

Report No. : BLA-EMC-202006-A52-05

FCC REPORT (GSM &WCDMA)

Product Name	:	Mobile Phone
Trade mark	:	TECNO
Model No.	:	B1f
FCC ID	:	2ADYY-B1F
Report Number	:	BLA-EMC-202006-A52-05
Date of sample receipt	:	June18, 2020
Date of Test	:	June19, 2020–June26, 2020
Date of Issue	:	July8, 2020
Test standard	:	FCC CFR Title 47 Part 2 FCC CFR Title 47 Part22 Subpart H FCC CFR Title 47 Part24 Subpart E
Test result	:	PASS

Prepared for:

TECNO MOBILE LIMITED

ROOM 604 6/F SOUTH TOWER WORLD FINANCE CTR HARBOUR CITY 17 CANTON ROAD TST KL

Prepared by: BlueAsia of Technical Services(Shenzhen) Co.,Ltd. IOT Test Centre of BlueAsia No. 448 Bulong Road, Bantian Street, Longgang District, Shenzhen,China TEL: +86-755-28682673

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Compiled by: asan Approved by:

Review by:) weet ling Date: July 8, 2020



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1. Version

Version No.	Date	Description
00	July 8, 2020	Original



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3. Test Summary

Test Item	Section in CFR 47	Result
	Part 1.1307	Pass
RF Exposure (SAR)	Part 2.1093	(Please refer to
	RSS102 Issue5	SAR Report)
	Part 2.1046	
RF Output Power	Part 22.913 (a)(2)	Pass
	Part 24.232 (c)	
Peak-to-Average Power Ratio	Part 24.232 (d)	Pass
Modulation Characteristics	Part 2.1047	Pass
	Part 2.1049	
99% & -26 dB Occupied Bandwidth	Part 22.917(b)	Pass
	Part 24.238(b)	
	Part 2.1051	
Spurious Emissions at Antenna Terminal	Part 22.917 (a)	Pass
	Part 24.238 (a)	
	Part 2.1053	
Field Strength of Spurious Radiation	Part 22.917 (a)	Pass
	Part 24.238 (a)	
Out of hand emission, Dand Edge	Part 22.917 (a)	Deee
Out of band emission, Band Edge	Part 24.238 (a)	Pass
	Part22.355	
Frequency stability vs. temperature	Part24.235	Pass
	Part 2.1055(a)(1)(b)	
	Part22.355	
Frequency stability vs. voltage	Part24.235	Pass
	Part 2.1055(d)(2)	
Pass: The EUT complies with the essential requiremen	ts in the standard.	



4. General Information

5.1 Client Information

Applicant:	TECNO MOBILE LIMITED
Address:	ROOM 604 6/F SOUTH TOWER WORLD FINANCE CTR HARBOUR CITY 17 CANTON ROAD TST KL
Manufacturer	TECNO MOBILE LIMITED
Address:	ROOM 604 6/F SOUTH TOWER WORLD FINANCE CTR HARBOUR CITY 17 CANTON ROAD TST KL
Factory	SHENZHEN TECNO TECHNOLOGY CO., LTD.
Address	101,Building 24,Waijing Industrial Park,FuminCommunity,FuchengStreet,LonghuaDistrict,ShenzhenCity ,P.R.China

5.2 General Description of E.U.T.

Product Name:	Mobile Phone			
Model No.:	B1f			
Operation Frequency range:	GSM 850: 824.20MHz-848.80MHz			
	PCS1900: 1850.20MHz-1909.80MHz			
1	WCDMA Band V:826.4MHz-846.6MHz			
	WCDMA Band II:1852.4 MHz -1907.6 MHz			
Modulation type:	GSM/GPRS:GMSK,EGPRS: 8PSK,UMTS:QPSK,			
Antenna type:	Internal Antenna			
Antenna gain:	GSM850:-2dBi			
	PCS1900:-2.5dBi			
	WCDMA Band V:-2 dBi			
	WCDMA Band II:-2.5dBi			
Power supply:	Rechargeable Li-ion Battery DC3.8V, 2400mAh			
AC adapter with two plugs :	Model: A8-501000			
	Input: AC100-240V 50/60Hz 0.2A			
	Output: DC 5.0V, 1000mA			
Remark: The Antenna Gain is supplied by the customer. Blue Asia is not responsible for this data				



Operation Frequency List:

GSM 850		PCS1900		
Channel:	Frequency (MHz)	Channel:	Frequency (MHz)	
128	824.20	512	1850.20	
129	824.40	513	1850.40	
189	836.40	660	1879.80	
190	836.60	661	1880.00	
191	836.80	662	1880.20	
250	848.60	809	1909.60	
251	848.80	810	1909.80	
WCDMA	NBand V	WCDMA Band II		
Channel:	Frequency (MHz)	Channel: Frequency (
4132	826.40	9262	1852.40	
4133	826.60	9263	1852.60	
4182	836.40	9399	1879.80	
4183	836.60	9400	1880.00	
4184	836.80	9401	1880.20	
4232	846.40	9537	1907.40	
4233	846.60	9538	1907.60	

Regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

GSM850			PCS1900			
Channel		Frequency(MHz)	Channel		Frequency(MHz)	
Lowest channel	128	824.20	Lowest channel 512		1850.20	
Middle channel	190	836.60	Middle channel 661		1880.00	
Highest channel	251	848.80	Highest channel 810		1909.80	
WCDMA Band V			WCDMA Band II			
Channe)	Frequency(MHz)	Channel Frequency(MHz)			
Lowest channel	4132	826.40	Lowest channel 9262		1852.40	
Middle channel	4183	836.60	Middle channel 9400		1880.00	
Highest channel	4233	846.60	Highest channel 9538		1907.60	



5.3 Test modes

Operating Environmen	Operating Environment:				
Temperature:	Normal: 15℃~ 35℃, Extreme: -10℃ ~ +55℃				
Humidity:	20 % ~ 75 % RH				
Atmospheric Pressure:	1008 mbar				
Voltage:	Nominal: 3.8Vdc, Extreme: Low 3.5 Vdc, High 4.35 Vdc				
Test mode:					
GSM mode	Keep the EUT communication with simulated station in GSM mode				
GPRS mode	Keep the EUT communication with simulated station in GPRS mode				
EGPRS mode	Keep the EUT communication with simulated station in EGPRS mode				
RMC mode	Keep the EUT communication with simulated station in RMC mode				
HSDPA	Keep the EUT communication with simulated station in HSDPA mode				
HSUPA	Keep the EUT communication with simulated station in HSUPA mode				
Remark: The EUT has b for each type band with r radiation emission was n	Remark: The EUT has been tested undercontinuous transmitting mode. Channel Low, Mid and High for each type band with rated data rate were chosen for full testing. The field strength of spurious radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2,				

radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for these modes with power adaptor, earphone and Data cable. Just the worst case position (H mode) shown in report.

5.4 Description of Support Units

	Manufacturer	Model No.	Serial No.	
Simulated Station	R&S	CMW500	1201.0002K50	

5.5 Measurement Uncertainty

Parameters	Expanded Uncertainty		
Radiated Emission (9kHz ~ 30MHz)	4.24 dB (k=2)		
Radiated Emission (30MHz ~ 1000MHz)	4.35 dB (k=2)		
Radiated Emission (1GHz ~ 18GHz)	4.44 dB (k=2)		
Radiated Emission (18GHz ~ 26.5GHz)	4.56 dB (k=2)		
Radiated Emission (18GHz ~ 26.5GHz)	4.56 dB (k=2)		

5.6 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations:

• FCC — Designation No.: CN1252

BlueAsia of Technical Services(Shenzhen) Co.,Ltd.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 files. DesignationCN1252.

•ISED - CAB identifier No.: CN0028

BlueAsia of Technical Services(Shenzhen) Co.,Ltd.has been registered by Certification and Engineering Bureau of ISED for radio equipment testing with CAB identifierCN0028.

•CNAS - Registration No.: CNAS L9788

BlueAsia of Technical Services(Shenzhen) Co.,Ltd. is accredited to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L9788

5.7 Laboratory Location

BlueAsia of Technical Services(Shenzhen) Co., Ltd. IOT Test Centre of BlueAsia No. 448 Bulong Road, Bantian Street, Longgang District, Shenzhen, China Telephone: TEL: +86-755-28682673 FAX: +86-755-28682673

5.8 Test Instruments list

Radiated Emission:



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ltem	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m SAC	SKET	9m*6m*6m	966	7/4/2019	7/3/2020
2	Broadband Antenna	SCHWARZBECK	VULB9168	00836 P:00227	7/14/2018	7/13/2020
3	Horn Antenna	SCHWARZBECK	9120D	01892 P:00331	7/14/2018	7/13/2020
4	EMI Test Software	EZ	EZ	N/A	N/A	N/A
5	Pre-amplifier	SKET	LNPA-0118-45N/A	N/A	7/4/2019	7/3/2020
6	Spectrum analyzer	Rohde & Schwarz	FSP40	100817	7/4/2019	7/3/2020
7	EMI Test Receiver	Rohde & Schwarz	ESR7	101199	4/20/2020	4/19/2021
8	Controller	SKET	N/A	N/A	N/A	N/A
9	Vector Signal Generator	Agilent	E4438C	MY45092582	5/24/2020	05-23-2021
10	Signal Generator	Agilent	E8257D	MY44320250	5/24/2020	05-23-2021
11	Coaxial Cable	BlueAsia	BLA-XC-02	N/A	N/A	N/A
12	Coaxial Cable	BlueAsia	BLA-XC-03	N/A	N/A	N/A
13	Coaxial Cable	BlueAsia	BLA-XC-01	N/A	N/A	N/A

Conducted Emission							
ltem	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)	
1	EMI Test Receiver	Rohde & Schwarz	ESPI3	101082	07/14/2019	07/13/2020	
2	LISN	CHASE	MN2050D	1447	12/18/2019	12/17/2020	
3	LISN	Rohde & Schwarz	ENV216	3560.6550.15	07/14/2019	07/13/2020	
4	EMI Test Software	EZ	EZ	N/A	N/A	N/A	
5	Temperature Humidity Chamber	Mingle	TH101B	N/A	07/14/2019	07/13/2020	
6	Coaxial Cable	BlueAsia	BLA-XC-05	N/A	N/A	N/A	



RF Conducted Test:						
ltem	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Spectrum Analyzer	Agilent	N9030A	MY50510123	5/24/2020	5/23/2021
2	Spectrum analyzer	Rohde & Schwarz	FSP40	100817	7/4/2019	7/3/2020
3	Vector Signal Generator	Agilent	E4438C	MY45092582	05/24/2020	05/23/2021
4	Signal Generator	Agilent	E8257D	MY44320250	05/24/2020	05/23/2021
5	Power Sensor	D.A.R.E	RPR3006W	17100015SNO27	05/24/2020	05/23/2021
7	DC Power Supply	LODESTAR	LP305DE	N/A	07/14/2019	07/13/2020
8	Temperature Humidity Chamber	Mingle	TH101B	N/A	07/14/2019	07/13/2020



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5. Test results

6.1 Conducted Output Power

Test Requirement:	FCC part 22.913(a)(2), FCC part24.232(c)
Test Method:	ANSI/TIA-603-D 2010
Limit:	GSM850: 7W, PCS1900: 2W WCDMA Band V: 7W, WCDMA Band II: 2W
Test setup:	ATT EUT
Test Procedure:	The transmitter output was connected to a calibrated attenuator, the other end of which was connected to the simulated station. Transmitter output power was read off in dBm.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed



Measurement Data:

	Burst Average power (dBm)			
EUT Mode	128	190	251	Limit(dBm)
	824.20MHz	836.60MHz	848.80MHz	
GSM 850	32.48	32.66	33.13	
GPRS 850 (1 Uplink slot)	32.53	32.68	33.14	
GPRS 850 (2 Uplink slot)	31.56	31.73	32.17	
GPRS 850 (3 Uplink slot)	29.82	29.96	30.39	
GPRS 850 (4 Uplink slot)	29.04	29.15	29.60	38.45
EGPRS 850 (1 Uplink slot)	25.90	25.73	25.82	
EGPRS 850 (2 Uplink slot)	24.67	24.37	24.76	
EGPRS 850 (3 Uplink slot)	22.37	22.36	22.13	
EGPRS 850 (4 Uplink slot)	20.36	20.51	20.75	
	Bur	rst Average power (d	Bm)	
EUT Mode	512	661	810	Limit(dBm)
	1850.20MHz	1880.00MHz	1909.80MHz	
PCS 1900	28.40	28.35	28.12	
GPRS 1900 (1 Uplink slot)	28.45	28.39	28.06	
GPRS 1900 (2 Uplink slot)	27.51	27.45	27.06	33.00
GPRS 1900 (3 Uplink slot)	25.71	25.67	25.29	
GPRS 1900 (4 Uplink slot)	24.87	24.85	24.47	
EGPRS 1900 (1 Uplink slot)	25.83	26.06	25.57	
EGPRS 1900 (2 Uplink slot)	24.90	24.99	24.98	
EGPRS 1900 (3 Uplink slot)	22.97	22.70	22.09	
EGPRS 1900 (4 Uplink slot)	21.27	20.84	20.48	



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		Burst Average power (dBm)			
EUT Mo	de	4132	4183	4233	Limit(dBm)
		826.40MHz	836.60MHz	846.60MHz	
	Subtest 1	22.11	22.30	22.11	
UMTS 850	Subtest 2	21.71	21.60	21.69	
HSDPA	Subtest 3	20.19	20.48	20.78	
	Subtest 4	20.51	20.90	20.53	
	Subtest 1	21.91	22.14	21.84	38.45
	Subtest 2	22.05	22.19	21.87	
UMTS 850 HSUPA	Subtest 3	20.91	20.72	20.76	
	Subtest 4	22.07	22.27	22.08	
	Subtest 5	21.55	21.61	21.49	
UMTS 850 RMC	12.2kbps	23.03	23.18	23.03	
		Burst	Average power (dl	Bm)	
EUT Mo	ide	Burst 9262	Average power (dl 9400	Bm) 9538	Limit(dBm)
EUT Mc	de	Burst 9262 1852.40MHz	Average power (dl 9400 1880.00MHz	8m) 9538 1907.60MHz	Limit(dBm)
EUT Mc	ode Subtest 1	Burst 9262 1852.40MHz 21.27	Average power (dl 9400 1880.00MHz 21.59	Bm) 9538 1907.60MHz 21.03	Limit(dBm)
EUT Mc UMTS 1900	ode Subtest 1 Subtest 2	Burst 9262 1852.40MHz 21.27 20.84	Average power (dl 9400 1880.00MHz 21.59 21.13	Bm) 9538 1907.60MHz 21.03 20.22	Limit(dBm)
EUT Mc UMTS 1900 HSDPA	ode Subtest 1 Subtest 2 Subtest 3	Burst 9262 1852.40MHz 21.27 20.84 19.47	Average power (dl 9400 1880.00MHz 21.59 21.13 19.76	Bm) 9538 1907.60MHz 21.03 20.22 19.07	Limit(dBm)
EUT Mc UMTS 1900 HSDPA	ode Subtest 1 Subtest 2 Subtest 3 Subtest 4	Burst 9262 1852.40MHz 21.27 20.84 19.47 19.22	Average power (dl 9400 1880.00MHz 21.59 21.13 19.76 20.10	Bm) 9538 1907.60MHz 21.03 20.22 19.07 19.30	Limit(dBm)
EUT Mc UMTS 1900 HSDPA	ode Subtest 1 Subtest 2 Subtest 3 Subtest 4 Subtest 1	Burst 9262 1852.40MHz 21.27 20.84 19.47 19.22 20.95	Average power (dl 9400 1880.00MHz 21.59 21.13 19.76 20.10 21.57	Bm) 9538 1907.60MHz 21.03 20.22 19.07 19.30 20.92	Limit(dBm)
EUT Mc UMTS 1900 HSDPA	ode Subtest 1 Subtest 2 Subtest 3 Subtest 4 Subtest 1 Subtest 2	Burst 9262 1852.40MHz 21.27 20.84 19.47 19.22 20.95 21.21	Average power (dl 9400 1880.00MHz 21.59 21.13 19.76 20.10 21.57 21.46	Bm) 9538 1907.60MHz 21.03 20.22 19.07 19.30 20.92 21.08	Limit(dBm) 33.00
EUT Mc UMTS 1900 HSDPA UMTS 1900 HSUPA	ode Subtest 1 Subtest 2 Subtest 3 Subtest 4 Subtest 1 Subtest 2 Subtest 3	Burst 9262 1852.40MHz 21.27 20.84 19.47 19.22 20.95 21.21 19.94	Average power (dl 9400 1880.00MHz 21.59 21.13 19.76 20.10 21.57 21.46 20.23	Bm) 9538 1907.60MHz 21.03 20.22 19.07 19.30 20.92 21.08 19.57	Limit(dBm) 33.00
EUT Mc UMTS 1900 HSDPA UMTS 1900 HSUPA	ode Subtest 1 Subtest 2 Subtest 3 Subtest 4 Subtest 1 Subtest 2 Subtest 3 Subtest 3 Subtest 4	Burst 9262 1852.40MHz 21.27 20.84 19.47 19.22 20.95 21.21 19.94 21.38	Average power (dl 9400 1880.00MHz 21.59 21.13 19.76 20.10 21.57 21.46 20.23 21.73	Bm) 9538 1907.60MHz 21.03 20.22 19.07 19.30 20.92 21.08 19.57 21.12	Limit(dBm) 33.00
EUT Mc UMTS 1900 HSDPA UMTS 1900 HSUPA	ode Subtest 1 Subtest 2 Subtest 3 Subtest 4 Subtest 1 Subtest 2 Subtest 3 Subtest 3 Subtest 4 Subtest 4 Subtest 5	Burst 9262 1852.40MHz 21.27 20.84 19.47 19.22 20.95 21.21 19.94 21.38 20.60	Average power (dl 9400 1880.00MHz 21.59 21.13 19.76 20.10 21.57 21.46 20.23 21.73 20.92	Bm) 9538 1907.60MHz 21.03 20.22 19.07 19.30 20.92 21.08 19.57 21.12 20.36	Limit(dBm) 33.00



6.2 Occupy Bandwidth

Test Requirement:	FCC part 22.917(b), FCC part 24.238(b)
Test Method:	ANSI/TIA-603-D 2010
Test setup:	System simulator Splitter ATT EUT Spectrum Analyzer
Test Procedure:	 The EUT's output RF connector was connected with a short cable to the spectrum analyzer RBW was set to about 1% of emission BW, VBW= 3 times RBW. -26dBc display line was placed on the screen (or 99% bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed



Measurement Data:

EUT Mode	Channel	Frequency (MHz)	99% Occupy bandwidth (kHz)	-26dB bandwidth (kHz)
	128	824.2	244.256	319.706
GSM 850	190	836.6	247.191	313.943
	251	848.8	248.091	317.852
	128	824.2	254.245	290.052
EGPRS 850	190	836.6	248.577	318.398
	251	848.8	245.772	294.526
	512	1850.2	245.562	317.778
PCS 1900	661	1880.0	242.201	320.529
	810	1909.8	245.728	317.110
	128	1850.2	250.749	314.768
EGPRS1900	190	1880.0	254.413	324.607
	251	1909.8	254.469	321.609
	4132	826.4	4161.742	4654.574
UMTS 850	4183	836.6	4163.815	4701.966
	4233	846.6	4147.763	4675.029
	9262	1852.4	4171.151	4696.300
UNIS 1900	9400	1880.0	4173.706	4690.215
	9538	1907.6	4168.943	4708.720

Note: GSM & GPRS use the same modulation technical (GMSK), and with the same channels, so the 99% OBW and the -26dB of GPRS not performed.



Test plot as follows:



GSM 850 99% Occupy bandwidth&26dB Emission Bandwidth

















Lowest channel



Middle channel









PCS 1900

99% Occupy bandwidth&26dB Emission Bandwidth



Lowest channel











EGPRS 1900

99% Occupy bandwidth&26dB Emission Bandwidth













UMTS 850 12.2k RMC 99% Occupy bandwidth&26dB Emission Bandwidth













UMTS 1900 12.2k RMC

99% Occupy bandwidth&26dB Emission Bandwidth

01:11:36 AM Jun 1 Radio Std: None RL RF 50 R AC Center Freq: 1.8 Trig: Free Run Radio Device: BTS Ref Offset 7.67 dB Ref 40.00 dBm enter 1.852 GHz tes BW 100 kHz Span 6 MH Sweep 1 m #VBW 300 kHz 29.5 dBm Occupied Bandwidth Total Power 4.1712 MHz -9.500 kHz Transmit Freq Error 99.00 % OBW Power x dB Bandwidth 4.696 MHz -26.00 dB x dB

Lowest channel

er Fre	q 1.880000	000 GI	lz	Center Freq: 1.880000	ALISNAUTO 000 GHz AvgjHold: 200/200	01:11:45 AM Jun 19 Radio Std: None
/div	Ref Offset 7 Ref 40.00	68 dB dBm	#IFGain:Low	#Atten: 40 dB		Radio Device: B IS
	1101 10100					
		~~~~	m	mmmmm	mmm	m
	/					· *
		_				
		_				
J.	~	_				han
		-				
er 1.8	B GHz			#\/BW 200 k	u-,	Span 6
DWV 1	00 KH2			#VDW 300 K	n2	Sweep
cupi	ed Bandw	/idth		Total Power	29.7 dBm	
		4.17	'37 MHz			
ansmi	t Freq Erro	r	-9.516 kHz	OBW Power	99.00 %	
dB Bar	ndwidth		4.690 MHz	x dB	-26.00 dB	
					20100 42	

ter Freq 1.90760000	GHz	Center Freq: 1.9076000 Trig: Free Bun	00 GHz AvaiHald: 200/200	Radio Std: None
	#IFGain:Low	#Atten: 40 dB		Radio Device: BTS
Ref Offset 7.68 d B/div Ref 40.00 dBr	m			
		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		
- And				many -
ſ				
mm				~
ter 1.908 GHz				Span 6
s BW 100 kHz		#VBW 300 k	Hz	Sweep
ccupied Bandwid	th	Total Power	29.8 dBm	
4.	1689 MHz			
ransmit Freq Error	-31.483 kHz	OBW Power	99.00 %	
dB Bandwidth	4.709 MHz	x dB	-26.00 dB	





6.3 Peak-to-Average Power Ratio

Test Requirement:	FCC part 24.232(d)
TestMethod	ANSI/TIA-603-D 2010
Limit:	The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.
Test setup:	
Test Procedure:	 The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. Set the CCDF option in spectrum analyzer, RBW ≥ OBW, Set the EUT working in highest power level, measured and recorded the 0.1% as PAPR level. Repeat step 1~3 at other frequency and modulations.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data:

Modulation	Test channel	PAPR
	128	2.62
GSM 850	190	2.63
	251	2.64
	512	2.62
PCS 1900	661	2.62
	810	2.63
	4132	2.81
UMTS 850 RMC	4182	2.91
	4233	2.84
	9262	2.68
UMTS 1900 RMC	9400	2.73
	9538	2.54



GSM 850



















Middle channel



Highest channel







UMTS 850 12.2k RMC















Lowest onalmer



Middle channel



Highest channel





6.4 Modulation Characteristic

K)

According to FCC § 2.1047(d), Part 22H & 24Ethere is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

6.5 Out of band emission at antenna terminals

Test Requirement:	FCC part22.917(a), FCC part24.238(a)
Test Method:	ANSI/TIA-603-D 2010
Limit:	-13dBm
Test setup:	System simulator Splitter ATT EUT Spectrum Analyzer
Test Procedure:	 The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 100 kHz when below 1GHz, 1MHz when above 1 GHz; sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic. For the out of band: Set the RBW=100 kHz, VBW=300 kHz when below 1 GHz, RBW =1 MHz, VBW=3 MHz when above 1 GHz, Start=30MHz, Stop= 10th harmonic. Band Edge Requirements: In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed



Test plots as follows:

Band	Channel	Frequency (MHz)	Spur Freq (MHz)	Spur Level (dBm)	Limit (dBm)	Verdict
GSM850	128	824.2	6329.05	-27.97	-13	PASS
GSM850	190	836.6	5580.55	-28.00	-13	PASS
GSM850	251	848.8	5771.47	-28.22	-13	PASS
PCS1900	512	1850.2	16428.37	-24.20	-13	PASS
PCS1900	661	1880	18753.87	-23.38	-13	PASS
PCS1900	810	1909.8	19046.43	-23.73	-13	PASS
Band5	4132	826.4	6545.15	-28.05	-13	PASS
Band5	4182	836.4	5684.98	-27.55	-13	PASS
Band5	4233	846.6	6471.37	-27.64	-13	PASS
Band2	9262	1852.4	16161.27	-24.31	-13	PASS
Band2	9400	1880	16005.50	-23.88	-13	PASS
Band2	9538	1907.6	18119.33	-24.56	-13	PASS

Spurious emission:

GSM 850

Lowest Channel



30MHz~10GHz

Middle channel

Agilent Spectr	rum Analyzer - Swept	SA							
(XIRL	RF 50 Q /	AC	SENSE:	INT	AL	IGNAUTO		11:54:13	PM Jun 18, 2020
Center F	req 5.015000	DOD GHZ	10 East ⊶ Tr	ig: Free Run		Avg Type Avg Hold:	: Log-Pwr 100/100	1	TYPE MWWWWWW
		IFO	Gain:Low #A	tten: 40 dB					DET P NNNNN
	Ref Offset 7.5 d	в						Mkr1 83	6.82 MHz
10 dB/div	Ref 30.00 dB	m						32.	321 dBm
20.0	1								
10.0									
0.00									
40.0									
- 10.0					. 2				-19.00 dBm
-20.0					\Diamond				
-30.0	no postati di Internette se el com								Non-Arristen
-40.0									
-50.0									
-60.0									
Start 30 h	/H7							Stop 1	0 000 GHz
#Res BW	1.0 MHz		#VBW 3.	0 MHz			Sweep	18.67 ms	(40001 pts)
MKR MODEL TR	RC SCL	×	Y	FUNCTION	FUNCT	ION WIDTH		UNCTION VALUE	^
<mark>1</mark> N 1	f	836.82 MHz	32.321 dBm						
2 N 1 3	т	5.580 55 GHz	-28.003 dBm						
4									
6									
7									
9									
10									~
<				11					>
MSG						STATUS			

30MHz~10GHz

Highest Channel

Center	Freq 5.01500	00000 GHz PN): Fast ↔ Trig: iin:Low #Atte	Free Run n: 40 dB	Avg T Avg H	ype: Log-Pwr old: 100/100	TRACE 1 TYPE M DET P
	Ref Offset 7.5	5 dB					Mkr1 849.04
10 dB/div	Ref 30.00 c	dBm					32.664
20.0	1						
10.0							
0.00							
-10.0							
-20.0					^ 2		
-30.0				المحمدان محاد الطبيب	∇		
-40.0							
-50.0							
-90.0							
00.0							
Start 30 #Res BV	MHz N 1.0 MHz		#VBW 3.0 I	٧Hz		Sweep	Stop 10.00 18.67 ms (4000
"		X	Y	FUNCTION	FUNCTION WIDTH	1	UNCTION VALUE
MKR MODE	TRC SCL						
MKE MODE	TRC SCL 1 f	849.04 MHz	32.664 dBm				
MKE MODE 1 N 2 N 3	TRC SCL 1 f 1 f	849.04 MHz 5.771 47 GHz	32.664 dBm -28.223 dBm				
1 N 2 N 3 4 5	TRC SCL 1 f 1 f	849.04 MHz 5.771 47 GHz	32.664 dBm -28.223 dBm				
XXXE X003 1 N 2 N 3 4 5 6 7	TRC SCL 1 f 1 f	849.04 MHz 5.771 47 GHz	32.664 dBm -28.223 dBm				
Mike Model 1 N 2 N 3 4 5 6 7 8	TFC SQL 1 f 1 f	849.04 MHz 5.771 47 GHz	32.664 dBm -28.223 dBm				
MR 2 N 1 N 2 N 3 4 5 6 7 8 9 10	TRC 50L 1 f 1 f	849.04 MHz 5.771 47 GHz	32.664 dBm -28.223 dBm				
MINE MODE 1 N 2 N 3 4 5 6 7 8 9 10 11		849.04 MHz 5.771 47 GHz	32,664 dBm -28,223 dBm				
MRE MODE 1 N 2 N 3 4 5 6 7 8 9 10 11 4 VISG		849.04 MHz 5.771 47 GHz	32.664 dBm -28.223 dBm	1	STATL	15	
Image: None N <th< td=""><td></td><td>849.04 MHz 5.771 47 GHz</td><td>32.664 dBm -28.223 dBm</td><td>í</td><td>STATU</td><td>15</td><td></td></th<>		849.04 MHz 5.771 47 GHz	32.664 dBm -28.223 dBm	í	STATU	15	

PCS 1900

Lowest Channel

30MHz~20GHz

Middle Channel

Agilent Spectrum A	nalyzer - Swept SA							
Center Freq	50 Ω AC 10.015000000 C	GHz PNO: Fast IFGain:Low	SENSE:IN	:FreeRun en:40 dB	ALIGNAUTO Avg Type Avg Hold	e: Log-Pwr : 100/100	12:14	TRACE 1 2 3 TYPE MWW DET P N N
Re 10 dB/div Re	f Offset 7.68 dB f 30.00 dBm						Mkr1 1. 23	880 2 G 7.930 dl
20.0	1							
40.0								
0.00								
40.0								
10.0								²
20.0								. Jun Ya
30.0			August,	New York Street				
40.0								
50.0								
60.0								
tart 30 MHz Res BW 1.0	MHz	;	¢VBW 3.0	MHz		Swee	Stop p 50.67 m	o 20.000 (s (40001
KR MODE TRC SC	4 000	0.011- 07	Y 020 dDat	FUNCTION	FUNCTION WIDTH		FUNCTION VALUE	
1 N 1 F 2 N 1 F	1.880	9 GHz -23	.388 dBm					
3 4								
5								
7								
9								
10								

30MHz~20GHz

Highest Channel

30MHz~20GHz

UMTS 850 12.2k RMC

Lowest Channel

30MHz~10GHz

		PNO:Fast ↔ Ths -Gain:Low #Att	en: 40 dB		Avginola.	100/100		DET
R 10 dB/div	ef Offset 7.5 dB ef 30 00 dBm						Mkr1 8 2	35.58 3.034
Log 20.0	V1							
10.0								_
0.00								
-10.0								
-20.0				\Diamond				
-40.0								
-50.0								
•								
-60.0								
-60.0 Start 30 MHz	Z	#//DW 0.0				.	Sto	o 10.000
-60.0 Start 30 MH: #Res BW 1.0	z) MHz	#VBW 3.0	MHz			Sweep	Sto 18.67 m	o 10.000 Is (4000
-60.0 Start 30 MHz #Res BW 1.0	z) MHz f 835.58 MHz	#VBW 3.0	MHZ	FUNCT	ION WIDTH	Sweep	Sto 18.67 m	o 10.000 is (4000
-60.0 Start 30 MH/ #Res BW 1.0 1 N 1 2 N 1 3	z D MHz f 835,58 MHz f 5,684 98 GHz	#VBW 3.0 23.034 dBm -27.552 dBm	MHZ	FUNCT	ION WIDTH	Sweep	Sto 18.67 m	o 10.000 is (4000
-60.0 Start 30 MH/ #Res BW 1.0 1 N 1 2 N 1 3 4 5	Z D MHz F 835,58 MHz F 5,684 98 GHz	#VBW 3.0 23.034 dBm -27.552 dBm	MHz	FUNC	ION WIDTH	Sweep	Sto 18.67 m UNCHONWALL	o 10.00(is (4000
-600 Start 30 MH: #Res BW 1.0 1 N 1 2 N 1 3 4 5 6 7 8	Z JMHZ SCI X F 835.68 MHz F 5.684 98 GHz	#VBW 3.0 ¥ 23.034 dBm -27.552 dBm	MHz	FUNCT	ION WIDTH	Sweep	Sto 18.67 m	o 10.000 is (4000
-80 0 Start 30 MH/: #Res BW 1.(1002 Hace Hace 1 N 1 3 4 5 6 6 7 7 8 9 9 9 9	Z JMHZ SCI 835.58 MHz f 5.684 98 GHz	#VBW 3.0 23.034 dBm -27.652 dBm	MHz	FUNCT	ION WIDTH	Sweep	Sto 18.67 m UNCHON WALL	o 10.00(s (4000
-80 0 Start 30 MH/ #Res BW 1.0 1002 Har 10 1 N 1 2 N 1 3 4 5 6 6 7 8 9 9 10 11	Z JMHZ SQI X35.58 MHZ f 5.684 98 GHz	#VBW 3.0 23.034 dBm -27.552 dBm	MHz	FUNCT	ION WIDTH	Sweep	Stoj 18.67 m	o 10.000 s (4000

Highest Channel

30MHz~10GHz

UMTS 1900 12.2k RMC

Lowest Channel

30MHz~20GHz

30MHz~20GHz

Highest Channel

		cu uni A	iatyzer - 5	mepe an											
Cer	nter	Freq	10.01	<u>o</u> AC 500000	00 GHz	PNO: Fast IFGain:Low	, ⊶⊷ ,	Trig: Free #Atten: 40	Run dB	ALI	IGN AUTO Avg Typ Avg Hold	e: Log-Pwr 1: 100/100		01:17:-	14 AM JU TRACE TYPE N DET F
10 d	B/div	Re Re	f Offset i f 30.00	7.68 dB) dBm									M	kr1 1.9 22	006 7 .185
20.0	-		♥ 1												-
10.0															
-10.0															0.2
-20.0 -30.0															Ŷ
-40.0	, <mark>inter</mark>									-					-
-50.0 -60.0															
Sta	rt 30	MHz												Stop	20.00
Sta #Re	rt 30 es Bi) MHz N 1.0	MHz				#VBV	/ 3.0 MHz	z			Swe	eep 50	Stop).67 ms	20.0((400
Sta #Re 1 2 3	nt 30 es Bi Mooe N N	0 MHz AV 1.0 1 f 1 f	MHz	× 1 18	1.906 7 GH 3.119 3 GH	z 2: z -24	#VBV 2.185 c 1.570 c	i 3.0 MH z IBm IBm	NCTION	FUNCT	ION WIDTH	Swe	eep 50 Euxo	Stop).67 ms TONVALUE	20.00
Sta #Re 1 2 3 4 5 6	nt 30 es Bi N N N	0 MHz A/ 1.0 1 f 1 f	MHz	× 1 18	I.906 7 GH 3.119 3 GH	iz 2: iz -24	# VBV 2.185 c 1.570 c	V 3.0 MHz FUI IBm IBm	2 NCTION	FUNCT	ION WIDTH	Swe	eep 50	Stop).67 ms TON VALUE	20.00
Sta #Re 1 2 3 4 5 6 7 8 9	nt 30 es B1 2009 N N	MHz AV 1.0	MHz	X 1 18	1.906 7 GH 3.119 3 GH	z 2: z -24	# VBV 2.185 c 1.570 c	i 3.0 MH; IBm Bm	Z	FUNCT	ION WIDTH	Swe	eep 5(RUNG	Stop).67 ms TONVALUE	20.00
Sta #Re 1 2 3 4 5 6 7 8 9 10	nt 30 es B1 N N N	0 MHz AV 1.0 1 f 1 f	MHz	× 1 1ε	1.906 7 GH 3.119 3 GH	z 2: z -24	# VBV 2.185 c	V 3.0 MHz IBm Bm	2 NGTION		ION WIDTH	Swe	eep 50 Funct	Stop D.67 ms	20.00
Sta #Re 1 2 3 4 5 6 7 8 9 10 11 1 < MSG	nt 30 es B) 1009 N N	MHz A/ 1.0	MHz 9	1 18	1.906 7 GH 3.119 3 GH	z 21 z -24	#VBV 2.185 c 1.570 c	V 3.0 MHz Bm Bm	Z NCTION		ION WIDTH	Swi	eep 50 Funct	Stop).67 ms Tonvaue	20.00

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Band edge emission:

Band	Channel	Frequency (MHz)	Spur Freq (MHz)	Spur Level (dBm)	Limit (dBm)	Verdict
GSM850	128	824.2	823.99	-26.76	-13	PASS
GSM850	251	848.8	849.02	-26.81	-13	PASS
PCS1900	512	1850.2	1849.99	-32.04	-13	PASS
PCS1900	810	1909.8	1910.02	-30.82	-13	PASS
Band5	4132	826.4	824.00	-24.05	-13	PASS
Band5	4233	846.6	849.00	-25.36	-13	PASS
Band2	9262	1852.4	1850.00	-24.11	-13	PASS
Band2	9538	1907.6	1910.00	-25.04	-13	PASS
			GSM850			

Lowest channel

Highest channel

PCS1900

Lowest channel

Highest channel

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UMTS 850 RMC 12.2kbps

Highest channel

Lowest channel

UMTS 1900 RMC 12.2kbps

Lowest channel

Highest channel

6.6 ERP, EIRP Measurement

Measurement Data (worst case):

EUT mode Channel EUT Pol. Antenna Pol. ERP(dBm) Lin	Limit (dBm) Result
---	--------------------

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COMPEO	251	Ц	V	31.61		
GSIMOSU	251	Π	Н	27.72		Pass
	125	Ц	V	23.48	29.45	
EGERSOOU	125	П	Н	22.16		
UMTS 850 12.2k	1192	Ц	V	22.22		
RMC	4105		Н	18.28		

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
DCS1000	510	Ц	V	26.89		
PC31900	512		Н	28.16		
	661	Ц	V	25.04	22	Pass
EGFRS1900	001	П	Н	23.41		
UMTS 1900	0.400	Ц	V	22.32		
12.2k RMC	9400		Н	19.45		

6.7 Field strength of spurious radiation measurement

Measurement Data (worst case):

Test mode:	GSN	1850	Test channel:	Lowest
	Spurious	Emission	Limit (dPm)	Popult
Frequency (MHZ)	Polarization	Level (dBm)		Result
1648.40	Vertical	-30.55		
2472.60	V	-31.58	-13.00	Pass
3296.80	V	-33.95		
1648.40	Horizontal	-28.58		
2472.60	Н	-35.13	-13.00	Pass
3296.80	Н	-34.04		
Test mode:	GSN	1850	Test channel:	Middle
Fraguanay (MHz)	Spurious	Emission		- .
Frequency (MHZ)	Polarization	Level (dBm)	Limit (dBm)	Result
1673.20	Vertical	-28.83		
2509.80	V	-31.09	-13.00	Pass
3346.40	V	-32.31		
1673.20	Horizontal	-24.51		
2509.80	Н	-30.10	-13.00	Pass
3346.40	Н	-32.77		
Test mode:	GSN	1850	Test channel:	Highest
Frequency (MHz)	Spurious	Emission	Limit (dBm)	Pocult
	Polarization	Level (dBm)		Result
1697.60	Vertical	-30.72		
2546.40	V	-32.32	-13.00	Pass
3395.20	V	-30.26		
1697.60	Horizontal	-26.99		
2546.40	Н	-29.55	-13.00	Pass
3395.20	Н	-32.79		

Remark:

Test mode:	PCS	1900	Test channel:	Lowest	
	Spurious	Emission	Limit (dDm)	Deput	
Frequency (MHZ)	Polarization	Level (dBm)		Result	
3700.40	Vertical	-30.84	12.00	Deee	
5550.60	V	-37.35	-13.00	Pass	
3700.40	Horizontal	-36.43	12.00	Deep	
5550.60	Н	-35.29	-13.00	Pass	
Test mode:	PCS	1900	Test channel:	Middle	
	Spurious	Emission	Limit (dDm)	Decult	
Frequency (MHZ)	Polarization	Level (dBm)		Result	
3760.00	Vertical	-24.43	12.00	Deep	
5640.00	V	-33.18	-13.00	Pass	
3760.00	Horizontal	-24.51	12.00	Deep	
5640.00	Н	-37.15	-13.00	Pass	
Test mode:	PCS	1900	Test channel:	Highest	
	Spurious	Emission	Limit (dDm)	Deput	
Frequency (MHZ)	Polarization	Level (dBm)		Result	
3819.60	Vertical	-27.43	12.00	Deep	
5729.40	V	-35.41	-13.00	rass	
3819.60	Horizontal	-29.03	12.00	Deee	
5729.40	Н	-33.43	-13.00	Pass	

Remark:

Test mode:	WCDMA BANI	O V 12.2k RMC	Test channel:	Lowest	
	Spurious	Emission	Limit (dDm)	Desult	
Frequency (MHZ)	Polarization	Level (dBm)		Result	
1652.80	Vertical	-45.38	12.00	Deee	
2479.20	V	-43.73	-13.00	F 855	
1652.80	Horizontal	-51.36	12.00	Dava	
2479.20	Н	-48.78	-13.00	Pass	
Test mode:	WCDMA BANI	O V 12.2k RMC	Test channel:	Middle	
Fraguanay (MHz)	Spurious Emission		Limit (dRm)	Popult	
Frequency (IVITIZ)	Polarization	Level (dBm)		Result	
1673.20	Vertical	-54.53	12.00	Pass	
2509.80	V	-51.06	-13.00		
1673.20	Horizontal	-51.15	12.00	Page	
2509.80	Н	-48.18	-13.00	Pass	
Test mode:	WCDMA BANI	WCDMA BAND V 12.2k RMC		Highest	
Eroqueney (MHz)	Spurious Emission		Limit (dPm)	Popult	
Frequency (IVITZ)	Polarization	Level (dBm)		Result	
1693.20	Vertical	-53.69	12.00	Deee	
2539.80	V	-44.28	-13.00	rass	
1693.20	Horizontal	-51.07	12.00	Deep	
2539.80	Н	-48.52	-13.00	Pass	

Remark:

Test mode:	WCDMA Band II 12.2k RMC		Test channel:	Lowest	
	Spurious	Emission	Limit (dPm)	Decult	
	Polarization	Level (dBm)		Result	
3704.80	Vertical	-49.42			
5557.20	V	-35.86	12.00	Pass	
3704.80	Horizontal	-50.98	-13.00		
5557.20	Н	-36.43			
Test mode:	WCDMA Band	II 12.2k RMC	Test channel:	Middle	
	Spurious Emission		Limit (dRm)	Popult	
Frequency (IVITIZ)	Polarization	Level (dBm)		Result	
3760.00	Vertical	-47.65		Page	
5640.00	V	-32.69	12.00		
3760.00	Horizontal	-50.67	-13.00	r d S S	
5640.00	Н	-34.70			
Test mode:	WCDMA Band	WCDMA Band II 12.2k RMC		Highest	
	Spurious Emission				
Frequency (MHz)	Polarization	Level (dBm)	Limit (dBm)	Result	
3815.20	Vertical	-46.98			
5722.80	V	-42.10			
3815.20	Horizontal	-49.87	-13.00	Pass	
5722.80	Н	-41.34			

Remark:

6.8 Frequency stability V.S. Temperature measurement

Test Requirement:	FCC Part22.355, FCC Part24.235, FCC Part2.1055(a)(1)(b)			
Test Method:	ANSI/TIA-6-3-D 2010			
Limit:	±2.5ppm			
Test setup:	SA Fower Source 1. The equipment under test was connected to an external DC power			
rest procedure.	 The equipment under test was connected to an external DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25 °C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30 °C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10 °C increased per stage until the highest temperature of +50 °C reached 			
Test Instruments:	Refer to section 5.8 for details			
Test mode:	Refer to section 5.3 for details			
Test results:	Passed			

Measurement Data (the worst channel):

Reference Frequency: GSM850 Middle channel=190 channel=836.6MHz					
Power supplied	er supplied $T_{\text{opporture}}(^{\circ})$		Frequency error		Popult
(Vdc)	Temperature (C)	Hz	ppm	Limit (ppm)	Result
	-30	176	0.210375		
	-20	157	0.187664		
	-10	138	0.164953		
	0	127	0.151805		
3.80	10	116	0.138656	±2.5	Pass
	20	144	0.172125		
	30	141	0.168539		
	40	130	0.155391		
	50	119	0.142242		
Refe	erence Frequency: PC	CS1900 Middle	channel=661 chann	el=1880MHz	
Power supplied	Temporature (°C)	Frequ	Frequency error		Recult
(Vdc)	Temperature (C)	Hz	ppm	Limit (pphi)	Result
	-30	181	0.096277		
	-20	158	0.084043		
	-10	144	0.076596		
	0	132	0.070213		
3.80	10	128	0.068085	±2.5	Pass
	20	119	0.063298		
	30	110	0.058511		
					4
	40	141	0.075000		

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Refer	ence Frequency: EG	PRS850 Middle	e channel=190 chanr	nel=836.6MHz	
Power supplied	Temperature (℃)	Frequency error			Desult
(Vdc)		Hz	ppm	Limit (ppm)	Result
	-30	168	0.200813		
	-20	144	0.172125		
	-10	141	0.168539		
	0	136	0.016256		
3.80	10	127	0.015181	±2.5	Pass
	20	143	0.017093		
	30	135	0.016137		
	40	127	0.015180	6	
	50	125	0.014941		
Refer	ence Frequency: EG	PRS1900 Midd	le channel=661 char	nel=1880MHz	
Power supplied	Tomporaturo (°C)	Frequency error		Limit (nnm)	Recult
(Vdc)	Temperature (C)	Hz	ppm	Liniit (ppin)	Result
	-30	148	0.078723		
	-20	162	0.086170		
	-10	151	0.080319		
3.80	0	143	0.076064		
	10	125	0.066489	±2.5	Pass
	20	142	0.075532		
	30	130	0.069149		
	40	128	0.068085		
	50	141	0.075000		

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Reference Frequency:WCDMA BAND V 12.2k RMC Middle channel=4183 channel=836.6MHz						
Power supplied	Power supplied		Frequency error			
(Vdc)	Temperature (C)	Hz	ppm	Limit (ppm)	Result	
	-30	171	0.204399			
	-20	144	0.172125			
	-10	137	0.163758			
	0	124	0.148219			
3.80	10	110	0.131485	±2.5	Pass	
	20	162	0.193641			
	30	164	0.196032			
	40	140	0.167344	6		
	50	147	0.175711			
Reference Free	quency: WCDMA BA	ND II 12.2k	RMC Middle channel=9	400 channel=18	80MHz	
Power supplied	Tomporatura (°C)	Frequency error		Limit (nnm)	Result	
(Vdc)	Temperature (C)	Hz	ppm	Linii (ppin)	Result	
	-30	192	0.102128			
	-20	154	0.081915			
	-10	145	0.077128			
	0	168	0.089362			
3.80	10	147	0.078191	±2.5	Pass	
	20	129	0.068617			
	30	150	0.079787			
	40	138	0.073404			
	50	154	0.081915			

6.9 Frequency stability V.S. Voltage measurement

Test Requirement:	FCC Part 22,355, FCC Part 24,235, FCC Part2,1055(d)(2)
Test Method:	ANSI/TIA-603-D 2010
Limit [.]	+2 5ppm
Test setup:	SS SS SA Divider EUT EUT EUT Temperature & Humidity Chamber Power Source
Test procedure:	 Set chamber temperature to 25°C. Use a variable DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency. Reduce the input voltage to specify extreme voltage variation (+/-15%) and endpoint, record the maximum frequency change.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data (the worst channel):

Reference Frequency: GSM850 Middle channel=190 channel=836.6MHz						
Temperature ($^{\circ}$ C)	Power supplied	Frequ Hz	ency error	Limit (ppm)	Result	
	4.35	87	0.103992			
25	3.80	80	0.095625	±2.5	Pass	
	3.55	70	0.083672			
Refe	rence Frequency: EQ	SPRS850 Middl	e channel=190 char	nel=836.6MHz		
	4.35	100	0.119531			
25	3.80	96	0.114791	+2.5	Pass	
	3.55	81	0.096820	±2.0	1 435	
Ref	erence Frequency: P	CS1900 Middle	channel=661 chan	nel=1880MHz		
Temperature (℃)	Power supplied	Frequ	ency error	Limit (ppm)	Result	
	4 35	92	0.048936			
25	3.80	76	0.040426	+2.5	Pass	
23	3.55	82	0.040420	±2.5	F 855	
Refe	rance Frequency: EG	PRS1900 Midd	lle channel-661 cha	nnel-1880MHz		
	4.35	78	0.041489			
25	3.80	80	0.042553	±2.5	Pass	
	3.55	85	0.045213			
Reference	Frequency: UMTS 85	50 12.2k RMC N	/liddle channel=418	3 channel=836.6I	MHz	
Temperature (℃)	Power supplied	Frequ	ency error	Limit (ppm)	Result	
	(VUC)	HZ 96	ppm			
05	4.35	00	0.102797	0.5	David	
25	3.80	92	0.109969	±2.5	Pass	
	3.55	65	0.077695			
Reference Frequency: UMTS 1900 12.2k RMC Middle channel=9400 channel=1880MHz						
Temperature (°C)	Power supplied (Vdc)	Frequ Hz	ency error ppm	Limit (ppm)	Result	
	4.35	80	0.042553			
25	3.80	83	0.044149	±2.5	Pass	
	3.55	71	0.037766			

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-----End of report-----

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