



TEST REPORT

No. 2010TAR056

for

ZTE CORPORATION

CDMA 1xRTT Digital Mobile Handset

Type: ZTE-C F350

FCC ID : Q78-ZTECF350

with

Hardware Version: 1.3

Software Version: ZTEF350V1.0.0B05

Issued Date: Mar 4th, 2010

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of TMC Beijing.

Test Laboratory:

DAR accreditation (DIN EN ISO/IEC 17025): No. DAT-P-114/01-01

FCC 2.948 Listed: No.733176

IC O.A.T.S listed: No.6629A-1

TMC Beijing, Telecommunication Metrology Center of Ministry of Industry and Information Technology

No. 52, Huayuan Bei Road, Haidian District, Beijing, P. R. China 100191.

Tel:+86(0)10-62303288-2105, Fax:+86(0)10-62304793 Email:welcom@emcite.com. www.emcite.com

©Copyright. All rights reserved by TMC Beijing.

CONTENTS

1. TEST LABORATORY	3
1.1. TESTING LOCATION	3
1.2. TESTING ENVIRONMENT	3
1.3. PROJECT DATA	3
1.4. SIGNATURE.....	3
2. CLIENT INFORMATION	4
2.1. APPLICANT INFORMATION.....	4
2.2. MANUFACTURER INFORMATION.....	4
3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE)	5
3.1. ABOUT EUT.....	5
3.2. INTERNAL IDENTIFICATION OF EUT USED DURING THE TEST	5
3.3. INTERNAL IDENTIFICATION OF AE USED DURING THE TEST.....	5
3.4. GENERAL DESCRIPTION	6
4. REFERENCE DOCUMENTS.....	6
4.1. REFERENCE DOCUMENTS FOR TESTING.....	6
5. LABORATORY ENVIRONMENT.....	7
6. SUMMARY OF TEST RESULTS.....	8
7. TEST EQUIPMENTS UTILIZED.....	8
ANNEX A: MEASUREMENT RESULTS	9
A.1 OUTPUT POWER	9
A.2 EMISSION LIMIT	12
A.3 CONDUCTED EMISSION	26
A.5 OCCUPIED BANDWIDTH.....	34
A.6 EMISSION BANDWIDTH	38
A.7 BAND EDGE COMPLIANCE.....	42
A.8 CONDUCTED SPURIOUS EMISSION	44

1. Test Laboratory

1.1. Testing Location

Company Name: TMC Beijing, Telecommunication Metrology Center of MIIT
Address: No 52, Huayuan beilu, Haidian District, Beijing,P.R.China
Postal Code: 100191
Telephone: 00861062303288
Fax: 00861062304793

1.2. Testing Environment

Normal Temperature: 15-35℃
Relative Humidity: 20-75%

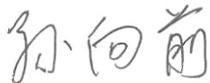
1.3. Project data

Testing Start Date: Jan 12,2010
Testing End Date: Mar 04,2010

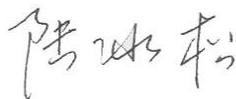
1.4. Signature



Zi Xiaogang
(Prepared this test report)



Sun Xiangqian
(Reviewed this test report)



Lu Bingsong
Deputy Director of the laboratory
(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name: ZTE CORPORATION
Address /Post: ZTE Plaza, Keji Road South, Hi-Tech Industrial Park,Nanshan
District,Shenzhen, Guangdong, 518057, P.R.China
City: Shenzhen
Postal Code: 518057
Country: China
Telephone: +86-21-68897541
Fax: +86-21-50801070

2.2. Manufacturer Information

Company Name: ZTE CORPORATION
Address /Post: ZTE Plaza, Keji Road South, Hi-Tech Industrial Park,Nanshan
District,Shenzhen, Guangdong, 518057, P.R.China
City: Shenzhen
Postal Code: 518057
Country: China
Telephone: +86-21-68897541
Fax: +86-21-50801070

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	CDMA 1xRTT Digital Mobile Handset
Model	ZTE-C F350
FCC ID	Q78-ZTECF350
Frequency	CDMA 800MHz;CDMA 1900MHz
Antenna	Internal
Power supply	Battery or Charger (AC Adaptor)
Output power	21.46 dBm maximum ERP measured for CDMA 800
Extreme vol. Limits	3.5VDC to 4.2VDC (nominal: 3.7 VDC)
Extreme temp. Tolerance	-30°C to +50°C

Note:Components list, please refer to documents of the manufacturer; it is also included in the original test record of Telecommunication Metrology Center of MIIT of People's Republic of China.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
N05	/	1.3	ZTEF350V1.0.0B05

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Internal Identification of AE used during the test

AE ID*	Description	SN
AE1	Battery	/
AE2	Travel Adapter	/

AE1

Model	Li3709T42P3h453756
Manufacturer	ZTE CORPORATION
Capacitance	900mAh
Nominal Voltage	3.7V

AE2

Model	STC-A22O50I700M5-Z
Manufacturer	ZTE CORPORATION
Length of DC line	125cm

*AE ID: is used to identify the test sample in the lab internally.

3.4. General Description

The Equipment Under Test (EUT) is a model of CDMA 1xRTT Digital Mobile Handset with integrated antenna. It consists of Hand Telephone Set and normal options: lithium battery, charger. Manual and specifications of the EUT were provided to fulfil the test. Samples under test were selected by the Client.

4. Reference Documents

4.1. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part 24	PERSONAL COMMUNICATIONS SERVICES	V 10.1.09
FCC Part 22	PUBLIC MOBILE SERVICES	V 10.1.09
ANSI/TIA-603-C	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards	2004
ANSI C63.4	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2009

5. LABORATORY ENVIRONMENT

Semi-anechoic chamber (23 meters×17meters×10meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω
Normalised site attenuation (NSA)	< ±3.2 dB, 10 m distance, from 30 to 1000 MHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 2000 MHz

Control room did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. =30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω

Conducted chamber did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω

Fully-anechoic chamber (6.8 meters×3.08 meters×3.53 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω
Uniformity of field strength	Between 0 and 6 dB, from 80 to 2000 MHz

6. SUMMARY OF TEST RESULTS

Items	List	Clause in FCC rules	Verdict
1	Output Power	22.913(a)/24.232(b)	P
2	Emission Limit	2.1051/22.917/24.238	P
3	Conducted Emission	15.107/207	P
4	Frequency Stability	2.1055/24.235	P
5	Occupied Bandwidth	2.1049(h)(i)	P
6	Emission Bandwidth	22.917(b)/24.238(b)	P
7	Band Edge Compliance	22.917(b)/24.238(b)	P
8	Conducted Spurious Emission	2.1057/22.917/24.238	P

7. Test Equipments Utilized

NO.	NAME	TYPE	SERIES NUMBER	PRODUCER	CAL DUE DATE
1	Test Receiver	ESS	847151/015	R&S	2010-10-30
2	Test Receiver	ESI40	831564/002	R&S	2011-2-10
3	BiLog Antenna	3142B	9908-1403	EMCO	2011-1-15
4	BiLog Antenna	3142B	9908-1405	EMCO	2010-9-19
5	Signal Generator	SMT06	831285/005	R&S	2010-12-25
6	Signal Generator	SMP04	100070	R&S	2010-4-20
7	LISN	ESH2-Z5	829991/012	R&S	2010-8
8	Spectrum Analyzer	FSU26	200030	R&S	2010-6-18
9	Universal Radio Communication Tester	CMU200	100680	R&S	2010-8-23
10	Dual-Ridge Waveguide Horn Antenna	3115	9906-5827	EMCO	2010-3
11	Dual-Ridge Waveguide Horn Antenna	3116	2663	EMCO	2010-3
12	Dual-Ridge Waveguide Horn Antenna	3116	2661	EMCO	2010-3
13	Climatic chamber	PL-2G	343074	ESPEC	2010-5-15

ANNEX A: MEASUREMENT RESULTS

A.1 OUTPUT POWER (§22.913(a)/§24.232(b))

A.1.1 Summary

During the process of testing, the EUT was controlled via Rhode & Schwarz Digital Radio Communication tester (CMU-200) to ensure max power transmission and proper modulation. This result contains peak output power and EIRP measurements for the EUT. In all cases, output power is within the specified limits.

A.1.2 Conducted

A.1.2.1 Method of Measurements

The EUT was set up for the max output power with pseudo random data modulation. The power was measured with Rhode & Schwarz Spectrum Analyzer FSU (peak) These measurements were done at 3 frequencies, 1851.25 MHz, 1880.0 MHz and 1908.75 MHz for PCS CDMA band, 824.7MHz, 836.52MHz and 848.31MHz for CDMA 800 band, (bottom, middle and top of operational frequency range).

CDMA 800

Measurement result

Channel	Frequency(MHz)	Channel power(dBm)	Target (dB)
1013	824.70	24.70	24±1
384	836.52	24.29	24±1
777	848.31	24.10	24±1

CDMA 1900

Measurement result

Channel	Frequency(MHz)	Channel power(dBm)	Target (dB)
25	1851.25	23.82	24±1
600	1880.00	23.71	24±1
1175	1908.75	23.25	24±1

A.1.3 Radiated

A.1.3.1 Description

This is the test for the maximum radiated power from the EUT.

Rule Part 24.232(b) specifies, "Mobile/portable stations are limited to 2 watts e.i.r.p. Peak power" and 24.232(c) specifies that "Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage."

Rule Part 22.913(a) specifies "Maximum ERP. The effective radiated power (ERP) of base transmitters and cellular repeaters must not exceed 500 Watts. The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts."

A.1.3.2 Method of Measurement

The measurements procedures in TIA-603C-2004 are used.

1. In an anechoic antenna test chamber, a half-wave dipole antenna for the frequency band of interest is placed at the reference centre of the chamber. An RF Signal source for the frequency band of interest is connected to the dipole with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A known (measured) power (P_{in}) is applied to the input of the dipole, and the power received (P_r) at the chamber's probe antenna is recorded.
2. The substitution method is used. Substitution values at each frequency are measured before and saved to the test software. A "reference path loss" is established as $A_{Rpl} = Pin + 2.15 - Pr$. The A_{Rpl} is the attenuation of "reference path loss", and including the gain of receive antenna, the cable loss and the air loss.

The measurement results are obtained as described below:

$$Power = P_{Mea} + A_{Rpl}$$

3. The EUT is substituted for the dipole at the reference centre of the chamber and a scan is performed to obtain the radiation pattern.
4. From the radiation pattern, the co-ordinates where the maximum antenna gain occurs are identified.
5. The EUT is then put into continuously transmitting mode at its maximum power level.
6. Power mode measurements are performed with the receiving antenna placed at the coordinates determined in Step 3 to determine the output power as defined in Rule 24.232 (b) and (c). The "reference path loss" from Step1 is added to this result.
7. This value is EIRP since the measurement is calibrated using a half-wave dipole antenna of known gain (2.15 dBi) and known input power (P_{in}).
8. ERP can be calculated from EIRP by subtracting the gain of the dipole, $ERP = EIRP - 2.15dBi$.

CDMA 800 -ERP

Measurement result

Frequency(MHz)	Channel	Peak ERP(dBm)	A _{Rpl} (dBm)	Correction (dBm)	P _{Mea} (dBm)	Polarization
824.70	1013	20.42	45.95	2.15	-23.38	Horizontal
836.52	384	21.46	45.98	2.15	-22.37	Horizontal
848.31	777	21.05	45.82	2.15	-22.62	Horizontal

Channel 384:

Peak ERP(dBm)= P_{Mea}(-22.37dBm)+ A_{Rpl} (45.98dBm)-2.15dBm= 21.46 dBm

ANALYZER SETTINGS: RBW = VBW = 3MHz

CDMA 1900-EIRP

Measurement result

Frequency(MHz)	Channel	Peak ERP(dBm)	A _{Rpl} (dBm)	P _{Mea} (dBm)	Polarization
1851.25	25	19.69	47.11	-27.42	Horizontal
1880.00	600	19.30	47.37	-28.07	Horizontal
1908.75	1175	18.49	47.54	-29.05	Horizontal

Channel 25:

Peak ERP(dBm)= P_{Mea}(-27.42dBm)+ A_{Rpl} (47.11dBm) = 19.69 dBm

ANALYZER SETTINGS: RBW = VBW = 3MHz

A.2 EMISSION LIMIT (§2.1051/§24.238)

A.2.1 Measurement Method

The measurements procedures in TIA-603C-2004 are used.

The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment, which is the transmitted carrier that can be as high as 1910 MHz. The resolution bandwidth is set 1MHz as outlined in Part 24.238. The spectrum was scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of the CDMA 800 and CDMA 1900 band.

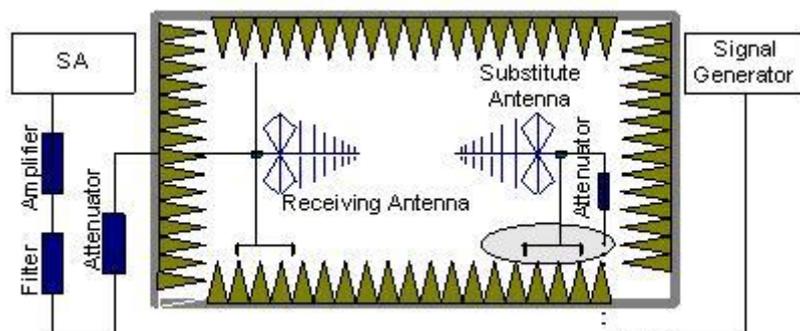
The procedure of radiated spurious emissions is as follows:

a) Pre-calibration

With pre-calibration method, the Radiated Spurious Emissions(RSE) is calculated as,

$$RSE = R_x \text{ (dBuV)} + CL \text{ (dB)} + SA \text{ (dB)} + Gain \text{ (dBi)} - 107 \text{ (dBuV to dBm)}$$

The SA is calibrated using following setup.

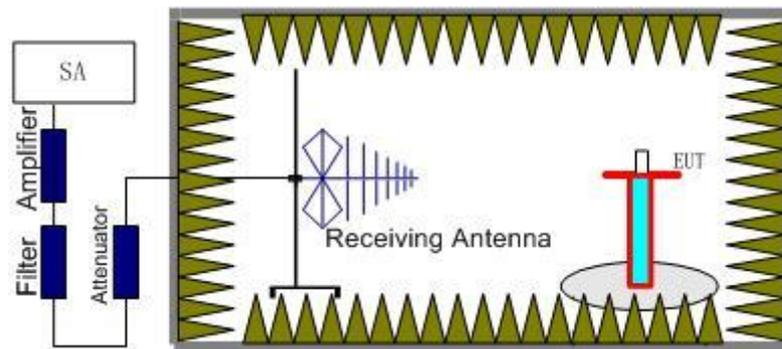


b) System check

The test system was checked before test by a standard comb signal source. The signal source put on the position, instead of the EUT. The test result should be compared with the test result before. If the test result is similar with the initial one, then the test system can work stably.

c) EUT test

EUT was placed on a 1.5 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the test item for emission measurements. The height of receiving antenna is 1.5m. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the test item and adjusting the receiving antenna polarization. The radiated emission measurements of all non-harmonic and harmonics of the transmit frequency through the 10th harmonic were measured with peak detector and 1MHz bandwidth.



A.2.2 Measurement Limit

Sec. 24.238 Emission Limits.

(a) On any frequency outside a licensee's frequency block (e.g. A, D, B, etc.) within the USPCS spectrum, the power of any emission shall be attenuated below the transmitter power (P , in Watts) by at least $43+10\text{Log}(P)$ dB. The specification that emissions shall be attenuated below the transmitter power (P) by at least $43 + 10 \log (P)$ dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

A.2.3 Measurement Results

Radiated emissions measurements were made only at the upper, middle, and lower carrier frequencies. 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 CDMA 800, CDMA 1900 into any of the other blocks. 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.

The substitution method is used. Substitution values at each frequency are measured before and saved to the test software. A "reference path loss" is established and the A_{Rpl} is the attenuation of "reference path loss", and including the gain of receive antenna, the gain of the preamplifier, the cable loss and the air loss.

The measurement results are obtained as described below:

$$\text{Power} = P_{\text{Mea}} + A_{\text{Rpl}}$$

A.2.4 Sweep Table

Working Frequency	Subrange (GHz)	RBW	VBW	Sweep time (s)
CDMA800	0.03~1	100KHz	300KHz	10
	1-2	1 MHz	3 MHz	2
	2~5	1 MHz	3 MHz	3
	5~8	1 MHz	3 MHz	3
	8~10	1 MHz	3 MHz	3
CDMA1900	0.03~1	100KHz	300KHz	10
	1-2	1 MHz	3 MHz	2
	2~5	1 MHz	3 MHz	3
	5~8	1 MHz	3 MHz	3
	8~11	1 MHz	3 MHz	3
	11~14	1 MHz	3 MHz	3
	14~18	1 MHz	3 MHz	3
	18~20	1 MHz	3 MHz	2

CDMA 800 Channel 1013/824.70MHz

Frequency(MHz)	Power(dBm)	A _{Rpl} (dBm)	P _{Mea} (dBm)	Limit (dBm)	Polarity
1392.1	-49.3	-1.45	-47.85	-13	Horizontal
9781.3	-41	10.05	-51.05	-13	Horizontal

CDMA 800 Channel 384/836.52MHz

Frequency(MHz)	Power(dBm)	A _{Rpl} (dBm)	P _{Mea} (dBm)	Limit (dBm)	Polarity
1176.1	-49	-1.25	-47.75	-13	Horizontal
5445.1	-43.6	3.35	-46.95	-13	Vertical
9832.9	-40.3	11.25	-51.55	-13	Horizontal

CDMA 800 Channel 777/848.31MHz

Frequency(MHz)	Power(dBm)	A _{Rpl} (dBm)	P _{Mea} (dBm)	Limit (dBm)	Polarity
1174.9	-49	-1.25	-47.75	-13	Horizontal
1389.7	-49	-1.45	-47.55	-13	Horizontal
5423.8	-43.3	2.85	-46.15	-13	Horizontal
9662.2	-41	10.35	-51.35	-13	Horizontal

CDMA 1900 Channel 25/1851.25MHz

Frequency(MHz)	Power(dBm)	A _{Rpl} (dBm)	P _{Mea} (dBm)	Limit (dBm)	Polarity
2000	-46.3	9.6	-55.9	-13	Horizontal
3702.5	-14.8	3	-17.8	-13	Horizontal
5552.9	-38.7	4.6	-43.3	-13	Vertical
12170	-39.2	15	-54.2	-13	Vertical
12645.5	-39	13.9	-52.9	-13	Vertical
15077.2	-36.8	14.8	-51.6	-13	Horizontal

CDMA 1900 Channel 600/1880.00MHz

Frequency(MHz)	Power(dBm)	A _{Rpl} (dBm)	P _{Mea} (dBm)	Limit (dBm)	Polarity
2001.2	-45.4	9.8	-55.2	-13	Vertical
3759.8	-22.1	3.3	-25.4	-13	Horizontal
5641.4	-41.4	5.2	-46.6	-13	Vertical
12161.6	-39.1	14.2	-53.3	-13	Horizontal
12670.1	-38.9	14.3	-53.2	-13	Vertical
13161.8	-31.7	14.3	-46	-13	Vertical

CDMA 1900 Channel 1175/1908.75MHz

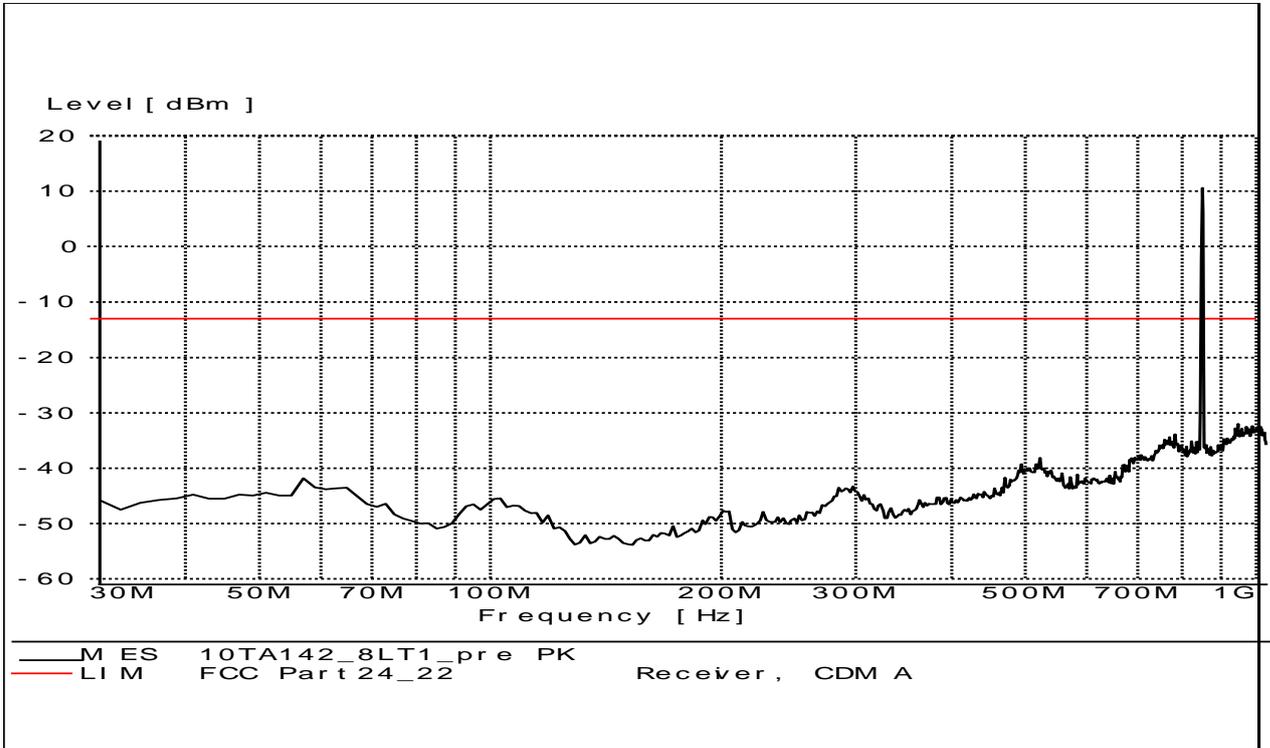
Frequency(MHz)	Power(dBm)	A _{Rpl} (dBm)	P _{Mea} (dBm)	Limit (dBm)	Polarity
3817.4	-22.1	3.8	-25.9	-13	Vertical
11451.5	-37.7	13.8	-51.5	-13	Horizontal
12179.6	-39.3	15	-54.3	-13	Horizontal
12623	-39.8	14	-53.8	-13	Vertical
13362.8	-35.9	11.8	-47.7	-13	Vertical
13523.9	-38.6	13.9	-52.5	-13	Vertical

CDMA 800

A.2.3.1 RADIATED SPURIOUS EMISSIONS-Channel 1013: 30MHz –1GHz

Radiated spurious emission limit :-13dBm.

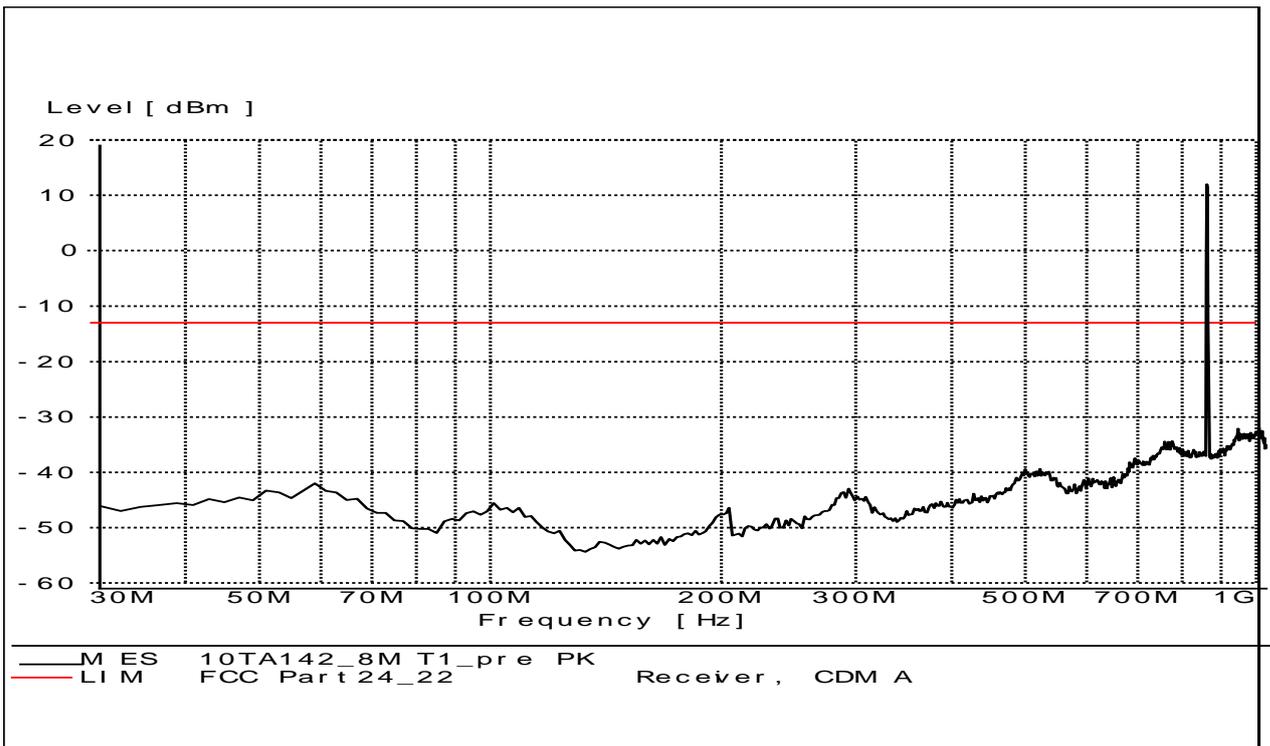
NOTE: peak above the limit line is the Carrier frequency @ ch-1013



A.2.3.2 RADIATED SPURIOUS EMISSIONS-Channel 384: 30MHz – 1GHz

Radiated spurious emission limit :-13dBm.

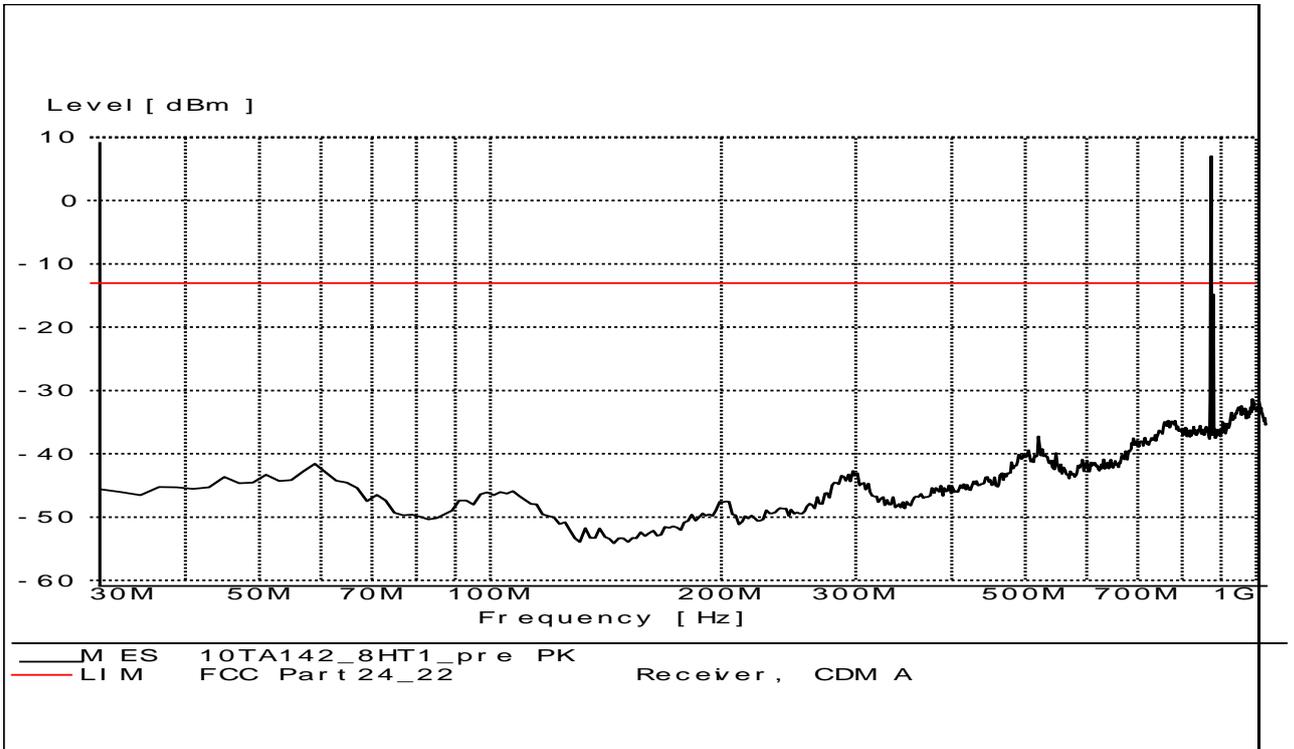
NOTE: peak above the limit line is the Carrier frequency @ ch-384



A.2.3.3 RADIATED SPURIOUS EMISSIONS-Channel 777: 30MHz – 1GHz

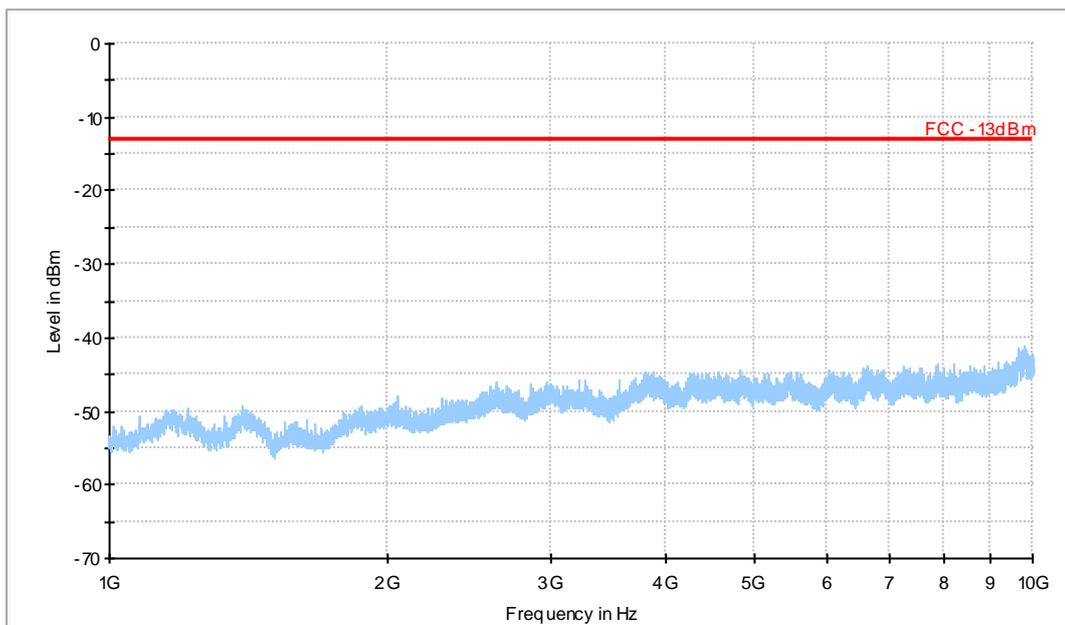
Radiated spurious emission limit :-13dBm.

NOTE: peak above the limit line is the Carrier frequency @ ch-777



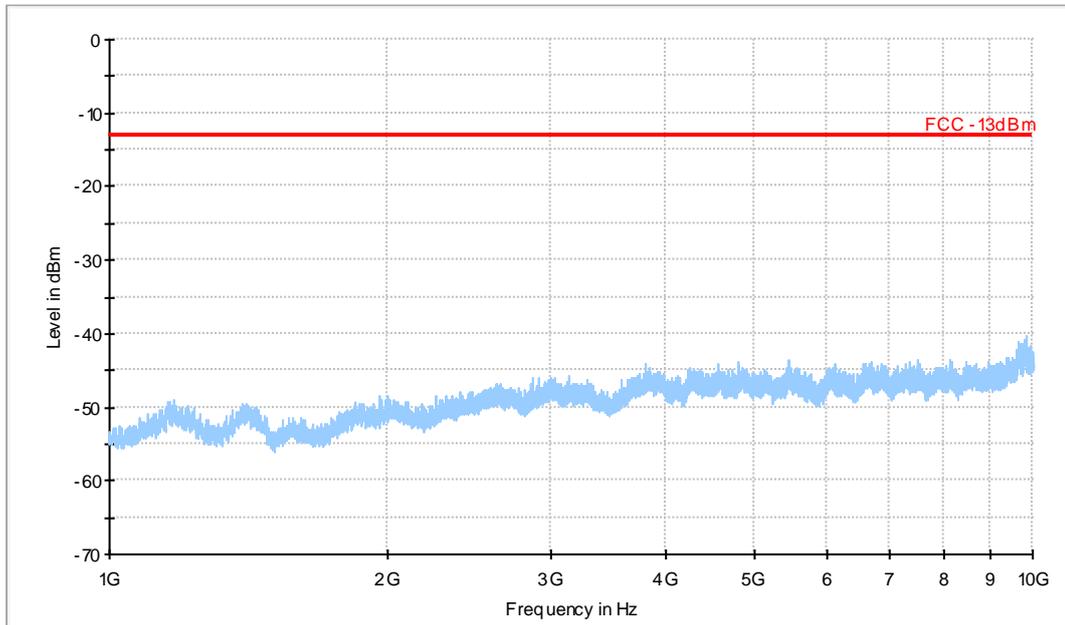
A.2.3.4 RADIATED SPURIOUS EMISSIONS-Channel 1013: 1GHz – 10GHz

Radiated spurious emission limit :-13dBm.



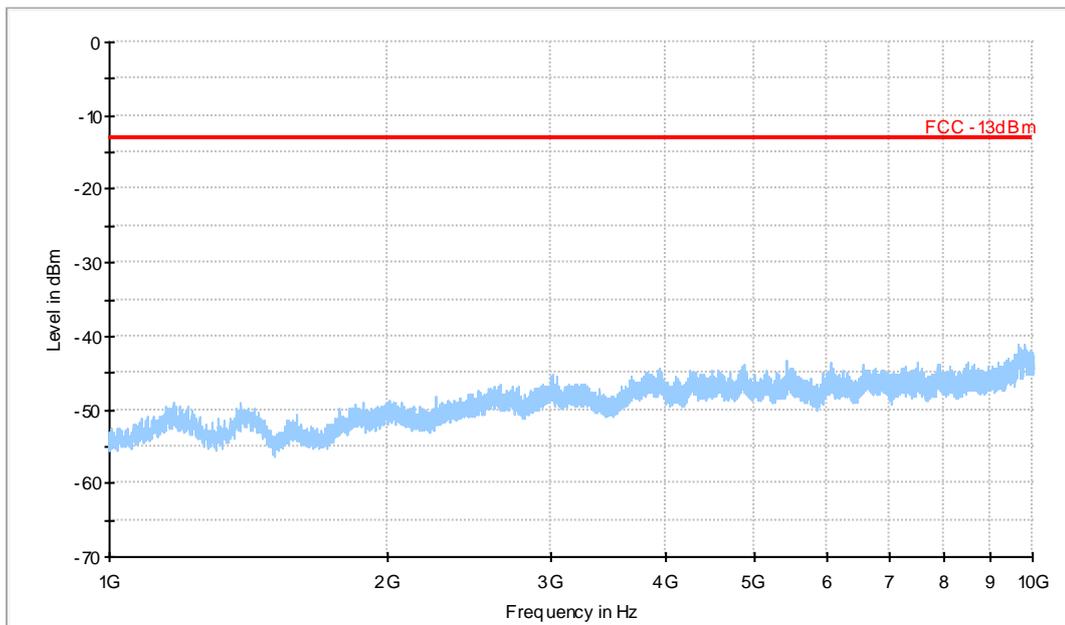
— FCC -13dBm — Preview Measurement Detector 1

A.2.3.5 RADIATED SPURIOUS EMISSIONS-Channel 384: 1GHz – 10GHz
Radiated spurious emission limit :-13dBm.



— FCC -13dBm — Preview Measurement Detector 1

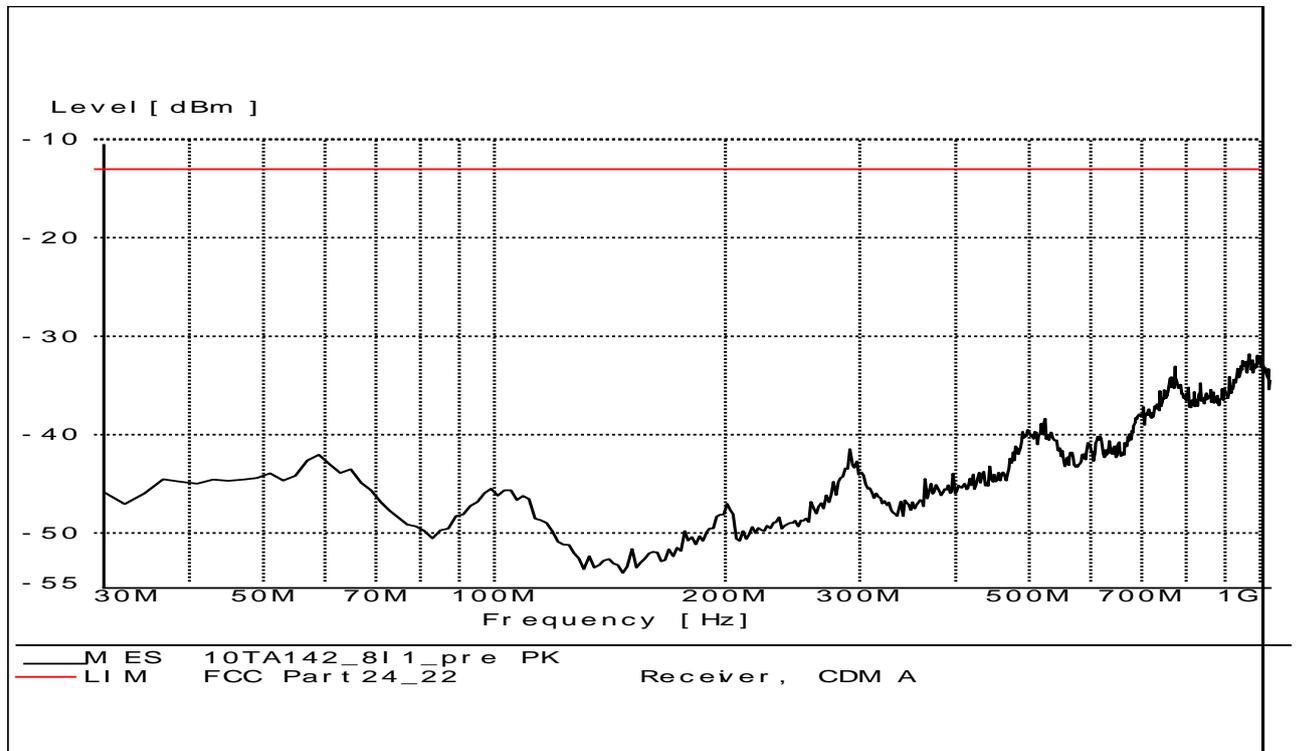
A.2.3.6 RADIATED SPURIOUS EMISSIONS-Channel 777: 1GHz – 10GHz
Radiated spurious emission limit :-13dBm.



— FCC -13dBm — Preview Measurement Detector 1

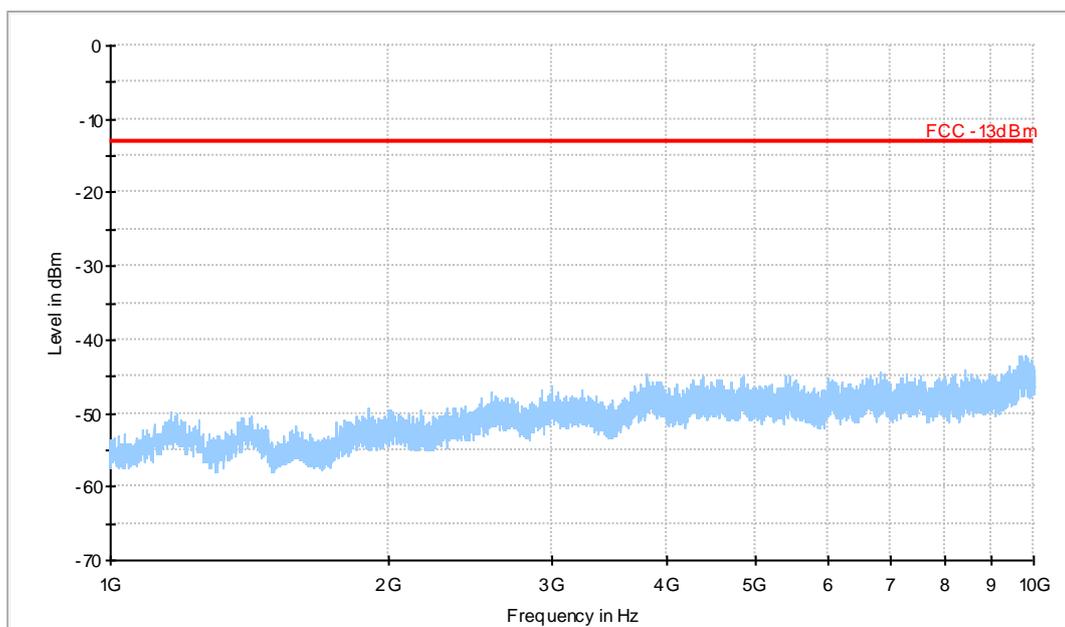
A.2.3.7 RADIATED SPURIOUS EMISSIONS-EUT in Idle Mode: 30MHz – 1GHz

Radiated spurious emission limit :-13dBm.



A.2.3.8 RADIATED SPURIOUS EMISSIONS-EUT in Idle Mode: 1GHz – 10GHz

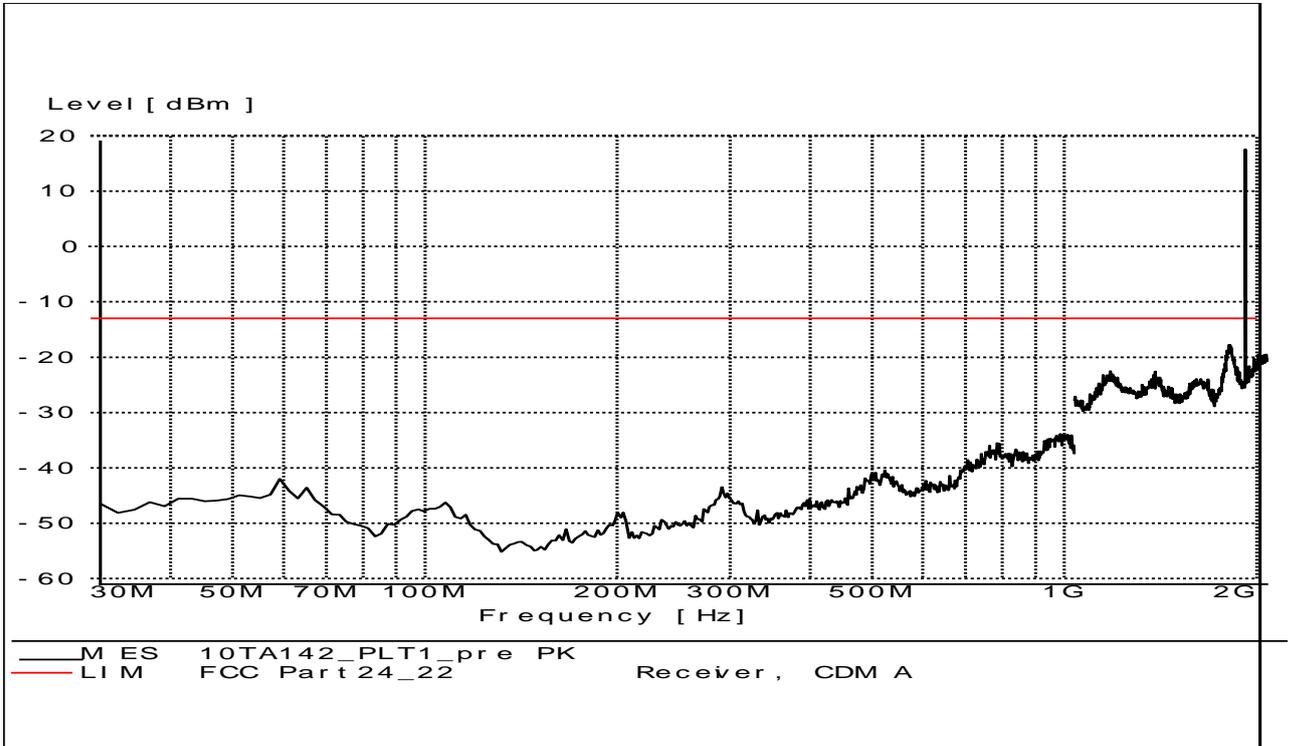
Radiated spurious emission limit :-13dBm.



CDMA 1900

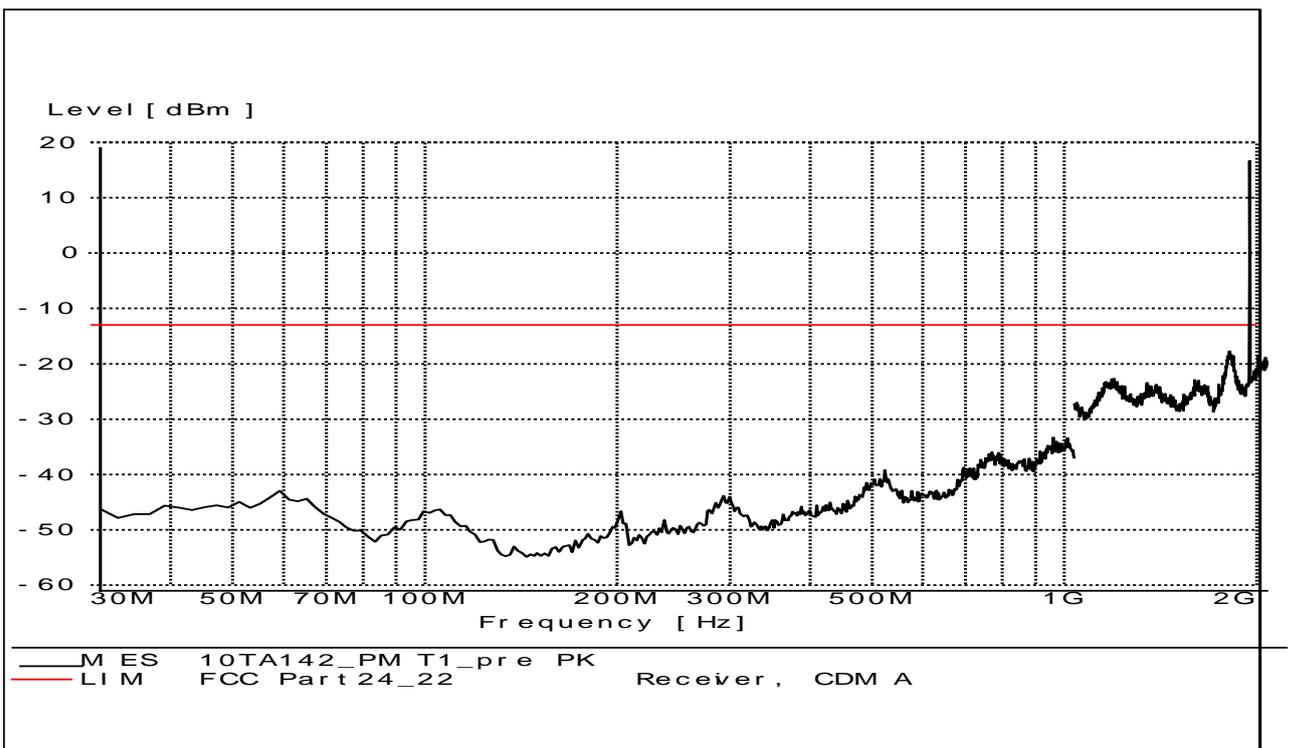
A.2.3.9 RADIATED SPURIOUS EMISSIONS-Channel 25: 30MHz – 2GHz

NOTE: peak above the limit line is the Carrier frequency @ ch-25



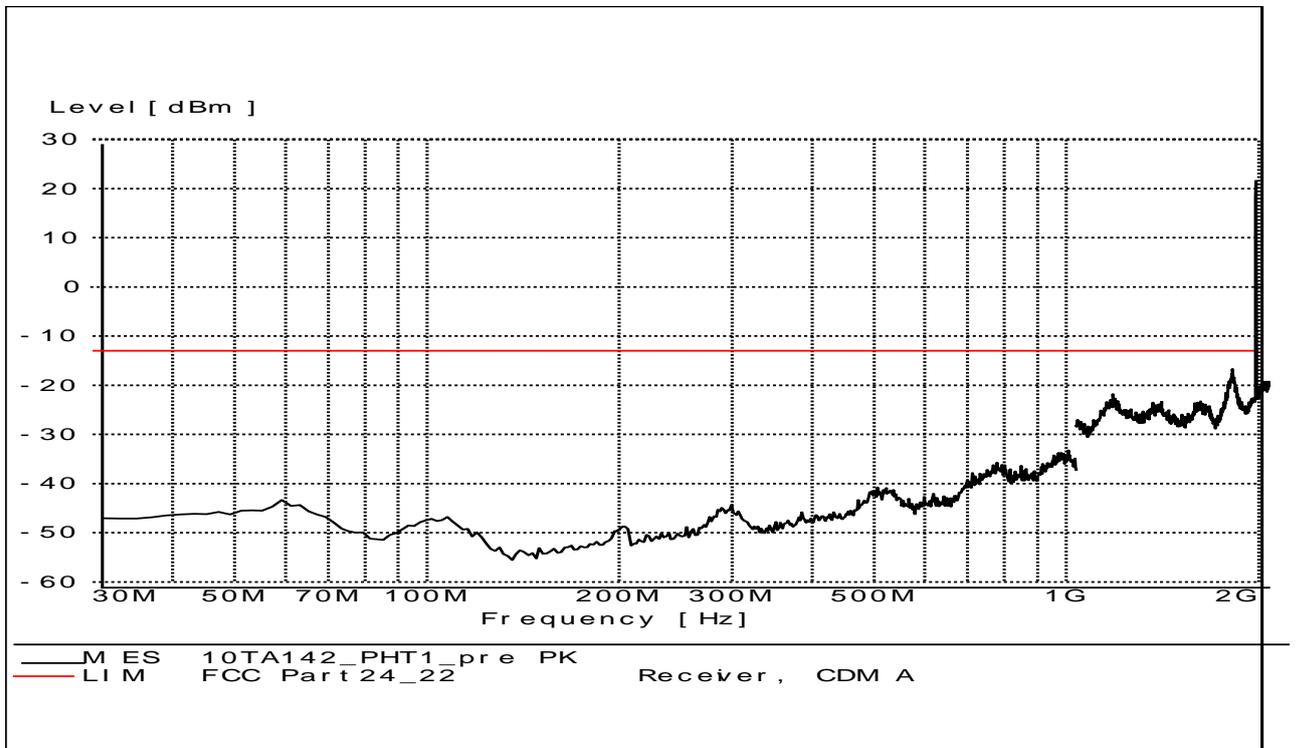
A.2.3.10 RADIATED SPURIOUS EMISSIONS-Channel 600: 30MHz – 2GHz

NOTE: peak above the limit line is the Carrier frequency @ ch-600

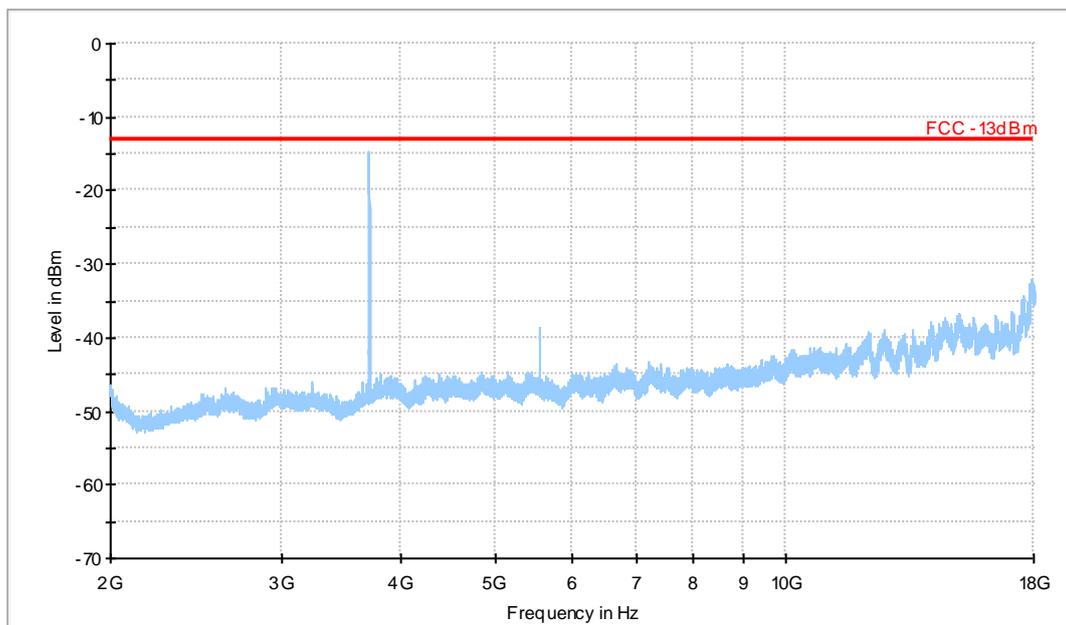


A.2.3.11 RADIATED SPURIOUS EMISSIONS-Channel 1175: 30MHz – 2GHz

NOTE: peak above the limit line is the Carrier frequency @ ch-1175

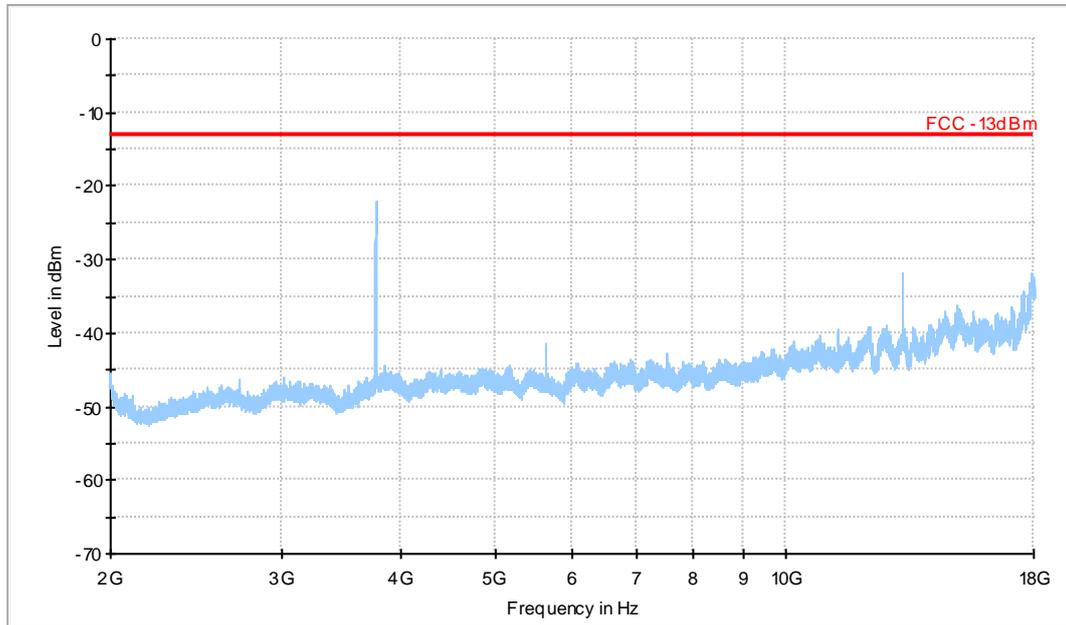


A.2.3.12 RADIATED SPURIOUS EMISSIONS-Channel 25: 2GHz – 18GHz



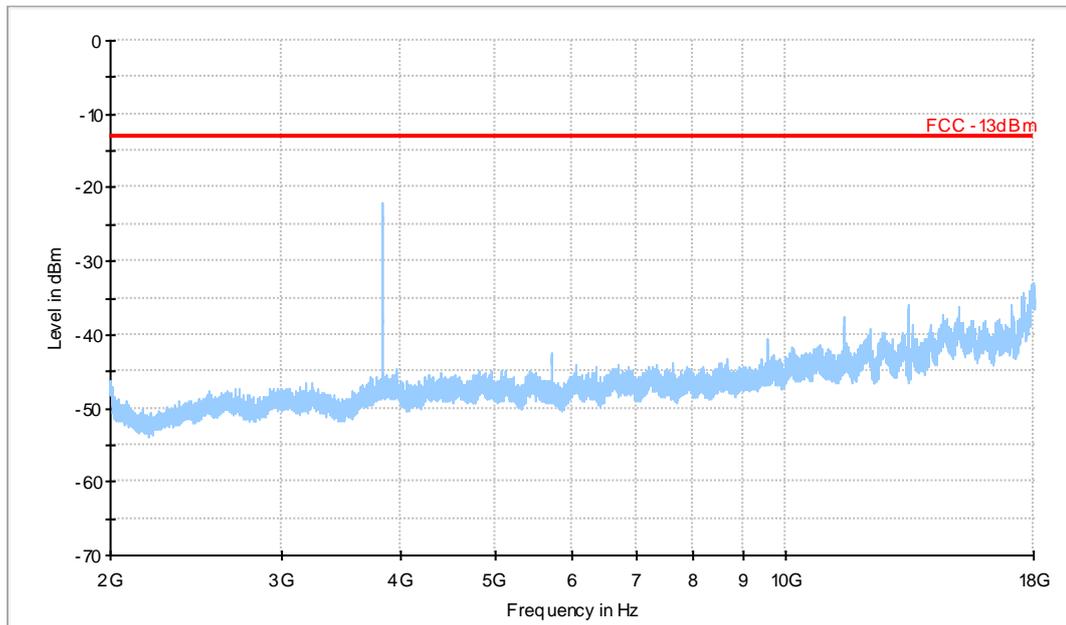
— FCC -13dBm — Preview Measurement Detector 1

A.2.3.13 RADIATED SPURIOUS EMISSIONS-Channel 600: 2GHz – 18GHz



— FCC -13dBm — Preview Measurement Detector 1

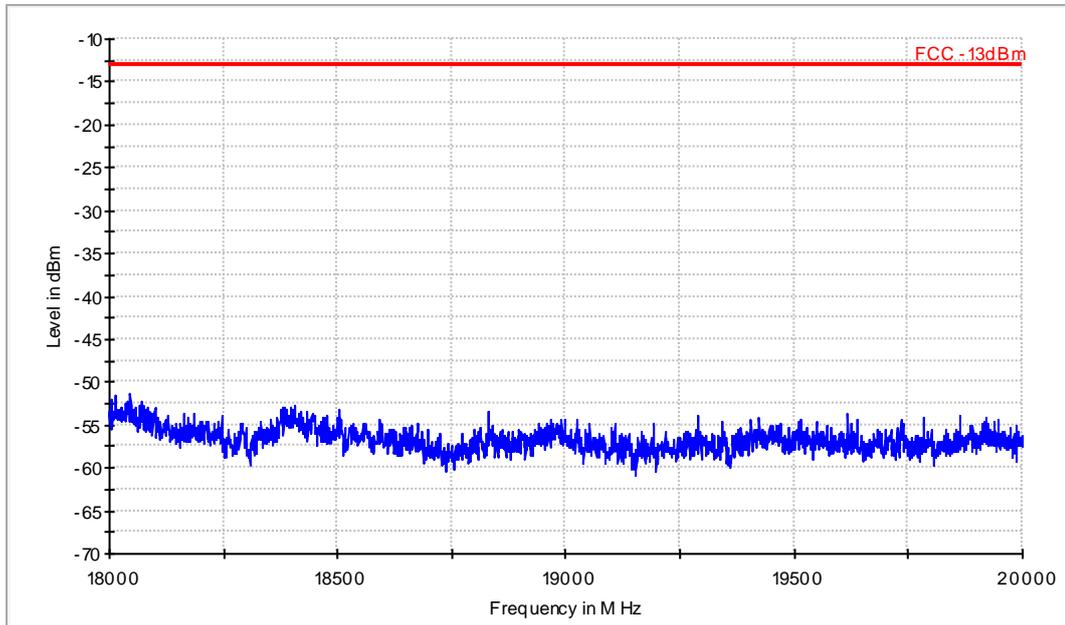
A.2.3.14 RADIATED SPURIOUS EMISSIONS-Channel 1175: 2GHz – 18GHz



— FCC -13dBm — Preview Measurement Detector 1

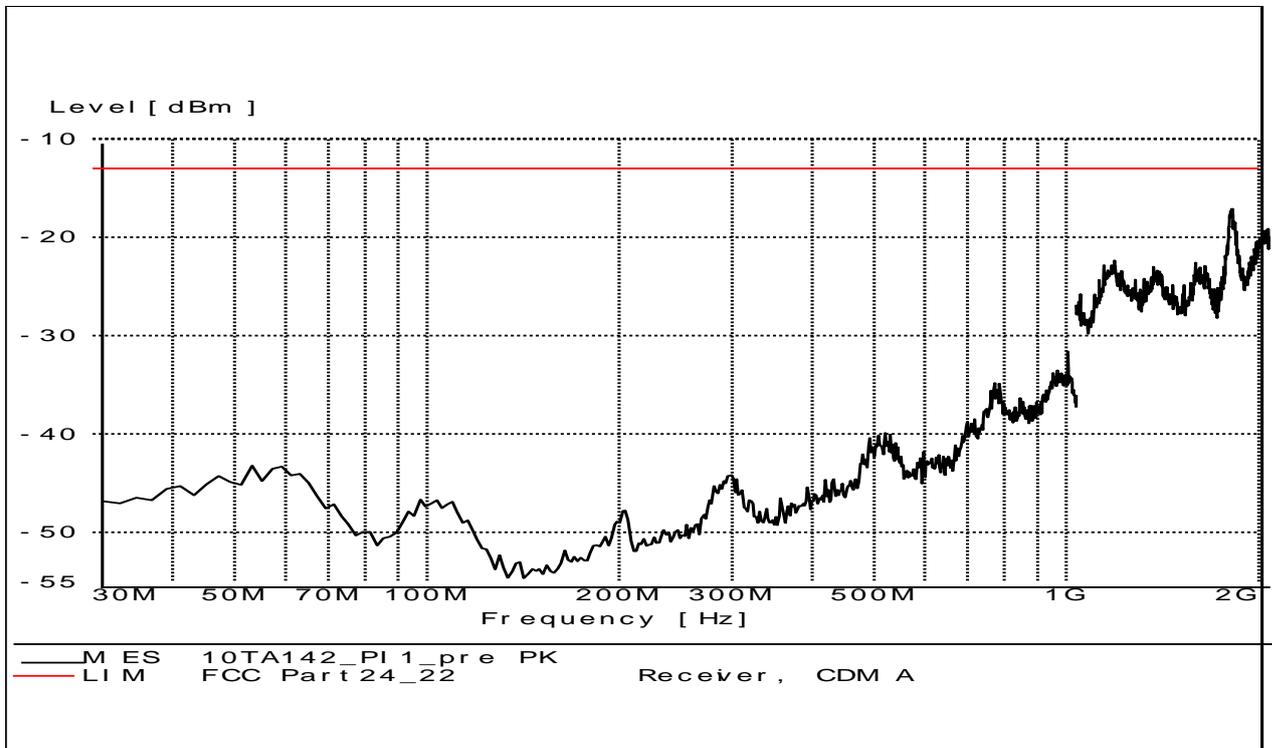
A.2.3.15 Radiated spurious emission (18GHz-20GHz)

Note: This plot is valid for low, mid & high channels. It is same as the floor noise.



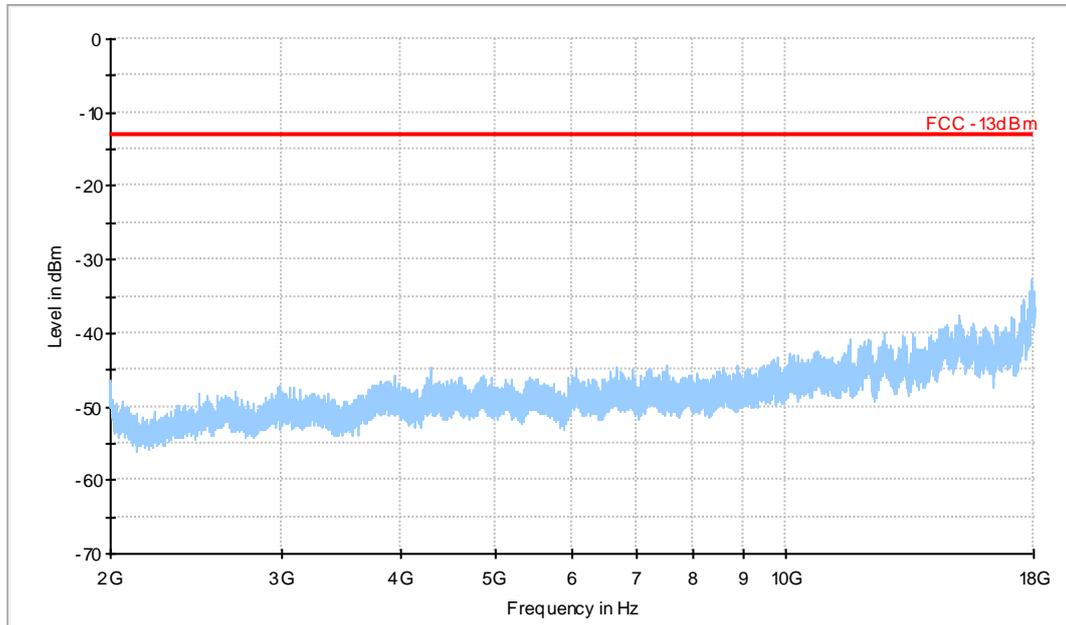
— Preview Measurement Detector 1 — FCC -13dBm

A.2.3.16 RADIATED SPURIOUS EMISSIONS-EUT in Idle Mode: 30MHz – 2GHz



— M ES 10TA142_PI 1_pre PK Receiver, CDM A
— LI M FCC Part 24_22

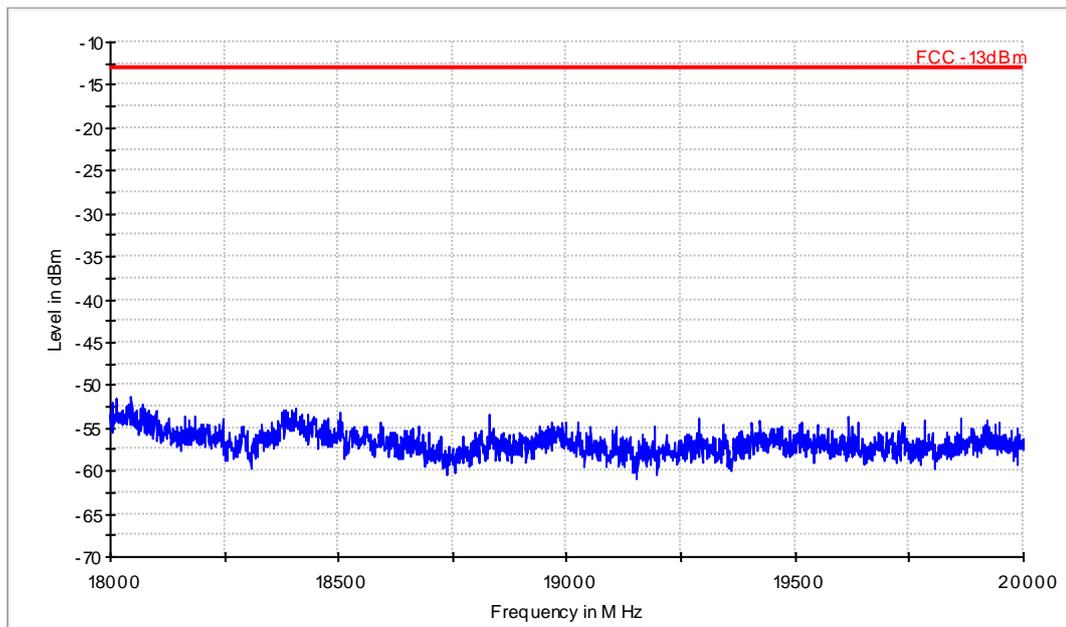
A.2.3.17 RADIATED SPURIOUS EMISSIONS-EUT in Idle Mode: 2GHz – 18GHz



— FCC -13dBm — Preview Measurement Detector 1

A.2.3.18 RADIATED SPURIOUS EMISSIONS-EUT in Idle Mode: 18GHz – 20GHz

Note: It is same as the floor noise.



— Preview Measurement Detector 1 — FCC -13dBm

A.3 CONDUCTED EMISSION **(§15.107§15.207)**

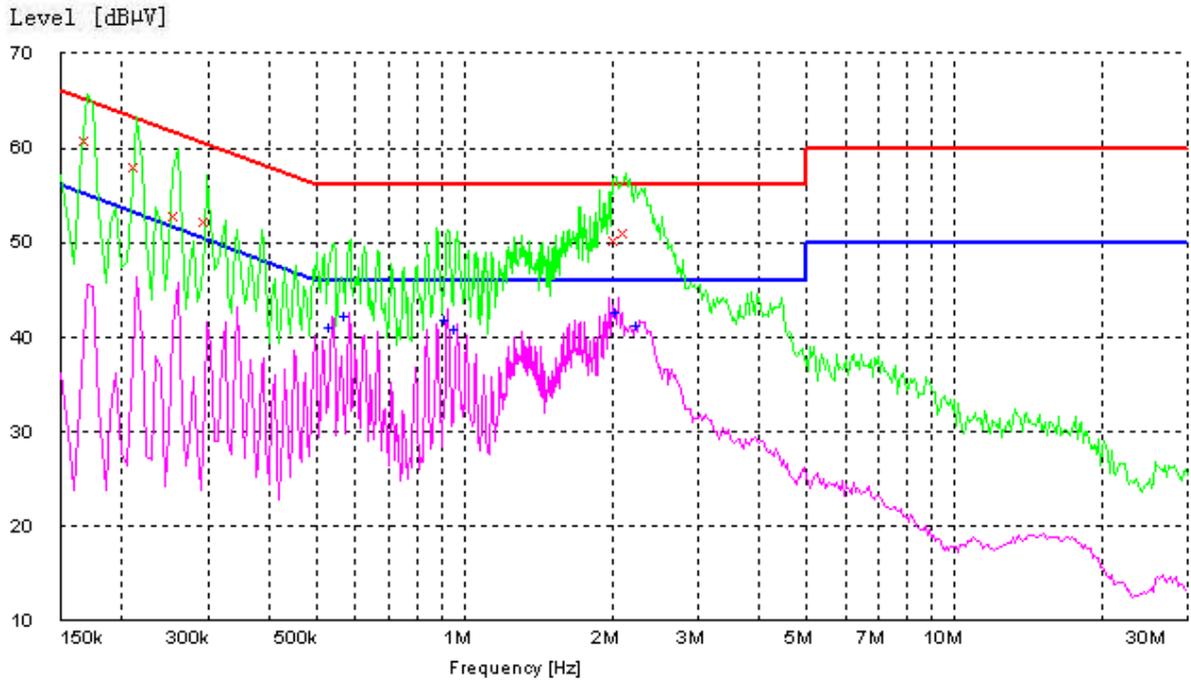
The measurement procedure in ANSI C63.4-1003 is used. Conducted Emission is measured with travel charger.

A.3.1 Limit

Frequency of Emission (MHz)	Conducted Limit (dB μ V)	
	Quasi -Peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 – 30	60	50

* Decreases with logarithm of the frequency

A.3.2 Measurement result
CDMA 800



× MES 10TA142_8C_fin QP
 + MES 10TA142_8C_fin AV
 — MES 10TA142_8C_pre PK
 — MES 10TA142_8C_pre AV

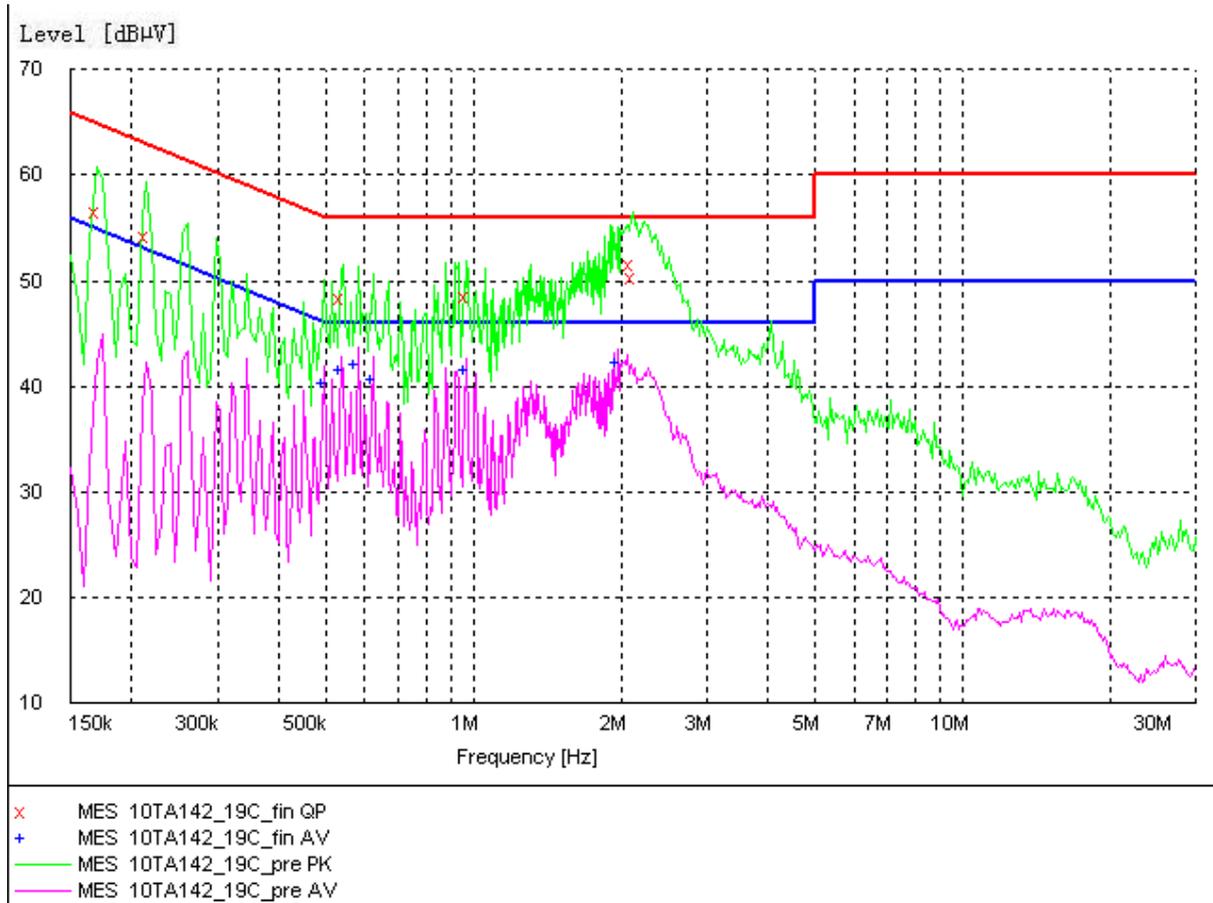
MEASUREMENT RESULT: "10TA142_8C_fin QP"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.170000	60.80	10.1	65	4.1	L1	FLO
0.215000	58.10	10.1	63	4.9	N	GND
0.260000	52.80	10.1	61	8.6	N	GND
0.300000	52.30	10.1	60	7.9	L1	FLO
2.040200	50.20	10.1	56	5.8	L1	FLO
2.144271	51.10	10.1	56	4.9	L1	GND

MEASUREMENT RESULT: "10TA142_8C_fin AV"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.535000	40.90	10.1	46	5.1	L1	FLO
0.580000	42.10	10.1	46	3.9	L1	GND
0.925000	41.80	10.1	46	4.2	L1	GND
0.970000	40.80	10.1	46	5.2	L1	FLO
2.060602	42.50	10.1	46	3.5	L1	GND
2.276187	41.20	10.1	46	4.8	L1	GND

CDMA 1900



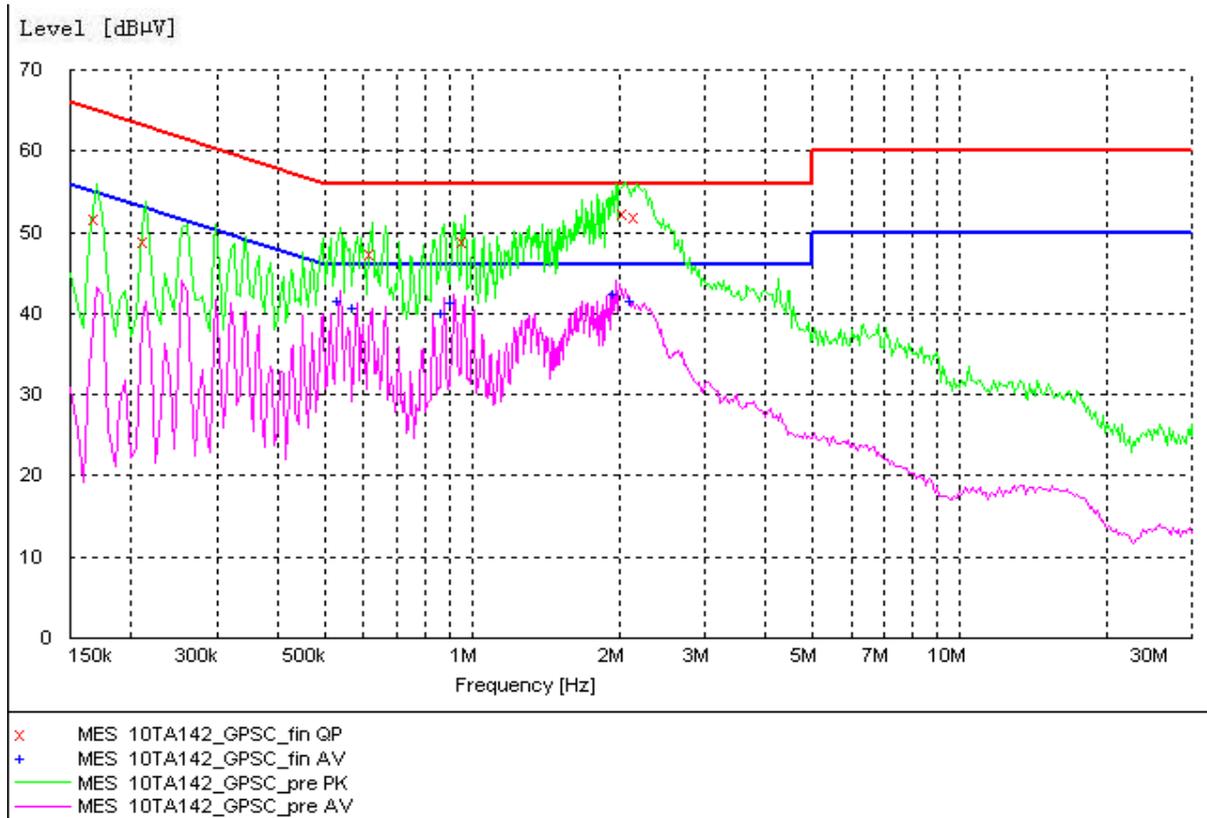
MEASUREMENT RESULT: "10TA142_19C_fin QP"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.170000	56.50	10.1	65	8.5	N	GND
0.215000	54.20	10.1	63	8.8	N	GND
0.540000	48.20	10.1	56	7.8	L1	FLO
0.965000	48.40	10.1	56	7.6	L1	FLO
2.102020	51.60	10.1	56	4.4	L1	GND
2.123040	50.20	10.1	56	5.8	L1	FLO

MEASUREMENT RESULT: "10TA142_19C_fin AV"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.495000	40.30	10.1	46	5.7	L1	FLO
0.535000	41.50	10.1	46	4.5	L1	FLO
0.580000	42.10	10.1	46	3.9	L1	GND
0.625000	40.70	10.1	46	5.3	L1	GND
0.965000	41.50	10.1	46	4.5	L1	GND
1.980000	42.30	10.1	46	3.7	L1	GND

GPS



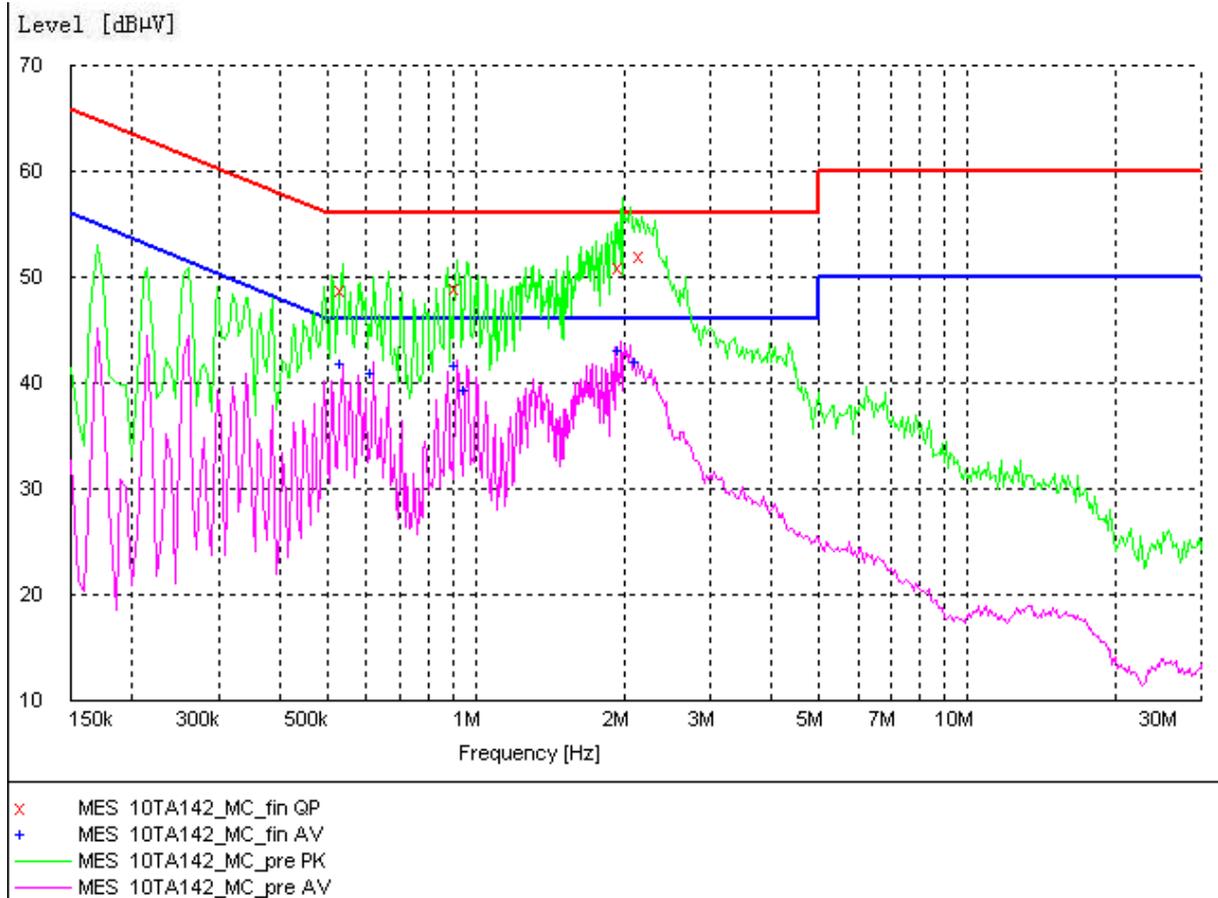
MEASUREMENT RESULT: "10TA142_GPSC_fin QP"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.170000	51.60	10.1	65	13.4	N	FLO
0.215000	48.80	10.1	63	14.2	N	FLO
0.625000	47.40	10.1	56	8.6	L1	FLO
0.965000	48.90	10.1	56	7.1	L1	FLO
2.060602	52.20	10.1	56	3.8	L1	FLO
2.187371	51.80	10.1	56	4.2	L1	GND

MEASUREMENT RESULT: "10TA142_GPSC_fin AV"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.535000	41.60	10.1	46	4.4	L1	GND
0.580000	40.60	10.1	46	5.4	L1	GND
0.880000	40.10	10.1	46	5.9	L1	GND
0.920000	41.20	10.1	46	4.8	L1	GND
1.980000	42.30	10.1	46	3.7	L1	FLO
2.144271	41.50	10.1	46	4.5	L1	GND

MP3



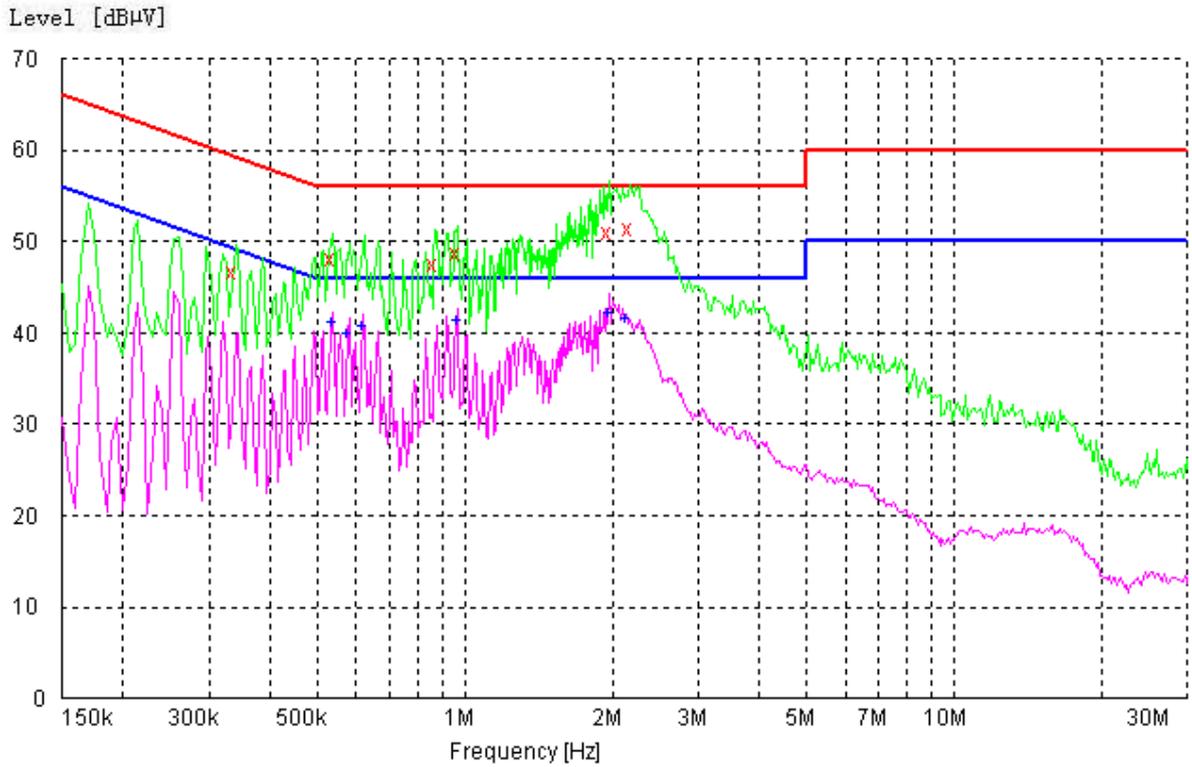
MEASUREMENT RESULT: "10TA142_MC_fin QP"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.535000	48.70	10.1	56	7.3	L1	GND
0.920000	49.00	10.1	56	7.0	L1	GND
1.985000	50.90	10.1	56	5.1	L1	GND
2.187371	51.90	10.1	56	4.1	L1	GND

MEASUREMENT RESULT: "10TA142_MC_fin AV"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.535000	41.80	10.1	46	4.2	L1	GND
0.620000	40.90	10.1	46	5.1	L1	GND
0.920000	41.60	10.1	46	4.4	L1	GND
0.960000	39.30	10.1	46	6.7	L1	FLO
1.975000	43.00	10.1	46	3.0	L1	GND
2.144271	41.90	10.1	46	4.1	L1	FLO

Camera



- x MES 10TA142_CC_fin QP
- + MES 10TA142_CC_fin AV
- MES 10TA142_CC_pre PK
- MES 10TA142_CC_pre AV

MEASUREMENT RESULT: "10TA142_CC_fin QP"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.340000	46.80	10.1	59	12.4	L1	FLO
0.535000	48.10	10.1	56	7.9	L1	GND
0.870000	47.60	10.1	56	8.4	L1	FLO
0.965000	48.70	10.1	56	7.3	L1	GND
1.980000	51.10	10.1	56	4.9	L1	FLO
2.187371	51.40	10.1	56	4.6	L1	GND

MEASUREMENT RESULT: "10TA142_CC_fin AV"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.535000	41.20	10.1	46	4.8	L1	FLO
0.580000	40.00	10.1	46	6.0	L1	FLO
0.620000	40.80	10.1	46	5.2	L1	GND
0.965000	41.30	10.1	46	4.7	L1	GND
1.970000	42.20	10.1	46	3.8	L1	FLO
2.144271	41.60	10.1	46	4.4	L1	FLO

A.4 FREQUENCY STABILITY (§2.1055/§24.235)

A.4.1 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 CMU200 DIGITAL 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 CMU200 and in a simulated call on channel 384 for CDMA 800 and channel 600 for 1900 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, unpowered, before making measurements.
5. Remeasure carrier frequency at room temperature with nominal voltage. Vary supply voltage from minimum voltage to maximum voltage, in 0.1Volt increments remeasuring carrier frequency at each voltage. Pause at nominal voltage for 1 1/2 hours unpowered, 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 CMU200 and in a simulated call on the centre channel, 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, unpowered, before making measurements.
9. At all temperature levels hold the temperature to +/- 0.5°C during the measurement procedure.

A.4.2 Measurement Limit

A.4.2.1 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, 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 3.5VDC 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. These voltages represent a tolerance of -10 % and +12.5 %. For the purposes of measuring frequency stability these voltage limits are to be used.

A.4.2.2 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, 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 varying primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

A.4.3 Measurement results

CDMA 800

Frequency Error vs Voltage

Voltage(V)	Frequency error(Hz)	Frequency error(ppm)
3.5	23	0.027
3.7	25	0.030
4.2	22	0.026

Frequency Error vs Temperature

temperature(°C)	Frequency error(Hz)	Frequency error(ppm)
-30	35	0.042
-20	31	0.037
-10	28	0.033
0	24	0.028
10	24	0.028
20	22	0.026
30	28	0.033
40	30	0.036
50	32	0.038

CDMA 1900

Frequency Error vs Voltage

Voltage(V)	Frequency error(Hz)	Frequency error(ppm)
3.5	40	0.021
3.7	40	0.021
4.2	45	0.024

Frequency Error vs Temperature

temperature(°C)	Frequency error(Hz)	Frequency error(ppm)
-30	69	0.037
-20	63	0.034
-10	56	0.030
0	45	0.024
10	43	0.023
20	44	0.023
30	45	0.024
40	46	0.024
50	60	0.032

A.5 OCCUPIED BANDWIDTH (§2.1049(h)(i))

A.5.1 Occupied Bandwidth Results

Similar to conducted emissions; occupied bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies of the CDMA frequency band. The table below lists the measured -20dBc BW (99%BW). Spectrum analyzer plots are included on the following pages.

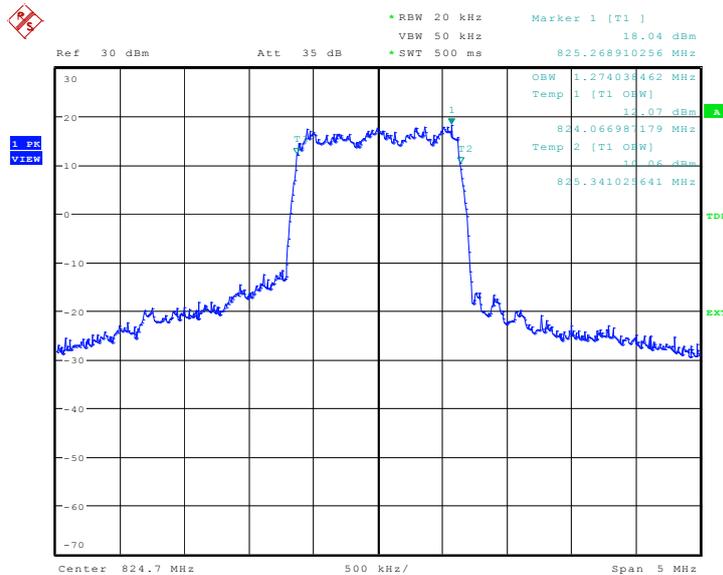
CDMA 800 (99% BW)

Channel	Occupied Bandwidth (-20dBc BW)(MHz)
1013	1.274
384	1.282
777	1.282

ANALYZER SETTINGS: RBW=20 kHz, VBW=50 kHz

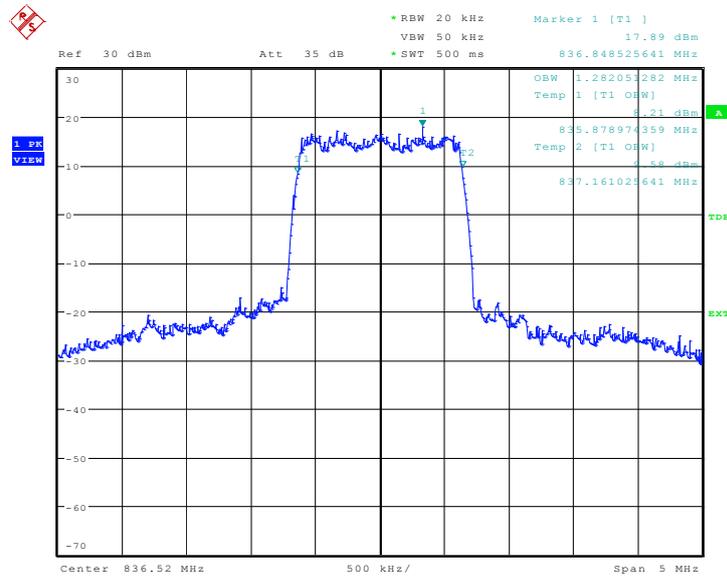
CDMA 800

Channel 1013-Occupied Bandwidth (99% BW)



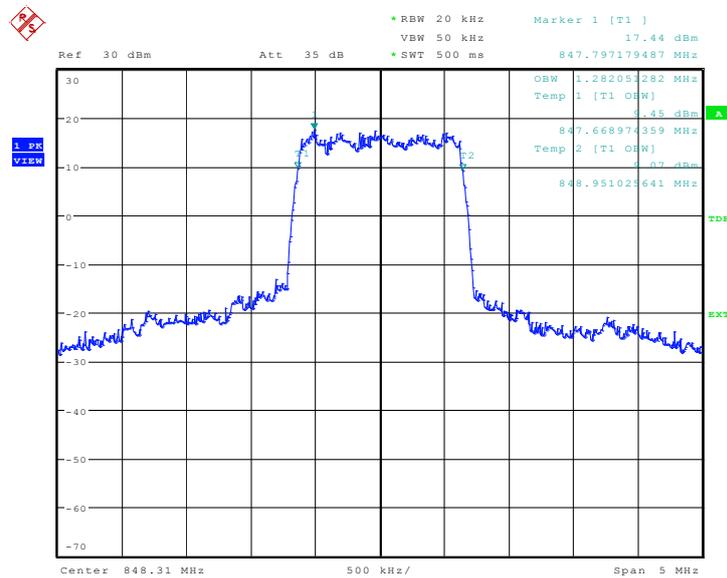
Date: 12.FEB.2010 00:33:38

Channel 384-Occupied Bandwidth (99% BW)



Date: 12.FEB.2010 00:34:02

Channel 777-Occupied Bandwidth (99% BW)



Date: 12.FEB.2010 00:34:29

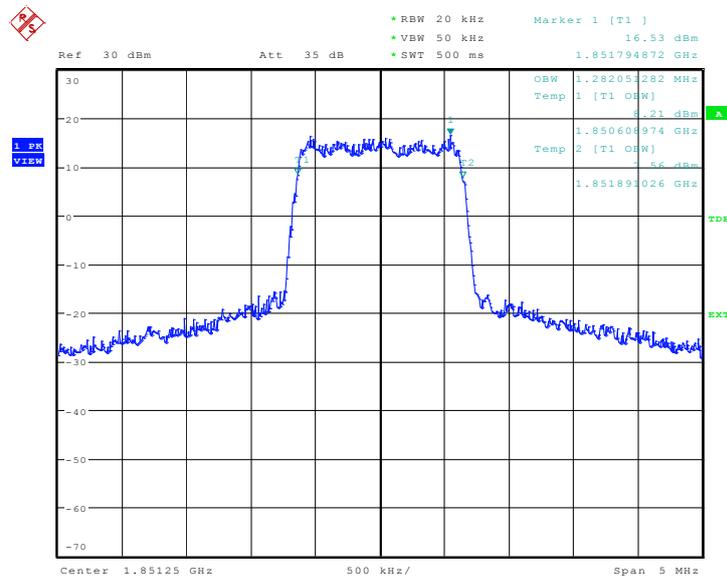
CDMA 1900(99% BW)

Channel	Occupied Bandwidth (-20dBc BW)(MHz)
25	1.282
600	1.282
1175	1.290

ANALYZER SETTINGS: RBW=20 kHz, VBW=50 kHz

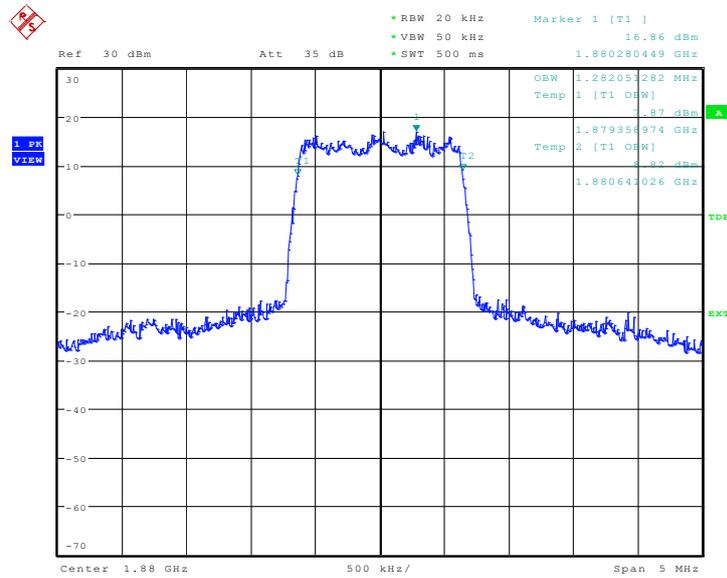
CDMA 1900

Channel 25-Occupied Bandwidth (99% BW)



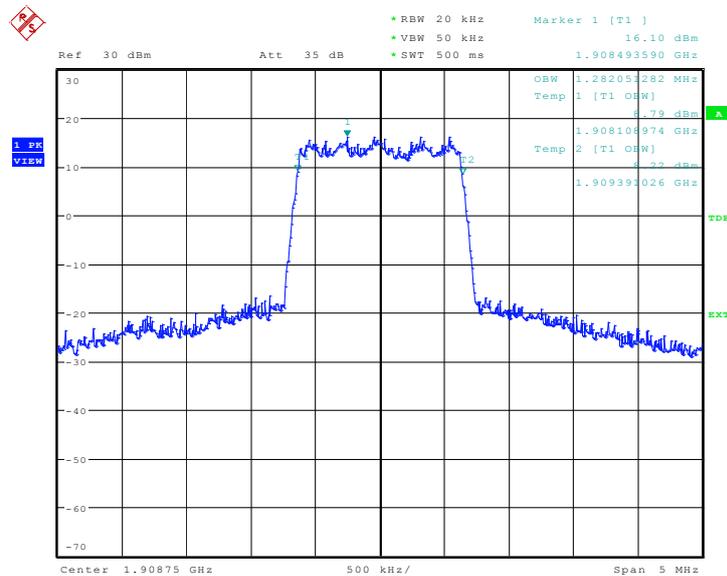
Date: 12.FEB.2010 00:51:52

Channel 600-Occupied Bandwidth (99% BW)



Date: 12.FEB.2010 00:52:12

Channel 1175-Occupied Bandwidth (99% BW)



Date: 12.FEB.2010 00:52:37

A.6 EMISSION BANDWIDTH (§22.917(b)/§24.238(b))

A.6.1 Emission Bandwidth Results

Similar to conducted emissions; Emission bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies of the CDMA 800, CDMA 1900 band. Table below lists the measured -26dBc BW. Spectrum analyzer plots are included on the following pages.

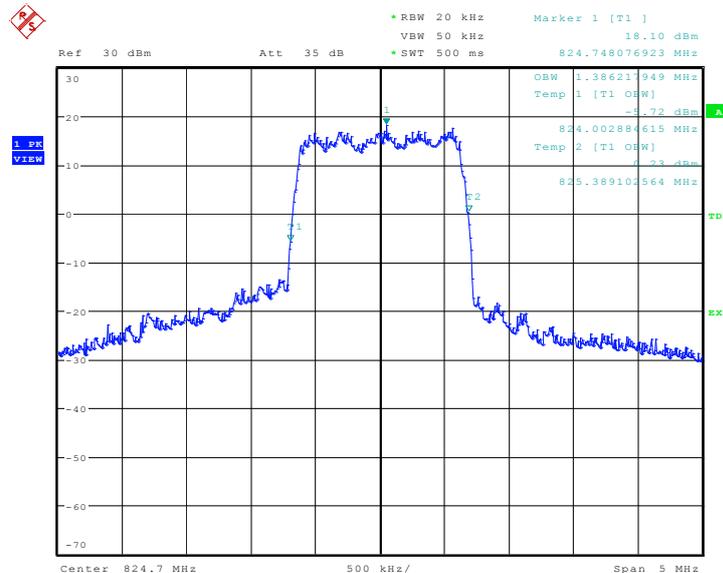
CDMA 800 (-26dBc)

Channel	Occupied Bandwidth (-26dBc BW)(MHz)
1013	1.386
384	1.378
777	1.386

ANALYZER SETTINGS: RBW=20 kHz, VBW=50 kHz

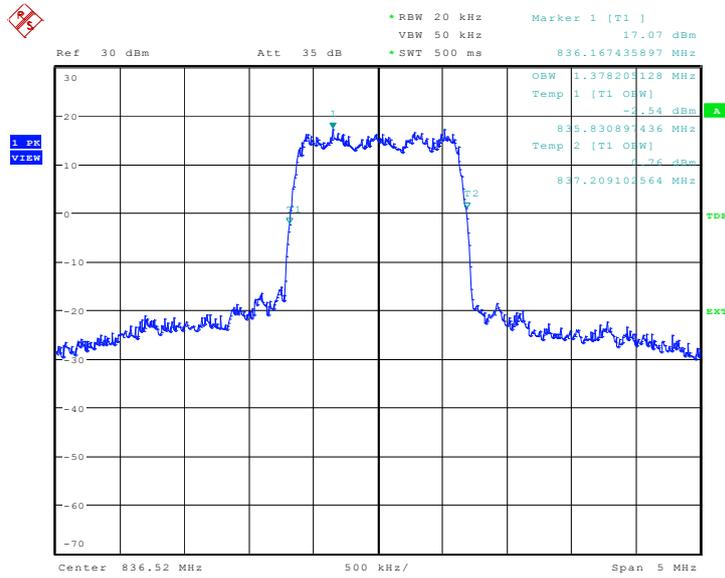
CDMA 800

Channel 1013-Occupied Bandwidth (-26dBc BW)



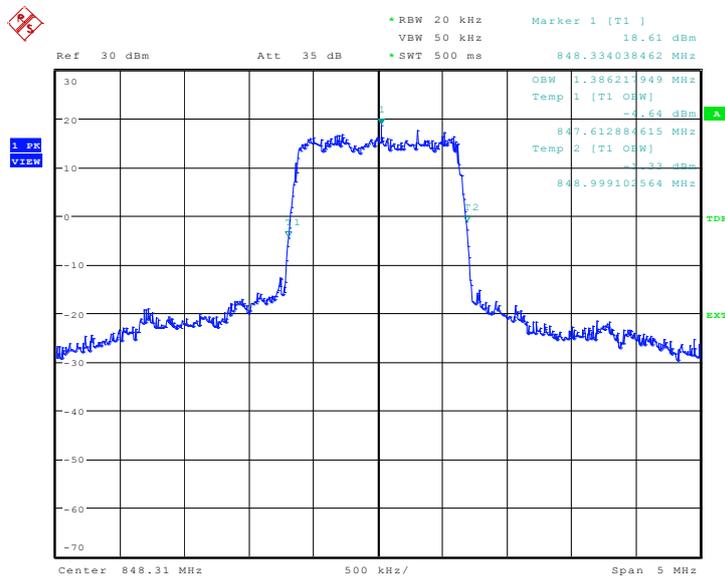
Date: 12.FEB.2010 00:36:08

Channel 384-Occupied Bandwidth (-26dBc BW)



Date: 12.FEB.2010 00:35:43

Channel 777-Occupied Bandwidth (-26dBc BW)



Date: 12.FEB.2010 00:35:20

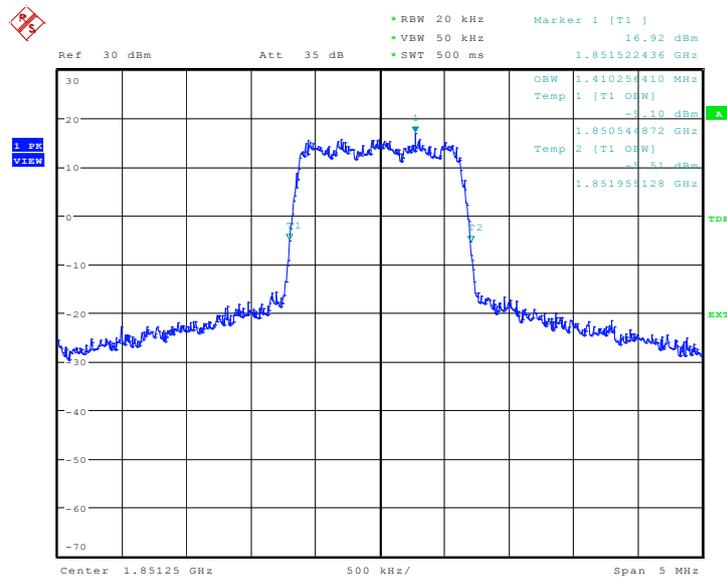
CDMA 1900 (-26dBc)

Channel	Occupied Bandwidth (-26dBc BW)(MHz)
25	1.410
600	1.394
1175	1.394

ANALYZER SETTINGS: RBW=20 kHz, VBW=50 kHz

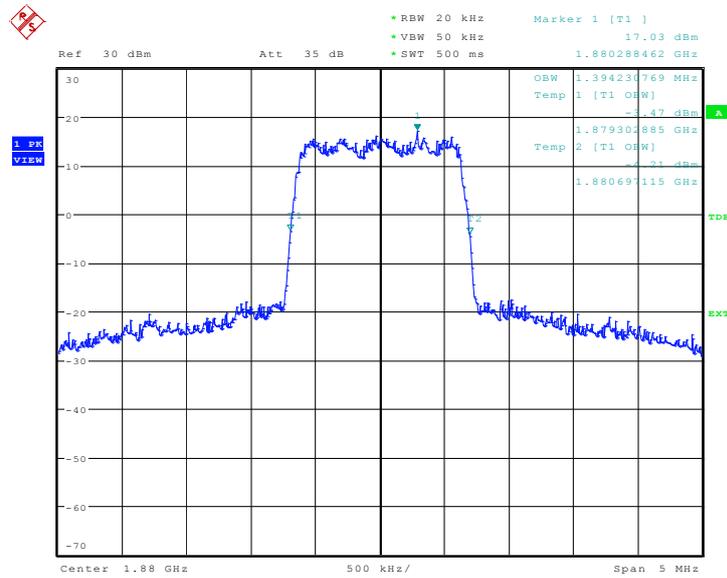
CDMA 1900

Channel 25-Occupied Bandwidth (-26dBc BW)



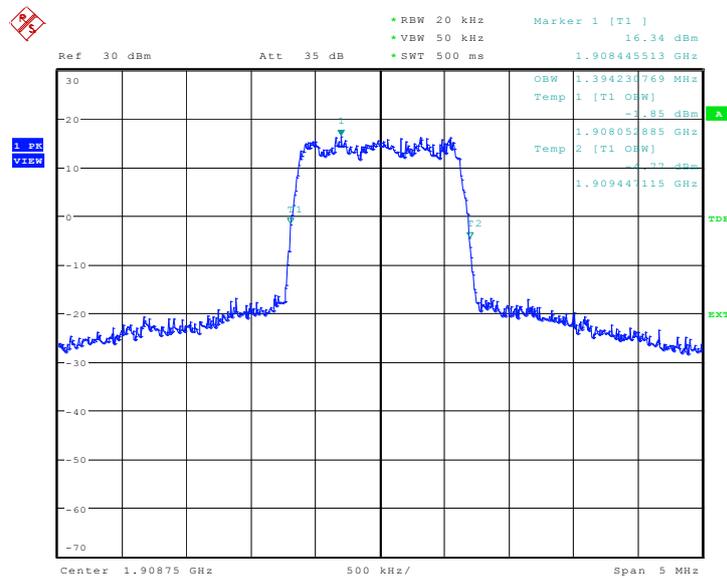
Date: 12.FEB.2010 00:54:03

Channel 600-Occupied Bandwidth (-26dBc BW)



Date: 12.FEB.2010 00:53:31

Channel 1175-Occupied Bandwidth (-26dBc BW)

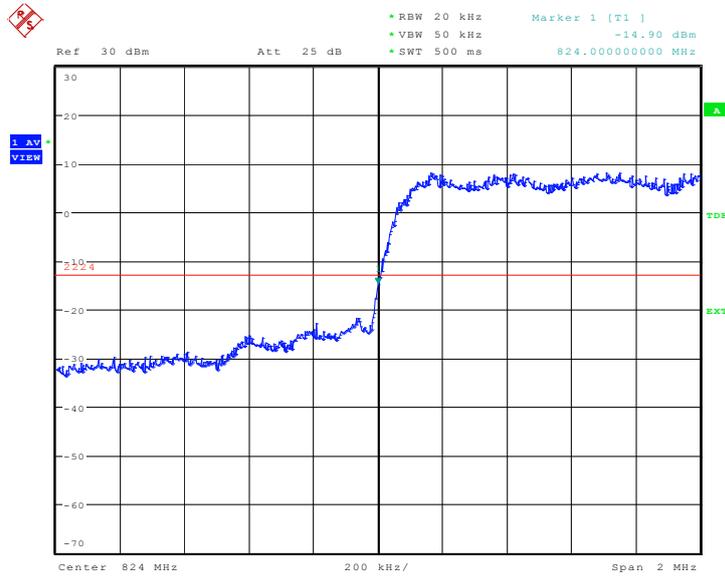


Date: 12.FEB.2010 00:53:08

A.7 BAND EDGE COMPLIANCE **(§22.917(b)/§24.238(b))**

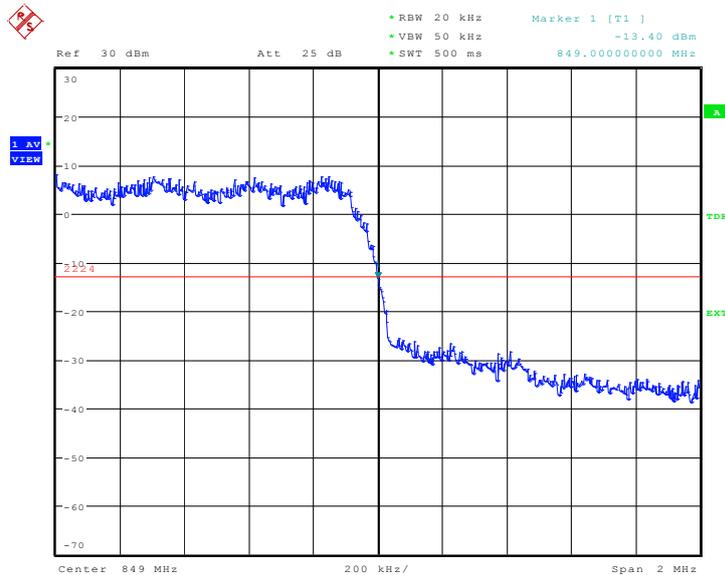
CDMA 800

BAND EDGE BLOCK-Channel 1013



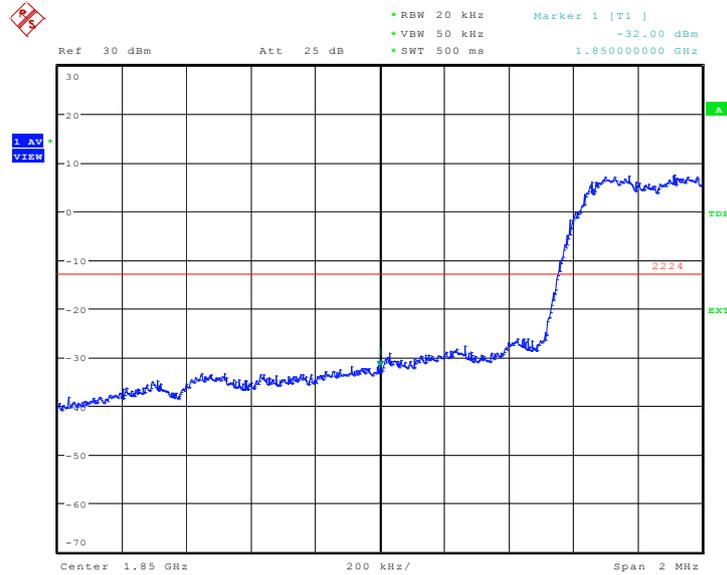
Date: 12.FEB.2010 00:42:44

BAND EDGE BLOCK-Channel 777



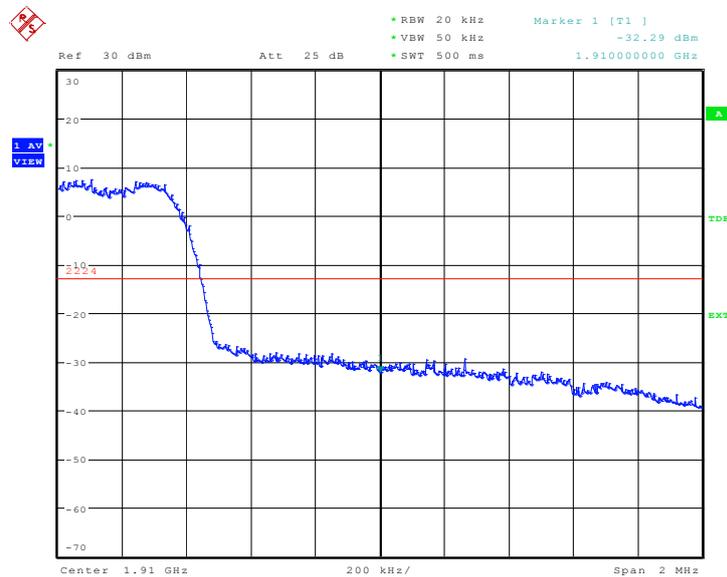
Date: 12.FEB.2010 00:45:29

CDMA 1900
BAND EDGE BLOCK-Channel 25



Date: 12.FEB.2010 00:49:59

BAND EDGE BLOCK-Channel 1175



Date: 12.FEB.2010 00:50:24

A.8 CONDUCTED SPURIOUS EMISSION (§2.1057/§22.917/§24.238)

A.8.1 Measurement Method

The following steps outline the procedure used to measure the conducted emissions from the EUT.

1. Determine frequency range for measurements: From CFR 2.1057 the spectrum should be investigated from the lowest radio frequency generated in the equipment up to at least the 10th harmonic of the carrier frequency.
2. Determine EUT transmit frequencies: below outlines the band edge frequencies pertinent to conducted emissions testing.

CDMA 800 Transmitter

Channel	Frequency (MHz)
1013	824.70
384	836.52
777	848.31

CDMA 1900 Transmitter

Channel	Frequency (MHz)
25	1851.25
600	1880.00
1175	1909.75

A. 8.2 Measurement Limit

Sec. 24.238 Emission Limits.

(a) On any frequency outside frequency band of the USPCS spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least $43+10\text{Log}(P)$ dB. For all power levels +30 dBm to 0 dBm, this becomes a constant specification limit of -13 dBm.

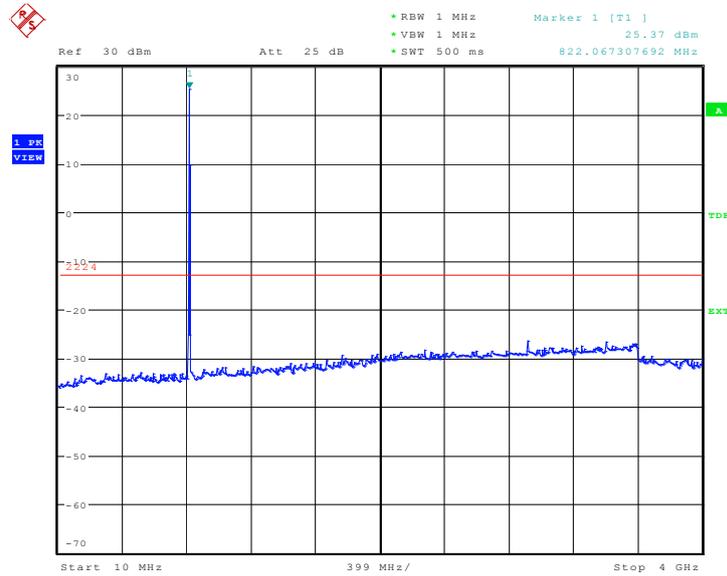
A. 8.3 Measurement result

CDMA 800

A.8.3.1 Channel 1013: 30MHz – 4GHz

Spurious emission limit –13dBm.

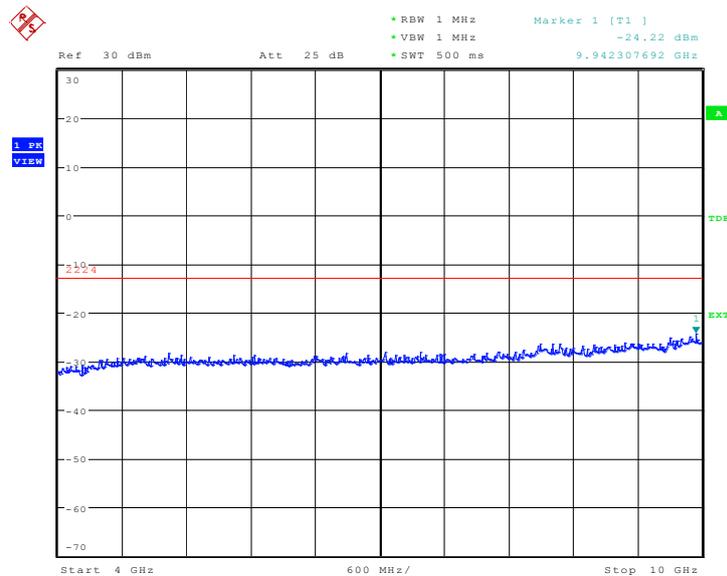
NOTE: peak above the limit line is the carrier frequency.



Date: 28..JAN.2010 05:43:42

A.8.3.2 Channel 1013: 4GHz – 10GHz

Spurious emission limit –13dBm.

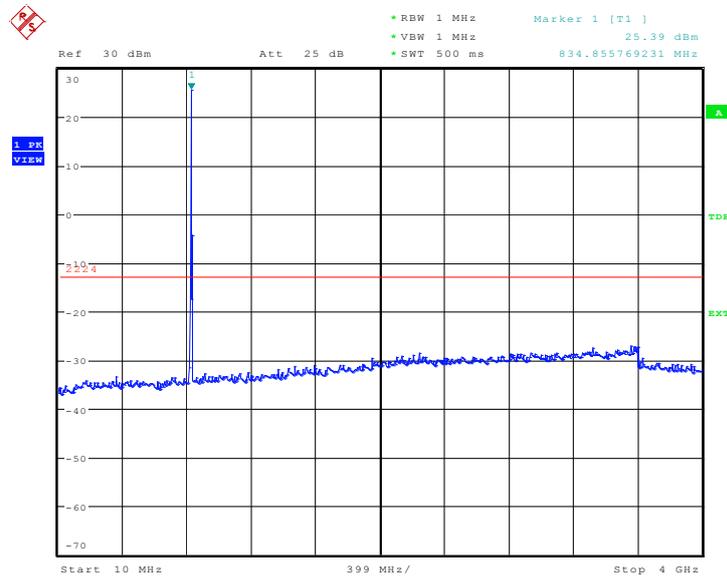


Date: 28..JAN.2010 05:44:04

A.8.3.3 Channel 384: 30MHz – 4GHz

Spurious emission limit –13dBm

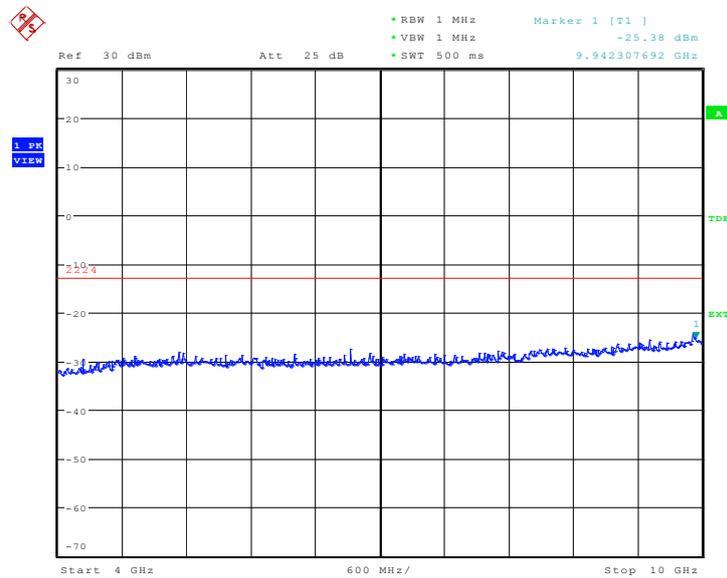
NOTE: peak above the limit line is the carrier frequency.



Date: 28.JAN.2010 05:44:42

A.8.3.4 Channel 384: 4GHz –10GHz

Spurious emission limit –13dBm

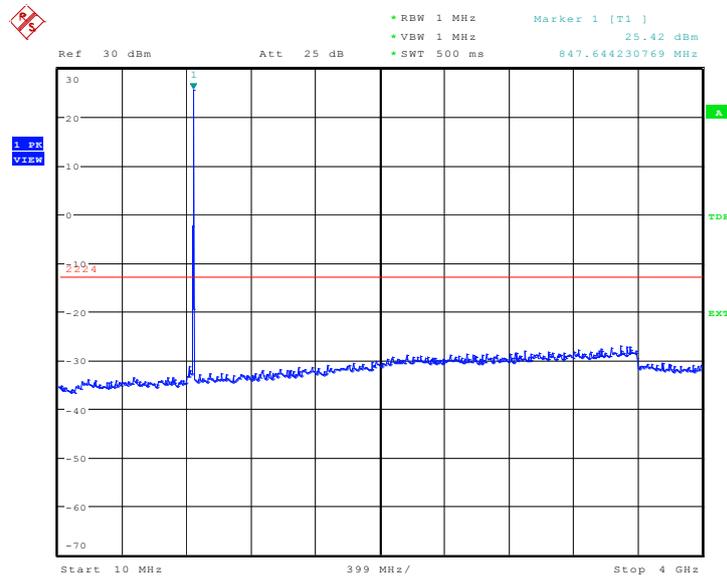


Date: 28.JAN.2010 05:44:26

A.8.3.5 Channel 777: 30MHz – 4GHz

Spurious emission limit –13dBm.

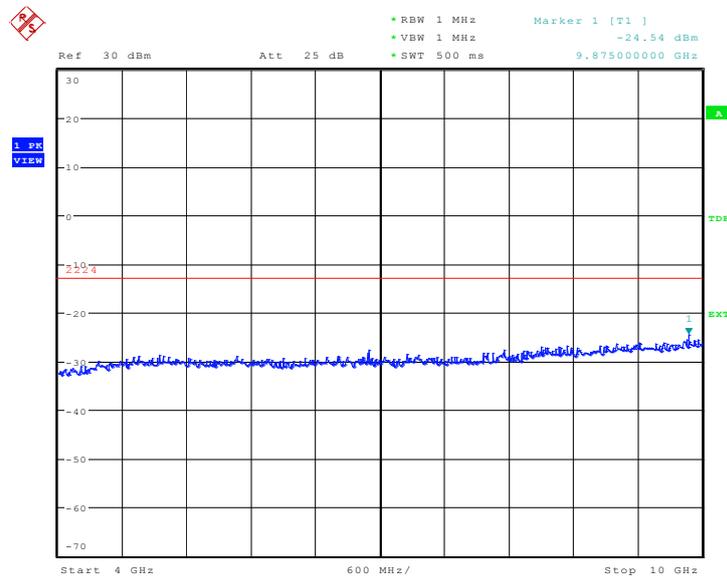
NOTE: peak above the limit line is the carrier frequency.



Date: 28.JAN.2010 05:45:02

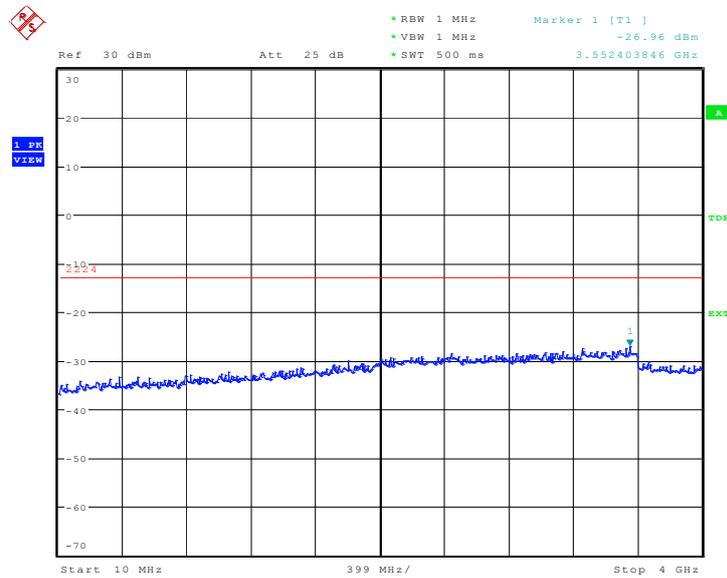
A.8.3.6 Channel 777: 4GHz – 10GHz

Spurious emission limit –13dBm.



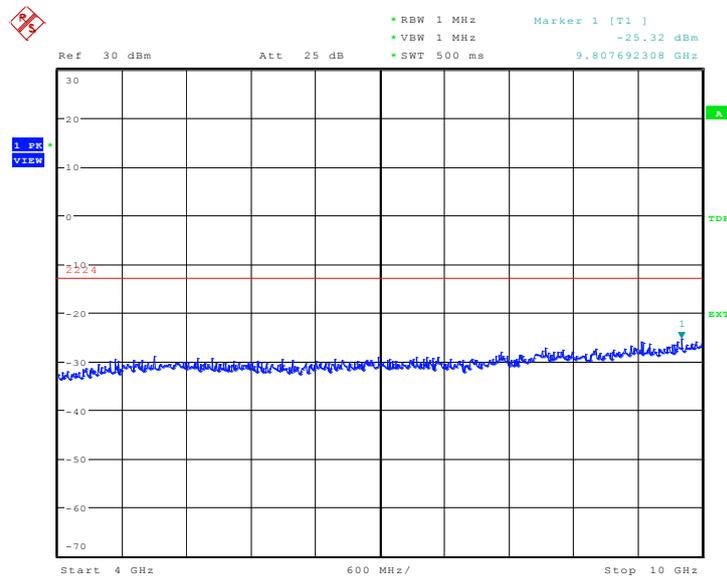
Date: 28.JAN.2010 05:45:17

A.8.3.7 Idle mode: 30MHz – 4GHz
Spurious emission limit –13dBm.



Date: 28.JAN.2010 05:56:27

A.8.3.8 Idle mode: 4GHz – 10GHz
Spurious emission limit –13dBm.



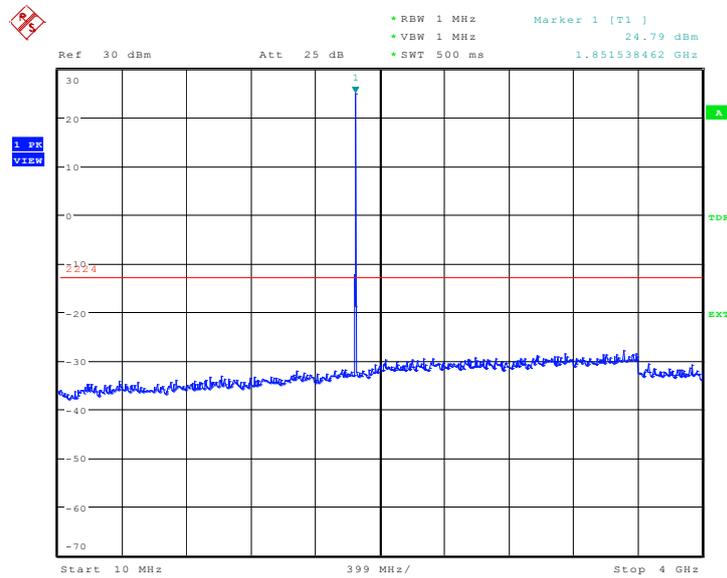
Date: 28.JAN.2010 05:56:49

CDMA 1900

A. 8.3.9 Channel 25: 30MHz – 4GHz

Spurious emission limit –13dBm.

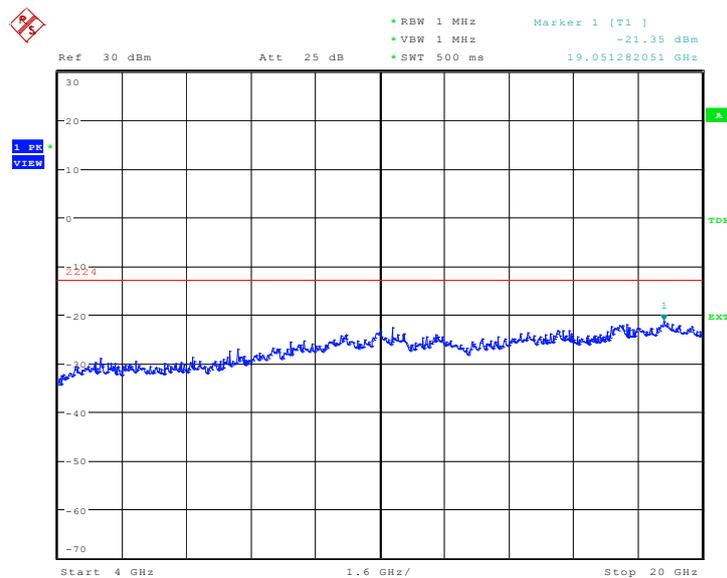
NOTE: peak above the limit line is the carrier frequency.



Date: 28..JAN.2010 06:16:04

A. 8.3.10 Channel 25: 4GHz – 20GHz

Spurious emission limit –13dBm.

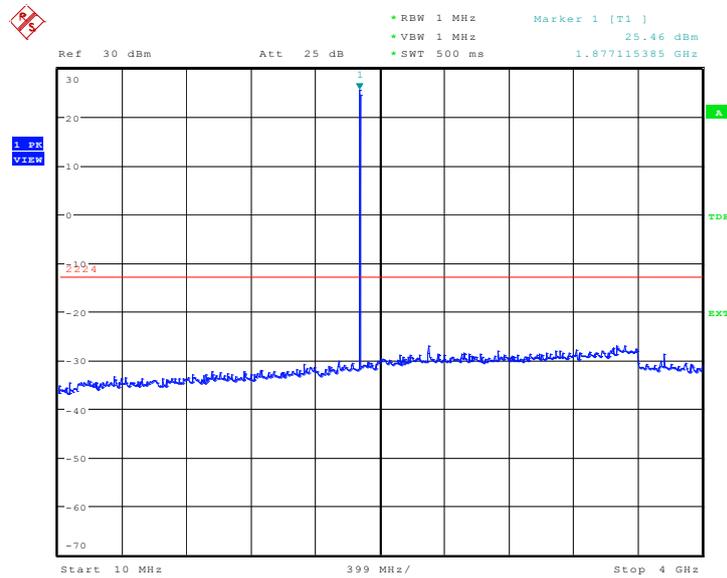


Date: 28..JAN.2010 06:16:24

A. 8.3.11 Channel 600: 30MHz – 4GHz

Spurious emission limit –13dBm

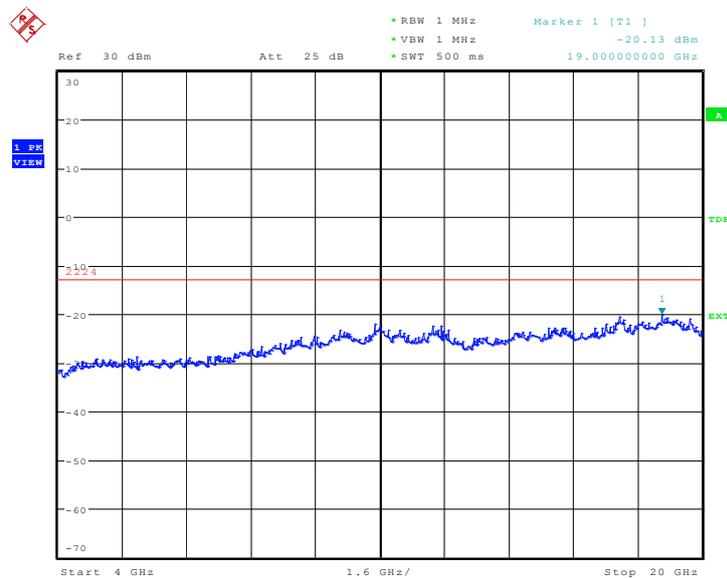
NOTE: peak above the limit line is the carrier frequency.



Date: 28.JAN.2010 06:17:13

A. 8.3.12 Channel 600: 4GHz –20GHz

Spurious emission limit –13dBm

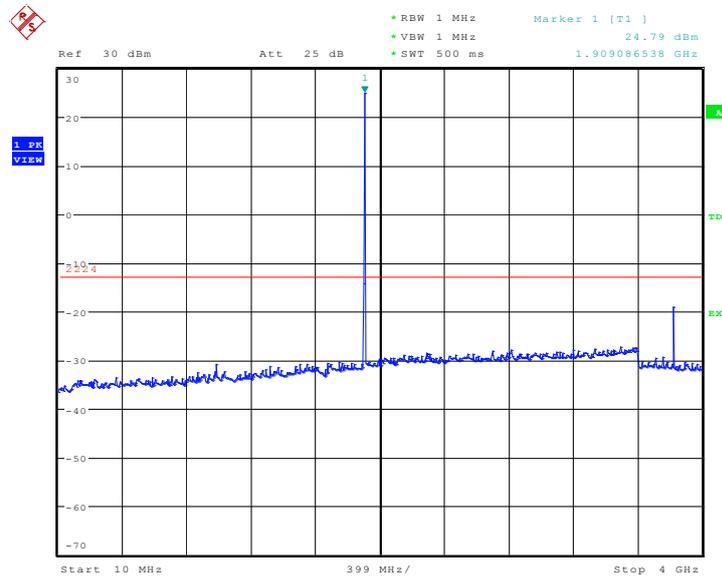


Date: 28.JAN.2010 06:16:47

A. 8.3.13 Channel 1175: 30MHz – 4GHz

Spurious emission limit -13dBm.

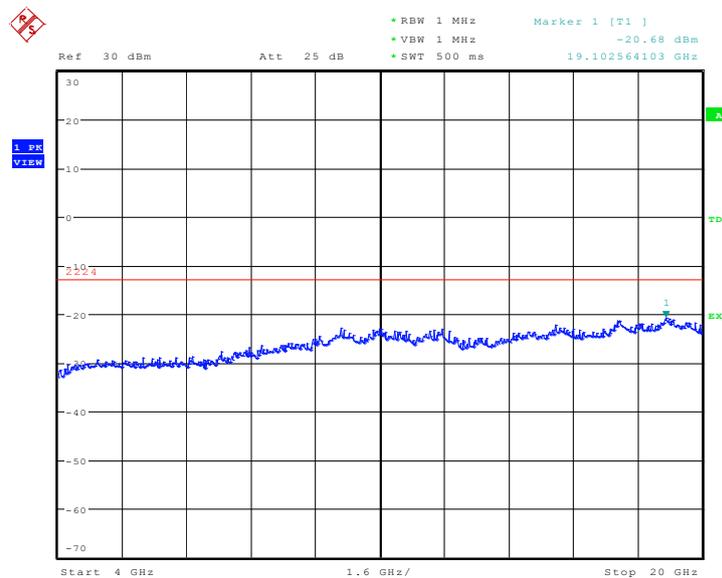
NOTE: peak above the limit line is the carrier frequency.



Date: 28.JAN.2010 06:17:42

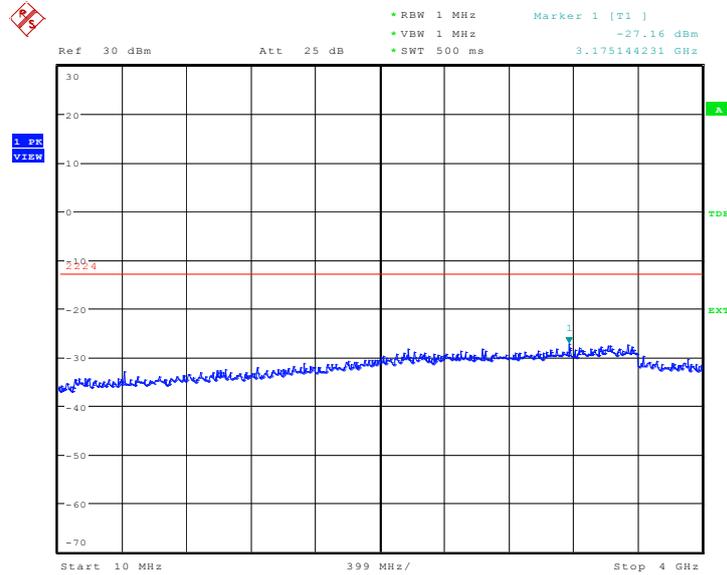
A. 8.3.14 Channel 1175: 4GHz – 20GHz

Spurious emission limit -13dBm.



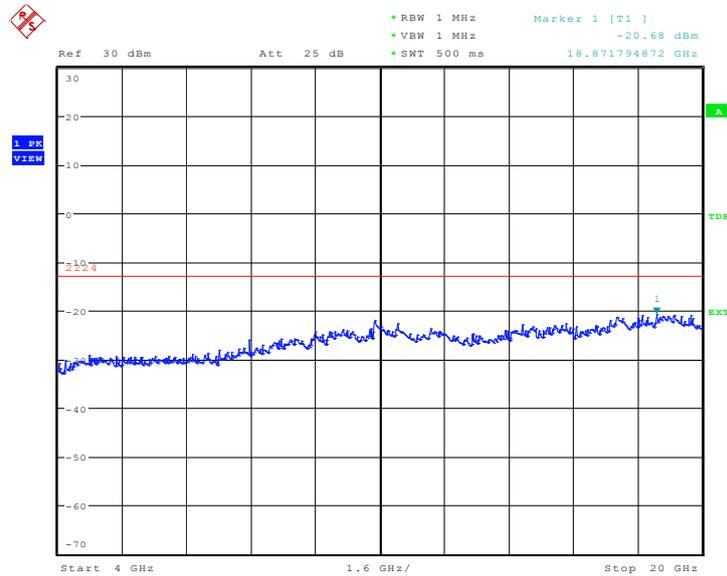
Date: 28.JAN.2010 06:17:59

A. 8.3.15 Idle mode: 30MHz – 4GHz
Spurious emission limit –13dBm.



Date: 28.JAN.2010 06:18:48

A. 8.3.16 Idle mode: 4GHz – 20GHz
Spurious emission limit -13dBm.



Date: 28.JAN.2010 06:18:22

END OF REPORT