

TEST REPORT

REPORT NUMBER: I11GW5907-FCC-RF

ON

Type of Equipment: WCDMA/GSM (GPRS) Dual-Mode Digital
Mobile Phone
Type of Designation: F953
Manufacturer: ZTE CORPORATION

ACCORDING TO

**FCC CFR Part 2, FREQUENCY ALLOCATIONS AND RADIO
TREATY MATTERS; GENERAL RULES AND REGULATIONS. Oct,
1, 2009**

PART 22, PUBLIC MOBILE SERVICES. Oct 1, 2009

**PART 24, PERSONAL COMMUNICATIONS SERVICES, Oct 1,
2009**

China Telecommunication Technology Labs.

Month date, year
June 2, 2011

Signature



He Guili
Director

FCC ID: Q78-F953
Report Date: 2011-06-02

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, and 22. The sample tested was found to comply with the requirements defined in the applied rules.

CONTENTS

1 GENERAL INFORMATION	4
1.1 NOTES	4
1.2 TESTERS	5
1.3 TESTING LABORATORY INFORMATION	6
1.4 DETAILS OF APPLICANT OR MANUFACTURER	7
2 TEST ITEM	8
2.1 GENERAL INFORMATION	8
2.2 OUTLINE OF EUT	8
2.3 MODIFICATIONS INCORPORATED IN EUT	8
2.4 EQUIPMENT CONFIGURATION	8
2.5 OTHER INFORMATION	8
3 SUMMARY OF TEST RESULTS	9
4 TEST RESULTS	10
4.1 RADIATED SPURIOUS EMISSION	10
4.2 RADIATED RF POWER OUTPUT AND ERP	21
4.3 OCCUPIED BANDWIDTH	25
4.4 FREQUENCY STABILITY OVER TEMPERATURE VARIATION	41
4.5 FREQUENCY STABILITY OVER VOLTAGE VARIATION	45
4.6 CONDUCTED RF POWER OUTPUT	48
4.7 CONDUCTED SPURIOUS EMISSION	52
4.8 BAND EDGE	58
ANNEX A EXTERNAL PHOTOS	70
ANNEX B INTERNAL PHOTOS	71
ANNEX C DEVIATIONS FROM PRESCRIBED TEST METHODS	72

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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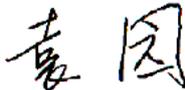
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FCC Parts 2, 22, 24
Equipment: F953

REPORT NO.: I11GW5907-FCC-RF

1.2 Testers

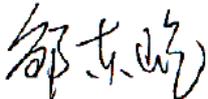
Name: Li Guoqing
Position: Engineer
Department: Department of EMC test
Signature: 

Name: Yuan Yuan
Position: Engineer
Department: Department of EMC test
Signature: 

Editor of this test report:

Name: Li Guoqing
Position: Engineer
Department: Department of EMC test
Date: 2011-06-02
Signature: 

Technical responsibility for area of testing:

Name: Zou Dongyi
Position: Manager
Department: Department of EMC test
Date: 2011-06-02
Signature: 

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
Fax: +86 10 68011404
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 17025:2005

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: ZTE Corporation
Address: ZTE Plaza, Keji Road South, Hi-Tech Industrial Park,
Nanshan District, Shenzhen, Guangdong, 518057,
P.R.China
Country: China
Telephone: 86-21-68895196
Fax: 86-21-68895196
Contact: Chen Yanli
Telephone: 86-21-68895196
Email: chen.yanli1@zte.com.cn

1.4.2 Manufacturer (if different from applicant in section 1.4.1)

Name: --
Address: --

1.4.3 Manufactory (if different from applicant in section 1.4.1)

Name: --
Address: --

2 Test Item

2.1 General Information

Manufacturer: ZTE Corporation
 Name: WCDMA/GSM (GPRS) Dual-Mode Digital Mobile Phone
 Model Number: F953
 Serial Number: 867726000000036
 Production Status: Product
 Receipt date of test item: 2011-05-03

2.2 Outline of EUT

EUT is a WCDMA/ GSM(GPRS) Dual-Mode Digital Mobile Phone supporting GSM, GPRS and EGPRS of 900/1800/850/1900, WCDMA and HSDPA of FDD I/V. It supports multislots class 12 for GPRS/EGPRS. Upon the applicant's request, only GSM850/1900 and WCDMA 850 band was tested in this application.

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	handset	ZTE CORPORATION	F953	8677260000 00036	None
B	adapter	ZTE Corporation	STC-A2205017 00USBA-Z	--	None
C	battery	ZTE Corporation	Li3709T42P3h5 04047	3003100926 0079730	None
D	Earphone	ZTE Corporation	--	--	None

Cables:

Item	Cable Type	Manufacturer	Length	Shield	Quantity	Remarks
1	DC cable on Adapter	ZTE Corporation	1.2 m	No	1	None

2.5 Other Information

Version of hardware and software:

HW Version: wx4B

SW Version: VIV_BR_F953_V0.0.0B02

3 Summary of Test Results

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

GSM/GPRS/EGPRS mode:		
Specification Clause	Name of Test	Result
2.1051, 24.238, 2.1053,22.917	Radiated Spurious Emission	Pass
2.1046,24.232, 22.913(a)	Radiated RF Power Output 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
2.1051,24.238, 2.1053, 22.917	Band Edge	Pass
Note 1: No applicable performance criteria.		

WCDMA/HSDPA mode:		
Specification Clause	Name of Test	Result
2.1051, 24.238, 2.1053,22.917	Radiated Spurious Emission	Pass
2.1046,24.232, 22.913(a)	Radiated RF Power Output 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
2.1051,24.238, 2.1053, 22.917	Band Edge	Pass
Note 2: No applicable performance criteria.		

4 Test Results

4.1 Radiated Spurious Emission

Specifications:	2.1051, 24.238, 2.1053, 22.917					
Date of Tests	2011-05-04					
Test conditions:	Ambient Temperature:15°C-35°C Relative Humidity:30%-60% Air pressure: 86-106kPa					
Operation Mode	TX on, channel 190 and 661 for GSM, GPRS and EGPRS mode 850 and 1900 band respectively; and channel 4175 for WCDMA and HSDPA FDD V band respectively.					
Test Results:	Pass					
Test equipment Used:						
Asset Number	Description	Manufacturer	Model Number	Serial Number	Cal Due	State
7805	EMI Test Receiver	R/S	ESIB26	100211	2012-01-12	Normal
7330	Ultra Broadband Antenna	SCHWARZBECK	VULB 9160	--	2013-11-24	Normal
7330	Double-Ridged Horn Antenna	R/S	HF906	100037	2013-01-24	Normal
713	Fully-Anechoic Chamber	ETS	11.8m×6.5m×6.3 m	--	2013-11-16	Normal
111835	Wireless Communications Test Set	R&S	CMU200	1100000802	2011-06-08	Normal

Limit Level Construction:

According to Part 22.917 (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:
 $P(\text{dBm}) - (43 + 10 \log(P)) \text{ dB} = -13\text{dBm}$

Limits for Radiated spurious emissions(UE)

Frequency range	Limit Level /Resolution Bandwidth
30 MHz to 20000 MHz	-13dBm/1MHz

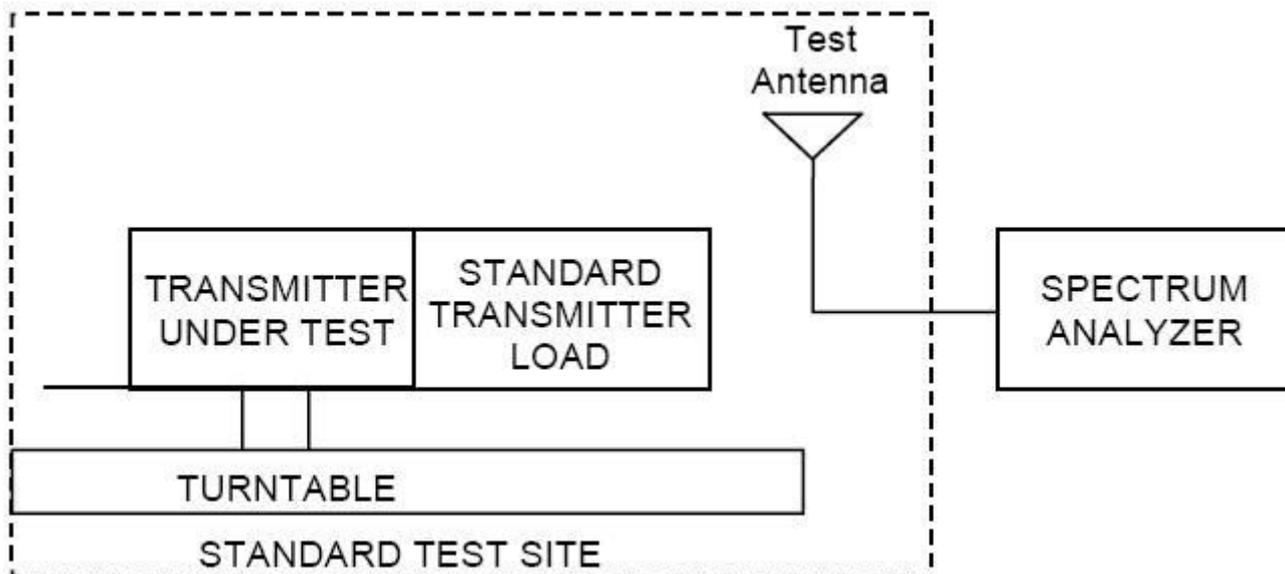
Test Setup:

The EUT was placed in an anechoic chamber. The Wireless Communications Test Set was used to set the TX channel and power level and modulate the TX signal with different bit patterns.

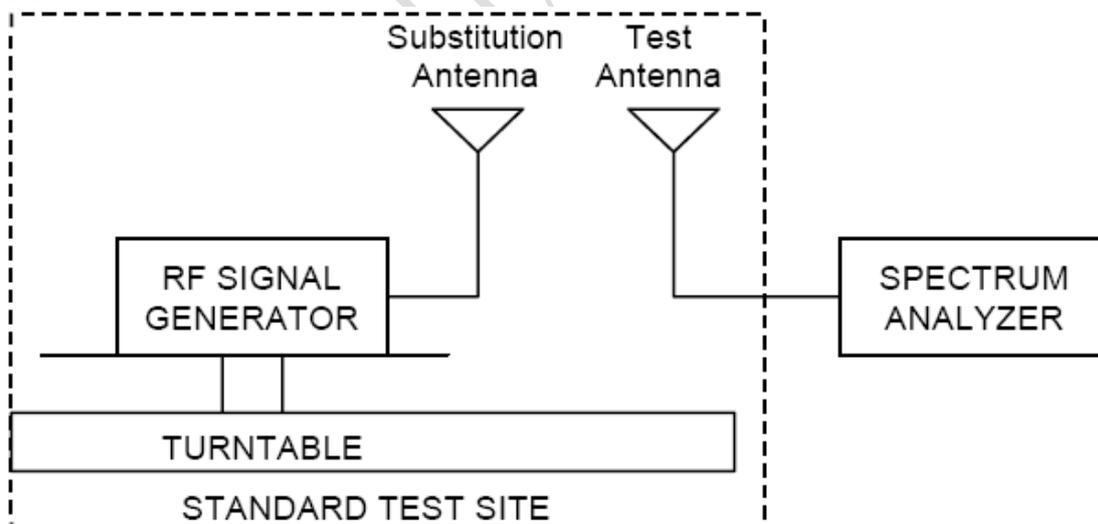
Test Method:

The measurement method is substitution method accordance with section 2.2.12 of ANSI/TIA-603-C: *Land Mobile FM or PM Communications Equipment Measurement and Performance Standards*.

(a) Connect the equipment as illustrated and measure the spurious emissions as the method as above.



(b) Reconnect the equipment as illustrated.



(c) Remove the transmitter and replace it with a substitution antenna. The center of the substitution antenna should be approximately at the same location as the center of the transmitter.

(d) Feed the substitution antenna at the transmitter end with a signal generator connected to the antenna by means of a non-radiating cable. With the antennas at both ends horizontally polarized, and with the signal generator tuned to a

particular spurious frequency, raise and lower the test antenna to obtain a maximum reading at the spectrum analyzer. Adjust the level of the signal generator output until the previously recorded maximum reading for this set of conditions is obtained. This should be done carefully repeating the adjustment of the test antenna and generator output.

(e) Repeat step d) with both antennas vertically polarized for each spurious frequency.

(f) Calculate power in dBm into a reference ideal half-wave dipole antenna by reducing the readings obtained in steps d) and e) by the power loss in the cable between the generator and the antenna, and further corrected for the gain of the substitution antenna used relative to an ideal half-wave dipole antenna by the following formula:

$$P_d(\text{dBm}) = P_g(\text{dBm}) - \text{cable loss (dB)} + \text{antenna gain (dB)}$$

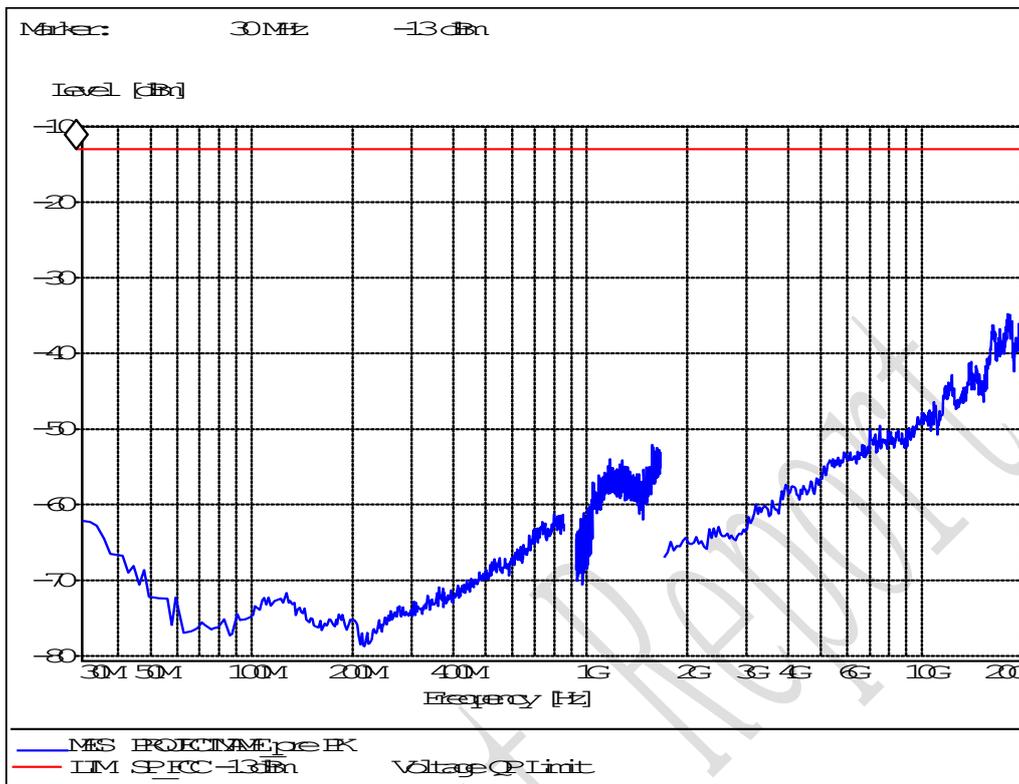
where:

P_d is the dipole equivalent power and

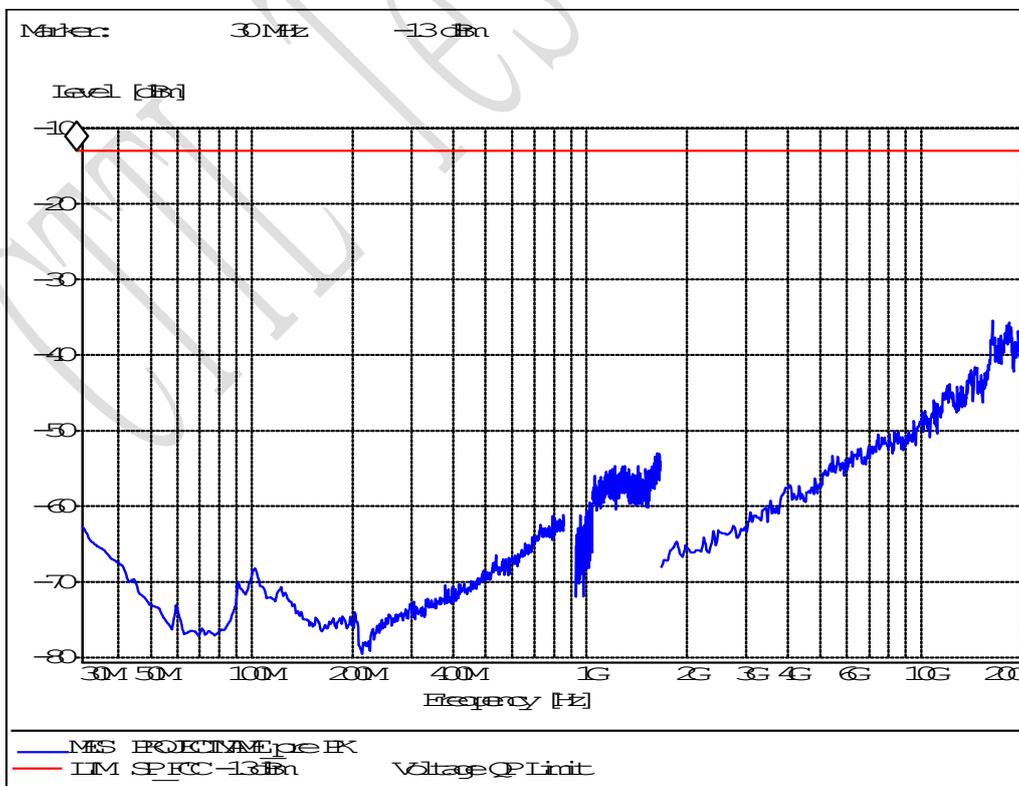
P_g is the generator output power into the substitution antenna.

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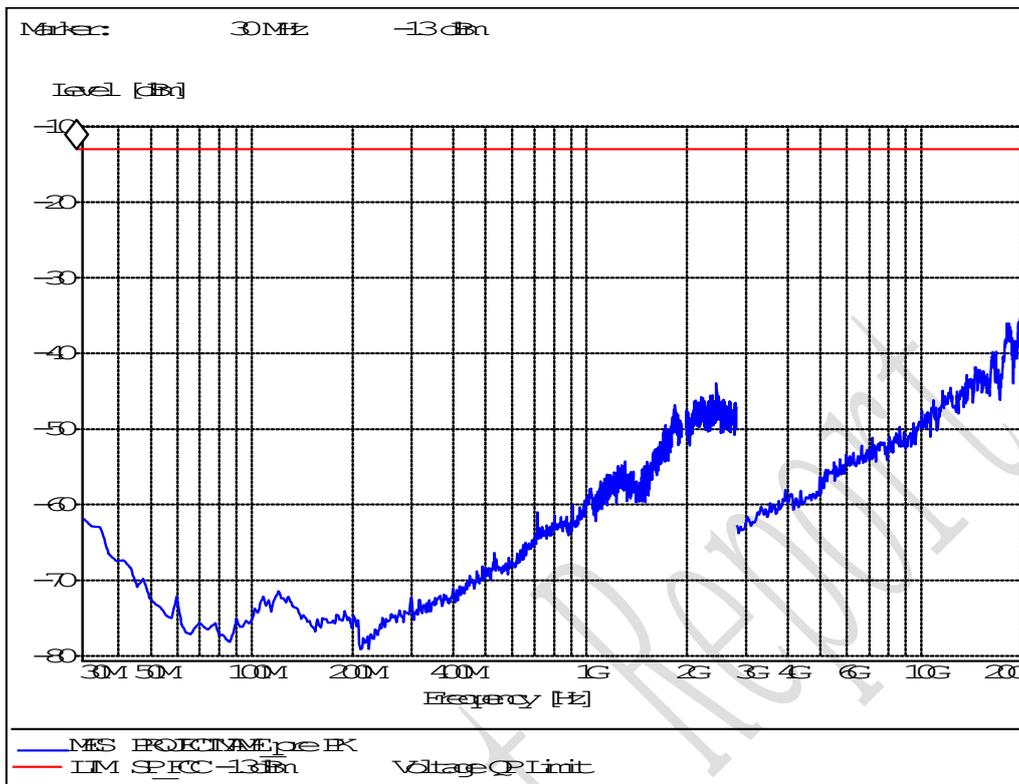
Test Results for GSM mode:



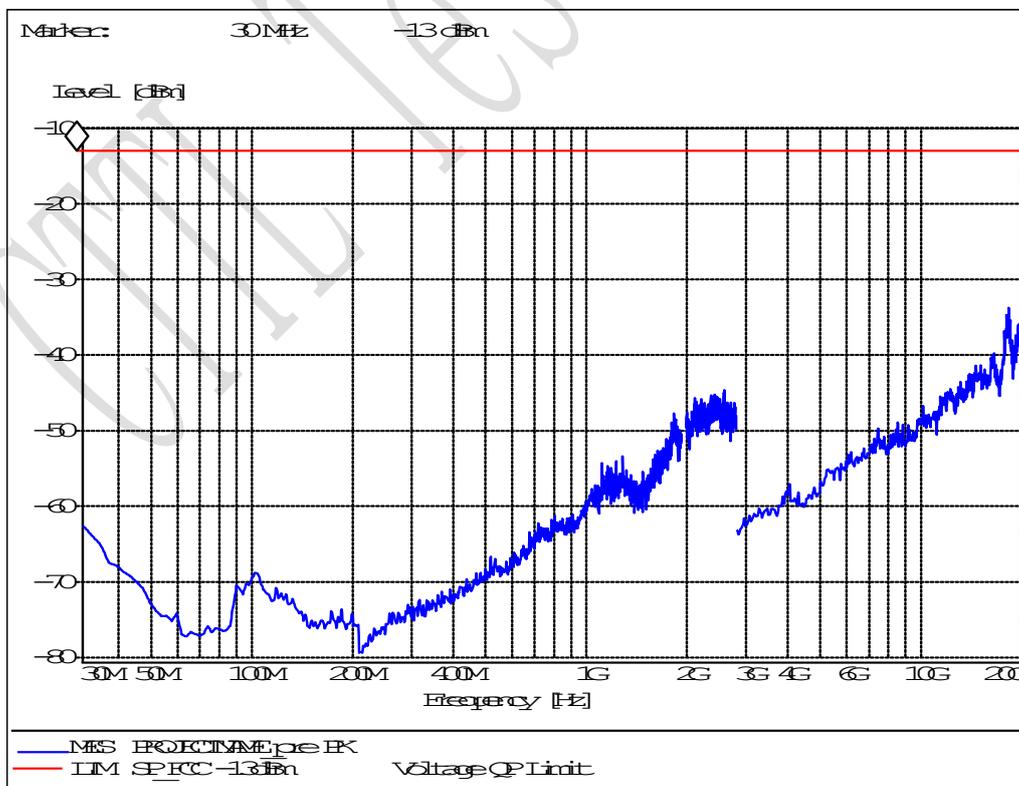
S190VF for GSM850 mode



S190HF for GSM850 mode

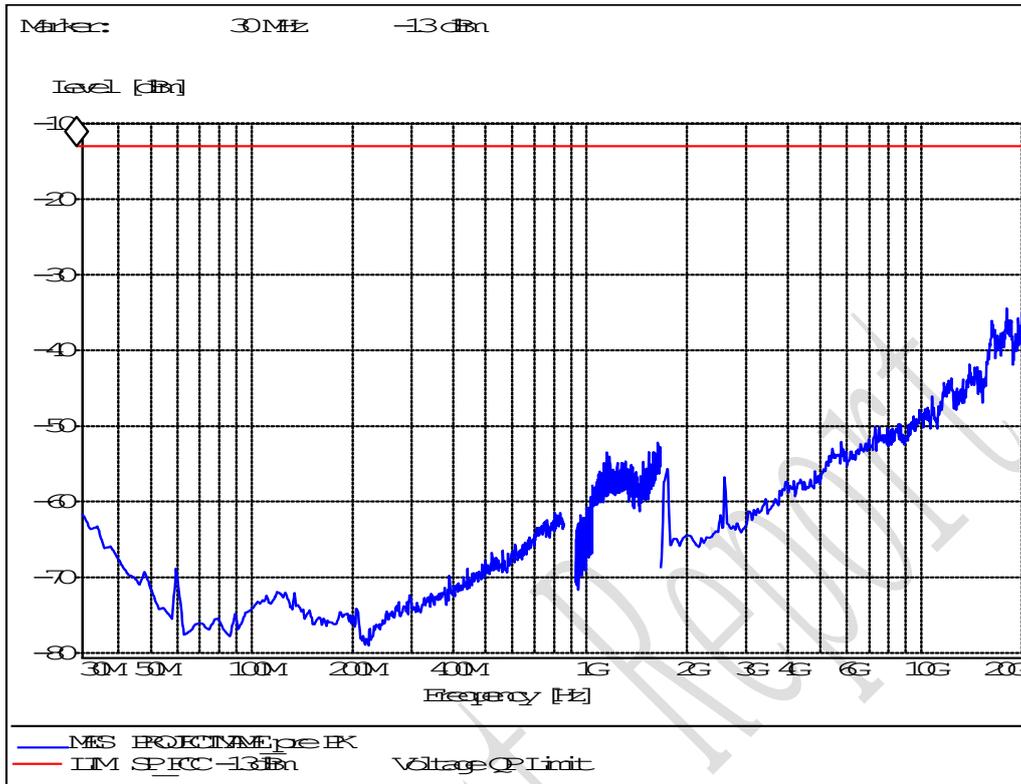


S661VF for GSM850 mode

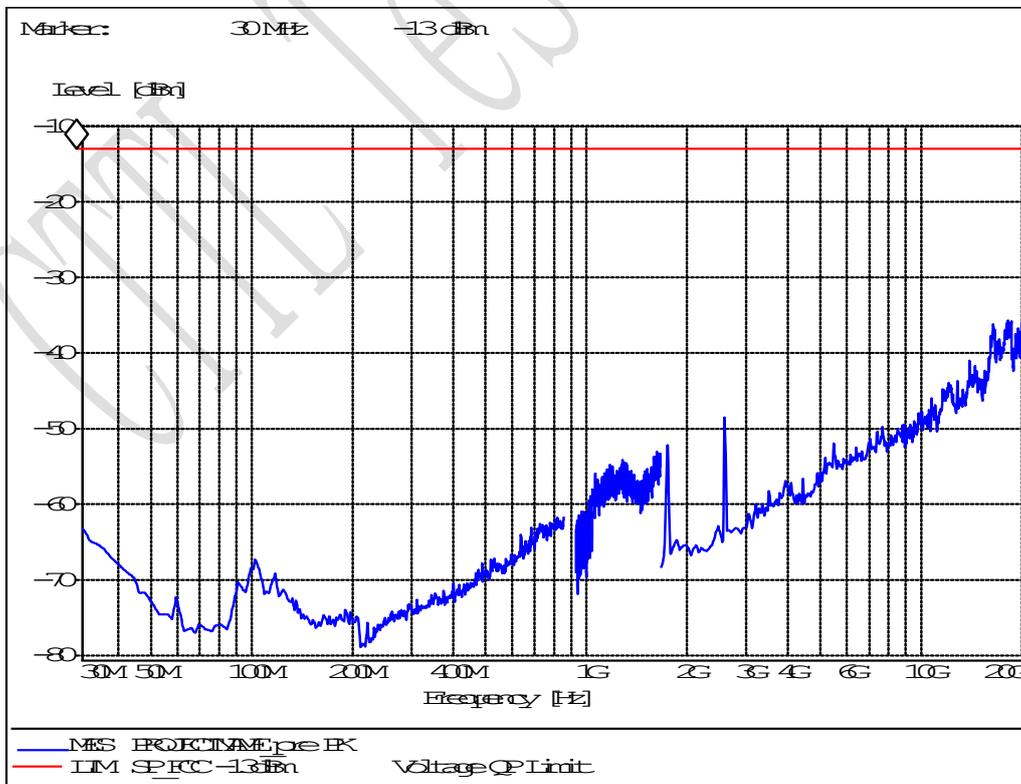


S661HF for GSM850 mode

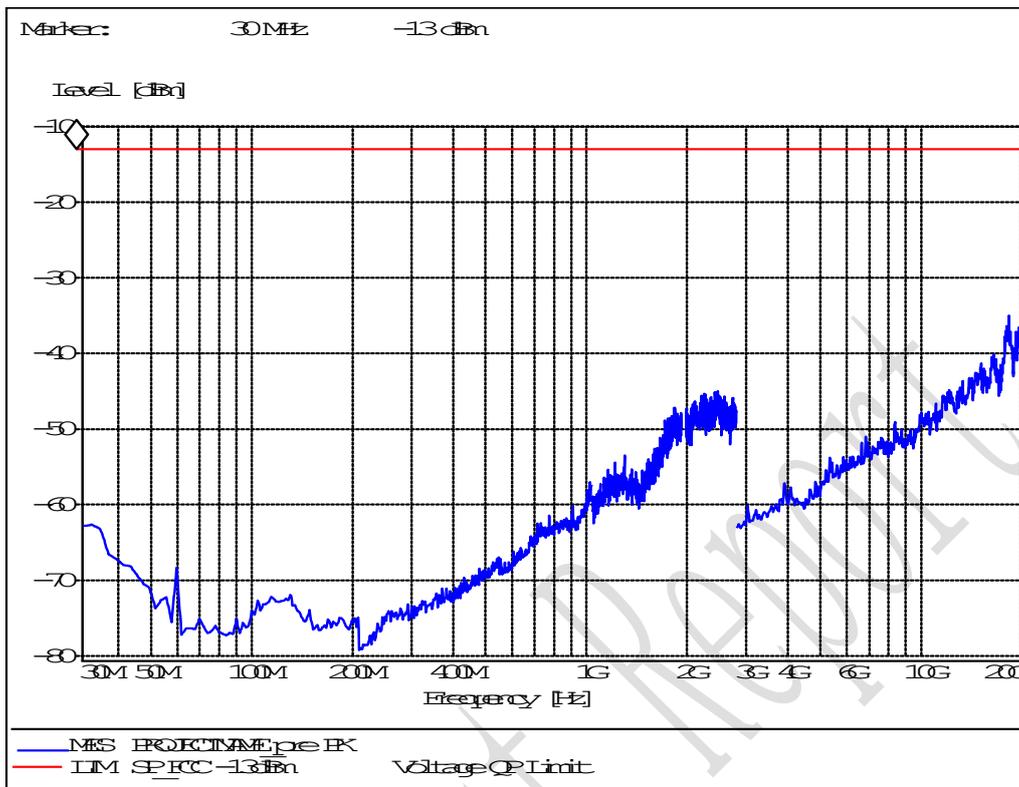
Test Results for GPRS mode:



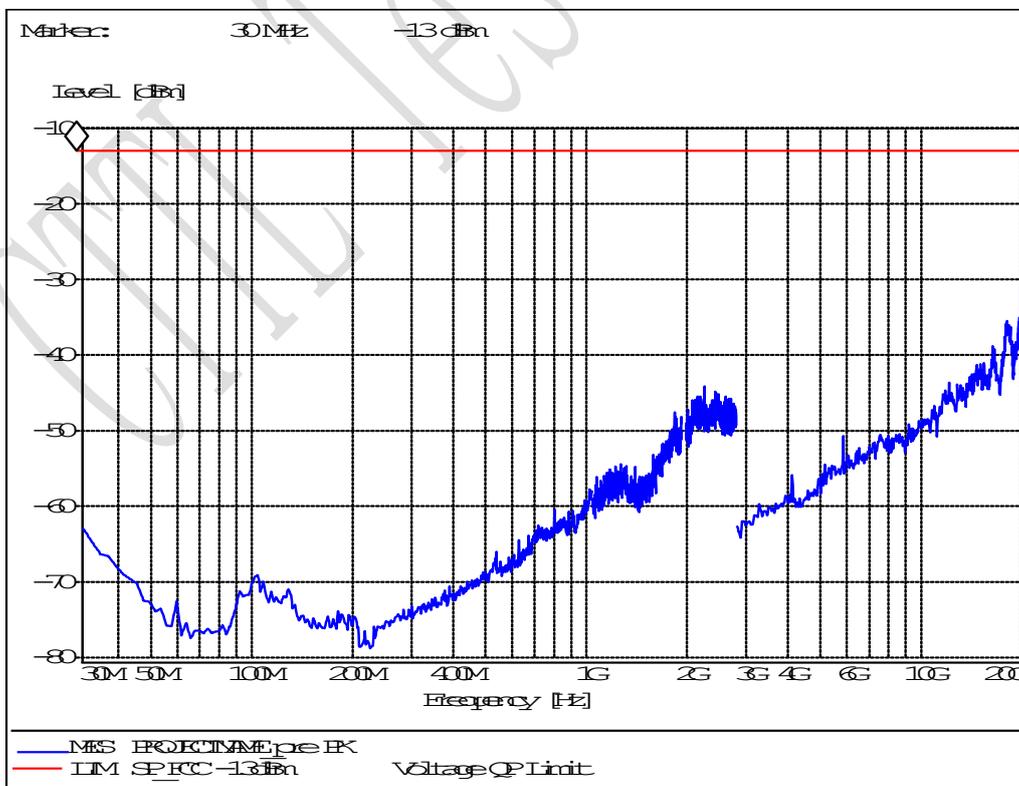
S190VF for GPRS850 mode



S190HF for GPRS850 mode

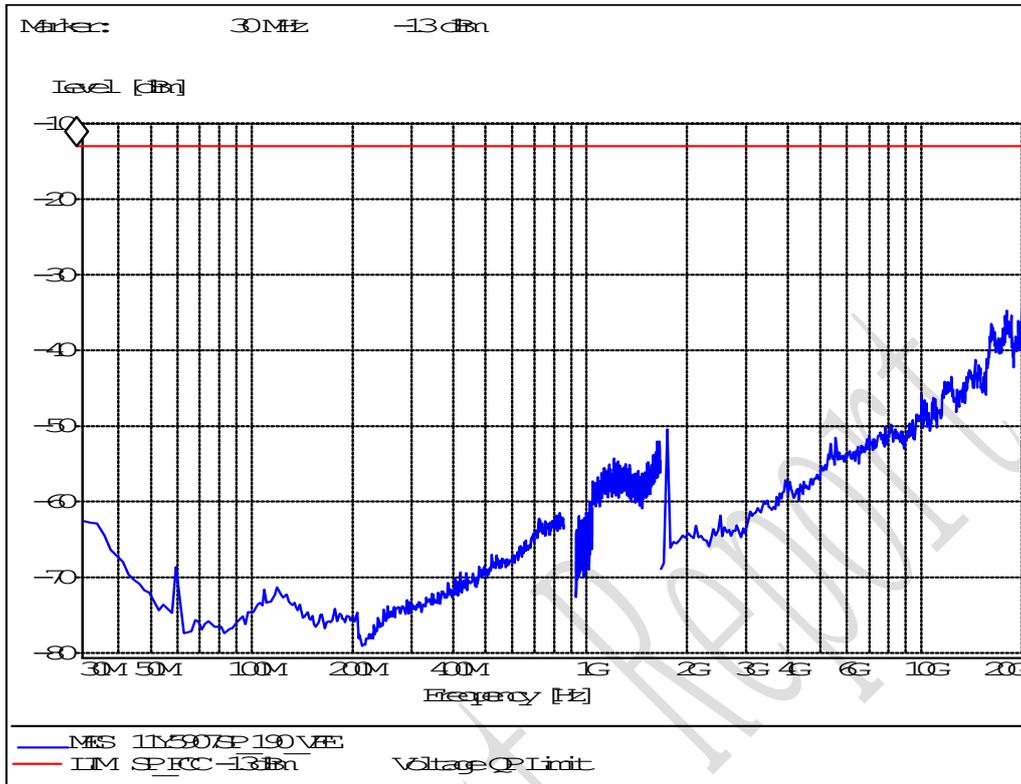


S661VF for GPRS1900 mode

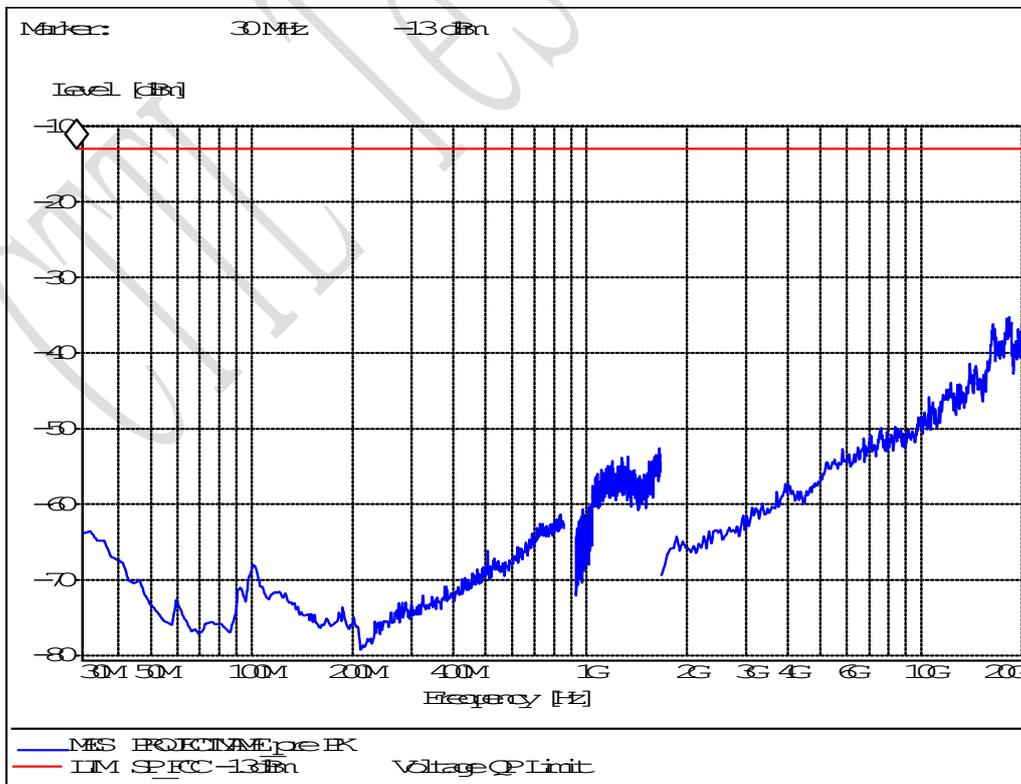


S661HF for GPRS1900 mode

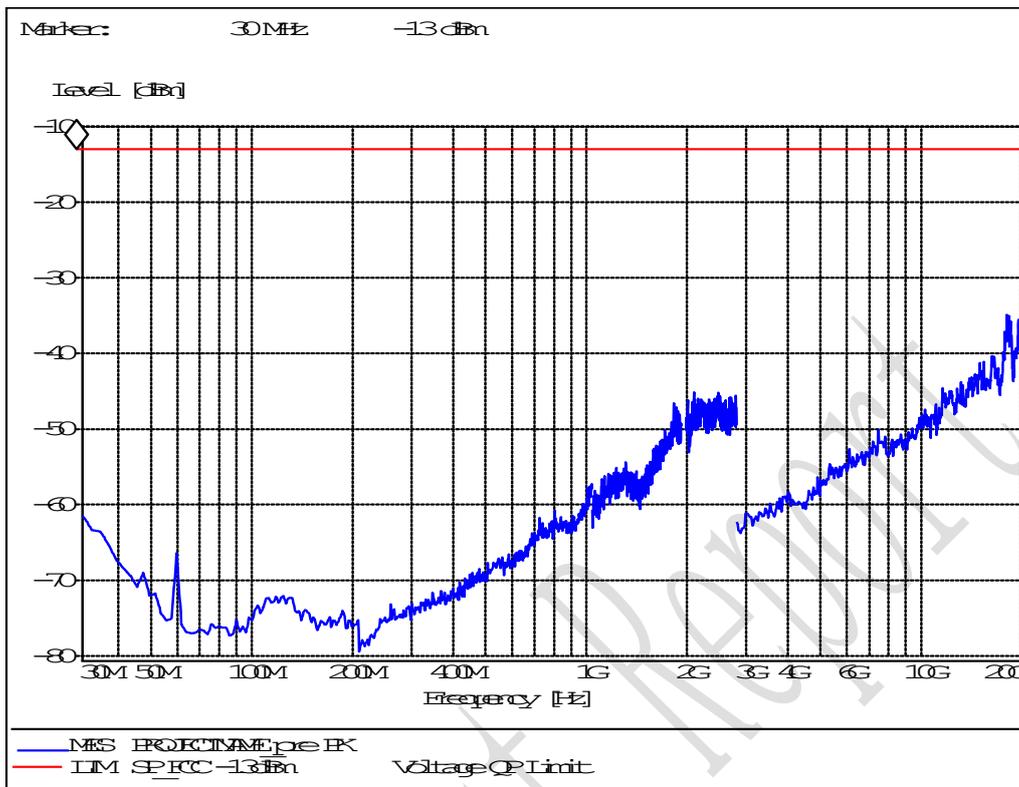
Test Results for EGPRS mode:



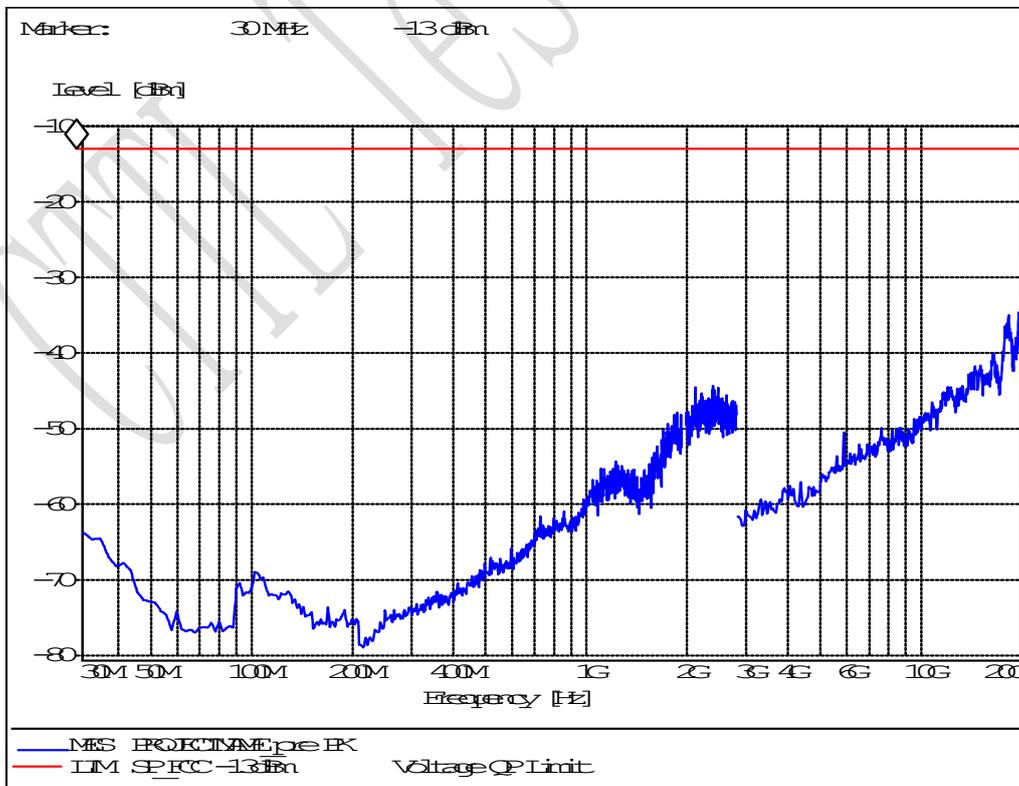
S190VF for EGPRS850 mode



S190HF for EGPRS850 mode

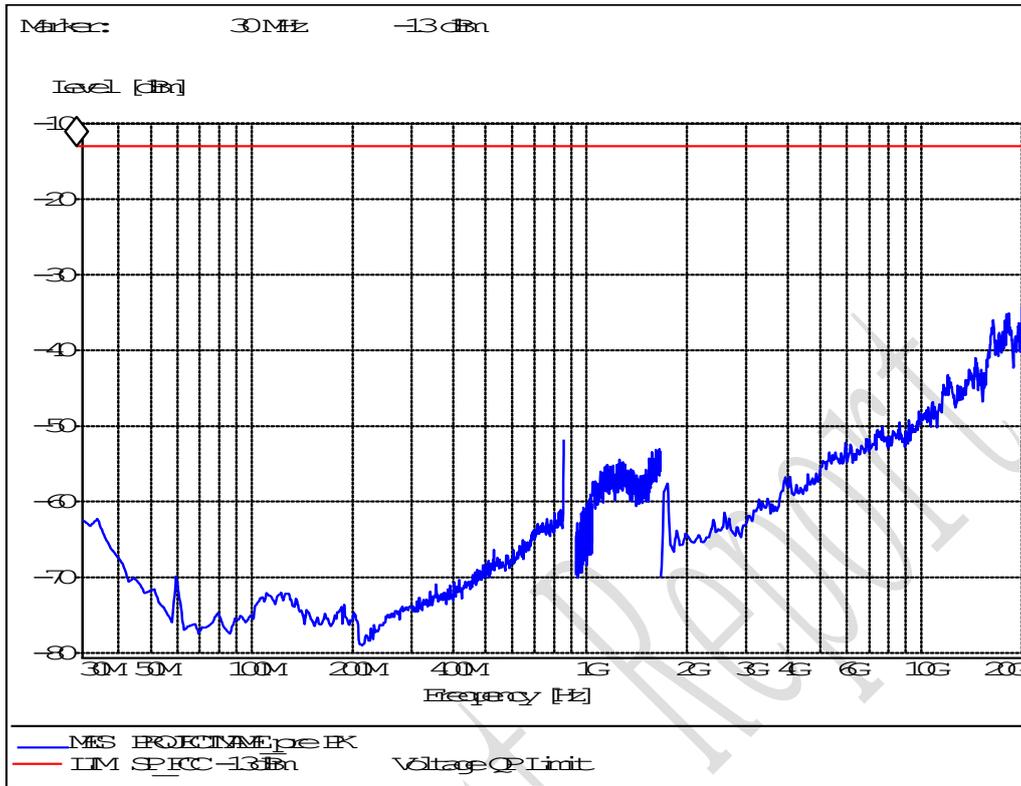


S661VF for EGPRS1900 mode

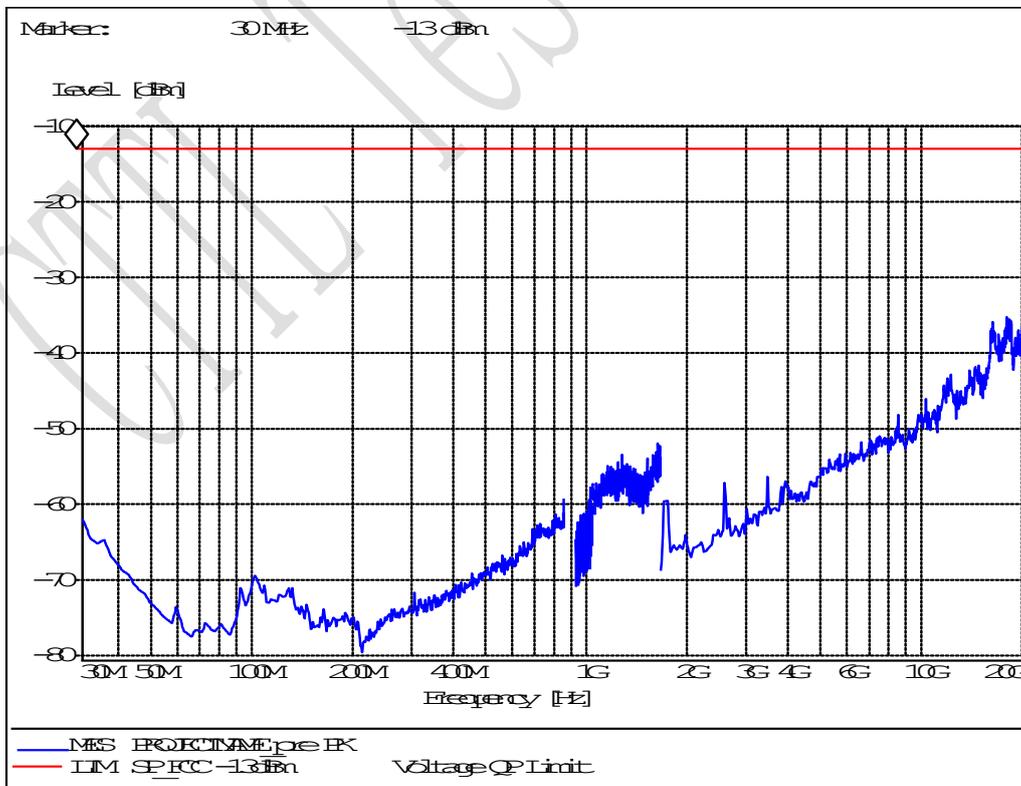


S661HF for EGPRS1900 mode

Test Results for WCDMA mode:

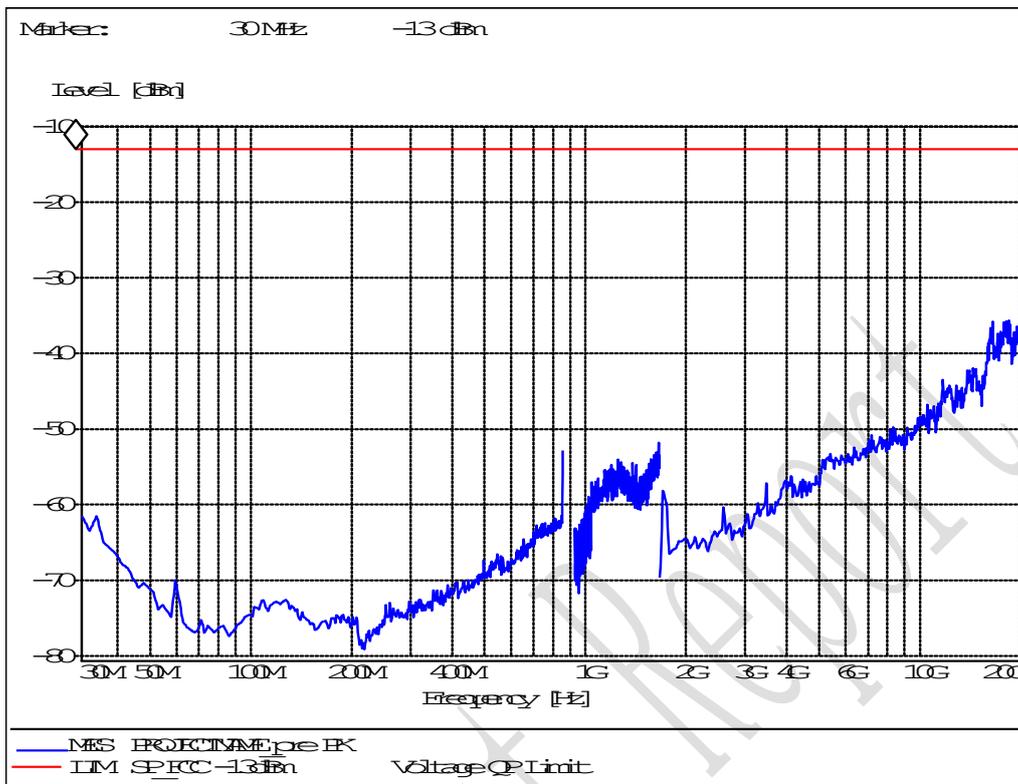


S4175VF for WCDMA FDD V mode

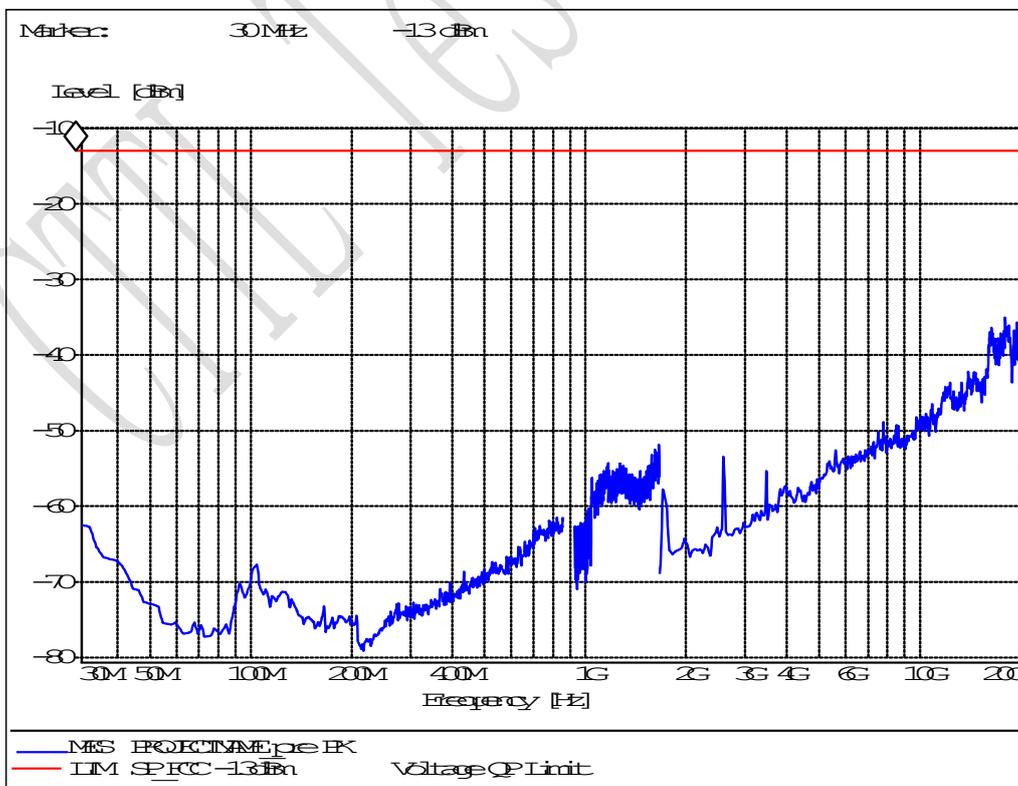


S4175HF for WCDMA FDD V mode

Test Results for HSDPA mode:



S4175VF for HSDPA FDD V mode



S4175HF for HSDPA FDD V mode

4.2 Radiated RF Power Output and ERP

Specifications:	2.1046,24.232,22.913(a)					
Date of Tests	2011-05-05 and 2011-05-13					
Test conditions:	Ambient Temperature:15°C-35°C Relative Humidity:30%-60% Air pressure: 86-106kPa					
Operation Mode	TX on, channel128, 190, 251, 512, 661 and 810 for GSM, GPRS and EGPRS; channel 4132, 4175 and 4233, for WCDMA and HSDPA.					
Test Results:	Pass					
Test equipment Used:						
Asset Number	Description	Manufacturer	Model Number	Serial Number	Cal Due	State
7805	EMI Test Receiver	R/S	ESIB26	100211	2012-01-12	Normal
7330	Ultra Broadband Antenna	SCHWARZBECK	VULB 9160	--	2013-11-24	Normal
713	Fully-Anechoic Chamber	ETS	11.8m×6.5m×6.3m	--	2013-11-16	Normal
111835	Wireless Communications Test Set	R&S	CMU200	1100000802	2011-06-08	Normal

Limit Level Construction:

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

Limits for ERP

Frequency range	Limit Level (ERP)
TX channel	7W or 38.5dBm

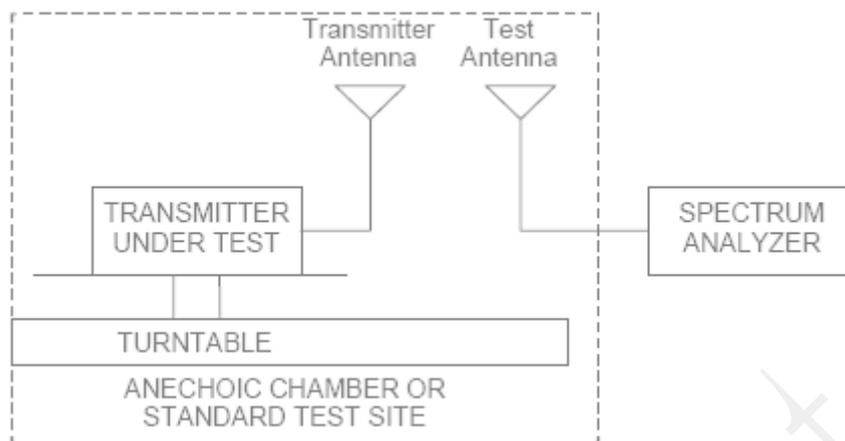
Test Setup:

The EUT was set in an anechoic chamber, which is connected to the Wireless Communications Test Set located outside the chamber. The test was done using an automated test system, where all test equipments were controlled by a computer. The test distance separation from the receive antenna is 3 meters.

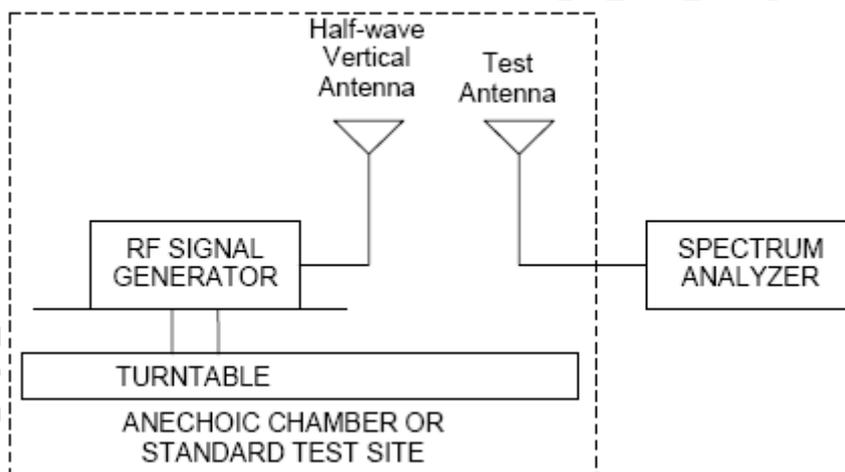
Test Method

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

- a) Connect the equipment as illustrated. Mount the equipment in a vertical orientation on a multi-axis plastic holder in a RF anechoic chamber.



- b) Key the transmitter on, then rotate the EUT 360 degree azimuthally and record spectrum analyzer power level (LVL) measurements at angular increments that are sufficiently small to permit resolution of all peaks.
- c) Replace the transmitter under test with a vertically polarized half-wave dipole, or an antenna whose gain is known relative to an ideal half-wave dipole, illustrated as following. The center of the antenna should be at the same location as the center of the antenna under test.



- d) Connect the antenna to a signal generator with a known output power and record the path loss (in dB) as LOSS.

$$LOSS = \text{Generator Output Power (dBm)} - \text{Analyzer reading (dBm)}$$

- e) Determine the effective radiated output power at each angular position from the readings in steps b) and d) using the following equation:

$$ERP \text{ (dBm)} = \text{LVL (dBm)} + \text{LOSS (dB)}$$

- f) The maximum ERP is the maximum value determined in the preceding step.

Method of Calculation

ERP can then be calculated as follows:

$$P_d \text{ (dBm)} = P_g \text{ (dBm)} - \text{Losses (dB)} + \text{Antenna Gain (dBd)}$$

where:

dBd refers to gain relative to an ideal dipole.

Test Data:

GSM 850 band mode:

Channel	Output power (Pg) [dBm]	Loss [dB]	Antenna Gain [dBd]	ERP (P _d) [dBm]
128 (824.2MHz)	18.91	0.3	2.73	19.19
190 (836.6MHz)	21.98	0.5	2.80	22.13
251 (848.8MHz)	20.23	0.5	2.87	20.45

GSM 1900 band mode:

Channel	Output power (Pg) [dBm]	Loss [dB]	Antenna Gain [dBd]	EIRP (P _d) [dBm]
512 (1850.2MHz)	18.40	0.3	2.73	20.83
661 (1880.0MHz)	19.83	0.5	2.80	22.13
810 (1909.8MHz)	19.87	0.5	2.87	22.24

GPRS 850 band mode:

Channel	Output power (Pg) [dBm]	Loss [dB]	Antenna Gain [dBd]	ERP (P _d) [dBm]
128 (824.2MHz)	19.97	0.3	2.73	20.25
190 (836.6MHz)	19.22	0.5	2.80	19.37
251 (848.8MHz)	22.11	0.5	2.87	22.33

GPRS 1900 band mode:

Channel	Output power (Pg) [dBm]	Loss [dB]	Antenna Gain [dBd]	EIRP (P _d) [dBm]
512 (1850.2MHz)	19.43	0.3	2.73	21.86
661 (1880.0MHz)	20.66	0.5	2.80	22.96
810 (1909.8MHz)	20.38	0.5	2.87	22.75

EGPRS 850 band mode:

Channel	Output power (Pg) [dBm]	Loss [dB]	Antenna Gain [dBd]	ERP (Pd) [dBm]
128 (824.2MHz)	20.10	0.3	2.73	20.38
190 (836.6MHz)	20.12	0.5	2.80	19.37
251 (848.8MHz)	21.35	0.5	2.87	21.57

EGPRS 1900 band mode:

Channel	Output power (Pg) [dBm]	Loss [dB]	Antenna Gain [dBd]	EIRP (Pd) [dBm]
512 (1850.2MHz)	21.39	0.3	2.73	23.82
661 (1880.0MHz)	21.53	0.5	2.80	23.83
810 (1909.8MHz)	20.51	0.5	2.87	22.88

WCDMA FDD V band mode:

Channel	Output power (Pg) [dBm]	Loss [dB]	Antenna Gain [dBd]	ERP (Pd) [dBm]
4132 (826.4MHz)	10.65	0.3	2.73	10.93
4175 (835.0MHz)	11.06	0.5	2.80	11.21
4233 (846.6MHz)	9.85	0.5	2.87	10.07

HSDPA FDD V band mode:

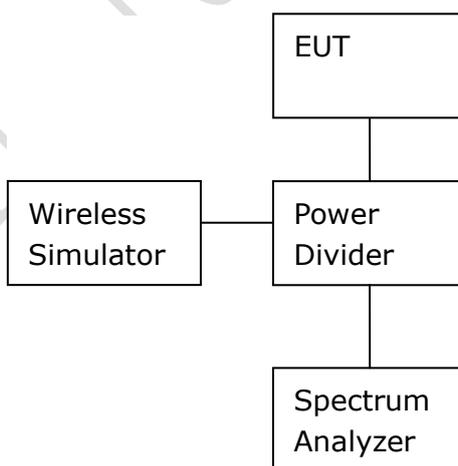
Channel	Output power (Pg) [dBm]	Loss [dB]	Antenna Gain [dBd]	ERP (Pd) [dBm]
4132 (826.4MHz)	10.38	0.3	2.73	10.66
4175 (835.0MHz)	12.07	0.5	2.80	12.22
4233 (846.6MHz)	8.89	0.5	2.87	9.11

4.3 Occupied bandwidth

Specifications:	2.1049,22.917(b),24.238(b)					
Date of Test	2011-03-31~2011-04-09					
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa					
Operation Mode	TX on, channel128, 190, 251, 512, 661 and 810 for GSM, GPRS and EGPRS; channel 4132, 4175 and 4233, for WCDMA and HSDPA.					
Test Results:	--					
Test equipment Used:						
Asset Number	Description	Manufacturer	Model Number	Serial Number	Cal Due	State
7330	EMC Analyzer	Agilent	E7405A	US41160321	2011-08-22	Normal
---	Power splitter	Jie sai	---	1000132	2012-01-04	Normal
111835	Wireless Communications Test Set	R&S	CMU200	1100000802	2012-04-01	Normal

Test Setup

During the test, the EUT was controlled via the Wireless Communications Test Set to ensure max power transmission and proper modulation and measured by spectrum analyzer.



Test Method

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

Note:

None

Test Data:

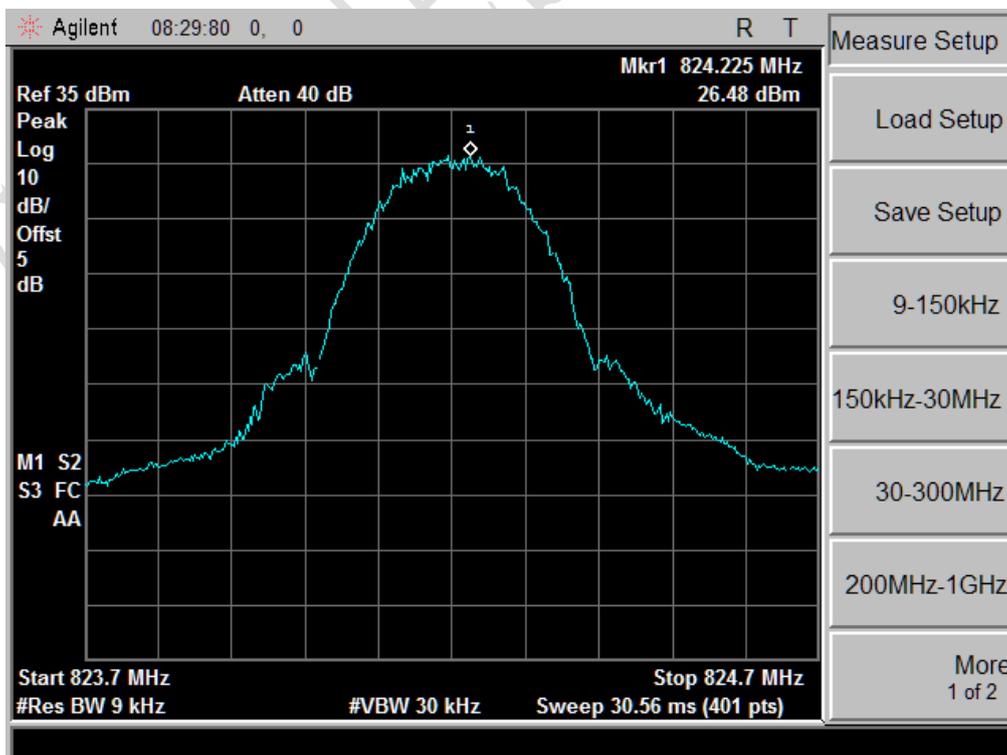
GSM 850 band mode

EUT channel no.	99% occupied bandwidth [kHz]
128 (824.2MHz)	247.5
190 (836.6MHz)	247.5
251 (848.8MHz)	245.0

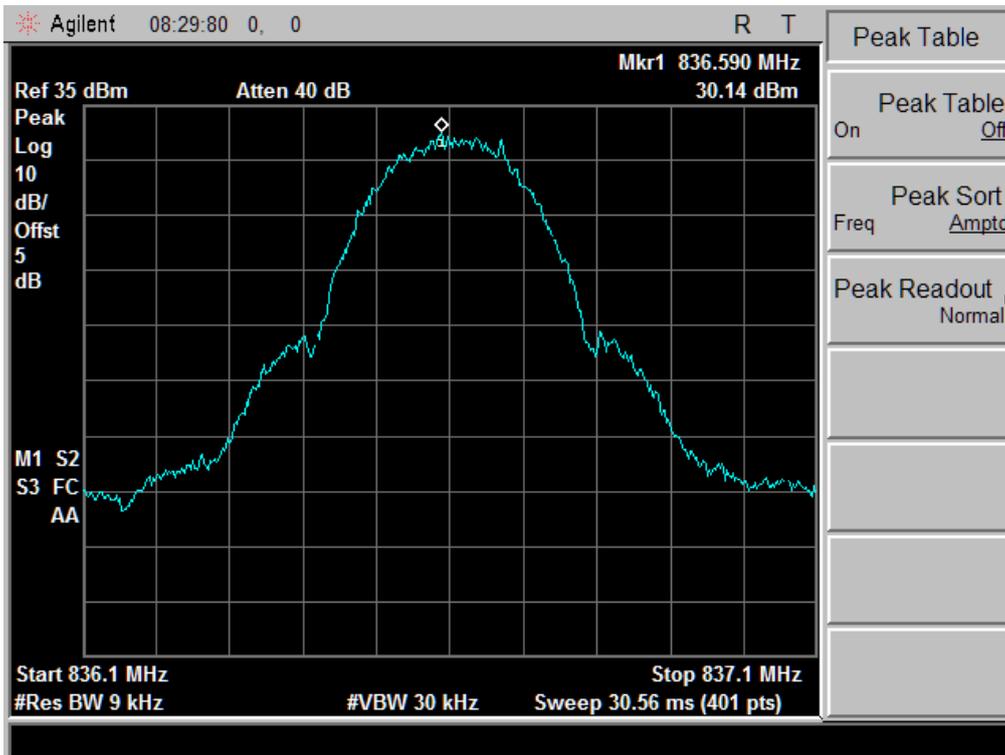
GSM 1900 band mode

EUT channel no.	99% occupied bandwidth [kHz]
512 (1850.2MHz)	247.5
661 (1880.0MHz)	247.5
810 (1909.8MHz)	242.5

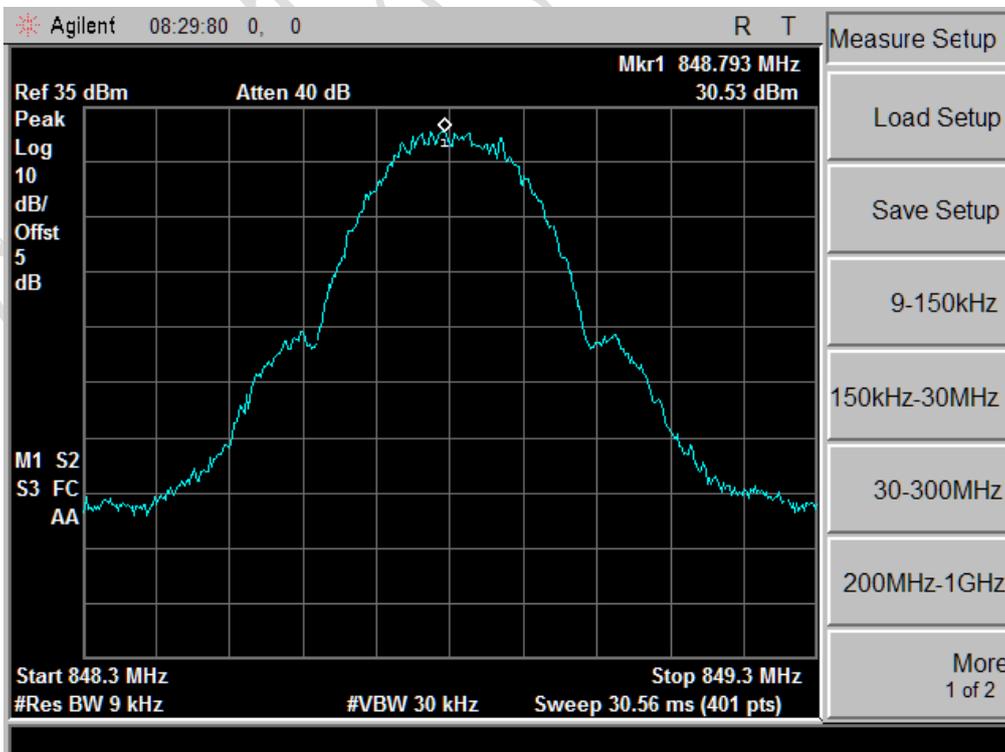
Graphical results for GSM mode:



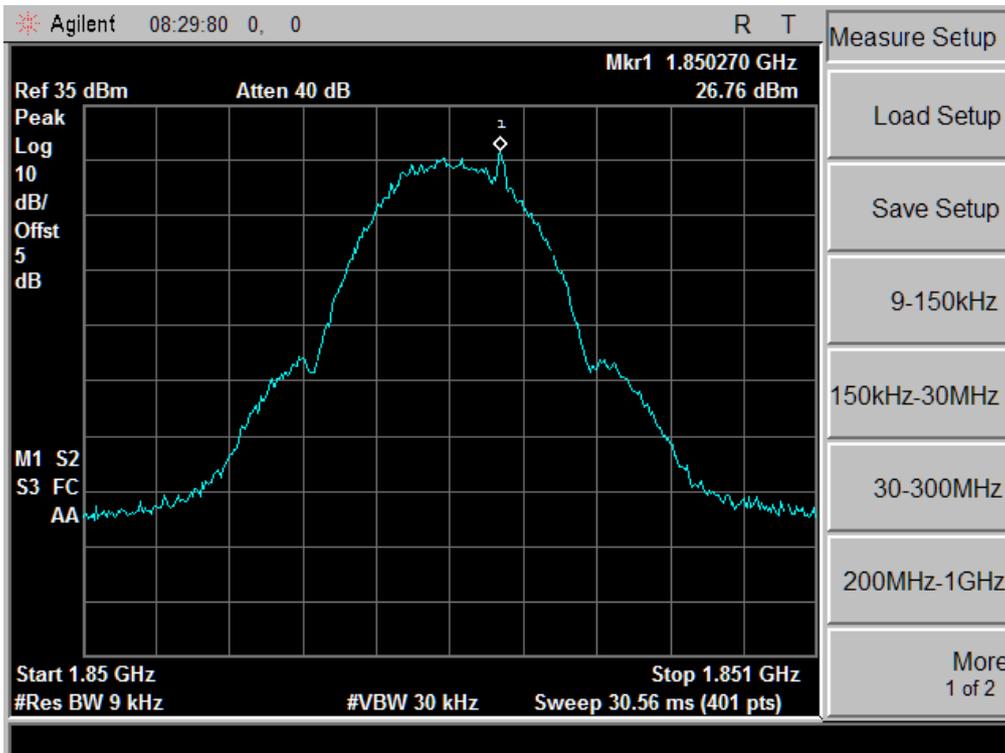
GSM850 Channel 128



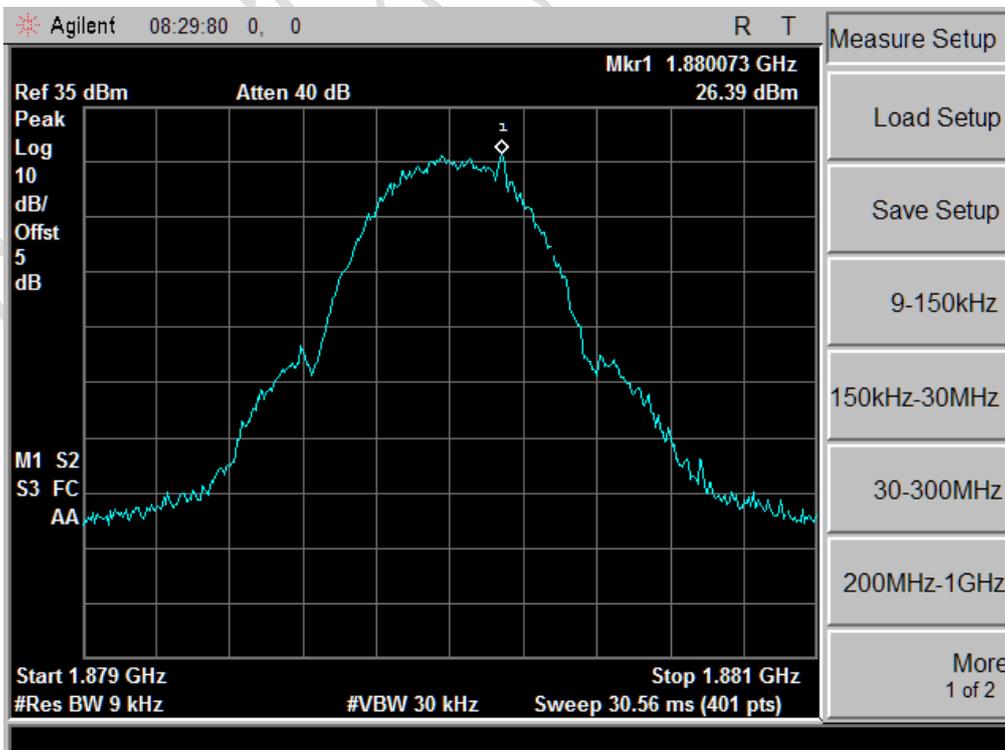
GSM850 Channel 190



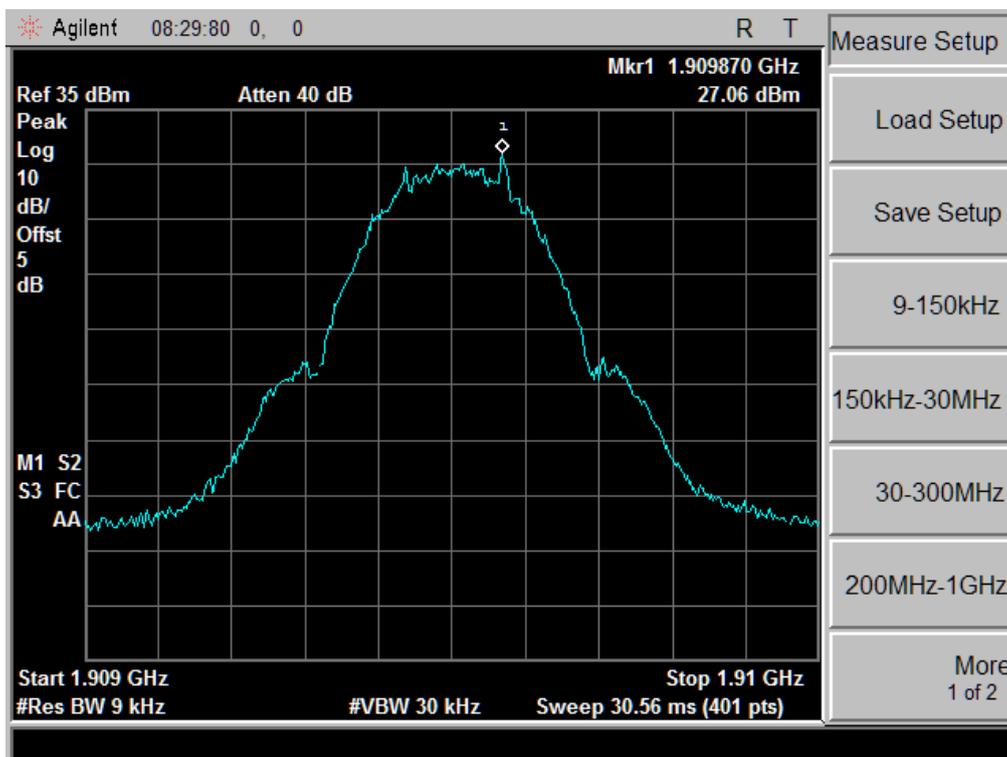
GSM850 Channel 251



GSM1900 Channel 512



GSM1900 Channel 661



GSM1900 Channel 810

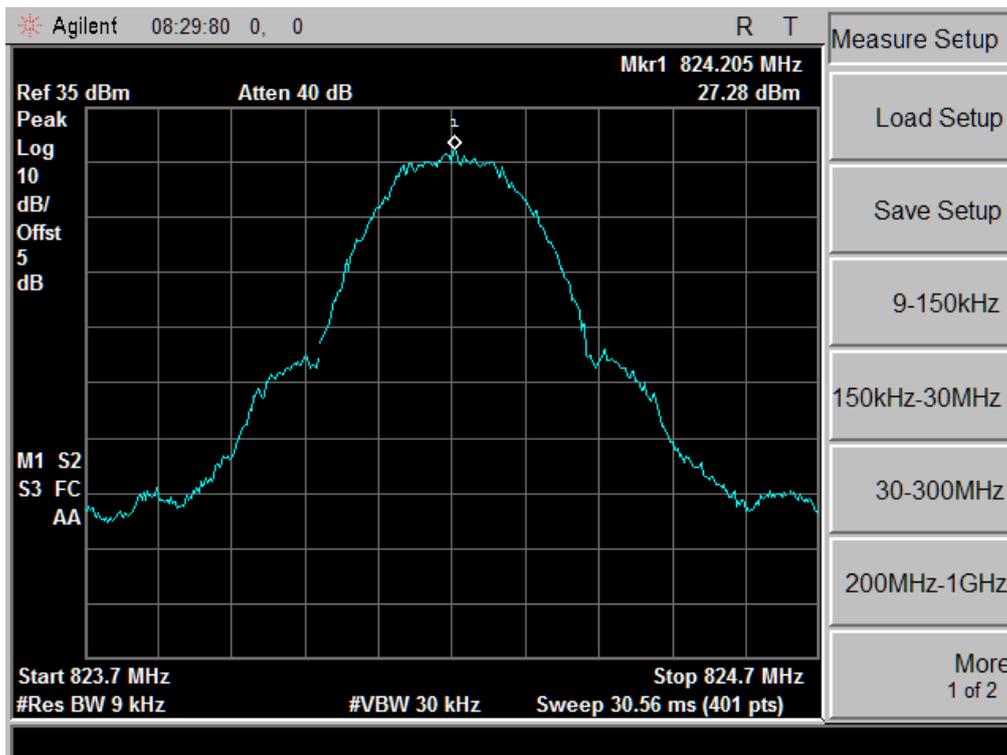
GPRS 850 band mode

EUT channel no.	99% occupied bandwidth [kHz]
128 (824.2MHz)	245.0
190 (836.6MHz)	247.5
251 (848.8MHz)	247.5

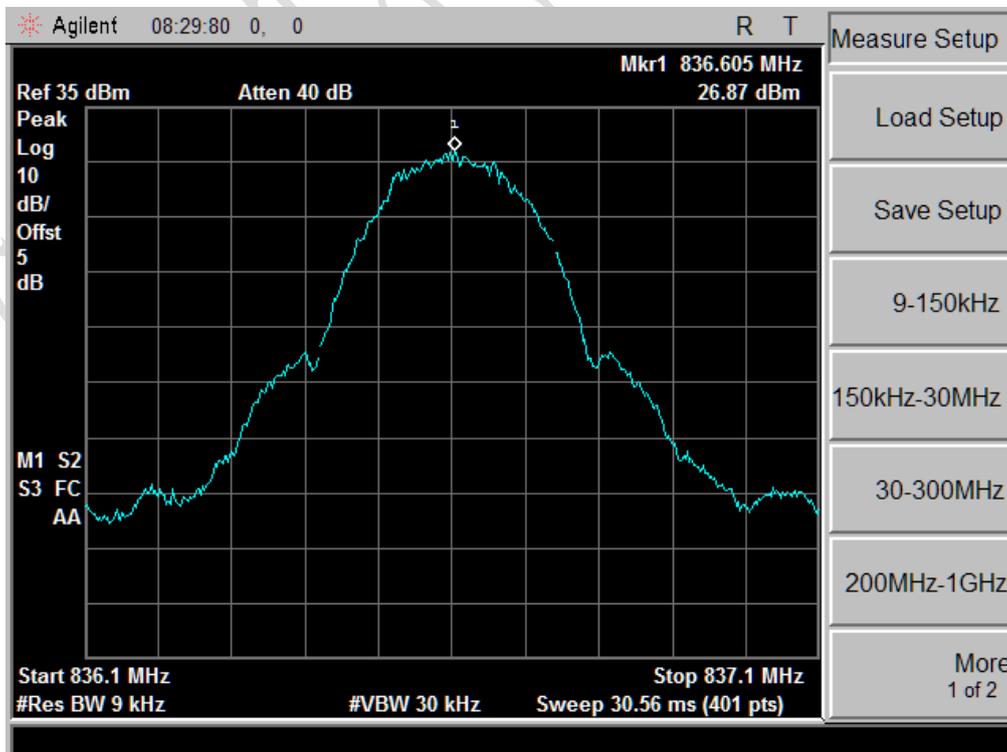
GPRS 1900 band mode

EUT channel no.	99% occupied bandwidth [kHz]
512 (1850.2MHz)	240.0
661 (1880.0MHz)	240.0
810 (1909.8MHz)	245.0

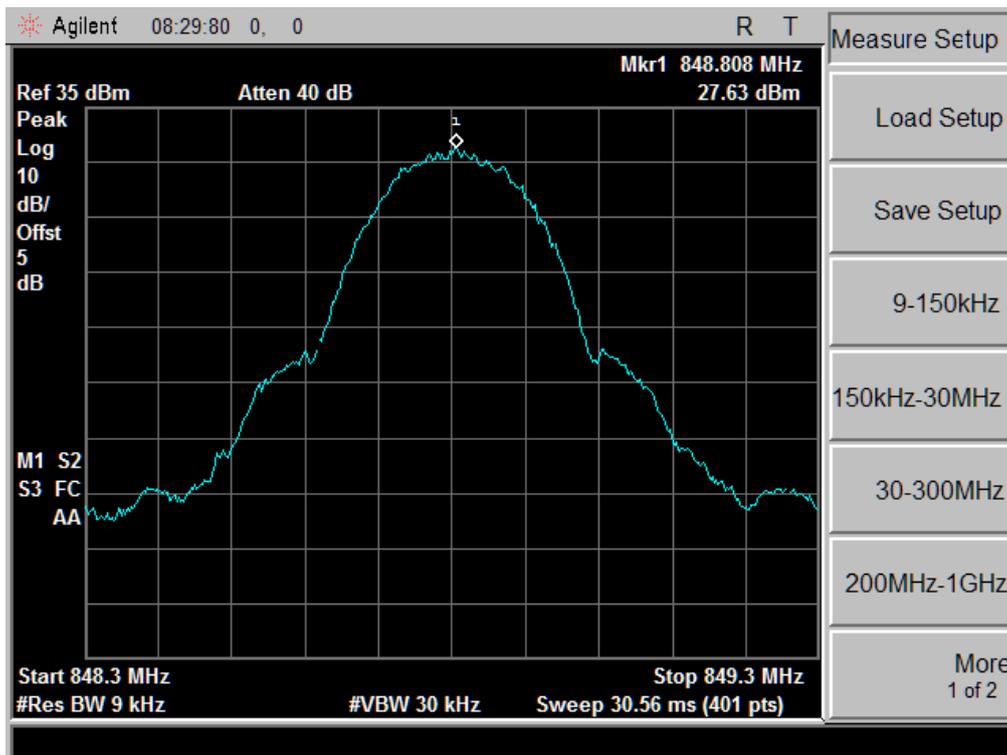
Graphical results for GPRS mode:



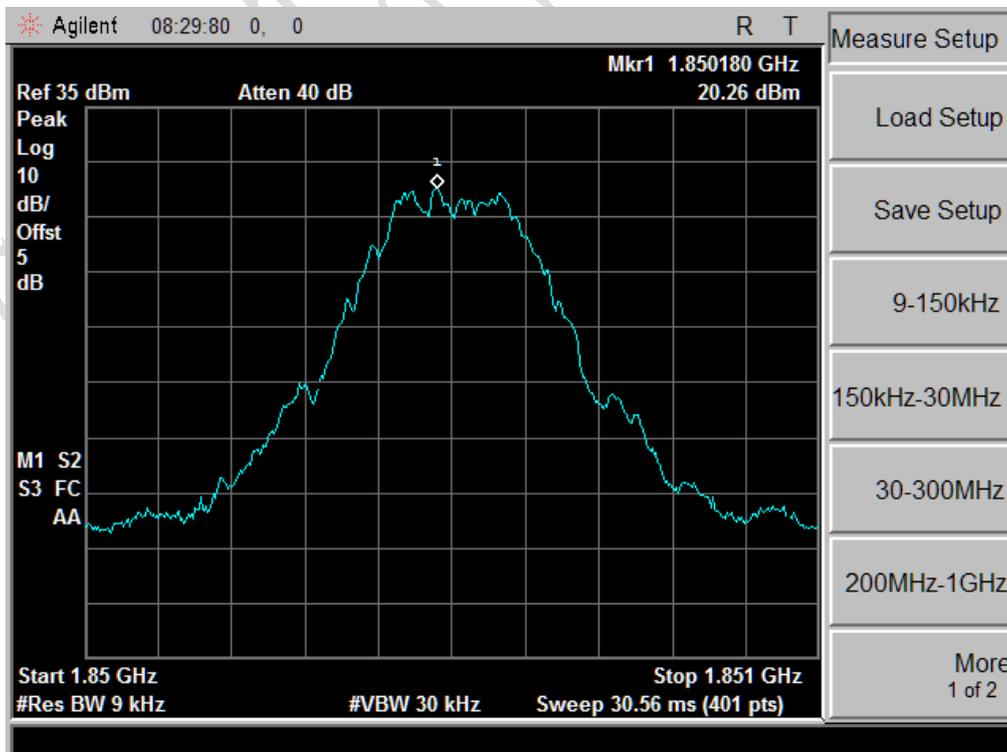
GPRS850 Channel 128



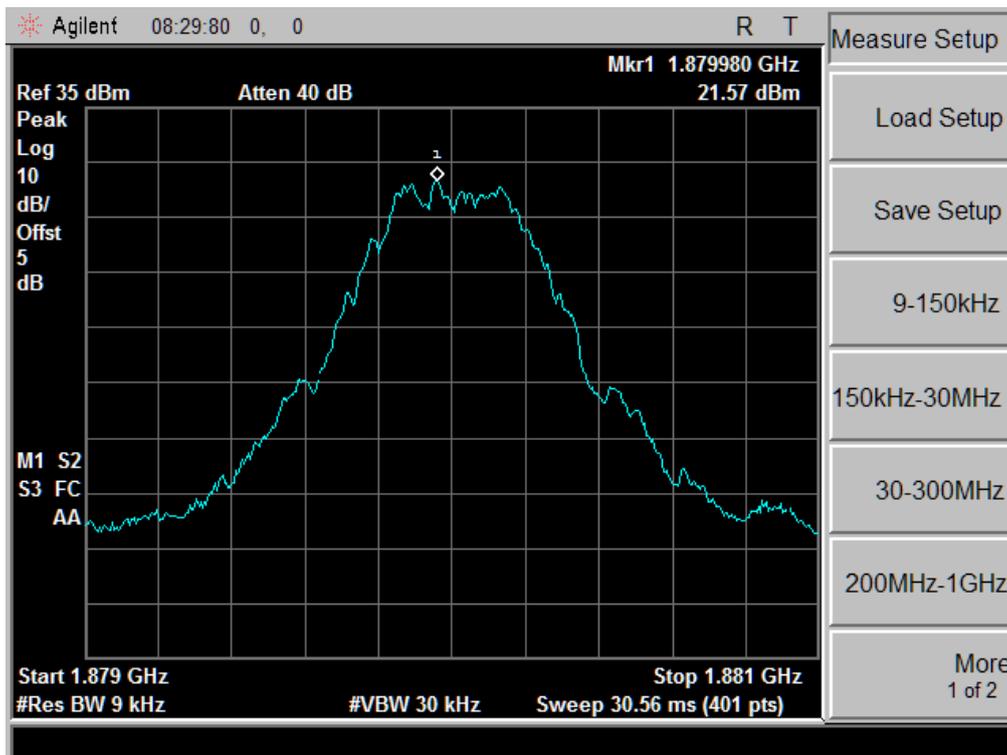
GPRS850 Channel 190



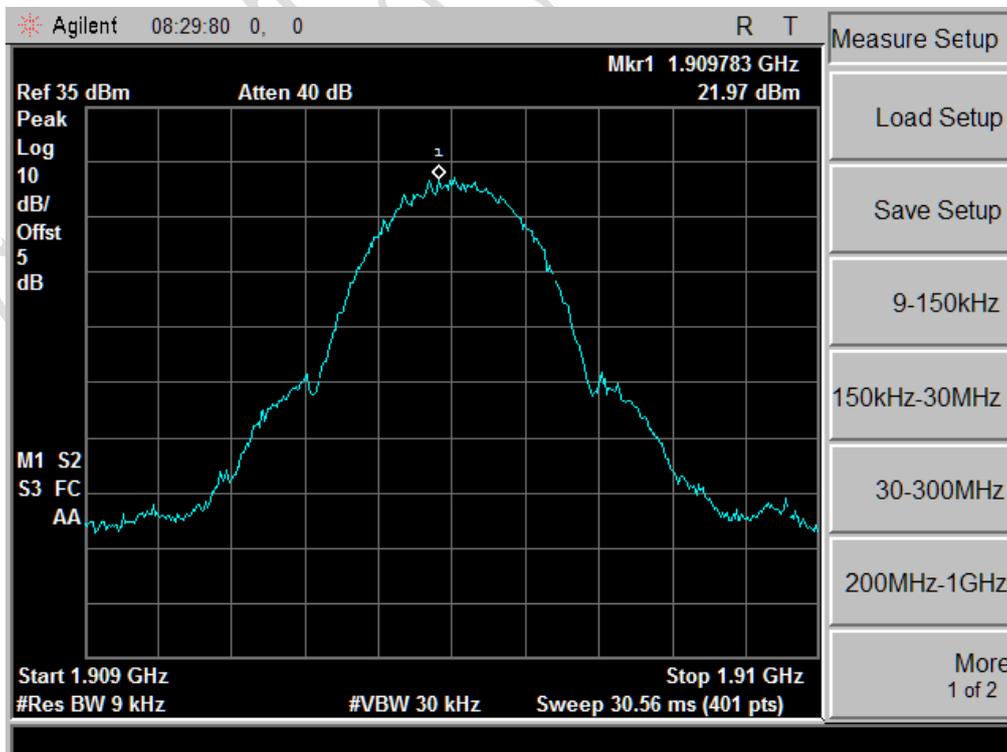
GPRS850 Channel 251



GPRS1900 Channel 512



GPRS1900 Channel 661



GPRS1900 Channel 810

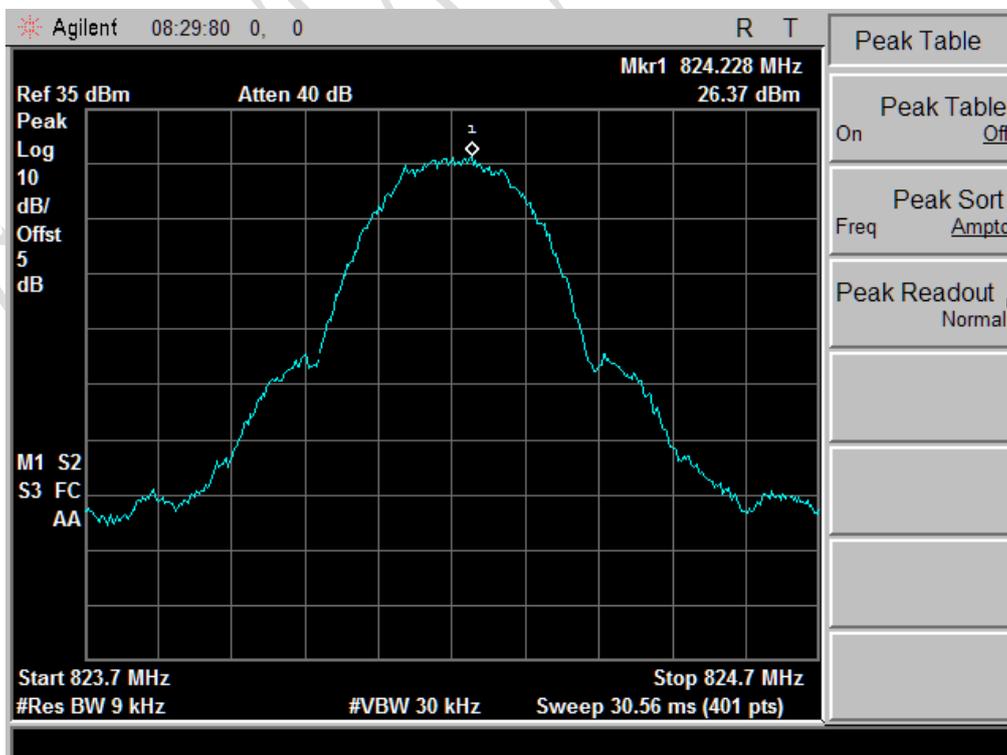
EGPRS 850 band mode

EUT channel no.	99% occupied bandwidth [kHz]
128 (824.2MHz)	247.5
190 (836.6MHz)	242.5
251 (848.8MHz)	245.0

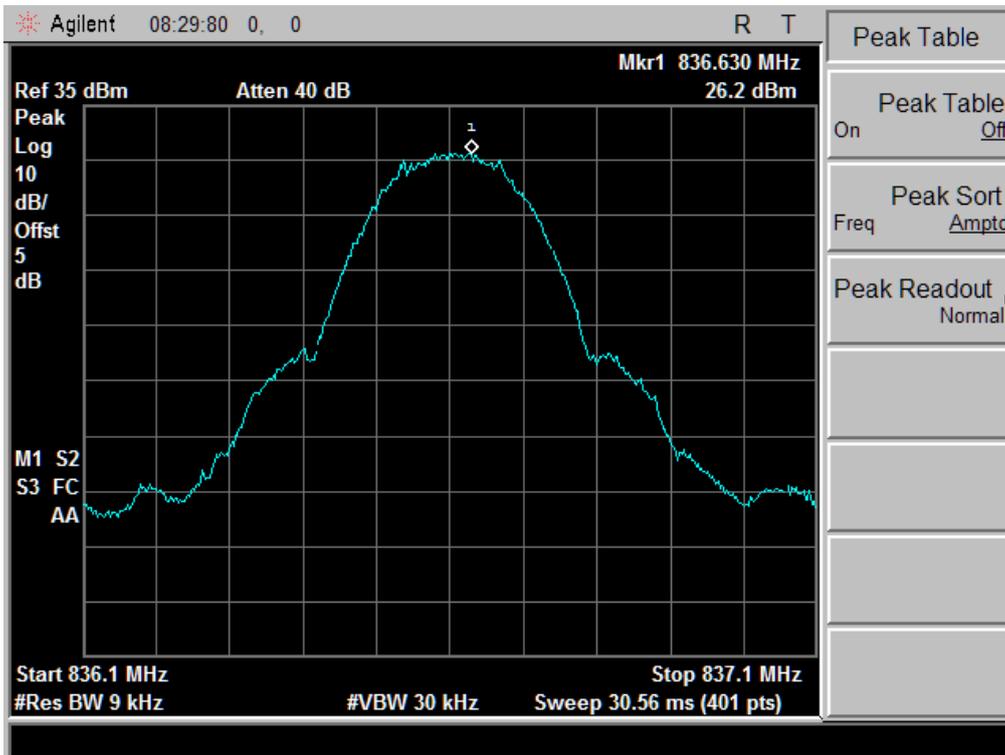
EGPRS 1900 band mode

EUT channel no.	99% occupied bandwidth [kHz]
512 (1850.2MHz)	242.5
661 (1880.0MHz)	245.0
810 (1909.8MHz)	242.5

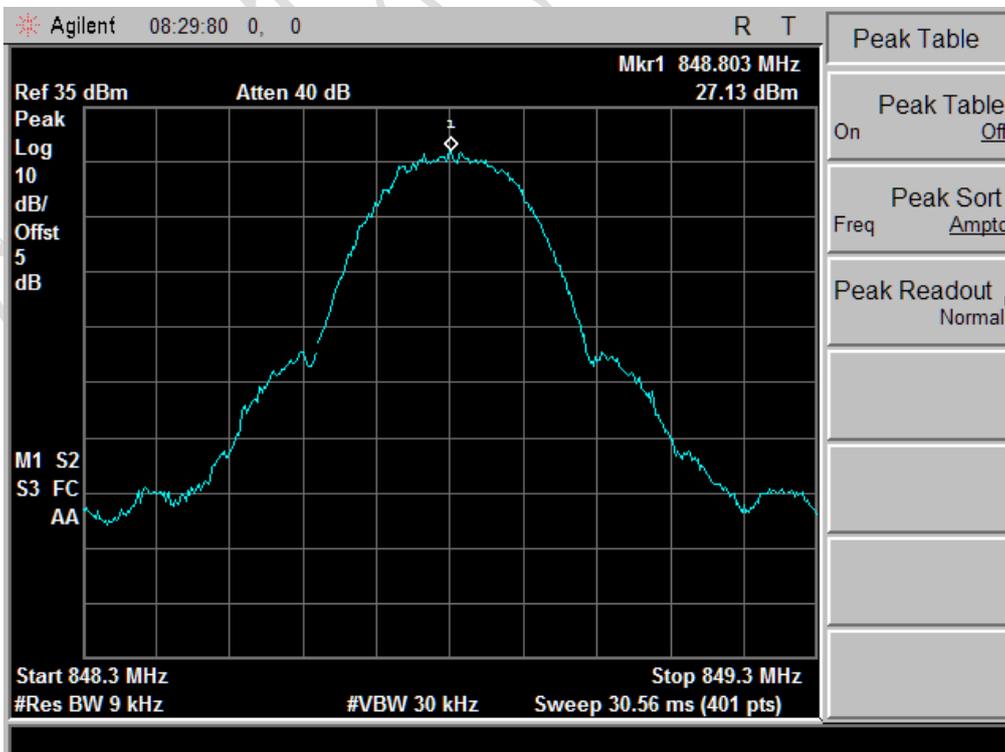
Graphical results for EGPRS mode:



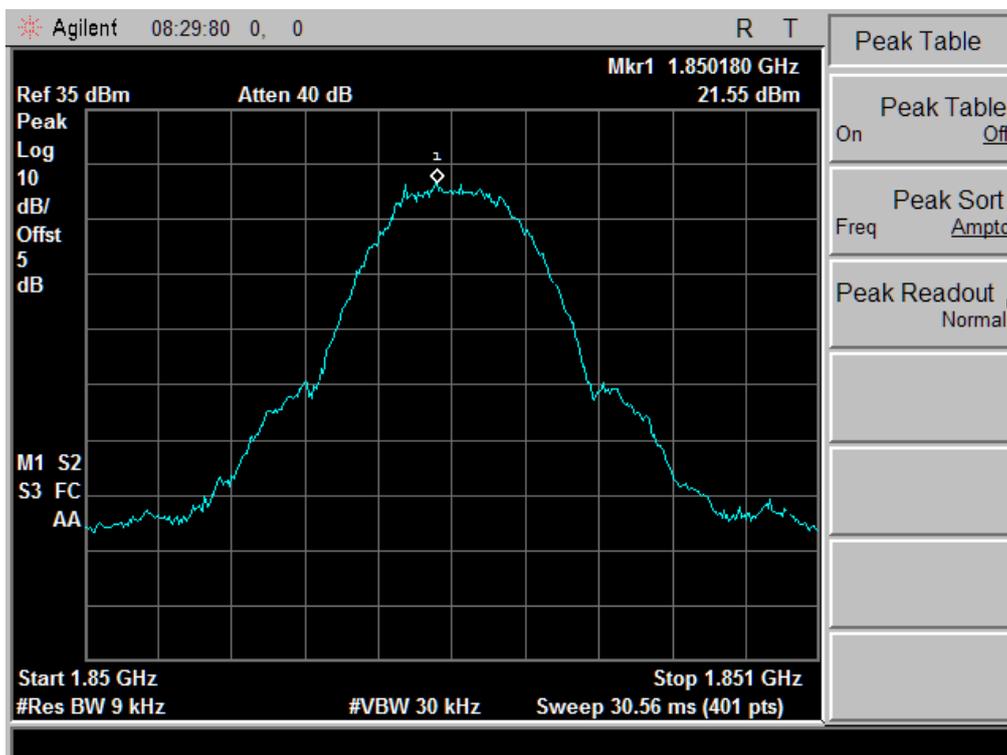
EGPRS850 Channel 128



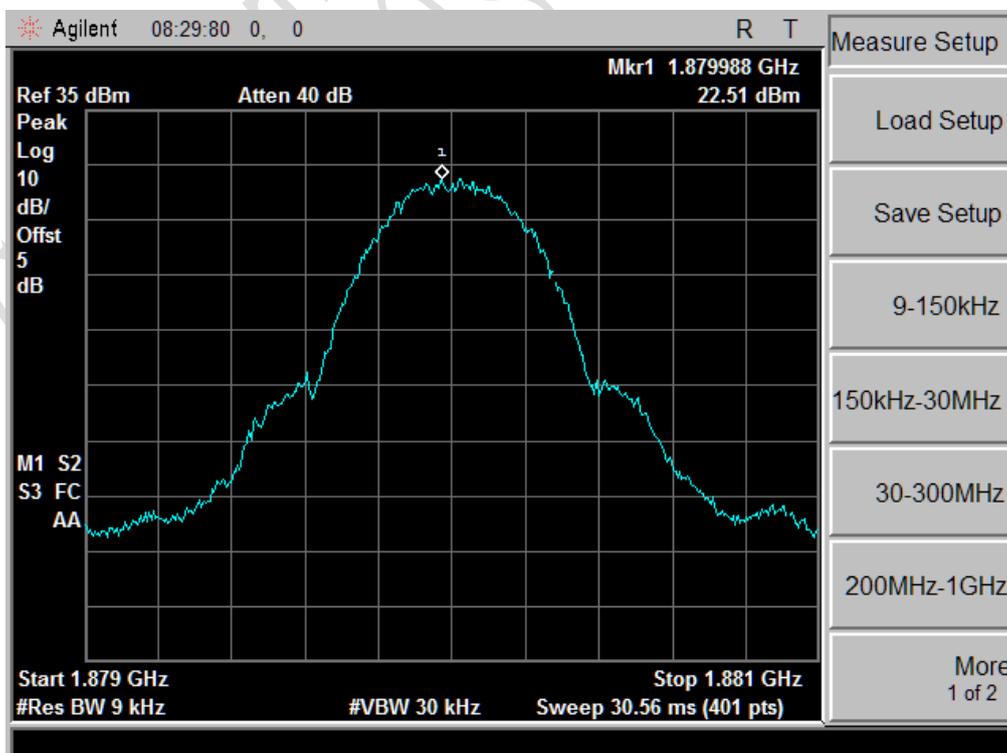
EGPRS850 Channel 190



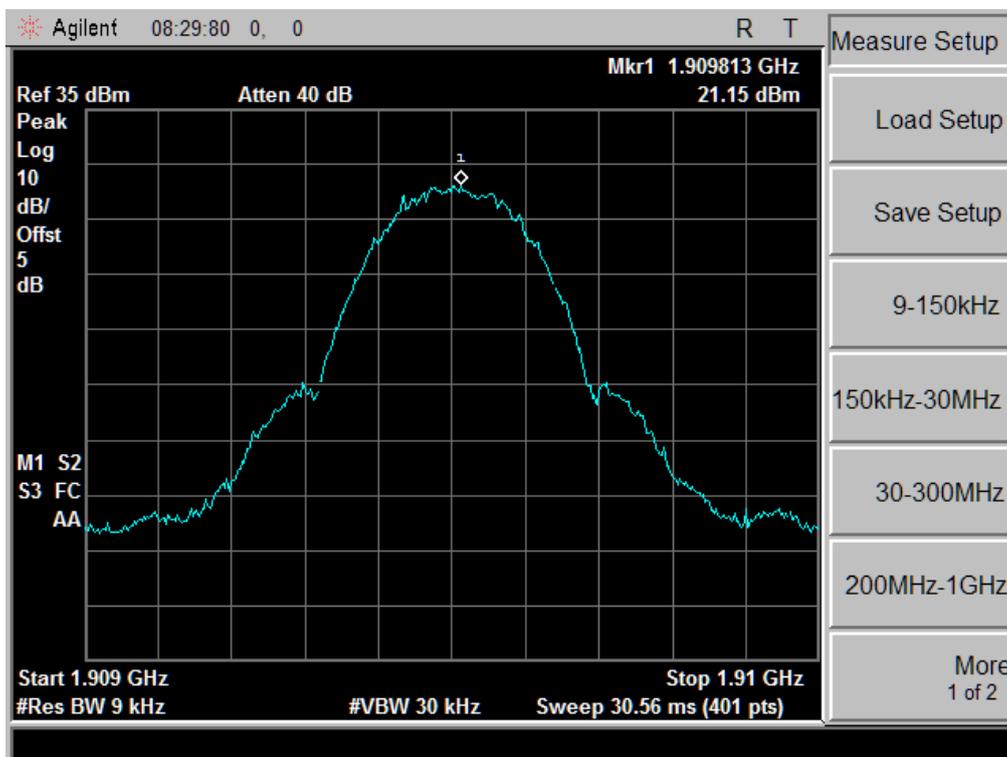
EGPRS850 Channel 251



EGPRS1900 Channel 512



EGPRS1900 Channel 661

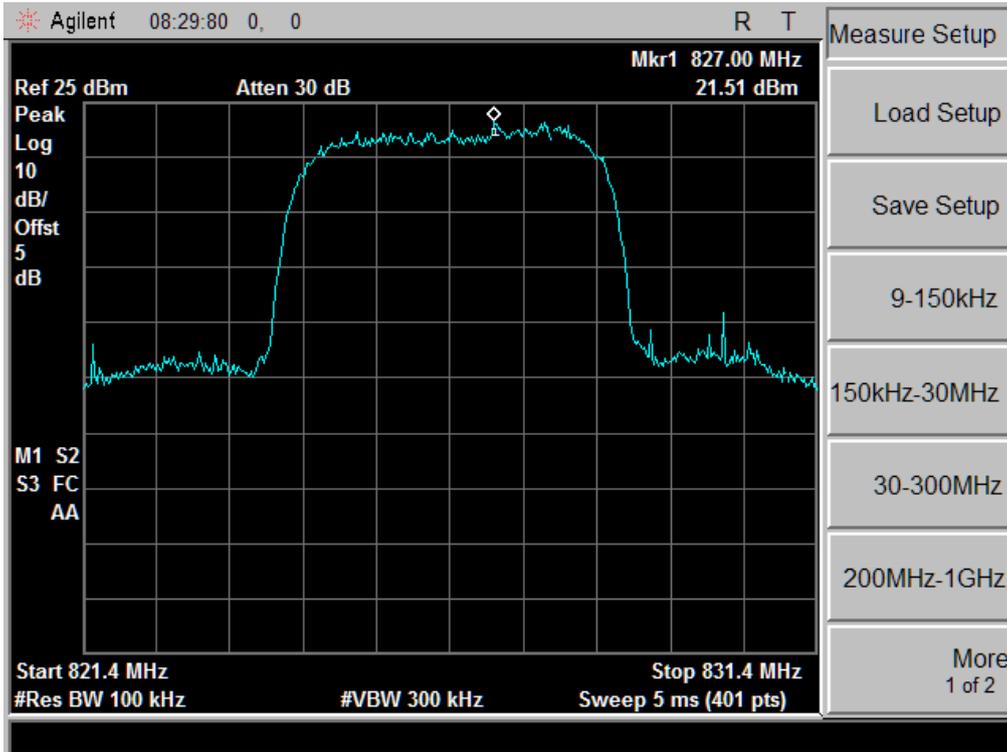


EGPRS1900 Channel 810

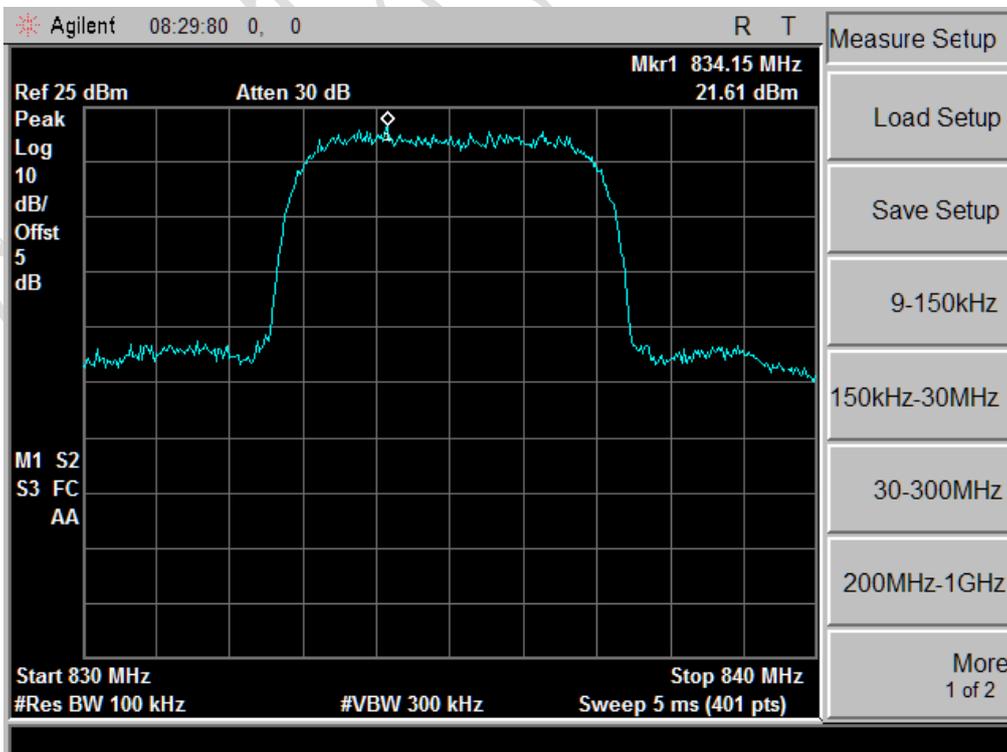
WCDMA FDD V band mode:

EUT channel no.	99% occupied bandwidth [kHz]
4132 (826.4MHz)	4175.0
4175 (835.0MHz)	4175.0
4233 (846.6MHz)	4200.0

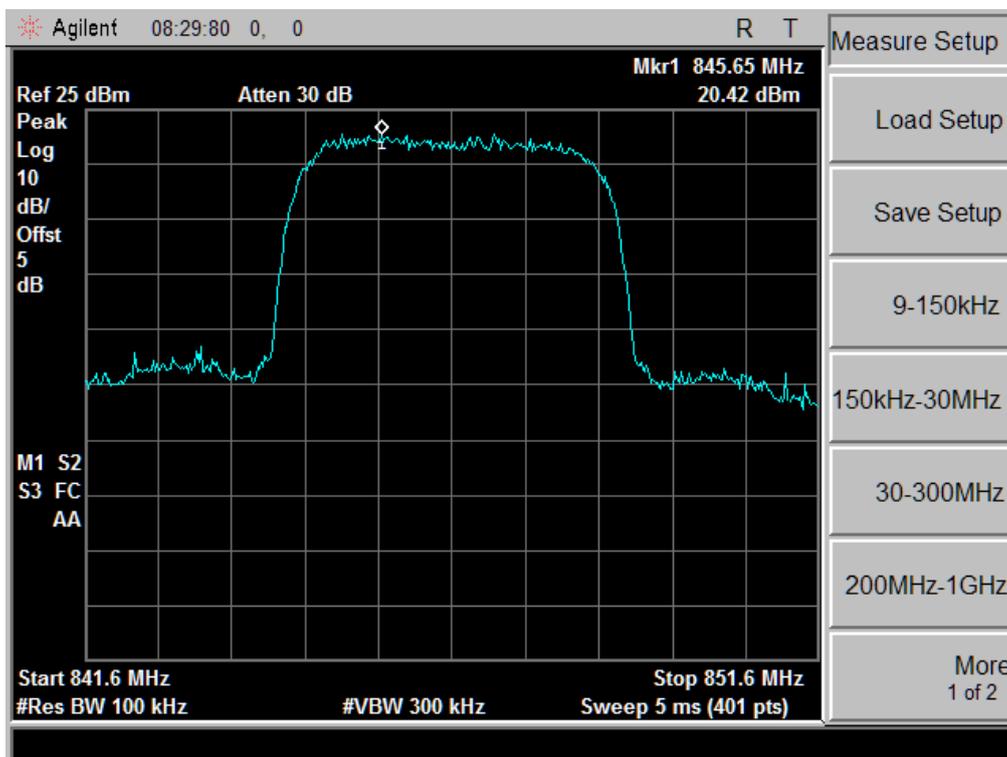
Graphical results for WCDMA mode:



WCDMA FDD V Channel 4132



WCDMA FDD V Channel 4175

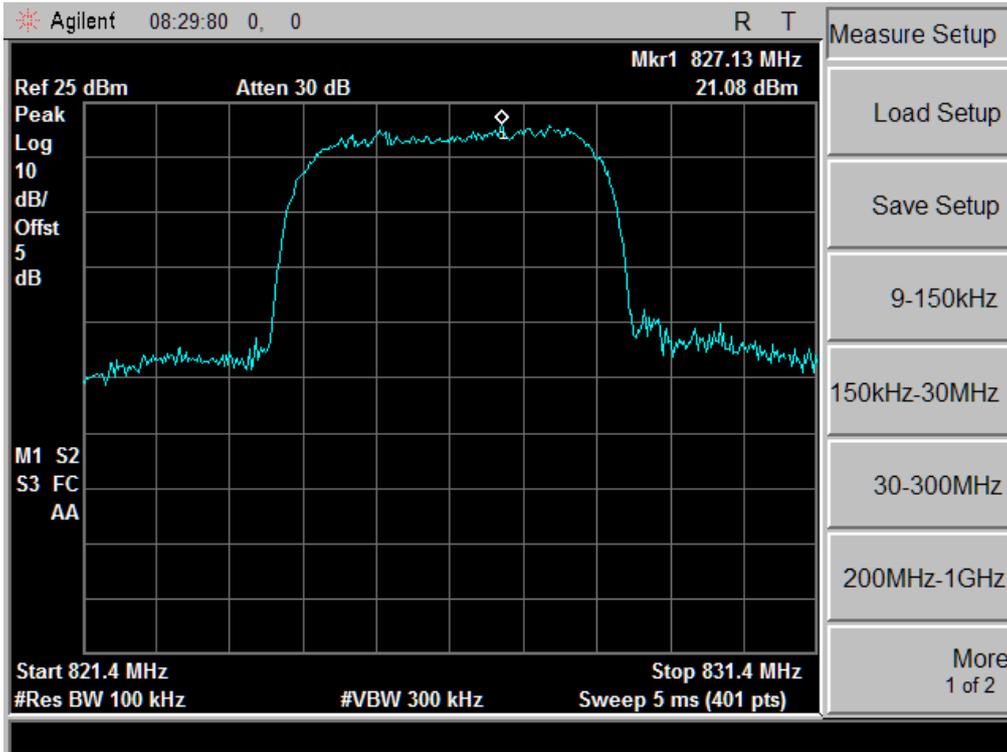


WCDMA FDD V Channel 4233

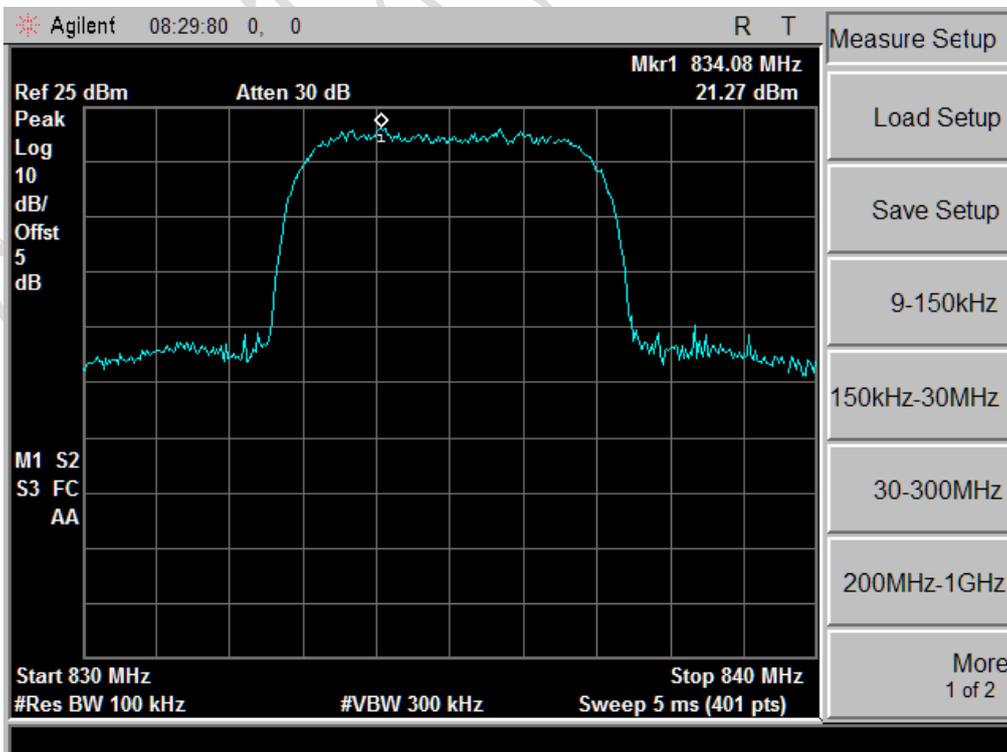
HSDPA FDD V band mode:

EUT channel no.	99% occupied bandwidth [kHz]
4132 (826.4MHz)	4200.0
4175 (835.0MHz)	4175.0
4233 (846.6MHz)	4175.0

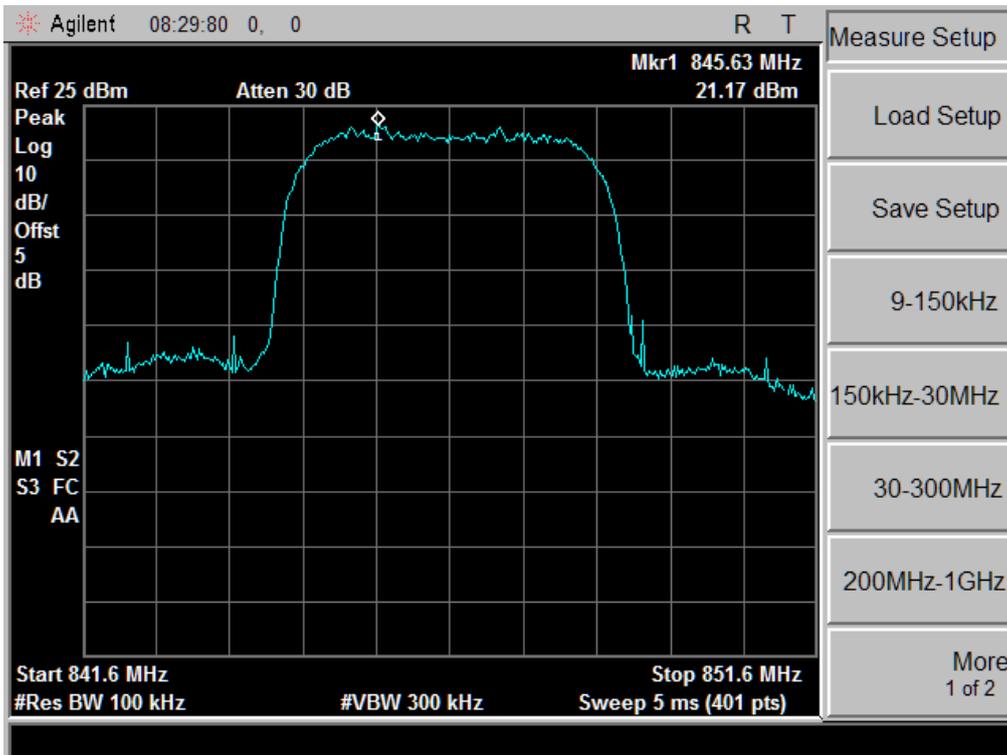
Graphical results for HSDPA mode:



HSDPA FDD V Channel 4132



HSDPA FDD V Channel 4175



HSDPA FDD V Channel 4233

Agilent
TTL TEST

4.4 Frequency Stability over Temperature Variation

Specifications:	2.1055,22.355,24.235					
Date of Test	2011-05-09 and 2011-05-11					
Test conditions:	Ambient Temperature:-30°C-50°C Relative Humidity:30%-60% Air pressure: 86-106kPa					
Operation Mode	TX on, channel 190 and 661 for GSM, GPRS and EGPRS mode 850 and 1900 band respectively; and channel 4175 for WCDMA and HSDPA FDD V band respectively.					
Test Results:	Pass					
Test equipment Used:						
Asset Number	Description	Manufacturer	Model Number	Serial Number	Cal Due	State
111835	Wireless Communications Test Set	R&S	CMU200	1100000802	2012-04-01	Normal
561	Temperature Chamber	Terchy Environmental Technology LTD.	MHU-800SR	84121202	2013-01-06	Normal
Limit						
Frequency deviation [ppm]	±2.5					

Test Setup

The EUT was placed in a temperature chamber, demonstrated as figure T. The Wireless Telecommunications 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.

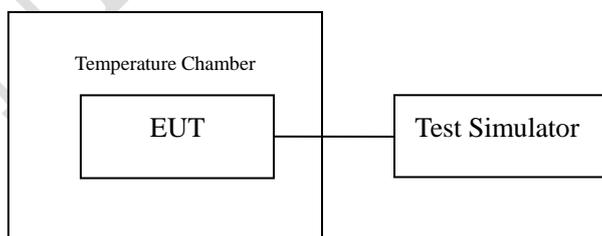


Figure T: setup for measurement of frequency stability over temperature variation

Test Method

1. The EUT was turned off and placed in the temperature chamber.
2. The temperature of the chamber was set to -30°C and allowed to stabilize.
3. The EUT temperature was allowed to stabilize for 45 minutes.

FCC Parts 2, 22, 24
Equipment: F953

REPORT NO.: I11GW5907-FCC-RF

4. The EUT was turned on and set to transmit with Wireless Telecommunications Test Set.
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°C, -10°C, 0°C, 10°C, 20°C, 30°C, 40°C and 50°C.

Test data:

GSM 850 band mode

Compliance windows: $\pm 2091.5\text{Hz}$

Temperature[°C]	Deviation[Hz]	Remarks
-30	-17	Pass
-20	-28	Pass
-10	-25	Pass
0	-13	Pass
10	-10	Pass
20	-16	Pass
30	-20	Pass
40	-34	Pass
50	-36	Pass

GSM 1900 band mode

Compliance windows: $\pm 4700.0\text{Hz}$

Temperature[°C]	Deviation[Hz]	Remarks
-30	-64	Pass
-20	-113	Pass
-10	-98	Pass
0	-69	Pass
10	-72	Pass
20	-75	Pass
30	-63	Pass
40	-103	Pass
50	-93	Pass

GPRS 850 band mode

Compliance windows: $\pm 2091.5\text{Hz}$

Temperature[°C]	Deviation[Hz]	Remarks
-30	-20	Pass
-20	-53	Pass
-10	-35	Pass
0	-17	Pass
10	-17	Pass
20	-24	Pass
30	-45	Pass
40	-48	Pass
50	-40	Pass

GPRS 1900 band mode

Compliance windows: $\pm 4700.0\text{Hz}$

Temperature[°C]	Deviation[Hz]	Remarks
-30	-40	Pass
-20	-66	Pass
-10	-54	Pass
0	-40	Pass
10	-49	Pass
20	-50	Pass
30	-66	Pass
40	-74	Pass
50	-85	Pass

EGPRS 850 band mode

Compliance windows: $\pm 2091.5\text{Hz}$

Temperature[°C]	Deviation[Hz]	Remarks
-30	-24	Pass
-20	-41	Pass
-10	-32	Pass
0	-28	Pass
10	-21	Pass
20	-22	Pass
30	-21	Pass
40	-58	Pass
50	-52	Pass

EGPRS 1900 band modeCompliance windows: $\pm 4700.0\text{Hz}$

Temperature[°C]	Deviation[Hz]	Remarks
-30	-46	Pass
-20	-55	Pass
-10	-80	Pass
0	-93	Pass
10	-53	Pass
20	-66	Pass
30	-73	Pass
40	-85	Pass
50	-68	Pass

WCDMA FDD V band mode:Compliance windows: $\pm 2087.5\text{Hz}$

Temperature[°C]	Deviation[Hz]	Remarks
-30	15	Pass
-20	-16	Pass
-10	15	Pass
0	19	Pass
10	16	Pass
20	16	Pass
30	11	Pass
40	17	Pass
50	24	Pass

HSDPA FDD V band mode:Compliance windows: $\pm 2087.5\text{Hz}$

Temperature[°C]	Deviation[Hz]	Remarks
-30	14	Pass
-20	13	Pass
-10	-16	Pass
0	-25	Pass
10	-22	Pass
20	13	Pass
30	-24	Pass
40	13	Pass
50	-19	Pass

4.5 Frequency Stability over Voltage Variation

Specifications:	2.1055,22.355,24.235					
Date of Test	2011-05-11					
Test conditions:	Ambient Temperature:15°C-35°C Relative Humidity:30%-60% Air pressure: 86-106kPa					
Operation Mode	TX on, channel 190 and 661 for GSM, GPRS and EGPRS mode 850 and 1900 band respectively; and channel 4175 for WCDMA and HSDPA FDD V band respectively.					
Test Results:	Pass					
Test equipment Used:						
Asset Number	Description	Manufacturer	Model Number	Serial Number	Cal Due	State
111835	Wireless Communications Test Set	R&S	CMU200	1100000802	2012-04-01	Normal
7982	DC Power Source	4NIC	DH1715A-3	004224	--	Normal
Limit						
Frequency deviation [ppm]	±2.5					

Test Setup

The EUT was placed in a shielding chamber and powered by an adjustable power supply, demonstrated as figure V. A Wireless Telecommunications 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.

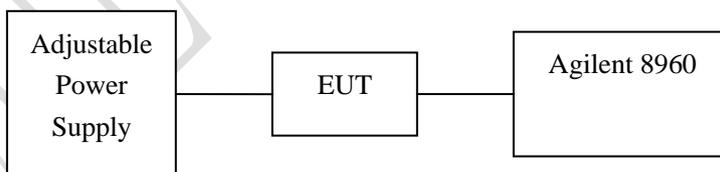


Figure V: test setup for measurement of frequency stability over voltage variation

Test Method

The EUT was powered by the adjustable power supply. The frequency stability is measured by the Wireless Telecommunications Test Set.

Test data:

GSM 850 band modeCompliance windows: $\pm 2091.5\text{Hz}$

Level	Voltage[V]	Deviation[Hz]	Remarks
Nominal	3.7	-10	Pass
Cut-off Point	3.3	-13	Pass

GSM 1900 band modeCompliance windows: $\pm 4700.0\text{Hz}$

Level	Voltage[V]	Deviation[Hz]	Remarks
Nominal	3.7	-65	Pass
Cut-off Point	3.3	-84	Pass

GPRS 850 band modeCompliance windows: $\pm 2091.5\text{Hz}$

Level	Voltage[V]	Deviation[Hz]	Remarks
Nominal	3.7	-47	Pass
Cut-off Point	3.3	-32	Pass

GPRS 1900 band modeCompliance windows: $\pm 4700.0\text{Hz}$

Level	Voltage[V]	Deviation[Hz]	Remarks
Nominal	3.7	-65	Pass
Cut-off Point	3.3	-67	Pass

EGPRS 850 band modeCompliance windows: $\pm 2091.5\text{Hz}$

Level	Voltage[V]	Deviation[Hz]	Remarks
Nominal	3.7	-45	Pass
Cut-off Point	3.3	-46	Pass

EGPRS 1900 band mode

Compliance windows: $\pm 4700.0\text{Hz}$

Level	Voltage[V]	Deviation[Hz]	Remarks
Nominal	3.7	-69	Pass
Cut-off Point	3.3	-44	Pass

WCDMA FDD V band mode:

Compliance windows: $\pm 2087.5\text{Hz}$

Level	Voltage[V]	Deviation[Hz]	Remarks
Nominal	3.7	25	Pass
Cut-off Point	3.3	17	Pass

HSDPA FDD V band mode:

Compliance windows: $\pm 2087.5\text{Hz}$

Level	Voltage[V]	Deviation[Hz]	Remarks
Nominal	3.7	32	Pass
Cut-off Point	3.3	75	Pass

TEST REPORT

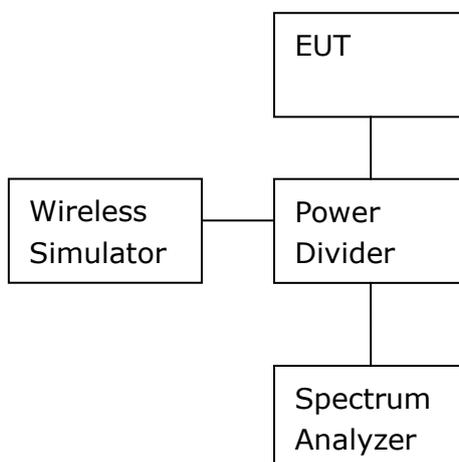
4.6 Conducted RF Power Output

Specifications:	2.1046,22.913(a),24.232(c)					
Date of Tests	2011-05-12~2011-05-13					
Test conditions:	Ambient Temperature:15°C-35°C Relative Humidity:30%-60% Air pressure: 86-106kPa					
Operation Mode	TX on, channel128, 190, 251, 512, 661 and 810 for GSM, GPRS and EGPRS; channel 4132, 4175 and 4233, for WCDMA and HSDPA.					
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	2012-01-12	Normal
---	Power splitter	Jie sai	---	1000132	2012-01-04	Normal
111835	Wireless Communications Test Set	R&S	CMU200	1100000802	2012-04-01	Normal

Limit Level Construction:	
ERP: According to Part 22.913(a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.	
Limits for ERP	
Frequency range	Limit Level (ERP)
TX channel	7W or 38.5dBm

Test Setup:

During the test, the EUT was controlled via the Wireless Communications Test Set to ensure max power transmission and proper modulation and measured by spectrum analyzer.



Test Method

- 1) The EUT was coupled to the spectrum analyzer and the base station simulator through a power divider. 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:

None

Test Results:

GSM 850 band mode

Channel No.	Peak output power [dBm]
128 (824.2MHz)	32.92
190 (836.6MHz)	32.68
251 (848.8MHz)	33.08

GSM 1900 band mode

Channel No.	Peak output power [dBm]
512 (1850.2MHz)	27.24
661 (1880.0MHz)	28.71
810 (1909.8MHz)	27.59

GPRS 850 band mode

Channel No.	Peak output power [dBm]
128 (824.2MHz)	28.72
190 (836.6MHz)	28.54
251 (848.8MHz)	28.91

GPRS 1900 band mode

Channel No.	Peak output power [dBm]
512 (1850.2MHz)	23.38
661 (1880.0MHz)	24.64
810 (1909.8MHz)	23.65

EGPRS 850 band mode

Channel No.	Peak output power [dBm]
128 (824.2MHz)	28.73
190 (836.6MHz)	28.52
251 (848.8MHz)	28.97

EGPRS 1900 band mode

Channel No.	Peak output power [dBm]
512 (1850.2MHz)	23.30
661 (1880.0MHz)	24.58
810 (1909.8MHz)	23.65

WCDMA FDD V band mode:

Channel No.	Peak output power [dBm]
4132 (826.4MHz)	25.54
4175 (835.0MHz)	25.63
4233 (846.6MHz)	25.54

HSDPA FDD V band mode:

Channel No.	Peak output power [dBm]
4132 (826.4MHz)	25.38
4175 (835.0MHz)	25.46
4233 (846.6MHz)	25.54

4.7 Conducted Spurious Emission

Specifications:	2.1051,22.917,24.238					
Date of Tests	2011-05-13 and 2011-05-16					
Test conditions:	Ambient Temperature:15°C-35°C Relative Humidity:30%-60% Air pressure: 86-106kPa					
Operation Mode	TX on, channel 190 and 661 for GSM, GPRS and EGPRS mode 850 and 1900 band respectively; and channel 4175 for WCDMA and HSDPA FDD V band respectively.					
Test Results:	Pass					
Test equipment Used:						
Asset Number	Description	Manufacturer	Model Number	Serial Number	Cal Due	State
7330	EMC Analyzer	Agilent	E7405A	US41160321	2011-08-22	Normal
---	Power splitter	Jie sai	---	1000132	2012-01-04	Normal
111835	Wireless Communications Test Set	R&S	CMU200	1100000802	2012-04-01	Normal

Limit Level Construction:

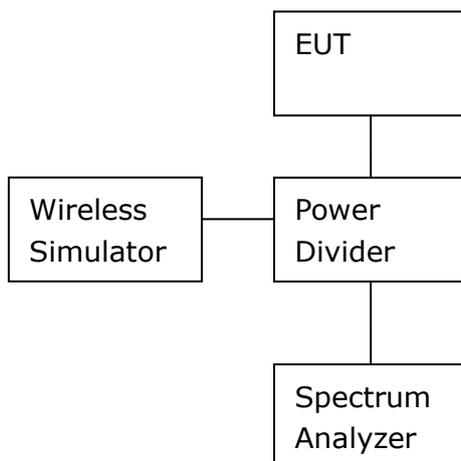
According to Part 24.238 (a), i.e., Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB, so the limit level is:
 $P(\text{dBm}) - (43 + 10 \log(P)) \text{ dB} = -13\text{dBm}$

Limits for Radiated spurious emissions(UE)

Frequency range	Limit Level /Resolution Bandwidth
30 MHz to 20000 MHz	-13dBm/1MHz

Test Setup:

During the test, the EUT was controlled via the Wireless Communications Test Set to ensure max power transmission and proper modulation and measured by spectrum analyzer.



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*.

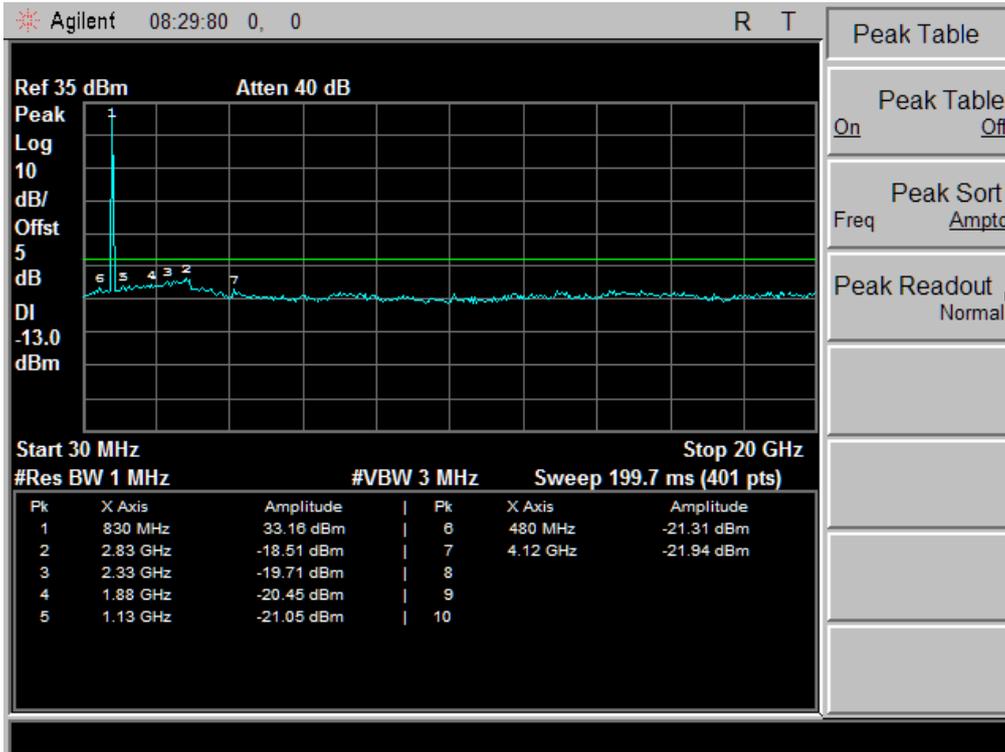
The following steps outline the procedure used to measure the conducted emissions from the EUT.

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.

Note:

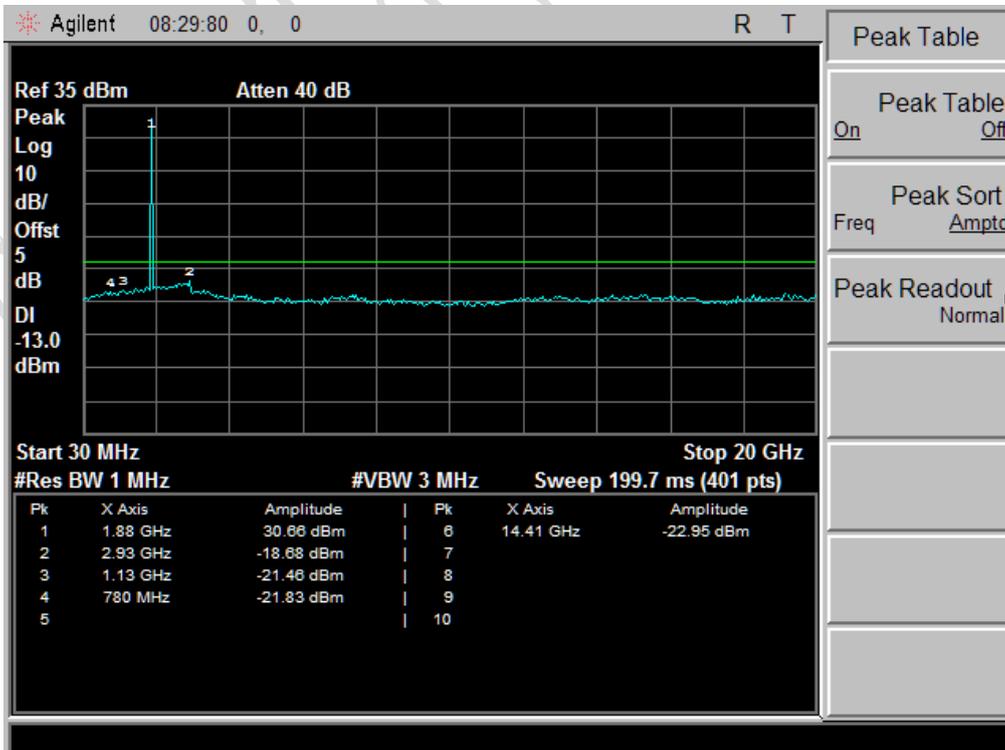
None

Graphical results for GSM mode:



GSM850 Channel 190

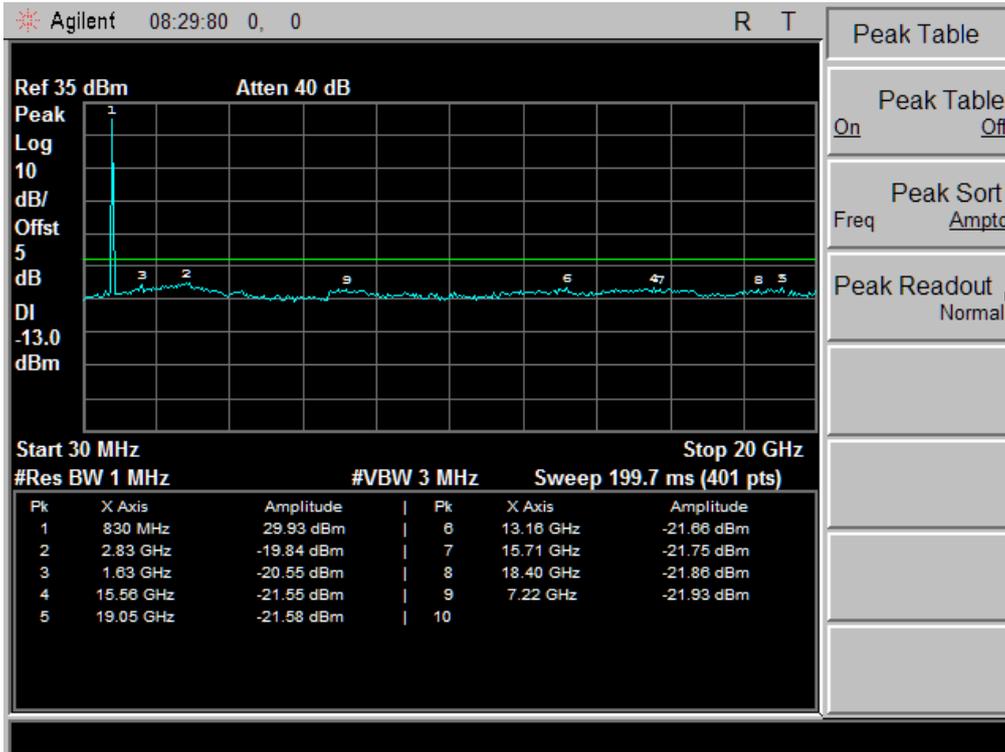
Note: 830 MHz is the EUT's operating frequency point.



GSM1900 Channel 661

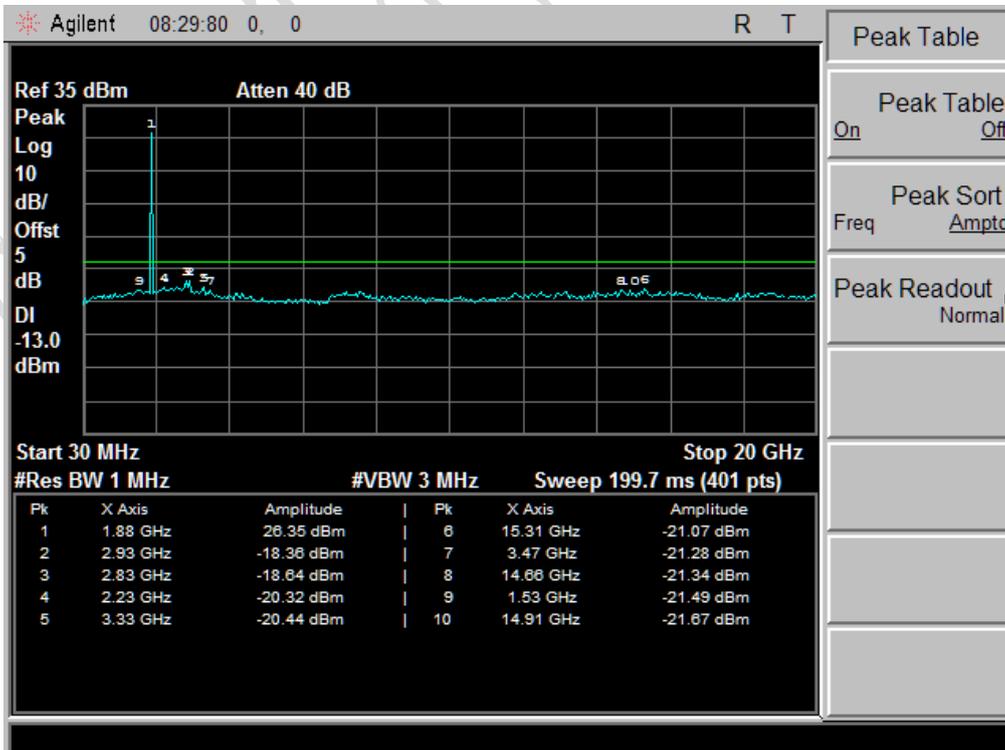
Note: 1880 MHz is the EUT's operating frequency point.

Graphical results for GPRS mode:



GPRS850 Channel 190

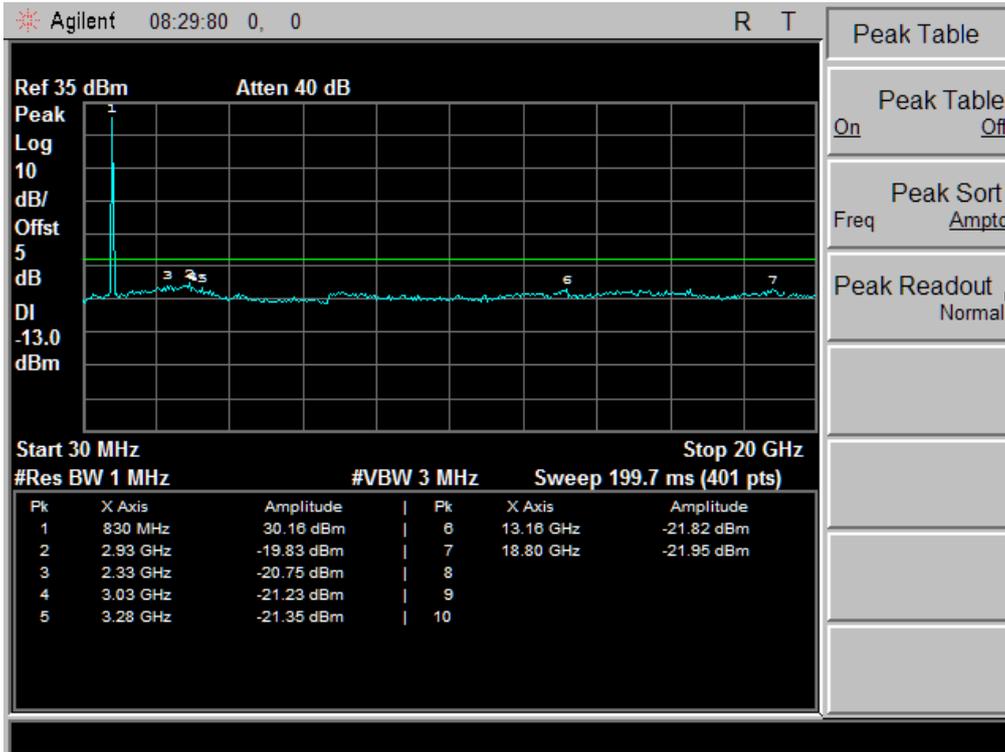
Note: 830 MHz is the EUT's operating frequency point.



GPRS1900 Channel 661

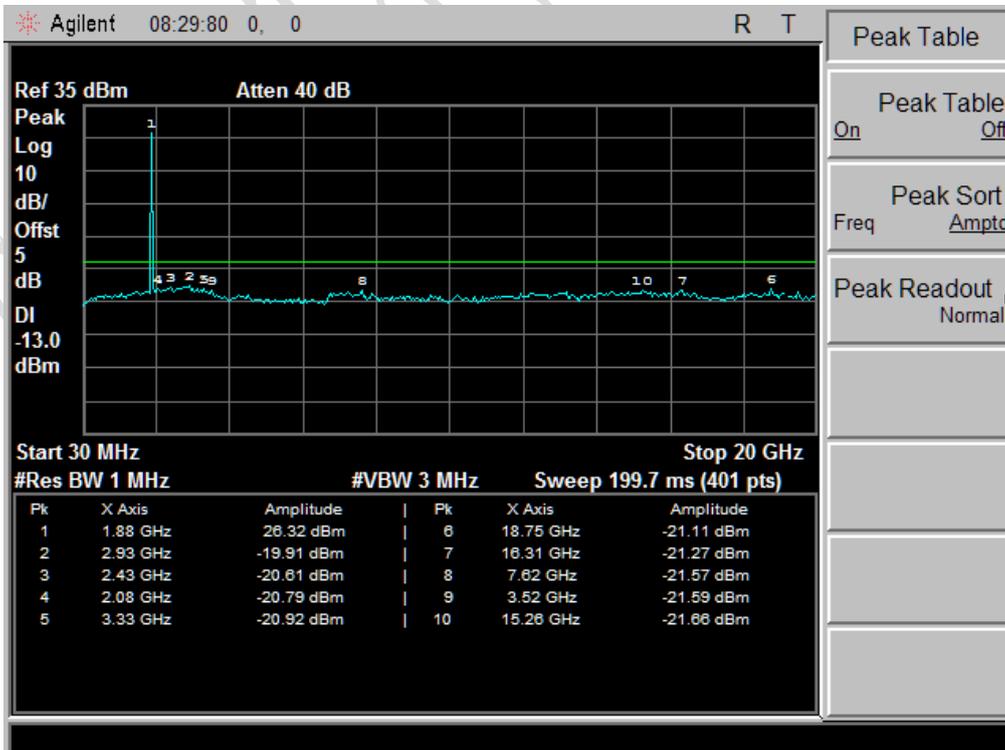
Note: 1880 MHz is the EUT's operating frequency point.

Graphical results for EGPRS mode:



EGPRS850 Channel 190

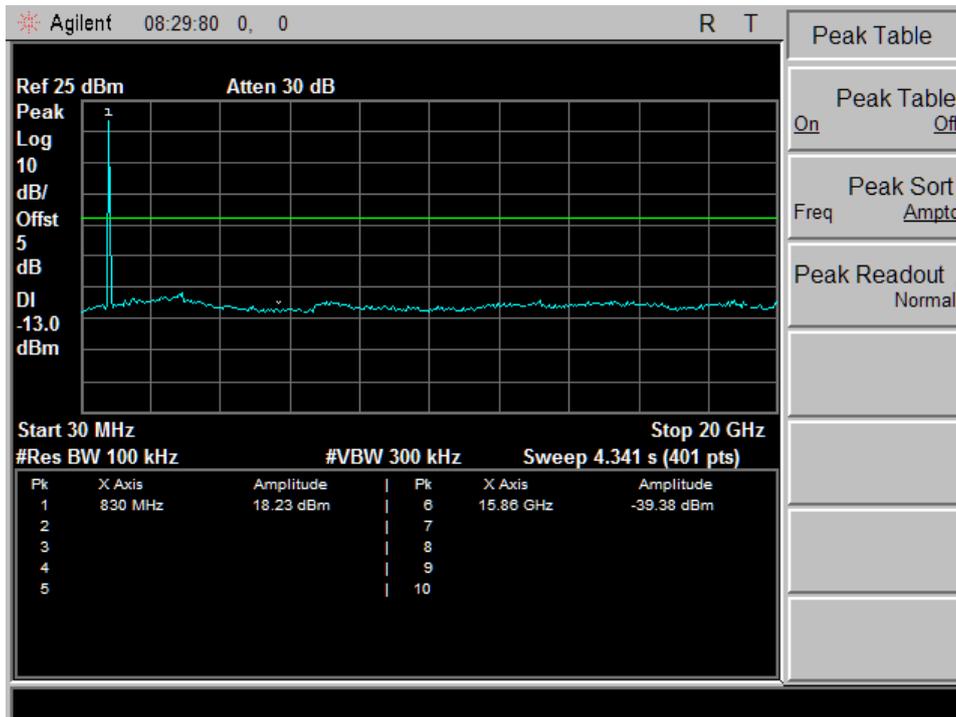
Note: 830 MHz is the EUT's operating frequency point.



EGPRS1900 Channel 661

Note: 1880 MHz is the EUT's operating frequency point.

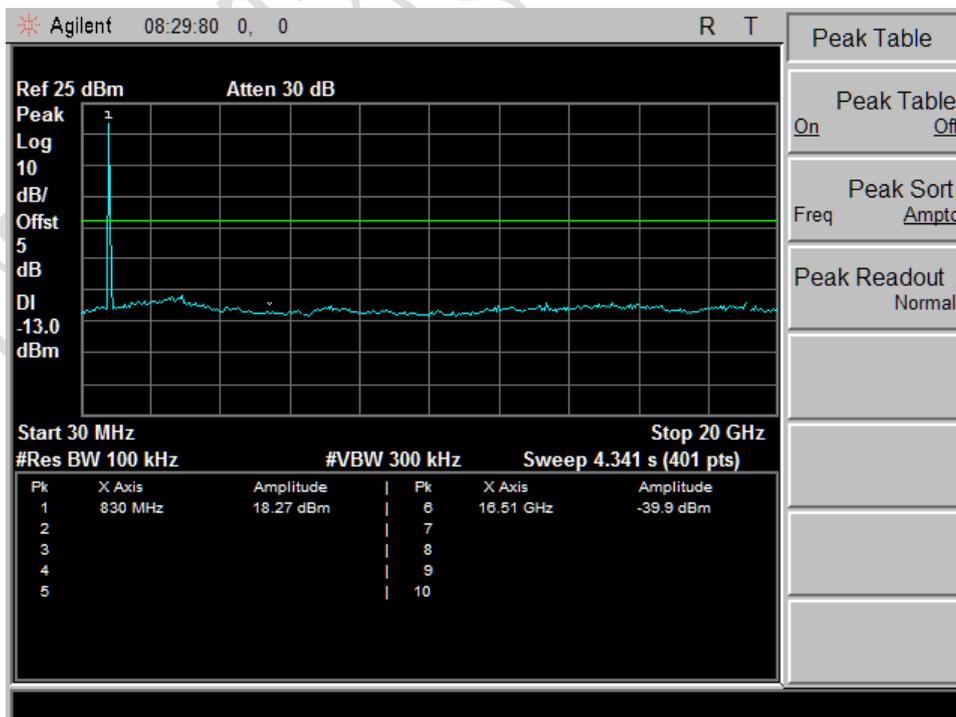
Graphical results for WCDMA mode:



HSDPA FDD V Channel 4175

Note: 830 MHz is the EUT's operating frequency point.

Graphical results for HSDPA mode:



HSDPA FDD V Channel 4175

Note: 830 MHz is the EUT's operating frequency point.

4.8 Band Edge

Specifications:	2.1051, 24.238, 2.1053, 22.917					
Date of Tests	2011-05-12~2011-05-13					
Test conditions:	Ambient Temperature:15°C-35°C Relative Humidity:30%-60% Air pressure: 86-106kPa					
Operation Mode	TX on, channel 128, 251, 512 and 810 for GPRS and EGPRS; 1312, 1513, 4132, 4233, 9262 and 9538 for HSPA.					
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	2012-01-12	Normal
---	Power splitter	Jie sai	---	1000132	2012-01-04	Normal
111835	Wireless Communications Test Set	R&S	CMU200	1100000802	2012-04-01	Normal

Limit Level Construction:

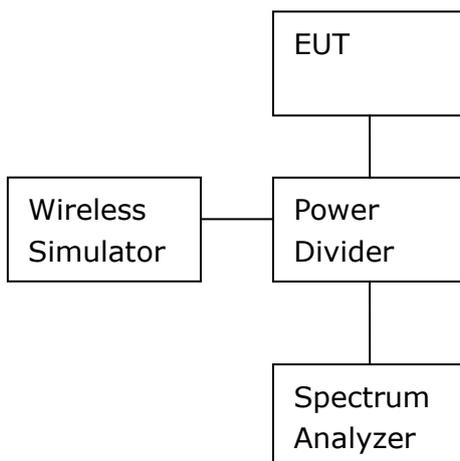
According to Part 24.238 (a), i.e., Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB, so the limit level is:
 $P(\text{dBm}) - (43 + 10 \log(P)) \text{ dB} = -13\text{dBm}$

Limits for Radiated spurious emissions

Frequency range	Limit Level
Band edge	-13dBm

Test Setup:

During the test, the EUT was controlled via the Wireless Communications Test Set to ensure max power transmission and proper modulation and measured by spectrum analyzer.



Test Method

- 1) The EUT was coupled to the EMI test receiver analyzer mode and the base station simulator through a power divider. The loss 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 a little greater than 1% of the 26dB emission bandwidth.

Note: --

Test Results:

GSM 850 band mode:

Band-edge emission		
EUT Channel	Frequency [MHz]	Level [dBm]
128 left band edge (824.2MHz)	823.999	-13.99
251 right band edge (848.8MHz)	849.023	-13.04

GSM 1900 band mode:

Band-edge emission		
EUT Channel	Frequency [MHz]	Level [dBm]
512 left band edge (1850.2MHz)	1849.997	-16.14
810 right band edge (1909.8MHz)	1910.021	-18.36

GPRS 850 band mode:

Band-edge emission		
EUT Channel	Frequency [MHz]	Level [dBm]
128 left band edge (824.2MHz)	823.985	-16.06
251 right band edge (848.8MHz)	849.021	-15.20

GPRS 1900 band mode:

Band-edge emission		
EUT Channel	Frequency [MHz]	Level [dBm]
512 left band edge (1850.2MHz)	1849.997	-21.03
810 right band edge (1909.8MHz)	1910.025	-21.76

EGPRS 850 band mode:

Band-edge emission		
EUT Channel	Frequency [MHz]	Level [dBm]
128 left band edge (824.2MHz)	823.999	-16.39
251 right band edge (848.8MHz)	849.021	-16.51

EGPRS 1900 band mode:

Band-edge emission		
EUT Channel	Frequency [MHz]	Level [dBm]
512 left band edge (1850.2MHz)	1849.981	-21.61
810 right band edge (1909.8MHz)	1910.015	-21.25

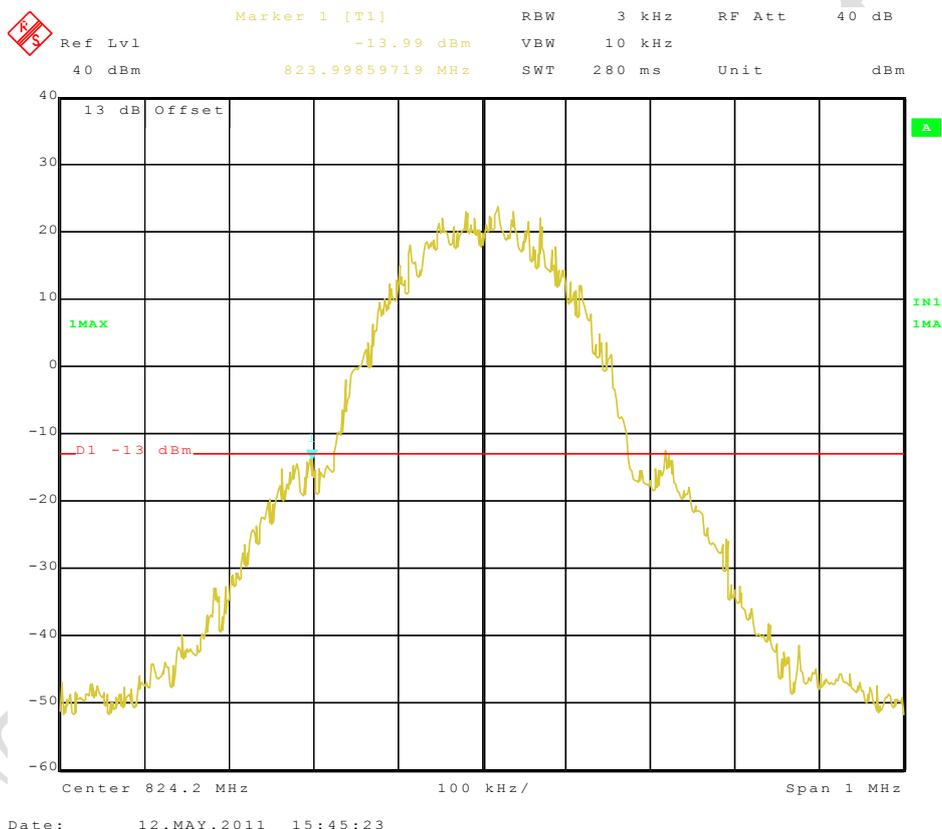
WCDMA FDD V band mode:

Band-edge emission		
EUT Channel	Frequency [MHz]	Level [dBm]
4132 left band edge (826.4MHz)	823.985	-17.09
4233 right band edge (846.6MHz)	849.015	-14.54

HSDPA FDD V band mode:

Band-edge emission		
EUT Channel	Frequency [MHz]	Level [dBm]
4132 left band edge (826.4MHz)	823.985	-18.16
4233 right band edge (846.6MHz)	849.015	-14.39

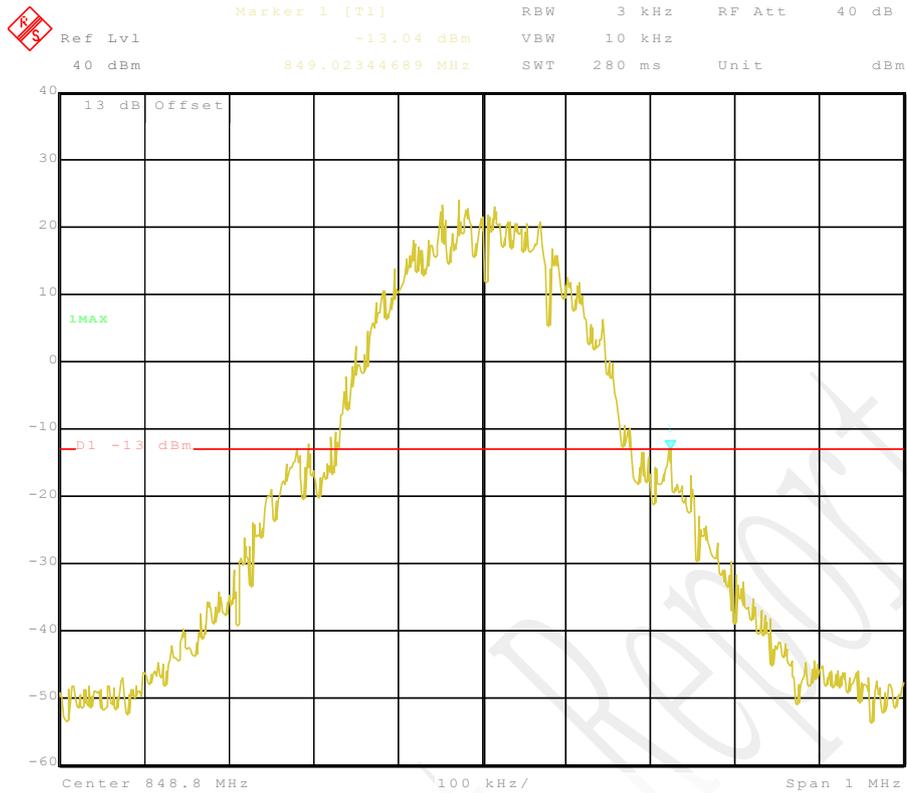
Graphical results for GSM mode:



GSM850 Channel 128 Left band edge

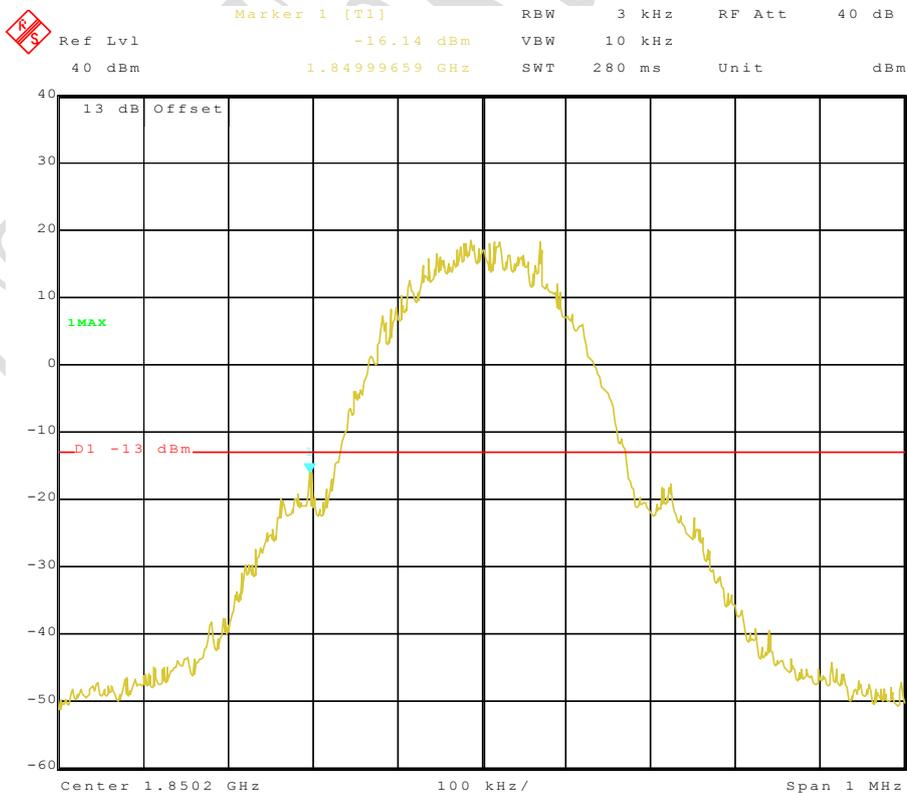
FCC Parts 2, 22, 24
Equipment: F953

REPORT NO.: I11GW5907-FCC-RF



Date: 12.MAY.2011 15:41:49

GSM850 Channel 251 Right band edge

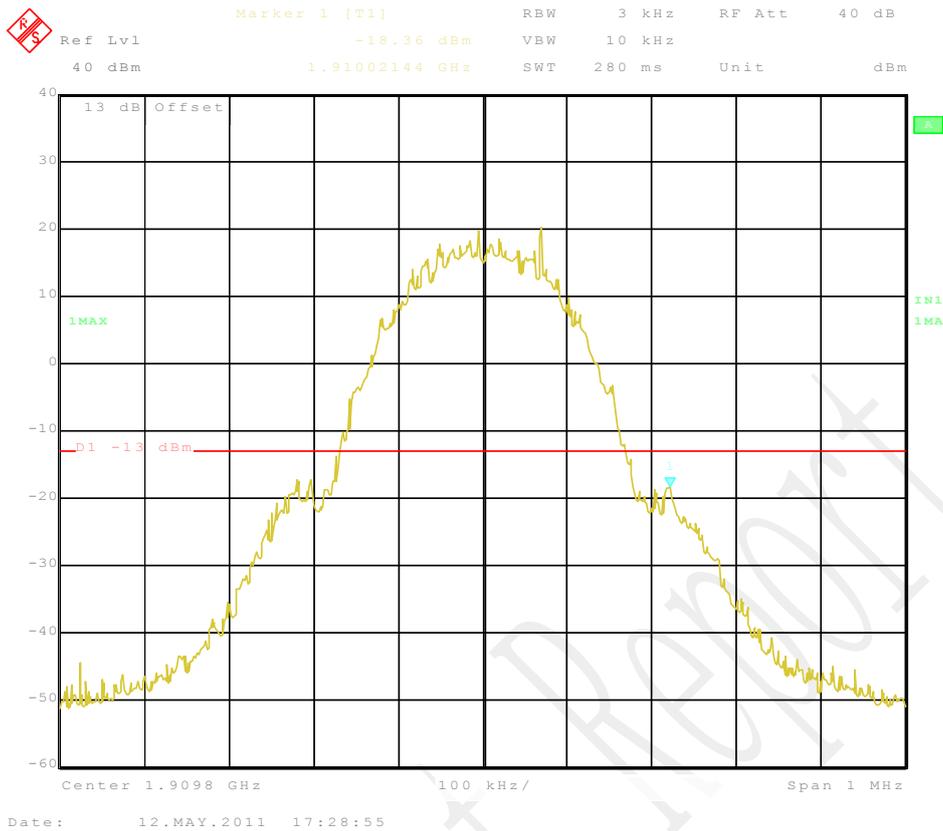


Date: 12.MAY.2011 17:25:03

GSM1900 Channel 512 Left band edge

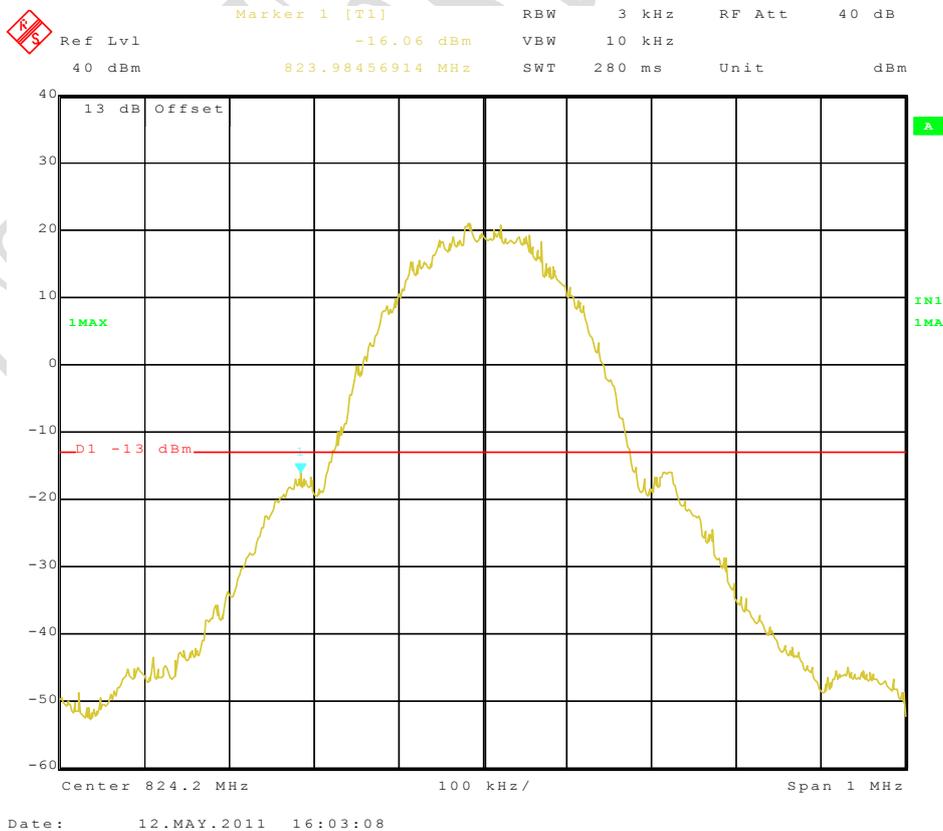
FCC Parts 2, 22, 24
Equipment: F953

REPORT NO.: I11GW5907-FCC-RF



GSM1900 Channel 810 Right band edge

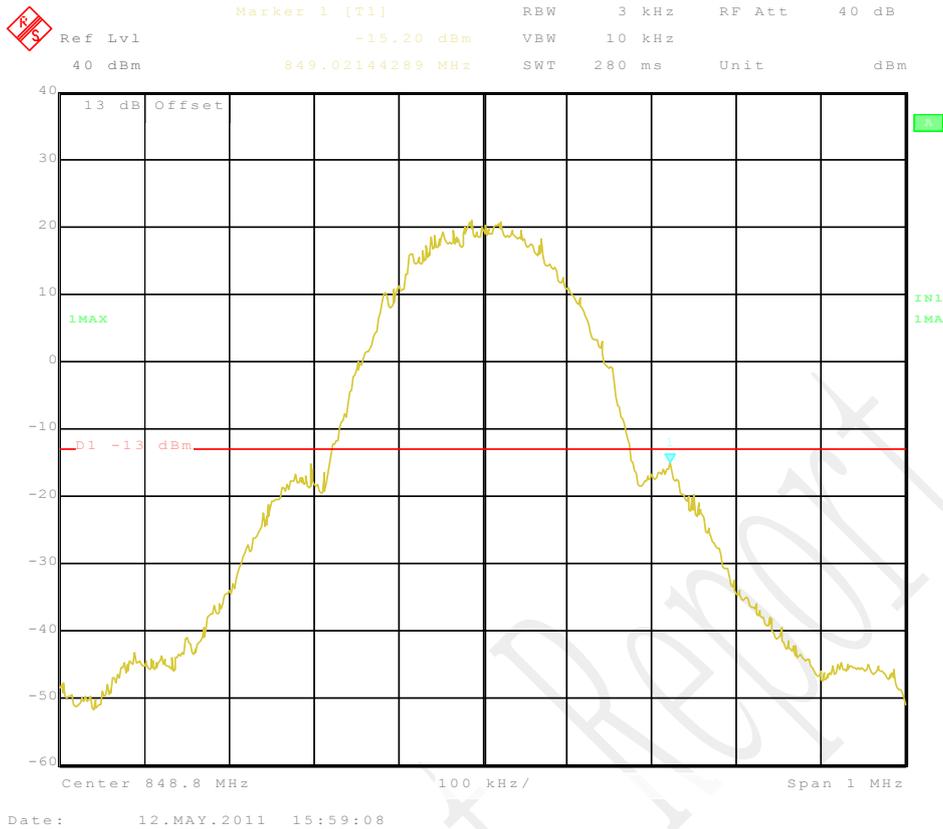
Graphical results for GPRS mode:



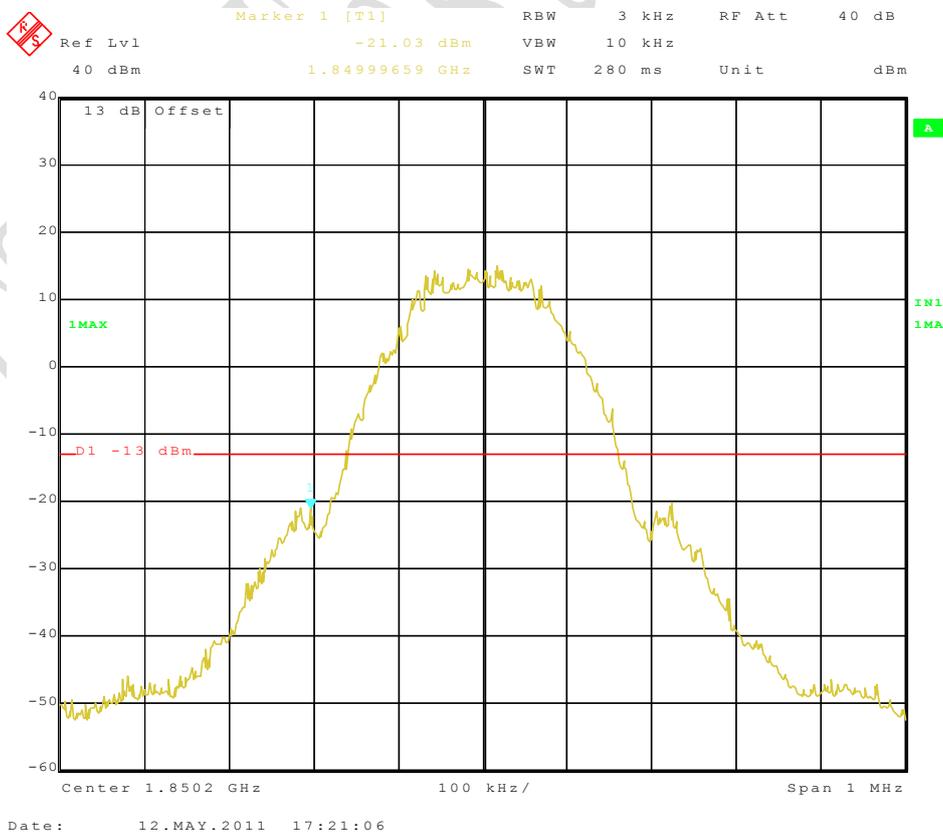
GPRS850 Channel 128 Left band edge

FCC Parts 2, 22, 24
Equipment: F953

REPORT NO.: I11GW5907-FCC-RF



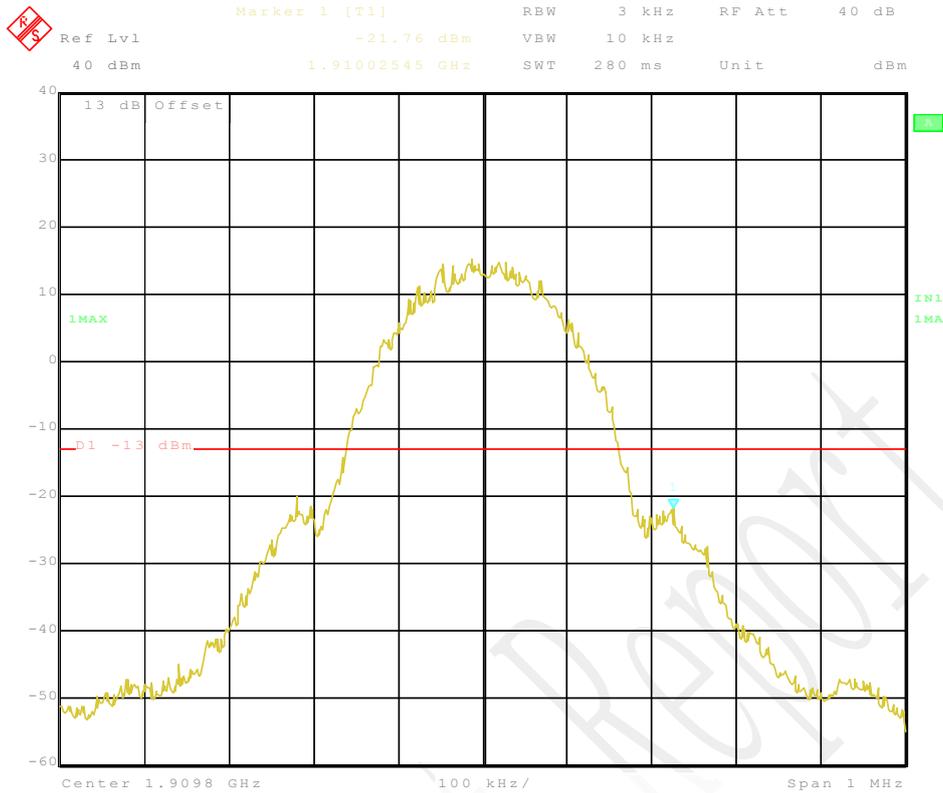
GPRS850 Channel 251 Right band edge



GPRS1900 Channel 512 Left band edge

FCC Parts 2, 22, 24
Equipment: F953

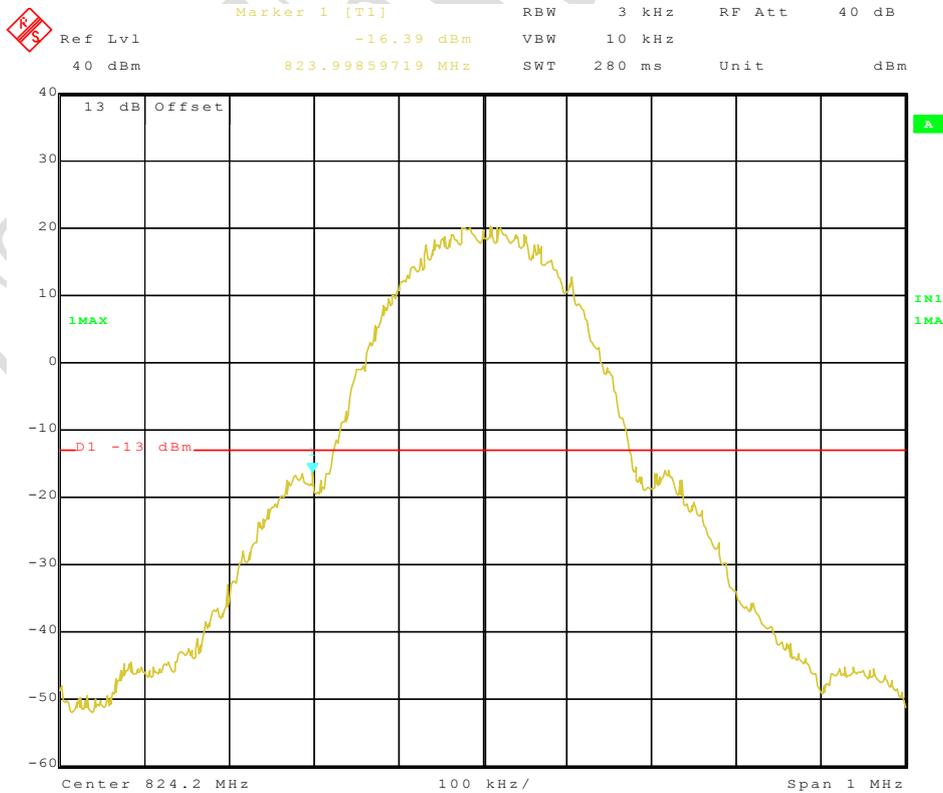
REPORT NO.: I11GW5907-FCC-RF



Date: 12.MAY.2011 17:17:44

GPRS1900 Channel 810 Right band edge

Graphical results for EGPRS mode:

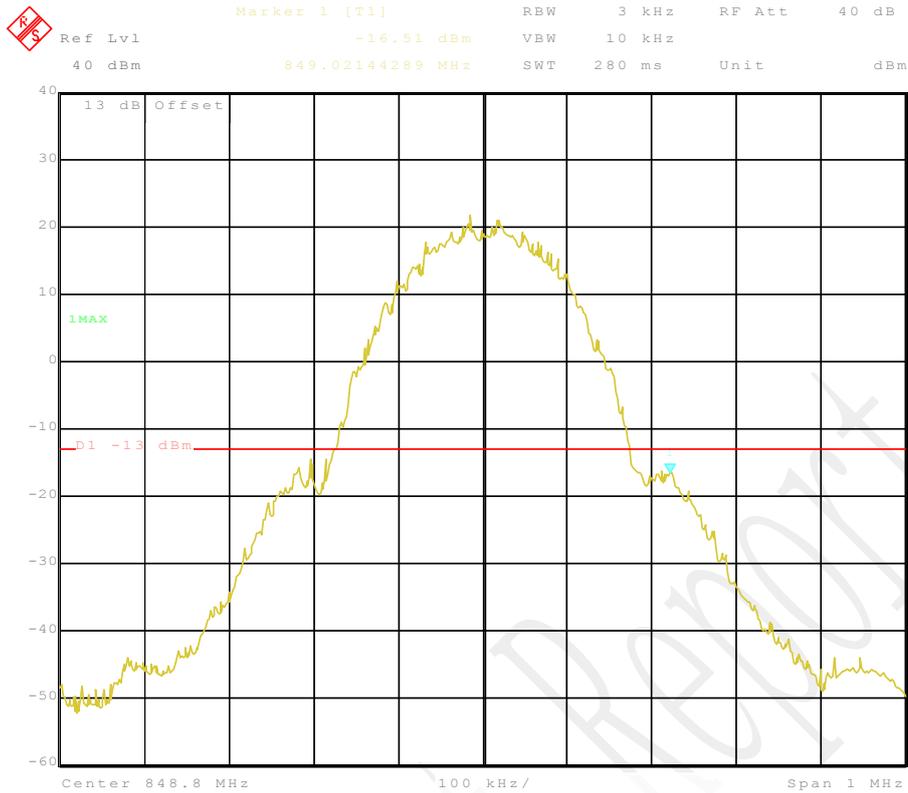


Date: 12.MAY.2011 16:35:06

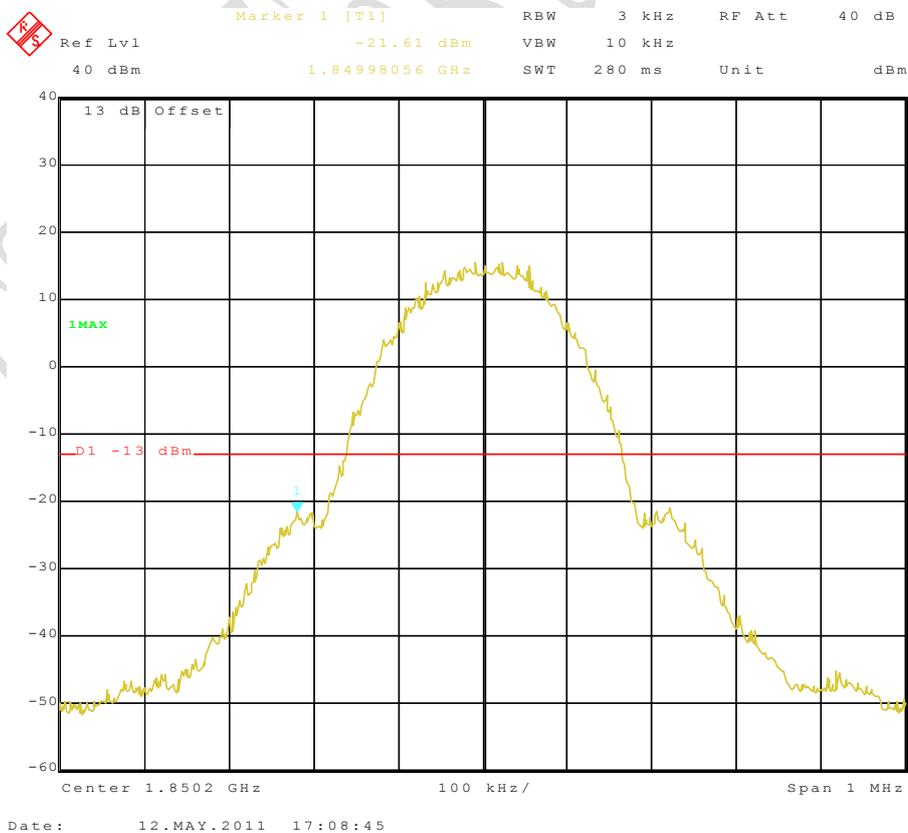
EGPRS850 Channel 128 Left band edge

FCC Parts 2, 22, 24
Equipment: F953

REPORT NO.: I11GW5907-FCC-RF



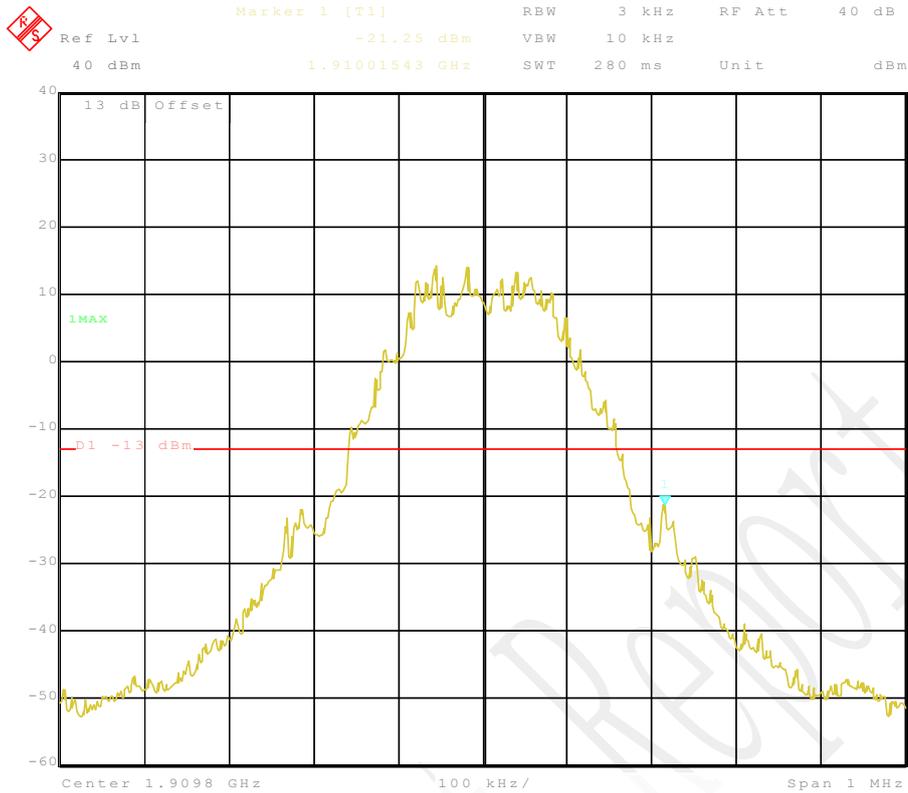
EGPRS850 Channel 251 Right band edge



EGPRS1900 Channel 512 Left band edge

FCC Parts 2, 22, 24
Equipment: F953

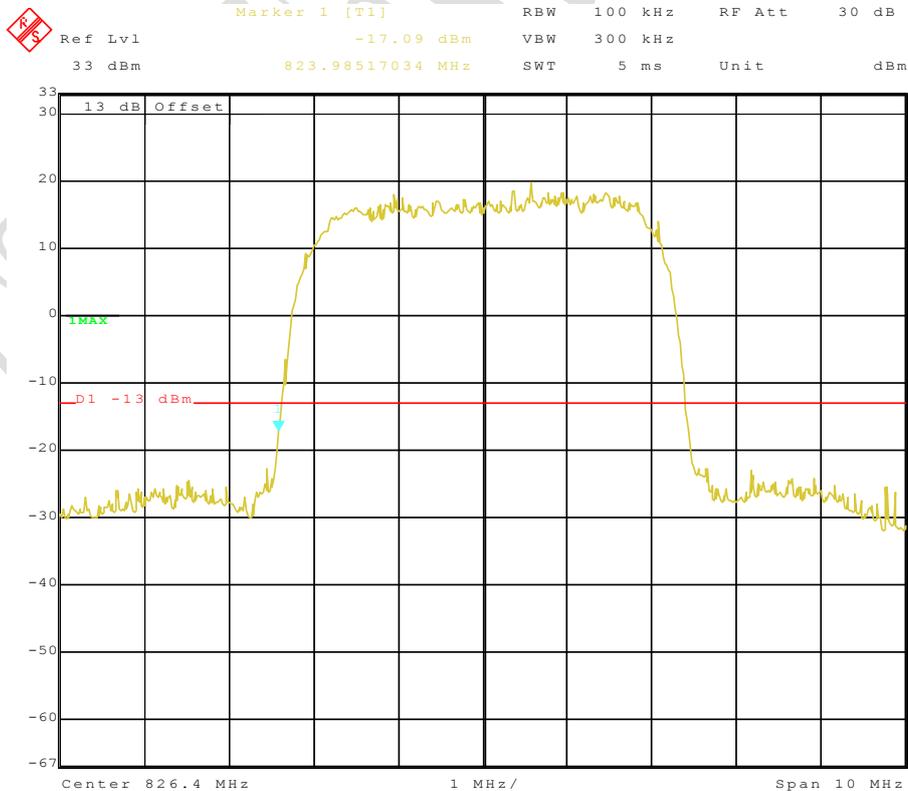
REPORT NO.: I11GW5907-FCC-RF



Date: 12.MAY.2011 17:11:43

EGPRS1900 Channel 810 Right band edge

Graphical results for HSDPA mode:

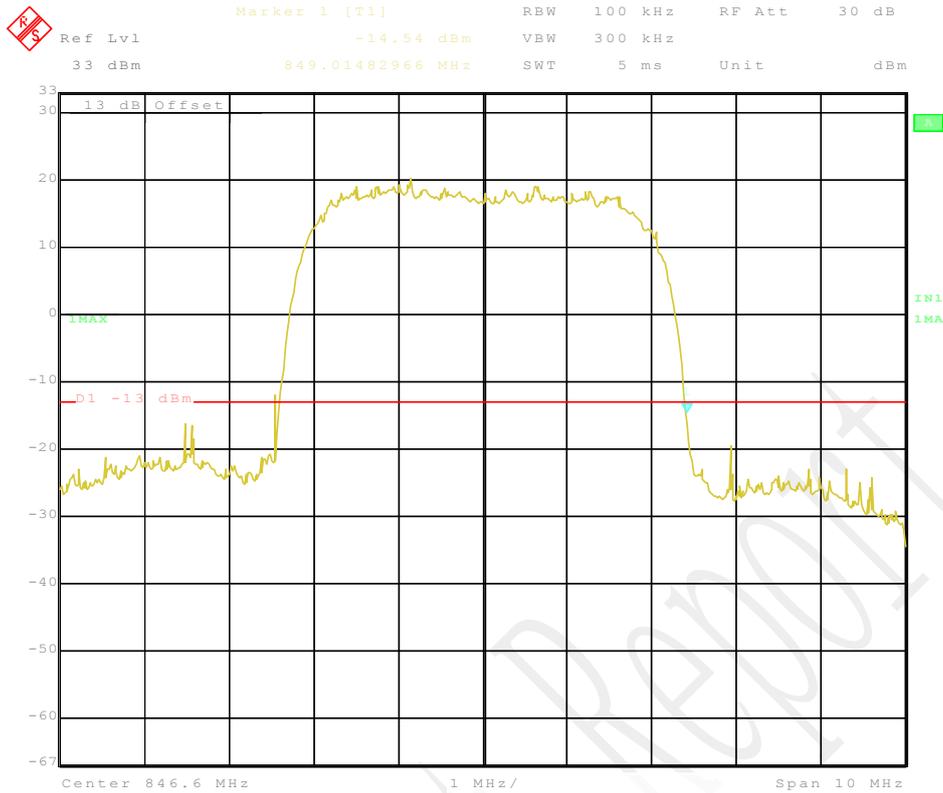


Date: 13.MAY.2011 11:06:26

WCDMA FDD V channel 4132 left band edge

FCC Parts 2, 22, 24
Equipment: F953

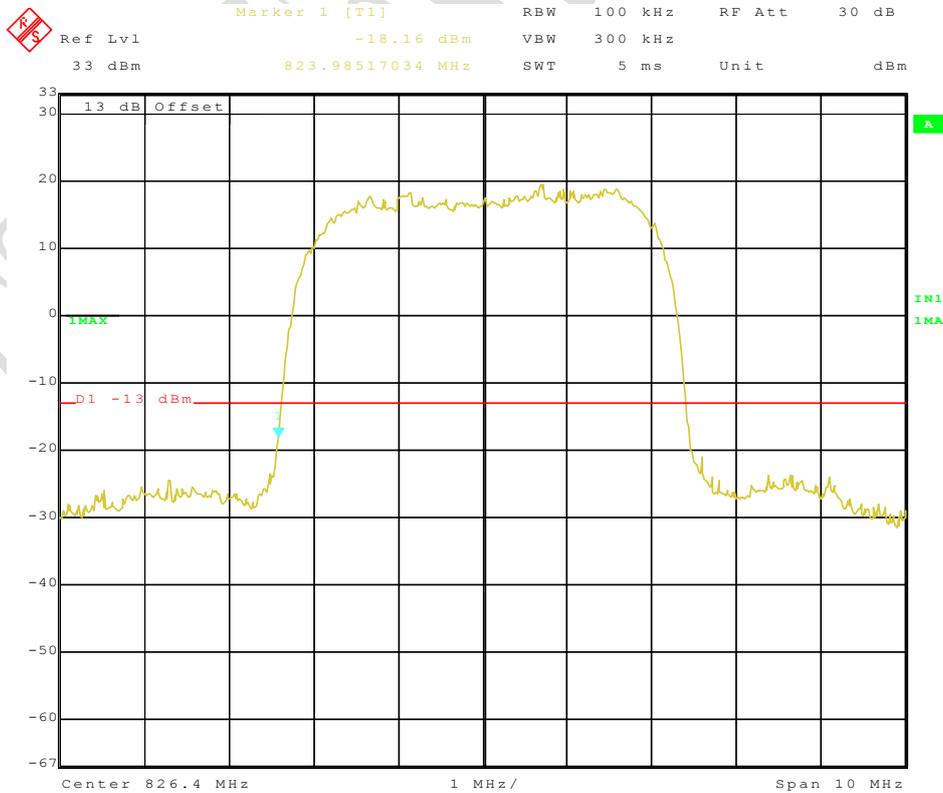
REPORT NO.: I11GW5907-FCC-RF



Date: 13.MAY.2011 10:57:58

WCDMA FDD V channel 4233 Right band edge

Graphical results for HSDPA mode:

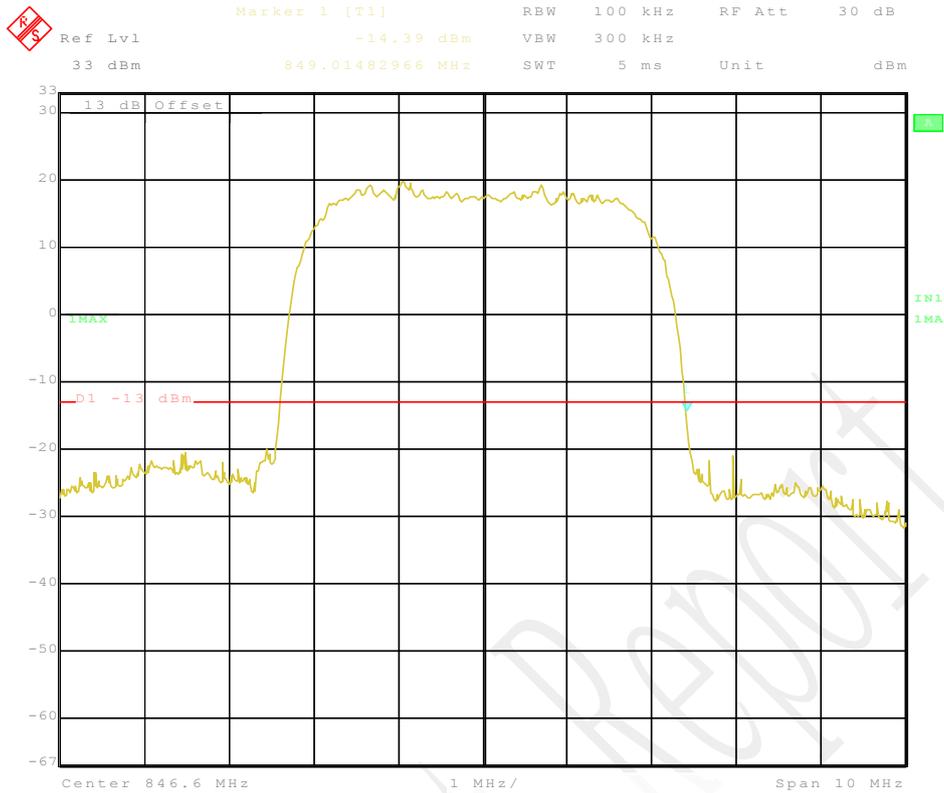


Date: 13.MAY.2011 10:44:43

HSDPA FDD V channel 4132 left band edge

FCC Parts 2, 22, 24
Equipment: F953

REPORT NO.: I11GW5907-FCC-RF



Date: 13.MAY.2011 10:49:57

HSDPA FDD V channel 4233 Right band edge

Annex A External Photos

See Annex A External Photos.

CTTL Test Report

Annex B Internal Photos

See Annex B Internal Photos.

CITL Test Report

ANNEX C Deviations from Prescribed Test Methods

No deviation from Prescribed Test Methods.

————— The End of this Report —————

TTL Test Report