MOBILE DEVICES BUSINESS
PRODUCT SAFETY AND COMPLIANCE
EMC LABORATORY

EMC TEST REPORT

Test Report Number – 23147-1

Report Date – 2009-06-27

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.

Signature: Name: Lei Yang

Title: EMC Project Manager Test: 2009-06-10 to 2009-06-23

As the responsible test lab manager, I hereby declare that the model tested as specified in this report conforms to the requirements indicated.

Signature: Name: Yilin Zhao

Title: Test Lab Manager Date: 2009-07-03

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FCC Registration Number: 177885

IC Registration Number: 109AW-1

UKAS TESTING
2404

ADR Testing Service location ADR BJ

ISO/IEC-17025:2005 accredited by UKAS

Test Report Details

Tests Performed By:	Motorola (China) Technologies Ltd. Asia Global Compliance Labs No. 1 Wang Jing East Road, Chao Yang District Beijing, 100102, P. R. China Phone: +86 10 8473 2610 FCC Registration Number: 177885 IC Registration Number: 109AW-1
Tests Requested By:	Motorola INC. 1301 E ALGONQUIN ROAD SCHAUMBURG ILLINOIS 60196-1078 UNITED STATES
Product Type:	Dual Mode GSM/UTRA FDD Module
Signaling Capability:	GSM 850/900/1800/1900, EDGE 850/900/1800/1900, WCDMA 850/1900/2100
FCC ID:	IHDT56KL1
IMEI:	354626030010630, 354626030010620
Testing Complete Date:	June 23, 2009

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 C63.4:2003, ANSI/TIA-603-C-2004, RSS-Gen, RSS-310, RSS-118 (AMPS), RSS-128 (TDMA), RSS-132 (WCDMA) and RSS-133 (PCS).

Summary of Testing

Test #	Test Name	Pass/Fail
1	RF Power Output	NA
2	ERP (Effective 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
7	Field Strength of Spurious Emissions from Unintentional Radiators	Pass
8	AC Line Conducted Emissions	Pass

Test #	Test Name	Margin with respect to the Limit
1	RF Power Output	NA
2	Occupied Bandwidth	See Plots
3	Spurious Emissions at Antenna Terminal	See results
4	Field Strength of Spurious Emissions	See results
5	Frequency Stability	See results
6	Field Strength of Spurious Emissions from Unintentional Radiators	Below noise floor
7	AC Line Conducted Emissions	See Plots

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

General and Special Conditions

The EUT was tested using an evaluation board 8488899V01_P3, and an adaptor type FMP5198A for power supply. Where the adaptor 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

Through the test, the EUT was installed in an evaluation board.

Equipment	Model/type	Serial number	Operational range	Date of calibration
EMI analyzers	ESU 40	100036	20 Hz – 40 GHz	12.11.2008
Pre Amplifiers	PA-02-0001:	2007343	(10 kHz – 3 GHz)	06.26.2009
	PA-02-218	2007344	3 GHz – 18 GHz	06.26.2009
	PA-02-5	2007345	18 GHz – 40 GHz	06.26.2009
Radio com. Tester	CMU 200	112790	GSM 850/900/1800/1900 UMTS, CDMA, Bluetooth	N/A
Band Reject Filter	WRCD	N/A	GSM 850/900/1800/1900 UMTS, CDMA	N/A
	4N45-24241/3/6	N/A	WLAN	N/A
EMI analyzers	R&S ESCI	100650	9 kHz – 3 GHz	12.11.2008
LISN	ENV216	100055	9 kHz – 30 MHz	12.16.2008
Environment Chamber	Votsch VT4004	3546270300000 20	-50^0C -150^0C	12.16.2008
DC Power Supply	Agilent E3632A	My40021519	15V/7A	12.15.2008
Power meter	Agilent E4416A	MY451000906	NA	03.03.2009
Power sensor	Agilent E9323A	MY44420783	50MHz-6GHz	03.03.2009

The antennas used in the various tests are listed in the below table.

Antenna	Type	Serial number	Operational range	Date of calibration
Hybrid-log periodic	TDK HLP 3003C	130361	30 MHz – 3 GHz	11.07.08
Double ridged Horn	TDK HRN0118	130303	1 GHz – 18 GHz	03.26.09
Double ridged Horn	ETS HRN3116	00071938	18 GHz – 40 GHz	10.17.08

All test equipment was within their calibration date during the time of testing. When equipment went out of calibration during testing it was replaced using a similar piece of calibrated equipment. All these equipments are listed in the equipment list.

Note that the Agilent power meter and power sensor are on a two-year calibration cycle. All other equipment is on a one-year calibration cycle.

Measurement Procedures and Data

RF POWER OUTPUT

Measurement Procedure

The RF output port of the equipment under test is directly coupled to the input of an Agilent power meter through a 30dB passive attenuator, adaptor (if needed), and specialized RF connector.

Measurement Results

GSM 850

Frequency (MHz)	Power (dBm)
824.2	33.27
836.6	32.98
848.8	33.05

GSM 1900

Frequency (MHz)	Power (dBm)
1850.2	30.00
1880.0	30.44
1909.8	29.85

EDGE 850

Frequency (MHz)	Power (dBm)
824.2	27.10
836.6	27.00
848.8	26.97

EDGE 1900

Frequency (MHz)	Power (dBm)
1850.2	26.39
1880.0	26.70
1909.8	26.30

WCDMA Modes

Band	Channel	Conducted power (dBm) for WCDMA modes		Conducted Power (dBm) for WCDMA – HSDPA (Rel 5) Modes			
		RMC	AMR	Sub test 1	Sub test 2	Sub test 3	Sub test 4
WCDMA 850	4132	24.18	24.10	23.86	24.16	24.16	24.12
	4180	24.12	24.06	24.10	24.08	24.10	24.01
	4233	24.35	24.28	24.33	24.32	24.30	24.10
WCDMA 1900	9262	24.38	24.32	23.78	23.81	23.82	23.82
	9400	24.18	24.08	23.86	23.92	23.82	23.74
	9538	24.28	24.26	23.83	23.78	23.96	24.16

All WCDMA testing was done in RMC mode.

OCCUPIED BANDWIDTH

Measurement Procedure

The RF output port of the equipment under test 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.

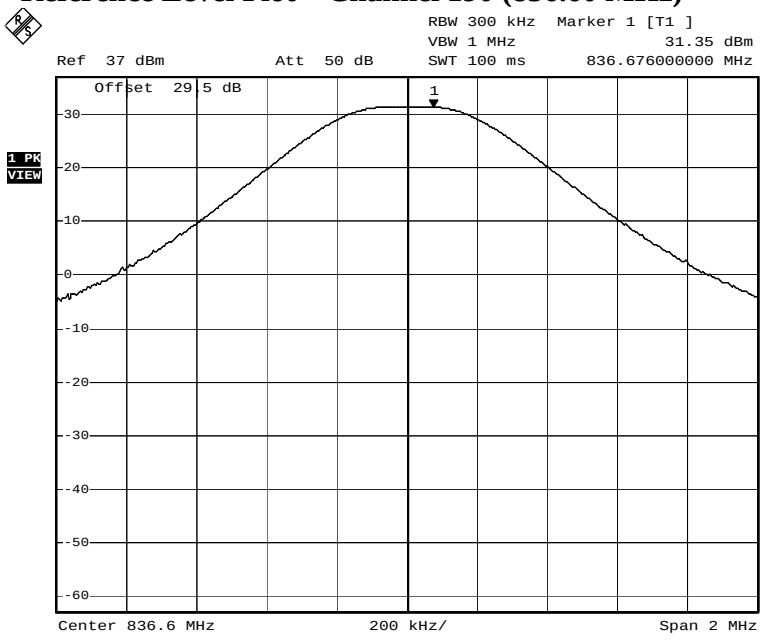
The middle channel within the designated frequency block was measured. For digital modulation, the lower and upper band edge plots are displayed.

Measurement Results

Attached

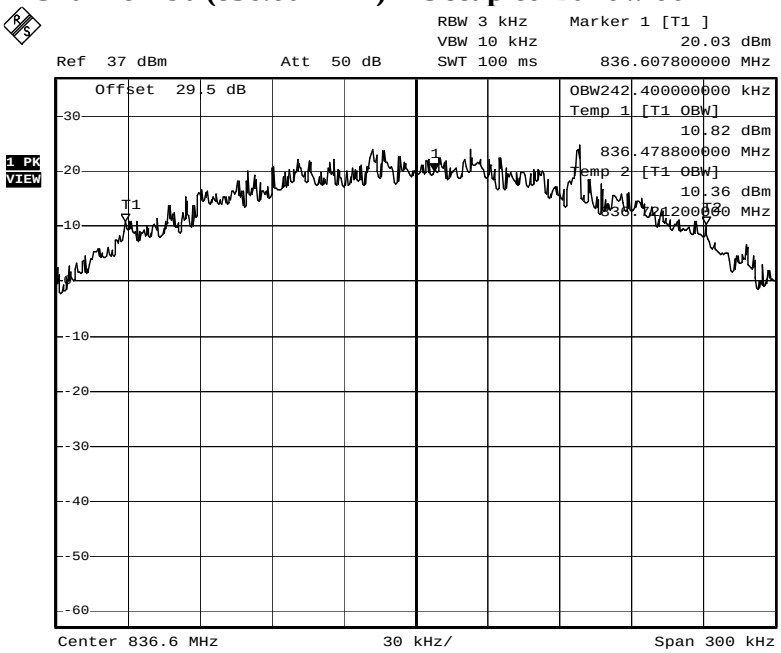
Measurement Results – GSM 850

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



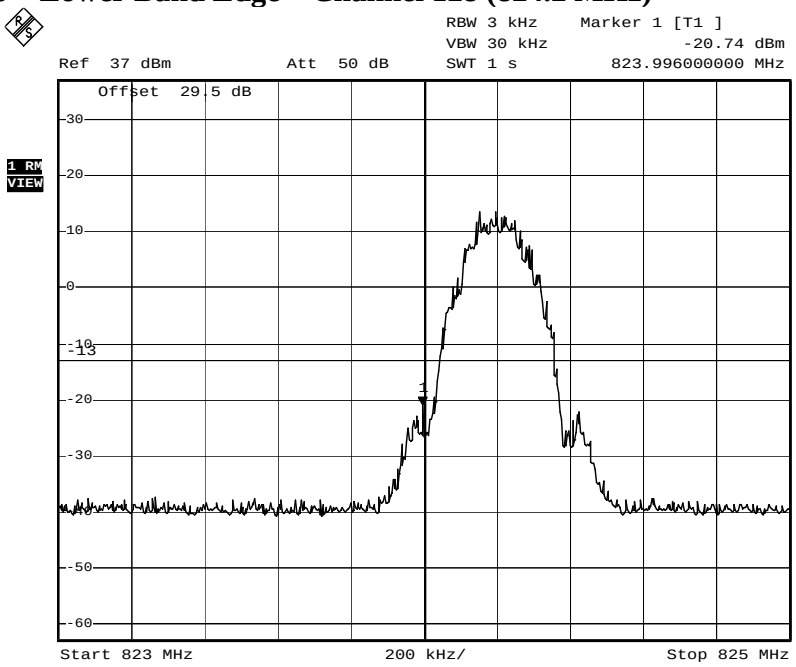
Date: 16.JUN.2009 16:48:45

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



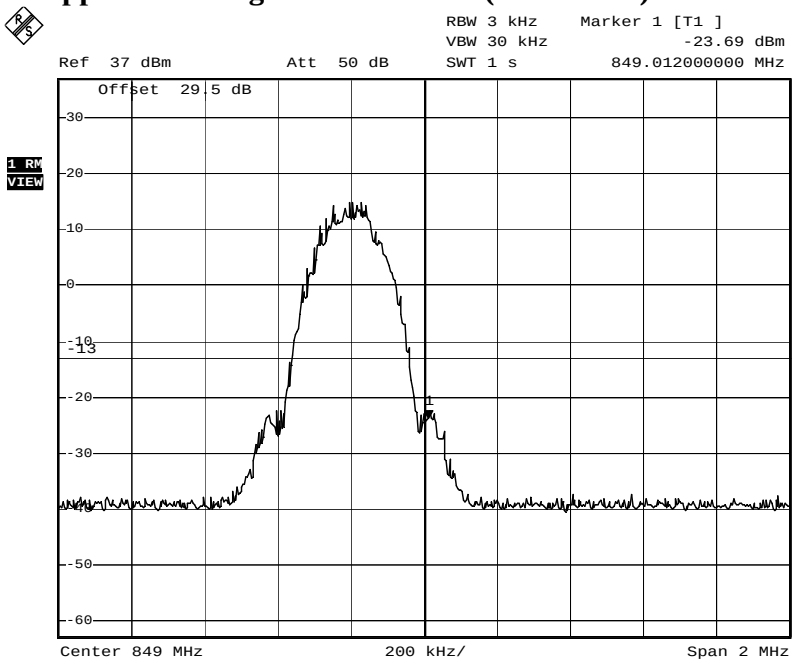
Date: 16.JUN.2009 16:50:06

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



Date: 16.JUN.2009 16:53:32

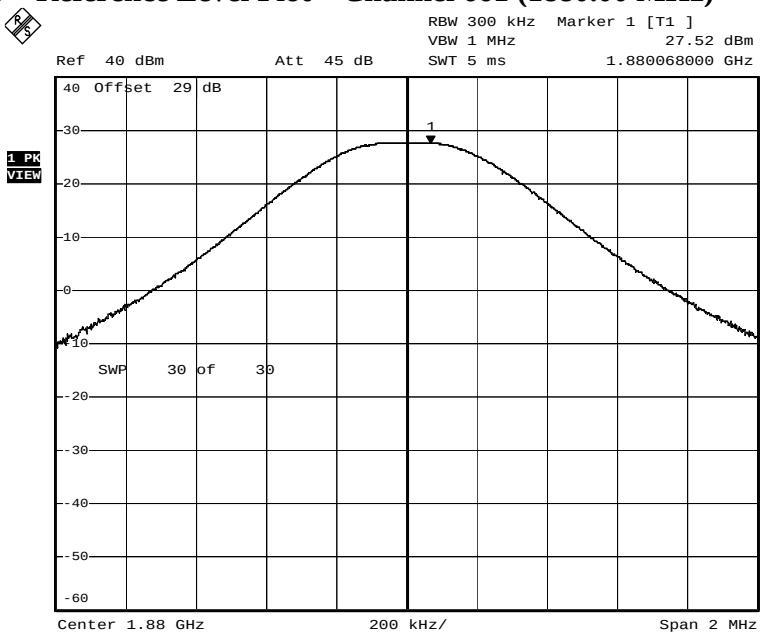
GSM 850 – Upper Band Edge – Channel 251 (848.8 MHz)



Date: 16.JUN.2009 16:55:30

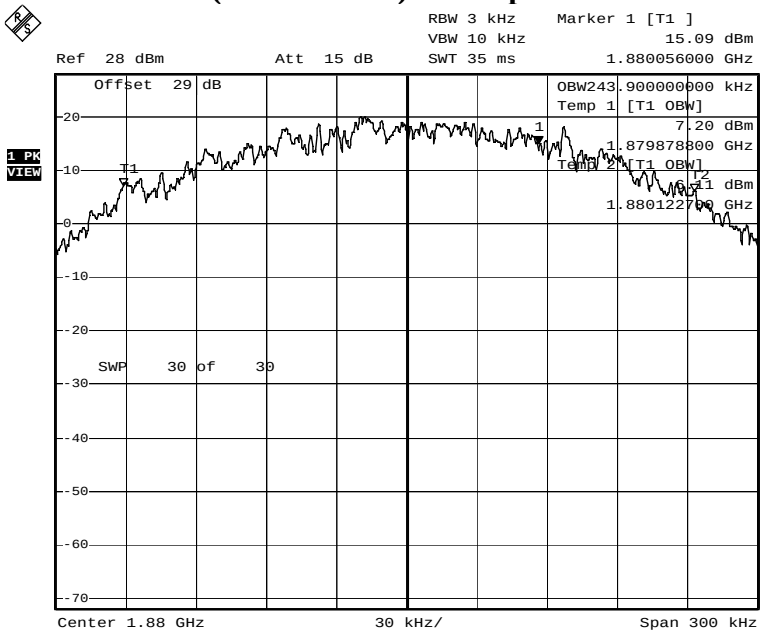
Measurement Results – GSM 1900

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



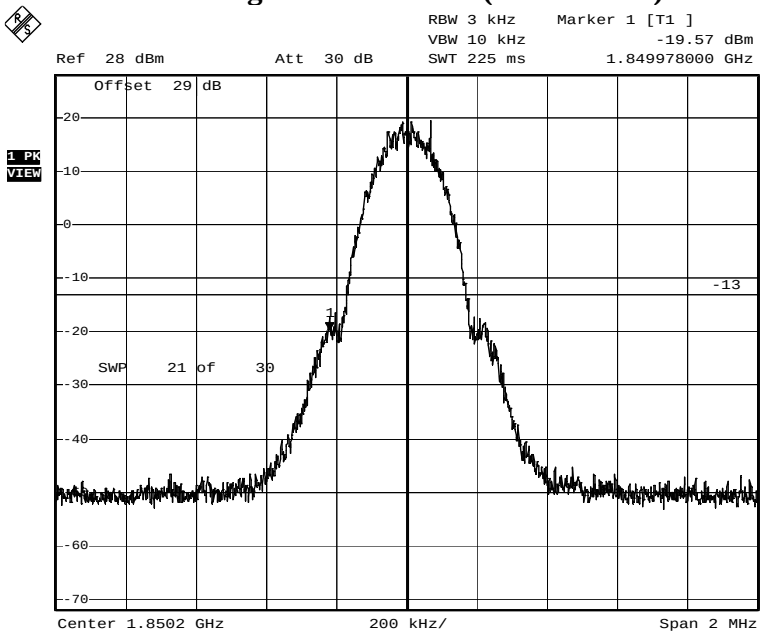
Date: 15.JUN.2009 11:38:21

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



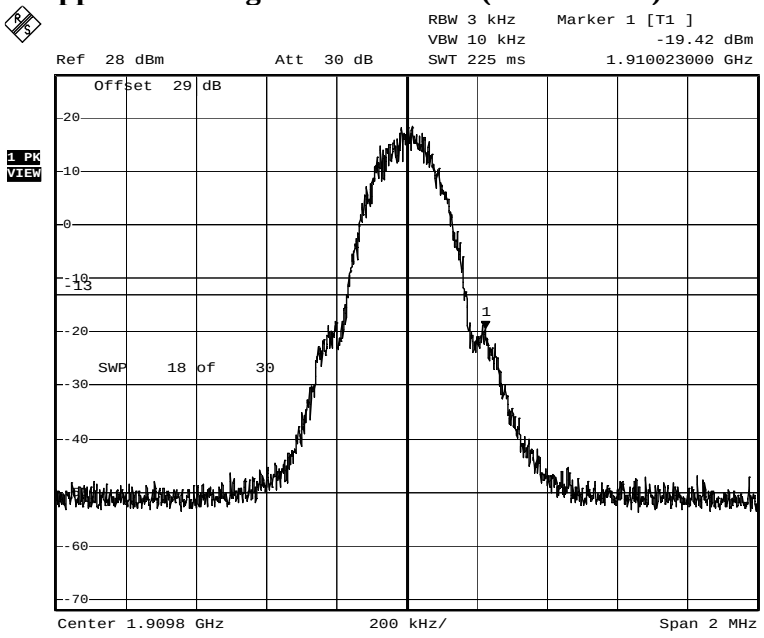
Date: 15.JUN.2009 11:53:47

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



Date: 15.JUN.2009 11:56:39

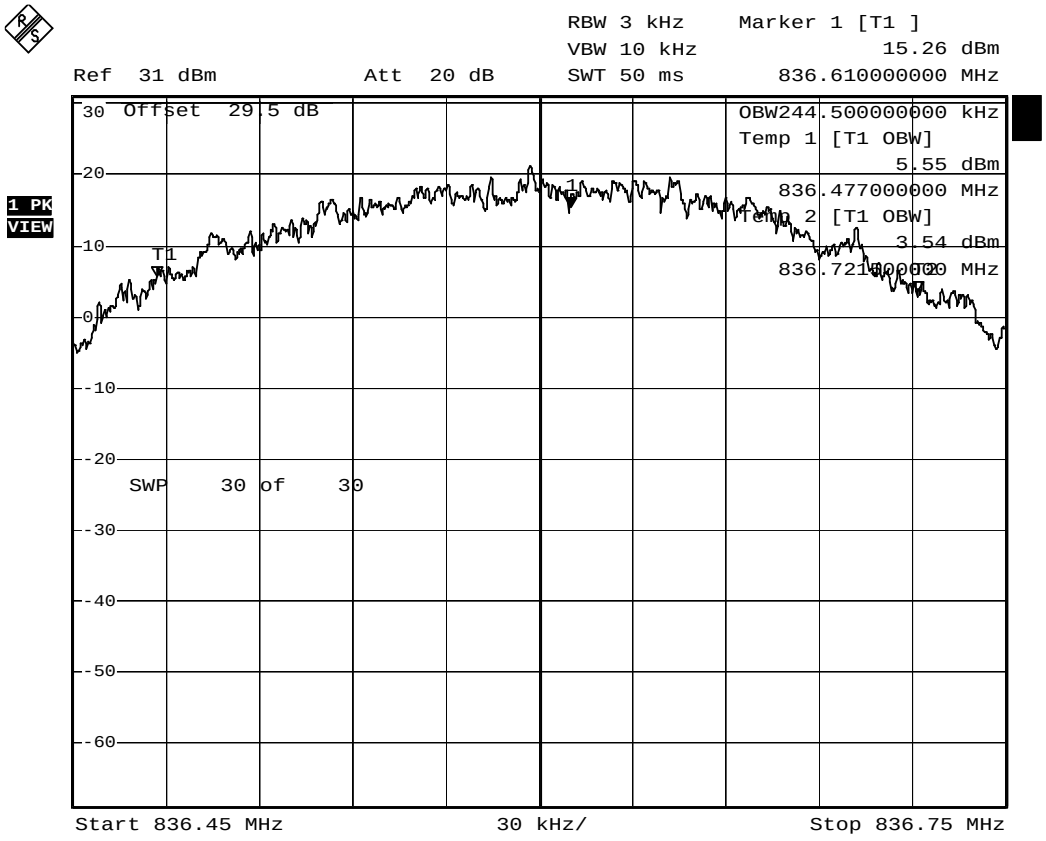
GSM 1900 – Upper Band Edge – Channel 810 (1909.8 MHz)



Date: 15.JUN.2009 11:58:48

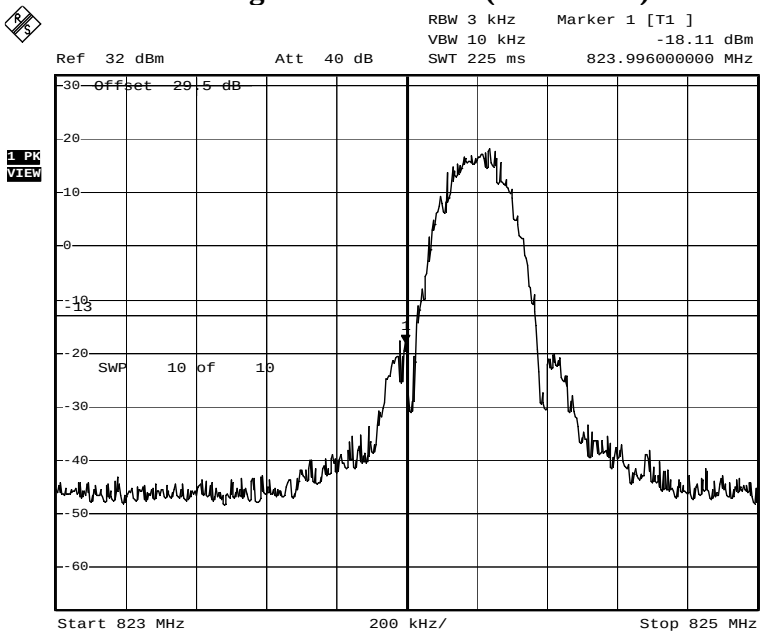
Measurement Results – EDGE 850

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



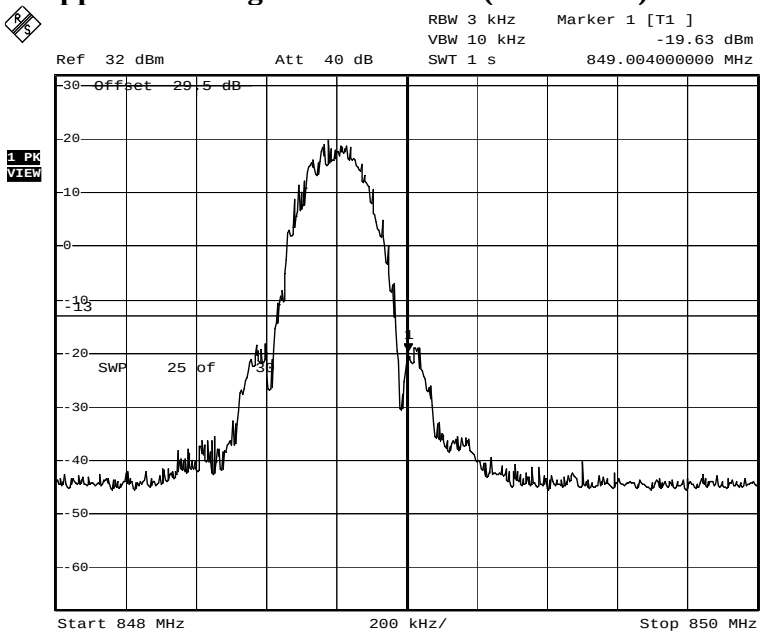
Date: 17.JUN.2009 10:44:54

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



Date: 16.JUN.2009 17:32:42

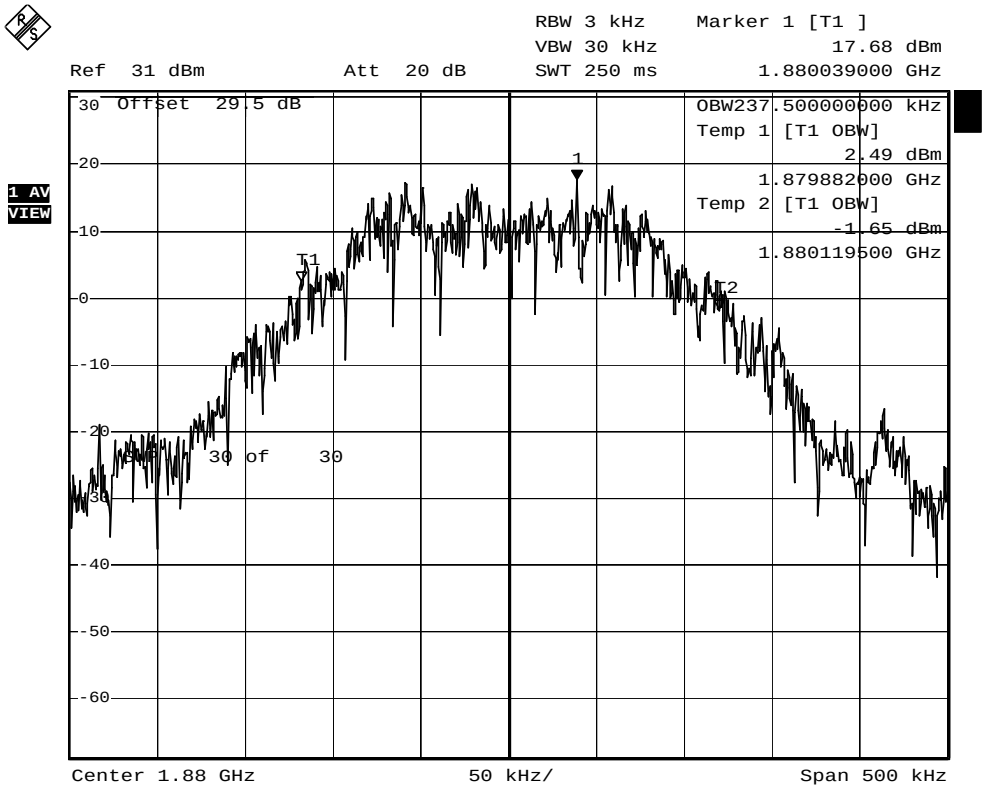
EDGE 850 – Upper Band Edge – Channel 251 (848.8 MHz)



Date: 16.JUN.2009 17:38:31

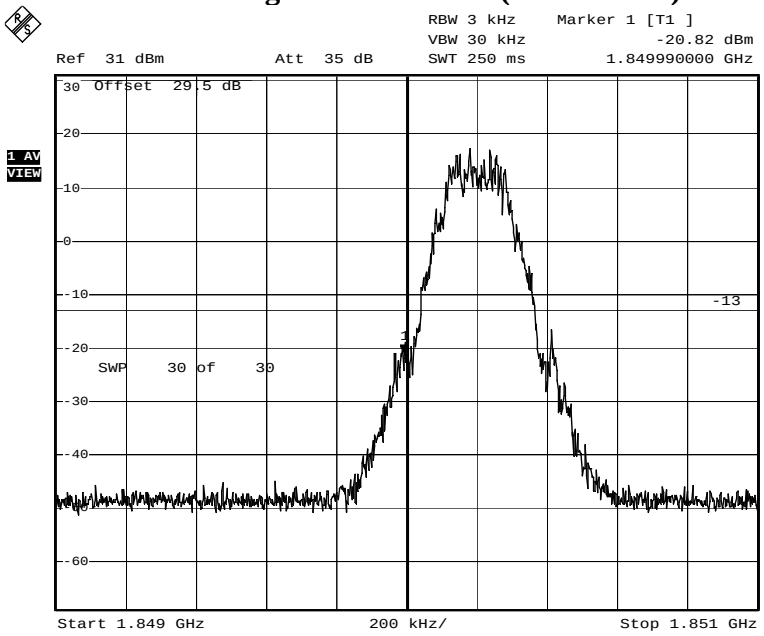
Measurement Results – EDGE 1900

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



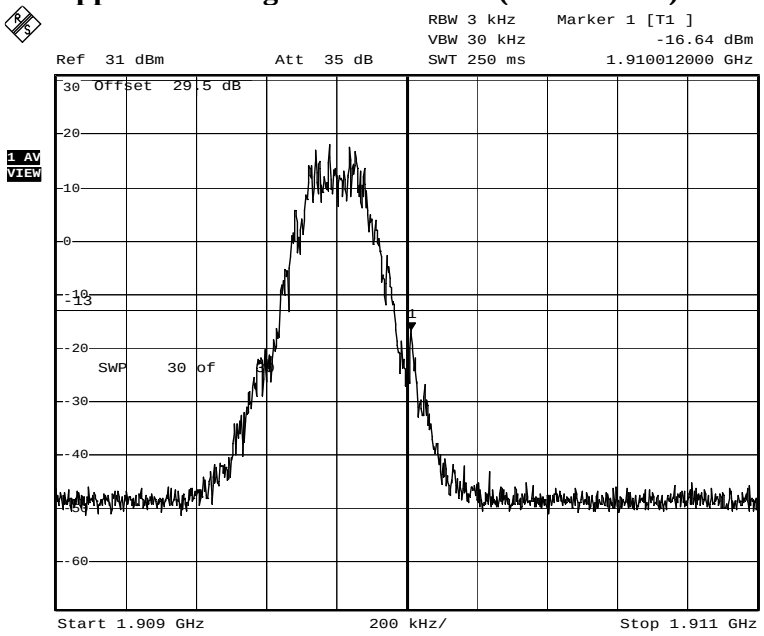
Date: 16.JUN.2009 10:59:57

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



Date: 16.JUN.2009 11:02:08

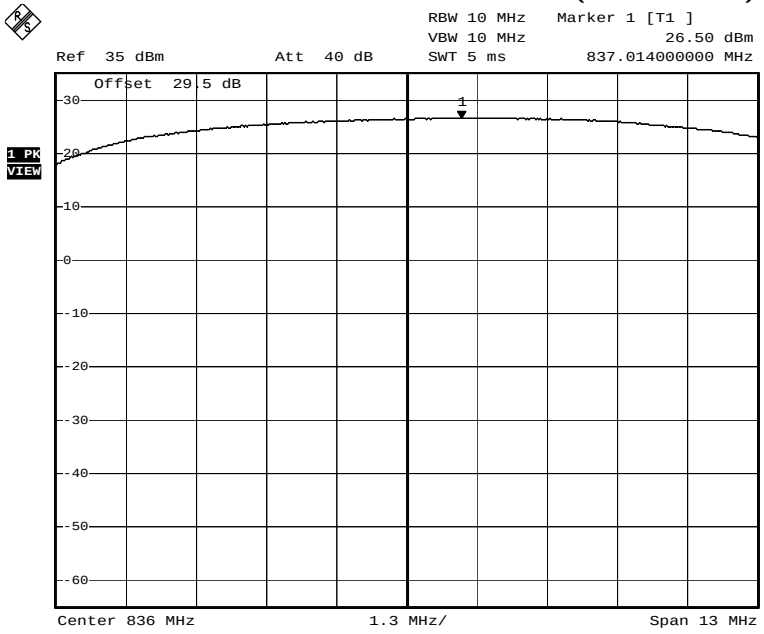
EDGE 1900 – Upper Band Edge – Channel 810 (1909.8 MHz)



Date: 16.JUN.2009 11:04:06

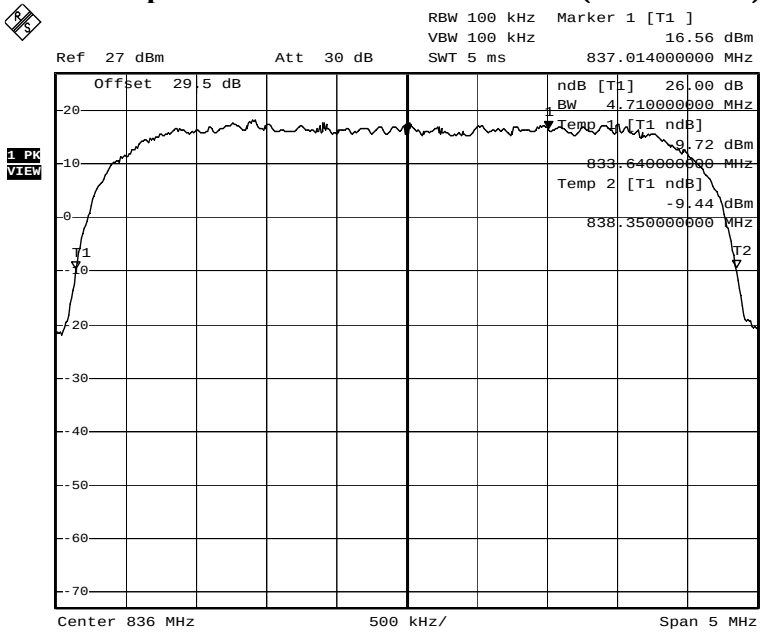
Measurement Results – WCDMA 850

WCDMA 850 – Reference Level Plot – Channel 4180 (836.00 MHz)



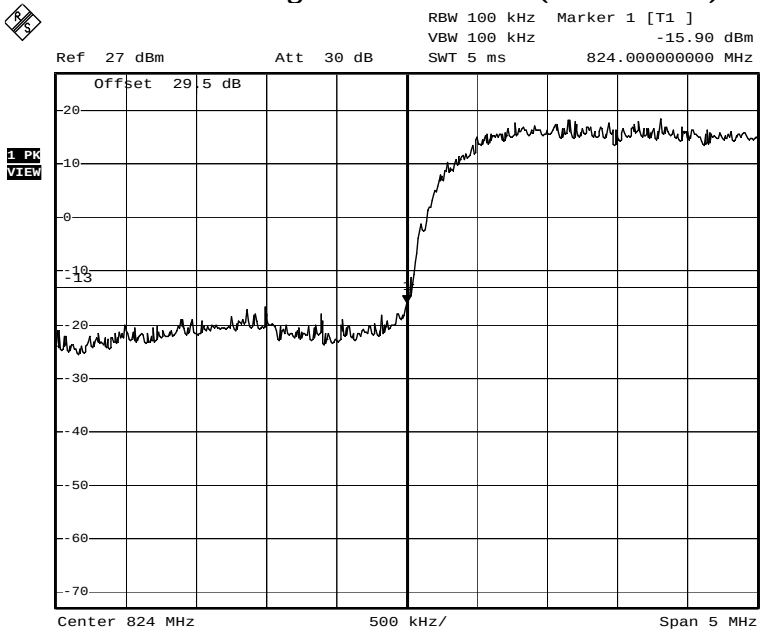
Date: 18.JUN.2009 09:49:04

WCDMA 850 – Occupied Bandwidth – Channel 4180 (836.00 MHz)



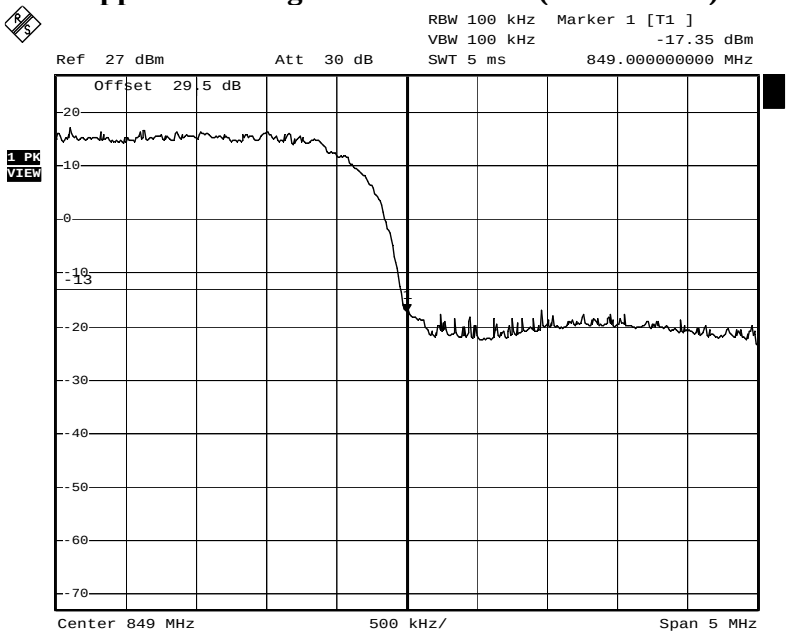
Date: 18.JUN.2009 09:50:36

W**CDMA 850 – Lower Band Edge – Channel 4132 (826.40 MHz)**



Date: 18.JUN.2009 09:53:33

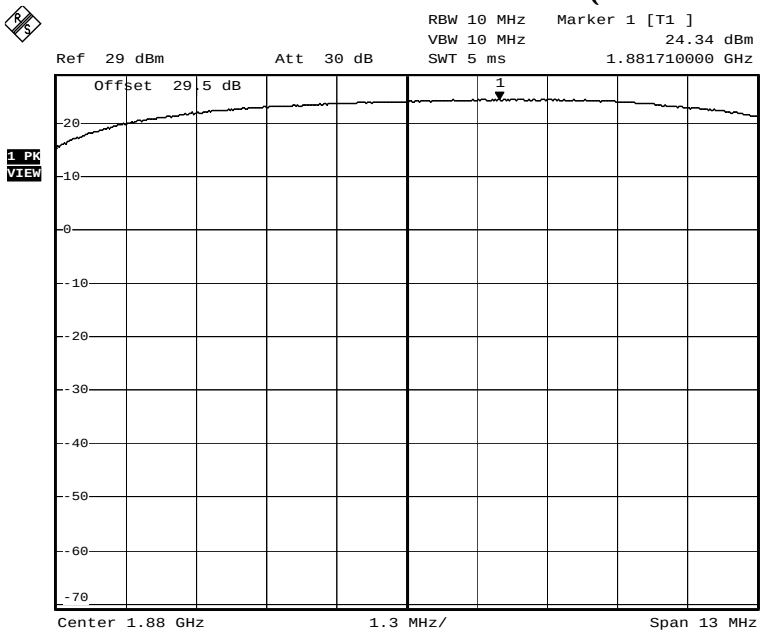
WCDMA 850 – Upper Band Edge – Channel 4233 (846.60 MHz)



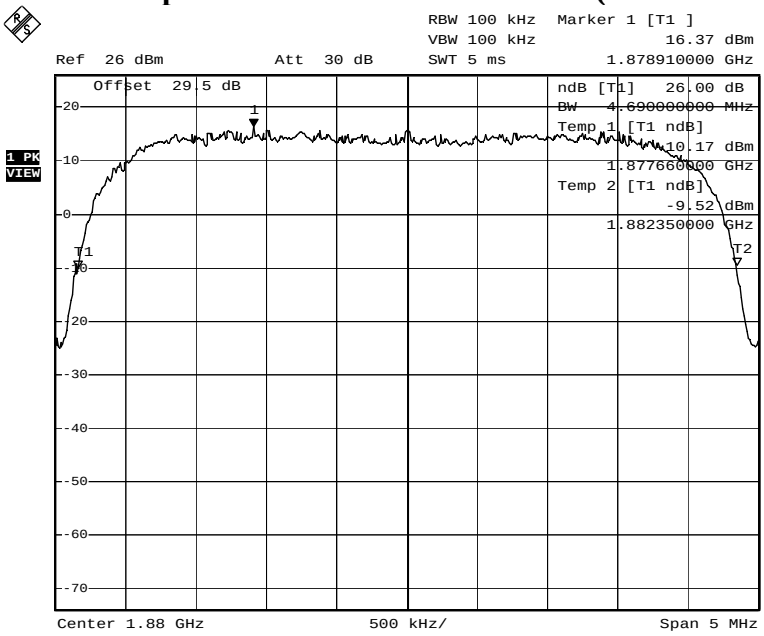
Date: 18.JUN.2009 09:55:25

Measurement Results – WCDMA 1900

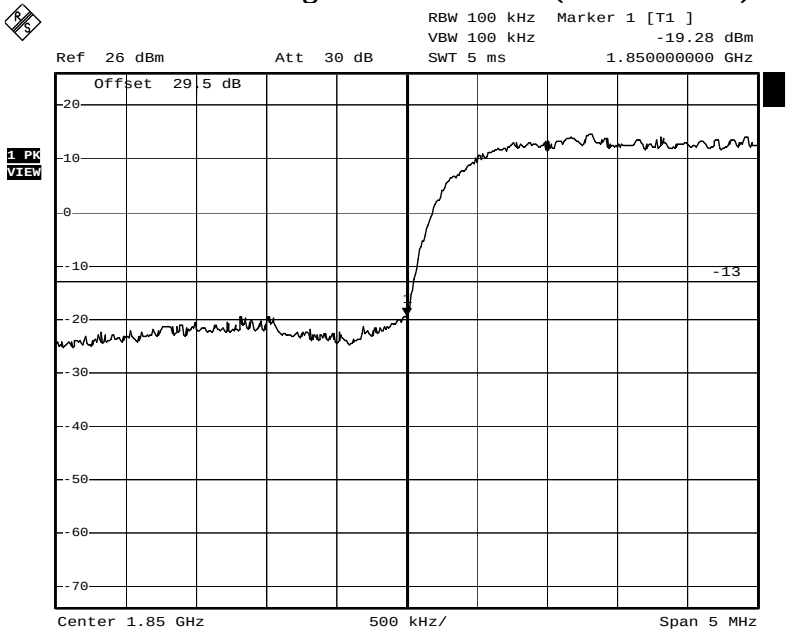
WCDMA 1900 – Reference Level Plot – Channel 9400 (1880.00 MHz)



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

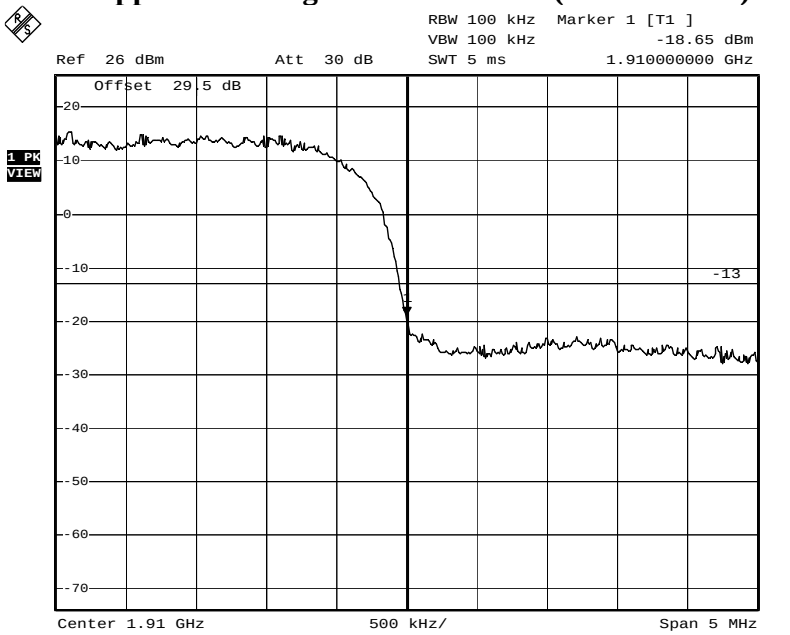


WCDMA 1900 – Lower Band Edge – Channel 9262 (1852.40 MHz)



Date: 17.JUN.2009 18:32:27

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



Date: 17.JUN.2009 18:35:23

SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Measurement Procedure

The RF output port of the Equipment Under Test 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

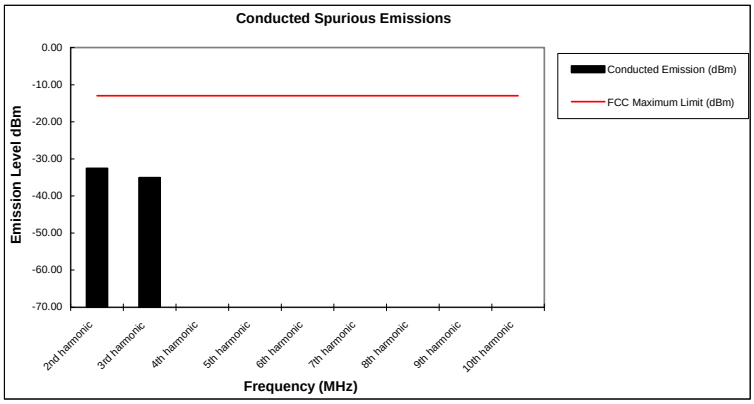
Measurement Results

Attached

Measurement Results – GSM 850

Conducted Spurious and Harmonic Emissions

Harmonic of Fundamental	FCC Maximum Limit (dBm)	Conducted Emission (dBm)
2nd harmonic	-13	-32.57
3rd harmonic	-13	-35.07
4th harmonic	-13	*
5th harmonic	-13	*
6th harmonic	-13	*
7th harmonic	-13	*
8th harmonic	-13	*
9th harmonic	-13	*
10th harmonic	-13	*



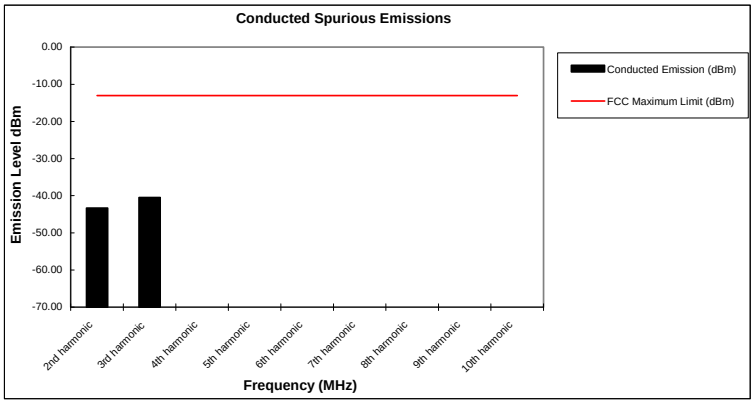
Notes:
1. * Indicates the spurious emission could not be detected due to noise limitations or ambients.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated from 9 kHz to the tenth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

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

Measurement Results – GSM 1900

Conducted Spurious and Harmonic Emissions

Harmonic of Fundamental	FCC Maximum Limit (dBm)	Conducted Emission (dBm)
2nd harmonic	-13	-43.33
3rd harmonic	-13	-40.51
4th harmonic	-13	*
5th harmonic	-13	*
6th harmonic	-13	*
7th harmonic	-13	*
8th harmonic	-13	*
9th harmonic	-13	*
10th harmonic	-13	*



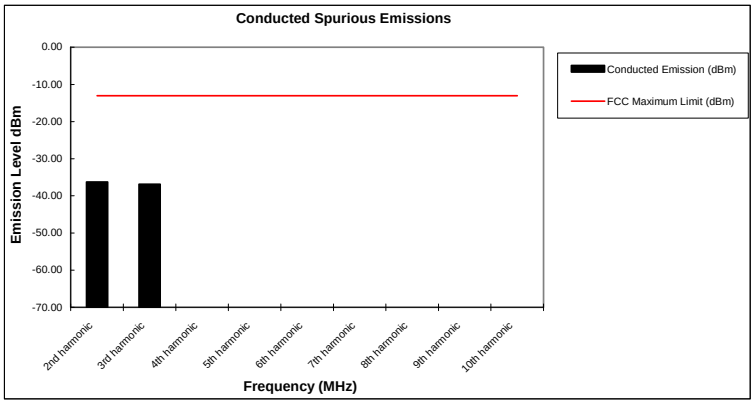
Notes:
1. * Indicates the spurious emission could not be detected due to noise limitations or ambients.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated from 9 kHz to the tenth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

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

Measurement Results – EDGE 850

Conducted Spurious and Harmonic Emissions

Harmonic of Fundamental	FCC Maximum Limit (dBm)	Conducted Emission (dBm)
2nd harmonic	-13	-36.27
3rd harmonic	-13	-36.87
4th harmonic	-13	*
5th harmonic	-13	*
6th harmonic	-13	*
7th harmonic	-13	*
8th harmonic	-13	*
9th harmonic	-13	*
10th harmonic	-13	*



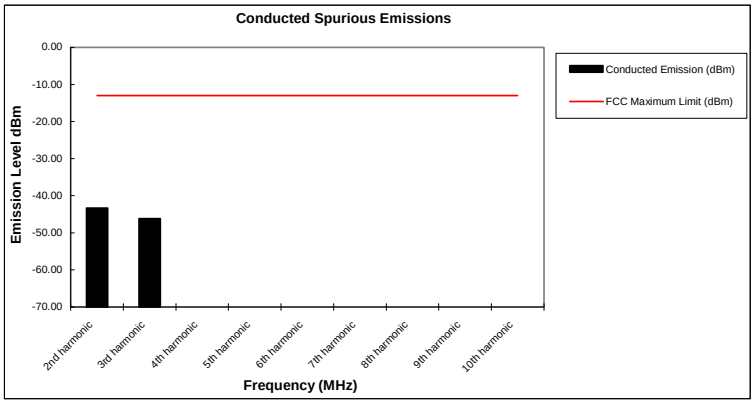
Notes:
1. * Indicates the spurious emission could not be detected due to noise limitations or ambients.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated from 9 kHz to the tenth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

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

Measurement Results – EDGE 1900

Conducted Spurious and Harmonic Emissions

Harmonic of Fundamental	FCC Maximum Limit (dBm)	Conducted Emission (dBm)
2nd harmonic	-13	-43.32
3rd harmonic	-13	-46.18
4th harmonic	-13	*
5th harmonic	-13	*
6th harmonic	-13	*
7th harmonic	-13	*
8th harmonic	-13	*
9th harmonic	-13	*
10th harmonic	-13	*



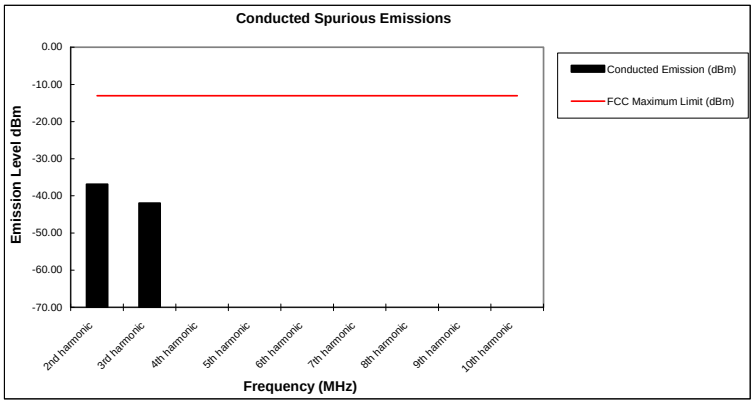
Notes:
1. * Indicates the spurious emission could not be detected due to noise limitations or ambients.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated from 9 kHz to the tenth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

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

Measurement Results – WCDMA 850

Conducted Spurious and Harmonic Emissions

Harmonic of Fundamental	FCC Maximum Limit (dBm)	Conducted Emission (dBm)
2nd harmonic	-13	-36.87
3rd harmonic	-13	-41.94
4th harmonic	-13	*
5th harmonic	-13	*
6th harmonic	-13	*
7th harmonic	-13	*
8th harmonic	-13	*
9th harmonic	-13	*
10th harmonic	-13	*



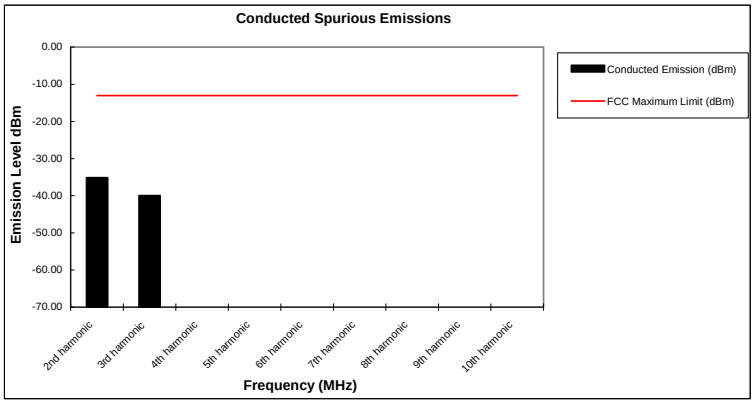
Notes:
1. * Indicates the spurious emission could not be detected due to noise limitations or ambients.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated from 9 kHz to the tenth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

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

Measurement Results – WCDMA 1900

Conducted Spurious and Harmonic Emissions

Harmonic of Fundamental	FCC Maximum Limit (dBm)	Conducted Emission (dBm)
2nd harmonic	-13	-35.13
3rd harmonic	-13	-39.97
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.

FIELD STRENGTH OF SPURIOUS EMISSIONS

Measurement Procedure

The equipment under test 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 equipment under test 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.

The settings of the receiver were as follows:

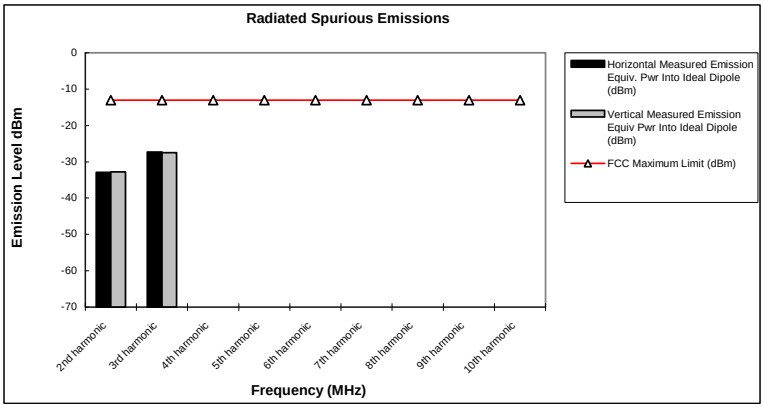
Units	dBm
Divisions	5 dB
Detector	Peak Detector
Resolution Bandwidth	1 MHz
Video Bandwidth (AVG)	Auto
Sweep Time	Auto

Measurement Results
Attached

Measurement Results – GSM 850

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	-32.9	-32.8
3rd harmonic	-13	-27.3	-27.5
4th harmonic	-13	*	*
5th harmonic	-13	*	*
6th harmonic	-13	*	*
7th harmonic	-13	*	*
8th harmonic	-13	*	*
9th harmonic	-13	*	*
10th harmonic	-13	*	*



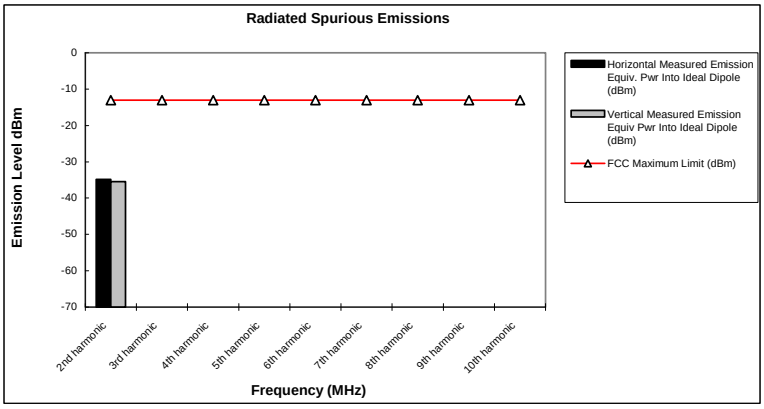
Notes:
1. * Indicates the spurious emission could not be detected due to noise limitations or ambients.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated from 30 MHz to the tenth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

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

Measurement Results – GSM 1900

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	-34.9	-35.4
3rd harmonic	-13	*	*
4th harmonic	-13	*	*
5th harmonic	-13	*	*
6th harmonic	-13	*	*
7th harmonic	-13	*	*
8th harmonic	-13	*	*
9th harmonic	-13	*	*
10th harmonic	-13	*	*



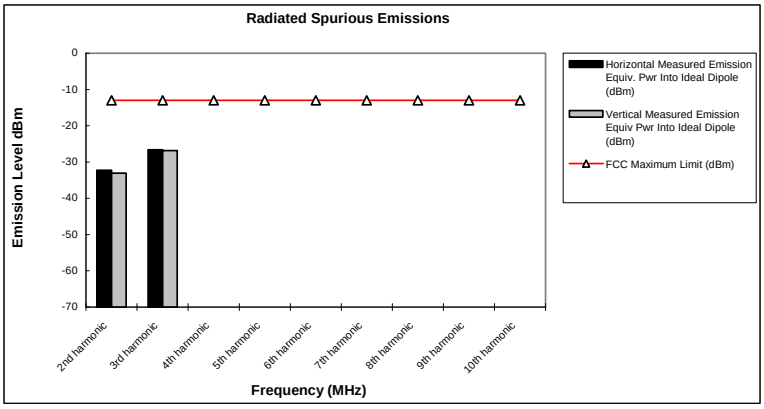
Notes:
1. * Indicates the spurious emission could not be detected due to noise limitations or ambients.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated from 30 MHz to the tenth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

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

Measurement Results – EDGE 850

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	-32.3	-33.1
3rd harmonic	-13	-26.6	-26.8
4th harmonic	-13	*	*
5th harmonic	-13	*	*
6th harmonic	-13	*	*
7th harmonic	-13	*	*
8th harmonic	-13	*	*
9th harmonic	-13	*	*
10th harmonic	-13	*	*

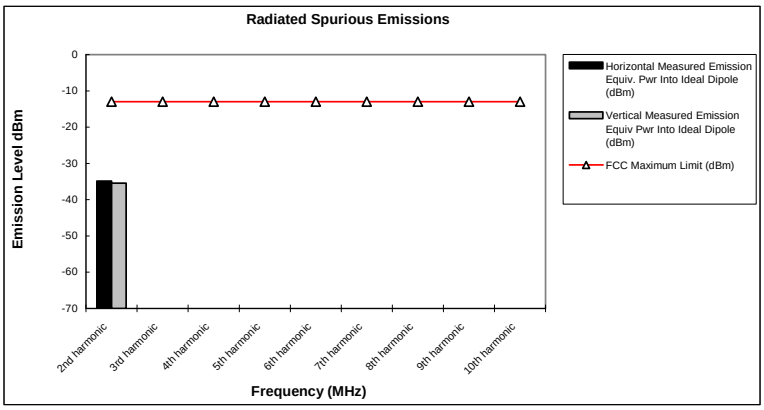


Notes:
1. * Indicates the spurious emission could not be detected due to noise limitations or ambients.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated from 30 MHz to the tenth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

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

Measurement Results – EDGE 1900

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	-34.9	-35.4
3rd harmonic	-13	*	*
4th harmonic	-13	*	*
5th harmonic	-13	*	*
6th harmonic	-13	*	*
7th harmonic	-13	*	*
8th harmonic	-13	*	*
9th harmonic	-13	*	*
10th harmonic	-13	*	*



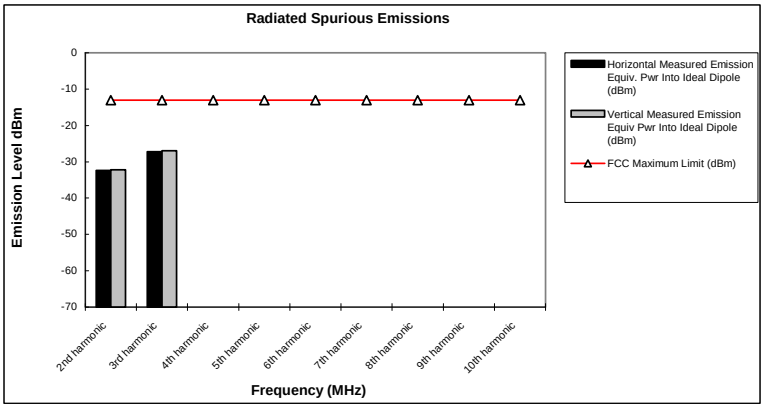
Notes:
1. * Indicates the spurious emission could not be detected due to noise limitations or ambients.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated from 30 MHz to the tenth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

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

Measurement Results – WCDMA 850

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	-32.4	-32.2
3rd harmonic	-13	-27.2	-27.0
4th harmonic	-13	*	*
5th harmonic	-13	*	*
6th harmonic	-13	*	*
7th harmonic	-13	*	*
8th harmonic	-13	*	*
9th harmonic	-13	*	*
10th harmonic	-13	*	*



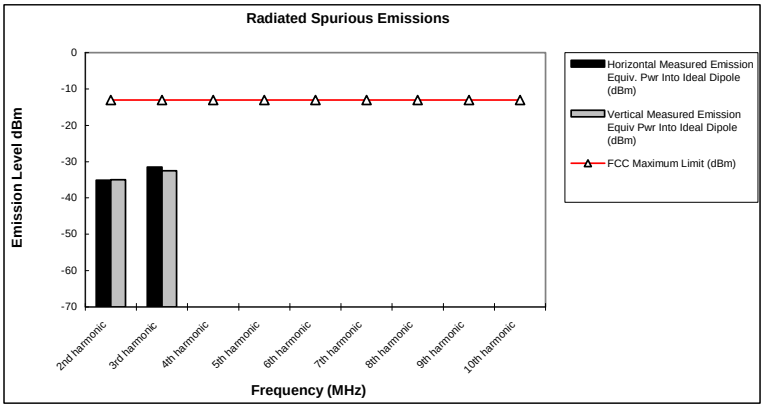
Notes:
1. * Indicates the spurious emission could not be detected due to noise limitations or ambients.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated from 30 MHz to the tenth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

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

Measurement Results – WCDMA 1900

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	-35.1	-35.0
3rd harmonic	-13	-31.5	-32.5
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 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 equipment under test is placed in an environmental chamber. The antenna port of the Equipment Under Test 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

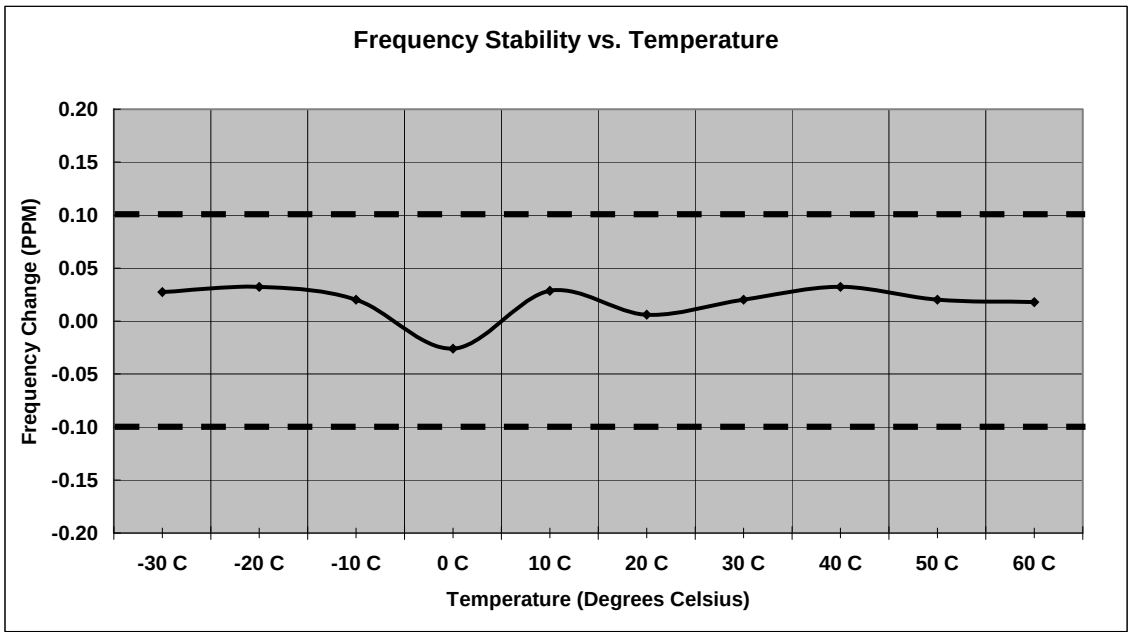
Attached

Measurement Results – GSM 850

Frequency Stability

Mode: GSM 850 **Operating Frequency:** 836.6 MHz
Channel: 190 **Deviation Limit (PPM):** 0.1 ppm

Temperature	Frequency Error	Frequency Error	Voltage	Voltage
C	HZ	(PPM)	(%)	(VDC)
-30 C	**23.00**	**0.027**	100%	3.75
-20 C	**27.00**	**0.032**	100%	3.75
-10 C	**17.00**	**0.020**	100%	3.75
0 C	**-22.00**	**-0.026**	100%	3.75
10 C	**24.00**	**0.029**	100%	3.75
20 C	**5.00**	**0.006**	100%	3.75
30 C	**17.00**	**0.020**	100%	3.75
40 C	**27.00**	**0.032**	100%	3.75
50 C	**17.00**	**0.020**	100%	3.75
60 C	**15.00**	**0.018**	100%	3.75
20 C	**-3.00**	**-0.004**	Battery Endpoint	3.30

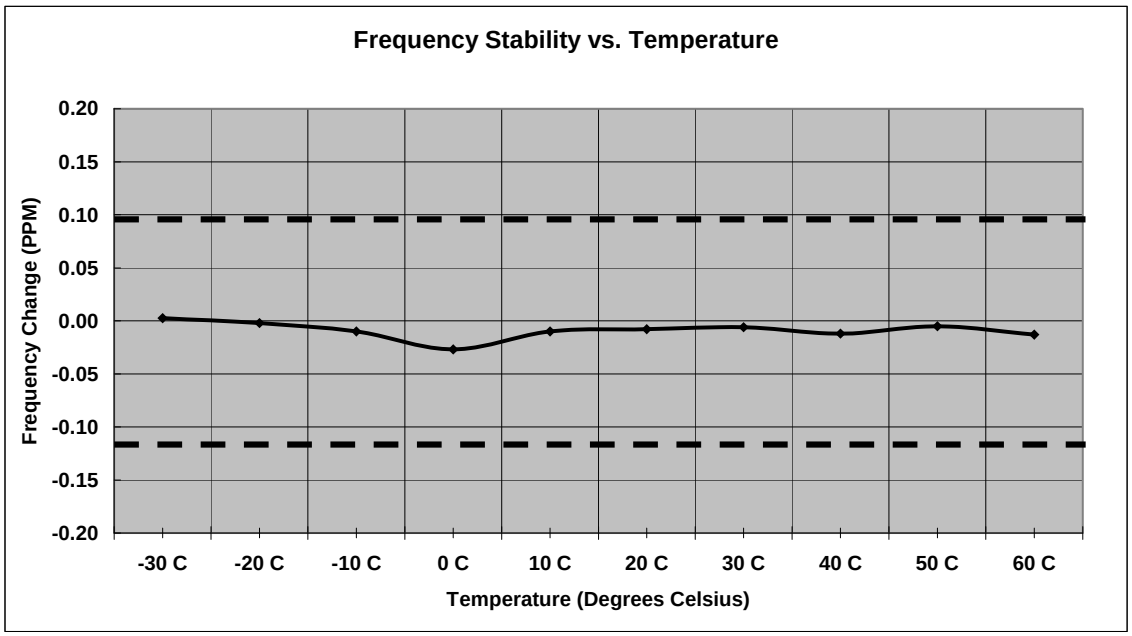


Measurement Results – GSM 1900

Frequency Stability

Mode: GSM 1900 **Operating Frequency:** 1880.0 MHz
Channel: 661 **Deviation Limit (PPM):** 0.1ppm

Temperature	Frequency Error	Frequency Error	Voltage	Voltage
C	HZ	(PPM)	(%)	(VDC)
-30 C	**5.00**	**0.003**	100%	3.75
-20 C	**-3.00**	**-0.002**	100%	3.75
-10 C	**-18.00**	**-0.010**	100%	3.75
0 C	**-50.00**	**-0.027**	100%	3.75
10 C	**-18.00**	**-0.010**	100%	3.75
20 C	**-15.00**	**-0.008**	100%	3.75
30 C	**-12.00**	**-0.006**	100%	3.75
40 C	**-22.00**	**-0.012**	100%	3.75
50 C	**-9.00**	**-0.005**	100%	3.75
60 C	**-24.00**	**-0.013**	100%	3.75
20 C	**-5.00**	**-0.003**	Battery Endpoint	3.30

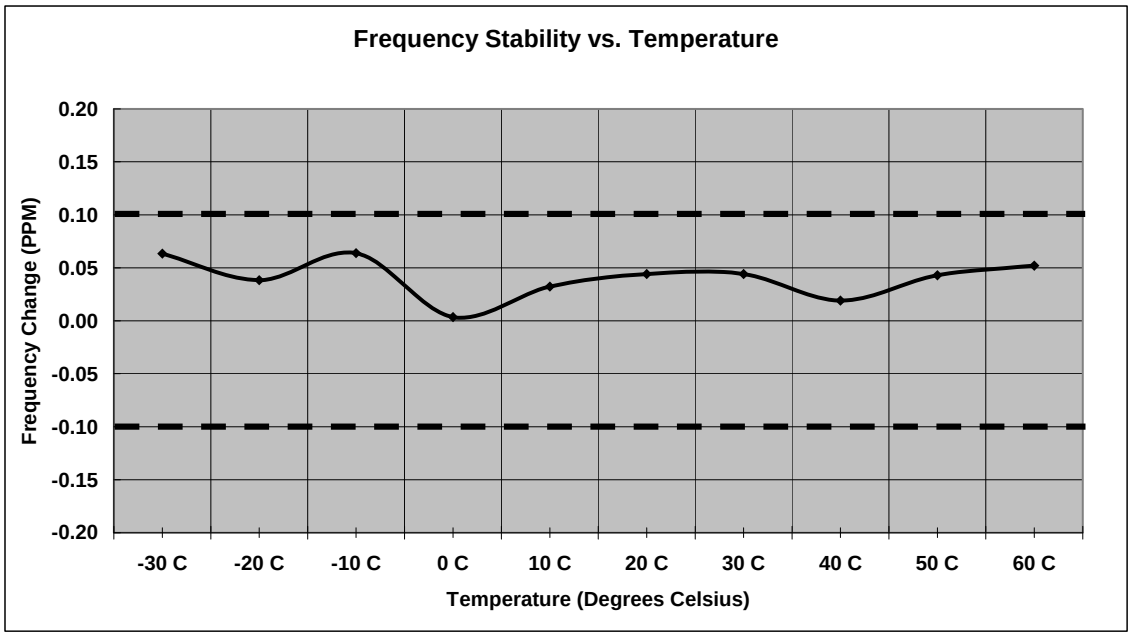


Measurement Results – EDGE 850

Frequency Stability

Mode: EDGE 850 **Operating Frequency:** 836.6 MHz
Channel: 190 **Deviation Limit (PPM):** 0.1 ppm

Temperature	Frequency Error	Frequency Error	Voltage	Voltage
C	HZ	(PPM)	(%)	(VDC)
-30 C	**53.00**	**0.063**	100%	3.75
-20 C	**32.00**	**0.038**	100%	3.75
-10 C	**53.50**	**0.064**	100%	3.75
0 C	**3.00**	**0.004**	100%	3.75
10 C	**27.00**	**0.032**	100%	3.75
20 C	**37.00**	**0.044**	100%	3.75
30 C	**37.00**	**0.044**	100%	3.75
40 C	**16.00**	**0.019**	100%	3.75
50 C	**36.00**	**0.043**	100%	3.75
60 C	**43.50**	**0.052**	100%	3.75
20 C	**28.50**	**0.034**	Battery Endpoint	3.30

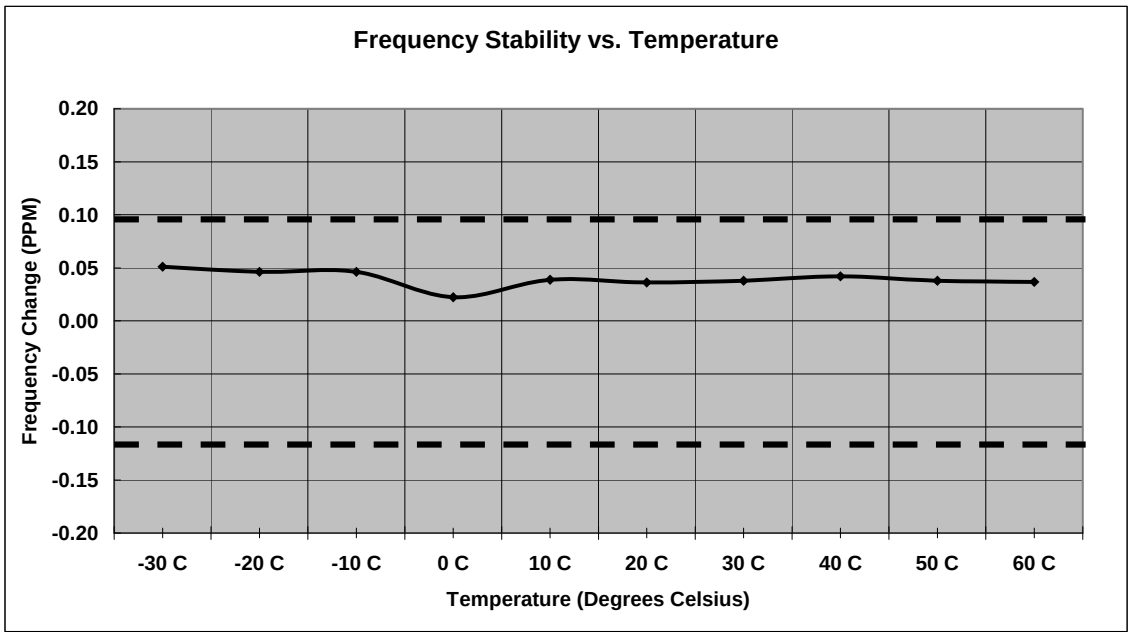


Measurement Results – EDGE 1900

Frequency Stability

Mode: EDGE 1900 **Operating Frequency:** 1880.0 MHz
Channel: 661 **Deviation Limit (PPM):** 0.1ppm

Temperature	Frequency Error	Frequency Error	Voltage	Voltage
C	HZ	(PPM)	(%)	(VDC)
-30 C	**96.00**	**0.051**	100%	3.75
-20 C	**87.00**	**0.046**	100%	3.75
-10 C	**87.00**	**0.046**	100%	3.75
0 C	**42.00**	**0.022**	100%	3.75
10 C	**73.00**	**0.039**	100%	3.75
20 C	**68.00**	**0.036**	100%	3.75
30 C	**71.00**	**0.038**	100%	3.75
40 C	**79.00**	**0.042**	100%	3.75
50 C	**71.00**	**0.038**	100%	3.75
60 C	**69.00**	**0.037**	100%	3.75
20 C	**73.00**	**0.039**	Battery Endpoint	3.30

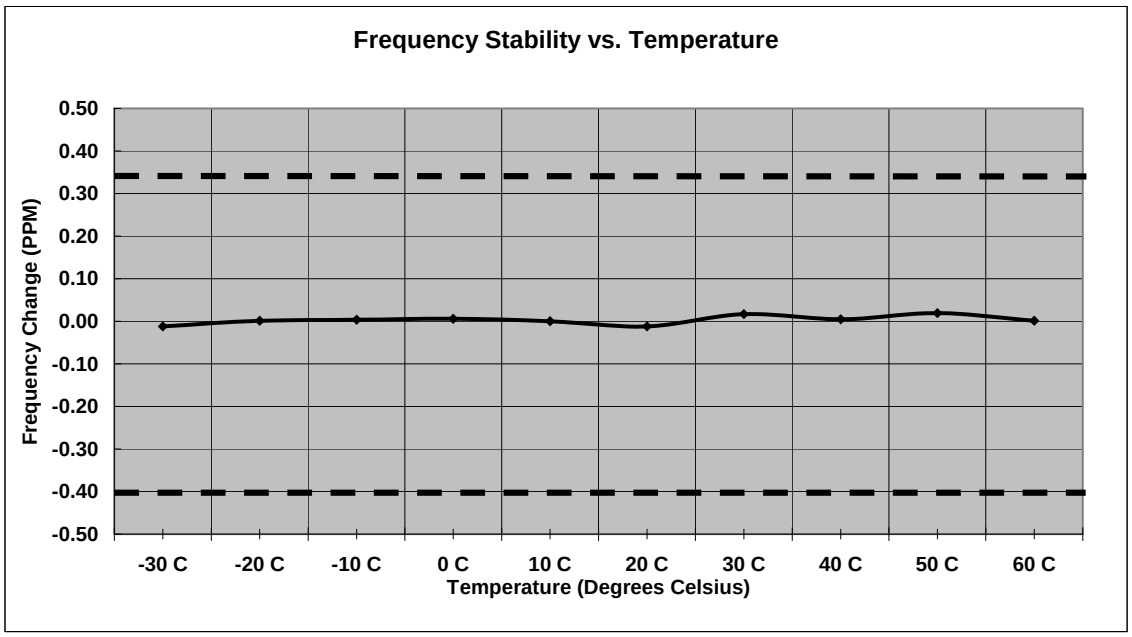


Measurement Results – WCDMA 850

Frequency Stability

Mode: WCDMA 850 **Operating Frequency:** 836.00 MHz
Channel: 4180 **Deviation Limit (PPM):** 0.359ppm (+/-300 Hz)

Temperature	Frequency Error	Frequency Error	Voltage	Voltage
C	HZ	(PPM)	(%)	(VDC)
-30 C	**-10.00**	**-0.012**	100%	3.75
-20 C	**1.00**	**0.001**	100%	3.75
-10 C	**3.00**	**0.004**	100%	3.75
0 C	**5.00**	**0.006**	100%	3.75
10 C	**0.00**	**0.000**	100%	3.75
20 C	**-10.00**	**-0.012**	100%	3.75
30 C	**14.00**	**0.017**	100%	3.75
40 C	**4.00**	**0.005**	100%	3.75
50 C	**16.00**	**0.019**	100%	3.75
60 C	**1.00**	**0.001**	100%	3.75
20 C	**3.00**	**0.004**	Battery Endpoint	3.30

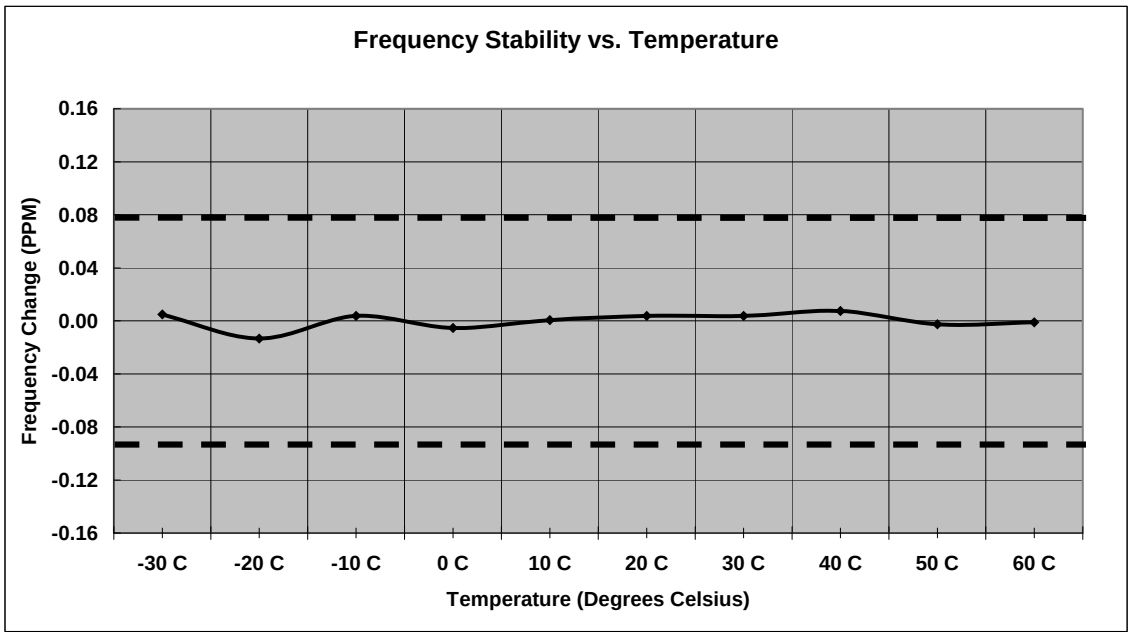


Measurement Results – WCDMA 1900

Frequency Stability

Mode: WCDMA 1900 **Operating Frequency:** 1880.0 MHz
Channel: 9400 **Deviation Limit (PPM):** 0.359ppm (+/-300Hz)

Temperature	Frequency Error	Frequency Error	Voltage	Voltage
C	HZ	(PPM)	(%)	(VDC)
-30 C	**9.00**	**0.005**	100%	3.75
-20 C	**-25.00**	**-0.013**	100%	3.75
-10 C	**7.00**	**0.004**	100%	3.75
0 C	**-10.00**	**-0.005**	100%	3.75
10 C	**1.00**	**0.001**	100%	3.75
20 C	**7.00**	**0.004**	100%	3.75
30 C	**7.00**	**0.004**	100%	3.75
40 C	**14.00**	**0.007**	100%	3.75
50 C	**-5.00**	**-0.003**	100%	3.75
60 C	**-2.00**	**-0.001**	100%	3.75
20 C	**8.00**	**0.004**	Battery Endpoint	3.30



FIELD STRENGTH OF EMISSIONS FROM UNINTENTIONAL RADIATORS

Measurement Procedure

The equipment under test is placed inside the semi-anechoic chamber on a wooden table at the turntable center. For each radiated emission, the antenna mast is raised and lowered from 1 to 4 meters and the turntable is rotated 360 degrees to obtain a maximum peak reading on the spectrum analyzer. The radiated emissions are then measured using an EMI receiver employing a CISPR quasi-peak detector function below 1000 MHz and an average detector function above 1000 MHz. This is repeated for both horizontal and vertical polarizations of the receive antenna. A fully charged battery was used for the supply voltage.

The field strength of each radiated emission is calculated by correcting the EMI receiver level for cable loss, amplifier gain, and antenna correction factors.

Field Strength (dBuV/m) = EMI Receiver Level (dBuV) + Cable Loss (dB) - Amplifier Gain (dB) + Antenna Correction Factor (1/m)

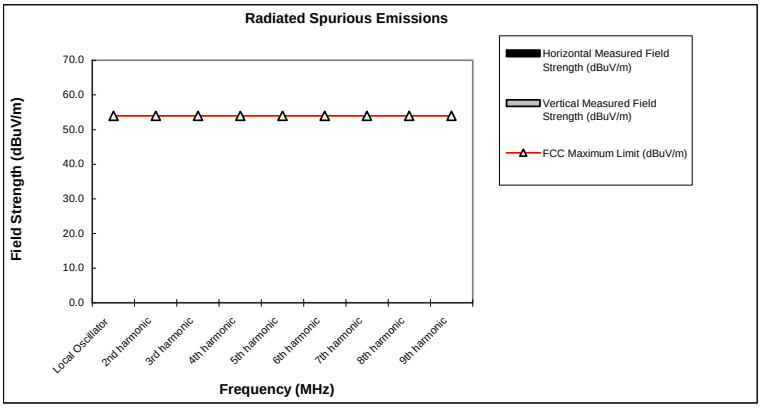
Measurement Results

Attached

Measurement Results – All Operating Modes

Receiver Radiated Spurious Emissions

Frequency (MHz)	FCC Maximum Limit (dBuV/m)	Horizontal Measured Field Strength (dBuV/m)	Vertical Measured Field Strength (dBuV/m)
Local Oscillator	54	*	*
2nd harmonic	54	*	*
3rd harmonic	54	*	*
4th harmonic	54	*	*
5th harmonic	54	*	*
6th harmonic	54	*	*
7th harmonic	54	*	*
8th harmonic	54	*	*
9th harmonic	54	*	*
10th harmonic	54	*	*



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 frequency for the low, mid, and high channels.

AC LINE CONDUCTED EMISSIONS

Measurement Procedure

Measured levels of ac power line conducted emission shall be the radio-noise voltage from the line probe or across the 50 Ω LISN port, where permitted, terminated into a 50 Ω noise meter, or where permitted or required, the radio-noise current on the power line sensed by a current probe.

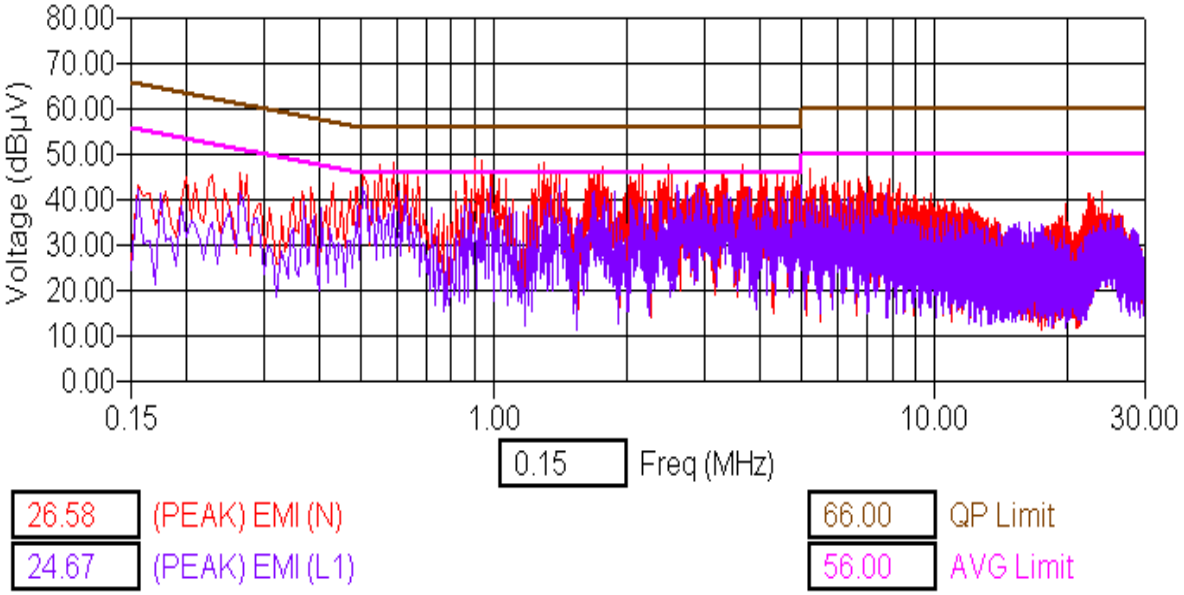
All radio-noise voltage and current measurements shall be made on each current-carrying conductor at the plug end of the EUT power cord or calibrated extension cord by the use of mating plugs and receptacles on the EUT and LISN. Equipment shall be tested with power cords that are normally supplied using an LISN, the 50 Ω measuring port is terminated by a 50 Ω radio-noise meter or a 50 Ω resistive load. All other ports are terminated in 50 Ω.

Detectors – Quasi Peak and Average

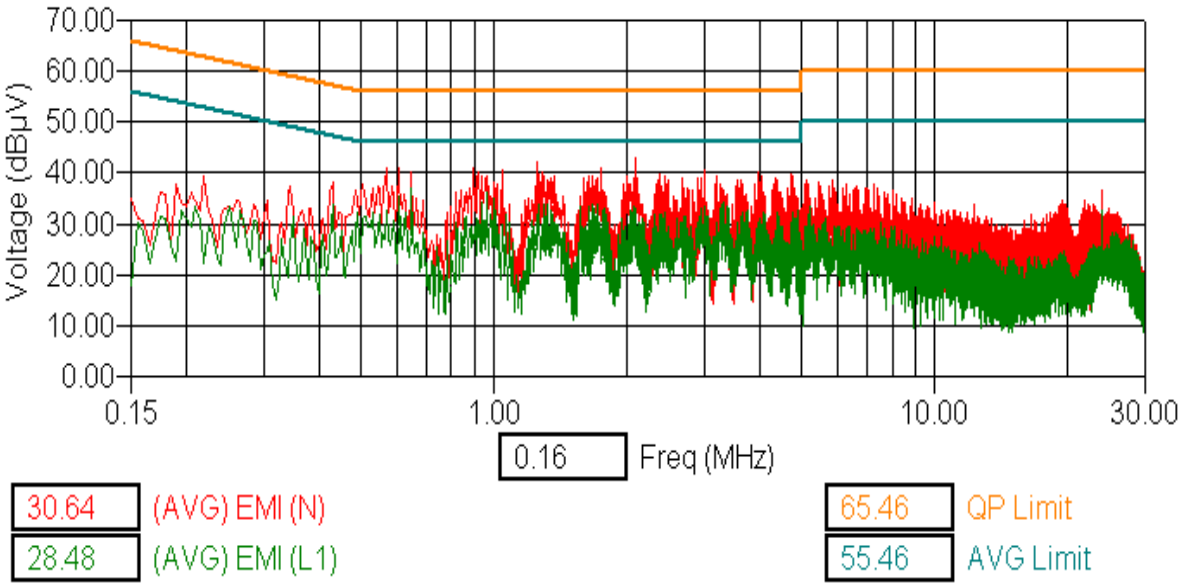
Measurement Results

Attached:

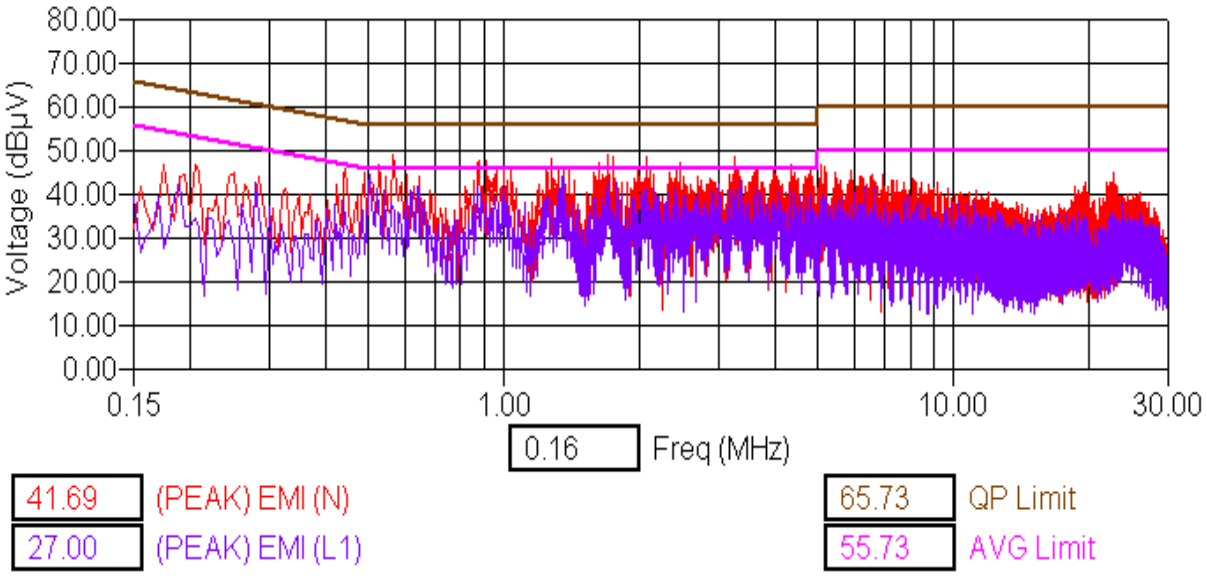
GSM 850 Channel 190 - Tx Mode – Peak detector



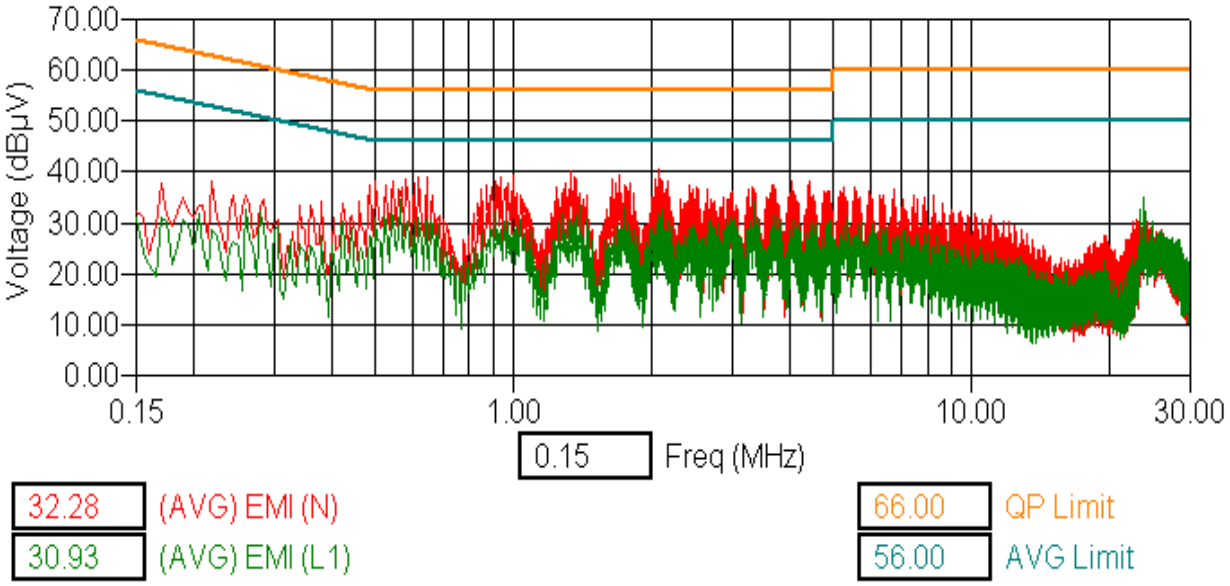
GSM 850 Channel 190 - Tx Mode – Average detector



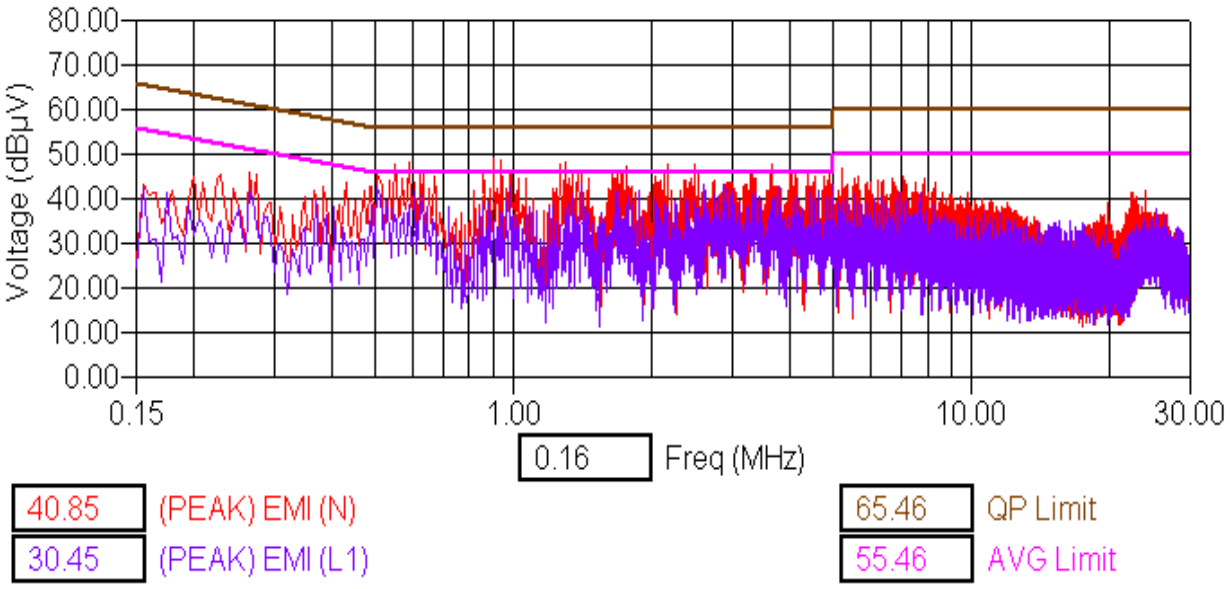
GSM 1900 Channel 661 - Tx Mode – Peak detector



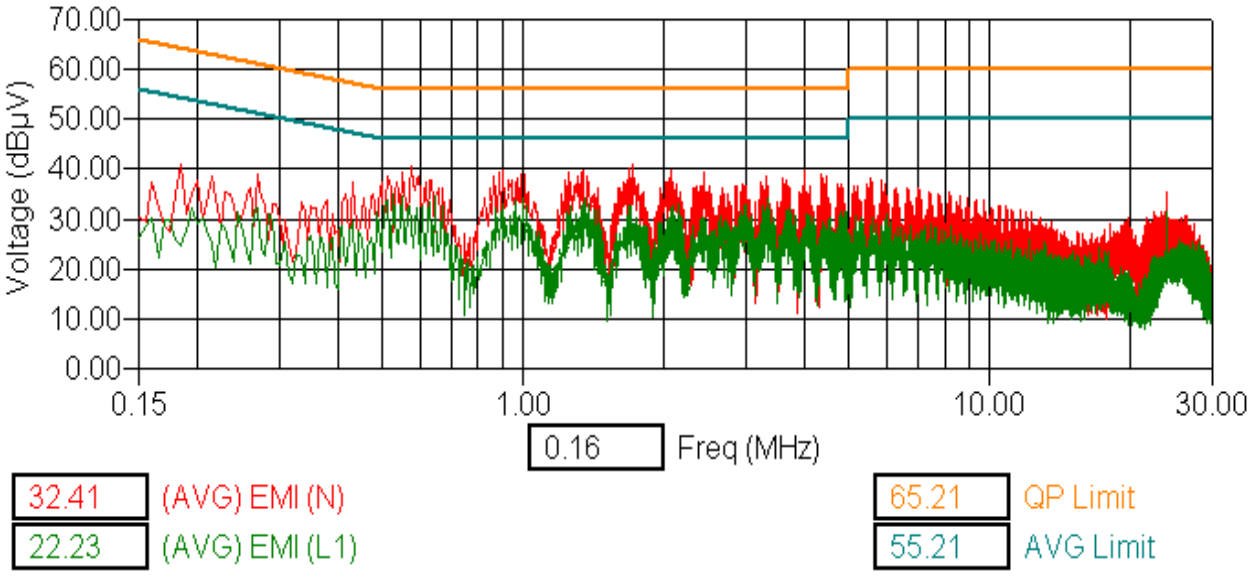
GSM 1900 Channel 661 - Tx Mode – Average detector



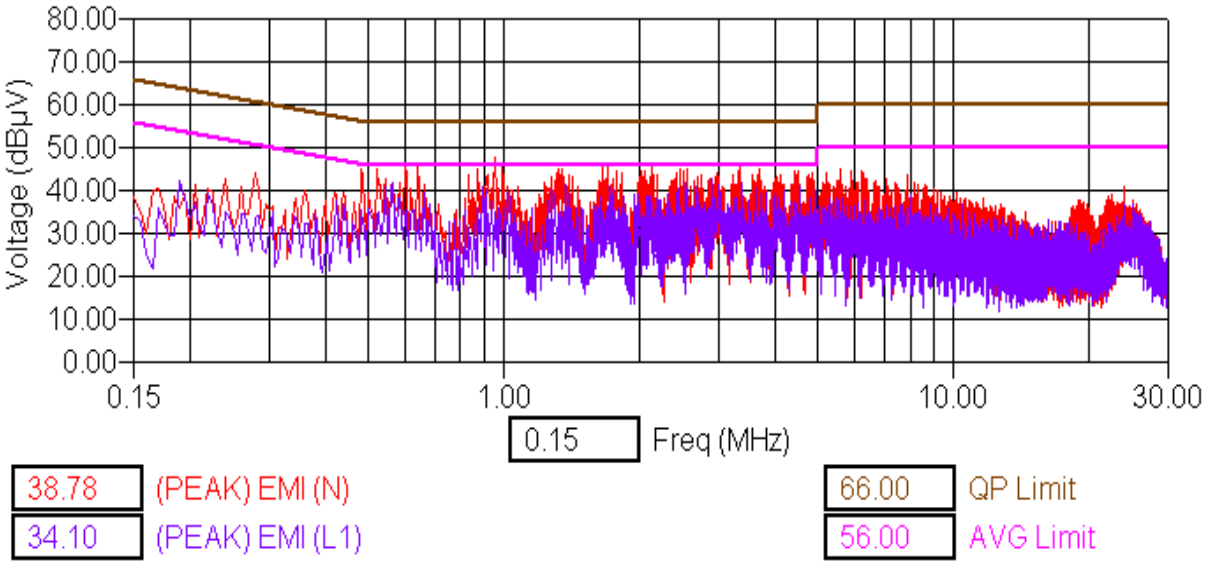
EDGE 850 Channel 190 – Tx Mode – Peak detector



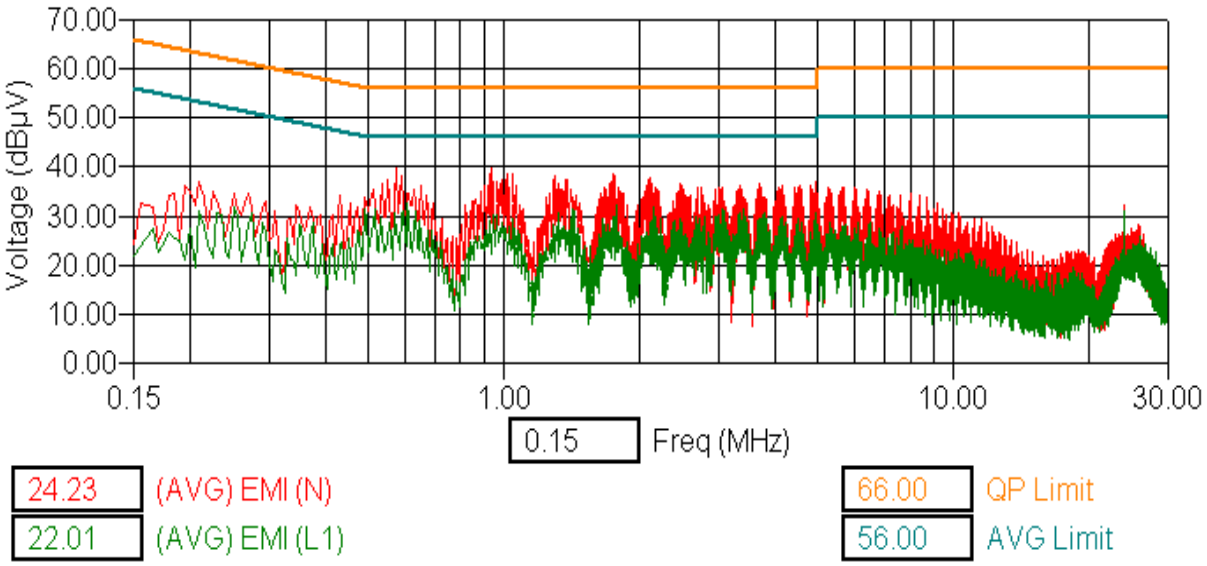
EDGE 850 Channel 190 – Tx Mode – Average detector



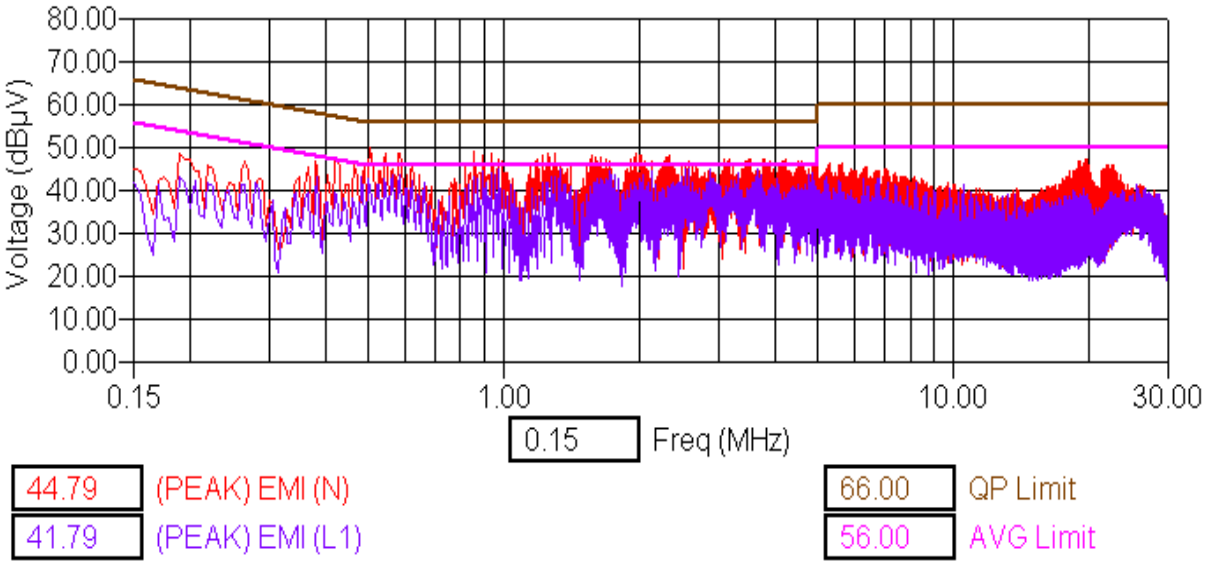
EDGE 1900 Channel 661 - Tx Mode – Peak detector



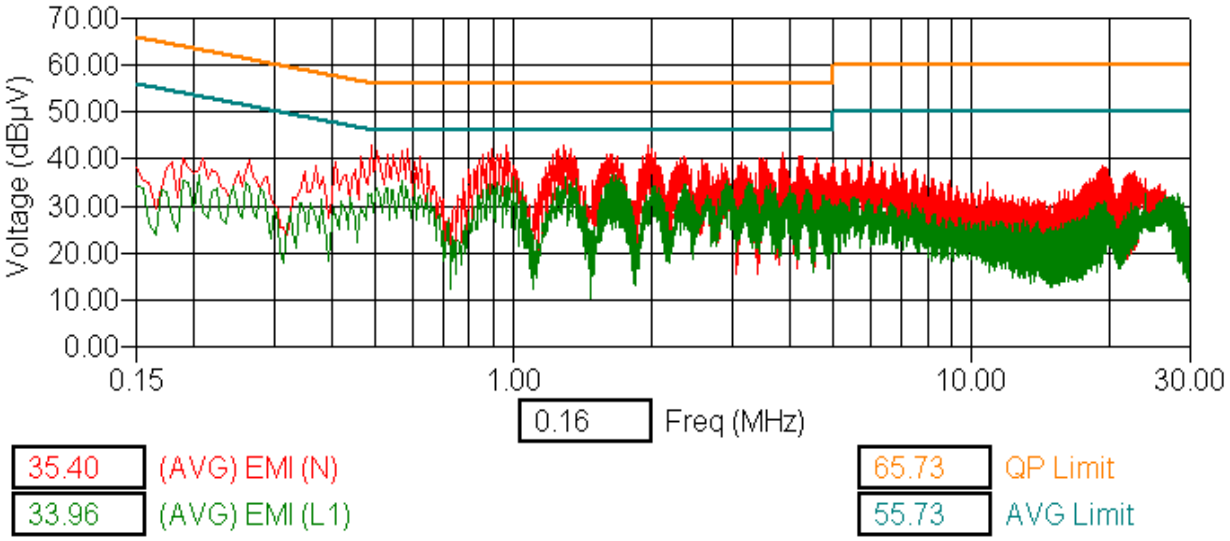
EDGE 1900 Channel 661 - Tx Mode – Average detector



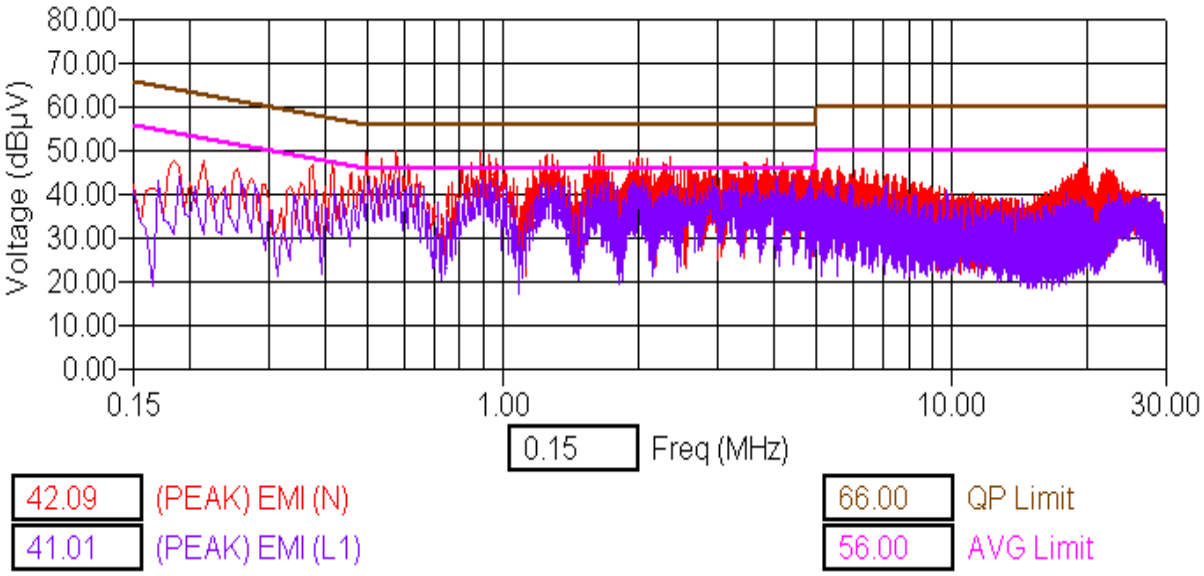
WCDMA 850 Channel 4180 - Tx Mode – Peak detector



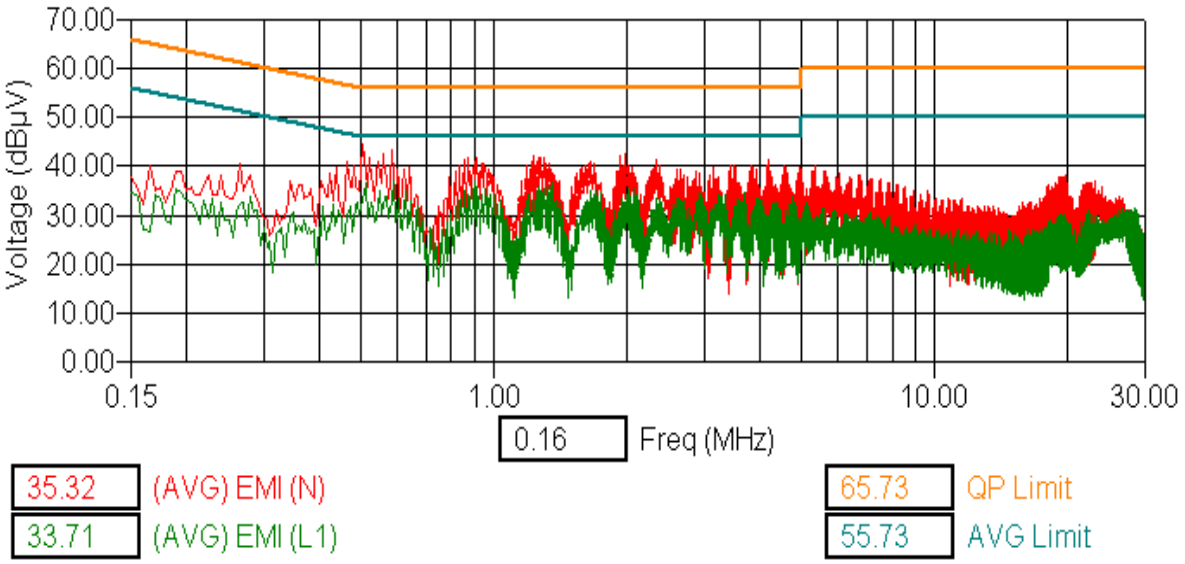
WCDMA 850 Channel 4180 - Tx Mode – Average detector



WCDMA 1900 Channel 9400 - Tx Mode – Peak detector



WCDMA 1900 Channel 9400 - Tx Mode – Average detector



End of Test Report