AWS Band GSM Left Side Pre-AGC



Date: 12.AUG.2022 16:44:03

AWS Band GSM Left Side Above AGC

Spectrum Ref Level	0.00 dBm 10 dB	Offset 1	0.50 dB 🖝	RBW 5 kHz	Mode Auto Sw	een	
SGL Count 1	00/100				Hous Hats St	oop	
1Rm AvgPwr	5	-		1	MILLI		ED DO dom
1.00					will il		2.10998050 GHz
-10 dBm			-	1			
701 dum 0	1 -19,000	dBm					
-20 ubiii							
-30 dBm							
-40 dBm			-	-			
-50 dBm							м
-60 dBm							
-70 dBm							,t
principal man	- sector frances	nhinest have been a	may here and application	n and some new man	alexandra and the second	ingthe maked an station	sourcherundenseught
-80 dBm				-		-	
-90 dBm	-						
Pt aut 9 107	CLIP			1001 m	+-	1	Stop 2 11 CHz
Marker	GHZ			1001 þ	ts .		atop 2.11 GH2
Type Ref	Trc	X-value	1	Y-value	Function	Functi	on Result
M1	1	2.10998	D5 GHz	-53.28 dBm		1	

Date: 12.AUG.2022 16:45:03

Spectru	m					
Ref Lev Att SGL Cour	el 0.00 dBm 10 dB (nt 100/100	Offset 10,50 de SWT 120 ms	8 👄 RBW 100 kHz 5 🕳 VBW 300 kHz	Mode Auto S	weep	
1Rm Avo	Pwr	-		100 A.S.		
				M1[1]	5	-48.33 dBn 2.10997750 GHa
-10 dBm-						
-20 d8m-	D1 -19.000)	dBm=				
-30 dBm—						
-40 dBm-						M
-50 dBm—						č
-60 dBm-						
-70 dBm—						
-80 dBm—						
-90 dBm—						
Start 2.1	07 GHz		1001 p	its		Stop 2.11 GHz
Marker Type F	ef Trc	X-value	Y-value	Function	Fun	ction Result
M1	1	2.1099775 GHz	-48,33 dBm			

AWS Band WCDMA Left Side Pre-AGC

Date: 12.AUG.2022 16:58:08

AWS Band WCDMA Left Side Above AGC

SGL Count 1	00/100	• 3W1	120 ms	YOW SUU KHZ	Mode Auto Sv	veep	
TINIT AVGEN			1		M1[1]		-48.82 dBm
-10 dBm	_		-		1	1 7	2.10997150 GH
-20 dBm-0	1 -19.000	dBm		-	_		
-30 dBm	-						
-40 dBm				+ +			10
-50 dBm							
-60 dBm	_			-		-	
-70 dBm				-		-	
-80 dBm							
-90 dBm	-					_	
Start 2 107	GH7			1001 n	ts		Stop 2.11 GHz

Date: 12.AUG.2022 16:58:46

Spectrum						E Starten Star	
Ref Level Att SGL Count 1	0.00 dBm 10 dB .00/100	Offset 10,50 dB SWT 120 ms	 RBW 30 kHz VBW 100 kHz 	Mode Auto SV	weep		
1Rm AvgPw	r	-		-			
				MI[1]			
-10 dBm							
-20 dBm0	1 -19.000	dBm		-	-		
-30 dBm			-				
-40 dBm					-		
150 dBm	monequestion						
-60 dBm	-	and a second	and the second s	and the second second			
-70 dBm							
-80 dBm							
-90 dBm							
Start 2.155	GHz		1001 p	ts		Stop 2.158 GHz	
Marker						and the second	
Type Ref M1	Trc 1	X-value 2.1550285 GHz	-54,12 dBm	Function	Fun	ction Result	

AWS Band CDMA Right Side Pre-AGC

Date: 12.AUG.2022 16:55:03

AWS Band CDMA Right Side Above AGC

SGL Count 1	00/100					14.24.28		_	
TRII AVYPW		1			MI	[1]	_	2.155	53.93 dBm
-10 dBm				-	1			2.100	
-20 dBm C	1 -19.000	dBm====			-				
-30 dBm									
-40 dBm									
150 dBm				1					
-60 dBm	Non-management	and have provided in	Marrie		and the second sec	manne	muni	and water and the state	-
-70 dBm									
-80 dBm	_								
-90 dBm								-	
Start 2.155	GHz			1001 p	ots	-	-	Stop	2.158 GHz

Date: 12.AUG.2022 16:55:40

AWS Band GSM Right Side Pre-AGC



Date: 12.AUG.2022 16:47:10

AWS Band GSM Right Side Above AGC



Date: 12.AUG.2022 16:48:59

Att Count 100/10	10 dB 10 dB	 SWT 	120 ms	VBW 300 kHz	Mode Auto S	Sweep				
1Rm AvgPwr								_		
1.1					M1[1]		-50.39 2.15500750	-50.39 dBm 2.15500750 GHz		
-10 dBm-										
-20 dBm D	19.000	dBm			-			_		
-30 dBm			_							
-40 dBm	_									
1 -50 dBm	-									
-60 dBm										
-70 dBm		-						-		
-80 dBm										
-90 dBm					_					
Start 2.155 (GHz	l	1	1001 p	its		Stop 2.158 (GHz		
Aarker Type Ref	Trc	X-valı	ie	Y-value	Function	Fu	nction Result			

AWS Band WCDMA Right Side Pre-AGC

Date: 12.AUG.2022 17:01:21

AWS Band WCDMA Right Side Above AGC

SGL Count 1	10 dB 00/100	swr	120 ms 🖷	VBW 300 KH	2 Mode Auto	Sweep	
1Rm AvgPw	r	[1	1	M1[1]		-49.30 dB
-10 dBm-							2.15502250 G
-20 dBm-C	1 -19.000	dBm	-				
-30 dBm							
-40 dBm							
11					_		
-50 dBm							
-60 dBm				-			
-70 dBm							
-80 dBm	_	-	-	-			-
-90 dBm							
Ptaut 0 1EE	CU-2		-	1001	nte		Stop 2 150 CH

Date: 12.AUG.2022 17:02:17

§ 20.21(e)(8)(i)(A), § 20.21(e)(8)(i)(H) &§20.21(e)(4) - NOISE LIMITS

Applicable Standards

According to § 20.21(e)(8)(i)(A) Noise Limits; § 20.21(e)(8)(i)(H) Transmit Power Off Mode (uplink and downlink noise power); §20.21(e)(4) Self-monitoring.

Test Procedure

Maximum transmitter noise power level

a) Connect the EUT to the test equipment as shown in **Figure 3**. Begin with the uplink output connected to the spectrum analyzer. When measuring downlink noise, connect the downlink output to the spectrum analyzer.

b) Set the spectrum analyzer RBW to 1 MHz with the VBW \ge 3 × RBW.

c) Select the power averaging (RMS) detector and trace average over at least 100 traces.

d) Set the center frequency of the spectrum analyzer to the center of the CMRS band under test with the span $\ge 2 \times$ the CMRS band.

e) Measure the maximum transmitter noise power level.

f) Save the spectrum analyzer plot as necessary for inclusion in the final test report.

g) Repeat 7.7b) to 7.7f) for all operational uplink and downlink bands.

h) Connect the EUT to the test equipment as shown in **Figure 4** for uplink. Affirm the coupled path of the RF coupler is connected to the spectrum analyzer.

i) Configure the signal generator for 4.1 MHz AWGN operation.

j) Set the spectrum analyzer RBW for 1 MHz with the VBW \ge 3 × RBW with a power averaging (rms) detector with at least 100 trace averages.

k) Set the center frequency of the spectrum analyzer to the center of the CMRS band under test with the span $\ge 2 \times$ the CMRS band. This shall include all spectrum blocks in the particular CMRS band under test (see Annex A).

l) For uplink noise measurements, set the spectrum analyzer center frequency for the uplink band under test and tune the signal generator to the center of the paired downlink band.

m) Measure the maximum transmitter noise power level when varying the downlink signal generator output level from -90 dBm to -20 dBm, as measured at the input port, in 1 dB steps inside the RSSI-dependent region and in 10 dB steps outside the RSSI-dependent region. Report the six values closest to the limit with at least two points within the RSSI-dependent region of the limit. See noise limit in Annex D. n) Repeat 7.7.1h) through 7.7.1m) for all operational uplink.

Variable uplink noise timing

Variable uplink noise timing is to be measured as follows.

a) Set the spectrum analyzer to the uplink frequency to be measured.

b) Set the span to 0 Hz with a sweep time of 10 seconds.

c) Set the power level of signal generator 1 to the lowest level of the RSSI-dependent noise.

d) Select MAX HOLD and increase the power level of signal generator 1 by 10 dB for mobile boosters and 20 dB for fixed boosters.

e) Confirm that the uplink noise decreases to the specified level within 1 second for mobile devices and 3 seconds for fixed devices

f) Repeat 7.7.2a) to 7.7.2e) for all operational uplink bands.

g) Include plots and summary table in test report.

Note: Some signal boosters will require a signal generator input because they will not operate unless a signal is received at the input terminals. If this is the case, connect a second signal generator and cycle the *RF* output to simulate this function.



Test Data

Environmental Conditions

Temperature:	24.8 °C
Relative Humidity:	58 %
ATM Pressure:	101.0 kPa

The testing was performed by Andy Yu from 2022-08-11 to 2022-08-25.

Test Result: Pass

Please refer to following table.

Mada	Orrenstier	Danda	Measured Value	Limit	Descrit
widde	Operation	Danus	dBm/MHz	dBm/MHz	Kesun
	Lower 70	0MHz	-46.35	-45.51	Pass
	Upper 70	0MHz	-46.16	-44.64	Pass
Uplink	Cellu	lar	-45.59	-44.05	Pass
	PCS		-38.09	-37.01	Pass
	AW	S	-38.79	-37.73	Pass
	Lower	Indoor 1	-48.82	45.51	Pass
	700MHz	Indoor 2	-48.65	-45.51	Pass
	Upper	Indoor 1	-48.71	14.64	Pass
	700MHz	Indoor 2	-48.78	-44.04	Pass
Doumlint	Callular	Indoor 1	-48.27	44.05	Pass
Downlink	Centular	Indoor 2	-48.12	-44.03	Pass
	DCC	Indoor 1	Indoor 1 -42.90		Pass
	PCS	Indoor 2	-42.71	-37.01	Pass
	AWC	Indoor 1	-41.10	27.72	Pass
	Awo	Indoor 2	-41.15	-37.73	Pass

Maximum Noise:

Note: Fixed booster maximum noise power shall not exceed -102.5 dBm/MHz + 20 Log10 (Frequency), where Frequency is the uplink mid-band frequency of the supported spectrum bands in MHz.

Variable Uplink Noise limit test result:

Our the Dead	RSSI	Measured Value	Limit	Develop
Operation Bands	dBm	dBm/MHz	dBm/MHz	Results
	-61	-46.89	-45.51	Compliance
	-60	-47.96	-45.51	Compliance
L	-59	-48.68	-45.51	Compliance
Lower /00MHz	-58	-49.61	-45.51	Compliance
	-57	-50.38	-46.00	Compliance
	-56	-51.67	-47.00	Compliance
	-61	-46.65	-44.64	Compliance
	-60	-47.50	-44.64	Compliance
	-59	-48.28	-44.64	Compliance
Opper 700MHz	-58	-48.96	-45.00	Compliance
	-57	-50.37	-46.00	Compliance
	-56	-51.62	-47.00	Compliance
	-60	-48.03	-44.05	Compliance
	-59	-48.88	-44.05	Compliance
Callular	-58	-49.03	-45.00	Compliance
Cenular	-57	-50.01	-46.00	Compliance
	-56	-50.90	-47.00	Compliance
	-55	-51.85	-48.00	Compliance
	-65	-41.05	-38.00	Compliance
	-64	-41.89	-39.00	Compliance
DCS	-63	-43.00	-40.00	Compliance
PCS	-62	-43.95	-41.00	Compliance
	-61	-45.07	-42.00	Compliance
	-60	-45.34	-43.00	Compliance
	-66	-40.08	-37.73	Compliance
	-65	-41.27	-38.00	Compliance
AWS	-64	-41.69	-39.00	Compliance
Aws	-63	-42.42	-40.00	Compliance
Γ	-62	-43.72	-41.00	Compliance
	-61	-45.36	-42.00	Compliance

Note: The Limit refers to KDB935210 D03 APPENDIX D Figure D1.



Uplink Cellular Band

Date: 18.AUG.2022 11:31:55

Uplink PCS Band



Date: 18.AUG.2022 11:35:46



Uplink AWS

Date: 25.AUG.2022 14:28:03

Uplink Lower 700MHz



Date: 18.AUG.2022 11:32:57

Shenzhen Accurate Technology Co., Ltd.



Uplink Upper 700MHz

Date: 18.AUG.2022 11:34:15

Indoor 1

Downlink Cellular Band



Date: 11.AUG.2022 10:14:12

Spectrum Offset 10.50 dB ■ RBW 1 MHz SWT 1 ms ■ VBW 3 MHz Ref Level -15.00 dBm SGL Count 100/100 Mode Sweep 1Rm AvgPwr M1[1] -42.90 dBn -20 dBm 1.983380 GHz -30 dBm-40 dBm M -50 dBm--60 dBm -70 dBm hangt -80 dBm -90 dBm -100 dBn -110 dBm CF 1.9625 GHz 691 pts Span 130.0 MHz

Downlink PCS Band

Date: 11.AUG.2022 10:15:42

Downlink AWS Band



Date: 11.AUG.2022 10:10:29

Downlink Lower 700MHz



Date: 11.AUG.2022 10:15:20

Downlink Upper 700MHz



Date: 11.AUG.2022 10:15:57

Indoor 2

Downlink Cellular Band



Date: 11.AUG.2022 10:19:37

Downlink PCS Band



Date: 11.AUG.2022 10:22:47

Spectrum Ref Level -15,00 o	IBm Offset 10.	50 dB 🖷 RBW 1 M	Hz Hz Mode Swaan	(The second seco
SGL Count 100/100	40 JH1	1 115 - 704 5 10	na Mode Sweep	
1Rm AvgPwr	1			14 A.M. 10
-20 dBm		2,121820 GH		
-30 dBm				
-40 dBm		Ma		
-50 dBm	von	N Contraction	mentermound	marken and and and the
product in the second s				and the second
-60 dBm				
70 dBm-				
-80 dBm				
-90 dBm				
-100 dBm				
-110 dBm				
CF 2.1325 GHz		691	pts	Span 90.0 MHz

Downlink AWS Band

Date: 11.AUG.2022 10:18:51

Downlink Lower 700MHz



Date: 11.AUG.2022 10:20:21

Downlink Upper 700MHz

Spectrum		011							
Att	-15.00 dBm 5 dB	SWT	10.50 dB 🖬	VBW 3 MH	z Mode	Sweep			
1Rm AvgPw	AL.					0.04			
-20 dBm					M	1[1]	r -	74	-48.78 dBn 7.0750 MH;
-30 dBm		-	-					-	
-40 dBm			_					_	
-50 dBm	moundate	M	1	monenter				-	
-60 dBm	-				manue	V	mannen	and the second	
-70 dBm	_							M	Manna
-80 dBm									
-90 dBm				_				_	
-100 dBm									
-110 dBm									
CF 751.5 M	Hz			691	pts	1		Span	22.0 MHz

Date: 11.AUG.2022 10:21:37

Variable Uplink Noise Timing:

Operation Bands	Measured Value	Limit	Posult
Operation Danus	S	S	Kesun
Lower 700MHz	0.029	3	Compliance
Upper 700MHz	0.029	3	Compliance
cellular	0.015	3	Compliance
PCS	0.015	3	Compliance
AWS	0.029	3	Compliance

Note: The uplink noise decreases to the specified level within 1 second for mobile devices and 3 seconds for fixed devices.



Cellular Band





Date: 18.AUG.2022 13:36:35

AWS Band



Date: 18.AUG.2022 13:25:29

Shenzhen Accurate Technology Co., Ltd.

Spectrum Ref Level -10.00 dBm Offset 16.00 dB 👄 RBW 1 MHz Att 0 dB 👄 SWT 10 s 👄 **VBW** 3 MHz SGL ⊖1Rm Max -26.49 dE 29.0 ms D1[1] M1[1] 47.66 dBn -20 dBm-3.5507 -30 dBm -40 dBm M1 -50 dBm--60 dBm -70 dBm -80 dBm -90 dBm -100 dBm CF 707.0 MHz 691 pts 1.0 s/

Lower 700MHz

Date: 17.AUG.2022 10:40:32

Upper 700MHz



Date: 18.AUG.2022 13:34:58

§ 20.21(e)(8)(i)(I) &§20.21(e)(4) - UPLINK INACTIVITY

Applicable Standards

According to § 20.21(e)(8)(i)(I) Uplink Inactivity&§20.21(e)(4); §20.21(e)(4) Self-monitoring.

Test Procedure

This measurement procedure is intended to demonstrate compliance to the uplink inactivity requirements specified for wideband consumer signal boosters in § 20.21(e)(8)(i)(I).

a) Connect the EUT to the test equipment as shown in **Figure 3** with the uplink output connected to the spectrum analyzer.

b) Select the RMS power averaging detector.

c) Set the spectrum analyzer RBW for 1 MHz with the VBW \ge 3 × RBW.

d) Set the center frequency of the spectrum analyzer to the center of the uplink operational band.

e) Set the span for 0 Hz with a single sweep time for a minimum of 330 seconds.

f) Start to capture a new trace using MAX HOLD.

g) After approximately 15 seconds turn on the EUT power.

h) Once the full spectrum analyzer trace is complete place a MARKER on the leading edge of the pulse and use the DELTA MARKER METHOD to measure the time until the uplink becomes inactive.i) Affirm that the noise level for the squelched signal is below the uplink inactivity noise power limit, as

specified by the rules.

j) Capture the plot for inclusion in the test report.

k) Measure noise using procedures in 7.7.1a) to 7.7.1f).

1) Repeat 7.8d) through 7.8k) for all operational uplink bands.

Note: Some signal boosters will require a signal generator input because they will not operate unless a signal is received at the input terminals. If this is the case, connect a signal generator and cycle the RF output to simulate this function.



Test Data

Environmental Conditions

Temperature:	25.1 °C
Relative Humidity:	58 %
ATM Pressure:	101.0 kPa

The testing was performed by Andy Yu from 2022-08-10 to 2022-08-11.

Test Result: Pass

Worst case: Configuration 1:

Please refer to following table.

Operation Band	Measured value	Limit	Result
	S	S	
Lower 700 MHz	296.010		Compliance
Upper 700 MHz	295.680		Compliance
cellular	296.010	300	Compliance
PCS	PCS 295.350 AWS 296.043		Compliance
AWS			Compliance

Note: When the consumer booster is not serving an active device connection after 5 minutes the uplink noise power not exceed -70 dBm/MHz.



Version 75: 2021-11-09





Date: 10.AUG.2022 10:37:57

AWS Band



Date: 11.AUG.2022 16:54:50



Lower 700MHz

Date: 10.AUG.2022 09:56:58

Upper 700MHz



Date: 10.AUG.2022 10:17:36

§ 20.21(e)(8)(i)(C)(1) & § 20.21(e)(8)(i)(H) - VARIABLE BOOSTER GAIN

Applicable Standards

Rule paragraph(s): § 20.21(e)(8)(i)(C)(1) *Booster Gain Limits* (variable gain); § 20.21(e)(8)(i)(H) *Transmit Power Off Mode* (uplink gain).

Test Procedure

Maximum gain

This procedure shall be used to demonstrate compliance to the booster gain limits specified for wideband consumer signal boosters in § 20.21(e)(8)(i)(C) or § 20.21(e)(8)(i)(H). The variable booster gain limits are expressed as a function of RSSI and MSCL. The RSSI is varied over a range of values as specified within the procedure. Refer to Annex B of this document for guidance on determining the applicable MSCL value.

a) Connect the EUT to the test equipment as shown in Figure 5 with the uplink output connected to signal generator 1. Confirm that the coupled path of the RF coupler is connected to the spectrum analyzer.
b) Configure downlink signal generator 1 for AWGN operation with a 99% occupied bandwidth of 4.1 MHz tuned to the center of the operational band.

c) Set the power level and frequency of signal generator 2 to a value 5 dB below the AGC level determined from 7.2. The signal type is AWGN with a 99% OBW of 4.1 MHz.

d) Set RBW = 100 kHz.

e) Set VBW \geq 300 kHz.

f) Select the CHANNEL POWER measurement mode.

g) Select the RMS (power averaging) detector.

h) Ensure that the number of measurement points per sweep $\geq (2 \times \text{span})/\text{RBW}$.

i) Sweep time = auto couple or as necessary (but no less than auto couple value).

j) Trace average at least 10 traces in power averaging (i.e., RMS) mode.

k) Measure the maximum channel power and compute maximum gain when varying the signal generator 1 output to a level from -90 dBm to -20 dBm as measured at the input port in 1 dB steps inside the RSSI-dependent region and 10 dB steps outside the RSSI-dependent region and report the six values closest to the limit, including at least two points from within the RSSI-dependent region of operation. See gain limit in charts in Annex D for uplink gain requirements. Additionally, document that the EUT provides equivalent uplink and downlink gain, and when operating in shutoff mode the uplink and downlink gain is within the transmit power off mode gain limits.

1) Repeat 7.9.1b) to 7.9.1k) for all operational uplink bands.

Variable uplink gain timing

Variable uplink gain timing is to be measured as follows.

a) Set the spectrum analyzer to the uplink frequency to be measured.

b) Set the span to 0 Hz with a sweep time of 10 seconds.

c) Set the power level of signal generator 1 to the lowest level of the RSSI-dependent gain.

d) Select MAX HOLD and increase the power level of signal generator 1 by 10 dB for mobile boosters and 20 dB for fixed indoor boosters. Signal generator 2 remains same, as described in 7.9.1c).

e) Confirm that the uplink gain decreases to the specified levels within 1 second for mobile devices and 3 seconds for fixed devices.

f) Repeat 7.9.2a) to 7.9.2e) for all operational uplink bands.



Figure 5 – Variable gain instrumentation test setup

Test Data

Environmental Conditions

Temperature:	24.6 °C
Relative Humidity:	60 %
ATM Pressure:	101.0 kPa

The testing was performed by Andy Yu on 2022-08-25.

Test Result: Pass

Worst case: Configuration 1.

Please refer to following table.

MSCL calculation:

Operation Bands	Frequency	Distance	Path Loss	Indoor Antenna Gain	Indoor Cable Loss	Polarity Loss	MSCL
	MHz	m	dB	(dBi)	(dB)	(dB)	
Lower 700MHz	707.0	1	29.49	6.5	4.97	3.01	30.97
Upper700MHz	781.5	1	30.36	6.5	4.97	3.01	31.84
Cellur	836.5	1	30.95	6.5	5.17	3.01	32.63
PCS	1882.5	1	37.99	8.5	7.51	3.01	40.01
AWS	1732.5	1	37.27	8.5	7.51	3.01	39.29

Note:

Path loss=20logf+20logd-27.50

Polarity loss=20log(1/sin(45))=3.01

MSCL= Path loss + Indoor Cable Loss - Mobile Antenna Gain- Indoor Antenna Gain+ Polarity Loss Mobile Antenna Gain=0

The lowest MSCL was calculated and used according to the manufacturer's specification

Variable booster gain:

Operation	RSSI	P _{in}	Pout	MSCL	Measured Value	Limit	
Bands	dBm	dBm	dBm	dB	dB	dB	Result
	-60	-47.04	3.28	30.97	50.32	56.97	Compliance
	-59	-47.04	2.30	30.97	49.34	55.97	Compliance
Lower	-58	-47.04	1.09	30.97	48.13	54.97	Compliance
700MHz	-57	-47.04	0.05	30.97	47.09	53.97	Compliance
	-56	-47.04	-1.45	30.97	45.59	52.97	Compliance
	-55	-47.04	-2.89	30.97	44.15	51.97	Compliance
	-60	-48.06	0.30	31.84	48.36	57.84	Compliance
	-59	-48.06	-0.11	31.84	47.95	56.84	Compliance
Upper	-58	-48.06	-1.65	31.84	46.41	55.84	Compliance
700MHz	-57	-48.06	-3.15	31.84	44.91	54.84	Compliance
	-56	-48.06	-4.44	31.84	43.62	53.84	Compliance
	-55	-48.06	-5.54	31.84	42.52	52.84	Compliance
	-60	-47.03	2.08	32.63	49.11	58.63	Compliance
	-59	-47.03	1.49	32.63	48.52	57.63	Compliance
Callur	-58	-47.03	0.62	32.63	47.65	56.63	Compliance
Cellul	-57	-47.03	-0.45	32.63	46.58	55.63	Compliance
	-56	-47.03	-1.10	32.63	45.93	54.63	Compliance
	-55	-47.03	-2.20	32.63	44.83	53.63	Compliance
	-64	-55.09	7.23	40.01	62.32	70.01	Compliance
	-63	-55.09	6.64	40.01	61.73	69.01	Compliance
PCS	-62	-55.09	5.16	40.01	60.25	68.01	Compliance
rcs	-61	-55.09	4.15	40.01	59.24	67.01	Compliance
	-60	-55.09	3.36	40.01	58.45	66.01	Compliance
	-59	-55.09	2.71	40.01	57.80	65.01	Compliance
	-66	-54.45	6.65	39.29	61.10	71.29	Compliance
	-65	-54.45	4.79	39.29	59.24	70.29	Compliance
AWS	-64	-54.45	4.15	39.29	58.60	69.29	Compliance
AWS	-63	-54.45	2.98	39.29	57.43	68.29	Compliance
	-62	-54.45	2.22	39.29	56.67	67.29	Compliance
	-61	-54.45	0.43	39.29	54.88	66.29	Compliance

Note: Variable booster gain Limit: -34 dB-RSSI + MSCL.

Variable gain timing:

Operation Bands	Measured value	Limit	Descrite
MHz	S	S	Results
Lower 700MHz	0.029		Compliance
Upper 700MHz	0.029		Compliance
Cellular	0.029	3	Compliance
PCS	0.029		Compliance
AWS	0.015		Compliance

Version 75: 2021-11-09

Spectrum Offset 11,00 dB = RBW 100 kHz SWT 10 s = VBW 300 kHz Ref Level 11.00 dBm Att 10 dB 🛥 SWT SGL 1Rm Max D1[1] 40.42 de 29.0 ms 0 dBm [1]1M -38.33 dBr 4,7391 -10 dBm--20 dBm--30 dBm-Mi -40 dBm--50 dBm--60 dBm--70 dBm 01 -80 dBm CF 832.52 MHz 1.0 s/ 691 pts Marker Type Ref Trc M1 1 D1 M1 1 X-value 4.7391 s 29.0 ms Y-value -38.33 dBm -40.42 dB Function Function Result

Cellular Band

Date: 25.AUG.2022 17:50:13

PCS Band

Spect	rum						
Ref L Att SGL	evel	11.00 dBr 10 d	n Offset 11,00 dB B 🖷 SWT 10 s	 RBW 100 kHz VBW 300 kHz 			
●1Rm N	lax		1	-			
0 dBm-	+				M1[1]		-37.22 dBm 4.5072 s -42.05 dB 29.0 ms
-10 dBn	n			-			
-20 dBn	n	_					
-30 dBn	n			MI			
-40 dBm	n					1	
-50 dBn	n	-					
-60 dBn	n						
-70 dBn	n						
-80 dBn	n	-		<u>q1</u>	<u></u>		
CF 1.8	7417	GHz		691 pt:	5		1.0 s/
Marker		(- 20.000	
M1	Ref	1 1	X-value 4.5072 s	-37.22 dBm	Function	Function	Result
D1	M1	1	29.0 ms	-42.05 dB	I =		

Date: 25.AUG.2022 17:52:47

Spect	rum						
Ref Lo Att SGL	evel	11.00 dBn 10 df	n Offset 11,00 dB 3 • SWT 10 s	 RBW 100 kHz VBW 300 kHz 			
●1Rm M	lax						
0 dBm—	_				M1[1]		-36,74 dBn 3,7101 s -42,43 dE 14,5 ms
-10 dBm	n			-			
-20 dBm	n						
-30 dBm	n	-	MI				
-40 dBm	n	_					
-50 dBm	n	_		-			
-60 dBm	n						
-70 dBm	n	_					
-80 dBm	n	-	DI				
CF 1.7	2364	GHz		691 pts	7		1.0 s/
Type	Ref	Trc	X-value	Y-value	Eunction	Eupetic	n Result
M1 D1	M1	1 1	3.7101 s 14.5 ms	-36.74 dBm -42.43 dB	- anosion	T uncere	

AWS Band

Date: 25.AUG.2022 17:46:36

Lower 700MHz

Spectrum The sector of the secto						
1Rm Max		1		DILL		-41 74 /10
0 dBm			_			29.0 ms -37.64 dBm 4,7101 s
-10 dBm			-			
-20 dBm						
-30 dBm			ML	-		
-40 dBm-	_		T T			
-50 dBm	-			_	_	
-60 dBm			-			
-70 dBm				_		_
-80 dBm			C1			
CF 706.58	3 MHz		691 pts			1.0 s/
Type Ref	Trc 1	X-value 4.7101 s	Y-value -37.64 dBm	Function	Function	Result
D1 M	1 1	29.0 ms	-41.74 dB			

Date: 25.AUG.2022 17:54:20

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Upper 700MHz	
--------------	--

Spect	rum						E □
Ref Lo Att SGL	evel	11.00 dBn 10 df	n Offset 11,00 d 3 🖝 SWT 10	dB 🖮 RBW 100 kH: s 🖷 VBW 300 kH:	2		
∎1Rm M	1ax						
0 dBm—	_				M1[1]	-37.55 d 4.826 -41.36 29.0	IBm 51 s 5 dB ms
-10 dBm	n						
-20 dBm	n	_					
-30 dBm	n	_		141		_	-
-40 dBm	n	_		T.			-
-50 dBm	n	_					
-60 dBm	n	_					_
-70 dBm	n	_					-
-80 dBm	n	-		01			
CF 778	1.5 MF	Iz		691 pt	s	1.0	s/
Marker	Pof	Trol	V-ualuo	V-ualuo	Eunction	Eunction Posult	1
M1 D1	M1	1 1	4.8261 s 29.0 ms	-37.55 dBm -41.36 dB	runction	r unction Result	-

Date: 25.AUG.2022 17:56:01

§ 2.1049 - OCCUPIED BANDWIDTH

Applicable Standards

According to§ 2.1049 Measurements required: Occupied bandwidth.

Test Procedure

This measurement is required to compare the uniformity of the output signal relative to the input signal and to satisfy the requirements of § 2.1049.

a) Connect the test equipment as shown in **Figure 6** to measure the characteristics of the test signals produced by the signal generator.

b) Set VBW to $\geq 3 \times RBW$.

c) Set the center frequency of the spectrum analyzer to the center of the operational band. The span will be adjusted for each modulation type and occupied bandwidth as necessary for accurately viewing the signals.d) Set the signal generator for power level to match the values obtained in 7.2.

e) Set the signal generator modulation type for GSM with a PRBS pattern and allow the trace on the signal generator to stabilize adjusting the span as necessary.

f) Set the spectrum analyzer RBW for 1% to 5% of the emissions bandwidth.

g) Capture the spectrum analyzer trace for inclusion in the test report.

h) Repeat 7.10c) to 7.10g) for CDMA and W-CDMA modulation adjusting the span as necessary for all uplink and downlink operational bands. AWGN or LTE may be used in place of W-CDMA, as an option. i) Connect the test equipment as shown in **Figure 1**. Begin with the uplink output connected to the spectrum analyzer.

j) Repeat 7.10c) to 7.10h) in this new configuration.



Figure 6 – Occupied bandwidth instrumentation test setup





Version 75: 2021-11-09

Test Data

Environmental Conditions

Temperature:	25.2 °C	
Relative Humidity:	57 %	
ATM Pressure:	101.0 kPa	

The testing was performed by Andy Yu on 2022-08-09.

Test Result: Pass

Worst case: Configuration 1.

Please refer to following table.

Mode	Operation Bands	Signal type	Occupied bandwidth(MHz)		Desult
			In	Out	Kesun
Uplink	Lower 700MHz	GSM	0.245	0.245	Compliance
		CDMA	1.207	1.276	Compliance
		WCDMA	4.197	4.139	Compliance
	Upper 700MHz	GSM	0.245	0.249	Compliance
		CDMA	1.207	1.203	Compliance
		WCDMA	4.197	4.197	Compliance
	cellular	GSM	0.245	0.243	Compliance
		CDMA	1.207	1.276	Compliance
		WCDMA	4.197	4.168	Compliance
	PCS	GSM	0.245	0.243	Compliance
		CDMA	1.198	1.203	Compliance
		WCDMA	4.197	4.182	Compliance
	AWS	GSM	0.260	0.245	Compliance
		CDMA	1.224	1.216	Compliance
		WCDMA	4.197	4.313	Compliance
Downlink	Lower 700MHz	GSM	0.245	0.245	Compliance
		CDMA	1.207	1.203	Compliance
		WCDMA	4.197	4.139	Compliance
	Upper 700MHz	GSM	0.246	0.245	Compliance
		CDMA	1.207	1.203	Compliance
		WCDMA	4.197	4.168	Compliance
	cellular	GSM	0.246	0.245	Compliance
		CDMA	1.207	1.272	Compliance
		WCDMA	4.197	4.211	Compliance
	PCS	GSM	0.245	0.245	Compliance
		CDMA	1.203	1.203	Compliance
		WCDMA	4.197	4.182	Compliance
	AWS	GSM	0.247	0.246	Compliance
		CDMA	1.207	1.276	Compliance
		WCDMA	4.211	4.168	Compliance





Date: 9.AUG.2022 11:25:42



Uplink, 836.5MHz-CDMA (Output)

Date: 9.AUG.2022 10:02:20





Date: 9.AUG.2022 11:28:12



Uplink, 836.5MHz-GSM (Output)

Date: 9.AUG.2022 09:58:41



Uplink, 836.5MHz-WCDMA (Input)

Date: 9.AUG.2022 11:23:57



Uplink, 836.5MHz-WCDMA (Output)

Date: 9.AUG.2022 09:55:00



Uplink, 1882.5MHz-CDMA (Input)

Date: 9.AUG.2022 11:54:11



Uplink, 1882.5MHz-CDMA (Output)

Date: 9.AUG.2022 10:21:19


Uplink, 1882.5MHz-GSM (Input)

Date: 9.AUG.2022 11:52:46



Uplink, 1882.5MHz-GSM (Output)

Date: 9.AUG.2022 10:25:21



Uplink, 1882.5MHz-WCDMA (Input)

Date: 9.AUG.2022 11:55:35



Uplink, 1882.5MHz-WCDMA (Output)

Date: 9.AUG.2022 10:26:52

Uplink, 1732.5MHz-CDMA (Input)



Date: 9.AUG.2022 11:18:16



Uplink, 1732.5MHz-CDMA (Output)

Date: 9.AUG.2022 09:25:09



Uplink, 1732.5MHz-GSM (Input)

Date: 9.AUG.2022 11:15:44



Uplink, 1732.5MHz-GSM (Output)

Date: 9.AUG.2022 09:22:06



Uplink, 1732.5MHz-WCDMA (Input)

Date: 9.AUG.2022 11:37:25



Uplink, 1732.5MHz-WCDMA (Output)

Date: 9.AUG.2022 09:51:19



Uplink, 707MHz-CDMA (Input)

Date: 9.AUG.2022 11:32:18



Uplink, 707MHz-CDMA (Output)

Date: 9.AUG.2022 10:05:01

Uplink, 707MHz-GSM (Input)



Date: 9.AUG.2022 11:30:27



Uplink, 707MHz-GSM (Output)

Date: 9.AUG.2022 10:07:46



Uplink, 707MHz-WCDMA (Input)

Date: 9.AUG.2022 11:34:15



Uplink, 707MHz-WCDMA (Output)

Date: 9.AUG.2022 10:11:20



Uplink, 781.5MHz-CDMA (Input)

Date: 9.AUG.2022 11:40:28



Uplink, 781.5MHz-CDMA (Output)

Date: 9.AUG.2022 10:19:01





Date: 9.AUG.2022 11:49:46



Uplink, 781.5MHz-GSM (Output)

Date: 9.AUG.2022 10:16:25



Uplink, 781.5MHz-WCDMA (Input)

Date: 9.AUG.2022 11:39:13



Uplink, 781.5MHz-WCDMA (Output)

Date: 9.AUG.2022 10:14:06



Downlink, 881.5MHz-CDMA (Input)

Date: 9.AUG.2022 13:15:25



Downlink, 881.5MHz-CDMA (Output)

Date: 9.AUG.2022 14:13:54





Date: 9.AUG.2022 13:16:59



Downlink, 881.5MHz-GSM (Output)

Date: 9.AUG.2022 14:16:02



Downlink, 881.5MHz-WCDMA (Input)

Date: 9.AUG.2022 13:13:43



Downlink, 881.5MHz-WCDMA (Output)

Date: 9.AUG.2022 14:19:03



Downlink, 1962.5MHz-CDMA (Input)

Date: 9.AUG.2022 13:29:00



Downlink, 1962.5MHz-CDMA (Output)

Date: 9.AUG.2022 14:46:50



Downlink, 1962.5MHz-GSM (Input)

Date: 9.AUG.2022 13:26:05



Downlink, 1962.5MHz-GSM (Output)

Date: 9.AUG.2022 14:48:23



Downlink, 1962.5MHz-WCDMA (Input)

Date: 9.AUG.2022 13:32:53



Downlink, 1962.5MHz-WCDMA (Output)

Date: 9.AUG.2022 14:44:55



Downlink, 2132.5MHz-CDMA (Input)

Date: 9.AUG.2022 13:10:59



Downlink, 2132.5MHz-CDMA (Output)

Date: 9.AUG.2022 14:10:32



Downlink, 2132.5MHz-GSM (Input)

Date: 9.AUG.2022 13:08:45



Downlink, 2132.5MHz-GSM (Output)

Date: 9.AUG.2022 13:59:46



Downlink, 2132.5MHz-WCDMA (Input)

Date: 9.AUG.2022 13:12:36



Downlink, 2132.5MHz-WCDMA (Output)

Date: 9.AUG.2022 13:58:28



Downlink, 737MHz-CDMA (Input)

Date: 9.AUG.2022 13:19:57



Downlink, 737MHz-CDMA (Output)

Date: 9.AUG.2022 14:24:47



Downlink, 737MHz-GSM (Input)

Date: 9.AUG.2022 13:18:17



Downlink, 737MHz-GSM (Output)

Date: 9.AUG.2022 14:26:43



Downlink, 737MHz-WCDMA (Input)

Date: 9.AUG.2022 13:21:06



Downlink, 737MHz-WCDMA (Output)

Date: 9.AUG.2022 14:22:27



Downlink, 751.5MHz-CDMA (Input)

Date: 9.AUG.2022 13:24:04



Downlink, 751.5MHz-CDMA (Output)

Date: 9.AUG.2022 14:37:22





Date: 9.AUG.2022 13:25:08



Downlink, 751.5MHz-GSM (Output)

Date: 9.AUG.2022 14:35:17



Downlink, 751.5MHz-WCDMA (Input)

Date: 9.AUG.2022 13:23:05



Downlink, 751.5MHz-WCDMA (Output)

Date: 9.AUG.2022 14:38:26

§ 20.21(e)(8)(ii)(A) &§20.21(e)(4) - OSCILLATION DETECTION

Applicable Standards

Rule paragraph(s): § 20.21(e)(8)(ii)(A) Anti-Oscillation, §20.21(e)(4) Self-monitoring

For this measurement two EUTs will be permitted, one operating in a normal mode and the second operating in a test mode that is capable of disabling the uplink inactivity squelching and or a reduction of the time between restarts to 5 seconds. This will greatly decrease the test time required.

NOTE — Consumer boosters certified as direct connection mobile boosters having gain of less than or equal to 15 dB are exempt from compliance to testing procedures in 7.11.3 and 7.11.4.

Test Procedure

According to KDB 935210 D03 Signal Booster Measurements v04, §7.11.2 Oscillation restart tests and §7.11.3 Test procedure for measuring oscillation mitigation or shutdown



Figure 7 - Oscillation detection instrumentation test setup

Test Data

Environmental Conditions

Temperature:	24.6 °C
Relative Humidity:	60 %
ATM Pressure:	101.0 kPa

The testing was performed by Andy Yu on 2022-08-16.

Test Result: Pass

Please refer to following table.

Version 75: 2021-11-09

Mode	Operation Bands	Detection (s)	Time	Power level	Between r (estart time s)	Number o	of restart	Result
	Danus	Reading	Limit	dBm	Reading	Limit	Reading	Limit	
	Lower 700	0.196		16.65	61.74		3		Compliance
	Upper 700	0.085		15.39	62.17		3		Compliance
Uplink	Cellular	0.130	0.3	13.13	62.17		2		Compliance
	PCS	0.051		16.52	62.17	60	3	5	Compliance
	AWS	0.080		14.72	61.74		3		Compliance
	Lower 700	0.138		11.77	62.17	00	4	3	Compliance
	Upper 700	0.181		12.07	61.74		3		Compliance
Downlink	Cellular	0.145	1	10.33	62.17		3		Compliance
	PCS	0.101		8.55	62.17		3		Compliance
	AWS	0.058		4.54	61.74		3		Compliance

Oscillation Restart Time:

Oscillation Mitigation or Shutdown:

Mada	Operation	Max gain	Isolation	Difference	Limit	Decult
widde	Band	dB	dB	dB	dB	Kesuit
			+5	-8.46	12.00	Compliance
			+4	-9.54	12.00	Compliance
			+3	-10.93	12.00	Compliance
			+2	-11.36	12.00	Compliance
	T		+1	-12.53	12.00	Compliance
		62.90	+0	/	12.00	Compliance
	/00MITZ		-1	/	12.00	Compliance
			-2	/	12.00	Compliance
			-3	/	12.00	Compliance
			-4	/	12.00	Compliance
			-5	/	12.00	Compliance
			+5	-8.00	12.00	Compliance
			+4	-9.10	12.00	Compliance
			+3	-10.56	12.00	Compliance
			+2	-12.21	12.00	Compliance
	TI		+1	/	12.00	Compliance
	Upper 700MU	63.95	+0	/	12.00	Compliance
	/00MHZ		-1	/	12.00	Compliance
			-2	/	12.00	Compliance
			-3	/	12.00	Compliance
			-4	/	12.00	Compliance
T In 15 of 1			-5	/	12.00	Compliance
Oplink			+5	-6.90	12.00	Compliance
			+4	-7.65	12.00	Compliance
			+3	-9.44	12.00	Compliance
			+2	-11.26	12.00	Compliance
			+1	-12.37	12.00	Compliance
	Cellular	62.00	+0	/	12.00	Compliance
			-1	/	12.00	Compliance
			-2	/	12.00	Compliance
			-3	/	12.00	Compliance
			-4	/	12.00	Compliance
			-5	/	12.00	Compliance
			+5	-12.26	12.00	Compliance
			+4	/	12.00	Compliance
			+3	/	12.00	Compliance
			+2	/	12.00	Compliance
			+1	/	12.00	Compliance
	PCS	71.15	+0	/	12.00	Compliance
			-1	/	12.00	Compliance
			-2	/	12.00	Compliance
			-3	/	12.00	Compliance
			-4	/	12.00	Compliance
			-5	/	12.00	Compliance

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Report No.: SZNS220622-27964E-RF-00

	Operation	Max gain	Isolation	Difference	Limit	
Mode	Band	dB	dB	dB	dB	Result
			+5	-7.11	12.00	Compliance
		+4	-8.30	12.00	Compliance	
			+3	-9.94	12.00	Compliance
			+2	-10.97	12.00	Compliance
			+1	-12.02	12.00	Compliance
Uplink	AWS	70.14	+0	/	12.00	Compliance
-			-1	/	12.00	Compliance
			-2	/	12.00	Compliance
			-3	/	12.00	Compliance
			-4	/	12.00	Compliance
			-5	/	12.00	Compliance
			+5	-15.32	12.00	Compliance
			+4	/	12.00	Compliance
			+3	/	12.00	Compliance
			+2	/	12.00	Compliance
	-		+1	/	12.00	Compliance
	Lower	62.70	+0	/	12.00	Compliance
	700MHz	0200	-1	/	12.00	Compliance
			-2	/	12.00	Compliance
			-3	/	12.00	Compliance
			-4	/	12.00	Compliance
			-5	/	12.00	Compliance
			+5	-8.63	12.00	Compliance
			+4	-10.52	12.00	Compliance
			+3	-13.26	12.00	Compliance
			+2	/	12.00	Compliance
	Upper 700MHz		+1	/	12.00	Compliance
Downlink		64.33	+0	/	12.00	Compliance
			-1	/	12.00	Compliance
			-2	/	12.00	Compliance
			-3	/	12.00	Compliance
			-4	/	12.00	Compliance
			-5	/	12.00	Compliance
			+5	-8.12	12.00	Compliance
			+4	-9.47	12.00	Compliance
			+3	-11.45	12.00	Compliance
			+2	-12.82	12.00	Compliance
			+1	/	12.00	Compliance
	Cellular	64.07	+0	/	12.00	Compliance
	Containing (01107	-1	/	12.00	Compliance
			-2	/	12.00	Compliance
			-2	/	12.00	Compliance
			-4	/	12.00	Compliance
				/	12.00	Compliance
	1	1	= J	/	12.00	Compliance

Shenzhen Accurate Technology Co., Ltd.

Mada	Operation	Max gain	Isolation	Difference	Limit	Descrit
Mode	Band	dB	dB	dB	dB	Result
			+5	-10.36	12.00	Compliance
			+4	-12.56	12.00	Compliance
			+3	/	12.00	Compliance
			+2	/	12.00	Compliance
			+1	/	12.00	Compliance
	PCS	69.32	+0	/	12.00	Compliance
			-1	/	12.00	Compliance
			-2	/	12.00	Compliance
			-3	/	12.00	Compliance
			-4	/	12.00	Compliance
Downlink			-5	/	12.00	Compliance
Downlink			+5	-7.57	12.00	Compliance
			+4	-8.11	12.00	Compliance
			+3	-9.35	12.00	Compliance
			+2	-10.22	12.00	Compliance
			+1	-11.34	12.00	Compliance
	AWS	71.17	+0	-12.25	12.00	Compliance
			-1	/	12.00	Compliance
			-2	/	12.00	Compliance
			-3	/	12.00	Compliance
			-4	/	12.00	Compliance
			-5	/	12.00	Compliance

Note: The mesured difference exceeds the limit for a period of less than 300 seconds before device mitigrate and shut down. The maximum recorded time prior to mitigate or shutdown was 96s

Oscillation Restart tests:

Uplink

Cellular Band

Spect	rum					Ē
Ref L Att	evel	20.00 d 10	Bm Offset 20.00 dB dB ∎ SWT 5 s	 RBW 1 MHz VBW 3 MHz 		(\
●1Pk M	lax			-	100 M	
10 dBm	Ma	1			M2[1]	13,13 dBr -7.25 m -46.34 dBr -21.74 m
0 dBm-						
-10 dBn	n	_		-		
-20 dBn	n					
-30 dBn	n T	RG -30.	000 dBm			
-40 dBn 	n ML Julia L	and the second	we add the standard and a star	ter and the second s	n manager and a	مىدە مەرەكەنىغانىلىر بالىرىيە بەرەمەرىغان قىرىغانىيە بىلەرىمەر
-60 dBn	n					
-70 dBn	n					
CF 833	3.171	MHz		691 pts		500.0 ms/
Marker	-					
Туре	Ref	Trc	X-value	Y-value	Function	Function Result
M1	641	1	-21.74 ms	-40.34 dBm		
M2	INI1	1	-7 25 ms	-3.24 GB		
1912		1	-1,20 115	19,19 0000		

Date: 16.AUG.2022 13:27:42



Date: 16.AUG.2022 13:40:59

PCS	Band
-----	------

Spect	rum									
Ref Le Att TRG: VI	ovel :	20.00 di 10	3m Offset 2 dB 📷 SWT	0.00 dB 5 s	 RBW 1 MHz VBW 3 MHz 	1				
1Pk Ma	эх						-			
10 dBm-	1	M2				M2 M3	(1) (1)			16.52 dBm -7.25 ms -41.95 dBm -14.49 ms
0 dBm-					-				1	1
-10 dBm	-			_	-		_	_	-	-
-20 dBm	T	RG -17.0	d8m	_			_			
-30 dBm	-		-							-
. AQ dam	Ma			_			-	-	-	
-50 dBm		Janu- a-ha	har waranta marana	مى الىرىكى الم		and the second second	le-l-,-dunnage	141		
-60 dBm	+	_	-	_			_		-	-
-70 dBm	+			-			_		-	
CF 1.86	5425	GHz		-	691 pt	s				500.0 ms/
Marker										
Type	Ref	Trc	X-value	0.mc	Y-value	Funct	ion	Fu	inction Resi	ult
D1	M1	1	-14.4	2 ms	-41.95 UBM -8.42 dB					-
M2	-	1	-7.2	5 ms	16,52 dBm					

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1Pk Max					
10 dBm	02		D2[1] M1[1]		15.65 dE 62.174 s -1.89 dBm 2.609 s
dBm-					
-10 dBm					
-20 dBm					
-30 dBm					
40 dBm					
-50 dBm	and manufacture	ontraneofmulancer	munnin	inchanged manual	hander all and the states
-60 dBm					
-70 dBm					

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Aws Band

Spect	rum						Ĩ₩ ▽
Ref Lo Att TRG: VI	evel : D	20.00 d 10	3m Offset 20.00 d dB - SWT 5	B 🖷 RBW 1 MHz s 🔮 VBW 3 MHz			
1Pk M	ах						
10 dBm	4	M2			M2[1]		14.72 dBm -7.25 ms -38.40 dBm -14.49 ms
0 dBm-		_			1		
-10 dBm		_					
-20 dBm	TF-	RG -17,	DOO dBm				-
-30 dBm						- in	-
-40 a8n	ma	_					
-50 dBm		autor and the	the law is a strate of the state of			the second and a second second	ant for an an a second
-60 dBm	1-						-
-70 dBm	-	_					
CF 1.7	1961	GHz		691 pts			500.0 ms/
Marker							
Type	Ref	Trc	X-value	Y-value	Function	Function Res	sult
M1	MI	1	-14.49 ms	-38.40 dBm			
M2		1	-7.25 ms	14,72 dBm			

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SGL	10 dB 📦 SWT	300 s 💗 VBW 3 MH	2		
M1 0 dBm	† D2		D2[1] M1[1]		0.14 di 61.739 17.79 dBn 3.478
) dBm					_
10 dBm					
20 dBm					
30 dBm					
40 dBm					
50 dBm	maturation	an automa and an and a second	mutermontation	mouthereast	In marine white men
-60 dBm					
-70 dBm					

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Lower 700MHz

Spect	rum				1						
Ref Le Att SGL TR	evel :	20.00 dE 10 (dB 🖷 SWT	0.00 dB 5 s	 RBW 1 MH VBW 3 MH 	2 Z					
1Pk Ma	ах										
10 dBm·					N/2	D1 M1	[1] [1]		-45	-2.54 dB 95.65 ms 9.81 dBm 14.49 ms	
0 dBm-					-				1 1		
-10 dBm	T	RG -10,0	00 dBm				_	-	-	-	
-20 dBm						-				-	
-30 dBm	-	_	-						-		
-40 dBm					ML		-				
-50 dBm	hunter	manduma		And March Mark	13 Thomas	there	leter or mode	من مياد مراب خا<mark>سره ي</mark>	the set of the set of the	- Andrew	
-60 dBm	-						_				
-70 dBm	+			_		_	_	-			
CF 703	.093	MHz			691	pts			50	0.0 ms/	
Marker											
Type	Ref	Trc	X-value		Y-value	Function Funct		nction Result	tion Result		
M1	MI	1	-14.4	9 ms	-47.81 dBi -2 54 d	n B					
M2	1417	1	-7.2	5 ms	16.65 dB	n l					

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1PK Max						
MI 10 dBm	1 01			D1[1] M1[1]		0,08 dB 61,739 s 16,72 dBm 6,087 s
0 dBm						
-10 dBm						
-20 dBm						
-30 dBm	_			_	_	
-40 dBm					_	
-50 dBm	then the hand when	nontranance	water and manufacture	were and the second second	madahadanadahada	مدار روای المرون ال
-60 dBm	-				_	
-70 dBm	-					

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Spectrum

Bm dB	Offset SWT	20.00 dB 5 s	■ RBV	¥ 1 MH ¥ 3 MH	iz iz		
			1		1	D1[1]	
	_					witit	-

Upper 700MHz

D-61										1.*
Att	ever	20.00 de 10 i	dB 💼 SWT 5	s s VBW	3 MHz					
TRG: VI	D									
1Pk M.	ах					1000				
10 dBm	-	M2.				D1[1]			-	0.78 de 85.00 ms 46.59 dBm -12.54 ms
0 dBm-										
-10 dBm		-		_	-		_	-		
-20 dBm	ŋ	-		_	-			_	-	
-30 dBm		RG -30.0	100 dBm				-			
-40 dBm	Mb	1		_	-			-	_	-
-50 dBm	1	- Innueska	adurin thelesalaris	Mul and Chilip	authornas	un up un	nelloude he	whiteward	upper months of	What who who have the
-60 dBm	-			-	_			_	_	
-70 dBm	1-				-	_				
CF 780	.484	MHz			691 pts				1	i00.0 ms/
Marker		1.1.1.1.1			1.1					-
Type	Ref	Trc	Trc X-value		lue	Function	12	Function Result		
M1	1	1	-12.54 ms	-46	.59 dBm		-			
D1	M1	1	85.0 ms	2	0.78 dB					
M2		1	-7,25 ms	15.	39 dBm					

Date: 16.AUG.2022 11:51:41



Date: 16.AUG.2022 11:57:55
Downlink

Cellular Band

Spect	rum					
Ref Lo Att TRG: VI	evel :	20.00 de 10	am Offset 20.00 dB dB 🖷 SWT 5 s	 RBW 1 MHz VBW 3 MHz 		
1Pk Cl	rw					
10 dBm	MP				M2[1]	10.33 dBm -7.25 ms -46.99 dBm -14.49 ms
0 dBm-	-	-				
-10 dBm	-	-		-		
-20 dBm	-					
-30 dBm	1	RG -26.0	000 dBm			
-40 dBm	MI	01				
-50 dBm		- And and a second		CIG-SCARLINGS-COMPACYOR	147 Section of the life of	The rest of the second s
-60 dBm					_	
-70 dBm					_	
CF 879	.257	MHz		691 pts		500.0 ms/
Marker						
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	-14.49 ms	-46.99 dBm		
MO	141	1	144.93 ms	-2.64 GB		
1412	-	T	-7.25 ms	10,35 0811		

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Date: 16.AUG.2022 15:10:17

PCS I	Band
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Spect	rum						
Ref Lo Att TRG: VI	evel :	20.00 d 10	IBm Offset 20.00 dB e SWT	dB 🗃 RBW 1 MHz 5 s 💼 VBW 3 MHz	1		1.
91Pk M	ах						1000
10 dBm	M				M2[1]		8.55 dBm -7.25 ms -43.85 dBm -14.49 ms
0 dBm-	-						
-10 dBn	η 	_	-				
-20 dBn	1 1	RG -17	000 dBm				
-30 dBn	1						
-40 dBn -50 dBn		I series. Alex	. Land and sound a mar of the state of the	yourd Lara we wanted	and a second and a second s	الاسا مهم همانه و شايانه محمد الماس	es arman age and the second
-60 dBn	1			_			
-70 dBn	1-		_				
CF 1.9	6777	GHz		691 pt	s		500.0 ms/
Marker							
Туре	Ref	Trc	X-value	Y-value	Function	Function	Result
M1	MI	1	-14.49 ms	-43.85 dBm			
M2	INIT	1	-7 25 m	-5.51 UB			
194		- L]	7,25 m	0.55 GBII	1		

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AWS	Band
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Spect	rum							
Ref Le Att TRG: VI	evel :	20.00 dE 10	Bm Offset 20.00 dB dB ∎ SWT 5 s	 RBW 1 MHz VBW 3 MHz 				
1Pk Ma	ах						12.0	
10 dBm·	1712	M2[1] M1[1]					4.54 dBm 36.23 ms -43.30 dBm -14.49 ms	
0 dBm-				+				
-10 dBm				-				
-20 dBm	-	G -19.0	000 dBm	-				
-30 dBm				-				
-40 dBm	man	-					-	
-50 dBm		multi	a hard you and a second and a second a second		warener and and the second	-ndana markana and a the time	withour vacure	
-60 dBm				-				
-70 dBm	1	_					-	
CF 2.1	3193	GHz		691 pts			500.0 ms/	
Marker								
Type	Ref	Trc	X-value	Y-value	Function	Function Resu	lt	
D1	MI	1	-14,49 MS	-43.30 UBM -5.89 dB				
M2	1417	1	36.23 ms	4.54 dBm				

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Lower 700MHz

Spect	rum					The second se	
Ref Lo Att TRG: VI	evel :	20.00 di 10	3m Offset 20.00 d dB 📷 SWT 5	B 📾 RBW 1 MHz s 🔹 VBW 3 MHz	1		
●1Pk M	ах						
10 dBm	M2	-		M2[1] M1[1]			
0 dBm-		-					
-10 dBn	-			-			
-20 dBn							
-30 dBn	1-11	RG -26.0	000 dBm-				
-40 dBn	MI	1 williams	hale and the second	bol-unt-weighter the state	adaanta wahaddalkaa	salating and a triplighter a parameter of a statistic	
-60 dBn							
-70 dBn	1-						
CF 746	.436	MHz		691 pt	s	500.0 ms/	
Marker	-						
Type	Ref	Trc	X-value	Y-value	Function	Function Result	
M1	M1	1	-14.49 ms	-47.19 dBm			
M2	IALT	1	-7.25 ms	11.77 dBm			
1.74		-1	1120 1115	abiii	1		

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10 dBm	DZ		D2[M1	1]		0,03 dB 62.174 s 12.19 dBm 22.609 s
0 dBm	-			-		
-10 dBm						-
-20 dBm	-		-			
-30 dBm	_		_			-
-40 dBm	-		_			-
-50 dBm	murrounder	nohumilienterite	unmunition	anturation	an a	water the second second
-60 dBm						
-70 dBm			-			-

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Spect	rum						
Ref L Att TRG:V	evel : ID	20.00 d 10	Bm Offset 20.00 d dB 🛥 SWT 5	B 🖬 RBW 1 MHz s 🖷 VBW 3 MHz			
1Pk M	lax						
10 dBm	MR				M2[1]		12.07 dBm -7.25 ms -47.35 dBm -21.74 ms
0 dBm-							
-10 dBr	n	-	-				
-20 dBr	n	-					
-30 dBr	n	RG -26.	JOU dBm-				-
-40 dBr	n ML	Jum	www.www.wowe	water waren drived	monutin	man and the second states of the second	mananthaw
-60 dBr	n						_
-70 dBr	n						
CF 746	5.29 M	Hz		691 pt	5		500.0 ms/
Marker	-						
Туре	Ref	Trc	X-value	Y-value	Function	Function Re	sult
M1		1	-21.74 ms	-47.35 dBm			
D1	M1	1	181.16 ms	0.02 dB			
M2		1	-7,25 ms	12,07 dBm			

Upper 700MHz

Date: 16.AUG.2022 15:44:04



Date: 16.AUG.2022 15:51:47

§2.1051- SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Applicable Standards

FCC §2.1051 Measurements required: Spurious emissions at antenna terminals.

§20.21(e)(8)(i)(E): Booster out of band emissions (OOBE) shall be at least 6 dB below the FCC's mobile emission limits for the supported bands of operation. Compliance to OOBE limits will utilize high peak-to-average CMRS signal types.

22.917 (a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P) dB$.

27.53: the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P) dB$;

Test Procedure

The following procedures shall be used to demonstrate compliance to the applicable conducted spurious emissions limits as per § 2.1051.

Note: For frequencies below 1 GHz, an RBW of 1 MHz may be used in a preliminary measurement. If noncompliant emissions are detected, a final measurement shall be made with a 100 kHz RBW. Additionally, a peak detector may also be used for the preliminary measurement. If non-compliant emissions are detected then a final measurement of these emissions shall be made with the power averaging (RMS) detector.

a) Connect the EUT to the test equipment as shown in **Figure 1**. Begin with the uplink output connected to the spectrum analyzer.

b) Configure the signal generator for AWGN with a 99% occupied bandwidth of 4.1 MHz with a center frequency corresponding to the center of the CMRS band under test.

c) Set the signal generator amplitude to the level determined in the power measurement procedure in 7.2.d) Turn on the signal generator RF output and measure the spurious emission power levels with an appropriate measurement instrument as follows.

1) Set RBW = measurement bandwidth specified in the applicable rule section for the operational frequency band under consideration (see Annex A for relevant cross-references). Note that many of the individual rule sections permit the use of a narrower RBW (typically \geq 1% of the emission bandwidth) to enhance measurement accuracy, but the result must then be integrated over the specified measurement bandwidth.

2) Set VBW = $3 \times RBW$.

3) Select the power averaging (RMS) detector. (See above note regarding the use of a peak detector for preliminary measurements.)

4) Sweep time = auto-couple.

5) Set the analyzer start frequency to the lowest radio frequency signal generated in the equipment, without going below 9 kHz, and the stop frequency to the lower band/block edge frequency minus 100 kHz or 1 MHz, as specified in the applicable rule part. Note that the number of measurement points in each sweep

must be $\geq (2 \times \text{span/RBW})$ which may require that the measurement range defined by the start and stop frequencies above be subdivided, depending on the available number of measurement points provided by the spectrum analyzer. Trace average at least 10 traces in power averaging (i.e., RMS) mode. 6) Use the peak marker function to identify the highest amplitude level over each measured frequency range. Record the frequency and amplitude and capture a plot for inclusion in the test report. 7) Reset the analyzer start frequency to the upper band/block edge frequency plus 100 kHz or 1 MHz, as specified in the applicable rule part, and the analyzer stop frequency to $10 \times$ the highest frequency of the fundamental emission. Note that the number of measurement points in each sweep must be $\geq (2 \times$ span/RBW) which may require that the measurement range defined by the start and stop frequencies above be subdivided, depending on the available number of measurement points provided by the spectrum analyzer.

8) Use the peak marker function to identify the highest amplitude level over each of the measured frequency ranges. Record the frequency and amplitude and capture a plot for inclusion in the test report.e) Repeat 7.6b) through 7.6d) for each supported frequency band of operation.



Figure 1 – Band verification test instrumentation setup

Test Data

Environmental Conditions

Temperature:	25.3 °C
Relative Humidity:	57 %
ATM Pressure:	101.0 kPa

The testing was performed by Andy Yu on 2022-08-10.

Test Mode: Transmitting (Worst case: Configuration 1)

Test Result: Pass

Please refer to the following plots.

Uplink

Cellular Band

Spectrum	·							
Ref Level	10.00 dBm	Offset	10.50 dB 👄	RBW 100 k	Hz			
e Att	25 dB	SWT	872.8 µs 👄	VBW 300 k	Hz Mode	Auto FFT		
●1Rm Max								
					м	1[1]	- 823	49.64 dBm .0320 MHz
0 dBm								
-10 dBm								
-20 dBm	D1 -19.000	dBm=====						
-30 dBm								
-40 dBm								
-50 dBm							 	M
-e0"dBm								
-70 dBm								
-80 dBm								
Start 30.0	MHz			1600	1 pts		Stop 8	23.9 MHz

Date: 10.AUG.2022 11:24:07

Spectrun	n								
Ref Leve	10.00 dBm	Offset 1	.0.50 dB 👄	RBW 100 k	Hz				
	25 dB	SWI	16.1 ms 👄	VBW 300 K	Hz Mode	Sweep			
●1Rm Max					м	1[1]		- 849.	47.65 dBm 54800 MHz
0 dBm									
-10 dBm									
-20 dBm	D1 -19.000	dBm=====							
-30 dBm									
-40 dBm									
50 dBm									
a la planta de pla	Log Locath Adams	u seda (ma dalar) ani seta seta dalar	New Jacobs and	Addina pineta ya da Justi itu. Mana angina ta	الله ويدار مريوسي فراسي. مراجع من المراسية مراسية م	الإيرانية المحافظ والاين المحافظ المحا المحافظ المحافظ	والمردقا وتأوله والمرواني	adding to the provide starts	Annal fail balting ha
-60 dBm									
-70 dBm									
-80 dBm									
Start 849.	1 MHz			1600	1 pts			Sto	p 1.0 GHz

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Date: 10.AUG.2022 11:30:00

PCS Band



Date: 10.AUG.2022 11:44:18

Report No.: SZNS220622-27964E-RF-00

Ref Level 10.00 dBm Offset 10.50 dB WIHz ● Att 20 dB SWT 25.1 ms ● VBW 3 MHz Mode Sweep	<u> </u>
M1[1] -49.40 1.563017	dBm) GHz
0 dBm	
-10 dBm	
-2U dBm-01 -19.000 dBm-	
-30 dBm-	
-40 dBm	
	esites
	and design
-60 dBm-	
-70 dBm	
-80 dBm	
Start 1.0 CH2 25001 ptr Stor 1.940	0117

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Spectrum										
Ref Level Att	10.00 dBm 20 dB	Offset 1 SWT	l0.50 dB 👄 72.4 ms 👄	RBW 1 MH: VBW 3 MH:	2 2 Mode S	weep				
⊖1Rm Max			1		1					
					M1[1] -46.09 17.95984					
0 dBm										
-10 dBm										
-20 dBm0	01 -19.000	dBm								
-30 dBm										
-40 dBm								M1		
-50 dBm	and the second second second		اللين وروحاته ومألوا		ام خان بالرور و الحدود	a state of the second second			hard A	
-60 dBm			and a second							
-70 dBm										
-80 dBm										
Start 1.916	GHz			2500	1 pts			Stop	20.0 GHz	

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A++ 00	do ewr	10.50 dB	RBW 100 K	HZ	ALLE FFT			
ALL 25	ub SWI	1.1 ms 📟	VBW 300 K	HZ Mode	AUTO FF I			
				м	1[1]		70	-37.81 dBm 3.9870 MHz
) dBm								
10 dBm								
20 dBm D1 -19.0	100 dBm====							
30 dBm								
40 dBm					M			-
50 dBm					ľ		M	
the Dep Challen of the State of the St		d dissumption	A Like	and dealers	ALS ADD	No.		
din des rockes and a second								
70 dBm								
80 dBm								

AWS Band

Date: 10.AUG.2022 11:04:08

Spectrun	n								
Ref Leve	10.00 dBm	Offset 1	0.50 dB 👄	RBW 1 MHz	2				
Att	25 dB	SWT	94.7 µs 👄	VBW 3 MHz	: Mode A	uto FFT.			
●1Rm Max									
					м	1[1]		- 1.70	34.28 dBm 87020 GHz
0 dBm									
-10 dBm—									
-20 dBm	D1 -19.000	dBm							
-30 dBm									67
-40 dBm]
how take the	Manager Manager Anger Anger	AnanMunaning	MARINA MARINA	Noth & Martin Martin	had and and the second	Andrewing	WANAWAW	while	MUNAMINAN
-50 08m++-	* # •								
-60 dBm									
-70 dBm									
-80 dBm									
Start 1.0 C	Hz			2500	1 pts			Stop	L.709 GHz

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Report No.: SZNS220622-27964E-RF-00



Date: 10.AUG.2022 11:09:52

Lower 700MHz

Spectrum	·								
Ref Level	10.00 dBm	Offset 1	.0.50 dB 👄	RBW 100 k	Hz				
Att	25 dB	SWT	25.1 ms 👄	VBW 300 k	Hz Mode	Sweep			
●1Rm Max									
					м	1[1]		- 696	40.86 dBm i.4970 MHz
0 dBm									
-10 dBm									
-20 dBm——I	D1 -19.000	dBm							
-30 dBm									
-40 dBm									M
-50 dBm									
and the ground life	والمعادلة ومعادلهما	al all finds and the adjust days	nuted here is a	La Martanatala an	alalasa a laka ta a fa lati	a nanga ang	and the second second second	langu sa katang sa ka	and the second second
tooraenhimir		a co til takklan co po	a na an		nen fature, fature, f	a haanga tila dalama	trada filmadata, stal pilata (fili)	and a second	allentitionen gegen ander gebraak en die seeling onder seeling on die seeling on die seeling on die seeling on
-70 dBm									
-80 dBm									
Start 30.0 f	MHz			2500	1 pts			Stop 6	i97.9 MHz

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Report No.: SZNS220622-27964E-RF-00



Date: 10.AUG.2022 11:34:35

Spectrum									
Ref Level	10.00 dBm	Offset	10.50 dB 👄	RBW 1 MHz	2				
🖷 Att	30 dB	SWT	28 ms 👄	VBW 3 MHz	: Mode S	Sweep			
⊖1Rm Max									
					М	1[1]		- 1.8	25.75 dBm 79860 GHz
0 dBm									
-10 dBm									
-20 dBm0	01 -19.000 M1	dBm=====							
-30 dBm						du.			
-40 dBm			Lude Lot of the	م يعد التا وار إن ا	and the superscript of the	to della della	and the second second	balls distribution	du an a
here while a dissibility.	a bantikata	and a second	and the local diversion of the second	the states of th	and the second	to and speed press	distribution of the	and a second second	and a second
Manapi Napor por porte	A Property and	all a start of the second s	1						
-50 dBm									
-60 dBm									
-70 dBm									
-80 dBm									
Start 1.0 Gi	lz	1	1	2500	1 pts	I	1	Sto	p 8.0 GHz

Date: 10.AUG.2022 11:35:30

Spectrum									
Ref Level 1	0.00 dBm	Offset :	10.50 dB 👄	RBW 100 k	Hz Hz Modo	Sween			
18m Max	30 GD	0111	20.1 115	1011 300 K	nz moue	Sweeh			
					М	1[1]		- 775	28.89 dBm .8850 MHz
0 dBm									
-10 dBm									
-20 dBm-01	-19.000	dBm====							
-30 dBm									N
-40 dBm									
-50 dBm	L housed, and the		وروارية والمراجع المراجع	an the second second second	and the local section.	an a seite say na thaise	and the second state of th		l. Interfertunt der
-60 dBm	paper da servicita d	ىرى ئەتەمىر چەللە لغان.	n konstantin and an	diga dar dibar menya	and a strategy and a second	en hildsten die geerlijken oorde		Philipping and under and	lanjer (Pohrodovi)
-70 dBm									
-80 dBm									

Upper 700MHz

Date: 10.AUG.2022 11:37:06



Date: 10.AUG.2022 11:39:28

Report No.: SZNS220622-27964E-RF-00



Date: 10.AUG.2022 11:40:42

Downlink

Cellular Band

Ref Level	0.50 dBm	Offset :	10.50 dB 🕳 RI	BW 100 kHz					
Att	10 dB	SWT	25.1 ms 👄 🗸	BW 300 kHz	Mode S	weep			
1Rm Max									
					M	1[1]			-45.96 dBn
10 d0m						I		1 /4	/.2140 MH.
·10 uBiii—									
	-n1 -19 000	dBm							
-20 aBm	01 -19.000								
-30 aBm									
10.10					ĺ				
-40 dBm								M1	
					ĺ			II	
-50 UBIII								<u> </u>	
60 dDm					ĺ			L MA	
-ou ubiii									
70 40					l				
		त्वर्थम् सम्बद्धाः स्टब्स् सर्वे ।			विकास २३ का पहला सामुद्राय जन्म के बोर्ज्य की संस्थानी कर	i si na su na su sheka ka ka I si na su	and the second se		algengeren jagen dat in Berlin in diesen dat in
00 40	a to a state of the second of	Change a back.	Contraction of the second						
-80 UBM									
00 d0m									
ao nem									

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Spectrun	n								
Ref Level Att	0.50 dBm 10 dB	Offset 10. SWT 25	50 dB 👄 RE .1 ms 👄 VE	3W 100 kHz 3W 300 kHz	Mode S	weep			
⊖1Rm Max									
					M	1[1]		- 894.	48.26 dBm 19530 MHz
-10 dBm—									
-20 dBm	D1 -19.000	dBm							
00 d0m									
-30 aBm									
-40 dBm									
1									
-50 dBm									
La Harris									
-8									
		la de la	مريان البري	later an oldert.			an a		lan an ali
-70 aBm-	i ja viena pieta pieta pieta. Pre pieta da pieta pi		dependent of the state of the s	nine of the section of the sector		And a start of the second s	ang tang tang tang tang tang tang tang t	and a second spectrum state	politic reflection of partici- region of the participation of the partic
-80 dBm									
-90 dBm									
Start 894.	1 MHz			2500	1 pts	1		Sto	p 1.0 GHz

Date: 10.AUG.2022 17:12:16



Date: 10.AUG.2022 17:13:29





Date: 10.AUG.2022 17:27:19

Spectrun	n								
Ref Level	0.50 dBm	Offset 10	.50 dB 👄 RE	3W 1 MHz					
Att	10 dB	SWT 2	5.1 ms 👄 VE	3W 3 MHz	Mode Sw	вер			
●1Rm Max									
					M	1[1]		- 1.78	59.01 dBm 37660 GHz
-10 dBm—									
-20 dBm—	D1 -19.000	dBm							
-30 dBm									
-40 dBm									
-50 dBm									
-30 0511								M1	
-60 dBm	وويقطون والمحالي	aument accord	al manual builders	hide a block it dage of the state	diametric produc	يعمى وارتقال فيواده	الاراد فسخا بعسال	وروج والجا أألفا خطر	hitan after a trailere
-70 dBm	աներություն	Marin Natorian ph	n pagan ing sa keting aya	fy de chier de company	syndense doederedder	footnellanseek(letters	densiti in ferrencia factori	fals book to total Hele	Nata prografi konistrutar
-80 dBm									
-90 dBm—									
Start 1.0 0	Hz			2500	1 nts			Stop	.929 GHz

Date: 10.AUG.2022 17:28:26

Report No.: SZNS220622-27964E-RF-00

Spectrun	n								
Ref Level Att	0.50 dBm 10 dB	Offset 10. SWT 72	50 dB 👄 RE .1 ms 👄 VE	W 1 MHz W 3 MHz	Mode Sw	вер			
⊖1Rm Max									
					М	1[1]		2.1	35.42 dBm 23820 GHz
-10 dBm									
-20 dBm	:D1 -19.000	dBm=							
20. d8m									
-30 UBIII									
-40 dBm									
-50 dBm									
-60 dBm							, <mark>Maria</mark> Ju	and the second	he was the
		the second s						A SHORE A	
-70 dBm									
-80 dBm									
-90 dBm									
50 0011									
Start 1.99	6 GHz			2500	1 pts	1		Stop	20.0 GHz

Date: 10.AUG.2022 17:29:48

AWS Band



Date: 10.AUG.2022 17:04:22

Spectrum									
Ref Level	0.50 dBm	Offset 10	.50 dB 👄 RE	3W 1 MHz					
Att	10 dB	SWT 2	5.1 ms 😑 VE	3W 3 MHz	Mode Swi	еер			
⊖1Rm Max									00.00.40
					IN I	1[1]		1.97	32.98 dBm 77660 GHz
-10 dBm									
-20 dBm	D1 -19.000	dBm 							
-30 dBm—								M1	
								<u> </u>	
-40 dBm									
									/
-50 dBm									
-60 dBm+									
an waarda a dahara daala		ما بر 10 (1994) (مریکار این کر بین مرکز میکند.			fellentes bereitet anderliet	In the second	And the second sec	and the second se	The second second second
70 10									
-70 UBIII									
-80 dBm									
00 0011									
-90 dBm									
Start 1.0 G	Hz		1	2500	1 pts			Stop	2.109 GHz

Date: 10.AUG.2022 16:57:14



Date: 10.AUG.2022 17:02:14

Stop 727.9 MHz

Spectrum Ref Level 0.50 dBm Offset 10.50 dB 🖷 RBW 100 kHz Att 10 dB SWT 25.1 ms 😑 **VBW** 300 kHz Mode Sweep ●1Rm Max -58.33 dBm 727.3840 MHz M1[1] -10 dBm-D1 -19.000 dBm -20 dBm--30 dBm -40 dBm--50 dBm -60 dBm-

Date: 10.AUG.2022 17:15:32

-70 dBm -80 dBm

-90 dBm-

Start 30.0 MHz



25001 pts

Date: 10.AUG.2022 17:17:18

Lower 700MHz

Report No.: SZNS220622-27964E-RF-00

Spectrum	ר							
RefLevel 0.50 Att 1	dBm Offset 10 0 dB SWT	.50 dB 👄 RB 28 ms 👄 VB	W 1 MHz W 3 MHz	Mode Sw	eep			
●1Rm Max		_						
_				М	1[1]		2.1	32.25 dBm 26810 GHz
-10 dBm								
-20 dBm	19.000 dBm							
-30 dBm	M1							
-40 dBm								
-50 dBm								
-60, dBm	e fint octor side dat malatitud	Leadilla anticipation and	واللانيسي	والمعرار المعربين والمعرار والمعر	and any line line with	alah samatan sa	and the second sec	ر المرز بالا ^{لم الم} الي . ف
70 d8m		l des della prise, da pris pr	- desires a dealling and the bas	ninina ang kang kang kang kang kang kang kan			all the second	Alternation of the second
-70 0811								
-80 dBm								
-90 dBm								
Start 1.0 GHz			2500	1 pts			Sto	p 8.0 GHz

Date: 10.AUG.2022 17:18:33

Upper 700MHz



Date: 10.AUG.2022 17:20:04

Report No.: SZNS220622-27964E-RF-00



Date: 10.AUG.2022 17:23:23

Spectrun	n								
Ref Level	0.50 dBm	Offset 10	.50 dB 👄 RE	W 1 MHz					
Att	10 dB	SWT	28 ms 👄 🛛	SW 3 MHz	Mode Sw	еер			
●1Rm Max									
					M1[1] -30.09 di 2.123740 di				
-10 dBm									
-20 dBm	D1 -19.000	dBm <u></u>							
-30 dBm	M1								
-40 dBm									
-50 dBm									
-60 dBm	areast are departe					and plates in the second	alaman ya kutu ya Wangana kutu ya	an dat de alde Alexandre albem	
-70 dBm——	nama di secon								, Andra (na Arada
-80 dBm									
-90 dBm									
Start 1.0 G	GHz			2500	1 pts			Sta	p 8.0 GHz

Date: 10.AUG.2022 17:25:03

Uplink

Additional requirement for upper 700MHz band



Date: 10.AUG.2022 18:12:59

793 MHz~805 MHz



Date: 10.AUG.2022 18:11:42



1559 MHz~1610 MHz (wide band)

Date: 10.AUG.2022 18:09:19





Date: 10.AUG.2022 18:07:43

Downlink

763 MHz~775 MHz



Date: 10.AUG.2022 17:41:40

793 MHz~805 MHz

Spectrun	n								
Ref Level Att	-30.00 dBm 0 dB	Offset 1 SWT	0.50 dB 👄 25.1 ms 👄	RBW 10 kH VBW 30 kH	z z Mode 9	Sweep			
⊜1Rm Max									
1					м	1[1]		- 796.1	85.86 dBm 34030 MHz
-40 dBm									
-50 dBm	D1 -52.000	dBm							
	02,000								
-60 dBm									
-70 dBm									
00 40									
-80 UBIII		M1							
	and start and the second	and the second second	and a second	and the second second	Highwayayaya	A standard a standard A standard a	which have been as the	م الجينة الحالي	Appleto black
								'	
-100 dBm—									
-110 dBm—									
-120 dBm—									
Start 793.	0 MHz			2500	1 nts	l .	1	Stop 8	05.0 MHz

Date: 10.AUG.2022 17:45:15

Spectrun	n									
Ref Level Att	-30.00 dBm 0 dB	Offset 1 SWT	0.50 dB 👄 51 ms 👄	RBW 10 kH VBW 30 kH	z z Mode 9	Sweep				
●1Rm Max										
					M1[1]			-87.91 dBm 1.57120790 GHz		
-40 dBm										
-50 dBm	D1 -46.000	dBm								
-60 dBm										
-70 dBm										
-80 dBm										
-AA, dAngilian	incase britene infe	M1		ti sa kala sa Kala sa kala sa			i in desidenti di statuli Successi di statuli			
-100 dBm—										
-110 dBm—										
-120 dBm—										
Start 1.55	9 GHz			2500	1 pts			Stop	1.61 GHz	

1559 MHz~1610 MHz (wide band)

Date: 10.AUG.2022 17:47:39



1559 MHz~1610 MHz (narrow band)

Date: 10.AUG.2022 17:47:07

§ 2.1053 - RADIATED SPURIOUS EMISSIONS

Applicable Standards

§ 2.1053 Measurements required: Field strength of spurious radiation.

Test Procedure

This procedure is intended to satisfy the requirements specified in § 2.1053. The applicable limits are those specified for mobile emissions in the rule part appropriate to the band of operation (see Annex A).

a) Place the EUT on an OATS or semi-anechoic chamber turntable 3 m from the receiving antenna. 12

b) Connect the EUT to the test equipment as shown in Figure 10 beginning with the uplink output.

c) Set the signal generator to produce a CW signal with the frequency set to the center of the operational band under test and the power level set at $P_{\rm IN}$ as determined from 7.2.

d) Measure the radiated spurious emissions from the EUT from lowest to the highest frequencies as specified in § 2.1057. Maximize the radiated emissions by utilizing the procedures described in Clause 8 of ANSI C63.4-2014.

e) Capture the peak emissions plots using a peak detector with Max-Hold for inclusion in the test report. Tabular data is acceptable in lieu of spectrum analyzer plots.

f) Repeat 7.12c) through 7.12e) for all operational bands.



Figure 10 – Radiated spurious emissions test instrumentation setup

Test Data

Environmental Conditions

Temperature:	26.3 °C
Relative Humidity:	58 %
ATM Pressure:	101.0 kPa

The testing was performed by Jeff Jiang on 2022-08-02

Test Result: Pass

Please refer to following table.

Test Mode: Transmitting (Worst case: Configuration 1)

Uplink

T	Receiver	T (11	Rx Ante	nna	Substituted	Absolute	T • •/	
Frequency (MHz)	Reading (dBm)	Turntable Degree	Height (m)	Polar (H/V)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)
Cellular Band, Test Frequency 836.5MHz								
950.51	-77.90	152	2.1	Н	10.0	-67.90	-19	48.90
950.51	-81.48	41	1.5	V	11.7	-69.78	-19	50.78
1673	-56.5	107	1.9	Н	3.8	-52.7	-19	33.7
1673	-54.7	144	1.4	V	3.1	-51.6	-19	32.6
		PC	S Band, Test	Frequenc	y 1882.5MHz			
951.97	-78.59	97	1.2	Н	10.0	-68.59	-19	49.59
951.97	-82.77	195	1.0	V	11.7	-71.07	-19	52.07
3765	-58.2	89	1.1	Н	8.8	-49.4	-19	30.4
3765	-56.8	117	2.4	V	8.0	-48.8	-19	29.8
		AW	/S Band, Test	Frequen	cy 1732.5MHz			
951.71	-77.32	321	1.7	Н	10.0	-67.32	-19	48.32
951.71	-81.97	181	1.4	V	11.7	-70.27	-19	51.27
3465	-51.4	140	2.2	Н	7.0	-44.4	-19	25.4
3465	-51.9	315	2.1	V	6.2	-45.7	-19	26.7
		Low	ver 700MHz, 7	Fest Freq	uency 707MHz			
956.64	-78.17	243	2.0	Н	10.0	-68.17	-19	49.17
956.64	-83.51	276	2.4	V	11.7	-71.81	-19	52.81
1414	-61.2	311	1.5	Н	5.7	-55.5	-19	36.5
1414	-61.6	13	2.4	V	5.4	-56.2	-19	37.2
		Uppo	er 700MHz, T	est Frequ	ency 781.5MHz	<u>r</u>		
954.28	-77.70	227	1.8	Н	10.0	-67.70	-19	48.70
954.28	-81.35	155	1.8	V	11.7	-69.65	-19	50.65
1563	-64.7	123	1.2	Н	4.2	-60.5	-46	14.5
1563	-63.0	220	2.3	V	3.3	-59.7	-46	13.7

Version 75: 2021-11-09

Downlink

	Receiver	_	Rx Ante	nna	Substituted	Absolute		Margin (dB)
Frequency (MHz)	Reading (dBm)	Turntable Degree	Height (m)	Polar (H/V)	Factor (dB)	Level (dBm)	Limit (dBm)	
Cellular Band, Test Frequency 881.5MHz								
950.60	-77.43	211	2.4	Н	10.0	-67.43	-19	48.43
950.60	-82.47	279	1.4	V	11.7	-70.77	-19	51.77
1763	-59.5	40	1.9	Н	4.4	-55.1	-19	36.1
1763	-58.7	191	1.8	V	3.2	-55.5	-19	36.5
		РС	S Band, Test	Frequenc	y 1962.5MHz			
956.83	-77.77	96	1.5	Н	10.0	-67.77	-19	48.77
956.83	-83.58	132	1.8	V	11.7	-71.88	-19	52.88
3925	-56.4	329	2.0	Н	8.9	-47.5	-19	28.5
3925	-56.7	227	1.2	V	8.3	-48.4	-19	29.4
		AW	VS Band, Test	Frequence	ey 2132.5MHz			
952.92	-78.38	103	1.3	Н	10.0	-68.38	-19	49.38
952.92	-83.07	101	1.4	V	11.7	-71.37	-19	52.37
4265	-60.0	316	1.4	Н	9.7	-50.3	-19	31.3
4265	-59.3	243	1.7	V	8.9	-50.6	-19	31.6
		Low	ver 700MHz, T	Fest Freq	uency 737MHz			
956.82	-77.98	46	1.5	Н	10.0	-67.98	-19	48.98
956.82	-81.83	102	1.9	V	11.7	-70.13	-19	51.13
1474	-62.0	150	2.5	Н	4.5	-57.5	-19	38.5
1474	-64.3	26	1.8	V	6.0	-58.3	-19	39.3
		Uppe	er 700MHz, T	est Frequ	ency 751.5MHz	2		
953.79	-77.62	107	1.3	Н	10.0	-67.62	-19	48.62
953.79	-82.81	33	2.0	V	11.7	-71.11	-19	52.11
1503	-64.3	324	2.1	Н	5.0	-59.3	-19	40.3
1503	-64.4	352	1.5	V	4.3	-60.1	-19	41.1

Note:

Absolute Level = Reading Level + Substituted Factor Substituted Factor contains: SG Level - Cable loss+ Antenna Gain Margin = Limit - Absolute Level

***** END OF REPORT *****