MOBILE DEVICES BUSINESS

PRODUCT SAFETY AND COMPLIANCE
EMC LABORATORY

EMC TEST REPORT

Test Report Number – 25257-1

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: February 1, 2013

2404

Table of Contents

Test Report Details

All Tests, except Radiated Power, 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

Radiated Power Testing Performed By:

PCTEST Engineering Laboratory, Inc.
6660-B Dobbin Road,
Columbia, MD 21045 USA
PH (410) 290-6652
FCC Registration Number: 90864
Industry Canada Number: 2451A-1

Tests Requested By:	Motorola Mobility LLC 600 North US Hwy 45 Libertyville, IL 60048
Product Type:	Cellular Phone
Signaling Capability:	WCDMA 850/1900, GSM 850/1900, EDGE 850/1900, HSDPA, HSUPA, GPRS, Bluetooth LE + EDR, 802.11b/g/n
FCC ID:	IHDP56NE1
Serial Numbers:	353207050002355, 353207050002330
Testing Complete Date:	January 31, 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

Applicable Standards: ANSI 63.4 2003, ANSI/TIA-603-C-2004,
RSS-Gen Issue 3, RSS-132 Issue 2, RSS-133 Issue 5

Summary of Testing

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

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

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

General and Special Conditions

When applicable, EMC testing was performed with a fully charged Model SNN5892A 1735mAH Battery. 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.

Equipment and Cable Configurations

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

For all testing performed by ADR Testing Service

Manufacturer	Equipment Type	Model No.	Serial Number	Calibration Due Date
Rohde & Schwarz	Receiver	ESIB40	100226	5/15/2013
Hewlett Packard	EMC Analyzer	E7405	US40240219	7/30/2013
Agilent	MXA Signal Analyzer	N9020A	US46470586	1/20/2014
Agilent	Signal Generator	83712A	3429A00286	3/26/2013
ETS-Lindgren	Horn Antenna	3115	6222	7/26/2013
A. H. Systems	Horn Antenna	SAS 200/571	365	9/4/2013
ETS	Log-Periodic Antenna	3148	1189	3/8/2013
ETS	Biconical Antenna	3110B	3370	3/8/2013
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	GB41293258	7/15/2013
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.

For Radiated Power testing performed by PCTEST Engineering Laboratory, Inc.

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	RE1	Radiated Emissions Cable Set (UHF/EHF)	7/10/2012	Annual	7/10/2013	N/A
-	RE2	Radiated Emissions Cable Set (VHF/UHF)	2/13/2012	Annual	2/13/2013	N/A
Anritsu	MA2411B	Power Sensor	3/5/2012	Annual	3/5/2013	846215
Anritsu	ML2495A	Power Meter	10/11/2012	Annual	10/11/2013	1039008
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	7/22/2011	Biennial	7/22/2013	125518
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	11/7/2012	Biennial	11/7/2014	128338
Mini-Circuits	SSG-4000HP	USB Synthesized Signal Generator	N/A		N/A	11208010032
Rohde & Schwarz	CMU200	Base Station Simulator	5/22/2012	Annual	5/22/2013	109892
Rohde & Schwarz	ESU26	EMI Test Receiver	2/15/2012	Annual	2/15/2013	100342
Schwarzbeck	UHA 9105	Dipole Antenna (400 - 1GHz) Rx	11/14/2011	Biennial	11/14/2013	9105-2404
Schwarzbeck	UHA 9105	Dipole Antenna (400 - 1GHz) Tx	11/14/2011	Biennial	11/14/2013	9105-2403
Seekonk	NC-100	Torque Wrench (8" lb)	3/5/2012	Triennial	3/5/2015	N/A

Measurement Procedures and Data

RF POWER OUTPUT

Measurement Procedure

The RF output port of the Equipment Under Test, EUT, is directly coupled to the input of an Agilent power meter through a 20dB passive attenuator, adaptor (if needed), and specialized RF connector. The average power output is measured for all channels.

Measurement Results

GSM 850

Frequency (MHz)	Power (dBm)
824.2	32.86
836.6	32.89
848.8	32.82

GSM 1900

Frequency (MHz)	Power (dBm)
1850.2	29.76
1880.0	29.73
1909.8	29.75

EDGE 850

Frequency (MHz)	Power (dBm)
824.2	27.27
836.6	27.25
848.8	27.23

EDGE 1900

Frequency (MHz)	Power (dBm)
1850.2	26.54
1880.0	26.63
1909.8	26.42

Conducted Power was measured according to the "SAR Measurement Procedure for 3G Devices" released on October, 2007. .

Band	Frequency (MHz)	Conducted power (dBm) for WCDMA modes		Conducted Power (dBm) for WCDMA – HSDPA (Rel 5) Modes			
		RMC	AMR	Subtest 1	Subtest 2	Subtest 3	Subtest 4
WCDMA 850	826.4	23.50	23.50	23.52	20.26	19.91	19.88
	836.0	23.49	23.45	23.45	20.31	19.78	19.81
	846.6	23.39	23.47	23.48	20.36	20.05	19.62
WCDMA 1900	1852.4	22.33	22.37	22.33	19.26	19.97	18.44
	1880.0	22.21	22.13	22.19	19.10	18.80	18.38
	1907.6	22.23	22.23	22.26	18.86	18.60	18.32

Band	Channel	Conducted Power (dBm) for WCDMA – HSPA (HSUPA/HSDPA-Rel 6) Modes				
		Subtest 1	Subtest 2	Subtest 3	Subtest 4	Subtest 5
WCDMA 850	826.4	23.44	23.49	23.49	23.46	23.48
	836.0	23.45	23.43	23.41	23.43	23.44
	846.6	23.38	23.37	23.37	23.38	23.35
WCDMA 1900	1852.4	22.25	22.29	22.26	22.28	22.29
	1880.0	22.11	22.11	22.11	22.11	22.10
	1907.6	22.13	22.17	22.09	22.13	22.18

Based on the power measurements, all WCDMA testing was performed in RMC mode.

RADIATED POWER (EIRP AND ERP)

Measurement Procedure

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. For measurements above 1GHz absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections. For measurements below 1GHz, the absorbers are removed. An ETS Lindgren Model 2188 raised turntable is used for radiated measurement. It is a continuously rotatable, remote-controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. A 78cm high PVC support structure is placed on top of the turntable. A ¾" (~1.9cm) sheet of high density polyethylene is used as the table top and is placed on top of the PVC supports to bring the total height of the table to 80cm.

The equipment under test was transmitting while connected to its integral antenna and is placed on a wooden turntable 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height is adjusted between 1 and 4 meter height, the turntable is rotated through 360 degrees, and the EUT is manipulated through all orthogonal planes representative of its typical use to achieve the highest reading on the receive spectrum analyzer. Radiated power levels are also investigated with the receive antenna horizontally and vertically polarized. The maximized power level is recorded using the spectrum analyzer "Channel Power" function with the integration band set to the emissions' occupied bandwidth, a RMS detector, RBW = 100kHz, VBW = 300kHz, and a 1 second sweep time over a minimum of 10 sweeps, per the guidelines of KDB 971168.

Per the guidance of ANSI/TIA-603-C-2004, a half-wave dipole is then substituted in place of the EUT. For emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator with the level of the signal generator being adjusted to obtain the same receive spectrum analyzer level previously recorded from the spurious emission from the EUT. The power of the emission is calculated using the following formula:

$$P_{d\,[dBm]} = P_{g\,[dBm]} - \text{cable loss}_{\,[dB]} + \text{antenna gain}_{\,[dBd/dBi]}$$

Where, P_d is the dipole equivalent power, P_g is the generator output into the substitution antenna, and the antenna gain is the gain of the substitute antenna used relative to either a half-wave dipole (dBd) or an isotropic source (dBi). The substitute level is equal to $P_{g\,[dBm]}$ – cable loss $_{[dB]}$.

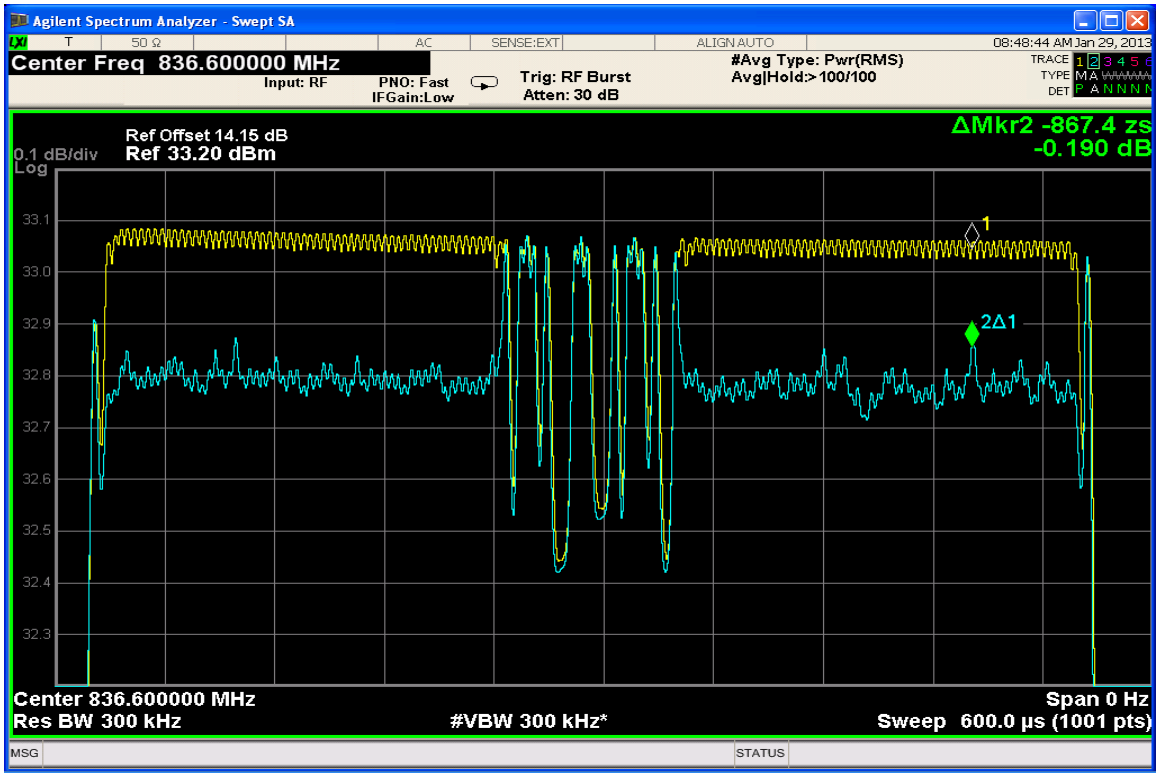
Measurement Results

Band	EIRP dBm	ERP dBm
GSM 850	32.49	**30.39**
GSM 1900	**29.62**	27.52
EDGE 850	28.74	**26.64**
EDGE 1900	**25.77**	23.67
WCDMA 850	24.24	**22.14**
WCDMA 1900	**22.65**	20.55

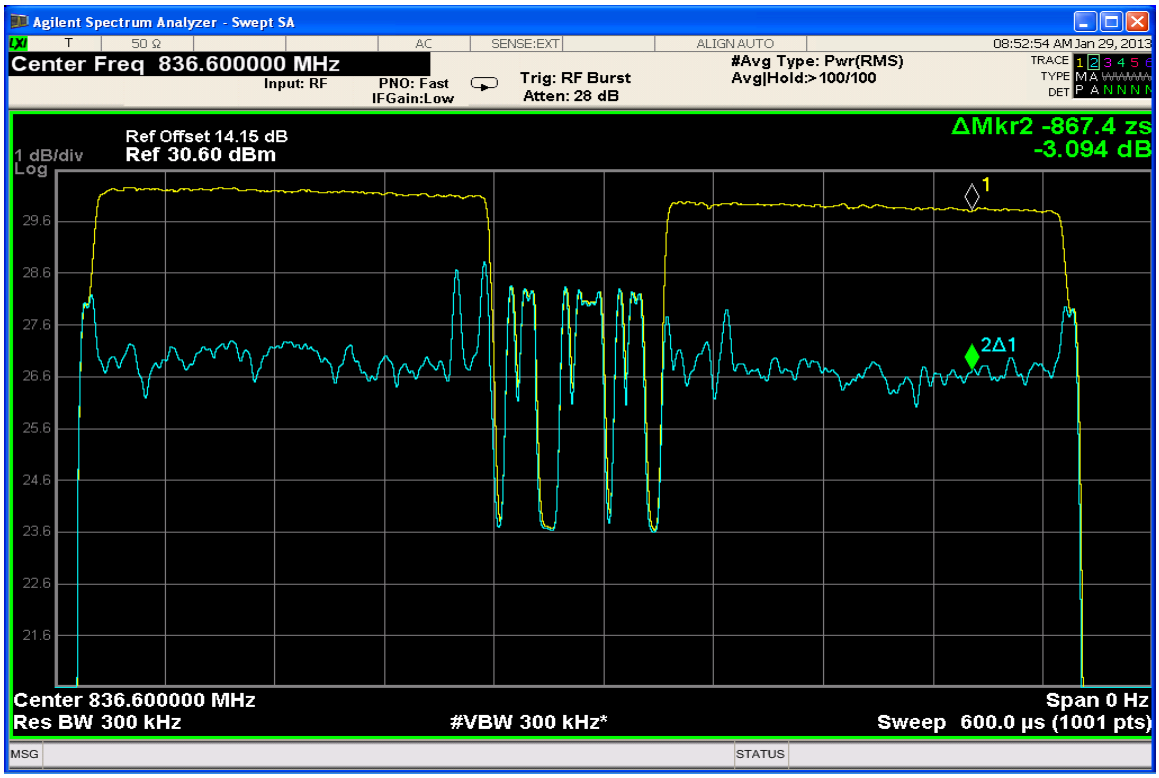
For GSM and EDGE modes, the PAR plots are shown below. The conducted port of the EUT is connected to the spectrum analyzer. Except for the detector used and the trace type, all spectrum analyzer settings are the same for both plot traces as follows:

Resolution Bandwidth 300 kHz
Video Bandwidth 300 kHz
Span 0 Hz
Sweep Time 600 µs
Trace 1 type is Max Hold and the detector is Peak.
Trace 2 type is average and the detector is Average.

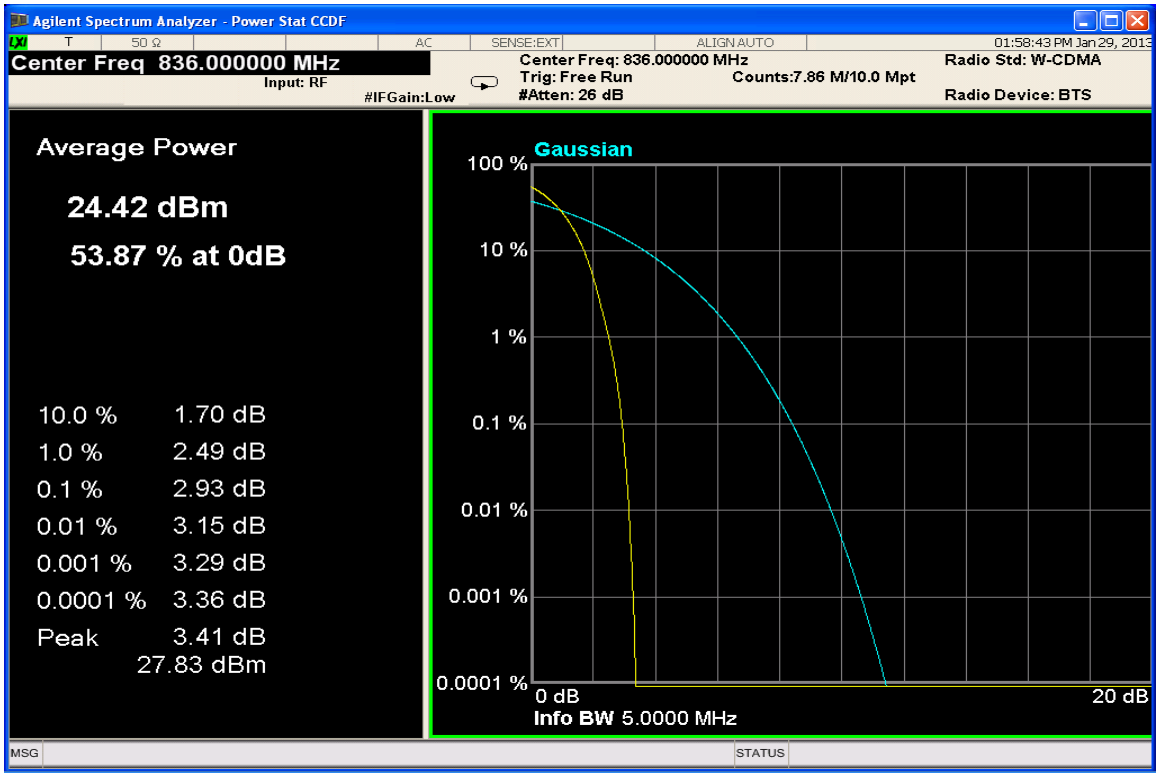
For WCDMA modes, the CCDF plots are also shown below. The conducted port of the EUT is connected to the spectrum analyzer. The spectrum analyzer's Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power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



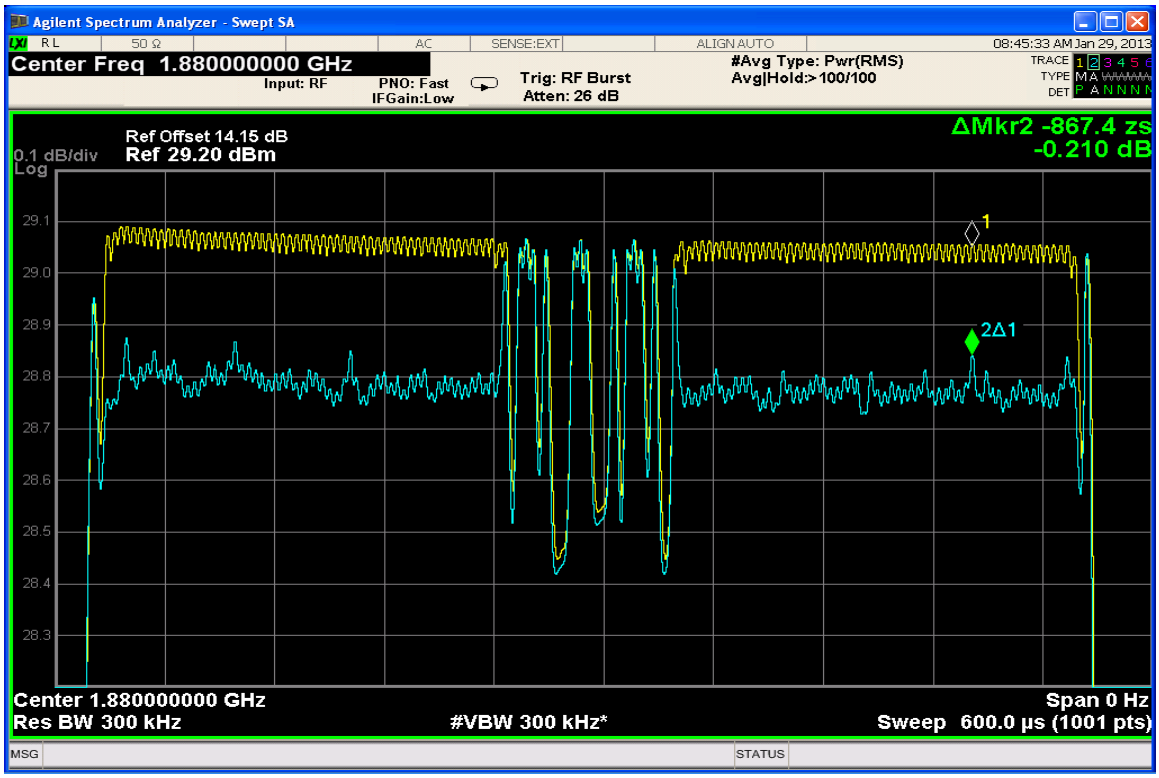
GSM 850 – PAR Plot



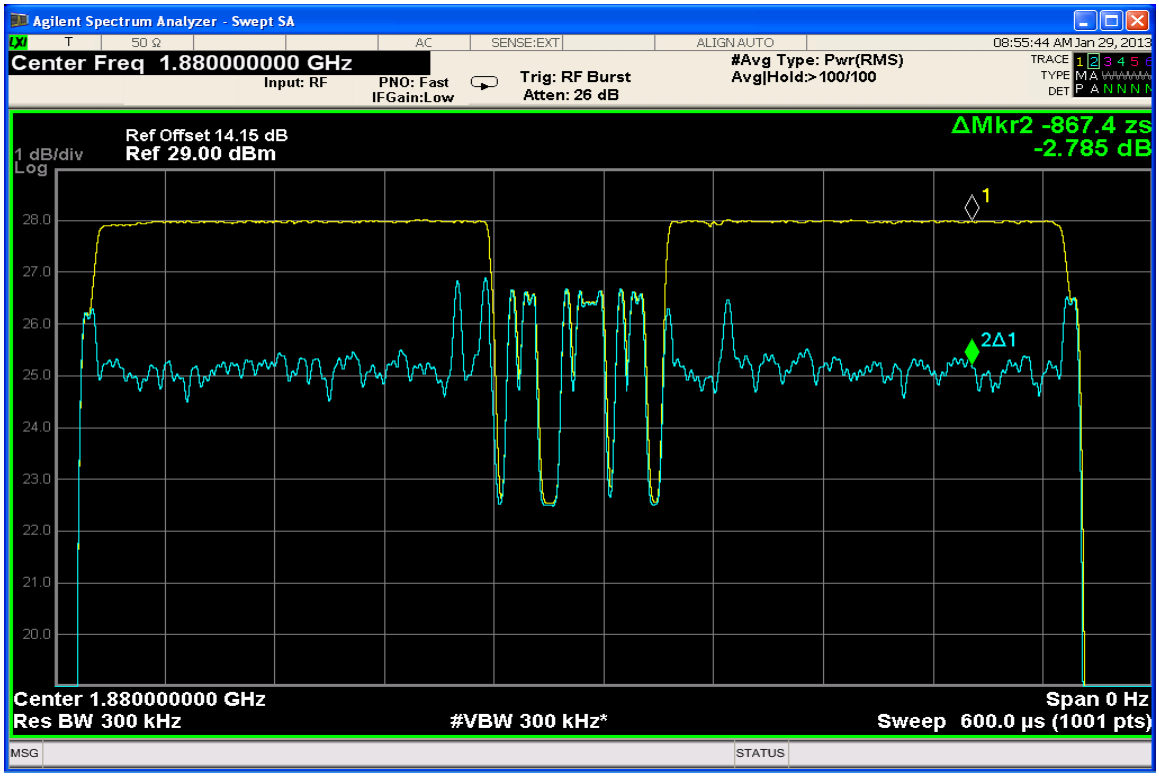
EDGE 850 – PAR Plot



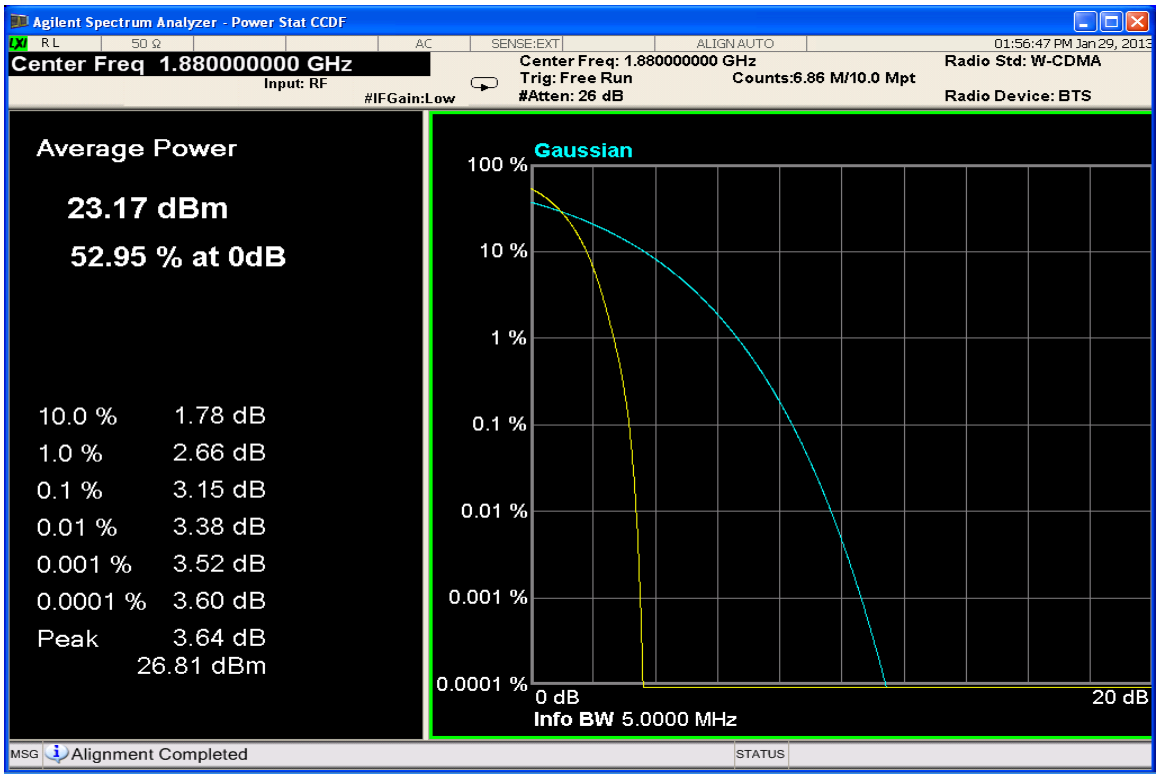
WCDMA 850 – CCDF Plot



GSM 1900 – PAR Plot



EDGE 1900 – PAR 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. The analyzer is set for Peak Detector and each trace is set for Max Hold. 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.

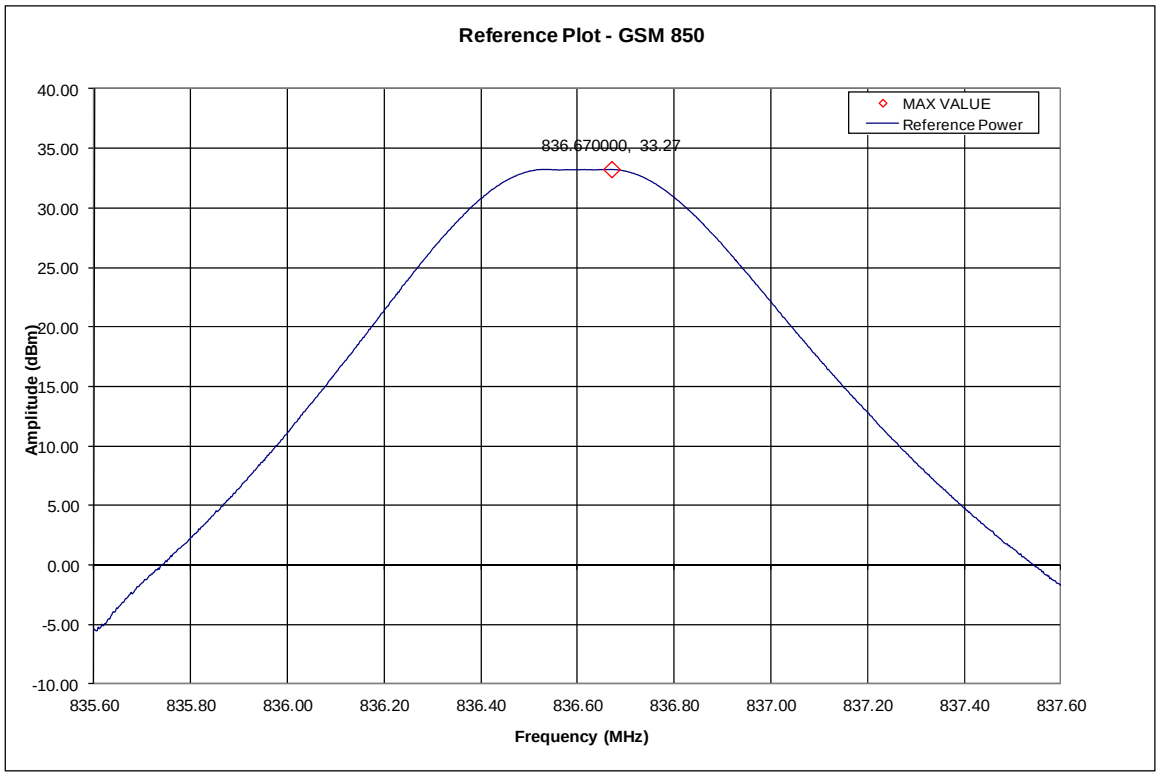
Measurement Results
Attached

	Equipment Settings					
Plot	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Sweep Points (#)	Trace Mode	Detector	Samples (≥ #)
Reference Plot - GSM 850	300	Auto	1001	Max Hold	Peak	30
OCBW - GSM 850	3	Auto	1001	Max Hold	Peak	30
Lower Band Edge - GSM 850	1	Auto	2004	Max Hold	Peak	30
Upper Band Edge - GSM 850	1	Auto	2004	Max Hold	Peak	30
Reference Plot - GSM 1900	300	Auto	1001	Max Hold	Peak	30
OCBW - GSM 1900	3	Auto	1001	Max Hold	Peak	30
Lower Band Edge - GSM 1900	1	Auto	2004	Max Hold	Peak	30
Upper Band Edge - GSM 1900	1	Auto	2004	Max Hold	Peak	30

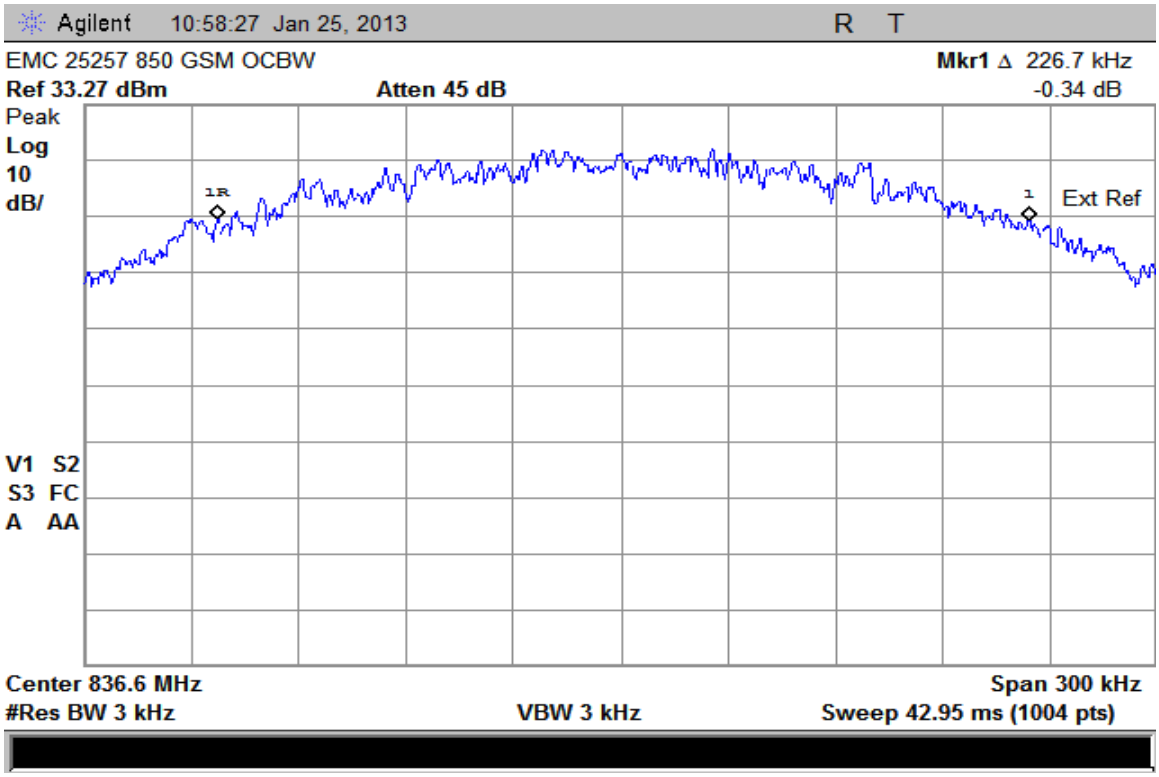
Notes: 1) When the video bandwidth is set to Auto the video bandwidth self adjusts for ³ the resolution bandwidth.

2) The plotted data shown for the band edge measurements is representative of data taken with a true 3 kHz resolution bandwidth filter. The raw data was taken using a 1 kHz resolution bandwidth and was integrated to produce a response representative of data taken using a true 3 kHz resolution bandwidth filter.

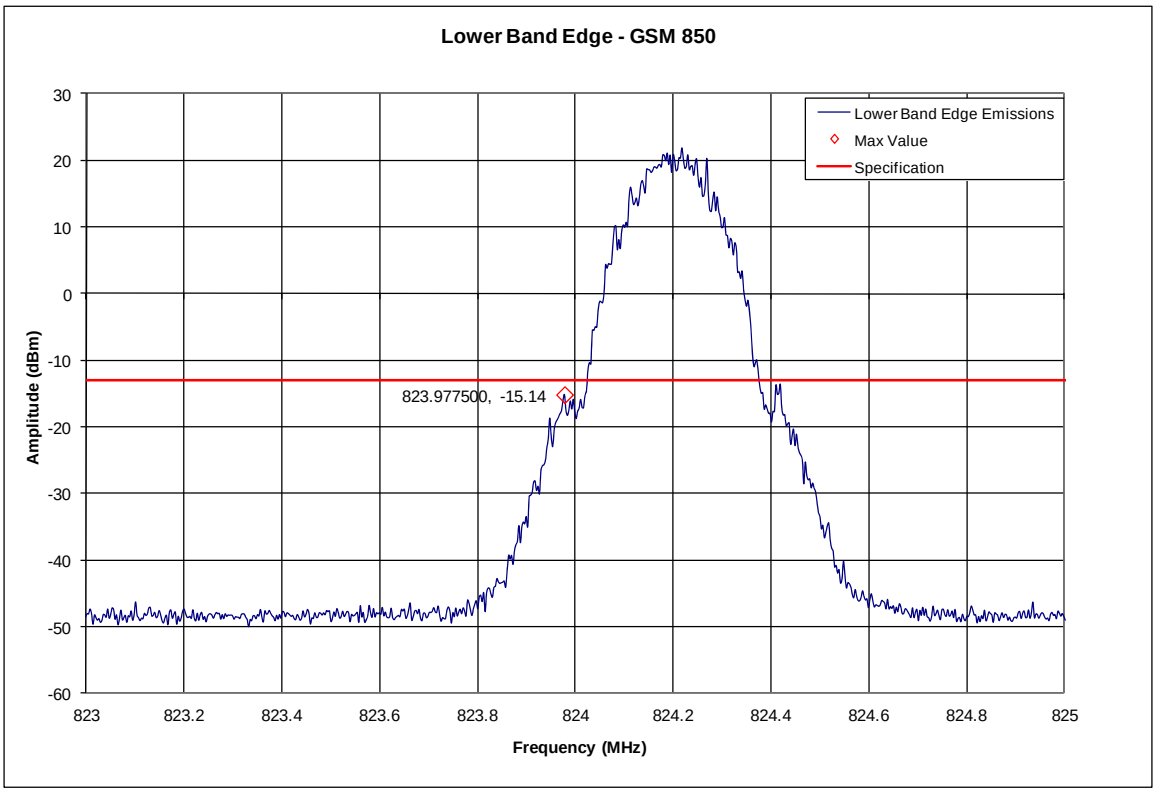
Measurement Results – GSM 850



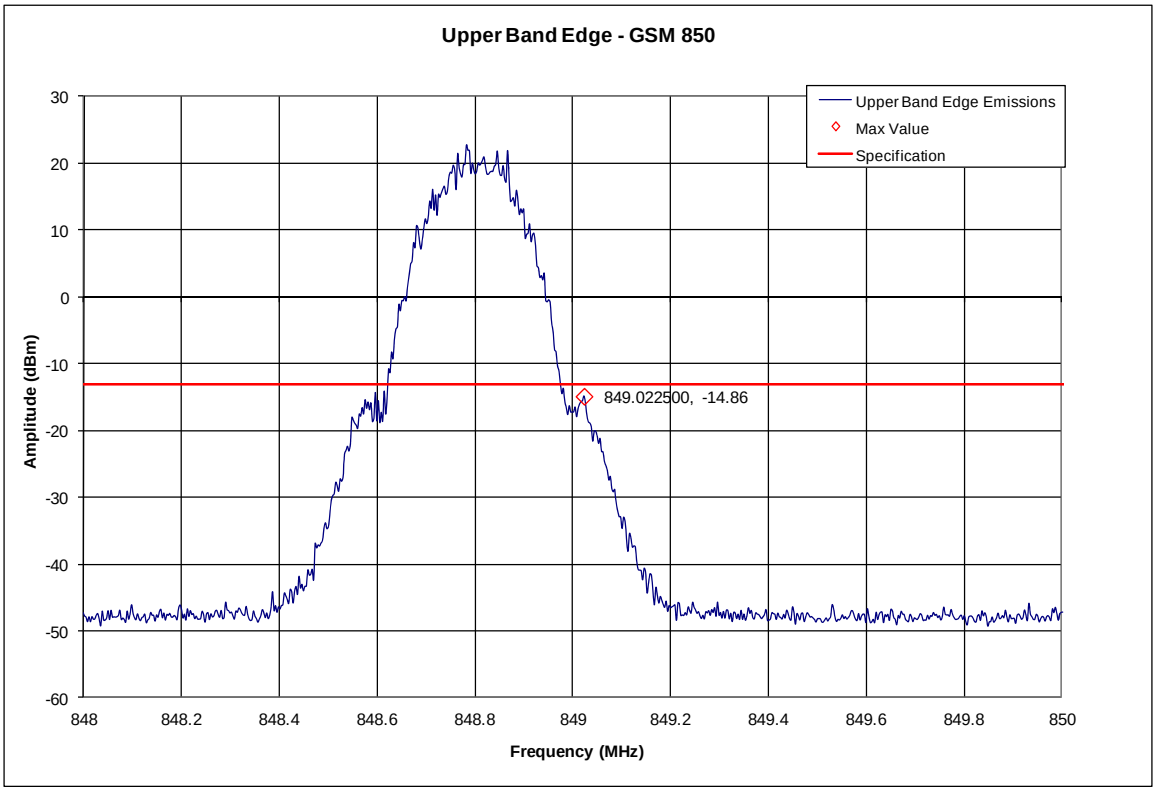
GSM 850 – Reference Level Plot – Channel 190 (836.60 MHz)



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

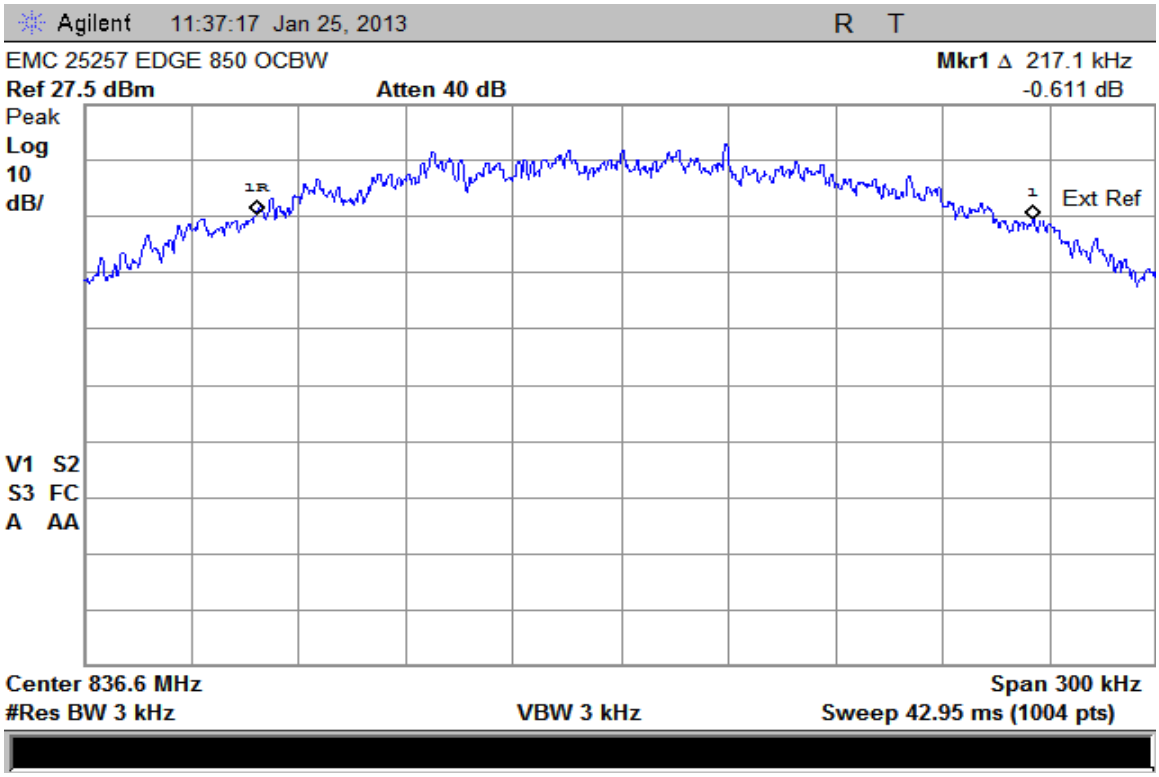


GSM 850 – Lower Band Edge – Channel 128 (824.2 MHz)

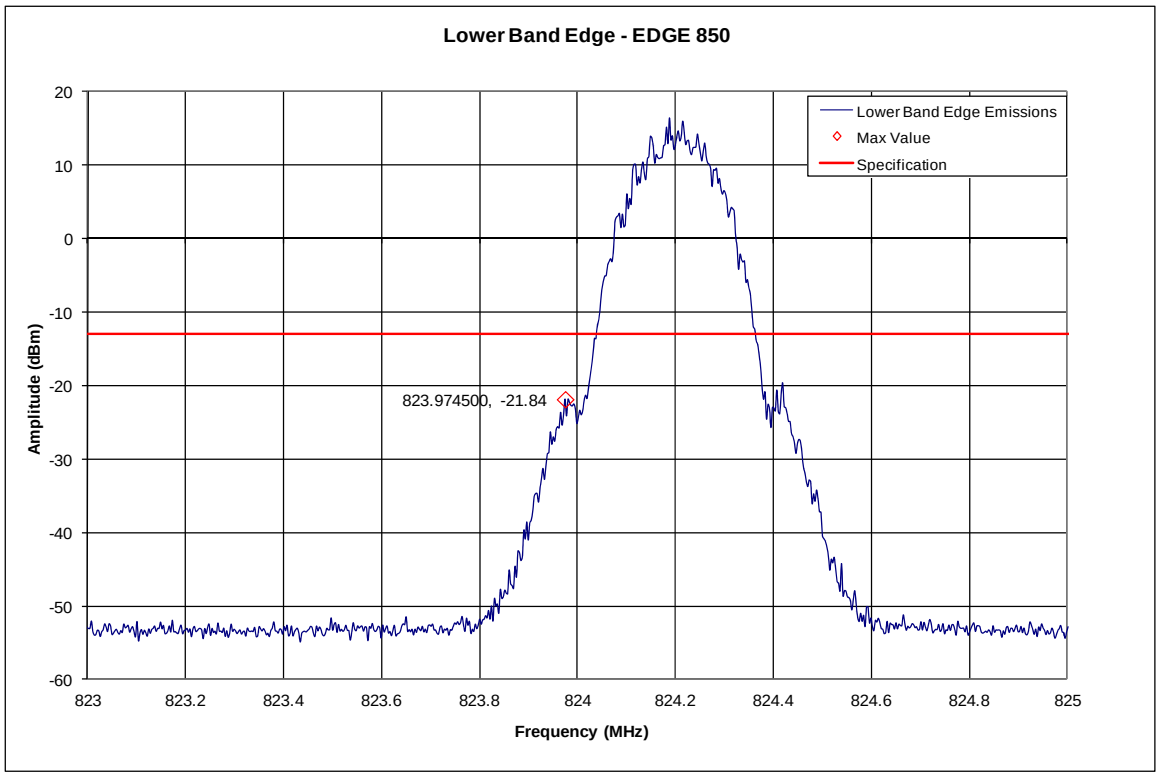


GSM 850 – Upper Band Edge – Channel 251 (848.8 MHz)

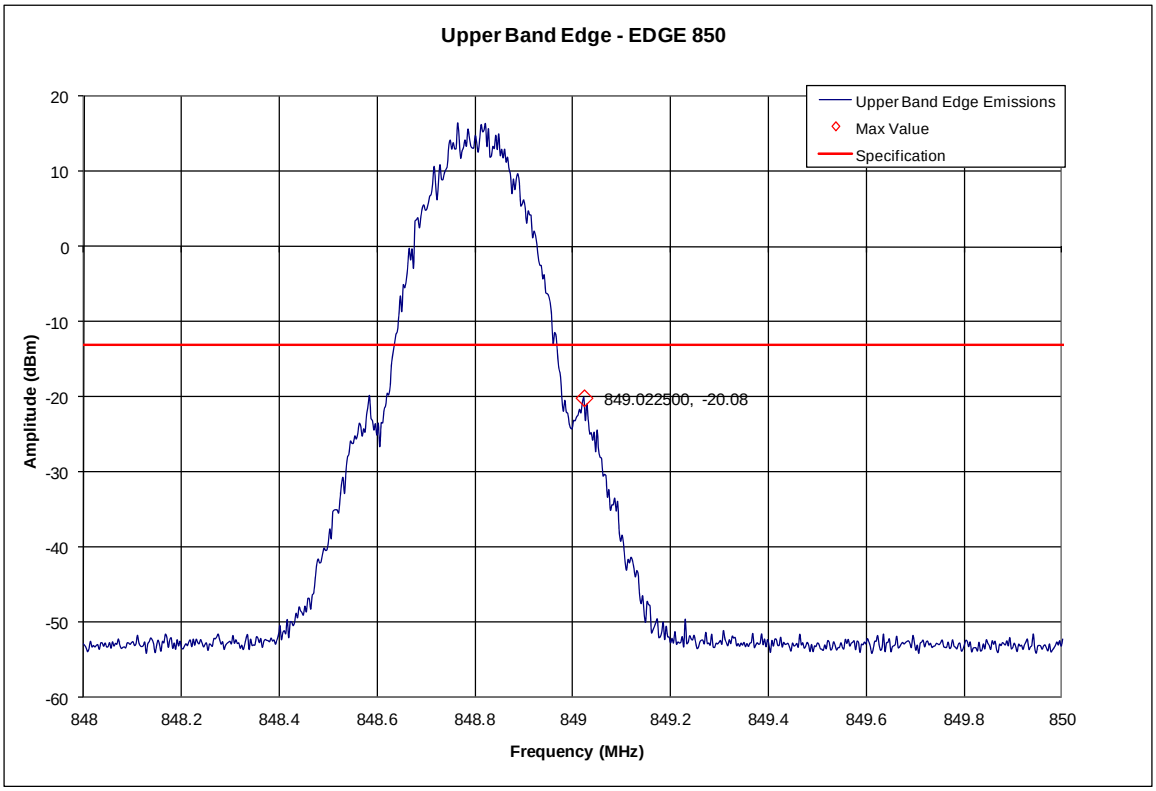
Measurement Results – EDGE 850



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

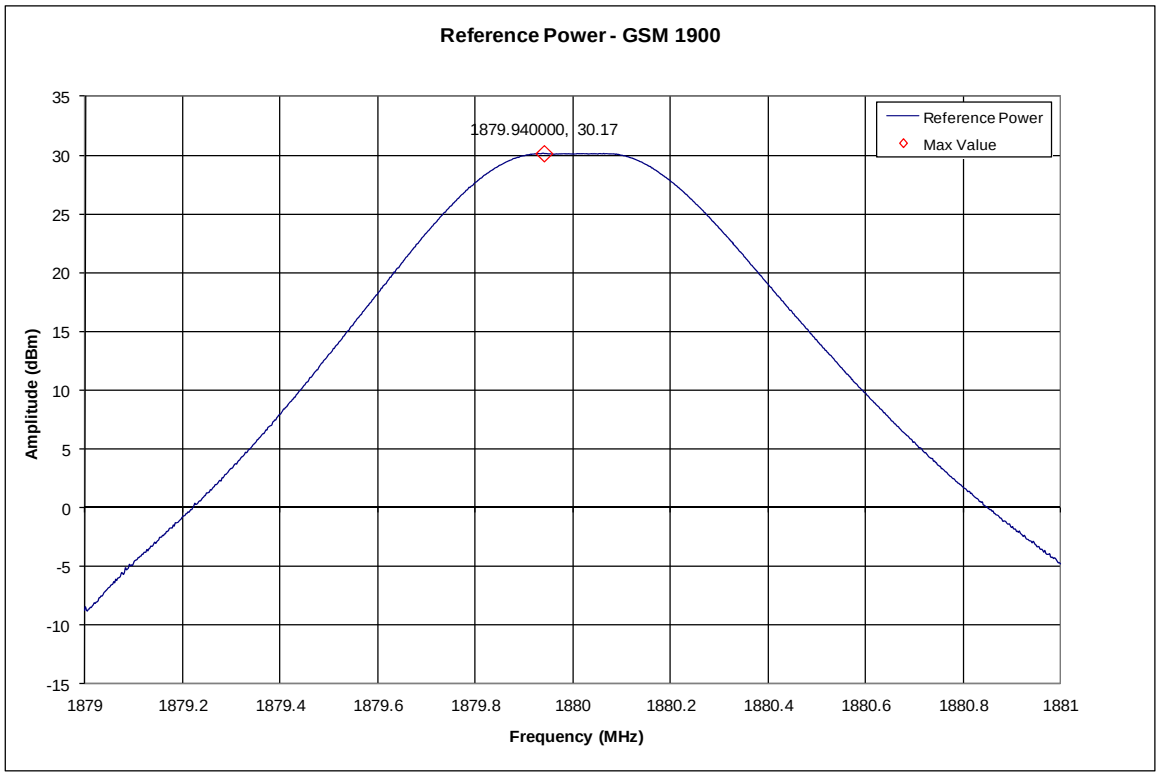


EDGE 850 – Lower Band Edge – Channel 128 (824.2 MHz)

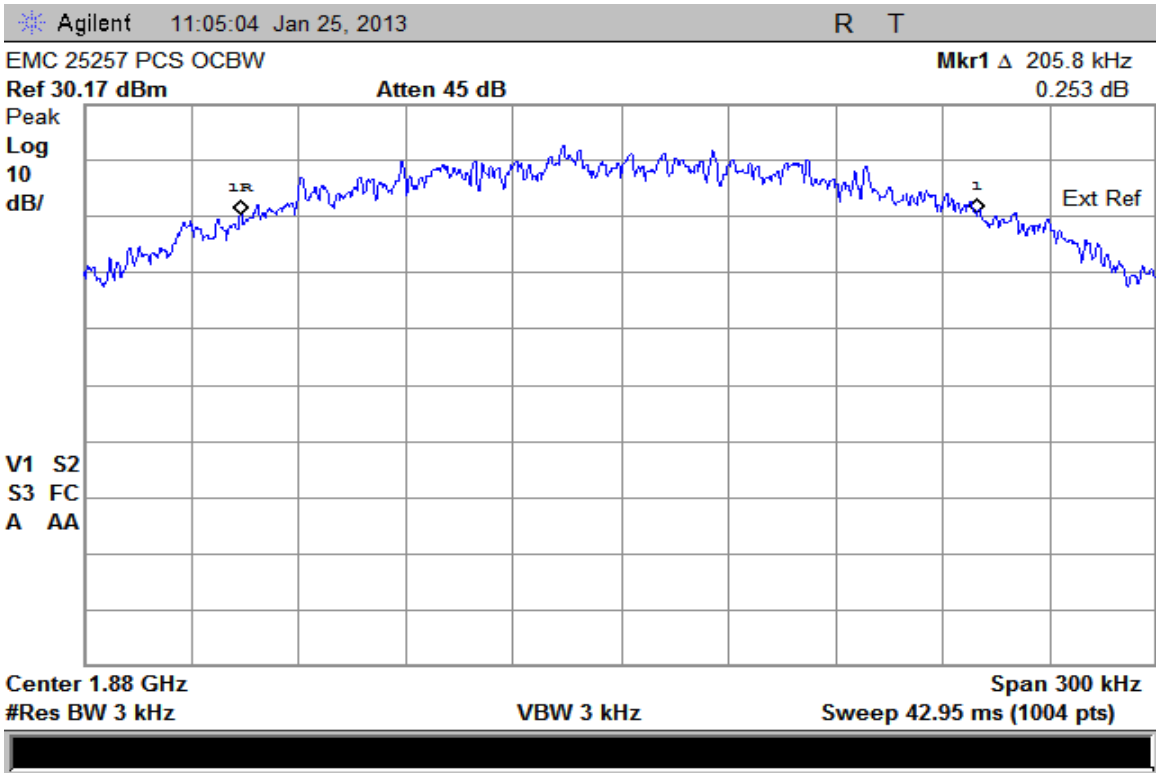


EDGE 850 – Upper Band Edge – Channel 251 (848.8 MHz)

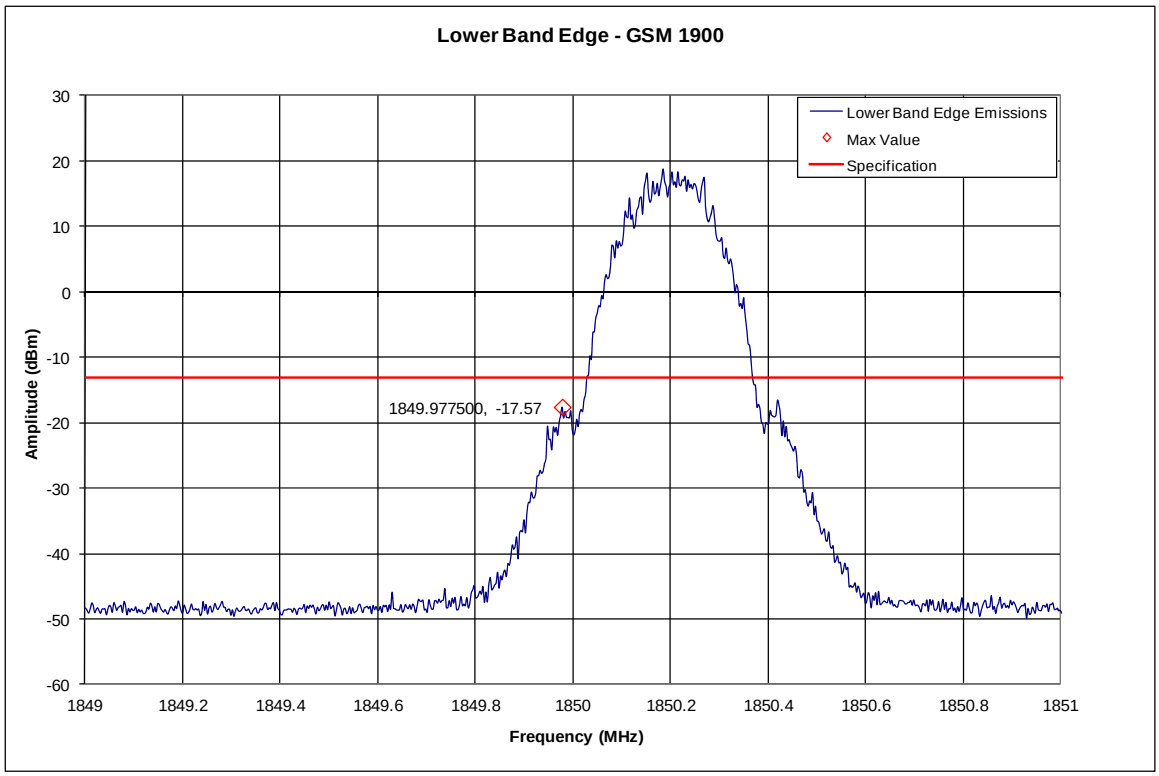
Measurement Results – GSM 1900



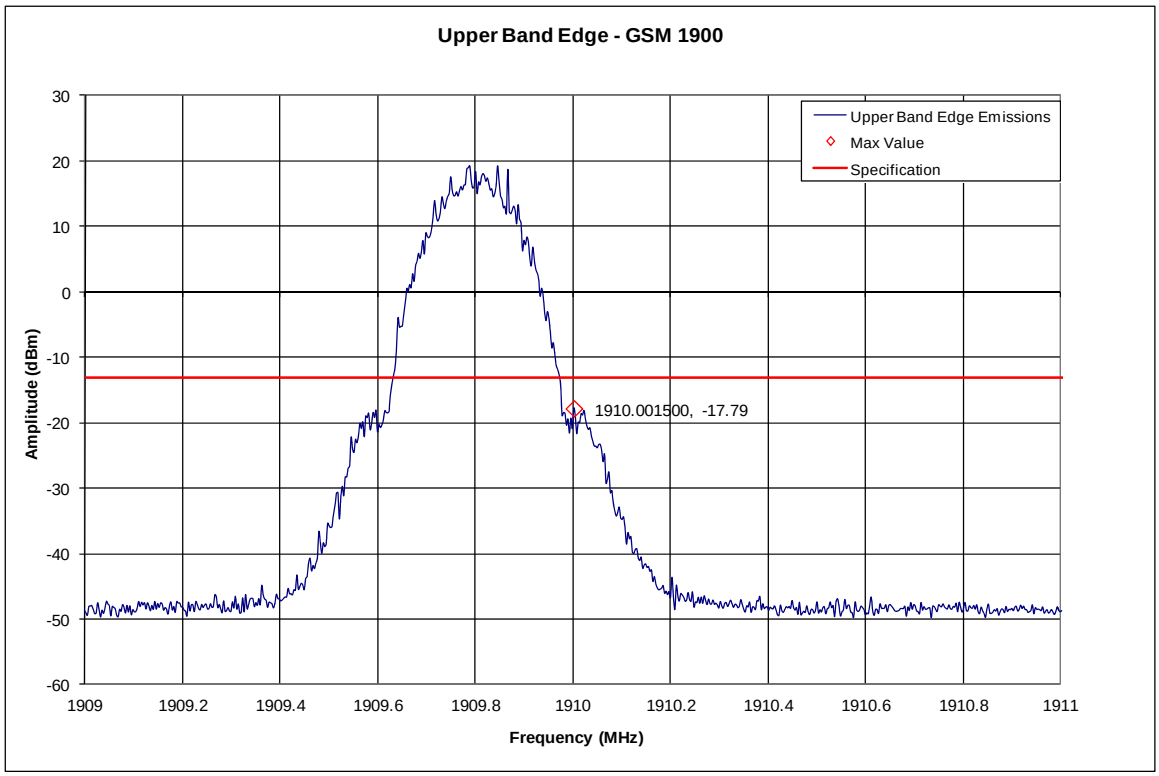
GSM 1900 – Reference Level Plot – Channel 661 (1880.00MHz)



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

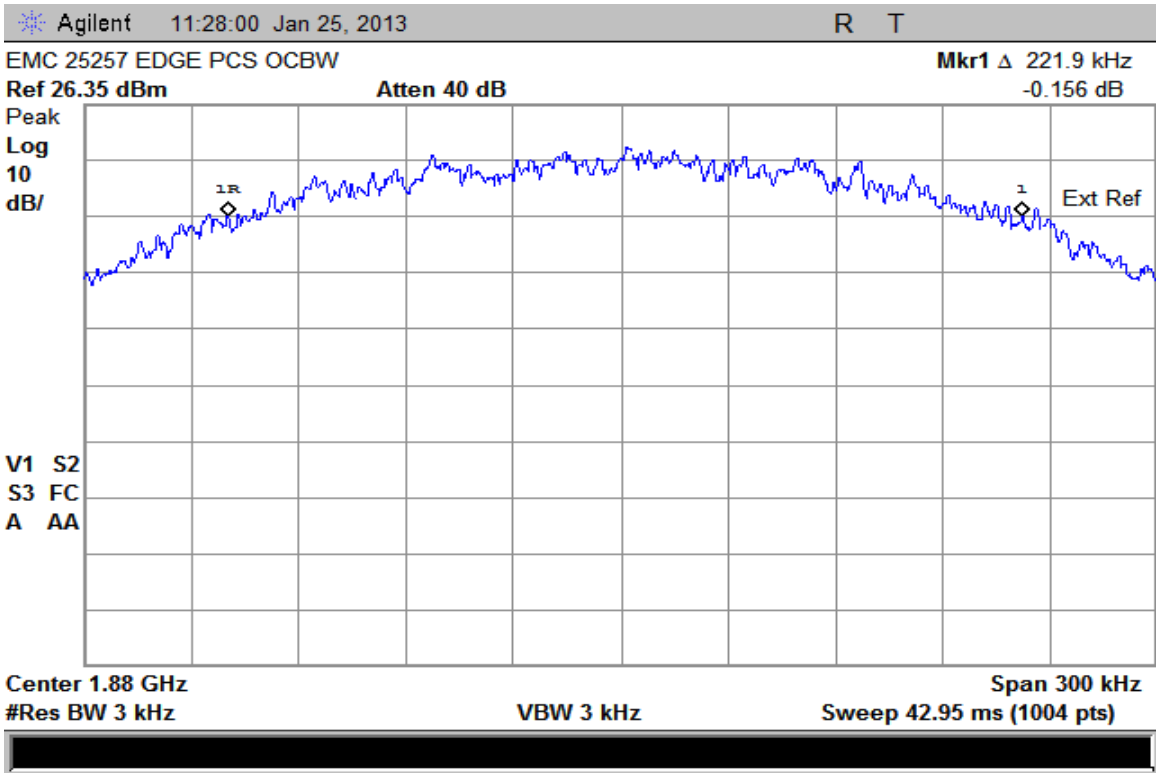


GSM 1900 – Lower Band Edge – Channel 512 (1850.2MHz)

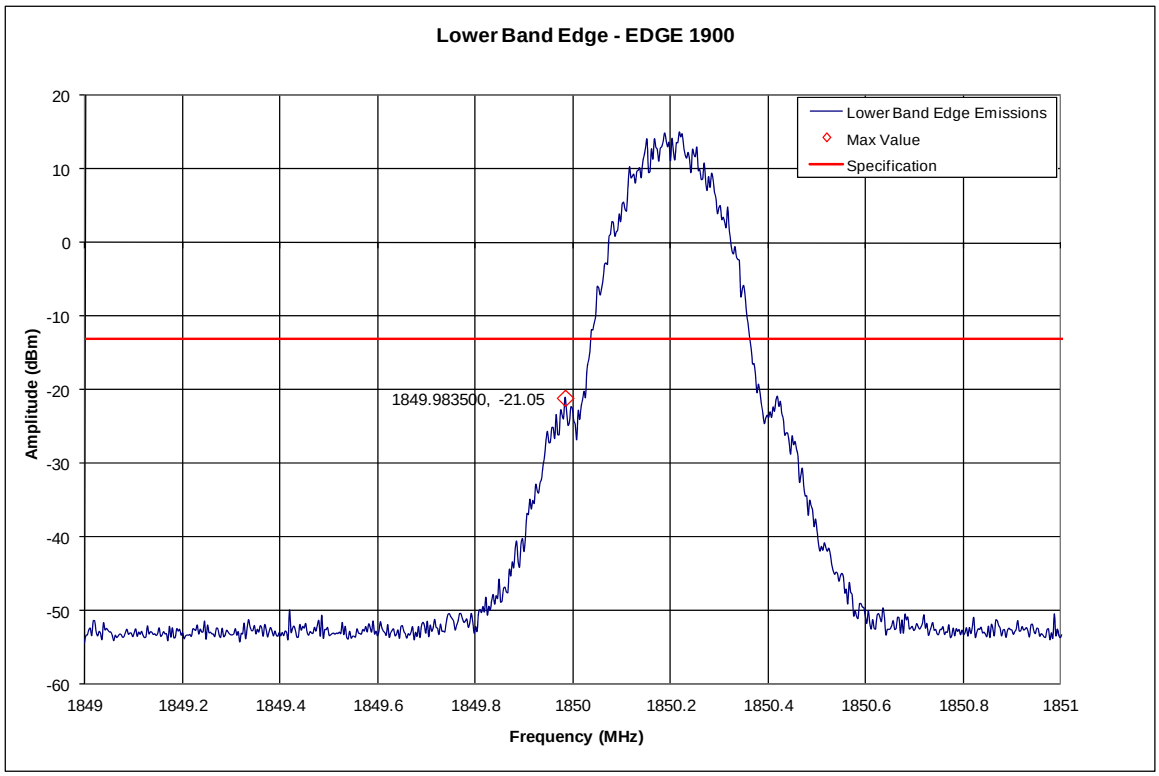


GSM 1900 – Upper Band Edge – Channel 810 (1909.8MHz)

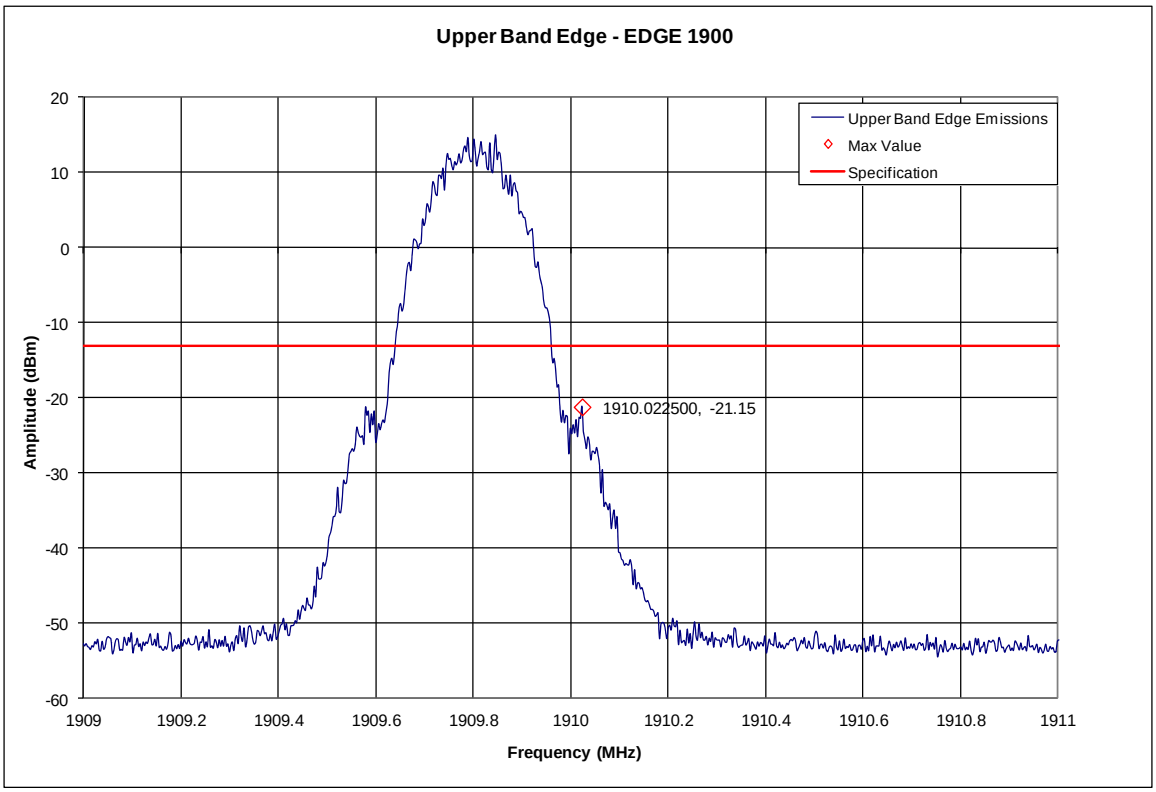
Measurement Results – EDGE 1900



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

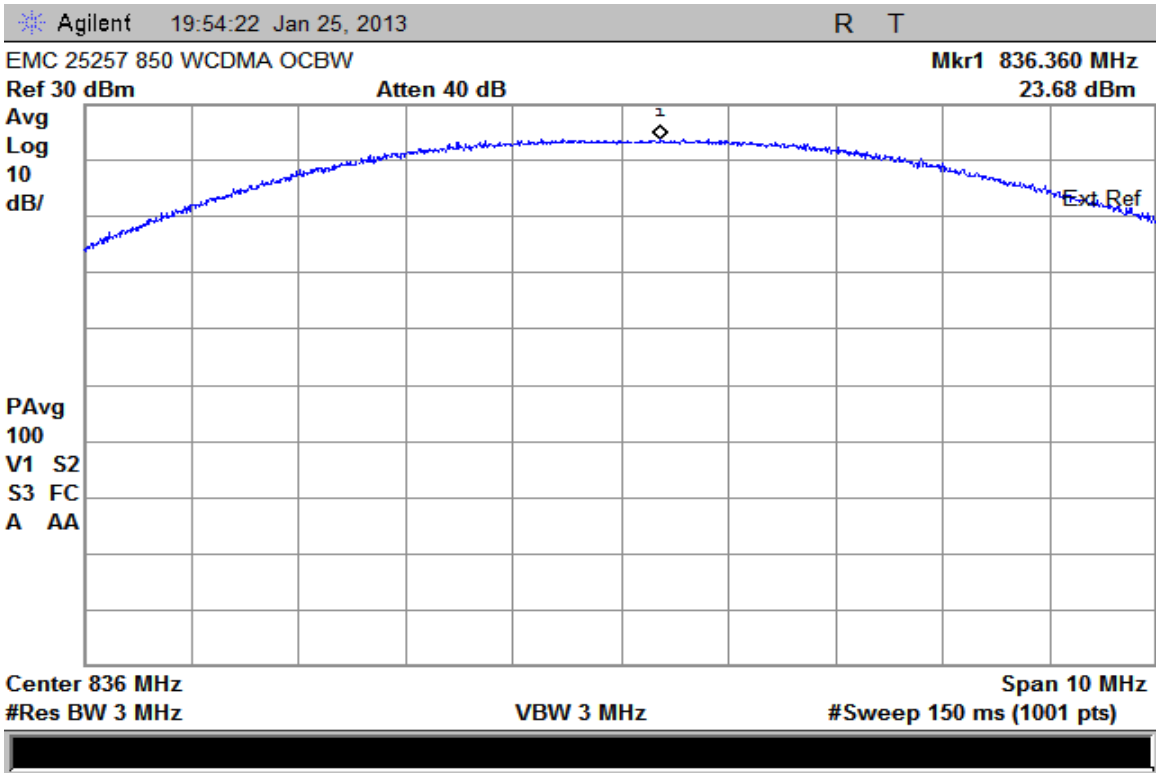


GSM 1900 EDGE – Lower Band Edge – Channel 512 (1850.2MHz)

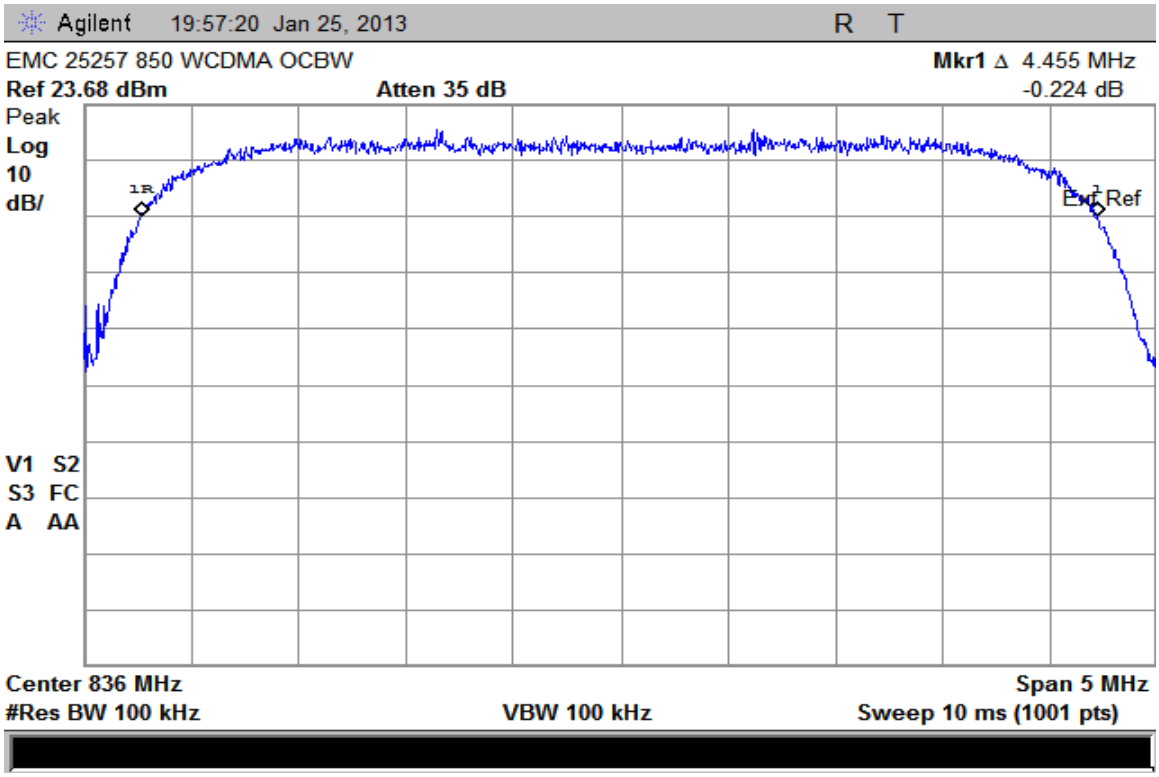


GSM 1900 EDGE – Upper Band Edge – Channel 810 (1909.8MHz)

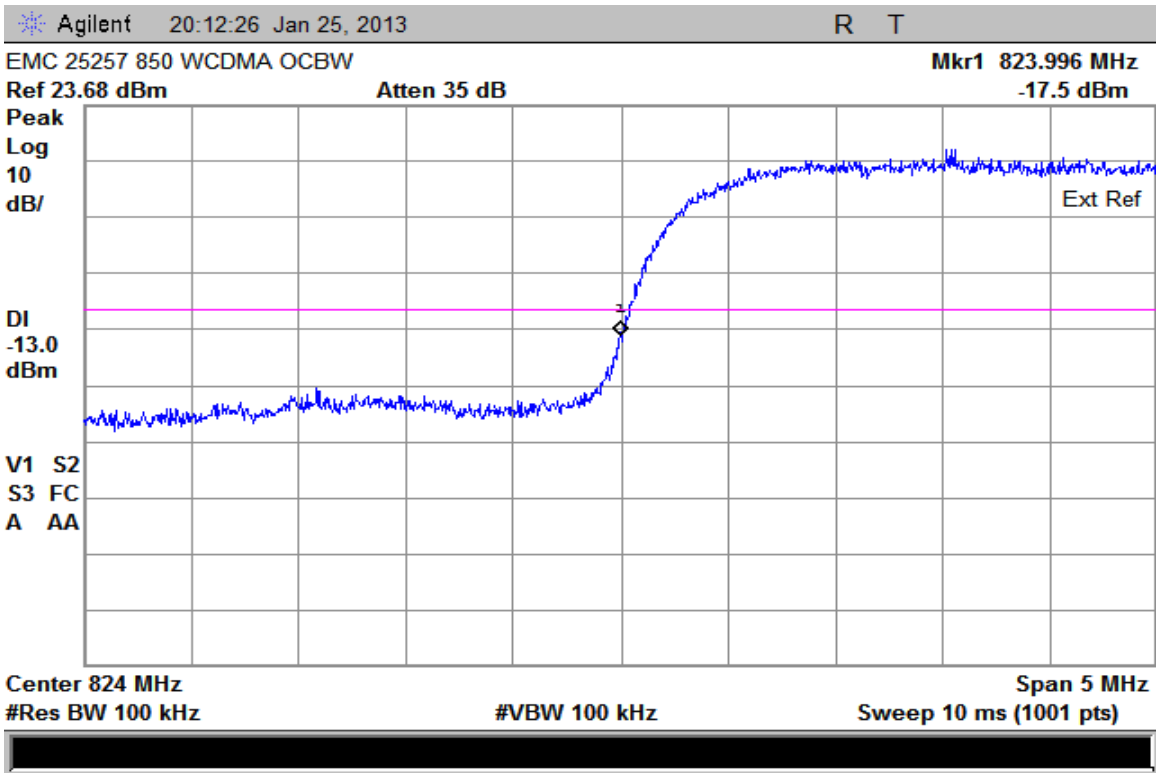
Measurement Results – WCDMA 850



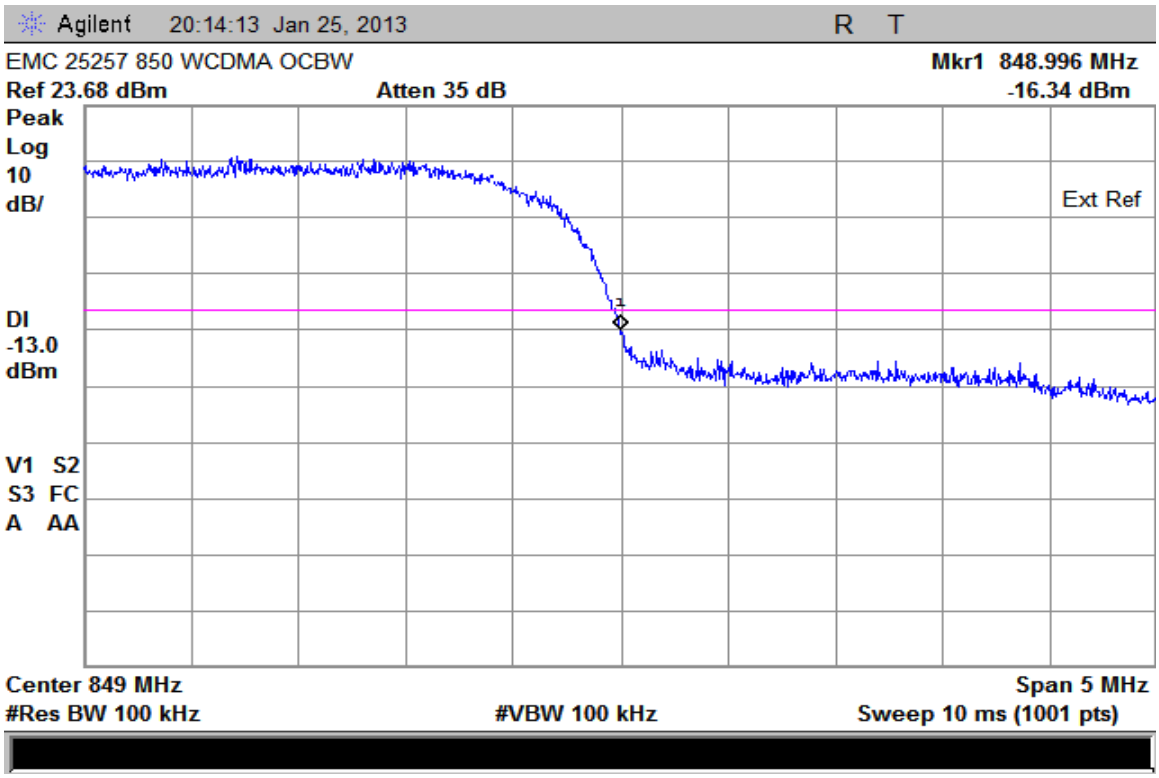
WCDMA 850 – Reference Level Plot – Channel 4180 (836.0 MHz)



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

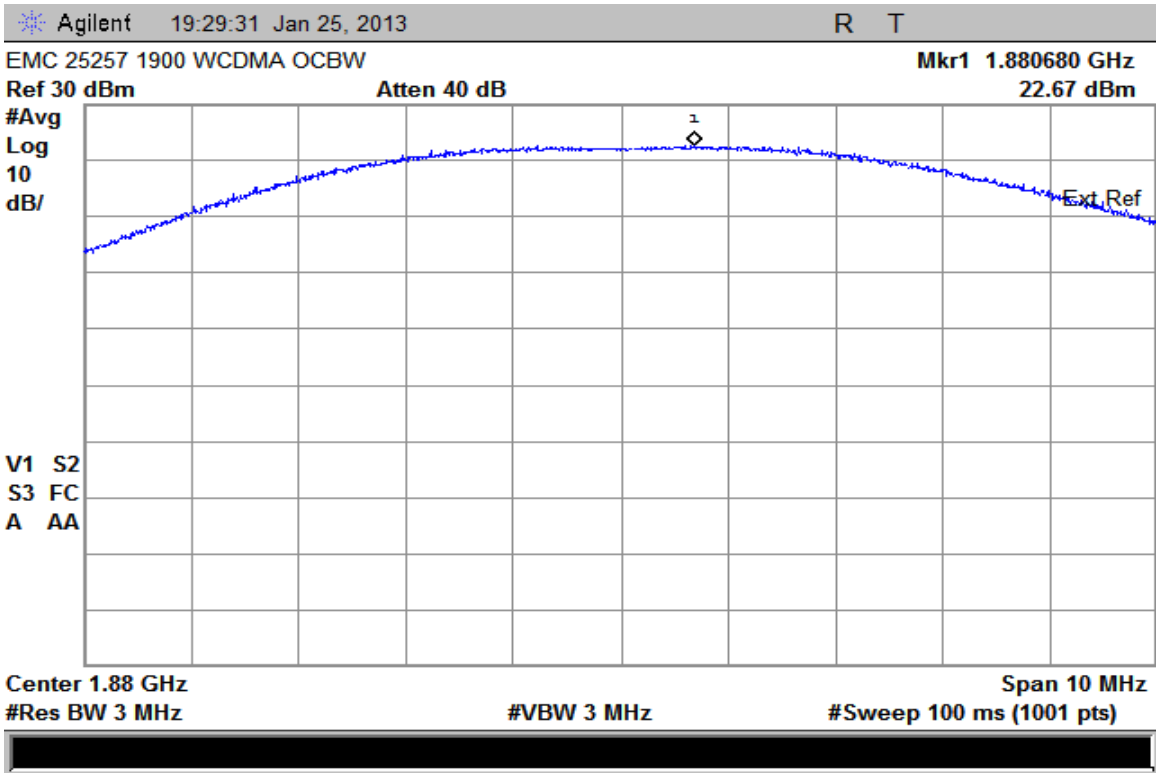


WCDMA 850 – Lower Band Edge – Channel 4132 (826.4 MHz)

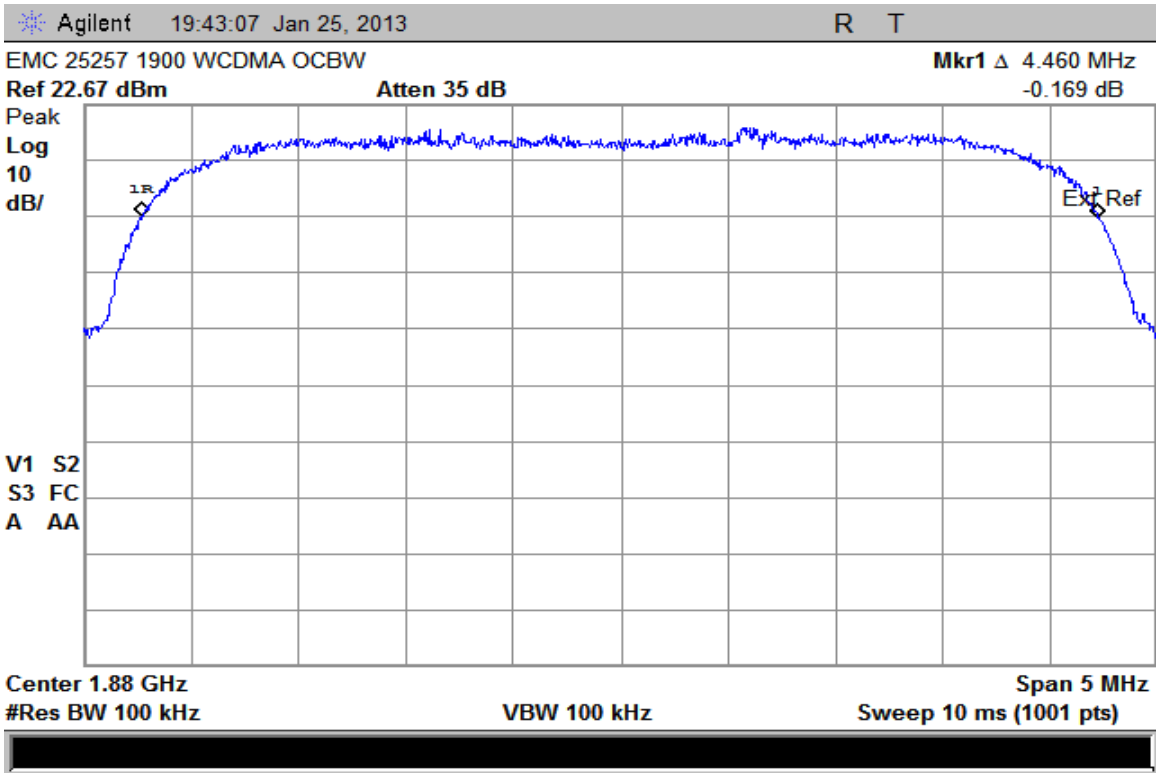


WCDMA 850 – Upper Band Edge – Channel 4233 (846.6 MHz)

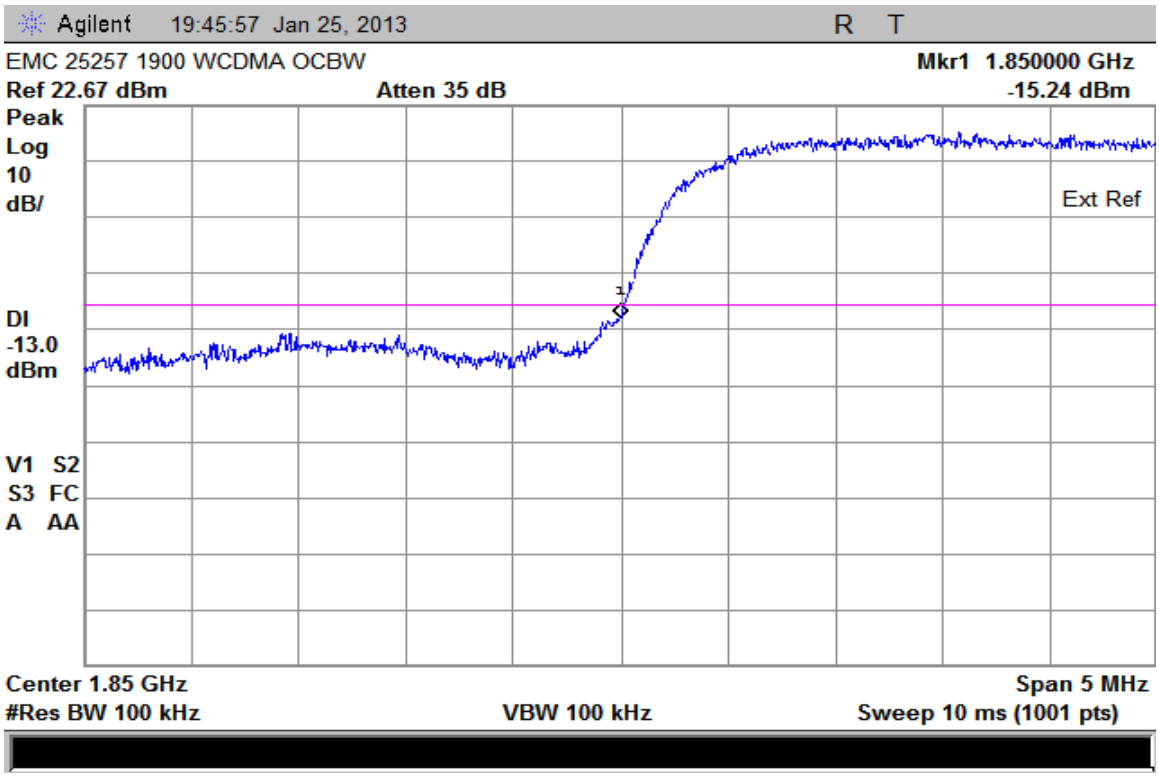
Measurement Results – WCDMA 1900



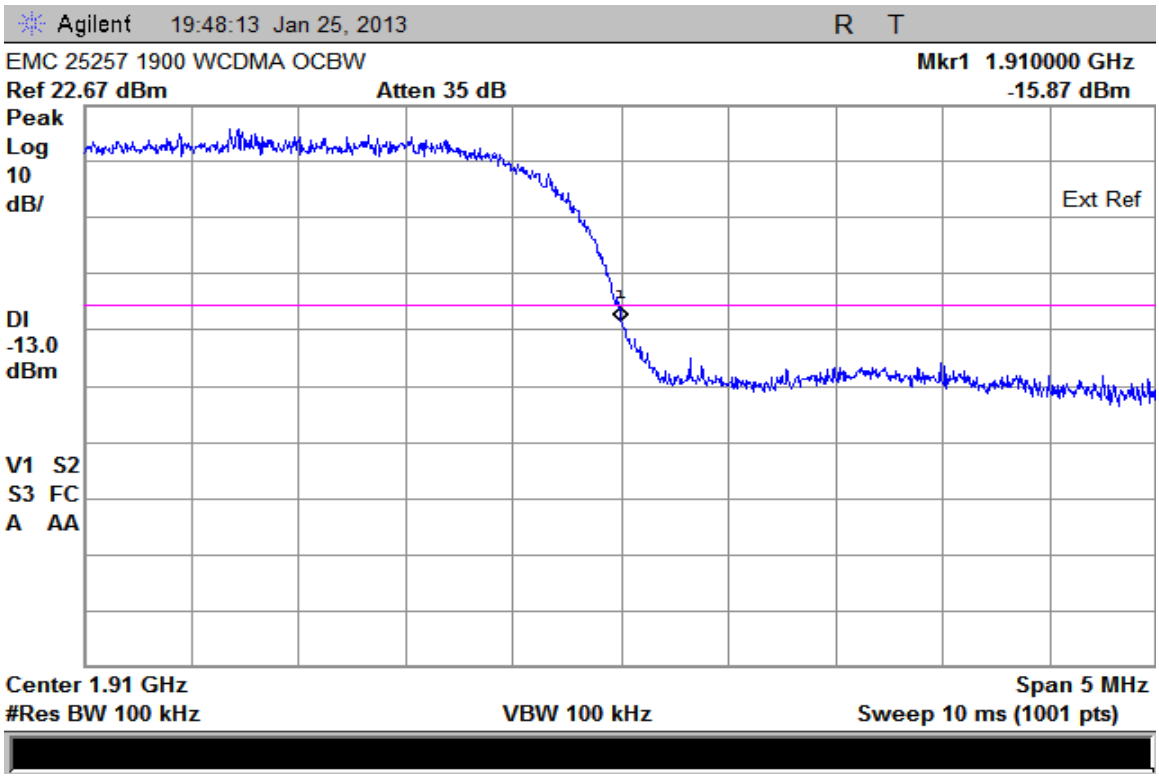
WCDMA 1900 – Reference Level Plot – Channel 9400 (1880.00 MHz)



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:

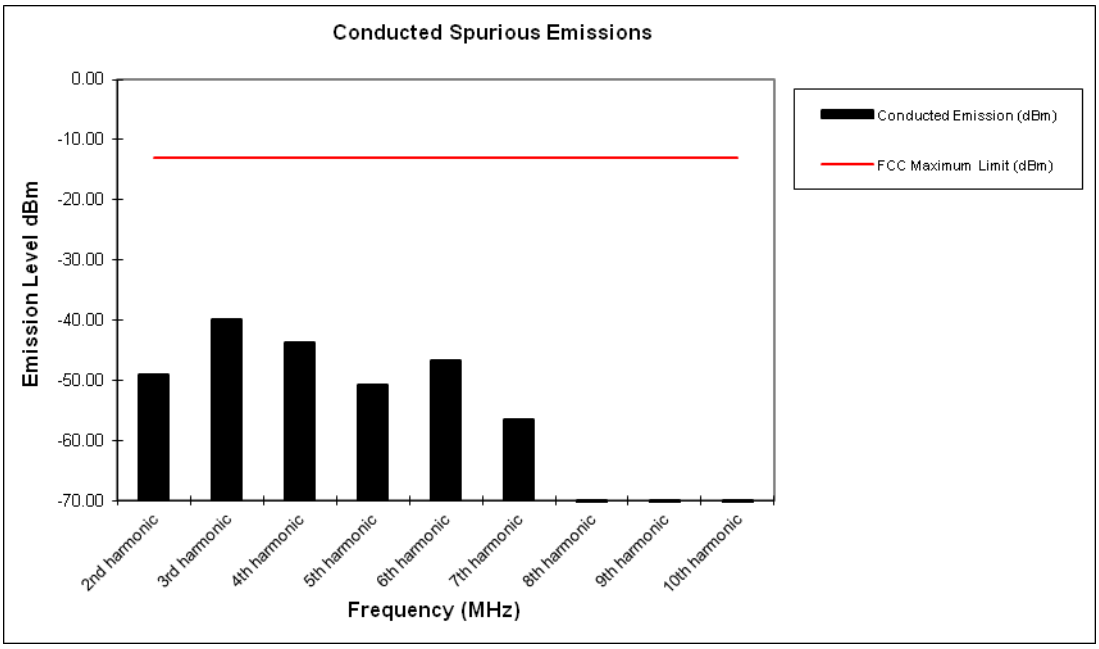
Units	dBm
Divisions	10 dB
Detector	Peak Detector
Resolution Bandwidth	1 MHz
Video Bandwidth (AVG)	Auto
Sweep Time	Auto

Measurement Results

Attached

Measurement Results
Modulation: GSM 850

Harmonic of Fundamental	FCC Maximum Limit (dBm)	Conducted Emission (dBm)
2nd harmonic	-13	-49.08
3rd harmonic	-13	-39.98
4th harmonic	-13	-43.80
5th harmonic	-13	-50.74
6th harmonic	-13	-46.77
7th harmonic	-13	-56.59
8th harmonic	-13	*
9th harmonic	-13	*
10th harmonic	-13	*

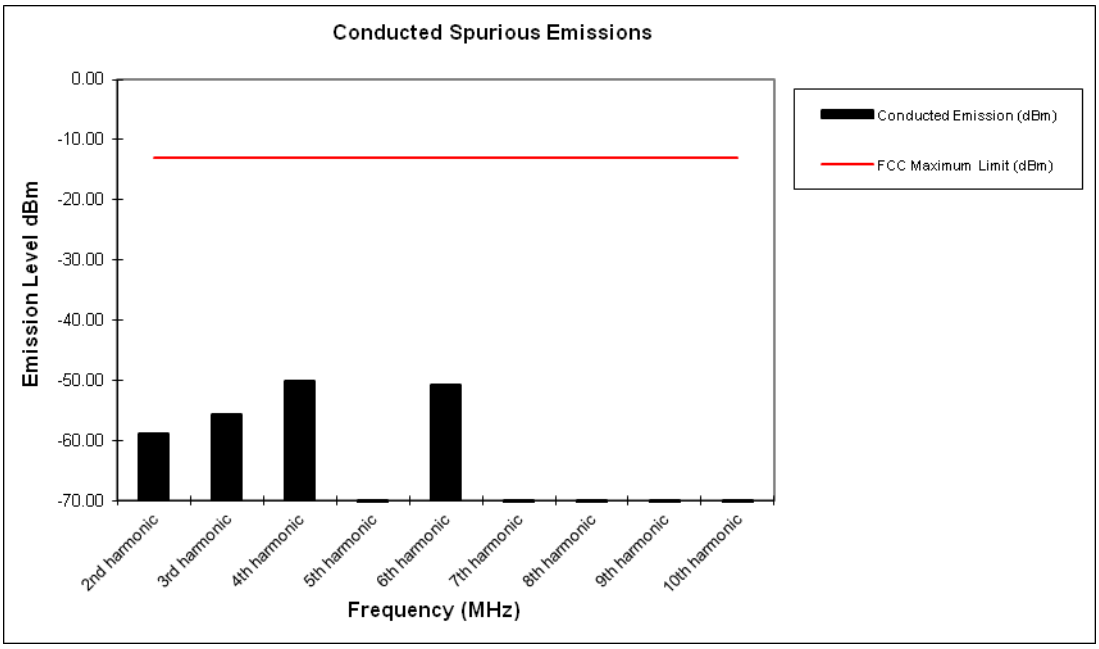


Notes:
1. * Indicates the spurious emission could not be detected due to noise limitations or ambients.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated from 9 kHz to the tenth 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	-58.96
3rd harmonic	-13	-55.70
4th harmonic	-13	-50.13
5th harmonic	-13	*
6th harmonic	-13	-50.79
7th harmonic	-13	*
8th harmonic	-13	*
9th harmonic	-13	*
10th harmonic	-13	*

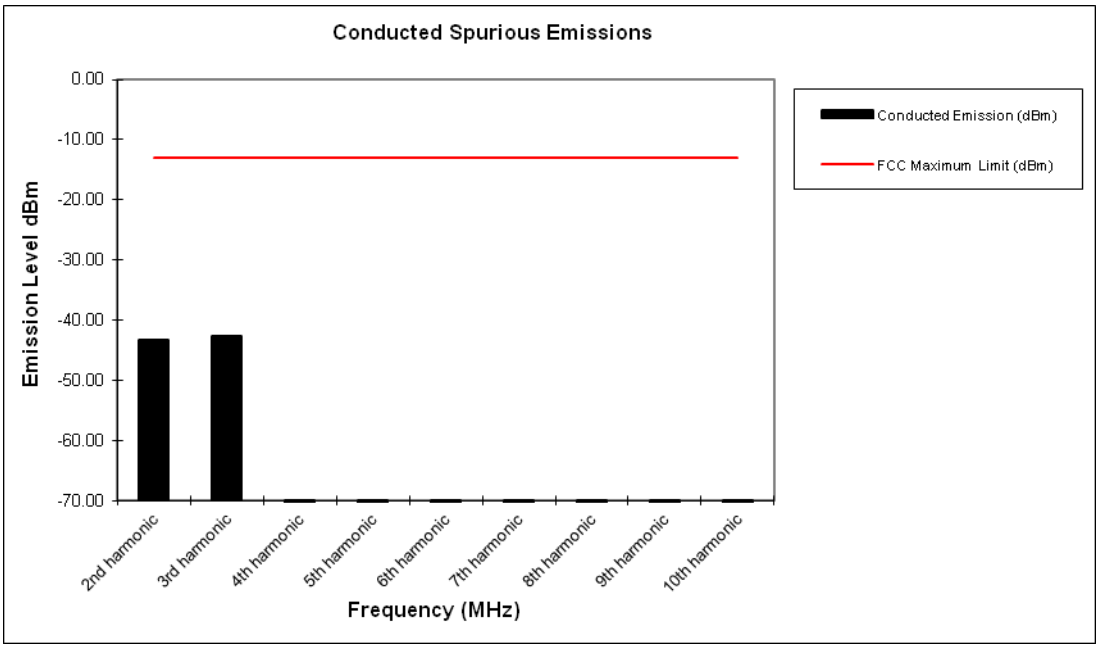


Notes:
1. * Indicates the spurious emission could not be detected due to noise limitations or ambients.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated from 9 kHz to the tenth 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	-43.26
3rd harmonic	-13	-42.69
4th harmonic	-13	*
5th harmonic	-13	*
6th harmonic	-13	*
7th harmonic	-13	*
8th harmonic	-13	*
9th harmonic	-13	*
10th harmonic	-13	*

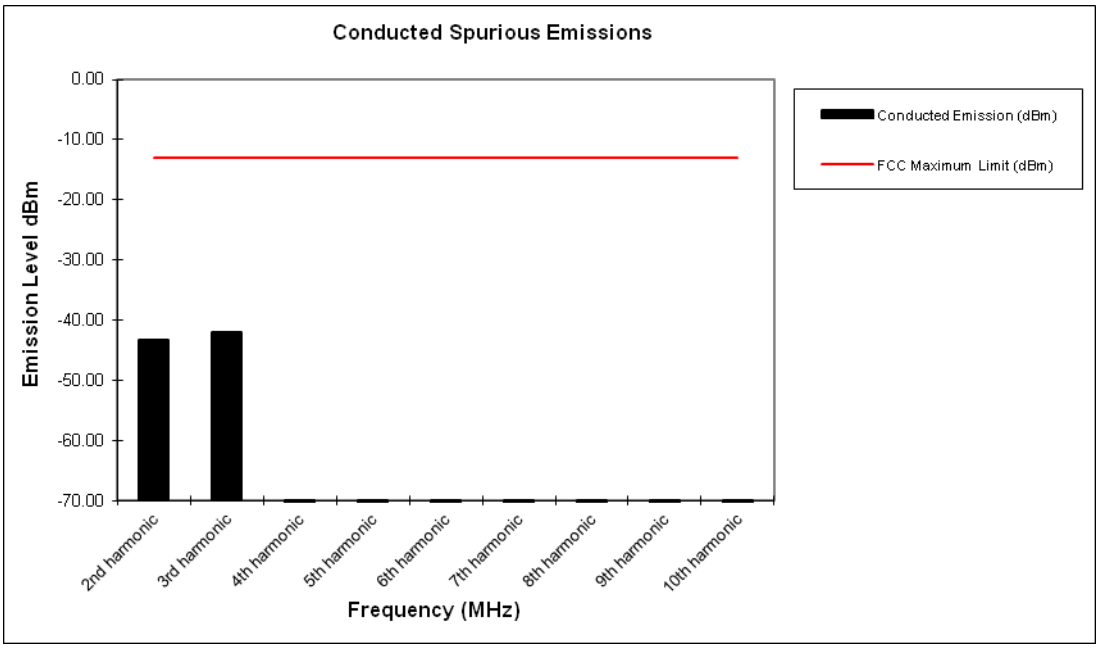


Notes:
1. * Indicates the spurious emission could not be detected due to noise limitations or ambients.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated from 9 kHz to the tenth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

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

Measurement Results
Modulation: EDGE 1900

Harmonic of Fundamental	FCC Maximum Limit (dBm)	Conducted Emission (dBm)
2nd harmonic	-13	-43.22
3rd harmonic	-13	-42.06
4th harmonic	-13	*
5th harmonic	-13	*
6th harmonic	-13	*
7th harmonic	-13	*
8th harmonic	-13	*
9th harmonic	-13	*
10th harmonic	-13	*

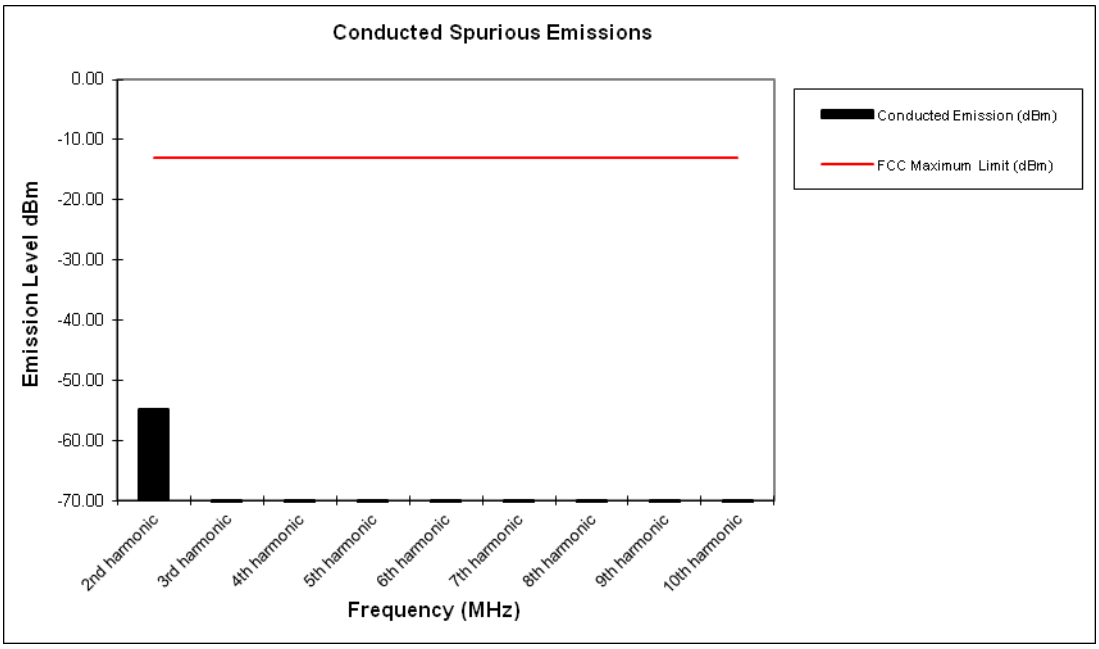


Notes:
1. * Indicates the spurious emission could not be detected due to noise limitations or ambients.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated from 9 kHz to the tenth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

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

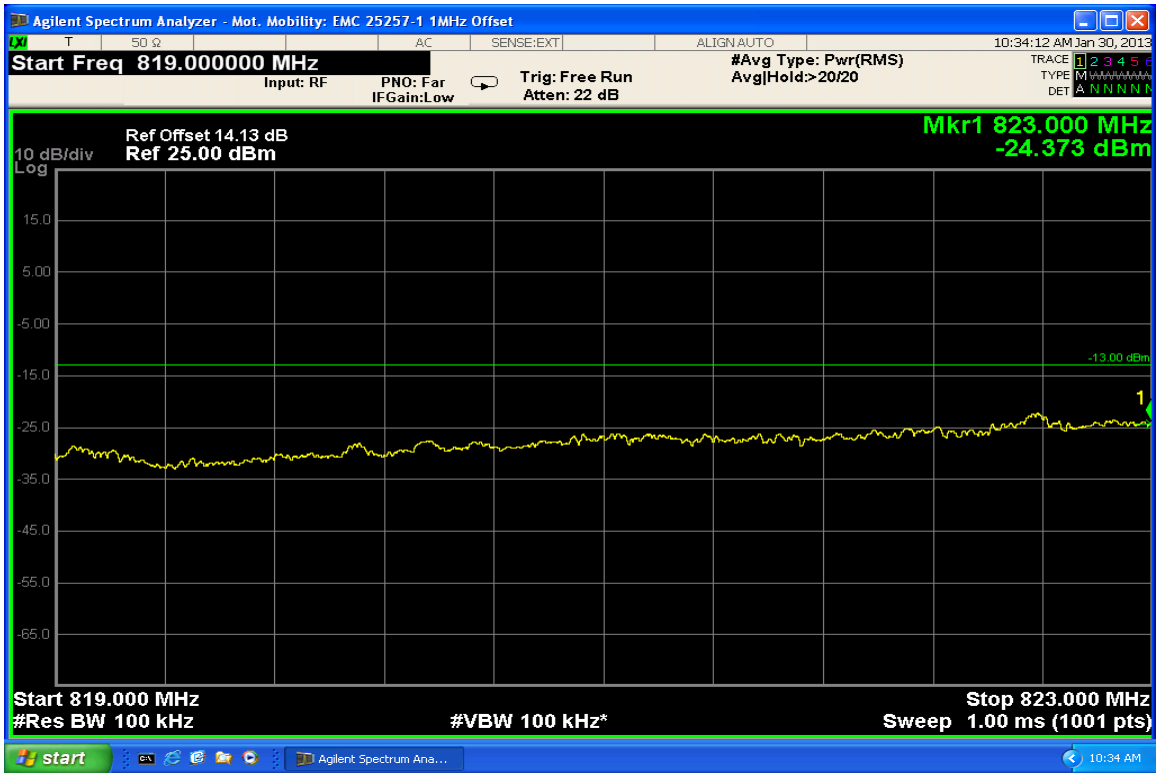
Measurement Results
Modulation: WCDMA 850

Harmonic of Fundamental	FCC Maximum Limit (dBm)	Conducted Emission (dBm)
2nd harmonic	-13	-54.85
3rd harmonic	-13	*
4th harmonic	-13	*
5th harmonic	-13	*
6th harmonic	-13	*
7th harmonic	-13	*
8th harmonic	-13	*
9th harmonic	-13	*
10th harmonic	-13	*

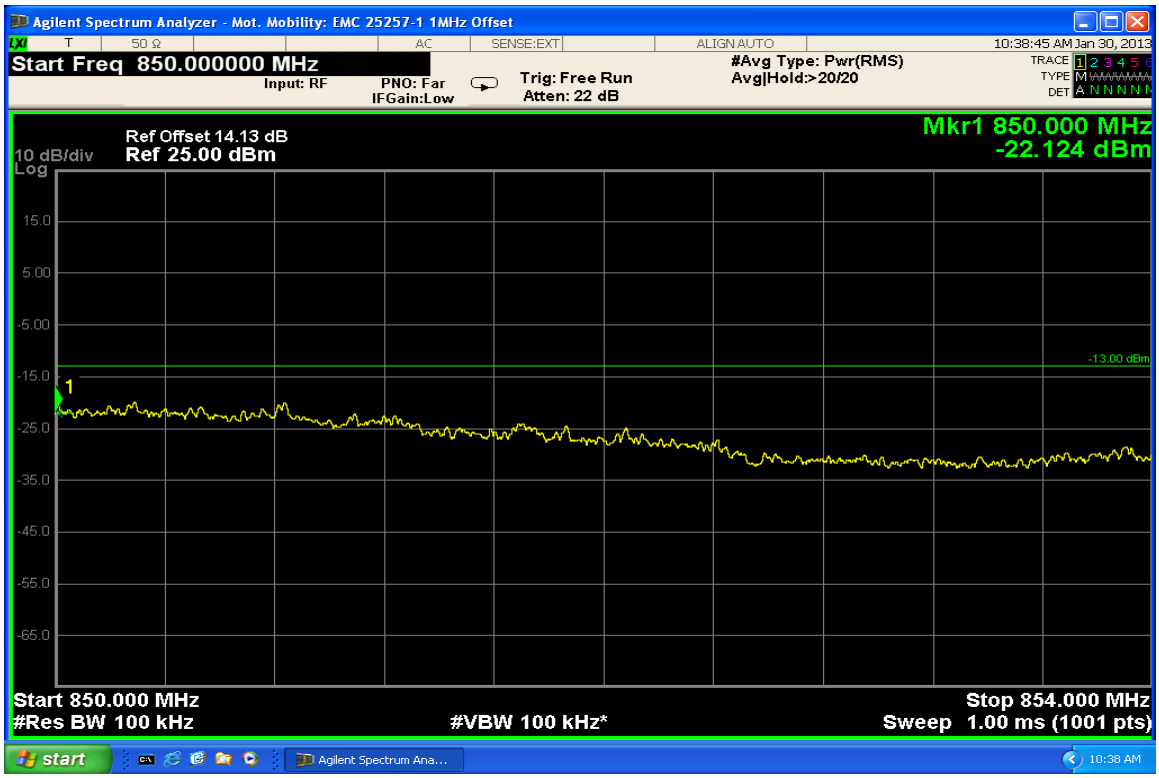


Notes:
1. * Indicates the spurious emission could not be detected due to noise limitations or ambients.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated from 9 kHz to the tenth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

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



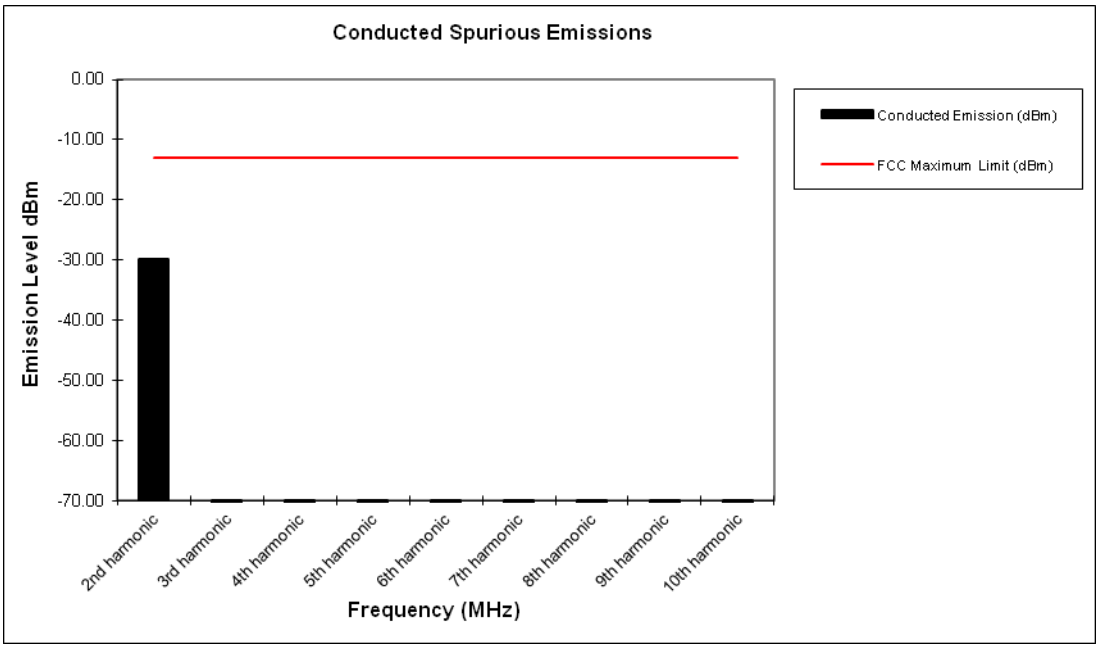
850 WCDMA Conducted Spurious Emissions (Lower adjacent 1 MHz band)



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

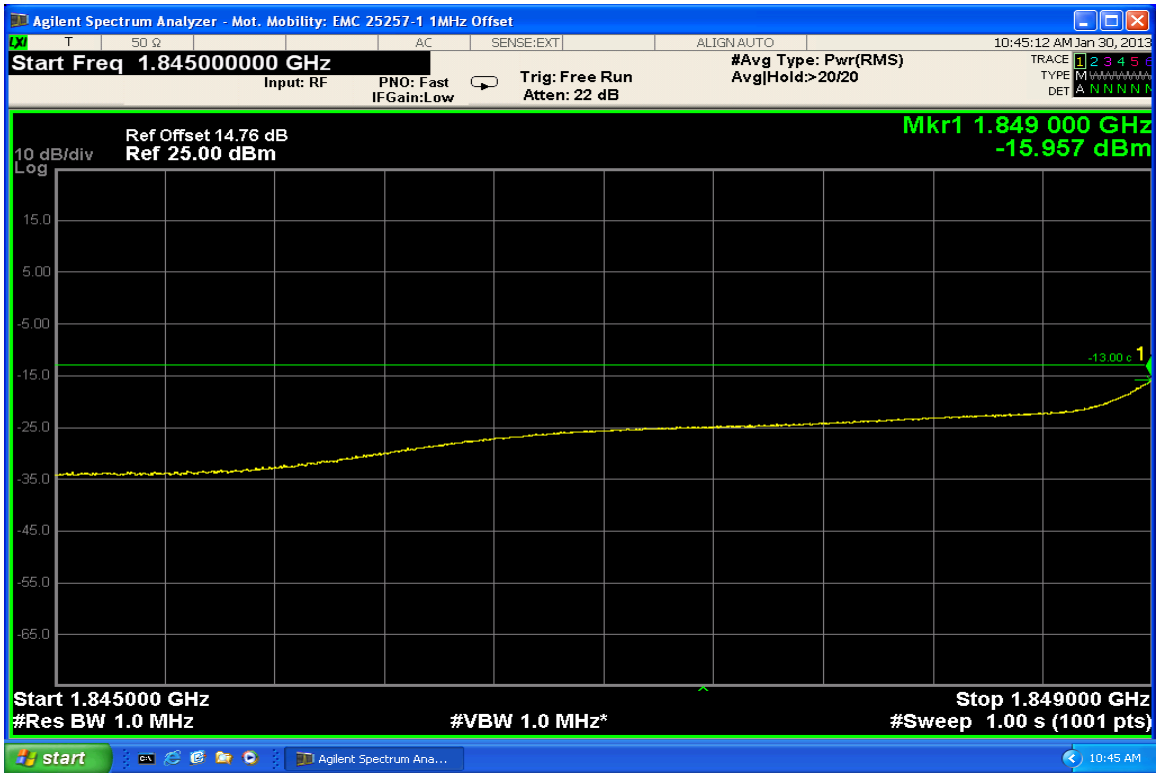
Measurement Results
Modulation: WCDMA 1900

Harmonic of Fundamental	FCC Maximum Limit (dBm)	Conducted Emission (dBm)
2nd harmonic	-13	-29.97
3rd harmonic	-13	*
4th harmonic	-13	*
5th harmonic	-13	*
6th harmonic	-13	*
7th harmonic	-13	*
8th harmonic	-13	*
9th harmonic	-13	*
10th harmonic	-13	*

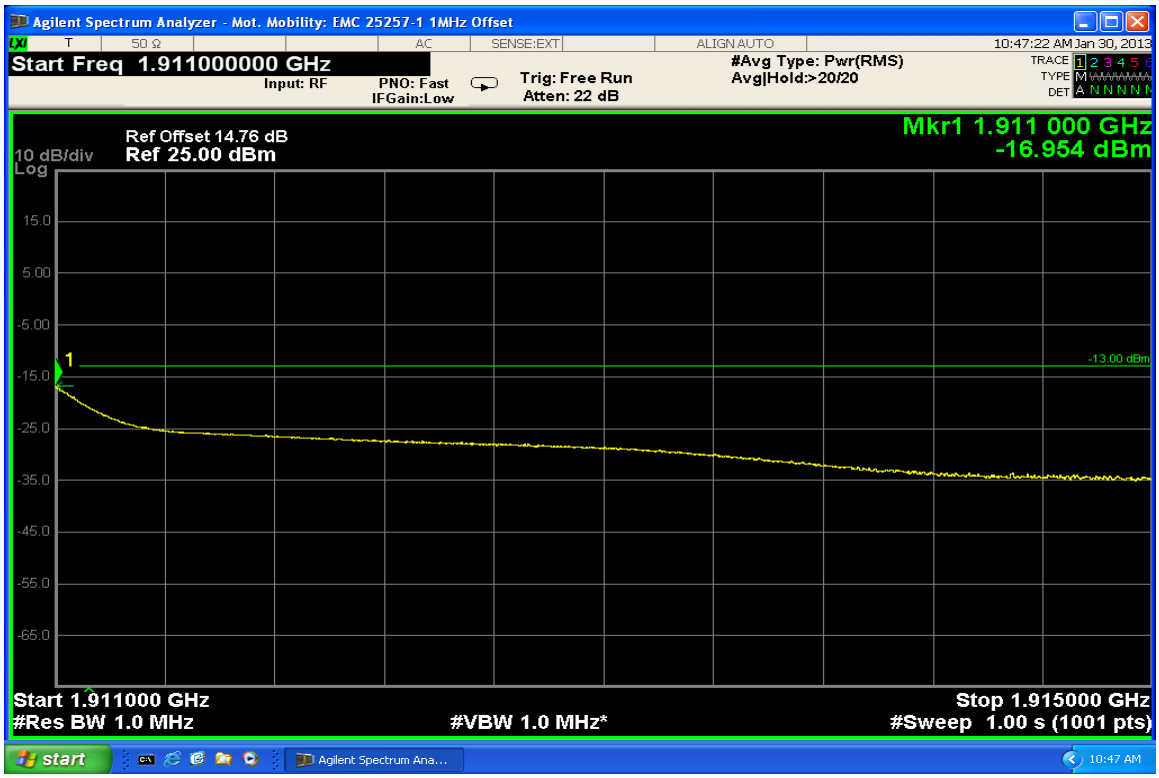


Notes:
1. * Indicates the spurious emission could not be detected due to noise limitations or ambients.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated from 9 kHz to the tenth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

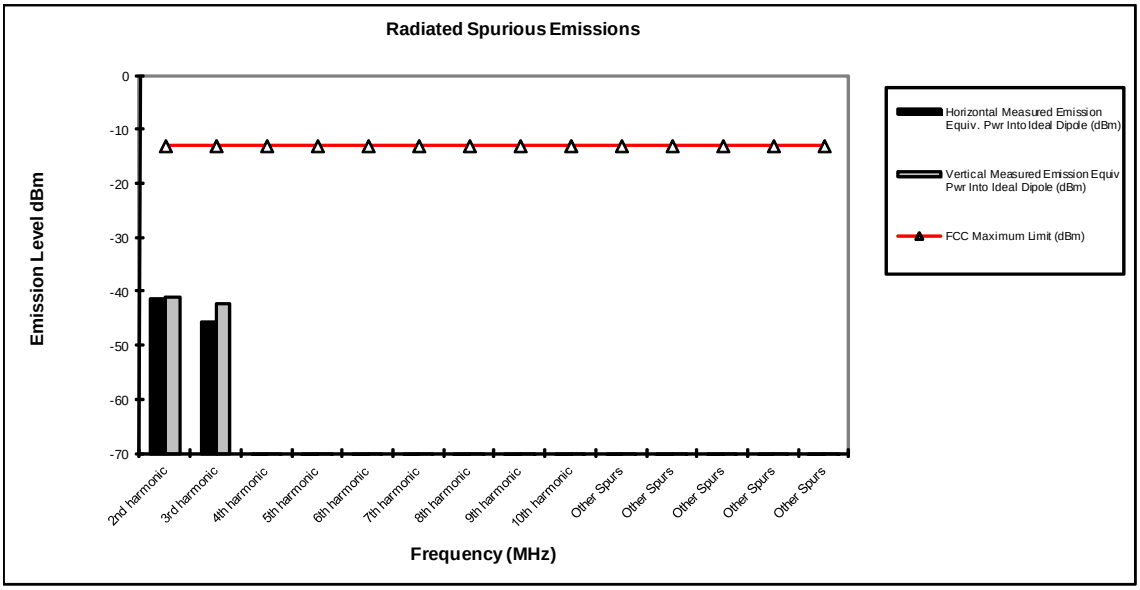
Measurement Results

Attached

Measurement Results –GSM 850; Z plane

Radiated Spurious and Harmonic Emissions

Frequency (MHz)	FCC Maximum Limit (dBm)	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
2nd harmonic	-13	-41.3	-41.2
3rd harmonic	-13	-45.6	-42.3
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:

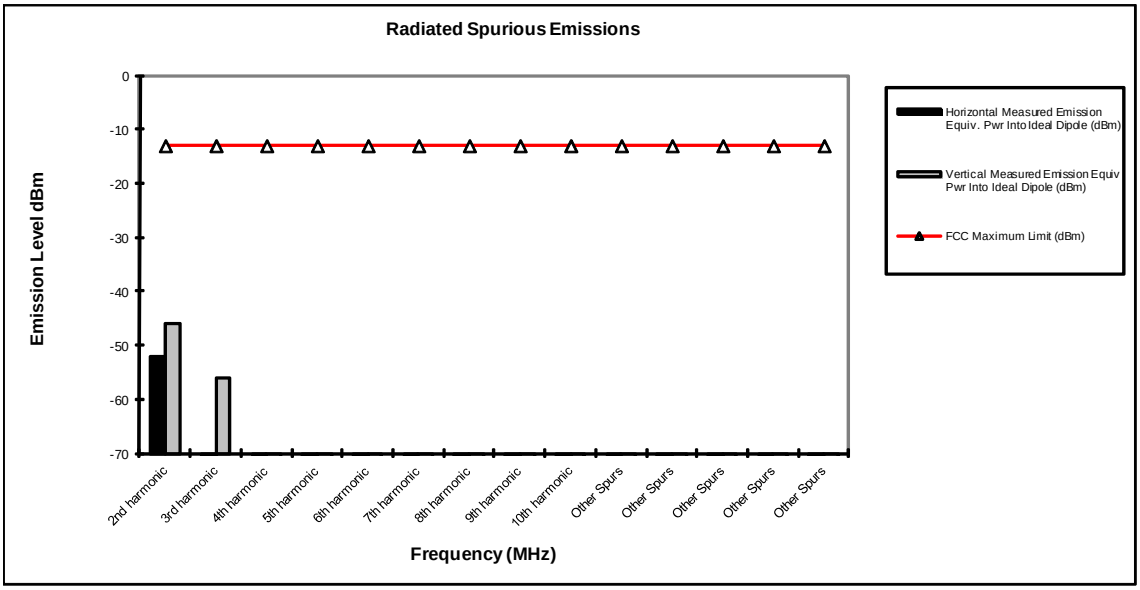
1. * Indicates the spurious emission could not be detected due to noise limitations or ambients or the emissions are lower than -33 dBm.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated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

Radiated Spurious and Harmonic Emissions

Frequency (MHz)	FCC Maximum Limit (dBm)	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
2nd harmonic	-13	-52.0	-46.1
3rd harmonic	-13	*	-56.2
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:

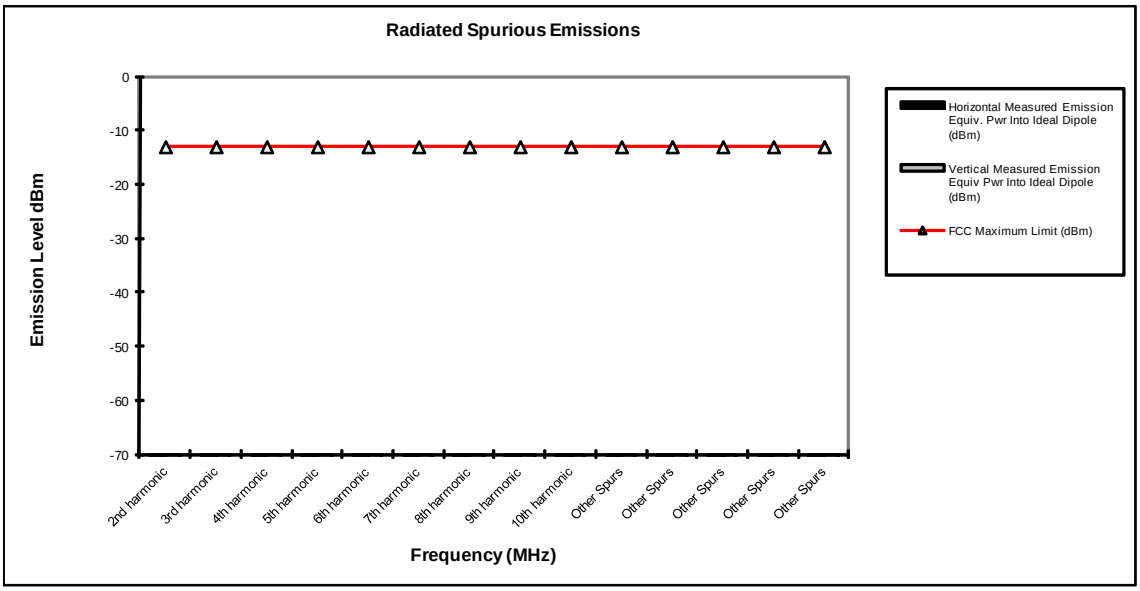
1. * Indicates the spurious emission could not be detected due to noise limitations or ambients or the emissions are lower than -33 dBm.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated 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 –GSM 1900; all planes

Radiated Spurious and Harmonic Emissions

Frequency (MHz)	FCC Maximum Limit (dBm)	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr 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:

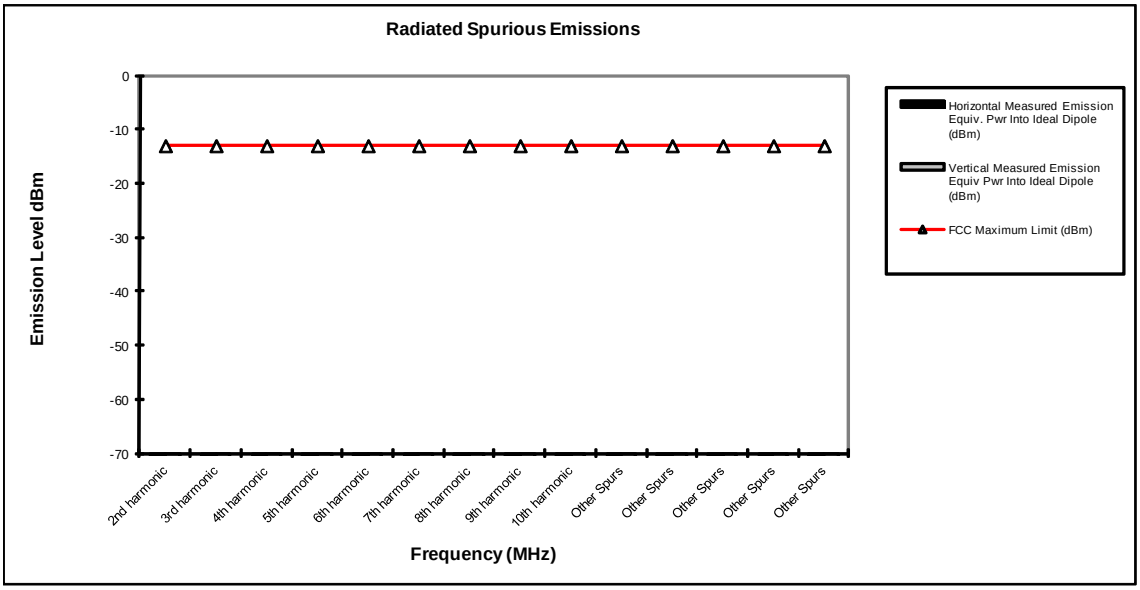
1. * Indicates the spurious emission could not be detected due to noise limitations or ambients or the emissions are lower than -33 dBm.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated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

Measurement Results –EDGE 1900; all planes

Radiated Spurious and Harmonic Emissions

Frequency (MHz)	FCC Maximum Limit (dBm)	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr 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:

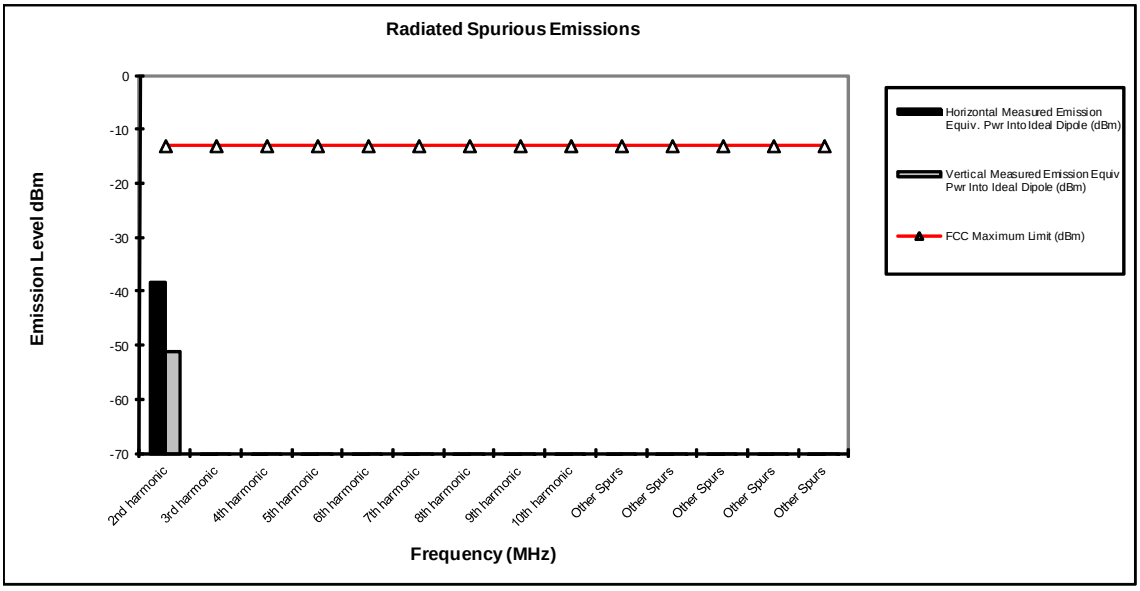
1. * Indicates the spurious emission could not be detected due to noise limitations or ambients or the emissions are lower than -33 dBm.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated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

Measurement Results –WCDMA 850; X plane

Radiated Spurious and Harmonic Emissions

Frequency (MHz)	FCC Maximum Limit (dBm)	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
2nd harmonic	-13	-38.4	-51.2
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:

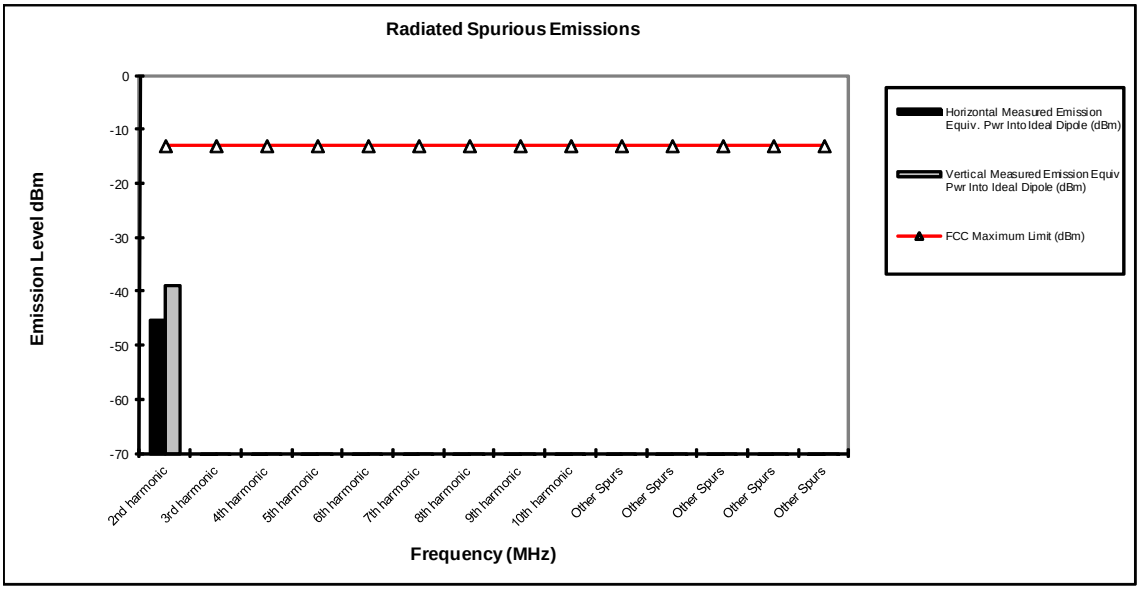
1. * Indicates the spurious emission could not be detected due to noise limitations or ambients or the emissions are lower than -33 dBm.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated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

Radiated Spurious and Harmonic Emissions

Frequency (MHz)	FCC Maximum Limit (dBm)	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
2nd harmonic	-13	-45.5	-38.9
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

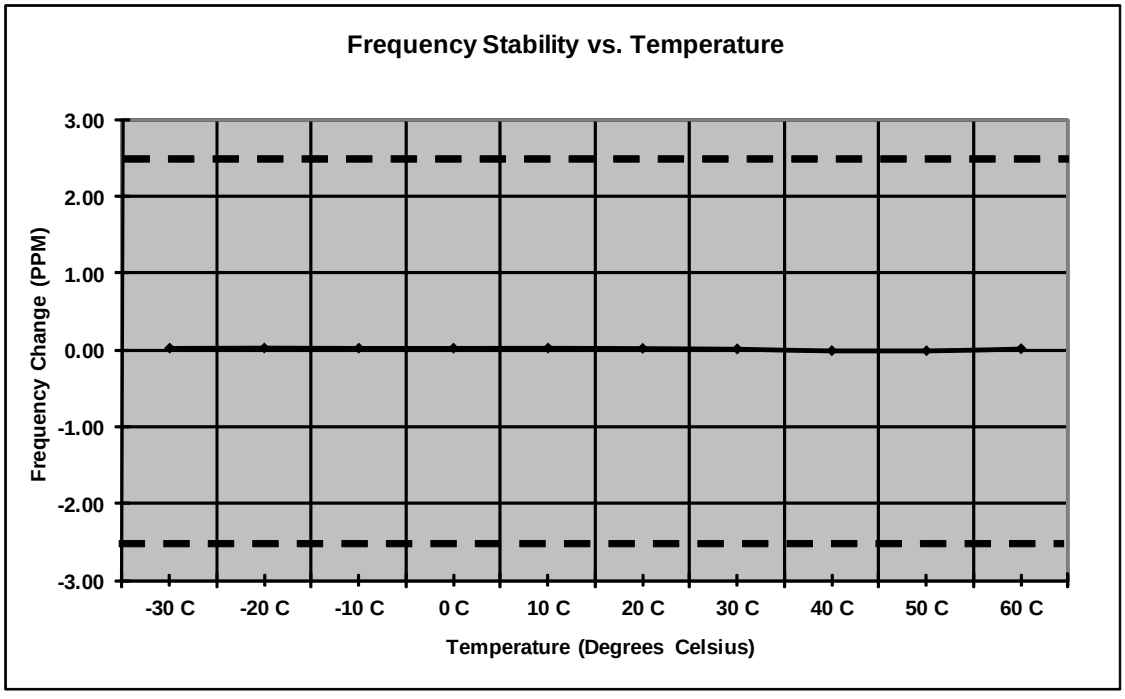
Attached

Measurement Results
Modulation: GSM 850

Frequency Stability

Mode: GSM 850 **Operating Frequency:** 836.6 MHz
Channel: 190 **Deviation Limit (PPM):** ±2.5ppm

Temperature	Frequency Error	Frequency Error	Voltage	Voltage
C	HZ	(PPM)	(%)	(VDC)
-30 C	**17.36**	**0.021**	100%	3.80
-20 C	**19.24**	**0.023**	100%	3.80
-10 C	**17.40**	**0.021**	100%	3.80
0 C	**17.54**	**0.021**	100%	3.80
10 C	**18.53**	**0.022**	100%	3.80
20 C	**15.57**	**0.019**	100%	3.80
30 C	**9.30**	**0.011**	100%	3.80
40 C	**-9.59**	**-0.011**	100%	3.80
50 C	**-9.98**	**-0.012**	100%	3.80
60 C	**10.93**	**0.013**	100%	3.80
20 C	**-10.19**	**-0.012**	Battery Endpoint	3.50

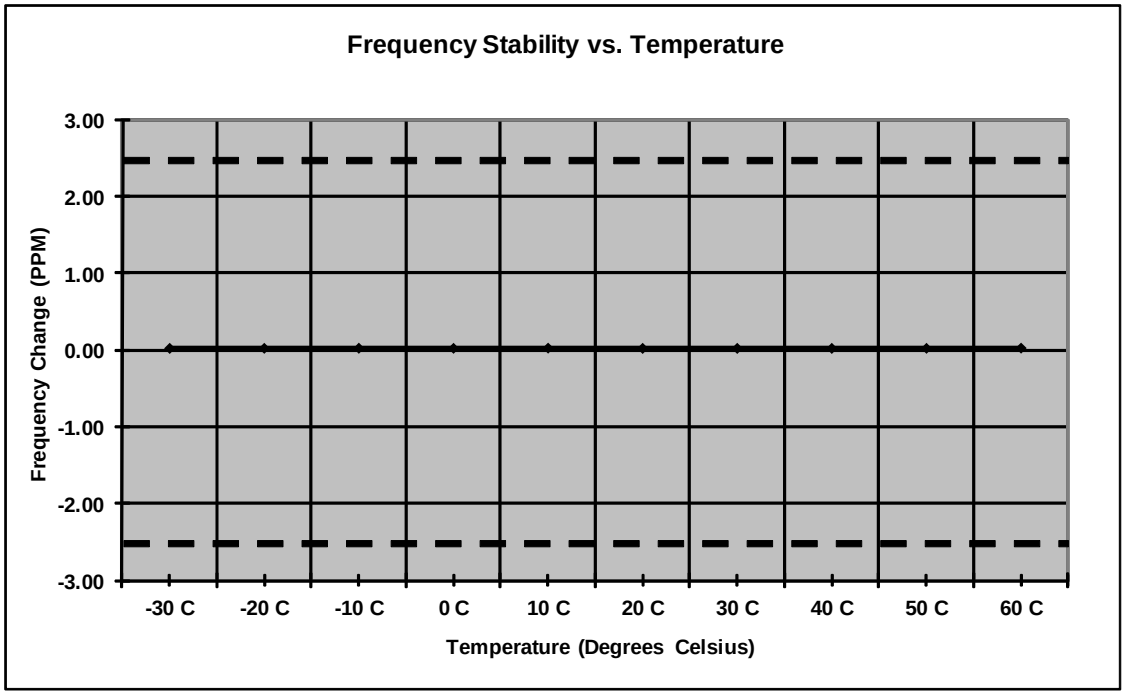


Measurement Results
Modulation: EDGE 850

Frequency Stability

Mode: EDGE 850 **Operating Frequency:** 836.6 MHz
Channel: 190 **Deviation Limit (PPM):** ±2.5ppm

Temperature	Frequency Error	Frequency Error	Voltage	Voltage
C	HZ	(PPM)	(%)	(VDC)
-30 C	**15.03**	**0.018**	100%	3.80
-20 C	**15.14**	**0.018**	100%	3.80
-10 C	**17.26**	**0.021**	100%	3.80
0 C	**15.74**	**0.019**	100%	3.80
10 C	**17.28**	**0.021**	100%	3.80
20 C	**14.35**	**0.017**	100%	3.80
30 C	**14.86**	**0.018**	100%	3.80
40 C	**14.86**	**0.018**	100%	3.80
50 C	**15.69**	**0.019**	100%	3.80
60 C	**17.57**	**0.021**	100%	3.80
20 C	**15.25**	**0.018**	Battery Endpoint	3.50

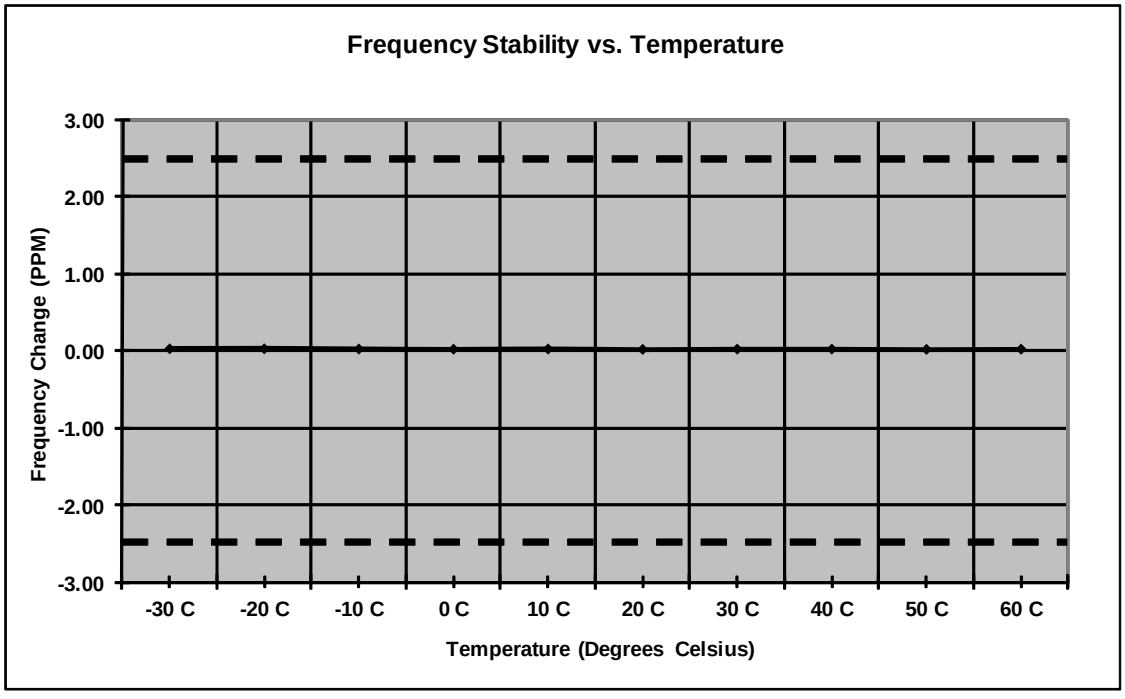


Measurement Results
Modulation: GSM 1900

Frequency Stability

Mode: GSM 1900 **Operating Frequency:** 1880.0 MHz
Channel: 661 **Deviation Limit (PPM):** ±2.5ppm

Temperature	Frequency Error	Frequency Error	Voltage	Voltage
C	HZ	(PPM)	(%)	(VDC)
-30 C	**41.55**	**0.022**	100%	3.80
-20 C	**41.66**	**0.022**	100%	3.80
-10 C	**37.06**	**0.020**	100%	3.80
0 C	**33.37**	**0.018**	100%	3.80
10 C	**37.81**	**0.020**	100%	3.80
20 C	**30.93**	**0.016**	100%	3.80
30 C	**34.14**	**0.018**	100%	3.80
40 C	**34.08**	**0.018**	100%	3.80
50 C	**31.21**	**0.017**	100%	3.80
60 C	**33.46**	**0.018**	100%	3.80
20 C	**29.53**	**0.016**	Battery Endpoint	3.50

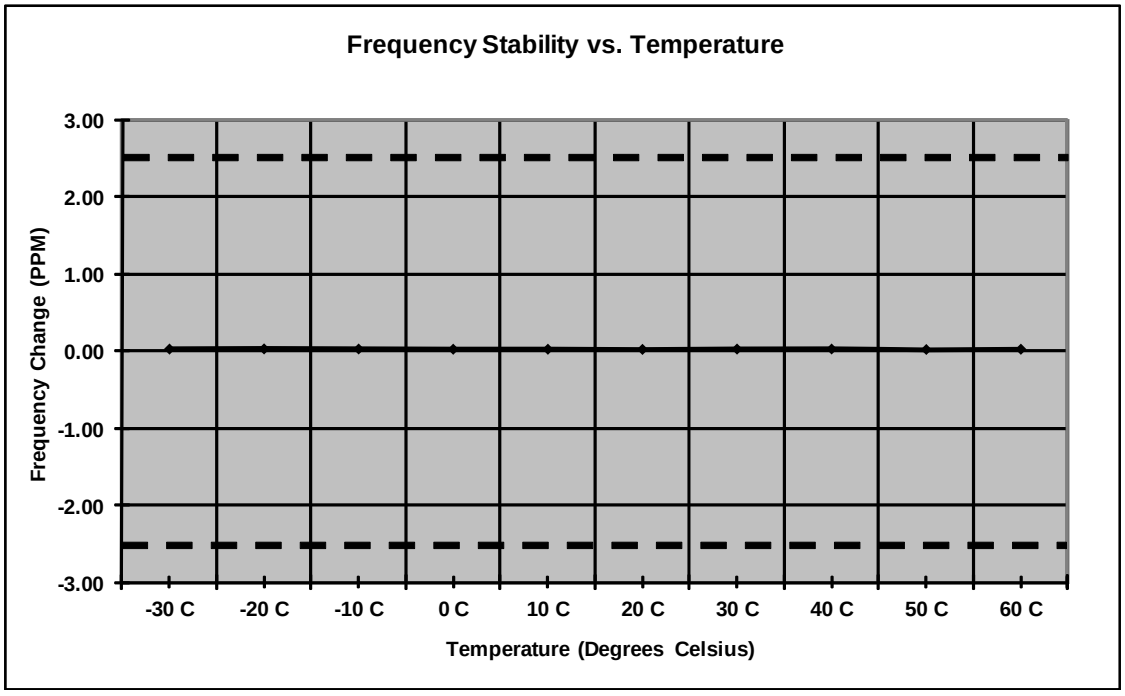


Measurement Results
Modulation: EDGE 1900

Frequency Stability

Mode: EDGE 1900 **Operating Frequency:** 1880.0 MHz
Channel: 661 **Deviation Limit (PPM):** ±2.5ppm

Temperature	Frequency Error	Frequency Error	Voltage	Voltage
C	HZ	(PPM)	(%)	(VDC)
-30 C	**40.53**	**0.022**	100%	3.80
-20 C	**44.90**	**0.024**	100%	3.80
-10 C	**41.20**	**0.022**	100%	3.80
0 C	**38.49**	**0.020**	100%	3.80
10 C	**37.90**	**0.020**	100%	3.80
20 C	**33.84**	**0.018**	100%	3.80
30 C	**39.61**	**0.021**	100%	3.80
40 C	**41.27**	**0.022**	100%	3.80
50 C	**30.39**	**0.016**	100%	3.80
60 C	**37.07**	**0.020**	100%	3.80
20 C	**37.86**	**0.020**	Battery Endpoint	3.50

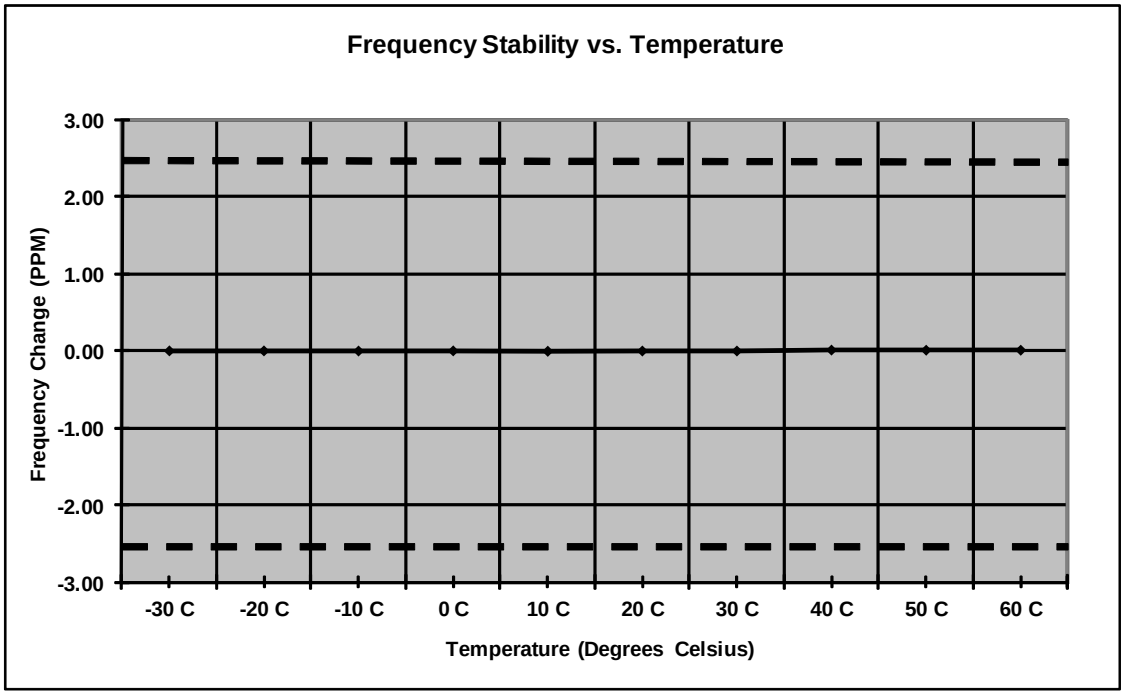


Measurement Results
Modulation: WCDMA 850

Frequency Stability

Mode: 850 WCDMA **Operating Frequency:** 836
Channel: 4180 **Deviation Limit (PPM):** ±2.5ppm

Temperature	Frequency Error	Frequency Error	Voltage	Voltage
C	HZ	(PPM)	(%)	(VDC)
-30 C	**-4.16**	**-0.005**	100%	3.80
-20 C	**-4.31**	**-0.005**	100%	3.80
-10 C	**-4.59**	**-0.005**	100%	3.80
0 C	**-4.28**	**-0.005**	100%	3.80
10 C	**-7.80**	**-0.009**	100%	3.80
20 C	**-5.35**	**-0.006**	100%	3.80
30 C	**-4.82**	**-0.006**	100%	3.80
40 C	**4.42**	**0.005**	100%	3.80
50 C	**4.18**	**0.005**	100%	3.80
60 C	**4.20**	**0.005**	100%	3.80
20 C	**-4.40**	**-0.005**	Battery Endpoint	3.50

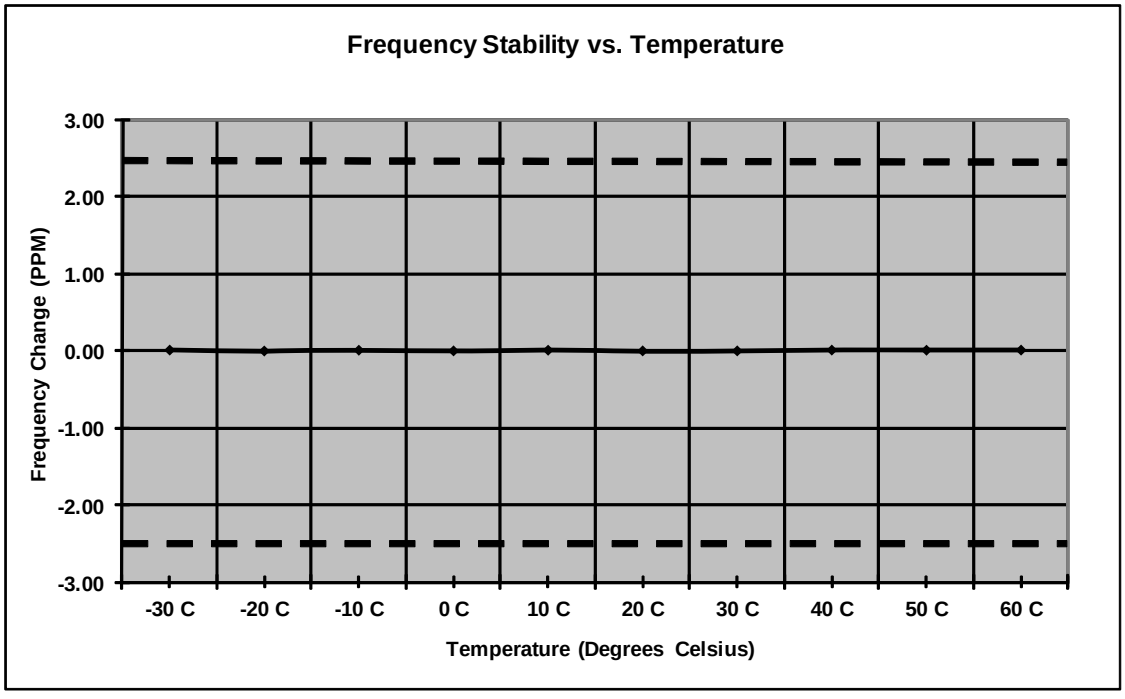


Measurement Results
Modulation: WCDMA 1900

Frequency Stability

Mode: WCDMA 1900 **Operating Frequency:** 1880.0 MHz
Channel: 9400 **Deviation Limit (PPM):** ±2.5ppm

Temperature	Frequency Error	Frequency Error	Voltage	Voltage
C	HZ	(PPM)	(%)	(VDC)
-30 C	**9.82**	**0.005**	100%	3.80
-20 C	**-10.43**	**-0.006**	100%	3.80
-10 C	**7.57**	**0.004**	100%	3.80
0 C	**-8.33**	**-0.004**	100%	3.80
10 C	**8.51**	**0.005**	100%	3.80
20 C	**-9.06**	**-0.005**	100%	3.80
30 C	**-7.89**	**-0.004**	100%	3.80
40 C	**10.06**	**0.005**	100%	3.80
50 C	**8.48**	**0.005**	100%	3.80
60 C	**9.65**	**0.005**	100%	3.80
20 C	**10.46**	**0.006**	Battery Endpoint	3.50



End of Test Report