

RF TEST REPORT

Report No.: SET2019-11649

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

FCC ID: SRQ-ZTE2050

Model No. : ZTE 2050

Marketing Name: ZTE Blade 20 Smart, ZTE Blade V Smart

Applicant: ZTE Corporation

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

Dates of Testing: 08/10/2019 - 09/18/2019

Issued by: CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd.

Lab Location: Building 28/29, East of Shigu, Xili Industrial Zone, Xili Road, Nanshan District, Shenzhen, Guangdong, China
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Test Report

Product:	LTE/WCDMA/GSM(GPRS) Multi-Mode Digital Mobile Phone			
Brand Name:	ZTE			
Trade Name:	ZTE			
Applicant:	ZTE Corporation			
Applicant Address:	ZTE Plaza, Keji Road South, Shenzhen, China.			
Manufacturer	ZTE Corporation			
Manufacturer Address:	ZTE Plaza, Keji Road South, Shenzhen, China.			
Test Standards:	47 CFR FCC Part 2/22/24/274			
Test Result: Tested by: Reviewed by:	PASS Shallwe Yang, Test Engineer Mis Yang, Test Engineer Chris You, Senior Engineer Shuangwan Angy 2019.09.18 Shuangwen Zhang, Manager			



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	(Change History	
Issue	Date	Reason for change	
1.0	2019.09.18	First edition	



1. GENERAL INFORMATION

1.1 EUT Description

EUT supports Radios applicationGPRS/EDGE/WCDMA/HSPAHardware VersionuppASoftware VersionTEL_MX_ZTE_2050V1.0Multi Slot ClassGPRS: Multi slot Class12, EGPRS:GSM 850MHz:Tx: 824.2 - 848.8MHz (at i Rx: 869.2 - 893.8MHz (at i GSM 1900MHz:Tx: 1850.2 - 1909.8MHz (a Rx: 1930.2 - 1989.8MHz (at i Rx: 871.4 - 891.6MHz (at i Rx: 2112.4 - 2152.6MHz (at i Rx: 1932.4 - 1907.6MHz (a Rx: 1932.4 - 1987.6MHz (a Rx: 1932.4 - 1987.6MHz (a GSM 1900: 28.60dBm EDGE 850: 26 10dBm	ntervals of 200kHz); ntervals of 200kHz) t intervals of 200kHz);	
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Tx: 1852.4 - 1907.6MHz (a Rx: 1932.4 - 1987.6MHz (a GSM 850: 32.40dBm GSM 1900: 28.60dBm EDGE 850: 26 10dBm	t intervals of 200kHz)	
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GSM 850: 32.40dBm GSM 1900: 28.60dBm EDGE 850: 26 10dBm	t intervals of 200kHz);	
GSM 1900: 28.60dBm EDGE 850: 26 10dBm	t intervals of 200kHz)	
EDGE 850: 26 10dBm		
EDGE 850: 26 10dBm		
Maximum Output Power to	EDGE 850: 26.10dBm	
Antenna EDGE 1900: 25.20dBm		
WCDMA 850: 23.17dBm	WCDMA 850: 23.17dBm	
WCDMA 1700:22.56dBm		
WCDMA 1900: 22.58dBm		
GSM / GPRS:GMSK		
EDGE:GMSK / 8PSK		
Type of ModulationWCDMA: QPSK(Uplink)		
HSDPA:QPSK(Downlink)		
HSUPA:QPSK(Uplink)		
Antenna Type Internal Antenna		



WCDMA 1700:-1.4dBi	Antenna Gain	GSM 850/ WCDMA 850: -1.4dBi GSM 1900/ WCDMA 1900: -1dBi WCDMA 1700:-1.4dBi
WCDMA 1700:-1.4dB1		WCDMA 1700:-1.4dB1

1.2 Maximum ERP/EIRP Power, Frequency Tolerance, and Emission

Designator

System	Type of Modulation	Emission Designator	Frequency Tolerance (ppm)	Maximum ERP/EIRP(W)
GSM 850	GMSK	250KGXW	0.0035	1.675
GSM 1900	GMSK	243KGXW	0.0038	0.697
EDGE 850	8PSK	248KG7W	0.0028	0.352
EDGE 1900	8PSK	246KG7W	0.0041	0.327
WCDMA 850 RMC 12.2Kbps	QPSK	4M17F9W	0.0044	0.200
WCDMA 1900 RMC 12.2Kbps	QPSK	4M17F9W	0.0039	0.164
WCDMA 1700 RMC 12.2Kbps	QPSK	4M18F9W	0.0036	0.173



1.3 Test Standards and Results

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

2. ANSI / TIA / EIA-603-D-2010

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 FCC	Description	Limit	Result
1	2.1046	Conducted Output Power	Reporting Only	PASS
2	24.232(d) 27.50(d)	Peak to Average Radio	<13dBm	PASS
3	2.1049 22.917(b) 24.238(b) 27.53(g)	Occupied Bandwidth	Reporting Only	PASS
4	2.1055 22.355 24.235 27.54	Frequency Stability	≤±2.5ppm	PASS
5	2.1051 22.917 24.238 27.53	Conducted Out of Band Emissions	< 43+10log10 (P[Watts])	PASS
6	2.1051 22.917 24.238 27.53	Band Edge	< 43+10log10 (P[Watts])	PASS
7	22.913	Effective Radiated Power	<7Watts	PASS



	24.232	Equivalent Isotropic Radiated Power	<2Watts	PASS
	27.50(d)	Effective Radiated Power	<1Watts	PASS
8	2.1053 22.917	Radiated Spurious	< 43+10log10	PASS
0	24.238 27.53	Emissions	(P[Watts])	

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 Cond		Conducted TCs		
CCM 950	GPRS Link	GPRS Link		
GSM 850	GPRS Link	GPRS Link		
GSM 1900	GPRS Link	GPRS Link		
GSM 1900	GPRS Link	GPRS Link		
WCDMA Band V	CDMA Band V RMC 12.2Kbps Link RMC 12.2Kbps			
WCDMA Band II RMC 12.2Kbps Link RMC 12.2Kbp		RMC 12.2Kbps Link		
WCDMA Band IV	WCDMA Band IV RMC 12.2Kbps Link RMC 12.2Kbps L			

Note: The maximum power levels are chosen to test as the worst case configuration as follows: GSM 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, only these modes were used for all tests.

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 Southern Electronic Product Testing (Shenzhen) Co., Ltd. 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, 2019.

ISED Registration: 11185A-1

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 Aug. 03, 2019

1.6.2 Test Environment Conditions

Temperature	(°C):



Relative Humidity (%):	30% -60%
Atmospheric Pressure (kPa):	86KPa-106KPa

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

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.

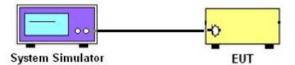
2.1.2 Measuring Instruments

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
GSM 850MHz	128	824.2	32.2	PASS
	190	836.6	32.4	PASS
	251	848.8	32.1	PASS
CEM	512	1850.2	28.6	PASS
GSM	661	1880.0	28.6	PASS
1900MHz	810	1909.8	28.6	PASS
GPRS 850MHz GPRS 1900MHz	128	824.2	32.2	PASS
	190	836.6	32.4	PASS
	251	848.8	32.0	PASS
	512	1850.2	28.7	PASS
	661	1880.0	28.6	PASS
	810	1909.8	28.6	PASS
EDCE	128	824.2	26.1	PASS
EDGE 850MHz	190	836.6	26.0	PASS
	251	848.8	25.9	PASS
EDCE	512	1850.2	25.2	PASS
EDGE	661	1880.0	25.1	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.



	band	W	CDMA 8	50	WCDMA 1900			WCDMA1700		
Item	Frequency	4132	4183	4233	9262	9400	9538	1313	1413	1513
	Subtest		dBm	I		dBm			dBm	
WCDMA	RMC 12.2Kbps	23.05	23.17	22.60	22.53	22.31	22.56	22.51	22.13	22.58
	1	22.34	22.24	22.27	22.13	22.32	22.10	22.36	22.32	22.28
HSDPA	2	21.73	21.64	21.83	21.73	21.74	21.84	21.32	21.32	21.49
IISDIA	3	21.22	21.18	21.20	21.30	21.33	21.32	21.26	21.30	21.26
	4	21.14	21.18	21.13	21.16	21.23	21.18	21.12	21.19	21.20
	1	22.51	22.63	22.26	22.37	22.33	22.30	22.43	22.35	22.32
	2	21.89	21.75	21.88	21.97	21.89	21.69	22.25	22.15	22.16
HSUPA	3	21.52	21.53	21.54	21.62	21.35	21.32	22.17	22.16	22.13
	4	21.23	21.27	21.29	21.27	21.24	21.19	21.85	21.95	21.99
	5	21.22	21.19	21.24	21.13	21.08	21.10	21.66	21.65	21.58

2. WCDMA Model Test Verdict:



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:

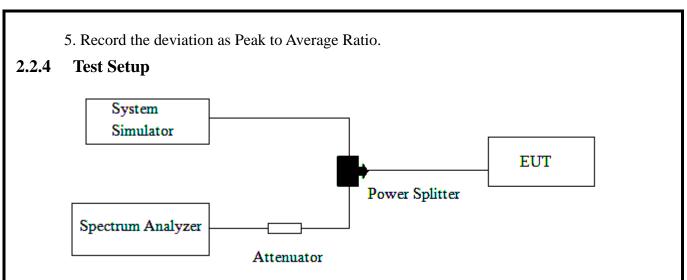
a. Set the CCDF (Complementary Cumulative Distribution Function) option on the

spectrum analyzer.

b. The highest RF powers were measured and recorded the maximum PAPR level

associated with a probability of 0.1 %.





2.2.5 Test Results of Peak-to-Average Ratio

Dend	Channal	Frequency	Peak to Average radio	Limit	Mandiat	
Band	Channel	(MHz)	dB	dB	Verdict	
CSM	512	1850.2	0.20		PASS	
GSM 1900MHz	661	1880.0	0.10	13	PASS	
1900MHZ	810	1909.8	0.10		PASS	
EDGE	512 1850.2		3.10		PASS	
1900MHz	661	1880.0	3.20	13	PASS	
1900/01/12	810	1909.8	2.80		PASS	
WCDMA	9262	1852.4	3.18		PASS	
1900MHz	9400	1880.0	3.61	13	PASS	
19001/11/2	9538	1907.6	3.65		PASS	
WCDMA	1312	1712.4	3.37		PASS	
WCDMA 1700MHz	1412	1732.4	3.36	13	PASS	
1700MHZ	1513	1752.6	3.10		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.

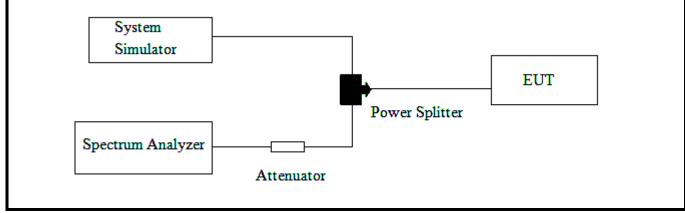
3. The RF output of the EUT was connected to the spectrum analyzer by RF cable and attenuator.

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



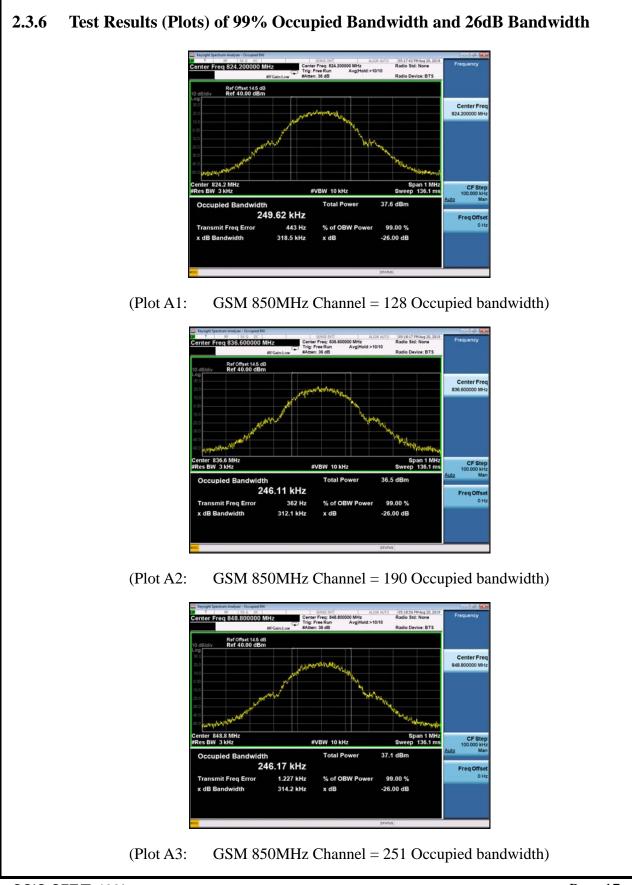
CCIC-SET/T (00)



Band	Channel	Frequency (MHz)	26dB bandwidth (KHz)	99% Occupied Bandwidth (KHz)	Refer to Plot
	128	824.2	318.5	249.62	Plot A1
GSM 850MHz	190	836.6	312.1	246.11	Plot A2
	251	848.8	314.2	246.17	Plot A3
	512	1850.2	308.6	243.35	Plot B1
GSM 1900MHz	661	1880.0	306.6	239.72	Plot B2
	810	1909.8	306.8	242.83	Plot B3
	128	824.2	305.0	244.30	Plot C1
EDGE 850MHz	190	836.6	302.9	242.74	Plot C2
	251	848.8	300.4	247.70	Plot C3
	512	1850.2	308.2	241.67	Plot D1
EDGE 1900MHz	661	1880.0	290.6	245.58	Plot D2
	810	1909.8	308.0	246.07	Plot D3
	4132	826.4	4715	4169.6	Plot E1
WCDMA 850MHz	4183	836.6	4690	4166.2	Plot E2
	4233	846.6	4683	4157.7	Plot E3
	9262	1852.4	4675	4167.4	Plot F1
WCDMA 1900MHz	9400	1880	4692	4168.0	Plot F2
	9538	1907.6	4682	4167.3	Plot F3
	1312	1712.4	4707	4181.9	Plot G1
WCDMA 1700MHz	1412	1732.4	4705	4160.9	Plot G2
	1513	1752.6	4695	4163.2	Plot G3

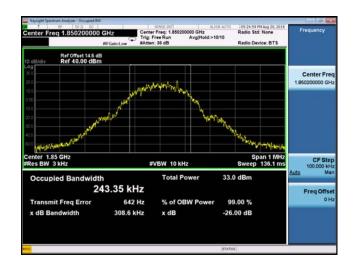
2.3.5 Test Results of 99% Occupied Bandwidth and 26dB Bandwidth





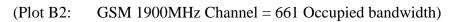
 $\text{CCIC-SET/T} \hspace{0.1 in} (00)$

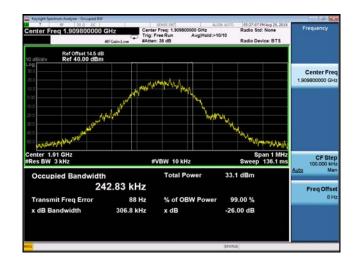




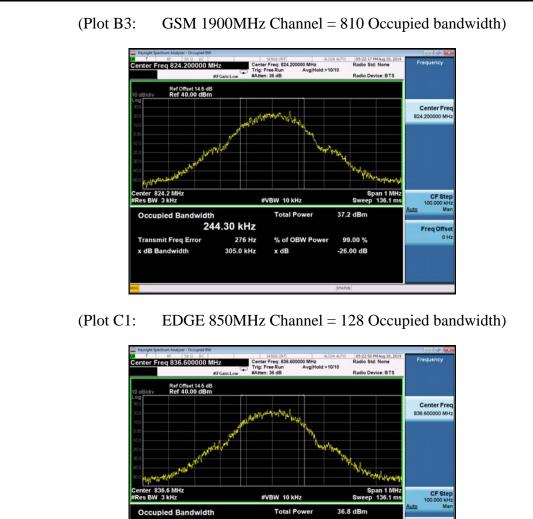
(Plot B1: GSM 1900MHz Channel = 512 Occupied bandwidth)

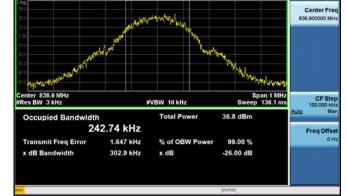


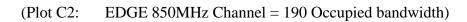


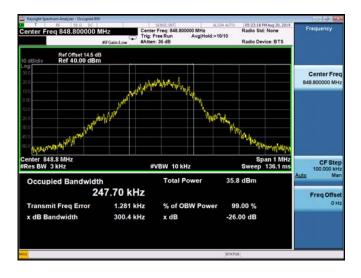




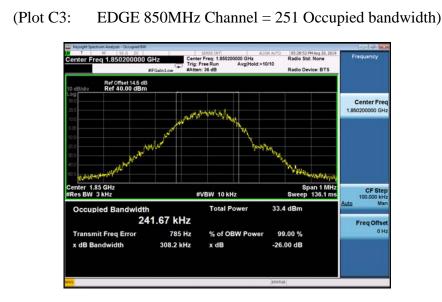




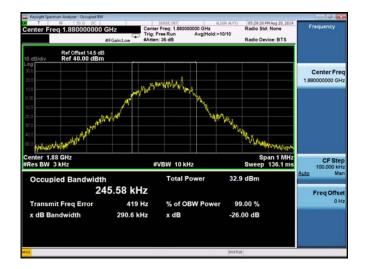


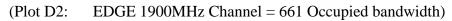


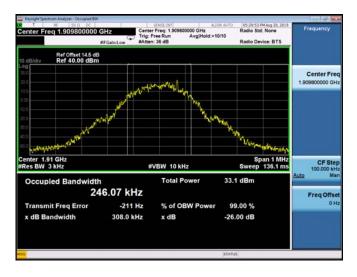




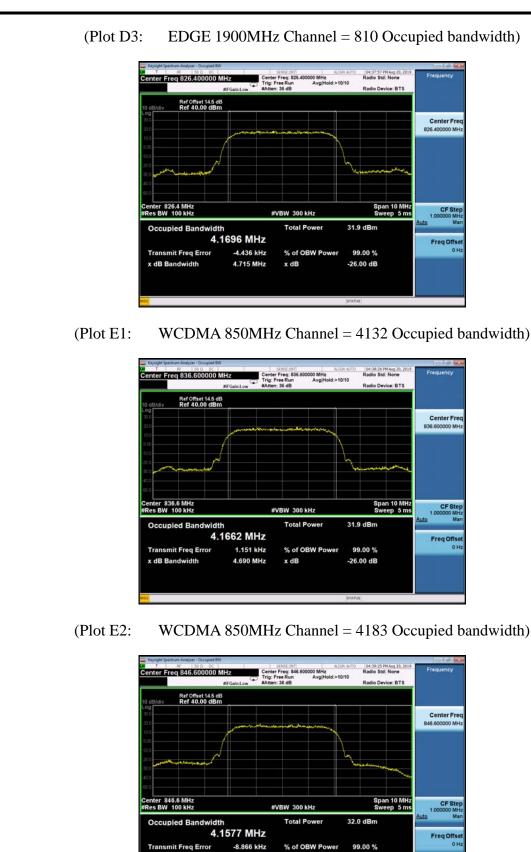
(Plot D1: EDGE 1900MHz Channel = 512 Occupied bandwidth)











IB Bandwidth

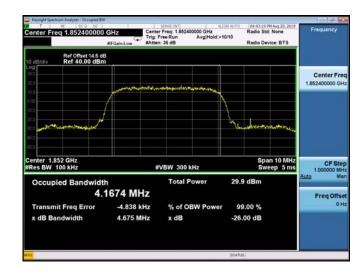
4.683 MHz

x dB

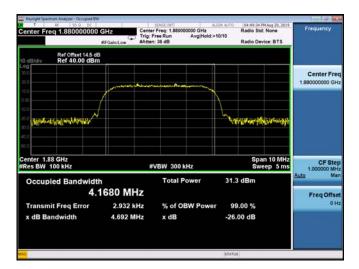
-26.00 dB



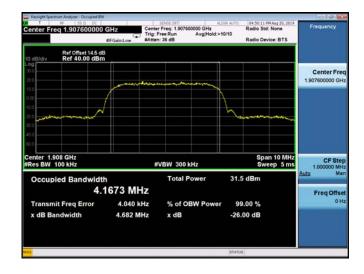
(Plot E3: WCDMA 850MHz Channel = 4233 Occupied bandwidth)



(Plot F1: WCDMA 1900MHz Channel = 9262 Occupied bandwidth)

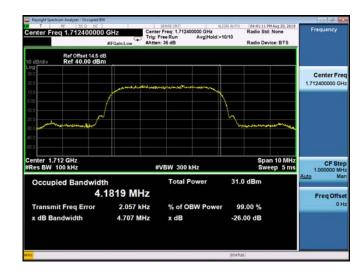


(Plot F2: WCDMA 1900MHz Channel = 9400 Occupied bandwidth)

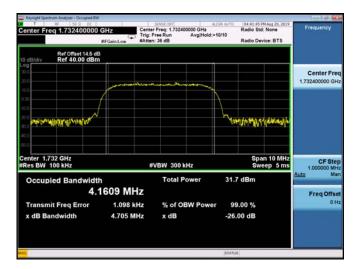




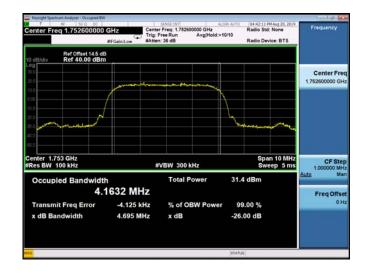
(Plot F3: WCDMA 1900MHz Channel = 9538 Occupied bandwidth)



(Plot G1: WCDMA 1700MHz Channel = 1312 Occupied bandwidth)



(Plot G2: WCDMA 1700MHz Channel = 1412 Occupied bandwidth)





(Plot G3: WCDMA 1700MHz Channel = 1513 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 $\pm 0.00025\%$ (± 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

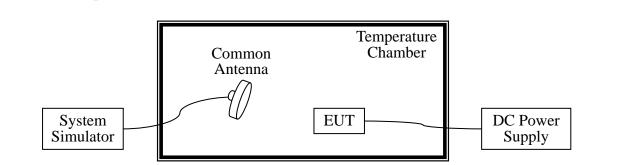
- 1. The testing follows FCC KDB 971168 D01 v03r01 Section 9.0.
- 2. The EUT was set up in the thermal chamber and connected with the system simulator.
- 3. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency 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		
D	TT (GSM	EDGE			
Power (VDC)	Temperatu	ire	Deviation	Deviation	Result		
(VDC)	(°C)		(ppm)	(ppm)			
	-30		0.0016	0.0028			
	-20		0.0002	0.0021			
	-10		0.0009	0.0013			
	0		0.0023	0.0027			
3.85	+10		0.0009	0.0010			
	+20		0.0035	0.0012	PASS		
	+30		0.0021	0.0018			
	+40		0.0019	0.0024			
	+50		0.0029	0.0022			
4.2	+25		0.0032	0.0021			
3.5	+25		0.0005	0.0024			



GSM 1900MHz Band

Band:		GS	M 1900	Channel:	661
Limit(ppm):		2.5		Frequency:	1880.0MHz
Power	Temperatu	ıre	GSM	EDGE	
(VDC)	(°C)	*10	Deviation	Deviation	Result
	(0)		(ppm)	(ppm)	
	-30		0.0029	0.0040	
	-20		0.0036	0.0037	
	-10		0.0035	0.0028	
	0		0.0026	0.0020	
3.85	+10		0.0023	0.0030	
	+20		0.0028	0.0036	PASS
	+30		0.0038	0.0028	
	+40		0.0026	0.0019	
	+50		0.0034	0.0041	
4.2	+25		0.0036	0.0026	
3.5	+25		0.0031	0.0036	

WCDMA 850MHz Band

Band:	WCDMA Ba	nd V Channel:	4183
Limit(ppm)	2.5	Frequency:	836.6MHz
Power (VDC)	Temperature (℃)	RMC 12.2Kbps Deviation (ppm)	Result
	-30 -20 -10	0.0013 0.0027 0.0027	
3.85	0 +10	0.0027	
	+20 +30	0.0044 0.0021	PASS
	+40 +50	0.0029 0.0022	
4.2	+25	0.0040	
3.5	+25	0.0037	



WCDMA 1900MHz Band WCDMA Band II Channel: 9400 Band: Limit(ppm): 2.5 Frequency: 1880.0MHz RMC 12.2Kbps Temperature Power Deviation Result (VDC) (°C) (ppm) -30 0.0024 -20 0.0013 -10 0.0021 0 0.0030 +103.85 0.0027 +200.0039 PASS +300.0015 +400.0020 +500.0021 4.2 +250.0028 3.5 +250.0014

WCDMA 1700MHz Band

Band:		WCDMA	Band IV	Channel:		1412		
Limit(ppm):		2.5	Frequency:			1732.4MHz		
Power (VDC)	-	perature	RMC 12.2Kbps Deviation (ppm) 0.0036			Result		
		-30 -20		0.0019				
2.05	-10 0		0.0029 0.0033					
3.85	-	+10 +20	0.0028 0.0023			PASS		
	+30 +40		0.0015 0.0034					
4.2		+50 +25	0.0030 0.0019			-		
3.5	-	+25		0.0034				



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.

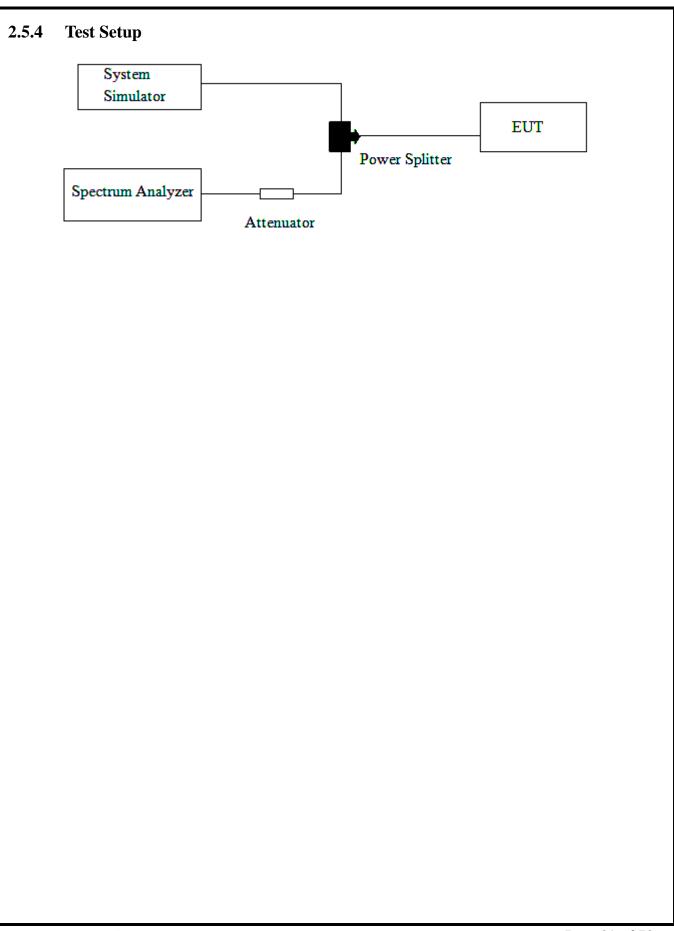
2.5.3 Test Procedures

- 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 + 10log(P)] (dBm) [43 + 10log(P)] (dB)
- = -13dBm.
- 8. 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.

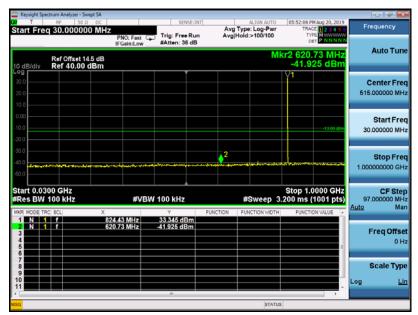


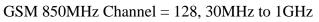




2.5.5 Test Result (Plots) of Conducted Spurious Emission

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.





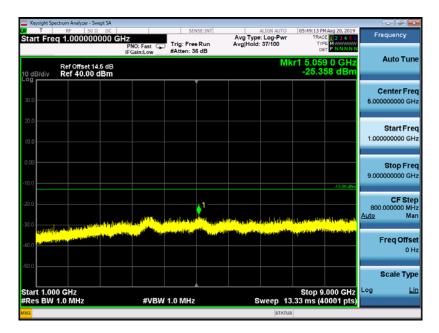


GSM 850MHz Channel = 128, 1GHz to 9GHz



tart Fre	RF 50	Q DC	SENSE:IN Trig: Free Run #Atten: 36 dB	Ave	ALIGN AUTO Type: Log-Pwr Hold:>100/100	05:51:39 PM Aug 20, 201 TRACE 1 2 3 4 5 TYPE M	Frequency		
10 dB/div									
30.0 20.0 10.0						Ŷ1	Center Fre 515.000000 Mi		
0.00							Start Fre 30.000000 M		
30.0 -40.0 -50.0	muhi munihinu	uturan jungation on a constraint of the		un an	2		Stop Fr 1.000000000 G		
	300 GHz / 100 kHz	#VE	3W 100 kHz		#Sweep 3.	Stop 1.0000 GH 200 ms (1001 pts	CF Sto 97.000000 M Auto M		
2 N 3 4 5 6	rac scl	× 837.04 MHz 695.42 MHz	Y 33,200 dBm 42.227 dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	Freq Offs		
7 8 9 10							Scale Typ		

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



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



Keysight op	RF 50 Q		SENSE:IN		ALIGN AUTO	05:51:17 P	MAug 20, 2019		_
Start Fre	q 30.000000	MHz PNO: Fast	Trig: Free Run #Atten: 36 dB	Avg Avg	Type: Log-Pwr Hold:>100/100	TRAC	PE NNNNN	Frequen	÷У
10 dB/div	Ref Offset 14.5 Ref 40.00 dl				Μ		52 MHz 87 dBm	Auto	Tur
30.0 20.0 10.0						\ 		Center 515.00000	
0.00 -10.0 -20.0							-10.00 dDm	Star 30.00000	
-30.0 -40.0 -60.0		ayay ay ar an	an an gang tang tang tang tang tang tang	Manufal part of terminal spars	2 		****	Stop 1.00000000	
Start 0.03 #Res BW		#VB	W 100 kHz		#Sweep 3	Stop 1.0 .200 ms (0000 GHz 1001 pts)	97.00000	
MKR MODE TI	RC SCL	× 849.65 MHz	ې 33.241 dBm	FUNCTION	FUNCTION WIDTH	FUNCTI	DN VALUE	Auto	M
1 N 1 2 N 1 3 4 5 6		849.65 MHz 724.52 MHz	-41.387 dBm					Freq	Offs 0 I
7 8 9								Scale	Ту
10							-	Log	L
80					STATU	5			_

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

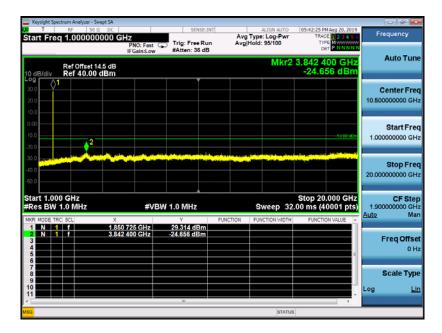


GSM 850MHz Channel = 251, 1GHz to 9GHz



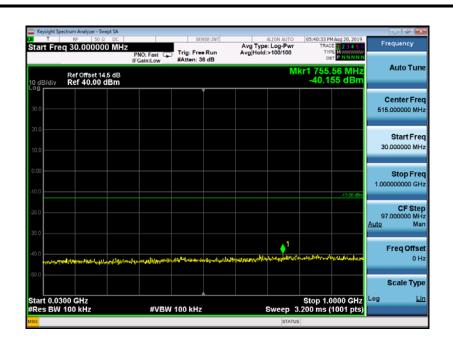
Keysight Spect	trum Analyzer - Swept SA								-	- 🖉 🛋
Start Freq	RF 50 Q DC 30.000000 MHz	PNO: Fast	Trig: Free #Atten: 3		Avg Type Avg Hold	ALIGN AUTO E: Log-Pwr :>100/100	TRA	MAUG 20, 2019 CE 1 2 3 4 5 6 PE MUNICIPAL ENDER ET P N N N N N	Fred	uency
10 dB/div	Ref Offset 14.5 dB Ref 40.00 dBm	I Galillow				Μ		.74 MHz 26 dBm	A	uto Tun
30.0										nter Fre 00000 MH
20.0										Start Fre
-10.0								-13.00 dBm		Stop Fre
-20.0									97.0 <u>Auto</u>	CF Step 00000 MH Ma
40.0	alasmalades, Jabum ¹ dua (mili)	Serigian second and	رور میلانومو رو	iging-ant-lu	usteration to play	mulantera	1 Landorbentern	in the second	Fr	eq Offse 0 H
-50.0									S	cale Typ
Start 0.030 #Res BW 1		#VBW	100 kHz			Sweep 3		0000 GHz (1001 pts)	Log	Li

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



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



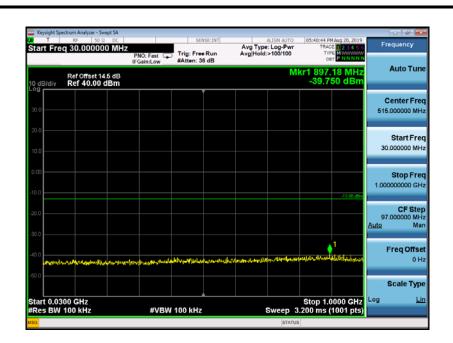


GSM 1900MHz Channel = 661, 30MHz to 1GHz

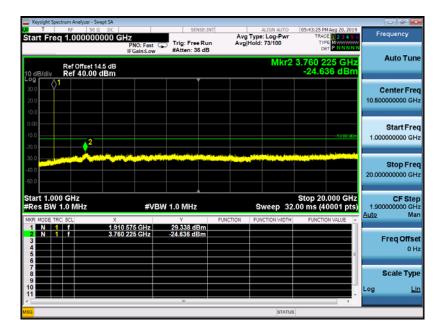


GSM 1900MHz Channel = 661, 1GHz to 20GHz





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



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



RF 50 1	R DC	SENSE:IN		ALIGN AUTO	05:53:44 PM Aug 20, 2019			
q 30.0000		Trig: Free Run #Atten: 36 dB	Avg Avg	g Type: Log-Pwr Hold:>100/100	TRACE 1 2 3 4 5 TYPE MWWWW DET P NNNN			
Ref Offset 14.5 dB Mkr2 673.11 MHz 0 dB/dlv Ref 40.00 dBm -41.962 dBm								
					Ŷ1	Center Fre 515.000000 MH		
					-13.00 dDr	Start Fre 30.000000 MF		
and market and	แก้สาวแปลที่สางค่าสาวการแกรงแ	and the fourth and a survey	nuu ya na dha ya dha "	2	, and an and a second s	Stop Fre 1.000000000 GF		
	#VE	BW 100 kHz		#Sweep 3	Stop 1.0000 GHz 2.00 ms (1001 pts	97.000000 Mi		
	X	Y 22.020 - 10	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	Auto Ma		
	824.43 MHZ 673.11 MHz	-41.962 dBm				Freq Offs 01		
						Scale Typ		
						Log L		
	RF 0ffset 1 Ref 0ffset 1 Ref 40.00	q 30.000000 MHz PNO; Fast If Gain:Low Ref Offset 14.5 dB Ref 40.00 dBm 4 0.00 dBm 4	Ref 0ffset 14.5 dB Trig: Free Run (FGainLow Trig: Free Run (FGainLow Ref 0ffset 14.5 dB Trig: Free Run (FGainLow) Trig: Free Run (FGainLow) Trig: Free Run (FGainLow) 300 OHz Trig: Free Run (FGainLow) Trig: Free Run (FGainLow) Trig: Free Run (FGainLow) 300 OHz Trig: Free Run (FGainLow) Trig: Free Run (FGainLow) Trig: Free Run (FGainLow) 300 OHz Trig: Free Run (FGainLow) Trig: Free Run (FGainLow) Trig: Free Run (FGainLow) 300 OHz Trig: Free Run (FGainLow) Trig: Free Run (FGainLow) Trig: Free Run (FGainLow) 300 OHz Trig: Free Run (FGainLow) Trig: Free Run (FGainLow) Trig: Free Run (FGainLow) 300 OHz Trig: Free Run (FGainLow) Trig: Free Run (FGainLow) Trig: Free Run (FGainLow) 300 OHz Trig: Free Run (FGainLow) Trig: Free Run (FGainLow) Trig: Free Run (FGainLow) 1 824.43 MHz Trig: Free Run (FGainLow) Trig: Free Run (FGainLow)	Ref 0.00 DC SENSE.INT Avg PNO: Fait If Gain:Low Trig: Free Run #Atten: 36 dB Avg Ref 0ffset 14.5 dB Ref 40.00 dBm Image: Sense Run #Atten: 36 dB Avg Solo DC Image: Sense Run #Atten: 36 dB Image: Sense Run #Atten: 36 dB Avg Solo DC Image: Sense Run #Atten: 36 dB Image: Sense Run #Atten: 36 dB	Ref 0.00 DC Sense:IntT Austenanto PNO: Fast Trig: Free Run Avg Type: Log-Pvr Avg Type: Log-Pvr Ref 0ffset 14.5 dB Mill Mill Mill Ref 40.00 dBm Mill Mill Avg Type: Log-Pvr Solo GHz Mill Mill Avg Type: Log-Pvr Solo GHz Mill Mill Avg Type: Log-Pvr Solo GHz Mill Mill Mill Solo GHz #VBW 100 kHz #Sweep 3 Rcl Sol_ X Y Punction Function	Ref Offset 14.5 dB Ref 40.00 dBm Mkr 2 File Aug Murror File Mkr 2 File Aug Murror File State File Mkr 2 File File Mkr 2 File File Mkr 2 File File Mkr 2 File File File		

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



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



IFGain et 14.5 dB .00 dBm	Low	#Atten: 36 db			Mkr2 66	3.41 MHz 487 dBm	C(515.0	Auto Tun enter Fre 000000 MH Start Fre 000000 MH
					91 	-12.00 dDm	515.0	000000 M⊢ Start Fre
						-10.00 dDm		
1997-1999-1-1-1999-1-1999	*****	-17-20-2-4-5-4-5-4-6-6-6-6-6-6-6-6-6-6-6-6-6-6-6	af agtree (1994 an an 1984 (2	angly-aged lasters	upo pisali lumana		Stop Fre
	#VBW 1	100 kHz		#Swee	Stop 32.00 m	1.0000 GHz s (1001 pts)		CF Ste 000000 MI M
			FUNCTION	FUNCTION W	IDTH FUN	CTION VALUE		req Offs 0 I
							S	Scale Typ
	× 837.04 M	× 837.04 MHz	X Y 837.04 MHz 33.122 dBm	X Y FUNCTION 837.04 MHz 333.122 dBm 663.41 MHz -43.487 dBm	X Y FUNCTION FUNCTION OF UNCTION V 837.04 MHz 33.122 dBm 663.41 MHz -43.487 dBm	#VBW 100 kHz #Sweep 32.00 m X Y 837.04 MHz 33.122 dBm 663.41 MHz -43.487 dBm	X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE A 8372 04 MHz 333 122 6 Bm 663 41 MHz -43 487 d Bm 	#VBW 100 kHz #Sweep 32.00 ms (1001 pts) 97.4 X37.04 MHz Y FUNCTION FUNCTION WIDTH FUNCTION VALUE Auto 663.41 MHz -43.487 dBm FUNCTION FUNCTION WIDTH FUNCTION VALUE FUNCTION VALUE <t< td=""></t<>

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

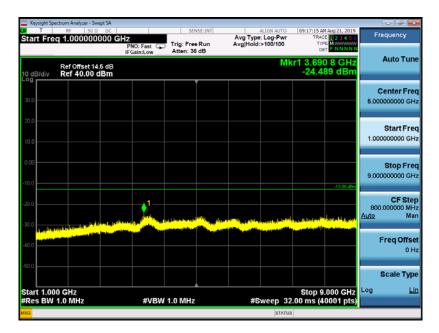


EDGE 850MHz Channel = 190, 1GHz to 9GHz



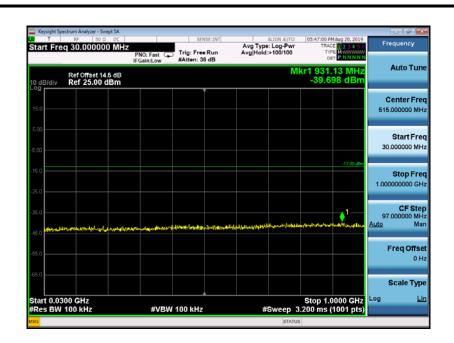
MHZ PNO: Fast Galmilow S dB Bm	#Atten: 36 dB	Avg	ALISN AUTON Type: Log-Pwr Hold:>100/100	TRAC TYI DI	MA UN 20, 2019 CE 12 3 4 5 0 PE MANAGEMENT 64 MHz 89 dBm 	Cer 515.00 \$ 30.00	uto Tun nter Fre 100000 MH tart Fre 100000 MH
Bm				-43.2	89 dBm	Cer 515.00 30.00	nter Fre 20000 MH tart Fre 20000 MH
						515.00 S 30.00	10000 MF
Jahr full and Descent Ann Descent Ann	ha and a second second second		and a start of the		-10.00 dDn	30.00	00000 MH
parature parate	hannan an daile		and and a state of the state of			S	ton Fre
					*****************	1.00000	00000 GH
#VB	W 100 kHz		#Sweep 32	Stop 1.0 2.00 ms (0000 GHz (1001 pts)		CF Ste
× 848.68 MHz	Y 33.152 dBm	FUNCTION	FUNCTION WIDTH	FUNCTI	ION VALUE	Auto	Ma
623.64 MHz	-43.289 dBm				_	Fre	e q Offs 0 I
						So	ale Typ
						Log	L
			623.64 MHz 43.289 dBm	623.64 MHz 43.289 dBm	623.64 MHz 43.289 dBm	623.64 MHz -43.289 dBm	623.64 MHz 43.289 dBm

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

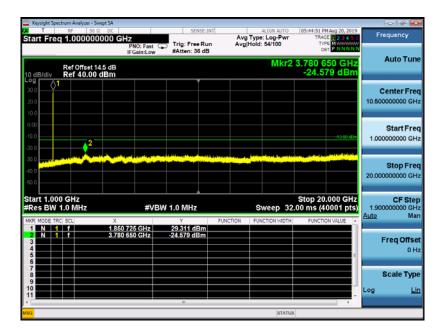


EDGE 850MHz Channel = 251, 1GHz to 9GHz



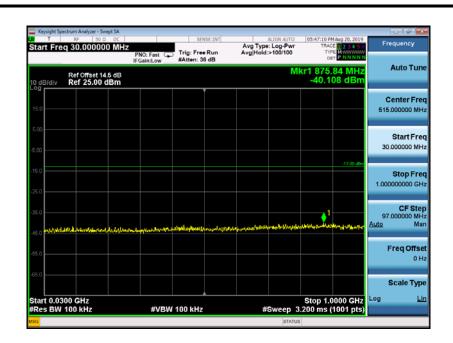


EDGE 1900MHz Channel = 512, 30MHz to 1GHz



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



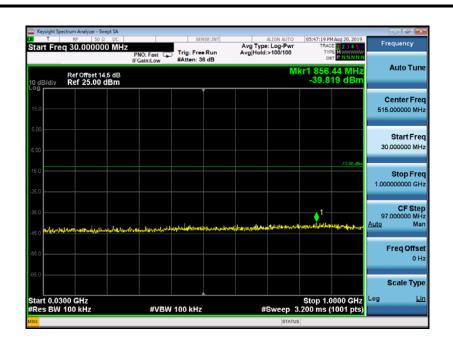


EDGE 1900MHz Channel = 661, 30MHz to 1GHz

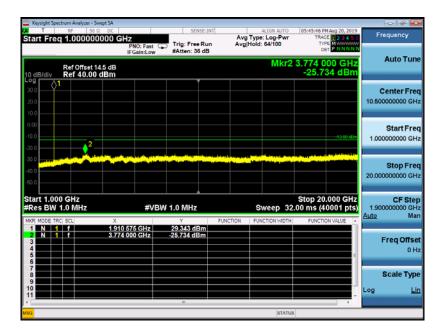


EDGE 1900MHz Channel = 661, 1GHz to 20GHz





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



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



tart Erec			SENSE:IN		ALIGN AUTO	04:15:36 PM Aug 20, 2019	
laitiret	RF 50 Ω DC 30.000000 MHz	PNO: Fast		Avg	Type: Log-Pwr Hold:>100/100	TRACE 2 3 4 5 TYPE NNNN	Frequency
0 dB/div	Ref Offset 14.5 dB Ref 40.00 dBm	IFGain:Low	#Atten: 36 dB		М	kr2 880.69 MHz -40.326 dBm	
- og 30.0 20.0						A 1	Center Fre 515.000000 MH
0.00						-10.00 dDr	Start Fre 30.000000 Mi
30.0 40.0 50.0		at a large from the second pr	ant in the second			<u>}</u>	Stop Fre 1.000000000 GF
start 0.030 Res BW		#VB\	N 100 kHz		Sweep 3	Stop 1.0000 GHz .200 ms (1001 pts)	CF Ste 97.000000 M Auto M
MKR MODE TRO	1 8	25.4 MHz 80.7 MHz	Y 20.115 dBm -40.326 dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	Freq Offs 01
7 8 9							Scale Typ
11						· · ·	Log <u>L</u>

WCDMA850MHz Channel = 4132, 30MHz to 1GHz



WCDMA850MHz Channel = 4132, 1GHz to 9GHz



	m Analyzer - Swept SA RF 50 Q DC		SENSE:INT		ALIGN AUTO	04:16:24 PM Aug 20, 2019	
Start Freq 3	30.000000 MHz	PNO: Fast G	Trig: Free Run #Atten: 36 dB	Avg Avgi	Type: Log-Pwr Hold:>100/100	TRACE 1 2 3 4 5 6 TYPE MUNITIVE DET PNNNNN	Frequency
0 dB/div	Ref Offset 14.5 dB Ref 40.00 dBm				M	r2 894.27 MHz -41.459 dBm	Auto Tur
.og 30.0						1	Center Fre
20.0							515.000000 Mi
10.00						-10.00 dDm	Start Fr 30.000000 M
20.0							30.00000 M
30.0 40.0	A-gelowel adversaria	an al an al an al an al an al an al an	-	and the second state	م در المحالية	2	Stop Fr 1.00000000 G
50.0							
tart 0.0300 Res BW 10		#VBN	/ 100 kHz		Sweep 3	Stop 1.0000 GHz .200 ms (1001 pts)	CF Ste 97.000000 Mi Auto M
KR MODE TRC S		38.01 MHz	Y 20.551 dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	Auto M
2 N 1 3 4 5 6	f 8	94.27 MHz	-41.459 dBm			E	Freq Offs 0
7 8 9							Scale Ty
							Log L

WCDMA850MHz Channel = 4183, 30MHz to 1GHz



WCDMA850MHz Channel = 4183, 1GHz to 9GHz



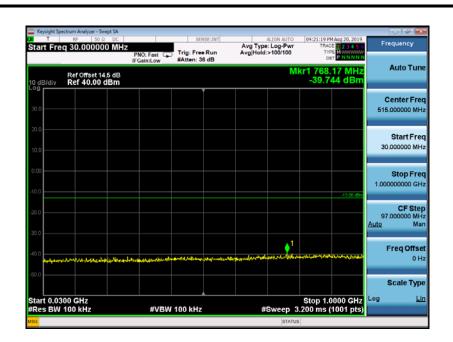
T	ectrum Analyzer - S RF 50 q 30.0000	Ω DC DO MHZ PNO	:Fast G	Trig: Free Ru #Atten: 36 dB	Avg	ALIGN AUTO Type: Log-Pwr Hold:>100/100	04:17:29 PM Aug 20, 20 TRACE 2 3 4 TYPE M DET P N N N	Frequency
0 dB/div	Ref Offset 1 Ref 40.00					M	kr2 915.61 MH -40.909 dBr	Z Auto Tur
-og 30.0 20.0 10.0							0 ¹	Center Fre 515.000000 MH
0.00							-10.00 at	Start Fre 30.000000 Mi
30.0 40.0 50.0		na shika dalara na		and all and a support of the support	ugan (ni unini na mangu /h			Stop Fre
Start 0.03 Res BW	100 kHz	×	#VBV	√ 100 kHz	FUNCTION	Sweep 3	Stop 1.0000 GH 200 ms (1001 pt FUNCTION VALUE	
1 N 1 2 N 1 3 4 5 6		845.77 N 915.61 N		19.709 dBm -40.909 dBm				Freq Offs 01
6 7 8 9								Scale Typ
							•	- Log _

WCDMA850MHz Channel = 4233, 30MHz to 1GHz



WCDMA850MHz Channel = 4233, 1GHz to 9GHz



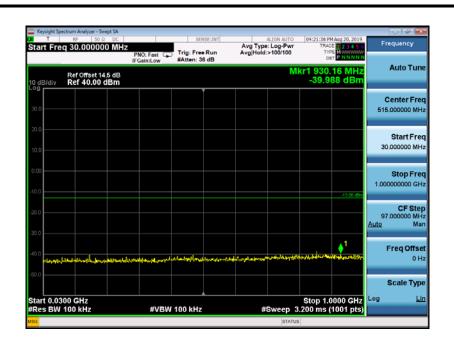


WCDMA1900MHz Channel = 9262, 30MHz to 1GHz

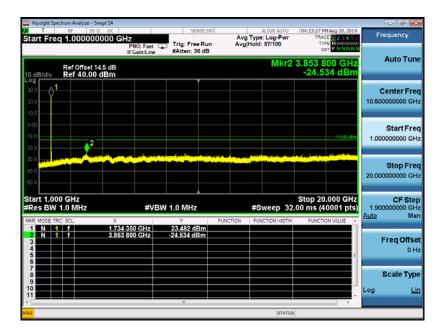


WCDMA1900MHz Channel = 9262, 1GHz to 20GHz



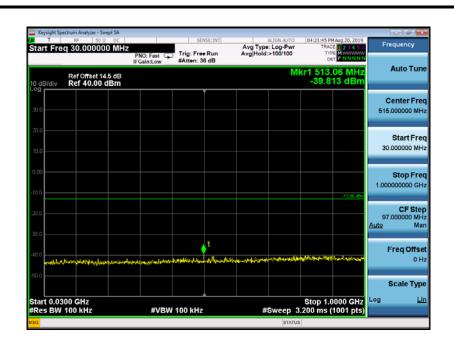


WCDMA1900MHz Channel = 9400, 30MHz to 1GHz



WCDMA1900MHz Channel = 9400, 1GHz to 20GHz



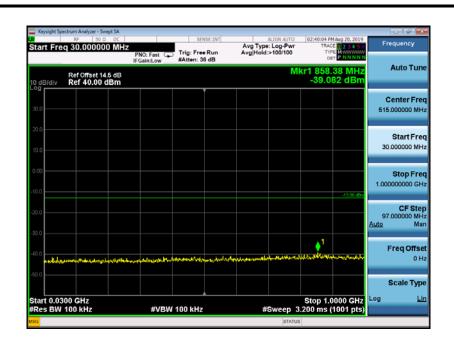


WCDMA1900MHz Channel = 9538, 30MHz to 1GHz

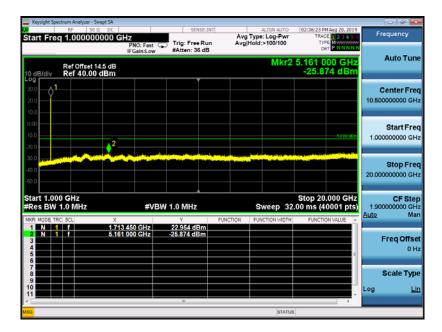


WCDMA1900MHz Channel = 9538 1GHz to 20GHz





WCDMA1700MHz Channel = 1312, 30MHz to 1GHz



WCDMA1700MHz Channel = 1312, 1GHz to 18GHz