Test Report

Prepared for: Wilson Electronics, LLC

Model: Enterprise 4330

Description: Quint Band Industrial Signal Booster

FCC ID: PWO075I

ISED: 4726A-075I

Serial Number: 4601075001102805280

Project No: p2560004

Test Results: Pass

To

FCC Part 20 Industrial
ISED RSS-131 (Issue 4)

Date of Issue: August 4, 2025

On the behalf of the applicant:	**Wilson Electronics, LLC (weBoost)** **3301 E Deseret Drive** **St. George, UT 84790**
To the attention of:	**Ilesh Patel, Senior Engineering Product Manager** **Ph: (435)673-5021** **Email: ipatel@wilsonelectronics.com**
Prepared By:	**Compliance Testing, LLC** **Mesa, AZ 85204** **(480) 926-3100 phone / (480) 926-3598 fax** **www.compliancetesting.com** **ANAB Cert#: AT-2901** **FCC Site Reg.750616** **ISED Site Reg. #2044A-2**

Greg Corbin

Project Test Engineer

Test Result Summary

Specification		Test Name	Pass, Fail, N/A	Comments
FCC	ISED			
KDB 935210 D05 (3.2)		AGC Threshold	Pass	
KDB 935210 D05 (3.3)	RSS-131_9.1	Out of Band Rejection	Pass	
2.1049 KDB 935210 D05 (3.4)	RSS-GEN_9.2	Input vs Output signal comparison (OCC BW)	Pass	
2.1046 KDB 935210 D05 (3.5)	RSS-131_9.3	Mean Output Power and Gain	Pass	
22.917(b) 24.238((b) 27.53(c)(5) 27.53(g) 27.53(h)(3) KDB 935210 D05 (3.6.2)	RSS-130_4.7.1 RSS-132_5.5(i) RSS-133_5.6 RSS-139_5.6	Out-of-Band Emissions	Pass	
2.1051 22.917(a) 24.238((a) 27.53(c) 27.53(f) 27.53(g) 27.53(h)(1)	RSS-130_4.7.1 RSS-130_4.7.2 RSS-132_5.5(ii) RSS-133_5.6 RSS-139_5.6	Conducted Spurious Emissions	Pass	
2.1053 KDB 935210 D05 (3.8)	RSS-GEN_6.13	Radiated Spurious	Pass	
2.1055 KDB 935210 D05 (3.7)	RSS-131_9.4	Frequency Stability	N/A	No frequency translation

Statements of conformity are reported as:

- Pass - the measured value is below the acceptance limit, *acceptance limit = test limit*.
- Fail - the measured value is above the acceptance limit, *acceptance limit = test limit*.

Test Report Revision History

Revision	Date	Revised By	Reason for Revision
1.0	8/4/2025	Greg Corbin	Original Document
2.0	8/21/25	Greg Corbin	Corrected FCC ID, ISED ID on page 1, added modulation types to page 8

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ANAB

Compliance Testing, LLC, has been accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to the joint ISO-ILAC-IAF Communiqué dated January 2009).

The tests results contained within this test report all fall within our scope of accreditation, unless noted below.

Please refer to http://www.compliancetesting.com/labscope.html for current scope of accreditation.

FCC Site Reg. #750616

IC Site Reg. #2044A-2

Test and Measurement Data

All tests and measurement data shown were performed in accordance with FCC Rules and Regulations, Part 2, Subpart J, Part: 20.21, ANSI C63.26-2015, KDB 935210 D05, RSS-131, RSS-GEN where appropriate.

Standard Test Conditions and Engineering Practices

Except as noted herein, the following conditions and procedures were observed during the testing:

In accordance with ANSI/C63.4-2014, and unless otherwise indicated in the specific measurement results, the ambient temperature of the actual EUT was maintained within the range of 10° to 40°C (50° to 104°F), unless the particular equipment requirements specified testing over a different temperature range. Also, unless otherwise indicated, the humidity levels were in the range of 10% to 90% relative humidity.

Environmental Conditions		
Temp (ºC)	**Humidity (%)**	**Pressure (mbar)**
25.7 – 30.2	36.4 – 42.6	964.1 – 970.8

Measurement results, unless otherwise noted, are worse case measurements.

EUT Description

Model:	Enterprise 4330
Serial:	4601075001102805280
Firmware:	3.6.2.8.8
Software:	N/A
HVIN	460075 (wall mount) 461075 (rack mount)
PMN	460075 (wall mount) 461075 (rack mount)
UPN	N/A
FVIN	N/A
Description:	Quint Band Industrial Signal Booster
Additional Information:	The EUT is an In-Building bi-directional amplifier for the boosting of cellular phone signals and data communication devices. The EUT has 4 server ports and 3 donor ports. A more detailed description of the server ports and donor ports is after the frequency band information.
Power	120 VAC
Receipt of Sample(s):	7/3/2025
EUT Condition:	**Visual Damage** No **State of Development** Production/Production Equivalent

Additional Information:
The following frequency bands and emission types are utilized.

Frequency Band (MHz)					
Band Designator	B12	B13	B5	B25	B4
Uplink	698 - 716	776 – 787 (IC, 777 – 787)	824 - 849	1850 - 1915	1710 – 1755
Downlink	728 - 746	746 – 757 (IC, 746 – 756)	869 - 894	1930 - 1995	2110 - 2155
Modulation Type	LTE	LTE	GSM, CDMA, EDGE, HSPA. EVDO, LTE		CDMA, HSPA, LTE, EDGE, EVDO

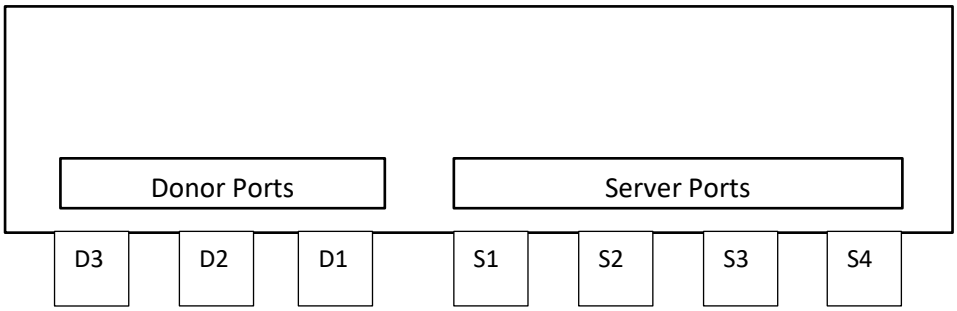
The EUT is an industrial In-building signal booster with 4 server ports and 3 donor ports.
The server ports are referred to as Server Port 1 thru Server Port 4 or S1 thru S4 throughout the test report. The server ports are the uplink input and downlink output ports.
The donor ports are referred to as Dedicated Donor Ports 1 thru 3, or D1 thru D3, and Common D2. The Donor ports are the uplink output and downlink input ports.
The 3 donor ports can be switched between dedicated and common ports.
The server ports (S1 thru S4) all have identical signal paths so server port 2 was selected to be used for all the tests.

Note: For the common port, the signal path for dedicated and common ports is the same for Band 4 and Band 25, so the tests for those 2 bands are only documented 1 time during common port testing.

Table 1 – Donor port assignment

Band	Dedicated ports	Common ports
12	Donor port 3 (D3)	Donor Port 2 (D2)
13	Donor port 3 (D3)	
5	Donor Port 1 (D1)	
4	Donor Port 2 (D2)	
25	Donor Port 2 (D2)	

The following figure shows the server and donor port configuration.



For all tests, the unused server and donor ports (any port not being tested) was terminated with 50 ohm termination.

Antenna Gain

The following maximum uplink and downlink Antenna gain including cable loss provided from the manufacturer.

Band	12	13	5	4	25
Uplink Antenna gain	3.58	3.21	3.01	2.05	1.92
Downlink Antenna gain	-2.43	-1.69	-2.79	-0.33	-1.29

EUT Operation during Tests

The EUT was in a normal operating condition.
The EUT does not have any external attenuation controls.
The EUT is powered by 120 VAC 60 Hz.
AWGN and GSM test signals described in were used for all tests as required per KDB 935210 D05.
The AWGN test signal must have a 4.1 MHz 99 % occupied bandwidth (OBW) (representative of a 5 MHz LTE channel). Narrowband test signals shall use a representative MSK modulated signal, with a Gaussian Filter of 0.3 and a data rate of 270 kbps (representative of a GSM-TDMA signal).

AGC Threshold

Engineer: Greg Corbin

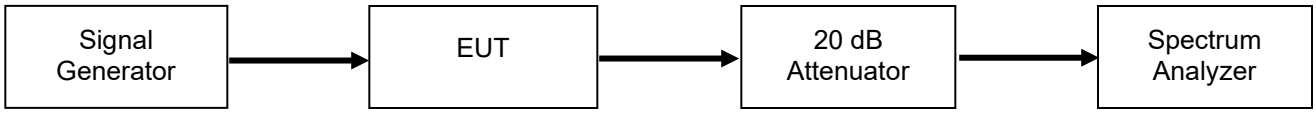
Test Date: 7/7/2025

Test Procedure

A signal generator was connected to the input of the EUT and set to produce a AWGN signal.
A spectrum analyzer was connected to the EUT in order to monitor the output power levels.
The signal generator was configured to produce the necessary UL and DL signals at the center frequency of the band.
The input power level was increased until the AGC level was reached by monitoring the output power level and the manufacturer AGC level indicator.
The input power was then set to 0.2 dB below the observed AGC level. The input power levels were recorded in the table below.
The test was repeated with GSM modulation.

Spectrum Analyzer settings
Used Channel Power integration
Average Detector
RBW = 1-5% of EBW
Video BW = 3x RBW

Test Setup



AGC Threshold Test Summary Table

Band	Test Frequency	Port	Uplink / Downlink	Signal Path	Signal Type	Input power AGC Threshold
	MHz	Dedicated / Common	UL / DL		GSM / AWGN	dBm
B12	707	Dedicated	UL	S2 to D3	AWGN	-30.8
B13	781.5	Dedicated	UL	S2 to D3	AWGN	-32.6
B5	836.5	Dedicated	UL	S2 to D1	AWGN	-36.0
B4	1732.5	Dedicated	UL	S2 to D2	AWGN	-40.3
B25	1882.5	Dedicated	UL	S2 to D2	AWGN	-41.8
B12	737	Dedicated	DL	D3 to S2	AWGN	-43.7
B13	751.5	Dedicated	DL	D3 to S2	AWGN	-45.8
B5	881.5	Dedicated	DL	D1 to S2	AWGN	-39.2
B25	1962.5	Dedicated	DL	D2 to S2	AWGN	-49.0
B4	2132.5	Dedicated	DL	D2 to S2	AWGN	-45.8
B12	707	Dedicated	UL	S2 to D3	GSM	-32.8
B13	781.5	Dedicated	UL	S2 to D3	GSM	-34.6
B5	836.5	Dedicated	UL	S2 to D1	GSM	-38.1
B4	1732.5	Dedicated	UL	S2 to D2	GSM	-42.5
B25	1882.5	Dedicated	UL	S2 to D2	GSM	-43.9
B12	737	Dedicated	DL	D3 to S2	GSM	-46.1
B13	751.5	Dedicated	DL	D3 to S2	GSM	-48.2
B5	881.5	Dedicated	DL	D1 to S2	GSM	-41.6
B25	1962.5	Dedicated	DL	D2 to S2	GSM	-51.2
B4	2132.5	Dedicated	DL	D2 to S2	GSM	-48.6
B12	707	Common	UL	S2 to D2	AWGN	-30.7
B13	781.5	Common	UL	S2 to D2	AWGN	-32.5
B5	836.5	Common	UL	S2 to D2	AWGN	-35.9
B12	737	Common	DL	D2 to S2	AWGN	-42.4
B13	751.5	Common	DL	D2 to S2	AWGN	-44.2
B5	881.5	Common	DL	D2 to S2	AWGN	-39.4
B12	707	Common	UL	S2 to D2	GSM	-32.8
B13	781.5	Common	UL	S2 to D2	GSM	-34.6
B5	836.5	Common	UL	S2 to D2	GSM	-38.1
B12	737	Common	DL	D2 to S2	GSM	-44.8
B13	751.5	Common	DL	D2 to S2	GSM	-46.5
B5	881.5	Common	DL	D2 to S2	GSM	-41.8

Out-of-band Rejection

Engineer: Greg Corbin

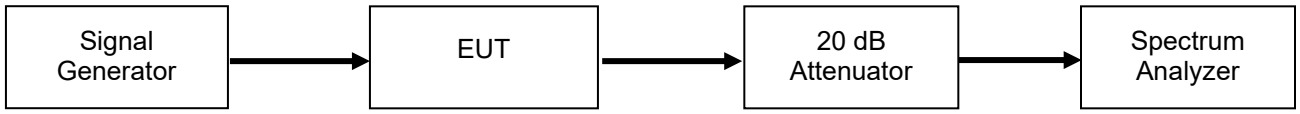
Test Date: 7/7/2025

Test Procedure

The EUT was connected to a spectrum analyzer through an attenuator with the losses being input into the spectrum analyzer as a combination of reference level offset and correction factor as needed to ensure accurate readings.
A signal generator was utilized to produce a CW input signal tuned to the center channel of the operational band.
The RF input level was increased to a point just prior to the AGC being in control of the power.
The signal generator was set to sweep across 2X the operational band of the EUT while the spectrum analyzer was set to MAX HOLD.
Markers were placed at the peak of the passband, the band edges, and the -20 dB points referenced to the peak of the passband.
All signal paths were tested as summarized in the table below.

Spectrum Analyzer settings
Detector: Peak, Max hold
RBW = 100 kHz
Video BW = 3x RBW
# of trace points = 32000

Test Setup



Signal Paths measured for Authorized Frequency Band

Dedicated Ports					Common Ports		
U/L					U/L		
B12	B13	B5	B4	B25	B12	B13	B5
S2 to D3	S2 to D3	S2 to D1	S2 to D2	S2 to D2	S2 to D2	S2 to D2	S2 to D2
D/L					D/L		
B12	B13	B5	B4	B25	B12	B13	B5
D3 to S2	D3 to S2	D1 to S2	D2 to S2	D2 to S2	D2 to S2	D2 to S2	D2 to S2

Annex A Out-of-band Rejection

Refer to Annex A for Out-of-band Rejection Plots

Occupied Bandwidth

Engineer: Greg Corbin

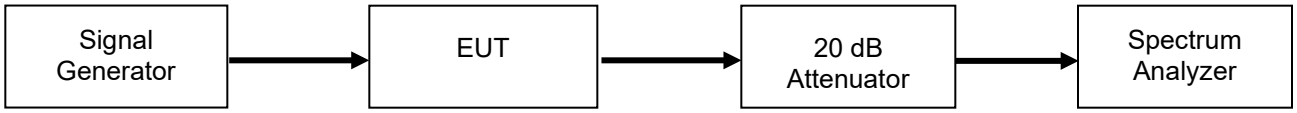
Test Date: 7/8/2025

Test Procedure

The EUT was connected to a spectrum analyzer through an attenuator with the losses being input into the spectrum analyzer as a combination of reference level offset and correction factor as required to ensure that accurate readings were obtained.
A signal generator was utilized to produce the following signals: AWGN and GSM.
The signal generator was tuned to the center channel of each of the uplink and downlink bands with the RF level set at a point just prior to the AGC being in control of the power.
For each modulation type, the input and output signal was recorded and verified that the input and output signals were similar in passband and roll off characteristic features.
The input power was increased by 3 dB and the occupied bandwidth was recorded and verified the input and output signals were still similar to each other.

The spectrum analyzer Occupied Bandwidth tool was used to capture the occupied bandwidth data.

Test Setup



Occupied Bandwidth Test Summary Table – AWGN test signal

Band	Test Frequency	Port	Uplink / Downlink	Signal Path	Input Signal BW	Output Signal BW	Output Signal with Pin + 3 dB	Pass / Fail
	MHz	Dedicated / Common	UL / DL		MHz	MHz	MHz	
B12	707	Dedicated	UL	S2 to D3	4.15	4.15	4.15	Pass
B13	781.5	Dedicated	UL	S2 to D3	4.15	4.17	4.14	Pass
B5	836.5	Dedicated	UL	S2 to D1	4.16	4.15	4.16	Pass
B4	1732.5	Dedicated	UL	S2 to D2	4.16	4.17	4.19	Pass
B25	1882.5	Dedicated	UL	S2 to D2	4.16	4.17	4.21	Pass
B12	737	Dedicated	DL	D3 to S2	4.16	4.14	4.11	Pass
B13	751.5	Dedicated	DL	D3 to S2	4.14	4.08	4.08	Pass
B5	881.5	Dedicated	DL	D1 to S2	4.18	4.41	4.27	Pass
B25	1962.5	Dedicated	DL	D2 to S2	4.18	4.28	4.27	Pass
B4	2132.5	Dedicated	DL	D2 to S2	4.15	4.24	4.32	Pass
B12	707	Common	UL	S2 to D2	4.15	4.17	4.16	Pass
B13	781.5	Common	UL	S2 to D2	4.15	4.14	4.15	Pass
B5	836.5	Common	UL	S2 to D2	4.16	4.13	4.12	Pass
B12	737	Common	DL	D2 to S2	4.16	4.13	4.10	Pass
B13	751.5	Common	DL	D2 to S2	4.14	4.06	4.06	Pass
B5	881.5	Common	DL	D2 to S2	4.18	4.25	4.27	Pass

Occupied Bandwidth Test Summary Table – GSM test signal

Band	Test Frequency	Port	Uplink / Downlink	Signal Path	Input Signal BW	Output Signal BW	Output Signal with Pin + 3 dB	Pass / Fail
	MHz	Dedicated / Common	UL / DL		kHz	kHz		
B12	707	Dedicated	UL	S2 to D3	244	244	244	Pass
B13	781.5	Dedicated	UL	S2 to D3	244	243	243	Pass
B5	836.5	Dedicated	UL	S2 to D1	243	243	242	Pass
B4	1732.5	Dedicated	UL	S2 to D2	244	245	243	Pass
B25	1882.5	Dedicated	UL	S2 to D2	244	243	243	Pass
B12	737	Dedicated	DL	D3 to S2	242	248	247	Pass
B13	751.5	Dedicated	DL	D3 to S2	245	248	248	Pass
B5	881.5	Dedicated	DL	D1 to S2	243	245	245	Pass
B25	1962.5	Dedicated	DL	D2 to S2	246	244	245	Pass
B4	2132.5	Dedicated	DL	D2 to S2	246	243	243	Pass
B12	707	Common	UL	S2 to D2	244	245	248	Pass
B13	781.5	Common	UL	S2 to D2	244	242	245	Pass
B5	836.5	Common	UL	S2 to D2	243	245	243	Pass
B12	737	Common	DL	D2 to S2	242	248	247	Pass
B13	751.5	Common	DL	D2 to S2	245	248	248	Pass
B5	881.5	Common	DL	D2 to S2	243	244	245	Pass

Annex B Occupied Bandwidth - AWGN

Refer to Annex B for Occupied Bandwidth AWGN plots.

Annex C Occupied Bandwidth - GSM

Refer to Annex B for Occupied Bandwidth GSM plots.

Maximum Power and Gain

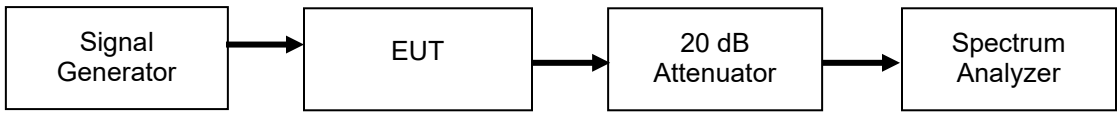
Engineer: Greg Corbin

Test Date: 7/08/2025

Test Procedure

The EUT was connected to a spectrum analyzer through an attenuator with the losses being input into the spectrum analyzer as a combination of reference level offset and correction factor as needed to ensure accurate readings.
The spectrum analyzer and signal generator were tuned to the frequency with the highest power level in the band, as determined by the Authorized Frequency Band test.
The RF input level was increased to a point just prior to the AGC being in control of the power.
The maximum power was recorded using the channel power tool on the spectrum analyzer.
The input power was increased 3 dB and the output power was recorded again.

Test Setup



Output Power Test Summary Table – AWGM test signal

Band	Port	Uplink / Downlink	Signal Path	Test Frequency	Input Power	Output Power	Gain	Output Power AGC Input power + 3 dB	Pass / Fail
	Dedicated / Common	UL / DL		MHz	dBm	dBm	dB	dBm	
B12	Dedicated	UL	S2 to D3	707.6	-32.4	26.2	58.6	26.1	Pass
B13	Dedicated	UL	S2 to D3	781.8	-34.1	25.3	59.4	24.7	Pass
B5	Dedicated	UL	S2 to D1	837.8	-36.8	22.7	59.5	22.6	Pass
B4	Dedicated	UL	S2 to D2	1744.7	-42.2	23.5	65.7	23.4	Pass
B25	Dedicated	UL	S2 to D2	1864.3	-44.1	24	68.1	23.7	Pass
B12	Dedicated	DL	D3 to S2	746	-48.2	18.3	66.5	18.1	Pass
B13	Dedicated	DL	D3 to S2	746.1	-48.2	18.3	66.5	18.1	Pass
B5	Dedicated	DL	D1 to S2	887.3	-40	20	60	20.1	Pass
B25	Dedicated	DL	D2 to S2	2145	-47.7	23.8	71.5	23.8	Pass
B4	Dedicated	DL	D2 to S2	1963	-50.6	22.3	72.9	22.3	Pass
B12	Common	UL	S2 to D2	703.1	-32.7	23.8	56.5	23.6	Pass
B13	Common	UL	S2 to D2	781.7	-34.1	23.5	57.6	23.1	Pass
B5	Common	UL	S2 to D2	832.9	-37.5	21.9	59.4	21.9	Pass
B12	Common	DL	D2 to S2	746	-46.9	18.2	65.1	18.1	Pass
B13	Common	DL	D2 to S2	746.1	-46.9	18.2	65.1	18.1	Pass
B5	Common	DL	D2 to S2	877.2	-41.1	21	62.1	20.7	Pass

Output Power Test Summary Table – GSM test signal

Band	Port	Uplink / Downlink	Signal Path	Test Frequency	Input Power	Output Power	Gain	Output Power AGC Input power + 3 dB	Pass / Fail
	Dedicated / Common	UL / DL		MHz	dBm	dBm	dB	dBm	
B12	Dedicated	UL	S2 to D3	707.6	-33.2	24.3	57.5	24.1	Pass
B13	Dedicated	UL	S2 to D3	781.8	-34.6	23.4	58	23.3	Pass
B5	Dedicated	UL	S2 to D1	837.8	-37.5	20.7	58.2	20.6	Pass
B4	Dedicated	UL	S2 to D2	1744.7	-42.9	21.7	64.6	21.6	Pass
B25	Dedicated	UL	S2 to D2	1864.3	-44.5	22.8	67.3	22.8	Pass
B12	Dedicated	DL	D3 to S2	746	-51.9	15.4	67.3	15.9	Pass
B13	Dedicated	DL	D3 to S2	746.1	-51.9	15.4	67.3	15.9	Pass
B5	Dedicated	DL	D1 to S2	887.3	-41.1	17.6	58.7	17.8	Pass
B25	Dedicated	DL	D2 to S2	2145	-49	22.5	71.5	21.7	Pass
B4	Dedicated	DL	D2 to S2	1963	-51.6	19.8	71.4	20.1	Pass
B12	Common	UL	S2 to D2	703.1	-33.8	21.9	55.7	21.7	Pass
B13	Common	UL	S2 to D2	781.7	-34.6	21.8	56.4	21.2	Pass
B5	Common	UL	S2 to D2	832.9	-38.1	20.1	58.2	20.9	Pass
B12	Common	DL	D2 to S2	746	-50.6	15.9	66.5	15.8	Pass
B13	Common	DL	D2 to S2	746.1	-50.6	15.9	66.5	15.8	Pass
B5	Common	DL	D2 to S2	877.2	-42.2	18.9	61.1	19	Pass

Out-of-Band Emissions

Engineer: Greg Corbin

Test Date: 7/12/2025

Test Procedure

This test requires the OOBE to be measured with single carrier and dual carrier test signals.

2 signal generators were used to produce the required modulated test signals.

For the single carrier, the center frequency was chosen such that the modulated signal at the band edge remained within the band.

For the dual carrier test signals, one signal was set such that the modulated signal at the band edge remained within the band. The second signal was offset from the first signal by 1 channel width.

The input power level was set to just below the AGC threshold but not more than 0.5dB.

For each out of band, band edge measurement, the lower and upper band edge was measured.

For the bands with operating frequencies below 1 GHz the band edge measurement was up to 300 kHz from the band edge.

For bands with operating frequencies above 1 GHz, the band edge measurement was up to 3 MHz from the band edge

The spectrum analyzer was set with the following parameters

RBW set as indicated in OOBE test summary table.

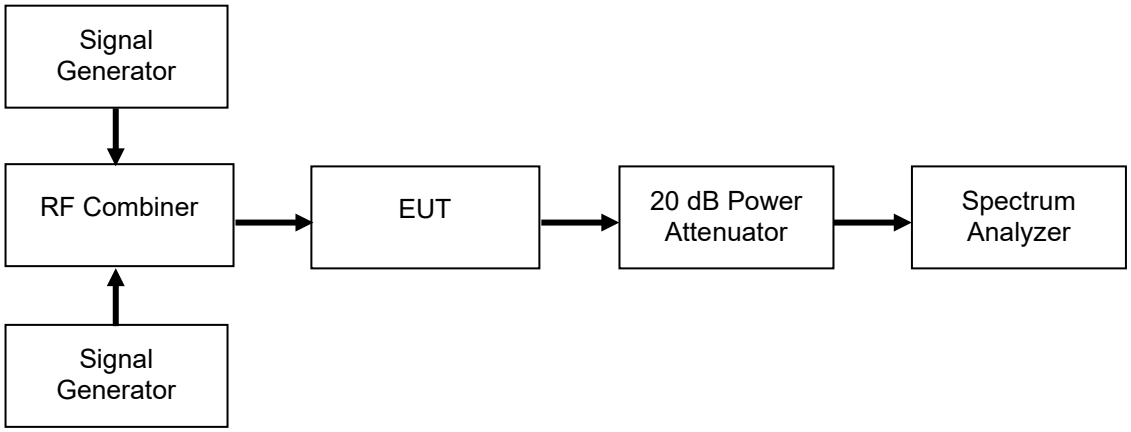
VBW = 3 × RBW

Average detector with trace averaging

Sweep time = auto-couple

The input power was increased +3 dB and the measurements were repeated

Test Setup



Dual Carrier OOBE Test Results – AWGN Test Signal

Band	Port	Uplink / Downlink	Signal Path	RBW	Band Edge	Test Frequency		Spurious Level	Spurious Level Input power + 3 dB	Pass / Fail
	Dedicated / Common	UL / DL		kHz	Lower / Upper	MHz		dBm	dBm	
B12	Dedicated	UL	S2 to D3	30	Lower	700.5	705.5	-25.4	-26.2	Pass
B12	Dedicated	UL	S2 to D3	30	Upper	708.5	713.5	-26.6	-25.0	Pass
B13	Dedicated	UL	S2 to D3	30	Lower	778.5	783.5	-29.1	-28	Pass
B13	Dedicated	UL	S2 to D3	30	Upper	779.5	784.5	-27.1	-25.1	Pass
B5	Dedicated	UL	S2 to D1	100	Lower	826.5	831.5	-20.0	-18.3	Pass
B5	Dedicated	UL	S2 to D1	100	Upper	841.5	846.5	-25.3	-24.8	Pass
B4	Dedicated	UL	S2 to D2	100	Lower	1712.5	1717.5	-18.6	-19.8	Pass
B4	Dedicated	UL	S2 to D2	100	Upper	1747.5	1752.5	-19.3	-19.5	Pass
B25	Dedicated	UL	S2 to D2	100	Lower	1852.5	1857.5	-20.7	-21.8	Pass
B25	Dedicated	UL	S2 to D2	100	Upper	1907.5	1912.5	-29	-29.9	Pass
B12	Dedicated	DL	D3 to S2	30	Lower	730.5	735.5	-34.2	-35.7	Pass
B12	Dedicated	DL	D3 to S2	30	Upper	738.5	743.5	-33.7	-36	Pass
B13	Dedicated	DL	D3 to S2	30	Lower	748.5	753.5	-37.4	-35.3	Pass
B13	Dedicated	DL	D3 to S2	30	Upper	749.5	754.5	-43	-43.7	Pass
B5	Dedicated	DL	D1 to S2	100	Lower	871.5	876.5	-19.5	-17.7	Pass
B5	Dedicated	DL	D1 to S2	100	Upper	886.5	891.5	-23.2	-22.8	Pass
B25	Dedicated	DL	D2 to S2	100	Lower	1852.5	1857.5	-20.3	-18.8	Pass
B25	Dedicated	DL	D2 to S2	100	Upper	1907.5	1912.5	-16.1	-16.1	Pass
B4	Dedicated	DL	D2 to S2	100	Lower	2112.5	2117.5	-20.5	-18.4	Pass
B4	Dedicated	DL	D2 to S2	100	Upper	2147.5	2152.5	-16.2	-15.7	Pass
B12	Common	UL	S2 to D2	30	Lower	700.5	705.5	-27.8	-27.1	Pass
B12	Common	UL	S2 to D2	30	Upper	708.5	713.5	-27.7	-26.3	Pass
B13	Common	UL	S2 to D2	30	Lower	778.5	783.5	-29.6	-28.9	Pass
B13	Common	UL	S2 to D2	30	Upper	779.5	784.5	-28.8	-28.4	Pass
B5	Common	UL	S2 to D2	100	Lower	826.5	831.5	-21.9	-23.4	Pass
B5	Common	UL	S2 to D2	100	Upper	841.5	846.5	-24.5	-26.1	Pass
B12	Common	DL	D2 to S2	30	Lower	730.5	735.5	-33.8	-34.0	Pass
B12	Common	DL	D2 to S2	30	Upper	738.5	743.5	-33.3	-33.6	Pass
B13	Common	DL	D2 to S2	30	Lower	748.5	753.5	-36.2	-35.5	Pass
B13	Common	DL	D2 to S2	30	Upper	749.5	754.5	-45.7	-42.3	Pass
B5	Common	DL	D2 to S2	100	Lower	871.5	876.5	-20.4	-19.9	Pass
B5	Common	DL	D2 to S2	100	Upper	886.5	891.5	-25.5	-23.6	Pass

Dual Carrier OOBE Test Results – GSM Test Signal

Band	Port	Uplink / Downlink	Signal Path	RBW	Band Edge	Test Frequency		Spurious Level	Spurious Level Input power + 3 dB	Pass / Fail
	Dedicated / Common	UL / DL		kHz	Lower / Upper	MHz		dBm	dBm	
B12	Dedicated	UL	S2 to D3	30	Lower	698.3	698.9	-29	-29.1	Pass
B12	Dedicated	UL	S2 to D3	30	Upper	715.1	715.7	-31.6	-27.0	Pass
B13	Dedicated	UL	S2 to D3	30	Lower	776.3	776.9	-42	-43.4	Pass
B13	Dedicated	UL	S2 to D3	30	Upper	786.1	786.7	-33.5	-30.4	Pass
B5	Dedicated	UL	S2 to D1	3	Lower	824.3	824.9	-47.1	-46.5	Pass
B5	Dedicated	UL	S2 to D1	3	Upper	848.1	848.7	-52.7	-54.1	Pass
B4	Dedicated	UL	S2 to D2	3	Lower	1710.3	1710.9	-44.3	-45	Pass
B4	Dedicated	UL	S2 to D2	3	Upper	1754.1	1754.7	-47.4	-47.1	Pass
B25	Dedicated	UL	S2 to D2	3	Lower	1850.3	1850.9	-42.6	-42.8	Pass
B25	Dedicated	UL	S2 to D2	3	Upper	1914.1	1914.7	-51.4	-51.2	Pass
B12	Dedicated	DL	D3 to S2	30	Lower	728.3	728.9	-42.5	-41.6	Pass
B12	Dedicated	DL	D3 to S2	30	Upper	745.1	745.7	-41.2	-40.1	Pass
B13	Dedicated	DL	D3 to S2	30	Lower	746.3	746.9	-44.5	-44.3	Pass
B13	Dedicated	DL	D3 to S2	30	Upper	756.1	756.7	-48.7	-50.1	Pass
B5	Dedicated	DL	D1 to S2	3	Lower	869.3	869.9	-34.5	-33.6	Pass
B5	Dedicated	DL	D1 to S2	3	Upper	893.1	893.7	-35.4	-34	Pass
B25	Dedicated	DL	D2 to S2	3	Lower	1930.3	1930.9	-24.9	-21.9	Pass
B25	Dedicated	DL	D2 to S2	3	Upper	1994.1	1994.7	-26.4	-24.5	Pass
B4	Dedicated	DL	D2 to S2	3	Lower	2110.3	2110.9	-40.8	-40.8	Pass
B4	Dedicated	DL	D2 to S2	3	Upper	2154.1	2154.7	-33.8	-29.9	Pass
B12	Common	UL	S2 to D2	30	Lower	698.3	698.9	-30.8	-28.6	Pass
B12	Common	UL	S2 to D2	30	Upper	715.1	715.7	-33.2	-30.5	Pass
B13	Common	UL	S2 to D2	30	Lower	776.3	776.9	-42.8	-43.5	Pass
B13	Common	UL	S2 to D2	30	Upper	786.1	786.7	-34.2	-32.8	Pass
B5	Common	UL	S2 to D2	3	Lower	824.3	824.9	-46.5	-46.4	Pass
B5	Common	UL	S2 to D2	3	Upper	848.1	848.7	-53.2	-52.7	Pass
B12	Common	DL	D2 to S2	30	Lower	728.3	728.9	-43.2	-42.1	Pass
B12	Common	DL	D2 to S2	30	Upper	745.1	745.7	-40.3	-40.2	Pass
B13	Common	DL	D2 to S2	30	Lower	746.3	746.9	-44.5	-43.9	Pass
B13	Common	DL	D2 to S2	30	Upper	756.1	756.7	-48.7	-49.7	Pass
B5	Common	DL	D2 to S2	3	Lower	869.3	869.9	-33.3	-32.1	Pass
B5	Common	DL	D2 to S2	3	Upper	893.1	893.7	-36.1	-33.4	Pass

Single Carrier OOBE Test Results – AWGN Test Signal

Band	Port	Uplink / Downlink	Signal Path	RBW	Band Edge	Test Frequency	Spurious Level	Spurious Level Input power + 3 dB	Pass / Fail
	Dedicated / Common	UL / DL		kHz	Lower / Upper	MHz	dBm	dBm	
B12	Dedicated	UL	S2 to D3	30	Lower	700.5	-22.2	-24.2	Pass
B12	Dedicated	UL	S2 to D3	30	Upper	713.5	-23.3	-23	Pass
B13	Dedicated	UL	S2 to D3	30	Lower	778.5	-26.4	-25.1	Pass
B13	Dedicated	UL	S2 to D3	30	Upper	784.5	-23.9	-22.7	Pass
B5	Dedicated	UL	S2 to D1	100	Lower	826.5	-18.1	-19.1	Pass
B5	Dedicated	UL	S2 to D1	100	Upper	846.5	-25	-22.9	Pass
B4	Dedicated	UL	S2 to D2	100	Lower	1712.5	-16.8	-16.3	Pass
B4	Dedicated	UL	S2 to D2	100	Upper	1752.5	-19.1	-17.3	Pass
B25	Dedicated	UL	S2 to D2	100	Lower	1852.5	-19.8	-17.8	Pass
B25	Dedicated	UL	S2 to D2	100	Upper	1912.5	-25.2	-24	Pass
B12	Dedicated	DL	D3 to S2	30	Lower	730.5	-31.1	-32.1	Pass
B12	Dedicated	DL	D3 to S2	30	Upper	743.5	-25.5	-24.7	Pass
B13	Dedicated	DL	D3 to S2	30	Lower	748.5	-27.2	-27	Pass
B13	Dedicated	DL	D3 to S2	30	Upper	754.5	-37.5	-36.8	Pass
B5	Dedicated	DL	D1 to S2	100	Lower	871.5	-18	-17.9	Pass
B5	Dedicated	DL	D1 to S2	100	Upper	891.5	-36	-31.4	Pass
B25	Dedicated	DL	D2 to S2	100	Lower	1932.5	-16.7	-15.4	Pass
B25	Dedicated	DL	D2 to S2	100	Upper	1992.5	-14.4	-13.7	Pass
B4	Dedicated	DL	D2 to S2	100	Lower	2112.5	-18.2	-18.2	Pass
B4	Dedicated	DL	D2 to S2	100	Upper	2152.5	-15	-13.5	Pass
B12	Common	UL	S2 to D2	30	Lower	700.5	-23.5	-23.6	Pass
B12	Common	UL	S2 to D2	30	Upper	713.5	-24.1	-25.1	Pass
B13	Common	UL	S2 to D2	30	Lower	778.5	-26.7	-25.2	Pass
B13	Common	UL	S2 to D2	30	Upper	784.5	-26.2	-23.4	Pass
B5	Common	UL	S2 to D2	100	Lower	826.5	-18.3	-19.6	Pass
B5	Common	UL	S2 to D2	100	Upper	846.5	-23.8	-23.1	Pass
B12	Common	DL	D2 to S2	30	Lower	730.5	-31.4	-32.5	Pass
B12	Common	DL	D2 to S2	30	Upper	743.5	-25.4	-25.1	Pass
B13	Common	DL	D2 to S2	30	Lower	748.5	-28.9	-26.4	Pass
B13	Common	DL	D2 to S2	30	Upper	754.5	-37.8	-39.6	Pass
B5	Common	DL	D2 to S2	100	Lower	871.5	-18.5	-16.4	Pass
B5	Common	DL	D2 to S2	100	Upper	891.5	-20.2	-19.6	Pass

Single Carrier OOBE Test Results –GSM Test Signal

Band	Port	Uplink / Downlink	Signal Path	RBW	Band Edge	Test Frequency	Spurious Level	Spurious Level Input power + 3 dB	Pass / Fail
	Dedicated / Common	UL / DL		kHz	Lower / Upper	MHz	dBm	dBm	
B12	Dedicated	UL	S2 to D3	30	Lower	698.3	-36.6	-35	Pass
B12	Dedicated	UL	S2 to D3	30	Upper	715.7	-37.6	-37	Pass
B13	Dedicated	UL	S2 to D3	30	Lower	776.3	-44.3	-43.6	Pass
B13	Dedicated	UL	S2 to D3	30	Upper	786.7	-37.5	-37.9	Pass
B5	Dedicated	UL	S2 to D1	3	Lower	824.3	-50.6	-48.8	Pass
B5	Dedicated	UL	S2 to D1	3	Upper	848.7	-52.3	-53.2	Pass
B4	Dedicated	UL	S2 to D2	3	Lower	1710.3	-47	-47.2	Pass
B4	Dedicated	UL	S2 to D2	3	Upper	1754.7	-47.1	-47.1	Pass
B25	Dedicated	UL	S2 to D2	3	Lower	1850.3	-47.7	-46	Pass
B25	Dedicated	UL	S2 to D2	3	Upper	1914.7	-51.7	-51	Pass
B12	Dedicated	DL	D3 to S2	30	Lower	728.3	-42.5	-43.2	Pass
B12	Dedicated	DL	D3 to S2	30	Upper	745.7	-41.6	-43.3	Pass
B13	Dedicated	DL	D3 to S2	30	Lower	746.3	-43.3	-43.1	Pass
B13	Dedicated	DL	D3 to S2	30	Upper	756.7	-48.8	-45.6	Pass
B5	Dedicated	DL	D1 to S2	3	Lower	869.3	-50.3	-50.1	Pass
B5	Dedicated	DL	D1 to S2	3	Upper	893.7	-54.3	-52.4	Pass
B25	Dedicated	DL	D2 to S2	3	Lower	1930.3	-46.8	-44.3	Pass
B25	Dedicated	DL	D2 to S2	3	Upper	1994.7	-44.7	-41.8	Pass
B4	Dedicated	DL	D2 to S2	3	Lower	2110.3	-42.8	-43.2	Pass
B4	Dedicated	DL	D2 to S2	3	Upper	2154.7	-39.8	-37.8	Pass
B12	Common	UL	S2 to D2	30	Lower	698.3	-37.9	-40.1	Pass
B12	Common	UL	S2 to D2	30	Upper	715.7	-36.7	-37.9	Pass
B13	Common	UL	S2 to D2	30	Lower	776.3	-40.5	-44.5	Pass
B13	Common	UL	S2 to D2	30	Upper	786.7	-37.3	-37.7	Pass
B5	Common	UL	S2 to D2	3	Lower	824.3	-50.2	-48.9	Pass
B5	Common	UL	S2 to D2	3	Upper	848.7	-53	-52.8	Pass
B12	Common	DL	D2 to S2	30	Lower	728.3	-41.8	-43.3	Pass
B12	Common	DL	D2 to S2	30	Upper	745.7	-44.3	-43.6	Pass
B13	Common	DL	D2 to S2	30	Lower	746.3	-42.9	-43.5	Pass
B13	Common	DL	D2 to S2	30	Upper	756.7	-47.6	-47.9	Pass
B5	Common	DL	D2 to S2	3	Lower	869.3	-50.7	-48.6	Pass
B5	Common	DL	D2 to S2	3	Upper	893.7	-54.2	-53.3	Pass

Annex D Out of Band Emission – Dual Channel - AWGN
Refer to Annex D for Out of Band Emission – Dual Channel - AWGN plots

Annex E Out of Band Emission – Dual Channel - GSM
Refer to Annex E for Out of Band Emission – Dual Channel - GSM plots

Annex F Out of Band Emission – Single Channel - AWGN
Refer to Annex F for Out of Band Emission – Single Channel - AWGN plots

Annex G Out of Band Emission – Single Channel - GSM
Refer to Annex G for Out of Band Emission – Single Channel - GSM plots

Conducted Spurious Emissions

Engineer: Greg Corbin

Test Date: 7/10/2025

Test Procedure

The EUT was connected to a spectrum analyzer through an attenuator, with the losses being input into the spectrum analyzer as a combination of reference level offset and correction factor as needed to ensure accurate readings.
The required GSM and AWGN input signals were used, set to the low, mid, and high frequencies of each band, with the input power level set to just below the AGC threshold but not more than 0.5dB.

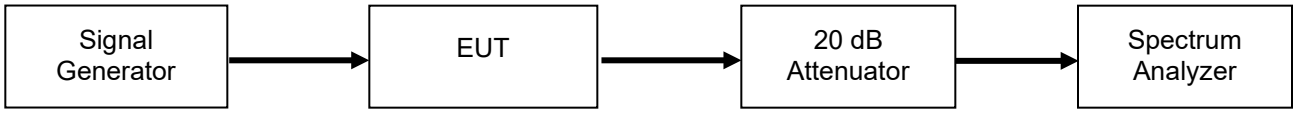
The conducted spurious emissions from 30 MHz to at least the 10th Harmonic of each band were measured.
The emissions were plotted and the highest level outside the passband was recorded in the summary table.

In the plots, any signals over the -13 dBm limit, are the fundamental test frequency within the band and are exempt from the -13 dBm limit. These signals have a marker and are included in the marker table on each plot.

Spectrum Analyzer settings:
RBW = 100 kHz, from 30 – 1000 MHz
RBW = 1 MHz, from 1 – 22 GHz
# of trace points = 40000

The following formulas are used for calculating the limits.
Conducted Spurious Emissions Limit = P1 – (43+ 10Log(P2)) = -13 dBm
P1 = power in dBm
P2 = power in Watts

Test Setup



Conducted Spurious - AWGN Test Signal

Band	Port	Uplink / Downlink	Signal Path	Test Frequency	Spurious Frequency	Spurious Level	Limit	Pass / Fail
	Dedicated / Common	UL / DL		MHz	MHz	dBm	dBm	
B12	Dedicated	UL	S2 to D3	Low	21598	-22.3	-13	Pass
B12	Dedicated	UL	S2 to D3	Mid	19524	-23.6	-13	Pass
B12	Dedicated	UL	S2 to D3	High	21642	-21.1	-13	Pass
B13	Dedicated	UL	S2 to D3	Low	19757	-22.8	-13	Pass
B13	Dedicated	UL	S2 to D3	Mid	21850	-23.4	-13	Pass
B13	Dedicated	UL	S2 to D3	High	21660	-22.9	-13	Pass
B5	Dedicated	UL	S2 to D1	Low	19579	-22.5	-13	Pass
B5	Dedicated	UL	S2 to D1	Mid	21631	-22.9	-13	Pass
B5	Dedicated	UL	S2 to D1	High	19904	-22.6	-13	Pass
B4	Dedicated	UL	S2 to D2	Low	1778.9	-22.0	-13	Pass
B4	Dedicated	UL	S2 to D2	Mid	21486	-22.9	-13	Pass
B4	Dedicated	UL	S2 to D2	High	21777	-21.6	-13	Pass
B25	Dedicated	UL	S2 to D2	Low	21890	-23.2	-13	Pass
B25	Dedicated	UL	S2 to D2	Mid	19774	-22.5	-13	Pass
B25	Dedicated	UL	S2 to D2	High	21567	-22.7	-13	Pass
B12	Dedicated	DL	D3 to S2	Low	19566	-23.2	-13	Pass
B12	Dedicated	DL	D3 to S2	Mid	21366	-23	-13	Pass
B12	Dedicated	DL	D3 to S2	High	21848	-22.7	-13	Pass
B13	Dedicated	DL	D3 to S2	Low	19562	-22.7	-13	Pass
B13	Dedicated	DL	D3 to S2	Mid	21349	-23	-13	Pass
B13	Dedicated	DL	D3 to S2	High	20442	-22.7	-13	Pass
B5	Dedicated	DL	D1 to S2	Low	21643	-21	-13	Pass
B5	Dedicated	DL	D1 to S2	Mid	21731	-22.7	-13	Pass
B5	Dedicated	DL	D1 to S2	High	21741	-22.7	-13	Pass
B25	Dedicated	DL	D2 to S2	Low	1994.2	-18.5	-13	Pass
B25	Dedicated	DL	D2 to S2	Mid	20546	-21.9	-13	Pass
B25	Dedicated	DL	D2 to S2	High	21713	-26.1	-13	Pass
B4	Dedicated	DL	D2 to S2	Low	2179	-18.7	-13	Pass
B4	Dedicated	DL	D2 to S2	Mid	21634	-22.6	-13	Pass
B4	Dedicated	DL	D2 to S2	High	2184	-26.1	-13	Pass
B12	Common	UL	S2 to D2	Low	21642	-21.8	-13	Pass
B12	Common	UL	S2 to D2	Mid	21871	-22.4	-13	Pass
B12	Common	UL	S2 to D2	High	21739	-22.2	-13	Pass
B13	Common	UL	S2 to D2	Low	19593	-21.6	-13	Pass
B13	Common	UL	S2 to D2	Mid	21546	-22.9	-13	Pass
B13	Common	UL	S2 to D2	High	19757	-22.3	-13	Pass
B5	Common	UL	S2 to D2	Low	19603	-23.1	-13	Pass
B5	Common	UL	S2 to D2	Mid	19579	-22.4	-13	Pass
B5	Common	UL	S2 to D2	High	21726	-22.9	-13	Pass
B12	Common	DL	D2 to S2	Low	19596	-20.4	-13	Pass
B12	Common	DL	D2 to S2	Mid	21426	-22.5	-13	Pass
B12	Common	DL	D2 to S2	High	21525	-22.4	-13	Pass
B13	Common	DL	D2 to S2	Low	19696	-22.9	-13	Pass
B13	Common	DL	D2 to S2	Mid	20.305	-22.4	-13	Pass
B13	Common	DL	D2 to S2	High	21654	-21.9	-13	Pass
B5	Common	DL	D2 to S2	Low	21869	-22.1	-13	Pass
B5	Common	DL	D2 to S2	Mid	21809	-22.9	-13	Pass
B5	Common	DL	D2 to S2	High	21839	-23.2	-13	Pass

Conducted Spurious - GSM Test Signal

Band	Port	Uplink / Downlink	Signal Path	Test Frequency	Spurious Frequency	Spurious Level	Limit	
	Dedicated / Common	UL / DL		MHz	MHz	dBm	dBm	Pass / Fail
B12	Dedicated	UL	S2 to D3	Low	8949	-28.7	-13	Pass
B12	Dedicated	UL	S2 to D3	Mid	7349	-31.2	-13	Pass
B12	Dedicated	UL	S2 to D3	High	7778	-30.8	-13	Pass
B13	Dedicated	UL	S2 to D3	Low	8958	-30.1	-13	Pass
B13	Dedicated	UL	S2 to D3	Mid	8635	-30.1	-13	Pass
B13	Dedicated	UL	S2 to D3	High	7196	-30.4	-13	Pass
B5	Dedicated	UL	S2 to D1	Low	5088	-29.9	-13	Pass
B5	Dedicated	UL	S2 to D1	Mid	8654	-31.0	-13	Pass
B5	Dedicated	UL	S2 to D1	High	8558	-30.9	-13	Pass
B4	Dedicated	UL	S2 to D2	Low	1779	-22.2	-13	Pass
B4	Dedicated	UL	S2 to D2	Mid	21652	-21.4	-13	Pass
B4	Dedicated	UL	S2 to D2	High	21624	-22.0	-13	Pass
B25	Dedicated	UL	S2 to D2	Low	21465	-22.5	-13	Pass
B25	Dedicated	UL	S2 to D2	Mid	21694	-21.2	-13	Pass
B25	Dedicated	UL	S2 to D2	High	21823	-21.0	-13	Pass
B12	Dedicated	DL	D3 to S2	Low	1967	-28.6	-13	Pass
B12	Dedicated	DL	D3 to S2	Mid	1962	-27.6	-13	Pass
B12	Dedicated	DL	D3 to S2	High	8653	-29.5	-13	Pass
B13	Dedicated	DL	D3 to S2	Low	2173	-30.0	-13	Pass
B13	Dedicated	DL	D3 to S2	Mid	2124	-29.5	-13	Pass
B13	Dedicated	DL	D3 to S2	High	1951.2	-29.5	-13	Pass
B5	Dedicated	DL	D1 to S2	Low	1959	-30.3	-13	Pass
B5	Dedicated	DL	D1 to S2	Mid	1961	-27.0	-13	Pass
B5	Dedicated	DL	D1 to S2	High	1963	-28.9	-13	Pass
B25	Dedicated	DL	D2 to S2	Low	1994	-15.6	-13	Pass
B25	Dedicated	DL	D2 to S2	Mid	21534	-26.4	-13	Pass
B25	Dedicated	DL	D2 to S2	High	1930	-17.2	-13	Pass
B4	Dedicated	DL	D2 to S2	Low	2178	-16.9	-13	Pass
B4	Dedicated	DL	D2 to S2	Mid	2181	-13.9	-13	Pass
B4	Dedicated	DL	D2 to S2	High	21513	-23.0	-13	Pass
B12	Common	UL	S2 to D2	Low	8961	-30.4	-13	Pass
B12	Common	UL	S2 to D2	Mid	6954	-30.7	-13	Pass
B12	Common	UL	S2 to D2	High	8348	-29.6	-13	Pass
B13	Common	UL	S2 to D2	Low	7467	-31.1	-13	Pass
B13	Common	UL	S2 to D2	Mid	8954	-30.3	-13	Pass
B13	Common	UL	S2 to D2	High	8996	-29.8	-13	Pass
B5	Common	UL	S2 to D2	Low	8327	-31.5	-13	Pass
B5	Common	UL	S2 to D2	Mid	7298	-30.8	-13	Pass
B5	Common	UL	S2 to D2	High	8658	-30.6	-13	Pass
B12	Common	DL	D2 to S2	Low	21800	-22.6	-13	Pass
B12	Common	DL	D2 to S2	Mid	21706	-22.2	-13	Pass
B12	Common	DL	D2 to S2	High	21704	-22.7	-13	Pass
B13	Common	DL	D2 to S2	Low	21686	-22.5	-13	Pass
B13	Common	DL	D2 to S2	Mid	20842	-22.5	-13	Pass
B13	Common	DL	D2 to S2	High	20852	-21.6	-13	Pass
B5	Common	DL	D2 to S2	Low	21648	-22.0	-13	Pass
B5	Common	DL	D2 to S2	Mid	21692	-22.7	-13	Pass
B5	Common	DL	D2 to S2	High	20296	-22.9	-13	Pass

For the 746 – 758 downlink and 776 – 788 Uplink bands of operation, the following additional spurious emissions requirements apply.

FCC 27.53(c)
ISED RSS-130 (4.7.2)

For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

(3)On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than 76 + 10 log (P) dB in a 6.25 kHz band segment, for base and fixed stations;

776 – 787 MHz
UL Dedicated S2 to D3

Spurious Frequency Range	Test signal	RBW	Spurious Frequency	Spurious Level	Limit (dBm)	Pass / Fail
MHz		kHz	MHz	dBm	dBm	
763 – 775	AWGN	6.25	774.9	-51.2	-46	Pass
793 – 805	AWGN	6.25	802.87	-67.5	-46	Pass
763 – 775	GSM	6.25	764	-66.6	-46	Pass
793 – 805	GSM	6.25	802.7	-66.4	-46	Pass

776 – 787 MHz
UL Common S2 to D2

Spurious Frequency Range	Test signal	RBW	Spurious Frequency	Spurious Level	Limit (dBm)	Pass / Fail
MHz		kHz	MHz	dBm	dBm	
763 – 775	AWGN	6.25	774.84	-53.6	-46	Pass
793 – 805	AWGN	6.25	793.64	-64	-46	Pass
763 – 775	GSM	6.25	763.14	-65.5	-46	Pass
793 – 805	GSM	6.25	798.65	-65.8	-46	Pass

746 - 757 MHz
DL Dedicated D3 to S2

Spurious Frequency Range	Test signal	RBW	Spurious Frequency	Spurious Level	Limit (dBm)	Pass / Fail
MHz		kHz	MHz	dBm	dBm	
763 – 775	AWGN	6.25	769.68	-65.1	-46	Pass
793 – 805	AWGN	6.25	802.87	-65.2	-46	Pass
763 – 775	GSM	6.25	773.68	-65.8	-46	Pass
793 – 805	GSM	6.25	803	-67	-46	Pass

746 - 757 MHz
DL Common D2 to S2

Spurious Frequency Range	Test signal	RBW	Spurious Frequency	Spurious Level	Limit (dBm)	Pass / Fail
MHz		kHz	MHz	dBm	dBm	
763 – 775	AWGN	6.25	774	-65.3	-46	Pass
793 – 805	AWGN	6.25	802.86	-66.8	-46	Pass
763 – 775	GSM	6.25	767.31	-64.7	-46	Pass
793 – 805	GSM	6.25	804.99	-65.8	-46	Pass

FCC 27.53(f)
ISED RSS-130 (4.7.2)

For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to −70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and −80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

Since the limit is referenced to EIRP, the final data is computed using the Conducted Spurious Emission data and adding the BW correction factor plus the final gain/loss data from the antenna kitting information supplied by the manufacturer.

Final Spurious Level (dBm) = conducted measurement + final gain/loss from Antenna Kitting document

The Limit for discreet (narrowband) emissions is -80dBW (-50 dBm) in 700 MHz BW.
The Limit for (wideband Emissions) is -70 dBW (-40 dBm) in a 1 MHz BW.

A 1 GHz highpass filter was used at the spectrum analyzer input.

776 – 787 MHz
UL Dedicated S2 to D3

Spurious Frequency Range	Test signal	RBW	Spurious Frequency	Spurious Level	Antenna Gain	Final Spurious Level	Limit	Pass / Fail
MHz			MHz	dBm	dB	dBm	dBm	
1559 – 1610 (Wideband)	AWGN	1 MHz	1563.89	-72.7	3.21	-69.49	-40	Pass
1559 – 1610 (Narrowband)	AWGN	700 Hz	1563.99	-104.5	3.21	-101.29	-50	Pass
1559 – 1610 (Wideband)	GSM	1 MHz	1569.98	-72.8	3.21	-69.59	-40	Pass
1559 – 1610 (Narrowband)	GSM	700 Hz	1562.86	-85	3.21	-81.79	-50	Pass

776 – 787 MHz
UL Common S2 to D2

Spurious Frequency Range	Test signal	RBW	Spurious Frequency	Spurious Level	Antenna Gain	Final Spurious Level	Limit	Pass / Fail
MHz			MHz	dBm	dB	dBm	dBm	
1559 – 1610 (Wideband)	AWGN	1 MHz	1599.95	-80.2	3.21	-76.99	-40	Pass
1559 – 1610 (Narrowband)	AWGN	700 Hz	1591.98	-110.8	3.21	-107.59	-50	Pass
1559 – 1610 (Wideband)	GSM	1 MHz	1584.34	-80.2	3.21	-76.99	-40	Pass
1559 – 1610 (Narrowband)	GSM	700 Hz	1559.64	-109	3.21	-105.79	-50	Pass

746 - 757 MHz
DL Dedicated D3 to S2

Spurious Frequency Range	Test signal	RBW	Spurious Frequency	Spurious Level	Antenna Gain	Final Spurious Level	Limit	Pass / Fail
MHz			MHz	dBm	dB	dBm	dBm	
1559 – 1610 (Wideband)	AWGN	1 MHz	1606.92	-80	-1.69	-81.69	-40	Pass
1559 – 1610 (Narrowband)	AWGN	700 Hz	1600.12	-109.4	-1.69	-111.09	-50	Pass
1559 – 1610 (Wideband)	GSM	1 MHz	1594.17	-80.7	-1.69	-82.39	-40	Pass
1559 – 1610 (Narrowband)	GSM	700 Hz	1600.98	-109.5	-1.69	-111.19	-50	Pass

746 - 757 MHz
DL Common D2 to S2

Spurious Frequency Range	Test signal	RBW	Spurious Frequency	Spurious Level	Antenna Gain	Final Spurious Level	Limit	Pass / Fail
MHz			MHz	dBm	dB	dBm	dBm	
1559 – 1610 (Wideband)	AWGN	1 MHz	1578.21	-80.5	-1.69	-82.19	-40	Pass
1559 – 1610 (Narrowband)	AWGN	700 Hz	1607.38	-110.1	-1.69	-111.79	-50	Pass
1559 – 1610 (Wideband)	GSM	1 MHz	1564.04	-80.2	-1.69	-81.89	-40	Pass
1559 – 1610 (Narrowband)	GSM	700 Hz	1584.53	-109.8	-1.69	-111.49	-50	Pass

Annex H Conducted Spurious Emissions – AWGN Test Signal

Refer to Annex H for Conducted Spurious Emissions – AWGN Test Signal plots

Annex I Conducted Spurious Emissions – GSM Test Signal

Refer to Annex I for Conducted Spurious Emissions – GSM Test Signal plots

Annex J Conducted Spurious Emissions – 27.53(c)(3)(4) and 27.53(f)

Refer to Annex J for Conducted Spurious Emissions – 27.53(c)(3)(4) and 27.53(f)

Radiated Spurious

Engineer: Greg Corbin

Test Date: 7/15/2025

Test Procedure

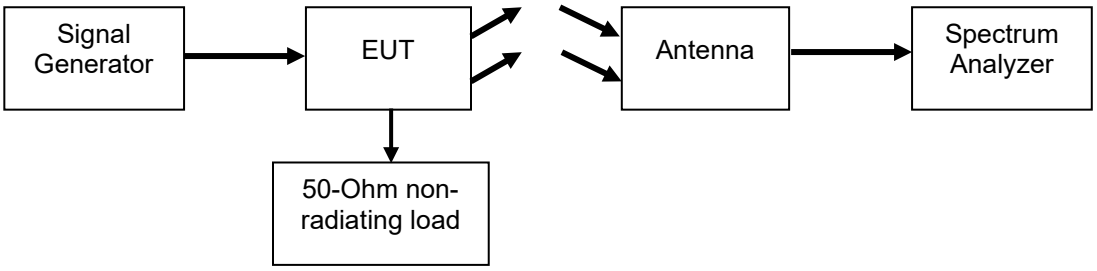
The EUT was tested in a semi-anechoic chamber with the turntable set 3m from the receiving antenna.
A spectrum analyzer was used to verify that the EUT met the requirements for Radiated Emissions.
The EUT was tested by rotating it 360 degrees with the antenna in both the vertical and horizontal orientation while raised from 1 to 4 meters to ensure that the signal levels were maximized.
All cable and antenna correction factors were input into the spectrum analyzer ensuring an accurate measurement in ERP/EIRP with the resultant power in dBm.
A signal generator was used to provide a GSM modulated signal centered in each operational uplink and downlink band with the input power level set to just below the AGC threshold but not more than 0.5dB
The EUT output was terminated into a 50 Ohm non-radiating load.
For each band, the spurious emissions were measured from 30 MHz to the 10th Harmonic of the band being investigated.

On some of the plots there are more than 1 marker, In some cases, the highest level signal on the plot may be the fundamental signal and is exempt from the -13 dBm limit.
In the plots, any signals over the -13 dBm limit, are the fundamental test frequency within the band and are exempt from the -13 dBm limit. These signals have a marker and are included in the marker table on each plot.

Spectrum Analyzer settings:
RBW = 100 kHz, from 30 – 1000 MHz
RBW = 1 MHz, from 1 – 22 GHz
Detector: Peak, max hold

The following formula was used for calculating the limits:
Radiated Spurious Emissions Limit = P1 – (43+ 10Log(P2)) = -13dBm
P1 = power in dBm
P2 = power in Watts

Test Setup



Port for signal injection

Dedicated Ports					Common Ports		
U/L					U/L		
B12	B13	B5	B4	B25	B12	B13	B5
S2	S2	S2	S2	S2	S2	S2	S2
D/L					D/L		
B12	B13	B5	B4	B25	B12	B13	B5
D3	D3	D1	D2	D2	D2	D2	D2

Annex K Radiated Spurious Emission

Refer to Annex K for Radiated Spurious Emission plots

All emissions were lower than -13 dBm.

Measurement Uncertainty

Measurement Uncertainty for Compliance Testing is listed in the table below.

The reported expanded uncertainty has been estimated at a 95% confidence level (k=2)

Measurement Type	Expanded Uncertainty
Conducted Emissions, AC Powerline	± 3.28 dB
Radiated Emissions_30 – 1000 MHz	± 4.82 dB
Radiated Emissions_1 – 18 GHz	± 5.73 dB
Frequency Error	± 22 Hz
Conducted RF Power	± 0.98 dB
Conducted Spurious Emission	± 2.49 dB
AC Voltage	± 2.3 %
DC Voltage	± 0.12 %
Temperature	± 1.0 deg C
Humidity	± 4.32 %

Test Equipment Utilized

Description	Manufacturer	Model #	CT Asset #	Last Cal Date	Cal Due Date
Horn Antenna	EMCO	3116	i00085	3/18/25	3/18/27
Horn Antenna	ARA	DRG-118/A	i00271	8/9/24	8/9/26
Humidity / Temp Meter	Newport	IBTHX-W-5	i00686	1/25/25	1/25/26
Bi-Log Antenna	Schaffner	CBL 6111D	i00349	2/27/25	2/27/27
Signal Generator	Rohde & Schwarz	SMU200A	i00405	12/31/24	12/31/25
Spectrum Analyzer	Textronix	RSA5126A	i00424	7/1/25	7/1/26
3 Meter Semi-Anechoic Chamber	Panashield	3 Meter Semi-Anechoic Chamber	i00428	7/13/23	7/13/26
Highpass Filter (1 GHz)	K&L	7IH40-980/T6000-O/O	i00432	Verified on: 07/18/25	
Voltmeter	Fluke	179	i00488	6/25/2025	6/25/2026
MXE EMI receiver	Keysight	N9038A	i00552	3/17/2025	3/17/2026
Signal Generator	Rohde & Schwarz	SMU200A	i00635	4/30/2025	4/30/2026
Preamplifier	COM-Power	PAM-103	i00734	Verified on: 6/27/24	
Preamplifier	Eravant	SBB-0115034019-2F2F-E3	i00722	Verified on: 12/4/24	

In addition to the equipment listed above, standard RF connectors and cables were utilized in the testing of the described equipment. Prior to testing these components were tested to verify proper operation.

END OF TEST REPORT