

RADIO TEST REPORT

Report No: STS1607009F01

S T S

A

Issued for

Mobile commodity corporation

20955 pathfinder road, Suite 200, Diamond bar, CA 91765

Product Name:	GSM phone
Brand Name:	Cellacom
Model Name:	M131
Series Model:	M13X(X = 123456)
FCC ID:	2AF6M3396993M131
Test Standard:	FCC Part 22H and 24E

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TEST RESULT CERTIFICATION

Applicant's name:	Mobile commodity corporation
Address	20955 pathfinder road, Suite 200, Diamond bar, CA 91765
Manufacture's Name	Cellacom incorporation
Address	20955 pathfinder road, ste 200, diamond bar, ca 91765, USA
Product name:	GSM phone
Brand name:	Cellacom
Model and/or type reference:	M131
Standards	FCC Part 22H and 24E

This device described above has been tested by STS and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Date of Test

Date of performance of tests 01July. 2016~06 July. 2016

Date of Issue 07 July. 2016

Test Result..... Pass

Testing Engineer :	Junter	
	(Tony Liu)	ESTING · CONSE
Technical Manager :	(Vita Li)	APPROVAL 6
Authorized Signatory :	(Bovey Yang)	30 · NO

Shenzhen STS Test Services Co., Ltd.



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Revision History

Rev.	Issue Date	Report NO.	Effect Page	Contents
00	07 July. 2016	STS1607009F01	ALL	Initial Issue



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SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

The radiated emission testing was performed according to the procedures of ANSI/TIA-603-D:

2010,KDB 971168 D01 v02r02 and KDB 648474 D03 v01r04

FCC Rules	Test Description	Test Limit	Test Result	Reference
2.1049	Conducted OutputPower	Reporting Only	PASS	
2.0146 24.232	Peak-to-AverageRatio	< 13 dB	PASS	
2.1046 22.913 24.232	Effective Radiated Pow- er/Equivalent Isotropic Radiated Power	< 7 Watts max. ERP(Part 22) < 2 Watts max. EIRP(Part 24)	PASS	
2.1049 22.917 24.238	Occupied Bandwidth	Reporting Only	PASS	
2.1055 22.355 24.235	Frequency Stability	< 2.5 ppm (Part 22) Emission must remain in band (Part 24)	PASS	
2.1051 22.917 24.238	Spurious Emission at Antenna Terminals	< 43+10log10(P[Watts])	PASS	
2.1053 22.917 24.238	Field Strength of Spurious Radiation	< 43+10log10(P[Watts])	PASS	
2.1051 22.917 24.238	Band Edge	< 43+10log10(P[Watts])	PASS	



1 INTRODUCTION 1.1 TEST FACTORY Shenzhen STS Test Services Co., Ltd. Add. : 1/F., Building B, Zhuoke Science Park, No.190,Chongqing Road, Fuyong Street, Bao'an District, Shenzhen, Guangdong,China CNAS Registration No.: L7649; FCC Registration No.: 842334; IC Registration No.: 12108A-1

1.2 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4-2014. All measurement uncertainty values are shown with a coverage factor of k = 2 to indicate a 95% level of confidence. The measurement data shown herein meets or exceeds the UCISPR measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

No.	Item	Uncertainty
1	RF power,conducted	±0.70dB
2	Spurious emissions, conducted	±1.19dB
5	All emissions, radiated (<1G) 30MHz-200MHz	±2.83dB
6	All emissions,radiated(<1G) 200MHz-1000MHz	±2.94dB
7	All emissions, radiated (>1G)	±3.03dB
8	Temperature	±0.5°C
9	Humidity	±2%



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2 PRODUCT INFORMATION

Product Designation:	GSM phone		
Hardware version number:	V1.0		
Software version number:	V1.0		
FCC ID:	2AF6M3396993M131		
	GSM:		
Tx Frequency:	850: 824.2 MHz ~ 848.8 MHz		
	1900: 1850.2 MHz ~ 1909.8MHz		
	GSM/GPRS:		
Rx Frequency:	850: 869.2 MHz ~ 893.8 MHz		
	1900: 1930.2 MHz ~ 1989.8 MHz		
Max RF Output Power:	GSM850:32.66dBm,PCS1900:28.55dBm GPRS50:32.52dBm,GPRS1900:28.41dBm		
Type of Emission:	GSM(850):318KGXW: GSM(1900):323XW GPRS(850):317XW: GPRS(1900):323XW		
SIM Card:	SIM 1 and SIM 2 is a chipset unit and tested as single chipset,SII 1 is used to tested		
Antenna: GSM:PIFA Antenna			
Antenna.	BT:Dipole Antenna		
Antenna gain:	GSM 850:0.8dBi ,PCS 1900:1.1dBi		
Power Supply:	DC 3.7V by battery		
Battery parameter:	Capacity: 600mAh, Rated Voltage: 3.7V		
GPRS Class:	Multi-Class12		
Extreme Vol. Limits:	DC3.5 V to 4.2 V (Nominal DC3.7V)		
Extreme Temp. Tolerance:	-20℃ to +45℃		
** Note: The High Voltage	4.2 V and Low Voltage 3.5 V was declared by manufacturer, The		
EUT couldn't be operate no	rmally with higher or lower voltage.		



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3 TEST CONFIGURATION OF EQUIPMENT UNDER TEST

Antenna port conducted and radiated test items were performed according to KDB 971168 D01 Power Meas. License Digital Systems v02r02 with maximum output power.

Radiated measurements were performed with rotating EUT in different three orthogonal test planes to find the maximum emission.

Radiated emissions were investigated as following frequency range:

- 1. 30 MHz to 10th harmonic for GSM850
- 2. 30 MHz to 10th harmonic for GSM1900 All modes and data rates and positions were investigated.

Test modes are chosen to be reported as the worst case configuration below:

	TEST MODES		
BAND	RADIATED TCS	CONDUCTED TCS	
GSM 850	GSM LINK GPRS CLASS 12 LINK	GSM LINK GPRS CLASS 12 LINK	
GSM 1900	GSM LINK GPRS CLASS 12 LINK	GSM LINK GPRS CLASS 12 LINK	



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4 MEASUREMENT INSTRUMENTS

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Calibrated Until
Spectrum Analyzer	Agilent	E4407B	MY50140340	2015.10.25	2016.10.24
Signal Analyzer	Agilent	N9020A	MY49100060	2015.11.18	2016.11.17
Test Receiver	R&S	ESCI	101427	2015.10.25	2016.10.24
Communication Tester	Agilent	8960	MY48360751	2015.11.20	2016.11.19
Communication Tester	R&S	CMU200	112012	2015.10.25	2016.10.24
Test Receiver	R&S	ESCI	102086	2015.10.25	2016.10.24
Bilog Antenna	TESEQ	CBL6111D	34678	2015.11.25	2016.11.24
Bilog Antenna (Calibration antenna)	TESEQ	CBL6111D	34678	2015.11.25	2016.11.24
Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-1343	2016.03.06	2017.03.05
Horn Antenna (Calibration antenna)	Schwarzbeck	BBHA 9170D	9170D-1344	2016.03.06	2017.03.05
MXA SIGNAL Analyzer	Agilent	N9020A	MY49100060	2015.10.25	2016.10.24
Double Ridge Horn An- tenna	COM-POWER CORPORATION	AH-840	AHA-840	2016.03.06	2017.03.05
Low frequency cable	N/A	R01	N/A	N/A	N/A
High frequency cable	SCHWARZBECK	AK9515H	SN-96286/96287	N/A	N/A
Vector signal generator	Agilent	E8257D-521	MY45141029	2015.10.16	2016.10.14
Power amplifier	DESAY	ZHL-42W	9638	2015.10.24	2016.10.23

Equipment with a calibration date of "N/A" shown in this list was not used to make direct calibrated measurements.



5 TEST ITEMS 5.1 CONDUCTED OUTPUT POWER

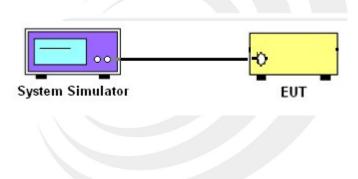
Test overview

A system simulator was used to establish communication with the EUT. Its parameters were set to enforce EUT transmitting at the maximum power. The measured power in the radio frequency on the transmitter output terminals shall be reported.

Test procedures

- 1. The transmitter output port was connected to the system simulator.
- 2. Set eut at maximum power through the system simulator.
- 3. Select lowest, middle, and highest channels for each band and different modulation.
- 4. Measure and record the power level from the system simulator.

Test setup





5.2 PEAK TO AVERAGE RATIO

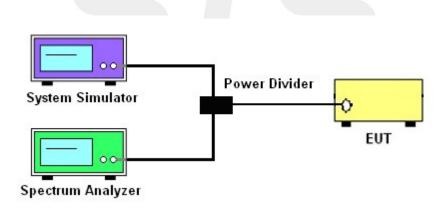
TEST OVERVIEW

According to §24.232(d), power measurements for transmissions by stations authorized under this section may be made either in accordance with a commission-approved average power technique or in compliance with paragraph (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of §24.51. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 db.

TEST PROCEDURES

- 1. The testing follows fcckdb 971168 v02r02 section
- 2. The eut was connected to the and peak and av system simulator& spectrum analysis reads
- 3. Select lowest, middle, and highest channels for each band and different modulation.
- 4. Set the test probe and measure average power of the spectrum analysis

TEST SETUP



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5.3 TRANSMITTER RADIATED POWER (EIRP/ERP) TEST OVERVIEW

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI/TIA-603-D-2010 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically polarized broadband horn antennas. All measurements are performed as RMS average measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

TEST PROCEDURE

1. The testing follows FCC KDB 971168 D01,

Section 5.2.2 (for GSM/GPRS) and ANSI / TIA-603-D-2010 Section 2.2.17.

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

3. 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.

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

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

6. Effective Isotropic Radiated Power (EIRP) was measured by substitution method according to TIA/EIA-603-D. The EUT was replaced by the substitution antenna at same location, and then a known power from S.G. was applied into the dipole antenna through a Tx cable, and then recorded the maximum Analyzer reading through raised and lowered the test antenna. The correction factor (in dB) = S.G. - Tx Cable loss + Substitution antenna gain - Analyzer reading. Then the EUT's EIRP/ERP was calculated with the correction factor,

ERP/EIRP = P.SG + GT - LC

ERP/EIRP = effective or equivalent radiated power, respectively (expressed in the same units as PMe as, typically dBW or dBm);

P.SG = measured transmitter output power or PSD, in dBm or dBW;

GT = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);

LC = signal attenuation in the connecting cable between the transmitter and antenna, in dB.



5.4 OCCUPIED BANDWIDTH

TEST OVERVIEW

The occupied bandwidth, 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.

The 26 dB emission bandwidth is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated 26 dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth equal to approximately 1.0% of the emission bandwidth.

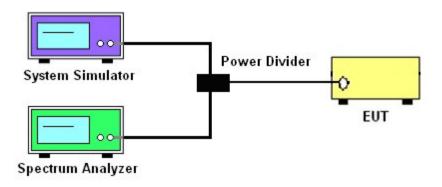
All modes of operation were investigated and the worst case configuration results are reported in this section.

TEST PROCEDURE

1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99% occupied bandwidth and the 26dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.

- 2. RBW = 1 5% of the expected OBW
- 3. VBW ≥ 3 x RBW
- 4. Detector = Peak
- 5. Trace mode = max hold
- 6. Sweep = auto couple
- 7. The trace was allowed to stabilize
- 8. If necessary, steps 2 7 were repeated after changing the RBW such that it would be within
- 1-5% of the 99% occupied bandwidth observed in Step 7

TEST SETUP





5.5 FREQUENCY STABILITY Test Overview

Frequency stability testing is performed in accordance with the guidelines of ANSI/TIA-603-D-2010. The frequency stability of the transmitter is measured by:

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a.) Temperature: The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.

b.) Primary Supply Voltage: The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

For Part 22, the frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ (± 2.5 ppm) of the center frequency. For Part 24 the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Test Procedure

Temperature Variation

1. The testing follows fcckdb 971168 D01 section 9.0

2. The EUT was set up in the thermal chamber and connected with the system simulator.

3. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing.

Power was applied and the maximum change in frequency was recorded within one minute.

4. With power OFF, the temperature was raised in 10°C steps up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

Voltage Variation

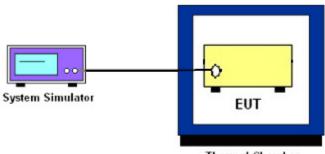
1. The testing follows FCC KDB 971168 D01 Section 9.0.

2. The EUT was placed in a temperature chamber at 25±5° C and connected with the system simulator.

3. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.

4. The variation in frequency was measured for the worst case.

TEST SETUP



Thermal Chamber





5.6 SPURIOUS EMISSIONS AT ANTENNA TERMINALS <u>Test Overview</u>

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th harmonic.

Test procedure

1. The testing follows FCC KDB 971168 D01 v02r02 Section 6.0.

2. The EUT was connected to the spectrum analyzer and system simulator via a power divider.

3. The RF output of EUT was connected to the spectrum analyzer by an RF cable and

attenuator. The path loss was compensated to the results for each measurement.

4. The middle channel for the highest RF power within the transmitting frequency was measured.

5. The conducted spurious emission for the whole frequency range was taken.

6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

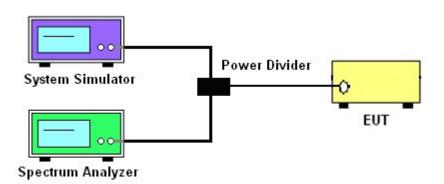
7. The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts)

= P(W) - [43 + 10log(P)] (dB)

= [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)

= -13dBm.

Test Setup



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5.7 BAND EDGE

OVERVIEW

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

The minimum permissible attenuation level of any spurious emission is 43 + log10(P[Watts]), where P is the transmitter power in Watts.

TEST PROCEDURE

1. Start and stop frequency were set such that the band edge would be placed in the center of the Plot.

2. The EUT was connected to the spectrum analyzer and system simulator via a power divider.

3. The RF output of EUT was connected to the spectrum analyzer by an RF cable and attenuator.

The path loss was compensated to the results for each measurement.

4. The band edges of low and high channels for the highest RF powers were measured.

5. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

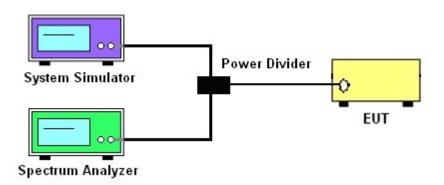
6.The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts)

= P(W) - [43 + 10log(P)] (dB)

 $= [30 + 10\log(P)] (dBm) - [43 + 10\log(P)] (dB)$

= -13dBm.

TEST SETUP







5.8 FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT Test overview

Radiated spurious emissions measurements are performed using the substitution method described inANSI/TIA-603-D-2010 with the EUT transmitting into an integral antenna. Measurements on signalsoperating below 1GHz are performed using horizontally and vertically polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized horn antennas. All measurements are performed as peak measurements while the EUT isoperating at maximum power and at the appropriate frequencies.

It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th harmonic.

Test procedure

1. The testing follows FCC KDB 971168 D01 Section 5.8 and ANSI/TIA-603-D-2010 - Section 2.2.12

- 2. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
- 3. VBW \geq 3 x RBW
- 4. Span = 1.5 times the OBW
- 5.No. of sweep points > 2 x span/RBW
- 6. Detector = Peak
- 7. Trace mode = max hold
- 8. The trace was allowed to stabilize

9. Effective Isotropic Spurious Radiation was measured by substitution method according to TIA/EIA-603-D. The EUT was replaced by the substitution antenna at same location, and then a known power from S.G. was applied into the dipole antenna through a Tx cable, and then recorded the maximum Analyzer reading through raised and lowered the test antenna. The correction factor (in dB) = S.G. - Tx Cable loss + Substitution antenna gain - Analyzer reading. Then the EUT's EIRP/ERP was calculated with the correction factor,

ERP/EIRP = P.SG + GT - LC

ERP/EIRP = effective or equivalent radiated power, respectively (expressed in the same units as PMe as, typically dBW or dBm);

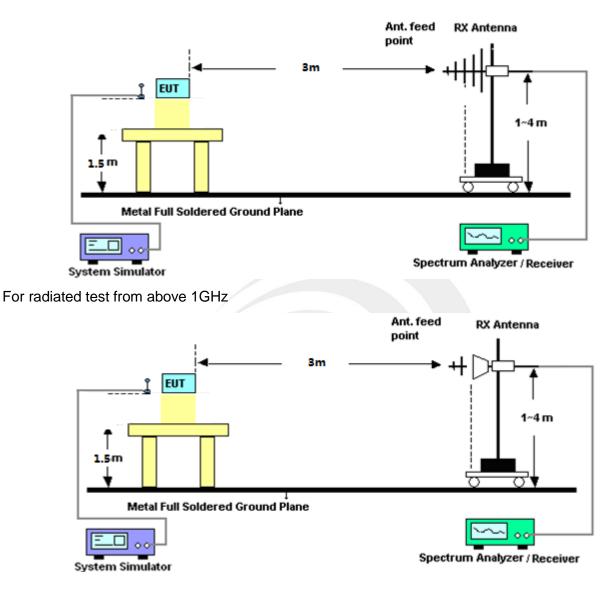
P.SG = measured transmitter output power or PSD, in dBm or dBW;

GT = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);

LC = signal attenuation in the connecting cable between the transmitter and antenna, in dB.



For radiated test from 30MHz to 1GHz



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APPENDIX ATestResult A1 CONDUCTED OUTPUT POWER

GSM 850:

Mode	Frequency (MHz)	AVG Power
GSM850	824.2	32.45
	836.6	32.52
	848.8	32.66
000000	824.2	32.32
GPRS850 (1-Slot)	836.6	32.45
	848.8	32.52

PCS 1900:

Mode	Frequency (MHz)	AVG Power
	1850.2	28.24
GSM1900	1880.0	28.47
	1909.8	28.55
	1850.2	28.12
GPRS1900 (1-Slot)	1880	28.28
	1909.8	28.41

A2 PEAK-TO-AVERAGE RADIO

PCS 1900:

1001000.				
Mode	Frequency (MHz)	PEAK Power	AVG Power	PAR
	1850.2	28.91	28.24	0.54
PCS1900	1880.0	28.99	28.47	0.58
	1909.8	29.14	28.55	0.67
	1850.2	28.73	28.12	0.60
GPRS1900	1880	28.88	28.28	0.67
	1909.8	29.06	28.41	0.60



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A3 TRANSMITTER RADIATED POWER (EIRP/ERP)

	Radiated Power (ERP) for GSM 850 MHZ									
			Result							
Mode	Frequency	S G level	Cable loss	Gain	Max.Pk	Polarization	Conclusion			
		(dBm)	1055	(dBi)	E.R.P(dBm)	Of Max. ERP				
	824.2	24.37	0.44	6.5	30.43	Horizontal	Pass			
	824.2	26.25	0.44	6.5	32.31	Vertical	Pass			
0014050	836.6	24.21	0.45	6.5	30.26	Horizontal	Pass			
GSM850	836.6	26.31	0.45	6.5	32.36	Vertical	Pass			
	848.8	24.25	0.46	6.5	30.29	Horizontal	Pass			
	848.8	26.42	0.46	6.5	32.46	Vertical	Pass			
	824.2	24.23	0.44	6.5	30.29	Horizontal	Pass			
	824.2	26.11	0.44	6.5	32.17	Vertical	Pass			
	836.6	24.22	0.45	6.5	30.27	Horizontal	Pass			
GPRS850	836.6	26.25	0.45	6.5	32.30	Vertical	Pass			
	848.8	23.95	0.46	6.5	29.99	Horizontal	Pass			
	848.8	26.33	0.46	6.5	32.37	Vertical	Pass			



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	Radiated Power (EIRP) for PCS 1900 MHZ									
				Re	sult					
Mode	Frequency	S G level (dBm)			Max. Pk E.I.R.P.(dBm)	Polarization Of Max.EIRP.	Conclusion			
	1850.2	18.39	2.41	10.35	26.33	Horizontal	Pass			
	1850.2	20.30	2.41	10.35	28.24	Vertical	Pass			
PCS1900	1880.0	18.59	2.42	10.35	26.52	Horizontal	Pass			
FC31900	1880.0	20.54	2.42	10.35	28.47	Vertical	Pass			
	1909.8	18.62	2.43	10.35	26.54	Horizontal	Pass			
	1909.8	20.63	2.43	10.35	28.55	Vertical	Pass			
	1850.2	18.49	2.41	10.35	26.43	Horizontal	Pass			
	1850.2	20.18	2.41	10.35	28.12	Vertical	Pass			
	1880.0	18.36	2.42	10.35	26.29	Horizontal	Pass			
GPRS1900	1880.0	20.35	2.42	10.35	28.28	Vertical	Pass			
	1909.8	18.26	2.43	10.35	26.18	Horizontal	Pass			
	1909.8	20.49	2.43	10.35	28.41	Vertical	Pass			

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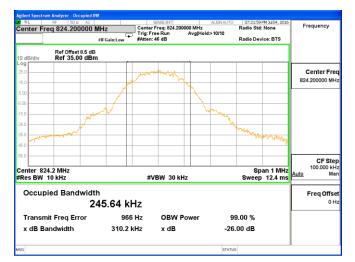
A4 OCCUPIED BANDWIDTH(99% OCCUPIED BANDWIDTH/26DB BANDWIDTH)

	Bandwidtl	n for GSM 850 band	
Mode	Frequency(MHz)	Occupied Bandwidth	Emission Bandwidth
Mode	Frequency(MHZ)	(99%)(kHz)	(-26dBc)(kHz)
Low Channel	824.2	245.64	310.2
Middle Channel	836.6	245.67	318.3
High Channel	848.8	242.09	315.5
	Bandwidth	for GPRS 850 band	
Mode	Fraguaday (MHz)	Occupied Bandwidth	Emission Bandwidth
Mode	Frequency(MHz)	(99%)(kHz)	(-26dBc)(kHz)
Low Channel	824.2	245.47	316.2
Middle Channel	836.6	245.29	316.7
High Channel	848.8	241.94	316.9

	Occupied Bandwidth for GSM1900 band								
Mode	Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	Emission Bandwidth (-26dBc)(kHz)						
Low Channel	1850.2	246.54	322.7						
Middle Channel	1880.0	248.27	321.7						
High Channel	1909.8	246.27	312.7						
	Occupied Band	width for GPRS1900 band							
Mode	Frequency(MHz)	Occupied Bandwidth	Emission Bandwidth						
wode	Frequency(IVITZ)	(99%)(kHz)	(-26dBc)(kHz)						
Low Channel	1850.2	247.05	315.8						
Middle Channel	1880.0	246.15	317.3						
High Channel	1909.8	246.02	323.2						



GSM 850 CH 128



GSM 850 CH 190





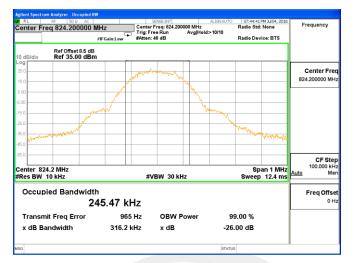
GSM 850 CH 251

Shenzhen STS Test Services Co., Ltd.



Report No.: STS1607009F01

GPRS 850 CH 128



GPRS 850 CH 190





GPRS 850 CH 251

Shenzhen STS Test Services Co., Ltd.

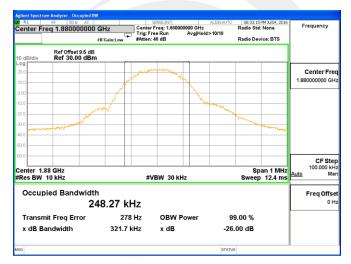


Report No.: STS1607009F01

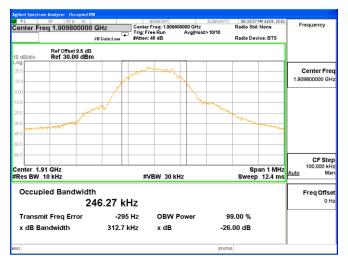
PCS 1900 CH 512



PCS 1900 CH 661



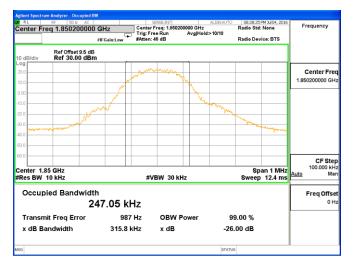
PCS 1900 CH 810



Shenzhen STS Test Services Co., Ltd.



GPRS 1900 CH 512



GPRS 1900 CH 661



GPRS 1900 CH 810



Shenzhen STS Test Services Co., Ltd.



Report No.: STS1607009F01

A5 FREQUENCY STABILITY

Normal Voltage = 3.7V. ;Battery End Point (BEP) = 3.5 V.;Maximum Voltage = 4.2 V

	GSM 850 Middle Channel									
Temperature (°C)	Voltage (Volt)	Freq. Dev. (Hz)	Freq. Dev. (ppm)	Limit	Result					
50		13.529	0.016							
40	-	26.466	0.032							
30		23.689	0.028							
20		27.911	0.033							
10	Normal Voltage	18.253	0.022							
0		13.532	0.016	2.5ppm	PASS					
-10		17.408	0.021							
-20		15.882	0.019							
-30	/	16.255	0.019							
25	Maximum Voltage	19.904	0.024							
25	BEP	11.604	0.014							

	GPRS 850 Middle Channel									
Temperature (°C)	Voltage (Volt)	Freq. Dev. (Hz)	Freq. Dev. (ppm)	Limit	Result					
50		13.525	0.016							
40		26.453	0.032							
30		23.673	0.028							
20		27.912	0.033							
10	Normal Voltage	18.237	0.022							
0		13.539	0.016	2.5ppm	PASS					
-10		17.357	0.021							
-20		15.942	0.019							
-30		16.221	0.019							
25	Maximum Voltage	19.839	0.024							
25	BEP	11.614	0.014							



Report No.: STS1607009F01

	GSM 1900 Middle Channel									
Temperature (°C)	Voltage (Volt)	Freq. Dev. (Hz)	Freq. Dev. (ppm)	Limit	Result					
50		19.118	0.010							
40		11.215	0.006							
30		10.282	0.005							
20	Normal Voltage	22.224	0.012	Within Au- thorized Band	PASS					
10		14.057	0.007							
0		10.015	0.005							
-10		15.408	0.008							
-20	-	20.698	0.011							
-30		24.121	0.013							
25	Maximum Voltage	12.464	0.007							
25	BEP	12.451	0.007							

	G	PRS1900 Middle	e Channel		
Temperature (°C)	Voltage (Volt)	Freq. Dev. (Hz)	Freq. Dev. (ppm)	Limit	Result
50		19.031	0.010		
40		11.182	0.006		
30		10.283	0.005		
20	Normal Voltage	22.219	0.012	Within Au- thorized Band	PASS
10		14.073	0.007		
0		10.016	0.005		
-10		15.407	0.008		
-20		20.686	0.011		
-30		24.085	0.013		
25	Maximum Voltage	12.453	0.007		
25	BEP	12.515	0.007		



A6 SPURIOUS EMISSIONS AT ANTENNA TERMINALS GSM 850 BAND

Lowest Channel

e RL Center	Fre		Ω AC 000000 GH PI	IZ IO: Fast ⊂ ain:Low		Run	Avg Typ	e: Log-Pwr	TRAC	M 3405, 2016 1 2 3 4 5 6 M MMMMMMM T P P P P P P P	Frequency
10 dB/di		Ref Offset 8 Ref 34.50	8.5 dB	an.cow				N		.3 MHz 41 dBm	Auto Tur
.og 24.5 14.5		*1									Center Fr 4.515000000 G
5.50 15.5 25.5										-13.00 dBn	Start Fre 30.000000 M
15.5 15.5 15.5											Stop Fr 9.000000000 G
tart 3 Res B	W 1.	0 MHz	×	#VB	W 3.0 MHz	FL	INCTION F	Sweep 1	6.0 ms (2		CF St 897.000000 M Auto M
N N N N N N N N N N N N N N N N N N N	1	ł	824. 5.426	3 MHz 4 GHz	32.341 dE -31.463 dE						Freq Offs 0
7 8 9 10 11											

Middle Channel

enter	RF 50	wept 5Λ Ω AC 000000 GHz PN0: Fast 0	SENSE:INT	Avg Typ	ALIGNAUTO e: Log-Pwr	TRACE	E MULANANA	Frequency
		IFGain:Low	#Atten: 36 dB		M	₀∈ kr1 836	O MH7	Auto Tu
0 dB/div	Ref Offset 8 Ref 34.50						5 dBm	
og 24.6	1							Center F
4.6								4.515000000 (
.50								4.010000000
50								
5.5							-13.00 dBm	Start F
5.6				A2				30.000000
5.5				n Ynnelen		-		
5.5								Stop F
5.6								9.000000000
tart 30 Res BV	MHZ V 1.0 MHZ	#VB	W 3.0 MHz		Sweep 10		.000 GHz 0001 pts)	CF S 897.000000
	TRC SCL	×		FUNCTION F	UNCTION WIDTH	FUNCTIO	N VALUE	Auto
1 N 2 N	1 7	836.9 MHz 5.402 1 GHz	32.085 dBm -31.565 dBm					
3								Freq Off
								(
4								
4 5 6 7								
4 5 6 7								
4								

Highest Channel

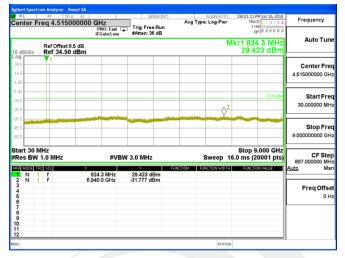
RL		Swept SA LΩ AC		SENSE		ALIGNAUTO		M Julo5, 2016	Frequency
enter F	req 4.5150	000000 GHz PNO: IFGair	Fast 😱 :Low	Trig: Free R #Atten: 36 dl	un	Type: Log-Pwr	TRAC TVI DI	ETPPPPPP	
dB/div	Ref Offset					N).0 MHz 79 dBm	Auto Tu
4.6	1								Center Fr
1.6									4.515000000 G
50									
1.5	_							-13.00 dBm	Start Fr 30.000000 M
5.6		1				and a state	²		00.000000
1.5									Stop Fr
5.6									9.00000000 G
art 30 I tes BW	MHz 1.0 MHz		#VBW	3.0 MHz		Sweep 1		.000 GHz 0001 pts)	CF St 897.000000 M
R MODE T	f	× 849.0 N	Hz	1 32.179 dBm	FUNCTION	FUNCTION WIDTH	FUNCTI	ON VALUE	Auto N
2 N 1 3 4 5	ŕ	7.617 3 G		-31.704 dBm					Freq Off
3									
)									
1									

Shenzhen STS Test Services Co., Ltd.



GPRS 850 BAND

Lowest Channel



Middle Channel

08:04:00 PM Jun 16, 2016	
TRACE 1 2 3 4 5 6 TYPE MWWWWWW DET P P P P P P	
Mkr1 836.9 MHz 29.566 dBm	Auto Tu
	Center F 4.515000000 0
-13.00 dBn	Start Fi 30.000000 N
	Stop F 9.000000000 0
Stop 9.000 GHz 16.0 ms (20001 pts)	CF St 897.000000 M
PORCHON VALUE	Freq Off
	us

Highest Channel

eq 4.5150000					
	PNO: Fast IFGain:Low	Trig: Free Run #Atten: 36 dB	Avg Type: Log-Pwr	TRACE 1 2 3 4 5 6 TYPE DET P P P P P P	Frequency
Ref Offset 8.5 dB Ref 34.50 dBm	1		м	Auto Tu	
X1					Center Fr 4.515000000 G
				-13.00 dBm	Start Fr 30.000000 M
					Stop Fr 9.000000000 G
Hz I.0 MHz					CF St 897.000000 M
f f	849.0 MHz 6.516 7 GHz	29.655 dBm -31.872 dBm	UNCTION FUNCTION WIDTH	FUNCTION VALUE	Auto M Freq Offs
					0
	Ref 34.50 dBm 1 1 1 1 1 1 1 1 1 1 1 1 1	Ref 34.50 dBm	Ref 34.50 dBm	42 (mar Units 0.5 up)	Ref 34.50 dBm 29.655 dBm 29.655 dBm 29.655 dBm 29.655 dBm 29.655 dBm 20.000 GHz 30.00 Hz 30.00 Hz 500 9.000 GHz 500

Shenzhen STS Test Services Co., Ltd.



GSM1900 BAND(30M-12G)

Lowest Channel

LXI RL	RF 50 Ω A0							
Center F	RF 50 Ω AC req 6.0150000	00 GHz	SENSE:INT	Avg Type:	ALIGNAUTO Log-Pwr	TRAC	M Julo5, 2016	Frequency
10 dB/div	Ref Offset 9.5 dB Ref 35.50 dBn		#Atten: 36 dB		Mk	r1 1.850	4 GHz	Auto Tune
25.5 15.5 5.50								Center Fred 6.015000000 GHz
-4.50 -14.5 -24.5							-13.00 dBn 2	Start Free 30.000000 MH;
-44.5								Stop Free 12.00000000 GH
Start 30 M #Res BW	1.0 MHz	X			weep 20	0.0 ms (2	.000 GHz 5001 pts)	CF Step 1.197000000 GH: Auto Mar
1 N 1 2 N 1 3 4 5 6 7 8 9 10	f	1.850 4 GHz 11.932 0 GHz	25.501 dBm -30.433 dBm					Freq Offse 0 H:
8 9 10 11 12								

Middle Channel

	M Jul05, 2016	00.01.01.0	ALIGNAUTO		SENSE: JNT		- Swept SΛ 50 Ω AC	m Analyz RE	Spectru	<mark>igilent</mark> RL
Frequency	E 1 2 3 4 5 6	TRAC	: Log-Pwr	Avg T		GHz	5000000 (er Fr	
Auto Tur	1 GHz 12 dBm	r1 1.880	Mk		#Atten: 36 dB	PNO: Fast C IFGain:Low	t 9.5 dB 50 dBm			10 dB
Center Fre 6.015000000 GH							1			25.5 15.5
Start Fre 30.000000 MH	-13.00 dBm									4.50 14.5 24.5
Stop Fre 12.00000000 GF										34.5 44.5 54.5
CF Ste 1.19700000 GF Auto Mi	.000 GHz 5001 pts)	0.0 ms (2	Sweep 2	INCTION	/ 3.0 MHz 26.172 dBm	#VB	×	.0 MH	JDE TRO	Res
Freq Offs 0 i					-29.351 dBm	02 1 GHz	1.80	ŕ		23456
										7 8 9 10 11
			STATUS							ISG

Highest Channel

RF	50 Ω .	AC		SB	NSE:INT		ALIGNAUTO	03:33:59 F	M Julo5, 2016	-
req 6.0	15000	Р	NO: Fast C			Avg Typ	e: Log-Pwr	TVS	A ALLEADARABLE	Frequency
		в	ounitow				Mk			Auto T
										Center F 6.015000000
									-13.00 dBm 2:	Start F 30.000000
										Stop F 12.000000000
	z		#VB					0.0 ms (2	5001 pts)	CF S 1.197000000
ac sou f f		1.909		26.388 d	Bm	INCTION	UNCTION WIDTH	FUNCTIO	IN VALUE	Auto
										Freq Of
	Ref Off Ref 3: AHz 1.0 MH	Ref Offset 9.5 d Ref 35.50 d 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Ref Offset 9.5 dB Ref 35.5 od Bm	Ref Offset 5.50 dBm	reg 6.0150000000 CHz PR0: Faint Provide Free In Galant.ow Trig: Free Matter: 31 Ref Offset 9.5 dB Ref 35.50 dBm Trig: Free Matter: 31 Not 100 and 100	reg 6.015000000 GHz Trig: Free Run IFGaint.ow Trig: Free Run Atten: 36 dB Ref Offset 9.5 dB Image: State of the stat	Proc 6.015000000 GHz Trig: Free Run Avg Typ PROF Test (Free Run Free Run Free Run Free Run Ref Offset 9.5 dB Ref Offset 9.5 dB Ref 35.50 dBm Ref 35.50 dBm Ref 3.5.00 dBm Image: State of the	Avg Type: Log-Pwr PIO: Fail (F all	Proc F.a. Proc F.a. <t< td=""><td>Avg Type: Log.Pwr That I is a 56 dim Pito: Fail (Fraintiew) Trig: Free Run Ref Offset 9.5 dB Mkr1 1 200 dim Ref Offset 9.5 dB Mkr1 200 dim 1 1 1</td></t<>	Avg Type: Log.Pwr That I is a 56 dim Pito: Fail (Fraintiew) Trig: Free Run Ref Offset 9.5 dB Mkr1 1 200 dim Ref Offset 9.5 dB Mkr1 200 dim 1 1 1

Shenzhen STS Test Services Co., Ltd.



GSM1900 BAND(12G-20G)

Lowest Channel

	um Analyzer - Swept Si							
Center Fr	RF 50 Ω AC	000 GHz	SENSE:INT	Avg Ty	pe: Log-Pwr	TRAC	M 3405, 2016	Frequency
0 dB/div	Ref Offset 9.5 dB Ref 35.50 dBn	PNO: Fast ⊂ IFGain:Low	#Atten: 36 dB		Mkr1	16.494	72 GHz 36 dBm	Auto Tur
og 25.5 15.5 5.50								Center Fr 16.00000000 G
4.5							-13.00 dBm	Start Fr 12.000000000 G
4.5								Stop Fi 20.000000000 0
tart 12.0 Res BW	1.0 MHz		W 3.0 MHz			0.0 ms (2		CF St 800.000000 N
E MODE TE N 1 2 N 1 3 4 5 5 6 7 8 9 9 0 1 2	f 10	3,494 72 GHz 5,494 72 GHz	Y F -24.936 dBm -24.936 dBm	UNCTION	FUNCTION WIDTH	FUNCTIO	N VALUE	Auto N Freq Off
1					STATU	s		1

Middle Channel

								er - Swept SA			
Amplitude	M Jul 05, 2016 E 1 2 3 4 5 6	TRAC	ALIGNAUTO : Log-Pwr	Avg Ty	ISE:INT			50 Ω AC	RF Ce Lev		Refe
RefLe	E Mutaninani P P P P P P P	DE	>100/100	Avg Ho		Trig: Free F #Atten: 30 c	PNO: Fast (IFGain:Low				
25.00 di	7 GHz 54 dBm		Mkr1					set 9.5 dB 5.00 dBm		3/div	10 dB Log r
Attenuatio											15.0
[30 dE	-4.00 dBm						_				5.00
	-4.00 00m										5.00
Scale/I				1							15.0 25.0
10											35.0
											15.0
Scale Ty											55.0
Log	2										65.0
PreselCen	.000 GHz 0000 pts)	Stop 20).7 ms (1	Sweep 20			W 3.0 MHz	#VB	z	000 GHz 1.0 MH		
	IN VALUE	FUNCTIO	NCTION WIDTH	ICTION	Bm	-33.054 dBr	631 7 GHz		RC SCL	N	1
Presel Adju 0					3m	dBr	4.722 GHz	24	1	N	234567
											8 9 0 1 2
M d 1 d			STATUS								

Highest Channel

0ffset 9.5 dB 35.50 dBm	D GHZ PNO: Fast C IFGain:Low	Trig: Free #Atten: 36		Avg Typ	e: Log-Pwr	TVE	E 1 2 3 4 5 6 E MMMMMM T P P P P P P	Frequency
					Mkr1		56 GHz 23 dBm	Auto T
								Center F 16.000000000
			•				-13.00 dBm	Start F 12.000000000
								Stop F 20.000000000
Hz AHz	#VB	W 3.0 MHz			Sweep 2	0.0 ms (2	5001 pts)	CF 9 800.000000
16.54			3m	INCTION	INCTION WIDTH	FUNCTIO	N VALUE	Auto
								Freq Of
	1Hz × 16.54	1Hz #VB	Hz #VBW 3.0 MHz 16.546 56 GHz -25.023 dB	Hz #VBW 3.0 MHz	1Hz #VBW 3.0 MHz	Hz #VBW 3.0 MHz Sweep 2/ X Function Function (International Control of the	Hz #VBW 3.0 MHz Sweep 20.0 ms (2: 2009 000 000 000 000 000 000 000 000 000	Hz Hz Hz 16.546 65 GHz 16.546 56 GHz 16.546 56 GHz 16.546 56 GHz 16.546 56 GHz 16.546 56 GHz 17.500 BHZ 17.500

Shenzhen STS Test Services Co., Ltd.



GPRS1900 BAND(30M-12G)

Lowest Channel

	rum Analyzer - Swep	t SA					
enter F	RF 50 Ω req 6.015000		SENSE:INT	Avg Type:	Log-Pwr	08:36:07 PM Jun 16, 20 TRACE 1 2 3 4 5 TYPE MWWWW	Frequency
0 dB/div	Ref Offset 9.5 d Ref 35.50 dE		#Atten: 36 dB		Mk	r1 1.850 4 GH 26.671 dB	Z Auto Tur
5.6 5.6 .50	• 1						Center Fr 6.015000000 G
.50 4.5 4.5						-13.00 d	Start Fr 30.000000 M
1.5							Stop Fr 12.000000000 G
R MODE T	1.0 MHz	X			weep 2	Stop 12.000 GH 0.0 ms (25001 pt EUNOTONIVAULE	
N 1 2 N 1 3	1	1.850 4 GHz 7.445 7 GHz	26.671 dBm -30.110 dBm				Freq Offe
8 9 0 1 2					STATUS		

Middle Channel

Agilent Spect RL Center F	RF	50 Q			ENSE:INT	Avg T	ALIGNAUTO 'ype: Log-Pwr	TRAC	PM Jun 16, 2016 DE 1 2 3 4 5 6	Frequency
10 dB/div		fset 9.5 5.50 d	IFGain:Lo				M	(r1 1.88	er⊫PPPPP 01GHz 17dBm	Auto Tun
25.5 15.5		1								Center Fre 6.015000000 G⊦
-4.50 -14.5 -24.5									-13.00 dBm 2	Start Fre 30.000000 MH
34.5 44.5 54.5										Stop Fr 12.00000000 G
Start 30 I Res BW	1.0 MH	z	#\ 1.880 1 GHz	VBW 3.0 MHz	F	UNCTION	Sweep 2	20.0 ms (2	2.000 GHz 25001 pts) 001/2006	CF Sto 1.197000000 G Auto M
2 N 3 4 5 6 7	ł		11.950 2 GHz							Freq Offs 0 I
8 9 10 11										
12 15G							STATU	5		

Highest Channel

RF 50 Ω AC	SENSE: INT	ALIGNAUTO	08:43:04 PM Jun 16, 2016	
er Freq 6.015000000 GHz PNO: Fas	Trig: Free Run	Avg Type: Log-Pwr	TRACE 1 2 3 4 5 6 TYPE MWWWWWWWWW DET P P P P P P	Frequency
IFGain:Lo Ref Offset 9.5 dB div Ref 35.50 dBm	w #Atten: 36 db	Mk	r1 1.910 2 GHz 26.754 dBm	Auto T
				Center 6.015000000
			-13.00 dBm	Start F 30.000000
				Stop 12.000000000
	/BW 3.0 MHz		Stop 12.000 GHz 0.0 ms (25001 pts)	CF \$
2013日 1789 1934日 第28日 1789 1934日 1 1 f 1.910 2.GHz 1 f 7.971 4.GHz	26.754 dBm	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	Auto Freq Of

Shenzhen STS Test Services Co., Ltd.



GPRS1900 BAND(12G-20G)

Lowest Channel

igilent Spectrum Analyzer - Swept SA							
RL RF 50 Ω AC Center Freq 16.00000000	0 GHz	SENSE:JNT		Log-Pwr	TRACE	Dun 16, 2016	Frequency
Ref Offset 9.5 dB 10 dB/div Ref 35.50 dBm	PNO: Fast G	Trig: Free Run #Atten: 36 dB		Mkr1	DET 16.453 1	2 GHz 8 dBm	Auto Tun
og 25.5 15.5 5.50							Center Fro 16.00000000 Gi
4.5		1				-13.00 dBn	Start Fr 12.00000000 G
4.5							Stop Fr 20.000000000 G
tart 12.000 GHz Res BW 1.0 MHz	#VBW	/ 3.0 MHz			Stop 20. 0.0 ms (25	001 pts)	CF St 800.000000 M
	3 12 GHz 3 12 GHz	24.878 dBm -24.878 dBm	FUI	ICTION WIDTH	FUNCTION	I WALKE	Auto M Freq Offs 0
a				STATUS	6		

Middle Channel

	Swept SA				
	0000000 GHz	SENSEJINT	ALIGNAUTO Avg Type: Log-Pwr	08:40:27 PM Jun 16, 2016 TRACE 1 2 3 4 5 6	Frequency
	IFGain:Low 9.5 dB	#Atten: 36 dB	Mkr1	0ET P P P P P P	Auto Tune
					Center Fre 16.000000000 GH
			1	-13.00 dBn	Start Fre 12.000000000 GH
					Stop Fre 20.000000000 GH
0 MHz	×	Y		20.0 ms (25001 pts)	CF Ste 800.000000 MH <u>Auto</u> Ma
ŗ	16.515 84 GHz 16.515 84 GHz	-24.718 dBm -24.718 dBm			Freq Offs 0 F
	Ref Offset	IF Gain:Low Ref Offset 9.5 dB Ref 35.50 dBm 0 GHz 0 0 GHz 1 0 MHz #VB	PROF Fast Configuration Targe Free Run If Gaintow Attain: 36 dB Ref 075et 0.5 dB Ref 35.50 dBm 0 GHz 0 GHz 1 6515 84 GHz 2 42.118 dBm	Pipe Run IF Gain: Low Trig: Free Run IF Gain: Low Ref Offset 3.5 dB Mkr1 Offset 3.5 dB Offset 3.5 dB <td>Pice Pice Training Pice Pice</td>	Pice Pice Training Pice Pice

Highest Channel

RL		wept SA Ω AC		SEN	E:INT		ALIGNAUTO	08:43:36 F	M Jun 16, 2016	
	req 16.000		PNO: Fast G		Run	Avg Typ	e: Log-Pwr	TRAC	CE 1 2 3 4 5 6	Frequency
dB/div	Ref Offset 9 Ref 35.50						Mkr1		12 GHz 10 dBm	Auto Tur
6 6										Center Fr 16.000000000 G
					• ¹				-13.00 dBm	Start Fr 12.00000000 G
										Stop Fr 20.000000000 G
es BW	00 GHz 1.0 MHz		#VBV	/ 3.0 MHz				0.0 ms (2	.000 GHz 5001 pts)	CF St 800.000000 N
NODE TE N 1 N 1	f f		3 12 GHz 9 76 GHz	-25.710 dB -25.844 dB	m	ICTION	UNCTION WIDTH	FUNCTI	ON VALUE	<u>Auto</u> N
										Freq Off 0
N 1										
							STATUS			

Shenzhen STS Test Services Co., Ltd.



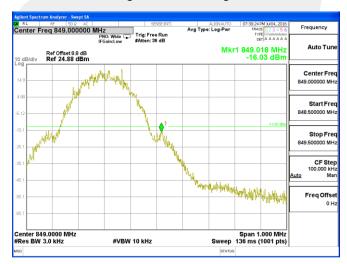
GSM 850

ARL RF 50.9 AC RL RF 50.9 AC PRC Wide PRC Wide PRC Wide IFGein:Lew #Atten: 36 dB Avg Type: Log-Pwr Frequency DET A A A A A Auto Tur Mkr1 823.981 MHz -18.15 dBm Ref Offset 8.8 dB Ref 25.80 dBm 10 0 MA ANALANA Center Fre 824.000000 MH Start Fre 823.500000 MH Stop Fre 824.500000 MH CF Ste 100.000 kH **Freq Offs** HAMA A الإمباليتاه 0 H Center 824.0000 MHz #Res BW 3.0 kHz Span 1.000 MHz Sweep 136 ms (1001 pts) #VBW 10 kHz

Lowest Band Edge

Note:Offset=Cable loss(8.5)+10log(3.2/3)=8.5+0.3=8.8 dB

Highest Band Edge

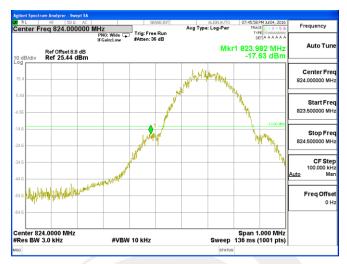


Note:Offset=Cable loss(8.5)+10log(3.2/3)=8.5+0.3=8.8 dB



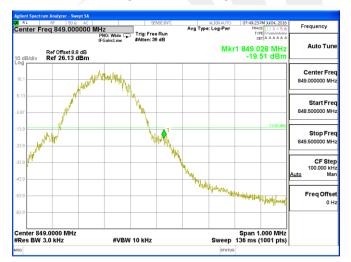
GPRS 850

Lowest Band Edge



Note:Offset=Cable loss(8.5)+10log(3.2/3)=8.5+0.3=8.8 dB

Highest Band Edge

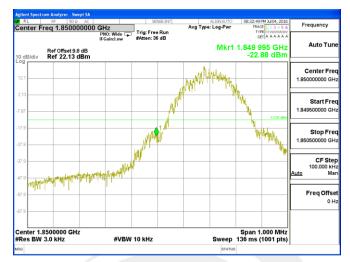


Note:Offset=Cable loss(8.5)+10log(3.2/3)=8.5+0.3=8.8 dB



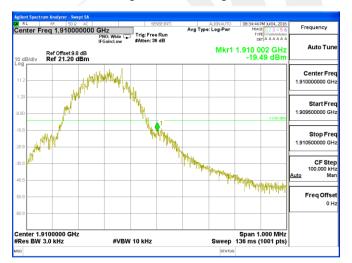
GSM 1900

Lowest Band Edge



Note:Offset=Cable loss(9.5)+10log(3.2/3)=9.5+0.3=9.8 dB

Highest Band Edge



Note:Offset=Cable loss(9.5)+10log(3.2/3)=9.5+0.3=9.8 dB

Shenzhen STS Test Services Co., Ltd.



GPRS 1900

Lowest Band Edge



Note:Offset=Cable loss(9.5)+10log(3.2/3)=9.5+0.3=9.8 dB

Highest Band Edge



Note:Offset=Cable loss(9.5)+10log(3.2/3)=9.5+0.3=9.8 dB

Shenzhen STS Test Services Co., Ltd.



Report No.: STS1607009F01

A8 FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT

GSM 850: (30-9000)MHz									
The Worst Test Results Channel 128/824.2 MHz									
	signal	Ant(dDi)		PMea	Limit	Margin	Polarity		
Frequency(MHz)	(dBm)	Ant(dBi)	Loss	(dBm)	(dBm)	(dBm)			
1648.18	-41.58	9.4	4.75	-36.93	-13	-23.93	Н		
2472.4	-39.32	10.6	8.39	-37.11	-13	-24.11	Н		
3296.63	-31.35	12	11.79	-31.14	-13	-18.14	Н		
1648.1	-44.11	9.4	4.75	-39.46	-13	-26.46	V		
2472.39	-44.24	10.6	8.39	-42.03	-13	-29.03	V		
3296.88	-43.75	12	11.79	-43.54	-13	-30.54	V		
The Worst Test Results Channel 190/836.6 MHz									
Frequency(MHz)	signal (dBm)	Ant(dBi)	Loss	PMea	Limit	Margin	Polarity		
Frequency(MHZ)				(dBm)	(dBm)	(dBm)			
1673.21	-41.61	9.5	4.76	-36.87	-13	-23.87	Н		
2509.87	-40.39	10.7	8.4	-38.09	-13	-25.09	Н		
3346.06	-31.43	12.2	11.8	-31.03	-13	-18.03	Н		
1673.25	-43.8	9.4	4.75	-39.15	-13	-26.15	V		
2509.49	-44.56	10.6	8.39	-42.35	-13	-29.35	V		
3346.16	-42.7	12.2	11.82	-42.32	-13	-29.32	V		
	The W	orst Test R	esults Ch	annel 251/	848.8 MHz				
Frequency(MHz)	signal	Ant(dBi)	Loss	PMea	Limit	Margin	Polarity		
Trequency(IMLIZ)	(dBm)	Апцаві)	LUSS	(dBm)	(dBm)	(dBm)	Folanty		
1697.52	-41.36	9.6	4.77	-36.53	-13	-23.53	Н		
2546.42	-39.54	10.8	8.5	-37.24	-13	-24.24	Н		
3395.31	-30.96	12.5	11.9	-30.36	-13	-17.36	Н		
1697.18	-43.57	9.6	4.77	-38.74	-13	-25.74	V		
2546.51	-44.25	10.8	8.5	-41.95	-13	-28.95	V		
3394.98	-43.14	12.5	11.9	-42.54	-13	-29.54	V		

Note: (1)Below 30MHz no Spurious found is the worst condition.

(2)Above 3.5GHz amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has.





GPRS 850: (30-9000)MHz

GPRS 850: (30-9000)MHz									
The Worst Test Results Channel 128/824.2 MHz									
	signal (dBm)			PMea	Limit	Margin	Polarity		
Frequency(MHz)		Ant(dBi)	Loss	(dBm)	(dBm)	(dBm)			
1648.22	-40.93	9.4	4.75	-36.28	-13	-23.28	Н		
2472.62	-39.36	10.6	8.39	-37.15	-13	-24.15	Н		
3296.86	-32.27	12	11.79	-32.06	-13	-19.06	Н		
1648.02	-43.63	9.4	4.75	-38.98	-13	-25.98	V		
2472.68	-44.13	10.6	8.39	-41.92	-13	-28.92	V		
3296.45	-43.71	12	11.79	-43.5	-13	-30.5	V		
The Worst Test Results Channel 190/836.6 MHz									
Frequency(MHz)	signal (dBm)	Ant(dBi)		PMea	Limit	Margin	Delority		
Frequency(MHZ)		Ani(ubi)	Loss	(dBm)	(dBm)	(dBm)	Polarity		
1673	-41.49	9.5	4.76	-36.75	-13	-23.75	Н		
2509.82	-39.85	10.7	8.4	-37.55	-13	-24.55	Н		
3346.35	-31.45	12.2	11.8	-31.05	-13	-18.05	Н		
1673.1	-43.18	9.4	4.75	-38.53	-13	-25.53	V		
2509.55	-45.06	10.6	8.39	-42.85	-13	-29.85	V		
3346.26	-43.26	12.2	11.82	-42.88	-13	-29.88	V		
	The W	orst Test R	esults Ch	annel 251/	848.8 MHz				
	signal	Apt(dBi)	Loss	PMea	Limit	Margin	Delarity		
Frequency(MHz)	(dBm)	Ant(dBi)		(dBm)	(dBm)	(dBm)	Polarity		
1697.34	-41.52	9.6	4.77	-36.69	-13	-23.69	Н		
2546.47	-40.58	10.8	8.5	-38.28	-13	-25.28	Н		
3395.1	-31.81	12.5	11.9	-31.21	-13	-18.21	Н		
1697.34	-43.18	9.6	4.77	-38.35	-13	-25.35	V		
2546.55	-44.89	10.8	8.5	-42.59	-13	-29.59	V		
3395.28	-43.69	12.5	11.9	-43.09	-13	-30.09	V		

Note: (1)Below 30MHz no Spurious found is the worst condition.

(2)Above 3.5GHz amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has.



Report No.: STS1607009F01

PCS 1900: (30-20000)MHz

		DCS 1	900: (30-2	0000)MHz					
	The Wor	st Test Res	sults for C	hannel 512	2/1850.2MH	z			
	signal		1	PMea	Limit	Margin	Polarity		
Frequency(MHz)	(dBm)	Ant(dBi)	Loss	(dBm)	(dBm)	(dBm)			
3700.16	-33.87	12.6	12.93	-34.2	-13	-21.2	Н		
5550.5	-34.12	13.1	17.11	-38.13	-13	-25.13	н		
7400.7	-33.46	11.5	22.2	-44.16	-13	-31.16	Н		
3700.51	-34.64	12.6	12.93	-34.97	-13	-21.97	V		
5550.24	-35.24	13.1	17.11	-39.25	-13	-26.25	V		
7400.61	-33.01	11.5	22.2	-43.71	-13	-30.71	V		
	The Worst Test Results for Channel 661/1880.0MHz								
	signal (dBm)	Ant(dBi)	Loss	PMea	Limit	Margin	Polarity		
Frequency(MHz)				(dBm)	(dBm)	(dBm)			
3760.25	-34.19	12.6	12.93	-34.52	-13	-21.52	Н		
5640.12	-34.22	13.1	17.11	-38.23	-13	-25.23	Н		
7519.96	-32.28	11.5	22.2	-42.98	-13	-29.98	Н		
3760.25	-34.58	12.6	12.93	-34.91	-13	-21.91	V		
5640.25	-34.15	13.1	17.11	-38.16	-13	-25.16	V		
7519.92	-32.2	11.5	22.2	-42.9	-13	-29.9	V		
	The Wor	st Test Res	sults for C	hannel 810)/1909.8MH	z			
	signal	Ant(dDi)		PMea	Limit	Margin	Delerity		
Frequency(MHz)	(dBm)	Ant(dBi)	Loss	(dBm)	(dBm)	(dBm)	Polarity		
3819.36	-34.37	12.6	12.93	-34.7	-13	-21.7	Н		
5729.17	-34.6	13.1	17.11	-38.61	-13	-25.61	Н		
7638.86	-33.09	11.5	22.2	-43.79	-13	-30.79	Н		
3819.47	-35.2	12.6	12.93	-35.53	-13	-22.53	V		
5729.44	-34.49	13.1	17.11	-38.5	-13	-25.5	V		
7639.18	-31.83	11.5	22.2	-42.53	-13	-29.53	V		

Note: (1)Below 30MHz no Spurious found is the worst condition.

(2)Above 8GHz amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has.



Report No.: STS1607009F01

GPRS 1900: (30-20000)MHz

GPRS1900: (30-20000)MHz										
The Worst Test Results for Channel 512/1850.2MHz										
	signal		1.000	PMea	Limit	Margin	Polarity			
Frequency(MHz)	(dBm)	Ant(dBi)	Loss	(dBm)	(dBm)	(dBm)				
3700.22	-33.5	12.6	12.93	-33.83	-13	-20.83	Н			
5550.63	-35.15	13.1	17.11	-39.16	-13	-26.16	н			
7400.51	-32.26	11.5	22.2	-42.96	-13	-29.96	Н			
3700.51	-35.21	12.6	12.93	-35.54	-13	-22.54	V			
5550.22	-34.82	13.1	17.11	-38.83	-13	-25.83	V			
7400.56	-31.98	11.5	22.2	-42.68	-13	-29.68	V			
The Worst Test Results for Channel 661/1880.0MHz										
Frequency(MHz)	signal (dBm)	Ant(dBi)	Loss	PMea	Limit	Margin	Polarity			
Frequency(MHZ)				(dBm)	(dBm)	(dBm)				
3759.96	-34.77	12.6	12.93	-35.1	-13	-22.1	Н			
5640.25	-34.92	13.1	17.11	-38.93	-13	-25.93	Н			
7520.08	-33.44	11.5	22.2	-44.14	-13	-31.14	Н			
3760.16	-35.92	12.6	12.93	-36.25	-13	-23.25	V			
5640.25	-34.64	13.1	17.11	-38.65	-13	-25.65	V			
7520.16	-32.23	11.5	22.2	-42.93	-13	-29.93	V			
	The Wor	st Test Res	sults for C	hannel 810)/1909.8MH	z				
Frequency(MHz)	signal		Loss	PMea	Limit	Margin	Delevity			
Frequency(MHZ)	(dBm)	Ant(dBi)	LOSS	(dBm)	(dBm)	(dBm)	Polarity			
3819.45	-34.36	12.6	12.93	-34.69	-13	-21.69	Н			
5729.09	-35.26	13.1	17.11	-39.27	-13	-26.27	Н			
7639.19	-32.69	11.5	22.2	-43.39	-13	-30.39	Н			
3819.57	-34.73	12.6	12.93	-35.06	-13	-22.06	V			
5729.51	-33.79	13.1	17.11	-37.8	-13	-24.8	V			
7638.96	-31.8	11.5	22.2	-42.5	-13	-29.5	V			

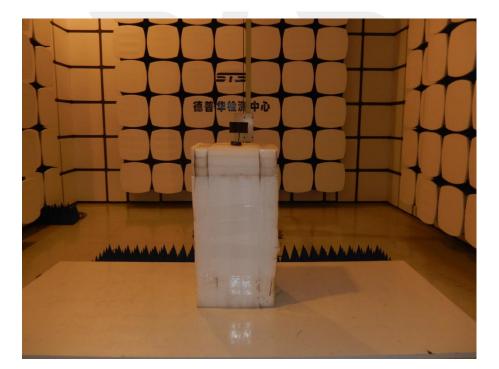
Note: (1)Below 30MHz no Spurious found is the worst condition.

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RADIATED SPURIOUS EMISSION

APPENDIX BPHOTOS OF TEST SETUP



Shenzhen STS Test Services Co., Ltd.