



EMC-TRF-01 Rev 1.0



Report No.: GZCR210802081505

Page: 1 of 56 FCC ID: V5PD190LTEBW

## TEST REPORT

**Application No.:** SZCR2106021815AT **Applicant:** PAX Technology Limited

Address of Applicant: Room 2416, 24/F., Sun Hung Kai Centre, 30 Harbour, Hong Kong, China

Manufacturer: PAX Computer Technology(Shenzhen) Co., Ltd.

Address of Manufacturer: 4/F, No.3 Building, Software Park, Second Central Science-Tech Road,

High-Tech industrial Park, Shenzhen, Guangdong, P.R.C.

**Equipment Under Test (EUT):** 

**EUT Name:** Mobile Payment Terminal

Model No.: D190 Trade Mark: PAX

Standard(s): 47 CFR Part 2

47 CFR Part 22 subpart H 47 CFR Part 24 subpart E

**Date of Receipt:** 2021-06-25

**Date of Test:** 2021-06-25 to 2021-08-24

Date of Issue: 2021-08-30

Test Result: Pass\*

Kobe Jian EMC Laboratory Manager



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<sup>\*</sup> In the configuration tested, the EUT complied with the standards specified above.



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	Revision Record						
Version Chapter Date Modifier Ren							
01		2021-08-30		Original			

Authorized for issue by		
	Cof Vhu	
	Curry Wu/Project Engineer	
	Riday Liu	
	Ricky Liu/Reviewer	



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## 2 Test Summary

Test Item	FCC Rule No.	Requirements	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §22.913,	ERP≤7W(GSM850, WCDMA band V) EIRP≤2W(GSM1900, WCDMA band II)	PASS
Peak-Average Ratio	§24.232 §24.232	≤13dB	PASS
Modulation Characteristics	§2.1047	Digital modulation	PASS
Bandwidth	§2.1049(h)	OBW: No limit EBW: No limit	PASS
Band Edge Compliance	§2.1051, §22.917, §24.238	≤ -13dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.	PASS
Spurious emissions at antenna terminals	\$2.1051, missions at antenna  \$22.917 < -13dBm		PASS
Field strength of spurious radiation	§2.1051, §22.917, §24.238	≤ -13dBm	PASS
Frequency stability	§2.1055, §22.355, §24.235	≤ ±2.5ppm.	PASS



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### 4 General Information

### 4.1 Details of E.U.T.

	Power supply:	DC3.7V by li-ion battery(1900mAh)		
		Recharged by AC/DC power adapter		
		Adapter M/N:GLH50D1000HW		
		Adapter input: 100-240VAC, 50/60Hz, 0.40A		
		Adapter output: DC5V/1A		
	Cable(s):	USB type C cable: 1m shielded cable without ferrite core		
	Sample Type:	Portable production		
	Sample NO.:	1260263900		
	Function:	Mobile Payment Terminal with GPRS/EGPRS function		
	Support Network:	GPRS, EGPRS		
	Operation Frequency Band:	GSM850/GSM1900		
Modulation Type:		GMSK for GPRS/EGPRS;		
		8PSK for EGPRS;		
	Supported Channel Bandwidth:	200KHz for GSM		
	GPRS Class:	12		
	EGPRS Class:	12		
	UMTS Power Class:	Level 3		
	Antenna Type:	PIFA antenna		
	Antenna Gain:	1dBi for GSM850, 0.5dBi for PCS1900		
	SIM Card:	This device has dual SIM Card sockets. Both the SIM sockets have been tested. SIM1 was worst case, only record SIM1.		
	Extreme temp. Tolerance:	-30°C to +50°C		
	Extreme vol. Limits:	3.4VDC to 4.2VDC (nominal: 3.7VDC)		



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4.2 Test Frequency

The restriction of				
T		RF Channel		
Test mode:	Low (L)	Middle (M)	High (H)	
GSM850	Channel 128	Channel 128 Channel 190	Channel 251	
GSIVIOSU	824.2MHz	824.2MHz 836.6 MHz		
Test mode:		RF Channel		
rest mode.	Low (L)	Low (L) Middle (M)		
00144000	Channel 512	Channel 661	Channel 810	
GSM1900	1850.2MHz	1880.0 MHz	1909.8 MHz	

### 4.3 Test Environment

Environment Parameter	Selected Values During Tests			
Relative Humidity		52%		
Atmospheric Pressure:	1000Pa			
Temperature:	TN	20 °C		
Voltage:	VL	3.4 V		
	VN	3.7 V		
	VH	4.2 V		

NOTE: VL= lower extreme test voltage

VN= nominal voltage

VH= upper extreme test voltage

TN= normal temperature



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### 4.4 Description of Support Units

The EUT has been tested independent unit.

### 4.5 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	7.25 x 10 <sup>-8</sup>
2	Duty cycle	0.37%
3	Occupied Bandwidth	3%
4	RF conducted power	0.75dB
5	RF power density	2.84dB
6	Conducted Spurious emissions	0.75dB
7	DE Dadiated navor	5.14dB (below 1GHz)
′	RF Radiated power	5.08dB (above 1GHz)
0	Dedicted Occurrence anciesies to st	5.14dB (below 1GHz)
8	Radiated Spurious emission test	5.08dB (above 1GHz)
9	Temperature test	± 1°C
10	Humidity test	± 3%
11	Supply voltages	± 1.5%
12	Time	± 3%

### 4.6 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory, 198 Kezhu Road, Scientech Park, Guangzhou Economic & Technology Development District, Guangzhou, China 510663

Tel: +86 20 82155555 Fax: +86 20 82075059

No tests were sub-contracted.



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### 4.7 Test Facility

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

#### • NVLAP (Lab Code: 200611-0)

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

#### ACMA

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian/New Zealand Regulatory Compliance Mark (RCM).

### SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO

Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

### • CNAS (Lab Code: L0167)

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAS-CL01:2018 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2017 General Requirements) for the Competence of Testing Laboratories.

#### • FCC Recognized Accredited Test Firm(Registration No.: 486818)

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: CN5016, Test Firm Registration Number: 486818.

### • ISED (Registration No.: 4620B, CAB identifier: CN0052)

SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Innovation Science and Economic Development Canada for Wireless Device Testing laboratories to test to Canadian radio equipment requirements. Registration No. 4620B, CAB identifier: CN0052.

#### • VCCI (Registration No.: R-12460, C-12584, G-20107 and T-11179)

The 10m Semi-anechoic chamber, 966 Anechoic Chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-12460, C-12584, G-20107 and T-11179 respectively.

### • CBTL (Lab Code: TL129)

SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2017, the Basic Rules, IECEE 01 and Rules of procedure IECEE 02, and the relevant IECEE CB-Scheme Operational documents.

### 4.8 Deviation from Standards

None

### 4.9 Abnormalities from Standard Conditions

None



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## 5 Equipment List

RF conducted test						
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date	Cal. Due date	
EXA Signal Analzer(10Hz-44GHz)	Agilent Technologies	N9010A	EMC2138	2020-09-17	2021-09-16	
6dB Attenuator	HP	8491A	EMC2062	2020-04-15	2022-04-14	
Measurement Software	TST	TST PASS V1.0.5	N/A	N/A	N/A	
MI CABLE	SGS-EMC	0.8M	EMC2136	2019-11-02	2021-11-01	
Attenuator	Weinschel Associates	WA41	SEM021-09	N/A	N/A	
Wideband Radio Communication Tester(CMW500)	R&S	CMW500	EMC2215	2020-09-20	2021-09-19	
Power Meter (U2021XA_Ch2)	Agilent Technologies	U2021XA_Ch 2	SEM009-02	2021-05-19	2022-05-18	
Tomporatura Chambar	C7 CongWon Co I td	CD IW 100	EMC0020	2020-07-05	2021-07-04	
Temperature Chamber	GZ GongWen Co.Ltd.	GDJW-100	EMC0039	2021-07-04	2022-07-03	

RE in Chamber(below 1GHz)						
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date	Cal. Due date	
Chamber cable	HangTianXing	N/A	EMC0542	2020-09-09	2022-09-08	
Trilog Broadband Antenna(25MHz-1GHz)- Lab	SCHWARZBECK MESS- ELEKTRONIK	VULB 9168	SEM003-18	2019-02-22	2022-02-22	
Amplifier(9kHz-1.3GHz)	HP	8447F	EMC2065	2021-05-19	2022-05-18	
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2019-10-20	2022-10-19	
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A	
EMI Test Receiver(1Hz- 8GHz)	Rohde & Schwarz	ESW8	EMC2220	2021-05-26	2022-05-25	
Chamber cable	HangTianXing	N/A	EMC0542	2020-09-09	2022-09-08	
Trilog Broadband Antenna(25MHz-1GHz)	SCHWARZBECK	VULB 9160	EMC2025	2020-09-24	2023-09-23	
Signal Generator (10MHz-20GHz)	Rohde & Schwarz	SMR20	EMC0516	2021-01-11	2022-01-10	
Wideband Radio Communication Tester(CMW500)	R&S	CMW500	EMC2215	2020-09-20	2021-09-19	



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RE in Chamber(above 1GHz)									
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date	Cal. Due date				
Chamber cable(Above 1GHz)	Scoflex	KMKM-8.0m	EMC0545	2020-09-09	2022-09-08				
Horn Antenna(1GHz- 18GHz)	SCHWARZBECK MESS- ELEKTRONIK	BBHA 9120D	EMC2026	2019-09-25	2022-09-24				
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2021-01-08	2022-01-07				
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2020-12-20	2023-12-19				
EXA Signal Analyzer(10Hz-44GHz)	Keysight	N9010A	EMC2138	2020-09-17	2021-09-16				
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A				
Horn Antenna(14- 40GHz)	SCHWARZBECK	BBHA 9170	EMC2041	2020-06-28	2023-06-27				
Microwave Broadband Preamplifier (18-40GHz)	SCHWARZBECK	BBV 9721	EMC2172	2020-09-09	2021-09-08				
Wideband Radio Communication Tester(CMW500)	R&S	CMW500	EMC2215	2020-09-20	2021-09-19				
Substitution Antenna	SCHWARZBECK MESS- ELEKTRONIK	BBHA 9120D	EMC2026	2019-09-25	2022-09-24				
Signal Generator (10MHz-20GHz)	Rohde & Schwarz	SMR20	EMC0516	2021-01-11	2022-01-10				

General used equipmer	eneral used equipment										
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date						
DMM	Fluke	73	EMC0006	2020-07-06	2021-07-05						
				2021-07-05	2022-07-04						
DMM	Fluke	73	EMC0007	2020-07-06	2021-07-05						
				2021-07-05	2022-07-04						



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#### **Radio Spectrum Matter Test Results** 6

### 6.1 Effective (Isotropic) Radiated Power Output Data

Test Requirement: §2.1046, §22.913, §24.232

Test Method: ANSI C63.26, KDB 971168 D01 v03

Limit:  $ERP \le 7W(GSM850)$ 

 $EIRP \le 2W(GSM1900)$ 

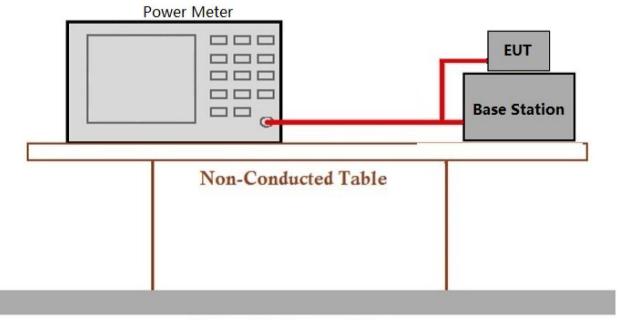
### 6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 25.9 °C Humidity: 48.9 % RH Atmospheric Pressure: 1000 mbar

Test mode: 08:TX mode\_Keep the EUT in transmitting mode

### 6.1.2 Test Setup Diagram



### Ground Reference Plane

### 6.1.3 Measurement Data



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	Test Band: GSM850										
Test Mode		Conducted Power (dBm)		Antenna gain		ERP(dBm)		n)	Limit	Marillat	
res	t Mode	LCH	MCH	HCH	(dBd)	(dBi)	LCH	MCH	HCH	(dBm)	Verdict
	1 TX Slot	32.36	32.61	32.78	-1.15	1.00	31.21	31.46	31.63	38.45	PASS
EGPRS	2 TX Slots	28.26	28.42	28.48	-1.15	1.00	27.11	27.27	27.33	38.45	PASS
EGPRS	3 TX Slots	26.65	26.80	26.86	-1.15	1.00	25.50	25.65	25.71	38.45	PASS
	4 TX Slots	25.41	25.63	25.67	-1.15	1.00	24.26	24.48	24.52	38.45	PASS
	1 TX Slot	32.76	32.50	32.65	-1.15	1.00	31.61	31.35	31.50	38.45	PASS
CDDC	2 TX Slots	28.21	28.32	28.43	-1.15	1.00	27.06	27.17	27.28	38.45	PASS
GPRS	3 TX Slots	26.58	26.68	26.78	-1.15	1.00	25.43	25.53	25.63	38.45	PASS
	4 TX Slots	25.41	25.57	25.60	-1.15	1.00	24.26	24.42	24.45	38.45	PASS

#### Note:

- 1) dBd = dBi 2.15
- 2) EIRP = Conducted output power + Antenna gain (dBi)
- 3) ERP = Conducted output power + Antenna gain (dBd)

	Test Band: PCS1900										
Test Mode		Conduc	ted Powe	er (dBm)	Antenr	Antenna gain		EIRP(dBm)		Limit	V ( 1" - 1
res	it iviode	LCH	MCH	HCH	(dBd)	(dBi)	LCH	MCH	HCH	(dBm)	Verdict
	1 TX Slot	30.10	30.02	30.02	/	0.50	30.60	30.52	30.52	33.01	PASS
EGPRS	2 TX Slots	24.88	24.54	23.97	/	0.50	25.38	25.04	24.47	33.01	PASS
EGPKS	3 TX Slots	21.72	21.28	20.51	/	0.50	22.22	21.78	21.01	33.01	PASS
	4 TX Slots	20.43	20.06	19.53	/	0.50	20.93	20.56	20.03	33.01	PASS
	1 TX Slot	30.75	30.34	30.90	/	0.50	31.25	30.84	31.40	33.01	PASS
CDDC	2 TX Slots	25.33	24.47	24.02	/	0.50	25.83	24.97	24.52	33.01	PASS
GPRS	3 TX Slots	20.76	20.38	20.84	/	0.50	21.26	20.88	21.34	33.01	PASS
	4 TX Slots	20.35	20.04	19.51	/	0.50	20.85	20.54	20.01	33.01	PASS

#### Note:

- 1) dBd = dBi 2.15
- 2) EIRP = Conducted output power + Antenna gain (dBi)



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### 6.2 Peak-Average Ratio

Test Requirement: §24.232

Test Method: ANSI C63.26, KDB 971168 D01 v03

Limit: ≤13dB

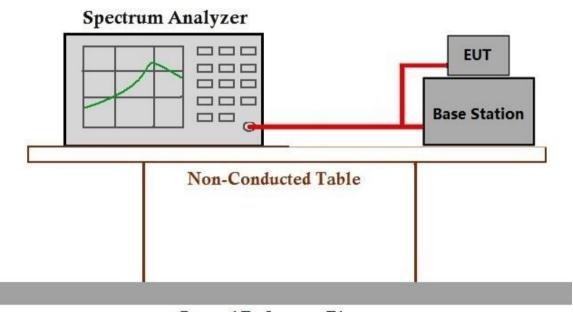
### 6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 25.9 °C Humidity: 48.9 % RH Atmospheric Pressure: 1000 mbar

Test mode: 08:TX mode Keep the EUT in transmitting mode

#### 6.2.2 Test Setup Diagram



Ground Reference Plane

#### 6.2.3 Measurement Data



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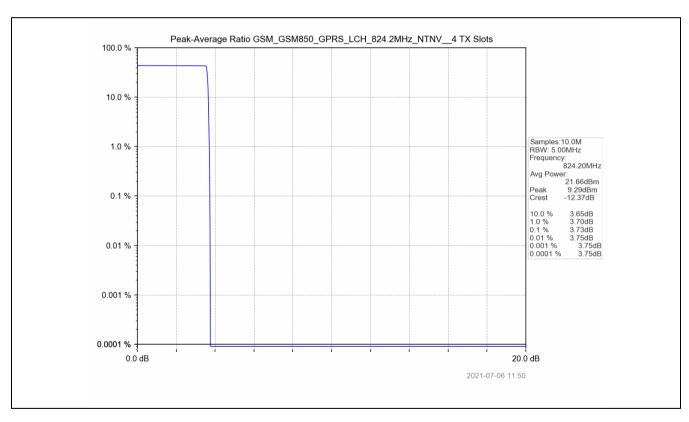
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Test Band: GSM850										
Toot Mode		Test result (dB)		Limit (dD)						
Test Mode	LCH	MCH	HCH	Limit (dB)	Verdict					
EGPRS	3.62	3.55	3.67	13	PASS					
GPRS	3.73	3.63	3.68	13	PASS					

Test Band: PCS1900										
Took Mode		Test result (dB)		Line it (dD)						
Test Mode	LCH	MCH	HCH	Limit (dB)	Verdict					
EGPRS	4.14	4.10	4.30	13	PASS					
GPRS	4.26	4.23	4.35	13	PASS					





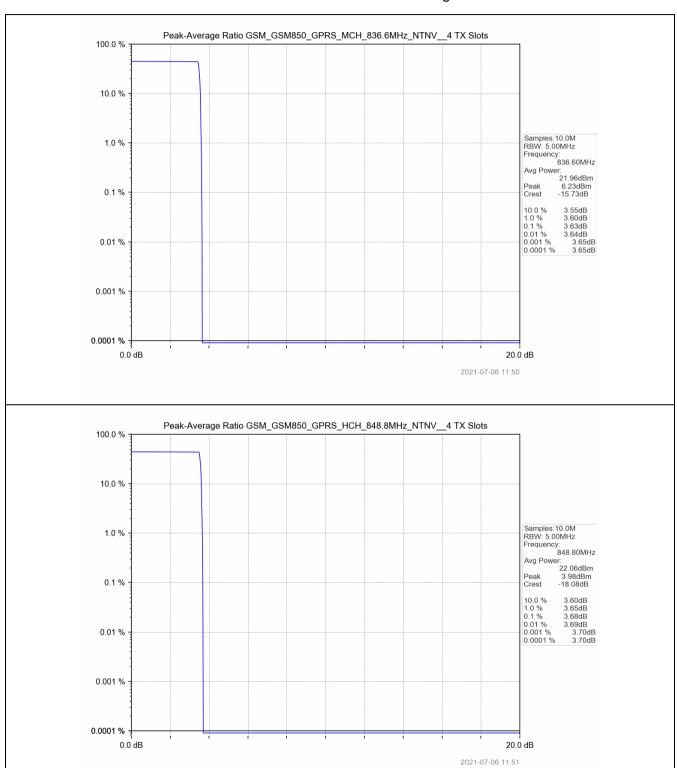
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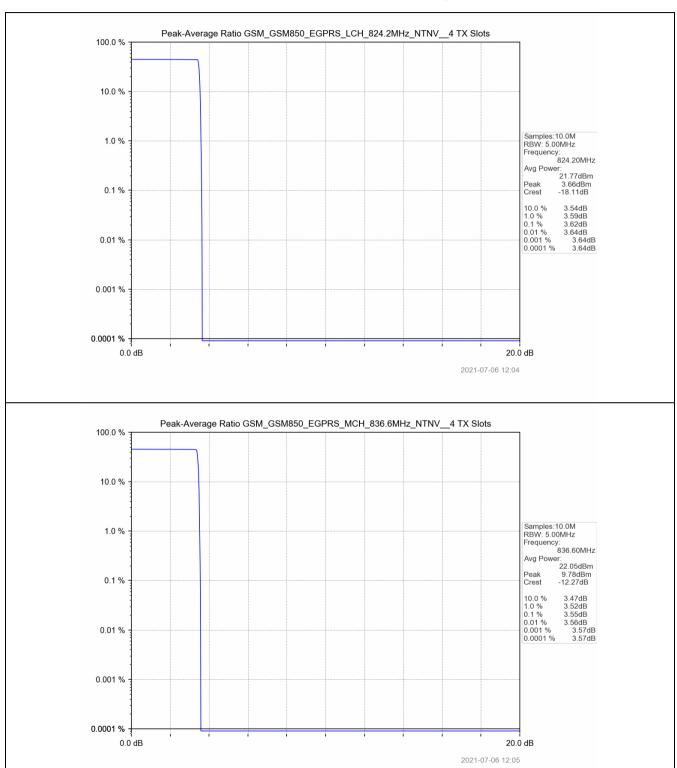
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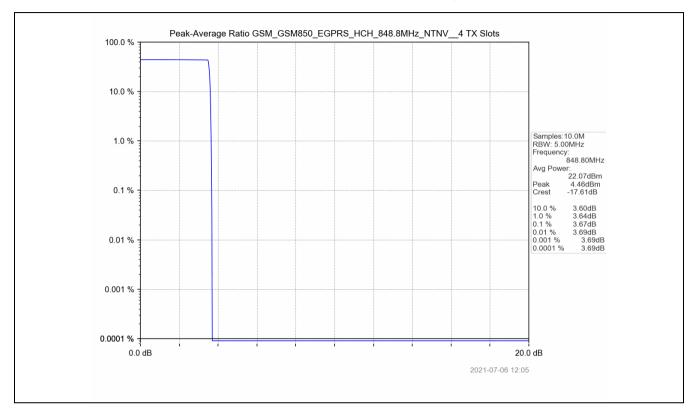
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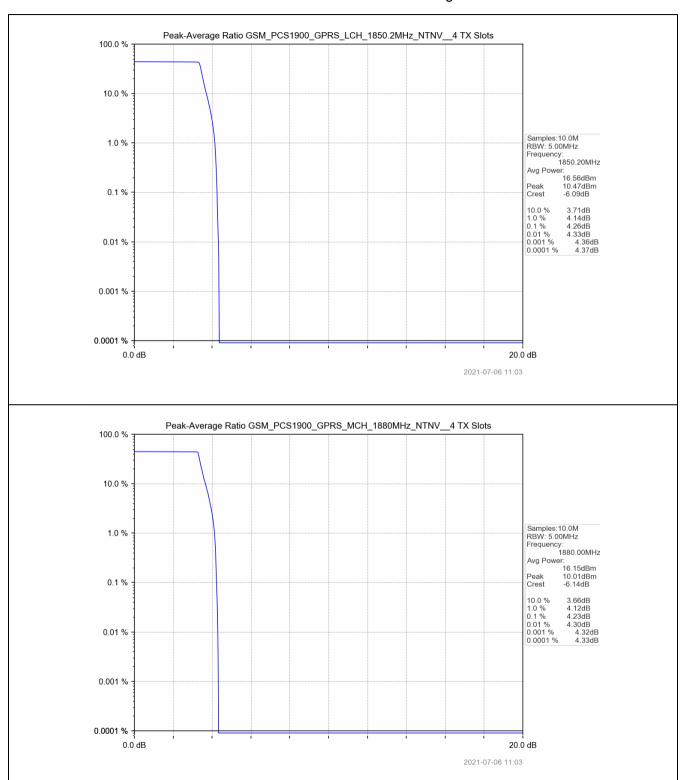
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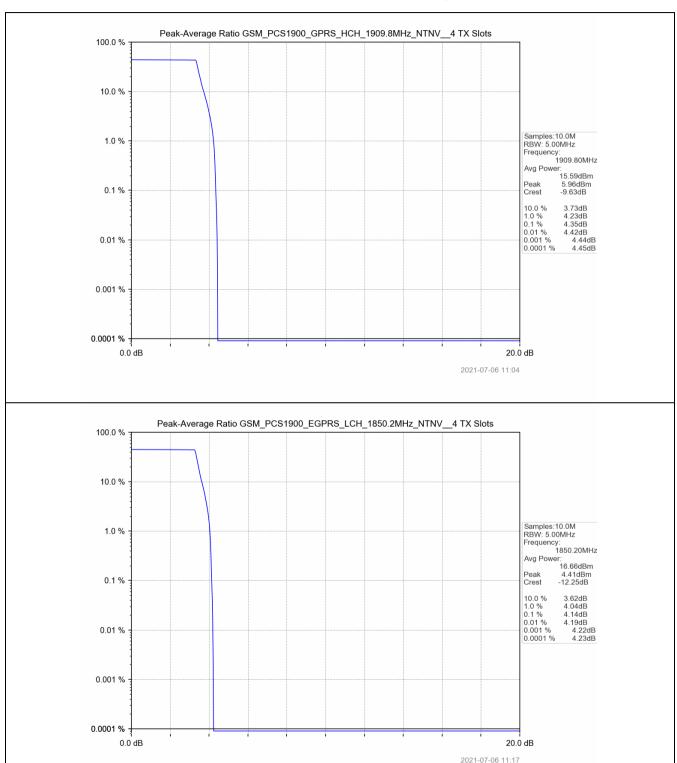
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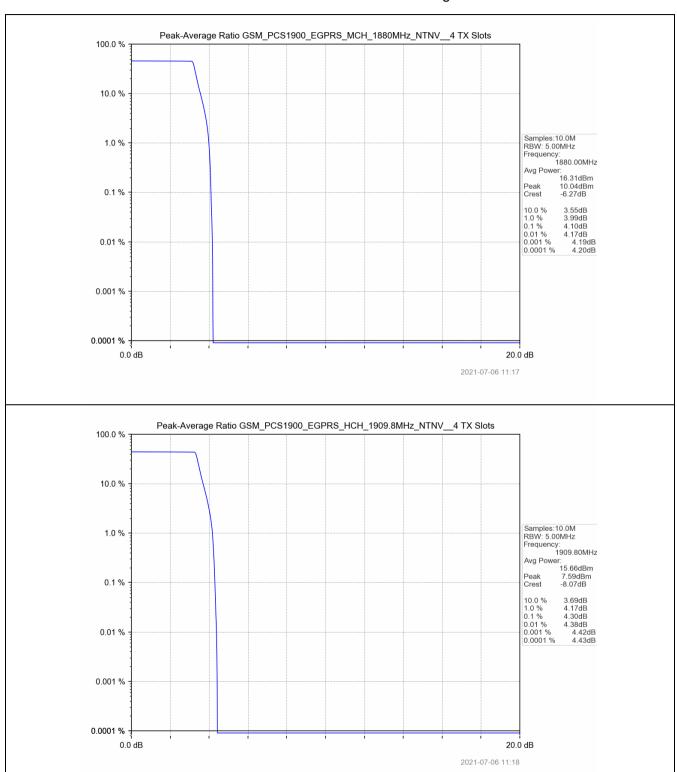
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### 6.3 Bandwidth

Test Requirement: §2.1049(h), §22.917, §24.238

Test Method: ANSI C63.26, KDB 971168 D01 v03

Limit: **OBW: No limit** EBW: No limit

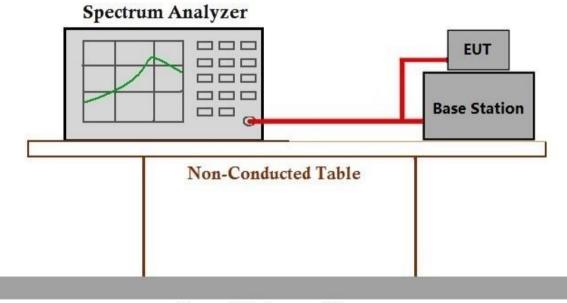
### 6.3.1 E.U.T. Operation

Operating Environment:

Temperature: 25.9 °C Humidity: 48.9 % RH Atmospheric Pressure: 1000 mbar

Test mode: 08:TX mode Keep the EUT in transmitting mode

### 6.3.2 Test Setup Diagram



### Ground Reference Plane

#### 6.3.3 Measurement Data



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Test Band: GSM850									
99% Occupied Bandwidth (MHz)				Linnit	Vordict				
Test Mode	LCH	MCH	HCH	Limit	Verdict				
EGPRS	0.246	0.244	0.246	N/A	PASS				
GPRS	0.243	0.244	0.245	N/A	PASS				

Test Band: PCS1900									
Took Mode	99% Occupied Bandwidth (MHz)				Mondiet				
Test Mode	LCH	MCH	HCH	Limit	Verdict				
EGPRS	0.243	0.244	0.243	N/A	PASS				
GPRS	0.243	0.244	0.242	N/A	PASS				

Test Band: GSM850									
Took Mode	26dB Bandwidth (MHz)				\/o.rd:o4				
Test Mode	LCH	MCH	HCH	Limit	Verdict				
EGPRS	0.317	0.323	0.316	N/A	PASS				
GPRS	0.317	0.314	0.318	N/A	PASS				

Test Band: PCS1900									
Took Mode	26	6dB Bandwidth (MH	Limais	Vardiet					
Test Mode	LCH	MCH	HCH	Limit	Verdict				
EGPRS	0.316	0.319	0.324	N/A	PASS				
GPRS	0.321	0.318	0.313	N/A	PASS				



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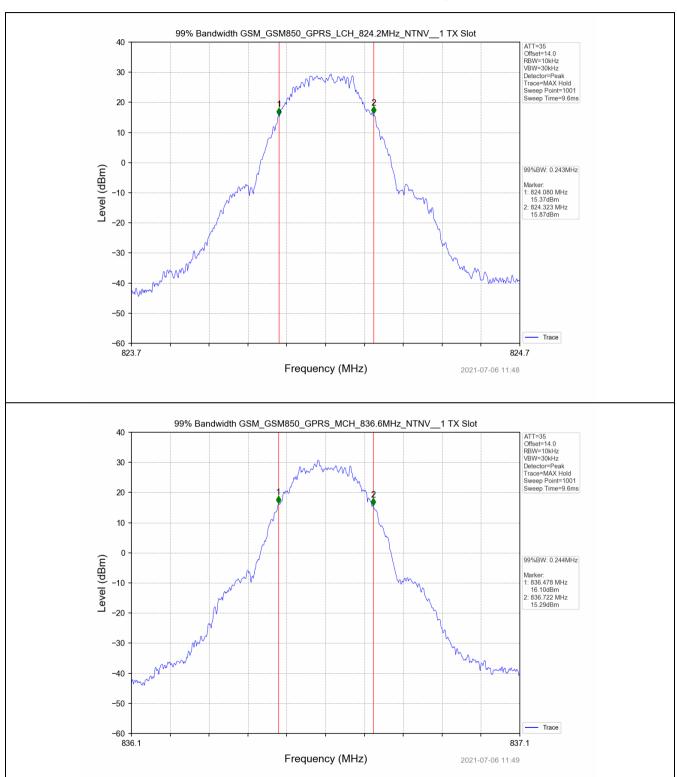
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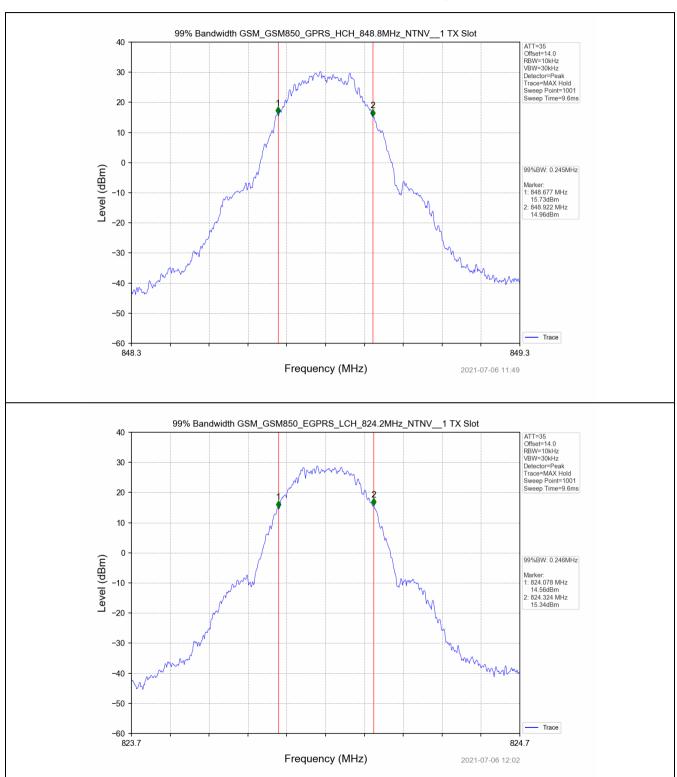
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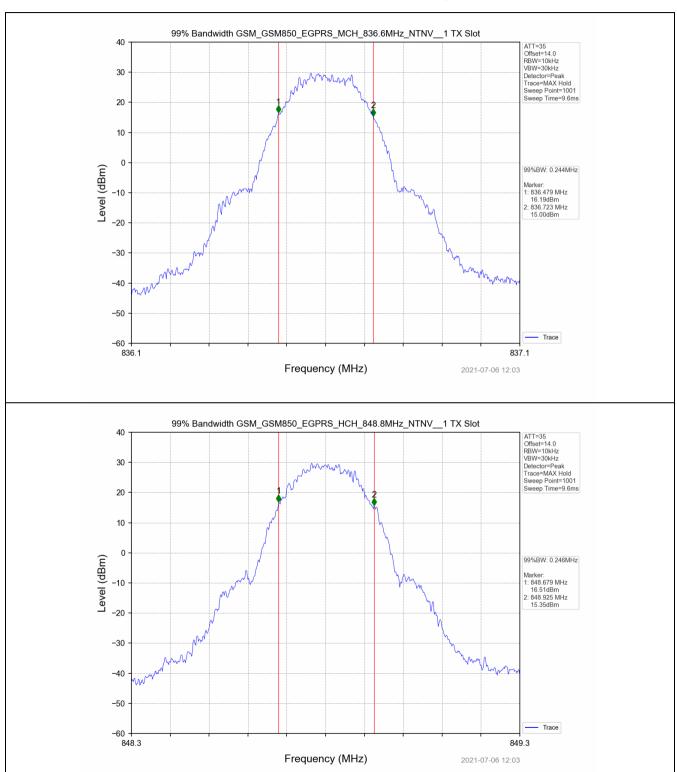
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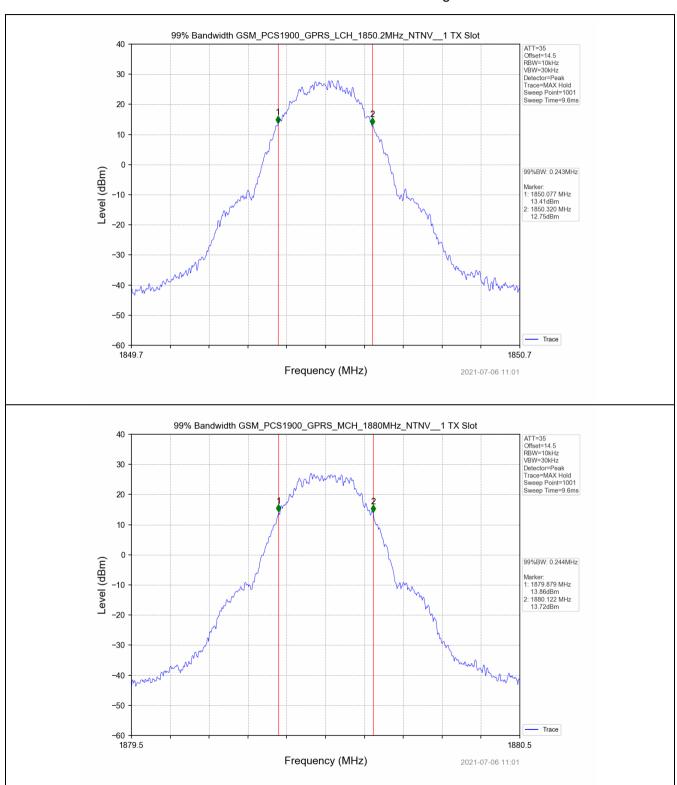
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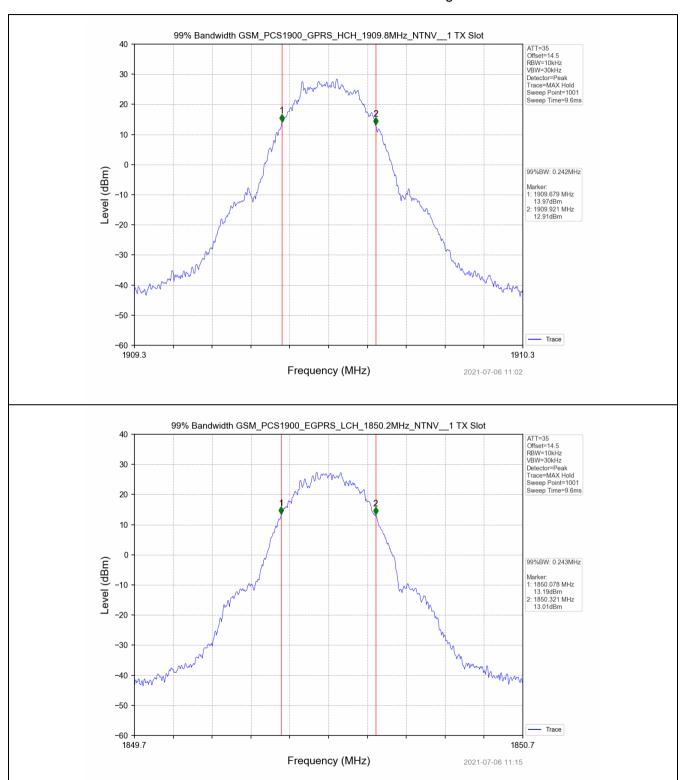
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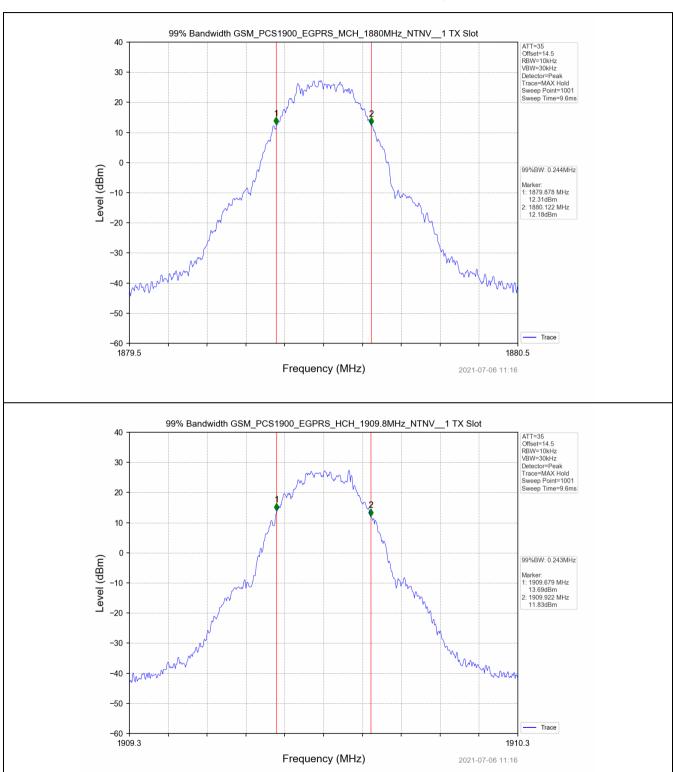
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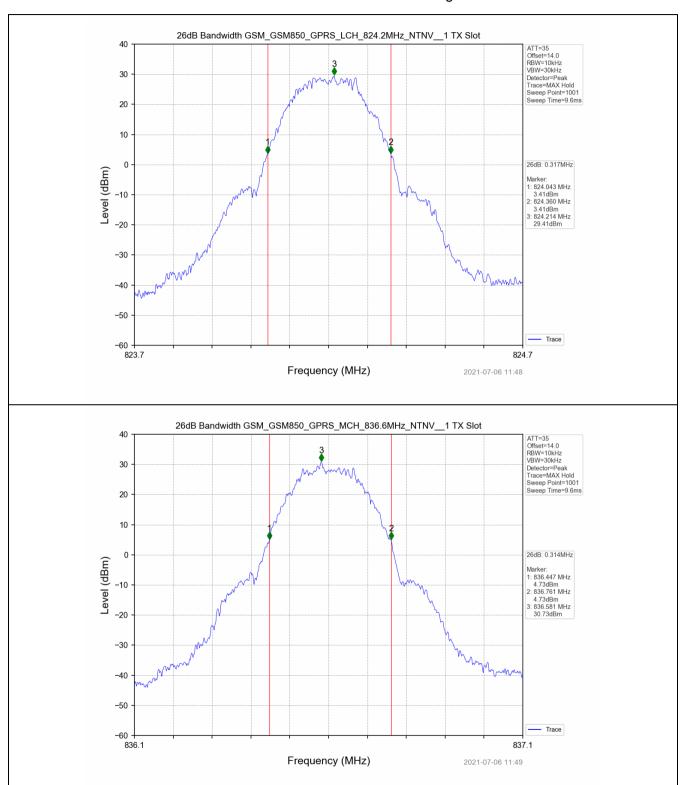
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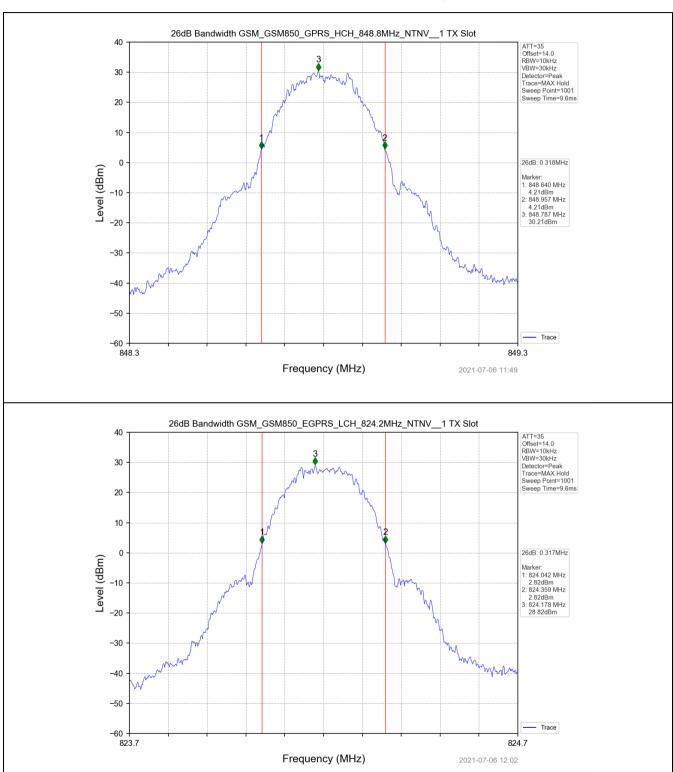
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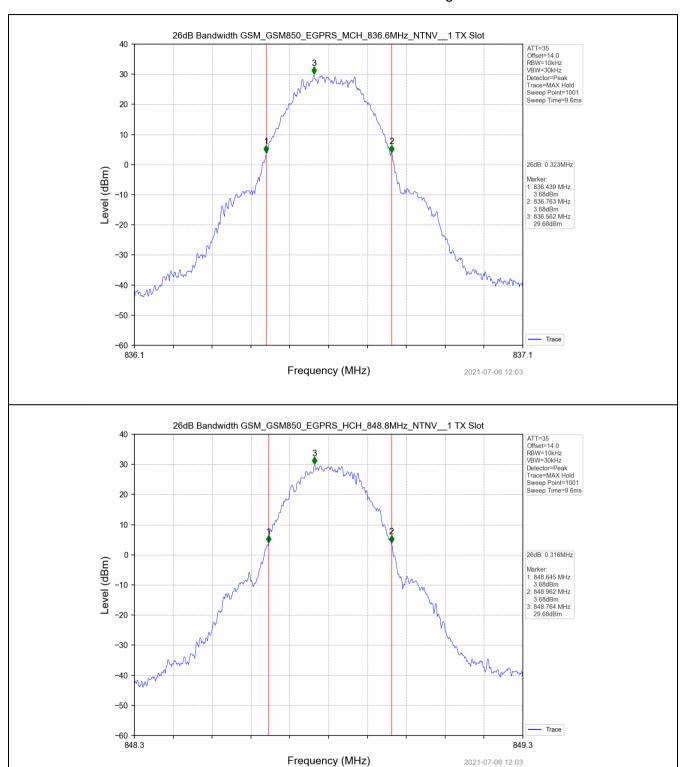
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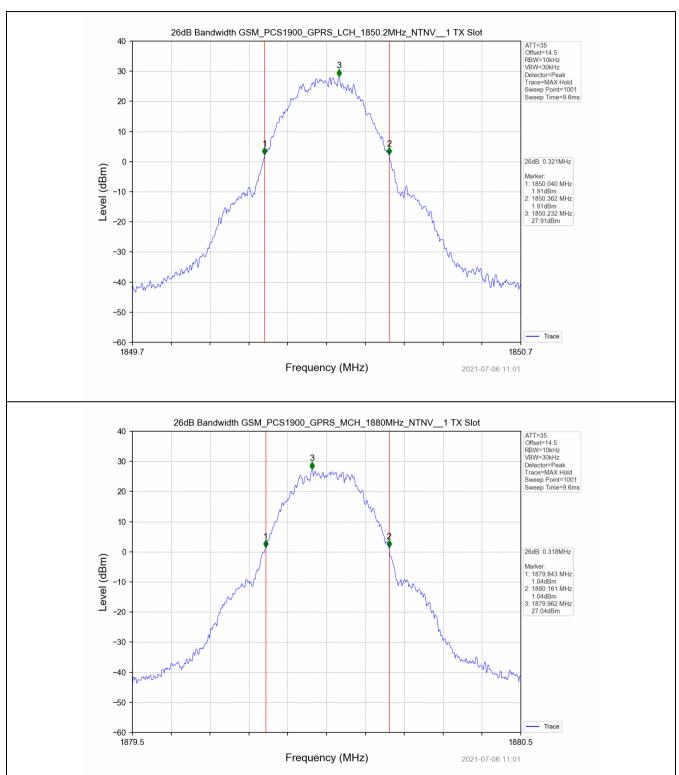
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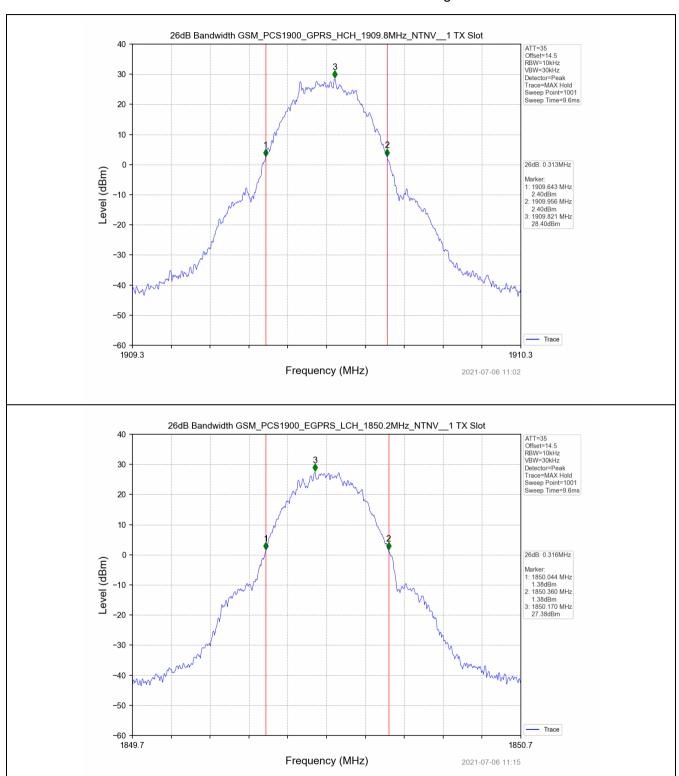
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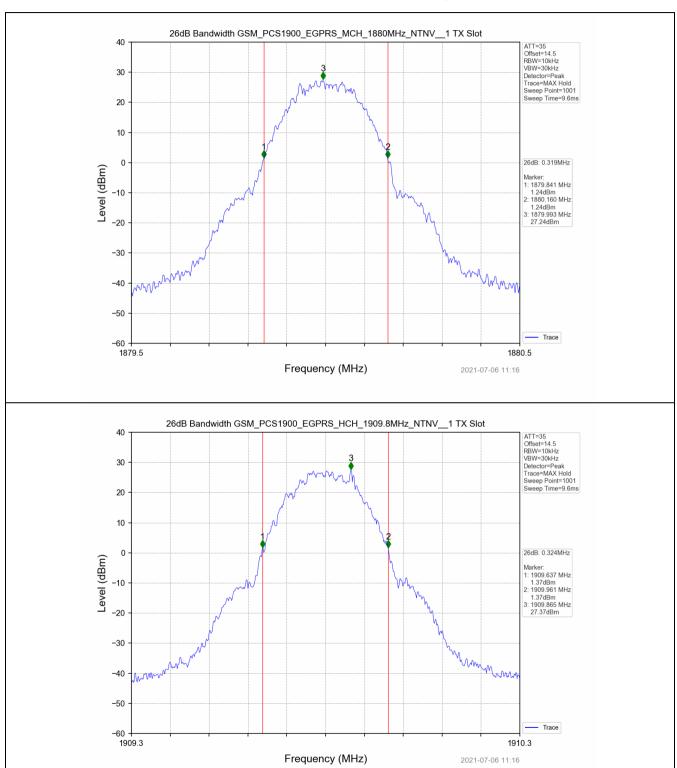
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### 6.4 Band Edge Compliance

Test Requirement: §2.1051, §22.917, §24.238

Test Method: ANSI C63.26, KDB 971168 D01 v03

Limit: ≤ -13dBm/1%\*EBW, in 1 MHz bands immediately outside and adjacent to

the frequency block.

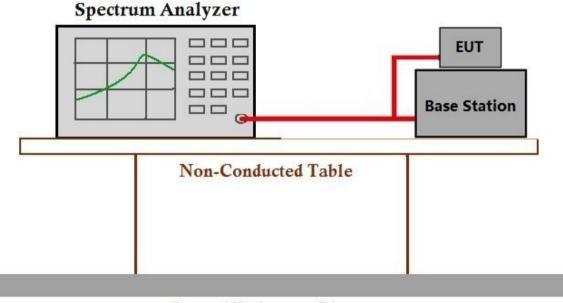
### 6.4.1 E.U.T. Operation

Operating Environment:

Temperature: 48.9 % RH Atmospheric Pressure: 1000 mbar 25.9 °C Humidity:

Test mode: 08:TX mode Keep the EUT in transmitting mode

#### 6.4.2 Test Setup Diagram



### Ground Reference Plane

#### 6.4.3 Measurement Data



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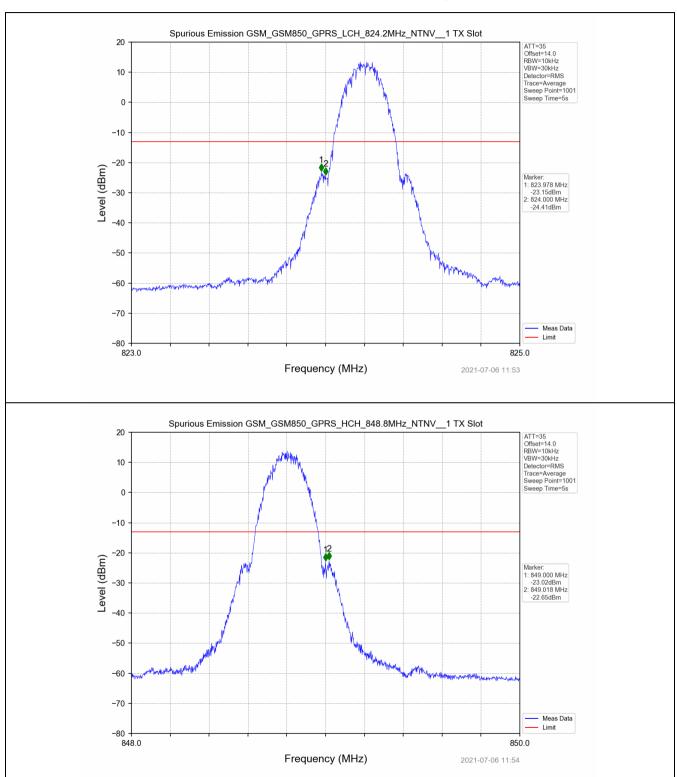
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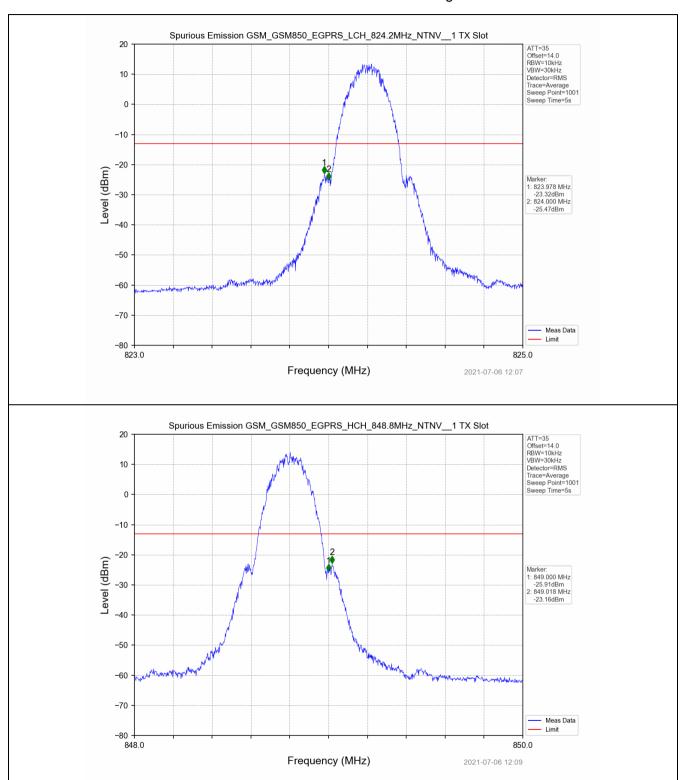
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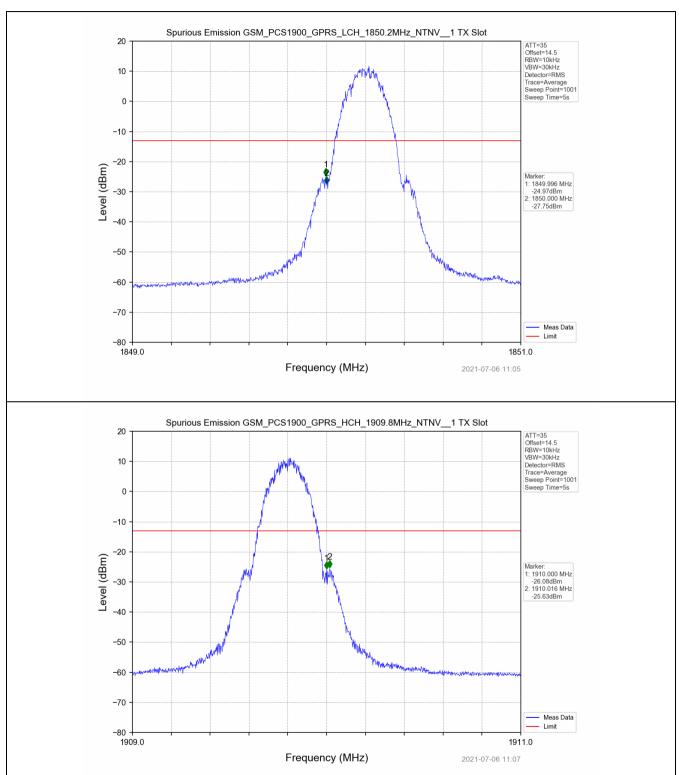
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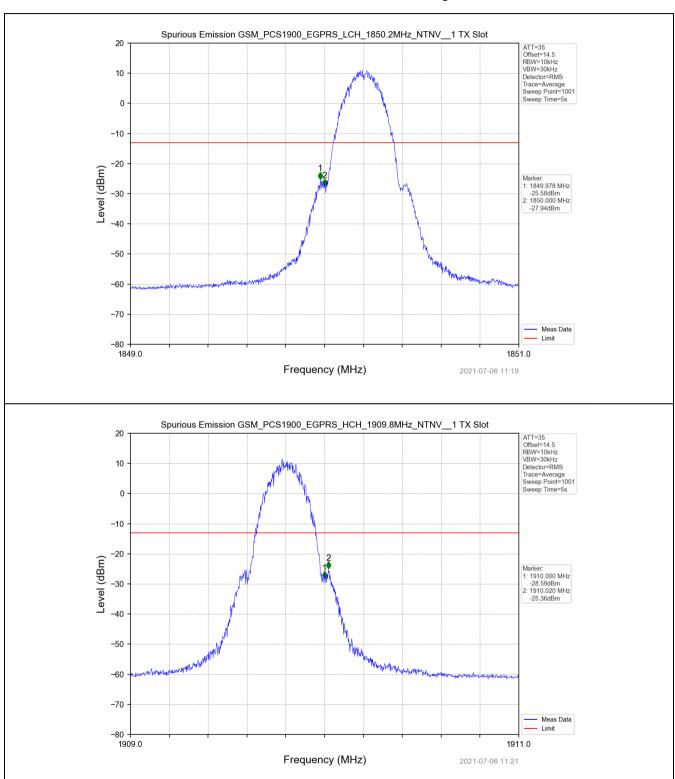
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### 6.5 Spurious emissions at antenna terminals

Test Requirement: §2.1051, §22.917, §24.238

ANSI C63.26, KDB 971168 D01 v03 Test Method:

Limit: ≤ -13dBm

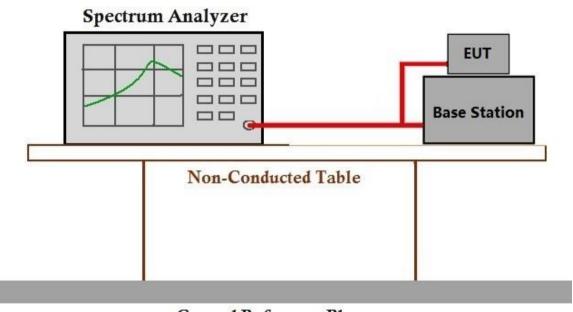
### 6.5.1 E.U.T. Operation

Operating Environment:

Temperature: Humidity: 48.9 % RH Atmospheric Pressure: 1000 mbar

Test mode: 08:TX mode\_Keep the EUT in transmitting mode

### 6.5.2 Test Setup Diagram



Ground Reference Plane

#### 6.5.3 Measurement Data



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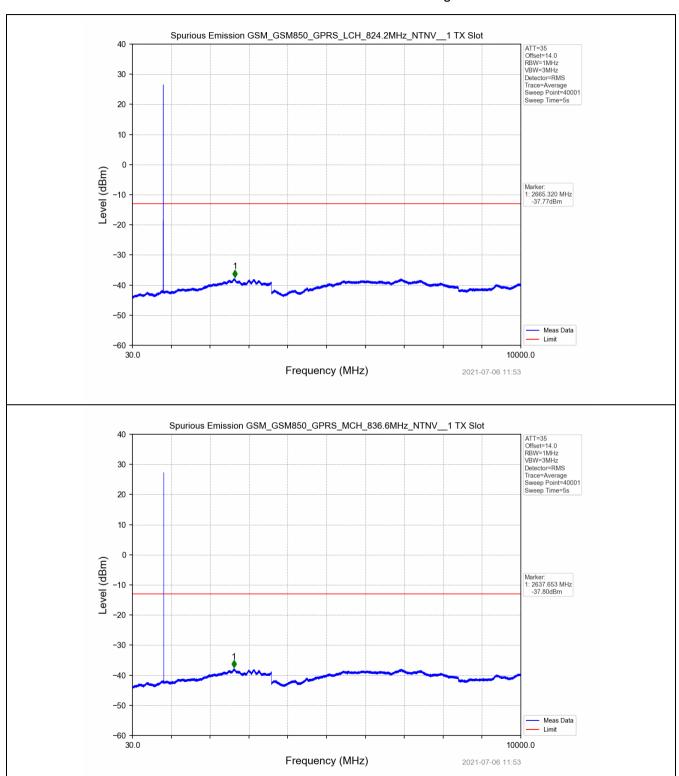
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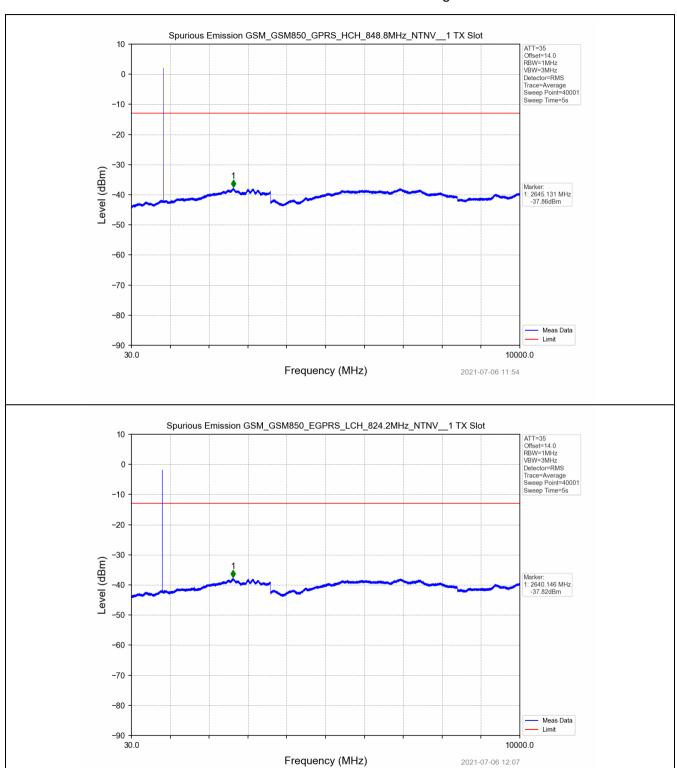
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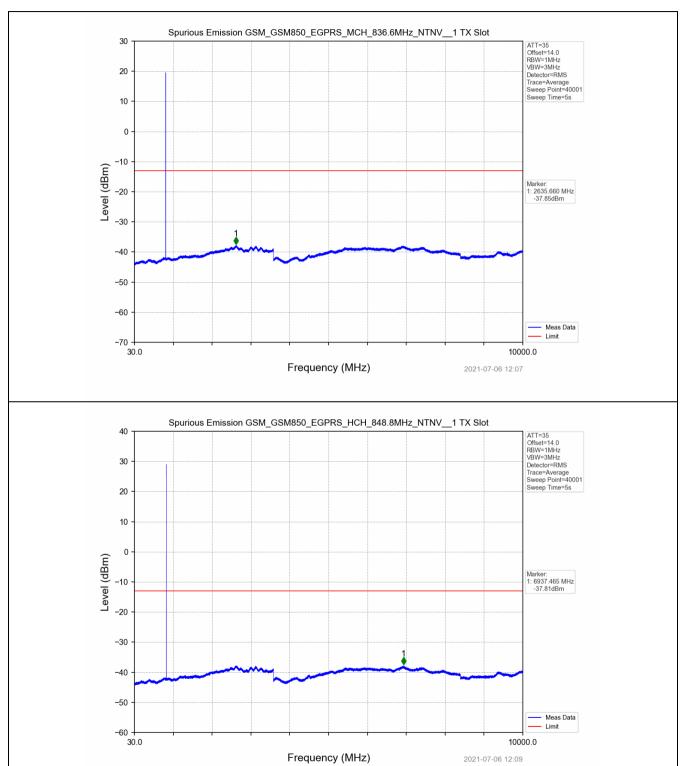
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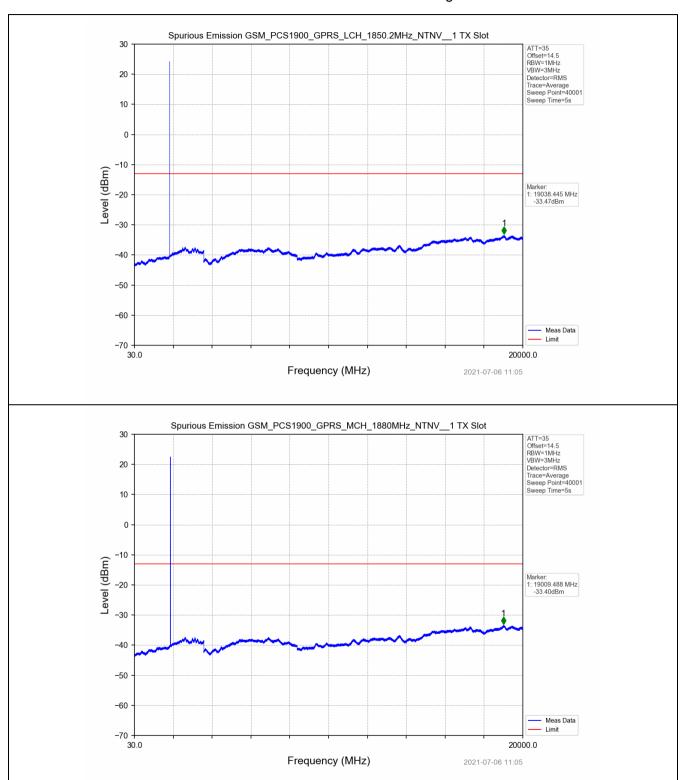
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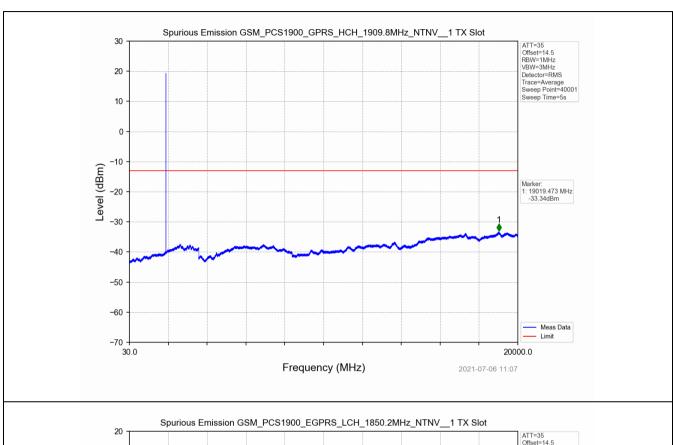
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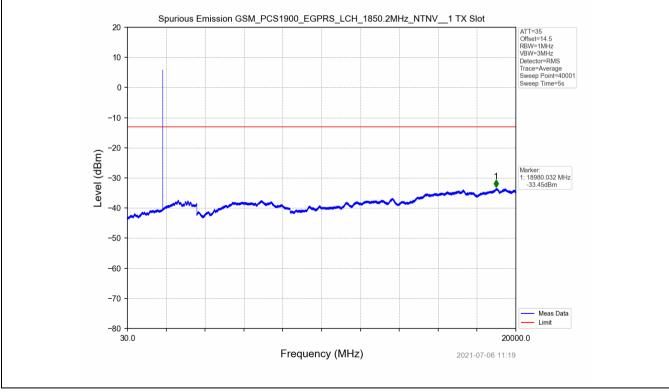
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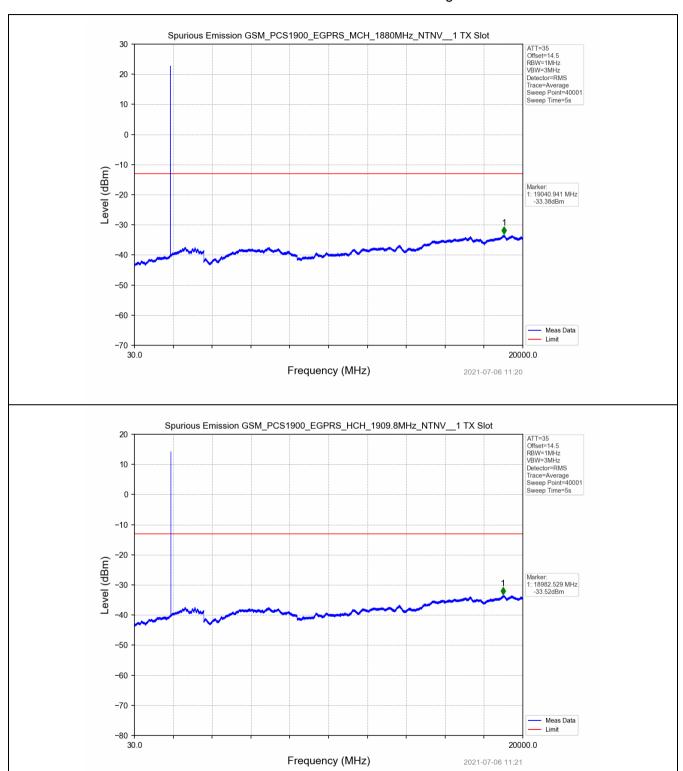
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### 6.6 Field strength of spurious radiation

Test Requirement: §2.1051, §22.917, §24.238,

ANSI C63.26, KDB 971168 D01 v03 Test Method:

Limit: ≤ -13dBm

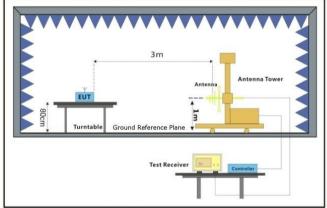
### 6.6.1 E.U.T. Operation

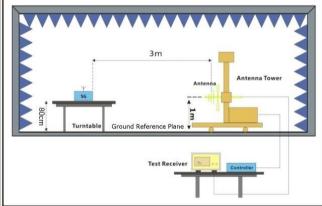
Operating Environment:

Temperature: Humidity: 48.9 % RH Atmospheric Pressure: 1000 mbar

Test mode: 08:TX mode\_Keep the EUT in transmitting mode

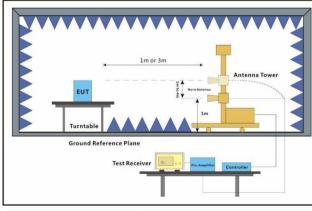
### 6.6.2 Test Setup Diagram

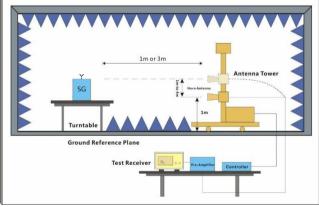




EUT

Substiute Antenna+Signal Generator





EUT

Substiute Antenna+Signal Generator

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#### 6.6.3 Measurement Procedure and Data

#### Test Procedure:

- (1)On a test site, the EUT shall be placed on a turntable and in the position closest to the normal use as declared by the user.
- (2) The test antenna shall be oriented initially for vertical polarization located 3m from the EUT to correspond to the transmitter.
- (3)The output of the antenna shall be connected to the measuring receiver and either a peak or quasi-peak detector was used for the measurement as indicated on the report. The detector selection is based on how close the emission level was approaching the limit.
- (4) The transmitter shall be switched on; if possible, without the modulation and the measurement receiver shall be tuned to the frequency of the transmitter under test.
- (5) The test antenna shall be raised and lowered through the specified range of height until the measuring receiver detects a maximum signal level.
- (6) The transmitter shall than be rotated through 360 in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
- (7)The test antenna shall be raised and lowered again through the specified range of height until the measuring receiver detects a maximum signal level.
- (8) The maximum signal level detected by the measuring receiver shall be noted.
- (9) The measurement shall be repeated with the test antenna set to horizontal polarization.
- (10) Replace the antenna with a proper Antenna (substitution antenna).
- (11) The substitution antenna shall be oriented for vertical polarization and, if necessary, the length of the substitution antenna shall be adjusted to correspond to the frequency of transmitting.
- (12) The substitution antenna shall be connected to a calibrated signal generator.
- (13)If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
- (14)The test antenna shall be raised and lowered through the specified range of the height to ensure that the maximum signal is received.
- (15) The input signal to substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuation setting of the measuring receiver.
- (16) The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.
- (17)The measurement shall be repeated with the test antenna and the substitution antenna oriented for horizontal polarization.



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	GPRS850-Low channel												
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result					
1648.4	-55.91	-13	-42.91	-61.08	3.33	8.5	Horizontal	Pass					
2472.6	-51.01	-13	-38.01	-58.01	3.4	10.4	Horizontal	Pass					
3296.8	-48.04	-13	-35.04	-56.55	2.99	11.5	Horizontal	Pass					
1648.4	-56.24	-13	-43.24	-61.41	3.33	8.5	Vertical	Pass					
2472.6	-51.98	-13	-38.98	-58.98	3.4	10.4	Vertical	Pass					
3296.8	-49.04	-13	-36.04	-57.55	2.99	11.5	Vertical	Pass					

	GPRS850-Middle channel												
Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result					
1672.8	-56.59	-13	-43.59	-61.76	3.33	8.5	Horizontal	Pass					
2509.2	-53.39	-13	-40.39	-60.78	3.21	10.6	Horizontal	Pass					
3345.6	-49.47	-13	-36.47	-57.98	2.99	11.5	Horizontal	Pass					
1672.8	-57.74	-13	-44.74	-62.91	3.33	8.5	Vertical	Pass					
2509.2	-52.31	-13	-39.31	-59.7	3.21	10.6	Vertical	Pass					
3345.6	-49.64	-13	-36.64	-58.15	2.99	11.5	Vertical	Pass					

	GPRS850-High channel													
Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result						
1697.6	-56.99	-13	-43.99	-62.16	3.33	8.5	Horizontal	Pass						
2546.4	-54.22	-13	-41.22	-61.61	3.21	10.6	Horizontal	Pass						
3395.2	-49.31	-13	-36.31	-57.82	2.99	11.5	Horizontal	Pass						
1697.6	-55.95	-13	-42.95	-61.12	3.33	8.5	Vertical	Pass						
2546.4	-52.9	-13	-39.9	-60.29	3.21	10.6	Vertical	Pass						
3395.2	-49.13	-13	-36.13	-57.64	2.99	11.5	Vertical	Pass						



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	GPRS1900-Low channel													
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result						
3700.4	-50.79	-13	-37.79	-60.47	2.92	12.6	Horizontal	Pass						
5550.6	-46.99	-13	-33.99	-56.94	3.15	13.1	Horizontal	Pass						
7400.8	-45.28	-13	-32.28	-53.58	3.4	11.7	Horizontal	Pass						
3700.4	-51.34	-13	-38.34	-61.02	2.92	12.6	Vertical	Pass						
5550.6	-47.52	-13	-34.52	-57.47	3.15	13.1	Vertical	Pass						
7400.8	-45.27	-13	-32.27	-53.57	3.4	11.7	Vertical	Pass						

	GPRS1900-Middle channel												
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result					
3760	-52.01	-13	-39.01	-61.69	2.92	12.6	Horizontal	Pass					
5640	-47.86	-13	-34.86	-57.81	3.15	13.1	Horizontal	Pass					
7520	-45.46	-13	-32.46	-53.01	3.85	11.4	Horizontal	Pass					
3760	-50.72	-13	-37.72	-60.4	2.92	12.6	Vertical	Pass					
5640	-47.45	-13	-34.45	-57.4	3.15	13.1	Vertical	Pass					
7520	-45.01	-13	-32.01	-52.56	3.85	11.4	Vertical	Pass					

	GPRS1900-High channel												
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result					
3819.6	-50.4	-13	-37.4	-60.08	2.92	12.6	Horizontal	Pass					
5729.4	-46.82	-13	-33.82	-56.77	3.15	13.1	Horizontal	Pass					
7639.2	-45.17	-13	-32.17	-52.72	3.85	11.4	Horizontal	Pass					
3819.6	-49.71	-13	-36.71	-59.39	2.92	12.6	Vertical	Pass					
5729.4	-47.18	-13	-34.18	-57.13	3.15	13.1	Vertical	Pass					
7639.2	-45.1	-13	-32.1	-52.65	3.85	11.4	Vertical	Pass					

### Note:

For GSM, all modes have been tested and we found GPRS Test mode has the worst test result. Only record the worst test result.



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### 6.7 Frequency stability

Test Requirement: §2.1055, §22.355, §24.235

Test Method: ANSI C63.26, KDB 971168 D01 v03

Limit:  $\leq$  ±2.5ppm.

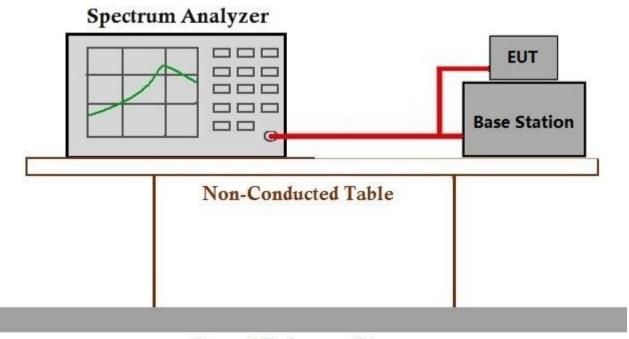
### 6.7.1 E.U.T. Operation

Operating Environment:

Temperature: 25.9 °C Humidity: 48.9 % RH Atmospheric Pressure: 1000 mbar

Test mode: 08:TX mode Keep the EUT in transmitting mode

### 6.7.2 Test Setup Diagram



### Ground Reference Plane

#### 6.7.3 Measurement Data



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	Test Band: GSM850 (Frequency Error VS. Voltage)											
Test Mode	Test	Test	Fre	q. Error (	(Hz)	Freq.	vs. rated	Limit	Verdict			
restiviode	Temp.	Volt.	LCH	MCH	HCH	LCH	MCH	HCH	(ppm)	verdict		
	NT	LV	29.7353	29.7676	31.8984	0.0361	0.0356	0.0376	2.50	PASS		
EGPRS		NV	31.0590	32.9638	31.9953	0.0377	0.0394	0.0377	2.50	PASS		
		HV	31.6724	31.3173	30.4778	0.0384	0.0374	0.0359	2.50	PASS		
		LV	28.6053	29.2833	30.4133	0.0347	0.0350	0.0358	2.50	PASS		
GPRS	NT N\	NV	27.7013	29.3156	29.8644	0.0336	0.0350	0.0352	2.50	PASS		
		HV	28.0564	29.5416	30.1227	0.0340	0.0353	0.0355	2.50	PASS		

	Test	Band: G	SM850 (F	requen	cy Error \	/S. Temp	erature)			
Test Mode	Test	Test	Free	q. Error (	(Hz)	Freq.	vs. rated	(ppm)	Limit	Verdict
rest wode	Volt.	Temp.	LCH	MCH	HCH	LCH	MCH	HCH	(ppm)	verdict
		-30.00	31.7370	30.7038	33.0284	0.0385	0.0367	0.0389	2.50	PASS
		-20.00	31.7047	31.1881	33.0930	0.0385	0.0373	0.0390	2.50	PASS
		-10.00	32.1890	32.4473	32.2213	0.0391	0.0388	0.0380	2.50	PASS
		0.00	32.6733	30.6070	30.3487	0.0396	0.0366	0.0358	2.50	PASS
EGPRS	NV	10.00	31.6724	30.6070	30.5747	0.0384	0.0366	0.0360	2.50	PASS
		20.00	32.5118	32.1244	32.1567	0.0394	0.0384	0.0379	2.50	PASS
		30.00	30.3810	32.0276	31.5756	0.0369	0.0383	0.0372	2.50	PASS
		40.00	30.9621	32.0921	31.7693	0.0376	0.0384	0.0374	2.50	PASS
		50.00	30.2196	31.0267	30.9944	0.0367	0.0371	0.0365	2.50	PASS
		-30.00	27.9596	29.6384	29.7030	0.0339	0.0354	0.0350	2.50	PASS
		-20.00	29.2510	28.9604	30.5747	0.0355	0.0346	0.0360	2.50	PASS
		-10.00	28.5407	28.9604	30.5747	0.0346	0.0346	0.0360	2.50	PASS
CDDC	NIV/	0.00	29.3478	28.4761	30.8330	0.0356	0.0340	0.0363	2.50	PASS
GPRS	NV	10.00	28.4116	28.4116	30.7361	0.0345	0.0340	0.0362	2.50	PASS
		20.00	29.2510	28.8313	31.4141	0.0355	0.0345	0.0370	2.50	PASS
		30.00	28.5407	28.6053	31.6724	0.0346	0.0342	0.0373	2.50	PASS
		40.00	29.5416	29.0896	31.8661	0.0358	0.0348	0.0375	2.50	PASS



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Test Band: PCS1900 (Frequency Error VS. Voltage)											
Test Mode	Test	Test Test		q. Error (	(Hz)	Freq.	vs. rated	Limit	Verdict		
rest Mode	Temp.	Volt.	LCH	MCH	HCH	LCH	MCH	HCH	(ppm)	verdict	
		LV	20.2432	25.1830	16.9178	0.0109	0.0134	0.0089	2.50	PASS	
EGPRS	NT	NV	25.9355	22.4387	16.4981	0.0122	0.0119	0.0086	2.50	PASS	
		HV	24.5050	22.1481	18.2415	0.0132	0.0118	0.0096	2.50	PASS	
	NT N	LV	27.8627	25.3121	19.8558	0.0151	0.0135	0.0104	2.50	PASS	
GPRS		NV	25.7964	23.5687	20.0172	0.0139	0.0125	0.0105	2.50	PASS	
		HV	26.8295	25.4412	21.2118	0.0145	0.0135	0.0111	2.50	PASS	

	Test	Band: PC	CS1900 (	Frequen	cy Error	VS. Temp	perature)			
Test Mode	Test	Test	Free	q. Error (	Hz)	Freq. vs. rated (ppm)			Limit	Verdict
restiviode	Volt.	Temp.	LCH	MCH	HCH	LCH	MCH	HCH	(ppm)	verdict
		-30.00	23.0198	22.0190	16.7241	0.0124	0.0117	0.0088	2.50	PASS
		-20.00	25.5381	21.9867	15.4326	0.0138	0.0117	0.0081	2.50	PASS
		-10.00	25.5704	23.6332	12.0749	0.0138	0.0126	0.0063	2.50	PASS
		0.00	26.5067	18.9518	16.2721	0.0143	0.0101	0.0085	2.50	PASS
EGPRS	NV	10.00	28.5084	21.5024	15.7232	0.0154	0.0114	0.0082	2.50	PASS
		20.00	29.3801	21.7930	16.0461	0.0159	0.0116	0.0084	2.50	PASS
		30.00	29.7676	22.2127	16.2075	0.0161	0.0118	0.0085	2.50	PASS
		40.00	26.5067	22.8907	17.1115	0.0143	0.0122	0.0090	2.50	PASS
		50.00	25.6027	18.4029	13.3663	0.0138	0.0098	0.0070	2.50	PASS
		-30.00	28.9927	25.4090	20.5015	0.0157	0.0135	0.0107	2.50	PASS
		-20.00	27.8950	24.9892	21.7284	0.0151	0.0133	0.0114	2.50	PASS
		-10.00	27.4107	24.3112	20.6307	0.0148	0.0129	0.0108	2.50	PASS
		0.00	27.6044	24.0852	19.4038	0.0149	0.0128	0.0102	2.50	PASS
GPRS	NV	10.00	27.1201	25.1184	19.6621	0.0147	0.0134	0.0103	2.50	PASS
		20.00	27.4430	23.1490	19.6621	0.0148	0.0123	0.0103	2.50	PASS
		30.00	27.1201	24.6341	18.8549	0.0147	0.0131	0.0099	2.50	PASS
		40.00	26.0224	25.3444	19.2101	0.0141	0.0135	0.0101	2.50	PASS
		50.00	25.7964	25.0538	18.7258	0.0139	0.0133	0.0098	2.50	PASS



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### 6.8 Modulation Characteristics

Test Requirement: §2.1047

Test Method: ANSI C63.26, KDB 971168 D01 v03

Limit: Digital modulation

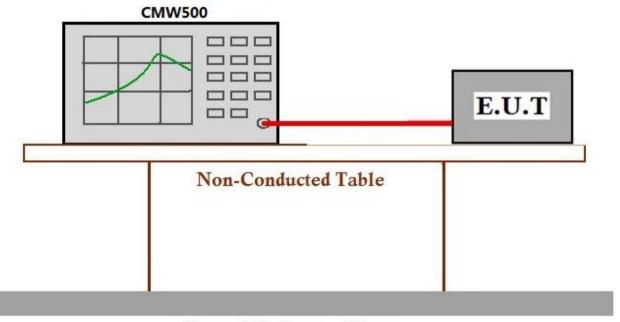
### 6.8.1 E.U.T. Operation

Operating Environment:

Temperature: 25.9 °C Humidity: 48.9 % RH Atmospheric Pressure: 1000 mbar

Test mode: 08:TX mode\_Keep the EUT in transmitting mode

### 6.8.2 Test Setup Diagram



### Ground Reference Plane

#### 6.8.3 Measurement Data

Pass, it's a digital modulation device.



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## 7 Test Setup Photo

Refer to Appendix - Setup Photos-WWAN for GZCR2108020815AT.

## 8 EUT Constructional Details (EUT Photos)

Refer to Appendix - External and Internal Photos for GZCR2108020815AT.

- End of the Report -



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