FCC/IC Test Report

FOR:

Model Name: HICELLULAR100
Cellular data terminal equipment

FCC ID: X7QHCM2010M100H25
IC ID: 329Q-HCM2010M100

47 CFR Part 2, 22, 24

RSS-132 Issue 2

RSS-133 Issue 5

TEST REPORT #: EMC_CET10_059_10501_FCC22_24
DATE: 2010-09-10

ilac-MRA

A2LA ACCREDITED TESTING LABORATORY Certificate #2135.01

Bluetooth

Bluetooth Qualification Test Facility (BQTF)

CTIA Authorized Test Lab
LAB CODE 20020328-00

FCC listed: A2LA Accredited

IC recognized # 3462B-1

***CETECOM* Inc.**
411 Dixon Landing Road ◆ Milpitas, CA 95035 ◆ U.S.A.
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CETECOM Inc. is a Delaware Corporation with Corporation number: 2113686
Board of Directors: Dr. Harald Ansorge, Dr. Klaus Matkey, Hans Peter May

Table of Contents

1 Assessment

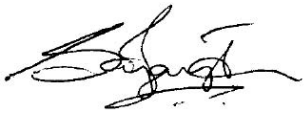
The following is in compliance with the applicable criteria specified in FCC rules Parts 2, 22 and 24 of Title 47 of the Code of Federal Regulations and Industry Canada Standards RSS 132 and RSS 133.

Company	Description	Model #
Hitachi Construction machinery Co., Ltd	Cellular Data Terminal Equipment	HICELLULAR100

Responsible for Testing Laboratory:

Date	Section	Name	Signature
2010-09-10	Compliance	Marc Douat (Test Lab Manager)	

Responsible for the Report:

Date	Section	Name	Signature
2010-09-10	Compliance	Sajay Jose (EMC Engineer)	

2 Administrative Data

2.1 Identification of the Testing Laboratory Issuing the EMC Test Report

Company Name:	CETECOM Inc.
Department:	Compliance
Address:	411 Dixon Landing Road Milpitas, CA 95035 U.S.A.
Telephone:	+1 (408) 586 6200
Fax:	+1 (408) 586 6299
Responsible Test Lab Manager:	Heiko Strehlow
Responsible Project Leader:	Rami Saman

2.2 Identification of the Client

Applicant's Name:	Hitachi Construction Machinery Co., Ltd
Street Address:	650, Kandatsu-machi, Tsuchiura-shi
City/Zip Code	Ibaraki-ken 300-0013
Country	Japan
Contact Person:	Yutaka Watanabe
Phone No.	+81-(0)29-832-4171
Fax:	+81-(0)29-831-0201

2.3 Identification of the Manufacturer

Manufacturer's Name:	KYB trodule Co., Ltd
Manufacturers Address:	3909 Ura, Nagaoka
City/Zip Code	Niigata 949-5406
Country	Japan
Contact Person:	Akifumi Kanai
Phone No.:	+81-(0)258-92-6903

3 Equipment under Test (EUT)

3.1 Specification of the Equipment under Test

Marketing Name:	HICELLULAR100
Model No:	HICELLULAR100
Product Type:	Cellular Data Terminal Equipment
Hardware Revision :	1.0
Software Revision :	1.0
Module Info:	Cinterion HC25 HW: B2.12.1 SW: Rev 02.050
FCC-ID:	X7QHCM2010M100H25
IC-ID :	329Q-HCM2010M100
Frequency:	GSM 850: 824.2-848.8MHz; PCS 1900: 1850.2-1909.8MHz FDD V: 826.4-846.6MHz; FDD II: 1852.4-1907.6MHz
Type(s) of Modulation:	GMSK; 8-PSK; QPSK; 16QAM
Number of channels:	GSM850: 125 and PCS 1900: 300 FDD II: 278/ FDD V: 103
Antenna Type:	Internal PIFA
Power Supply:	Nominal 24V DC

3.2 Identification of the Equipment Under Test (EUT)

EUT #	Serial Number	HW Version	IMEI	SW Version
1	CS2-25	HC25	354114-01-073722-0	N/A
2	CS2-31	HC25	354114-01-073705-5	N/A

3.3 Identification of Accessory equipment

AE #	Type	Manufacturer	Model	Serial Number
1	Data/power harness	KYB Trondule	N/A	N/A
2	GPS Antenna	Trimble	N/A	1638

3.4 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
- 47 CFR Part 24: Title 47 of the Code of Federal Regulations: Chapter I-Federal Communications Commission subchapter B- common carrier services; Part 24- Personal communication services
- RSS 132- Issue 2: Spectrum management and telecommunication policy- Radio Standards Specifications Cellular telephones employing new technologies operating in the bands 824-849MHz and 869-894MHz
- RSS 133- Issue 5: Spectrum management and telecommunication policy- Radio Standards Specifications- 2GHz personal communication services

Only Radiated measurements were performed on this device and reported in this document. The conducted measurements are leveraged from the Cinterion HC25 module certification report.

4 Measurements

4.1 RF Power Output

4.1.1 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

4.1.2 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.

4.1.3 Limits:

4.1.3.1 FCC 22.913 (a) Effective radiated power limits.

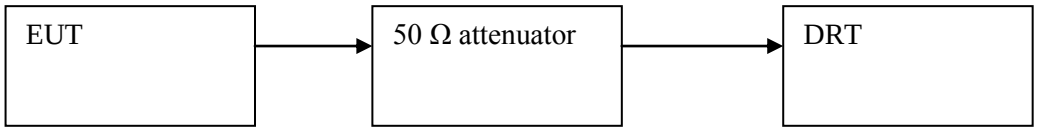
The effective radiated power (ERP) of mobile transmitters must not exceed 7 Watts.

4.1.3.2 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.

4.1.4 Conducted Output Power Measurement procedure

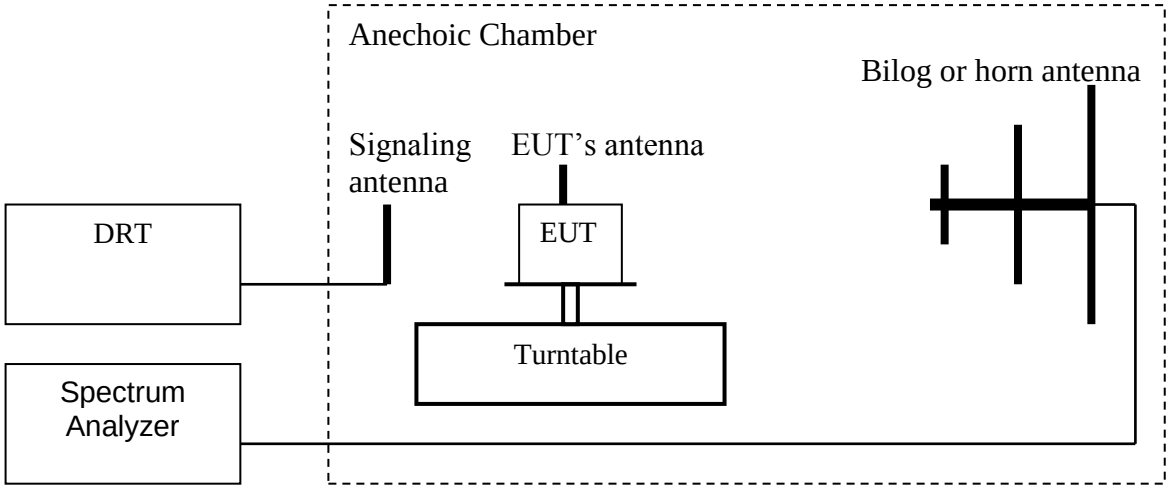
Ref: TIA-603C 2004 2.2.1 Conducted Carrier Output Power Rating



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.

4.1.5 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 RadioCommunication 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.)

4.1.6 RF Power Output 850MHz band

Limit: Nominal Peak Output Power < 38.45 dBm (7W)
Measurement Uncertainty: ±3.0 dB

GSM 850: GMSK	
Frequency (MHz)	**Radiated Power**
	ERP (dBm)
824.2	27.5
836.4	28.0
848.8	27.9

EGPRS 850: 8PSK	
Frequency (MHz)	**Radiated Power**
	ERP (dBm)
824.2	23.6
836.4	23.6
848.8	23.7

FDD5: WCDMA	
Frequency (MHz)	**Radiated Power**
	ERP (dBm)
826.4	21.4
836.0	21.9
846.6	22.0

4.1.7 RF Power Output 1900MHz band

Limit: Nominal Peak Output Power < 33 dBm (2W)
PAR many not exceed 13dB
Measurement Uncertainty: ±3.0 dB

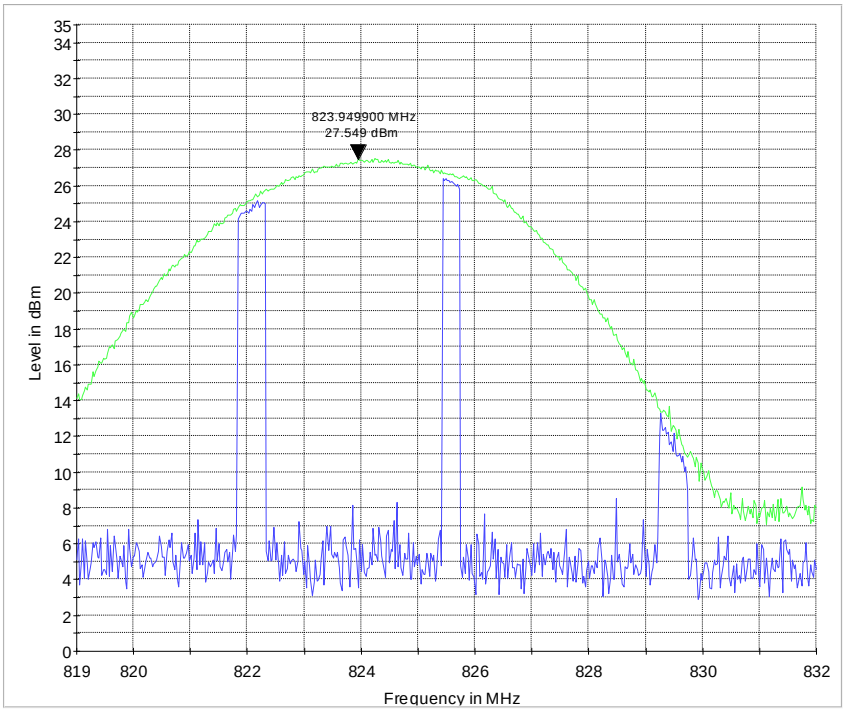
GSM 1900: GMSK	
Frequency (MHz)	**Radiated Power**
	EIRP (dBm)
1850.2	27.3
1880.0	26.9
1909.8	27.6

EGPRS 1900: 8PSK	
Frequency (MHz)	**Radiated Power**
	EIRP (dBm)
1850.2	25.7
1880.0	25.3
1909.8	25.9

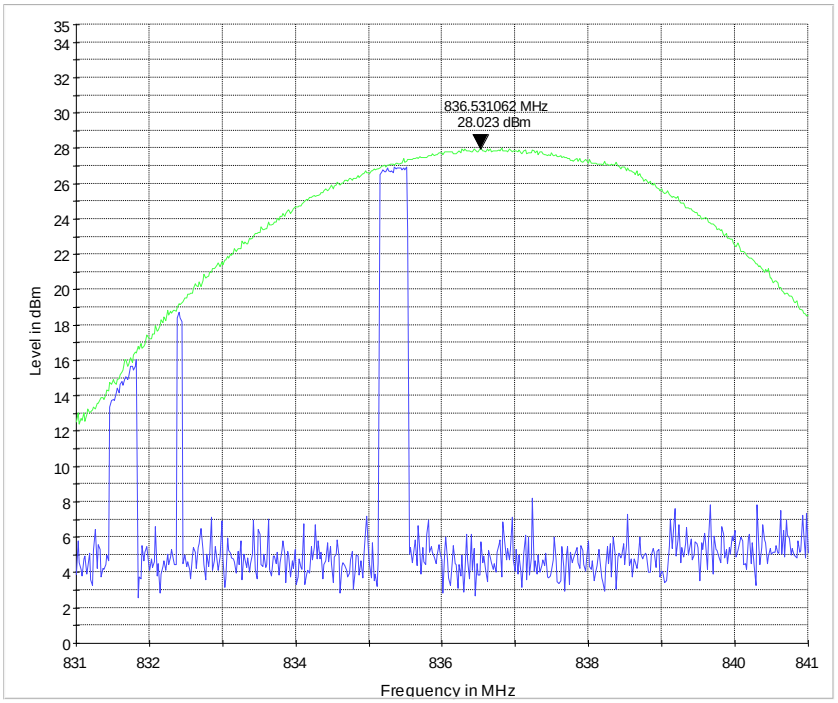
FDD2: WCDMA	
Frequency (MHz)	**Radiated Power**
	EIRP (dBm)
1852.4	25.3
1880.0	24.4
1907.6	25.0

4.1.8 Results

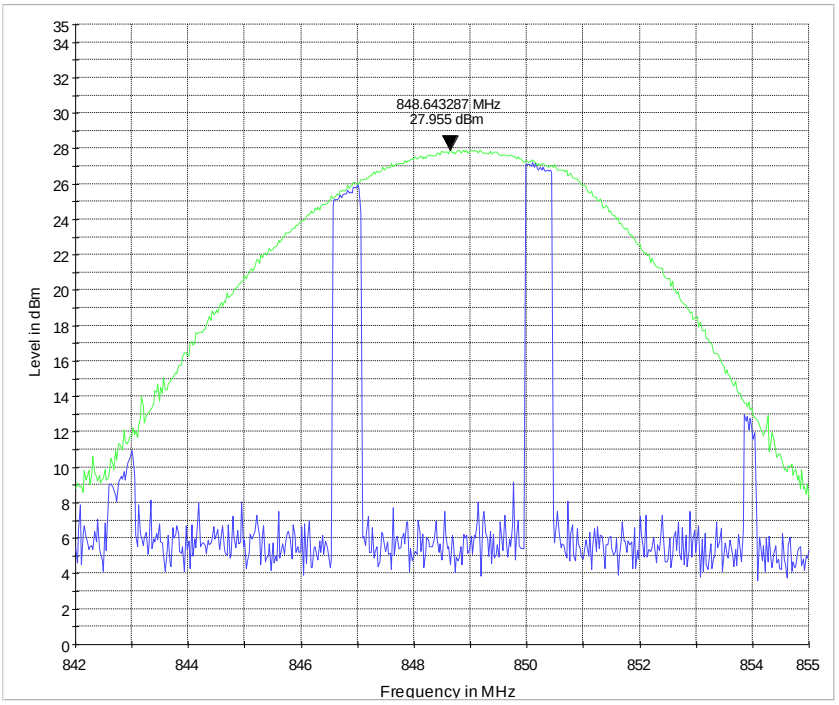
ERP (GSM 850) CHANNEL 128 §22.913(a)



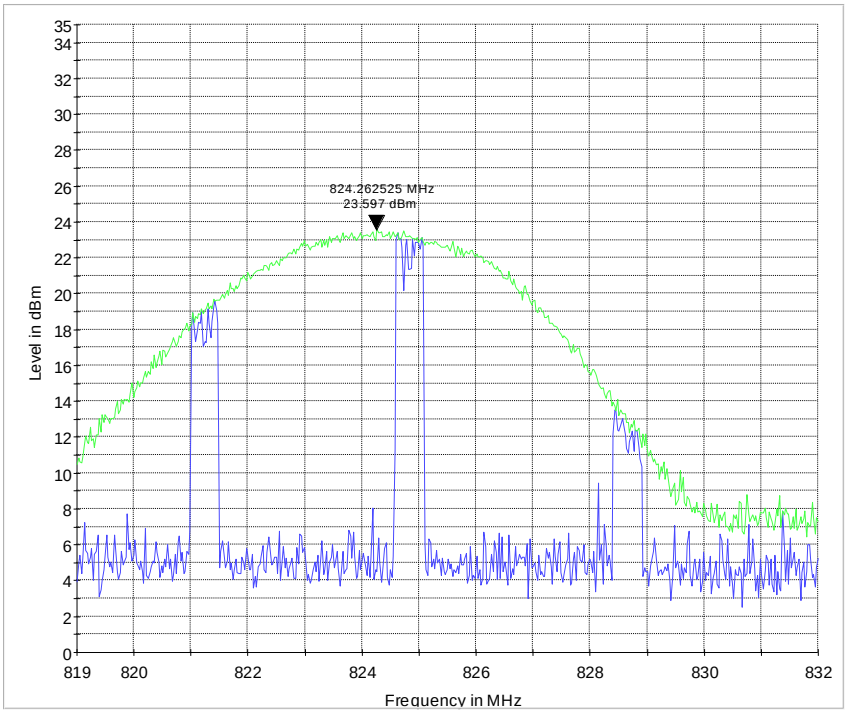
ERP (GSM 850) CHANNEL 190 §22.913(a)



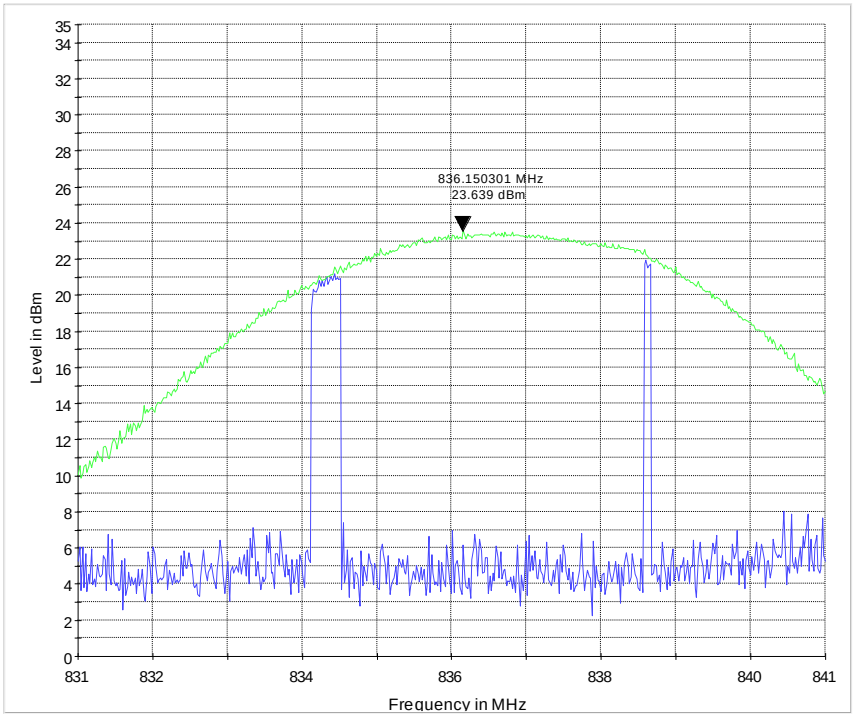
ERP (GSM 850) CHANNEL 251 §22.913(a)



ERP (EGPRS 850) CHANNEL 128 §22.913(a)



ERP (EGPRS 850) CHANNEL 190 §22.913(a)



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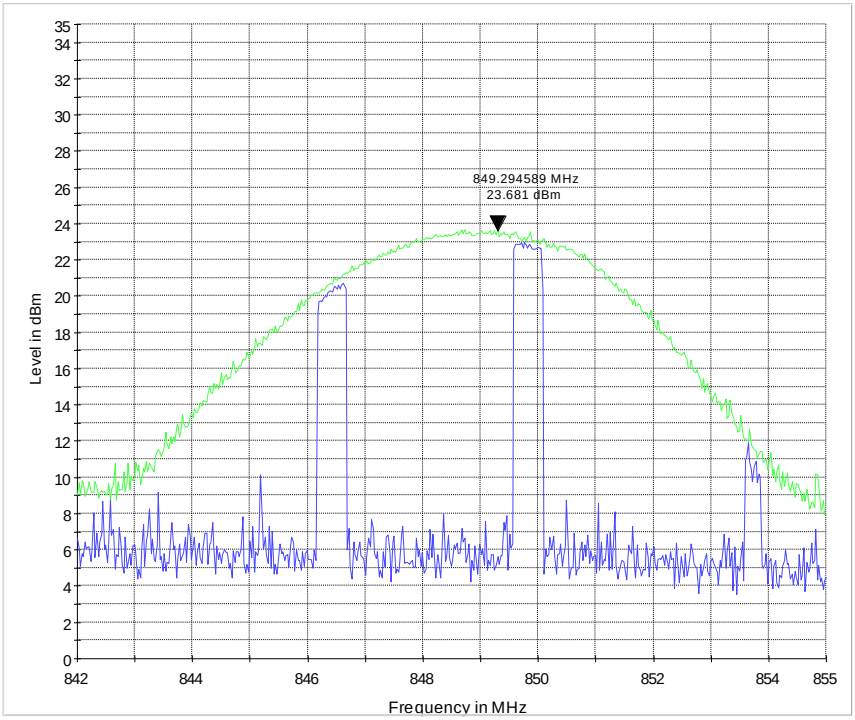
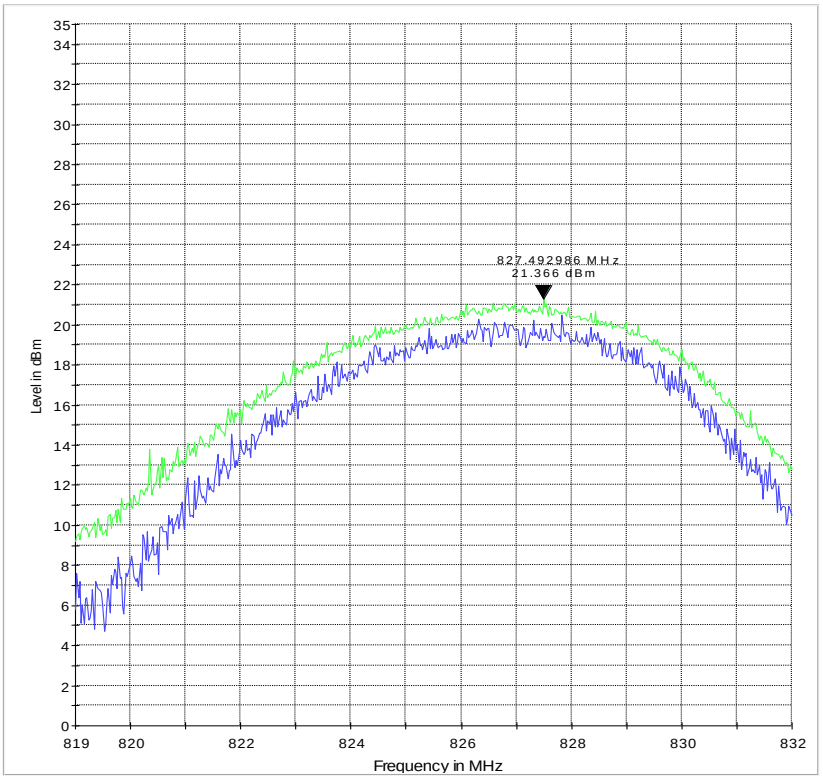
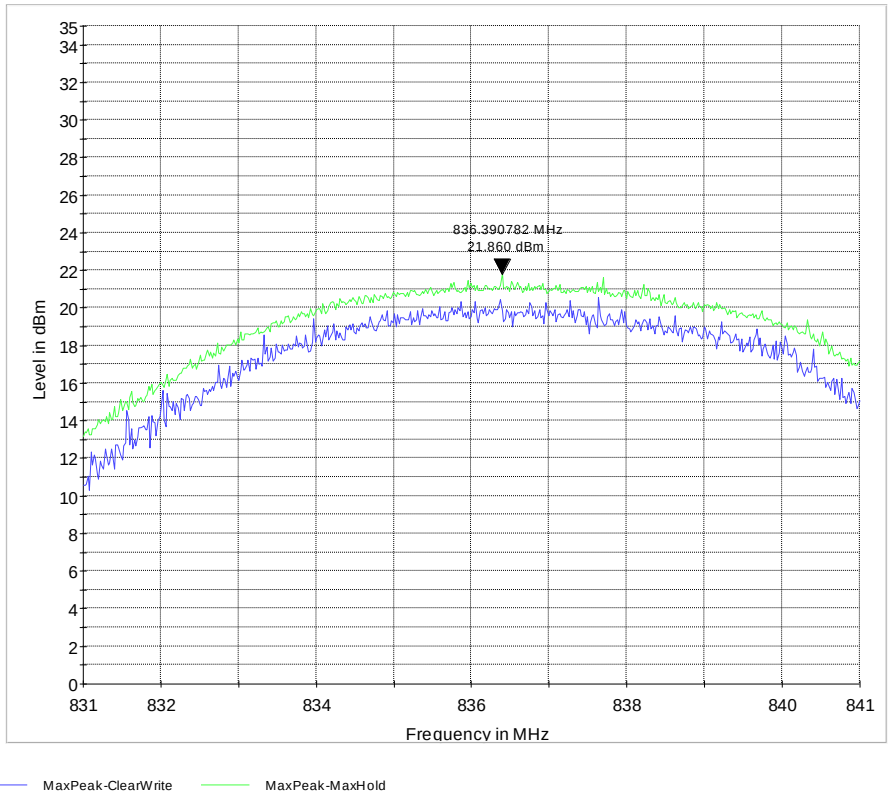


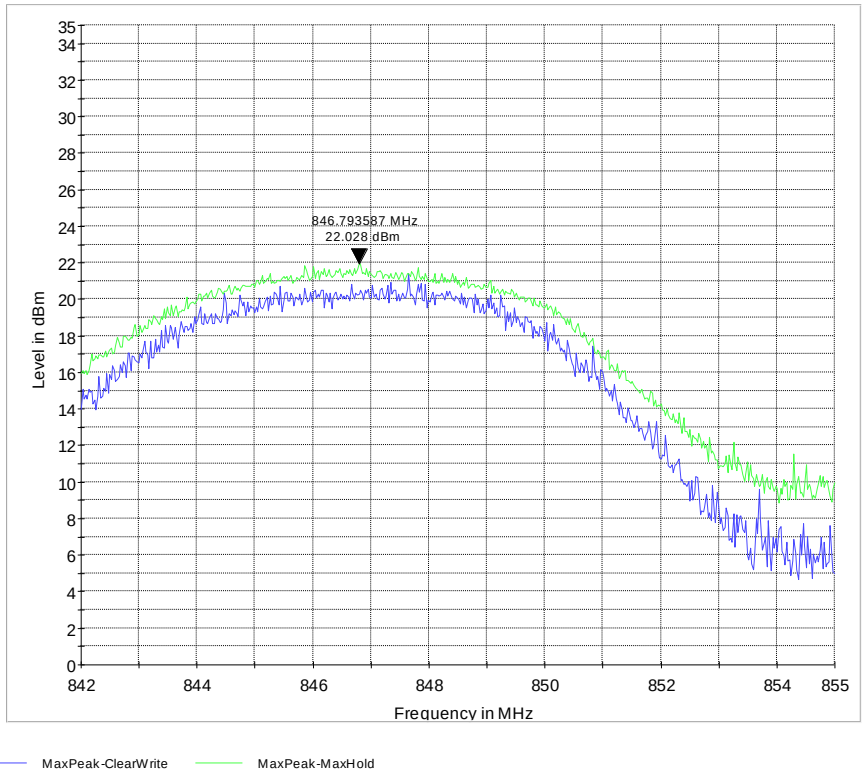
ERP (UMTS FDD5) CHANNEL 4132 §22.913(a)



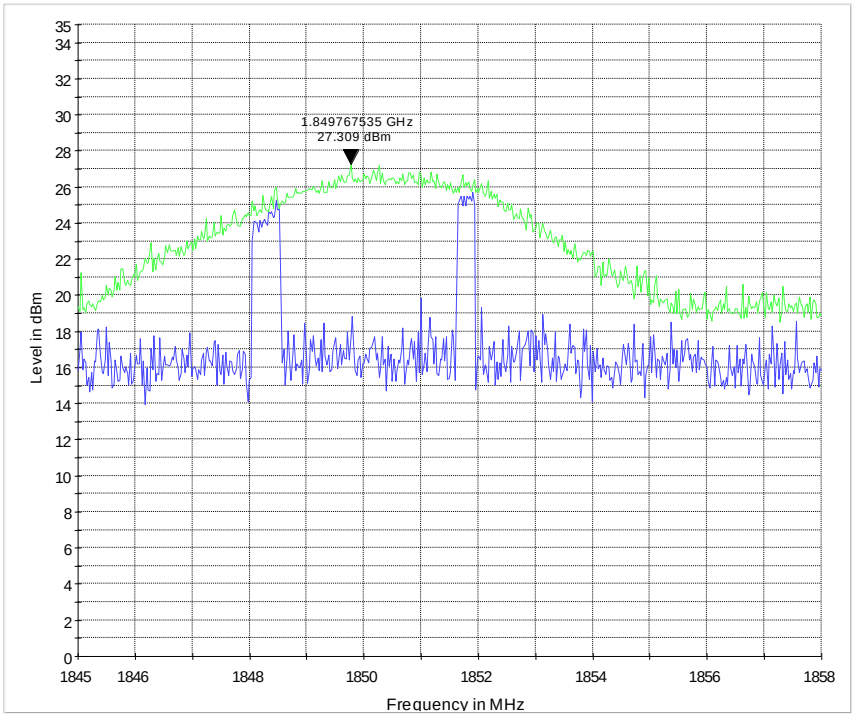
ERP (UMTS FDD5) CHANNEL 4183 §22.913(a)



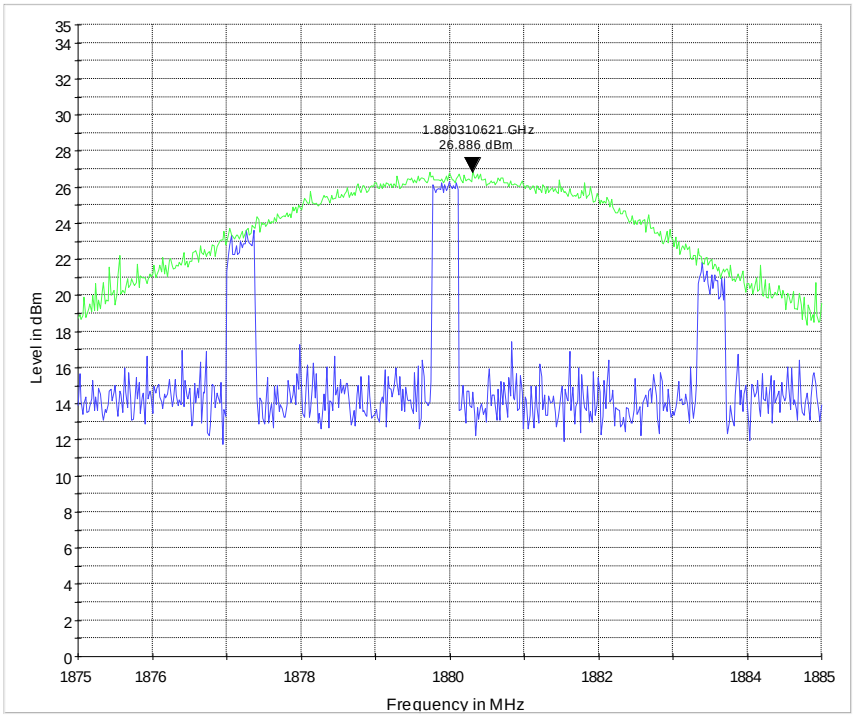
ERP (UMTS FDD5) CHANNEL 4233 §22.913(a)



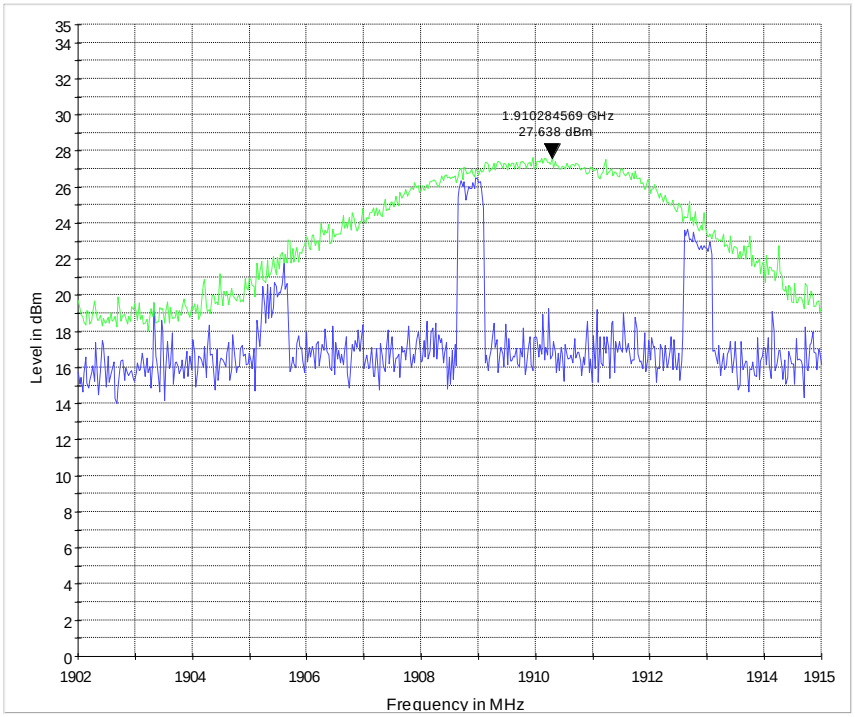
EIRP (PCS-1900) CHANNEL 512 §24.232(b)



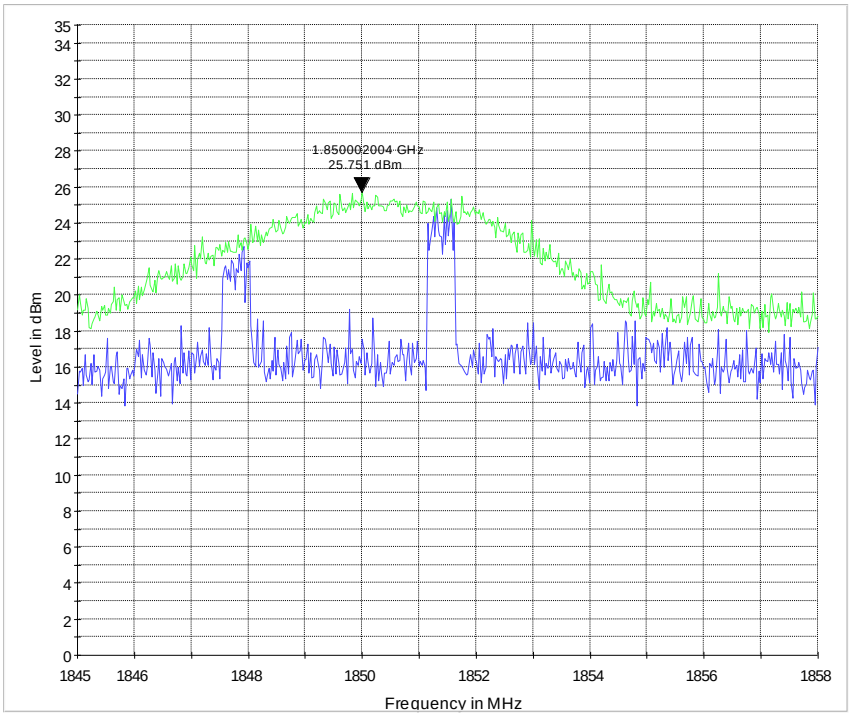
EIRP (PCS-1900) CHANNEL 661 §24.232(b)



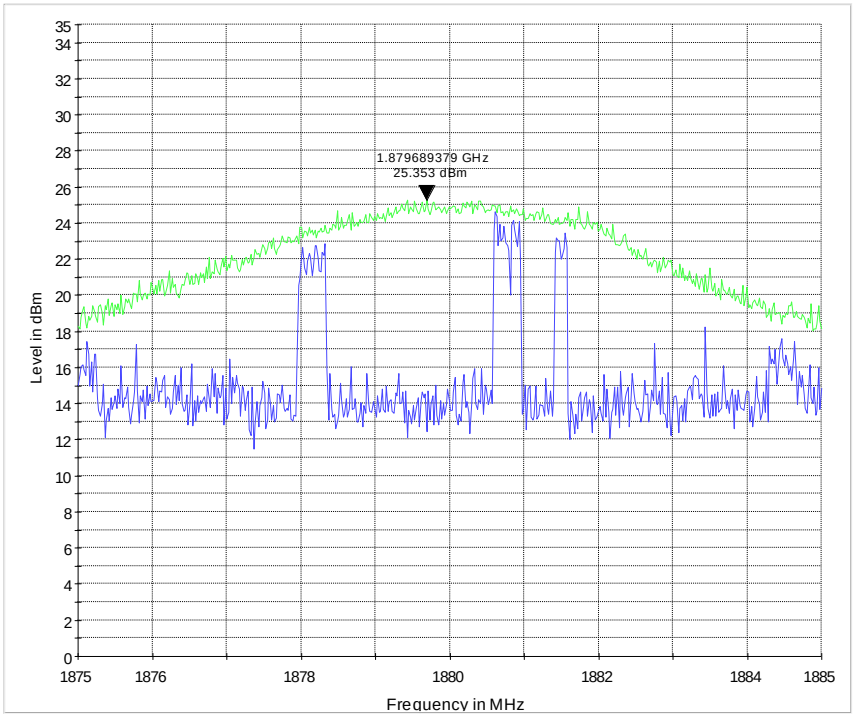
EIRP (PCS-1900) CHANNEL 810 §24.232(b)



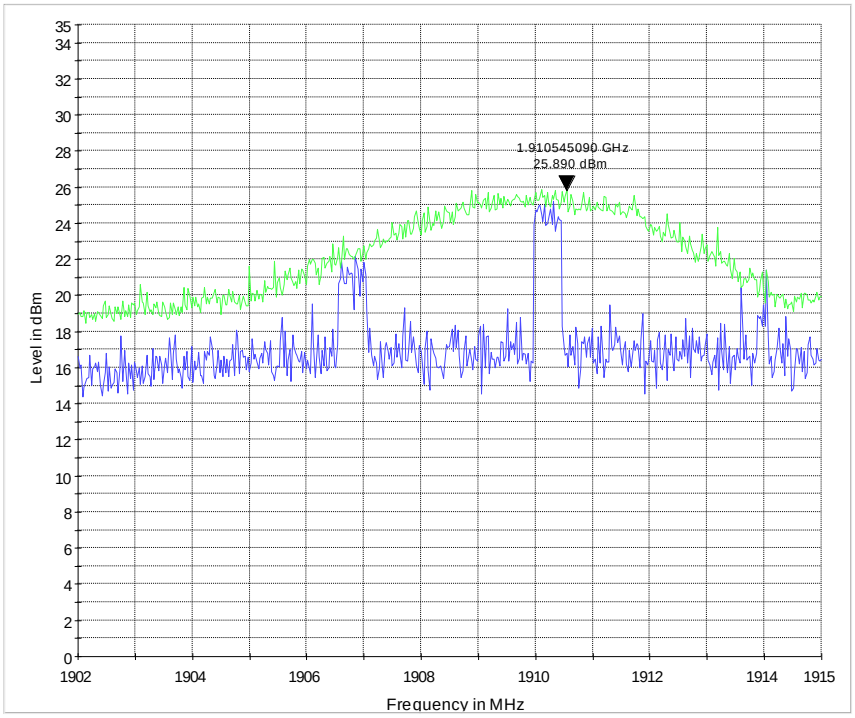
EIRP (EGPRS 1900) CHANNEL 512 §24.232(b)



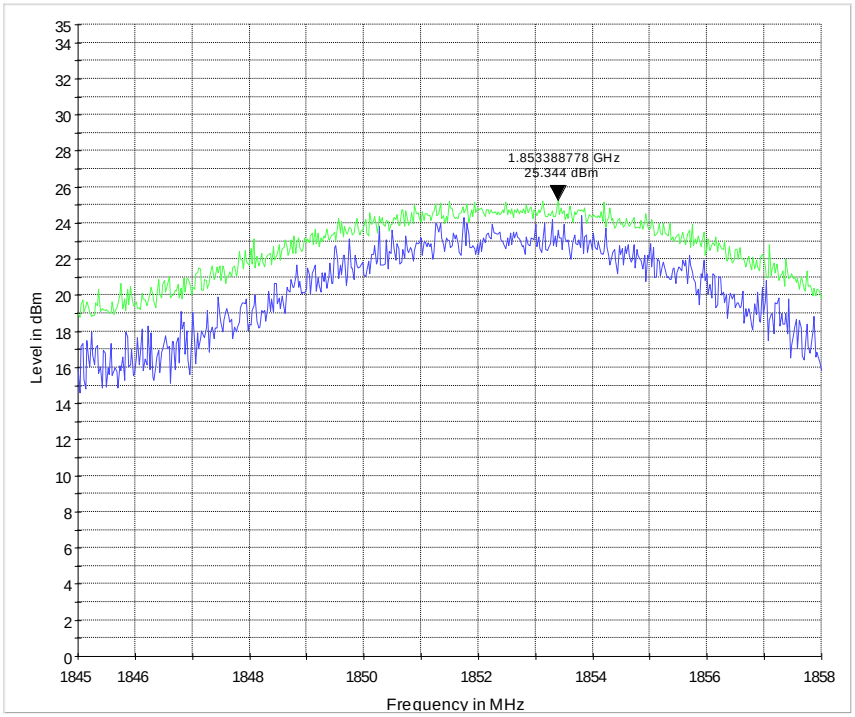
EIRP (EGPRS 1900) CHANNEL 661 §24.232(b)



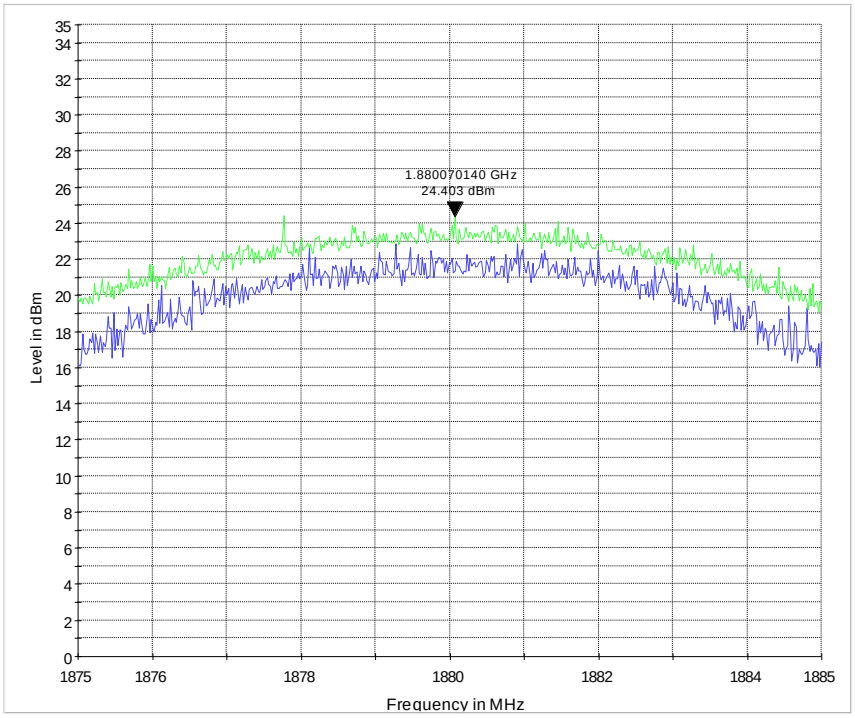
EIRP (EGPRS 1900) CHANNEL 810 §24.232(b)



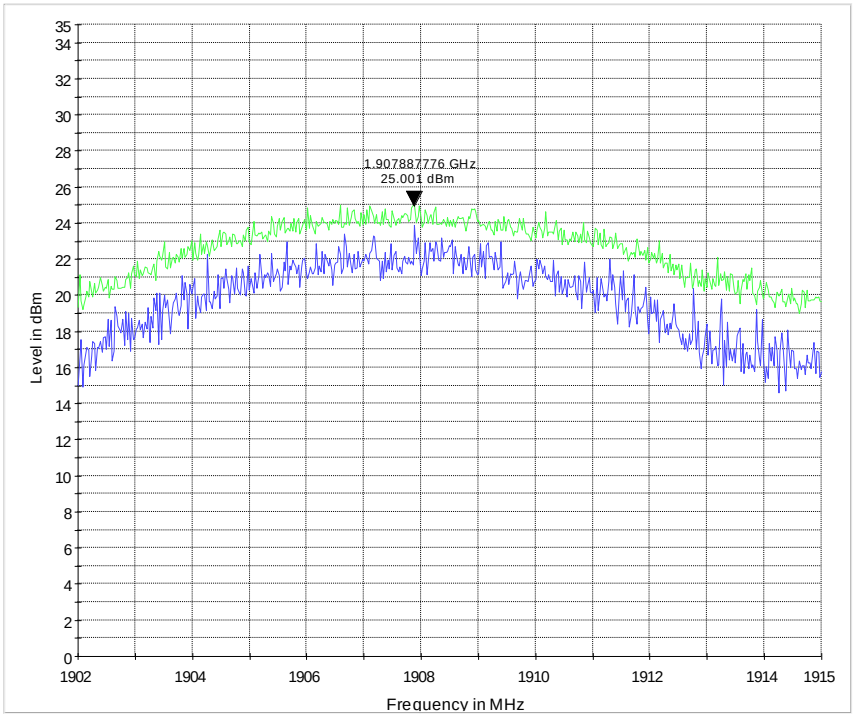
EIRP (UMTS FDD2) CHANNEL 9262 §24.232(b)



EIRP (UMTS FDD2) CHANNEL 9400 §24.232(b)

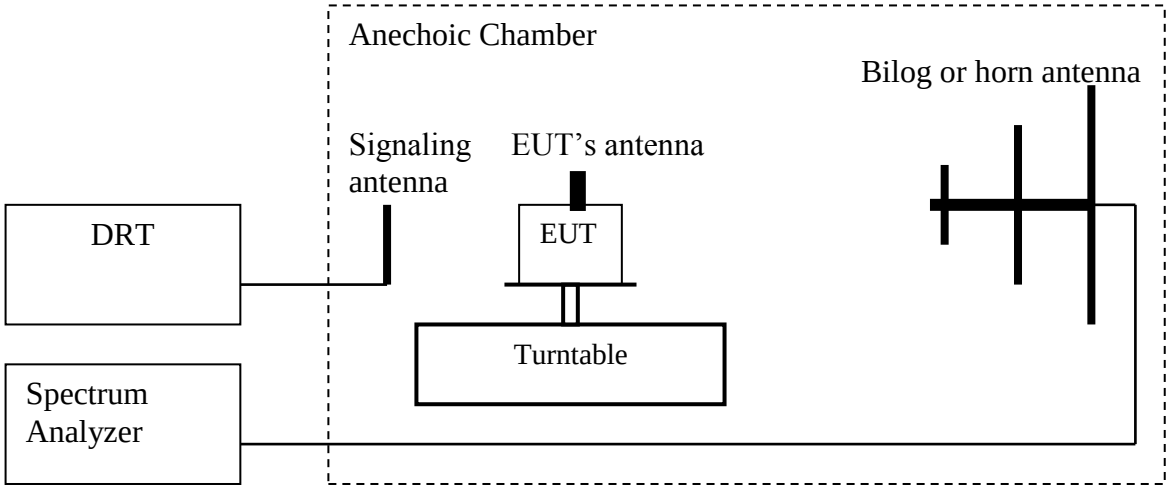


EIRP (UMTS FDD2) CHANNEL 9538 §24.232(b)



4.2 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 GSM-850 & PCS-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 GSM-850 & PCS-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.

Radiated emission measurements were made only in Packet switched mode GMSK modulation because this mode represents the worse case emissions. The output power measured in this mode is higher than in 8PSK mode.
All measurements are done in horizontal and vertical polarization; the plots show the worst case where it is not indicated otherwise.

No emissions measured below 30 MHz.

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

4.2.1.1 Test Results Transmitter Spurious Emission GSM850:

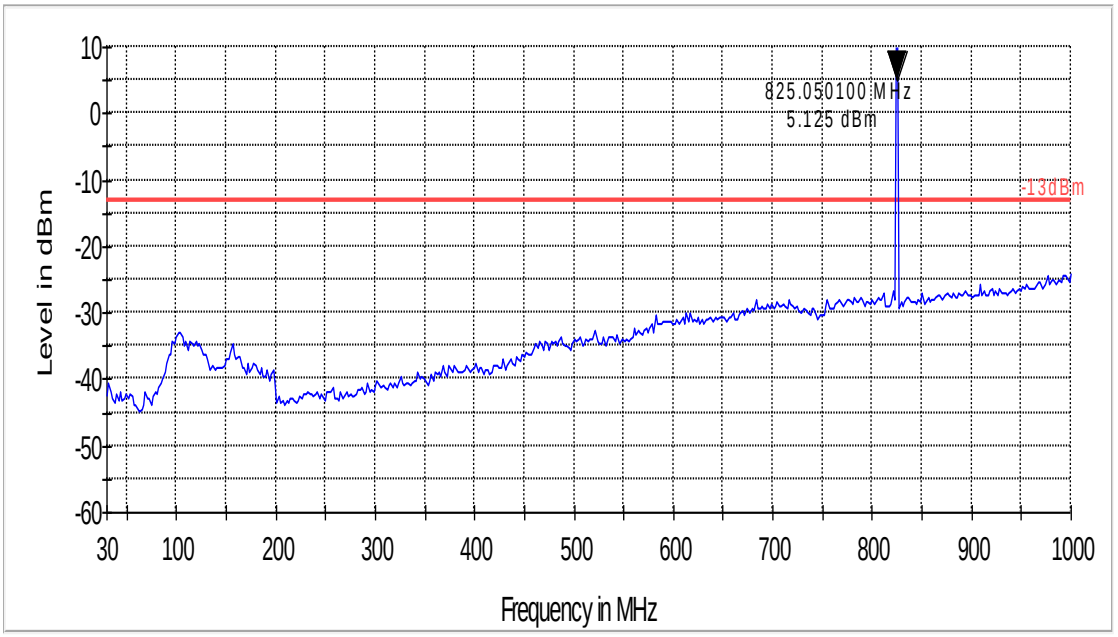
Harmonic	Tx ch-128 Freq. (MHz)	Level (dBm)	Tx ch-190 Freq. (MHz)	Level (dBm)	Tx ch-251 Freq. (MHz)	Level (dBm)
1	**824.2**	-	**836.6**	-	**848.8**	-
2	**1648.4**	NF	**1673.2**	NF	**1697.6**	NF
3	**2472.6**	-35	**2509.8**	-37	**2546.4**	-35.5
4	**3296.8**	NF	**3346.4**	NF	**3395.2**	NF
5	**4121**	NF	**4183**	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						

Note: Unless specified otherwise, the peaks over the limit line in the plots are from the TX signal.

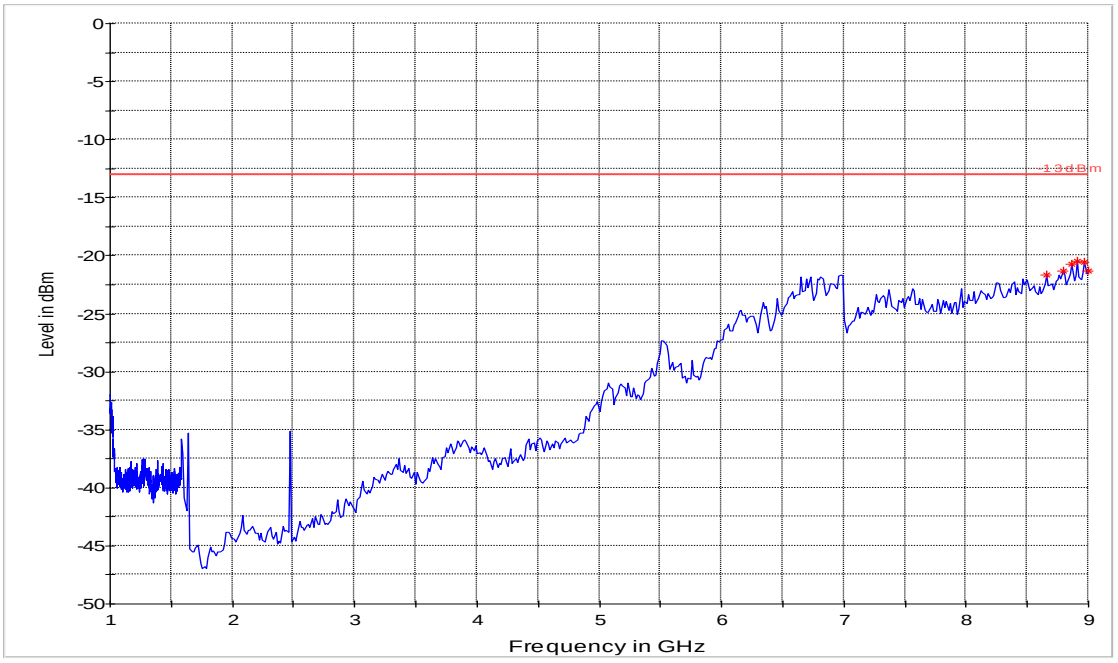
-13dBm.LimitLine
Preview Result
Data Reduction Result
Final Measurement Result

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

Test results 30M-1GHz

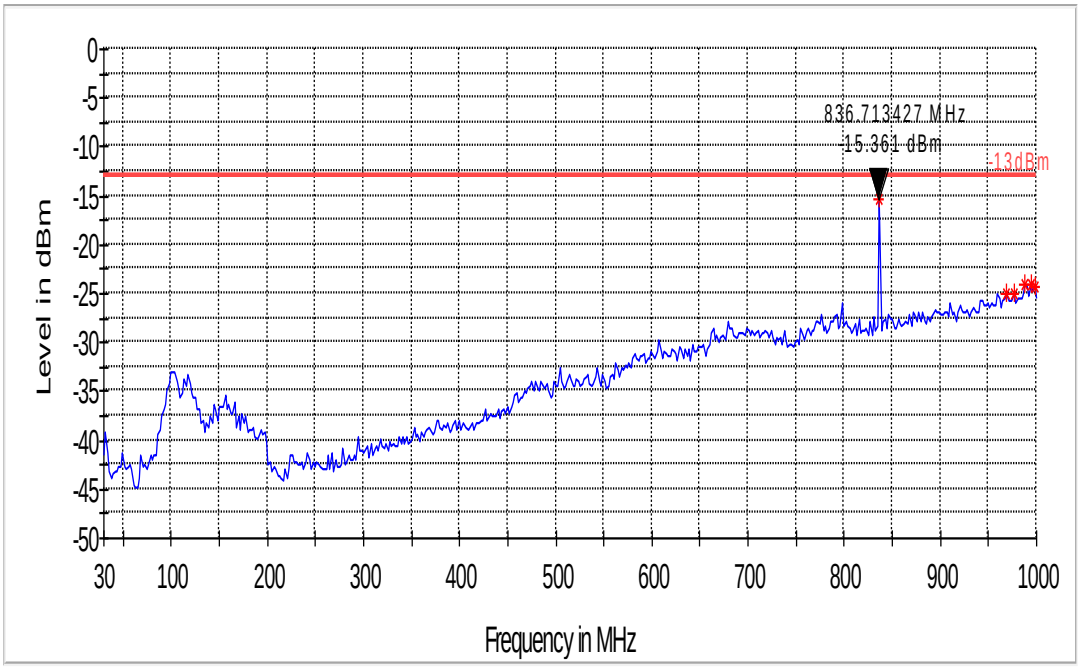


Test results 1GHz-9GHz

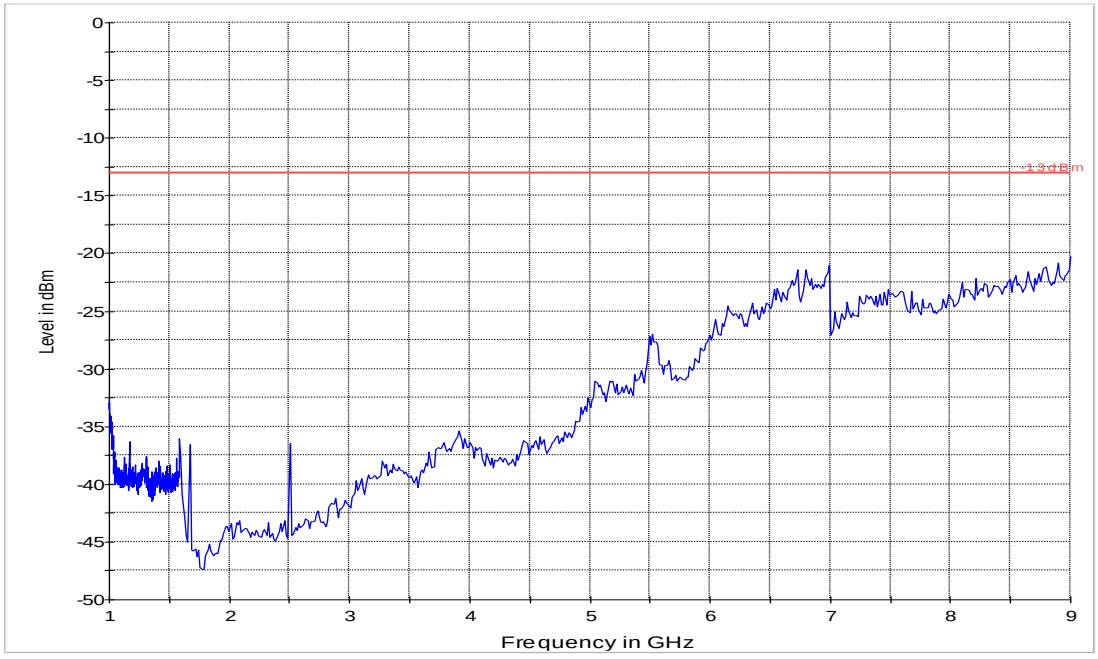


Radiated Spurious Emissions (GSM-850) Tx: Mid Channel

Test results 30M-1GHz



Test results 1GHz-9GHz



Radiated Spurious Emissions (GSM-850) Tx: High Channel

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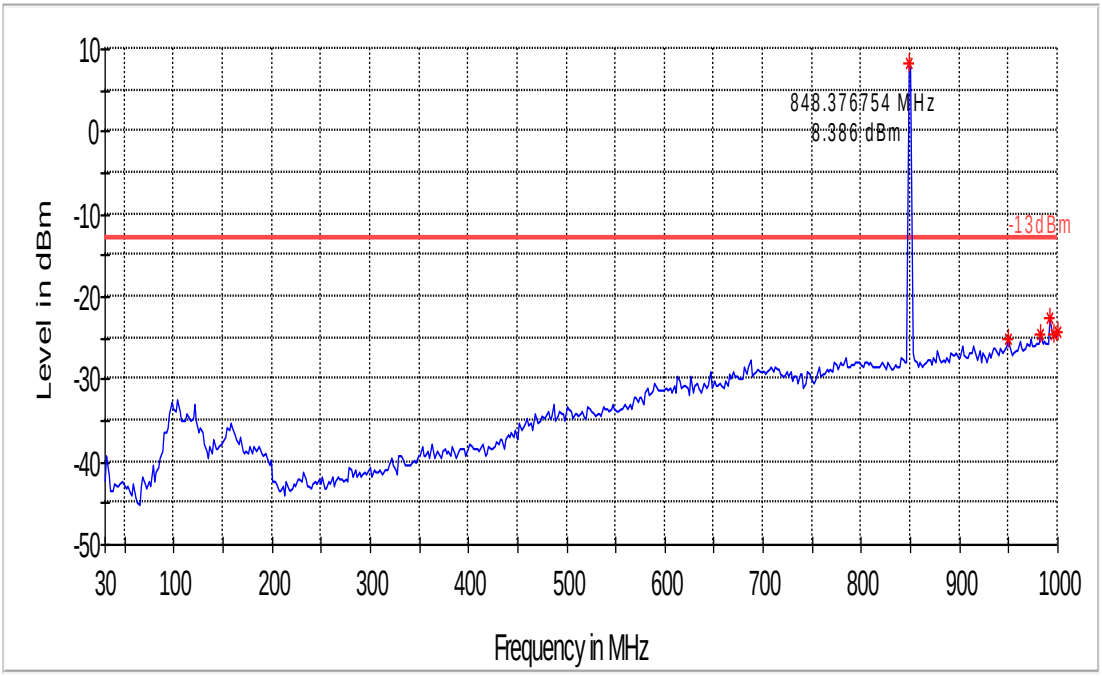
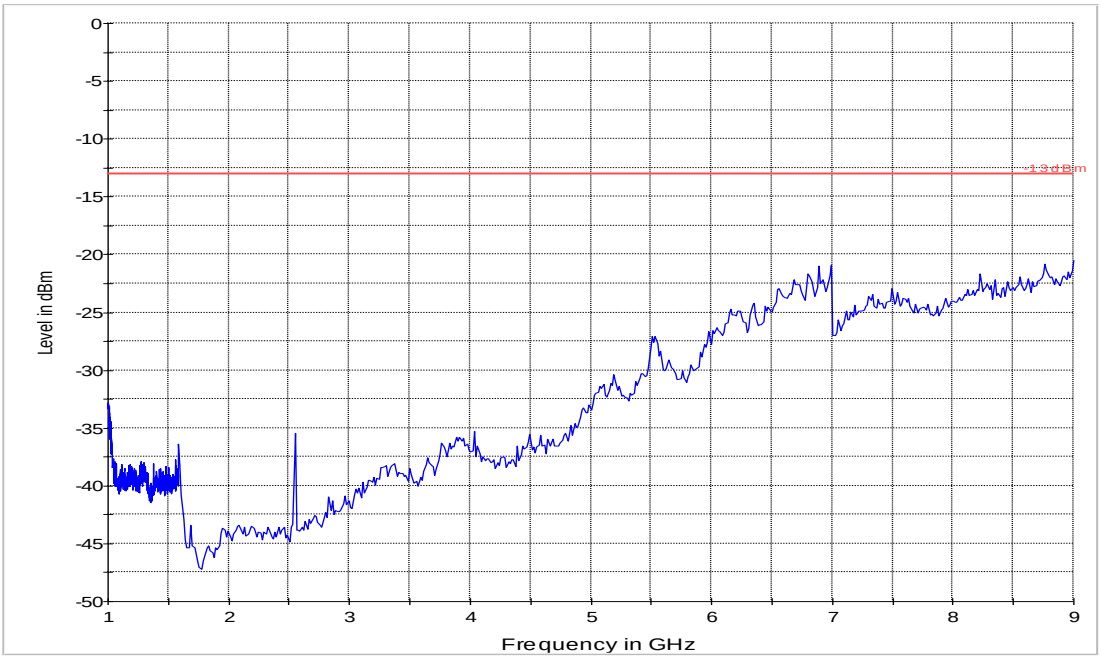


Test results 1GHz-9GHz



4.2.1.2 Test Results Transmitter Spurious Emission PCS-1900:

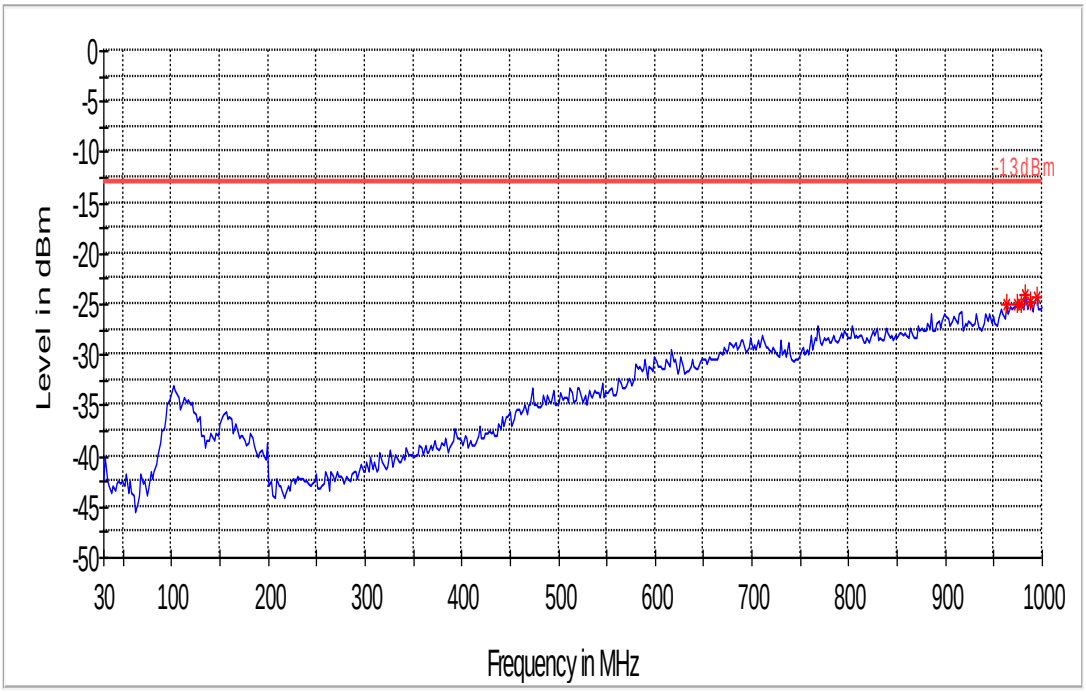
Harmonic	Tx ch-512 Freq.(MHz)	Level (dBm)	Tx ch-661 Freq. (MHz)	Level (dBm)	Tx ch-810 Freq. (MHz)	Level (dBm)
1	**1850.2**	-	**1880.0**	-	**1909.8**	-
2	**3700.4**	-40	**3760**	-36	**3819.6**	-39
3	**5550.6**	NF	**5640**	NF	**5729.4**	NF
4	**7400.8**	NF	**7520**	NF	**7639.2**	NF
5	**9251**	NF	**9400**	NF	**9549**	NF
6	**11101.2**	NF	**11280**	NF	**11458.8**	NF
7	**12951.4**	NF	**13160**	NF	**13368.6**	NF
8	**14801.6**	NF	**15040**	NF	**15278.4**	NF
9	**16651.8**	NF	**16920**	NF	**17188.2**	NF
10	**18502**	NF	**18800**	NF	**19098**	NF
NF = Noise Floor						

Note: Unless specified otherwise, the peaks over the limit line in the plots are from the TX signal.

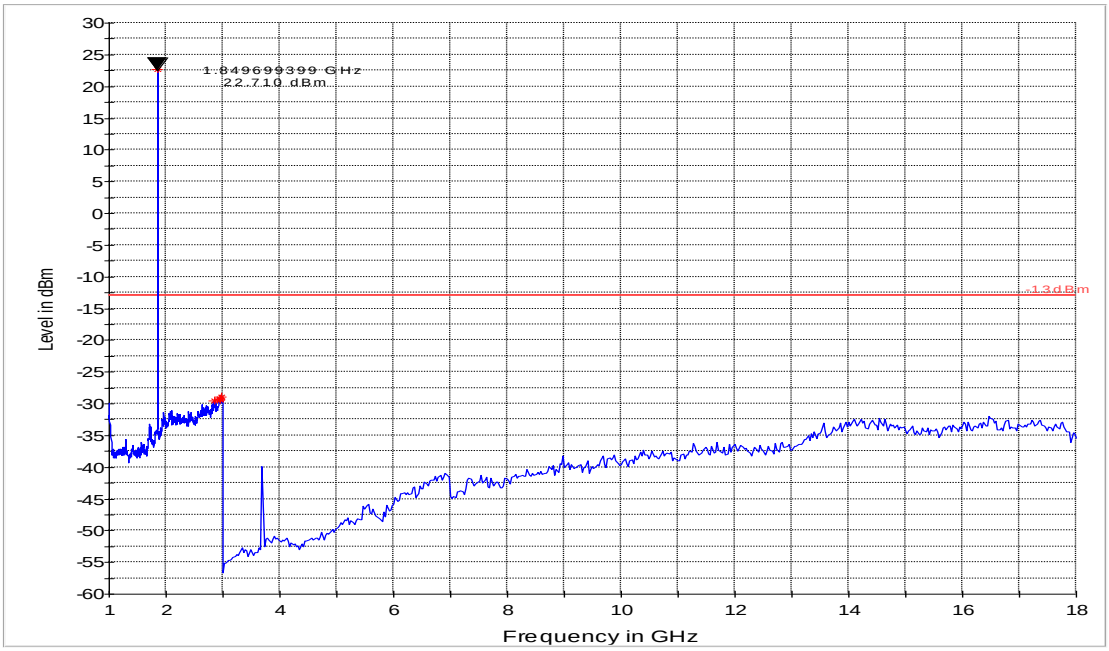
-13dBm.LimitLine
Preview Result
Data Reduction Result
Final Measurement Result

Radiated Spurious Emissions (GSM-1900) Tx: Low Channel

Test results 30M-1GHz

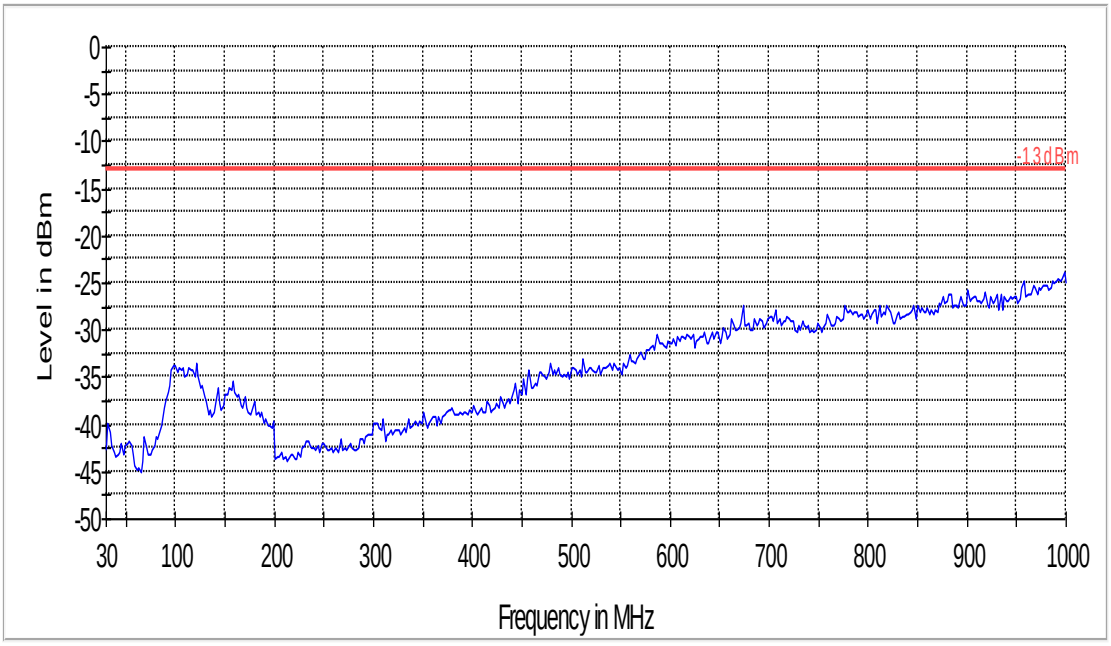


Test results 1GHz-18GHz

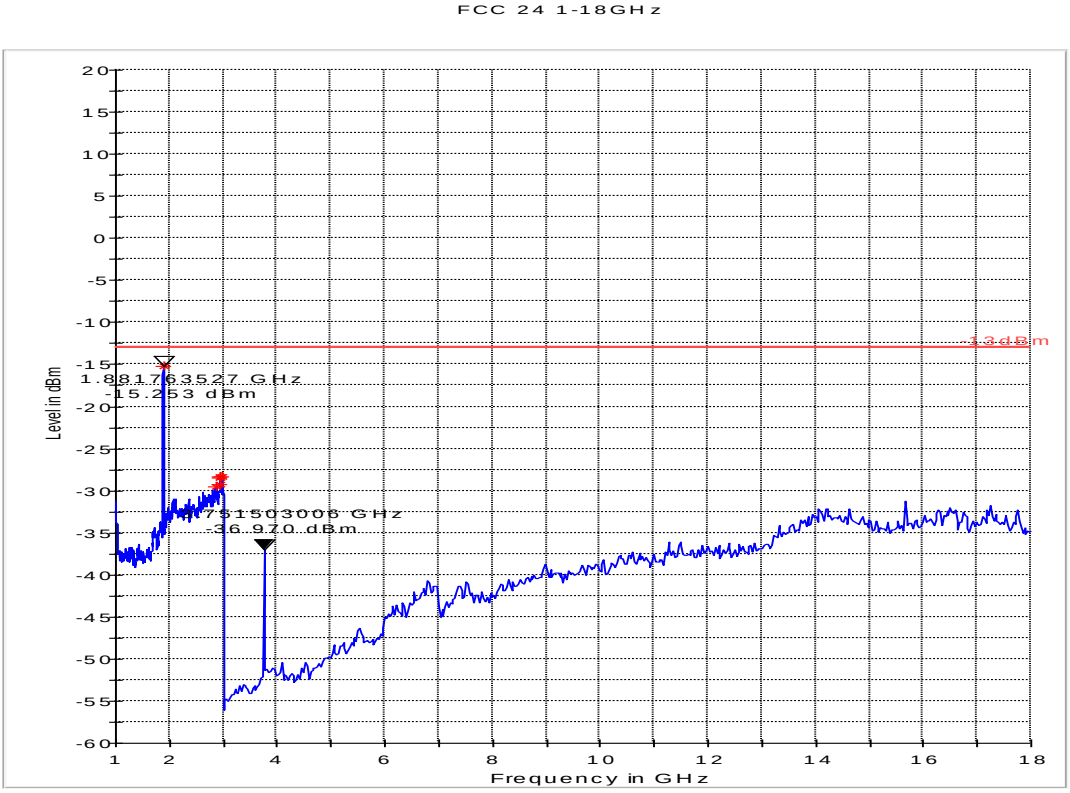


Radiated Spurious Emissions (GSM-1900) Tx: Mid Channel

Test results 30M-1GHz

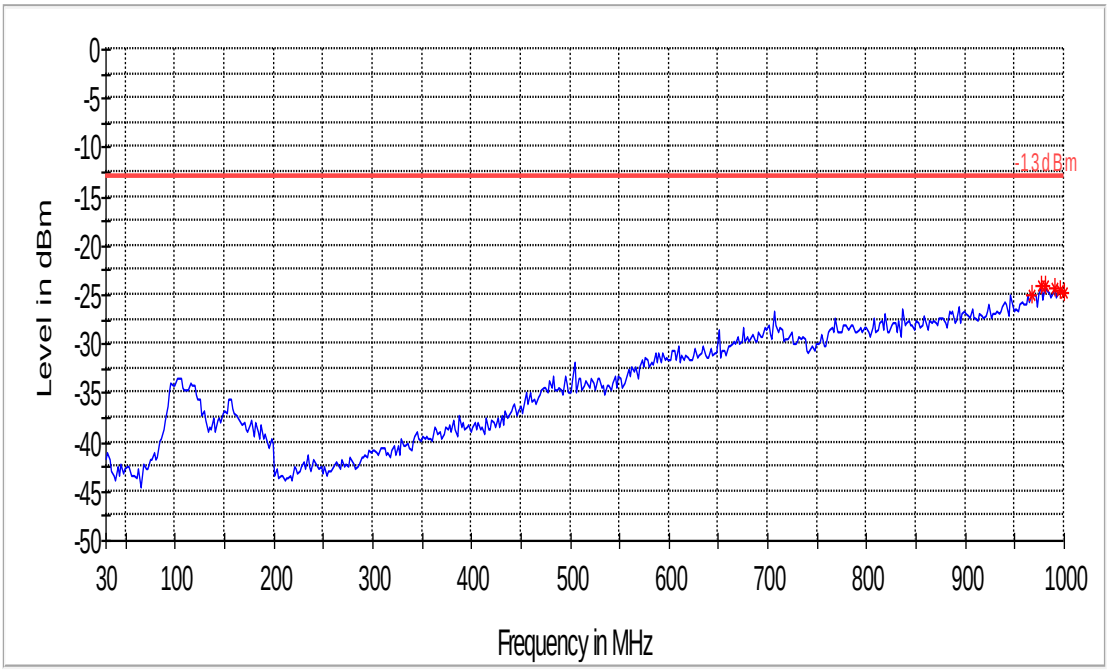


Test results 1GHz-18GHz

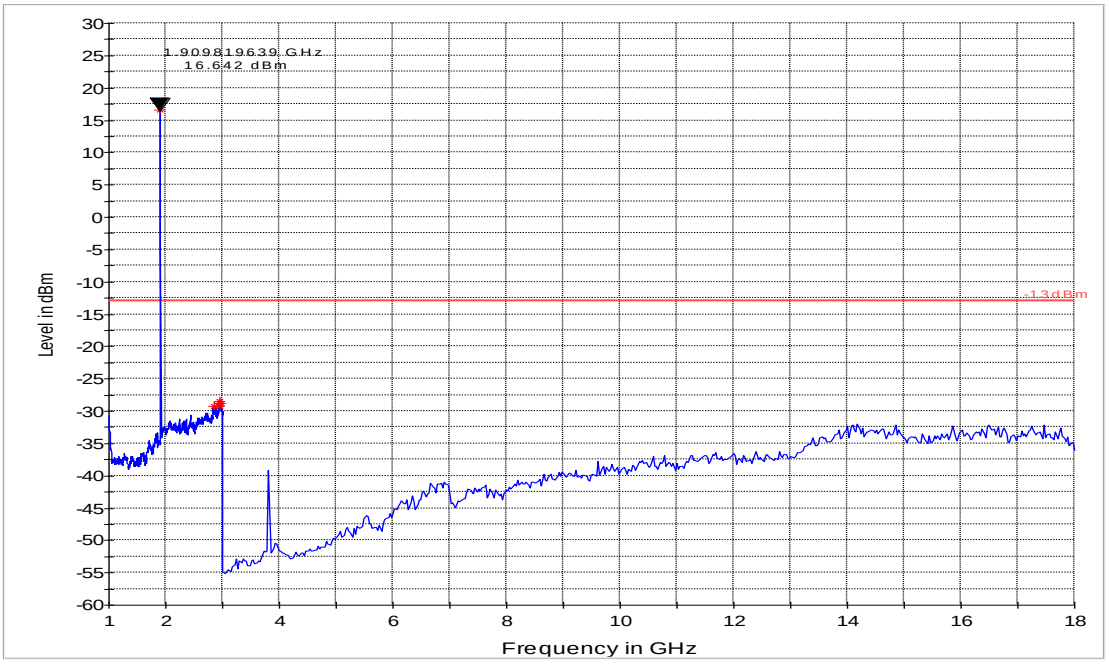


Radiated Spurious Emissions (GSM-1900) Tx: High Channel

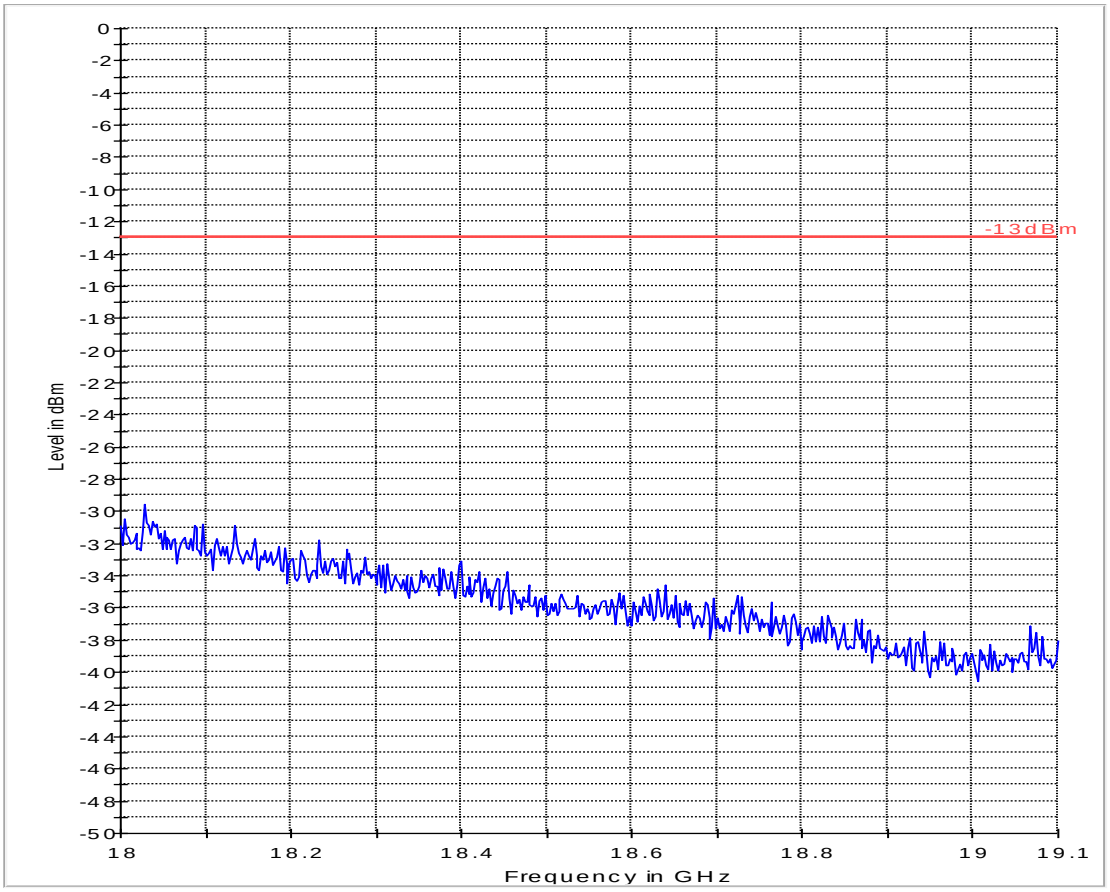
Test results 30M-1GHz



Test results 1GHz-18GHz



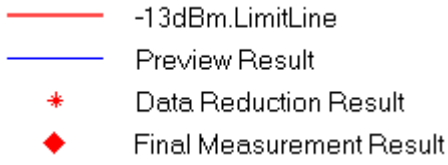
Test results 18GHz-19.1GHz
Worst case plot from mid channel transmission; applicable for all channels.



4.2.1.3 Test Results Transmitter Spurious Emission UMTS FDD2:

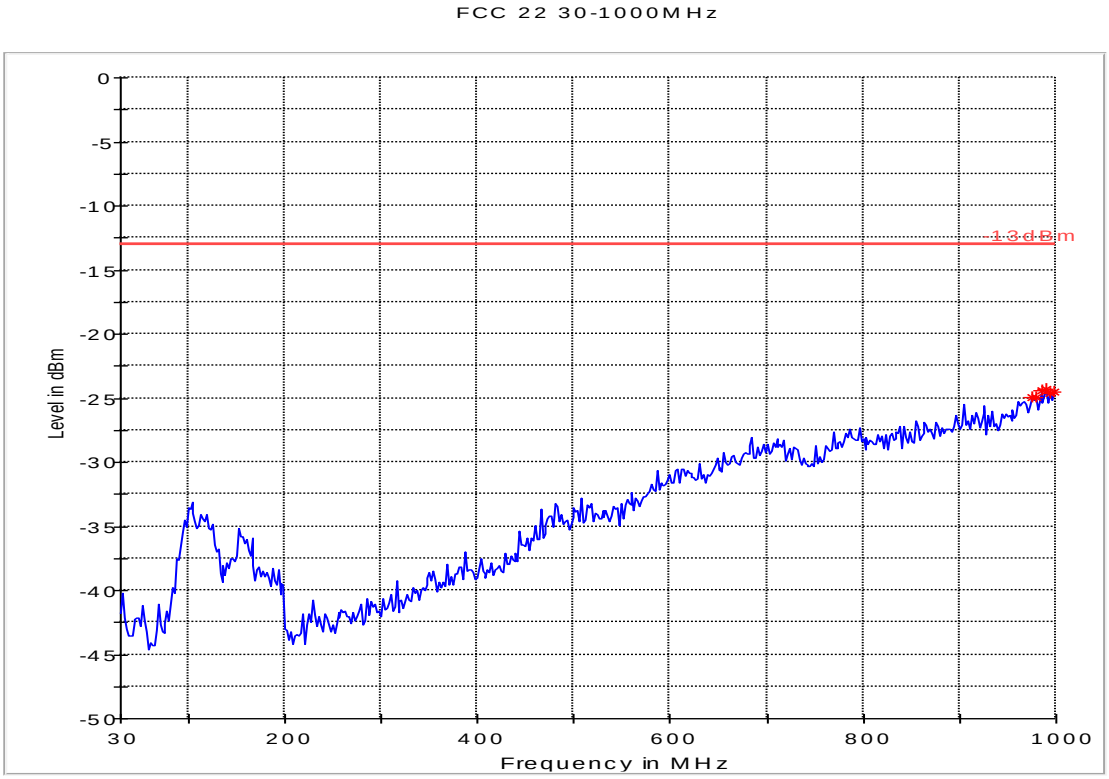
Harmonic	Tx ch-9262 Freq. (MHz)	Level (dBm)	Tx ch-9400 Freq. (MHz)	Level (dBm)	Tx ch-9538 Freq. (MHz)	Level (dBm)
1	**1852.4**	-	**1880.0**	-	**1907.6**	-
2	**3704.8**	NF	**3760**	NF	**3815.2**	NF
3	**5557.2**	NF	**5640**	NF	**5722.8**	NF
4	**7409.6**	NF	**7520**	NF	**7630.4**	NF
5	**9262**	NF	**9400**	NF	**9538**	NF
6	**11114.4**	NF	**11280**	NF	**11445.6**	NF
7	**12966.8**	NF	**13160**	NF	**13353.2**	NF
8	**14819.2**	NF	**15040**	NF	**15260.8**	NF
9	**16671.6**	NF	**16920**	NF	**17168.4**	NF
10	**18524**	NF	**18800**	NF	**19076**	NF
NF= Noise Floor						

Note: Unless specified otherwise, the peaks over the limit line in the plots are from the TX signal.

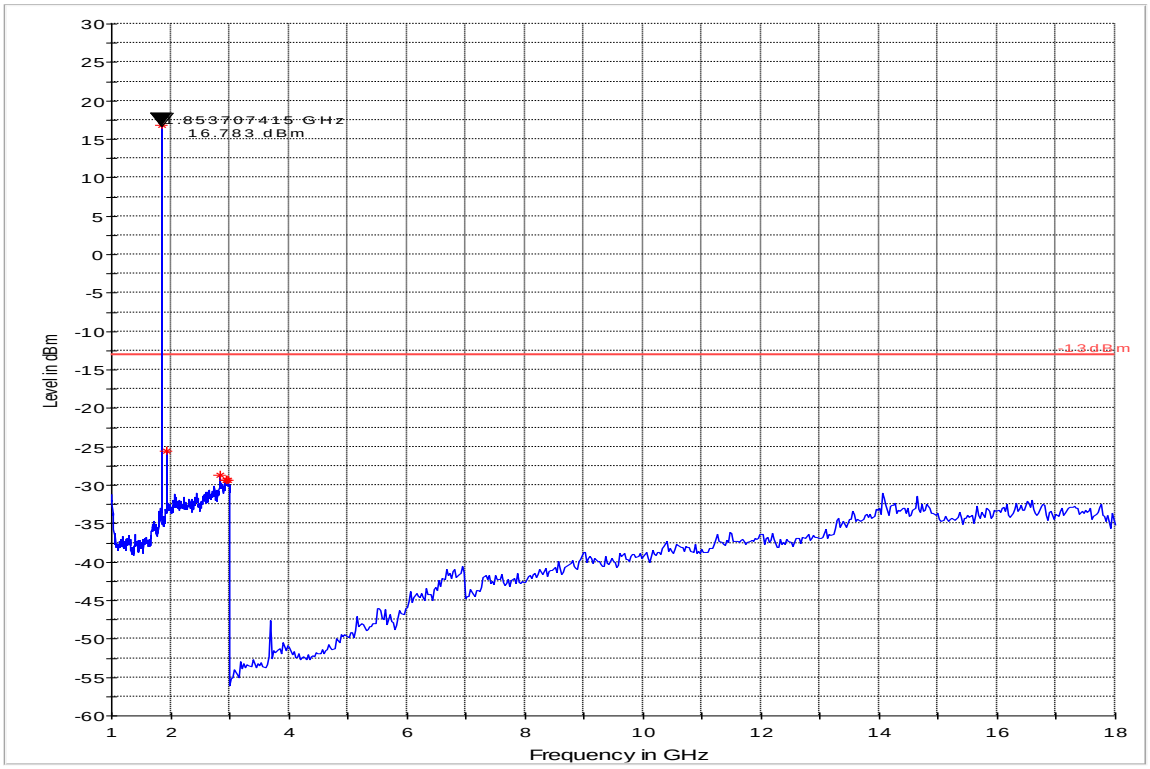


Radiated Spurious Emissions (UMTS Band 2) Tx: Low Channel

Test results 30M-1GHz

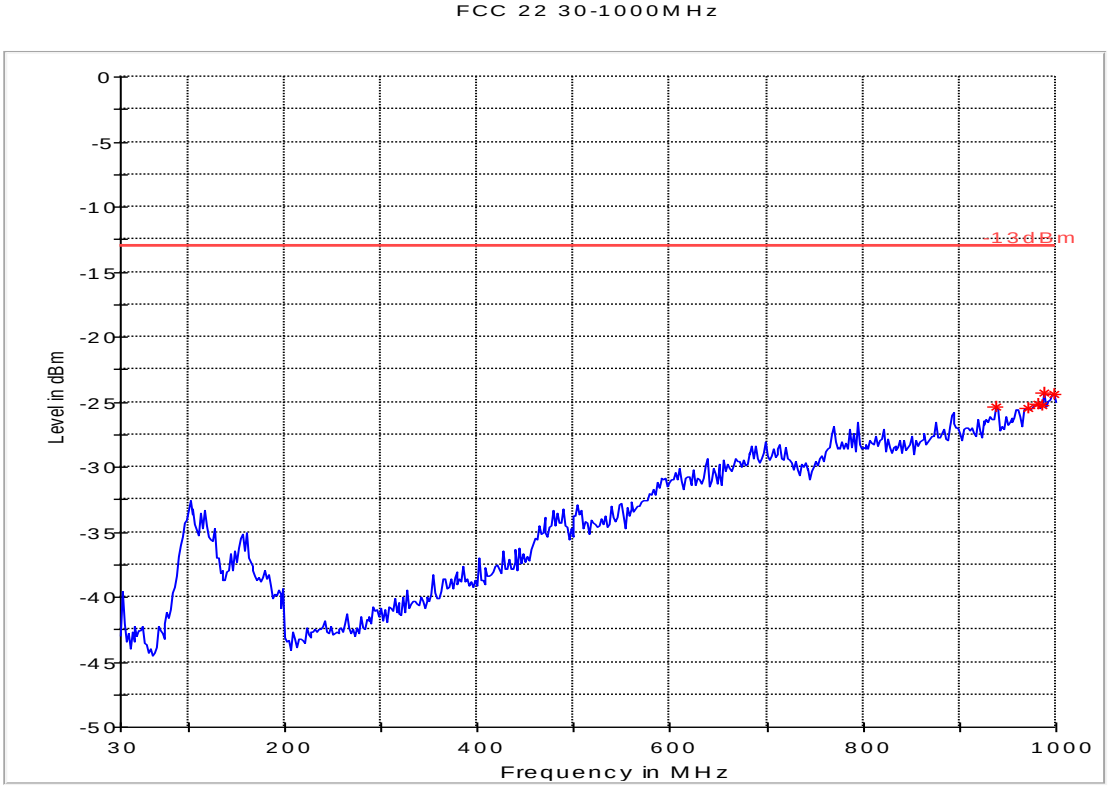


Test results 1GHz-18GHz

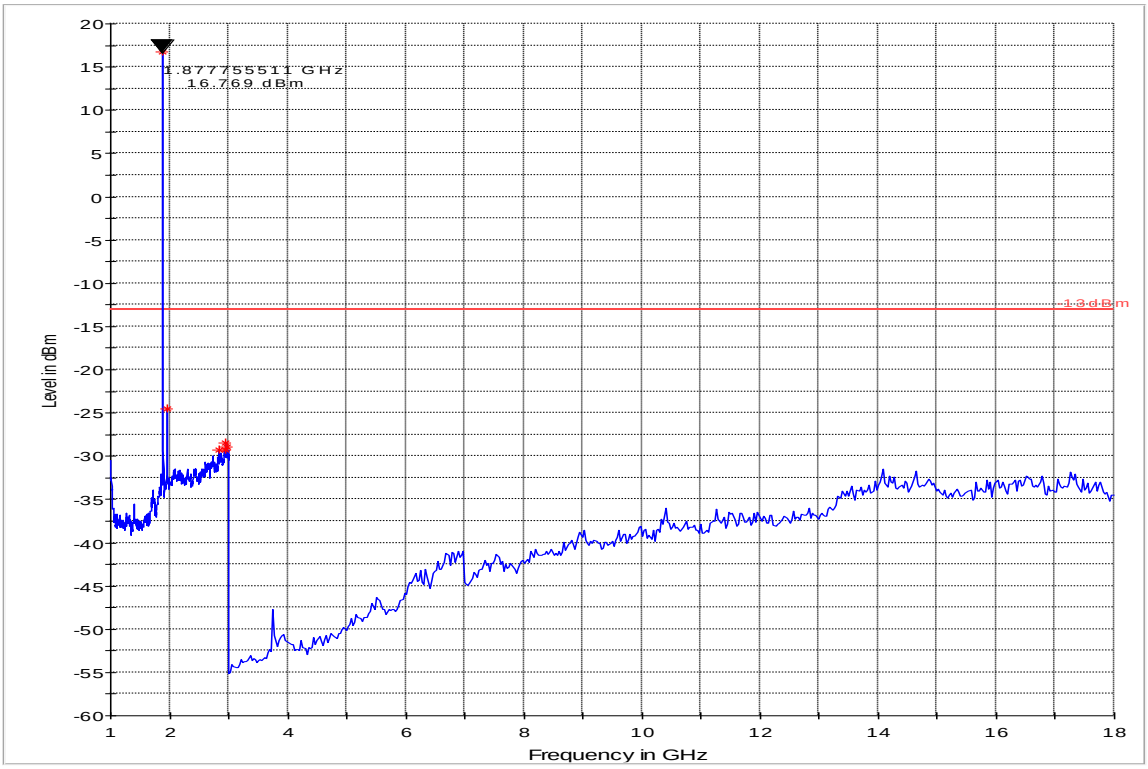


Radiated Spurious Emissions (UMTS Band 2) Tx: Mid Channel

Test results 30M-1GHz

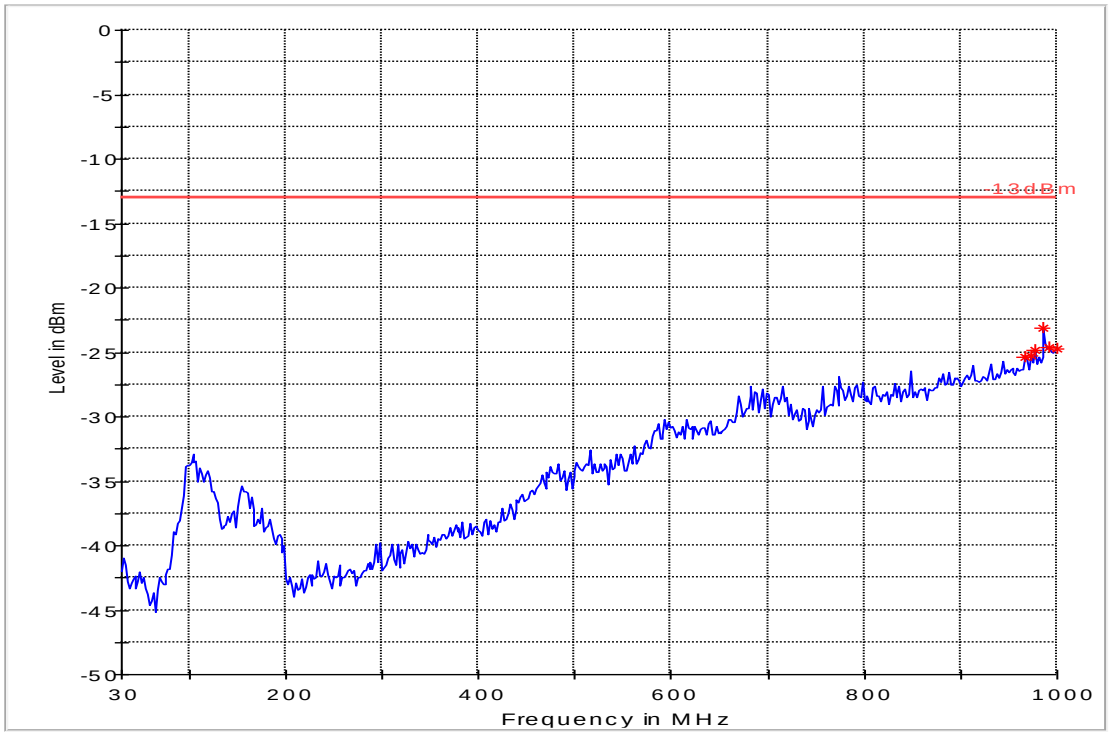


Test results 1GHz-18GHz

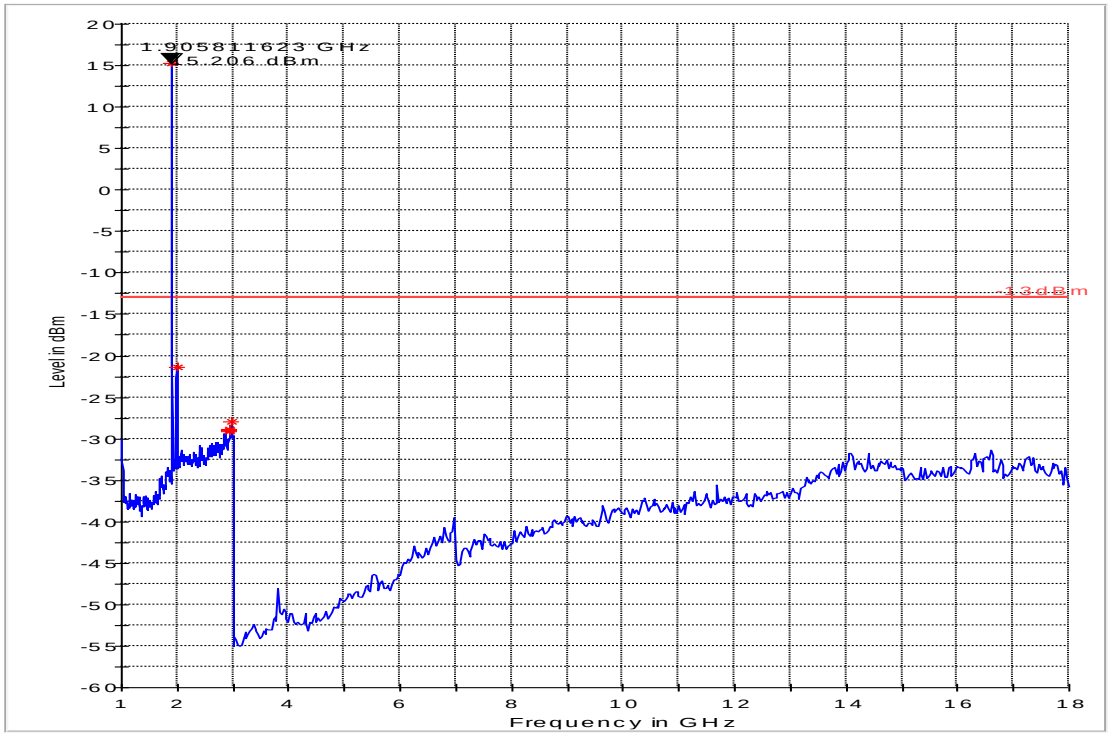


Radiated Spurious Emissions (UMTS Band 2) Tx: High Channel

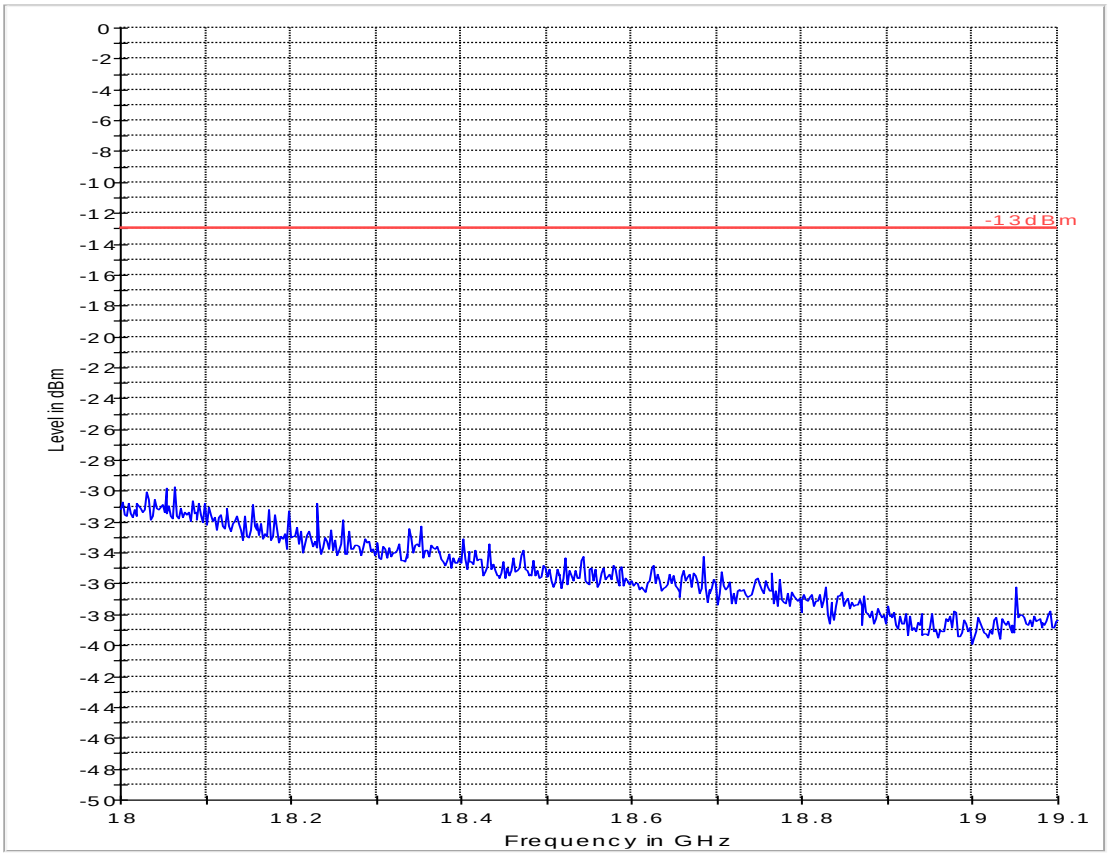
Test results 30M-1GHz



Test results 1GHz-18GHz



Test results 18GHz-19.1GHz
Worst case plot from mid channel transmission; applicable for all channels.



4.2.1.4 Test Results Transmitter Spurious Emission UMTS FDD5:

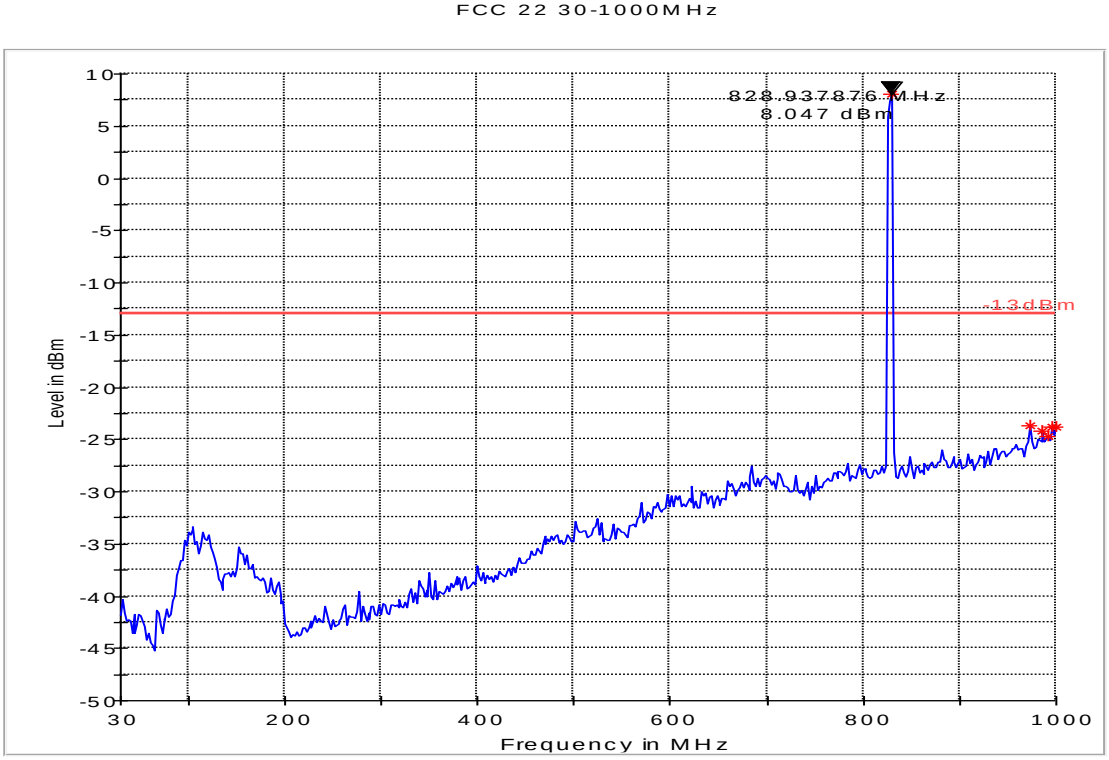
Harmonic	Tx ch-4132 Freq. (MHz)	Level (dBm)	Tx ch-4183 Freq. (MHz)	Level (dBm)	Tx ch-4233 Freq. (MHz)	Level (dBm)
1	**826.4**	-	**836.6**	-	**846.6**	-
2	**1652.8**	NF	**1673.2**	NF	**1693.2**	NF
3	**2479.2**	NF	**2509.8**	NF	**2539.8**	NF
4	**3305.6**	NF	**3346.4**	NF	**3386.4**	NF
5	**4132**	NF	**4183**	NF	**4233**	NF
6	**4958.4**	NF	**5019.6**	NF	**5079.6**	NF
7	**5784.8**	NF	**5856.2**	NF	**5926.2**	NF
8	**6611.2**	NF	**6692.8**	NF	**6772.8**	NF
9	**7437.6**	NF	**7529.4**	NF	**7619.4**	NF
10	**8264**	NF	**8366**	NF	**8466**	NF
NF= Noise Floor						

Note: Unless specified otherwise, the peaks over the limit line in the plots are from the TX signal.

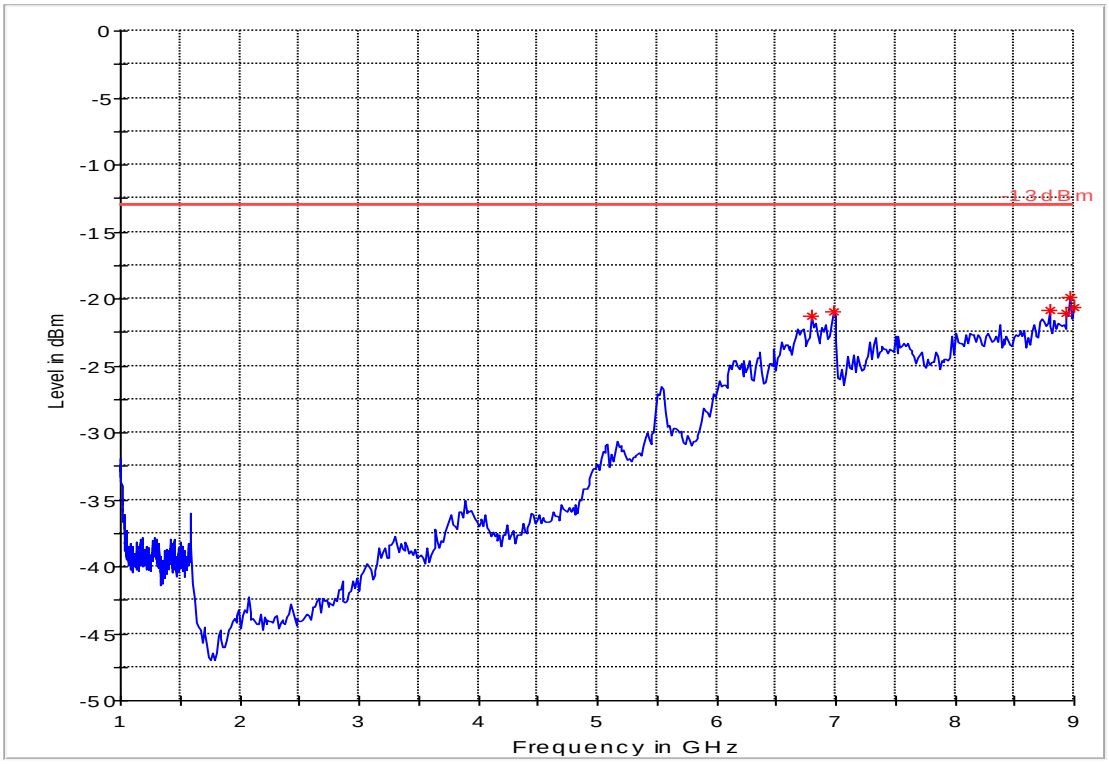
-13dBm.LimitLine
Preview Result
Data Reduction Result
Final Measurement Result

Radiated Spurious Emissions (UMTS Band 5) Tx: Low Channel

Test results 30M-1GHz

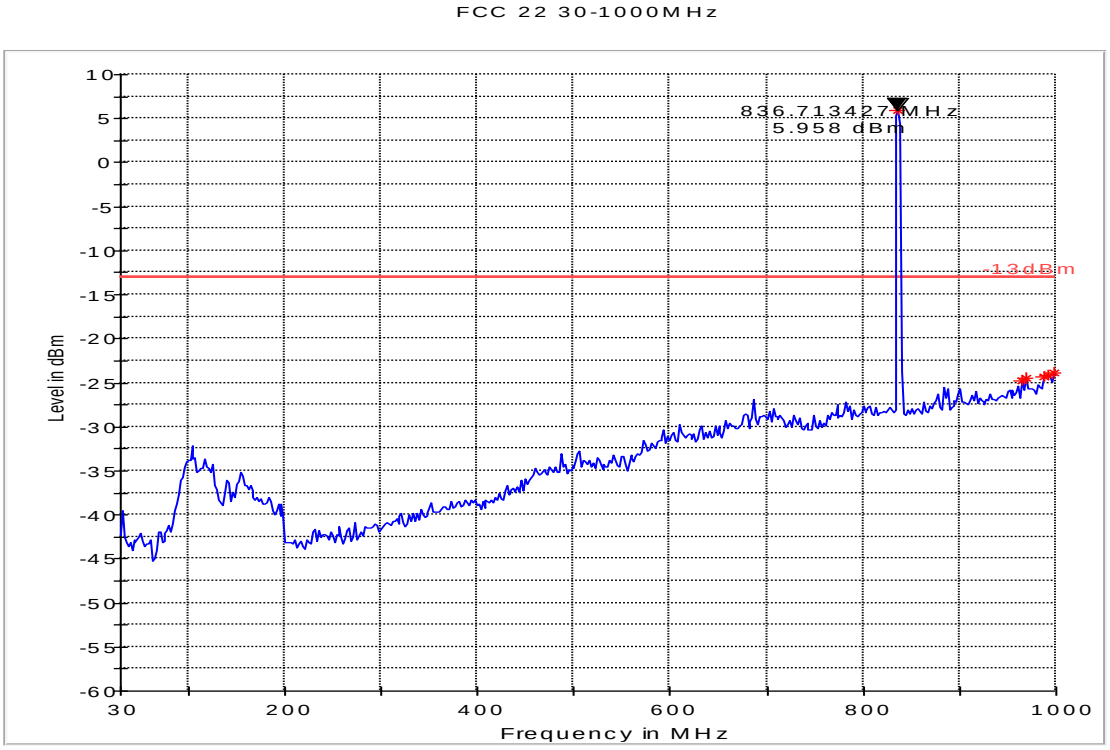


Test results 1GHz-9GHz

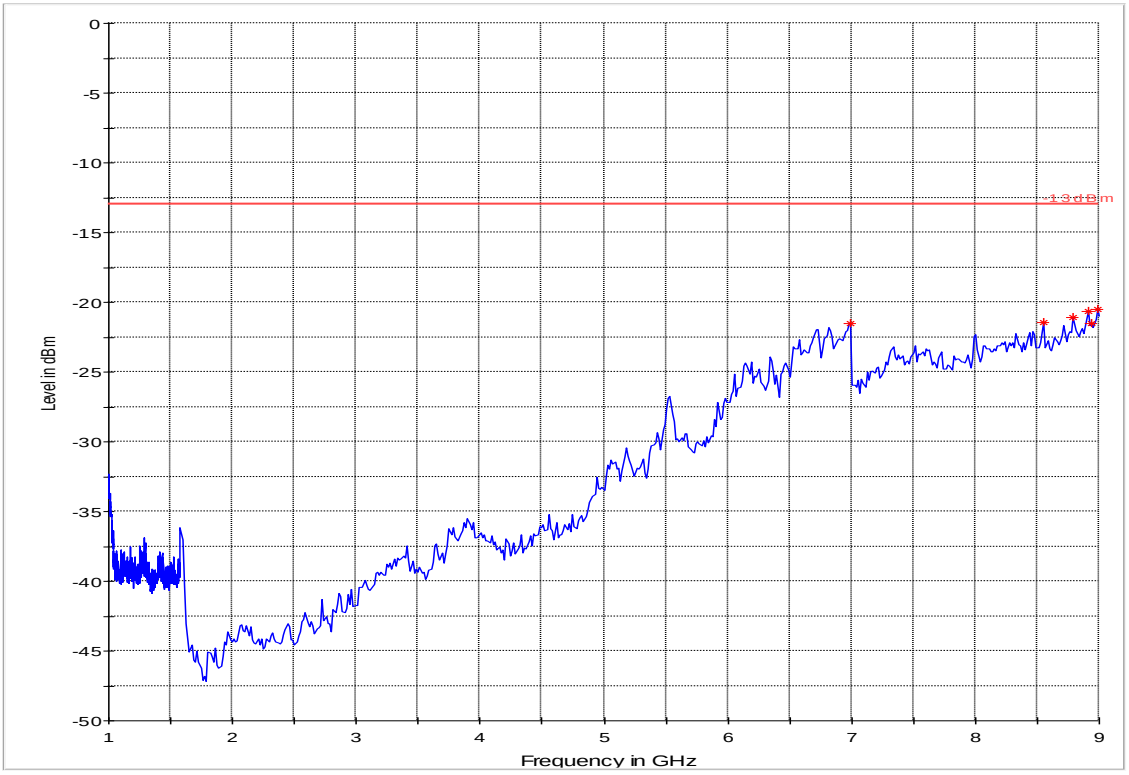


Radiated Spurious Emissions (UMTS Band 5) Tx: Mid Channel

Test results 30M-1GHz

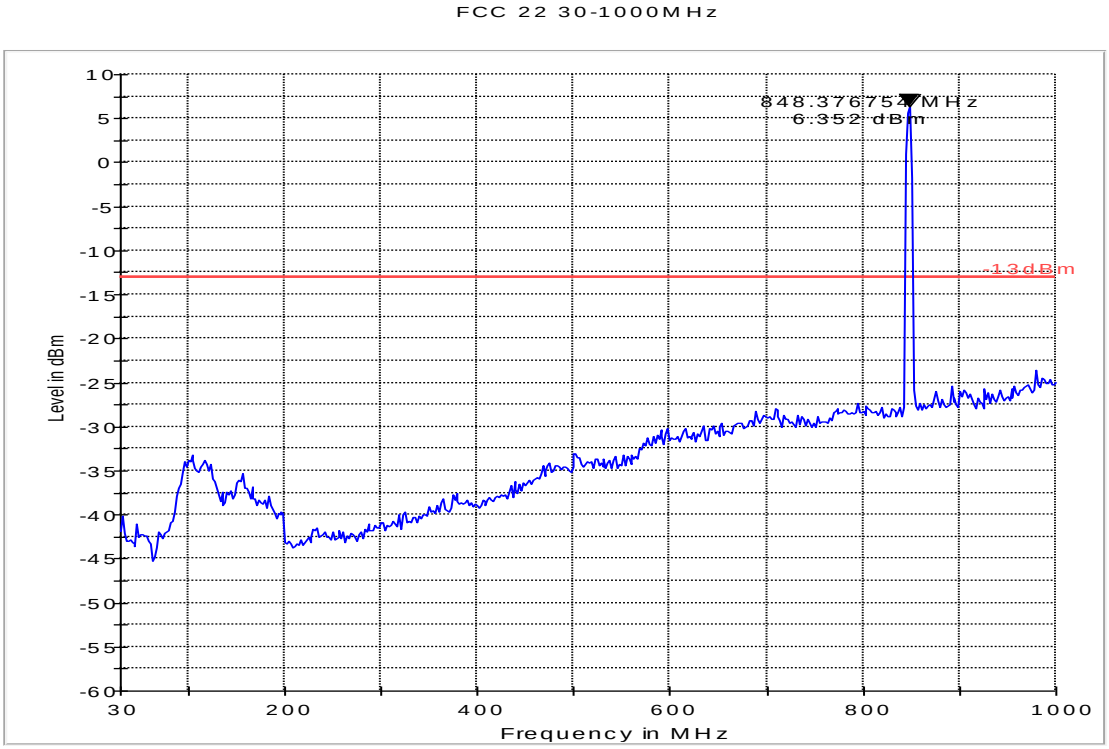


Test results 1GHz-9GHz

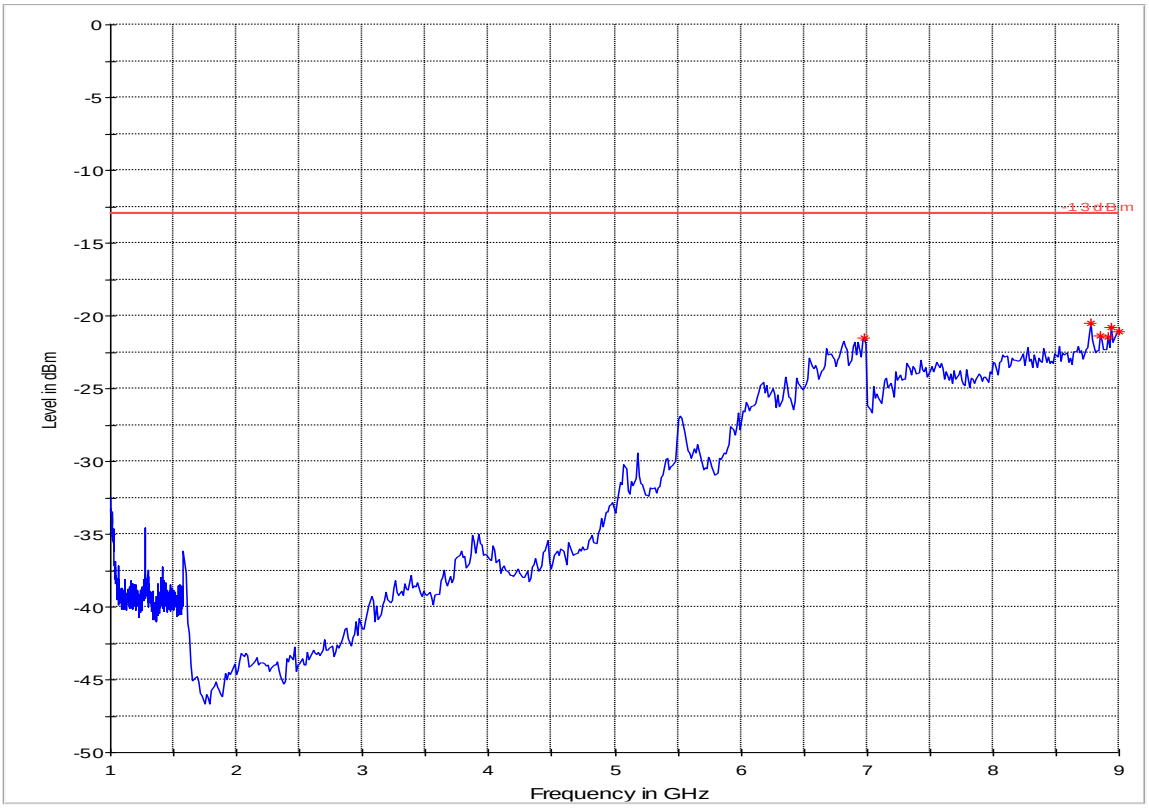


Radiated Spurious Emissions (UMTS Band 5) Tx: High Channel

Test results 30M-1GHz



Test results 1GHz-9GHz



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

4.3.1.1 References

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

4.3.1.2 §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

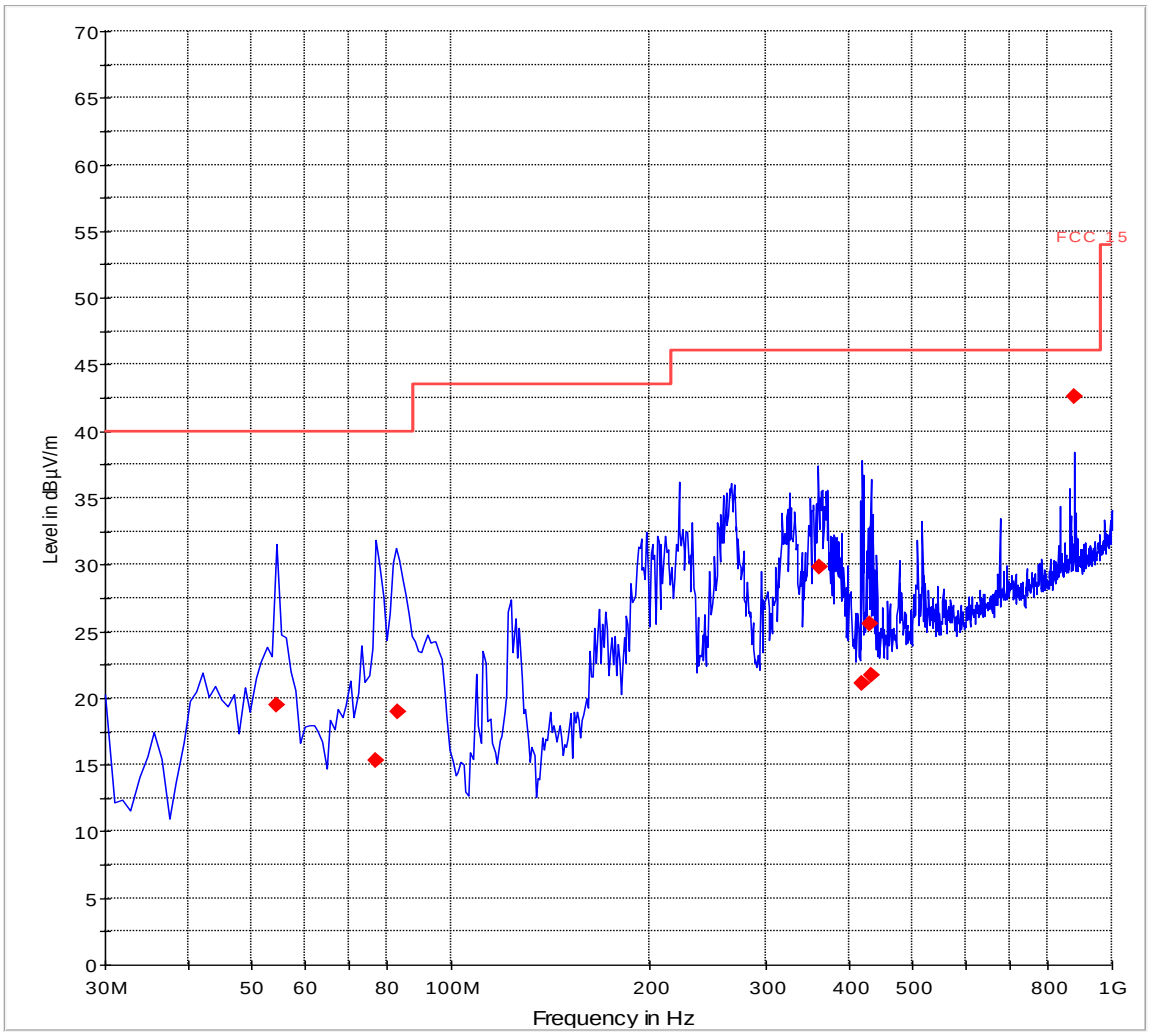
4.3.1.3 Results

Plots reported here represent the worse case emissions.
No emissions measured below 30MHz.

4.3.1.4 Test Results Receiver Spurious Emission

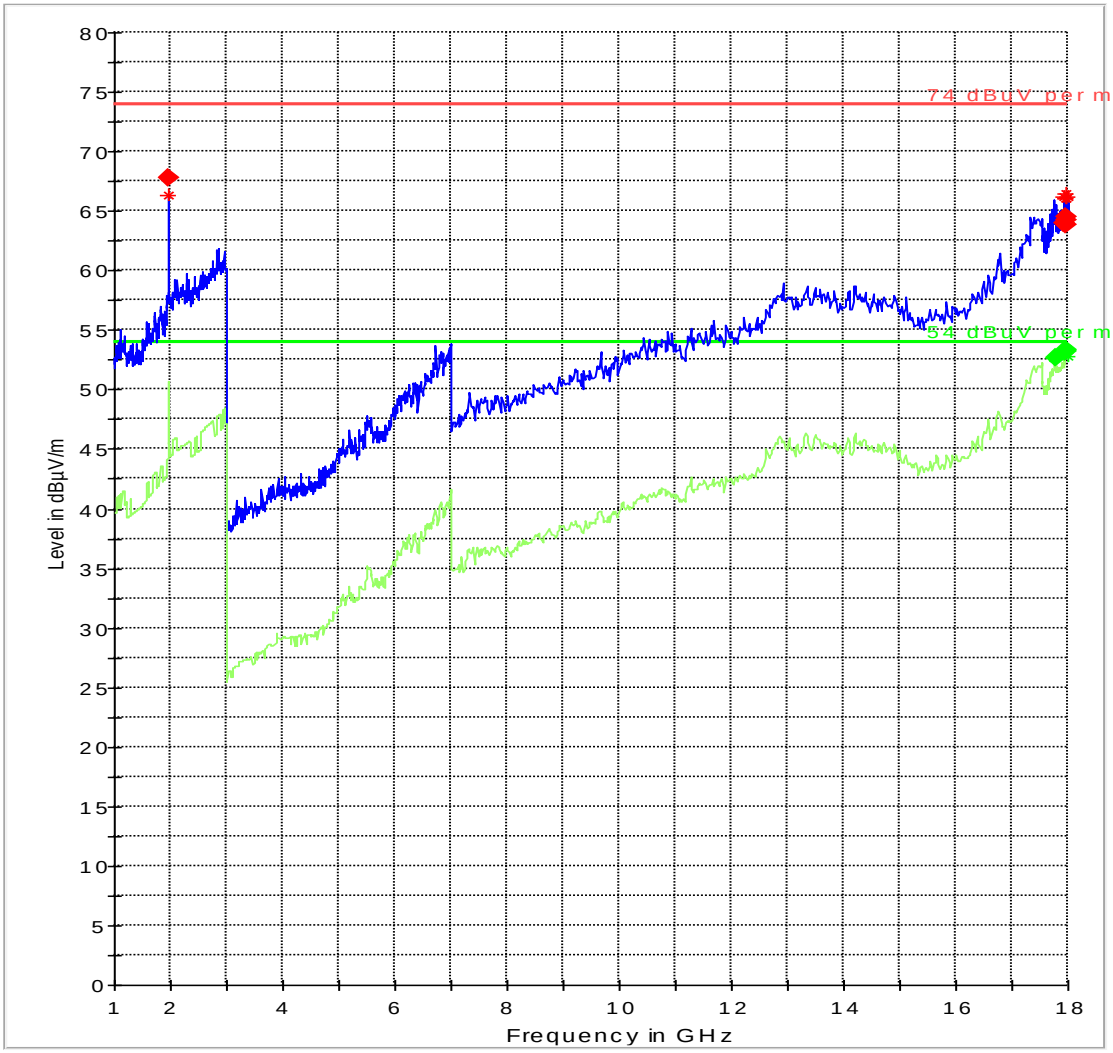
Receive Mode: 30MHz-1GHz

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
54.644557	19.5	20.0	120.000	195.0	V	225.0	7.3	20.5	40.0
77.144403	15.3	20.0	120.000	120.0	V	170.0	9.4	24.7	40.0
83.106131	19.0	20.0	120.000	120.0	V	178.0	9.8	21.0	40.0
360.001681	29.8	20.0	120.000	120.0	H	187.0	17.7	16.2	46.0
418.935020	21.1	20.0	120.000	120.0	H	103.0	18.6	24.9	46.0
431.108558	25.6	20.0	120.000	120.0	H	157.0	18.8	20.4	46.0
431.599757	21.7	20.0	120.000	120.0	H	33.0	18.8	24.3	46.0
876.094619	42.6	20.0	120.000	178.0	H	112.0	26.4	3.4	46.0

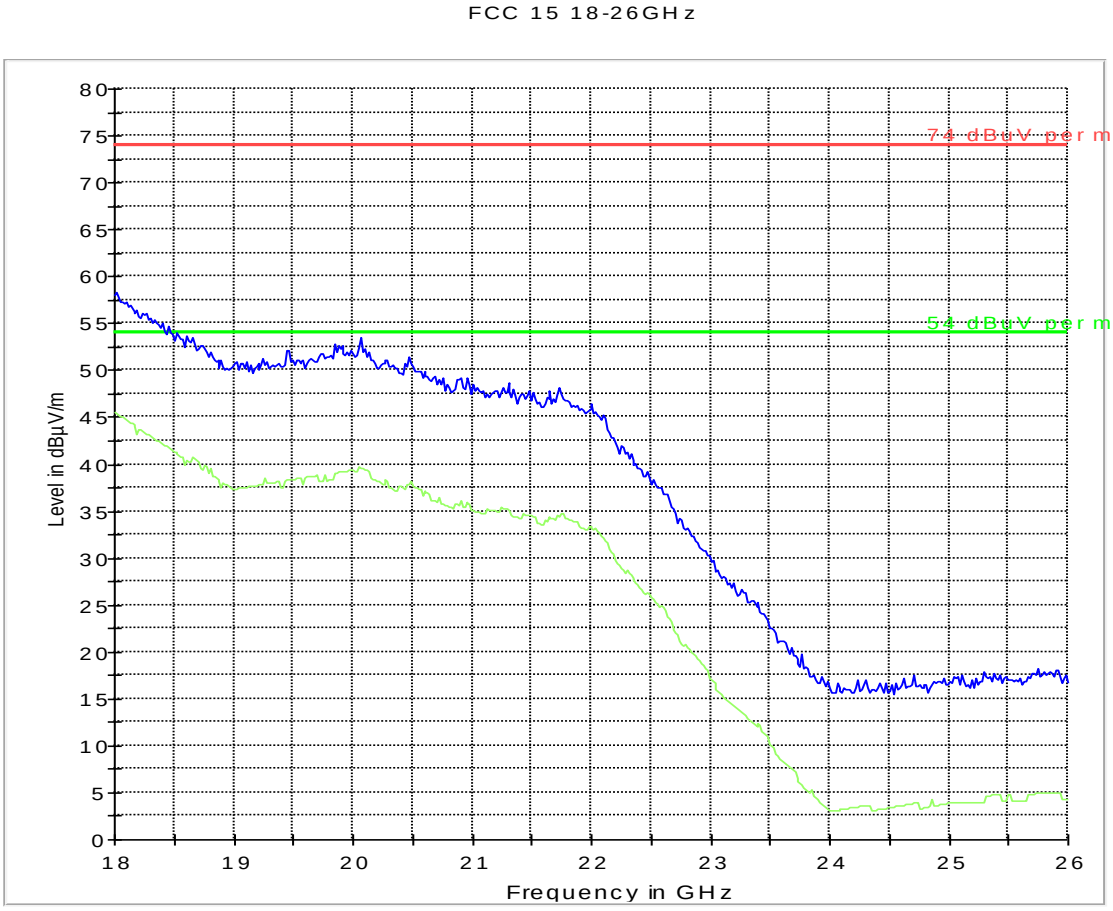


Receive Mode: 1GHz-18GHz

Spike in the plot is the Downlink signal from the base station simulator.



Receive Mode: 18GHz-26GHz



4.4 AC Power Line Conducted Emissions

4.4.1 §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

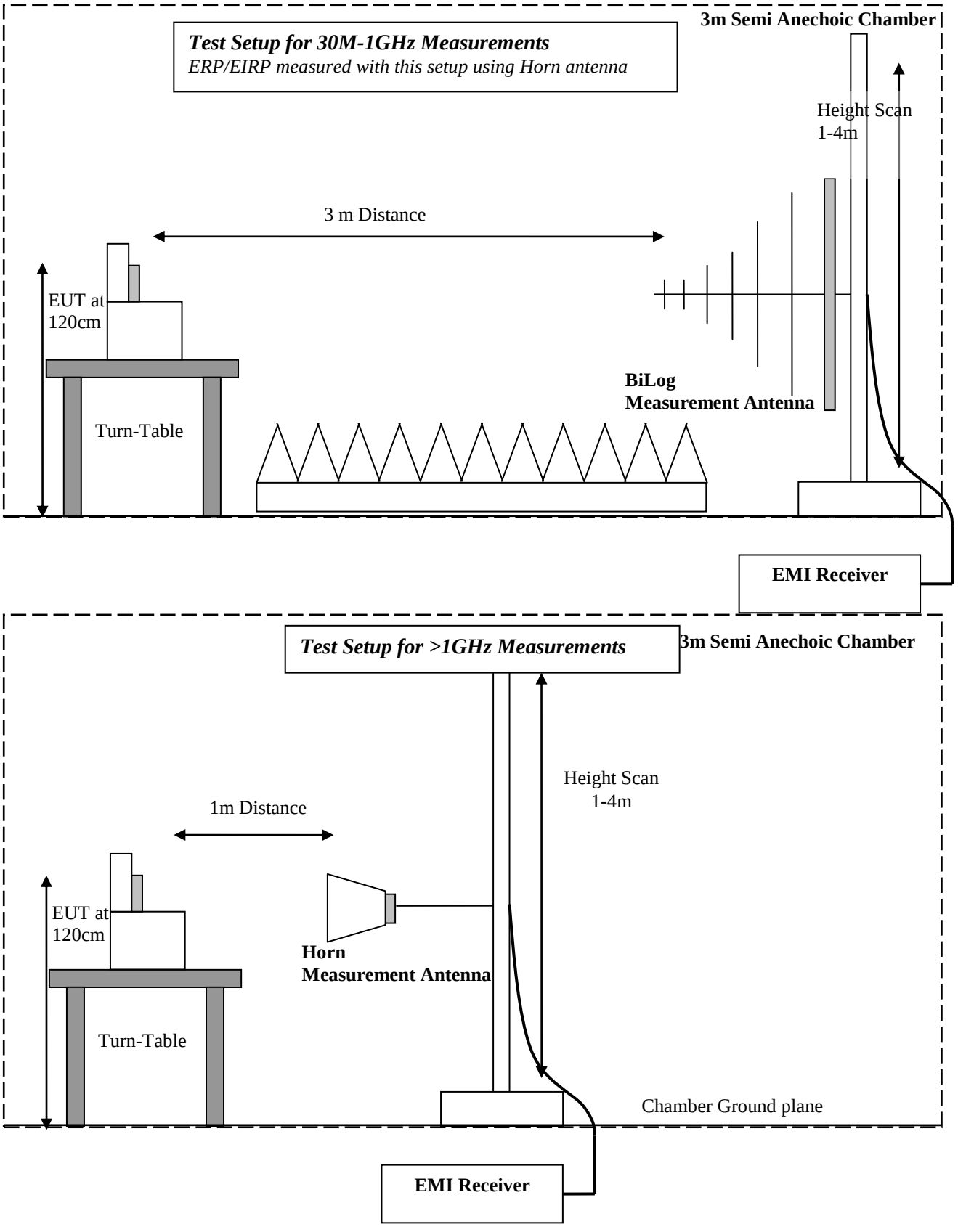
4.4.2 Test Results:

This test was not performed since the device is not operated using AC power.

5 Test Equipment And Ancillaries Used For Tests

Instrument/Ancillary	Model	Manufacturer	Serial No.	Cal Date	Cal Interval
Radio Communication Tester	CMU 200	Rohde & Schwarz	101821	June 2010	1 year
Radio Communication Tester	CMU 200	Rohde & Schwarz	109879	June 2010	1 year
Radio Communication Tester	CMU 200	Rohde & Schwarz	110759	June 2010	1 year
Bluetooth Tester	CBT	Rohde & Schwarz	100212	May 2009	2 Years
EMI Receiver/Analyzer	ESIB 40	Rohde & Schwarz	100107	May 2010	1 year
Spectrum Analyzer	FSU	Rohde & Schwarz	200302	Jul 2010	1 year
Loop Antenna	6512	EMCO	00049838	April 2009	2 years
Biconilog Antenna	3141	EMCO	0005-1186	June 2009	2 years
Horn Antenna (1-18GHz)	3115	ETS	00035111	Jan 2009	3 years
Horn Antenna (18-40GHz)	3116	ETS	00070497	Jan 2009	3 years
Communication Antenna	IBP5-900/1940	Kathrein	n/a	n/a	n/a
High Pass Filter	5HC2700	Trilithic Inc.	9926013	Part of system calibration	
High Pass Filter	4HC1600	Trilithic Inc.	9922307	Part of system calibration	
6GHz High Pass Filter	HPM50106	Microtronics	001	Part of system calibration	
Pre-Amplifier	JS4-00102600	Miteq	00616	Part of system calibration	
LISN	50-25-2-08	FCC	08014	June 2010	1 year
LISN	R&S	ESH3-Z5	836679/003	May 2009	2 Years
LISN	R&S	ESH3-Z6	836154/011	May 2009	2 Years
Power Smart Sensor	R&S	NRP-Z81	100161	June 2010	1 Year
Power Smart Sensor	R&S	NRP-Z22	100223	May 2010	1 Year
Upconverter	PXI-5610	NI	E93740	May 2010	2 years
Waveform Generator	PXI-5421	NI	E965F1	May 2010	2 years
10dB attenuator	ATT-0298-10	MidwestMicrowave	n/a	n/a	n/a
Power Splitter	11667B	Hewlett Packard	645348	n/a	n/a
DC Power Supply	E3610A	Hewlett Packard	KR83021224	n/a	n/a
DC Power Supply	E3610A	Hewlett Packard	KR83023316	n/a	n/a
DC Power Supply	6632A	Hewlett Packard	3524A-12822	n/a	n/a
DC Power Supply	6655A	Hewlett Packard	3403A-00487	n/a	n/a
Multimeter	179	Fluke	N/A	Feb 2010	1 Year
Temp Hum Logger	TM320	Dickson	03280063	Feb 2010	1 Year
Temp Hum Logger	TM325	Dickson	5285354	Feb 2010	1 Year

6 Block Diagrams



7 Revision History

Date	Report Name	Changes to report	Report prepared by
2010-09-10	**EMC_CET10_059_10501_FCC22_24**	**First Version**	**S Jose**