

# FCC TEST REPORT

## Test report On Behalf of Shanghai Dewav IoT Technology Co.,Ltd. For Real-time temperature logger Model No.: B9Z(2G-60), V5L(2G-60), V5L(2G-120), V5D(2G-60), /5D(2G-90), V5D(2G-120), V5A(2G-60), V5A(2G-120), V5H(2G-60)

V5D(2G-90), V5D(2G-120), V5A(2G-60), V5A(2G-120), V5H(2G-60), V5H(2G-120)

## FCC ID: 2ATWZ-V5X2G

- Prepared for :Shanghai Dewav IoT Technology Co.,Ltd.5th Floor,C8-30 of Lane 3188,Xiupu Road,Pudong New<br/>District,Shanghai,201315,P.R.China
- 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: 2022/3/10 - 2022/3/24

Date of Report: 2022/6/23

Report Number: TZ220603348-E

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:	Shanghai Dewav IoT Technology Co.,Ltd.
Address:	5th Floor,C8-30 of Lane 3188,Xiupu Road,Pudong New District,Shanghai,201315,P.R.China
Manufacture's Name:	Shanghai Dewav IoT Technology Co.,Ltd.
Address:	5th Floor,C8-30 of Lane 3188,Xiupu Road,Pudong New District,Shanghai,201315,P.R.China
Product description	
Trade Mark	Frigga
Product name:	Real-time temperature logger
Model and/or type reference .:	B9Z(2G-60), V5L(2G-60), V5L(2G-120), V5D(2G-60), V5D(2G-90), V5D(2G-120), V5A(2G-60), V5A(2G-120), V5H(2G-60), V5H(2G-120)
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:	2022/3/10 - 2022/3/24
Date of Issue	2022/6/23
Test Result:	Pass

:

:

:

Testing Engineer

Anna Hu

(Anna Hu)

Technical Manager

Hugo Chen

(Hugo Chen)

Authorized Signatory

And

(Andy Zhang)



## **Revision History**

Revision	Issue Date	Revisions	Revised By
000	2022/6/23	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

ANSI/TIA-603-E-2016: 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

EUT	: Real-time temperature logger		
Model Number	B9Z(2G-60), V5L(2G-60), V5L(2G-120), V5D(2G-60), V5D(2G- : 120), V5A(2G-60), V5D(2G-90), V5A(2G-120), V5H(2G-60), V5H(2G-120)		
Test Model	: V5H(2G-60)		
Power Supply	1,DC 3.7V by battery 2,DC 5.0V charged by adapter		
Hardware version	: V50MR41C		
Software version	: V5A_GD_L07		
Sample ID	: TZ220603348–1# & TZ220603348–2#		
GSM			
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(Supplied by Applicant)	Internal Antenna : GSM850: -0.9 dBi PCS1900: -0.8 dBi		

Note: Antenna position refer to EUT Photos.



## GSM Card Slot:

	Maximum ERP/EIRP (dBm)	Max. Conducted Power (dBm)	Max. Average Burst Power (dBm)
GPRS 850	26.61	32.09	31.84
GPRS 1900	24.74	30.24	29.95



## 2.2 Difference of Models

The difference shows in following table, other design are identical.

Derived Medel	Difference		
Derived Model	Function	Battery	Appearance
B9Z(2G-60)	without external probe Without LCD	Li-ion battery Nominal voltage: 3.7Vdc	
V5L(2G-60) V5L(2G-120)	without external probe Without LCD	Li-ion battery Nominal voltage: 3.7Vdc	
V5D(2G-60) V5D(2G-90) V5D(2G-120) V5A(2G-60) V5A(2G-120)	without external probe With LCD	Li-ion battery Nominal voltage: 3.7Vdc	



V5H(2G-60) V5H(2G-120)	with external probe With LCD	Li-ion battery Nominal voltage: 3.7Vdc	
---------------------------	------------------------------------	----------------------------------------------	--

## 2.3 Host System Configuration List and Details

Manufacturer	Description	Model	Serial Number	Certificate

#### 2.4 Short description of the Equipment under Test (EUT)

#### 2.4.1 General Description

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

#### 2.5 Normal Accessory setting

Fully charged battery was used during the test.

#### 2.6 EUT configuration

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

- supplied by the manufacturer
- $\, \odot \,$  supplied by the lab

•		

#### 2.7 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: 2ATWZ-V5X2G filing to comply with FCC Part 22 and FCC Part 24 Rules.

#### 2.8 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:	950-1050mbar



## 3.3 Test Description

#### PCS 1900:

Test Item	FCC Rule No.	Requirements	Judgement	Sample ID
Effective (Isotropic) Radiated Power	2.1046, 24.232(c)	EIRP ≤ 2W(33dBm)	Pass	TZ220603348-2#
Bandwidth	2.1049 24.238(a)	OBW: No limit. EBW: No limit.	Pass	TZ220603348-1#
Band Edges	2.1051, 24.238(a)	-13dBm	Pass	TZ220603348-1#
Spurious Emission at Antenna Terminals	2.1051, 24.238(a)	-13dBm	Pass	TZ220603348-1#
Field Strength of Spurious Radiation	2.1053, 24.238(a)	-13dBm	Pass	TZ220603348-2#
Frequency Stability	2.1055, 24.235	the fundamental emission stays within the authorized frequency block.	Pass	TZ220603348-1#
Peak to average ratio	24.232(d)	<13dB	Pass	TZ220603348-1#

#### GSM850:

Test Item	FCC Rule No.	Requirements	Judgement	Sample ID
Effective (Isotropic) Radiated Power	2.1046, 22.913(a)	ERP ≤ 7W(38.5dBm)	Pass	TZ220603348-2#
Occupied Bandwidth	2.1049	OBW: No limit.	Pass	TZ220603348-1#
Emission Bandwidth	22.917(b)	EBW: No limit.	Pass	TZ220603348-1#
Band Edges Compliance	2.1051, 22.917(a)(b)	-13dBm	Pass	TZ220603348-1#
Spurious Emission at Antenna Terminals	2.1051, 22.917	-13dBm	Pass	TZ220603348-1#
Field Strength of Spurious Radiation	2.1053, 22.917	-13dBm	Pass	TZ220603348-2#
Frequency Stability	2.1055, 22.355	the fundamental emissions stay within the authorized bands of operation. (2.5ppm)	Pass	TZ220603348-1#
Peak to average ratio	2.1046, 2.913(a)	<13dB	Pass	TZ220603348-1#



## 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	2022/1/13	2023/1/12
2	Power Sensor	Agilent	U2021XA	MY5365004	2022/1/13	2023/1/12
3	Power Meter	Agilent	U2531A	TW53323507	2022/1/13	2023/1/12
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	2022/1/12	2023/1/11
8	Controller	MF	MF7802	N/A	N/A	N/A
9	Amplifier	schwarzbeck	BBV 9743	209	2022/1/12	2023/1/11
10	Amplifier	Tonscend	TSAMP- 0518SE		2022/1/12	2023/1/11
11	RF Cable(below 1GHz)	HUBER+SUHNE R	RG214	N/A	2022/1/12	2023/1/11
12	RF Cable(above 1GHz)	HUBER+SUHNE R	RG214	N/A	2022/1/14	2023/1/13
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	2021/10/10	2022/10/09
17	Spectrum Analyzer	R&S	FSP40	100550	2022/1/10	2023/1/9
18	UNIVERSAL RADIO COMMUNICATION	R&S	CMW500	101855	2022/1/13	2023/1/12
19	Signal Generator	Keysight	N5182A	MY4620709	2022/1/13	2023/1/12

#### 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	Measurement Uncertainty	Notes
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)
Occupied Bandwidth	9KHz~40GHz	-	(1)
Frequency Error	9KHz~40GHz	1 x 10 <sup>-7</sup>	(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 (CMW 500)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 850, GSM 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 850, GSM 1900,)at 3 typical channels(the Top Channel, the Middle Channel and the Bottom Channel) for each band.

#### 5.1.1.2 MEASUREMENT RESULT

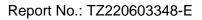
Temperature	<b>23.9</b> ℃	Humidity	56%
Test Engineer	Anna Hu		

Pass



Mode	Frequency (MHz)	Peak Power	Avg.Burst Power	Duty cycle Factor(dB)	Frame Power (dBm)	Peak to Average Ratio
	824.2	31.73	31.53	-9	22.53	0.19
GPRS850 (1 Slot)	836.6	32.09	31.84	-9	22.84	0.25
(1 0101)	848.8	31.81	31.62	-9	22.62	0.19
0000050	824.2	30.29	30.04	-6	24.04	0.25
GPRS850 (2 Slot)	836.6	30.39	30.29	-6	24.29	0.11
(2 0101)	848.8	30.45	30.17	-6	24.17	0.28
0000050	824.2	29.58	29.36	-4.26	25.10	0.22
GPRS850 (3 Slot)	836.6	29.33	29.16	-4.26	24.90	0.17
(0 0101)	848.8	29.67	29.46	-4.26	25.20	0.21
0000000	824.2	27.48	27.24	-3	24.24	0.24
GPRS850 (4 Slot)	836.6	27.47	27.26	-3	24.26	0.21
(4 5101)	848.8	27.46	27.32	-3	24.32	0.14

Mode	Frequency (MHz)	Peak Power	Avg.Burst Power	Duty cycle Factor(dB)	Frame Power(dBm)	Peak to Average Ratio
00004000	1850.2	30.24	29.95	-9	20.95	0.29
GPRS1900 (1 Slot)	1880	29.95	29.70	-9	20.70	0.25
	1909.8	30.04	29.78	-9	20.78	0.26
00004000	1850.2	28.21	27.98	-6	21.98	0.22
GPRS1900 (2 Slot)	1880	27.79	27.59	-6	21.59	0.20
(2 0101)	1909.8	27.87	27.65	-6	21.65	0.21
00004000	1850.2	26.70	26.52	-4.26	22.26	0.18
GPRS1900 (3 Slot)	1880	27.22	27.00	-4.26	22.74	0.22
(3 300)	1909.8	26.98	26.77	-4.26	22.51	0.21
00004000	1850.2	25.85	25.60	-3	22.60	0.25
GPRS1900 (4 Slot)	1880	25.86	25.71	-3	22.71	0.14
(+ 3101)	1909.8	25.70	25.58	-3	22.58	0.12





#### 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 850	22.913(a)(2)	<=38.45dBm (7W). ERP
GSM 1900	24.232(c)	<=33dBm (2W). EIRP



#### 5.1.2.3 Measurement Result

Temperature	<b>24.8</b> ℃	Humidity	58%
Test Engineer	Anna Hu		

	Radiated Power (ERP) for GPRS/EGPRS 850				
		Re	Result		
Mode	Frequency	Max. Peak ERP	Polarization	Conclusion	
		(dBm)	Of Max. E.R.P		
	824.2	26.61	Horizontal	Pass	
	836.6	26.27	Horizontal	Pass	
GPRS	848.8	25.05	Horizontal	Pass	
GFN3	824.2	21.53	Vertical	Pass	
	836.6	21.04	Vertical	Pass	
	848.8	20.25	Vertical	Pass	

	Radiated Power (E.I.R.P) for GPRS/EGPRS 1900				
		Resu			
Mode	Frequency	Max. Peak ERP	Polarization	Conclusion	
		(dBm)	Of Max. E.I.R.P		
	1850.2	23.85	Horizontal	Pass	
	1880.0	24.74	Horizontal	Pass	
GPRS	1909.8	23.04	Horizontal	Pass	
GENG	1850.2	20.67	Vertical	Pass	
	1880.0	21.86	Vertical	Pass	
	1909.8	20.96	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	
GPRS 850	0.28	13	Pass	
GPRS 1900	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

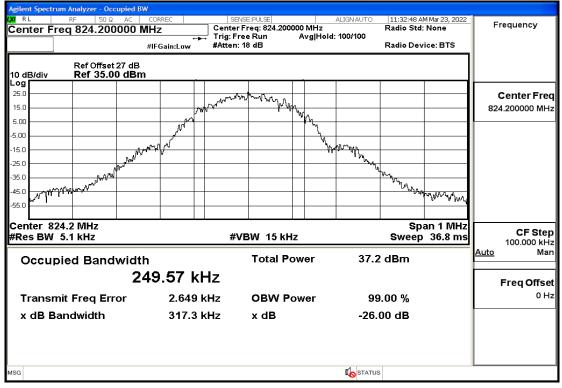
#### 5.3.3 MEASUREMENT RESULT

Temperature	<b>23.9</b> ℃	Humidity	56%
Test Engineer	Anna Hu		

Туре	Frequency(MHz)	Mode	Occupied Bandwidth(KHz)	Emission Bandwidth(KHz)	Limit
GSM850	824.2	GPRS	249.57	317.3	No limit
GSM850	836.6	GPRS	245.45	309	No limit
GSM850	848.8	GPRS	246.36	318.5	No limit
GSM1900	1850.2	GPRS	248.29	307.8	No limit
GSM1900	1880	GPRS	248.61	317.8	No limit
GSM1900	1909.8	GPRS	243.36	314.9	No limit



#### GSM850-824.2MHz-GPRS



#### GSM850-836.6MHz-GPRS

Agilent Spectrum Analyzer - Oco								
RL RF 50 Ω Center Freq 836.600	AC CORREC		::PULSE eq: 836.6000		ALIGNAUTO	11:34:32 AM Radio Std:	4 Mar 23, 2022 None	Frequency
		Trig: Free 🛱 🛱		Avg Hold:	100/100	Radio Dev	ice: BTS	
							1	
Ref Offset 10 dB/div Ref 35.0								
Log 25.0								
15.0		Many	way wyper					Center Fre 836.600000 MH
5.00	<u></u> А́́г	יאי 		horn .				
-5.00	^~			<u>``</u> \				
-15.0	-MWWAR -				Mer Way			
-25.0	and N							
-35.0						∩	Yryfar <sup>da</sup> rdowydydr	
-45.0						· VAung	᠙᠉ᡩᠳ <sup>ᡱ</sup> ᡐ᠇ᠯᡅ <sub>᠆ᡐ</sub> ᠕ᡁᢢ	
-55.0								
Center 836.6 MHz							an 1 MHz	CF Ste
#Res BW 5.1 kHz		#VE	W 15 kHz	2		Sweep	36.8 ms	100.000 kH
Occupied Band	lwidth		Total Po	wer	37.5	dBm		<u>Auto</u> Ma
	245.45 k	Hz						Ener Offer
Transmit Freg Err			OBW Po	wor	00	.00 %		Freq Offse 0 H
				Wei				
x dB Bandwidth	309.0	KHZ	x dB		-26.	00 dB		
MSG					<b>I</b> STATUS	5		l



#### GSM850-848.8MHz-GPRS

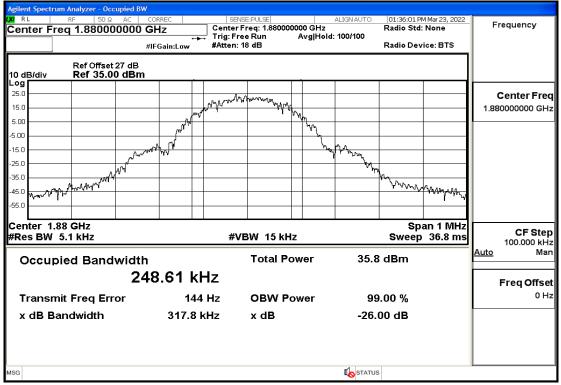
Agilent Spectrum Analy									D.				
Center Freq 84			Center Fi	::PULSE  req: 848.8000		ALIGNAUTO	11:35:26 AM	1 Mar 23, 2022 None	Fr	equency			
		Gain:Low	Trig: Free # Atten: 18		Avg Hold	: 100/100	Radio Dev	ice: BTS					
	f Offset 27 dB ef 35.00 dBm												
Log										optor Frog			
15.0		ا <sup>م</sup> ير.	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	www.						enter Freq .800000 MHz			
5.00		AN MARK	Ņ	ΥU	~v.				040				
-5.00													
-15.0		h./ <sup>vel</sup>				Alama							
-25.0	100 m					- WW							
-35.0	WWW .					14	1/2 1/2	Nor~Vilowalying					
-40.0	w <sup>n</sup> "						Thy way	ᢉᡁᢛᠬ᠈ᢔᡔᢇᡙᢈᠷ					
-55.0								· · ·					
Center 848.8 M								an 1 MHz		CF Step			
#Res BW 5.1 kl	Hz		#VE	SW 15 kH	z		Sweep	36.8 ms		100.000 kHz			
Occupied	Bandwidth			Total Po	ower	36.1	dBm		<u>Auto</u>	Man			
		.36 kH	47										
Tronomit En		-1.195 k		OBW P			.00 %		'	Freq Offset 0 Hz			
Transmit Fre	•				ower								
x dB Bandw	idth	318.5 k	Hz	x dB		-26.0	00 dB						
MSG							;		l				
						V							

## GSM1900-1850.2MHz-GPRS

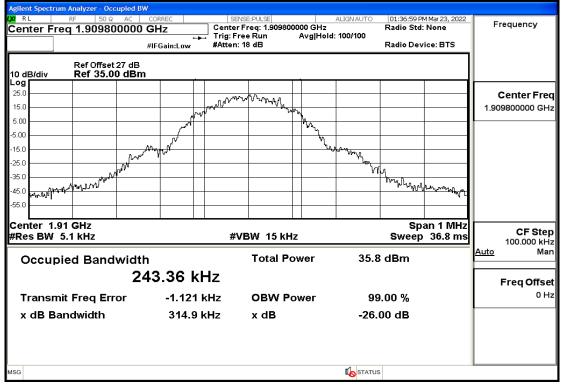
Agilent Spectrum Analyze								
	50 2 AC COF		SENSE:PULSE nter Freq: 1.850200		LIGNAUTO	01:33:58 PM Radio Std:	1 Mar 23, 2022 None	Frequency
		Tri	g: Free Run tten: 18 dB	Avg Hold: '	100/100	Radio Dev	ice: BTS	
		5411.20						
	Offset 27 dB 35.00 dBm							
Log 25.0								
15.0		n un	www.hallanananananananananananananananananan					Center Freq 1.85020000 GHz
5.00		and	ম	wn <sub>1</sub>				1.850200000 GHz
-5.00		NY.		~~				
-15.0	المهر ا	ALC V			where a			
-25.0		*			- "Why			
-35.0				_	"N	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		
-35.0 -45.0	vvv					ሆ <sup>.</sup> ማለሌብ	Apage Along	
-55.0				_				
Center 1.85 GHz						Sna	an 1 MHz	
#Res BW 5.1 kH			#VBW 15 kHz	z			36.8 ms	CF Step 100.000 kHz
Occupied B	andwidth		Total Po	wer	35.7	dBm		<u>Auto</u> Man
		20 61-	rotair o	HOI .	00.1	abiii		
	248	. <b>29 kH</b> z						Freq Offset
Transmit Free	q Error	266 Hz	OBW Po	wer	99	.00 %		0 Hz
x dB Bandwid	ith	307.8 kHz	x dB		-26.0	00 dB		
MSG					<b>K</b> STATUS			



#### GSM1900-1880MHz-GPRS



#### GSM1900-1909.8MHz-GPRS





#### 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

Pass

Temperature	<b>23.9</b> ℃	Humidity	56%
Test Engineer	Anna Hu		



#### GSM850-824.2MHz-GPRS

Agilen		ctrur	n An	alyze	r - Sw	ept S	A													
Cen	-	Fre	RF Pq 8	823	50 Ω .95(		0 MF				SENS				у Турч	ALIGNAUTO e: RMS : 10/10	TR	AM Mar 23, 2022 ACE 1 2 3 4 5 ( YPE M WWWWW	6	Frequency
					et 27		1		Wide n:Low		#Atten: 1			~ 91			823.98	9 0 MHz		Auto Tune
10 di 20.0 10.0	B/div	•	Rei	f 30	.00 (	dBr	n								<b>P</b>	and the second				Center Freq 823.950000 MHz
0.00 -10.0 -20.0 -30.0												, 	≜'⊸/	AND						Start Freq 823.450000 MHz
-40.0 -50.0 -60.0		-	ienej v	<b>t</b> ert fel	<b></b>	*	-		┉┉	a de la constante da	n for the second se									Stop Freq 824.450000 MHz
Star #Re	s B\	NЗ	.91	κHz	-Iz				#VE	зw	11 kHz*					#Sweep	3.000 s	.4500 MHz (2001 pts)		CF Step 100.000 kHz Auto Man
MKB 1 2 3 4 5 6 7 8 9 10 11 <			f				× 23.98:	90 N	AHz		-19.025 df	3m	FUN			ICTION WIDTH	FUNC			Freq Offset 0 Hz
MSG																<b>I</b> o statu	s			

## GSM850-848.8MHz-GPRS

Agilent Spectrum Analyzer - Swept SA						
Center Freq 849.050000 Ν		SENSE:PULSE	AL: #Avg Type: Avg Hold: 10	RMS	1:36:05 AM Mar 23, 2022 TRACE 1 2 3 4 5 6 TYPE MWWWWW	Frequency
Ref Offset 27 dB	PNO: Wide ↔ IFGain:Low	#Atten: 18 dB		Mkr1 84	9.015 5 MHz	Auto Tune
10 aB/div Ref 30.00 dBm Log 20.0 10.0 0.00					-20.843 dBm	Center Freq 849.050000 MHz
-10.0 -20.0 -30.0					-13.60 dBm	Start Freq 848.550000 MHz
-40.0 -50.0 -60.0			<sup>PA</sup> YAY <mark>P<sup>A</sup>YA</mark> PA		aftificturity, after the after the	<b>Stop Freq</b> 849.550000 MHz
Start 848.5500 MHz #Res BW 3.9 kHz	#VBW			Sweep 3.0	o 849.5500 MHz 000 s (2001 pts)	CF Step 100.000 kHz Auto Man
2     3       4     5       6     7       8     9       10     11       \$     \$	D15 5 MHz	20.843 dBm				Freq Offset 0 Hz
MSG				STATUS		



#### GSM1900-1850.2MHz-GPRS

	rum Analyzer - Sw	ept SA						
Center F	RF 50 Ω Feq 1.84995	50000 GHz	SENSE:PU	#Avg Ty		TRAC	M Mar 23, 2022 E 1 2 3 4 5 6 PE M WWWWW	Frequency
10 dB/div	Ref Offset 27 Ref 30.00 (					¤ .849 973	7 0 GHz 23 dBm	Auto Tune
20.0 10.0					h with the state of the state o	Hangar Manager and Anna Anna Anna Anna Anna Anna Anna		Center Freq 1.849950000 GHz
-10.0 -20.0 -30.0				1 Marter			13:00 dBm	<b>Start Freq</b> 1.849450000 GHz
-40.0 -50.0 -60.0	grins. for all a grant age as in the set							<b>Stop Freq</b> 1.850450000 GHz
Start 1.84 #Res BW	3.9 kHz		/BW 11 kHz*			3.000 s (	1500 GHz 2001 pts)	CF Step 100.000 kHz <u>Auto</u> Man
1     N       2     3       3     -       5     -       6     -       7     -       8     -       9     -       10     -       11     -		1.849 977 0 GHz	-19.623 dBm			FUNCTI		Freq Offset 0 Hz
MSG					<b>K</b> STATUS	6		

## GSM1900-1909.8MHz-GPRS

	um Analyzer - Swep									
Center Fr	RF 50 Ω eq 1.910050		ide ↔ T	SENSE	:PULSE	#Avg Typ Avg[Hold:		TRAC	4 Mar 23, 2022 E 1 2 3 4 5 6 PE M WWWWWW	Frequency
10 dB/div	Ref Offset 27 d Ref 30.00 d	IFGain:L		Atten: 18				.910 001	0 GHz 79 dBm	Auto Tune
20.0 10.0		and the second	Mu <sub>ken</sub>							Center Freq 1.910050000 GHz
-10.0 -20.0 -30.0				1 	Ny interest of the second seco				<del>-13.88 dBm</del>	<b>Start Freq</b> 1.909550000 GHz
-40.0 -50.0 -60.0						<sup>ſ</sup> Ĩҟ╍╋ <sub>┺</sub> ╈┾┲┲┱┾┷┲┱	un manan ing a sa an	n-lafaritei Quid	5500 GHz	<b>Stop Freq</b> 1.910550000 GHz
Start 1.90 #Res BW			#VBW 11					3.000 s (		CF Step 100.000 kHz <u>Auto</u> Man
1 N 1 2 3 4 5 6 7 7 8 9 10 11		1.910 001 0 GH	z20	1.379 dB				-		Freq Offset 0 Hz
MSG							<b>K</b> 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 10<sup>th</sup> 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 Channels 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

Temperature	<b>23.9</b> ℃	Humidity	56%
Test Engineer	Anna Hu		



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

		ctru		alyzer - S	Swept	SA																
Cen		Fre	RF q (	50 515.0						1	ISE:PUL			і Туре	ALIGN AU e: RMS 100/100		1	TRA	M Mar 23, 1 2E 1 2 3 PE M <del>WW</del>	456		Frequency
10 di Log	B/div			Offset: f 35.00		3	PNO IFGai	): Fast in:Lov	v	#Atten:			0181					<sup>⊳</sup> 773.	07 M 97 de	Hz		Auto Tune
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				ina di patri da patri		<u>ita</u> i itai												ng daganda ya				<b>Stop Freq</b> 1.00000000 GHz
Star #Re	s Bl	N 1	.0 I	VIHz		×		#V	вw	3.0 MH	z	FUN	CTION		weep			ms (2	0000 G ו 0001 ו		Au	<b>CF Step</b> 97.000000 MHz <u>to</u> Man
1 2 3 4 5 6 7 8	N	1	f			773	3.07 M	MHz		-28.297 (	dBm											Freq Offset 0 Hz
9 10 11 <										Ш					<b>I</b> o si	FATUS	6			>		

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

Agilent Spectrum Analyzer - Swept SA					
🕅 RL   RF   50 Ω AC   Center Freq 5.000000000		E:PULSE #Avg Typ		M Mar 23, 2022 CE 1 2 3 4 5 6	Frequency
Ref Offset 27 dB	PNO: Fast +++ Trig: Fre IFGain:Low #Atten: 2		Mkr1 1.95	1 2 GHz 12 dBm	Auto Tune
10.0 10.0				-13:00 dDm	Center Freq 5.00000000 GHz
-20.0					<b>Start Freq</b> 1.000000000 GHz
-60.0					<b>Stop Freq</b> 9.000000000 GHz
Start 1.000 GHz #Res BW 1.0 MHz	#VBW 3.0 MHz		weep 13.33 ms (2		<b>CF Step</b> 800.000000 MHz <u>Auto</u> Man
1     N     1     f     1.       2     .     .     .     .       3     .     .     .     .       4     .     .     .     .       5     .     .     .     .       6     .     .     .     .       9     .     .     .     .       10     .     .     .     .	951 2 GHz -22.012 d	Bm			Freq Offset 0 Hz
MSG			STATUS		



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

		ectru	m An	alyzer -	Swep	ot SA																					
Cen		Fre	RF Pq	515.0	ດ 000	AC 200	MH				1	SENSE				∖vg Ty ∕g Hol•	pe: F			11	/ 34:39: TRA TN	CE 1	r 23, 202 2 3 4 5 WWW	56	F	requen	icy
10 di	B/di			Offset			IF		Fast n:Low			en: 24					u. 10					.86	MH	z I		Auto	Tune
Log 25.0 15.0 5.00		-																								<b>Cente</b> 5.00000	
-5.00 -15.0 -25.0																		and data b	in		<b>●</b> 1		-13.00 dE	9m	3	<b>Star</b> 0.00000	<b>t Freq</b> 00 MHz
-35.0 -45.0 -55.0														on the block							<u>(,,,,,,</u> ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				1.0	<b>Stoj</b>	<b>o Freq</b> 00 GHz
Star #Re	s B	W 1	.0 I	ИНz		×				вw	3.0 N			FUN	ICTION			eep Ionwit			op 1. ms (2 FUNCI	2000	01 pt		g <u>Auto</u>	CF 7.00000	<b>Step</b> 00 MHz Man
1 2 3 4 5 6 7 8 9 10 11	N	1	f				876.8	36 M			-27.58	80 dE	3m													Freq	Offset 0 Hz
MSG			·	I							m							Iю st/	ATUS								

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

		ctru		alyzer -														
LXI RI			RF				DRREC		SENS	E:PULSE		#Avg Ti				5 AM Mar 23, 202 RACE 1 2 3 4 5		Frequency
Cen	lter	FIG	eq :	5.000	0000	000 G	⊓Z PNO: Fa	st⊶⊷	Trig: Fre			Avg Ho				TYPE M WWWW	₩	
							Gain:Lo		#Atten: 2	4 dB						DETPNNNN		
			Dof	Offset	27 de	,								Mk	r1 1.9	59 6 GH	z	Auto Tune
10 di	B/div	/		f 20.0											-23.	853 dBr	n	
Log																	1	
10.0																	1	Center Freq
0.00	-				_								-				-11	5.00000000 GHz
-10.0																-13.00 dB	m	
-20.0				1 −														
-30.0			ALL UNDER	بالمحصال		ويتفرد والبرورية والم		. منتقدون	متاطقهم سيامدناه دن		الاسريا	و جار و بالد بروان	ماري اول	ماطر وعرياهم المعاقب	ومؤالد استحصا الأماد	الالالافير المراجع المتعادين	al.	Start Freq
						• •					1						1	1.000000000 GHz
-40.0																		
-50.0																	Ш	Oton Eror
-60.0			-										+				-11	Stop Freq
-70.0																	-11	9.000000000 GHz
																	1	
Star													_			9.000 GH		CF Step
#Re	s Bl	W 1	.0	MHz			#	VBW	3.0 MHz				S٧	veep 13	.33 ms	(20001 pts	· ·	800.000000 MHz
MKR	MODE	TRO	SCL			×			Y		FUNCT	TION F	FUNC	TION WIDTH	FUN	TION VALUE	~	<u>Auto</u> Man
<u>1</u> 2	Ν	1	f			1.959	) 6 GHz	z	-23.853 dl	Зm								
2								-										Freq Offset
4																		0 Hz
5																	3	
7																		
8																		
10																		
11								-	1111							>	~	
MSG														П- стати				
MSG															2			



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

		ectru	m An	alyzer - S	iwept	t SA																
Cen		Fre	RF eq (	50 515.00		AC 00	MHz				SENSE				g Тур	ALIGN AUTO e: RMS : 100/100	) 1	TF	RACE	Mar 23, 202	6	Frequency
10 di	B/div			Offset 2				NO: F Gain:	ast ↔ Low		ten: 24							877	DE"	19 MH 18 dBr	z I	Auto Tune
Log 25.0 15.0 5.00																						Center Freq 515.000000 MHz
-5.00 -15.0 -25.0																	- 40 - 20 1		1	-13.00 dE		Start Freq 30.000000 MHz
-35.0 -45.0 -55.0						A HAY GA															-	<b>Stop Freq</b> 1.00000000 GHz
Star #Re	s B'	W 1	.0 I	MHz		×				V 3.0	,		FUN	CTION		weep ′	1.333	ms	(20	000 GH 0001 pt:		<b>CF Step</b> 97.000000 MHz <u>Auto</u> Man
1 2 3 4 5 6 7 8 9 10 11	N	1	f			8	377.4	9 MH		-27.1	108 dB	3m									>	Freq Offset 0 Hz
MSG																<b>I</b> stat	TUS					

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

Agilent Spectrum Analyzer - Swept SA				
🕅 RL RF 50Ω AC C	CORREC SENSE:PULSE	ALIGNAUTO 11 #Avg Type: RMS	1:36:26 AM Mar 23, 2022 TRACE 1 2 3 4 5 6	Frequency
LI	IFGain:Low #Atten: 24 dB		1.946 4 GHz	Auto Tune
			-13.00 dDm	Center Freq 5.000000000 GHz
-20.0 -30.0 -40.0				<b>Start Freq</b> 1.000000000 GHz
-50.0				<b>Stop Freq</b> 9.000000000 GHz
Start 1.000 GHz #Res BW 1.0 MHz	#VBW 3.0 MHz		Stop 9.000 GHz ms (20001 pts)	CF Step 800.000000 MHz Auto Man
2     3       4     -       5     -       6     -       7     -       8     -       9     -       10     -	I6 4 GHz -19.474 dBm			Freq Offset 0 Hz
11 MSG				



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

	ctrum An	alyzer - Swe	pt SA								
(X) RL Center	Freq :		000 MHz				#Avg Ty Augited	ALIGN AUTO pe: RMS d: 100/100	TRA	M Mar 23, 2022 CE 1 2 3 4 5 6 PE M WWWWW	Frequency
10 dB/div		Offset 27	dB	NO: Fast Gain:Low	#Atten: 24				⊳ kr1 985.	ET P N N N N N	Auto Tune
10.0 0.00										-13:00 dBm	Center Freq 515.000000 MHz
-20.0 -30.0 -40.0		an by filly an altern p a <sup>ff</sup> y Malancia (a space of high layer of the strange of			n yan a yanki je tranye ty tri ku		a nearla a guine a da su a				Start Freq 30.000000 MHz
-50.0 -60.0 -70.0											<b>Stop Freq</b> 1.000000000 GHz
Start 30 #Res B	N 1.0 I	MHz	×	#VE	3W 3.0 MHz			Sweep 1.	333 ms (2	0000 GHz 0001 pts)	<b>CF Step</b> 97.000000 MHz <u>Auto</u> Man
1 N 2 3 4 5 6 7 7 8 9 10	1 f		985.9	8 MHz	-27.618 di	3m					Freq Offset 0 Hz
11 MSG					hull			<b>Ko</b> statu	IS		

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

Agilent Spec			pt SA									
Center	RF	50 Ω 00000				SENSE	:PULSE	#Avg Ty	ALIGNAUTO		M Mar 23, 2022 CE 1 2 3 4 5 6	Frequency
10 dB/div	Ref	Offset 27 25.00 d	dB	PNO: Fa IFGain:Lo		Trig: Free #Atten: 24		Avg Ho		¤ 1.94	B 0 GHz 09 dBm	Auto Tune
15.00												Center Freq 4.000000000 GHz
-15.0 -25.0 -35.0		<b>●</b> <sup>1</sup> -		~~~~	~						-25.00 dBm	<b>Start Freq</b> 1.000000000 GHz
-45.0 -55.0 -65.0												<b>Stop Freq</b> 7.000000000 GHz
Start 1.0 #Res BV	N 1.0 N		×			3.0 MHz*	FU	NCTION F	#Sweep	1.000 s (2	.000 GHz 0001 pts) DN VALUE	<b>CF Step</b> 600.000000 MHz <u>Auto</u> Man
1 N 2 3 3 4 5 6 7 8 9 9 10 11	1 f		1.9	48 0 GH2		-32.909 dE	3m					Freq Offset 0 Hz
MSG									🚺 STATU	s		· · · · · · · · · · · · · · · · · · ·



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

		ctru		alyzer - Sw	ept SA								
Cen	-	Fre	RF Pq'	50 Ω 10.3000	000000			NSE:PUL		ALIGNAUTO /pe: RMS Id: 100/100	TRA	M Mar 23, 2022 CE 1 2 3 4 5 6 PE M WWWWW	Frequency
10 d	B/div			Offset 27	ı⊧ ′dB	NO: Fast Gain:Low					□ 13.197	73 GHz 96 dBm	Auto Tune
Log 10.0 0.00												- <u>1</u> ; 1 haBm	Center Freq 10.30000000 GHz
-20.0 -30.0 -40.0	u lenne	<b>nin i</b> li	-		in a transferið Mind y til f				la se de la constante de la con La constante de la constante de	er et fan de andte weeken ke	en her er stellet er bestellet for en stellet er bestellet i bestellet er bestellet er bestellet er bestellet e		<b>Start Freq</b> 7.000000000 GHz
-50.0 -60.0 -70.0													<b>Stop Freq</b> 13.60000000 GHz
Star #Re	s B\ Mode	W 1	.0 1	MHz	×		BW 3.0 MH		FUNC	Sweep 12	2.00 ms (2	8.600 GHz 20001 pts) 201 01 01 01 01 01 01 01 01 01 01 01 01 0	CF Step 660.000000 MHz <u>Auto</u> Man
1 2 3 4 5 6 7 8 9 10 11	N		f		13.197 7	3 GHz	-21.796	dBm					Freq Offset 0 Hz
MSG										<b>Ko</b> statu	IS		

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

Agiler		ctru																	
LXI R			RF		50 Ω	AC	CORF			SENSI	E:PULSE				ALIGN AUTO		1 PM Mar		Frequency
Cen	ter	Fre	eq	<u>16.8</u>	000	0000	)0 GI	Hz		Trig: Free					: RMS 100/100	-		23456	Trequency
								0: Fast ain:Lov		#Atten: 24			- vygir	ioiu.	100/100			NNNN	
<u> </u>							10	am.cov	*									<u> </u>	Auto Tune
			Ref	f Offs	et 27	dB									Mkr1	19.07			
10 d	B/div	/	Re	f 20.	00 d	dBm										-18	.276	dBm	
Log																			
10.0																			Center Freq
0.00			_																16.80000000 GHz
-10.0																. ·		13.00 dDm	
																		13.00 ubm	
-20.0						ليعد	فالارد بعدر	ي الألبانيون	و المقاورين	وأعتارهم والقاراتي وهريار	والمتعالمة والمقالمة	وبالطعام و	as hits second	يطابقننان	أنقصه فالتستل وراسرته		والعروبية أوريه وروال	الشناب وبترز لكاله	Start Freq
-30.0	1				i periote		alar ya ara						بالد جامرين		and the second second			ىرىقى يولى ھورى	13.60000000 GHz
-40.0																			13.00000000 3112
-50.0																			Oton Eror
-60.0			_																Stop Freq
-70.0																			20.00000000 GHz
10.0																			
Star	rt 13	3 60	in c	Hz												Ston	20.000	1 GHz	CF Step
#Re								#V	вw	3.0 MHz				S	weep 16				640.000000 MHz
															-				Auto Man
MKR		TRC				×				Y		FUNC	CTION	FUN	CTION WIDTH	FUN	CTION VAL	LUE	<u>, (ato</u>
<u>1</u> 2	Ν	1	f			19.0	078 40	GHZ		-18.276 di	3m								
3																			Freq Offset
4																			0 Hz
5																			
7																			
8 9																			
9			-											<u> </u>					
10 11																		~	
<		I		1										-				>	
MSG																-			L.
															No sixio	- I			



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

Agilent Spec	trum An	alyzer - Swep	ot SA							
Center I	Freq :			2			ALIGN AUTO Type: RMS old: 100/100	TRA	M Mar 23, 2022 CE 1 2 3 4 5 6 PE M WWWWWW	Frequency
10 dB/div		Offset 27 d	IFG B	NO: Fast  • Sain:Low	#Atten: 2			□ /lkr1 912.	ET P N N N N N	Auto Tune
10.0 0.00									-13.00 dDm	Center Freq 515.000000 MHz
-20.0 -30.0 -40.0		ng ban lings an parties. San georgeneration	and a second			ali ita di ka kiji jama		i tent azista azist Azista azista		Start Freq 30.000000 MHz
-50.0 -60.0 -70.0										<b>Stop Freq</b> 1.000000000 GHz
Start 30. #Res BV	V 1.0 I	MHz	×	#VB	W 3.0 MHz	UNCTION	Sweep 1	.333 ms (2	0000 GHz 20001 pts)	CF Step 97.000000 MHz <u>Auto</u> Man
1 N 2 3 4 5 6 7	1 f		912.99	9 MHz	-28.364 d					Freq Offset 0 Hz
8 9 10 11 ×					m		<b>Lo</b> stat	าบร	×	

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

Agilent Spe	ctrum Ana	lyzer - Swej	pt SA									
KN RL Center	RF	50 Ω			 SENSE	E:PULSE	#	Avg Typ	ALIGNAUTO e: RMS		M Mar 23, 2022 CE 1 2 3 4 5 6	Frequency
10 dB/div	Ref	Offset 27	ı dB	PNO: Fast FGain:Low	Trig: Free #Atten: 24		A	vg Hold		r1 1.96		Auto Tune
15.00		20.00 4										Center Freq 4.000000000 GHz
-15.0 -25.0 -35.0		<b>↓</b> 1		***	 pinagir 1994						-25.00 dBm	<b>Start Freq</b> 1.000000000 GHz
-45.0 -55.0 -65.0												<b>Stop Freq</b> 7.00000000 GHz
Start 1.0 #Res B\ MKR MODE	N 1.0 IV		×		3.0 MHz*		FUNCTIO		≠Sweep	1.000 s (2	2.000 GHz 20001 pts)	<b>CF Step</b> 600.000000 MHz <u>Auto</u> Man
1 N 2 3 4 5 6 7 8 9	1 f		1.96	0 0 GHz	 33.116 de	3m						Freq Offset 0 Hz
10 11 K MSG					ш				<b>K</b> STATU:	s	×	



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

		ctrur	n An	alyzer - Sv	wept SA												
ux∥ ⊪ Cer		Fre	RF q '	50 s 10.300		)00 G		 SENS				Туре	ALIGN AUTO : RMS 100/100	TRA	M Mar 23, 2022 CE 1 2 3 4 5 1 YPE M WWWWW	6	Frequency
10 0	B/div			Offset 2		IFO	NO: Fas Gain:Lo	#Atten: 2						12.713	62 GHz		Auto Tune
10.0 0.00				20.00											-13.00 dBm		Center Freq 10.30000000 GHz
-20.0 -30.0 -40.0										la constant a la		u lin					<b>Start Freq</b> 7.000000000 GHz
-50.0 -60.0 -70.0																	<b>Stop Freq</b> 13.60000000 GHz
#Re	rt7. esB	W 1	.0 P	ИНz		×		3.0 MHz		FUNC	TION		weep 12 ction width	.00 ms (:	3.600 GHz 20001 ptsj ION VALUE		CF Step 660.000000 MHz Auto Man
1 2 3 4 5 6 7 8 9 10 11 <	N		f		12	2.713 6	2 GHz	-22.943 dl	Bm								Freq Offset 0 Hz
MSG														5			

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

		ctru	m An	alyzer	- Swe	pt SA														
KI R		Erd	RF		50 Ω ΛΛΛ	AC	CORR			SENS	E:PULS	E	#Ava		ALIGN AUTO	01:3		Mar 23, 20 E 1 2 3 4 5		Frequency
			Ref	Öffse	et 27	dB	PN	12 O: Fast ain:Low		Trig: Free #Atten: 24					100/100		түг D 985	60 GH		Auto Tune
10 d Log	<u>B/di</u>	1	Re	f 20.	00 c	IBm										-1	7.0	DU UB		
10.0 0.00																				<b>Center Freq</b> 16.80000000 GHz
-10.0																-	1	-13.00 d	Ðm	
-20.0			_							tudited it will call to be				1.	u dil un	in the second second	in the second	It find the state	_	
-30.0	بلا بن		date	وتشغل فسال	يط الم يك	الالاليمي	اد بادر براید. مربع						بادار جنداده مربعها اسم		الا الألامية على من الله الا المراجعة عن من الله				÷.	Start Freq
																				13.60000000 GHz
-40.0			-																	
-50.0			_																-1	
-60.0																				Stop Freq
																				20.00000000 GHz
-70.0																				
Star #Re	s Bl	W 1	.0	MHz		×		#V	BW	3.0 MHz		FUNC	חוד		weep 16	6.00 n	is (2	.000 GH 0001 pt		<b>CF Step</b> 640.000000 MHz <u>Auto</u> Man
1	N	1	f				85 60	GHz		17.560 di	Зm	TON	non	1.0.	CHON WIDTH	· ·	onterne	IN WALCE		
2 3 4 5 6						10.0														Freq Offset 0 Hz
7																				
8																				
10																			-	
11																			~	
MSG																s		>		
																-				



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

		ctrur	n An	alyzer - Swe	ept SA											
Cent		Fre	RF q (	50 Ω 515.000	AC 0000 N				E:PULSE		vg Type	ALIGN AUTO e: RMS : 100/100	TRA	M Mar 23, 2022 CE 1 2 3 4 5 6 PE M WWWWW		Frequency
10 dE	3/div			Offset 27		PNO: IFGair	⊧Fast ↔ n:Low	#Atten: 24					⊳ kr1 810.	ET P N N N N N	1	Auto Tune
Log 10.0 0.00 -10.0														-13:00 dDm	5	Center Freq 15.000000 MHz
-20.0 -30.0 -40.0	-		in the second					ali polici a se ante a presidente da presidente na fali se presidente da se	in the property of the			a da la constanta da la constan La constanta da la constanta da			:	Start Freq 30.000000 MHz
-50.0 -60.0 -70.0															1.0	Stop Freq 00000000 GHz
Star #Res	s Bl	N 1	.0 F	MHz			#VBV	V 3.0 MHz		FUNCTION		weep 1.	333 ms (2	0000 GHz 0001 pts)		<b>CF Step</b> 97.000000 MHz Man
1 2 3 4 5 6	N	1	f		81	10.85 N	1Hz	-28.663 dl	3m							Freq Offset 0 Hz
7 8 9 10 11								illi						v		
MSG												<b>K</b> STATU	s			,

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

Agilent Spectrum Analyzer					
Center Freq 4.000		SENSE:PULSE	ALIGNAUTO #Avg Type: RMS	01:37:56 PM Mar 23, 2022 TRACE 1 2 3 4 5 6	Frequency
Ref Offse 10 dB/div <b>Ref 25.</b> (	PN0: Fast ↔ IFGain:Low t 27 dB	┘ Trig: Free Run #Atten: 24 dB	AvgjHold: 5/5	түре Мужижи Det A N N N N N (r1 2.673 7 GHz -33.306 dBm	Auto Tune
15.0 -5.00					Center Freq 4.000000000 GHz
-15.0 -25.0 -35.0	1	*****		-25.00 dBm	<b>Start Freq</b> 1.000000000 GHz
-45.0 -55.0 -65.0					<b>Stop Freq</b> 7.000000000 GHz
Start 1.000 GHz #Res BW 1.0 MHz	* *	3.0 MHz*	#Sweep	Stop 7.000 GHz 1.000 s (20001 pts) FUNCTION VALUE	<b>CF Step</b> 600.000000 MHz <u>Auto</u> Man
1     N     1     f       2     -     -     -       3     -     -     -     -       4     -     -     -     -     -       6     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -	2.673 7 GHz	-33.306 dBm			Freq Offset 0 Hz
MSG				5	



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

	Spectru	im An	alyzer - Swe	ept SA								
Cente	er Fr	RF eq '	50 Ω 10.3000	00000 G			SE:PULS		ALIGN AUTO pe: RMS d: 100/100	TRA	M Mar 23, 2022 CE 1 2 3 4 5 6 'PE M WWWWW	Frequency
			Offset 27	dB	NO: Fast Gain:Low					12.836	71 GHz 25 dBm	Auto Tune
10 dB/ Log -	div	Rei	f 20.00 c	1Bm						-23.5		Center Freq 10.30000000 GHz
-10.0 = -20.0 - -30.0 # -40.0 -					i and the distance of	and the set of a last of a set of the set of					-13:00 dBm 1	Start Freq 7.00000000 GHz
-50.0 - -60.0 - -70.0 -												<b>Stop Freq</b> 13.600000000 GHz
Start #Res	BW	1.0 1	ИНZ	×	#V	BW 3.0 MH	z	FUNC	Sweep 1:	2.00 ms (2	8.600 GHz 20001 pts)	CF Step 660.000000 MHz <u>Auto</u> Man
1 N 2 3 4 5 6	N 1	f		12.836 7	1 GHz	-23.525 (	dBm					Freq Offset 0 Hz
7 8 9 10 11 <						m						
MSG									🚺 STATU	IS		

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

	m Analyzer - Swept SA							
LXI RL	RF 50 Ω AC eq 16.8000000		SENSE:PUL		ALIGNAUTO		M Mar 23, 2022	Frequency
10 dB/div	Ref Offset 27 dB Ref 20.00 dBm	PNO: Fast ↔ IFGain:Low	┘ Trig: Free Ru #Atten: 24 dB	n AvgļH	old: 100/100	□ 19.025	92 GHz 61 dBm	Auto Tune
10.0 0.00 -10.0						1	-13.00 dDm	Center Freq 16.80000000 GHz
-20.0 -30.0 -40.0				aksi perintahan perintahan keti Kenyaran tertakan perintahan keti perintahan keti perintahan keti perintahan keti perintahan keti perintahan keti				<b>Start Freq</b> 13.600000000 GHz
-50.0 -60.0 -70.0								<b>Stop Freq</b> 20.000000000 GHz
Start 13.60 #Res BW 1	I.0 MHz		3.0 MHz	FUNCTION	Sweep 16	.00 ms (2	.000 GHz 0001 pts)	<b>CF Step</b> 640.000000 MHz <u>Auto</u> Man
1     N     1       2     3     -       3     -     -       4     -     5       6     -     -       7     -     8       9     -     -       10     -     -       11     -     -		.025 92 GHz	-18.261 dBm					Freq Offset 0 Hz
MSG						5		



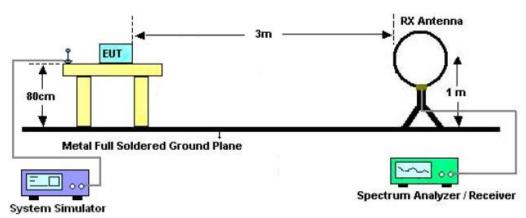
#### 5.5.2 RADIATED SPURIOUS EMISSION

#### 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.

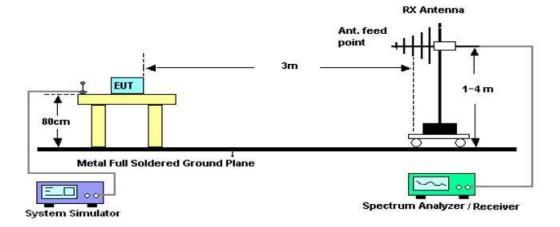
#### 5.5.2.2 TEST SETUP



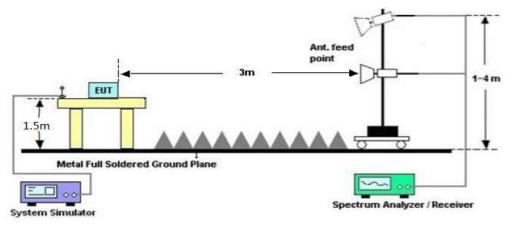


#### Radiated Emission Test-Setup Frequency Below 30MHz

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

Temperature	<b>24.8</b> ℃	Humidity	58%
Test Engineer	Anna Hu		

#### GSM 850:

The Worst Test Results for Channel 128/824.2 MHz											
Frequency	Emission Level	Limits	Margin	Comment							
(MHz)	(dBm)	(dBm)	(dB)	Comment							
1648.22	-57.04	-13	44.04	Horizontal							
3296.65	-41.54	-13	28.54	Horizontal							
4945.08	-50.82	-13	37.82	Horizontal							
1648.23	-41.25	-13	28.25	Vertical							
3296.67	-50.68	-13	37.68	Vertical							
4945.02	-48.76	-13	35.76	Vertical							

#### PCS 1900:

The Worst Test Results for Channel 661/1880.0 MHz											
Frequency	Emission Level	Limits	Margin	Comment							
(MHz)	(dBm)	(dBm)	(dB)	Comment							
3759.87	-56.06	-13	43.06	Horizontal							
7519.86	-39.46	-13	26.46	Horizontal							
11279.86	-53.40	-13	40.40	Horizontal							
3759.85	-40.64	-13	27.64	Vertical							
7519.88	-50.15	-13	37.15	Vertical							
11279.86	-44.71	-13	31.71	Vertical							

#### **RESULT: PASS**

#### Note:

1. Margin = Limit - Emission Level

2. 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 CMW500 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 CMW500 and in a simulated call on channel 661 for PCS 1900 band, channel 190 for GSM 850 band 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  $10^{\circ}$ C increments from  $-10^{\circ}$ 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  $+50^{\circ}$ C.

7 With the EUT, powered via nominal voltage, connected to the CMW500 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  $10^{\circ}$ 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 +/-  $0.5^{\circ}$  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 3.5VDC 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			
Band	Channel	Voltage	Temperature	Deviation	Deviation	Limit	Verdict
GPRS850	128	VL	TN	2.88	0.0034	2.5	PASS
GPRS850	128	VN	TN	3.91	0.0047	2.5	PASS
GPRS850	128	VH	TN	5.52	0.0066	2.5	PASS
GPRS850	190	VL	TN	5.71	0.0068	2.5	PASS
GPRS850	190	VN	TN	5.16	0.0062	2.5	PASS
GPRS850	190	VH	TN	1.63	0.0019	2.5	PASS
GPRS850	251	VL	TN	5.92	0.0071	2.5	PASS
GPRS850	251	VN	TN	6.16	0.0074	2.5	PASS
GPRS850	251	VH	TN	5.61	0.0067	2.5	PASS
GPRS1900	512	VL	TN	7.74	0.0041	2.5	PASS
GPRS1900	512	VN	TN	9.08	0.0048	2.5	PASS
GPRS1900	512	VH	TN	12.76	0.0068	2.5	PASS
GPRS1900	661	VL	TN	24.46	0.0130	2.5	PASS
GPRS1900	661	VN	TN	28.14	0.0150	2.5	PASS
GPRS1900	661	VH	TN	29.78	0.0158	2.5	PASS
GPRS1900	810	VL	TN	24.5	0.0130	2.5	PASS
GPRS1900	810	VN	TN	22.39	0.0119	2.5	PASS
GPRS1900	810	VH	TN	27.79	0.0148	2.5	PASS

	Temperature										
Band	Channel	Voltage (Vdc)	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict				
GPRS850	128	VN	-30	5.45	0.0065	2.5	PASS				
GPRS850	128	VN	-20	8.42	0.0101	2.5	PASS				
GPRS850	128	VN	-10	8.12	0.0097	2.5	PASS				
GPRS850	128	VN	0	9.57	0.0114	2.5	PASS				
GPRS850	128	VN	10	8.66	0.0104	2.5	PASS				
GPRS850	128	VN	20	7.25	0.0087	2.5	PASS				
GPRS850	128	VN	30	10.47	0.0125	2.5	PASS				
GPRS850	128	VN	40	8.12	0.0097	2.5	PASS				
GPRS850	128	VN	50	9.19	0.0110	2.5	PASS				
GPRS850	190	VN	-30	5.84	0.0070	2.5	PASS				
GPRS850	190	VN	-20	7.19	0.0086	2.5	PASS				
GPRS850	190	VN	-10	3.94	0.0047	2.5	PASS				
GPRS850	190	VN	0	0.76	0.0009	2.5	PASS				
GPRS850	190	VN	10	-0.17	-0.0002	2.5	PASS				
GPRS850	190	VN	20	2.68	0.0032	2.5	PASS				



GPRS850	190	VN	30	-1.05	-0.0013	2.5	PASS
GPRS850	190	VN	40	0.06	0.0001	2.5	PASS
GPRS850	190	VN	50	-0.3	-0.0004	2.5	PASS
GPRS850	251	VN	-30	9.57	0.0114	2.5	PASS
GPRS850	251	VN	-20	7.82	0.0094	2.5	PASS
GPRS850	251	VN	-10	7.46	0.0089	2.5	PASS
GPRS850	251	VN	0	6.32	0.0076	2.5	PASS
GPRS850	251	VN	10	6.63	0.0079	2.5	PASS
GPRS850	251	VN	20	5.91	0.0071	2.5	PASS
GPRS850	251	VN	30	2.94	0.0035	2.5	PASS
GPRS850	251	VN	40	5.17	0.0062	2.5	PASS
GPRS850	251	VN	50	5.58	0.0067	2.5	PASS
GPRS1900	512	VN	-30	11	0.0059	2.5	PASS
GPRS1900	512	VN	-20	11.83	0.0063	2.5	PASS
GPRS1900	512	VN	-10	18.24	0.0097	2.5	PASS
GPRS1900	512	VN	0	17.34	0.0092	2.5	PASS
GPRS1900	512	VN	10	18.99	0.0101	2.5	PASS
GPRS1900	512	VN	20	12.28	0.0065	2.5	PASS
GPRS1900	512	VN	30	18.81	0.0100	2.5	PASS
GPRS1900	512	VN	40	19.1	0.0102	2.5	PASS
GPRS1900	512	VN	50	18.09	0.0096	2.5	PASS
GPRS1900	661	VN	-30	27.45	0.0146	2.5	PASS
GPRS1900	661	VN	-20	26.5	0.0141	2.5	PASS
GPRS1900	661	VN	-10	20.89	0.0111	2.5	PASS
GPRS1900	661	VN	0	31.99	0.0170	2.5	PASS
GPRS1900	661	VN	10	27.74	0.0148	2.5	PASS
GPRS1900	661	VN	20	27.43	0.0146	2.5	PASS
GPRS1900	661	VN	30	35.11	0.0187	2.5	PASS
GPRS1900	661	VN	40	25.37	0.0135	2.5	PASS
GPRS1900	661	VN	50	29.87	0.0159	2.5	PASS
GPRS1900	810	VN	-30	24.86	0.0132	2.5	PASS
GPRS1900	810	VN	-20	23.5	0.0125	2.5	PASS
GPRS1900	810	VN	-10	29.83	0.0159	2.5	PASS
GPRS1900	810	VN	0	28.02	0.0149	2.5	PASS
GPRS1900	810	VN	10	32.16	0.0171	2.5	PASS
GPRS1900	810	VN	20	24.48	0.0130	2.5	PASS
GPRS1900	810	VN	30	25.71	0.0137	2.5	PASS
GPRS1900	810	VN	40	33.7	0.0179	2.5	PASS
GPRS1900	810	VN	50	25.62	0.0136	2.5	PASS



## 6 Test Set up Photos of the EUT

Please refer to separated files for Test Setup Photos of the EUT.

## 7 External Photos of the EUT

Please refer to separated files for External Photos of the EUT.

## 8 Internal Photos of the EUT

Please refer to separated files for Internal Photos of the EUT.