TEST REPORT

REPORT NUMBER: I08GE4343-FCC-EMC

ON

Type of Equipment:	**GSM/GPRS/EDGE/WCDMA/HSDPA Data Card**
Type of Designation:	**One Touch X030**
Manufacturer:	**T&A Mobile Phones**

ACCORDING TO

FCC CFR Part 2, FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS; e-CFR, March 23, 2006

PART 22, PUBLIC MOBILE SERVICES (Oct 1, 02 Edition)

PART 24, PERSONAL COMMUNICATIONS SERVICES (Oct 1, 97 Edition)

China Telecommunication Technology Labs.

Month date, year
Feb, 3, 2008

Signature

He Guili
Director

FCC ID:	RAD081
Report Date:	2008-2-3

Test Firm Name:	China Telecommunication Technology Labs
Registration Number:	840587

Statement

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported tests were carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47 Parts 2, 22, and 24. The sample tested was found to comply with the requirements defined in the applied rules.

CONTENTS

1 General Information

1.1 Notes

All reported tests were carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47 Parts 2, 22 and 24.

The test results of this test report relate exclusively to the item(s) tested as specified in section 2.

The following deviation from, additions to, or exclusions from the test specifications have been made. See Annex C.

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1.2 Testers

Name: Li Dongjin

Position: Engineer

Department: Department of EMC test

Signature: 

Name: Li Guoqing

Position: Engineer

Department: Department of EMC test

Signature: 李国庆

Name: Yuan Yuan

Position: Engineer

Department: Department of EMC test

Signature: 

Name: Lv Ke

Position: Engineer

Department: Department of EMC test

Signature: 

Editor of this test report:

Name:	Li Guoqing
Position:	Engineer
Department:	Department of EMC test
Date:	2008-2-3
Signature:	李国庆

Technical responsibility for area of testing:

Name:	Zou Dongyi
Position:	Manager
Department:	Department of EMC test
Date:	2008.2.3
Signature:	邹东屹

1.3 Testing Laboratory information

1.3.1 Location

Name:	China Telecommunication Technology Labs.
Address:	No. 11, Yue Tan Nan Jie, Xi Cheng District BEIJING P. R. CHINA, 100083
Tel:	+86 10 68094053
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Email:	emc@chinattl.com

1.3.2 Details of accreditation status

Accredited by:	China National Accreditation Service for Conformity Assessment (CNAS)
Registration number:	CNAS Registration No. CNAS L0570
Standard:	ISO/IEC 17025

1.3.3 Test location, where different from section 1.3.1

Name:	------
Street:	------
City:	------
Country:	------
Telephone:	------
Fax:	------
Postcode:	------

1.4 Details of applicant or manufacturer

1.4.1 Applicant

Name:	T&A Mobile Phones
Address:	4/F, South Building, No.2966, Jinke Road, Zhangjiang High-Tech Park, Pudong, Shanghai, 201203, P.R.China
Country:	China
Telephone:	+86-21-61460888
Fax:	+86-21-61460600
Contact:	Kong Ying
Telephone:	+86-21-61460883
Email:	ying.kong@jrdcom.com

1.4.2 Manufacturer (if different from applicant in section 1.4.1)

Name:	--
Address:	--
City:	--
Country:	--

1.4.3 Manufactory (if different from applicant in section 1.4.1)

Name:	--
Address:	--
City:	--
Country:	--

2 Test Item

2.1 General Information

Manufacturer: T&A Mobile Phones

Name: GSM/GPRS/EDGE/WCDMA/HSDPA Data Card

Model Number: One Touch X030

Serial Number: --

Production Status: Production

Receipt date of test item: 2007-09-07

2.2 Outline of EUT

EUT is a GSM/GPRS/EDGE/WCDMA/HSDPA Data Card.

2.3 Modifications Incorporated in EUT

The EUT has not been modified from what is described by the brand name and unique type identification stated above.

2.4 Equipment Configuration

Equipment configuration list:

Item	Generic Description	Manufacturer	Type	Serial No.	Remarks
A	Data card	T&A Mobile Phones	One Touch X030	--	None

Cables:

Item	Cable Type	Manufacturer	Length	Shield	Quantity	Remarks
1	USB cable	Unknown	1.0 m	No	1	None

2.5 Other Information

(a)GPRS modulation is GMSK.
EDGE modulation is 8PSK.
WCDMA modulation is QPSK.
HSDPA modulation is QPSK.

(b) Emission Designator of GPRS: 250KGXW.
Emission Designator of EDGE: 248KG7W
Emission Designator of WCDMA: 4M40F9W
Emission Designator of HSDPA: 4M70F9W

3 Summary of Test Results

A brief summary of the tests carried out is shown as following.

GPRS mode:		
Specification Clause	Name of Test	Result
2.1051, 24.238, 2.1053,22.917	Radiated Spurious Emission	Pass
2.1046,24.232	Radiated RF Power Output	Pass
22.913(a)	Effective Radiated Power (ERP)	Pass
2.1049,22.917(b), 24.238(b)	Occupied Bandwidth	*Note 1
2.1055,22.355, 24.235	Frequency Stability over Temperature Variation	Pass
2.1055,22.355, 24.235	Frequency Stability over Voltage Variation	Pass
2.1046,22.913(a), 24.232(c)	Conducted RF Power Output	Pass
2.1051,22.917,24.238	Conducted spurious emissions	Pass
Note 1: No applicable performance criteria.		

EDGE mode:		
2.1051, 24.238, 2.1053,22.917	Radiated Spurious Emission	Pass
2.1046,24.232	Radiated RF Power Output	Pass
22.913(a)	Effective Radiated Power (ERP)	Pass
2.1049,22.917(b), 24.238(b)	Occupied Bandwidth	*Note 2
2.1055,22.355, 24.235	Frequency Stability over Temperature Variation	Pass
2.1055,22.355, 24.235	Frequency Stability over Voltage Variation	Pass
2.1046,22.913(a), 24.232(c)	Conducted RF Power Output	Pass
2.1051,22.917,24.238	Conducted spurious emissions	Pass
Note 2: No applicable performance criteria.		

WCDMA mode:		
2.1051, 24.238, 2.1053,22.917	Radiated Spurious Emission	Pass
2.1046,24.232	Radiated RF Power Output	Pass
22.913(a)	Effective Radiated Power (ERP)	Pass
2.1049,22.917(b), 24.238(b)	Occupied Bandwidth	*Note 3
2.1055,22.355, 24.235	Frequency Stability over Temperature Variation	Pass
2.1055,22.355, 24.235	Frequency Stability over Voltage Variation	Pass
2.1046,22.913(a), 24.232(c)	Conducted RF Power Output	Pass
2.1051,22.917,24.238	Conducted spurious emissions	Pass
Note 3: No applicable performance criteria.		

HSDPA mode:		
2.1051, 24.238, 2.1053,22.917	Radiated Spurious Emission	Pass
2.1046,24.232	Radiated RF Power Output	Pass
22.913(a)	Effective Radiated Power (ERP)	Pass
2.1049,22.917(b), 24.238(b)	Occupied Bandwidth	*Note 4
2.1055,22.355, 24.235	Frequency Stability over Temperature Variation	Pass
2.1055,22.355, 24.235	Frequency Stability over Voltage Variation	Pass
2.1046,22.913(a), 24.232(c)	Conducted RF Power Output	Pass
2.1051,22.917,24.238	Conducted spurious emissions	Pass
Note 4: No applicable performance criteria.		

4 Test Results of mode

4.1 Radiated Spurious Emission

Specifications:	2.1051, 24.238, 2.1053, 22.917
Date of Tests	2007.09.14, 2007.12.27, 2008.1.8
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Operation Mode	TX on, channel 190 and 661 for GPRS and EDGE mode, And Channel 4175 and 9400 for WCDMA and HSDPA mode
Test Results:	Pass

Test equipment Used:

Asset Number	Description	Manufacturer	Model Number	Serial Number	Cal Due	State
7805	EMI Test Receiver	R/S	ESI26	100211	2009-01-03	Normal
7330	Ultra Broadband Antenna	R/S	HL562	100013	2008-07-24	Normal
7330	Double-Ridged Horn Antenna	R/S	HF906	100037	2008-01-14	Normal
713	Fully-Anechoic Chamber	ETS	11.8m×6.5m×6.3m	--	2010-11-17	Normal
023	Wireless Communications Test Set	Agilent	8960(E5515C)	GB41450323	2008-06-13	Normal
4295	Notebook	Lenovo	T60	2007I23	--	Normal
111835	Wireless Communications Test Set	R&S	CMU200	1100000802	--	Normal

Limit Level Construction:
According to Part 24.238 (a), i.e., 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, so the limit level is:
P(dBm) – (43 + 10 log(P)) dB= -13dBm

Limits for Radiated spurious emissions(UE)	
Frequency range	**Limit Level /Resolution Bandwidth**
30 MHz to 20000 MHz	-13dBm/1MHz

Test Setup:

The EUT was placed in an anechoic chamber, see figure SP. The Wireless Communications Test Set was used to set the TX channel and power level and modulate the TX signal with different bit patterns. The test was done using an automated test system, where all test equipments were controlled by a computer.

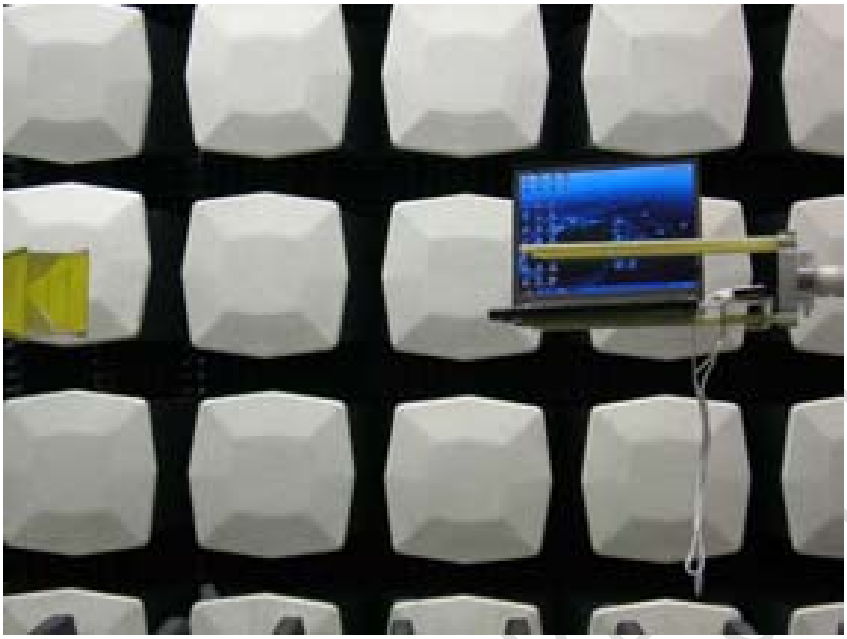


Figure SP

Test Method:

The measurement was performed accordance with section 2.2.12 of ANSI/TIA-603-B-2002: *Land Mobile FM or PM Communications Equipment Measurement and Performance Standards*.

1 The maximum spurious emissions were searched by turning the azimuth of the turntable, shifting the polarization of the measuring antenna and changing the pose of the EUT.

2 Levels of EUT's transmitter harmonics and suspicious signals were recorded.

3 The recorded levels were corrected in the automated test system with the correction factors given by a substitution calibration made before the measurement. The calibration was made separately for vertical and horizontal polarization and the system uses different correction factors depending on the measuring antenna polarization.

4 The corrected values of radiated spurious emissions indicated as EIRP are reported.

Note:

1 The investigated ARFCNs are 190 (836.6 MHz) and 661 (1880.0 MHz) for GPRS and EDGE mode, and the investigated UARFCNs are 4175 (835 MHz) and 9400 (1880 MHz) for WCDMA and HSDPA mode.

2 The investigated frequency range is 30 MHz ~ 18 GHz, including out of band emission and band-edge emission measurements.

Test Results for GPRS mode:

Out of band emission			
Frequency [MHz]	SPU emission [dBm]	EUT pose [H/V]	Antenna Polarization [H/V]
1673.2	-55.3	V	H
1673.2	-56.8	V	V
2509.8	-57.1	V	H
3346.4	-51.9	H	H
4183.0	-56.2	H	H
4183.0	-57.3	V	V
3760	-54.3	H	H
5640	-47.4	V	H
5640	-47.1	H	H
5640	-49.8	V	V
9400	-38.0	V	H
9400	--34.2	H	H
9400	-36.8	V	V
13160	-27.7	V	H
13160	-28.6	H	H
13160	-32.4	V	V
13160	-27.8	T	V

Band-edge emission		
EUT Channel	Frequency [MHz]	Level [dBm]
128 Left band edge	824.00160321	-13.32
251 Right band edge	849.00240481	-16.05
512 Left band edge	1850.000160	-16.67
810 Right band edge	1910.00240	16.00

Test Results for EDGE mode:

Out of band emission			
Frequency [MHz]	SPU emission [dBm]	EUT pose [H/V]	Antenna Polarization [H/V]
1676	－50.59	V	V
2487	-55.29	V	V
8370	-37.46	V	V
9192	-36.61	V	V
1666	-51.80	H	V
2487	-39.36	H	V
10868	-34.68	H	V
11723	-37.32	H	V
1666	-55.88	V	H

7516	-43.17	V	H
8370	-39.92	V	H
9192	-41.48	V	H
10868	-34.19	V	H
16291	-28.45	V	H
9384	-27.70	V	V
17755	-31.50	H	V
9384	-26.54	V	H

Band-edge emission		
EUT Channel	Frequency [MHz]	Level [dBm]
128 Left band edge	824.00160321	-13.03
251 Right band edge	249.00240481	-15.71
512 Left band edge	1850.000160	-14.00
810 Right band edge	1910.000641	-13.47

Test Results for WCDMA mode:

Out of band emission			
Frequency [MHz]	SPU emission [dBm]	EUT pose [H/V]	Antenna Polarization [H/V]
1699	-43.7	V	V
13160	-38.0	V	H

Band-edge emission		
EUT Channel	Frequency [MHz]	Level [dBm]
4132 Left band edge	823.9859719	-15.24
4233 Right band edge	849.04609218	-13.56
9662 Left band edge	1850.01202	-14.45
9938 Right band edge	1910.01002	-16.15

Test Results for HSDPA mode:

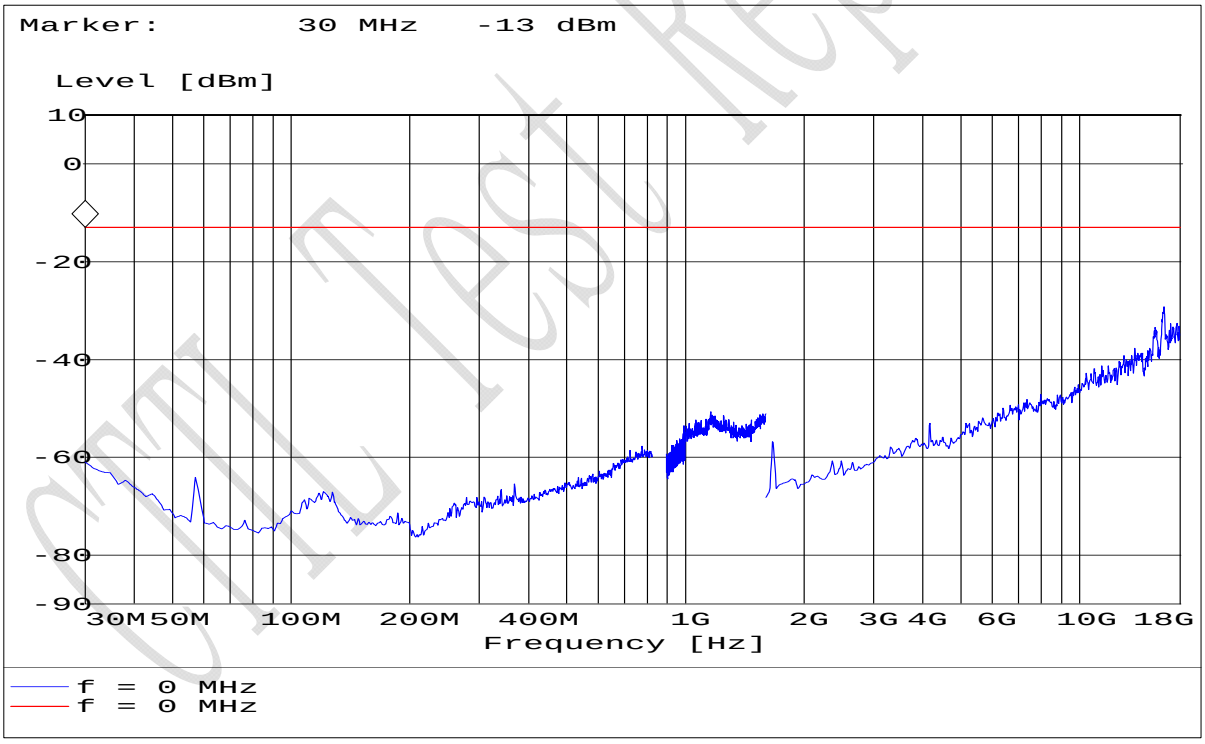
Out of band emission			
Frequency [MHz]	SPU emission [dBm]	EUT pose [H/V]	Antenna Polarization [H/V]
1666	-58.82	V	V
2487	-57.29	V	V
16390	-27.58	V	V
1666	-61.49	H	V
2487	-53.06	H	V
16291	-28.25	H	V
1666	-58.13	V	H
2487	-54.10	V	H

16324	-27.61	V	H
1666	-59.59	H	H
2487	-54.82	H	H
16324	-29.77	H	H
3742	-50.88	H	V
3742	-51.22	H	H

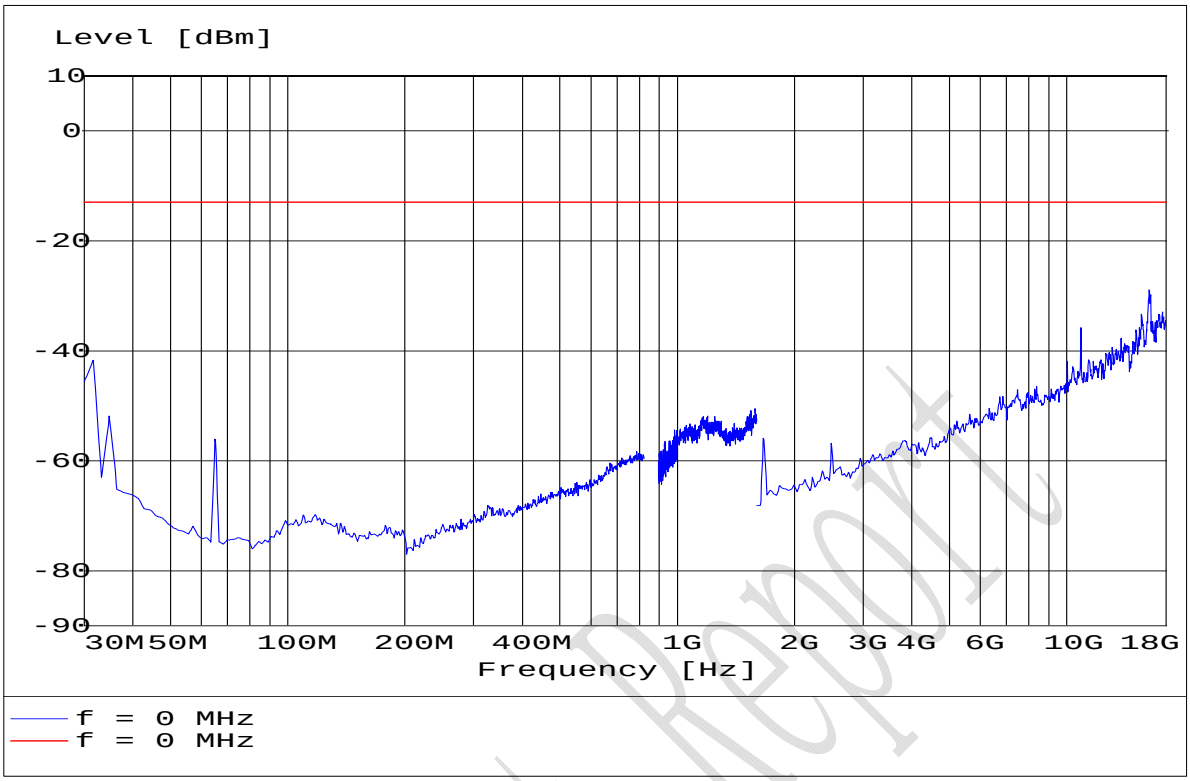
Band-edge emission		
EUT Channel	Frequency [MHz]	Level [dBm]
4132 Left band edge	824.03006012	-17.52
4233 Right band edge	848.98597194	-18.18
9662 Left band edge	1850.01002	-14.75
9938 Right band edge	1910.02605	-15.75

Graphical results:

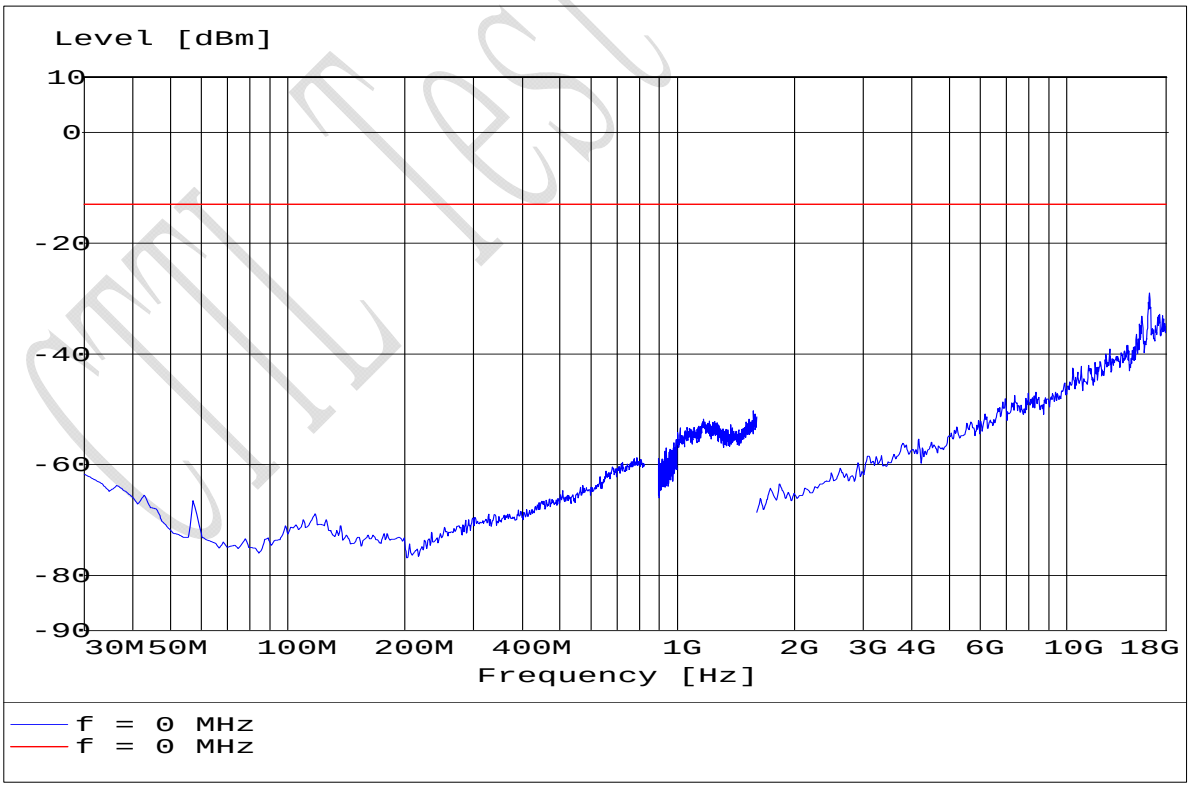
Graphical results of GPRS mode:



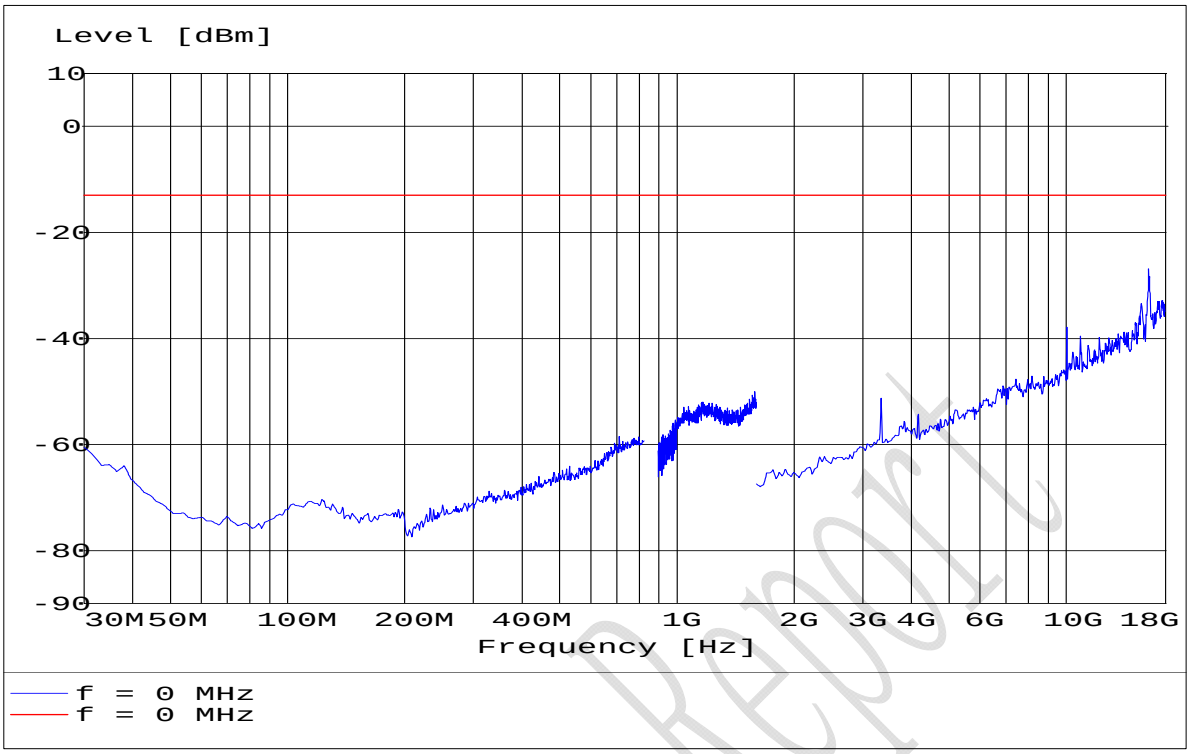
S190VF for GPRS mode



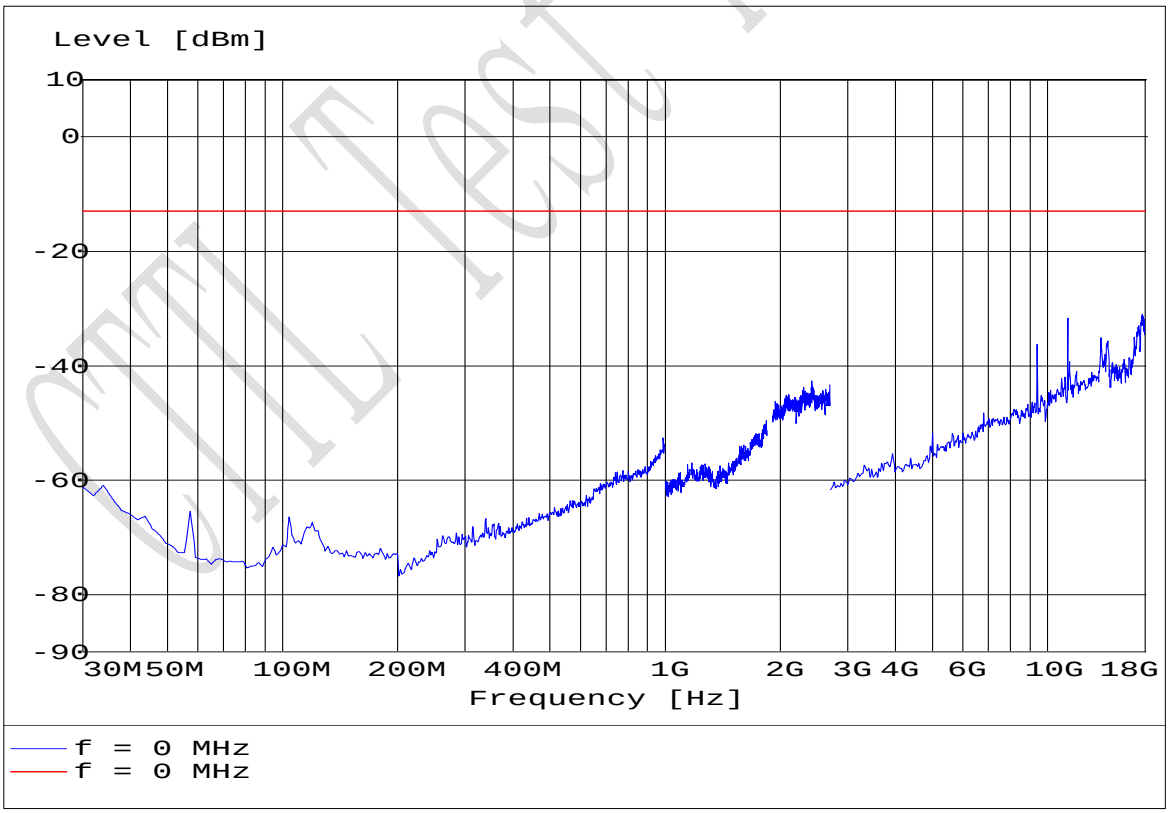
S190HF for GPRS mode



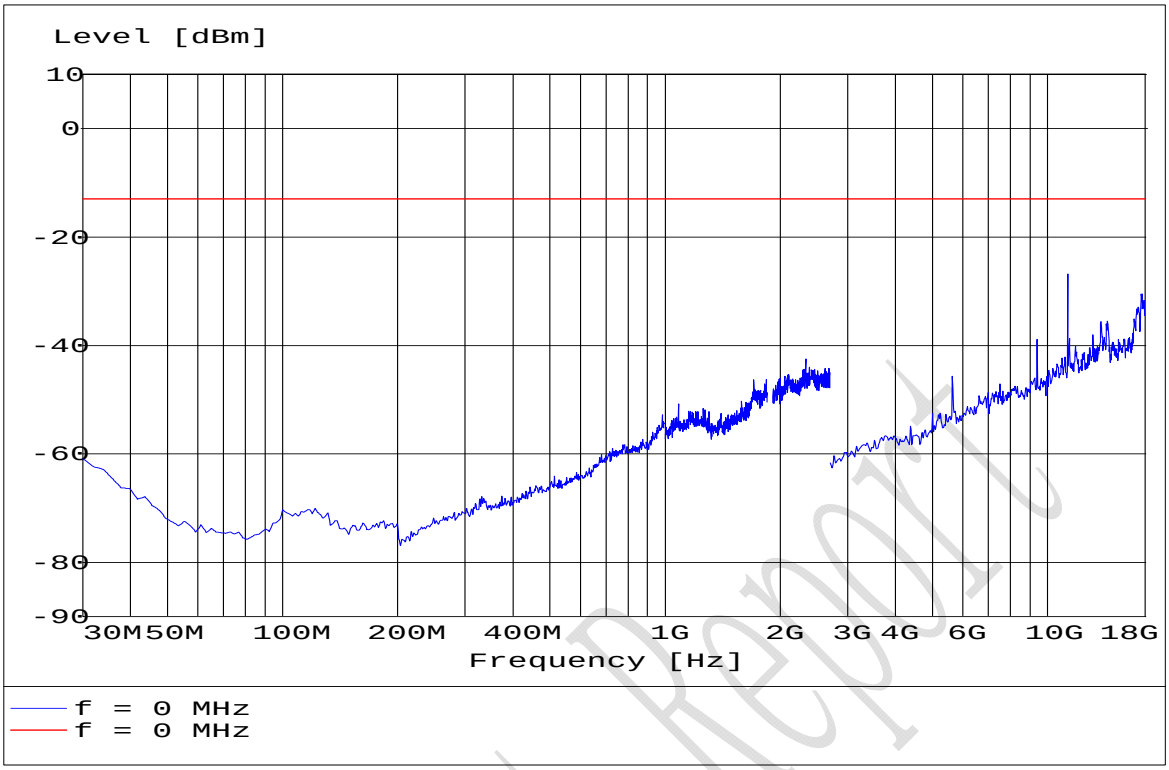
S190VT for GPRS mode



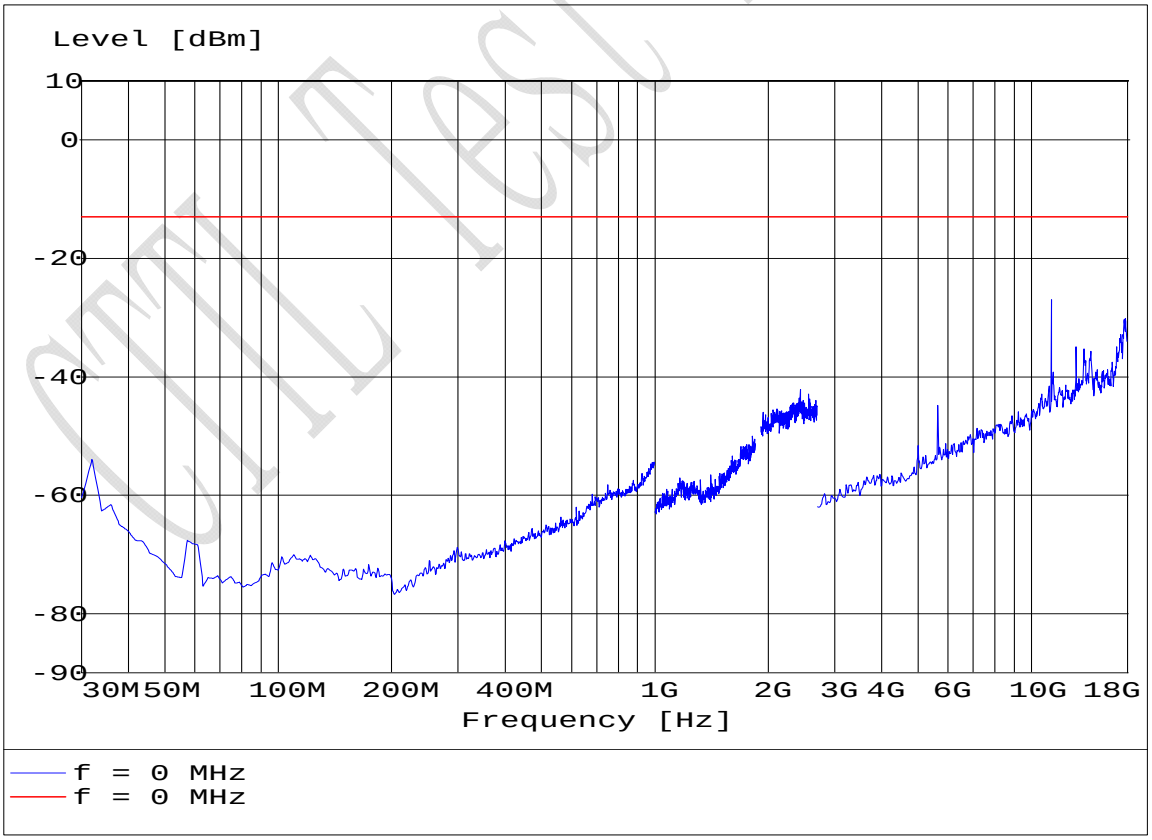
S190HT for GPRS mode



S661VF for GPRS mode



S661HF for GPRS mode



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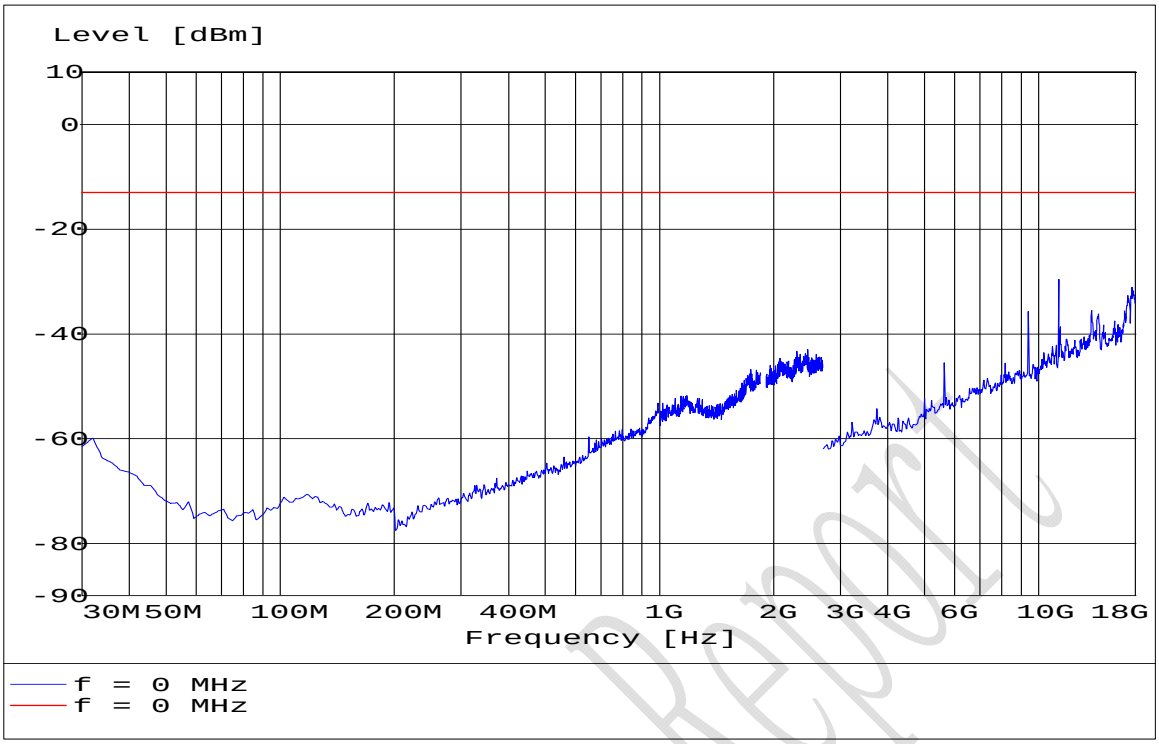
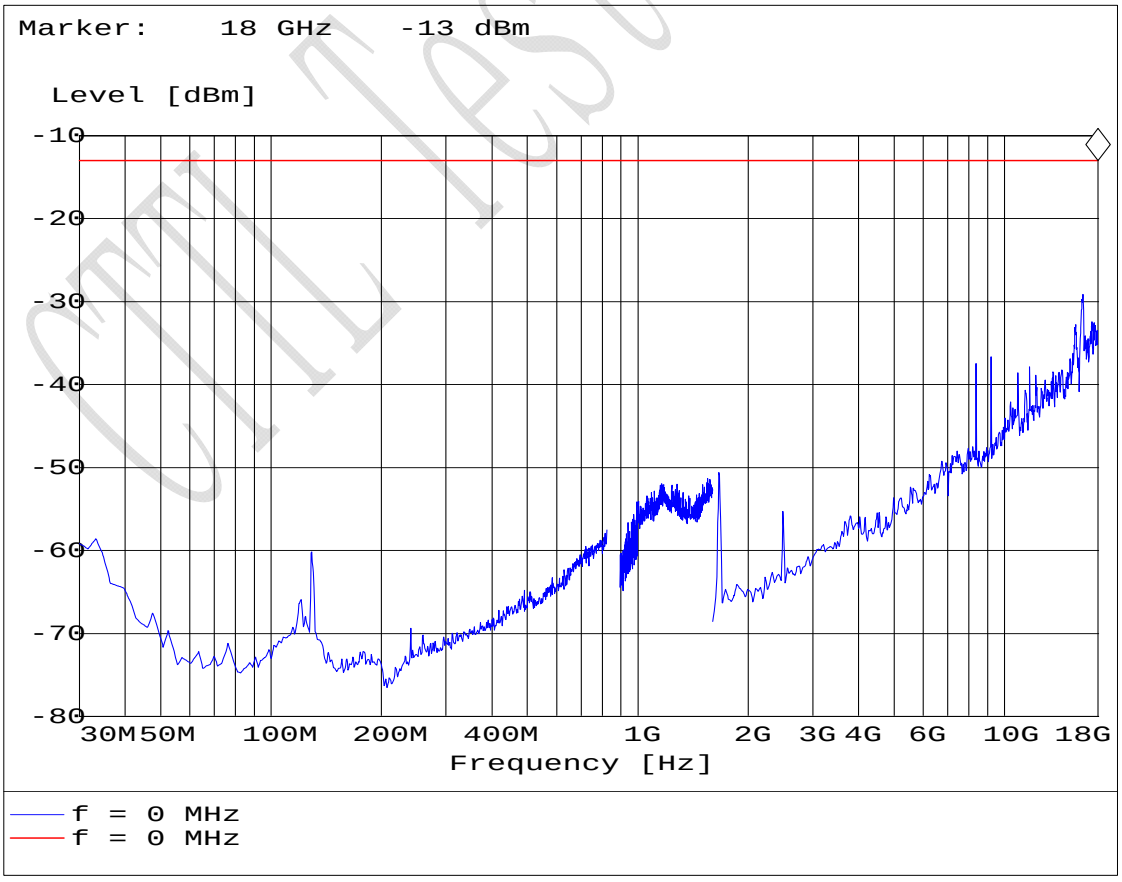
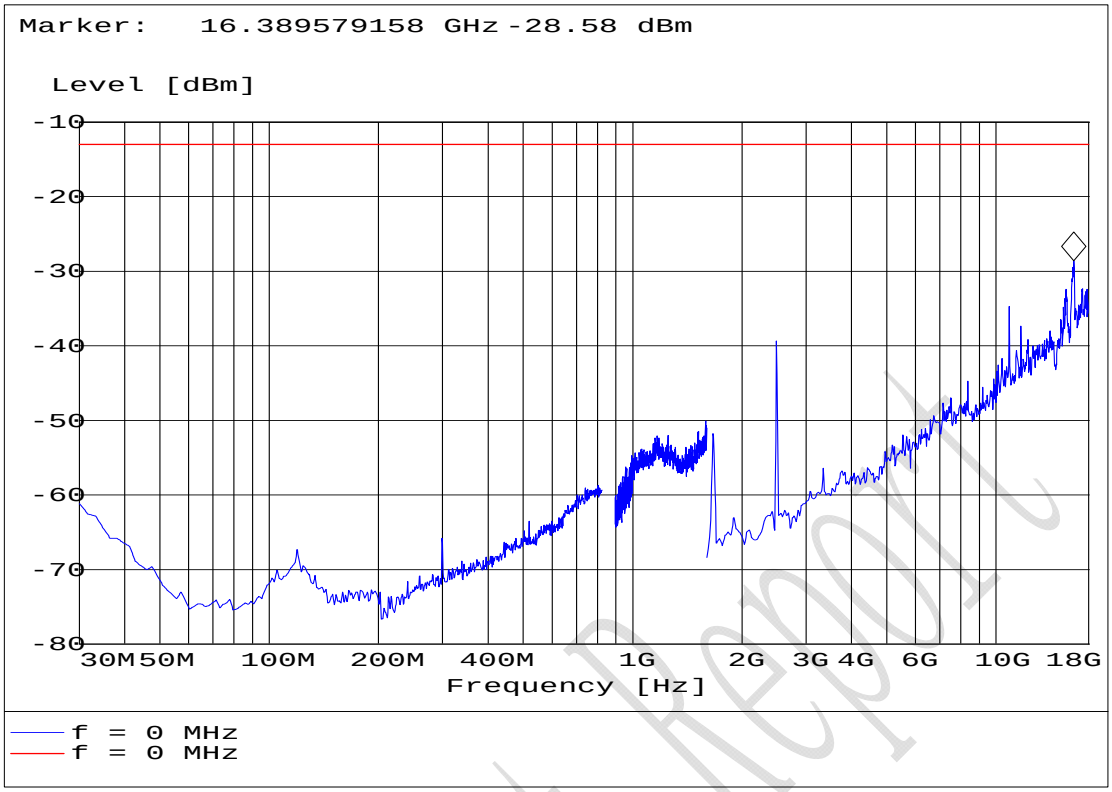


S661HT for GPRS mode

Graphical results of EDGE mode:



S190VF for EDGE mode



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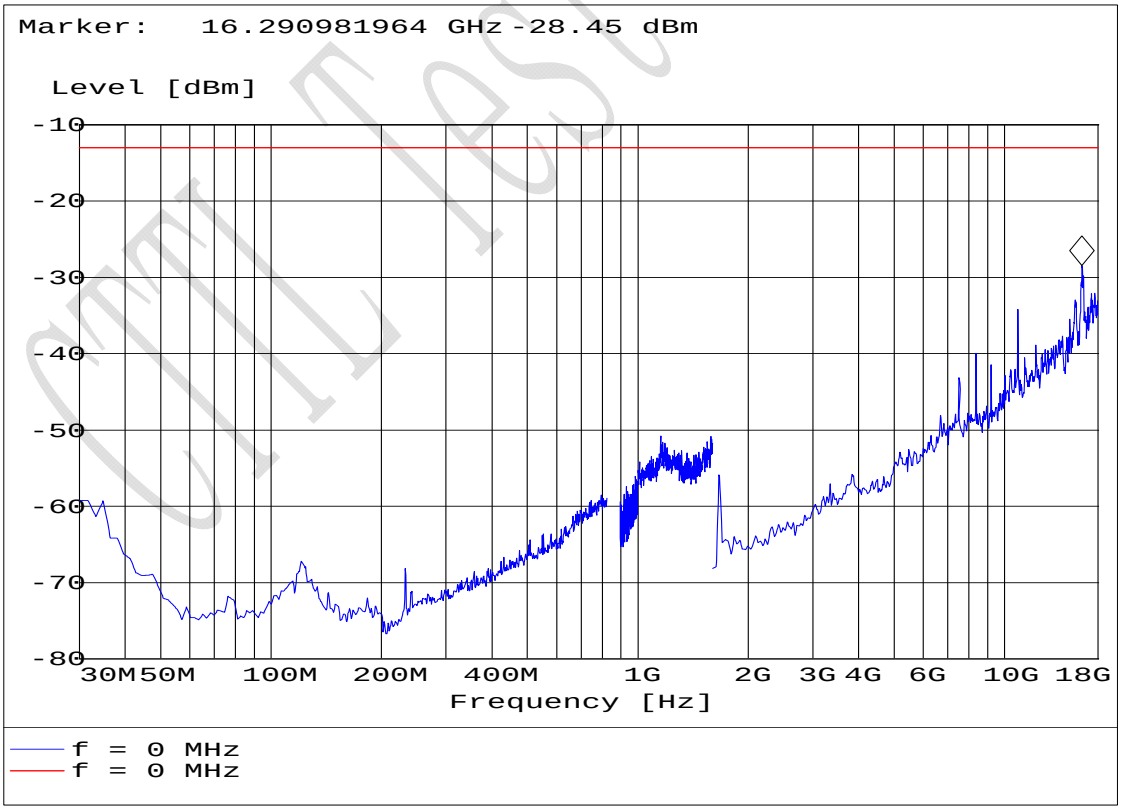
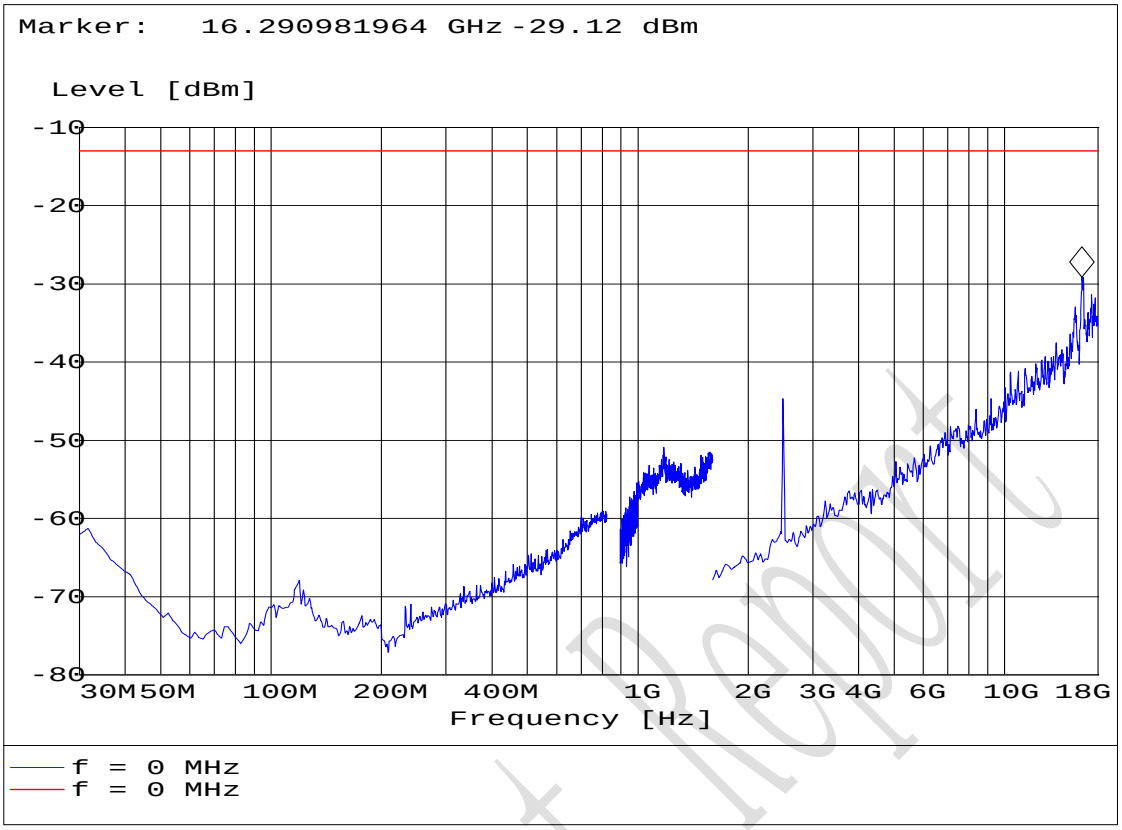
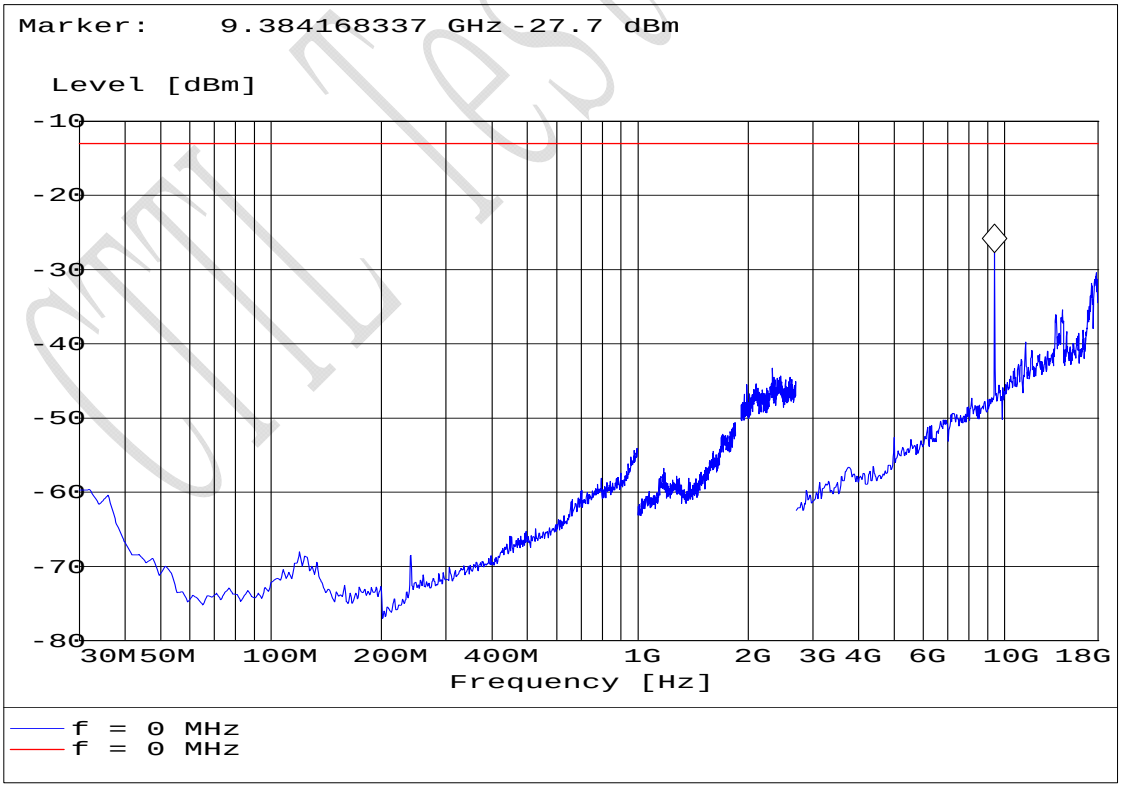


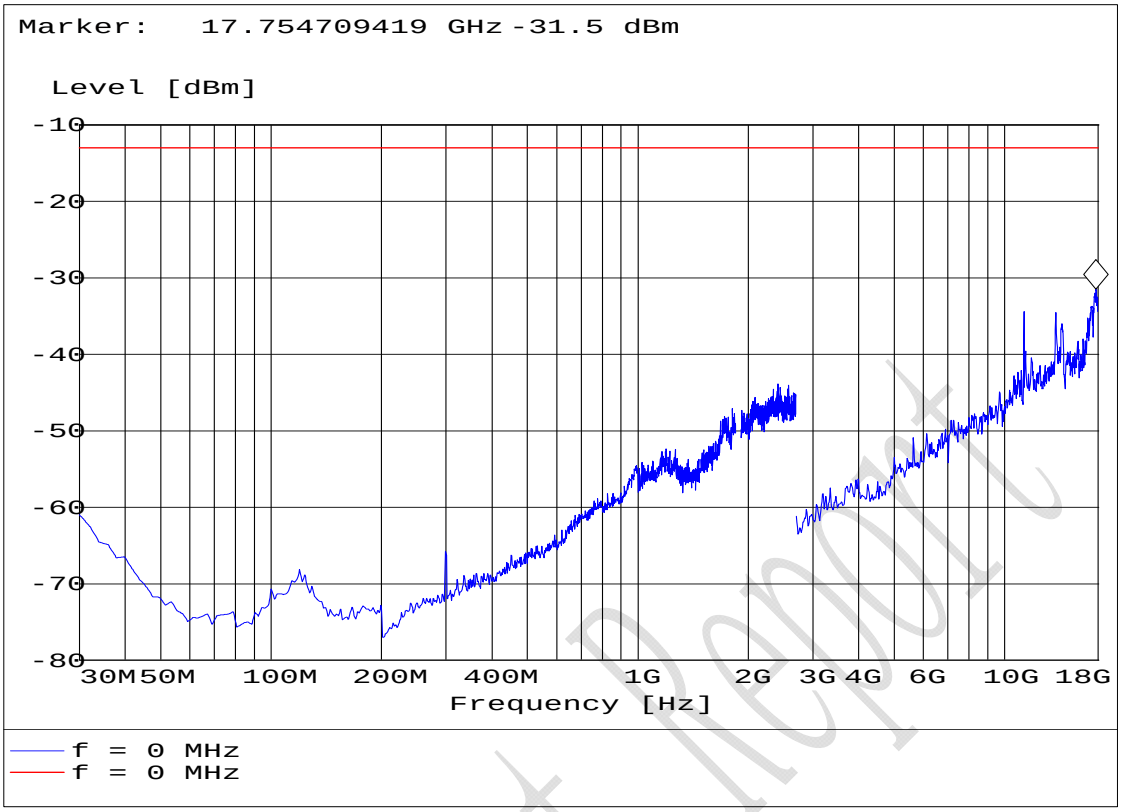
S190VT for EDGE mode



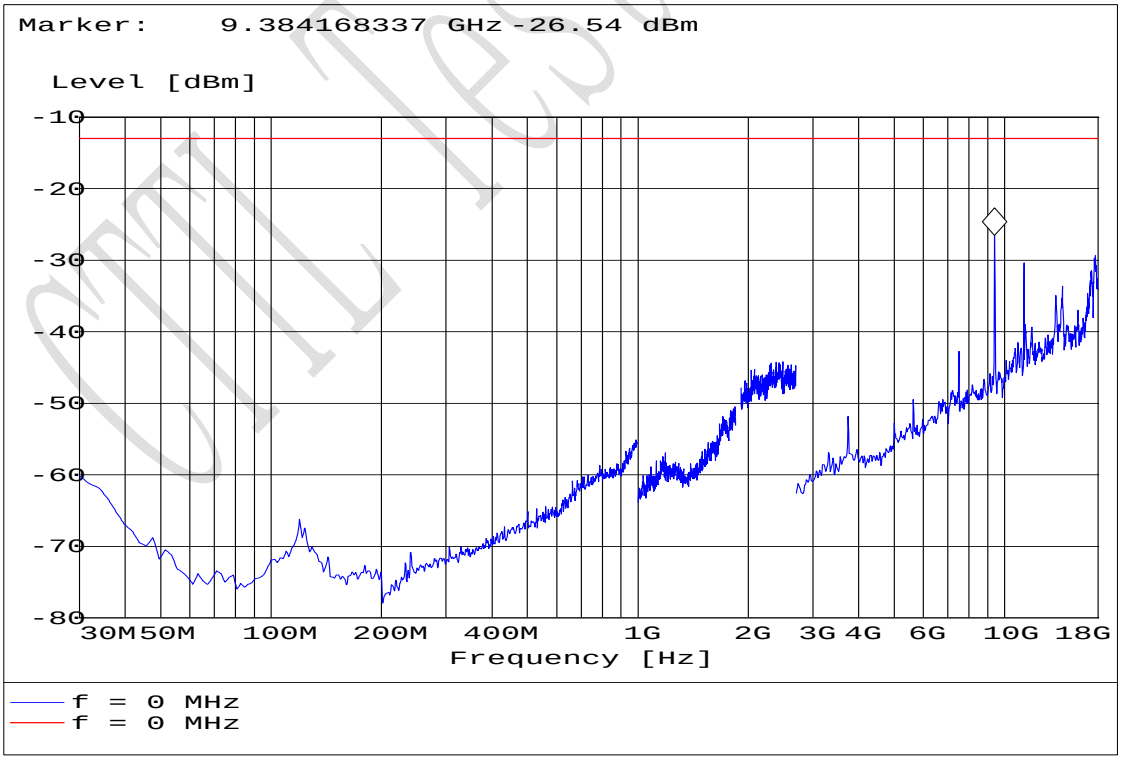
S190HT for EDGE mode



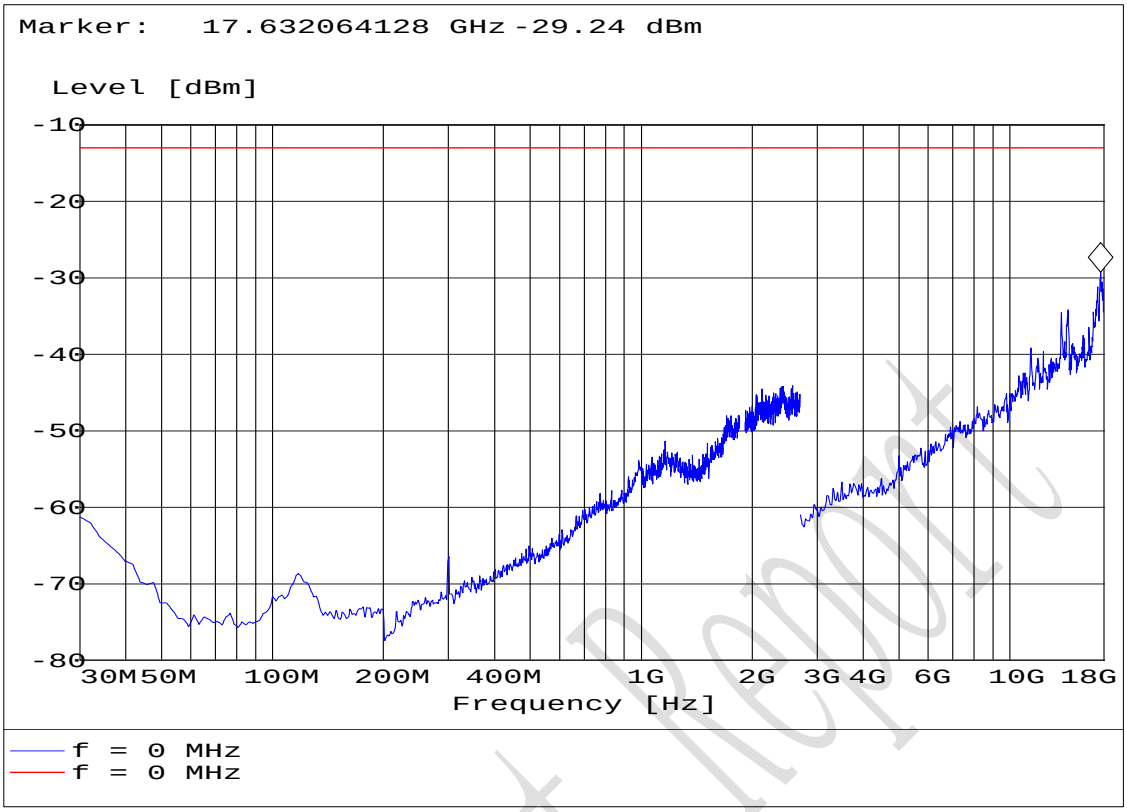
S661VF for EDGE mode



S661HF for EDGE mode

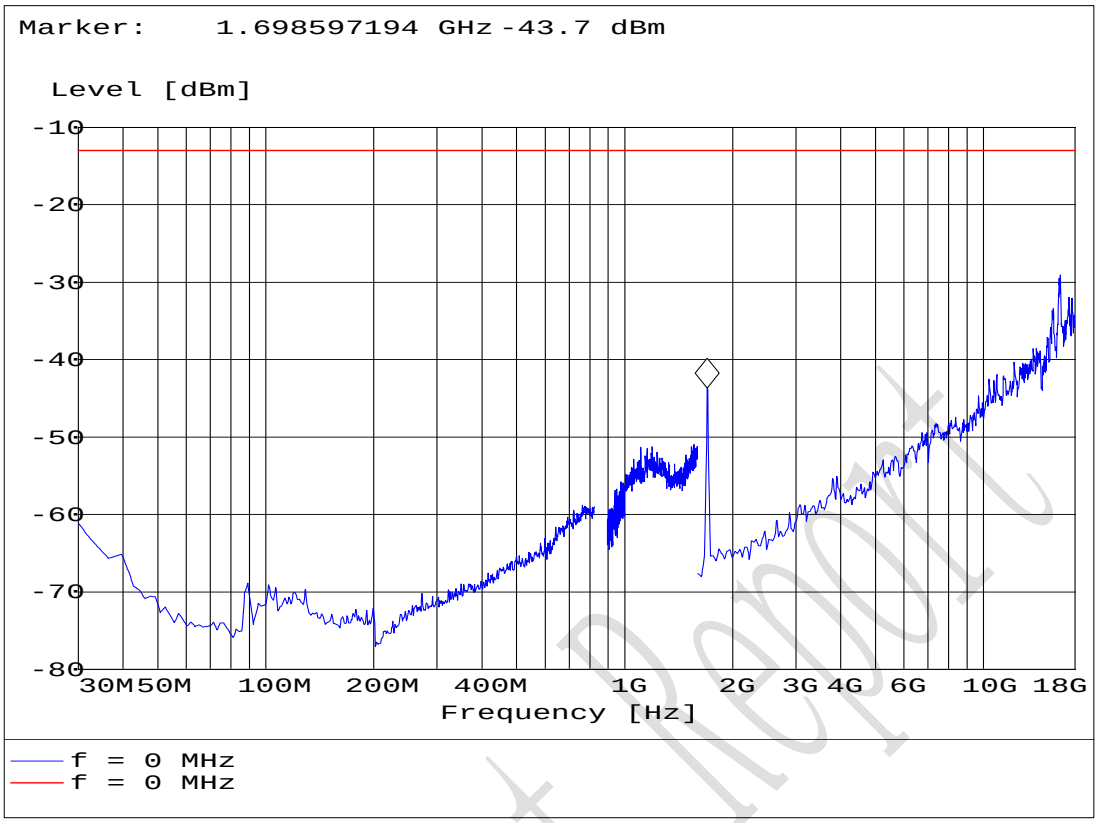


S661VT for EDGE mode

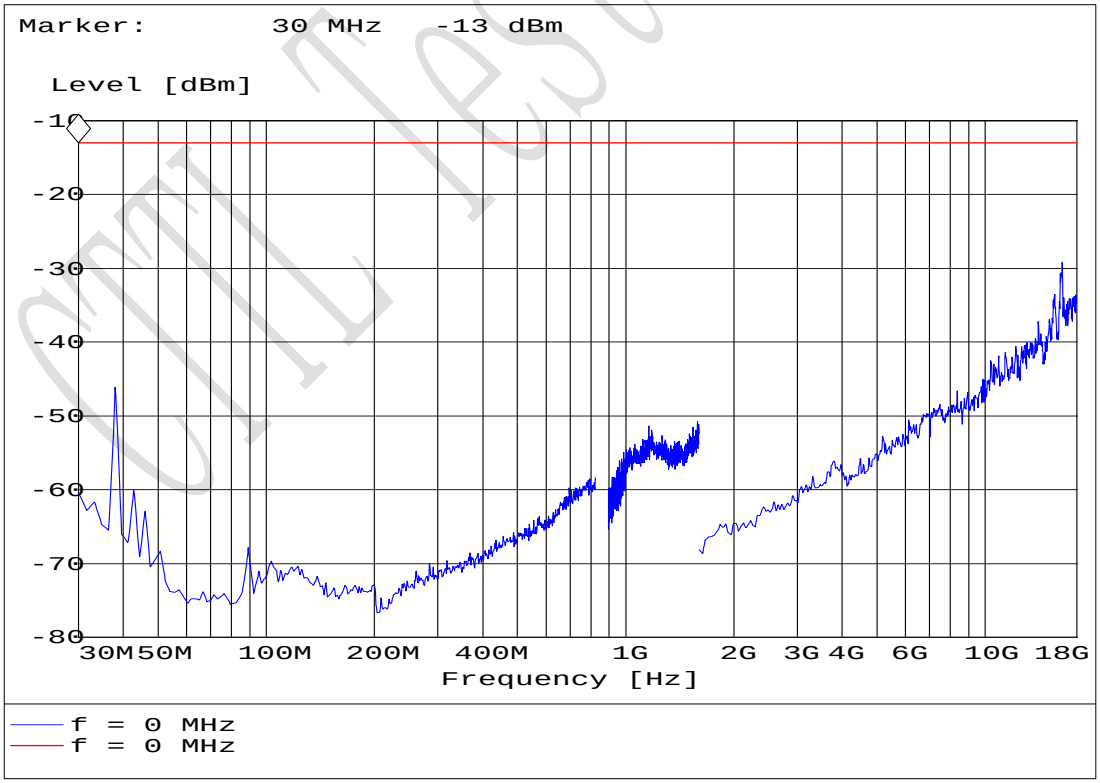


S661HT for EDGE mode

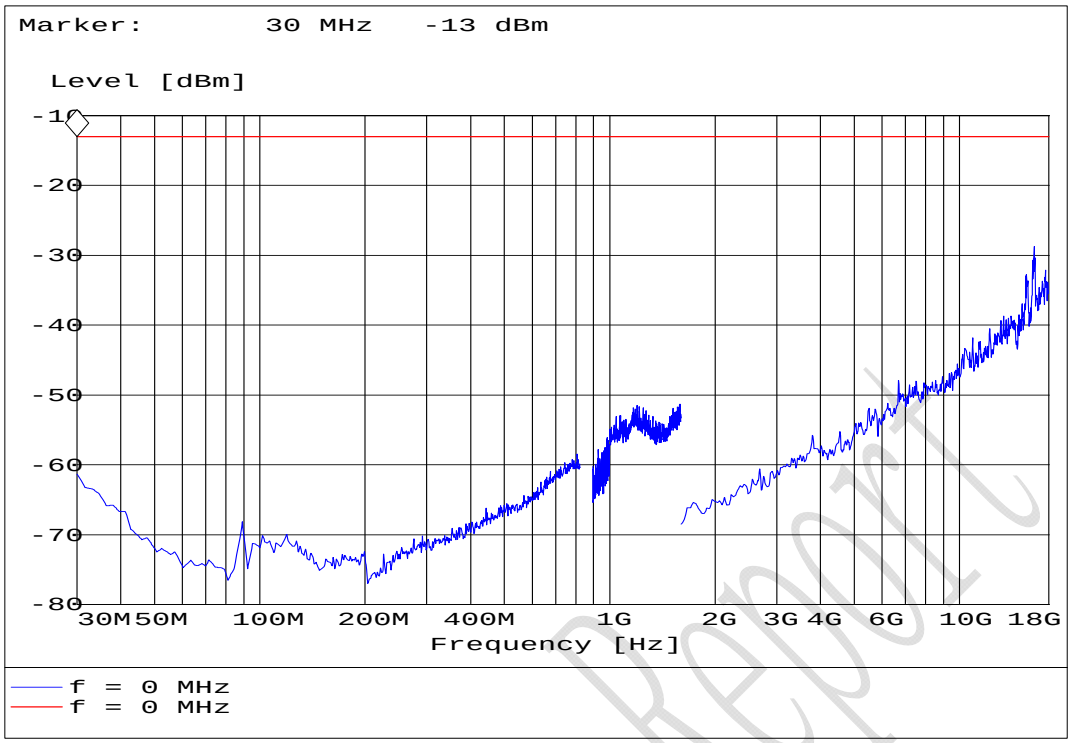
Graphical results of WCDMA mode:



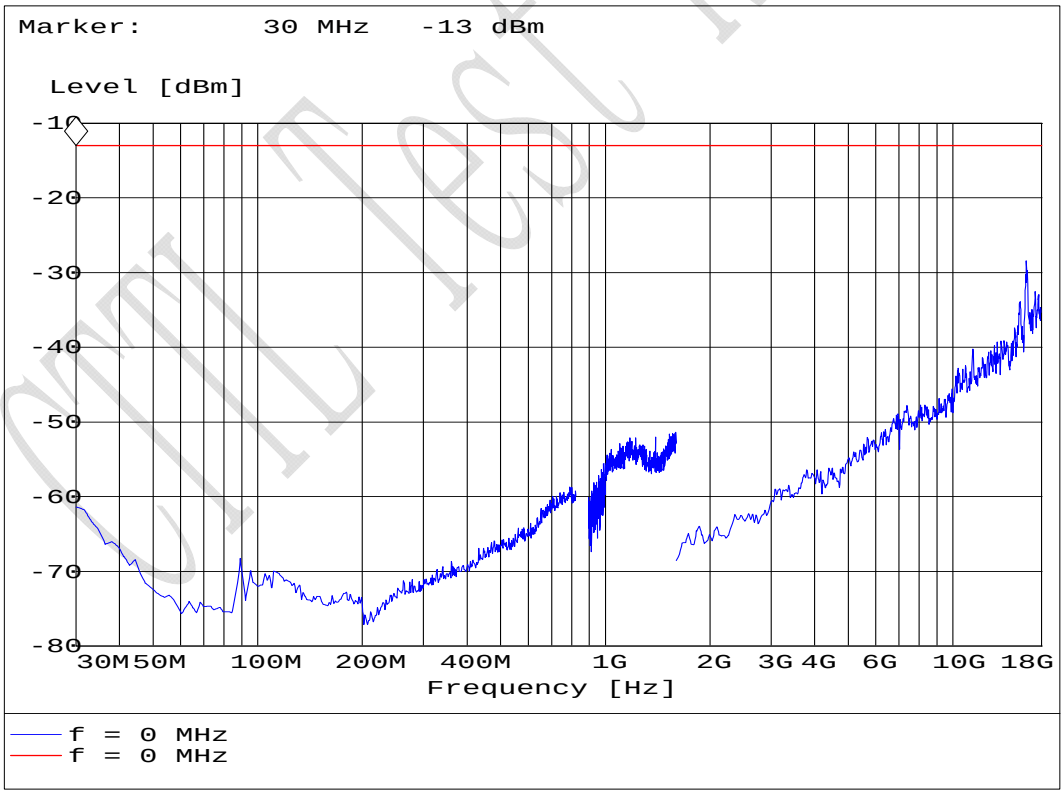
S4175VF for WCDMA mode



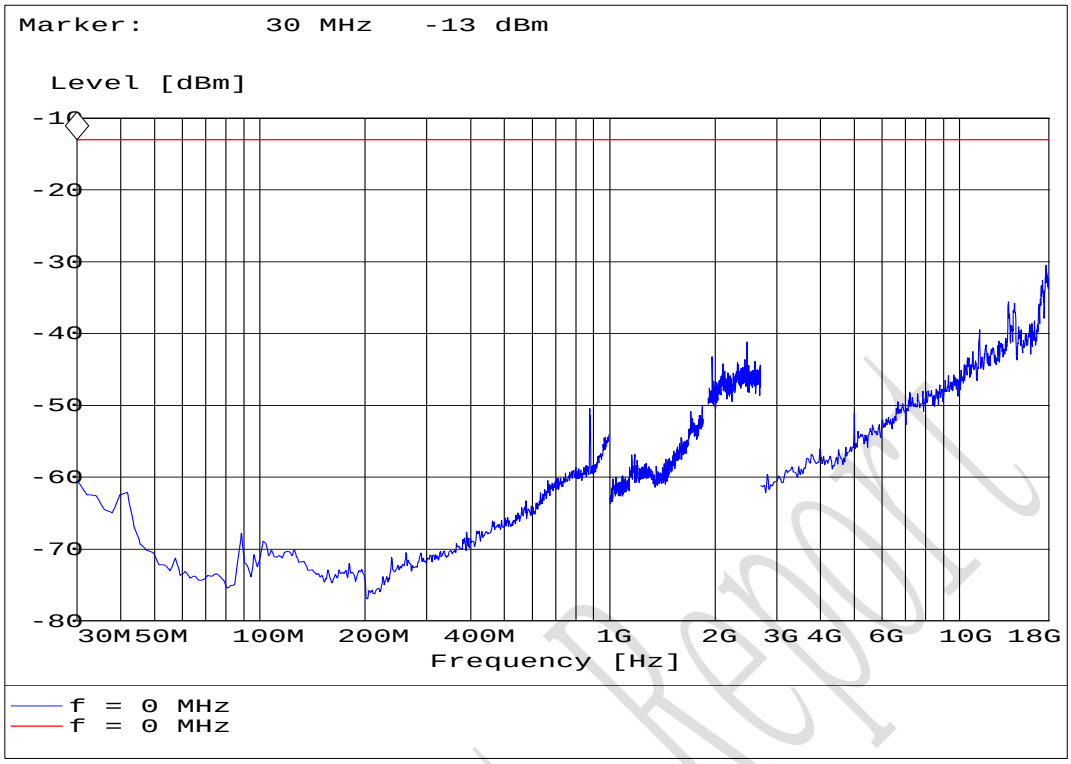
S4175HF for WCDMA mode



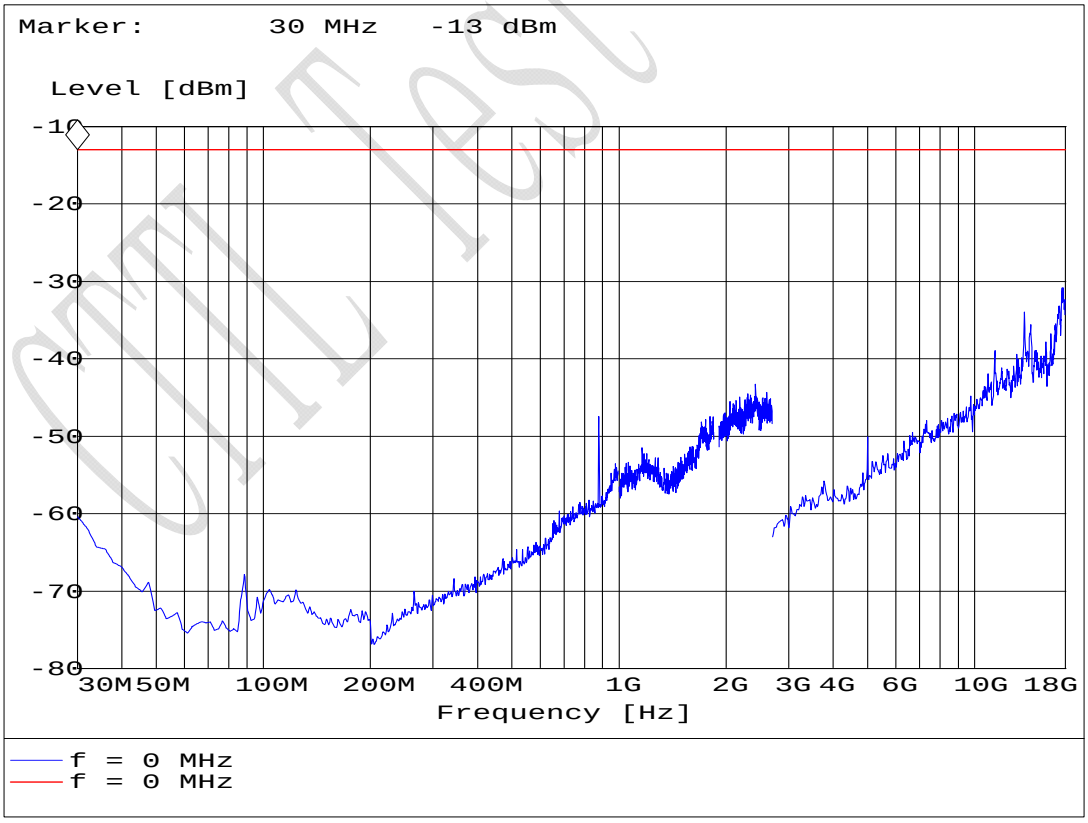
S4175VT for WCDMA mode



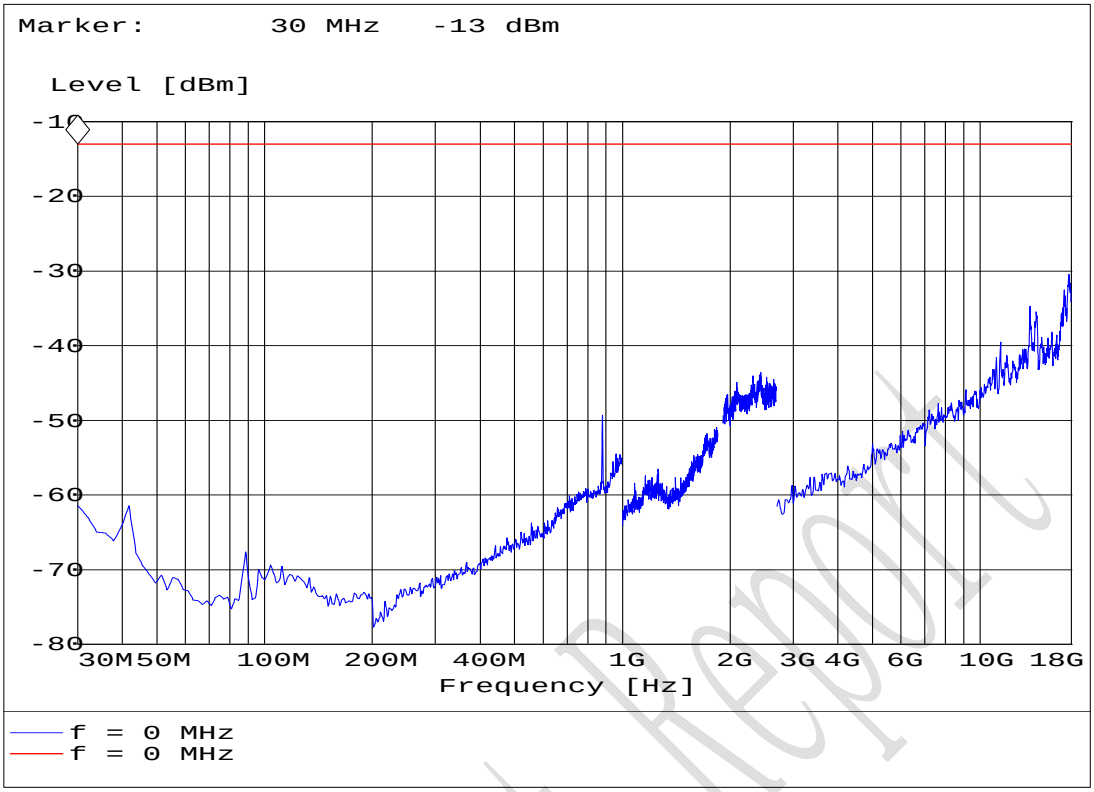
S4175HT for WCDMA mode



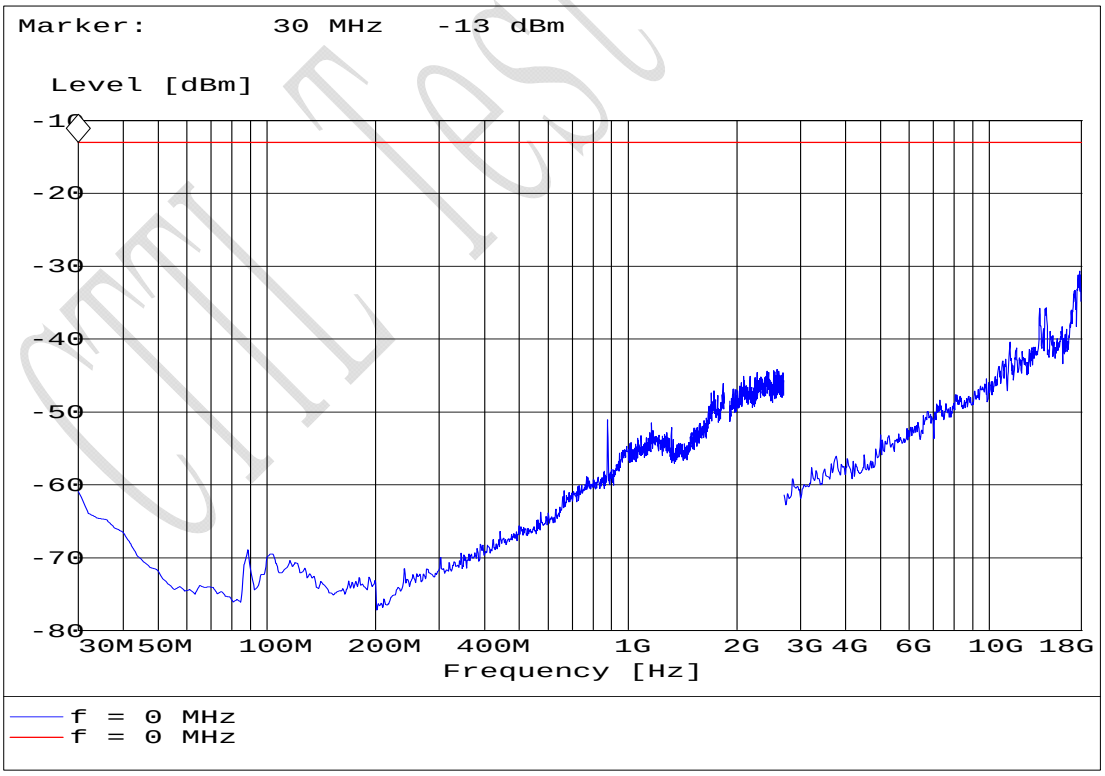
S9400VF for WCDMA mode



S9400HF for WCDMA mode

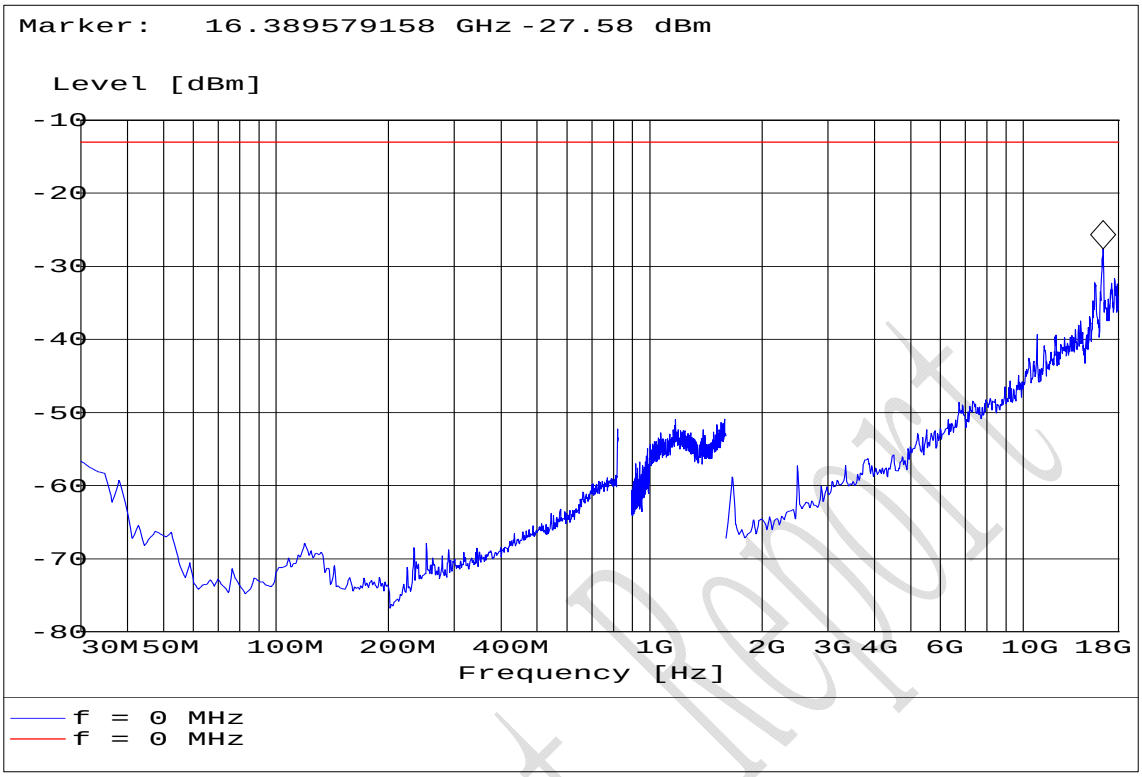


S9400VT for WCDMA mode

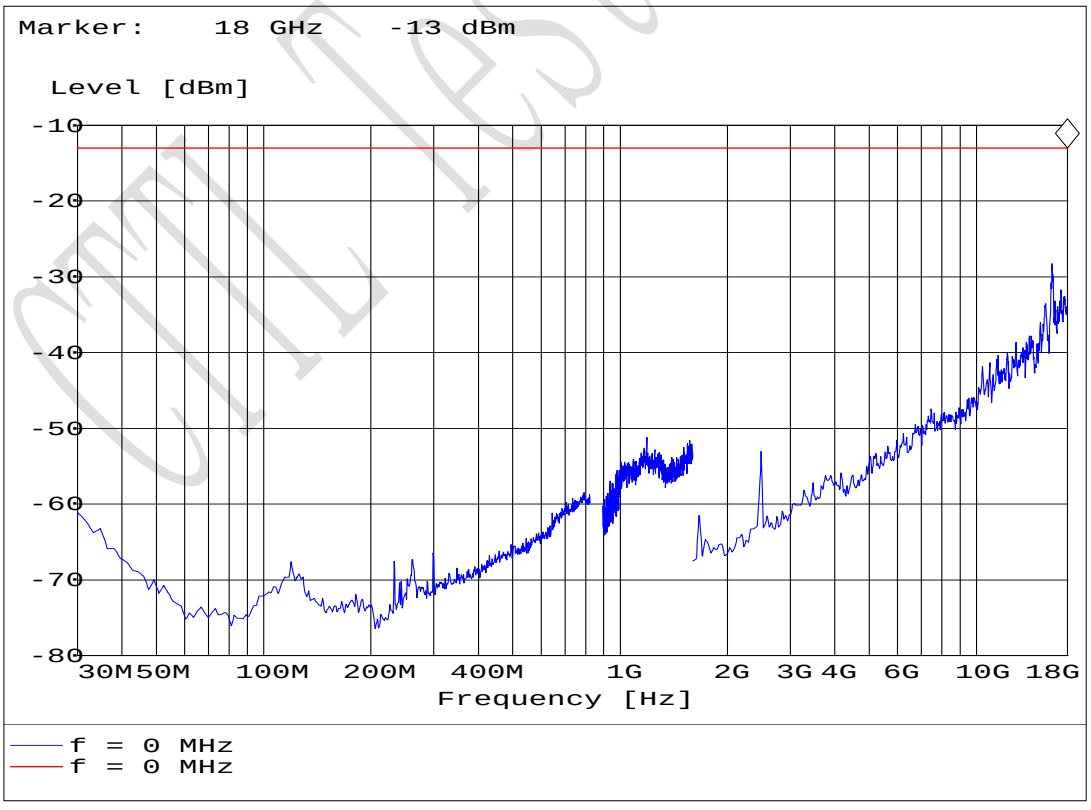


S9400HT for WCDMA mode

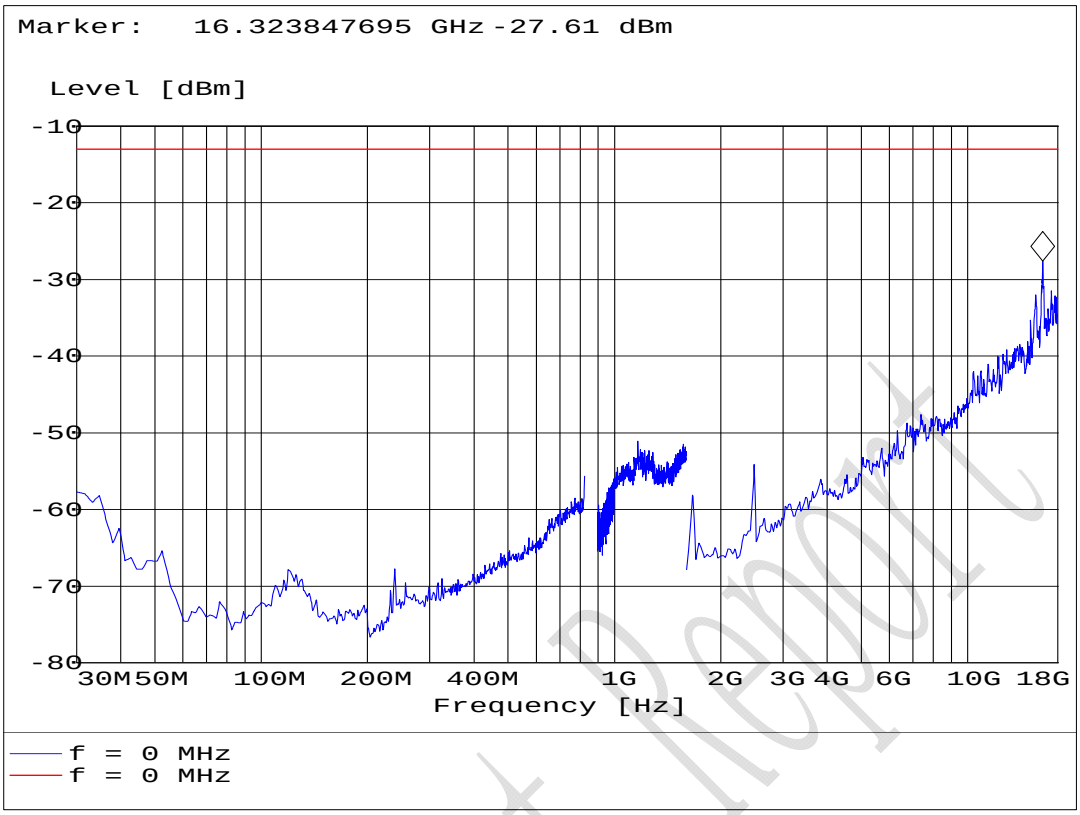
Graphical results of HSDPA mode:



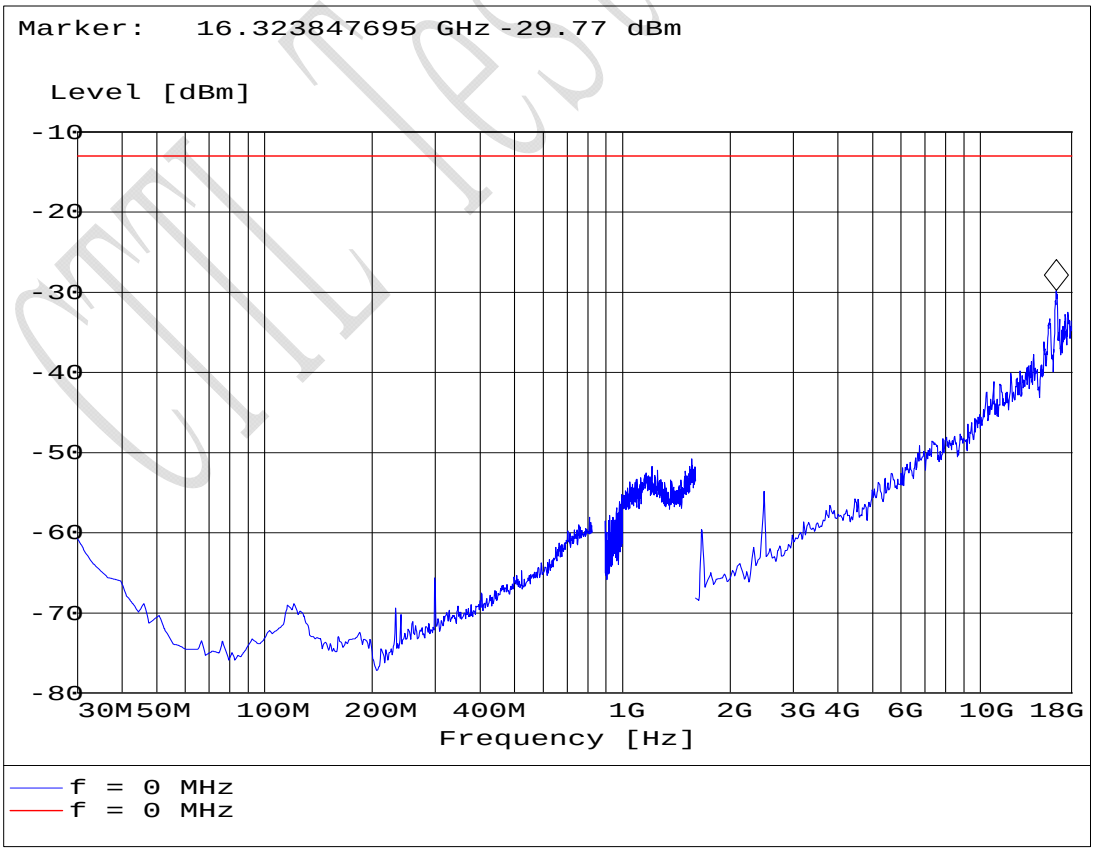
S4175VF for HSDPA mode



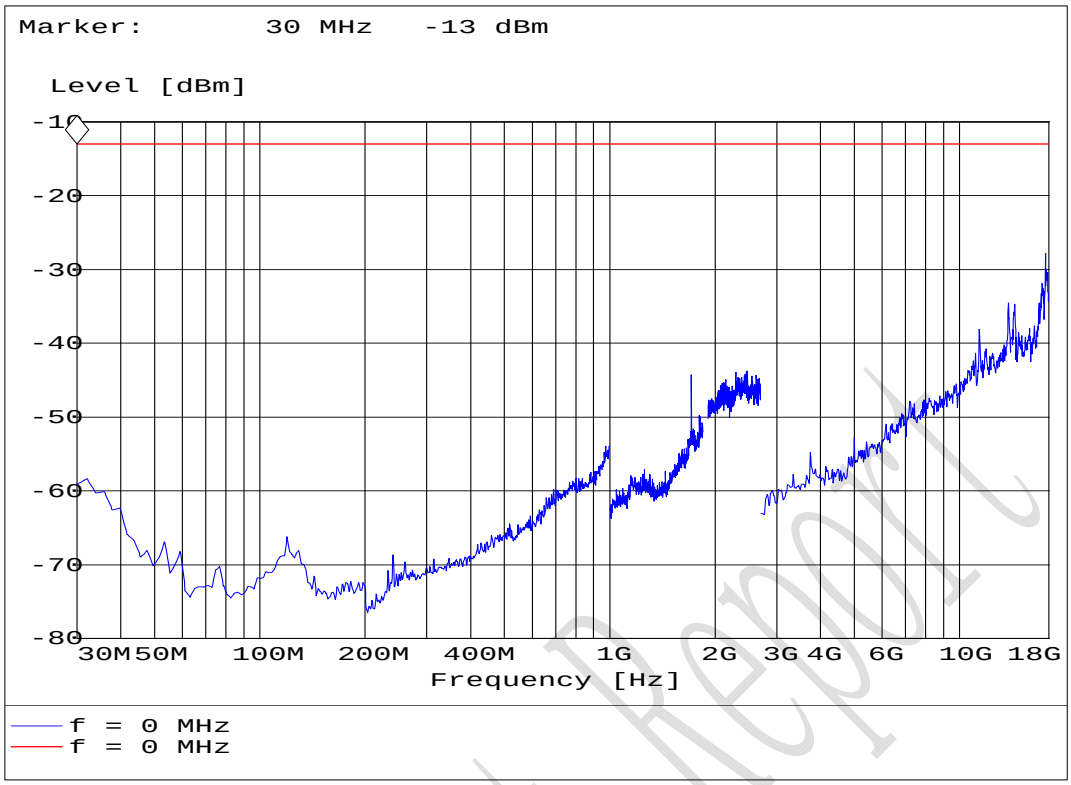
S4175HF for HSDPA mode



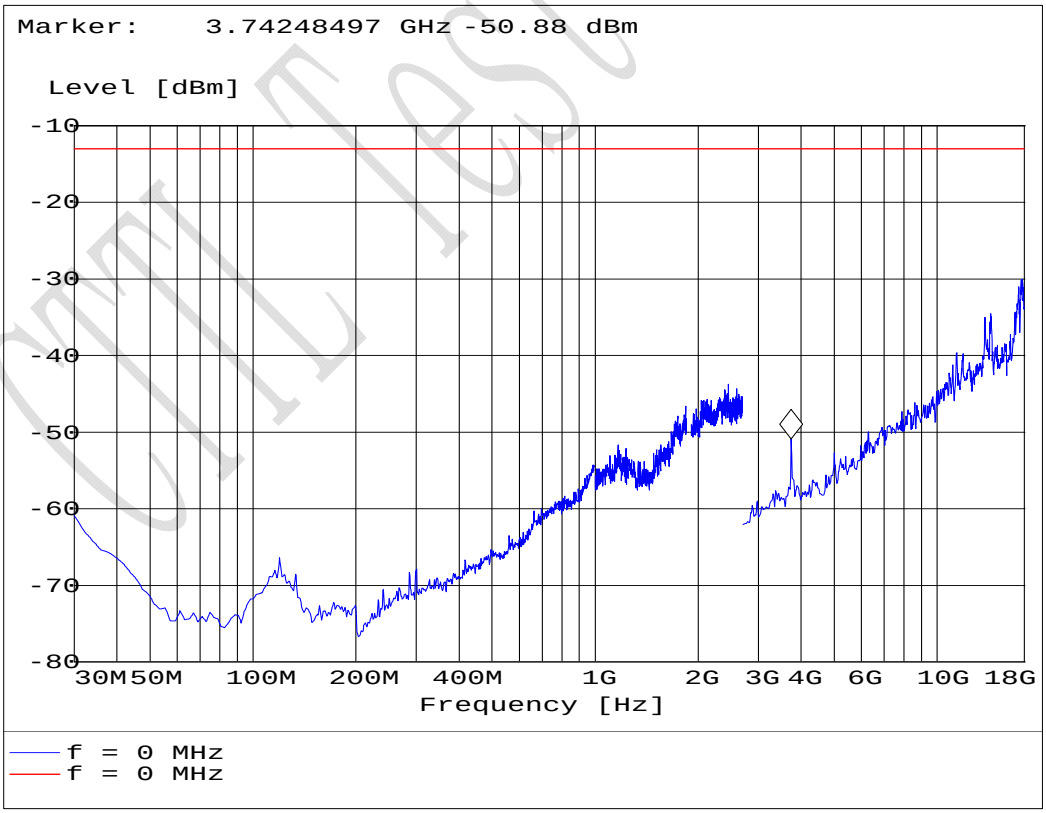
S4175VT for HSDPA mode



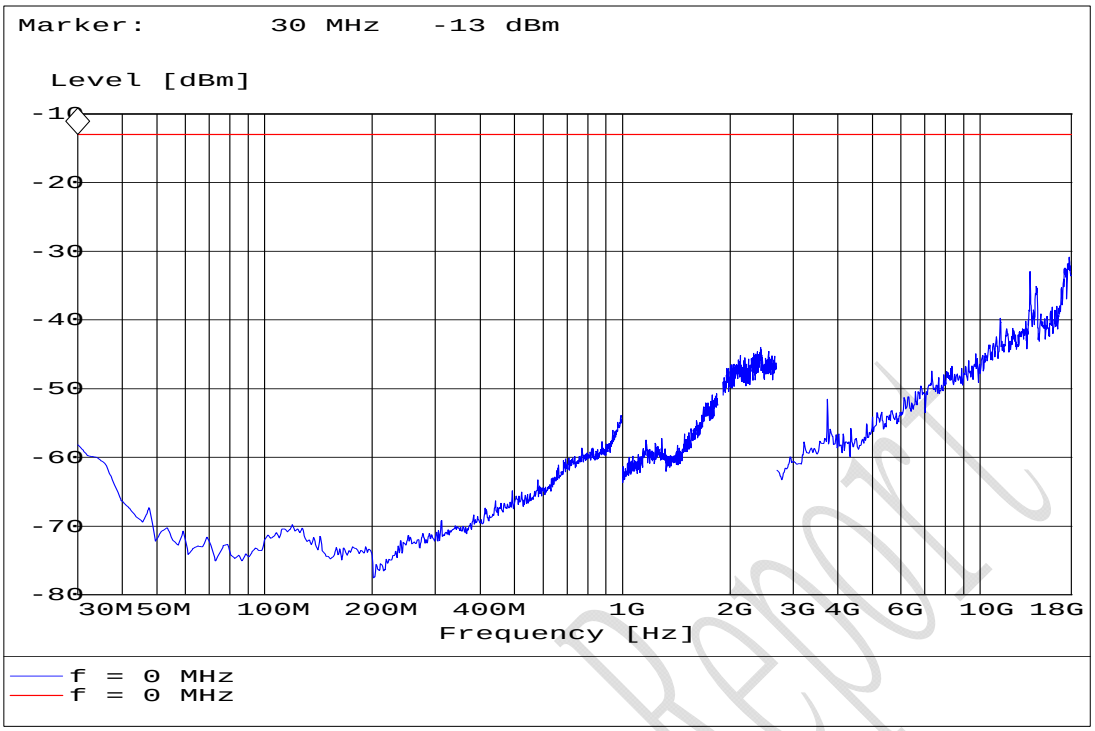
S4175HT for HSDPA mode



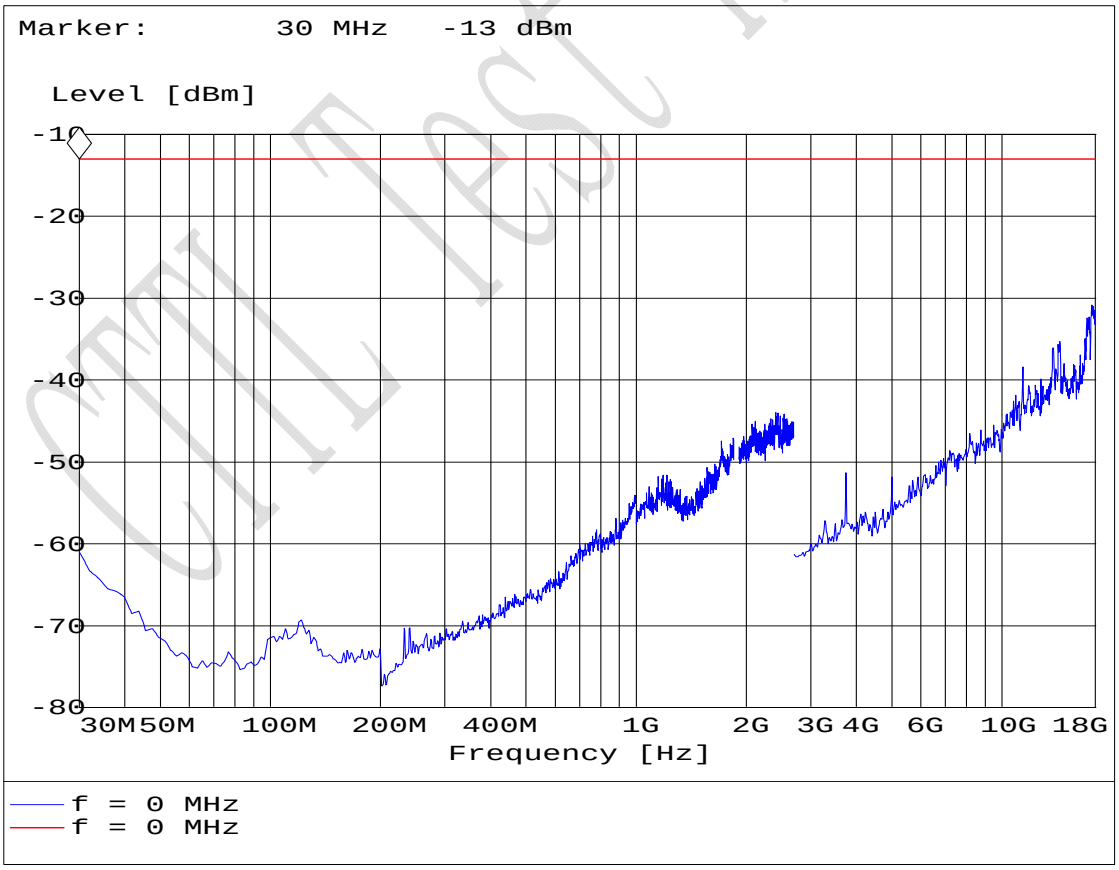
S9400VF for HSDPA mode



S9400HF for HSDPA mode



S9400VT for HSDPA mode



S9400HT for HSDPA mode

4.2 Radiated RF Power Output and ERP

Specifications:	2.1046,24.232,22.913(a)
Date of Tests	2007.10.24, 2007.12.26, 2007.12.27
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Operation Mode	TX on, channel 128, 190, 251, 512, 661 and 810 for GPRS and EDGE mode, and Channel 4133, 4175, 4232, 9263, 9400 and 9537 for WCDMA and HSDPA mode
Test Results:	Pass

Test equipment Used:

Asset Number	Description	Manufacturer	Model Number	Serial Number	Cal Due	State
7805	EMI Test Receiver	R/S	ESI26	100211	2008-01-04	Normal
7330	Ultra Broadband Antenna	R/S	HL562	100013	2008-07-24	Normal
7330	Double-Ridged Horn Antenna	R/S	HF906	100037	2008-01-14	Normal
713	Fully-Anechoic Chamber	ETS	11.8m×6.5m×6.3m	--	2010-11-17	Normal
023	Wireless Communications Test Set	Agilent	8960(E5515C)	GB41450323	2008-06-13	Normal
4295	Notebook	Lenovo	T60	2007I23	--	Normal
111835	Wireless Communications Test Set	R&S	CMU200	1100000802	--	Normal

Limit Level Construction:

(a) Radiated RF Power Output

According to Part 24.232(b), i.e., Mobile/portable stations are limited to 2 watts EIRP peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications, so the limit level is 2 W or 33 dBm.

(b) ERP

According to Part 22.913(a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

Limits for Radiated RF Power Output	
Frequency range	**Limit Level (EIRP)/Resolution Bandwidth**
TX channel	33dBm/1MHz
Limits for ERP	
Frequency range	**Limit Level (ERP)**
TX channel	7W

Test Setup:

The EUT was set in an anechoic chamber, which is connected to the Wireless Communications Test Set located outside the chamber over the air. The test was done using an automated test system, where all test equipments were controlled by a computer.

Test Method

The measurement was performed accordance with section 2.2.17 of ANSI/TIA-603-B-2002: *Land Mobile FM or PM Communications Equipment Measurement and Performance Standards*.

1 The maximum power was searched by turning the azimuth of the turntable, shifting the polarization of the measuring antenna and changing the pose of the EUT.

2 The measured levels are EIRP values corrected in the automated test system with the correction factors given by a substitution calibration made before the measurement. The calibration is made separately for vertical and horizontal polarization and the system uses different correction factors depending on the measuring antenna polarization.

3 The corrected maximum levels were reported for EIRP values, and ERP values can be calculated from EIRP values.

Note:

1 For GPRS 850 and EDGE 850 band, the ARFCN 128 (824.2 MHz), 190 (836.6 MHz) and 251 (848.8 MHz) are investigated, which are the lowest, middle and highest channel. For GPRS 1900 and EDGE 1900 band, the ARFCN 512 (1850.2 MHz), 661 (1880.0 MHz) and 810 (1909.8 MHz) are investigated. For WCDMA and HSDPA FDD V, the UARFCN 4133 (826.6 MHz), 4175 (835 MHz) and 4232 (846.4 MHz) are investigated. For WCDMA and HSDPA FDD II, the UARFCN 9263 (1852.6 MHz), 9400 (1880 MHz) and 9537 (1907.4 MHz) were investigated.

2 ERP dBm = EIRP dBm – 2.15dB.

ERP Value for GPRS 850 band mode:

ARFCN	Frequency [MHz]	ERP [dBm]
128	824.248497	27.72
190	836.553106	29.25
251	848.376754	27.37

EIRP Value for GPRS 1900 band mode:

ARFCN	Frequency [MHz]	EIRP [dBm]
512	1850.100200	29.33
661	1879.919840	29.08
810	1909.739479	28.62

ERP Value for EDGE 850 band mode:

ARFCN	Frequency [MHz]	ERP [dBm]
128	824.240	27.72
190	836.670	27.95
251	848.697	27.60

EIRP Value for EDGE 1900 band mode:

ARFCN	Frequency [MHz]	EIRP [dBm]
512	1850.100	30.37
661	1880.008	31.35
810	1909.890	30.38

ERP Value for WCDMA FDD V band:

ARFCN	Frequency [MHz]	ERP [dBm]
4133	826.933868	15.57
4175	835.651303	17.65
4232	845.871743	19.21

EIRP Value for WCDMA FDD II band:

ARFCN	Frequency [MHz]	EIRP [dBm]
9263	1853.146293	15.38
9400	1879.118236	14.6
9537	1907.655311	13.74

ERP Value for HSDPA FDD V band:

ARFCN	Frequency [MHz]	ERP [dBm]
4133	826.050	23.28
4175	835.070	21.95
4232	846.090	23.78

EIRP Value for HSDPA FDD II band:

ARFCN	Frequency [MHz]	EIRP [dBm]
9263	1852.600	30.44
9400	1879.400	31.11
9537	1906.850	31.56

4.3 Occupied bandwidth

Specifications:	2.1049,22.917(b),24.238(b)
Date of Test	2007.10.10, 2007.10.23, 2007.12.27, 2007.12.28, 2008.1.8
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Operation Mode	TX on, channel 128, 190, 251, 512, 661 and 810 for GPRS and EDGE mode, and Channel 4133, 4175, 4232, 9263, 9400 and 9537 for WCDMA and HSDPA mode
Test Results:	--

Test equipment Used:

Asset Number	Description	Manufacturer	Model Number	Serial Number	Cal Due	State
7805	EMI Test Receiver	R/S	ESI26	100211	2009-01-03	Normal
7330	Ultra Broadband Antenna	R/S	HL562	100013	2008-07-24	Normal
7330	Double-Ridged Horn Antenna	R/S	HF906	100037	2008-01-14	Normal
713	Fully-Anechoic Chamber	ETS	11.8m×6.5m×6.3m	--	2010-11-17	Normal
023	Wireless Communications Test Set	Agilent	8960(E5515C)	GB41450323	2008-06-13	Normal
4295	Notebook	Lenovo	T60	2007I23	--	Normal
111835	Wireless Communications Test Set	R&S	CMU200	1100000802	--	Normal

Test Setup

The situation under which maximum EIRP values were found in the measurement of the radiated RF power output was used to determine the 99% occupied bandwidth. The Wireless Communications Test Set was used to set the TX channel, power level and modulation.

Test Method

The 99% occupied bandwidth was calculated form the spectrum analyzer. Markers in the spectrum analyzer were then placed between the calculated frequencies to show the calculated 99% power band.

Note:

1 For GPRS 850 and EDGE 850 band, the ARFCN 128 (824.2 MHz), 190 (836.6 MHz) and 251 (848.8 MHz) are investigated, which are the lowest, middle and highest channel. For GPRS 1900 and EDGE 1900 band, the ARFCN 512 (1850.2

MHz), 661 (1880.0 MHz) and 810 (1909.8 MHz) are investigated. For WCDMA and HSDPA FDD V, the UARFCN 4133 (826.6 MHz), 4175 (835 MHz) and 4232 (846.4 MHz) are investigated. For WCDMA and HSDPA FDD II, the UARFCN 9263 (1852.6 MHz), 9400 (1880 MHz) and 9537 (1907.4 MHz) were investigated.

Results data of GPRS mode:

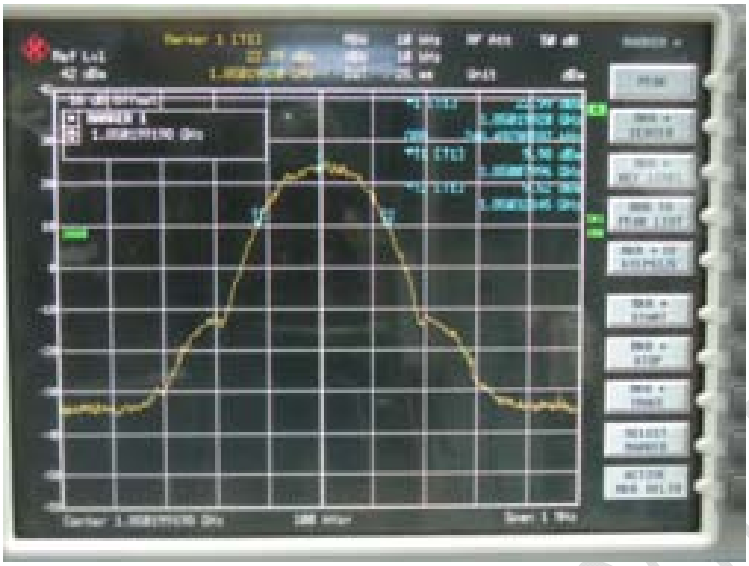
EUT channel	99% occupied bandwidth [kHz]
128	248
190	244
251	248
512	246
661	244
810	248

Graphical results for GPRS mode:

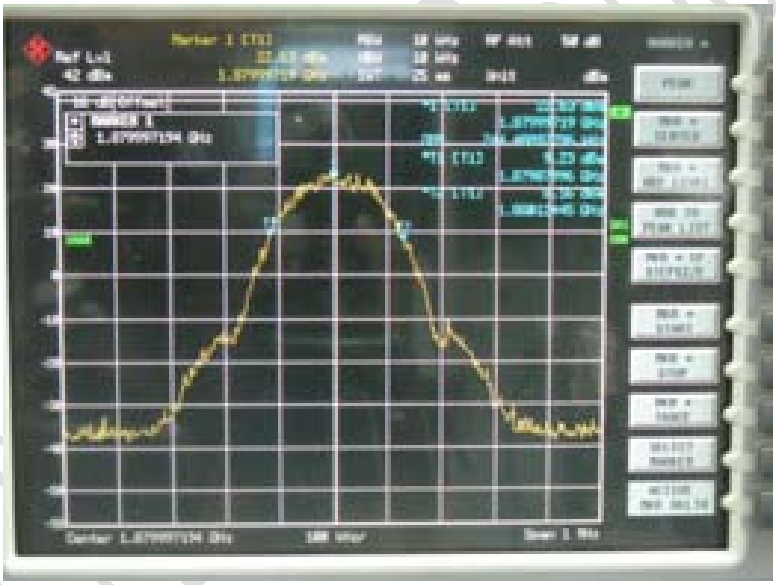
Channel 128

Channel 190

Channel 251



Channel 512



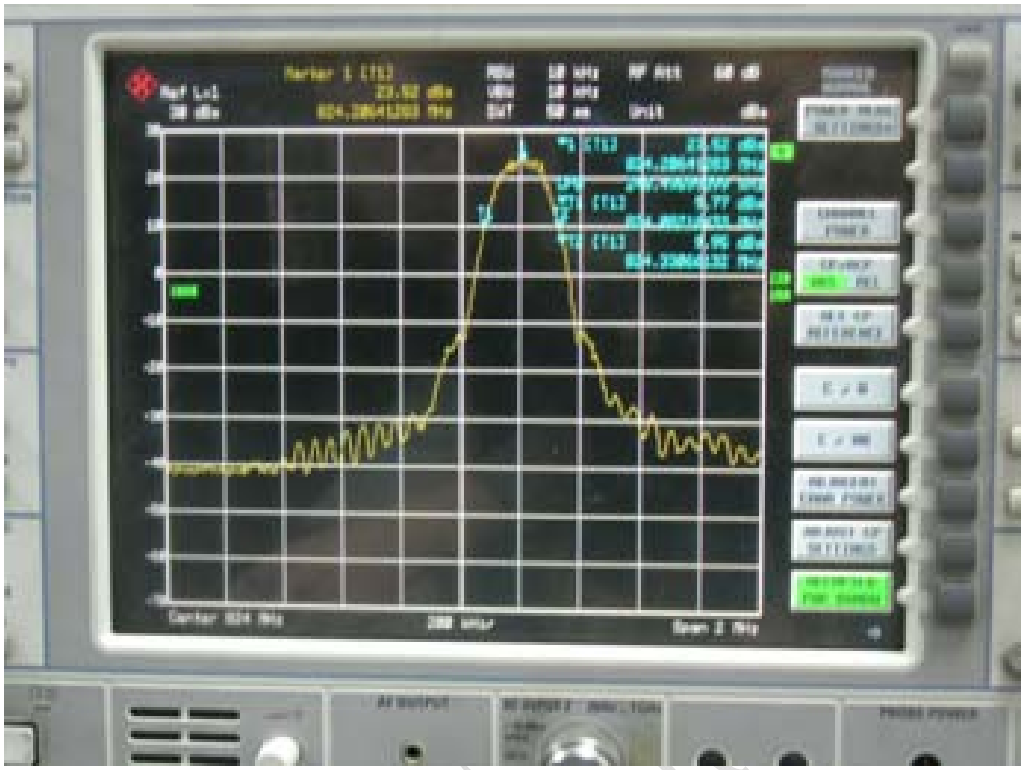
Channel 661

Channel 810

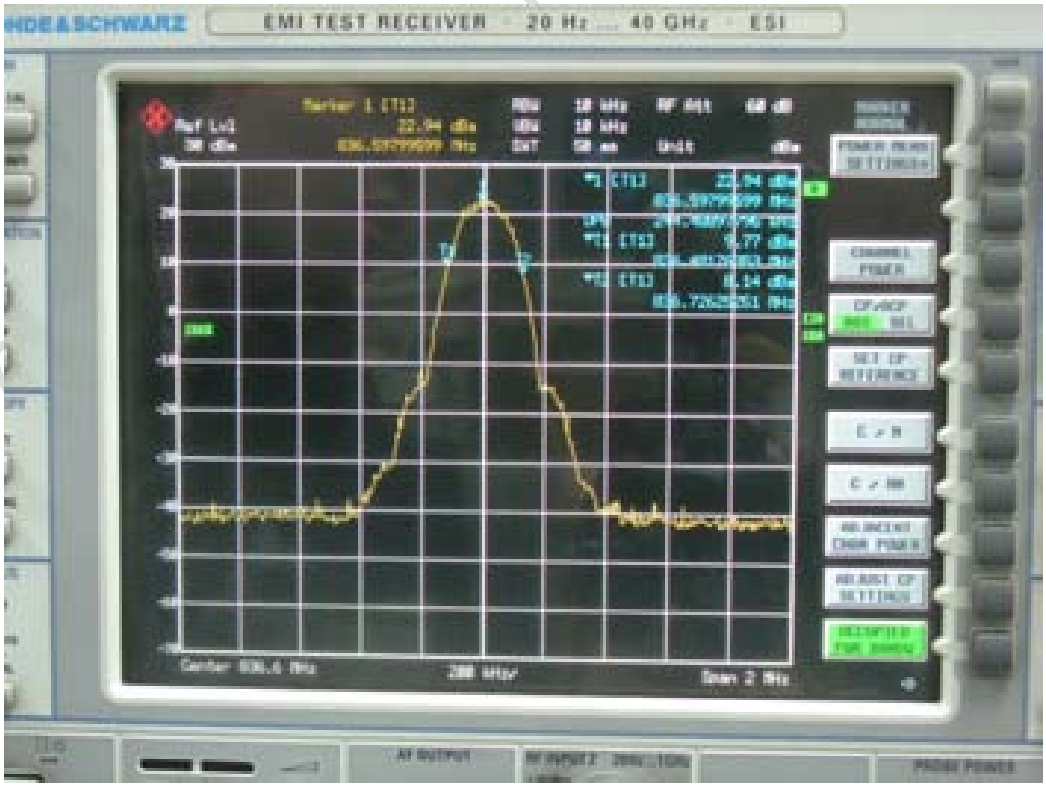
Results data of EDGE mode:

EUT channel	99% occupied bandwidth [kHz]
128	244
190	244
251	244
512	248
661	244
810	248

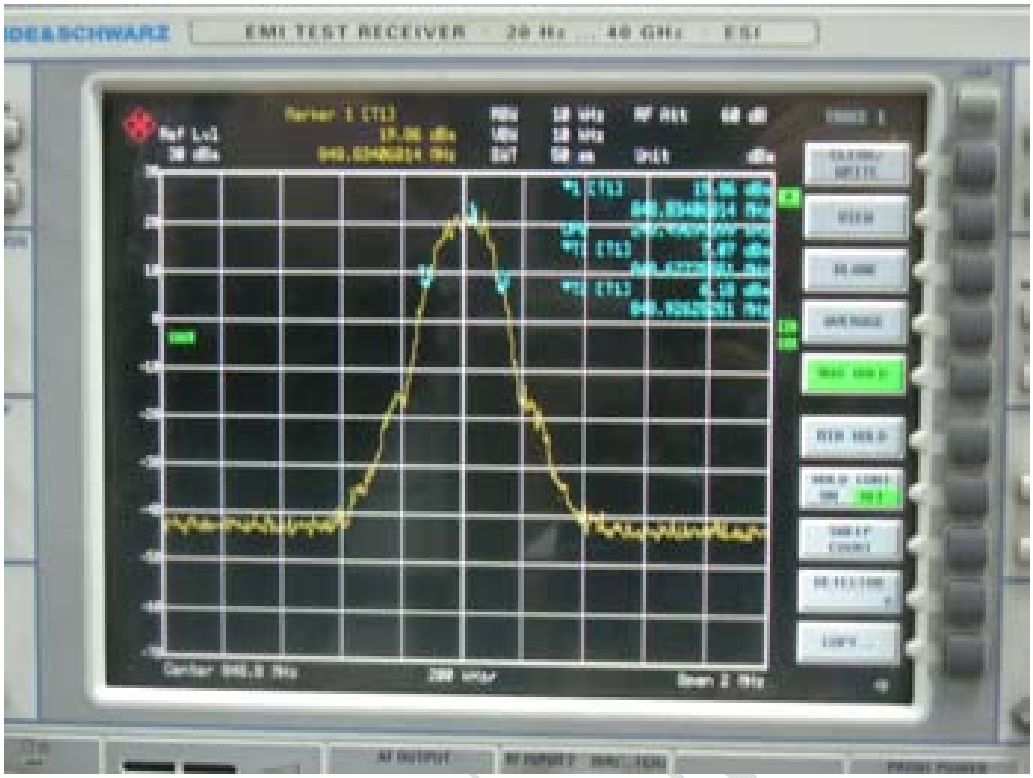
Graphical results for EDGE mode:



Channel 128

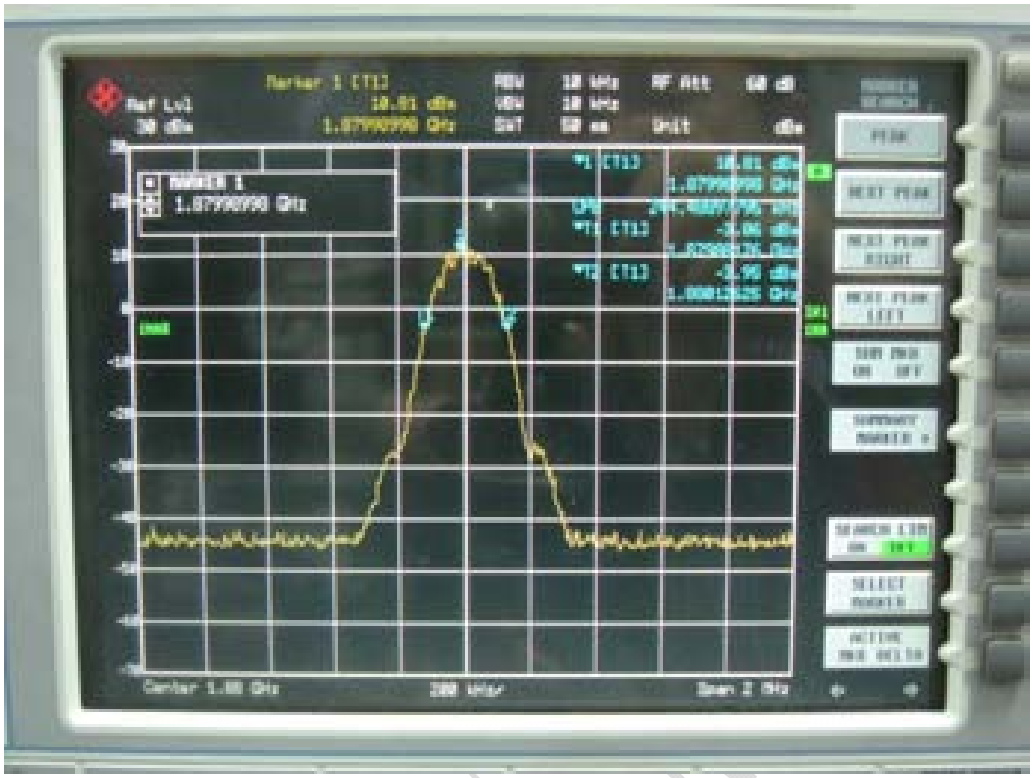


Channel 190



Channel 251

Channel 512



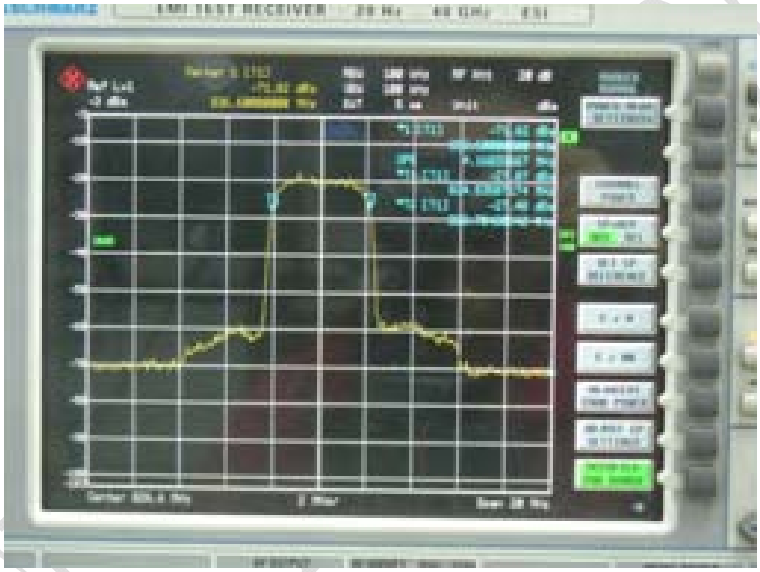
Channel 661

Channel 810

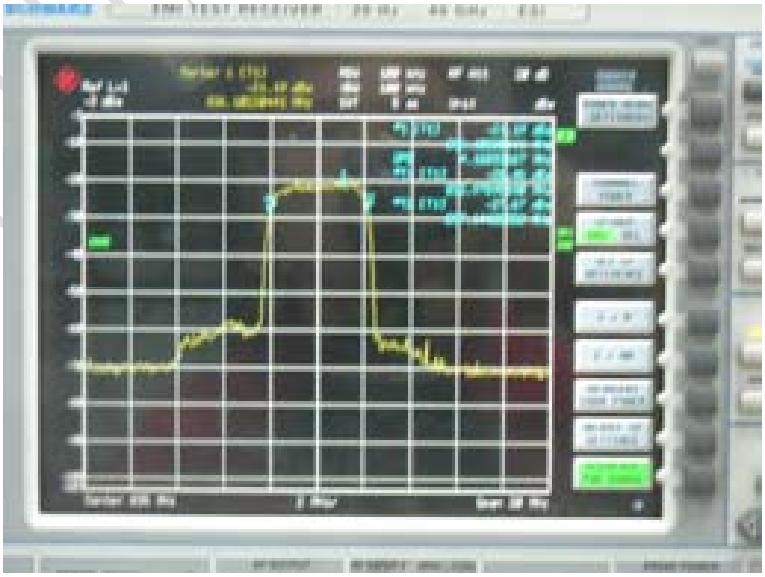
Results data of WCDMA mode:

EUT channel	99% occupied bandwidth [MHz]
4133	4.168
4175	4.168
4232	4.248
9263	4.268
9400	4.409
9537	4.168

Graphical results for WCDMA mode:

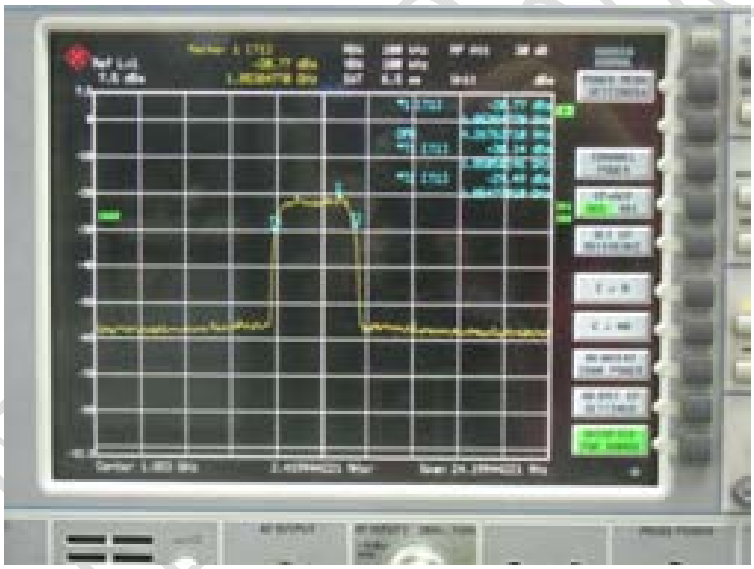


Channel 4133

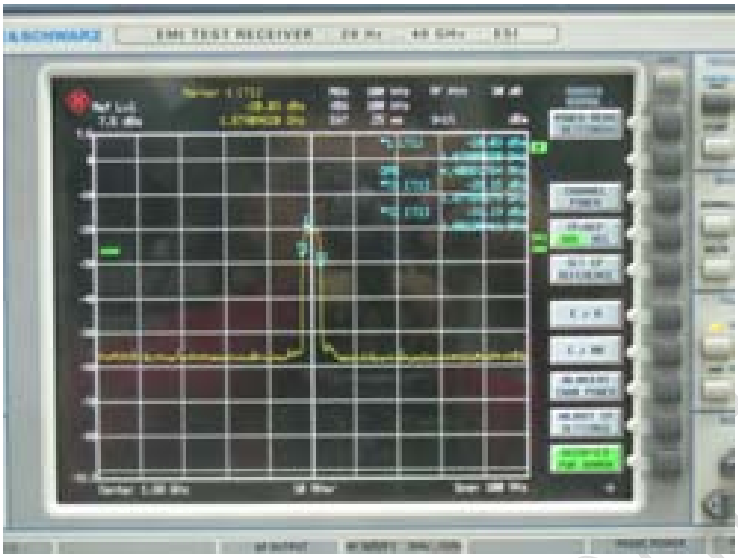


Channel 4175

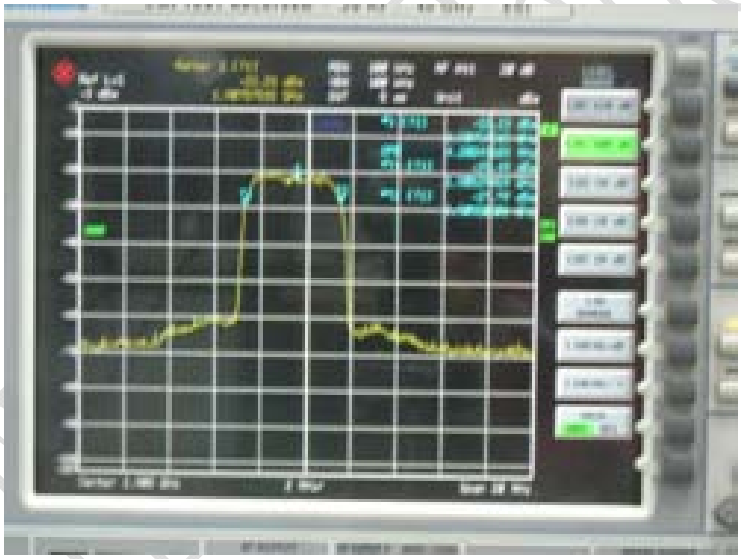
Channel 4232



Channel 9263



Channel 9400



Channel 9537

Results data of HSDPA mode:

EUT channel	99% occupied bandwidth [MHz]
4133	4.609
4175	4.649
4232	4.649
9263	4.569
9400	4.609
9537	4.569

Graphical results for HSDPA mode:

Channel 4133

Channel 4175

Channel 4232

Channel 9263

Channel 9400

Channel 9537

4.4 Frequency Stability over Temperature Variation

Specifications:	2.1055,22.355,24.235
Date of Test	2007.10.23, 2008.1.2
Test conditions:	Ambient Temperature:-30℃-50℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Operation Mode	TX on, channel 190 and 661 for GPRS and EDGE mode, and Channel 4175 and 9400 for WCDMA and HSDPA mode
Test Results:	Pass

Test equipment Used:

Asset Number	Description	Manufacturer	Model Number	Serial Number	Cal Due	State
023	Wireless Communications Test Set	Agilent	8960(E5515C)	GB41450323	2008-06-13	Normal
561	Temperature Chamber	Terchy Environmental Technology LTD.	MHU-800SR	84121202	2008-05-06	Normal
4295	Notebook	Lenovo	T60	2007I23	--	Normal
111835	Wireless Communications Test Set	R&S	CMU200	1100000802	--	Normal

Limit	
Frequency deviation [ppm]	±2.5

Test Setup

The EUT was placed in a temperature chamber, demonstrated as figure T. The wireless communications test set (test simulator) was used to set the TX channel and power levels, modulate the TX signal with different bit patterns and measure the frequency of TX.

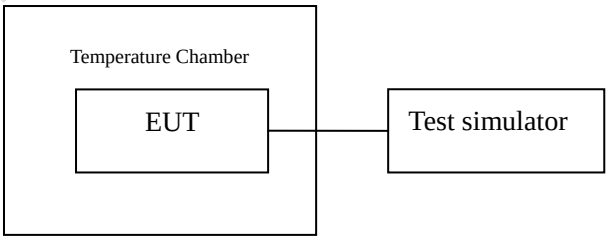


Figure T: setup for measurement of frequency stability over temperature variation

Test Method

1. The EUT was turned off and placed in the temperature chamber.
2. The temperature of the chamber was set to -30℃ and allowed to stabilize.
3. The EUT temperature was allowed to stabilize for 45 minutes.
4. The EUT was turned on and set to transmit with 8960.
5. The maximum transmit frequency deviation during one minute period was measured by Wireless Communications Test Set.
6. The steps 3-5 were repeated for -20℃, -10℃, 0℃, 10℃, 20℃, 30℃, 40℃ and 50℃.

Test results data for GPRS mode:

Table T1: frequency deviation over temperature variation for channel 190

Temperature[℃]	Deviation[Hz]	Deviation[ppm]	Remarks
-30	-29	-0.03	Pass
-20	-21	-0.03	Pass
-10	-23	-0.03	Pass
0	-16	-0.02	Pass
10	-7	-0.01	Pass
20	-7	-0.01	Pass
30	-12	-0.01	Pass
40	-20	-0.02	Pass
50	-39	-0.05	Pass

Table T2: frequency deviation over temperature variation for channel 661

Temperature[℃]	Deviation[Hz]	Deviation[ppm]	Remarks
-30	-12	-0.01	Pass
-20	-18	-0.01	Pass
-10	17	0.01	Pass
0	12	0.01	Pass
10	13	0.01	Pass
20	17	0.01	Pass
30	18	0.01	Pass
40	-16	-0.01	Pass
50	-14	-0.01	Pass

Test results data for EDGE mode:

Table T3: frequency deviation over temperature variation for channel 190

Temperature[℃]	Deviation[Hz]	Deviation[ppm]	Remarks
-30	10	0.012	Pass
-20	8	0.010	Pass
-10	7	0.008	Pass
0	7	0.008	Pass
10	-10	-0.012	Pass
20	-5	-0.006	Pass
30	-11	-0.013	Pass
40	-8	0.010	Pass
50	-4	-0.005	Pass

Table T4: frequency deviation over temperature variation for channel 661

Temperature[℃]	Deviation[Hz]	Deviation[ppm]	Remarks
-30	-35	-0.019	Pass
-20	-8	-0.004	Pass
-10	-13	-0.007	Pass
0	-17	-0.009	Pass
10	-28	-0.015	Pass
20	-51	-0.027	Pass
30	-46	-0.024	Pass
40	-53	-0.028	Pass
50	-39	-0.021	Pass

Test results data for WCDMA mode:

Table T5: frequency deviation over temperature variation for channel 4175

Temperature[℃]	Deviation[Hz]	Deviation[ppm]	Remarks
-30	-11	-0.01	Pass
-20	-10	-0.01	Pass
-10	-12	-0.01	Pass
0	-10	-0.01	Pass
10	-10	-0.01	Pass
20	-9	-0.01	Pass
30	-10	-0.01	Pass
40	-10	-0.01	Pass
50	-10	-0.01	Pass

Table T6: frequency deviation over temperature variation for channel 9400

Temperature[℃]	Deviation[Hz]	Deviation[ppm]	Remarks
-30	-20	-0.01	Pass
-20	-21	-0.01	Pass
-10	-18	-0.01	Pass
0	-19	-0.01	Pass
10	-20	-0.01	Pass
20	-19	-0.01	Pass
30	-19	-0.01	Pass
40	-17	-0.01	Pass
50	-18	-0.01	Pass

Test results data for HSDPA mode:

Table T7: frequency deviation over temperature variation for channel 4175

Temperature[℃]	Deviation[Hz]	Deviation[ppm]	Remarks
-30	-71	-0.085	Pass
-20	-58	-0.069	Pass
-10	-97	-0.116	Pass
0	-55	-0.066	Pass
10	-152	-0.182	Pass
20	-100	-0.120	Pass
30	-104	-0.124	Pass
40	-87	-0.104	Pass
50	-99	-0.118	Pass

Table T8: frequency deviation over temperature variation for channel 9400

Temperature[℃]	Deviation[Hz]	Deviation[ppm]	Remarks
-30	-124	-0.066	Pass
-20	-149	-0.079	Pass
-10	-182	-0.097	Pass
0	-173	-0.092	Pass
10	-102	-0.054	Pass
20	-87	-0.046	Pass
30	-29	-0.015	Pass
40	-124	-0.066	Pass
50	-88	-0.047	Pass

4.5 Frequency Stability over Voltage Variation

Specifications:	2.1055,22.355,24.235
Date of Test	2007.10.24, 2007.12.28
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Operation Mode	TX on, channel 190 and 661 for GPRS and EDGE mode, and Channel 4175 and 9400 for WCDMA and HSDPA mode
Test Results:	Pass

Test equipment Used:

Asset Number	Description	Manufacturer	Model Number	Serial Number	Cal Due	State
023	Wireless Communications Test Set	Agilent	8960(E5515C)	GB41450323	2008-06-13	Normal
4295	Notebook	Lenovo	T60	2007I23	--	Normal
111835	Wireless Communications Test Set	R&S	CMU200	1100000802	--	Normal

Limit	
Frequency deviation [ppm]	±2.5

Test Setup

The EUT was placed in a shielding chamber and powered by the USB port of a notebook PC, demonstrated as figure V. The wireless communications test set was used to set the TX channel and power level, modulate the TX signal with different bit patterns and measure the frequency of TX.

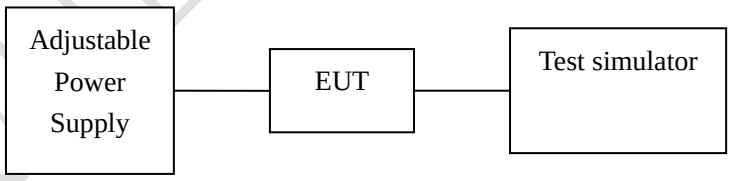


Figure V: test setup for measurement of frequency stability over voltage variation

Test Method

The EUT was powered by the USB port of a notebook PC. The frequency stability is measured only at nominal voltage of USB port only.

Test Results data for GPRS mode:

Table V1: frequency deviation over voltage variation for channel 190

Level	Voltage[V]	Deviation[Hz]	Deviation[ppm]	Remarks
Nominal	Note*	-12	-0.01	Pass
Cut-off point	--	--	--	NA

Table V2: frequency deviation over voltage variation for channel 661

Level	Voltage[V]	Deviation[Hz]	Deviation[ppm]	Remarks
Nominal	Note*	-28	-0.01	Pass
Cut-off point	--	--	--	NA

Test Results data for EDGE mode:

Table V3: frequency deviation over voltage variation for channel 190

Level	Voltage[V]	Deviation[Hz]	Deviation[ppm]	Remarks
Nominal	Note*	-23	0.027	Pass
Cut-off point	--	--	--	NA

Table V4: frequency deviation over voltage variation for channel 661

Level	Voltage[V]	Deviation[Hz]	Deviation[ppm]	Remarks
Nominal	Note*	-37	0.020	Pass
Cut-off point	--	--	--	NA

Test Results data for WCDMA mode:

Table V5: frequency deviation over voltage variation for channel 4175

Level	Voltage[V]	Deviation[Hz]	Deviation[ppm]	Remarks
Nominal	Note*	-10	-0.01	Pass
Cut-off point	--	--	--	NA

Table V6: frequency deviation over voltage variation for channel 9400

Level	Voltage[V]	Deviation[Hz]	Deviation[ppm]	Remarks
Nominal	Note*	-11	-0.01	Pass
Cut-off point	--	--	--	NA

Note*: Standard Laptop USB voltage.

Test Results data for HSDPA mode:

Table V7: frequency deviation over voltage variation for channel 4175

Level	Voltage[V]	Deviation[Hz]	Deviation[ppm]	Remarks
Nominal	Note*	-91	-0.109	Pass
Cut-off point	--	--	--	NA

Table V8: frequency deviation over voltage variation for channel 9400

Level	Voltage[V]	Deviation[Hz]	Deviation[ppm]	Remarks
Nominal	Note*	-87	-0.046	Pass
Cut-off point	--	--	--	NA

Note*: Standard Laptop USB voltage.

4.6 Conducted RF Power Output

Specifications:	2.1046,22.913(a),24.232(c)
Date of Tests	2007.10.10, 2007.10.23, 2007.12.28
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Operation Mode	TX on, channel 128, 190, 251, 512, 661 and 810 for GPRS and EDGE mode, and Channel 4133, 4175, 4232, 9263, 9400 and 9537 for WCDMA and HSDPA mode
Test Results:	Pass

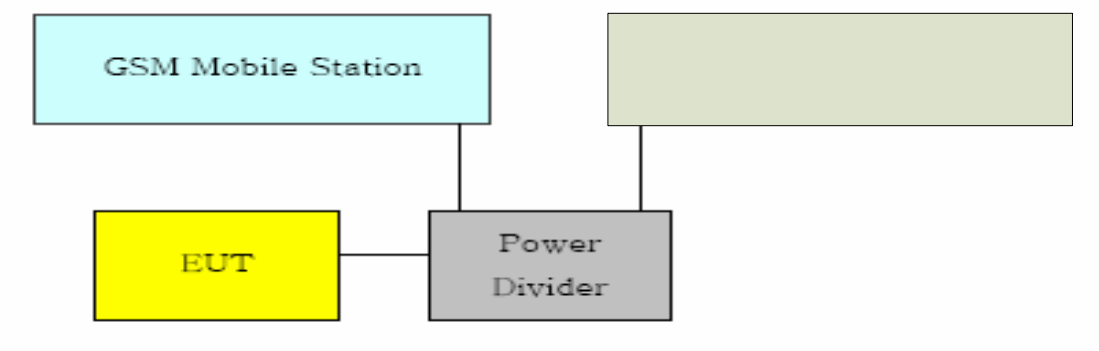
Test equipment Used:

Asset Number	Description	Manufacturer	Model Number	Serial Number	Cal Due	State
7805	EMI Test Receiver	R/S	ESI26	100211	2008-01-04	Normal
023	Wireless Communications Test Set	Agilent	8960(E5515C)	GB41450323	2008-06-13	Normal
---	Power spliter	Jie sai	---	1000132	2008-01-04	Normal
4295	Notebook	Lenovo	T60	2007I23	--	Normal
111835	Wireless Communications Test Set	R&S	CMU200	1100000802	--	Normal

Limits for Radiated RF Power Output	
Frequency range	**Limit Level (EIRP) / Resolution Bandwidth**
TX channel	33dBm/1MHz
Limits for ERP	
Frequency range	**Limit Level (ERP)**
TX channel	7W

Test Setup:

During the process of testing, the EUT was controlled via the Wireless Communications Test Set to ensure max power transmission and proper modulation and measured by Rhode & Schwarz EMI test receiver (ESI26).



Test Method

1) The EUT was coupled to the EMI test receiver analyzer mode and the base station simulator through a power divider. The radio frequency load attached to the EUT antenna terminal was 50 Ohm. The lost of the cables the test system is calibrated to correct the readings.
2) The spectrum analyzer was set to Maxpeak Detector function and Maximum hold mode.
3) The resolution bandwidth of the spectrum analyzer was comparable to the emission bandwidth.

Note:

For GPRS 850 and EDGE 850 band, the ARFCN 128 (824.2 MHz), 190 (836.6 MHz) and 251 (848.8 MHz) are investigated, which are the lowest, middle and highest channel. For GPRS 1900 and EDGE 1900 band, the ARFCN 512 (1850.2 MHz), 661 (1880.0 MHz) and 810 (1909.8 MHz) are investigated. For WCDMA and HSDPA FDD V, the UARFCN 4133 (826.6 MHz), 4175 (835 MHz) and 4232 (846.4 MHz) are investigated. For WCDMA and HSDPA FDD II, the UARFCN 9263 (1852.6 MHz), 9400 (1880 MHz) and 9537 (1907.4 MHz) were investigated.

Test Results for GPRS mode:

ERP Value for GPRS 850 band:

ARFCN	Peak output power [dBm]
128	30.08
190	30.03
251	30.01

EIRP Value for GPRS 1900 band:

ARFCN	Peak output power [dBm]
512	29.68
661	29.63
810	29.60

Test Results for EDGE mode:

ERP Value for EDGE 850 band:

ARFCN	Peak output power [dBm]
128	30.67
190	30.83
251	30.62

EIRP Value for EDGE 1900 band:

ARFCN	Peak output power [dBm]
512	23.60
661	24.26
810	24.75

Test Results for WCDMA mode:

ERP Value for WCDMA FDD V band:

UARFCN	Peak output power [dBm]
4133	21.06
4175	20.88
4232	21.30

EIRP Value for WCDMA FDD II band:

UARFCN	Peak output power [dBm]
9263	23.02
9400	22.93
9537	23.41

Test Results for HSDPA mode:

ERP Value for HSDPA FDD V band:

UARFCN	Peak output power [dBm]
4133	24.06
4175	23.60
4232	23.30

EIRP Value for HSDPA FDD II band:

UARFCN	Peak output power [dBm]
9263	24.02
9400	23.42
9537	23.41

4.7 Conducted Spurious Emission

Specifications:	2.1051,22.917,24.238
Date of Tests	2007.10.23
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Operation Mode	TX on, channel 190 and 661 for GPRS and EDGE mode, And Channel 4175 and 9400 for WCDMA and HSDPA mode
Test Results:	Pass

Test equipment Used:

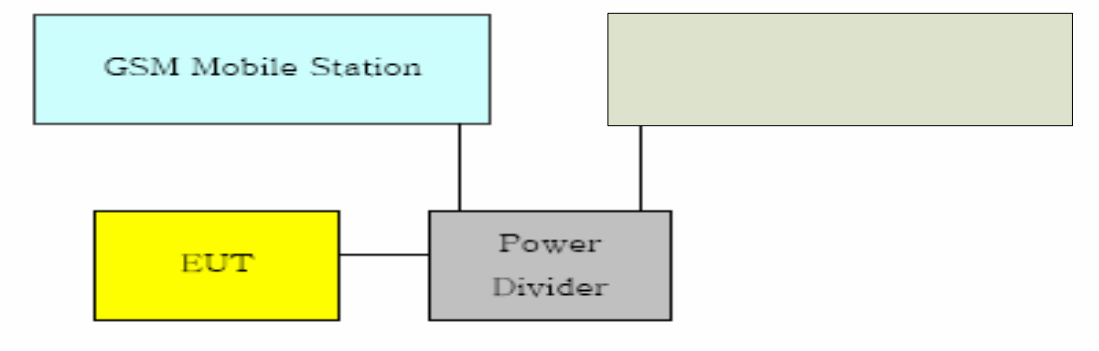
Asset Number	Description	Manufacturer	Model Number	Serial Number	Cal Due	State
7805	EMI Test Receiver	R/S	ESI26	100211	2008-01-04	Normal
023	Wireless Communications Test Set	Agilent	8960(E5515C)	GB41450323	2008-06-13	Normal
---	Power spliter	Jie sai	---	1000132	2008-01-04	Normal
4295	Notebook	Lenovo	T60	2007I23	--	Normal
111835	Wireless Communications Test Set	R&S	CMU200	1100000802	--	Normal

Limit Level Construction:
According to Part 24.238 (a), i.e., 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, so the limit level is:
P(dBm) – (43 + 10 log(P)) dB= -13dBm

Limits for Radiated spurious emissions(UE)	
Frequency range	**Limit Level /Resolution Bandwidth**
30 MHz to 20000 MHz	-13dBm/1MHz

Test Setup:

During the process of testing, the EUT was controlled via Wireless Communications Test Set to ensure max power transmission and proper modulation and measured by Rhode & Schwarz EMI test receiver (ESI26)



Test Method

The measurement was performed accordance with section 2.2.13 of ANSI/TIA-603-B-2002: *Land Mobile FM or PM Communications Equipment Measurement and Performance Standards*.

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. For the equipment under test, this equates to a frequency range of 30 MHz to 19.1 GHz, data taken from 30 MHz to 20 GHz.
2. Determine EUT transmit frequencies: below outlines the band edge frequencies pertinent to conducted emissions testing.

Note:

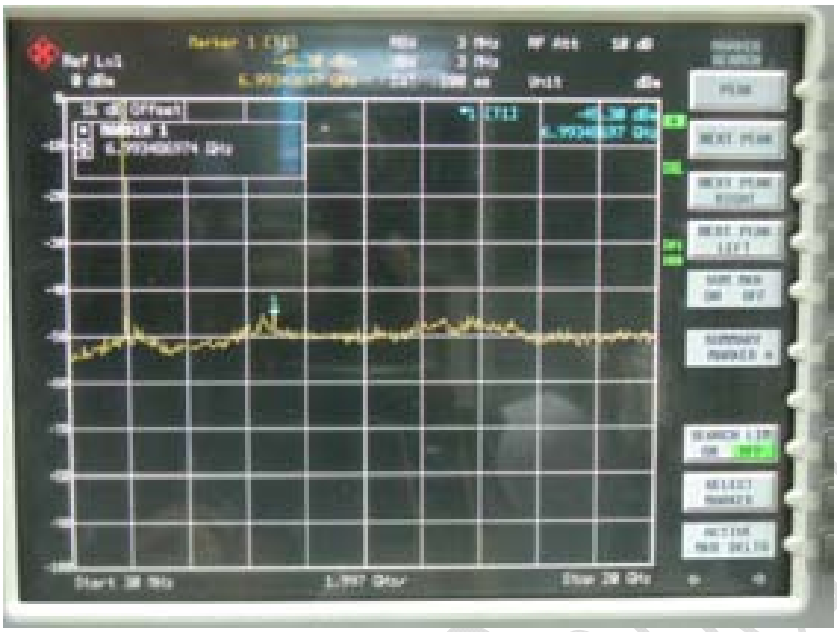
The investigated ARFCNs are 190 (836.6 MHz) and 661 (1880.0 MHz) for GPRS and EDGE mode, and UARFCNs are 4175 and 9400 for WCDMA and HSDPA mode.

Test Results for GPRS mode:

Out of band emission	
Frequency [MHz]	Level (dBm)
1673.2	-51.64
2509.8	nf
3346.4	nf
4183.0	nf
5019.6	nf
5856.2	nf
6692.8	-45.30
7529.4	nf
8366.0	nf
3760	nf
5640	nf
7520	nf
9400	nf
11280	nf
13160	nf
15040	nf
16920	nf
18800	nf
nf: noise floor	

Graphical results for GPRS mode:

Channel 190

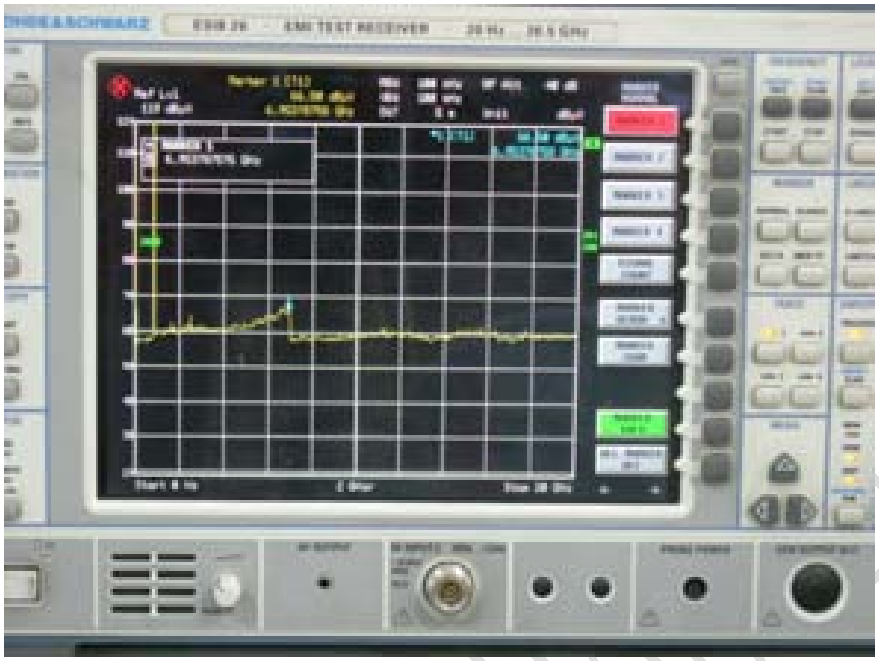


Channel 661

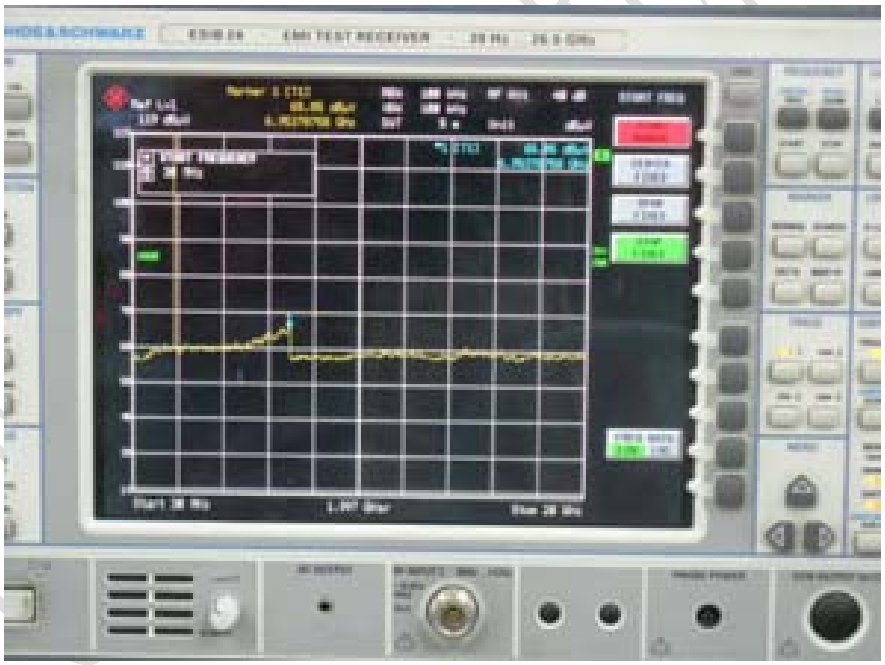
Test Results for EDGE mode:

Out of band emission	
Frequency [MHz]	Level (dBm)
1673.2	nf
2509.8	nf
3346.4	nf
4183.0	nf
5019.6	nf
5856.2	nf
6692.8	nf
7529.4	nf
8366.0	nf
3760	nf
5640	nf
7520	nf
9400	nf
11280	nf
13160	nf
15040	nf
16920	nf
18800	nf
nf: noise floor	

Graphical results for EDGE mode:



Channel 190

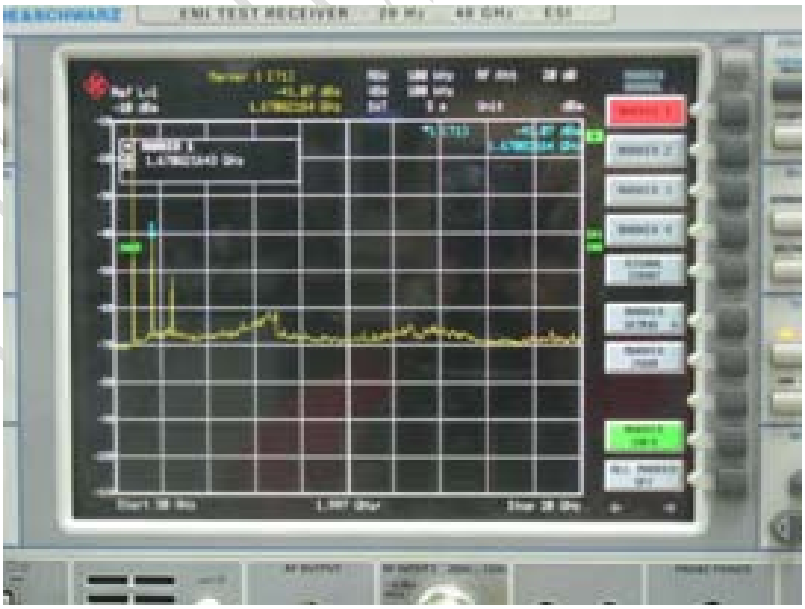


Channel 661

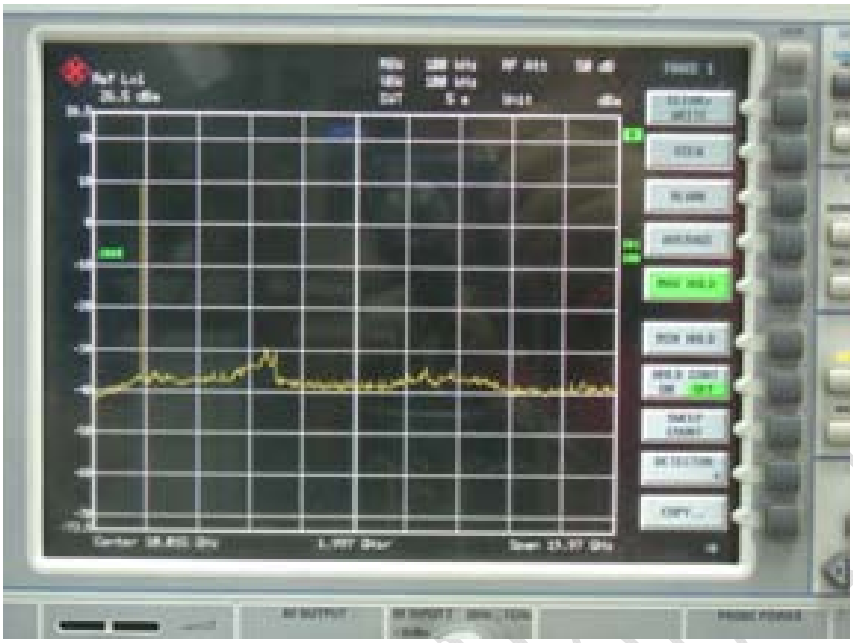
Test Results for WCDMA mode:

Out of band emission	
Frequency [MHz]	Level (dBm)
1670	nf
2505	nf
3340	nf
4175	nf
5010	nf
5845	nf
6680	nf
7515	nf
8350	nf
3760	nf
5640	nf
7520	nf
9400	nf
11280	nf
13160	nf
15040	nf
16920	nf
18800	nf

Graphical results for WCDMA mode:



Channel 4175



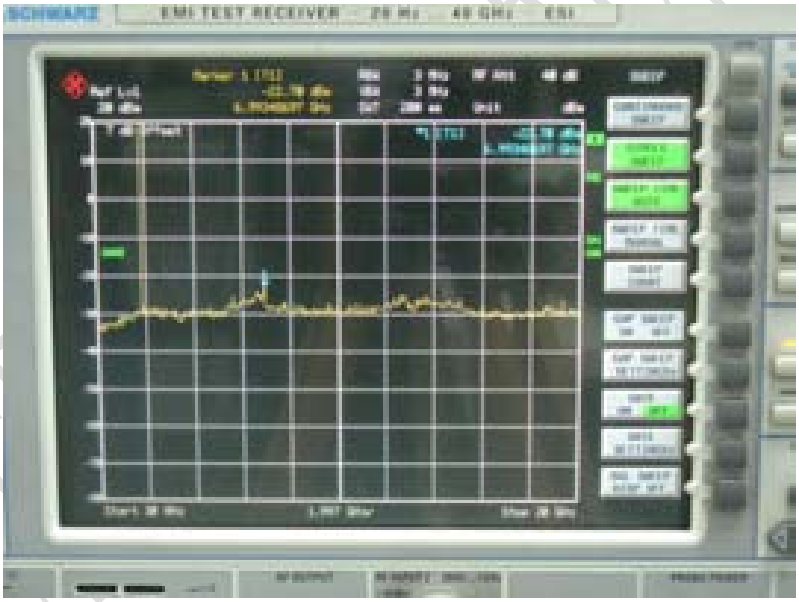
Channel 9400

Test Results for HSDPA mode:

Out of band emission	
Frequency [MHz]	Level (dBm)
1670	-41.07
2505	-52.32
3340	nf
4175	nf
5010	nf
5845	nf
6680	nf
7515	nf
8350	nf
3760	nf
5640	nf
7520	nf
9400	nf
11280	nf
13160	nf
15040	nf
16920	nf
18800	nf

Graphical results for HSDPA mode:

Channel 4175



Channel 9400

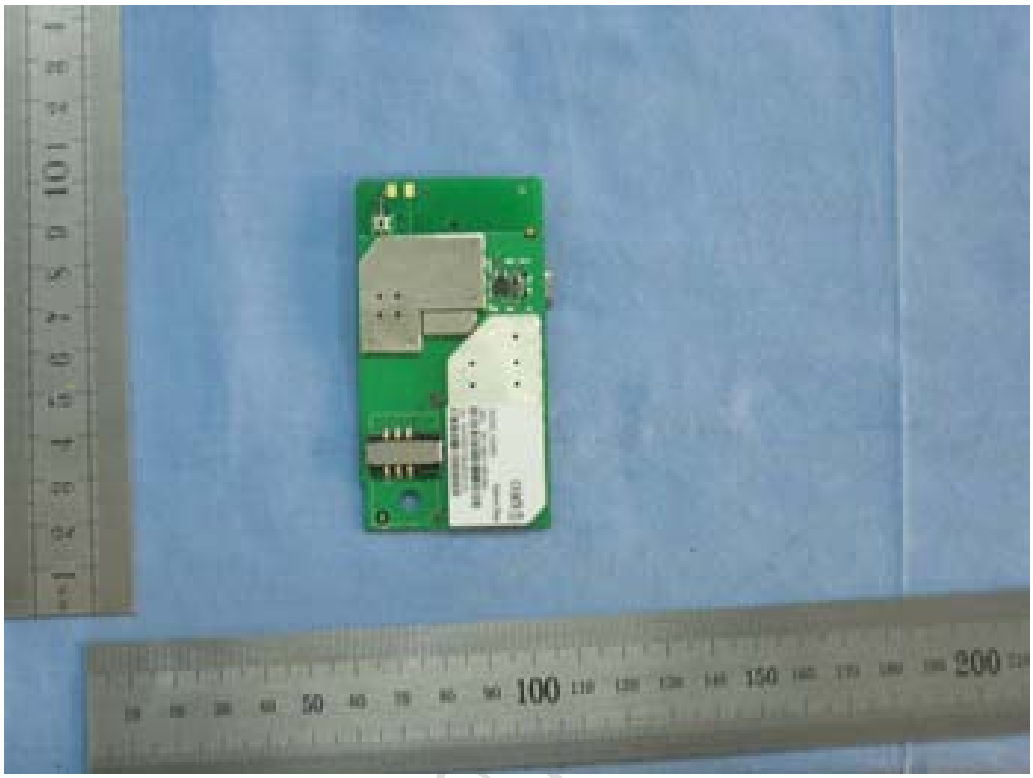
Annex A External Photos

Picture 1 Front view

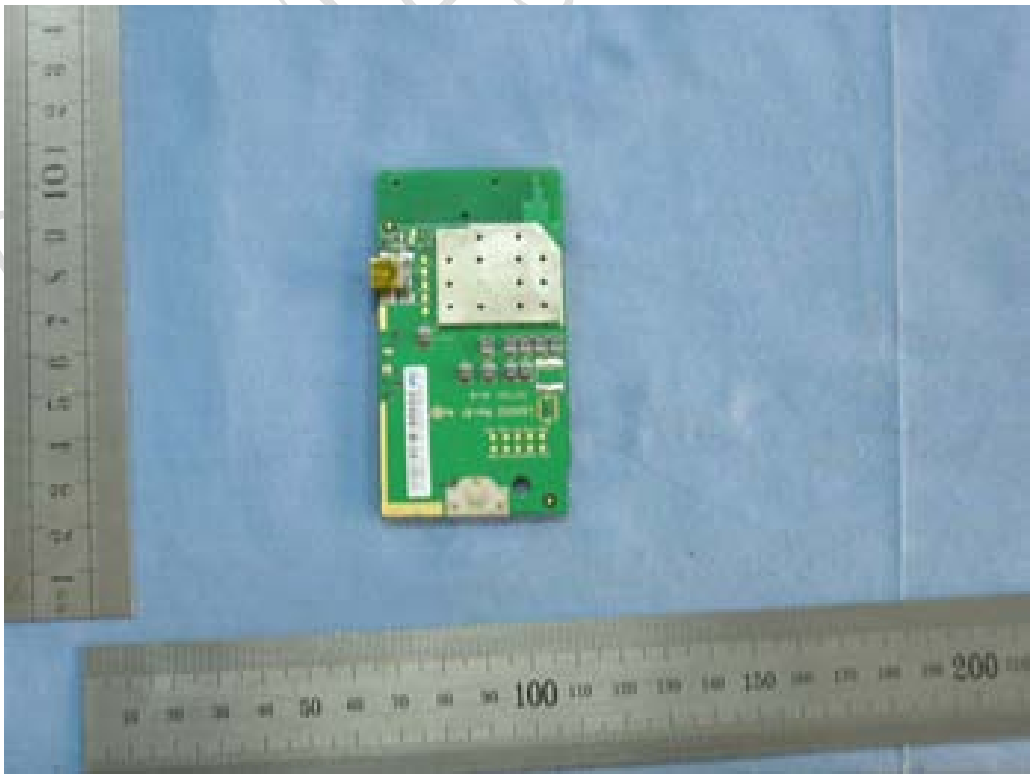
Picture 2 Back view

Picture 3 Cable

Annex B Internal Photos



Picture 5 Front view of the internal structure



Picture 6 Back view of the internal structure

ANNEX C Deviations from Prescribed Test Methods

No deviation from Prescribed Test Methods.

The End of this Report