ADR TESTING SERVICE
EMC LABORATORY

EMC TEST REPORT

Test Report Number – 25493-1

The test results contained herein relate only to the model(s) identified. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical characteristics.

As the responsible EMC Engineer, I hereby declare that the equipment tested as specified in this report conforms to the requirements indicated.

Signature: Name: Albert J. Patapack

Title: EMC Engineer Date: September 17, 2013

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Test Report Details

All Tests Performed By:	ADR Testing Service Location Code: ADR LV Motorola Mobility LLC Product Safety and Compliance Group 600 North US Hwy 45 Libertyville, IL 60048 PH (847) 523-6167 Fax (847) 523-4538 FCC Registration Number: 316588 Industry Canada Number: 109O-1
Tests Requested By:	Motorola Mobility LLC 600 North US Hwy 45 Libertyville, IL 60048
Product Type:	Cellular Phone
Signaling Capability:	GSM 850/900/1800/1900, EDGE Class 12, WCDMA 850/1700/1900, HSDPA 21.1Mbps (Category 14), HSUPA 5.76Mbps, Bluetooth Class 1, Version 4.0 LE+EDR, 802.11b/802.11g/802.11n
FCC ID:	IHDT56PF2
Serial Numbers:	LDXU220006, LDXU220033, LDXU220027
Testing Complete Date:	July 30 – September 11, 2013

Applicable Standards

All tests and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47 Part 2, Sub-part J as well as the following parts:

__X__ Part 2
__X__ Part 22 Subpart H - Public Mobile Services
__X__ Part 24 Subpart E – Personal Communications Services
__X__ Part 27

Applicable Standards: ANSI 63.4 2003, ANSI/TIA-603-C-2004,
RSS-Gen Issue 3, RSS-132 Issue 3, RSS-133 Issue 6

Summary of Testing

Test #	Test Name	Pass/Fail
1	ERP (Effective Radiated Power)	Pass
2	EIRP (Effective Isotropic Radiated Power)	Pass
3	Occupied Bandwidth	Pass
4	Spurious Emissions at Antenna Terminal	Pass
5	Field Strength of Spurious Emissions	Pass
6	Frequency Stability	Pass

Test #	Test Name	Margin with respect to the Limit
1	ERP (Effective Radiated Power)	See results
2	EIRP (Effective Isotropic Radiated Power)	See results
3	Occupied Bandwidth	See Plots
4	Spurious Emissions at Antenna Terminal	See results
5	Field Strength of Spurious Emissions	See results
6	Frequency Stability	See results

The margin with respect to the limit is the minimum margin for all modes and bands.

General and Special Conditions

This product utilizes an internal battery that is not removable. When applicable, EMC testing was performed with the internal battery fully charged. Where a battery could not be used due to the need for a controlled variation of input voltage, an external power supply was utilized.

All testing was done in an indoor controlled environment. The temperature and the relative humidity were maintained within the ANSI C63.4 2003 Standard requirements during the entire duration of testing. All testing was performed per KDB 971168 DO1 Power Meas License Digital Systems v02r01.

Equipment and Cable Configurations

The EUT was tested in a stand-alone configuration that is representative of typical use.

Manufacturer	Equipment Type	Model No.	Serial Number	Calibration Due Date
Rohde & Schwarz	Receiver	ESIB26	838786/010	9/24/2013
Hewlett Packard	EMC Analyzer	E7405	US39440191	6/26/2014
Agilent	MXA Signal Analyzer	N9020A	US46470586	1/20/2014
Agilent	Signal Generator	83712A	3429A00286	4/10/2015
ETS-Lindgren	Horn Antenna	SAS 200/571	265	1/24/2014
A. H. Systems	Horn Antenna	SAS 200/571	365	9/4/2013
ETS	Log-Periodic Antenna	3148	1188	9/6/2013
ETS	Biconical Antenna	3110B	3369	9/5/2013
Attenuator	Weinschel	AS-6	6675	NCR
Attenuator	Weinschel	AS-6	6677	NCR
Thermotron	Environmental Chamber	S-4	31580	11/15/2013
Agilent	Power Meter	E4416A	MY51500018	12/20/2013
Agilent	Power Sensor	E9323A	US40412067	8/29/2013
Rohde & Schwarz	Amplifier	TS-PR18	100073	9/5/2013

Note that the Agilent power meter, the Signal Generator and the MXA signal analyzer are on a two-year calibration cycle. All other equipment is on a one-year calibration cycle. All testing was performed using equipment that was within calibration at the time that the test was performed. No equipment listed in the table above was used after the specified calibration due date. If, during the course of product testing, a piece of equipment went out of calibration and that piece of equipment was needed to complete product testing, a similar piece of calibrated equipment was substituted. If a substitution was made, that new piece of equipment would be listed in the above table along with the piece that was removed from service.

Measurement Procedures and Data

RADIATED POWER (EIRP AND ERP)

Measurement Procedure

The equipment under test is placed inside the semi-anechoic chamber on a wooden table at the turntable center 3 meters from the receive antenna. The antenna mast is raised and lowered from 1 to 4 meters and the turntable is rotated 360 degrees to obtain a maximum reading on the spectrum analyzer. This is repeated for both horizontal and vertical polarizations of the receive antenna.

The equipment under test is then replaced with a substitution antenna fed by a signal generator. With the signal generator tuned to a particular frequency, the antenna mast is raised and lowered from 1 to 4 meters to obtain the same maximum reading at the spectrum analyzer. The output of the signal generator is then adjusted until a reading identical to that obtained with the actual transmitter is achieved.

The power in dBm of each emission is calculated by correcting the signal generator level for cable loss and gain of the substitution antenna referenced to a dipole. A fully charged battery was used for the supply voltage.

An RMS detector was used for all measurements.

The EUT was tested in all configurations and the highest power level is reported.

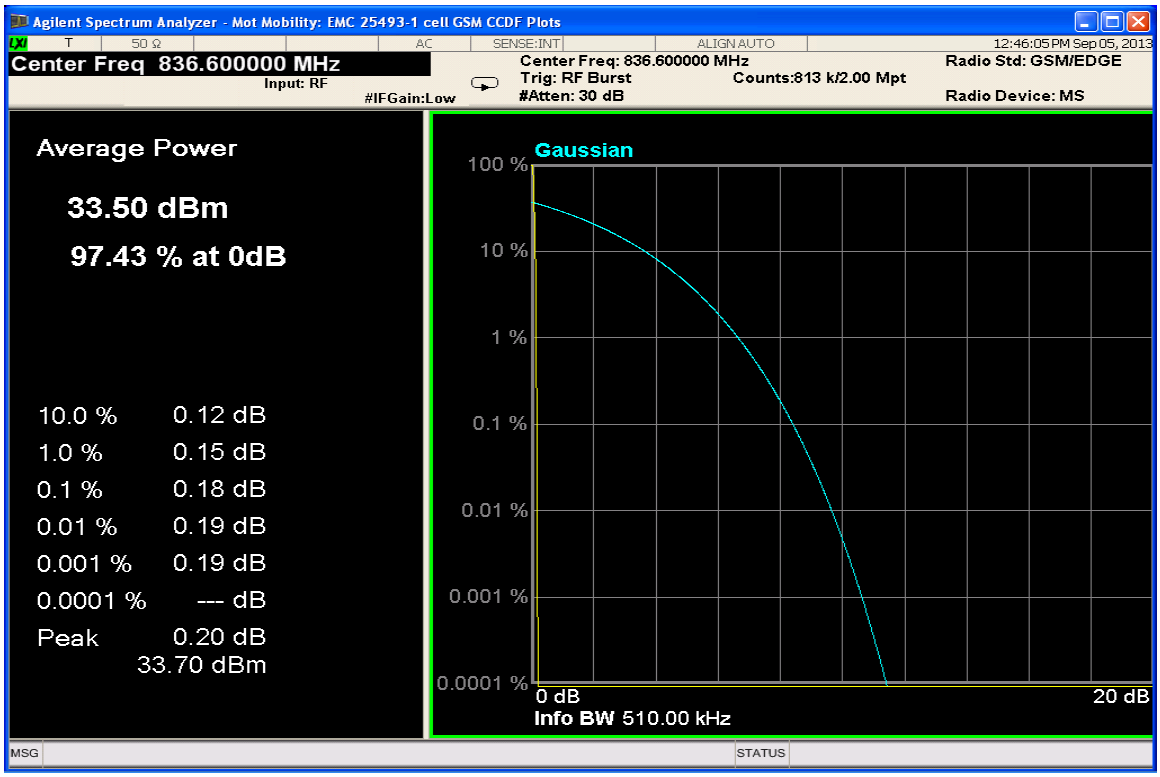
Measurement Results

Band	ERP dBm	Limit dBm
GSM 850	31.33	38.45
EDGE 850	26.41	38.45
WCDMA 850	20.98	38.45

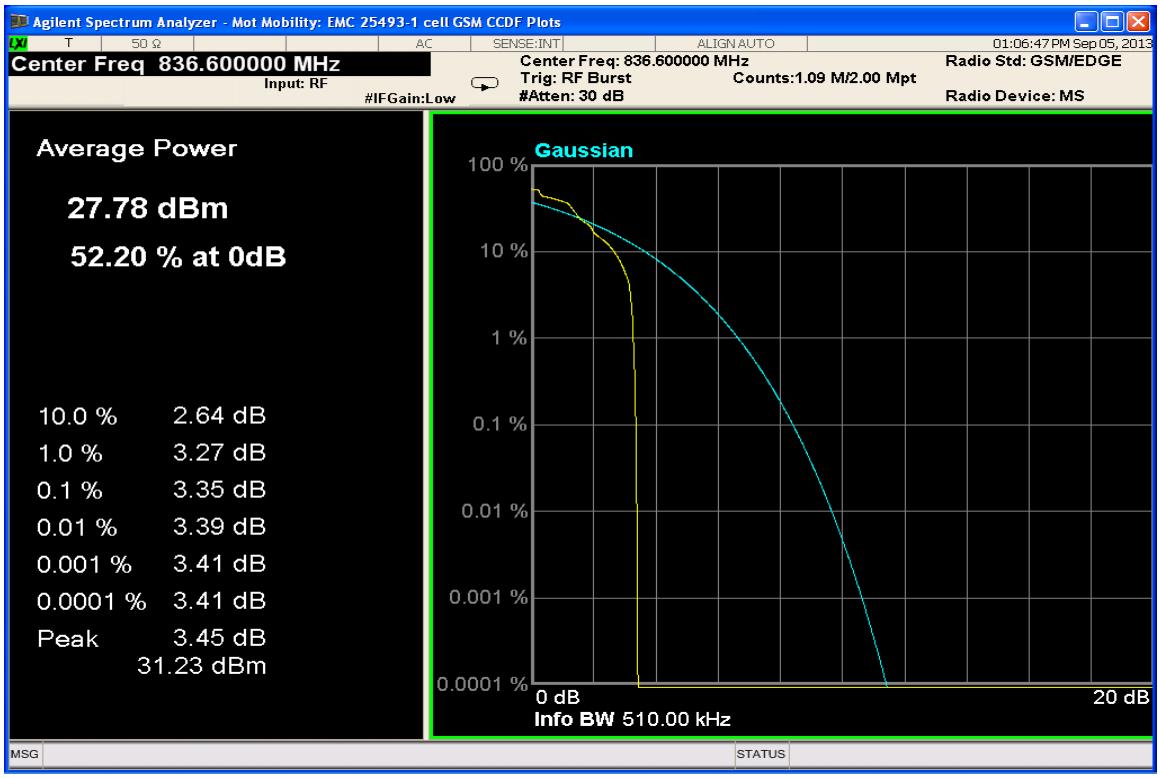
Band	EIRP dBm	Limit dBm
GSM 1900	31.08	33.01
EDGE 1900	29.30	33.01
WCDMA 1700	27.69	30.00
WCDMA 1900	23.37	33.01

The CCDF plots are also shown below. The conducted port of the EUT is connected to the spectrum analyzer. The spectrum analyzer's Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth.

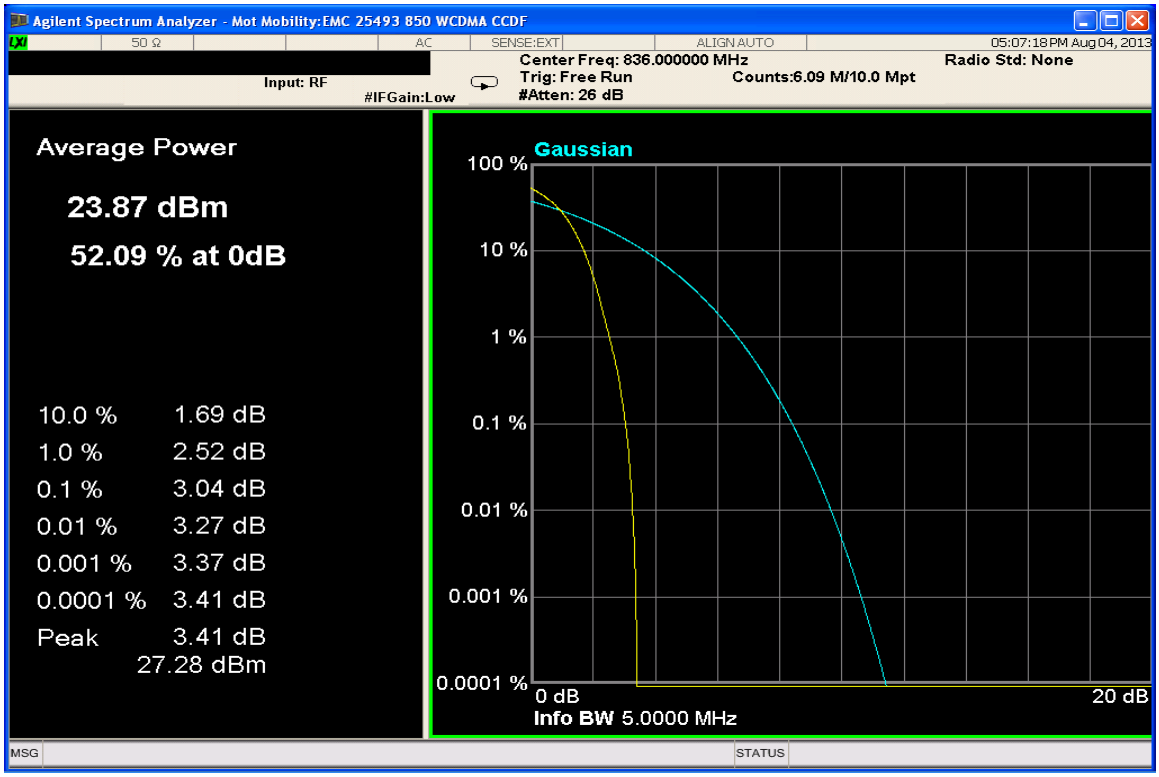
The peak-to-average ratio (PAR), which is associated with a CCDF probability of 0.1%, of the transmission may not exceed 13 dB.



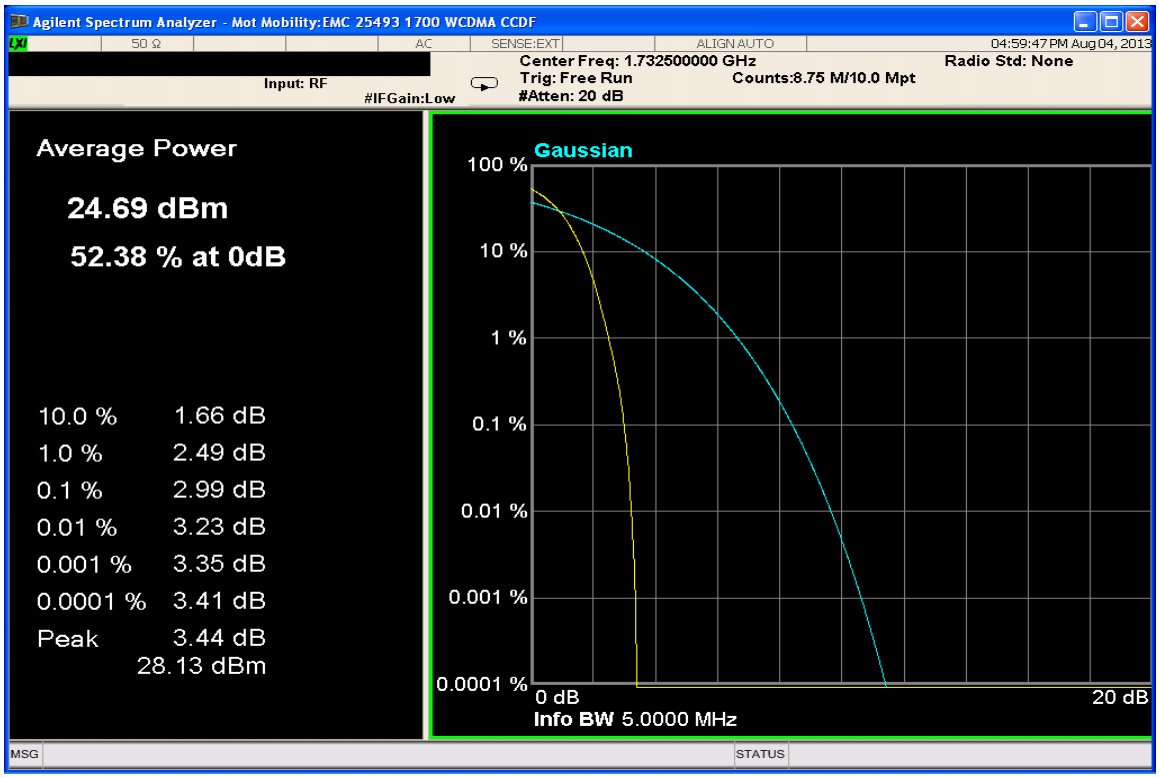
GSM 850 – CCDF Plot



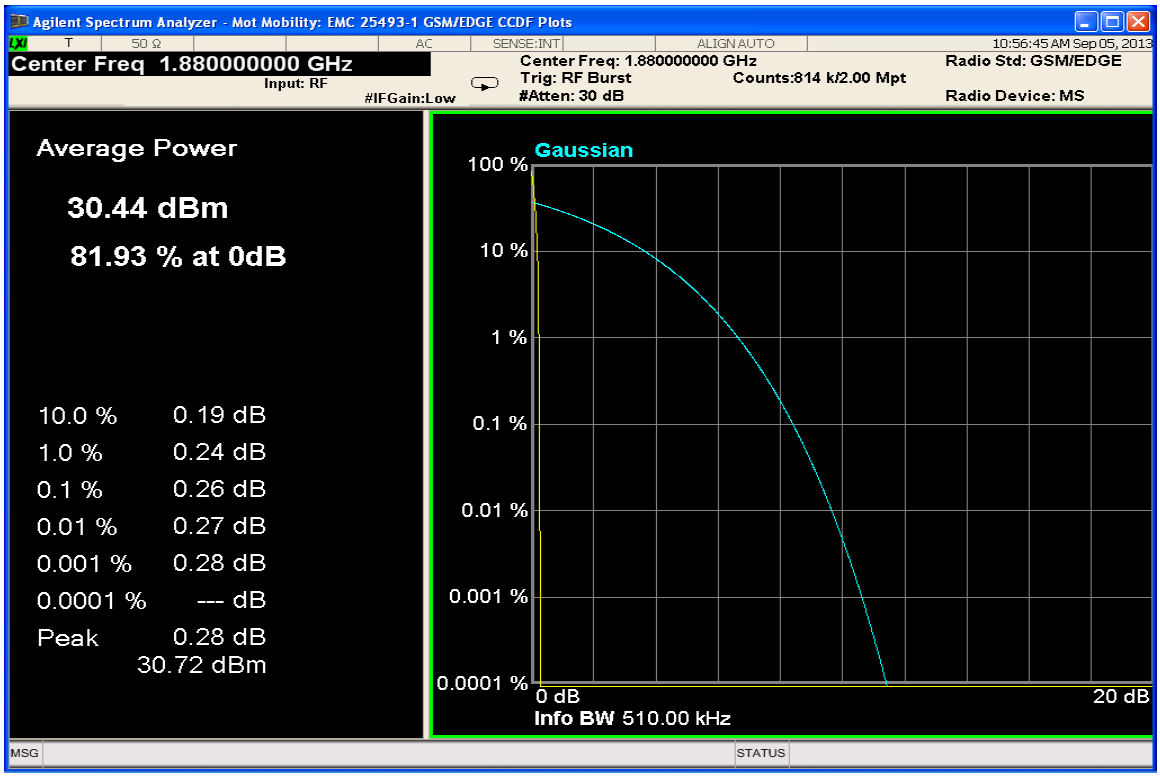
EDGE 850 – CCDF Plot



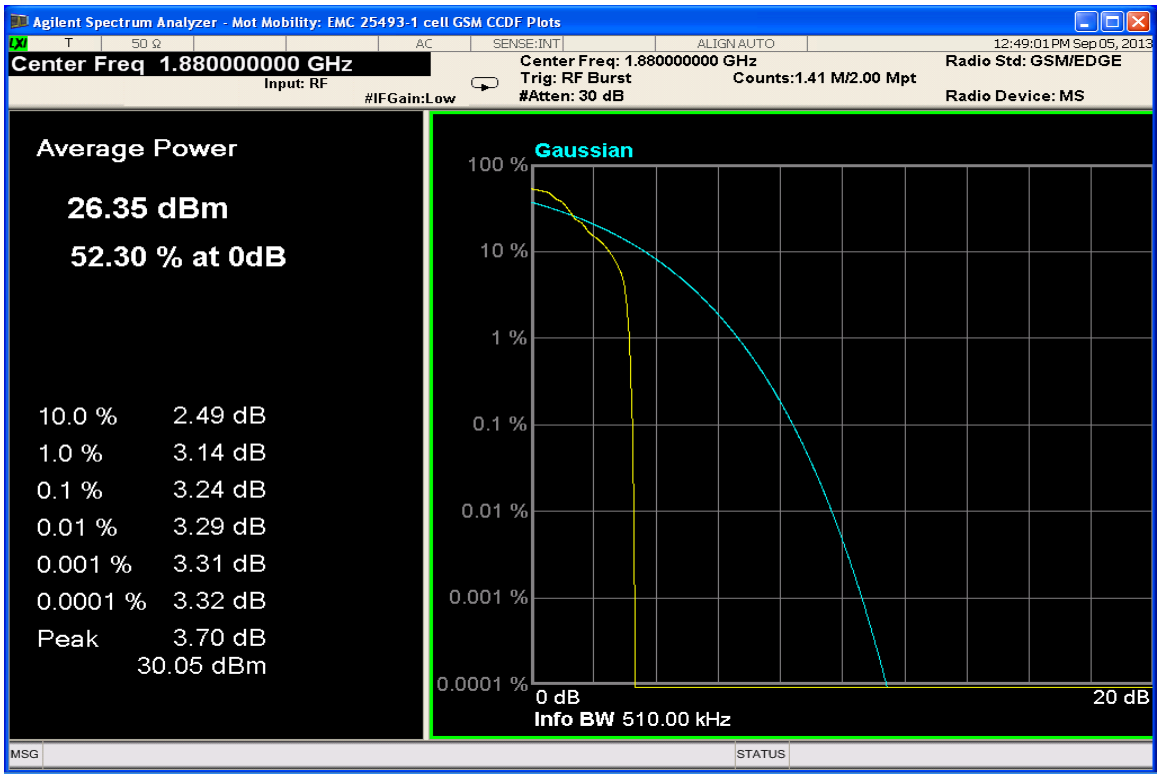
WCDMA 850 – CCDF Plot



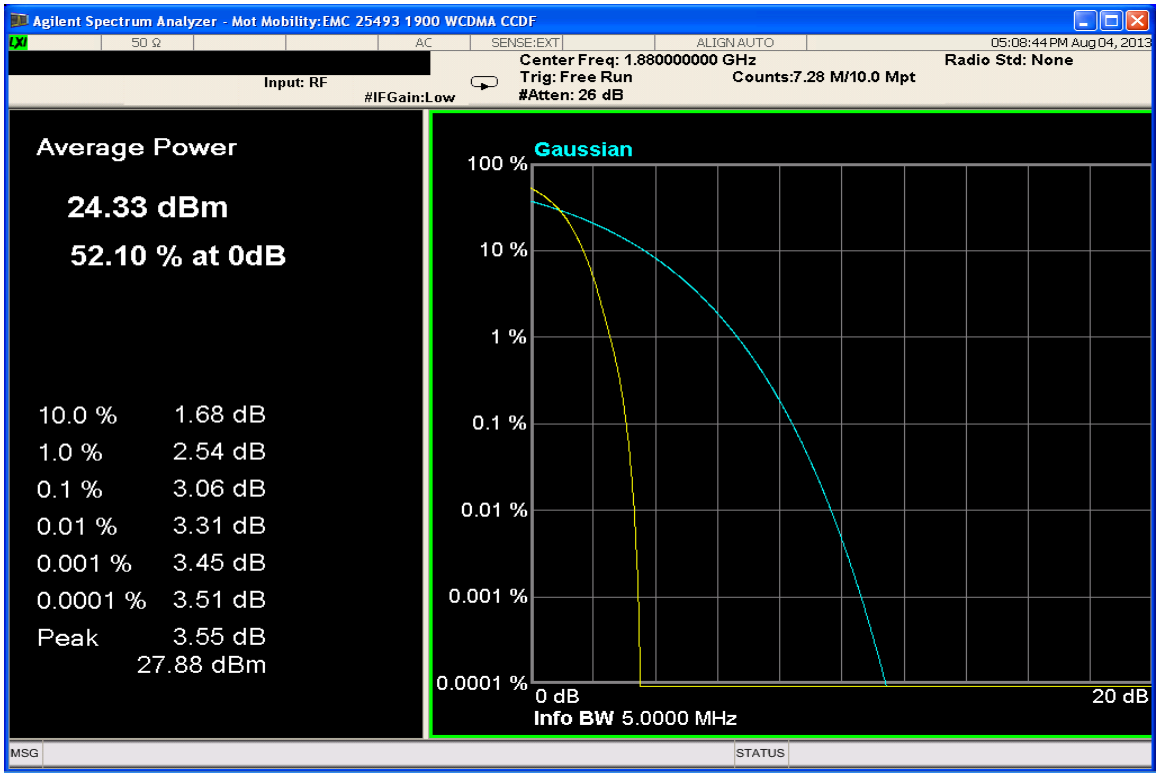
WCDMA 1700 – CCDF Plot



GSM 1900 – CCDF Plot



EDGE 1900 – CCDF Plot



WCDMA 1900 – CCDF Plot

OCCUPIED BANDWIDTH

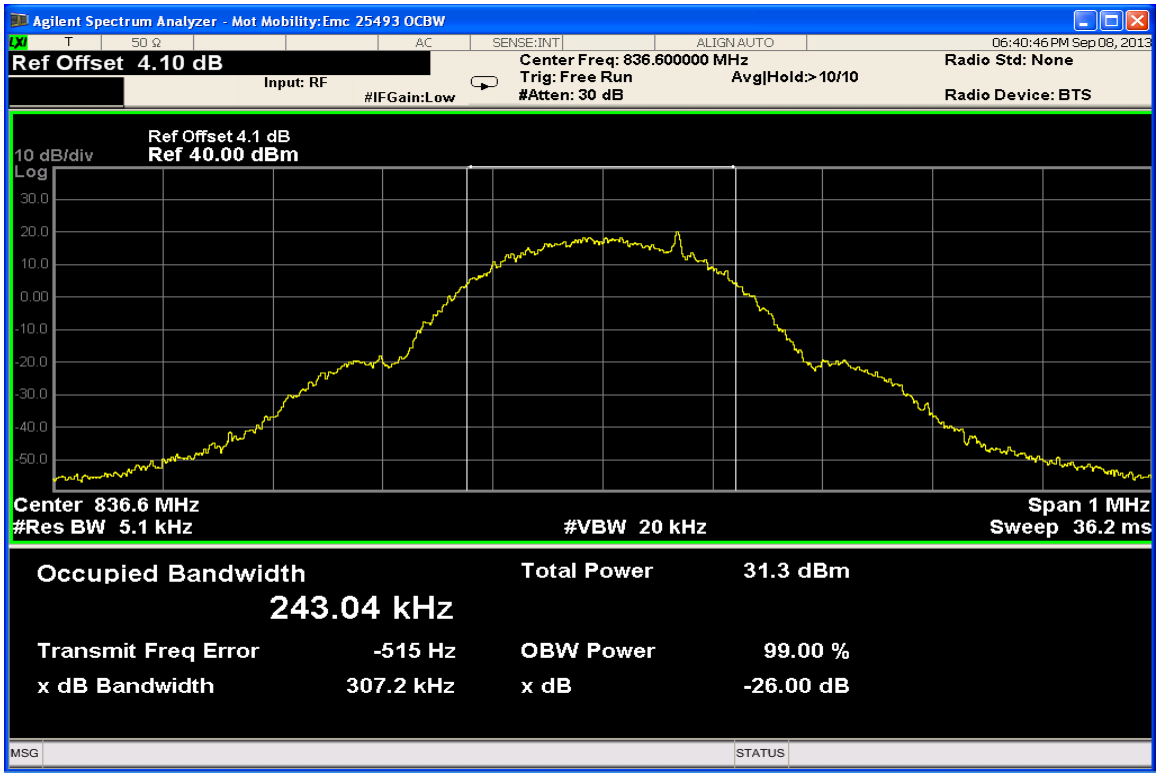
Measurement Procedure

The RF output port of the EUT is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. The amplitude of the spectrum analyzer is corrected for the attenuator and any other applicable losses. A fully charged battery was used for the supply voltage.

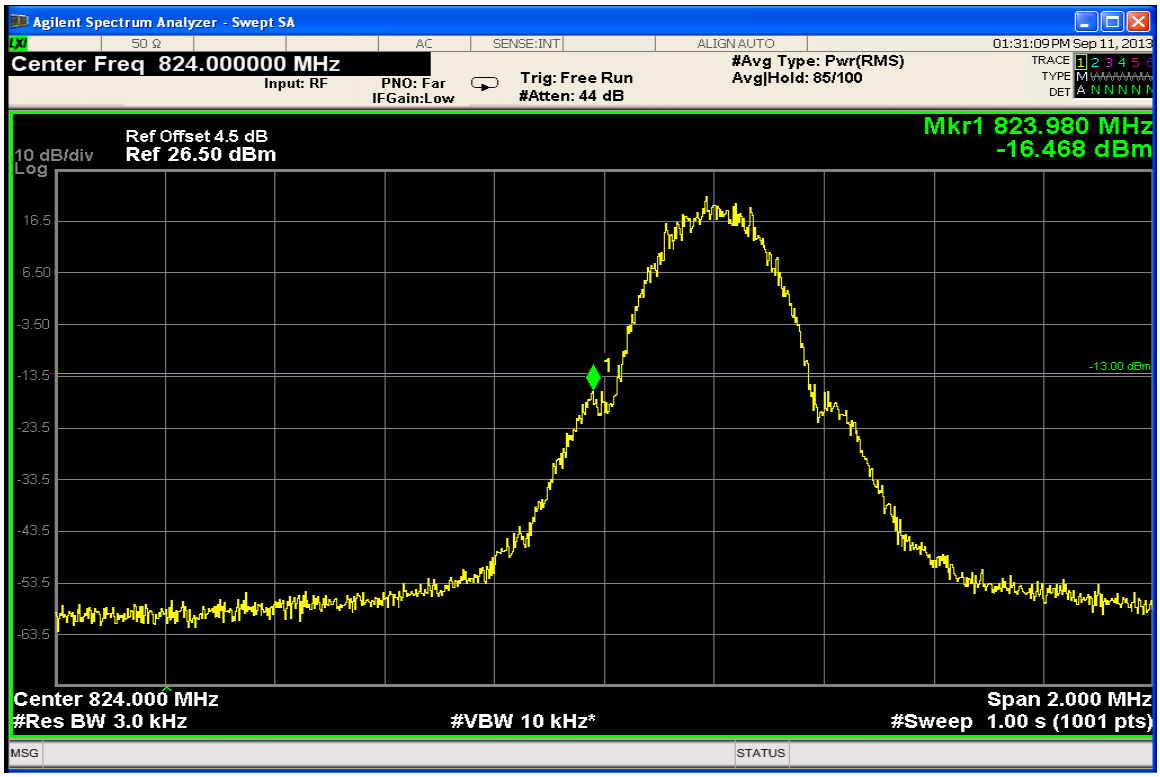
The middle channel within the designated frequency block was measured. For digital modulation, the lower and upper band edge plots are displayed.

Measurement Results
Attached

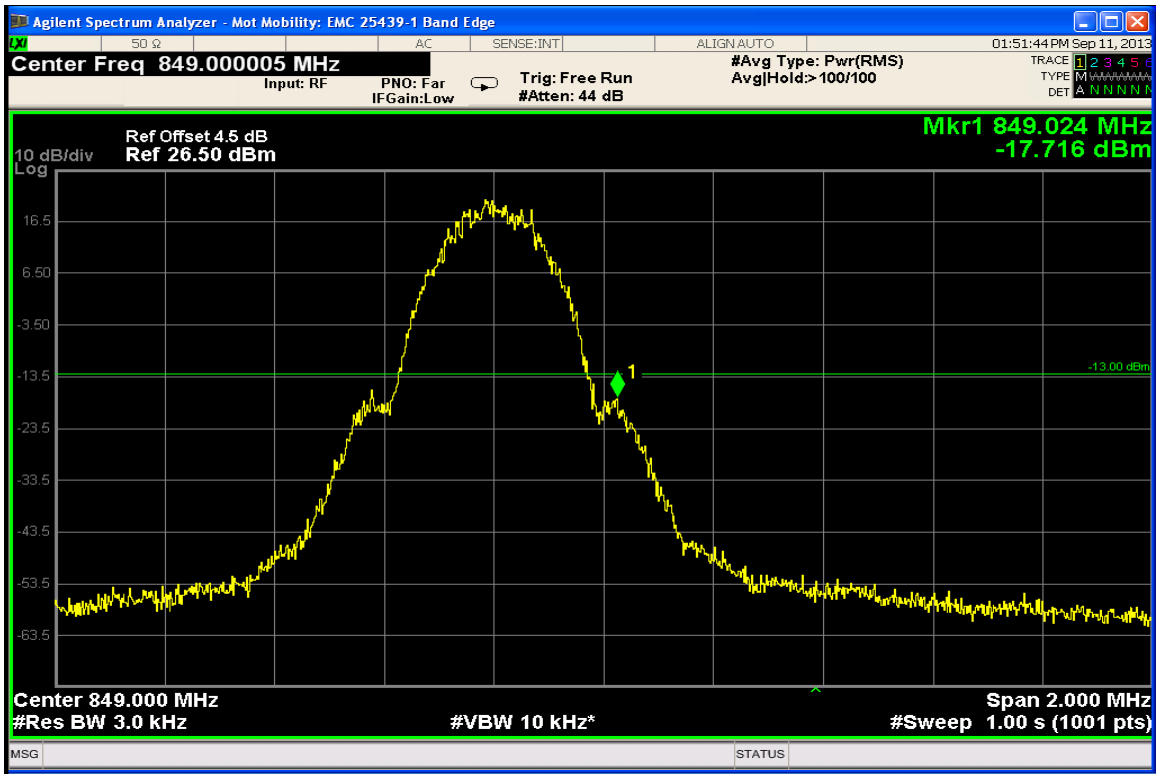
Measurement Results – GSM 850



GSM 850 – Channel 190 (836.60 MHz) – Occupied Bandwidth

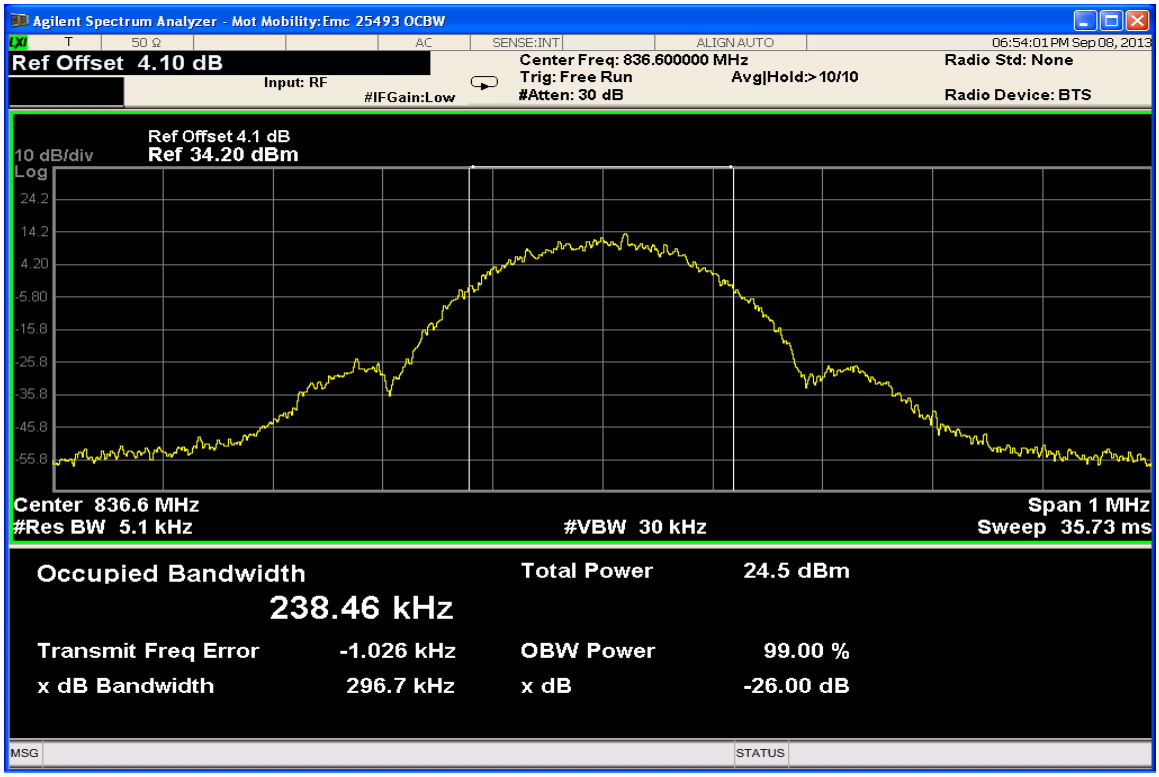


GSM 850 – Lower Band Edge – Channel 128 (824.2 MHz)

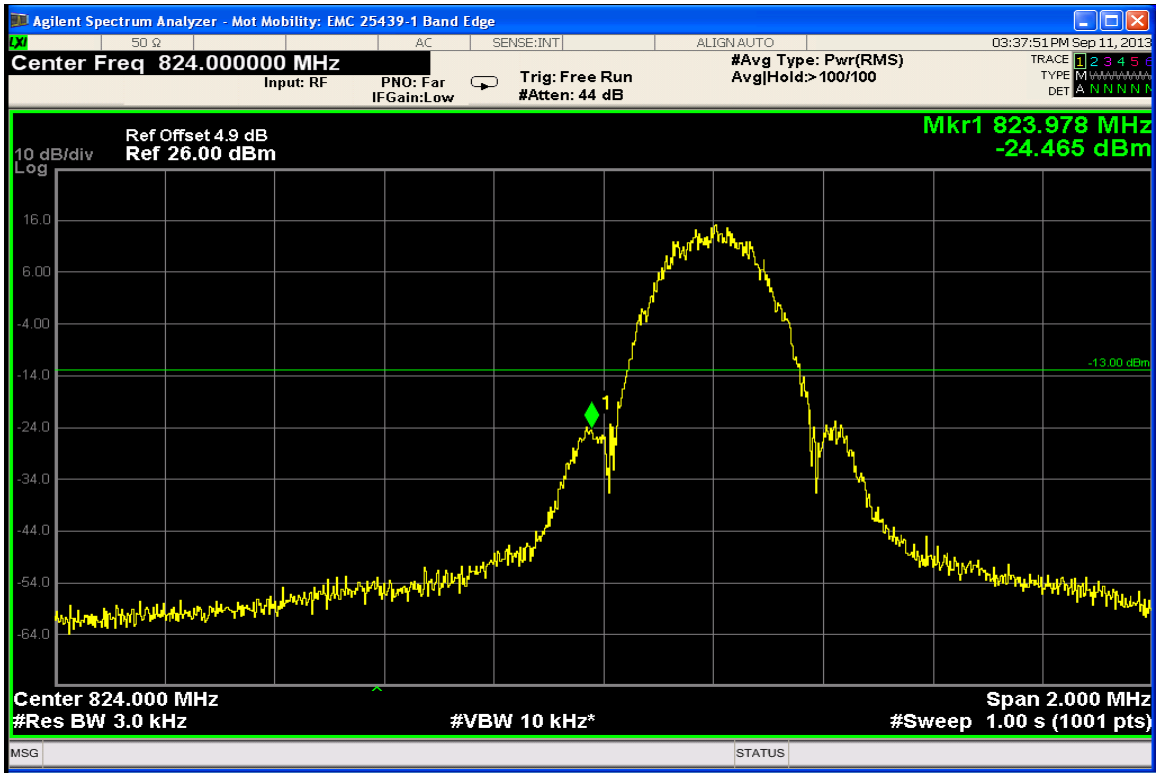


GSM 850 – Upper Band Edge – Channel 251 (848.8 MHz)

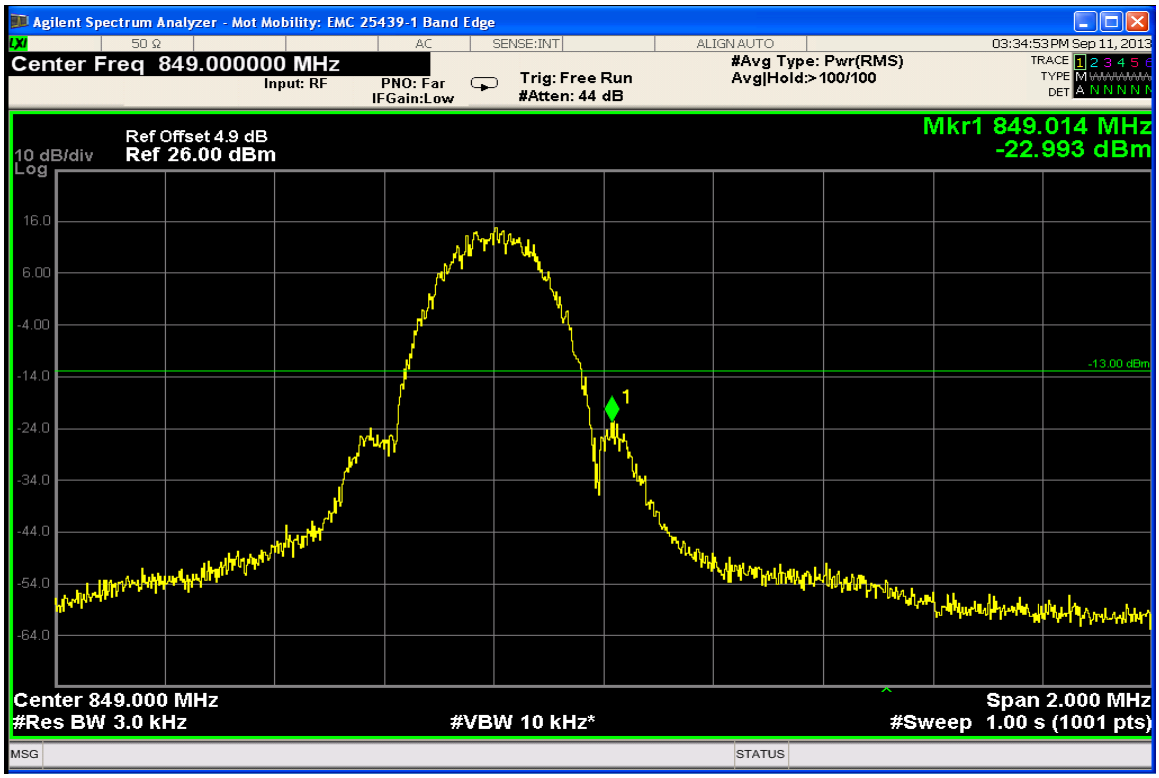
Measurement Results – EDGE 850



EDGE 850 – Channel 190 (836.60 MHz) – Occupied Bandwidth

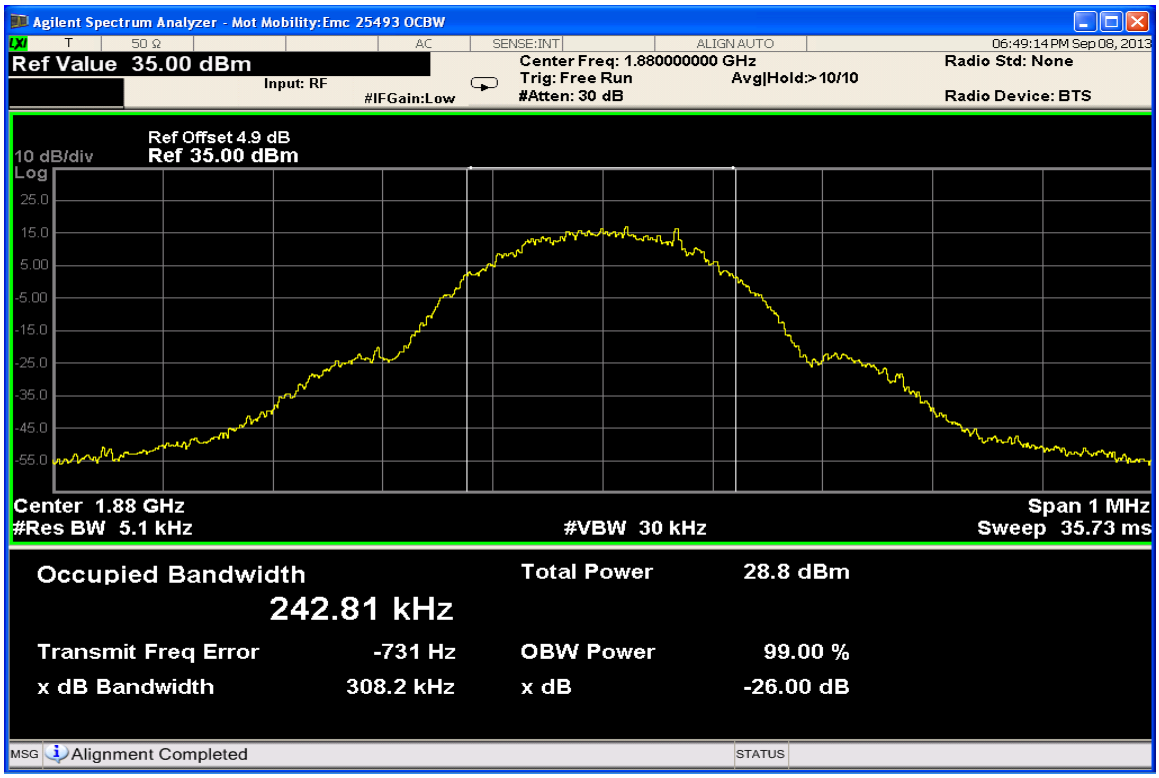


EDGE 850 – Lower Band Edge – Channel 128 (824.2 MHz)

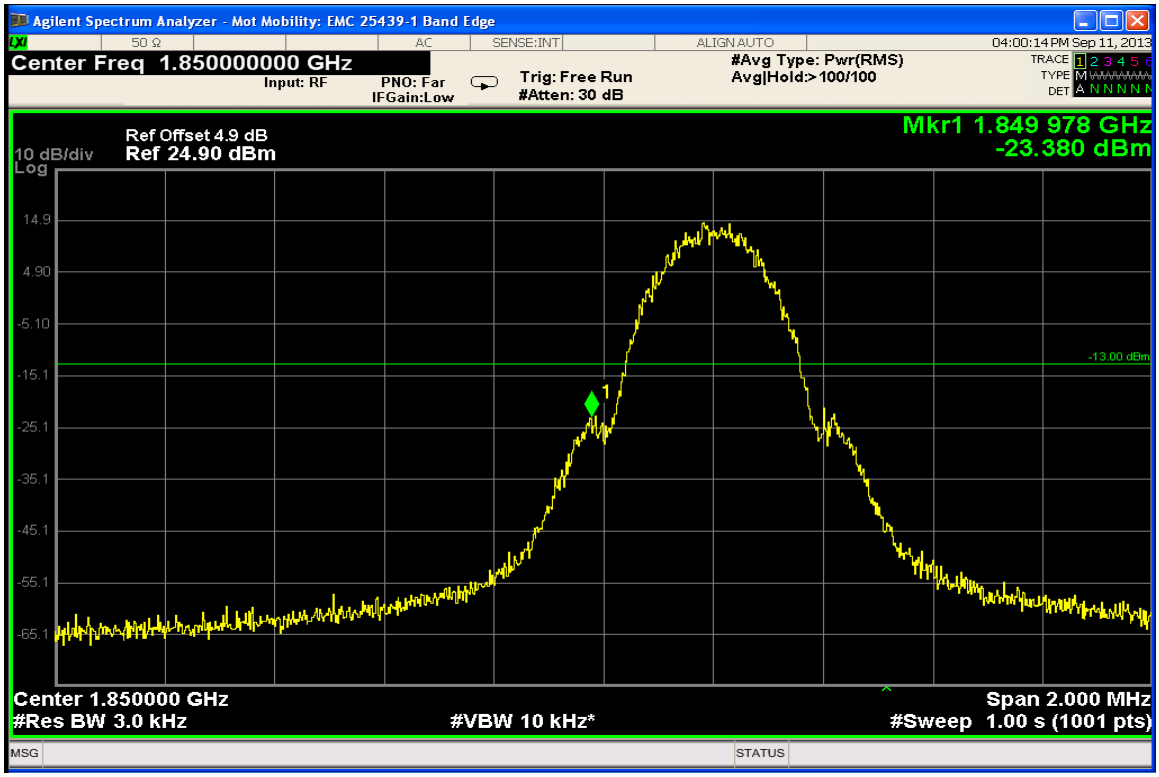


EDGE 850 – Upper Band Edge – Channel 251 (848.8 MHz)

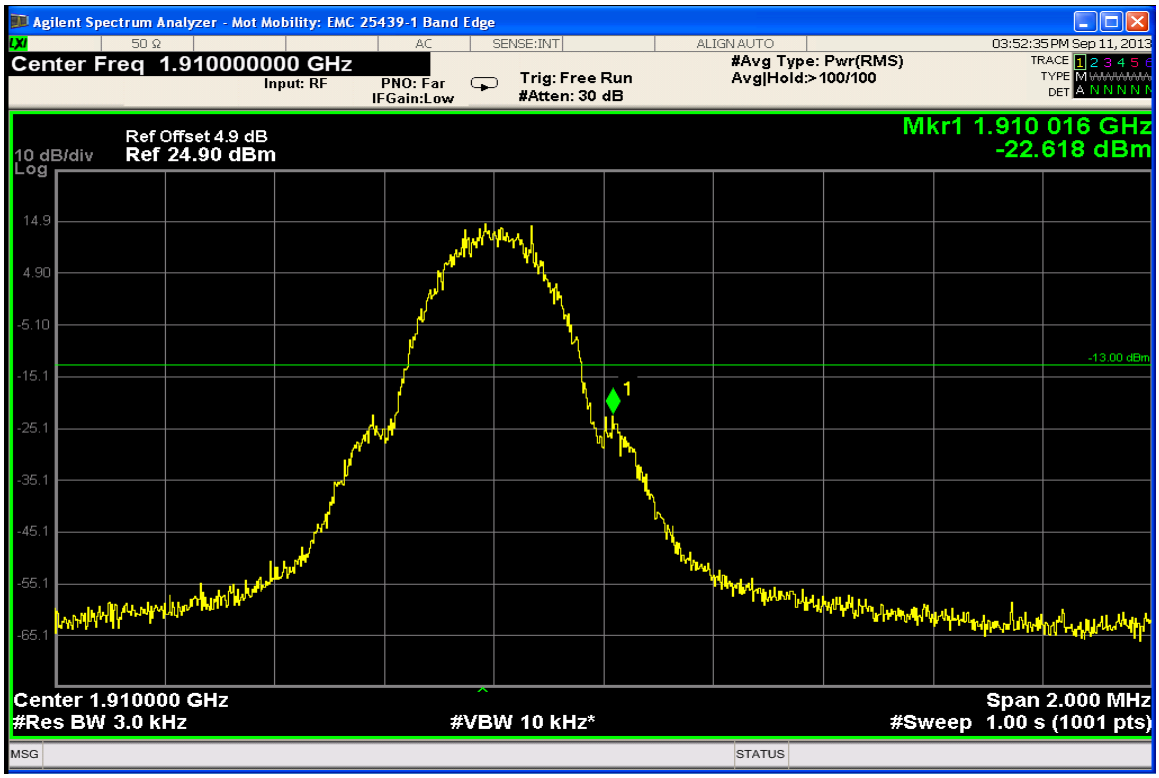
Measurement Results – GSM 1900



GSM 1900 – Occupied Bandwidth – Channel 661 (1880.00MHz)

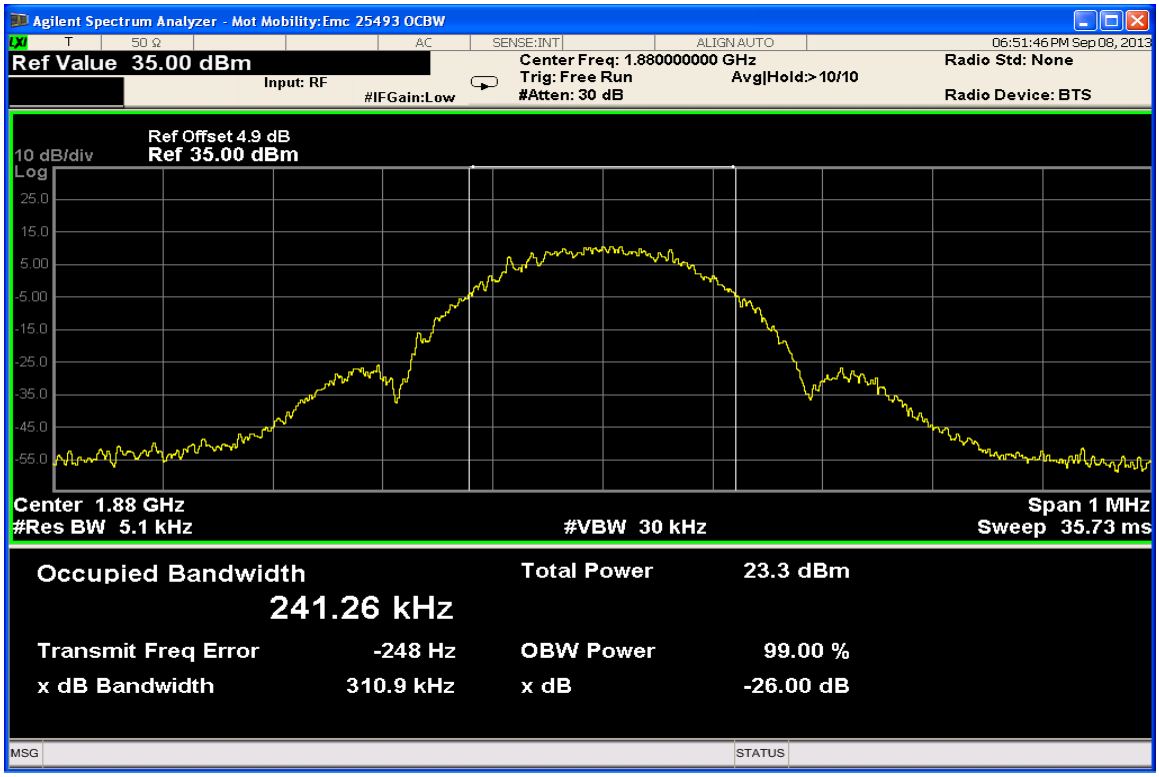


GSM 1900 – Lower Band Edge – Channel 512 (1850.2MHz)

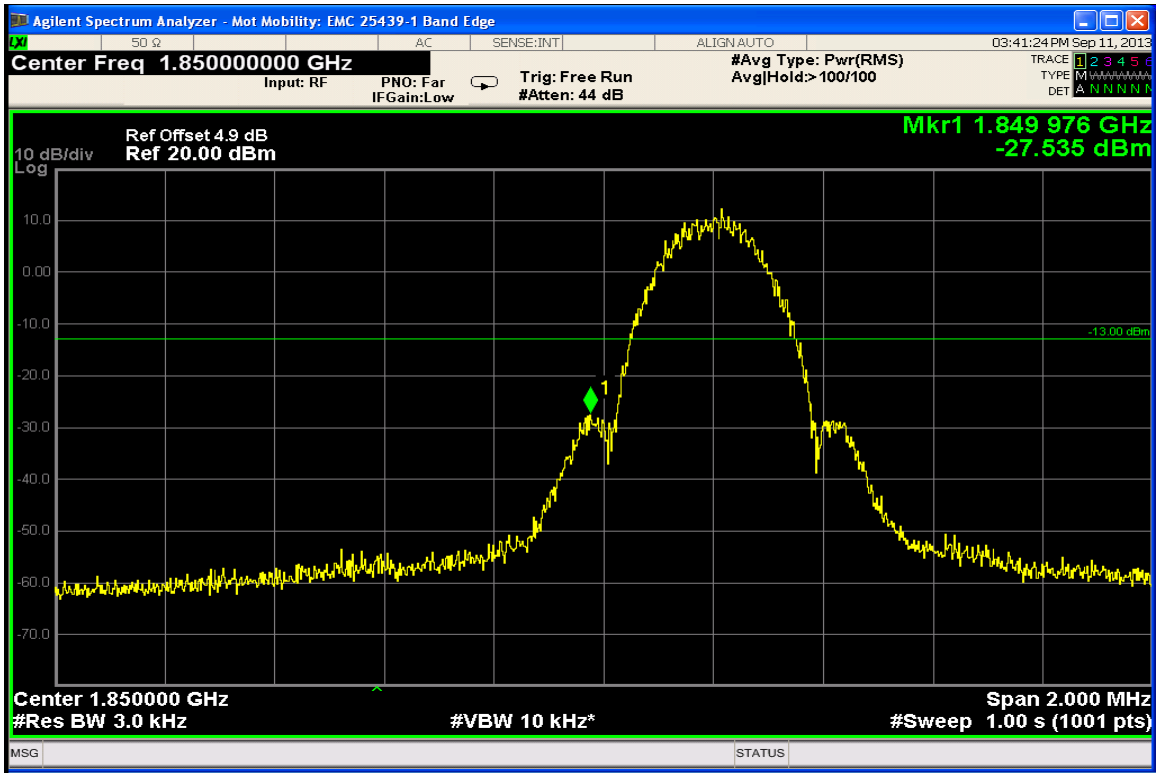


GSM 1900 – Upper Band Edge – Channel 810 (1909.8MHz)

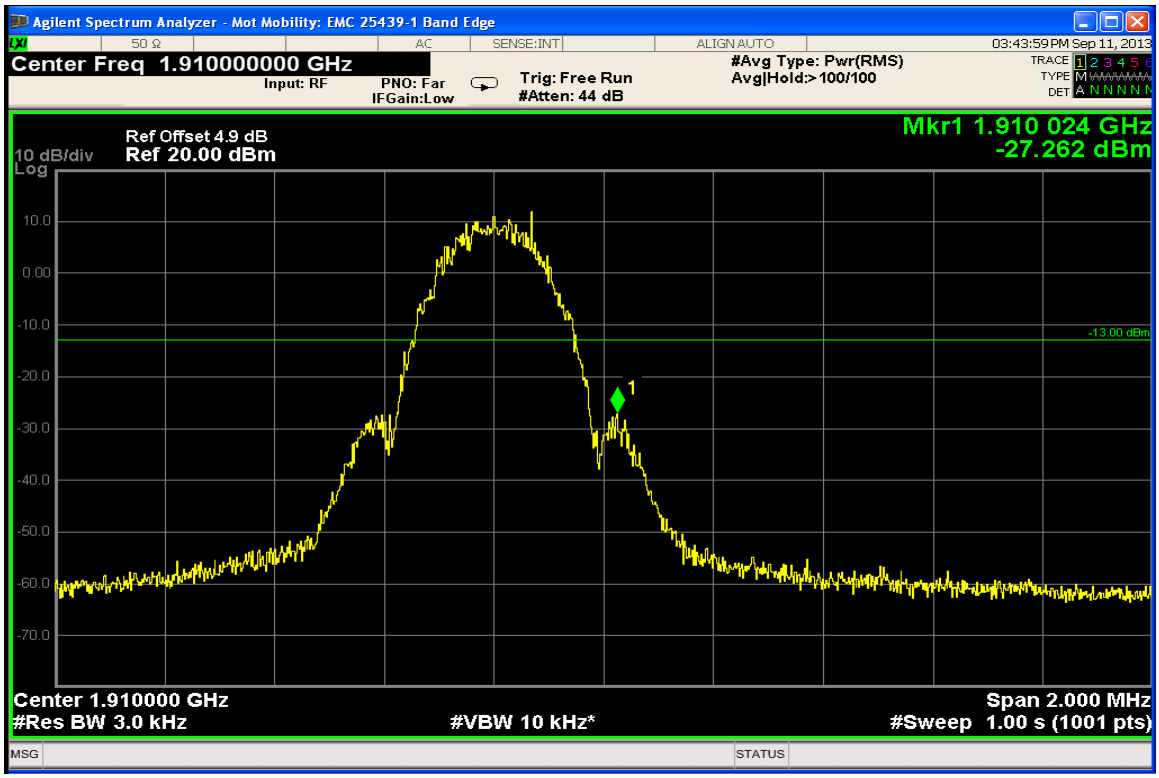
Measurement Results – EDGE 1900



GSM 1900 EDGE – Occupied Bandwidth – Channel 661 (1880.00MHz)

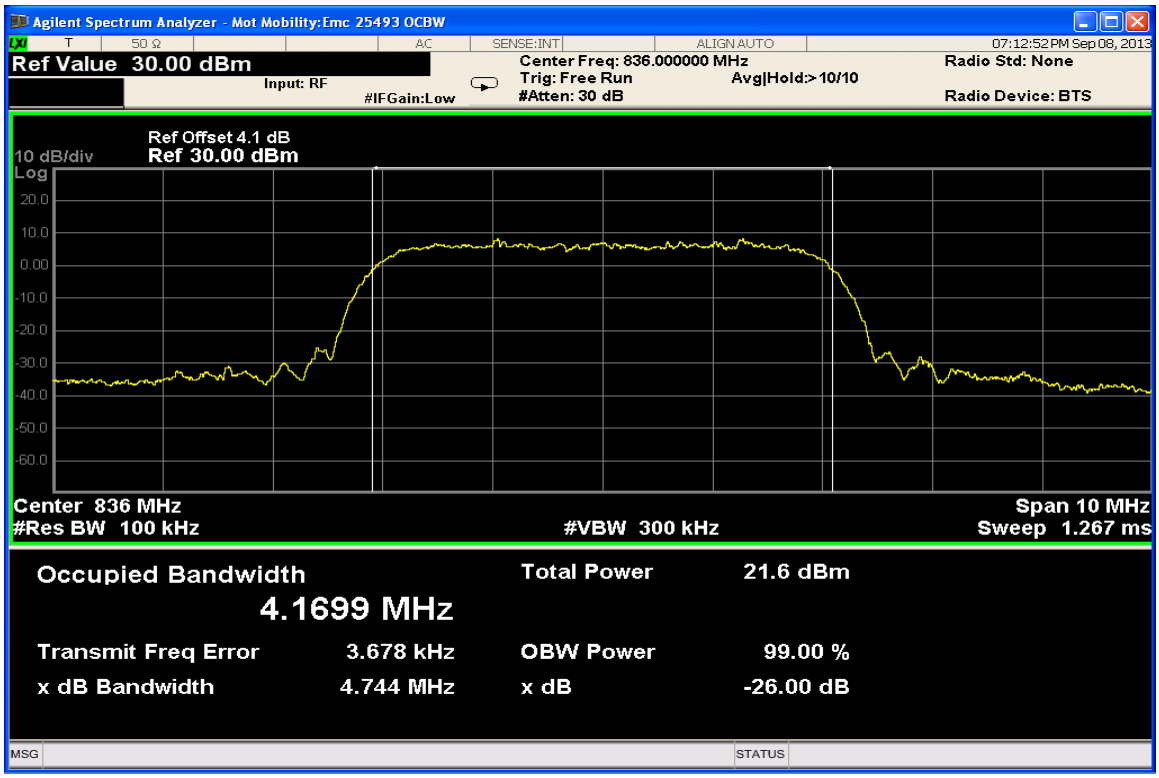


GSM 1900 EDGE – Lower Band Edge – Channel 512 (1850.2MHz)



GSM 1900 EDGE – Upper Band Edge – Channel 810 (1909.8MHz)

Measurement Results – WCDMA 850

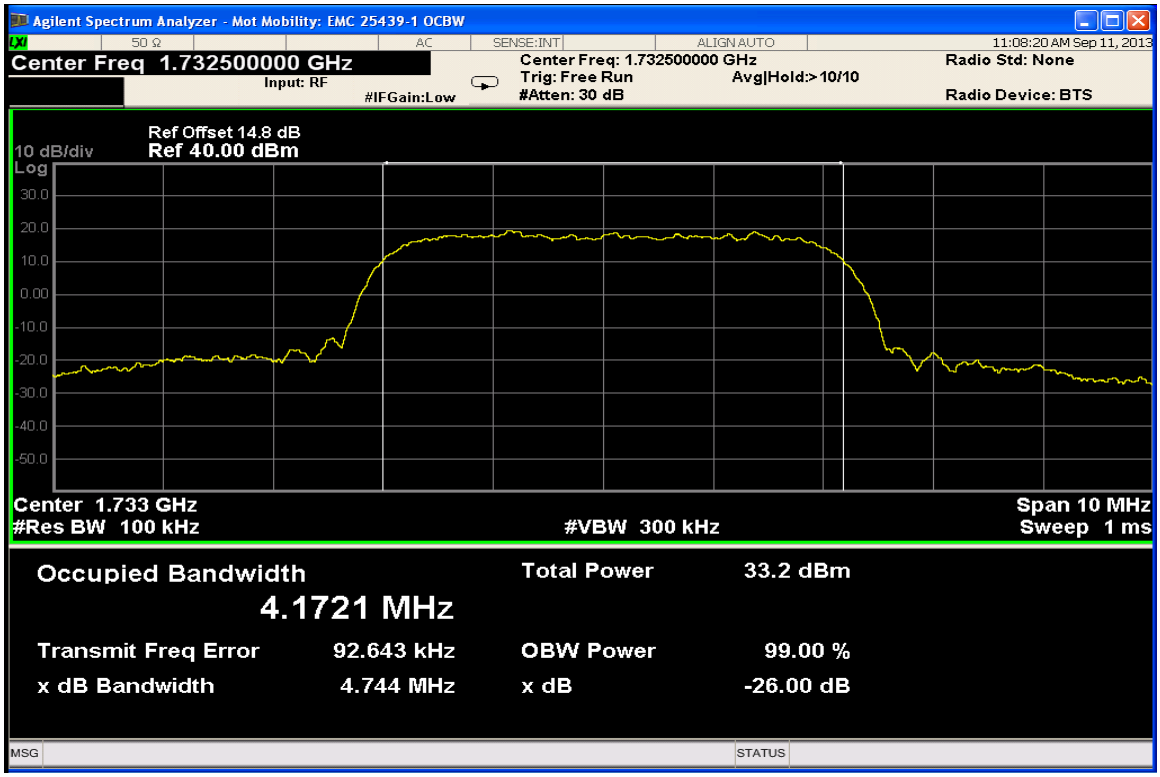


WCDMA 850 – Occupied Bandwidth – Channel 4180 (836.0 MHz)

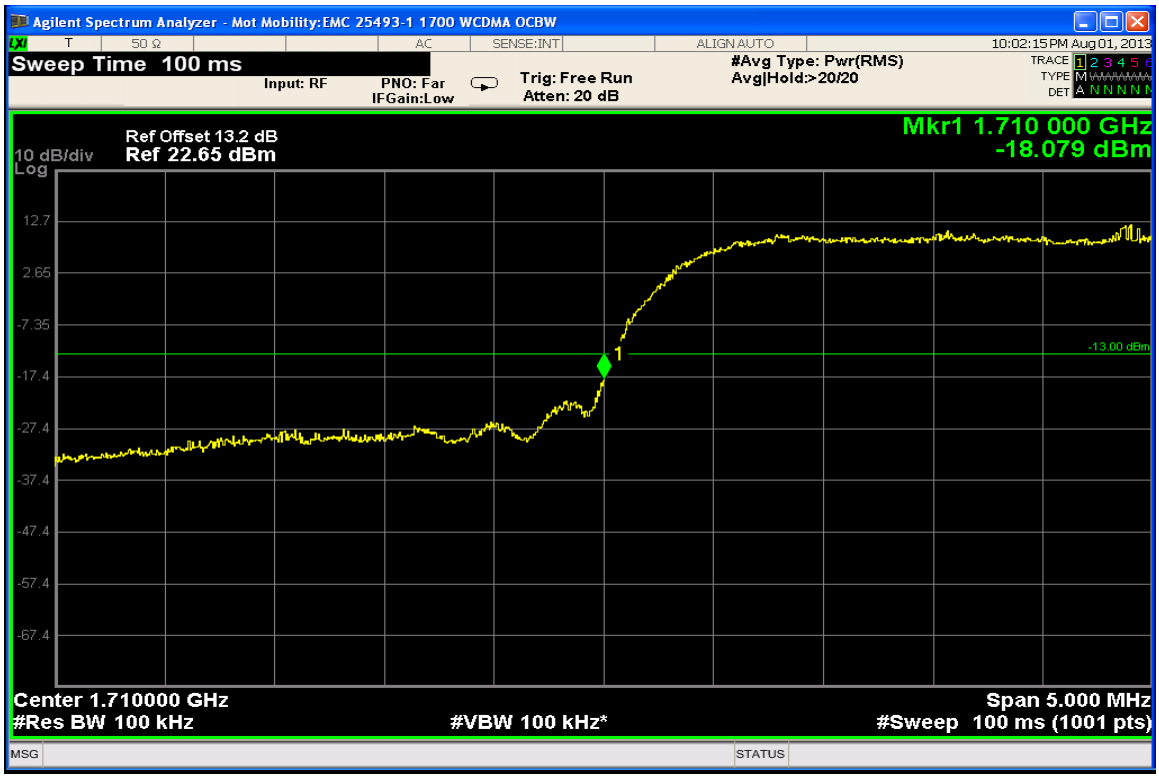
WCDMA 850 – Lower Band Edge – Channel 4132 (826.4 MHz)

WCDMA 850 – Upper Band Edge – Channel 4233 (846.6 MHz)

Measurement Results – WCDMA 1700



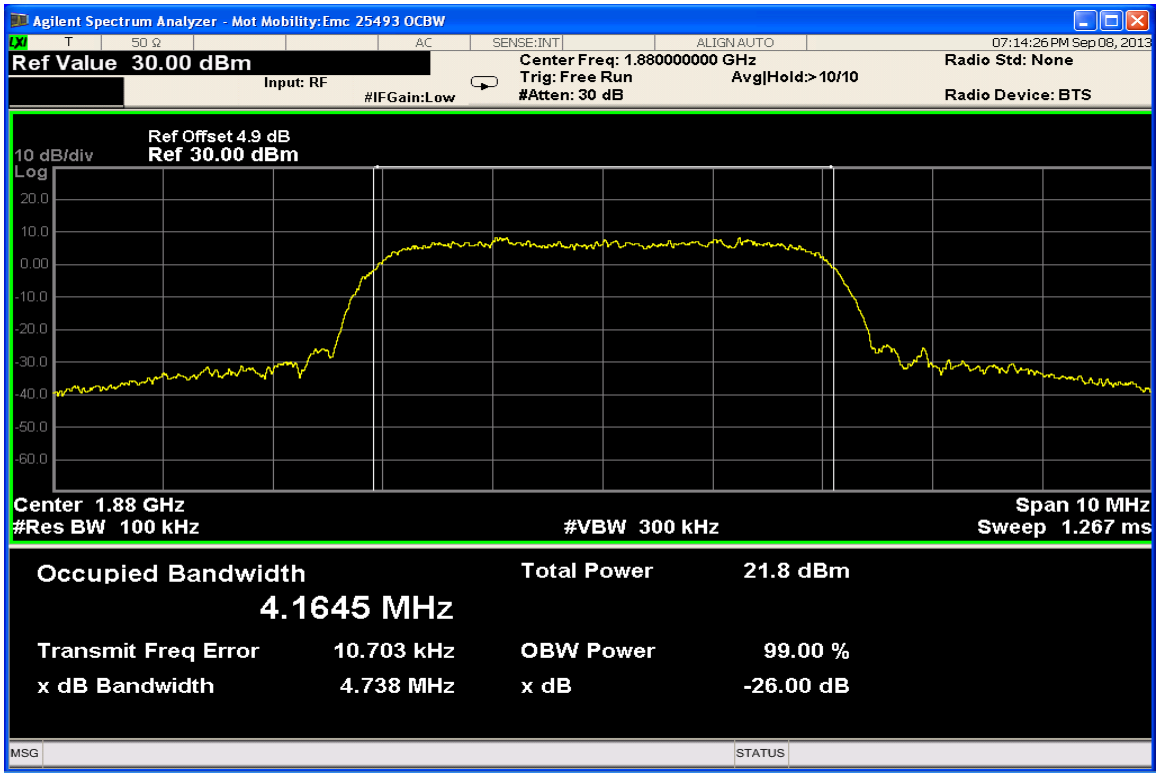
WCDMA 1700 – Channel 1413 (1732.5 MHz) – Occupied Bandwidth



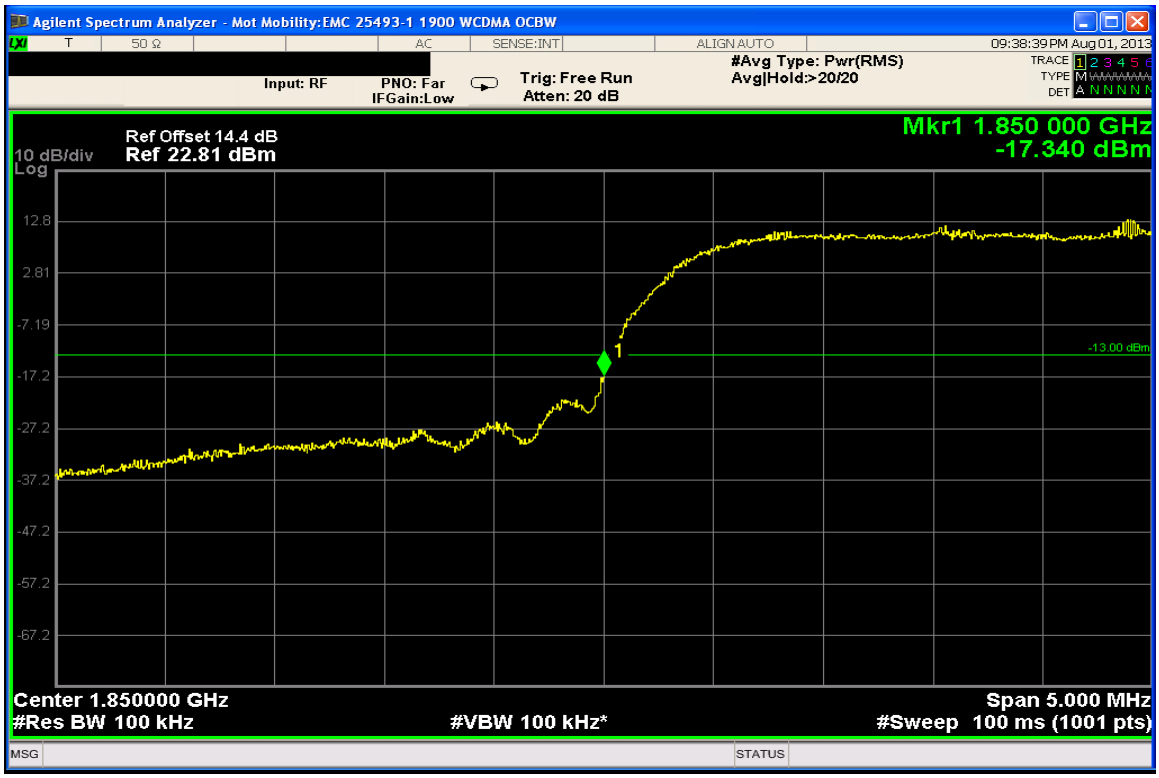
WCDMA 1700 – Lower Band Edge – Channel 1312 (1712.4 MHz)

WCDMA 1700 – Upper Band Edge – Channel 1513 (1752.6 MHz)

Measurement Results – WCDMA 1900



WCDMA 1900 – Occupied Bandwidth – Channel 9400 (1880.00 MHz)



WCDMA 1900 – Lower Band Edge – Channel 9262 (1852.40 MHz)

WCDMA 1900 – Upper Band Edge – Channel 9538 (1907.60 MHz)

SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Measurement Procedure

The RF output port of the EUT is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. A fully charged battery was used for the supply voltage.

The spectrum was investigated from the lowest frequency signal generated, without going below 9 kHz, up to at least the tenth harmonic of the fundamental or 40 GHz, whichever is lower.

The spectrum analyzer settings were as follows:

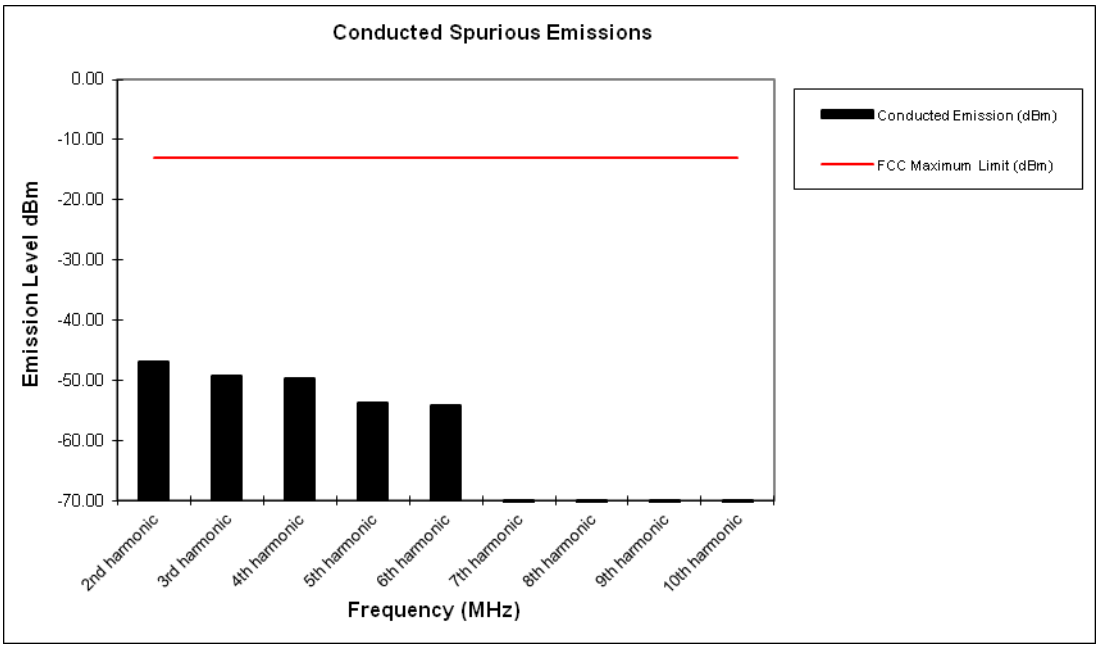
Units	dBm
Divisions	10 dB
Detector	Peak Detector
Resolution Bandwidth	1 MHz
Video Bandwidth (AVG)	Auto
Sweep Time	Auto

Measurement Results

Attached

Measurement Results
Modulation: GSM 850

Harmonic of Fundamental	FCC Maximum Limit (dBm)	Conducted Emission (dBm)
2nd harmonic	-13	-46.94
3rd harmonic	-13	-49.29
4th harmonic	-13	-49.73
5th harmonic	-13	-53.78
6th harmonic	-13	-54.15
7th harmonic	-13	*
8th harmonic	-13	*
9th harmonic	-13	*
10th harmonic	-13	*

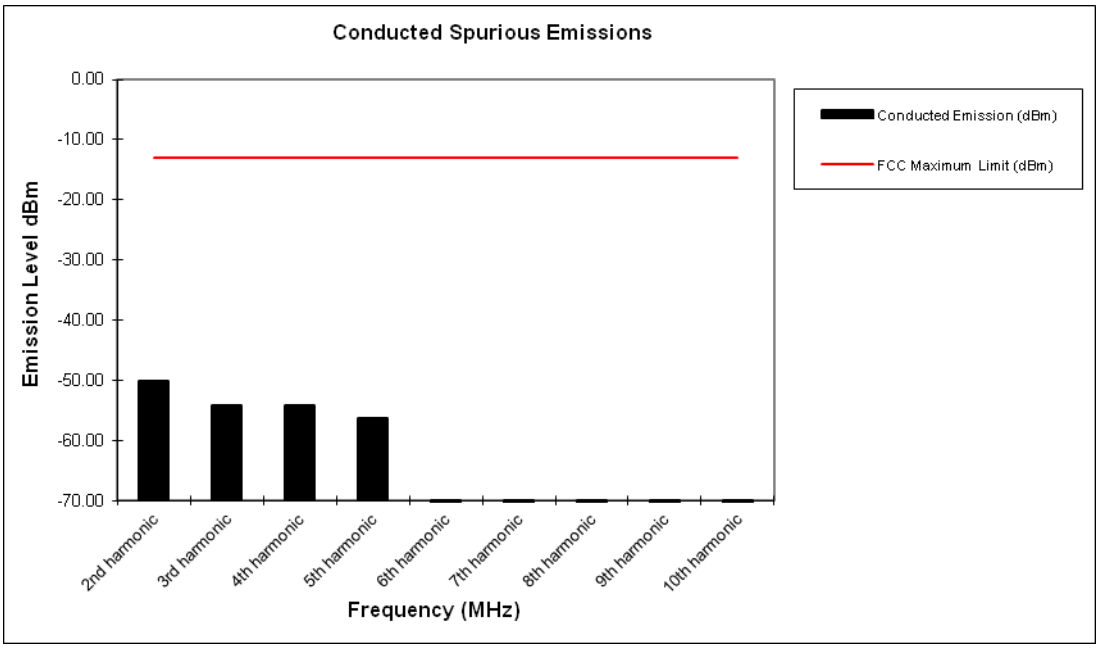


Notes:
1. * Indicates the spurious emission could not be detected due to noise limitations or ambients.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated from 9 kHz to the tenth harmonic of the fundamental.

The margin with respect to the limit is the minimum margin for all modes and bands.

Measurement Results
Modulation: EDGE 850

Harmonic of Fundamental	FCC Maximum Limit (dBm)	Conducted Emission (dBm)
2nd harmonic	-13	-50.10
3rd harmonic	-13	-54.18
4th harmonic	-13	-54.28
5th harmonic	-13	-56.28
6th harmonic	-13	*
7th harmonic	-13	*
8th harmonic	-13	*
9th harmonic	-13	*
10th harmonic	-13	*

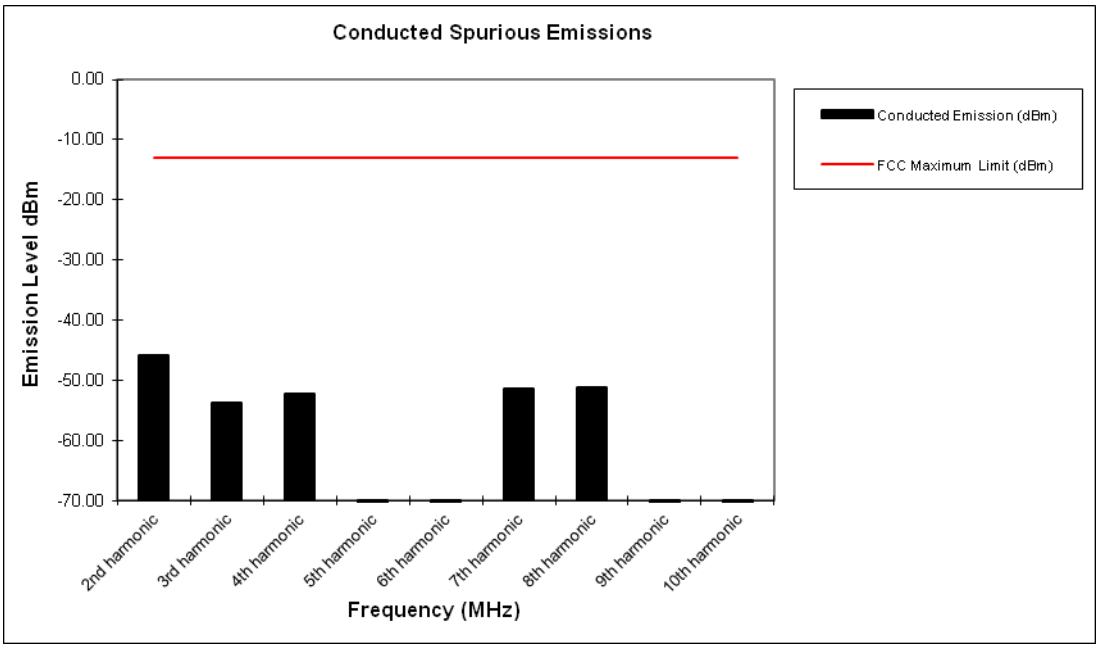


Notes:
1. * Indicates the spurious emission could not be detected due to noise limitations or ambients.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated from 9 kHz to the tenth harmonic of the fundamental.

The margin with respect to the limit is the minimum margin for all modes and bands.

Measurement Results
Modulation: GSM 1900

Harmonic of Fundamental	FCC Maximum Limit (dBm)	Conducted Emission (dBm)
2nd harmonic	-13	-45.81
3rd harmonic	-13	-53.70
4th harmonic	-13	-52.28
5th harmonic	-13	*
6th harmonic	-13	*
7th harmonic	-13	-51.47
8th harmonic	-13	-51.14
9th harmonic	-13	*
10th harmonic	-13	*

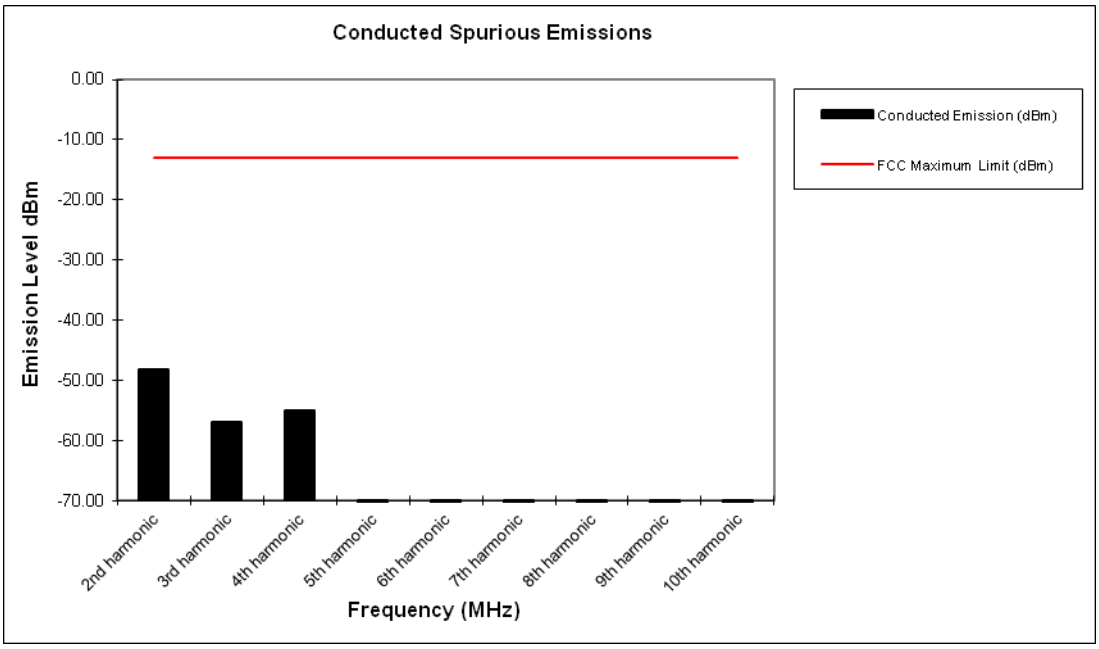


Notes:
1. * Indicates the spurious emission could not be detected due to noise limitations or ambients.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated from 9 kHz to the tenth harmonic of the fundamental.

The margin with respect to the limit is the minimum margin for all modes and bands.

Measurement Results
Modulation: EDGE 1900

Harmonic of Fundamental	FCC Maximum Limit (dBm)	Conducted Emission (dBm)
2nd harmonic	-13	-48.23
3rd harmonic	-13	-56.90
4th harmonic	-13	-55.03
5th harmonic	-13	*
6th harmonic	-13	*
7th harmonic	-13	*
8th harmonic	-13	*
9th harmonic	-13	*
10th harmonic	-13	*

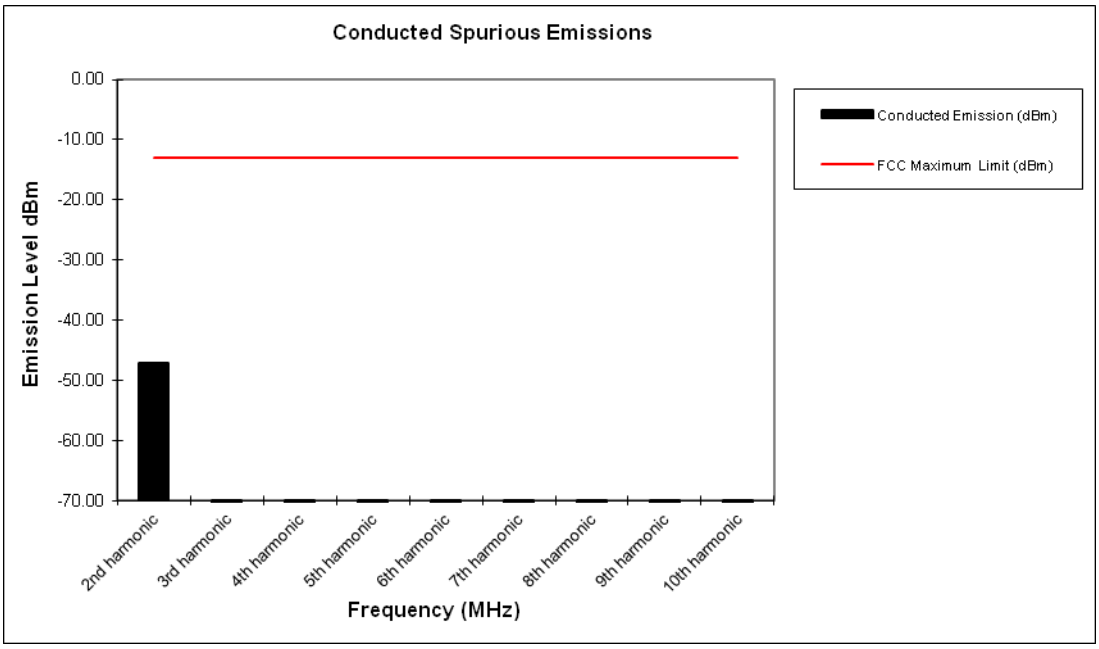


Notes:
1. * Indicates the spurious emission could not be detected due to noise limitations or ambients.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated from 9 kHz to the tenth harmonic of the fundamental.

The margin with respect to the limit is the minimum margin for all modes and bands.

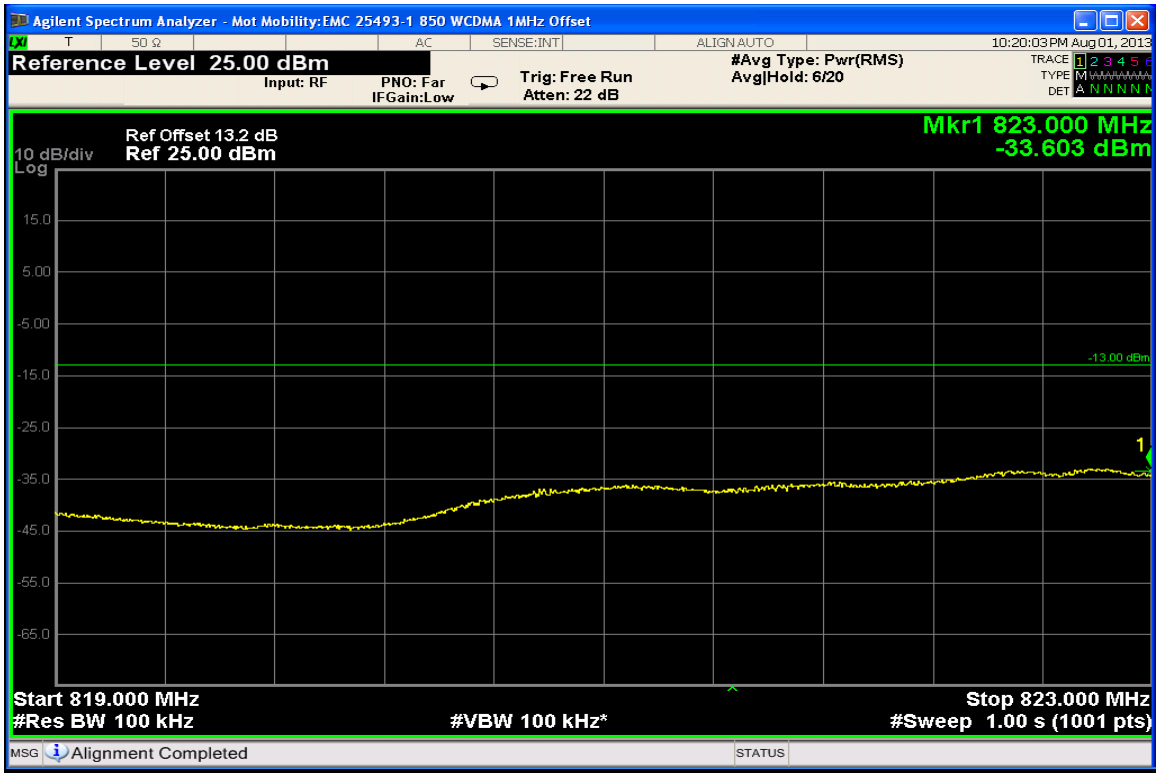
Measurement Results
Modulation: WCDMA 850

Harmonic of Fundamental	FCC Maximum Limit (dBm)	Conducted Emission (dBm)
2nd harmonic	-13	-47.22
3rd harmonic	-13	*
4th harmonic	-13	*
5th harmonic	-13	*
6th harmonic	-13	*
7th harmonic	-13	*
8th harmonic	-13	*
9th harmonic	-13	*
10th harmonic	-13	*

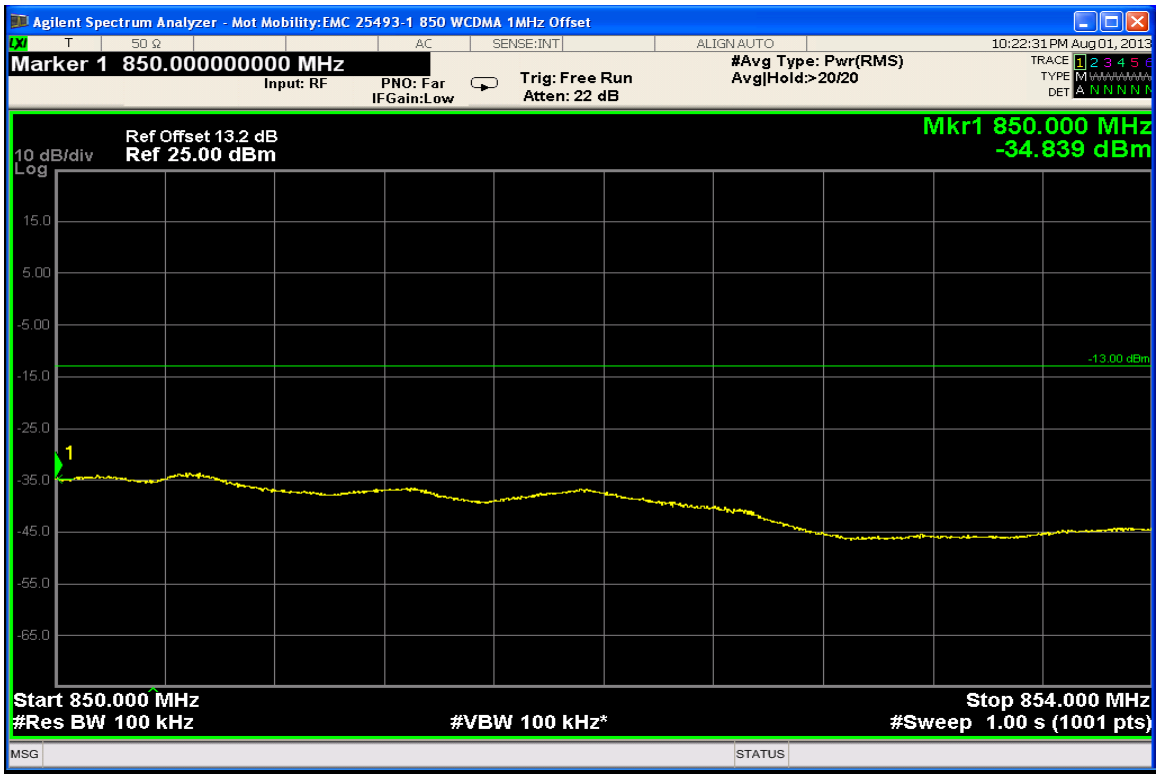


Notes:
1. * Indicates the spurious emission could not be detected due to noise limitations or ambients.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated from 9 kHz to the tenth harmonic of the fundamental.

The margin with respect to the limit is the minimum margin for all modes and bands.



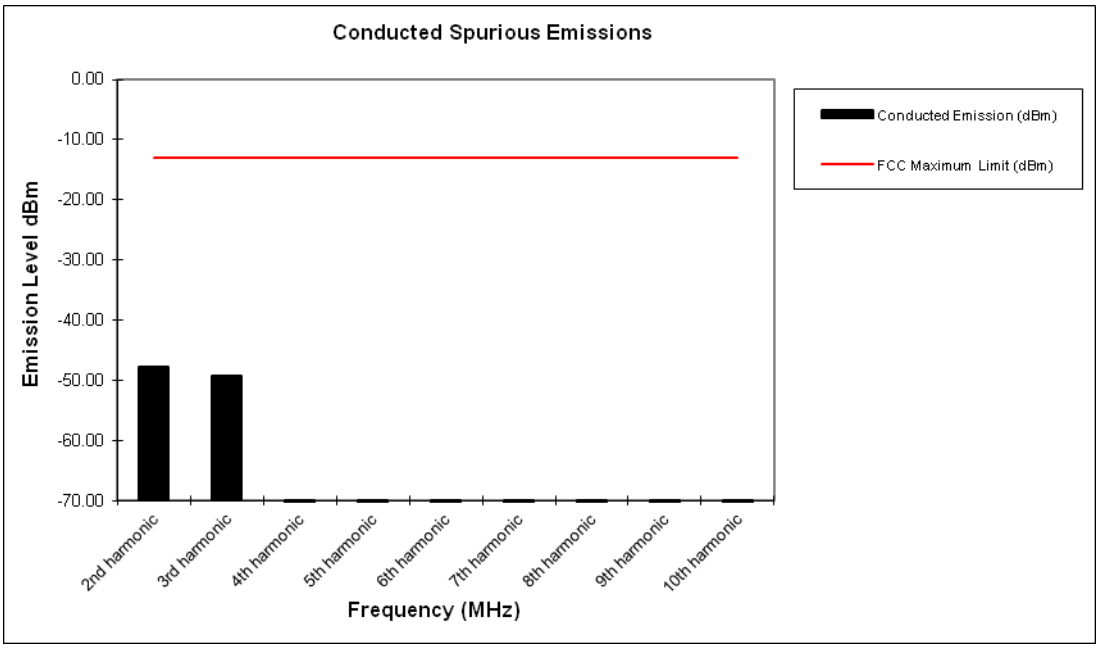
850 WCDMA Conducted Spurious Emissions (Lower adjacent 1 MHz band)



850 WCDMA Conducted Spurious Emissions (Upper adjacent 1 MHz band)

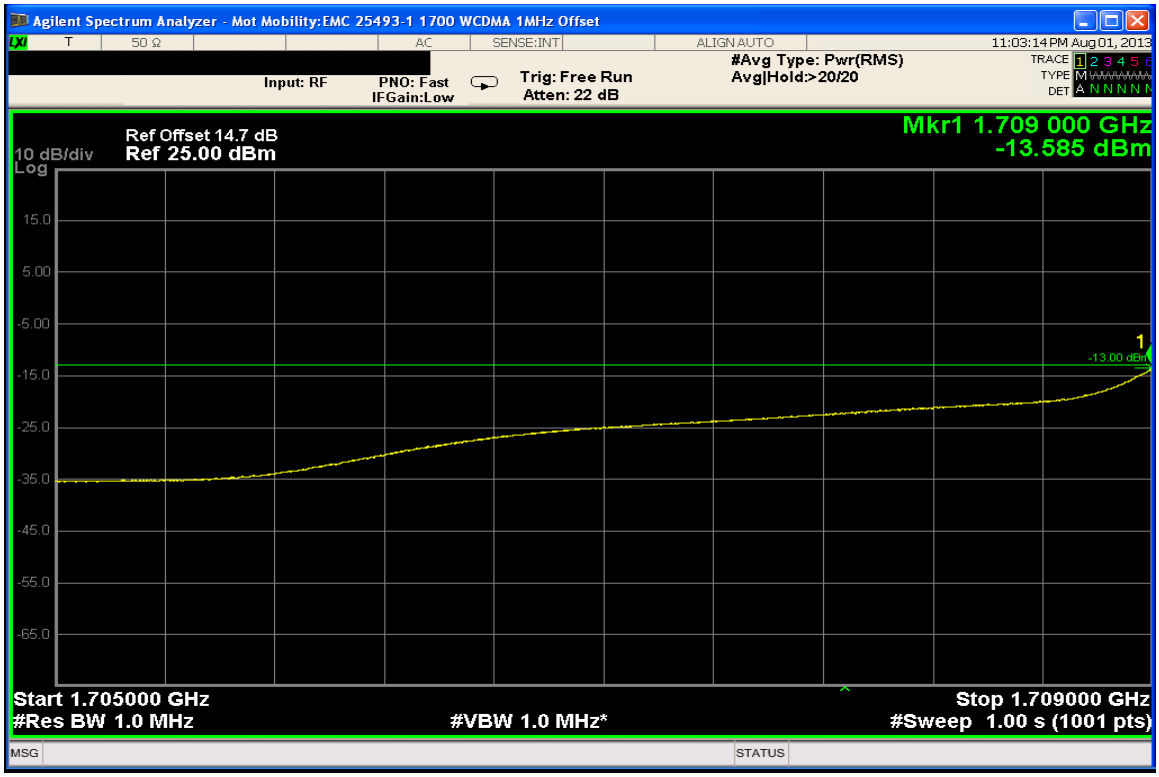
Measurement Results
Modulation: WCDMA 1700

Harmonic of Fundamental	FCC Maximum Limit (dBm)	Conducted Emission (dBm)
2nd harmonic	-13	-47.84
3rd harmonic	-13	-49.29
4th harmonic	-13	*
5th harmonic	-13	*
6th harmonic	-13	*
7th harmonic	-13	*
8th harmonic	-13	*
9th harmonic	-13	*
10th harmonic	-13	*

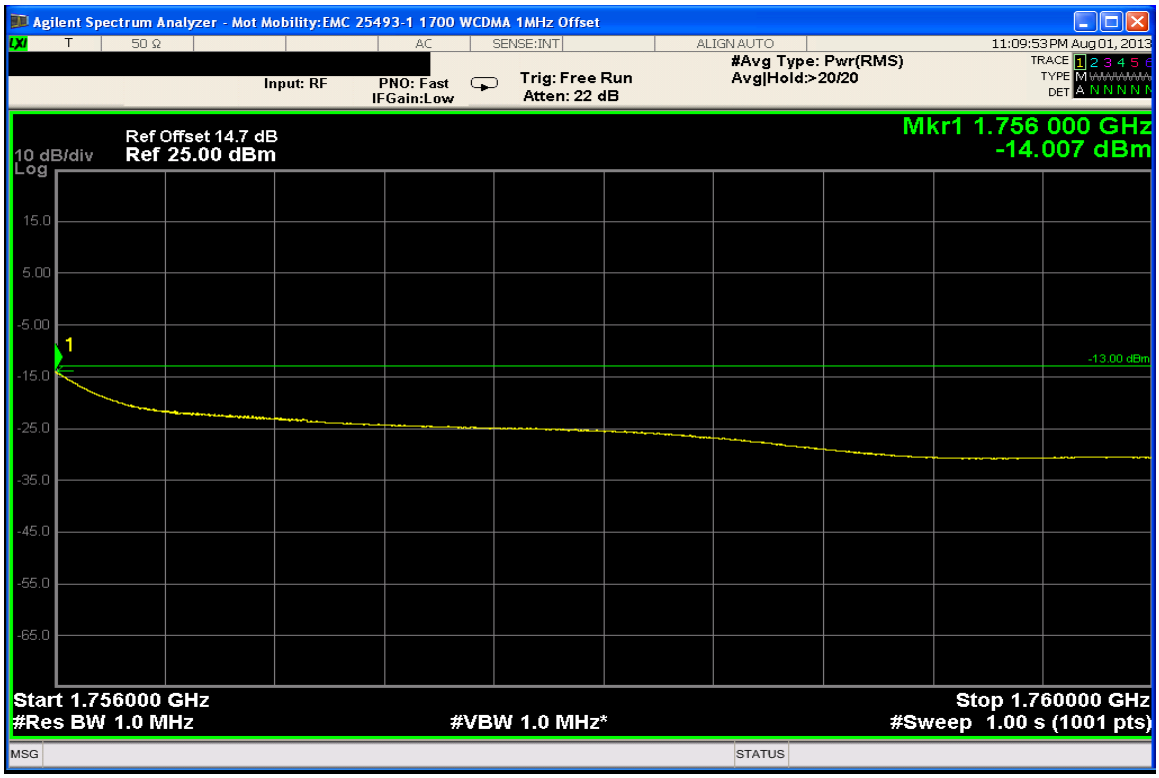


Notes:
1. * Indicates the spurious emission could not be detected due to noise limitations or ambients.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated from 9 kHz to the tenth harmonic of the fundamental.

The margin with respect to the limit is the minimum margin for all modes and bands.



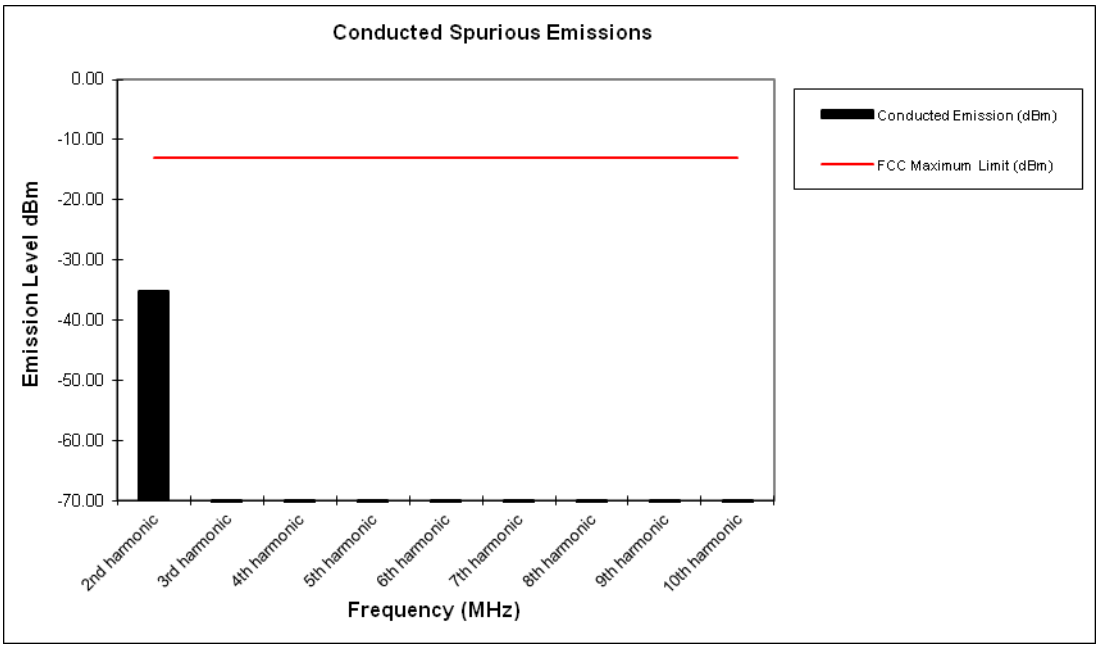
1700 WCDMA Conducted Spurious Emissions (Lower adjacent 1 MHz band)



1700 WCDMA Conducted Spurious Emissions (Upper adjacent 1 MHz band)

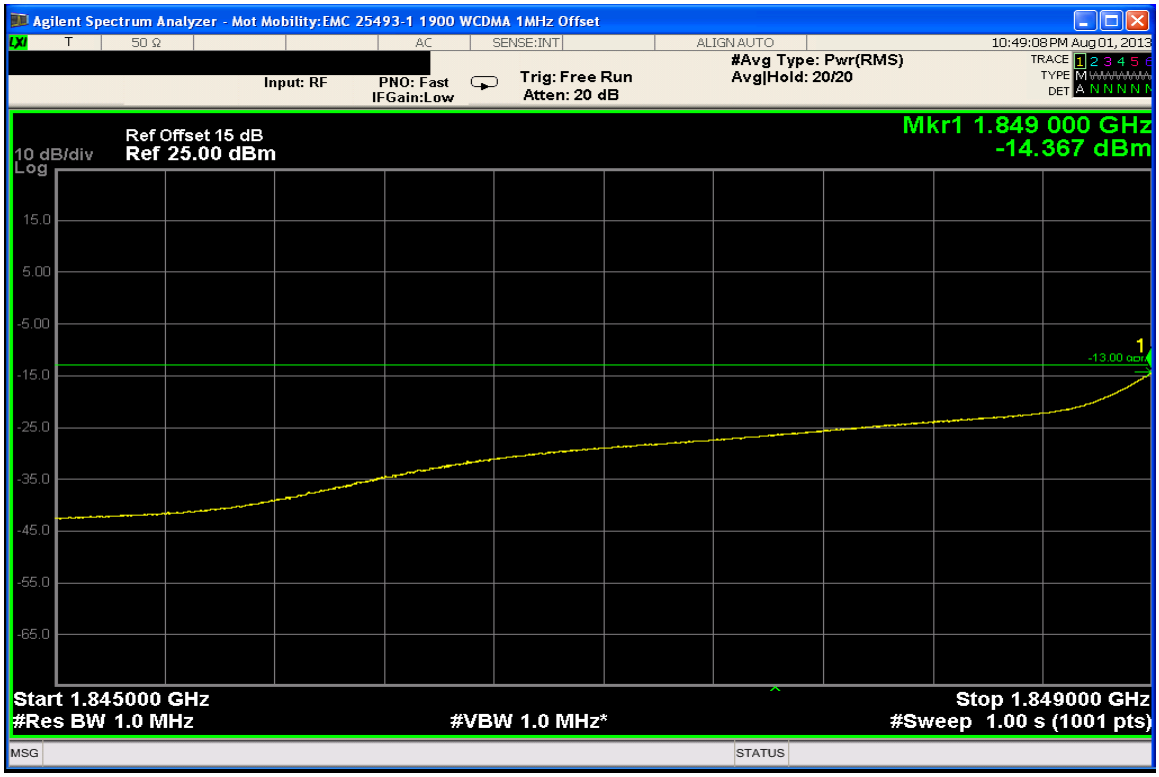
Measurement Results
Modulation: WCDMA 1900

Harmonic of Fundamental	FCC Maximum Limit (dBm)	Conducted Emission (dBm)
2nd harmonic	-13	-35.22
3rd harmonic	-13	*
4th harmonic	-13	*
5th harmonic	-13	*
6th harmonic	-13	*
7th harmonic	-13	*
8th harmonic	-13	*
9th harmonic	-13	*
10th harmonic	-13	*

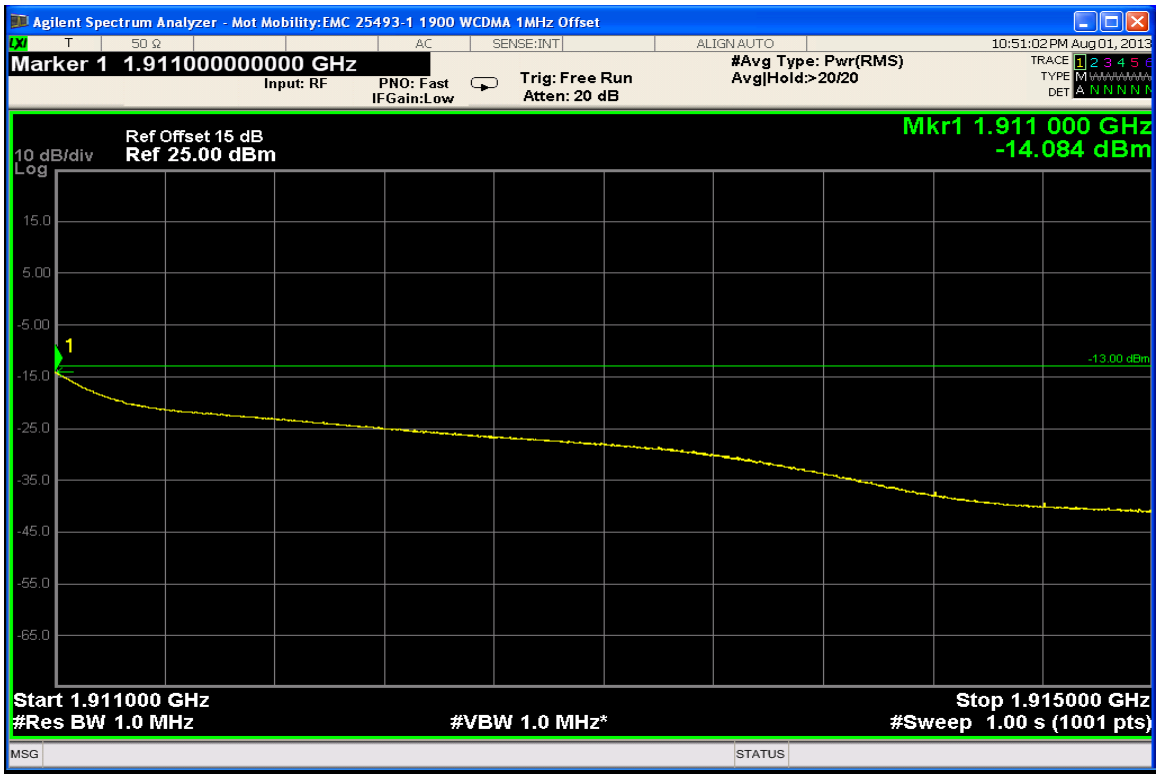


Notes:
1. * Indicates the spurious emission could not be detected due to noise limitations or ambients.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated from 9 kHz to the tenth harmonic of the fundamental.

The margin with respect to the limit is the minimum margin for all modes and bands.



1900 WCDMA Conducted Spurious Emissions (Lower adjacent 1 MHz band)



1900 WCDMA Conducted Spurious Emissions (Upper adjacent 1 MHz band)

FIELD STRENGTH OF SPURIOUS EMISSIONS

Measurement Procedure

The EUT is placed inside the semi-anechoic chamber on a wooden table at the turntable center. For each spurious frequency, the antenna mast is raised and lowered from 1 to 4 meters and the turntable is rotated 360 degrees to obtain a maximum reading on the spectrum analyzer. This is repeated for both horizontal and vertical polarizations of the receive antenna.

The EUT is then replaced with a substitution antenna fed by a signal generator. With the signal generator tuned to a particular spurious frequency, the antenna mast is raised and lowered from 1 to 4 meters to obtain a maximum reading at the spectrum analyzer. The output of the signal generator is then adjusted until a reading identical to that obtained with the actual transmitter is achieved.

The power in dBm of each spurious emission is calculated by correcting the signal generator level for cable loss and gain of the substitution antenna referenced to a dipole. A fully charged battery was used for the supply voltage. Testing was performed in three orthogonal planes where the X plane is with the EUT orientated vertically, the Y plane is with the EUT orientated on its side and the Z plane with the EUT laying flat on the table. The worst case emission is reported for each tested mode.

The settings of the receiver were as follows:

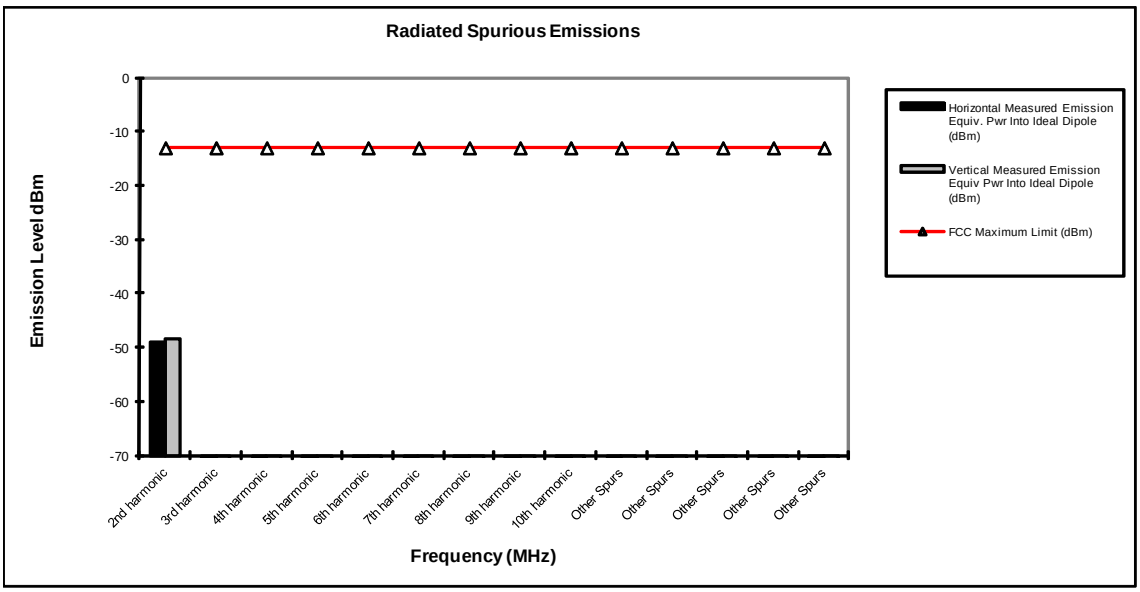
Units	dBm
Divisions	5 dB
Detector	Peak Detector
Resolution Bandwidth	1 MHz
Video Bandwidth (AVG)	Auto
Sweep Time	Auto

Measurement Results

Attached

Measurement Results – GSM 850

Frequency (MHz)	FCC Maximum Limit (dBm)	Horizontal Measured Emission Equiv. Pw r Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pw r Into Ideal Dipole (dBm)
2nd harmonic	-13	-49.0	-48.5
3rd harmonic	-13	*	*
4th harmonic	-13	*	*
5th harmonic	-13	*	*
6th harmonic	-13	*	*
7th harmonic	-13	*	*
8th harmonic	-13	*	*
9th harmonic	-13	*	*
10th harmonic	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*



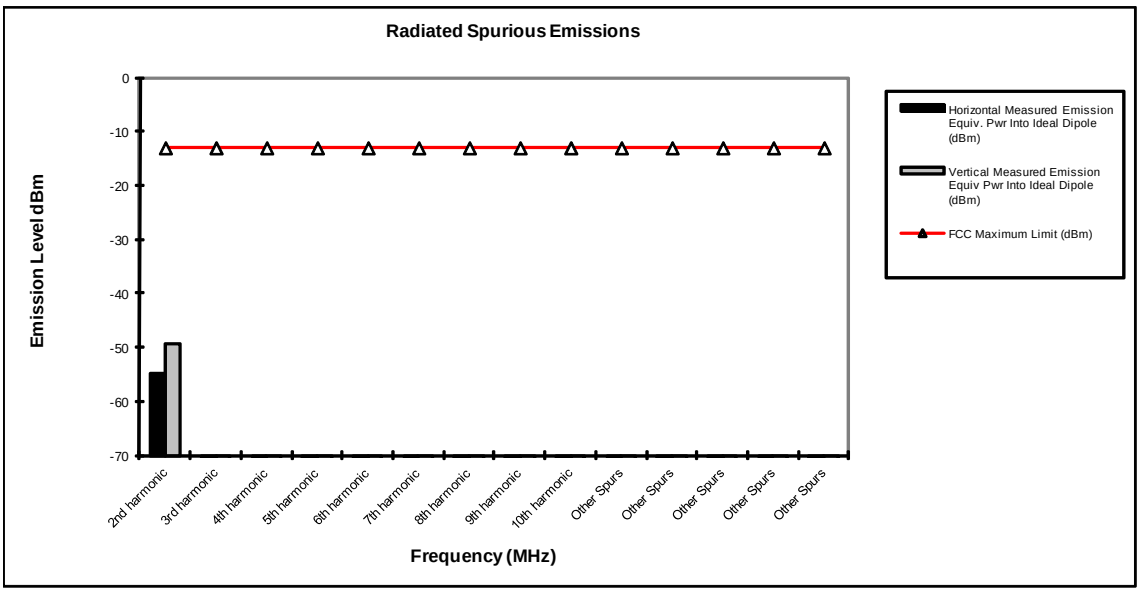
Notes:

1. * Indicates the spurious emission could not be detected due to noise limitations or ambients or the emissions are lower than -33 dBm.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated from 30 MHz to the tenth harmonic of the fundamental.

The margin with respect to the limit is the minimum margin for all modes and bands.

Measurement Results –EDGE 850

Frequency (MHz)	FCC Maximum Limit (dBm)	Horizontal Measured Emission Equiv. Pw r Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pw r Into Ideal Dipole (dBm)
2nd harmonic	-13	-54.9	-49.4
3rd harmonic	-13	*	*
4th harmonic	-13	*	*
5th harmonic	-13	*	*
6th harmonic	-13	*	*
7th harmonic	-13	*	*
8th harmonic	-13	*	*
9th harmonic	-13	*	*
10th harmonic	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*



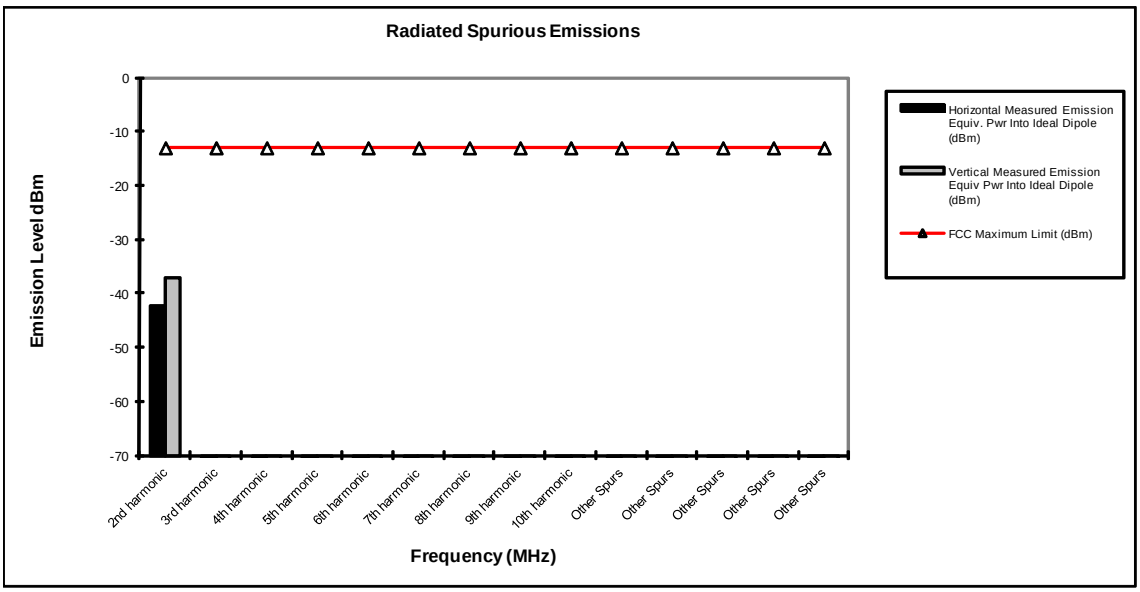
Notes:

1. * Indicates the spurious emission could not be detected due to noise limitations or ambients or the emissions are lower than -33 dBm.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated from 30 MHz to the tenth harmonic of the fundamental.

The margin with respect to the limit is the minimum margin for all modes and bands.

Measurement Results –WCDMA 850

Frequency (MHz)	FCC Maximum Limit (dBm)	Horizontal Measured Emission Equiv. Pw r Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pw r Into Ideal Dipole (dBm)
2nd harmonic	-13	-42.4	-37.1
3rd harmonic	-13	*	*
4th harmonic	-13	*	*
5th harmonic	-13	*	*
6th harmonic	-13	*	*
7th harmonic	-13	*	*
8th harmonic	-13	*	*
9th harmonic	-13	*	*
10th harmonic	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*



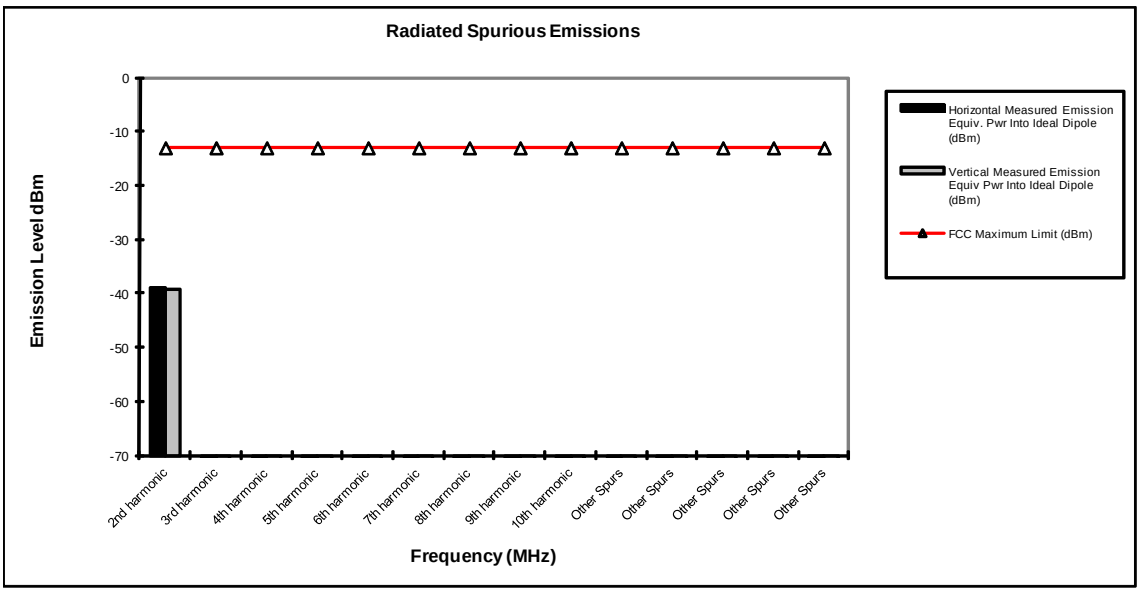
Notes:

1. * Indicates the spurious emission could not be detected due to noise limitations or ambients or the emissions are lower than -33 dBm.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated from 30 MHz to the tenth harmonic of the fundamental.

The margin with respect to the limit is the minimum margin for all modes and bands.

Measurement Results –WCDMA 1900

Frequency (MHz)	FCC Maximum Limit (dBm)	Horizontal Measured Emission Equiv. Pw r Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pw r Into Ideal Dipole (dBm)
2nd harmonic	-13	-39.1	-39.4
3rd harmonic	-13	*	*
4th harmonic	-13	*	*
5th harmonic	-13	*	*
6th harmonic	-13	*	*
7th harmonic	-13	*	*
8th harmonic	-13	*	*
9th harmonic	-13	*	*
10th harmonic	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*



Notes:

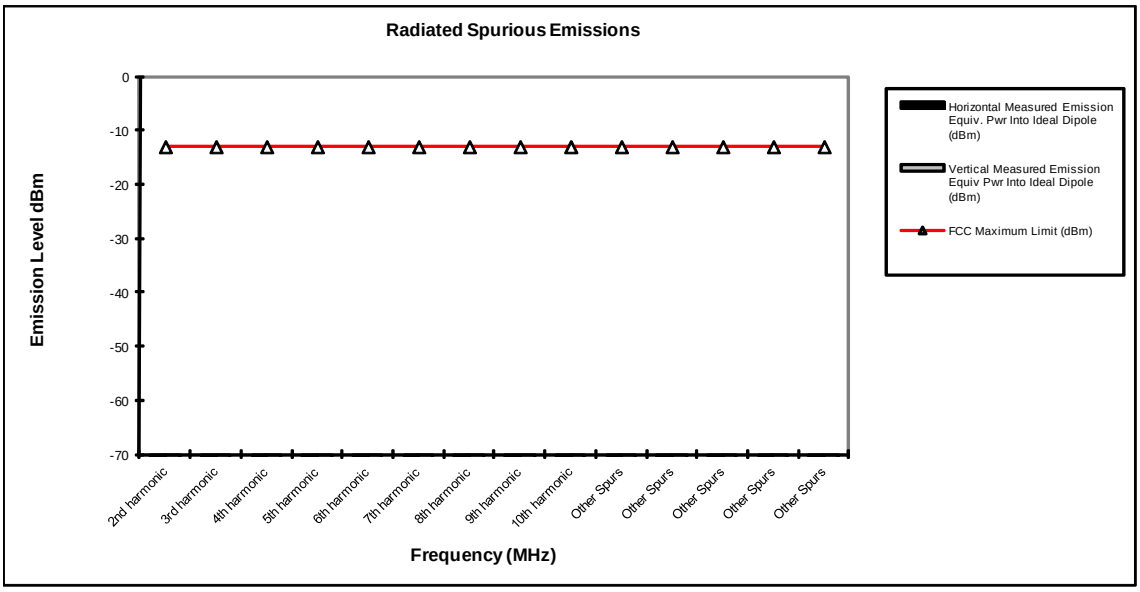
1. * Indicates the spurious emission could not be detected due to noise limitations or ambients or the emissions are lower than -33 dBm.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated from 30 MHz to the tenth harmonic of the fundamental.

The margin with respect to the limit is the minimum margin for all modes and bands.

Measurement Results –WCDMA 1700, GSM1900 & EDGE 1900

Radiated Spurious and Harmonic Emissions

Frequency (MHz)	FCC Maximum Limit (dBm)	Horizontal Measured Emission Equiv. Pw r Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pw r Into Ideal Dipole (dBm)
2nd harmonic	-13	*	*
3rd harmonic	-13	*	*
4th harmonic	-13	*	*
5th harmonic	-13	*	*
6th harmonic	-13	*	*
7th harmonic	-13	*	*
8th harmonic	-13	*	*
9th harmonic	-13	*	*
10th harmonic	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*
Other Spurs	-13	*	*



Notes:
1. * Indicates the spurious emission could not be detected due to noise limitations or ambients or the emissions are lower than -33 dBm.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated from 30 MHz to the tenth harmonic of the fundamental.

The margin with respect to the limit is the minimum margin for all modes and bands.

FREQUENCY STABILITY

Measurement Procedure

The EUT is placed in an environmental chamber. The antenna port of the EUT is directly coupled to the input of the measurement equipment through a specialized RF connector. A power supply is attached as the primary voltage supply.

Frequency measurements are made at the extremes of the temperature range -30º C to +60º C and at intervals of 10º C with the primary supply voltage set to the nominal battery operating voltage. A period of time sufficient to stabilize all components of the equipment is allowed at each frequency measurement. The maximum variation of frequency is measured.

At room temperature, the primary supply voltage is reduced to the battery operating endpoint of the equipment under test. The maximum variation of frequency is measured. A battery eliminator was used for the input supply voltage.

Measurement Results

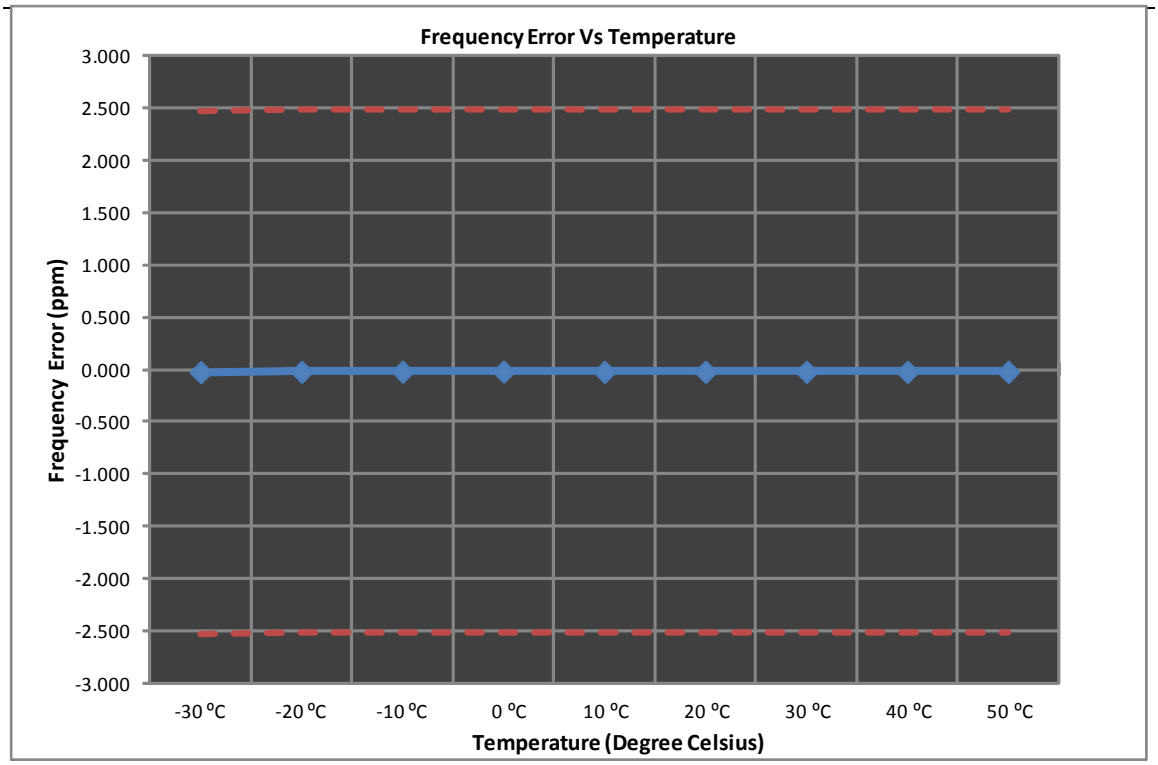
Attached

Measurement Results
Modulation: GSM 850

Frequency Stability

Mode:	GSM 850	Operating Frequency:	824.2 MHz
Channel:	128	Deviation Limit (PPM):	± 2.5 ppm

Temperature	Frequency Error	Frequency Error	Voltage	Voltage
^{0}C	Hz	(ppm)	(%)	(VDC)
-30 ^{0}C	**-19.09**	-0.023	100%	3.80
-20 ^{0}C	**-15.61**	-0.019	100%	3.80
-10 ^{0}C	**-15.28**	-0.019	100%	3.80
0 ^{0}C	**-15.01**	-0.018	100%	3.80
10 ^{0}C	**-16.88**	-0.020	100%	3.80
20 ^{0}C	**-16.26**	-0.020	100%	3.80
30 ^{0}C	**-16.06**	-0.019	100%	3.80
40 ^{0}C	**-15.79**	-0.019	100%	3.80
50 ^{0}C	**-17.04**	-0.021	100%	3.80
20 ^{0}C	**-18.47**	-0.022	Battery Endpoint	3.42

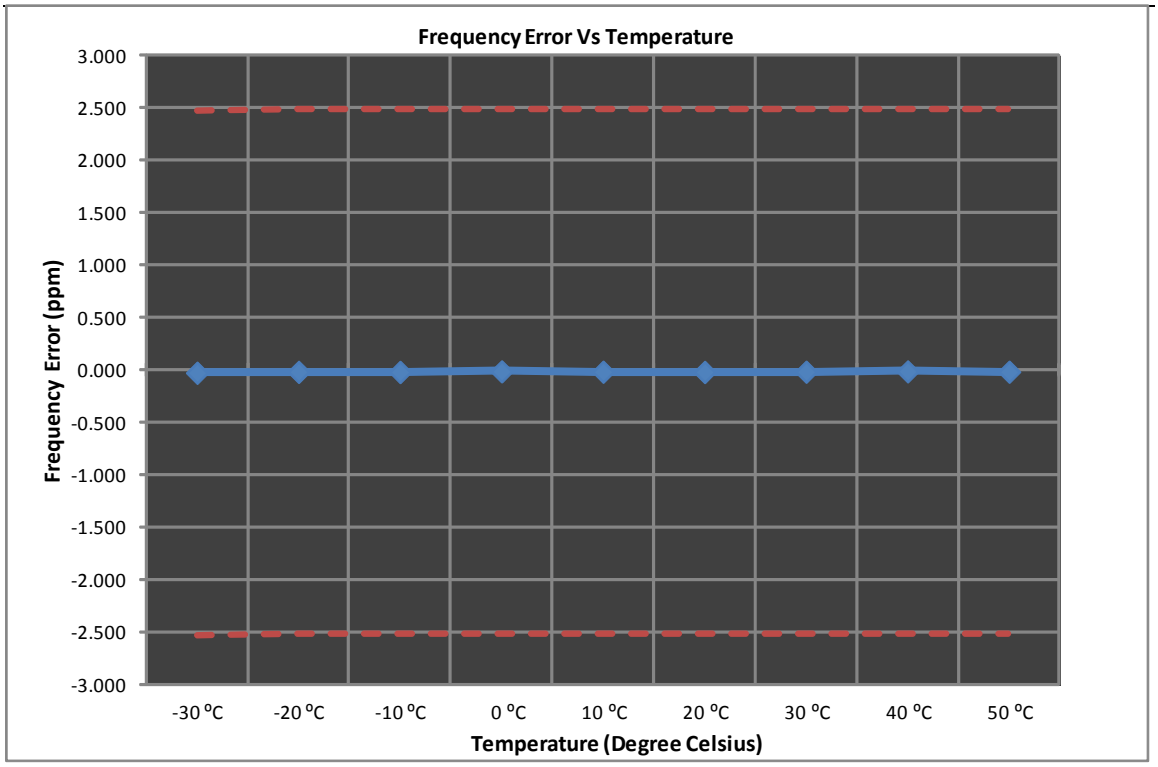


Measurement Results
Modulation: EDGE 850

Frequency Stability

Mode:	Edge 850	Operating Frequency:	824.2 MHz
Channel:	128	Deviation Limit (PPM):	± 2.5 ppm

Temperature	Frequency Error	Frequency Error	Voltage	Voltage
^{0}C	Hz	(ppm)	(%)	(VDC)
-30 ^{0}C	**-21.25**	-0.026	100%	3.80
-20 ^{0}C	**-13.54**	-0.016	100%	3.80
-10 ^{0}C	**-14.94**	-0.018	100%	3.80
0 ^{0}C	**-9.83**	-0.012	100%	3.80
10 ^{0}C	**-13.00**	-0.016	100%	3.80
20 ^{0}C	**-14.95**	-0.018	100%	3.80
30 ^{0}C	**-12.94**	-0.016	100%	3.80
40 ^{0}C	**-9.98**	-0.012	100%	3.80
50 ^{0}C	**-12.90**	-0.016	100%	3.80
20 ^{0}C	**-13.81**	-0.017	Battery Endpoint	3.42

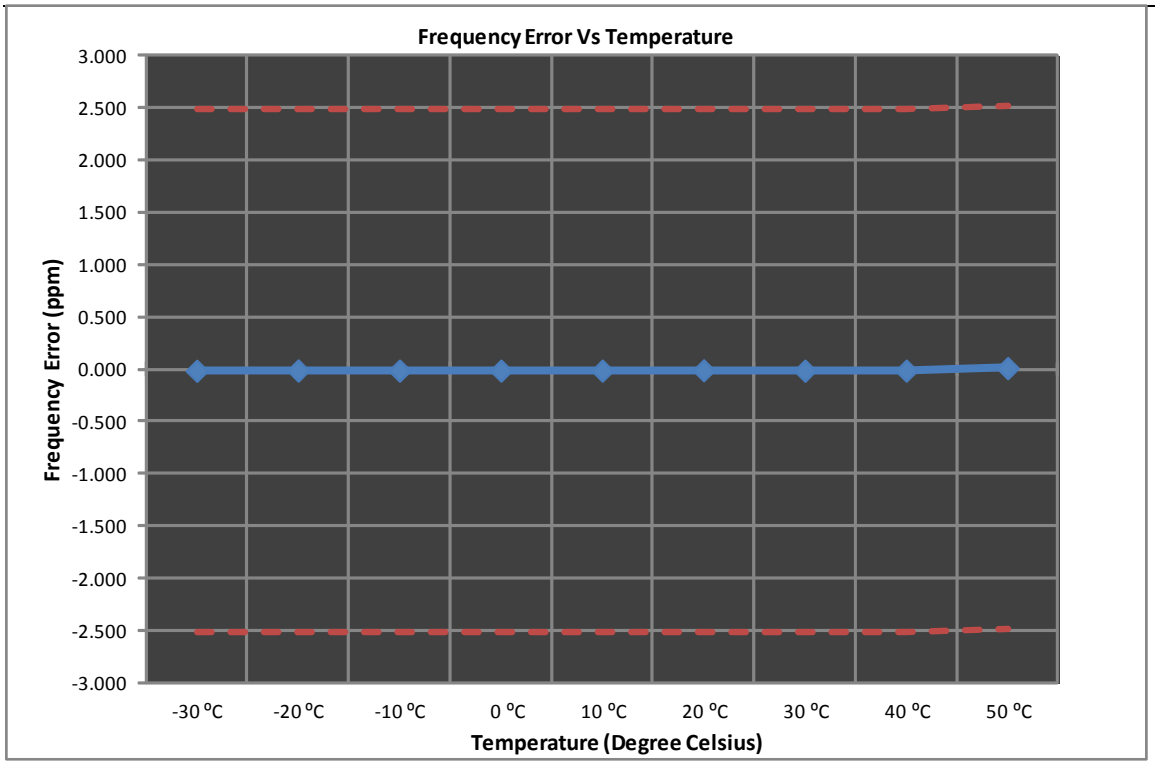


Measurement Results
Modulation: GSM 1900

Frequency Stability

Mode:	GSM 1900	Operating Frequency:	1850.2 MHz
Channel:	512	Deviation Limit (PPM):	± 2.5 ppm

Temperature	Frequency Error	Frequency Error	Voltage	Voltage
^{0}C	Hz	(ppm)	(%)	(VDC)
-30 ^{0}C	**-26.26**	-0.014	100%	3.80
-20 ^{0}C	**-20.52**	-0.011	100%	3.80
-10 ^{0}C	**-22.32**	-0.012	100%	3.80
0 ^{0}C	**-23.32**	-0.013	100%	3.80
10 ^{0}C	**-22.95**	-0.012	100%	3.80
20 ^{0}C	**-18.31**	-0.010	100%	3.80
30 ^{0}C	**-24.30**	-0.013	100%	3.80
40 ^{0}C	**-23.28**	-0.013	100%	3.80
50 ^{0}C	**21.52**	0.012	100%	3.80
20 ^{0}C	**22.67**	0.012	Battery Endpoint	3.42

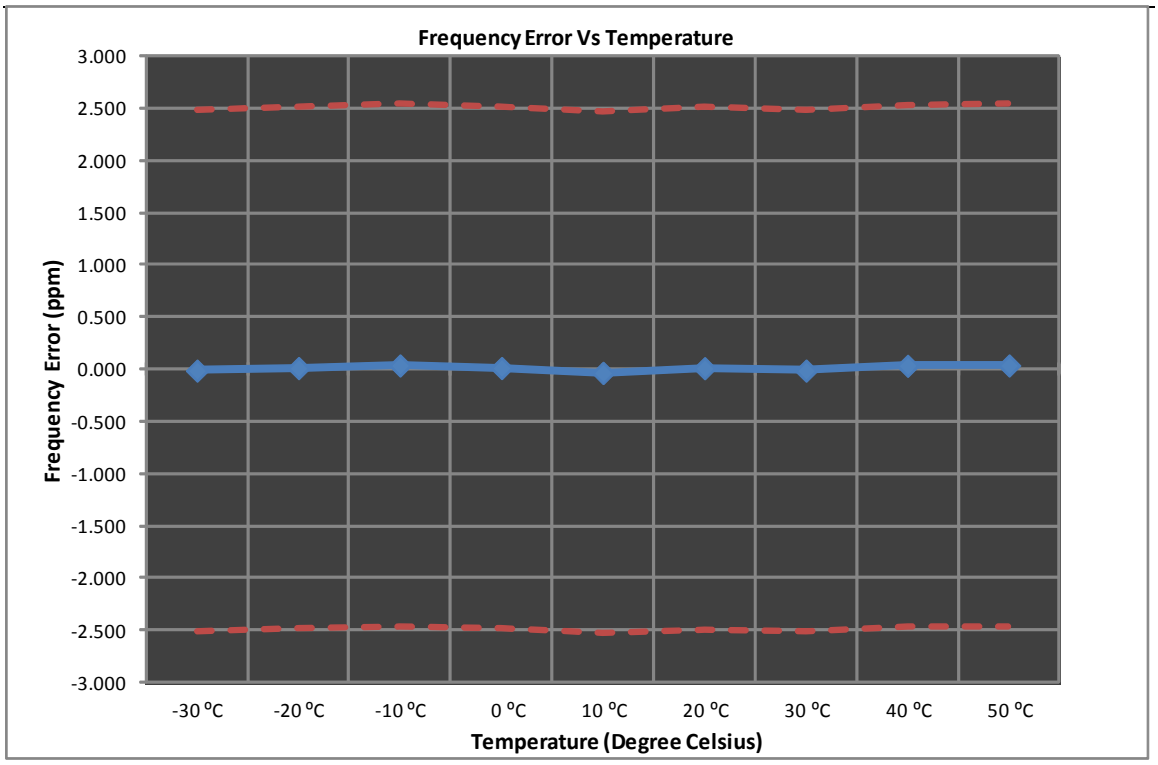


Measurement Results
Modulation: EDGE 1900

Frequency Stability

Mode:	Edge 1900	Operating Frequency:	1850.2 MHz
Channel:	512	Deviation Limit (PPM):	± 2.5 ppm

Temperature	Frequency Error	Frequency Error	Voltage	Voltage
^{0}C	Hz	(ppm)	(%)	(VDC)
-30 ^{0}C	**-22.58**	-0.012	100%	3.80
-20 ^{0}C	**22.49**	0.012	100%	3.80
-10 ^{0}C	**69.02**	0.037	100%	3.80
0 ^{0}C	**24.08**	0.013	100%	3.80
10 ^{0}C	**-62.59**	-0.034	100%	3.80
20 ^{0}C	**19.94**	0.011	100%	3.80
30 ^{0}C	**-23.20**	-0.013	100%	3.80
40 ^{0}C	**63.19**	0.034	100%	3.80
50 ^{0}C	**68.78**	0.037	100%	3.80
20 ^{0}C	**19.13**	0.010	Battery Endpoint	3.42

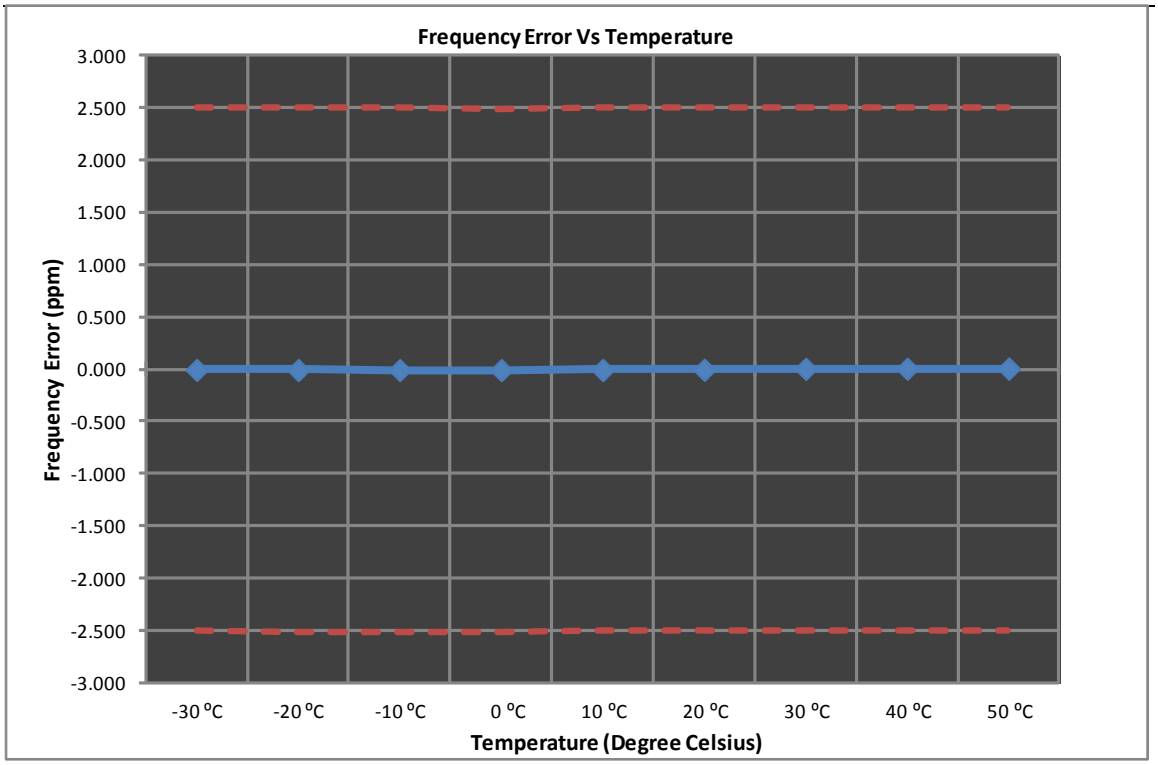


Measurement Results
Modulation: WCDMA 850

Frequency Stability

Mode:	WCDMA 800	Operating Frequency:	826.4 MHz
Channel:	4132	Deviation Limit (PPM):	± 2.5 ppm

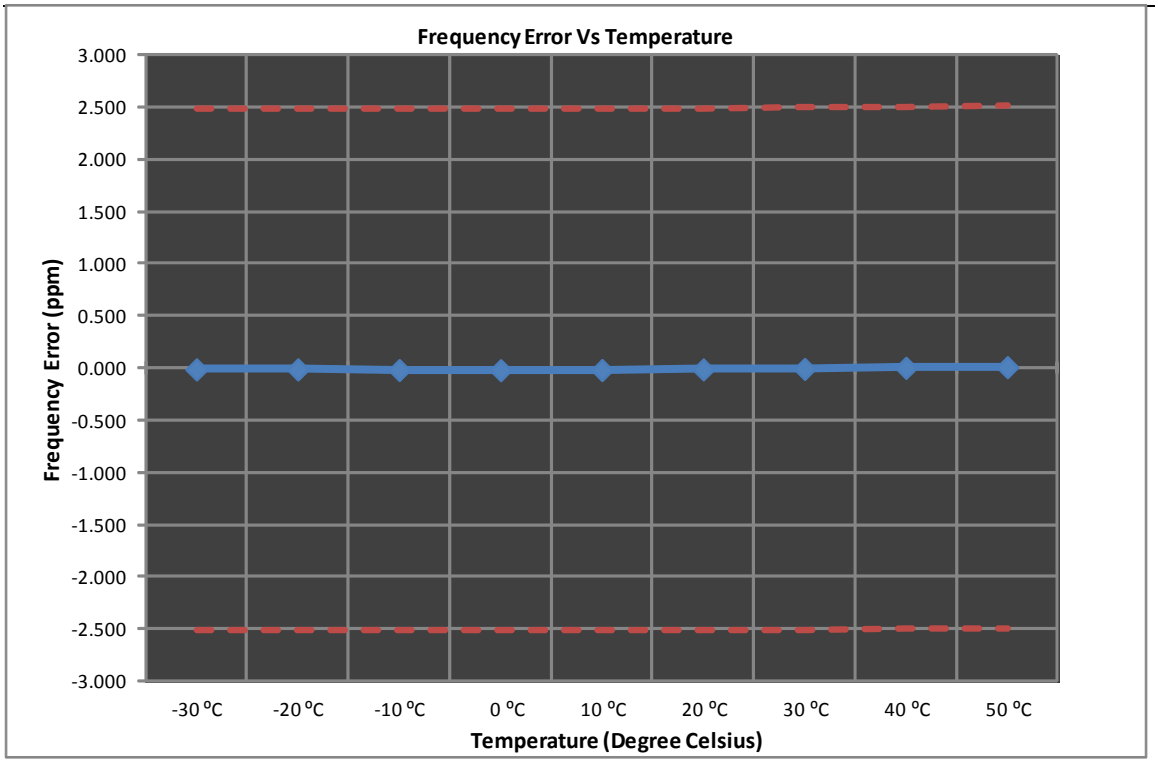
Temperature	Frequency Error	Frequency Error	Voltage	Voltage
^{0}C	Hz	(ppm)	(%)	(VDC)
-30 ^{0}C	**-5.16**	-0.006	100%	3.80
-20 ^{0}C	**-5.50**	-0.007	100%	3.80
-10 ^{0}C	**-5.87**	-0.007	100%	3.80
0 ^{0}C	**-6.59**	-0.008	100%	3.80
10 ^{0}C	**-5.35**	-0.006	100%	3.80
20 ^{0}C	**-4.08**	-0.005	100%	3.80
30 ^{0}C	**3.81**	0.005	100%	3.80
40 ^{0}C	**4.60**	0.006	100%	3.80
50 ^{0}C	**5.54**	0.007	100%	3.80
20 ^{0}C	**-4.11**	-0.005	Battery Endpoint	3.42



Measurement Results
Modulation: WCDMA 1700

Mode: WCDMA 1700 Operating Frequency: 1712.4 MHz
Channel: 1312 Deviation Limit (PPM): ± 2.5 ppm

Temperature	Frequency Error	Frequency Error	Voltage	Voltage
^{0}C	Hz	(ppm)	(%)	(VDC)
-30 ^{0}C	**-20.96**	-0.012	100%	3.80
-20 ^{0}C	**-20.99**	-0.012	100%	3.80
-10 ^{0}C	**-31.28**	-0.018	100%	3.80
0 ^{0}C	**-32.82**	-0.019	100%	3.80
10 ^{0}C	**-31.10**	-0.018	100%	3.80
20 ^{0}C	**-21.27**	-0.012	100%	3.80
30 ^{0}C	**-11.77**	-0.007	100%	3.80
40 ^{0}C	**5.54**	0.003	100%	3.80
50 ^{0}C	**16.37**	0.010	100%	3.80
20 ^{0}C	**-41.17**	-0.024	Battery Endpoint	3.42

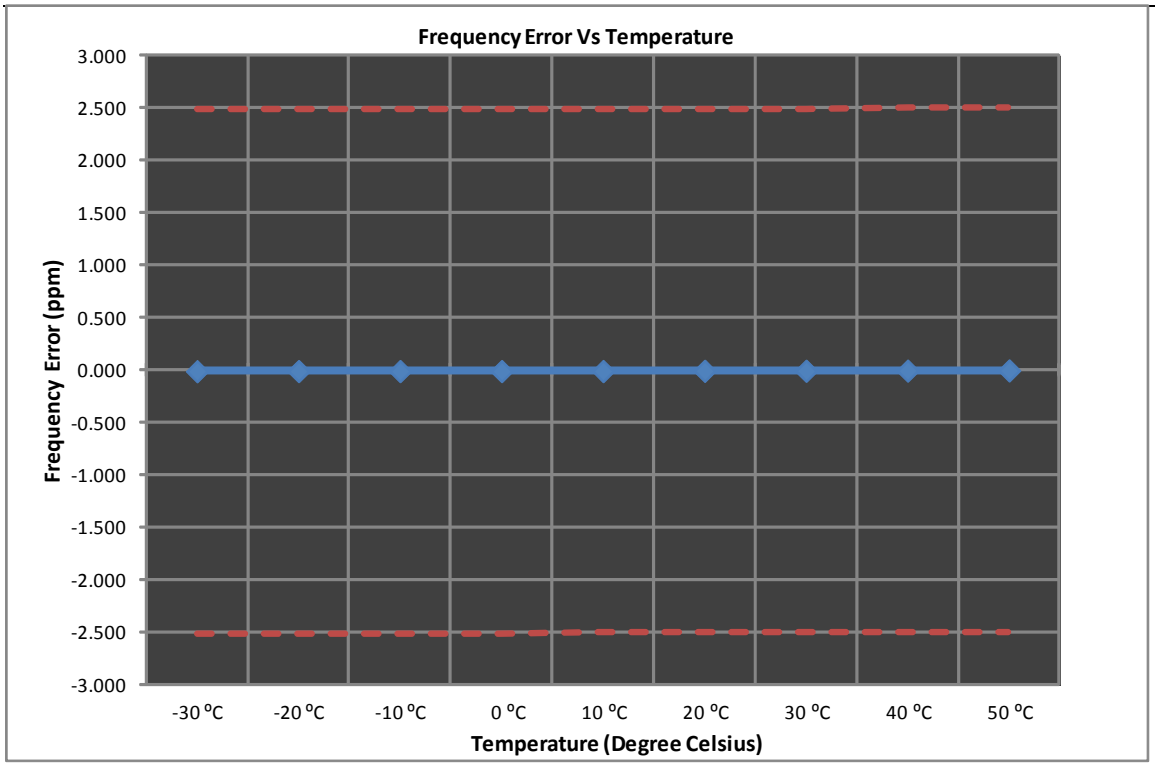


Measurement Results
Modulation: WCDMA 1900

Frequency Stability

Mode:	WCDMA 1900	Operating Frequency:	1852.4 MHz
Channel:	9262	Deviation Limit (PPM):	± 2.5 ppm

Temperature	Frequency Error	Frequency Error	Voltage	Voltage
^{0}C	Hz	(ppm)	(%)	(VDC)
-30 ^{0}C	**-19.71**	-0.011	100%	3.80
-20 ^{0}C	**-17.36**	-0.009	100%	3.80
-10 ^{0}C	**-18.09**	-0.010	100%	3.80
0 ^{0}C	**-18.75**	-0.010	100%	3.80
10 ^{0}C	**-16.21**	-0.009	100%	3.80
20 ^{0}C	**-13.69**	-0.007	100%	3.80
30 ^{0}C	**-12.70**	-0.007	100%	3.80
40 ^{0}C	**-9.16**	-0.005	100%	3.80
50 ^{0}C	**-6.75**	-0.004	100%	3.80
20 ^{0}C	**-15.62**	-0.008	Battery Endpoint	3.42



End of Test Report