

# **RADIO TEST REPORT**

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# Report No: STS1607196F01

Issued for

# SHENZHEN HENG FENG ELECTRONIC CO; LTD

16Floor, Room 16H,Block A Moderm of window Building Futian District ShenZhen,China

Product Name:	Feature phone
Brand Name:	JOO
Model Name:	230
Series Model:	Q22,Q2,Q33
FCC ID:	2AI8M23
Test Standard:	FCC Part 22H and 24E

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# **TEST RESULT CERTIFICATION**

Applicant's name:	SHENZHEN HENG FENG ELECTRONIC CO; LTD
Address:	16Floor, Room 16H,Block A Moderm of window Building Futian District ShenZhen,China
Manufacture's Name:	SHENZHEN HENG FENG ELECTRONIC CO; LTD
Address:	16Floor, Room 16H,Block A Moderm of window Building Futian District ShenZhen,China
Product name:	Feature phone
Brand name:	JOO
Model and/or type reference :	230
Standards:	FCC Part 22H and 24E
Test procedure	ANSI/TIA 603-D (2010)

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 ......... 22 July. 2016 ~01 Aug. 2016

Date of Issue ..... 02 Aug. 2016

Test Result ..... Pass

Testing Engineer :	Junter	
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	(Vita Li)	Northe North
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**1 INTRODUCTION** 

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# **Revision History**

Rev.	Issue Date	Report NO.	Effect Page	Contents
00	02 Aug. 2016	STS1607196F01	ALL	Initial Issue



Shenzhen STS Test Services Co., Ltd.



## 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:	Feature phone			
Hardware version number	G938V30-KF-00			
Software version number	G938_JSY_G14_SC6531_3232_PCB10_QVGA_ENG_FRE_ POR_mSPA_WELCOME_V02			
FCC ID:	2AI8M23			
	GSM/GPRS:			
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:	GSM850:31.89dBm,PCS1900:26.10dBm GPRS850:31.78dBm,GPRS1900:26.01dBm			
Type of Emission:	GSM(850):316KGXW: GSM(1900):321KGXW GPRS(850):323KGXW: GPRS(1900):317KGXW			
SIM Card	SIM 1 and SIM 2 is a chipset unit and tested as single chipset, SIM 1 is used to tested			
Antenna:	PIFA Antenna			
Antenna gain:	GSM 850:-0.5dBi ,PCS 1900:-0.5dBi			
Power Supply:	DC 3.7V by battery			
Battery parameter:	Capacity:850mAh, Rated Voltage: 3.7V			
GPRS/EDGE Class	Multi-Class12			
Extreme Vol. Limits:	DC3.6 V to 4.2 V (Nominal DC3.7V)			
Extreme Temp. Tolerance	-20℃ to +45℃			
** Note: The High Voltage 4.2 V and Low Voltage 3.6 V was declared by manufacturer, The EUT couldn't be operate normally with higher or lower voltage.				





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	9120D-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

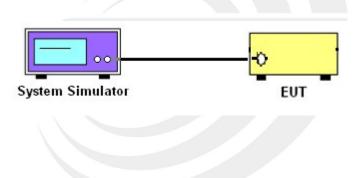
#### Test overview

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

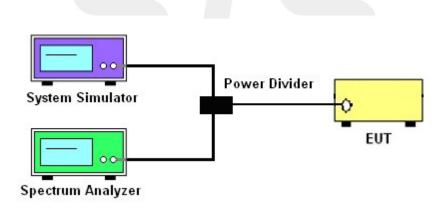
#### TEST OVERVIEW

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/EDGE) 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);

PMeas(PK) = 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.

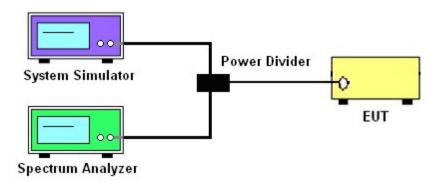
All modes of operation were investigated and the worst case configuration results are reported in this section.

## 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  $\pm 0.00025\%$  ( $\pm 2.5$  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

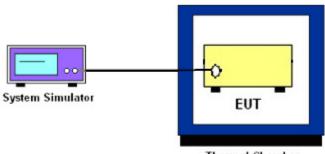
1. The testing follows FCC KDB 971168 D01 Section 9.0.

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.

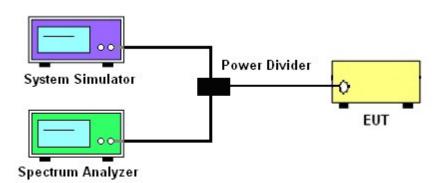
7. The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts)

= 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.

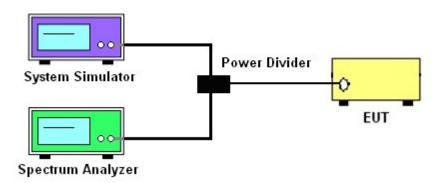
6.The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts)

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

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

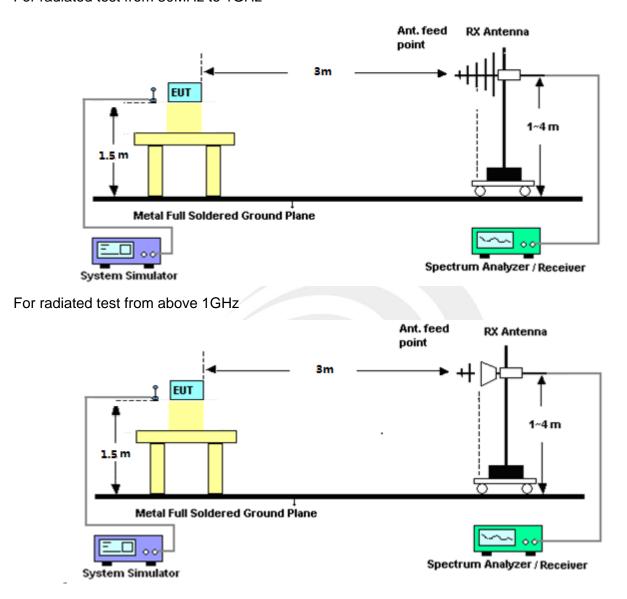
## Test procedure

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  $\ge$  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



For radiated test from 30MHz to 1GHz



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## APPENDIX ATESTRESULT A1CONDUCTED OUTPUT POWER

GSM 850:

Mode	Frequency (MHz)	AVG Power
GSM850	824.2	31.67
	836.6	31.77
	848.8	31.89
GPRS850	824.2	31.57
	836.6	31.68
	848.8	31.78

PCS 1900:

Mode	Frequency (MHz)	AVG Power
	1850.2	26.10
GSM1900	1880	25.80
	1909.8	25.73
	1850.2	26.01
GPRS1900	1880	25.71
	1909.8	25.68



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## A2 PEAK-TO-AVERAGE RADIO

PCS 1900:

Mode	Frequency (MHz)	PEAK Power	AVG Power	PAR
	1850.2	26.70	26.10	0.60
PCS1900	1880	26.59	25.80	0.79
	1909.8	26.48	25.73	0.75
	1850.2	26.52	26.01	0.51
GPRS1900	1880	26.29	25.71	0.58
	1909.8	26.46	25.68	0.78

# A3 TRANSMITTER RADIATED POWER (EIRP/ERP)

	Radiated Power (ERP) for GSM 850 MHZ								
				Re	esult				
Mode	Frequency	S G.Level (dBm)	Cable loss	Gain (dBi)	PMeas E.R.P(dBm)	Polarization Of Max. ERP	Conclusion		
	824.2	23.63	0.44	6.5	29.69	Horizontal	Pass		
	824.2	25.61	0.44	6.5	31.67	Vertical	Pass		
0014050	836.6	23.79	0.45	6.5	29.84	Horizontal	Pass		
GSM850	836.6	25.72	0.45	6.5	31.77	Vertical	Pass		
	848.8	23.64	0.46	6.5	29.68	Horizontal	Pass		
	848.8	25.85	0.46	6.5	31.89	Vertical	Pass		
	824.2	23.57	0.44	6.5	29.63	Horizontal	Pass		
	824.2	25.51	0.44	6.5	31.57	Vertical	Pass		
0000000	836.6	23.42	0.45	6.5	29.47	Horizontal	Pass		
GPRS850	836.6	25.63	0.45	6.5	31.68	Vertical	Pass		
	848.8	23.31	0.46	6.5	29.35	Horizontal	Pass		
	848.8	25.74	0.46	6.5	31.78	Vertical	Pass		



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	Radiated Power (EIRP) for PCS 1900 MHZ								
			Result						
Mode	Frequency	S G.Level Cable	Gain	PMeas	Polarization	Conclusion			
		(dBm)	loss (dBi) <sub>E</sub>	E.I.R.P.(dBm)	Of Max.EIRP.				
	1850.2	16.17	2.41	10.35	24.11	Horizontal	Pass		
	1850.2	18.16	2.41	10.35	26.10	Vertical	Pass		
PCS1900	1880.0	15.95	2.42	10.35	23.88	Horizontal	Pass		
PC31900	1880.0	17.87	2.42	10.35	25.80	Vertical	Pass		
	1909.8	15.77	2.43	10.35	23.69	Horizontal	Pass		
	1909.8	17.81	2.43	10.35	25.73	Vertical	Pass		
	1850.2	16.27	2.41	10.35	24.21	Horizontal	Pass		
	1850.2	18.07	2.41	10.35	26.01	Vertical	Pass		
	1880.0	15.98	2.42	10.35	23.91	Horizontal	Pass		
GPRS1900	1880.0	17.78	2.42	10.35	25.71	Vertical	Pass		
	1909.8	15.93	2.43	10.35	23.85	Horizontal	Pass		
	1909.8	17.76	2.43	10.35	25.68	Vertical	Pass		



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

	Occupied Bandwidth for GSM 850 band							
Mode	Frequency(MHz)	Occupied Bandwidth	Emission Bandwidth					
Mode	Frequency(IVIHZ)	(99%)( kHz)	(-26dBc)( kHz)					
Low Channel	824.2	241.73	316.1					
Middle Channel	836.6	246.49	316.2					
High Channel	848.8	244.93	315.4					
	Occupied Band	width for GPRS 850 band						
Mada		Occupied Bandwidth	Emission Bandwidth					
Mode	Frequency(MHz)	(99%)( kHz)	(-26dBc)( kHz)					
Low Channel	824.2	249.39	322.8					
Middle Channel	836.6	249.21	318.6					
High Channel	848.8	251.07	311.8					



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	Occupied Bandwidth for GSM1900 band								
Mode	Frequency(MHz)	Occupied Bandwidth	Emission Bandwidth						
Mode	Frequency(IVIEZ)	(99%)( kHz)	(-26dBc)( kHz)						
Low Channel	1850.2	242.79	315.8						
Middle Channel	1880.0	243.47	311.7						
High Channel	1909.8	247.65	320.7						
	Occupied Bandy	width for GPRS 1900 band							
Mode		Occupied Bandwidth	Emission Bandwidth						
Mode	Frequency(MHz)	(99%)( kHz)	(-26dBc)( kHz)						
Low Channel	1850.2	242.30	316.6						
Middle Channel	1880.0	244.41	314.1						
High Channel	1909.8	246.79	317.3						

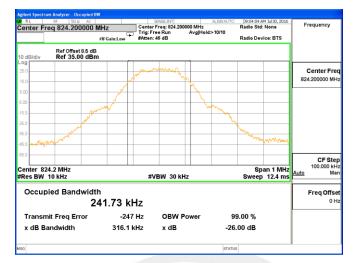


Shenzhen STS Test Services Co., Ltd.

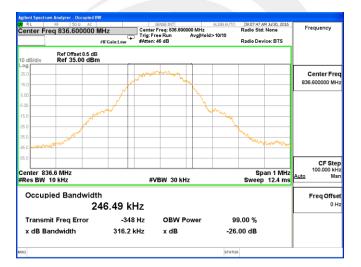


#### Report No.: STS1607196F01

#### GSM 850 CH 128



GSM 850 CH 190





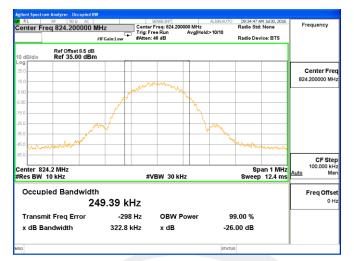
#### GSM 850 CH 251

## Shenzhen STS Test Services Co., Ltd.



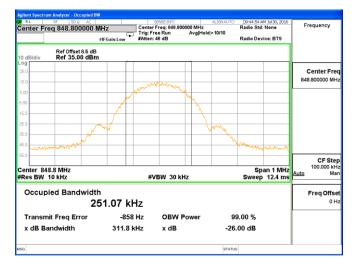
#### Report No.: STS1607196F01

#### GPRS 850 CH 128



#### GPRS 850 CH 190





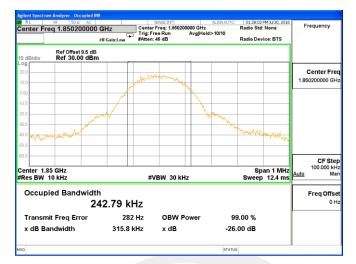
#### GPRS 850 CH 251

## Shenzhen STS Test Services Co., Ltd.

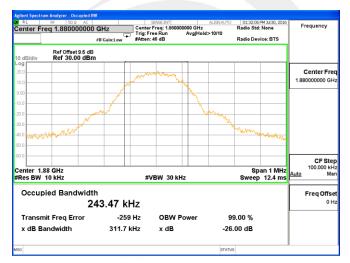


#### Report No.: STS1607196F01

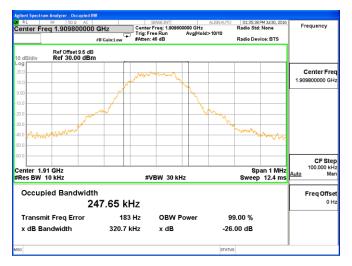
#### PCS 1900 CH 512



PCS 1900 CH 661



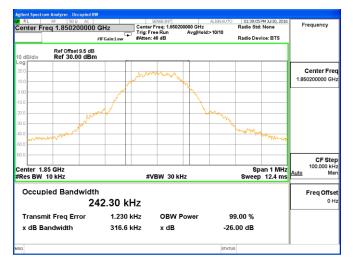
#### PCS 1900 CH 810



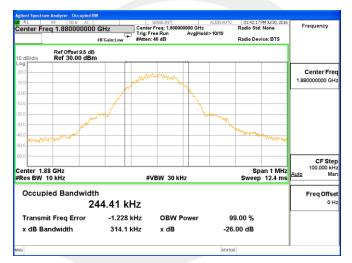
Shenzhen STS Test Services Co., Ltd.



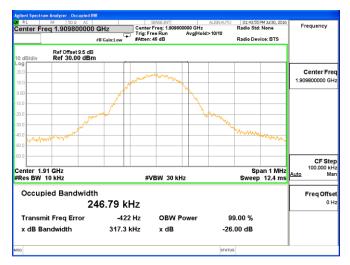
#### GPRS 1900 CH 512



## GPRS 1900 CH 661



#### GPRS 1900 CH 810





Report No.: STS1607196F01

# A5 FREQUENCY STABILITY

Normal Voltage = 3.7V. ; Battery End Point (BEP) = 3.6 V.; Maximum Voltage = 4.2 V

	GSM 850Middle Channel							
Temperature (°C)	Voltage (Volt)	Freq. Dev. (Hz)	Freq. Dev. (ppm)	Limit	Result			
50		13.509	0.016					
40		26.454	0.032					
30		23.698	0.028		PASS			
20		27.918	0.033					
10	Normal Voltage	18.272	0.022					
0		13.535	0.016	2.5ppm				
-10		17.430	0.021					
-20	/	15.945	0.019					
-30		16.206	0.019					
25	Maximum Voltage	19.866	0.024					
25	BEP	11.631	0.014					

	GPRS 850Middle Channel								
Temperature (°C)	Voltage (Volt)	Freq. Dev. (Hz)	Freq. Dev. (ppm)	Limit	Result				
50		13.559	0.016						
40		26.446	0.032						
30		23.682	0.028						
20		27.886	0.033						
10	Normal Voltage	18.227	0.022						
0		13.501	0.016	2.5ppm	PASS				
-10		17.413	0.021						
-20		15.904	0.019						
-30		16.264	0.019						
25	Maximum Voltage	19.897	0.024						
25	BEP	11.667	0.014	]					



Report No.: STS1607196F01

	GSM 1900Middle Channel									
Temperature (°C)	Voltage (Volt)	Freq. Dev. (Hz)	Freq. Dev. (ppm)	Limit	Result					
50		19.032	0.010							
40		11.202	0.006							
30		10.255	0.005							
20		22.304	0.012	Within Au- thorized Band	PASS					
10	Normal Voltage	14.107	0.008							
0		10.075	0.005							
-10		15.438	0.008							
-20		20.668	0.011							
-30		24.082	0.013							
25	Maximum Voltage	12.468	0.007							
25	BEP	12.506	0.007							

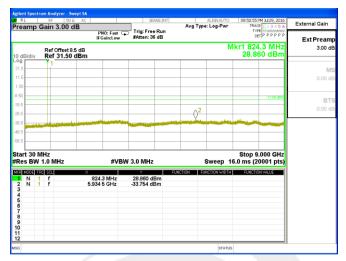
GPRS 1900Middle Channel								
Temperature (°C)	Voltage (Volt)	Freq. Dev. (Hz)	Freq. Dev. (ppm)	Limit	Result			
50		19.065	0.010					
40		11.202	0.006					
30		10.300	0.005					
20		22.263	0.012		PASS			
10	Normal Voltage	14.120	0.008	Within Au-				
0		10.003	0.005	thorized				
-10		15.419	0.008	Band				
-20		20.695	0.011					
-30		24.105	0.013					
25	Maximum Voltage	12.444	0.007					
25	BEP	12.446	0.007					



# A6 SPURIOUS EMISSIONS AT ANTENNA TERMINALS

GSM 850 BAND

## Lowest Channel



Middle Channel

RL		50 Ω AC		SENSE: If		ALIGNAUTO		1 Jul 29, 2016	Frequency
enter F	-req 4.51	5000000	PNO: Fast C	Trig: Free Rur	Avg	Type: Log-Pwr	TYPE	123456 MWWWWWWW PPPPPP	Frequency
) dB/div	Ref Offse	et 8.5 dB 50 dBm	IFGain:Low	#Atten: 36 dB		м	kr1 836.		Auto Tu
ng 1.5	1	50 dBm							Center Fr
1.5									4.515000000 G
.50								-13.00 dBm	
8.5						^2			Start Fi 30.000000 N
8.5				-		× ×			
8.5									Stop F 9.000000000
tart 30 Res BW	MHz / 1.0 MHz		#VB	W 3.0 MHz		Sweep 16	Stop 9.0		CFS
KE MODE		×	836.9 MHz	28.788 dBm	FUNCTION	FUNCTION WIDTH	FUNCTION		897.000000 <u>Auto</u>
2 N 3	i i		023 5 GHz	-34.931 dBm					Freg Off
4 5 6 7									
9									
0 1 2									
<b>2</b>						STATUS			

**Highest Channel** 

enter F		000000 GHz PN0: Fast C	SENSE:INT	ALIGNAUTO Avg Type: Log-Pwr	09:53:49 PM Jul 29, 2016 TRACE 1 2 3 4 5 6 TYPE MUMMANN DET P P P P P P	Frequency
0 dB/div	Ref Offset Ref 31.50		#Atten: 36 dB	N	Akr1 849.0 MHz 28.816 dBm	Auto Tu
21.5 11.5	1					Center Fr 4.515000000 G
1.50 18.5 28.5					-13.00 dbm	Start Fr 30.000000 M
8.5						Stop Fr 9.000000000 G
tart 30 I Res BW	1.0 MHz	#VB	W 3.0 MHz	Sweep 1	Stop 9.000 GHz 6.0 ms (20001 pts) EUX#TONVAUE	CF St 897.000000 M <u>Auto</u> M
2 N 3 4 5 6 7 8 9 0 1	i i	5.986 5 GHz	-34.828 dBm			Freq Offs 0

Shenzhen STS Test Services Co., Ltd.



## GPRS 850 BAND

#### Lowest Channel

	um Analyzer - Swept SA					
	RF 50 Ω AC		SENSE:INT	ALIGNAUTO Avg Type: Log-Pwr	10:00:19 PM 3/429, 2016 TRACE 1 2 3 4 5 6	Frequency
10 dB/div	Ref Offset 8.5 dB Ref 31,50 dBm	PN0: Fast IFGain:Low	Trig: Free Run #Atten: 36 dB		тие рет РРРРРР kr1 824.3 MHz 28.807 dBm	Auto Tune
21.6 11.5 1.50	*1					Center Fre 4.515000000 GH
-8.50 -18.5 -28.5					-13.00 dSe	Start Fre 30.000000 MH
-48.5						Stop Fre 9.000000000 GH
Start 30 N #Res BW	1.0 MHz	824.3 MHz	28.807 dBm	Sweep 1	Stop 9.000 GHz 5.0 ms (20001 pts) EUNGTION VALUE	CF Ste 897.000000 MH <u>Auto</u> Ma
2 N 1 3 4 5 6 7 8 9 10	f 6	.475 4 GHz	-34,895 dBm			Freq Offse 0 H
8 9 10 11 12						
MSG				STATUS		

#### Middle Channel

		10.01.07	ALIGNAUTO		SENSE:INT	pt SA	um Analyzer - St		lgilen R
Frequency	PM 3ul 29, 2016	TRAC	E Log-Pwr	Avg T		0000 GHz	req 4.5150		
Auto Tur	6.9 MHz 21 dBm	kr1 836	м		#Atten: 36 dB		Ref Offset 8 Ref 31.50	B/div	
Center Fre 4.515000000 Gi		20.0.					1 1	Bidiv	0 dt .0g 21.5 11.5 1.50
Start Fre 30.000000 Mi	-13.00 dBm								8.50 18.5 28.5
<b>Stop Fr</b> 9.000000000 G									38.5 48.5 58.5
CF Sto 897.000000 M Auto M	0.000 GHz 20001 pts) 0004408	6.0 ms (2	Sweep 10	UNCTION	V 3.0 MHz 28.921 dBm	× 836.9 MHz	1.0 MHz	MODE T	Re:
Freq Offs 0					-34.143 dBm	5.664 1 GHz	f	N 1	234567
									8 9 10 11
			STATUS						ISG

#### **Highest Channel**

-	M Jul 29, 2016		ALIGNAUTO		INSE: INT	SE		Ω AC	F 5			
Frequency		TVP	: Log-Pwr	Avg T	e Run	Trig: Free		000000	4.515	rec	er F	
	PPPPP	DE				#Atten: 3	PNO: Fast C IFGain:Low					
Auto Tu	.0 MHz 58 dBm	kr1 849 28.95	М				Ref Offset 8.5 dB Ref 31.50 dBm					
Center F									1			
4.515000000 0												
							_			_		
Start F	-13.00 dBm									_		
30.000000 M			<mark>2</mark>	-								
			and Same									
Stop F	-											
9.000000000							_					
	.000 GHz	Stop 9								MHz	30	
CF S 897.000000 M	0001 pts)	6.0 ms (2	Sweep 16			V 3.0 MHz	#VB		MHz			
Auto N	N VALUE	FUNCTIO	NCTION WIDTH	NCTION		Y		×	u	RC S		
					Bm Bm	28.958 d -34.503 d	49.0 MHz 59 8 GHz				N N	
Freq Off												
C												
			STATUS						-	<u> </u>	-	

Shenzhen STS Test Services Co., Ltd.



# Report No.: STS1607196F01

# GSM1900 BAND(30M-20G)

## Lowest Channel

	Analyzer - Swept SA							
	RF 50 Ω AC	0 GHz	SENSE:INT	Avg T	ALIGNAUTO ype: Log-Pwr	TRAC	PM Jul 30, 2016	Frequency
	ef Offset 9.5 dB ef 35.50 dBm	PNO: Fast G	#Atten: 36 dB		Mk	r1 1.85	0 1 GHz	Auto Tu
5.6 5.6 5.0	1							Center Fr 10.015000000 G
50 .5 .5						Q <sup>3</sup>	-13.00 dBm	Start Fr 30.000000 N
1.5								Stop Fr 20.000000000 0
art 30 MHz tes BW 1.0	MHz	#VBV	/ 3.0 MHz	FUNCTION	Sweep 5	1.3 ms (3	.000 GHz 5001 pts)	CF St 1.997000000 G Auto N
F 77.000 FRG 5 N 1 1 3 N 1 1 4 5 5 7 7 8 9 0 0 1 2	r 1 r 11	850 1 GHz 817 4 GHz 254 8 GHz	2046 dBm -30.491 dBm -24.383 dBm	<i>torund</i> N	PORCHON WIDTH			Auto N Freq Off
					STATU	5		

#### Middle Channel

								er - Swept SA		ectrur		
Frequency	PM Jul 30, 2016	TRAC	ALIGNAUTO : Log-Pwr	Avg Ty	NSE:INT			50 R AC	RF Bq 1	Fre		Cer
Auto Tun	0 4 GHz 34 dBm	r1 1.880	Mk		dB	#Atten: 36	PNO: Fast ( IFGain:Low	set 9.5 dB 5.50 dBm			IB/di	
Center Fre 10.015000000 GH									<b>(</b> 1		5	Log 25.5 15.5 5.50
Start Fre 30.000000 MH	-13.00 dBm	Q <sup>3</sup>		2							5	-4.50 -14.5 -24.5
Stop Fre 20.000000000 GH												-34.5 -44.5 -54.5
CF Ste 1.997000000 GH Auto Ma	.000 GHz 5001 pts)	1.3 ms (3	Sweep 5	CTION	FUN	V 3.0 MHz	#VB	z	Hz I.0 M	W 1	-	#Re
Freq Offse					Bm	23.534 di -30.343 di -24.307 di	880 4 GHz 863 7 GHz 562 3 GHz	11.6	f f	1 1 1	ZZZ	1234567
												9 10 11 12
			STATUS									ASG

#### **Highest Channel**

RL	RF 50	Ω AC	SENSE: IN			4 Jul 30, 2016	-
enter F	req 10.015	000000 GHz	Tria: Free Run	Avg Type: Log-	TVDE	123456	Frequency
		PNO: Fast IFGain:Low	#Atten: 36 dB		DET	PPPPPP	Auto Tun
) dB/div		Ref 35.50 dB Mkr1 1.910 0 GHz Ref 35.50 dBm 23.767 dBm					
5.5 5.6	1						Center Fre
.50							
4.5			¢ <sup>2</sup>		3	-13.00 dBm	Start Fre 30.000000 MH
4.5	and the second se		and the second second				Stop Fr
4.5							20.000000000 G
tart 30 I Res BW	MHz 1.0 MHz	#VB	W 3.0 MHz	Swee	Stop 20.0 p 51.3 ms (35	000 GHz 001 pts)	CF Ste
KR MODE T		×	Y	FUNCTION FUNCTION V	VIDTH FUNCTION	VALUE	Auto M
1 N 1 2 N 1	1	1.910 0 GHz 8.023 7 GHz	23.767 dBm -30.713 dBm				
3 N 1 4 5	1 f	16.445 3 GHz	-25.778 dBm				Freq Offs 0
2 N 1 3 N 1 4 5 6 6 7 8 9 9 0 1							
2					TATUS		

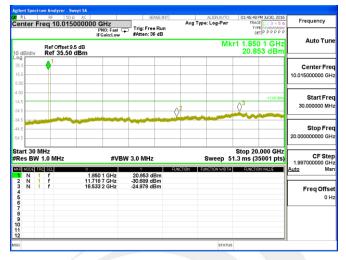
Shenzhen STS Test Services Co., Ltd.



# Report No.: STS1607196F01

## GPRS1900 BAND(30M-20G)

#### Lowest Channel



## Middle Channel

RL RF 50	Ω AC	SENSE:INT	ALIGNAUTO	01:43:08 PM Jul 30, 2016	-
enter Freq 10.015	5000000 GHz PNO: Fast C IFGain:Low	Trig: Free Run #Atten: 36 dB	Avg Type: Log-Pwr	TYPE MWWWWWW DET P P P P P	Frequency
Ref Offset 9 dB/div Ref 35.50	9.5 dB		Mk	r1 1.880 4 GHz 21.392 dBm	Auto Tur
og 15.5 15.6					Center Fr 10.015000000 G
4.5			2	-13.00 dBn	Start Fr 30.000000 M
4.5 4.5					Stop Fr 20.000000000 G
tart 30 MHz Res BW 1.0 MHz		W 3.0 MHz		Stop 20.000 GHz 1.3 ms (35001 pts)	1.997000000 G
KR MODE TRC SCL 1 N 1 F 2 N 1 F 3 N 1 F	× 1.880 4 GHz 11.503 1 GHz	21.392 dBm -30.676 dBm	INCTION FUNCTION WIDTH	FUNCTION VALUE	Auto N
4 5 6 7	16.556 6 GHz	-25.578 dBm			Freq Offs 0
8 9 0 1					

## **Highest Channel**

RL RF 50	Ω AC	SENSE: INT	ALIGNAUTO	01:44:45 PM Jul 30, 2016	-
enter Freq 10.01	5000000 GHz PN0: Fast G IFGain:Low	Trig: Free Run #Atten: 36 dB	Avg Type: Log-Pwr	TYPE MUMUUMUU DET P P P P P P	
Ref Offset 9 dB/div Ref 35.50			Mk	r1 1.910 0 GHz 21.708 dBm	Auto Tun
29 1 5.5 5.5 50					Center Fre 10.015000000 GH
60 4.5 4.5	¢ <sup>2</sup>			-13.00 dBm	Start Fre 30.000000 M⊦
4.5 4.5					Stop Fre 20.000000000 GH
art 30 MHz Res BW 1.0 MHz	#VBV	V 3.0 MHz		Stop 20.000 GHz 1.3 ms (35001 pts)	CF Ste 1.997000000 GH
FRODE TRO SOL N 1 f 2 N 1 f 3 N 1 f 4	× 1.910 0 GHz 6.038 7 GHz 16.503 0 GHz	21.708 dBm -30,468 dBm -25.756 dBm	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	Auto Ma
5 5 7 3 9 0 1 2					

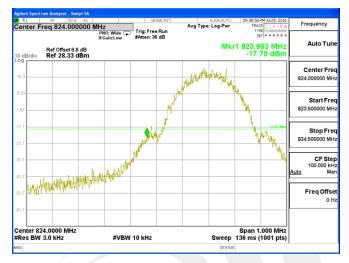
Shenzhen STS Test Services Co., Ltd.



## A7 BAND EDGE

## GSM 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



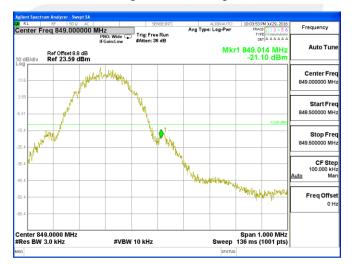
## **GPRS 850**

#### Lowest Band Edge



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

## Highest Band Edge



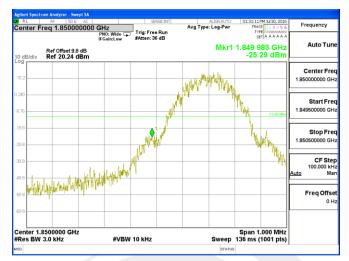
Note:Offset=Cable loss(8.5)+10log(3.2/3)=8.5+0.3=8.8 dB

Shenzhen STS Test Services Co., Ltd.



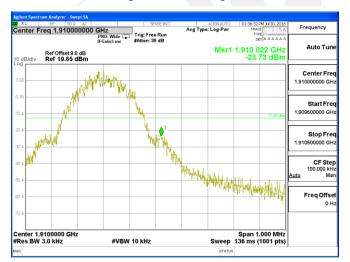
## GSM 1900

#### 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



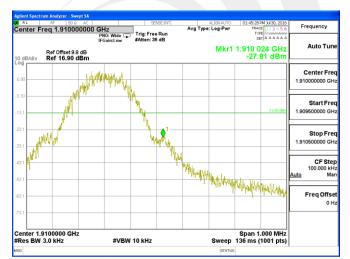
#### **GPRS 1900**

#### 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.



# A8 FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT

#### GSM 850: (30-9000)MHz

	GSM 850: (30-9000)MHz											
	The Worst Test Results Channel 128/824.2 MHz											
	S G.Lev	Anot(dDi)		PMea	Limit	Margin	Delerity					
Frequency(MHz)	(dBm)	Ant(dBi)	Loss	(dBm)	(dBm)	(dBm)	Polarity					
1648.14	-41.33	9.40	4.75	-36.68	-13.00	-23.68	Н					
2472.46	-40.25	10.60	8.39	-38.04	-13.00	-25.04	Н					
3296.55	-31.43	12.00	11.79	-31.22	-13.00	-18.22	Н					
1648.45	-44.17	9.40	4.75	-39.52	-13.00	-26.52	V					
2472.34	-44.29	10.60	8.39	-42.08	-13.00	-29.08	V					
3296.71	-43.87	12.00	11.79	-43.66	-13.00	-30.66	V					
The Worst Test Results Channel 190/836.6 MHz												
Frequency(MHz)	S G.Lev	Ant(dBi)	Loss	PMea	Limit	Margin	Polarity					
Frequency(MHZ)	(dBm)	Ani(ubi)	L055	(dBm)	(dBm)	(dBm)	Folanty					
1673.07	-41.20	9.50	4.76	-36.46	-13.00	-23.46	Н					
2509.76	-39.40	10.70	8.40	-37.10	-13.00	-24.10	Н					
3346.25	-31.64	12.20	11.80	-31.24	-13.00	-18.24	Н					
1673.00	-43.67	9.40	4.75	-39.02	-13.00	-26.02	V					
2509.68	-44.02	10.60	8.39	-41.81	-13.00	-28.81	V					
3346.07	-43.14	12.20	11.82	-42.76	-13.00	-29.76	V					
	The W	orst Test R	esults Ch	annel 251/	848.8 MHz							
Frequency(MHz)	S G.Lev	Ant(dBi)	Loss	PMea	Limit	Margin	Polarity					
Frequency(MHZ)	(dBm)	Ani(ubi)	L055	(dBm)	(dBm)	(dBm)	Folanty					
1697.43	-40.92	9.60	4.77	-36.09	-13.00	-23.09	Н					
2546.13	-39.86	10.80	8.50	-37.56	-13.00	-24.56	Н					
3395.18	-31.88	12.50	11.90	-31.28	-13.00	-18.28	Н					
1697.57	-43.52	9.60	4.77	-38.69	-13.00	-25.69	V					
2546.45	-44.77	10.80	8.50	-42.47	-13.00	-29.47	V					
3395.01	-42.75	12.50	11.90	-42.15	-13.00	-29.15	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.: STS1607196F01

#### GPRS 850: (30-9000)MHz

	GPRS 850: (30-9000)MHz										
	The W	orst Test R	esults Ch	annel 128/	824.2 MHz						
	S G.Lev	A set (alDi)		PMea	Limit	Margin	Deleritu				
Frequency(MHz)	(dBm)	Ant(dBi)	Loss	(dBm)	(dBm)	(dBm)	Polarity				
1648.17	-41.00	9.40	4.75	-36.35	-13.00	-23.35	Н				
2472.29	-39.43	10.60	8.39	-37.22	-13.00	-24.22	Н				
3296.43	-31.22	12.00	11.79	-31.01	-13.00	-18.01	Н				
1648.14	-43.74	9.40	4.75	-39.09	-13.00	-26.09	V				
2472.65	-44.00	10.60	8.39	-41.79	-13.00	-28.79	V				
3296.64	-43.57	12.00	11.79	-43.36	-13.00	-30.36	V				
The Worst Test Results Channel 190/836.6 MHz											
	S G.Lev	Ant(dBi)		PMea	Limit	Margin	<b>Dolority</b>				
Frequency(MHz)	(dBm)	Ani(ubi)	Loss	(dBm)	(dBm)	(dBm)	Polarity				
1673.11	-40.18	9.50	4.76	-35.44	-13.00	-22.44	Н				
2509.78	-39.34	10.70	8.40	-37.04	-13.00	-24.04	Н				
3346.18	-31.37	12.20	11.80	-30.97	-13.00	-17.97	Н				
1672.86	-43.85	9.40	4.75	-39.20	-13.00	-26.20	V				
2509.73	-45.34	10.60	8.39	-43.13	-13.00	-30.13	V				
3346.27	-43.60	12.20	11.82	-43.22	-13.00	-30.22	V				
	The W	orst Test R	esults Ch	annel 251/8	848.8 MHz		-				
Frequency(MHz)	S G.Lev	Ant(dBi)	Loss	PMea	Limit	Margin	Polarity				
Frequency(MHZ)	(dBm)	Ani(ubi)	L055	(dBm)	(dBm)	(dBm)	Folanty				
1697.50	-41.63	9.60	4.77	-36.80	-13.00	-23.80	Н				
2546.08	-40.18	10.80	8.50	-37.88	-13.00	-24.88	Н				
3395.12	-31.54	12.50	11.90	-30.94	-13.00	-17.94	Н				
1697.58	-44.27	9.60	4.77	-39.44	-13.00	-26.44	V				
2546.50	-44.65	10.80	8.50	-42.35	-13.00	-29.35	V				
3395.26	-43.22	12.50	11.90	-42.62	-13.00	-29.62	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.



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#### PCS 1900: (30-20000)MHz

	DCS 1900: (30-20000)MHz										
	The Wor	st Test Res	sults for C	hannel 512	2/1850.2MH	z					
	S G.Lev	A == (( - D ))		PMea	Limit	Margin	Delevite				
Frequency(MHz)	(dBm)	Ant(dBi)	Loss	(dBm)	(dBm)	(dBm)	Polarity				
3700.17	-33.90	12.60	12.93	-34.23	-13.00	-21.23	Н				
5550.54	-34.91	13.10	17.11	-38.92	-13.00	-25.92	Н				
7400.90	-32.79	11.50	22.20	-43.49	-13.00	-30.49	Н				
3700.51	-35.42	12.60	12.93	-35.75	-13.00	-22.75	V				
5550.25	-34.84	13.10	17.11	-38.85	-13.00	-25.85	V				
7400.66	-31.84	11.50	22.20	-42.54	-13.00	-29.54	V				
The Worst Test Results for Channel 661/1880.0MHz											
	S G.Lev	Apt(dDi)		PMea	Limit	Margin	Polarity				
Frequency(MHz)	(dBm)	Ant(dBi)	Loss	(dBm)	(dBm)	(dBm)	Polanty				
3760.16	-33.78	12.60	12.93	-34.11	-13.00	-21.11	Н				
5639.89	-34.86	13.10	17.11	-38.87	-13.00	-25.87	Н				
7520.27	-33.09	11.50	22.20	-43.79	-13.00	-30.79	Н				
3760.11	-35.03	12.60	12.93	-35.36	-13.00	-22.36	V				
5639.90	-33.76	13.10	17.11	-37.77	-13.00	-24.77	V				
7520.26	-32.28	11.50	22.20	-42.98	-13.00	-29.98	V				
	The Wor	st Test Res	sults for C	hannel 810	)/1909.8MH	z	-				
Frequency(MHz)	S G.Lev	Ant(dBi)	Loss	PMea	Limit	Margin	Polarity				
Frequency(MHZ)	(dBm)	Ani(ubi)	L055	(dBm)	(dBm)	(dBm)	Folanty				
3819.47	-33.60	12.60	12.93	-33.93	-13.00	-20.93	Н				
5729.12	-34.09	13.10	17.11	-38.10	-13.00	-25.10	Н				
7639.24	-32.69	11.50	22.20	-43.39	-13.00	-30.39	Н				
3819.74	-35.97	12.60	12.93	-36.30	-13.00	-23.30	V				
5729.09	-34.41	13.10	17.11	-38.42	-13.00	-25.42	V				
7639.34	-32.43	11.50	22.20	-43.13	-13.00	-30.13	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.: STS1607196F01

## GPRS 1900: (30-20000)MHz

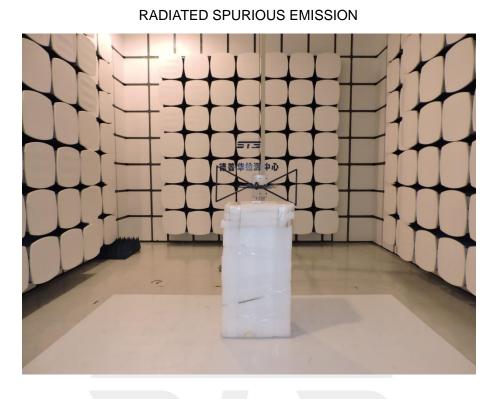
	<u>.</u>	GPRS1	900: (30-2	0000)MHz						
	The Wor	st Test Res	ults for C	hannel 512	2/1850.2MH	z				
	S G.Lev	A == (( -  D :)		PMea	Limit	Margin	Delevitu			
Frequency(MHz)	(dBm)	Ant(dBi)	Loss	(dBm)	(dBm)	(dBm)	Polarity			
3700.39	-33.97	12.60	12.93	-34.30	-13.00	-21.30	Н			
5550.47	-34.54	13.10	17.11	-38.55	-13.00	-25.55	Н			
7400.79	-32.52	11.50	22.20	-43.22	-13.00	-30.22	Н			
3700.51	-35.61	12.60	12.93	-35.94	-13.00	-22.94	V			
5550.26	-34.48	13.10	17.11	-38.49	-13.00	-25.49	V			
7400.67	-33.15	11.50	22.20	-43.85	-13.00	-30.85	V			
The Worst Test Results for Channel 661/1880.0MHz										
	S G.Lev	Apt(dDi)		PMea	Limit	Margin	Delerity			
Frequency(MHz)	(dBm)	Ant(dBi)	Loss	(dBm)	(dBm)	(dBm)	Polarity			
3759.93	-34.61	12.60	12.93	-34.94	-13.00	-21.94	Н			
5639.81	-34.75	13.10	17.11	-38.76	-13.00	-25.76	Н			
7520.27	-32.40	11.50	22.20	-43.10	-13.00	-30.10	Н			
3760.05	-35.84	12.60	12.93	-36.17	-13.00	-23.17	V			
5640.20	-35.07	13.10	17.11	-39.08	-13.00	-26.08	V			
7520.02	-32.58	11.50	22.20	-43.28	-13.00	-30.28	V			
	The Wor	st Test Res	sults for Cl	hannel 810	)/1909.8MH	Z				
	S			PMea	Limit	Margin				
Frequency(MHz)	G.Level	Ant(dBi)	Loss	(dBm)	(dBm)	(dBm)	Polarity			
	(dBm)			(ubiii)	(ubiii)	(ubiii)				
3819.56	-34.50	12.60	12.93	-34.83	-13.00	-21.83	Н			
5729.44	-34.84	13.10	17.11	-38.85	-13.00	-25.85	Н			
7639.11	-32.24	11.50	22.20	-42.94	-13.00	-29.94	Н			
3819.48	-35.87	12.60	12.93	-36.20	-13.00	-23.20	V			
5729.53	-35.04	13.10	17.11	-39.05	-13.00	-26.05	V			
7639.07	-33.08	11.50	22.20	-43.78	-13.00	-30.78	V			

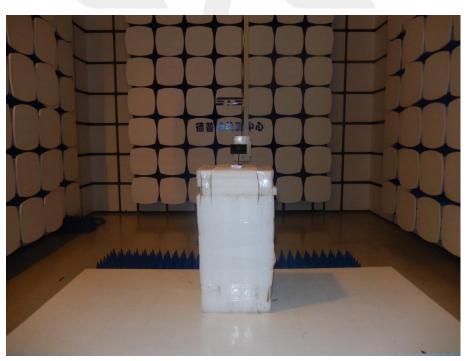
Note: (1)Below 30MHz no Spurious found is the worst condition.

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



## APPENDIX BPHOTOS OF TEST SETUP





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Shenzhen STS Test Services Co., Ltd.