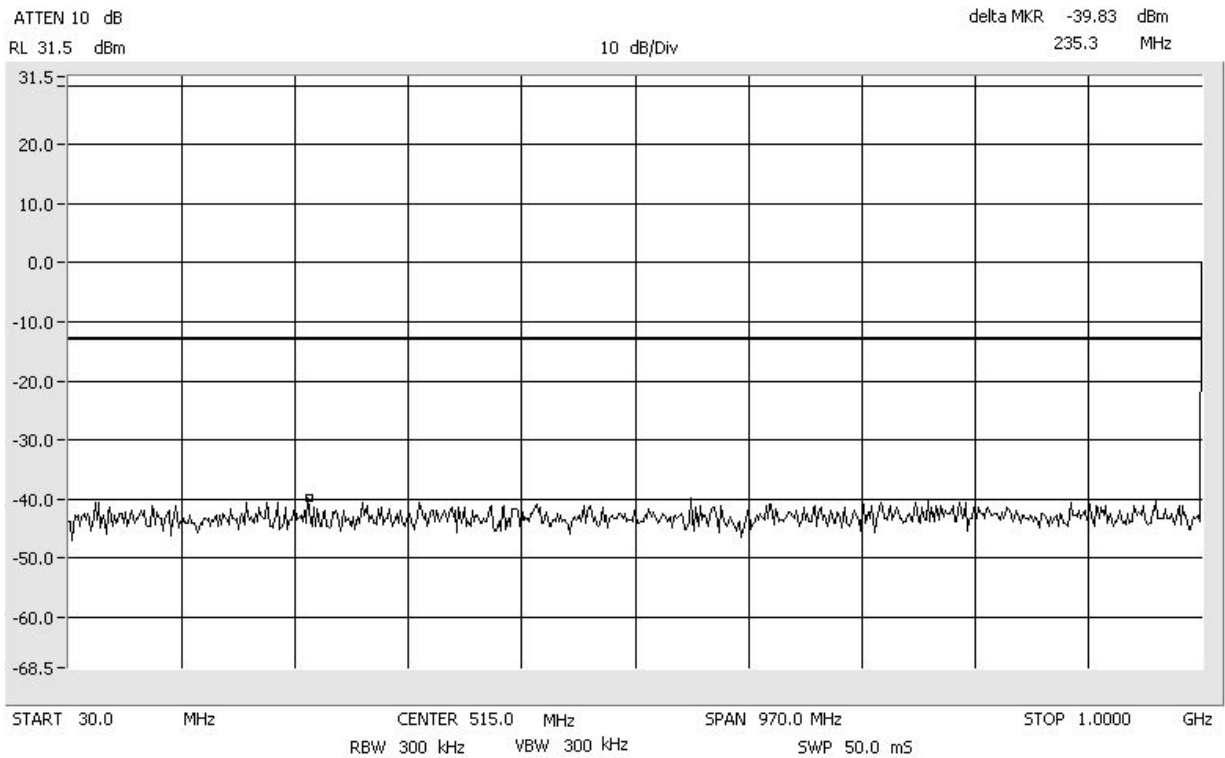
GSM AWS
RBW/VBW: 1 MHz



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

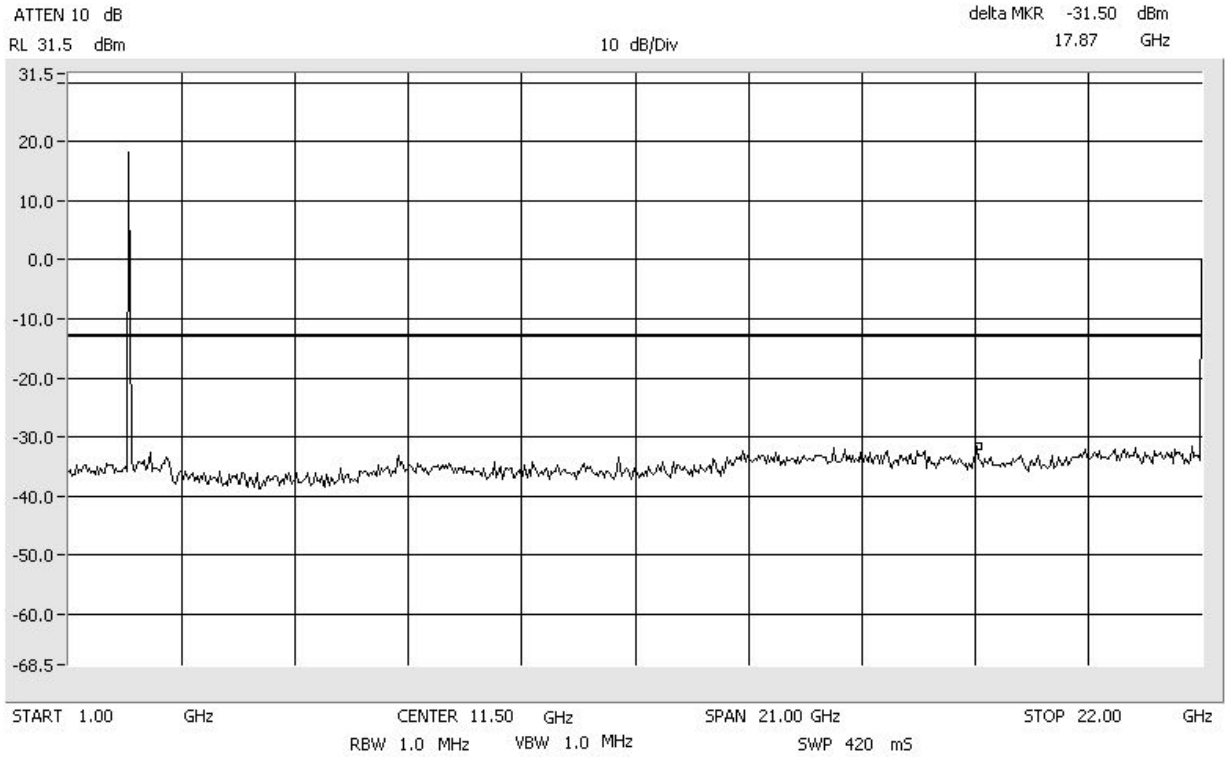


Conducted Emissions EDGE AWS
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz

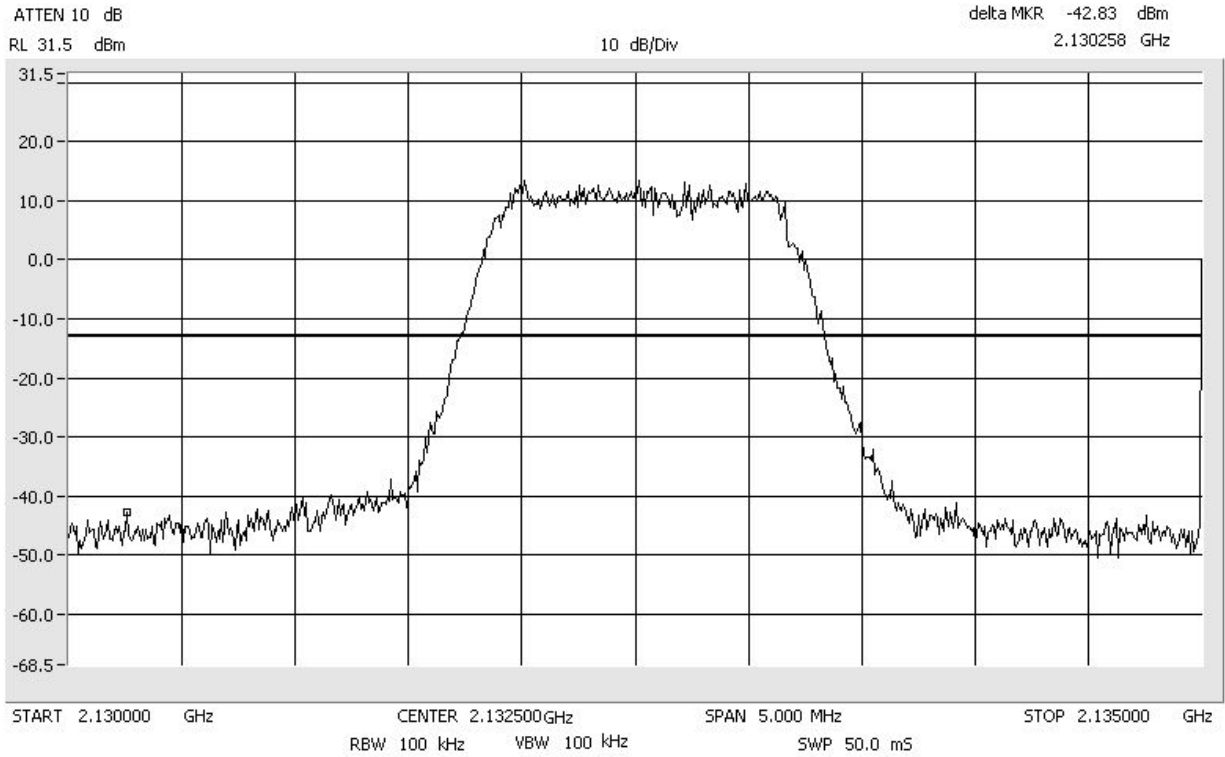


Conducted Emissions
Span: 1 GHz to 22 GHz

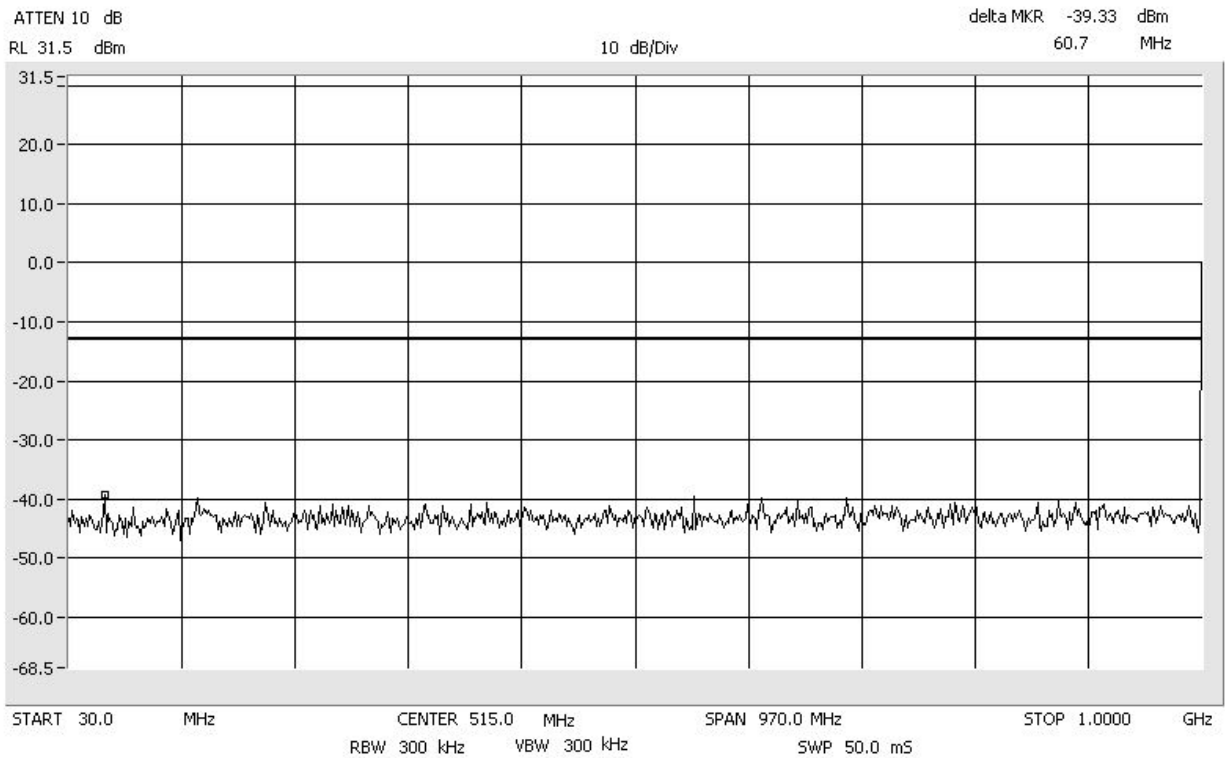
EDGE AWS
RBW/VBW: 1 MHz



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

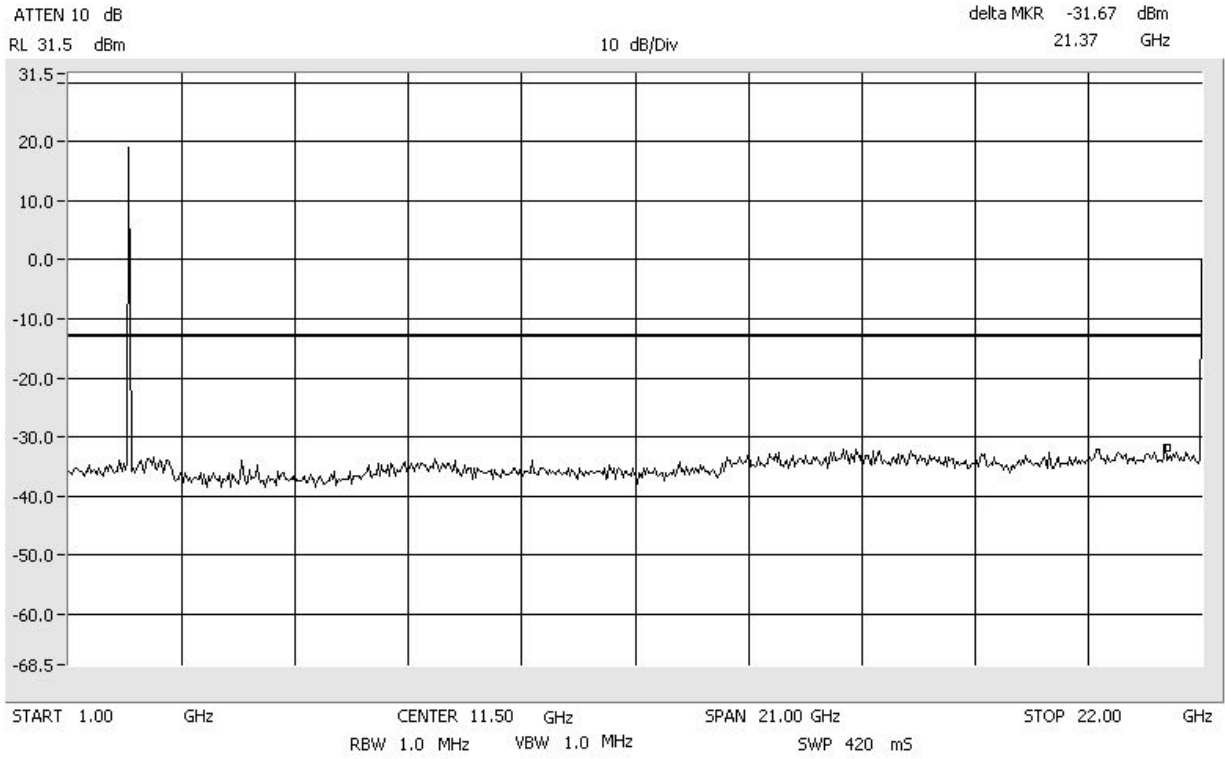


Conducted Emissions CDMA AWS
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz

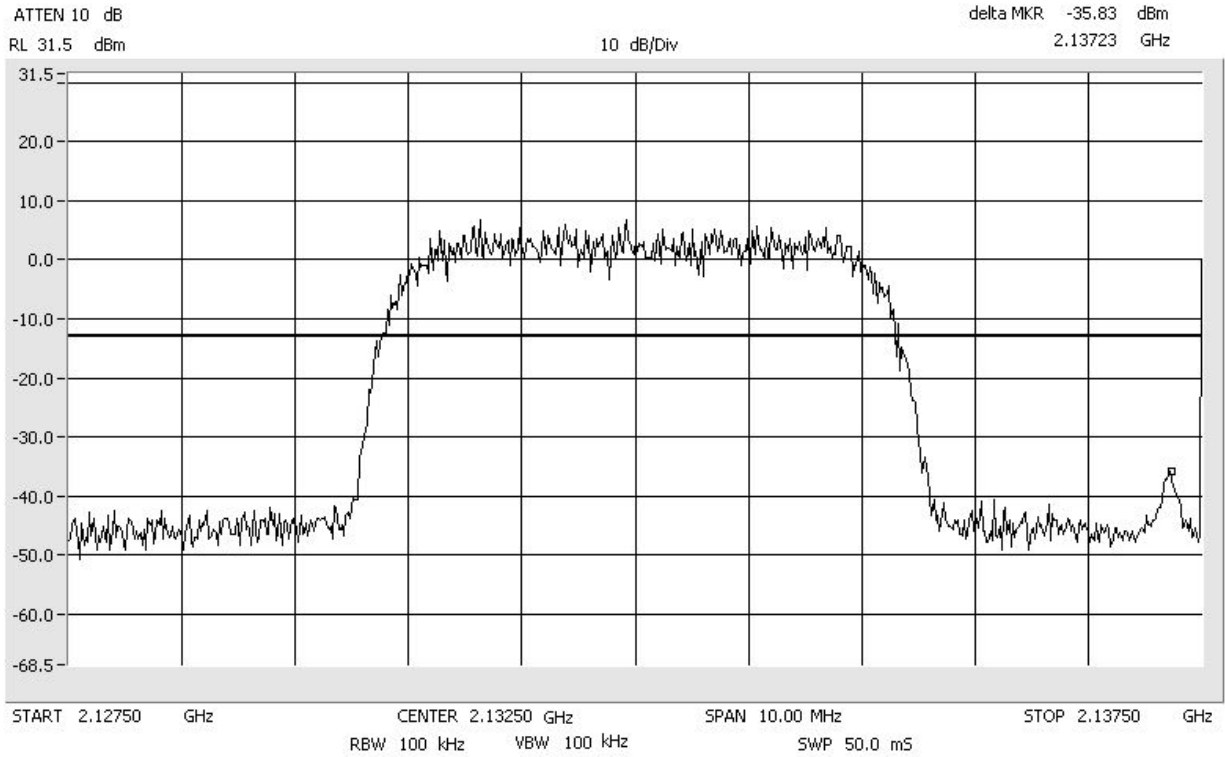


Conducted Emissions
Span: 1 GHz to 22 GHz

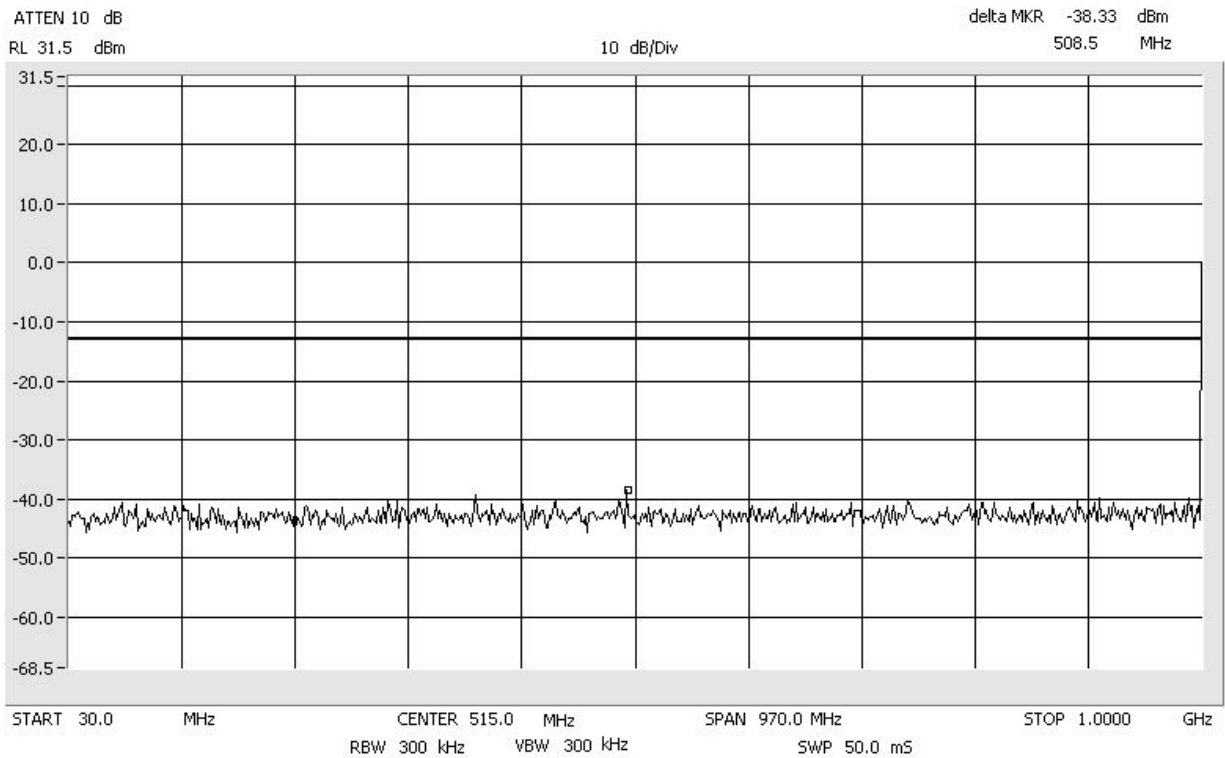
CDMA AWS
RBW/VBW: 1 MHz



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



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

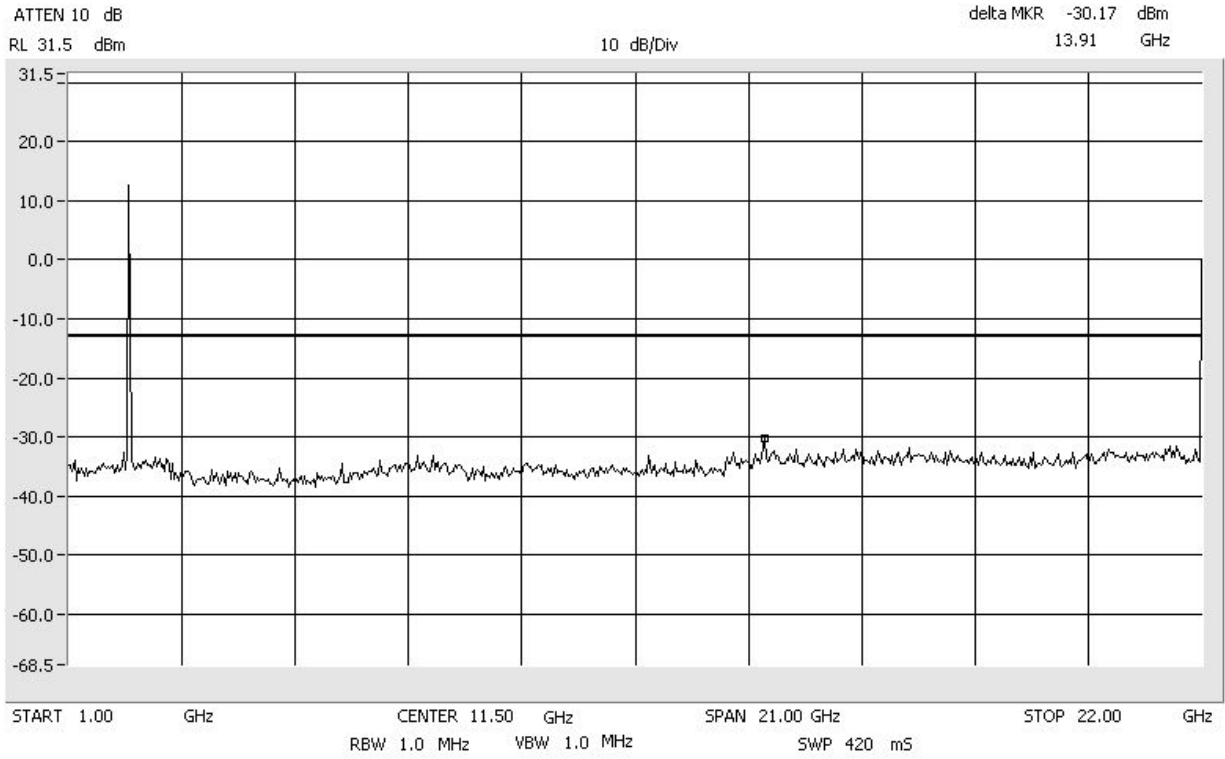


Conducted Emissions
Span: 1 GHz to 22 GHz

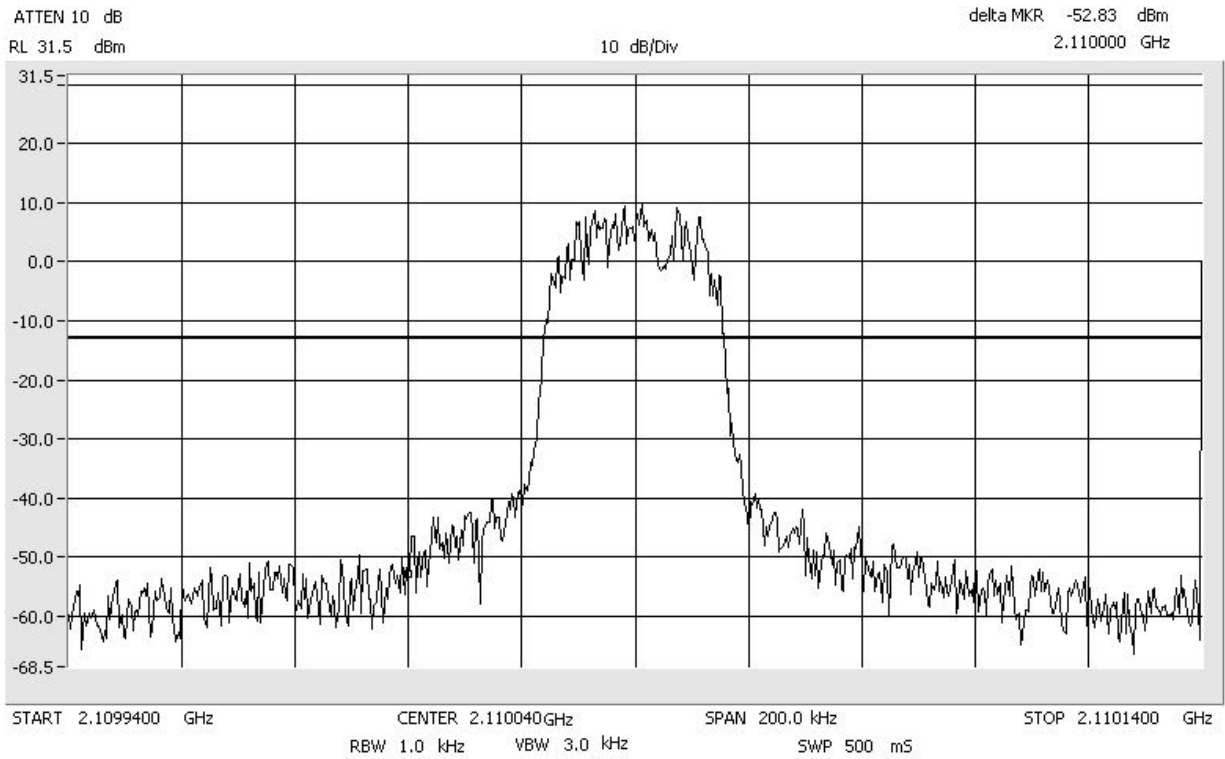
WCDMA

AWS

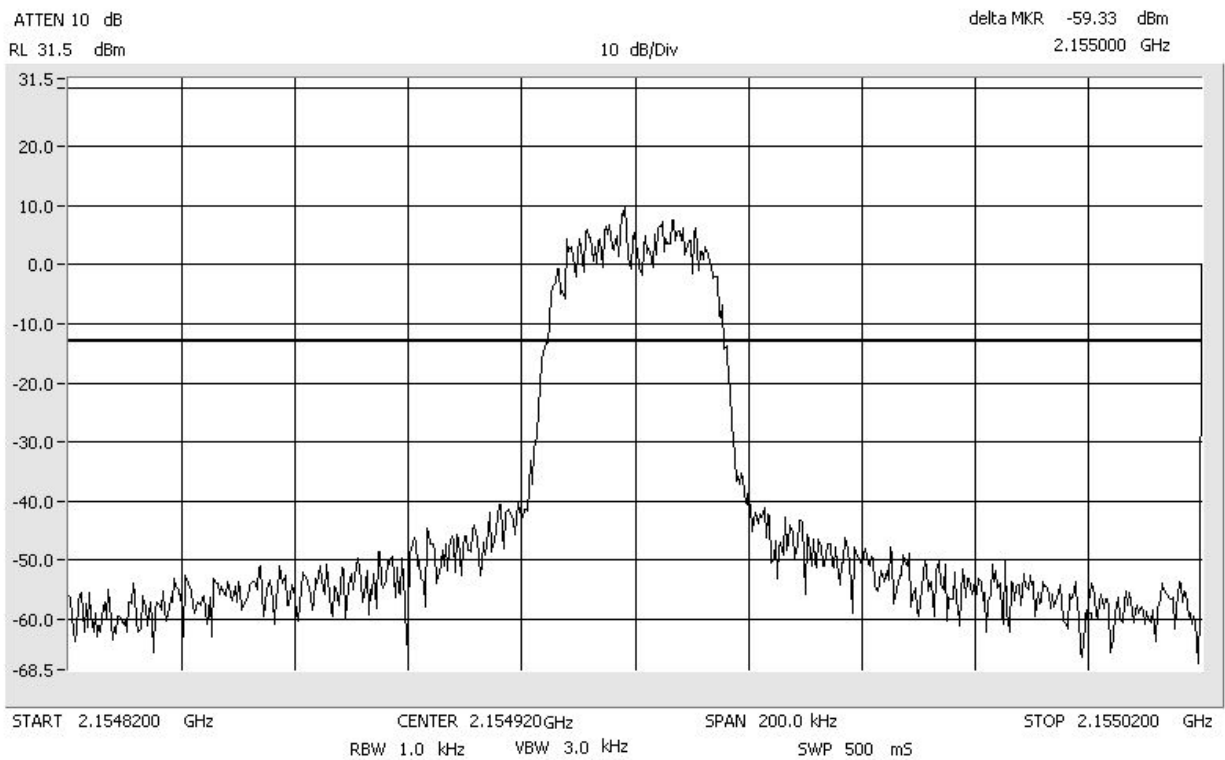
RBW/VBW: 1 MHz



Center: 2110.04 MHz Band_Edge TDMA
Span: 200 kHz RBW: 1 kHz VBW: 3 kHz

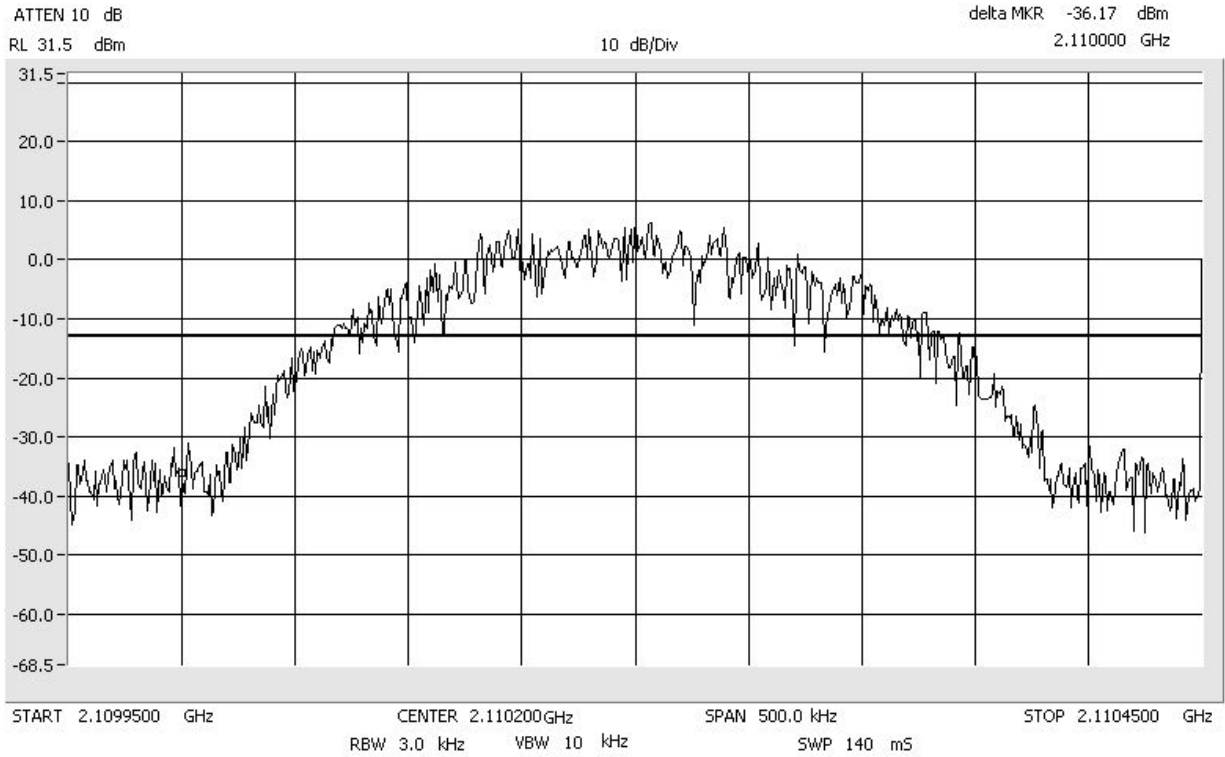


Center: 2154.92 MHz Band_Edge TDMA
Span: 200 kHz RBW: 1 kHz VBW: 3 kHz



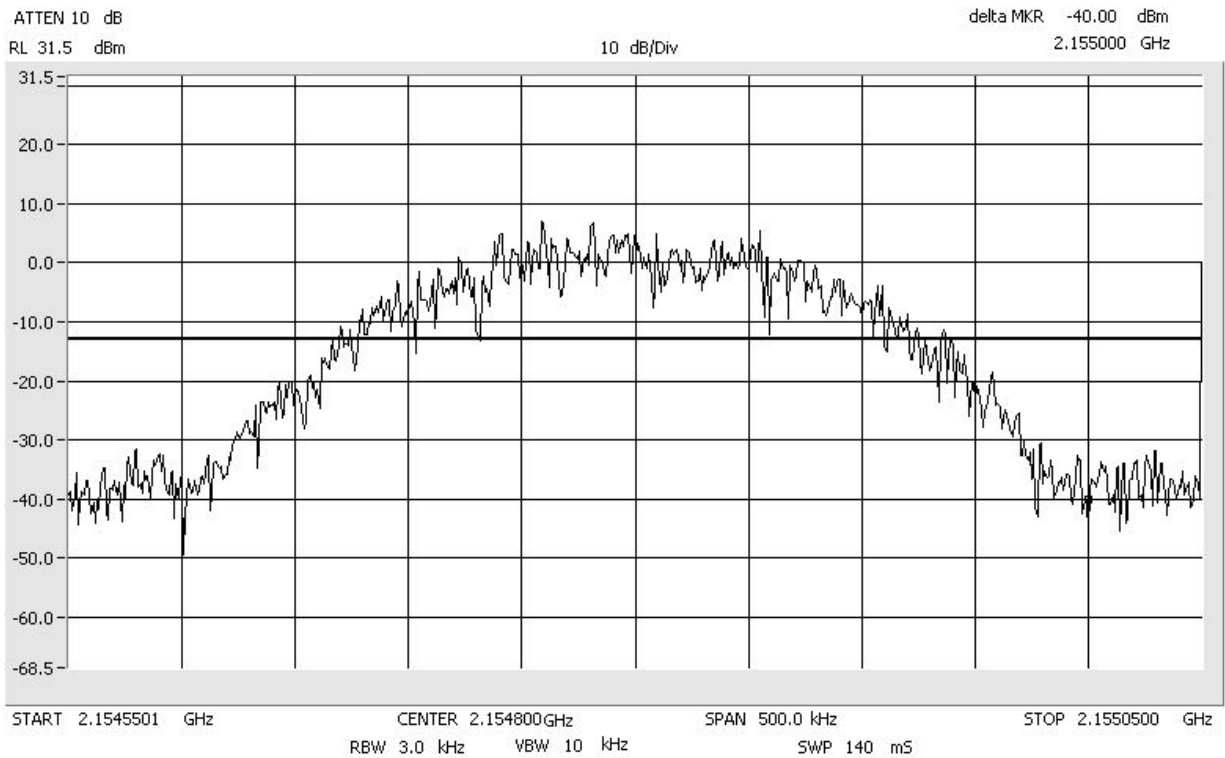
Band_Edge
Center: 2110.2 MHz Span: 500 kHz

GSM
RBW: 3 kHz VBW: 10 kHz



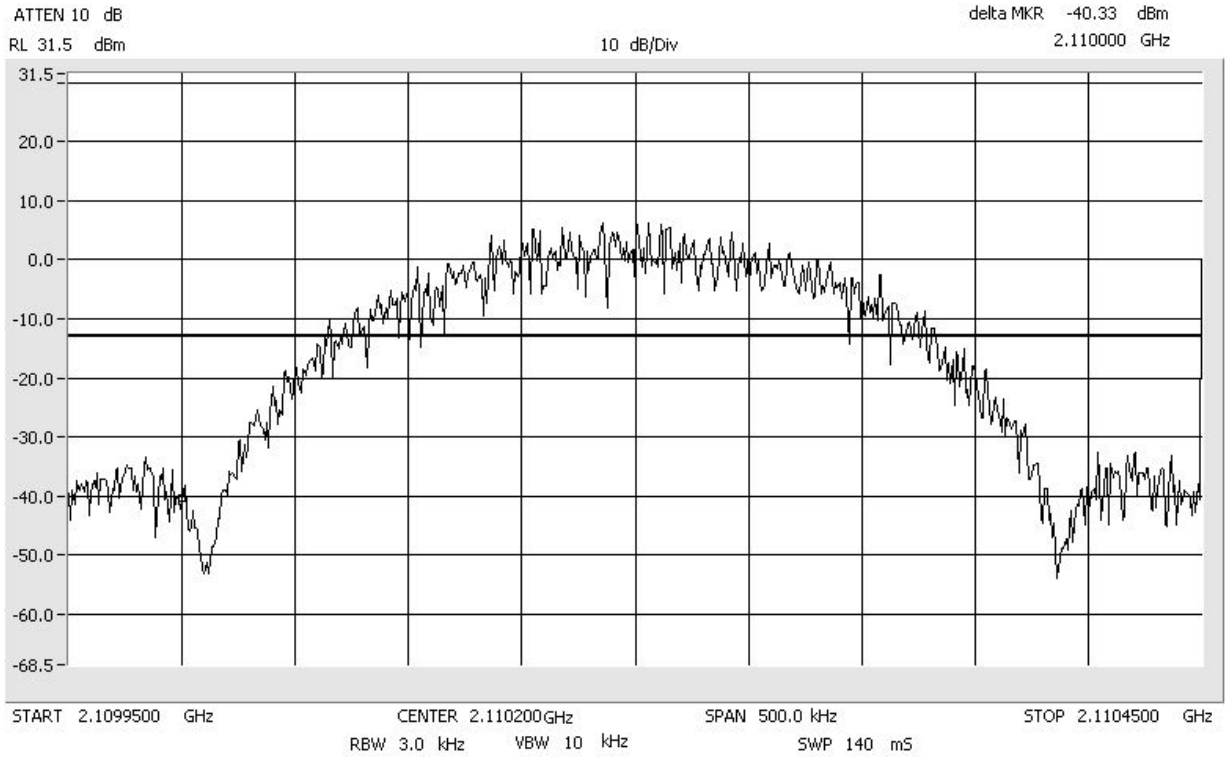
Band_Edge
Center: 2154.8 MHz Span: 500 kHz

GSM
RBW: 3 kHz VBW: 10 kHz



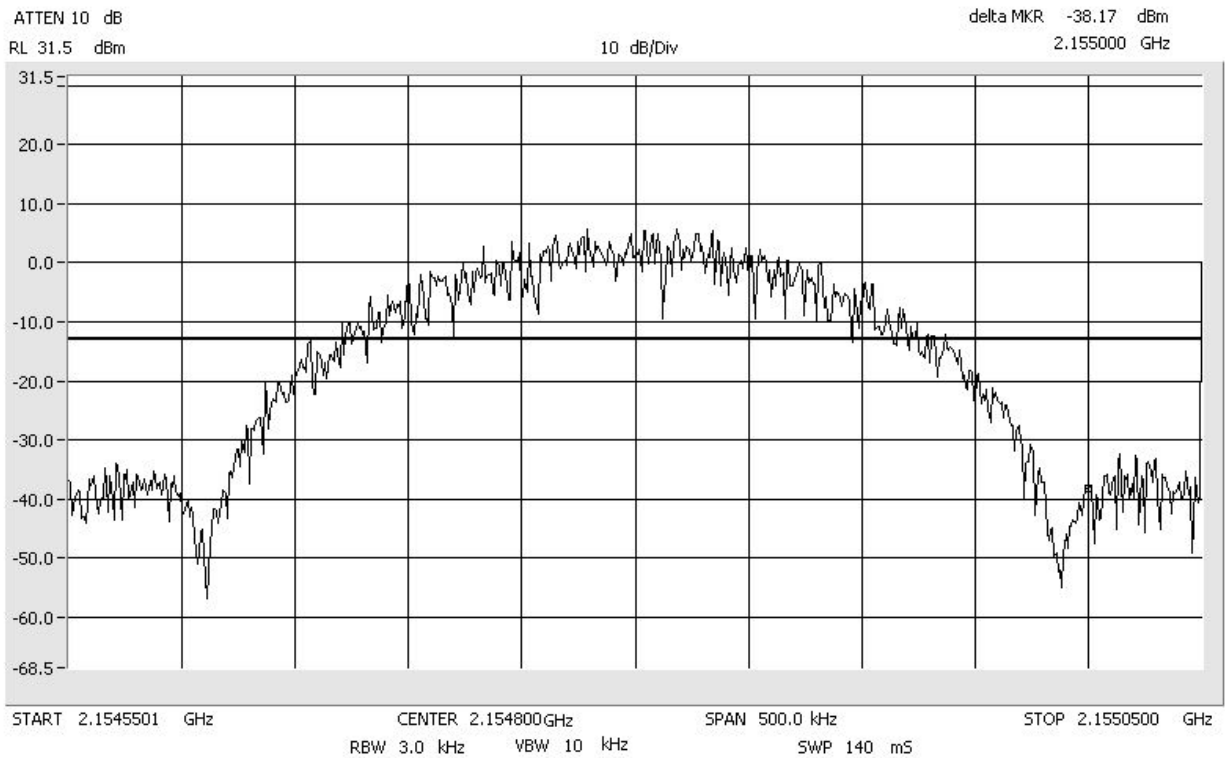
Band_Edge
Center: 2110.2 MHz Span: 500 kHz

EDGE
RBW: 3 kHz VBW: 10 kHz

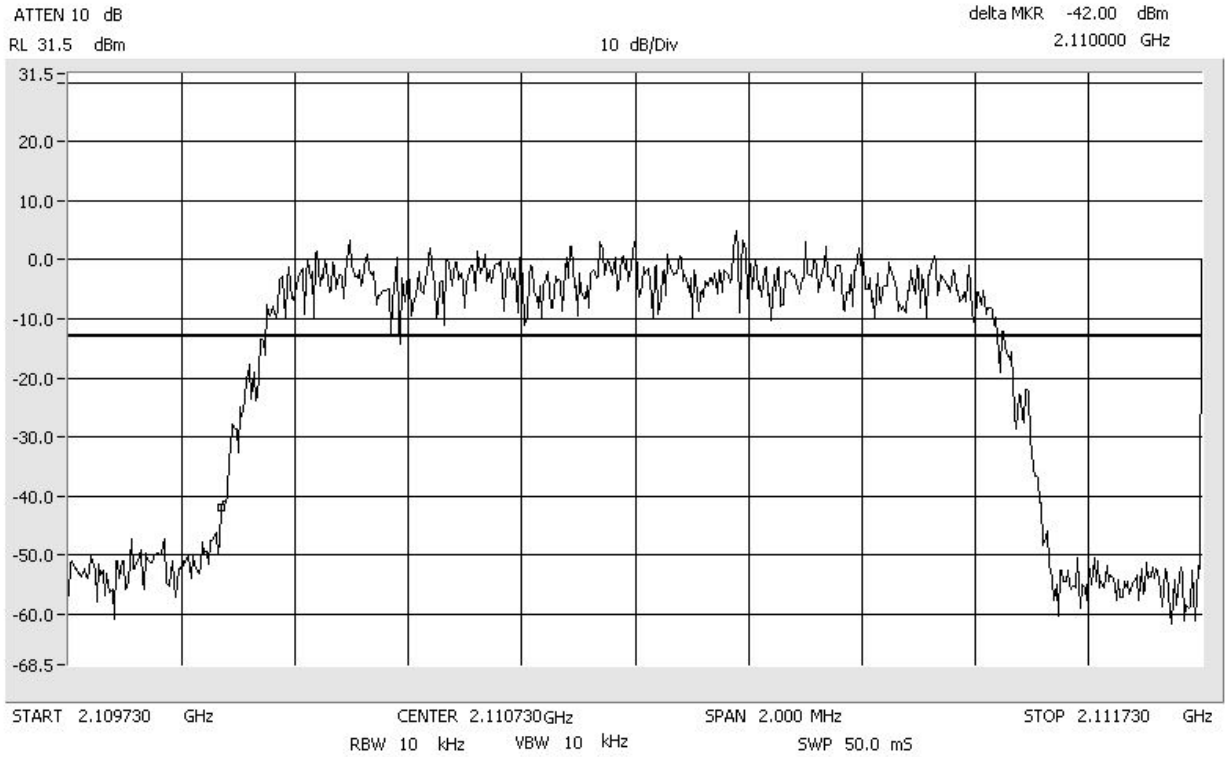


Band_Edge
Center: 2154.8 MHz Span: 500 kHz

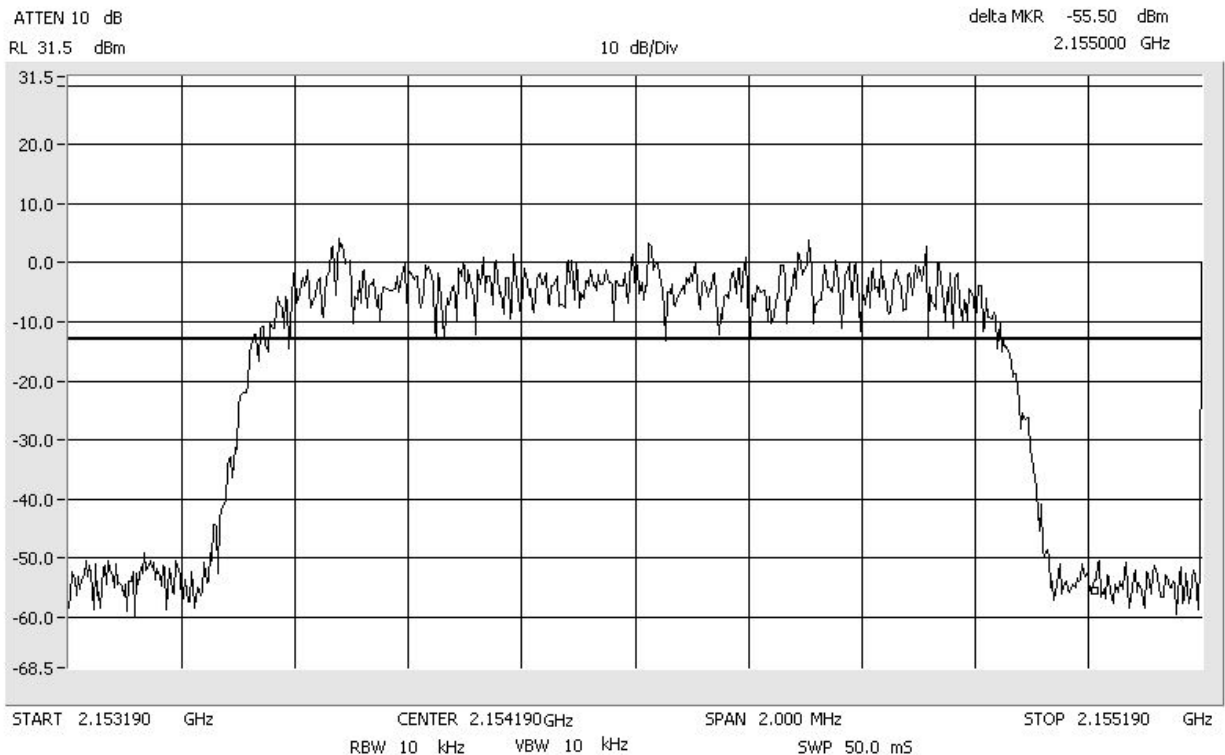
EDGE
RBW: 3 kHz VBW: 10 kHz



Center: 2110.73 MHz Band_Edge CDMA
Span: 2 MHz RBW: 10 kHz VBW: 10 kHz

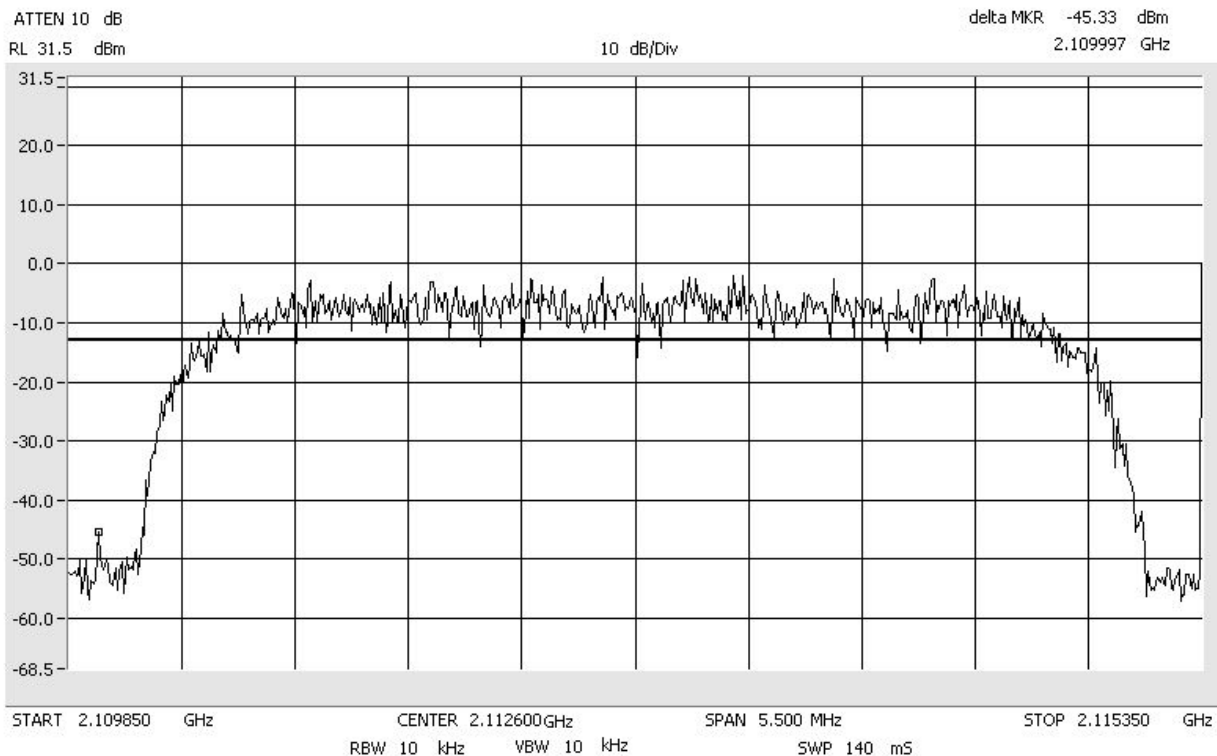


Center: 2154.19 MHz Band_Edge CDMA
Span: 2 MHz RBW: 10 kHz VBW: 10 kHz



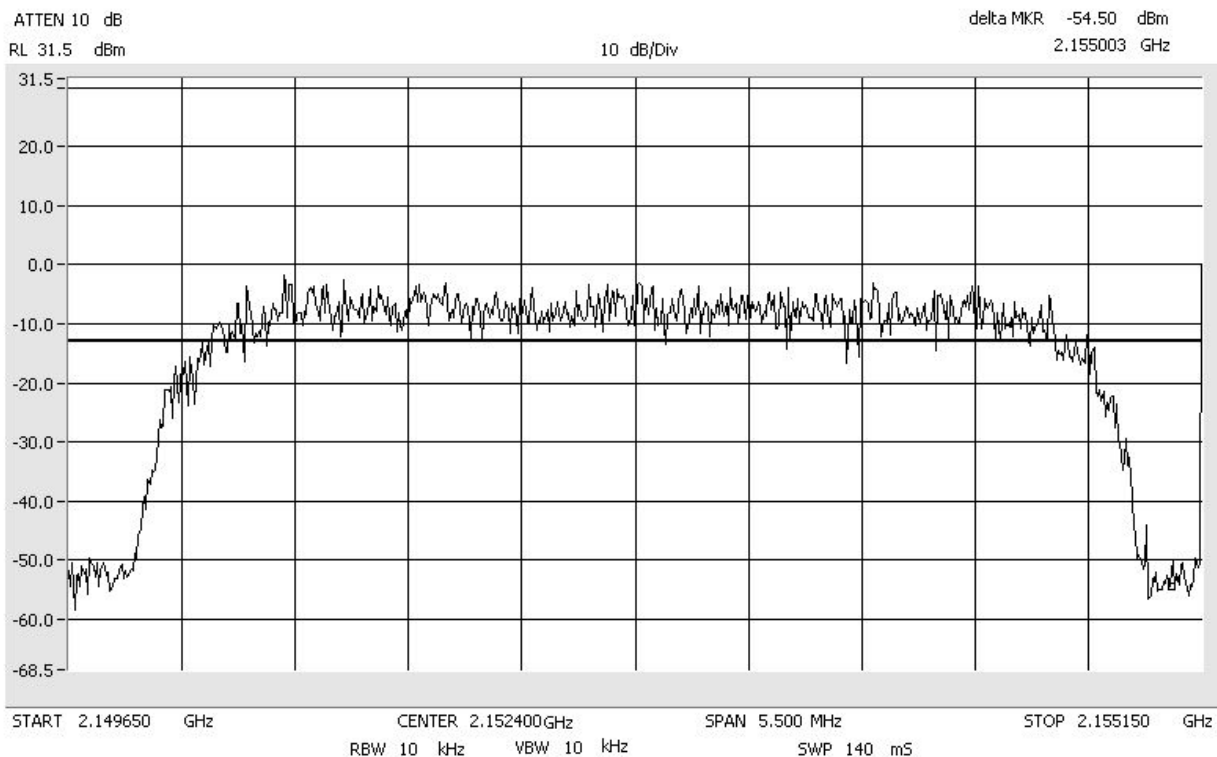
Band_Edge
Center: 2112.6 MHz Span: 5.5 MHz

WCDMA
RBW: 10 kHz VBW: 10 kHz

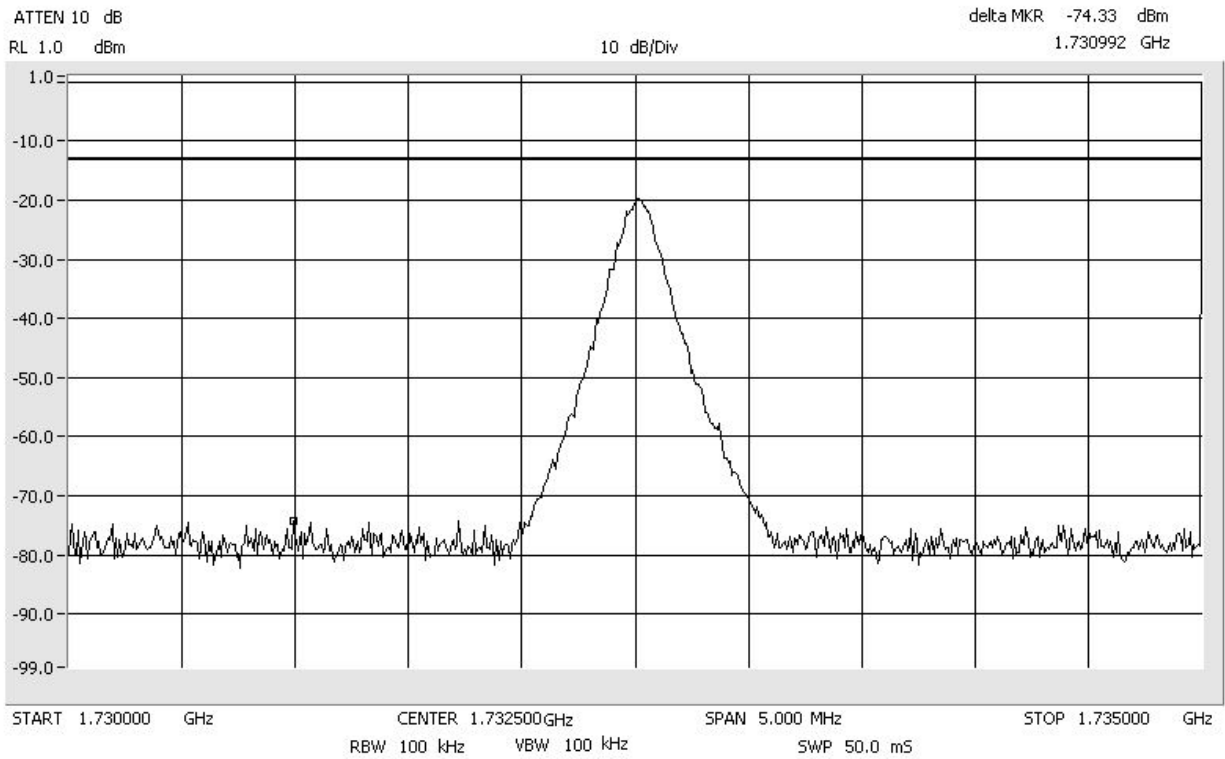


Band_Edge
Center: 2152.4 MHz Span: 5.5 MHz

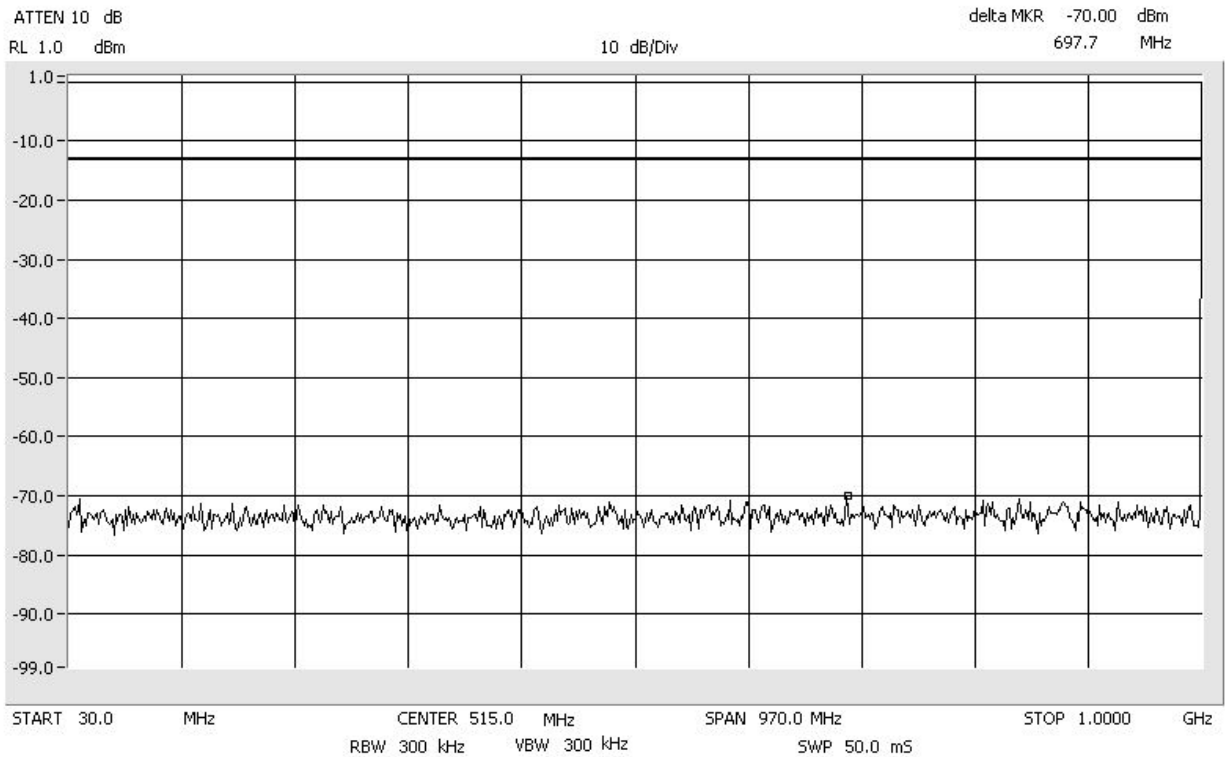
WCDMA
RBW: 10 kHz VBW: 10 kHz



Conducted Emissions TDMA AWS
Center: 1732.5 MHz Span: 5 MHz RBW/VBW: 100 kHz

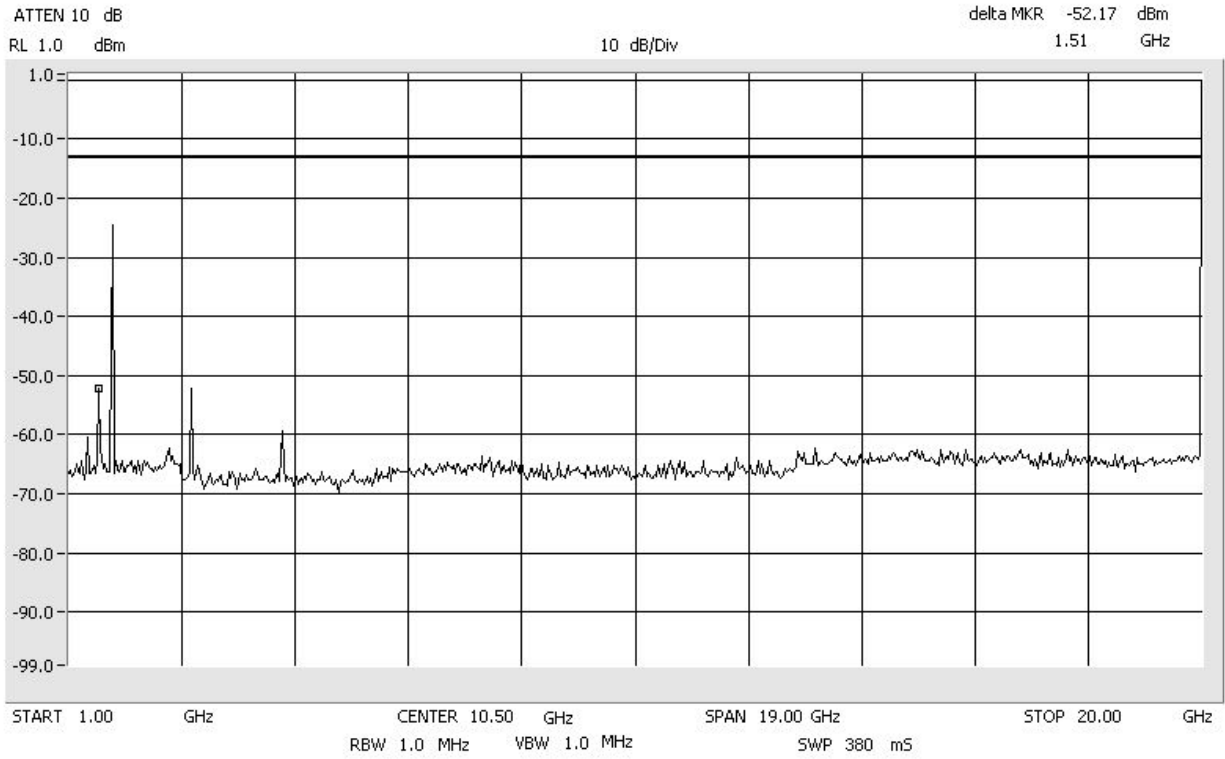


Conducted Emissions TDMA AWS
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz

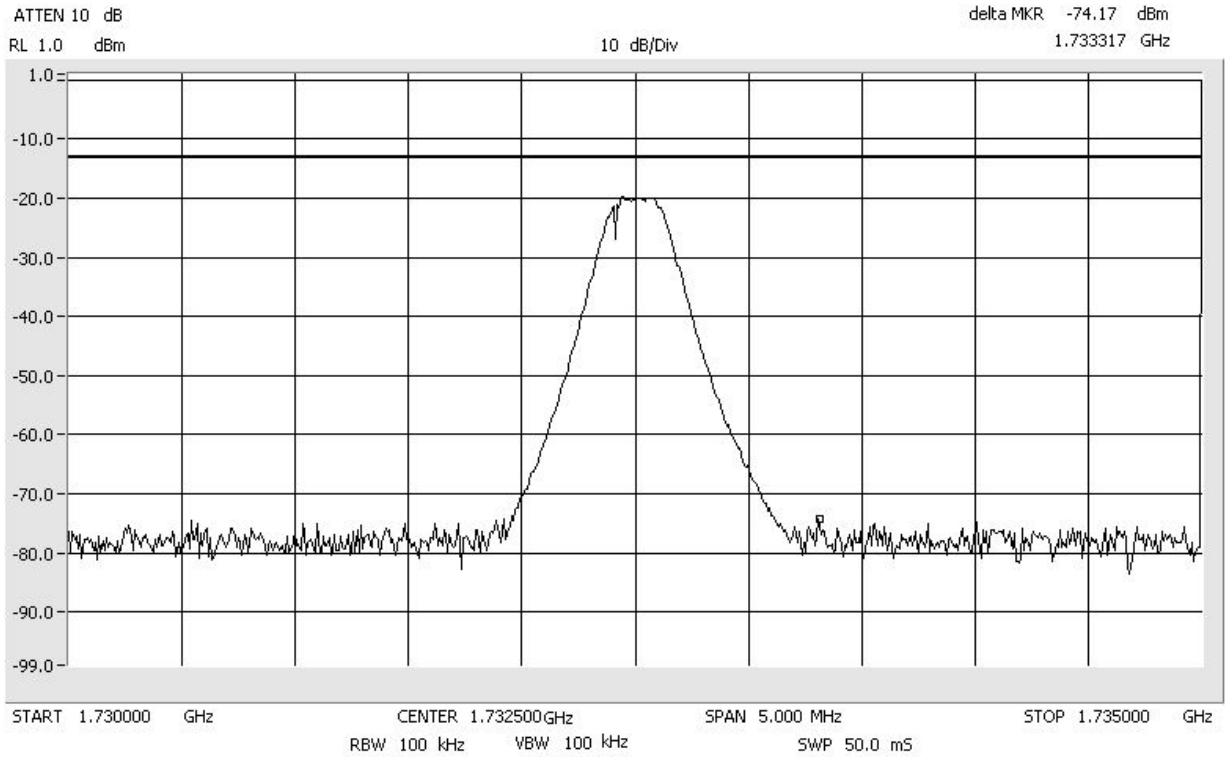


Conducted Emissions
Span: 1 GHz to 20 GHz

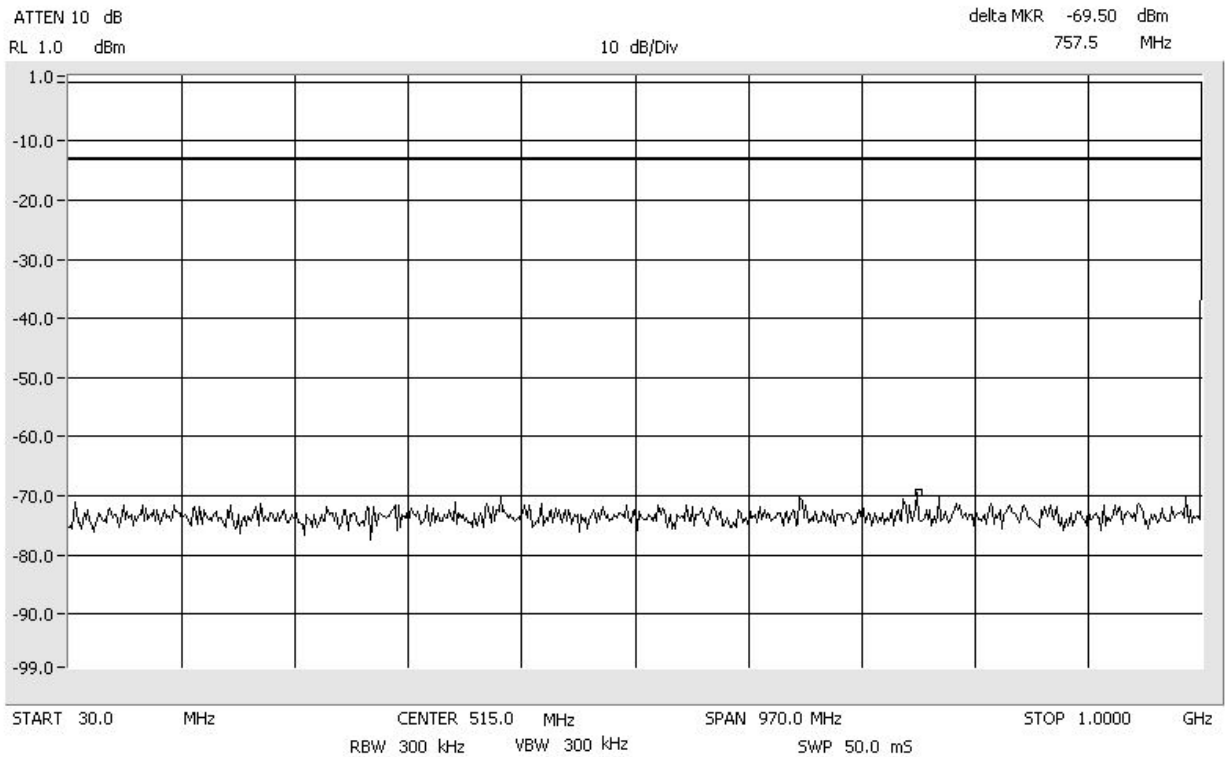
TDMA AWS
RBW/VBW: 1 MHz



Conducted Emissions GSM AWS
Center: 1732.5 MHz Span: 5 MHz RBW/VBW: 100 kHz

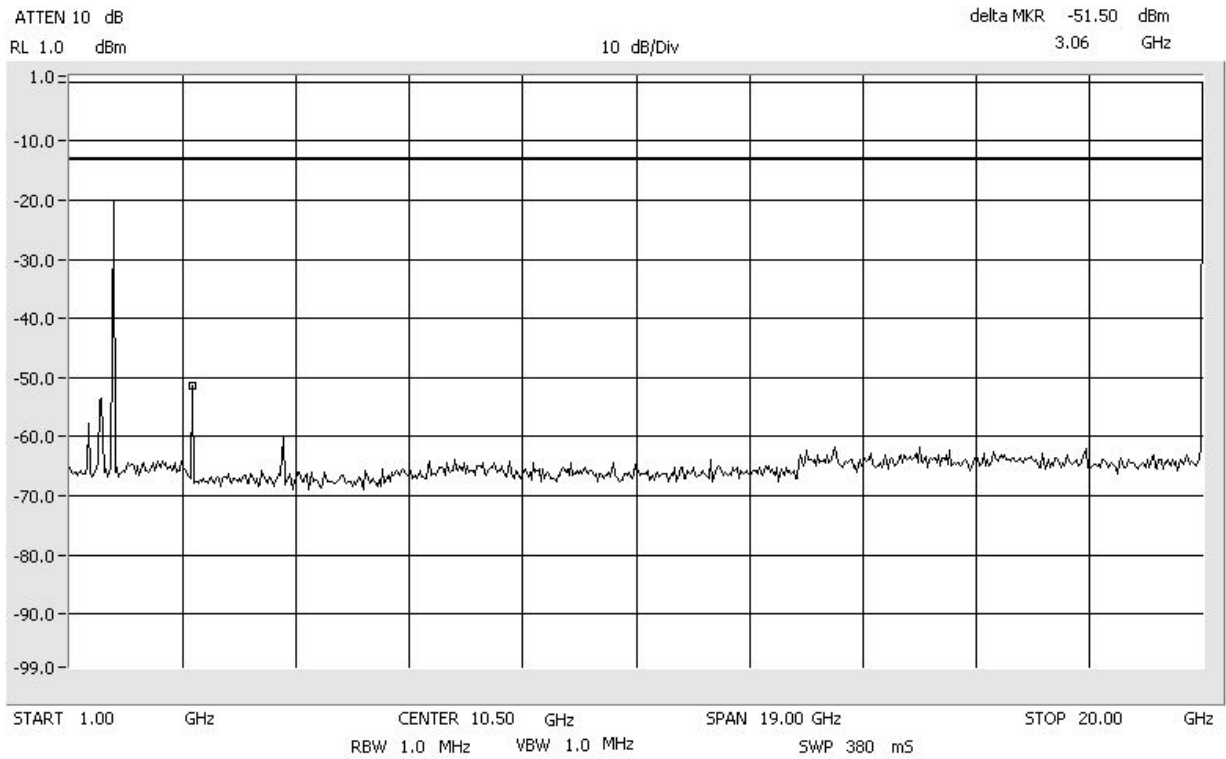


Conducted Emissions GSM AWS
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz

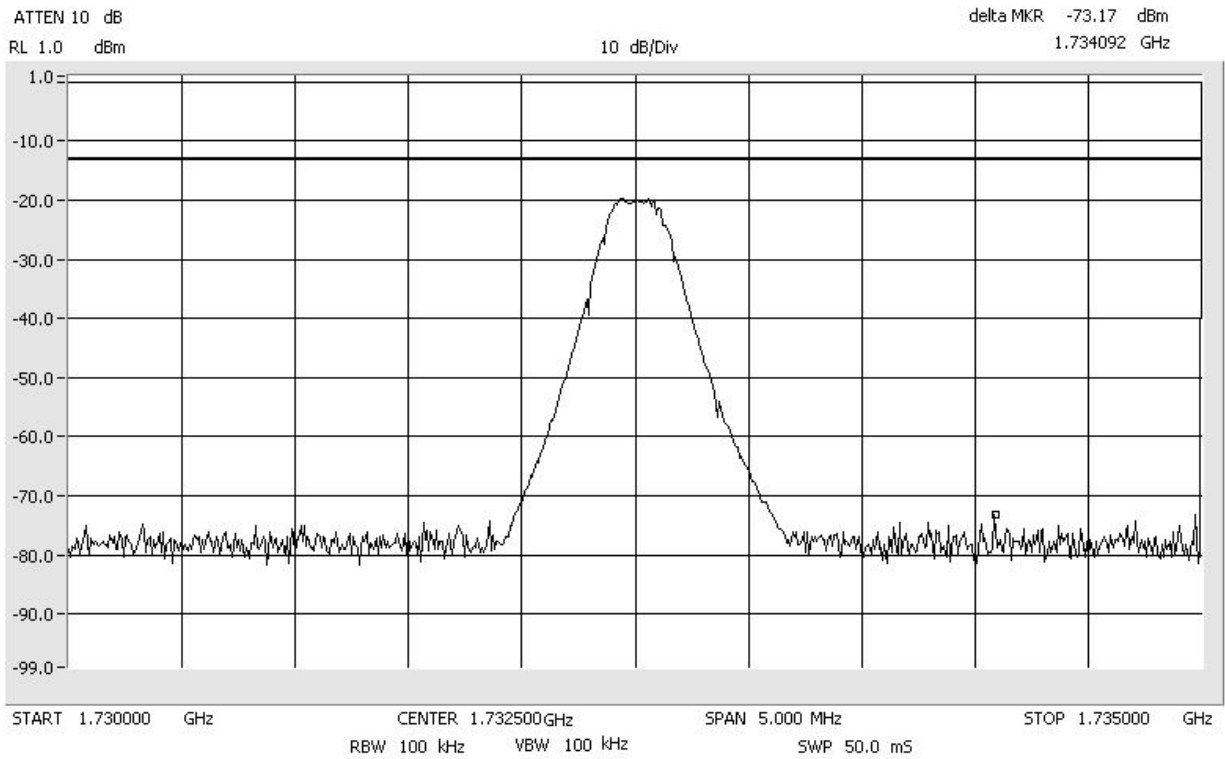


Conducted Emissions
Span: 1 GHz to 20 GHz

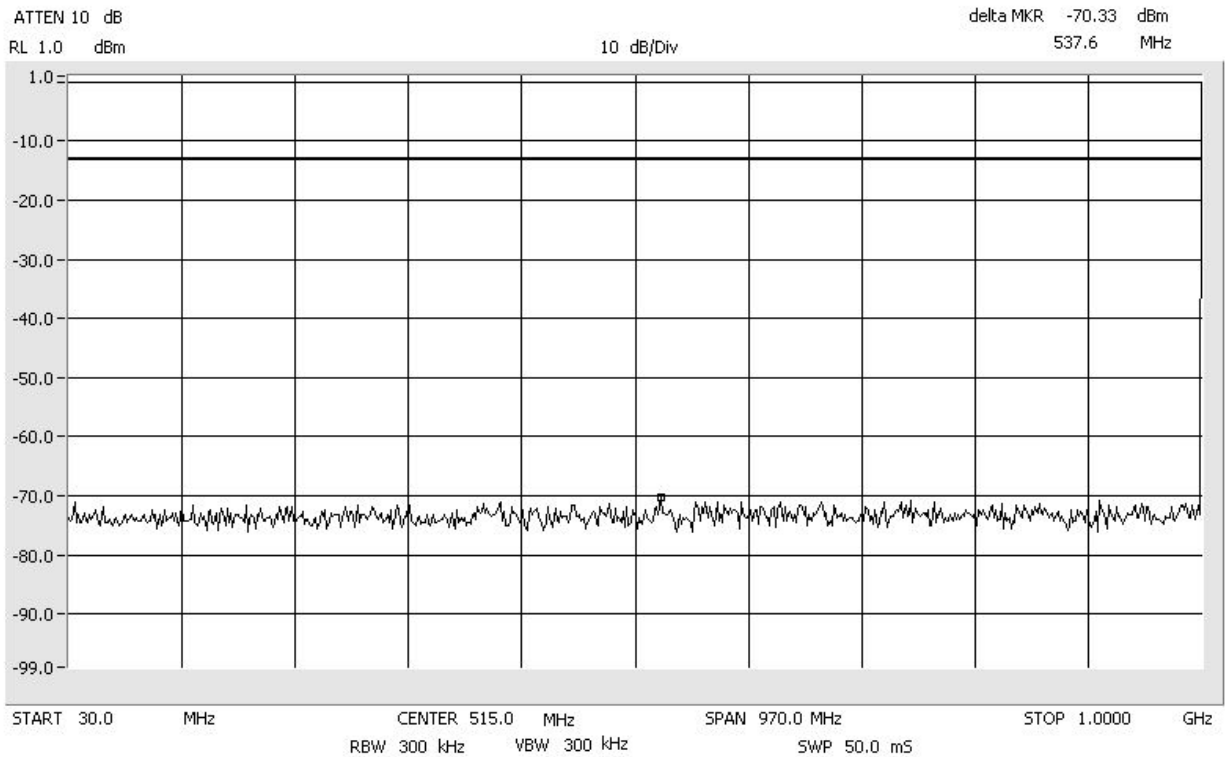
GSM AWS
RBW/VBW: 1 MHz



Conducted Emissions EDGE AWS
Center: 1732.5 MHz Span: 5 MHz RBW/VBW: 100 kHz

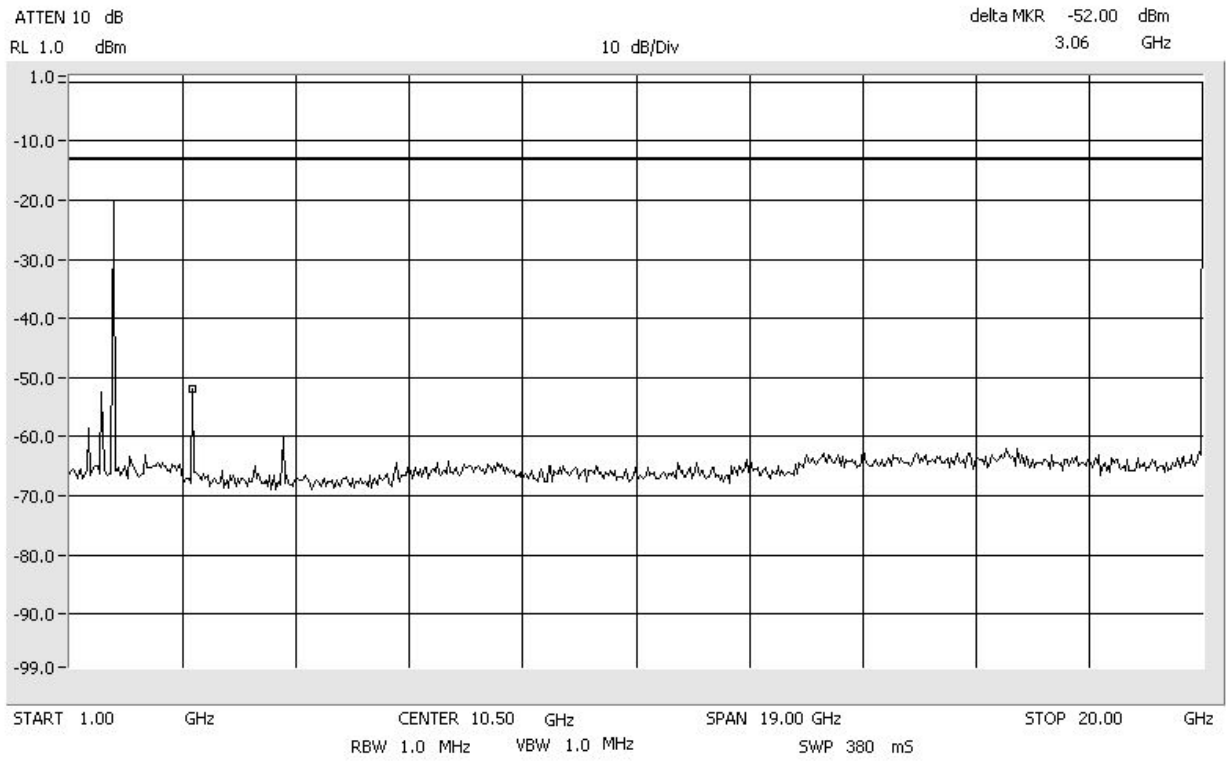


Conducted Emissions EDGE AWS
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz

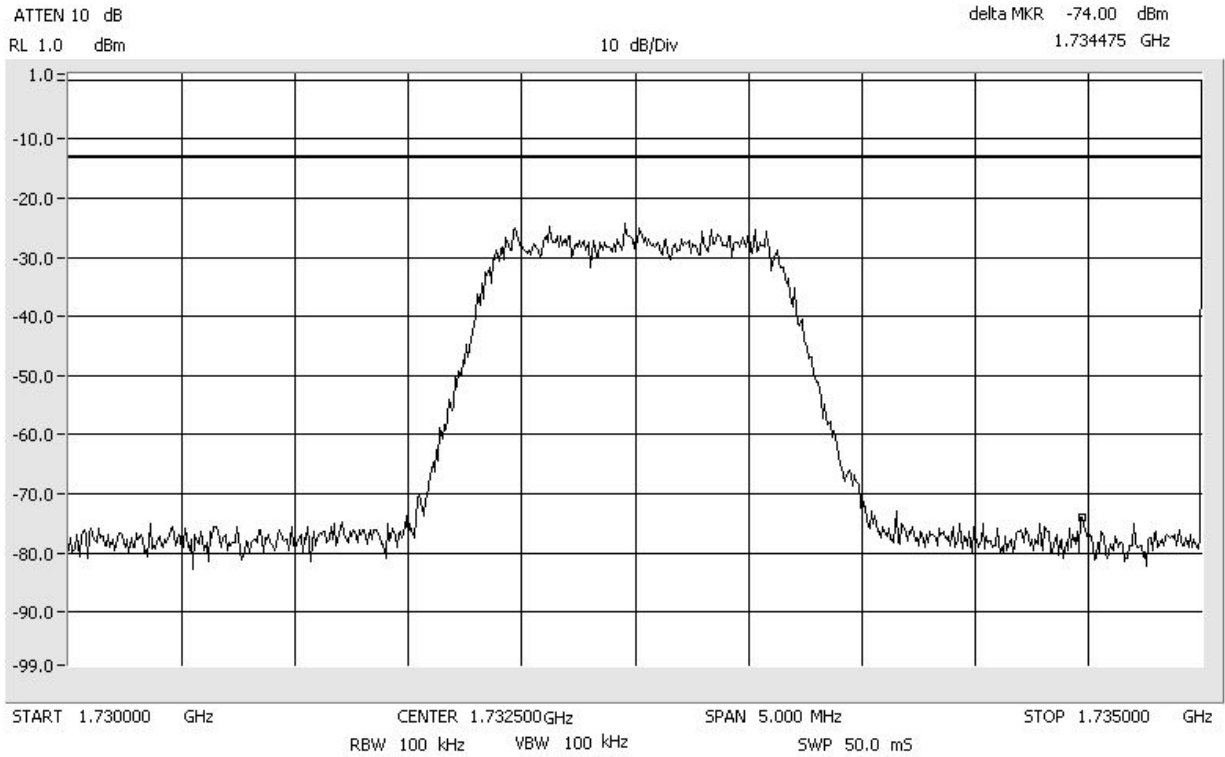


Conducted Emissions
Span: 1 GHz to 20 GHz

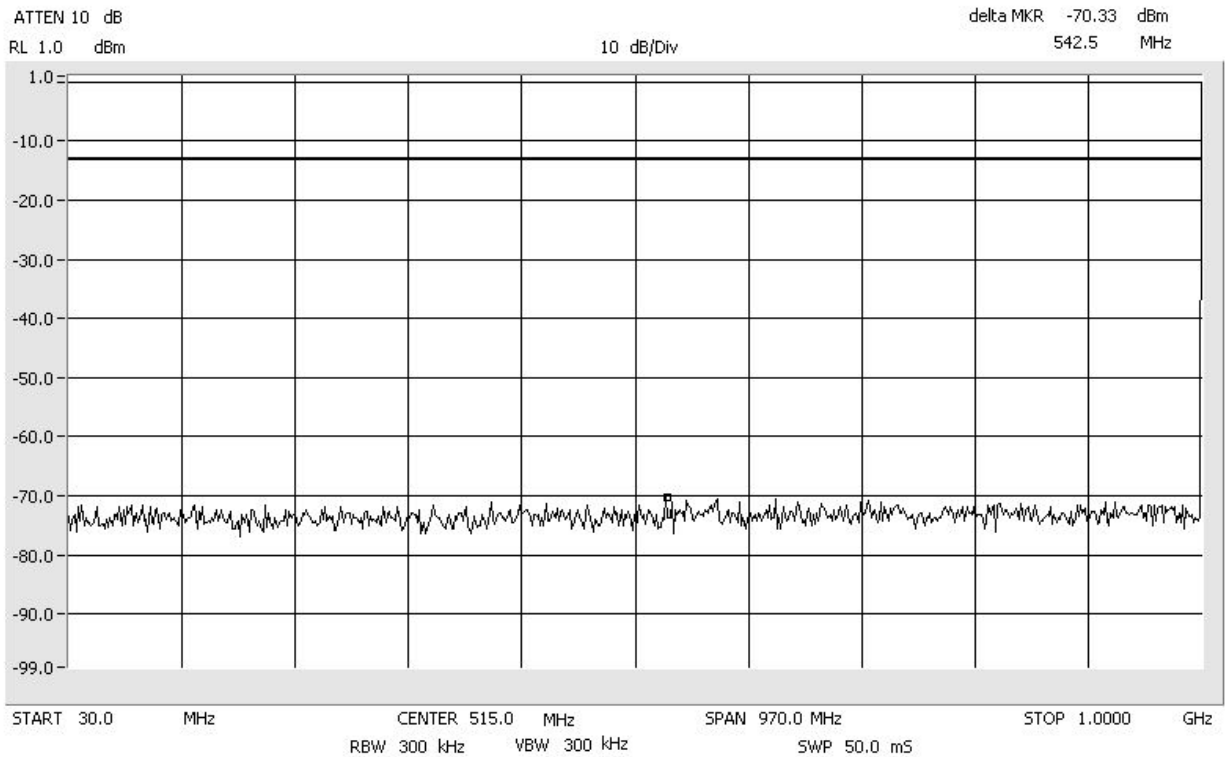
EDGE AWS
RBW/VBW: 1 MHz



Conducted Emissions CDMA AWS
Center: 1732.5 MHz Span: 5 MHz RBW/VBW: 100 kHz

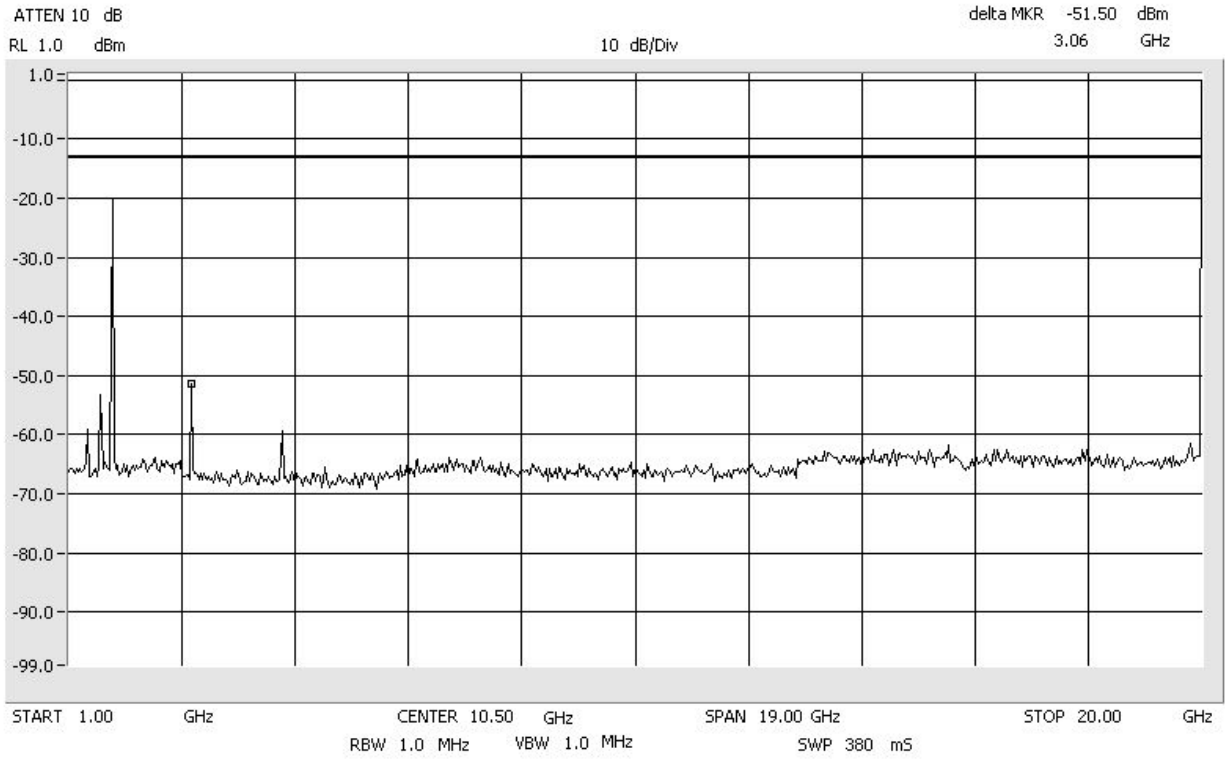


Conducted Emissions CDMA AWS
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz

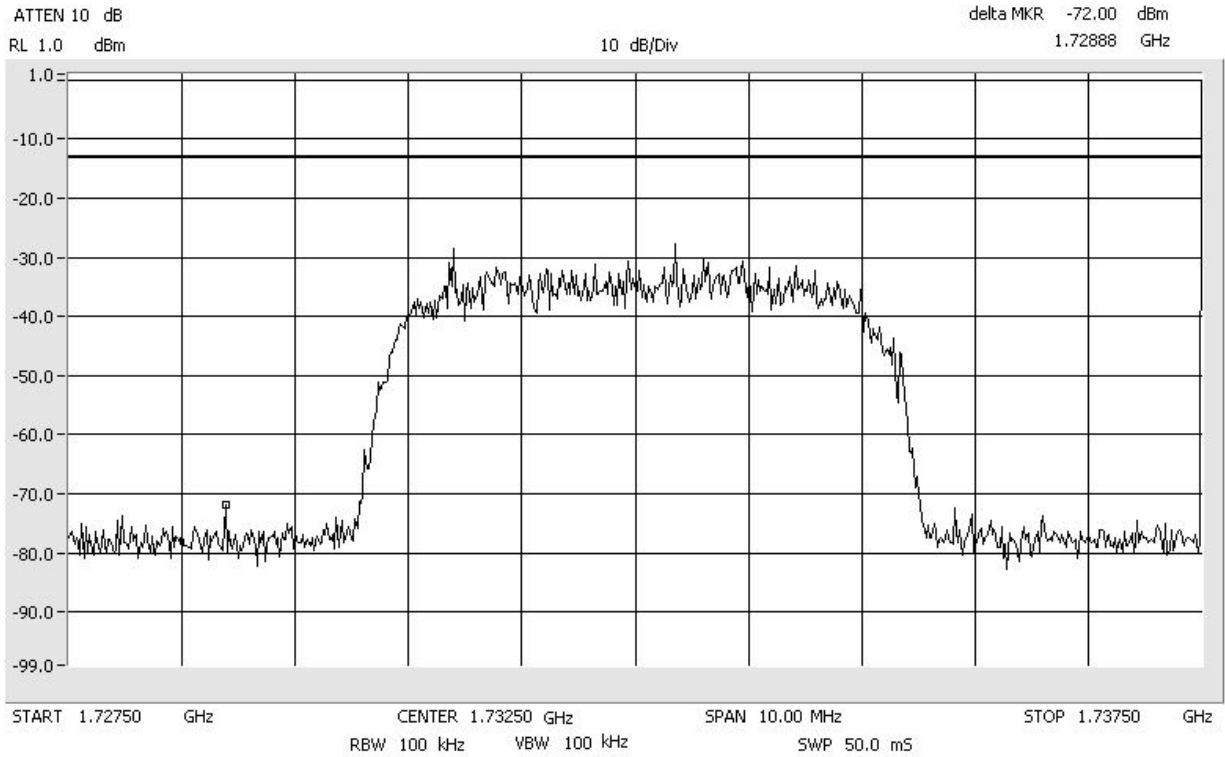


Conducted Emissions
Span: 1 GHz to 20 GHz

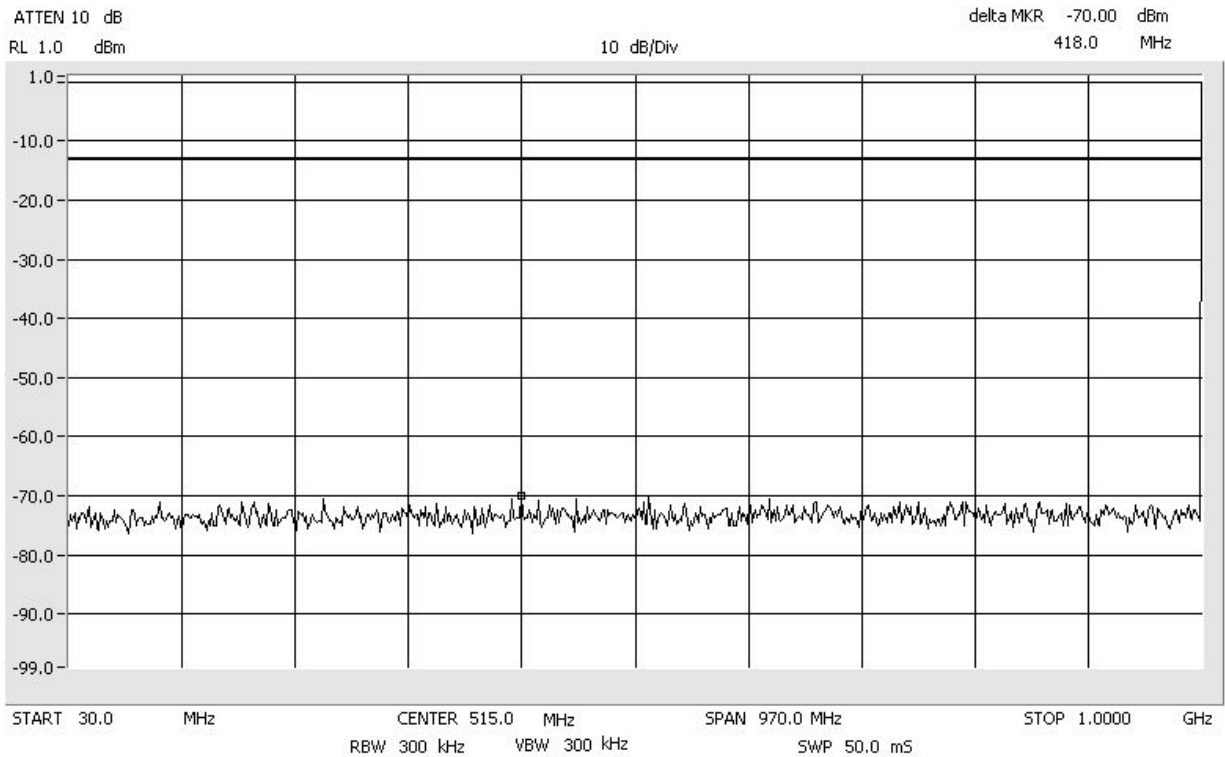
CDMA AWS
RBW/VBW: 1 MHz



Conducted Emissions WCDMA AWS
Center: 1732.5 MHz Span: 10 MHz RBW/VBW: 100 kHz



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

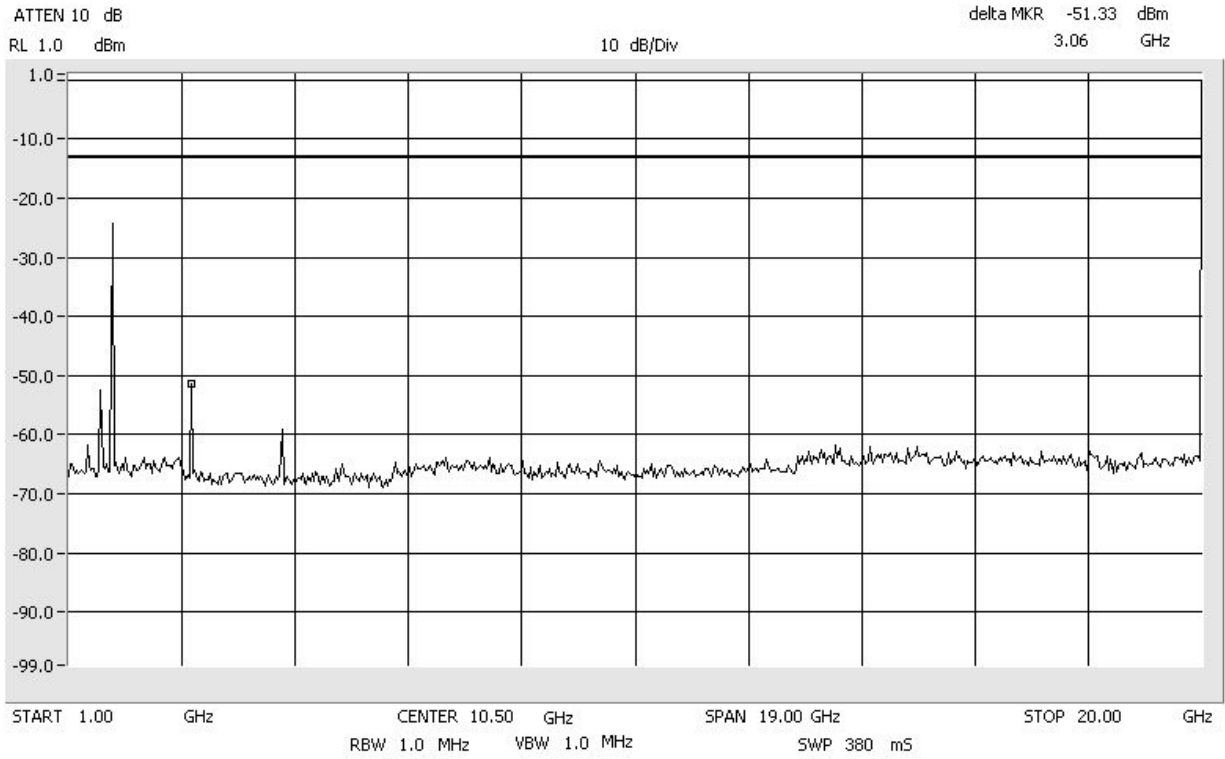


Conducted Emissions
Span: 1 GHz to 20 GHz

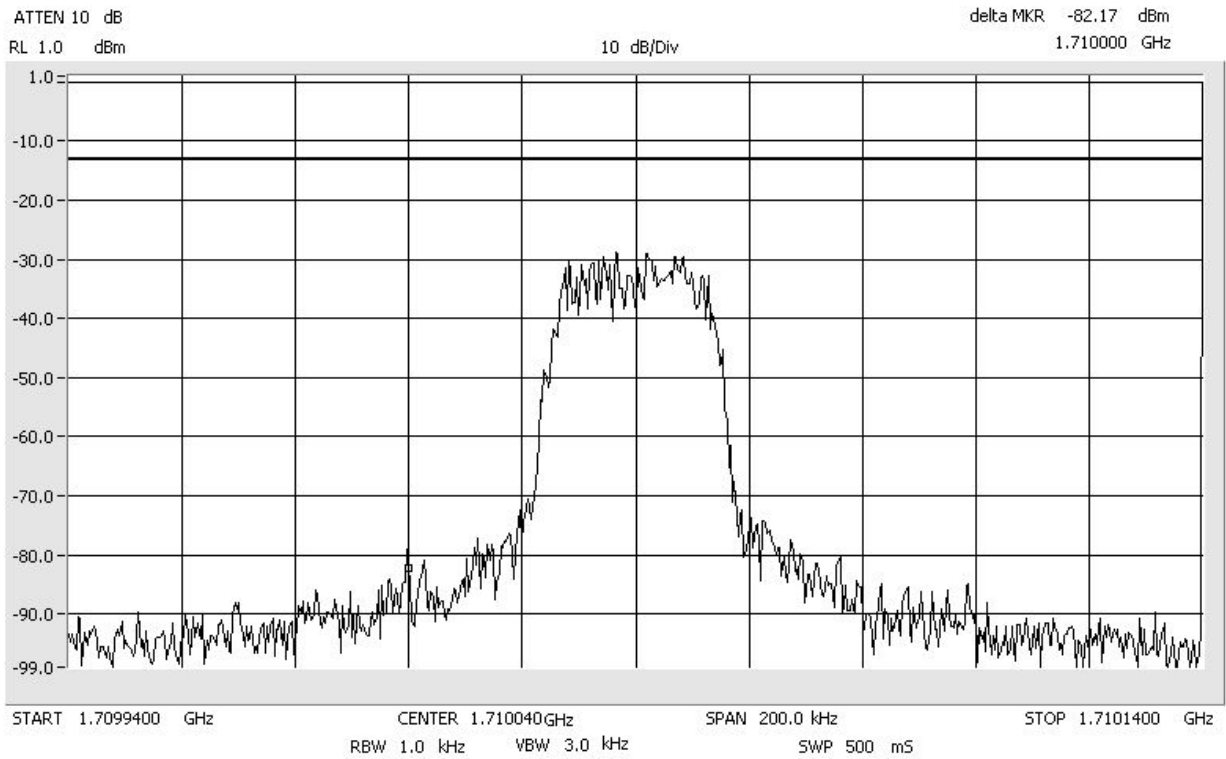
WCDMA

AWS

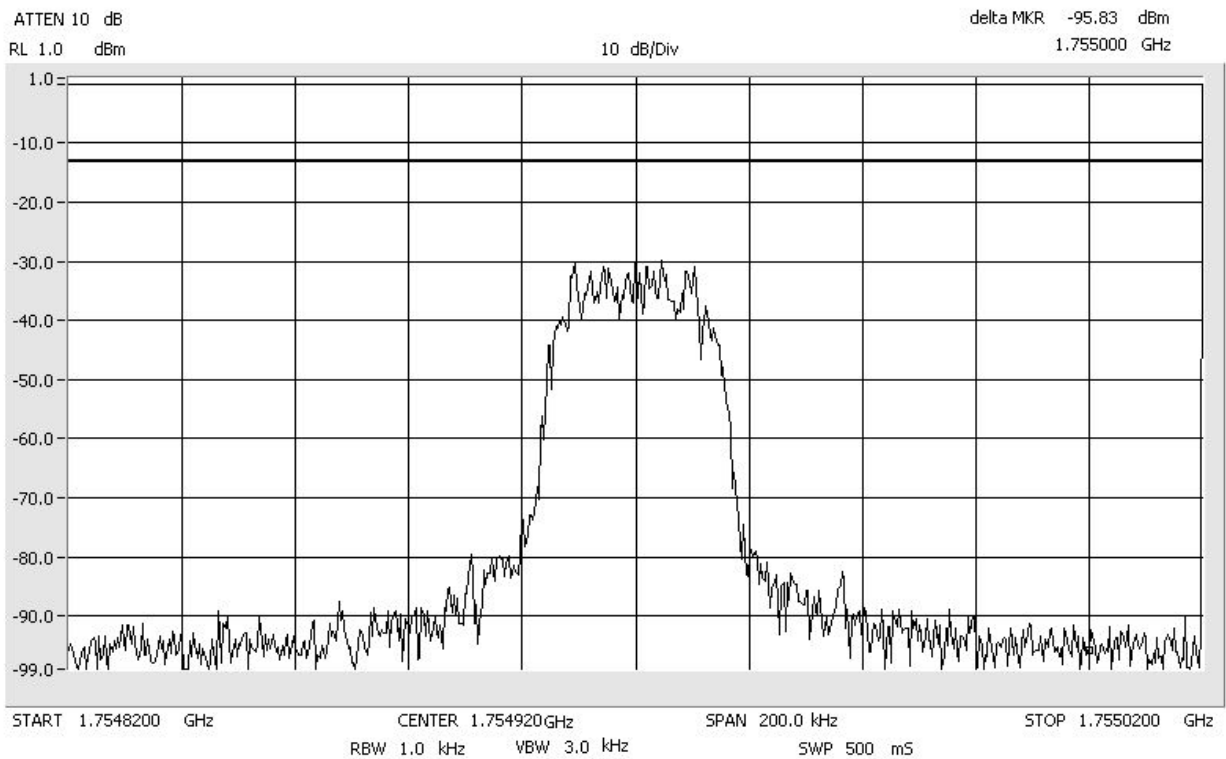
RBW/VBW: 1 MHz



Center: 1710.04 MHz Band_Edge TDMA
Span: 200 kHz RBW: 1 kHz VBW: 3 kHz

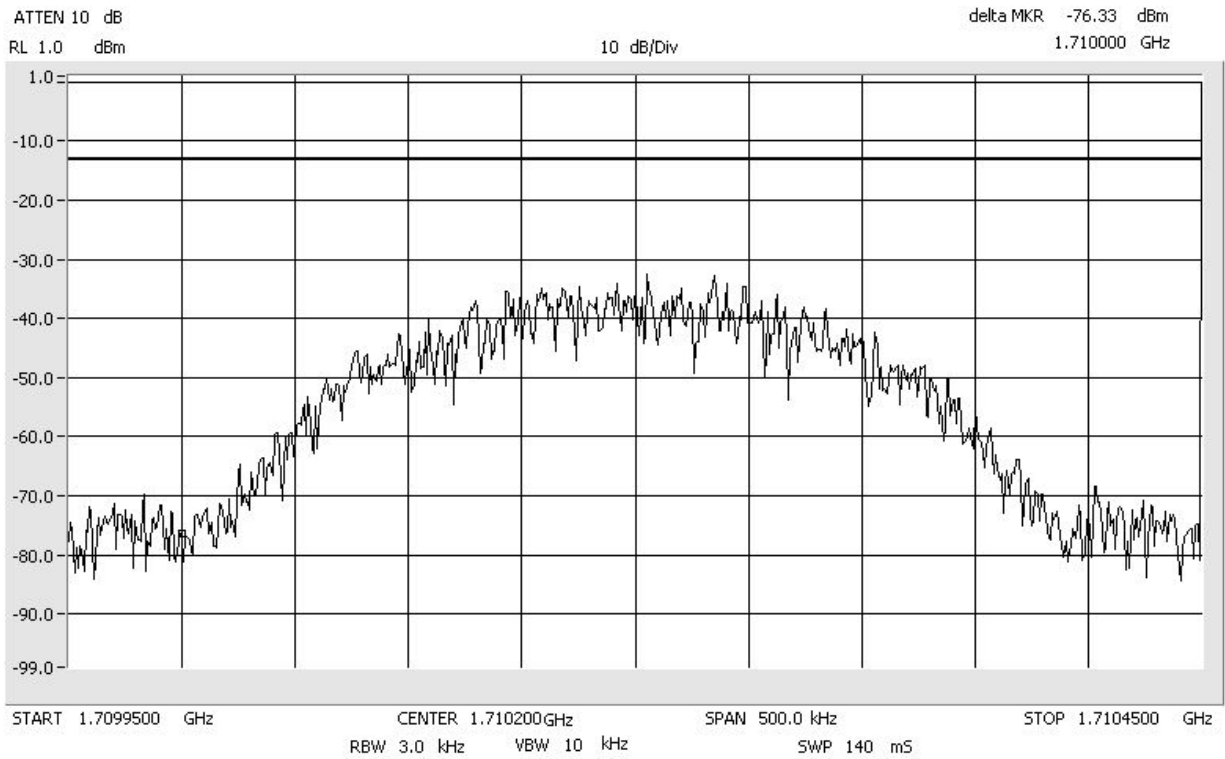


Center: 1754.92 MHz Band_Edge TDMA
Span: 200 kHz RBW: 1 kHz VBW: 3 kHz



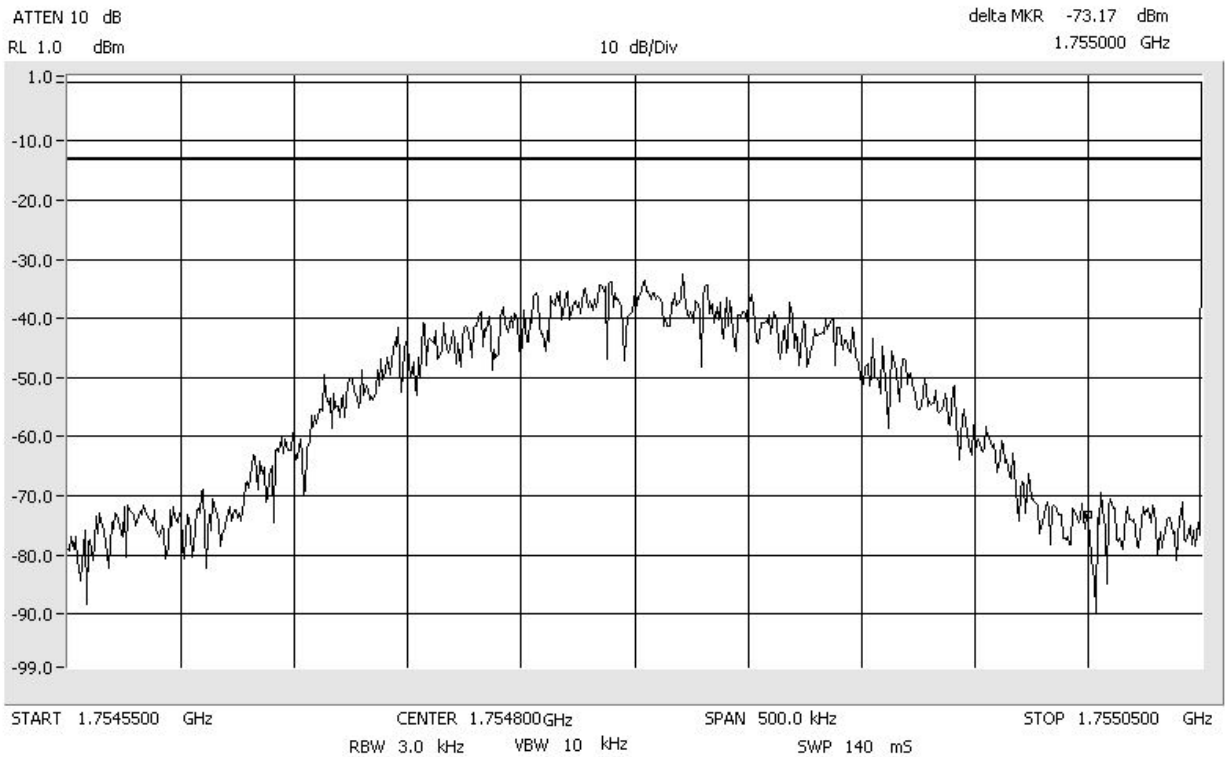
Band_Edge
Center: 1710.2 MHz Span: 500 kHz

GSM
RBW: 3 kHz VBW: 10 kHz



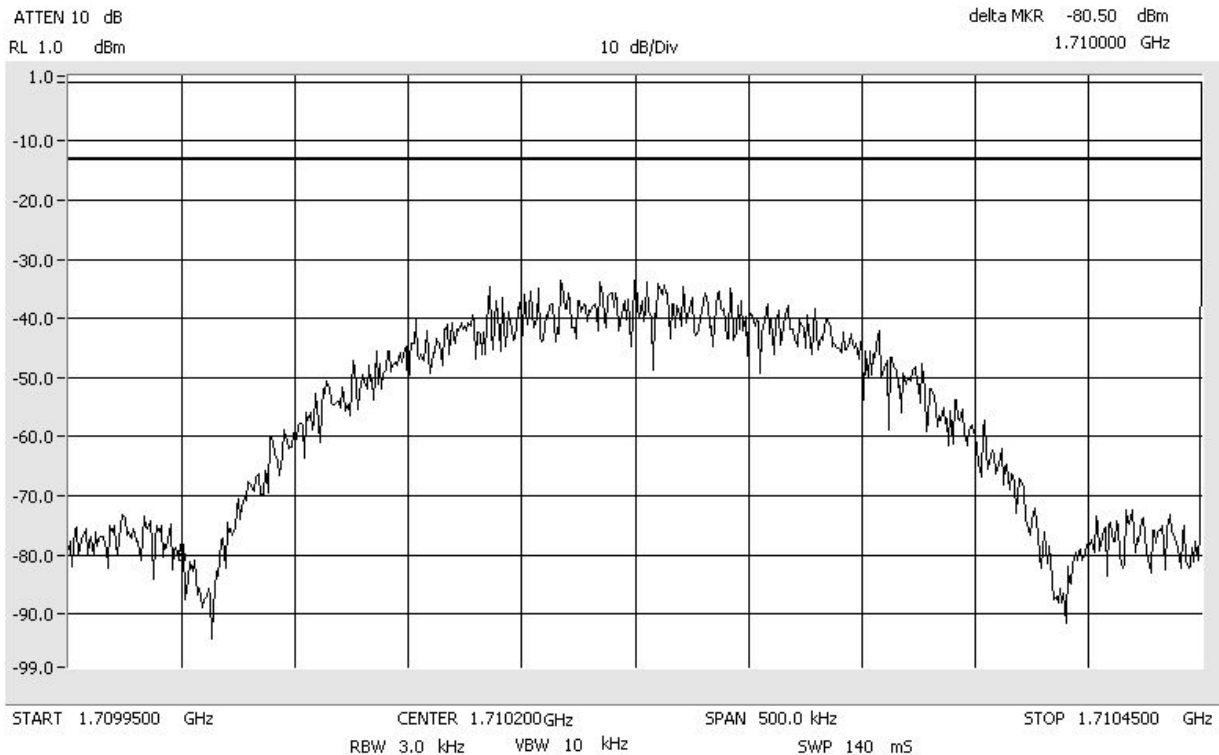
Band_Edge
Center: 1754.8 MHz Span: 500 kHz

GSM
RBW: 3 kHz VBW: 10 kHz



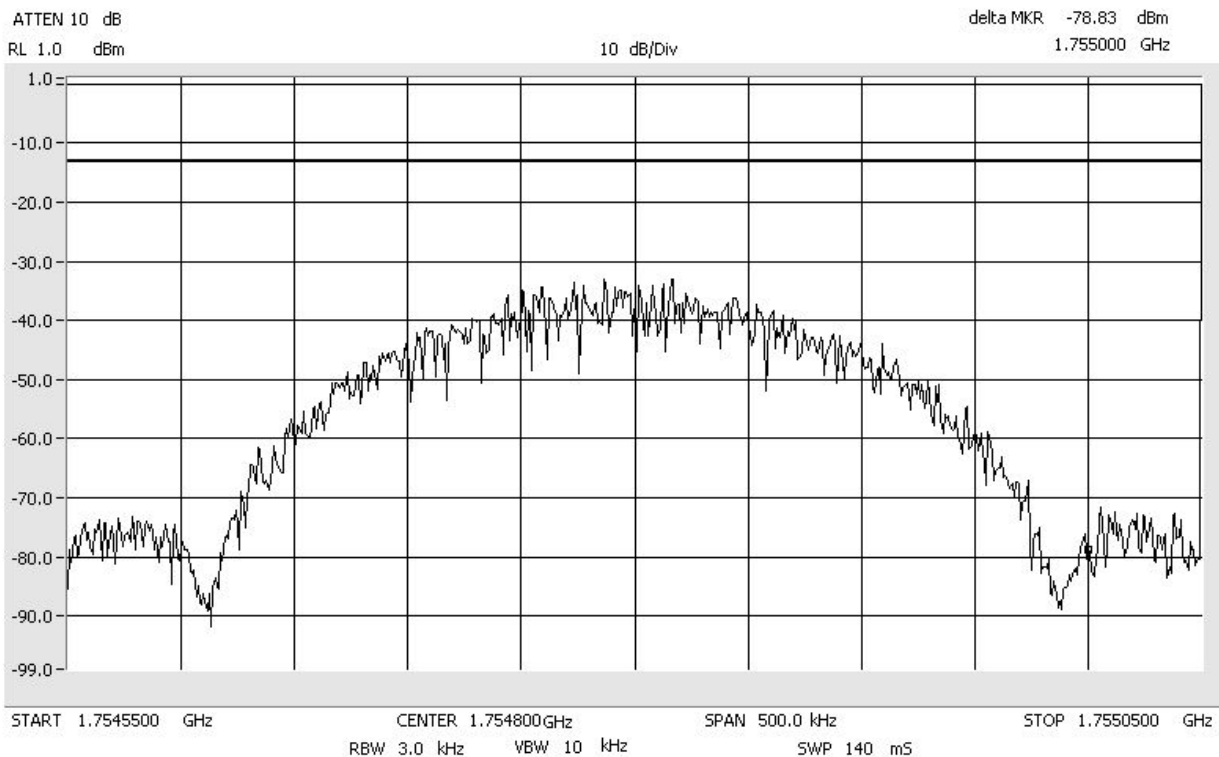
Band_Edge
Center: 1710.2 MHz Span: 500 kHz

EDGE
RBW: 3 kHz VBW: 10 kHz

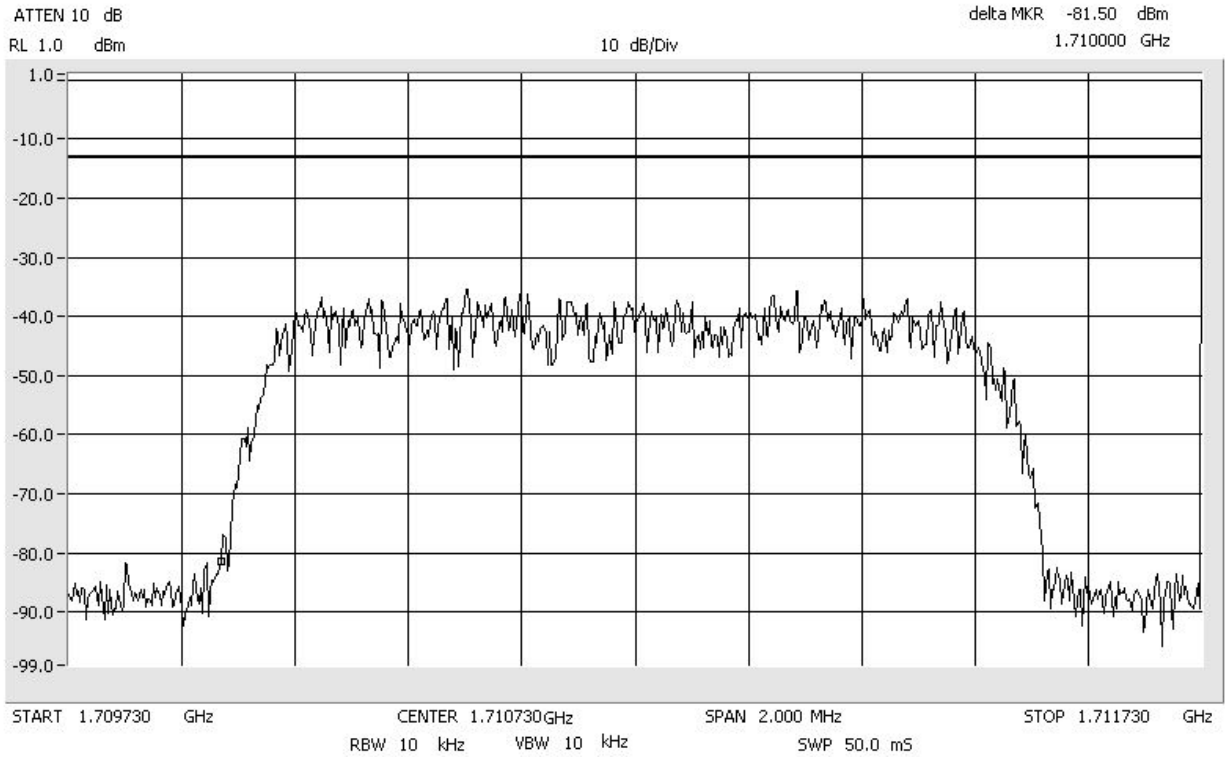


Band_Edge
Center: 1754.8 MHz Span: 500 kHz

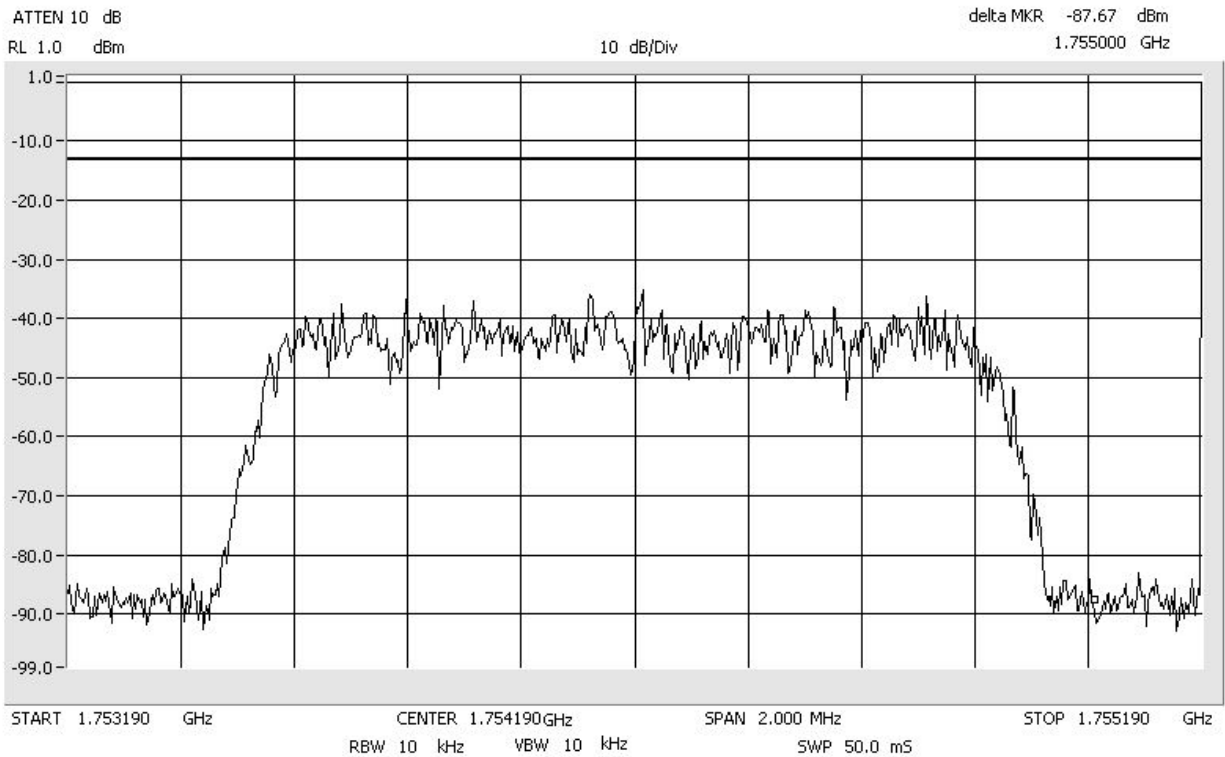
EDGE
RBW: 3 kHz VBW: 10 kHz



Center: 1710.73 MHz Band_Edge CDMA
Span: 2 MHz RBW: 10 kHz VBW: 10 kHz

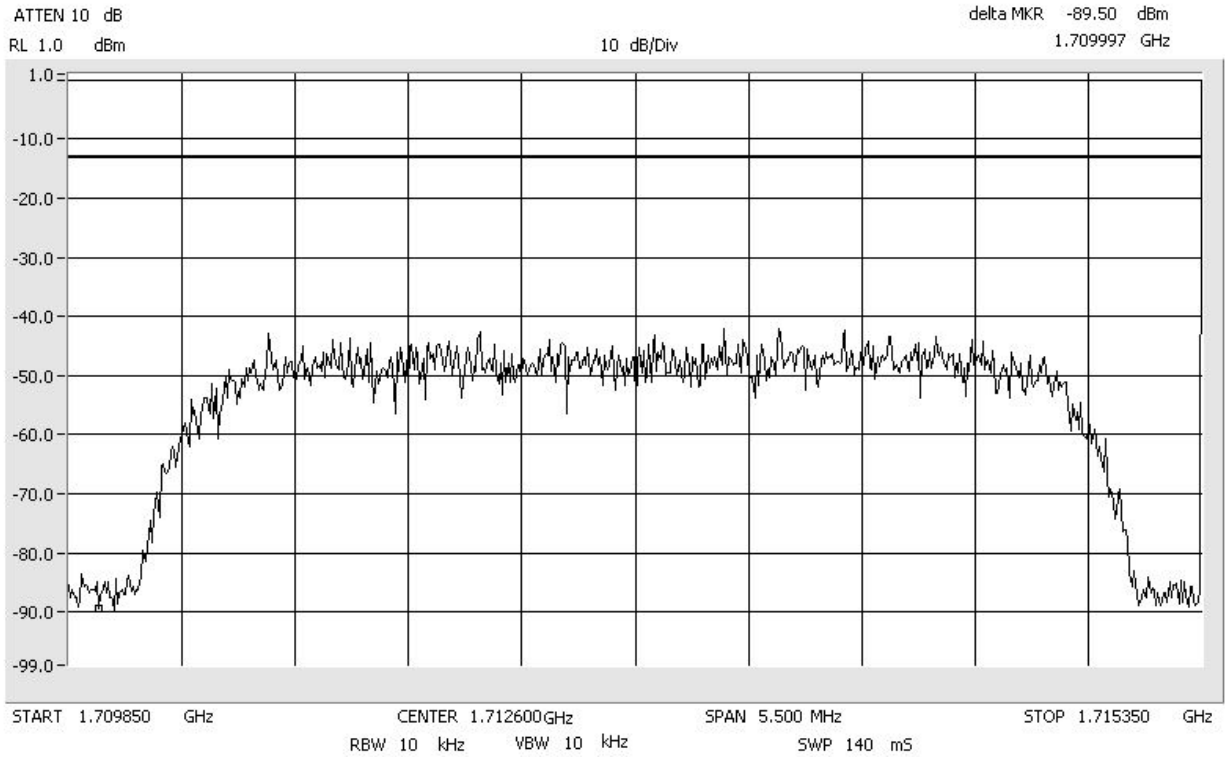


Center: 1754.19 MHz Band_Edge CDMA
Span: 2 MHz RBW: 10 kHz VBW: 10 kHz



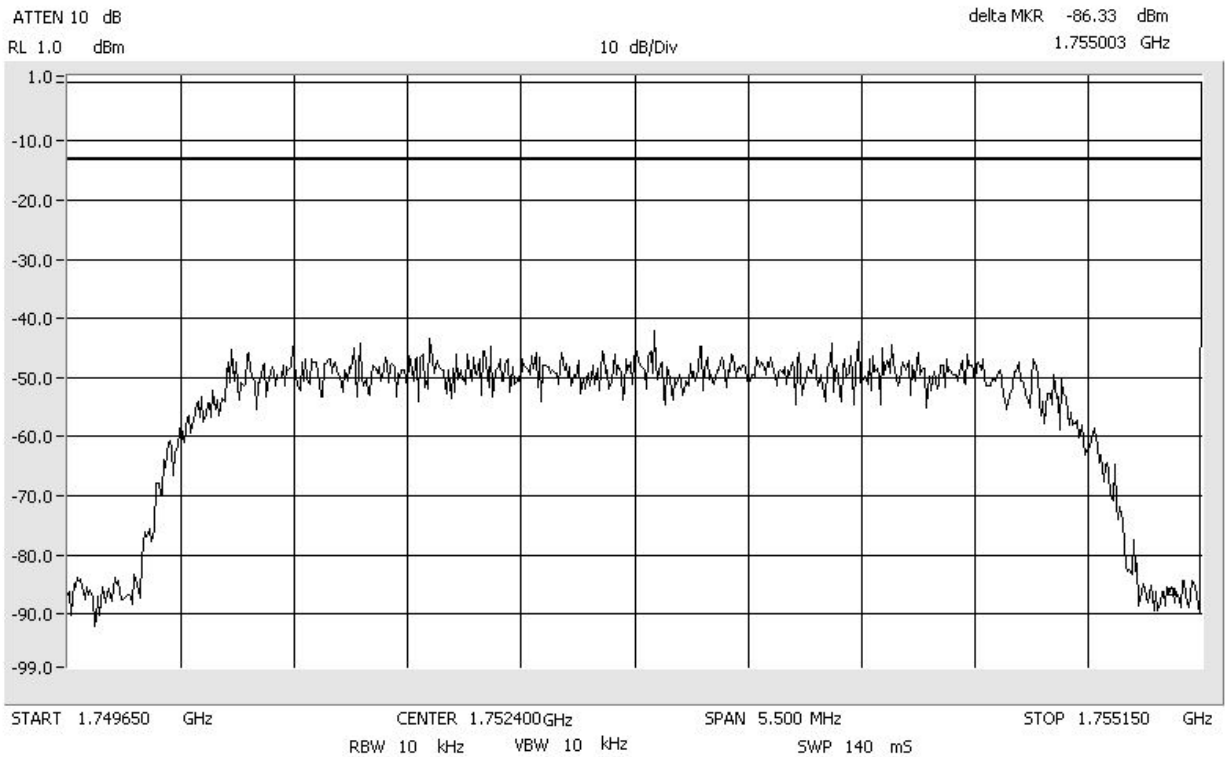
Band_Edge
Center: 1712.6 MHz Span: 5.5 MHz

WCDMA
RBW: 10 kHz VBW: 10 kHz



Band_Edge
Center: 1752.4 MHz Span: 5.5 MHz

WCDMA
RBW: 10 kHz VBW: 10 kHz



7.2 Conducted Output Power Test

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*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 TDMA, CDMA, EDGE, GSM and WCDMA signal generator. The power meter level was offset to compensate for attenuators and cable loss between the EUT and the power meter.

A signal was used at the low, mid and high parts of the selected band.

CDMA		EDGE	
0.0192 mWatts		0.0162 mWatts	
Carrier Frequency	Carrier Output	Carrier Frequency	Carrier Output
1710.7 MHz	<u>-18.09</u> dBm	1710.2 MHz	<u>-18.03</u> dBm
1732.5 MHz	<u>-18.07</u> dBm	1732.5 MHz	<u>-18.15</u> dBm
1754.3 MHz	<u>-17.16</u> dBm	1754.8 MHz	<u>-17.89</u> dBm

GSM		WCDMA	
0.0159 mWatts		0.0158 mWatts	
Carrier Frequency	Carrier Output	Carrier Frequency	Carrier Output
1710.2 MHz	<u>-17.97</u> dBm	1852.5 MHz	<u>-18.10</u> dBm
1732.5 MHz	<u>-18.13</u> dBm	1732.5 MHz	<u>-18.01</u> dBm
1754.8 MHz	<u>-18.25</u> dBm	1752.5 MHz	<u>-18.57</u> dBm

TDMA	
0.0163 mWatts	
Carrier Frequency	Carrier Output
1710.2 MHz	<u>-17.89</u> dBm
1732.5 MHz	<u>-18.07</u> dBm
1754.8 MHz	<u>-18.10</u> dBm

CDMA		EDGE	
261.82 mWatts		306.90 mWatts	
Carrier Frequency	Carrier Output	Carrier Frequency	Carrier Output
1930.7 MHz	<u>21.99</u> dBm	2110.2 MHz	<u>24.57</u> dBm
2132.5 MHz	<u>23.14</u> dBm	2132.5 MHz	<u>24.87</u> dBm
1989.3 MHz	<u>24.18</u> dBm	2154.8 MHz	<u>24.27</u> dBm

GSM		WCDMA	
321.36 mWatts		164.06 mWatts	
Carrier Frequency	Carrier Output	Carrier Frequency	Carrier Output
2110.2 MHz	<u>24.79</u> dBm	2110.5 MHz	<u>21.23</u> dBm
2132.5 MHz	<u>25.07</u> dBm	2132.5 MHz	<u>20.88</u> dBm
2154.8 MHz	<u>23.93</u> dBm	2152.5 MHz	<u>22.15</u> dBm

TDMA	
328.85 mWatts	
Carrier Frequency	Carrier Output
2110.2 MHz	<u>22.23</u> dBm
2132.5 MHz	<u>25.17</u> dBm
2154.8 MHz	<u>22.88</u> dBm

7.3 Frequency Stability Test

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Host/Expansion	RAU			
Input Voltage	Input Voltage	Carrier Frequency	Measured Frequency	Meets Requirements?
100 VAC	45.9 VDC	1710.200 MHz	1710.200 MHz	Yes
170 VAC	54 VDC	1710.200 MHz	1710.200 MHz	Yes
240 VAC	62.1 VDC	1710.200 MHz	1710.200 MHz	Yes
100 VAC	45.9 VDC	1732.500 MHz	1732.500 MHz	Yes
170 VAC	54 VDC	1732.500 MHz	1732.500 MHz	Yes
240 VAC	62.1 VDC	1732.500 MHz	1732.500 MHz	Yes
100 VAC	45.9 VDC	1754.800 MHz	1754.800 MHz	Yes
170 VAC	54 VDC	1754.800 MHz	1754.800 MHz	Yes
240 VAC	62.1 VDC	1754.800 MHz	1754.800 MHz	Yes
Temperature		Carrier Frequency	Measured Frequency	Meets Requirements?
-25 Deg. C		1710.200 MHz	1710.200 MHz	Yes
-20 Deg. C		1710.200 MHz	1710.200 MHz	Yes
-10 Deg. C		1710.200 MHz	1710.200 MHz	Yes
0 Deg. C		1710.200 MHz	1710.200 MHz	Yes
10 Deg. C		1710.200 MHz	1710.200 MHz	Yes
20 Deg. C		1710.200 MHz	1710.200 MHz	Yes
30 Deg. C		1710.200 MHz	1710.200 MHz	Yes
40 Deg. C		1710.200 MHz	1710.200 MHz	Yes
45 Deg. C		1710.200 MHz	1710.200 MHz	Yes
-25 Deg. C		1732.500 MHz	1732.500 MHz	Yes
-20 Deg. C		1732.500 MHz	1732.500 MHz	Yes
-10 Deg. C		1732.500 MHz	1732.500 MHz	Yes
0 Deg. C		1732.500 MHz	1732.500 MHz	Yes
10 Deg. C		1732.500 MHz	1732.500 MHz	Yes
20 Deg. C		1732.500 MHz	1732.500 MHz	Yes
30 Deg. C		1732.500 MHz	1732.500 MHz	Yes
40 Deg. C		1732.500 MHz	1732.500 MHz	Yes
45 Deg. C		1732.500 MHz	1732.500 MHz	Yes
-25 Deg. C		1754.800 MHz	1754.800 MHz	Yes
-20 Deg. C		1754.800 MHz	1754.800 MHz	Yes
-10 Deg. C		1754.800 MHz	1754.800 MHz	Yes
0 Deg. C		1754.800 MHz	1754.800 MHz	Yes
10 Deg. C		1754.800 MHz	1754.800 MHz	Yes
20 Deg. C		1754.800 MHz	1754.800 MHz	Yes
30 Deg. C		1754.800 MHz	1754.800 MHz	Yes
40 Deg. C		1754.800 MHz	1754.800 MHz	Yes
45 Deg. C		1754.800 MHz	1754.800 MHz	Yes

Host/Expansion	RAU			
Input Voltage	Input Voltage	Carrier Frequency	Measured Frequency	Meets Requirements?
100 VAC	45.9 VDC	2110.200 MHz	2110.200 MHz	Yes
170 VAC	54 VDC	2110.200 MHz	2110.200 MHz	Yes
240 VAC	62.1 VDC	2110.200 MHz	2110.200 MHz	Yes
100 VAC	45.9 VDC	2132.500 MHz	2132.500 MHz	Yes
170 VAC	54 VDC	2132.500 MHz	2132.500 MHz	Yes
240 VAC	62.1 VDC	2132.500 MHz	2132.500 MHz	Yes
100 VAC	45.9 VDC	2154.800 MHz	2154.800 MHz	Yes
170 VAC	54 VDC	2154.800 MHz	2154.800 MHz	Yes
240 VAC	62.1 VDC	2154.800 MHz	2154.800 MHz	Yes
Temperature		Carrier Frequency	Measured Frequency	Meets Requirements?
-25 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
45 Deg. C		2110.200 MHz	2110.200 MHz	Yes
-25 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
45 Deg. C		2132.500 MHz	2132.500 MHz	Yes
-25 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
45 Deg. C		2154.800 MHz	2154.800 MHz	Yes

7.4 Intermodulation Test

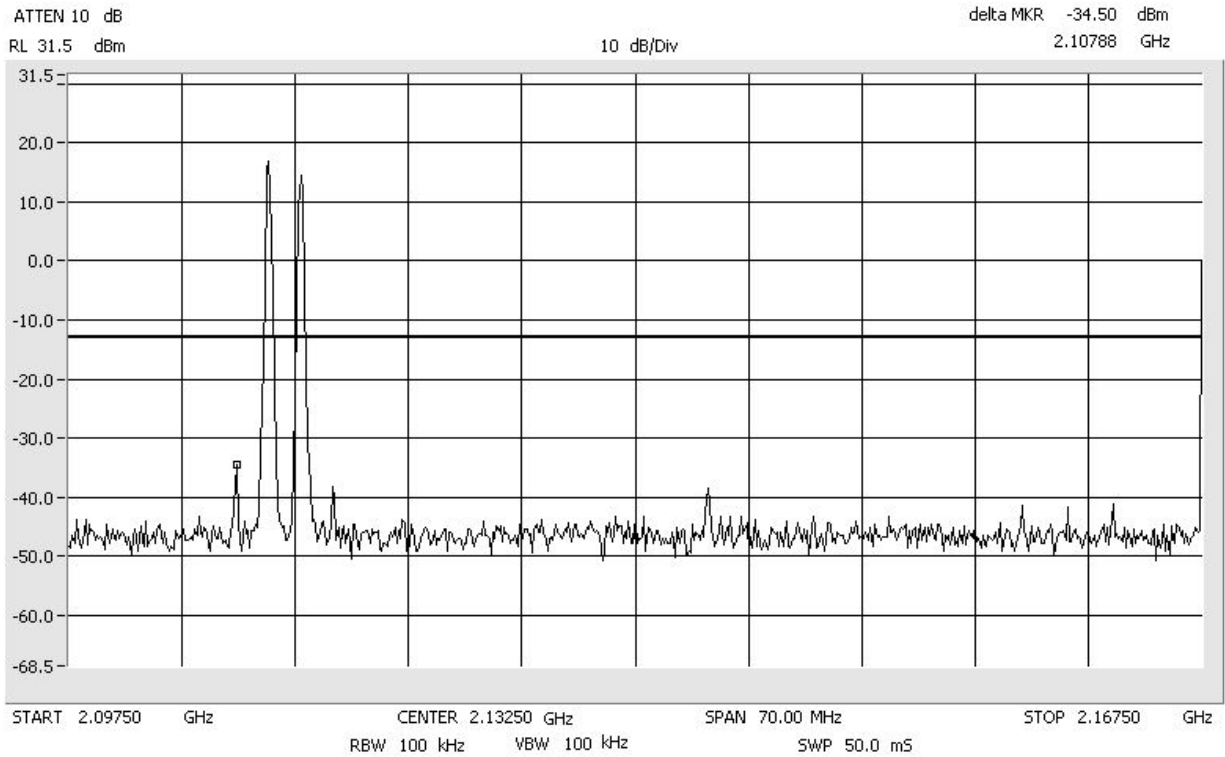
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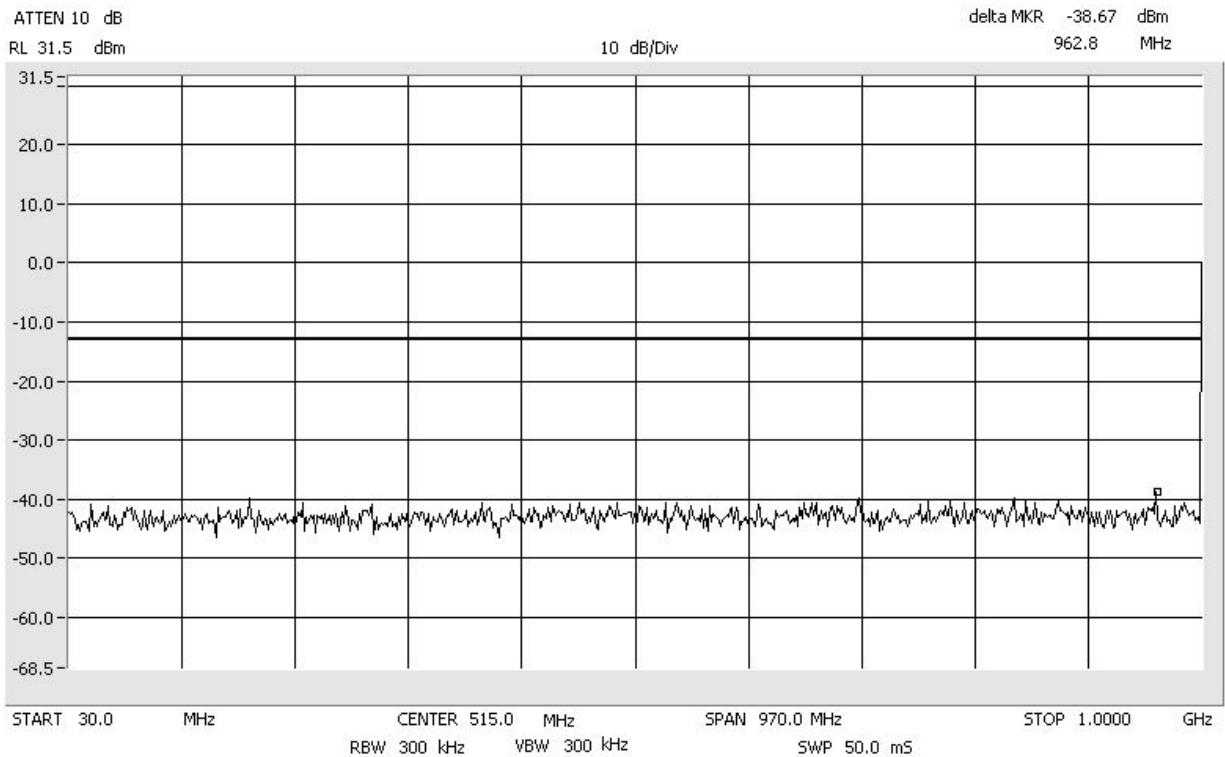
The inter-modulation products test was performed for the EUT. Three tests were performed with the modulation type. Test 1 was with 2 signals input to the EUT at lower end channels. Test 2 was with 2 signals input to the EUT at upper end channels. Test 3 was with 2 signals input to the EUT at upper and lower end channels. The modulation types tested were TDMA, CDMA, EDGE, GSM and WCDMA. An investigation was made from 30 MHz to the 10th Harmonic of the highest fundamental frequency (~20 GHz). The following plots show the results.

Results:
(See Plots)

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

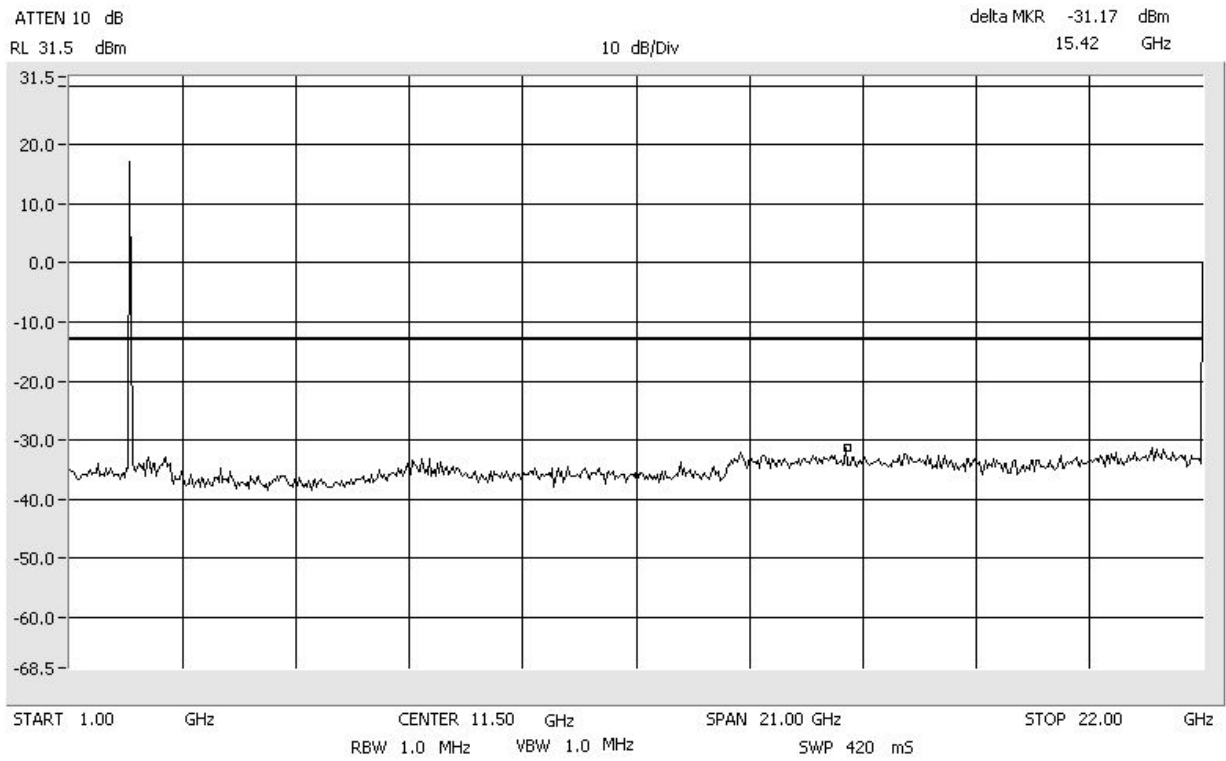


Intermodulation TDMA_Low AWS
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz

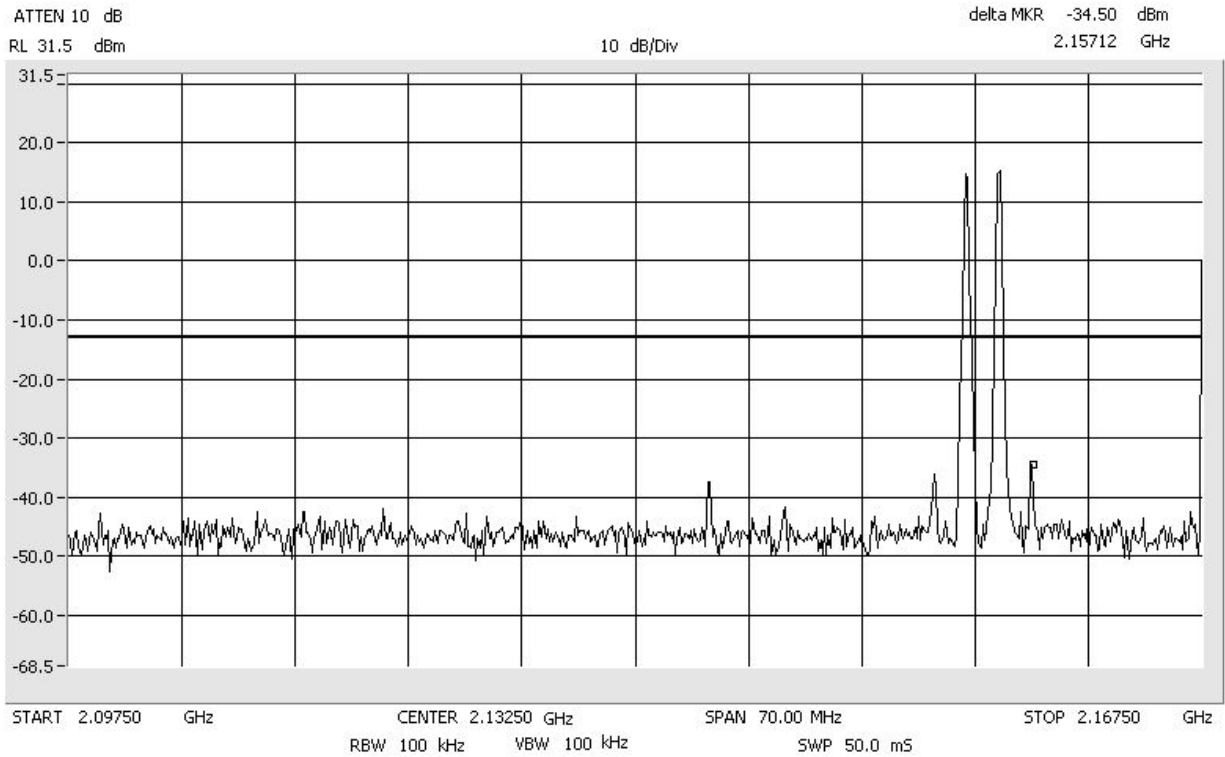


Intermodulation
Span: 1 GHz to 22 GHz

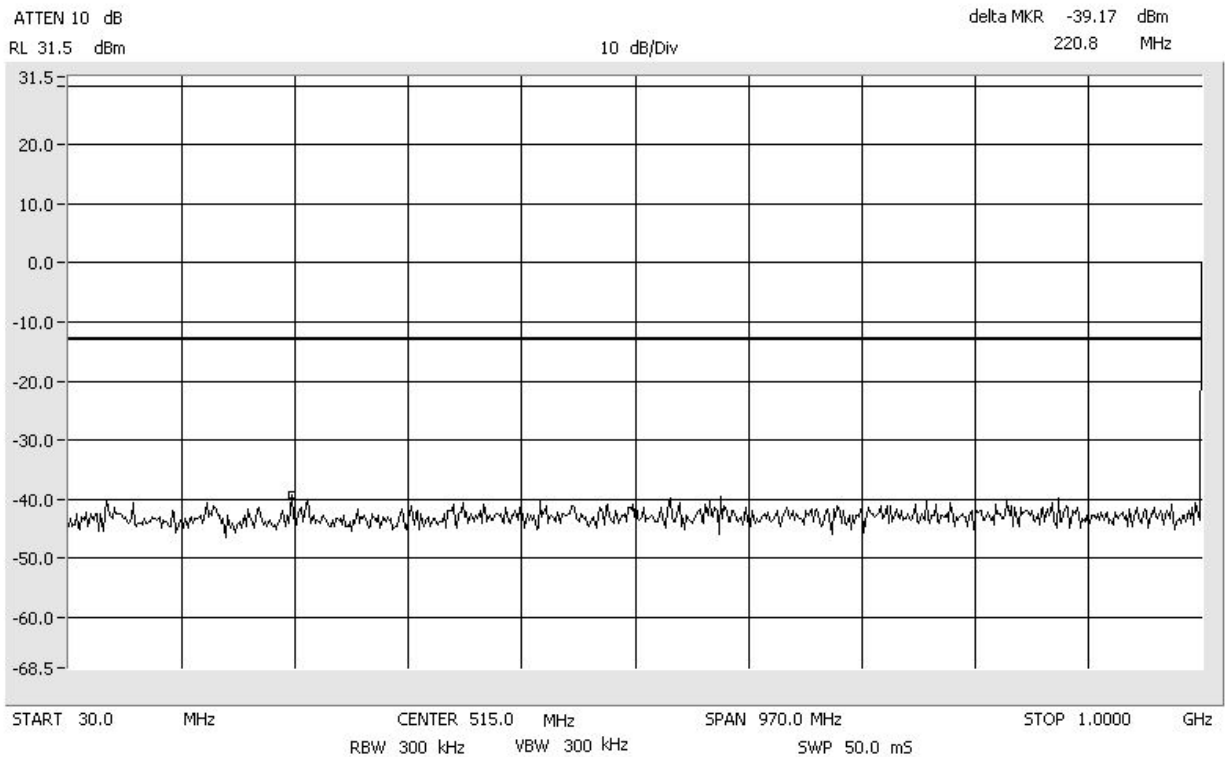
TDMA_Low AWS
RBW/VBW: 1 MHz



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

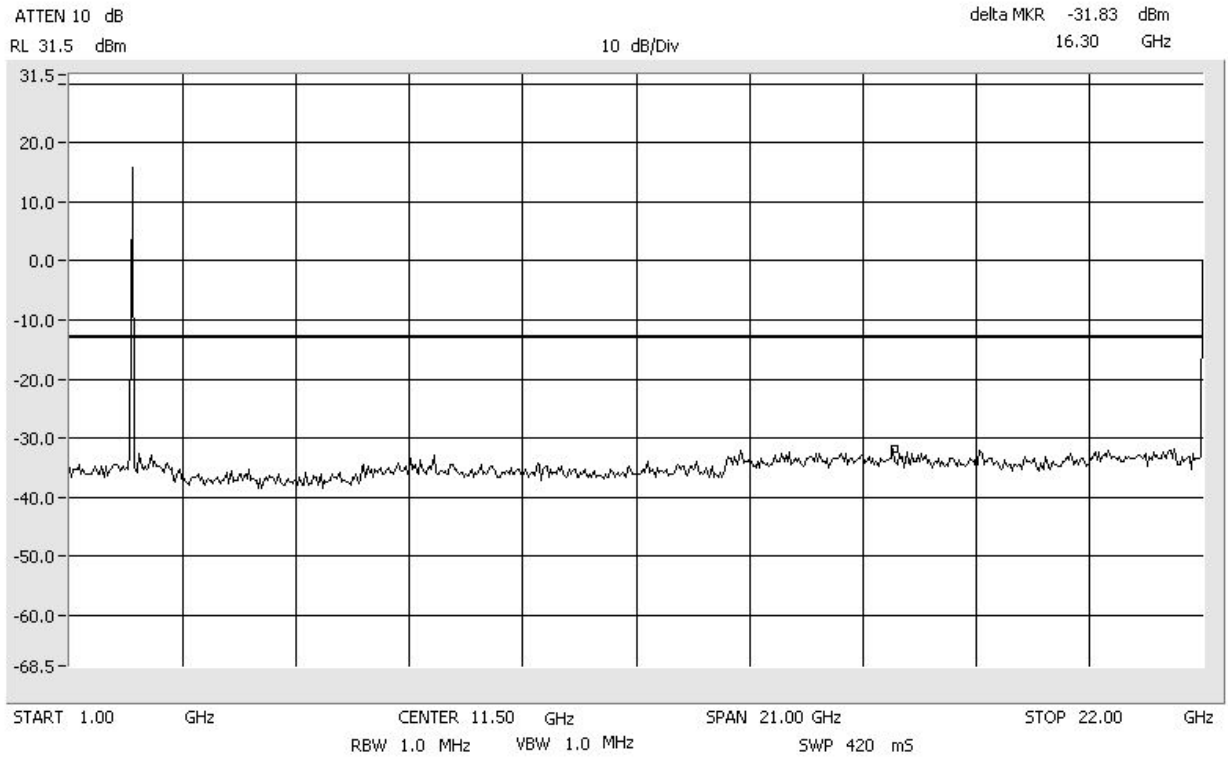


Intermodulation TDMA_High AWS
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz

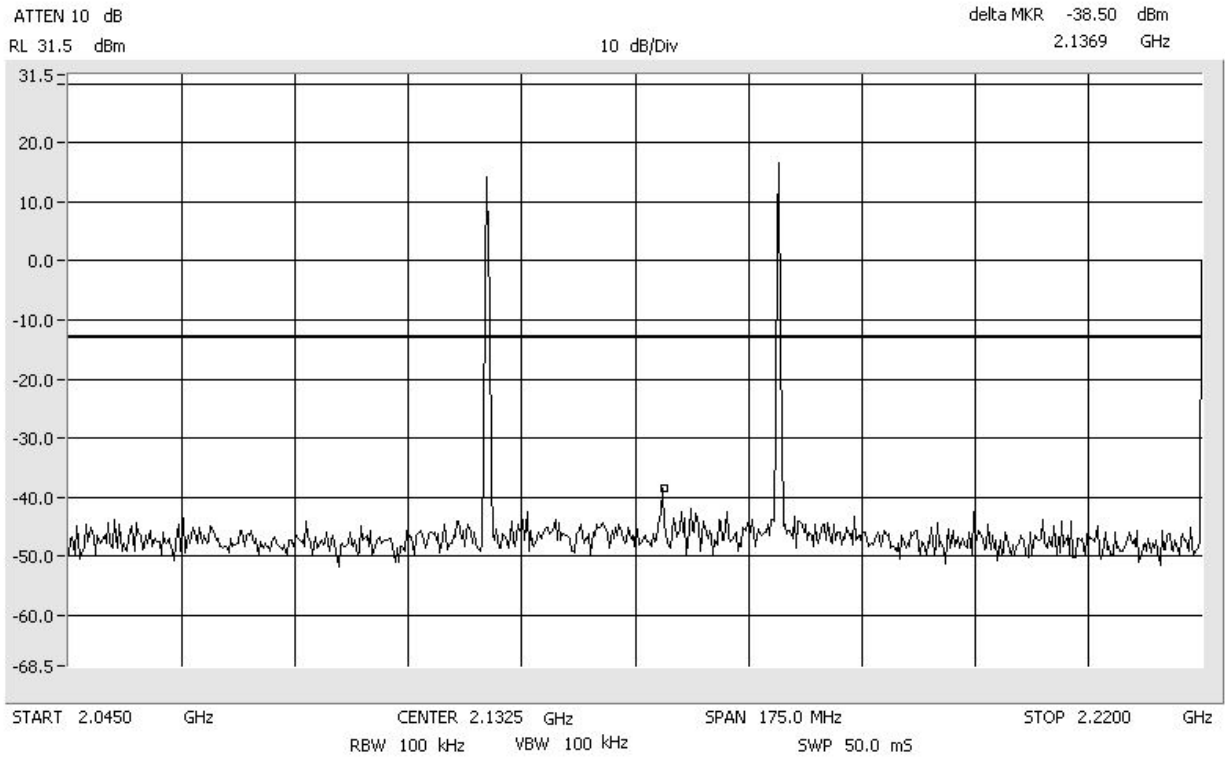


Intermodulation
Span: 1 GHz to 22 GHz

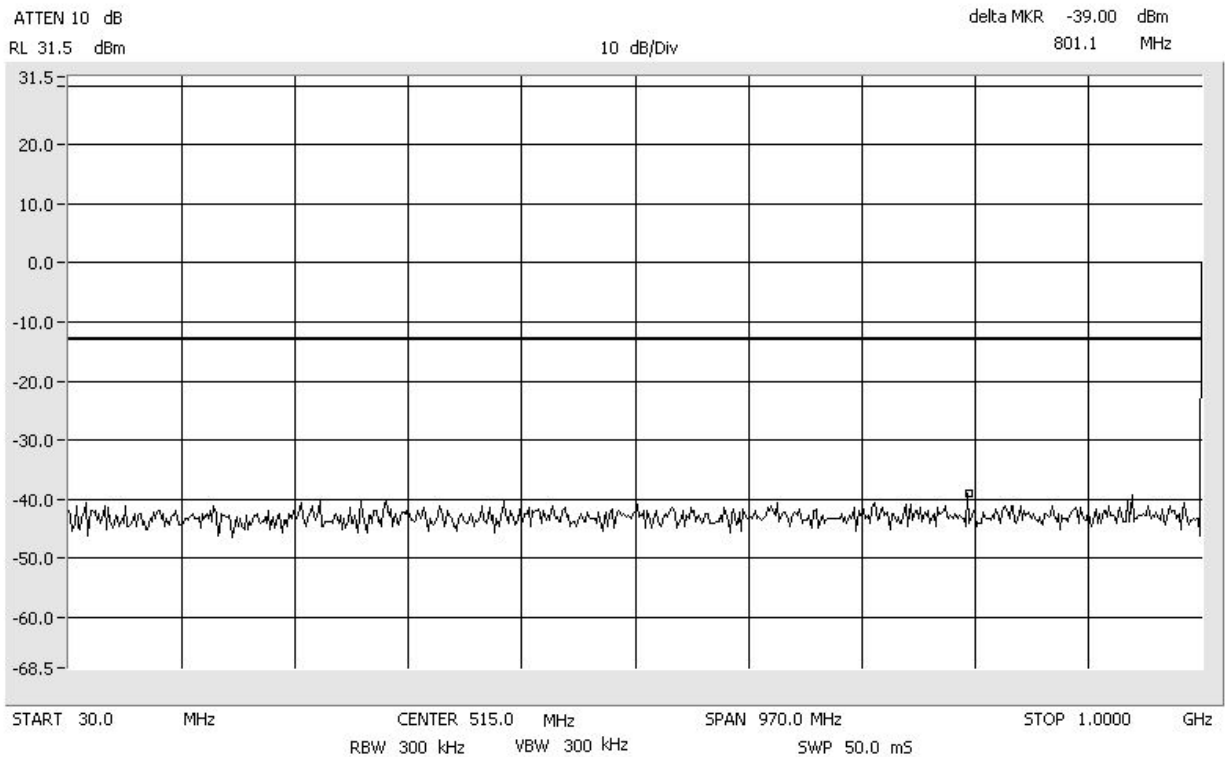
TDMA_High AWS
RBW/VBW: 1 MHz



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

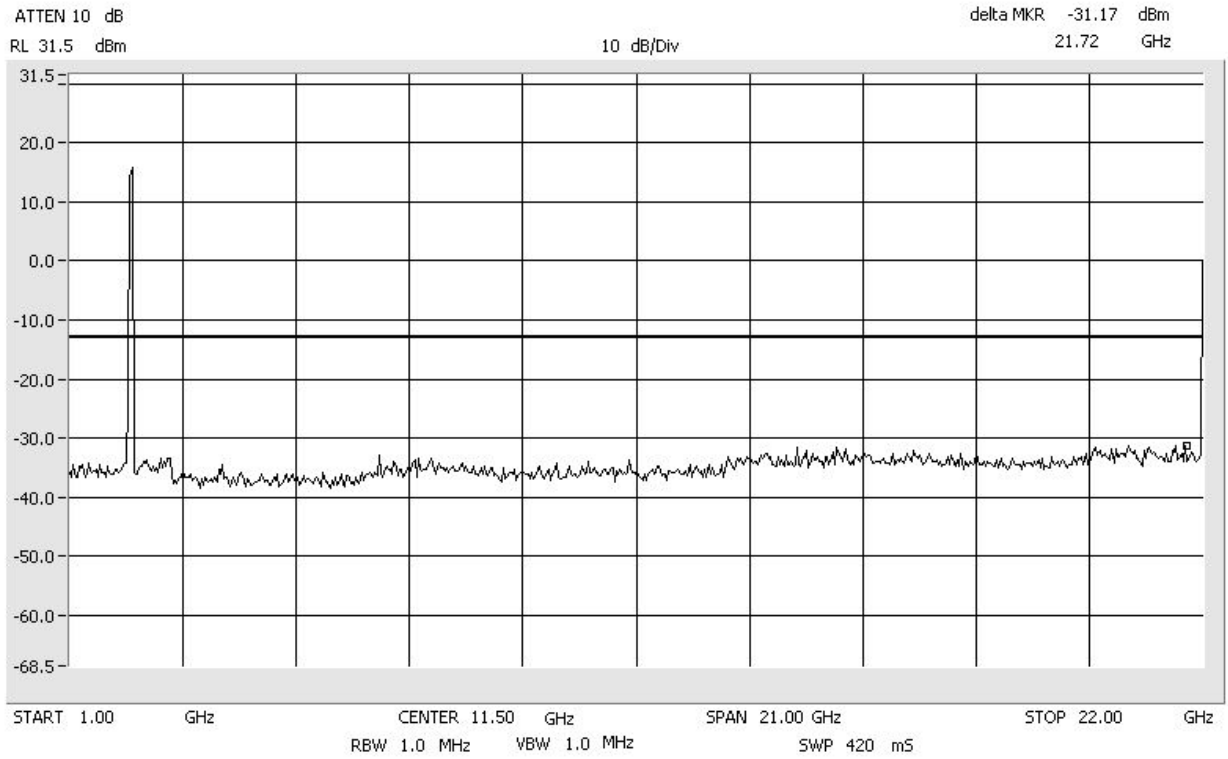


Intermodulation TDMA_Apart AWS
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz

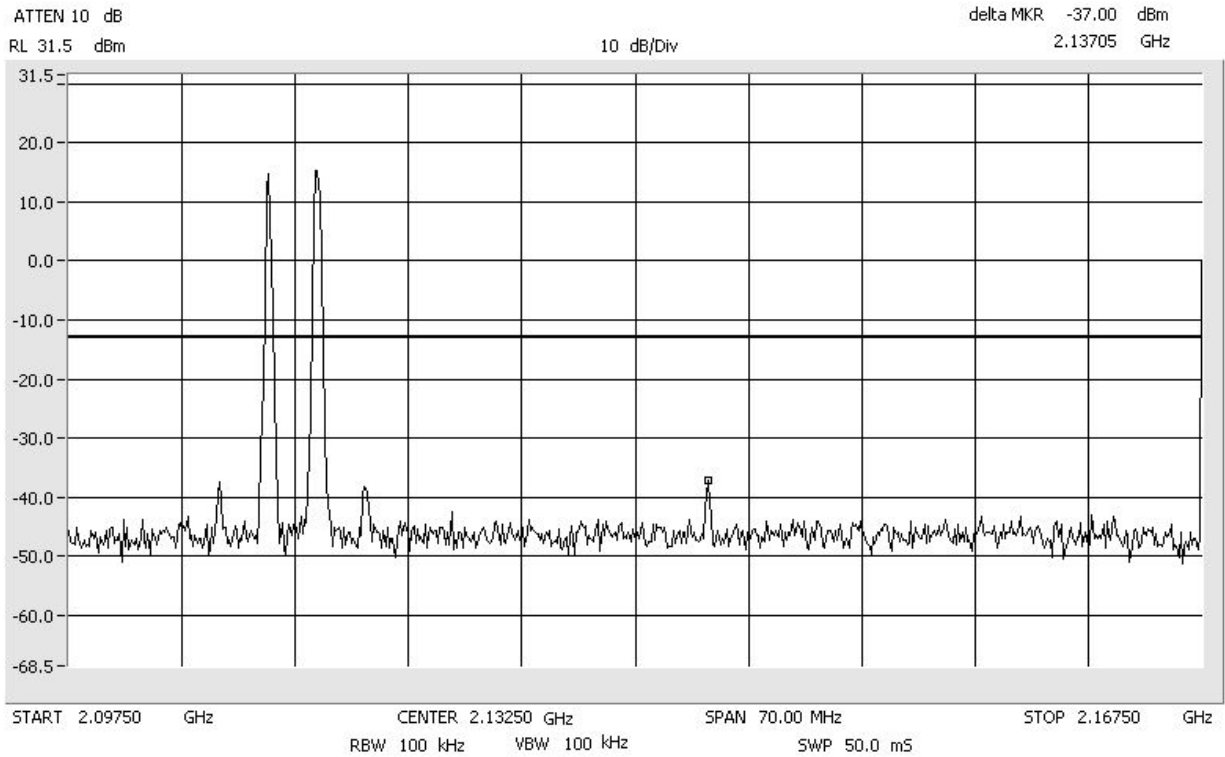


Intermodulation
Span: 1 GHz to 22 GHz

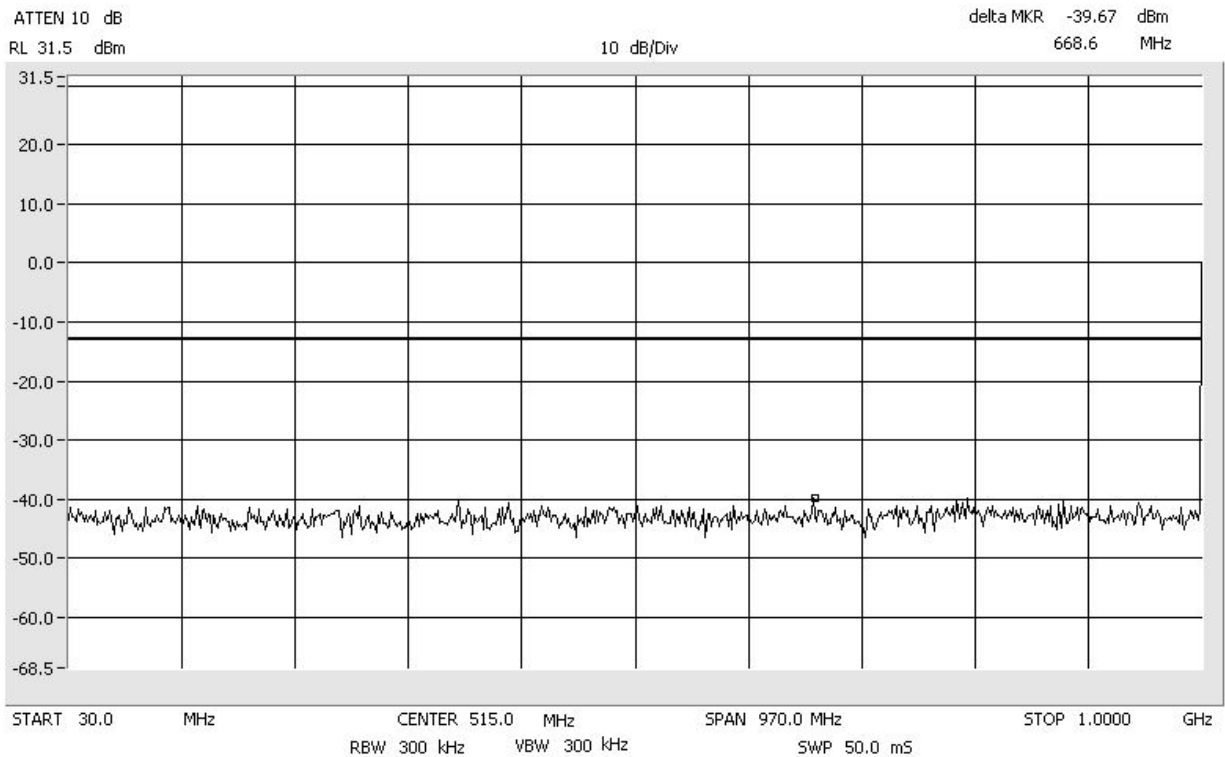
TDMA_Apart AWS
RBW/VBW: 1 MHz



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

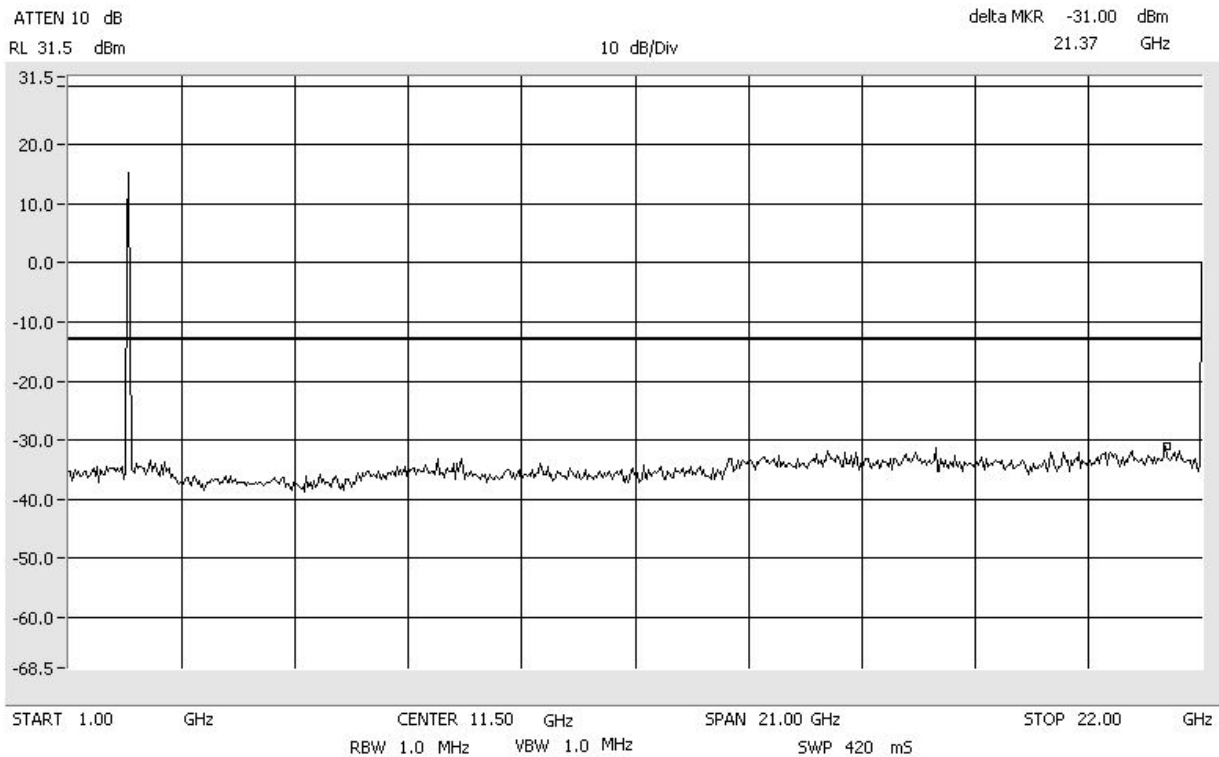


Intermodulation GSM_Low AWS
Span: 30 MHz to 1 GHz RBW/VBW: 300 kHz

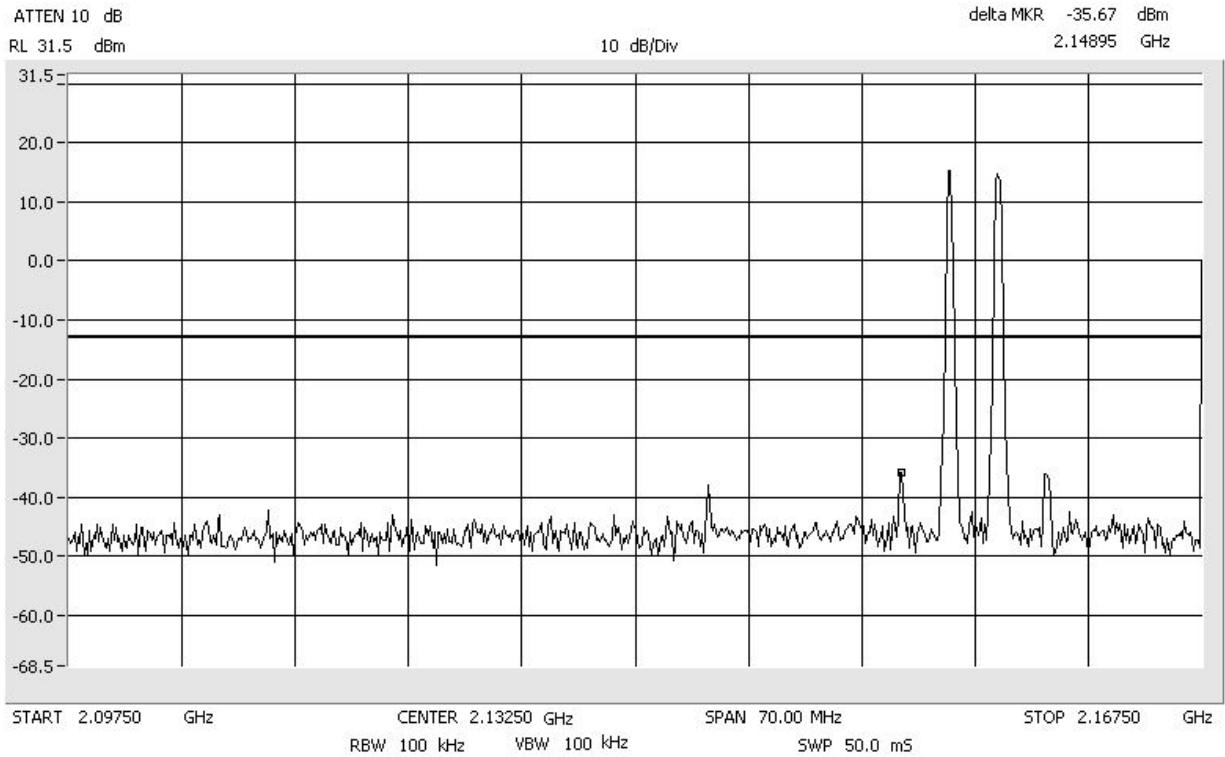


Intermodulation
Span: 1 GHz to 22 GHz

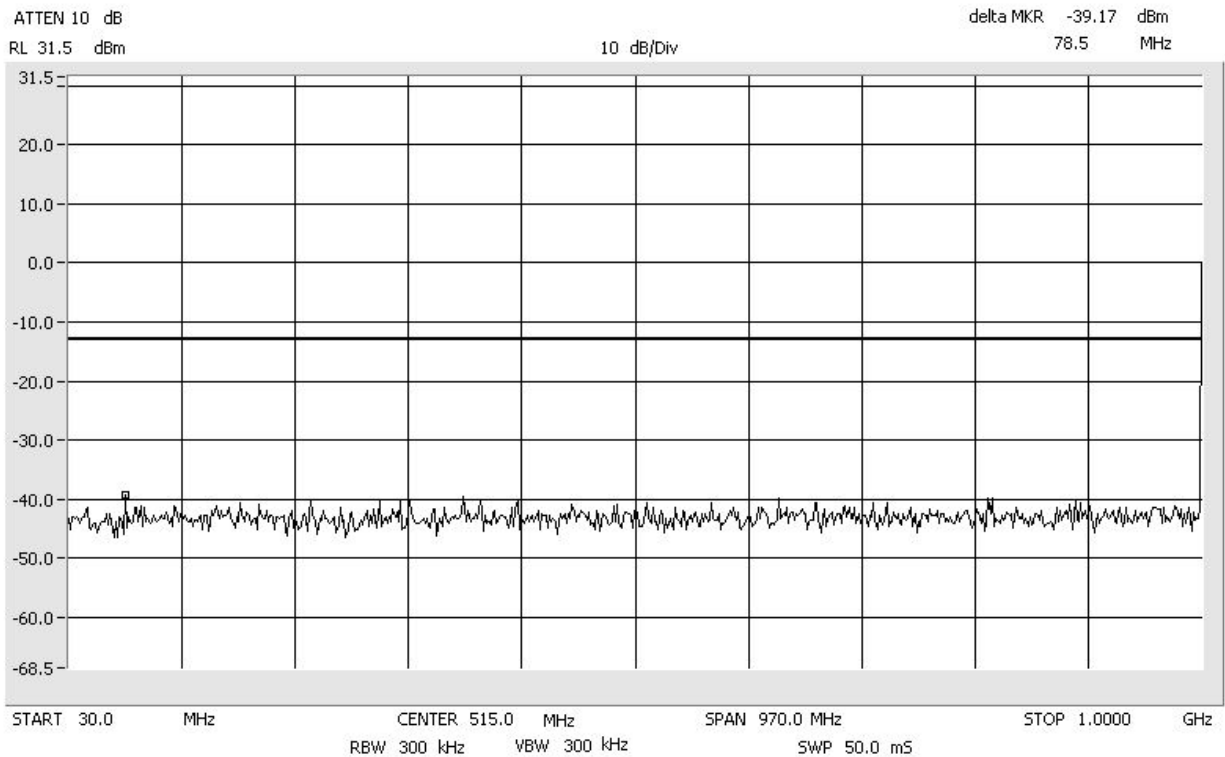
GSM_Low AWS
RBW/VBW: 1 MHz



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



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



Intermodulation
Span: 1 GHz to 22 GHz

GSM_High AWS
RBW/VBW: 1 MHz

