

# TEST REPORT

REPORT NUMBER: I12GCD278-RF

ON

Type of Equipment: GSM dual band mobile phone

Model of Equipment: V32cu

Marketing Name: emporiaCLICK

Applicant: Emporia Telecom USA Inc.

China Telecommunication Technology Labs

Month date, year

July 12<sup>th</sup>, 2012

Signature



Ma Xin

Vice Director

**FCC ID:** ZVP-V32C

**Report Date:** 2012-07-12

**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.

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## 1 General Information

### 1.1 Notes

All reported tests were carried out on a sample equipment to demonstrate limited compliance with the following specifications.

FCC PART 2	FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS	10-1-10 Edition
FCC Part 24	PERSONAL COMMUNICATIONS SERVICES	10-1-10 Edition
FCC Part 22	PUBLIC MOBILE SERVICES	10-1-10 Edition
ANSI/TIA-603-C	Land Mobile FM or PM Communications Equipment Measurement and Performance standards	2004
ANSI C63.4	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40 GHz	2003

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 Peng

Position: Engineer

Date: 2012-07-12

Signature:



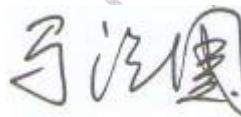
Technical responsibility for area of testing:

Name: Ma Zhiguo

Position: Manager

Date: 2012-07-12

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](mailto: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: Emporia Telecom USA Inc.  
Address: 321 E. Glen Ave, Ridgewood, New Jersey  
Country: Unite State  
Telephone: (201) 962-5550  
Fax: (201) 962-5550  
Contact: Silva Hoo  
Email: foley@emporiatelecom.com

### 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: Emporia Telecom USA Inc.  
 Name: GSM dual band mobile phone  
 Model Number: V32cu  
 Serial Number: --  
 Production Status: Product  
 Receipt date of test item: 2012-05-11  
 Transmitter Frequency range: GSM850: 824.2-848.8 MHz,  
                                   PCS1900: 1850.2-1909.8MHz  
 Receiver Frequency Range: GSM850: 869.2-893.8 MHz,  
                                   PCS1900: 1930.2-1989.8MHz  
 Bluetooth Frequency Range: 2400MHz~2483.5MHz  
 High Voltage Level: 4.2 V  
 Nominal Voltage Level: 3.7 V  
 Low Voltage Level: 3.5 V

### 2.2 Outline of EUT

E.U.T. is a GSM dual mobile phone.

### 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	Shenzhen Compoka Electronic Technology Co.,Ltd	PFSPO-V170	--	None
B	adapter	KUANTECH CO LTD	RL-V170US	--	None
C	battery	Shenzhen Renergy Science & Technology Co., Ltd	Li-ion	--	None

## 2.5 Other Information

(a) Modulation is GMSK for GSM and GPRS.

(b) Version of hardware and software

HW Version: V32c\_HW\_V2.0

SW Version: V32c\_SW\_V1.04

(c) Battery information:

Nominal Voltage: 3.7 V

Capacity: 1000 mAh

CTTLL Test Report

### 3 Summary of Test Results

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

<b>GSM mode:</b>		
<b>FCC Specification Clause</b>	<b>Name of Test</b>	<b>Result</b>
2.1051, 24.238, 22.917	Radiated Spurious Emission	Pass
22.913, 24.232	Output Power	Pass
15.107, 15.207	Conducted Emission	Pass
2.1049,22.917(b), 24.238(b)	Occupied Bandwidth	Pass
22.917(b), 24.238(b)	Emission Bandwidth	Pass
2.1055,22.355, 24.235	Frequency Stability	Pass
2.1057,22.917, 24.238	Conducted spurious emissions	Pass
22.917(b), 24.238(b)	Band Edge Compliance	Pass

<b>GPRS mode:</b>		
<b>FCC Specification Clause</b>	<b>Name of Test</b>	<b>Result</b>
2.1051, 24.238, 22.917	Radiated Spurious Emission	Pass
22.913, 24.232	Conducted Emission	Pass
15.107, 15.207	Occupied Bandwidth	Pass
2.1049,22.917(b), 24.238(b)	Emission Bandwidth	Pass
22.917(b), 24.238(b)	Frequency Stability	Pass
2.1055,22.355, 24.235	Conducted spurious emissions	Pass
2.1057,22.917, 24.238	Band Edge Compliance	Pass

## 4 Test Results of mode

### 4.1 Radiated Spurious Emission

<b>Specifications:</b>	24.238, 22.917
<b>Test conditions:</b>	Ambient Temperature: 15°C-35°C Relative Humidity: 30%-60% Air pressure: 86-106kPa
<b>Operation Mode</b>	TX on, channel 190 and 661
<b>Test Results:</b>	Pass

**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.

<b>Limits for Radiated spurious emissions(UE)</b>	
<b>Frequency range</b>	<b>Limit Level /Resolution Bandwidth</b>
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.

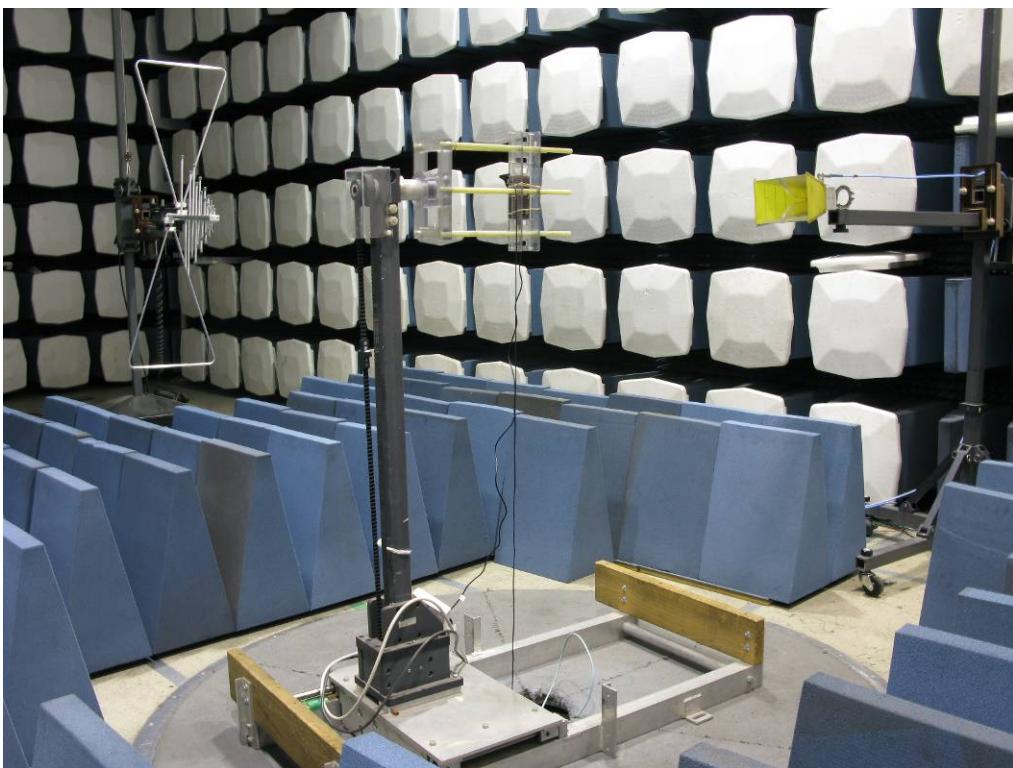


Figure SP

**Test Method:**

The measurement was performed accordance with section 2.2.12 of TIA-603-C-2004: *Land Mobile FM or PM Communications Equipment Measurement and Performance Standards*.

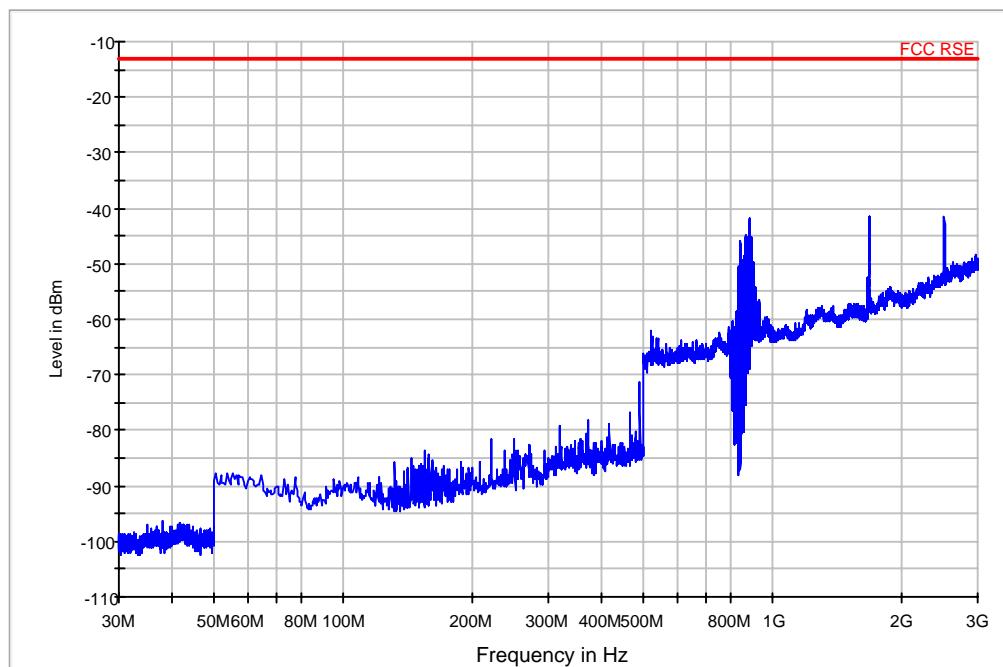
- 1 The maximum spurious emissions were searched by turning the azimuth of the turntable, shifting the polarization of the measuring antenna and changing the pose of the EUT.
- 2 Levels of EUT's transmitter harmonics and suspicious signals were recorded.
- 3 The recorded levels were corrected in the automated test system with the correction factors given by a substitution calibration made before the measurement.
- 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).
- 2 The investigated frequency range is 30 MHz to the 10<sup>th</sup> harmonic of the highest Frequency generated within the equipment.

**Test Results for GSM mode:**

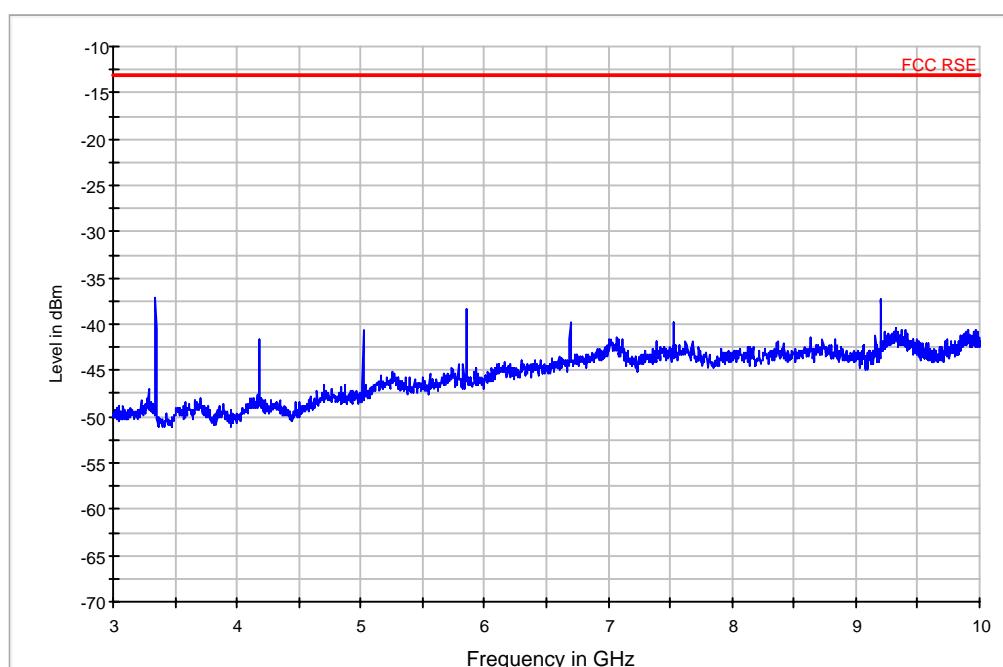
GSM850 Tx 30-3GHz-FCC Test



— FCC RSE.LimitLine      — Preview Result 1

**Channel 190 for 850MHz – 30MHz to 3GHz**

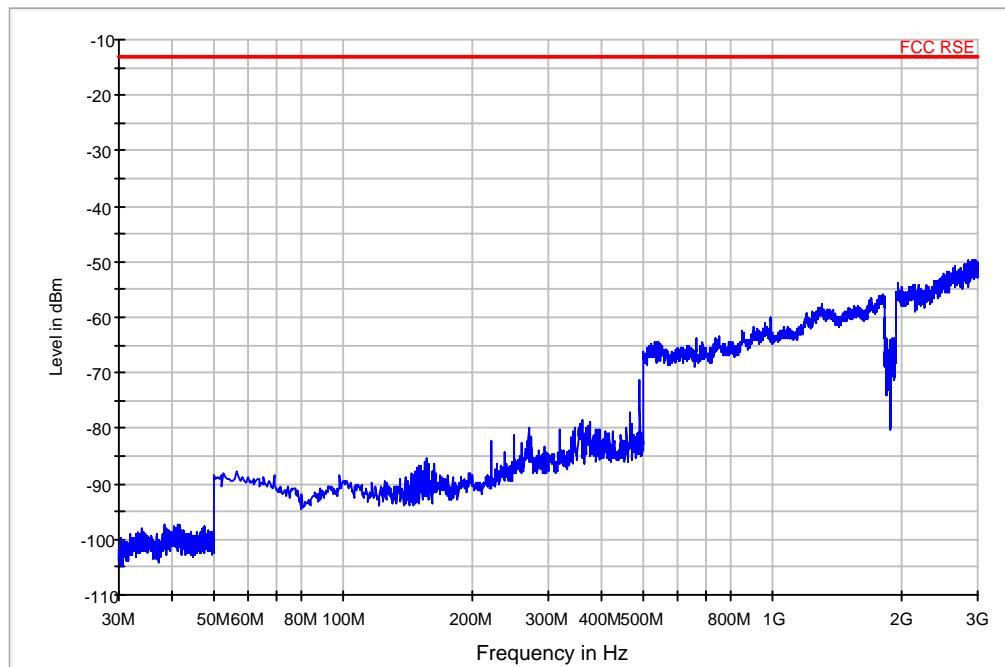
GSM850 Tx 3-12.75GHz-FCC Test



— FCC RSE.LimitLine      — Preview Result 1

**Channel 190 for 850MHz – 3GHz to 12.75GHz**

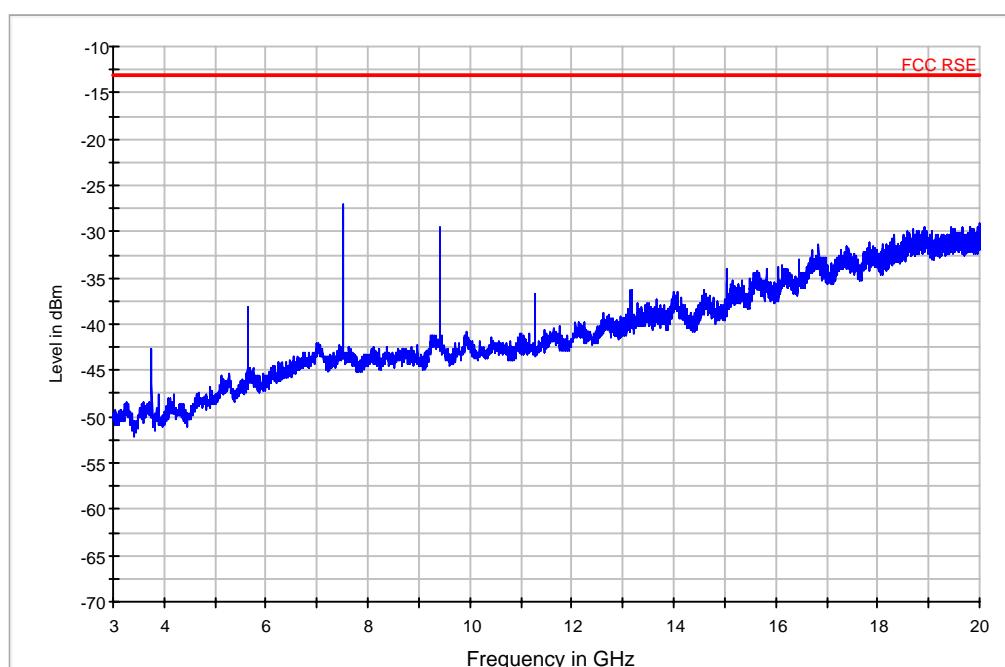
GSM1900 Tx 30-3GHz-FCC Test



— FCC RSE.LimitLine      — Preview Result 1

### Channel 661 for 1900MHz– 30MHz to 3GHz

GSM1900 Tx 3-20GHz-FCC Test



— FCC RSE.LimitLine      — Preview Result 1

### Channel 661 for 1900MHz– 3GHz to 20GHz

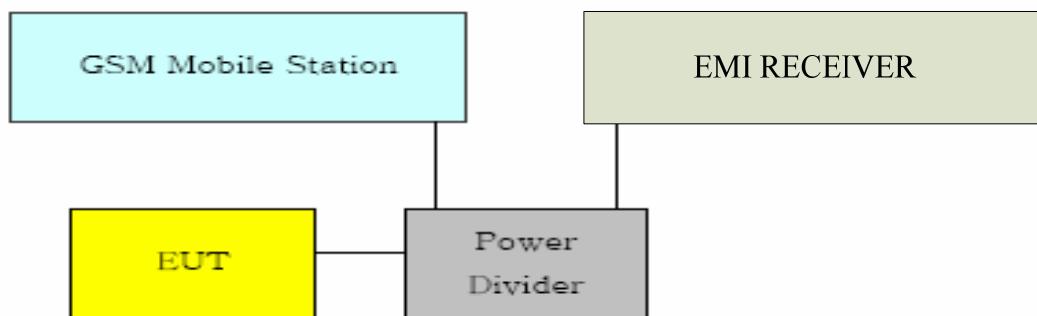
## 4.2 Output Power

### 4.2.1. Conducted Output Power

<b>Specifications:</b>	22.913, 24.232
<b>Test conditions:</b>	Ambient Temperature: 15°C-35°C Relative Humidity: 30%-60% Air pressure: 86-106kPa
<b>Operation Mode</b>	TX on, channel 128, 190, 251, 512, 661 and 810
<b>Test Results:</b>	Pass

#### 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 loss of the cables the test system is calibrated to correct the readings.
- 2) The spectrum analyzer was set to Max-peak Detector function and Maximum hold mode.
- 3) The resolution bandwidth of the spectrum analyzer was comparable to the emission bandwidth.

**Note:** --

**Test Result for GSM mode:****GSM 850 band:****GSM**

ARFCN	Output Power [dBm]
128	32.93
190	33.11
251	32.24

**GPRS**

ARFCN	Output Power [dBm]
128	32.91
190	33.08
251	33.18

PCS 1900 band:

**GSM**

ARFCN	Output Power [dBm]
512	30.26
661	30.40
810	30.57

**GPRS**

ARFCN	Output Power [dBm]
512	30.20
661	30.30
810	30.50

#### 4.2.2. Radiated Output Power

##### 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-C-2004: *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:

ERP dBm = EIRP dBm – 2.15dB.

**ERP Value for GSM 850 band mode:****Limits**

	Burst Peak ERP (dBm)
GSM	≤ 38.45 (7W)
GPRS	≤ 38.45 (7W)
EGPRS	≤ 38.45 (7W)

**GSM**

ARFCN	Frequency [MHz]	ERP [dBm]
128	824.228	21.83
190	836.553	21.55
251	848.777	23.25

**GPRS**

ARFCN	Frequency [MHz]	ERP [dBm]
128	824.128	17.31
190	836.553	19.05
251	848.777	20.94

**EIRP Value for GSM 1900 band mode:****Limits**

	Burst Peak EIRP (dBm)
GSM	≤ 33 (2W)
GPRS	≤ 33 (2W)
EGPRS	≤ 33 (2W)

**GSM**

ARFCN	Frequency [MHz]	EIRP [dBm]
512	1850.100	26.89
661	1880.080	25.69
810	1909.739	25.69

**GPRS**

ARFCN	Frequency [MHz]	EIRP [dBm]
512	1850.100	26.09
661	1880.080	24.53
810	1909.899	24.69

### 4.3 Conducted Emission

<b>Specifications:</b>	15.107, 15.207
<b>Test conditions:</b>	Ambient Temperature: 15°C-35°C Relative Humidity: 30%-60% Air pressure: 86-106kPa
<b>Operation Mode</b>	TX on, channel 190 and 661
<b>Test Results:</b>	Pass

#### Test Method

The Measure procedure is ANSI C63.4-2003 is used. Conducted Emission is measured with travel charger.

#### Limit

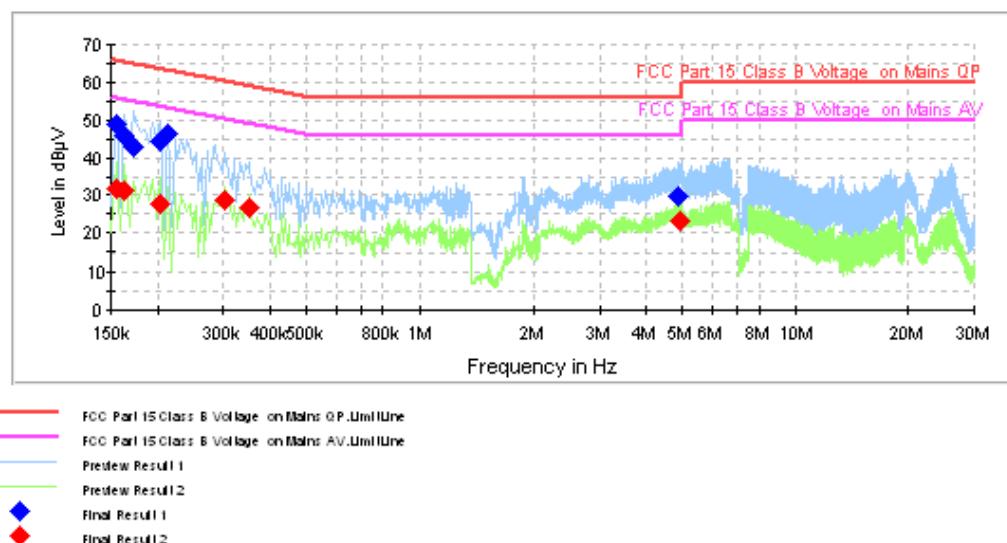
Frequency of Emission (MHz)	Conducted Limit (dB $\mu$ V)	
	Quasi-Peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 - 30	60	50

Note: \* Decreases with logarithm of the frequency

## Test Result

### GSM 850MHz

ESH2-Z5 Scan-FCC

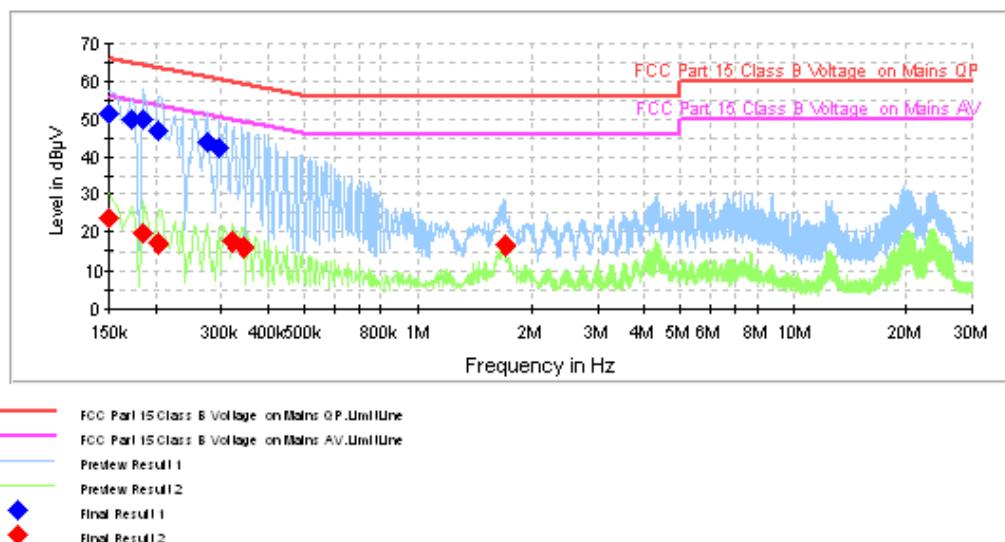


Frequency (MHz)	QuasiPeak (dB $\mu$ V)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)
0.154500	49.0	FLO	L1	10.0	16.8	65.8
0.163500	45.6	FLO	L1	10.0	19.7	65.3
0.172500	43.0	FLO	L1	10.0	21.8	64.8
0.204000	44.2	FLO	L1	10.0	19.2	63.4
0.213000	46.5	FLO	L1	10.0	16.6	63.1
4.834500	30.0	FLO	L1	10.2	26.0	56.0

Frequency (MHz)	CAverage (dB $\mu$ V)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)
0.154500	31.8	FLO	N	10.1	24.0	55.8
0.163500	31.4	FLO	L1	10.0	23.9	55.3
0.204000	27.4	FLO	L1	10.0	26.0	53.4
0.303000	28.6	FLO	L1	10.0	21.6	50.2
0.352500	26.9	FLO	L1	10.0	22.0	48.9
4.929000	23.3	FLO	L1	10.2	22.7	46.0

## GSM 1900MHz

ESH2-Z5 Scan-FCC



Frequency (MHz)	QuasiPeak (dB $\mu$ V)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)
0.150000	51.2	FLO	L1	10.0	14.8	66.0
0.172500	49.9	FLO	L1	10.0	14.9	64.8
0.186000	49.9	FLO	N	10.1	14.3	64.2
0.204000	47.1	FLO	L1	10.0	16.3	63.4
0.276000	43.7	FLO	L1	10.0	17.2	60.9
0.294000	42.5	FLO	N	10.1	17.9	60.4

Frequency (MHz)	CAverage (dB $\mu$ V)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)
0.150000	23.6	FLO	L1	10.0	32.4	56.0
0.186000	19.5	FLO	L1	10.0	34.7	54.2
0.204000	17.3	FLO	N	10.1	36.1	53.4
0.321000	17.8	FLO	L1	10.0	31.9	49.7
0.343500	16.2	FLO	L1	10.0	32.9	49.1
1.698000	16.8	FLO	L1	10.1	29.2	46.0

#### 4.4 Occupied bandwidth

<b>Specifications:</b>	2.1049,22.917(b),24.238(b)
<b>Operation Mode</b>	TX on, channel 128, 190, 251, 512, 661 and 810
<b>Test Results:</b>	Pass

#### 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

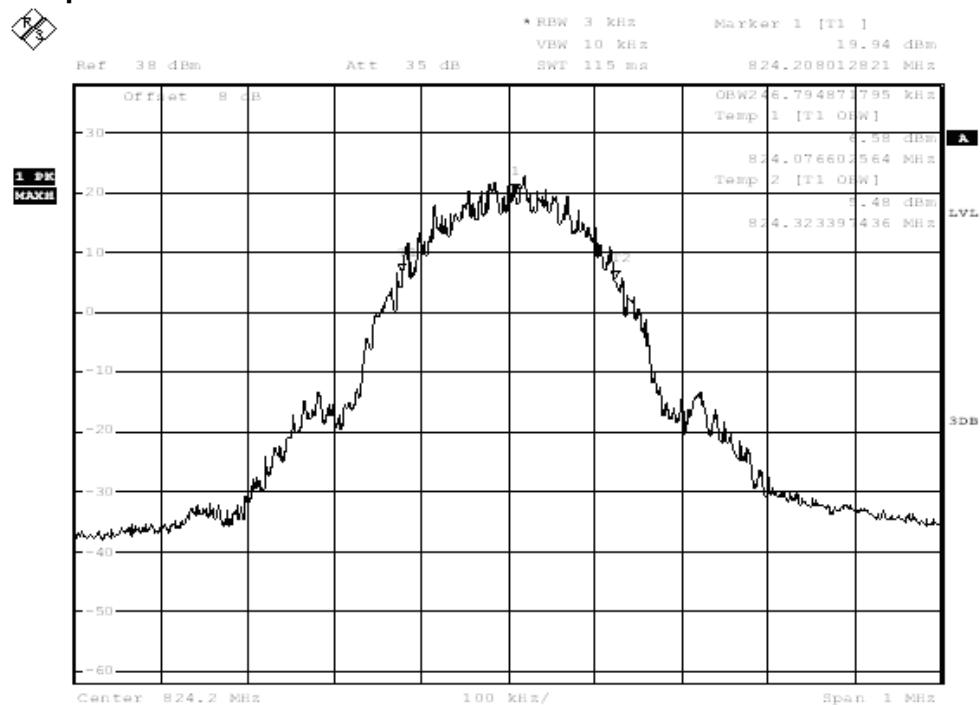
The 99% occupied bandwidth was calculated from the spectrum analyzer. Markers in the spectrum analyzer were then placed between the calculated frequencies to show the calculated 99% power band.

**Note:** --

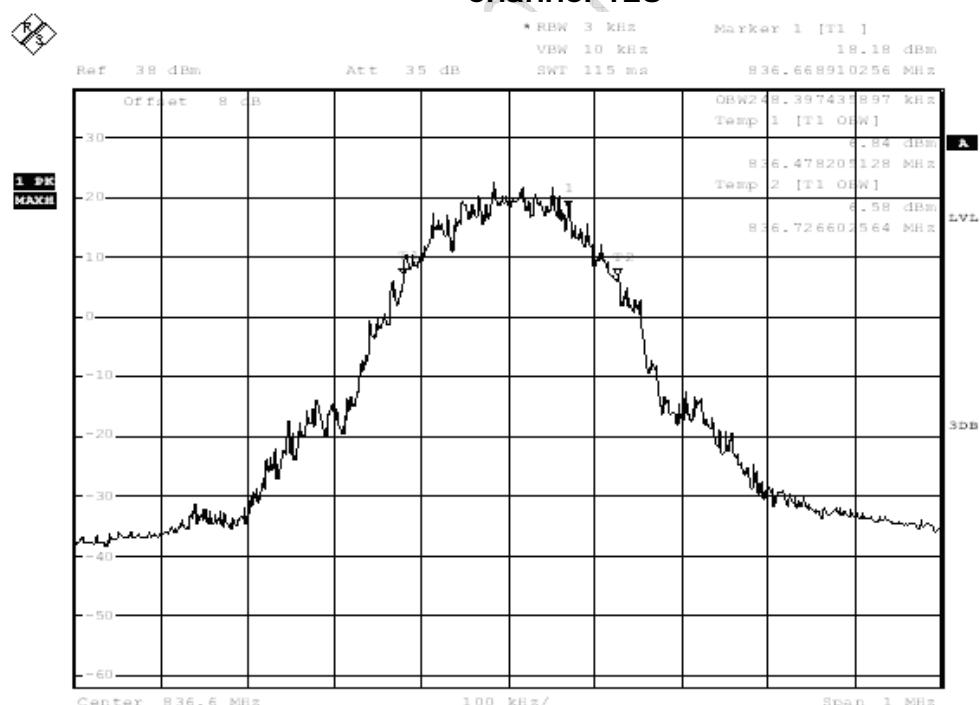
#### Results data of GSM mode:

EUT channel	99% occupied bandwidth [kHz]
128	246.79
190	248.40
251	248.40
512	248.40
661	248.40
810	246.79

## Graphical results for GSM mode:

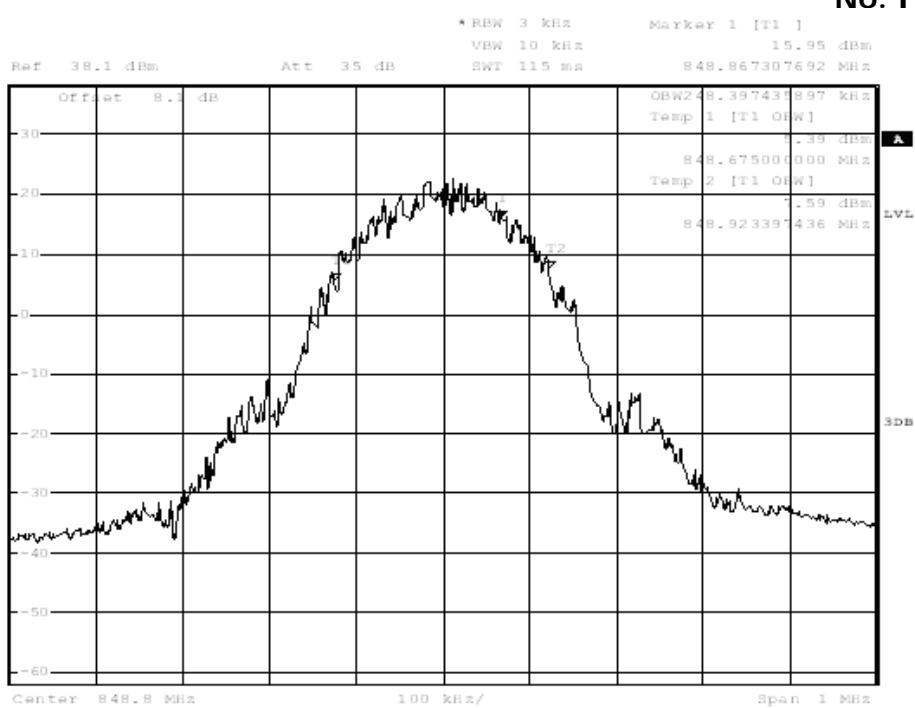


## Channel 128



## Channel 190

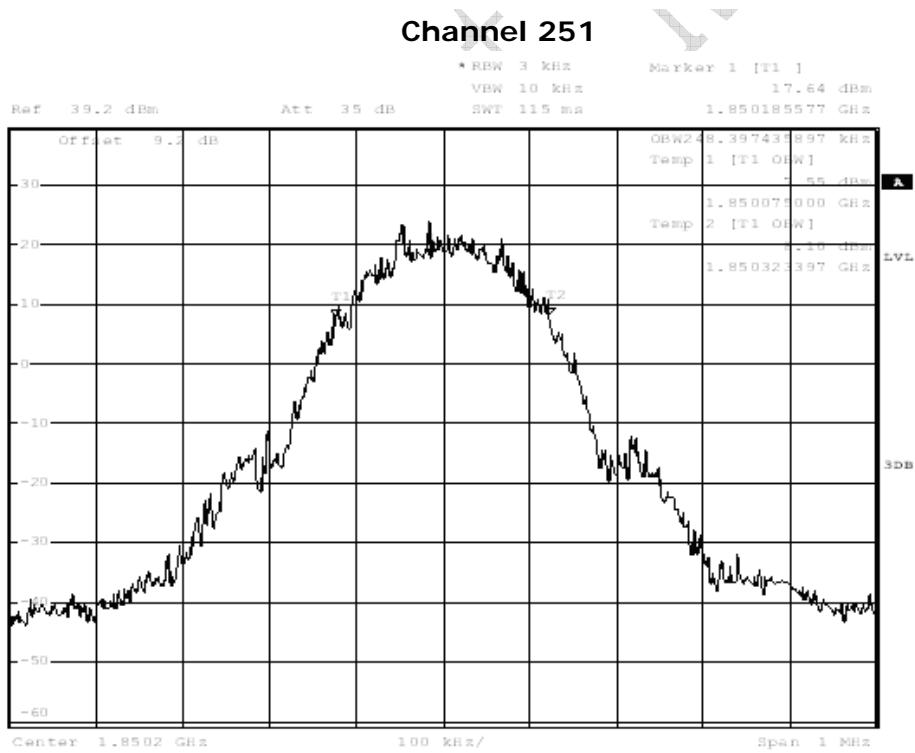
No. I12GCD278-RF


**1 PK  
MAX**


A

LVL

3dB


**1 PK  
MAX**


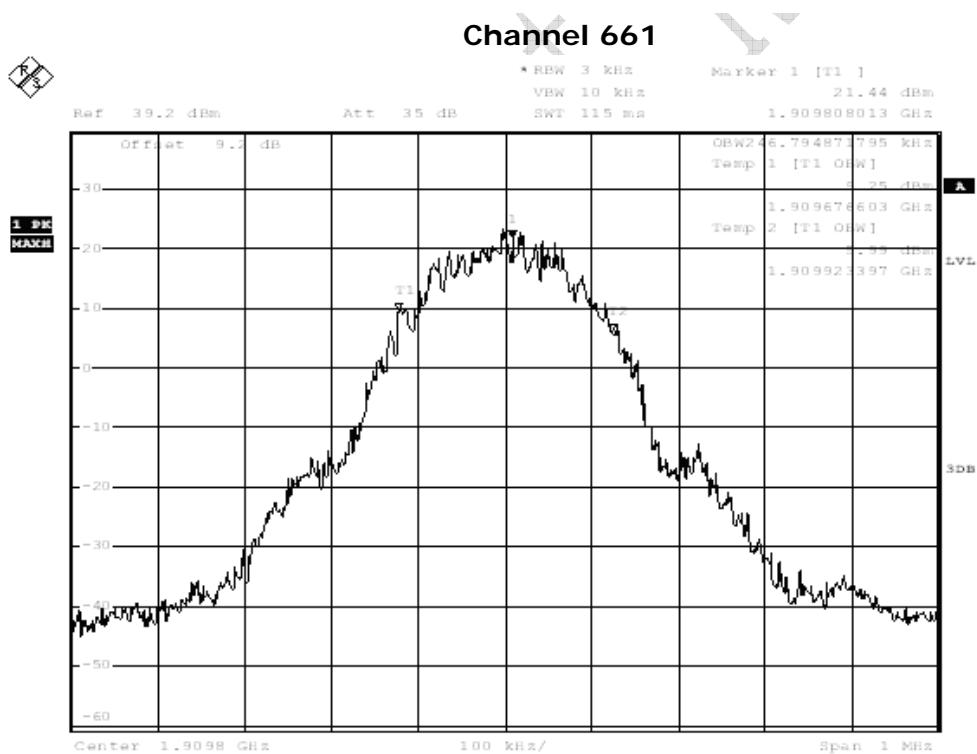
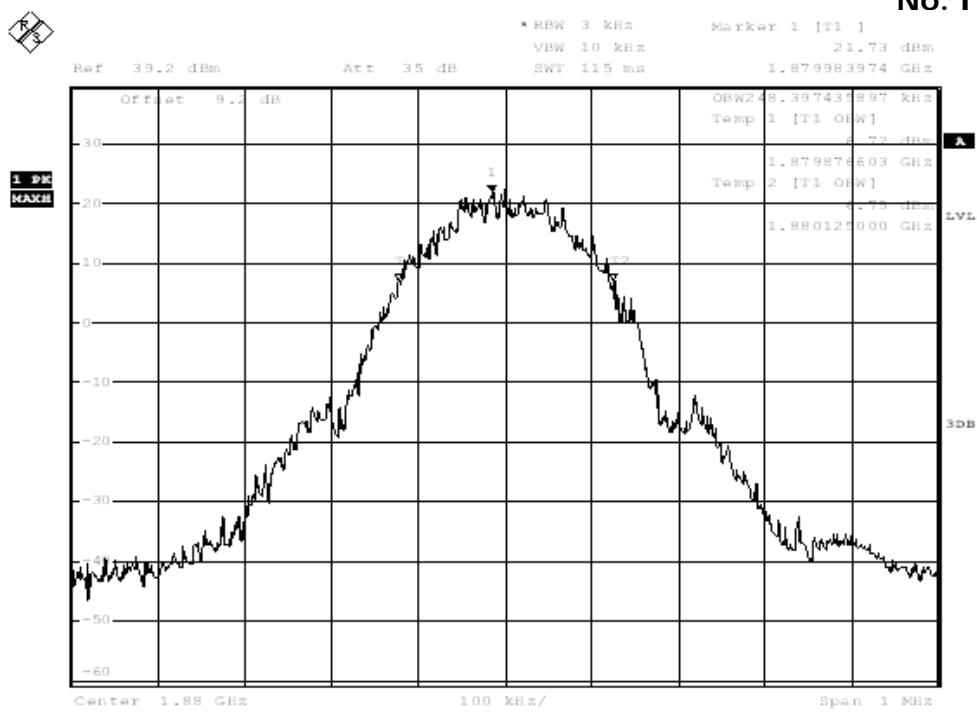
A

LVL

3dB

### Channel 251

### Channel 512

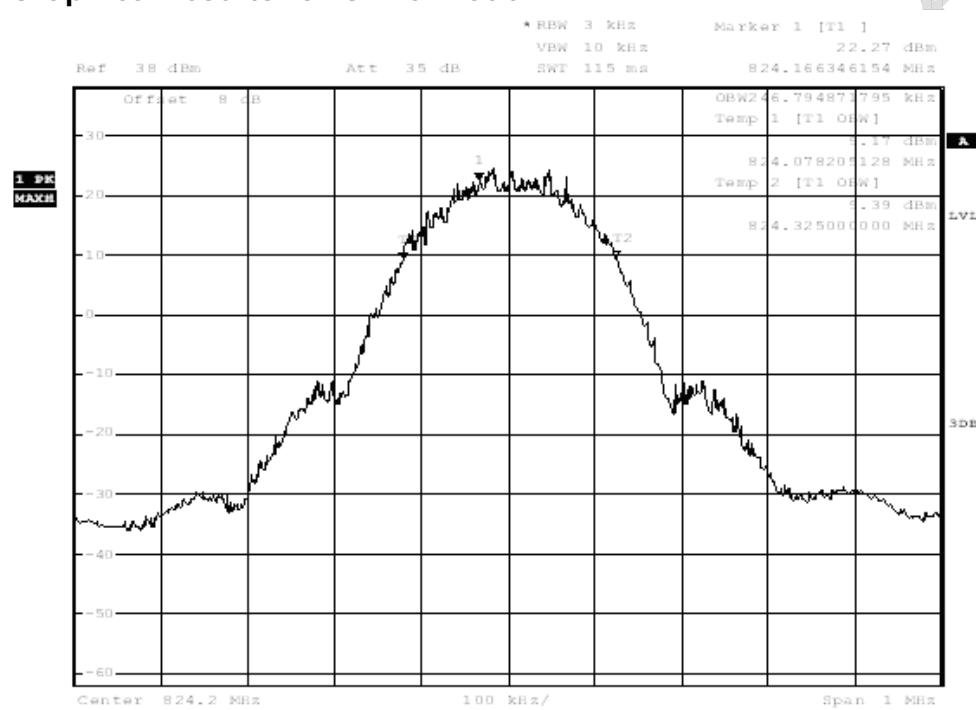


### Channel 810

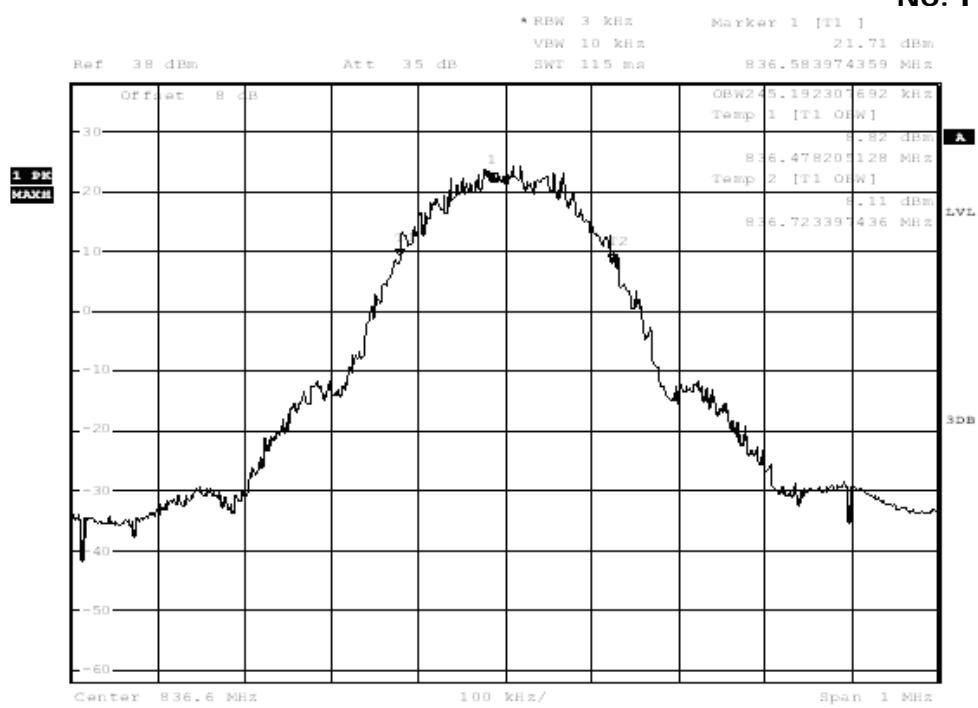
## Results data of GPRS mode:

EUT channel	99% occupied bandwidth [kHz]
128	246.80
190	245.19
251	246.79
512	246.79
661	246.79
810	246.79

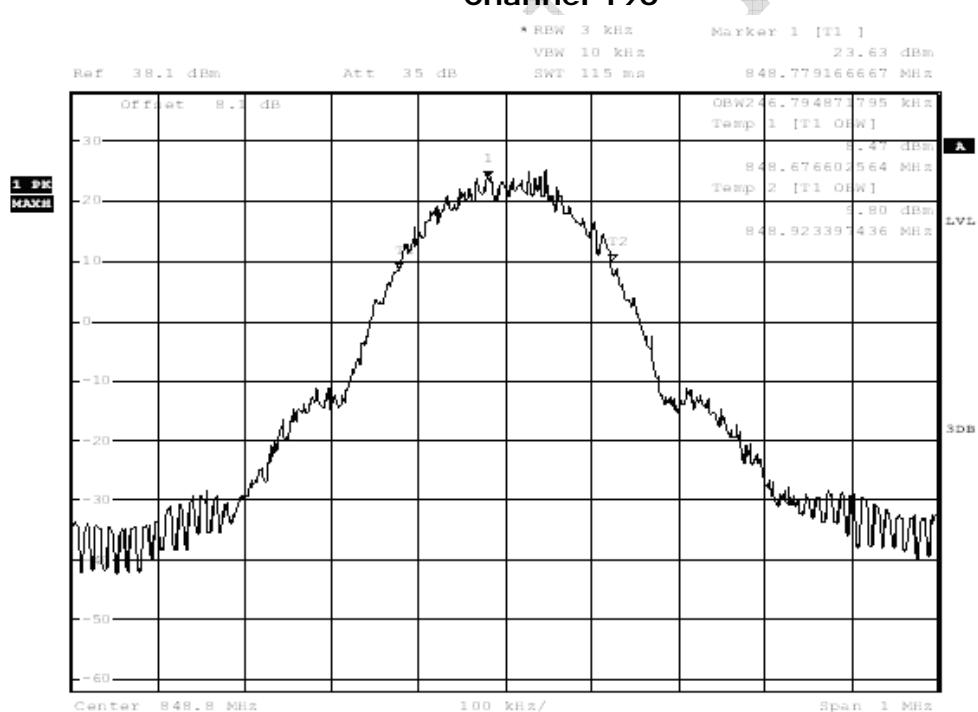
## Graphical results for GPRS mode:



Channel 128

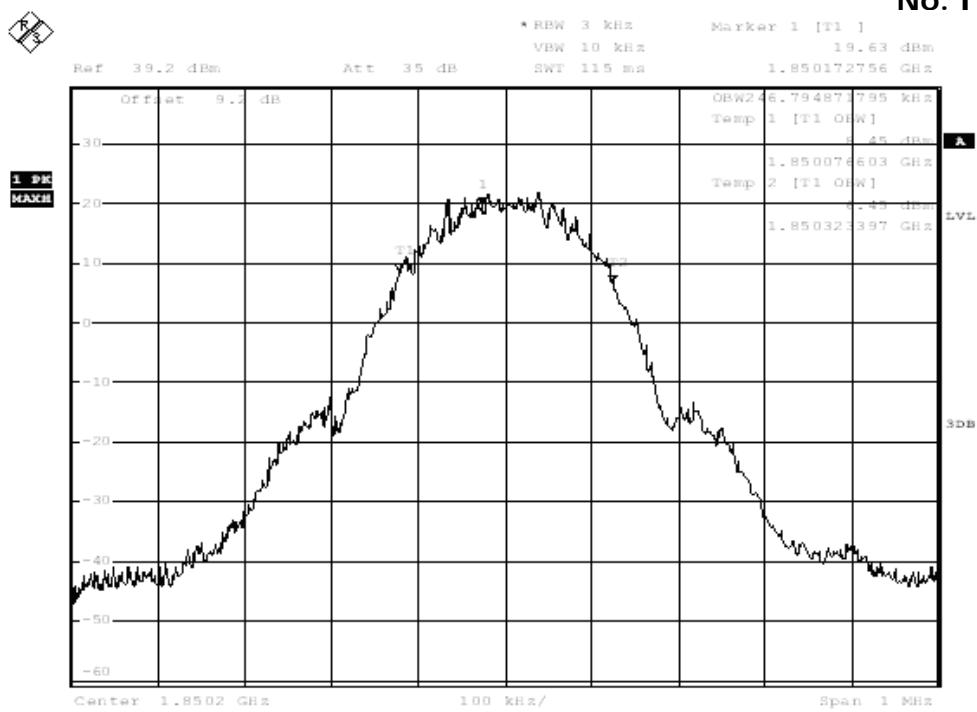


## Channel 190

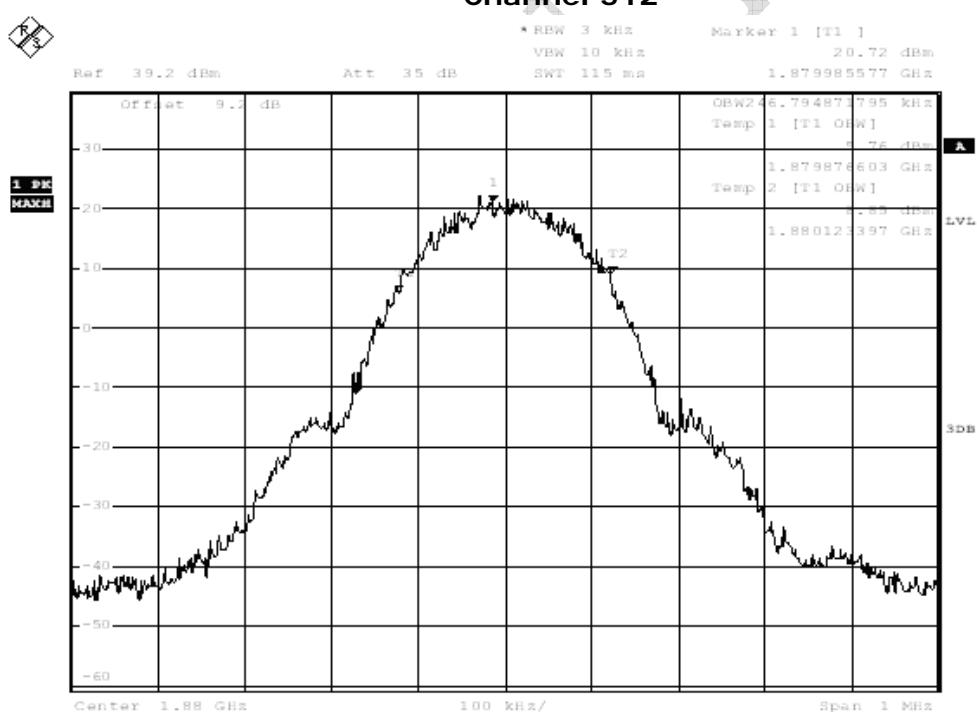


## Channel 251

No. I12GCD278-RF

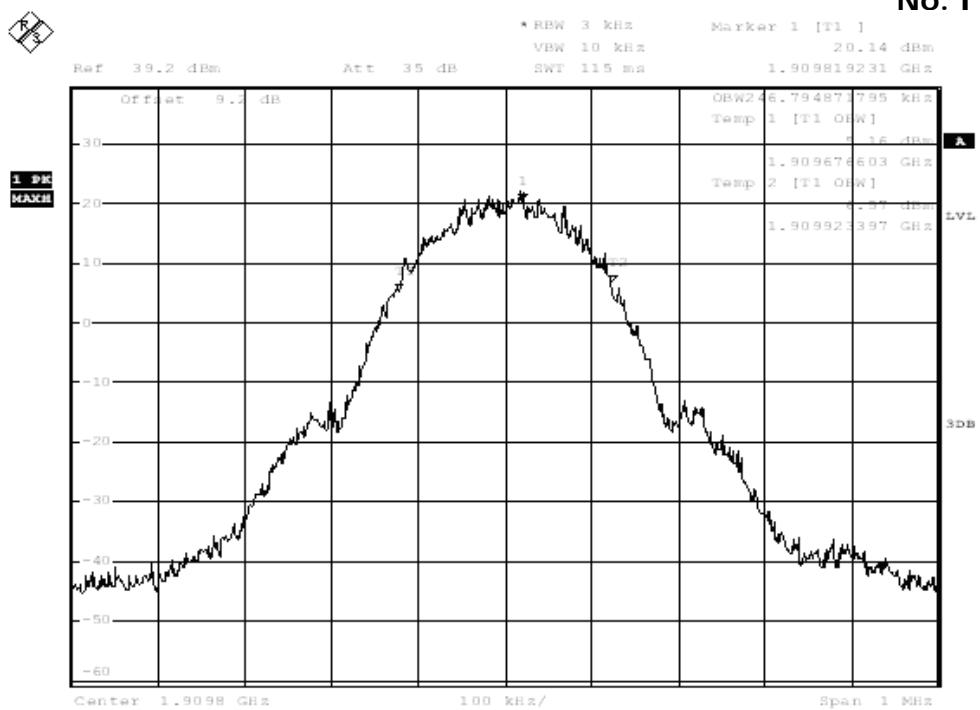


## Channel 512



## Channel 661

No. I12GCD278-RF



Channel 810

CTTLL Test

#### 4.5 Emission bandwidth

<b>Specifications:</b>	22.917(b), 24.238(b)
<b>Operation Mode</b>	TX on, channel 128, 190, 251, 512, 661 and 810
<b>Test Results:</b>	Pass

##### Test Setup

The setup of emission bandwidth is similar to conducted emissions.

##### Test Method

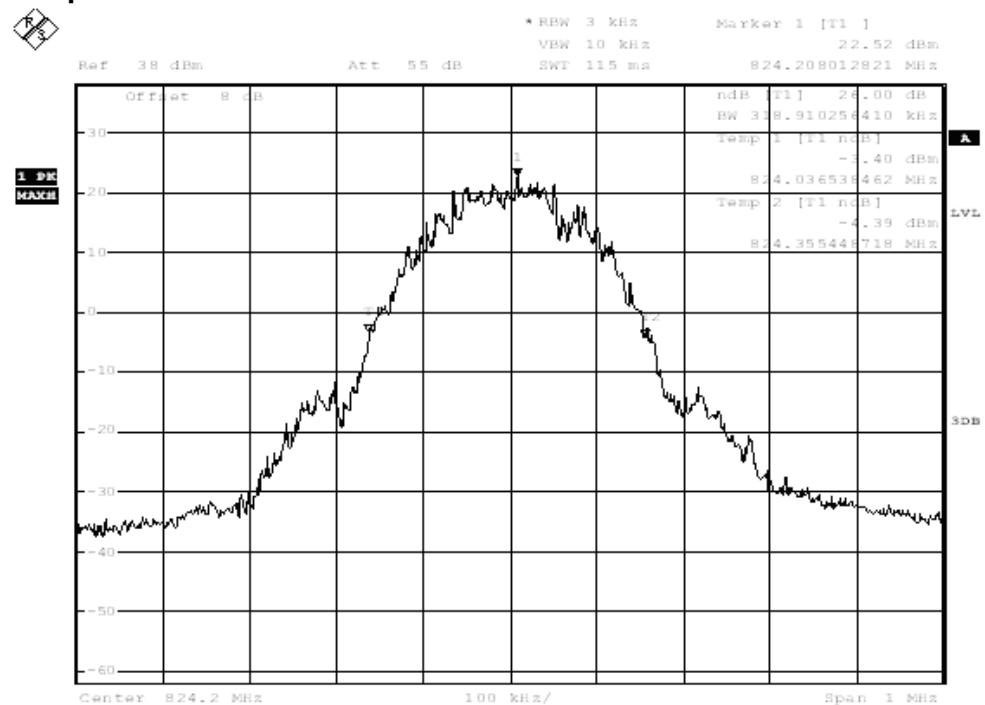
The emission bandwidth measures -26dBc Spectrum analyzer plots from frequencies of PCS 1900 band and GSM 850 band.

**Note:** --

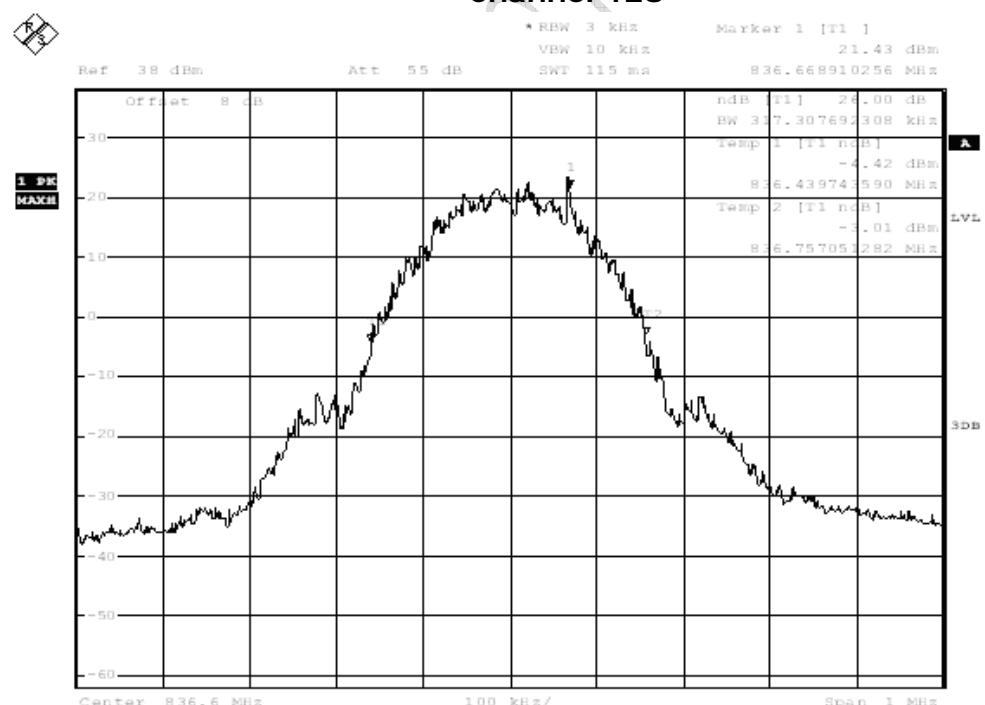
##### Results data of GSM mode:

EUT channel	-26dBc Emission bandwidth [kHz]
128	318.91
190	317.31
251	309.29
512	320.51
661	310.90
810	312.50

## Graphical results for GSM mode:

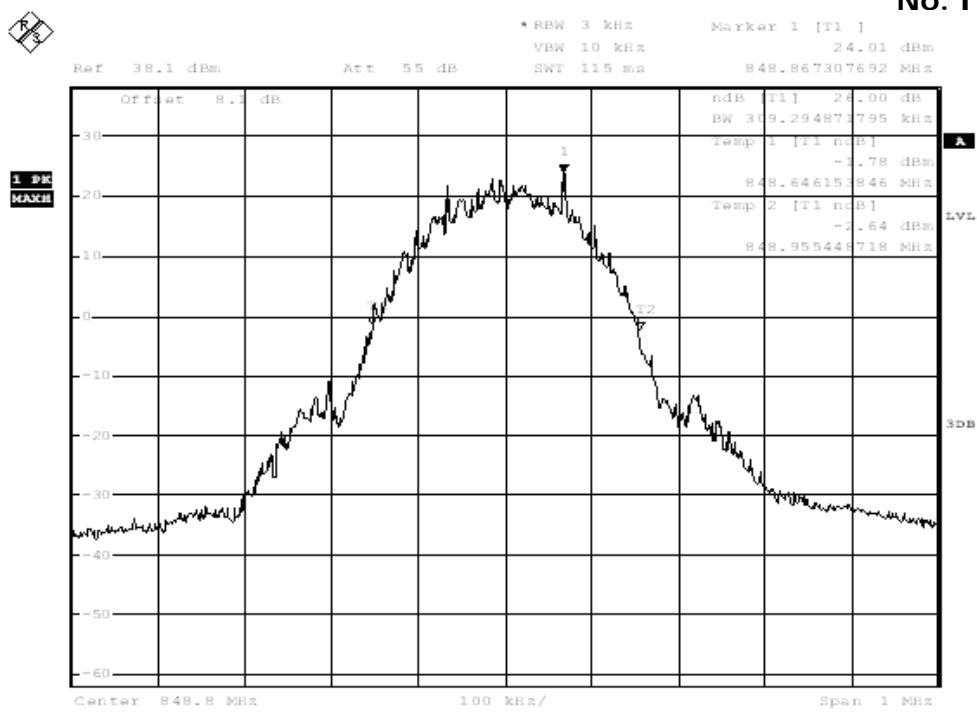


## Channel 128

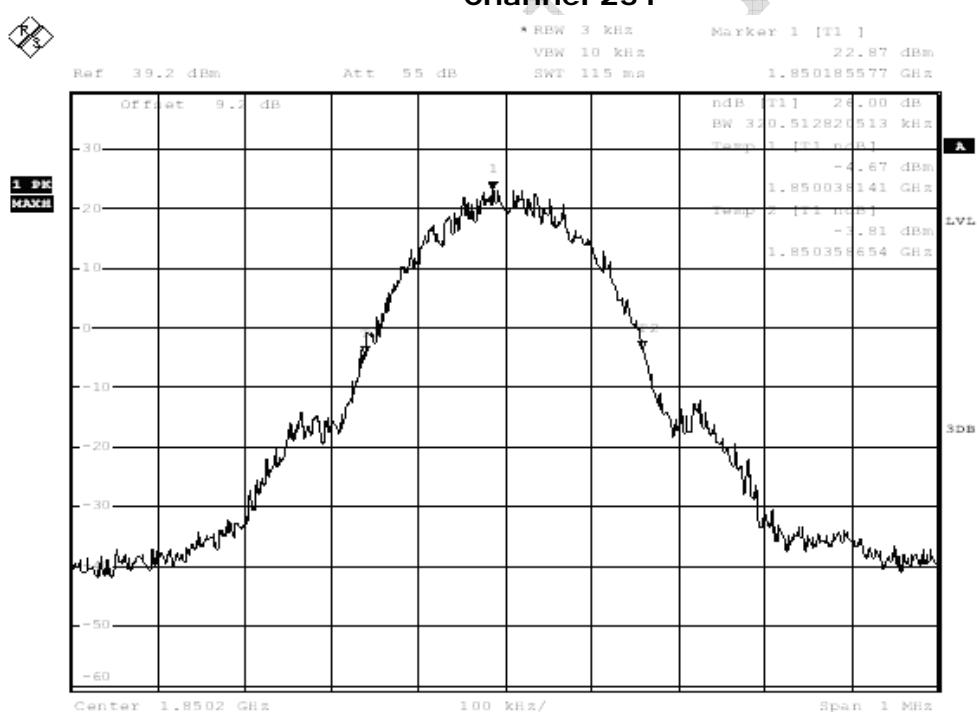


## Channel 190

No. I12GCD278-RF

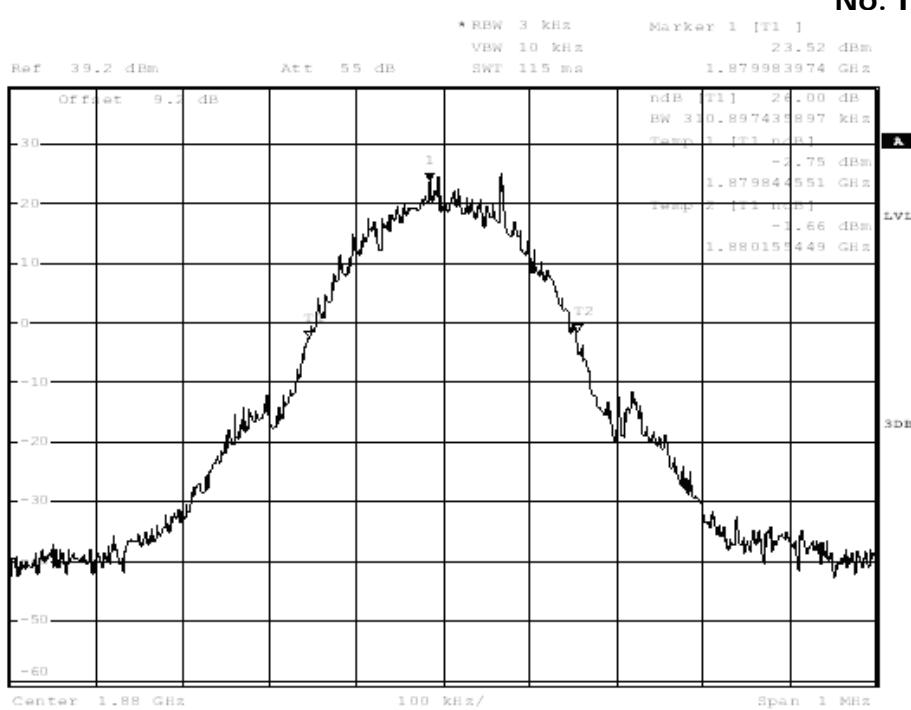
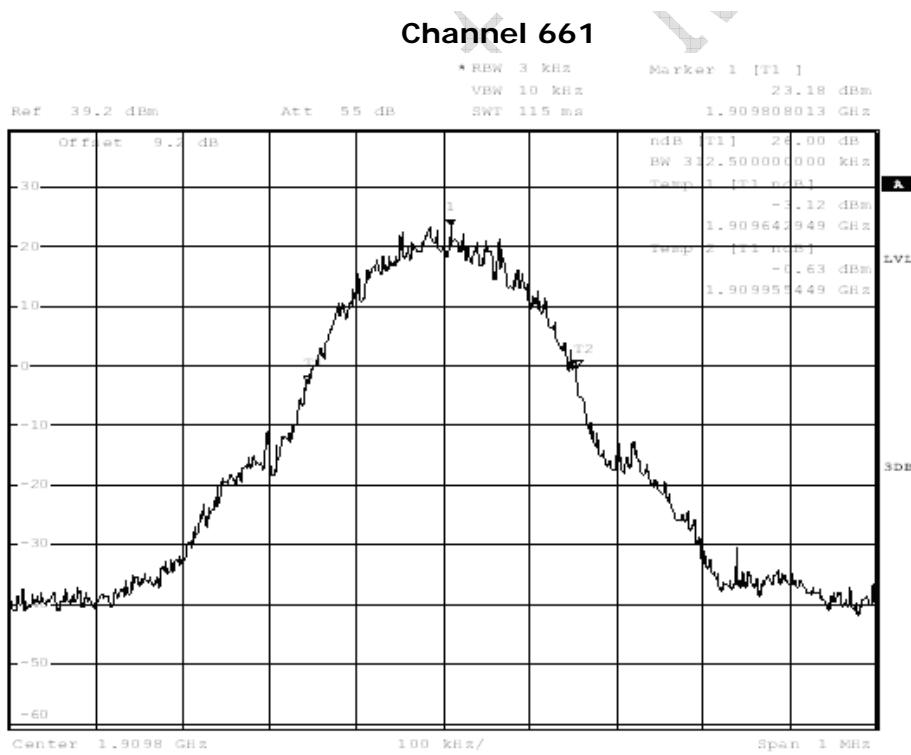


## Channel 251



## Channel 512

No. I12GCD278-RF

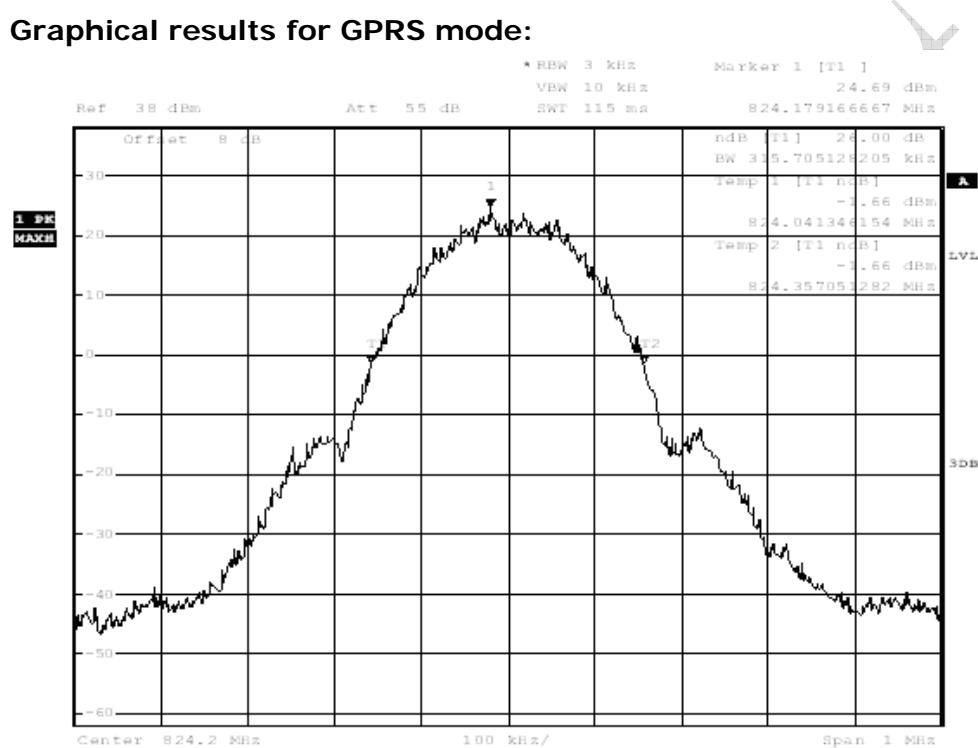
1 PK  
MAX1 PK  
MAX

Channel 810

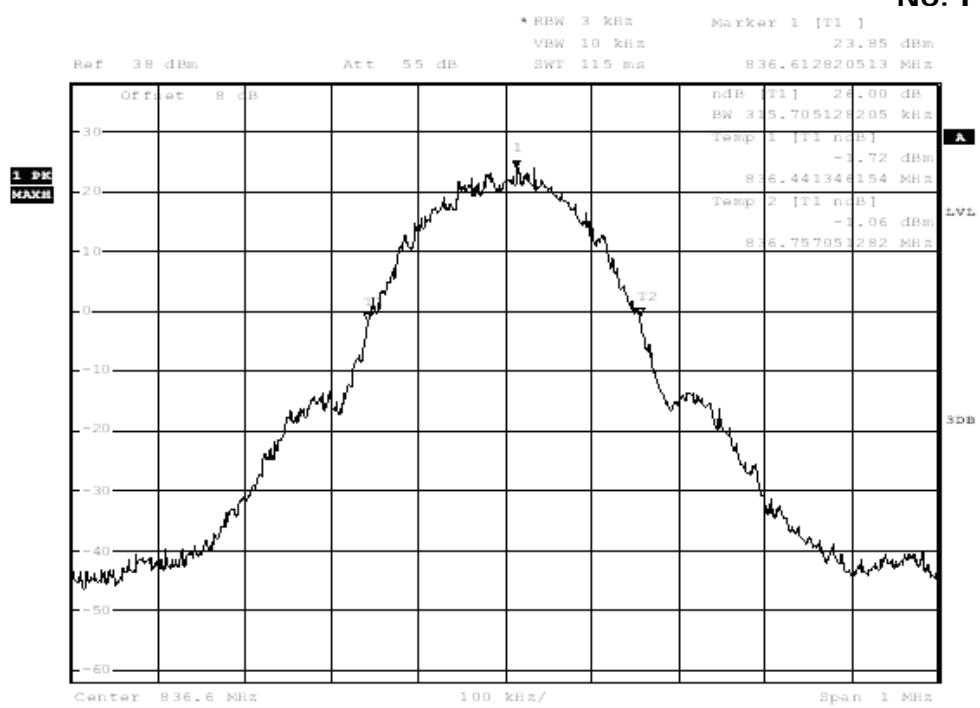
## Results data of GPRS mode:

EUT channel	-26dBc Emission bandwidth [kHz]
128	315.71
190	315.71
251	315.71
512	320.51
661	318.91
810	322.12

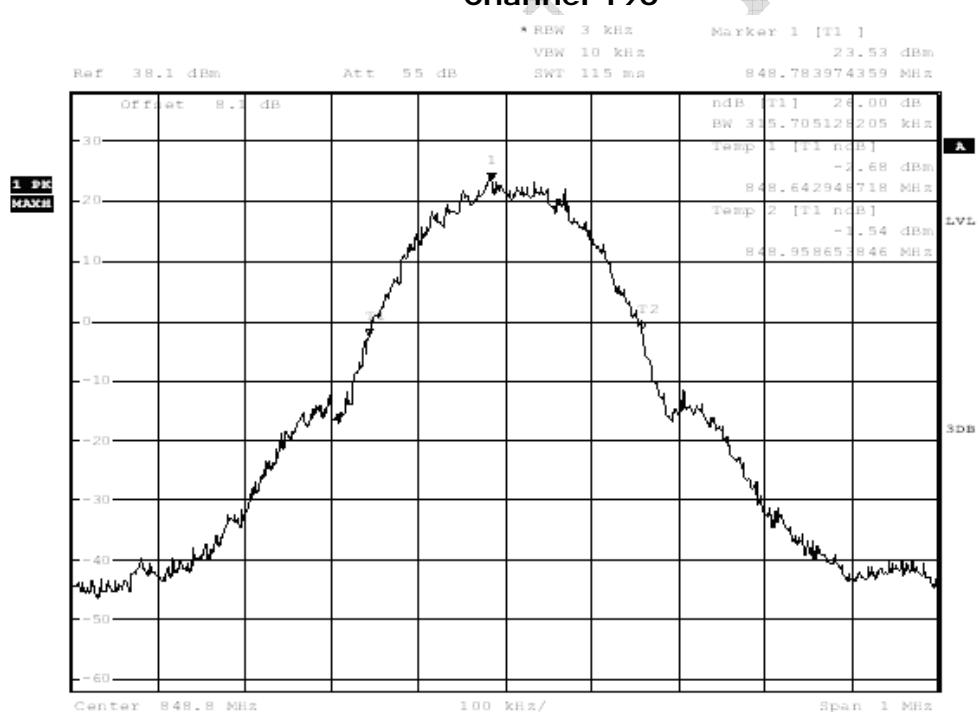
## Graphical results for GPRS mode:



Channel 128

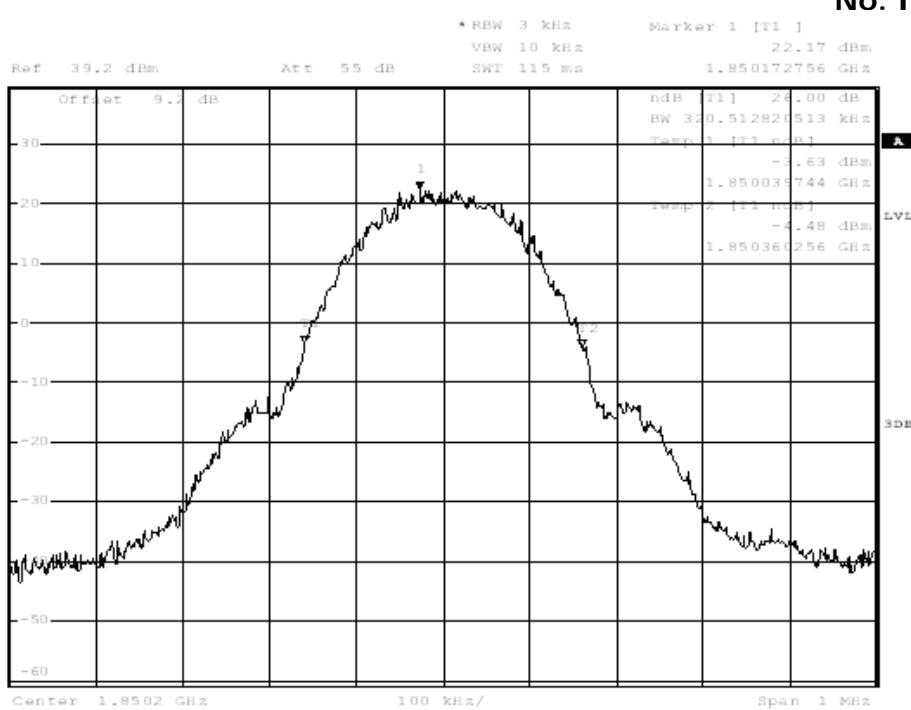


### Channel 190

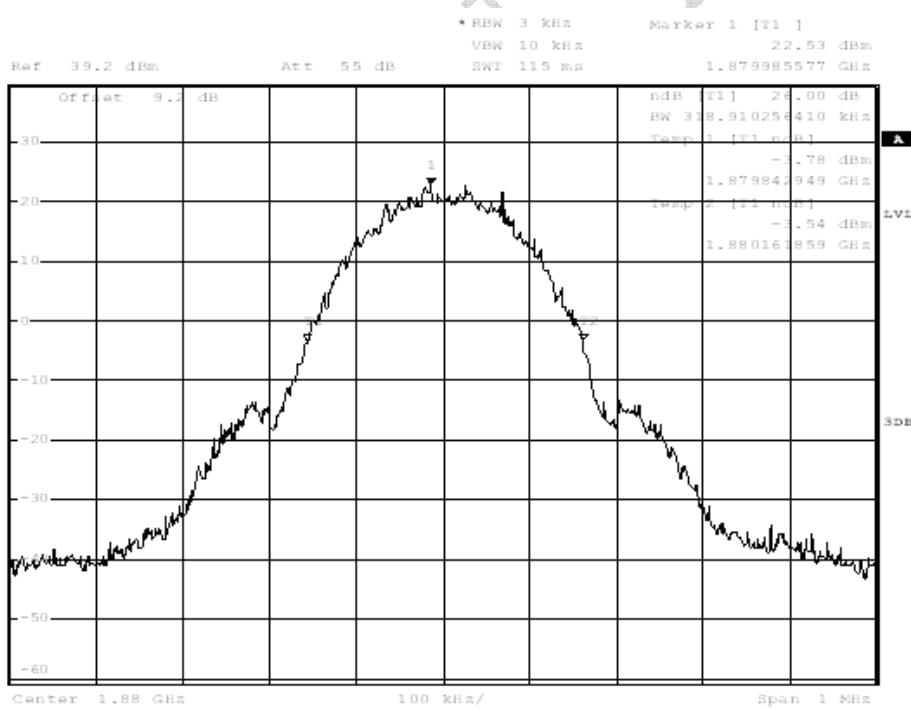


### Channel 251

No. I12GCD278-RF

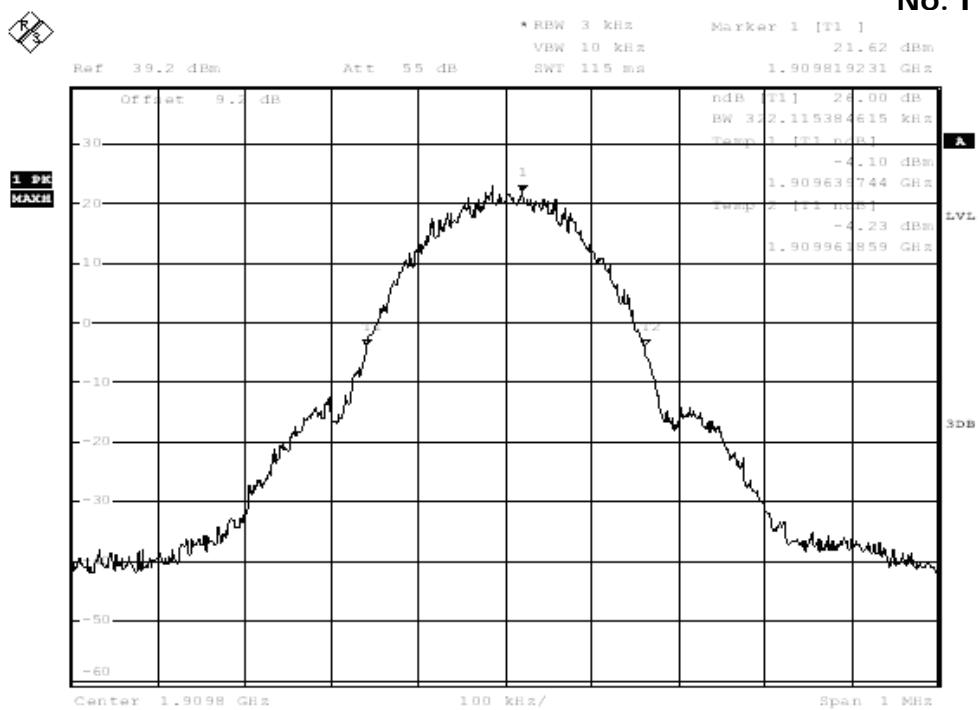
1 PK  
MAX

## Channel 512

1 PK  
MAX

## Channel 661

No. I12GCD278-RF



Channel 810

CTTLL Test

## 4.6 Frequency Stability

<b>Specifications:</b>	2.1055, 22.355, 24.235
<b>Test conditions:</b>	Ambient Temperature: -30°C-50°C Relative Humidity: 30%-60% Air pressure: 86-106kPa
<b>Operation Mode</b>	TX on, channel 190 and 661
<b>Test Results:</b>	Pass
<b>Limit</b>	
Frequency deviation [ppm]	±2.5

### 4.6.1 Frequency stability over temperature variation

#### 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.

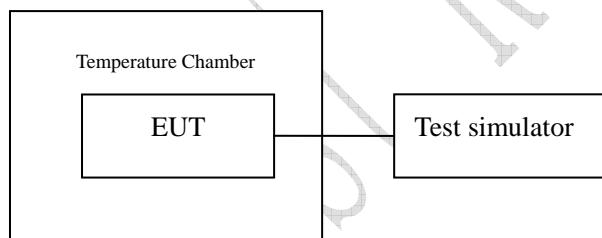


Figure T: setup for measurement of frequency stability over temperature variation

#### Test Method

1. The EUT was turned off and placed in the temperature chamber.
2. The temperature of the chamber was set to -30°C 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 CMU200.
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 results data for GSM mode:**

Channel 190:

Temperature[°C]	Deviation[Hz]	Remarks
-30	-18	Pass
-20	-19	Pass
-10	-9	Pass
0	-17	Pass
10	-15	Pass
20	-14	Pass
30	-15	Pass
40	-9	Pass
50	-5	Pass

Channel 661:

Temperature[°C]	Deviation[Hz]	Remarks
-30	-42	Pass
-20	-35	Pass
-10	-21	Pass
0	-29	Pass
10	-35	Pass
20	-22	Pass
30	-21	Pass
40	-12	Pass
50	-10	Pass

**Test results data for GPRS mode:**

Channel 190:

Temperature[°C]	Deviation[Hz]	Remarks
-30	-16	Pass
-20	-17	Pass
-10	-10	Pass
0	-14	Pass
10	-13	Pass
20	-14	Pass
30	-10	Pass
40	-7	Pass
50	-6	Pass

Channel 661:

Temperature[°C]	Deviation[Hz]	Remarks
-30	-38	Pass
-20	-41	Pass
-10	-42	Pass
0	-25	Pass
10	-33	Pass
20	-26	Pass
30	-16	Pass
40	9	Pass
50	-15	Pass

#### 4.6.2 Frequency Stability over Voltage Variation

<b>Specifications:</b>	2.1055,22.355,24.235
<b>Test conditions:</b>	Ambient Temperature: 15°C-35°C Relative Humidity: 30%-60% Air pressure: 86-106kPa
<b>Operation Mode</b>	TX on, channel 190 and 661
<b>Test Results:</b>	Pass
<b>Limit</b>	
Frequency deviation [ppm]	±2.5

#### Test Setup

The EUT was placed in a shielding chamber and powered by the dummy battery which is connected to a DC power source, 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.

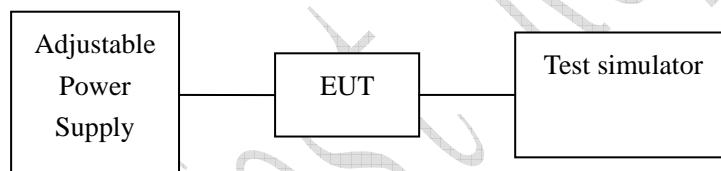


Figure V: test setup for measurement of frequency stability over voltage variation

#### Test Results data for GSM mode:

Channel 190:

Level	Voltage[V]	Deviation[Hz]	Remarks
Maximum	4.2	-12	Pass
Nominal	3.6	-12	Pass
Minimum	3.5	-13	Pass

Channel 661:

Level	Voltage[V]	Deviation[Hz]	Remarks
Maximum	4.2	20	Pass
Nominal	3.6	22	Pass
Minimum	3.5	-20	Pass

**Test Results data for GPRS mode:**

Channel 190:

Level	Voltage[V]	Deviation[Hz]	Remarks
Maximum	4.2	-6	Pass
Nominal	3.6	-9	Pass
Minimum	3.5	-13	Pass

Channel 661:

Level	Voltage[V]	Deviation[Hz]	Remarks
Maximum	4.2	-42	Pass
Nominal	3.7	-37	Pass
Minimum	3.6	-33	Pass

#### 4.7 Conducted Spurious Emission

<b>Specifications:</b>	2.1051,22.917,24.238
<b>Test conditions:</b>	Ambient Temperature: 15°C-35°C Relative Humidity: 30%-60% Air pressure: 86-106kPa
<b>Operation Mode</b>	TX on, channel 128, 190, 251, 512, 661 and 810
<b>Test Results:</b>	Pass

##### Limit Level Construction:

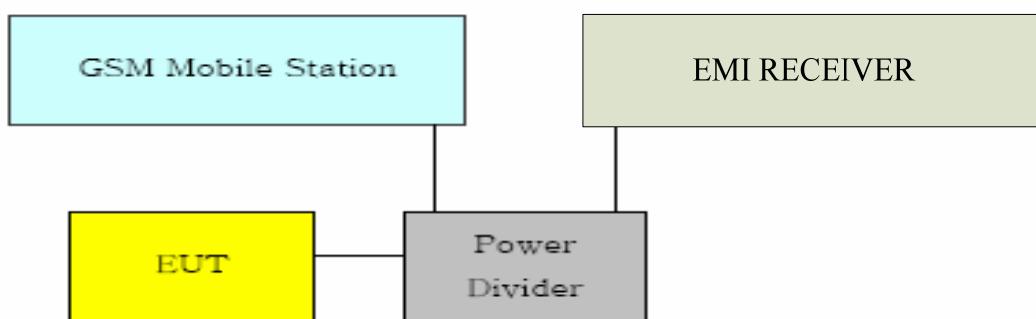
According to Part 24.238 (a), i.e., Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB, so the limit level is:  
 $P(\text{dBm}) - (43 + 10 \log(P)) \text{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

##### Limits for Radiated spurious emissions(UE)

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

##### Test Setup:

During the 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-C-2004: *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.

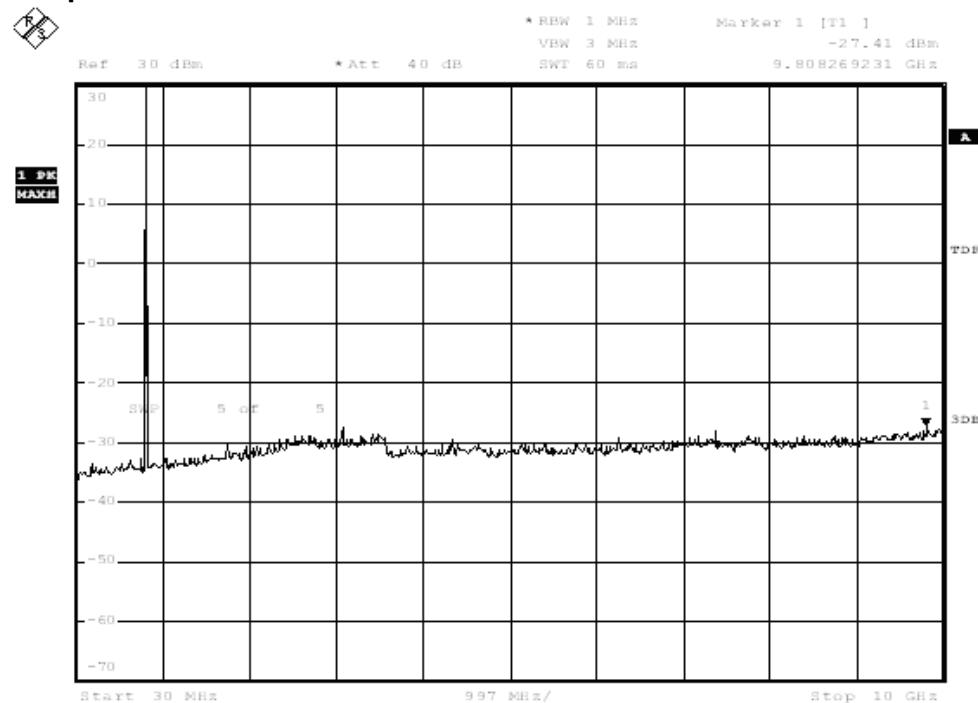
1. Determine frequency range for measurements: From CFR 2.1057 the spectrum should be investigated from the lowest radio frequency generated in the equipment up to at least the 10th harmonic of the carrier frequency. For the equipment under test, this equates to a frequency range of 30 MHz to 19.1 GHz,

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:** --

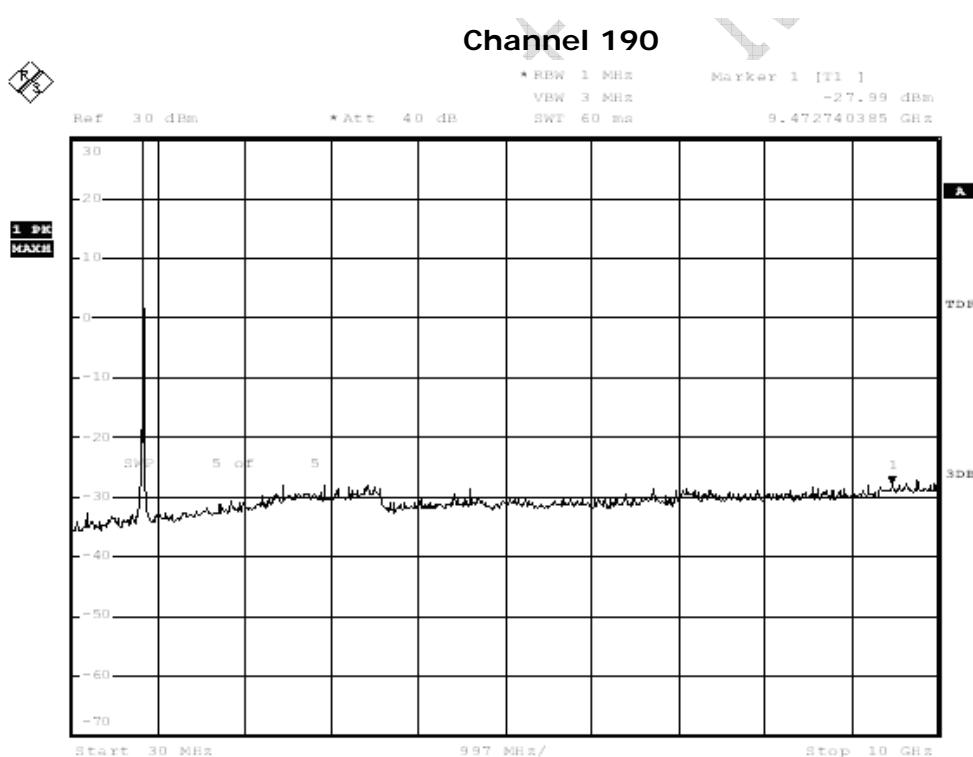
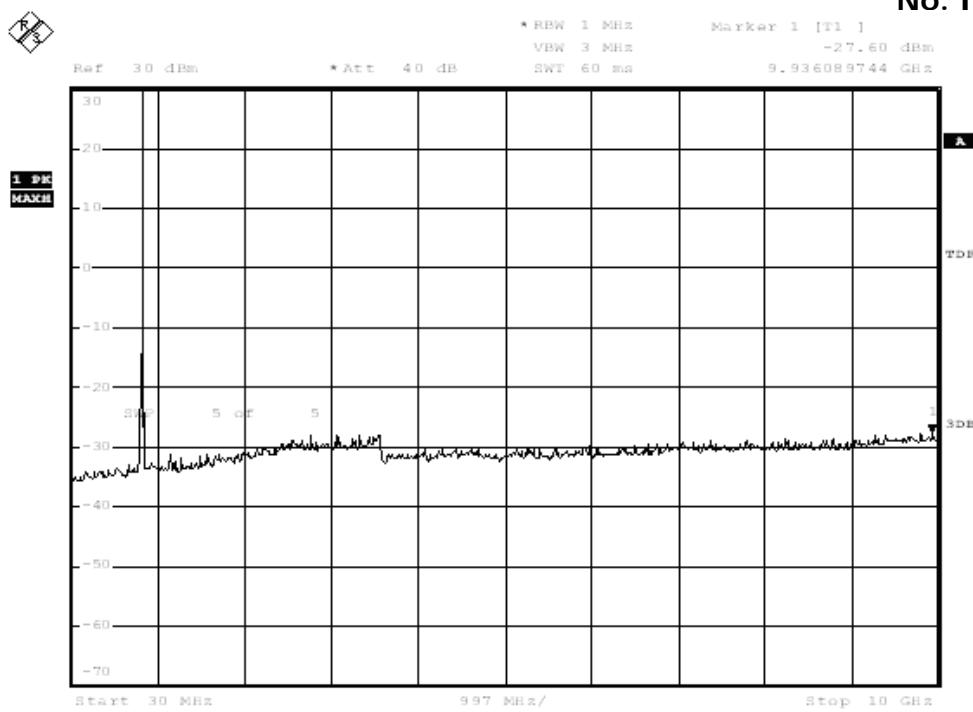
#### Graphical results for GSM mode:



Channel 128

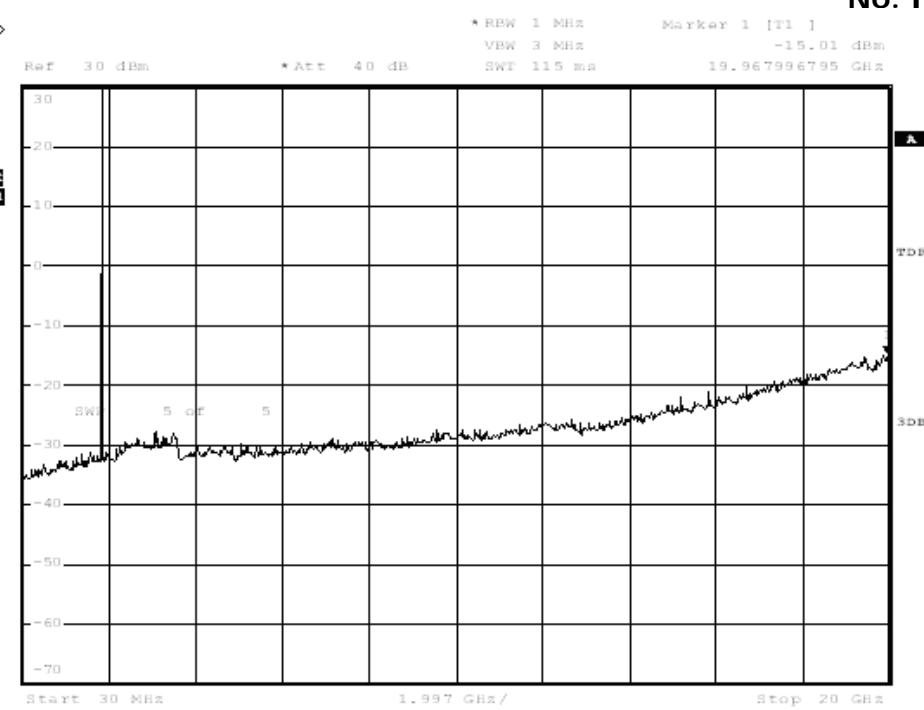


No. I12GCD278-RF

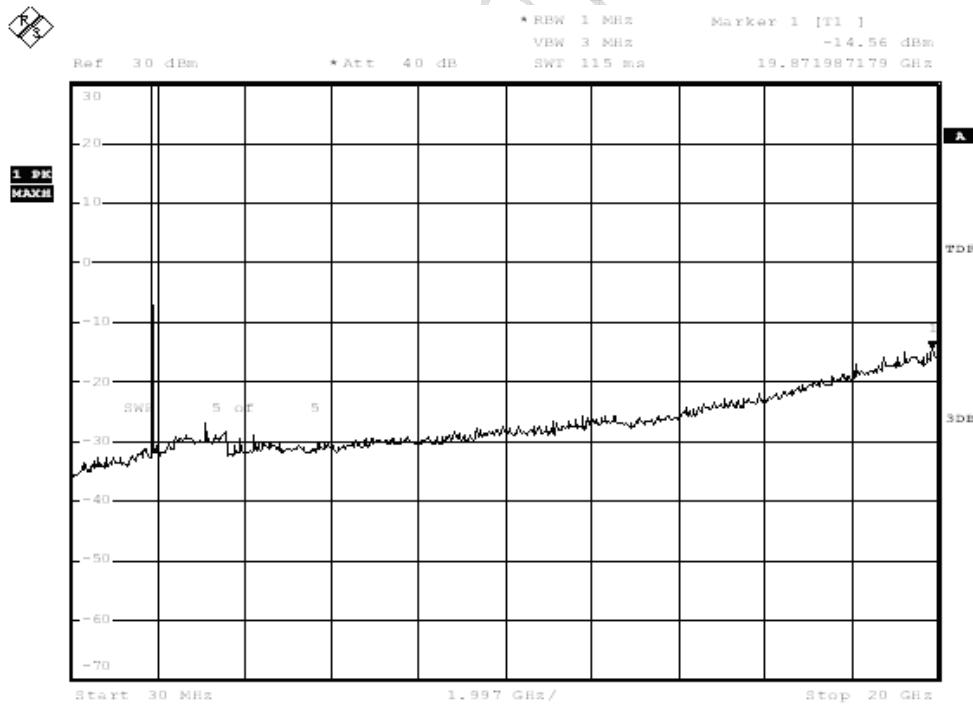


Channel 251

No. I12GCD278-RF

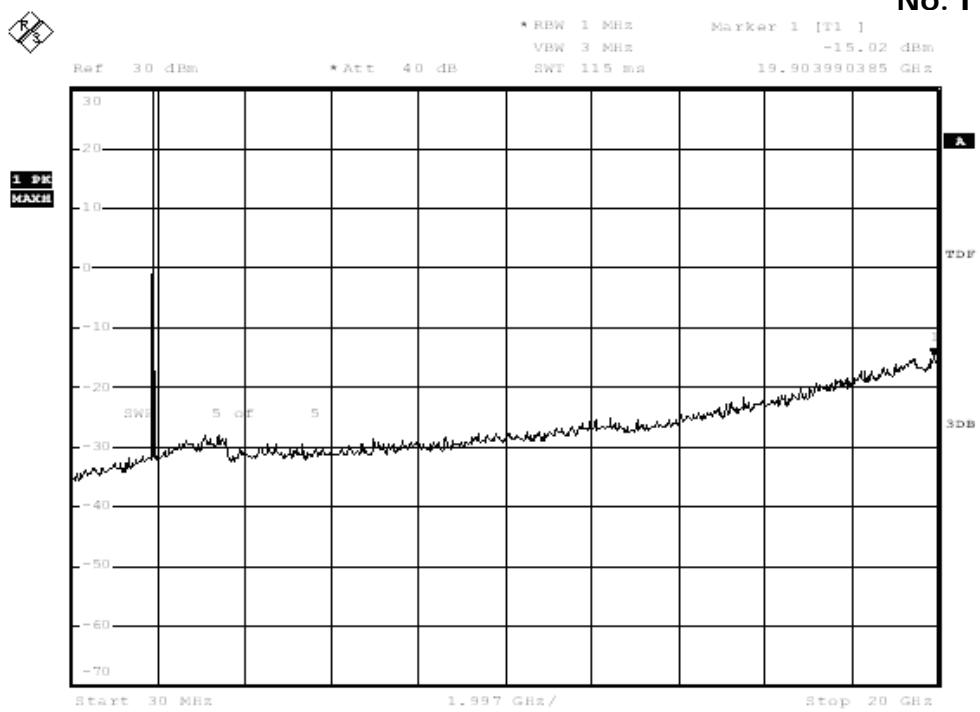


### Channel 512



### Channel 661

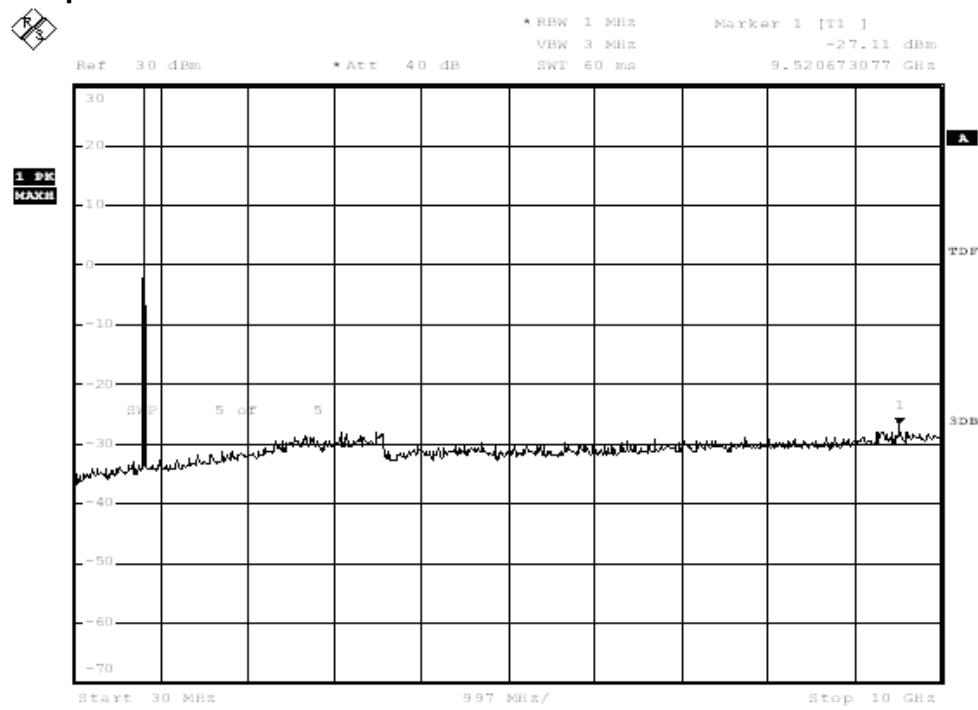
No. I12GCD278-RF



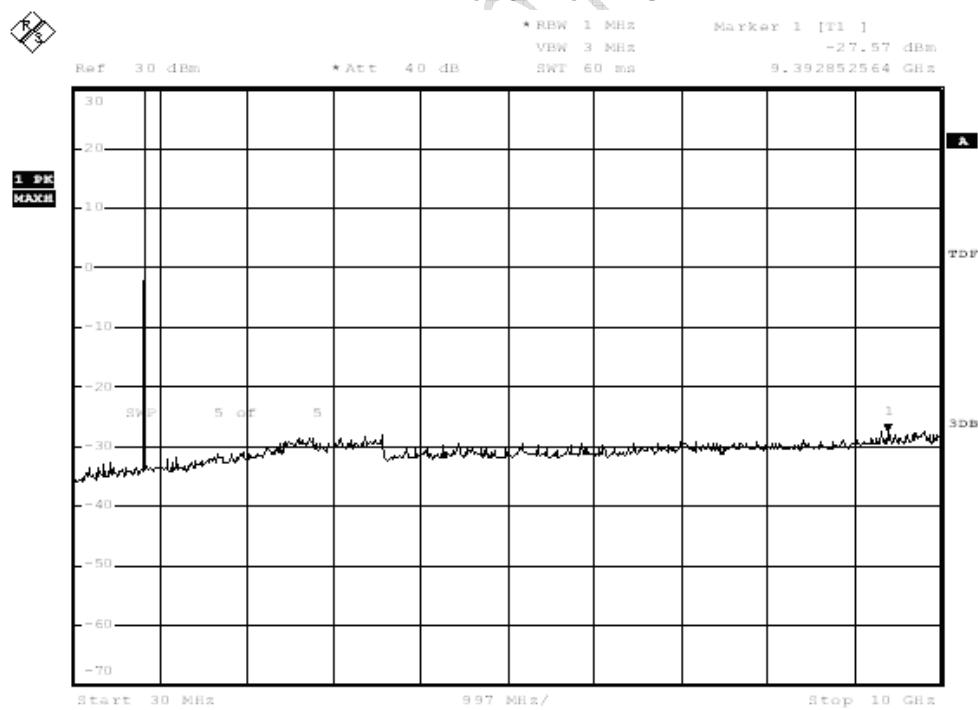
Channel 810

CTT Test

## Graphical results for GPRS mode:

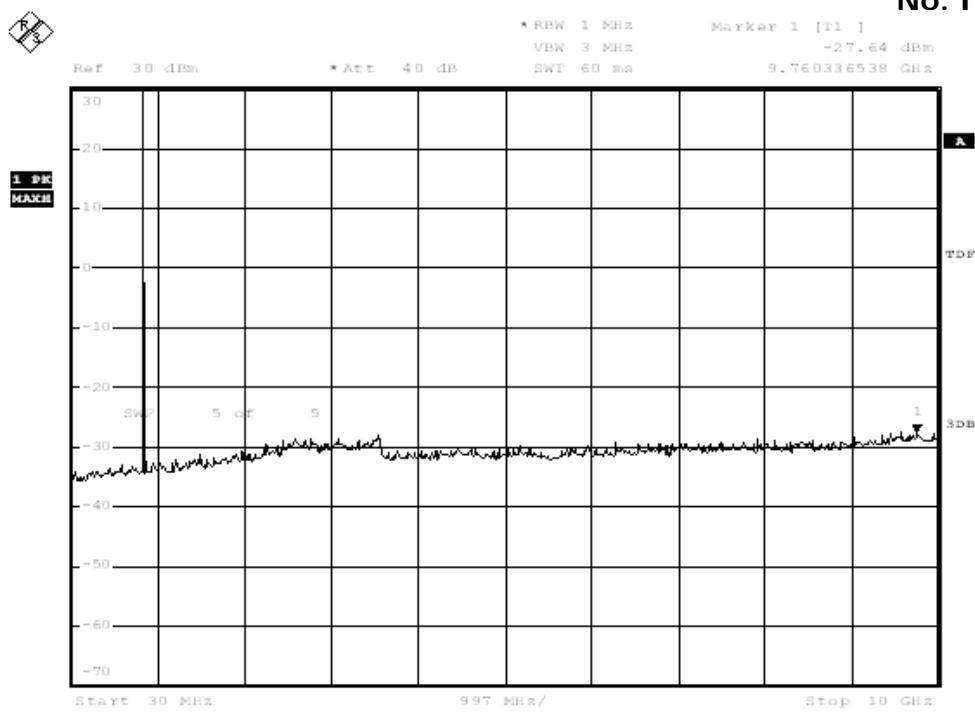


## Channel 128

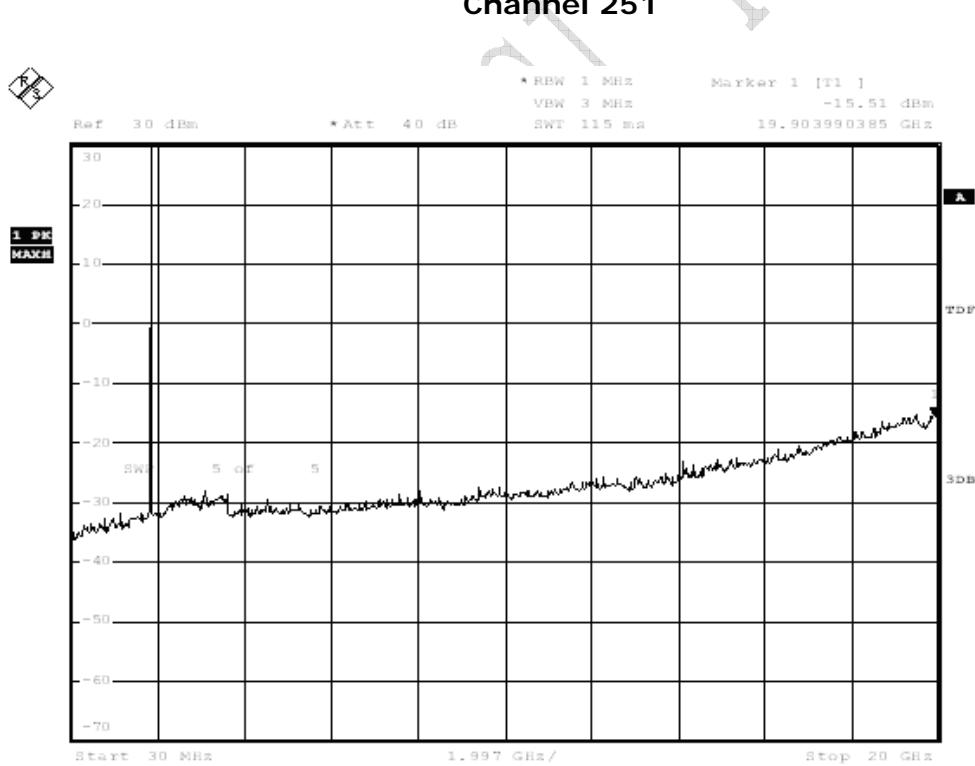


## Channel 190

No. I12GCD278-RF

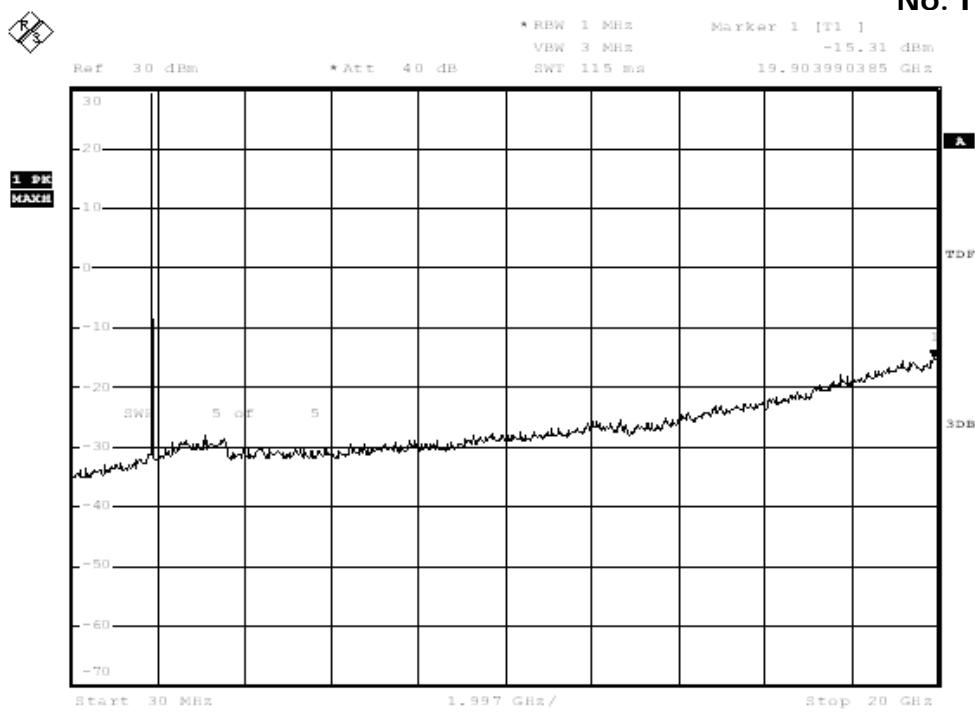


## Channel 251

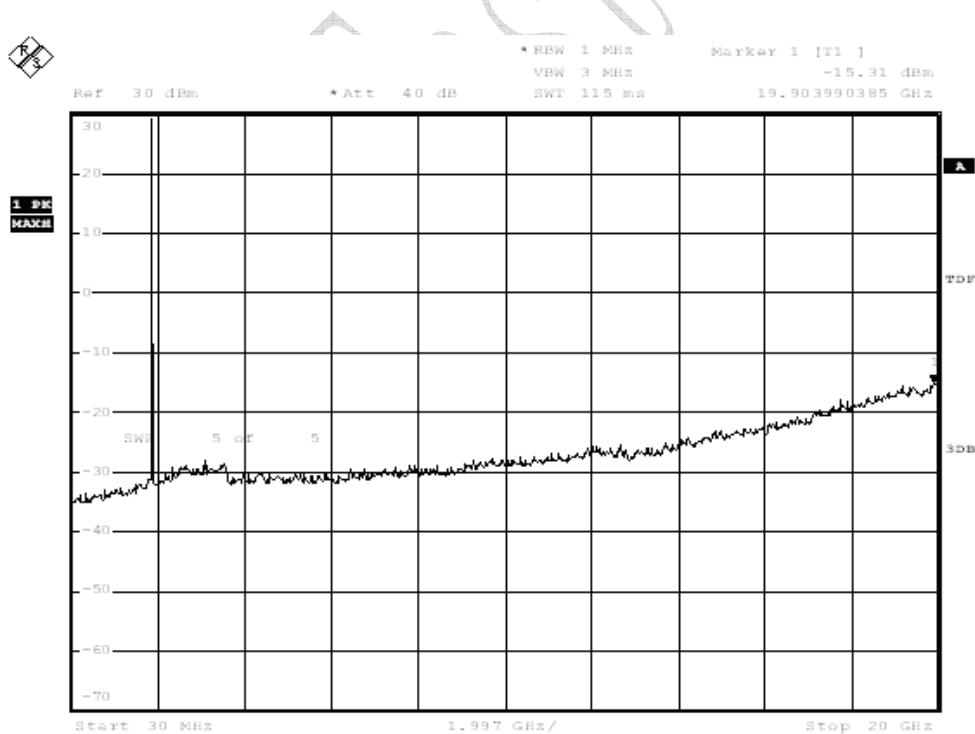


## Channel 512

No. I12GCD278-RF



### Channel 661



### Channel 810

## 4.8 Band Edge Compliance

<b>Specifications:</b>	22.917(b), 24.238(a)
<b>Test conditions:</b>	Ambient Temperature: 15°C-35°C Relative Humidity: 30%-60% Air pressure: 86-106kPa
<b>Operation Mode</b>	TX on, channel 128, 251, 512 and 810
<b>Test Results:</b>	Pass

### Limit Level Construction:

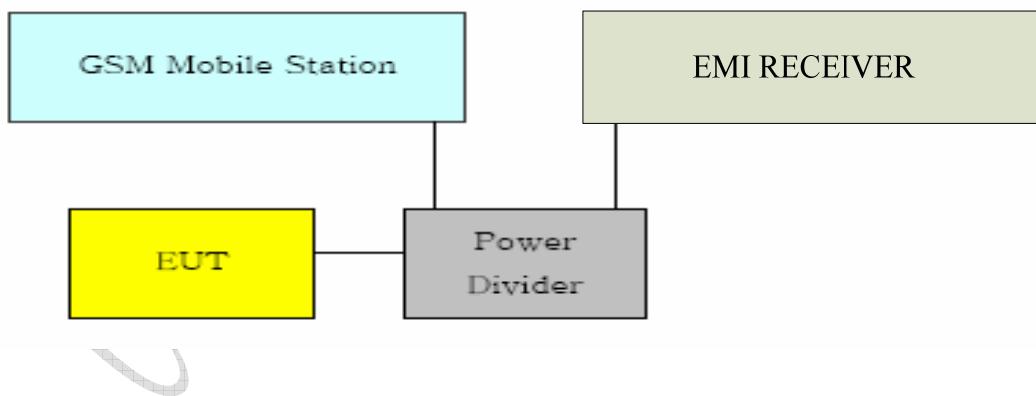
According to Part 24.238 (a), i.e., Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB, so the limit level is:  
 $P(\text{dBm}) - (43 + 10 \log(P)) \text{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

### Limits for Radiated spurious emissions(UE)

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

### Test Setup:

During the 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 attenuation of every cables of the test system is being taken into account by calibration to ensure measurement accuracy
- 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:** --

**Test Results:**

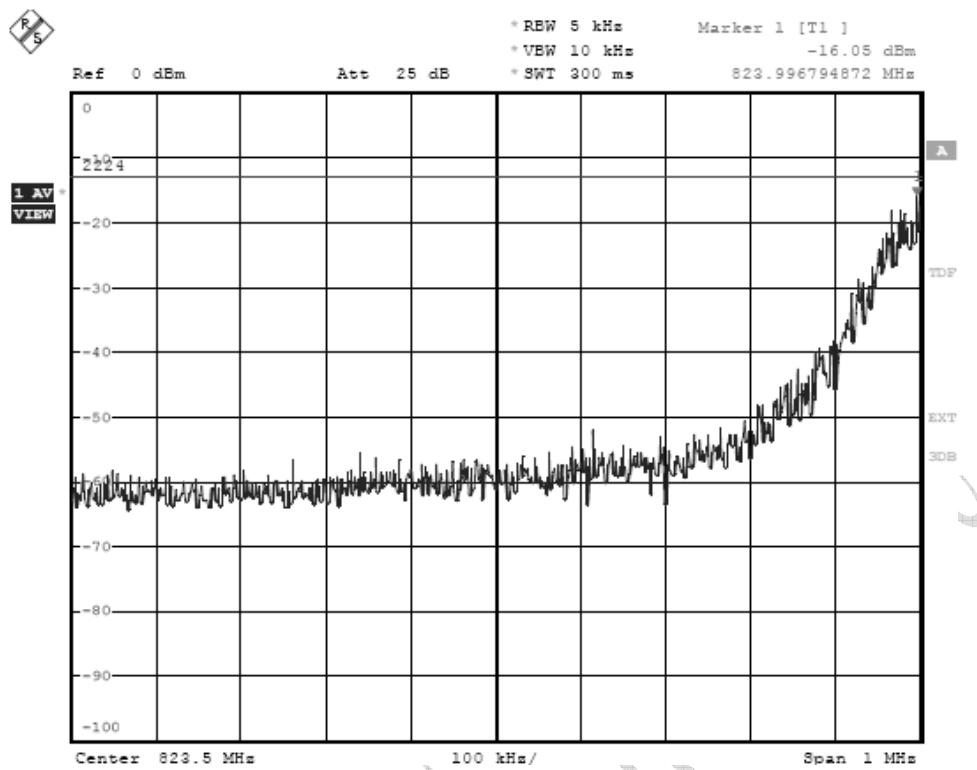
**GSM mode:**

Band-edge emission		
EUT Channel	Frequency [MHz]	Level [dBm]
128 Left band edge	824.000	-16.05
251 Right band edge	849.000	-16.19
512 Left band edge	1850.000	-17.99
810 Right band edge	1910.000	-18.99

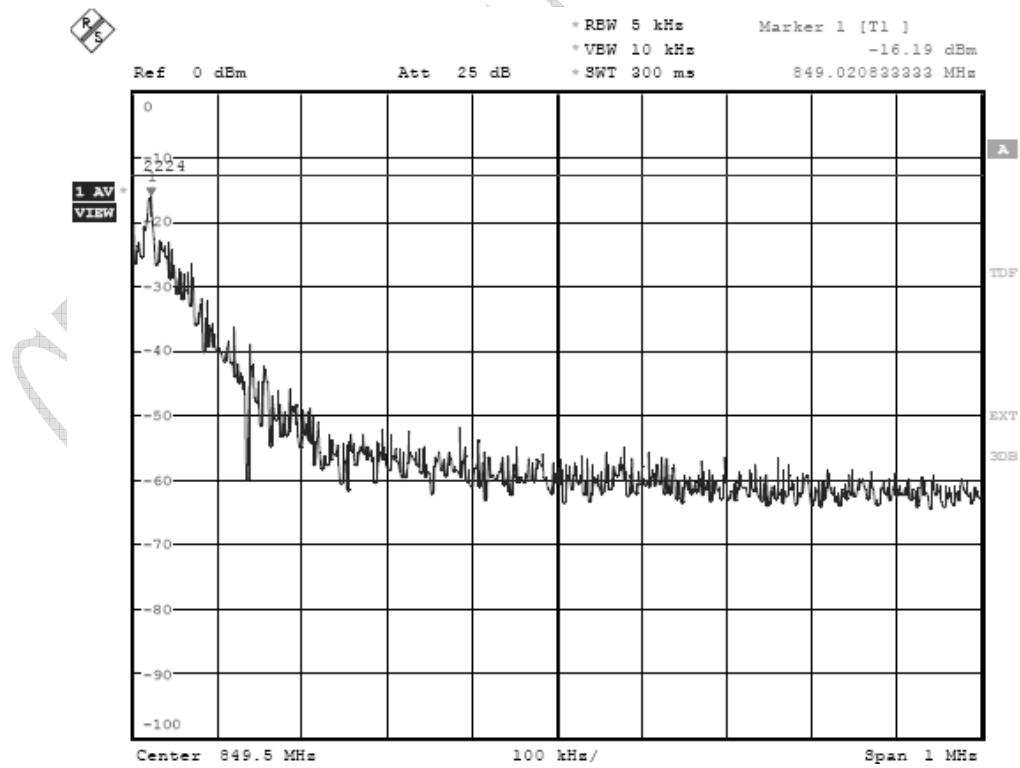
**GPRS mode:**

Band-edge emission		
EUT Channel	Frequency [MHz]	Level [dBm]
128 Left band edge	824.000	-18.25
251 Right band edge	849.000	-19.73
512 Left band edge	1850.000	-20.65
810 Right band edge	1910.000	-21.12

## Graphical results:

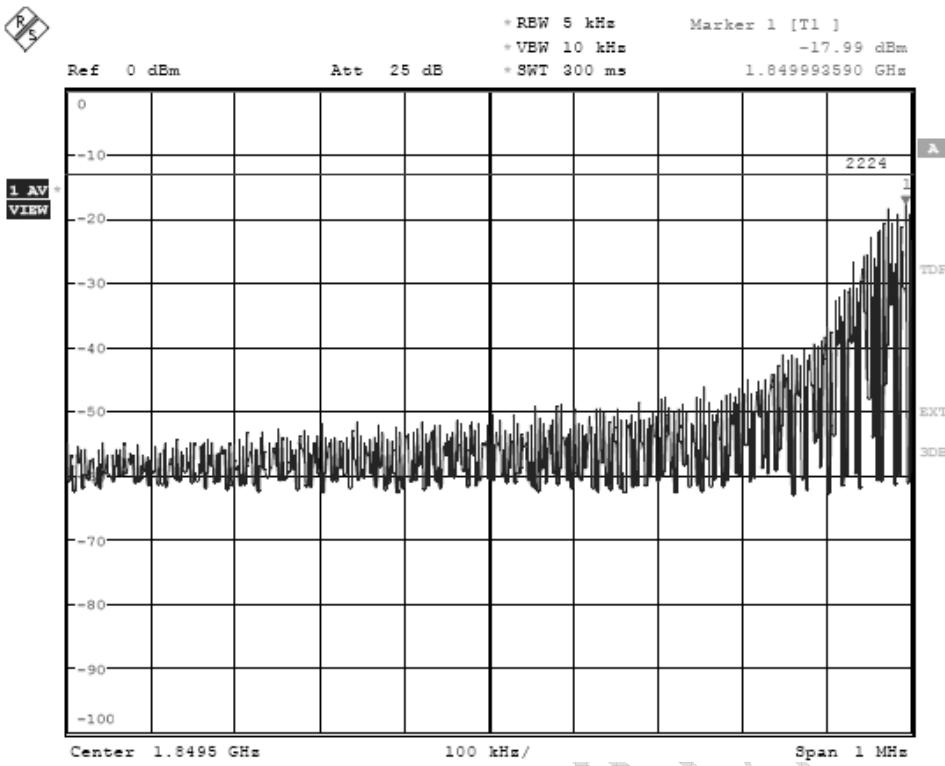


GSM channel 128 Left band edge

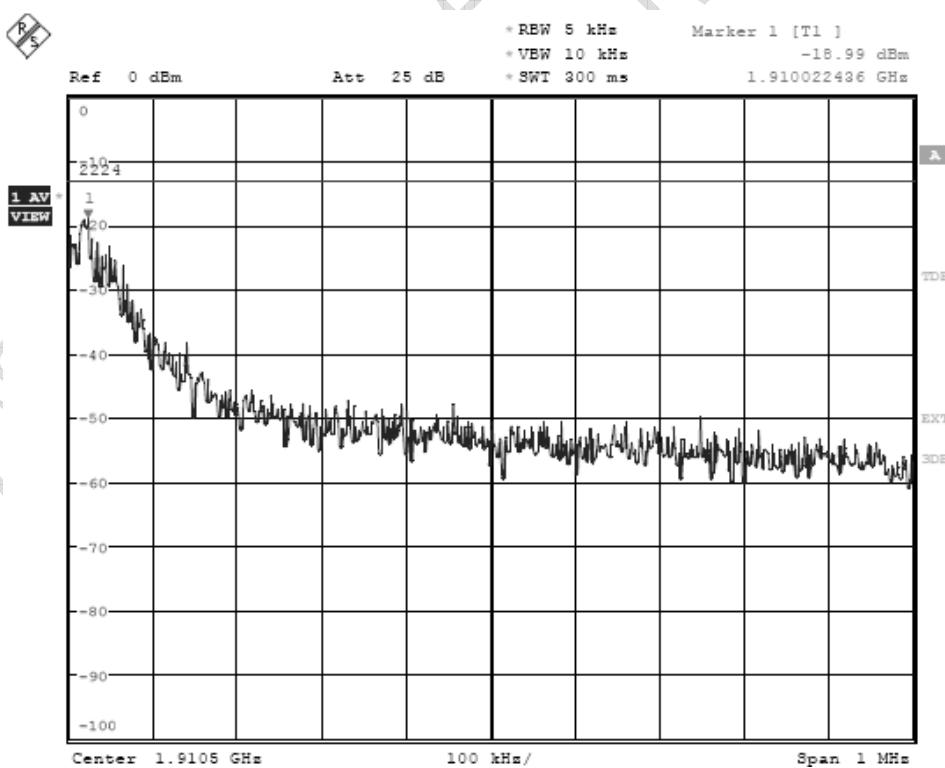


GSM channel 251 Right band edge

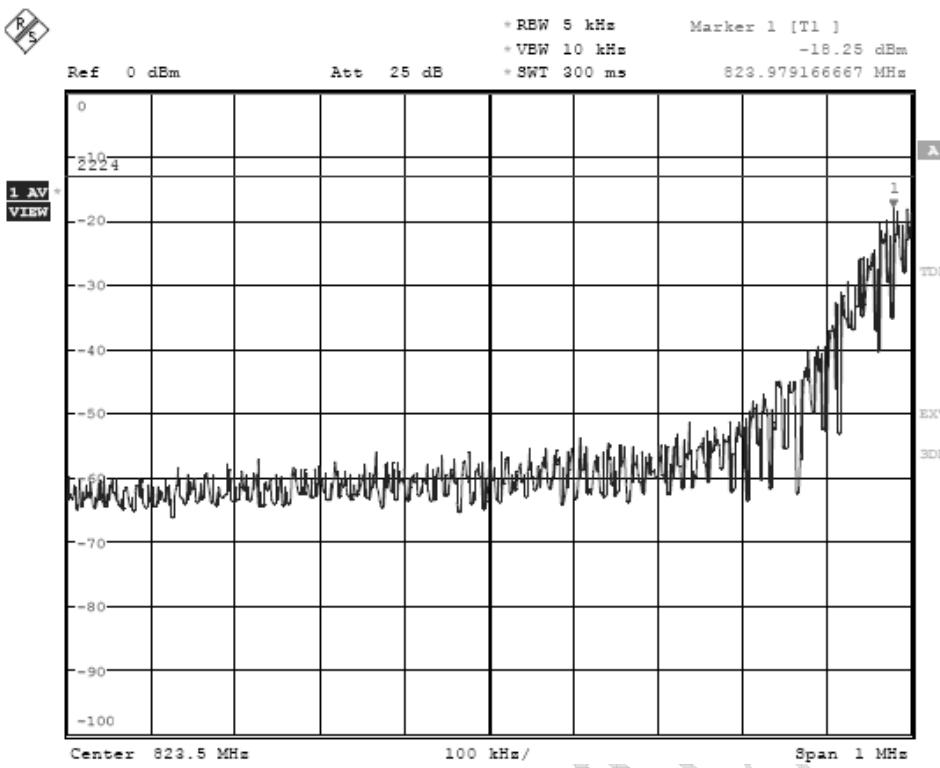
No. I12GCD278-RF



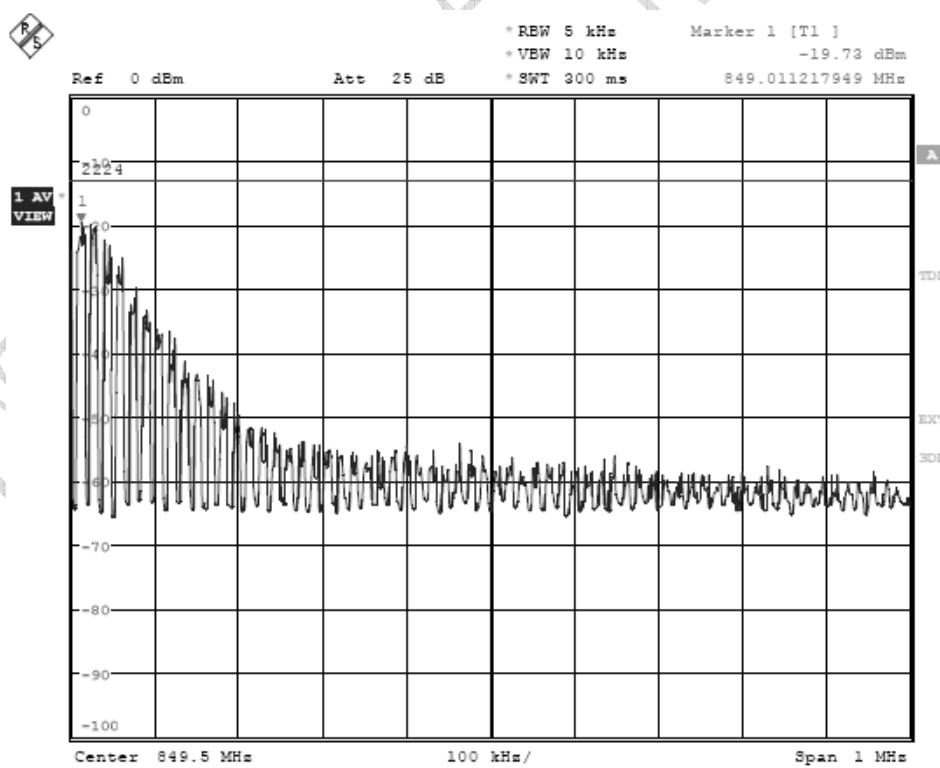
GSM channel 512 Left band edge



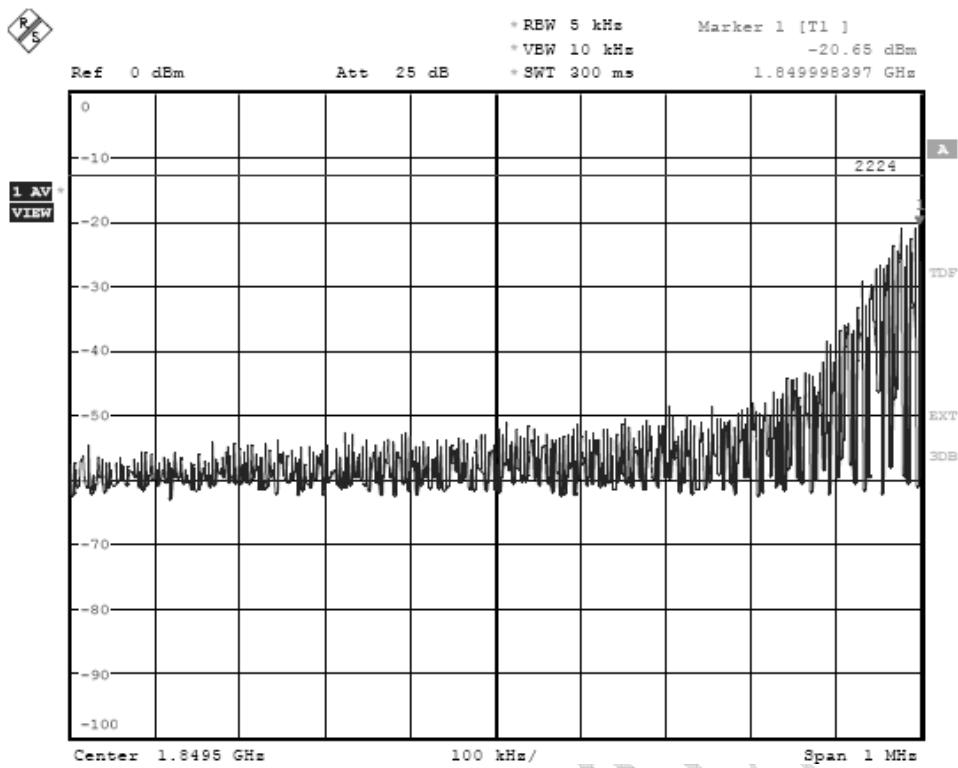
GSM channel 810 Right band edge



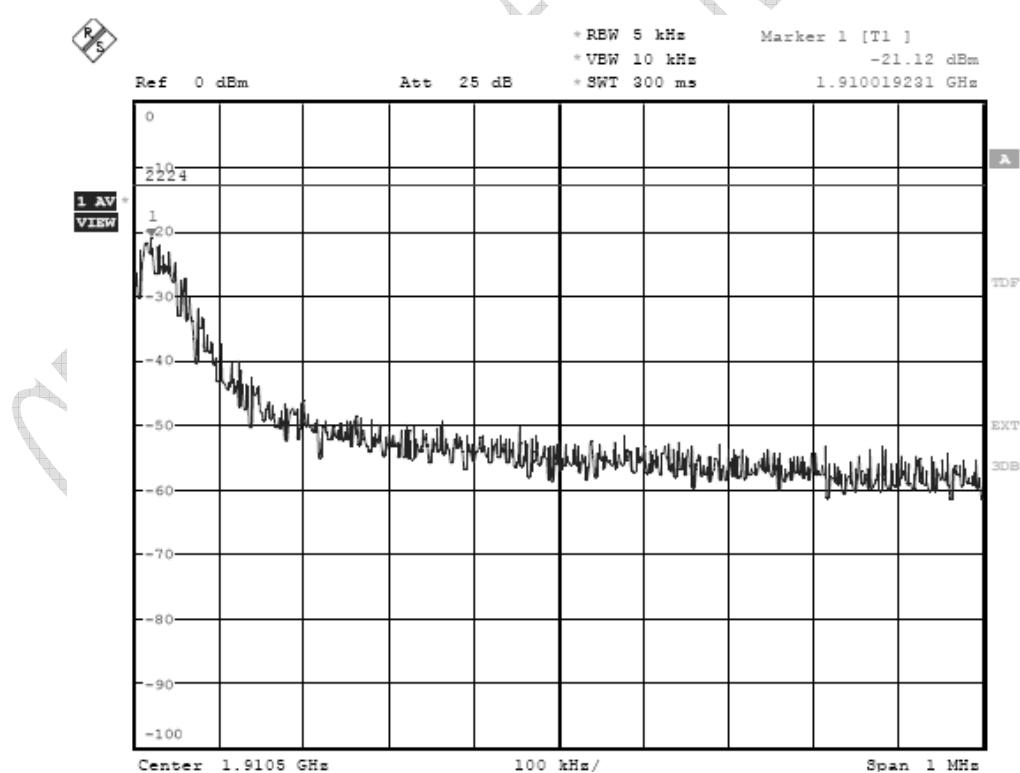
GPRS channel 128 Left band edge



GPRS channel 251 Right band edge



GPRS channel 512 Left band edge



GPRS channel 810 Right band edge

## 5 Test Equipments and Ancillaries Used For Tests

The test equipments and ancillaries used are as follows.

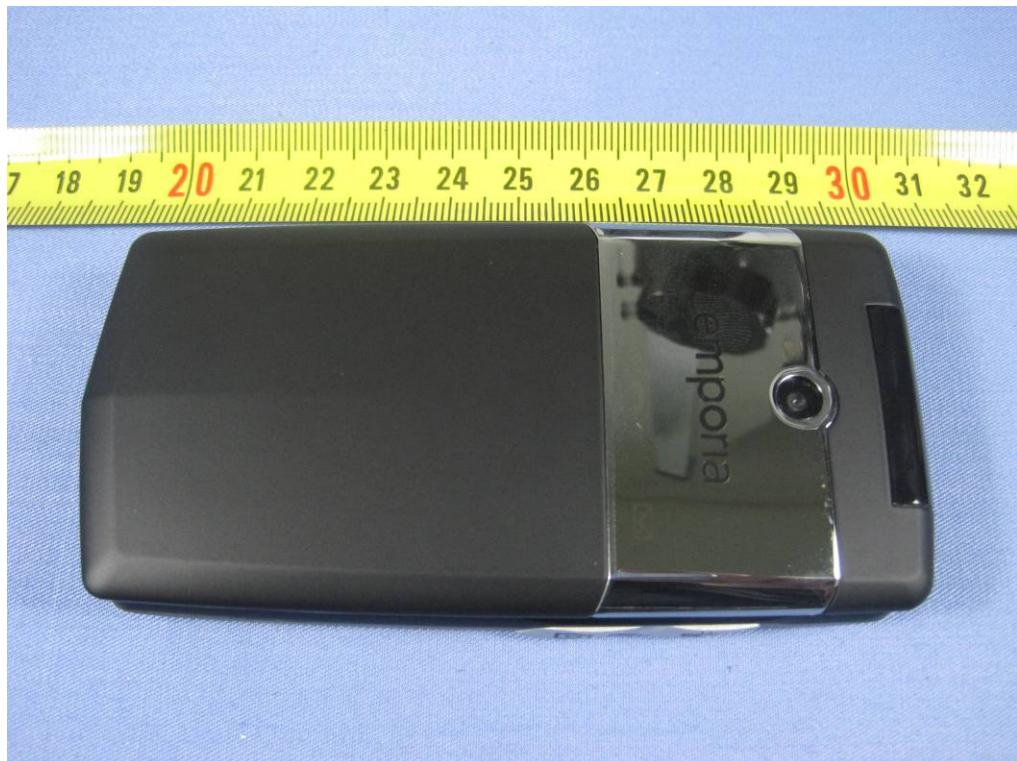
### 5.1 Test Equipments for RF Test

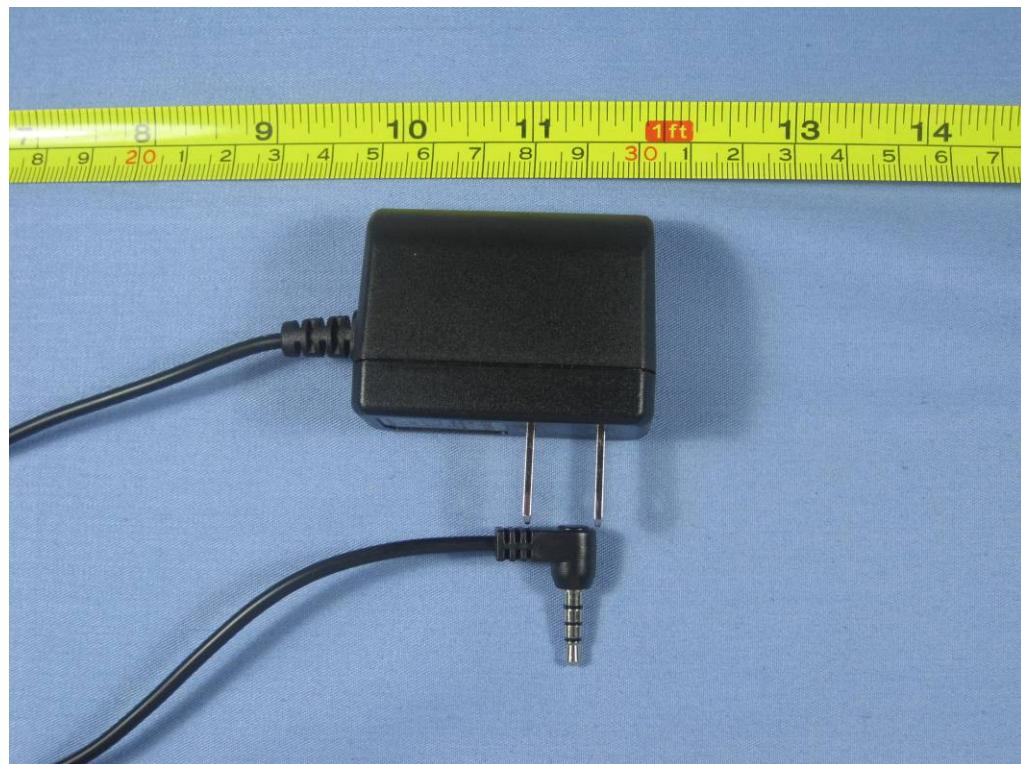
Ref No.	Instrument/Ancillary	Type	Manufacturer	Serial No.	Cal Due Date
1	Universal Radio Communication Tester	CMU200	Rohde&Schwarz	114828	2013.01.19
2	Spectrum Analyzer	FSU	Rohde&Schwarz	200679	2013.01.18
3	Temperature Chamber	SH-241	ESPEC	92007516	2013.02.24
4	DC Power Supply	U3606A	Agilent Technologies	MY50450012	2013.11.15
5	RF Switch Matrix	OSP130	Rohde&Schwarz	100086	2013.03.28
6	Vector Signal Generator	SMU200A	Rohde&Schwarz	104072	2013.03.28
7	MXG Analog Signal Generator	N5183A	Agilent Technologies	MY50140012	2013.11.15

## 5.2 Test Equipments for RSE Test

Ref No.	Instrument/Ancillary	Type	Manufacturer	Serial No.	Cal Due Date
1	Universal Radio Communication	CMU200	Rohde&Schwarz	114545	2013.03.23
2	Test Receiver	ESCI	Rohde&Schwarz	100701	2013.12.30
3	BiLog Antenna	9163	Schwarzbeck	9163-330	2014.03.02
4	Double-Ridged Waveguide Horn Antenna	3164-05	ETS-Lindgren	00085724	2014.02.18
5	Spectrum Analyzer	FSP40	Rohde&Schwarz	100378	2013.12.23
6	Fully Anechoic Chamber	n/a	ETS-Lindgren	n/a	2012.04.17

## Annex A External Photos





Adaptor and cable



battery

## ANNEX B Deviations from Prescribed Test Methods

No deviation from Prescribed Test Methods.

— The End of this Report —

CTTLL Test Report