

Test Report

REP108478

Date of issue: August 1, 2025

Applicant:

Andre Italy Srl

Via Archimede 22/24, 20864 Agrate Brianza (MB), Italy

Product:

CAP M2 25T

Model:

7856326-2xxx

Model variant:

--

FCC ID:

XS5-CAPM225T

Specifications:

◆ **FCC 47 CFR Part 27**

Operation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz

Lab locations

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Tested by	Luis Anticono
Test engineer signature	
Reviewed by	Paolo Barbieri
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 S.p.A. ISO/IEC 17025 accreditation.

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Section 1 Report summary

1.1 Applicant and manufacturer

Applicant name	Andrew Wireless Systems
Applicant address	Industriering 10, Buchdorf 86675 Germany
Manufacture name	Andrew Wireless Systems
Manufacture address	Industriering 10, Buchdorf 86675 Germany

1.2 Test specifications

FCC 47 CFR Part 2	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
FCC 47 CFR Part 27	Miscellaneous wireless communications services

1.3 Test methods

ANSI C63.26-2015	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services
KDB 935210 D05	Indus Booster Basic Meas v01r04
KDB 662911 D01	Multiple Transmitter Output v02r01
KDB 662911 D02	MIMO with Cross-Polarized Antennas v01

1.4 Statement of compliance

In the configuration tested, the EUT was found compliant.

Testing was performed against all relevant requirements of the test standard except as noted in section 1.3 above. Results obtained indicate that the product under test *Choose an item*. In full with the requirements tested. The test results relate only to the items tested.

See "Summary of test results" for full details.

1.5 Exclusions

None

1.6 Test report revision history

Table 1.6-1: Test report revision history

Revision #	Date of issue	Details of changes made to test report
REP108478	August 1, 2025	Original report issued

Section 2 Summary of test results

2.1 Testing location

Test location (s)	Nemko Spa Via del Carroccio, 4 – 20853 Biassono (MB) - Italy
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2.2 Testing period

Test start date	July 28, 2025	Test end date	August 1, 2025
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2.3 Sample information

Receipt date	July 14, 2025	Nemko sample ID number(s)	PRJ0084706001
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2.4 FCC Part 27 test requirements results

Table 2.4-1: FCC requirements results

Part	Method (clause)	Test description	Verdict
--	935210 (3.2)	Measuring AGC threshold level	Pass
--	935210 (3.3)	Out-of-band-rejection	Pass
--	935210 (3.4)	Input-versus-output signal comparison	Pass
FCC 27.50(h)(1)	935210 (3.5)	Mean output power and amplifier/booster gain	Pass
FCC 27.53(m)(2)	935210 (3.6.2)	Out-of-band/out-of-block emissions conducted measurements	Pass
FCC 27.53(m)(2)	935210 (3.6.3)	Spurious emissions conducted measurements	Pass
FCC 27.54	935210 (3.7)	Frequency stability measurements	Pass
FCC 27.53(m)(2)	935210 (3.8)	Spurious emissions radiated measurements	Pass

Notes:

Section 3 Equipment under test (EUT) details

3.1 Sample information

Receipt date	July 14, 2025
Nemko sample ID number	PRJ0084706001

3.2 EUT information

Product name	Carrier Access Point Radio Module
Model	L2 B41
Model variant(s)	--
Serial number	BGRMAQ21320001
Part number	7847633-01
Power supply requirements	DC: 48 V

3.3 Technical information

Applicant FCC company number	XS5
FCC UPN number	-CAPM25T
All used FCC test site(s) Reg. number	682159
FCC number	XS5-CAPM225T
Frequency band	2496 MHz to 2690 MHz
Frequency Min (MHz)	2498.5 MHz for LTE 5 MHz
Frequency Max (MHz)	2687.5 MHz for LTE 5 MHz
RF power Min (W), Conducted/ERP/EIRP	2.2W
RF power Max (W), Conducted/ERP/EIRP	-
Field strength, Units @ distance	N/A
Measured BW (MHz) (99%)	4.161 MHz
Calculated BW (kHz), as per TRC-43	N/A
Type of modulation	AWGN5
Emission classification (F1D, G1D, D1D)	W7D
Transmitter spurious, Units @ distance	3m
Power requirements	2W (EIRP), PARP≤13dB
Antenna information	The EUT uses a unique antenna coupling/ non-detachable antenna to the intentional radiator.

3.4 Product description and theory of operation

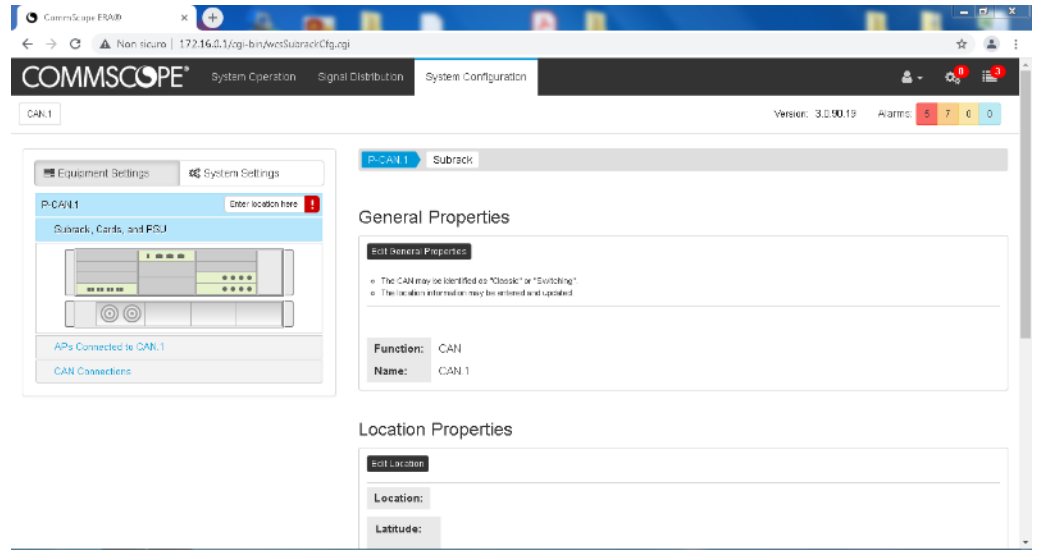
The EUT is a MIMO 1 +1 radio module used inside a CAP L2 Access Point.

The Era product is a digital distribution system with focus on flexibility, easy installing, commissioning, and reliable operation. The system is designed in a way to satisfy all of today's needs as well as unknown future standards and requirements. The Era system comprises of two main parts. A base station interface (Master or Head End Unit) that takes RF signals as well as digital signals from the base stations, conditions the signals for the given application and assigns them to the coverage zones. The coverage side is built of one or more Access Points. The "Access Point" (hereinafter referred to as "AP") is connected via a 10GBASE SFP+ fiber optical link to the Era Master Unit. This link gives a total RF bandwidth of up to 320 MHz. For higher bandwidth requirements, a secondary 10G link can be used in parallel. RF signals between Master Unit and Access Points are sent digitally over the fiber optical link. At the receiver side these signals are converted back to analog and amplified up to appropriate transmit levels. The AP unit is designed to support up to 4 Radio Cards within one CAP L2 cabinet. Depending on the market needs the outputs of the PAs can be all combined to one common or multiple antenna ports. The AP is equipped with a Digital Board for signal processing and controlling functionality. The AP is powered by an external DC power supply. The Era CAP L2 is primarily intended for indoor and outdoor use, while the master unit mainly operates in indoor environments. Although this is not a rule especially in cases where master unit components are used together with air-conditioned outdoor racks.

3.5 EUT exercise details

Operating conditions

The EUT has been tested connected to a dedicated server. The following software has been used to configure the EUT:



A signal generator with an AWGN5 signal with 4.1 MHz 99% OBW representative of a 5 MHz LTE channel has been connected to the RF input of the server. The RF output of the EUT was connected to a spectrum analyzer or a dummy load.

3.6 EUT setup diagram

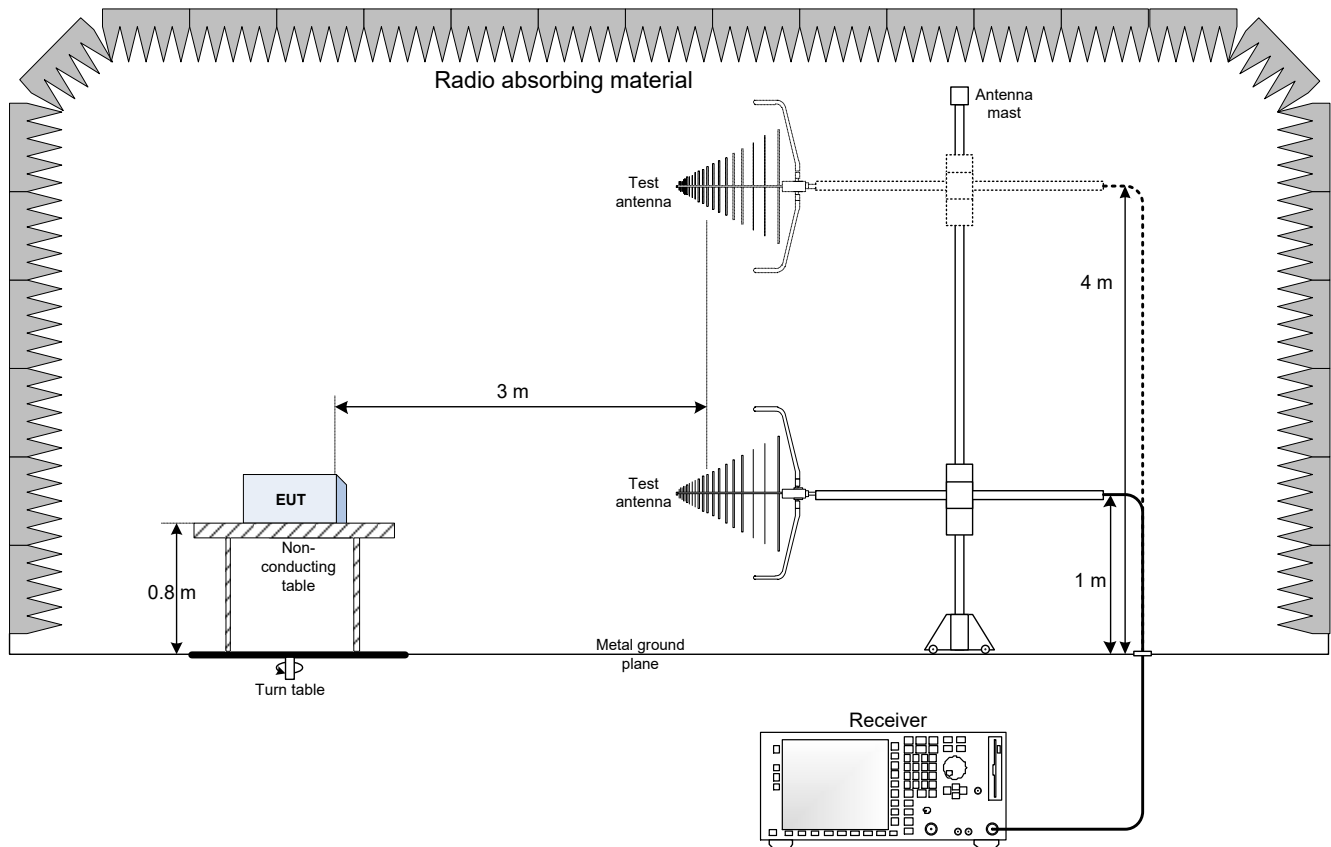


Figure 3.6-1: Radiated emissions set-up for frequencies below 1 GHz

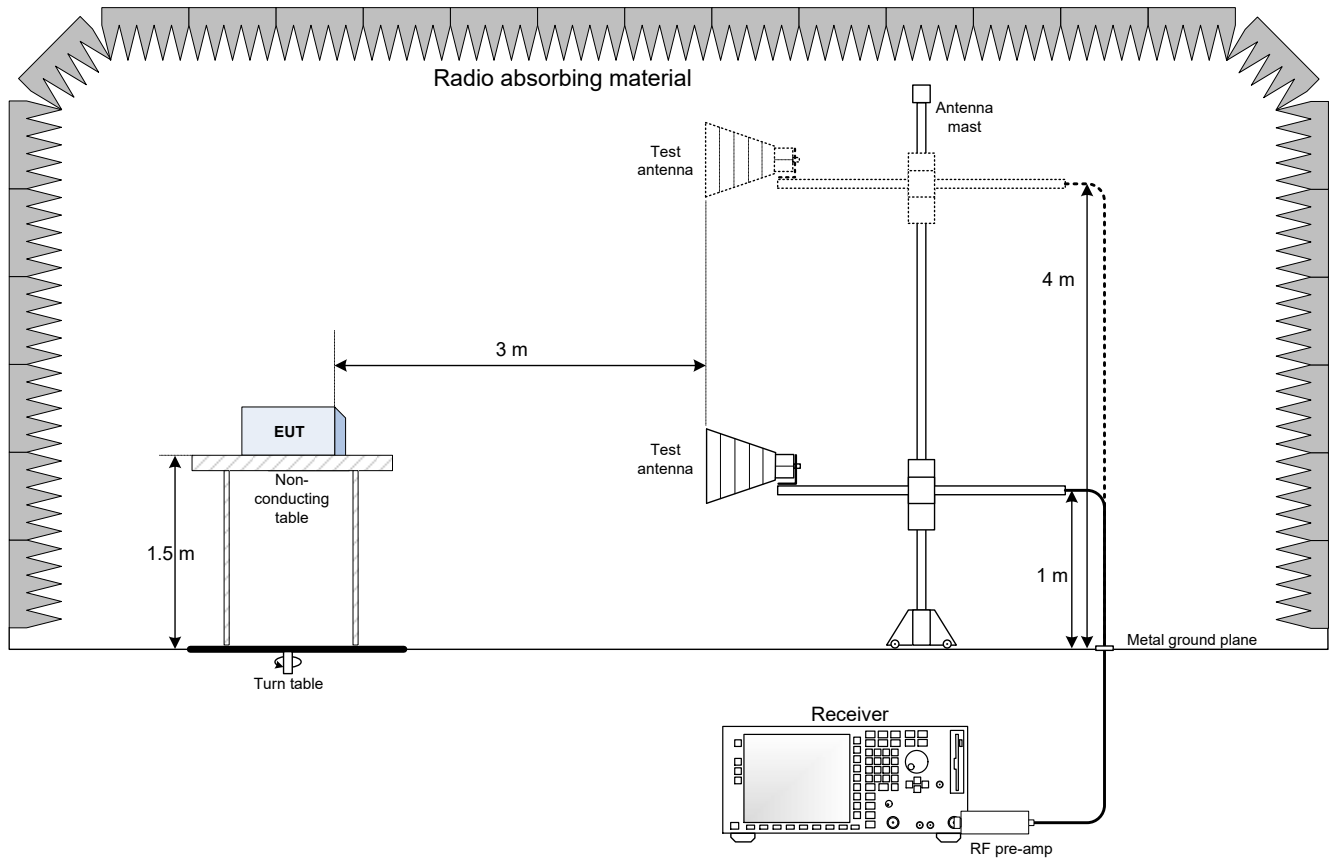


Figure 3.6-2: Radiated emissions set-up for frequencies above 1 GHz

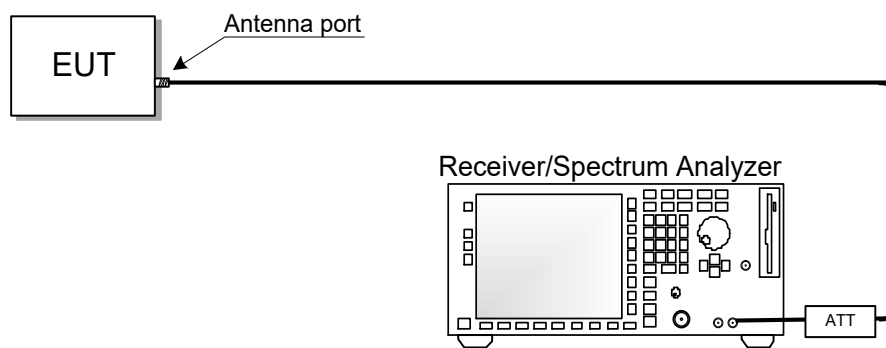


Figure 3.6-3: Antenna port testing set-up

Figure 3.6-1: Setup diagram

3.7 EUT sub assemblies

Table 3.7-1: EUT sub assemblies

Description	Brand name	Model/Part number	Serial number

Section 4 Engineering considerations

4.1 Modifications incorporated in the EUT

There were no modifications performed to the EUT during this assessment.

4.2 Technical judgment

None

4.3 Deviations from laboratory tests procedures

No deviations were made from laboratory procedures.

Section 5 Test conditions

5.1 Atmospheric conditions

Temperature	18–33 °C
Relative humidity	20–70 %
Air pressure	860–1060 mbar

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.

The following instruments are used to monitor the environmental conditions:

Equipment	Manufacturer	Model no.	Asset no.	Cal cycle	Next cal.
Thermo-hygrometer	Testo	175-H2	20012380/305	2025-01	2027-01
Thermo-hygrometer	Testo	175-H2	38203337/703	2025-01	2027-01
Barometer	Castle	GPB 3300	072015	2025-03	2026-03

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 purpose of the present document, the nominal voltage shall be the declared voltage, or any of the declared voltages $\pm 5\%$, for which the equipment was designed.

Section 6 Measurement uncertainty

6.1 Uncertainty of measurement

The measurement uncertainty was calculated for each test and quantity listed in this test report, according to CISPR 16-4-2, ETSI TR 100 028-1, ETSI TR 100 028-2 and other specific test standards and is documented in Nemko Spa working manuals WML1002 and WML0078.

The assessment of conformity for each test performed on the equipment is performed not taking into account the measurement uncertainty. The two following possible verdicts are stated in the report:

P (Pass) - The measured values of the equipment respect the specification limit at the points tested. The specific risk of false accept is up to 50% when the measured result is close to the limit.

F (Fail) - One or more measured values of the equipment do not respect the specification limit at the points tested. The specific risk of false reject is up to 50% when the measured result is close to the limit.

Hereafter Nemko's measurement uncertainties are reported:

EUT	Type	Test	Range	Measurement Uncertainty	Notes
Transmitter	Conducted	Frequency error	0.001 MHz ÷ 40 GHz	0.08 ppm	(1)
		Carrier power RF Output Power	0.009 MHz ÷ 30 MHz	1.1 dB	(1)
			30 MHz ÷ 18 GHz	1.5 dB	(1)
			18 MHz ÷ 40 GHz	3.0 dB	(1)
			40 MHz ÷ 140 GHz	5.0 dB	(1)
		Adjacent channel power	1 MHz ÷ 18 GHz	1.4 dB	(1)
		Conducted spurious emissions	0.009 MHz ÷ 18 GHz	3.0 dB	(1)
			18 GHz ÷ 40 GHz	4.2 dB	(1)
			40 GHz ÷ 220 GHz	6.0 dB	(1)
		Intermodulation attenuation	1 MHz ÷ 18 GHz	2.2 dB	(1)
		Attack time – frequency behaviour	1 MHz ÷ 18 GHz	2.0 ms	(1)
		Attack time – power behaviour	1 MHz ÷ 18 GHz	2.5 ms	(1)
		Release time – frequency behaviour	1 MHz ÷ 18 GHz	2.0 ms	(1)
		Release time – power behaviour	1 MHz ÷ 18 GHz	2.5 ms	(1)
		Transient behaviour of the transmitter– Transient frequency behaviour	1 MHz ÷ 18 GHz	0.2 kHz	(1)
		Transient behaviour of the transmitter – Power level slope	1 MHz ÷ 18 GHz	9%	(1)
		Frequency deviation - Maximum permissible frequency deviation	0.001 MHz ÷ 18 GHz	1.3%	(1)
		Frequency deviation - Response of the transmitter to modulation frequencies above 3 kHz	0.001 MHz ÷ 18 GHz	0.5 dB	(1)
		Dwell time	-	3%	(1)
		Hopping Frequency Separation	0.01 MHz ÷ 18 GHz	1%	(1)
		Occupied Channel Bandwidth	0.01 MHz ÷ 18 GHz	2%	(1)
		Modulation Bandwidth	0.01 MHz ÷ 18 GHz	2%	(1)
	Radiated	Radiated spurious emissions	0.009 MHz ÷ 26.5 GHz	6.0 dB	(1)
			26.5 GHz ÷ 66 GHz	8.0 dB	(1)
			66 GHz ÷ 220 GHz	10 dB	(1)
		Effective radiated power transmitter	10 kHz ÷ 26.5 GHz	6.0 dB	(1)
			26.5 GHz ÷ 66 GHz	8.0 dB	(1)
			66 GHz ÷ 220 GHz	10 dB	(1)

NOTES:

(1) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k = 2$, which for a normal distribution corresponds to a coverage probability of approximately 95 %

Section 7 Test equipment

7.1 Test equipment list

Equipment	Manufacturer	Model no.	Asset no.	Cal cycle	Next cal.
EMI Receiver	Rohde & Schwarz	ESW44	101620	2024-09	2025-09
Spectrum Analyzer	Rohde & Schwarz	FSW43	101767	2024-09	2025-09
EMI Receiver	Rohde & Schwarz	ESU8	100202	2024-09	2025-09
RF Vector Signal Generator	Rohde & Schwarz	SMBV100A	263254	2025-01	2026-01
RF Vector Signal Generator	Rohde & Schwarz	SMBV100A	263397	2025-01	2026-01
Antenna 1 - 18 GHz	Schwarzbeck Mess-Elektronik	STLP9148	STLP 9148-152	2024-10	2027-10
Antenna Trilog 25MHz - 8GHz	Schwarzbeck Mess-Elektronik	VULB9162	9162-025	2024-08	2027-08
Double Ridge Horn Antenna	RFSpin	DRH40	061106A40	2024-08	2027-08
Broadband Amplifier	Schwarzbeck Mess-Elektronik	BBV9718C	00121	2025-01	2026-01
Controller	Maturo	FCU3.0	10041	NCR	NCR
Tilt antenna mast	Maturo	TAM4.0-E	10042	NCR	NCR
Turntable	Maturo	TT4.0-5T	2.527	NCR	NCR
3m Semi anechoic chamber	Comtest	SAC-3	1711-150	2024-09	2026-09
Semi-anechoic chamber	Nemko S.p.a.	10m semi-anechoic chamber	530	2023-09	2025-09
Software turntable and mast	Maturo	mcApp	8.1.0.5410	NCR	NCR
Cable set	Rosenberger and Huber + Suhner	RE01+RE02	1.654+1.655	2025-05	2026-05
Cable set	Rosenberger+Huber-Suhner	RE03+RE04	1.510+1.511	2025-05	2026-05
Cable set	Rosenberger+Huber-Suhner	RE04+RE05	1.511+1.512	2025-05	2026-05
Cable set	Rosenberger+Huber+Suhner	CE01+CE02	1.498+1.632	2025-05	2026-05
Cable set	Rosenberger	ST.ALO-02	1.650	2025-05	2026-05
Climatic Chamber	MSL	EC500DA	15022	2025-06	2026-06

Notes: NCR - no calibration required, VOU - verify on use

Section 8 Testing data

8.1 Measuring AGC threshold level

8.1.1 References, definitions and limits

935210 D05 Indus Booster Basic Meas v01r04, Clause 3.2

The AGC threshold is to be determined as follows. In the case of fiber-optic distribution systems, the RF input port of the equipment under test (EUT) refers to the RF input of the supporting equipment RF to optical convertor; see also descriptions and diagrams for typical DAS booster systems in KDB Publication 935210 D02. Devices intended to be directly connected to an RF source (donor port) only need to be evaluated for any over-the-air transmit paths.

- Connect a signal generator to the input of the EUT.
- Connect a spectrum analyzer or power meter to the output of the EUT using appropriate attenuation as necessary.
- The signal generator should initially be configured to produce either of the required test signals (i.e., broadband or narrowband).
- Set the signal generator frequency to the center frequency of the EUT operating band.
- While monitoring the output power of the EUT, measured using the methods of 3.5.3 or 3.5.4, increase the input level until a 1 dB increase in the input signal power no longer causes a 1 dB increase in the output signal power.
- Record this level as the AGC threshold level.
- Repeat the procedure with the remaining test signal.

8.1.2 Test summary

Verdict	Pass		
Tested by	Luis Anticono	Test date	July 30, 2025

8.1.3 Observations, settings and special notes

AWGN5 signal with 4.1 MHz 99% OBW representative of a 5 MHz LTE channel used

Spectrum analyzer settings:

Detector mode	RMS
Resolution bandwidth	100 kHz
Video bandwidth	300 kHz
Measurement mode	Power over emission bandwidth
Trace mode	Averaging
Measurement time	Auto

8.1.4 Test equipment used

Equipment	Manufacturer	Model no.	Asset no.
Spectrum Analyzer	Rohde & Schwarz	FSW43	101767
RF Vector Signal Generator	Rohde & Schwarz	SMBV100A	263254
RF Vector Signal Generator	Rohde & Schwarz	SMBV100A	263397

Notes: NCR - no calibration required, VOU - verify on use

8.1.5 Test data

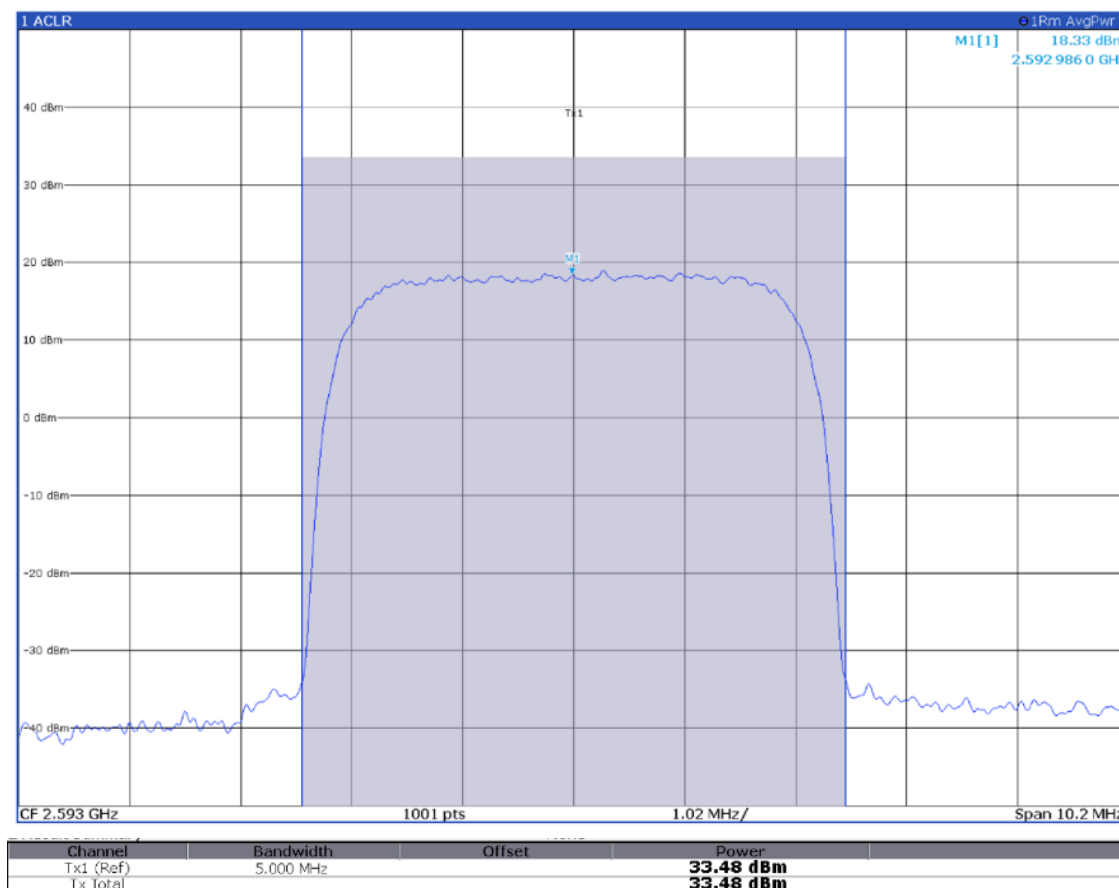


Figure 8.1-1: Antenna port 1 output spectral plot with input at AGC threshold

Test data, continued

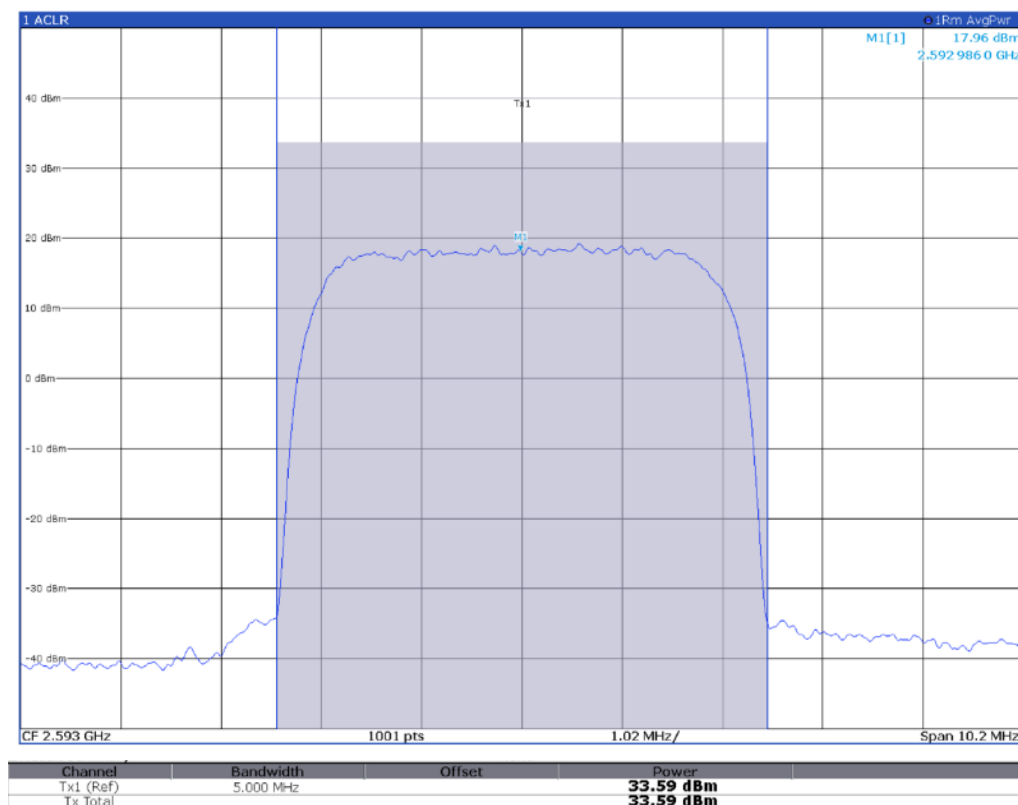


Figure 8.1-2: Antenna port 1 output spectral plot with input at AGC threshold +1 dBm

Test data, continued

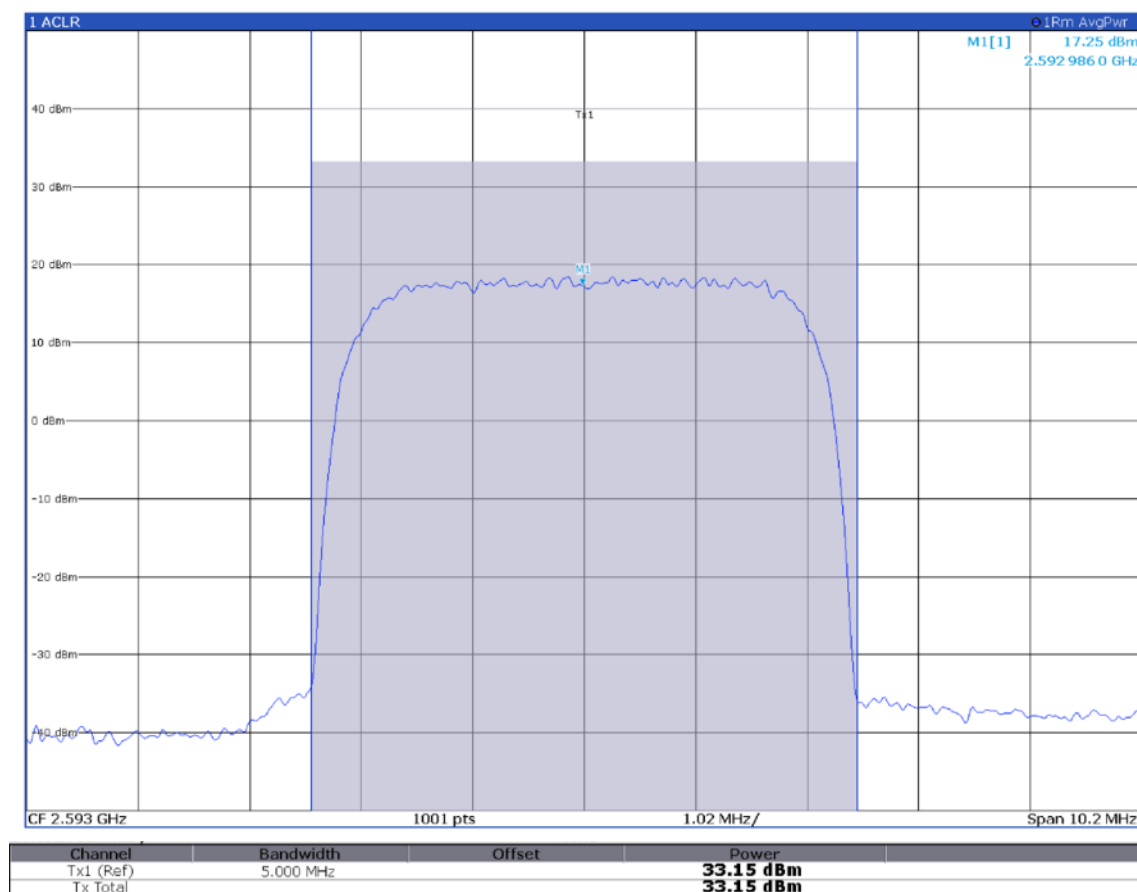


Figure 8.1-3: Antenna port 2 output spectral plot with input at AGC threshold

Test data, continued

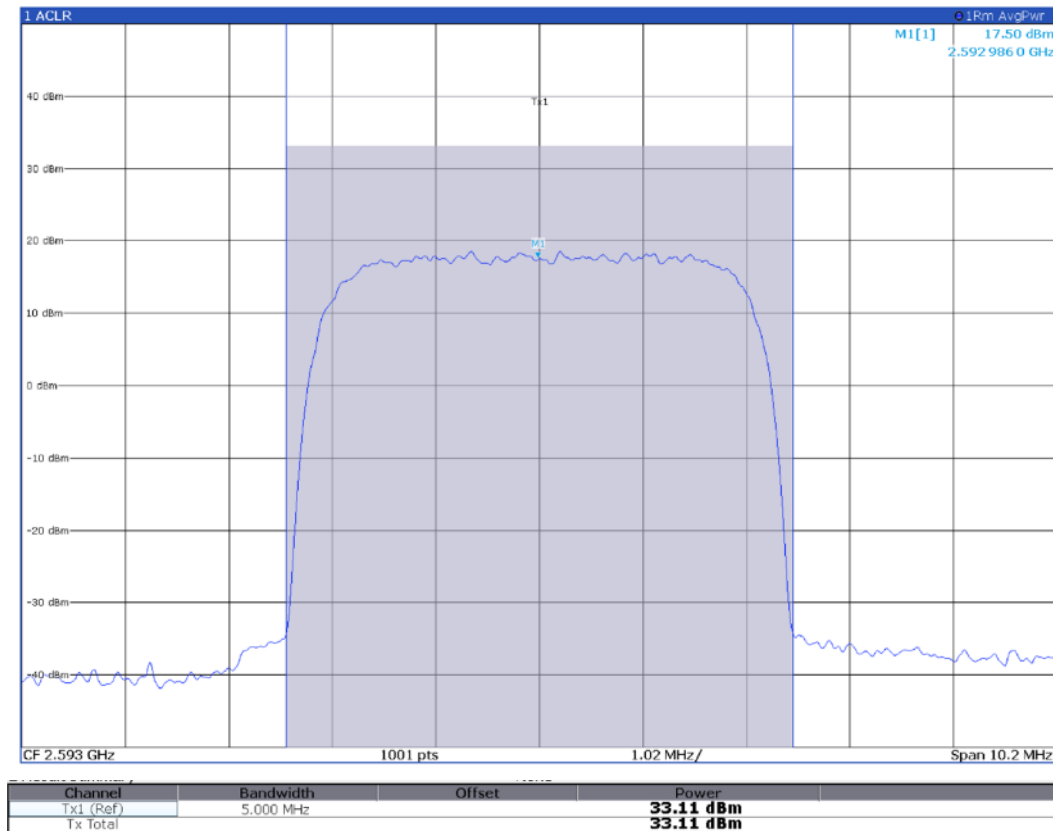


Figure 8.1-4: Antenna port 2 output spectral plot with input at AGC threshold +1 dBm

8.2 Out-of-band-rejection

8.2.1 References, definitions and limits

935210 D05 Indus Booster Basic Meas v01r04, Clause 3.3

A signal booster shall reject amplification of other signals outside of its passband. Adjust the internal gain control of the EUT (if so equipped) to the maximum gain for which equipment certification is sought.

8.2.2 Test summary

Verdict	Pass		
Tested by	L. Anticono	Test date	July 30, 2025

8.2.3 Observations, settings and special notes

CW signal used with a frequency sweep in the range ± 250 % of the passband with a dwell time of 10 ms

Spectrum analyzer settings:

Resolution bandwidth	1 % to 5 % of the EUT passband
Video bandwidth	$\geq 3 \times \text{RBW}$
Frequency span	± 250 % of the passband
Detector mode	Peak
Trace mode	Max Hold

8.2.4 Test equipment used

Equipment	Manufacturer	Model no.	Asset no.
Spectrum Analyzer	Rohde & Schwarz	FSW43	101767
RF Vector Signal Generator	Rohde & Schwarz	SMBV100A	263254
RF Vector Signal Generator	Rohde & Schwarz	SMBV100A	263397

Notes: NCR - no calibration required, VOU - verify on use

8.2.5 Test data

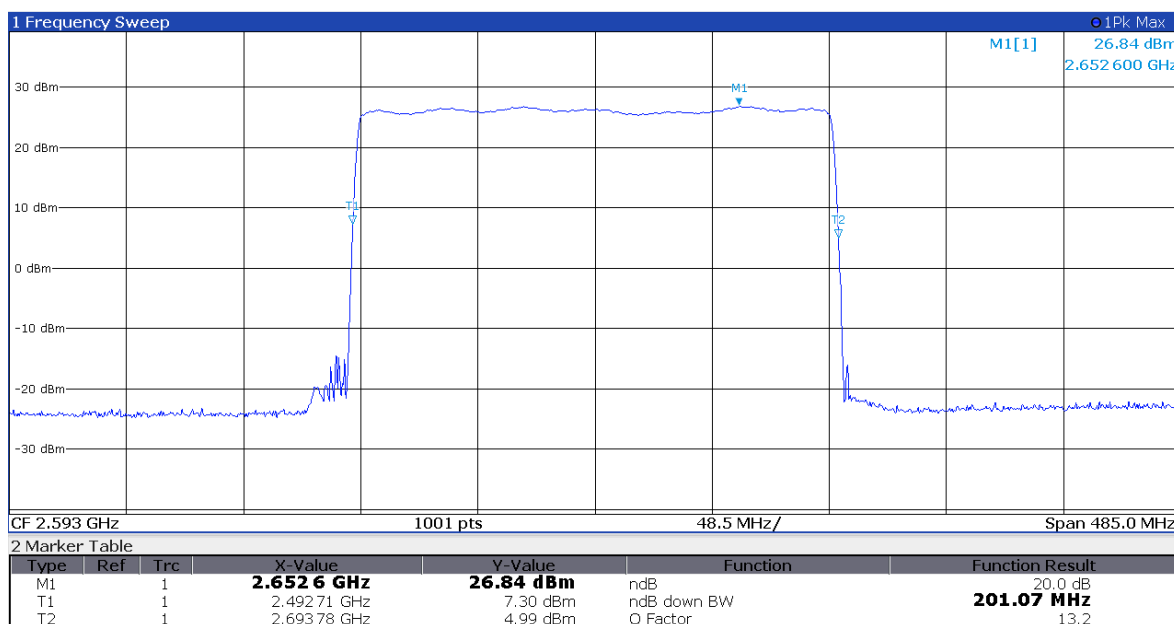


Figure 8.2-1: Out-of-band-rejection 20dB BW spectral plot for Antenna port 1

Test data, continued

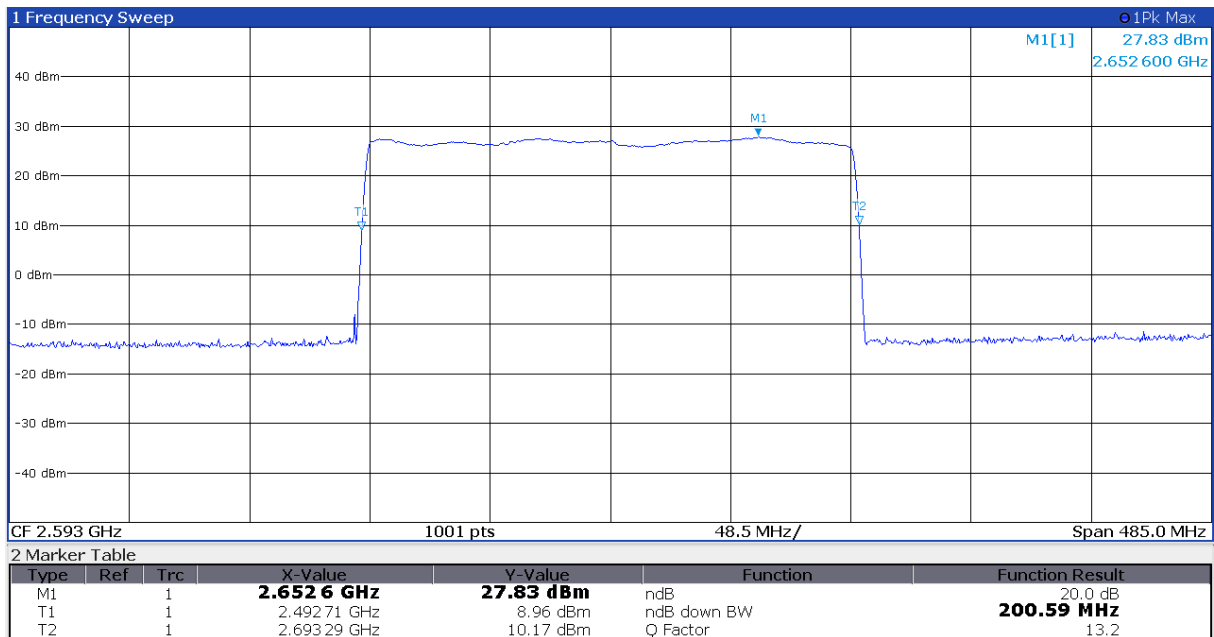


Figure 8.2-2: Out-of-band-rejection 20dB BW spectral plot for Antenna port 2

8.3 Input-versus-output signal comparison

8.3.1 References, definitions and limits

935210 D05 Indus Booster Basic Meas v01r04, Clause 3.4

A 26 dB bandwidth measurement shall be performed on the input signal and the output signal; alternatively, the 99% OBW can be measured and used.

8.3.2 Test summary

Verdict	Pass		
Tested by	L. Anticona	Test date	July 29, 2025

8.3.3 Observations, settings and special notes

AWGN5 signal with 4.1 MHz 99% OBW representative of a 5 MHz LTE channel used.
EUT input power set to a level that is just below the AGC threshold, but not more than 0.5 dB below.
Repeated the test with the input signal amplitude set to 3 dB above the AGC threshold.

Spectrum analyzer settings:

Resolution bandwidth	of 1 % to 5 % of the OBW
Video bandwidth	$\geq 3 \times$ RBW
Frequency span	$2 \times$ to $5 \times$ the emission bandwidth (EBW) or alternatively, the OBW
Detector mode	Peak
Trace mode	Max Hold

8.3.4 Test equipment used

Equipment	Manufacturer	Model no.	Asset no.
Spectrum Analyzer	Rohde & Schwarz	FSW43	101767
RF Vector Signal Generator	Rohde & Schwarz	SMBV100A	263254
RF Vector Signal Generator	Rohde & Schwarz	SMBV100A	263397

Notes: NCR - no calibration required, VOU - verify on use

8.3.5 Test data

Table 8.3-1: Occupied bandwidth results

Antenna port	Signal measured	Input signal level	Frequency, MHz	99% OBW, MHz	26 dB BW, MHz
1	Input	AGC threshold	2593	4.164	4.68
1	Output	AGC threshold	2593	4.156	4.69
1	Input	AGC threshold +3 dB	2593	4.160	4.67
1	Output	AGC threshold +3 dB	2593	4.154	4.69
2	Input	AGC threshold	2593	4.166	4.66
2	Output	AGC threshold	2593	4.150	4.67
2	Input	AGC threshold +3 dB	2593	4.161	4.66
2	Output	AGC threshold +3 dB	2593	4.153	4.70

Test data, continued

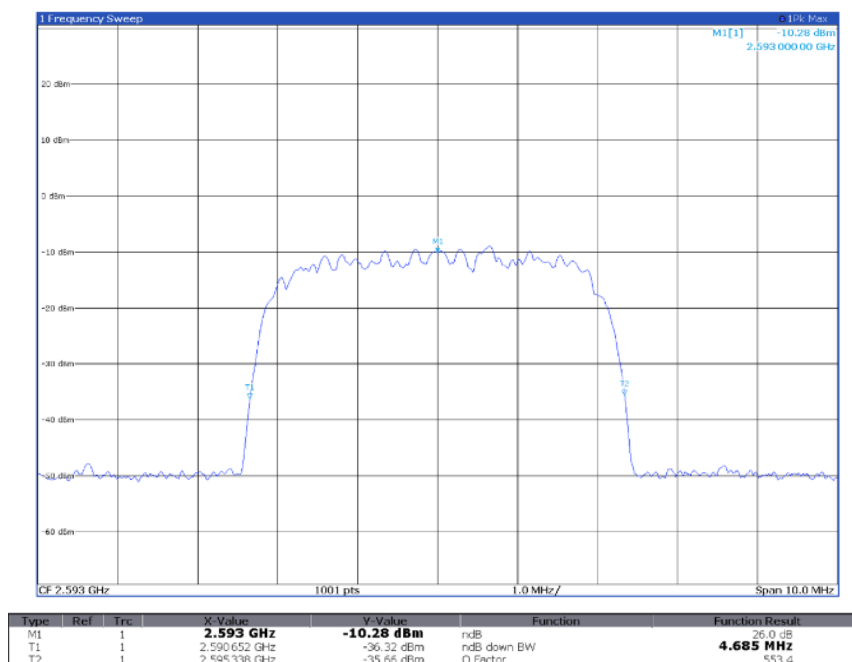


Figure 8.3-1: 26 dB occupied bandwidth, antenna port 1 input signal at AGC threshold spectral plot

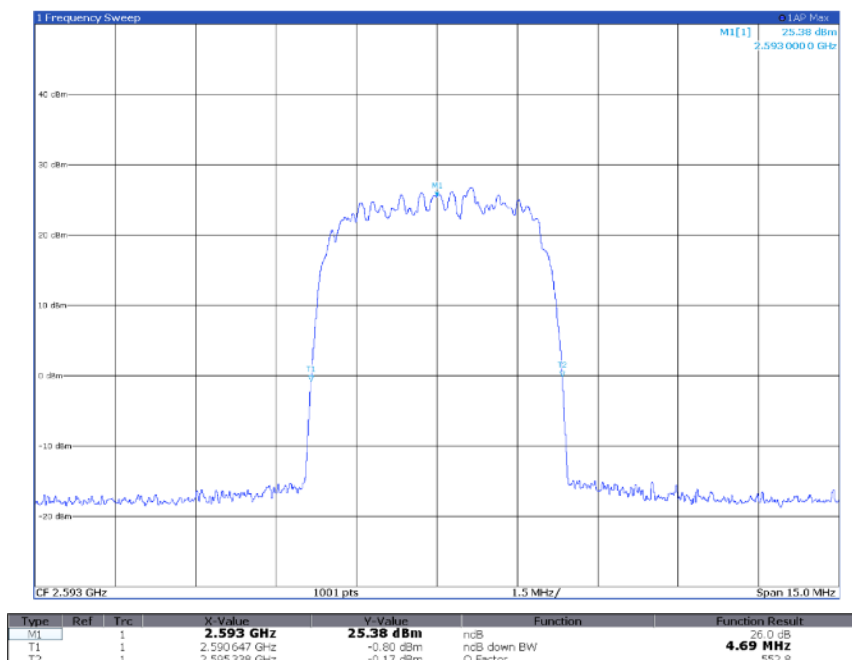


Figure 8.3-2: 26 dB occupied bandwidth, antenna port 1 output signal at AGC threshold spectral plot

Test data, continued

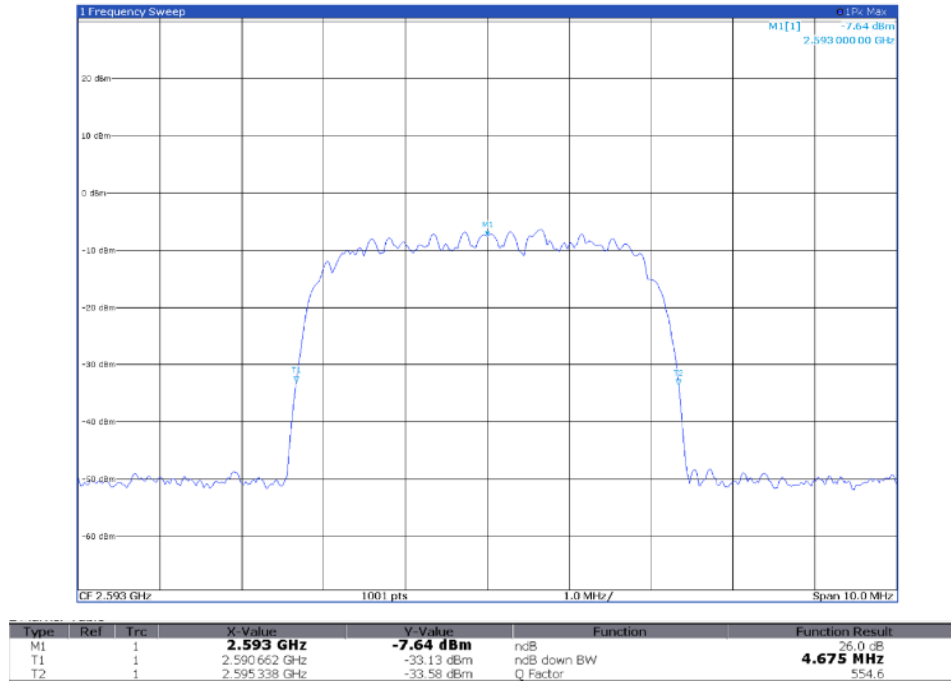


Figure 8.3-3: 26 dB occupied bandwidth, antenna port 1 input signal at AGC threshold +3 dB spectral plot

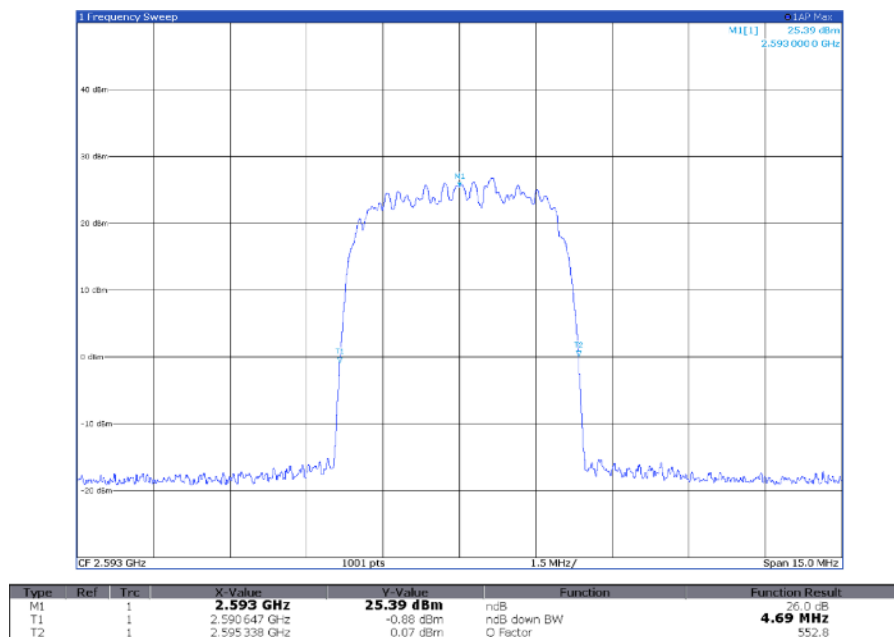


Figure 8.3-4: 26 dB occupied bandwidth, antenna port 1 output signal at AGC threshold +3 dB spectral plot

Test data, continued

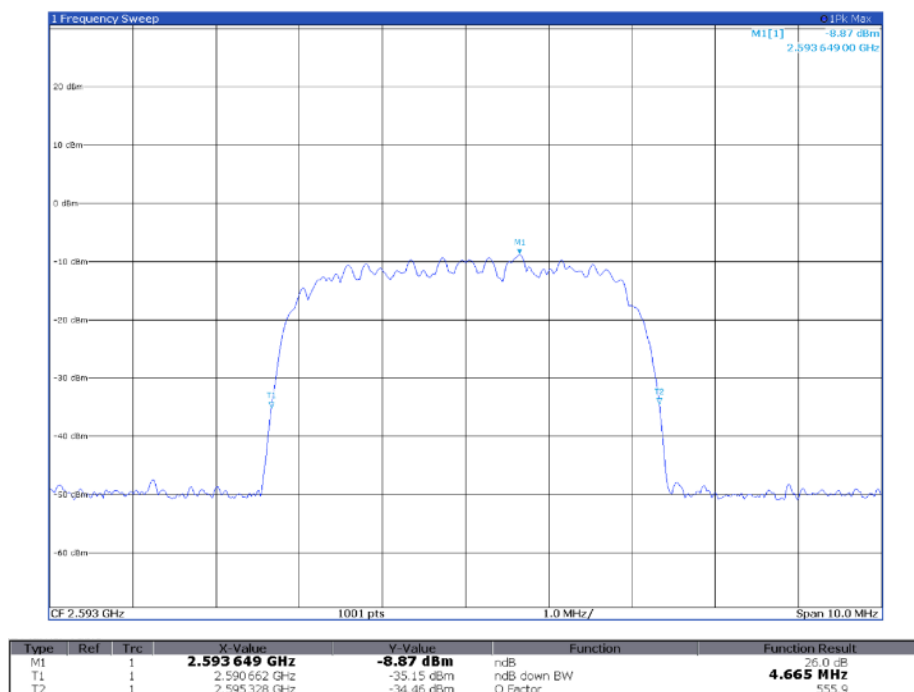


Figure 8.3-5: 26 dB occupied bandwidth, antenna port 2 input signal at AGC threshold spectral plot

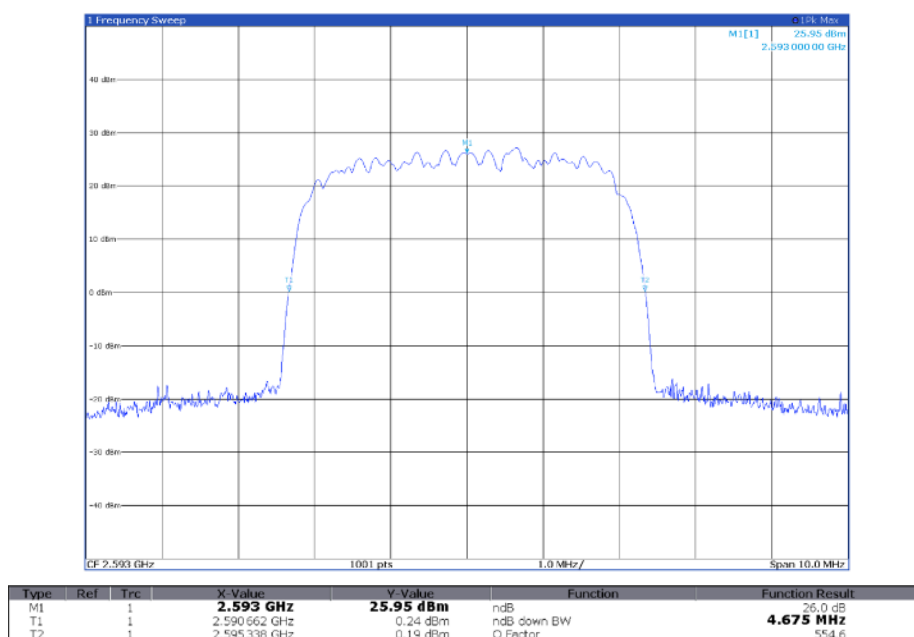


Figure 8.3-6: 26 dB occupied bandwidth, antenna port 2 output signal at AGC threshold spectral plot

Test data, continued

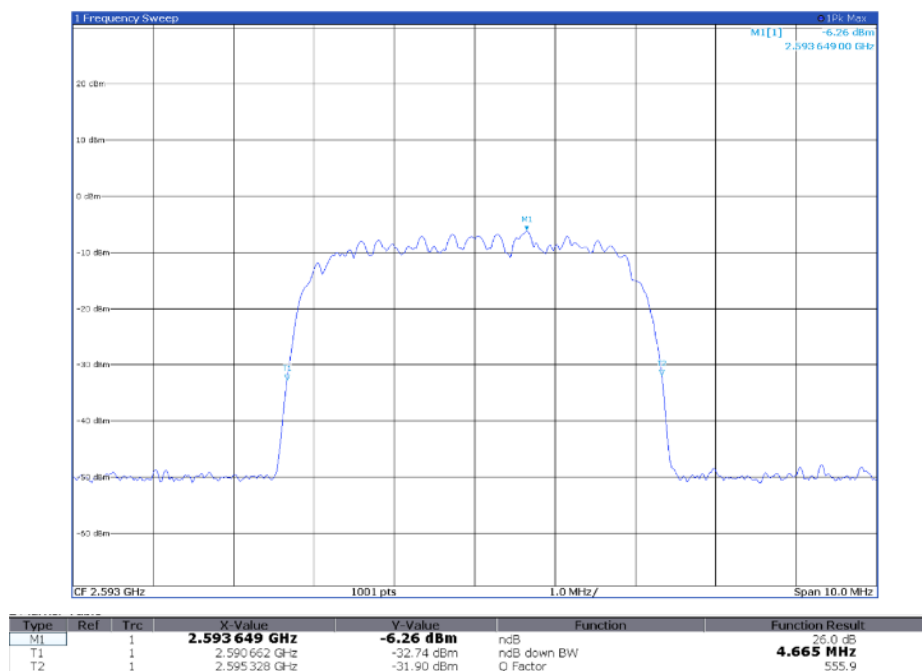


Figure 8.3-7: 26 dB occupied bandwidth, antenna port 2 input signal at AGC threshold +3 dB spectral plot

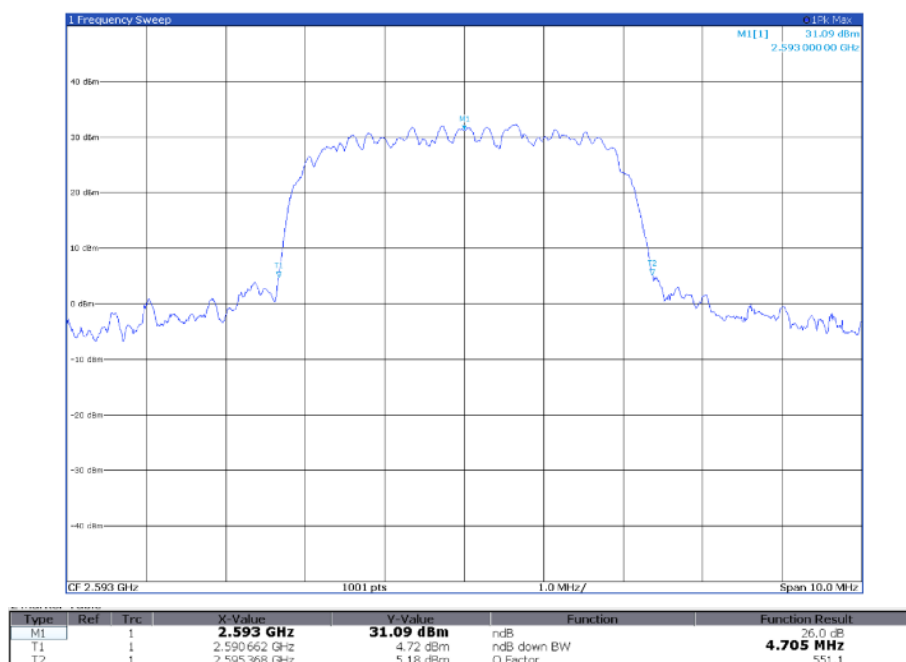


Figure 8.3-8: 26 dB occupied bandwidth, antenna port 2 output signal at AGC threshold +3 dB spectral plot

Test data, continued

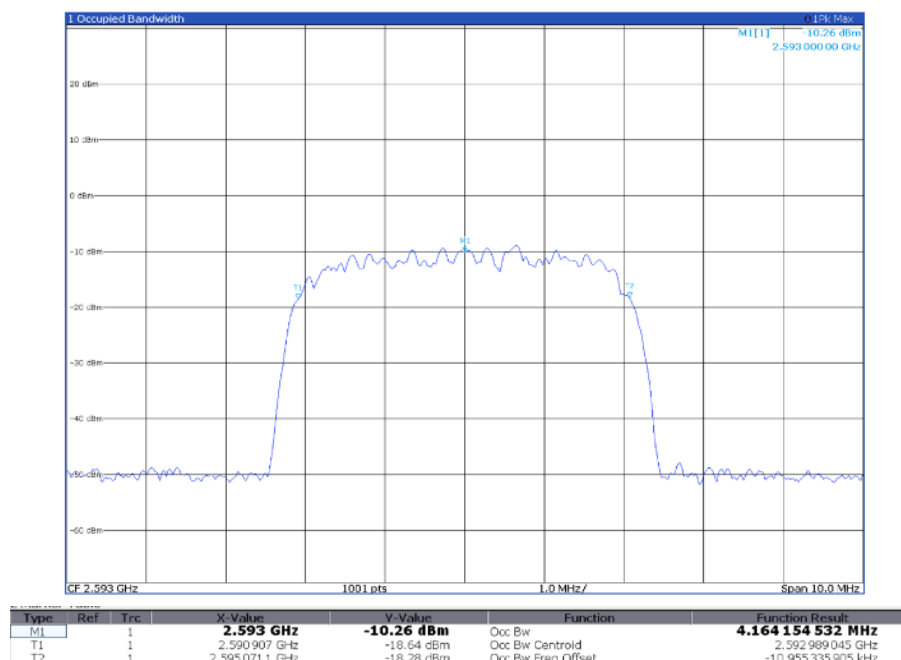


Figure 8.3-9: 99% occupied bandwidth, antenna port 1 input signal at AGC threshold spectral plot

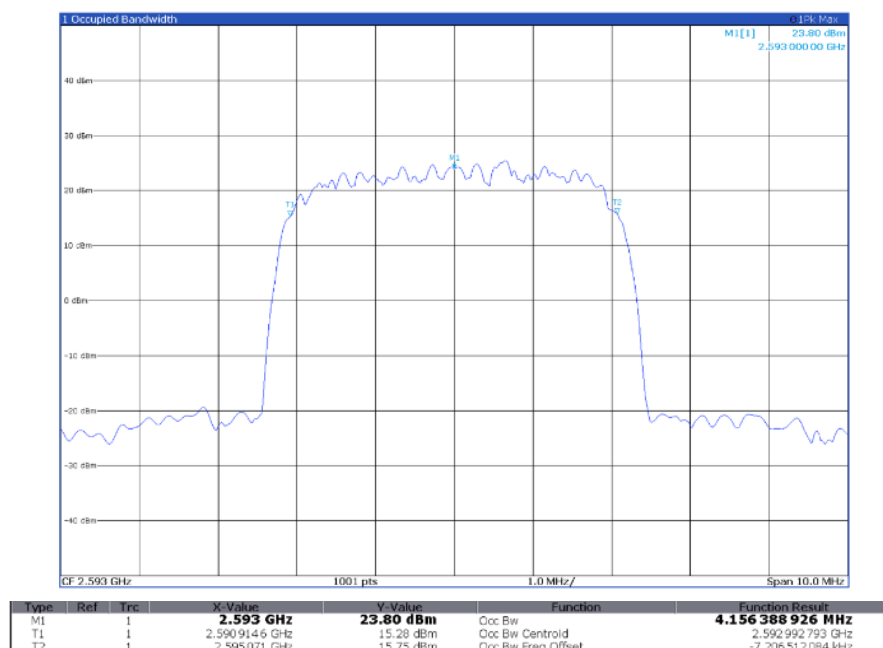


Figure 8.3-10: 99% occupied bandwidth, antenna port 1 output signal at AGC threshold spectral plot

Test data, continued

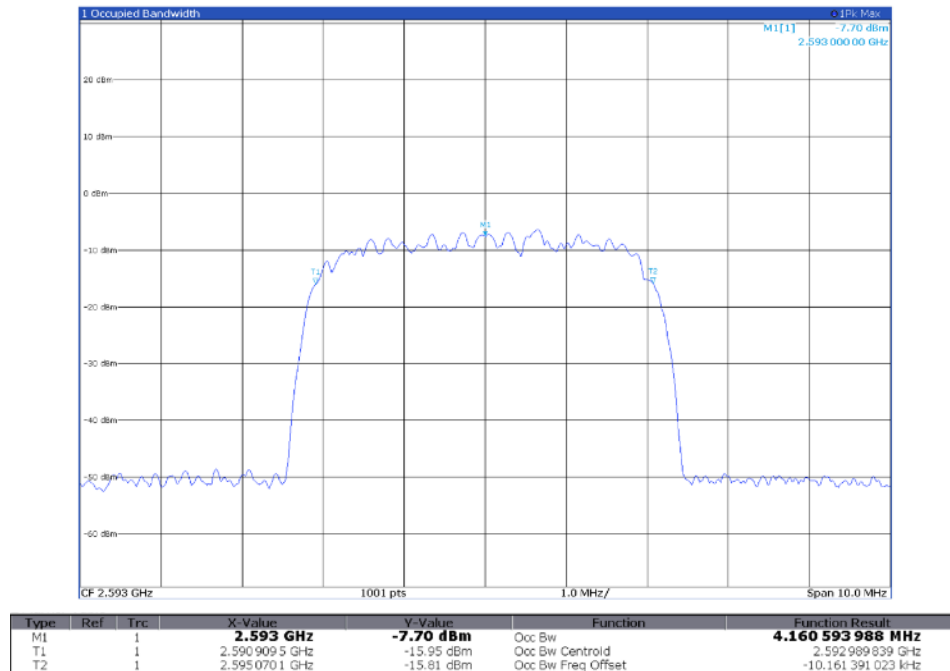


Figure 8.3-11: 99% occupied bandwidth, antenna port 1 input signal at AGC threshold +3 dB spectral plot

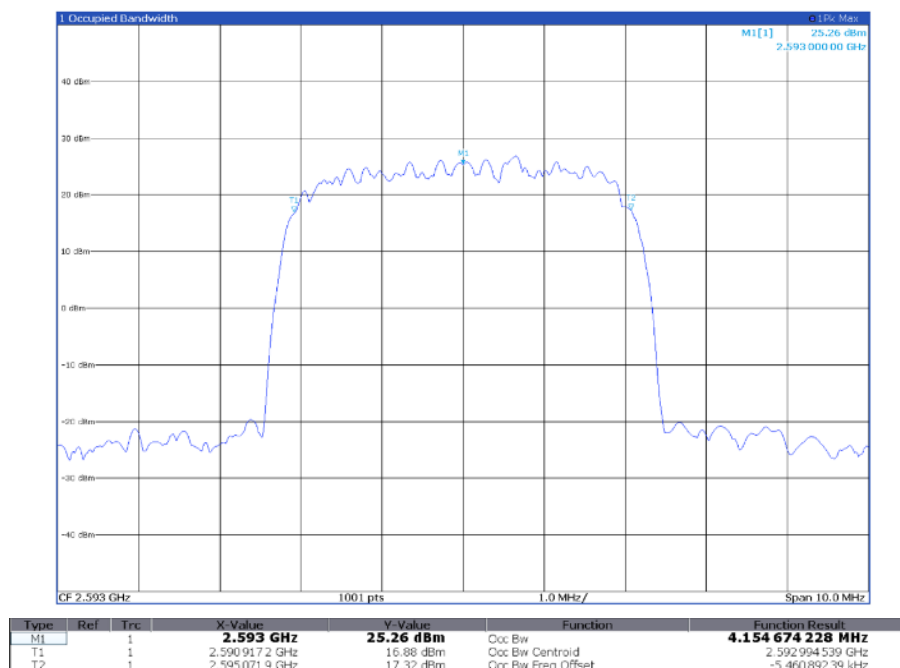


Figure 8.3-12: 99% occupied bandwidth, antenna port 1 output signal at AGC threshold +3 dB spectral plot

Test data, continued

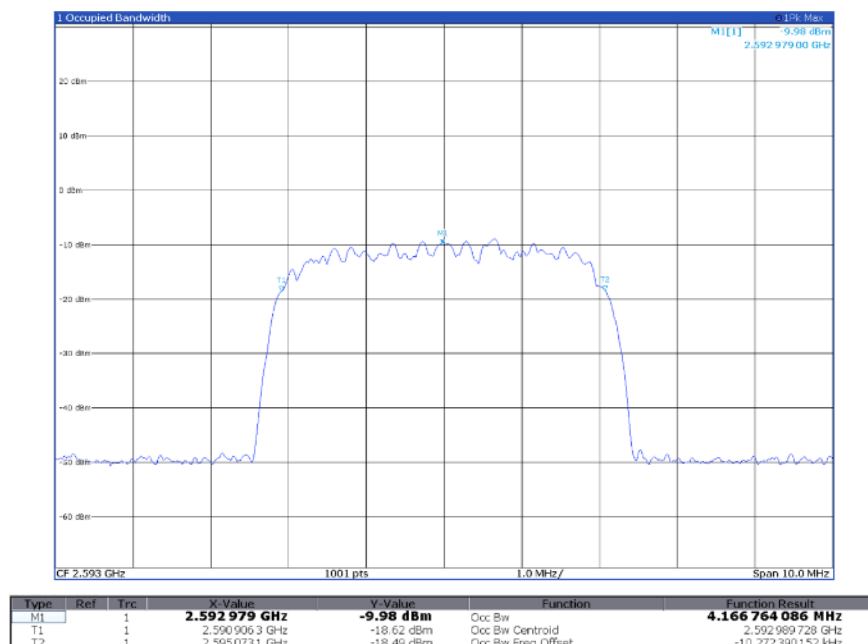


Figure 8.3-13: 99% occupied bandwidth, antenna port 2 input signal at AGC threshold spectral plot

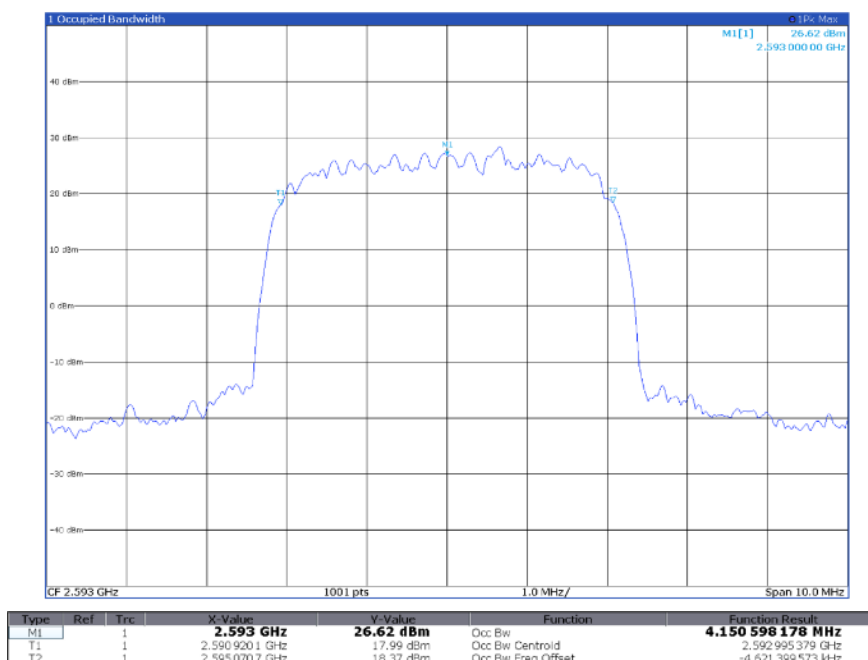


Figure 8.3-14: 99% occupied bandwidth, antenna port 2 output signal at AGC threshold spectral plot

Test data, continued

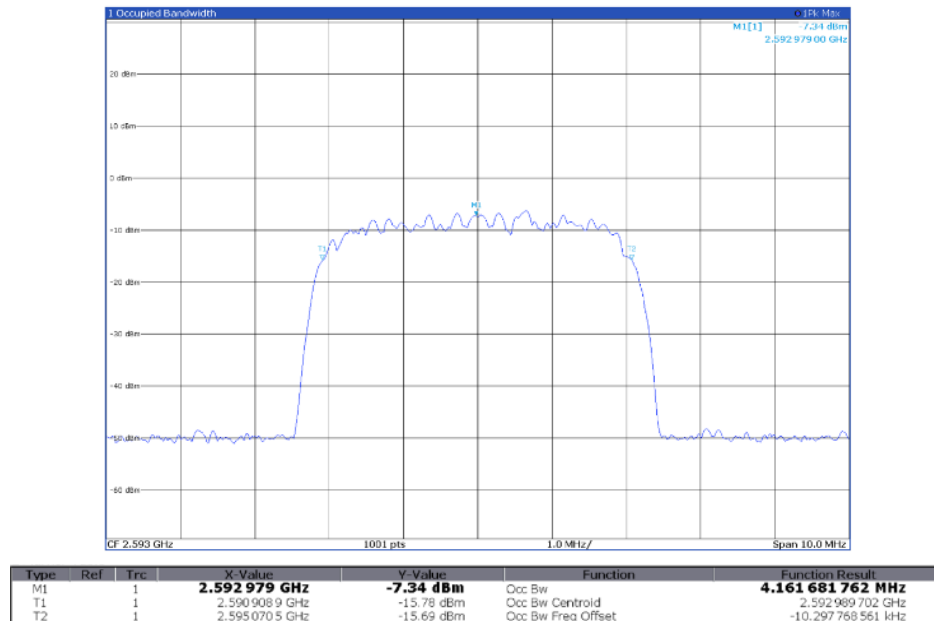


Figure 8.3-15: 99% occupied bandwidth, antenna port 2 input signal at AGC threshold +3 dB spectral plot

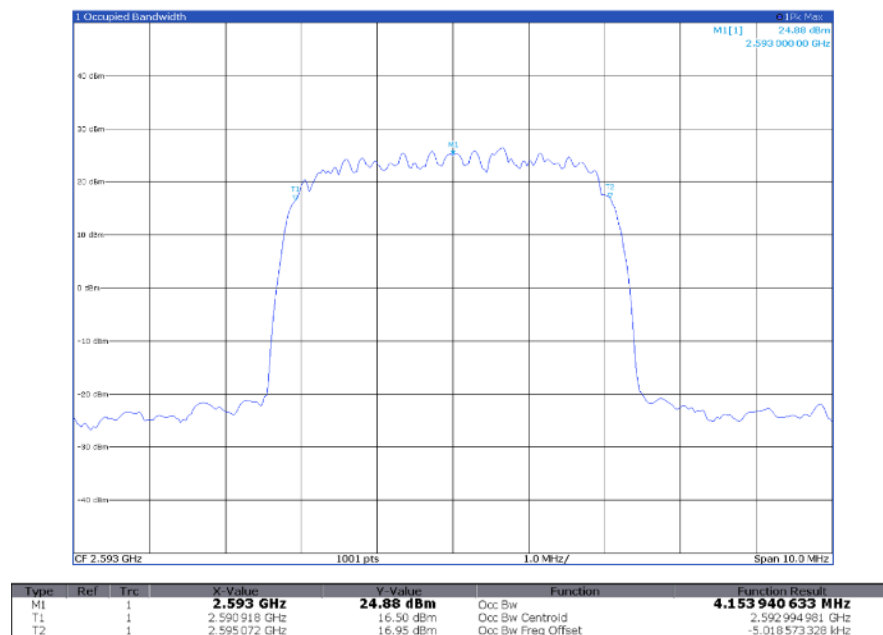


Figure 8.3-16: 99% occupied bandwidth, antenna port 2 output signal at AGC threshold +3 dB spectral plot

8.4 Mean output power and amplifier/booster gain

8.4.1 References, definitions and limits

FCC §27.50(h)

- (h) The following power limits shall apply in the BRS and EBS:
 - (1) Main, booster and base stations.
 - (i) The maximum EIRP of a main, booster or base station shall not exceed $33 \text{ dBW} + 10\log(X/Y) \text{ dBW}$, where X is the actual channel width in MHz and Y is either 6 MHz if prior to transition or the station is in the MBS following transition or 5.5 MHz if the station is in the LBS and UBS following transition, except as provided in paragraph (h)(1)(ii) of this section.
 - (ii) If a main or booster station sectorizes or otherwise uses one or more transmitting antennas with a non-omnidirectional horizontal plane radiation pattern, the maximum EIRP in dBW in a given direction shall be determined by the following formula: $\text{EIRP} = 33 \text{ dBW} + 10 \log(X/Y) \text{ dBW} + 10 \log(360/\text{beamwidth}) \text{ dBW}$, where X is the actual channel width in MHz, Y is either (i) 6 MHz if prior to transition or the station is in the MBS following transition or (ii) 5.5 MHz if the station is in the LBS and UBS following transition, and beamwidth is the total horizontal plane beamwidth of the individual transmitting antenna for the station or any sector measured at the half-power points.
 - (2) Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.
 - (3) For television transmission, the peak power of the accompanying aural signal must not exceed 10 percent of the peak visual power of the transmitter. The Commission may order a reduction in aural signal power to diminish the potential for harmful interference.
 - (4) For main, booster and response stations utilizing digital emissions with non-uniform power spectral density (e.g. unfiltered QPSK), the power measured within any 100 kHz resolution bandwidth within the 6 MHz channel occupied by the non-uniform emission cannot exceed the power permitted within any 100 kHz resolution bandwidth within the 6 MHz channel if it were occupied by an emission with uniform power spectral density, i.e., if the maximum permissible power of a station utilizing a perfectly uniform power spectral density across a 6 MHz channel were 2000 watts EIRP, this would result in a maximum permissible power flux density for the station of $2000/60 = 33.3 \text{ watts EIRP per } 100 \text{ kHz}$ bandwidth. If a non-uniform emission were substituted at the station, station power would still be limited to a maximum of 33.3 watts EIRP within any 100 kHz segment of the 6 MHz channel, irrespective of the fact that this would result in a total 6 MHz channel power of less than 2000 watts EIRP.

8.4.2 Test summary

Verdict	Pass		
Tested by	L. Anticono	Test date	July 31, 2025

8.4.3 Observations, settings and special notes

Input and output power was measured with a spectrum analyzer per ANSI C63.26 Paragraph 5.2.4.4. AWGN5 signal with 4.1 MHz 99% OBW representative of a 5 MHz LTE channel used. EUT input power set to a level that is just below the AGC threshold, but not more than 0.5 dB below. Repeated the test with the input signal amplitude set to 3 dB above the AGC threshold. PAR measure is performed by the "CCDF" function installed on Spectrum analyzer that provides average power, peak power and PAR.

Spectrum analyzer settings:

Detector mode	RMS
Resolution bandwidth	100 kHz
Video bandwidth	300 kHz
Measurement mode	Power over emission bandwidth
Trace mode	Averaging
Measurement time	Auto

8.4.4 Test equipment used

Equipment	Manufacturer	Model no.	Asset no.
Spectrum Analyzer	Rohde & Schwarz	FSW43	101767
RF Vector Signal Generator	Rohde & Schwarz	SMBV100A	263254
RF Vector Signal Generator	Rohde & Schwarz	SMBV100A	263397

Notes: NCR - no calibration required, VOU - verify on use

8.4.5 Test data

Table 8.4-1: Output power measurement results

Antenna port	Input signal level	Frequency, MHz	RF input power, dBm	RF output power, dBm	RF output power, W	Gain, dB
1	AGC threshold	2593	-2.0	33.4	2.2	35.4
1	AGC threshold +3 dB	2593	0.6	33.4	2.2	34.0
2	AGC threshold	2593	-1.9	33.4	2.2	35.3
2	AGC threshold +3 dB	2593	0.7	33.1	2.0	33.8

Amplifier gain = measured RF output power (dBm) – measured RF input power (dBm) =

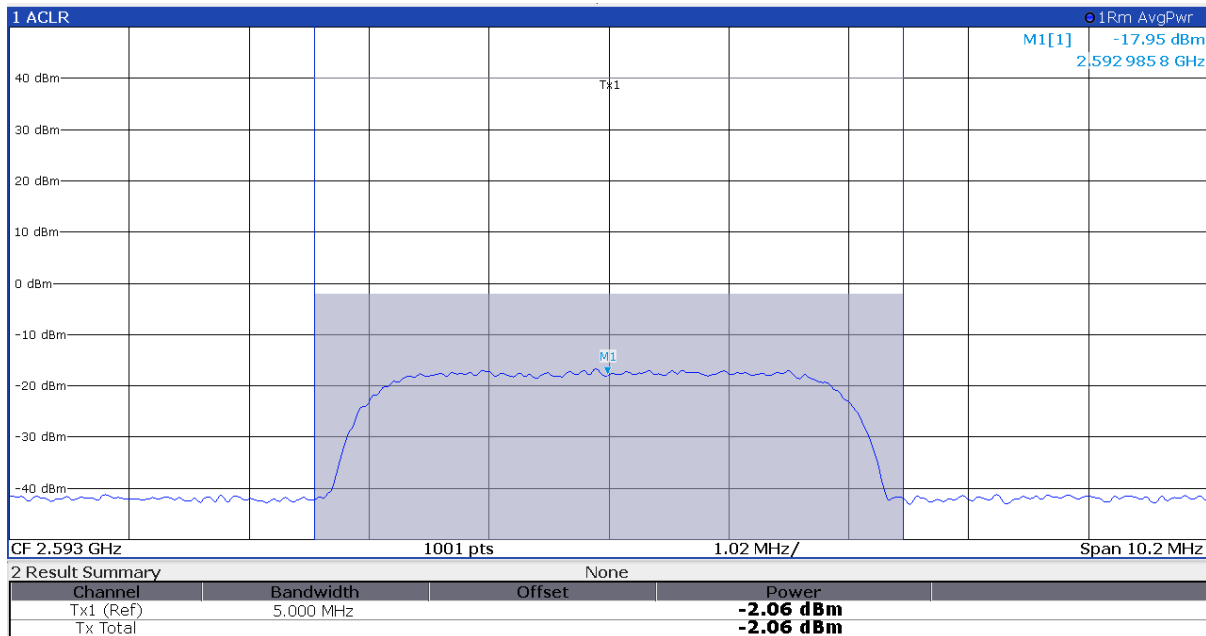


Figure 8.4-1: Input power at antenna port 1 with input signal at AGC threshold

Test data, continued

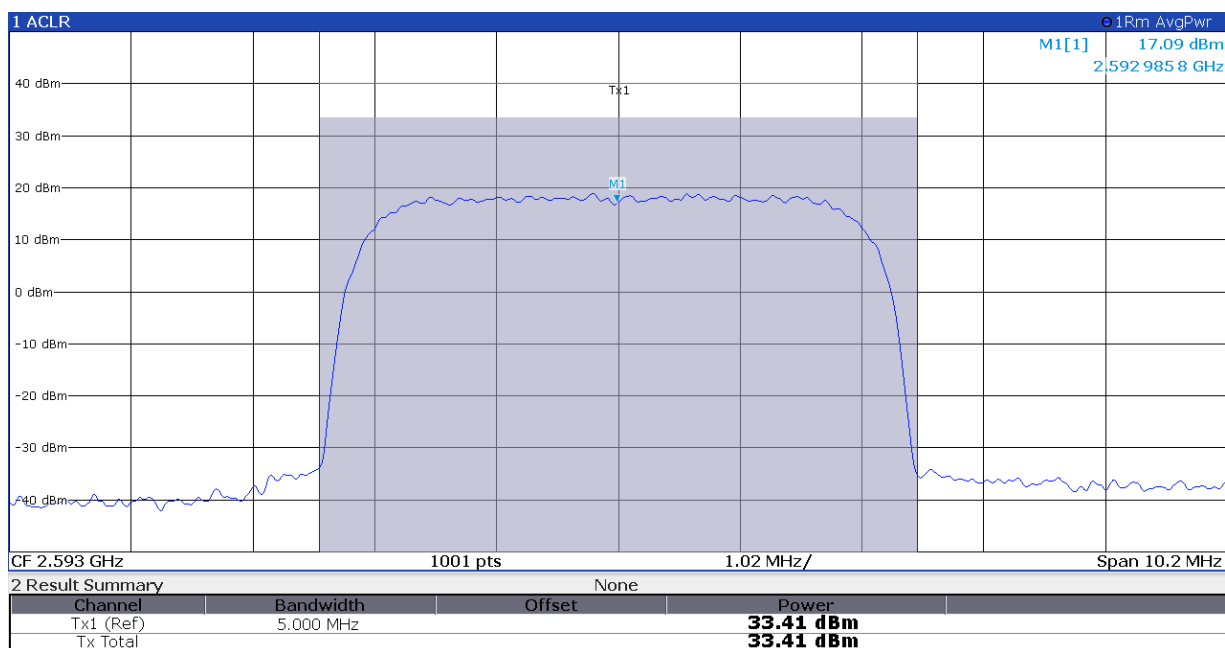


Figure 8.4-2: Output power at antenna port 1 with input signal at AGC threshold

Test data, continued

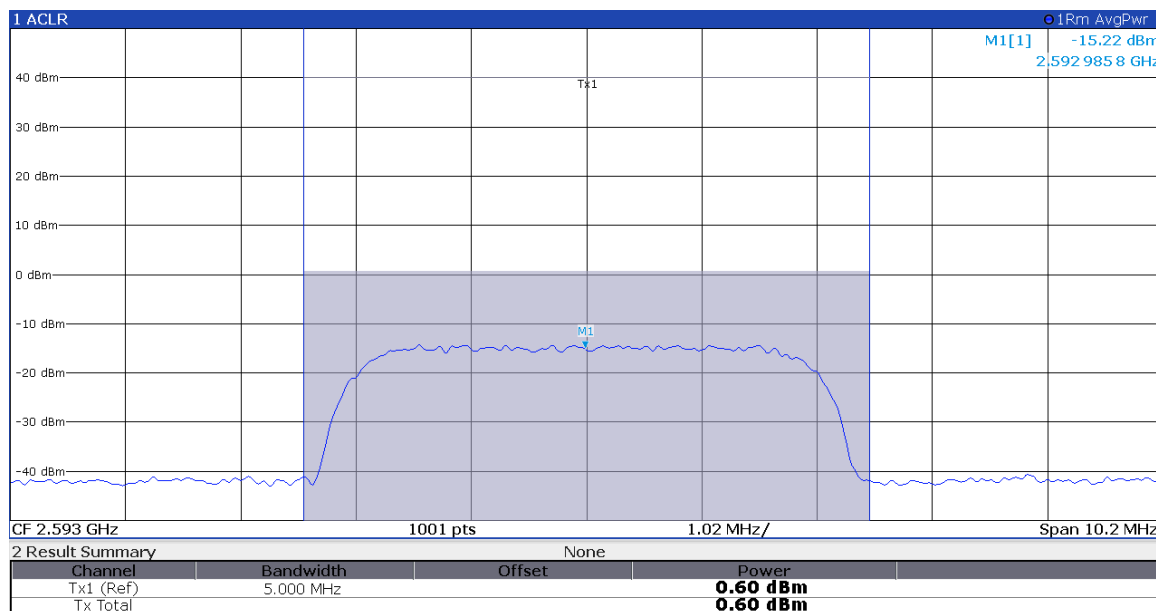


Figure 8.4-3: Input power at antenna port 1 with input signal at AGC threshold +3 dB

Test data, continued

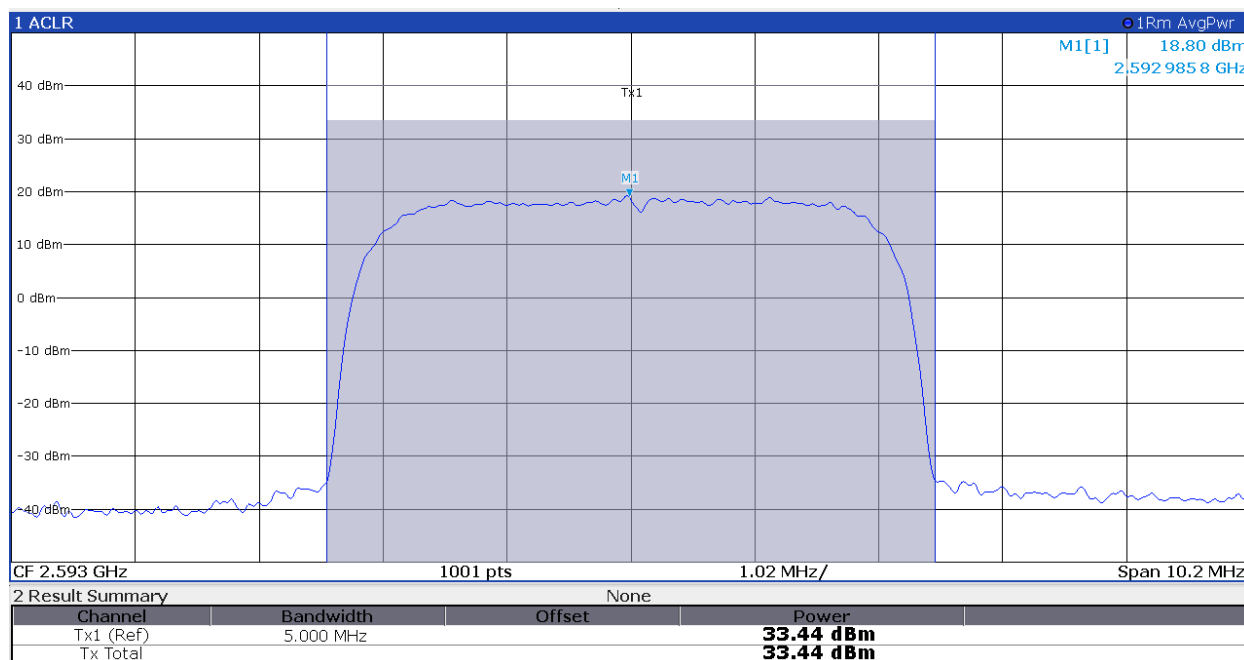


Figure 8.4-4: Output power at antenna port 1 with input signal at AGC threshold +3 dB

Test data, continued

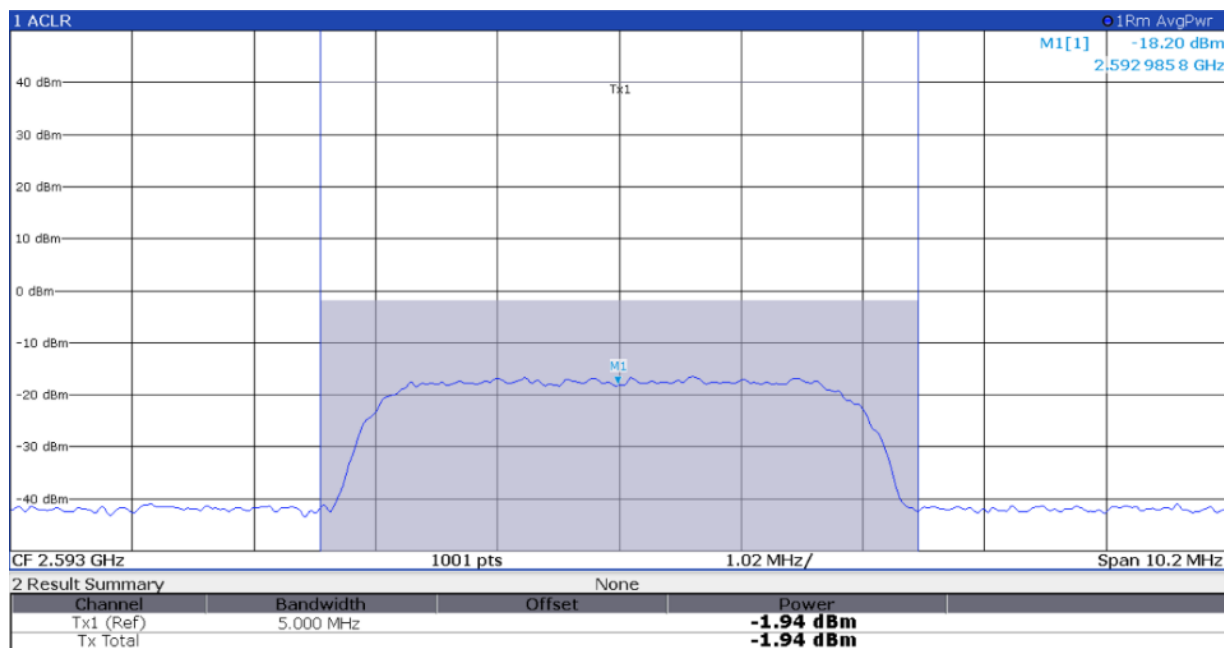


Figure 8.4-5: Input power at antenna port 2 with input signal at AGC threshold

Test data, continued

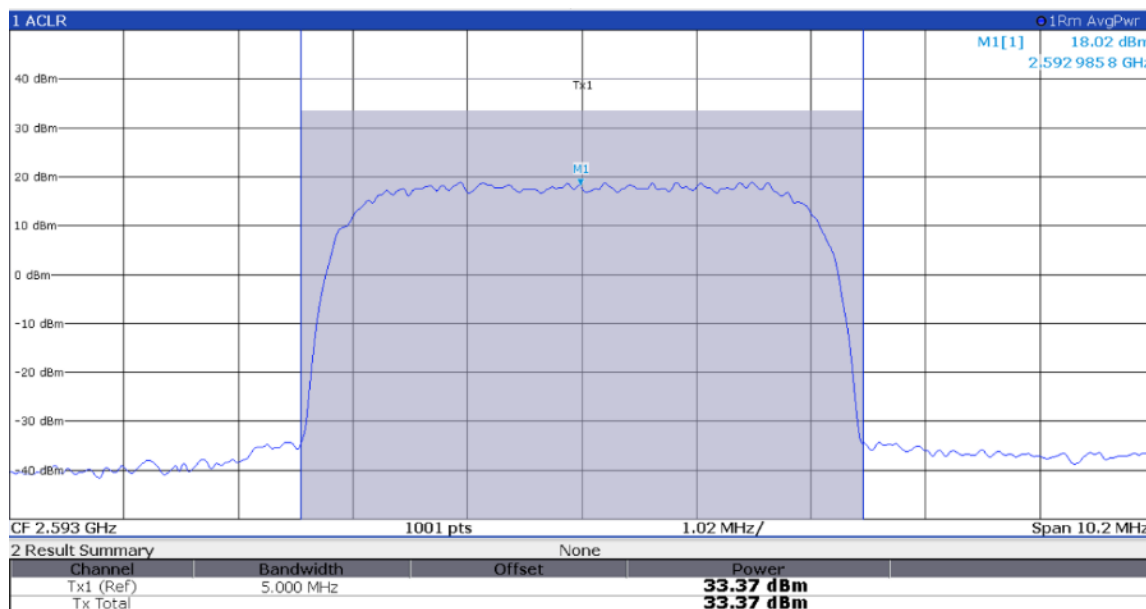


Figure 8.4-6: Output power at antenna port 2 with input signal at AGC threshold

Test data, continued

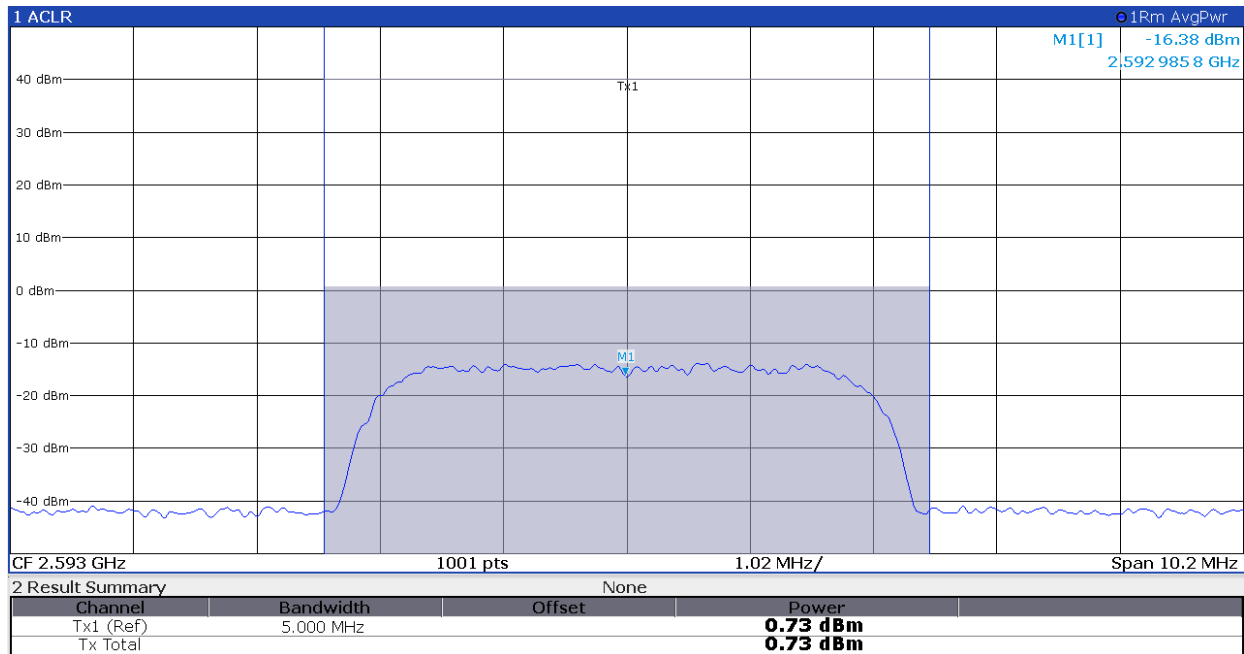


Figure 8.4-7: Input power at antenna port 2 with input signal at AGC threshold +3 dB

Test data, continued

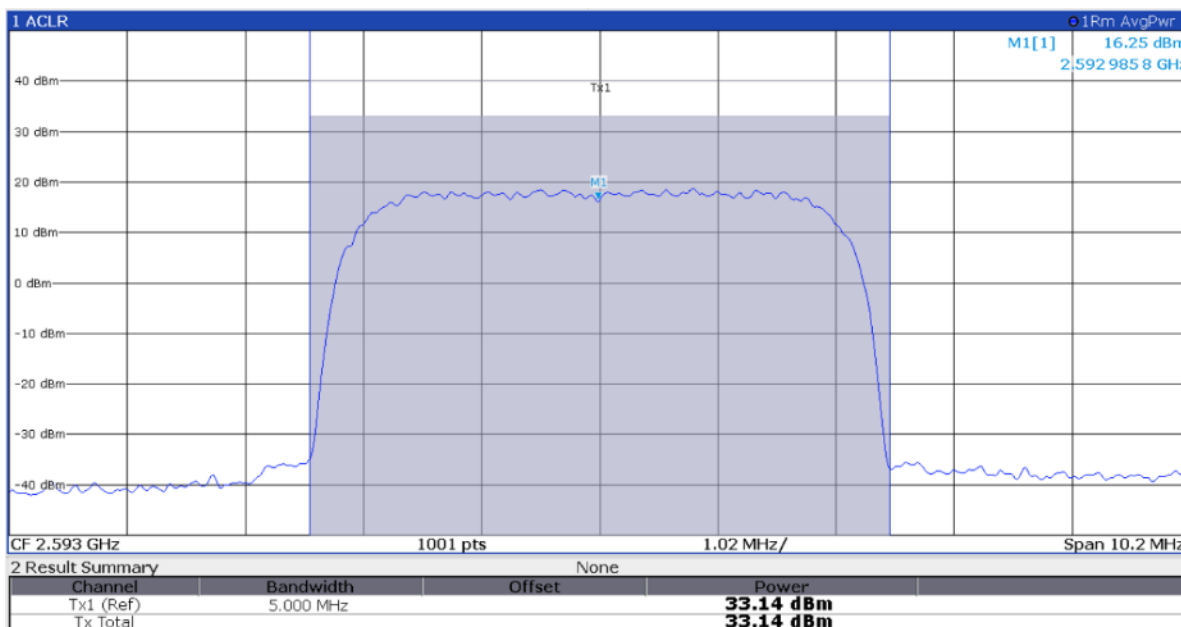


Figure 8.4-8: Output power at antenna port 2 with input signal at AGC threshold +3 dB

Test data, continued

Table 8.4-2: Complementary Cumulative Distribution Function (CCDF) of the PAPR reduction measurement results

Antenna port	Input signal level	Frequency, MHz	0.1% CCDF, dB	PAPR reduction limit, dB	Margin, dB
1	AGC threshold	2593	4.42	13.00	-8.58
1	AGC threshold +3 dB	2593	4.40	13.00	-8.60
2	AGC threshold	2593	4.44	13.00	-8.56
2	AGC threshold +3 dB	2593	4.42	13.00	-8.58

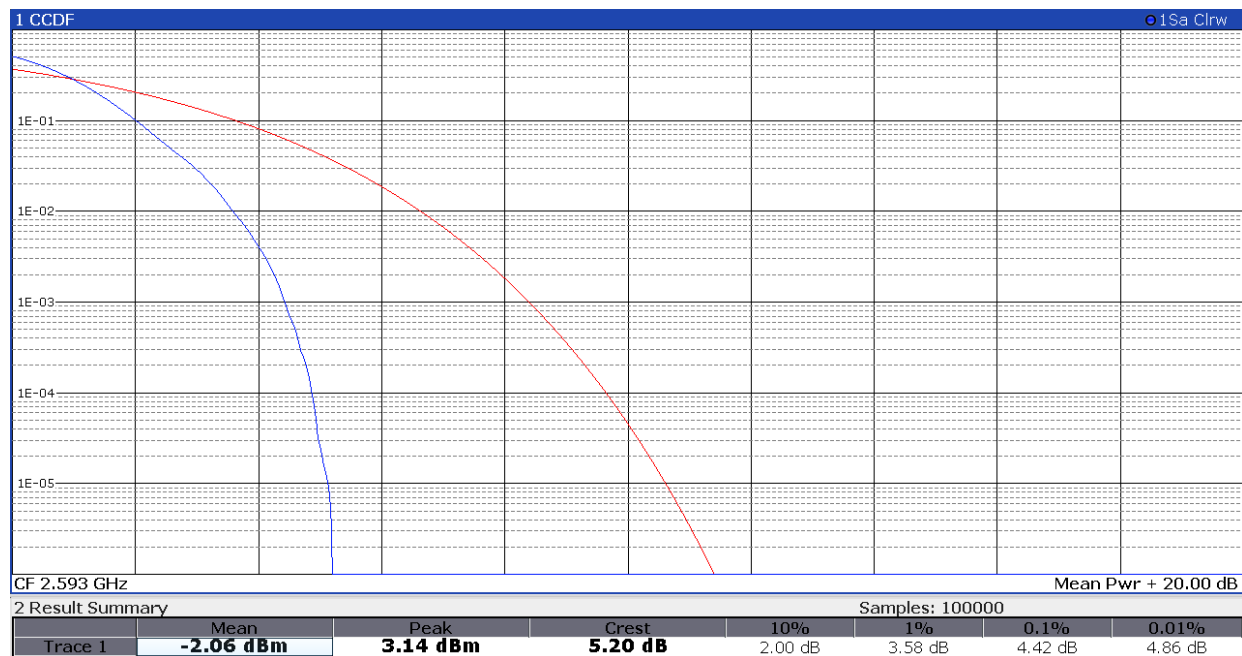


Figure 8.4-9: PAPR at antenna port 1 with input signal at AGC threshold

Test data, continued

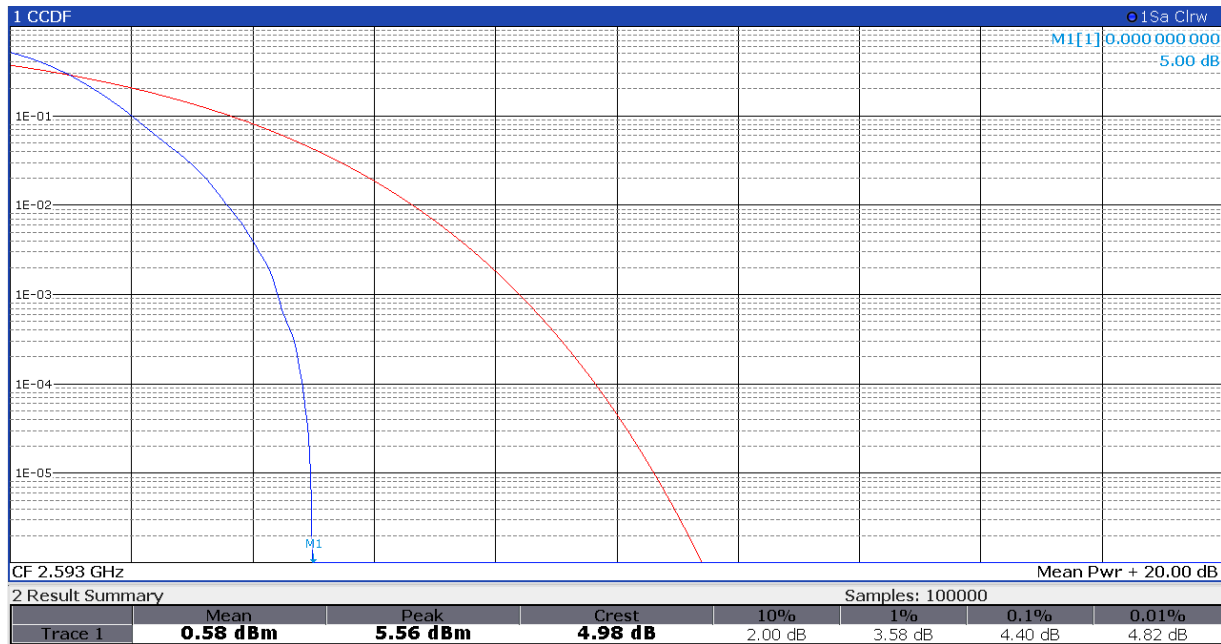


Figure 8.4-10: PAPR at antenna port 1 with input signal at AGC threshold +3 dB

Test data, continued

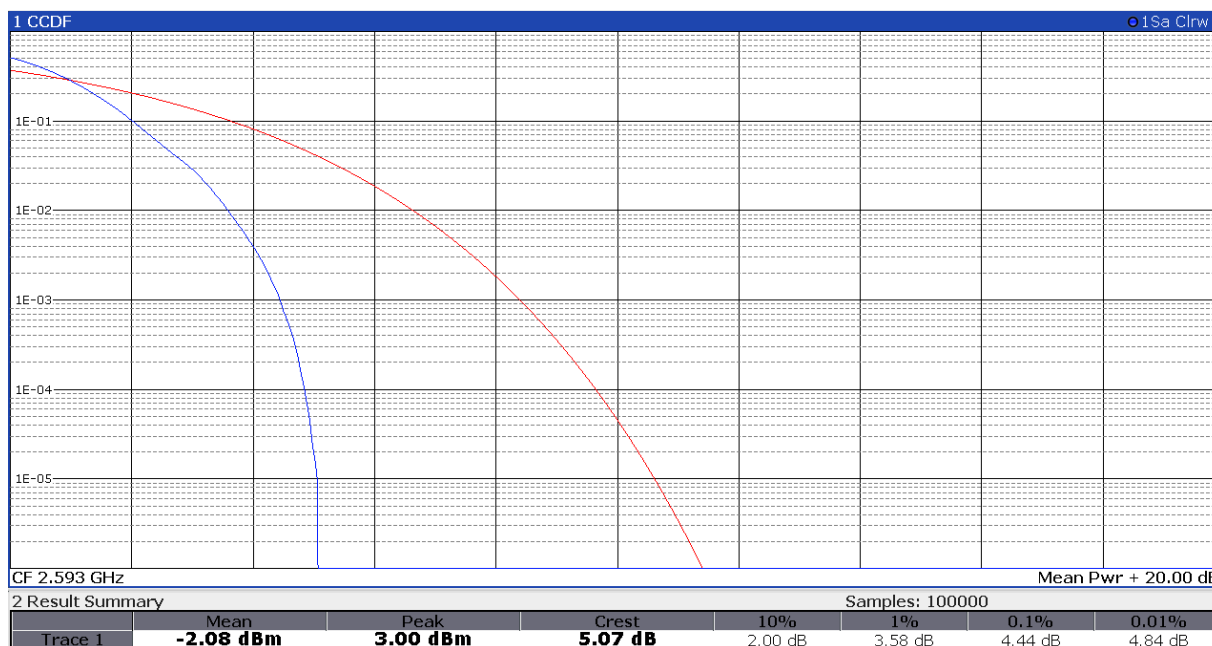


Figure 8.4-11: PAPR at antenna port 2 with input signal at AGC threshold

Test data, continued

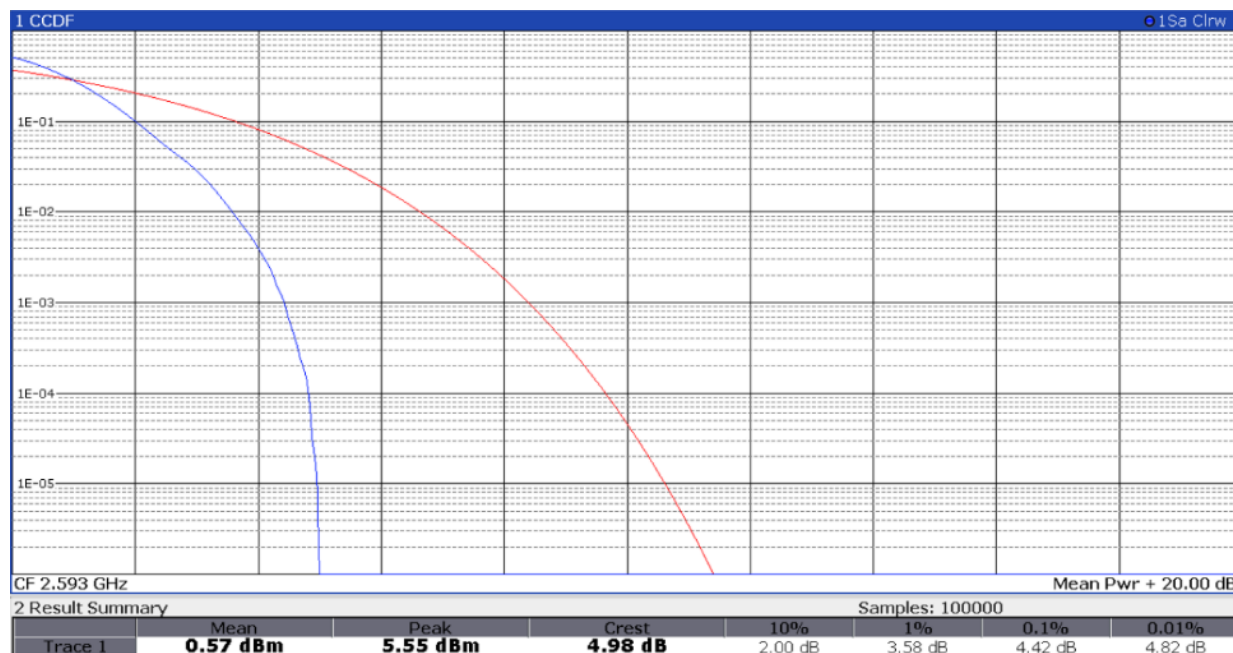


Figure 8.4-12: PAPR at antenna port 2 with input signal at AGC threshold +3 dB

8.5 Out-of-band/out-of-block emissions conducted measurements

8.5.1 References, definitions and limits

FCC §27.53(m)(2):

- (m) For BRS and EBS stations, the power of any emissions outside the licensee's frequency bands of operation shall be attenuated below the transmitter power (P) measured in watts in accordance with the standards below. If a licensee has multiple contiguous channels, out-of-band emissions shall be measured from the upper and lower edges of the contiguous channels.
- (2) For digital base stations, the attenuation shall be not less than $43 + 10 \log (P)$ dB, unless a documented interference complaint is received from an adjacent channel licensee with an overlapping Geographic Service Area. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS No. 1 on the same terms and conditions as adjacent channel BRS or EBS licensees. Provided that a documented interference complaint cannot be mutually resolved between the parties prior to the applicable deadline, then the following additional attenuation requirements shall apply:
 - (i) If a pre-existing base station suffers harmful interference from emissions caused by a new or modified base station located 1.5 km or more away, within 24 hours of the receipt of a documented interference complaint the licensee of the new or modified base station must attenuate its emissions by at least $67 + 10 \log (P)$ dB measured at 3 megahertz, above or below, from the channel edge of its frequency block and shall immediately notify the complaining licensee upon implementation of the additional attenuation. No later than 60 days after the implementation of such additional attenuation, the licensee of the complaining base station must attenuate its base station emissions by at least $67 + 10 \log (P)$ dB measured at 3 megahertz, above or below, from the channel edge of its frequency block of the new or modified base station.
 - (ii) If a pre-existing base station suffers harmful interference from emissions caused by a new or modified base station located less than 1.5 km away, within 24 hours of receipt of a documented interference complaint the licensee of the new or modified base station must attenuate its emissions by at least $67 + 10 \log (P) - 20 \log (D\text{km}/1.5)$ dB measured at 3 megahertz, above or below, from the channel edge of its frequency block of the complaining licensee, or if both base stations are co-located, limit its undesired signal level at the pre-existing base station receiver(s) to no more than -107 dBm measured in a 5.5 megahertz bandwidth and shall immediately notify the complaining licensee upon such reduction in the undesired signal level. No later than 60 days after such reduction in the undesired signal level, the complaining licensee must attenuate its base station emissions by at least $67 + 10 \log (P)$ dB measured at 3 megahertz, above or below, from the channel edge of its frequency block of the new or modified base station.
 - (iii) If a new or modified base station suffers harmful interference from emissions caused by a pre-existing base station located 1.5 km or more away, within 60 days of receipt of a documented interference complaint the licensee of each base station must attenuate its base station emissions by at least $67 + 10 \log (P)$ dB measured at 3 megahertz, above or below, from the channel edge of its frequency block of the other licensee.
 - (iv) If a new or modified base station suffers harmful interference from emissions caused by a pre-existing base station located less than 1.5 km away, within 60 days of receipt of a documented interference complaint: (a) The licensee of the new or modified base station must attenuate its OOB by at least $67 + 10 \log (P) - 20 \log (D\text{km}/1.5)$ measured 3 megahertz above or below, from the channel edge of its frequency block of the other licensee, or if the base stations are co-located, limit its undesired signal level at the other base station receiver(s) to no more than -107 dBm measured in a 5.5-megahertz bandwidth; and (b) the licensee causing the interference must attenuate its emissions by at least $67 + 10 \log (P)$ dB measured at 3 megahertz, above or below, from the channel edge of its frequency block of the new or modified base station.
 - (v) For all fixed digital user stations, the attenuation factor shall be not less than $43 + 10 \log (P)$ dB at the channel edge.

References, definitions and limits, continued

8.5.2 Test summary

Verdict	Pass		
Tested by	L. Anticono	Test date	July 29, 2025

8.5.3 Observations, settings and special notes

AWGN5 signal with 4.1 MHz 99% OBW representative of a 5 MHz LTE channel used.
EUT input power set to a level that is just below the AGC threshold, but not more than 0.5 dB below.
Repeated the test with the input signal amplitude set to 3 dB above the AGC threshold.
Test performed with one single carrier and two adjacent carriers.
Limit line ($43 + 10 \log_{10}(P)$ or -13 dBm) was adjusted for MIMO operation by 3 dB*: -13 dBm $- 3$ dB = -16 dBm
*MIMO correction factor for 2 antenna ports: $10 \times \log_{10}(2) = 3.01$ dB

Spectrum analyser settings for spurious emissions in the 1 MHz bands immediately outside and adjacent to the licensee's frequency block:

Resolution bandwidth:	At least 1% of EBW
Video bandwidth:	> RBW
Detector mode:	RMS
Trace mode:	Averaging

Input signal frequency

Upper block edge intermodulation products:	2682.5 MHz and 2687.5 MHz
Lower block edge intermodulation products:	2498.5 MHz and 2503.5 MHz
Lower block edge intermodulation products:	2502.5 MHz and 2507.5 MHz
Upper block edge, single carrier:	2687.5 MHz
Lower block edge, single carrier:	2498.5 MHz
Lower block edge, single carrier:	2502.5 MHz

8.5.4 Test equipment used

Equipment	Manufacturer	Model no.	Asset no.
Spectrum Analyzer	Rohde & Schwarz	FSW43	101767
RF Vector Signal Generator	Rohde & Schwarz	SMBV100A	263254
RF Vector Signal Generator	Rohde & Schwarz	SMBV100A	263397

Notes: NCR - no calibration required, VOU - verify on use

8.5.5 Test data

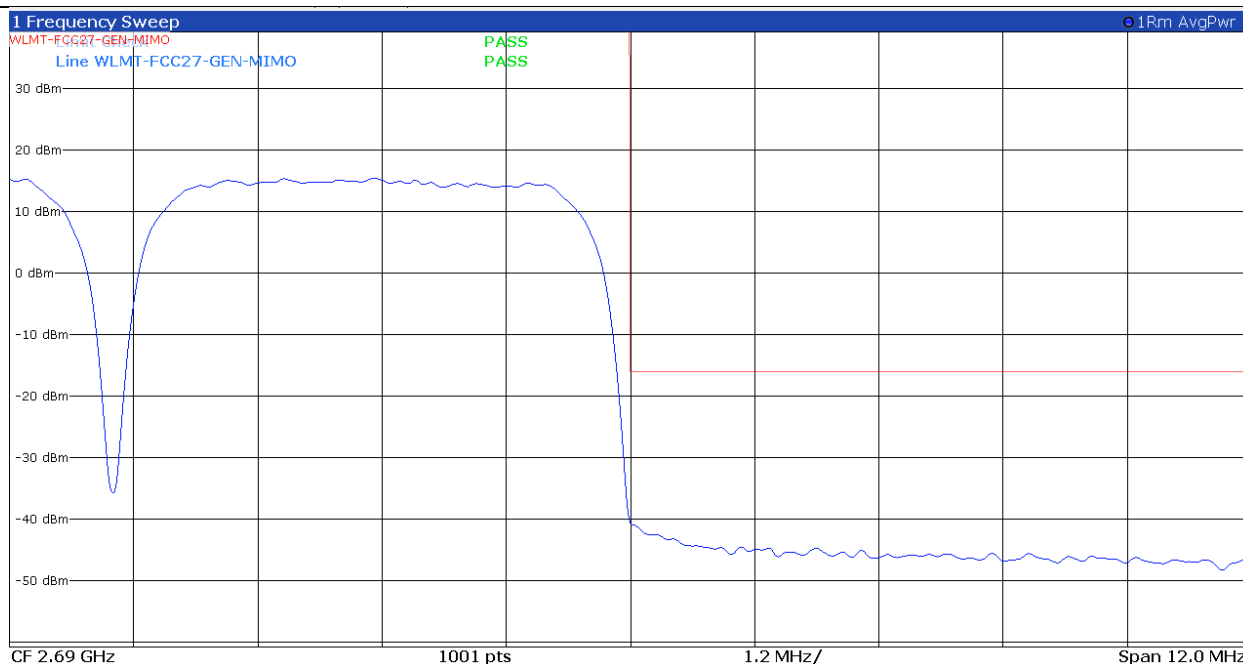


Figure 8.5-1: Antenna port 1 upper block edge intermodulation products with input signal at AGC threshold

Test data, continued

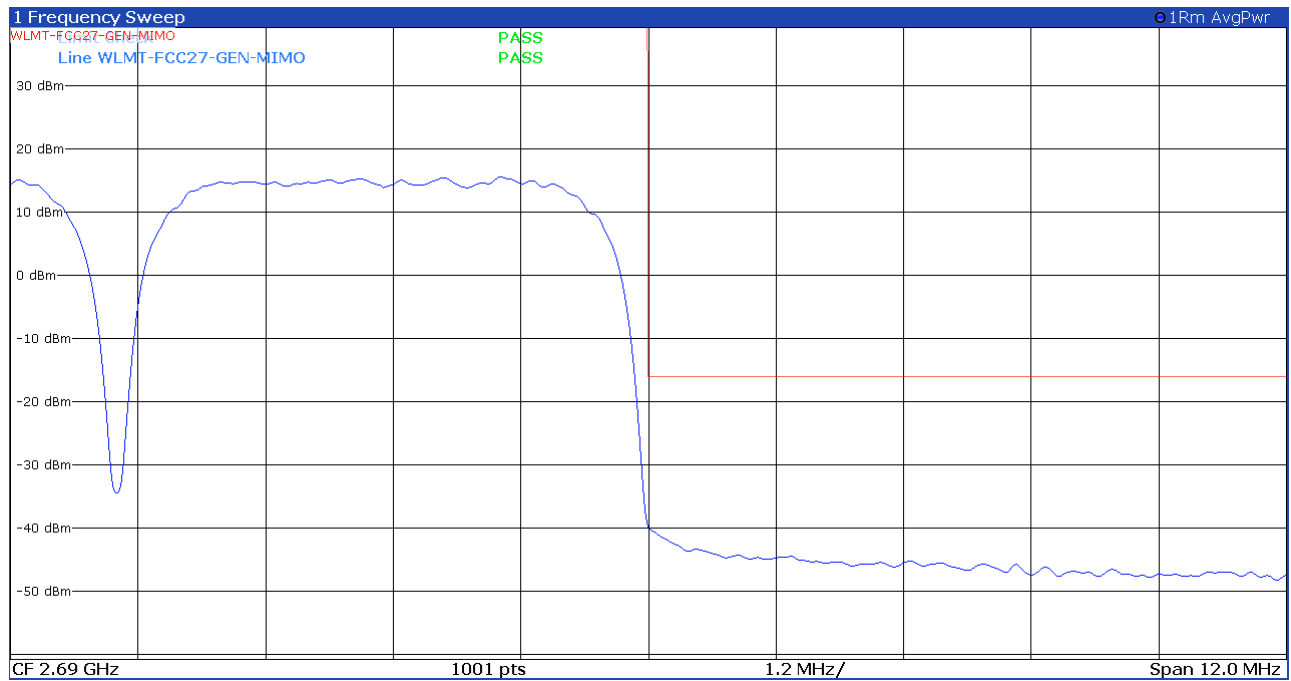


Figure 8.5-2: Antenna port 1 upper block edge intermodulation products with input signal at AGC threshold +3 dB

Test data, continued

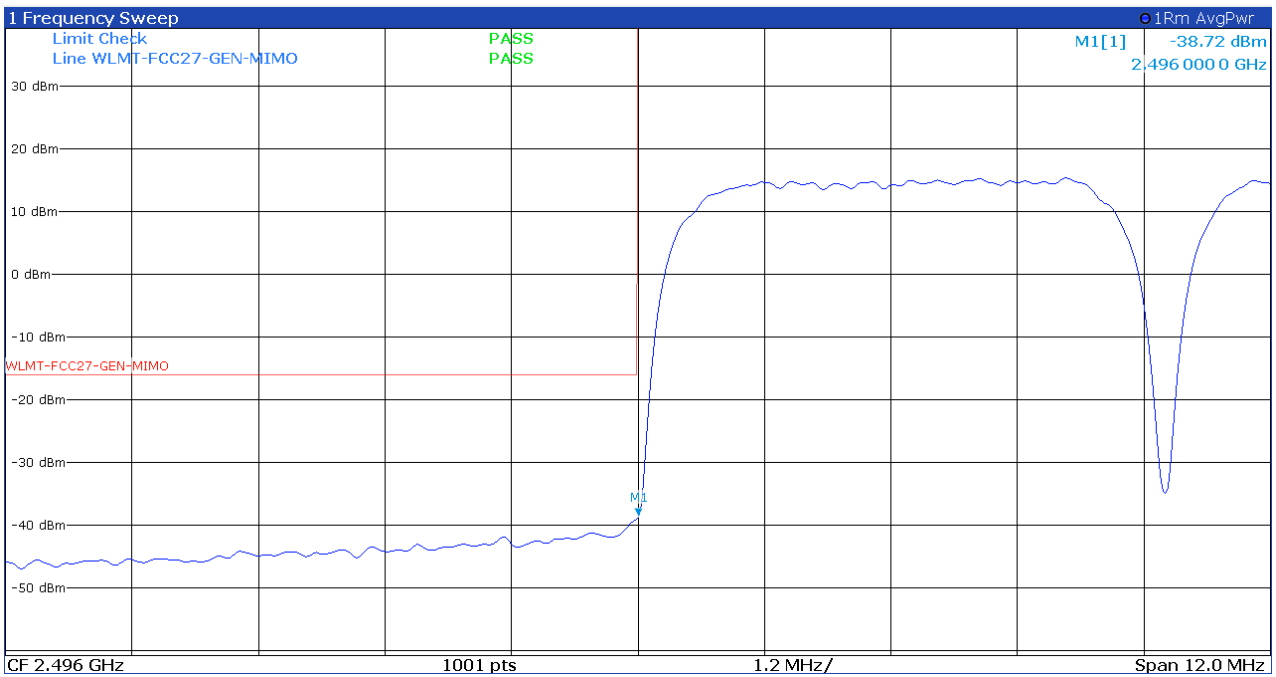


Figure 8.5-3: Antenna port 1 lower block edge intermodulation products with input signal at AGC threshold

Test data, continued

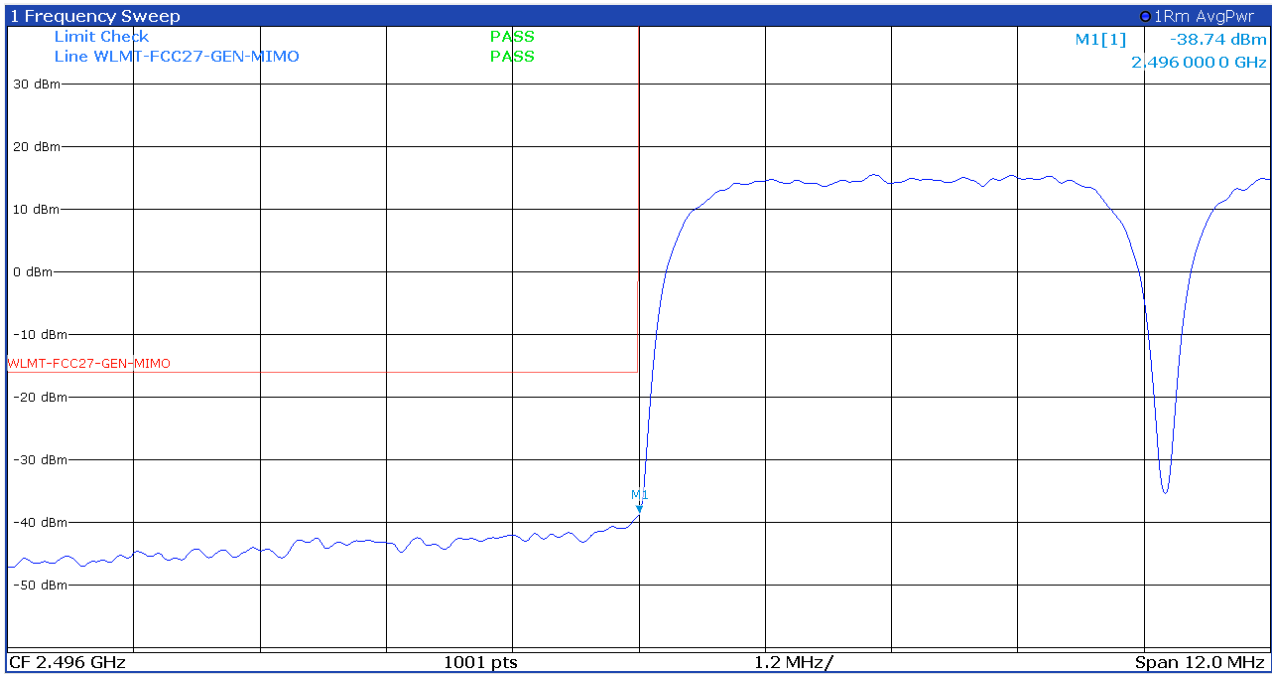


Figure 8.5-4: Antenna port 1 lower block edge intermodulation products with input signal at AGC threshold +3 dB

Test data, continued

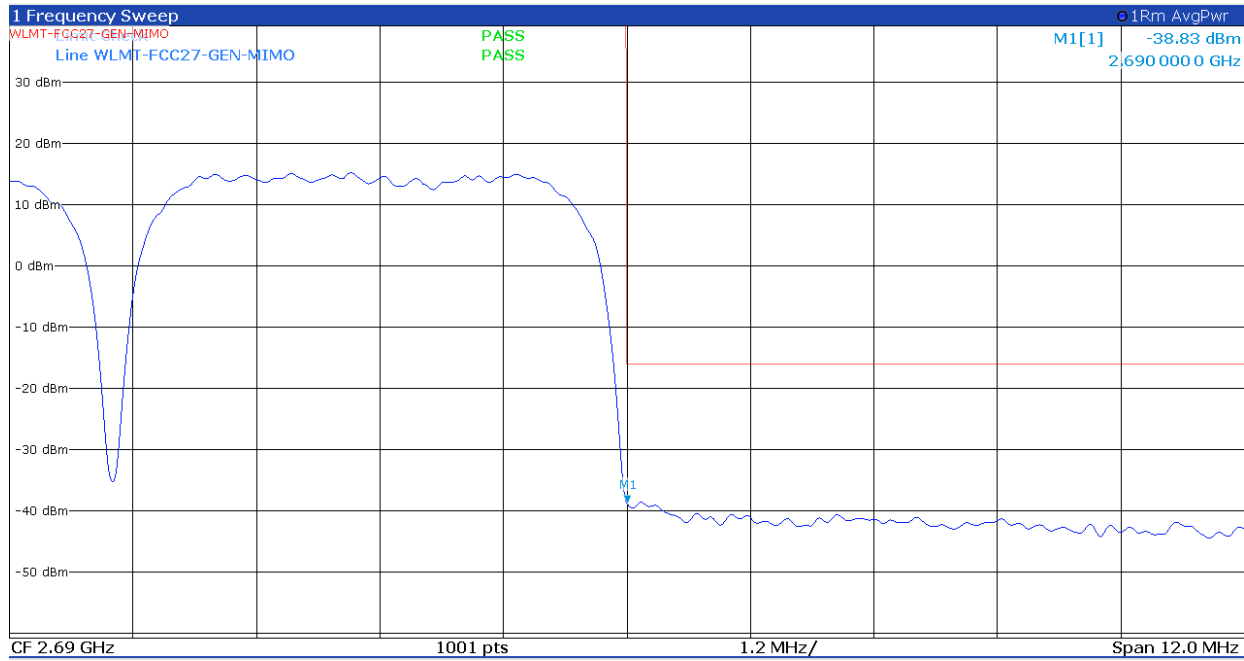


Figure 8.5-5: Antenna port 2 upper block edge intermodulation products with input signal at AGC threshold

Test data, continued

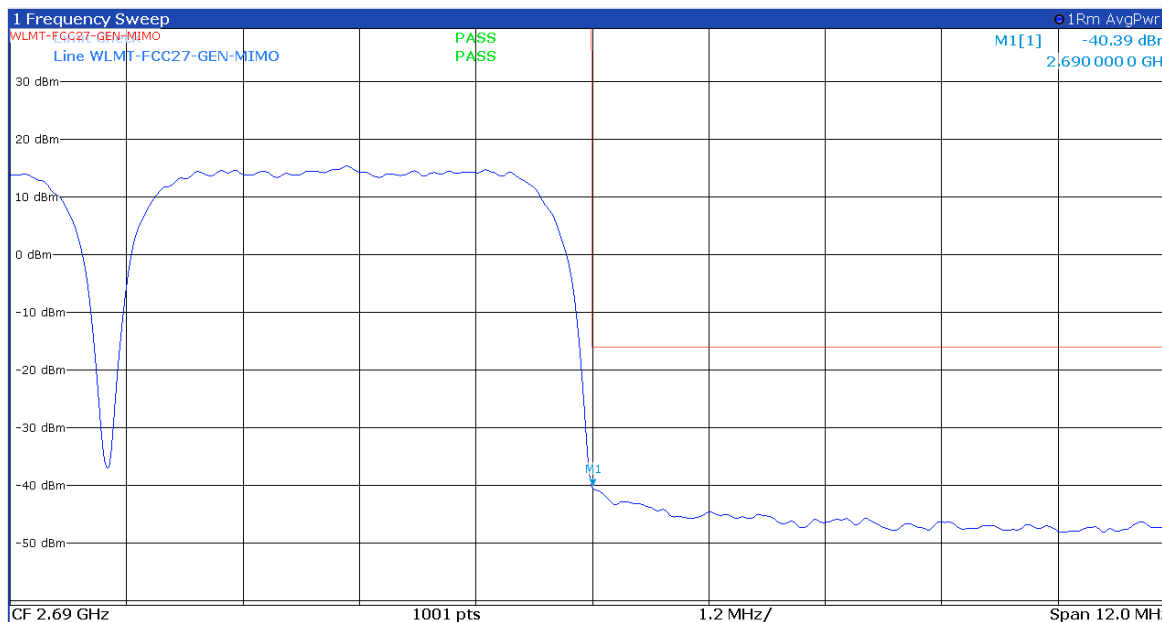


Figure 8.5-6: Antenna port 2 upper block edge intermodulation products with input signal at AGC threshold +3 dB

Test data, continued

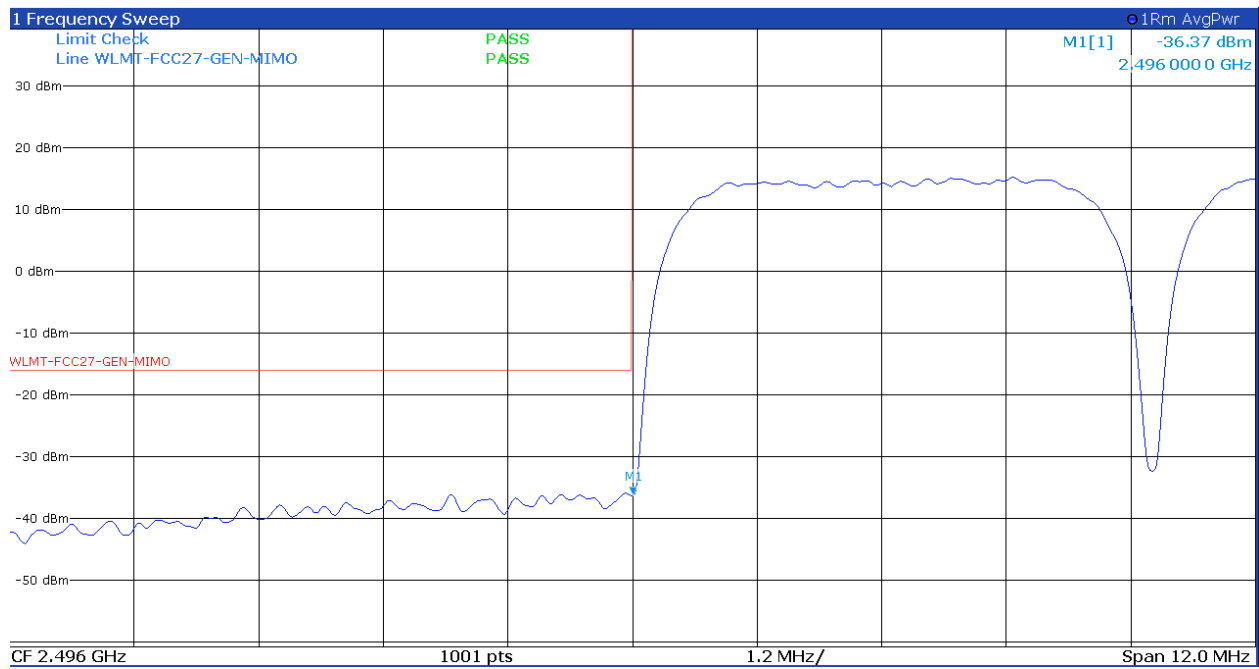


Figure 8.5-7: Antenna port 2 lower block edge intermodulation products with input signal at AGC threshold

Test data, continued

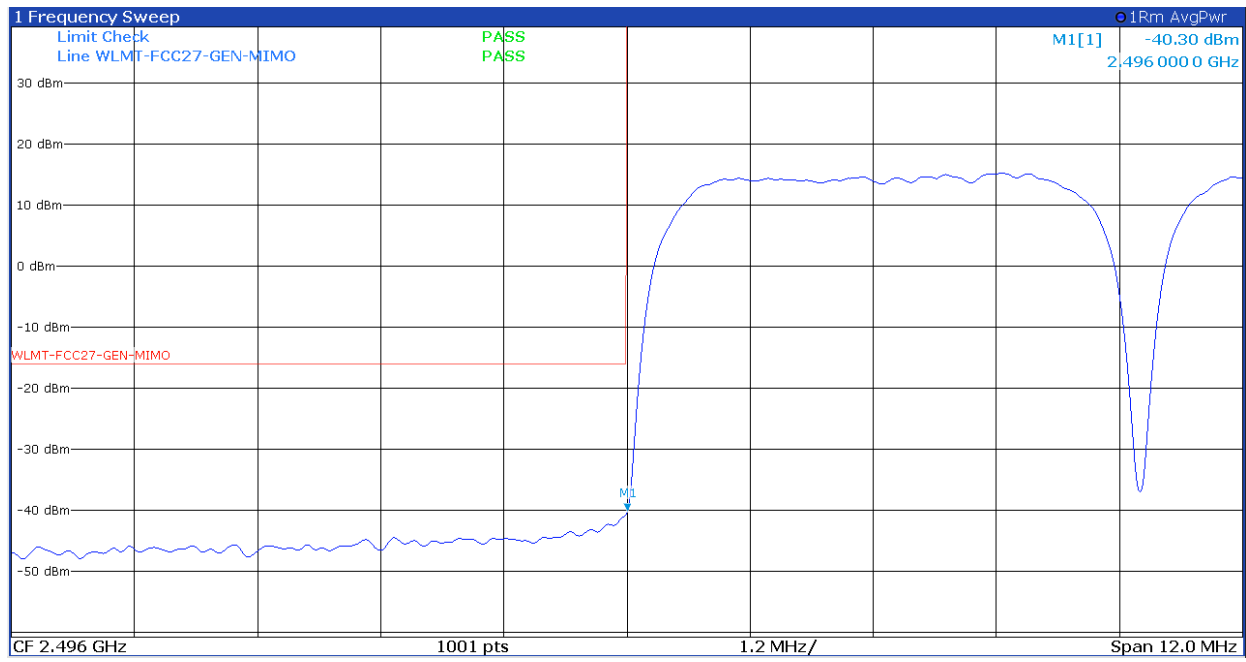


Figure 8.5-8: Antenna port 2 lower block edge intermodulation products with input signal at AGC threshold +3 dB

Test data, continued

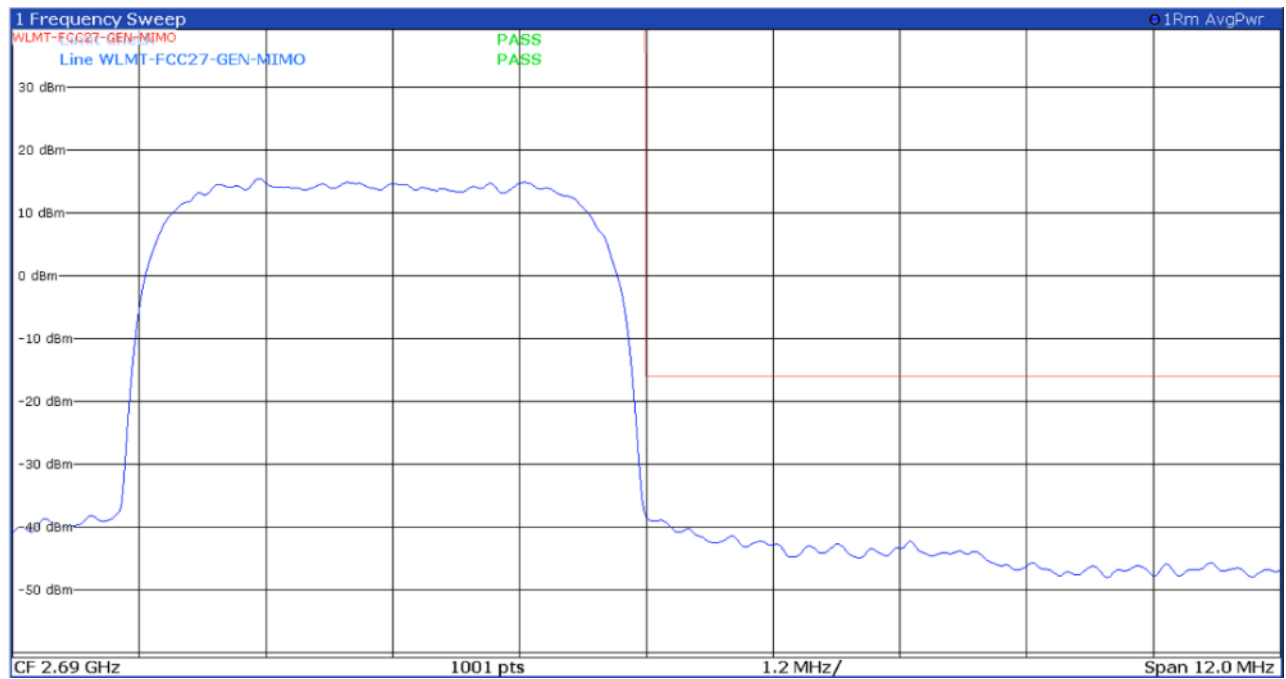


Figure 8.5-9: Antenna port 1 single carrier upper block edge with input signal at AGC threshold

Test data, continued

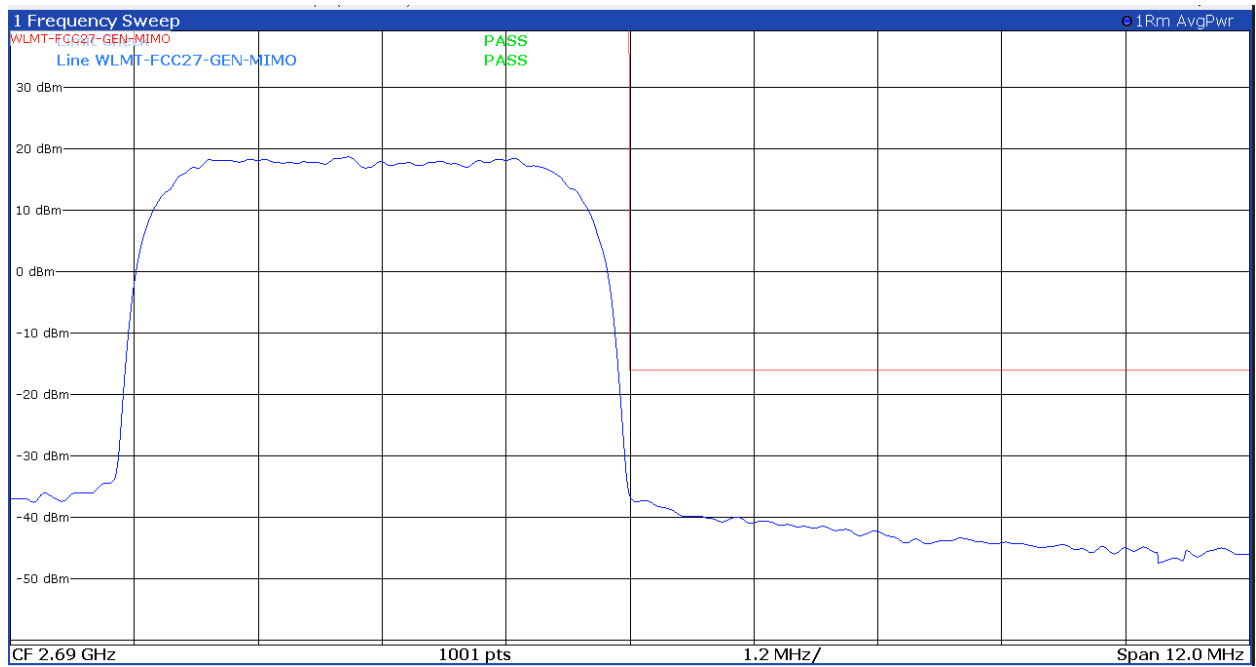


Figure 8.5-10: Antenna port 1 single carrier upper block edge with input signal at AGC threshold +3 dB

Test data, continued

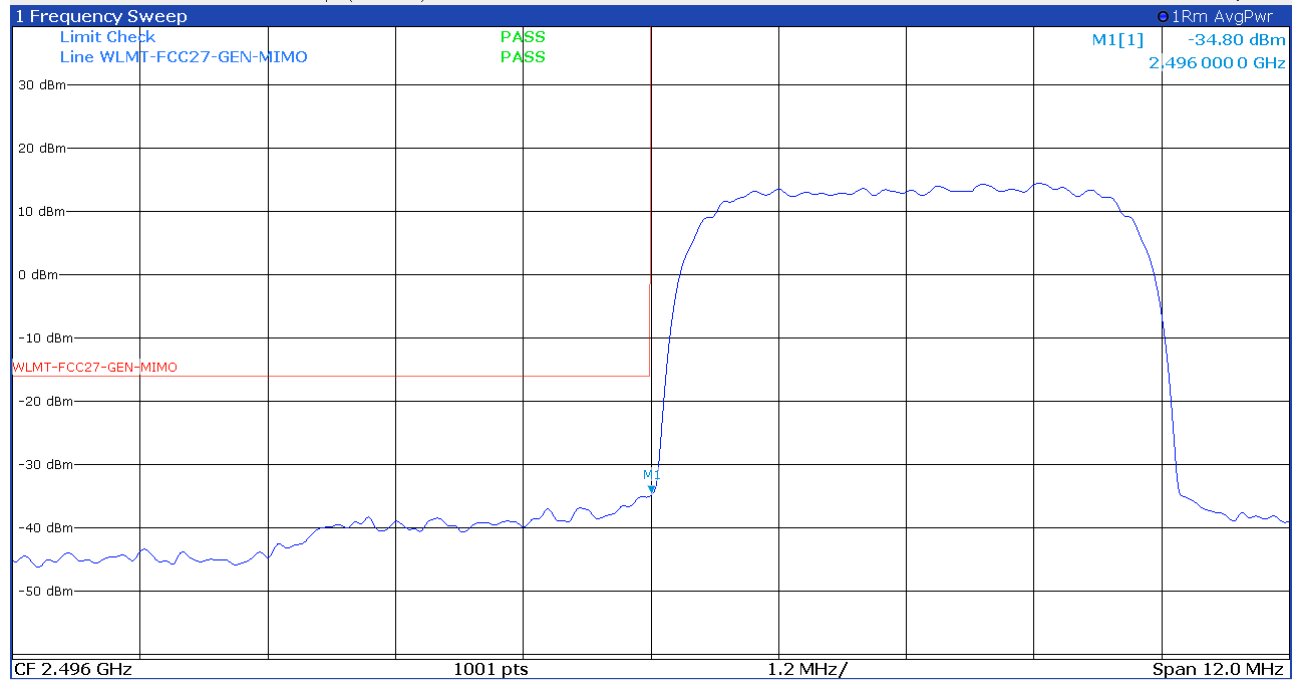


Figure 8.5-11: Antenna port 1 single carrier lower block edge with input signal at AGC threshold

Test data, continued

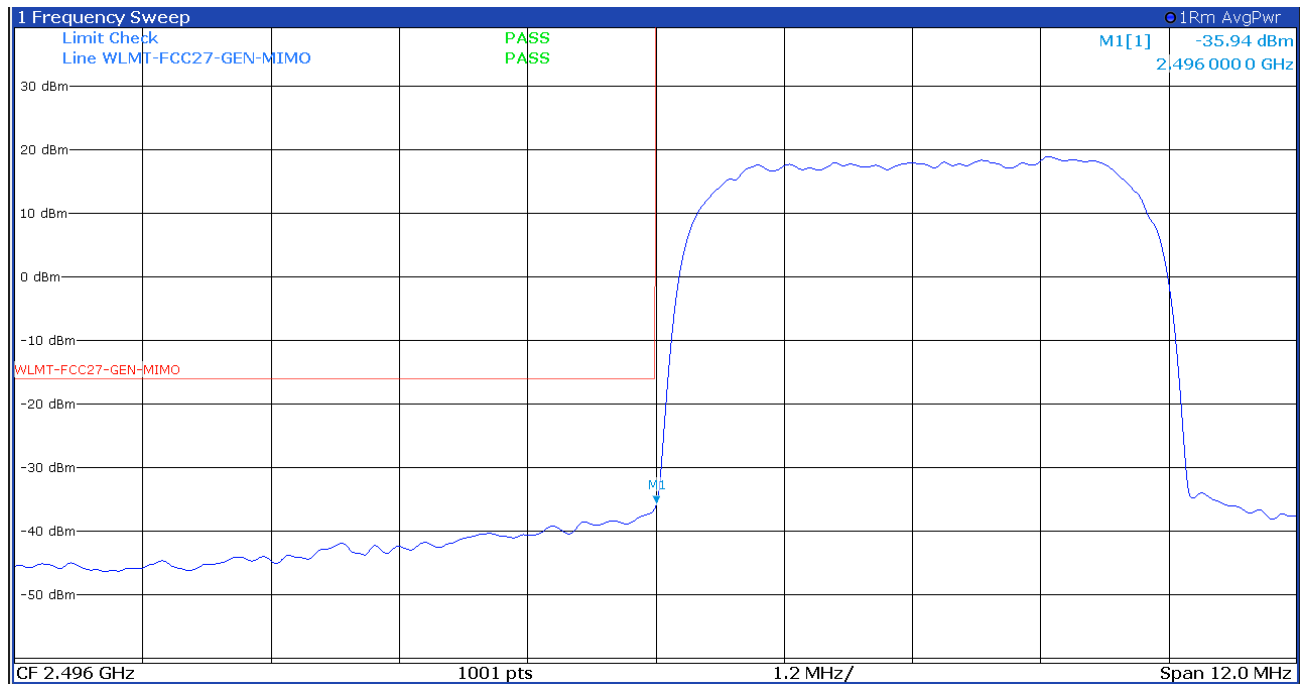


Figure 8.5-12: Antenna port 1 single carrier lower block edge with input signal at AGC threshold +3 dB

Test data, continued

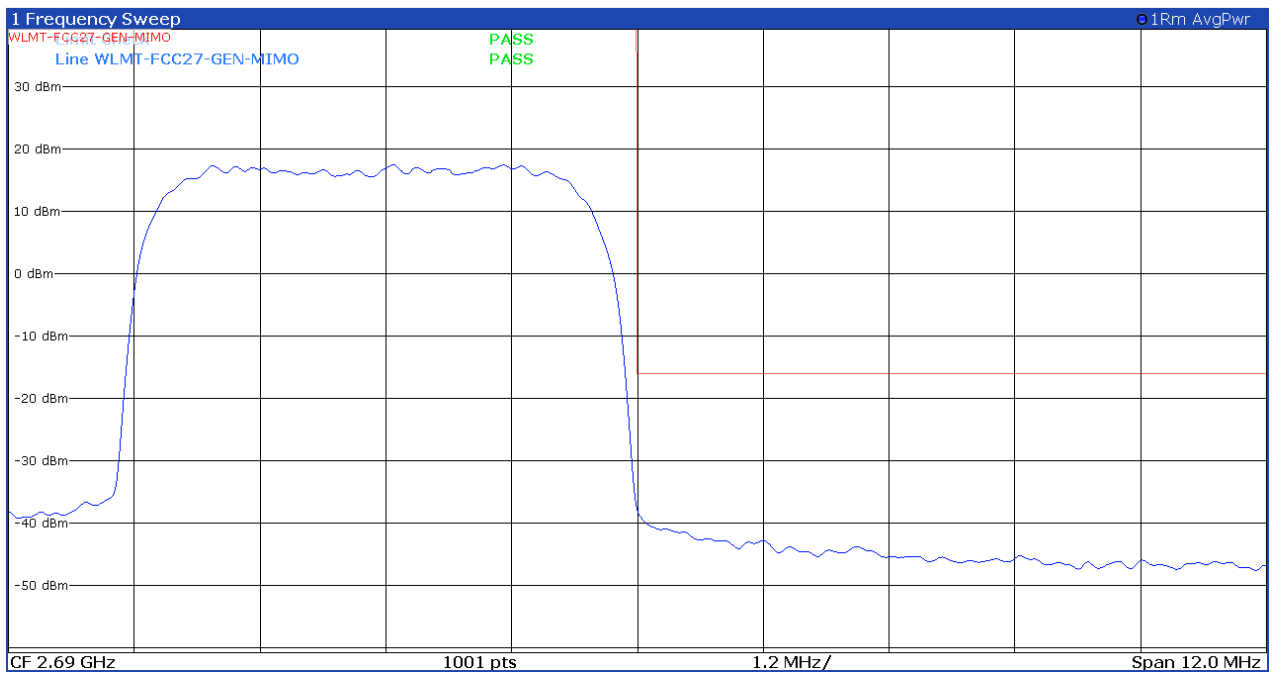


Figure 8.5-13: Antenna port 2 single carrier upper block edge with input signal at AGC threshold

Test data, continued

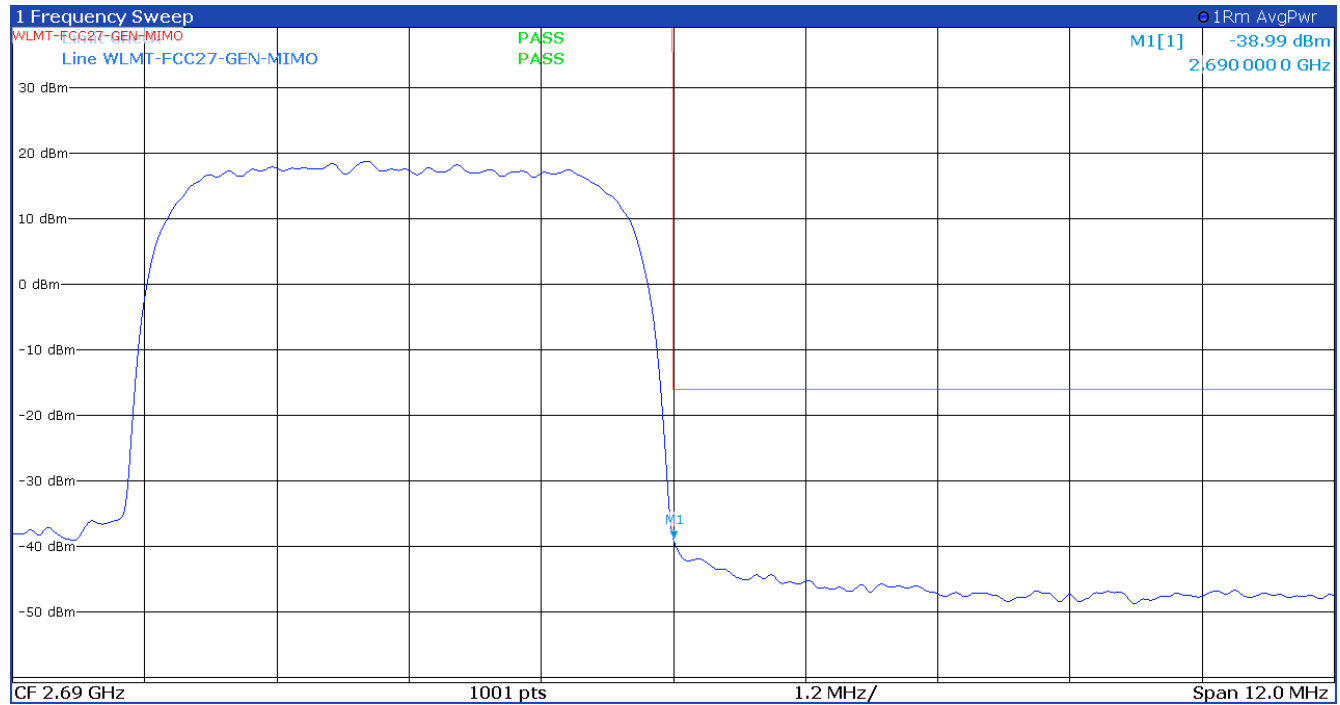


Figure 8.5-14: Antenna port 2 single carrier upper block edge with input signal at AGC threshold +3 dB

Test data, continued

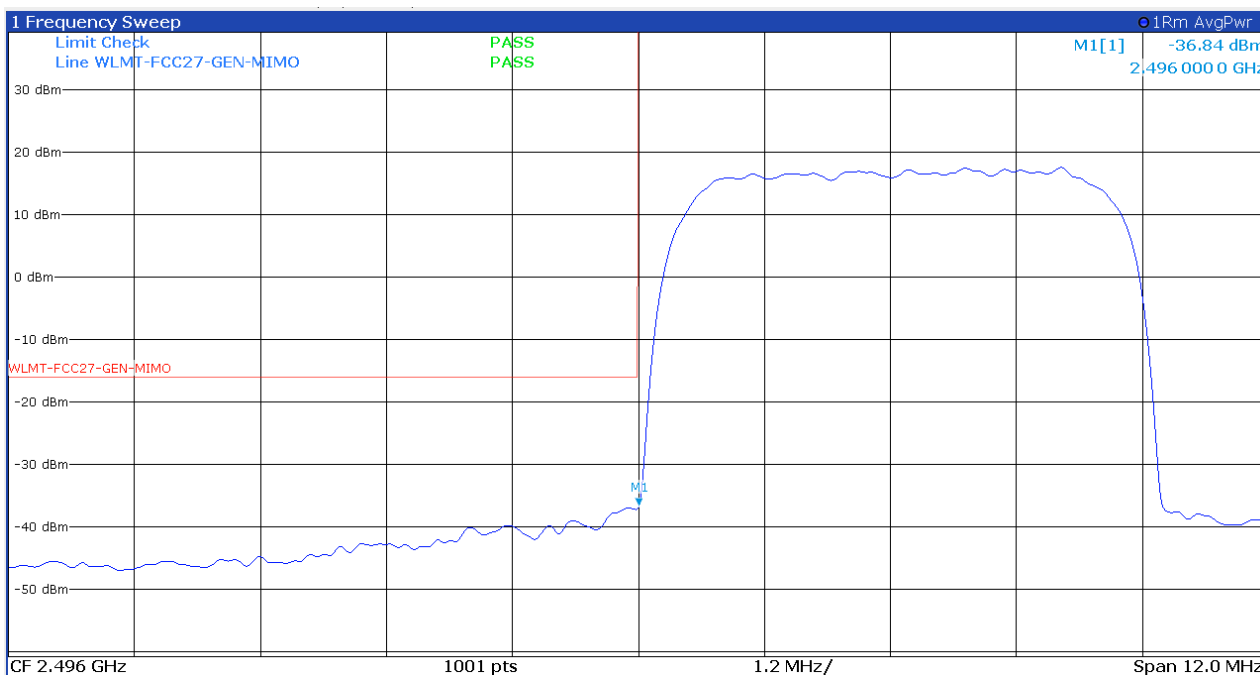


Figure 8.5-15: Antenna port 2 single carrier lower block edge with input signal at AGC threshold

Test data, continued

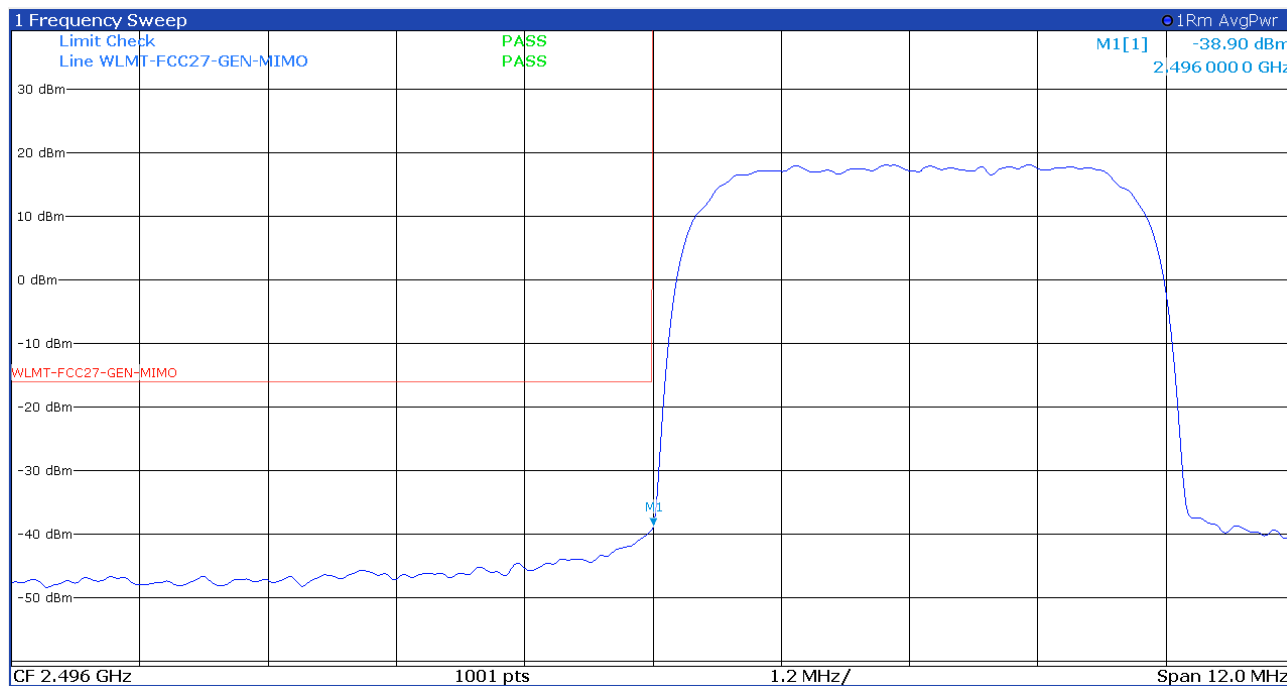


Figure 8.5-16: Antenna port 2 single carrier lower block edge with input signal at AGC threshold +3 dB

8.6 Spurious emissions conducted measurements

8.6.1 References, definitions and limits

FCC §27.53(m)(2):

- (m) For BRS and EBS stations, the power of any emissions outside the licensee's frequency bands of operation shall be attenuated below the transmitter power (P) measured in watts in accordance with the standards below. If a licensee has multiple contiguous channels, out-of-band emissions shall be measured from the upper and lower edges of the contiguous channels.
- (2) For digital base stations, the attenuation shall be not less than $43 + 10 \log (P)$ dB, unless a documented interference complaint is received from an adjacent channel licensee with an overlapping Geographic Service Area. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS No. 1 on the same terms and conditions as adjacent channel BRS or EBS licensees. Provided that a documented interference complaint cannot be mutually resolved between the parties prior to the applicable deadline, then the following additional attenuation requirements shall apply:
 - (i) If a pre-existing base station suffers harmful interference from emissions caused by a new or modified base station located 1.5 km or more away, within 24 hours of the receipt of a documented interference complaint the licensee of the new or modified base station must attenuate its emissions by at least $67 + 10 \log (P)$ dB measured at 3 megahertz, above or below, from the channel edge of its frequency block and shall immediately notify the complaining licensee upon implementation of the additional attenuation. No later than 60 days after the implementation of such additional attenuation, the licensee of the complaining base station must attenuate its base station emissions by at least $67 + 10 \log (P)$ dB measured at 3 megahertz, above or below, from the channel edge of its frequency block of the new or modified base station.
 - (ii) If a pre-existing base station suffers harmful interference from emissions caused by a new or modified base station located less than 1.5 km away, within 24 hours of receipt of a documented interference complaint the licensee of the new or modified base station must attenuate its emissions by at least $67 + 10 \log (P) - 20 \log (D\text{km}/1.5)$ dB measured at 3 megahertz, above or below, from the channel edge of its frequency block of the complaining licensee, or if both base stations are co-located, limit its undesired signal level at the pre-existing base station receiver(s) to no more than -107 dBm measured in a 5.5 megahertz bandwidth and shall immediately notify the complaining licensee upon such reduction in the undesired signal level. No later than 60 days after such reduction in the undesired signal level, the complaining licensee must attenuate its base station emissions by at least $67 + 10 \log (P)$ dB measured at 3 megahertz, above or below, from the channel edge of its frequency block of the new or modified base station.
 - (iii) If a new or modified base station suffers harmful interference from emissions caused by a pre-existing base station located 1.5 km or more away, within 60 days of receipt of a documented interference complaint the licensee of each base station must attenuate its base station emissions by at least $67 + 10 \log (P)$ dB measured at 3 megahertz, above or below, from the channel edge of its frequency block of the other licensee.
 - (iv) If a new or modified base station suffers harmful interference from emissions caused by a pre-existing base station located less than 1.5 km away, within 60 days of receipt of a documented interference complaint: (a) The licensee of the new or modified base station must attenuate its OOB by at least $67 + 10 \log (P) - 20 \log (D\text{km}/1.5)$ measured 3 megahertz above or below, from the channel edge of its frequency block of the other licensee, or if the base stations are co-located, limit its undesired signal level at the other base station receiver(s) to no more than -107 dBm measured in a 5.5-megahertz bandwidth; and (b) the licensee causing the interference must attenuate its emissions by at least $67 + 10 \log (P)$ dB measured at 3 megahertz, above or below, from the channel edge of its frequency block of the new or modified base station.
 - (v) For all fixed digital user stations, the attenuation factor shall be not less than $43 + 10 \log (P)$ dB at the channel edge.

References, definitions and limits, continued

8.6.2 Test summary

Verdict	Pass		
Tested by	L. Anticono	Test date	July 30, 2025

8.6.3 Observations, settings and special notes

The spectrum was searched from 9 kHz to the 10th harmonic.

All measurements were performed using peak detector according to note 4 of 935210 D05 Indus Booster Basic Meas v01r04 paragraph 3.6.3.

Limit line ($43 + 10 \log_{10}(P)$ or -13 dBm) was adjusted for MIMO operation by 3 dB*: -13 dBm $- 3$ dB = -16 dBm

*MIMO correction factor for 2 antenna ports: $10 \times \log_{10}(2) = 3.01$ dB

Spectrum analyser settings:

Resolution bandwidth:	Reference bandwidth in the applicable rule section for the supported frequency band
Video bandwidth:	VBW $\geq 3 \times$ RBW
Detector mode:	Peak
Trace mode:	Max Hold

Input signal frequency

Low channel	2498.5 MHz
Middle channel	2593.0 MHz
High channel	2687.5 MHz

8.6.4 Test equipment used

Equipment	Manufacturer	Model no.	Asset no.
Spectrum Analyzer	Rohde & Schwarz	FSW43	101767
RF Vector Signal Generator	Rohde & Schwarz	SMBV100A	263254
RF Vector Signal Generator	Rohde & Schwarz	SMBV100A	263397

Notes: NCR - no calibration required, VOU - verify on use

8.6.5 Test data

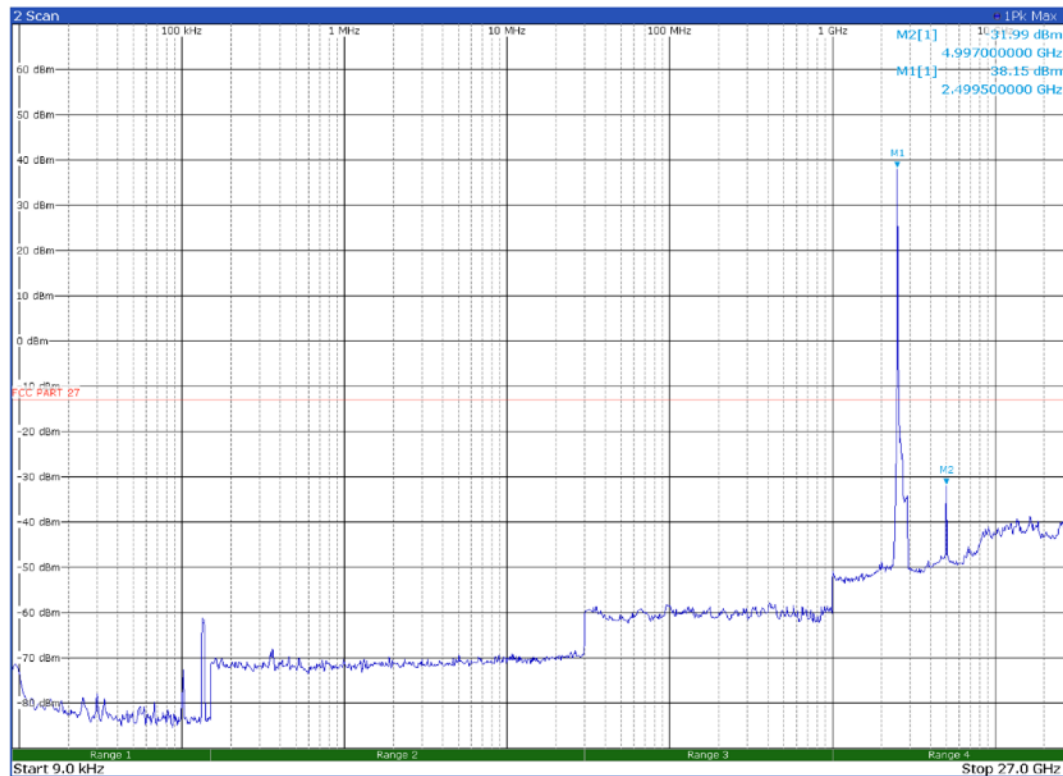


Figure 8.6-1: Conducted spurious emissions of low channel, antenna port 1 – Range 9 kHz to 27 GHz

Test data, continued

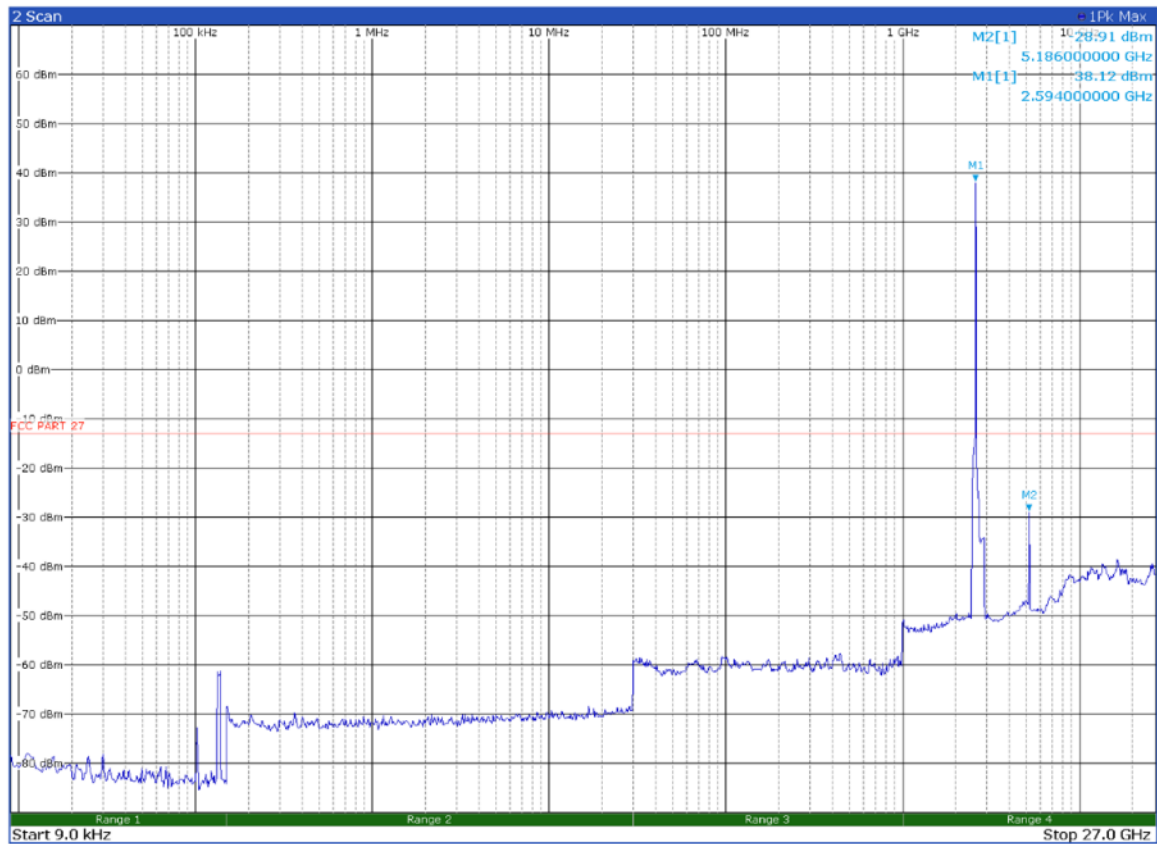


Figure 8.6-2: Conducted spurious emissions of middle channel, antenna port 1 – Range 9 kHz to 27 GHz

Test data, continued

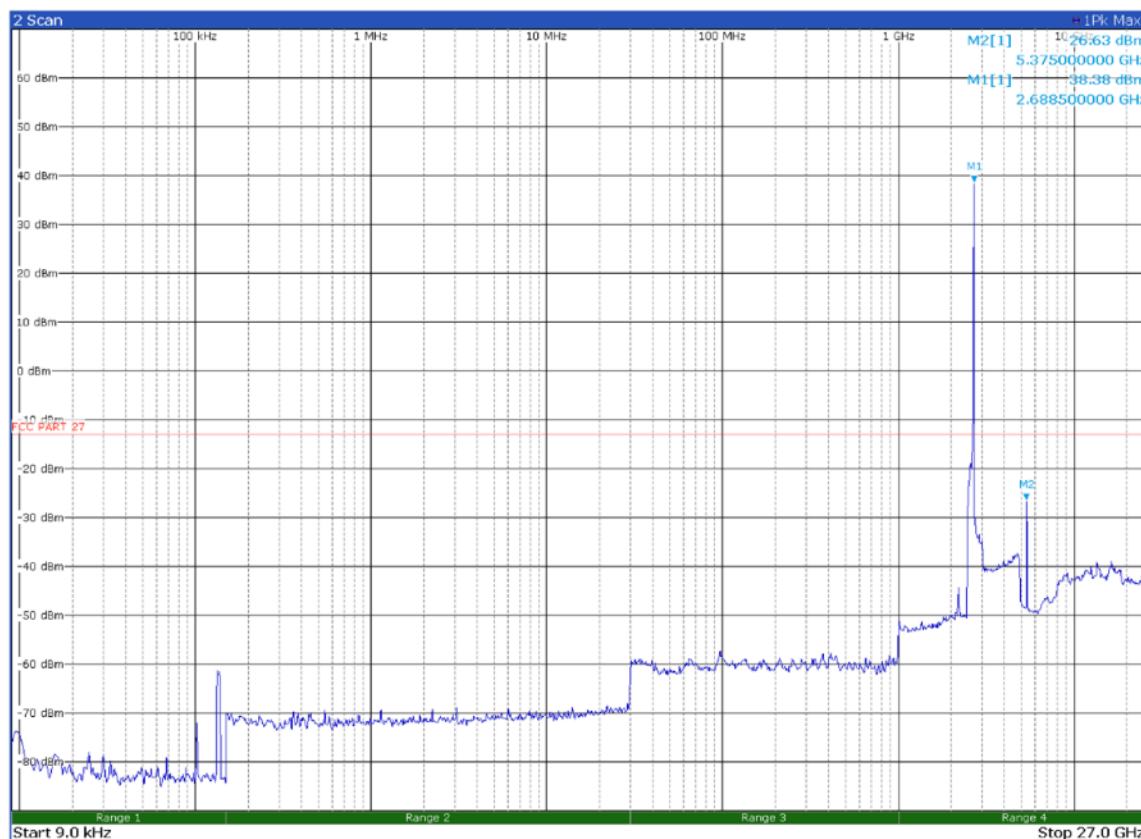


Figure 8.6-3: Conducted spurious emissions of high channel, antenna port 1 – Range 9 kHz to 27 GHz

8.6.1 Test data

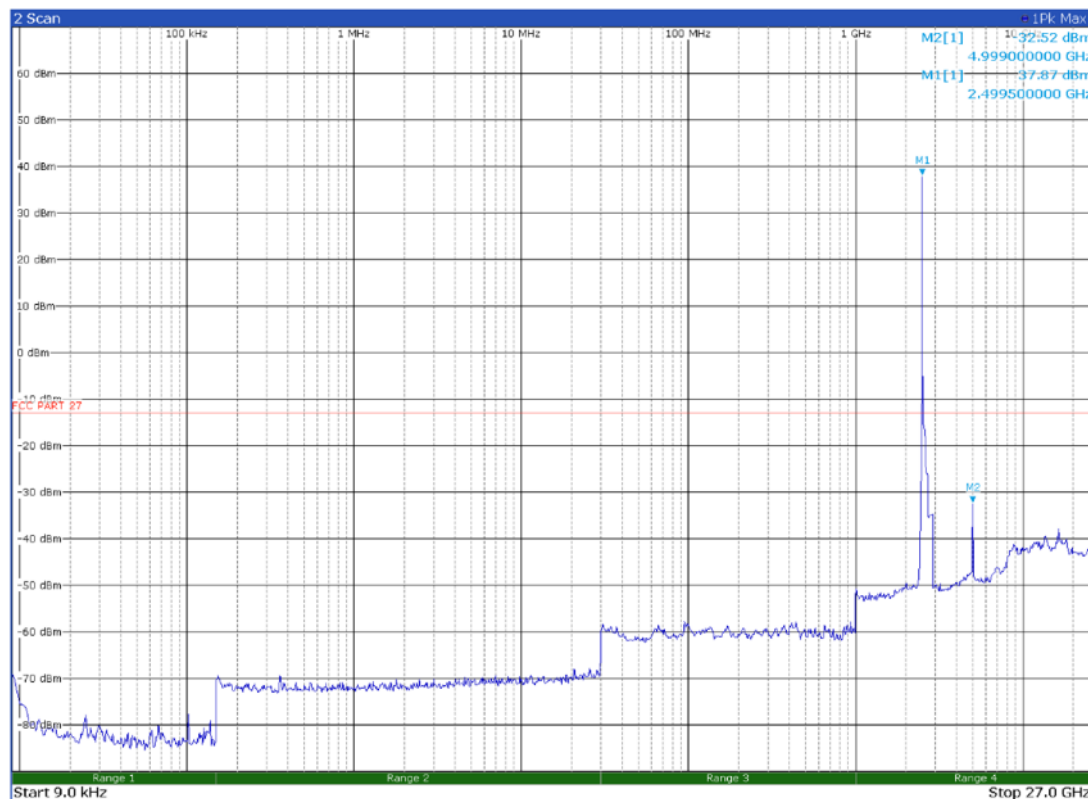


Figure 8.6-4: Conducted spurious emissions of low channel, antenna port 2 – Range 9 kHz to 27 GHz

Test data, continued

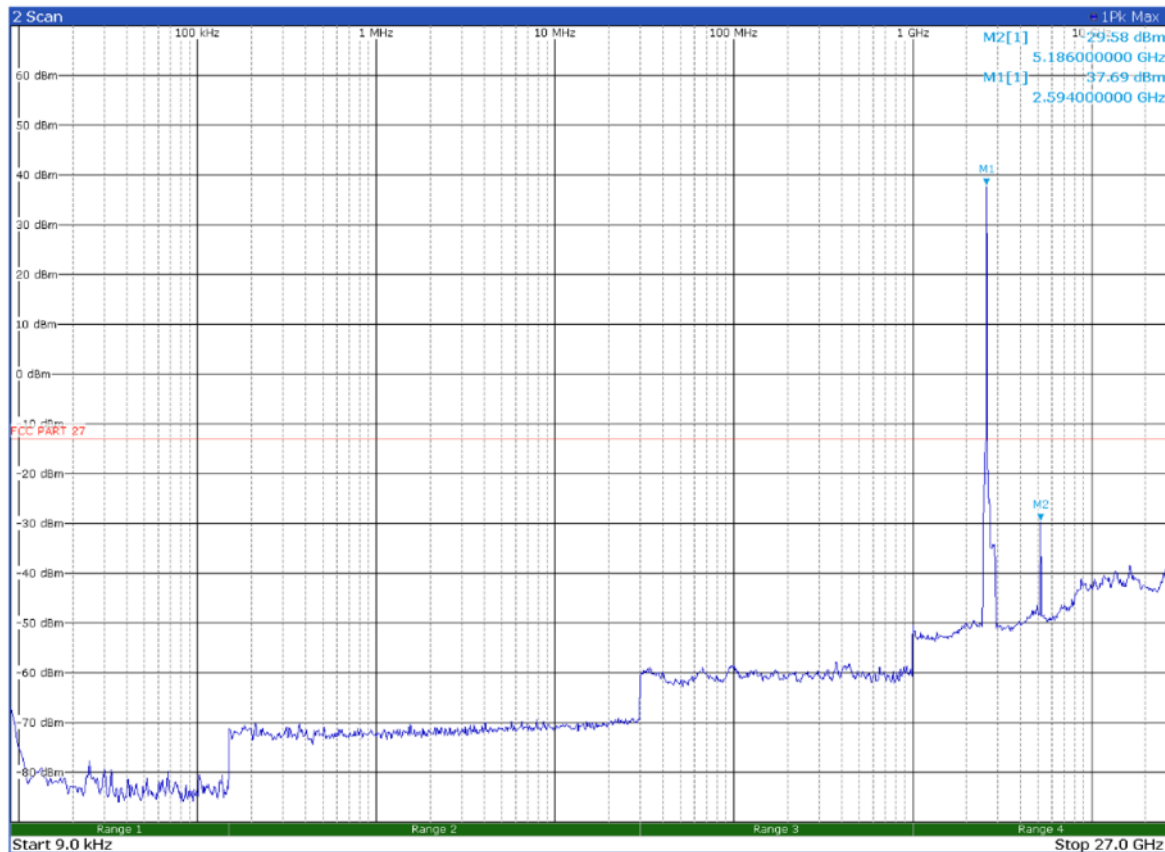


Figure 8.6-5: Conducted spurious emissions of middle channel, antenna port 2 – Range 9 kHz to 27 GHz

Test data, continued

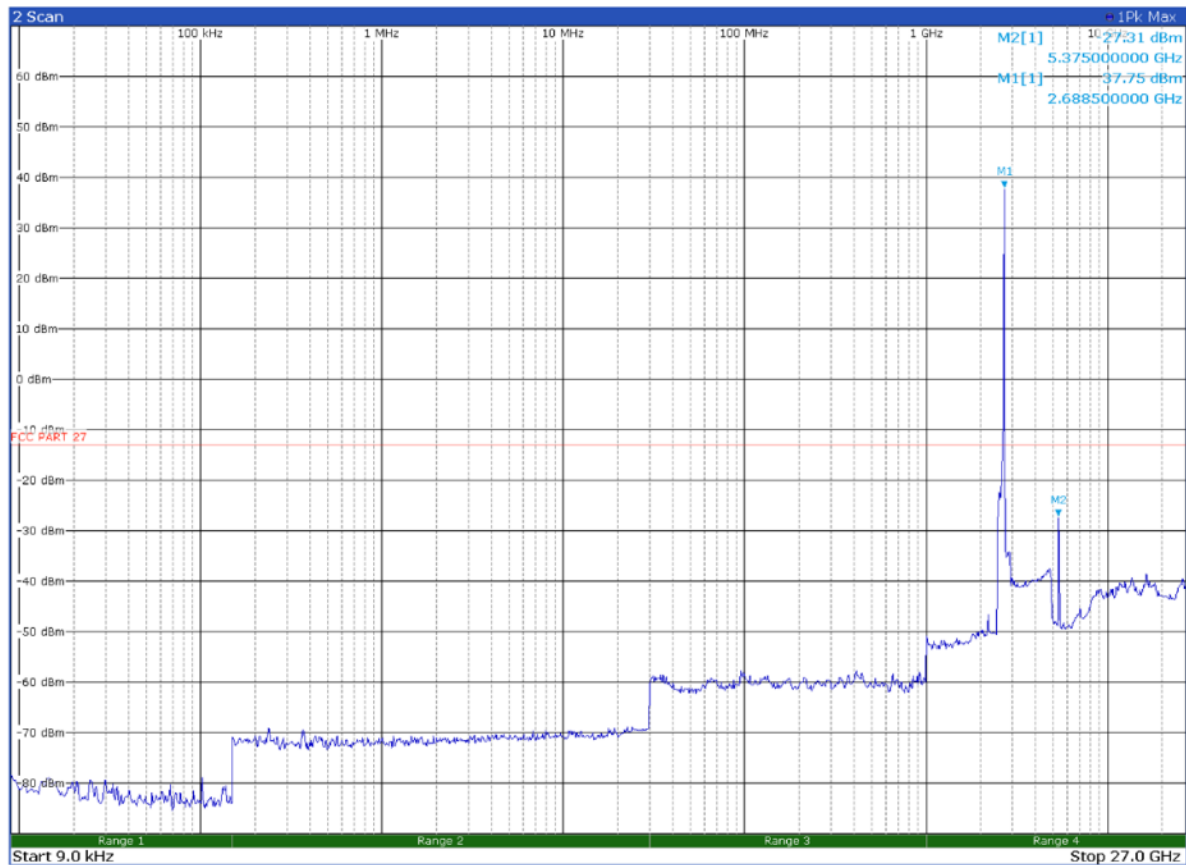


Figure 8.6-6: Conducted spurious emissions of high channel, antenna port 2 – Range 9 kHz to 27 GHz

8.7 Spurious emissions radiated measurements

8.7.1 References, definitions and limits

FCC §27.53(m)(2):

- (m) For BRS and EBS stations, the power of any emissions outside the licensee's frequency bands of operation shall be attenuated below the transmitter power (P) measured in watts in accordance with the standards below. If a licensee has multiple contiguous channels, out-of-band emissions shall be measured from the upper and lower edges of the contiguous channels.
- (2) For digital base stations, the attenuation shall be not less than $43 + 10 \log (P)$ dB, unless a documented interference complaint is received from an adjacent channel licensee with an overlapping Geographic Service Area. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS No. 1 on the same terms and conditions as adjacent channel BRS or EBS licensees. Provided that a documented interference complaint cannot be mutually resolved between the parties prior to the applicable deadline, then the following additional attenuation requirements shall apply:
 - (i) If a pre-existing base station suffers harmful interference from emissions caused by a new or modified base station located 1.5 km or more away, within 24 hours of the receipt of a documented interference complaint the licensee of the new or modified base station must attenuate its emissions by at least $67 + 10 \log (P)$ dB measured at 3 megahertz, above or below, from the channel edge of its frequency block and shall immediately notify the complaining licensee upon implementation of the additional attenuation. No later than 60 days after the implementation of such additional attenuation, the licensee of the complaining base station must attenuate its base station emissions by at least $67 + 10 \log (P)$ dB measured at 3 megahertz, above or below, from the channel edge of its frequency block of the new or modified base station.
 - (ii) If a pre-existing base station suffers harmful interference from emissions caused by a new or modified base station located less than 1.5 km away, within 24 hours of receipt of a documented interference complaint the licensee of the new or modified base station must attenuate its emissions by at least $67 + 10 \log (P) - 20 \log (D\text{km}/1.5)$ dB measured at 3 megahertz, above or below, from the channel edge of its frequency block of the complaining licensee, or if both base stations are co-located, limit its undesired signal level at the pre-existing base station receiver(s) to no more than -107 dBm measured in a 5.5 megahertz bandwidth and shall immediately notify the complaining licensee upon such reduction in the undesired signal level. No later than 60 days after such reduction in the undesired signal level, the complaining licensee must attenuate its base station emissions by at least $67 + 10 \log (P)$ dB measured at 3 megahertz, above or below, from the channel edge of its frequency block of the new or modified base station.
 - (iii) If a new or modified base station suffers harmful interference from emissions caused by a pre-existing base station located 1.5 km or more away, within 60 days of receipt of a documented interference complaint the licensee of each base station must attenuate its base station emissions by at least $67 + 10 \log (P)$ dB measured at 3 megahertz, above or below, from the channel edge of its frequency block of the other licensee.
 - (iv) If a new or modified base station suffers harmful interference from emissions caused by a pre-existing base station located less than 1.5 km away, within 60 days of receipt of a documented interference complaint: (a) The licensee of the new or modified base station must attenuate its OOB by at least $67 + 10 \log (P) - 20 \log (D\text{km}/1.5)$ measured 3 megahertz above or below, from the channel edge of its frequency block of the other licensee, or if the base stations are co-located, limit its undesired signal level at the other base station receiver(s) to no more than -107 dBm measured in a 5.5-megahertz bandwidth; and (b) the licensee causing the interference must attenuate its emissions by at least $67 + 10 \log (P)$ dB measured at 3 megahertz, above or below, from the channel edge of its frequency block of the new or modified base station.
 - (v) For all fixed digital user stations, the attenuation factor shall be not less than $43 + 10 \log (P)$ dB at the channel edge.

References, definitions and limits, continued

8.7.2 Test summary

Verdict	Pass		
Tested by	L. Anticono	Test date	July 31, 2025

8.7.3 Observations, settings and special notes

The spectrum was searched from 30 MHz to the 10th harmonic.
All measurements were performed using peak detector according to note 4 of 935210 D05 Indus Booster Basic Meas v01r04 paragraph 3.6.3.
Testing was performed with RF ports terminated with 50 Ohm load.
In the graphics below, no radiated spurious emission found and the limit is exceeded only by the carrier.

Spectrum analyser settings:

Resolution bandwidth:	100 kHz and 1 MHz
Video bandwidth:	VBW $\geq 3 \times$ RBW
Detector mode:	Peak
Trace mode:	Max Hold

Input signal frequency

Low channel	2498.5 MHz
Middle channel	2593.0 MHz
High channel	2687.5 MHz

8.7.4 Test equipment used

Equipment	Manufacturer	Model no.	Asset no.
Spectrum Analyzer	Rohde & Schwarz	FSW43	101767
EMI Receiver	Rohde & Schwarz	ESW44	101620
RF Vector Signal Generator	Rohde & Schwarz	SMBV100A	263254
RF Vector Signal Generator	Rohde & Schwarz	SMBV100A	263397
Antenna Trilog 25MHz - 8GHz	Schwarzbeck Mess-Elektronik	VULB9162	9162-025
Antenna 1 - 18 GHz	Schwarzbeck Mess-Elektronik	STLP9148	STLP 9148-152
Double Ridge Horn Antenna	RFSpin	DRH40	061106A40
Broadband Amplifier	Schwarzbeck Mess-Elektronik	BBV9718C	00121
Broadband Bench Top Amplifier	Sage	STB-1834034030-KFKF-L1	18490-01
Controller	Maturo	FCU3.0	10041
Tilt antenna mast	Maturo	TAM4.0-E	10042
Turntable	Maturo	TT4.0-ST	2.527
Semi-anechoic chamber	Nemko S.p.a.	10m semi-anechoic chamber	530

Notes: NCR - no calibration required, VOU - verify on use

8.7.5 Test data

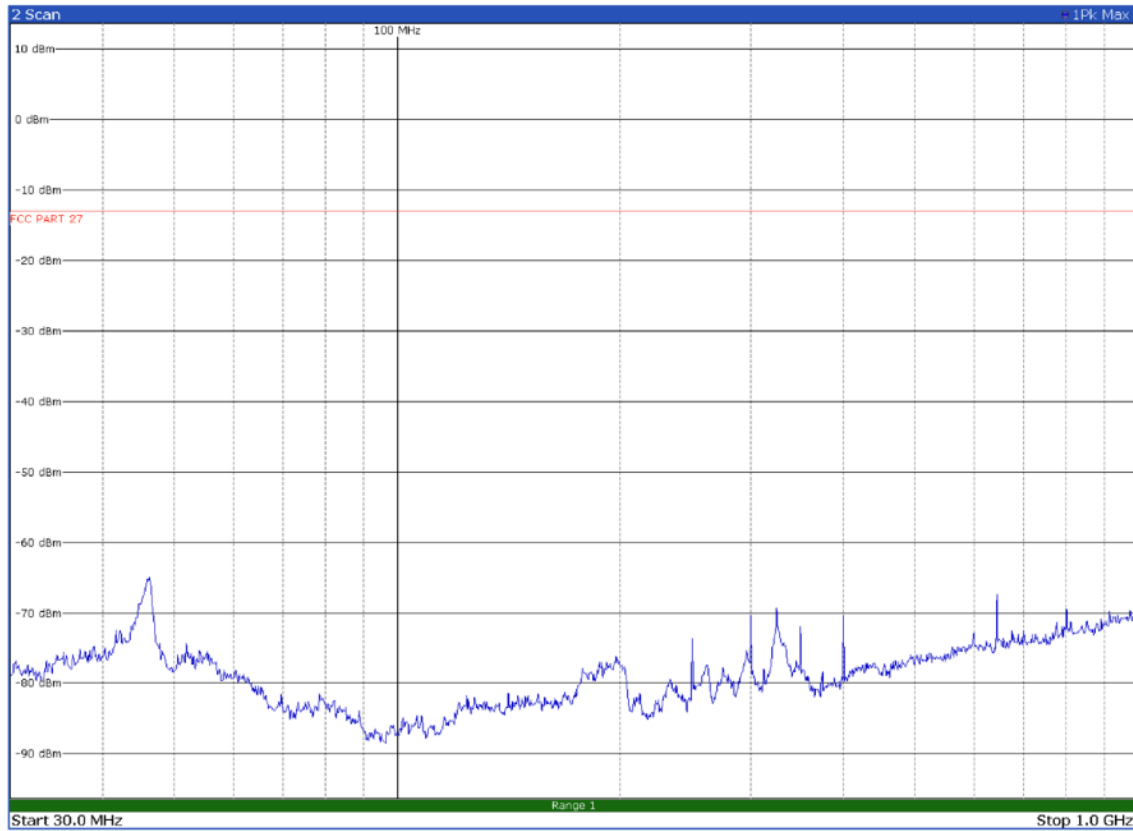


Figure 8.7-1: Radiated spurious emissions below 1 GHz, low channel with antenna in horizontal polarization

Test data, continued

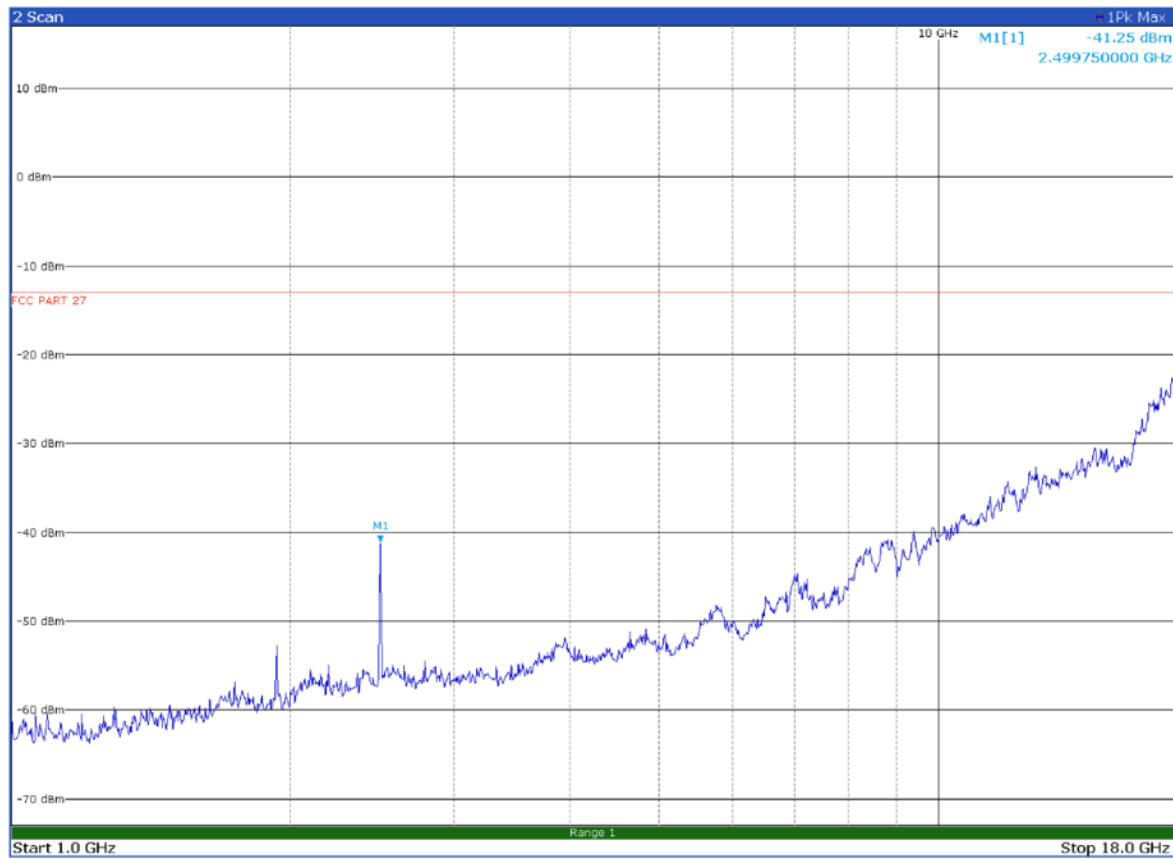


Figure 8.7-2: Radiated spurious emissions from 1 GHz to 18 GHz, low channel with antenna in horizontal polarization

Test data, continued

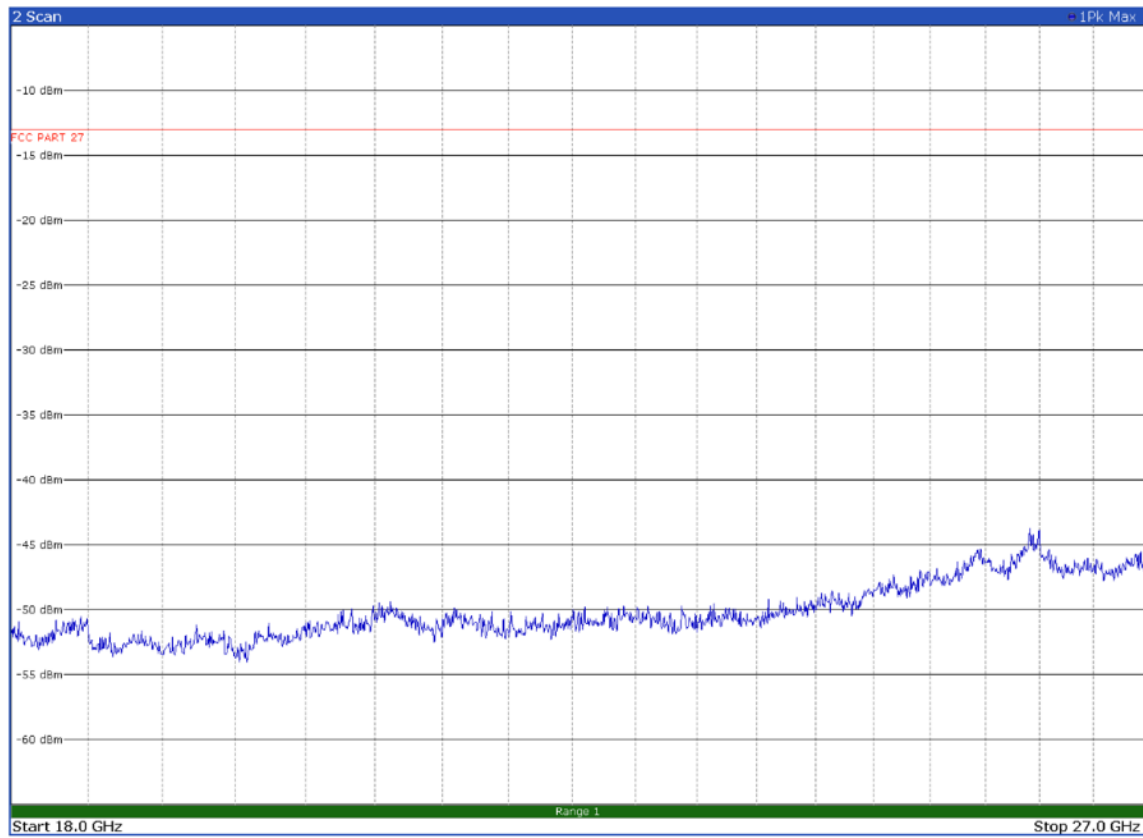


Figure 8.7-3: Radiated spurious emissions from 18 GHz to to 10th harmonic, low channel with antenna in horizontal polarization

Test data, continued

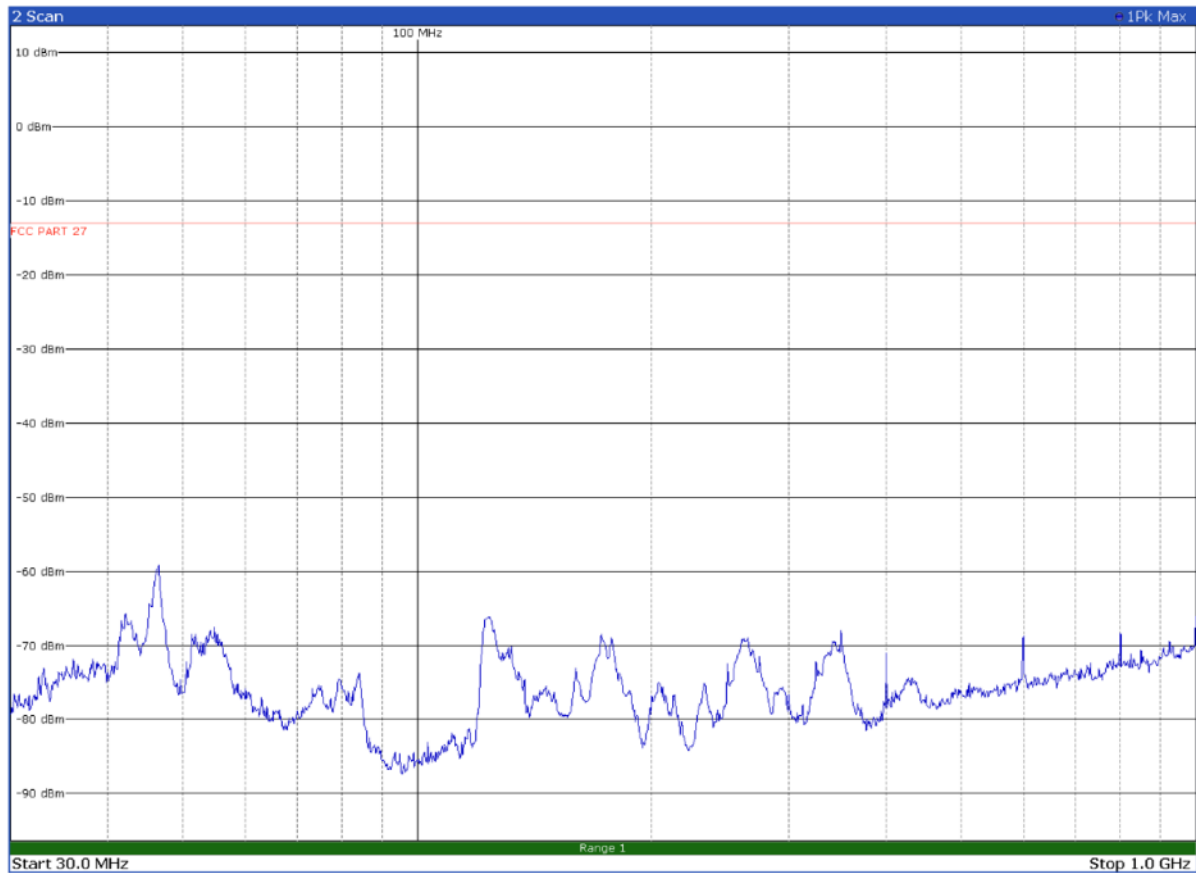


Figure 8.7-4: Radiated spurious emissions below 1 GHz, low channel with antenna in vertical polarization

Test data, continued

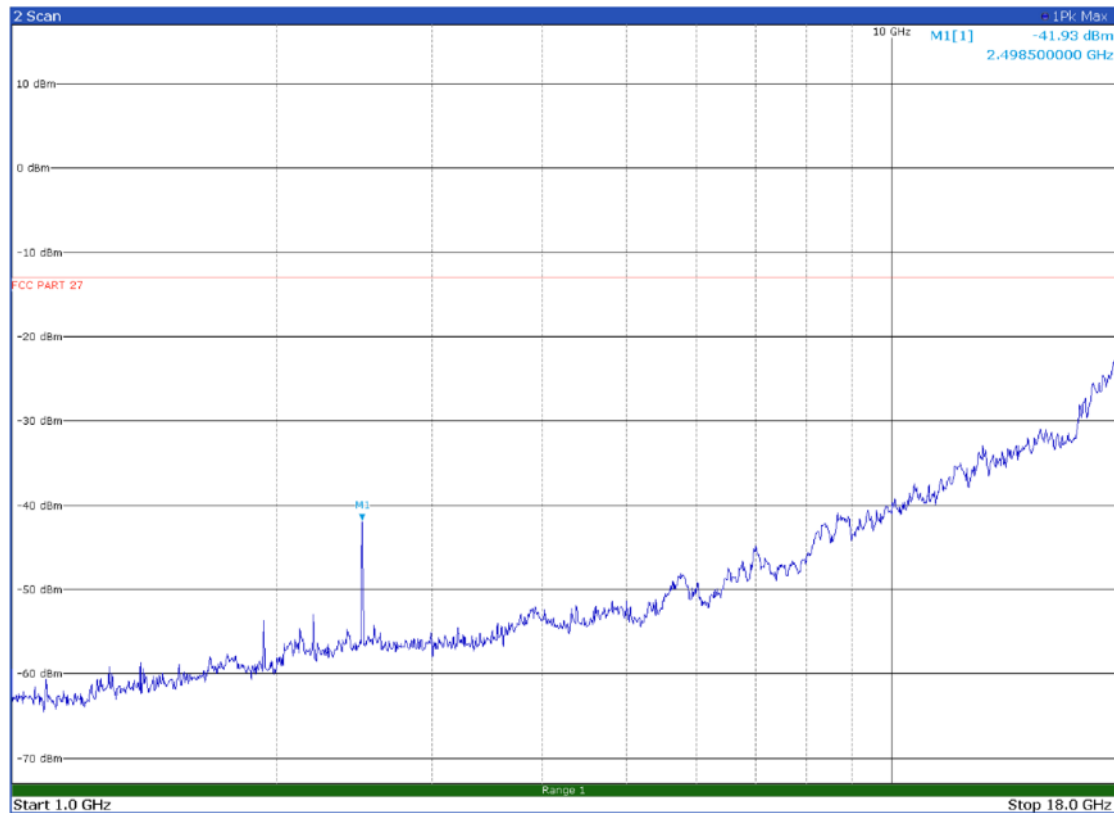


Figure 8.7-5: Radiated spurious emissions from 1 GHz to 18 GHz, low channel with antenna in vertical polarization

Test data, continued

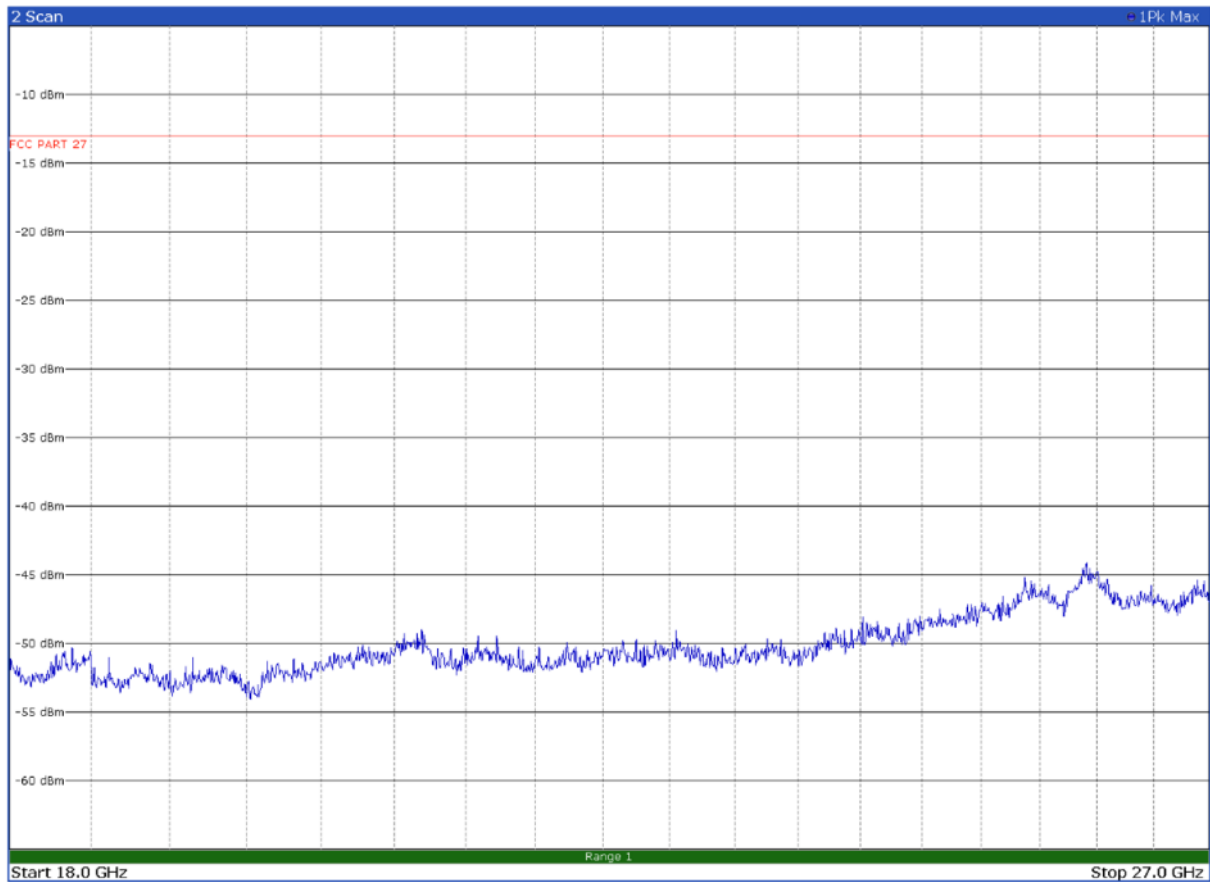


Figure 8.7-6: Radiated spurious emissions from 18 GHz to 10th harmonic, low channel with antenna in vertical polarization

Test data, continued

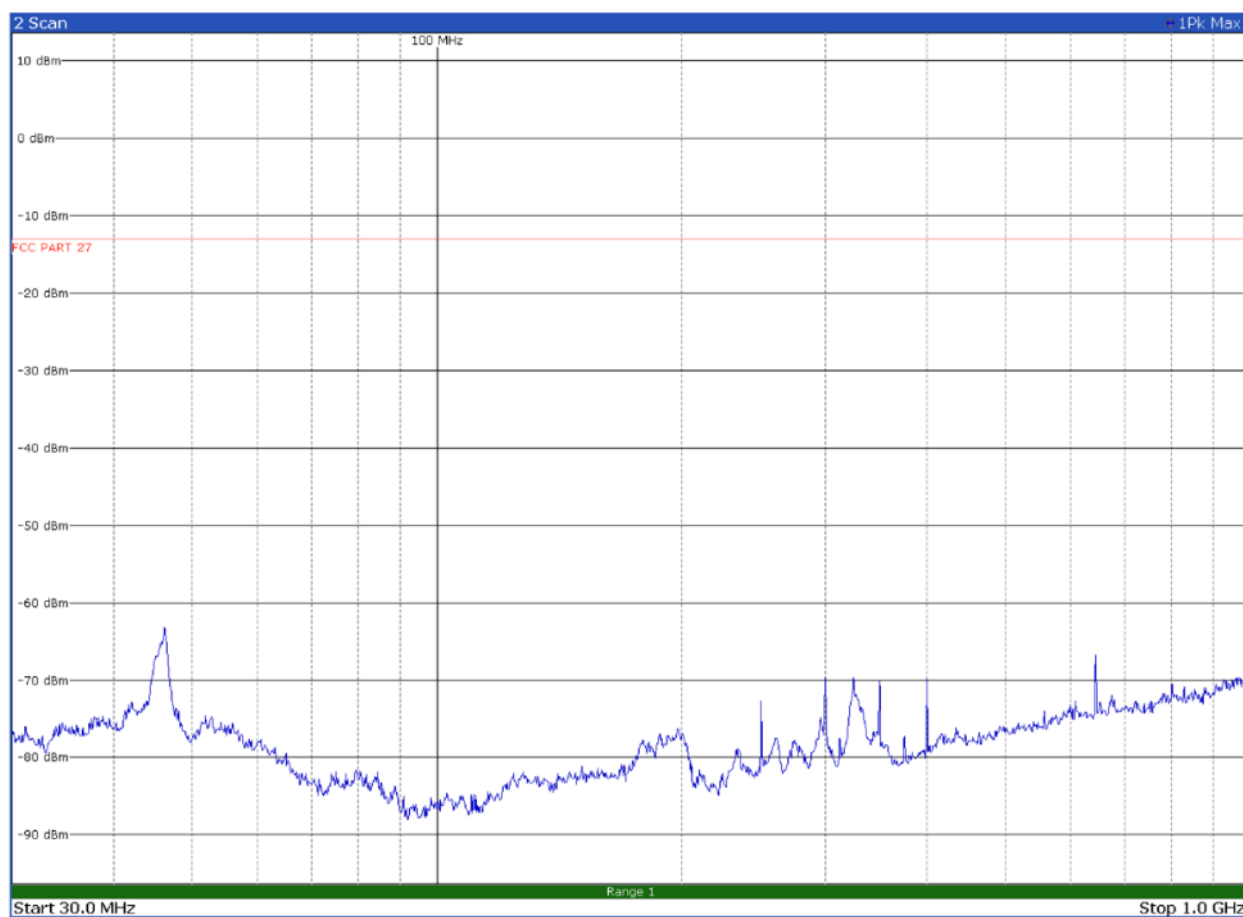


Figure 8.7-7: Radiated spurious emissions below 1 GHz, middle channel with antenna in horizontal polarization

Test data, continued

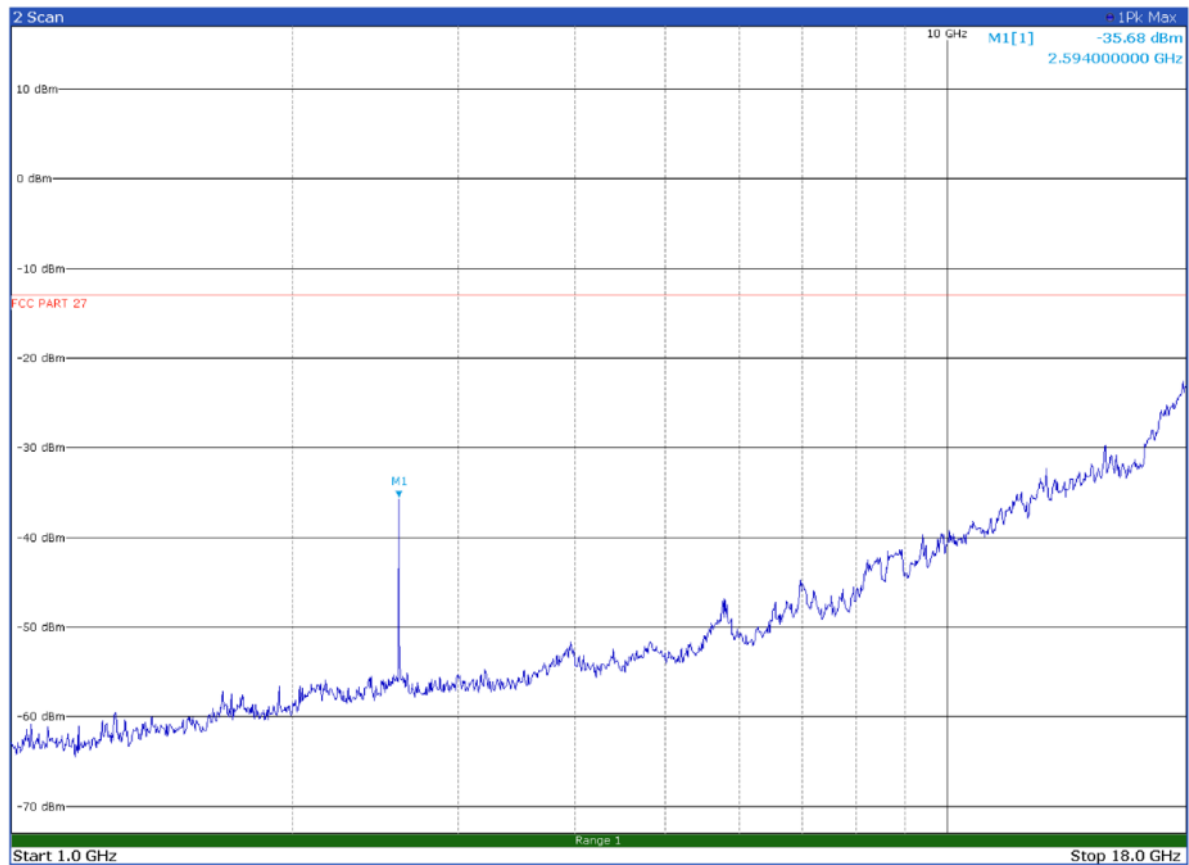


Figure 8.7-8: Radiated spurious emissions from 1 GHz to 18 GHz, middle channel with antenna in horizontal polarization

Test data, continued

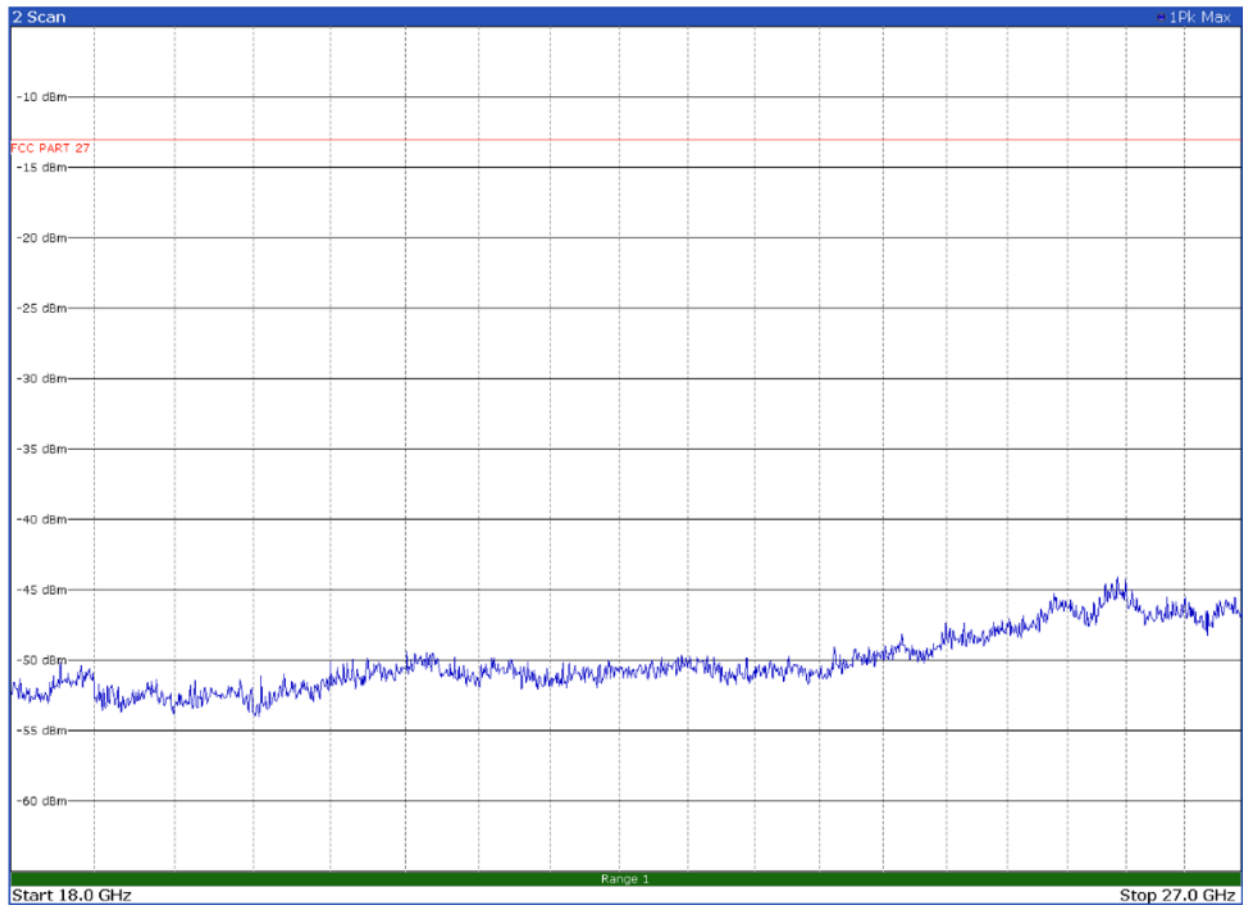


Figure 8.7-9: Radiated spurious emissions from 18 GHz to 10th harmonic, middle channel with antenna in horizontal polarization

Test data, continued

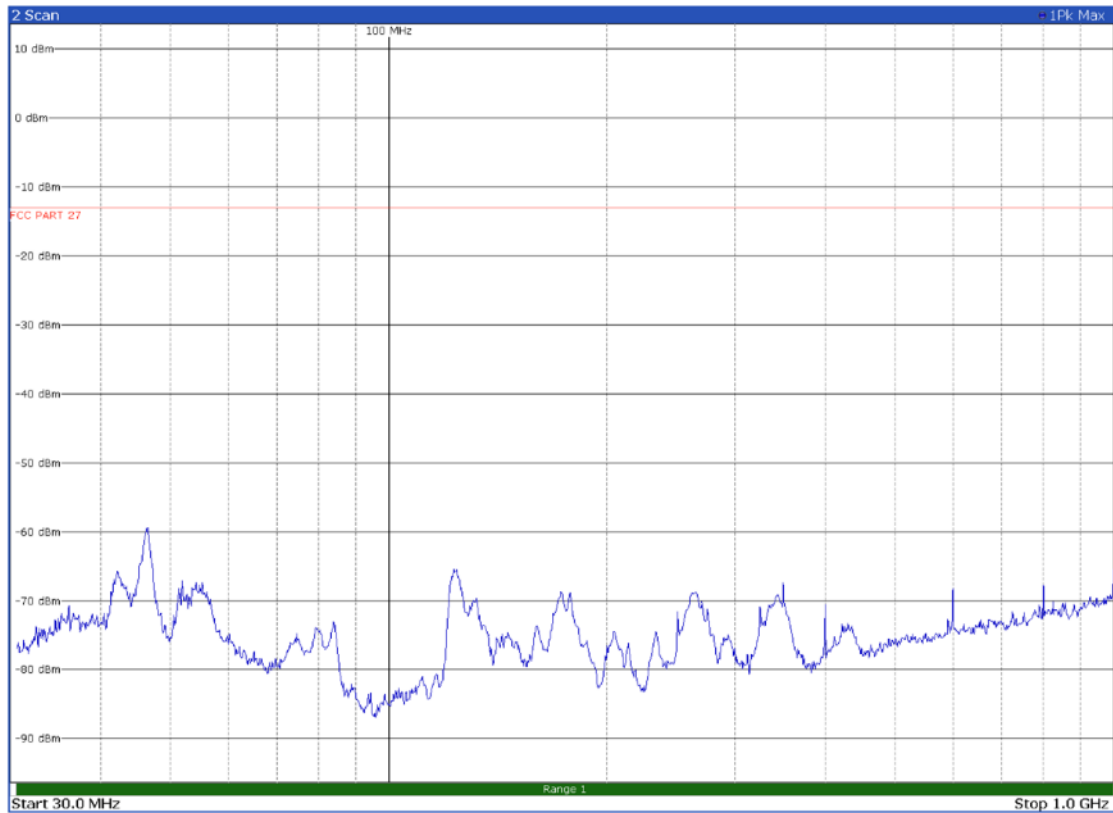


Figure 8.7-10: Radiated spurious emissions below 1 GHz, middle channel with antenna in vertical polarization

Test data, continued

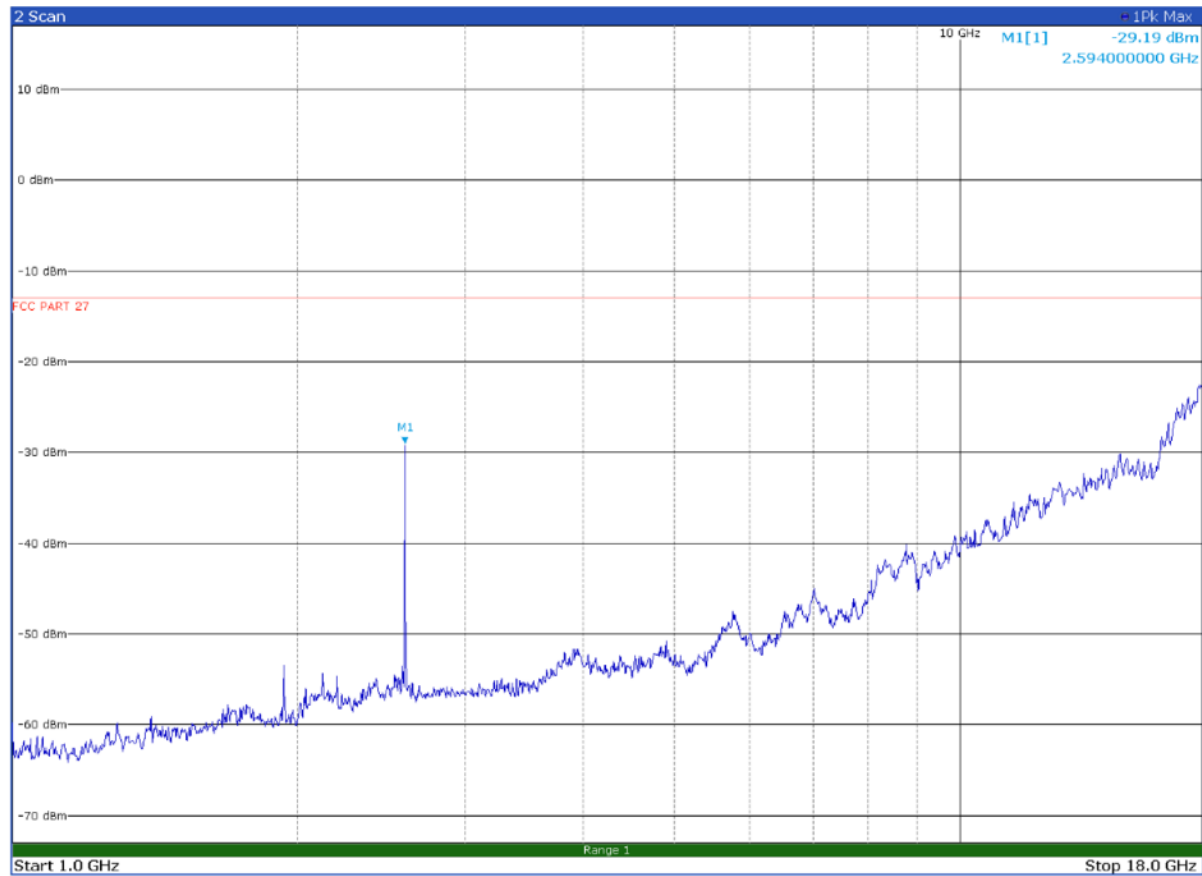


Figure 8.7-11: Radiated spurious emissions from 1 GHz to 18 GHz, middle channel with antenna in vertical polarization

Test data, continued

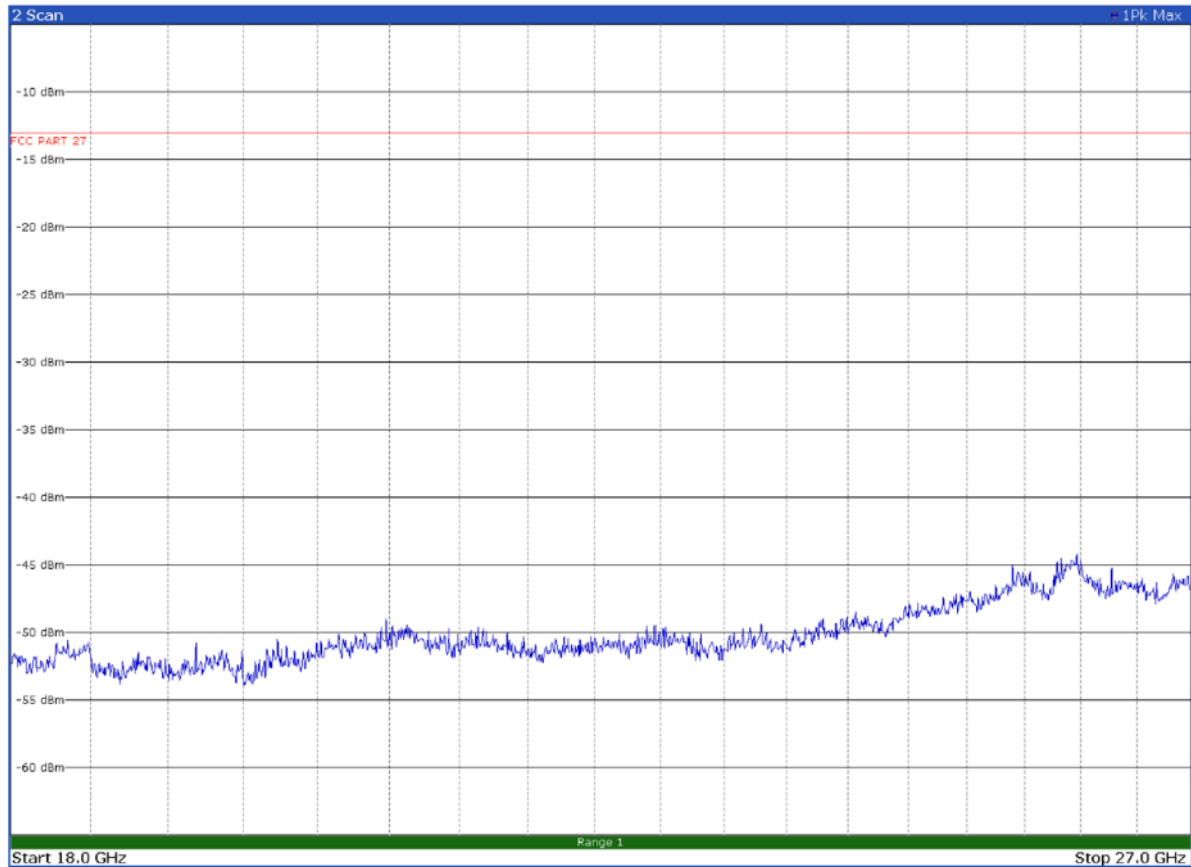


Figure 8.7-12: Radiated spurious emissions from 18 GHz to 10th harmonic, middle channel with antenna in vertical polarization

Test data, continued

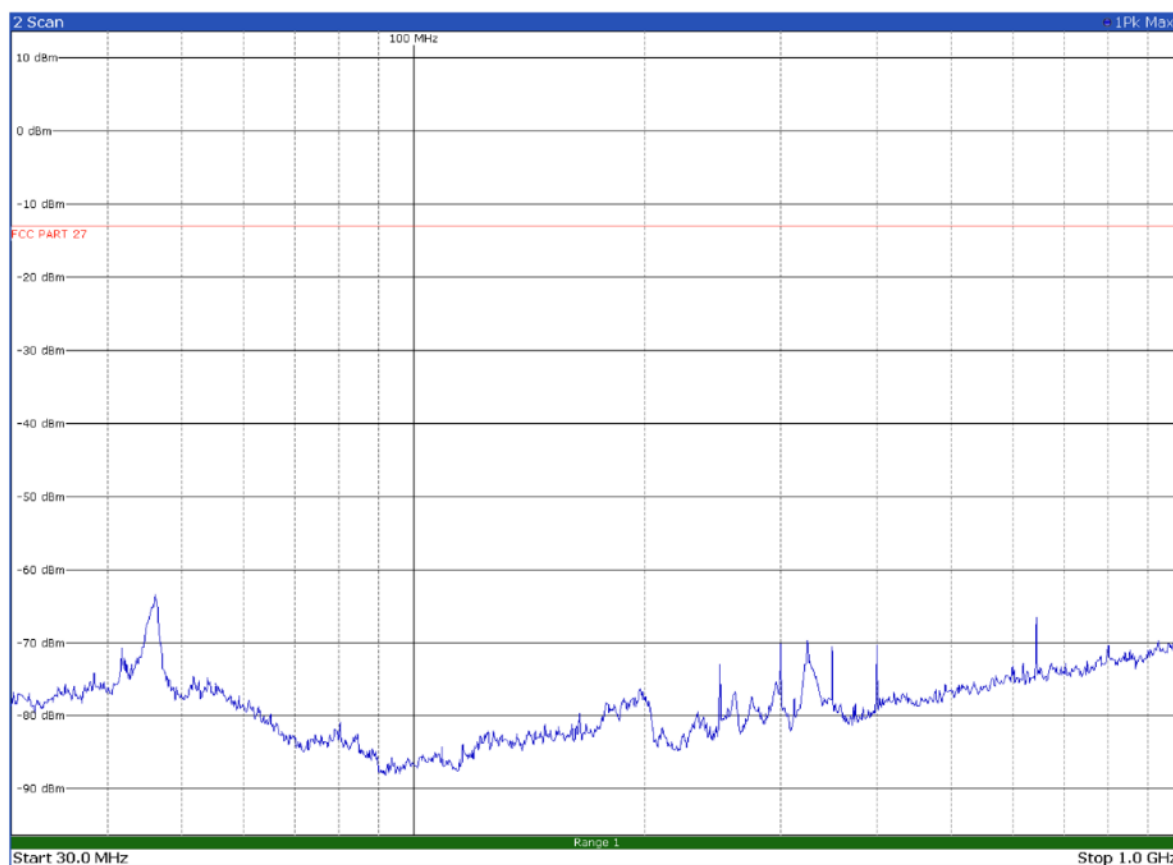


Figure 8.7-13: Radiated spurious emissions below 1 GHz, high channel with antenna in horizontal polarization

Test data, continued

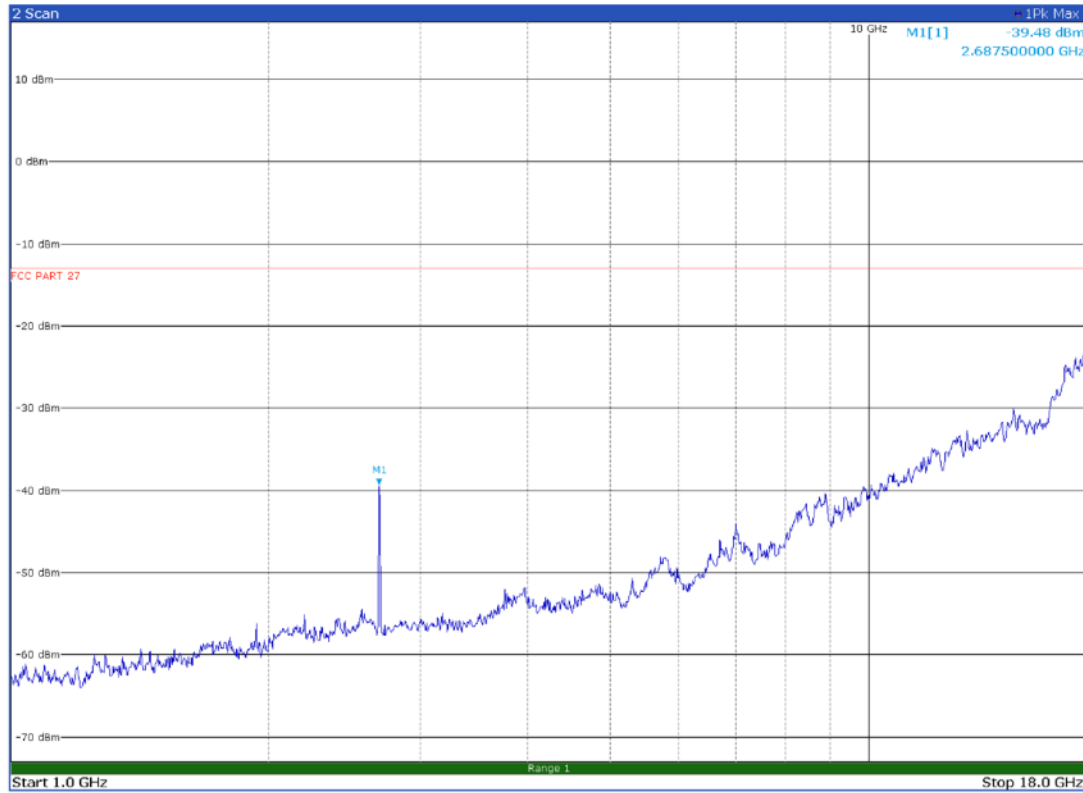


Figure 8.7-14: Radiated spurious emissions from 1 GHz to 18 GHz, high channel with antenna in horizontal polarization

Test data, continued

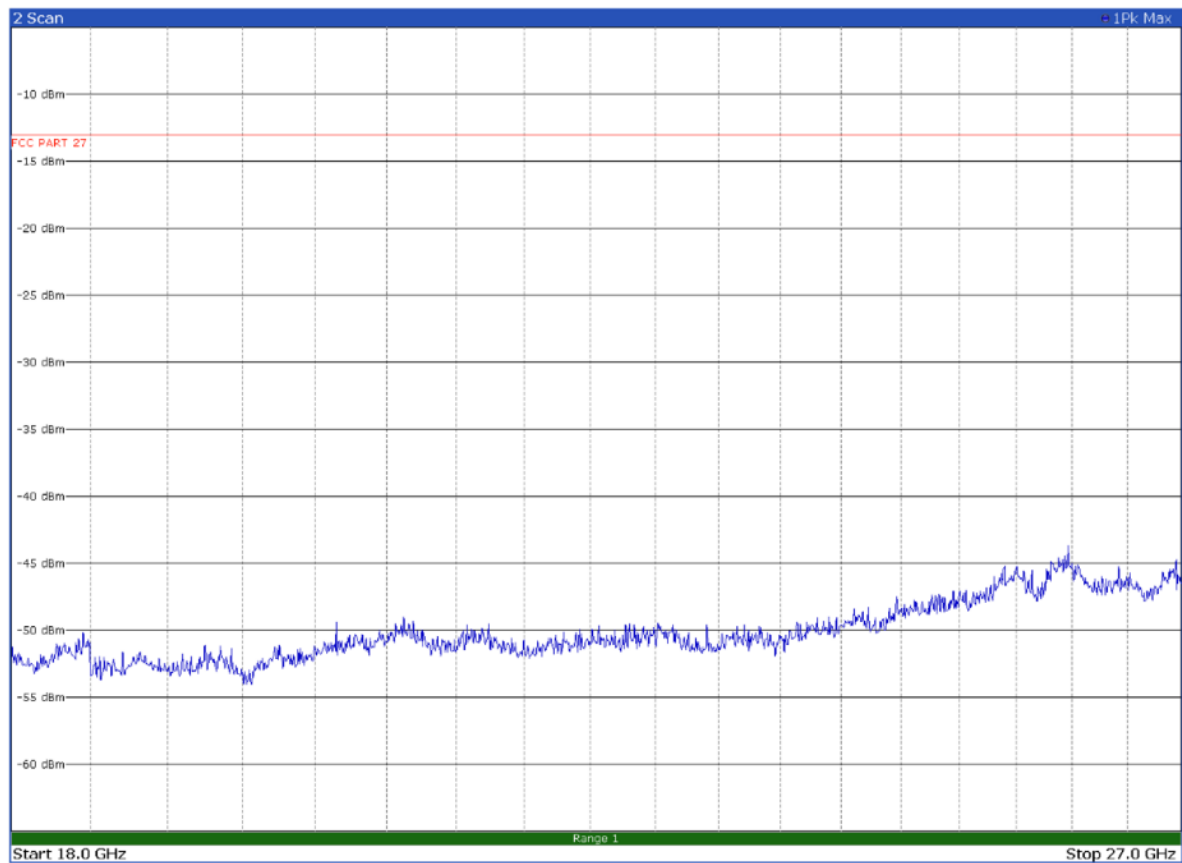


Figure 8.7-15: Radiated spurious emissions from 18 GHz to to 10th harmonic, high channel with antenna in horizontal polarization

Test data, continued

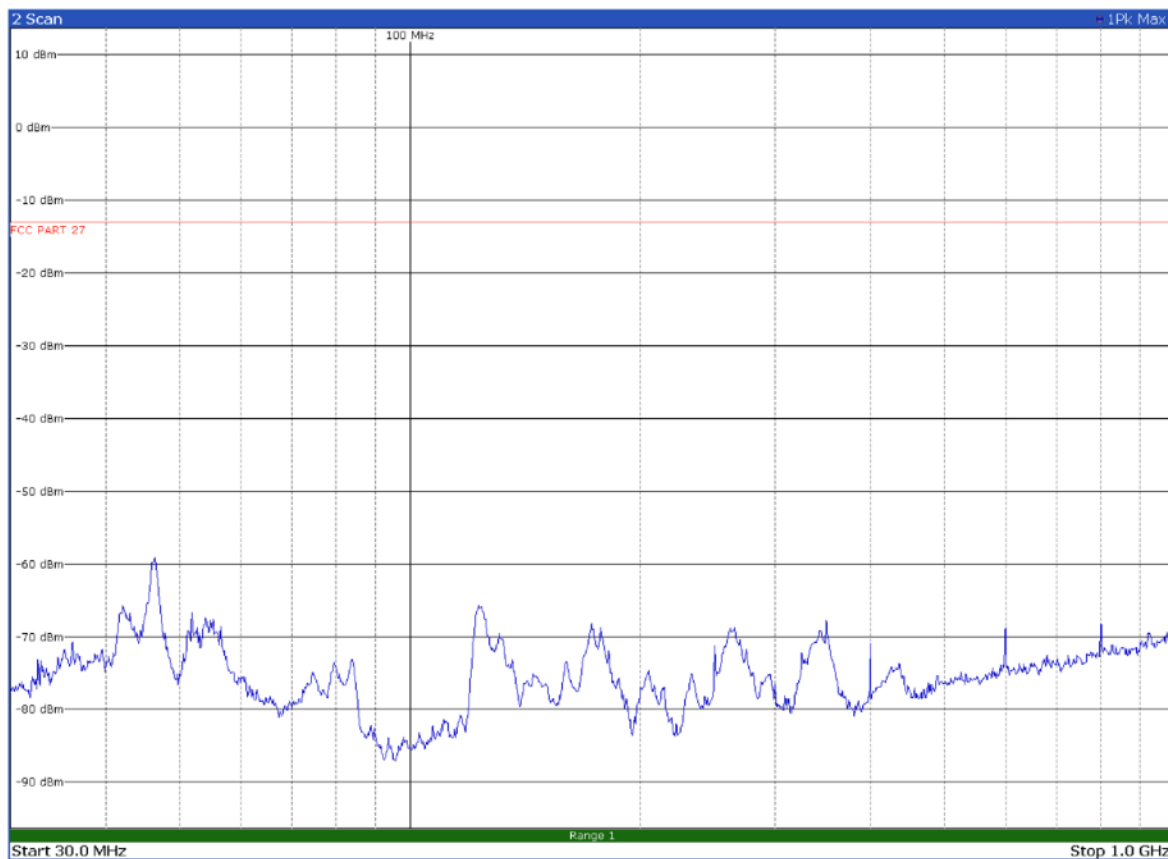


Figure 8.7-16: Radiated spurious emissions below 1 GHz, high channel with antenna in vertical polarization

Test data, continued

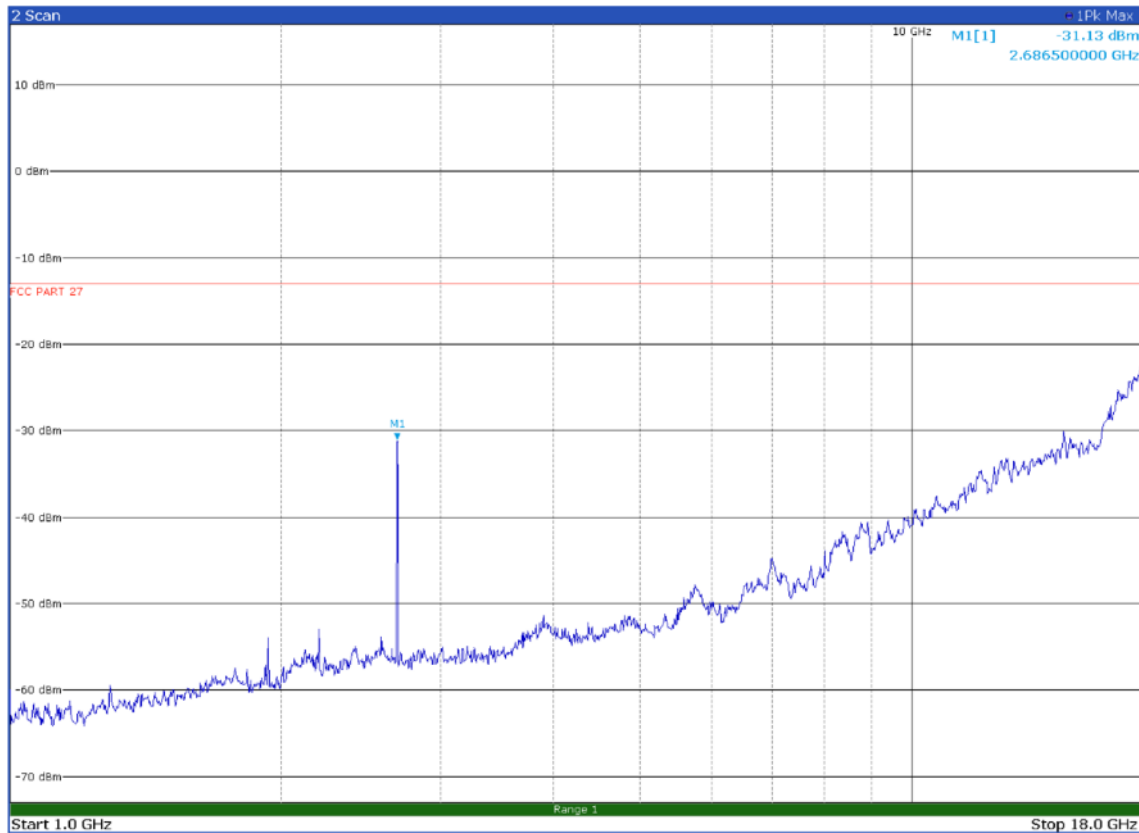


Figure 8.7-17: Radiated spurious emissions from 1 GHz to 18 GHz, high channel with antenna in vertical polarization

Test data, continued

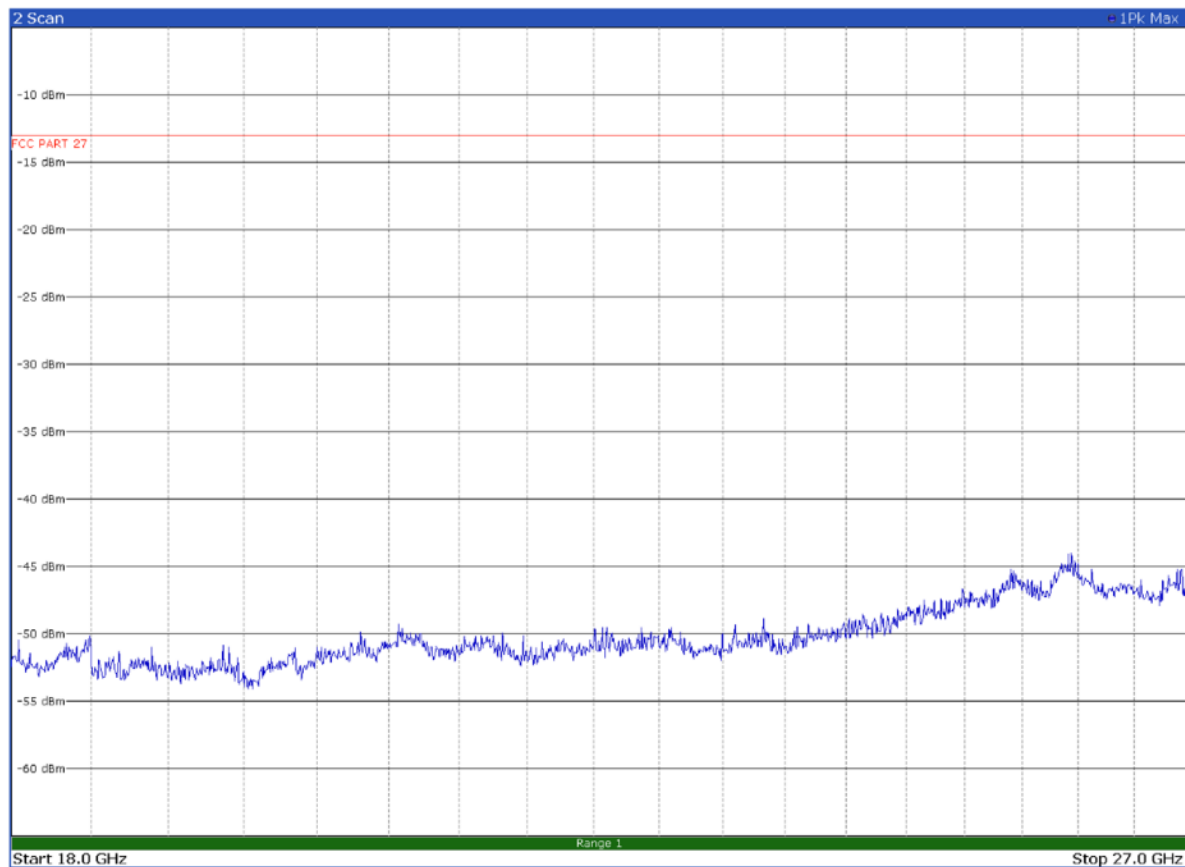


Figure 8.7-18: Radiated spurious emissions from 18 GHz to 10th harmonic, high channel with antenna in vertical polarization

8.8 Frequency stability measurements

8.8.1 References, definitions and limits

FCC §27.54

The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

FCC §2.1055

(a) The frequency stability shall be measured with variation of ambient temperature as follows:

- (1) From -30° to $+50^{\circ}$ centigrade for all equipment except that specified in paragraphs (a) (2) and (3) of this section.
- (2) From -20° to $+50^{\circ}$ centigrade for equipment to be licensed for use in the Maritime Services under part 80 of this chapter, except for Class A, B, and S Emergency Position Indicating Radiobeacons (EPIRBS), and equipment to be licensed for use above 952 MHz at operational fixed stations in all services, stations in the Local Television Transmission Service and Point-to-Point Microwave Radio Service under part 21 of this chapter, equipment licensed for use aboard aircraft in the Aviation Services under part 87 of this chapter, uncrewed aircraft stations (as defined in § 88.5 of this chapter) in the Uncrewed Aircraft System Services under part 88 of this chapter, and equipment authorized for use in the Family Radio Service under part 95 of this chapter.
- (3) From 0° to $+50^{\circ}$ centigrade for equipment to be licensed for use in the Radio Broadcast Services under part 73 of this chapter.

(b) Frequency measurements shall be made at the extremes of the specified temperature range and at intervals of not more than 10° centigrade through the range. A period of time sufficient to stabilize all of the components of the oscillator circuit at each temperature level shall be allowed prior to frequency measurement. The short term transient effects on the frequency of the transmitter due to keying (except for broadcast transmitters) and any heating element cycling normally occurring at each ambient temperature level also shall be shown. Only the portion or portions of the transmitter containing the frequency determining and stabilizing circuitry need be subjected to the temperature variation test.

(c) In addition to all other requirements of this section, the following information is required for equipment incorporating heater type crystal oscillators to be used in mobile stations, for which type acceptance is first requested after March 25, 1974, except for battery powered, hand carried, portable equipment having less than 3 watts mean output power.

- (1) Measurement data showing variation in transmitter output frequency from a cold start and the elapsed time necessary for the frequency to stabilize within the applicable tolerance. Tests shall be made after temperature stabilization at each of the ambient temperature levels; the lower temperature limit, 0° centigrade and $+30^{\circ}$ centigrade with no primary power applied.
- (2) Beginning at each temperature level specified in paragraph (c)(1) of this section, the frequency shall be measured within one minute after application of primary power to the transmitter and at intervals of no more than one minute thereafter until ten minutes have elapsed or until sufficient measurements are obtained to indicate clearly that the frequency has stabilized within the applicable tolerance, whichever time period is greater. During each test, the ambient temperature shall not be allowed to rise more than 10° centigrade above the respective beginning ambient temperature level.
- (3) The elapsed time necessary for the frequency to stabilize within the applicable tolerance from each beginning ambient temperature level as determined from the tests specified in this paragraph shall be specified in the instruction book for the transmitter furnished to the user.
- (4) When it is impracticable to subject the complete transmitter to this test because of its physical dimensions or power rating, only its frequency determining and stabilizing portions need be tested.

(d) The frequency stability shall be measured with variation of primary supply voltage as follows:

- (1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.
- (2) For hand carried, battery powered equipment, reduce primary supply voltage to the battery operating end point which shall be specified by the manufacturer.
- (3) The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided. Effects on frequency of transmitter keying (except for broadcast transmitters) and any heating element cycling at the nominal supply voltage and at each extreme also shall be shown.

(e) When deemed necessary, the Commission may require tests of frequency stability under conditions in addition to those specifically set out in paragraphs (a), (b), (c), and (d) of this section. (For example measurements showing the effect of proximity to large metal objects, or of various types of antennas, may be required for portable equipment.)

8.8.2 Test summary

Verdict	Pass		
Tested by	L. Anticono	Test date	August 1, 2025

8.8.3 Observations, settings and special notes

Testing was performed per ANSI C63.26 Paragraphs 5.6.3, 5.6.4 and 5.6.5 methods.

8.8.4 Test equipment used

Equipment	Manufacturer	Model no.	Asset no.
EMI Receiver	Rohde & Schwarz	ESU8	100202
RF Vector Signal Generator	Rohde & Schwarz	SMBV100A	263254
RF Vector Signal Generator	Rohde & Schwarz	SMBV100A	263397
Climatic Chamber	MSL	EC500DA	15022

Notes: NCR - no calibration required, VOU - verify on use

8.8.5 Test data

Table 8.8-1: Transmitter frequency stability results for antenna port 1

Test conditions	Frequency, Hz	Drift, Hz	Drift, ppm	Limit ±ppm	Margin, ±ppm
+50 °C, Nominal	259299873	-11	-0.04242	1.5	1.45
+40 °C, Nominal	259299872	-12	-0.04627	1.5	1.45
+30 °C, Nominal	259299872	-12	-0.04627	1.5	1.55
+20 °C, -15% voltage	259299885	1	0.00385	1.5	1.50
+20 °C, Nominal	259299884	Reference	Reference	Reference	Reference
+20 °C, +15% voltage	259299883	-1	-0.00385	1.5	1.49
+10 °C, Nominal	259299868	-16	-0.06170	1.5	1.43
0 °C, Nominal	259299867	-17	-0.06556	1.5	1.43
-10 °C, Nominal	259299864	-20	-0.07713	1.5	1.42
-20 °C, Nominal	259299859	-25	-0.09641	1.5	1.40
-30 °C, Nominal	259299859	-25	-0.09641	1.5	1.40

Table 8.8-2: Transmitter frequency stability results for antenna port 2

Test conditions	Frequency, Hz	Drift, Hz	Drift, ppm	Limit ±ppm	Margin, ±ppm
+50 °C, Nominal	259299879	-4	-0.0154	1.5	1.49
+40 °C, Nominal	259299874	-9	-0.0347	1.5	1.49
+30 °C, Nominal	259299873	-10	-0.0385	1.5	1.50
+20 °C, -15% voltage	259299883	0	0	1.5	1.50
+20 °C, Nominal	259299883	Reference	Reference	Reference	Reference
+20 °C, +15% voltage	259299882	-1	-0.0038	1.5	1.50
+10 °C, Nominal	259299869	-14	-0.0539	1.5	1.49
0 °C, Nominal	259299868	-15	-0.0578	1.5	1.49
-10 °C, Nominal	259299865	-18	-0.0694	1.5	1.48
-20 °C, Nominal	259299860	-23	-0.0887	1.5	1.48
-30 °C, Nominal	259299859	-24	-0.0925	1.5	1.45

Section 9 EUT photos

Annex A_EUT & Test Setup photos

End of the test report