FCC Test Report

FOR:

Model Name: CA005
Global roaming CDMA cellular phone with Bluetooth function and Felica function sold in Japan.

FCC ID: TYKNX6580

47 CFR Part 2, 22

TEST REPORT #: EMC_CET10_054_10501_CA005_FCC_22CDMA
DATE: 2010-02-19

ACCREDITED
TESTING LABORATORY
CERTIFICATE # 2135.01

Bluetooth Qualification Test Facility (BQTF)

CTIA Authorized Test Lab
LAB CODE 20020328-00

FCC listed: A2LA accredited

IC recognized # 3462B-1

***CETECOM* Inc.**
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Board of Directors: Dr. Harald Ansorge, Dr. Klaus Matkey, Hans Peter May

Table of Contents

1 Assessment

The following is in compliance with the applicable criteria specified in FCC rules Parts 2, 22 of Title 47 of the Code of Federal Regulations.

Company	Description	Model #
Casio Hitachi Mobile Communications Co., Ltd.	The cellular phone for the global roaming of the CDMA method of 3G equipped with the Bluetooth function and the FeliCa function sold in Japan	CDMA CA005

Responsible for Testing Laboratory:

Date	Section	Name	Signature
2010-02-19	Compliance	Marc Douat (Test Lab Manager)	

Responsible for the Report:

Date	Section	Name	Signature
2010-02-19	Compliance	Christopher Torio (EMC Test Engineer)	Christopher Torio

The test results of this test report relate exclusively to the test item specified in Section3.
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2 Administrative Data

2.1 Identification of the Testing Laboratory Issuing the EMC Test Report

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Telephone:	+1 (408) 586 6200
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Responsible Test Lab Manager:	Heiko Strehlow
Responsible Project Leader:	Peter Mu

2.2 Identification of the Client

Applicant's Name:	Casio Hitachi Mobile Communications Co., Ltd.
Street Address:	2-229-1 Sakuragaoka
City/Zip Code	Higashiyamato-shi, Tokyo 207-8501
Country	Japan
Contact Person:	Osamu Hasegawa
Phone No.	+81-42-516-2184
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2.3 Identification of the Manufacturer

Manufacturer's Name:	Same as above
Manufacturers Address:	
City/Zip Code	
Country	

3 Equipment under Test (EUT)

3.1 Specification of the Equipment under Test

Marketing Name:	CA005
Model No:	CDMA CA005
Product Type:	Global roaming CDMA cellular phone with Bluetooth function and Felica function sold in Japan.
FCC-ID:	TYKNX6580
Frequency:	BC0 US Cellular
Type(s) of Modulation:	QPSK/HPSK(CDMA2000)
Antenna Type:	1/4λSingle Type
Power Supply:	DC3.4(V)/DC3.7(V)/DC4.2(V)
Temperature Range:	-20°C/-25°C/+60°C

3.2 Specification of the Equipment under Test

EUT #	Serial Number	Cetecom ID	Sample
1	SCADZ000161	C004728	Radiated
2	SCADZ000162	C004727	Radiated
3	SCADZ000148	C004726	Conducted
4	SCADZ000148	C004729	Conducted

3.3 Identification of Accessory equipment

AE #	Type	Manufacturer	Model	Serial Number
1	AC Charger	Mitsumi	MT-WCA	0203PQA
2	USB Cable	Casio/Hitachi	N/A	N/A
3	Dummy Battery	Casio/Hitachi	N/A	N/A

4 Subject of Investigation

The objective of the measurements done by Cetecom Inc. was to measure the performance of the EUT as specified by requirements listed in the following test standards:

- 47 CFR Part 2: Title 47 of the Code of Federal Regulations: Chapter I-Federal Communications Commission Frequency allocations and radio treaty matters; general rules and regulations.
- 47 CFR Part 22: Title 47 of the Code of Federal Regulations: Chapter I-Federal Communications Commission subchapter B- common carrier services; Part 22- Public mobile services

5 Measurements

5.1 RF Power Output

5.1.1 References

FCC: CFR Part 2.1046, CFR Part 22.913, CFR Part 24.232
IC: RSS 132 Section 4.4 and 6.4; RSS 133 Section 4.3

5.1.2 FCC 2.1046 Measurements required: RF power output.

Power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on circuit elements as specified. The electrical characteristics of the radio frequency load attached to the output terminals when this test is made shall be stated.

5.1.3 Limits:

5.1.3.1 FCC 22.913 (a) Effective radiated power limits.

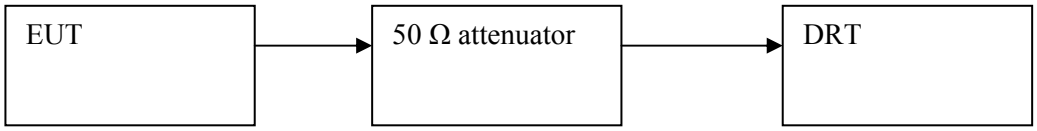
The effective radiated power (ERP) of mobile transmitters must not exceed 7 Watts.

5.1.3.2 FCC 24.232 (b)(c) Power limits.

(b) Mobile/portable stations are limited to 2 Watts effective isotropic radiated power (EIRP).
(c) Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms equivalent voltage. The measurement results shall be properly adjusted for any limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, sensitivity, etc., so as to obtain a true peak measurement over the full bandwidth of the channel.

5.1.4 Conducted Output Power Measurement procedure

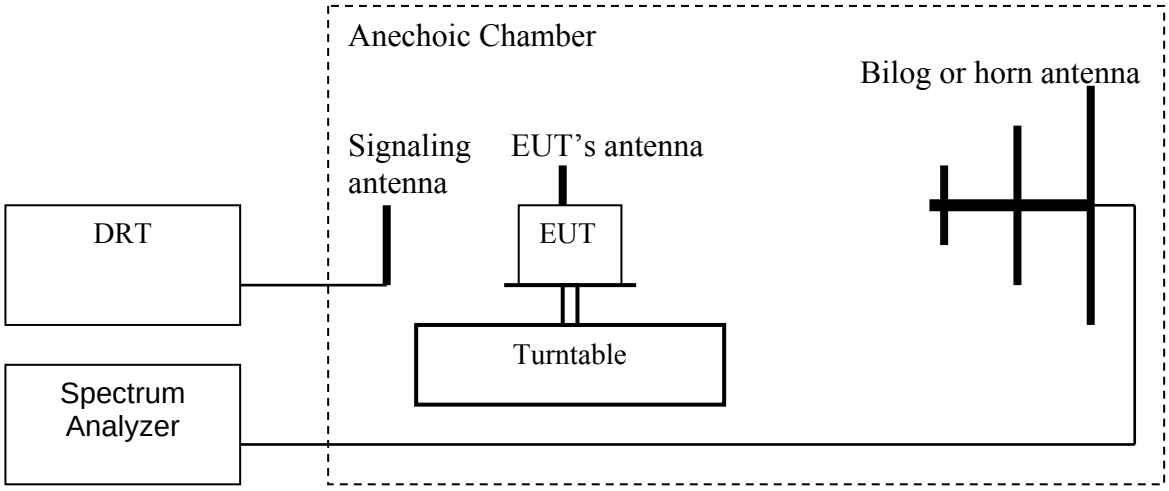
Ref: TIA-603C 2004 2.2.1 Conducted Carrier Output Power Rating



1. Connect the equipment as shown in the above diagram. A Digital RadioCommunication Tester (DRT) is used to enable the EUT to transmit and to measure the output power.
2. Adjust the settings of the DRT to set the EUT to its maximum power at the required channel.
3. Record the output power level measured by the DRT.
4. Correct the measured level for all losses in the RF path.
5. Measurements are to be performed with the EUT set to the low, middle and high channel of each frequency band.

5.1.5 Radiated Output Power Measurement procedure

Ref: TIA-603C 2004 -2.2.17.2 Effective Radiated Power (ERP) or Effective Isotropic Radiated Power (EIRP)



1. Connect the equipment as shown in the above diagram with the EUT's antenna in a vertical orientation.
2. Adjust the settings of the Digital Radio Communication Tester (DRT) to set the EUT to its maximum power at the required channel.
3. Set the spectrum analyzer to the channel frequency. Set the analyzer to measure peak hold with the required settings.
4. Rotate the EUT 360°. Record the peak level in dBm (**LVL**).
5. Replace the EUT with a vertically polarized half wave dipole or known gain antenna. The center of the antenna should be at the same location as the center of the EUT's antenna.
6. Connect the antenna to a signal generator with known output power and record the path loss in dB (**LOSS)**. **LOSS** = Generator Output Power (dBm) – Analyzer reading (dBm).
7. Determine the ERP using the following equation:
   ERP (dBm) = **LVL** (dBm) + **LOSS** (dB)
8. Determine the EIRP using the following equation:
   EIRP (dBm) = **ERP** (dBm) + 2.14 (dB)
9. Measurements are to be performed with the EUT set to the low, middle and high channel of each frequency band.

Spectrum analyzer settings: RBW=VBW=3MHz
(**Note:** Steps 5 and 6 above are performed prior to testing and **LOSS** is recorded by test software. Steps 3, 4, 7 and 8 above are performed with test software.)

Worst case configuration is tested with RC3/SO55 with "All Up" Power Control Bits.

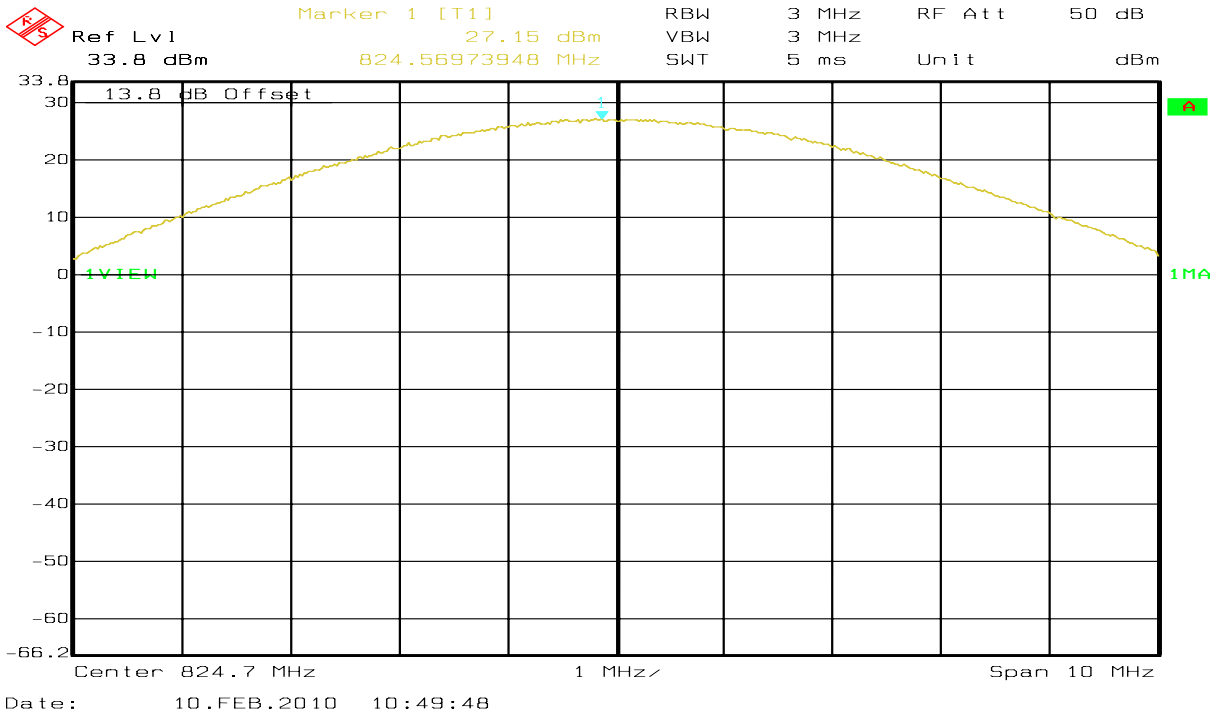
5.1.6 RF Power Output 850MHz band

Limit: Nominal Peak Output Power < 38.45 dBm (7W)
Measurement Uncertainty: ±0.5 dB

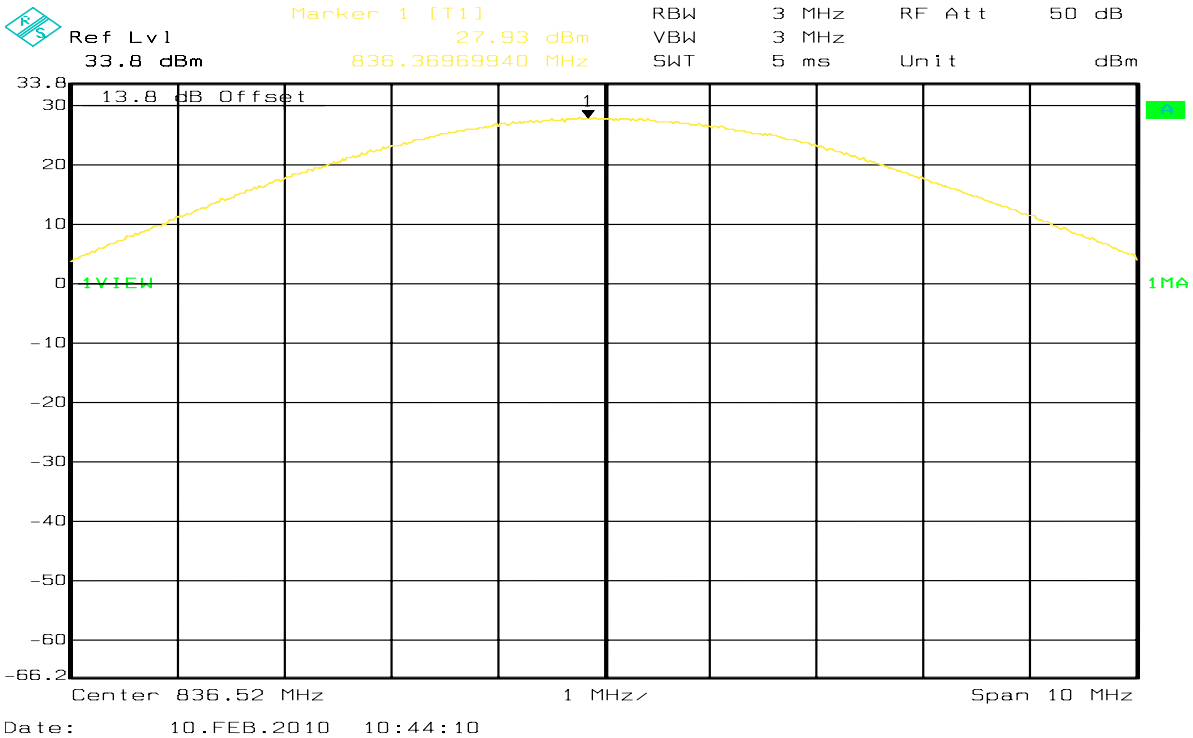
CDMA 850		
Frequency (MHz)	**Conducted Power**	**Radiated Power**
	Peak Power (dBm)	**ERP (dBm)**
824.70	27.15	23.30
836.52	27.93	22.46
848.31	27.09	22.93

5.1.7 Results

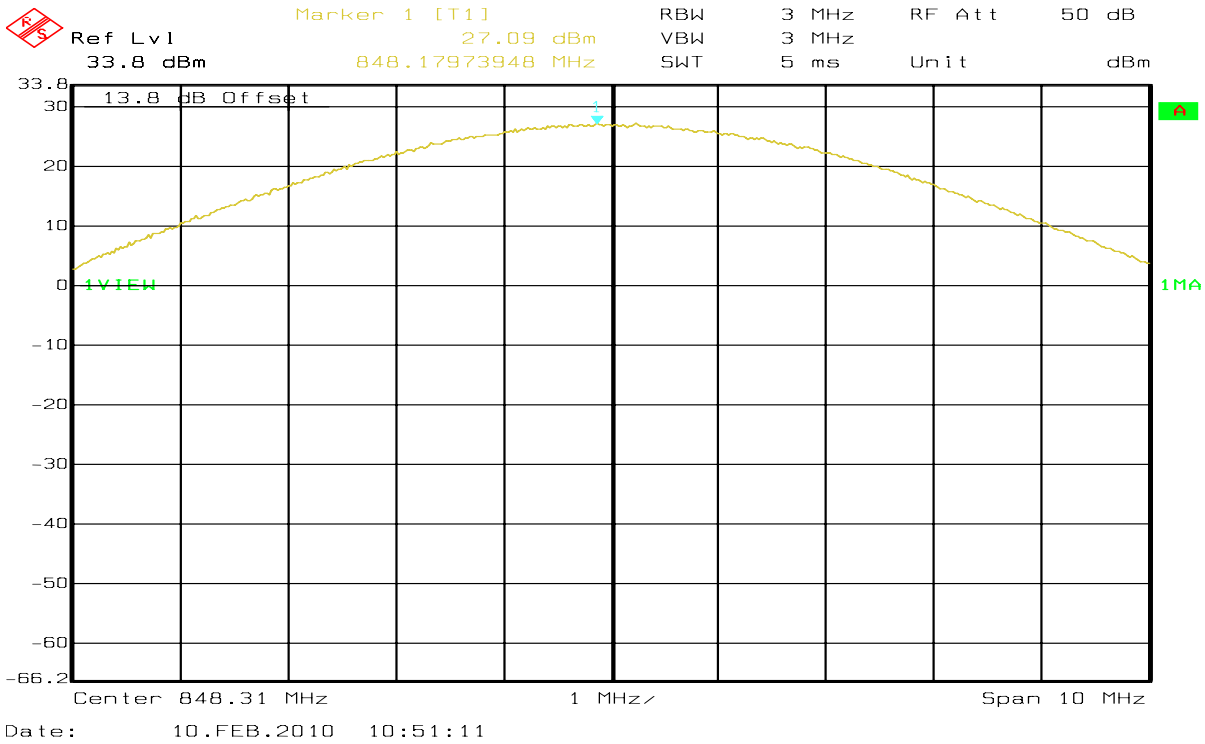
CONDUCTED PEAK POWER (GSM 850) CHANNEL 1013 §22.913(a)



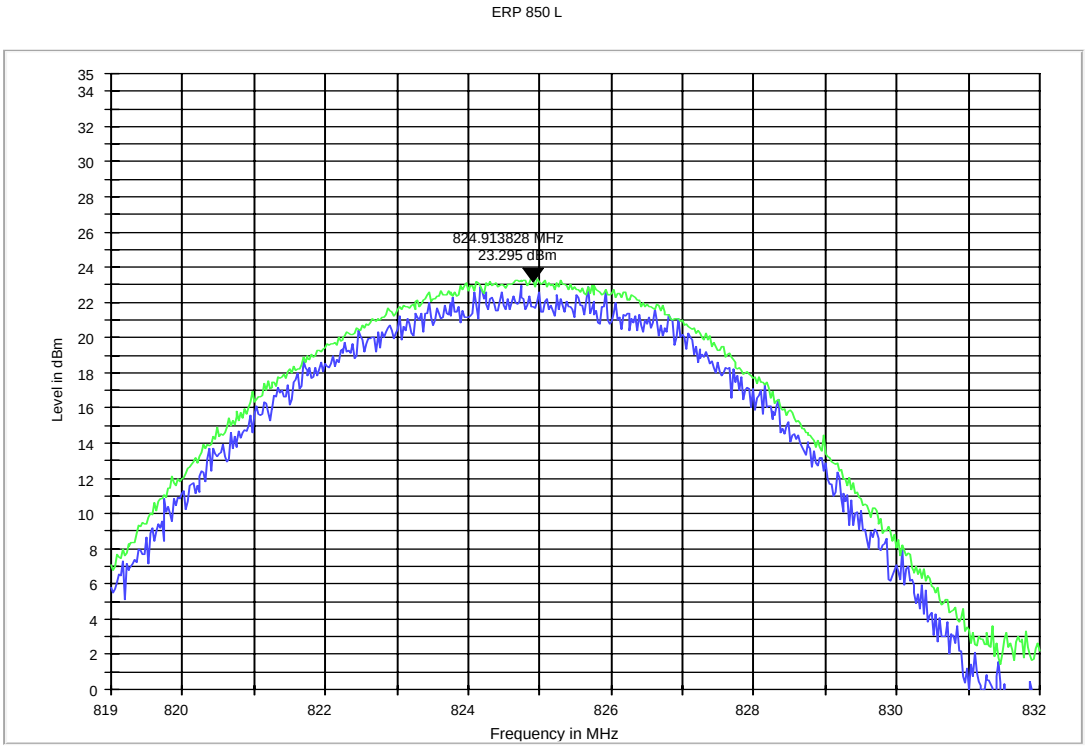
CONDUCTED PEAK POWER (GSM 850) CHANNEL 384 §22.913(a)



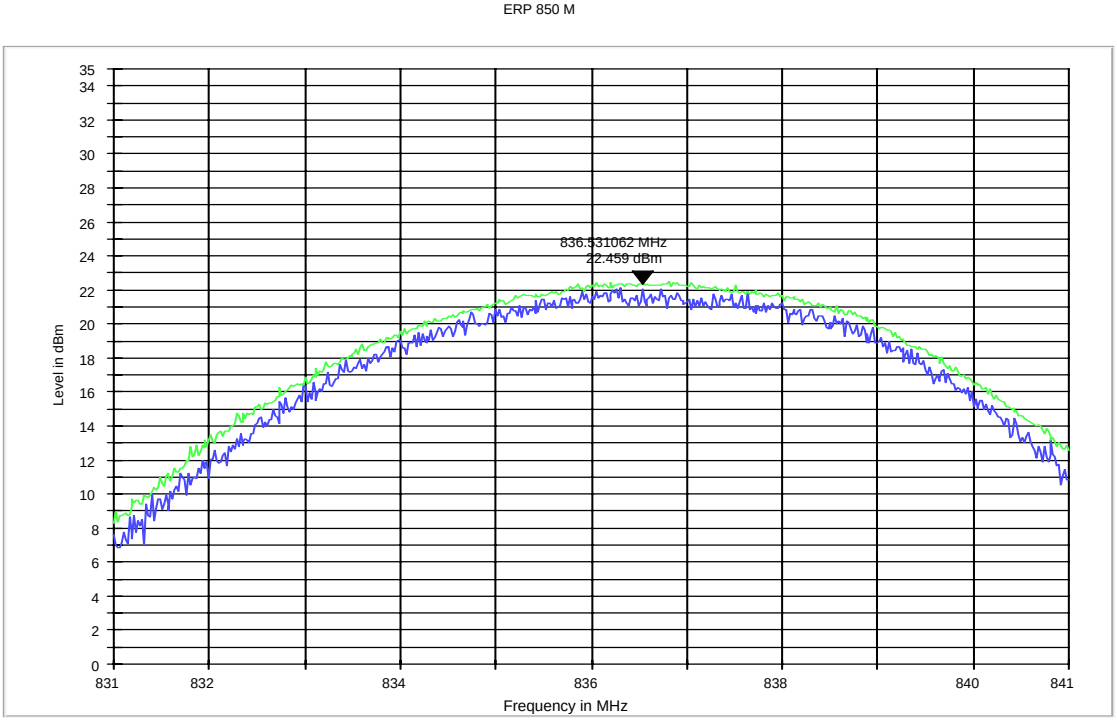
CONDUCTED PEAK POWER (CDMA 850) CHANNEL 777 §22.913(a)



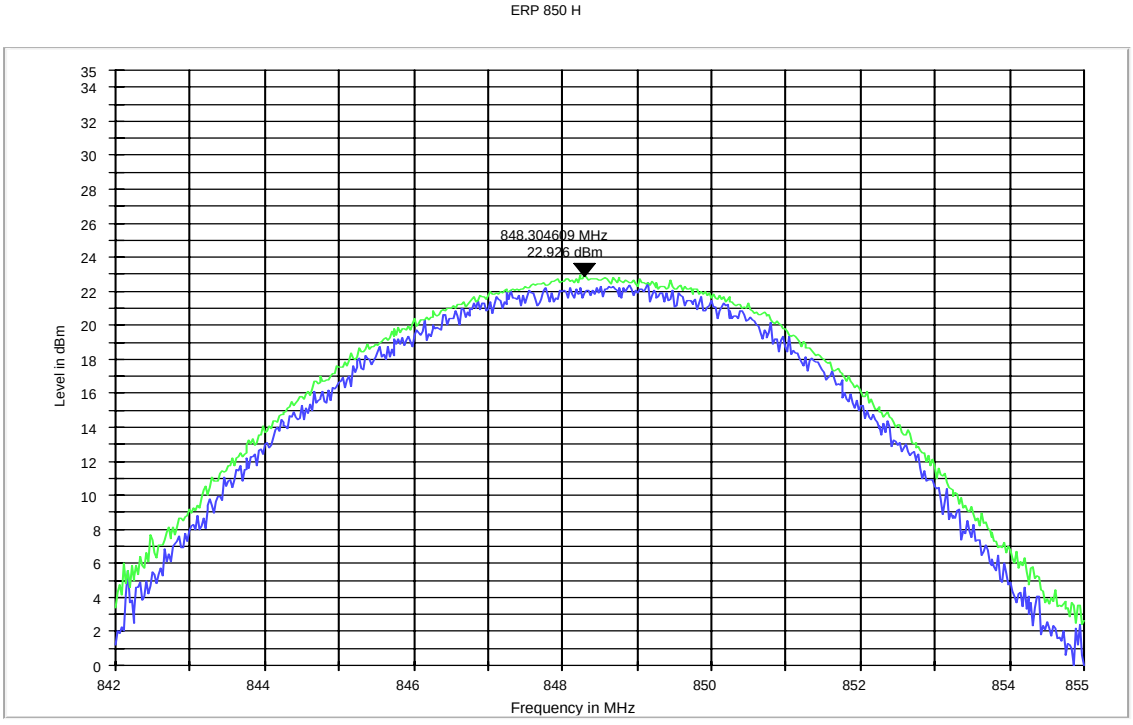
EIRP (GSM 850) CHANNEL 1013 §22.913(a)



EIRP (GSM 850) CHANNEL 384 §22.913(a)



EIRP (GSM 850) CHANNEL 777 §22.913(a)



5.2 Occupied Bandwidth/Emission Bandwidth

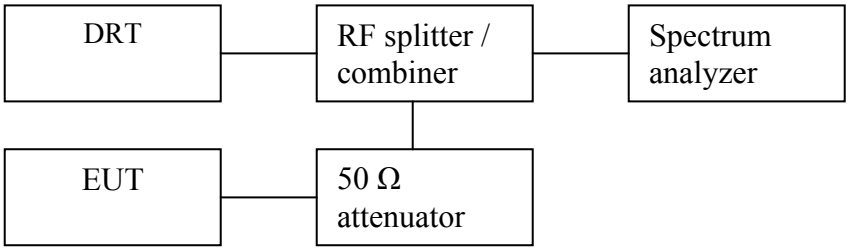
5.2.1 References

FCC: CFR Part 2.1049, CFR Part 22.917, CFR Part 24.238
IC: RSS 132 Section 4.2; RSS 133 Section 6.5

5.2.2 FCC 2.1049 Measurements required: Occupied bandwidth

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured under the following conditions as applicable.
(h) Transmitters employing digital modulation techniques-when modulated by an input signal such that its amplitude and symbol rate represent the maximum rated conditions under which the equipment will be operated.

5.2.3 Occupied / Emission bandwidth measurement procedure



1. Connect the equipment as shown in the above diagram.
2. Adjust the settings of the Digital RadioCommunication Tester (DRT) to set the EUT to its maximum power at the required channel.
3. Set the spectrum analyzer to measure the 99% (-20 dB) occupied bandwidth. Record the value.
4. Set the spectrum analyzer to measure the 99.5% (-26 dB) emission bandwidth. Record the value.
5. Measurements are to be performed with the EUT set to the low, middle and high channel of each frequency band.

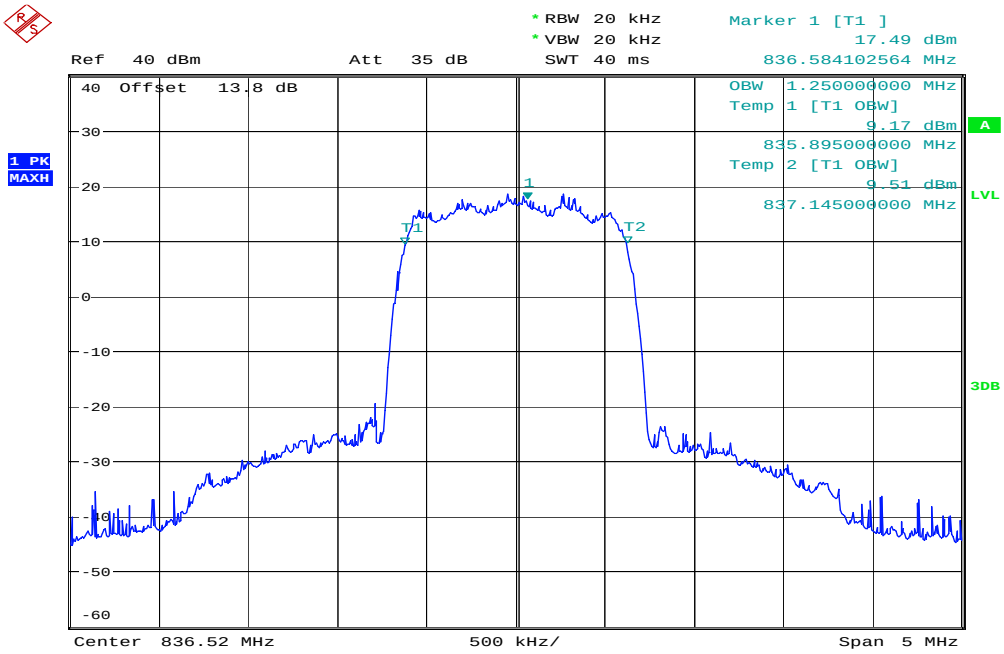
Spectrum analyzer settings: Meaasurement bandwidth of atleast 1% of the occupied bandwidth.

5.2.4 Occupied/Emission Bandwidth- 850 MHz band

GSM 850: GMSK Mode		
Frequency (MHz)	**99% Occupied Bandwidth (MHz)**	**-26dBc Bandwidth (MHz)**
824.2	1.25	1.41
836.4	1.25	1.41
848.8	1.25	1.41

5.2.5 Results

Occupied band Width CDMA850 MHz Channel 1013 CDMA



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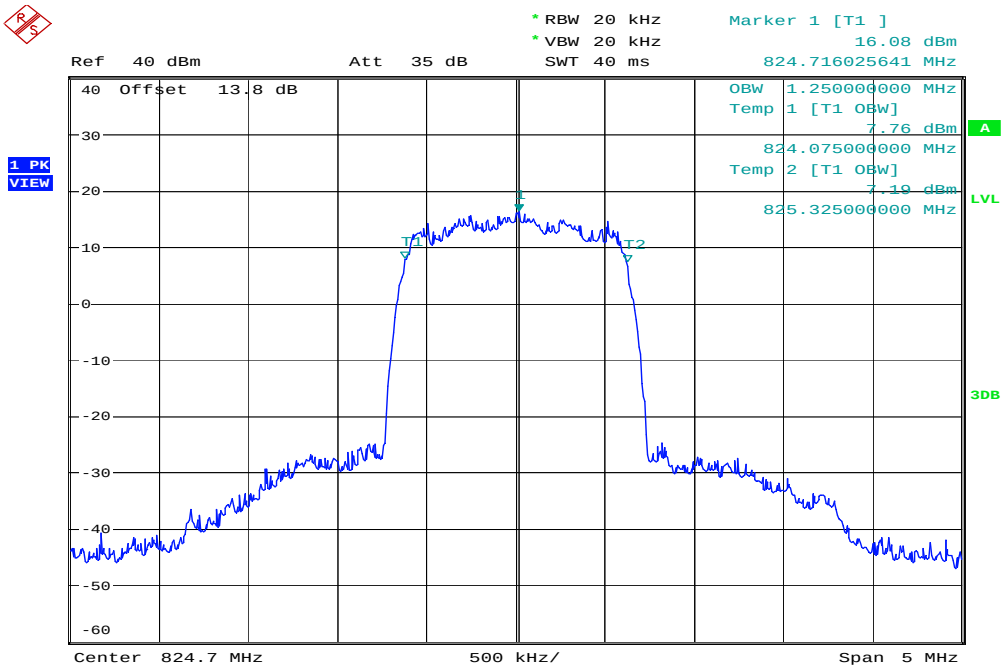
Occupied band Width CDMA850 MHz Channel 384 CDMA



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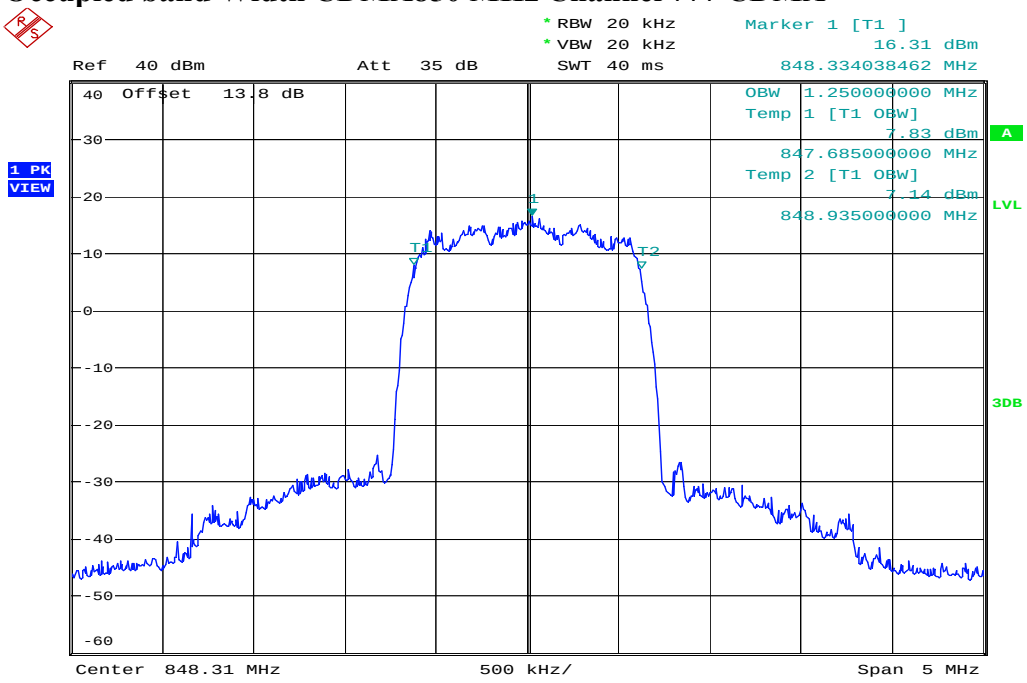
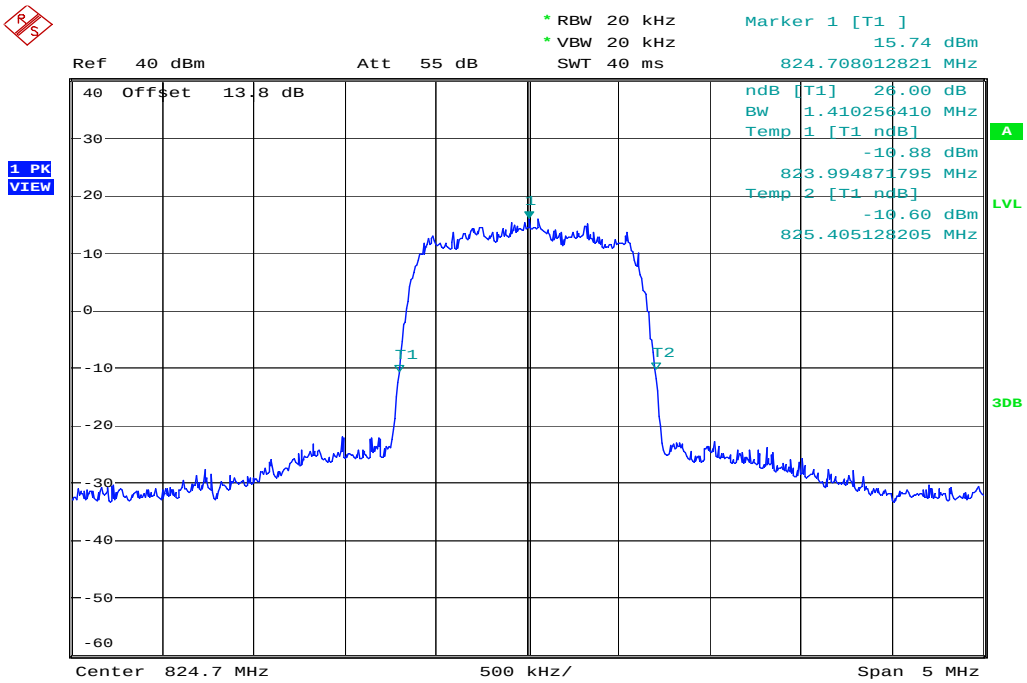
Occupied band Width CDMA850 MHz Channel 777 CDMA



Date: 10.FEB.2010 13:39:28

Emission band Width CDMA850 MHz Channel 1013 CDMA



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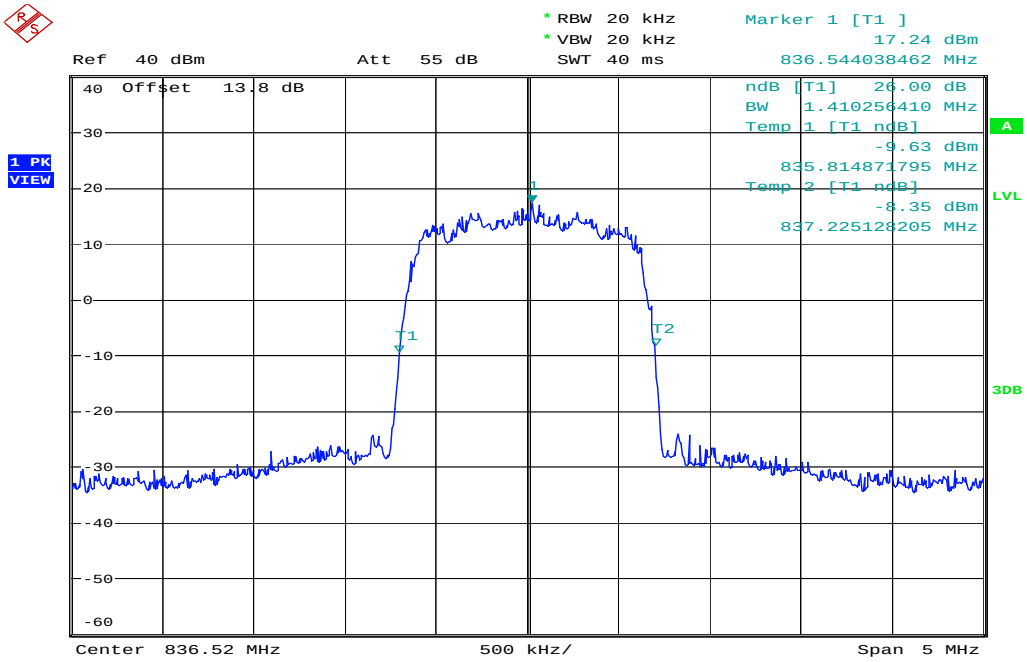
Emission band Width CDMA850 MHz Channel 384 CDMA



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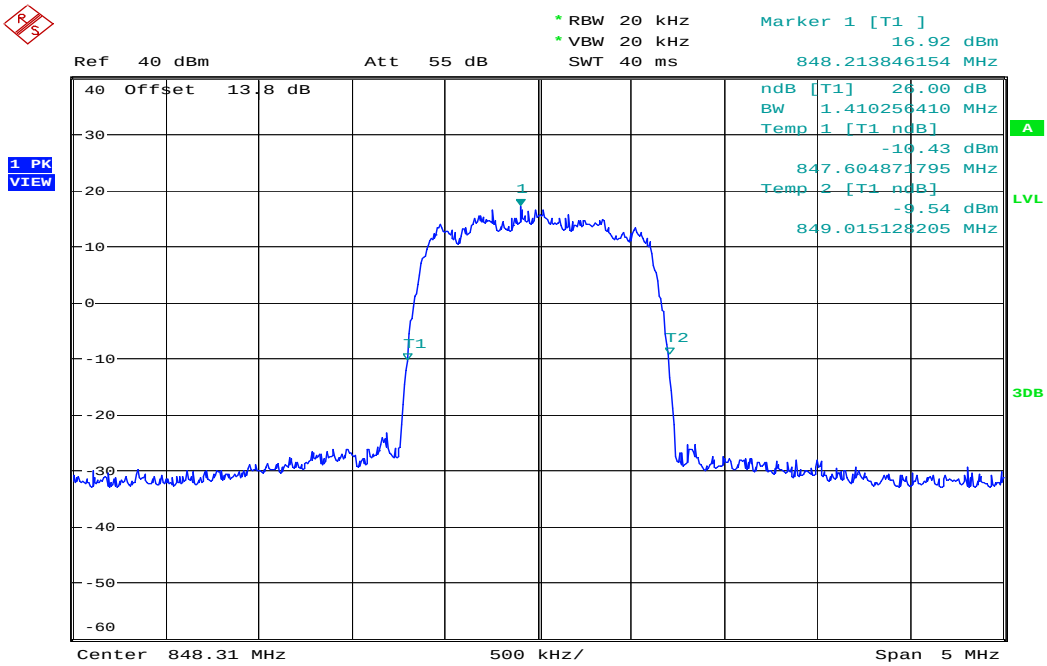
Emission band Width CDMA850 MHz Channel 777 CDMA



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5.3 Frequency Stability

5.3.1 References

FCC: CFR Part 2.1055, CFR Part 22.355, CFR Part 24.235
IC: RSS 132 Section 4.3 and 6.3; RSS 133 Section 4.2

5.3.2 Limits

For Hand carried battery powered equipment:
According to the JTC standard the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235/22.355 Frequency Stability. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.
As this transceiver is considered "Hand carried, battery powered equipment" Section 2.1055(d)(2) applies. This requires that the lower voltage for frequency stability testing be specified by the manufacturer. This transceiver is specified to operate with an input voltage of between 3.4VDC and 4.2VDC, with a nominal voltage of 3.7VDC. Operation above or below these voltage limits is prohibited by transceiver software in order to prevent improper operation as well as to protect components from overstress. For the purposes of measuring frequency stability these voltage limits are to be used.

For equipment powered by primary supply voltage:
According to the JTC standard the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235/22.355 Frequency Stability. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.
For this EUT section 2.1055(d)(1) applies. This requires to vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

Method of Measurement:
In order to measure the carrier frequency under the condition of AFC lock, it is necessary to make measurements with the EUT in a “call mode”. This is accomplished with the use of R&S CMU 200 Universal Radio Communication Tester.
1. Measure the carrier frequency at room temperature.
2. Subject the EUT to overnight soak at -30 C.
3. With the EUT, powered via nominal voltage, connected to the CMU 200 and in a simulated call on mid channel (190 for GSM 850 & 4183 for FDD5 & 661 for PCS1900 & 9400 for FDD2), measure the carrier frequency. These measurements should be made within 2 minutes of powering up the EUT, to prevent significant self-warming.
4. Repeat the above measurements at 10 C increments from -30 C to +50 C. Allow at least 1 1/2 hours at each temperature, un-powered, before making measurements.
5. Re-measure carrier frequency at room temperature with nominal voltage. Re-measure carrier frequency at low and high voltage. Pause at nominal voltage for 1 1/2 hours un-powered, to allow any self-heating to stabilize, before continuing.

6. Subject the EUT to overnight soak at +50 C.
7. With the EUT, powered via nominal voltage, connected to the CMU 200 and in a simulated call on mid channel (190 for GSM 850 & 4183 for FDD5 & 661 for PCS1900 & 9400 for FDD2), measure the carrier frequency. These measurements should be made within 2 minutes of powering up the EUT, to prevent significant self-warming.
8. Repeat the above measurements at 10 C increments from +50 C to -30 C. Allow at least 1 1/2 hours at each temperature, un-powered, before making measurements.
9. At all temperature levels hold the temperature to +/- 0.5 C during the measurement procedure.

5.3.3 Test Results Frequency Stability (GSM-850): Channel 190 (836.6 MHz)

Voltage (V)	Frequency Error (Hz)	Frequency Error (ppm)
Low V: 3.4	8	0.009563
High V: 4.2	12	0.014344

§2.1055 (a)(1) AFC FREQ ERROR vs. TEMPERATURE

Temperature (^{o}C)	Frequency Error (Hz)	Frequency Error (ppm)
-30	7	0.008367
-20	6	0.007172
-10	7	0.008367
0	9	0.010758
+10	9	0.010758
+20	8	0.009563
+30	7	0.008367
+40	8	0.009563
+50	10	0.011953

§2.1055 (b)(2) Battery end point

Battery End Point (V DC)	Frequency Error (Hz)	Frequency Error (ppm)
2.8	9	0.010758

5.4 Conducted Spurious Emissions

5.4.1 References

FCC: CFR Part 2.1051, CFR Part 22.917, CFR Part 24.238
IC: RSS 132 Section 4.5 and 6.5; RSS 133 Section 4.4

5.4.2 FCC 2.1051 Measurements required: Spurious emissions at antenna terminals.

The radio frequency voltage or power generated within the equipment and appearing on a spurious frequency shall be checked at the equipment output terminals when properly loaded with a suitable artificial antenna. Curves or equivalent data shall show the magnitude of each harmonic and other spurious emission that can be detected when the equipment is operated under the conditions specified in FCC 2.1049 as appropriate. The magnitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be specified.

5.4.3 Limits

(a) *Out of band emissions*. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

For all power levels +30dBm to 0dBm, this becomes a constant specification of -13dBm.

5.4.3.1 FCC 22.917 Emission limitations for cellular equipment.

The rules in this section govern the spectral characteristics of emissions in the Cellular Radiotelephone Service.
(b) *Measurement procedure.* Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (*i.e.* 100 kHz of 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

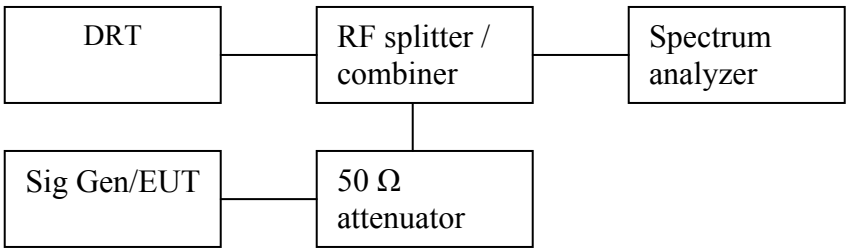
5.4.3.2 FCC 24.238 Emission limitations for Broadband PCS equipment.

The rules in this section govern the spectral characteristics of emissions in the Broadband Personal Communications Service.
(b) *Measurement procedure.* Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (*i.e.* 100 kHz of 1 percent of emission bandwidth, as specified). The

emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

5.4.4 Measurement Procedure -Conducted Out of band Emissions

Ref: TIA-603C 2004 2.2.13 Unwanted Emissions: Conducted Spurious



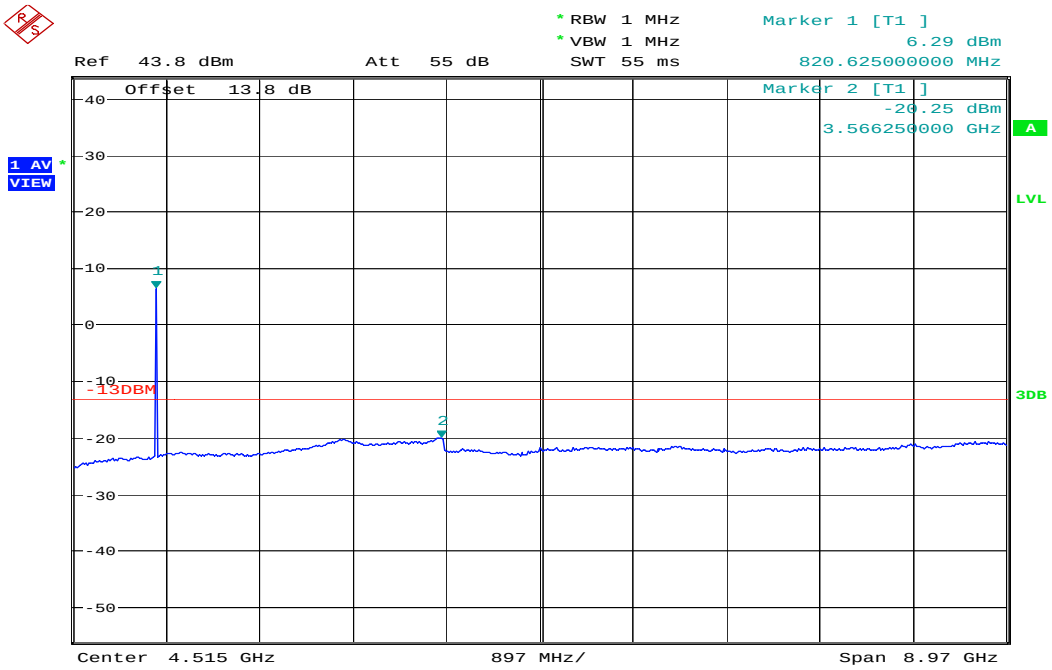
1. Connect the equipment as shown in the above diagram.
2. Set the spectrum analyzer to measure peak hold with the required settings.
3. Set the signal generator to a known output power and record the path loss in dB (**LOSS)** for frequencies up to the tenth harmonic of the EUT's carrier frequency. \
   LOSS = Generator Output Power (dBm) – Analyzer reading (dBm).
4. Replace the signal generator with the EUT.
5. Adjust the settings of the Digital RadioCommunication Tester (DRT) to set the EUT to its maximum power at the required channel.
6. Set the spectrum analyzer to measure peak hold with the required settings. Offset the spectrum analyzer reference level by the path loss measured above.
7. Measure and record all spurious emissions up to the tenth harmonic of the carrier frequency.
8. Measurements are to be performed with the EUT set to the low, middle and high channel of each frequency band.
9. If necessary steps 6 and 7 may be performed with the spectrum analyzer set to average detector.
   (**Note:** Step 3 above is performed prior to testing and **LOSS** is recorded by test software. Steps 2, 6, and 7 above are performed with test software.)

5.4.5 Test Results- Conducted Out of band Emission

No measurable spurious emissions noted. Emission above the limit in the plots is from EUT uplink.

All measurement conducted in CDMA mode with highest power settings- RC3/S055. Plots here show worse case emission for each channel under any modulation.

Conducted Out of band Emission CDMA850 channel 1013:



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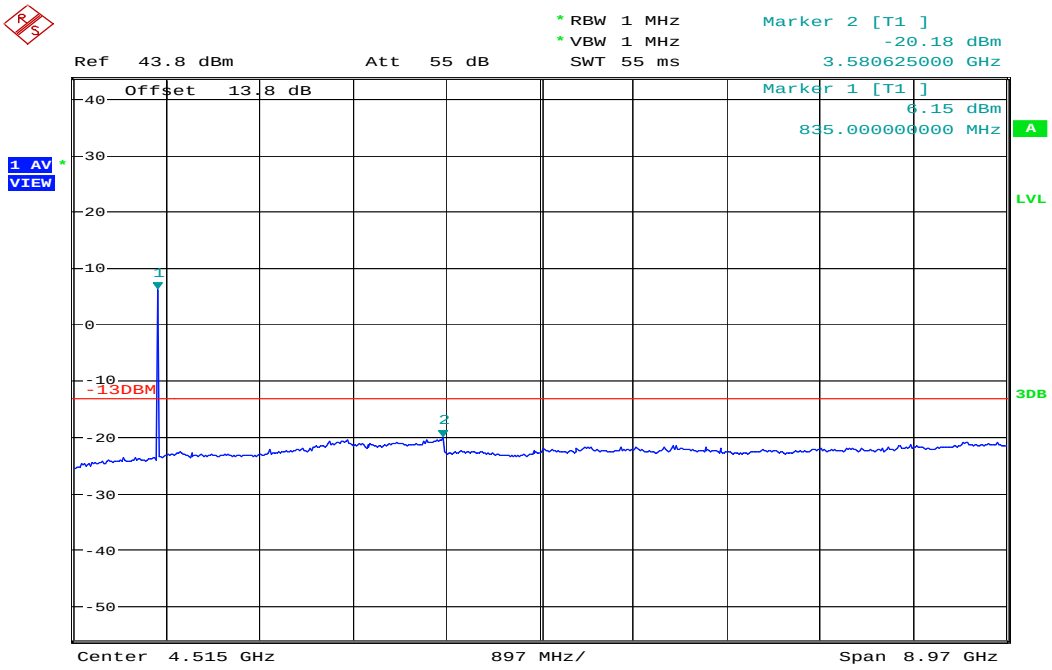

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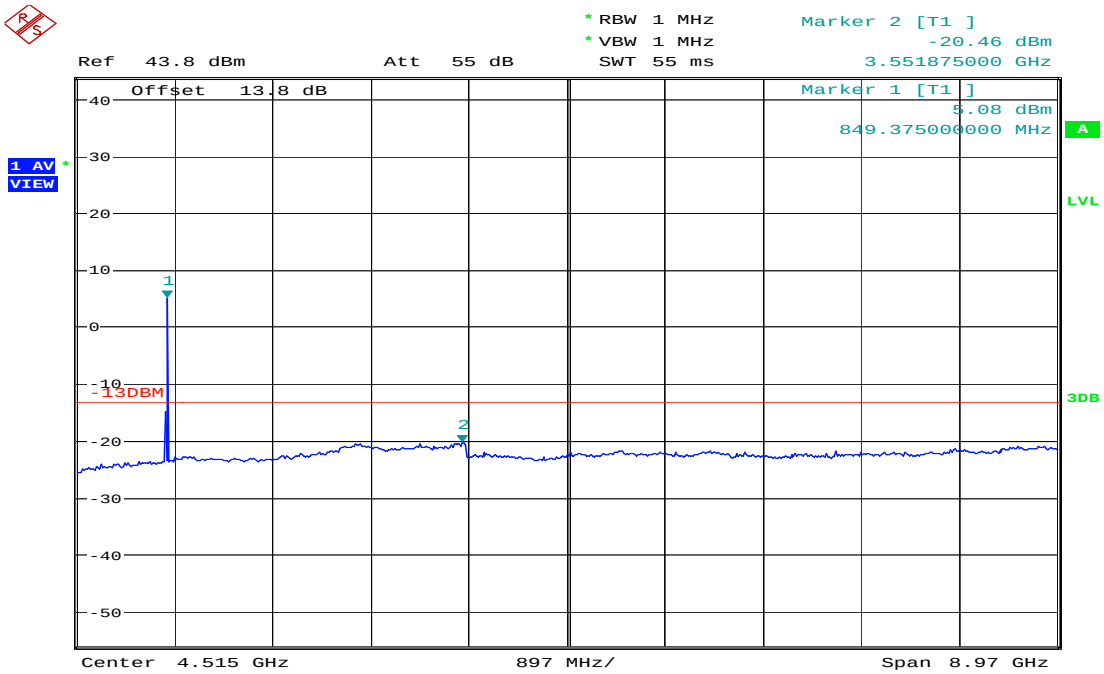
Conducted Out of band Emission CDMA850 channel 777:



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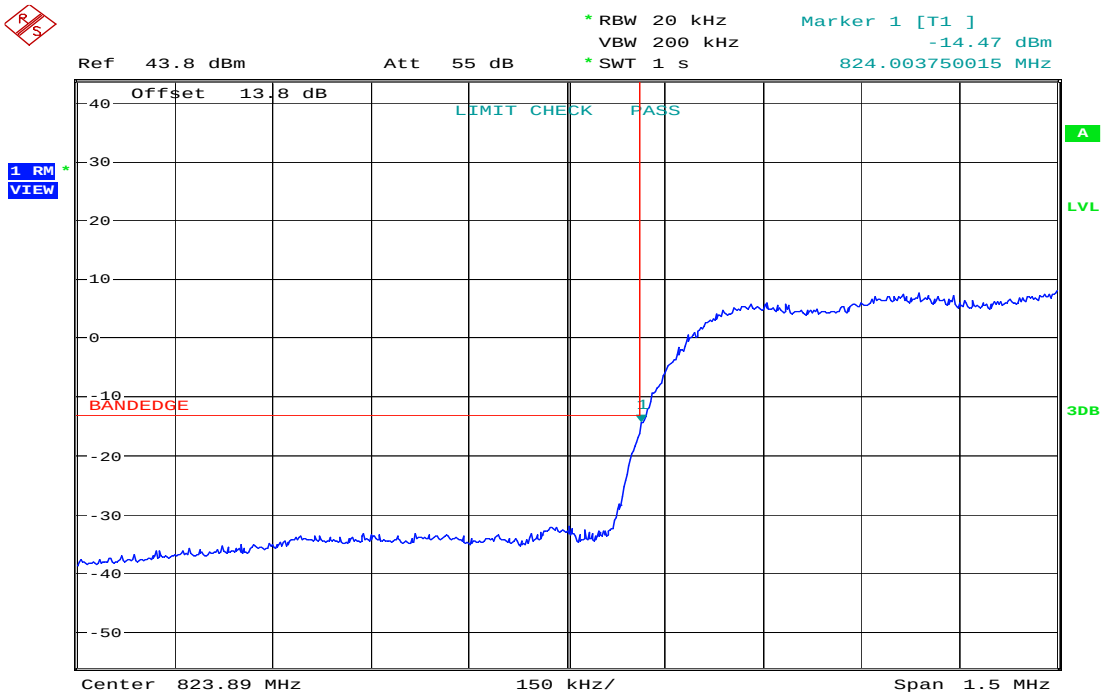

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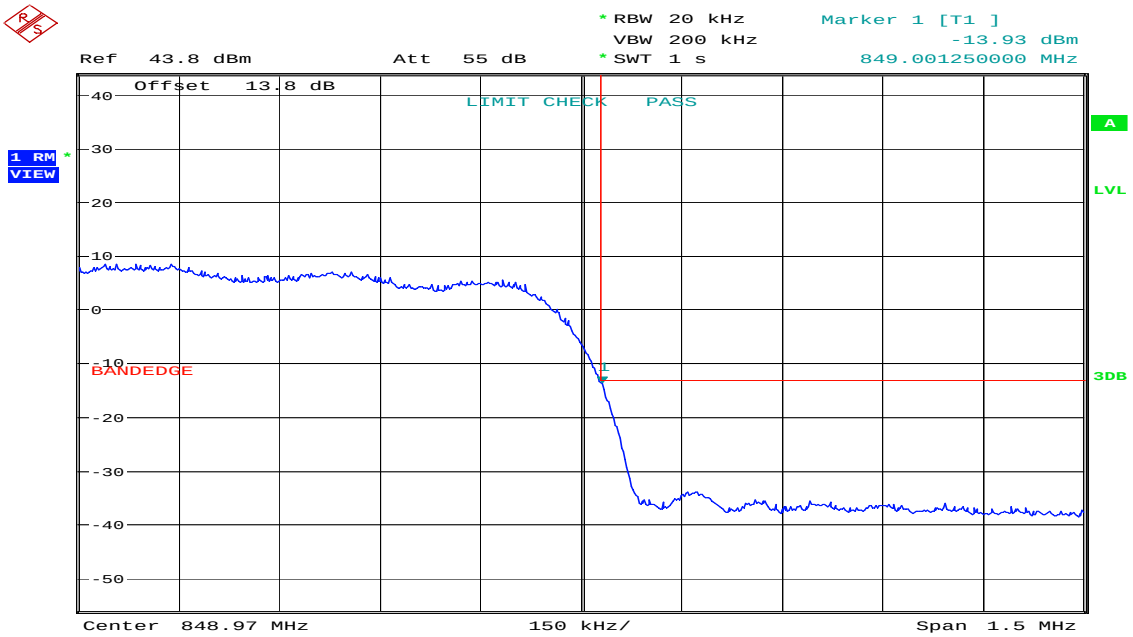
Upper Band Edge CDMA850 Channel 777



Date: 10.FEB.2010 14:16:29

5.5 Spurious Emissions Radiated

5.5.1 References

FCC: CFR Part 2.1053, CFR Part 22.917, CFR Part 24.238
IC: RSS 132 Section 4.5 and 6.5; RSS 133 Section 4.4

5.5.2 FCC 2.1053 Measurements required: Field strength of spurious radiation.

Measurements shall be made to detect spurious emissions that may be radiated directly from the cabinet, control circuits, power leads or intermediate circuit elements under normal conditions of installation and operation. Curves or equivalent data shall be supplied showing the magnitude of each harmonic and other spurious emission.

5.5.3 Limits:

(a) *Out of band emissions*. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

For all power levels +30dBm to 0dBm, this becomes a constant specification of -13dBm.

5.5.3.1 FCC 22.917 Emission limitations for cellular equipment.

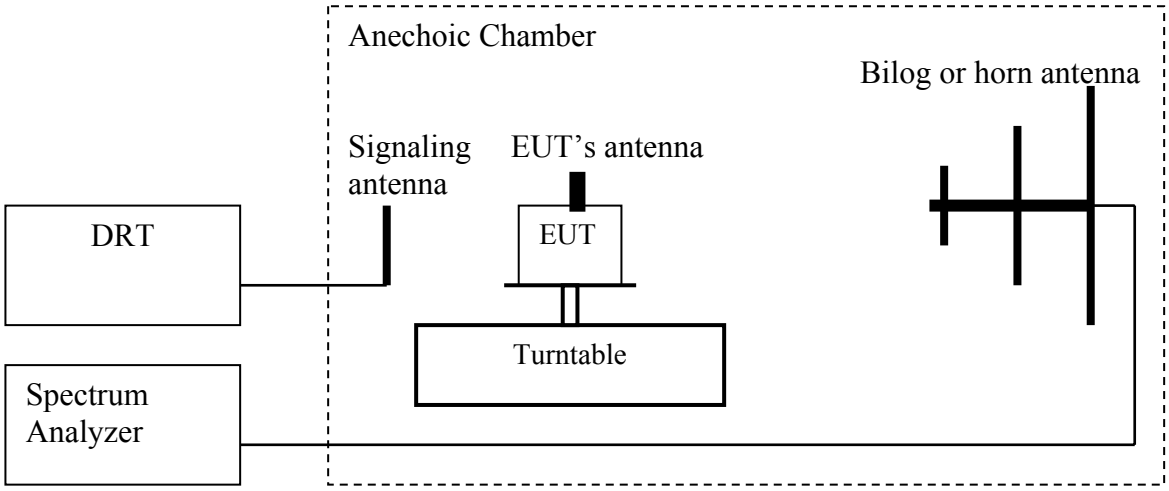
The rules in this section govern the spectral characteristics of emissions in the Cellular Radiotelephone Service.
(b) *Measurement procedure.* Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (*i.e.* 100 kHz of 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

5.5.3.2 FCC 24.238 Emission limitations for Broadband PCS equipment.

The rules in this section govern the spectral characteristics of emissions in the Broadband Personal Communications Service.
(b) Measurement procedure. Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (*i.e.* 100 kHz of 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

5.5.4 Radiated out of band measurement procedure:

Ref: TIA-603C 2004- 2.2.12 Unwanted emissions: Radiated Spurious



1. Connect the equipment as shown in the above diagram with the EUT's antenna in a horizontal orientation.
2. Adjust the settings of the Digital RadioCommunication Tester (DRT) to set the EUT to its maximum power at the required channel.
3. Set the spectrum analyzer to measure peak hold with the required settings.
4. Place the measurement antenna in a horizontal orientation. Rotate the EUT 360°. Raise the measurement antenna up to 4 meters in 0.5 meters increments and rotate the EUT 360° at each height to maximize all emissions. Measure and record all spurious emissions (**LVL**) up to the tenth harmonic of the carrier frequency.
5. Replace the EUT with a horizontally polarized half wave dipole or known gain antenna. The center of the antenna should be at the same location as the center of the EUT's antenna.
6. Connect the antenna to a signal generator with known output power and record the path loss in dB (**LOSS)**. **LOSS** = Generator Output Power (dBm) – Analyzer reading (dBm).
7. Determine the level of spurious emissions using the following equation:
   Spurious (dBm) = **LVL** (dBm) + **LOSS** (dB):
8. Repeat steps 4, 5 and 6 with all antennas vertically polarized.
9. Determine the level of spurious emissions using the following equation:
   Spurious (dBm) = **LVL** (dBm) + **LOSS** (dB):
10. Measurements are to be performed with the EUT set to the low, middle and high channel of each frequency band.
    (N**ote:** Steps 5 and 6 above are performed prior to testing and **LOSS** is recorded by test software. Steps 3, 4 and 7 above are performed with test software.)

Spectrum analyzer settings: RBW=VBW=1MHz

Measurement Survey:

The site is constructed in accordance with ANSI C63.4 requirements and is recognized by the FCC to be in compliance for a 3m site. The spectrum is scanned from 30MHz to the 10th harmonic of the highest frequency generated by the EUT.
Radiated emissions measurements were made only at the upper, middle, and lower carrier frequencies of the 850 & 1900 bands. It was decided that measurements at these three carrier frequencies would be sufficient to demonstrate compliance with emissions limits because it was seen that all the significant spurs occur well outside the band and no radiation was seen from a carrier in one block of the 850 & 1900 band into any of the other blocks respectively. The equipment must still, however, meet emissions requirements with the carrier at all frequencies over which it is capable of operating and it is the manufacturer's responsibility to verify this.

All measurements are done in horizontal and vertical polarization; the plots show the worst case where it is not indicated otherwise. Unless mentioned otherwise, the peaks in the plots are from the carrier frequency.

5.5.5 Radiated out of band emissions results on EUT- Transmit Mode:

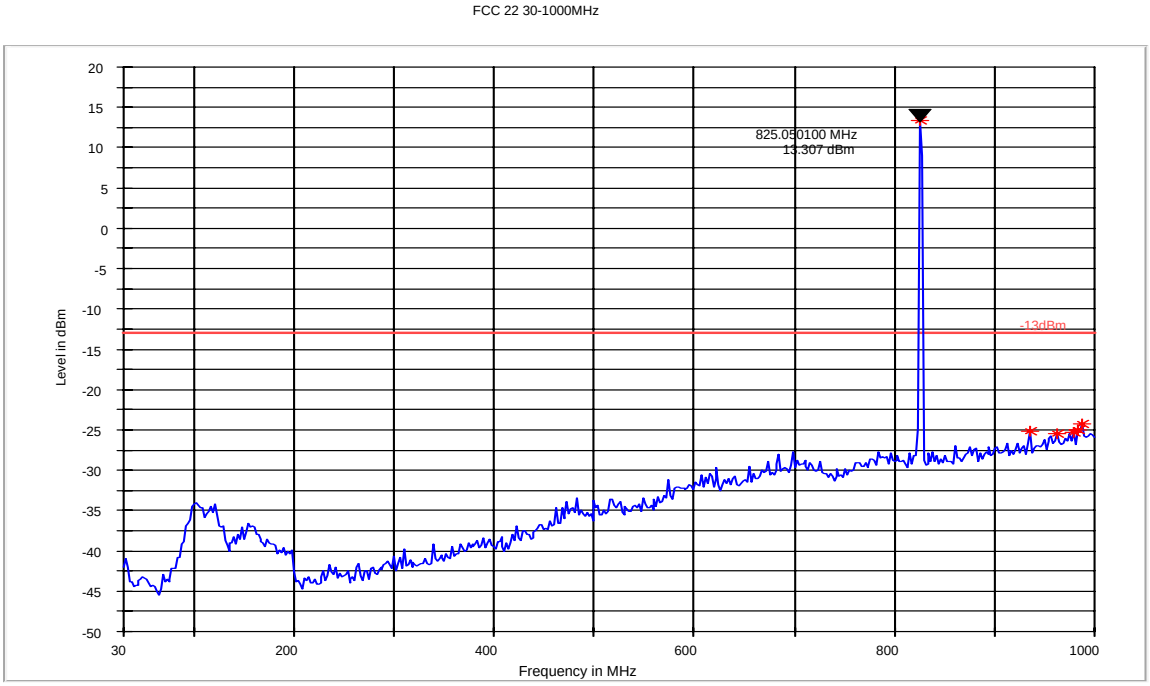
5.5.5.1 Test Results Transmitter Spurious Emission GSM850:

Harmonic	Tx ch-128 Freq. (MHz)	Level (dBm)	Tx ch-190 Freq. (MHz)	Level (dBm)	Tx ch-251 Freq. (MHz)	Level (dBm)
1	**824.2**	-	**836.6**	-	**848.8**	-
2	**1648.4**	NF	**1673.2**	NF	**1697.6**	NF
3	**2472.6**	NF	**2509.8**	NF	**2546.4**	NF
4	**3296.8**	NF	**3346.4**	NF	**3395.2**	NF
5	**4121**	NF	**4183**	NF	**4244**	NF
6	**4945.2**	NF	**5019.6**	NF	**5092.8**	NF
7	**5769.4**	NF	**5856.2**	NF	**5941.6**	NF
8	**6593.6**	NF	**6692.8**	NF	**6790.4**	NF
9	**7417.8**	NF	**7529.4**	NF	**7639.2**	NF
10	**8242**	NF	**8366**	NF	**8488**	NF
NF = Noise Floor						

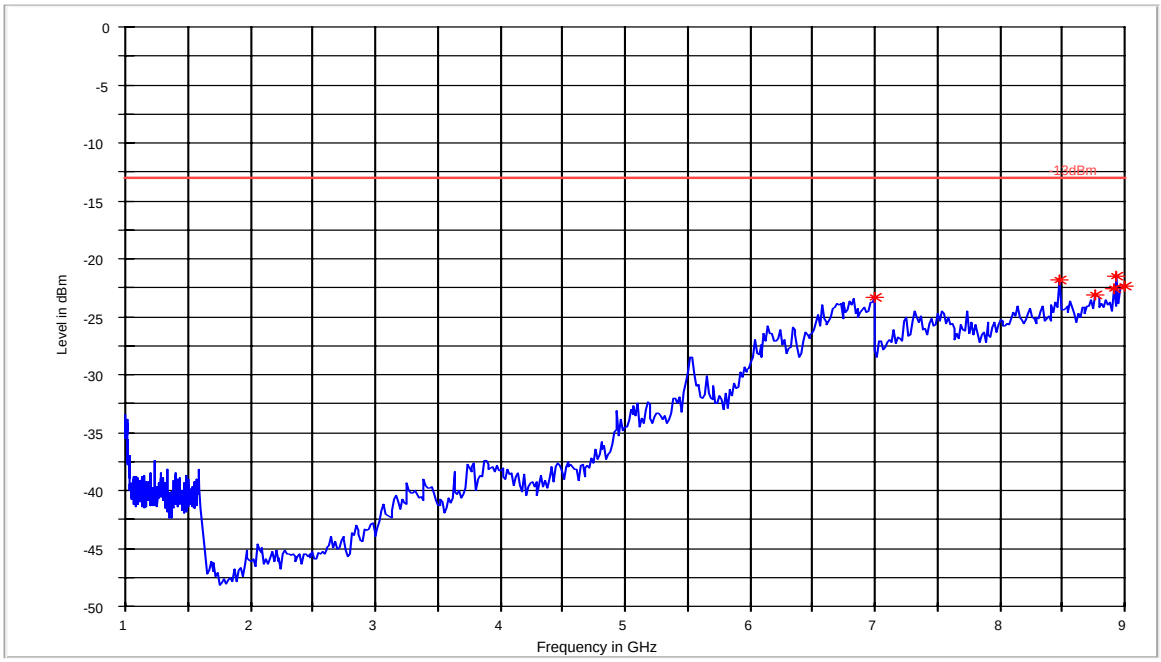
Unless mentioned otherwise, the peaks in the plots are from the carrier frequency.

Radiated Spurious Emissions (CDMA-850) Tx: Low Channel

30MHz-1GHz



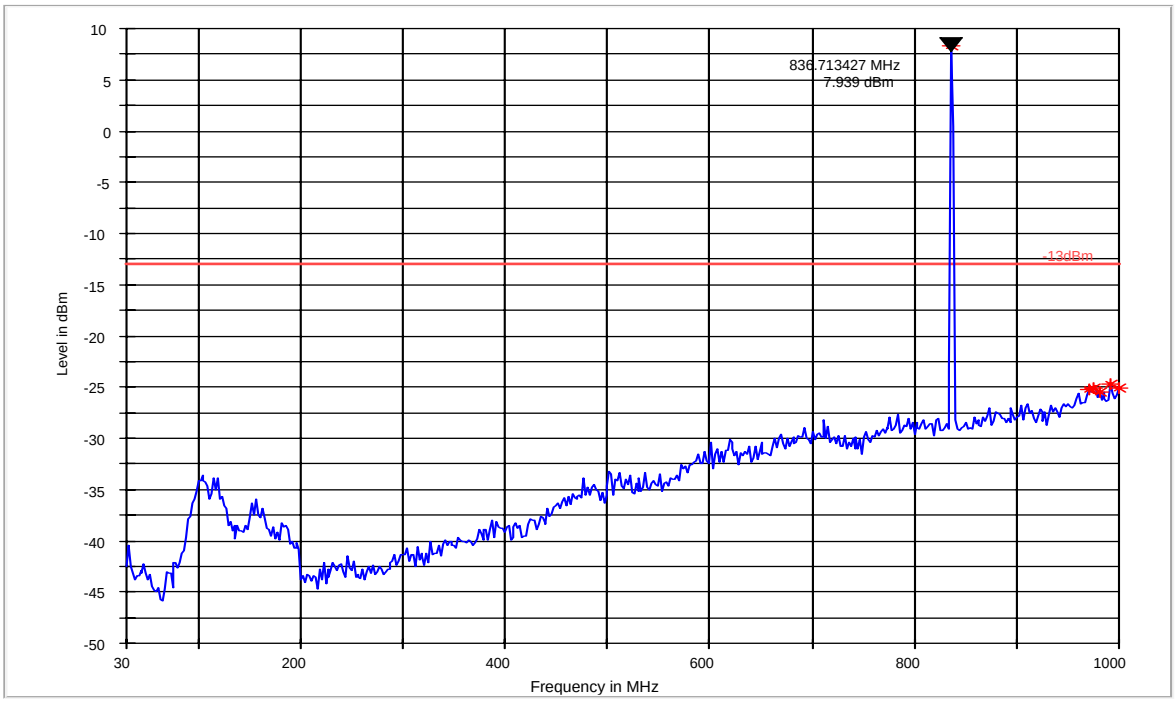
1GHz-9GHz



Radiated Spurious Emissions (CDMA-850) Tx: Mid Channel

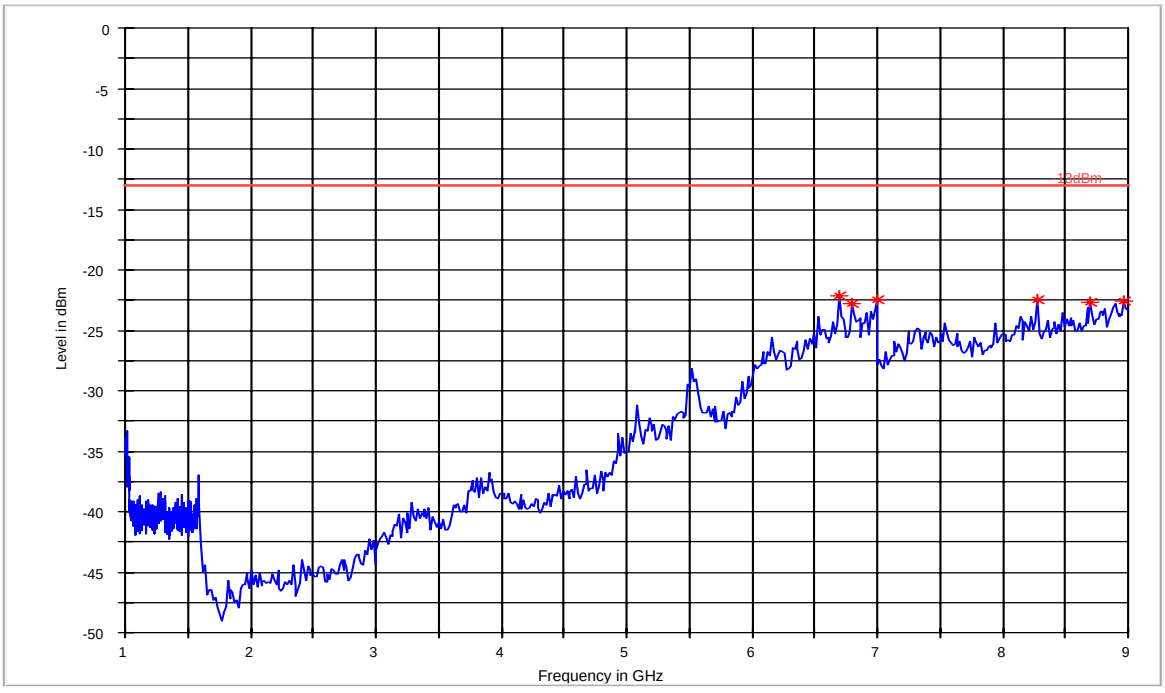
30MHz-1GHz

FCC 22 30-1000MHz



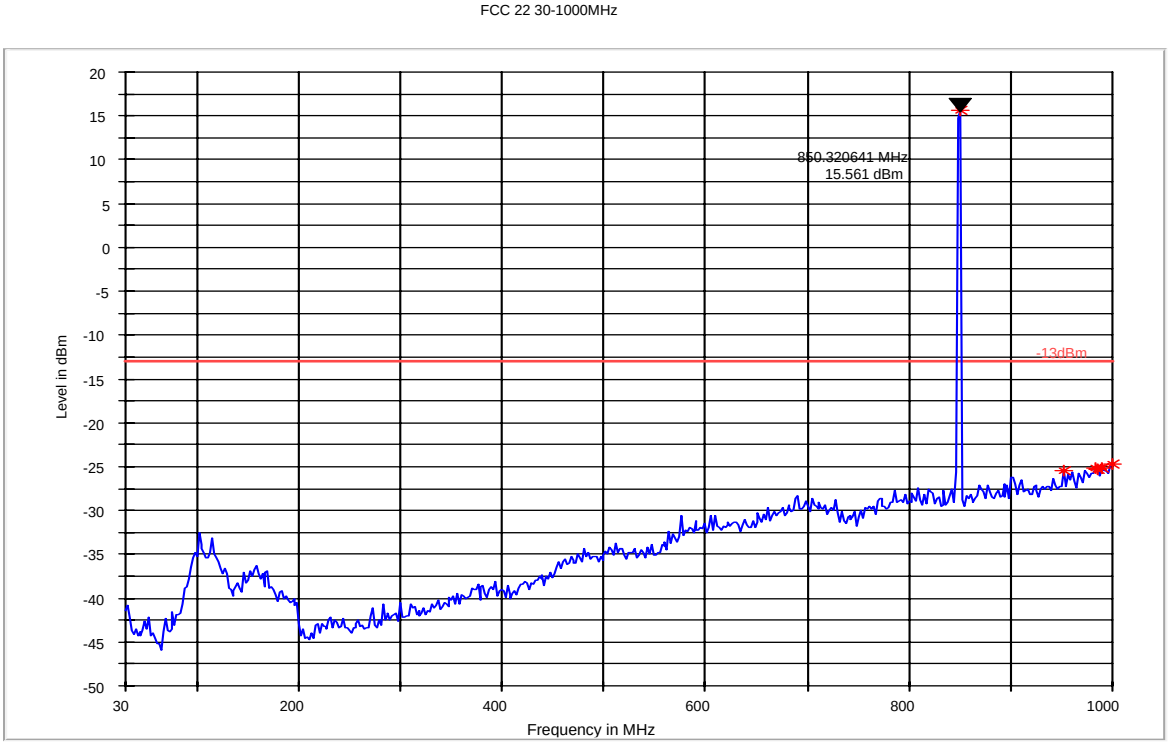
1GHz-9GHz

FCC 22 1-9GHz

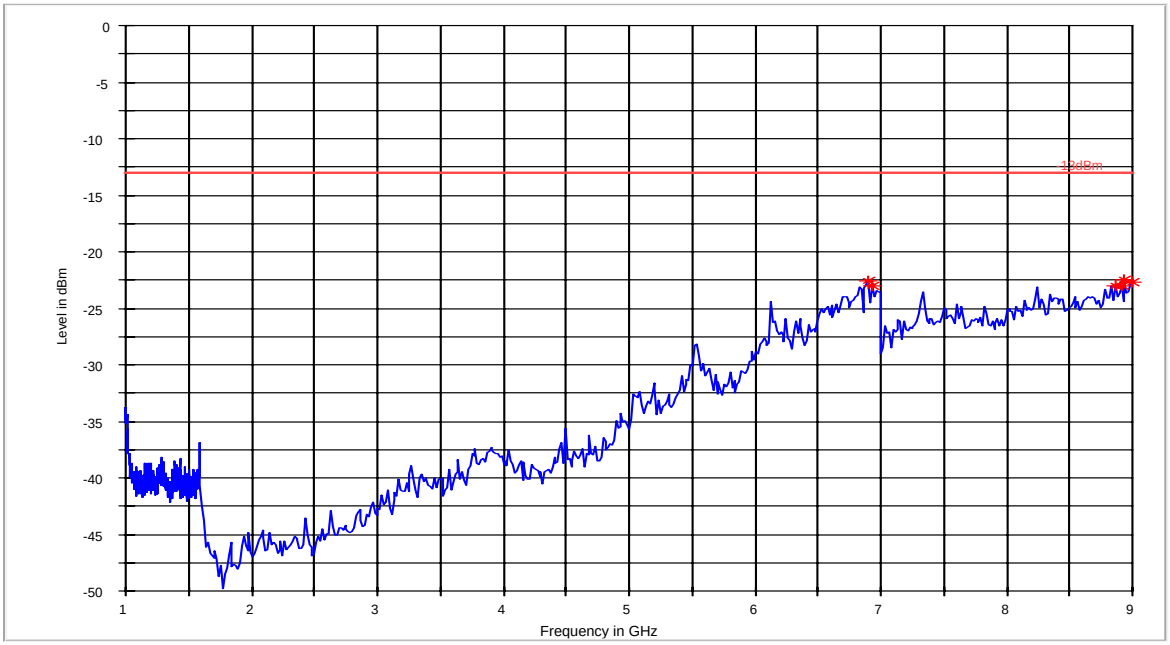


Radiated Spurious Emissions (CDMA-850): High Channel

30MHz-1GHz



1GHz-9GHz



5.5.6 Radiated out of band emissions results on EUT- Receive Mode:

5.5.6.1 References

FCC: CFR Part 15.109, 2.1053
IC: RSS 132 Section 4.6 and 6.6

5.5.6.2 §15.109 Radiated emission limits- Unintentional Radiators:

(a) Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency of emission (MHz)	Field strength (µV/m)
30–88	100 (40dBµV/m)
88–216	150 (43.5 dBµV/m)
216–960	200 (46 dBµV/m)
Above 960	500 (54 dBµV/m)

(b) The field strength of radiated emissions from a Class A digital device, as determined at a distance of 10 meters, shall not exceed the following:

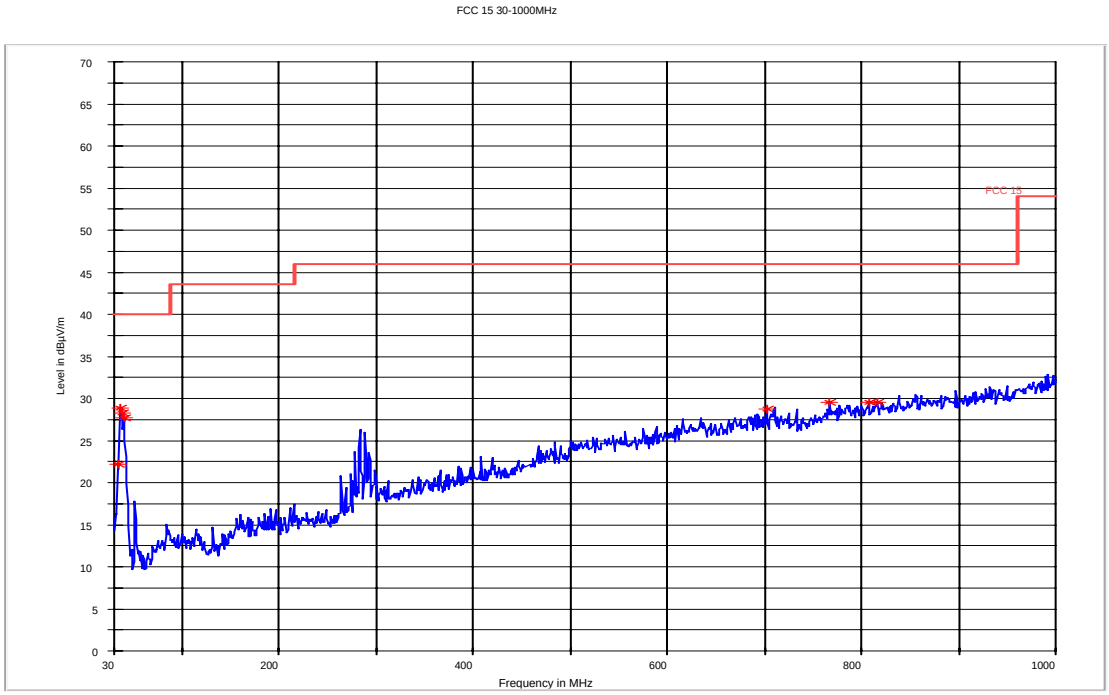
Frequency of emission (MHz)	Field strength (µV/m)
30–88	90
88–216	150
216–960	210
Above 960	300

5.5.6.3 Results

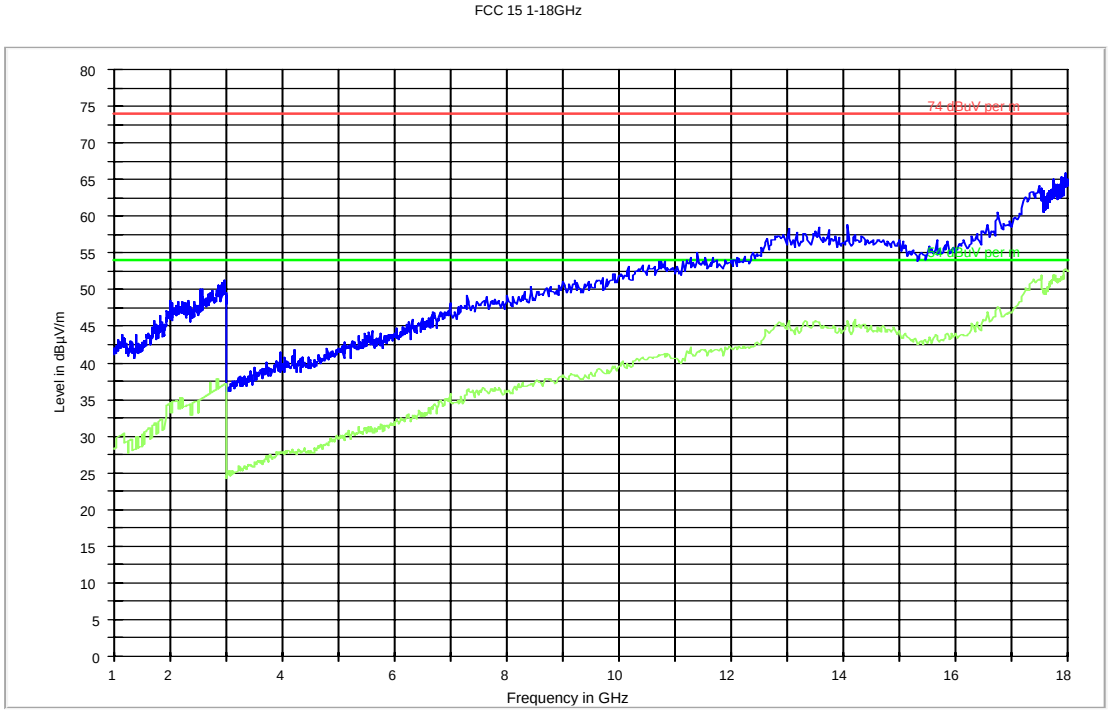
No significant emissions measurable. Plots reported here represent the worse case emissions.

5.5.6.4 Test Results Receiver Spurious Emission

Receive Mode: 30MHz-1GHz



Receive Mode: 1GHz-18GHz



5.6 AC Power Line Conducted Emissions

5.6.1 §15.207 Conducted limits- Intentional Radiators:

(a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 µH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

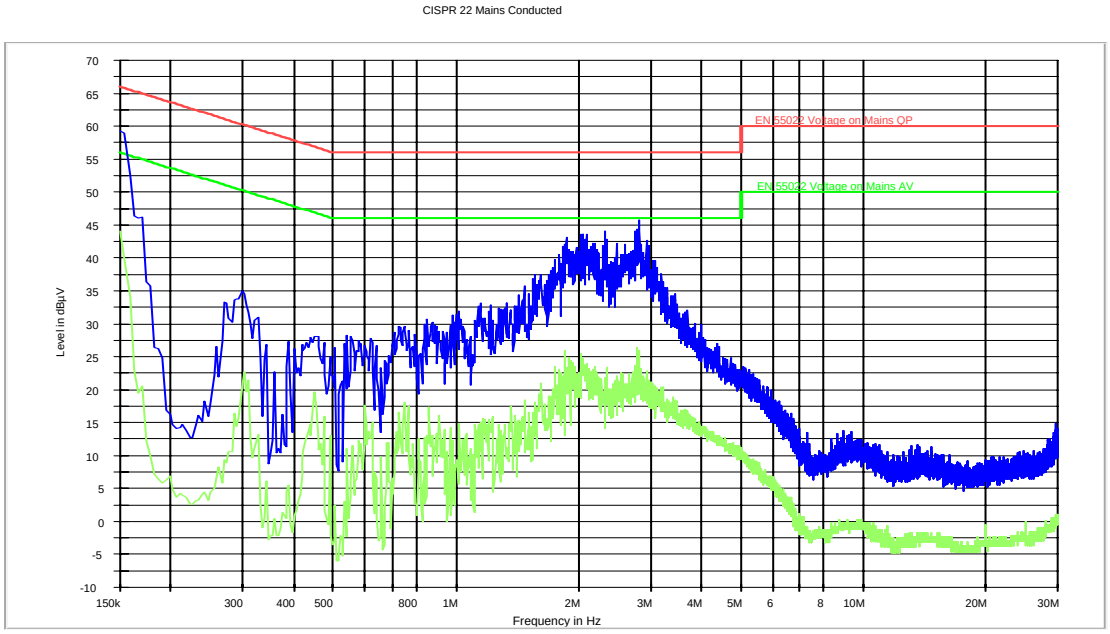
Frequency of emission (MHz)	Conducted limit (dBµV)	
	Quasi-peak	Average
0.15–0.5	66 to 56*	56 to 46*
0.5–5	56	46
5–30	60	50

*Decreases with the logarithm of the frequency.

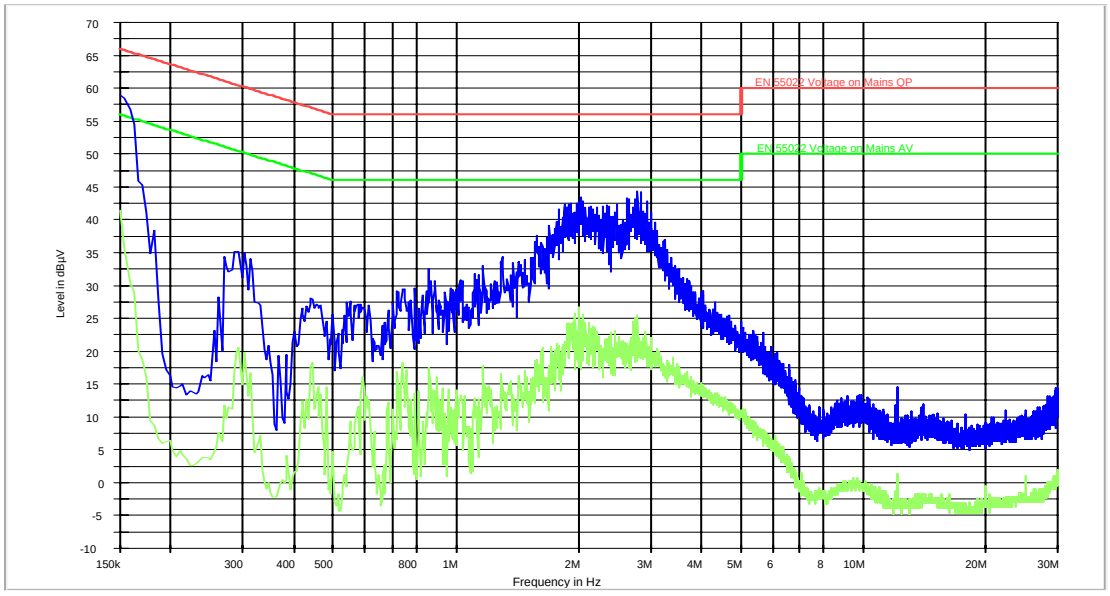
Analyzer Settings: RBW = 10KHz; VBW = 10KHz

Plots reported here represent the worse case emissions.

5.6.2 Rx Test Results:



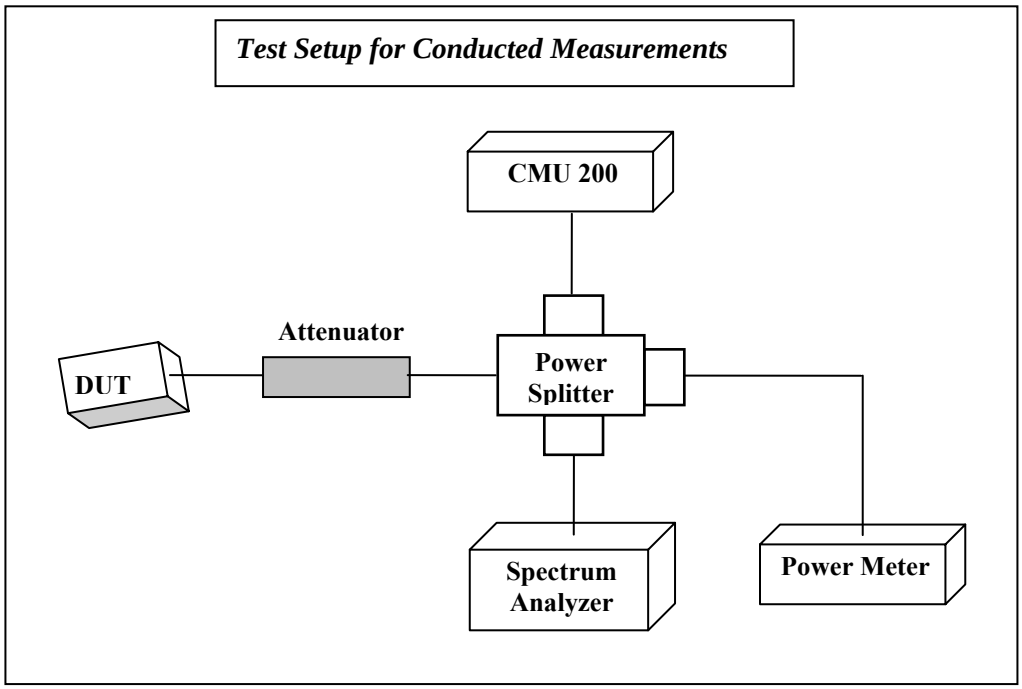
5.6.3 Tx Test Results:

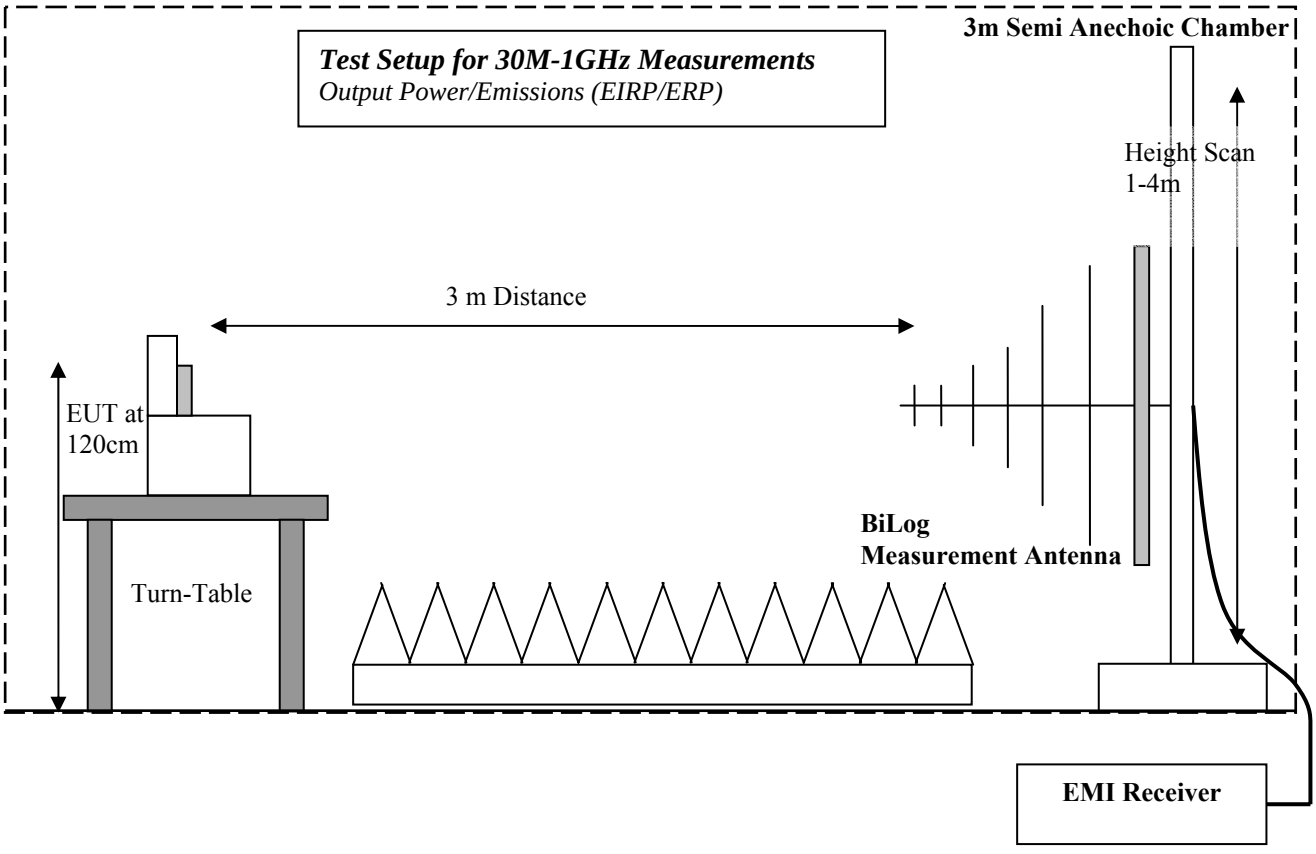


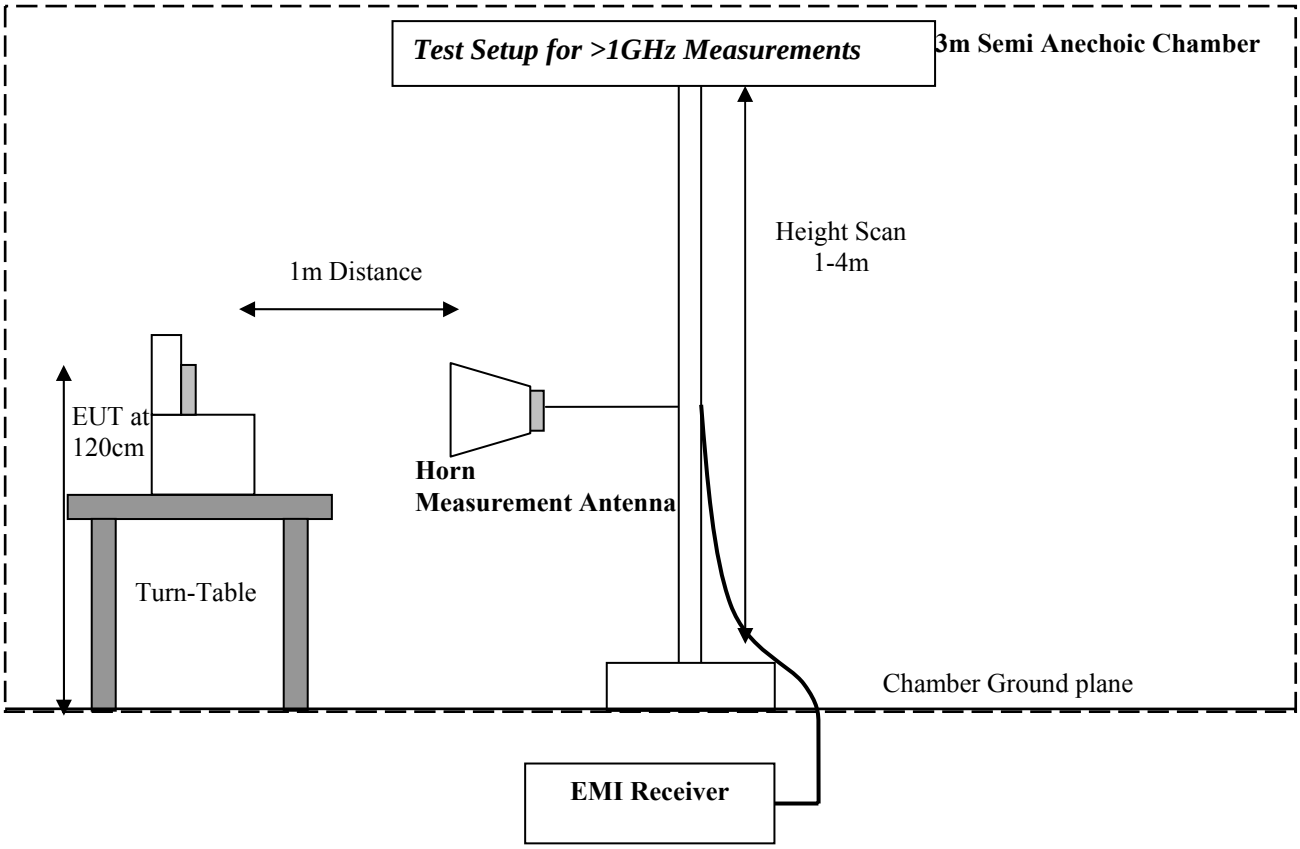
6 Test Equipment And Ancillaries Used For Tests

No	Instrument/Ancillary	Type	Manufacturer	Serial No.	Cal Due	Interval
01	Spectrum Analyzer	ESIB 40	Rohde & Schwarz	100107	May 2010	1 year
02	Spectrum Analyzer	FSEM 30	Rohde & Schwarz	100017	May 2010	1 year
03	Signal Generator	SMY02	Rohde & Schwarz	836878/011	May 2010	1 year
04	Power-Meter	NRVD	Rohde & Schwarz	0857.8008.02	May 2010	1 year
05	Biconilog Antenna	3141	EMCO	0005-1186	June 2010	1 year
06	Horn Antenna (1-18GHz)	SAS-200/571	AH Systems	325	June 2010	1 year
07	Horn Antenna (18-26.5GHz)	3160-09	EMCO	1240	June 2010	1 year
08	Power Splitter	11667B	Hewlett Packard	645348	n/a	n/a
09	Climatic Chamber	VT4004	Voltsch	G1115	May 2010	1 year
10	High Pass Filter	5HC2700	Trilithic Inc.	9926013	n/a	n/a
11	High Pass Filter	4HC1600	Trilithic Inc.	9922307	n/a	n/a
12	Pre-Amplifier	JS4-00102600	Miteq	00616	May 2010	1 year
13	Power Sensor	URV5-Z2	Rohde & Schwarz	DE30807	May 2010	1 year
14	Digital Radio Comm. Tester	CMD-55	Rohde & Schwarz	847958/008	May 2010	1 year
15	Universal Radio Comm. Tester	CMU 200	Rohde & Schwarz	832221/06	May 2010	1 year
16	LISN	ESH3-Z5	Rohde & Schwarz	836679/003	May 2010	1 year
17	Loop Antenna	6512	EMCO	00049838	July 2010	2 years

7 Block Diagrams






Test Setup for >1GHz Measurements
3m Semi Anechoic Chamber
Height Scan
1-4m
1m Distance
EUT at
120cm
Horn
Measurement Antenna
Turn-Table
Chamber Ground plane
EMI Receiver

8 Revision History

Date	Report Name	Changes to report	Report prepared by
02-19-10	**EMC_CET10_054_10501_CA005_FCC22CDMA**	**Original Version**	**Christopher Torio**