

RF TEST REPORT

Report No.: SET2020-01327

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

FCC ID: SRQ-ZTEA320201

Model No.: ZTE Blade A3 2020

Marketing Name: ZTE Blade A3 2020, Blade A3 2020

Applicant: ZTE Corporation.

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

Dates of Testing: 02/10/2020 -03/05/2020

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 2020.03.11			
Vincent, Test Engineer			
Chris 1 on 2020.03.11			
Chris You, Senior Engineer			
Shuangwan Zhang 2020.03.11			
Shuangwen Zhang, Manager			



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Change History				
Issue	Date	Reason for change		
1.0	2020.03.11	First edition		



1. GENERAL INFORMATION

1.1 EUT Description

EUT Type	LTE/WCDMA/GSM(GPRS) Multi-Mode Digital Mobile Phone
EUT supports Radios application	GSM850/900/1800/1900MHz
EOT supports Kadios application	WCDMA Band 2/5
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);
Energy and Damag	Rx: 1930.2 - 1989.8MHz (at intervals of 200kHz)
Frequency Range	WCDMA 850MHz
	Tx: 826.4 - 846.6MHz (at intervals of 200kHz);
	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)
	GSM 850: 32.90dBm
	GSM 1900: 29.50dBm
Maximum Output Power to	EDGE 850: 25.70dBm
Antenna	EDGE 1900: 25.70dBm
	WCDMA 850: 23.01dBm
	WCDMA 1900: 22.91dBm
	GSM / GPRS:GMSK
	EDGE:GMSK / 8PSK
Type of Modulation	WCDMA: QPSK(Uplink)
	HSDPA:QPSK(Uplink)
	HSUPA:QPSK(Uplink)
Antenna Type	Internal Antenna



1.2	2 Maximum Designator		Power, Freq	quency Tolerance	e, and Emission
	System	Type of Modulation	Emission Designator	Frequency Tolerance (ppm)	Maximum ERP/EIRP(W)
	GSM 850	GMSK	250KGXW	0.064	1.409
	GSM 1900	GMSK	247KGXW	0.068	0.573
	EDGE 850	8PSK	247KG7W	0.07	0.366
	EDGE 1900	8PSK	246KG7W	0.066	0.384
	WCDMA 850 RMC 12.2Kbps	QPSK	4M16F9W	0.0068	0.232
	WCDMA 1900 RMC 12.2Kbps	QPSK	4M16F9W	0.0078	0.211





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	Liiiit	Kesuit
1	2.1046	Conducted Output Power	Reporting Only	PASS
2	24.232(d)	Peak to Average Radio	<13dBm	PASS
2	27.50(d)	Teak to Average Radio		IASS
	2.1049			
3	22.917(b)	Occupied Bandwidth	Reporting Only	PASS
5	24.238(b)	Occupied Baildwidth	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			PASS
5	22.917	Conducted Out of Band	< 43+10log10	
3	24.238	Emissions	(P[Watts])	
	27.53			
	2.1051			
6	22.917	Pand 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





	2.1053			
o	22.917	Radiated Spurious	< 43+10log10	DACC
0	24.238	Emissions	(P[Watts])	PASS
	27.53			

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.

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	Conducted TCs				
GSM 850	GPRS Link	GPRS Link			
	GPRS Link	GPRS Link			
GGN 6 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			

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, 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°C-35°C
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	32.9	PASS
GSM 850MHz	190	836.6	32.7	PASS
83014112	251	848.8	32.5	PASS
COM	512	1850.2	29.4	PASS
GSM 1900MHz	661	1880.0	29.3	PASS
1900MHZ	810	1909.8	29.5	PASS
CDDS	128	824.2	32.9	PASS
GPRS	190	836.6	32.8	PASS
850MHz	251	848.8	32.8	PASS
CDDS	512	1850.2	29.7	PASS
GPRS	661	1880.0	29.9	PASS
1900MHz	810	1909.8	29.8	PASS
EDCE	128	824.2	25.7	PASS
EDGE 850MHz	190	836.6	25.7	PASS
850MHz	251	848.8	25.6	PASS
EDCE	512	1850.2	25.7	PASS
EDGE	661	1880.0	25.5	PASS
1900MHz	810	1909.8	25.6	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)
(В	and II)	9262CH	9400CH	9538cH
WCDMA	VCDMA 12.2kbps RMC		22.81	22.91
	Subtest 1	22.05	22.13	22.23
HSDPA	Subtest 2	21.64	21.72	21.82
ISDFA	Subtest 3	21.25	21.33	21.43
	Subtest 4	21.04	21.12	21.22
	Subtest 1	22.55	22.36	22.37
	Subtest 2	22.1	21.91	21.99
HSUPA	Subtest 3	21.71	21.52	21.6
	Subtest 4	21.43	21.24	21.32
	Subtest 5	21.24	21.05	21.13
UN	1TS850	Average Power (dBm)		
(B	and V)	4132CH	4183CH	4233CH
WCDMA	12.2kbps RMC	22.83	23.01	22.92
	Subtest 1	22.15	22.33	22.24
	Subtest 2	04 74		
	Sublest 2	21.74	21.92	21.83
HSDPA	Subtest 2 Subtest 3	21.74 21.35	21.92 21.53	21.83 21.44
HSDPA				
HSDPA	Subtest 3	21.35	21.53	21.44
HSDPA	Subtest 3 Subtest 4	21.35 21.14	21.53 21.32	21.44 21.23
HSDPA	Subtest 3 Subtest 4 Subtest 1	21.35 21.14 22.65	21.53 21.32 22.56	21.44 21.23 22.37
	Subtest 3 Subtest 4 Subtest 1 Subtest 2	21.35 21.14 22.65 22.2	21.53 21.32 22.56 22.11	21.44 21.23 22.37 22



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:

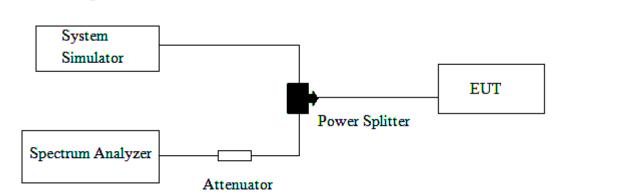
a. Set the CCDF (Complementary Cumulative Distribution Function) option on the spectrum analyzer.

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	Verdict
	Channel	(MHz)	dB	dB	verdict
CSM	512	1850.2	0.2		PASS
GSM 1000MUz	661	1880.0	0.4	13	PASS
1900MHz	810	1909.8	0.3		PASS
EDCE	512	1850.2	2.8		PASS
EDGE 1900MHz	661	1880.0	3.4	13	PASS
1900/01112	810	1909.8	3.0		PASS
WCDMA	9262	1852.4	3.03		PASS
WCDMA 1900MHz	9400	1880.0	3.08	13	PASS
	9538	1907.6	2.90		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.

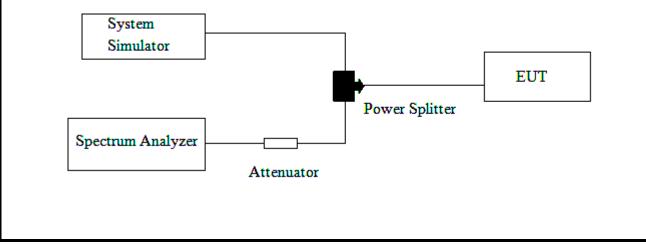
3. The RF output of the EUT was connected to the spectrum analyzer by RF cable and attenuator.

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



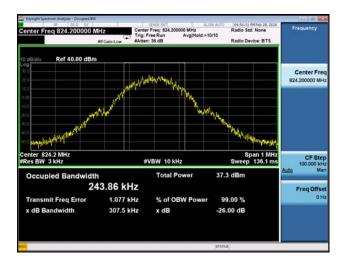


Band	Channel	Frequency (MHz)	26dB bandwidth (KHz)	99% Occupied Bandwidth (KHz)	Refer to Plot
	128	824.2	307.5	243.86	Plot A1
GSM 850MHz	190	836.6	317.7	250.28	Plot A2
	251	848.8	316.0	246.35	Plot A3
	512	1850.2	323.2	246.86	Plot B1
GSM 1900MHz	661	1880.0	312.7	246.87	Plot B2
	810	1909.8	313.2	244.11	Plot B3
	128	824.2	311.9	241.82	Plot C1
EDGE 850MHz	190	836.6	312.8	241.10	Plot C2
	251	848.8	318.6	246.66	Plot C3
	512	1850.2	308.3	245.93	Plot D1
EDGE 1900MHz	661	1880.0	291.3	243.24	Plot D2
	810	1909.8	314.1	240.53	Plot D3
	4132	826.4	4677	4152.9	Plot E1
WCDMA 850MHz	4183	836.6	4664	4151.9	Plot E2
	4233	846.6	4674	4155.1	Plot E3
	9262	1852.4	4676	4157.4	Plot F1
WCDMA 1900MHz	9400	1880	4665	4154.2	Plot F2
	9538	1907.6	4676	4156.8	Plot F3

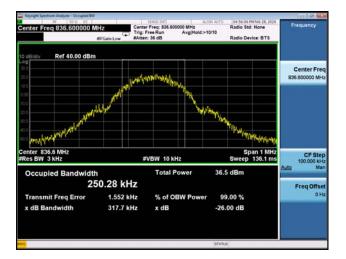
2.3.5 Test Results of 99% Occupied Bandwidth and 26dB Bandwidth



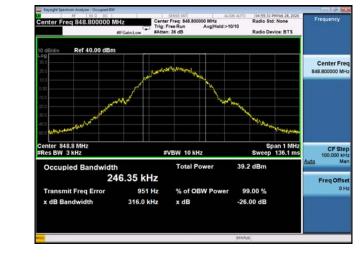
2.3.6 Test Results (Plots) of 99% Occupied Bandwidth and 26dB Bandwidth



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

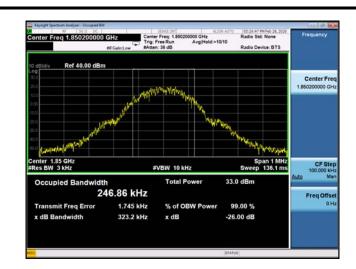


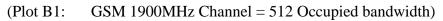
(Plot A2: GSM 850MHz Channel = 190 Occupied bandwidth)

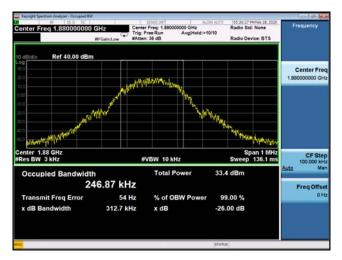


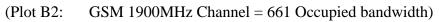
(Plot A3: GSM 850MHz Channel = 251 Occupied bandwidth)

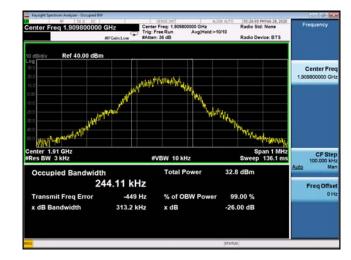






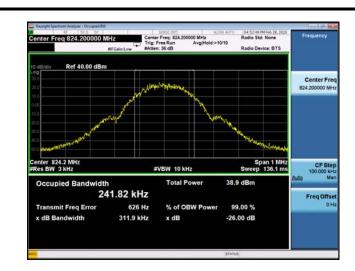


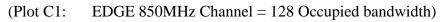




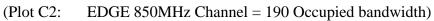
(Plot B3: GSM 1900MHz Channel = 810 Occupied bandwidth)

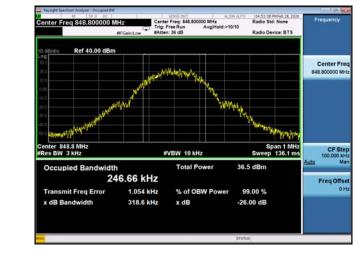






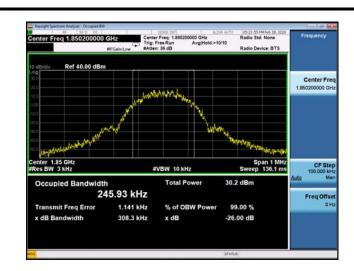


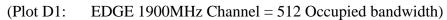




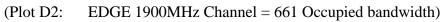
(Plot C3: EDGE 850MHz Channel = 251 Occupied bandwidth)

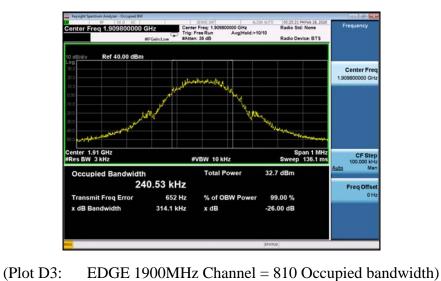






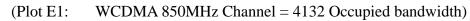


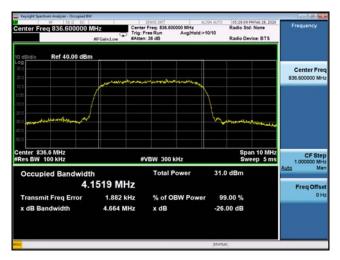




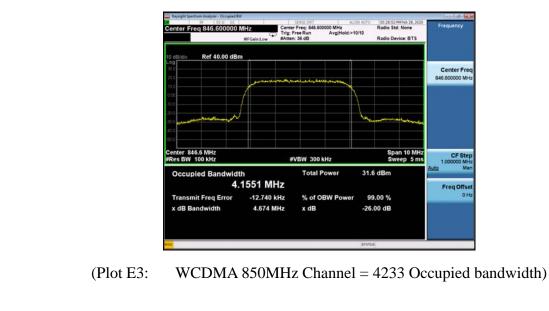


Center Freq 826.400000 M	Trig:	5ENSE 341 4. r Freq: 828.400000 MHz Free Run Avg Hold:>1 n: 36 dB	Radio S	7 PM Feb 28, 2020 td: None evice: BTS	Frequency
10 dB/div Ref 40.00 dBm					
30.0 20.0		and another Monte on the second			Center Free 826.400000 MH
10.0	P		1		
10.0					
200 months and			have	manner	
42.0					
50.0					
Center 826.4 MHz #Res BW 100 kHz		VBW 300 kHz	S	oan 10 MHz weep 5 ms	CF Ste 1.000000 MH
Occupied Bandwidt	1 I	Total Power	31.9 dBm		Auto Ma
4.	1529 MHz				Freq Offse
Transmit Freq Error	3.537 kHz	% of OBW Power	99.00 %		он
x dB Bandwidth	4.677 MHz	x dB	-26.00 dB		
HSG .			STATUS		





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



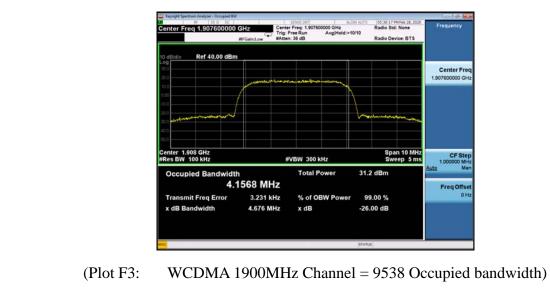


enter Freq 1.852400000	Trig: 1	r Freq: 1.852400000 GHz Free Run Avg Hold:> h: 36 dB	Radio St 10/10	PMFeb 28, 2020 d: None wice: BTS	Frequency	
IO dB/div Ref 40.00 dBn	1					
10 0 20 0		and the strategy of the second			Center Free 1.852400000 GH	
10.0	Proventalionana	and added to the section and a	C.	-		
0.00	/					
200 martin and and			homen	allow and and		
43.0 50.0						
Center 1.852 GHz #Res BW 100 kHz		VBW 300 kHz		an 10 MHz eep 5 ms	CF Ste 1.000000 MH	
Occupied Bandwidt	h	Total Power	31.0 dBm	31.0 dBm		
4.	1574 MHz				Freq Offse	
Transmit Freq Error	2.405 kHz	% of OBW Power	99.00 %		он	
x dB Bandwidth	4.676 MHz	x dB	-26.00 dB			



Keysight Spectrum Analyzer - Occupied BW	5) AV	SONG INT	ALIGN AUTO	05:29:58 PM Feb	0 0 0
Center Freq 1.880000000 (Trig:	Center Freq: 1.88000000 GHz Trig: Free Run Avg/Hold:>10/10 #Atten: 36 dB			BTS
10 dB/div Ref 40.00 dBm					
30.0 20.0	Strengt - Angel	and the second second			Center Freq 1.880000000 GHz
10.0			1		
10.0					
200			~	at the state of the states	****
60.0					
Center 1.88 GHz #Res BW 100 kHz	-	VBW 300 kHz		Span 1 Sweep	5 ms 1.000000 MHz
Occupied Bandwidth		Total Power	31.	3 dBm	<u>Auto</u> Man
	542 MHz				Freq Offset
Transmit Freq Error x dB Bandwidth	4.835 kHz 4.665 MHz	% of OBW Po x dB		9.00 % .00 dB	0 Hz
HIQ			STATU	15	

(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 $\pm 0.00025\%$ (± 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

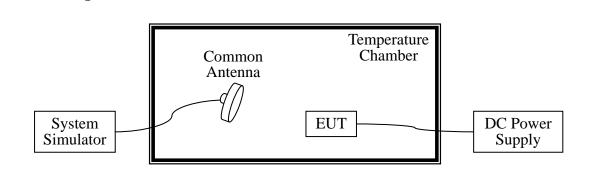
- 1. The testing follows FCC KDB 971168 D01 v03r01 Section 9.0.
- 2. The EUT was set up in the thermal chamber and connected with the system simulator.
- 3. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency 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		
Douvon	Tommonoto	1400	GSM	EDGE			
Power (VDC)	Temperatu	ire	Deviation	Deviation	Result		
(VDC)	(°C)		(ppm)	(ppm)			
	-30		0.064	0.042			
	-20		0.053	0.070			
	-10		0.052	0.035			
	0		0.035	0.044			
3.87	+10		0.041	0.044			
	+20		0.052	0.037	PASS		
	+30		0.047	0.032	1		
	+40		0.042	0.035			
	+50		0.054	0.032			
4.2	+25		0.043	0.032			
3.5	+25		0.039	0.028			



GSM 1900MHz Band

Band:		GS	SM 1900	Channel:	661
Limit(ppm):		2.5		Frequency:	1880.0MHz
Power	Temperatu	ıre	GSM	EDGE	
(VDC)	(°C)		Deviation	Deviation	Result
(VDC)			(ppm)	(ppm)	
	-30		0.045	0.026	
	-20		0.056	0.027	
	-10		0.045	0.038	
	0		0.068	0.031	
3.87	+10		0.051	0.034	
	+20		0.036	0.037	PASS
	+30		0.044	0.066	
	+40		0.059	0.062	
	+50	0.052		0.028	
4.2	+25	0.046		0.045	
3.5	+25		0.040	0.031	

WCDMA 850MHz Band

Band:	WCDMA Bar	nd V Channel:	4183
Limit(ppm)	2.5	Frequency:	836.6MHz
Power (VDC)	Temperature (°C)	RMC 12.2Kbps Deviation (ppm)	Result
	-30 -20 -10	0.0044 0.0042 0.0028	
3.87	0 +10	0.0034 0.0067	
	+20 +30 +40	0.0068 0.0053 0.0048	PASS
4.2	+50	0.0028	
4.2 3.5	+25 +25	0.0019 0.0018	



WCDMA 1900MHz Band Band: WCDMA Band II Channel: 9400 Limit(ppm): 2.5 1880.0MHz Frequency: RMC 12.2Kbps Temperature Power Deviation Result (VDC) (°C) (ppm) 0.0078 -30 -20 0.0047 -10 0.0042 0 0.0047 3.87 +100.0053 +200.0028 PASS +300.0027 +400.0029 0.0007 +504.2 +250.0025 3.5 0.0039 +25



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.

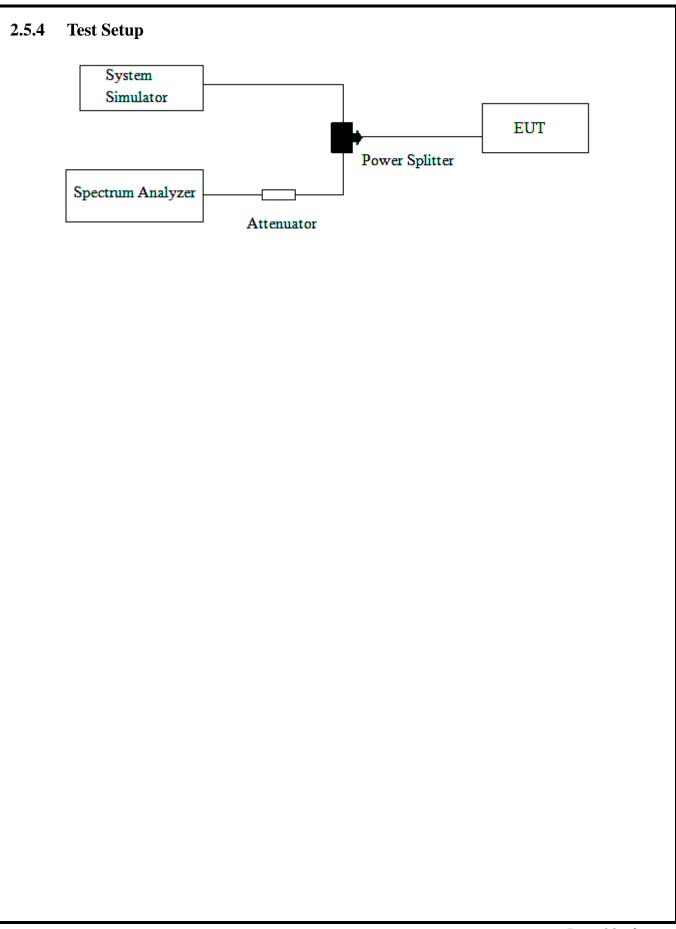
2.5.3 Test Procedures

- 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.

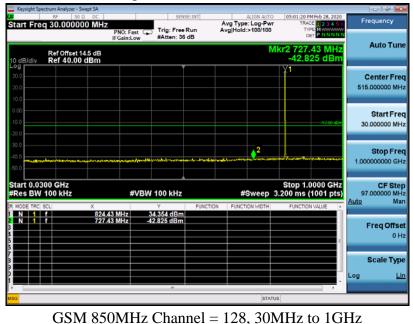






2.5.5 Test Result (Plots) of Conducted Spurious Emission

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.



tart Freq 1.000000000 GHz Frequency Avg Type: Log-Pwi AvgHold: 49/100 0: Fast G Trig: Free Run Auto Tun 3.839 4 GH -25.526 dBr Ref Offset 14.5 dB Ref 35.00 dBm Center Fred 5.00000000 GH Start Fred 1.000000000 GHz Stop Freq 9.000000000 GHz 1 CF Step 800.000000 MH Freq Offset 0 H Scale Type Stop 9.000 GHz #Sweep 13.33 ms (40001 pts) Start 1.000 GHz #Res BW 1.0 MHz Log Lin #VBW 1.0 MHz

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



0	ctrum Analyzer - Swept S RF 50 Ω D q 30.000000 N	nc MHz	SENS	Av	ALIGN AUTO g Type: Log-Pwr g Hold:>100/100	TRA	M Feb 28, 2020 25 1 2 3 4 5 6 PE M	Frequency
	Ref Offset 14.5 of					₀ 1kr2 740	ET P NNNN	Auto Tu
30.0 20.0	Ref 40.00 dB	m				Y1		Center Fr 515.000000 M
0.00 -10.0 -20.0								Start Fr 30.000000 M
30.0 -40.0 -50.0	1990 - 1997 - 19	teritatinite na ^p risetra ana	auran direction for a state	مەرەپ ھەلسى	¢ ²	en al ante	a da a da Jacoba da da	Stop Fr 1.000000000 G
Start 0.03 #Res BW	100 kHz		BW 100 kHz	FUNCTION	#Sweep	Stop 1. 3.200 ms (CF St 97.000000 M Auto M
N 1		837.04 MHz 740.04 MHz	34.115 dBm -41.767 dBm				=	Freq Off: 0
								Scale Ty
							-	

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



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



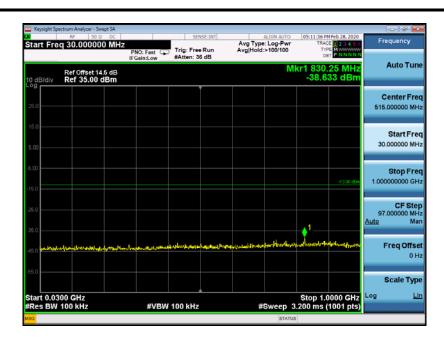
Start Free	RF 50 Ω q 30.000000	0 MHz	Fast 😱	Trig: Free #Atten: 36	Run A	Avg Type	LIGN AUTO Log-Pwr >100/100	т	6 PM Feb 28, 202 RACE 1 2 3 4 5 TYPE M	S F	requency
10 dB/div	Ref Offset 14 Ref 40.00 (.5 dB					Μ		1.83 MH 412 dBr		Auto Tu
20.0											Center Fr 5.000000 M
0.00 -10.0 -20.0									-10-00 dD	30	Start Fr 0.000000 M
-30.0 -40.0 -50.0	and the second	1 9-9-10-10-00-00-00-00-00-00-00-00-00-00-00-	ه ارس سوي سوي	har an an tar al as	rtatud anangan	يا ال ديوريون	2	on star	Turne 10/10/10/10/10/10	1.00	Stop Fr 0000000 G
Start 0.03 #Res BW	100 kHz	x	#VBW	100 kHz Y	FUNCTION		Sweep (3.200 m	1.0000 GH s (1001 pts	z 97 <u>Auto</u>	CF St 7.000000 M N
1 N 1 2 N 1 3		848.971 MH 751.826 MH		3.970 dBm 2.412 dBm							Freq Off
7											Scale Ty
í 💻									, ·	Log	

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

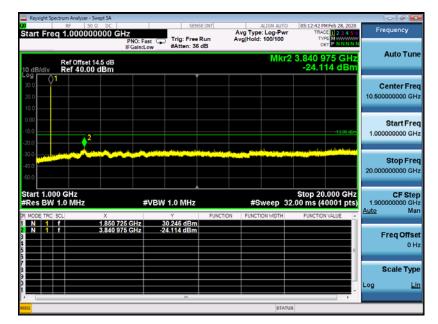


GSM 850MHz Channel = 251, 1GHz to 9GHz



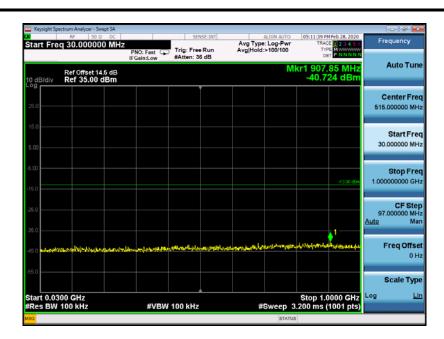


GSM 1900MHz Channel = 512, 30MHz to 1GHz

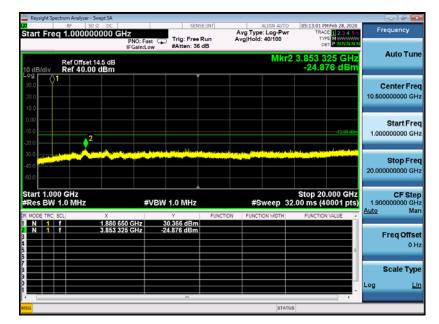


GSM 1900MHz Channel = 512, 1GHz to 20GHz



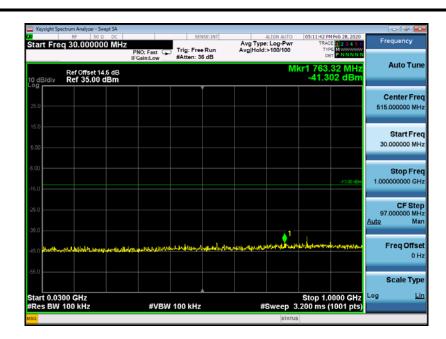


GSM 1900MHz Channel = 661, 30MHz to 1GHz

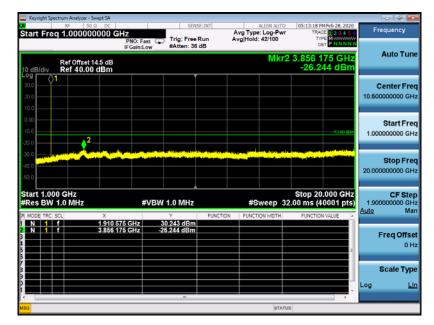


GSM 1900MHz Channel = 661, 1GHz to 20GHz





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



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



× Start Free	RF 50 Q DC Q 30.000000 MH	Z PNO: Fast C IFGain:Low	Trig: Free R #Atten: 36 d	un A	ALIGN AUTO vg Type: Log-Pwr vg Hold:>100/100	05:02:33 PM Feb 28, 20 TRACE 1 2 3 4 TYPE M	5 6 Frequency
10 dB/div	Ref Offset 14.5 dB Ref 40.00 dBm	n dumeon			N	lkr2 630.43 Mi -43.265 dB	
20.0						¥1	Center Fr 515.000000 M
-10.00							Start Fr 30.000000 M
-30.0 -40.0 -50.0	1	ويتربعون مقاصفون ويروران	Auropean Article and a state	3er#annan e	2 Age, by we is the attended	Low Young to a state of the Sta	Stop Fr 1.000000000 G
Start 0.03 #Res BW	100 kHz	#VB	W 100 kHz	FUNCTION	#Sweep	Stop 1.0000 Gi 3.200 ms (1001 p	Hz CF St 97.000000 M Auto N
1 N 1 2 N 1 3 4 5 9	f 82	4.43 MHz 0.43 MHz	34.340 dBm -43.265 dBm				Freq Offs
5 7 3 9							Scale Ty
i –						,	- Log

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

Keysight Spectrum Analyzer - Swept SA					- 4
RF 50 Ω DC tart Freq 1.000000000 G		Avg Type	Log-Pwr T	6 PM Feb 28, 2020 RACE 1 2 3 4 5 6 TYPE	Frequency
Ref Offset 14.5 dB 0 dB/div Ref 40.00 dBm	IFGain:Low #Atten: 3	6 dB	Mkr1 3.9	25 8 GHz 996 dBm	Auto Tun
30.0					Center Fre 5.000000000 GH
10.0					Start Fro 1.000000000 Gi
					Stop Fr 9.000000000 G
	1			-13.00 dBm	CF Sto 800.000000 M Auto M
				n in en	Freq Offs
50.0					Scale Ty
tart 1.000 GHz Res BW 1.0 MHz	#VBW 1.0 MHz	#0	Stop weep 13.33 ms	9.000 GHz	Log L

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



Start Fre	RF 50 9 q 30.00000	0 MHz	0: Fast 😱 ain:Low	Trig: Free #Atten: 36	Run A	Avg Type	ALIGN AUTO : Log-Pwr :>100/100	TRA	PM Feb 28, 2020 CE 1 2 3 4 5 6 PE M DET P NNNNN	Frequenc
10 dB/div	Ref Offset 14 Ref 40.00						Μ		.04 MHz 46 dBm	Auto
20.0								Ŷ1		Center 515.000000
0.00 -10.0 -20.0									-10.00 dDm	Start 30.000000
-30.0 -40.0 -50.0	enterantesta ano		Lagerran and the	lathertandag		2	ەرمىلىچىت			Stop 1.000000000
Start 0.03 #Res BW	100 kHz	X	#VBW	100 kHz	FUNCTION		Sweep :	3.200 ms	0000 GHz (1001 pts)	CF 97.000000 Auto
1 N 1 2 N 1 3		837.04 M 643.04 M		4.117 dBm 3.646 dBm						Freq O
										Scale '
í H									- ,	Log

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



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



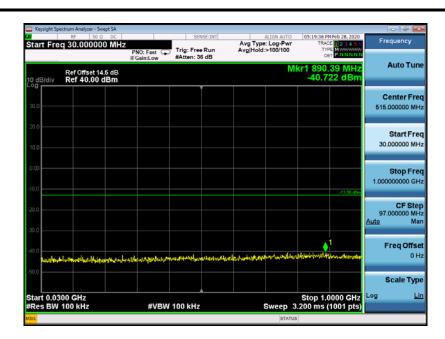
Start Free	RF 50 q 30.0000	00 MHz	NO: Fast C		Run A	Avg Type	ALIGN AUTO : Log-Pwr :>100/100		TYPE PNNN	f F	requency
10 dB/div	Ref Offset 1 Ref 40.00						Μ	-42	5.65 MH .553 dBr		Auto Tu
20.0 20.0 10.0								 			Center Fi 5.000000 M
0.00 -10.0 -20.0									-10:00 d	3	Start Fi 0.000000 M
-30.0	and a start of the second	اور مواور ورواند مراجع اور مراجع اور ورواند مراجع اور مراجع اور ورواند مراجع اور ورواند مراجع اور ورواند مراجع اور مراجع اور مراحم اور مراحم اور مراحم اور م	westered to other		and successful and all and	2	carrent per manet	• • • • • • • • • • • • • • • • • • •	ellinadora de orde de ord	1.00	Stop Fr 00000000 G
Start 0.03 #Res BW	100 kHz	X	#VB1	W 100 kHz	FUNCTION		Sweep (3.200 m	1.0000 GH s (1001 pt	z s) 9 <u>Auto</u>	CF S 7.000000 M
1 N 1 2 N 1 3	1	848.68 655.65		33.973 dBm -42.553 dBm							Freq Off 0
7											Scale Ty
									,	Log	

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



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



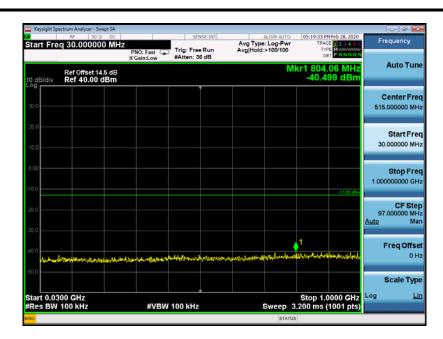


EDGE 1900MHz Channel = 512, 30MHz to 1GHz

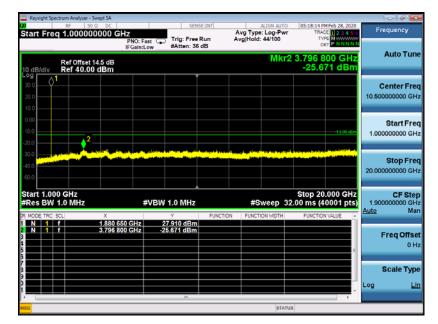


EDGE 1900MHz Channel = 512, 1GHz to 20GHz



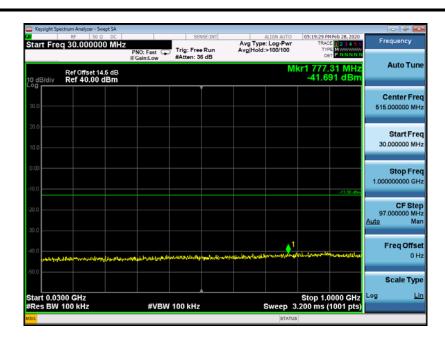


EDGE 1900MHz Channel = 661, 30MHz to 1GHz

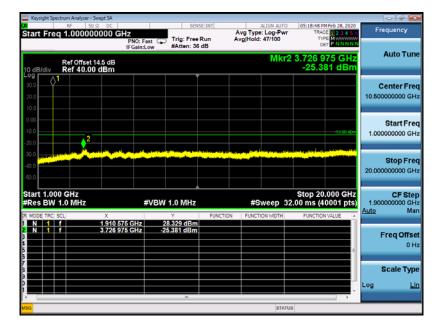


EDGE 1900MHz Channel = 661, 1GHz to 20GHz





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



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



Keysight	Spectrum #	Analyzer - Swe 50 Ω	DC		SENS	EINT		ALIGN AUTO	05:35:09	PM Feb 28, 2020		
Start F		.000000) MHz	PNO: Fast Gain:Low	Trig: Free Atten: 36	Run A	Avg Type	: Log-Pwr >100/100	TR	ACE 1 2 3 4 5 YPE MUNICIPAL OFT PINNIN	i i	requency
10 dB/div		Offset 14. f 40.00 d						N		4.34 MHz 149 dBm		Auto Tur
30.0 20.0 10.0									¢¹		51	Center Fre
0.00 -10.0 -20.0										-10:00 dDr	3	Start Fre
-30.0		Thermone with the second	www.esawyeed	and helping and a first of	al an in contract for	at the second	anderly of the		-	¢ ²	1.0	Stop Fr 00000000 G
Start 0. #Res B	W 100		x	#VBW	100 kHz	FUNCTION		Sweep	3.200 ms	.0000 GHz (1001 pts	g Auto	CF Ste 97.000000 Mi M
	f f		827.34 924.34		19.332 dBm 12.149 dBm							Freq Offs 01
7												Scale Ty
1											Log	L
•								STAT				

WCDMA850MHz Channel = 4132, 30MHz to 1GHz



WCDMA850MHz Channel = 4132, 1GHz to 9GHz



Start Freq 30.000	000 MHz PNO: Fas		Avg Type: Log-Pwr Avg[Hold:>100/100	05:34:55 PM Feb 28, 2020 TRACE 1 2 3 4 5 6 TYPE MUSEUM	Frequency
Ref Offse	t 14.5 dB		М	kr2 935.01 MHz -42.170 dBm	Auto Tun
20.0 10.0				¢'	Center Fre 515.000000 MH
-10.0				-10.00 dDn	Start Fre 30.000000 MH
-30.0 -40.0 -50.0	alat a second a second a second	and the second second second	and the last of the second	¢²	Stop Fre 1.000000000 Gi
Start 0.0300 GHz #Res BW 100 kHz	#\	/BW 100 kHz	#Sweep 3	Stop 1.0000 GHz 3.200 ms (1001 pts)	CF Sto 97.000000 M Auto M
1 N 1 f 2 N 1 f 3 4	836.07 MHz 935.01 MHz	18.692 dBm -42.170 dBm			Freq Offs 0
					Scale Ty
					Log L

WCDMA850MHz Channel = 4183, 30MHz to 1GHz



WCDMA850MHz Channel = 4183, 1GHz to 9GHz



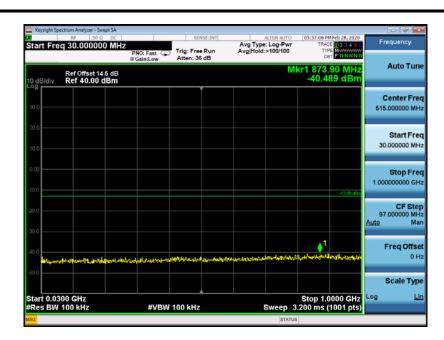
x Start Fre	rs 30.000000 MH	Z PNO: Fast C IFGain:Low	Trig: Free Run Atten: 36 dB	Avg Typ	ALIGN AUTO e: Log-Pwr d:>100/100	TRAC	4 Feb 28, 2020 E 1 2 3 4 5 6 E M	Frequency
10 dB/div	Ref Offset 14.5 dB Ref 40.00 dBm	IT Galificore			Μ	kr2 942. -41.9	77 MHz 76 dBm	Auto Tu
20.0 20.0						¢'		Center Fi 515.000000 M
0.00 -10.0								Start Fr 30.000000 M
-30.0 -40.0	unalistation and an			and the second secon	مى بولىدۇرا ئۇسىلىرى مەركى	\mathcal{A}_{-}	• ²	Stop Fr 1.000000000 G
Start 0.03 #Res BW	100 kHz	#VB	W 100 kHz		Sweep S	Stop 1.0 3.200 ms (CF St 97.000000 M <u>Auto</u> M
1 N 1 2 N 1 3 4 9	1 846.	361 MHz .77 MHz	18.627 dBm -41.976 dBm					Freq Off 0
5 7 3 9								Scale Ty
2								Log

WCDMA850MHz Channel = 4233, 30MHz to 1GHz

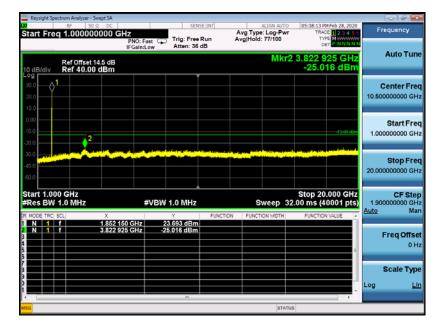


WCDMA850MHz Channel = 4233, 1GHz to 9GHz



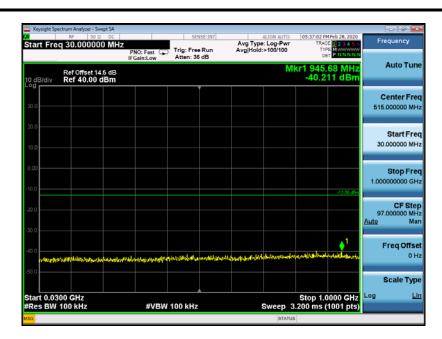


WCDMA1900MHz Channel = 9262, 30MHz to 1GHz



WCDMA1900MHz Channel = 9262, 1GHz to 20GHz



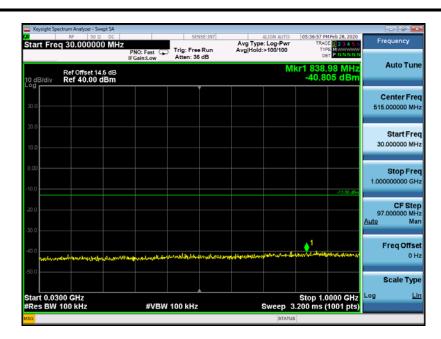


WCDMA1900MHz Channel = 9400, 30MHz to 1GHz

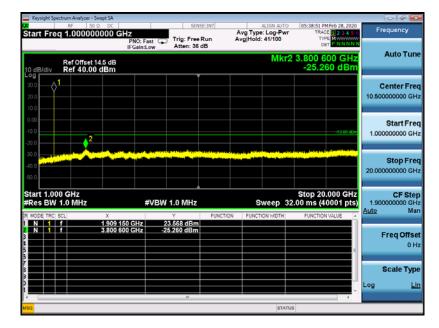


WCDMA1900MHz Channel = 9400, 1GHz to 20GHz





WCDMA1900MHz Channel = 9538, 30MHz to 1GHz



WCDMA1900MHz Channel = 9538 1GHz to 20GHz



2.6 Bandedge

2.6.1 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 $43 + 10 \log (P) dB$.

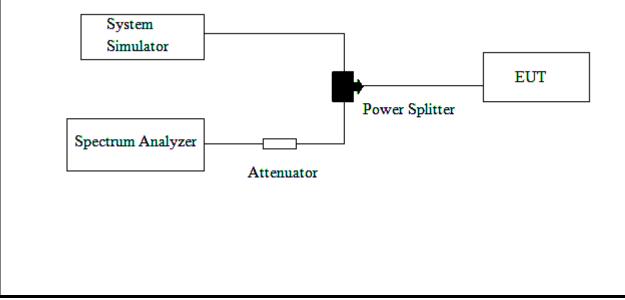
2.6.2 Measuring Instruments

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

2.6.3 Test Procedures

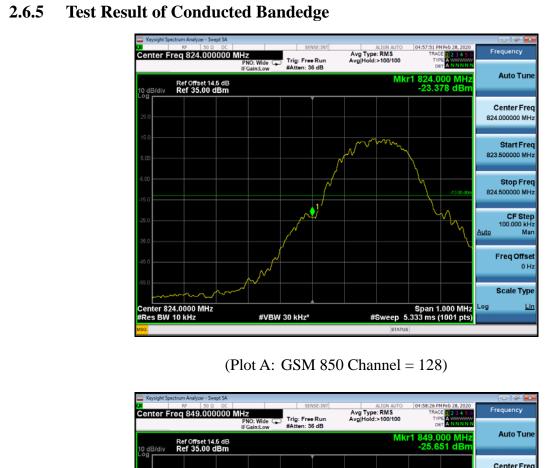
- 1. The testing follows FCC KDB 971168 D01 v03r01 Section 6.0.
- 2. The EUT was connected to the spectrum analyzer and system simulator via a power divider.
- 3. The RF output of EUT was connected to the spectrum analyzer by an RF cable and attenuator. The path loss was compensated to the results for each measurement.
- 4. The band GPRSs 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 $43 + 10\log(P)$ dB below the transmitter power P(Watts)
 - = P(W) [43 + 10log(P)] (dB)
 - $= [30 + 10\log(P)] (dBm) [43 + 10\log(P)] (dB)$
 - = -13dBm.

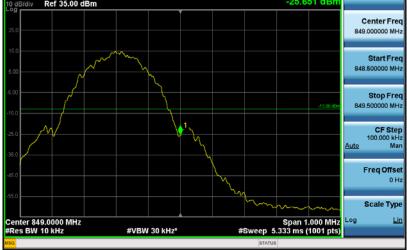
2.6.4 Test Setup

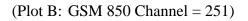
















(Plot C:GSM 1900 Channel = 512)



(Plot D: GSM 1900 Channel = 810)





(Plot E: EDGE 850 Channel = 128)



(Plot F: EDGE 850 Channel = 251)





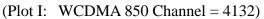
(Plot G: EDGE 1900 Channel = 512)



(Plot H: EDGE 1900 Channel = 810)









(Plot J: WCDMA 850 Channel = 4233)





(Plot K: WCDMA 1900 Channel = 9262)



(Plot L: WCDMA 1900 Channel = 9538)



2.7 Transmitter Radiated Power (EIRP/ERP)

2.7.1 Requirement

The substitution method, in ANSI C63.26:2015, was used for ERP/EIRP measurement, and the spectrum analyzer configuration follows KDB 971168 D01 Power Meas. License Digital Systems v03r01. The ERP of mobile transmitters must not exceed 7 Watts (Cellular Band) and the EIRP of mobile transmitters are limited to 2 Watts (PCS Band) and 1 Watts (AWS Band).

2.7.2 Measuring Instruments

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

2.7.3 Test Procedures

- 1. The testing follows FCC KDB 971168 D01 v03r01 Section 5.2.1. (for CDMA/WCDMA), Section 5.2.2.2 (for GSM/GSM/GPRS) and ANSI / TIA-603-D-2010 Section 2.2.17.
- 2. The EUT was placed on a turntable 1.5 meters high in a fully anechoic chamber.
- 3. The EUT was placed 3 meters from the receiving antenna, which was mounted on the antenna tower.
- 4. GSM operating modes: Set RBW= 1MHz, VBW= 3MHz, RMS detector over burst;

UMTS operating modes: Set RBW= 100 kHz, VBW= 300 kHz, RMS detector over frame, and use channel power option with bandwidth=5MHz, per KDB 971168 D01 v03r01.

- 5. The table was rotated 360 degrees to determine the position of the highest radiated power.
- 6. The height of the receiving antenna is adjusted to look for the maximum ERP/EIRP.
- 7. Taking the record of maximum ERP/EIRP.
- 8. A dipole antenna was substituted in place of the EUT and was driven by a signal generator.
- 9. The conducted power at the terminal of the dipole antenna is measured.



10. Repeat step 3 to step 5 to get the maximum ERP/EIRP of the substitution antenna.

11. ERP/EIRP = Ps + Et - Es + Gs = Ps + Rt - Rs + Gs

Ps (dBm): Input power to substitution antenna.

Gs (dBi or dBd): Substitution antenna Gain.

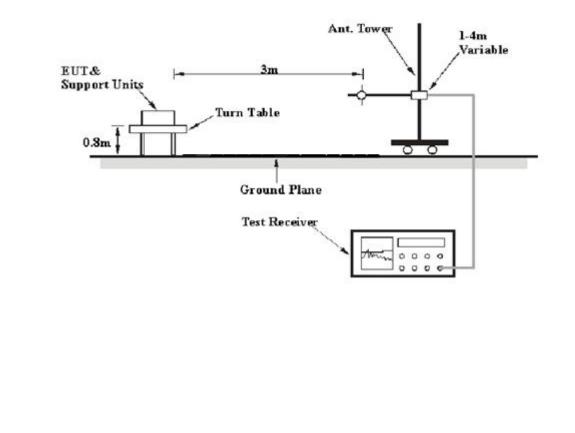
Et = Rt + AF Es = Rs + AF

AF (dB/m): Receive antenna factor

Rt: The highest received signal in spectrum analyzer for EUT.

Rs: The highest received signal in spectrum analyzer for substitution antenna.

2.7.4 Test Setup





2.7.5 Test Result of Transmitter Radiated Power

Test Notes:

1. This device employs GMSK technology with GSM capabilities. All configurations were investigated and the worst case emissions were found in GSM mode.

2. This device employs UMTS technology with WCDMA (AMR/RMC), HSDPA, HSUPA capabilities. All configurations were investigated and the worst case UMTS emissions were found in RMC WCDMA mode at 12.2Kbps.

3. This unit was tested with its standard battery.

4. The worst case test configuration was found in the vertical positioning where the EUT is laying on its side. The data reported in the tables below were measured in this test setup.

Band	Channel	Frequency	PCL	Antenna Pol	Measured ERP	Limit	Verdict
Dallu	Chaimer	(MHz)	FCL	(H/V)	dBm	dBm	veruict
	128	824.20	5	Н	30.28		PASS
	128	024.20	5	V	31.48		глээ
GSM	190	836.60	5	Н	30.87	20 5	DACC
850MHz				V	31.29	- 38.5	PASS
		848.80	5	Н	31.49		DACC
	251		5	V	31.27		PASS

Band	Channel	Frequency (MHz)	PCL	Antenna Pol (H/V)	Measured EIRP dBm	Limit dBm	Verdict
	510	1850.2	0	Н	27.23		PASS
	512	1630.2	0	V	27.35		PASS
GSM	((1	1990.0	0	Н	27.58	22	DACC
1900MHz	661	1880.0		V	27.29	33	PASS
	010	1909.8	0	Н	27.44		DACC
	810			V	27.21	1	PASS



Band	Channel	Frequency (MHz)	PCL	Antenna Pol (H/V)	Measured ERP dBm	Limit dBm	Verdict	
	128	824.20	5	Н	25.12		PASS	
	128	824.20	3	V	25.37		1739	
EDGE	100	836.60	5	Н	25.48	20 5	PASS	
850MHz	190			V	25.52	38.5	FASS	
	251	0.40.00	~	Н	25.19		DASS	
	231	848.80	3	V	25.63		PASS	

Band	Channel	Frequency (MHz)	PCL	Antenna Pol (H/V)	Measured EIRP dBm	Limit dBm	Verdict
	510	1950.2	0	Н	25.27		DACC
	512	1850.2	0	V	25.34		PASS
EDGE	<i>cc</i> 1	1990.0	0	Н	25.57	22	PASS
1900MHz	661	1880.0		V	25.22	33	FASS
	010	1909.8	0	Н	25.84		DACC
	810		0	V	25.19		PASS

Band	Channel	Frequency (MHz)	Antenna Pol (H/V)	Measured ERP dBm	Limit dBm	Verdict
	4122	926.4	Н	23.27		DACC
	4132	826.4	V	22.29		PASS
WCDMA	4175	835	Н	23.33	38.5	PASS
850MHz	4175	033	V	22.74	56.5	PASS
	4233	846.6	Н	23.65		DACC
	4255	840.0	V	22.57		PASS

Band	Channel	Frequency	Antenna Pol	Measured EIRP	Limit	Verdict
	Channel	(MHz)	(H/V)	dBm	dBm	vertitet
	0262	1952 4	Н	23.24		PASS
	9262	1852.4	V	22.51		IASS
WCDMA	9400	1000	Н	23.15	22	DACC
1900MHz		1880	V	22.54	33	PASS
	0529	1007.6	Н	23.20		DACC
	9538	1907.6	V	22.65		PASS



2.8 Radiated Spurious Emissions

2.8.1 Requirement

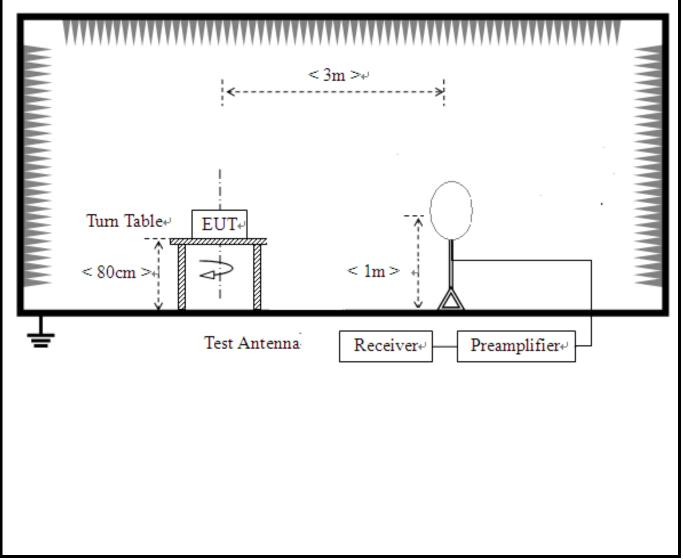
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least $43 + 10 \log (P) dB$. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

2.8.2 Measuring Instruments

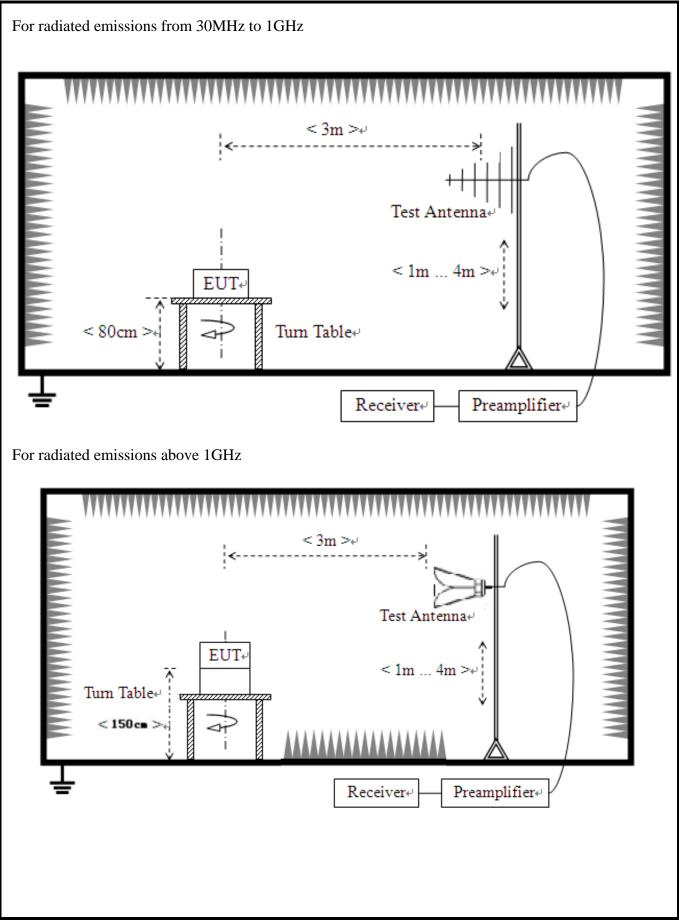
The measuring equipment is listed in the section 3 of this test report.

2.8.3 Test Setup

For radiated emissions from 9 kHz to 30MHz









2.8.4 Test Procedures

- 1. The testing follows FCC KDB 971168 D01 v03r01 Section 5.8.
- 2. The EUT was placed on a rotatable wooden table 0.8/1.5 meters above the ground.
- 3. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
- 4. The table was rotated 360 degrees to determine the position of the highest spurious emission.
- 5. The height of the receiving antenna is varied between one meter and four meters to search for the maximum spurious emission for both horizontal and vertical polarizations.
- 6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking record of maximum spurious emission.
- 7. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
- 8. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
- 9. Taking the record of output power at antenna port.
- 10. Repeat step 7 to step 8 for another polarization.
- 11. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
- 12. 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.
- 13. This device employs GMSK technology with GSM and GSM capabilities. All configurations were investigated and the worst case emissions were found in GSM mode.
- 14. This device employs UMTS technology with WCDMA (AMR/RMC), HSDPA, HSUPA capabilities. All configurations were investigated and the worst case UMTS emissions were found in RMC WCDMA mode at 12.2Kbps.
- 15. This unit was tested with its standard battery.
- 16. All Spurious Emission tests were performed in X, Y, Z axis direction and low, middle, high channel. And only the worst axis test condition was recorded in this test report.
- 17. The spectrum is measured from 9 KHz to the 10th harmonic of the fundamental frequency



of the transmitter using CISPR quasi peak detector below 1GHz. The worst case emissions are reported however emissions whose levels were not within 20dB of the respective limits were not reported.

 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.



2.8.5 Test Results of Radiated Spurious Emissions

Note: 1. (Absolute)Level=Reading Level + Factor

Worst-Case test data provide as below:

GSM850 Middle Channel

30MHz~10GHz:

Susp	ected List						
	Freq.	Reading	Level	Limit	Margin	Factor	Delerity
NO.	[MHz]	[dBm]	[dBm]	[dBm]	[dB]	[dB]	Polarity
1	61.0555	-76.87	-55.10	-13.00	42.10	21.77	Horizontal
2	131.415	-86.10	-63.64	-13.00	50.64	22.46	Horizontal
3	354.627	-88.69	-58.70	-13.00	45.70	29.99	Horizontal
4	1433.21	-56.08	-58.37	-13.00	45.37	-2.29	Horizontal
5	3915.45	-58.54	-48.98	-13.00	35.98	9.56	Horizontal
6	6031.51	-59.14	-45.28	-13.00	32.28	13.86	Horizontal
Susp	ected List						
NO.	Freq.	Reading	Level	Limit	Margin	Factor	Delarity
NO.	[MHz]	[dBm]	[dBm]	[dBm]	[dB]	[dB]	Polarity
1	61.0555	-81.06	-58.44	-13.00	45.44	22.62	Vertical
2	110.065	-85.84	-59.94	-13.00	46.94	25.90	Vertical
3	307.558	-89.68	-63.00	-13.00	50.00	26.68	Vertical
4	1795.39	-57.74	-56.79	-13.00	43.79	0.95	Vertical
5	3345.17	-54.40	-46.97	-13.00	33.97	7.43	Vertical
6	4920.96	-57.51	-44.59	-13.00	31.59	12.92	Vertical



Worst-Case test data provide as below:

GSM1900 Middle Channel

30MHz~20GHz:

Suspected List									
NO.	Freq.	Reading	Level	Limit	Margin	Factor	Polarity		
	[MHz]	[dBm]	[dBm]	[dBm]	[dB]	[dB]			
1	61.0555	-78.93	-60.53	-13.00	47.53	18.40	Horizontal		
2	204.687	-90.02	-68.23	-13.00	55.23	21.79	Horizontal		
3	344.437	-87.10	-60.50	-13.00	47.50	26.60	Horizontal		
4	3727.86	-57.93	-49.16	-13.00	36.16	8.77	Horizontal		
5	5641.32	-55.23	-43.15	-13.00	30.15	12.08	Horizontal		
6	12027.0	-62.14	-37.80	-13.00	24.80	24.34	Horizontal		
Susp	Suspected List								
NO.	Freq.	Reading	Level	Limit	Margin	Factor	Polarity		
NO.	[MHz]	[dBm]	[dBm]	[dBm]	[dB]	[dB]			
1	61.0555	-77.81	-58.56	-13.00	45.56	19.25	Vertical		
2	99.8749	-86.66	-63.25	-13.00	50.25	23.41	Vertical		
3	325.027	-89.03	-65.19	-13.00	52.19	23.84	Vertical		
4	2701.85	-55.18	-46.10	-13.00	33.10	9.08	Vertical		
5	5101.05	-58.19	-43.94	-13.00	30.94	14.25	Vertical		
6	6601.80	-58.24	-43.41	-13.00	30.41	14.83	Vertical		





Worst-Case test data provide as below:

WCDMA 850 Middle Channel

30MHz~10GHz:

Suspected List									
NO.	Freq.	Reading	Level	Limit	Margin	Factor	Polarity		
	[MHz]	[dBm]	[dBm]	[dBm]	[dB]	[dB]			
1	61.0555	-84.04	-62.27	-13.00	49.27	21.77	Horizontal		
2	111.520	-84.73	-62.75	-13.00	49.75	21.98	Horizontal		
3	348.319	-89.12	-59.01	-13.00	46.01	30.11	Horizontal		
4	1806.40	-57.16	-55.49	-13.00	42.49	1.67	Horizontal		
5	3705.35	-58.36	-49.62	-13.00	36.62	8.74	Horizontal		
6	7974.98	-59.06	-40.59	-13.00	27.59	18.47	Horizontal		
Susp	Suspected List								
	Freq.	Reading	Level	Limit	Margin	Factor	Polarity		
NO.	[MHz]	[dBm]	[dBm]	[dBm]	[dB]	[dB]			
1	42.6163	-84.55	-62.19	-13.00	49.19	22.36	Vertical		
2	106.183	-85.67	-59.49	-13.00	46.49	26.18	Vertical		
3	206.143	-90.23	-67.85	-13.00	54.85	22.38	Vertical		
4	1830.41	-54.25	-53.84	-13.00	40.84	0.41	Vertical		
5	3907.95	-58.48	-48.35	-13.00	35.35	10.13	Vertical		
6	7112.05	-59.44	-43.06	-13.00	30.06	16.38	Vertical		





Worst-Case test data provide as below:

WCDMA 1900 Middle Channel

30MHz~20GHz:

Suspected List									
NO.	Freq.	Reading	Level	Limit	Margin	Factor	Polarity		
	[MHz]	[dBm]	[dBm]	[dBm]	[dB]	[dB]			
1	48.9245	-88.55	-69.66	-13.00	56.66	18.89	Horizontal		
2	130.930	-86.70	-67.56	-13.00	54.56	19.14	Horizontal		
3	196.923	-89.56	-67.67	-13.00	54.67	21.89	Horizontal		
4	3142.57	-57.71	-49.11	-13.00	36.11	8.60	Horizontal		
5	5303.65	-57.54	-45.23	-13.00	32.23	12.31	Horizontal		
6	7517.25	-59.28	-42.63	-13.00	29.63	16.65	Horizontal		
Susp	Suspected List								
	Freq.	Reading	Level	Limit	Margin	Factor	Polarity		
NO.	[MHz]	[dBm]	[dBm]	[dBm]	[dB]	[dB]			
1	61.0555	-82.43	-63.18	-13.00	50.18	19.25	Vertical		
2	106.668	-86.19	-63.40	-13.00	50.40	22.79	Vertical		
3	346.378	-88.06	-63.97	-13.00	50.97	24.09	Vertical		
4	2669.83	-56.04	-47.59	-13.00	34.59	8.45	Vertical		
5	4815.90	-59.00	-48.35	-13.00	35.35	10.65	Vertical		
6	10136.0	-61.72	-38.34	-13.00	25.34	23.38	Vertical		



3. LIST OF MEASURING EQUIPMENT

Description	Manufactu rer	Model	Serial No.	Cal. Date	Due Date	Remark
EMI Test Receiver	R&S	ESIB26	A0304218	2019.05.20	2020.05.19	Radiation
Loop Antenna	Schwarz beck	HFH2-Z2	100047	2019.04.26	2022.04.25	Radiation
Broadband antenna (30MHz~1GHz)	R&S	HL562	101341	2017.07.14	2020.07.13	Radiation
Broadband antenna (30MHz~1GHz)	R&S	HL562	101339	2017.07.14	2020.07.13	Radiation
Double ridge horn antenna (1GHz~18GHz)	R&S	HF906	100150	2019.04.27	2022.04.26	Radiation
Double ridge horn antenna (1GHz~18GHz)	R&S	HF906	100149	2019.04.17	2022.04.16	Radiation
Horn antenna (18GHz~26.5GHz)	AR	AT4002A	305753	2017.07.12	2020.07.11	Radiation
Horn antenna (18GHz~26.5GHz)	AR	AT4003A	0329293	2018.09.17	2020.09.16	Radiation
Amplifier 1GHz-18GHz	AR	25S1G4AM1	22018	2018.09.17	2020.09.16	Radiation
Ampilier 20M~3GHz	MILMEGA	80RF1000-250	1064573	2017.10.09	2020.10.08	Radiation
Spectrum Analyzer	KEYSIGHT	N9030A	A160702554	2019.06.05	2020.06.04	Conducted
LISN	ROHDE&SC HWARZ	ESH2-Z5	A0304221	2019.04.30	2020.04.29	Conducted
Test Receiver	R&S	ESCS30	A0304260	2019.05.25	2020.05.24	Conducted
Temperature chamber	Dongguan gaoda instrument CO.LTD	GD-7005-100	130130101	2019.04.22	2020.04.21	Conducted
Wideband Radio Communication tester	R&S	CMW500	149332	2019.04.01	2020.03.31	Conducted
Power Supply	R&S	NGMO1	101037	2019.08.03	2020.08.02	Conducted

** END OF REPORT **