Test report

REP011029-2R1TRFWL

Date of issue: March 25, 2024

Applicant:

Maven Wireless, Inc.

Product description:

Stratus High Power Remote Unit

Model:

RHN00205

Product marketing name(s):

Nebula Digital DAS

FCC ID:

2BE5B-RHN00205

ISED certification number:

32082-RHN00205

Specifications:

- FCC 47 CFR Part 24 – Personal Communication Services
- FCC 47 CFR Part 27 – Miscellaneous Wireless Communication Services
- RSS 131 Issue 4 – Zone Enhancers
- RSS 133 Issue 6 Amendment 1 – 2 GHz Personal Communications Services
- RSS-139 Issue 4 - Advanced Wireless Services Equipment Operating in the Bands 1710-1780 MHz and 2110 – 2200 MHz
- RSS-195 Issue 2 – Wireless Communication Services (WCS) Equipment Operating in the Bands 2305 – 2320 MHz and 2345 – 2360 MHz
- RSS-199 Issue 4 – Broadband Radio Service (BRS) Equipment Operating in the Band 2500 – 2690 MHz

Nemko USA Inc., a testing laboratory, is accredited by ANAB. The tests included in this report are within the scope of this accreditation.

Lab and test locations

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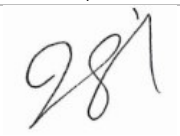
State	California
Postal code	92008
Country	USA
Telephone	+1 760 444 3500
Website	www.nemko.com
FCC Site Number	Test Firm Registration Number: 392943; Designation Number: US3165
ISED Test Site	2040B

Tested by	Lan Sayasane, EMC Test Engineer
Reviewed by	James Cunningham, EMC/WL Manager
Review date	March 25, 2024
Reviewer signature	

Limits of responsibility

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.
This test report has been completed in accordance with the requirements of ISO/IEC 17025. All results contain in this report are within Nemko USA's ISO/IEC 17025 accreditation.
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Section 1 Report summary

1.1 Test specifications

FCC 47 CFR Part 24	Personal Communication Services
FCC 47 CFR Part 27	Miscellaneous Wireless Communication Services
RSS-131 Issue 4	Zone Enhancers
RSS-133 Issue 6, Amendment 1	2 GHz Personal Communications Services
RSS 139 Issue 4	Advanced Wireless Services Equipment Operating in the Bands 1710-1780 MHz and 2110 – 2200 MHz
RSS 195 Issue 2	Wireless Communication Service (WCS) Equipment Operating in the Bands 2305 – 2320 MHz and 2345 – 2360 MHz
RSS-199 Issue 4	Broadband Radio Service (BRS) Equipment Operating in the Band 2500 – 2690 MHz

1.2 Test methods

ANSI C63.26 – 2015	American National Standard for Compliance Testing of Transmitters Used in Licensed Services; Section 7 – RF Repeaters, amplifiers, and boosters testing
FCC KDB 935210 D05 v01r04	Measurements Guidance for Industrial, and Non-Consumer Signal Booster, Repeater, and Amplifier Devices

1.3 Exclusions

None.

1.4 Statement of compliance

Testing was performed against all relevant requirements of the test standard(s).

Results obtained indicate that the product under test complies in full with the tested requirements.

The test results relate only to the item(s) tested.

See “Section 2 Summary of test results” for full details.

1.5 Test report revision history

Table 1.5-1: *Test report revision history*

Revision #	Issue Date	Details of changes made to test report
REP011029-2TRFEMC	March 19, 2024	Original report issued
REP011029-2R1TRFEMC	March 25, 2024	Added missing information required by RSS-131 in Section 3

Section 2 Summary of test results

2.1 Sample information

Receipt date	11-Nov-23
Nemko sample ID number	REP011029

2.2 Testing period

Test start date	11-Nov-23
Test end date	18-Feb-24

2.3 Test results

Table 2.3-1: *Summary of results*

FCC Part	ISED Part	Test method	Test description	Verdict
		KDB 935210 D05V01r04 (3.2) ANSI C63.26 7.2.2.1	AGC threshold	Pass
	RSS-131 Clause 9.1	KDB 935210 D05v01r04 (3.3) ANSI C63.26 7.2.2.2	Out of band rejection	Pass
FCC Part 2.1049	RSS-131 Clause 9.2	KDB 935210 D05v01r05 (3.4) ANSI C63.26 7.2.2.3	Occupied bandwidth / Input-versus-output spectrum	Pass
FCC Part 24.232 (band 25 operation) FCC Part 27.50(d) (band 30, 66, 41 operation)	RSS-131 Clause 9.3	KDB 935210 D05v01r05 (3.5) ANSI C63.26 7.2.2.4	Input/output power and amplifier/booster gain	Pass
FCC Part 24.238 (band 25 operation) FCC Part 27.53(h) (band 30, 66, 41 operation)	RSS-133 Clause 6.5.1 (band 25 operation) RSS-139 Clause 5.6 (band 66 operation) RSS-195 Clause 5.6 (band 30 operation) RSS-199 Clause 5.6 (band 41 operation)	KDB 935210 D05v01r05 (3.6) ANSI C63.26 7.2.2.5	Spurious emissions at RF antenna connector	Pass
FCC Part 24.235 (band 25 operation) FCC Part 27.54 (band 30, 66, 41 operation)	RSS-131 Clause 9.4	KDB 935210 D05v01r05 (3.7) ANSI C63.26 7.2.2.6	Frequency stability	Not applicable [1]
FCC Part 24.238 (band 25 operation) FCC Part 27.53(h) (band 30, 66, 41 operation)	RSS-133 Clause 6.5.1 (band 25 operation) RSS-139 Clause 5.6 (band 66 operation) RSS-195 Clause 5.6 (band 30 operation) RSS-199 Clause 5.6 (band 41 operation)	KDB 935210 D05v01r05 (3.8) ANSI C63.26 7.2.2.7	Radiated spurious emissions	Pass

Notes: [1] Per ANSI C63.26-2015 clause 7.2.2.6 and KDB 935210 Clause 3.7 and RSS-131 Clause 9.4, frequency stability testing is not required if the EUT does not process the input signal in a manner that can influence the output signal frequency/frequencies.

Section 3 Equipment under test (EUT) details

3.1 Disclaimer

This section contains information provided by the applicant and has been utilized to support the test plan. Inaccurate information provided by the applicant can affect the validity of the results within this test report. Nemko accepts no responsibility for the information contained within this section and the impact it may have on the test plan and resulting measurements.

3.2 Applicant

Company name	Maven Wireless, Inc.
Address	222 Pacific Coast Hwy, Office 10-144
City	El Segundo
State	CA
Postal/Zip code	90245
Country	USA

3.3 Manufacturer

Company name	Maven Wireless, Inc.
Address	222 Pacific Coast Hwy, Office 10-144
City	El Segundo
State	CA
Postal/Zip code	90245
Country	USA

3.4 EUT information

Product name	Nebula Digital DAS
Model	RHN00205
Variant(s)	None
Serial number	00XUQ
Part number	RHN00205
Power requirements	85 - 264 Vac; -48 V DC (optional)
Description/theory of operation	The Maven Wireless Digital DAS is an indoor coverage system for mobile wireless services. It features a fully digital transport that supports all 2G, 3G, 4G and 5G services in star, daisy chain, ring, and mesh network architectures. The capacity is scaled to your network: 300 MHz bandwidths with SFP+.
Operational frequencies	Band 25: 1930 – 1995 MHz DL / 1850 – 1915 MHz UL Band 66: 2110 – 2180 MHz DL / 1710 – 1760 MHz UL (*) Band 30: 2350 – 2360 MHz DL, 2305 – 2315 MHz UL Band 41: 2496 – 2690 MHz UL/DL
Software details	N/A
Type of signal booster	FCC: ☐ Consumer Signal Booster ☐ Provider-Specific Consumer Signal Booster ☒ Industrial Signal Booster ISED: ☐ Consumer Zone Enhancer ☐ Fixed Consumer Zone Enhancer ☒ Industrial Zone Enhancer ☐ Mobile Consumer Zone Enhancer ☐ Provider-Specific Consumer Zone Enhancer

(*) Note this is a subset of the full band 66 (2110 – 2200 MHz DL / 1710 – 1780 MHz UL)

3.5 Transmitter Information

Frequency band	Band 25: 1930 – 1995 MHz DL / 1850 – 1915 MHz UL Band 66: 2110 – 2180 MHz DL / 1710 – 1760 MHz UL Band 30: 2350 – 2360 MHz DL, 2305 – 2315 MHz UL Band 41: 2496 – 2690 MHz UL/DL
Antenna information	One output antenna port. None - antenna connectors only
Nominal gain (*)	15 to 45 dB in 0.1 dB steps
Gain-versus-frequency response (*)	Gain is nominally flat across the frequency bands. See out-of-band rejection data in section 8.2 for verification.
Rated mean output power P_{rated} (*)	43 dBm
Output signal coupling attenuation (*)	0 dB
Mobile Station Coupling Loss (*)	N/A (EUT is not a Wideband Consumer Zone Enhancer)
Base Station Coupling Loss (*)	N/A (EUT is not a Provider-Specific Consumer Zone Enhancer)
Input port impedance	50 ohms (note – input port(s) are situated on the Orion Point of Interface unit, connected via fiber to EUT
Output port impedance	50 ohms

(*) Information required per RSS-131

3.6 EUT setup details

Table 3.6-1: *EUT sub assemblies*

Description	Brand name	Model/Part number	Serial number	Rev.
Orion	Maven Wireless Inc.	MRN00004	012DL	B

Table 3.6-2: *EUT interface ports*

Description	Qty.
Power port	1
RF port	1
EXT Alarm	1
SFP ports	4
QSFP+ ports	3
Ethernet port	1
Aux/USB port	1
Local management port	1

Table 3.6-3: *Support equipment*

Description	Brand name	Model/Part number	Serial number	Rev.
Laptop	DELL	Latitude	N/A	N/A

Table 3.6-4: *Inter-connection cables*

Cable description	From	To	Length (m)
QSFP+ fiber	Orion	Stratus	3
USB cable	Laptop	Orion	2
USB cable	Laptop	Stratus	2
AC power	Building	Stratus	2

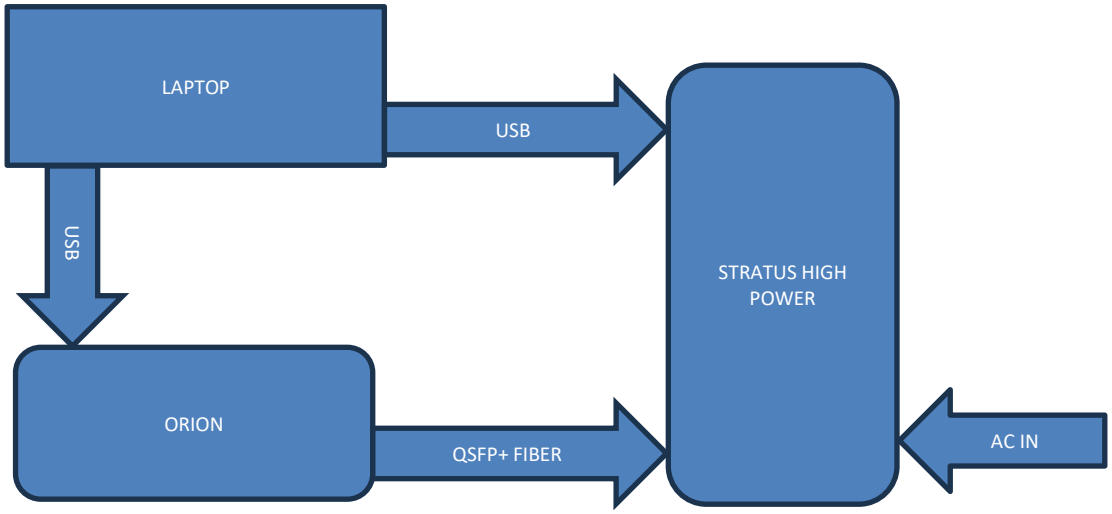


Figure 3.6-1: Test setup diagram

Section 4 Engineering considerations

4.1 Modifications incorporated in the EUT

None.

4.2 Technical judgement

None.

4.3 Deviations from laboratory test procedures

None.

Section 5 Test conditions

5.1 Atmospheric conditions

Temperature	15–30 °C
Relative humidity	20–75 %
Air pressure	86–106 kPa

When it is impracticable to carry out tests under these conditions, a note to this effect stating the ambient temperature and relative humidity during the tests shall be recorded and stated.

5.2 Power supply range

The normal test voltage for equipment to be connected to the mains shall be the nominal mains voltage. For the present document, the nominal voltage shall be the declared voltage, or any of the declared voltages ±5 %, for which the equipment was designed.

Section 6 Measurement uncertainty

6.1 Uncertainty of measurement

Nemko USA Inc. has calculated measurement uncertainty and is documented in EMC/MUC/001 "Uncertainty in EMC measurements." Measurement uncertainty was calculated using the methods described in CISPR 16-4-2 Specification for radio disturbance and immunity measuring apparatus and methods – Part 4-2: Uncertainties, statistics, and limit modelling – Measurement instrumentation uncertainty. The expression of Uncertainty in EMC testing. Measurement uncertainty calculations assume a coverage factor of K=2 with 95% certainty.

Table 6.1-1: *Measurement uncertainty calculations*

Measurement		U_{cispr} **dB**	U_{lab} **dB**
Conducted disturbance at AC mains and other port power using a V-AMN	9 kHz to 150 kHz	3.8	2.9
	150 kHz to 30 MHz	3.4	2.3
Conducted disturbance at telecommunication port using AAN	150 kHz to 30 MHz	5.0	4.3
Conducted disturbance at telecommunication port using CVP	150 kHz to 30 MHz	3.9	2.9
Conducted disturbance at telecommunication port using CP	150 kHz to 30 MHz	2.9	1.4
Conducted disturbance at telecommunication port using CP and CVP	150 kHz to 30 MHz	4.0	3.1
Radiated disturbance (electric field strength in a SAC)	30 MHz to 1 GHz	6.3	5.5
Radiated disturbance (electric field strength in a FAR)	1 GHz to 6 GHz	5.2	4.7
Radiated disturbance (electric field strength in a FAR)	6 GHz to 18 GHz	5.5	5.0

Notes: Compliance assessment:

If U_{lab} is less than or equal to U_{cispr} then:

- compliance is deemed to occur is no measured disturbance level exceeds the disturbance limit.
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit

If U_{lab} is greater than U_{cispr} then:

- compliance is deemed to occur is no measured disturbance level, increased by (U_{lab} - U_{cispr}), exceeds the disturbance limit.
- non-compliance is deemed to occur if any measured disturbance level, increased by (U_{lab} - U_{cispr}), exceeds the disturbance limit

V-AMN: V type artificial mains network
AAN: Asymmetric artificial network
CP: Current probe
CVP: Capacitive voltage probe
SAC: Semi-anechoic chamber
FAR: Fully anechoic room

Section 7 Test equipment

7.1 Test equipment list

Table 7.1-1: *Test Equipment List*

Equipment	Manufacturer	Model no.	Asset no.	Cal cycle	Next cal.
Signal and Spectrum Analyzer	Rohde & Schwarz	FSV40	E1120	2 years	14-Dec-2025
Vector Signal Generator	Rohde & Schwarz	SMW200A	E1156	3 years	10-May-2024
Power Sensor	ETS-Lindgren	7002-006	EW110	1 year	14-Apr-2024
EMI Test Receiver	Rohde & Schwarz	ESU 40	E1121	1 year	23-Aug-2024
System Controller	Sunol Sciences	SC104V	E1191	NCR	NCR
Antenna, Bilog	Schaffner-Chase	CBL6111C	1480	1 year	21-Feb-2024
Antenna, DRG Horn	ETS-Lindgren	3117-PA	E1160	1 year	13-Feb-2024
Antenna, Horn (18-26.5 GHz)	Eravant	SAZ-2410-42-S1	EW107	1 year	05-Dec-2024
Antenna, Horn (26.5-40 GHz)	Eravant	SAZ-2410-2-S1	EW108	1 year	05-Dec-2024
Termination, 50 ohms	Diamond Antenna	DC-500MHz	N/A	NCR	NCR
Attenuator, 30dB	Pasternack	PE7388-30	E1325	VBU	VBU

Notes: NCR: no calibration required
VBU: verify before use

7.2 Test software list

Table 7.2-1: *Test Software*

Manufacturer	Details
Rohde & Schwarz	EMC 32 V10.60.10 (AC conducted emissions)
Rohde & Schwarz	EMC 32 V10.60.15 (radiated emissions)

Section 8 Testing data

8.1 AGC Threshold

8.1.1 References and limits

- ANSI C63.26 Section 7.2.2.1
- KDB 935210 D05v01r04 Clause 3.2

8.1.2 Test summary

Verdict	Pass		
Test date	November 17, 2023 November 22, 2023 January 8, 2024	Temperature	20 °C
Test engineer	Lan Sayasane, EMC Test Engineer	Air pressure	1008 mbar
Test location	☐ 10m semi anechoic chamber ☐ 3m semi anechoic chamber ☒ Wireless bench ☐ Other:	Relative humidity	55 %

8.1.3 Notes

Per KDB 935210 D05 v01r04, Clause 3.1 and ANSI C63.26 Clause 7.2.2.1, testing was performed with a narrowband test signal (MSK modulated, gaussian filter of 0.3 and data rate 270 kbps) and a broadband signal (AWGN, 4.1 MHz 99% occupied bandwidth).

8.1.4 Setup details

EUT power input during test	120 VAC / 60 Hz
EUT setup configuration	☒ Table-top ☐ Floor standing ☐ Other:
Measurement details	The automatic gain control (AGC) threshold is determined as follows: a) Connect a signal generator to the input of the EUT. b) Connect a spectrum analyzer or power meter to the output of the EUT using appropriate attenuation. c) The signal generator must be set to either of the required modulation signals. d) Set the frequency to the middle frequency of the EUT operating band. e) While monitoring the output of the EUT using the method of ANSI C63.26 7.2.2.4.2 or 7.2.2.4.3, increase the input level until a 1 dB increase in the input signal no longer causes a 1 dB increase in the output signal. f) This is the AGC threshold level of the EUT. g) Repeat for the other modulation signal.

8.1.5 Test data

Table 8.1-1: *AGC Threshold results*

Operating frequency band	Input signal type	AGC Threshold Level (dBm)
Band 25: 1930 – 1995 MHz	Narrowband	-1.0
	Broadband	-1.0
Band 66: 2110 – 2180 MHz	Narrowband	-1.0
	Broadband	0.0
Band 30: 2350 – 2360 MHz	Narrowband	-1.0
	Broadband	0.0
Band 41: 2496 – 2690 MHz	Narrowband	3.0
	Broadband	4.0

8.2 Out of band rejection

8.2.1 References and limits

- ANSI C63.26 Section 7.2.2.2
- KDB 935210 D05v01r04 Clause 3.3
- RSS-131 Clause 9.1

8.2.2 Test summary

Verdict	Pass		
Test date	November 17, 2023 February 9, 2024	Temperature	20 °C
Test engineer	Lan Sayasane, EMC Test Engineer	Air pressure	1006 mbar
Test location	☐ 10m semi anechoic chamber ☐ 3m semi anechoic chamber ☒ Wireless bench ☐ Other:	Relative humidity	50 %

8.2.3 Notes

None

8.2.4 Setup details

EUT power input during test	120 VAC / 60 Hz
EUT setup configuration	☒ Table-top ☐ Floor standing ☐ Other:
Measurement details	The out-of-band rejection is measured as follows: a. Connect a signal generator to the input of the EUT. b. Configure a swept CW signal with the following parameters: 1) Frequency range = ± 250 % of the passband from the center of the passband, for each applicable operating frequency band. 2) Level = a sufficient level to affirm that the out-of-band rejection is > 20 dB above the noise floor and will not engage the AGC during the entire sweep. 3) Dwell time = approximately 10 ms. 4) Number of points = SPAN/(RBW/2). c. Connect a spectrum analyzer to the output of the EUT using appropriate attenuation. d. Set the span of the spectrum analyzer to the same frequency range of the signal generator. e. Set the RBW of the spectrum analyzer to be 1% to 5% of the EUT passband and the VBW shall be set to ≥ 3 x RBW. f. Set the detector to Peak Max-Hold and wait for the spectrum analyzer's display to fill. g. Capture the frequency response of the EUT. h. Please a marker to the peak of the frequency response and record this frequency as f_0. i. Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the -20 dB down amplitude to determine the 20 dB bandwidth. j. Repeat for all frequency bands applicable for use by the EUT.

8.2.5 Test data

8.2.5.1 Operating frequency band: band 25: 1930 – 1995 MHz

Note: The EUT can only be programmed to operate in one 20 MHz sub-band at a time. Therefore, measurements of the out-of-band rejection were performed covering the lowest and highest 20 MHz range in the operating frequency band.

Table 8.2-1: *Out of band rejection results, low sub-band*

Parameter	Value (MHz)
f_0	1940.196
f_l	1929.727
f_h	1950.665
20 dB bandwidth	20.938

Table 8.2-2: *Out of band rejection results, high sub-band*

Parameter	Value (MHz)
f_0	1985.032
f_l	1975.245
f_h	1994.818
20 dB bandwidth	19.573

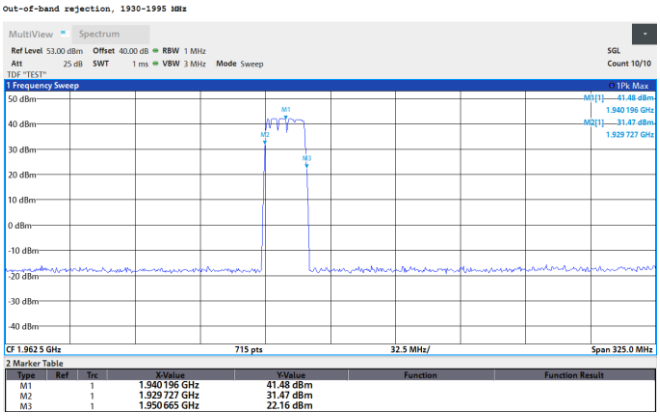


Figure 8.2-1: *Out of band rejection results, low sub-band, band 25*

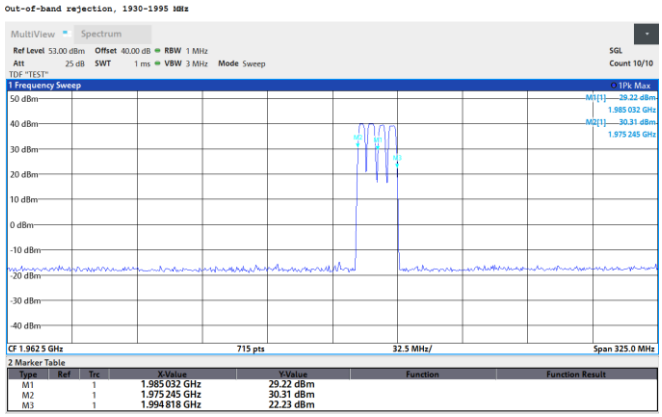


Figure 8.2-2: *Out of band rejection results, high sub-band, band 25*

8.2.5.2 Operating frequency band: band 66: 2110 – 2180 MHz

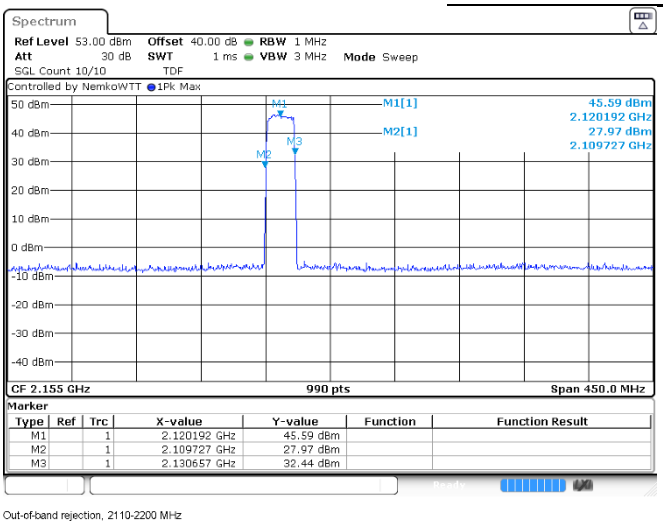
Note: The EUT can only be programmed to operate in one 20 MHz sub-band at a time. Therefore, measurements of the out-of-band rejection were performed covering the lowest (2120 MHz), and highest (2155 MHz) 20 MHz range in the operating frequency band.

Table 8.2-3: *Out of band rejection results, low sub-band*

Parameter	Value (MHz)
f_0	2120.192
f_l	2109.727
f_h	2130.657
20 dB bandwidth	20.93

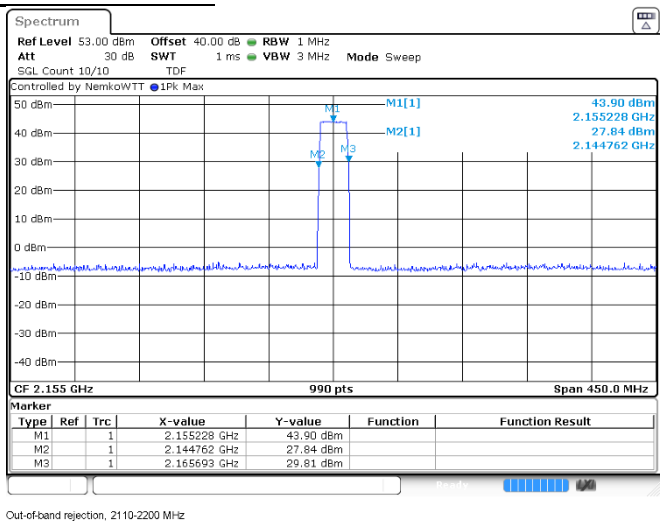
Table 8.2-4: *Out of band rejection results, high sub-band*

Parameter	Value (MHz)
f_0	2155.228
f_l	2144.762
f_h	2165.693
20 dB bandwidth	20.931



Out-of-band rejection, 2110-2200 MHz

Figure 8.2-3: *Out of band rejection results, low sub-band, band 66*



Out-of-band rejection, 2110-2200 MHz

Figure 8.2-4: *Out of band rejection results, high sub-band, band 66*

8.2.5.3 Operating frequency band: band 30: 2350 – 2360 MHz

Table 8.2-5: *Out of band rejection results*

Parameter	Value (MHz)
f_0	2355.046
f_l	2350.036
f_h	2360.055
20 dB bandwidth	10.019

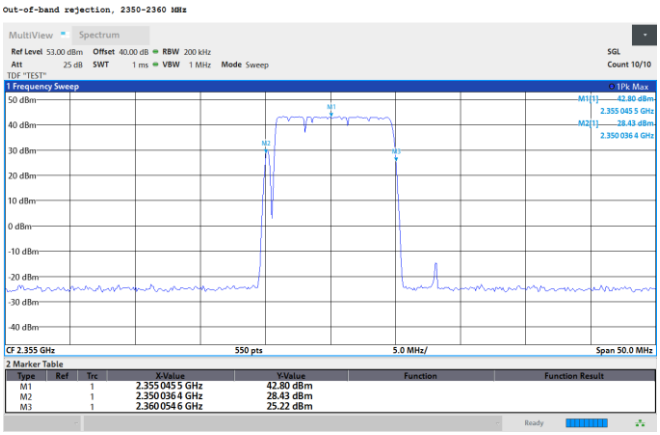


Figure 8.2-5: *Out of band rejection results, band 30*

8.2.5.4 Operating frequency band: band 41: 2496 – 2690 MHz

Note: The EUT can only be programmed to operate in one 20 MHz sub-band at a time. Therefore, measurements of the out-of-band rejection were performed covering the lowest and highest 20 MHz range in the operating frequency band.

Table 8.2-6: *Out of band rejection results, low sub-band*

Parameter	Value (MHz)
f_0	2506.100
f_l	2494.726
f_h	2517.475
20 dB bandwidth	22.749

Table 8.2-7: *Out of band rejection results, high sub-band*

Parameter	Value (MHz)
f_0	2679.900
f_l	2668.525
f_h	2691.274
20 dB bandwidth	22.749

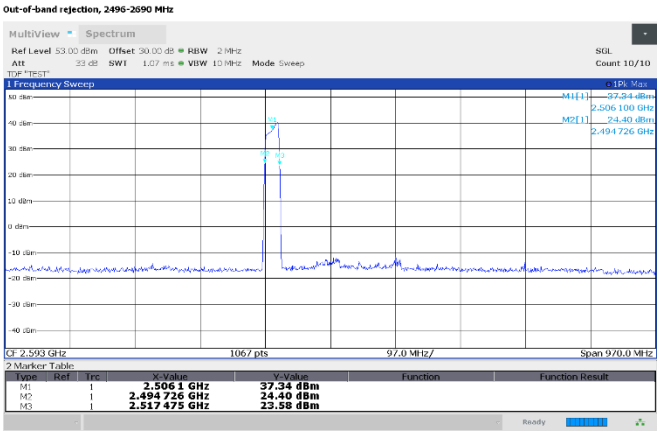


Figure 8.2-6: *Out of band rejection results, low sub-band, band 41*

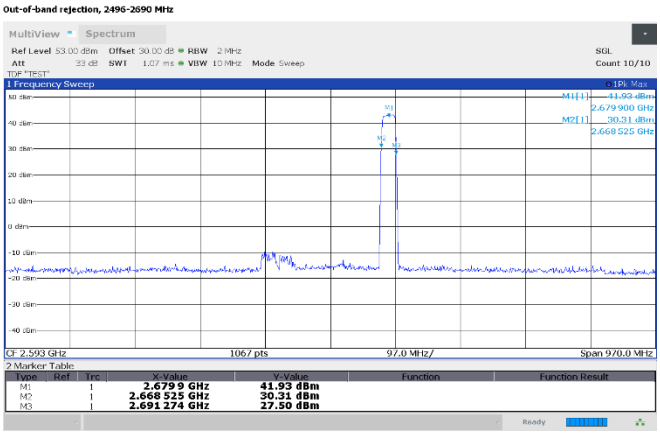


Figure 8.2-7: *Out of band rejection results, high sub-band, band 41*

8.3 Occupied bandwidth / Input Versus Output Comparison

8.3.1 References and limits

- FCC 47 CFR Part 2.1049
- ANSI C63.26 Clause 7.2.2.4
- KDB 935210 D05v01r04 Clause 3.4
- RSS-131 Clause 9.2

8.3.2 Test summary

Verdict	Pass		
Test date	November 17, 2023 January 8, 2024	Temperature	20 °C
Test engineer	Lan Sayasane, EMC Test Engineer	Air pressure	1006 mbar
Test location	☐ 10m semi anechoic chamber ☐ 3m semi anechoic chamber ☒ Wireless bench ☐ Other:	Relative humidity	55 %

8.3.3 Notes

Per KDB 935210 D05 v01r04, Clause 3.3 and ANSI C63.26 Clause 7.2.2.3, testing was performed with a narrowband test signal (MSK modulated, gaussian filter of 0.3 and data rate 270 kbps) and a broadband signal (AWGN, 4.1 MHz 99% occupied bandwidth).

8.3.4 Setup details

EUT power input during test	120 VAC / 60 Hz
EUT setup configuration	☒ Table-top ☐ Floor standing ☐ Other:
Measurement details	A 26 dB bandwidth measurement shall be performed on the input and the output signal. a. Connect a signal generator to the EUT. b. Configure the signal generator to transmit the AWGN signal. c. Configure the signal level to be just below the AGC threshold, but not more than 0l5 dB below. d. Connect a spectrum analyzer to the output of the EUT using appropriate attenuation. e. Set the spectrum analyzer center frequency to the nominal EUT channel center frequency. The span range of the spectrum analyzer shall be between 2 x OBW and 5 x OBW. f. The nominal RBW shall be in the range of 1% to 5% of the anticipated OBW and the VBW shall be ≥ 3 x RBW. g. Set the reference level of the instrument as required, to prevent the signal from exceeding the maximum spectrum analyzer input mixer level for linear operation. In general, the peak of the spectral envelope must be more than [10 log (OBW / RBW)] below the reference level. Step f) and step g) can require iteration to enable adjustments within the specified tolerances. h. The noise floor of the spectrum analyzer at the selected RBW shall be at least 36 dB below the reference level. i. Set spectrum analyzer detection mode to peak, and the trace mode to max hold. j. Determine the reference value: Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace (this is the reference level). k. Determine the -26 dB down amplitude by placing two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the-26 dB down amplitude. If a marker is below the -26 dB down value, it should be as close as possible to this value. The OBW is the positive frequency difference between the two markers. l. Repeat step 3) to step k) to measure the input signal to the EUT (i.e., signal generator output). Compare the 26 dB bandwidths to affirm they are similar. m. Repeat step e) to step l) with the input signal to the EUT set to 3 dB above the AGC threshold. n. Repeat step e) to step m) with the signal generator set to the narrowband signal. o. Repeat step e) to step n) for all bands used by the EUT.

8.3.5 Test data

8.3.5.1 Operating frequency band: band 25: 1930 – 1995 MHz

Table 8.3-1: *Occupied bandwidth / Input Versus Output Comparison results, band 25*

Condition	Test Frequency (MHz)	26 dB Bandwidth (Input Signal) (MHz)	26 dB Bandwidth (Output Signal) (MHz)
Input Level = AGC Threshold - -0.5 dB Input signal = narrowband	1962.5	0.3094	0.3087
Input Level = AGC Threshold + 3 dB Input signal = narrowband	1962.5	0.3094	0.3094
Input Level = AGC Threshold - -0.5 dB Input signal = broadband	1962.5	4.6275	4.6725
Input Level = AGC Threshold + 3 dB Input signal = broadband	1962.5	4.6725	4.6725

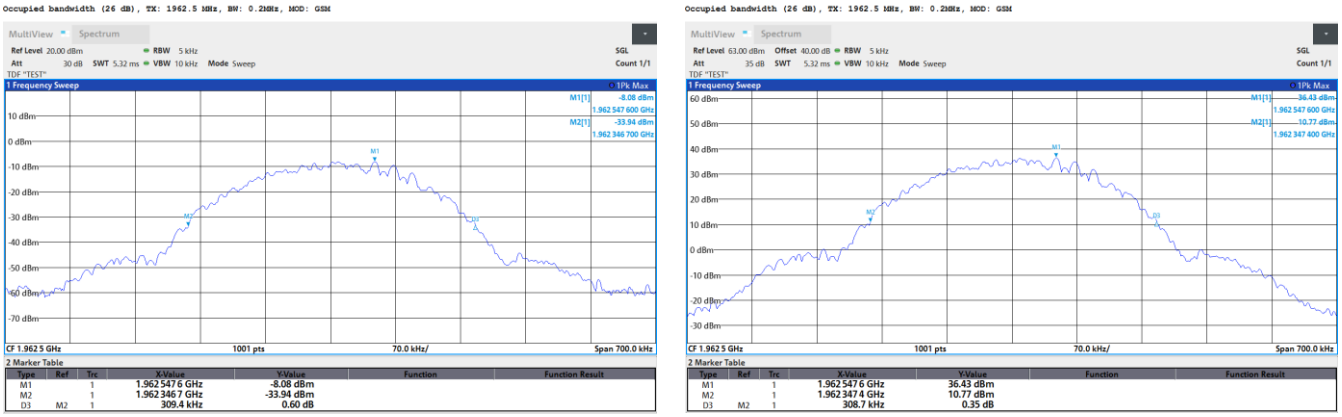


Figure 8.3-1: *Occupied bandwidth / Input Versus Output Comparison results, narrowband signal, 0.5 dB below AGC threshold, input and output signal respectively*

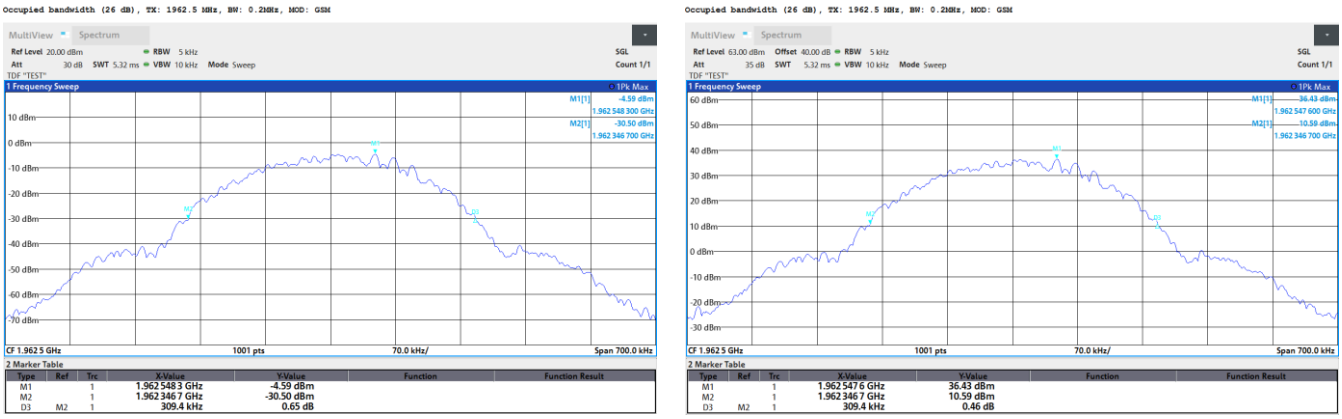


Figure 8.3-2: *Occupied bandwidth / Input Versus Output Comparison results, narrowband signal, 3.0 dB above AGC threshold, input and output signal respectively*

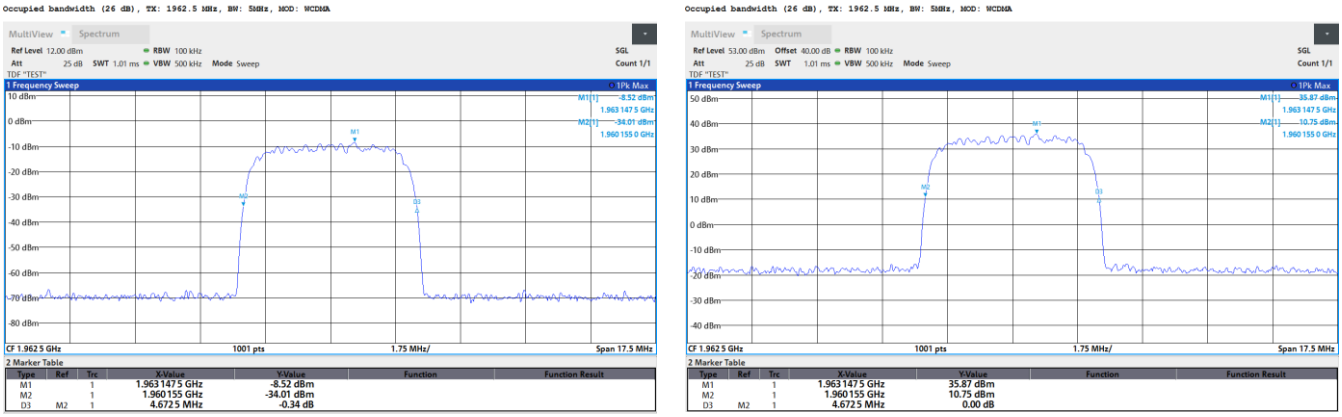


Figure 8.3-3: *Occupied bandwidth / Input Versus Output Comparison results, broadband signal, 0.5 dB below AGC threshold, input and output signal respectively*

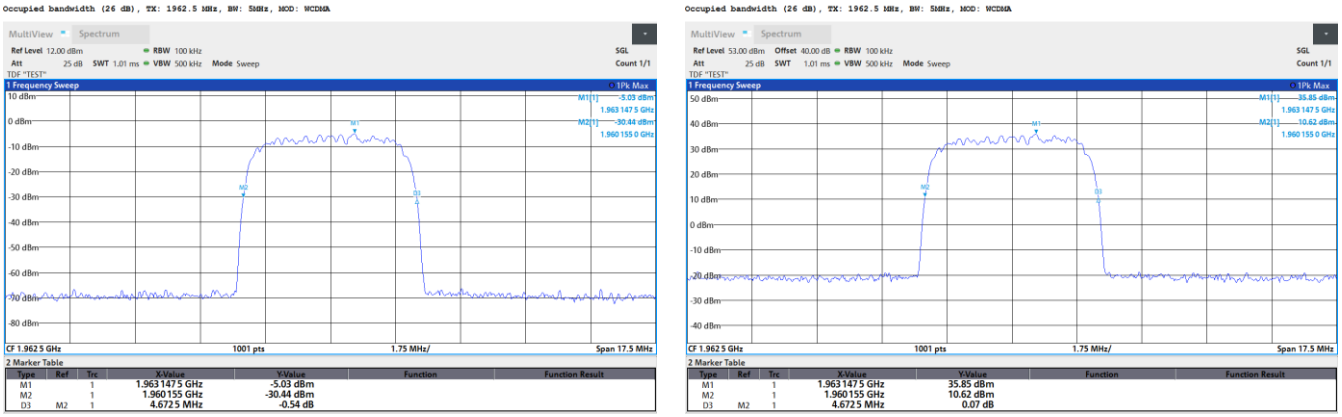


Figure 8.3-4: *Occupied bandwidth / Input Versus Output Comparison results, broadband signal, 3.0 dB above AGC threshold, input and output signal respectively*

8.3.5.2 Operating frequency band: band 66: 2110 – 2180 MHz

Table 8.3-2: *Occupied bandwidth / Input Versus Output Comparison results, band 66*

Condition	Test Frequency (MHz)	26 dB Bandwidth (Input Signal) (MHz)	26 dB Bandwidth (Output Signal) (MHz)
Input Level = AGC Threshold - -0.5 dB Input signal = narrowband	2155	0.30638	0.30739
Input Level = AGC Threshold + 3 dB Input signal = narrowband	2155	0.30841	0.30841
Input Level = AGC Threshold - -0.5 dB Input signal = broadband	2155	4.6667	4.6667
Input Level = AGC Threshold + 3 dB Input signal = broadband	2155	4.6667	4.6667

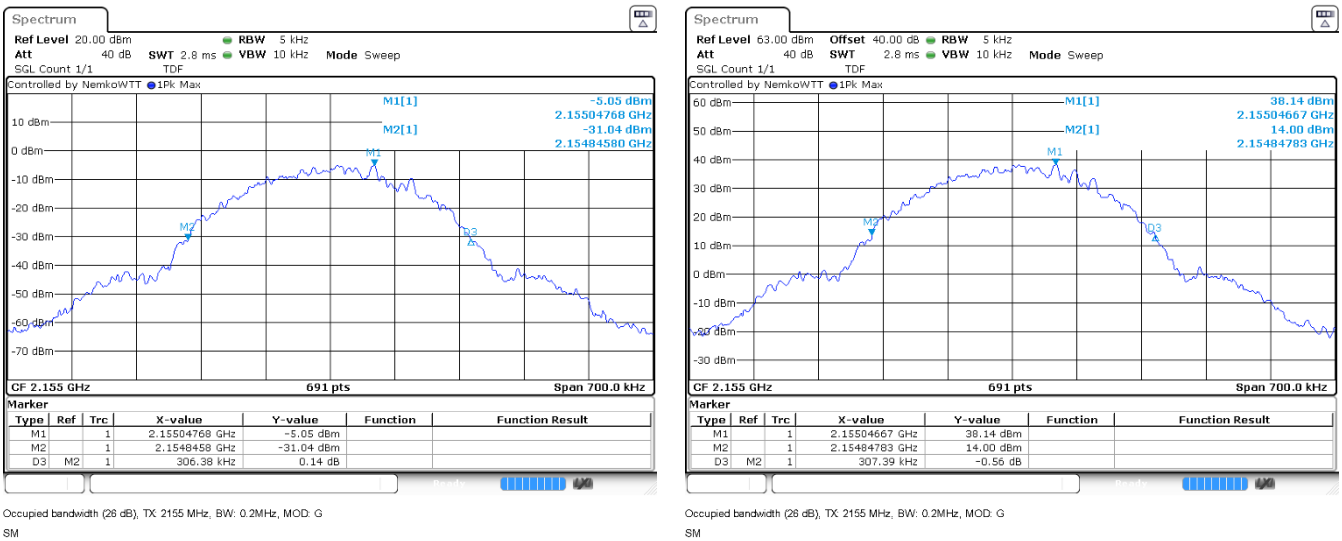


Figure 8.3-5: *Occupied bandwidth / Input Versus Output Comparison results, narrowband signal, 0.5 dB below AGC threshold, input and output signal respectively*

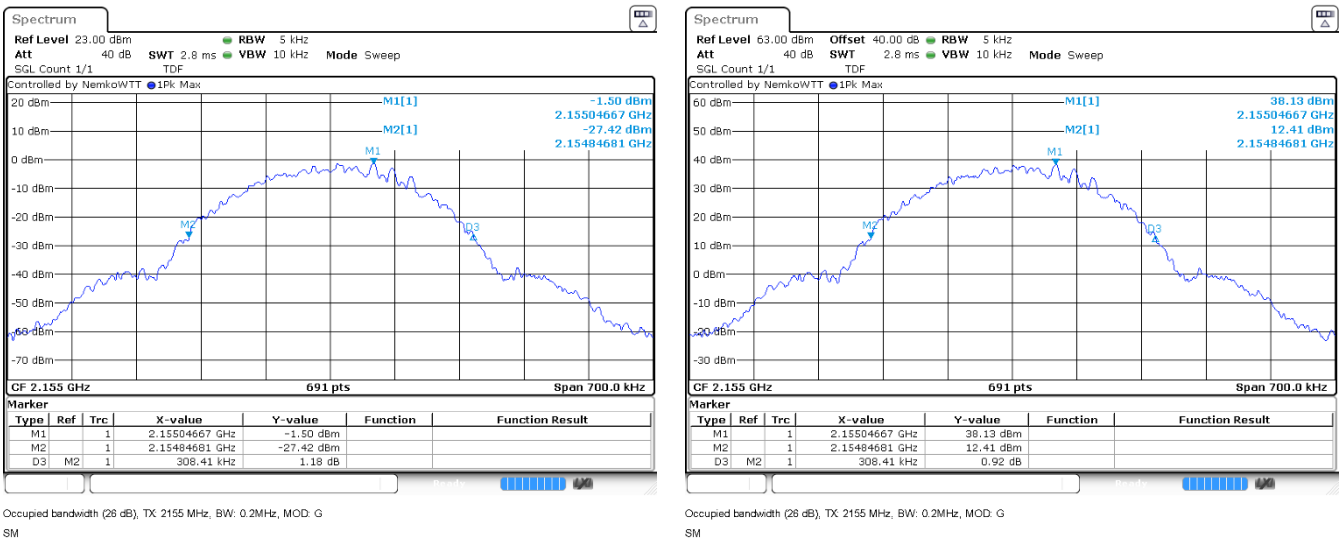
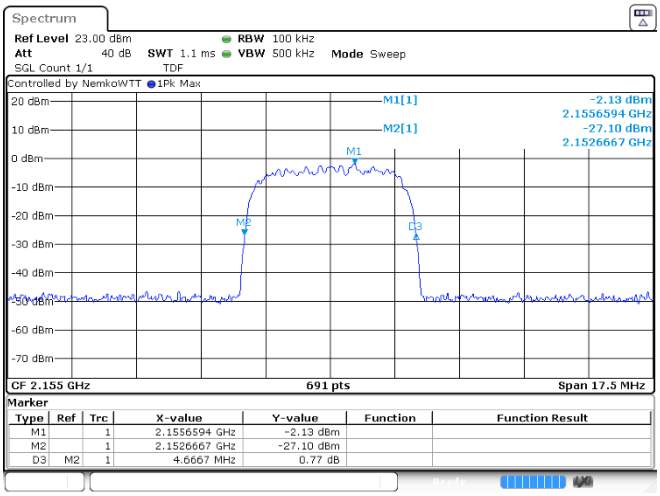
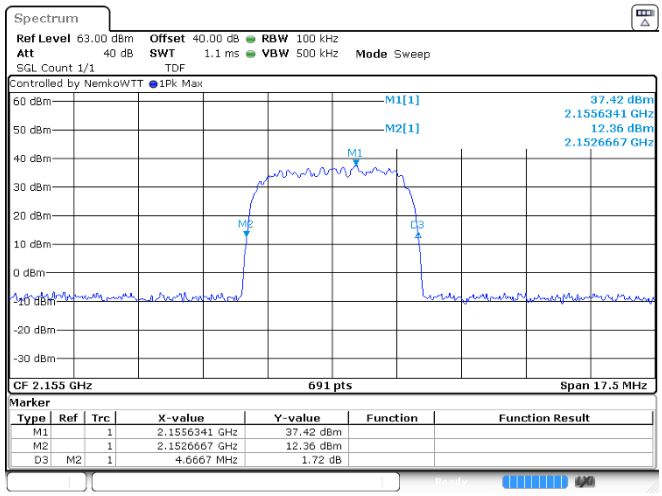


Figure 8.3-6: *Occupied bandwidth / Input Versus Output Comparison results, narrowband signal, 3 dB above AGC threshold, input and output signal respectively*

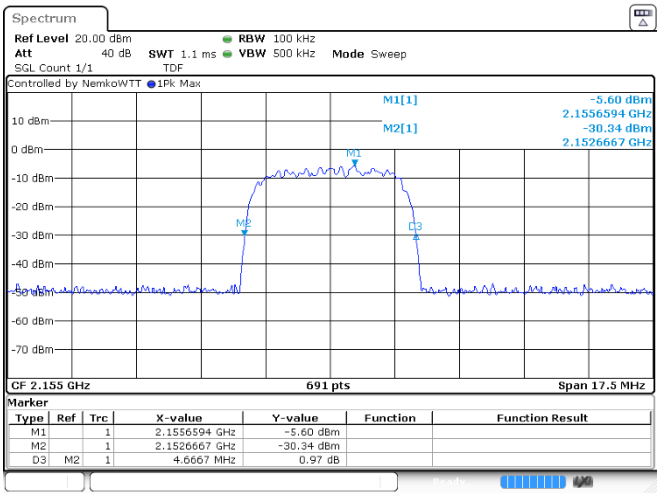


Occupied bandwidth (26 dB), TX 2155 MHz, BW: 5MHz, MOD: WCD
MA

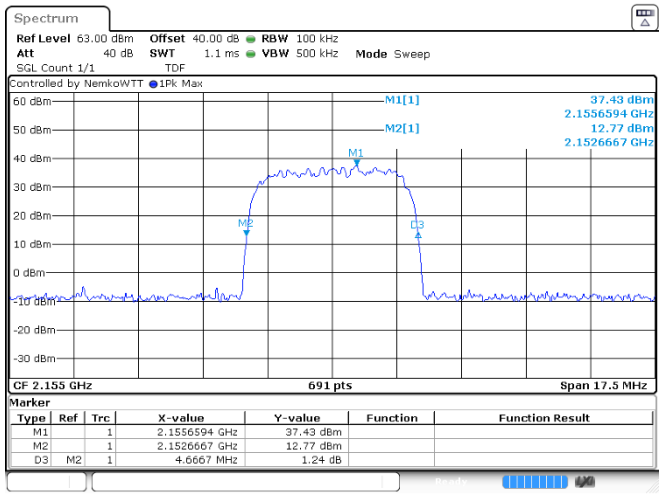


Occupied bandwidth (26 dB), TX 2155 MHz, BW: 5MHz, MOD: WCD
MA

Figure 8.3-7: *Occupied bandwidth / Input Versus Output Comparison results, broadband signal, 0.5 dB below AGC threshold, input and output signal respectively*



Occupied bandwidth (26 dB), TX 2155 MHz, BW: 5MHz, MOD: WCD
MA



Occupied bandwidth (26 dB), TX 2155 MHz, BW: 5MHz, MOD: WCD
MA

Figure 8.3-8: *Occupied bandwidth / Input Versus Output Comparison results, broadband signal, 3 dB above AGC threshold, input and output signal respectively*

8.3.5.3 Operating frequency band: band 30: 2350 – 2360 MHz

Table 8.3-3: *Occupied bandwidth / Input Versus Output Comparison results, band 30*

Condition	Test Frequency (MHz)	26 dB Bandwidth (Input Signal) (MHz)	26 dB Bandwidth (Output Signal) (MHz)
Input Level = AGC Threshold - -0.5 dB Input signal = narrowband	2355	0.3094	0.3087
Input Level = AGC Threshold + 3 dB Input signal = narrowband	2355	0.3094	0.3094
Input Level = AGC Threshold - -0.5 dB Input signal = broadband	2355	4.6725	4.6725
Input Level = AGC Threshold + 3 dB Input signal = broadband	2355	4.6725	4.6725

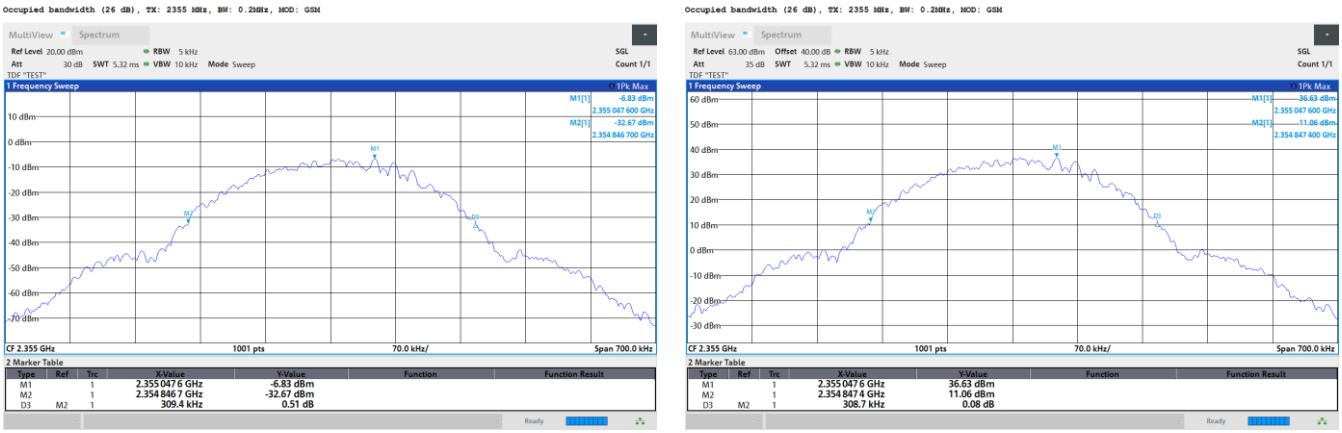


Figure 8.3-9: *Occupied bandwidth / Input Versus Output Comparison results, narrowband signal, 0.5 dB below AGC threshold, input and output signal respectively*

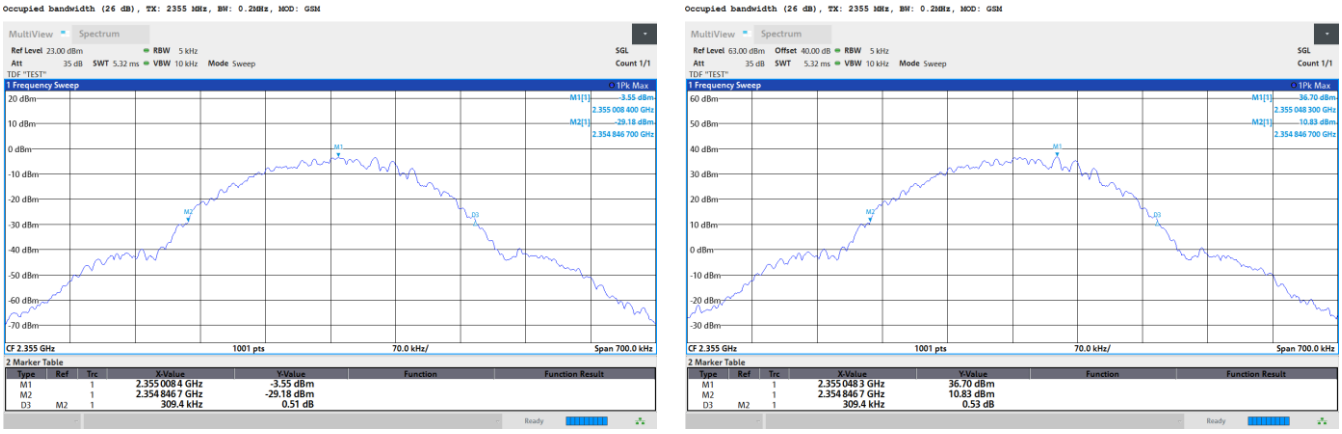


Figure 8.3-10: *Occupied bandwidth / Input Versus Output Comparison results, narrowband signal, 3 dB above AGC threshold, input and output signal respectively*

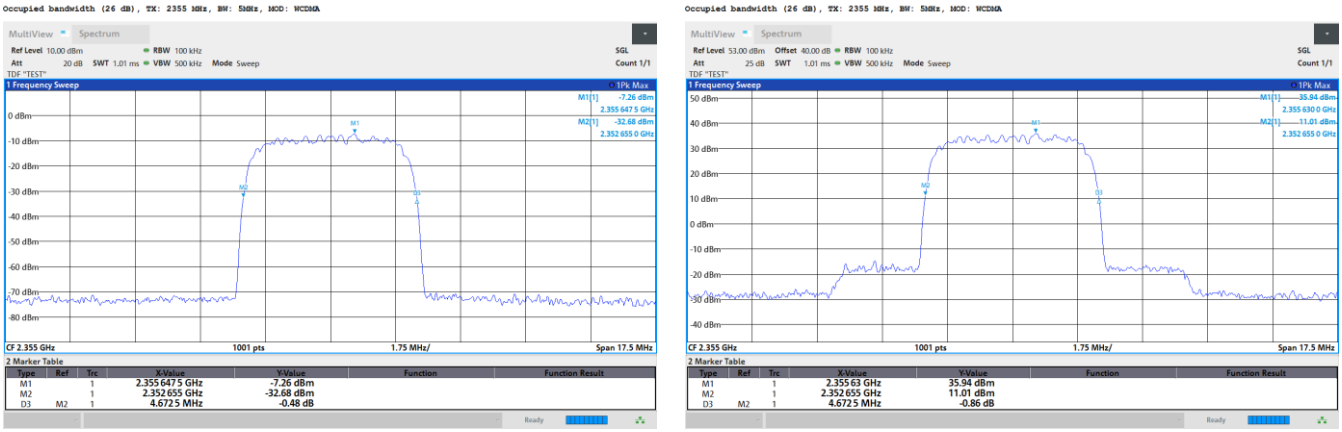


Figure 8.3-11: *Occupied bandwidth / Input Versus Output Comparison results, broadband signal, 0.5 dB below AGC threshold, input and output signal respectively*

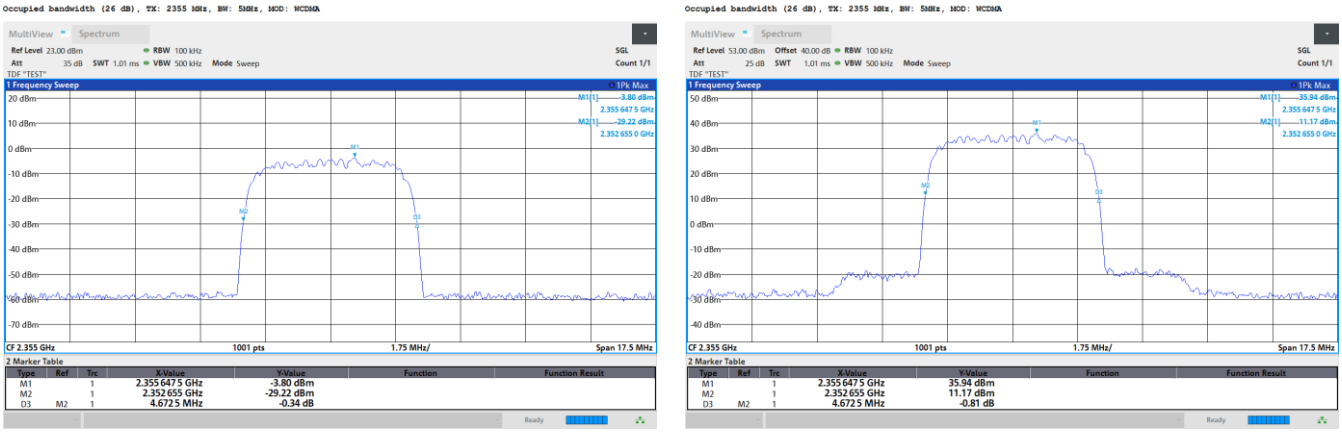


Figure 8.3-12: *Occupied bandwidth / Input Versus Output Comparison results, broadband signal, 3 dB above AGC threshold, input and output signal respectively*

8.3.5.4 Operating frequency band: band 41: 2496 – 2690 MHz

Table 8.3-4: *Occupied bandwidth / Input Versus Output Comparison results, band 41*

Condition	Test Frequency (MHz)	26 dB Bandwidth (Input Signal) (MHz)	26 dB Bandwidth (Output Signal) (MHz)
Input Level = AGC Threshold - -0.5 dB Input signal = narrowband	2580	0.30841	0.30841
Input Level = AGC Threshold + 3 dB Input signal = narrowband	2580	0.30841	0.30841
Input Level = AGC Threshold - -0.5 dB Input signal = broadband	2580	4.6667	4.6667
Input Level = AGC Threshold + 3 dB Input signal = broadband	2580	4.6667	4.6667

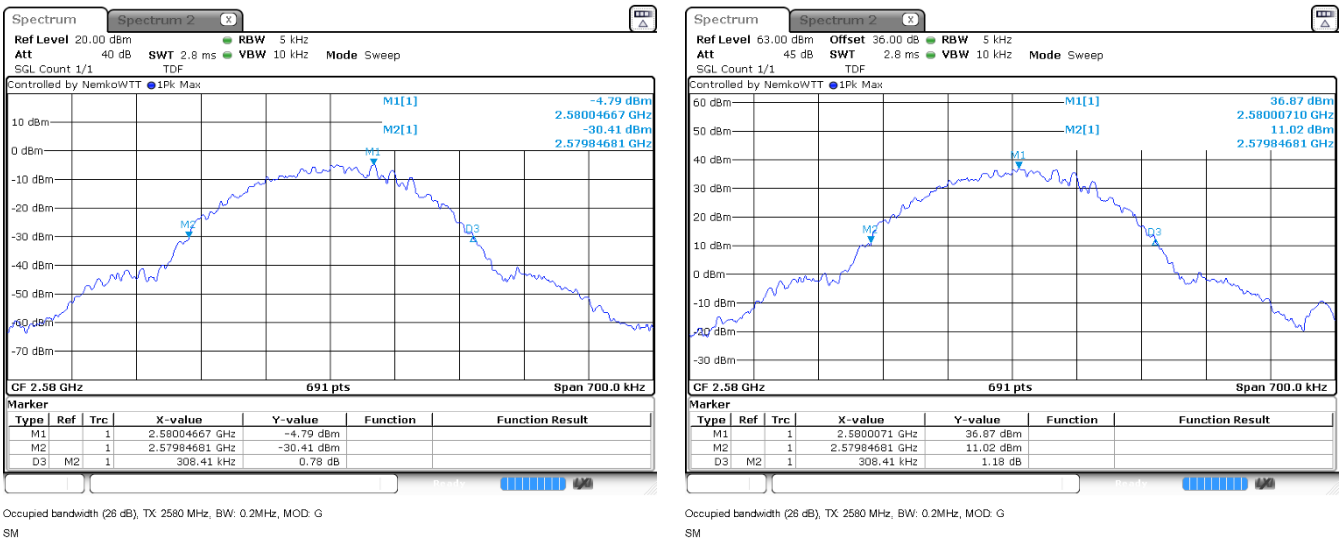


Figure 8.3-13: *Occupied bandwidth / Input Versus Output Comparison results, narrowband signal, 0.5 dB below AGC threshold, input and output signal respectively*

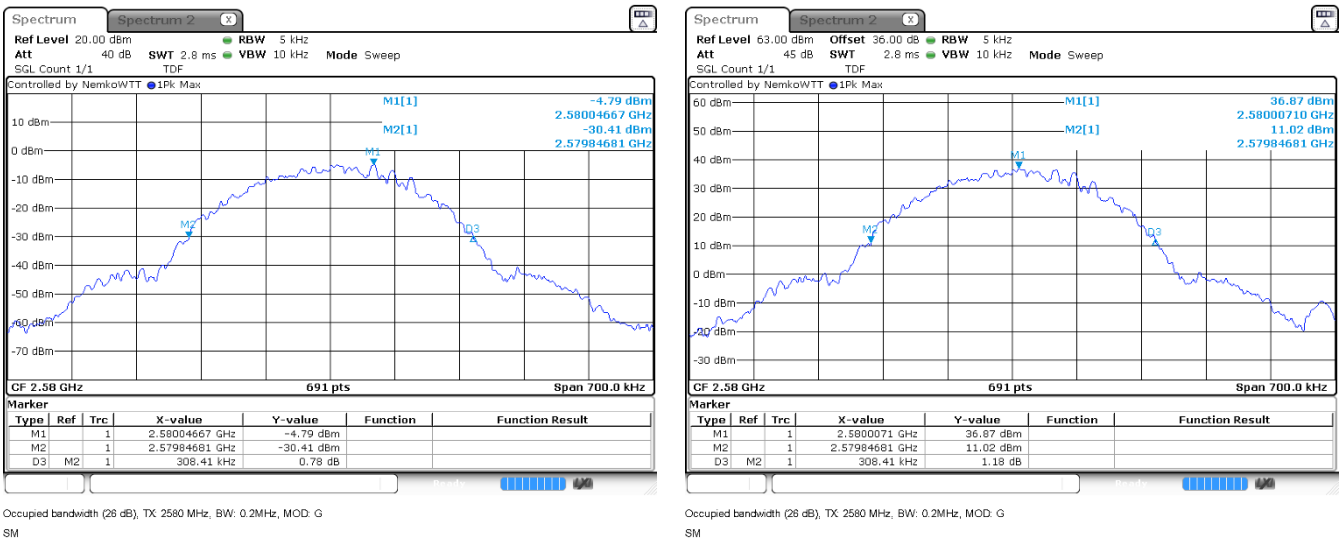


Figure 8.3-14: *Occupied bandwidth / Input Versus Output Comparison results, narrowband signal, 3 dB above AGC threshold, input and output signal respectively*

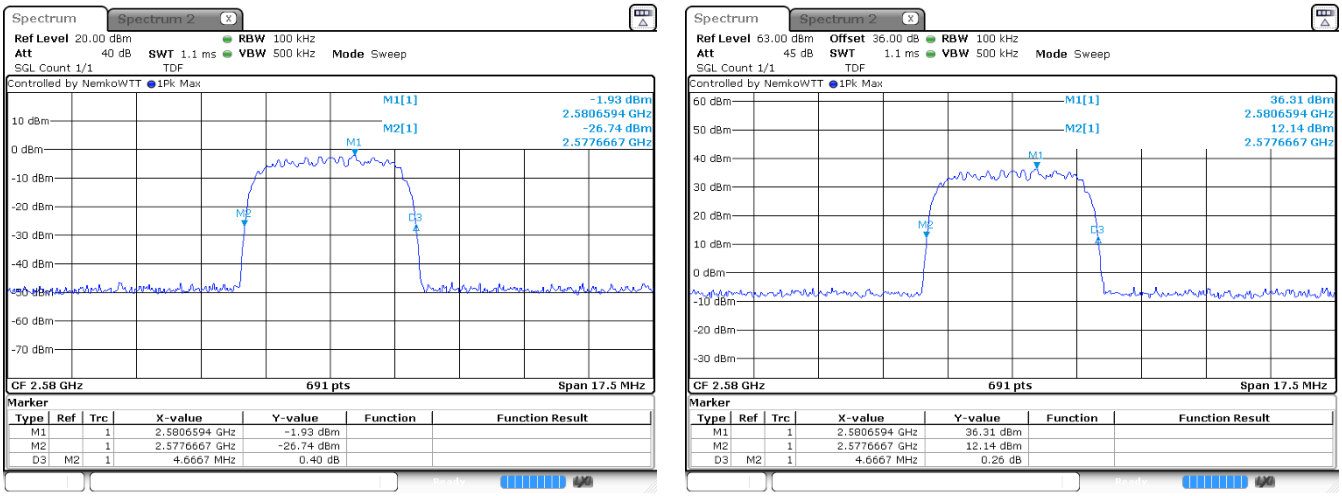


Figure 8.3-15: *Occupied bandwidth / Input Versus Output Comparison results, broadband signal, 0.5 dB below AGC threshold, input and output signal respectively*

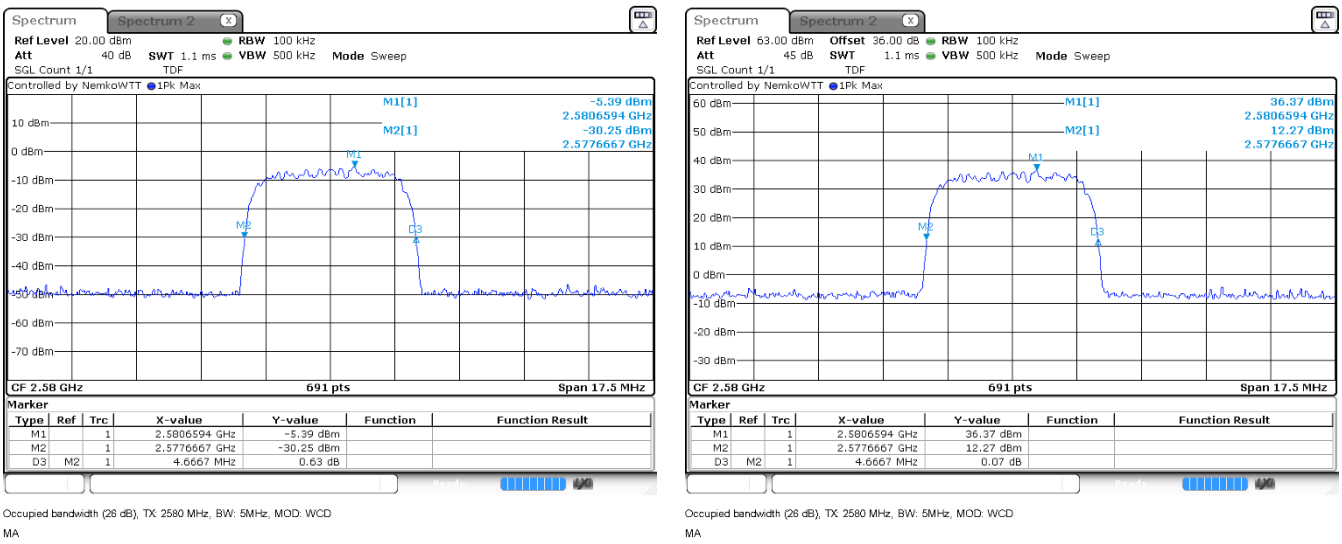


Figure 8.3-16: *Occupied bandwidth / Input Versus Output Comparison results, broadband signal, 3 dB above AGC threshold, input and output signal respectively*

8.4 Output power / Mean output power and amplifier gain

8.4.1 References and limits

- FCC Part 24.232 & RSS-133 (band 25 operation)
- FCC Part 27.50(a) & RSS-195 (band 30 operation)
- FCC Part 27.50(d) & RSS-139 (band 66) and RSS-199 (band 41) (band 66, and 41 operation)
- ANSI C63.26 Clause 7.2.2.4
- KDB 935210 D05v01r05 Clause 3.5

8.4.2 Test summary

Verdict	Pass		
Test date	November 22, 2023 January 8, 2024	Temperature	20 °C
Test engineer	Lan Sayasane, EMC Test Engineer	Air pressure	1006 mbar
Test location	☐ 10m semi anechoic chamber ☐ 3m semi anechoic chamber ☒ Wireless bench ☐ Other:	Relative humidity	54 %

8.4.3 Notes

Per KDB 935210 D05 v01r04, Clause 3.4 and ANSI C63.26 Clause 7.2.2.4, testing was performed with a narrowband test signal (MSK modulated, gaussian filter of 0.3 and data rate 270 kbps) and a broadband signal (AWGN, 4.1 MHz 99% occupied bandwidth).

8.4.4 Setup details

EUT power input during test	120 VAC / 60 Hz
EUT setup configuration	☒ Table-top ☐ Floor standing ☐ Other:
Measurement details	Adjust the internal gain control of the EUT to the maximum gain for which the equipment certification is sought. Any EUT attenuation settings shall be set to their minimum value. a. Connect a signal generator to the input of the EUT. b. The modulation shall be set to the AWGN signal. c. The frequency of the signal generator shall be set to the frequency f_0 as determined during the out-of-band rejection measurement. d. Connect a spectrum analyzer or power meter to the output of the EUT using appropriate attenuation, e. Set the level of the signal generator to a level that produces an output just below the AGC threshold, but not more than 0l5 dB below. f. Measure the output power of the EUT. g. Remove the EUT from the measurement set-up. Using the same signal generator settings, repeat the power measurement on the input signal to the EUT (i.e., the signal generator output). Calculate the amplifier gain as follows: Gain (dB) = output (dBm) – input (dBm). h. Repeat step f) and g) with the input level set to a level that is 3 dB above the AGC threshold. i. Repeat step e) to step h) with the input signal set to narrowband modulation. j. Repeat step e) to step i) for all bands used by the EUT.

8.4.5 Test data

8.4.5.1 Operating frequency band: band 25: 1930 – 1995 MHz

Table 8.4-1: *Output power / Mean output power and amplifier gain test data*

Condition	Test frequency (MHz)	Input power (dBm / MHz)	Output power (dBm/MHz)	Amplifier gain (dB)	0.1 % PAPR (dB)
Input Level = AGC Threshold - -0.5 dB Input signal = narrowband	1963.183	-1.15	32.18	33.33	0.43
Input Level = AGC Threshold + 3 dB Input signal = narrowband	1963.183	2.46	35.70	33.24	0.41
Input Level = AGC Threshold - -0.5 dB Input signal = broadband	1963.183	-0.86	32.57	33.43	4.46
Input Level = AGC Threshold + 3 dB Input signal = broadband	1963.183	2.56	36.11	33.55	4.46

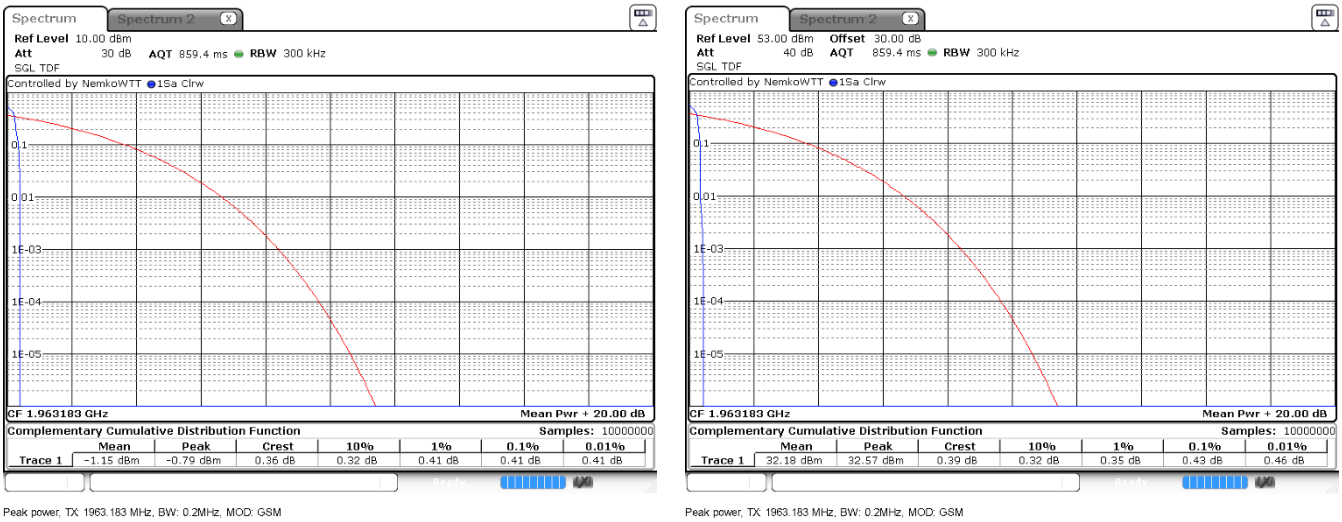


Figure 8.4-1: *Output power / Mean output power and amplifier gain results, narrowband signal, 0.5 dB below AGC threshold, input and output signal respectively*

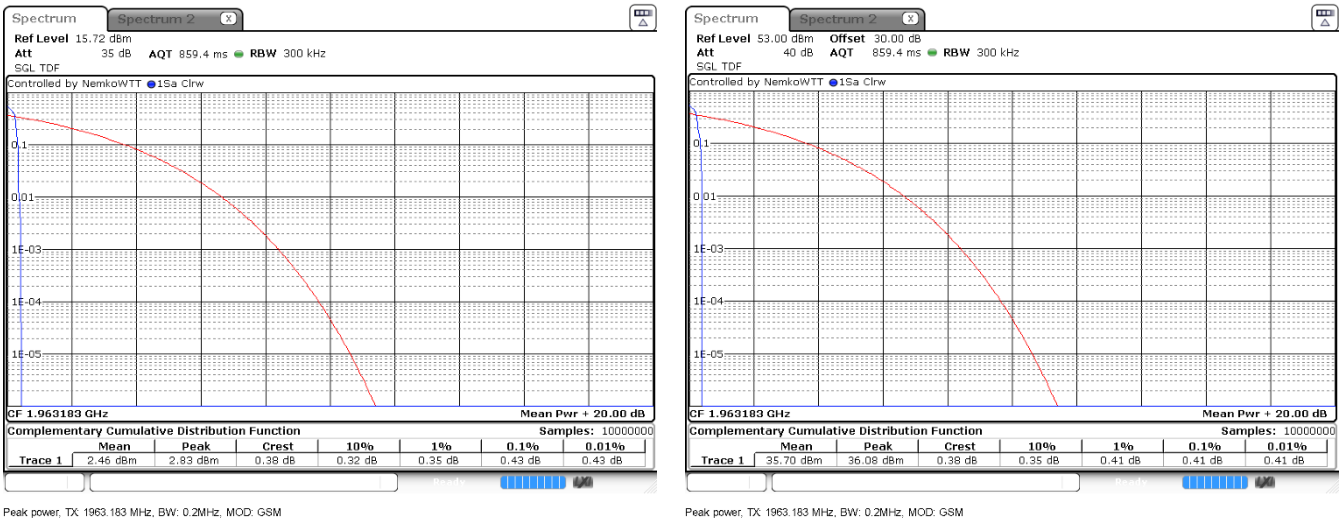
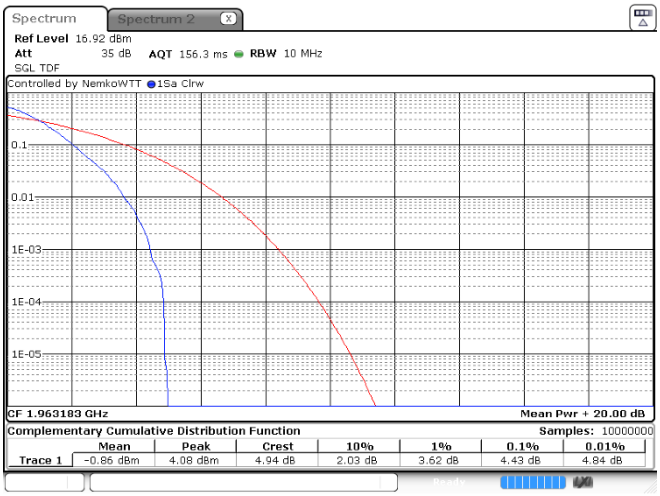
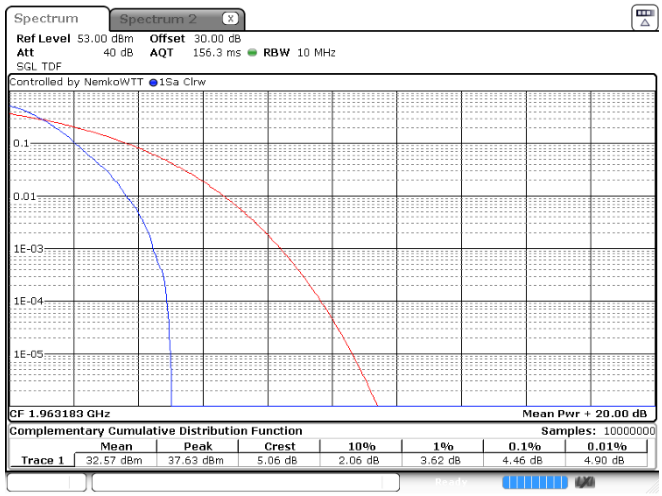


Figure 8.4-2: *Output power / Mean output power and amplifier gain results, narrowband signal, 3 dB above AGC threshold, input and output signal respectively*

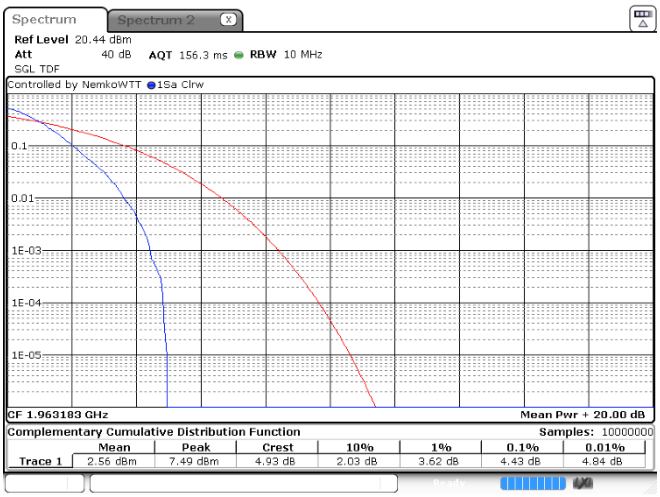


Peak power, TX 1963.183 MHz, BW: 5MHz, MOD: WCDMA

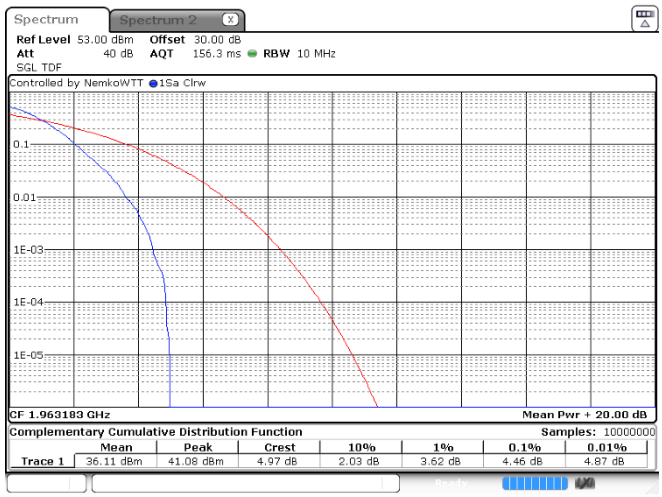


Peak power, TX 1963.183 MHz, BW: 5MHz, MOD: WCDMA

Figure 8.4-3: *Output power / Mean output power and amplifier gain results, broadband signal, 0.5 dB below AGC threshold, input and output signal respectively*



Peak power, TX 1963.183 MHz, BW: 5MHz, MOD: WCDMA



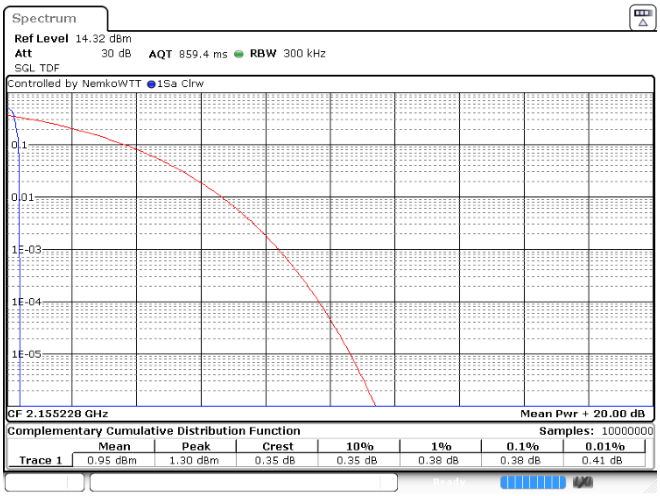
Peak power, TX 1963.183 MHz, BW: 5MHz, MOD: WCDMA

Figure 8.4-4: *Output power / Mean output power and amplifier gain results, broadband signal, 3 dB above AGC threshold, input and output signal respectively*

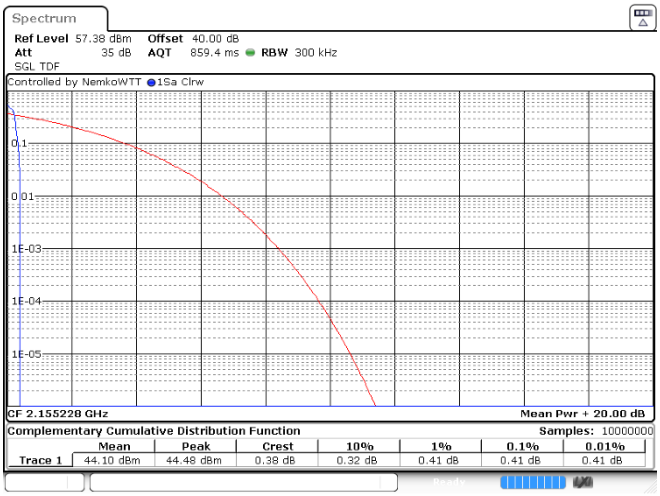
8.4.5.2 Operating frequency band: band 66: 2100 – 2180 MHz

Table 8.4-2: *Output power / Mean output power and amplifier gain test data*

Condition	Test frequency (MHz)	Input power (dBm / MHz)	Output power (dBm/MHz)	Amplifier gain (dB)	0.1 % PAPR (dB)
Input Level = AGC Threshold - -0.5 dB Input signal = narrowband	2155.288	0.95	44.10	43.15	0.41
Input Level = AGC Threshold + 3 dB Input signal = narrowband	2155.288	4.50	44.11	39.61	0.41
Input Level = AGC Threshold - -0.5 dB Input signal = broadband	2155.288	0.75	43.80	43.05	4.43
Input Level = AGC Threshold + 3 dB Input signal = broadband	2155.288	4.15	43.74	39.59	4.43

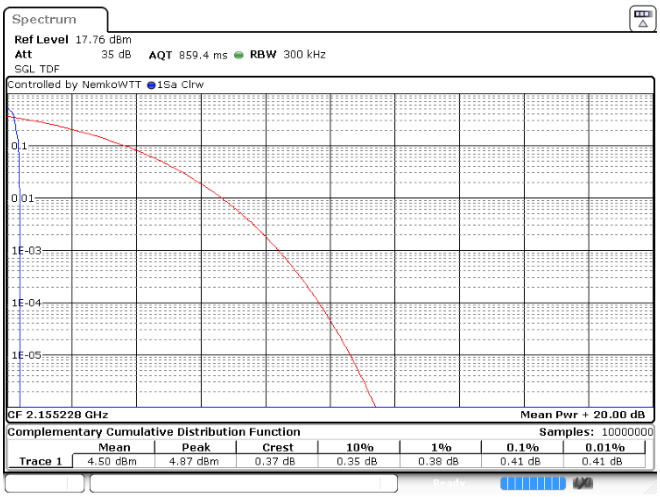


Peak power, TX 2155.228 MHz, BW: 0.2MHz, MOD: GSM

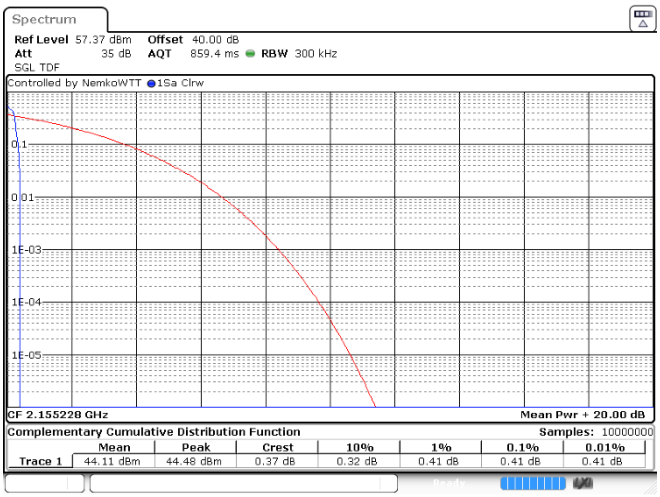


Peak power, TX 2155.228 MHz, BW: 0.2MHz, MOD: GSM

Figure 8.4-5: *Output power / Mean output power and amplifier gain results, narrowband signal, 0.5 dB below AGC threshold, input and output signal respectively*

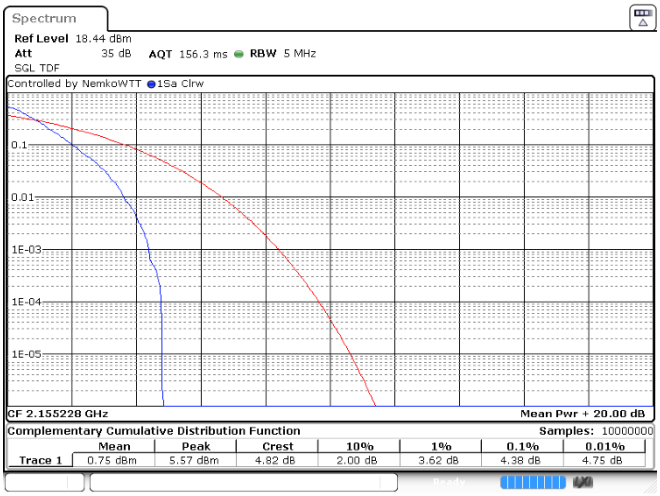


Peak power, TX 2155.228 MHz, BW: 0.2MHz, MOD: GSM

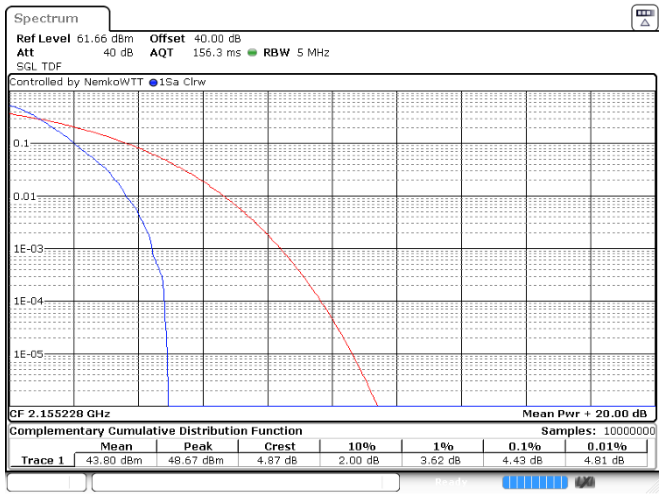


Peak power, TX 2155.228 MHz, BW: 0.2MHz, MOD: GSM

Figure 8.4-6: *Output power / Mean output power and amplifier gain results, narrowband signal, 3 dB above AGC threshold, input and output signal respectively*

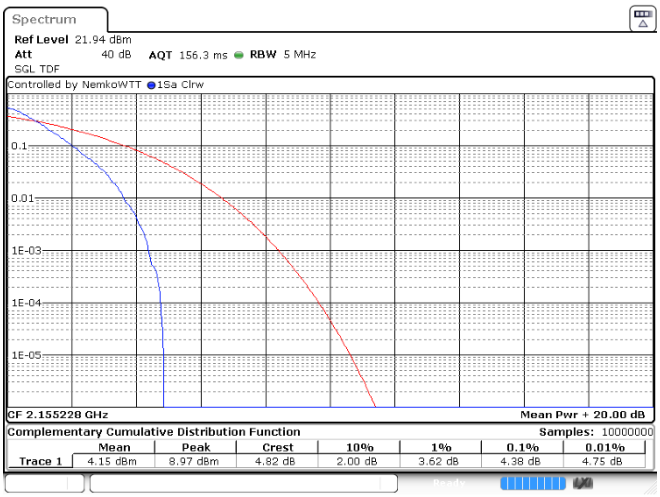


Peak power, TX 2155.228 MHz, BW: 5MHz, MOD: WCDMA

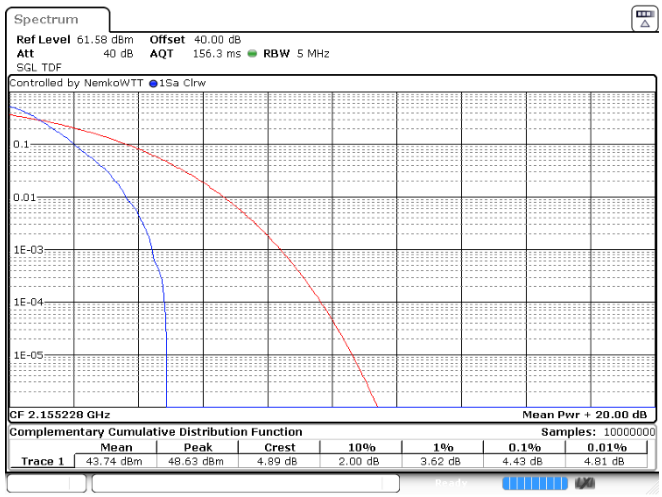


Peak power, TX 2155.228 MHz, BW: 5MHz, MOD: WCDMA

Figure 8.4-7: *Output power / Mean output power and amplifier gain results, broadband signal, 0.5 dB below AGC threshold, input and output signal respectively*



Peak power, TX 2155.228 MHz, BW: 5MHz, MOD: WCDMA



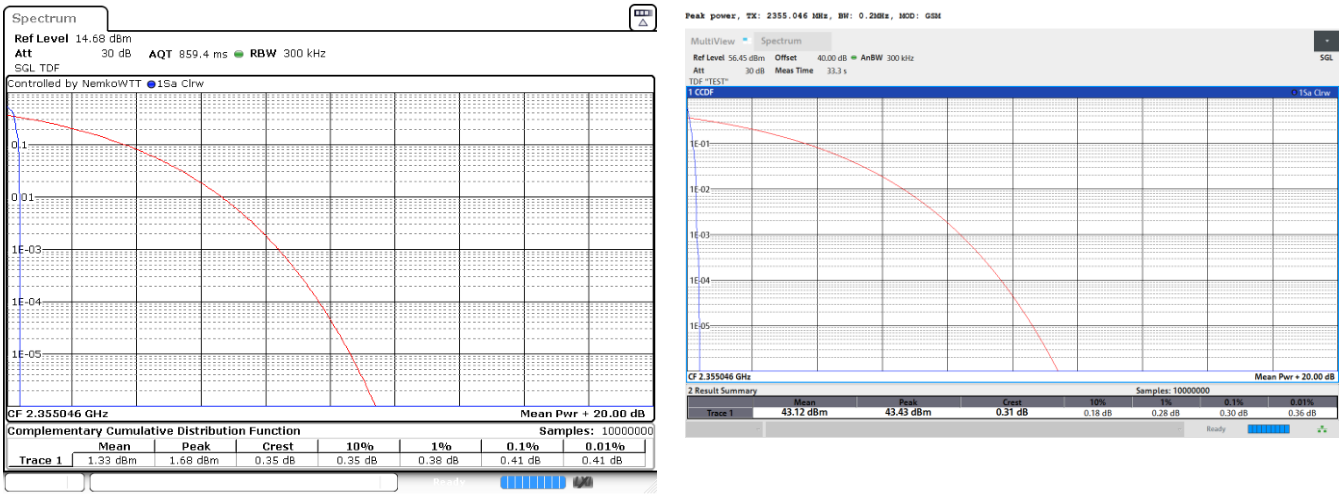
Peak power, TX 2155.228 MHz, BW: 5MHz, MOD: WCDMA

Figure 8.4-8: *Output power / Mean output power and amplifier gain results, broadband signal, 3 dB above AGC threshold, input and output signal respectively*

8.4.5.3 Operating frequency band: band 30: 2350 – 2360 MHz

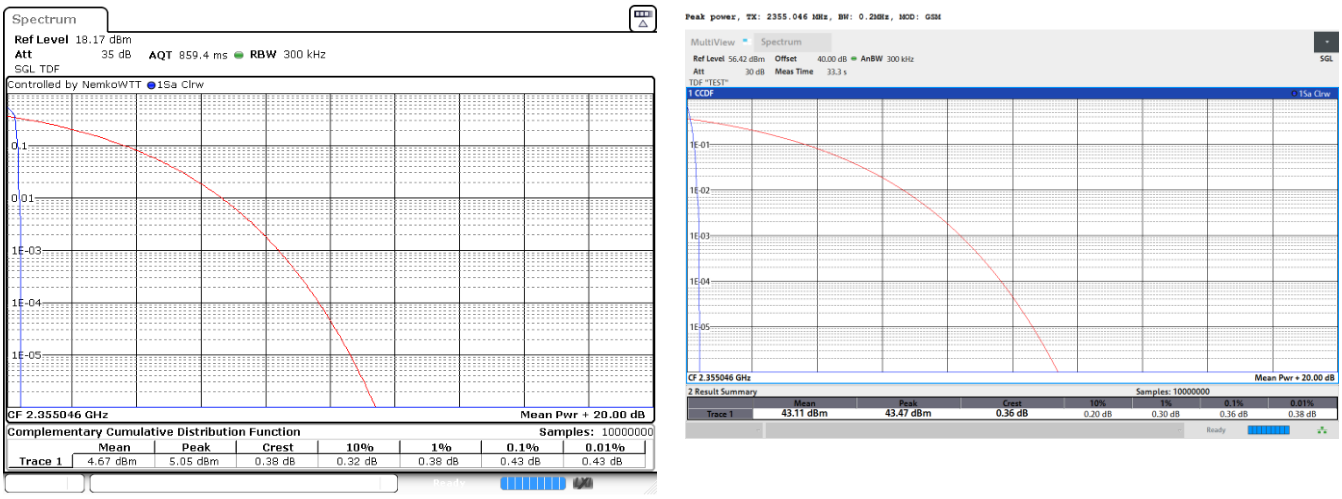
Table 8.4-3: *Output power / Mean output power and amplifier gain test data*

Condition	Test frequency (MHz)	Input power (dBm / MHz)	Output power (dBm/MHz)	Amplifier gain (dB)	0.1 % PAPR (dB)
Input Level = AGC Threshold - -0.5 dB Input signal = narrowband	2355.046	1.33	43.12	41.79	0.30
Input Level = AGC Threshold + 3 dB Input signal = narrowband	2355.046	4.67	43.11	38.44	0.36
Input Level = AGC Threshold - -0.5 dB Input signal = broadband	2355.046	0.92	44.42	43.50	4.43
Input Level = AGC Threshold + 3 dB Input signal = broadband	2355.046	4.52	44.24	39.72	4.43



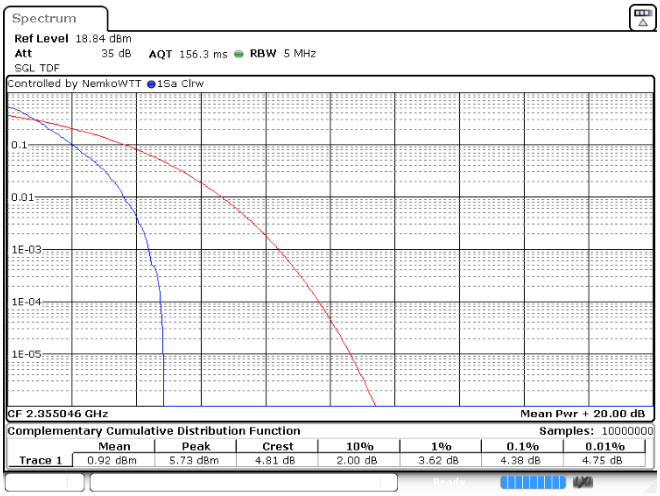
Peak power, TX: 2355.046 MHz, BW: 0.2MHz, MOD: GSM

Figure 8.4-9: *Output power / Mean output power and amplifier gain results, narrowband signal, 0.5 dB below AGC threshold, input and output signal respectively*

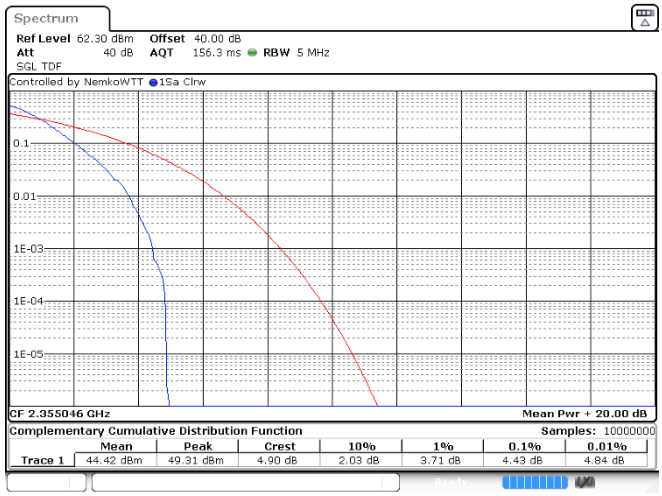


Peak power, TX: 2355.046 MHz, BW: 0.2MHz, MOD: GSM

Figure 8.4-10: *Output power / Mean output power and amplifier gain results, narrowband signal3 dB above AGC threshold, input and output signal respectively*

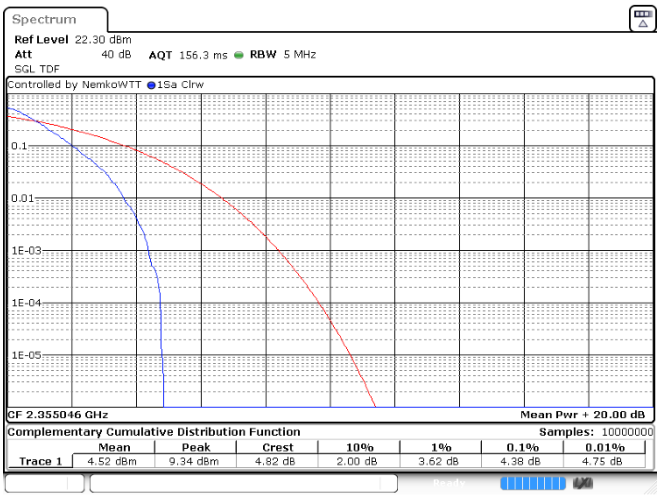


Peak power, TX 2355.046 MHz, BW: 5MHz, MOD: WCDMA

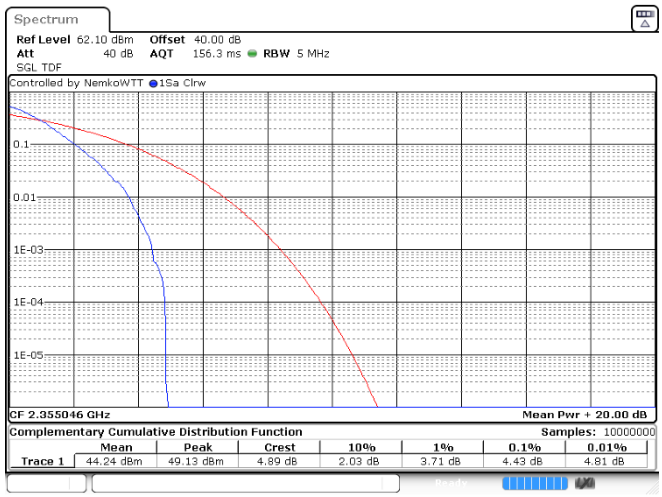


Peak power, TX 2355.046 MHz, BW: 5MHz, MOD: WCDMA

Figure 8.4-11: *Output power / Mean output power and amplifier gain results, broadband signal, 0.5 dB below AGC threshold, input and output signal respectively*



Peak power, TX 2355.046 MHz, BW: 5MHz, MOD: WCDMA



Peak power, TX 2355.046 MHz, BW: 5MHz, MOD: WCDMA

Figure 8.4-12: *Output power / Mean output power and amplifier gain results, broadband signal, 3 dB above AGC threshold, input and output signal respectively*

8.4.5.4 Operating frequency band: band 41: 2496 – 2690 MHz

Table 8.4-4: *Output power / Mean output power and amplifier gain test data*

Condition	Test frequency (MHz)	Input power (dBm / MHz)	Output power (dBm/MHz)	Amplifier gain (dB)	0.1 % PAPR (dB)
Input Level = AGC Threshold - -0.5 dB Input signal = narrowband	2592.545	4.09	35.93	31.84	0.41
Input Level = AGC Threshold + 3 dB Input signal = narrowband	2592.545	7.47	39.64	32.17	0.41
Input Level = AGC Threshold - -0.5 dB Input signal = broadband	2592.545	4.14	36.57	32.43	4.46
Input Level = AGC Threshold + 3 dB Input signal = broadband	2592.545	7.85	39.95	32.10	4.46

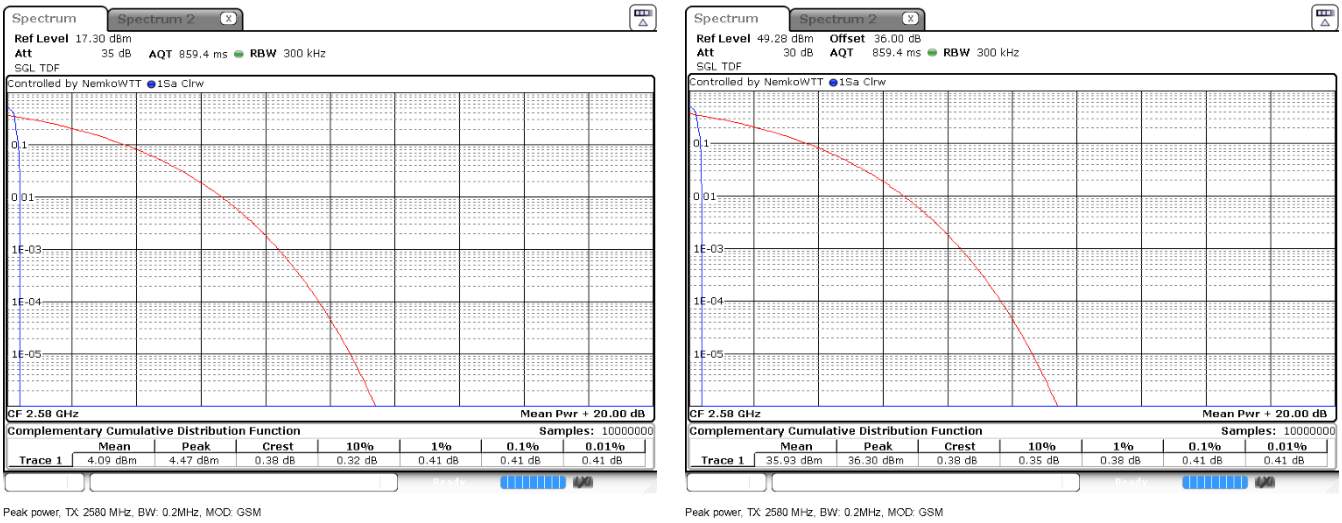


Figure 8.4-13: *Output power / Mean output power and amplifier gain results, narrowband signal, 0.5 dB below AGC threshold, input and output signal respectively*

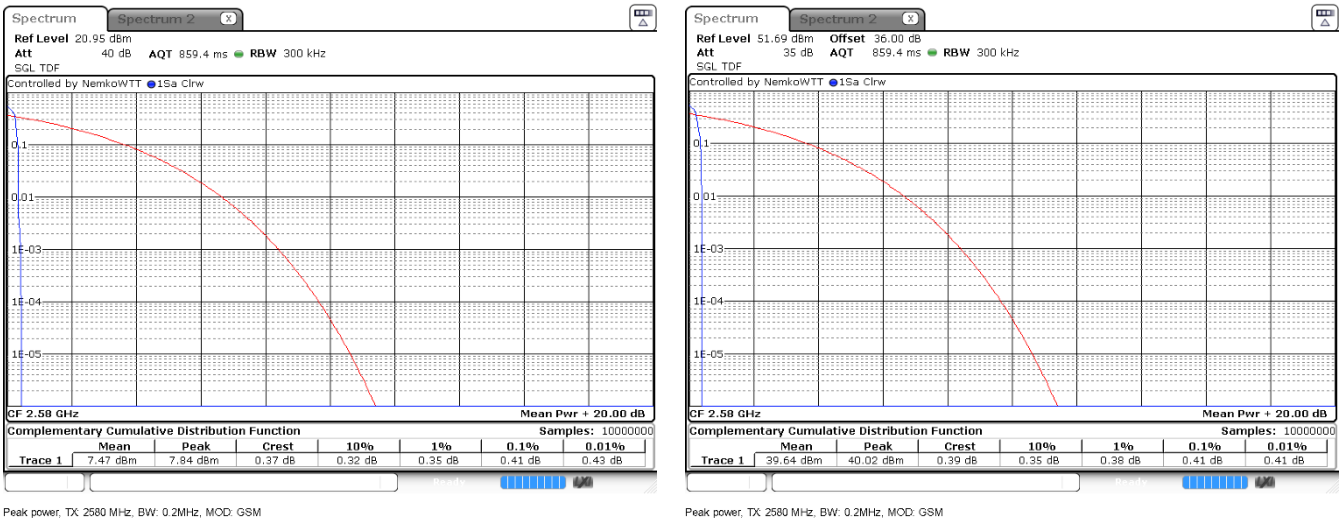
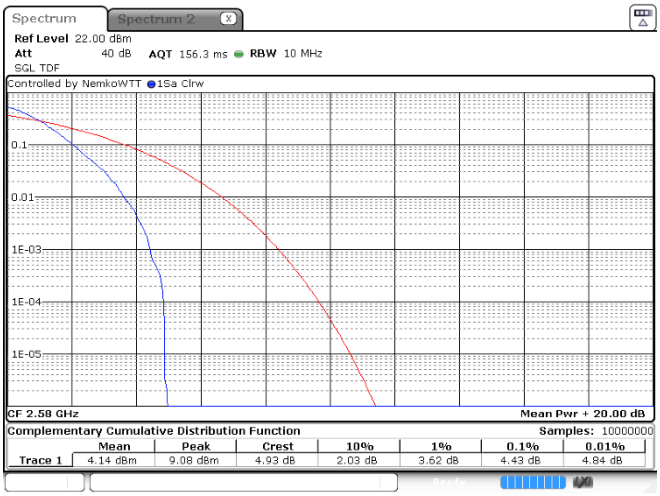
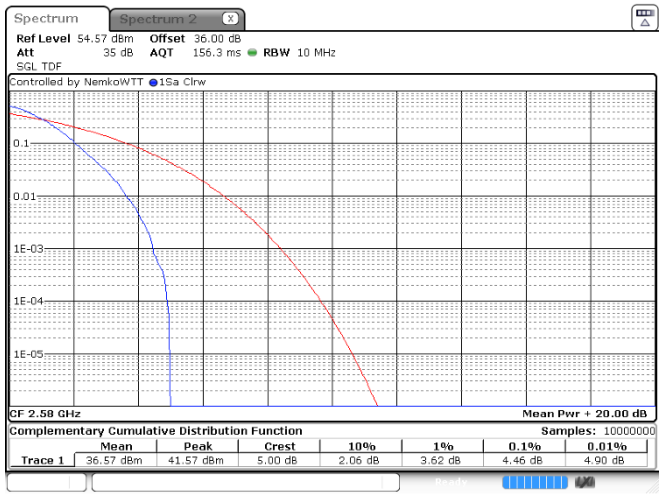


Figure 8.4-14: *Output power / Mean output power and amplifier gain results, narrowband signal, 3 dB above AGC threshold, input and output signal respectively*

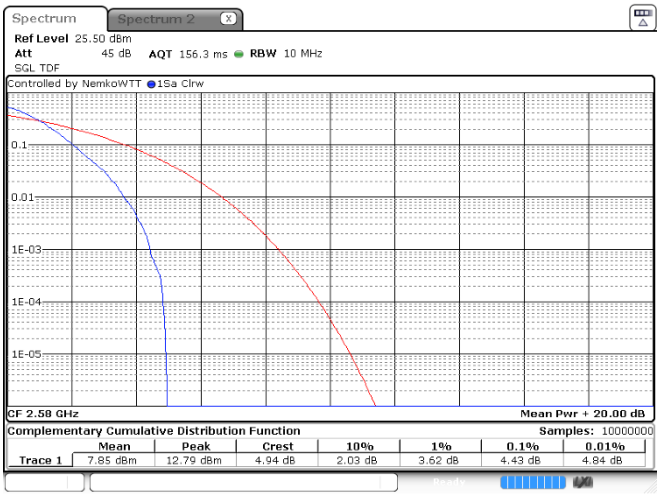


Peak power, TX 2580 MHz, BW: 5MHz, MOD: WCDMA

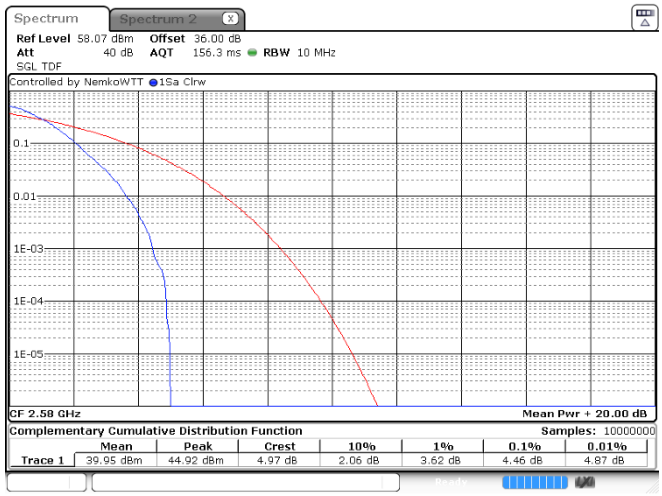


Peak power, TX 2580 MHz, BW: 5MHz, MOD: WCDMA

Figure 8.4-15: *Output power / Mean output power and amplifier gain results, broadband signal, 0.5 dB below AGC threshold, input and output signal respectively*



Peak power, TX 2580 MHz, BW: 5MHz, MOD: WCDMA



Peak power, TX 2580 MHz, BW: 5MHz, MOD: WCDMA

Figure 8.4-16: *Output power / Mean output power and amplifier gain results, broadband signal, 3 dB above AGC threshold, input and output signal respectively*

8.5 Spurious emissions at RF connector

8.5.1 References and limits

- FCC Part 24.232 & RSS-133 (band 25 operation)
- FCC Part 27.50(a) & RSS-195 (band 30 operation)
- FCC Part 27.50(d) & RSS-139 (band 66) and RSS-199 (band 41) (band 66, and 41 operation)
- ANSI C63.26 Clause 7.2.2.5
- KDB 935210 D05v01r05 Clause 3.6

8.5.2 Test summary

Verdict	Pass		
Test date	November 28, 2023	Temperature	21 °C
Test engineer	Lan Sayasane, EMC Test Engineer	Air pressure	1008 mbar
Test location	☐ 10m semi anechoic chamber ☐ 3m semi anechoic chamber ☒ Wireless bench ☐ Other:	Relative humidity	55 %

8.5.3 Notes

Per KDB 935210 D05 v01r04, Clause 3.6 and ANSI C63.26 Clause 7.2.2.5, testing was performed with a narrowband test signal (MSK modulated, gaussian filter of 0.3 and data rate 270 kbps) and a broadband signal (AWGN, 4.1 MHz 99% occupied bandwidth).

For intermodulation products and out-of-channel block tests, testing is performed under the following two conditions (per ANSI C63.26 7.2.2.5.1 and KDB 935210 D05v01r04 Section 3.6):

a) Two modulated signals set to the lower or upper block edge.
b) A single modulated signal set to the low or high channel

8.5.4 Setup details

EUT power input during test	120 VAC / 60 Hz
EUT setup configuration	☒ Table-top ☐ Floor standing ☐ Other:
Measurement details	Out-of-channel-block and out-of-band emissions: a. Connect a signal generator to the input of the EUT. If the signal generator is not capable of generating two modulated carriers at one time, then it may be replaced by two signal generators connected with an appropriate combining network b. Set the signal generator to produce 2 AWGN signals. c. The frequencies shall be set so that the AWGN signals occupy adjacent channels, as defined by industry standards such as 3GPP or3GPP2, at the upper block edge of the frequency band under test. d. The composite power levels shall be set so that the signal is just below the AGC threshold, but not more than 0.5 dB below. The composite power can be measured using the methods described in the output power methods, however, it will be necessary to measure the composite power by increasing the band power integration bandwidth to include both transmit channels, or alternatively, this measurement can be performed using an average power meter. e. Connect a spectrum analyzer to the output of the EUT using appropriate attenuation. f. Set the RBW= reference bandwidth in the applicable rule section for the supported frequency band (typically 1% of the EBW or 100 kHz or 1 MHz). g. Set the VBW = 3 x RBW. h. Set the detector to power averaging (rms) detector. i. Set the sweep time = auto couple. j. Set the spectrum analyzer start frequency to the upper block edge frequency and the stop frequency to the upper block edge frequency plus 300 kHz or 3 MHz for frequencies below and above 1 GHz, respectively. k. Trace average at least one hundred traces in power averaging (i.e., rms) mode. l. Use the marker function to find the maximum power level. m. Capture the spectrum analyzer trace of the power level for inclusion in the test report.

n. Repeat step k) and step m) with the input level set to 3 dB above the AGC threshold.
o. Set the frequencies of the input signals to the lower block edge of the frequency band under test.
p. Reset the analyzer start frequency to the lower block edge frequency minus 300 kHz or 3 MHz for frequencies below and above 1 GHZ, respectively, and the stop frequency to the lower block edge frequency.
q. Repeat step k) to step n).
r. Repeat step a) to step q) with the signal generator set to only a single signal closest to the block edges.
s. Repeat step a) to step r) with the narrowband signal.
t. Repeat step a) to step s) for all bands used by the EUT.

Conducted spurious:

a. Connect a signal generator to the input of the EUT.
b. Set the signal generator to produce the AWGN signal.
c. Set the frequency of the signal to the lowest channel within the frequency block.
d. The power levels shall be set so that the signal is just below the AGC threshold, but not more than 0.5 dB below.
e. Connect a spectrum analyzer to the output of the EUT using appropriate attenuation.
f. Set the RBW = reference bandwidth in the applicable rule section for the supported frequency band (typically 100 kHz or 1 MHz).
g. Set the VBW = 3 x RBW.
h. Set the sweep time = auto-couple.
i. Set the spectrum analyzer start frequency to the lowest RF signal generated in the equipment, without going below 9 kHz, and the stop frequency to the lower band/block edge frequency minus 100 kHz to 1 MHz, as specified in the applicable rule part. The number of measurement points in each sweep must be ≥ (2 x span/RBW), which may require that the measurement range defined by the start and stop frequencies be subdivided depending on the available number of measurement points provided by the spectrum analyzer.
j. Trace average at least ten traces in power averaging (i.e., rms) mode.
k. Use the peak marker function to identify the highest amplitude level over each of measured frequency range. Record the frequency and amplitude and capture a plot for inclusion in the test report.
l. Reset the spectrum 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 spectrum analyzer stop frequency to ten times the highest frequency of the fundamental emission. The number of measurement points in each sweep must be ≥ (2 x span/RBW), which may require that the measurement range defined by the start and stop frequencies be subdivided, depending on the available number of measurement points provided by the spectrum analyzer.
m. Trace average at least ten traces in power averaging (i.e., rms) mode.
n. 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; also provide tabular data, if required.
o. Repeat step i) to step n) with the input signal firstly set to a middle channel frequency and then tuned to a high channel frequency.
p. Repeat step c) to step o) with the narrowband signal.
q. Repeat step b) to step p) for all bands used by the EUT

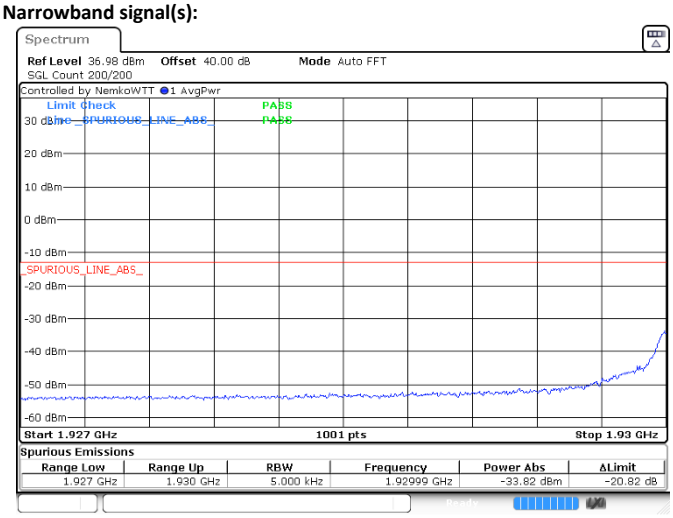
8.5.5 Test data – out-of-channel-block and out-of-band emissions

8.5.5.1 Operating frequency band: band 25: 1930 – 1995 MHz

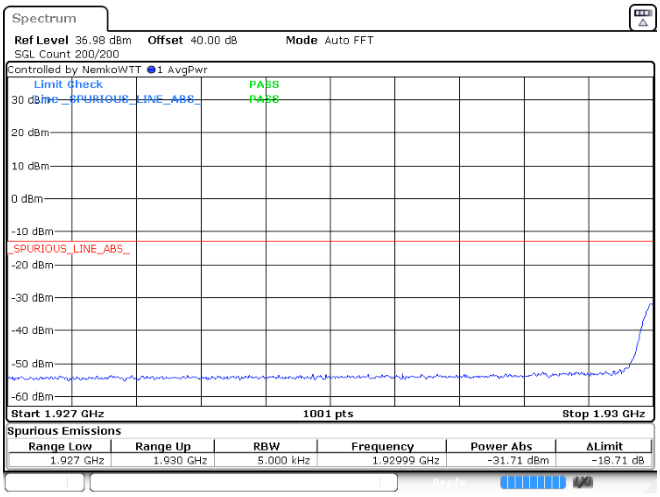
Table 8.5-1: *Spurious emissions at RF connector test data, narrowband*

Condition	Frequency of highest emission (MHz)	Level (dBm)	Limit (dBm)
Input Level = **AGC Threshold - -0.5 dB** Input signal = **narrowband** Number of signals: **2** **Low** band edge	1929.989510	-33.82	-13.00
Input Level = **AGC Threshold - -0.5 dB** Input signal = **narrowband** Number of signals: **1** **Low** band edge	1929.986513	-31.71	-13.00
Input Level = **AGC Threshold + 3 dB** Input signal = **narrowband** Number of signals: **2** **Low** band edge	1929.863636	-19.67	-13.00
Input Level = **AGC Threshold + 3 dB** Input signal = **narrowband** Number of signals: **1** **Low** band edge	1929.992507	-28.41	-13.00
Input Level = **AGC Threshold - -0.5 dB** Input signal = **narrowband** Number of signals: **2** **High** band edge	1996.799700	-50.57	-13.00
Input Level = **AGC Threshold - -0.5 dB** Input signal = **narrowband** Number of signals: **1** **High** band edge	1996.799700	-50.09	-13.00
Input Level = **AGC Threshold + 3 dB** Input signal = **narrowband** Number of signals: **2** **High** band edge	1996.799700	-50.57	-13.00
Input Level = **AGC Threshold + 3 dB** Input signal = **narrowband** Number of signals: **1** **High** band edge	1996.799700	-50.95	-13.00

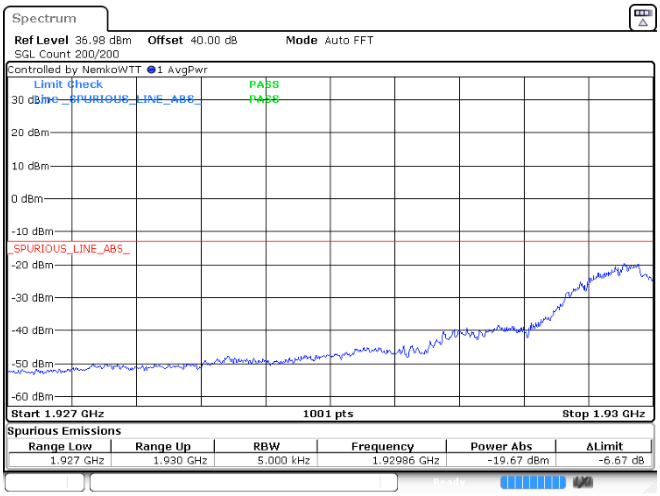
Narrowband signal(s):



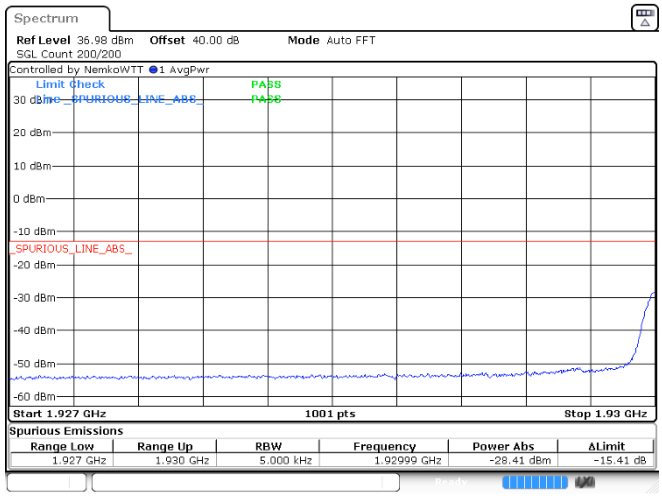
Low band edge, 2 signals, level = AGC Threshold - 0.5



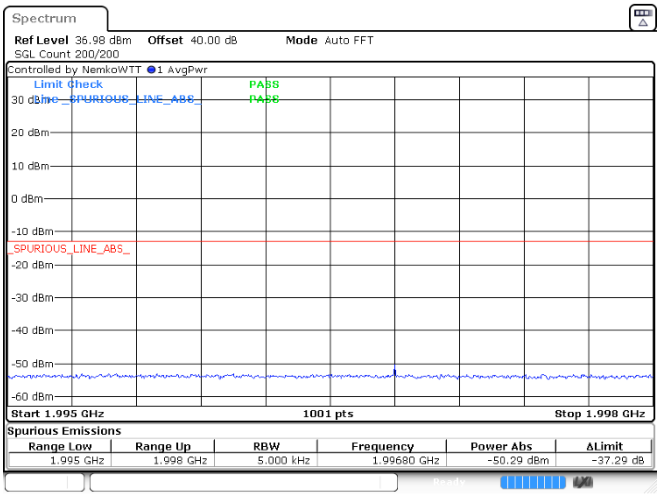
Low band edge, 1 signal, level = AGC Threshold - 0.5



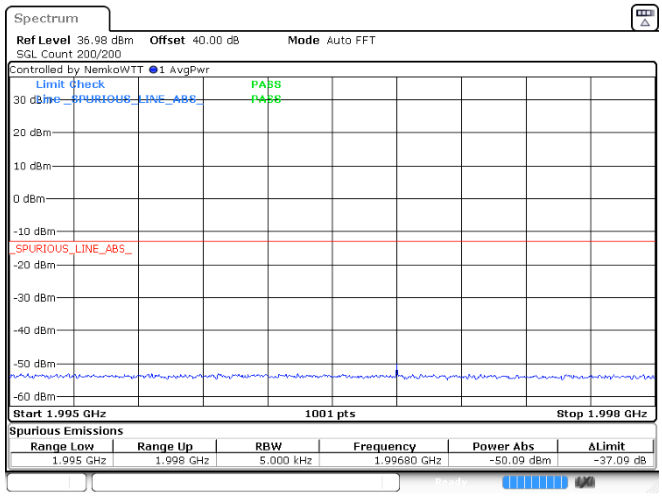
Low band edge, 2 signals, level = AGC Threshold + 3



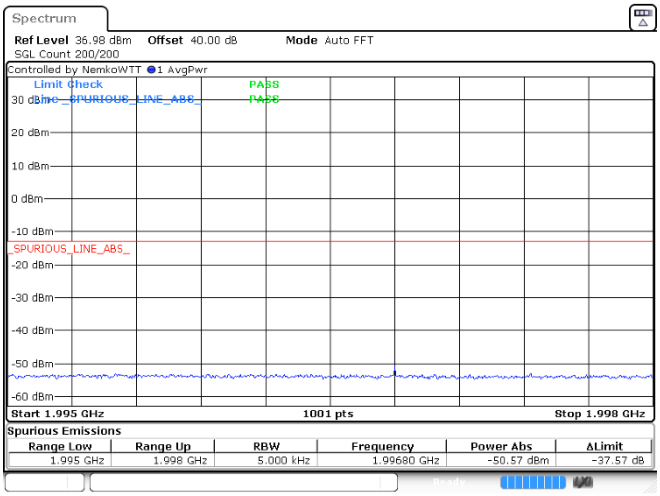
Low band edge, 1 signal, level = AGC Threshold + 3



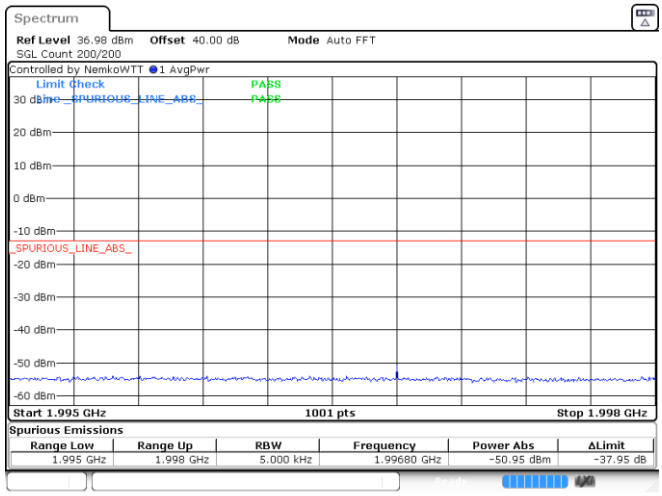
High band edge, 2 signals, level = AGC Threshold - 0.5



High band edge, 2 signals, level = AGC Threshold + 3



High band edge, 1 signal, level = AGC Threshold - 0.5

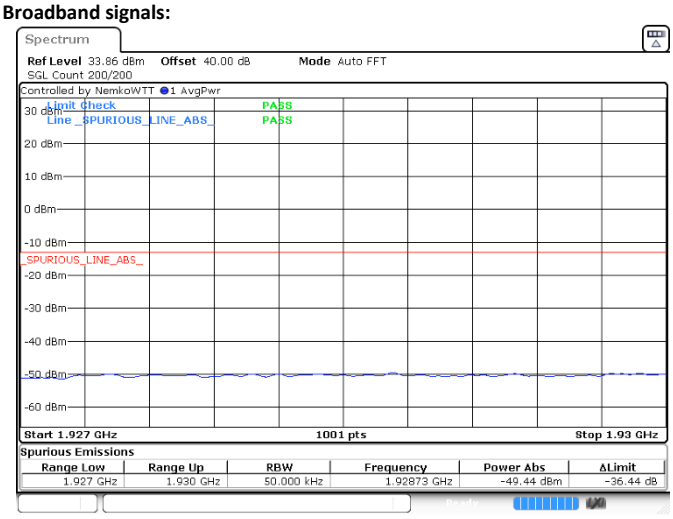


High band edge, 1 signal, level = AGC Threshold + 3

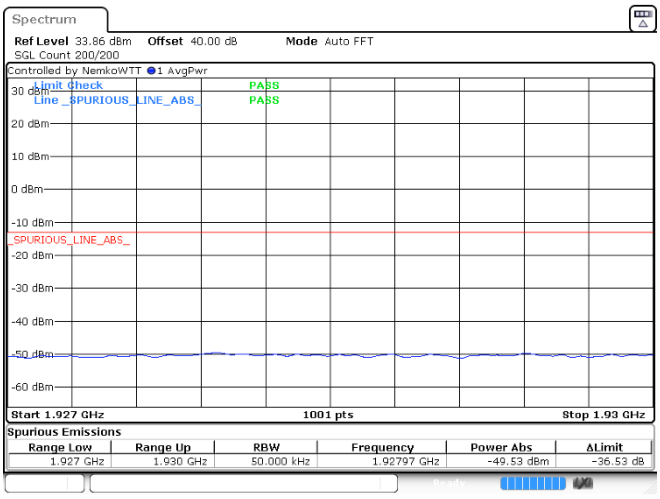
Table 8.5-2: *Spurious emissions at RF connector test data, broadband*

Condition	Frequency of highest emission (MHz)	Level (dBm)	Limit (dBm)
Input Level = **AGC Threshold - -0.5 dB** Input signal = **broadband** Number of signals: **2** **Low** band edge	1928.727772	-49.44	-13.00
Input Level = **AGC Threshold - -0.5 dB** Input signal = **broadband** Number of signals: **1** **Low** band edge	1927.972527	-49.53	-13.00
Input Level = **AGC Threshold + 3 dB** Input signal = **broadband** Number of signals: **2** **Low** band edge	1928.754745	-49.55	-13.00
Input Level = **AGC Threshold + 3 dB** Input signal = **broadband** Number of signals: **1** **Low** band edge	1929.821678	-49.74	-13.00
Input Level = **AGC Threshold - -0.5 dB** Input signal = **broadband** Number of signals: **2** **High** band edge	1996.814685	-48.73	-13.00
Input Level = **AGC Threshold - -0.5 dB** Input signal = **broadband** Number of signals: **1** **High** band edge	1995.001499	-38.57	-13.00
Input Level = **AGC Threshold + 3 dB** Input signal = **broadband** Number of signals: **2** **High** band edge	1995.013487	-36.57	-13.00
Input Level = **AGC Threshold + 3 dB** Input signal = **broadband** Number of signals: **1** **High** band edge	1995.001499	-36.99	-13.00

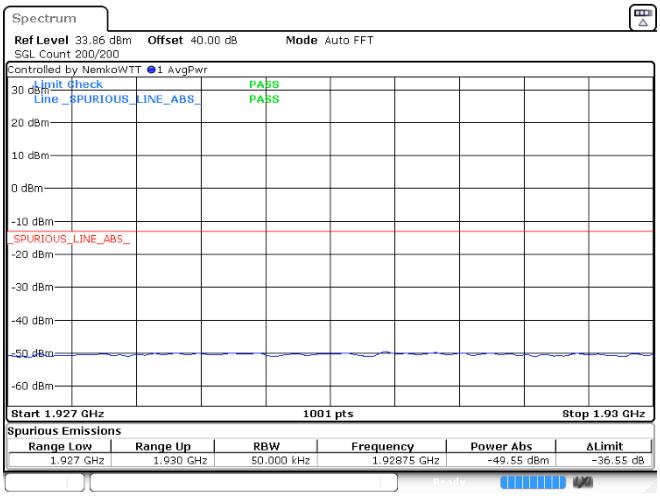
Broadband signals:



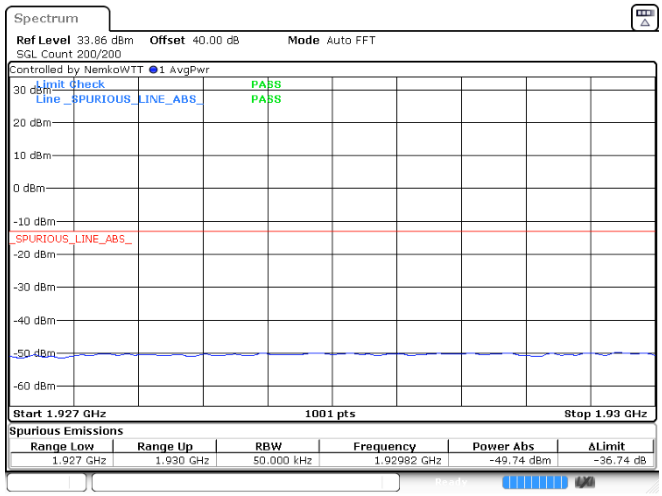
Low band edge, 2 signals, level = AGC Threshold - 0.5



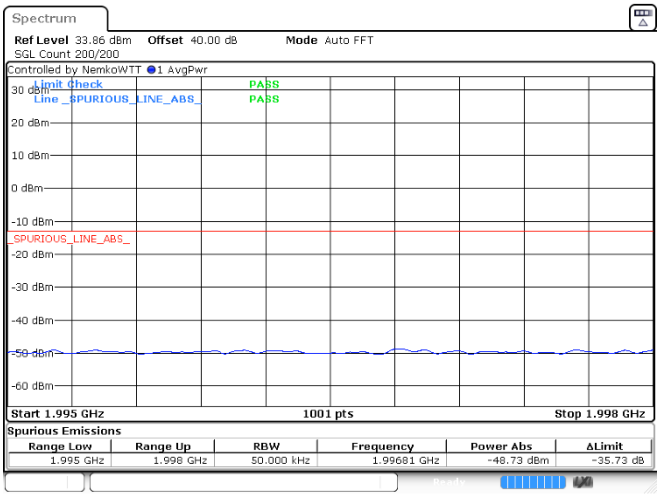
Low band edge, 1 signal, level = AGC Threshold - 0.5



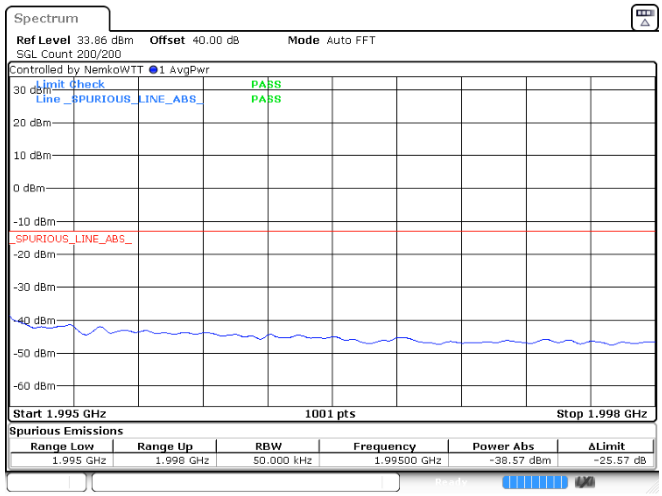
Low band edge, 2 signals, level = AGC Threshold + 3



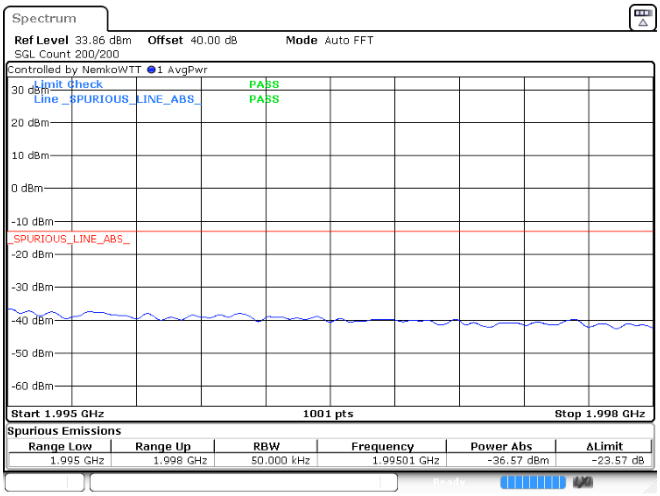
Low band edge, 1 signal, level = AGC Threshold + 3



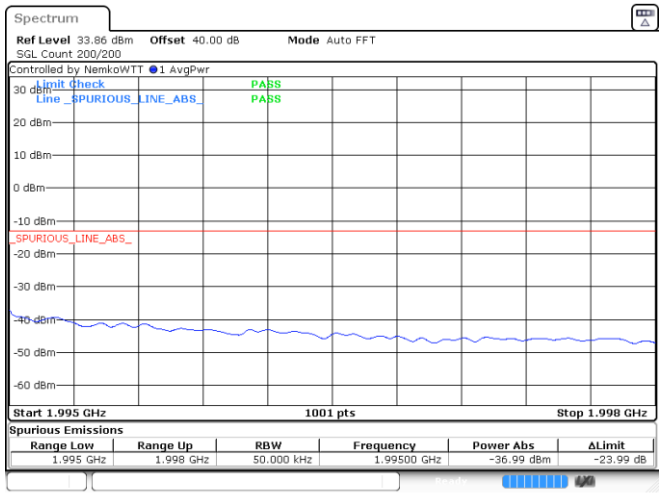
High band edge, 2 signals, level = AGC Threshold - 0.5



High band edge, 1 signal, level = AGC Threshold - 0.5



High band edge, 2 signals, level = AGC Threshold + 3



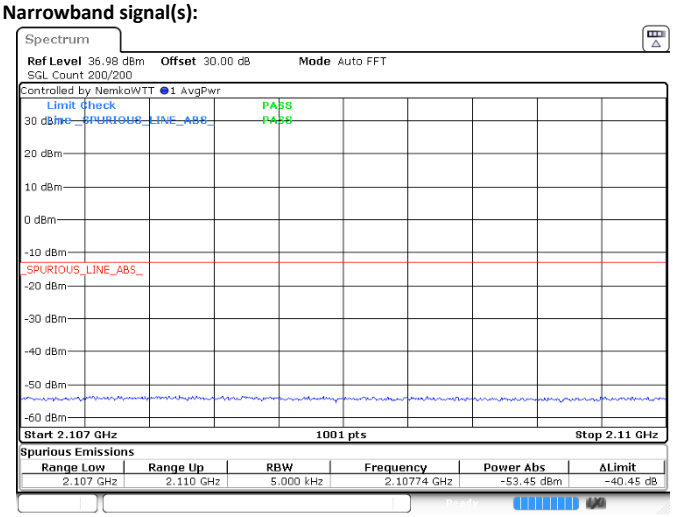
Highband edge, 1 signal, level = AGC Threshold + 3

8.5.5.2 Operating frequency band: band 66: 2110 – 2180 MHz

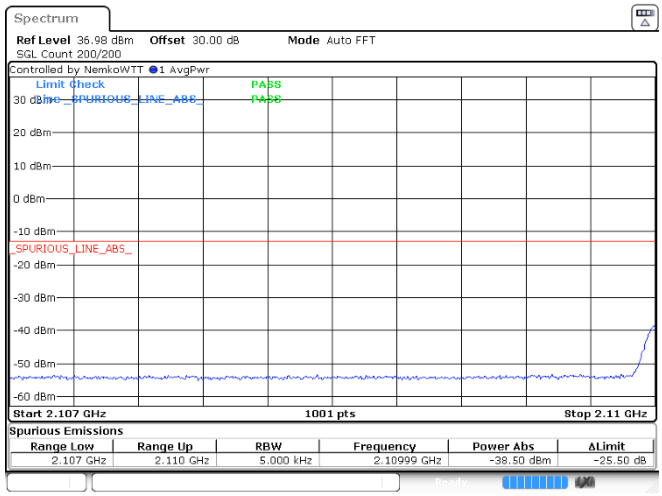
Table 8.5-3: *Spurious emissions at RF connector test data, narrowband*

Condition	Frequency of highest emission (MHz)	Level (dBm)	Limit (dBm)
Input Level = **AGC Threshold - -0.5 dB** Input signal = **narrowband** Number of signals: **2** **Low** band edge	2107.738761	-53.45	-13.00
Input Level = **AGC Threshold - -0.5 dB** Input signal = **narrowband** Number of signals: **1** **Low** band edge	2109.992507	-38.50	-13.00
Input Level = **AGC Threshold + 3 dB** Input signal = **narrowband** Number of signals: **2** **Low** band edge	2109.992507	-38.23	-13.00
Input Level = **AGC Threshold + 3 dB** Input signal = **narrowband** Number of signals: **1** **Low** band edge	2109.995504	-35.31	-13.00
Input Level = **AGC Threshold - -0.5 dB** Input signal = **narrowband** Number of signals: **2** **High** band edge	2200.133367	-53.69	-13.00
Input Level = **AGC Threshold - -0.5 dB** Input signal = **narrowband** Number of signals: **1** **High** band edge	2201.317183	-53.61	-13.00
Input Level = **AGC Threshold + 3 dB** Input signal = **narrowband** Number of signals: **2** **High** band edge	2200.537962	-53.66	-13.00
Input Level = **AGC Threshold + 3 dB** Input signal = **narrowband** Number of signals: **1** **High** band edge	2200.819680	-53.84	-13.00

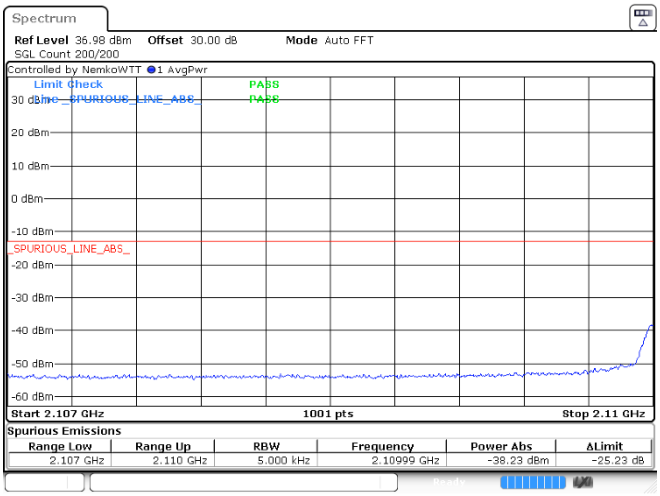
Narrowband signal(s):



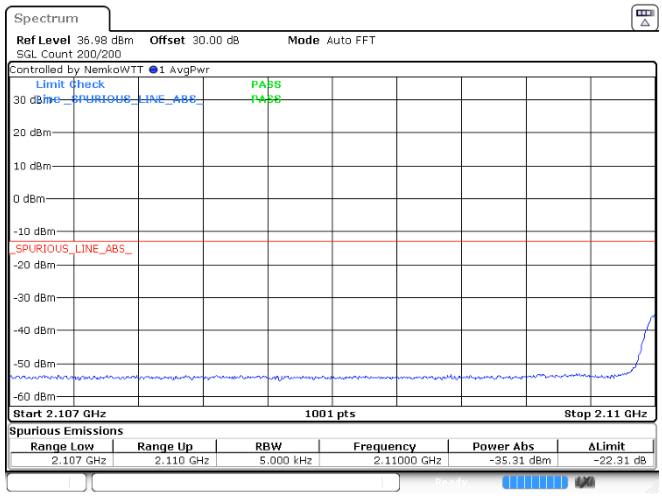
Low band edge, 2 signals, level = AGC Threshold - 0.5



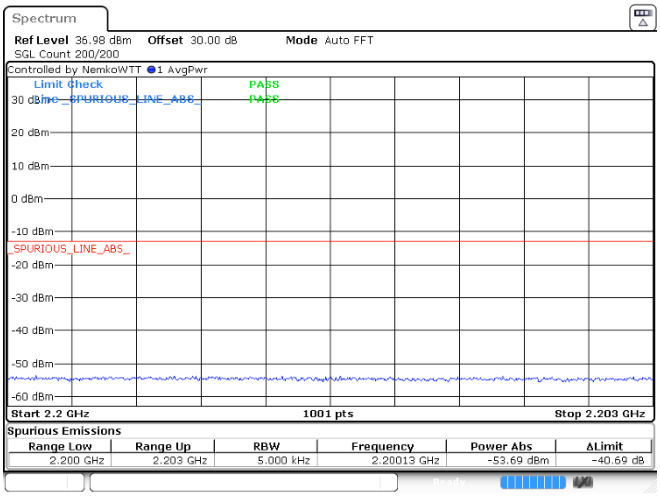
Low band edge, 1 signal, level = AGC Threshold - 0.5



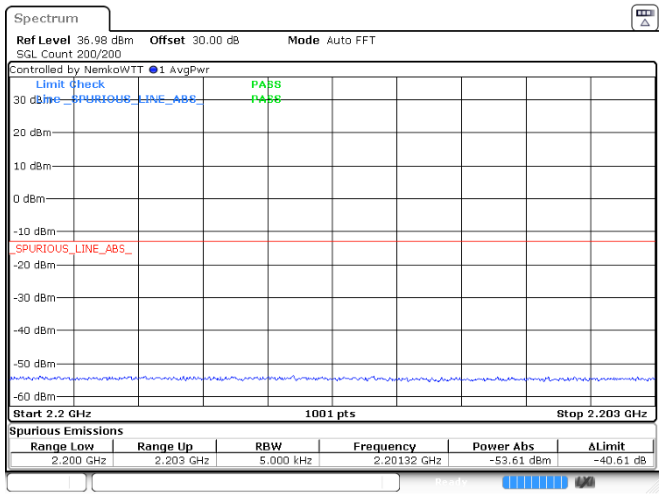
Low band edge, 2 signals, level = AGC Threshold + 3



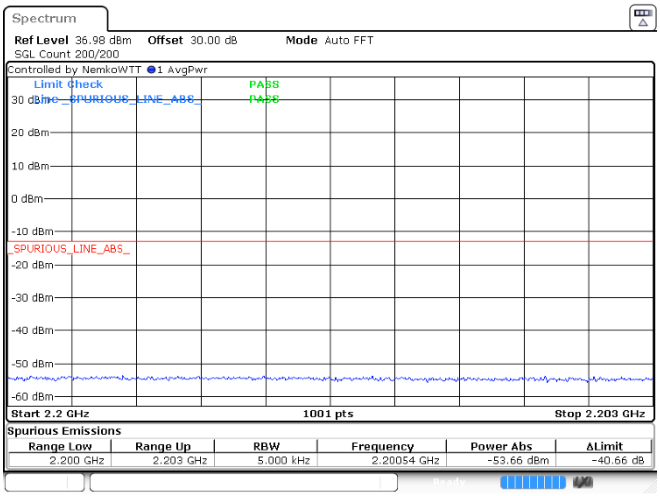
Low band edge, 1 signal, level = AGC Threshold + 3



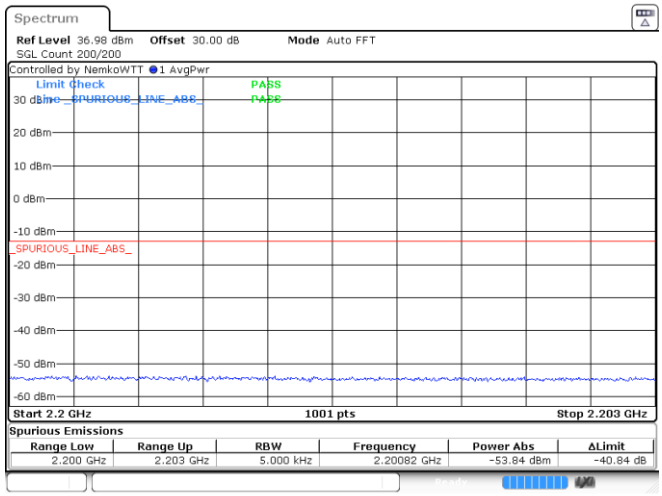
High band edge, 2 signals, level = AGC Threshold - 0.5



High band edge, 1 signal, level = AGC Threshold - 0.5



High band edge, 2 signals, level = AGC Threshold + 3

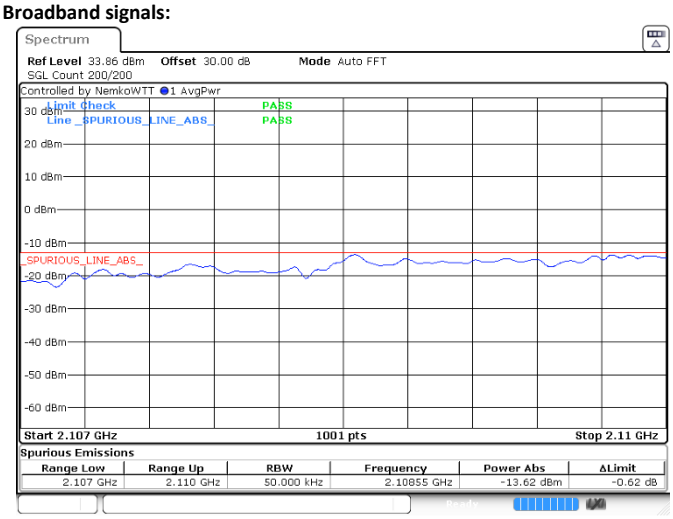


Highband edge, 1 signal, level = AGC Threshold + 3

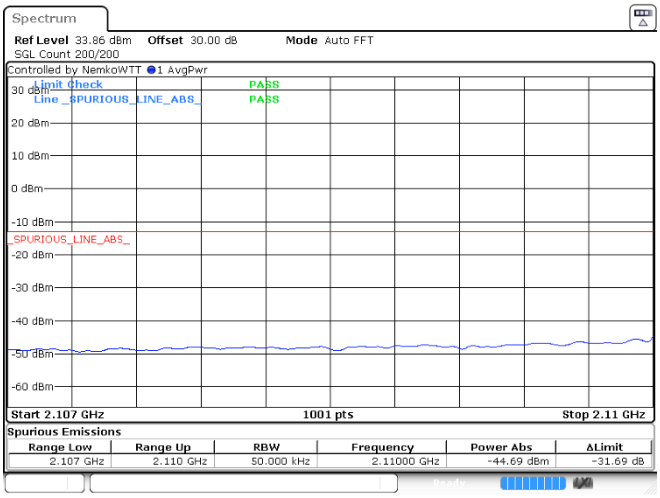
Table 8.5-4: *Spurious emissions at RF connector test data, broadband*

Condition	Frequency of highest emission (MHz)	Level (dBm)	Limit (dBm)
Input Level = **AGC Threshold - -0.5 dB** Input signal = **broadband** Number of signals: **2** **Low** band edge	2108.880949	-13.62	-13.00
Input Level = **AGC Threshold - -0.5 dB** Input signal = **broadband** Number of signals: **1** **Low** band edge	2109.998501	-44.69	-13.00
Input Level = **AGC Threshold + 3 dB** Input signal = **broadband** Number of signals: **2** **Low** band edge	2109.746753	-13.63	-13.00
Input Level = **AGC Threshold + 3 dB** Input signal = **broadband** Number of signals: **1** **Low** band edge	2109.998501	-42.60	-13.00
Input Level = **AGC Threshold - -0.5 dB** Input signal = **broadband** Number of signals: **2** **High** band edge	2201.371129	-48.34	-13.00
Input Level = **AGC Threshold - -0.5 dB** Input signal = **broadband** Number of signals: **1** **High** band edge	2200.987512	-48.48	-13.00
Input Level = **AGC Threshold + 3 dB** Input signal = **broadband** Number of signals: **2** **High** band edge	2201.796703	-48.24	-13.00
Input Level = **AGC Threshold + 3 dB** Input signal = **broadband** Number of signals: **1** **High** band edge	2201.541958	-48.25	-13.00

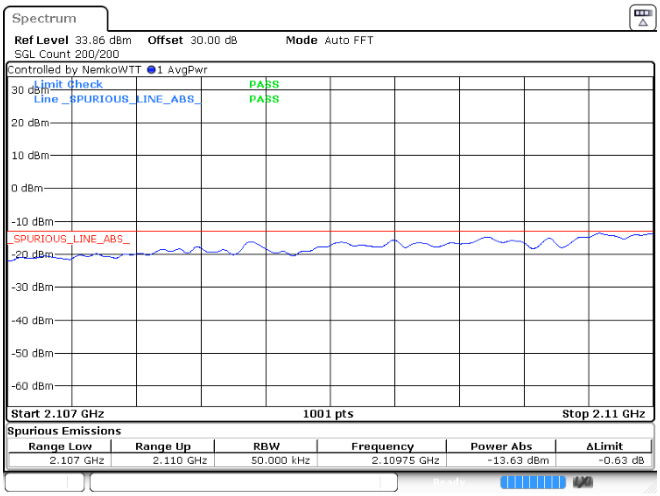
Broadband signals:



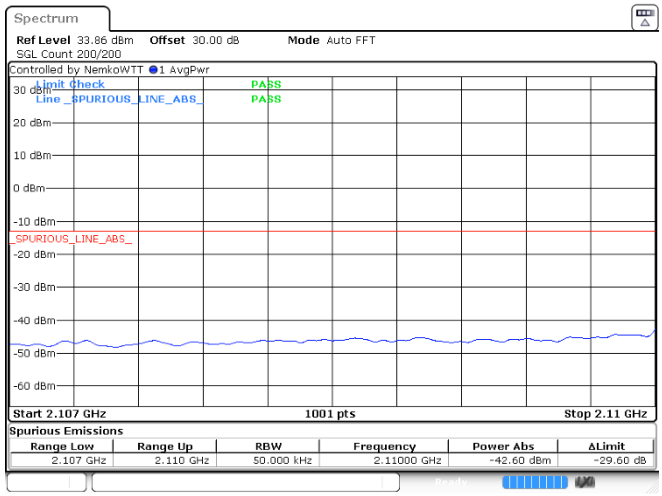
Low band edge, 2 signals, level = AGC Threshold - 0.5



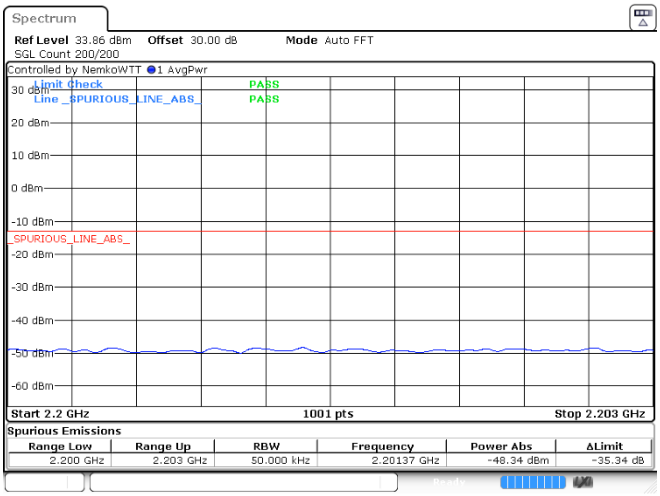
Low band edge, 1 signal, level = AGC Threshold - 0.5



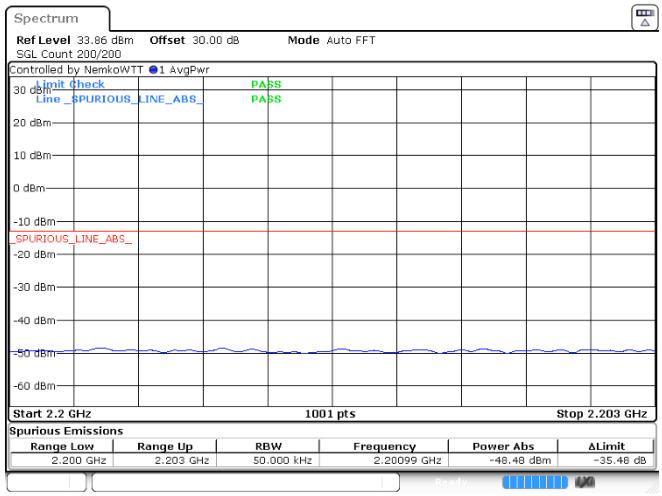
Low band edge, 2 signals, level = AGC Threshold + 3



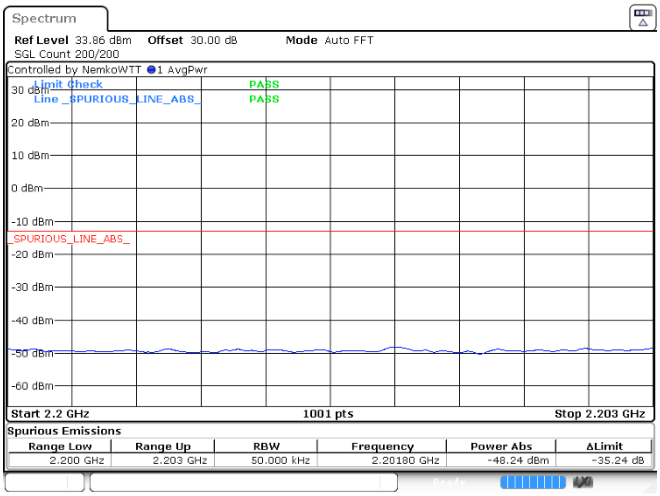
Low band edge, 1 signal, level = AGC Threshold + 3



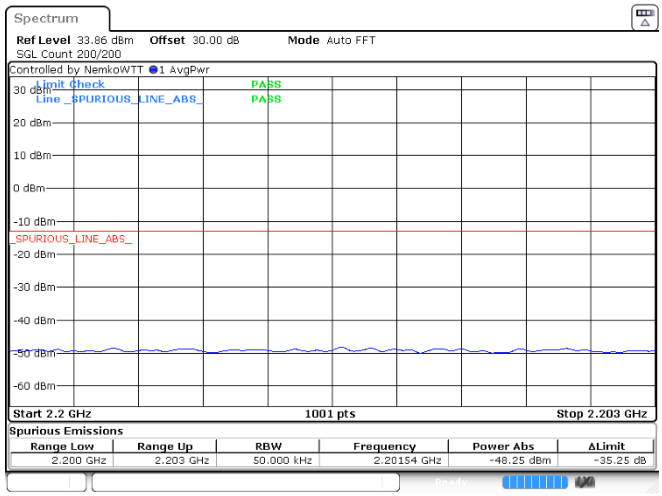
High band edge, 2 signals, level = AGC Threshold - 0.5



High band edge, 1 signal, level = AGC Threshold - 0.5



High band edge, 2 signals, level = AGC Threshold + 3



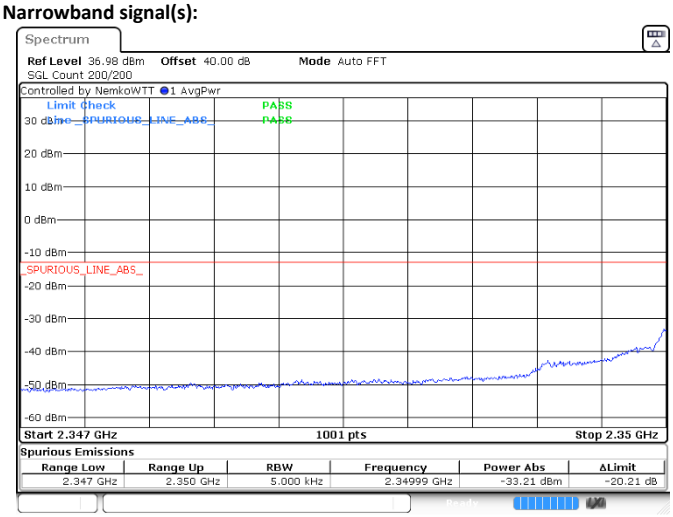
Low band edge, 1 signal, level = AGC Threshold + 3

8.5.5.3 Operating frequency band: band 30: 2350 – 2360 MHz

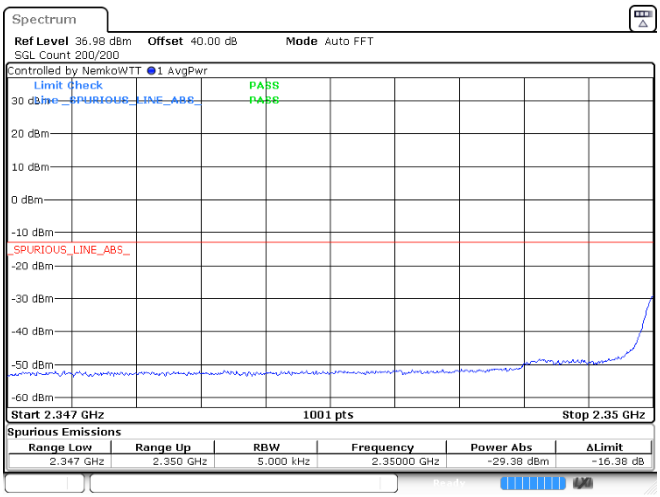
Table 8.5-5: *Spurious emissions at RF connector test data, narrowband*

Condition	Frequency of highest emission (MHz)	Level (dBm)	Limit (dBm)
Input Level = **AGC Threshold - -0.5 dB** Input signal = **narrowband** Number of signals: **2** **Low** band edge	2349.986513	-33.21	-13.00
Input Level = **AGC Threshold - -0.5 dB** Input signal = **narrowband** Number of signals: **1** **Low** band edge	2349.998501	-29.38	-13.00
Input Level = **AGC Threshold + 3 dB** Input signal = **narrowband** Number of signals: **2** **Low** band edge	2349.995504	-32.33	-13.00
Input Level = **AGC Threshold + 3 dB** Input signal = **narrowband** Number of signals: **1** **Low** band edge	2349.995504	-28.02	-13.00
Input Level = **AGC Threshold - -0.5 dB** Input signal = **narrowband** Number of signals: **2** **High** band edge	2360.085415	-21.29	-13.00
Input Level = **AGC Threshold - -0.5 dB** Input signal = **narrowband** Number of signals: **1** **High** band edge	2360.001499	-31.92	-13.00
Input Level = **AGC Threshold + 3 dB** Input signal = **narrowband** Number of signals: **2** **High** band edge	2360.001499	-32.63	-13.00
Input Level = **AGC Threshold + 3 dB** Input signal = **narrowband** Number of signals: **1** **High** band edge	2360.010490	-28.23	-13.00

Narrowband signal(s):



Low band edge, 2 signals, level = AGC Threshold - 0.5



Low band edge, 1 signal, level = AGC Threshold - 0.5