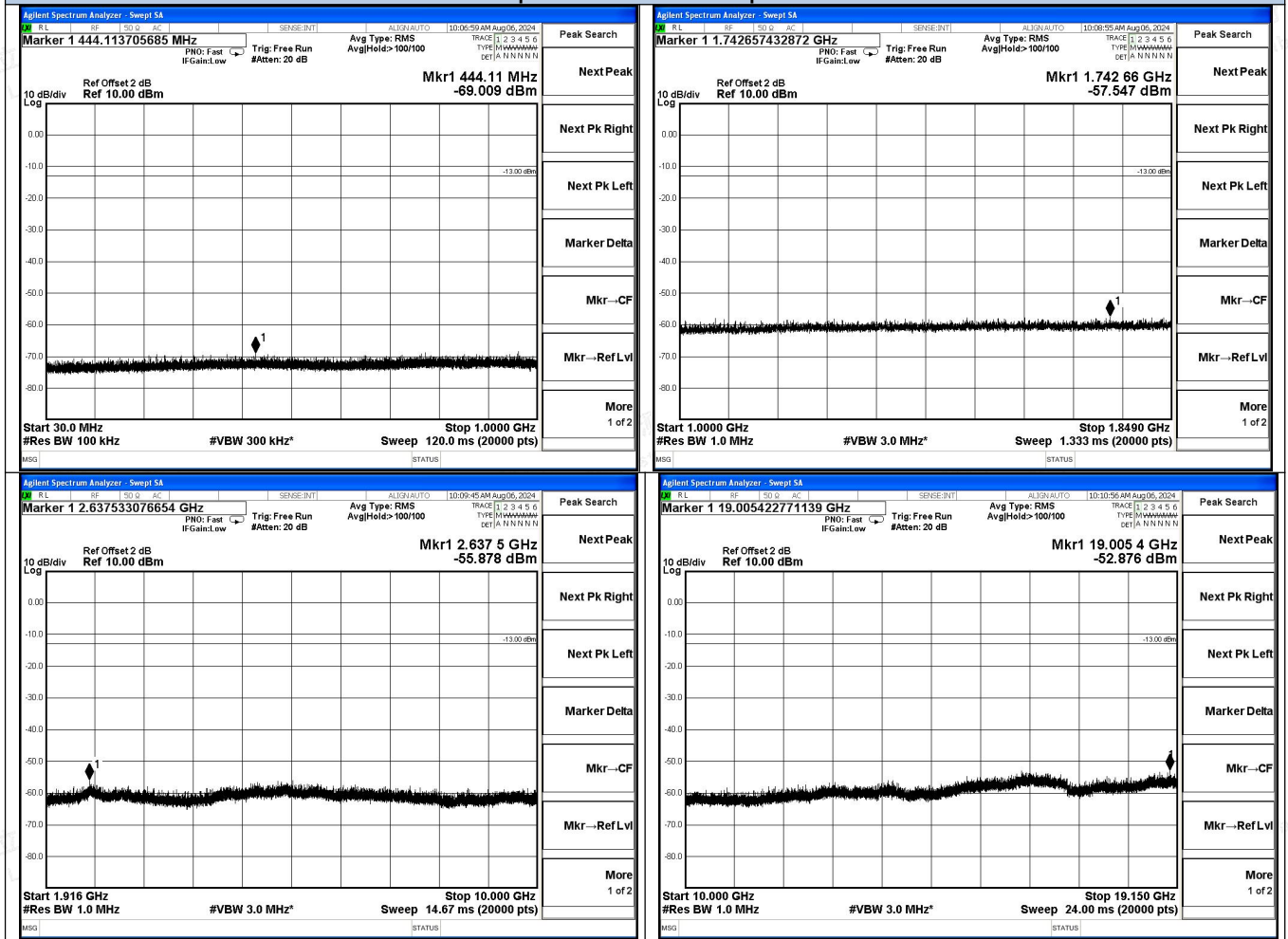




Test Graphs-PCS Band Uplink-GSM



Shenzhen LCS Compliance Testing Laboratory Ltd.

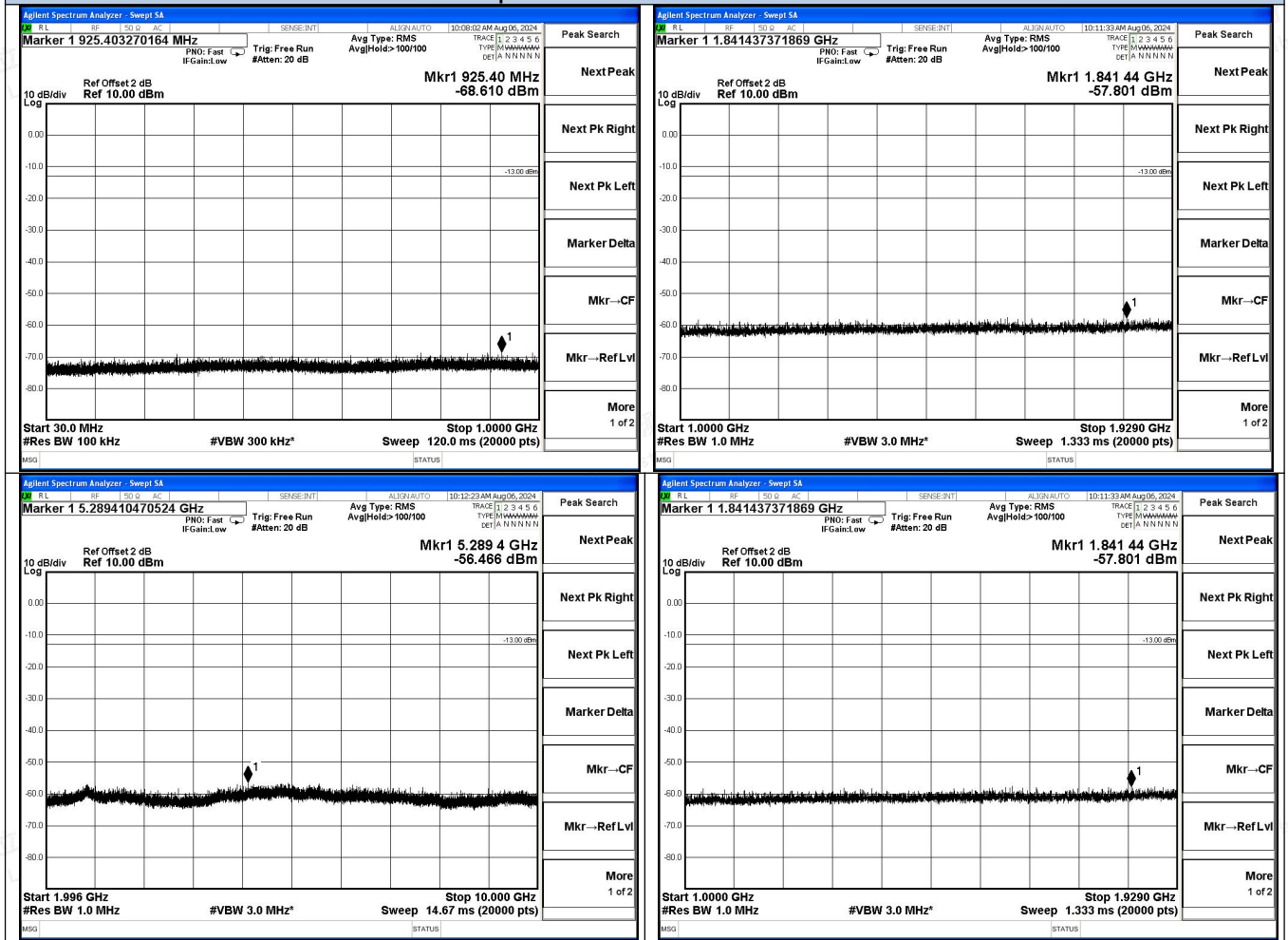
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

Scan code to check authenticity



Test Graphs-PCS Band Downlink-GSM



Shenzhen LCS Compliance Testing Laboratory Ltd.

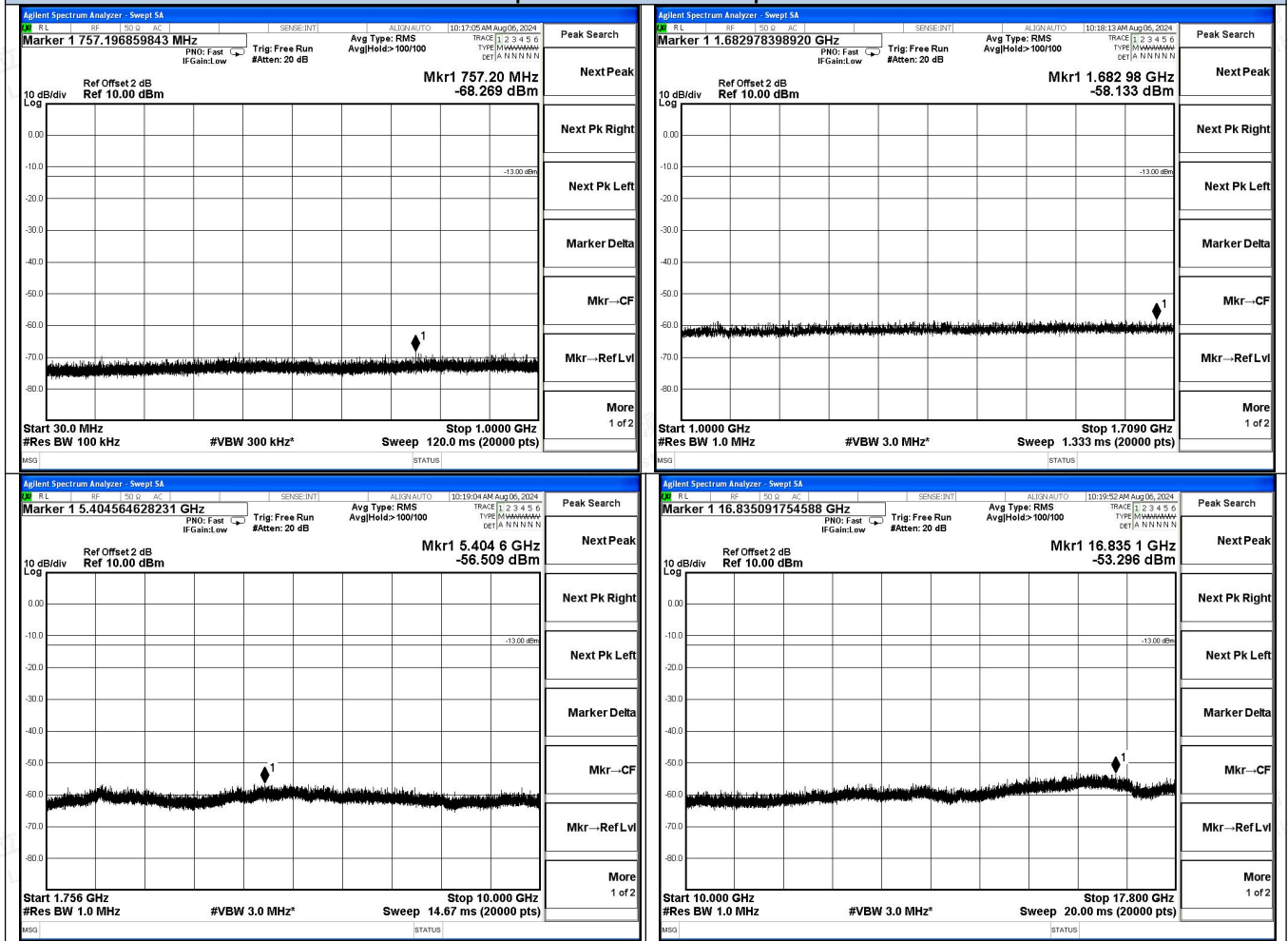
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

Scan code to check authenticity



Test Graphs-AWS Band Uplink-GSM



Shenzhen LCS Compliance Testing Laboratory Ltd.

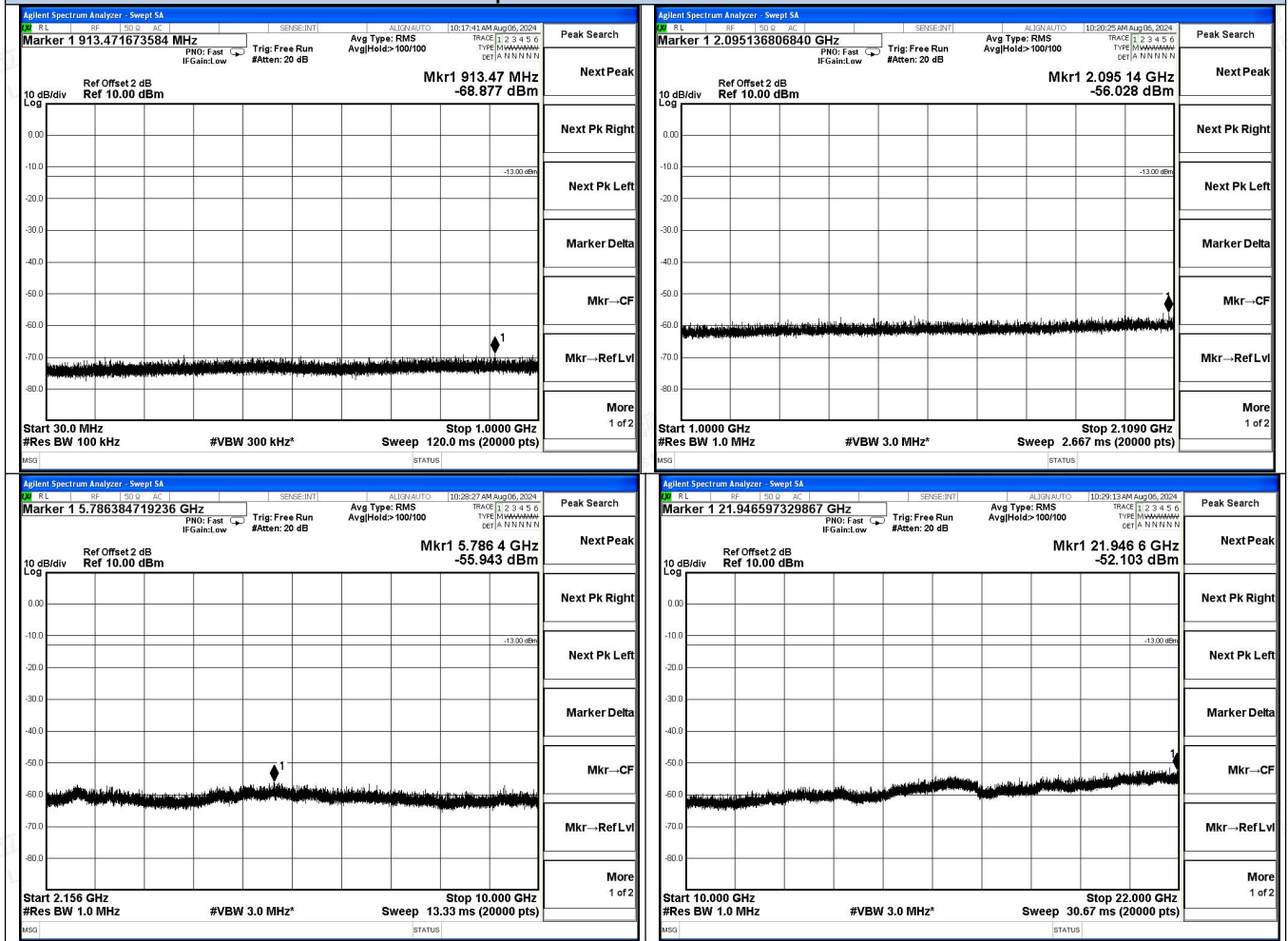
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

Scan code to check authenticity



Test Graphs-AWS Band Downlink-GSM



Shenzhen LCS Compliance Testing Laboratory Ltd.

Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

Scan code to check authenticity



6.9 Uplink Inactivity

6.9.1 Applicable Standard

According to §20.21(e)(8)(i)(I) Uplink Inactivity:

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

6.9.2 Test Procedure

According to section 7.8 of KDB 935210 D03 Signal Booster Measurement v04r04:

- Connect the EUT to the test equipment as shown in Figure 1 with the uplink output (donor) port connected to the spectrum analyzer.
 - Select the power averaging (rms) detector.
 - Set the spectrum analyzer RBW for 1 MHz with the VBW ≥ 3 RBW.
 - Set the center frequency of the spectrum analyzer to the center of the uplink operational band.
 - Set the span for 0 Hz with a single sweep time for a minimum of 330 seconds.
 - Start to capture a new trace using MAX HOLD.
 - After approximately 15 seconds, turn on the EUT power.
 - After the full spectrum analyzer trace is complete, place a MARKER on the leading edge of the pulse, then use the DELTA MARKER METHOD to measure the time until the uplink becomes inactive.
 - Affirm that the noise level is below the uplink inactivity noise power limit, as specified by the rules.
 - Capture the plot for inclusion in the test report.
 - Measure noise using procedures in 7.7.1a) to 7.7.1f).
- Repeat 7.8d) through 7.8k) for all operational uplink bands.



Shenzhen LCS Compliance Testing Laboratory Ltd.

Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

Scan code to check authenticity



6.9.3 Test Data

Temperature	23.6℃	Humidity	52.3%
Test Engineer	Nick Peng	Test Mode	Transmitting

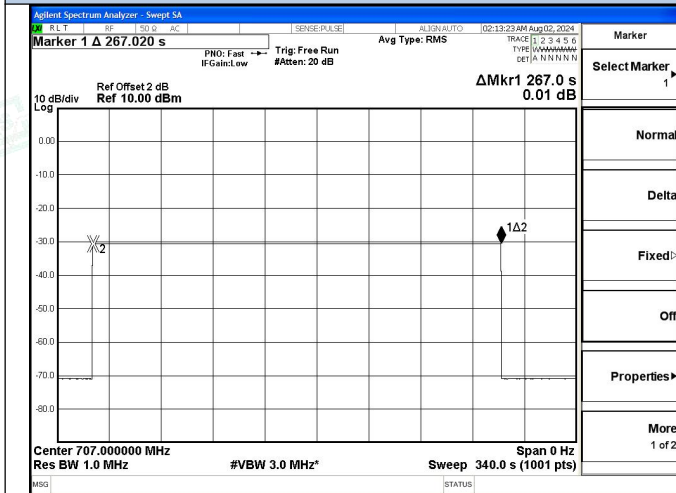
Uplink Inactivity			
Operation Band	Measured (s)	Limit (s)	Result
Lower 700 Band	267.0	300.0	PASS
Upper 700 Band	268.3	300.0	PASS
Cellular Band	268.7	300.0	PASS
PCS Band	270.7	300.0	PASS
AWS Band	265.3	300.0	PASS



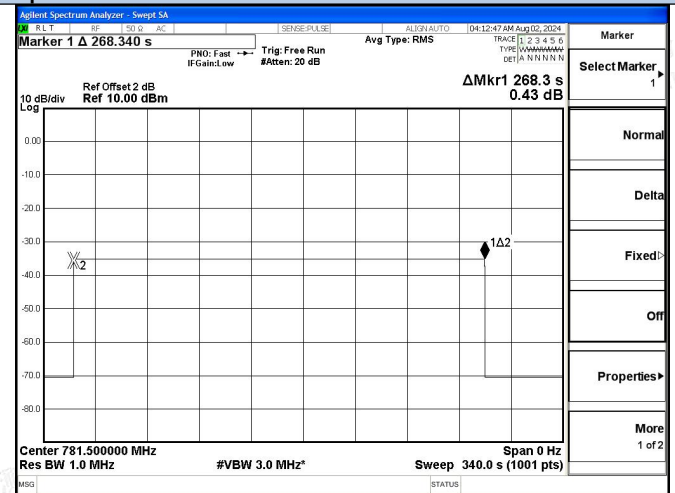
Shenzhen LCS Compliance Testing Laboratory Ltd.
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com
Scan code to check authenticity



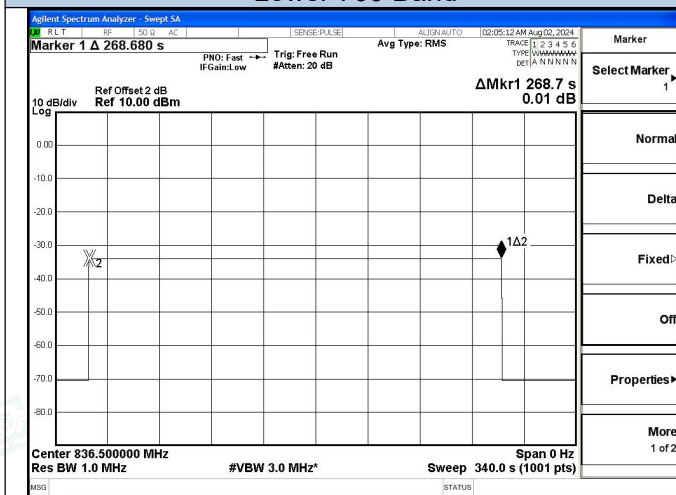
Test Graphs



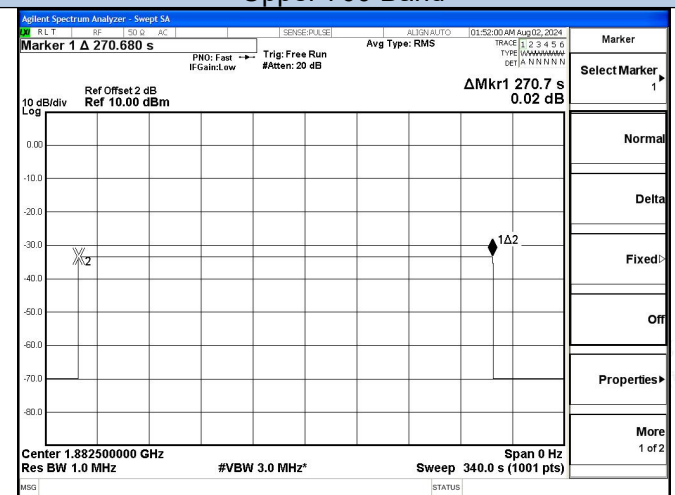
Lower 700 Band



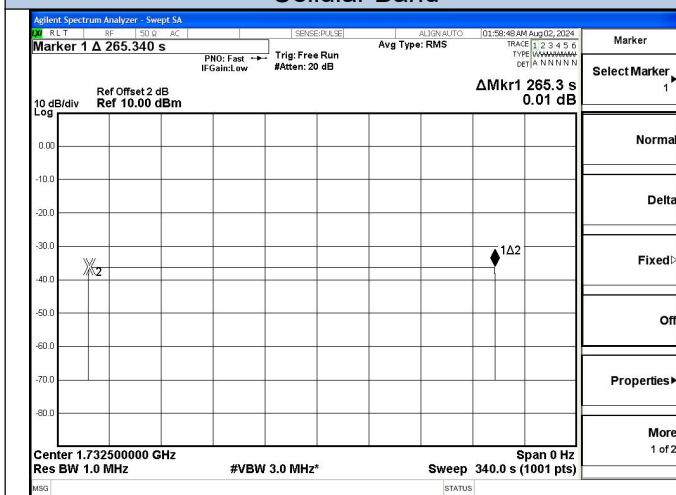
Upper 700 Band



Cellular Band



PCS Band



AWS Band



Shenzhen LCS Compliance Testing Laboratory Ltd.

Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

Scan code to check authenticity



6.10 Occupied Bandwidth

6.10.1 Applicable Standard

According to §2.1049 Measurements required: Occupied bandwidth.

This measurement is required to compare the consistency of the output signal relative to the input signal, and to satisfy the requirements of Section 2.1049.

6.10.2 Test Procedure

According to section 7.10 of KDB 935210 D03 Signal Booster Measurement v04r04:

- Connect the test equipment as shown in Figure 10 to firstly measure the characteristics of the test signals produced by the signal generator.
- Set VBW $\geq$ 3 RBW.
- 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 OBW as necessary for accurately viewing the signals.
- Set the signal generator for power level to match the values obtained from the tests of 7.2.
- 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.
- Set the spectrum analyzer RBW for 1% to 5% of the EBW.
- Capture the spectrum analyzer trace for inclusion in the test report.
- Repeat 7.10c) to 7.10g) for CDMA and W-CDMA modulation, adjusting the span as necessary. AWGN or LTE may be used in place of W-CDMA, as an option.
- Repeat 7.10c) to 7.10h) for all uplink and downlink operational bands.
- Connect the test equipment as shown in Figure 10, with the uplink output (donor) port connected to the spectrum analyzer, and the server port connected to the signal generator.
- Repeat 7.10c) to 7.10i) with this EUT uplink path test setup.
- Connect the test equipment as shown in Figure 10, with the downlink output (server) port connected to the spectrum analyzer, and the donor port connected to the signal generator.
- Repeat 7.10c) to 7.10i) with this EUT downlink path test setup.

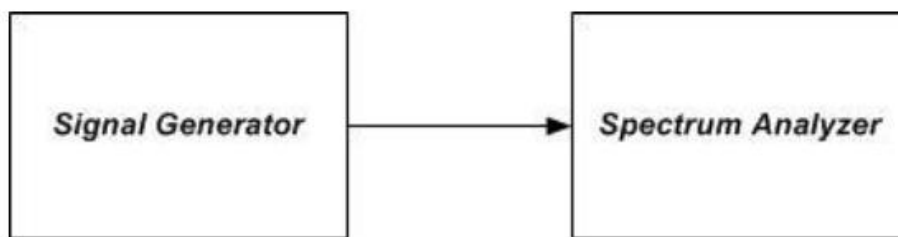


Figure 10 – Test setup for measuring characteristics of test signals used for subsequent EUT occupied bandwidth testing





6.10.3 Test data

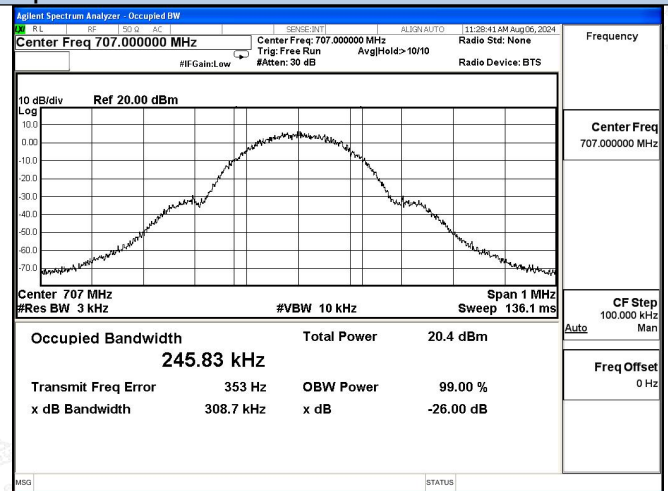
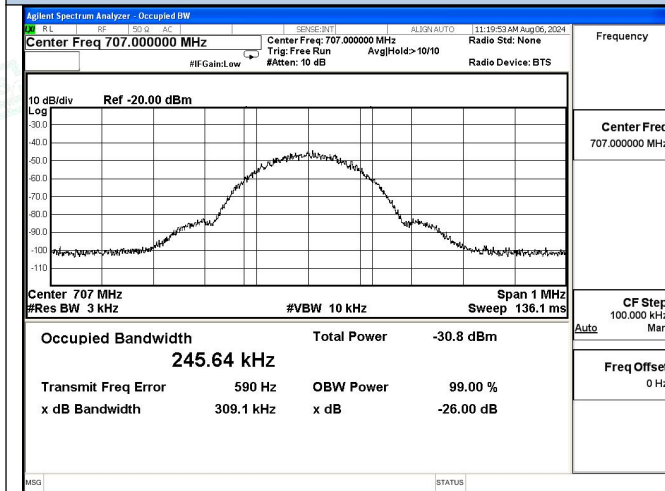
Temperature	23.6℃	Humidity	52.3%
Test Engineer	Nick Peng	Test Mode	Transmitting

Operation Band		Signal Type	Input OBW (MHz)	Output OBW (MHz)
Uplink	Lower 700 Band	GSM	0.246	0.246
		CDMA	1.2606	1.2641
		LTE	4.2423	4.2512
	Upper 700 Band	GSM	0.244	0.246
		CDMA	1.2616	1.2592
		LTE	4.247	4.2499
	Cellular Band	GSM	0.244	0.244
		CDMA	1.2639	1.2600
		LTE	4.2507	4.2361
	PCS Band	GSM	0.246	0.245
		CDMA	1.2606	1.2592
		LTE	4.2504	4.2377
	AWS Band	GSM	0.244	0.243
		CDMA	1.2600	1.2598
		LTE	4.2469	4.2541
Downlink	Lower 700 Band	GSM	0.246	0.242
		CDMA	1.2606	1.2614
		LTE	4.2685	4.2408
	Upper 700 Band	GSM	0.246	0.245
		CDMA	1.258	1.2607
		LTE	4.2564	4.2475
	Cellular Band	GSM	0.246	0.241
		CDMA	1.2560	1.2632
		LTE	4.2605	4.2536
	PCS Band	GSM	0.246	0.245
		CDMA	1.2616	1.2539
		LTE	4.2772	4.243
	AWS Band	GSM	0.246	0.243
		CDMA	1.2649	1.2576
		LTE	4.2744	4.2415

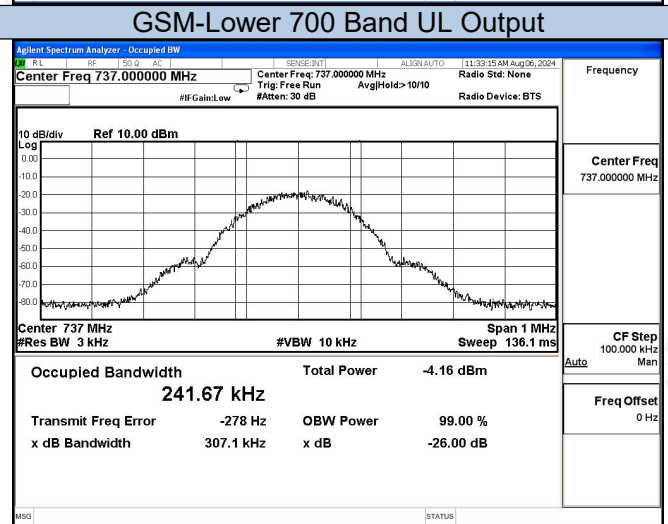
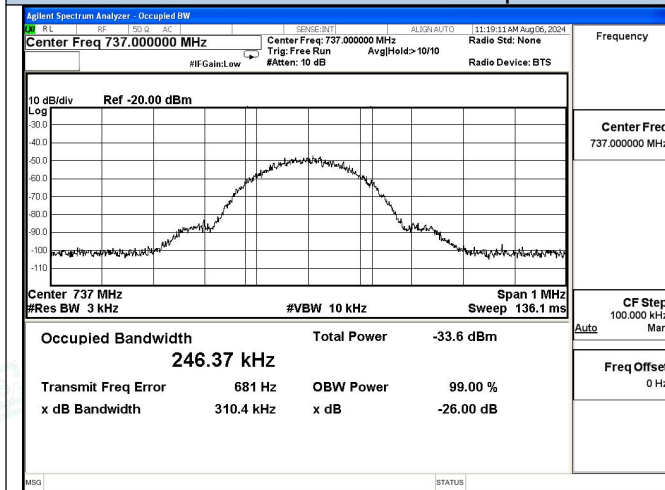




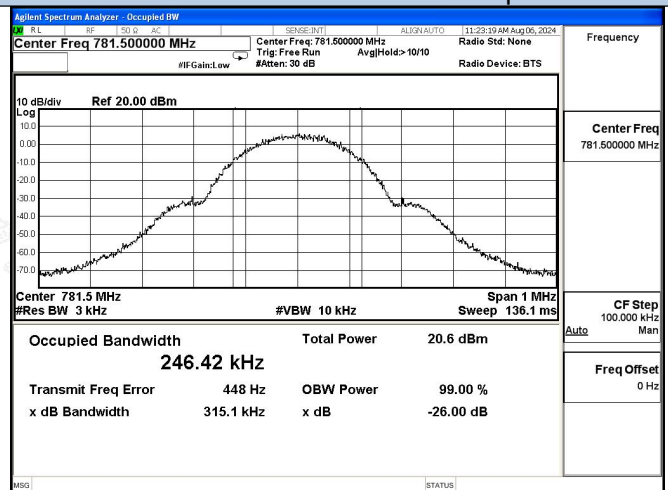
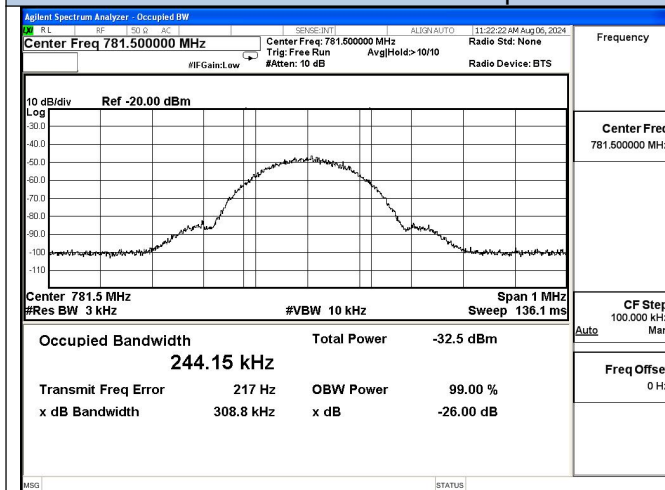
Test Graphs



GSM-Lower 700 Band UL Input



GSM-Lower 700 Band DL Input



GSM-Upper 700 Band UL Input

GSM-Upper 700 Band UL Output

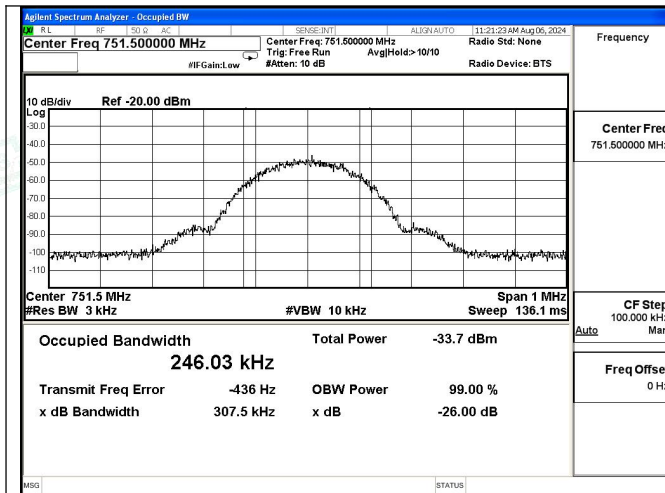


Shenzhen LCS Compliance Testing Laboratory Ltd.

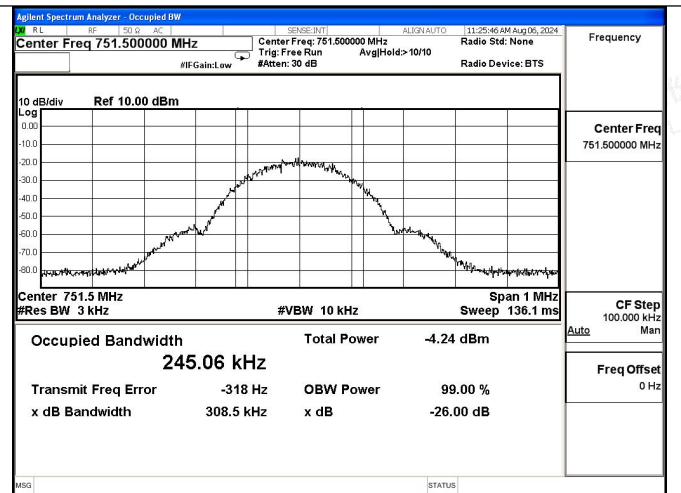
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

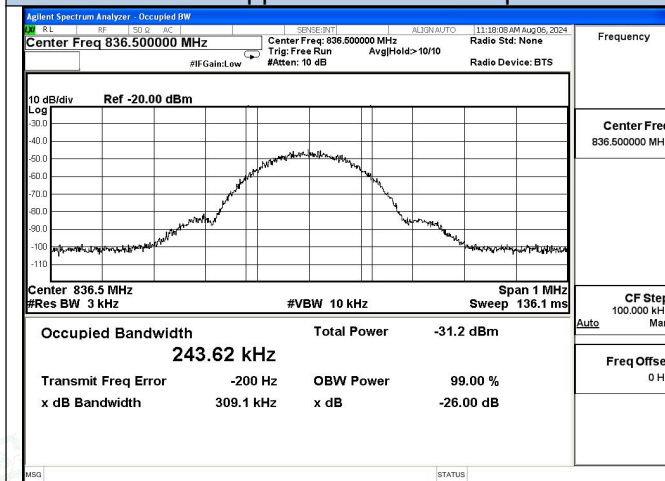
Scan code to check authenticity



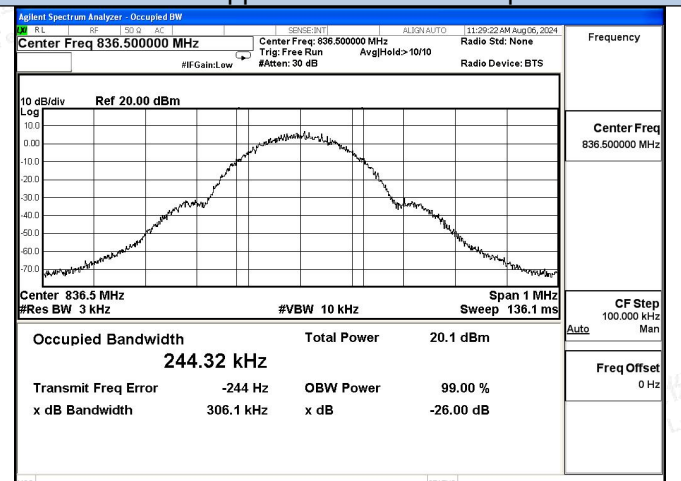
GSM-Upper 700 Band DL Input



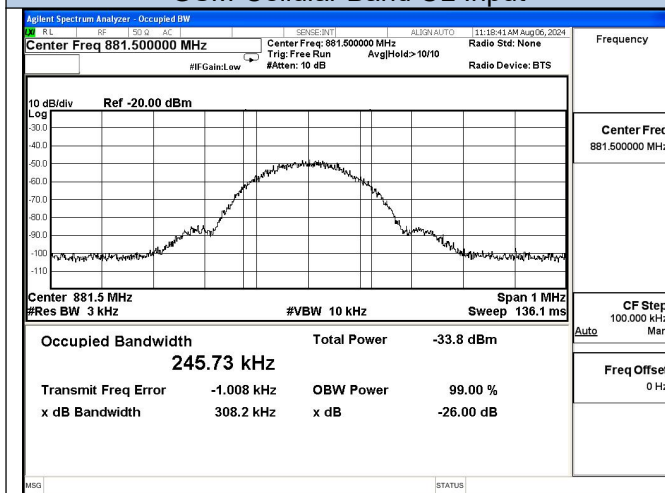
GSM-Upper 700 Band DL Output



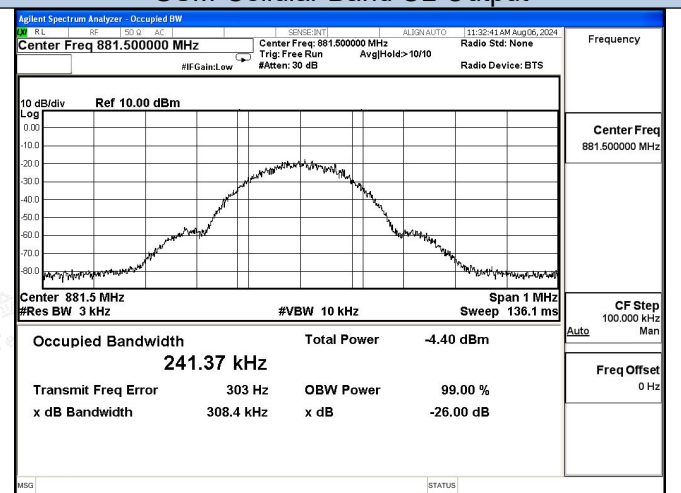
GSM-Cellular Band UL Input



GSM-Cellular Band UL Output



GSM-Cellular Band DL Input



GSM-Cellular Band DL Output

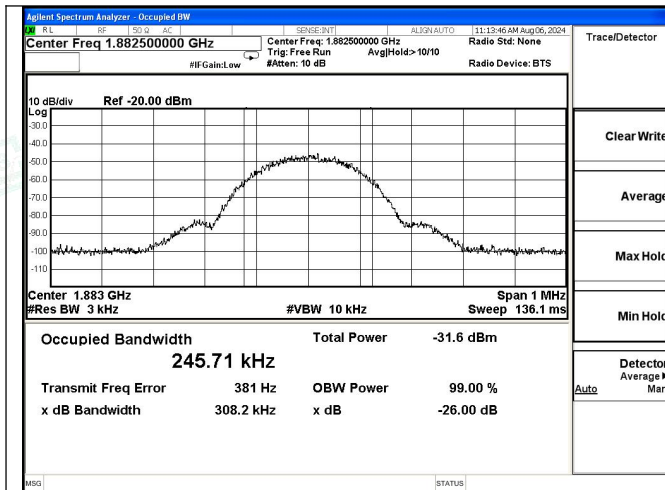


Shenzhen LCS Compliance Testing Laboratory Ltd.

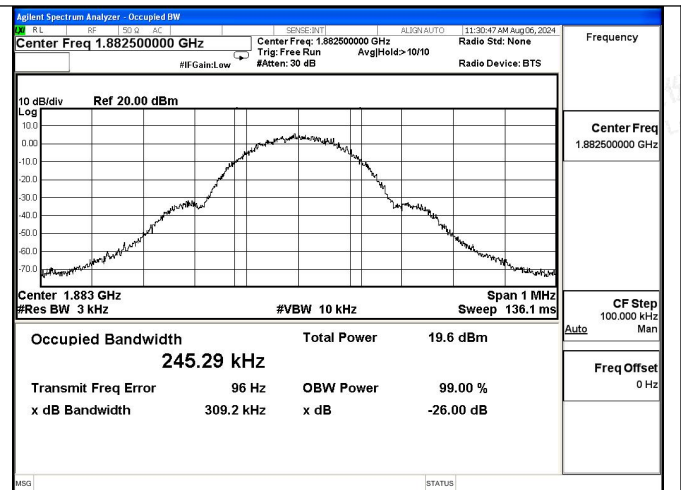
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

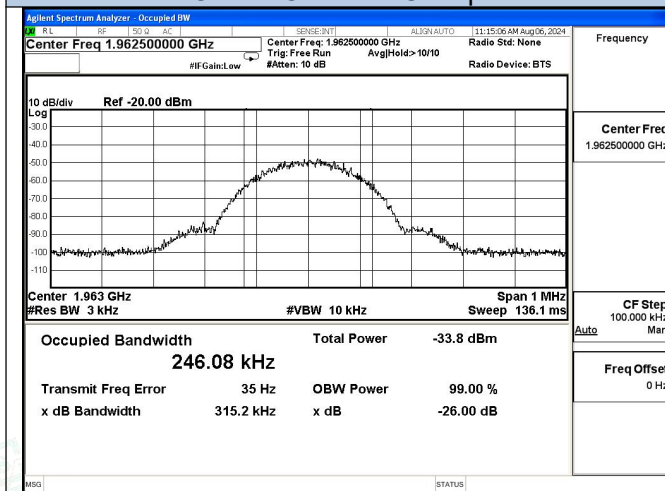
Scan code to check authenticity



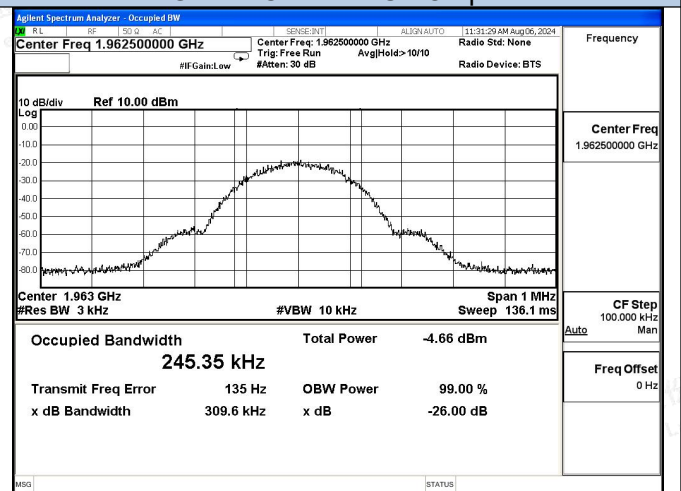
GSM-PCS Band UL Input



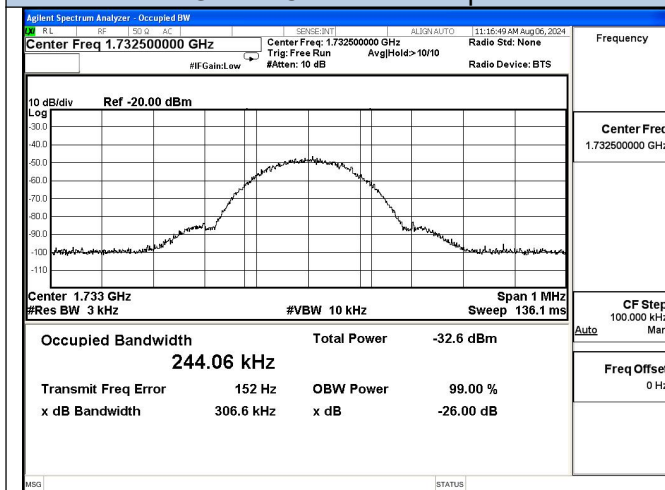
GSM-PCS Band UL Output



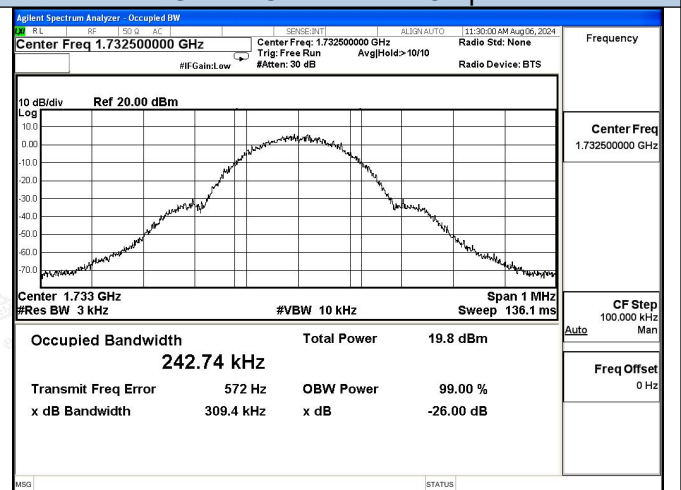
GSM-PCS Band DL Input



GSM-PCS Band DL Output



GSM-AWS Band UL Input



GSM-AWS Band UL Output

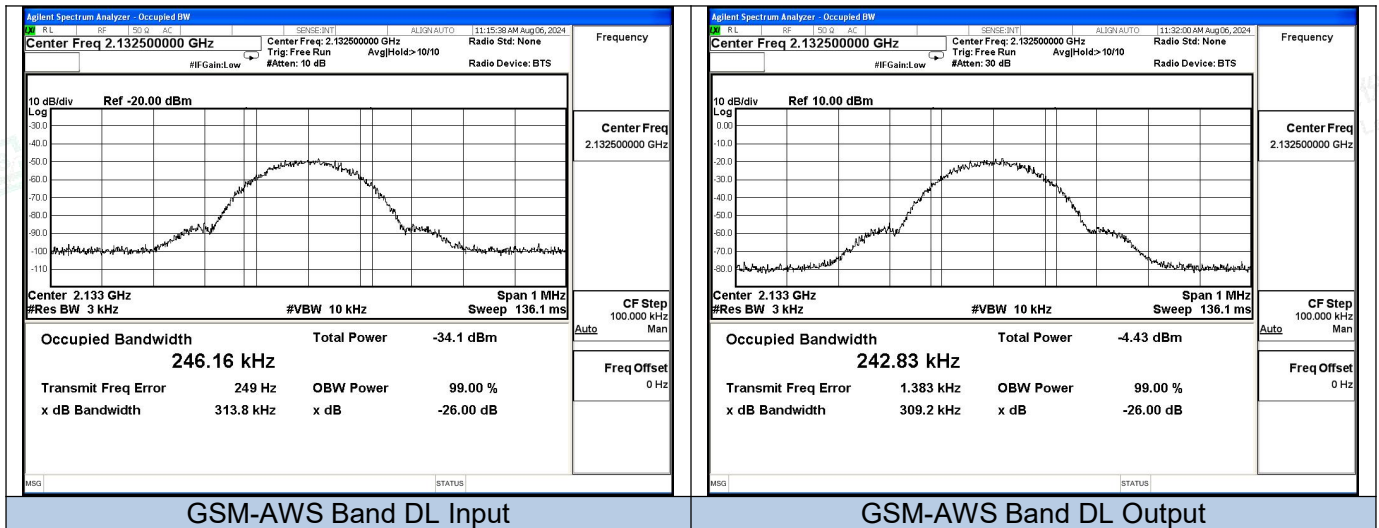


Shenzhen LCS Compliance Testing Laboratory Ltd.

Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

Scan code to check authenticity



Shenzhen LCS Compliance Testing Laboratory Ltd.

Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

Scan code to check authenticity