

# **RF TEST REPORT**

Report No.: SET2020-02149

Product Name: LTE/WCDMA/GSM(GPRS) Multi-Mode Digital Mobile Phone

FCC ID: SRQ-ZTEA2021L

Model No.: ZTE A2021L

Marketing Name: ZTE Axon 11

Applicant: ZTE Corporation.

Address: ZTE Plaza, Keji Road South, Shenzhen, China.

Dates of Testing: 03/10/2020 -04/02/2020

**Issued by:** CCIC Southern Testing Co., Ltd.

Lab Location: Electronic Testing Building, No. 43 Shahe Road, Xili Street, Nanshan District, Shenzhen, Guangdong, China.

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# **Test Report**

LTE/WCDMA/GSM(GPRS)Multi-Mode Digital Mobile Phone			
ZTE			
ZTE			
ZTE Corporation.			
ZTE Plaza, Keji Road South, Shenzhen, China.			
ZTE Corporation.			
ZTE Plaza, Keji Road South, Shenzhen, China.			
47 CFR FCC Part 2/22/24/27			
PASS			
Vincent 2020.04.02			
Vincent, Test Engineer			
Chris Jon 2020.04.02			
Chris You, Senior Engineer			
Shuangwan Zhang 2020.04.02			
Shuangwen Zhang, Manager			



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Change History					
Issue	Date	Reason for change			
1.0	2020.04.02	First edition			



# 1. GENERAL INFORMATION

# 1.1 EUT Description

EUT Type	LTE/WCDMA/GSM(GPRS) Multi-Mode Digital Mobile Phone
EUT supports Radios application	GPRS/EDGE/WCDMA/HSPA
Multi Slot Class	GPRS: Multi slot Class12, EGPRS: Multi slot Class12
	GSM 850MHz:
	Tx: 824.2 - 848.8MHz (at intervals of 200kHz);
	Rx: 869.2 - 893.8MHz (at intervals of 200kHz)
	GSM 1900MHz:
	Tx: 1850.2 - 1909.8MHz (at intervals of 200kHz);
	Rx: 1930.2 - 1989.8MHz (at intervals of 200kHz)
	WCDMA 850MHz
Test Band	Tx: 826.4 - 846.6MHz (at intervals of 200kHz);
Frequency Range	Rx: 871.4 - 891.6MHz (at intervals of 200kHz)
	WCDMA 1900MHz
	Tx: 1852.4 - 1907.6MHz (at intervals of 200kHz);
	Rx: 1932.4 - 1987.6MHz (at intervals of 200kHz)
	WCDMA 1700MHz
	Tx: 1712.4 - 1752.6MHz (at intervals of 200kHz);
	Rx: 2112.4 - 2152.6MHz (at intervals of 200kHz)
	GSM 850: 33.00dBm
	GSM 1900: 29.30dBm
Maximum Output Power to	EDGE 850: 26.80dBm
Antenna	EDGE 1900: 25.30dBm
Antenna	WCDMA 850: 23.80dBm
	WCDMA 1900: 22.30dBm
	WCDMA 1700: 22.10dBm
	GSM / GPRS:GMSK
	EDGE:GMSK / 8PSK
Type of Modulation	WCDMA: QPSK(Uplink)
	HSDPA:QPSK(Uplink)
	HSUPA:QPSK(Uplink)
Antenna Type	Internal Antenna
	LI



1.2	2 Maximum Designator	ERP/EIRP	Power, Freq	uency Tolerance	e, and Emissio	on
	System	Type of Modulation	Emission Designator	Frequency Tolerance (ppm)	Maximum ERP/EIRP(W)	
	GSM 850	GMSK	245KGXW	0.067	1.560	
	GSM 1900	GMSK	247KGXW	0.081	0.422	
	EDGE 850	8PSK	241KG7W	0.070	0.622	
	EDGE 1900	8PSK	247KG7W	0.069	0.333	
	WCDMA 850 RMC 12.2Kbps	QPSK	4M18F9W	0.0068	0.197	
	WCDMA 1900 RMC 12.2Kbps	QPSK	4M18F9W	0.0079	0.164	
	WCDMA 1700 RMC 12.2Kbps	QPSK	4M19F9W	0.0078	0.163	





### **1.3** Test Standards and Results

1. 47 CFR Part 2, 22(H), 24(E), 27(L)

2. ANSI C63.26:2015

3. FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.

2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

Test detailed items/section required by FCC rules and results are as below:

No.	Section	Description	Limit	Result
110.	FCC	Description		Result
1	2.1046	Conducted Output Power	Reporting Only	PASS
2	24.232(d)	Peak to Average Radio	<13dBm	PASS
	27.50(d)	Touk to Thorage Radio		11100
	2.1049			
3	22.917(b)	Occupied Bandwidth	Reporting Only	PASS
5	24.238(b)	Occupied Bandwidth	Reporting Only	TASS
	27.53(g)			
	2.1055			
4	22.355	Eraguanay Stability	$\leq \pm 2.5$ ppm	PASS
4	24.235	Frequency Stability		
	27.54			
	2.1051			
5	22.917	Conducted Out of Band	< 43+10log10	PASS
5	24.238	Emissions	(P[Watts])	PASS
	27.53			
	2.1051			
6	22.917	Dand Edga	< 43+10log10	PASS
0	24.238	Band Edge	(P[Watts])	PASS
	27.53			
	22.913	Effective Radiated Power	<7Watts	PASS
7	24.232	Equivalent Isotropic Radiated Power	<2Watts	PASS
	27.50(d)	Effective Radiated Power	<1Watts	PASS





8	2.1053 22.917 24.238 27.53	Radiated Spurious Emissions	< 43+10log10 (P[Watts])	PASS
---	-------------------------------------	--------------------------------	----------------------------	------

# **1.4** 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 v03r01 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 9000 MHz for GSM850 and WCDMA Band V.

2. 30 MHz to 20000 MHz for GSM1900 and WCDMA Band II.

3. 30 MHz to 18000 MHz for WCDMA Band IV.

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	GPRS Link	GPRS Link			
GSM 850	GPRS Link	GPRS Link			
C(1) ( 1000	GPRS Link	GPRS Link			
GSM 1900	GPRS Link	GPRS Link			
WCDMA Band V	RMC 12.2Kbps Link	RMC 12.2Kbps Link			
WCDMA Band II	RMC 12.2Kbps Link	RMC 12.2Kbps Link			
WCDMA Band IV	RMC 12.2Kbps Link	RMC 12.2Kbps Link			

Note: The maximum power levels are chosen to test as the worst case configuration as follows: GPRS mode for GMSK modulation,

EDGE multi-slot class 8 mode for 8PSK modulation,

RMC 12.2Kbps mode for WCDMA band V,

RMC 12.2Kbps mode for WCDMA band II,

RMC 12.2Kbps mode for WCDMA band IV, only these modes were used for all tests.





# **1.5** Measurement Results Explanation Example

#### For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 6B and 10dB attenuator.

Example:

Offset (dB) = RF cable loss(dB) + attenuator factor(dB).

= 7.5 + 10 = 17.5(dB)

#### **1.6** Facilities and Accreditations

#### 1.6.1 Test Facilities

#### NVLAP Lab Code: 201008-0

CCIC-SET is a third party testing organization accredited by NVLAP according to ISO/IEC 17025. The accreditation certificate number is 201008-0.

#### FCC- Designation Number: CN5031

CCIC-SET. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Designation Number: CN5031, valid time is until December 31, 2020.

#### **ISED Registration: 11185A**

#### CAB identifier: CN0064

CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd. EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 11185A-1 on Aug. 04, 2016, valid time is until Dec. 31, 2020

#### **1.6.2** Test Environment Conditions

During the measurement, the environmental conditions were within the listed ranges:

Temperature (°C):	15°℃- 35°℃
Relative Humidity (%):	30% -60%
Atmospheric Pressure (kPa):	86KPa-106KPa





# 2. 47 CFR PART 2, PART 22H & 24E 27L REQUIREMENTS

## 2.1 Conducted RF Output Power

#### 2.1.1 Definition

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.

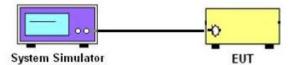
#### 2.1.2 Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

#### 2.1.3 Test Procedures

- 1. The transmitter output port was connected to the system simulator.
- 2. Set EUT at maximum power through 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.

#### 2.1.4 Test Setup







# 2.1.5 Test Results of Conducted Output Power

#### 1. Test Verdict:

Band	Channel	Frequency (MHz)	Measured Output Power dBm	Verdict
CSM	128	824.2	32.1	PASS
GSM 850MHz	190	836.6	32.7	PASS
83014112	251	848.8	33.0	PASS
COM	512	1850.2	29.3	PASS
GSM 1900MHz	661	1880.0	29.2	PASS
1900MHZ	810	1909.8	29.1	PASS
CDDS	128	824.2	32.0	PASS
GPRS	190	836.6	32.7	PASS
850MHz	251	848.8	33.0	PASS
CDDS	512	1850.2	29.1	PASS
GPRS 1900MHz	661	1880.0	29.2	PASS
1900MHZ	810	1909.8	29.1	PASS
EDCE	128	824.2	25.8	PASS
EDGE 850MHz	190	836.6	26.2	PASS
850MHz	251	848.8	26.8	PASS
EDCE	512	1850.2	25.2	PASS
EDGE	661	1880.0	25.3	PASS
1900MHz	810	1909.8	25.2	PASS

Note 1: For the GPRS model, all the slots were tested and just the worst data was record in this report.



### 2. WCDMA Model Test Verdict:

UMTS1900		Av	erage Power (d	Bm)
(E	and II)	9262CH	9400CH	9538cH
WCDMA	WCDMA 12.2kbps RMC		22.20	22.30
	Subtest 1	22.34	22.18	22.25
	Subtest 2	21.84	21.68	21.74
HSDPA	Subtest 3	21.44	21.42	21.42
	Subtest 4	20.86	21.30	20.78
	Subtest 1	22.27	22.15	22.25
	Subtest 2	22.10	22.02	22.15
HSUPA	Subtest 3	21.87	21.78	21.74
	Subtest 4	21.63	21.67	21.34
	Subtest 5	21.45	21.43	21.09
UM	TS1700	Av	erage Power (d	Bm)
(B	and IV)	1313CH	1413CH	1513CH
WCDMA	12.2kbps RMC	22.00	22.00	22.10
	Subtest 1	22.08	22.01	21.74
	Subtest 2	21.87	21.66	21.43
HSDPA	Subtest 3	21.56	21.58	21.23
	Subtest 4	21.08	21.16	21.06
	Subtest 1	21.96	22.07	21.98
	Subtest 2	21.72	21.90	21.71
HSUPA	Subtest 3	21.63	21.82	21.59
	Subtest 4	21.53	21.69	20.48
	Subtest 5	21.41	21.60	20.40
UN	/TS850	Av	erage Power (d	Bm)
(B	and V)	4132CH	4183CH	4233CH
WCDMA	12.2kbps RMC	23.80	23.80	23.80
	Subtest 1	23.78	23.62	23.84
	Subtest 2	22.98	22.86	22.93
HSDPA	Subtest 3	22.32	22.23	22.38
	Subtest 4	22.01	21.98	22.11
	Subtest 1	23.54	23.93	23.79
	Subtest 2	23.08	23.36	23.33
HSUPA	Subtest 3	22.42	22.73	22.71
	Subtest 4	22.14	22.38	22.21
	Subtest 5	21.49	21.65	21.54



#### 2.2 Peak to Average Radio

#### 2.2.1 Definition

Power Complementary Cumulative Distribution Function (CCDF) curves provide a means for characterizing the power peaks of a digitally modulated signal on a statistical basis. A CCDF curve depicts the probability of the peak signal amplitude exceeding the average power level. Most contemporary measurement instrumentation include the capability to produce CCDF curves for an input signal provided that the instrument's resolution bandwidth can be set wide enough to accommodate the entire input signal bandwidth. 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.

#### 2.2.2 Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

#### 2.2.3 Test Procedures

1. The testing follows FCC KDB 971168 D01 v03r01 Section 5.7.1.

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

3. For GSM/EGPRS operating modes:

a. Set EUT in maximum power output.

b. Set the RBW = 1MHz, VBW = 3MHz, Peak detector on spectrum analyzer for first trace.

c. Set the RBW = 1MHz, VBW = 3MHz, RMS detector on spectrum analyzer for second

trace.

d. The wanted burst signal is triggered by spectrum analyzer, and measured respectively the peak level and Mean level without burst-off time, after system simulator has synchronized with the spectrum analyzer.

4. For UMTS operating modes:

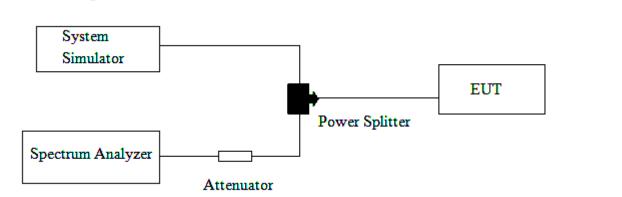
a. Set the CCDF (Complementary Cumulative Distribution Function) option on the spectrum analyzer.

b. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.

5. Record the deviation as Peak to Average Ratio.



# 2.2.4 Test Setup



#### 2.2.5 Test Results of Peak-to-Average Ratio

Band	Channel	Frequency	Peak to Average radio	Limit	Man 1: at
Band	Channel	(MHz)	dB	dB	Verdict
CSM	512	1850.2	0.1		PASS
GSM 1900MHz	661	1880.0	0.1	13	PASS
190010112	810	1909.8	0.2		PASS
EDGE	512	1850.2	3.0		PASS
	661	1880.0	2.9	13	PASS
1900MHz	810	1909.8	3.0		PASS
WCDMA	9262	1852.4	2.9		PASS
	9400	1880.0	3.1	13	PASS
1900MHz	9538	1907.6	2.9		PASS
WCDMA 1700MHz	1312	1712.4	2.7		PASS
	1412	1732.4	3.0	13	PASS
	1513	1752.6	3.1		PASS



#### 2.3 99% Occupied Bandwidth and 26dB Bandwidth Measurement

#### 2.3.1 Definition

The 99% occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean transmitted power.

The emission bandwidth is defined as the width of the signal between two points, located at the 2 sides of the carrier frequency, outside of which all emissions are attenuated at least 26 dB below

the transmitter power.

#### 2.3.2 Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

#### 2.3.3 Test Procedures

1. The testing follows FCC KDB 971168 D01 v03r01 Section 4.2.

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

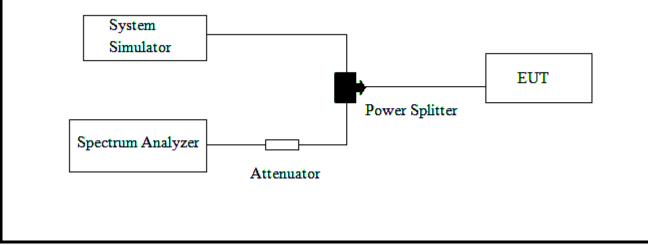
3. The RF output of the EUT was connected to the spectrum analyzer by RF cable and attenuator.

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

4. The 99% occupied bandwidth were measured, set RBW= 1% of span, VBW= 3\*RBW, sample detector, trace maximum hold.

5. The 26dB bandwidth were measured, set RBW= 1% of EBW, VBW= 3\*RBW, peak detector, trace maximum hold.

#### 2.3.4 Test Setup





#### 99% Occupied Frequency 26dB bandwidth Band Channel Bandwidth Refer to Plot (MHz) (KHz) (KHz) 128 824.2 294.6 235.42 Plot A1 GSM 850MHz 190 836.6 292.5 235.04 Plot A2 251 Plot A3 848.8 309.8 244.96 Plot B1 512 1850.2 309.3 244.50 661 1880.0 313.2 246.99 Plot B2 GSM 1900MHz 810 1909.8 314.6 246.57 Plot B3 128 824.2 278.0 238.73 Plot C1 190 241.43 Plot C2 EDGE 850MHz 836.6 290.5 251 312.3 Plot C3 848.8 236.46 512 1850.2 313.3 244.56 Plot D1 1880.0 308.2 246.53 Plot D2 661 EDGE 1900MHz 810 1909.8 311.3 241.39 Plot D3 4132 826.4 4718 4175.6 Plot E1 4183 4733 4175.1 Plot E2 WCDMA 850MHz 836.6 4233 4152.4 Plot E3 846.6 4681 9262 1852.4 4717 4165.3 Plot F1 4700 Plot F2 WCDMA 1900MHz 9400 1880 4176.3 9538 1907.6 4685 4163.2 Plot F3 1312 1712.4 4702 4185.0 Plot G1 Plot G2 WCDMA 1700MHz 1412 1732.4 4694 4173.6 1513 4700 4168.0 Plot G3 1752.6

#### 2.3.5 Test Results of 99% Occupied Bandwidth and 26dB Bandwidth



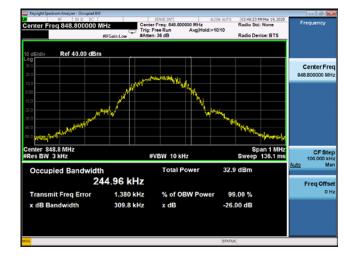
#### 2.3.6 Test Results (Plots) of 99% Occupied Bandwidth and 26dB Bandwidth



(Plot A1: GSM 850MHz Channel = 128 Occupied bandwidth)

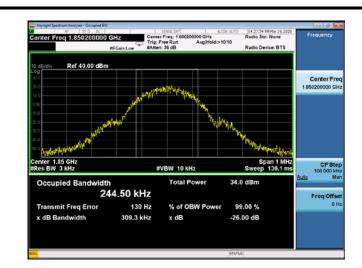


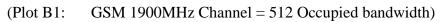
<sup>(</sup>Plot A2: GSM 850MHz Channel = 190 Occupied bandwidth)



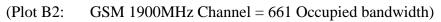
(Plot A3: GSM 850MHz Channel = 251 Occupied bandwidth)

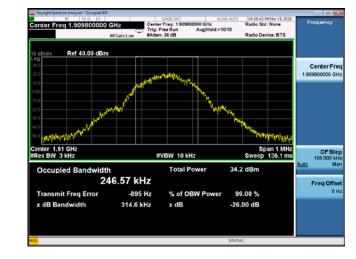






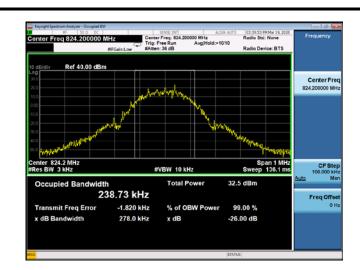


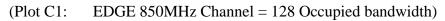




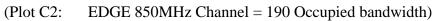
(Plot B3: GSM 1900MHz Channel = 810 Occupied bandwidth)

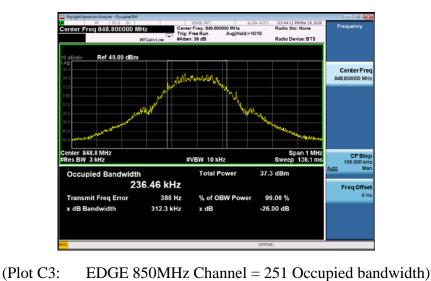








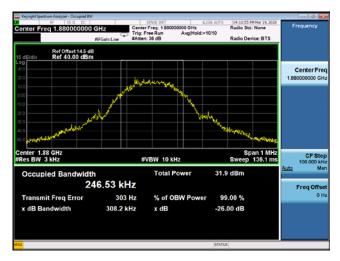




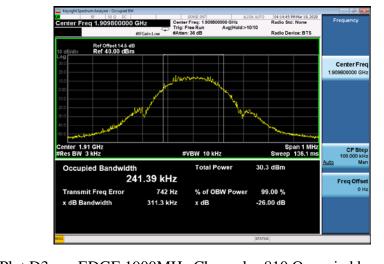












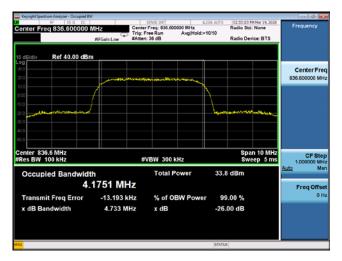
(Plot D3: EDGE 1900MHz Channel = 810 Occupied bandwidth)



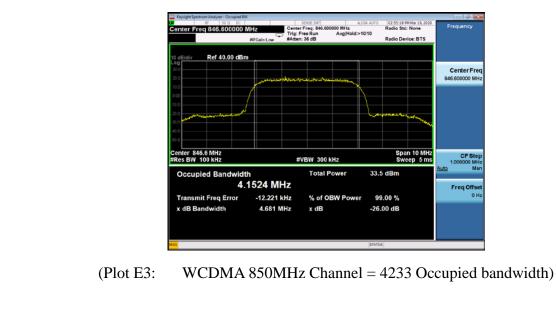
Center Freq 82		Trig: F	SDSE:00 r Freq: 826.400000 MH: Free Run Avgit h: 36 dB	ALIGN AUTO Iold:>10/10	2:54:44 PM Mar 19, 2020 Radio Std: None Radio Device: BTS	Frequency
10 dB/div Re	f 40.00 dBm					
30.0		,	reason Monorthan			Center Fre 826.400000 MH
10.0	(					
-20.0	anna a sa sa			~~~~		
-40.0 -50.0						
Center 826.4 M #Res BW 100 k		#	VBW 300 kHz		Span 10 MHz Sweep 5 ms	CF Ste 1.000000 MH
Occupied I		56 MHz	Total Power	dBm	Auto Man Freq Offset 0 Hz	
4.17 Transmit Freq Error		-4.519 kHz	% of OBW Po	wer 99		
x dB Bandwi	idth	4.718 MHz	x dB	-26.	00 dB	
				STATU		



1: WCDMA 850MHz Channel = 4132 Occupied bandwidth)

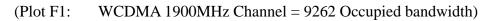


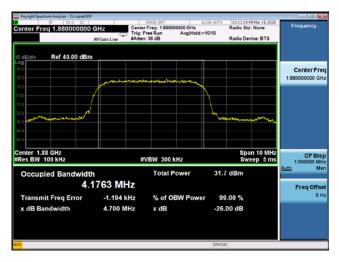
(Plot E2: WCDMA 850MHz Channel = 4183 Occupied bandwidth)



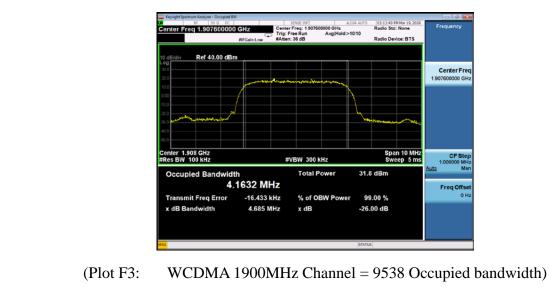


Center Fre	ng 1.852400000 €		SENSE:DVT Center Freq: 1.852400000 ( Frig: Free Run Avg Atten: 36 dB	ALIGN AUTO GHz g Hold:>10/10	03:12:57 PM Mar 19, 2020 Radio Std: None Radio Device: BTS	Frequency
10 dB/div	Ref 40.00 dBm					
Log 30.0 20.0						Center Free 1.852400000 GH
10.0						
	mansaman			- L~~	alter al state lange an and a single	
-40.0						
Center 1.8 #Res BW 1			#VBW 300 kHz		Span 10 MHz Sweep 5 ms	CF Stej 1.000000 MH
Occupi	ed Bandwidth 4 1	653 MHz	Total Powe	r 32.	7 dBm	Auto Ma Freg Offse
Transmi	it Freq Error	-5.353 kH		Power 99	9.00 %	0 H
x dB Ba	ndwidth	4.717 MH:	z xdB	-26	.00 dB	





(Plot F2: WCDMA 1900MHz Channel = 9400 Occupied bandwidth)









#### 2.4 Frequency Stability

#### 2.4.1 Requirement

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within  $\pm 0.00025\%$  ( $\pm 2.5$ ppm) of the center frequency.

#### 2.4.2 Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

#### 2.4.3 Test Procedures for Temperature Variation

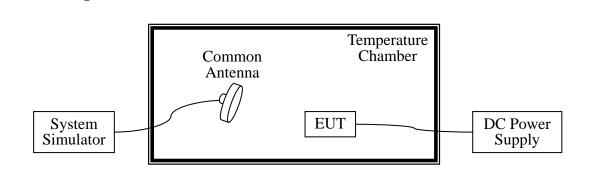
- 1. The testing follows FCC KDB 971168 D01 v03r01 Section 9.0.
- 2. The EUT was set up in the thermal chamber and connected with the system simulator.
- 3. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency 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.

#### 2.4.4 Test Procedures for Voltage Variation

- 1. The testing follows FCC KDB 971168 D01 v03r01 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 BEP to 115% of the nominal value measured at the input to the EUT.
- 4. The variation in frequency was measured for the worst case.



### 2.4.5 Test Setup



## 2.4.6 Test Results of Frequency Stability

#### GSM 850MHz Band

Band:		GS	M 850	Channel:	190		
Limit(ppm):		2.5		Frequency:	836.6MHz		
Domon	Tamananata		GSM	EDGE			
Power (VDC)	Temperatu	ire	Deviation	Deviation	Result		
(VDC)	(°C)		(ppm)	(ppm)			
	-30		0.062	0.070			
	-20		0.067	0.052			
	-10		0.044	0.059	PASS		
	0		0.035	0.038			
3.87	+10		0.041	0.034			
	+20		0.060	0.067			
	+30		0.047	0.039			
	+40		0.043	0.037			
	+50		0.054	0.035			
4.4	+25	0.057		0.048			
3.6	+25		0.049	0.058			



#### GSM 1900MHz Band

Band:		GS	M 1900	Channel:	661
Limit(ppm):	Limit(ppm):			Frequency:	1880.0MHz
Power	Temperatu	ıre	GSM	EDGE	
(VDC)	(°C)		Deviation	Deviation	Result
(VDC)			(ppm)	(ppm)	
	-30		0.047	0.065	
	-20		0.046	0.028	
	-10		0.054	0.028	
	0		0.064	0.034	
3.87	+10		0.081	0.064	
	+20		0.058	0.065	PASS
	+30		0.047	0.056	
	+40		0.059	0.062	
	+50		0.043	0.069	
4.4	+25		0.045	0.051	
3.6	+25		0.047	0.034	

#### WCDMA 850MHz Band

Band:	WCDMA Ba	nd V Channel	l: 4183
Limit(ppm)	: 2.5	Frequen	ncy: 836.6MHz
Power (VDC)	Temperature (°C)	RMC 12.2 Deviation (ppm)	ion Result
	-30 -20	0.0045	8
3.87	-10 0 +10	0.0068 0.0045 0.0067	5
	+10 +20 +30	0.0064	4 PASS
	+40 +50	0.0033	3
4.4	+25	0.0059	9
3.6	+25	0.0012	2



Band:		WCDMA	Band II	Channel:	9400
Limit(ppm):		2.5		Frequency:	1880.0MHz
				RMC 12.2Kbps	
Power (VDC)	Power Temp (VDC) (			Deviation (ppm)	Result
	-	30		0.0058	
	-	20		0.0038	
	-	10		0.0079	
		0		0.0077	
3.87	+	-10		0.0063	
-	+	-20		0.0033	PASS
-	+	-30		0.0037	
	+	-40		0.0011	
	+	-50	0.0016		
4.4	+	-25		0.0023	
		25 0.0034		0.0034	

#### WCDMA 1700MHz Band

Band:		WCDMA	Band IV	Channel:		1412		
Limit(ppm):		2.5	Frequency:			1732.4MHz		
Power Tem (VDC)		perature (°C)		RMC 12.2Kbps Deviation (ppm)		Result		
	-30 -20 -10		0.0058 0.0064 0.0066			-		
3.87		0 +10		<b>0.0078</b> 0.0028				
	-	+20 +30 +40		0.0047 0.0041 0.0019		PASS		
4.4	-	+50 +25		0.0027 0.0024				
3.6	3.6 +25			0.0037				



#### 2.5 Conducted Out of Band Emissions

#### 2.5.1 Requirement

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.

#### 2.5.2 Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

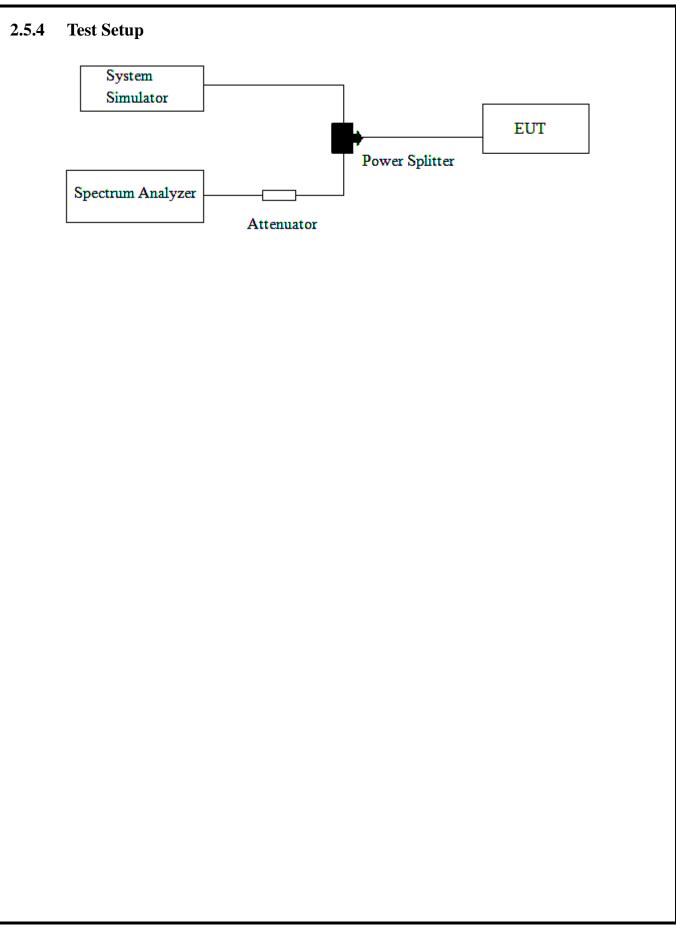
#### 2.5.3 Test Procedures

- 1. The testing follows FCC KDB 971168 D01 v03r01 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  $43 + 10\log(P)$  dB below the transmitter power P(Watts)

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

- $= [30 + 10\log(P)] (dBm) [43 + 10\log(P)] (dB)$
- = -13dBm.
- For 9KHz to 30MHz: the amplitude of spurious emissions are attenuated by more than 20dB below the permissible value has no need to be reported.

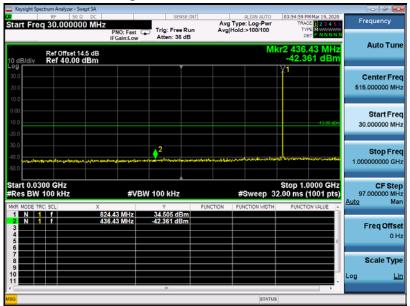




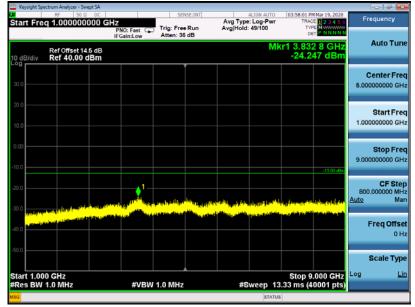


#### 2.5.5 Test Result (Plots) of Conducted Spurious Emission

Note: For 9 KHz to 30MHz: the amplitude of spurious emissions is attenuated by more than 20dB below the permissible value, so we not provide the test result here.



GSM 850MHz Channel = 128, 30MHz to 1GHz



GSM 850MHz Channel = 128, 1GHz to 9GHz



	ctrum Analyzer - Swept 5 RF 50 Ω 0 q 30.000000 №	C	Trig: Free Run Atten: 36 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	03:55:29 PM Mar 19, 2020 TRACE 2 3 4 5 6 TYPE M DET P NNNN	Frequency
0 dB/div	Ref Offset 14.5 e Ref 40.00 dB			М	kr2 643.04 MHz -42.714 dBm	Auto Tur
.og 30.0 20.0 10.0					¥1	Center Fre 515.000000 Mi
0.00					-10.00 dDn	Start Fr 30.000000 M
30.0 40.0 50.0		สะประชาวารรูปกระชุษที่	ga, andrafica (sh. d h.) <sup>94</sup> Automore	2 hru anturyon (shares) far ang anturation and ag		Stop Fr 1.000000000 G
tart 0.03 Res BW	100 kHz		W 100 kHz	-	Stop 1.0000 GHz 2.00 ms (1001 pts)	CF St 97.000000 M Auto N
MKR MODE TR 1 N 1 2 N 1 3 4 5 6	1	× 837.04 MHz 643.04 MHz	Y 34 592 dBm -42.714 dBm	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	Freq Offs 0
7 8 9 10 11						Scale Ty
				STATU	,	

#### GSM 850MHz Channel = 190, 30MHz to 1GHz



GSM 850MHz Channel = 190, 1GHz to 9GHz



a	RF 50 Q DC		SENSE:IN		ALIGN AUTO		M Mar 19, 2020	Frequency
start Fre	q 30.000000 MH	PNO: Fast IFGain:Low	Trig: Free Run Atten: 36 dB	Avg T Avg H	ype: Log-Pwr old:>100/100	TY	DE 1 2 3 4 5 6 PE MWWWWWW ET P NNNNN	Frequency
10 dB/div	Ref Offset 14.5 dB Ref 40.00 dBm				M		.68 MHz 15 dBm	Auto Tu
-og 30.0 20.0 10.0						¥1		Center Fr 515.000000 M
0.00							-10.00 dDm	Start Fr 30.000000 M
30.0 40.0				¢ <sup>2</sup>	a and a such a before the se			Stop Fr
ما (ما بارد به	-ernetalini,manjaliminiaranan	erstaan en daageeren						1.00000000 0
Start 0.03	300 GHz 100 kHz	#VE	W 100 kHz	SUNCTION	#Sweep 3	2.00 ms (	0000 GHz 1001 pts)	1.00000000 G CF St 97.000000 M <u>Auto</u> M
50.0 Start 0.03 Res BW	300 GHz 100 kHz RC  SCL  X	#VE		FUNCTION	#Sweep 3	2.00 ms (	0000 GHz	CF St 97.000000 M
50.0 Start 0.03 Res BW 1 N 1 2 N 1 3 4 5	300 GHz 100 kHz RC  SCL  X	#VE	W 100 kHz ¥ 34,717 dBm	FUNCTION		2.00 ms (	0000 GHz 1001 pts)	CF St 97.000000 M <u>Auto</u> M Freq Off

#### GSM 850MHz Channel = 251, 30MHz to 1GHz

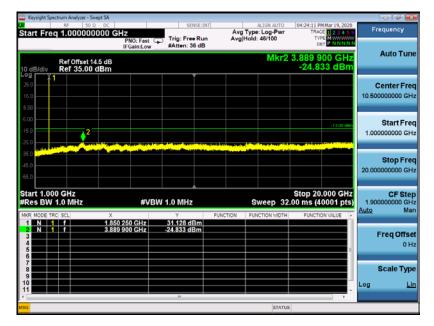


GSM 850MHz Channel = 251, 1GHz to 9GHz



RF 50 Q DC		SENSE:INT	ALIGN AUTO	04:25:43 PM Mar 19, 2020	Frequency
q 30.000000 MH:		Trig: Free Run #Atten: 36 dB	Avg Type: Log-Pwr Avg Hold:>100/100	TRACE 2 3 4 5 6 TYPE MWWWWWW DET PNNNNN	
Ref Offset 14.5 dB Ref 35.00 dBm			М	kr1 885.54 MHz -39.727 dBm	Auto Tur
					Center Fro 515.000000 Mi
					Start Fre 30.000000 Mi
				-13.00 dbn	<b>Stop Fr</b> 1.000000000 G
					CF Ste 97.000000 M Auto M
www.anglanananananananananananananananananan	unur sigek dirigesti	งการเกาะ	مەيدىنىيەر بىلەر بەيدۇرىيەر بىرىنى بىرىوسى بىرىوسى بىرىوسى بىرىوسى بىرىوسى بىرىوسى بىرىيە ھەيدۇرى بىرىيە ھەيدۇ ئىرىكى ئىرىكى بىرىيە بىرىكى بىرىكى بىرىيە ب	annon de Manne anna	Freq Offs
					Scale Ty
	#VBW	100 kHz	#Sweep 3	atop 1.0000 anz	Log <u>L</u>
	se 1902 or 1 q 30.000000 MH3 Ref 0ffset 14.5 dB Ref 35.00 dBm	NP 30.0 DC   PQ 30.000000 MHz   PN0: Fast Fast Fast   Ref Offset 14.6 dB Ref 35.00 dBm Fast	Ref 000000 MHz PNO: Fast IFGalinLow Trig: Free Run #Atten: 36 dB   Ref 00fset 14.6 dB ************************************	Ref 0ffset 14.6 dB Mile   Mile Mile	No Display Server Hit Allow arrow Display

#### GSM 1900MHz Channel = 512, 30MHz to 1GHz

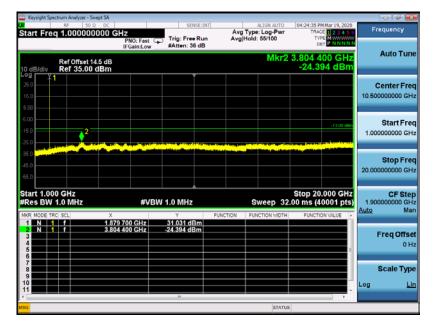


GSM 1900MHz Channel = 512, 1GHz to 20GHz



XI I	ectrum Analyzer - Swept SA RF 50 Q DC Q 30.000000 MHz	PNO: Fast	SENSE:INT Trig: Free Run #Atten: 36 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	04:25:46 PMMar 19, 2020 TRACE 2 3 4 5 6 TYPE M	Frequency
IQ dB/div	Ref Offset 14.5 dB Ref 35.00 dBm	IF Gain:Low	NALLEN. 55 CD	М	kr1 937.92 MHz -39.666 dBm	Auto Tur
°g						Center Fr 515.000000 M
5.00						Start Fre 30.000000 M
5.00					-13.00 dBn	<b>Stop Fr</b> 1.000000000 G
25.0						CF Ste 97.000000 MI <u>Auto</u> M
35.0 45.0	tumantamina ana adalah na a	hiledeydaandaayysoona	ana mana ang	۵۰۶۰ مارور بالغان کاروراه مارور به اور م	1 	Freq Offs
55.0						Scale Ty
tart 0.03 Res BW	00 GHz 100 kHz	#VBW	100 kHz	#Sweep 3	Stop 1.0000 GHz .200 ms (1001 pts)	Log <u>l</u>

#### GSM 1900MHz Channel = 661, 30MHz to 1GHz

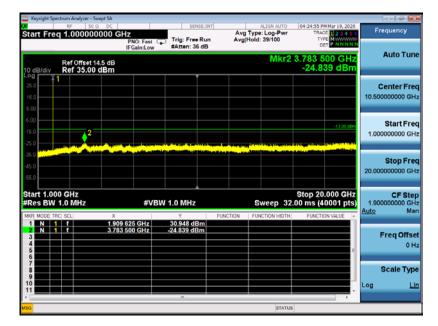


GSM 1900MHz Channel = 661, 1GHz to 20GHz





GSM 1900MHz Channel = 810, 30MHz to 1GHz



GSM 1900MHz Channel = 810, 1GHz to 20GHz



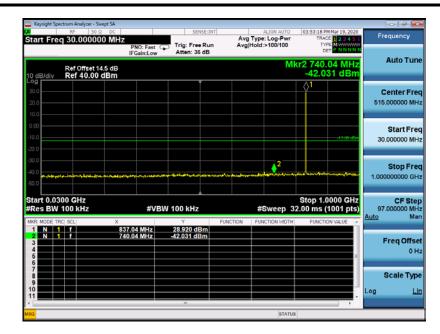
Start Fre	<sup>ŖF</sup> q 30.0	50 Ω DC 00000 MHz	PNO: Fast IFGain:Low	Trig: Free Ru Atten: 36 dB	Avg	ALIGN AUTO g Type: Log-Pwr  Hold:>100/100	03:52:26 PM Mar 15 TRACE 2 TYPE M DET P N	3456	Frequency
10 dB/div	Ref Of Ref 4	fset 14.5 dB 0.00 dBm				M	(r2 727.43 M -41.346 d		Auto Tu
20.0 10.0							¥1		Center Fr 515.000000 M
0.00 -10.0 -20.0									Start Fr 30.000000 M
-30.0 -40.0 -50.0	aharidra		alaunta Japankernei	1000-8110-1010-1010-1	tan an martillardo	and the contraction of the second	and a state of the	****	<b>Stop Fr</b> 1.000000000 G
Start 0.03 #Res BW			#VE	3W 100 kHz		#Sweep 3	Stop 1.0000 2.00 ms (1001	GHz pts)	CF Sto 97.000000 M ato M
MKR MODE TH	RC SCL	X	24.43 MHz	Y 34,790 dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALU	E A	<u>//0</u> m
2 N 1			27.43 MHz	-41.346 dBm					Freq Offs 0
7 8 9									Scale Ty
10								Lo	a I

EDGE 850MHz Channel = 128, 30MHz to 1GHz



EDGE 850MHz Channel = 128, 1GHz to 9GHz



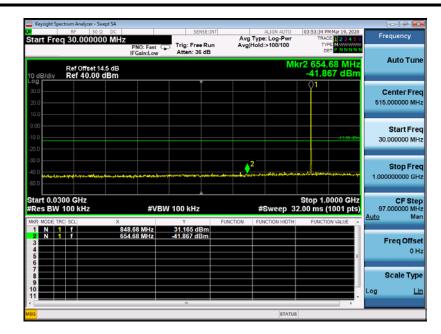


EDGE 850MHz Channel = 190, 30MHz to 1GHz



EDGE 850MHz Channel = 190, 1GHz to 9GHz





EDGE 850MHz Channel = 251, 30MHz to 1GHz

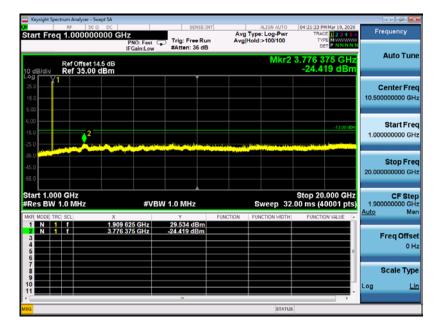


EDGE 850MHz Channel = 251, 1GHz to 9GHz



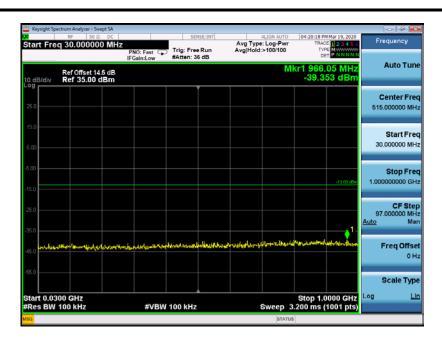


EDGE 1900MHz Channel = 512, 30MHz to 1GHz

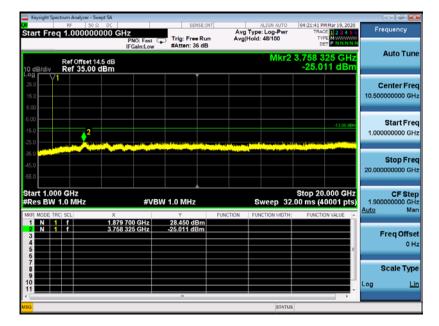


EDGE 1900MHz Channel = 512, 1GHz to 20GHz



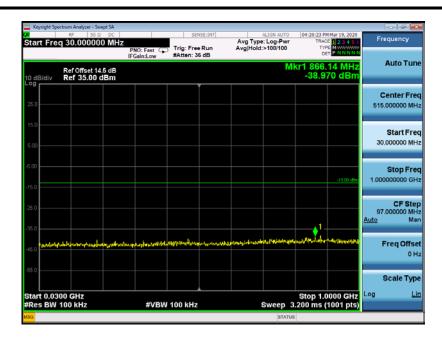


EDGE 1900MHz Channel = 661, 30MHz to 1GHz

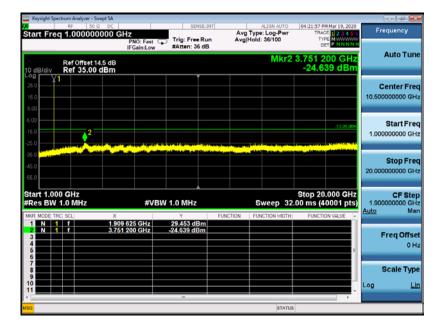


EDGE 1900MHz Channel = 661, 1GHz to 20GHz



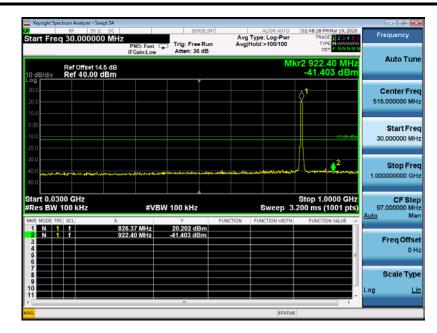


EDGE 1900MHz Channel = 810, 30MHz to 1GHz



EDGE 1900MHz Channel = 810, 1GHz to 20GHz





WCDMA850MHz Channel = 4132, 30MHz to 1GHz



WCDMA850MHz Channel = 4132, 1GHz to 9GHz