















This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd. Page 78 of 95



Center Freq 781.500000 MHz Center Freq: #IF Gain:Low TAten: 6 dB	781.500000 MH2 Radio Std: None Prequency n Avg[Hold>10/10 Radio Device: BTS	Center Freq 781.500	1000 MHz Center Free; 781,500000 FIFGain:Low FAtten: 30 dB	MHtz Radio Std: None TracelDetec rg Held>10/10 Radio Device: BTS
10 dB/dW Ref -20.00 dBm	Center Fr 781.50000 M	10 dB/div Ref 20.0	0 dBm	ClearV
		-20.0 -30.0 -40.0		Ave
40.0 -100 -110		-50.0 -50.0 -70.0		Max
Center 781.5 MHz #Res BW 100 kHz #VBW	Span 10 MHz         CF St           300 kHz         Sweep 1.267 ms           1.00000 M         Auto	Center 781.5 MHz #Res BW 100 kHz	#VBW 300 kHz	Span 10 MHz Sweep 1.267 ms Min
4.5594 MHz Transmit Freq Error 119 Hz OE x dB Bandwidth 9.679 MHz x d	Har Power         47.2 dbm           3W Power         99.00 %           1B         -26.00 dB	et tz x dB Bandwidth	4.5767 MHz or -1.204 kHz OBW Pow 4.966 MHz x dB	er 99.00 % Auto
MSG	STATUS	MSG		01/000
UND LTE-Upper 700N	MHz band UL input	LT	TE-Upper 700M	The second secon
to allow Ref -20.00 dBm	Argineles toro	Center Freq 751.500	CE-Upper 700M	Hz UL output
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# 6.11 Oscillation Detection and Mitigation

#### **Applicable Standard**

According to §20.21(e)(8)(ii)(A) Anti-Oscillation:

 1. Consumer boosters must be able to detect and mitigate (i.e., by automatic gain reduction or shut down), any oscillations in uplink and downlink bands. Oscillation detection and mitigation must occur automatically within 0.3 seconds in the uplink band and within 1 second in the downlink band. In cases where oscillation is detected, the booster must continue mitigation for at least one minute before restarting. After five such restarts, the booster must not resume operation until manually reset.
 2. Use of two EUTs is permitted for this measurement, which can greatly reduce the test time required. One EUT shall operate in a normal mode, and the second EUT shall operate in a test mode that is capable of disabling the uplink inactivity function and/or allows a reduction to 5 seconds of the time between restarts.

The procedures in 7.11.3 and 7.11.4 do not apply for devices that operate only as direct-connection mobile boosters having gain of less than or equal to 15 dB.

#### **Test Procedure**

Oscillation restart tests

According to section 7.11.2 of KDB 935210 D03 Signal Booster Measurement v04r04:

a) Connect the normal-operating mode EUT to the test equipment as shown in Figure 7 beginning with the spectrum analyzer on the uplink output (donor) port. Confirm that the RF coupled path is connected to the spectrum analyzer.

NOTE-The band-pass filter shall provide sufficient out-of-band rejection to prevent oscillations from occurring in bands not under test.

b) Spectrum analyzer settings:

- 1) Center frequency at the center of the band under test
- 2) Span equal or slightly exceeding the width of the band under test
- 3) Continuous sweep, max-hold
- 4) RBW  $\geq$  1 MHz, VBW > 3 RBW

c) Decrease the variable attenuator until the spectrum analyzer displays a signal within the band under test. Using a marker, identify the approximate center frequency of this signal on the max-hold display, increase the attenuation by 10 dB, then reset the EUT (e.g., cycle ac/dc power).

d) Repeat 7.11.2c) twice to ensure that the center of the signal created by the booster remains within 250 kHz of the spectrum analyzer display center frequency. If the frequency of the signal is unstable, confirm that the spectrum analyzer display is centered between the frequency extremes observed. If the signal is wider than 1 MHz, ensure that the spectrum analyzer display is centered on the signal by increasing the RBW. Reset the EUT (e.g., cycle ac/dc power) after each oscillation event, if necessary. Set the spectrum analyzer sweep trigger level to just below the peak amplitude of the displayed EUT oscillation signal.

e) Set the spectrum analyzer to zero-span, with a sweep time of 5 seconds, and single-sweep with max-hold. The spectrum analyzer sweep trigger level in this and the subsequent steps shall be the level identified in 7.11.2d).

f) Decrease the variable attenuator until the spectrum analyzer sweep is triggered, increase the attenuation by 10 dB, then reset the EUT (e.g., cycle ac/dc power).

g) Reset the zero-span trigger of the spectrum analyzer, then repeat 7.11.2f) twice to ensure that the spectrum analyzer is reliably triggered, resetting the EUT (e.g., cycle ac/dc power) after each oscillation event if necessary.

h) Reset the zero-span sweep trigger of the spectrum analyzer, and reset the EUT (e.g., cycle ac/dc



power).

i) Force the EUT into oscillation by reducing the attenuation.

j) Use the marker function of the spectrum analyzer to measure the time from the onset of oscillation until the EUT turns off, by setting Marker 1 on the leading edge of the oscillation signal and Marker 2 on the trailing edge. The spectrum analyzer sweep time may be adjusted to improve the time resolution of these cursors.

k) Capture the spectrum analyzer zero-span trace for inclusion in the test report. Report the power level associated with the oscillation separately if it can't be displayed on the trace.

1) Repeat 7.11.2b) to 7.11.2k) for all operational uplink and downlink bands.

m) Set the spectrum analyzer zero-span sweep time for longer than 60 seconds, then measure the restart time for each operational uplink and downlink band.

n) Replace the normal-operating mode EUT with the EUT that supports an anti-oscillation test mode.

o) Set the spectrum analyzer zero-span time for a minimum of 120 seconds, and a single sweep.

p) Manually trigger the spectrum analyzer zero-span sweep, and manually force the booster into oscillation as described in 7.11.2i).

q) When the sweep is complete, place cursors between the first two oscillation detections, and save the plot for inclusion in the test report. The time between restarts must match the manufacturer's timing for the test mode, and there shall be no more than 5 restarts.

r) Repeat 7.11.2m) to 7.11.2q) for all operational uplink and downlink bands.

oscillation mitigation or shutdown

According to section 7.11.3 of KDB 935210 D03 Signal Booster Measurement v04r04:

a) Connect the normal-operating mode EUT to the test equipment as shown in Figure 8.

b) Set the spectrum analyzer center frequency to the center of band under test, and use the following settings:

- 1) RBW=30 kHz, VBW  $\geq$  3 × RBW,
- 2) power averaging (rms) detector,
- 3) trace averages  $\geq 100$ ,
- 4) span  $\geq$  120% of operational band under test,
- 5) number of sweep points  $\geq 2 \times \text{Span/RBW}$ .

c) Configure the signal generator for AWGN operation with a 99% OBW of 4.1 MHz, tuned to the frequency of 2.5 MHz above the lower edge or below the upper edge of the operating band under test. Adjust the RF output level of the signal generator such that the measured power level of the AWGN signal at the output port of the booster is 30 dB less than the maximum power of the booster for the band under test. Affirm that the input signal is not obstructing the measurement of the strongest oscillation peak in the band, and is not included within the span in the measurement.

1) Boosters with operating spectrum passbands of 10 MHz or less may use a CW signal source at the band edge rather than AWGN.

2) For device passbands greater than 10 MHz, standard CMRS signal sources (i.e., CDMA,

W-CDMA, LTE) may be used instead of AWGN at the band edge.

d) Set the variable attenuator to a high attenuation setting such that the booster will operate at maximum gain when powered on. Reset the EUT (e.g., cycle ac/dc power). Allow the EUT to complete its boot-up process, to reach full operational gain, and to stabilize its operation.

e) Set the variable attenuator such that the insertion loss for the center of the band under test (isolation) between the booster donor port and server port is 5 dB greater than the maximum gain, as recorded in the maximum gain test procedure (see 7.3), for the band under test.

f) Verify the EUT shuts down, i.e., to mitigate the oscillations. If the booster does not shut down, measure and verify the peak oscillation level as follows.

1) Allow the spectrum analyzer trace to stabilize.

2) Place the marker at the highest oscillation level occurring within the span, and record its output level and frequency.

3) Set the spectrum analyzer center frequency to the frequency with the highest oscillation signal level, and reduce the span such that the upper and lower adjacent oscillation peaks are within the span.
4) Use the Minimum Search Marker function to find the lowest output level that is within the span, and within the operational band under test, and record its output level and frequency.
5) Affirm that the peak oscillation level measured in 7.11.3f2), does not exceed by 12.0 dB the minimal output level measured in 7.11.3f). Record the measurement results of 7.11.3f2) and

7.11.3f4) in tabular format for inclusion in the test report.

6) The procedure of 7.11.3f1) to 7.11.3.f5) allows the spectrum analyzer trace to stabilize, and verification of shutdown or oscillation level measurement must occur within 300 seconds.20

g) Decrease the variable attenuator in 1 dB steps, and repeat step 7.11.3f) for each 1 dB step. Continue testing to the level when the insertion loss for the center of band under test (isolation) between the booster donor port and server port is 5 dB lower than the maximum gain (see 7.3).

h) Repeat 7.11.3a) to 7.11.3g) for all operational uplink and downlink bands.



NOTE—This figure shows the test setup for uplink bands transmission path tests; i.e., signal flow is out from the donor port into the directional coupler. For downlink bands transmission path tests, the feedback signal flow path direction and equipment connections shall be reversed, i.e., signal flow is out from the server port into the directional coupler, and signal flow is into the donor port from the variable RF attenuator.





Figure 8 – Oscillation mitigation/shutdown test setup



## Test data

Temperature	23.1°C	Humidity	54.2%
Test Engineer	Ling Zhu	Test Mode	Transmitting

Test results of detection time						
Operat	ion Bands	Detection Time	Limit	Result		
Орега	ion Danas	(\$)	(\$)	Kesuit		
	PCS	0.270	0.300	PASS		
	AWS	0.225	0.300	PASS		
Uplink	Cellular	0.255	0.300	PASS		
	Lower 700	0.290	0.300	PASS		
	Upper 700	0.130	0.300	PASS		
	PCS	0.265	1.000	PASS		
	AWS	0.255	1.000	PASS		
Downlink	Cellular	0.195	1.000	PASS		
	Lower 700	0.165	1.000	PASS		
	Upper 700	0.215	1.000	PASS		

Test results of detection time							
Operatio	on Bands	Restarting Time(s)	Limit (s)	Restarting Counts	Limit	Result	
	PCS	68.34	60	3	5	PASS	
	AWS	70.62	60	3	5	PASS	
Uplink	Cellular	70.68	60	3	5	PASS	
	Lower 700	70.56	60	2	5	PASS	
	Upper 700	71.61	60	2	5	PASS	
	PCS	69.24	60	4	5	PASS	
	AWS	69.90	60	3	5	PASS	
Downlink	Cellular	69.00	60	3	5	PASS	
	Lower 700	69.60	60	2	5	PASS	
	Upper 700	69.30	60	3	5	PASS	



#### **Test Graphs**



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Agilent Spectrum Analyzer - Swipt SA 27 85 500 ac Marker 130.000 ms Avg Type: Log Pur Taxot [2:3 4:5 6]	Peak Search	Agiturit Spectrum Analyzer - Smyd SA 18 100 20 20 100 20 100 20 100 20 100 20 100 20 20 20 20 20 20 20 20 20 20 20 20 2
PRC Fuel         PRC Fuel         Opportunity           Ref Offset 5 dB         ΔMkr1 130.0 ms         ΔMkr1 130.0 ms           Io dBladav         Ref 10.00 dBm         -34.84 dB	NextPeak	المركز المنتخب المركز المنتخب المركز المنتخب المركز المنتخب المركز المنتخب المركز المنتخب المركز ا مركز المركز ا
000	Next Pk Right	100 Next PK Right
100 300	Next Pk Left	00
	Marker Delta	100 200 122 Marker Dela
100 marshare and the second standard and a second standard more	Mkr→CF	400 Mikr-CP
70.0	Mkr→RefLvl	00 Mitr-RefLy
00         Center 782.540000 MHz         Span 0 Hz           Res BW 1.0 MHz         sVBW 3.0 MHz         Sweep 5.00 s (1001 pts)           Moj         istrum         istrum	More 1 of 2	OD         More           Center 751.940000 MHz         Span 0 Hz         1 of 2           Res BW 10 MHz         #VBW 3.0 MHz         Sweep 5.000 (1001 pts)         1 of 2           Mol         imma         imma         imma
detection time-Upper 700 band	UL	detection time-Upper 700 band DL

#### restarting time

Marker 1 68.3350 s PN0: Fast →→ Trig: Free	PUSE ALIGNAUTO 09:29:56 AM Mar 21, 2022 Avg Type: Log-Pwr TRACE 1 2 3 4 5 6 Run Avg[Hold: 1/100 TVPE MWWWWW	Peak Search	
IFGaincLow #Atten: 40	ΔMkr1 68.34 s	NextPeak	iFGalactow Atten: 10 dB △Mkr1 624 s
10 dB/div Ref 30.00 dBm	-16.786 dB		10 dB/div Ref 0.00 dBm -0.25 dB
20.0		Next Pk Right	.100 Next Pk Right
10.0 2 102			-20.0
0.00		Next Pk Left	300 Next Pk Left
-10.0			400 42
		Marker Delta	Marker Detta
-30.0		MkrCF	Mkr→CF
-40.0			
-50.0		Mkr⊸RefLvl	40.0 Mkr→RefLvl
-60.0		More	000 More
Center 1.876680000 GHz	Span 0 Hz	1 of 2	Center 1.962500000 GHz Span 0 Hz 1 of 2
Kes BW 1.0 MHZ #VBW 3.0 MHZ	Sweep 410.0 s (1001 pts)		Kes BW 1.0 MHZ #VBW 3.0 MHZ Sweep 305.0 s (1001 pts)
detection tin	ne-PCS band UI	-	detection time-PCS band DL
Agilent Spectrum Analyzee - Swept SA		-	Aglent Spectrum Knalyner - Swept SA
Marker 1 70.6200 s PN0: Fast (-) Trig: Free	Avg Type: Log-Pwr         TRACE         12.3.4.5.6           Run         Avg[Held: 1/100         TVPE	Peak Search	Marker 1 69.9000 s         State (1)
IFGainLow Atten: 16 o	48 ΔMkr1 70.62 s	Next Peak	If Galaction Atten: 10 dB Del NNNN N DMkr1 69.90 s Next Peak
10 dB/div Ref 10.00 dBm	-9.580 dB		10 dB/div Ref 0.00 dBm 3.769 dB
0.00		Next Pk Right	.100 162 Next Pk Right
-10.0			200 22
-20.0		Next Pk Left	300 Next Pk Left
30.0			-0.0
		Marker Delta	Marker Delta
		Mkr→CF	400 MkrCF
60.0			
-70.0		Mkr→RefLvl	<sup>80.0</sup> Mkr→RefLvi
-80.0		More	More
Center 1.719630000 GHz Res BW 1.0 MHz #VBW 3.0 MHz	Span 0 Hz Sweep 330.0 s (1001 pts)	1 of 2	Center 2.121610000 GHz Span 0 Hz 1 of 2 Res BW 1.0 MHz VBW 3.0 MHz Sweep 300.0 s (1001 pts)
MSG	STATUS		M5G STATUS
detection tim	ie-AWS bnad U	L	detection time-AWS bnad DL
Apjient Spectrum Analyzer - Swept SA 20 89 50 9 AC 5809	12-2NT SOURCE OFF   ALIGNAUTO 00:36:37 PM Mar 21, 2022	Back Same	Agitent Spectrum Analyzer - Swept SA 16 50 0 a.c. SINGERVT SOLICIC (FF ALIXIV AUTO 04:06:10 FM Mar 21, 2022 Parts Parts b
Marker 1 70.6800 s PNO: Fast Atten: 16 IFGain:Low	Avg Type: Log-Pwr TRACE 1 2 3 4 5 6 Run THE WWWWWW BB DEF P NNNN	. Jan Granch	Marker 1 69.0000 s PN0: Fast +++ Trig: Free Run Trig: Free Run Trig: Search Trig: S
Ref Offset 5 dB	ΔMkr1 70.68 s -0.56 dB	Next Peak	ΔMkr1 69.00 s 10 dB/dex Eef 0.00 dBm -0.80 dB
0.00		Next Pk Right	-10.0 Next Pk Right
-10.0			
▲1∆2		Next Pk Left	30.0
-20.0 102		Next Pk Left	
		Marker Delta	-0.0 Marker Deta
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200		Marker Delta	400 Marker Deta
		Marker Delta MikrCF	40 6 Marker Deka 60 0 Marker Deka 60 0 Marker Deka 60 0 Marker Deka 60 0 Marker Deka
		Next Pk Left Marker Delta MkrCP MkrRef Lvi	40 Marker Deka
		Next Pix Left Marker Delta MkrCF MkrRef Lvi	400 400 400 400 400 400 400 400
		Next Pix Left Marker Delta MixrCF MixrRefLvi More	400         Marker Dela           600         Marker Dela
300         4122           300         42           42         42	Span 0Hz Sweep 310.0 s (1001 pts)	Next Pk Left Marker Delta MkrCP MkrRef Lvi More 1 of 2	400         Marker Deta
300         4122           300         42           42         42	Sweep 30.0 s (100 pts)	Next Pk Left Marker Delta MkrCP MkrRef Lv More 1 of 2	400         Marker Deta

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IFGain	ow Mater: 20 cb	AM	lkr1 70.56 s	NextPeak			IFGaind	w Atten: 1			A1	Mkr1 69 6	NextPea
Ref Offset 5 dB 10 dB/div Ref 10.00 dBm		2	-10.61 dB		10 dB/	liv Ref 0.00	dBm					0.09	dB
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0.00			Ne.	EAL PK RIGHL	-10.0	w	●1∆2			-			HEAL PK RIGI
-10.0 A2					-20.0	2				++	-		_
-20.0			N	Next Pk Left	-30.0								Next Pk Le
-30.0			M	Marker Delta	-40.0								Marker Delt
-40.0					-50.0		+ + + -				-		_
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60.0	angelen and and an and and and	Ason a second as a second	www.stasand-stas		-70.0					-	a address		
-70.0			м	Mkr→RefLvl	-80.0								Mkr→RefL
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Capter 705 170000 MHz			Soon 0 Hz	1 of 2	Capte	r 742 210000 M	ALL 2					Sean (	Mor 1 of
Res BW 1.0 MHz	VBW 3.0 MHz	Sweep 330.0	.0 s (1001 pts)		Res E	W 1.0 MHz	1	VBW 3.0 MH		Swe	eep 30	0.0 s (1001	ots)
		and the second se								5	STATUS		
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### oscillation mitigation or shutdown:

PCS Band	Uplink(1850-1910MHz)				
Signal Type	AWGN				
Isolation	Deffrence	Limit	Result		
dB	dB	dB			
+5	3.61	<12	Pass		
+4	4.35	<12	Pass		
+3	7.22	<12	Pass		
+2	8.64	<12	Pass		
+1	10.25	<12	Pass		
0		shutdown			

PCS Band	Downlink(1930-1990MHz)				
Signal Type		AWGN			
Isolation	Deffrence	Limit	Result		
dB	dB	dB			
+5	4.39	<12	Pass		
+4	6.58	<12	Pass		
+3	7.36	<12	Pass		
+2	8.99	<12	Pass		
+1	10.25	<12	Pass		
0	11.20	<12	Pass		
-1		shutdown			

AWS band	Uplink(1710-1755MHz)				
Signal Type		AWGN			
Isolation	Deffrence	Limit	Result		
dB	dB	dB			
+5	6.35	<12	Pass		
+4	7.25	<12	Pass		
+3	8.33	<12	Pass		
+2	9.16	<12	Pass		
+1	9.87	<12	Pass		
0	10.65	<12	Pass		
-1		shutdown			



Report No.: LCS220226024AEA

AWS band	Downlink(2110-2155MHz)				
Signal Type	AWGN				
Isolation	Deffrence	Limit	Result		
dB	dB	dB			
+5	3.69	<12	Pass		
+4	4.65	<12	Pass		
+3	7.58	<12	Pass		
+2	8.21	<12	Pass		
+1	11.25	<12	Pass		
0		shutdown			

Cellular Band	Uplink(824-849MHz)				
Signal Type		AWGN			
Isolation	Deffrence	Limit	Result		
dB	dB	dB			
+5	5.24	<12	Pass		
+4	6.33	<12	Pass		
+3	5.94	<12	Pass		
+2	9.24	<12	Pass		
+1		shutdown			

Cellular Band	Downlink(869-894MHz)						
Signal Type		AWGN					
Isolation	Deffrence	Limit	Result				
dB	dB	dB					
+5	4.52	<12	Pass				
+4	6.33	<12	Pass				
+3	7.29	<12	Pass				
+2	9.12	<12	Pass				
+1	11.02	<12	Pass				
0		shutdown					

Lower700MHz band		Uplink(698-716MHz)						
Signal Type		AWGN						
Isolation	Deffrence	Limit	Result					
dB	dB	dB						
+5	3.69	<12	Pass					
+4	5.22	<12	Pass					
+3	8.69	<12	Pass					
+2	7.28	<12	Pass					
+1	9.24	<12	Pass					
0	10.35	<12	Pass					
-1	11.26	<12	Pass					
-2		shutdown						

Lower700MHz band		Downlink(728-746MHz)						
Signal Type		AWGN						
Isolation	Deffrence	Limit	Result					
dB	dB	dB						
+5	6.35	<12	Pass					
+4	7.25	<12	Pass					
+3	7.36	<12	Pass					
+2	8.14	<12	Pass					
+1	9.22	<12	Pass					
0	10.25	<12	Pass					
-1		shutdown						

Upper 700Mhz Band		Uplink(776-787MHz)						
Signal Type		AWGN						
Isolation	Deffrence	Limit	Result					
dB	dB	dB						
+5	3.61	<12	Pass					
+4	6.26	<12	Pass					
+3	7.99	<12	Pass					
+2	9.34	<12	Pass					
+1	10.26	<12	Pass					
0	10.99	<12	Pass					
-1	11.68	<12	Pass					
-2		shutdown	·					

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Upper 700Mhz Band	Downlink(746-757MHz)						
Signal Type		AWGN					
Isolation	Deffrence	Limit	Result				
dB	dB	dB	Result Pass Pass Pass Pass Pass Pass				
+5	5.28	<12	Pass				
+4	6.31	<12	Pass				
+3	7.93	<12	Pass				
+2	8.64	<12	Pass				
+1	10.21	<12	Pass				
0		shutdown					

# 7. RADIATION SPURIOUS EMISSION

### Applicable Standard

According to \$2.1053 Measurements required: Field strength of spurious radiation. The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log 10$  (P) dB. So the Conducted emissions limit = -13 dBm

## **Test Procedure**

According to section 7.12 of KDB 935210 D03 Signal Booster Measurement v04r04:

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

Separate compliance requirements are applicable for any digital device circuitry that controls additional functions or capabilities and that is not used only to enable operation of the transmitter in a booster device [i.e., Section 15.3(k) digital device definition]. Separate compliance requirements are applicable for any receiver components/functions that tune within 30 MHz to 960 MHz contained in booster devices [Section 15.101(b)].

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

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

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 PIN as determined from measurement results per 7.2.

d) Measure the radiated spurious emissions from the EUT from the lowest to the highest frequencies as specified in Section 2.1057. Maximize the radiated emissions by using the procedures described in ANSI C63.26.

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 uplink and downlink operational bands.



Figure 10 – Radiated spurious emissions test and instrumentation setup



#### **Test Data**

Temperature	23.1°C	Humidity	54.2%
Test Engineer	Ling Zhu	Test Mode	Transmitting

#### Uplink, Test Frequency 1880MHz

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin	Polarization
834.29	-48.51	2.32	3.00	10.03	-40.80	-13.00	-27.80	Н
3760.23	-47.87	6.19	3.00	11.41	-42.65	-13.00	-29.65	Н
834.29	-43.07	2.32	3.00	10.03	-35.36	-13.00	-22.36	V
3760.23	-40.85	6.19	3.00	11.41	-35.63	-13.00	-22.63	V

### Uplink, Test Frequency 1732.5MHz

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin	Polarization
776.24	-49.06	2.63	3.00	7.84	-43.85	-13.00	-30.85	Н
3465.23	-52.40	5.94	3.00	10.86	-47.48	-13.00	-34.48	Н
776.24	-46.83	2.63	3.00	7.84	-41.62	-13.00	-28.62	V
3465.23	-44.15	5.94	3.00	10.86	-39.23	-13.00	-26.23	V

#### Uplink, Test Frequency 836.5MHz

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin	Polarization
634.77	-49.80	1.98	3.00	11.12	-40.66	-13.00	-27.66	Н
1670.36	-46.86	4.45	3.00	12.02	-39.29	-13.00	-26.29	Н
634.77	-42.91	1.98	3.00	11.12	-33.77	-13.00	-20.77	V
1670.36	-43.57	4.45	3.00	12.02	-36.00	-13.00	-23.00	V

Uplink, Test Frequency 707.5MHz

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin	Polarization
823.19	-47.77	1.75	3.00	10.44	-39.08	-13.00	-26.08	Н
1415.38	-46.22	4.66	3.00	12.33	-38.55	-13.00	-25.55	Н
823.19	-44.02	1.75	3.00	10.44	-35.33	-13.00	-22.33	V
1415.38	-42.97	4.66	3.00	12.33	-35.30	-13.00	-22.30	V



Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin	Polarization
588.24	-47.08	1.99	3.00	11.12	-37.95	-13.00	-24.95	Н
1564.21	-48.05	4.85	3.00	12.02	-40.88	-13.00	-27.88	Н
588.24	-42.99	1.99	3.00	11.12	-33.86	-13.00	-20.86	V
1564.21	-41.67	4.85	3.00	12.02	-34.50	-13.00	-21.50	V

### Uplink, Test Frequency 782MHz

## Downlink, Test Frequency1960MHz

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin	Polarization
833.52	-49.92	2.36	3.00	9.62	-42.66	-13.00	-29.66	Н
3920.664	-48.06	6.24	3.00	11.46	-42.84	-13.00	-29.84	Н
833.52	-46.67	2.36	3.00	9.62	-39.41	-13.00	-26.41	V
3920.664	-41.34	6.24	3.00	11.46	-36.12	-13.00	-23.12	V

#### Downlink, Test Frequency2132.5MHz

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin	Polarization
741.88	-52.12	2.65	3.00	9.9	-44.87	-13.00	-31.87	Н
4265.21	-53.38	5.95	3.00	10.91	-48.42	-13.00	-35.42	Н
741.88	-44.77	2.65	3.00	9.9	-37.52	-13.00	-24.52	V
4265.21	-46.01	5.95	3.00	10.91	-41.05	-13.00	-28.05	V

#### Downlink, Test Frequency 881.5MHz

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin	Polarization
569.14	-47.98	2.95	3.00	9.98	-40.95	-13.00	-27.95	Н
1763.28	-46.78	6.63	3.00	11.66	-41.75	-13.00	-28.75	Н
569.14	-43.67	2.95	3.00	9.98	-36.64	-13.00	-23.64	V
1763.28	-42.52	6.63	3.00	11.66	-37.49	-13.00	-24.49	V

#### Downlink, Test Frequency 737MHz

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin	Polarization
596.28	-49.24	1.77	3.00	10.45	-40.56	-13.00	-27.56	Н
1474.38	-44.35	5.69	3.00	12.36	-37.68	-13.00	-24.68	Н
596.28	-44.51	1.77	3.00	10.45	-35.83	-13.00	-22.83	V
1474.38	-40.01	5.69	3.00	12.36	-33.34	-13.00	-20.34	V

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Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin	Polarization
469.25	-50.05	2.12	3.00	9.98	-42.19	-13.00	-29.19	Н
1503.68	-45.62	5.93	3.00	11.66	-39.89	-13.00	-26.89	Н
469.25	-43.38	2.12	3.00	9.98	-35.52	-13.00	-22.52	V
1503.68	-40.57	5.93	3.00	11.66	-34.84	-13.00	-21.84	V

#### Downlink, Test Frequency 751.5MHz

Remark:

1. We were not recorded other points as values lower than limits.

2.  $Peak(EIRP)=P_{Mea}+P_{Ag}-P_{cl}+G_{a}$ 3. Margin = EIRP - Limit

4. For Outdoor Antenna(PTE-RB-800-2100), Indoor Antenna(PTE-CI-800-2500); Outdoor Antenna(AN-101), Indoor Antenna(PTE-YG-800/1900);OutdoorAntenna(AN-201),

Indoor Antenna(PTE-GF-700-2500) were estimated ,the report recorded the worst result of Outdoor Antenna (AN-201), Indoor Antenna(AN-101).

# 8. TEST SETUP PHOTOGRAPHS OF EUT

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

# 9. EXTERIOR PHOTOGRAPHS OF THE EUT

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

# **10. INTERIOR PHOTOGRAPHS OF THE EUT**

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

-----THE END OF TEST REPORT-----