



RF TEST REPORT						
Report No.:	SET2019-02851					
Product:	LTE Digital Mobile Phone					
FCC ID:	2AHJO-NX629J					
Model No. :	NX629J					
Applicant:	Nubia Technology Co., Ltd.					
Address:	10/F, Tower A, Hans Innovation Mansion, North Ring Rd.,No.9018, High-Tech Park, Nanshan District, Shenzhen, China.					
Dates of Testing:	03/01/2019 — 04/04/2019					
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 Digital Mobile Phone
Brand Name:	nubia
Trade Name:	nubia
Applicant	Nubia Technology Co., Ltd.
Applicant Address:	10/F, Tower A, Hans Innovation Mansion, North Ring Rd.,No.9018, High-Tech Park, Nanshan District, Shenzhen, China.
Manufacturer	Nubia Technology Co., Ltd.
Manufacturer Address:	10/F, Tower A, Hans Innovation Mansion, North Ring Rd.,No.9018, High-Tech Park, Nanshan District, Shenzhen, China.
Test Standards	47 CFR FCC Part 2/22H/24E/27L
Test Result:	PASS
Tested by	2019.04.04
	Robin Luo, Test Engineer
Reviewed by:	Chris Jon 2019.04.04
	Chris You, Senior Engineer
Approved by	Shuangwan Zhang 2019.04.04
	ShuangwenZhang, Manager



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	Change History					
Issue	Date	Reason for change				
1.0	2019.04.04	First edition				

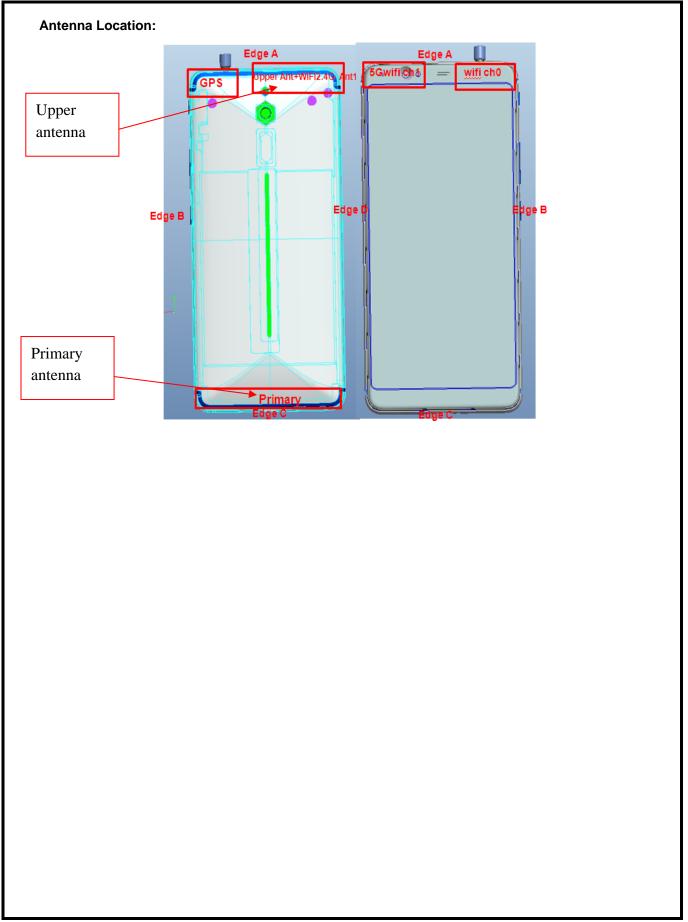


1. GENERAL INFORMATION

1.1 EUT Description

EUT Type	LTE Digital Mobile Phone			
EUT supports Radios application	GPRS/EDGE/WCDMA/HSPA			
Multi Slot Class	GPRS: Multi slot Class12, EGPRS: Multi slot Class12			
	GSM 850MHz:			
	Tx: 824.2 - 848.8MHz (at intervals of 200kHz);			
	Rx: 869.2 - 893.8MHz (at intervals of 200kHz)			
	GSM 1900MHz:			
	Tx: 1850.2 - 1909.8MHz (at intervals of 200kHz);			
	Rx: 1930.2 - 1989.8MHz (at intervals of 200kHz)			
	WCDMA 850MHz			
Frequency Range	Tx: 826.4 - 846.6MHz (at intervals of 200kHz);			
	Rx: 871.4 - 891.6MHz (at intervals of 200kHz)			
	WCDMA 1700MHz			
	Tx: 1712.4 - 1752.6MHz (at intervals of 200kHz);			
	Rx: 2112.4 - 2152.6MHz (at intervals of 200kHz)			
	WCDMA 1900MHz			
	Tx: 1852.4 - 1907.6MHz (at intervals of 200kHz);			
	Rx: 1932.4 - 1987.6MHz (at intervals of 200kHz)			
	GSM 850: 32.20dBm			
	GSM 1900: 29.50dBm			
Maximum Output Power to	EDGE 850: 26.80dBm			
Antenna	EDGE 1900: 25.60dBm			
Antenna	WCDMA 850: 21.65dBm			
	WCDMA 1700:21.77dBm			
	WCDMA 1900: 21.65dBm			
	GSM / GPRS:GMSK			
	EDGE:GMSK / 8PSK			
Type of Modulation	WCDMA:QPSK(Uplink)			
	HSDPA:QPSK(Downlink)			
	HSUPA:QPSK(Uplink)			
Antenna Type	Internal Antenna			
	(Upper antenna and Primary antenna)			







1.2	2 Maximum Designator	ERP/EIRP	Power, Frequen	ncy Tolerance,	and Emission
	System	Type of Modulation	Emission Designator	Frequency Tolerance (ppm)	Maximum ERP/EIRP(W)
	GSM 850	GMSK	245KGXW	0.0049	1.406
	GSM 1900	GMSK	243KGXW	0.0059	0.650
	EDGE 850	8PSK	246KG7W	0.0057	0.380
	EDGE 1900	8PSK	252KG7W	0.0040	0.356
	WCDMA 850 RMC 12.2Kbps	QPSK	4M14F9W	0.0054	0.140
	WCDMA 1900 RMC 12.2Kbps	QPSK	4M16F9W	0.0043	0.135
	WCDMA 1700 RMC 12.2Kbps	QPSK	4M15F9W	0.0046	0.138



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	Description	Limit	Result	
110.	FCC	Description	Linit	Kesuit	
1	2.1046	Conducted Output Power	Reporting Only	PASS	
2	24.232(d)	Peak to Average Radio	<13dB	PASS	
	27.50(d)				
	2.1049				
3	22.917(b)	Occupied Bandwidth	Reporting Only	PASS	
5	24.238(b)	Securica Ballawidan	Reporting Only	11100	
	27.53(g)				
	2.1055				
4	22.355	Frequency Stability	$\leq \pm 2.5$ ppm	PASS	
4	24.235	requency stability	< <u>⊥</u> 2.5ppm	TASS	
	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	Dand Edga	< 43+10log10	PASS	
6	24.238	Band Edge	(P[Watts])		
	27.53				
	22.913	Effective Radiated Power	<7Watts	PASS	
7	24.232	Equivalent Isotropic Radiated Power	<2Watts	PASS	
	27.50(d)	Equivalent Isotropic Radiated Power	<1Watts	PASS	



8	2.1053 22.917 24.238 27.53	Radiated Spurious Emissions	< 43+10log10 (P[Watts])	PASS
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1.4 Test Configuration of Equipment under Test

Antenna port conducted and radiated test items were performed according to KDB 971168 D01 Power Meas. License Digital Systems v03r01 with maximum output power.

Radiated measurements were performed with rotating EUT in different three orthogonal test planes to find the maximum emission.

Radiated emissions were investigated as following frequency range:

1. 30 MHz to 9000 MHz for GSM850 and WCDMA Band V.

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

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

All modes and data rates and positions were investigated.

Test modes are chosen to be reported as the worst case configuration below:

Test Modes						
Band	Radiated TCs	Conducted TCs				
GSM 850	GPRS Link	GPRS Link				
GSM 850	GPRS Link	GPRS Link				
CSM 1000	GPRS Link	GPRS Link				
GSM 1900	GPRS Link	GPRS Link				
WCDMA Band V	RMC 12.2Kbps Link	RMC 12.2Kbps Link				
WCDMA Band II	RMC 12.2Kbps Link	RMC 12.2Kbps Link				
WCDMA Band IV	RMC 12.2Kbps Link	RMC 12.2Kbps Link				

Note:

1. The EUT has two WWAN antennas , upper antenna and primary antenna. The antenna which has the maximum power were used for all tests.

2. 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.

3.For ERP/EIRP, all the antennas (upper antenna and primary antenna) have been tested, the worst data reported only.





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 Dec. 31, 2019.

ISED Registration: 11185A-1

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, 2019

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

Upper Antenna

Band	Channel	Frequency (MHz)	Measured Output Power dBm	Verdict
CSM	128	824.2	29.25	PASS
GSM 850MHz	190	836.6	29.22	PASS
83014112	251	848.8	29.18	PASS
CGM	512	1850.2	26.85	PASS
GSM 1900MHz	661	1880.0	26.74	PASS
1900/01112	810	1909.8	26.53	PASS
CDDC	128	824.2	29.10	PASS
GPRS	190	836.6	29.25	PASS
850MHz	251	848.8	29.17	PASS
CDDC	512	1850.2	26.54	PASS
GPRS 1900MHz	661	1880.0	26.41	PASS
1900/01/12	810	1909.8	26.03	PASS
EDCE	128	824.2	26.85	PASS
EDGE 850MUz	190	836.6	26.51	PASS
850MHz	251	848.8	25.94	PASS
EDCE	512	1850.2	25.61	PASS
EDGE 1900MHz	661	1880.0	24.99	PASS
TYUUMHZ	810	1909.8	24.53	PASS

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



WCDMA Model Test Verdict:											
	band	W	CDMA 8	50	WC	CDMA 1	900	WC	WCDMA1700		
Item	Frequency	4132	4183	4233	9262	9400	9538	1313	1413	1513	
	Subtest		dBm			dBm			dBm		
WCDMA	RMC 12.2Kbps	19.65	19.53	19.63	18.65	18.26	18.55	19.67	19.55	19.77	
	1	19.26	19.54	19.36	18.24	17.85	18.14	19.24	18.82	19.22	
HSDPA	2	19.12	19.25	19.17	17.85	17.46	17.75	18.85	18.43	18.83	
	3	19.16	19.24	19.16	17.64	17.25	17.54	18.64	18.22	18.62	
	4	19.18	19.21	19.17	17.42	18.22	17.48	18.38	18.14	18.17	
	1	19.13	19.39	19.10	18.74	18.54	18.42	19.44	19.18	19.45	
	2	19.04	19.19	19.14	18.35	18.15	18.03	19.25	19.17	19.36	
HSUPA	3	19.06	19.22	19.16	18.07	17.87	17.75	19.14	19.18	19.12	
	4	19.07	19.13	19.13	17.88	17.68	17.56	18.94	18.83	18.70	
	5	19.07	19.05	19.12	17.65	17.26	17.55	18.27	18.35	18.32	



Primary Antenna

Band	Channel	Frequency (MHz)	Measured Output Power dBm	Verdict
CGM	128	824.2	31.2	PASS
GSM 850MH-	190	836.6	31.1	PASS
850MHz	251	848.8	31.2	PASS
COM	512	1850.2	28.8	PASS
GSM 1900MHz	661	1880.0	28.7	PASS
1900MHZ	810	1909.8	28.5	PASS
CDDS	128	824.2	31.1	PASS
GPRS 850MU	190	836.6	31.2	PASS
850MHz	251	848.8	31.1	PASS
CDDS	512	1850.2	28.5	PASS
GPRS 1900MHz	661	1880.0	28.4	PASS
1900/01/12	810	1909.8	27.9	PASS
EDCE	128	824.2	26.3	PASS
EDGE	190	836.6	26.3	PASS
850MHz	251	848.8	25.4	PASS
EDCE	512	1850.2	24.2	PASS
EDGE	661	1880.0	24.6	PASS
1900MHz	810	1909.8	24.3	PASS

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



WCDMA M	WCDMA Model Test Verdict:									
	band	band WCDMA			850 WCDMA 1900			WCDMA1700		
Item	Frequency	4132	4183	4233	9262	9400	9538	1313	1413	1513
	Subtest		dBm			dBm			dBm	
WCDMA	RMC 12.2Kbps	21.61	21.23	21.52	21.63	21.01	21.73	21.51	21.18	21.56
	1	21.23	21.61	23.46	21.21	20.81	21.02	21.23	21.17	21.31
HSDPA	2	21.08	21.33	23.2	21.09	20.56	20.8	21.11	20.92	21.09
	3	21.01	21.30	23.24	20.98	20.48	20.81	21.00	20.84	21.10
	4	21.06	21.23	23.33	21.06	20.5	20.89	21.08	20.86	21.18
	1	21.11	20.58	21.51	21.68	21.46	21.39	21.08	20.9	21.19
	2	21.00	20.35	21.39	21.56	21.22	21.23	20.96	20.66	21.03
HSUPA	3	20.93	20.45	21.38	21.53	21.3	21.34	20.93	20.74	21.14
	4	20.99	20.36	21.23	21.55	21.22	21.16	20.95	20.66	20.96
	5	20.88	20.40	21.36	21.44	21.33	21.28	20.84	20.77	21.08



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:

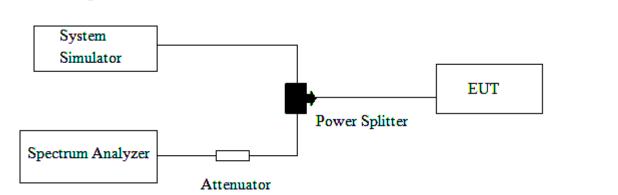
a. Set the CCDF (Complementary Cumulative Distribution Function) option on the spectrum analyzer.

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

Dand	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	0.40	13	PASS
1900/01112	810	1909.8	0.20		PASS
EDGE	512	1850.2	2.20		PASS
1900MHz	661	1880.0	1.60	13	PASS
19001/112	810	1909.8	2.80		PASS
WCDMA	9262	1852.4	3.16		PASS
1900MHz	9400	1880.0	2.69	13	PASS
1900/01/12	9538	1907.6	2.85		PASS
WCDMA	1312	1712.4	1.94		PASS
WCDMA 1700MHz	1412	1732.4	3.06	13	PASS
1700101112	1513	1752.6	2.76		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.

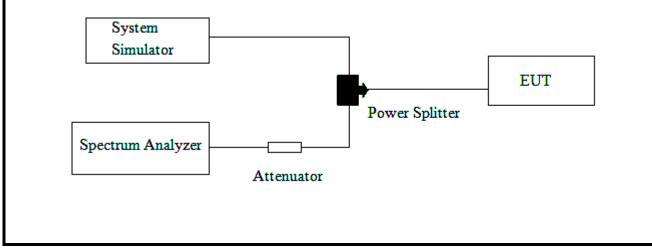
3. The RF output of the EUT was connected to the spectrum analyzer by RF cable and attenuator.

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





			26dB	99% Occupied	
Band	Channel	Frequency (MHz)	bandwidth (KHz)	Bandwidth (KHz)	Refer to Plo
	128	824.2	313.1	242.02	Plot A1
GSM 850MHz	190	836.6	313.7	245.31	Plot A2
	251	848.8	314.2	243.71	Plot A3
	512	1850.2	310.5	241.15	Plot B1
GSM 1900MHz	661	1880.0	307.5	243.37	Plot B2
	810	1909.8	309.2	240.56	Plot B3
EDGE 850MHz	128	824.2	311.4	245.66	Plot C1
	190	836.6	300.8	244.72	Plot C2
	251	848.8	292.1	235.76	Plot C3
	512	1850.2	308.9	241.76	Plot D1
EDGE 1900MHz	661	1880.0	307.5	243.23	Plot D2
	810	1909.8	306.5	243.69	Plot D3
	4132	826.4	4717	4138.7	Plot E1
WCDMA 850MHz	4183	836.6	4706	4126.5	Plot E2
	4233	846.6	4715	4135.3	Plot E3
	9262	1852.4	4781	4160.5	Plot F1
WCDMA 1900MHz	9400	1880	4738	4144.2	Plot F2
	9538	1907.6	4749	4138.1	Plot F3
	1312	1712.4	4744	4146.7	Plot G1
WCDMA 1700MHz	1412	1732.4	4731	4148.9	Plot G2
	1513	1752.6	4758	4151.4	Plot G3

£ 000/. A ind **B** dwidtk 4 764B B 4 D 14 .



2.3.6 Test Results (Plots) of 99% Occupied Bandwidth and 26dB Bandwidth 24. Center Freq: 824. Trig: Free Run #Atten: 32 dB Ref 40.00 dB Center Fr pan 1 M 105.5 r 38.0 4 242.02 kHz 321 Hz 99.00 % 313.1 kHz x dB 26.00 dB GSM 850MHz Channel = 128 Occupied bandwidth) (Plot A1: Radio Std: None Center Freq: 83 Trig: Free Run Ref 40.00 dBn Center F Span 1 M p 105.5 r #VBW 10 kH 37.3 dE 245.31 kHz Freq 1.279 kHz 99.00 % % of 313.7 kHz 26.00 dB (Plot A2: GSM 850MHz Channel = 190 Occupied bandwidth) Ref 40.00 dB Center Fre 848.800000 Mi an 1 105. W 10 kH

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

% of OBW P

99.00 %

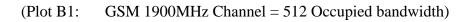
243.71 kHz

14.21

966 Hz



200 200 0.00 0.00 0.00 20.0	ef 40.00 dBm		mon	1 1			Center Free 1.850200000 GH
200 200 100 000 100 200			mont	1			
20.0	-4		- Nig	۱			
		~54		Lunte.			
30.0 41.0 60.0 (1.15)	and a start				Mar and the	Warner	
Center 1.85 GH #Res BW 3 kH			#VBW 10 kHz		Sp Sweep	oan 1 MHz 105.5 ms	CF Ste 100.000 kH
Occupied	Bandwidth 24	1.15 kHz	Total Power	33	3.4 dBm		Auto Ma Freg Offse
Transmit Fr x dB Bandv		-199 Hz 310.5 kHz	% of OBW P x dB		99.00 % 6.00 dB		OH



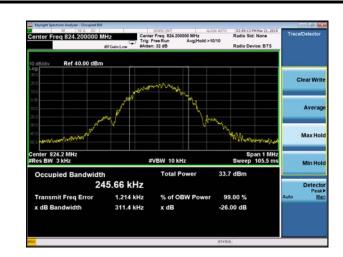


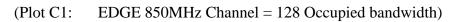
(Plot B2: GSM 1900MHz Channel = 661 Occupied bandwidth)



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









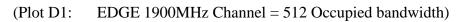
(Plot C2: EDGE 850MHz Channel = 190 Occupied bandwidth)



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









(Plot D2: EDGE 1900MHz Channel = 661 Occupied bandwidth)



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

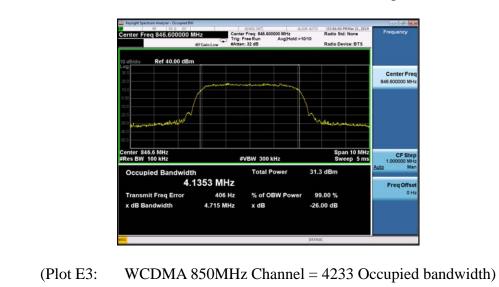


826.600000	61	Trig: Free R	: 826.600000 Mi	Hz	(10	Radio Std	and the second	Frequency
Ref 40.00 dBr	n							
	manner		margan					Center Fri 826.600000 Mi
1				X				
und				l	Unen	alungeran	annatha	
MHz kHz		#VBW	300 kHz			Spa Swe	ep 5 ms	CF Ste 1.000000 M
			otal Powe	r	31.0	dBm		<u>Auto</u> M
4. Freq Error width	-199.64 kH	tz 9		ower				Freq Offs 01
	Ref 40.00 dBr MHz kHz I Bandwidt 4. Freq Error	Ref 40.00 dBm	Ref 40.00 dBm MHz svbw 4 Bandwidth 4.1387 MHz Freq Error -199.64 kHz 5	Ref 40.00 dBm Ref 40.00 dBm MHz svBW 300 kHz H Bandwidth Total Powe 4.1387 MHz Freq Error -199.64 kHz % of OBW F	Ref 40.00 dBm Attain 32 dB Ref 40.00 dBm MHz Hz Hz Hz Hz Hz Hz Hz Hz Hz	Ref 40.00 dBm AvgHold-31010 Ref 40.00 dBm MHz Bandwidth 4.1387 MHz Freq Error -199,64 kHz % of OBW Power 99.J	Ref 40.00 dBm Atten: 32 dB Ref 40.00 dBm MHz Badio Dev MHz Badio Dev Badio Dev	Ref 40.00 dBm Attain 32 dD Ref 40.00 dBm MHz Bandwidth 4 Bandwidth 4.1387 MHz Freq Error -199.64 kHz % of OBW Power 99.00 %



Res BW 100 kHz Occupied Bandwid		Total Power	Sweep 5 m 31.5 dBm 99.00 %	CF Step 1.000000 MH3 Auto Mar Freq Offset 0 H0
enter 836.6 MHz			Span 10 MH	
10 dBidiw Ref 40.00 dBi .eg 20 0 20 0 10 0	m			Center Fred 836.600000 MH

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



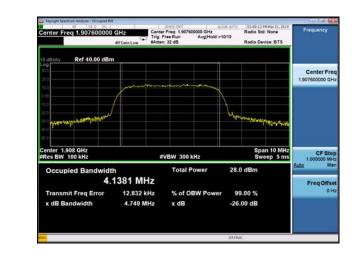


Transmit Freq I x dB Bandwidt	Error	605 MHz 7.396 kHz 4.781 MHz	% of OBW x dB	V Power	99.0 -26.00			Freq Off 0
#Res BW 100 kHz Occupied Bar		#VBW 300 kHz Sweep 5 ms Total Power 28.0 dBm					1.000000 MH Auto Ma	
410 63 0 Center 1.852 GHz						Spa	n 10 MHz	CFS
0.00 10.0 20.0	and l				luni	hours		
20.0		marine		min				Center Fr 1.852400000 G
10 dB/div Ref 40	0.00 dBm	D Gain:Low #Atte	n: 32 db			2010 044	CH: BTS	
Center Freq 1.852		Trig:	Freq: 1.85240000 Free Run		10	ladio Std:		Frequency

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

4. Transmit Freq Error x dB Bandwidth	1442 MHz 14.603 kHz 4.738 MHz	% of OBW Power x dB	99.00 % -26.00 dB		Freq Offse 0 H	
	Occupied Bandwidth Total Power 28.0 dBm					
enter 1.88 GHz Res BW 100 kHz		VBW 300 kHz		eep 5 ms	CF Ste 1.000000 MH	
Alternation and the second second			Hy Massime	in a second s		
00						
20	Junanun	-			Center Fre 1.88000000 GF	
dB/div Ref 40.00 dBn	n					
enter Freq 1.88000000	Trig: I	r Freq: 1.88000000 GHz Free Run Avg Hold:>1 h: 32 dB	Radio Sto 0/10 Radio De		Frequency	

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



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

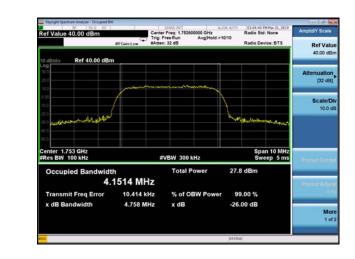


Center Fred L. 7/12 CHU200 CH2 BFCatal.dow Arg/Hold > 1910 Radio Device: BTS Radio De	4.* Transmit Freq Error x dB Bandwidth	13.401 kHz 4.744 MHz	% of OBW Pow x dB		.00 % 00 dB	Freq Offse 01
Center Fri Center Fr		ı		28.1		ms 1.000000 MH
Leftiler Freq Trey Free Run AvgiHeld > 1010 Radio Device: BTS 0 BfGaintow BfGaintow Radio Device: BTS Radio Device: BTS 00 Center Fin Trey Free Run AvgiHeld > 1010 Radio Device: BTS 01 Distribution Center Fin Trey Free Run AvgiHeld > 1010 02 Distribution Center Fin Trey Free Run Radio Device: BTS 03 Distribution Center Fin Trey Free Run Radio Device: BTS 04 Distribution Center Fin Trey Free Run Radio Device: BTS 05 Distribution Center Fin Trey Trey Free Run 05 Distribution Center Fin Trey Trey Trey Trey 06 Distribution Distribution Center Fin Trey Trey	410 500 Center 1.712 GHz				Span 10 N	AHZ CE St
Leftfor Freq T. F1240000 GH2 #FGalc.low Trip: FreeBun AvgiHold:>1010 Radio Device: BT5 10 dBldir Ref 40.00 dBm	0.00 10.0			hours		
Trig: Free un Avg/Hold>1010	30.0					Center Fre
	Center Freq 1.712400000	Tri		£>10/10	Radio Std: None Radio Device: BT	Frequency S



Keysight Spectrum Analyzer - Occupied Bill		ana ana ana a		040
Center Freq 1.732400000	Trig: F	stast bit) r Freq: 1.732400000 GHz Free Run Avg(Hold.> h: 32 dB	10/10 Radio Device	one Frequency
t0 dB/div Ref 40.00 dBm	·			
30.0 .20.0				Center Freq 1.732400000 GHz
0.0	1 martine	min		
30.0				
30.0 panapatranalantehan			We work have an	an and a second second
60.0				
Center 1.732 GHz #Res BW 100 kHz		VBW 300 kHz		10 MHz CF Step 5 ms 1.000000 MHz
Occupied Bandwidt		Total Power	28.0 dBm	Auto Man
	1489 MHz			Freq Offset
Transmit Freq Error x dB Bandwidth	11.937 kHz 4.731 MHz	% of OBW Power x dB	r 99.00 % -26.00 dB	- OH2
ANG .			STATUS	

(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

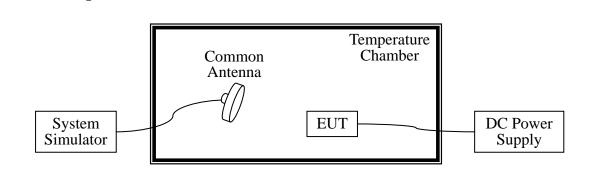
- 1. The testing follows FCC KDB 971168 D01 v03r01 Section 9.0.
- 2. The EUT was set up in the thermal chamber and connected with the system simulator.
- 3. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency 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	SM 850	Channel:	190
Limit(ppm):	Limit(ppm):			Frequency:	836.6MHz
Dowon	Tomporate	1400	GSM	EDGE	
Power (VDC)	Temperatu	ire	Deviation	Deviation	Result
(VDC)	(°C)		(ppm)	(ppm)	
	-30 -20 -10 0		0.0046	0.0042	
			0.0039	0.0005	
			0.0036	0.0015	
			0.0041	0.0023	
3.8	+10		0.0030	0.0015	
	+20		0.0035	0.0034	PASS
	+30		0.0037	0.0030	
	+40		0.0041	0.0051	
	+50		0.0032	0.0057	
4.4	+25		0.0048	0.0035	
3.5	+25		0.0049	0.0023	



GSM 1900MHz Band

Band:		GS	M 1900	Channel:	661
Limit(ppm):		2.5		Frequency:	1880.0MHz
Power	Temperatu	ıre	GSM Deviation	EDGE Deviation	Result
(VDC)	(°C)		(ppm)	(ppm)	
	-30		0.0050	0.0032	
	-20		0.0057	0.0040	
	-10		0.0056	0.0031	
	0		0.0047	0.0023	
3.8	+10		0.0044	0.0033	
	+20		0.0049	0.0028	PASS
	+30		0.0059	0.0020	
	+40		0.0047	0.0011	
	+50		0.0055	0.0033	
4.4	+25		0.0057	0.0018	
3.5	+25		0.0052	0.0028	

WCDMA 850MHz Band

Band:		WCDMA Bar	nd V	Channel:		4183
Limit(ppm)	:	2.5		Frequency: 836.6N RMC 12.2Kbps Period Deviation Period (ppm) 0.0023 0.0037 0.0037 0.0036 0.0035	836.6MHz	
Power (VDC)		perature (℃)	J.	Deviation		Result
-		-30 -20 -10		0.0037		
3.8		0 +10		0.0036		
		+20 +30		0.0031		PASS
4.4		+40 +50 +25				
3.5		+25		0.0030		



WCDMA 1900MHz Band

Band:		WCDMA	Band II	Channel:		9400
Limit(ppm):		2.5		RMC 12.2Kbps Result Deviation Result (ppm) 0.0034 0.0023 0.0031 0.0040 0.0040	1880.0MHz	
Power (VDC)	-	perature	.5 Frequence ature RMC 12.2Kb Deviation (ppm) 0 0.0034 0 0.0023 0 0.0031 0 0.0043 0 0.0025 0 0.0031 0 0.0031	Deviation		Result
		-30 -20 -10		0.0023		
3.8		0 +10		0.0037		D. GG
	-	+20 +30 +40		0.0025		PASS
4.4		+50 +25		0.0031 0.0038		
3.5	-	+25		0.0024		

WCDMA 1700MHz Band

Band:	WCDMA	Band IV	Channel:	1412
Limit(ppm):	2.5		Frequency:	1732.4MHz
Power (VDC)	Temperature (℃)	F	RMC 12.2Kbps Deviation (ppm)	Result
3.8			0.0046 0.0029 0.0039 0.0043 0.0038 0.0033	 PASS
4.4	+20 +30 +40 +50 +25		0.0033 0.0025 0.0044 0.0040 0.0029	
3.5	+25		0.0044	



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.

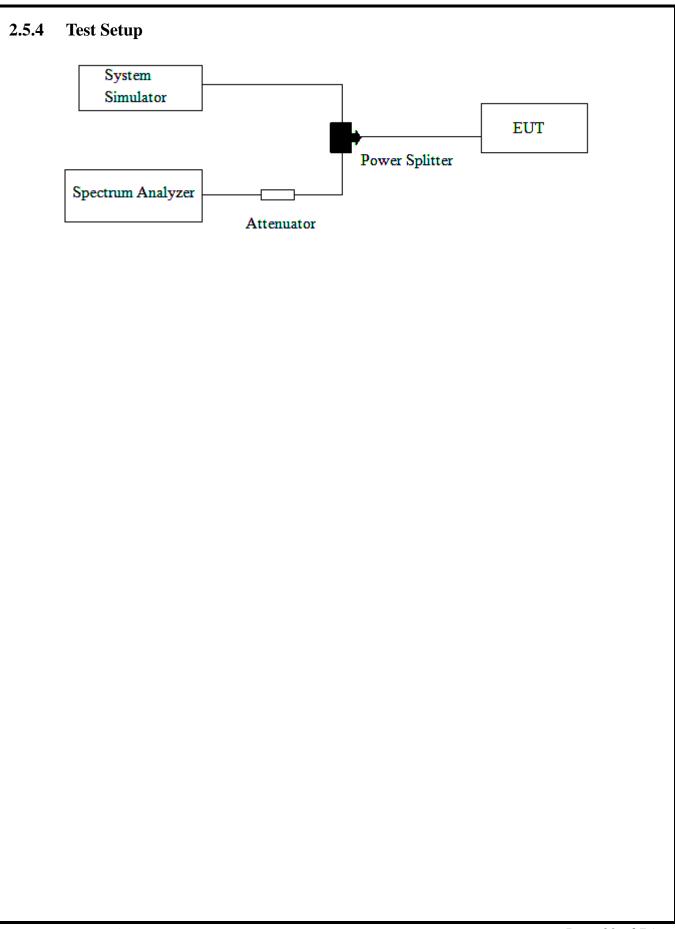
2.5.3 Test Procedures

- 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.
- 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.

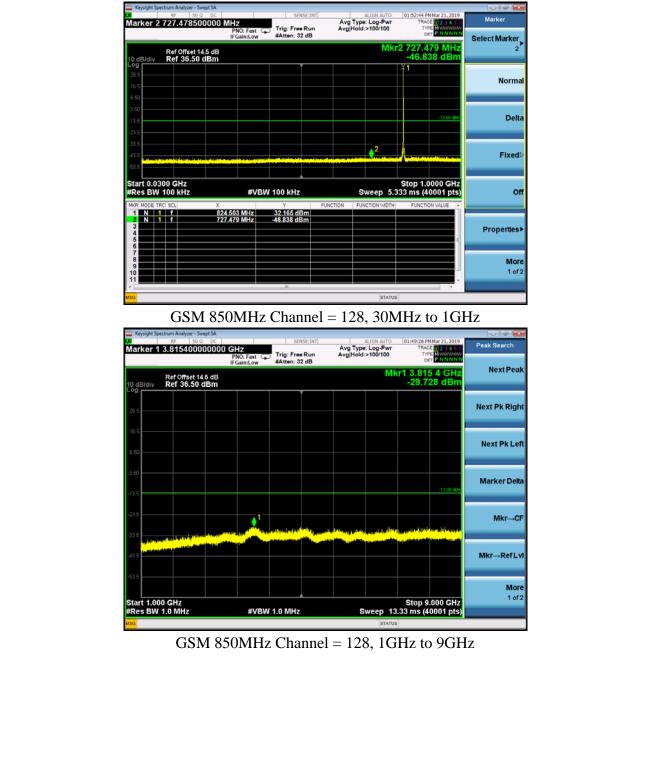






2.5.5 Test Result (Plots) of Conducted Spurious Emission

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.





	00000 M			Ave	ALIGN AUTO Type: Log-Pwr Hold:>100/100	01:53:10 PM Mar 21, 2019 TRACE 1 2 3 4 5 6 TYPE M	Marker
	14.5 dB				·	2 629.945 MHz	Select Marke
Ref 36.50	dBm					¥1	Norm
						-13.00 dBm	De
		et Margaret					Fixe
800 GHz 100 kHz	×	#VB		EUNCTION			
f	836.7			1			Propertie
							M
	629.94500 Ref Offset 7 Ref 36.50 000 GHz 100 KHz KI SCL	629,945000000 M Ref Offset 14.5 dB Ref 36.50 dBm 000 GHz 100 GHz 100 KHz 1 8355	629.945000000 MHz PN0: Fast IF Gaint Low Ref Offset 14.5 dB Ref 36.50 dBm 3600 GHz 100 KHz 4 VB 835.773 MHz	629.945000000 MHz PNO; Fast PNO; Fast Atten: 32 of Atten: 40 of Atten	629.945000000 MHz PNO: Fast If Gaint.ow Trig: Free Run Avg Avg Avg Avg Avg Avg Avg Avg	629.945000000 MHz PNO: Fast If GainLow PNO: Fast PNO: Fast P	629.945000000 MHz IFGalnLow Trig: Free Rin #Atten: 32 dB Avg Type: Log-Pwr Avg[Hold::100/100 Trice IP 38 450 Processor Ref Offset 14.5 dB Ref 36.50 dBm Mkr2 629.945 MHz -47.358 dBm 100 400 100 Processor State 14.5 dB Ref 36.50 dBm 100 400 100 Processor 100 Processor 100 Processor State 14.5 dB Ref 36.50 dBm 200 Processor 100 Processor 100 Processor 100 Processor State 14.5 dB Ref 36.50 dBm Free Rin Processor 100 Processor 100 Processor 100 Processor State 14.5 dB Ref 36.50 dBm Free Rin Processor 100 Processor 100 Processor 100 Processor State 14.5 dB Ref 36.50 dBm Free Rin Processor 100 Processor 100 Processor 100 Processor State 14.5 dB Ref 36.50 dBm Free Rin Processor 100 Processor 100 Processor 100 Processor 100 Processor State 14.5 dB Ref 36.5 dBm Free Rin Processor 100 Processor 100 Processor

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

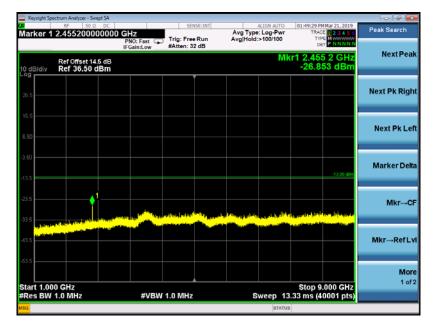


GSM 850MHz Channel = 190, 1GHz to 9GHz



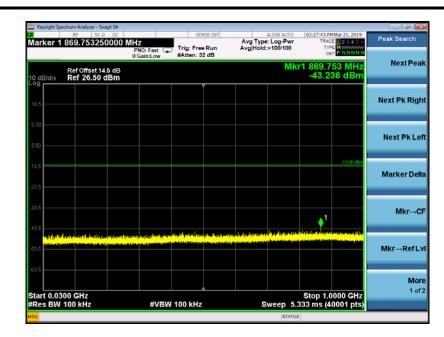
Marker 2	^{RF} 50 5 944.63725	P	Z NO: Fast C Gain:Low	Trig: Free R #Atten: 32 d	Avg un Avg	g Type: Log-Pwr Hold:>100/100	TRAC	4Mar 21, 2019 E 1 2 3 4 5 6 E M NNNNN T P NNNNN	Peak Search
10 dB/div	Ref Offset 14.5 dB Mkr2 944.637 MHz (B/div Ref 36.50 dBm -46.856 dBm								
26.5							¥1		Next Pk Rig
-3.50								-13.00 dBm	Next Pk L
-33.5 -43.5 -53.5		de la la caractería de la cale				, id tundent de die side side		2	Marker De
Start 0.03 #Res BW	100 kHz	X	#VB	W 100 kHz	FUNCTION	Sweep 5.	333 ms (4)	0000 GHz 0001 pts)	Mkr→
1 N 1 2 N 1 3 4 5	1		7 MHz 7 MHz	32.275 dBm -46.856 dBm					Mkr→Refl
6 7 8 9									M c 1 c

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

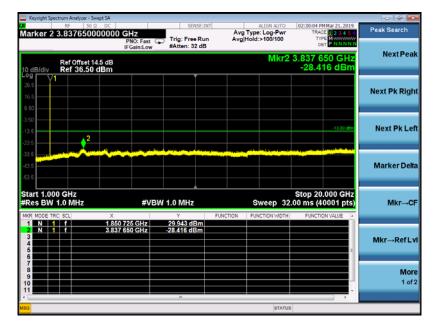


GSM 850MHz Channel = 251, 1GHz to 9GHz



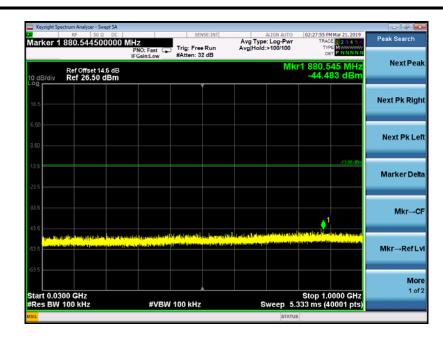


GSM 1900MHz Channel = 512, 30MHz to 1GHz

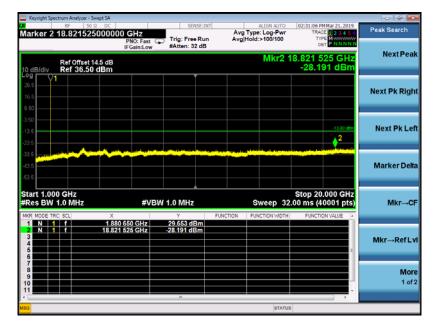


GSM 1900MHz Channel = 512, 1GHz to 20GHz



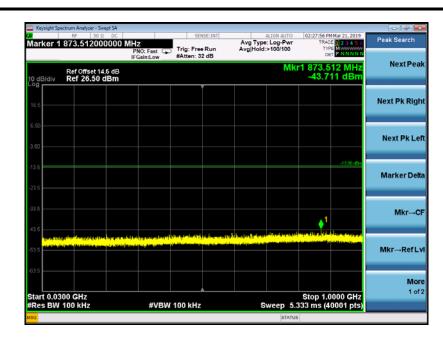


GSM 1900MHz Channel = 661, 30MHz to 1GHz



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





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



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



SENSE:INT ALIGN AUTO 01:55:26 PM Mar 21, 2019 Avg Type: Log-Pwr TRACE ID:23 4.5 6 rig: Free Run Avg[Hold>100/100 TYPE Mar 21, 2019 Atten: 32 dB OFT P INNUM	eak Search
Mkr2 922.036 MHz -46.379 dBm	Next Pea Next Pk Righ Next Pk Le Marker Delt
N N	lext Pk Ri
-13.00 dev	Next Pk L
	Marker D
Stop 1.0000 GHz 10 kHz Sweep 5.333 ms (40001 pts) Y FUNCTION	Mkr→
2.404 dBm 3.379 dBm	Mkr→Ref
	M (

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



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



larker 2	8F 50 € 934.01575	50000 MHz); Fast 😱	Trig: Free F	Av tun Av	g Type: Log-Pwr g Hold:>100/100	TYPE	1 2 3 4 5 6	Marker		
0 dB/div		IFGaint.ow #Atten: 32 dB 0er PANNING Miset 14.5 dB Mkr2 934.016 MHz 36.50 dBm -47.098 dBm									
.og 26.5 16.5							X1		Norn		
6.50 3.50 13.6 23.5								-13.00 dbm	De		
33.6			u di su consider					≜ 2	Fixe		
Start 0.03 Res BW	100 kHz	×	#VBW	100 kHz	FUNCTION	Sweep 5.	Stop 1.00 333 ms (40	001 pts)	(
1 N 1 2 N 1 3 4 5 5	1	836.895 934.016		32.291 dBr -47.098 dBn	n	PONCTION MIDT	Powerlow		Propertie		
6 7 8 9									M (

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



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



Peak Search Next Pea	Mar 21, 2019 E 1 2 3 4 5 6 E M	TRAC	LIGN AUTO Log-Pwr >100/100	Avg Ty Avg Ho			PNO: Fast G	50 Q DC 250000 M		Marker
	Ref Offset 14.5 dB Mkr2 751.704 MHz dB/dlv Ref 36.50 dBm -45.327 dBm									
Next Pk Rig		¥1								26.5
Next Pk L	-13.00 dBm									-3.50 -13.5 -23.5
Marker De		Land ¹ Construction	2		ar and daa		ueren en trekkere		a the state state	-33.5 -43.5 -53.5
Mkr→	0000 GHz 0001 pts)	33 ms (40	weep 5.3		FU	100 kHz	#VBW	X	300 GHz 100 kHz	
Mkr→Refl						31.383 dB -45.327 dB	44 MHz 04 MHz			2 N 3 4 5
Mc 1.c										6 7 8 9 10

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



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



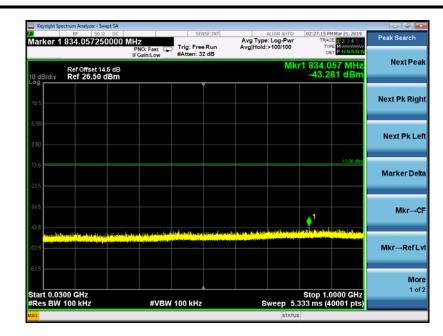


EDGE 1900MHz Channel = 512, 30MHz to 1GHz



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



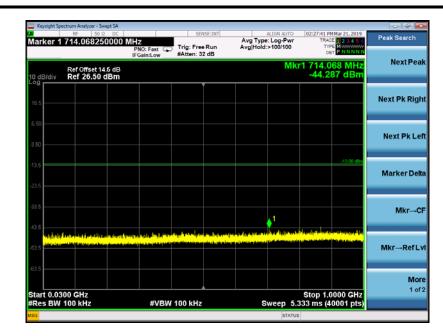


EDGE 1900MHz Channel = 661, 30MHz to 1GHz

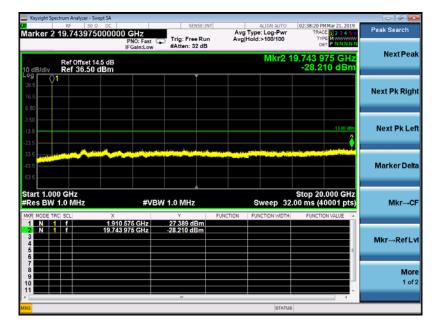


EDGE 1900MHz Channel = 661, 1GHz to 20GHz



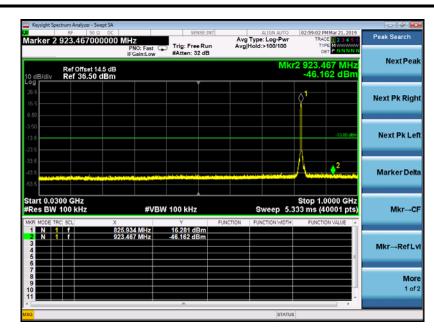


EDGE 1900MHz Channel = 810, 30MHz to 1GHz

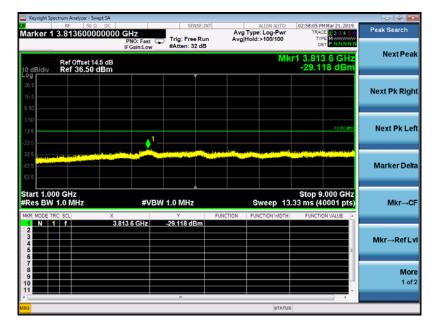


EDGE 1900MHz Channel = 810, 1GHz to 20GHz



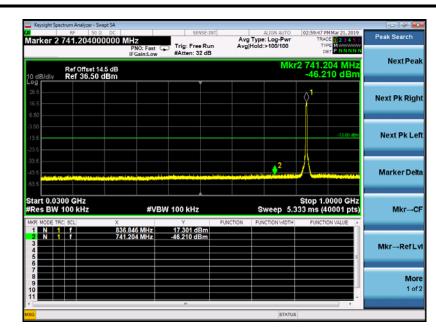


WCDMA850MHz Channel = 4132, 30MHz to 1GHz

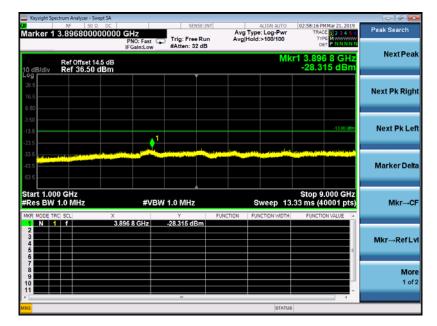


WCDMA850MHz Channel = 4132, 1GHz to 9GHz



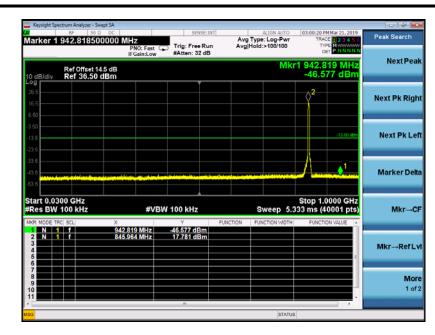


WCDMA850MHz Channel = 4183, 30MHz to 1GHz

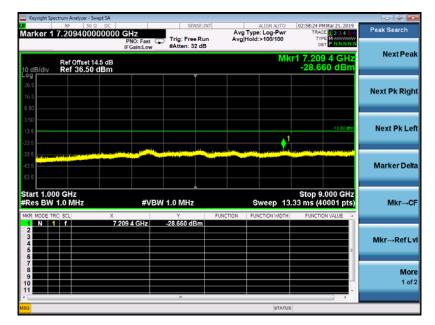


WCDMA850MHz Channel = 4183, 1GHz to 9GHz





WCDMA850MHz Channel = 4233, 30MHz to 1GHz



WCDMA850MHz Channel = 4233, 1GHz to 9GHz