EMI MEASUREMENT AND TEST REPORT

For

SERVIMAX, SERVICIOS MULTIPLES S.A.

Sauces, 1 Av. Agustin freire Mz 12F V. 36 frente a garzocentro, Guayaquil, Guayas, Ecuado

FCC ID: WPBMC500

Sep. 29, 2008

This Report Concerns: Original Report	Equipment Type： GSM Pay Phone
Test Engineer:	Eric Li
Report No.:	F08090205A
Receive EUT Date/Test Date:	Sep.04,2008/ Sep.04-29,2008
Reviewed By:	Christina
Prepared By:	**Shenzhen BST Technology Co.,Ltd.** 3F,Weames Technology Building, No. 10 Kefa Road,Science Park, Nanshan District,Shenzhen,Guangdong,China Tel: 0755-26747751～3 Fax: 0755-26747751～3 ext.826

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1. GENERAL INFORMATION

1.1. Report infor mation

1.1.1.This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that BST approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that BST in any way guarantees the later performance of the product/equipment.

1.1.2.The sample/s mentioned in this report is/are supplied by Applicant, BST therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture or any information supplied.

Additional copies of the report are available to the Applicant at an additional fee. No third part can obtain a copy of this report through BST, unless the applicant has authorized BST in writing to do so.

Test Facility -
The test site used to collect the radiated data is located on the address of
emitel (Shenzhen) Limited
(FCC Registered Test Site Number: 746887) on
Building 2, 171 Meihua Road,Futian District,Shenzhen, 518049 China
The Test Site is constructed and calibrated to meet the FCC requirements.

1.2. Measurement Uncertainty

Available upon request.

2. PRODUCT DESCRIPTION

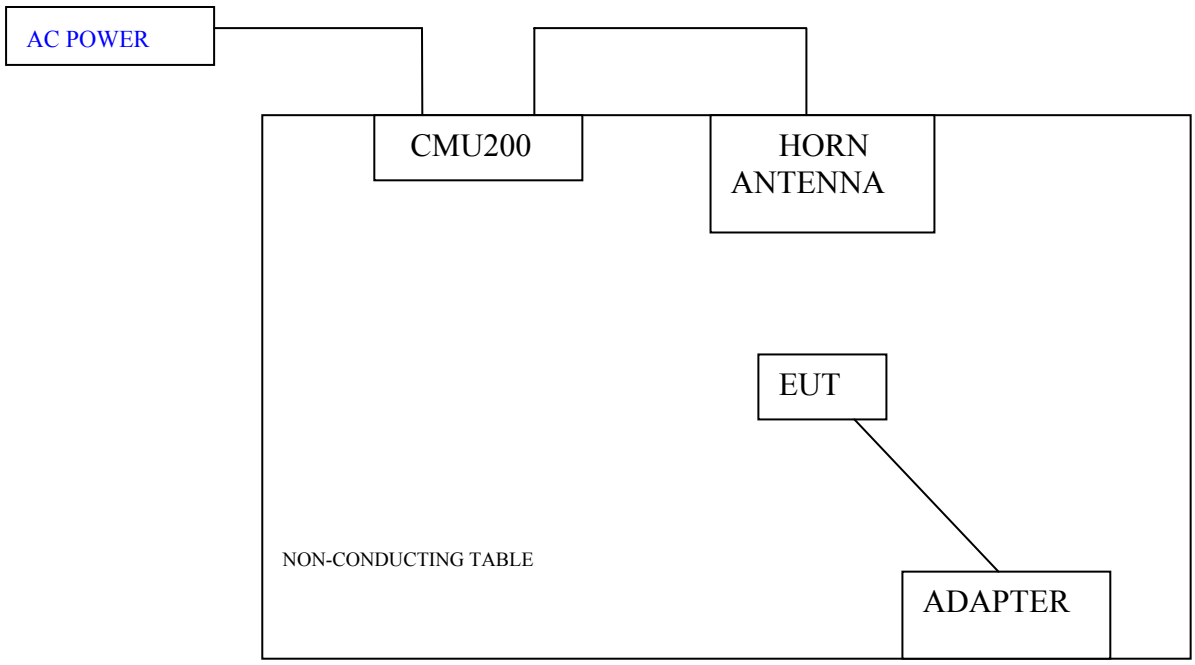
2.1. EUT Description

Description	:	GSM Pay Phone
Applicant	:	SERVIMAX, SERVICIOS MULTIPLES S.A. Sauces, 1 Av. Agustin freire Mz 12F V. 36 frente a garzocentro, Guayaquil, Guayas, Ecuador
Model Number	:	MC500

Additonal Information

Frequency	:	850MHZ
Power Supply	:	DC9～12V
Maximum Range	:	N/A
Transmitter Antenna	:	-
Current Consumption		N/A

2.2. Block Diagram of EUT Configuration



2.3. Test Conditions

Temperature: 23~25℃
Relative Humidity: 55~63 %

3. FCC ID LABEL

FCC ID: WPBMC500

:

Label Location on EUT

EUT Bottom View/ FCC ID Label Location

4. TEST RESULTS SUMMARY

FCC PART 22H

FCC RULE	DESCRIPTION OF TEST	Result
§15.107	Conducted Emission	Compliant
§2.1046; § 22.913 (a)	RF Output Power	Compliant
§ 2.1047	Modulation Characteristics	Compliant
§ 2.1049 § 22.905 § 22.917	99% & -26 dB Occupied Bandwidth	Compliant
§ 2.1051, § 22.917 (a)	Spurious Emissions at Antenna Terminal	Compliant
§ 2.1053 § 22.917 (a)	Field Strength of Spurious Radiation	Compliant
§ 2.1055 § 22.355	Frequency stability vs. temperature Frequency stability vs. voltage	Compliant

Modifications

No modification was made.

5. TEST EQUIPMENT USED

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Horn Antenna	DRH-118	A052604	2007-09-25	2008-09-25
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2008-03-11	2009-03-11
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2008-05-09	2009-05-09
HP	Preamplifier	8449B	3008A00277	2007-09-29	2008-09-29
HP	Signal Generator	HP8657A	2849U00982	2007-10-16	2008-10-16
HP	Amplifier	HP8447D	2944A09795	2007-11-15	2008-11-15
Giga-tronics	Signal Generator	1026	270801	2007-09-29	2008-09-29
COM POWER	Dipole Antenna	AD-100	041000	2007-09-25	2008-09-25
A.H. System	Horn Antenna	SAS-200/571	135	2008-05-17	2009-05-17
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	1100.0008.02	2008-06-21	2009-06-21
Rohde & Schwarz	EMI Test Receiver	ESCI	100224	2007-10-16	2008-10-16
WUHUAN	Temperature & Humidity Chamber	HTP205	20021115	2007-12-28	2008-12-28

6. §15.107 CONDUCTED EMISSION TEST

6.1. Applicable Standard

According to FCC §15.107, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150 kHz to 30 MHz shall not exceed the limits in the
following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN).

Frequency range (MHz)	Conducted Limit (dBμV), Class B digital device	
	Quasi-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
0.50 - 30	60	50

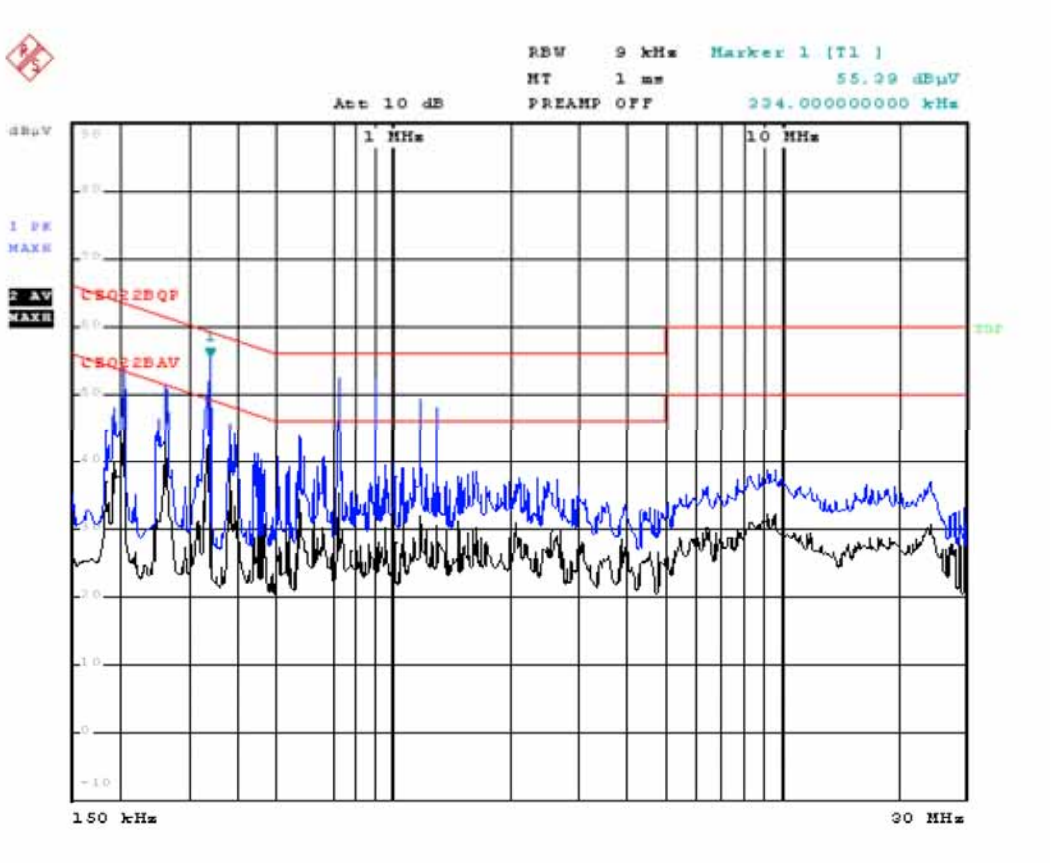
6.2. Test Procedure

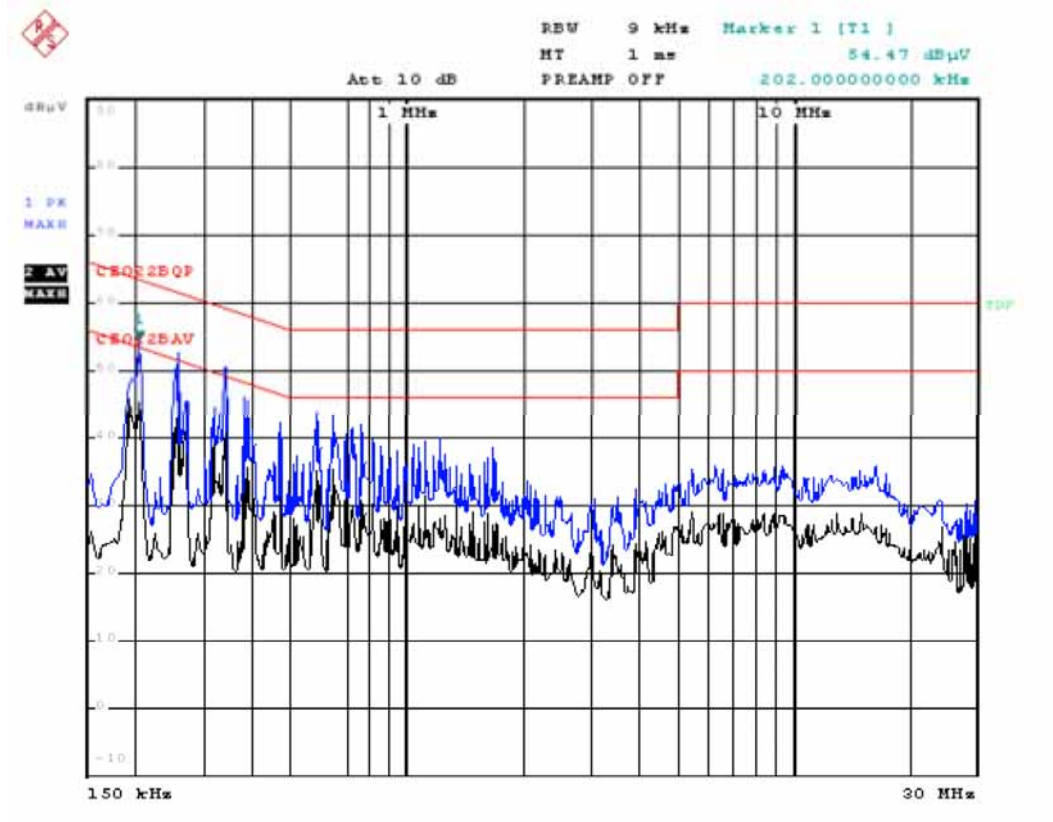
a. The EUT was placed on a 0.8m high insulating table and kept 0.4 meters from the conducting
wall of shielded room.
b. The EUT was connected to the power mains through a line impedance stabilization network (LISN). The LISN provide 50Ω/50μH of coupling impedance for the measuring instrument.
c. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
d. The frequency range from 150 kHz to 30 MHz was searched using CISPR Quasi-Peak and Average detector.

6.3. Test Data

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	56%
ATM Pressure:	100.0kPa


RBW 9 kHz
MT 1 ms
Att 10 dB
PREAMP OFF
Marker 1 [T1]
55.29 dBµV
234.000000000 kHz
dBµV
1 MHz
10 MHz
1 PK
MAXH
2 AV
MAXH
CISPR22BQP
CISPR22BAV
150 kHz
30 MHz


RBW 9 kHz
MT 1 ms
Att 10 dB
PREAMP OFF
Marker 1 [T1]
54.47 dBµV
202.000000000 kHz
dBµV
1 MHz
10 MHz
1 PK
MAXH
2 AV
MAXH
CISPR22BQP
CISPR22BAV
150 kHz
30 MHz

7. 2.1046, § 22.913 (A) - RF OUTPUT POWER

7.1. Applicable Standard

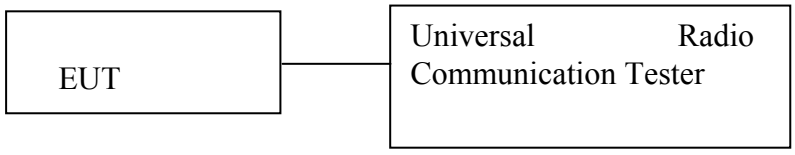
According to FCC §2.1046 and §22.913 (a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

According to FCC §2.1046, in no case may the peak output power of a base station transmitter exceed 2 watt EIRP.

7.2. Test Procedure

Conducted method:

The RF output of the transmitter was connected to the wireless test set and the spectrum analyzer through sufficient attenuation.



Radiated method:

TIA 603-C section 2.2.17

7.3. Test Data

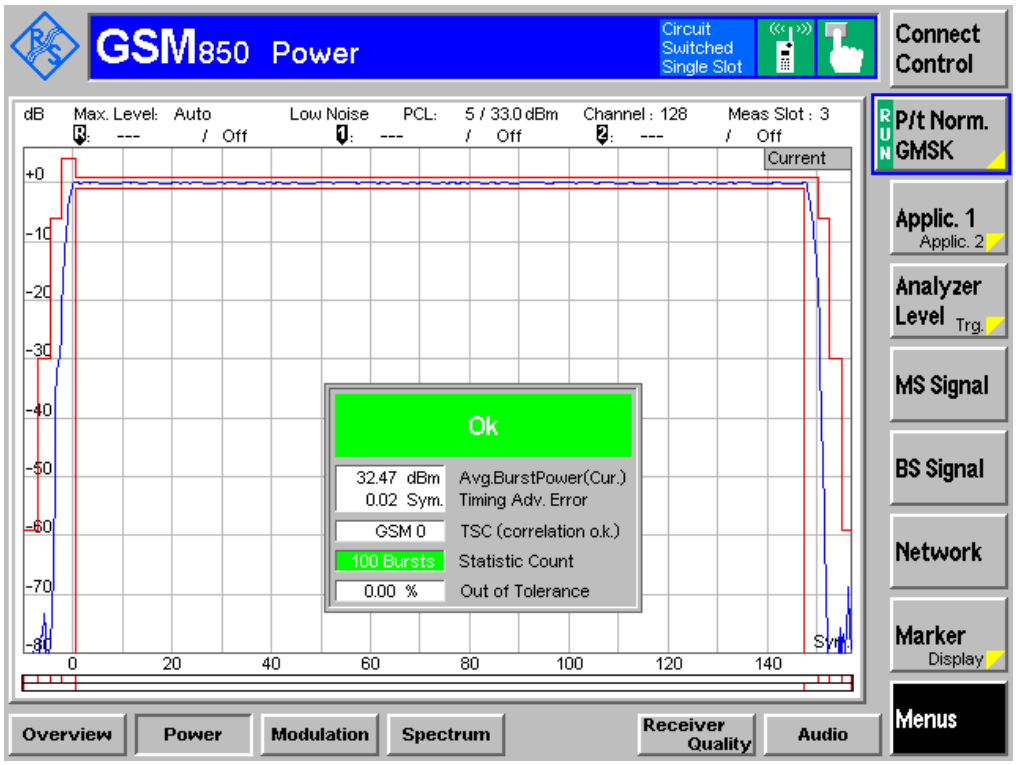
Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	56%
ATM Pressure:	100.0kPa

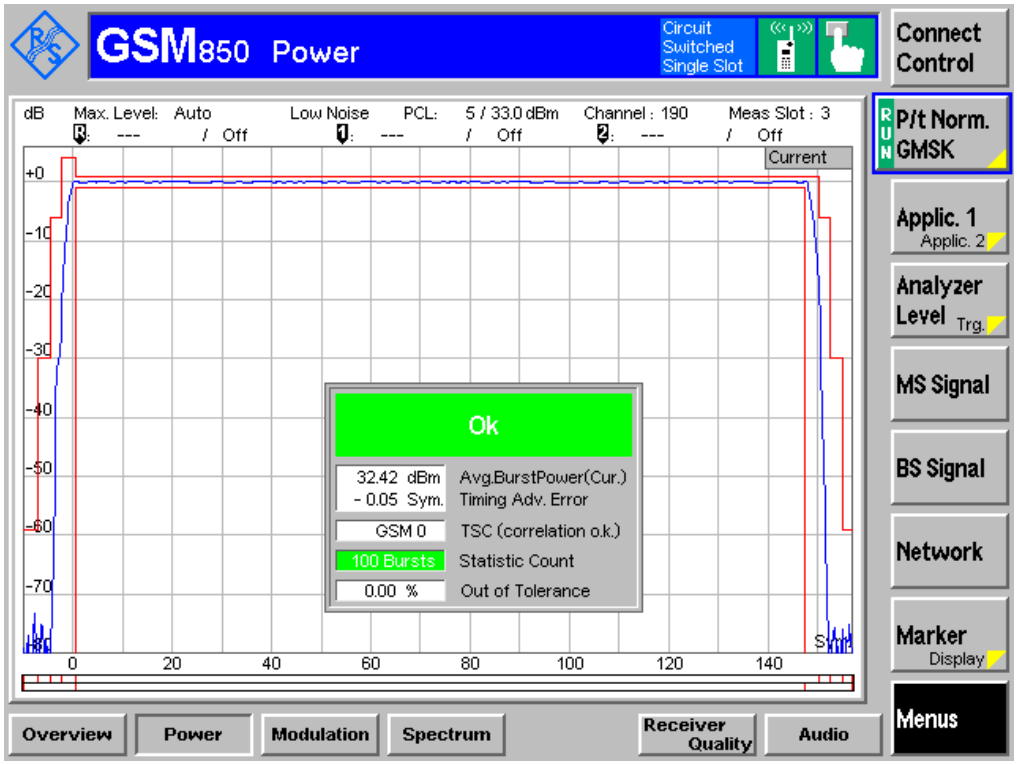
For GSM850

Channel	Frequency (MHz)	Output Power (dBm)
Channel 128	824.2	32.47
Channel 190	836.6	32.42
Channel 251	848.8	32.36

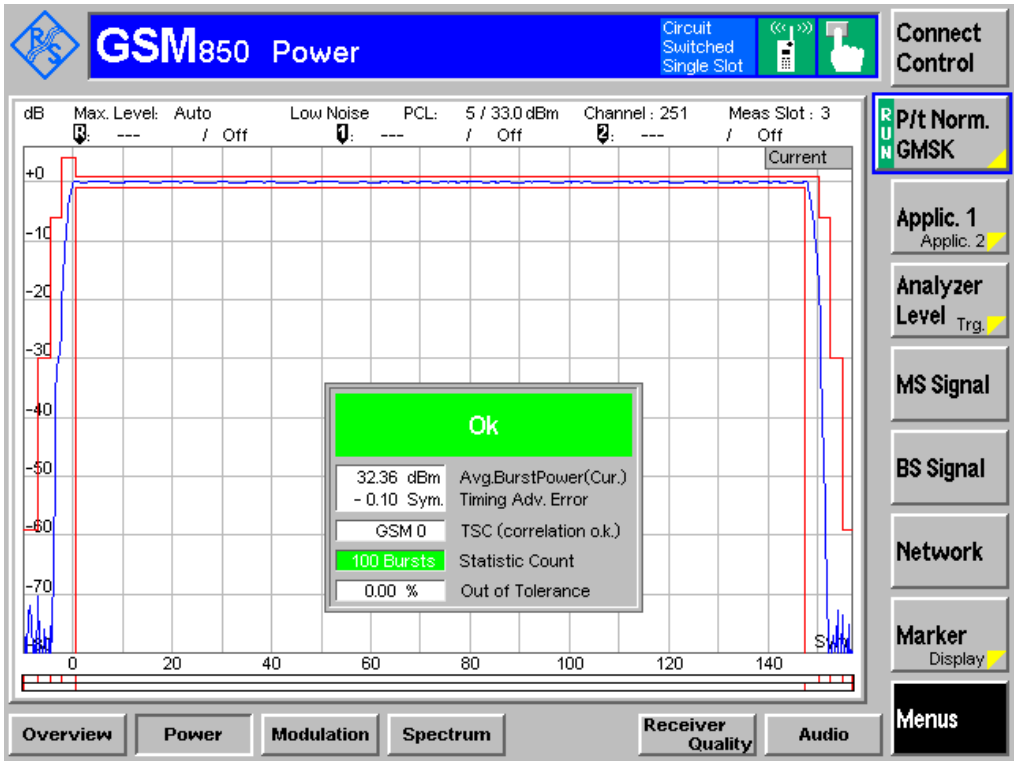
Low Channel



Middle Channel



High Channel



E.R.P for GSM 850MHz

Indicated		Table Angle Degree	Test Antenna		Substituted			Antenna Gain Correction (dBi)	Cable Loss (dB)	Absolute Level		FCC Part 22H
Frequency (MHz)	Receiver Reading (dBμV)		Height (m)	Polar (H/V)	Frequency (MHz)	Level (dBm)	Polar (H/V)			(dBm)	(W)	Limit (W)
Frequency in Low Channel												
824.2	114.56	125	1.0	H	824.2	25.3	H	0	0.90	24.4	0.275	7
824.2	115.74	250	1.1	V	824.2	26.4	V	0	0.90	25.5	0.355	7
Frequency in Middle Channel												
836.6	115.40	120	1.1	H	836.6	26.5	H	0	0.90	25.6	0.363	7
836.6	116.03	125	1.0	V	836.6	27.5	V	0	0.90	26.6	0.457	7
Frequency in High Channel												
848.8	116.10	125	1.1	H	848.8	27.2	H	0	0.90	26.3	0.427	7
848.8	116.35	130	1.0	V	848.8	27.8	V	0	0.90	26.9	0.490	7

8. MODULATION CHARACTERISTIC

8.1. Applicable Standard

Requirement: §2.1047.

8.2. Test Procedure

Test Method: TIA/EIA-603 2.2.3

8.3. Test Data

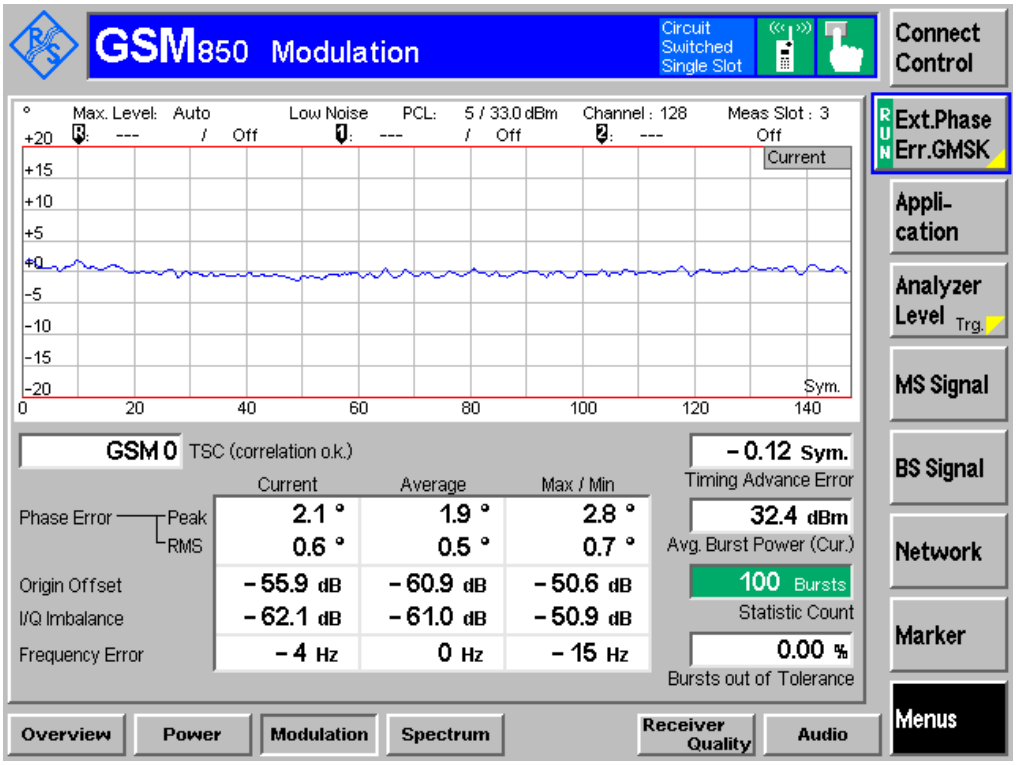
8.3.1.Environmental Conditions

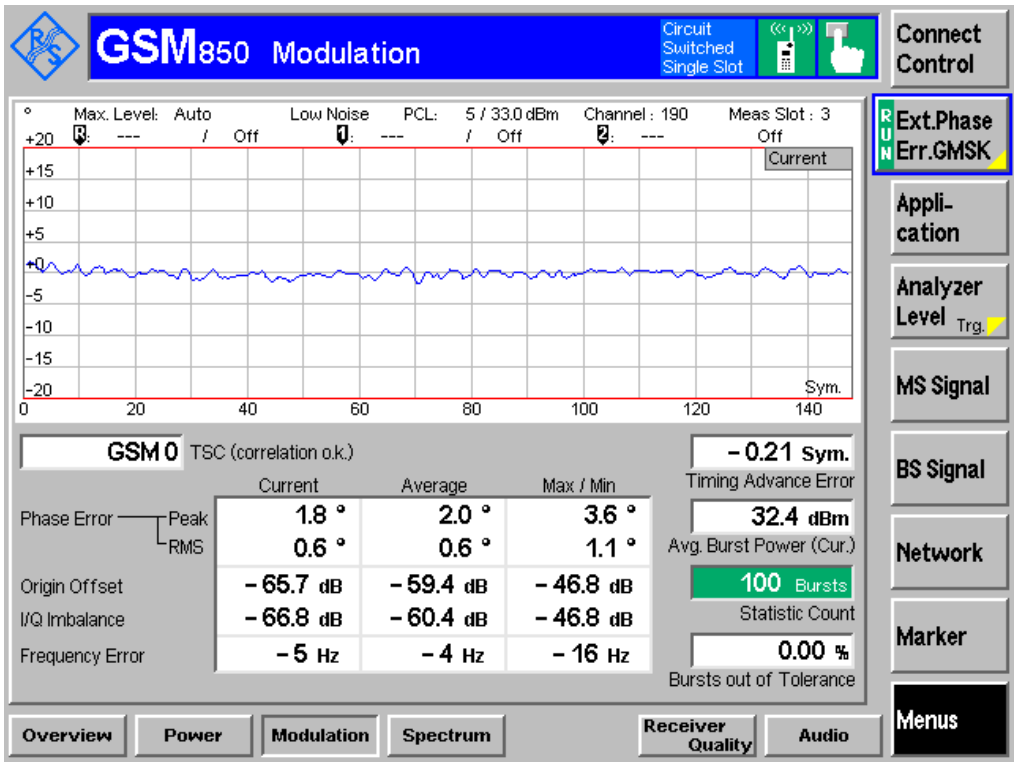
Temperature:	25 ° C
Relative Humidity:	56%
ATM Pressure:	100.0kPa

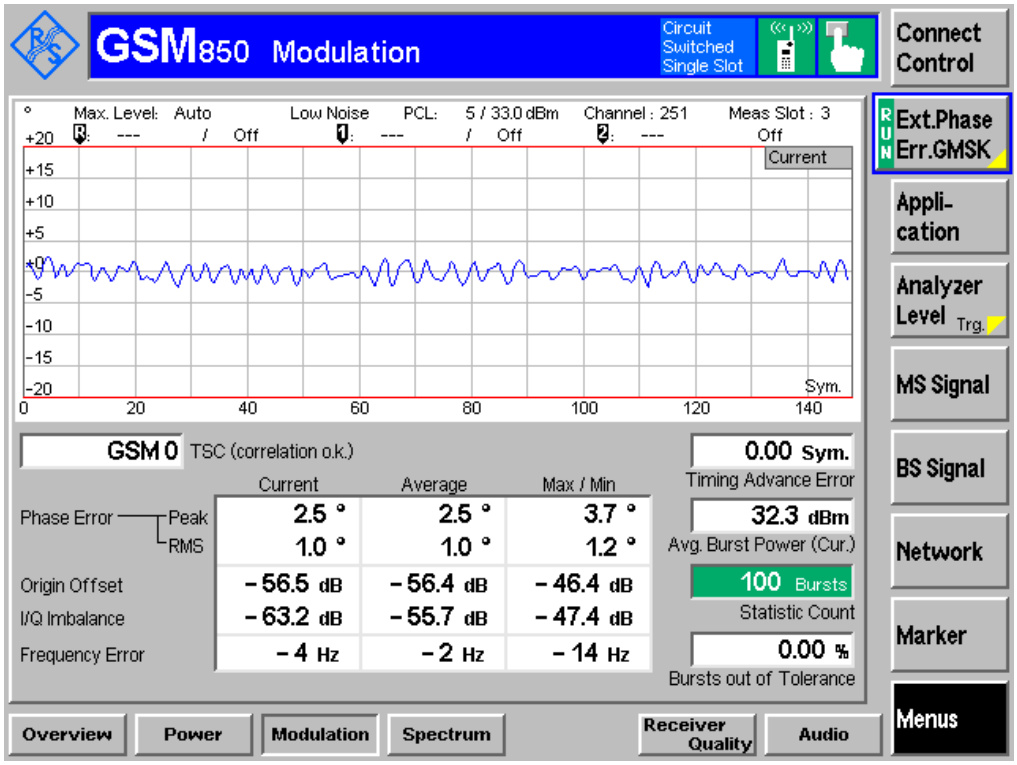
Test Mode: Transmitting

For GSM850

Channel	Frequency (MHz)	Frequency Error (Hz)	Phase Error (degree)		I/Q offset (dBc)
Channel 128	824.2	0	RMS	0.5	-61.0
			Peak	1.9	
Channel 190	836.6	-4	RMS	0.6	-60.4
			Peak	2.0	
Channel 251	848.8	-2	RMS	1.0	-55.7
			Peak	2.5	


GSM850 Modulation
Circuit Switched Single Slot
Connect Control
Ext.Phase Err.GMSK
Appli-cation
Analyzer Level Trg.
MS Signal
BS Signal
Network
Marker
Menus
Max. Level: Auto / Off
Low Noise PCL: --- / Off
5 / 33.0 dBm
Channel : 128
Meas Slot : 3
Current
Sym.
GSM 0 TSC (correlation o.k.)
-0.12 Sym.
Timing Advance Error
Current Average Max / Min
Phase Error Peak 2.1 ° 1.9 ° 2.8 °
RMS 0.6 ° 0.5 ° 0.7 °
32.4 dBm
Avg. Burst Power (Cur.)
Origin Offset -55.9 dB -60.9 dB -50.6 dB
I/Q Imbalance -62.1 dB -61.0 dB -50.9 dB
100 Bursts
Statistic Count
Frequency Error -4 Hz 0 Hz -15 Hz
0.00 %
Bursts out of Tolerance
Overview
Power
Modulation
Spectrum
Receiver Quality
Audio


GSM850 Modulation
Circuit Switched Single Slot
Connect Control
Ext.Phase Err.GMSK
Appli-cation
Analyzer Level Trg.
MS Signal
BS Signal
Network
Marker
Menus
Max. Level: Auto / Off
Low Noise PCL: --- / Off
5 / 33.0 dBm
Channel : 190
Meas Slot : 3
Current
Sym.
GSM 0 TSC (correlation o.k.)
-0.21 Sym.
Timing Advance Error
Current Average Max / Min
Phase Error Peak 1.8 ° 2.0 ° 3.6 °
RMS 0.6 ° 0.6 ° 1.1 °
32.4 dBm
Avg. Burst Power (Cur.)
Origin Offset -65.7 dB -59.4 dB -46.8 dB
I/Q Imbalance -66.8 dB -60.4 dB -46.8 dB
100 Bursts
Statistic Count
Frequency Error -5 Hz -4 Hz -16 Hz
0.00 %
Bursts out of Tolerance
Overview
Power
Modulation
Spectrum
Receiver Quality
Audio


GSM850 Modulation
Circuit Switched Single Slot
Connect Control
Ext.Phase Err.GMSK
Appli-cation
Analyzer Level Trg.
MS Signal
BS Signal
Network
Marker
Menus
Max. Level: Auto / Off
Low Noise PCL: 5 / 33.0 dBm / Off
Channel : 251 Off
Meas Slot : 3
Current
Sym.
GSM 0
TSC (correlation o.k.)
0.00 Sym.
Timing Advance Error
Current Average Max / Min
Phase Error Peak 2.5 ° 2.5 ° 3.7 °
RMS 1.0 ° 1.0 ° 1.2 °
32.3 dBm
Avg. Burst Power (Cur.)
Origin Offset -56.5 dB -56.4 dB -46.4 dB
100 Bursts
Statistic Count
I/Q Imbalance -63.2 dB -55.7 dB -47.4 dB
Frequency Error -4 Hz -2 Hz -14 Hz
0.00 %
Bursts out of Tolerance
Overview
Power
Modulation
Spectrum
Receiver Quality
Audio

9. §2.1049, §22.917, §22.905 - OCCUPIED BANDWIDTH

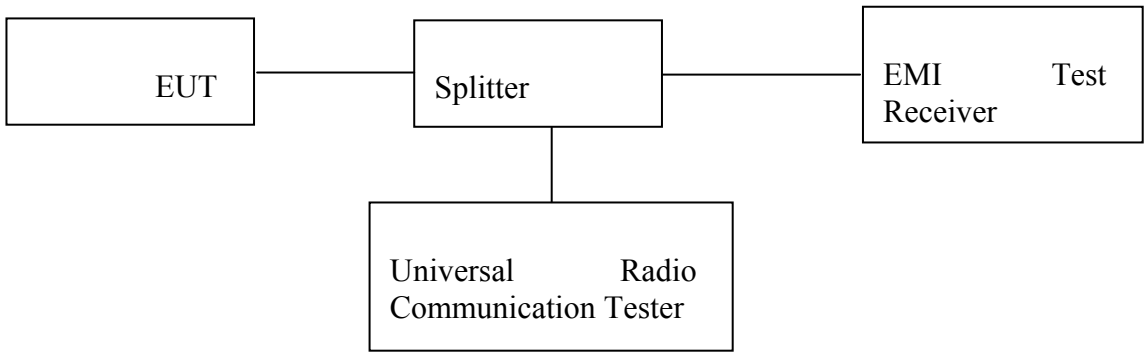
9.1. Applicable Standards

CFR 47 §2.1049, §22.917, §22.905.

9.2. Test Procedure

The RF output of the transmitter was connected to the simulator and the spectrum analyzer through sufficient attenuation.

The resolution bandwidth of the spectrum analyzer was set at 30 kHz (Cellular /PCS) and the 26 dB & 99% bandwidth was recorded.



9.3. Test Data

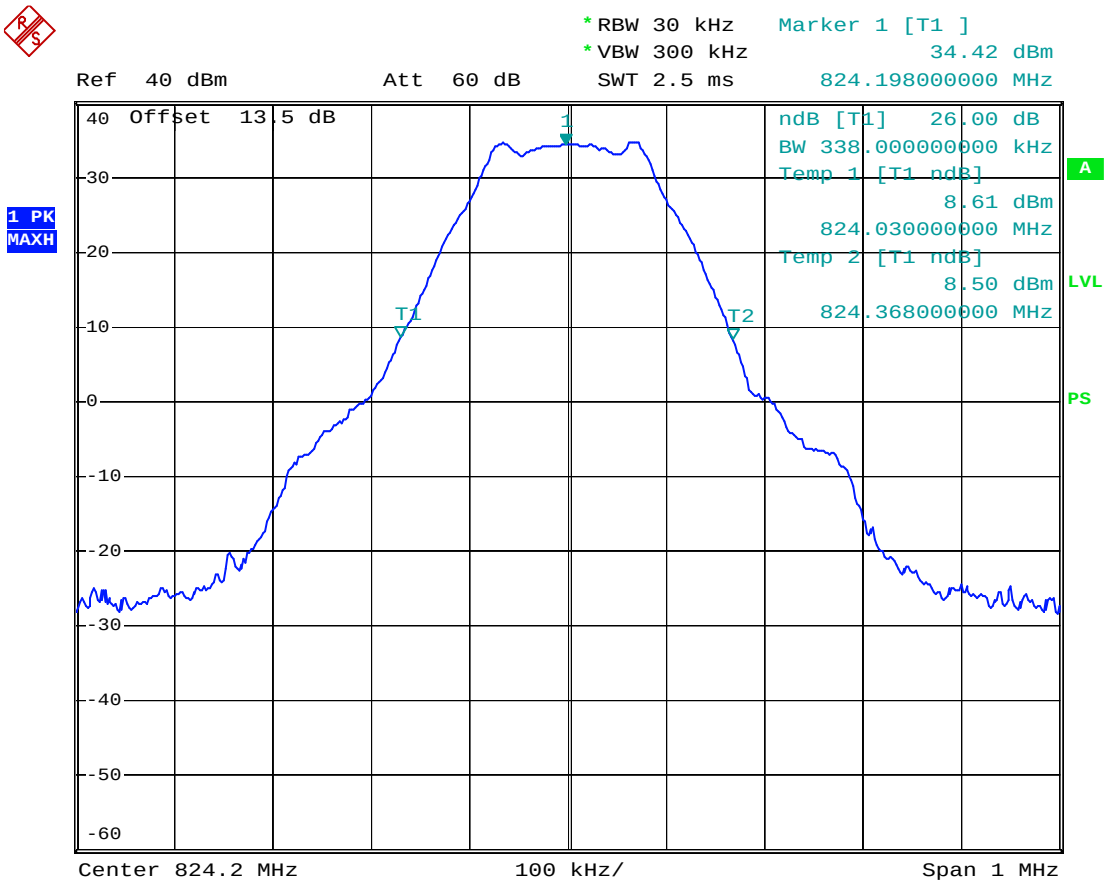
9.3.1. Environmental Conditions

Temperature:	**25 ° C**
Relative Humidity:	**56%**
ATM Pressure:	**100.0kPa**

Occupied Bandwidth for GSM 850
GMSK modulation:

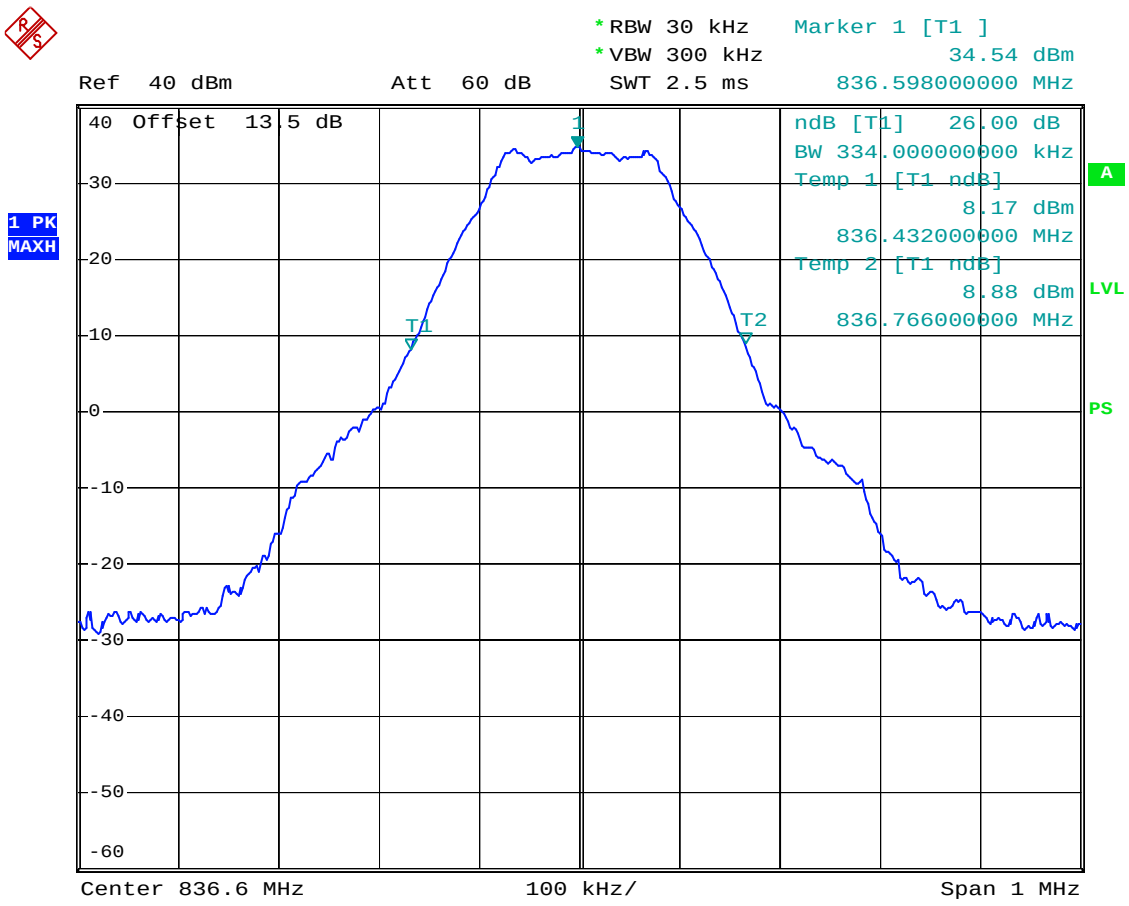
Channel	Channel frequency (MHz)	99% Power Bandwidth (kHz)	26 dB Bandwidth (kHz)
Channel 128	824.2	248	338.0000
Channel 190	836.6	248	334.0000
Channel 251	848.8	246	332.0000

Please refer to the following plots.



Occupied Bandwidth

Date: 29.AUG.2008 16:32:32



Occupied Bandwidth

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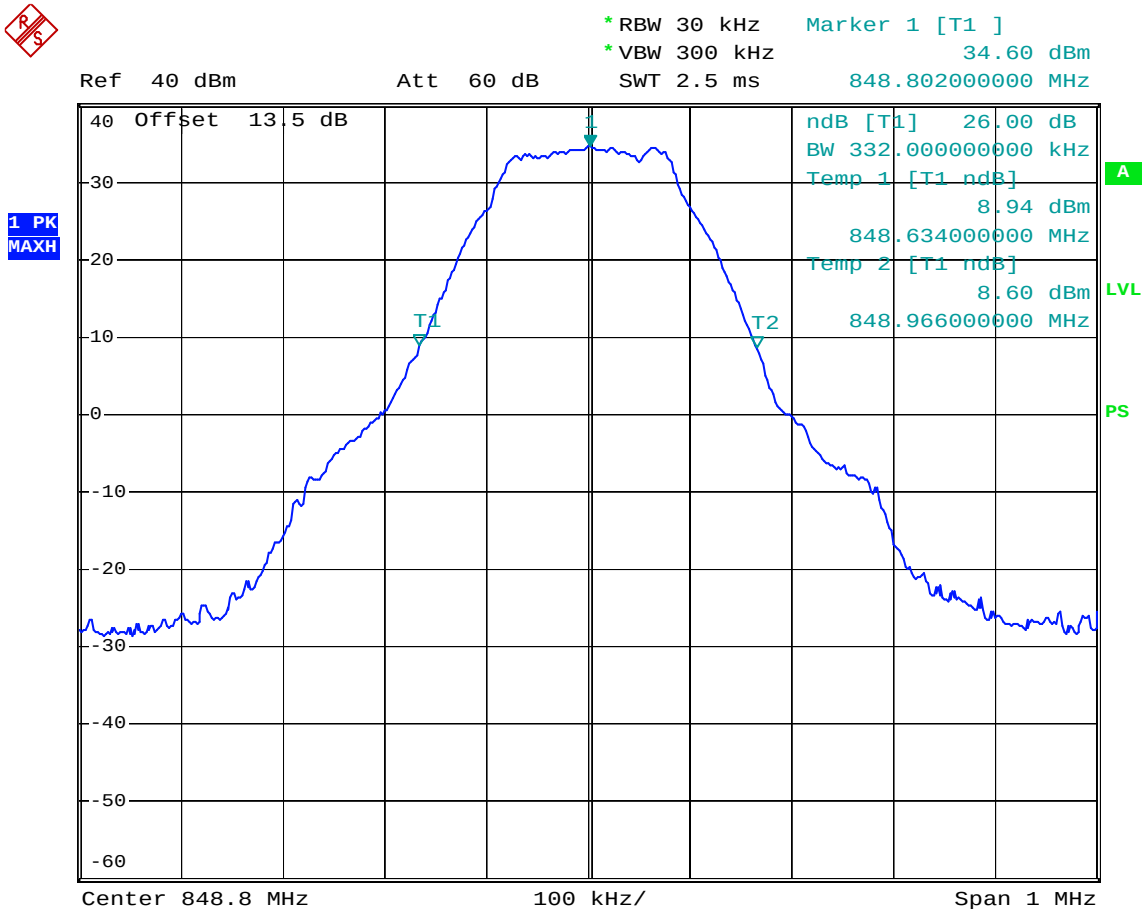
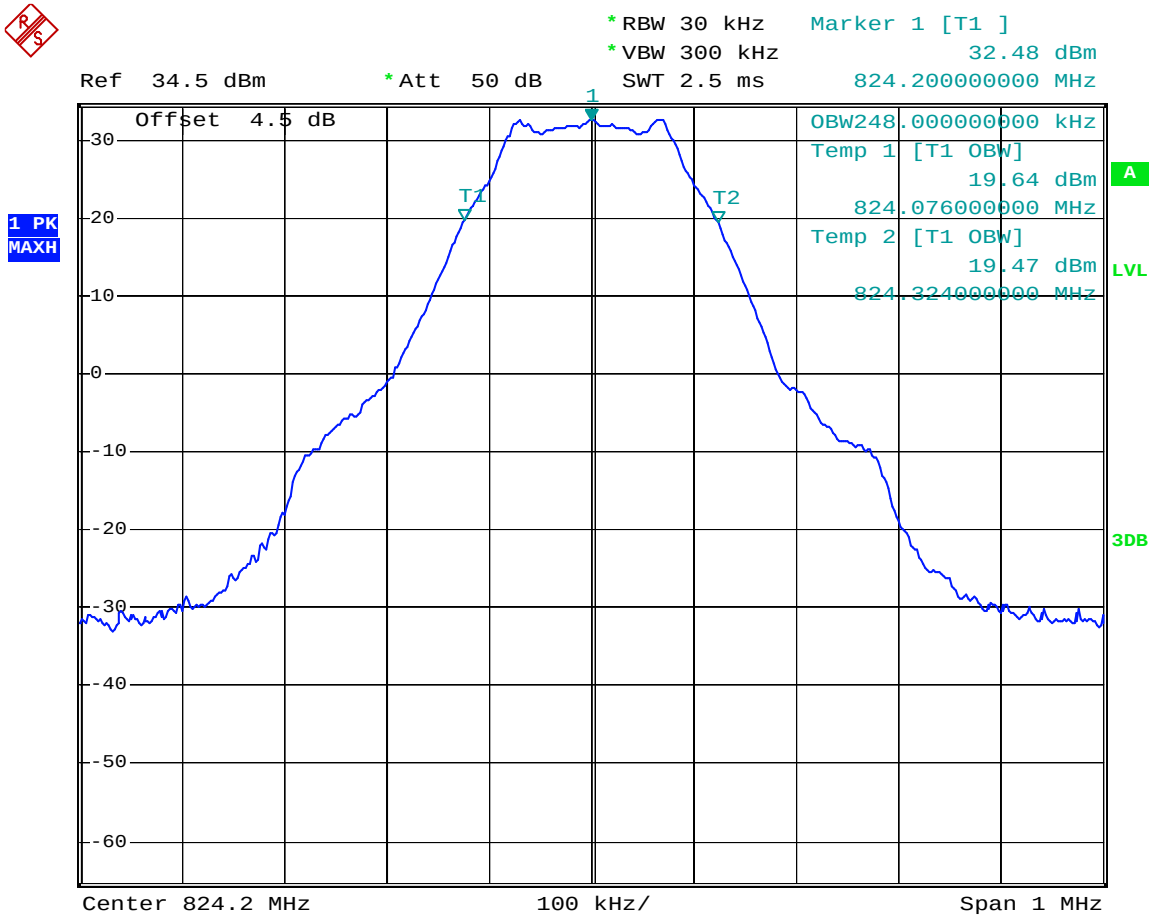


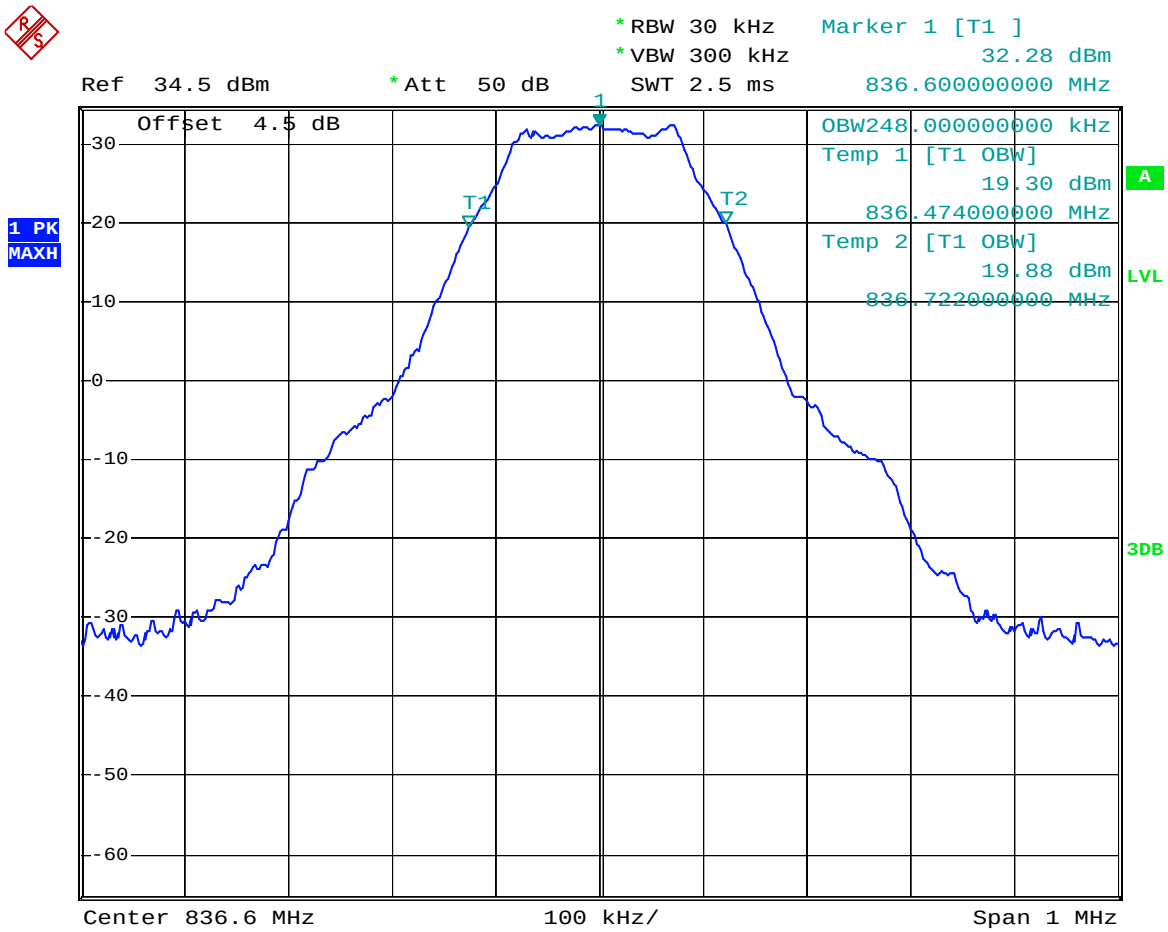
Occupied Bandwidth

Date: 29.AUG.2008 16:36:34



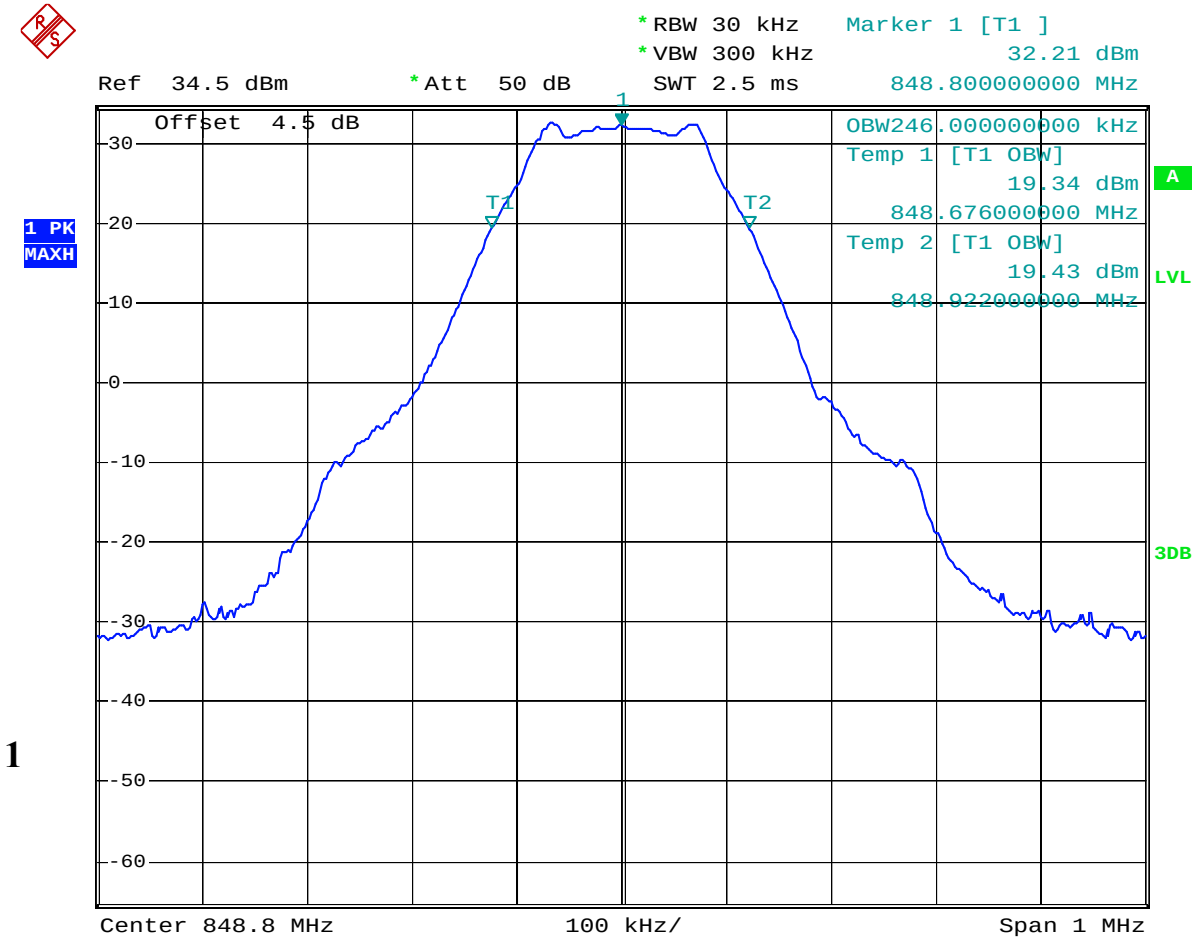
99% Band width

Date: 4.SEP.2008 15:02:47



99% Band width

Date: 4.SEP.2008 15:04:01



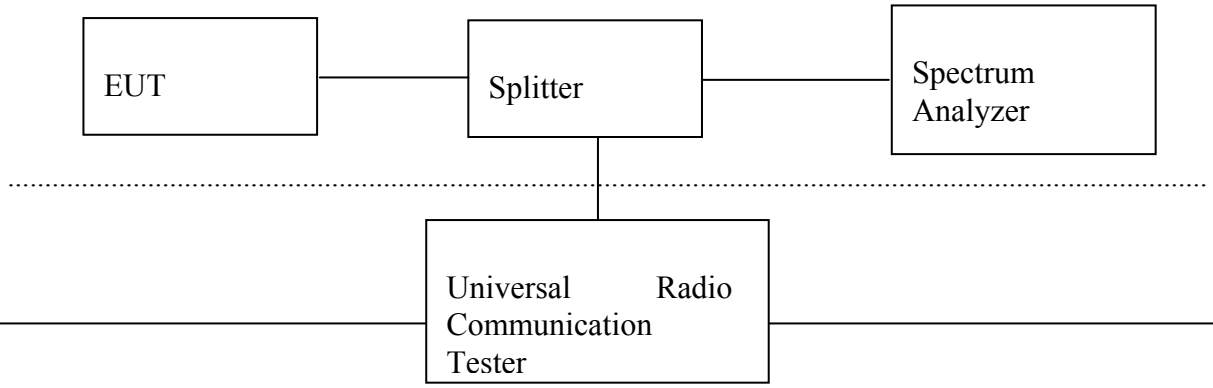
1

99% Band width

Date: 4.SEP.2008 15:08:44

10.2.Test Procedure

The RF output of the transceiver was connected to a spectrum analyzer and simulator through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 100 kHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.



10.3.Test Data

10.3.1.

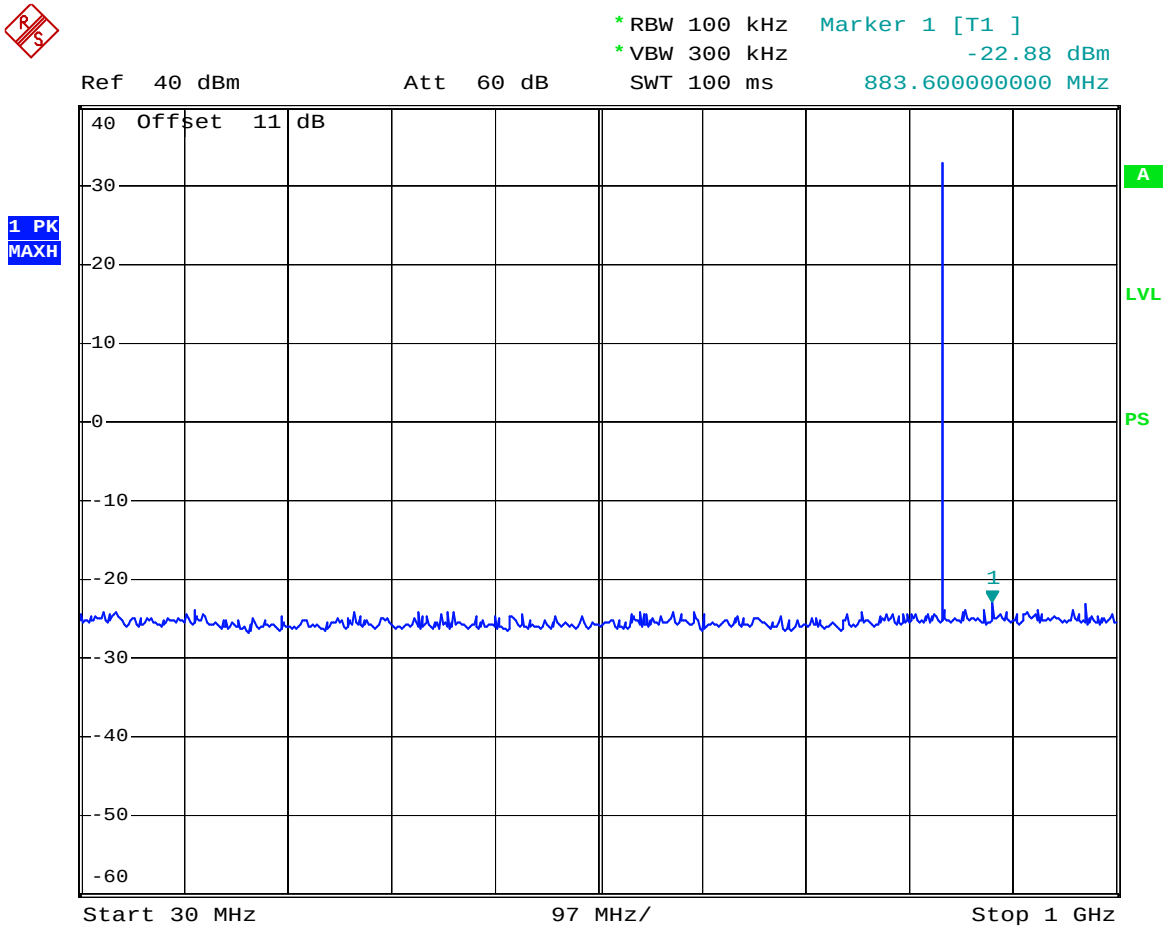
10.3.2.Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	56%
ATM Pressure:	100.0kPa

Please refer to the hereinafter plots.

For GSM 850:

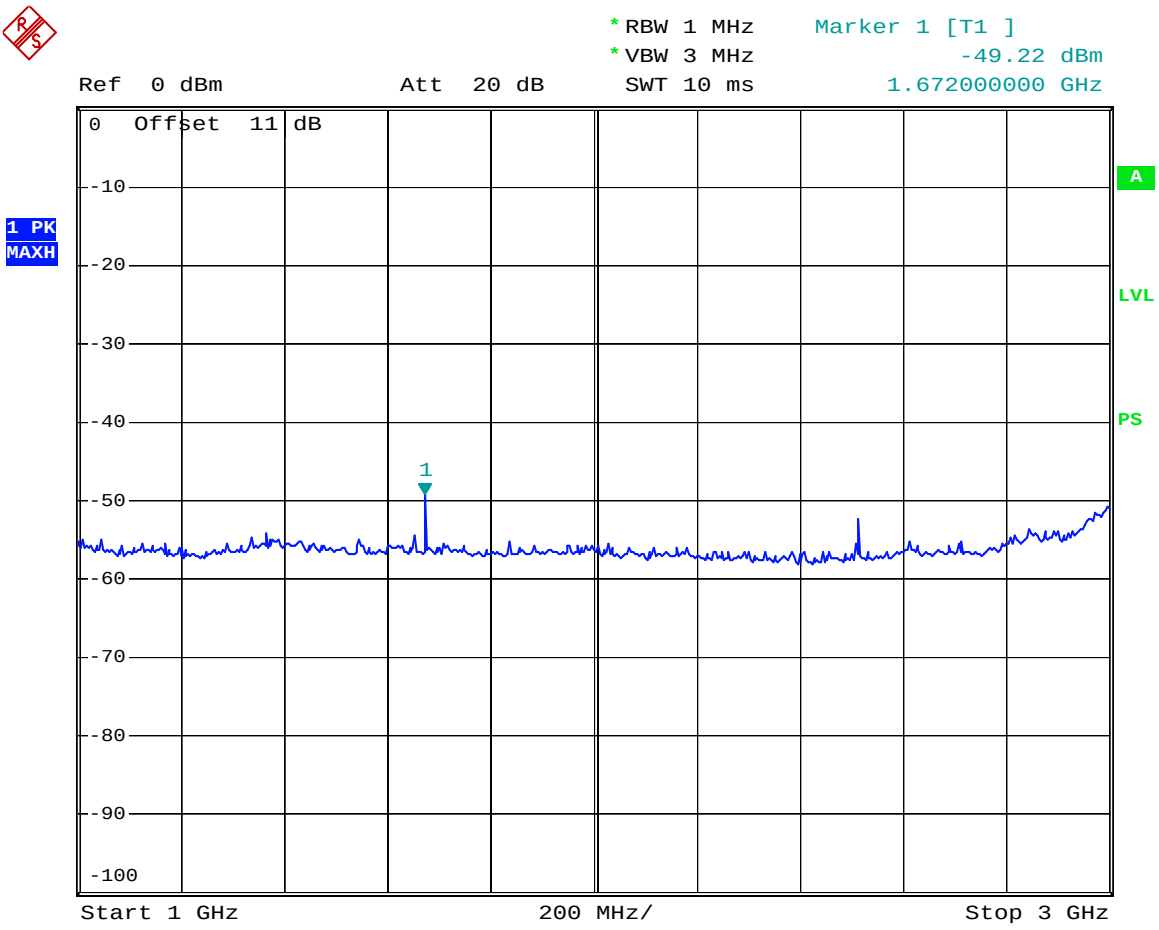
30MHz-1000MHz - Middle Channel



Spurious Emissions at Atenna terminals

Date: 29.AUG.2008 15:38:22

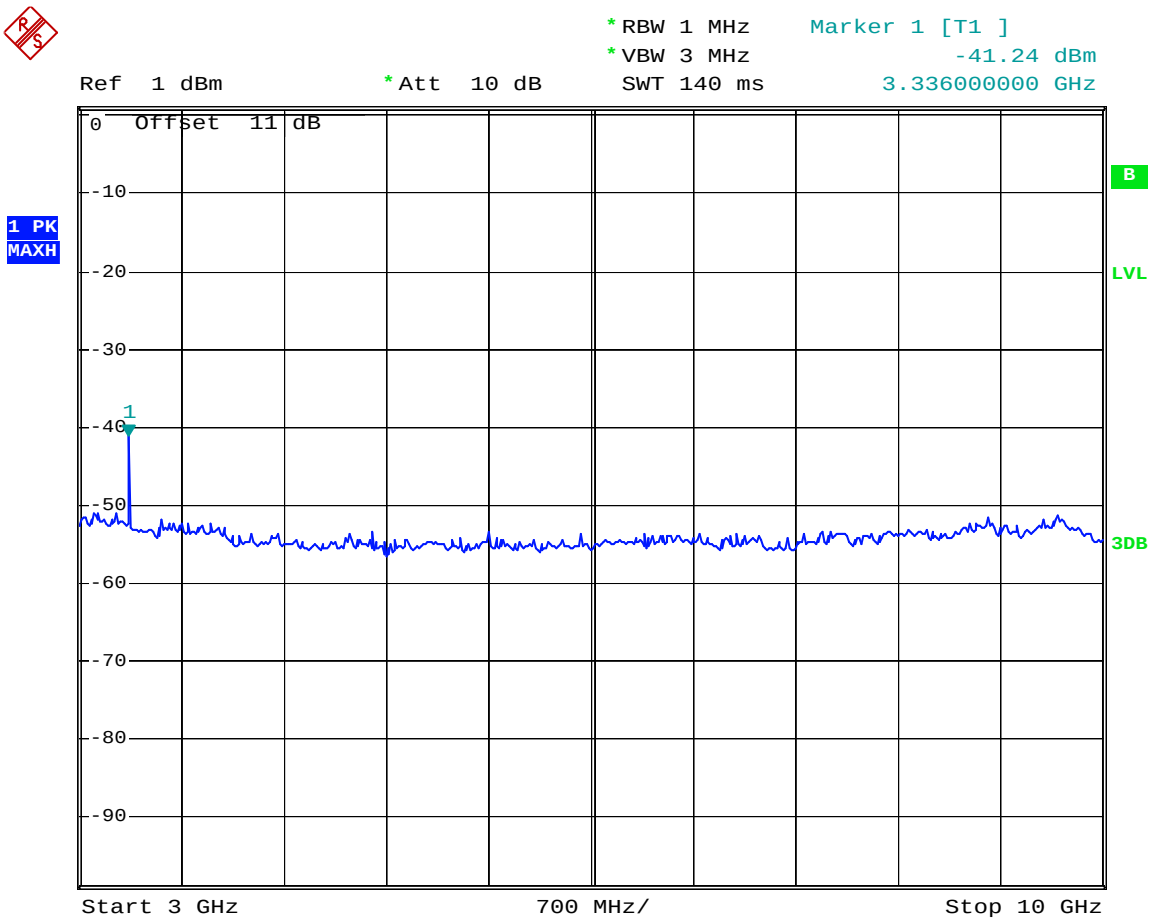
1GHz-3GHz - Middle Channel



Spurious Emissions at Atenna terminals

Date: 29.AUG.2008 15:43:21

3GHz-10GHz - Middle Channel



Spurious Emission At Antenna terminals

Date: 5.SEP.2008 17:23:44

11. §2.1053 - SPURIOUS RADIATED EMISSIONS

11.1.Applicable Standards

CFR 47 § 2.1053, 22.917.

11.2.Test Procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to tenth harmonic of the fundamental frequency was investigated.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB = 10 lg (TXpwr in Watts/0.001) – the absolute level

Spurious attenuation limit in dB = 43 + 10 Log_{10} (power out in Watts)

11.3.Test Data

11.3.1.

11.3.2.Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	56%
ATM Pressure:	100.0kPa

For GSM 850 Band

Indicated		Table	Test Antenna		Substituted			Antenna	Cable	Absolute	Limit (dBm)	Margin (dB)
Frequency (MHz)	Reading (dBμV)	Angle Degree	Height Meter	Polar H/V	Frequency (MHz)	Level (dBm)	Polar H/V	Gain (dBi)	Loss (dB)	Level (dBm)		
30 MHz-10 GHz: Middle Channel												
3346.6	56.34	0	1.5	H	3346.6	-47.6	H	7.1	1.44	-41.94	-13	28.94
1673.2	53.79	120	1.5	V	1673.2	-52.3	V	6.2	0.98	-47.08	-13	34.08
1673.2	48.37	120	1.2	H	1673.2	-55.6	H	6.2	0.98	-50.38	-13	37.38
2509.8	48.05	180	1.5	V	2509.8	-56.5	V	7.3	1.19	-50.39	-13	37.39
3346.6	46.90	180	1.8	V	3346.6	-56.4	V	6.9	1.35	-50.85	-13	37.85
2509.8	47.26	200	1.6	H	2509.8	-57.7	H	7.3	1.19	-51.59	-13	38.59
877.3	43.40	70	2.8	H	897.3	-56.8	H	0	4.90	-61.70	-13	48.70
698.3	33.80	242	2.5	H	698.3	-66.7	H	0	4.15	-70.85	-13	57.85

12. §2.1055, §22.355 - FREQUENCY STABILITY

12.1.Applicable Standard

CFR47 § 2.1055 (a), § 2.1055 (d), §22.355

According to §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table below:

Frequency Tolerance for Transmitters in the Public Mobile Services

Frequency Range (MHz)	Base, fixed (ppm)	Mobile ≤ 3 watts (ppm)	Mobile ≤ 3 watts (ppm)
25 to 50	20.0	20.0	50.0
50 to 450	5.0	5.0	50.0
450 to 512	2.5	5.0	5.0
821 to 896	1.5	2.5	2.5
928 to 929.	5.0	N/A	N/A
929 to 960.	1.5	N/A	N/A
2110 to 2220	10.0	N/A	N/A

12.2.Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to communication test set via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the communication test set.

Frequency Stability vs. Voltage: An external variable DC power supply was connected to the battery terminals of the equipment under test. The voltage was set to 115% of the nominal value and was then decreased until the transmitter light no longer illuminated; i.e., the battery end point. The output frequency was recorded for each battery voltage.

12.3.Test Data

12.3.1.

12.3.2.Environmental Conditions

Temperature:	**25 ° C**
Relative Humidity:	**56%**
ATM Pressure:	**100.0kPa**

For GSM 850

Middle channel fo =836.6MHz				
Temperature (℃)	Power Supplied (V)	Frequency Error (Hz)	Error (ppm)	Limit (ppm)
-20	Vnor	-2	-0.0024	2.5
	Vhigh	-5	-0.0060	2.5
	Vlow			
-10	Vnor	-5	-0.0060	2.5
	Vhigh	-6	-0.0072	2.5
	Vlow			
0	Vnor	-10	-0.0120	2.5
	Vhigh	-8	-0.0096	2.5
	Vlow			
10	Vnor	-10	-0.0120	2.5
	Vhigh	-12	-0.0143	2.5
	Vlow			
20	Vnor	-6	-0.0072	2.5
	Vhigh	-11	-0.0131	2.5
	Vlow			
30	Vnor	-11	-0.0131	2.5
	Vhigh	-9	-0.0108	2.5
	Vlow			
40	Vnor	-9	-0.0108	2.5
	Vhigh	-7	-0.0084	2.5
	Vlow			
50	Vnor	-3	-0.0036	2.5
	Vhigh	-4	-0.0048	2.5
	Vlow			
55	Vnor	-6	-0.0072	2.5
	Vhigh	-7	-0.0084	2.5
	Vlow			