

FCC TEST REPORT

Test report On Behalf of INVEGUA SAS ZESE For Mobile Phone Model No.: CR-MP3019

FCC ID: 2A2KFCR-MP3019

Prepared for : INVEGUA SAS ZESE Calle 7 # 6 - 57 of 102A, Riohacha-Guajira, Colombia

Prepared By : Shenzhen Tongzhou Testing Co.,Ltd 1th Floor, Building 1, Haomai High-tech Park, Huating Road 387, Dalang Street, Longhua, Shenzhen, China

Date of Test: 2021/6/10 ~ 2021/7/2

Date of Report: 2021/7/12

Report Number: TZ210602321-E3

The test report apply only to the specific sample(s) tested under stated test conditions It is not permitted to copy extracts of these test result without the written permission of the test laboratory.



TEST RESULT CERTIFICATION

Applicant's name:	INVEGUA SAS ZESE
Address:	Calle 7 # 6 - 57 of 102A, Riohacha-Guajira, Colombia
Manufacture's Name	INVEGUA SAS ZESE
Address:	Calle 7 # 6 - 57 of 102A, Riohacha-Guajira, Colombia
Product description	
Trade Mark	CROWN
Product name:	Mobile Phone
Model and/or type reference .:	CR-MP3019
Standards	FCC Rules and Regulations Part 22 & Part 24 ANSI C63.26:2015

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Date of Test	
Date (s) of performance of tests:	2021/6/10 ~ 2021/7/2
Date of Issue	2021/7/12
Test Result:	Pass

2

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Zhan?

(Andy Zhang)



Revision History

Revision	Issue Date	Revisions	Revised By
000	2021/7/12	Initial Issue	Andy Zhang



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1 TEST STANDARDS

The tests were performed according to following standards:

FCC Part 2: FREQUENCY ALLOCA-TIONS AND RADIO TREATY MAT-TERS; GENERAL RULES AND REG-ULATIONS

FCC Part 22 Subpart H: PRIVATE LAND MOBILE RADIO SERVICES.

FCC Part 24 Subpart E: PUBLIC MOBILE SERVICES

<u>ANSI/TIA-603-E-2016</u>: Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.

ANSI C63.26-2015: IEEE/ANSI Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

FCCKDB971168D01 Power Meas License Digital Systems



2 SUMMARY

2.1 Product Description

- UT	
EUT	: Mobile Phone
Model Number	: CR-MP3019
Model Declaration	: N/A
Test Model	: CR-MP3019
Power Supply	: N/A
Hardware version	: 2631-MB-V0.1
Software version	: 2631_XDSD_U530_CROWN_YFXY
Sample ID	: TZ210602321-2#
Bluetooth	
Bluetooth Version	: V2.1 + EDR
Channel Number	: 79 Channels
Modulation Technology	: GFSK, π/4-DQPSK, 8-DPSK
Data Rates	: 1/2/3Mbps
Antenna Type And Gain	: Internal Antenna,0.42dBi
WiFi	
WLAN	: Supported IEEE 802.11b/g/n
WLAN FCC Operation Frequency	IEEE 802.11b:2412-2462MHz : IEEE 802.11g:2412-2462MHz IEEE 802.11n HT20:2412-2462MHz
WLAN Channel Number	: 11 Channels for 2412-2462MHz(IEEE 802.11b/g/n HT20)
WLAN Modulation Technology	IEEE 802.11b: DSSS(CCK,DQPSK,DBPSK) : IEEE 802.11g: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n: OFDM (64QAM, 16QAM, QPSK, BPSK)
Antenna Type And Gain	: Internal Antenna, 0.42 dBi(Max.)
GSM	
Support Bands	⊠GSM 850 : ⊠PCS 1900 ⊠GSM 900 ⊠PCS 1800
GSM FCC Operation Frequency	. GSM850(UL: 824 – 849 MHz/DL: 869 – 894 MHz) GSM1900(UL: 1850 –1910 MHz/DL: 1930 – 1990 MHz)
Channel Separation	: 0.2MHz
Modulation Technology	: GMSK
Antenna Type And Gain	Internal Antenna, : GSM850:-0.17dBi; PCS1900:0.51dBi
ote: Antenna position refer to FUT	Photos

Note: Antenna position refer to EUT Photos



GSM Card Slot :

	Maximum ERP/EIRP (dBm)	Max. Conducted Power (dBm)	Max. Average Burst Power (dBm)
GSM 850	27.30	32.24	31.99
PCS 1900	25.74	30.30	30.09



2.2 Host System Configuration List and Details

Manufacturer	Description	Model	Serial Number	Certificate

2.3 Short description of the Equipment under Test (EUT)

EUT is subscriber equipment in the GSM system. Frequency bands Shows in section 2.1.

2.4 Normal Accessory setting

Fully charged battery was used during the test.

2.5 EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

 \Box supplied by the lab \Box supplied by the manufacturer

Manufacturer	Description	Model	Serial Number	Certificate
N/A	N/A	N/A	N/A	N/A

2.6 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: 2A2KFCR-MP3019 filing to comply with FCC Part 22 and FCC Part 24 Rules.

2.7 Modifications

No modifications were implemented to meet testing criteria.



3 TEST ENVIRONMENT

3.1 Test Facility

FCC

Designation Number: CN1275 Test Firm Registration Number: 167722 Shenzhen Tongzhou Testing Co.,Ltd has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

A2LA

Certificate Number: 5463.01 Shenzhen Tongzhou Testing Co.,Ltd has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

IC

ISED#: 22033 CAB identifier: CN0099 Shenzhen Tongzhou Testing Co.,Ltd has been listed by Innovation, Science and Economic Development Canada to perform electromagnetic emission measurement.

The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.10 and CISPR 16-1-4:2010

3.2 Environmental conditions

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

Temperature:	15-35 ° C
Humidity:	30-60 %
Atmospheric pressure:	950-



3.3 Test Description

PCS 1900:

Test Item	FCC Rule No.	Requirements	Judgement
Effective (Isotropic) Radiated Power	2.1046, 24.232(c)	EIRP ≤ 2W(33dBm)	Pass
Bandwidth	2.1049 24.238(a)	OBW: No limit. EBW: No limit.	Pass
Band Edges	2.1051, 24.238(a)	-13dBm	Pass
Spurious Emission at Antenna Terminals	2.1051, 24.238(a)	-13dBm	Pass
Field Strength of Spurious Radiation	2.1053, 24.238(a)	-13dBm	Pass
Frequency Stability	2.1055, 24.235	the fundamental emission stays within the authorized frequency block.	Pass
Peak to average ratio	24.232(d)	<13dB	Pass

GSM850:

Test Item	FCC Rule No.	Requirements	Judgement
Effective (Isotropic) Radiated Power	2.1046, 22.913(a)	ERP ≤ 7W(38.5dBm)	Pass
Occupied Bandwidth	2.1049	OBW: No limit.	Pass
Emission Bandwidth	22.917(b)	EBW: No limit.	Pass
Band Edges Compliance	2.1051, 22.917(a)(b)	-13dBm	Pass
Spurious Emission at Antenna Terminals	2.1051, 22.917	-13dBm	Pass
Field Strength of Spurious Radiation	2.1053, 22.917	-13dBm	Pass
Frequency Stability	2.1055, 22.355	the fundamental emissions stay within the authorized bands of operation. (2.5ppm)	Pass
Peak to average ratio	2.1046, 2.913(a)	<13dB	Pass



3.4 Equipment Used during the Test

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
1	MXA Signal Analyzer	Keysight	N9020A	MY52091623	2021/1/4	2022/1/3
2	Power Sensor	Agilent	U2021XA	MY5365004	2021/1/4	2022/1/3
3	Power Meter	Agilent	U2531A	TW53323507	2021/1/4	2022/1/3
4	Loop Antenna	schwarzbeck	FMZB1519B	00023	2019/11/16	2022/11/15
5	Wideband Antenna	schwarzbeck	VULB 9163	958	2019/11/16	2022/11/15
6	Horn Antenna	schwarzbeck	9120D-1141	1574	2019/11/16	2022/11/15
7	EMI Test Receiver	R&S	ESCI	100849/003	2021/1/4	2022/1/3
8	Controller	MF	MF7802	N/A	N/A	N/A
9	Amplifier	schwarzbeck	BBV 9743	209	2021/1/4	2022/1/3
10	Amplifier	Tonscend	TSAMP- 0518SE		2021/1/4	2022/1/3
11	RF Cable(below 1GHz)	HUBER+SUHNE R	RG214	N/A	2021/1/4	2022/1/3
12	RF Cable(above 1GHz)	HUBER+SUHNE R	RG214	N/A	2021/1/4	2022/1/3
12	RE test software	Tonscend	JS32-RE	V2.0.2.0	N/A	N/A
14	Test Software	Tonscend	JS1120-3	V2.5.77.0418	N/A	N/A
15	Horn Antenna	A-INFO	LB-180400- KF	J211020657	2020/10/12	2022/10/11
16	Amplifier	CDSA	PAP-1840	17021	2020/10/10	2021/10/09
17	Spectrum Analyzer	R&S	FSP40	100550	2021/1/10	2022/1/9
18	UNIVERSAL RADIO COMMUNICATION	R&S	CMW500	101855	2021/1/4	2022/1/3
19	Signal Generator	Keysight	N5182A	MY4620709	2021/1/4	2022/1/3

3.5 Measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to ETSI TR 100 028 " Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics" and is documented in the Shenzhen Tongzhou Testing Co.,Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen Tongzhou Testing Co.,Ltd is reported:

Test	Range	Measurem ent	Note
Radiated Emission	30~1000MHz	3.10 dB	(1)
Radiated Emission	1~18GHz	3.70 dB	(1)
Radiated Emission	18-40GHz	3.90 dB	(1)
Conducted Disturbance	0.15~30MHz	1.63 dB	(1)
Conducted Power	9KHz~18GHz	0.61 dB	(1)
Spurious RF Conducted Emission	9KHz~40GHz	1.22 dB	(1)
Band Edge Compliance of RF Emission	9KHz~40GHz	1.22 dB	(1)
Occuiped Bandwidth	9KHz~40GHz	-	(1)
Frequency Error	9KHz~40GHz	1 x 10 ⁻⁷	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.



4 DESCRIPTION OF TEST MODES

During the testing, the EUT was controlled via Rhode & Schwarz Digital Radio Communication Tester (CMU 200)to ensure max power transmission and proper modulation. Three channels (The top channel, the middle channel and the bottom channel) were chosen for testing on both GSM and PCS frequency band. ***Note: GSM/GPRS 850, GSM/GPRS 1900 mode have been tested during the test.

The worst condition was recorded in the test report if no other modes test data.

5 TEST CONDITIONS AND RESULTS

5.1 OUTPUT POWER

- 5.1.1 CONDUCTED OUTPUT POWER
- 5.1.1.1 MEASUREMENT METHOD

The transmitter output port was connected to base station.

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

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

Measure the maximum burst average power and average power for other modulation signal.

The EUT was setup for the max output power with pseudo random data modulation. Power was measured with Spectrum Analyzer. The measurements were performed on all modes(GSM/GPRS 850, GSM/GPRS 1900)at 3 typical channels(the Top Channel, the Middle Channel and the Bottom Channel) for each band.

5.1.1.2 MEASUREMENT RESULT



GSM 850

Mode	Frequency (MHz)	Peak Power	Avg.Burst Power	Duty cycle Factor(dB)	Frame Power (dBm)	Peak to Average Ratio
	824.2	32.24	31.94	-9	22.94	0.30
GSM850	836.6	32.13	31.89	-9	22.89	0.23
	848.8	32.24	31.99	-9	22.99	0.25
0000050	824.2	31.81	31.53	-9	22.53	0.28
GPRS850 (1 Slot)	836.6	31.59	31.46	-9	22.46	0.13
(1000)	848.8	31.93	31.79	-9	22.79	0.14
0000050	824.2	30.37	30.21	-6	24.21	0.16
GPRS850 (2 Slot)	836.6	30.01	29.76	-6	23.76	0.25
(2 0101)	848.8	30.10	29.84	-6	23.84	0.25
0000050	824.2	29.26	29.02	-4.26	24.76	0.24
GPRS850 (3 Slot)	836.6	29.25	29.07	-4.26	24.81	0.18
(3 5101)	848.8	29.04	28.77	-4.26	24.51	0.28
0000050	824.2	27.36	27.16	-3	24.16	0.20
GPRS850 (4 Slot)	836.6	27.43	27.19	-3	24.19	0.24
(+ 0101)	848.8	27.00	26.82	-3	23.82	0.19



PCS 1900

Mode	Frequency (MHz)	Peak Power	Avg.Burst Power	Duty cycle Factor(dB)	Frame Power(dBm)	Peak to Average Ratio
	1850.2	30.30	30.09	-9	21.09	0.21
GSM1900	1880	30.02	29.75	-9	20.75	0.27
	1909.8	30.01	29.90	-9	20.90	0.11
GPRS1900 (1 Slot)	1850.2	29.79	29.50	-9	20.50	0.29
	1880	29.67	29.51	-9	20.51	0.16
	1909.8	29.42	29.14	-9	20.14	0.29
00004000	1850.2	27.95	27.67	-6	21.67	0.28
GPRS1900 (2 Slot)	1880	27.94	27.73	-6	21.73	0.20
(2 0101)	1909.8	27.86	27.62	-6	21.62	0.24
00004000	1850.2	26.66	26.53	-4.26	22.27	0.12
GPRS1900 (3 Slot)	1880	26.65	26.51	-4.26	22.25	0.14
(3 5101)	1909.8	26.82	26.53	-4.26	22.27	0.29
00004000	1850.2	25.73	25.49	-3	22.49	0.24
GPRS1900 (4 Slot)	1880	26.00	25.79	-3	22.79	0.21
(4 3101)	1909.8	25.99	25.81	-3	22.81	0.18



5.1.2 RADIATED OUTPUT POWER

5.1.2.1 MEASUREMENT METHOD

The measurements procedures specified in ANSI/TIA-603-E-2016 were applied.

1. Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signal operating below 1GHz are performed using dipole antennas. Measurements on signals operating above 1GHz are performed using broadband horn antennas. All measurements are performed as RMS average measurements while the EUT operating at its maximum duty cycle, at maximum power, and at the approximate frequencies.

2. In an anechoic antenna test chamber, a half-wave dipole antenna for the frequency band of interest is placed at the reference centre of the chamber. An RF Signal source for the frequency band of interest is connected to the dipole with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A known (measured) power (Pin) is applied to the input of the dipole, and the power received (Pr) at the chamber's probe antenna is recorded.

3. The substitution method is used. Substitution values at each frequency are measured before and saved to the test software. A "reference path loss" is established as ARpl=Pin + 2.15 - Pr. TheARpl is the attenuation of "reference path loss", and including the gain of receive antenna, the cable loss and the air loss. The measurement results are obtained as described below: Power=PMea+ARpl

4. The EUT is substituted for the dipole at the reference centre of the chamber and a scan is performed to obtain the radiation pattern.

5. From the radiation pattern, the co-ordinates where the maximum antenna gain occurs are identified.

6. The EUT is then put into continuously transmitting mode at its maximum power level.

7. Power mode measurements are performed with the receiving antenna placed at the coordinates determined in Step 3 to determine the output power as defined in Rule 24.232 (b) and (c). The "reference path loss" from Step1 is added to this result.

8. This value is EIRP since the measurement is calibrated using a half-wave dipole antenna of known gain (2.15 dBi) and known input power (Pin).

9. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP-2.15dBi...

5.1.2.2 PROVISIONS APPLICABLE

Mode	FCC Part Section(s)	Nominal Peak Power
GSM/GPRS 850	22.913(a)(2)	<=38.45dBm (7W). ERP
GSM/GPRS 1900	24.232(c)	<=33dBm (2W). EIRP



5.1.2.3 Measurement Result

	Radiated Power (ERP) for GSM 850										
		Res	Result								
Mode	Frequency	Max. Peak ERP	Polarization	Conclusion							
		(dBm)	Of Max. E.R.P								
	824.2	27.30	Horizontal	Pass							
	836.6	26.04	Horizontal	Pass							
GSM	848.8	27.05	Horizontal	Pass							
GSIM	824.2	24.13	Vertical	Pass							
	836.6	24.30	Vertical	Pass							
	848.8	24.38	Vertical	Pass							
	824.2	26.44	Horizontal	Pass							
	836.6	26.41	Horizontal	Pass							
GPRS	848.8	25.14	Horizontal	Pass							
GPRO	824.2	21.34	Vertical	Pass							
	836.6	21.31	Vertical	Pass							
	848.8	21.06	Vertical	Pass							



	Radiated Power (E.I.R.P) for GSM1900										
		Res	ult								
Mode	Frequency	Max. Peak ERP	Polarization	Conclusion							
		(dBm)	Of Max. E.I.R.P								
	1850.2	25.41	Horizontal	Pass							
	1880.0	25.74	Horizontal	Pass							
GSM	1909.8	25.41	Horizontal	Pass							
GSIVI	1850.2	20.45	Vertical	Pass							
	1880.0	21.84	Vertical	Pass							
	1909.8	21.04	Vertical	Pass							
	1850.2	23.81	Horizontal	Pass							
	1880.0	24.68	Horizontal	Pass							
	1909.8	22.77	Horizontal	Pass							
GPRS	1850.2	20.52	Vertical	Pass							
	1880.0	21.43	Vertical	Pass							
	1909.8	21.39	Vertical	Pass							

Note: Above is the worst mode data.



5.2 PEAK-TO-AVERAGE RATIO

5.2.1 **MEASUREMENT METHOD**

Use one of the procedures presented in 4.1 to measure the total peak power and record as PPk. Use one of the applicable procedures presented 4.2 to measure the total average power and record as PAvg. Both the peak and average power levels must be expressed in the same logarithmic units (e.g., dBm). Determine the PAPR from:

PAPR (dB) = PPk (dBm) - PAvg (dBm).

5.2.2 PROVISIONS APPLICABLE

This is the test for the Peak-to-Average Ratio from the EUT.

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.



5.2.3 MEASUREMENT RESULT

Modes	Max Peak to Average Ratio(dB)	Upper limit(dB)	Result
GSM850	0.30	13	Pass
PCS1900	0.29	13	Pass
Note: refer to section	of 5.1.1.2.		



5.3 OCCUPIED BANDWIDTH

5.3.1 **MEASUREMENT METHOD**

1. The Occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper Frequency limits, the mean power radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured.

2. RBW=1~5% of the expected OBW, VBW>=3 x RBW, Detector=Peak, Trace mode=max hold, Sweep=auto couple, and the trace was allowed to stabilize.

5.3.2 **PROVISIONS APPLICABLE**

The emission bandwidth is defined as two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26dB below the transmitter power

5.3.3 MEASUREMENT RESULT

Band	Channel	Occupied Bandwidth (kHz)	26dB Bandwidth (kHz)	Limit(kHz)	Verdict
GSM850	128	248.2	313		PASS
GSM850	190	242.3	314		PASS
GSM850	251	244.2	312		PASS
GSM1900	512	245.0	305		PASS
GSM1900	661	244.9	315		PASS
GSM1900	810	243.6	309		PASS



GSM850-824.2-@26dB and 99PCT Bandwidth

	trum Analyzer - Occu									
(X) RL Center F	RF 50 Ω		SENSE:PULSE ALIGN OFF			05:39:09 PM Jun 17, 2021 Radio Std: None		Frequency		
Conter I		井 🖁 Trig: Fre					ice: BTS			
		#IFU	Gain:Low	#Atten. 1	0 40			Radio Dev		
10 dB/div	Ref Offset 2 Ref 35.00					- <u>,</u>	1			
Log 25.0				W	though -					Center Freq
15.0				ALL MUNUTANI	" "Www	<u>n.</u>				824.200000 MHz
5.00			اليمر			Mr.				
-5.00			N.			<u> </u>				
-15.0		1 ¹¹¹ 11	w ^{ul}	_			mm hren .			
-25.0	(1 400.00)	م ^م ر ۱۱ م					1 'YL	Va.		
-35.0	- manahara							Man Marker	ullun llun	
-45.0 m	- Vilani			-						
-55.0									19	
Center 3	824.2 MHz							Sna	an 1 MHz	
	5.1 kHz			#VI	#VBW 15 kHz				36.8 ms	CF Step 100.000 kHz
Occu	ipied Bandv	vidth			Total Po	wer	37.7	/ dBm		<u>Auto</u> Man
		248	.19 I	кНz						Freq Offset
Trans	Transmit Freq Error 537			37 Hz	OBW Po	wer	99	9.00 %		0 Hz
x dB l	Bandwidth		312.5	5 kHz	x dB		-26.	00 dB		
							4			
MSG								5		

GSM850-836.6-@26dB and 99PCT Bandwidth

	um Analyzer - Occi										
(XIRL Center Er	RF 50 Ω				SENSE:PULSE ALIGN OFF			05:41:27 PM Radio Std:	4 Jun 17, 2021 None	Fr	equency
	eq 050.000		÷	📕 🕂 Trig: F	┘ Trig: Free Run Avg Hold: 100/100 #Atten: 18 dB				ice: BTS		
		#IFC	Gain:Low	#Atten					Ice: B15		
10 dB/div	Ref Offset 2 Ref 35.00										
25.0				and the second	r^{μ}					6	enter Freq
15.0				/w/ ^{uu} ···	- " \w	⁴ 11					.600000 MHz
5.00			<u>m</u> h			h					
-5.00			N			h					
-15.0			4 ⁷¹				March Charles				
-25.0	for ward	prod -					C	W mart			
-35.0	m. Arman							የ የሌላው	· WWWWW		
-45.0									יאיי		
Center 83 #Res BW				#	/BW 15 ki	H7			an 1 MHz 36.8 ms		CF Step
								oweep 30.8 ms			100.000 kHz Man
Occup	bied Band	width			Total P	ower	38.0	6 dBm		<u>Auto</u>	
		242	.27 k	кНz							Freq Offset
Transn	nit Freq Erro	or	41	16 Hz	OBW F	Power	99	9.00 %			0 Hz
x dB B	x dB Bandwidth		314.1	l kHz	x dB		-26.	.00 dB			
MSG							I STATU	s			



GSM850-848.8-@26dB and 99PCT Bandwidth

		rum Analyzer - Occ											
	M RL RF 50 Ω AC CORREC Center Freq 848.800000 MHz					SENSE:PULSE ALIGN OFF			05:42:21 PM Jun 17, 2021 Radio Std: None		Frequency		
00					🛻 Trig				Radio Dev	I BTC			
			#IF0	Gain:Low	#A0	ten: 1d	a 🛛			Radio Dev	Ice: BIS		
	dB/div	Ref Offset Ref 35.00											
25.0						-0 A P	A-mar A					Center F	rea
15.0	o				N WWW Y	ዀላዮ	transingly and the second seco					848.800000 N	- 1
5.0	0			گاہیں				"h					
-5.00	0			, d				- Vh					
-15.0	0		NUM	over all a				`	And the second s				
-25.0	0		י. איזען						· · · · · · · · · · · · · · · · · · ·				
-35.0	0	Name Sandar	·					_		- Kowen	10 ⁴		
-45.0	O Charles	~may ~								1.4	White M		
-55.0								_					
		48.8 MHz								- Cr.	on 4 Milla		
		5.1 kHz				#VBW 15 kHz					an 1 MHz 36.8 ms	CF St	
F										· · ·		100.000 I Auto	кнz Man
	Occu	pied Band [,]	width				Total Po	wer	38.2	2 dBm			
			244	.19 I	kHz							Freq Off	fset
ן ו	Trans	mit Freq Erre	or	22	24 Hz		OBW Po	ower	99	9.00 %		0) Hz
Ι,	dB E	Bandwidth		311.9	9 kHz		x dB		-26.	00 dB			
MSG									Ko STATU:	s			

GSM1900-1850.2-@26dB and 99PCT Bandwidth

	ım Analyzer - Occ												
(X) RL Center Fr	RF 50 Ω eq 1.85020					E:PULSE reg: 1.85020	0000		ALIGN OFF	05:53:27 PM Radio Std:	1 Jun 17, 2021 None	F	requency
	<u>cq 1.03020</u>		Gain:Low	÷	Trig: Fre #Atten: 1	Run		vg Hold:	100/100	Radio Devi	ice: BTS		
10 dB/div	Ref Offset: Ref 35.00												
25.0					ᠬᠬᡢᡢ	hannalange felfe							Center Freq
15.0 5.00			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	wh s	- <u>1</u>	~~~~~	·η	wh.				1.85	0200000 GHz
-5.00		er tin	יין, אר _{י ש}						h t a-				
-25.0	Mr	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~						γm	virv h	and the second			
-35.0 -45.0	M. Marana Marana									- I Many	<u>୰</u> ୶୵୶ୄୄୗ୷୶		
-55.0													
Center 1.3 #Res BW					#VE	3W 15 kH	١z				an 1 MHz 36.8 ms		CF Step 100.000 kHz
Occup	ied Band	width				Total P	٥w	/er	35.6	i dBm		<u>Auto</u>	Man
		245	.03	kН	Z								Freq Offset
Transm	nit Freq Erre	or	-3.08	5 kH	Ιz	OBW P	٥v	/er	99	0.00 %			0 Hz
x dB B	andwidth		305.	3 k⊦	łz	x dB			-26.	00 dB			
MSG										3			



GSM1900-1880-@26dB and 99PCT Bandwidth

	m Analyzer - Occu	pied BW								
(XIRL Contor Fre	RF 50 Ω eq 1.880000				E:PULSE req: 1.88000		ALIGN OFF	05:55:47 Pr Radio Std:	4 Jun 17, 2021	Frequency
Center Fre	eq 1.00000		+	🚽 Trig: Fre	e Run	Avg Hold	: 100/100			
		#IFG	iain:Low	#Atten: 1	8 dB			Radio Dev	ice: BTS	
10 dB/div	Ref Offset 2 Ref 35.00									
Log 25.0										Contor From
15.0				warm /	monthly.					Center Freq 1.88000000 GHz
5.00			N	μ <mark>Ν΄ '</mark>	°~~,	MAR				1.550000000 G112
-5.00						"\				
-15.0		- Par	N.			<u> </u>	Proch			
		all and the	<u>ل</u>			ý				
-35.0	mappiner	ν Ι					י איז	WWW Jow Party		
-45.0	man we								^N WYNGHUY AV I	
-55.0										
Center 1.8 #Res BW				#VE	3W 15 kH	z			an 1 MHz 36.8 ms	CF Step 100.000 kHz
Occup	ied Bandv	vidth			Total Po	ower	34.8	8 dBm		<u>Auto</u> Man
		244	.87 k	Hz						Freq Offset
Transm	it Freq Erro	r	3.017	kHz	OBW P	ower	99	9.00 %		0 Hz
x dB Ba	andwidth		315.4	kHz	x dB		-26.	00 dB		
MSG							I o statu	s		

GSM1900-1909.8-@26dB and 99PCT Bandwidth

Agilent Spectrum Analyzer - Occupied BW					
RL RF 50 Ω AC C Center Freq 1.909800000 G		SENSE:PULSE Center Freg: 1.90980	ALIGN OFF	05:56:45 PM Jun 17, 2021 Radio Std: None	Frequency
		Trig: Free Run #Atten: 18 dB	Avg Hold: 100/100	Radio Device: BTS	
Ref Offset 27 dB 10 dB/div Ref 35.00 dBm					
Log 25.0 15.0		UNDEN VICATION AND AND AND AND AND AND AND AND AND AN	m		Center Freq 1.909800000 GHz
5.00 -5.00 -15.0 -25.0					
-25.0 -35.0 -45.0				Watter Willing Conference	
-55.0					
Center 1.91 GHz #Res BW 5.1 kHz		#VBW 15 kH	Iz	Span 1 MHz Sweep 36.8 ms	
Occupied Bandwidth		Total P	ower 34.2	2 dBm	<u>Auto</u> Man
24	3.61 kH	Z			Freq Offset
Transmit Freq Error	-2.072 kH	lz OBW P	ower 9	9.00 %	0 Hz
x dB Bandwidth	308.5 k⊦	lz xdB	-26.	.00 dB	
MSG			STATU	S	



5.4 BAND EDGE

5.4.1 MEASUREMENT METHOD

1. All out of band emissions are measured with an analyzer spectrum connected to the antenna terminal of the EUT while the EUT at its maximum duty cycle, at maximum power, and at the approximate frequencies. All data rates were investigated to determine the worst case configuration

2. The test set up and general procedure is similar to conducted peak output power test. Only different for setting the measurement configuration of the measuring instrument of Spectrum Analyzer.

3. Start and stop frequency were set such that the band edge would be placed in the center of the plot.

4. Span was set large enough so as to capture all out of band emissions near the band edge.

5. RBW>1% of the emission bandwidth, VBW >=3 x RBW, Detector=RMS, Number of points>=2 x Span/RBW,

Trace mode=max hold, Sweep time=auto couple, and the trace was allowed to stabilize

5.4.2 **PROVISIONS APPLICABLE**

As Specified in FCC rules of 22.917(a), 24.238(a)and KDB 971168 D1 V03R01.

5.4.3 MEASUREMENT RESULT



GSM1900-GPRS-1850.2@Pass

Agile	nt Spe	ectrur	n An	alyzer -	Swe	pt S/	ł																		
ເ <mark>೫</mark> ℝ Cer		Fre	RF Pq	1.849	^{50 Ω}		00 G				S		E:PULS			vg Ty	pe:	AUTO/N RMS 00/100	JO RF	02:49	TRAG	CE 1 2	24,202 2345 VMM/	56	Frequency
	B/di [,]			Offse f 30.0			ĬF		Wide n:Low		#Atte					gino		/lkr1	1.		D 000		1 N N N	z N	Auto Tune
20.0 10.0															M	March	()MAR	n ^a n ^a trich	(veres	Y Yiriniy	Mul.				Center Freq 1.849950000 GHz
													h ana	≹ 1/	WV V						יי 	N. - N.	<u>ю</u> ц ∕-1 0	∋m 4 _y n	Start Fred 1.849450000 GHz
-40.0 -50.0 -60.0	لإطراب	'nınlırı	/40 /44	الإسرام (۱۹۷۵) 00 GH	hinghaph	ስ ምትም	hyth r adianth 	Natori	4.11 ⁴ 17 ¹⁴	der nå fr	AND CALL														Stop Frec 1.850450000 GHz
<u> </u>	rt 1. s B				iz		×		#VE	sw ·	11 kH	łz*			ICTION			veep	81		ns (1 pt	s)	CF Step 100.000 kHz <u>Auto</u> Mar
1 2 3 4 5 6	N	1	f				50 000	000	GHz		-16.95	8 dE	3m												Freq Offset 0 Hz
7 8 9 10 11 <																							>		
MSG																			TUS						

GSM1900-GPRS-1909.8@Pass

Agilent Spectrum Analyzer - Swept S	5A			
🕅 RL RF 50 Ω ΑΦ Center Freq 1.9100500	000 GHz	#Avg Type: RMS	02:47:41 PM Nov 24, 2020 TRACE 1 2 3 4 5 6 TYPE MWWWWW	Frequency
Ref Offset 27 dB	IFGain:Low #Atten: 18 dE	3	910 020 0 GHz -13.663 dBm	Auto Tune
Log	V Vilene Mark and Marken			Center Freq 1.910050000 GHz
-10.0 -20.0 -30.0		Keffianse	-13.00 dBm	Start Freq 1.909550000 GHz
-40.0		Hartyn llyn gan gan gan gan gan gan gan gan gan ga	^י וריזיילקאניגיעיקערייריקאנאיזיין איזיין אי	Stop Freq 1.910550000 GHz
Start 1.9095500 GHz #Res BW 3.9 kHz	#VBW 11 kHz*	Sto	p 1.9105500 GHz .60 ms (2001 pts) FUNCTION VALUE	CF Step 100.000 kHz <u>Auto</u> Man
2 3 4 5 6 7	-13.663 dBm		s	Freq Offset 0 Hz
8 9 10 11 <				



GSM1900-Voice-1850.2@Pass

	50:2@1 035			
Agilent Spectrum Analyzer - Swept				
ເ₩ RL RF 50 Ω Center Freq 1.849950	AC CORREC SENSE:PU 000 GHz PNO: Wide ↔ Trig: Free Ri	#Avg Type: RMS	TRACE 123456 TYPE MWWWWW	Frequency
	IFGain:Low #Atten: 18 di	8	850 000 0 GHz	Auto Tune
Ref Offset 27 dl 10 dB/div Ref 30.00 dB Log			-18.459 dBm	
20.0			mila.	Center Freq
10.0		www.handhanalanalanalanalanalanalanalanalanalana	W WWW WWW	1.849950000 GHz
		1 M	ች 	Start Freq
-20.0	mathy the terms and the second s	ант <mark>и</mark> ни	"MARA A	1.849450000 GHz
-40.0	A START AND A START			
-50.0	www.waterheader			Stop Fred 1.850450000 GHz
Start 1.8494500 GHz		Ct	op 1.8504500 GHz	
#Res BW 3.9 kHz	#VBW 11 kHz*	Sweep 8	1.60 ms (2001 pts)	CF Step 100.000 kHz
	× Y .850 000 0 GHz -18.459 dBm	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Mar
2 3 4				Freq Offset
5 6				0 Hz
7 8 9				
10 11			<u> </u>	
MSG	in and a second s			
		N		

GSM1900-Voice-1909.8@Pass

Agilent Spectrum Analyzer - Swept SA				
M RL RF 50 Ω AC CORREC Center Freq 1.910050000 GHz		ALIGN AUTO/NORF 02:43:3 #Avg Type: RMS Avg Hold: 100/100	RACE 1 2 3 4 5 6	Frequency
PNO: Wide ← IFGain:Low Ref Offset 27 dB 10 dB/div Ref 30.00 dBm	#Atten: 18 dB			Auto Tune
				Center Freq 1.910050000 GHz
-10.0		Stop 1 9	-13.00 dBm	Start Freq 1.909550000 GHz
-40.0		┙┉┉┉┉┉┉╷┑┪┿╎╎╏┈╌┉╗╢┉╌╦╍╦┿╗╠┥┉┵┉╅╔┥	har myrraetal aynr	Stop Freq 1.910550000 GHz
#Res BW 3.9 kHz #VB	W 11 kHz*	Sweep 81.60 m	00000 0112	CF Step 100.000 kHz <u>Auto</u> Man
1 N 1 f 1.910 000 0 GHz 2 - - - - 3 - - - - 4 - - - - 5 - - - - 6 - - - - 7 - - - -	-18.682 dBm		I	Freq Offset 0 Hz
8 9 10 11 <			<u> </u>	
MSG				



GSM850-GPRS-824.2@Pass

Agilent Spectrum Analyzer - Swe			N AUTO/NORF 02:52:32 PM	1Nov 24, 2020	
Center Freq 823.950	0000 MHz	#Avg Type	RMS TRAC	E123456 Frequen	icy
•	PNO: Wide ++++ Trig: Fre IFGain:Low #Atten: *		100/100 IYP DE		
	IFGail.Low written.	• 40	Mkr1 824.000	Auto	Tune
Ref Offset 27				I3 dBm	
10 dB/div Ref 30.00 d	dBm		-22.0		
20.0				Cente	r Fred
10.0		i tanki d	Whater and a start	823.95000	
		A alway a second	' 'Why we have	825.95000	
0.00		NV N			
-10.0		1,		Star	t Freq
-20.0				523.45000	
-30.0	Meter I I I I I I I I I I I I I I I I I I I				
-40.0	and a second sec				
-50.0	All and Al			Stop	o Freq
-50.0	Les hearing and a plant provide the			824.45000	00 MHz
-60.0 100 -60.0					
Start 823.4500 MHz			Stop 824.4	500 MHz	04
#Res BW 3.9 kHz	#VBW 11 kHz*	s	Sweep 81.60 ms (2		- Step 00 kHz
			•	Auto	Man
MKR MODE TRC SCL	× Y 824.000 0 MHz -22.013 d		CTION WIDTH FUNCTIO		
2	024.000 0 111 12 -22.010 0				
3 4				Freq	
5				=	0 Hz
6 7					
8					
9					
10				~	
C	III III				
MSG			STATUS		
			- 1		

GSM850-GPRS-848.8@Pass

Agilent Spectrum Analyzer - Swept SA				
M RL RF 50 Ω AC CORREC Center Freq 849.050000 MHz	SENSE:PULSE	ALIGN AUTO/NOR #Avg Type: RMS Avg Hold: 100/100	F 02:52:47 PM Nov 24, 2020 TRACE 1 2 3 4 5 6 TYPE MWWWWW	Frequency
PN0: Wide → IFGain:Low Ref Offset 27 dB	#Atten: 18 dB		849.000 0 MHz	Auto Tune
10 dB/div Ref 30.00 dBm			-18.568 dBm	Center Freq 849.050000 MHz
0.00 -10.0 -20.0			-13:00 dBm	Start Freq 848.550000 MHz
-30.0		and the state of t	^{ምም} ትር የሚያስት በ የምምምምምምምምምምምምምምምምምምምምምምምምምምምምምምምምምምም	Stop Freq 849.550000 MHz
Start 848.5500 MHz #Res BW 3.9 kHz #VBV	V 11 kHz*	Sweep 8	1.60 ms (2001 pts)	CF Step 100.000 kHz Auto Man
MKS MODE TRC SCI X 1 N 1 f 849.000 0 MHz 2 2 - - - - - 3 - - - - - 4 - - - - - - 5 -	-18.568 dBm	TION FUNCTION WIDTH	FUNCTION VALUE	Freq Offset 0 Hz
7 8 9 10 11 11			v	
MSG	100	STATUS		



GSM850-Voice-824.2@Pass

0000000	inzer ass				
Agilent Spectrum Analyzer - Sw	rept SA				
LX/ RL RF 50 Ω	AC CORREC	SENSE:PULSE	\Lambda ALIGN AUTO/NO F	RF 02:52:01 PM Nov 24, 2020	-
Center Freq 823.95	0000 MHz	1	#Avg Type: RMS	TRACE 1 2 3 4 5 6	
	PNO: Wide ++-	🚽 Trig: Free Run	Avg Hold: 100/100		
	IFGain:Low	#Atten: 18 dB		DET A N N N N N	
			Miland	823.995 5 MHz	Auto Tune
Ref Offset 27	7 dB		IVIKET		
10 dB/div Ref 30.00	dBm			-18.344 dBm	
Log					
20.0					Center Fred
				4WA.m.	
10.0			and a second and the second second	1 or Minimum Andrews	823.950000 MHz
0.00			Y	17/1 ₁₁	
			5	h 1	
-10.0		▲ 1,,	f	-13.00 dDm	Start Freq
-20.0				1 m 1 m 1 m	
20.0					823.450000 MHz
-30.0		Jul In			
-40.0		and the			
-40.0					Stop Freq
-50.0	a builden hit he	W.			
-60.0	A REAL PROPERTY AND A REAL				824.450000 MHz
	11110.1				
Start 823.4500 MHz			_	Stop 824.4500 MHz	CF Step
#Res BW 3.9 kHz	۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲	11 kHz*	Sweep 8	31.60 ms (2001 pts)	100.000 kHz
MKR MODE TRC SCL	×		ICTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
	823.995 5 MHz	-18.344 dBm	FUNCTION WIDTH		
	823.995 5 MHZ	-18.344 dBm			
3				<u> </u>	Freq Offset
4					
5					0 Hz
6					
7					
8					
9					
10					
		I		×	
			-4		
MSG				s	

GSM850-Voice-848.8@Pass

Agilent Spectrum Analyzer - Swept SA				
Center Freq 849.050000 MHz	SENSE:PULSE	ALIGN AUTO/NORF #Avg Type: RMS Avg Hold: 100/100	02:52:17 PMNov 24, 2020 TRACE 1 2 3 4 5 6	Frequency
PNO: Wide - IFGain:Low Ref Offset 27 dB 10 dB/div Ref 30.00 dBm	#Atten: 18 dB	-	TYPE MUMUU DET A N N N N N 849.000 0 MHz -19.914 dBm	Auto Tune
	и — — — — — — — — — — — — — — — — — — —			Center Freq 849.050000 MHz
-10.0 -20.0 -30.0			-13.00 dBm	Start Freq 848.550000 MHz
-40.0		้ ^{ให้ก} ัดไข่ไข้ทำให้อาการเลืองการเลืองการเลืองการเลืองการเลืองการเลืองการเลืองการเลืองการเลืองการเลืองการเลืองการ Si	rine water to and the second	Stop Freq 849.550000 MHz
Start 848.5500 MHz #Res BW 3.9 kHz #VB MXR MODE TRE SEL X	W 11 kHz*		top 849.5500 MHz .60 ms (2001 pts) FUNCTION VALUE	CF Step 100.000 kHz <u>Auto</u> Man
1 N 1 f 849,000 0 MHz 2 - - - - 3 - - - - 4 - - - - 5 - - - - 6 - - - - 7 - - - -	-19.914 dBm			Freq Offset 0 Hz
8 9 9 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	ing	STATUS	 >	



5.5 SPURIOUS EMISSION

5.5.1 CONDUCTED SPURIOUS EMISSION

5.5.1.1 MEASUREMENT METHOD

The following steps outline the procedure used to measure the conducted emissions from the EUT. 1. The level of the carrier and the various conducted spurious and harmonic frequency is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at maximum power, and at the approximate frequencies. All data rates were investigated to determine the worst case configuration.

2. Determine frequency range for measurements: From CFR 2.1057 the spectrum should be investigated from the lowest radio frequency generated in the equipment up to at least the 10th harmonic of the carrier frequency. For the equipment of PCS1900 band, this equates to a frequency range of 30 MHz to 19.1 GHz, data taken from 30 MHz to 20 GHz. For GSM850, data taken from 30 MHz to 9 GHz.

3. Determine EUT transmit frequencies: the following typical channelswere chosen to conducted emissions testing.

Typical Channels for testing of GSM 850							
Channel	Frequency (MHz)						
128	824.2						
190	836.6						
251	848.8						

Typical Channel	Is for testing of PCS 1900
Channel	Frequency (MHz)
512	1850.2
661	1880.0
810	1909.8



5.5.1.2 PROVISIONS APPLICABLE

On any frequency outside frequency band of the USPCS spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least 43+10Log(P) dB. For all power levels +30 dBm to 0 dBm, this becomes a constant specification limit of -13 dBm.

5.5.1.3 MEASUREMENT RESULT

Pass



GSM850-824.2-GPRS@1GHz-9GHz@Pass

	Spectr		halyzer - Si													
Cent	er Fi	RI req		Ω AC 00000				E:PULSE		#Avg Ty Avg Ho	ype: R		TR/	PM Jun 17, 202 ACE 1 2 3 4 5 YPE M WWWWW	6	Frequency
10 dB	(div		f Offset 2 f 20.00			:Fast ⊶ n:Low	#Atten: 2				10. 100		r1 1.64	9 2 GH	z	Auto Tune
10.00 - -10.00 -														-13.00 dB		Center Freq 5.000000000 GHz
-20.0 - -30.0 -40.0 -		• 1		anti Manta Harita	, det at lite for the						(h. dis juis	in the part of the				Start Freq 1.000000000 GHz
-50.0 - -60.0 - -70.0 -																Stop Fred 9.000000000 GHz
Start #Res	BW	1.0	MHz	×		#VB\	W 3.0 MHz	2	FUNC			ep 13 NWDTH	.33 ms (9.000 GH 20001 pts	5)	CF Step 800.000000 MHz <u>Auto</u> Man
1 2 3 4 5 6 7 8 9 10	N 1	f		1.6	649 2 0	GHz	-23.460 d	Bm								Freq Offset 0 Hz
11 MSG							IIII				Ę		3		~	

GSM850-824.2-GPRS@30mHz-1GHz@Pass

		ctrui	n An	alyzer -	Swep	t SA															
Cen		Fre	RF eq (515.0	າ ລ 000	ac 100	MHz			1				Түре	ALIGN OF RMS 100/100	F	05:	TRAG	MJun 17,2 2E 1 2 3 PE MWWW	456	Frequency
10 d	B/div	,		Offset f 35.0				10: Fas Sain:Lo		#Atten: 2						Mk		₀ 786.	99 M 89 de	Hz	Auto Tune
Log 25.0 15.0 5.00																					Center Freq 515.000000 MHz
-5.00 -15.0 -25.0																1			-13.00		Start Freq 30.000000 MHz
-35.0 -45.0 -55.0	ni fujin			en in		hin ingingin	in and					iya qalada ya ka		****							Stop Freq 1.000000000 GHz
Star #Re		N 1	1 O.	MHz		×		#\	VBW	3.0 MHz	z	FUNC	DTION		weep		1 E E	ns (2	0000 G 0001 j		CF Step 97.000000 MHz <u>Auto</u> Man
1 2 3 4 5 6 7 8 9 10	N	1	f			7	86.99	9 MHz		<u>-28.889</u> d	Bm										Freq Offset 0 Hz
10 11 <										IIII					I ∕o st≉	TUS				>	



GSM850-824.2-Voice@1GHz-9GHz@Pass

Agilent Spe											
Center	Freq	00.00	00000 GH				#Avg Ty	ALIGN OFF pe: RMS d: 100/100	TRA	M Jun 17, 2021 CE 1 2 3 4 5 6 PE M WWWWWW	Frequency
10 dB/div		f Offset 27	'dB	NO: Fast + Gain:Low	#Atten: 2				⊳ kr1 1.64	ET P N N N N N	Auto Tune
	<u> </u>									-13.00 dBm	Center Freq 5.000000000 GHz
-20.0		الأحجاب والمارية المراجعين المحور المحور المحور المحود المحود الم	in the state of the								Start Freq 1.000000000 GHz
-50.0 -60.0 -70.0											Stop Freq 9.000000000 GHz
Start 1.0 #Res B\ MKE MODE	N 1.0	MHz	×	#VB	W 3.0 MHz			Sweep 1	3.33 ms (2	0.000 GHz 0001 pts)	CF Step 800.000000 MHz <u>Auto</u> Man
1 N 2 3 4 5 6 7 7 8 9 9 10 11	1 F		1.649	2 GHz	-23.255 d	Bm					Freq Offset 0 Hz
MSG								Ko statu	JS		U

GSM850-824.2-Voice@30mHz-1GHz@Pass

		ctrui	n An	alyzer - S	Swep	t SA																	
Cen		Fre	RF eq (50 515.0		AC	MHz			_ ,	SENS	E:PUL			д Тур-	ALIGN OFI e: RMS : 100/100	F	05:	TRAG	MJun 17 2E 1 2 3 PE MWW	456		Frequency
10 d	B/div	,		Offset				NO: H Gain:	ast ⊷ Low		Atten: 2						Mkı		₀ 858.	14 N 97 d	1Hz	í	Auto Tune
Log 25.0 15.0 5.00																							Center Freq 515.000000 MHz
-5.00 -15.0 -25.0																			♦ ¹		00 dBm		Start Freq 30.000000 MHz
-35.0 -45.0 -55.0						i i i i i i i i i i i i i i i i i i i	uni-tent																Stop Freq 1.00000000 GHz
Star #Re		N 1	.0 I	MHz		×			#VB\	N 3.	0 MHz	z	FUN	CTION		weep	1.33	33 r	ns (2	0000	pts)		CF Step 97.000000 MHz <u>Auto</u> Man
1 2 3 4 5 6 7 8 9 10 11	N	1	f				858.1	4 MI		-28	3.897 d	Bm											Freq Offset 0 Hz
MSG																I o sta	TUS				_		



GSM850-836.6-GPRS@1GHz-9GHz@Pass

	oectrun		lyzer - Swe										
w. RL Cente	r Fre	RF q5	50 Ω .00000	0000 G			ISE:PULSE		vg Typ	ALIGN OFF e: RMS : 100/100	TRA	M Jun 17, 2021 CE 1 2 3 4 5 6 PE MWWWWWW	Frequency
10 dB/d			Offset 27 20.00 c	dB	PNO: Fast FGain:Low	#Atten:			ginoia.		□ < <u>r1 1.67</u>	4 0 GHz 86 dBm	Auto Tune
			20.00 (-13.00 dBm	Center Freq 5.000000000 GHz
-20.0 -30.0 -40.0	(مر العربي ال العربي العربي										Start Fred 1.000000000 GHz
-50.0													Stop Fred 9.000000000 GHz
Start 1 #Res I	3W 1.	.0 IV		×	#VI	вw з.о мн	z	FUNCTION		weep 13	3.33 ms (2	.000 GHz 20001 pts)	CF Step 800.000000 MHz <u>Auto</u> Man
1 N 2 3 4 5 6 7 8 9 10 11		f			40 GHz	-22.486							Freq Offset 0 Hz
K MSG						1111	1			I o statu	s		

GSM850-836.6-GPRS@30mHz-1GHz@Pass

		ctru	m An	alyzer -	Swep	ot SA														
Cen		Fre	RF Pq (515.0	0 Q	AC 000	MHz			7	NSE:PU			Туре	ALIGN OF	F	05:41:32 TR, T	PM Jun 17, ACE 1 2 3 YPE MWW	456	Frequency
10 d	B/div	,		Offsel				NO: Fa Gain:L	ist ↔ ow	#Atten:						Mkr	1 745	DET P N N	1Hz	Auto Tune
Log 25.0 15.0 5.00																				Center Freq 515.000000 MHz
-5.00 -15.0 -25.0											_				● ¹				00 dBm	Start Freq 30.000000 MHz
-35.0 -45.0 -55.0		i i i i i i i i i i i i i i i i i i i		,,,,,,,, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,	wighter		up in e ful	i yi biyon					i i genide pi plat		in the second					Stop Freq 1.000000000 GHz
Star #Re		N 1	.0 I	MHz		×		#	VBW	3.0 MH	lz	FUNI	CTION		weep	1.33			pts)	CF Step 97.000000 MHz <u>Auto</u> Man
1 2 3 4 5 6 7 8	N	1	f				745.9	1 MH:	z	-29.154	dBm									Freq Offset 0 Hz
9 10 11 <															K STA	TUS			>	



GSM850-836.6-Voice@1GHz-9GHz@Pass

Agilent Spec												
Center I	RF Freq	00.00	00000 GH			E:PULSE	#Avg T Avg Ho	ype: R		TRA	M Jun 17, 2021 CE 1 2 3 4 5 6 PE MWWWWW	Frequency
		f Offset 27	dB	NO: Fast Gain:Low	#Atten: 2					r1 1.674	4 0 GHz 81 dBm	Auto Tune
10 dB/div 10.0	Re	f 20.00 (-20.4	-13.00 dDm	Center Freq 5.00000000 GHz
-20.0 -30.0	1	المحركمينا با يتعاد العبرينين العرب المعرار في العبرينين					renter for bits (Lie ,					Start Freq 1.000000000 GHz
-50.0 -60.0 -70.0												Stop Freq 9.000000000 GHz
Start 1.0 #Res BV	V 1.0	MHz		#VE	W 3.0 MHz				ep 13 NWDTH	.33 ms (2	.000 GHz 0001 pts)	CF Step 800.000000 MHz <u>Auto</u> Man
1 N 2 3 3 - 6 - 7 - 8 - 9 - 10 - 11 -	1 f			0 GHz	-23.481 d							Freq Offset 0 Hz
MSG								¢	STATUS	3	>	

GSM850-836.6-Voice@30mHz-1GHz@Pass

		ctrur	n An	alyzer - S	wept S	5A													
Cen		Fre	RF eq (50 515.00		0 MH]	e Run			Түре	ALIGN OFF : RMS 100/100	1	TRA	M Jun 17, 2 CE <u>1</u> 2 3 4 PE M W W	156	Frequency
10 d	B/div			Offset 2		IF	PNO: Fas Gain:Lo		#Atten: 2						lkr	1 939.	76 M 81 dE	Hz	Auto Tune
Log 25.0 15.0 5.00																			Center Freq 515.000000 MHz
-5.00 -15.0 -25.0																	-13.00	dBm	Start Freq 30.000000 MHz
-35.0 -45.0 -55.0						an la tha faga			te de service de la complete de la c										Stop Freq 1.000000000 GHz
Star #Re		N 1	1 O.	VIHz		×	#	vbw	7 3.0 MHz	2	FUNC	TION		weep 1	.333	3 ms (2	0000 G 20001 p		CF Step 97.000000 MHz <u>Auto</u> Man
1 2 3 4 5 6 7 8 9	N	1	f			939.7	76 MHz		<u>-28.581 d</u>	Bm									Freq Offset 0 Hz
9 10 11 <									IIII					STAT	JS			>	



GSM850-848.8-GPRS@1GHz-9GHz@Pass

Agilent Spect			pt SA									
Center F	_{RF} req 5.	50 Ω 00000	0000 GH			E:PULSE		ј Туре	ALIGN OFF : RMS 100/100	TRA	M Jun 17, 2021 CE 1 2 3 4 5 6 PE M WWWWWW	Frequency
10 dB/div		offset 27 20.00 d	dB	NO: Fast • Gain:Low	#Atten: 2					r1 5.83	1 6 GHz 50 dBm	Auto Tune
		20.00 0									-13.00 dBm	Center Freq 5.000000000 GHz
-20.0 -30.0 -40.0						i hindi	1 Internet					Start Freq 1.000000000 GHz
-50.0 -60.0 -70.0												Stop Freq 9.000000000 GHz
Start 1.00 #Res BW	1.0 M		×	#VB	W 3.0 MHz		FUNCTION		weep 13	.33 ms (2	.000 GHz 20001 pts)	CF Step 800.000000 MHz <u>Auto</u> Man
1 N 2 3 3 4 5 6 7 8 9 10 11 11	f		5.831	6 GHz	-23.850 d							Freq Offset 0 Hz
MSG					IIII					5		

GSM850-848.8-GPRS@30mHz-1GHz@Pass

Agiler		ctru	m An	alyzer	- Swe	ept SA																		
Cen		Fre	RF eq :		50 Ω 000	AC 1000	MH] 	SENSE				у Туре	ALIGN OF e: RMS 100/100		05:	TRA	CE 1 2	7,2021 3456 MMMM		Frequency
10 d	B/div	,		^{- Offs} f 35.				PNO FGai	: Fast in:Lov	N N		en: 24			0181					⊳ 815.	ет <mark>Р N</mark> 31	MHz dBm	1	Auto Tune
Log 25.0 15.0 5.00																								Center Freq 515.000000 MHz
-5.00 -15.0 -25.0																			● ¹			3.00 dBm		Start Freq 30.000000 MHz
-35.0 -45.0 -55.0	-			i a la se la s	<u>Un fije</u>					**************************************				, de la compañía de La compañía de la comp										Stop Freq 1.000000000 GHz
Star #Re		W 1	.0	MHz		` >	<			/BW	' 3.0 ľ			FUN	CTION		weep		33 r		000	<u> </u>	I	CF Step 97.000000 MHz <u>Auto</u> Man
1 2 3 4 5 6 7 8 9 10 11 <	N	1	f				815.	31 N	MHz		-28.7(67 dE	3m											Freq Offset 0 Hz
MSG																	I ost/	ATUS						



GSM850-848.8-Voice@1GHz-9GHz@Pass

Agilent	Spec	trun																							
Cent	er F	Fre	RF		ີ 2 000	AC 000	0 G]	SENS					Тури	ALIGN e: RM 100/1	s	05	TRA	CE 1	17, 202 2 3 4 5 WWW	56	Frequency
10 dB/	/ alia .			Offset			1		in:Lo	st ⊶► w		tten: 2						100/1			، 2.63	оет Р 44	GH	Z Z	Auto Tune
10 dB/ Log - 10.0 - 0.00 -	iaiv			20.0		5111															2-7.0		-13.00 df		Center Fre 5.000000000 GH
-20.0 - -30.0 -						1	i ale de la composición de la composici		-						4.44									*	Start Free 1.000000000 GH
-50.0 - -60.0 - -70.0 -			-																						Stop Free 9.000000000 GH
Start #Res	BW	V 1	.0 1	٨Hz		×			#\	VBW	/ 3.0	MHz		FL	INCT	ION			p 13 WIDTH	3.33		200	0 GH 01 pt		CF Step 800.000000 MH <u>Auto</u> Mar
		1	f				2.63	4 4 9	GHz		-24.	535 dl	Bm												Freq Offse 0 H
MSG																		K	STATU	s					<u> </u>

GSM850-848.8-Voice@30mHz-1GHz@Pass

Agilen		ctrui	m An	alyzer	- Swe	ept SA														
Cen		Fre	RF Pq (515.0	50Ω 000	AC	MHz]	ISE:PU			Түре	ALIGN OFF : RMS 100/100	05	TRA	M Jun 17, 2 CE <u>1</u> 2 3 4 PE M WWV	56	Frequency
10 d	B/div	,		Offse f 35.0				NO: Fa Gain:Li	ist 🔸	#Atten:							□ 852.	37 MI 61 dB	Hz	Auto Tune
Log 25.0 15.0 5.00																				Center Freq 515.000000 MHz
-5.00 -15.0 -25.0																	• ¹ =	-13.00		Start Freq 30.000000 MHz
-35.0 -45.0 -55.0		Heister		teri i firi	() un all y		inte la					i yaya yi					i <u>hardenta</u>			Stop Freq 1.000000000 GHz
Star #Re		N 1	.0 I	MHz		×		#	VBW	' 3.0 MH	z	FUN	CTION		weep 1.	.333 I	nis (2	0000 G 0001 p		CF Step 97.000000 MHz <u>Auto</u> Man
1 2 3 4 5 6 7 8 9 10	N	1	f				852.3	7 MH:		-20.961	dBm									Freq Offset 0 Hz
11 MSG				ļ												ıs				



GSM1900-1850.2-GPRS@13.6GHz-20GHz@Pass

		ectru	m An	alyzer - S	Swept S													
Cen	-	Fre	RF eq	50 16.80		0000]	E:PULSE		Туре	ALIGN OFF : RMS 100/100	05:5	TRAG	M Jun 17,2 CE <u>1</u> 2 3 4 PE M W W	156	Frequency
10 di	D (dia			Offset		1 }	PNO: Fa FGain:L	ast ↔ Low	#Atten: 2						□ 119	04 G 67 dE	Hz	Auto Tune
10.0 10.0 0.00		•		20.00											-+1-	-13.00		Center Frec 16.800000000 GH2
-20.0 -30.0 -40.0		i i i i i i	-						, j. S. bilaitá ant bir an Uni. 1				las un et sa de stat de side a				at the second	Start Fred 13.600000000 GHz
-50.0 -60.0 -70.0																		Stop Frec 20.000000000 GH:
Star #Re:	s B	W 1	.01	ИНz			#	#VBW	3.0 MHz				weep 10	6.00 n	15 (2	.000 G 0001 p		CF Step 640.000000 MHz Auto Mar
MKR 1 2 3 4 5 6	N		f			× 19.119	04 GH		-18.467 dl	3m	FUNC	FUN	CTION WIDTH		UNCTU	UN VALUE		Freq Offse
7 8 9 10 11									IIU								>	
MSG														S				

GSM1900-1850.2-GPRS@1GHz-7GHz@Pass

		rum A	nalyz	er - Swe	ept SA														
Cen		req		50 Ω 00000	AC 10000		z		1	E:PULSE			Туре	ALIGN OFF : RMS 100/100	05:54	TRAC	I Jun 17, 202 1 2 3 4 5 E MWWWW	56	Frequency
10 di	B/div			fset 27 5.00 (IO: Fast ain:Lov		#Atten: 2							DE 817	7 GH	z I	Auto Tune
Log 25.0 15.0 5.00																		_	Center Freq 4.000000000 GHz
-5.00 -15.0 -25.0		y das J Mar a Bar San							and the state of the second second		- Luuri	الم الم الم		, Maria Maria and Sala	1		-13.00 dE	Ðm	Start Freq 1.000000000 GHz
-35.0 -45.0 -55.0																		_	Stop Freq 7.000000000 GHz
#Re	t 1.04 s BW	1.0	мн	z	X		#V	/BW	3.0 MHz	2	FUNC	TION		weep 1	0.67 m	s (20	000 GH 0001 pt: NVALUE		CF Step 600.000000 MHz <u>Auto</u> Man
1 2 3 4 5 6 7 8 9	N	1 f			5	.817 7	7 GHz		-25.112 d	Bm									Freq Offset 0 Hz
10 11 <									1111					STATU	JS			~	



GSM1900-1850.2-GPRS@30mHz-1GHz@Pass

	Spectru		alyzer - Swe													
(X) RL Cente	er Fro	RF eq (50 Ω		CORREC		1	E:PULSE		#Avg Ty	ALIGN OFF pe: RMS d: 100/100	05:54	TRAC	I Jun 17, 2021 E 1 2 3 4 5 6 E MWWWWW		Frequency
10 dB/	ali		Offset 27		PNO: Fa IFGain:L		#Atten: 24			Avgino			DE	65 MHz	1	Auto Tune
10.00 - 10.00 -			20.00 (-13.00 dDm		Center Freq 515.000000 MHz
-20.0 - -30.0 -									é duga					1		Start Freq 30.000000 MHz
-50.0 - -60.0 - -70.0 -															1.	Stop Freq 000000000 GHz
Start #Res	BW 1	1.0 [MHz		#	¢VBW	3.0 MHz		FUNC		Sweep	1.333 m	s (20	000 GHz 0001 pts) NVALUE	Auto	CF Step 97.000000 MHz <u>o</u> Man
	N 1	f		95	4.65 MH:	Z	-28.702 df	3m								Freq Offset 0 Hz
MSG											По sta	TUS				

GSM1900-1850.2-GPRS@7GHz-13.6GHz@Pass

		ctrum	n Ana	lyzer - Sv														
Cen		Fre	RF q 1	50 s			Hz		1	E:PULS			Type	ALIGN OFF : RMS 100/100	TR	PM Jun 17, 2021 ACE 1 2 3 4 5 YPE MWWWWW	6	Frequency
							NO: Fast Gain:Lov		#Atten: 2			Avgin				B 44 GHz	N	Auto Tune
10 d	B/div			Offset 2 20.00												077 dBm		
Log 10.0																	l	Center Freq
0.00			_		_												ł	10.300000000 GHz
-10.0					-			_								dDm		
-20.0	- 41- 10-	المريطة	الملاد	العديد ورزاميه		Indust in		والمعادمة والمع	وريقاقينان وقفوار والمراجع		. Las ales and	ر او هم خانگ و رو	dan same	أسرار فريتين بمع مقرمانه	فالمعادمة المعادمة	all conceptibility and a start		Start Freq
-30.0 -40.0]	7.00000000 GHz
-50.0																	I	
-60.0					_													Stop Freq
-70.0			-		_												╢	13.600000000 GHz
Star							1									3.600 GHz		CF Step
#Re				/IHz			#V	/BW	3.0 MHz					<u> </u>		20001 pts	-	660.000000 MHz Auto Man
MKR 1	MODE	TRC 1	SCI. f		× 13.	193 44	4 GHz		-24.077 dl	3m	FUNC	TION	FUN	CTION WIDTH	FUNC	TION VALUE		<u>Auto</u> man
2										-								Freq Offset
4																		0 Hz
6																		
8																		
10 11																~		
MSG															-			
MSG														STATU:	2			



GSM1900-1850.2-Voice@13.6GHz-20GHz@Pass

Agilent Spect	rum An	alyzer - Swej										
Center F	RF req '	50 Ω 16.8000	00000 0			e Run		AL Type: I lold: 10		TRA	M Jun 17, 2021 CE 1 2 3 4 5 6 PE M WWWWW	Frequency
10 dB/div		Offset 27	IF dB	PNO: Fast Gain:Low	#Atten: 2					18.984	96 GHz 65 dBm	Auto Tune
10.00		20.00 4								<u> </u>	-13.00 dDm	Center Freq 16.80000000 GHz
-20.0 -30.0			روي بالماريم و الارامي روي بالماريم و الارامي		in the product of the state of							Start Fred 13.600000000 GHz
-50.0 -60.0 -70.0												Stop Frec 20.000000000 GHz
Start 13.0 #Res BW	1.0	MHz	X	#VE	3W 3.0 MH		UNCTION		eep 16	.00 ms (2	0.000 GHz 20001 pts)	CF Step 640.000000 MHz <u>Auto</u> Man
1 N 2 3 4 5 6	1 f		18.984 9	96 GHz	-19.465 d			FUNCT		FUNCT		Freq Offset 0 Hz
0 7 8 9 10 11												
MSG										3		

GSM1900-1850.2-Voice@1GHz-7GHz@Pass

		trum A	nalyz	er - Swe	ept SA														
Cen	-		۶ 4.0	50 Ω 0000	AC		z		1			#Avg T Avg Ho	ype:		05:4	TRAG	M Jun 17, 20 CE <u>1</u> 2 3 4 PE M WWW	56	Frequency
				fset 27		PN IFG	10: Fast Gain:Lov	t⊶ ⊫⊶ w	#Atten: 2			Avgino				.70	et P N N N B 5 GH	N N IZ	Auto Tune
10 di Log	B/div	R	ef 3	5.00 c	iBm										-2	:4.7	60 dB	m	
25.0 15.0 5.00																		_	Center Freq 4.000000000 GHz
-5.00																			
-15.0																	-13.00	dBm	Start Freq
																			1.00000000 GHz
-25.0		بالمتر وسأله		ومعلايدة		.			initia a la fatta		الم يطري	والمتحدث والمراجع					An of Antonia Alberta	(inter	
-35.0									1. and 1										Stop Freq
-45.0																			7.000000000 GHz
-55.0																			
	t 1.0 s BW			z			#\	/BW	3.0 MHz	:			Sw	eep 1			.000 GI 0001 p		CF Step 600.000000 MHz Auto Man
	MODE	TRC SI			×	700 /			Y		FUNC	TION	FUNCT	TION WIDTH		UNCTIO	on value	^	Auto Iviaii
1 2 3 4 5 6	N				2.	/08 6	5 GHz		-24.760 d	Bm								-	Freq Offset 0 Hz
7 8 9 10																			
10																		~	
MSG															JS				



GSM1900-1850.2-Voice@30mHz-1GHz@Pass

		ectru		alyzer -		t SA														
Cen		Fre	RF eq	515.0		AC 000	COR	:			SE:PUL		#Avg	Туре	ALIGN OFF : RMS 100/100	т	RACE 1	17,2021 23456 MMMMM		Frequency
10 di	D (dia			Offset				NO: F Gain:l	ast ↔ Low	#Atten:2			O A BIU			kr1 86	DET P	NNNN	×]	Auto Tune
10.0 10.0 -10.0		v		1 20.0		<u>, , , , , , , , , , , , , , , , , , , </u>												-13:00 dBm		Center Freq 515.000000 MHz
-20.0 -30.0 -40.0	Nive	la equi		er i likilen jerisi Tana tanga pag	-		and kine b	i și de la c	ali star	inde Jaal and Hanston and Land Hanston Annual and Appropriate	e lei				્ તું આ દિવ્યુ છે. કુ વાળ કે બાળ કરે છે કે જ જ વ્યુક્ત અને કુ અને કુ અને કુ અને કે અને કુ			an i star se te i		Start Freq 30.000000 MHz
-50.0 -60.0 -70.0																				Stop Freq 1.000000000 GHz
Star #Re	s B	W 1	1.0	MHz		×		Ĵ	#VBW	/ 3.0 MH	z	FUNI	OTION		weep 1.:	333 ms	1.000 (200)			CF Step 97.000000 MHz .uto Man
1 2 3 4 5 6 7 8 9 10	N	1	f			8	63.52	2 MH		-28.960 c	iBm									Freq Offset 0 Hz
11 MSG		1	I	ļ						1111					I o STATU:	s		× ×		

GSM1900-1850.2-Voice@7GHz-13.6GHz@Pass

		trum	Ana	yzer - Sv	wept SA											
Cen		Free	RF q 1	50 s 0.300	Ω AC		Hz			e Run		/g Typ	ALIGN OFF e: RMS : 100/100	TR.	PM Jun 17, 2021 ^{ACE} 1 2 3 4 5 6 YPE M WWWWM	Frequency
10 di	3/div			Offset 2 20.00		Pr IFG	NO: Fast Sain:Lov	v	#Atten: 2					12.494	17 GHz 346 dBm	Auto Tune
Log 10.0 0.00 -10.0															-13.00 dDm	Center Fred 10.300000000 GHz
-20.0 -30.0 -40.0		ii) ai	47 414	nt nin di k				444					ليان معادي مناسب المراجع المراجع الم			Start Fred 7.000000000 GHz
-50.0 -60.0 -70.0																Stop Fred 13.600000000 GHz
Star #Re:	s BV	V 1.	0 14				#V	вw	3.0 MHz	-	UNCTION		weep 12	2.00 ms (3.600 GHz 20001 pts)	
1 2 3 4 5 6 7	N	1	f		12.	494 17	7 GHz		-23.346 d	Bm						Freq Offset 0 Hz
8 9 10 11 <									IIII				I statu	s	~	



GSM1900-1880-GPRS@13.6GHz-20GHz@Pass

Agilent Spect	rum An	alyzer - Swe									
Center F	req '	00.00	00000 0				ј Туре	ALIGN OFF : RMS 100/100	TRA	M Jun 17, 2021 CE 1 2 3 4 5 6 (PE M WWWWW	Frequency
10 dB/div		Offset 27	dB	PNO: Fast Gain:Low	#Atten: 2				19.054	72 GHz	Auto Tune
		20.00 0							1_	-13.00 dBm	Center Freq 16.80000000 GHz
-20.0 -30.0 -40.0		and and the second s		ing in the filling with	natal un di Bach a Literatura du					a an	Start Freq 13.600000000 GHz
-50.0 -60.0 -70.0											Stop Freq 20.000000000 GHz
Start 13. #Res BW	1.0	MHz		#VE	3W 3.0 MH2	UNCTION		weep 16 monworth	6.00 ms (2	0.000 GHz 20001 pts)	CF Step 640.000000 MHz <u>Auto</u> Man
Att MUDe 1 N 2 3 3			× 19.054 7	72 GHz	-18.527 d						Freq Offset
MSG		+		· ·			•		s		

GSM1900-1880-GPRS@1GHz-7GHz@Pass

Agilen		trun	n Ana	alyze	r - Sw	ept SA																
Cent		Fre	RF q4	1.00	50 Ω 0000	AC 0000	0 G				1		E:PULSE			Туре	ALIGN OFF : RMS 100/100	0	5:56:04 P TRA TV	CE 1 2	7,2021 3456 MMM	Frequency
10 dE	3/div				et 27	′ dB dBm	IF		: Fast in:Lov			en: 24				1010.			2.65 -24.2	84	GHz	Auto Tune
25.0 15.0																						Center Freq 4.00000000 GHz
-5.00 -15.0 -25.0					الفدادي بم	La de adre		1=							1				والمتعادية والمعادية		.00 dBm	Start Freq 1.000000000 GHz
-35.0 -45.0 -55.0																						Stop Freq 7.000000000 GHz
Star #Res	s BV	V 1.	.0 N			×	<		#V	/BW	' 3.0 N	ИНz		FUNC	TION		weep 1	0.67	<u> </u>		pts)	CF Step 600.000000 MHz <u>uto</u> Man
1 2 3 4 5 6 7 8 9	N	1	f				2.658	340	GHz		-24.2	13 dE	3m									Freq Offset 0 Hz
10 11 <											III	11					I stati	us			>	



GSM1900-1880-GPRS@30mHz-1GHz@Pass

Agilent Spect	rum Anal	yzer - Swe	pt SA									
(XI RL Center F	RF req 5	<u>50 ຊ</u> 15.000	000 MH			SE:PULSE		g Typ	ALIGN OFF e: RMS : 100/100	TRA	M Jun 17, 2021 CE 1 2 3 4 5 6 PE M WARMAN	Frequency
10 dB/div) ffset 27 20.00 c	dB	PNO: Fast Gain:Low	#Atten::					۔ kr1 847	95 MHz 34 dBm	Auto Tune
		20.00 0									-13.00 dBm	Center Fred 515.000000 MHz
-20.0 -30.0 -40.0	intre live	an in the second lie	fels et al litter poor	n jing B. d. a. B. dalahan judit. gang gan Vi wati ping gan	ente la pala a preja de la preja		irdier gy rathing					Start Freq 30.000000 MHz
-50.0 -60.0 -70.0												Stop Frec 1.000000000 GHz
Start 30.0 #Res BW	1.0 M	Hz	×	#VE	SW 3.0 MH	_	FUNCTION		weep 1.	333 ms (2	0000 GHz 20001 pts)	CF Step 97.000000 MHz <u>Auto</u> Mar
1 N 2 3 4 5 6 7 8 9 10				95 MHz	-27.934 (Freq Offset 0 Hz
MSG					IIII					s	×	

GSM1900-1880-GPRS@7GHz-13.6GHz@Pass

		ctrum	Ana	lyzer - Sw	ept SA												
Cen	-	Free	RF q 1	50 Ω 0.3000			lz		1			// #Avg Typ Avg Hold		TRA	M Jun 17, 2021 CE 1 2 3 4 5 1 PE M WWWWW	6	Frequency
_						PNC IFGa	D: Fast ain:Low		#Atten: 24			Arginola		1	PNNNN	N	Auto Tune
10 d	B/div			Offset 27 20.00 (Mkr1		72 GHz 34 dBm		
Log 10.0																11	
0.00																11	Center Freq 10.30000000 GHz
-10.0																1	10.30000000 GHz
															<u>1 -13.00 dDm</u>	- -	
-20.0	ut. Lula		-	una Lana a Intel Lanada	مدر المل		ير الم		معاهدين وراحيا	وروار والمراجع		والمراجع المرافع المرافع	un autom des anno longer	والتقاربية والمتعادية	a contraction of the second		Start Freq
-30.0	1		-1.0													11	7.000000000 GHz
-40.0																1	
-50.0																11	Stop Freq
-60.0																11	13.600000000 GHz
-70.0																1	
Star														Stop 13	.600 GHz	11	CF Step
#Re	s Bl	N 1.	0 M	IHz			#V	вW	3.0 MHz			S	weep 12	2.00 ms (2	20001 pts		660.000000 MHz
MKR		TRC			Х				Y		FUNCTI	ON FUI	NCTION WIDTH	FUNCT	ON VALUE	ſ	<u>Auto</u> Man
1	Ν	1	f		12.8	35 72	GHz		-23.934 di	3m						ŀ	
3																	Freq Offset
4																1	0 Hz
6 7			+														
8 9																	
10																	
11									00						~		
MSG													I statu	s			
													-				



GSM1900-1880-Voice@13.6GHz-20GHz@Pass

	pectrum	Anal	yzer - Swe										
(XI RL Cente	r Fre	RF q 1	50 Ω 6.8000	00000 C			ISE:PULSE		Avg Typ	ALIGN OFF e: RMS : 100/100	TRA	PM Jun 17, 2021 ACE 1 2 3 4 5 6 YPE MWWWWW	Frequency
10 dB/d			Offset 27 20.00 d	dB	PNO: Fast Gain:Low				- and the second		18.974	72 GHz	Auto Tune
			20.00 0								1	-13.00 dBm	Center Freq 16.80000000 GHz
-20.0		1 44	i kalan sina kasa si juta si	a a statistica a st									Start Freq 13.600000000 GHz
-50.0 -60.0 -70.0													Stop Freq 20.000000000 GHz
Start ' #Res I	3W 1.	0 M		×	#VI	BW 3.0 MH	z	FUNCTION		weep 16	6.00 ms (2	0.000 GHz 20001 pts)	CF Step 640.000000 MHz <u>Auto</u> Man
1 N 2 3 4 5 6 7 8 9 10		f		18.974 7	72 GHz	-19.633	dBm	FUNCTION					Freq Offset 0 Hz
11 K MSG						1111					s	×	

GSM1900-1880-Voice@1GHz-7GHz@Pass

Agilen	nt Spec	ctrur	n Ana	alyze	r - Sw	ept S/	4															
Cen	-	Fre	RF q 4	1.00	50 Ω 0000				z		1	SENSE	E:PULSE			Туре	ALIGN OFF : RMS 100/100	(05:48:53 F TRA	CE 1 2	7,2021 3456 MMMN	Frequency
10 d	B/div				et 27				0: Fas ain:Lo	st ⊶► w		en: 24				1014.			2.47 -24.4	4 2 (GHZ	Auto Tune
Log 25.0 15.0 5.00																						Center Freq 4.000000000 GHz
-5.00 -15.0 -25.0					a patis		1		, sa ta di sa d							(فعل مثالة		.11.111		-13	.00 dBm	Start Freq 1.000000000 GHz
-35.0 -45.0 -55.0					han - real																	Stop Freq 7.000000000 GHz
Star #Re		N 1	.0 P		<u>.</u>		×		#\	VBW	1 3.0 P	ИНz		FUNC	TION		weep 1	0.67	· ·		pts)	CF Step 600.000000 MHz <u>uto</u> Man
1 2 3 4 5 6 7 8 9	N	1	f				2.47	742	GHz		-24.49	92 dE	3m									Freq Offset 0 Hz
10 11 <											11						K STAT	US			>	



GSM1900-1880-Voice@30mHz-1GHz@Pass

		ctru		alyzer - S	A														
Cen		Fre	RF eq	50 515.00	0 MI				1	SE:PU			Тур	ALIGN OFF e: RMS 100/100		TRAC	1 Jun 17, 20 E 1 2 3 4 E MWWW	56	Frequency
10 di	Didis			Offset 2): Fast in:Lov		#Atten: 2			Avgir	1010.			DE 61.1	63 MH	N N	Auto Tune
10.0 10.0 0.00		<u>, </u>		1 20.00													-13:00 d		Center Freq 515.000000 MHz
-20.0 -30.0 -40.0	with the	u di più	i juli i	isioni ini ini	hile point and	,				i i i i i i i i i i i i i i i i i i i				a gana a sa a sa a sa a sa a sa a sa a s	ar (healthin a	1-		idadi	Start Free 30.000000 MHz
-50.0 -60.0 -70.0																			Stop Fred 1.000000000 GHz
Star #Re:	s B	W 1	.0	MHz	 ×			/BW	7 3.0 MH2		FUN	CTION		weep 1.3	333 ms	5 (2	0000 GH 0001 p1		CF Step 97.000000 MHz <u>Auto</u> Man
1 2 3 4 5 6 7 8 9 10	N	1	f		861	.63	MHz		-29.037 d	Bm									Freq Offsel 0 Hz
11 K MSG			-	ļ					1111				<u> </u>	I o statu:	5		>		

GSM1900-1880-Voice@7GHz-13.6GHz@Pass

	Spectru	m Ana	ılyzer - Sv	vept SA															
Cente	er Fro	RF eq 1	50 s 0.300			Hz		1	E:PULSE		#Avg 1 Avg He	Гуре:		05:	TRA	M Jun 17, CE <u>1</u> 2 3 PE M W/	456	Frequ	ency
						0: Fast ain:Low		#Atten: 2			Avgin		Mkr	1 1 2	D	ET P N N	INNN	Au	ito Tune
10 dB/	div		Offset 2 20.00										IVINI			17 d			
Log 10.0																		Cen	ter Freg
0.00 -		_					_										_		0000 GHz
-10.0		-					_							-	1 —	-13.	30 dDm		
-20.0	ويتعاملون وال				the state of	المرابق الم	وهبيال	بعقد والمعالية والغا		ورهامه الرائد	و ماناد امر ا		ومرادع والمساليات			ور المراجع الم	ورور المالية	St	art Freq
-30.0					19-19-19-19-19-19-19-19-19-19-19-19-19-1		,								هندا به			7.00000	0000 GHz
-50.0 -																	_		
-60.0 —														_				St 13.60000	op Freq
-70.0		-					-										_	13.500000	5000 GH2
Start												_				.600			CF Step
#Res			/IHz			#V	BW	3.0 MHz					eep 1		· ·			660.000 Auto	0000 MHz Man
		f		× 12.4	84 93	GHz		-23.717 dl	Bm	FUNC	TION	FUNC	TION WIDTH		FUNCTI	ON VALUE			
2																		Fre	q Offset
4																			0 Hz
6 7						_													
8						_													
10 11																	~		
MSG														JS			>		



GSM1900-1909.8-GPRS@13.6GHz-20GHz@Pass

Agilent Spect	rum Anal	yzer - Swept									
Center F	RF req 10		0000 G		_	#Avg Avalt	Type:	RMS	TRA	M Jun 17, 2021 CE 1 2 3 4 5 6 /PE M WW/WW	Frequency
10 dB/div)ffset 27 di 20.00 dB	IFC B	NO: Fast • Gain:Low	#Atten: 2				، 19.064	00 GHz	Auto Tune
10.0 0.00									 1-	-13:00 dDm	Center Freq 16.800000000 GHz
-20.0 -30.0 -40.0					forge und hid optimization of						Start Freq 13.60000000 GHz
-50.0 -60.0 -70.0											Stop Fred 20.000000000 GHz
Start 13.0 #Res BW	1.0 M		×	#VB	W 3.0 MHz	UNCTION		veep 16	.00 ms (2	0.000 GHz 20001 pts)	CF Step 640.000000 MHz <u>Auto</u> Man
1 N 2 3 4 5 6	1 f		19.064 00	0 GHz	-19.233 d		FUNC		FUNCT		Freq Offset 0 Hz
0 7 8 9 10 11											
MSG									3		

GSM1900-1909.8-GPRS@1GHz-7GHz@Pass

MR.L RF 50.2 AC CORREC SENSEPLASE Autor Single Frequency Center Freq 4.000000000000000000000000000000000000	Agilen		ctru			r - Sw	ept SA													
PHO: Fast with the second s			Fre	1.0				0 GH	lz		7			#Avg Ty	pe: RMS	05:57	TRAC	E12345	6	Frequency
Log Image: Start Control of the start								IF									162	T P NNNN	z I	Auto Tune
25.0		B/div	/	Rei	f 35	.00	<u>dBm</u>									-24	4.4	93 abr	n	
5.00 1 1	25.0 15.0																			
15.0 .13.00 dBm .13.00 dBm .13.00 dBm .13.00 dBm .25.0																				
-25.0										1 1=						_		-13.00 dE	Im	
-45.0 -45.0 <td< td=""><td>-25.0</td><td>1</td><td></td><td></td><td></td><td></td><td></td><td>ور الألور الدور</td><td>a gentrates</td><td>V Idaadaa</td><td>la fadina</td><td></td><td>n</td><td>and the strike is a state of the</td><td>والتفصير وأفقطته والترويين</td><td>الاست المالي</td><td>الولا أأساليه</td><td>و بار بار بار معنام</td><td>d.u</td><td></td></td<>	-25.0	1						ور الألور الدور	a gentrates	V Idaadaa	la fadina		n	and the strike is a state of the	والتفصير وأفقطته والترويين	الاست المالي	الولا أأساليه	و بار بار بار معنام	d.u	
-65.0 -55.0 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>4</td><td>Stop Freq</td></td<>										1									4	Stop Freq
#Res BW 1.0 MHz #VBW 3.0 MHz Sweep 10.67 ms (20001 pts) 600.00000 MHz MRG MODE TRC SCL X Y FUNCTION WIDTH FUNCTION WIDTH FUNCTION WALLE 1 N 1 f 3.162.7 GHz -24.493 dBm Auto Man 2 - - - - - FUNCTION WIDTH FUNCTION WALLE Auto Man 4 -																				7.000000000 GHz
MKR MODE TC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION WALLE Image: Constraint of the second	#Re	s Bl	W 1	.0 1	ИНz	<u>.</u>			#\	VBW	/ 3.0 MHz				-	0.67 m	is (2	0001 pt		600.000000 MHz
2									7 CH7		24 493 di	2	FUNC	TION F	UNCTION WIDT	H FL	UNCTIO	IN VALUE	^	
8	2 3 4 5							3.102			-24.435 ui	2111								-
	8 9 10																			
	11										111								~	
	MSG														To STAT	US				



GSM1900-1909.8-GPRS@30mHz-1GHz@Pass

		ectru		alyzer -		ot SA															
Cen		Fre	RF eq	515.0	ີ 2 000	AC 100	MHz				SENSI				Тур	ALIGN OFF e: RMS 100/100	05:5	TRAC	M Jun 17,20 2E <u>1</u> 2 3 4 PE M WWW	56	Frequency
10 d	Bidi			Offset					Fast + :Low	••	#Atten: 24			Avgi				₀ 955.	09 MI 04 dB		Auto Tune
Log 10.0 0.00	F	•		1 20.0															-13.00		Center Freq 515.000000 MHz
-20.0 -30.0 -40.0	ni stadi	,	i i fa	n al baint mark	put de														et internet		Start Freq 30.000000 MHz
-50.0 -60.0 -70.0																					Stop Fred 1.000000000 GHz
Star #Re	s B'	W 1	1.0 SOI	MHz		×					3.0 MHz		FUNC	TION		weep 1.3	333 n	15 (2	0000 G 0001 p		CF Step 97.000000 MHz <u>Auto</u> Man
1 2 3 4 5 6 7 8 9 9 10 11	N		f				955.0	9 M			-28.804 df	3m									Freq Offset 0 Hz
MSG																To STATU:	s				<u>.</u>

GSM1900-1909.8-GPRS@7GHz-13.6GHz@Pass

		ctrum		lyzer - Sv													
Cen		Fre	RF q 1	50 s 0.300			Hz	 1	e:PULSE		#Avg Ty	ALIGN OFF pe: RMS d: 100/100	05:	TRA	M Jun 17, 20 CE 1 2 3 4 PE M WWW	56	Frequency
_							NO: Fast Gain:Lov	#Atten: 2			Arginor		4.40	D	ET P N N N	ΝN	Auto Tune
10 d	B/div			Offset 2 20.00								IVIKI			77 GH 38 dB		
Log 10.0													_				Center Freq
0.00	\vdash		+													-	10.30000000 GHz
-10.0 -20.0														1	-13.00+	:Dm	
-30.0	lugari,	1. I.I.	-				والمترافع المراجع		المارية إعراق التعديلة. (1) مركز المركز المركز الم		والبيانة ألجرتها		- Alexandre			-	Start Freq 7.000000000 GHz
-40.0			-														
-50.0 -60.0																	Stop Freq
-70.0	_		_		-											-	13.600000000 GHz
Star #Re							-#3.4	3.0 MHz				Sweep 1			600 GI		CF Step
#Re MKB					×		#V	3.0 IVITZ		FUNCT		Notion widt		· ·		LS)	660.000000 MHz <u>Auto</u> Man
1	Ν	1	f		12.	467 77	7 GHz	-22.938 dl	Bm								
3	_																Freq Offset 0 Hz
5 6 7	_								_				_			_	
8																	
10 11																~	
MSG													rus		>		



GSM1900-1909.8-Voice@13.6GHz-20GHz@Pass

		rum	Ana	lyzer - Swe	ept SA														
<mark>⊮</mark> ℝ Cen		rec	RF q 1	50 Ω 6.8000	AC		Hz]	E:PUL			Туре	ALIGN OFF : RMS 100/100	05:5	TRA	M Jun 17, 2 CE <u>1</u> 2 3 4 PE M W M/	56	Frequency
				Offset 27			IO: Fast ain:Lov		#Atten: 2			Avgr				₀ 024	32 G	Hz	Auto Tune
10 d Log	B/div	R	₹ef	20.00 c	1Bm										-1	9.6	98 dE	۶m	
10.0 0.00 -10.0																1-	-13.00		Center Freq 16.80000000 GHz
-20.0									1.40)'			
-30.0 -40.0				dii tayaya ta		alstin.													Start Freq 13.60000000 GHz
-50.0 -60.0			+																Stop Freq 20.000000000 GHz
-70.0			+																
#Re	rt 13. s BW	/ 1.0	0 N				#\	/BW	/ 3.0 MHz					weep 16	6.00 m	is (2	•		CF Step 640.000000 MHz Auto Man
MKR 1	MODE 1		5CU f		X	24.22	GHz		Y -19.698 dl	2	FUNC	TION	FUN	CTION WIDTH	F	UNCTI	ON VALUE	^	Adio Mari
2 3 4 5 6			-		19.0	24 32			-19.098 0	DIII									Freq Offset 0 Hz
7 8 9 10																			
< MSG									IIII					I o statu	s				

GSM1900-1909.8-Voice@1GHz-7GHz@Pass

Agilen		ctru			r - Sw	ept SA														
Cen		Fre	RF Pq4		50 Ω 0000		0 GI			1	E:PULS		#Avg T	Гуре	ALIGN OFF : RMS 100/100		TRACE	un 17, 2021 1 2 3 4 5 M WWWW	6	Frequency
			Ref	Offs	set 27	7 dB		NO: F Gain:	ast ⊶► Low	#Atten: 2		I	Avgine				DET	9 GHz	N Z	Auto Tune
10 d Log	B/div	/	Re	f 35	.00	dBm										-24	.49	6 dBm	ונ	
25.0 15.0 5.00																				Center Freq 4.000000000 GHz
-5.00																			I	
-15.0							— 1							_				-13.00 dBr	n	Start Freq
-25.0									. Int si.							الله ومغمسونا عروا بر				1.000000000 GHz
-35.0	u a la	t de	w.																	
-45.0																				Stop Freq
-55.0																				7.000000000 GHz
Star #Re					2			:	#VBW	/ 3.0 MHz	z			Sv	veep 10			000 GHz 001 pts)	CF Step 600.000000 MHz
	MODE	TRC				×				Y		FUN	TION	FUNC	CTION WIDTH	FUN	ICTION	VALUE		<u>Auto</u> Man
1 2 3	N	1	f				2.629	9 GF		-24.496 d	Bm								ľ	Freq Offset
4																				0 Hz
5																				
- 7 - 8																				
9 10				-																
11																			•	
MSG															I statu	s		>		
															-					



GSM1900-1909.8-Voice@30mHz-1GHz@Pass

		ctru		alyzer - Sv															
Cen	-	Fre	RF Pq (50 s 515.00		MHz	RREC			E:PUL			Гуре	ALIGN OFF : RMS 100/100	05:51	TRAC	M Jun 17,20 2E <u>1</u> 2 3 4 PE M W M M	56	Frequency
10 d				Offset 2		IFO	NO: Fas Gain:Lo		#Atten: 2		rı	Avgin	014.			B3.	93 MI 88 dB		Auto Tune
10.0 10.0 0.00		, 	Ke	20.00													-13.00		Center Freq 515.000000 MHz
-20.0 -30.0 -40.0	ų.		y siley				روبار روبار روبار اورار روبار			hin I		D. Antonio de la constante de l La constante de la constante de	pl Asir			, in the second seco		4	Start Freq 30.000000 MHz
-50.0 -60.0 -70.0																			Stop Fred 1.000000000 GHz
Star #Re	s Bl	W 1	.0 I	MHz	· 	<	#\	vbw	3.0 MHz		FUNC	CTION		weep 1.3	333 m	s (2	0000 GI 0001 p		CF Step 97.000000 MHz <u>Auto</u> Man
1 2 3 4 5 6 7 8 9 10 11	N	1	f			783.9	3 MHz		-29,388 dl	Bm									Freq Offset 0 Hz
MSG				· · · · · · · · · · · · · · · · · · ·															

GSM1900-1909.8-Voice@7GHz-13.6GHz@Pass

		ctrun		alyzer - Sv															
Cen		Fre	RF 9 1	50 s 10.300			Hz		1	e:PULSE		#Avg T Avg Ho	ype:		05:51	TRAC	M Jun 17,2 2E 1 2 3 4 PE M WWW	56	Frequency
			Ref	Offset 2	7 dB		NO: Fast Gain:Lov		#Atten: 2			- Crains				□ 22	16 G	Hz	Auto Tune
10 d	B/div			20.00											-23	3.8	07 dE	m	
Log 10.0																			Center Freq 10.30000000 GHz
-10.0																	43.00	dDm	10.000000000000
-20.0																	1 ²	aom	
-30.0	ياس الديان			فالحمر ذير والمحافة			بدلاسمانى	متر فأترتن	وبالفناف ورارهما	بالمقاط والتقال سلحا	يعقر ويتأريس	مل المقاضر والمحدي	ور المعالية	و من العالية العالمة الم	a substance			-	Start Freq
-40.0		1										and the last of the second							7.000000000 GHz
-40.0																			
-60.0																			Stop Freq
-70.0																			13.60000000 GHz
-70.0																			
Star #Re							#V	вw	3.0 MHz				Sw	eep 12			.600 G 0001 p		CF Step 660.000000 MHz
MKB	MODE	TRE	SCI		×				Y		FUNC	TION		ION WIDTH		· ·	IN VALUE		<u>Auto</u> Man
1	N	1	f			122 16	5 GHz		-23.807 d										
2																		-	Freq Offset
4																			0 Hz
6																		=	
7										_								-	
9 10																			
10																		~	
<														~					
MSG															s				



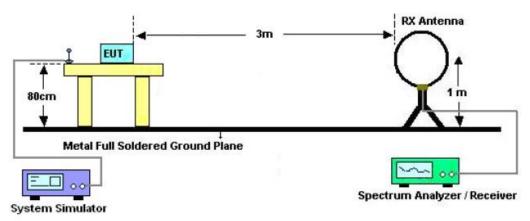
5.5.2 RADIATED SPURIOUS EMISSION

5.5.2.1 MEASUREMENT METHOD

- 1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
- 3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
- 4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
- 5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
- 6. For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
- 7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
- 8.If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
- 9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
- 10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High Low scan is not required in this case.

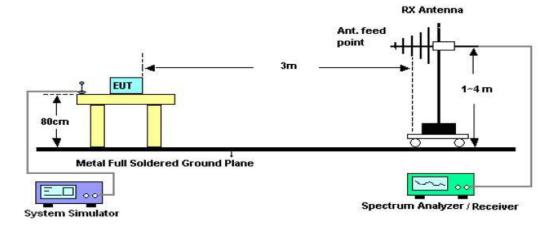
5.5.2.2 TEST SETUP



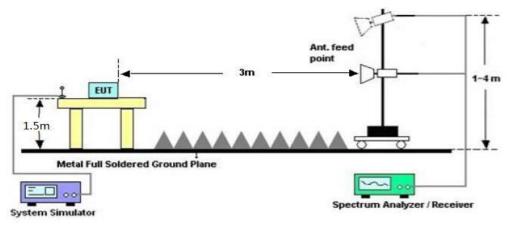


Radiated Emission Test-Setup Frequency Below 30MHz

RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



5.5.2.3 PROVISIONS APPLICABLE

(a) On any frequency outside a licensee's frequency block (e.g. A, D, B, etc.) within the USPCS spectrum,
 the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least
 43+10Log(P) dB. The specification that emissions shall be attenuated below the transmitter power (P) by at



least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out. **Note:** only result the worst condition of each test mode:



5.5.2.4 MEASUREMENT RESULT

GSM 850:

The Worst Test Results for Channel 128/824.2 MHz											
Frequency	Emission Level	Limits	Margin	Comment							
(MHz)	(dBm)	(dBm)	(dB)	Comment							
1648.07	-59.64	-13	46.64	Horizontal							
3296.47	-38.65	-13	25.65	Horizontal							
4944.87	-55.60	-13	42.60	Horizontal							
1648.08	-42.07	-13	29.07	Vertical							
3296.43	-51.45	-13	38.45	Vertical							
4944.95	-45.01	-13	32.01	Vertical							

PCS 1900:

The Worst Test Results for Channel 661/1880.0 MHz											
Frequency	Emission Level	Limits	Margin	Comment							
(MHz)	(dBm)	(dBm)	(dB)	Comment							
3759.64	-57.89	-13	44.89	Horizontal							
7519.64	-41.43	-13	28.43	Horizontal							
11279.61	-53.78	-13	40.78	Horizontal							
3759.70	-42.24	-13	29.24	Vertical							
7519.68	-52.90	-13	39.90	Vertical							
11279.69	-44.39	-13	31.39	Vertical							

Note:

11. Margin = Limit - Emission Level

12. Below 30MHZ no Spurious found and Above is the worst mode data.



5.6 FREQUENCY STABILITY

5.6.1 MEASUREMENT METHOD

In order to measure the carrier frequency under the condition of AFC lock, it is necessary to make measurements with the EUT in a "call mode". This is accomplished with the use of R&S CMU200 DIGITAL RADIO COMMUNICATION TESTER.

1 Measure the carrier frequency at room temperature.

2 Subject the EUT to overnight soak at -10 $^{\circ}$ C.

3 With the EUT, powered via nominal voltage, connected to the CMU200 and in a simulated call on channel 661 for PCS 1900 band , channel 190 for GSM 850 band, channel 9400 for UMTS band II, channel 1412 for UMTS band IV and channel 4175 for UMTS band V measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.

4 Repeat the above measurements at 10° C increments from -10° C to $+50^{\circ}$ C. Allow at least 1 1/2 hours at each temperature, unpowered, before making measurements.

5 Re-measure carrier frequency at room temperature with nominal voltage. Vary supply voltage from minimum voltage to maximum voltage, in 0.1Volt increments re-measuring carrier frequency at each voltage. Pause at nominal voltage for 1 1/2 hours unpowered, to allow any self-heating to stabilize, before continuing.

6 Subject the EUT to overnight soak at +50℃.

7 With the EUT, powered via nominal voltage, connected to the CMU200 and in a simulated call on the centre channel, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.

8 Repeat the above measurements at 10° C increments from +50°C to -10°C. Allow at least 1 1/2 hours at each temperature, unpowered, before making measurements.

9 At all temperature levels hold the temperature to +/- $0.5\,^\circ\!\mathrm{C}$ during the measurement procedure.

5.6.2 **PROVISIONS APPLICABLE**

5.6.2.1 FOR HAND CARRIED BATTERY POWERED EQUIPMENT

According to the ANSI/TIA-603-E-2016, the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235, Frequency Stability. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. As this transceiver is considered "Hand carried, battery powered equipment" Section 2.1055(d)(2) applies. This requires that the lower voltage for frequency stability testing be specified by the manufacturer. This transceiver is specified to operate with an input voltage of between 3.4VDC and 4.2VDC, with a nominal voltage of 3.7VDC. Operation above or below these voltage limits is prohibited by transceiver software in order to prevent improper operation as well as to protect components from overstress. These voltages represent a tolerance of -10 % and +12.5 %. For the purposes of measuring frequency stability these voltage limits are to be used.



5.6.2.2 FOR EQUIPMENT POWERED BY PRIMARY SUPPLY VOLTAGE

According to the ANSI/TIA-603-E-2016,the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235, Frequency Stability. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. For this EUT section 2.1055(d)(1) applies. This requires varying primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment, the normal environment temperature is 20°C.



5.6.3 MEASUREMENT RESULT

Pass

For GSM

Test Band=GSM850/GSM1900

			Volta	ge			
Dand	Dand Channel		Temperature	Deviation	Deviation	Limit	Vordiat
Band	Channel	(Vdc)	(°C)	(Hz)	(ppm)	(ppm)	Verdict
GSM850	128	VL	TN	10.85	0.0130	2.5	PASS
GSM850	128	VN	TN	8.39	0.0100	2.5	PASS
GSM850	128	VH	TN	12.16	0.0145	2.5	PASS
GSM850	190	VL	TN	7.19	0.0086	2.5	PASS
GSM850	190	VN	TN	12.95	0.0155	2.5	PASS
GSM850	190	VH	TN	7.97	0.0095	2.5	PASS
GSM850	251	VL	TN	8.7	0.0104	2.5	PASS
GSM850	251	VN	TN	7.11	0.0085	2.5	PASS
GSM850	251	VH	TN	9.72	0.0116	2.5	PASS
GPRS850	128	VL	TN	3.28	0.0039	2.5	PASS
GPRS850	128	VN	TN	4.02	0.0048	2.5	PASS
GPRS850	128	VH	TN	5.54	0.0066	2.5	PASS
GPRS850	190	VL	TN	6.32	0.0076	2.5	PASS
GPRS850	190	VN	TN	5.47	0.0065	2.5	PASS
GPRS850	190	VH	TN	1.66	0.0020	2.5	PASS
GPRS850	251	VL	TN	6.54	0.0078	2.5	PASS
GPRS850	251	VN	TN	6.33	0.0076	2.5	PASS
GPRS850	251	VH	TN	4.68	0.0056	2.5	PASS
GSM1900	512	VL	TN	12.34	0.0066	2.5	PASS
GSM1900	512	VN	TN	11.41	0.0061	2.5	PASS
GSM1900	512	VH	TN	12.41	0.0066	2.5	PASS
GSM1900	661	VL	TN	26.09	0.0139	2.5	PASS
GSM1900	661	VN	TN	23.09	0.0123	2.5	PASS
GSM1900	661	VH	TN	25.89	0.0138	2.5	PASS
GSM1900	810	VL	TN	24.85	0.0132	2.5	PASS
GSM1900	810	VN	TN	28.78	0.0153	2.5	PASS
GSM1900	810	VH	TN	24.89	0.0132	2.5	PASS
GPRS1900	512	VL	TN	7.81	0.0042	2.5	PASS
GPRS1900	512	VN	TN	8.68	0.0046	2.5	PASS
GPRS1900	512	VH	TN	11.7	0.0062	2.5	PASS
GPRS1900	661	VL	TN	22.91	0.0122	2.5	PASS
GPRS1900	661	VN	TN	28.25	0.0150	2.5	PASS
GPRS1900	661	VH	TN	27.19	0.0145	2.5	PASS
GPRS1900	810	VL	TN	26.92	0.0143	2.5	PASS
GPRS1900	810	VN	TN	23.04	0.0123	2.5	PASS
GPRS1900	810	VH	TN	23.78	0.0126	2.5	PASS



			Temper	ature			
Derel		Voltage	Temperature	Deviation	Deviation	Limit	
Band	Channel	(Vdc)	(°C)	(Hz)	(ppm)	(ppm)	Verdict
GSM850	128	VN	-30	9.36	0.0112	2.5	PASS
GSM850	128	VN	-20	6.89	0.0082	2.5	PASS
GSM850	128	VN	-10	9.88	0.0118	2.5	PASS
GSM850	128	VN	0	9.09	0.0109	2.5	PASS
GSM850	128	VN	10	9.4	0.0112	2.5	PASS
GSM850	128	VN	20	8.09	0.0097	2.5	PASS
GSM850	128	VN	30	8.85	0.0106	2.5	PASS
GSM850	128	VN	40	10.52	0.0126	2.5	PASS
GSM850	128	VN	50	9.05	0.0108	2.5	PASS
GSM850	190	VN	-30	9.91	0.0119	2.5	PASS
GSM850	190	VN	-20	12.66	0.0151	2.5	PASS
GSM850	190	VN	-10	8.59	0.0103	2.5	PASS
GSM850	190	VN	0	10.07	0.0120	2.5	PASS
GSM850	190	VN	10	8.7	0.0104	2.5	PASS
GSM850	190	VN	20	8.76	0.0105	2.5	PASS
GSM850	190	VN	30	9.03	0.0108	2.5	PASS
GSM850	190	VN	40	8.46	0.0101	2.5	PASS
GSM850	190	VN	50	10.21	0.0122	2.5	PASS
GSM850	251	VN	-30	8.7	0.0104	2.5	PASS
GSM850	251	VN	-20	8.52	0.0102	2.5	PASS
GSM850	251	VN	-10	8.96	0.0107	2.5	PASS
GSM850	251	VN	0	9.78	0.0117	2.5	PASS
GSM850	251	VN	10	7.28	0.0087	2.5	PASS
GSM850	251	VN	20	7.05	0.0084	2.5	PASS
GSM850	251	VN	30	6.18	0.0074	2.5	PASS
GSM850	251	VN	40	11.89	0.0142	2.5	PASS
GSM850	251	VN	50	10.53	0.0126	2.5	PASS
GPRS850	128	VN	-30	5.51	0.0066	2.5	PASS
GPRS850	128	VN	-20	9.05	0.0108	2.5	PASS
GPRS850	128	VN	-10	8.07	0.0097	2.5	PASS
GPRS850	128	VN	0	9.95	0.0119	2.5	PASS
GPRS850	128	VN	10	8.66	0.0104	2.5	PASS
GPRS850	128	VN	20	8.41	0.0101	2.5	PASS
GPRS850	128	VN	30	10.36	0.0124	2.5	PASS
GPRS850	128	VN	40	8.22	0.0098	2.5	PASS
GPRS850	128	VN	50	8.86	0.0106	2.5	PASS
GPRS850	190	VN	-30	5.82	0.0070	2.5	PASS
GPRS850	190	VN	-20	8.06	0.0096	2.5	PASS
GPRS850	190	VN	-10	3.5	0.0042	2.5	PASS
GPRS850	190	VN	0	0.68	0.0008	2.5	PASS
GPRS850	190	VN	10	-0.2	-0.0002	2.5	PASS
GPRS850	190	VN	20	2.7	0.0032	2.5	PASS
GPRS850	190	VN	30	-1.17	-0.0014	2.5	PASS
GPRS850	190	VN	40	0.06	0.0001	2.5	PASS

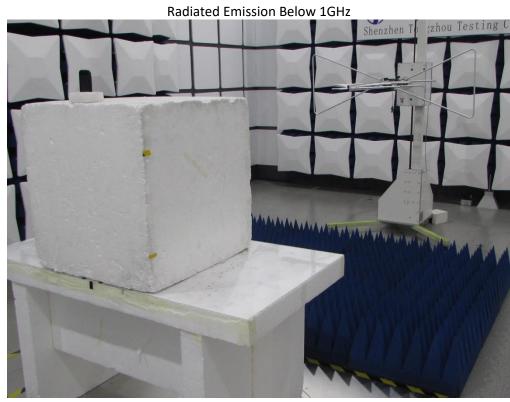


GPRS850	190	VN	50	-0.29	-0.0003	2.5	PASS
GPRS850	251	VN	-30	9	0.0108	2.5	PASS
GPRS850	251	VN	-20	7.83	0.0094	2.5	PASS
GPRS850	251	VN	-10	7.19	0.0086	2.5	PASS
GPRS850	251	VN	0	6.31	0.0075	2.5	PASS
GPRS850	251	VN	10	6.89	0.0082	2.5	PASS
GPRS850	251	VN	20	5.87	0.0070	2.5	PASS
GPRS850	251	VN	30	2.73	0.0033	2.5	PASS
GPRS850	251	VN	40	5.51	0.0066	2.5	PASS
GPRS850	251	VN	50	5.8	0.0069	2.5	PASS
GSM1900	512	VN	-30	12.98	0.0069	2.5	PASS
GSM1900	512	VN	-20	11.51	0.0061	2.5	PASS
GSM1900	512	VN	-10	8.29	0.0044	2.5	PASS
GSM1900	512	VN	0	10.53	0.0056	2.5	PASS
GSM1900	512	VN	10	8.82	0.0047	2.5	PASS
GSM1900	512	VN	20	7.16	0.0038	2.5	PASS
GSM1900	512	VN	30	9.37	0.0050	2.5	PASS
GSM1900	512	VN	40	13.09	0.0070	2.5	PASS
GSM1900	512	VN	50	10.09	0.0054	2.5	PASS
GSM1900	661	VN	-30	27.24	0.0145	2.5	PASS
GSM1900	661	VN	-20	24.78	0.0132	2.5	PASS
GSM1900	661	VN	-10	23.29	0.0124	2.5	PASS
GSM1900	661	VN	0	26.43	0.0141	2.5	PASS
GSM1900	661	VN	10	26.26	0.0140	2.5	PASS
GSM1900	661	VN	20	29.16	0.0155	2.5	PASS
GSM1900	661	VN	30	27.81	0.0148	2.5	PASS
GSM1900	661	VN	40	26.7	0.0142	2.5	PASS
GSM1900	661	VN	50	28.78	0.0153	2.5	PASS
GSM1900	810	VN	-30	27.12	0.0144	2.5	PASS
GSM1900	810	VN	-20	26.94	0.0143	2.5	PASS
GSM1900	810	VN	-10	23.74	0.0126	2.5	PASS
GSM1900	810	VN	0	22.15	0.0118	2.5	PASS
GSM1900	810	VN	10	23.64	0.0126	2.5	PASS
GSM1900	810	VN	20	27.91	0.0148	2.5	PASS
GSM1900	810	VN	30	31.55	0.0168	2.5	PASS
GSM1900	810	VN	40	29.38	0.0156	2.5	PASS
GSM1900	810	VN	50	27.51	0.0146	2.5	PASS
GPRS1900	512	VN	-30	13.11	0.0070	2.5	PASS
GPRS1900	512	VN	-20	12.21	0.0065	2.5	PASS
GPRS1900	512	VN	-10	19.66	0.0105	2.5	PASS
GPRS1900	512	VN	0	17.38	0.0092	2.5	PASS
GPRS1900	512	VN	10	18.56	0.0099	2.5	PASS
GPRS1900	512	VN	20	10.23	0.0054	2.5	PASS
GPRS1900	512	VN	30	19.01	0.0101	2.5	PASS
GPRS1900	512	VN	40	20.66	0.0110	2.5	PASS
GPRS1900	512	VN	50	20.55	0.0109	2.5	PASS
GPRS1900	661	VN	-30	28.3	0.0151	2.5	PASS



	l					~ -	
GPRS1900	661	VN	-20	24.15	0.0128	2.5	PASS
GPRS1900	661	VN	-10	22.6	0.0120	2.5	PASS
GPRS1900	661	VN	0	31.5	0.0168	2.5	PASS
GPRS1900	661	VN	10	23.72	0.0126	2.5	PASS
GPRS1900	661	VN	20	27.89	0.0148	2.5	PASS
GPRS1900	661	VN	30	33.07	0.0176	2.5	PASS
GPRS1900	661	VN	40	24.88	0.0132	2.5	PASS
GPRS1900	661	VN	50	29.89	0.0159	2.5	PASS
GPRS1900	810	VN	-30	22.05	0.0117	2.5	PASS
GPRS1900	810	VN	-20	24.93	0.0133	2.5	PASS
GPRS1900	810	VN	-10	32.58	0.0173	2.5	PASS
GPRS1900	810	VN	0	28.81	0.0153	2.5	PASS
GPRS1900	810	VN	10	31.64	0.0168	2.5	PASS
GPRS1900	810	VN	20	29.68	0.0158	2.5	PASS
GPRS1900	810	VN	30	24.69	0.0131	2.5	PASS
GPRS1900	810	VN	40	30.69	0.0163	2.5	PASS
GPRS1900	810	VN	50	28.7	0.0153	2.5	PASS





6 APPENDIX A: PHOTOGRAPHS OF TEST SETUP

Radiated Emission Above 1GHz



----END OF REPORT----