



Report No: SYBH(R)097092007EB-1

FCC ID: QISBTS3006C

IC ID: 6369A-BTS3006C

# **FCC & IC TEST REPORT OF Outdoor BTS with Dual-density TRX**

**M/N: BTS3006C**

**November 20, 2007**

**Reliability Laboratory of Huawei Technologies Co., Ltd.**

**All Right Reserved**

## Notice

1.	The laboratory has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS), and accreditation number: L0310.
2.	The laboratory has obtained the accreditation of THE AMERICAN ASSOCIATION FOR LABORATORY ACCREDITATION (A2LA), and Accreditation Council Certificate Number: 2174.01.
3.	The laboratory has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements. The site recognition number is 97456.
4.	The laboratory has been listed by industry Canada to perform electromagnetic emission measurement. The site recognition number is 6369A-1.
5.	The laboratory also has been listed by the VCCI to perform EMC measurements. The accreditation number is C2583, R2364, and T256.
6.	The test report is invalid if not marked with "exclusive stamp for the test report".
7.	Any copy of the test report is invalid if not re-marked with the "exclusive stamp for the test report".
8.	The test report is invalid if not marked with the stamps or the signatures of the persons responsible for performing, revising and approving the test report.
9.	The test report is invalid if there is any evidence of erasure and/or falsification.
10.	If there is any dissidence for the test report, please file objection to the test centre within 15 days from the date of receiving the test report.
11.	Normally, the test report is only responsible for the samples that have undergone the test.
12.	Context of the test report cannot be used partially or in full for publicity and/or promotional purposes without previous written approval of the laboratory.
13.	In this page, the "laboratory" is "Reliability Laboratory of Huawei Technologies CO., Ltd. "

Huawei Technologies Co Ltd  
Huawei Industrial Base,  
Bantian Longgang  
Shenzhen 518128, P.R China  
Tel: +86 755 89651014  
Fax: +86 755 89652518



---

**REPORT No** FCC & IC Test of Outdoor BTS with Dual-density TRX

M/N: BTS3006C

Report No: SYBH(R)097092007EB-1

**REGULATION** FCC CFR47 Part 2 (October 2005);

FCC CFR47 Part 22 (October 2005);

IC RSS-132 Issue 2 (September 2005)

**CONCLUSION** There are 7 items need to be tested, 7 items have been tested. The sample of the model completely meets the requirements

**Final Judgement: Pass**

**General Manager**

2007.11.20

Date

张兴海

Name

signature



**Technical Responsibility  
For Area of Testing**

2007.11.20

Date

余辉

Name

signature



**Test Lab Engineer**

2007.11.20

Date

张卫民

Name

signature



## Contents

<b>1</b>	<b><u>Summary</u></b> .....	<b>5</b>
<b>2</b>	<b><u>Product Description</u></b> .....	<b>6</b>
2.1	PRODUCTION INFORMATION.....	6
2.2	MODIFICATION INFORMATION .....	6
<b>3</b>	<b><u>Test Site Description</u></b> .....	<b>7</b>
3.1	TESTING PERIOD.....	7
<b>4</b>	<b><u>Product Description</u></b> .....	<b>8</b>
4.1	TECHNICAL CHARACTERISTICS.....	8
4.2	EUT IDENTIFICATION LIST .....	10
<b>5</b>	<b><u>Main Test Instruments</u></b> .....	<b>11</b>
<b>6</b>	<b><u>Transmitter Measurements</u></b> .....	<b>12</b>
6.1	MAXIMUM CHANNEL POWER .....	12
6.2	MODULATION CHARACTERISTICS.....	15
6.3	OCCUPIED BANDWIDTH.....	18
6.4	BAND EDGES COMPLIANCE.....	21
6.5	SPURIOUS EMISSION AT ANTENNA TERMINAL.....	24
6.6	RADIATED SPURIOUS EMISSION .....	27
6.7	FREQUENCY STABILITY .....	30
<b>7</b>	<b><u>System Measurement Uncertainty</u></b> .....	<b>35</b>
<b>8</b>	<b><u>Appendices</u></b> .....	<b>36</b>

# 1 Summary

The table below summarizes the measurements and results for the EUT. Detailed results and descriptions are shown in the following pages.

table 1. Summary of results required by FCC

FCC Measurement Specification	FCC Limits Part(s)	Description	Result
2.1046	22.913	Maximum Channel Power	PASS
2.1047	-	Modulation Characteristics	PASS
2.1049	-	Occupied Bandwidth	PASS
2.1051	22.917	Band Edges Compliance	PASS
2.1051	22.917	Spurious Emission at Antenna Terminal	PASS
2.1053	22.917	Radiated Spurious Emission	PASS
2.1055	22.355	Frequency Stability	PASS

table 2. Summary of results required by IC

IC RSS-132 Specification	Description	Result
4.1	Channelling Arrangements	(N/A, see TCF)
4.4	Maximum Channel Power	PASS
4.2	Modulation Characteristics	PASS
---	Occupied Bandwidth	PASS
4.5	Band Edges Compliance	PASS
4.5	Spurious Emission at Antenna Terminal	PASS
4.5	Radiated Spurious Emission	PASS
4.3	Frequency Stability	PASS
4.6	Receiver Spurious Emissions (Radiated)	(see EMC report)

## 2 Product Description

### 2.1 Production Information

#### 2.1.1 General Description

The BTS3006C (EUT) is used for edge networks and hotspots in cities, where medium-volume traffic is required. The BTS3006C is a double-transceiver EDGE BTS. It has the features of fast deployment, low cost, and wide coverage.

A single BTS3006C cabinet can supports up to six TRXs. It supports functions such as transmit diversity, 4-way receive diversity, and AMR.

The BTS3006C has large power and large capacity. It is small and easy to install. It can save the cost on the equipment room.

The BTS3006C has strong environment adaptability. It supports the outdoor application with IP55 protection level.

The BTS3006C supports DC power inputs or AC power inputs. It supports the SDH. The optical cable can directly connect to the BTS.

The BTS3006C can form a network with indoor double-transceiver BTSs and outdoor BTSs, thus proving a fast, economical and effective network construction.

#### 2.1.2 Support function and Service

The EUT supports the function and service as follows:

table 3. Service and Test mode List

Service Name	Characteristic	Corresponding Test Mode	Note
Data, Voice	Modulation: GMSK	TM1	GSM/GPRS
Data	Modulation: 8PSK	TM2	EDGE

Note: \* The specified GSM/GPRS test conditions & settings are defined in 3GPP TS51.010 and the EDGE test conditions & settings are defined in 3GPP TS51.010.

### 2.2 Modification Information

For original equipment, following table is not application.

table 4. Modification Information

Model Number	Board/Module	Original Version	New Version	Modify Information
Not applicable				

### 3 Test Site Description

The test site of:

***Huawei Technologies Co. Ltd.  
P.O. Box 518129  
Huawei base, bantian,  
Longgang District, Shenzhen, China***

The test site description has been submitted to  and registration granted under the registration number **97456** on April 20, 2006. The test site has been accredited by



and the accredited number is **2174.01** in Jan of 2006.

#### **3.1 Testing Period**

The test has been performed during the period of

From: Sep. 27, 2007  
To: Oct. 10, 2007

## 4 Product Description

### 4.1 Technical Characteristics

#### 4.1.1 Frequency Range

table 5. Frequency Range

Uplink band:	824 to 849 MHz
Downlink band:	869 to 894 MHz

#### 4.1.2 Channel Spacing / Separation

table 6. Channel Spacing and Separation

Channel spacing:	200 kHz
Channel separation:	200 kHz

#### 4.1.3 Type of Emission

table 7. Type of Emission

Emission Designation:	250KGXW (for TM1, GMSK) 250KG7W (for TM2, 8PSK)
-----------------------	--

According to CFR 47 (FCC) part 2, subpart C, section 2.201 and 2.202

#### 4.1.4 Environmental Requirements

table 8. Environmental Requirements

Minimum temperature:	-40 °C
Maximum temperature:	+55 °C
Relative Humidity:	5% - 95%RH

#### 4.1.5 Power Source

table 9. Power Source

DC voltage nominal:	$\equiv$ -48 V
DC voltage range	$\equiv$ -60 V ~ -40 V
DC current maximal:	45 A
AC voltage nominal:	$\sim$ 110V or 220 V
AC voltage range	$\sim$ 85V~300V
AC current maximal:	11 A

#### 4.1.6 Tune-up Procedure

According to CFR (FCC) part 2, subpart 2, section 2.1033(c) (9).

Please reference the document Tune-up Procedure in TCF.

## 4.2 EUT Identification List

### 4.2.1 Board Information

table 10. Board Information

Model Name	Qty.	Hardware Version	Serial	Description
DMCM	1	48.1.1	21023142871075000295	Main Control Module
850M-DDPM	1	52.2.2	21023146891075000021	Duplexer and Filter
850M-DDRM	1	24.0.0	21023146981073000040	Double Transceiver Module
DSEM	1	/	2102314288NO75000990	DC SPD and EMI Module
DPSM	1	/	21990568028N6A000012	Power Supply Module

### 4.2.2 Adapter Technical Data

Not Applicable for BTS.

### 4.2.3 Battery Technical Data

Not Applicable for BTS.

### 4.2.4 FCC Identification

Grantee Code: QIS  
Product Code: BTS3006C  
FCC Identification: QISBTS3006C

### 4.2.5 IC Identification

Company Number: 6369A  
Product Code: BTS3006C  
IC Identification: 6369A-BTS3006C

## 5 Main Test Instruments

table 11. Main Test Equipments

Equipment Description	Manufacturer	Model	Serial Number	Calibrated until (MM.DD.YYYY)
Signal Analyzer	R&S	FSIQ 26	3601091114	07.22.2008
Spectrum Analyzer	R&S	FSU	3606053905	03.09.2008
Universal Radio Communication Tester	R&S	CMU300	3606061529	05.15.2008
Climate Chamber	WZH	ACS-2	3605030256	04.16.2008
Notch Filter	WALNWRIGHT	WRCT800/960	3606073874	04.10.2008
Attenuator	HuaXiang	30 dB	07021204	08.18.2008

## 6 Transmitter Measurements

### 6.1 Maximum Channel Power

#### 6.1.1 Test Conditions

table 12. Test Conditions

Preconditioning:	1 hour
Measured at:	Antenna connector
Ambient temperature:	25 °C
Relative humidity:	50 %
Test configuration:	TM1/TM2 at channel Bottom, Middle, Top

#### 6.1.2 Test Specifications and Limits

##### 6.1.2.1 Specification

CFR 47 (FCC) part 2.1046 and part 22.913  
 IC RSS-132 clause 4.4

##### 6.1.2.2 Supporting Standards

table 13. Supporting Standards:

EIA/TIA-603-C: 2004	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
3GPP TS 11.21 version 8.10.0 Release 1999	Digital cellular telecommunications system (Phase 2+); Base Station System (BSS) equipment specification; Radio aspects
IC SRSP-503 Issue 6 June 2003	Technical Requirements for Cellular Radiotelephone Systems Operating in the Bands 824-849 MHz and 869-894 MHz

##### 6.1.2.3 Limits

Compliance with FCC part 22.913, in no any case may the peak power of a base station transmitter exceeds 500 Watts.  $P \text{ (dBm)} = 10 \cdot \log(P \text{ mWatts})$ .

table 14. Limits According to FCC Part 22.913

Maximum Output Power (Watts)	< 500 Watts
Maximum Output Power (dBm)	< 57 dBm

Compliance with IC RSS-132 clause 4.4, the transmitter output power shall not exceed 500 Watts per channel for digital systems.  $P \text{ (dBm)} = 10 \cdot \log(P \text{ mWatts})$ .

table 15. Limits According to IC RSS-132 clause 4.4

Maximum Output Power (Watts)	< 500 Watts
Maximum Output Power (dBm)	< 57 dBm

table 16. Limits According to 3GPP TS 11.21

Rated Maximum Output Power (dBm) at Antenna connectors	47.2 (for TM1) 45.2 (for TM2)
Maximum Tolerance Allowed	< ±2 dB

### 6.1.3 Test Method and Setup

The EUT was connected to the Universal Radio Communication Tester R&S CMU300 via the one RF connector. Other RF connectors were connected to match load. BTS was controlled to transmit Maximum power by console computer. Measure and record the Maximum Channel Power of the Base Station by the R&S CMU300.

#### Test setup

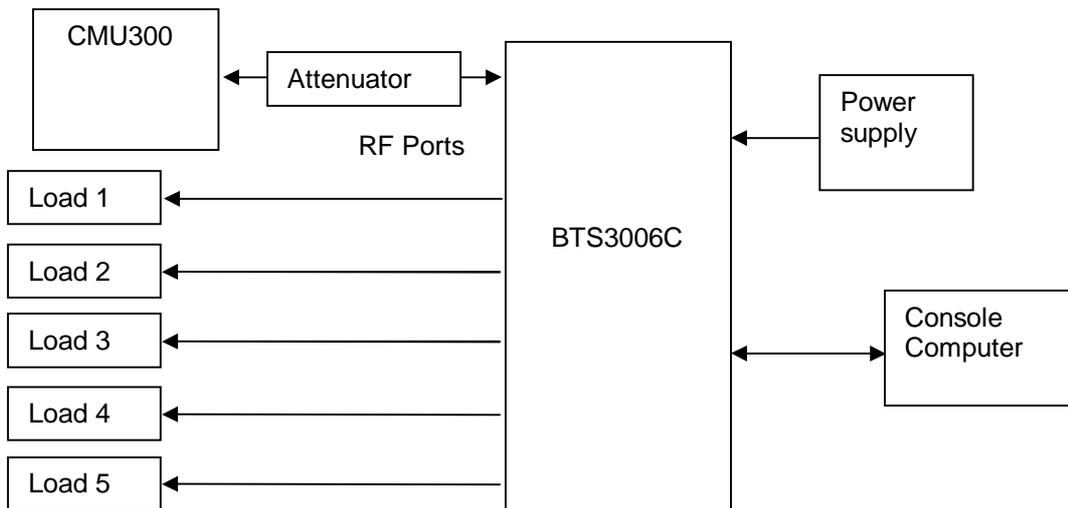


Figure 1. TEST SETUP

### 6.1.4 Measurement Results

TM1:

table 17. Measurement Results for TM1

TEST CONDITIONS		Maximum Output Power			
		GMSK			
		Measured		Limit	
		Level (dBm)	Tolerance (dB)	Limit of Level (dBm)	Limit of Tolerance (dB)
CH 128 (B) 869.2MHz	$T_{nom}$ (25 °C) $V_{nom}$ (-48 V)	47.21	+0.01	< 57	< ±2
CH 189 (M) 881.4MHz	$T_{nom}$ (25 °C) $V_{nom}$ (-48 V)	47.22	+0.02	< 57	< ±2
CH 251 (T) 893.8MHz	$T_{nom}$ (25 °C) $V_{nom}$ (-48 V)	47.12	-0.08	< 57	< ±2

TM2:

table 18. Measurement Results for TM2

TEST CONDITIONS		Maximum Output Power	
		8PSK	
		Measured	Limit

		Level (dBm)	Tolerance (dB)	Limit of Level (dBm)	Limit of Tolerance (dB)
CH 128 (B) 869.2MHz	T <sub>nom</sub> (25 °C) V <sub>nom</sub> (-48 V)	<b>45.73</b>	<b>+0.53</b>	<b>&lt; 57</b>	<b>&lt; ±2</b>
CH 189 (M) 881.4MHz	T <sub>nom</sub> (25 °C) V <sub>nom</sub> (-48 V)	<b>45.60</b>	<b>+0.40</b>	<b>&lt; 57</b>	<b>&lt; ±2</b>
CH 251 (T) 893.8MHz	T <sub>nom</sub> (25 °C) V <sub>nom</sub> (-48 V)	<b>45.03</b>	<b>-0.17</b>	<b>&lt; 57</b>	<b>&lt; ±2</b>

### 6.1.5 Conclusion

The equipment **PASSED** the requirement of this clause.

## 6.2 Modulation Characteristics

### 6.2.1 Test Conditions

table 19. Test Conditions

Preconditioning:	1hour
Measured at:	Antenna connector
Ambient temperature:	25 °C
Relative humidity:	50 %
Test configuration:	TM1/TM2 at channel Middle

### 6.2.2 Test Specifications and Limits

#### 6.2.2.1 Specification

CFR 47 (FCC) part 2.1047 and part 22 subpart H.  
 IC RSS-132 clause 4.2

#### 6.2.2.2 Supporting Standards

table 20. Supporting Standards:

EIA/TIA-603-C: 2004	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
3GPP TS 11.21 version 8.10.0 Release 1999	Digital cellular telecommunications system (Phase 2+); Base Station System (BSS) equipment specification; Radio aspects

#### 6.2.2.3 Limits

No specific modulation characteristics requirement limits in FCC part 2.1047 and part 22 subpart H.

No specific modulation characteristics requirement limits in IC RSS-132 clause 4.2.

table 21. Limits According to 3GPP TS 11.21

Limits	GMSK modulation	rms phase error (°)	< 5
		peak phase error (°)	< 20
	8PSK modulation	rms evm error (%)	< 8
		peak evm error (%)	< 22
		OOS (dB)	> 35
		95 <sup>th</sup> Percentile (%)	< 11

### 6.2.3 Test Method and Setup

Base Station was connected to the Universal Radio Communication Tester R&S CMU300 via the one RF connector. Other RF connectors were connected to match load. The band class is set Band Class 0(850MHz). BTS was controlled to transmit Maximum power by console computer. Measure and record the Phase Error, Evm Error, OOS and 95<sup>th</sup> Percentile of the Base Station by the R&S CMU300.

**Test setup**

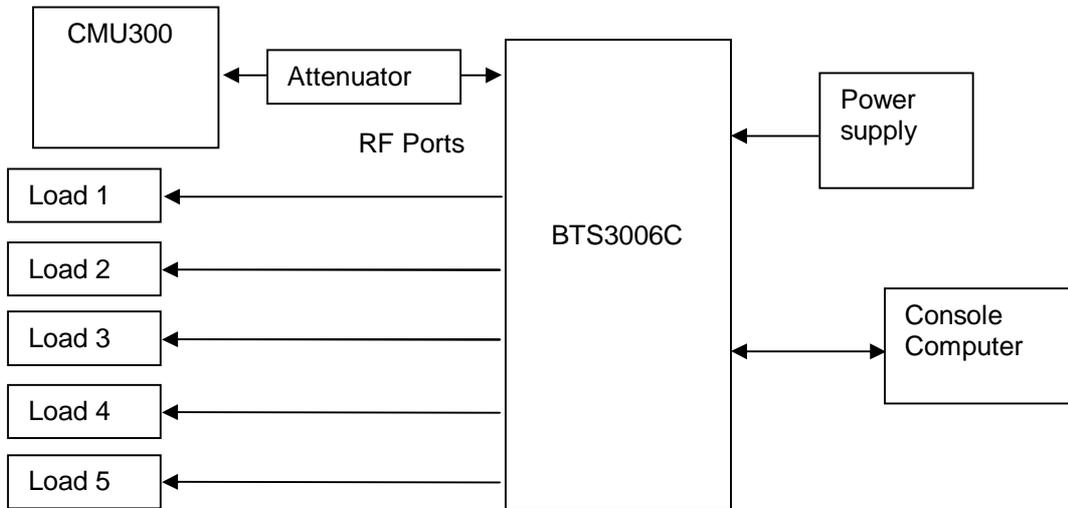


Figure 2. TEST SETUP

**6.2.4 Measurement Results**

TM1:

table 22. Measurement Results for TM1

TEST CONDITIONS		Modulation Characteristics			
		GMSK			
		Measured		Limit	
		Phase Error (deg)		Phase Error	
		° rms	° peak	° rms	° peak
CH 190 (M) 881.6MHz	T <sub>nom</sub> (25 °C) V <sub>nom</sub> (-48V)	1.0	-3.2	< 5	< 20
<b>See appendix A</b>					

TM2:

table 23. Measurement Results for TM2

TEST CONDITION S	Modulation Characteristics							
	CH 190 (M) 881.6MHz							
	8PSK							
	Measured				Limit			
	EVM rms (%)	EVM peak (%)	OOS (dB)	95 <sup>th</sup> Percentile (%)	EVM rms (%)	EVM peak (%)	OOS (dB)	95 <sup>th</sup> Percentile (%)
T <sub>nom</sub> (25 °C) V <sub>nom</sub> (-48V)	2.7	9.7	-41.7	3.9	< 8	< 22	> 35	< 11
<b>See appendix A</b>								

## 6.2.5 Conclusion

The equipment **PASSED** the requirement of this clause.  
For the measurement results refer to appendix A.

## 6.3 Occupied Bandwidth

### 6.3.1 Test Conditions

table 24. Test Conditions

Preconditioning:	1 hour
Measured at:	Antenna connector
Ambient temperature:	25 °C
Relative humidity:	50%
Test configuration:	TM1/TM2 at channel Bottom, Middle, Top

### 6.3.2 Test Specifications and Limits

#### 6.3.2.1 Specification

CFR 47 (FCC) part 2.1049 and part 22 subpart H

#### 6.3.2.2 Supporting Standards

table 25. Supporting Standards:

EIA/TIA-603-C: 2004	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
3GPP TS 11.21 version 8.10.0 Release 1999	Digital cellular telecommunications system (Phase 2+); Base Station System (BSS) equipment specification; Radio aspects

#### 6.3.2.3 Limits

No specific occupied bandwidth requirement in FCC part 22 subpart H, but the occupied bandwidth was defined in part 2.1049: the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured.

table 26. Limits

Upper /lower frequency limits	0.5% of the mean power
-------------------------------	------------------------

### 6.3.3 Test Method and Setup

Base Station was connected to the Spectrum analyzer R&S FSU via the one RF connector. Other RF connectors were connected to match load. BTS was controlled to transmit Maximum power by console computer. Measure and record the Occupied Bandwidth of the Base Station by the R&S FSU.

The OBW, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured under the following conditions as applicable:

Refer to 47CFR part2.1049 section (g)&(h).

(g) Transmitter in which the modulating base band comprises not more than three independent channels - when modulated by the full complement of signals for which the transmitter is rated. The

level of modulation for each channel should be set to that prescribed in rule parts applicable to the services for which the transmitter is intended. If specific modulation levels are not set forth in the rules, the tests should provide the manufacturer's maximum rated condition.

(h) Transmitters employing digital modulation techniques - when modulated by an input signal such that its amplitude and symbol rate represent the maximum rated conditions under which the equipment will be operated. The signal shall be applied through any filter networks, pseudorandom generators or other devices required in normal service. Additionally, the occupied bandwidth shall be shown for operation with any devices used for modifying the spectrum when such devices are optional at discretion of the user.

Measurement bandwidth (RBW): 3 kHz

**Test Set-up**

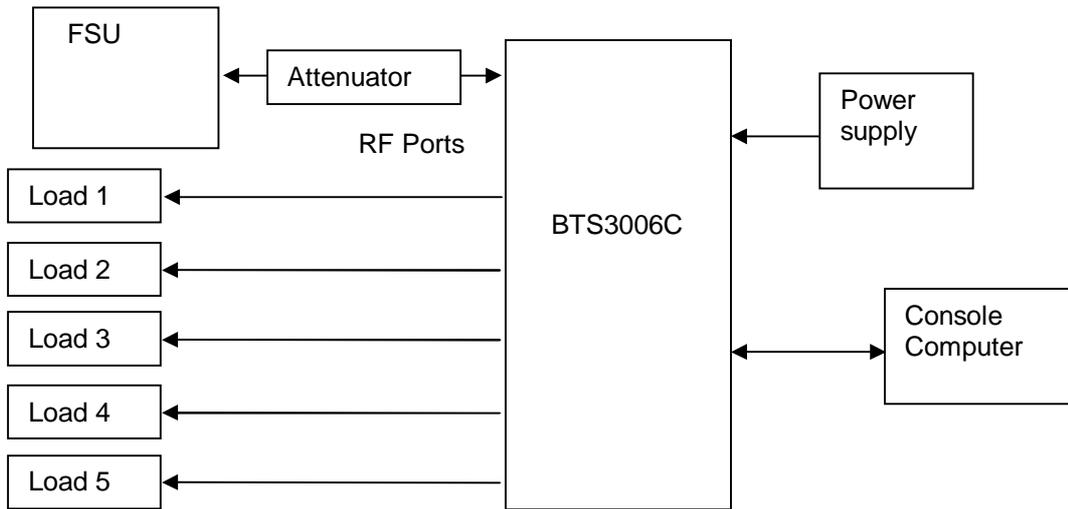


Figure 3. TEST SETUP

**6.3.4 Measurement Results**

TM1:

table 27. Measurement Results for TM1

TEST CONDITIONS		Occupied Bandwidth	
		GMSK	
		Measured (kHz)	Limit (kHz)
CH 128 (B) 869.2MHz	T <sub>nom</sub> (25 °C) V <sub>nom</sub> (-48 V)	243	< 300
CH 190 (M) 881.6MHz	T <sub>nom</sub> (25 °C) V <sub>nom</sub> (-48 V)	243	< 300
CH 251 (T) 893.8MHz	T <sub>nom</sub> (25 °C) V <sub>nom</sub> (-48 V)	240	< 300
<b>See appendix B</b>			

TM2:

table 28. Measurement Results for TM2

TEST CONDITIONS	Occupied Bandwidth
	8PSK

		Measured (kHz)	Limit (kHz)
CH 128 (B) 869.2MHz	$T_{nom}$ (25 °C) $V_{nom}$ (-48 V)	243	< 300
CH 190 (M) 881.6MHz	$T_{nom}$ (25 °C) $V_{nom}$ (-48 V)	243	< 300
CH 251 (T) 893.8MHz	$T_{nom}$ (25 °C) $V_{nom}$ (-48 V)	243	< 300
See appendix B			

### 6.3.5 Conclusion

The equipment **PASSED** the requirement of this clause.  
For the measurement results refer to appendix B.

## 6.4 Band Edges Compliance

### 6.4.1 Test Conditions

table 29. Test Conditions

Preconditioning:	1 hour
Measured at:	Antenna connector
Ambient temperature:	25°C
Relative humidity:	50%
Test configuration:	TM1/TM2 at channel Bottom, Top

### 6.4.2 Test Specifications and Limits

#### 6.4.2.1 Specification

CFR 47 (FCC) part 2.1051 and part 22.917  
 IC RSS-132 clause 4.5

#### 6.4.2.2 Supporting Standards

table 30. Supporting Standards:

EIA/TIA-603-C: 2004	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
3GPP TS 11.21 version 8.10.0 Release 1999	Digital cellular telecommunications system (Phase 2+); Base Station System (BSS) equipment specification; Radio aspects
IC SRSP-503 Issue 6 June 2003	Technical Requirements for Cellular Radiotelephone Systems Operating in the Bands 824-849 MHz and 869-894 MHz

#### 6.4.2.3 Limits

Compliance with FCC part 22.917, all spurious emission must be attenuated below the transmitter power by at least  $43 + 10 \log_{10} P$ . (Whereas P is the rated power of the EUT).

table 31. Limits required by FCC part 22.917

Limit	$P - (43 + 10 \log_{10} P) = 10 \log_{10}(1000P) - 43 - 10 \log_{10} P = 30 - 43 = -13$ dBm
-------	---

Compliance with IC RSS-132 clause 4.5, the power of emissions shall be attenuated below the transmitter output power P (in watts) by at least  $43 + 10 \log_{10} P$ , dB.

table 32. Limits required by IC RSS-132 clause 4.5

Limit	$P - (43 + 10 \log_{10} P) = 10 \log_{10}(1000P) - 43 - 10 \log_{10} P = 30 - 43 = -13$ dBm
-------	---

### 6.4.3 Test Method and Setup

Base Station was connected to the Spectrum analyzer R&S FSU via the one RF connector. Other RF connectors were connected to match load. BTS was controlled to transmit Maximum power by console computer. Measure and record the Occupied Bandwidth of the Base Station by the R&S FSU.

In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 1% of the emission bandwidth of the fundamental emission of the transmitter may be employed.

Measurement bandwidth (RBW): 3 kHz (more than 1% of 300 kHz)

**Test Set-up**

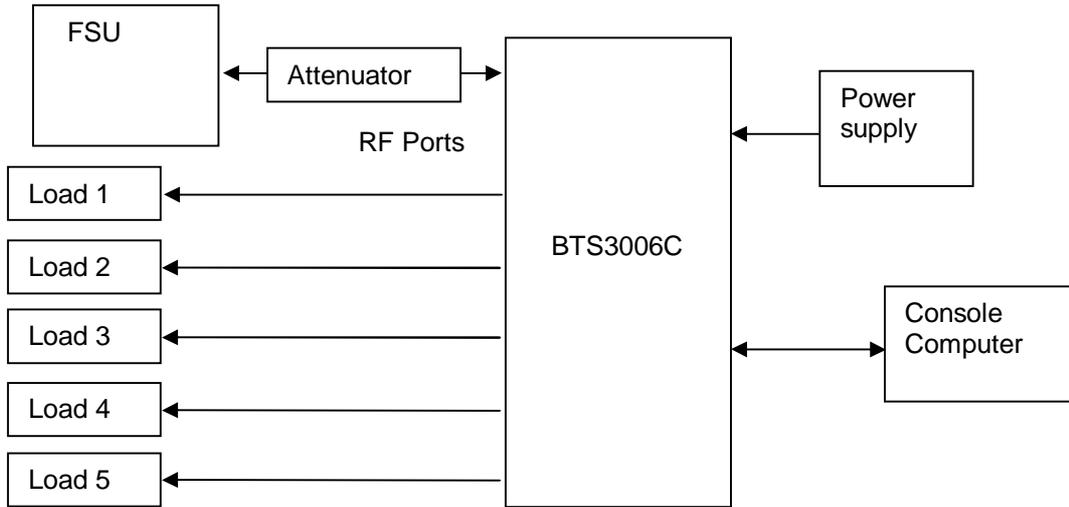


Figure 4. Test Set-up

**6.4.4 Measurement Results**

TM1:

table 33. Measurement Results for TM1

TEST CONDITIONS		Band Edge	
		GMSK	
		Measured Max. Emission (dBm)	Limit (dBm)
CH 129 (B) 869.4MHz	T <sub>nom</sub> (25 °C) V <sub>nom</sub> (-48 V)	<b>-33.50</b>	<b>&lt; -13</b>
CH 250 (T) 893.6MHz	T <sub>nom</sub> (25 °C) V <sub>nom</sub> (-48 V)	<b>-33.95</b>	<b>&lt; -13</b>
<b>See appendix C</b>			

TM2:

table 34. Measurement Results for TM2

TEST CONDITIONS		Band Edge	
		8PSK	
		Measured Max. Emission (dBm)	Limit (dBm)
CH 129 (B) 869.4MHz	T <sub>nom</sub> (25 °C) V <sub>nom</sub> (-48 V)	<b>-32.82</b>	<b>&lt; -13</b>
CH 250 (T) 893.6MHz	T <sub>nom</sub> (25 °C) V <sub>nom</sub> (-48 V)	<b>-33.63</b>	<b>&lt; -13</b>
<b>See appendix C</b>			

NOTE: The channel 129 and 250 shown in the tables above are the minimum and maximum channels that

can be used to maintain compliance. Channels used outside of those stated in the tables exceed the specification limits, thus they cannot be used.

#### 6.4.5 Conclusion

The equipment **PASSED** the requirement of this clause.  
For the measurement results refer to appendix C.

## 6.5 Spurious Emission at Antenna Terminal

### 6.5.1 Test Conditions

table 35. Test Conditions

Preconditioning:	1 hour
Measured at:	Antenna connector
Ambient temperature:	25°C
Relative humidity:	50%
Test configuration:	TM1/TM2 at channel Bottom, Middle, Top

### 6.5.2 Test Specifications and Limits

#### 6.5.2.1 Specification

CFR 47 (FCC) part 2.1051 and part 22.917  
 IC RSS-132 clause 4.5

#### 6.5.2.2 Supporting Standards

table 36. Supporting Standards:

EIA/TIA-603-C: 2004	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
ITU-R Recommendation SM.329-10 (2003)	Unwanted emissions in the spurious domain
3GPP TS 11.21 version 8.10.0 Release 1999	Digital cellular telecommunications system (Phase 2+); Base Station System (BSS) equipment specification; Radio aspects
IC SRSP-503 Issue 6 June 2003	Technical Requirements for Cellular Radiotelephone Systems Operating in the Bands 824-849 MHz and 869-894 MHz

#### 6.5.2.3 Limits

Compliance with FCC part 22.917, all spurious emission must be attenuated below the transmitter power by at least  $43 + 10 \log_{10} P$ . (Whereas P is the rated power of the EUT).

table 37. Limits required by FCC part 22.917

Limit	$P - (43 + 10 \log_{10} P) = 10 \log_{10}(1000P) - 43 - 10 \log_{10} P = 30 - 43 = -13 \text{ dBm}$
-------	---

Compliance with IC RSS-132 clause 4.5, after the first 1.0 MHz, the power of emissions shall be attenuated below the transmitter output power (P) by at least  $43 + 10 \log_{10} P$ , dB.

table 38. Limits required by IC RSS-132 clause 4.5

Limit	$P - (43 + 10 \log_{10} P) = 10 \log_{10}(1000P) - 43 - 10 \log_{10} P = 30 - 43 = -13 \text{ dBm}$
-------	---

### 6.5.3 Test Method and Setup

Base Station was connected to the Signal analyzer R&S FSIQ26 via the one RF connector. Other RF connectors were connected to match load. BTS was controlled to transmit Maximum power by console

computer. Measure and record the Occupied Bandwidth of the Base Station by the R&S FSIQ26.

According to 47CFR part 22.917, this defined the measurement bandwidth of as following:  
 Measurement bandwidth (RBW) for 9 kHz up to 10<sup>th</sup> harmonic included: 100kHz;

According to IC RSS-132 clause 4.5, this defined the measurement bandwidth of as following:  
 Measurement bandwidth (RBW): 100kHz;

Alternatively, according to ITU SM.329-10,  
 Measurement bandwidth (RBW) for 9 kHz up to 150 KHz: 1 kHz;  
 Measurement bandwidth (RBW) for 150 kHz up to 30 MHz: 10 kHz;  
 Measurement bandwidth (RBW) for 30 MHz up to 1 GHz: 100 kHz;  
 Measurement bandwidth (RBW) for 1 GHz up to 10<sup>th</sup> harmonic included: 1 MHz;

**Test Set-up**

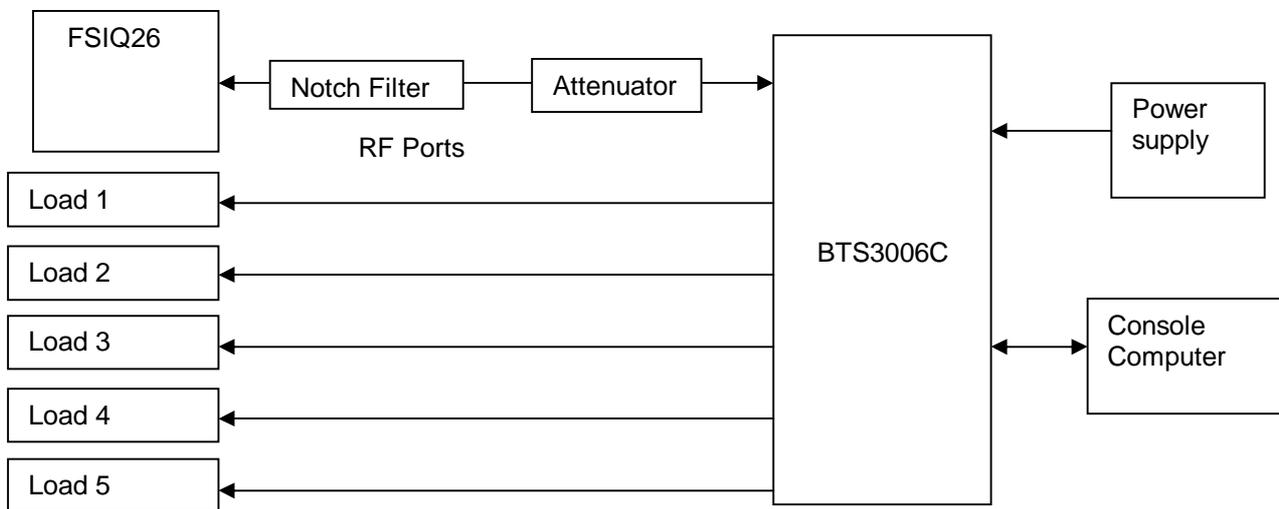


Figure 5. Test Set-up

**6.5.4 Measurement Results**

TM1:

table 39. Measurement Results for TM1

TEST CONDITIONS		Spurious Emission at Antenna Terminal		
		GMSK		
		Test Frequency	Measured Max. Emission (dBm)	Limit (dBm)
CH 128 (B) 869.2MHz	T <sub>nom</sub> (25 °C) V <sub>nom</sub> (-48 V)	9 kHz ~12.75GHz	-44.56	< -13
CH 190 (M) 881.6MHz	T <sub>nom</sub> (25 °C) V <sub>nom</sub> (-48 V)	9 kHz ~12.75GHz	-44.15	< -13
CH 251 (T) 893.8MHz	T <sub>nom</sub> (25 °C) V <sub>nom</sub> (-48 V)	9 kHz ~12.75GHz	-44.22	< -13
See appendix D				

TM2:

table 40. Measurement Results for TM2

TEST CONDITIONS	Spurious Emission at Antenna Terminal
-----------------	---------------------------------------

		8PSK		
		Test Frequency	Measured Max. Emission (dBm)	Limit (dBm)
CH 128 (B) 869.2MHz	T <sub>nom</sub> (25 °C) V <sub>nom</sub> (-48 V)	9 kHz ~12.75GHz	-38.57	< -13
CH 190 (M) 881.6MHz	T <sub>nom</sub> (25 °C) V <sub>nom</sub> (-48 V)	9 kHz ~12.75GHz	-38.50	< -13
CH 251 (T) 893.8MHz	T <sub>nom</sub> (25 °C) V <sub>nom</sub> (-48 V)	9 kHz ~12.75GHz	-39.03	< -13
See appendix D				

### 6.5.5 Conclusion

The equipment **PASSED** the requirement of this clause.  
 For the measurement results refer to appendix D.

## 6.6 Radiated Spurious Emission

### 6.6.1 Test Conditions

table 41. Test Conditions

Preconditioning:	1 hour
Measured at:	enclosure
Ambient temperature:	23 °C
Relative humidity:	50 %

### 6.6.2 Test Specifications and Limits

#### 6.6.2.1 Specification

CFR 47 (FCC) part 2.1053 and part 22.917  
 IC RSS-132 clause 4.5

#### 6.6.2.2 Supporting Standards

table 42. Supporting Standards:

EIA/TIA-603-C: 2004	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
ITU-R Recommendation SM.329-10 (2003)	Unwanted emissions in the spurious domain
3GPP TS 11.21 version 8.10.0 Release 1999	Digital cellular telecommunications system (Phase 2+); Base Station System (BSS) equipment specification; Radio aspects
IC SRSP-503 Issue 6 June 2003	Technical Requirements for Cellular Radiotelephone Systems Operating in the Bands 824-849 MHz and 869-894 MHz

#### 6.6.2.3 Limits

Compliance with FCC part 22.917, all spurious emission must be attenuated below the transmitter power by at least  $43 + 10 \log_{10} P$ . (Whereas P is the rated power of the EUT).

table 43. Limits required by FCC part 22.917

Limit	$P - (43 + 10 \log_{10} P) = 10 \log_{10}(1000P) - 43 - 10 \log_{10} P = 30 - 43 = -13 \text{ dBm}$
-------	---

Compliance with IC RSS-132 clause 4.5, after the first 1.0 MHz, the power of emissions shall be attenuated below the transmitter output power (P) by at least  $43 + 10 \log_{10} P$ , dB.

table 44. Limits required by IC RSS-132 clause 4.5

Limit	$P - (43 + 10 \log_{10} P) = 10 \log_{10}(1000P) - 43 - 10 \log_{10} P = 30 - 43 = -13 \text{ dBm}$
-------	---

### 6.6.3 Test Method and Setup

(a) Measurements were made to detect spurious emissions radiated directly from the cabinet, control circuits, power leads, or intermediate circuit elements under normal conditions of installation and operation. Curves or equivalent data were supplied showing the magnitude of each harmonic and other

spurious emission. For this test, single sideband, independent sideband, and controlled carrier transmitters shall be modulated under the conditions specified in paragraph FCC 2.1049(c) as appropriate. For equipment operating on frequencies below 890 MHz, an Open Field Test is normally required with the measuring instrument antenna located in the far field at all test frequencies. In the event it is either impractical or impossible to make open field measurements (e.g. a broadcast transmitter installed in a building) measurement will be accepted of the equipment as installed. Such measurements must be accompanied by a description of the site where the measurements were made showing the location of any possible source of reflections, which might distort the field strength measurements. Information submitted shall include the relative radiated power of each spurious emission with the reference to the rated power output of the transmitter, assuming all emissions are radiated from half-wave dipole antennas.

- (b) Measurements specified in paragraph (a) of this section shall be made for the following equipment:
- (1) Those in which the spurious emission are required to be 60 dB or more below the mean power of the transmitter.
  - (2) All equipment operating on frequencies higher than 25 MHz
  - (3) All equipment where the antenna is an integral part of, and attached directly to the transmitter.
  - (4) Other types of equipment as required, when deemed necessary by the Commission.

The BTS under test is equipment with non-integral antenna. And it should test according to part (b) of above section.

BTS is connected to match loads. The console computer controls the EUT to transmitter the maximum power which defined in specification of product. The EUT operates on a typical channel.

### **The test procedure:**

- (a) For transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, E.R.P. shall be measured when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in FCC 2.1033(c)(8). The EUT was connected to ancillary in order to simulate normal operating conditions with reference to the guidance given in the standard for this type of equipment.
- (b) Test the radiated maximum output power by the R&S test receiver ESMI received from test antenna.
- (c) Use substitution method to verify the Maximum output power. The EUT is substituted by a dipole antenna. The dipole is connected to a signal generator. And then adjust the output level of the signal generator to get the same received power recorded in step (b) on ESMI, and record the power level of Signal Generator. Of course, the cable loss at the test frequency should be compensated.

According to 47CFR part 22.917, this defined the measurement bandwidth of as following:  
Measurement bandwidth (RBW) for 9 kHz up to 10<sup>th</sup> harmonic included: 100kHz;

According to IC RSS-132 clause 4.5, this defined the measurement bandwidth of as following:  
Measurement bandwidth (RBW): 100kHz;

Alternatively, according to ITU SM.329-10,  
Measurement bandwidth (RBW) for 9 kHz up to 150 KHz: 1 kHz;  
Measurement bandwidth (RBW) for 150 kHz up to 30 MHz: 10 kHz;  
Measurement bandwidth (RBW) for 30 MHz up to 1 GHz: 100 kHz;  
Measurement bandwidth (RBW) for 1 GHz up to 10<sup>th</sup> harmonic included: 1 MHz;

### **Test setup**

#### **Step 1: Pre-test**

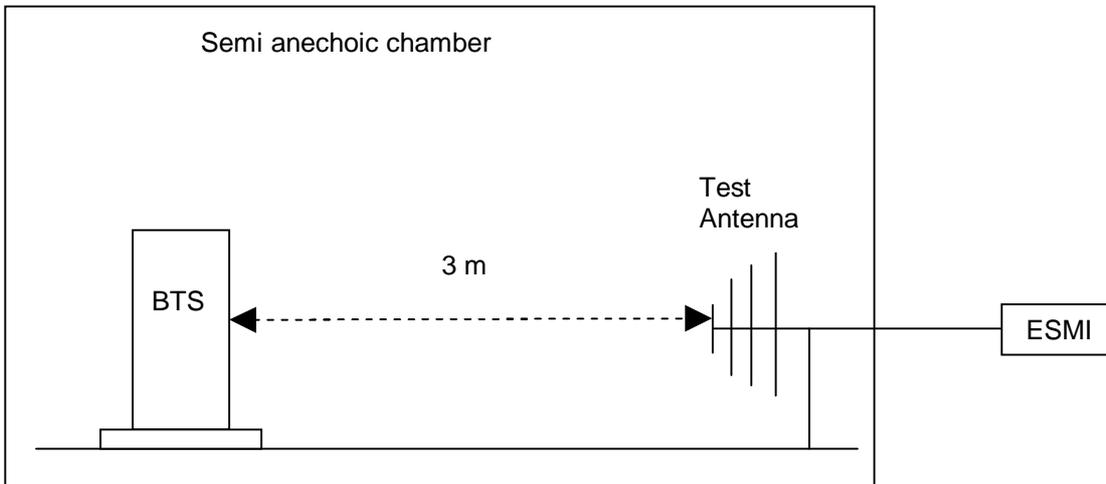


Figure 6. Test Set-up

**Step 2: Substitution method to verify the maximum ERP**

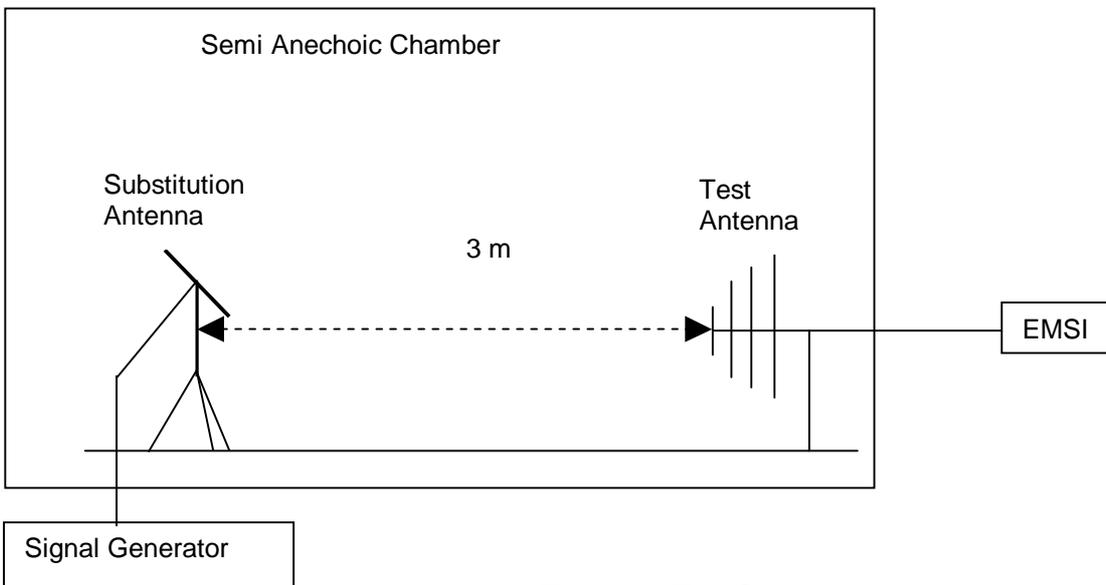


Figure 7. Test Set-up

NOTE: Effective radiated power (ERP) refers to the radiation power output of the EUT, assuming all emissions are radiated from half-wave dipole antennas.

**6.6.4 Measurement Results**

table 45. Measurement Results

TEST CONDITIONS	Spurious Emission at Enclosure		
	Test Frequency	Measured Max. Emission (dBm)	Limit (dBm)
T <sub>nom</sub> (23 °C) V <sub>nom</sub> (-48 V)	30 MHz ~ 10 GHz	<- 13 dBm	-13
See appendix E			

**6.6.5 Conclusion**

The equipment **PASSED** the requirement of this clause.  
 For the measurement results refer to appendix E.

## 6.7 Frequency Stability

### 6.7.1 Test Conditions

table 46. Test Conditions

Preconditioning:	1 hour
Measured at:	Antenna connector
Ambient temperature:	See below
Voltage range:	See below
Relative humidity:	50% at 20 °C
Test configuration:	TM1/TM2 at channel Middle

### 6.7.2 Test Specifications and Limits

#### 6.7.2.1 Specification

CFR 47 (FCC) part 2.1055 and part 22.355  
 IC RSS-132 clause 4.3

#### 6.7.2.2 Supporting Standards

table 47. Supporting Standards:

EIA/TIA-603-C: 2004	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
3GPP TS 11.21 version 8.10.0 Release 1999	Digital cellular telecommunications system (Phase 2+); Base Station System (BSS) equipment specification; Radio aspects
IC RSS-Gen Issue 2 June 2007	General Requirements and Information for the Certification of Radiocommunication Equipment

#### 6.7.2.3 Limits

According to FCC part 22.355, the carrier frequency of each transmitter must be maintained within the tolerances of  $\pm 1.5$  ppm.

table 48. Limits required by FCC part 22.355

Limit	$< \pm 1.5$ ppm
-------	-----------------

According to IC RSS-132 clause 4.3, the carrier frequency shall not depart from the reference frequency in excess of  $\pm 1.5$  ppm for base stations.

table 49. Limits required by IC RSS-132 clause 4.3

Limit	$< \pm 1.5$ ppm
-------	-----------------

table 50. Limits According to 3GPP TS 11.21

Limits	$< \pm 0.05$ ppm
--------	------------------

### 6.7.3 Test Method and Setup

The frequency stability shall be measured with variation of ambient temperature as follows:

(1) From -30 ° to +50 ° centigrade for all equipment except that specified in subparagraphs (2) and (3) of paragraph FCC 2.1055

(b) Frequency measurements shall be made at the extremes of the specified temperature range and at intervals of not more than 10° centigrade through the range. A period of time sufficient to stabilize all of the components of the oscillator circuit at each temperature level shall be allowed prior to frequency measurement. The short-term transient effects on the frequency of the transmitter due to keying (except for broadcast transmitters) and any heating element cycling normally occurring at each ambient temperature level also shall be shown. Only the portion or portions of the transmitter containing the frequency determining and stabilizing circuitry need be subjected to the temperature variation test.

(d) The frequency stability shall be measured with variation of primary supply voltage as follows:

(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

(2) For hand carried, battery powered equipment, reduce primary supply voltage to the battery operating end point, which shall be specified by the manufacturer.

(3) The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided. Effects on frequency of transmitter keying (except for broadcast transmitters) and any heating element cycling at the nominal supply voltage and at each extreme also shall be shown.

(e) When deemed necessary, the Commission may require tests of frequency stability under conditions in addition to those specifically set out in paragraphs (a), (b), (c) and (d) of this section. (For example, measurements showing the effect of proximity to large metal objects, or of various types of antennas, may be required for portable equipment.)

**Test Set up**

Connect the Base Station to the Universal Radio Communication Tester R&S CMU300 via the antenna connector. Then measure the frequency error by the R&S CMU300. The Other antenna output ports were matched with 50 Ω match loads.

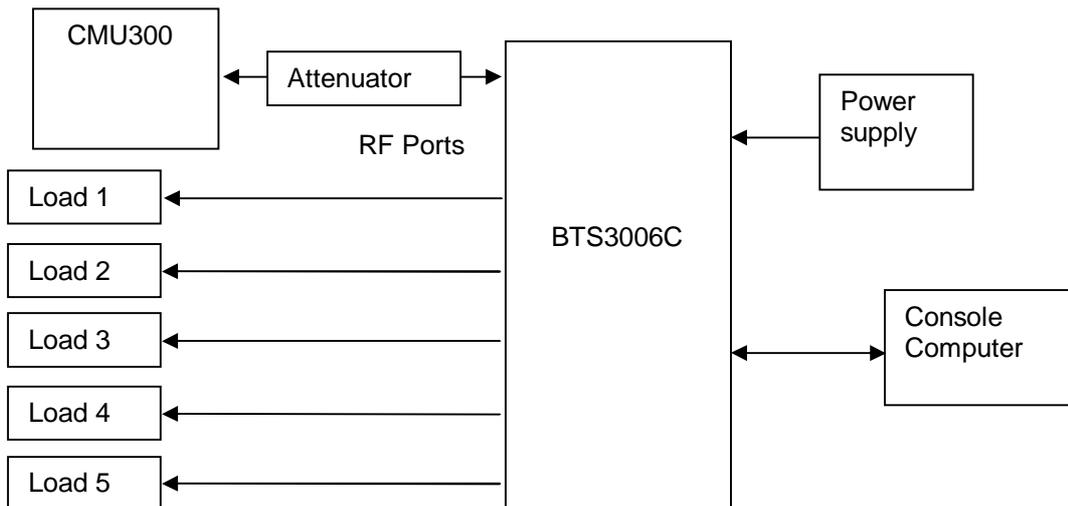


Figure 8. Test Set up

**6.7.4 Measurement Results**

**6.7.4.1 Measurement Results vs. Variation of Temperature (DC Power Supply)**

TM1:

table 51. Measurement Results for TM1

TEST CONDITIONS	Frequency Stability
-----------------	---------------------

			GMSK		
			Measured Max. Frequency Error		Limit (ppm)
			Hz	ppm	
CH 190 (M) 881.6MHz	$V_{nom} (-48 V_{dc})$	-30 °C	11	0.012	$< \pm 0.05$
		-20 °C	-8	-0.009	$< \pm 0.05$
		-10 °C	-6	-0.006	$< \pm 0.05$
		0 °C	8	0.009	$< \pm 0.05$
		+10 °C	-12	-0.013	$< \pm 0.05$
		+20 °C	8	0.009	$< \pm 0.05$
		+30 °C	-11	-0.012	$< \pm 0.05$
		+40 °C	-11	-0.012	$< \pm 0.05$
		+50 °C	7	0.007	$< \pm 0.05$

TM2:

table 52. Measurement Results for TM2

TEST CONDITIONS			Frequency Stability		
			8PSK		
			Measured Max. Frequency Error		Limit (ppm)
			Hz	ppm	
CH 190 (M) 881.6MHz	$V_{nom} (-48 V_{dc})$	-30 °C	-16	-0.018	$< \pm 0.05$
		-20 °C	-16	-0.018	$< \pm 0.05$
		-10 °C	-12	-0.013	$< \pm 0.05$
		0 °C	13	0.014	$< \pm 0.05$
		+10 °C	-14	-0.015	$< \pm 0.05$
		+20 °C	-15	-0.017	$< \pm 0.05$
		+30 °C	-10	-0.011	$< \pm 0.05$
		+40 °C	-14	-0.015	$< \pm 0.05$
		+50 °C	13	0.014	$< \pm 0.05$

### 6.7.4.2 Measurement Results vs. Variation of Voltage (DC Power Supply)

TM1:

table 53. Measurement Results for TM1

TEST CONDITIONS			Frequency Stability		
			GMSK		
			Measured Max. Frequency Error		Limit (ppm)
			Hz	ppm	
CH 190 (M) 881.6MHz	$T_{nom} (20^{\circ}C)$	$85\%V_{nom} (-40V)$	7	0.007	$< \pm 0.05$
		$V_{nom} (-48V)$	9	0.010	$< \pm 0.05$
		$115\%V_{nom} (-60V)$	6	0.006	$< \pm 0.05$

TM2:

table 54. Measurement Results for TM2

TEST CONDITIONS			Frequency Stability		
			8PSK		
			Measured Max.		Limit (ppm)
			Hz	ppm	

		Frequency Error			
		Hz	ppm		
CH 190 (M) 881.6MHz	T <sub>nom</sub> (20°C)	85%V <sub>nom</sub> (-40V)	-10	-0.011	< ±0.05
		V <sub>nom</sub> (-48V)	-15	-0.017	< ±0.05
		115%V <sub>nom</sub> (-60V)	16	0.018	< ±0.05

**6.7.4.3 Measurement Results vs. Variation of Temperature (AC Power Supply)**

TM1:

table 55. Measurement Results for TM1

TEST CONDITIONS			Frequency Stability			
			GMSK			Limit (ppm)
			Measured Max. Frequency Error			
			Hz	ppm		
CH 190 (M) 881.6MHz	V <sub>nom</sub> (110Vac)	-30 °C	-10	-0.011	< ±0.05	
		-20 °C	11	0.012	< ±0.05	
		-10 °C	7	0.007	< ±0.05	
		0 °C	6	0.006	< ±0.05	
		+10 °C	-8	-0.009	< ±0.05	
		+20 °C	-7	-0.007	< ±0.05	
		+30 °C	-7	-0.007	< ±0.05	
		+40 °C	-6	-0.006	< ±0.05	
		+50 °C	-10	-0.011	< ±0.05	

TM2:

table 56. Measurement Results for TM2

TEST CONDITIONS			Frequency Stability			
			8PSK			Limit (ppm)
			Measured Max. Frequency Error			
			Hz	ppm		
CH 190 (M) 881.6MHz	V <sub>nom</sub> (110Vac)	-30 °C	10	0.011	< ±0.05	
		-20 °C	-14	-0.015	< ±0.05	
		-10 °C	-11	-0.012	< ±0.05	
		0 °C	12	0.013	< ±0.05	
		+10 °C	12	0.013	< ±0.05	
		+20 °C	-11	-0.012	< ±0.05	
		+30 °C	9	0.010	< ±0.05	
		+40 °C	-15	-0.017	< ±0.05	
		+50 °C	-10	-0.011	< ±0.05	

**6.7.4.4 Measurement Results vs. Variation of Voltage (AC Power Supply)**

TM1:

table 57. Measurement Results for TM1

TEST CONDITIONS		Frequency Stability	
		GMSK	
		Measured Max. Frequency Error	Limit (ppm)

			Hz	ppm	
CH 190 (M) 881.6MHz	T <sub>nom</sub> (20°C)	85%V <sub>nom</sub> (85Vac)	<b>5</b>	<b>0.005</b>	<b>&lt; ±0.05</b>
		V <sub>nom</sub> (110Vac)	<b>-8</b>	<b>-0.009</b>	<b>&lt; ±0.05</b>
		115%V <sub>nom</sub> (300Vac)	<b>-7</b>	<b>-0.007</b>	<b>&lt; ±0.05</b>

TM2:

table 58. Measurement Results for TM2

TEST CONDITIONS		Frequency Stability			
		8PSK			
		Measured Max. Frequency Error		Limit (ppm)	
		Hz	ppm		
CH 190 (M) 881.6MHz	T <sub>nom</sub> (20°C)	85%V <sub>nom</sub> (85Vac)	<b>-12</b>	<b>-0.013</b>	<b>&lt; ±0.05</b>
		V <sub>nom</sub> (110Vac)	<b>10</b>	<b>0.011</b>	<b>&lt; ±0.05</b>
		115%V <sub>nom</sub> (300Vac)	<b>-13</b>	<b>-0.014</b>	<b>&lt; ±0.05</b>

### 6.7.5 Conclusion

The equipment **PASSED** the requirement of this clause.

## 7 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 as following:

table 59. System Measurement Uncertainty

Items		Extended Uncertainty
Band Width	Magnitude (%)	U=0.2%; k=2
Band Edge Compliance	Disturbance Power(dBm)	U= 2.0dB; k=2
Conducted Spurious Emission at Antenna Terminal	Disturbance Power(dBm)	U= 2.0dB; k=2
Field Strength of Spurious Radiation	ERP (dBm)(30MHz~1G)	U=4.6dB; k=2
	ERP (dBm) (>1G)	U=3dB; k=2
Frequency Stability	Frequency Accuracy(ppm)	U= 0.21ppm; k=2
Conducted Output Power	Power(dBm)	U=0.39dB; k=2

## 8 Appendices

Appendix A	Measurement Results Modulation Characteristics	01 - 03	page
Appendix B	Measurement Results Occupied Bandwidth	04 - 10	page
Appendix C	Measurement Results Band Edges	11 - 15	page
Appendix D	Measurement Results Spurious Emission at Antenna Terminal	16 - 40	page
Appendix E	Measurement Results Radiated Spurious Emission	41 - 42	page
Appendix F	Photos of Test Setup	43 - 45	page

--- END OF REPORT ---

## Appendix A

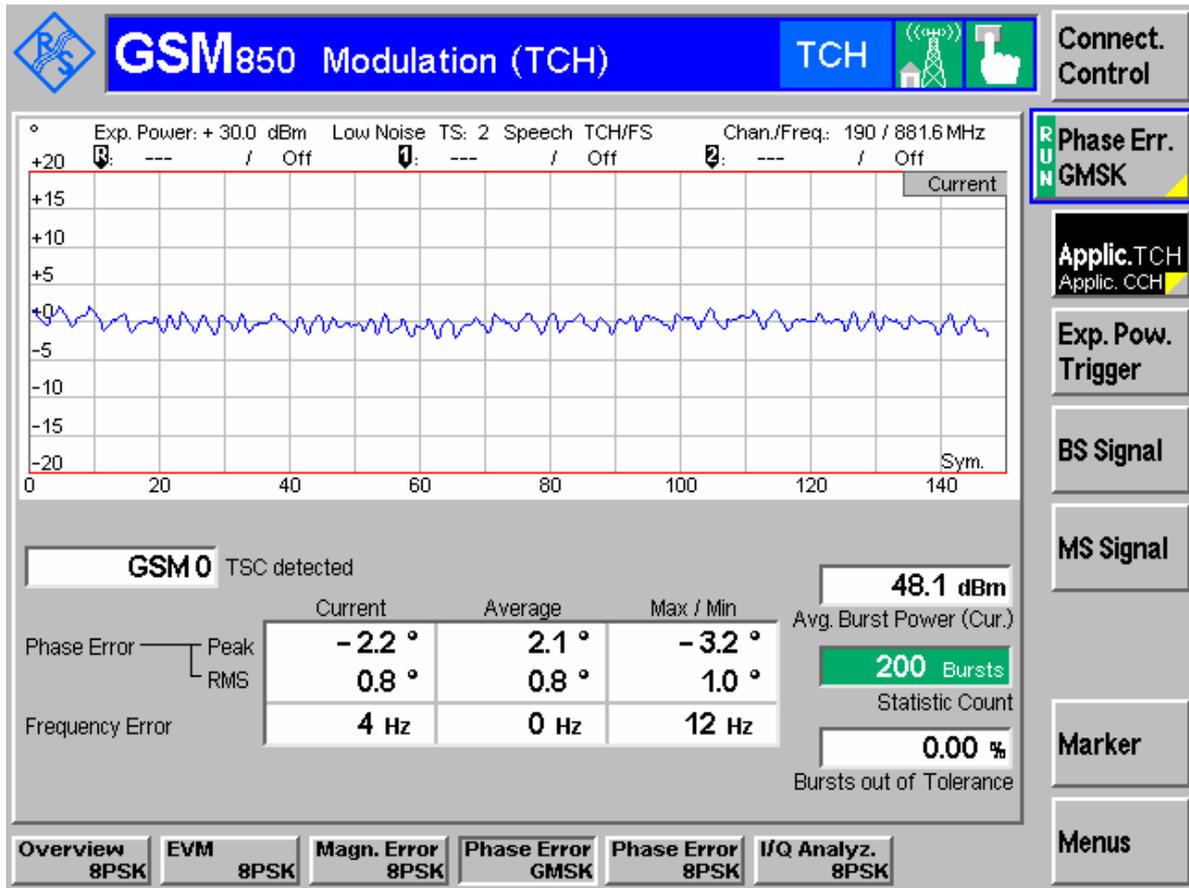
# Modulation Characteristic Measurement

According to CFR 47 (FCC) part 2.1047

According to IC RSS-132 clause 4.2

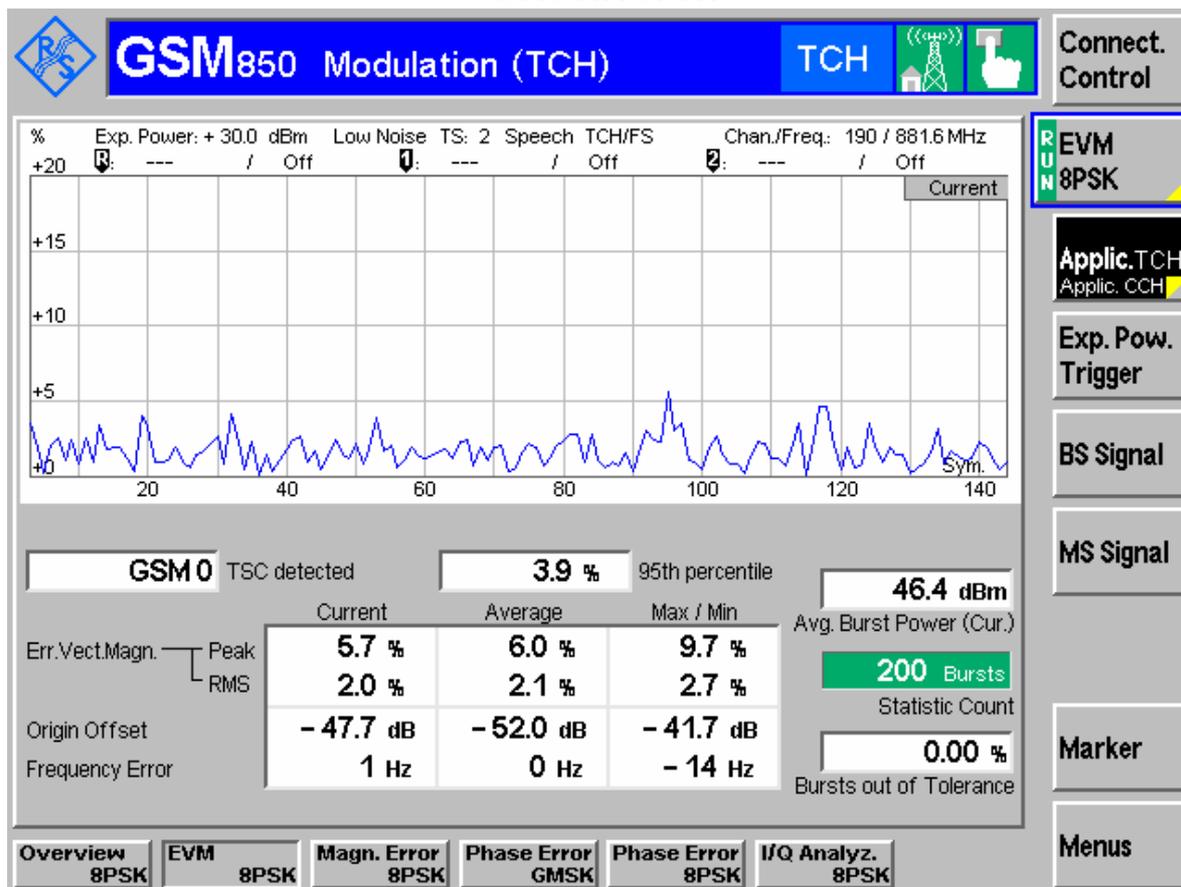
TM1 (GSM/GPRS):

Channel M



TM2 (EDGE):

### Channel M

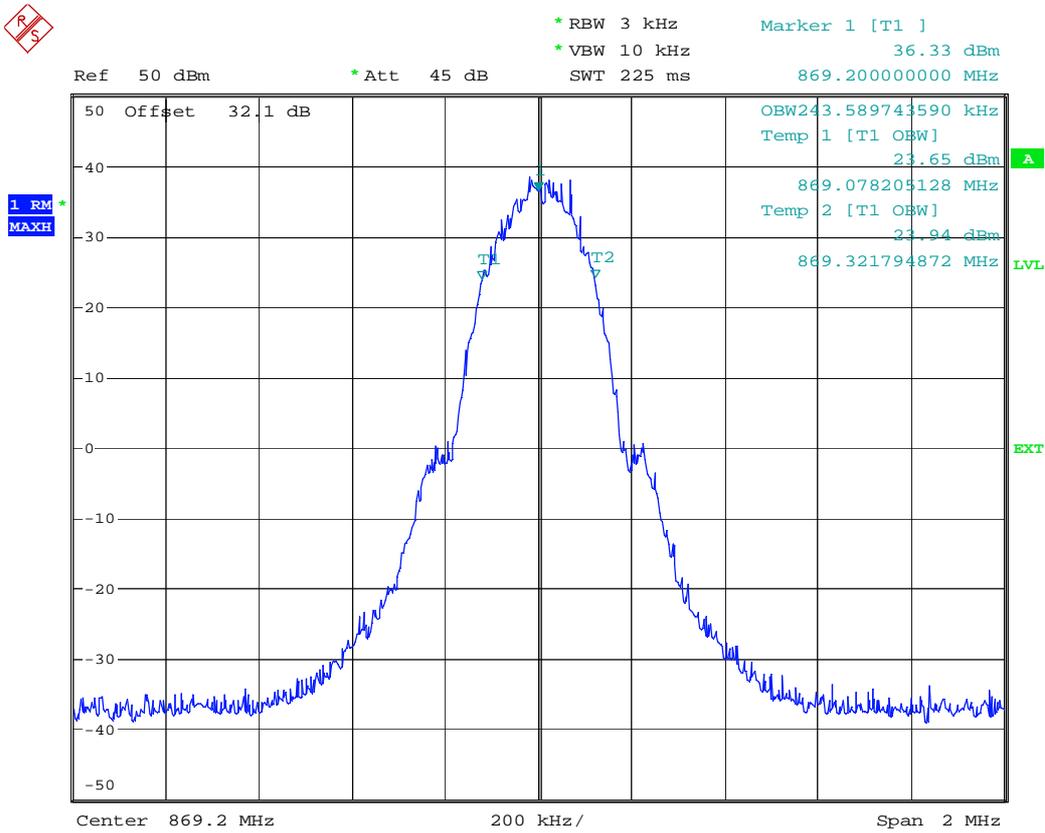


## Appendix B

# Occupied Bandwidth Measurement

According to CFR 47 (FCC) part 2.1049

# TM1 (GSM/GPRS):

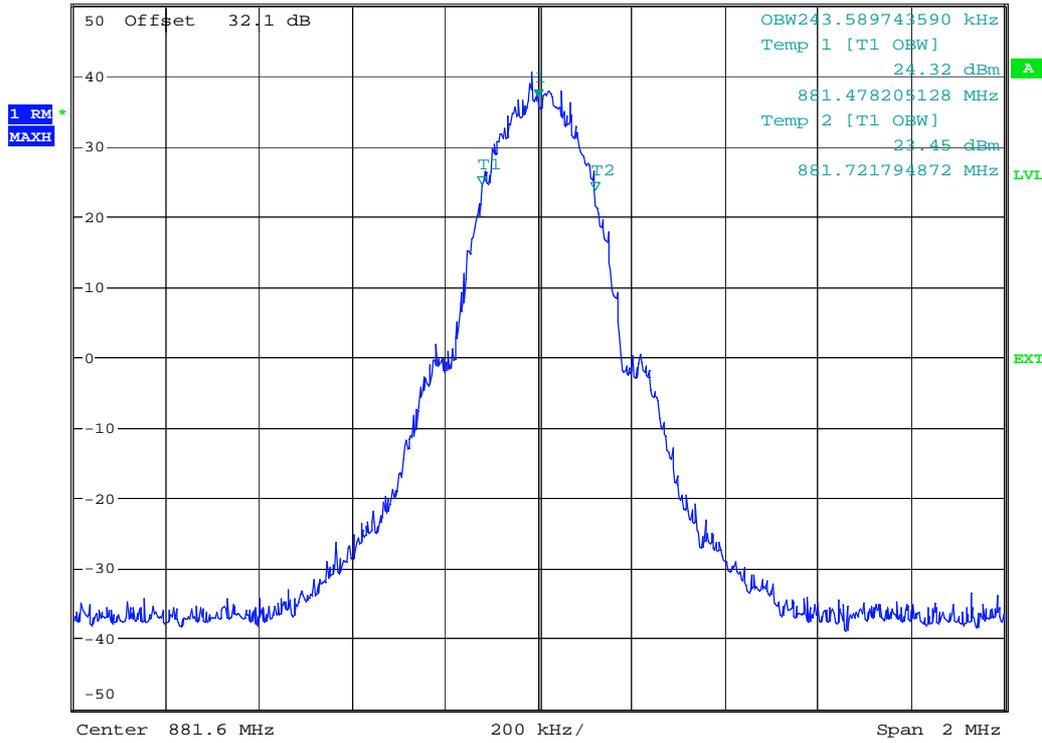


Date: 30.SEP.2007 04:09:21

## Channel B



Ref 50 dBm      \* Att 45 dB      \* RBW 3 kHz      Marker 1 [T1]      36.72 dBm  
 \* VBW 10 kHz      SWT 225 ms      881.60000000 MHz

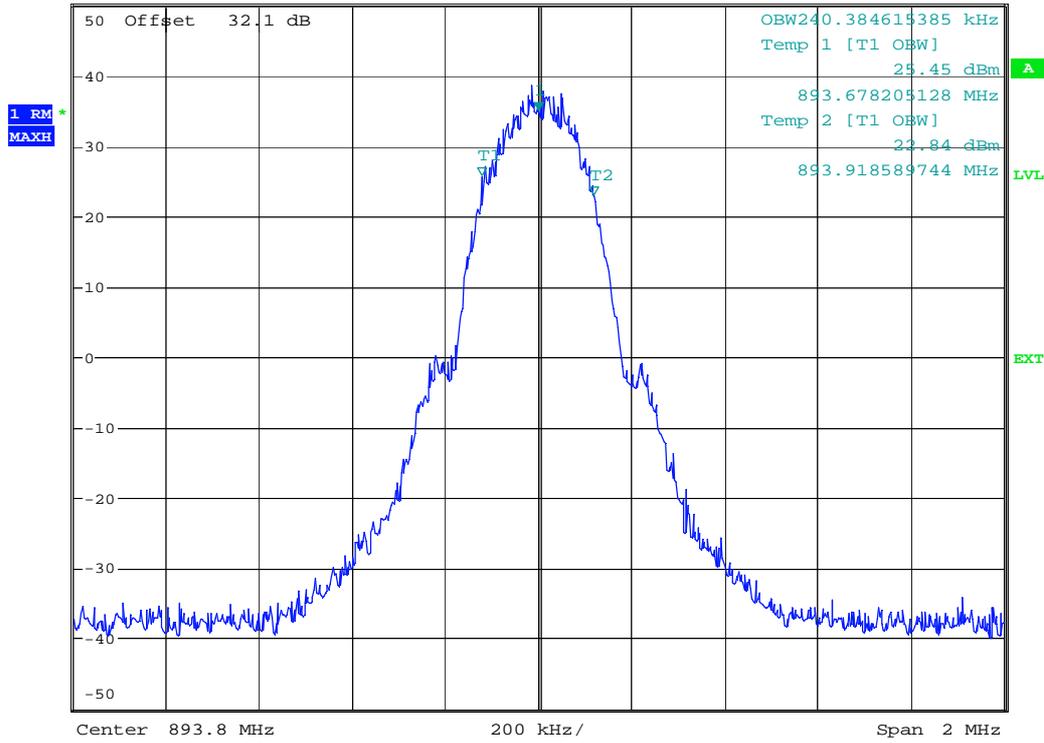


Date: 30.SEP.2007 04:13:18

## Channel M



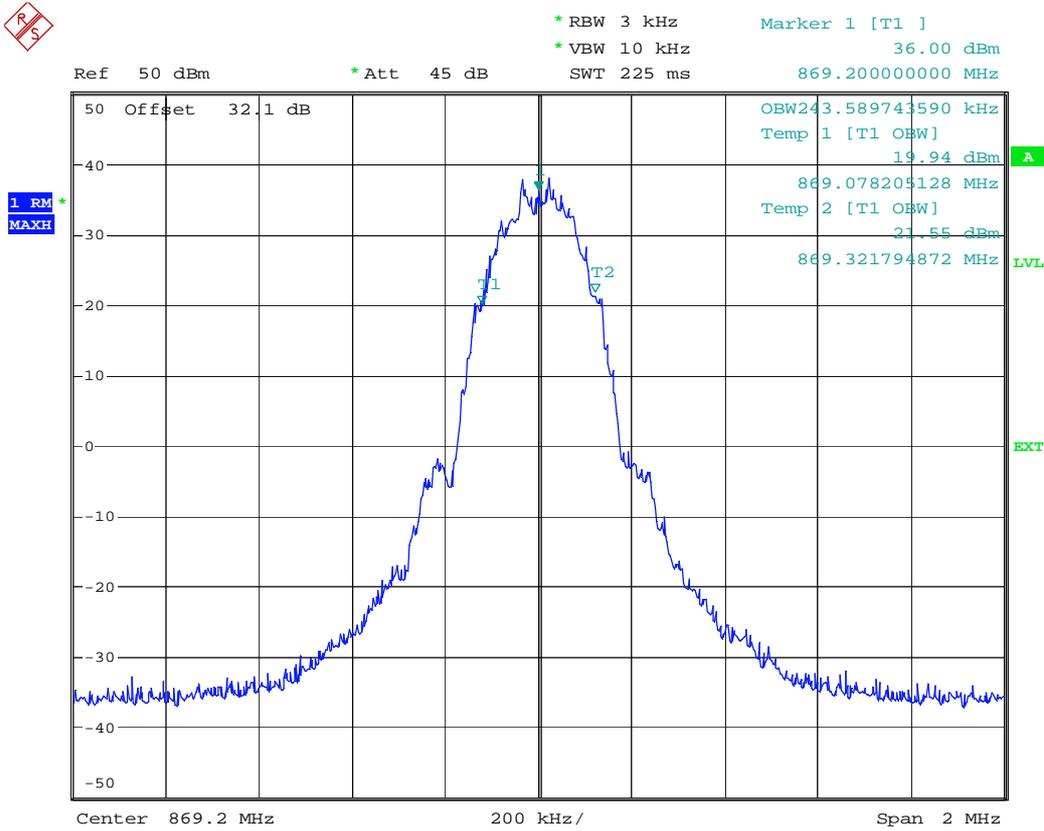
Ref 50 dBm      \* Att 45 dB      \* RBW 3 kHz      Marker 1 [T1]      34.84 dBm  
 \* VBW 10 kHz      SWT 225 ms      893.80000000 MHz



Date: 30.SEP.2007 04:15:23

## Channel T

# TM2 (EDGE):



Date: 30.SEP.2007 04:12:10

## Channel B

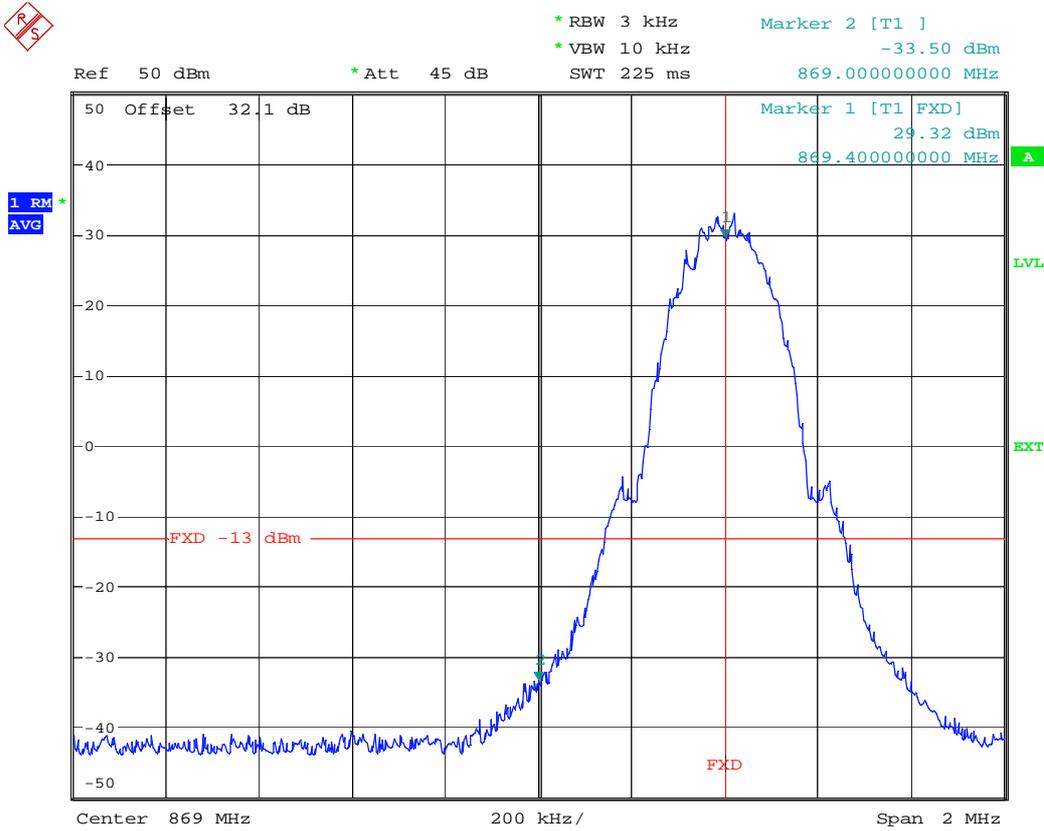




## Appendix C

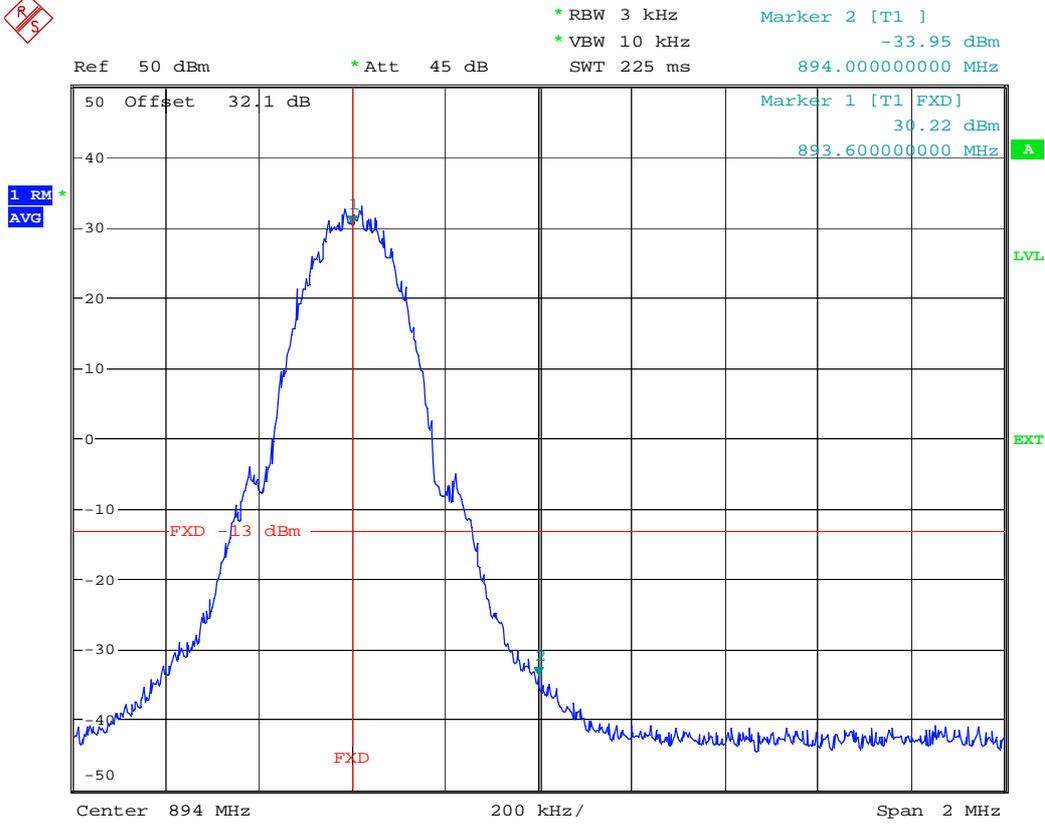
### Band Edge Measurements According to FCC Part 2.1051 & 22.917 According to IC RSS-132 clause 4.5

# TM1 (GSM/GPRS):



Date: 30.SEP.2007 04:56:13

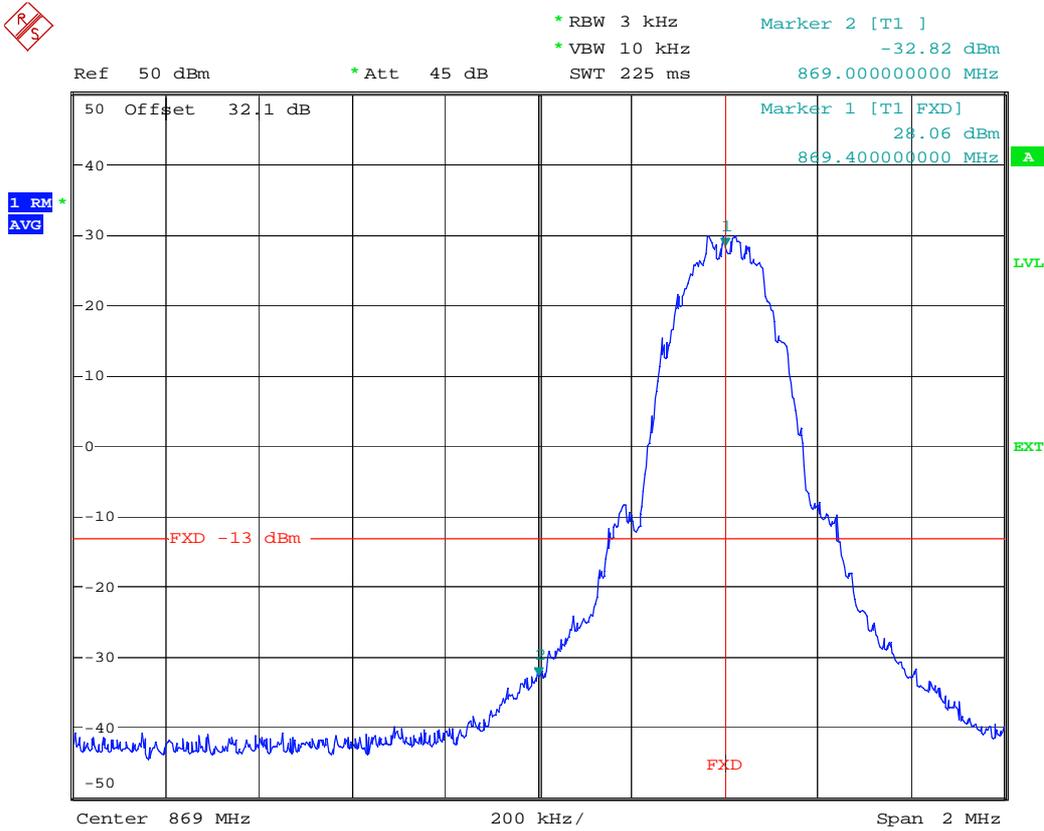
## Channel B



Date: 30.SEP.2007 04:59:25

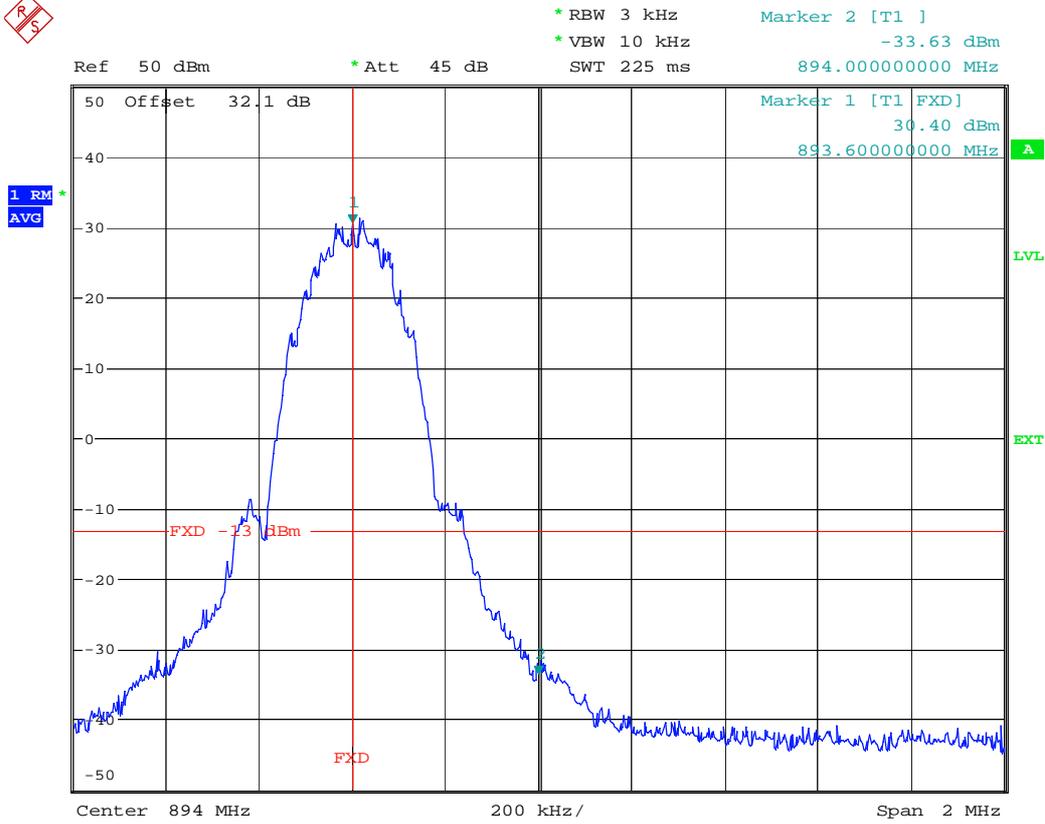
# Channel T

# TM2 (EDGE):



Date: 30.SEP.2007 04:57:21

## Channel B



Date: 30.SEP.2007 05:00:21

# Channel T

## Appendix D

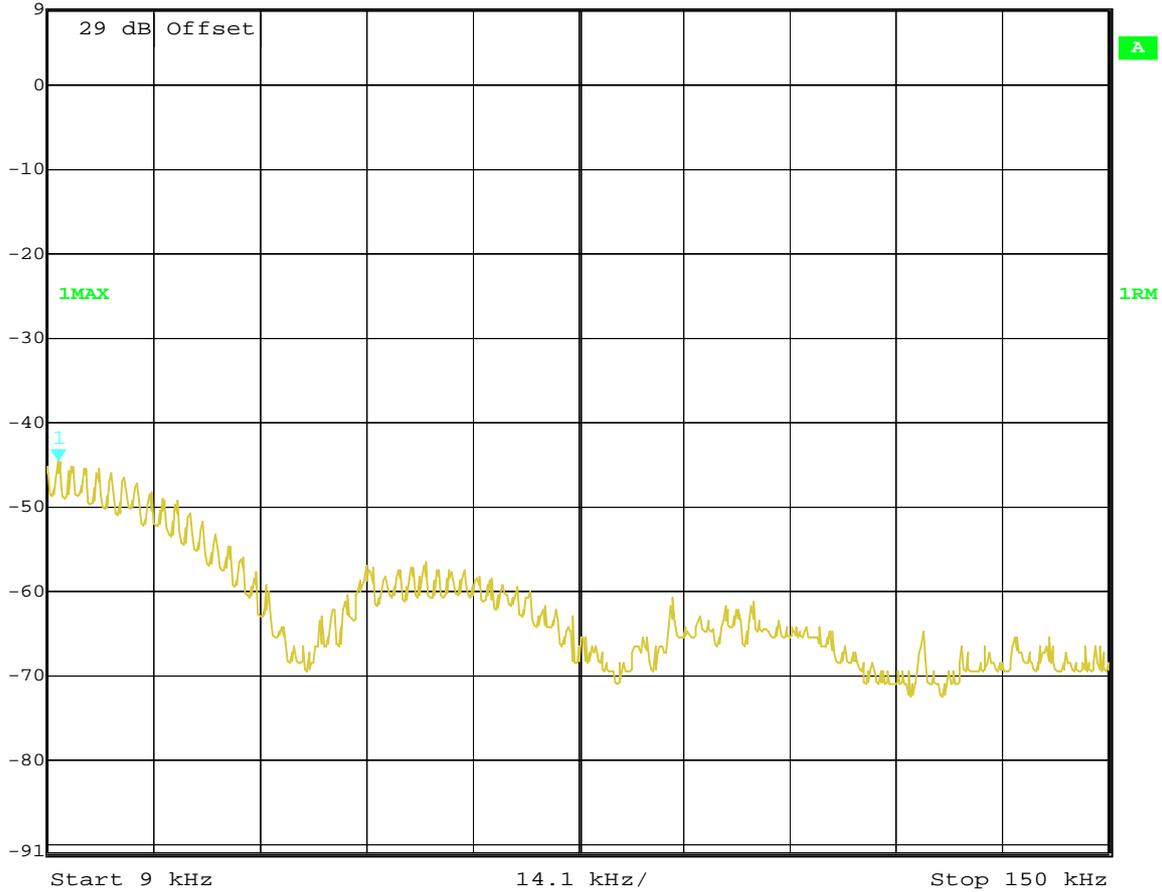
# Conducted Spurious Emission Measurements

According to FCC Part 2.1051 & 22.917  
According to IC RSS-132 clause 4.5

# TM1 (GSM/GPRS):

## Channel B

 Marker 1 [T1] RBW 1 kHz RF Att 10 dB  
Ref Lvl -44.56 dBm VBW 3 kHz  
9 dBm 10.41282565 kHz SWT 360 ms Unit dBm

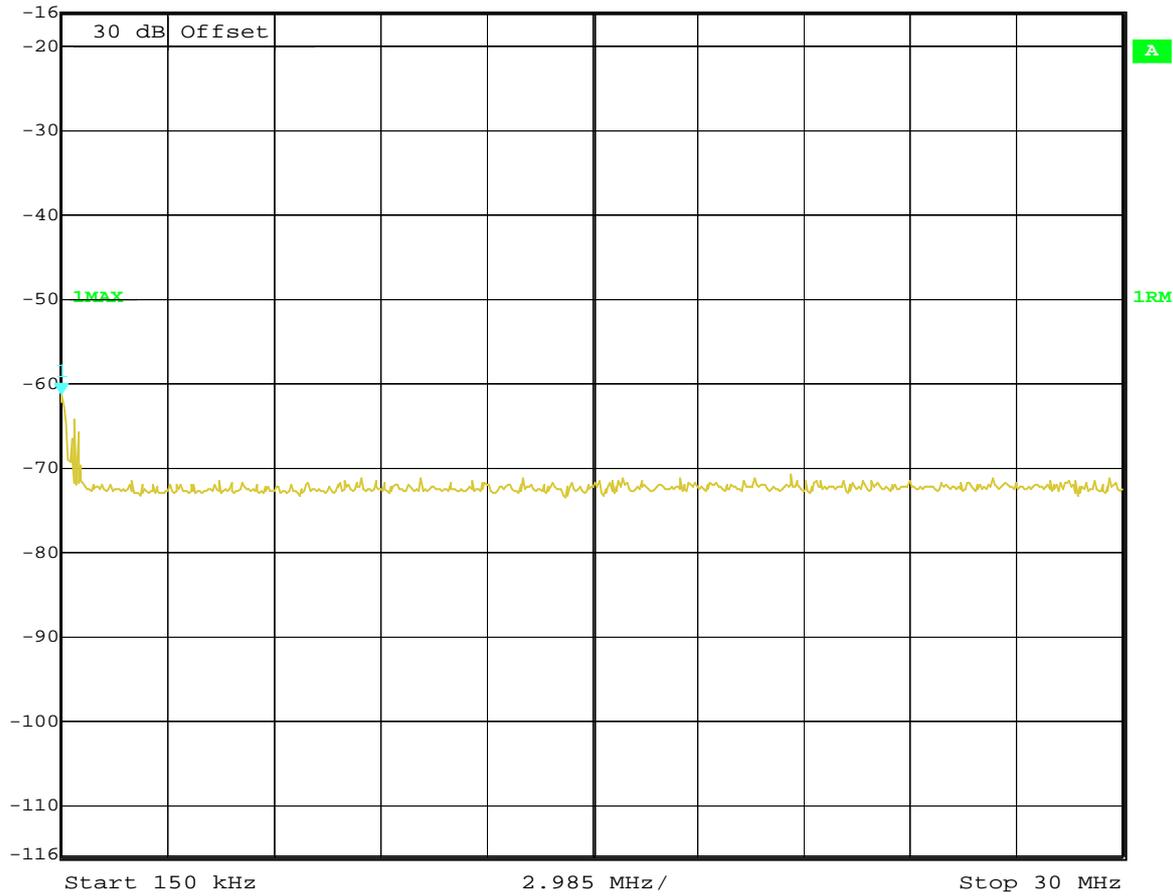


Date: 9.OCT.2007 02:22:59

### (9K to 150K)



Marker 1 [T1] RBW 10 kHz RF Att 10 dB  
Ref Lvl -61.30 dBm VBW 30 kHz  
-16 dBm 150.0000000 kHz SWT 760 ms Unit dBm

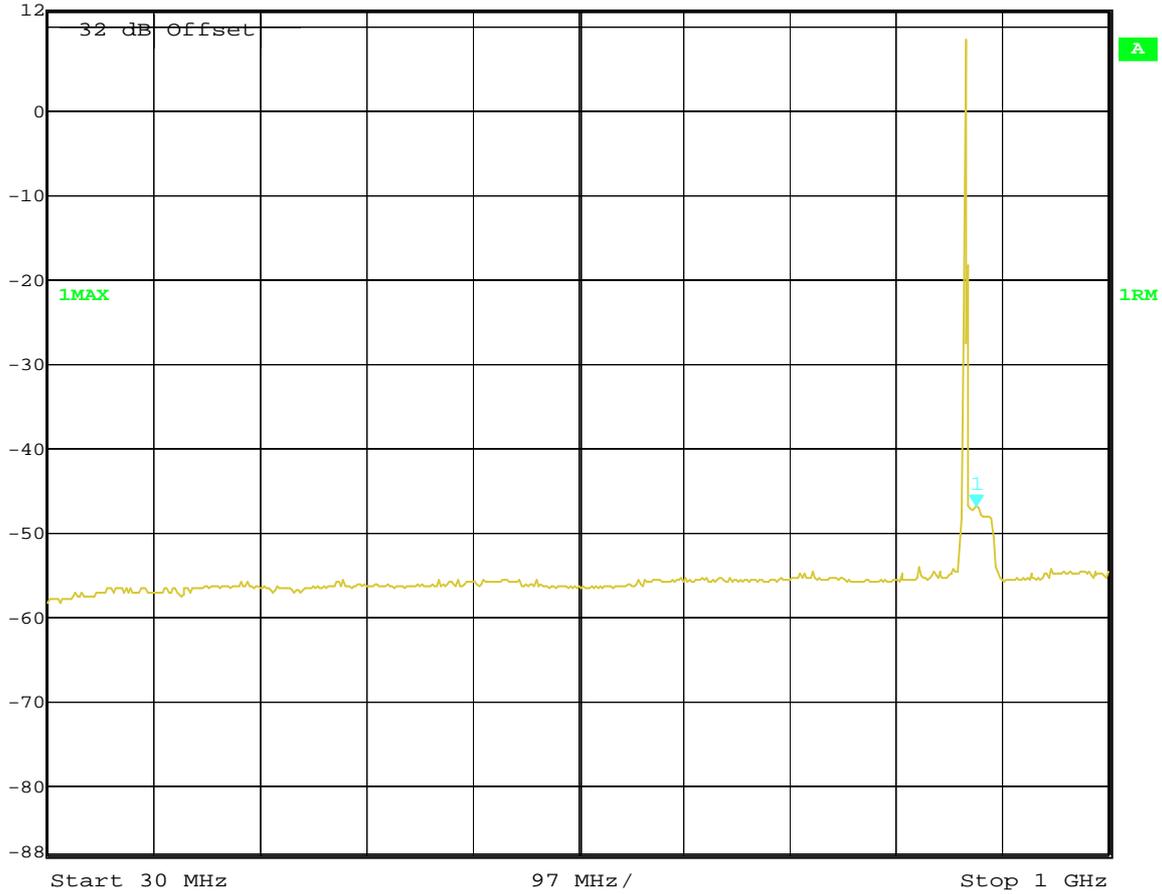


Date: 9.OCT.2007 02:29:59

(150K to 30M)



Marker 1 [T1] RBW 100 kHz RF Att 10 dB  
Ref Lvl -46.92 dBm VBW 300 kHz  
12 dBm 879.47895792 MHz SWT 245 ms Unit dBm

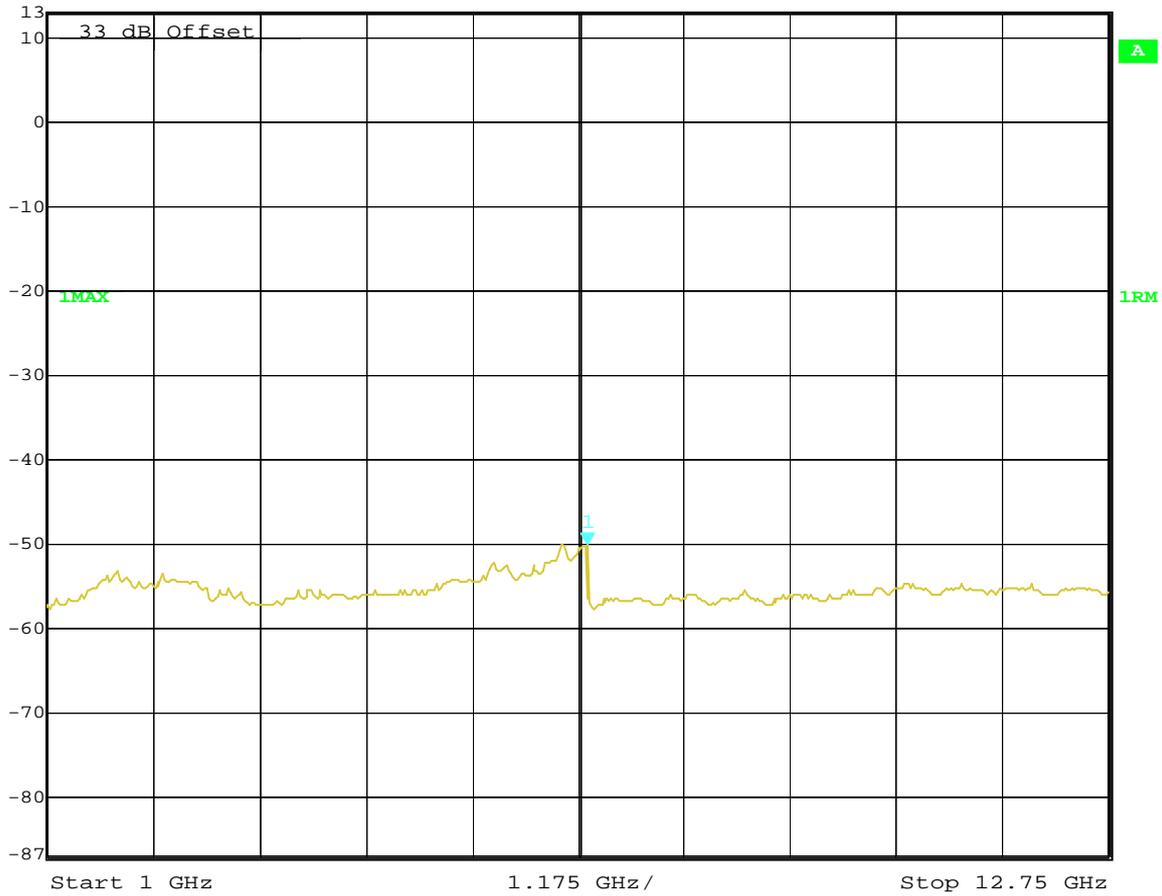


Date: 9.OCT.2007 02:41:47

(30M to 1G)



Marker 1 [T1] RBW 1 MHz RF Att 0 dB  
Ref Lvl -50.10 dBm VBW 3 MHz  
13 dBm 6.98096192 GHz SWT 68 ms Unit dBm



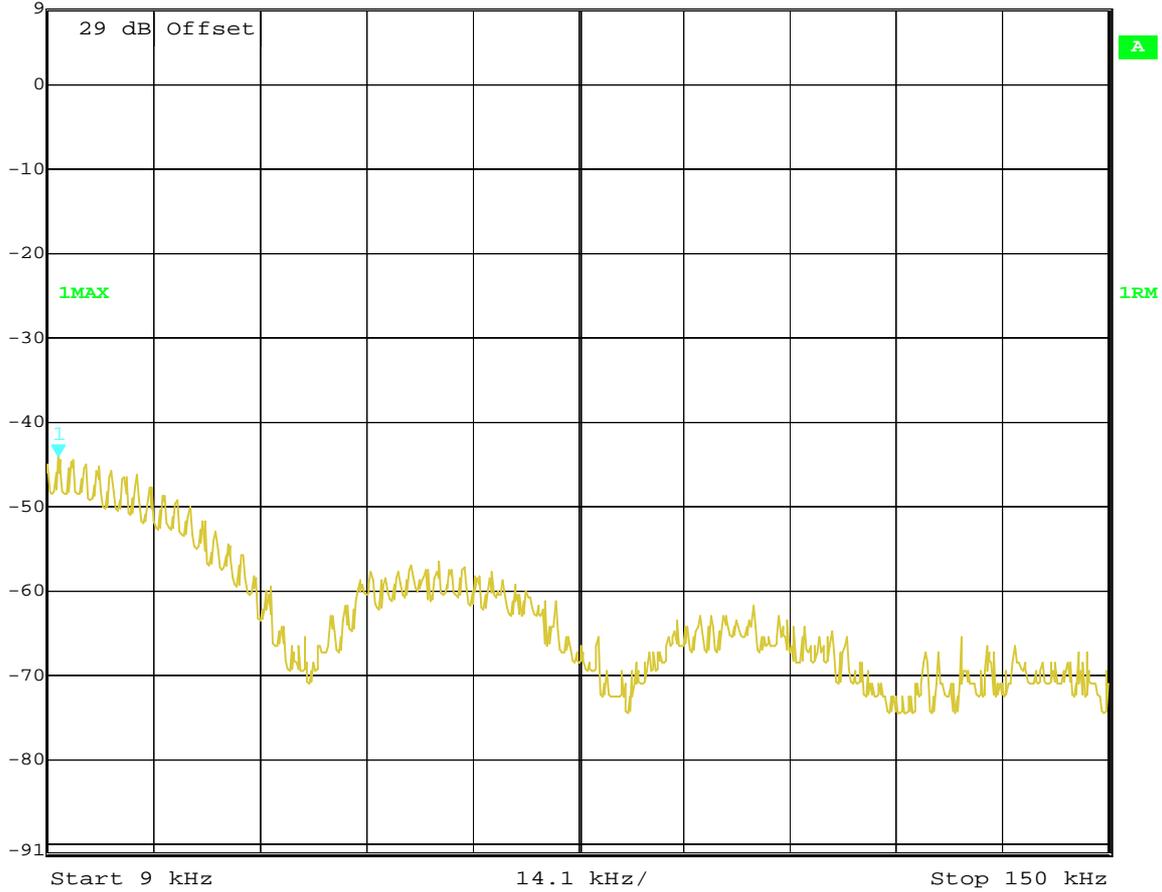
Date: 9.OCT.2007 03:23:35

(1G to 12.75G)

# Channel M

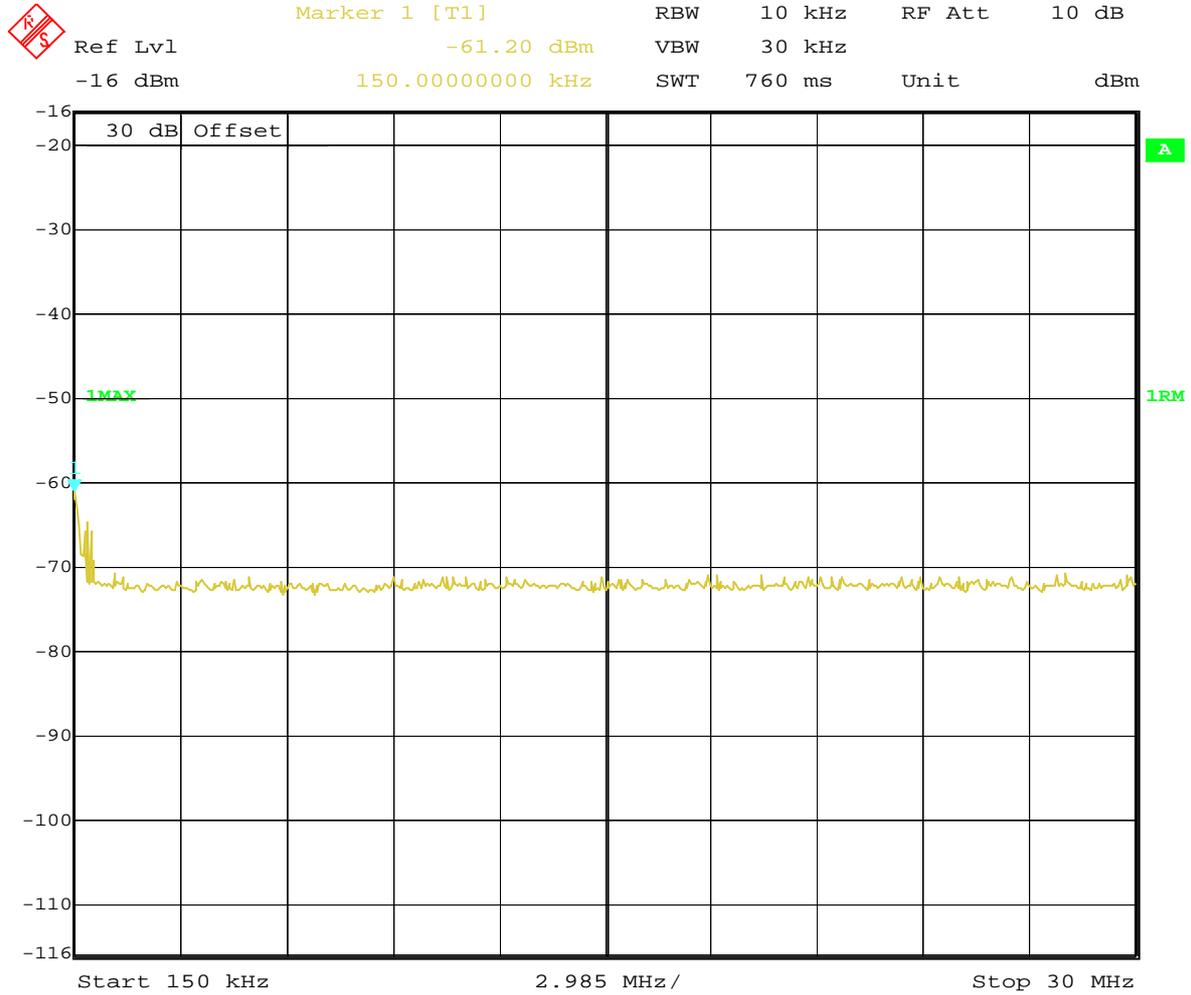


Ref Lvl 9 dBm  
Marker 1 [T1] -44.15 dBm  
RBW 1 kHz RF Att 10 dB  
VBW 3 kHz  
SWT 360 ms Unit dBm



Date: 9.OCT.2007 02:25:47

(9K to 150K)

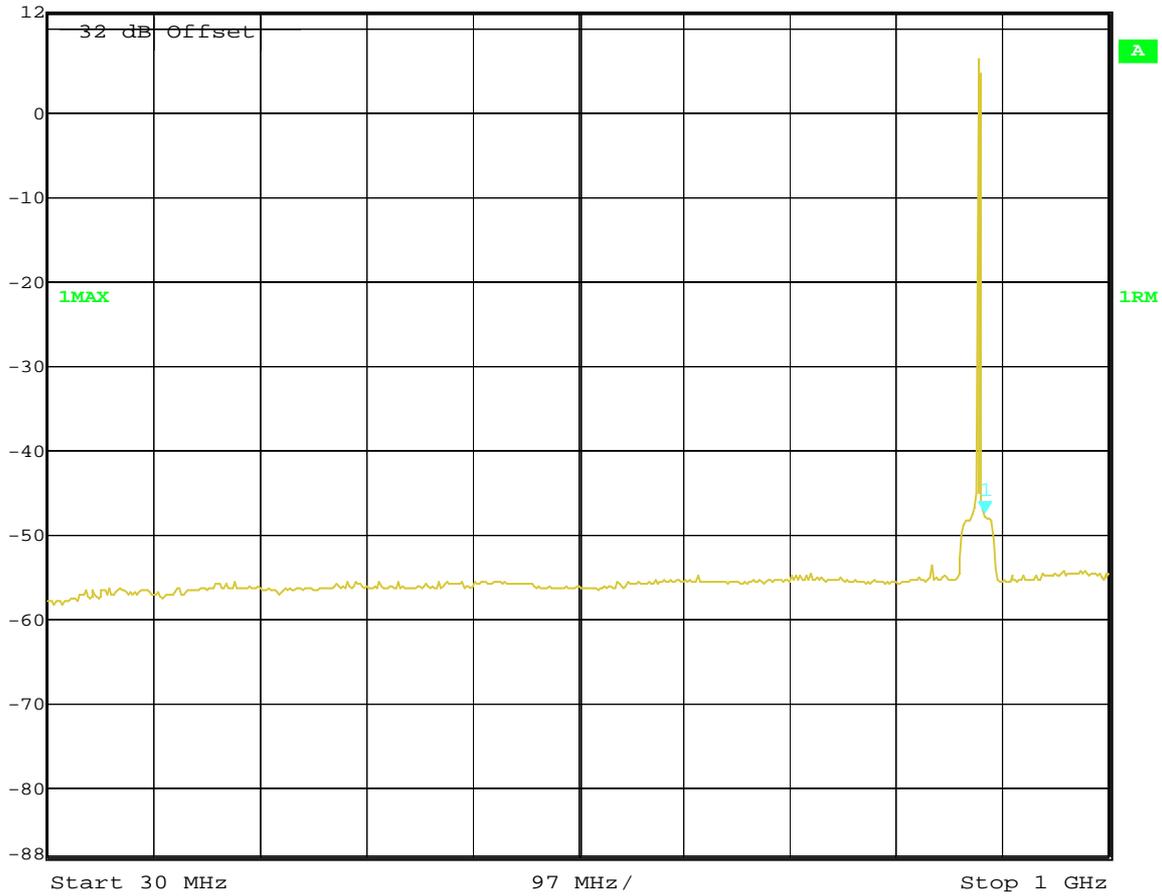


Date: 9.OCT.2007 02:31:55

(150K to 30M)



Marker 1 [T1] RBW 100 kHz RF Att 10 dB  
Ref Lvl -47.44 dBm VBW 300 kHz  
12 dBm 887.25450902 MHz SWT 245 ms Unit dBm

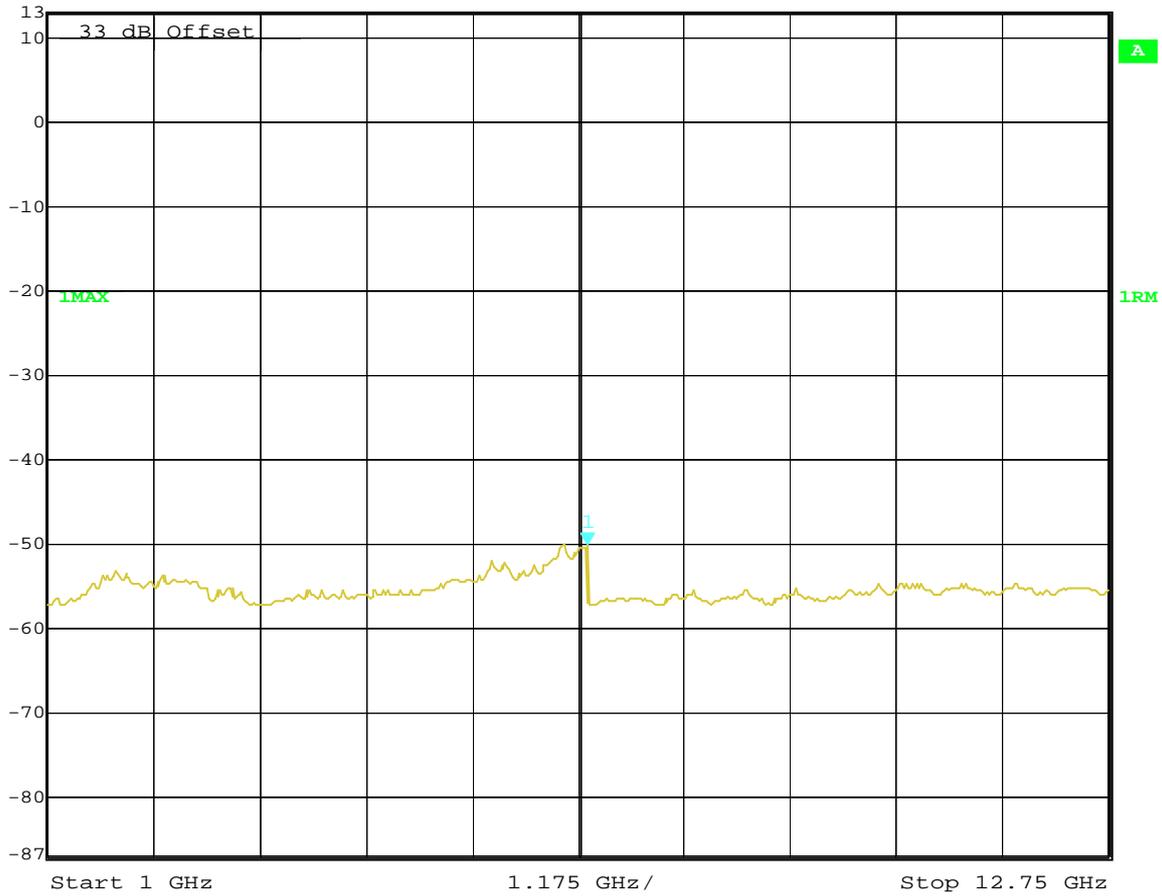


Date: 9.OCT.2007 02:44:00

(30M to 1G)



Marker 1 [T1] RBW 1 MHz RF Att 0 dB  
Ref Lvl -50.10 dBm VBW 3 MHz  
13 dBm 6.98096192 GHz SWT 68 ms Unit dBm



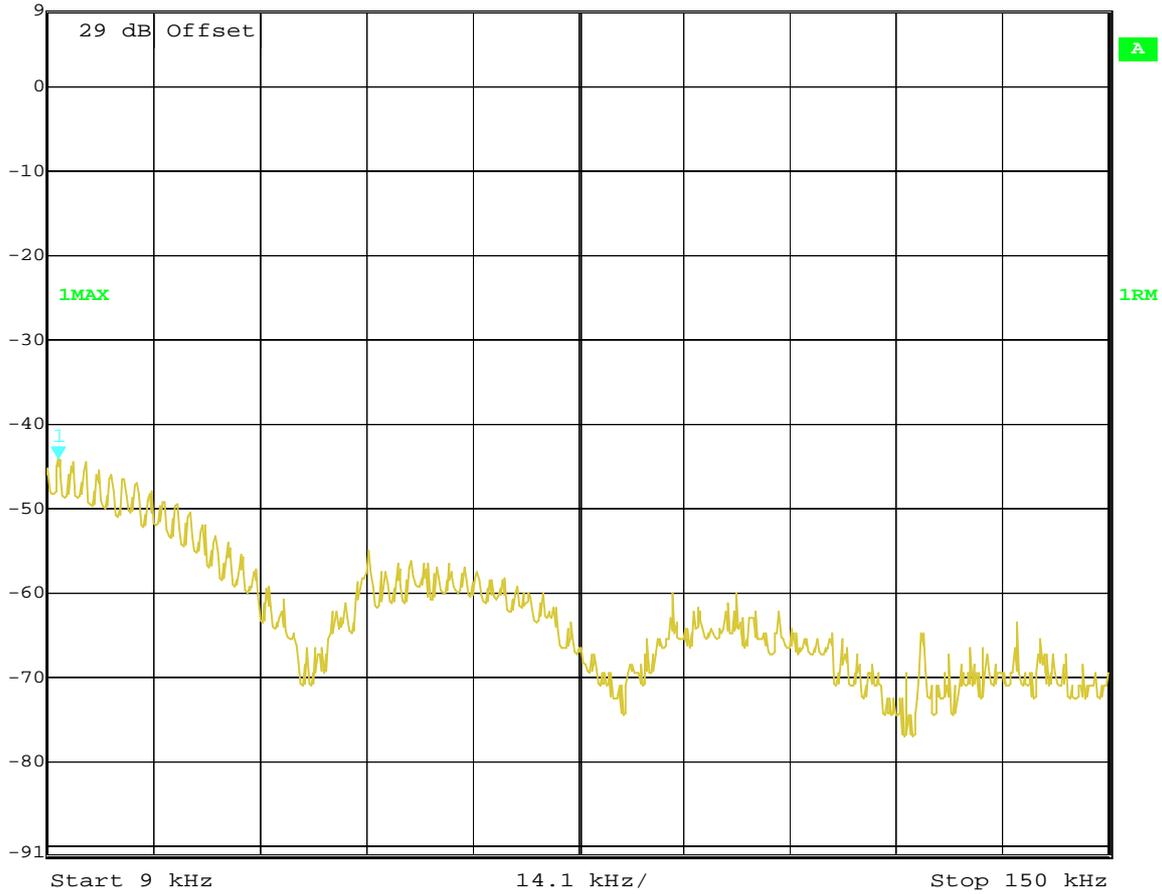
Date: 9.OCT.2007 03:19:51

(1G to 12.75G)

# Channel T



Marker 1 [T1]      RBW      1 kHz      RF Att      10 dB  
Ref Lvl      -44.22 dBm      VBW      3 kHz  
9 dBm      10.41282565 kHz      SWT      360 ms      Unit      dBm



Date: 9.OCT.2007 02:27:38

(9K to 150K)



Marker 1 [T1]

RBW 10 kHz RF Att 10 dB

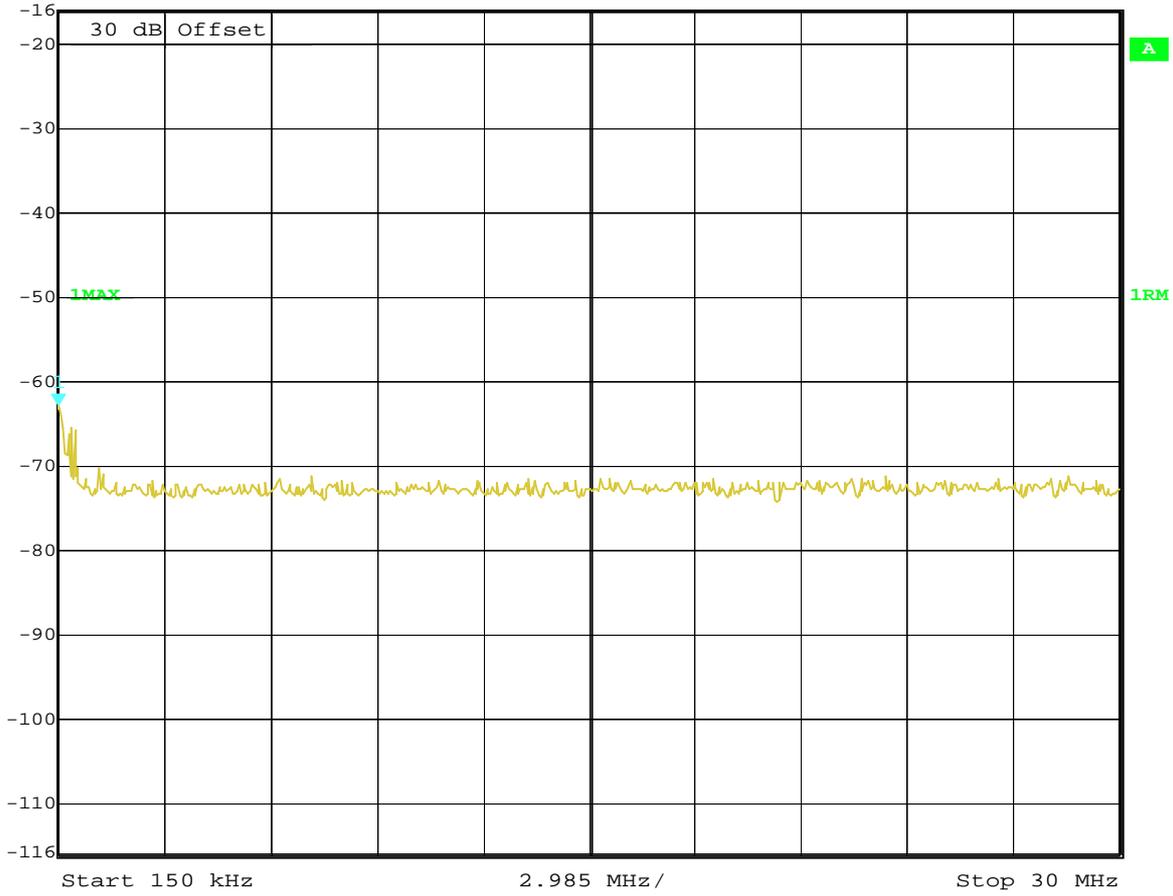
Ref Lvl -62.97 dBm

VBW 30 kHz

-16 dBm 150.0000000 kHz

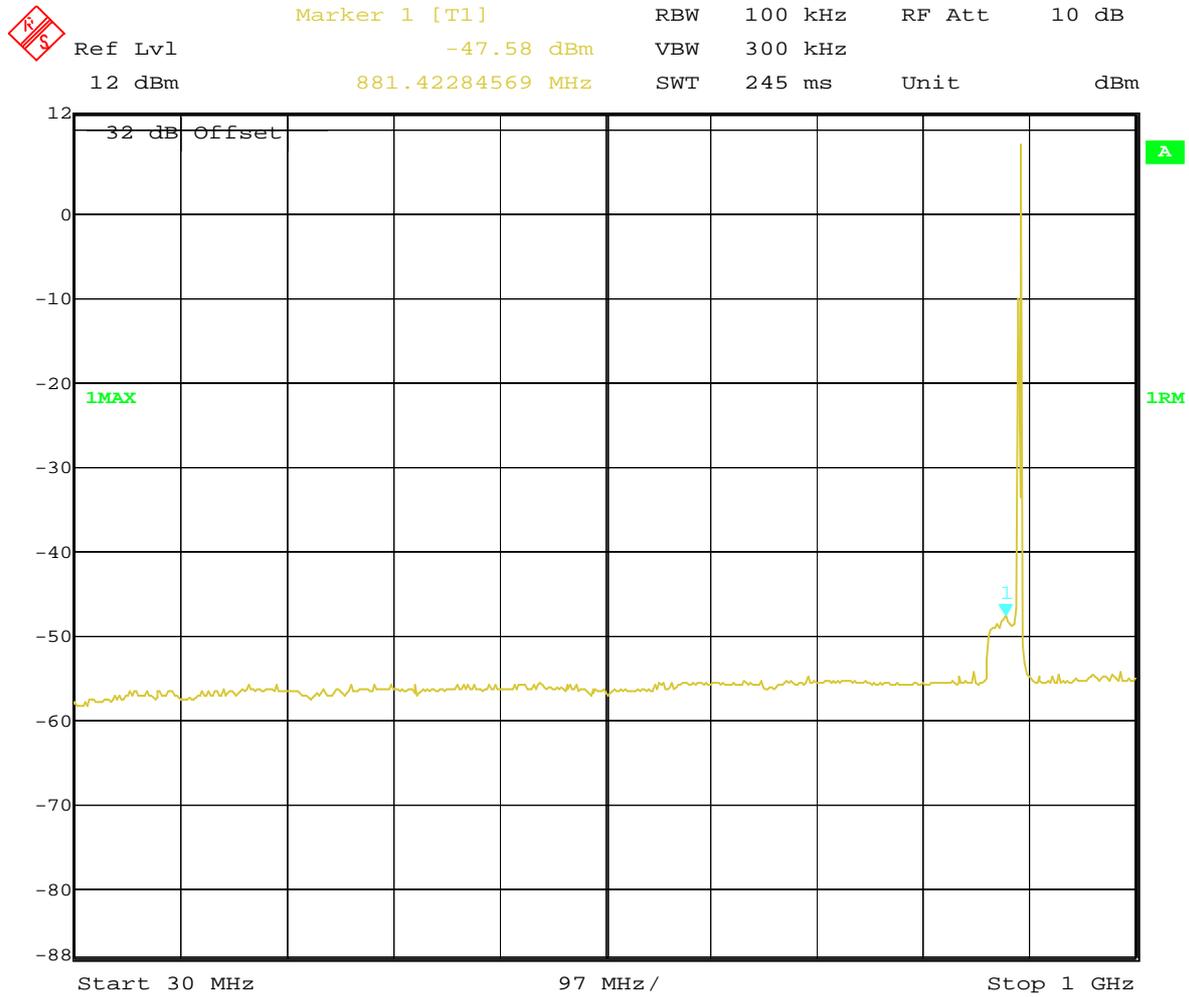
SWT 760 ms

Unit dBm



Date: 9.OCT.2007 02:38:17

(150K to 30M)

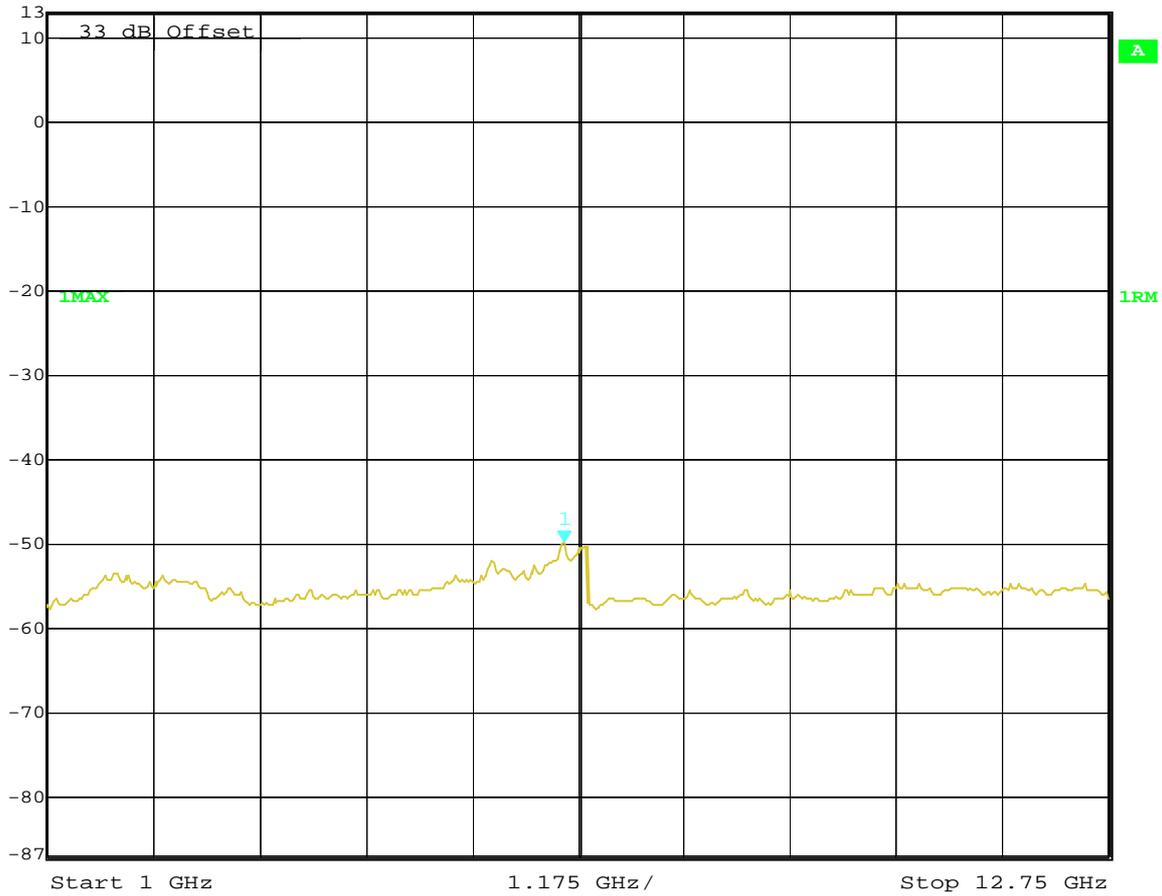


Date: 9.OCT.2007 02:45:20

(30M to 1G)



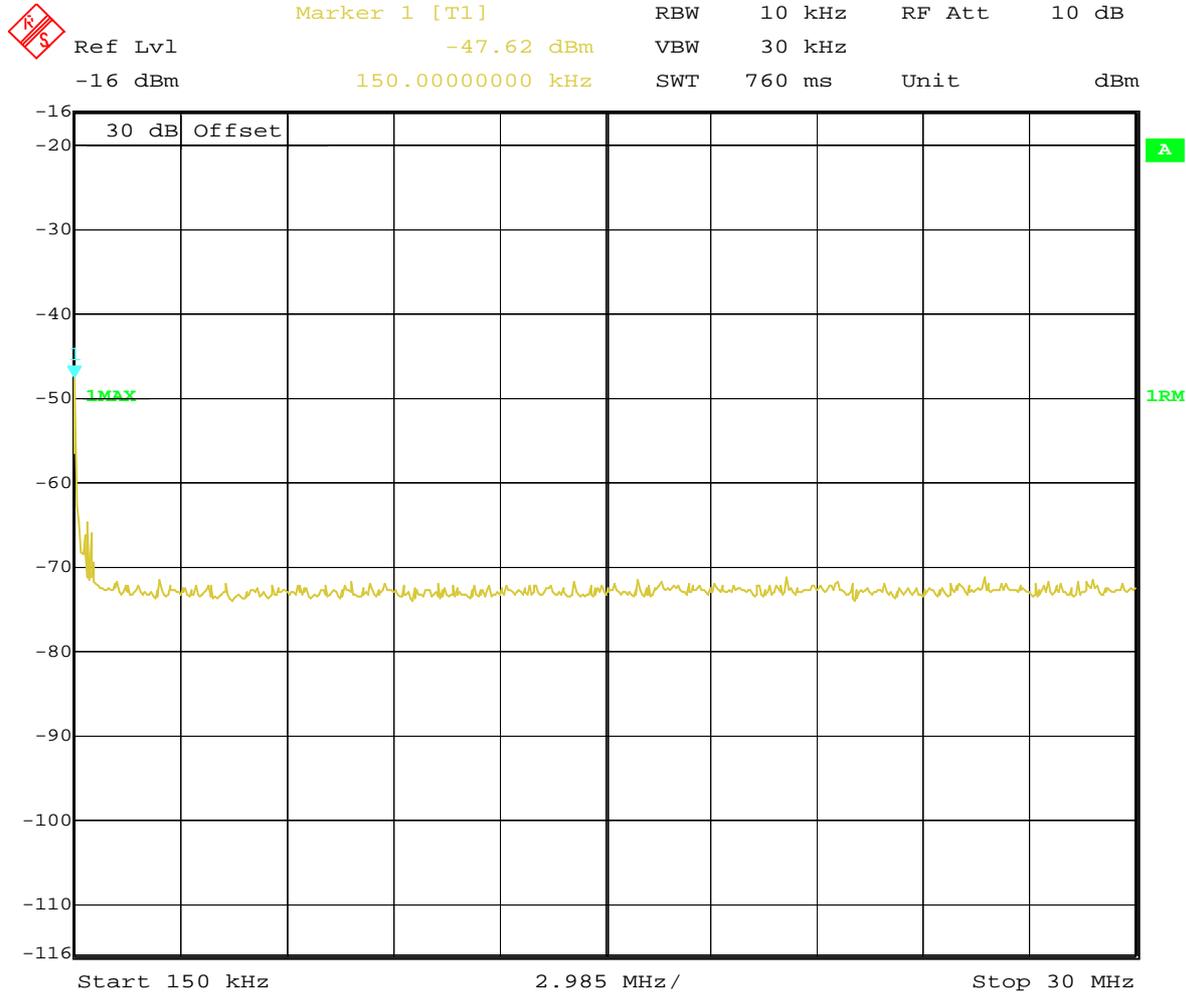
Marker 1 [T1] RBW 1 MHz RF Att 0 dB  
Ref Lvl -49.90 dBm VBW 3 MHz  
13 dBm 6.72194389 GHz SWT 68 ms Unit dBm



Date: 9.OCT.2007 03:28:06

(1G to 12.75G)



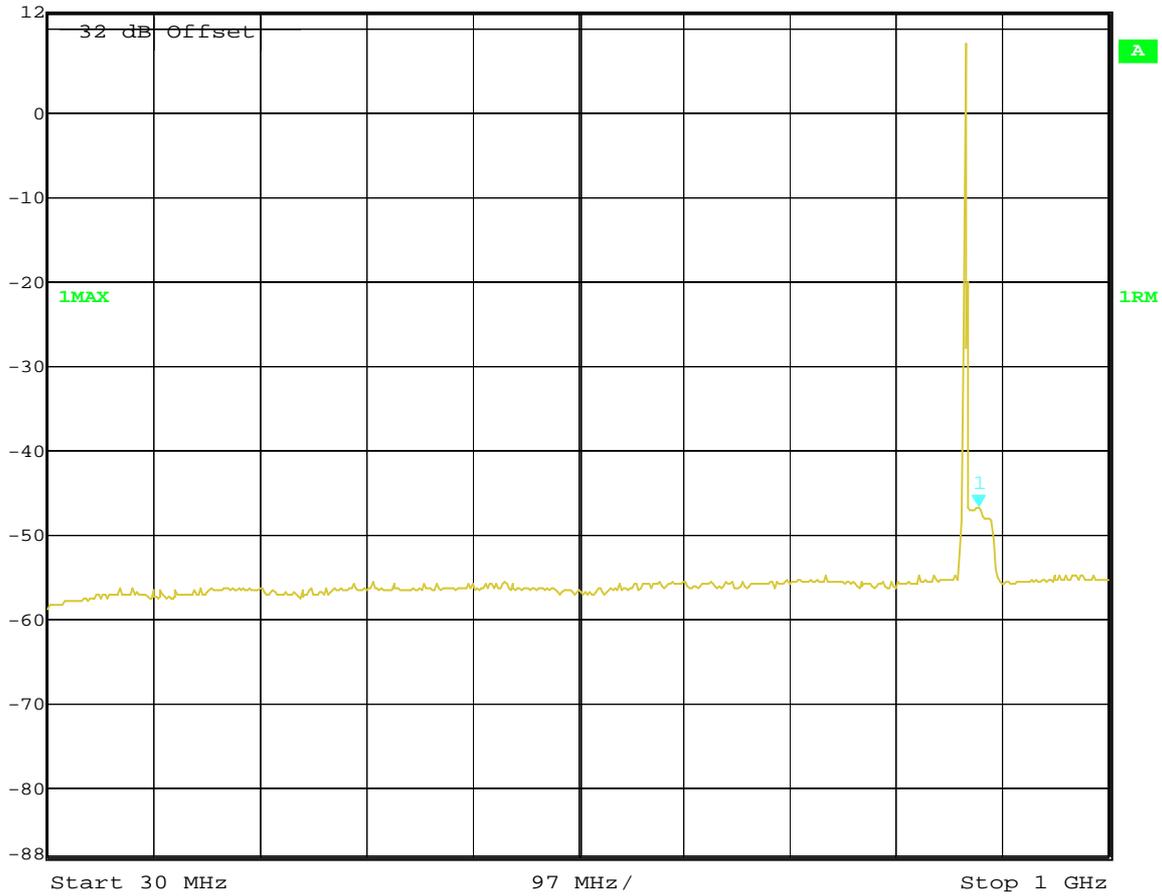


Date: 9.OCT.2007 02:30:55

(150K to 30M)



Marker 1 [T1] RBW 100 kHz RF Att 10 dB  
Ref Lvl -46.54 dBm VBW 300 kHz  
12 dBm 881.42284569 MHz SWT 245 ms Unit dBm

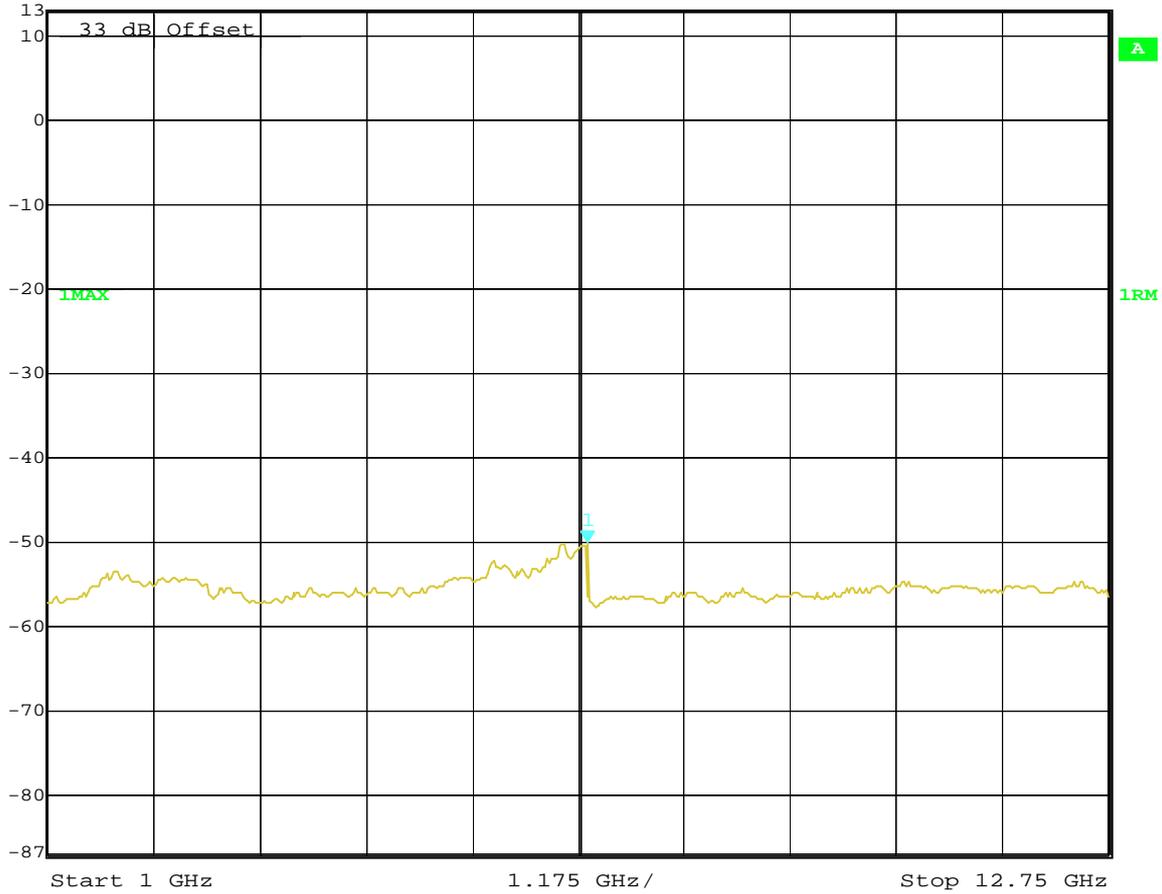


Date: 9.OCT.2007 02:42:46

(30M to 1G)



Marker 1 [T1] RBW 1 MHz RF Att 0 dB  
Ref Lvl -50.10 dBm VBW 3 MHz  
13 dBm 6.98096192 GHz SWT 68 ms Unit dBm



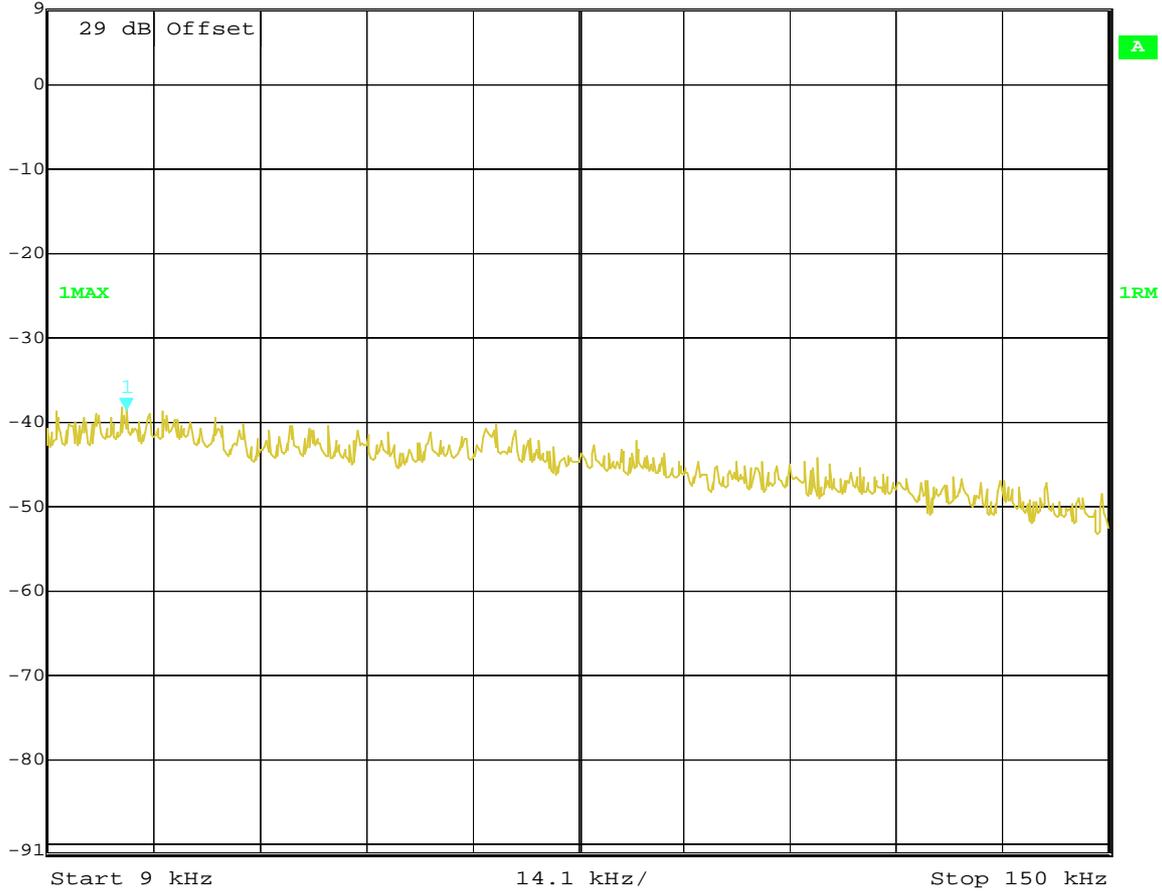
Date: 9.OCT.2007 03:24:02

(1G to 12.75G)

# Channel M



Marker 1 [T1] RBW 1 kHz RF Att 10 dB  
Ref Lvl -38.50 dBm VBW 3 kHz  
9 dBm 19.45490982 kHz SWT 360 ms Unit dBm

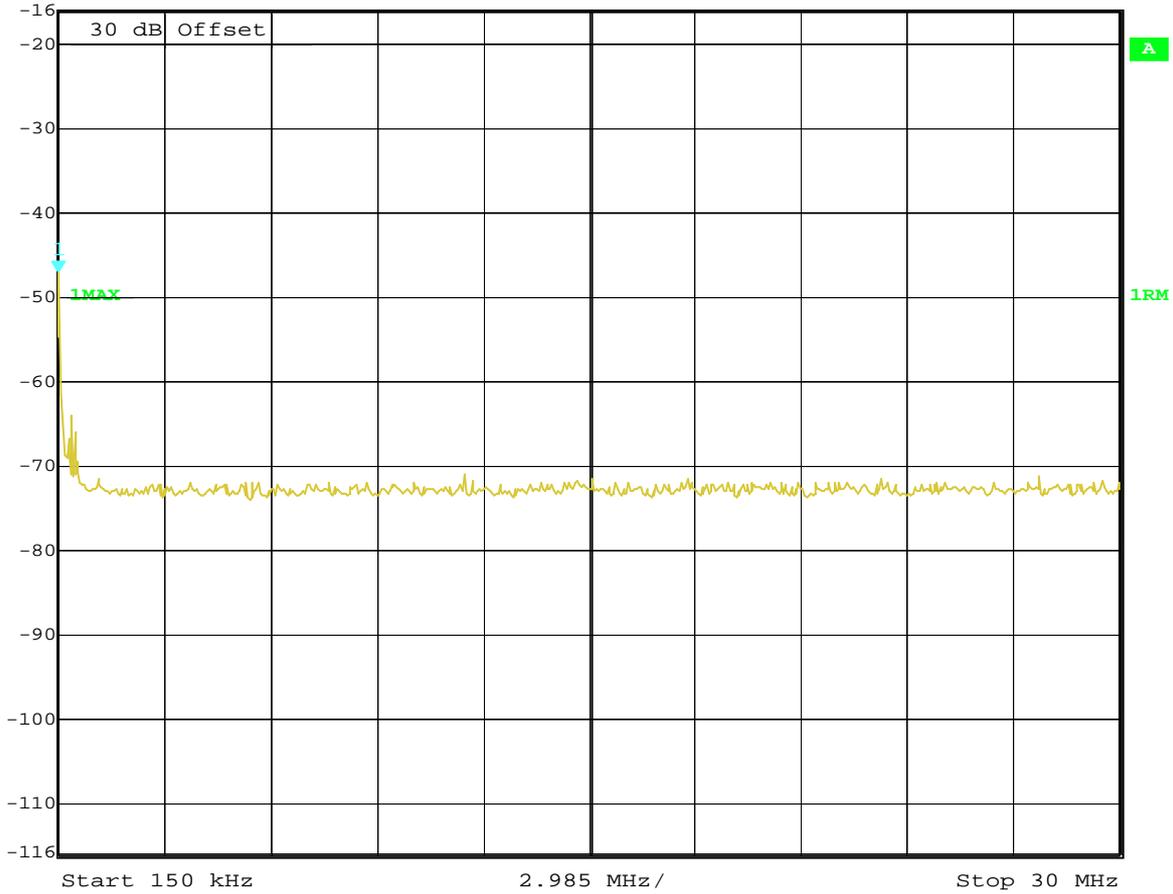


Date: 9.OCT.2007 02:26:47

(9K to 150K)

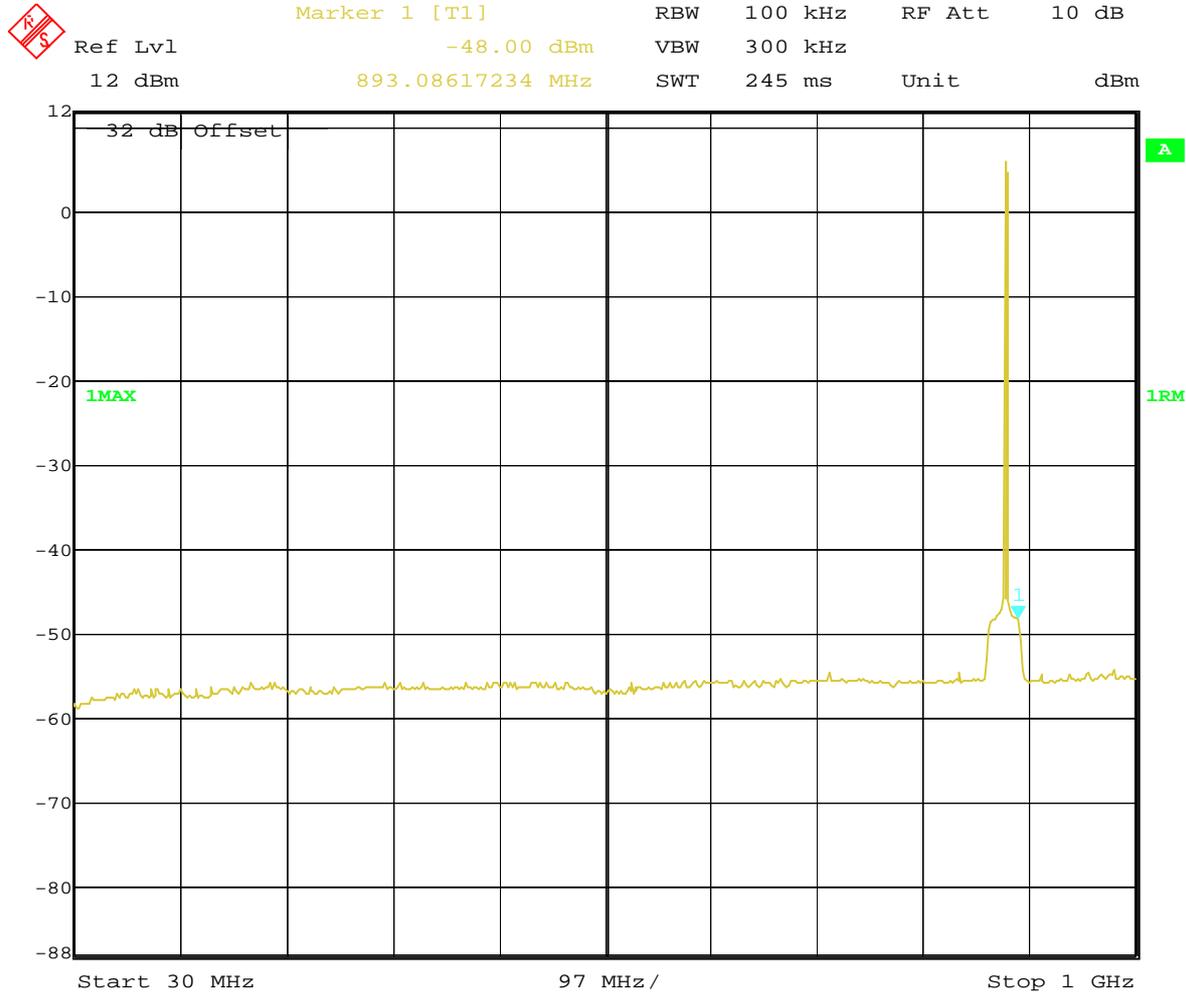


Marker 1 [T1] RBW 10 kHz RF Att 10 dB  
Ref Lvl -47.08 dBm VBW 30 kHz  
-16 dBm 150.0000000 kHz SWT 760 ms Unit dBm



Date: 9.OCT.2007 02:32:37

(150K to 30M)

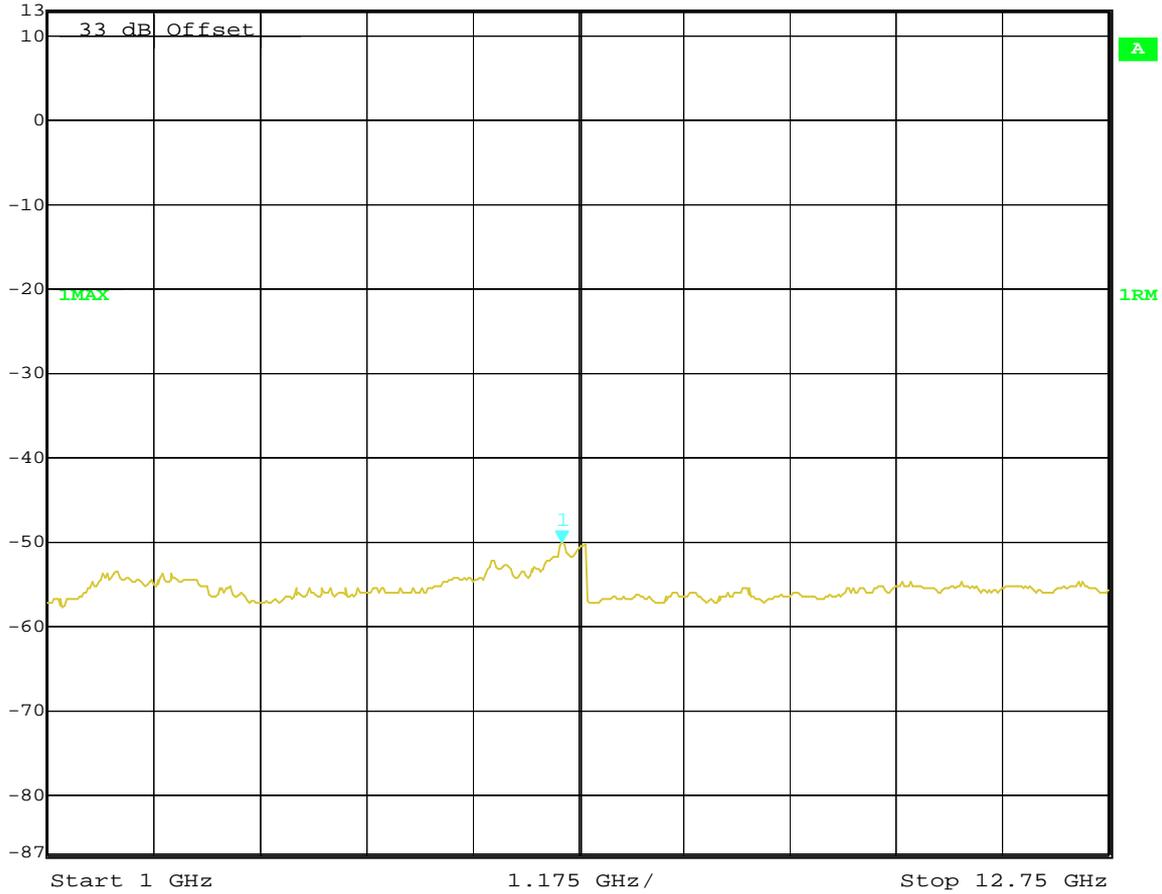


Date: 9.OCT.2007 02:44:45

(30M to 1G)



Marker 1 [T1] RBW 1 MHz RF Att 0 dB  
Ref Lvl -50.10 dBm VBW 3 MHz  
13 dBm 6.69839679 GHz SWT 68 ms Unit dBm



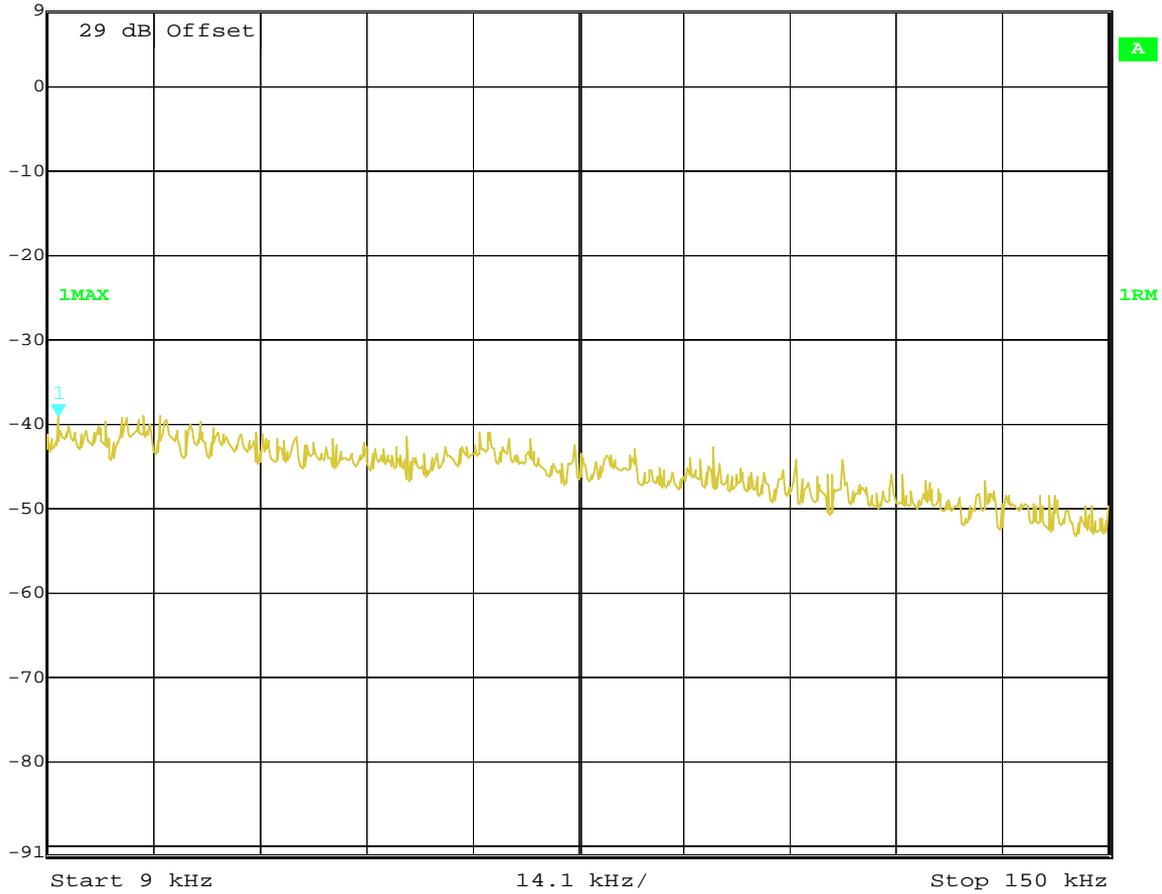
Date: 9.OCT.2007 03:15:56

(1G to 12.75G)

# Channel T



Marker 1 [T1] RBW 1 kHz RF Att 10 dB  
Ref Lvl -39.03 dBm VBW 3 kHz  
9 dBm 10.41282565 kHz SWT 360 ms Unit dBm

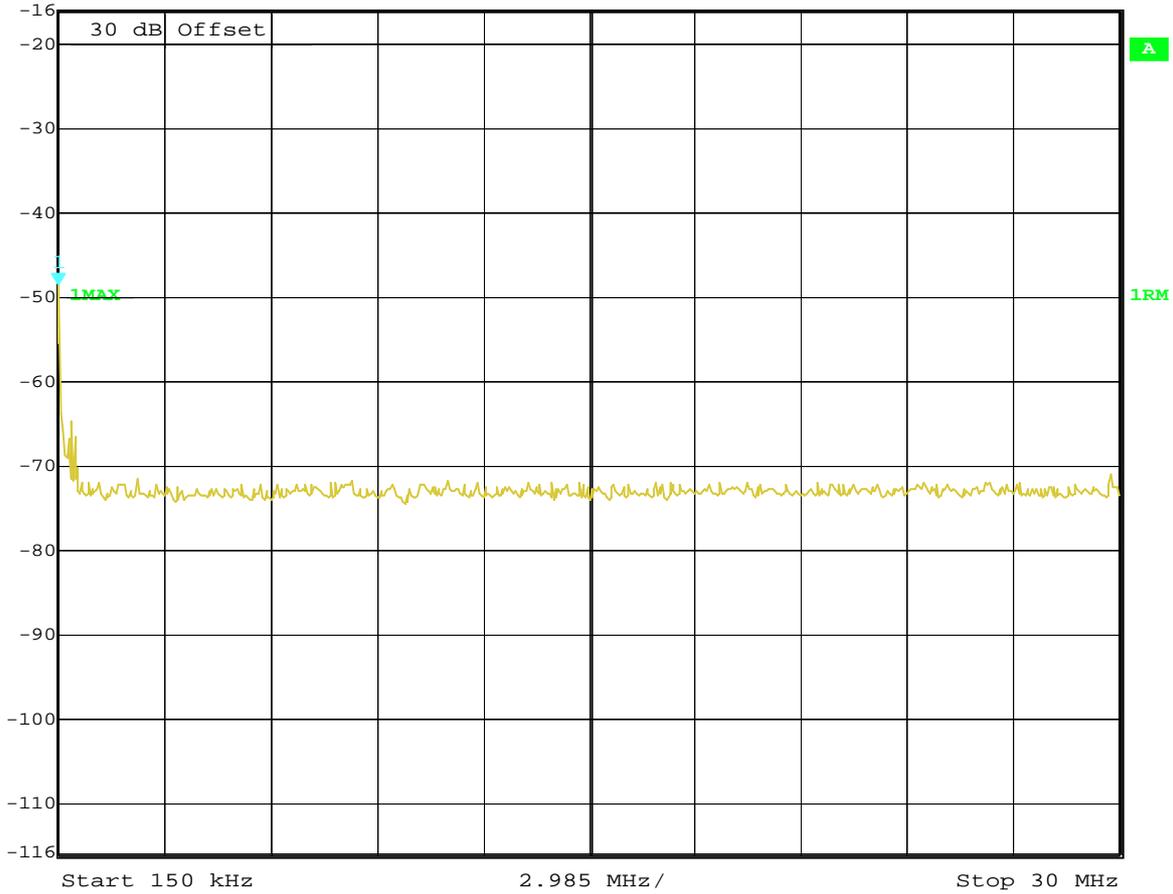


Date: 9.OCT.2007 02:28:27

(9K to 150K)



Marker 1 [T1] RBW 10 kHz RF Att 10 dB  
Ref Lvl -48.62 dBm VBW 30 kHz  
-16 dBm 150.0000000 kHz SWT 760 ms Unit dBm

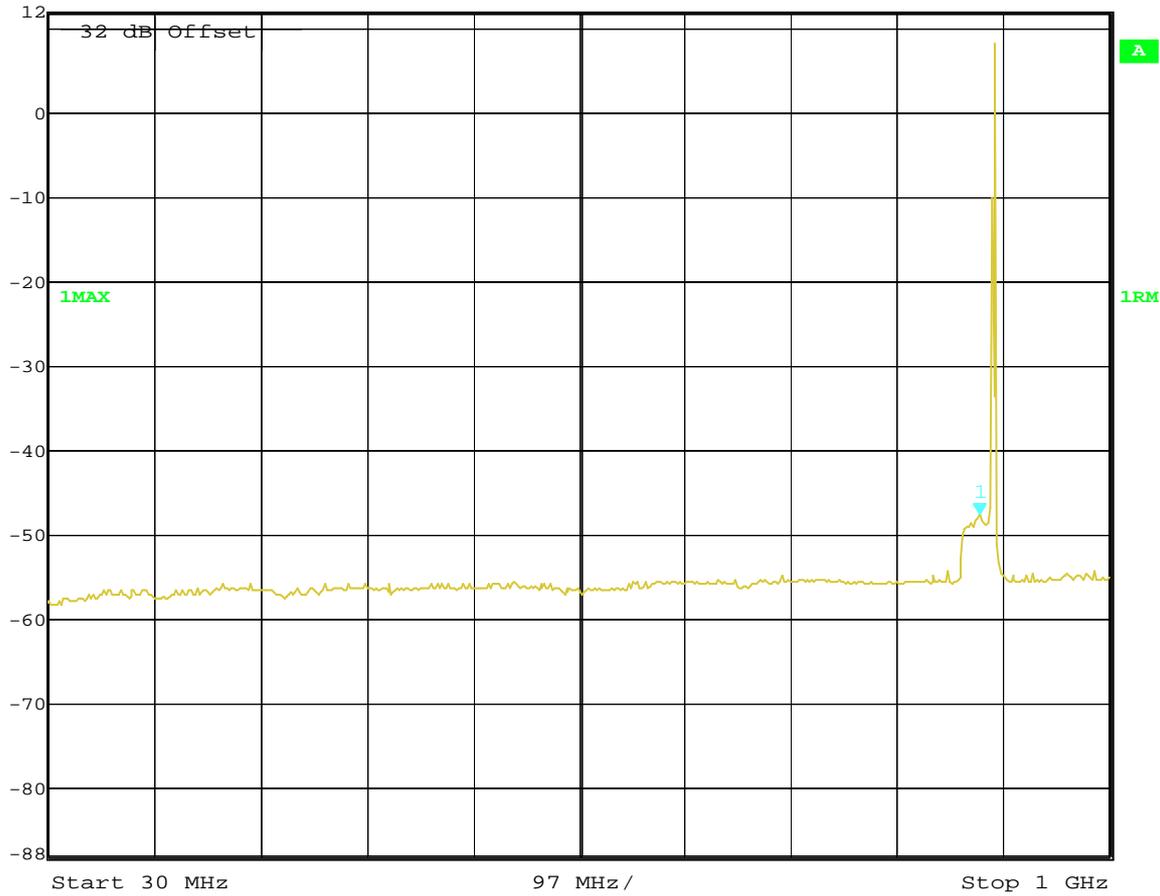


Date: 9.OCT.2007 02:38:51

(150K to 30M)



Marker 1 [T1] RBW 100 kHz RF Att 10 dB  
Ref Lvl -47.58 dBm VBW 300 kHz  
12 dBm 881.42284569 MHz SWT 245 ms Unit dBm

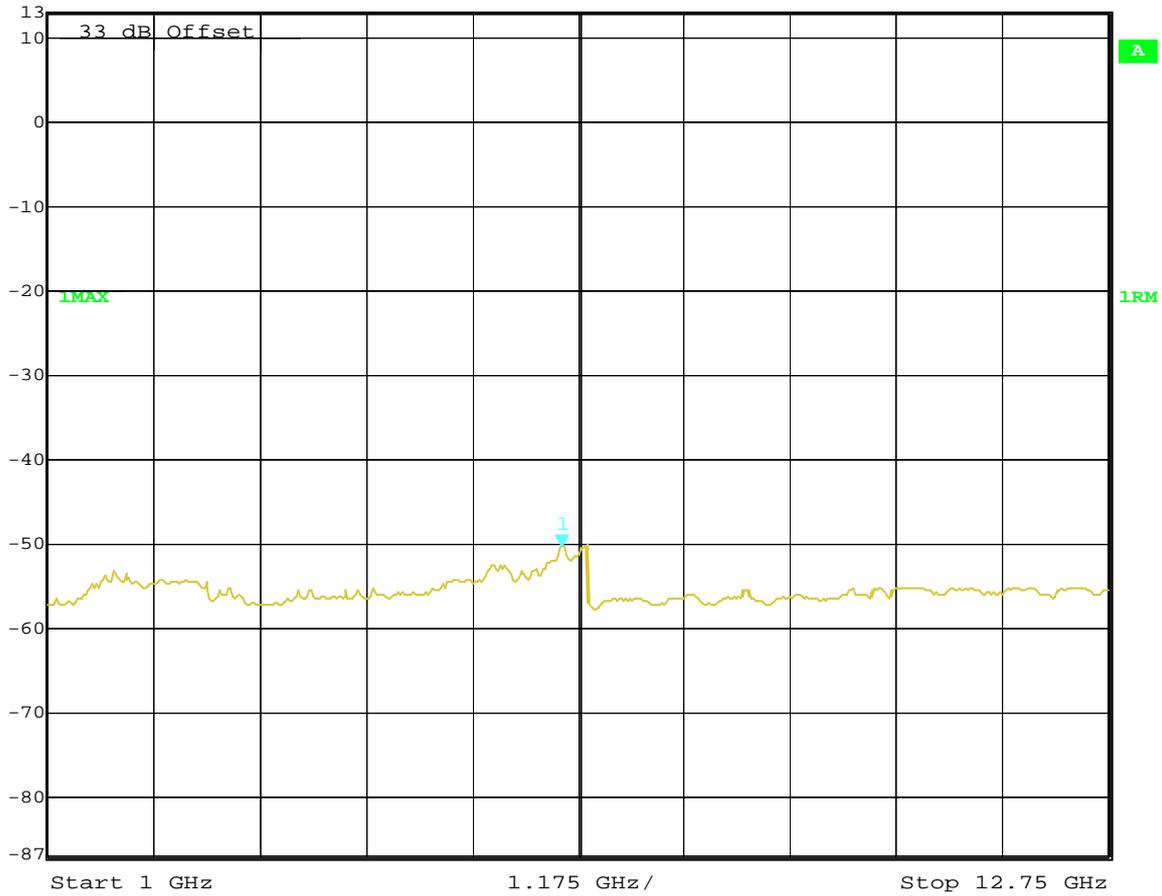


Date: 9.OCT.2007 02:45:20

(30M to 1G)



Marker 1 [T1] RBW 1 MHz RF Att 0 dB  
Ref Lvl -50.31 dBm VBW 3 MHz  
13 dBm 6.69839679 GHz SWT 68 ms Unit dBm



Date: 9.OCT.2007 03:28:38

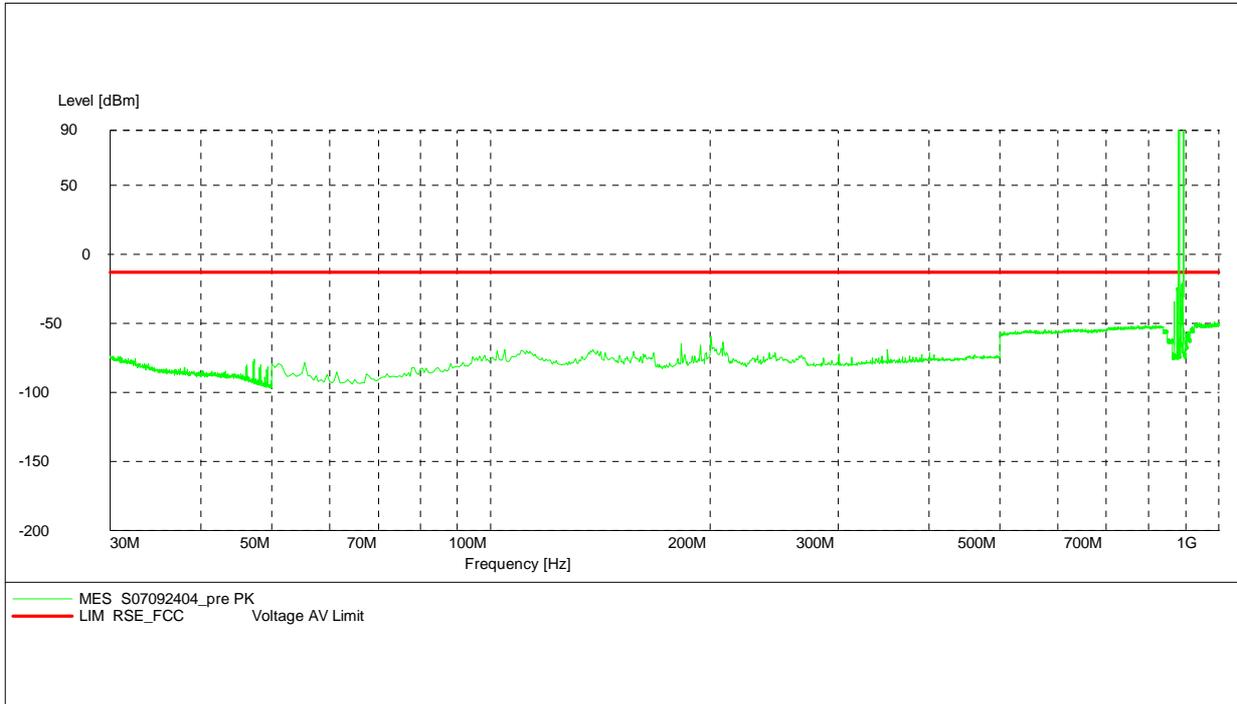
(1G to 12.75G)

## Appendix E

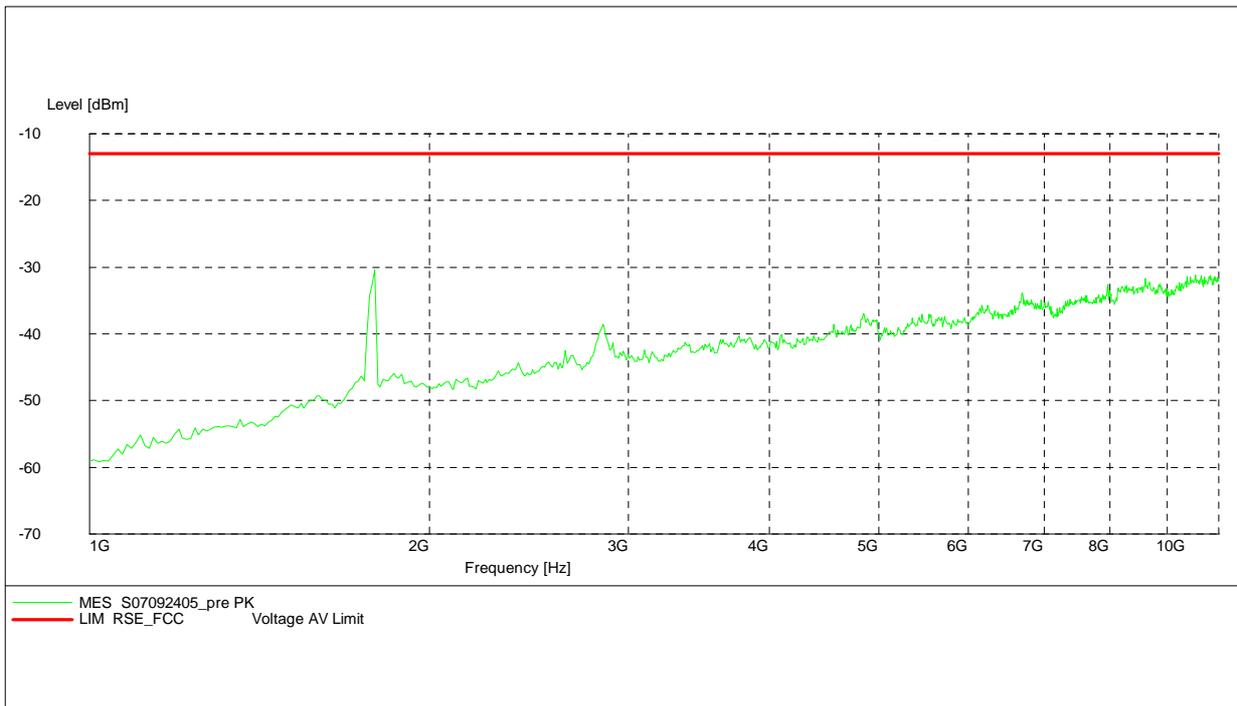
# Radiated Spurious Emission Measurements

According to FCC Part 2.1053 & 22.917

According to IC RSS-132 clause 4.5



(30MHz to 1GHz)



(Above 1GHz)

# Appendix F

## Photos of Test Setup

1. RF Tests at Antenna Terminals



## 2. Radiated Spurious Emissions

