



Report No.: RZA2010-1463RF22-R1



Part 22

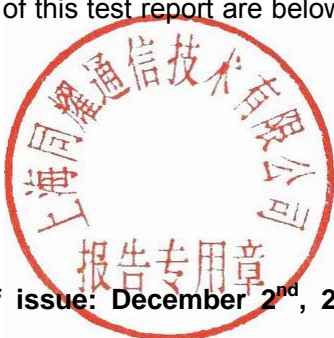
TEST REPORT

Product Name	GSM mobile phone
Model Name	IT385
FCC ID	WH7IT385
Client	Longcheer Technology (Shanghai) Co., Ltd.

TA Technology (Shanghai) Co., Ltd.



GENERAL SUMMARY

Product Name	GSM mobile phone	Model Name	IT385
FCC ID	WH7IT385		
Report No.	RZA2010-1380RF01-R1		
Client	Longcheer Technology (Shanghai) Co., Ltd.		
Manufacturer	Longcheer Technology (Shanghai) Co., Ltd.		
Reference Standard(s)	<p>FCC CFR47 Part 2 (2009-12) Frequency Allocations And Radio Treaty Matters;General Rules And Regulations</p> <p>FCC CFR 47 Part 22H (2009-12) Public Mobile Services(850MHz)</p> <p>ANSI/TIA-603-C(2004) Land mobile FM or PM Communications Equipment Measurements and Performance Standards.</p>		
Conclusion	<p>This portable wireless equipment has been measured in all cases requested by the relevant standards. Test results in Chapter 2 of this test report are below limits specified in the relevant standards.</p> <p>General Judgment: Pass</p> <div style="text-align: right;">  (Stamp) Date of issue: December 2nd, 2010 </div>		
Comment	The test result only responds to the measured sample.		

Approved by 杨伟中
Yang Weizhong

Revised by 徐凯
Xu Kai

Performed by 杜如巍
Du Ruwei

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1. General Information

1.1. Notes of the test report

TA Technology (Shanghai) Co., Ltd. guarantees the reliability of the data presented in this test report, which is the results of measurements and tests performed for the items under test on the date and under the conditions stated in this test report and is based on the knowledge and technical facilities available at TA Technology (Shanghai) Co., Ltd. at the time of execution of the test.

TA Technology (Shanghai) Co., Ltd. is liable to the client for the maintenance by its personnel of the confidentiality of all information related to the items under test and the results of the test. This report only refers to the item that has undergone the test.

This report standalone dose not constitute or imply by its own an approval of the product by the certification Bodies or competent Authorities. This report cannot be used partially or in full for publicity and/or promotional purposes without previous written approval of **TA Technology (Shanghai) Co., Ltd.** and the Accreditation Bodies, if it applies.

1.2. Testing laboratory

Company: TA Technology (Shanghai) Co., Ltd.
Address: No.145, Jintang Rd, Tangzhen Industry Park, Pudong
City: Shanghai
Post code: 201201
Country: P. R. China
Contact: Yang Weizhong
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1.3. Applicant Information

Company: Longcheer Technology (Shanghai) Co., Ltd.
Address: Building 1, No. 401, Caobao Rd, Xuhui District, Shanghai, P.R. China
City: Shanghai
Postal Code: 201204
Country: P.R. China
Contact: Leo BAO
Telephone: 86-21-640888898-5108
Fax: 021-54970876

1.4. Manufacturer Information

Company: Longcheer Technology (Shanghai) Co., Ltd.
Address: Building 1, No. 401, Caobao Rd, Xuhui District, Shanghai, P.R. China
City: Shanghai
Postal Code: 201204
Country: P.R. China
Telephone: 86-21-640888898-5108
Fax: 021-54970876

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1.5. Information of EUT

General information

Name of EUT:	GSM mobile phone		
IMEI :	358688000000158		
Hardware Version:	LB6M111A2-1		
Software Version:	LB6UN01.8.5.1.1T20G0714_M111		
Antenna Type:	Internal Antenna		
Device Operating Configurations:			
Operating Mode(s):	GSM 850: (tested)		
Test Modulation:	GMSK		
Maximum E.R.P.	29.24dBm		
Power Supply:	Battery or Charger (AC adaptor)		
Rated Power Supply Voltage:	3.8V		
Extreme Voltage:	Minimum: 3.6V Maximum: 4.2V		
Extreme Temperature:	Lowest: -20°C Highest: +55°C		
Test Channel: (Low - Middle - High)	128 - 190 - 251 (GSM 850) (tested)		
Operating Frequency Range(s)	Band	Tx (MHz)	Rx (MHz)
	GSM850	824.2 ~ 848.8	869.2 ~ 893.8

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Auxiliary Equipment Details

AE1: Battery

Model:	BL-5C
Manufacture:	/
S/N:	BAK08100827004089

Equipment Under Test (EUT) is GSM mobile phone with internal antenna. The EUT is tested GSM 850 band in this report.

The sample under test was selected by the Client.

Components list please refer to documents of the manufacturer.

1.6. Test Date

The test is performed from September 3, 2010 to October 14, 2010 and December 2, 2010.

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2. Test Information

2.1. Summary of test results

Number	Test Case	Clause in FCC rules	Verdict
1	RF power output	2.1046	PASS
2	Effective Radiated Power	22.913(a)(2)	PASS
3	Occupied Bandwidth	2.1049	PASS
4	Band Edge Compliance	22.917	PASS
5	Frequency Stability	2.1055 / 22.355	PASS
6	Spurious Emissions at Antenna Terminals	2.1051 / 22.917(a)	PASS
7	Radiates Spurious Emission	2.1053 / 22.917 (a)	PASS

2.2. RF Power Output

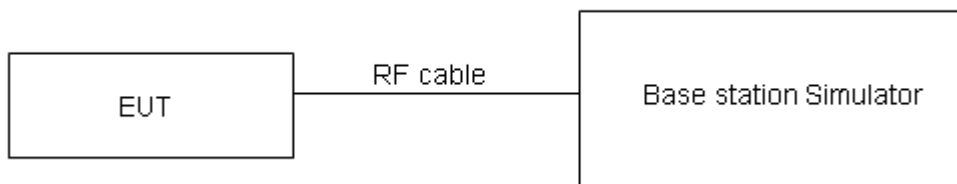
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

During the process of the testing, The EUT is controlled by the Base Station Simulator to ensure max power transmission and proper modulation. These measurements have been tested at following channels: 128, 190, and 251 for GSM 850 band.

Test Setup



The loss between RF output port of the EUT and the input port of the tester has been taken into consideration.

Limits

No specific RF power output requirements in part 2.1046.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$. $U = 0.4$ dB.

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Test Results

	Channel	Frequency (MHz)	RF Output Power (dBm)	
GSM 850	128	824.2	32.19	
	190	836.6	32.23	
	251	848.8	32.29	
GSM850+GPRS	128	824.2	1 Down 1Up	32.26
			1 Down 2Up	32.02
	190	836.6	1 Down 1Up	32.28
			1 Down 2Up	32.10
	251	848.8	1 Down 1Up	32.35
			1 Down 2Up	32.18

Note: The following testing in GPRS is set to multislot class(1 Down 1Up) based on the maximum RF Output Power.

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2.3. Effective Radiated Power

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

The measurement procedures in TIA- 603C are used.

The radiated power was measured using ETS-LINDGREN OTA Chamber in “Peak” mode.

1. In an fully anechoic chamber, a sleeve dipole antenna for the frequency band of interest is placed on the reference centre of the turntable at a 5 meters test distance from the test receive antenna. An RF signal source is connected to the dipole with a Tx cable that has been constructed to not interfere with radiation pattern of the antenna. A known (measured) power (P_{in}) is applied to input of dipole, and the power received (P_r) is recorded from the spectrum analyzer.
2. The EUT substituted for the dipole at the reference centre of the chamber. A radio link shall be established between EUT and the Base Station Simulator. The EUT is controlled to ensure at its maximum power level and proper modulation.
3. A scan is performed to obtain the radiation pattern. A peak detector is used while RBW and VBW are both set to 3MHz. From these measurements, the maximum radiated power (P_{er}) was recorded from the spectrum analyzer from the 360 degrees rotation of the turntable and in both horizontally and vertically polarized orientations of the test antenna.

The Reference Path loss = $P_{in} - P_r$ - Tx cable loss + Substitution antenna gain

$EIRP = P_{er} + \text{Path loss}$

4. ERP can be calculated from EIRP by subtracting the gain of the dipole, $ERP = EIRP - 2.15 \text{ dBi}$.
5. The measurement will be conducted at three channels No.128, No.190 and No.251 (Bottom, middle and top channels of GSM 850).

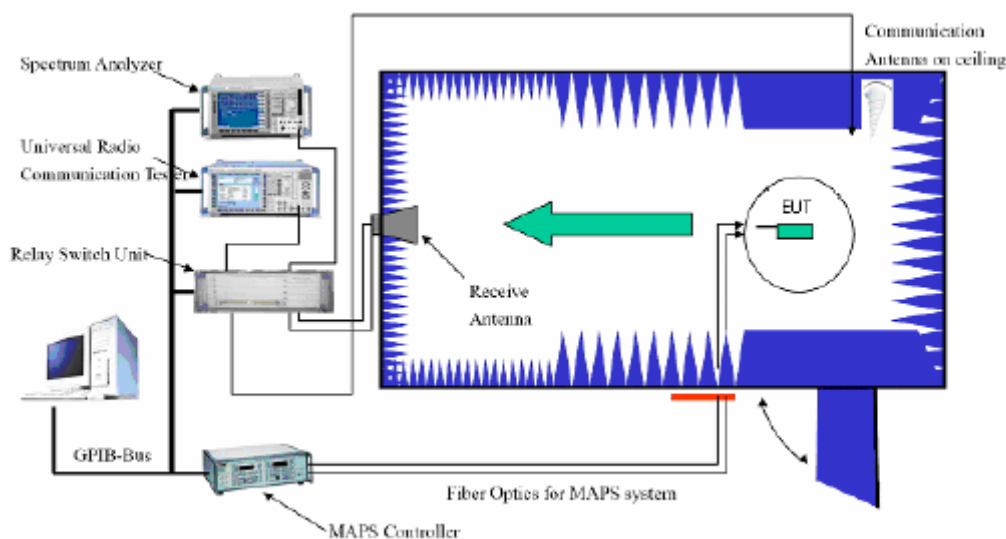
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Test Setup



Limits

Rule Part 22.913(a) specifies that "Mobile/portable stations are limited to 7 watts ERP".

GSM 850(ERP)	$\leq 7 \text{ W}$ (38.45 dBm)
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Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$. $U = 1.19 \text{ dB}$

Test Results:Pass

	Channel	Frequency (MHz)	P_{er} (EUT)	Pin	Gain (dBi)	Cable Loss	Pr (dBm)	Path loss (dBm)	E.R.P. (dBm)
GSM 850	128	824.2	77.4036	0	1.06475	-15.1681	-30.5608	-46.7936	28.46
	190	836.6	77.9561	0	1.2373	-15.1951	-30.4537	-46.8861	28.92
	251	848.8	78.1758	0	1.384	-15.2426	-30.4192	-47.0458	28.98
GSM 850+GPRS	128	824.2	77.6736	0	1.06475	-15.1681	-30.5608	-46.7936	28.73
	190	836.6	78.2361	0	1.2373	-15.1951	-30.4537	-46.8861	29.20
	251	848.8	78.4358	0	1.384	-15.2426	-30.4192	-47.0458	29.24

Note: 1. The Reference Path loss = $P_{in} - P_r - \text{Tx cable loss} + \text{Substitution antenna gain}$

2. $EIRP = P_{er} + \text{Path loss}$

3. $ERP = EIRP - 2.15 \text{ dBi}$.

2.4. Occupied Bandwidth

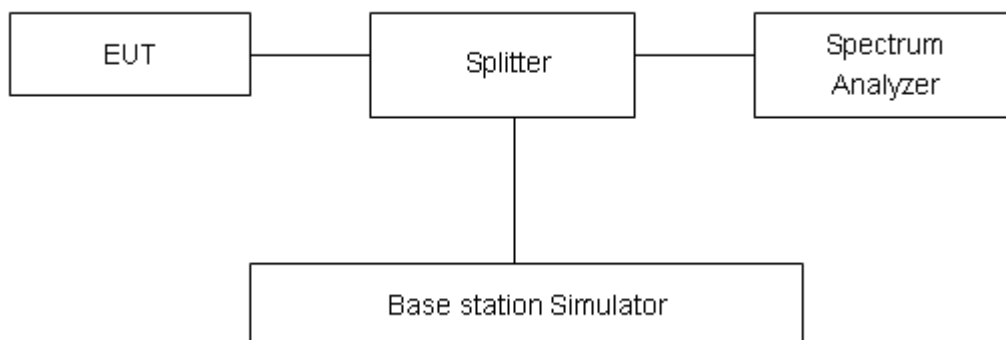
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The occupied bandwidth is measured using spectrum analyzer. RBW is set to 3kHz, VBW is set to 10kHz on spectrum analyzer. 99% power and -26dBc occupied bandwidths are recorded. Spectrum analyzer plots are included on the following pages.

Test Setup



Limits

No specific occupied bandwidth requirements in part 2.1049.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$. $U = 624\text{Hz}$.

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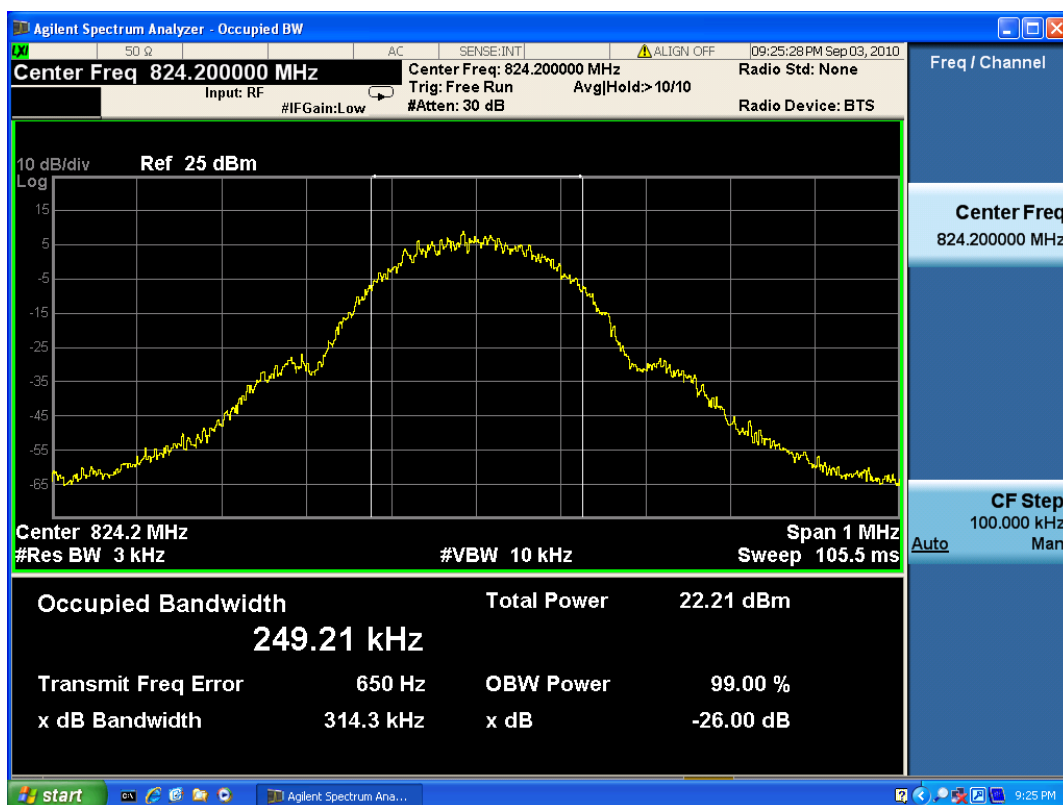
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Test Result

	Channel	Frequency (MHz)	99% Power Bandwidth (kHz)	-26dBc Bandwidth(kHz)
GSM 850	128	824.2	249.21	314.3
	190	836.6	246.25	316.7
	251	848.8	249.87	310.3
GSM 850+GPRS	128	824.2	253.35	319.4
	190	836.6	249.52	321.0
	251	848.8	252.81	317.5



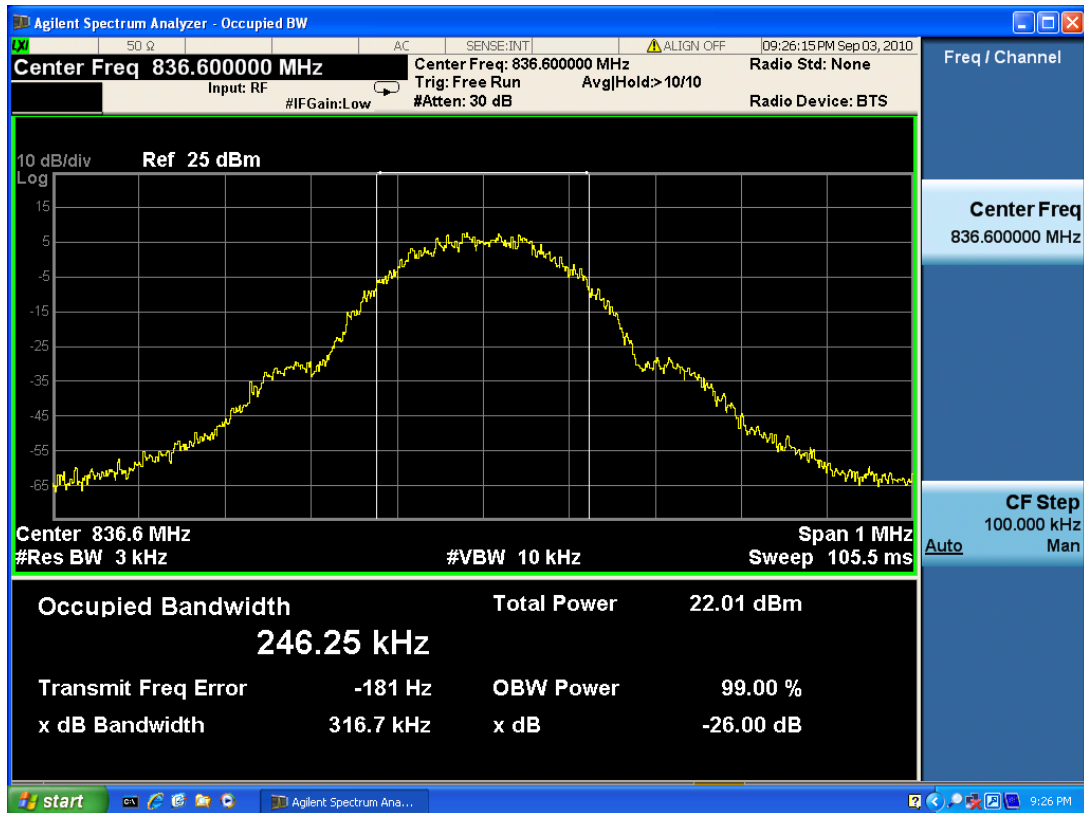
GSM 850 CH128 Occupied Bandwidth

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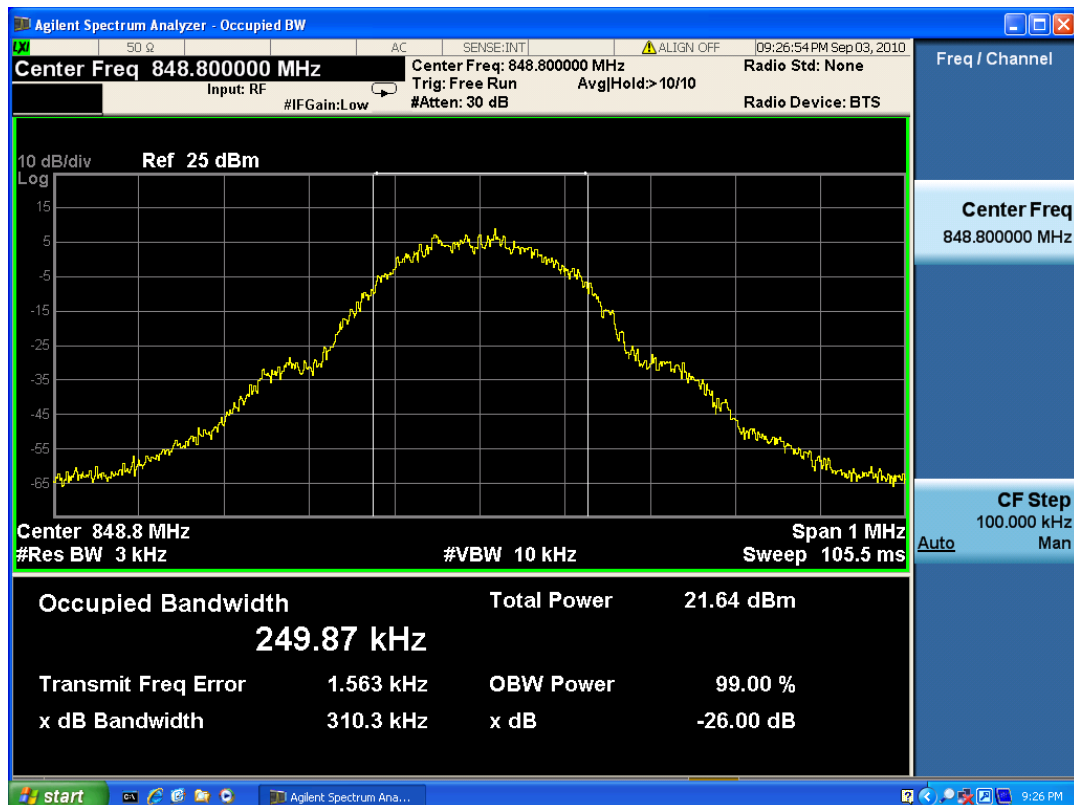
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GSM 850 CH190 Occupied Bandwidth



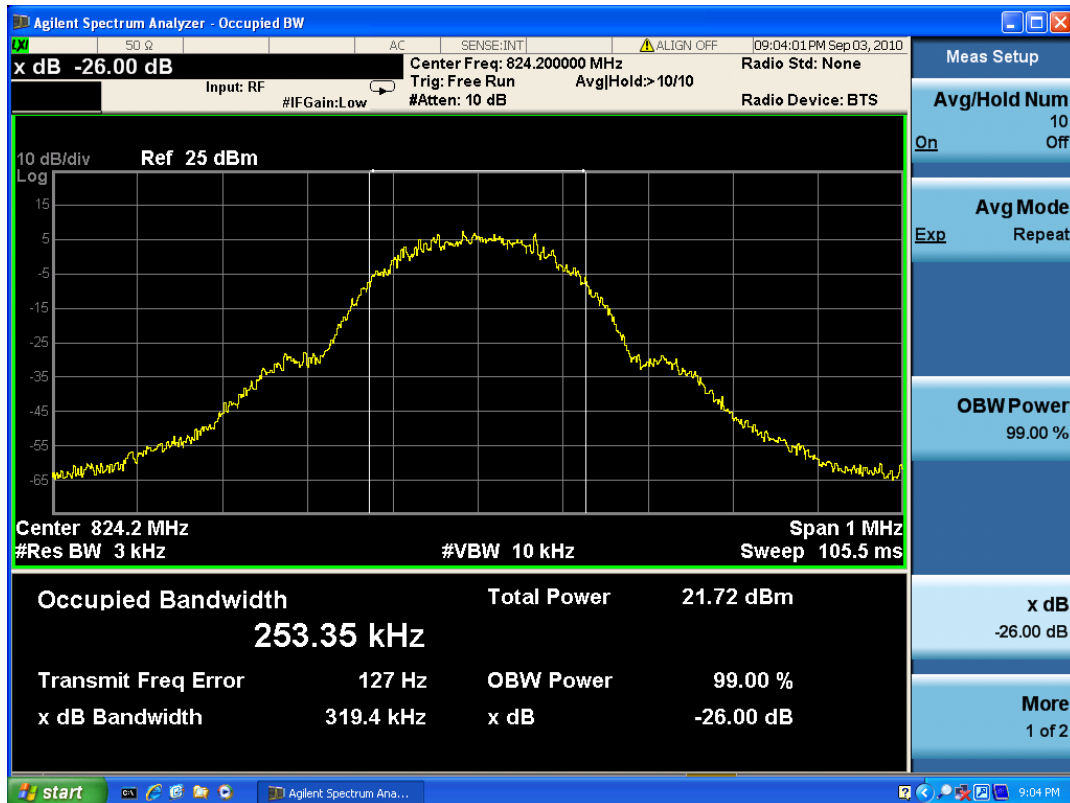
GSM 850 CH251 Occupied Bandwidth

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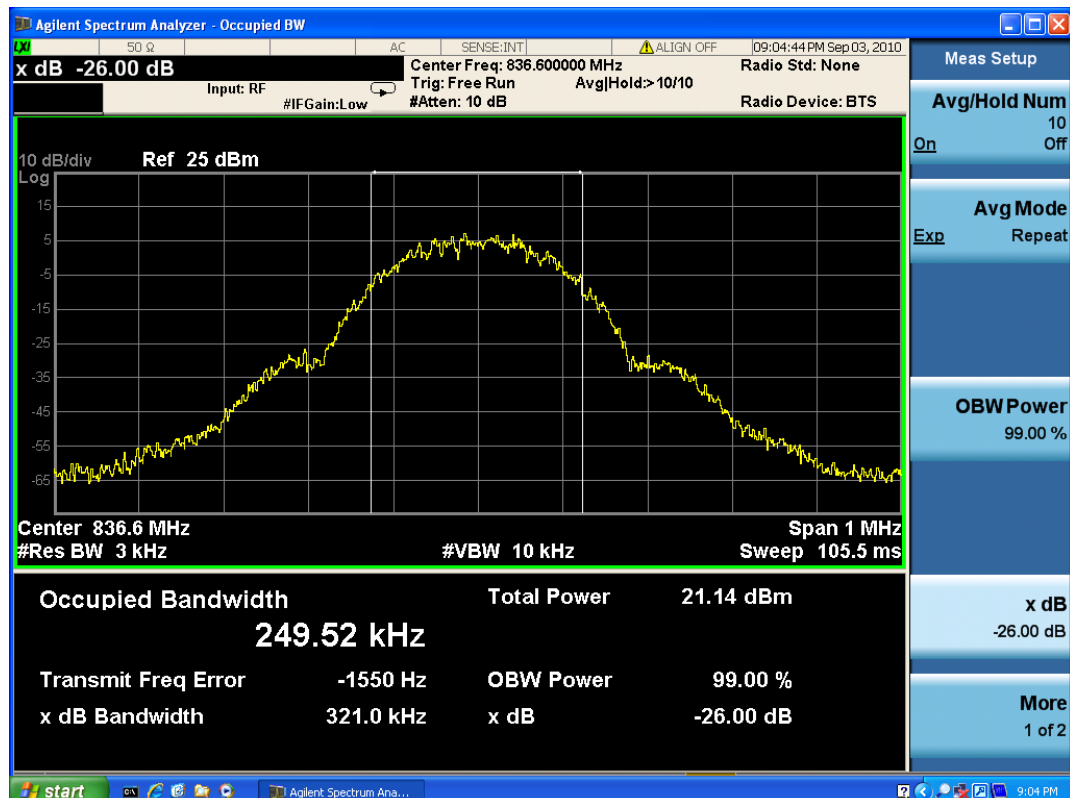
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GSM 850 GPRS CH128 Occupied Bandwidth



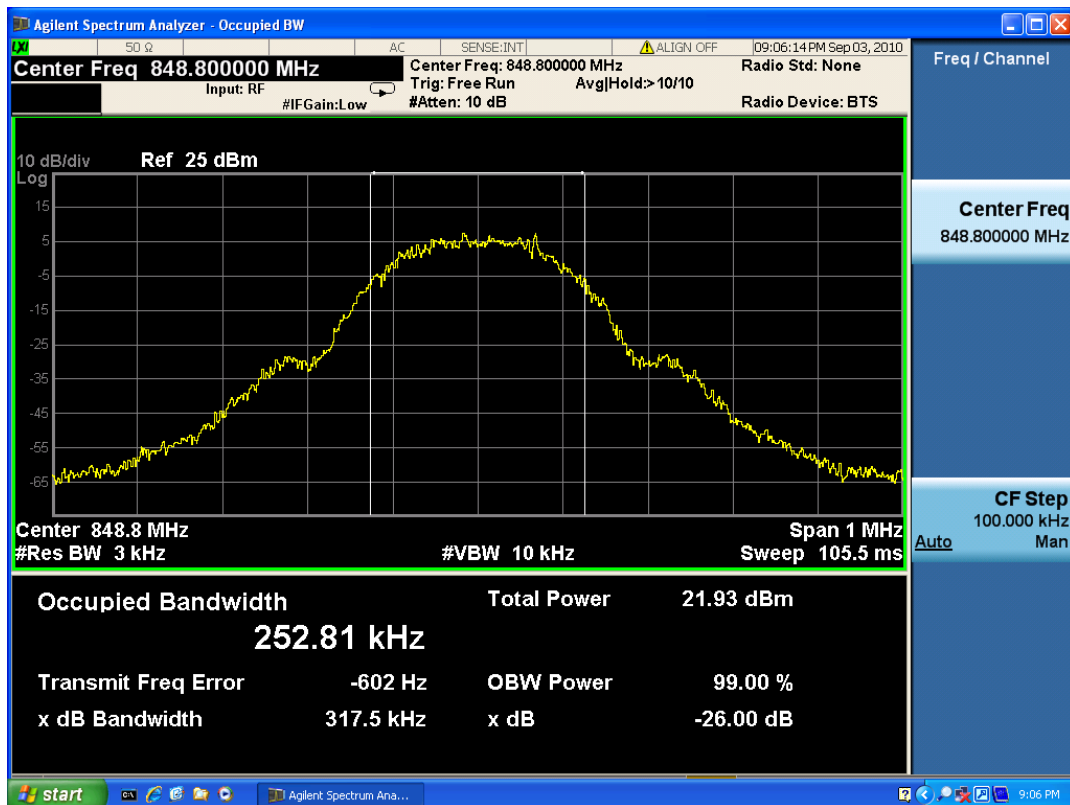
GSM 850 GPRS CH190 Occupied Bandwidth

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GSM 850 GPRS CH251 Occupied Bandwidth

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2.5. Band Edge Compliance

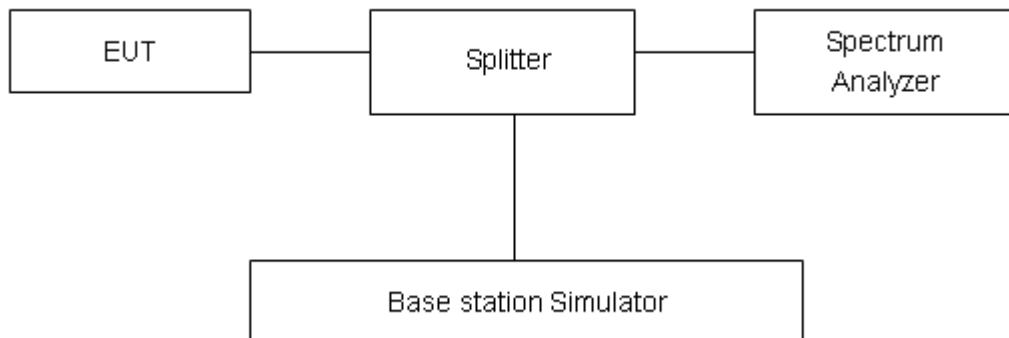
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The band edge of the lowest and highest channels were measured. The average detector is used. RBW is set to 3kHz on spectrum analyzer. Spectrum analyzer plots are included on the following pages.

Test Setup



Limits

Rule Part 22.917(a) specifies that “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.”

Limit	-13 dBm
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Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$. $U=0.684\text{dB}$.

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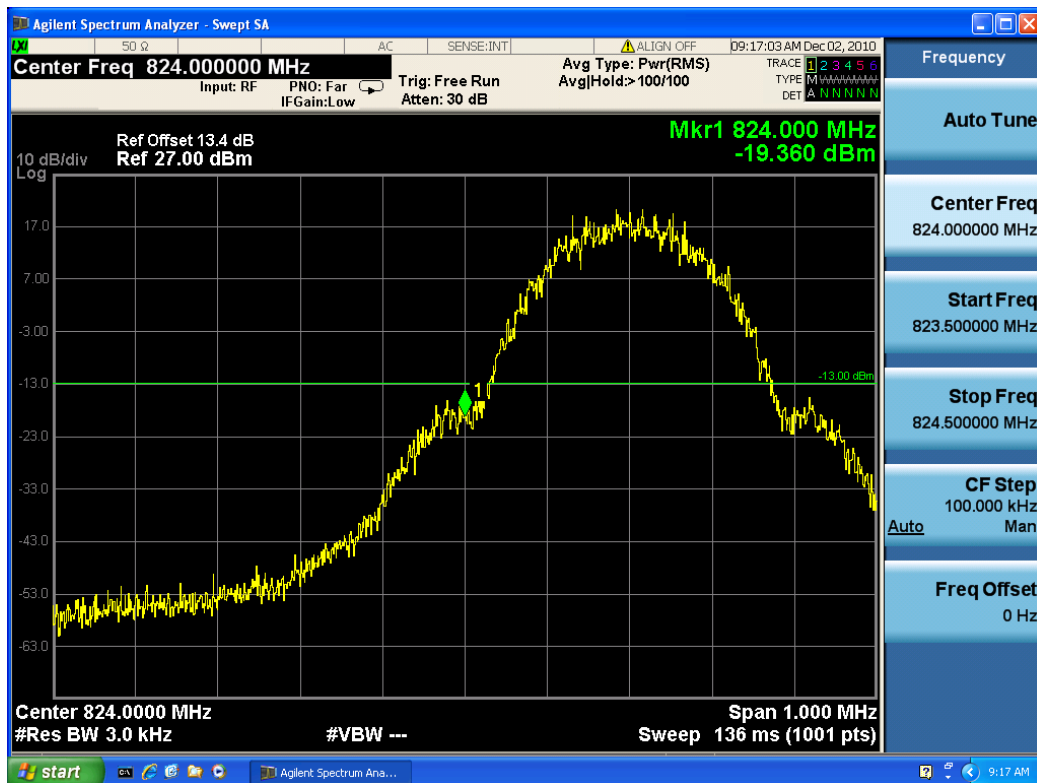
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Test Result:

	Carrier frequency (MHz)	Reference value (dBm)	Limit	Conclusion
GSM 850	824.0	-19.36	-13	PASS
	849.0	-20.20	-13	PASS
GSM 850+GPRS	824.0	-18.69	-13	PASS
	849.0	-20.365	-13	PASS



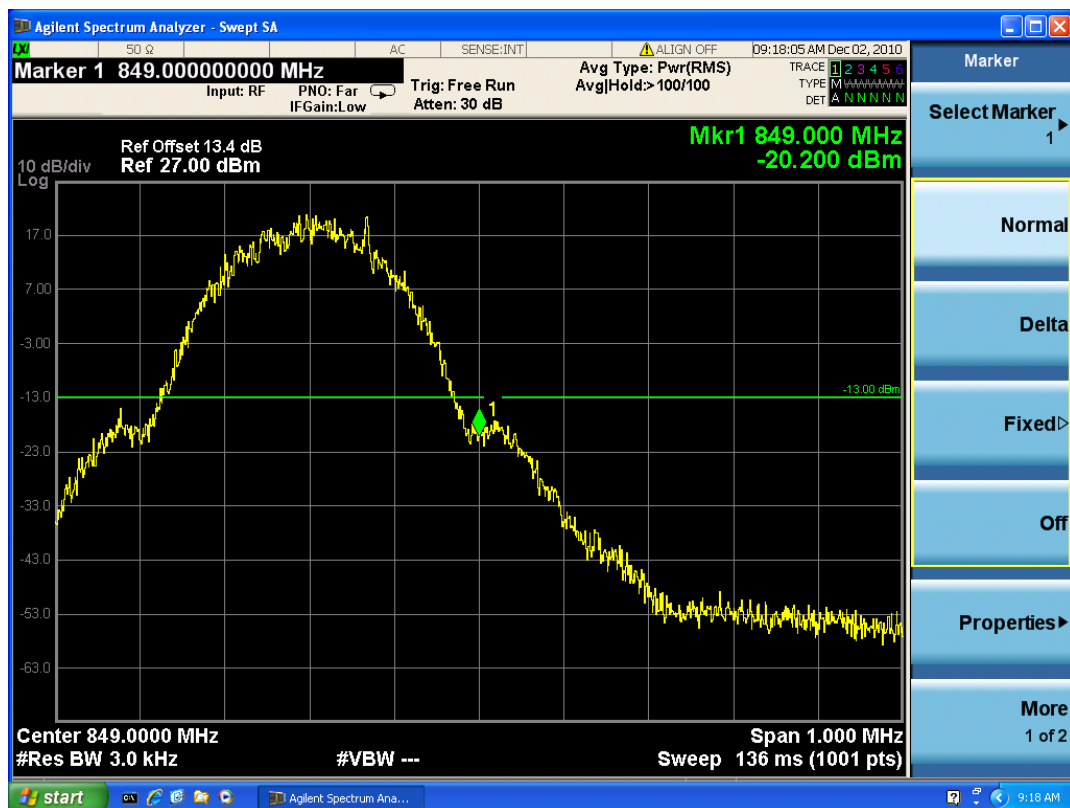
GSM 850 128 Channel

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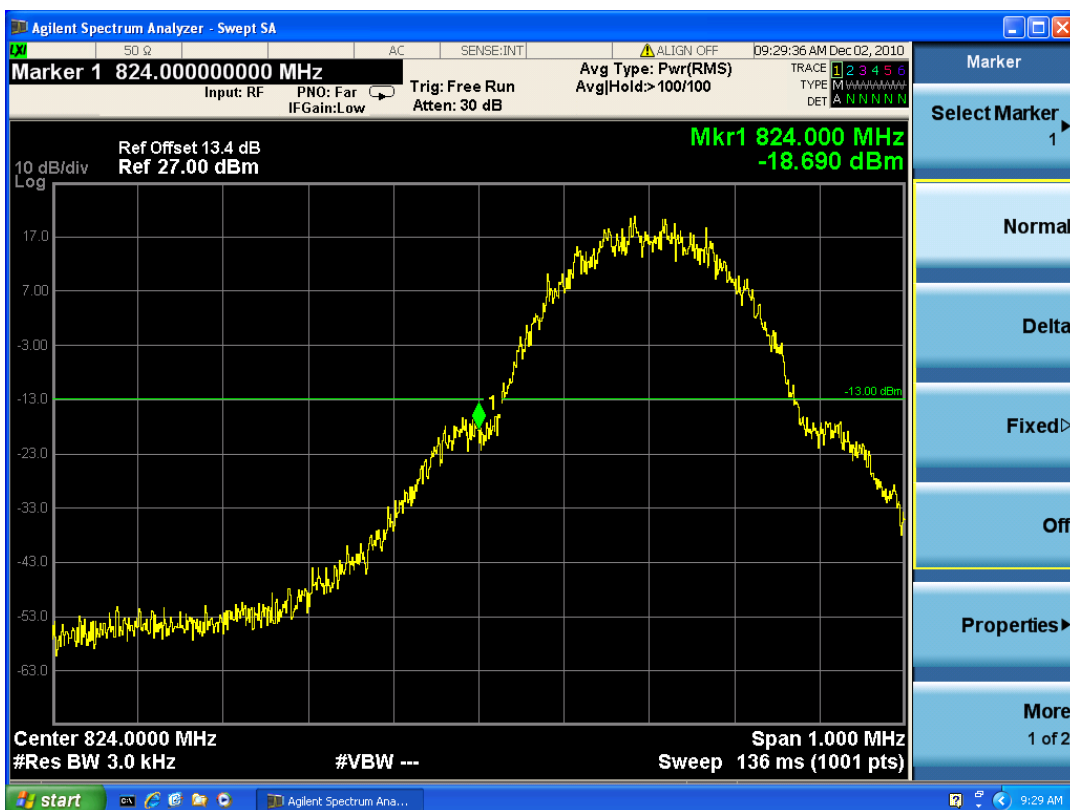
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GSM 850 251 Channel



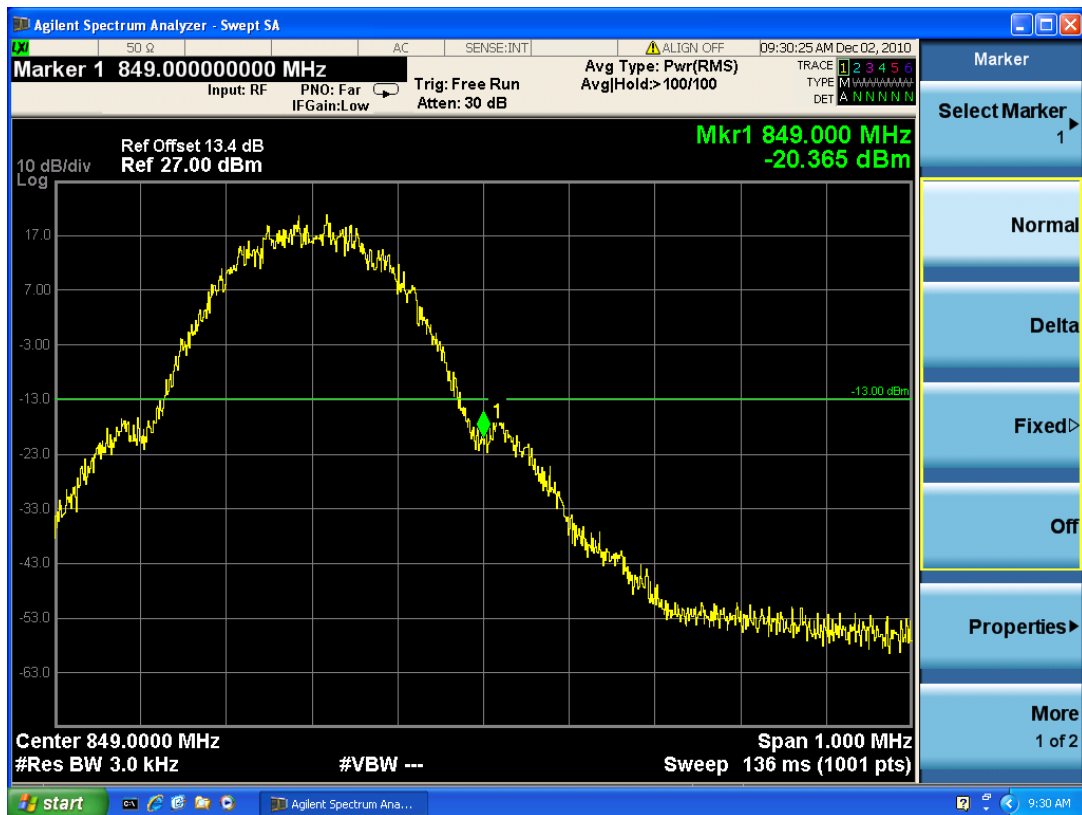
GSM 850 GPRS 128 Channel

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GSM 850 GPRS 251 Channel

2.6. Frequency Stability

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

1. Frequency Stability (Temperature Variation)

The temperature inside the climate chamber is varied from -30°C to +50°C in 10°C step size,

(1) With all power removed, the temperature was decreased to -30°C and permitted to stabilize for three hours.

(2) Measure the carrier frequency with the test equipment in a “call mode”. These measurements should be made within 1 minute of powering up the mobile station, to prevent significant self warming.

(3) Repeat the above measurements at 10°C increments from -30°C to +50°C. Allow at least 1.5 hours at each temperature, un-powered, before making measurements.

2. Frequency Stability (Voltage Variation)

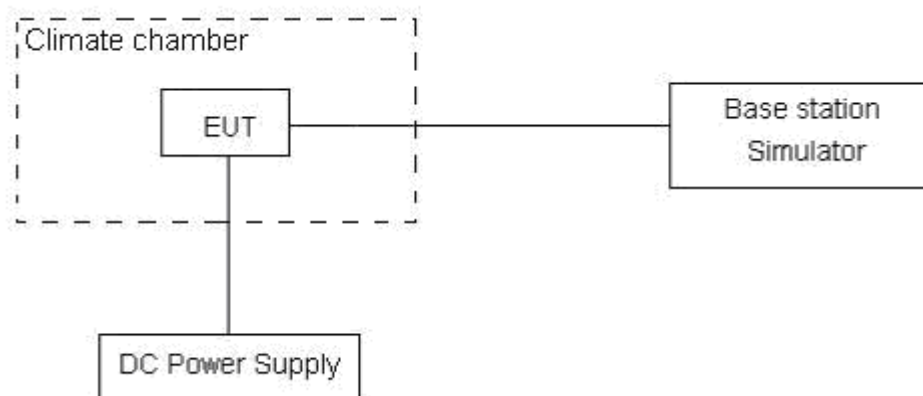
The frequency stability shall be measured with variation of primary supply voltage as follows:

(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.

This transceiver is specified to operate with an input voltage of between 3.6 V and 4.2 V, with a nominal voltage of 3.8V.

Test setup



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Limits

According to the Sec. 22.355, the frequency stability of the carrier shall be accurate to within 2.5 ppm of the received frequency from the base station.

Limits	≤ 2.5 ppm
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Measurement Uncertainty

The assessed measurement uncertainty to ensure 99.75% confidence level for the normal distribution is with the coverage factor $k = 3$. $U = 0.01\text{ppm}$.

Test Result

Temperature (°C)	Test Results (ppm) / 3.8 V Power supply
	Channel 190
-30	0.049
-20	0.047
-10	0.048
0	0.036
10	0.039
20	-0.031
30	0.036
40	0.037
50	0.029

Voltage (V)	Test Results(ppm) / 20°C
	Channel 190
3.6	0.017
3.8	-0.031
4.2	0.029

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2.7. Spurious Emissions at Antenna Terminals

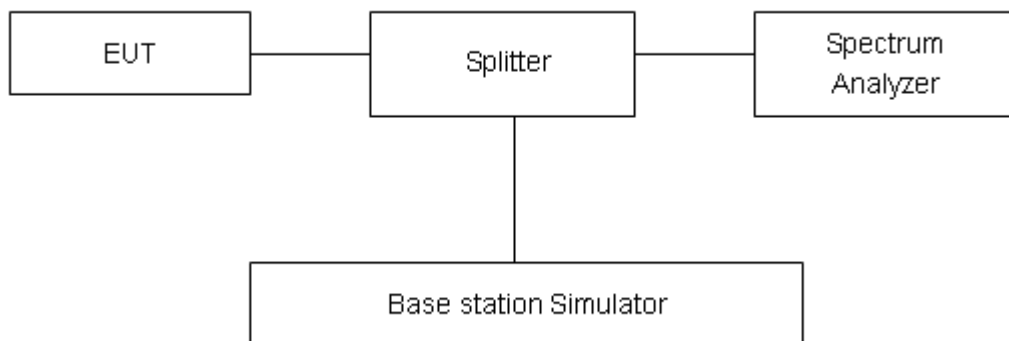
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The measurement is carried out using a spectrum analyzer. The spectrum analyzer scans from 30MHz to the 10th harmonic of the carrier. The peak detector is used. RBW and VBW are set to 100 kHz, Sweep is set to ATUO.

Test setup



Limits

Rule Part 22.917(a) specifies that “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.”

Limit	-13 dBm
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Measurement Uncertainty

The assessed measurement uncertainty to ensure 99.75% confidence level for the normal distribution is with the coverage factor $k = 1.96$.

Frequency	Uncertainty
100kHz-2GHz	0.684 dB
2GHz-12.75GHz	1.407 dB

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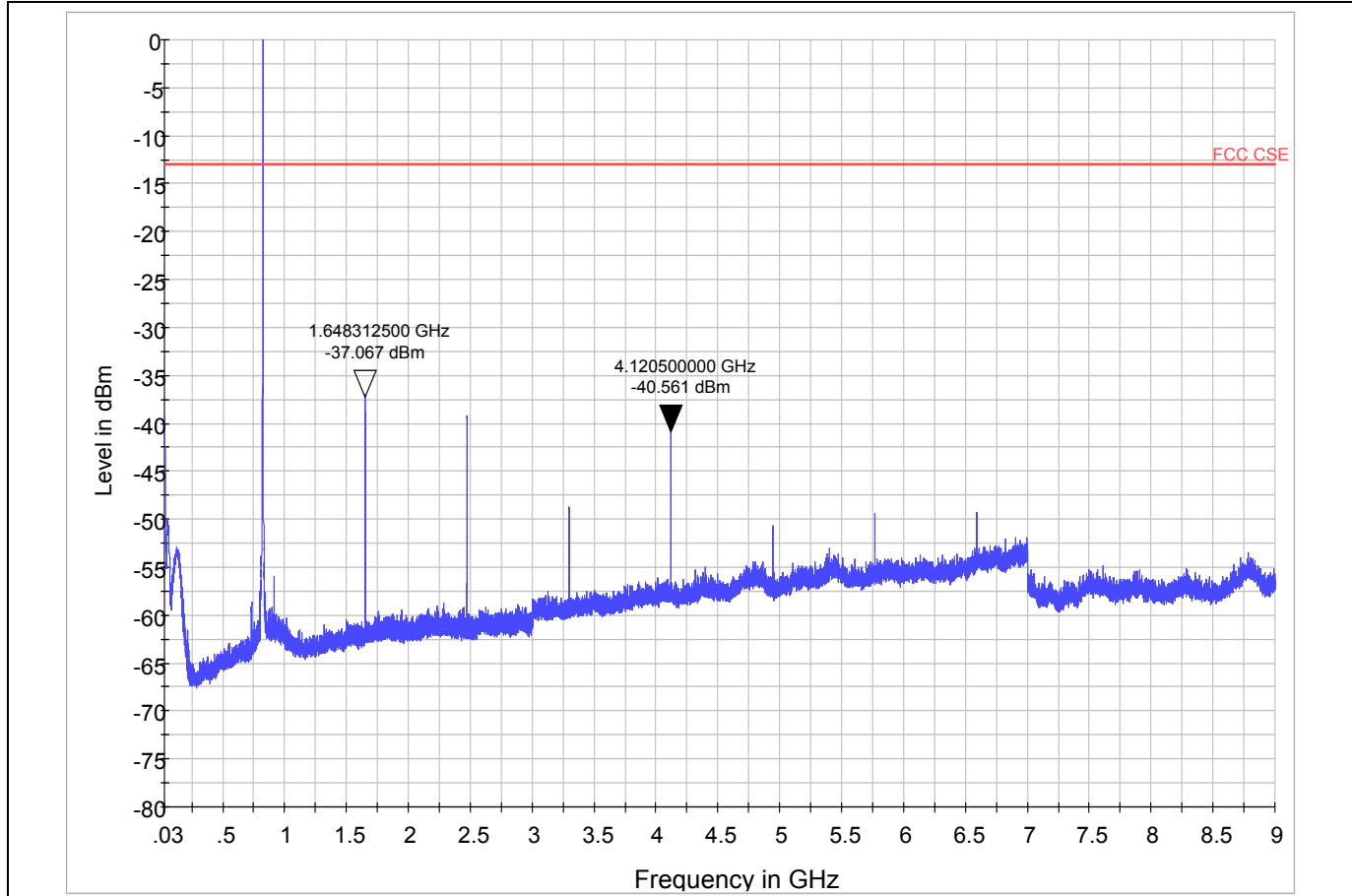
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Test Result

GSM 850 CH128



Note: The signal beyond the limit is carrier:824.2 MHz
GSM 850 128 Channel 30MHz~9GHz

Harmonic	TX ch.128 Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	1648.3125	-37.067	-13	24.067
3	2472.6	/	-13	/
4	3296.8	/	-13	/
5	4120.5	-40.561	-13	27.561
6	4945.2	/	-13	/
7	5769.4	/	-13	/
8	6593.6	/	-13	/
9	7417.8	Nf	-13	/
10	8242	Nf	-13	/

Nf: noise floor

Note: The other Spurious RF conducted emissions level is no more than noise floor.

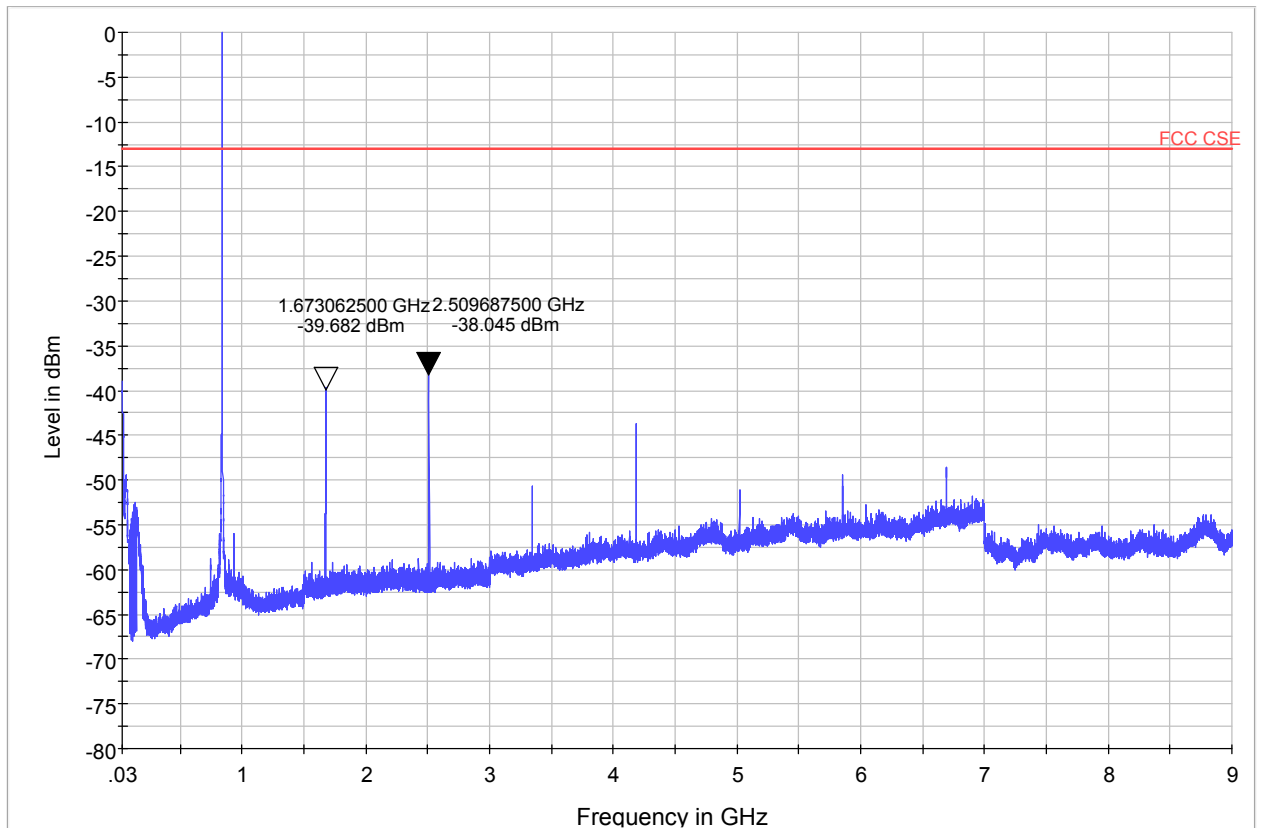
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GSM 850 CH190



Note: The signal beyond the limit is carrier:836.6 MHz
GSM 850 190 Channel 30MHz~9GHz

Harmonic	TX ch.190 Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	1673.0625	-39.682	-13	26.682
3	2509.6875	-38.045	-13	25.045
4	3346.4	/	-13	/
5	4183	/	-13	/
6	5019.6	/	-13	/
7	5856.2	/	-13	/
8	6692.8	/	-13	/
9	7529.4	Nf	-13	/
10	8366	Nf	-13	/
Nf: noise floor				

Note: The other Spurious RF conducted emissions level is no more than noise floor.

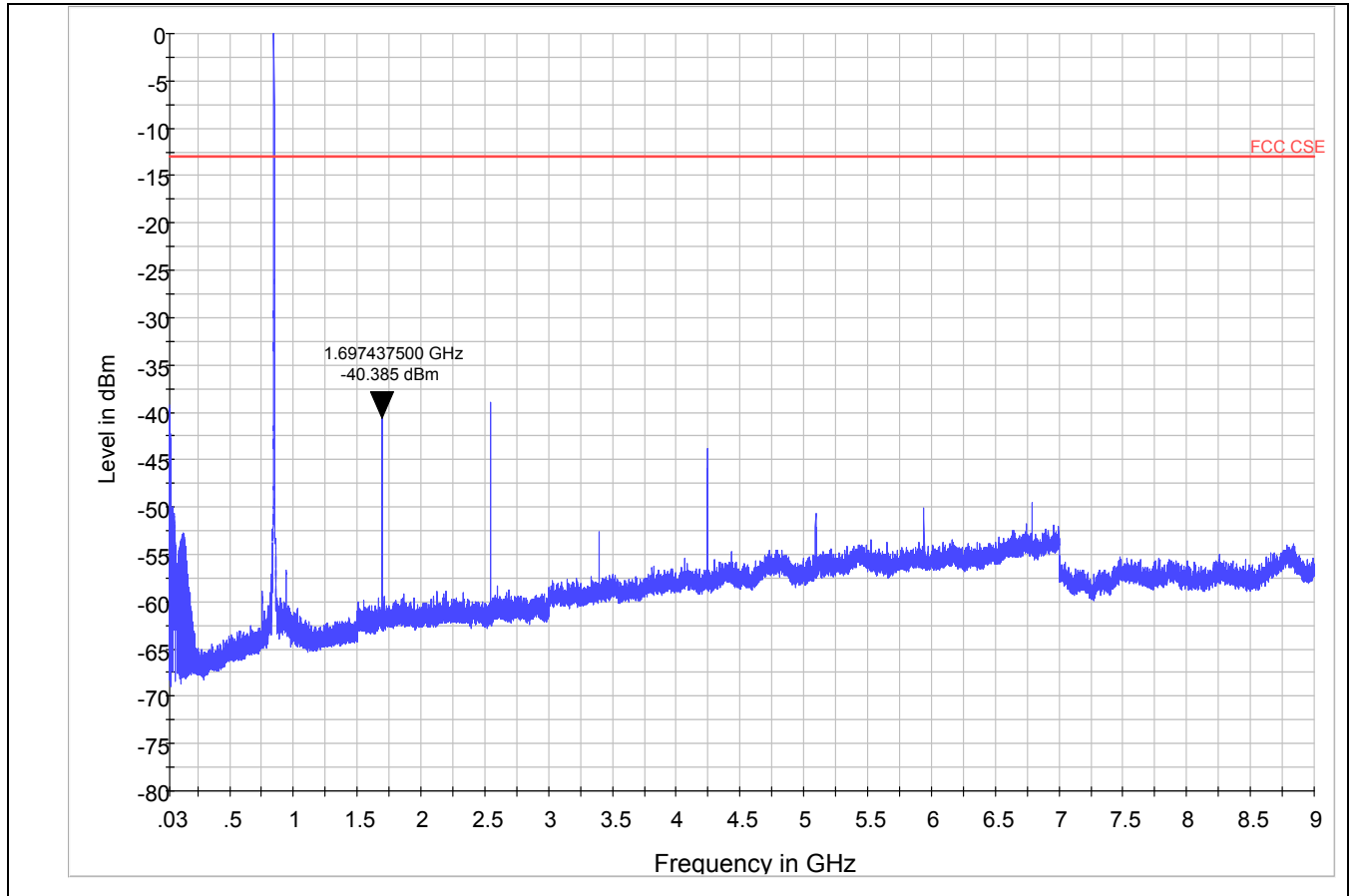
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GSM 850 CH251



Note: The signal beyond the limit is carrier:848.8 MHz
GSM 850 251 Channel 30MHz~9GHz

Harmonic	TX ch.251 Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	1697.4375	-40.385	-13	27.385
3	2546.4	/	-13	/
4	3395.2	/	-13	/
5	4244	/	-13	/
6	5092.8	/	-13	/
7	5941.6	/	-13	/
8	6790.4	/	-13	/
9	7639.2	Nf	-13	/
10	8488	Nf	-13	/
Nf: noise floor				

Note: The other Spurious RF conducted emissions level is no more than noise floor.

2.8. Radiates Spurious Emission

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The measurements procedures in TIA -603C are used.

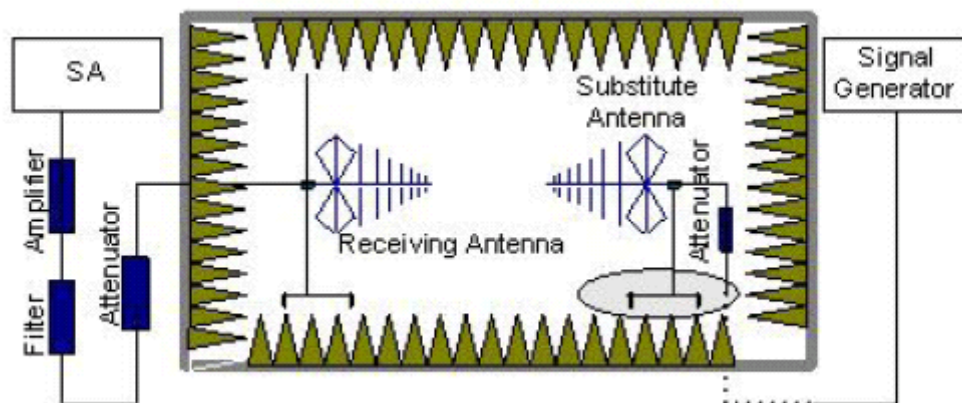
The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment. The measurement will be conducted at three channels 128, 190, 251 of GSM850.

The procedure of Radiates Spurious Emission is as follows:

1. Pre-calibration

In an fully anechoic chamber, A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted at a 3 meter test distance from the receive antenna. An RF signal source is connected to the dipole with a Tx cable that has been constructed to not interfere with radiation pattern of the antenna. A known (measured) power (P_{in}) is applied to input of dipole, and the power received (P_r) is recorded from the spectrum analyzer.

“Reference Path loss” is established as $P_{in} - P_r - \text{Tx cable loss} + \text{Substitution antenna gain}$.



2. EUT Test

EUT was placed on a 1.5 meter high non – conductive table at a 3 meter test distance from the receive antenna. The height of receiving antenna is 1.5 m. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the table and adjusting the receiving antenna polarization. The measurement is carried out using a spectrum analyzer .The radiated emission measurements of all non-harmonic and harmonic of the transmit frequency from 30MHz to the 10th harmonic were measured with peak detector. RBW is set to 100kHz and VBW is set to 300kHz for 30MHz to 1GHz. RBW is set to 100kHz,VBW is set to 30kHz for the carrier frequency, RBW is set to 1MHz and VBW is set to 3MHz for other frequency above 1GHz. A notch filter is necessary in the band near to the carrier frequency. A high pass filter is needed to avoid the distortion of the testing equipment in the band above the carrier frequency. If the

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harmonic could not be detected above the noise floor, the ambient level was recorded.

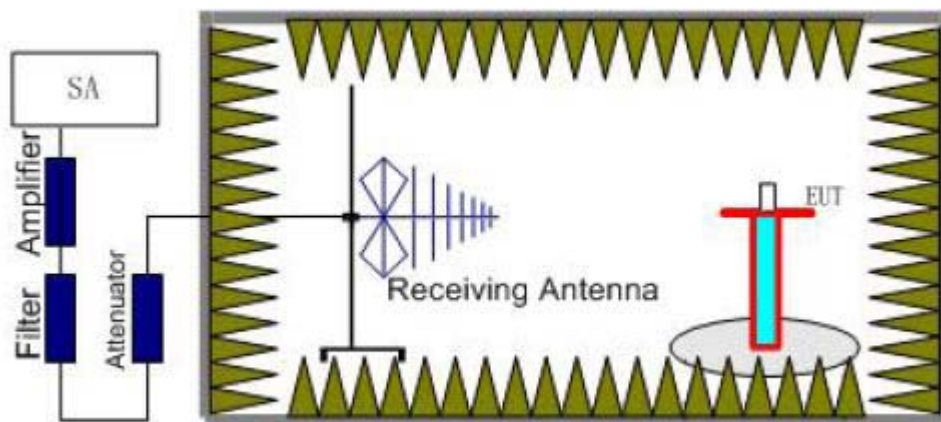
The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.

Calculation procedure:

$RSE = Rx \text{ (dBm)} + \text{Reference Path loss}$

Rx: reading of the receiver

The field strength of spurious emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis) and docking mode. The worst emission was found in stand-up position (Z axis) and the worst case was recorded.



Limits

Rule Part 22.917(a) specifies that “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.”

Limit	-13 dBm
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Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$. $U = 3.16$ dB.

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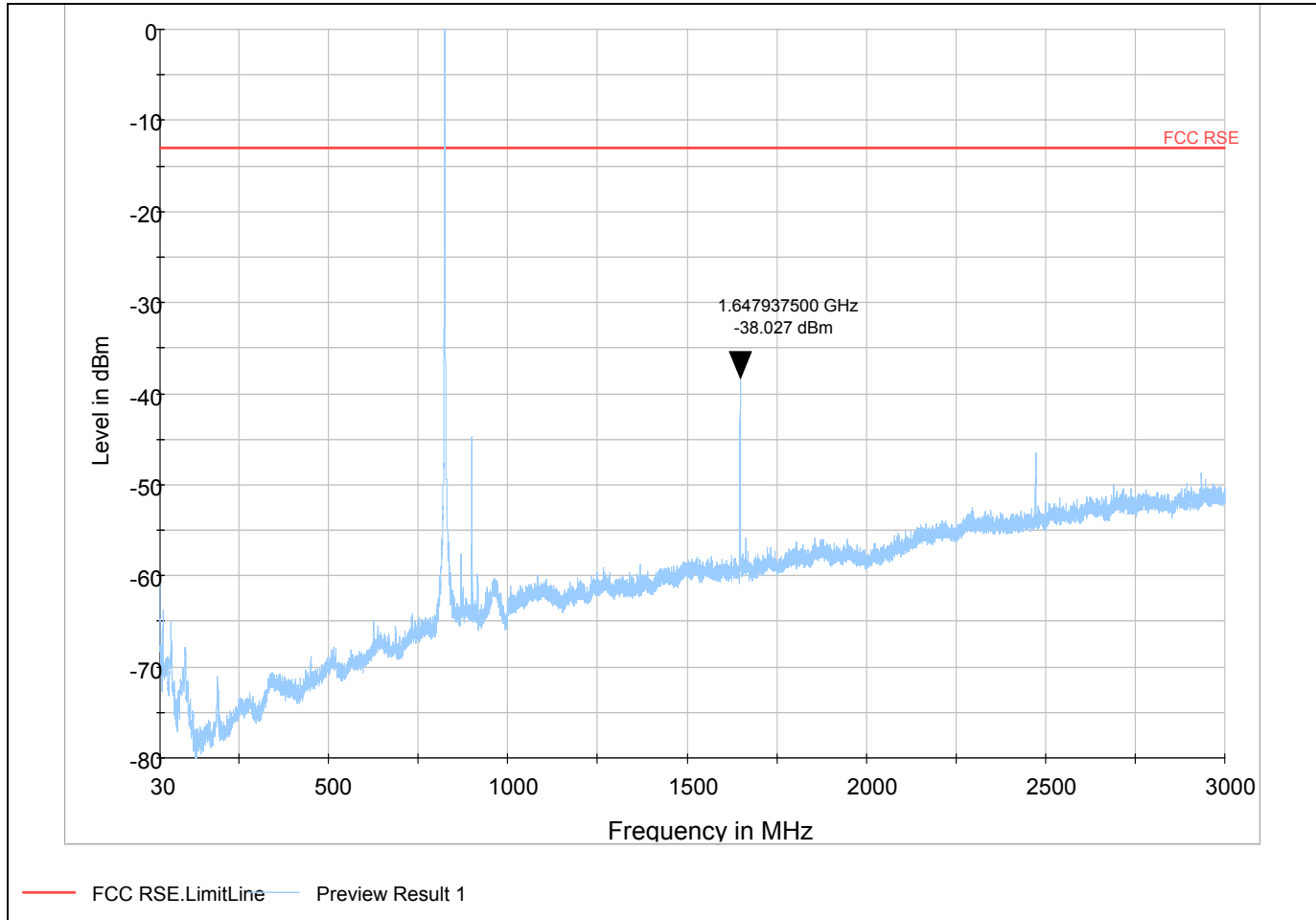
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Test Result

GSM 850 CH128



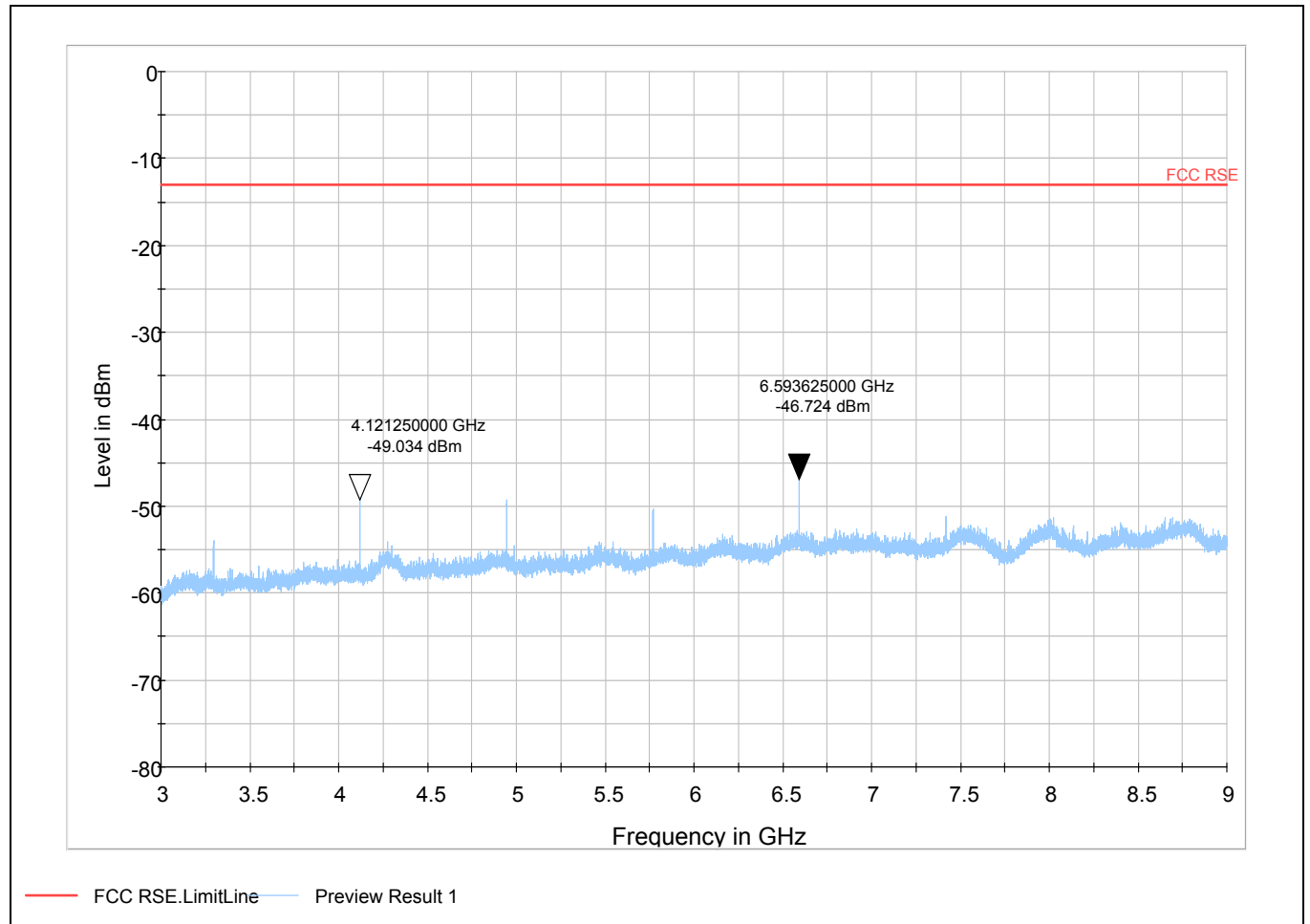
Note: The signal beyond the limit is carrier:824.2 MHz
GSM 850 128 Channel 30MHz~3GHz

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GSM 850 128 Channel 3GHz~9GHz

Harmonic	TX ch.128 Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1647.9375	-38.027	-13	25.027	180
5	4121.25	-49.034	-13	36.034	225
8	6593.625	-46.724	-13	33.724	270

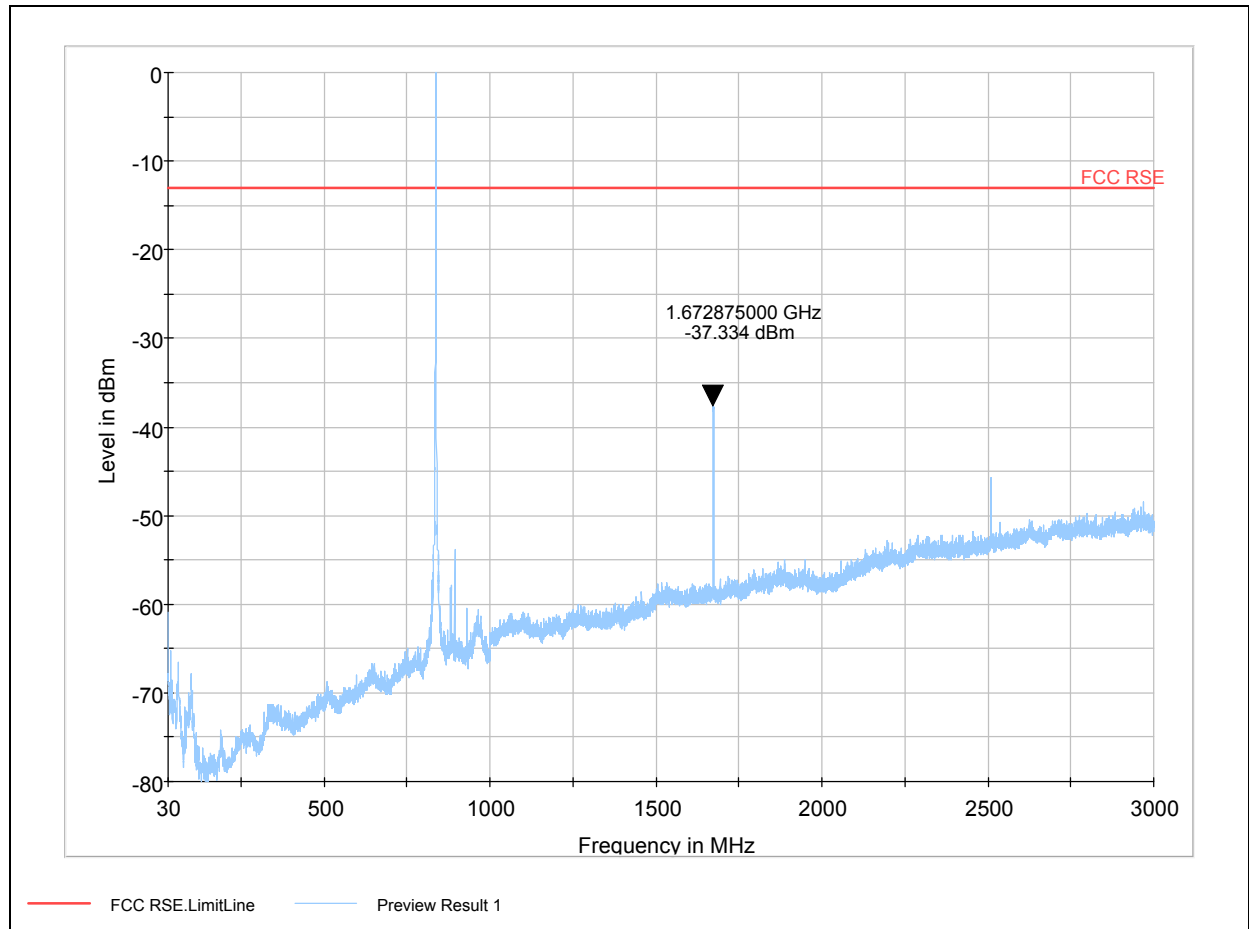
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GSM 850 CH190



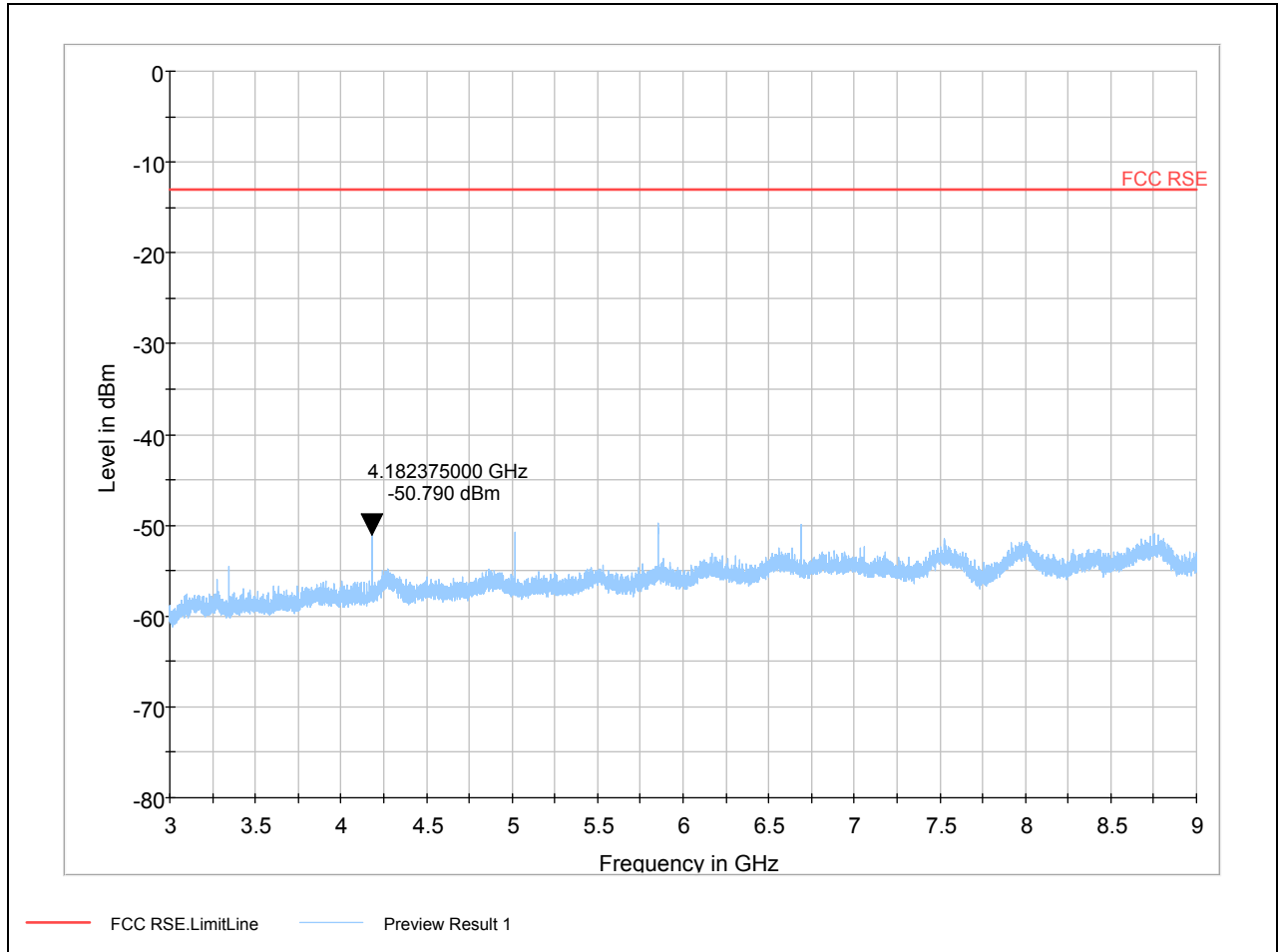
Note: The signal beyond the limit is carrier.
GSM 850 190 Channel 30MHz~3GHz

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GSM 850 190 Channel 3GHz ~9GHz

Harmonic	TX ch.190 Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1672.875	-37.334	-13	24.334	180
6	4182.375	-50.790	-13	37.790	0

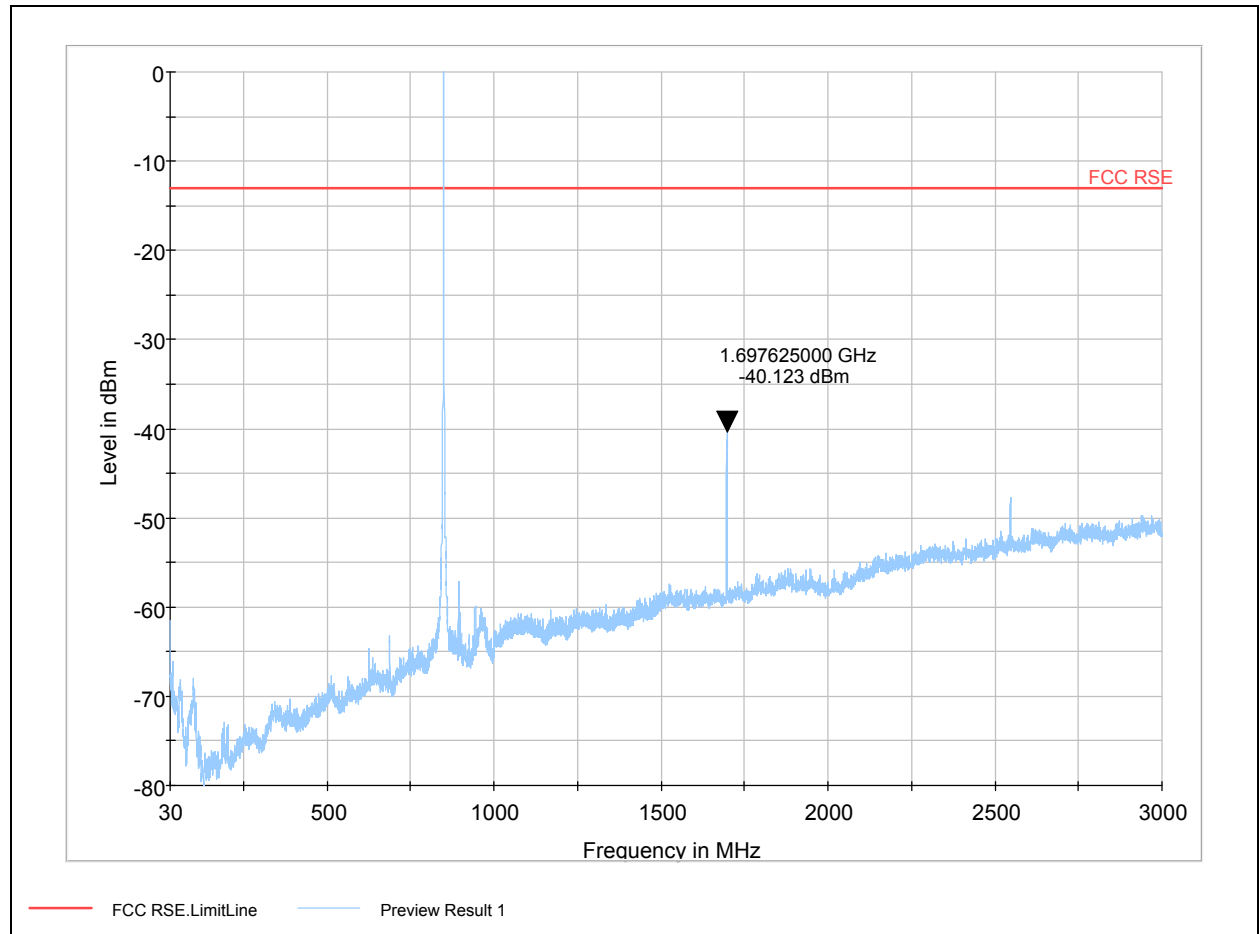
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GSM 850 CH251



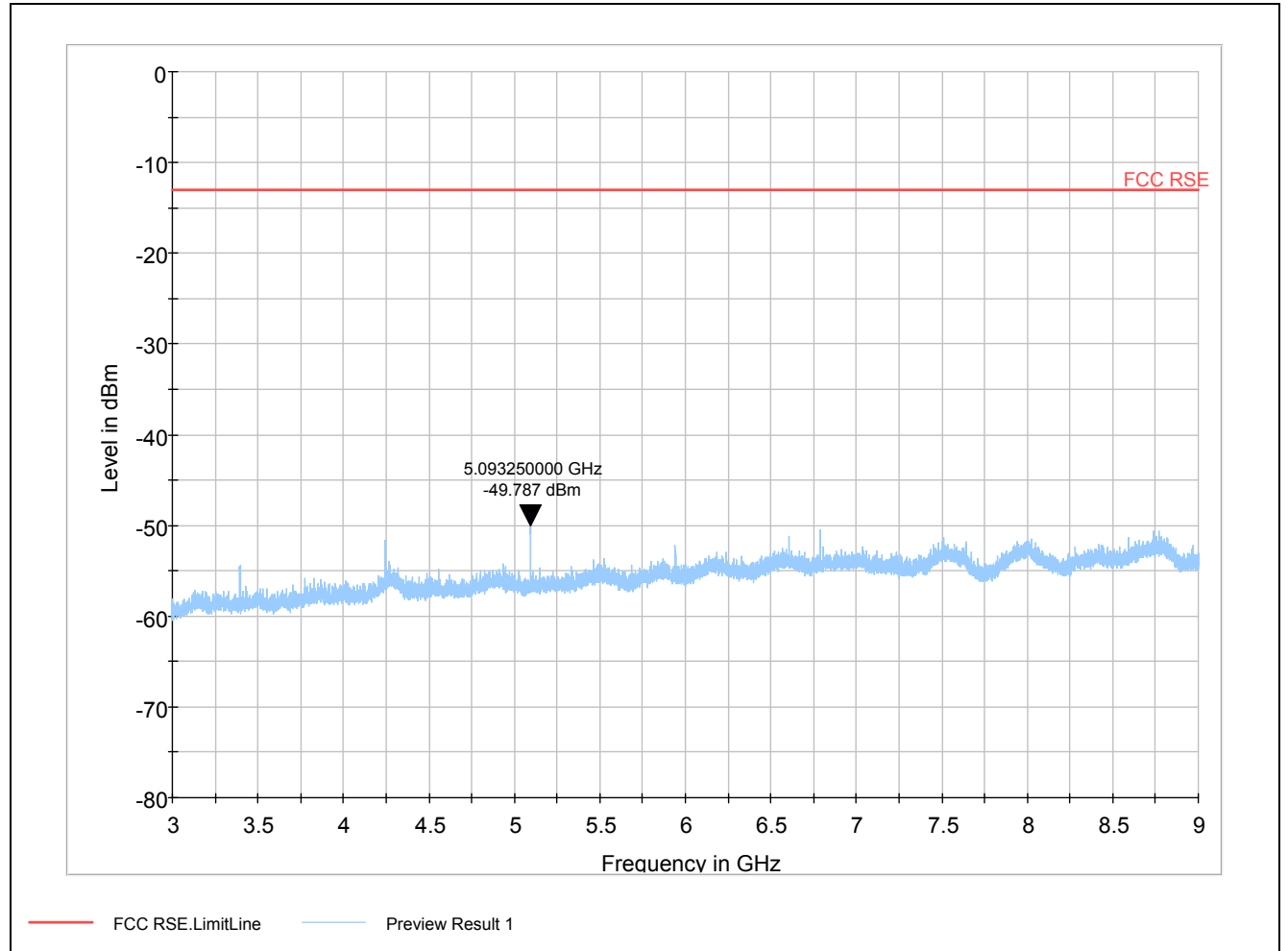
Note: The signal beyond the limit is carrier.
GSM 850 251 Channel 30MHz~3GHz

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GSM 850 251 Channel 3GHz ~9GHz

Harmonic	TX ch.251 Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
3	1697.625	-40.123	-13	27.123	180
6	5093.25	-49.787	-13	36.787	0

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3. Main Test Instruments

No.	Name	Type	Manufacturer	Serial Number	Calibration Date	Valid Period
01	Base Station Simulator	CMU200	R&S	118133	2010-05-27	One year
02	Signal Analyzer	FSV	R&S	100815	2010-06-28	One year
03	Signal generator	SMR27	R&S	1606.6000.02	2010-06-28	One year
04	EMI Test Receiver	ESCI	R&S	100948	2010-07-01	One year
05	Trilog Antenna	VUBL 9163	SCHWARZB ECK	9163-201	2010-06-29	Two years
06	Horn Antenna	HF907	R&S	100126	2009-07-02	Two years
07	Power Splitter	11667A	Agilent	52960	NA	NA
08	DC Power Supply	GPS-3030D	GM	E877677	NA	NA
09	Climatic Chamber	ESS-SDH401	YIN HE	2006001	2010-02-22	One year
10	Semi-Anechoic Chamber	9.6*6.7*6.6m	ETS-Lindgren	NA	NA	NA
11	EMI test software	ES-K1	R&S	NA	NA	NA

*****END OF REPORT BODY*****

ANNEX A: EUT Appearance and Test Setup

A.1 EUT Appearance



a: EUT



b: Battery

Picture 1 EUT and Auxiliary

A.2 Test Setup



Picture 2: Radiated Spurious Emissions Test setup