

RADIO TEST REPORT

Report No: STS1604038F01

S T S

A

P

Issued for

XTR S.A.C.

Av. Camino Real 1225 Of. 201 A - San Isidro, Lima - Perú

Product Name:	2G Feature phone
Brand Name:	EKS
Model Name:	FX2.4
Series Model:	N/A
FCC ID:	2AGAK-FX24
Test Standard:	FCC Part 22H and 24E



Any reproduction of this document must be done in full. No single part of this document has be rep permission from STS, All Test Data Presented in this report is only applicable to presented Test sample.



Report No.: STS1604038F01

TEST RESULT CERTIFICATION

Applicant's name:	XTR S.A.C.
Address:	Av. Camino Real 1225 Of. 201 A - San Isidro, Lima - Perú
Manufacture's Name	T-SOURCE TECHNOLOGY H.K. CO. LTD.
Address:	Rm 218, 2/F., House of Corona,No.50, HungTo Road, Kwun Tong, Kowloon,HongKong
Product name:	2G Feature phone
Brand name:	EKS
Model and/or type reference:	FX2.4
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.

This report shall not be reproduced except in full, without the written approval of STS, this document may be altered or revised by STS, personal only, and shall be noted in the revision of the document.

Date of Test

Date of performance of tests 07 Apr. 2016 ~19 Apr. 2016

Date of Issue 20 Apr. 2016

Test Result..... Pass

Testing Engineer :	Finming
	(Jin Ming)
Technical Manager :	APPROVAL S
	(Vita Li)
Authorized Signatory :	Browey Yuney
	(Bovey Yang)

Shenzhen STS Test Services Co., Ltd.

3 1	TEST CONFIGURATION OF EQUIPMENT UNDER TEST	8
4 1	MEASUREMENT INSTRUMENTS	9
5 1	TEST ITEMS	10
	5.1 CONDUCTED OUTPUT POWER	10
	5.2 PEAK TO AVERAGE RATIO	11
	5.3 TRANSMITTER RADIATED POWER (EIRP/ERP)	12
	5.4 OCCUPIED BANDWIDTH	13
	5.5 FREQUENCY STABILITY	14
	5.6 SPURIOUS EMISSIONS AT ANTENNA TERMINALS	15
	5.7 BAND EDGE	16
	5.8 FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT	17
AF	PPENDIX ATESTRESULT	19
	A1 CONDUCTED OUTPUT POWER	19
	A2 PEAK-TO-AVERAGE RADIO	19
	A3 TRANSMITTER RADIATED POWER (EIRP/ERP)	20
	A4 OCCUPIED BANDWIDTH(99% OCCUPIED BANDWIDTH/26DB BANDWIDTH)	21
	A5 FREQUENCY STABILITY	26
	A6 SPURIOUS EMISSIONS AT ANTENNA TERMINALS	28
	A7 BAND EDGE	34
	A8 FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT	38

APPENDIX BPHOTOS OF TEST SETUP

1/F., Building B, Zhuoke Science Park, No.190, Chongqing Road, Fuyong Street, Bao'an District, Shenzhen, Guangdong, China Tel: 0755-36886288 Fax: 0755-36886277 Http://www.stsapp.com E-mail: sts@stsapp.com

Page



1 INTRODUCTION

SUMMARY OF TEST RESULTS

1.2 MEASUREMENT UNCERTAINTY

1.1 TEST FACTORY

2 PRODUCT INFORMATION

3 of 42

TABLE OF CONTENTS



Report No.: STS1604038F01

Revision History

Rev.	Issue Date	Report NO.	Effect Page	Contents
00	20 Apr. 2016	STS1604038F01	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. \circ

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%



Report No.: STS1604038F01

2 PRODUCT INFORMATION

Product Designation:	2G Feature phone		
Hardware version:	F032-MB-V1.2		
Software version:	EKS-FX2.4-Ver1.0-20160324		
FCC ID:	2AGAK-FX24		
	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:	GSM850:31.95dBm,PCS1900:27.69dBm GPRS850:31.69dBm,GPRS1900:27.46dBm		
Type of Emission:	GSM(850):315KGXW: GSM(1900):324KGXW GPRS(850):319KGXW; GPRS(1900):317KGXW		
SIM Card:	Support single card		
Antenna:	PIFA Antenna		
Antenna gain:	GSM 850:1.5dBi ,PCS 1900:1.5dBi		
Power Supply:	DC 3.7V by battery		
Battery parameter:	Capacitance: 750mAh, 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 3.5V was declared by manufacturer, The		
EUT couldn't be operate no.	rmally 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 EDGE CLASS 8 LINK	GSM LINK EDGE CLASS 8 LINK	
GSM 1900	GSM LINK EDGE CLASS 8 LINK	GSM LINK EDGE CLASS 8 LINK	



Report No.: STS1604038F01

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
Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-1343	2016.03.06	2017.03.05
Horn Antenna	Schwarzbeck	BBHA 9170	9170-0741	2016.03.06	2017.03.05
MXA SIGNAL Analyzer	Agilent	N9020A	MY49100060	2015.10.25	2016.10.24
Bilog Antenna	Sunol Sciences	JB3	A110714	2015.09.03	2016.09.02
Horn-Antenna	Schwarzbeck	BBHA9120D	9120D-1266	2016.03.06	2017.03.05
Horn Antenna	Schwarzbeck	BBHA 9170	9170-0741	2016.03.06	2017.03.05
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

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

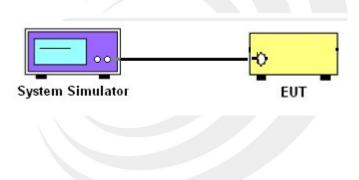
Test overview

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

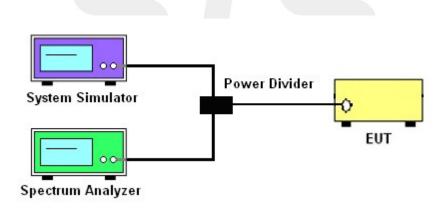
TEST OVERVIEW

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



Shenzhen STS Test Services Co., Ltd.



12 of 42 Report No.: STS1604038F01

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.

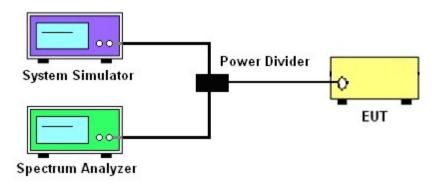
All modes of operation were investigated and the worst case configuration results are reported in this section.

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:

14 of 42

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

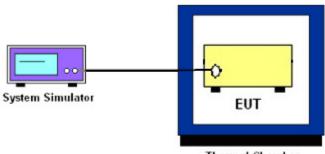
1. The testing follows FCC KDB 971168 D01 Section 9.0.

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 Test Overview

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.

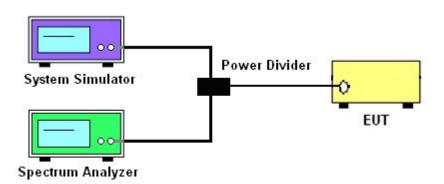
7. The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts)

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

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

= -13dBm.

Test Setup



Shenzhen STS Test Services Co., Ltd.



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.

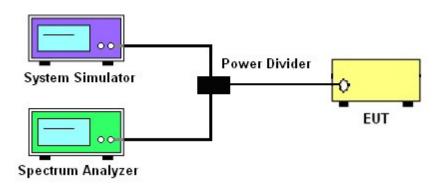
6.The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts)

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

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

= -13dBm.

TEST SETUP



Shenzhen STS Test Services Co., Ltd.





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.

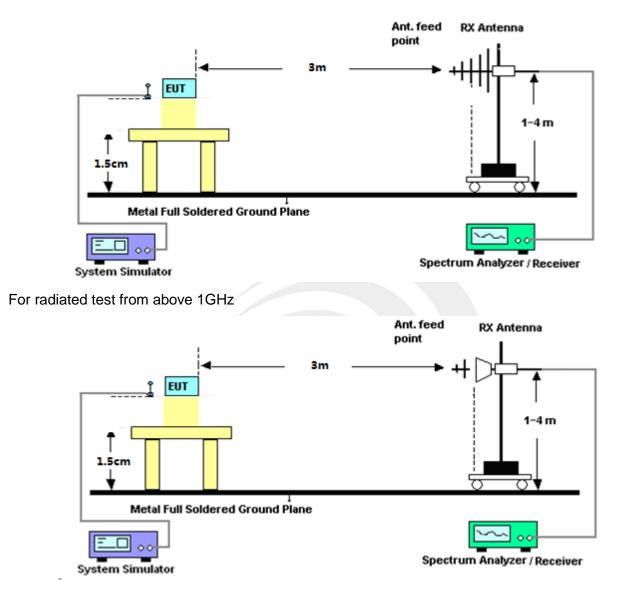
Test procedure

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



18 of 42

1/F., Building B, Zhuoke Science Park, No.190, Chongqing Road, Fuyong Street, Bao'an District, Shenzhen, Guangdong, China Tel: 0755-36886288 Fax: 0755-36886277 Http://www.stsapp.com E-mail: sts@stsapp.com

Report No.: STS1604038F01



APPENDIX ATestResult A1 CONDUCTED OUTPUT POWER

GSM 850:

Mode	Frequency (MHz)	AVG Power
GSM850	824.2	31.95
	836.6	31.93
	848.8	31.91
GPRS850 1-slot	824.2	31.67
	836.6	31.64
	848.8	31.69

PCS 1900:

Mode	Frequency (MHz)	AVG Power
	1850.2	27.69
GSM1900	1880.0	27.52
	1909.8	27.47
	1850.2	27.46
GPRS1900 1-slot	1880	27.25
	1909.8	27.26

A2 PEAK-TO-AVERAGE RADIO

PCS 1900:

000.				
Mode	Frequency (MHz)	PEAK Power	AVG Power	PAR
	1850.2	28.51	27.69	0.82
PCS1900	1880	28.45	27.52	0.93
	1909.8	28.24	27.47	0.77
	1850.2	28.31	27.46	0.85
GPRS1900	1880	28.22	27.25	0.97
	1909.8	28.20	27.26	0.94



A3 TRANSMITTER RADIATED POWER (EIRP/ERP)

		Radiate	d Power	(ERP) fo	r GSM 850 MHZ	2	
Mode	Frequency	S G.Level (dBm)	Cable loss	Gain (dBd)	Max.Pk E.R.P(dBm)	Polarization Of Max. ERP	Conclusion
	824.2	28.27	0.44	0	29.98	Horizontal	Pass
GSM850	824.2	30.24	0.44	0	31.95	Vertical	Pass
	836.6	28.26	0.45	0	29.96	Horizontal	Pass
	836.6	30.23	0.45	0	31.93	Vertical	Pass
	848.8	28.24	0.46	0	29.93	Horizontal	Pass
	848.8	30.22	0.46	0	31.91	Vertical	Pass
	824.2	29.03	0.44	0	30.74	Horizontal	Pass
	824.2	31.13	0.44	0	32.84	Vertical	Pass
GPRS	836.6	28.98	0.45	0	30.68	Horizontal	Pass
850	836.6	31.1	0.45	0	32.80	Vertical	Pass
	848.8	29.15	0.46	0	30.84	Horizontal	Pass
	848.8	31.12	0.46	0	32.81	Vertical	Pass
(1)Dipole A	ntenna Gain:0	dBd=2.15dB	i –				

		Radiated	Power (I	EIRP) fo	r PCS 1900 MH	Z	
Mode	Frequency	S G.Level	Cable	Gain	Max. Pk	Polarization	Conclusion
		(dBm)	loss	(dBi)	E.I.R.P.(dBm)	Of Max.EIRP.	
	1850.2	17.52	2.41	10.06	25.17	Horizontal	Pass
	1850.2	20.04	2.41	10.06	27.69	Vertical	Pass
PCS1900	1880.0	17.46	2.42	10.06	25.10	Horizontal	Pass
PC31900	1880.0	19.88	2.42	10.06	27.52	Vertical	Pass
	1909.8	17.42	2.43	10.06	25.05	Horizontal	Pass
	1909.8	19.84	2.43	10.06	27.47	Vertical	Pass
	1850.2	17.65	2.41	10.06	25.30	Horizontal	Pass
	1850.2	19.92	2.41	10.06	27.57	Vertical	Pass
	1880.0	17.53	2.42	10.06	25.17	Horizontal	Pass
GPRS1900	1880.0	19.72	2.42	10.06	27.36	Vertical	Pass
	1909.8	17.57	2.43	10.06	25.20	Horizontal	Pass
	1909.8	19.70	2.43	10.06	27.33	Vertical	Pass

Shenzhen STS Test Services Co., Ltd.



Report No.: STS1604038F01

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

	Bandwidth for GSM 850 band							
Mode	Frequency(MHz)	Occupied Bandwidth	Emission Bandwidth					
Widde	Frequency(MHz)	(99%)(kHz)	(-26dBc)(kHz)					
Low Channel	824.2	243.47	315.1					
Middle Channel	836.6	245.98	310.0					
High Channel	848.8	245.36	314.8					
	Bandwidth	for GPRS 850 band						
Mode	Fraguaday (MHz)	Occupied Bandwidth	Emission Bandwidth					
wode	Frequency(MHz)	(99%)(kHz)	(-26dBc)(kHz)					
Low Channel	824.2	243.83	318.7					
Middle Channel	836.6	244.10	318.9					
High Channel	848.8	247.78	316.9					

	Occupied Bandwidth for GSM1900 band							
Mode	Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	Emission Bandwidth (-26dBc)(kHz)					
Low Channel	1850.2	246.82	324.3					
Middle Channel	1880.0	244.12	322.7					
High Channel	1909.8	244.23	314.7					
	Occupied Band	width for GPRS1900 band						
Mode		Occupied Bandwidth	Emission Bandwidth					
wode	Frequency(MHz)	(99%)(kHz)	(-26dBc)(kHz)					
Low Channel	1850.2	245.47	314.1					
Middle Channel	1880.0	245.95	317.3					
High Channel	1909.8	242.73	315.5					



Report No.: STS1604038F01

GSM 850 CH 128



GSM 850 CH 190





GSM 850 CH 251

Shenzhen STS Test Services Co., Ltd.



GPRS 850 CH 128



GPRS 850 CH 190





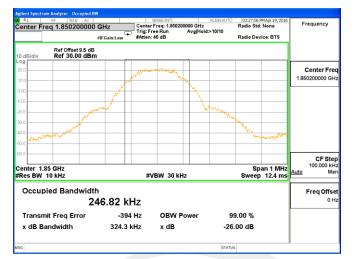
GPRS 850 CH 251

Shenzhen STS Test Services Co., Ltd.

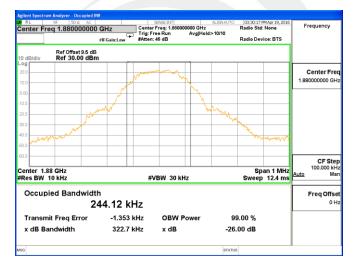


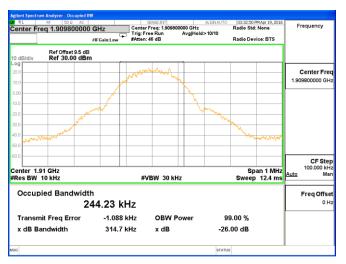
Report No.: STS1604038F01

PCS 1900 CH 512



PCS 1900 CH 661



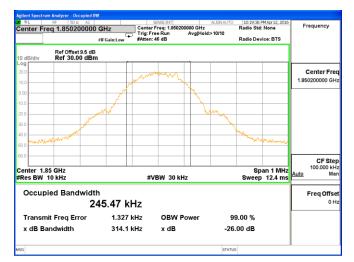


PCS 1900 CH 810

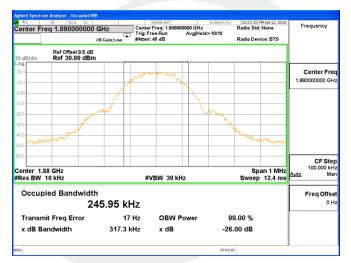
Shenzhen STS Test Services Co., Ltd.



GPRS 1900 CH 512



GPRS 1900 CH 661



GPRS 1900 CH 810





Report No.: STS1604038F01

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	-	13.364	0.016						
40	-	26.369	0.032						
30		23.546	0.028						
20		27.506	0.033						
10	Normal Voltage	18.124	0.022						
0		3.418	0.004	2.5ppm	PASS				
-10		17.273	0.021						
-20	/	0.439	0.001	1					
-30		6.116	0.007						
25	Maximum Voltage	9.770	0.012						
25	BEP	1.508	0.002						

GPRS 850 Middle Channel								
Temperature (°C)	Voltage (Volt)	Freq. Dev. (Hz)	Freq. Dev. (ppm)	Limit	Result			
50		13.583	0.016					
40		26.510	0.032					
30		23.631	0.028					
20		27.870	0.033					
10	Normal Voltage	18.188	0.022					
0		13.472	0.016	2.5ppm	PASS			
-10		17.408	0.021					
-20		15.931	0.019					
-30		16.257	0.019					
25	Maximum Voltage	19.900	0.024					
25	BEP	11.571	0.014					



Report No.: STS1604038F01

	GSM 1900 Middle Channel								
Temperature (°C)	Voltage (Volt)	Freq. Dev. (Hz)	Freq. Dev. (ppm)	Limit	Result				
50		19.071	0.010						
40		1.156	0.001						
30		10.247	0.005						
20		22.237	0.012	Within Au-	PASS				
10	Normal Voltage	4.068	0.002						
0		9.988	0.005						
-10		15.406	0.008	Band					
-20		20.625	0.011						
-30		24.125	0.013						
25	Maximum Voltage	1.760	0.001						
25	BEP	12.463	0.007						

	G	PRS 1900 Middle	e Channel		
Temperature (°C)	Voltage (Volt)	Freq. Dev. (Hz)	Freq. Dev. (ppm)	Limit	Result
50		19.040	0.010		
40		11.185	0.006		
30		10.240	0.005		
20		22.304	0.012	Within Au-	PASS
10	Normal Voltage	14.135	0.008		
0		10.041	0.005	thorized	
-10		15.479	0.008	Band	
-20		20.685	0.011		
-30		24.115	0.013		
25	Maximum Voltage	12.451	0.007		
25	BEP	12.497	0.007		



A6 SPURIOUS EMISSIONS AT ANTENNA TERMINALS GSM 850 BAND

Lowest Channel

enter Fre	RF 50 Ω q 4.51500		Trig: Free Run	Avg Type	ALIGNAUTO :: Log-Pwr	TRAC	M Apr 19, 2016	Frequency
0 dB/div	Ref Offset 8.5 Ref 34.50 d	dB	shaen oo do		М	lkr1 824 32.34	.3 MHz 1 dBm	Auto Tur
24.5 14.5 4.50	X1							Center Fr 4.515000000 G
5.50 15.5 25.5				¢2			-13.00 dBm	Start Fre 30.000000 M
15.5 15.5 55.5								Stop Fr 9.000000000 G
tart 30 MH Res BW 1.	0 MHz	#VB	W 3.0 MHz		Sweep 10	6.0 ms (2		CF Sto 897.000000 M Auto M
1 N 1 2 N 1 3 4 5 6 7	1	824.3 MHz 5.426 4 GHz	32.341 dBm -31.463 dBm					Freq Offs
8 9 10 11								

Middle Channel

RL enter		- Swept SA 50 Ω AC 5000000 GHz PN0: Fast	SENSE: INT	Avg Type	ALIGNAUTO I: Log-Pwr	03:05:50 PM Apr TRACE	3 4 5 6 Frequency
		PNO: Fast IFGain:Lov				DET P P	Auto Tu
0 dB/div	Ref Offse Ref 34.				IVI	32.085	
og 24.6	1						Center F
4.6							4.515000000
.50							4.01000000
50							
5.5						- 4	3.00 den Start F
5.5				2			30.000000
5.5				an Yana kana			
5.5							Stop F
5.5							9.000000000
tart 30 Res BV	MHZ N 1.0 MHZ	#V	BW 3.0 MHz		Sweep 10	Stop 9.000 6.0 ms (2000	
	TRC SCL	×	Y	FUNCTION FU	NCTION WIDTH	FUNCTION VAL	
1 N 2 N	1 f	836.9 MHz 5.402 1 GHz	32.085 dBm -31.565 dBm				
3							Freq Off
5 6 7							
7 8 9 0							

Highest Channel

RL		Ω AC		SENSE		ALIGNAUTO		M Apr 19, 2016	Frequency
enter F	req 4.5150	DOOOOO GHz PNO: IFGain	-ast 🖵 Low	Trig: Free R #Atten: 36 d	un	Type: Log-Pwr	TRAC TVI DI	ET P P P P P P	
dB/div	Ref Offset 8 Ref 34.50					N).0 MHz 79 dBm	Auto Tu
4.6	1								Center Fr
1.5 50									4.515000000 G
50									
1.5	_							-13.00 dBm	Start Fr 30.000000 M
5.5						and a state of solar	²		
5.5									Stop Fr
5.5									9.000000000 G
art 30 I Res BW	MHz 1.0 MHz		#VBW 3	3.0 MHz		Sweep 1		.000 GHz 0001 pts)	CF St 897.000000 M
R MODE T	f	× 849.0 M	Hz	Y 32.179 dBm	FUNCTION	FUNCTION WIDTH	FUNCTI	ON VALUE	Auto N
2 N 1 3 4 5	f	7.617 3 G	Hz -	31.704 dBm	1				Freq Offs 0
3									
)									
1									

Shenzhen STS Test Services Co., Ltd.



GPRS 850 BAND

Lowest Channel

Agilent Spectrum Analyzer - Swept SA											
RL RF 50 Ω AC Center Freq 4.515000000	GHz	SENSE:INT		Log-Pwr	TRACE	Apr 12, 2016	Frequency				
Ref Offset 8.5 dB	Pilo: Fait Trig: Free Run IFGaint.uw Trig: Free Run #Atten: 36 dB Trig: Free Ref Offset 85 dB Ref Offset 85 dB Mkr1 823.8 MHz dB(div Per P 4										
10 dB/div Ref 34.50 dBm - 9g 24.5 14.5					29.05		Center Fre 4.515000000 GH				
4.50 5.50 15.5 25.5						-13.00 dBn	Start Fre 30.000000 MH				
25.5 45.5 55.5							Stop Fre 9.000000000 Gi				
itart 30 MHz Res BW 1.0 MHz	#VBW 3	Y FUNC		Sweep 10			CF Ste 897.000000 Mi <u>Auto</u> Mi				
		29.097 dBm 30.843 dBm					Freq Offs				
7 8 9 10 11 12											
5G				STATUS							

Middle Channel

		00.15.10.5	ALIGNAUTO		SENSE: INT		AC	nalyzer - Sv	trum		lgilen R R
Frequency	NE ADDREAMARABLE	TRAC	Lignauto	Avg T	a: Free Run		00000 GHz		Fre		
Auto Tu	5.2 MHz 18 dBm	o Ikr1 836	M		g. Free Run tten: 36 dB	Fast 😱 :Low	IFGair 5 dB	f Offset 8 ef 34.50		3/div	10 di
Center Fr 4.515000000 G								1			.og 24.6 14.6 4.50
Start Fr 30.000000 N	-13.00 dBn			() ²							5.50 15.5 25.5
Stop Fr 9.000000000 c								والمترجيني	-	-	5.5 5.5 5.5
CF S 897.000000 M Auto	.000 GHz 0001 pts)	Stop 9 6.0 ms (2	Sweep 1	UNCTION	MHz 018 dBm	#VBW	× 836.2 M	MHz	MH V 1.	s Bl	Re
Freq Off 0					951 dBm	iHz	5.524 1 0		1	N	234567
											8 9 0 1 2
			STATUS								ISG

Highest Channel

RL	RF 50 Ω	AC	SENSE: INT	ALIGNAUTO	09:49:10 PM Apr 12, 2016	
	eq 4.51500			Avg Type: Log-Pwr	TRACE 1 2 3 4 5 6	Frequency
		IFGain:Low	#Atten: 36 dB		DETPPPPP	
dB/div	Ref Offset 8.5 Ref 34.50 d			M	kr1 848.5 MHz 28.936 dBm	Auto Tu
4.5	1					Center Fr
.6						4.515000000 G
50	_					
0					-13.00 dBm	Start Fi
5						30.000000 N
5				Q ⁴		
5						Stop F
.5						9.000000000
art 30 N					Stop 9.000 GHz	
	1.0 MHz	#VB	W 3.0 MHz	Sweep 1	6.0 ms (20001 pts)	CF S 897.000000 M
r Mode Tr		×		UNCTION FUNCTION WIDTH	FUNCTION VALUE	Auto N
N 1	f	848.5 MHz 6.094 8 GHz	28.936 dBm -32.064 dBm			
						Freq Off
						C
N 1						
				STATUS		

Shenzhen STS Test Services Co., Ltd.



GSM1900 BAND(30M-12G)

Lowest Channel

Agilent Spectrum An	alyzer - Swept SA							
Center Freq	50 Ω AC		SENSE:INT		ALIGNAUTO pe: Log-Pwr	TRAC	M Apr 19, 2016	Frequency
10 dB/div Re	Offset 9.5 dB 7 35.50 dBm	PN0: Fast G IFGain:Low	Trig: Free Run #Atten: 36 dB		Mk	r1 1.850	TPPPPP	Auto Tune
25.5 15.5 5.50	1							Center Fred 6.015000000 GHz
-4.50							-13.00 dBn 2	Start Free 30.000000 MH;
-34.5								Stop Free 12.00000000 GH
Start 30 MHz #Res BW 1.0 ME MODE 109 SO	×		V 3.0 MHz	FUNCTION F	Sweep 2	0.0 ms (2		CF Step 1.197000000 GH: Auto Mar
1 N 1 f 2 N 1 f 3 4 5 6 7 7 8 9		.850 4 GHz .932 0 GHz	25.501 dBm -30.433 dBm					Freq Offse 0 Ha
11 12								
MSG					STATUS			

Middle Channel

	M Apr 19, 2016	00.01.01	ALIGNAUTO		SENSE:INT			Swept		m An	ectru		gilen R
Frequency		TRAC	: Log-Pwr	Avg T	rig: Free Run	_	00 GHz				Fr		
Auto Tur	1 GHz 12 dBm	r1 1.880	Mk		Atten: 36 dB	ast ⊂, Low	IFGai	9.5 di 0 dB				B/div	
Center Fre 6.015000000 GH								1					og 25.5 15.5
Start Fre 30.000000 MH	-13.00 dBm												1.50 14.5 24.5
Stop Fro 12.00000000 G													94.5 14.5 54.5
CF Ste 1.19700000 Gi Auto M		0.0 ms (2	Sweep 2	INCTION			*		ИНz			s B	Re
Freq Offs					5.172 dBm 9.351 dBm	HZ HZ	1.880 1 (11.602 1 (ŕ	1	NN	23456
													7 8 9 0
			STATUS										IG

Highest Channel

RF	50 Q A0	1		SB	NSE: INT		ALIGNAUTO	03:33:59 F	M Apr 19, 2016	-	
eq 6.01	50000	PN	0: Fast 🕞			Avg Typ	e: Log-Pwr	TRACE 1 2 3 4 5 6 TYPE MWWWWWW DET P P P P P P		Frequency	
			am.cow				Mk			Auto T	
	1									Center F 6.015000000	
									-13.00 dBm 2:	Start F 30.000000	
			مالندني بينا التي ا							Stop F 12.000000000	
IHZ 1.0 MHZ			#VBV					0.0 ms (2	5001 pts)	CF S	
f f		1.909 8		26.388 d	Bm	INCTION	INCTION WIDTH	FUNCTIC	ON VALUE	Auto Freq Of	
										Tregor	
	Ref Offs Ref 35	eq 6.0150000 Ref Offset 9.5 dB Ref 35.50 dBr	eq 6.015000000 GH PR IFG Ref Offset 9.5 dB Ref 35.50 dBm 1 1 1 1 1 1 1 1 1 1 1 1 1	eq 6.01500000 CHz PRO: Fast C FGaint.ev Ref 07s-t0 5.08 Ref 35.50 dBm 1 1 1 1 1 1 1 1 1 1 1 1 1	eq 6.01500000 GHz PROTest Carl Carl Carl Carl Carl Carl Carl Carl	eq 6.01500000 CHZ PIO: Fail T If Selection The Selection of the Selection	eq 6.015000000 CHz Trig: Free Run Avg Typ PIO: Fail Trig: Free Run #Aten: 36 dB Ref Offset 9.6 dB Ref 3.5 00 dBm Ref 3.5 00 dBm Ref 3.5 00 dBm Image: State 1.5 mm Image: State 1.5 mm Image: State 1.5 mm Image: State 1.5 mm Image: State 1.5 mm Image: State 1.5 mm Image: State 1.5 mm Image: State 1.5 mm Image: State 1.5 mm Image: State 1.5 mm Image: State 1.5 mm Image: State 1.5 mm Image: State 1.5 mm Image: State 1.5 mm Image: State 1.5 mm Image: State 1.5 mm Image: State 1.5 mm Image: State 1.5 mm Image: State 1.5 mm Image: State 1.5 mm Image: State 1.5 mm Image: State 1.5 mm Image: State 1.5 mm Image: State 1.5 mm Image: State 1.5 mm Image: State 1.5 mm Image: State 1.5 mm Image: State 1.5 mm Image: State 1.5 mm Image: State 1.5 mm Image: State 1.5 mm Image: State 1.5 mm Image: State 1.5 mm Image: State 1.5 mm Image: State 1.5 mm Image: State 1.5 mm Image: State 1.5 mm Image: State 1.5 mm	eq 6.015000000 GHz Trig: Free Run Avg Type: Log-Pwr PI0: Factor Trig: Free Run Mkten: 36 dB Ref Offset 9.5 dB Mkten: 36 dB Mkten: 40 dB Ref 35.50 dBm GBm Mkten: 40 dB Image: State of the s	aq 6.015000000 GHz Avg Type: Log-Pwr This: Free Run PR0: Fail (Total) Free Run Free Run Mkr1 1.00 Ref Offset 9.6 dB Mkr1 1.00 26.31 Ref 35.50 dBm GBm 26.31 Image: State 1.00 State 1.00 State 1.00 Image: State 1.00 Image: State 1.00 Image: State 1.00 Image: State 1.00 Image: State 1.00 Image: State 1.00 Image: State 1.00 Image: State 1.00 Image: State 1.00	and Bit States Avg Type: Log-Pwr With States Made States States Ref Offset 9.5 dB Ref 35.50 dBm Mkrt 1200 dF 26.388 dBm Mkrt 1200 dF 26.388 dBm Mkrt 1200 dF 26.388 dBm Image States Mkrt 1200 dF 26.388 dBm Mkrt 1200 dF 26.388 dBm Mkrt 1200 dF 26.388 dBm Image States Mkrt 1200 dF 20.000 GHz Image States Mkrt 1200 dF 20.000 GHz Image States Mkrt 1200 dF 20.000 GHz Image States Mkrt 1200 dF 20.000 GHz Image States Image States Image States Image States Image States Image States Image States Image States Image States Image States Image States Image States Image States Image States Image States Image States Image States Image States Image States Image States Image States Image States Image States Image States Image States Image States Image States Image States Image States Image States Image States Image States Image States Image States Image States Image States	

Shenzhen STS Test Services Co., Ltd.



GSM1900 BAND(12G-20G)

Lowest Channel

	um Analyzer - Swept SA							
e RL Center Fr	RF 50 Ω AC req 16.0000000		SENSE:INT	Avg Ty	ALIGNAUTO pe: Log-Pwr	TRAC	M Apr 19, 2016	Frequency
0 dB/div	Ref Offset 9.5 dB Ref 35.50 dBm	PNO: Fast ⊂ IFGain:Low	#Atten: 36 dB		Mkr1	16.494	TPPPPPP	Auto Tu
og 25.5 15.5 5.50								Center Fr 16.00000000 G
4.5				1			-13.00 dBm	Start Fi 12.000000000 0
4.5 4.5 4.5								Stop F 20.000000000 (
	1.0 MHz		W 3.0 MHz			0.0 ms (2		CF S 800.000000 M
E MODE TE N 1 2 N 1 3 4 5 5 6 7 8 9 0 0 1 2	f 16	494 72 GHz 494 72 GHz	Y F -24.936 dBm -24.936 dBm	UNCTION	FUNCTION WIDTH	FUNCTIO	N VALUE	Auto M Freq Off 0
					STATU	s		1

Middle Channel

E 1 2 3 4 5 6	TRAC	ALIGNAUTO							
	110-10	: Log-Pwr	Avg				50 Ω AC	RF Ce Lev	erer
TPPPPP	DE	>100/100	AvgiH		Trig: Fre #Atten: 3	PNO: Fast (IFGain:Low			
17 GHz 54 dBm	Mkr1 16.631 7 GHz -33.054 dBm								
				-	-		_		-
-4.00 dbm			-	-	-				
			1						
				-					
2				-					-
.000 GHz 0000 pts)	Stop 20).7 ms (1	Sweep 20			W 3.0 MHz	#VB			
)n value	FUNCTIO	NCTION WIDTH	NCTION					rac scl	Ν
				Bm	d	4.722 GHz	2	1 1	N
2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	.000 G	-33.054 dE	-33.054 dE	-33.054 dE		33.054 dE	-33.054 dE	2. 33.06 dBm33.064 dE 2. 400 2. 400 2. 400 2. 400 2. 400 2. 400 2. 400 3. 60 dBm33.064 dE 3. 60 dBm33.064 dB	Ref 25.00 dBm -33.054 dE

Highest Channel

RL	RF 50	Ω AC		SE	ISE:INT		ALIGNAUTO	03:34:32	M Apr 19, 2016	
nter Fr	req 16.000	00000	PNO: Fast	Trig: Free #Atten: 36		Avg Typ	e: Log-Pwr	TRAC	E123456	Frequency
dB/div	Ref Offset 9 Ref 35.50	0.5 dB dBm					Mkr1		56 GHz 23 dBm	Auto Tur
5										Center Fr 16.00000000 G
0 0 5 5					↓ ¹				-13.00 dBn	Start Fr 12.000000000 G
5										Stop Fr 20.00000000 G
es BW	00 GHz 1.0 MHz		#VBV	V 3.0 MHz				0.0 ms (2	.000 GHz 5001 pts)	CF St 800.000000 N
MODE TH	f f		6 56 GHz 6 56 GHz	-25.023 dE	3m	CTION FU	INCTION WIDTH	FUNCTI	ON VALUE	<u>Auto</u> N
										Freq Off: 0
N 1										
_							STATUS			

Shenzhen STS Test Services Co., Ltd.



GPRS 1900 BAND(30M-12G)

Lowest Channel

	Analyzer - Swept SA							
	RF 50 Ω AC		SENSE:INT	Avg Type:	ALIGNAUTO Log-Pwr	TRAC	MApr 12, 2016	Frequency
10 dB/div R	ef Offset 9.5 dB ef 35.50 dBm	PN0: Fast IFGain:Low	#Atten: 36 dB		Mk	r1 1.850	9 GHz 3 dBm	Auto Tune
25.6 15.5 5.50								Center Free 6.015000000 GH:
-4.50 -14.5 -24.5			2				-13.00 dBm	Start Free 30.000000 MH
-34.5 -44.5 -54.5								Stop Fre 12.000000000 GH
Start 30 MHz #Res BW 1.0	MHz	#VBV	V 3.0 MHz		weep 20		.000 GHz 5001 pts)	CF Step 1.197000000 GH Auto Mar
2 N 1 1 3 4 5 6 7 8 9 10		070 4 GHz	-30.392 dBm					Freq Offse 0 H
9 10 11 12 MSG					STATUS			

Middle Channel

		10.01172	ALIGNAUTO		L course wat		AC	yzer - Sw	um And RE		lgilent R I
Frequency	M Apr 12, 2016	TRAC	: Log-Pwr	Avg Ty	SENSE:INT	Hz	00000 GI				
Auto Tur	9 GHz 4 dBm	r1 1.880	Mk		#Atten: 36 dB	PNO: Fast C FGain:Low	iF 5 dB	offset 9. 35.50		/div	10 dE
Center Fre 6.015000000 GH											25.5 15.5 5.50
Start Fre 30.000000 MF	-13.00 dBm 2/										-4.50 -14.5 -24.5
Stop Fre 12.000000000 GF								ing a second		1999	34.5 44.5 54.5
CF Ste 1.19700000 GF Auto Mi		0.0 ms (2	Sweep 2	INCTION			×	Hz	1.0 N	: 30 M : BW	#Res
Freq Offs					24.264 dBm -31.023 dBm	0 9 GHz 1 6 GHz	1.880 11.941		f	N 1 N 1	23456
											7 8 9 10 11 12
			STATUS								IZ

Highest Channel

RF	50 g A0	1		SE	NSE: INT		ALIGNAUTO	10:26:37 F	M Apr 12, 2016	
req 6.0	150000	PNO:	Fast 🖵			Avg Typ	e: Log-Pwr	TVS	A ALLEANARABLE	Frequency
			Low				Mk			Auto Tu
	1									Center Fi 6.015000000 G
									-13.00 dBm 20	Start F 30.000000 M
				a de la constanta de la constan						Stop F 12.000000000
MHz 1.0 MHz	2		#VBW	3.0 MHz	-		Sweep 2	Stop 12 20.3 ms (.000 GHz 8001 pts)	CF S
RC SCL		1.909 3 0		24.881 d	Bm	INCTION	JNCTION WIDTH	FUNCTION)N VALUE	Auto M
										Freq Off 0
	MHz NHZ	Ref 0:0150000 Ref 0:05:60 dBr Ref 3:5:0 dBr 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	reg 6.01500000 GHz Pro- If Gale Ref Offset 9.5 dB Ref 35.50 dBm 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Freq 6.015000000 CHz PRO: Fail (-) PRO: Fail (-) PRO: Fail (-) Ref 076+15.61 BR BR 1000000000000000000000000000000000000	Freq 6.015000000 CHz Trigs Fre Pilot Fait Fred offset 9.5 dB Ref 0ffset 9.5 dB GB Villa Villa Villa VILla 1.0 MHz #VBW 3.0 MHz 1.0 MHz 1.00 MHz	Image: Generation of the second sec	Fire 6.015000000 GHZ Avg Typ PRO: Fire PRO: Fire Fire PRO: Fire PRO: Fire PRO: Fire Ref Offset 9.5 dB Ref 35.50 dBm Ref 35.50 dBm VHz 1 Image: Fire Fire VHz 1 Image: Fire Fire 1.0 MHz #VBW 3.0 MHz Fire Fire 201000 Fire 24.881 dBm Fire	Free 6.015000000 GHz Avg Type: Leg-Pwr PHO: Fail Trig: Free Run Ref Offset 9.6 dB Mk Ref 35.50 dBm Mk Vit/z June 1.00 Lo. MHz #VBW 3.0 MHz Sweep 2 Statest 24.681 dBm Statest 2000	Fire 6.0150000000 CHZ Avg Type: Log-Pwr Trig: Free Run PRO: Fire Free Run Avg Type: Log-Pwr Trig: Free Run Trig: Free Run </td <td>Image: 6.015000000 GHz Avg Type: Log-Pwr Image: 6.01500000 GHz PHO: Fail (Free Run IFGain.tow) Free Run IFGain.tow) Free Run IFGain.tow) Mkrt 1.33 4.56 Mkrt 1.35 4.56 Mkrt 1.35 4.56 Mkrt 1.30 4.50 Mkrt 1.00 4.50 4.50 4.50 4.50 4.50 4.50 4.50 4</td>	Image: 6.015000000 GHz Avg Type: Log-Pwr Image: 6.01500000 GHz PHO: Fail (Free Run IFGain.tow) Free Run IFGain.tow) Free Run IFGain.tow) Mkrt 1.33 4.56 Mkrt 1.35 4.56 Mkrt 1.35 4.56 Mkrt 1.30 4.50 Mkrt 1.00 4.50 4.50 4.50 4.50 4.50 4.50 4.50 4

Shenzhen STS Test Services Co., Ltd.



GPRS 1900 BAND(12G-20G)

Lowest Channel

	Analyzer - Swept SA						
enter Fred	RF 50 Ω AC	0 GHz	SENSE:INT	Avg Typ	ALIGNAUTO e: Log-Pwr	10:20:51 PM Apr 12, 20 TRACE 1 2 3 4 5 TYPE MWWWW	Frequency
dB/div	Ref Offset 9.5 dB Ref 35.50 dBm	PNO: Fast G IFGain:Low	#Atten: 36 dB		M	kr1 16.520 GF -24.953 dB	Z Auto Tun
og 15.6 15.6							Center Fre 16.00000000 GF
4.5				1 ○ ²	Lidwa	-13.00 d	Start Fre
4.5							Stop Fr 20.000000000 G
art 12.000 Res BW 1.0	0 MHz	#VB\	V 3.0 MHz	UNCTION F	Sweep 2	Stop 20.000 GH 0.7 ms (10000 pt EUX010XV2005	
1 N 1	f 1	6.520 GHz 7.050 GHz	-24.953 dBm -25.883 dBm				Freq Offs 0
3					STATUS		

Middle Channel

Agilent Spect									
Center F		50 Ω AC 00000000 GHz	SENSE		Avg Type	ALIGNAUTO I: Log-Pwr	TRAC		Frequency
PHO: Fast Trig: Free Run Free Run									Auto Tune
25.5 15.5	Ref 35.						20.4		Center Free 16.000000000 GH
-4.50 -14.5 -24.5				€ !:				-13.00 dBm	Start Fre 12.000000000 GH
-34.5									Stop Fre 20.000000000 GH
Start 12.0 #Res BW	1.0 MHz	#VE	W 3.0 MHz -25.423 dBm			Sweep 2	0.0 ms (2	.000 GHz 5001 pts)	CF Stej 800.000000 MH <u>Auto</u> Ma
2 N 1 3 4 5 6 7 8 9 10	÷	16.525 GHz	-26.917 dBm						Freq Offse 0 H
11 12 //sg						STATUS	1		

Highest Channel

RF 50 Ω A0		SENSE: INT	ALIGNAUTO	10:27:05 PM Apr 12, 2016	-		
er Freq 16.000000	PNO: Fast G	Trig: Free Run #Atten: 36 dB	Avg Type: Log-Pwr	TRACE 1 2 3 4 5 6 TYPE MUMUUMUU DET P P P P P P	Frequency Auto T		
Ref Offset 9.5 dB			Mkr1 16.757 GHz -25.406 dBm				
					Center F 16.000000000		
			1	-13.00 dBm	Start F 12.000000000		
					Stop F 20.000000000		
t 12.000 GHz s BW 1.0 MHz	#VBV	V 3.0 MHz		Stop 20.000 GHz 0.7 ms (10000 pts)	CF 5 800.000000		
N 1 f N 1 f	× 16.757 GHz 16.757 GHz	-25.406 dBm -25.406 dBm	UNCTION FUNCTION WIDTH	FUNCTION VALUE	Auto		
					Freq Of		
			STATUS				

Shenzhen STS Test Services Co., Ltd.



A7 BAND EDGE

GSM 850

Lowest Band Edge

Im By Editoration (F 150.0, AC) enter Freq 824.000000 MHz PRG: Wide C→ IFGainLow #Atten: 36 dB Avg Type: Log-Pwr Frequency Mkr1 823.980 MHz -16.03 dBm Auto Tur Ref Offset 8.8 dB Ref 23.76 dBm WWWWWWW Center Fre 824.000000 MH Start Fre 823.500000 MH Stop Fre 824.500000 Mi CF Ste 100.000 kH Freq Offs showed a second state 0⊦ Center 824.0000 MHz #Res BW 3.0 kHz Span 1.000 MHz Sweep 136 ms (1001 pts) #VBW 10 kHz

MSG STATUS

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



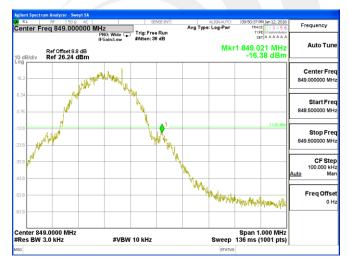
GPRS 850

Lowest Band Edge



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

Highest Band Edge

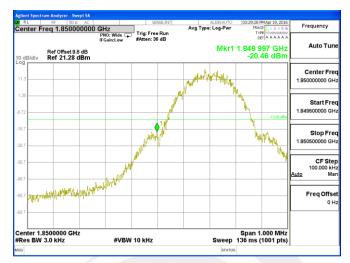


Note:Offset=Cable loss(8.5)+10log(3.2/3)=8.5+0.3=8.8 dB



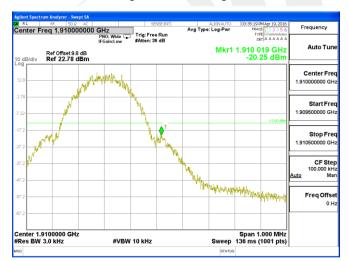
GSM 1900

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



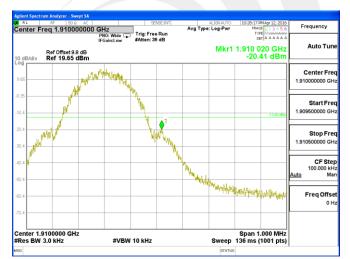
GPRS 1900

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

	The	Worst Test R	esults Channe	el 128/824.2 MHz		
Frequency(MHz)	Power(dBm)	ARpl	Р _{меа} (dBm)	Limit (dBm)	Margin(dBm)	Polarity
1648.4	-35.59	-4.65	-40.24	-13	-27.24	Horizontal
2472.587	-37.13	-2.21	-39.34	-13	-26.34	Horizontal
3296.754	-31.23	0.21	-31.02	-13	-18.02	Horizontal
1648.359	-38.63	-4.65	-43.28	-13	-30.28	Vertical
2472.575	-41.91	-2.21	-44.12	-13	-31.12	Vertical
3296.813	-42.88	0.21	-42.67	-13	-29.67	Vertical
	The	Worst Test R	esults Channe	el 190/836.6 MHz		
Frequency(MHz)	Power(dBm)	ARpl	Р _{меа} (dBm)	Limit (dBm)	Margin(dBm)	Polarity
1673.09	-36.59	-4.65	-41.24	-13	-28.24	Horizontal
2509.682	-43.09	-2.21	-45.3	-13	-32.3	Horizontal
3346.262	-38.24	0.21	-38.03	-13	-25.03	Horizontal
1673.065	-37.59	-4.65	-42.24	-13	-29.24	Vertical
2509.681	-31.94	-2.21	-34.15	-13	-21.15	Vertical
3346.274	-36.81	0.21	-36.6	-13	-23.6	Vertical
	The	Worst Test R	esults Channe	el 251/848.8 MHz		
Frequency(MHz)	Power(dBm)	ARpl	Р _{меа} (dBm)	Limit (dBm)	Margin(dBm)	Polarity
1697.476	-35.6	-4.65	-40.25	-13	-27.25	Horizontal
2546.263	-44.12	-2.21	-46.33	-13	-33.33	Horizontal
3395.077	-42.25	0.21	-42.04	-13	-29.04	Horizontal
1697.465	-35.6	-4.65	-40.25	-13	-27.25	Vertical
2546.284	-41.91	-2.21	-44.12	-13	-31.12	Vertical
3395.062	-37.86	0.21	-37.65	-13	-24.65	Vertical

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

	The	Worst Test R	esults Channe	el 128/824.2 MHz		
Frequency(MHz)	Power(dBm)	ARpl	Р _{меа} (dBm)	Limit (dBm)	Margin(dBm)	Polarity
1648.456	-35.68	-4.65	-40.33	-13	-27.33	Horizontal
2472.905	-37.45	-2.21	-39.66	-13	-26.66	Horizontal
3296.769	-31.97	0.21	-31.76	-13	-18.76	Horizontal
1648.865	-38.97	-4.65	-43.62	-13	-30.62	Vertical
2472.876	-41.91	-2.21	-44.12	-13	-31.12	Vertical
3296.679	-42.89	0.21	-42.68	-13	-29.68	Vertical
	The	Worst Test R	esults Channe	el 190/836.6 MHz		
Frequency(MHz)	Power(dBm)	ARpl	Р _{меа} (dBm)	Limit (dBm)	Margin(dBm)	Polarity
1673.875	-36.85	-4.65	-41.5	-13	-28.5	Horizontal
2509.636	-43.52	-2.21	-45.73	-13	-32.73	Horizontal
3346.6452	-38.57	0.21	-38.36	-13	-25.36	Horizontal
1673.634	-37.68	-4.65	-42.33	-13	-29.33	Vertical
2509.566	-31.41	-2.21	-33.62	-13	-20.62	Vertical
3346.578	-36.52	0.21	-36.31	-13	-23.31	Vertical
	The	Worst Test R	esults Channe	el 251/848.8 MHz		
Frequency(MHz)	Power(dBm)	ARpl	Р _{меа} (dBm)	Limit (dBm)	Margin(dBm)	Polarity
1697.476	-35.45	-4.65	-40.1	-13	-27.1	Horizontal
2546.263	-44.55	-2.21	-46.76	-13	-33.76	Horizontal
3395.077	-42.89	0.21	-42.68	-13	-29.68	Horizontal
1697.465	-35.64	-4.65	-40.29	-13	-27.29	Vertical
2546.284	-41.25	-2.21	-43.46	-13	-30.46	Vertical
3395.062	-37.98	0.21	-37.77	-13	-24.77	Vertical

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.





PCS 1900: (30-20000)MHz

	The	Worst Test Res	ults for Chann	el 512/1850.2MH	Iz	
Frequency(MHz)	Power(dBm)	ARpl	Р _{меа} (dBm)	Limit (dBm)	Margin(dBm)	Polarity
3700.224	-33.62	0.33	-33.29	-13	-20.29	Horizontal
5550.499	-36.11	4.01	-32.1	-13	-19.1	Horizontal
7400.702	-42.25	10.7	-31.55	-13	-18.55	Horizontal
3700.273	-34.58	0.33	-34.25	-13	-21.25	Vertical
5550.462	-35.89	4.01	-31.88	-13	-18.88	Vertical
7400.66	-41.83	10.7	-31.13	-13	-18.13	Vertical
	The	Worst Test Res	ults for Chann	el 661/1880.0MF	z	
Frequency(MHz)	Power(dBm)	ARpl	P _{Mea} (dBm)	Limit (dBm)	Margin(dBm)	Polarity
3760.010	-36.62	0.33	-36.29	-13	-23.29	Horizontal
5640.054	-37.11	4.01	-33.1	-13	-20.1	Horizontal
7520.025	-32.25	10.7	-21.55	-13	-8.55	Horizontal
3760.006	-38.65	0.33	-38.32	-13	-25.32	Vertical
5640.076	-41.89	4.01	-37.88	-13	-24.88	Vertical
7520.053	-42.83	10.7	-32.13	-13	-19.13	Vertical
	The	Worst Test Res	ults for Chann	el 810/1909.8MH	lz	
Frequency(MHz)	Power(dBm)	ARpl	P _{Mea} (dBm)	Limit (dBm)	Margin(dBm)	Polarity
3819.447	-36.59	0.33	-36.26	-13	-23.26	Horizontal
5729.276	-37.11	4.01	-33.1	-13	-20.1	Horizontal
7639.083	-32.28	10.7	-21.58	-13	-8.58	Horizontal
3819.453	-38.58	0.33	-38.25	-13	-25.25	Vertical
5729.331	-41.9	4.01	-37.89	-13	-24.89	Vertical
7639.063	-42.85	10.7	-32.15	-13	-19.15	Vertical

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.



GPRS 1900: (30-20000)MHz

	The W	/orst Test Res	ults for Chann	el 512/1850.2M	Hz	
Frequency(MHz)	Power(dBm)	ARpl	Р _{меа} (dBm)	Limit (dBm)	Margin(dBm)	Polarity
3700.789	-33.89	0.33	-33.56	-13	-20.56	Horizontal
5550.865	-36.75	4.01	-32.74	-13	-19.74	Horizontal
7400.546	-42.94	10.7	-32.24	-13	-19.24	Horizontal
3700.678	-34.75	0.33	-34.42	-13	-21.42	Vertical
5550.546	-35.56	4.01	-31.55	-13	-18.55	Vertical
7400.454	-41.45	10.7	-30.75	-13	-17.75	Vertical
	The W	/orst Test Res	ults for Chann	el 661/1880.0M	Hz	
Frequency(MHz)	Power(dBm)	ARpl	Р _{меа} (dBm)	Limit (dBm)	Margin(dBm)	Polarity
3760.895	-36.45	0.33	-36.12	-13	-23.12	Horizontal
5640.853	-37.43	4.01	-33.42	-13	-20.42	Horizontal
7520.743	-32.32	10.7	-21.62	-13	-8.62	Horizontal
3760.853	-38.78	0.33	-38.45	-13	-25.45	Vertical
5640.643	-41.43	4.01	-37.42	-13	-24.42	Vertical
7520.743	-42.74	10.7	-32.04	-13	-19.04	Vertical
	The W	/orst Test Res	ults for Chann	el 810/1909.8M	Hz	
Frequency(MHz)	Power(dBm)	ARpl	Р _{меа} (dBm)	Limit (dBm)	Margin(dBm)	Polarity
3819.856	-36.74	0.33	-36.41	-13	-23.41	Horizontal
5729.854	-37.53	4.01	-33.52	-13	-20.52	Horizontal
7639.743	-32.47	10.7	-21.77	-13	-8.77	Horizontal
3819.784	-38.75	0.33	-38.42	-13	-25.42	Vertical
5729.532	-41.32	4.01	-37.31	-13	-24.31	Vertical
7639.643	-42.85	10.7	-32.15	-13	-19.15	Vertical

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.



RADIATED SPURIOUS EMISSION

APPENDIX BPHOTOS OF TEST SETUP



