

EMC Test Report

2024-0451-EMC-TR-25-0072-V01

Designation:	UAP-XR [BRS]
Manufacturer:	CommScope
Serial No(s):	SZBEBF2452A0003
ID No.	7862380-00 Rev: 00
FCC ID	XS5-IONEUAPR
ISED ID	2237E-IONEUAPR
Test Specifications:	ANSI 63.26:2015 FCC Rules and Regulations as listed in 47 CFR, Part 20 and Part 27 RSS-199 Issue 4 with RSS-GEN Issue 5 and RSS-131 Issue 4
Test Plan:	"BU-PC-2336-58" from customer
Test Result:	Passed

Date of issue:	12.06.2025		Signature:
Version:	01	Technical Reviewer:	
Date of receipt EUT:	26.02.2025		
Performance date:	17.03.2025 . 18.03.2025	Report Reviewer:	



Bundesnetzagentur

BNetzA-CAB-19/21-20



Deutsche
Akkreditierungsstelle
D-PL-12024-06-00

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Bureau Veritas
Consumer Products Services Germany GmbH
www.bureauveritas.de/cps
Tel.: +49 (0)40 – 740 41 – 0

Managing Director: Jörg-Timm Kilisch
VAT-No.: DE164793120
Reg.No.: Schwerin HRB 3564

Schwerin
Mettenheimer Straße 12-14, 19061 Schwerin
cps-schwerin@bureauveritas.com

Hamburg
Oehleckerring 40, 22419 Hamburg
cps-hamburg@bureauveritas.com

Tuerkheim
Businesspark A96, 86842 Tuerkheim
cps-tuerkheim@bureauveritas.com

Nuremberg
Thurn-und-Taxis-Str. 18, 90411 Nuremberg
cps-nuernberg@bureauveritas.com



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Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

Client:

CommScope
Andrew Wireless System GmbH
Industriering 10
86675 Buchdorf
Germany

Test laboratory:

Bureau Veritas Consumer Products Services Germany GmbH
Thurn-und-Taxis-Straße 18
D-90411 Nürnberg
Tel.: +49 40 74041 0

Test location:

Bureau Veritas Consumer Products Services Germany GmbH
Thurn-und-Taxis-Straße 18
D-90411 Nürnberg

Laboratory accreditation no: DAKKS D-PL-12024-06-04
BNETZA-CAB-19/21-20

FCC Designation Number: DE0023
FCC Test Firm Registration: 366481

ISED CAB Identifier DE0016
ISED Company Number 3475A

Versions management:

V 01.00 Initial release



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1.1 CFR APPLIED STANDARDS

Type of Authorization

Certification for an Industrial Signal Booster.

Applicable FCC Rules

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Prepared in accordance with the requirements of FCC Rules and Regulations as listed in 47 CFR Chapter 1 Parts 2 and 20 and 27. The following subparts are applicable to the results in this test report.

Part 2, Subpart J - Equipment Authorization Procedures, Certification

Part 20, Commercial Mobiles Services

§ 20.21 Signal Boosters

Part 27; Miscellaneous Wireless Communications Services
Subpart C – Technical standards

§ 27.50 – Power and duty cycle limits

§ 27.54 – Frequency stability

§ 27.53 – Emission limits

The tests were selected and performed with reference to:

- FCC Public Notice 935210 applying "Signal Boosters Basic Certification Requirements" 935210 D02, 2024-11-20.
- FCC Public Notice 935210 applying "Measurement guidance for industrial and non-consumer signal booster, repeater and amplifier devices"
- 935210 D05, 2020-04-03.
- FCC Public Notice 971168 applying "Measurement guidance for certification of licensed digital transmitters" 971168 D01, 2018-04-09.
- ANSI C63.26: 2015 "American National Standard for Compliance Testing of Transmitters Used in Licensee Radio Services"
- RSS-199 Issue 4 "Broadband Radio Services (BRS) Equipment Operating in the Band 2500-2690 MHz"
- RSS-GEN Issue 5 "General Requirements for Compliance of Radio Apparatus"
- RSS-131 Issue 4 "Zone Enhancers"

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1.2 FCC-ISED CORRELATION TABLE

**Correlation of measurement requirements for
Industrial signal booster from FCC and ISED Canada**

Measurement	FCC reference	ISED reference
Effective radiated power, mean output power and zone enhancer gain	§ 27.50 KDB 935210 D05 v01r04: 3.5	RSS-GEN Issue 5, 6.12 RSS-199 Issue 4, 5.5
Peak to average ratio	§ 27.50	RSS-199 Issue 4, 5.5
Occupied bandwidth	§ 2.1049	RSS-GEN Issue 5, 6.7
Input-versus-output spectrum	KDB 935210 D05 v01r04: 3.4	RSS-131 Issue 4: 9.2
Conducted spurious emission at antenna terminal(s)	§ 2.1051 § 27.53 KDB 935210 D05 v01r04: 3.6	RSS-GEN Issue 5, 6.13 RSS-199 Issue 4, 5.6
Out-of-band emissions limits	§ 2.1051 § 27.53 KDB 935210 D05 v01r04: 3.6	RSS-GEN Issue 5, 6.13 RSS-199 Issue 4, 5.6
Frequency stability	§ 2.1055 § 27.54	RSS-GEN Issue 5, 6.11 RSS-131 Issue 4: 9.4 RSS-199 Issue 4, 5.4
Out-of-band rejection	KDB 935210 D05 v01r04: 3.3	RSS-131 Issue 4: 9.1
Field strength of spurious radiation	§ 2.1053 § 27.53	RSS-GEN Issue 5, 6.13 RSS-131 Issue 4, 10.5
All measurements	ANSI 63.26	ANSI 63.26

The test case frequency stability was not performed since the EUT is not equipped with signal processing capabilities. According KDB 935210 D05 in this case a measurement is not required.



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1.3 MEASUREMENT SUMMARY/SIGNATURES

47 CFR CHAPTER I FCC PART 27 Subpart C [Base § 27.50 stations/Repeater]

Effective radiated power, mean output power and zone enhancer gain
The measurement was performed according to ANSI C63.26,
KDB 935210 D05 v01r04: 3.5

Final Result

OP-Mode

Frequency band; Direction; Input Power; Signal type

Band 41 BRS (LBS), RF downlink, 0.3 dB < AGC, Wideband

BAND 41 BRS (LBS), RF downlink, 3 dB > AGC, Wideband

BAND 41 BRS (LBS), RF downlink, 0.3 dB < AGC, Narrowband

BAND 41 BRS (LBS), RF downlink, 3 dB > AGC, Narrowband

BAND 41 BRS (LBS), RF downlink, 0.3 dB < AGC, Wideband 5G

BAND 41 BRS (LBS), RF downlink, 3 dB > AGC, Wideband 5G

Band 41 BRS (MBS), RF downlink, 0.3 dB < AGC, Wideband

BAND 41 BRS (MBS), RF downlink, 3 dB > AGC, Wideband

BAND 41 BRS (MBS), RF downlink, 0.3 dB < AGC, Narrowband

BAND 41 BRS (MBS), RF downlink, 3 dB > AGC, Narrowband

BAND 41 BRS (MBS), RF downlink, 0.3 dB < AGC, Wideband 5G

BAND 41 BRS (MBS), RF downlink, 3 dB > AGC, Wideband 5G

Band 41 BRS (UBS), RF downlink, 0.3 dB < AGC, Wideband

BAND 41 BRS (UBS), RF downlink, 3 dB > AGC, Wideband

BAND 41 BRS (UBS), RF downlink, 0.3 dB < AGC, Narrowband

BAND 41 BRS (UBS), RF downlink, 3 dB > AGC, Narrowband

BAND 41 BRS (UBS), RF downlink, 0.3 dB < AGC, Wideband 5G

BAND 41 BRS (UBS), RF downlink, 3 dB > AGC, Wideband 5G

FCC

ISED

Passed

Passed

Passed

Passed

Passed

Passed

Passed

Passed

Passed

Passed

Passed

Passed

Passed

Passed

Passed

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**47 CFR CHAPTER I FCC PART 27 Subpart C [Base § 27.50
stations/Repeater]**

Peak to average ratio

The measurement was performed according to ANSI C63.26

Final Result

	FCC	ISED
BAND 41 BRS (LBS), RF downlink, 0.3 dB < AGC, Wideband	Passed	Passed
BAND 41 BRS (LBS), RF downlink, 3 dB > AGC, Wideband	Passed	Passed
BAND 41 BRS (LBS), RF downlink, 0.3 dB < AGC, Narrowband	Passed	Passed
BAND 41 BRS (LBS), RF downlink, 3 dB > AGC, Narrowband	Passed	Passed
BAND 41 BRS (MBS), RF downlink, 0.3 dB < AGC, Wideband	Passed	Passed
BAND 41 BRS (MBS), RF downlink, 3 dB > AGC, Wideband	Passed	Passed
BAND 41 BRS (MBS), RF downlink, 0.3 dB < AGC, Narrowband	Passed	Passed
BAND 41 BRS (MBS), RF downlink, 3 dB > AGC, Narrowband	Passed	Passed
BAND 41 BRS (UBS), RF downlink, 0.3 dB < AGC, Wideband	Passed	Passed
BAND 41 BRS (UBS), RF downlink, 3 dB > AGC, Wideband	Passed	Passed
BAND 41 BRS (UBS), RF downlink, 0.3 dB < AGC, Narrowband	Passed	Passed
BAND 41 BRS (UBS), RF downlink, 3 dB > AGC, Narrowband	Passed	Passed

47 CFR CHAPTER I FCC PART 2

§ 2.1049

Occupied bandwidth/Input-versus-output spectrum

The measurement was performed according to ANSI C63.26,
KDB 935210 D05 v01r04: 3.4

Final Result

OP-Mode

Frequency band; Direction; Input power; Signal type

	FCC	ISED
BAND 41 BRS (LBS), RF downlink, 0.3 dB < AGC, Wideband	Passed	Passed
BAND 41 BRS (LBS), RF downlink, 3 dB > AGC, Wideband	Passed	Passed
BAND 41 BRS (LBS), RF downlink, 0.3 dB < AGC, Narrowband	Passed	Passed
BAND 41 BRS (LBS), RF downlink, 3 dB > AGC, Narrowband	Passed	Passed
BAND 41 BRS (LBS), RF downlink, 0.3 dB < AGC, Wideband 5G	Passed	Passed
BAND 41 BRS (LBS), RF downlink, 3 dB > AGC, Wideband 5G	Passed	Passed
BAND 41 BRS (MBS), RF downlink, 0.3 dB < AGC, Wideband	Passed	Passed
BAND 41 BRS (MBS), RF downlink, 3 dB > AGC, Wideband	Passed	Passed
BAND 41 BRS (MBS), RF downlink, 0.3 dB < AGC, Narrowband	Passed	Passed
BAND 41 BRS (MBS), RF downlink, 3 dB > AGC, Narrowband	Passed	Passed
BAND 41 BRS (MBS), RF downlink, 0.3 dB < AGC, Wideband5G	Passed	Passed
BAND 41 BRS (MBS), RF downlink, 3 dB > AGC, Wideband 5G	Passed	Passed
BAND 41 BRS (UBS), RF downlink, 0.3 dB < AGC, Wideband	Passed	Passed
BAND 41 BRS (UBS), RF downlink, 3 dB > AGC, Wideband	Passed	Passed
BAND 41 BRS (UBS), RF downlink, 0.3 dB < AGC, Narrowband	Passed	Passed
BAND 41 BRS (UBS), RF downlink, 3 dB > AGC, Narrowband	Passed	Passed
BAND 41 BRS (UBS), RF downlink, 0.3 dB < AGC, Wideband 5G	Passed	Passed
BAND 41 BRS (UBS), RF downlink, 3 dB > AGC, Wideband 5G	Passed	Passed



Tests performed on UAP-XR [BRS]

The measurement was performed according to ANSI C63.26, KDB 935210 D05 v01r04: 3.6

BAND 41 BRS (UBS), high, RF downlink, Wideband 5G

Passed

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47 CFR CHAPTER I FCC PART 27 Subpart C [Base stations/Repeater]

§2.1051, § 27.53

Out-of-band emission limits

The measurement was performed according to ANSI C63.26,
KDB 935210 D05 v01r04: 3.6

OP-Mode

Band edge; Frequency band; Number of signals; Direction; Input power; Signal type

FCC

ISED

	Passed	Passed
Upper, Band 41 BRS (LBS), 1, RF downlink, 0.3 dB < AGC, Wideband	Passed	Passed
Upper, Band 41 BRS (LBS), 1, RF downlink, 3 dB > AGC, Wideband	Passed	Passed
Upper, Band 41 BRS (LBS), 1, RF downlink, 0.3 dB < AGC, Wideband 5G	Passed	Passed
Upper, Band 41 BRS (LBS), 1, RF downlink, 3 dB > AGC, Wideband 5G	Passed	Passed
Upper, Band 41 BRS (LBS), 1, RF downlink, 0.3 dB < AGC, Narrowband	Passed	Passed
Upper, Band 41 BRS (LBS), 1, RF downlink, 3 dB > AGC, Narrowband	Passed	Passed
Lower, Band 41 BRS (LBS), 1, RF downlink, 0.3 dB < AGC, Wideband	Passed	Passed
Lower, Band 41 BRS (LBS), 1, RF downlink, 3 dB > AGC, Wideband	Passed	Passed
Lower, Band 41 BRS (LBS), 1, RF downlink, 0.3 dB < AGC, Wideband 5G	Passed	Passed
Lower, Band 41 BRS (LBS), 1, RF downlink, 3 dB > AGC, Wideband 5G	Passed	Passed
Lower, Band 41 BRS (LBS), 1, RF downlink, 0.3 dB < AGC, Narrowband	Passed	Passed
Lower, Band 41 BRS (LBS), 1, RF downlink, 3 dB > AGC, Narrowband	Passed	Passed
Upper, Band 41 BRS (LBS), 2, RF downlink, 0.3 dB < AGC, Wideband	Passed	Passed
Upper, Band 41 BRS (LBS), 2, RF downlink, 3 dB > AGC, Wideband	Passed	Passed
Upper, Band 41 BRS (LBS), 2, RF downlink, 0.3 dB < AGC, Narrowband	Passed	Passed
Upper, Band 41 BRS (LBS), 2, RF downlink, 3 dB > AGC, Narrowband	Passed	Passed
Lower, Band 41 BRS (LBS), 2, RF downlink, 0.3 dB < AGC, Wideband	Passed	Passed
Lower, Band 41 BRS (LBS), 2, RF downlink, 3 dB > AGC, Wideband	Passed	Passed
Lower, Band 41 BRS (LBS), 2, RF downlink, 0.3 dB < AGC, Narrowband	Passed	Passed
Lower, Band 41 BRS (LBS), 2, RF downlink, 3 dB > AGC, Narrowband	Passed	Passed



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Tests performed on UAP-XR [BRS]

**47 CFR CHAPTER I FCC PART 27 Subpart C [Base
stations/Repeater]**

§2.1051, § 27.53

Out-of-band emission limits

The measurement was performed according to ANSI C63.26,

KDB 935210 D05 v01r04: 3.6

OP-Mode

Band edge; Frequency band; Number of signals; Direction; Input power; Signal
type

FCC

ISED

	Passed	Passed
Upper, Band 41 BRS (MBS), 1, RF downlink, 0.3 dB < AGC, Wideband	Passed	Passed
Upper, Band 41 BRS (MBS), 1, RF downlink, 3 dB > AGC, Wideband	Passed	Passed
Upper, Band 41 BRS (MBS), 1, RF downlink, 0.3 dB < AGC, Wideband 5G	Passed	Passed
Upper, Band 41 BRS (MBS), 1, RF downlink, 3 dB > AGC, Wideband 5G	Passed	Passed
Upper, Band 41 BRS (MBS), 1, RF downlink, 0.3 dB < AGC, Narrowband	Passed	Passed
Upper, Band 41 BRS (MBS), 1, RF downlink, 3 dB > AGC, Narrowband	Passed	Passed
Lower, Band 41 BRS (MBS), 1, RF downlink, 0.3 dB < AGC, Wideband	Passed	Passed
Lower, Band 41 BRS (MBS), 1, RF downlink, 3 dB > AGC, Wideband	Passed	Passed
Lower, Band 41 BRS (MBS), 1, RF downlink, 0.3 dB < AGC, Wideband 5G	Passed	Passed
Lower, Band 41 BRS (MBS), 1, RF downlink, 3 dB > AGC, Wideband 5G	Passed	Passed
Lower, Band 41 BRS (MBS), 1, RF downlink, 0.3 dB < AGC, Narrowband	Passed	Passed
Lower, Band 41 BRS (MBS), 1, RF downlink, 3 dB > AGC, Narrowband	Passed	Passed
Upper, Band 41 BRS (MBS), 2, RF downlink, 0.3 dB < AGC, Wideband	Passed	Passed
Upper, Band 41 BRS (MBS), 2, RF downlink, 3 dB > AGC, Wideband	Passed	Passed
Upper, Band 41 BRS (MBS), 2, RF downlink, 0.3 dB < AGC, Narrowband	Passed	Passed
Upper, Band 41 BRS (MBS), 2, RF downlink, 3 dB > AGC, Narrowband	Passed	Passed
Lower, Band 41 BRS (MBS), 2, RF downlink, 0.3 dB < AGC, Wideband	Passed	Passed
Lower, Band 41 BRS (MBS), 2, RF downlink, 3 dB > AGC, Wideband	Passed	Passed
Lower, Band 41 BRS (MBS), 2, RF downlink, 0.3 dB < AGC, Narrowband	Passed	Passed
Lower, Band 41 BRS (MBS), 2, RF downlink, 3 dB > AGC, Narrowband	Passed	Passed



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**47 CFR CHAPTER I FCC PART 27 Subpart C [Base
stations/Repeater]**

§2.1051, § 27.53

Out-of-band emission limits

The measurement was performed according to ANSI C63.26,

KDB 935210 D05 v01r04: 3.6

OP-Mode

Band edge; Frequency band; Number of signals; Direction; Input power; Signal type

FCC

ISED

	Passed	Passed
Upper, Band 41 BRS (UBS), 1, RF downlink, 0.3 dB < AGC, Wideband	Passed	Passed
Upper, Band 41 BRS (UBS), 1, RF downlink, 3 dB > AGC, Wideband	Passed	Passed
Upper, Band 41 BRS (UBS), 1, RF downlink, 0.3 dB < AGC, Wideband 5G	Passed	Passed
Upper, Band 41 BRS (UBS), 1, RF downlink, 3 dB > AGC, Wideband 5G	Passed	Passed
Upper, Band 41 BRS (UBS), 1, RF downlink, 0.3 dB < AGC, Narrowband	Passed	Passed
Upper, Band 41 BRS (UBS), 1, RF downlink, 3 dB > AGC, Narrowband	Passed	Passed
Lower, Band 41 BRS (UBS), 1, RF downlink, 0.3 dB < AGC, Wideband	Passed	Passed
Lower, Band 41 BRS (UBS), 1, RF downlink, 3 dB > AGC, Wideband	Passed	Passed
Lower, Band 41 BRS (UBS), 1, RF downlink, 0.3 dB < AGC, Wideband 5G	Passed	Passed
Lower, Band 41 BRS (UBS), 1, RF downlink, 3 dB > AGC, Wideband 5G	Passed	Passed
Lower, Band 41 BRS (UBS), 1, RF downlink, 0.3 dB < AGC, Narrowband	Passed	Passed
Lower, Band 41 BRS (UBS), 1, RF downlink, 3 dB > AGC, Narrowband	Passed	Passed
Upper, Band 41 BRS (UBS), 2, RF downlink, 0.3 dB < AGC, Wideband	Passed	Passed
Upper, Band 41 BRS (UBS), 2, RF downlink, 3 dB > AGC, Wideband	Passed	Passed
Upper, Band 41 BRS (UBS), 2, RF downlink, 0.3 dB < AGC, Narrowband	Passed	Passed
Upper, Band 41 BRS (UBS), 2, RF downlink, 3 dB > AGC, Narrowband	Passed	Passed
Lower, Band 41 BRS (UBS), 2, RF downlink, 0.3 dB < AGC, Wideband	Passed	Passed
Lower, Band 41 BRS (UBS), 2, RF downlink, 3 dB > AGC, Wideband	Passed	Passed
Lower, Band 41 BRS (UBS), 2, RF downlink, 0.3 dB < AGC, Narrowband	Passed	Passed
Lower, Band 41 BRS (UBS), 2, RF downlink, 3 dB > AGC, Narrowband	Passed	Passed

**47 CFR CHAPTER I FCC PART 27 Subpart C [Base
stations/Repeater]**

KDB 935210 D05 v01r04: 3.3

Out-of-band rejection

The measurement was performed according to ANSI C63.26;

KDB 935210 D05 v01r04: 3.3

Final Result

OP-Mode

Frequency Band, Direction

FCC

ISED

Band 41 BRS (LBS), RF downlink	Passed	Passed
Band 41 BRS (MBS), RF downlink	Passed	Passed
Band 41 BRS (UBS), RF downlink	Passed	Passed



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47 CFR CHAPTER I FCC PART 27 Subpart C [Base stations/Repeater]

§ 2.1053, § 27.53

Field strength of spurious radiation

The measurement was performed according to ANSI C63.26

Final Result

OP-Mode

Frequency Band, Test Frequency, Direction

Band 41 BRS (LBS), RF downlink

Passed

Passed

Band 41 BRS (MBS), RF downlink

Passed

Passed

Band 41 BRS (UBS), RF downlink

Passed

Passed

The test case frequency stability was not performed, since the EUT is not equipped with signal processing capabilities.



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2 ADMINISTRATIVE DATA

2.1 TESTING LABORATORY

Bureau Veritas Consumer Products Services

Germany GmbH

Thurn-und-Taxis-Straße 18

D-90411 Nürnberg

Tel.: +49 40 74041 0

Fax: +49 40 74041-2755

2.2 APPLICANT DATA

Company Name:

CommScope

Address:

Andrew Wireless Systems GmbH

Industriering 10

86675 Buchdorf

Germany

Contact Person:

Mr. Jiri Čečka

2.3 MANUFACTURER DATA

Company Name:

Please see applicant data.

Address:

Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

3 TEST OBJECT DATA

3.1 GENERAL EUT DESCRIPTION

Kind of Device product description	Cellular repeater
Product name	Cellular repeater
Type	UAP-XR
Declared EUT data by the supplier	
General Product Description	<p>The EUT is an industrial signal booster supporting the following:</p> <p>Band 30/WCS 2300: 2350 – 2360 MHz</p> <p>Band 41 (BRS 2500), Broadband Radio Service:</p> <ul style="list-style-type: none">• Lower Band Segment (LBS): 2496- 2568 MHz (Range for FCC)• Lower Band Segment (LBS): 2500- 2568 MHz (Range for ISSED)• Middle Band Segment (MBS): 2572- 2614 MHz• Upper Band Segment (UBS): 2618 – 2690 MHz <p>Band 25/PCS 1900</p> <p>Band 66/AWS 1700</p> <p>A RF operation is only supported for the downlink.</p>
Booster Type	Industrial signal booster
Voltage Type	DC, supply about PoE
Voltage Level	-60 V - -36 V, -57 V nominal
Maximum Output Donor Port [Uplink]	-
Maximum Output Server Port [Downlink]	18 dBm in all bands
Maximum Gain [Uplink]	-
Maximum Gain [Downlink]	20 dB in all bands

The main components of the EUT are listed and described in chapter 3.2 EUT Main components.

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3.2 EUT MAIN COMPONENTS

Sample Parameter	Value
Serial Number	SZBEBF2452A0003
HW Version	7862380-00 Rev: 00
SW Version	01.03.0012
Comment	-----

NOTE: The short description is used to simplify the identification of the EUT in this test report.

3.3 ANCILLARY EQUIPMENT

For the purposes of this test report, ancillary equipment is defined as equipment which is used in conjunction with the EUT to provide operational and control features to the EUT. It is necessary to configure the system in a typical fashion, as a customer would normally use it. But nevertheless Ancillary Equipment can influence the test results.

Device	Details (manufacturer, type model, OUT code)	Description
-	-	-

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3.4 AUXILIARY EQUIPMENT

For the purposes of this test report, auxiliary equipment is defined as equipment which is used temporarily to enable operational and control features especially used for the tests of the EUT which is not used during normal operation or equipment that is used during the tests in combination with the EUT but is not subject of this test report. It is necessary to configure the system in a typical fashion, as a customer would normally use it. But nevertheless Auxiliary Equipment can influence the test results.

Device	Details (manufacturer, type, S/N)	Description
AUX1	CommScope; ION-E PSU Shelf AC; HD20882	Power supply rack
AUX1	CommScope; ION-E WCS-2; SZAEAJ1952A0032	Power supply rack
AUX3	GE Power Electronics Inc.; CAR1212FPBC-Z; FK69111	Power module
AUX4	GE Energy; CP2000AC54TEP-CM; LBLNPW13KZ07004506	Power module
AUX5	CommScope; ION E SUI; (e1)MA34	Ethernet module
AUX6	CommScope; ION E CAT; SZBEAE1810A0009	PoE module
AUX8	CommScope, ION E RFD, SZBEAG1825A0004	RF card plug-in module
AUX8	CommScope, ION E RFD, SZBEA G1849A0043	RF card plug-in module

3.5 EUT SETUPS

This chapter describes the combination of EUTs and equipment used for testing. The rationale for selecting the EUTs, ancillary and auxiliary equipment and interconnecting cables, is to test a representative configuration meeting the requirements of the referenced standards.

Setup	Combination of EUTs	Description and rationale
	,	Setup for all tests

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Tests performed on UAP-XR [BRS]

3.6 OPERATING MODES

This chapter describes the operating modes of the EUT used for testing.

3.6.1 TEST CHANNELS

Channel frequencies for FCC use:

Band	Direction	Lower Frequency Band Edge [MHz]	Upper Frequency Band Edge [MHz]	Center Frequency [MHz]	Port
41, BRS (LBS)	Downlink	2496.00	2568.00	2532.00	Donor
41; BRS (MBS)	Downlink	2572.00	2614.00	2593.00	Donor
41, BRS (UBS)	Downlink	2618.00	2690.00	2654.00	Donor

Channel frequencies for ISSED use:

Band	Direction	Lower Frequency Band Edge [MHz]	Upper Frequency Band Edge [MHz]	Center Frequency [MHz]	Port
41, BRS (LBS)	Downlink	2500.00	2568.00	2534.00	Donor
41; BRS (MBS)	Downlink	2572.00	2614.00	2593.00	Donor
41, BRS (UBS)	Downlink	2618.00	2690.00	2654.00	Donor

3.6.2 DEFINITION OF USED FREQUENCY BANDS

Narrowband: representation by a GSM signal

Wideband : representation by an AWGN signal with 4.1 MHz

Wideband 5G: representation by an AWGN signal with 43.6 MHz for LBS und UBS. For MBS the representation was done with 23.9 MHz.

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Tests performed on UAP-XR [BRS]

3.6.3 AUTOMATIC GAIN CONTROL LEVELS

AGC Levels							
Band	Direction	Signal Type	AGC Start Pin [dBm]	AGC Start Pin -0.3 dB [dBm]	AGC Start Pin +3 dB [dBm]	Frequency [MHz]	Frequency
41, BRS (LBS)	Downlink	Wideband	-0.5	-0.5	2.5	2532.0	Mid
41, BRS (LBS)	Downlink	Narrowband	-0.6	-0.9	2.4	2532.0	
41, BRS (LBS)	Downlink	Wideband 5G	-0.2	-0.5	2.8	2532.0	
41, BRS (MBS)	Downlink	Wideband	-0.7	-1.0	2.3	2593.0	
41, BRS (MBS)	Downlink	Narrowband	-0.7	-1.0	2.3	2593.0	
41, BRS (MBS)	Downlink	Wideband 5G	0.3	0.6	2.7	2593.0	
41, BRS (UBS)	Downlink	Wideband	-0.5	-0.8	2.5	2654.0	
41, BRS (UBS)	Downlink	Narrowband	0.0	-0.3	3.0	2654.0	
41, BRS (UBS)	Downlink	Wideband 5G	0.3	0,0	3.3	2654.0	
41, BRS (LBS)	Downlink	Wideband	0.8	0.5	3.8	2498.5	Low
41, BRS (LBS)	Downlink	Narrowband	0.8	0.5	3.8	2496.2	
41, BRS (LBS)	Downlink	Wideband 5G	0.5	0.2	3.2	2518.5	
41, BRS (MBS)	Downlink	Wideband	0.2	-0.1	3.2	2574.5	
41, BRS (MBS)	Downlink	Narrowband	0.2	-0.1	3.2	2572.2	
41, BRS (MBS)	Downlink	Wideband 5G	0.7	-0.4	2.6	2584.5	
41, BRS (UBS)	Downlink	Wideband	1.6	1.3	4.6	2620.5	
41, BRS (UBS)	Downlink	Narrowband	1.6	1.3	4.6	2618.2	
41, BRS (UBS)	Downlink	Wideband 5G	1.3	1.0	4.0	2640.5	
41, BRS (LBS)	Downlink	Wideband	0.2	-0.1	3.2	2565.5	High
41, BRS (LBS)	Downlink	Narrowband	0.2	-0.1	3.2	2567.8	
41, BRS (LBS)	Downlink	Nwideband 5G	-0.1	-0.4	2.6	2545.5	
41, BRS (MBS)	Downlink	Wideband	-0.6	-0.9	2.4	2611.5	
41, BRS (MBS)	Downlink	Narrowband	-0.8	-1.1	2.2	2613.8	
41, BRS (MBS)	Downlink	Nwideband 5G	-0,9	-1.2	1.8	2601.5	
41, BRS (UBS)	Downlink	Wideband	0.4	-0.1	3.4	2687.5	
41, BRS (UBS)	Downlink	Narrowband	0.5	0.3	3.6	2689.8	
41, BRS (UBS)	Downlink	Nwideband 5G	0.4	0.1	3.4	2667.5	
41, BRS (LBS)	Downlink	Wideband	0.9	0.6	4.0	2500.0	Max. Power
41, BRS (LBS)	Downlink	Narrowband	0.9	0.6	3.7	2500.0	
41, BRS (LBS)	Downlink	Wideband 5G	-0.2	-0.5	2.8	2532.0	
41, BRS (MBS)	Downlink	Wideband	-0.6	-0.9	2.5	2589.6	
41, BRS (MBS)	Downlink	Narrowband	-0.6	-0.9	2.5	2589.6	
41, BRS (MBS)	Downlink	Wideband 5G	0.3	0.6	2.7	2593.0	
41, BRS (UBS)	Downlink	Wideband	-0.5	-0.8	2.6	2661.8	
41, BRS (UBS)	Downlink	Narrowband	-0.5	-0.8	2.6	2661.8	
41, BRS (UBS)	Downlink	Wideband 5G	0.3	0,0	3.3	2654.0	

The test results relate only to the tested item. The sample has been provided by the client.

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Remark:

If the measured frequency f_0 for the max power has a too low distance to the band edges, because in the tests modulated signals must be used: The next possible frequency to the according band edge is used.

For example for minimum distances to the band edges:

GSM signal (narrowband): 0.2 MHz

AWGN signal (wideband): 2.5 MHz

AWGN signal (wideband 5G): Here only measurements at the mid frequency were performed.

3.7 PRODUCT LABELLING**3.7.1 FCC ID LABEL**

Please refer to the documentation of the applicant.

3.7.2 LOCATION OF THE LABEL ON THE EUT

Please refer to the documentation of the applicant.

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Tests performed on UAP-XR [BRS]

4 DESCRIPTION OF EMC TEST CENTRE

4.1 CLIMATIC CONDITIONS DURING MEASUREMENTS

The climatic conditions were within the following ranges.

For ESD testing, the conditions during the test were denoted in the corresponding chapter.

Ambient temperature:	25 ± 10 °C
Relative humidity:	20 – 60 %
Air pressure:	860 - 1060 hPa

4.2 CONFORMITY STATEMENT/DECISION RULE

4.2.1 EMISSION

If the standard or the customer defines no decision rule, the laboratory applies a decision rule following the "Binary Statement for Simple Acceptance Rule ($w=0$)" (chapter 4.2.1) of ILAC Guidelines on Decision Rules and Statements of Conformity (ILAC-G8:09/2019). If the measured value is at the limit value, it is evaluated as PASS. The client has agreed with application of the decision rule prior testing and demanded a statement of conformity by the test laboratory.

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Tests performed on UAP-XR [BRS]

4.3 MEASUREMENT UNCERTAINTIES

KDB 935210 D05	Test laboratory
Power measurement	0,68 dB
Measuring AGC threshold level	0,90 dB
Out of band rejection	0,90 dB
Input-versus-output signal comparison	0,91 dB
Mean power output	0,90 dB
Measuring out-of-band/out-of-block (including intermodulation) emissions and spurious emissions	0,90 dB
Out-of-band/out-of-block emissions conducted measurements	0,90 dB
Spurious emissions conducted	2,18 dB
Spurious emissions radiated measurements	5,38 dB
Total frequency uncertainty	2×10^{-7}

Reference : ECL-MU5.4.6.3-EMC-14-001-V03.00 MU Wireless.xlsx

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Tests performed on UAP-XR [BRS]

5 TEST RESULTS

5.1 EFFECTIVE RADIATED POWER, MEAN OUTPUT POWER AND ZONE ENHANCER GAIN

Standard FCC Part 27, §27.50

The test was performed according to:

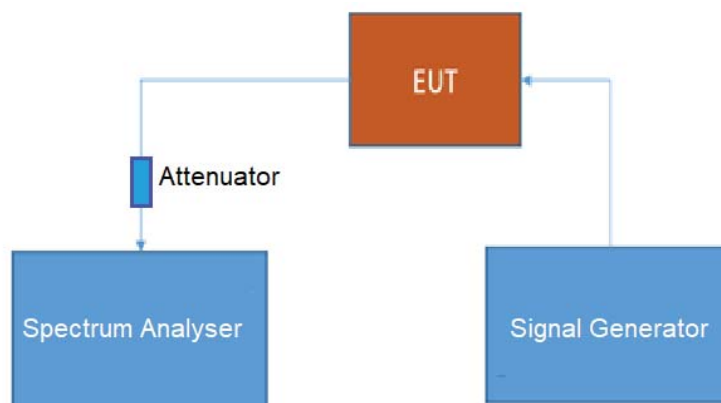
ANSI C63.26, KDB 935210 D05 v01r04: 3.5

Test date: 2025-03-17 – 2025-03-18**Environmental conditions:** 22.8 °C; 26 % r. H./23.5 °C; 23 % r. H.**Test engineer:** Thomas Hufnagel

5.1.1 TEST DESCRIPTION

This test case is intended to demonstrate compliance to the signal booster power and gain limits and requirements for industrial signal boosters.

The EUT was connected to the test setup according to the following diagram:



The attenuation of the measuring and stimulus path are known for each measured frequency and are considered.

The Spectrum Analyzer settings can be directly found in the measurement diagrams.

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Tests performed on UAP-XR [BRS]

5.1.2 TEST REQUIREMENTS/LIMITSAbstract from FCC Part 27:**Part 27; Miscellaneous Wireless Communication Services****Subpart C – Technical standards****§ 27.50****Band 41:**

- (h) The following power limits shall apply in the BRS and EBS:
- (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.

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Tests performed on UAP-XR [BRS]

Abstract from RSS-199:**5.5 Transmitter power**

The maximum output power of the equipment shall comply with the limits specified in table 3. In this table, maximum power refers to the equivalent isotropically radiated power (e.i.r.p.) or total radiated power (TRP), measured in terms of average values.

Subscriber equipment other than fixed subscriber equipment shall not exceed an e.i.r.p of 2W per channel bandwidth.

Fixed subscriber equipment shall not exceed the following:

- i i. conducted power of 2W per channel bandwidth for all ports
- ii ii. e.i.r.p of 40 W per channel bandwidth

The maximum power limits for fixed station and base station are provided in Table 3. The limits in this RSS are specified for the purpose of certification and may not apply to all deployment scenarios. Consult SRSP-517 for more deployment details in the band 2500-2690 MHz.

Table 3: Maximum power of fixed station and base station in the band 2500-2690 MHz

Equipment type	Maximum power
Non-AAS fixed station and base station	e.i.r.p of 1640 W /MHz
AAS fixed station and base station	TRP of 43 dBm /MHz

5.1.3 TEST PROTOCOL

FCC table

Band 41, BRS (LBS), downlink							
Signal type	Input power	Frequency [MHz]	Input power [dBm]	Maximum average output power [dBm]	Limit average output power [dBm] EIRP	Margin to limit [dB]	Gain [dB]
Wideband	0.3 dB < AGC	2500.0	0.6	19.1	62.6	43.5	18.5
Wideband	3 dB > AGC	2500.0	4.0	19.2	62.6	43.4	15.2
Narrowband	0.3 dB < AGC	2500.0	0.6	19.2	51.6	32.4	18.6
Narrowband	3 dB > AGC	2500.0	3.7	19.5	51.6	32.1	15.8
Wideband 5G	0.3 dB < AGC	2532.0	-0.5	18.9	72.1	53.2	19.5
Wideband 5G	3 dB > AGC	2532.0	2.8	18.4	72.1	53.7	15.6

Band 41, BRS (MBS), downlink							
Signal type	Input power	Frequency [MHz]	Input power [dBm]	Maximum average output power [dBm]	Limit average output power [dBm] EIRP	Margin to limit [dB]	Gain [dB]
Wideband	0.3 dB < AGC	2589.6	-0.9	18.6	62.2	43.6	19.5
Wideband	3 dB > AGC	2589.6	2.5	18.0	62.2	44.2	15.5
Narrowband	0.3 dB < AGC	2589.6	-0.9	18.7	51.2	32.5	19.7
Narrowband	3 dB > AGC	2589.6	2.5	18.1	51.2	33.1	15.6
Wideband 5G	0.3 dB < AGC	2593.0	-0.6	18.6	69.2	50.6	19.2
Wideband 5G	3 dB > AGC	2593.0	2.7	18.1	69.2	51.1	15.4

Band 41, BRS (UBS), downlink							
Signal type	Input power	Frequency [MHz]	Input power [dBm]	Maximum average output power [dBm]	Limit average output power [dBm] EIRP	Margin to limit [dB]	Gain [dB]
Wideband	0.3 dB < AGC	2661.8	-0.8	18.5	62.6	44.1	19.3
Wideband	3 dB > AGC	2661.8	2.6	17.9	62.6	44.7	15.3
Narrowband	0.3 dB < AGC	2661.8	-0.8	18.6	51.6	33.0	19.3
Narrowband	3 dB > AGC	2661.8	2.6	17.8	51.6	33.8	15.2
Wideband 5G	0.3 dB < AGC	2654.0	0.0	18.9	72.1	53.2	18.9
Wideband 5G	3 dB > AGC	2654.0	3.3	18.3	72.1	53.8	15.1

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Tests performed on UAP-XR [BRS]

ISED table

Band 41, BRS (LBS), downlink							
Signal type	Input power	Frequency [MHz]	Input power [μW; dBm]	Maximum average output power [mW; dBm]	Limit average output power [W; dBm] EIRP	Margin to limit [dB]	Gain [dB]
Wideband	0.3 dB < AGC	2500.0	1160; 0.6	82.0; 19.1	1640; 62.1	43.0	18.5
Wideband	3 dB > AGC	2500.0	1810; 2.6	82.4; 19.2	1640; 62.1	42.9	16.6
Narrowband	0.3 dB < AGC	2500.0	1130; 0.5	82.0; 19.1	1640; 62.1	43.0	18.6
Narrowband	3 dB > AGC	2500.0	2420; 3.8	90.5; 19.6	1640; 62.1	42.5	15.7
Wideband 5G	0.3 dB < AGC	2532.0	887; -0.5	78.4; 18.9	1640; 62.1	43.2	19.5
Wideband 5G	3 dB > AGC	2532.0	1900; 2.8	69.0; 18.4	1640; 62.1	43.7	15.6

Band 41, BRS (MBS), downlink							
Signal type	Input power	Frequency [MHz]	Input power [μW; dBm]	Maximum average output power [mW; dBm]	Limit average output power [W; dBm] EIRP	Margin to limit [dB]	Gain [dB]
Wideband	0.3 dB < AGC	2589.6	823; -0.8	72.1; 18.6	1640; 62.1	43.5	19.4
Wideband	3 dB > AGC	2589.6	1780; 2.5	63.3; 18.0	1640; 62.1	44.1	15.5
Narrowband	0.3 dB < AGC	2589.6	810; -0.9	73.8; 18.7	1640; 62.1	43.4	19.6
Narrowband	3 dB > AGC	2589.6	1740; 2.4	66.1; 18.2	1640; 62.1	43.9	15.8
Wideband 5G	0.3 dB < AGC	2593.0	868; -0.6	72.9; 18.6	1640; 62.1	43.5	19.2
Wideband 5G	3 dB > AGC	2593.0	1870; 2.7	64.2; 18.1	1640; 62.1	44.0	15.4

Band 41, BRS (UBS), downlink							
Signal type	Input power	Frequency [MHz]	Input power [μW; dBm]	Maximum average output power [mW; dBm]	Limit average output power [W; dBm] EIRP	Margin to limit [dB]	Gain [dB]
Wideband	0.3 dB < AGC	2661.8	839; -0.9	70.9; 18.5	1640; 62.1	43.6	19.3
Wideband	3 dB > AGC	2661.8	1830; 2.6	62.2; 17.9	1640; 62.1	44.2	15.3
Narrowband	0.3 dB < AGC	2661.8	855; -0.7	70.9; 18.5	1640; 62.1	43.6	19.2
Narrowband	3 dB > AGC	2661.8	1850; 2.7	61.9; 17.9	1640; 62.1	44.2	15.2
Wideband 5G	0.3 dB < AGC	2654.0	995; 0.0	78.0; 18.9	1640; 62.1	43.2	18.9
Wideband 5G	3 dB > AGC	2654.0	2130; 3.3	68.2; 18.3	1640; 62.1	43.8	15.1

Remark:

Please see next sub-clause for the measurement plot

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Tests performed on UAP-XR [BRS]

5.1.4 SAMPLE CALCULATION OF OUTPUT POWER

FCC calculation:**Maximum output power (EIRP) in consideration together with the send antenna**

The highest power level together in consideration with the lowest margin to limit in the tables above is

$p_{\text{highest}} = 19.5 \text{ dBm}$ at the channel which has the most output power of all channels.

Hereby at an antenna gain of $G_{\text{dBi}} = 13.0 \text{ dB}$ the highest effective radiated output power EIRP $p_{\text{EIRP 1CH}}$ of one channel is:

$$p_{\text{EIRP 1CH}} = p_{\text{highest}} + G_{\text{dBi}}$$

This results in:

$$p_{\text{EIRP 1CH}} = 19.5 \text{ dBm} + 13.0 \text{ dB} = 32.5 \text{ dBm}$$

Because only one conducted antenna port is available no calculation for MIMO operation must be done.

Final result of this consideration:

$$p_{\text{EIRP all channels}} = 32.5 \text{ dBm} < 51.6 \text{ dBm}$$

The DUT doesn't exceed the limit.

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Tests performed on UAP-XR [BRS]

ISED calculation:**Maximum output power (EIRP) in consideration together with the send antenna**

The highest power level together in consideration with the lowest margin to limit in the tables above is

$p_{\text{highest}} = 19.6 \text{ dBm}$ at the channel which has the most output power of all channels.

Hereby at an antenna gain of $G_{\text{dBi}} = 13.0 \text{ dB}$ the highest effective radiated output power EIRP $p_{\text{EIRP 1CH}}$ of one channel is:

$$p_{\text{EIRP 1CH}} = p_{\text{highest}} + G_{\text{dBi}}$$

This results in:

$$p_{\text{EIRP 1CH}} = 19.6 \text{ dBm} + 13.0 \text{ dB} = 32.6 \text{ dBm}$$

The equivalent power P is according the given formula:

$$P_{\text{EIRP 1CH}} =$$

$$P_{\text{EIRP 1CH}} [W] = 10 \exp \left(\frac{p_{\text{EIRP 1CH}} [\text{dBm}]}{10} \right) * 0.001 [W]$$

This results in:

$$P_{\text{EIRP 1CH}} [W] = 10 \exp \left(\frac{32.6 [\text{dBm}]}{10} \right) * 0.001 [W] = 1.82 \text{ W}$$

Because only one conducted antenna port is available no calculation for MIMO operation must be done.

Final result of this consideration:

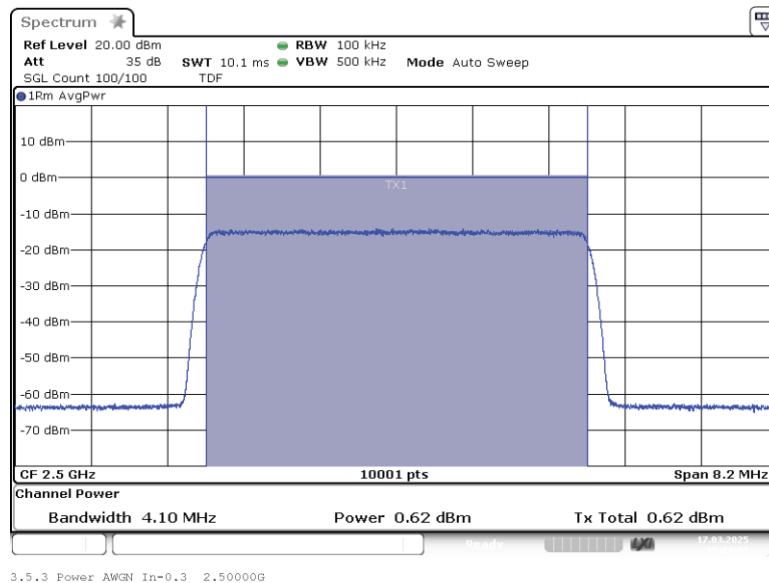
$p_{\text{EIRP all channels}} = 1.82 \text{ W} < 1640 \text{ W/MHz}$, hereby 1640 W/MHz is the highest allowed limit in this band which equates 62.1 dBm/MHz.

The DUT doesn't exceed the limit.

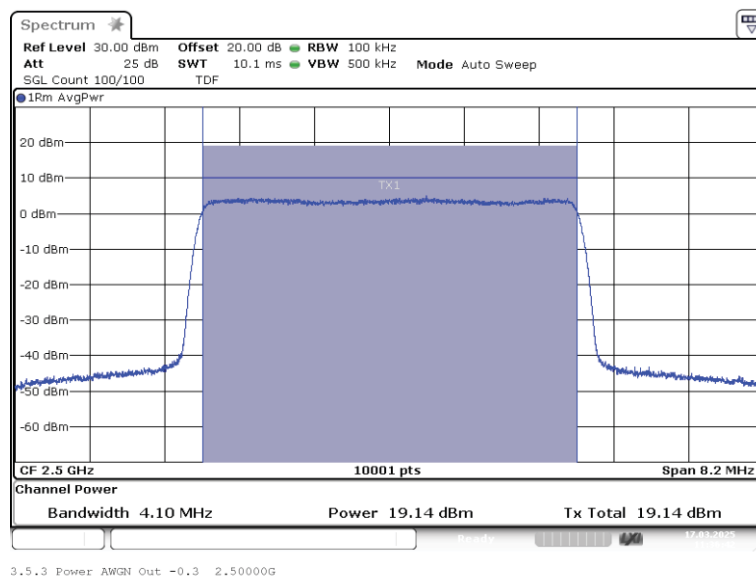
5.1.5 MEASUREMENT PLOT

FCC plots

Band: BRS LBS; Frequency: 2.5000 GHz; Band edge: f0; Mod: AWGN;
Input power 0.3 dB < AGC



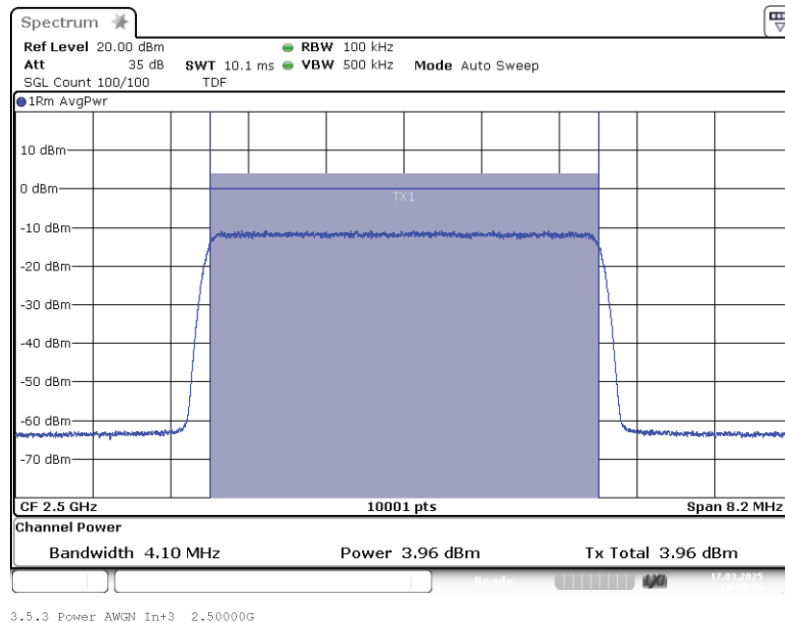
Band: BRS LBS; Frequency: 2.5000 GHz; Band edge: f0; Mod: AWGN;
Output power 0.3 dB < AGC



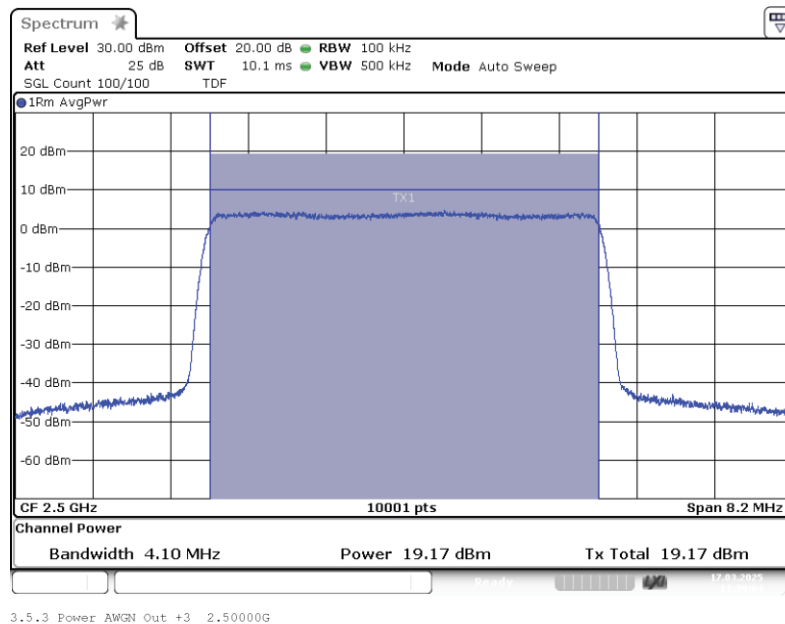
Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

Band: BRS LBS; Frequency: 2.5000 GHz; Band edge: f0; Mod: AWGN;
Input power 3 dB > AGC



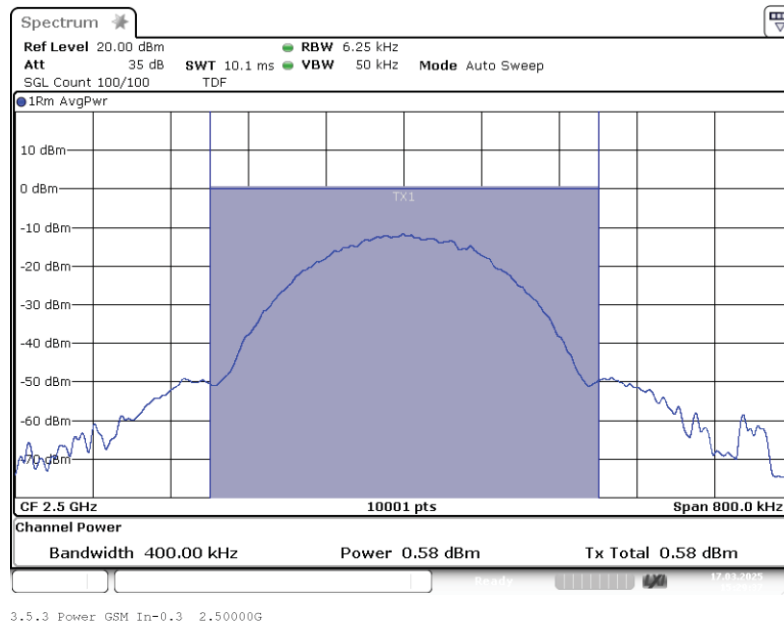
Band: BRS LBS; Frequency: 2.5000 GHz; Band edge: f0; Mod: AWGN;
Output power 3 dB > AGC



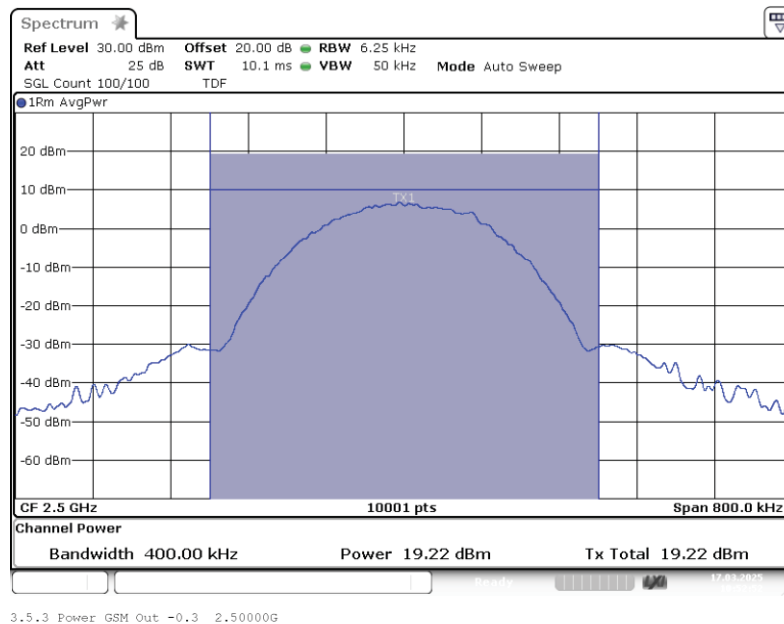
Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

Band: BRS LBS; Frequency: 2.5000 GHz; Band edge: f0; Mod: GSM;
Input power 0.3 dB < AGC



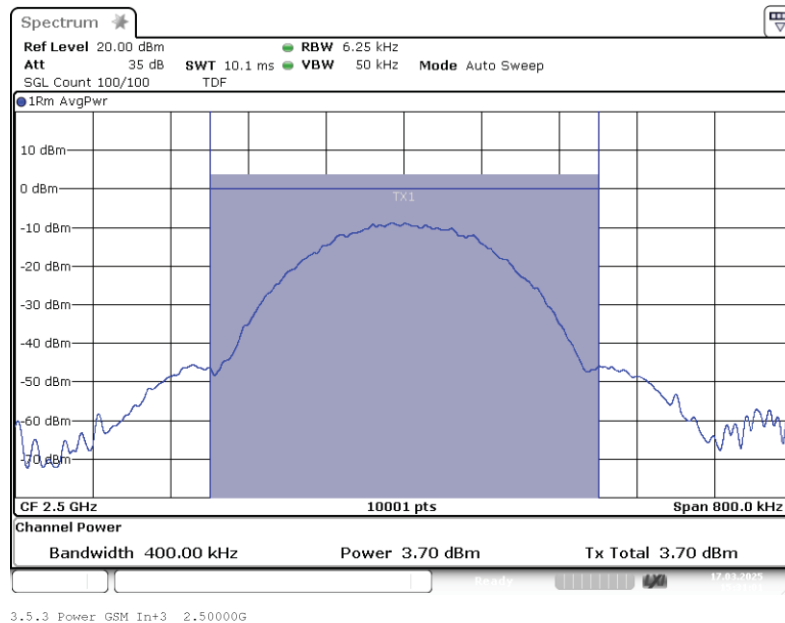
Band: BRS LBS; Frequency: 2.5000 GHz; Band edge: f0; Mod: GSM;
Output power 0.3 dB < AGC



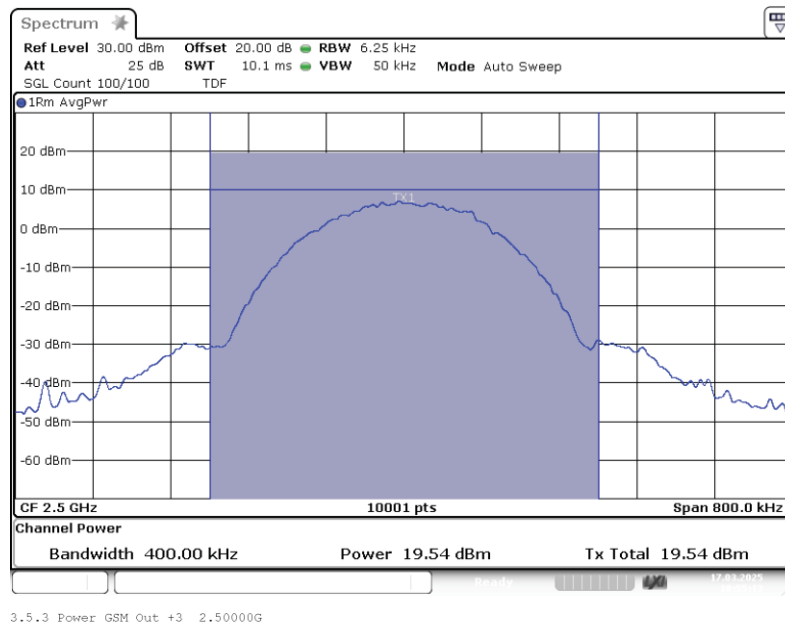
Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

Band: BRS LBS; Frequency: 2.5000 GHz; Band edge: f0; Mod: GSM;
Input power 3 dB > AGC



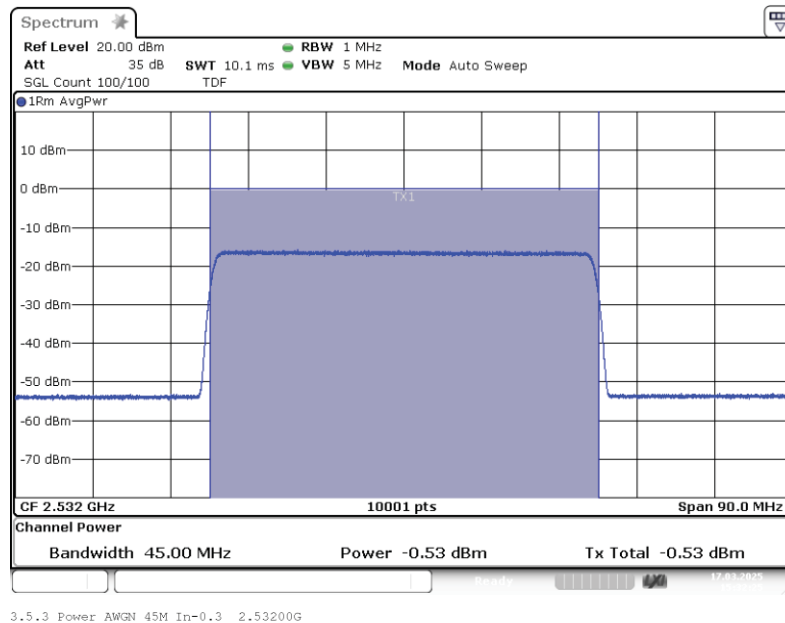
Band: BRS LBS; Frequency: 2.5000 GHz; Band edge: f0; Mod: GSM;
Output power 3 dB > AGC



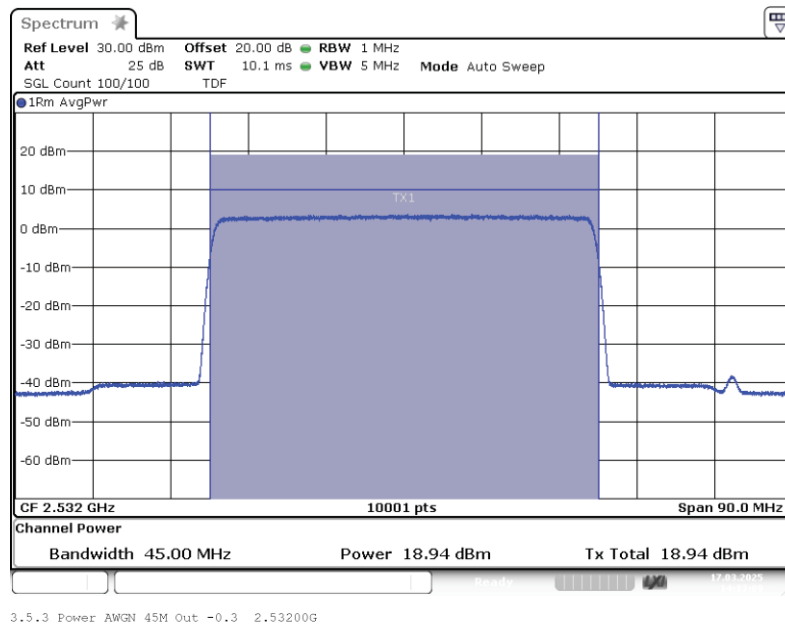
Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

Band: BRS LBS; Frequency: 2.5320 GHz; Band edge: mid; Mod: AWGN 45M;
Input power 0.3 dB < AGC



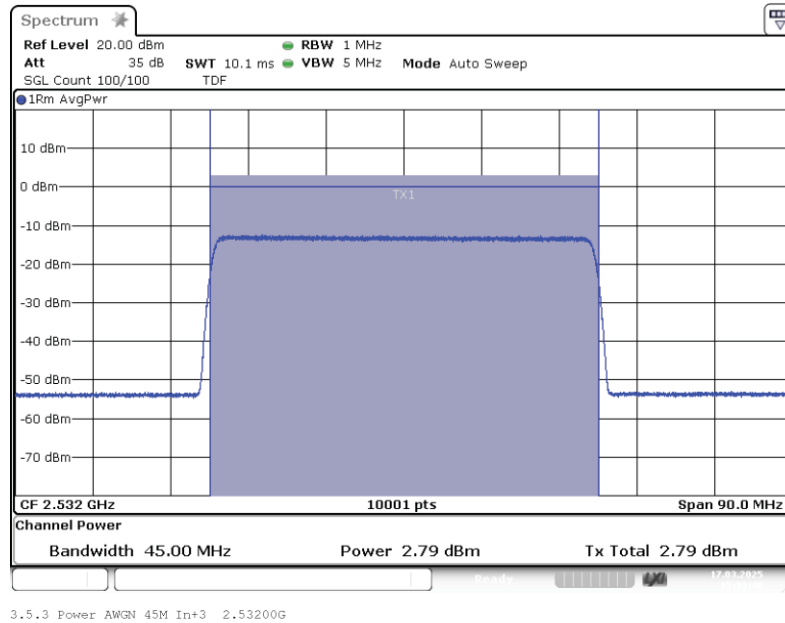
Band: BRS LBS; Frequency: 2.5320 GHz; Band edge: mid; Mod: AWGN 45M;
Output power 0.3 dB < AGC



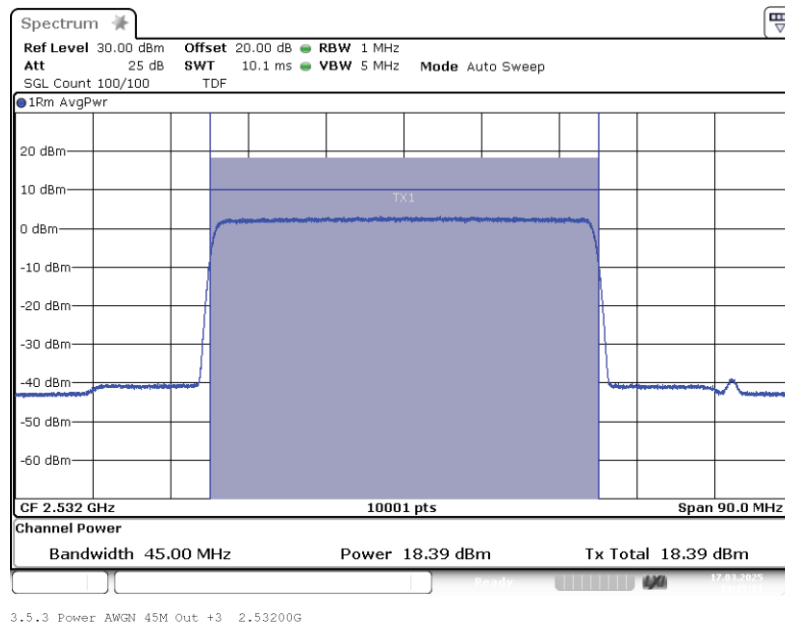
Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

Band: BRS LBS; Frequency: 2.5320 GHz; Band edge: mid; Mod: AWGN 45M;
Input power 3 dB > AGC



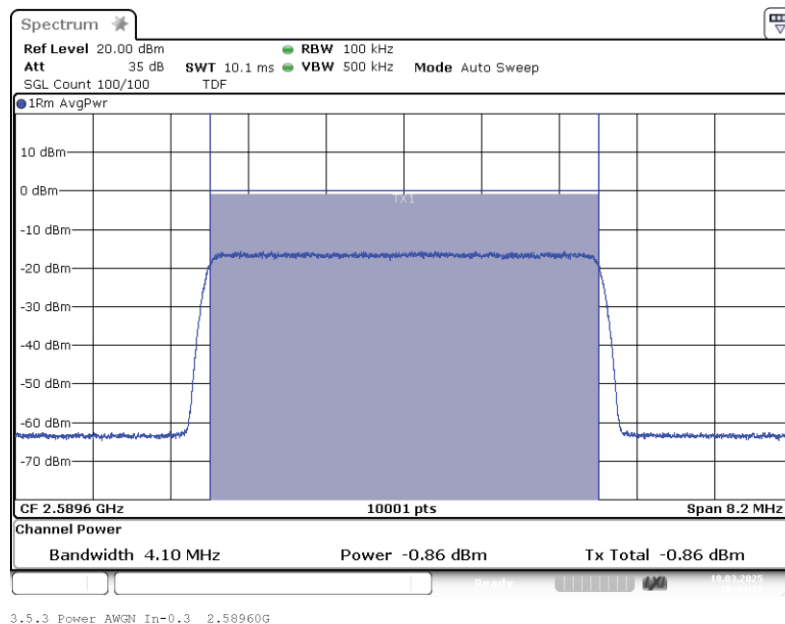
Band: BRS LBS; Frequency: 2.5320 GHz; Band edge: mid; Mod: AWGN 45M;
Output power 3 dB > AGC



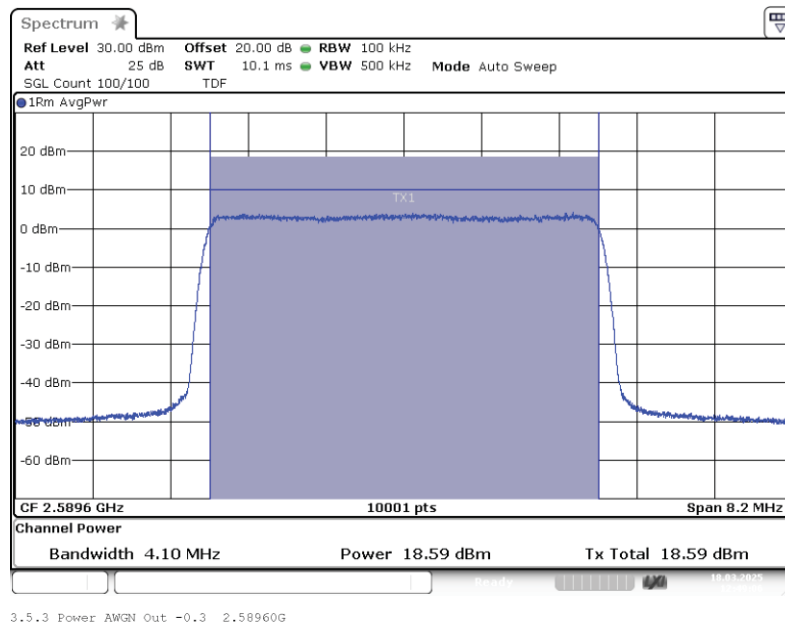
Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

Band: BRS MBS; Frequency: 2.5896 GHz; Band edge: f0; Mod: AWGN;
Input power 0.3 dB < AGC



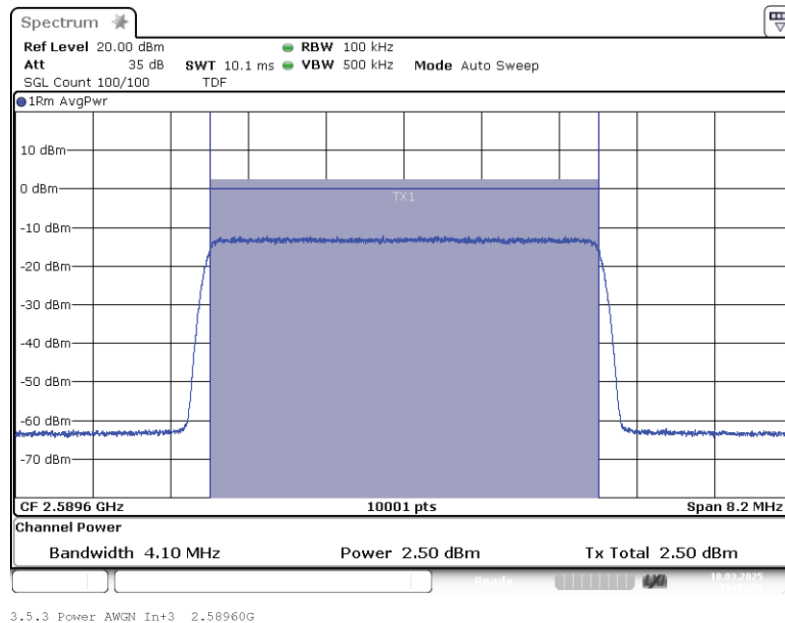
Band: BRS MBS; Frequency: 2.5896 GHz; Band edge: f0; Mod: AWGN;
Output power 0.3 dB < AGC



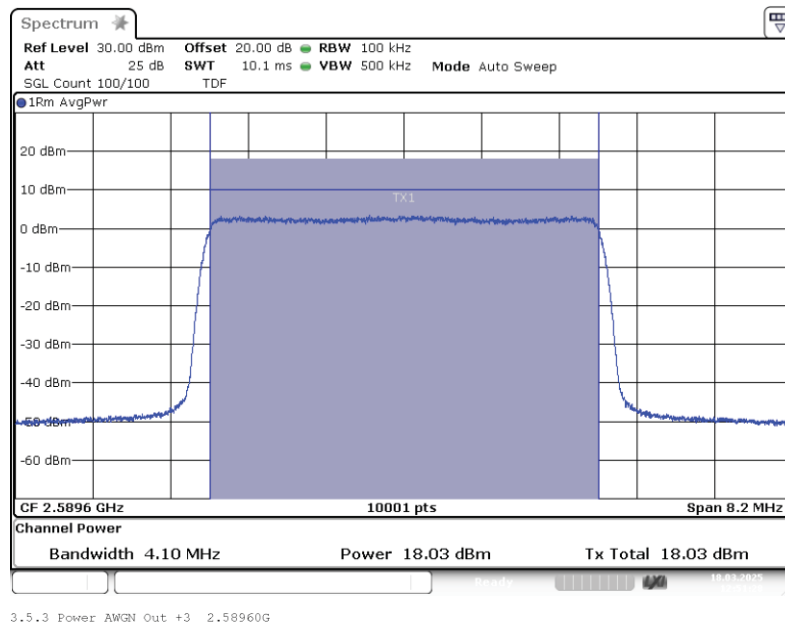
Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

Band: BRS MBS; Frequency: 2.5896 GHz; Band edge: f0; Mod: AWGN;
Input power 3 dB > AGC



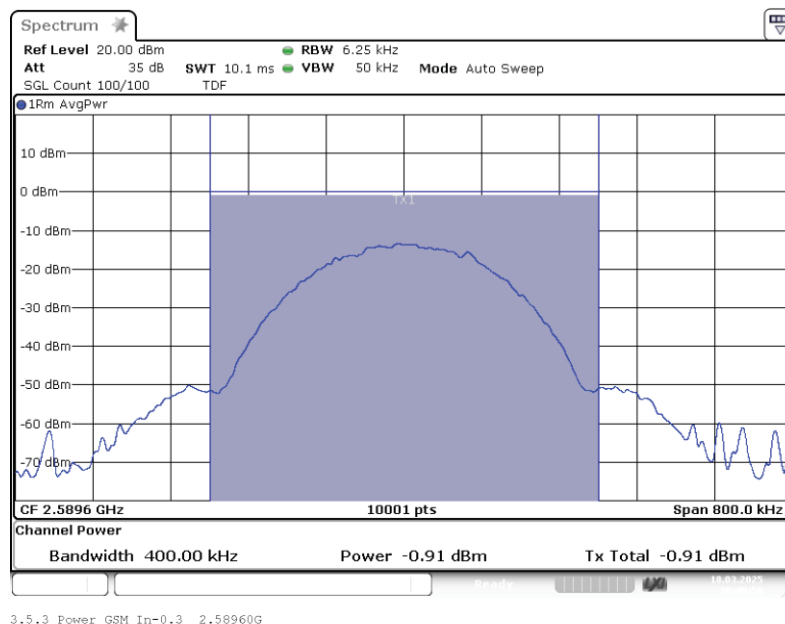
Band: BRS MBS; Frequency: 2.5896 GHz; Band edge: f0; Mod: AWGN;
Output power 3 dB > AGC



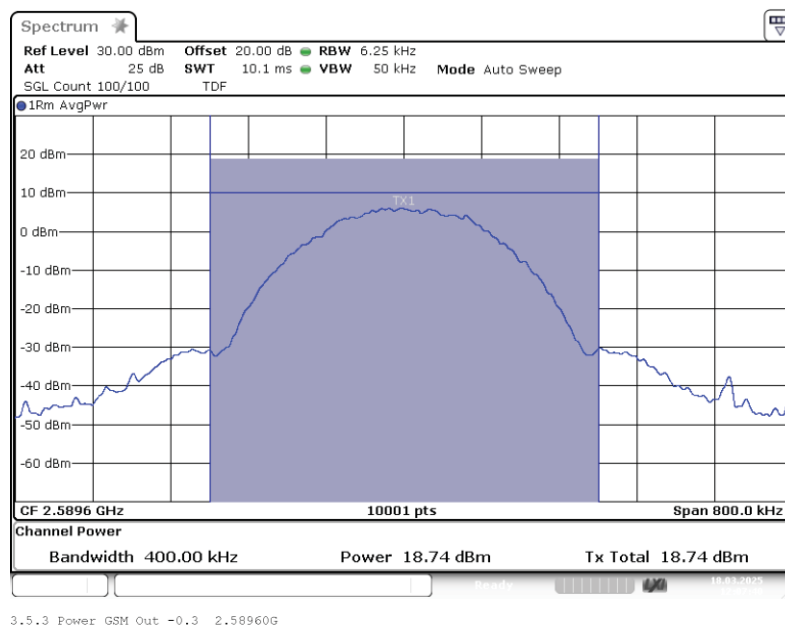
Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

Band: BRS MBS; Frequency: 2.5896 GHz; Band edge: f0; Mod: GSM;
Input power 0.3 dB < AGC



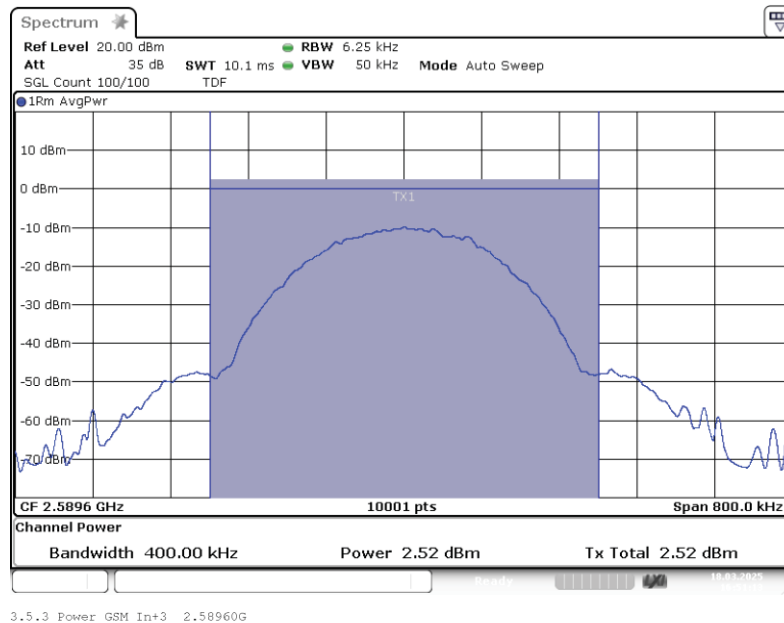
Band: BRS MBS; Frequency: 2.5896 GHz; Band edge: f0; Mod: GSM;
Output power 0.3 dB < AGC



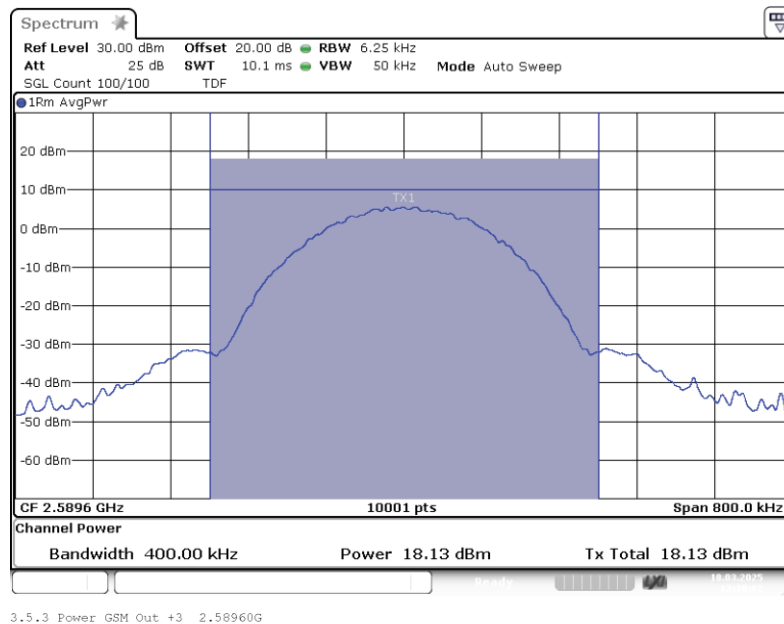
Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

Band: BRS MBS; Frequency: 2.5896 GHz; Band edge: f0; Mod: GSM;
Input power 3 dB > AGC



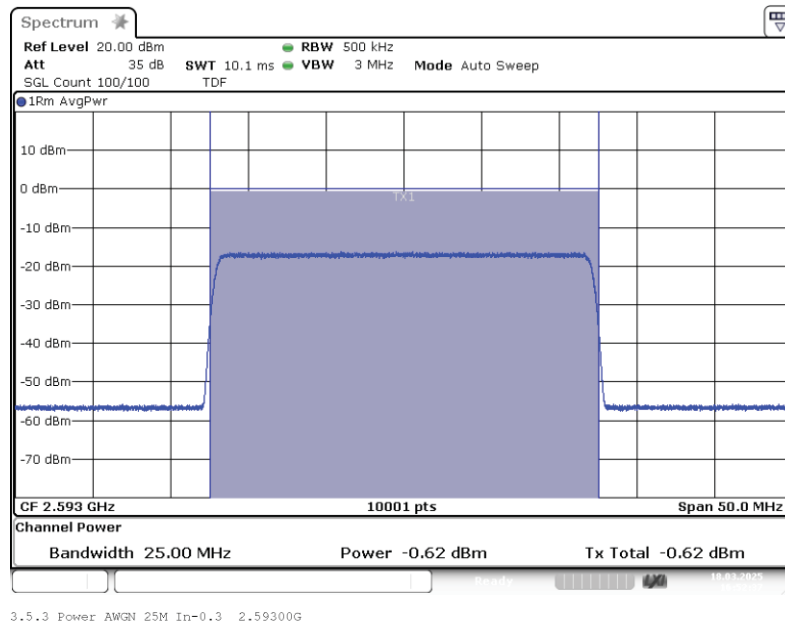
Band: BRS MBS; Frequency: 2.5896 GHz; Band edge: f0; Mod: GSM;
Output power 3 dB > AGC



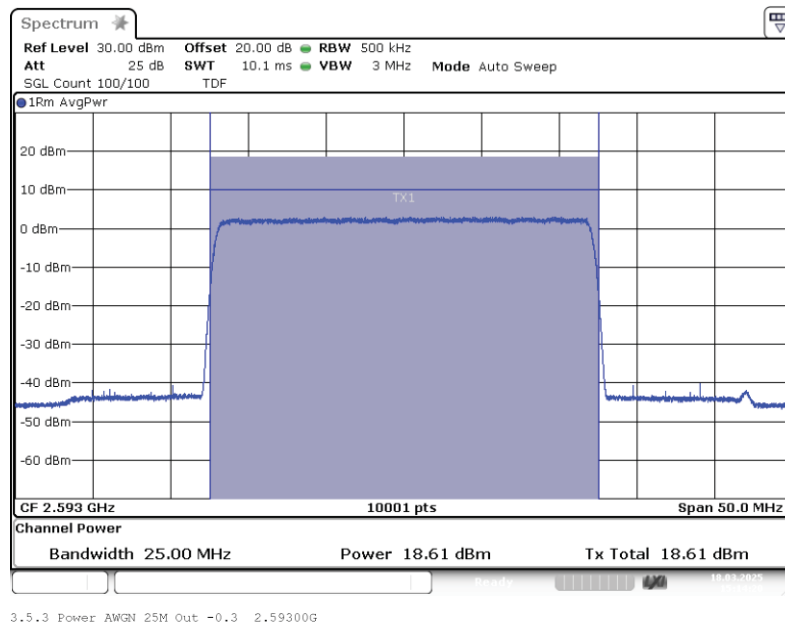
Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

Band: BRS MBS; Frequency: 2.5930 GHz; Band edge: mid; Mod: AWGN 25M;
Input power 0.3 dB < AGC



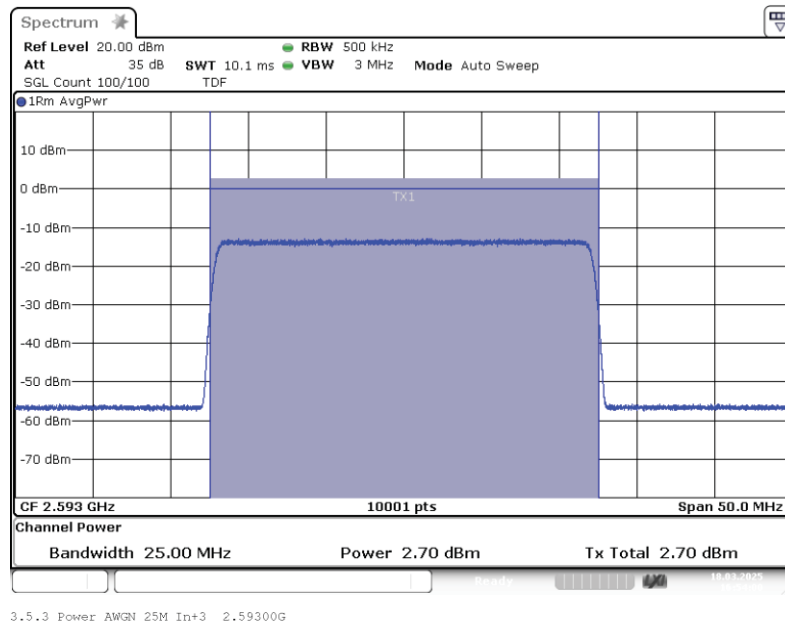
Band: BRS MBS; Frequency: 2.5930 GHz; Band edge: mid; Mod: AWGN 25M;
Output power 0.3 dB < AGC



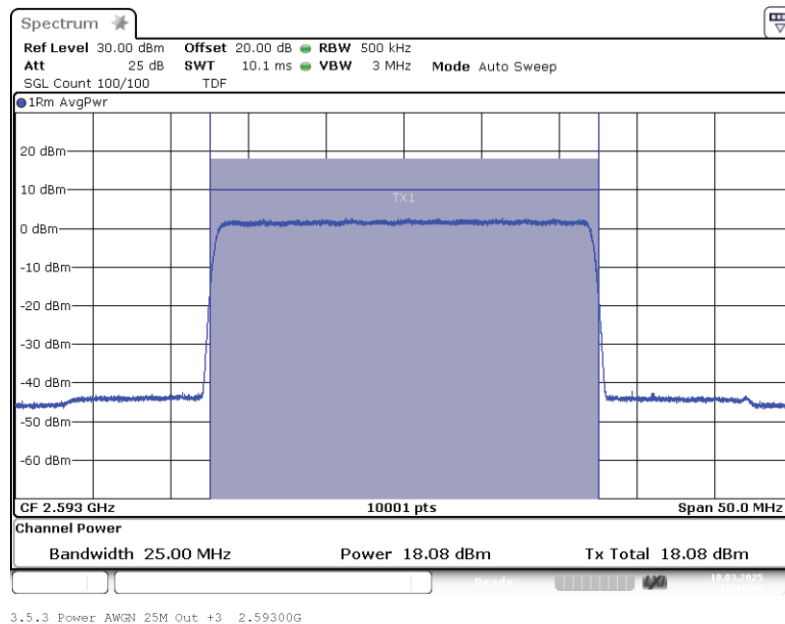
Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

Band: BRS MBS; Frequency: 2.5930 GHz; Band edge: mid; Mod: AWGN 25M;
Input power 3 dB > AGC



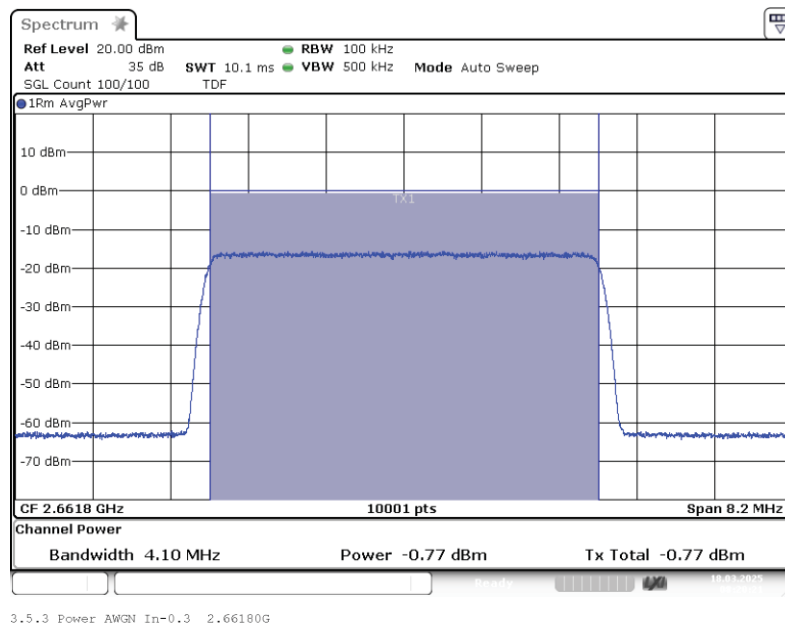
Band: BRS MBS; Frequency: 2.5930 GHz; Band edge: mid; Mod: AWGN 25M;
Output power 3 dB > AGC



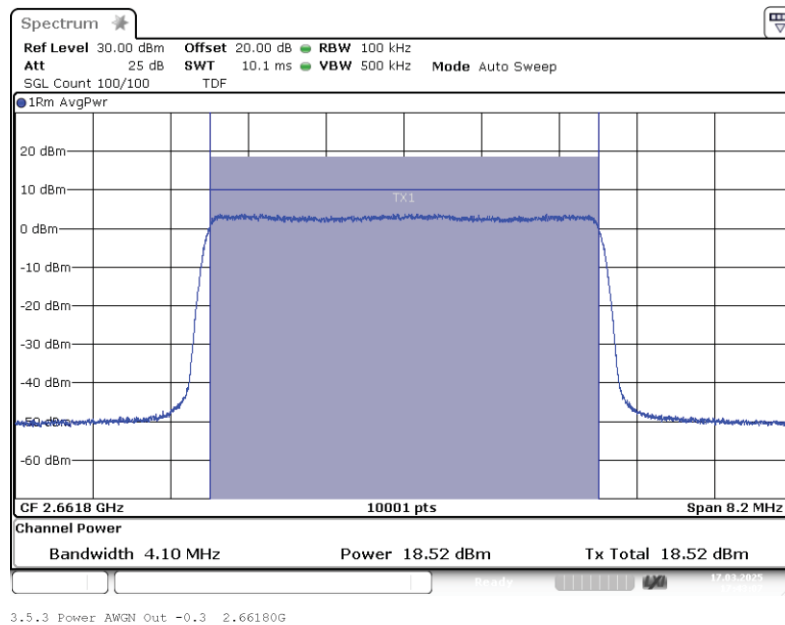
Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

Band: BRS UBS; Frequency: 2.6618 GHz; Band edge: f0; Mod: AWGN;
Input power 0.3 dB < AGC



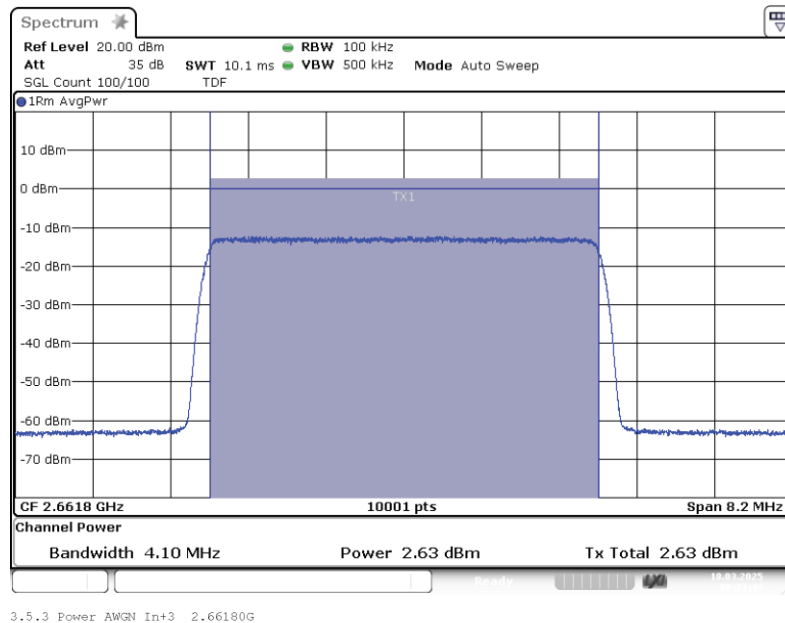
Band: BRS UBS; Frequency: 2.6618 GHz; Band edge: f0; Mod: AWGN;
Output power 0.3 dB < AGC



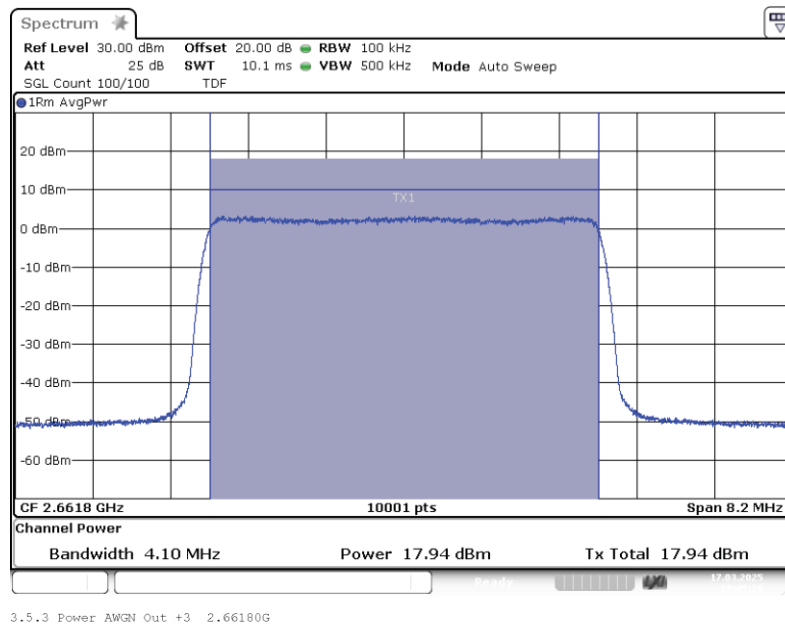
Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

Band: BRS UBS; Frequency: 2.6618 GHz; Band edge: f0; Mod: AWGN;
Input power 3 dB > AGC



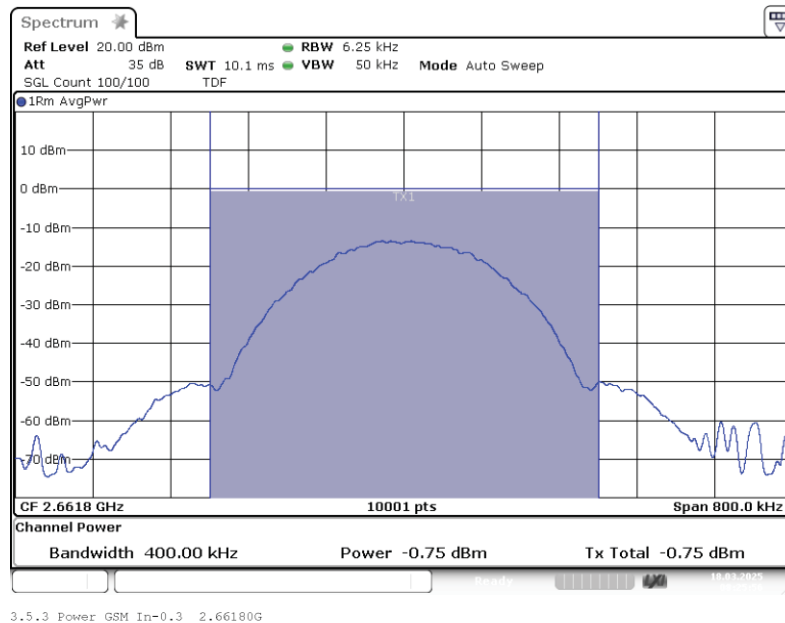
Band: BRS UBS; Frequency: 2.6618 GHz; Band edge: f0; Mod: AWGN;
Output power 3 dB > AGC



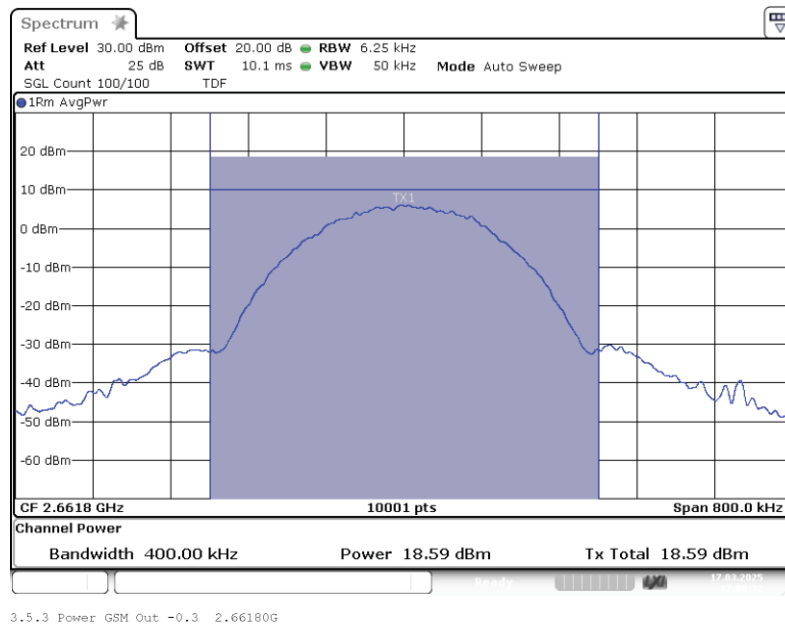
Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

Band: BRS UBS; Frequency: 2.6618 GHz; Band edge: f0; Mod: GSM;
Input power 0.3 dB < AGC



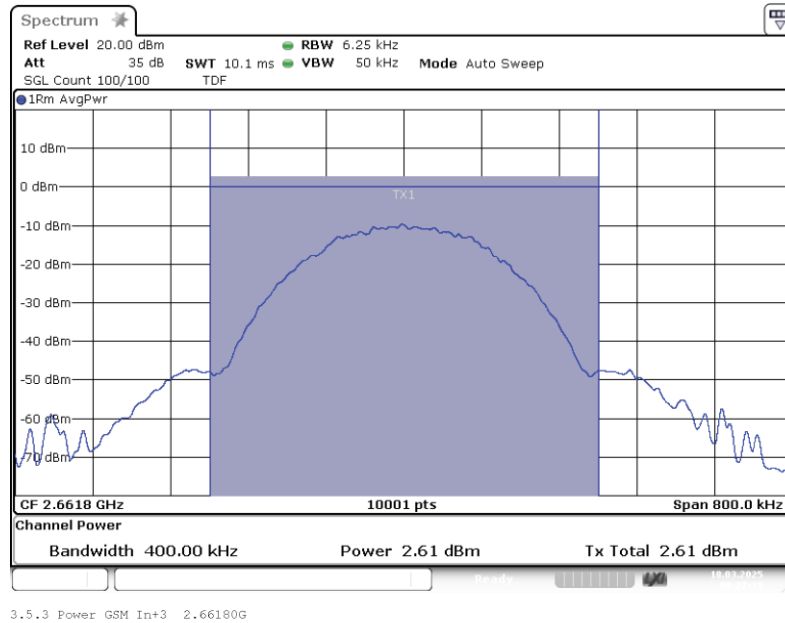
Band: BRS UBS; Frequency: 2.6618 GHz; Band edge: f0; Mod: GSM;
Output power 0.3 dB < AGC



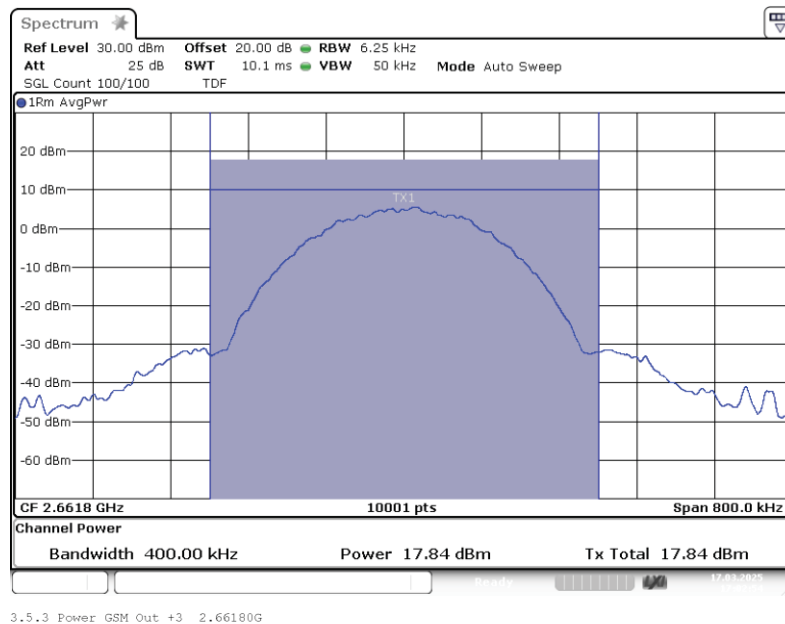
Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

Band: BRS UBS; Frequency: 2.6618 GHz; Band edge: f0; Mod: GSM;
Input power 3 dB > AGC



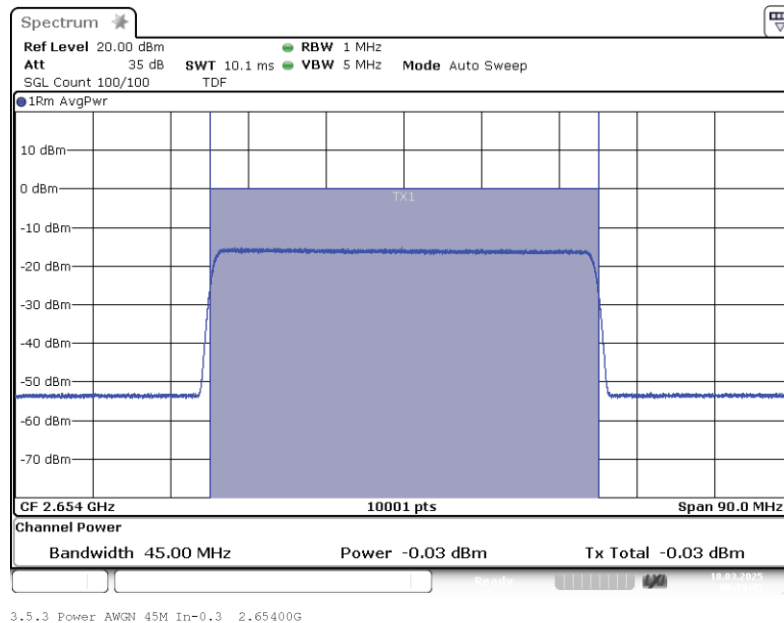
Band: BRS UBS; Frequency: 2.6618 GHz; Band edge: f0; Mod: GSM;
Output power 3 dB > AGC



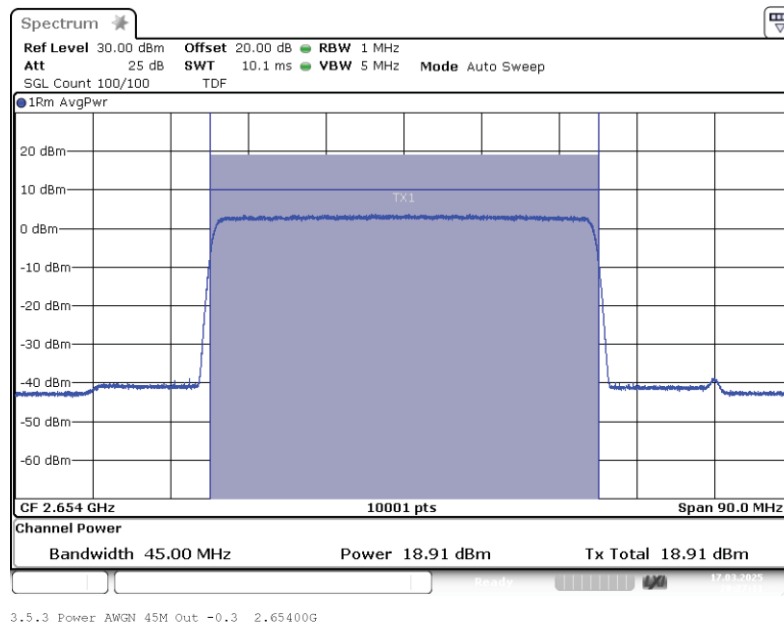
Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

Band: BRS UBS; Frequency: 2.6540 GHz; Band edge: mid; Mod: AWGN 45M;
Input power 0.3 dB < AGC



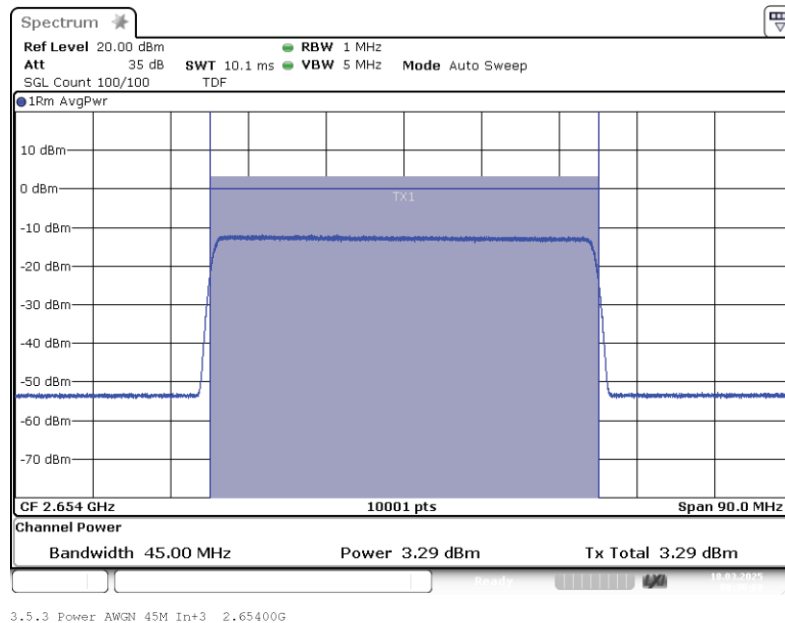
Band: BRS UBS; Frequency: 2.6540 GHz; Band edge: mid; Mod: AWGN 45M;
Output power 0.3 dB < AGC



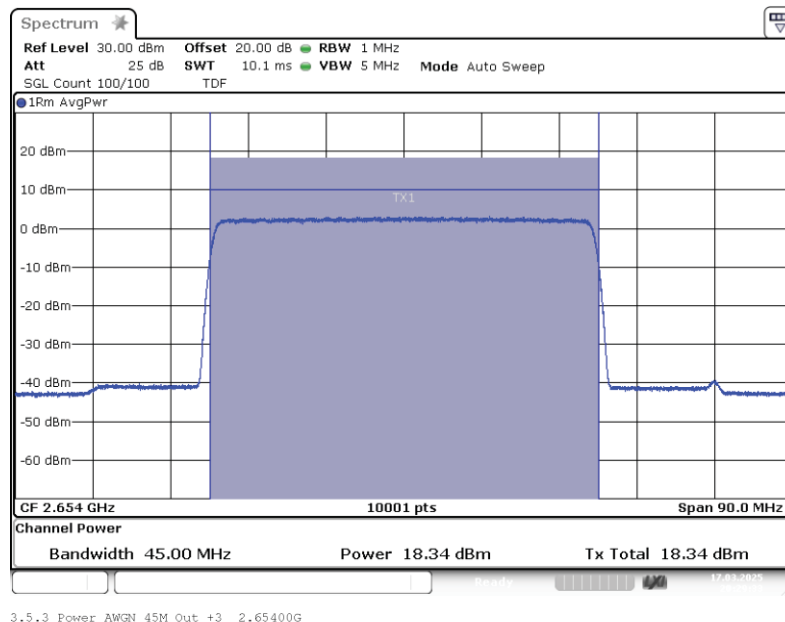
Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

Band: BRS UBS; Frequency: 2.6540 GHz; Band edge: mid; Mod: AWGN 45M;
Input power 3 dB > AGC

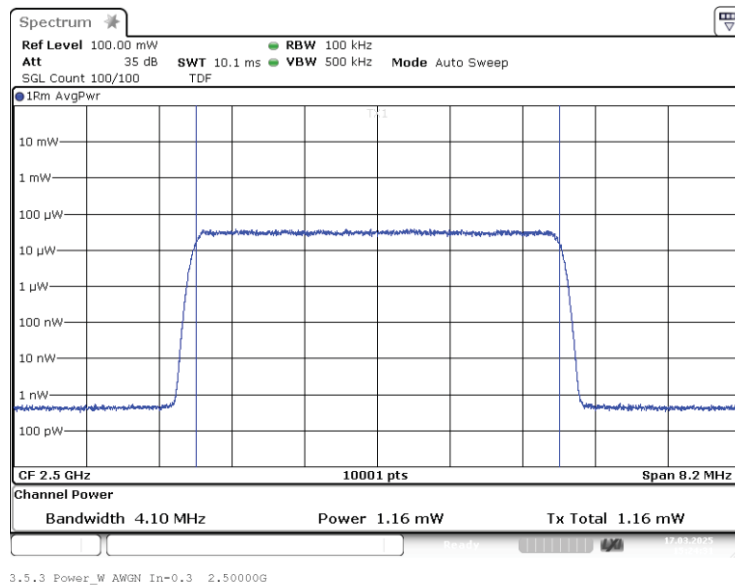


Band: BRS UBS; Frequency: 2.6540 GHz; Band edge: mid; Mod: AWGN 45M;
Output power 3 dB > AGC

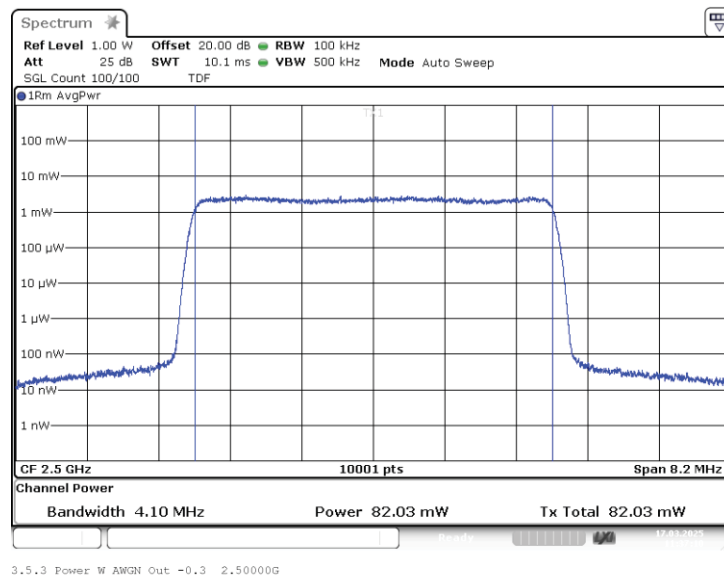


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Band: BRS LBS; Frequency: 2.5000 GHz; Band edge: f0; Mod: AWGN;
Input power 0.3 dB < AGC



Band: BRS LBS; Frequency: 2.5000 GHz; Band edge: f0; Mod: AWGN;
Output power 0.3 dB < AGC



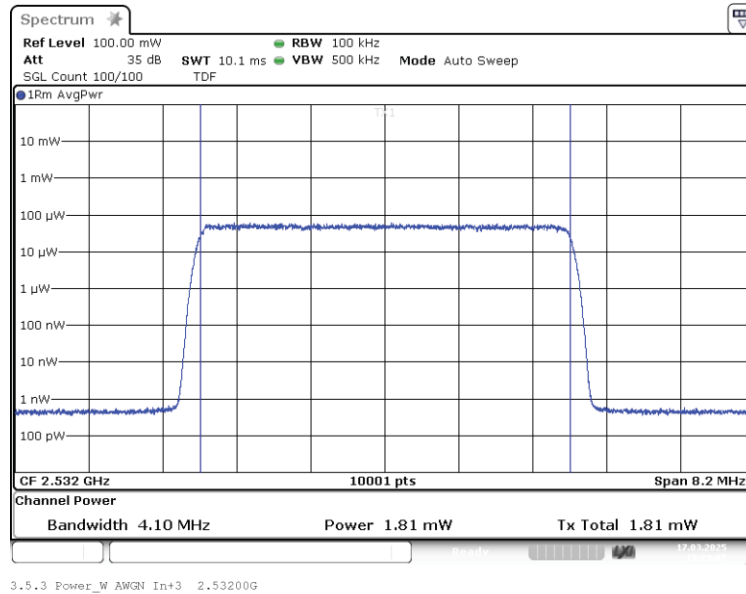


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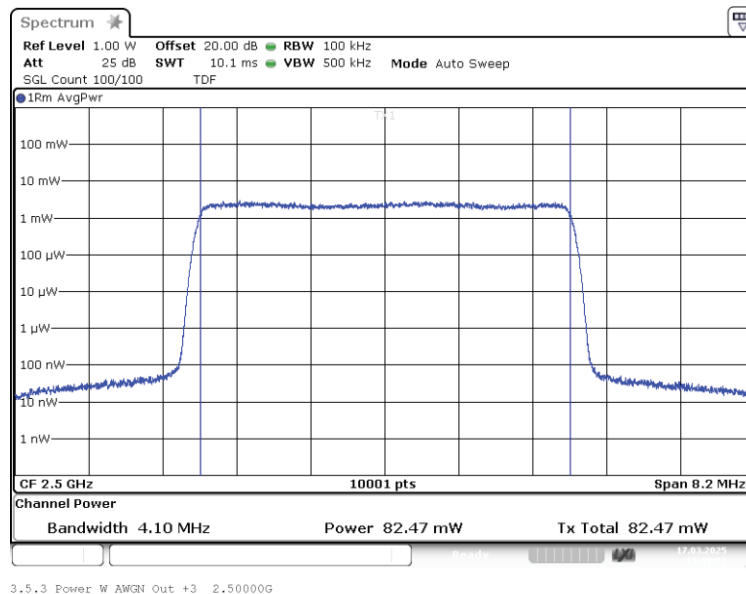
Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

Band: BRS LBS; Frequency: 2.5000 GHz; Band edge: f0; Mod: AWGN;
Input power 3 dB > AGC



Band: BRS LBS; Frequency: 2.5000 GHz; Band edge: f0; Mod: AWGN;
Output power 3 dB > AGC



The test results relate only to the tested item. The sample has been provided by the client.
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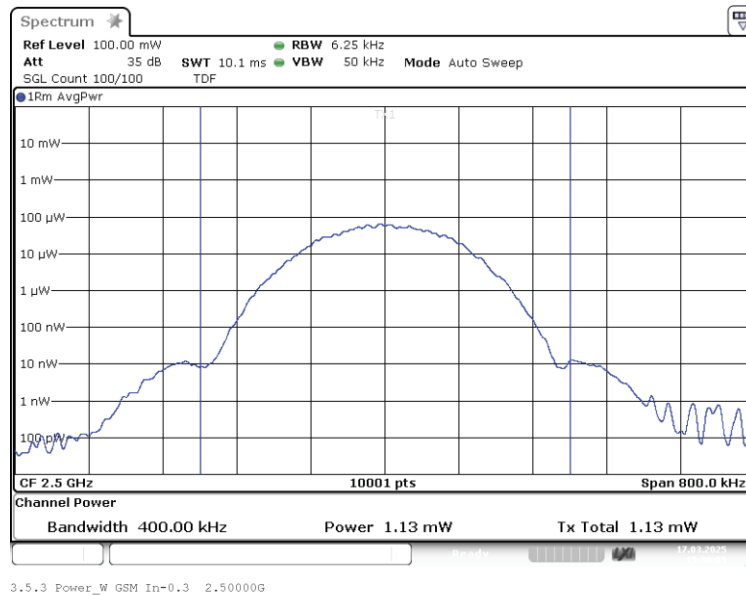


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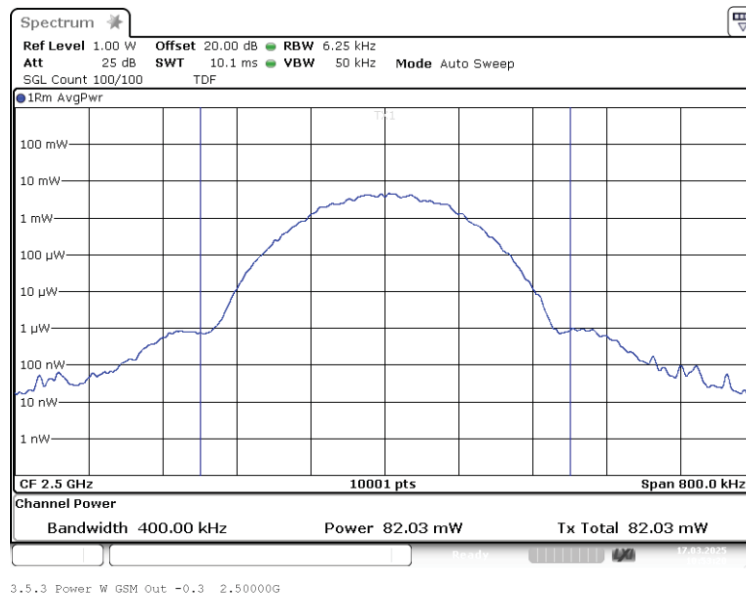
Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

Band: BRS LBS; Frequency: 2.5000 GHz; Band edge: f0; Mod: GSM;
Input power 0.3 dB < AGC



Band: BRS LBS; Frequency: 2.5000 GHz; Band edge: f0; Mod: GSM;
Output power 0.3 dB < AGC

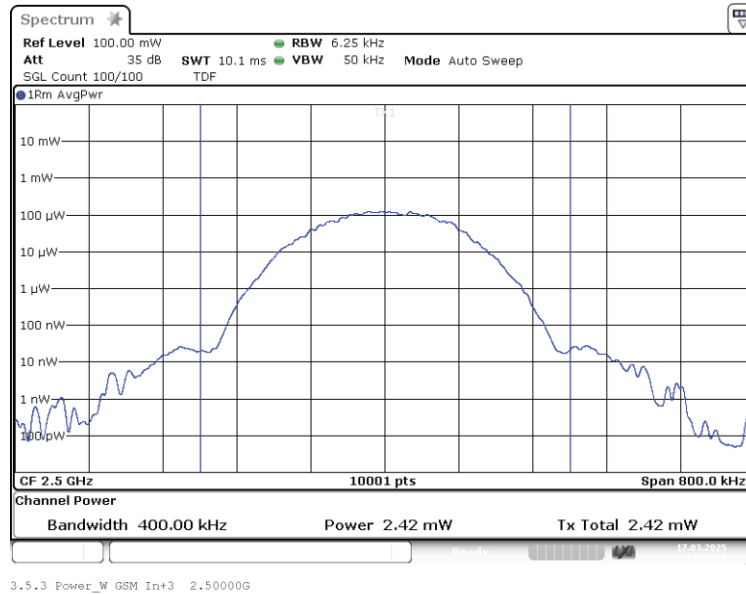


The test results relate only to the tested item. The sample has been provided by the client.
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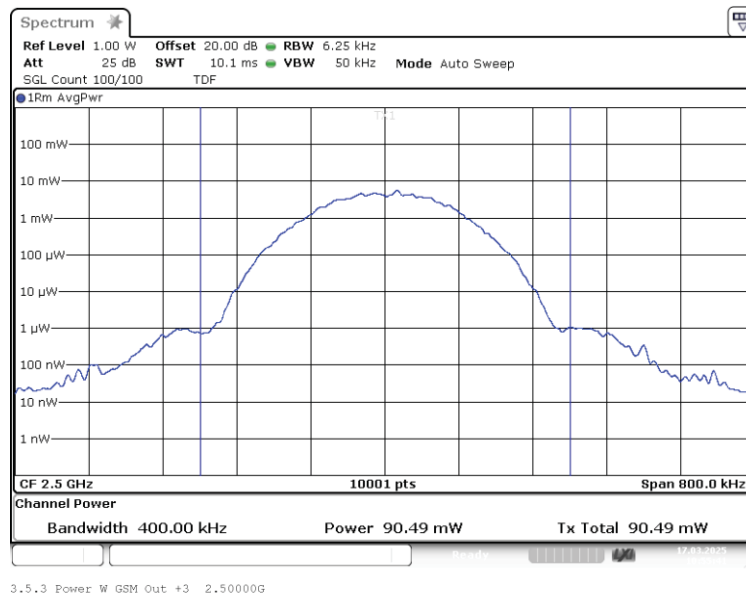
Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

Band: BRS LBS; Frequency: 2.5000 GHz; Band edge: f0; Mod: GSM;
Input power 3 dB > AGC



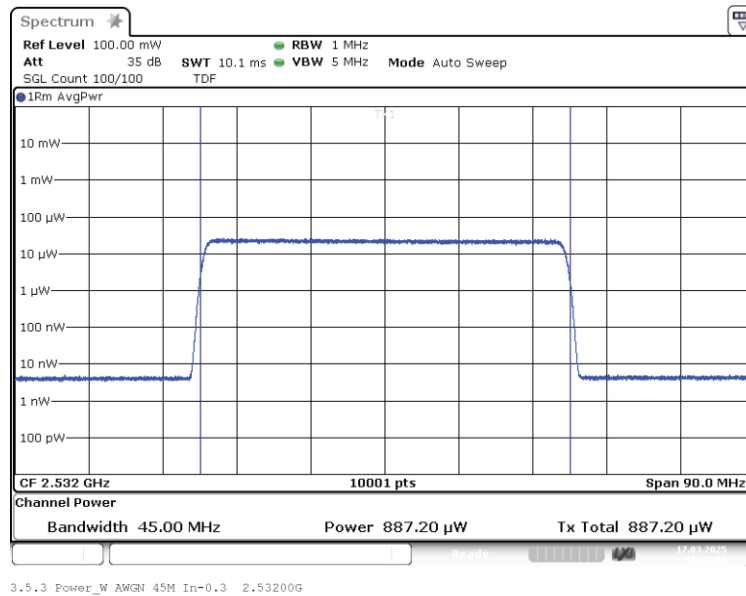
Band: BRS LBS; Frequency: 2.5000 GHz; Band edge: f0; Mod: GSM;
Output power 3 dB > AGC



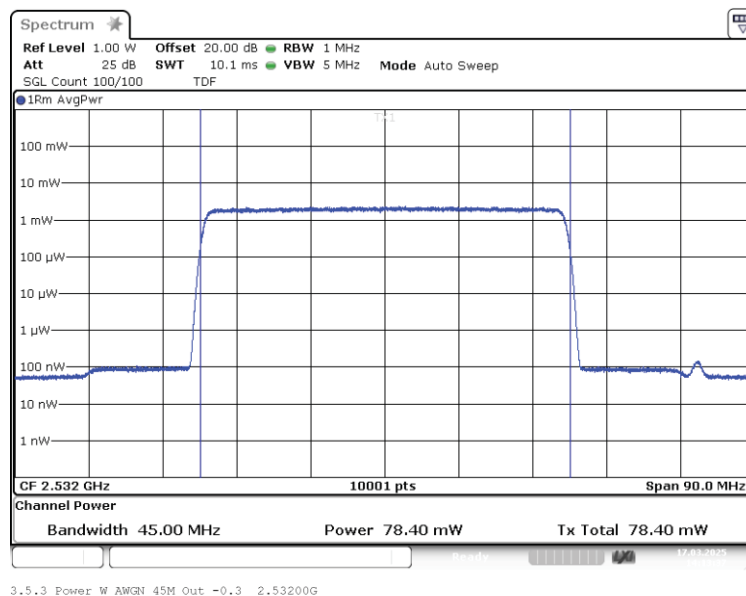
Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

Band: BRS LBS; Frequency: 2.5320 GHz; Band edge: mid; Mod: AWGN 45M;
Input power 0.3 dB < AGC



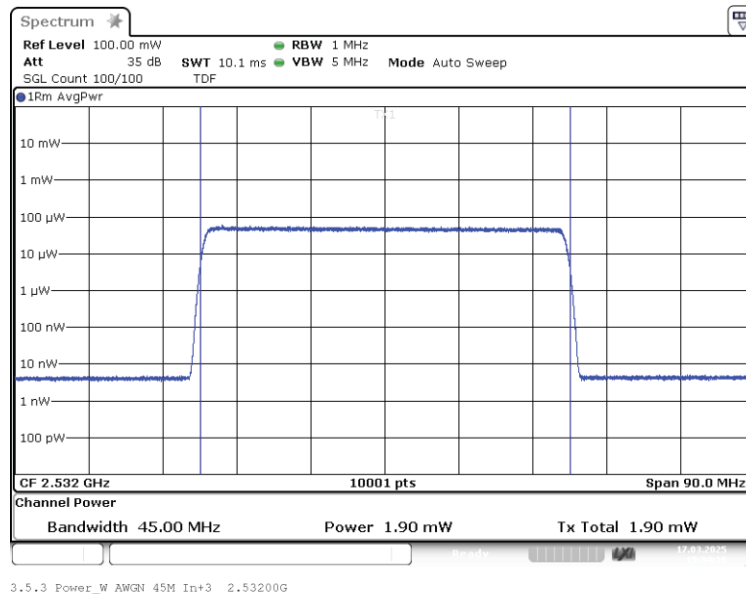
Band: BRS LBS; Frequency: 2.5320 GHz; Band edge: mid; Mod: AWGN 45M;
Output power 0.3 dB < AGC



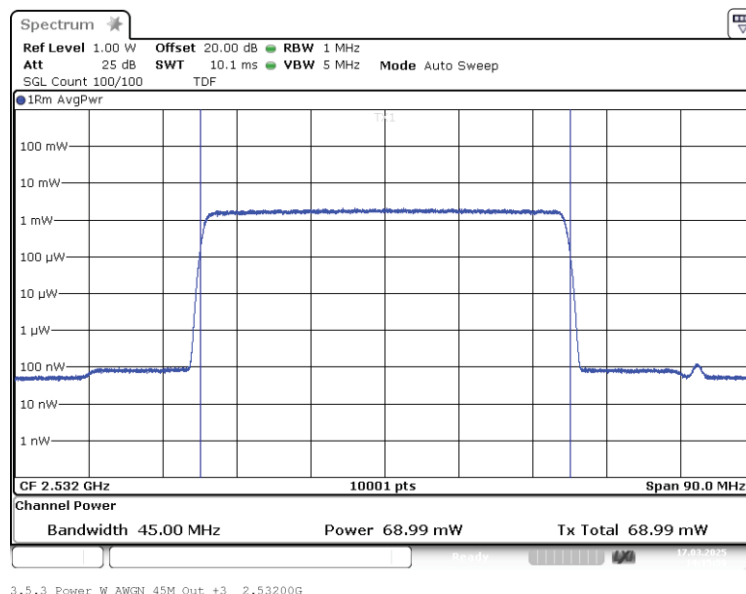
Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

Band: BRS LBS; Frequency: 2.5320 GHz; Band edge: mid; Mod: AWGN 45M;
Input power 3 dB > AGC



Band: BRS LBS; Frequency: 2.5320 GHz; Band edge: mid; Mod: AWGN 45M;
Output power 3 dB > AGC



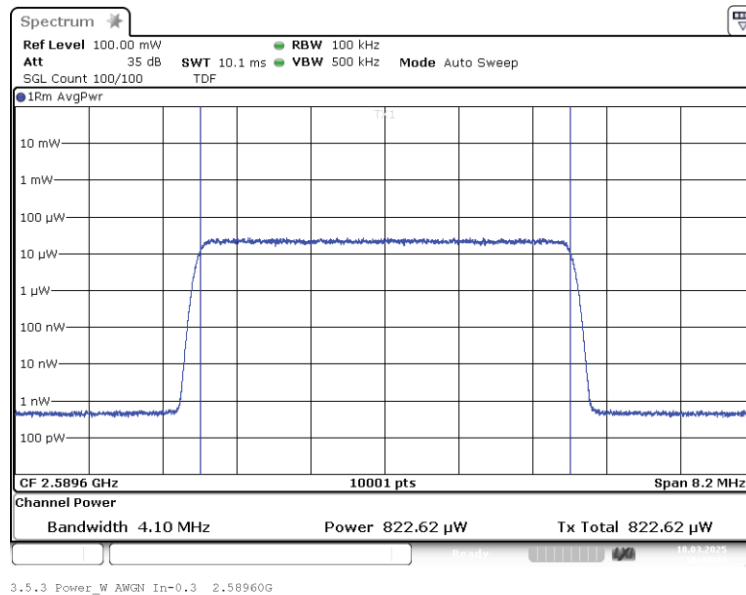


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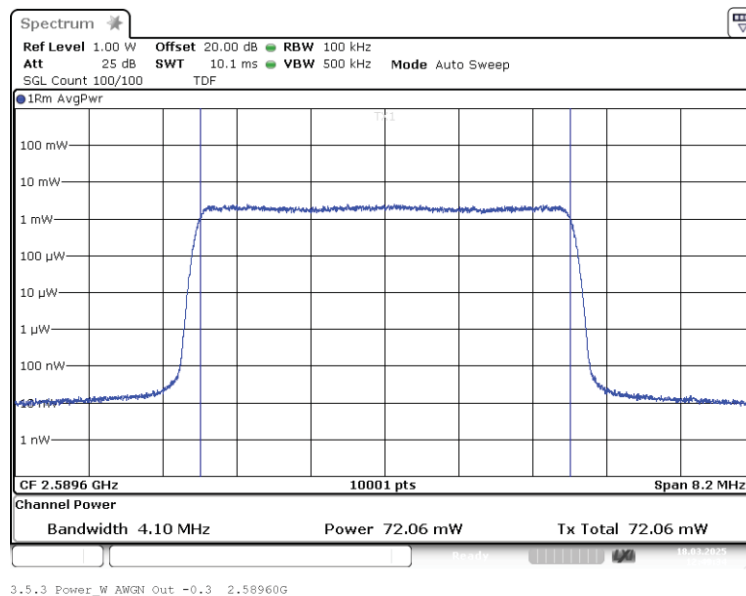
Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

Band: BRS MBS; Frequency: 2.5896 GHz; Band edge: f0; Mod: AWGN;
Input power 0.3 dB < AGC



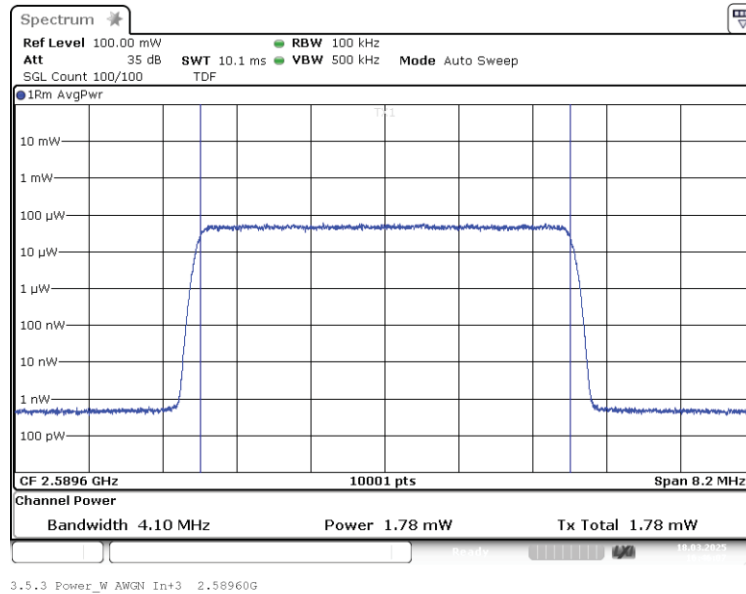
Band: BRS MBS; Frequency: 2.5896 GHz; Band edge: f0; Mod: AWGN;
Output power 0.3 dB < AGC



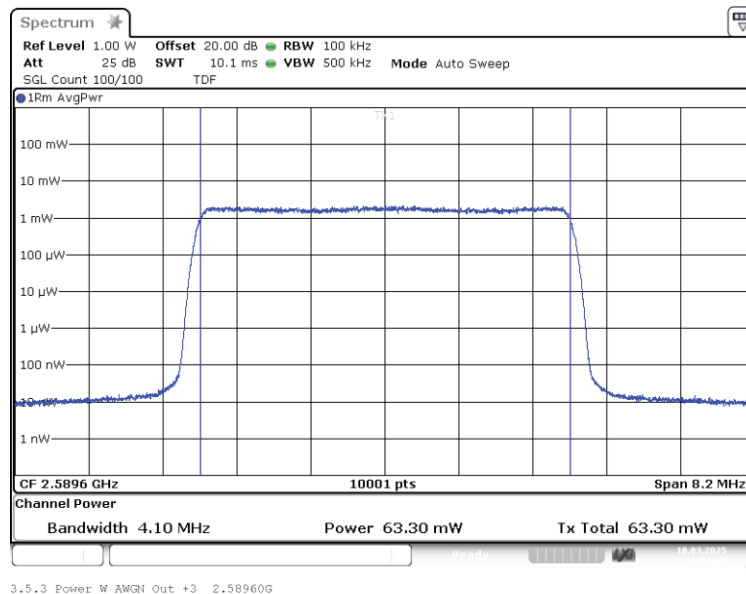
Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

Band: BRS MBS; Frequency: 2.5896 GHz; Band edge: f0; Mod: AWGN;
Input power 3 dB > AGC



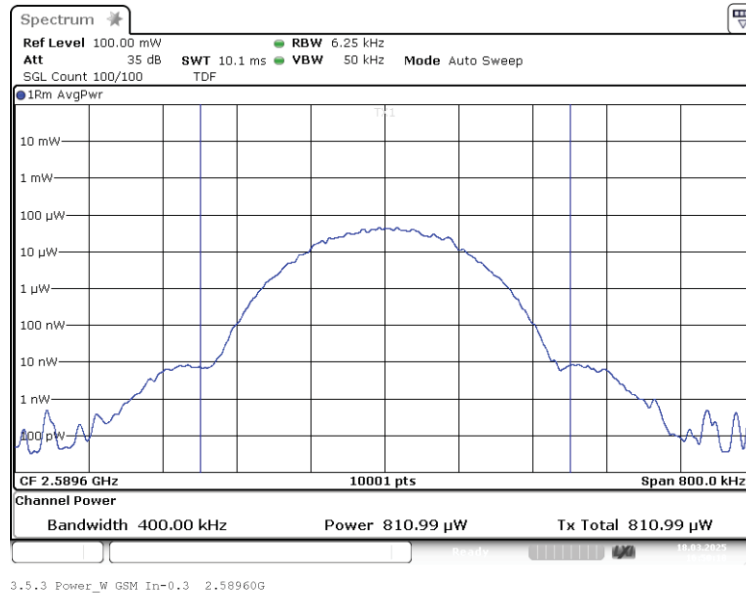
Band: BRS MBS; Frequency: 2.5896 GHz; Band edge: f0; Mod: AWGN;
Output power 3 dB > AGC



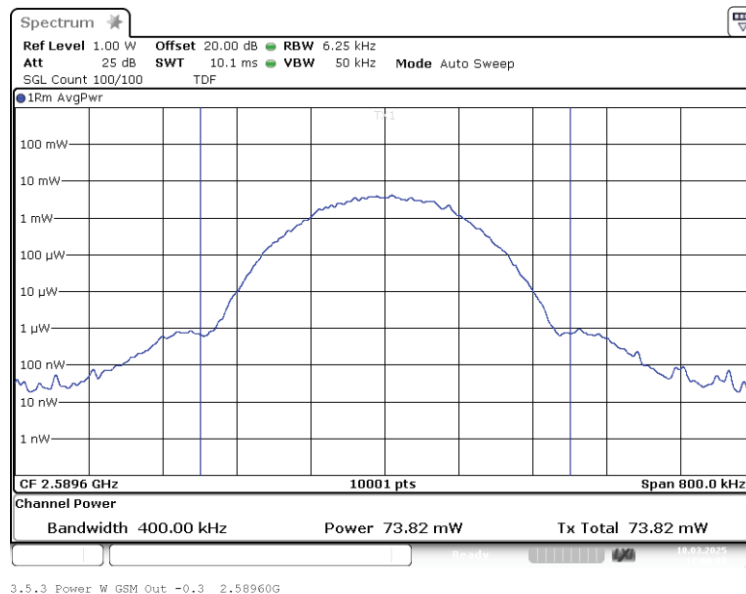
Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

Band: BRS MBS; Frequency: 2.5896 GHz; Band edge: f0; Mod: GSM;
Input power 0.3 dB < AGC



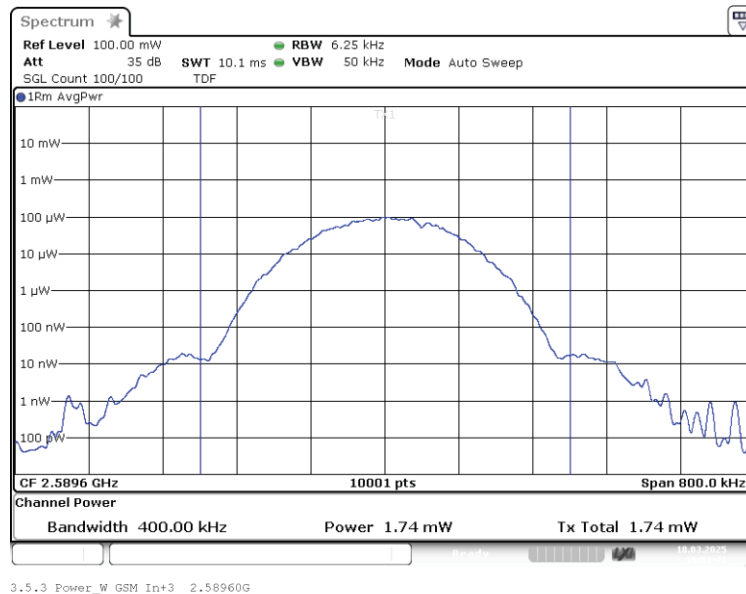
Band: BRS MBS; Frequency: 2.5896 GHz; Band edge: f0; Mod: GSM;
Output power 0.3 dB < AGC



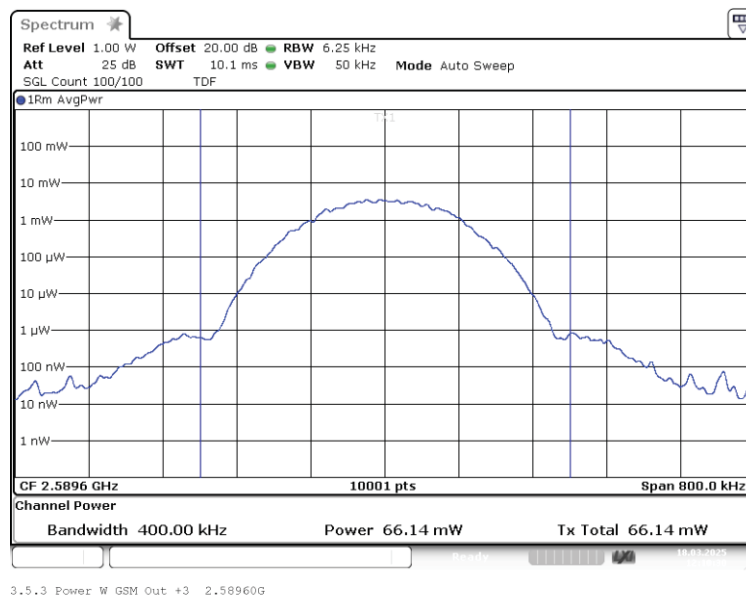
Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

Band: BRS MBS; Frequency: 2.5896 GHz; Band edge: f0; Mod: GSM;
Input power 3 dB > AGC



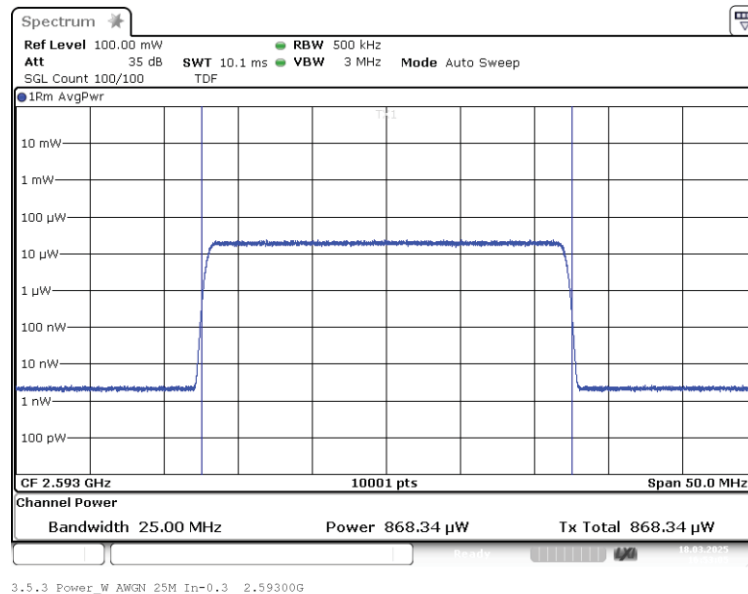
Band: BRS MBS; Frequency: 2.5896 GHz; Band edge: f0; Mod: GSM;
Output power 3 dB > AGC



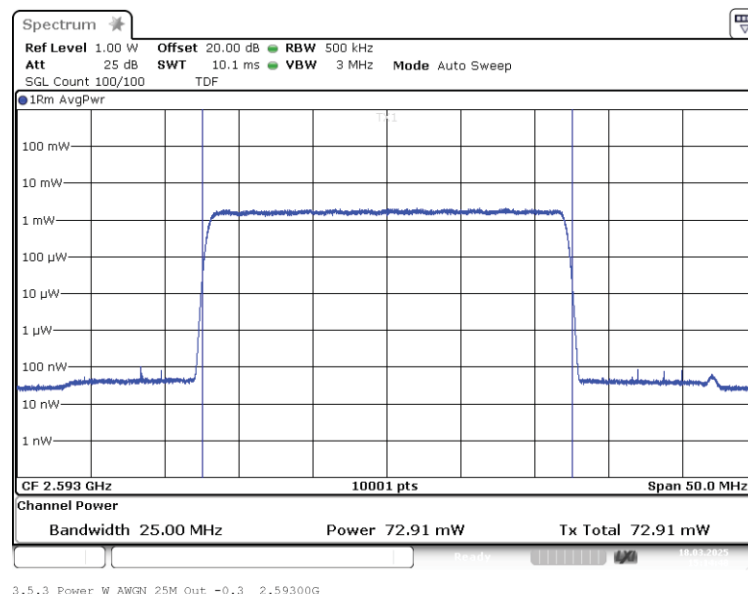
Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

Band: BRS MBS; Frequency: 2.5930 GHz; Band edge: mid; Mod: AWGN 25M;
Input power 0.3 dB < AGC



Band: BRS MBS; Frequency: 2.5930 GHz; Band edge: mid; Mod: AWGN 25M;
Output power 0.3 dB < AGC



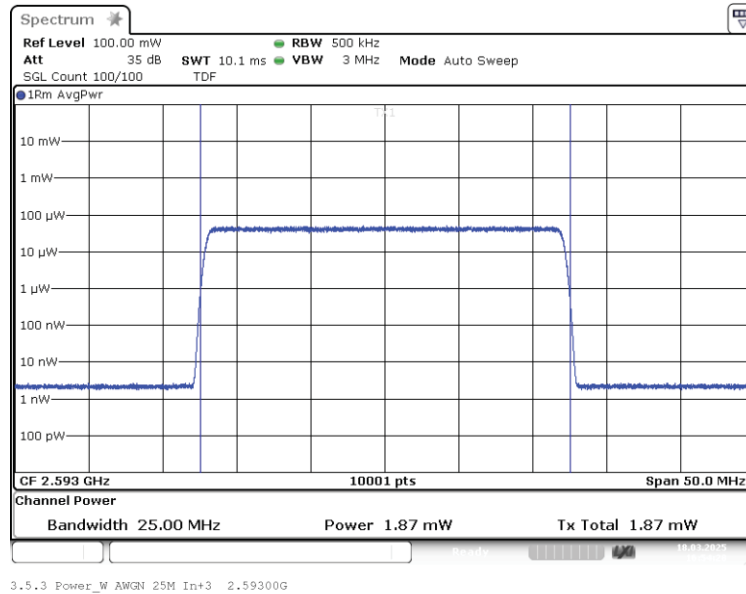


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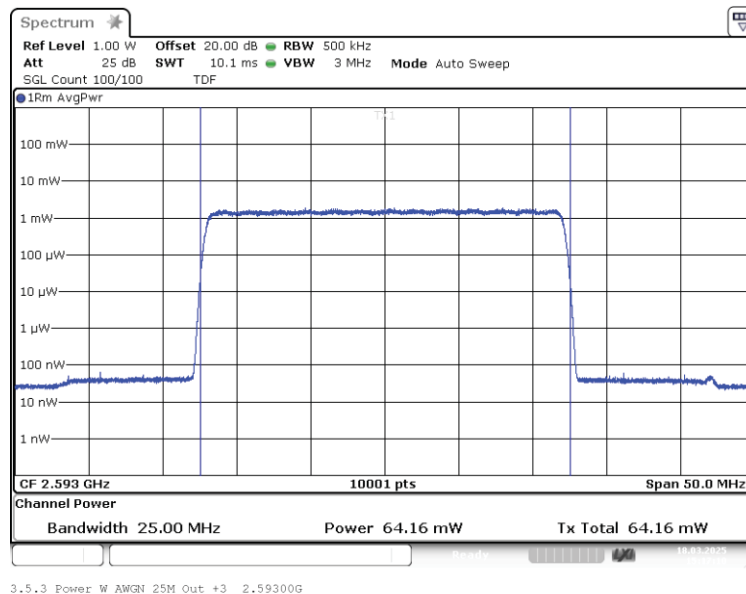
Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

Band: BRS MBS; Frequency: 2.5930 GHz; Band edge: mid; Mod: AWGN 25M;
Input power 3 dB > AGC



Band: BRS MBS; Frequency: 2.5930 GHz; Band edge: mid; Mod: AWGN 25M;
Output power 3 dB > AGC

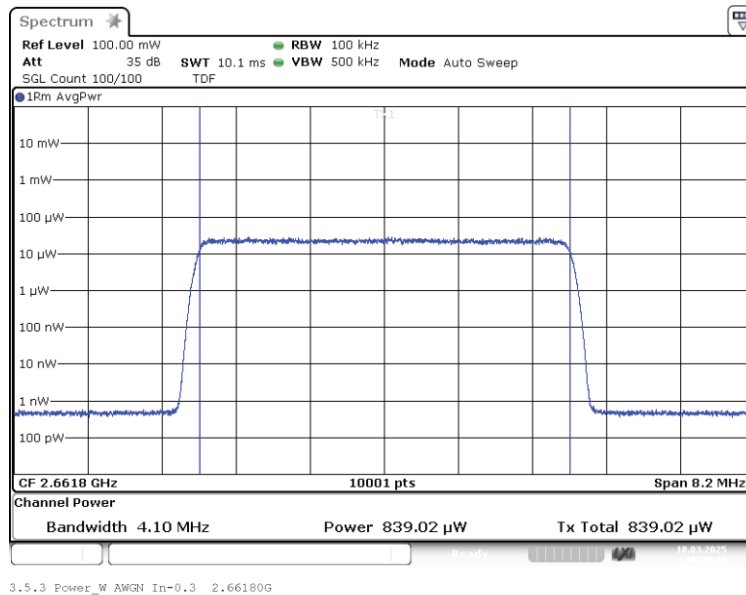


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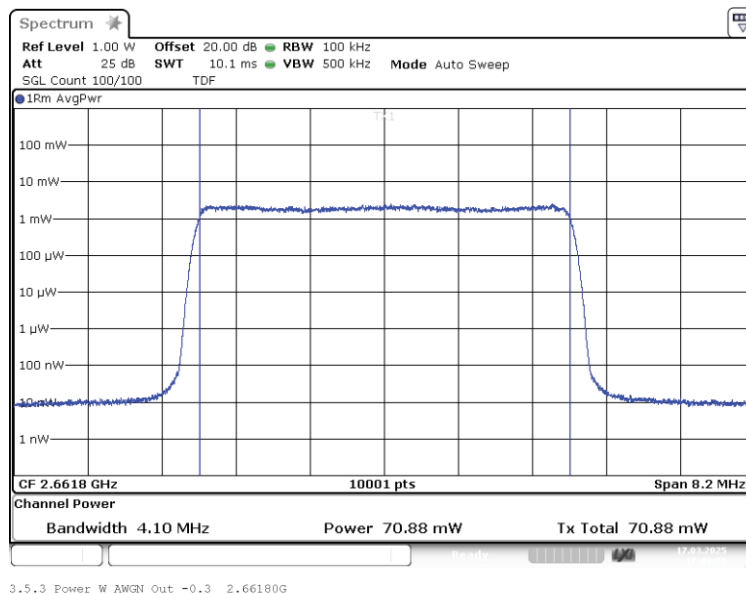
Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

Band: BRS UBS; Frequency: 2.6618 GHz; Band edge: f0; Mod: AWGN;
Input power 0.3 dB < AGC



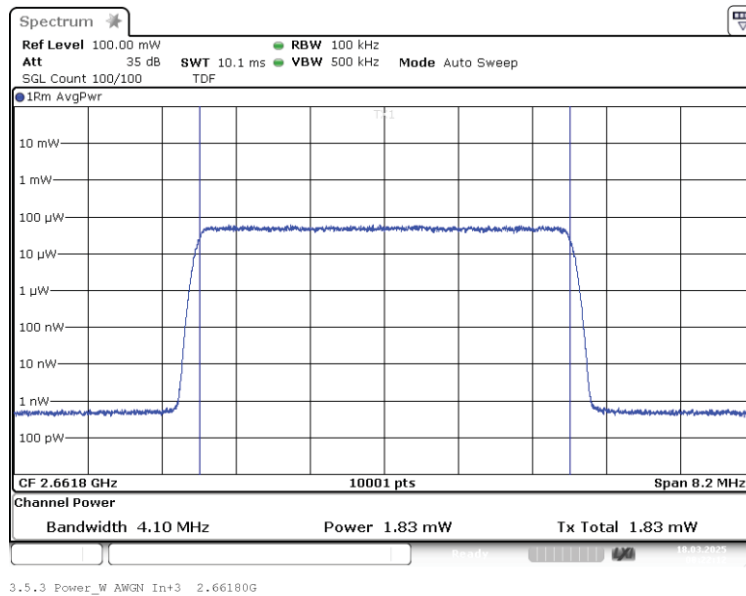
Band: BRS UBS; Frequency: 2.6618 GHz; Band edge: f0; Mod: AWGN;
Output power 0.3 dB < AGC



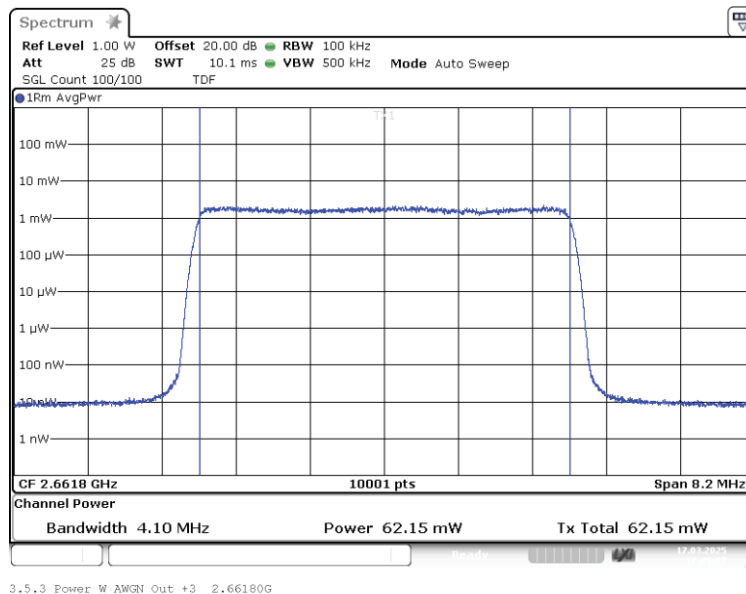
Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

Band: BRS UBS; Frequency: 2.6618 GHz; Band edge: f0; Mod: AWGN;
Input power 3 dB > AGC



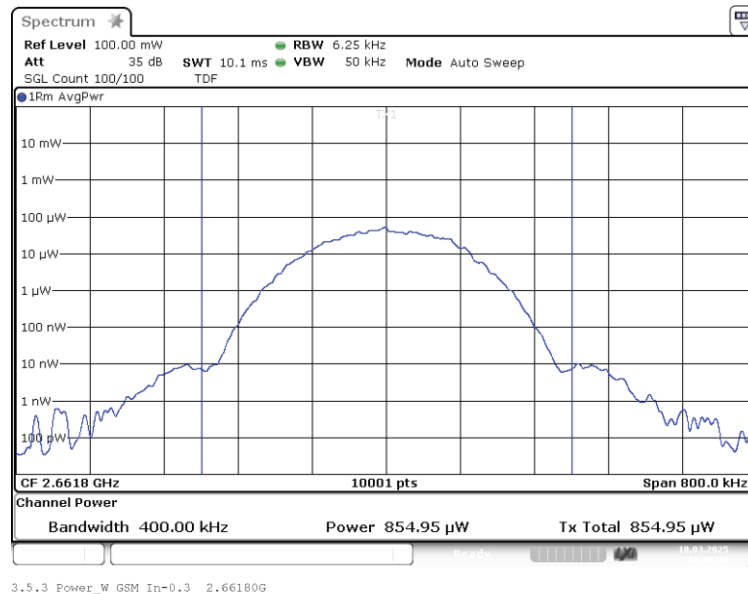
Band: BRS UBS; Frequency: 2.6618 GHz; Band edge: f0; Mod: AWGN;
Output power 3 dB > AGC



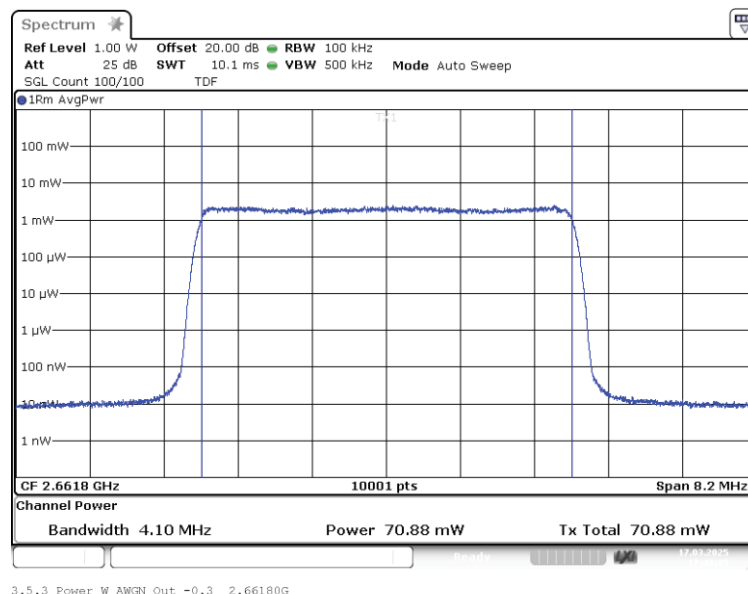
Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

Band: BRS UBS; Frequency: 2.6618 GHz; Band edge: f0; Mod: GSM;
Input power 0.3 dB < AGC



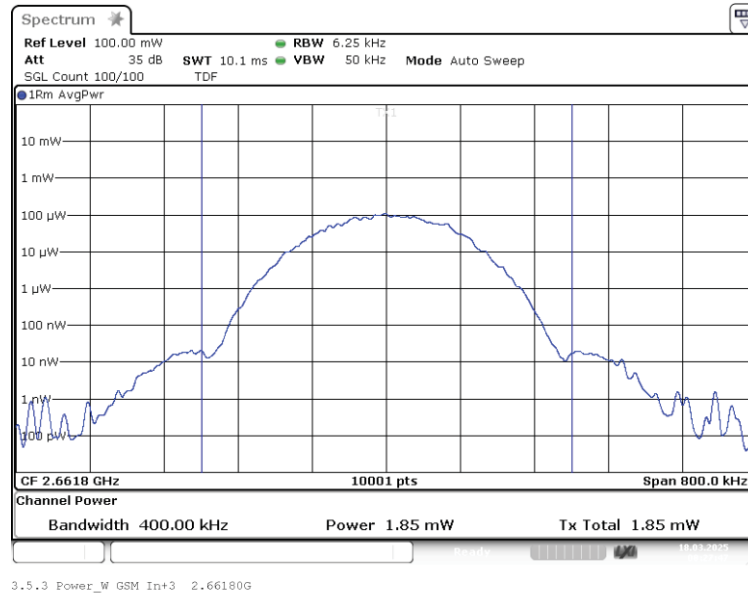
Band: BRS UBS; Frequency: 2.6618 GHz; Band edge: f0; Mod: GSM;
Output power 0.3 dB < AGC



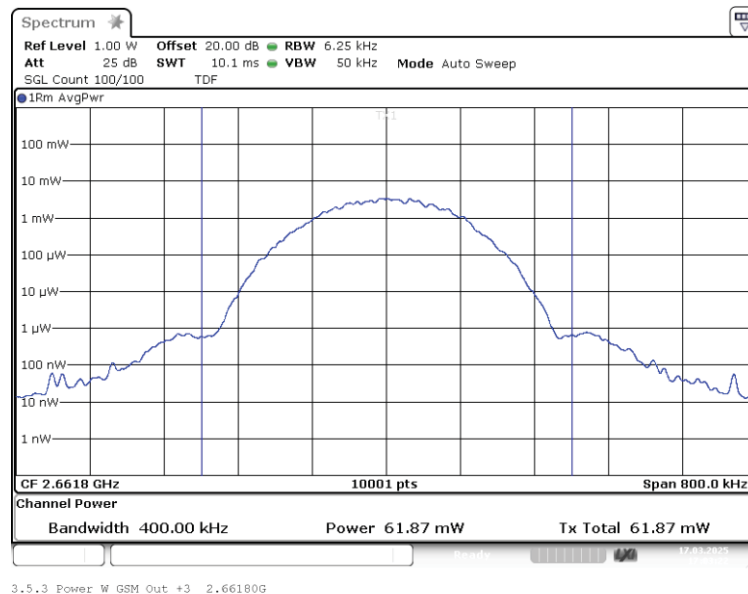
Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

Band: BRS UBS; Frequency: 2.6618 GHz; Band edge: f0; Mod: GSM;
Input power 3 dB > AGC



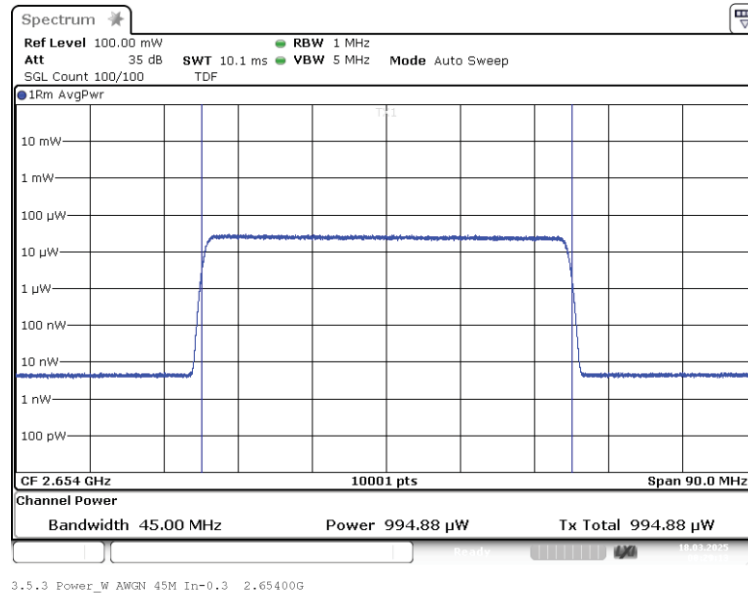
Band: BRS UBS; Frequency: 2.6618 GHz; Band edge: f0; Mod: GSM;
Output power 3 dB > AGC



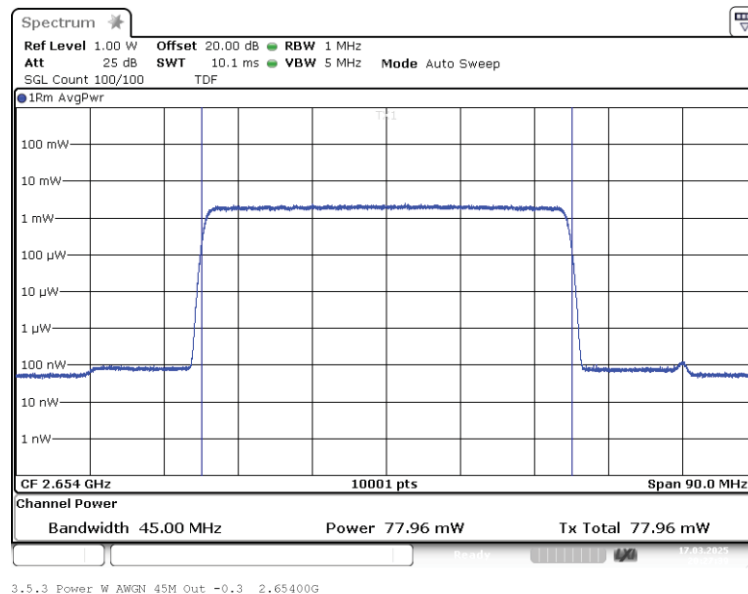
Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

Band: BRS UBS; Frequency: 2.6540 GHz; Band edge: mid; Mod: AWGN 45M;
Input power 0.3 dB < AGC



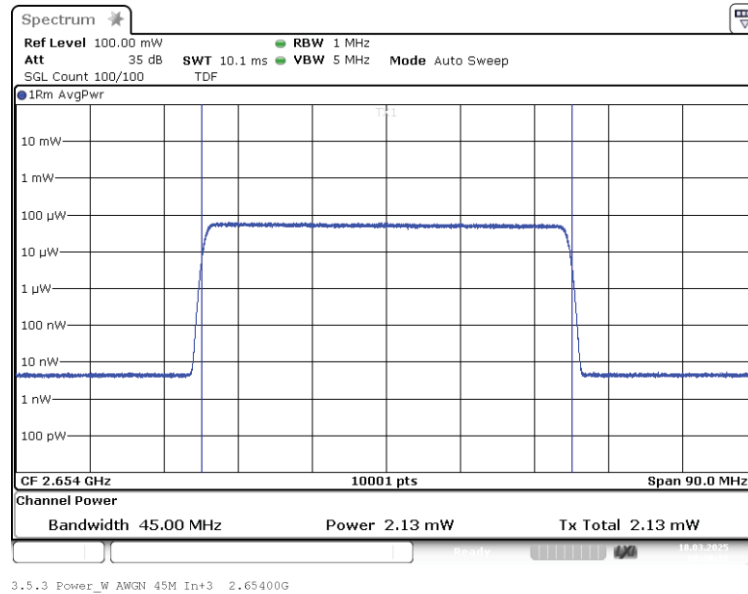
Band: BRS UBS; Frequency: 2.6540 GHz; Band edge: mid; Mod: AWGN 45M;
Output power 0.3 dB < AGC



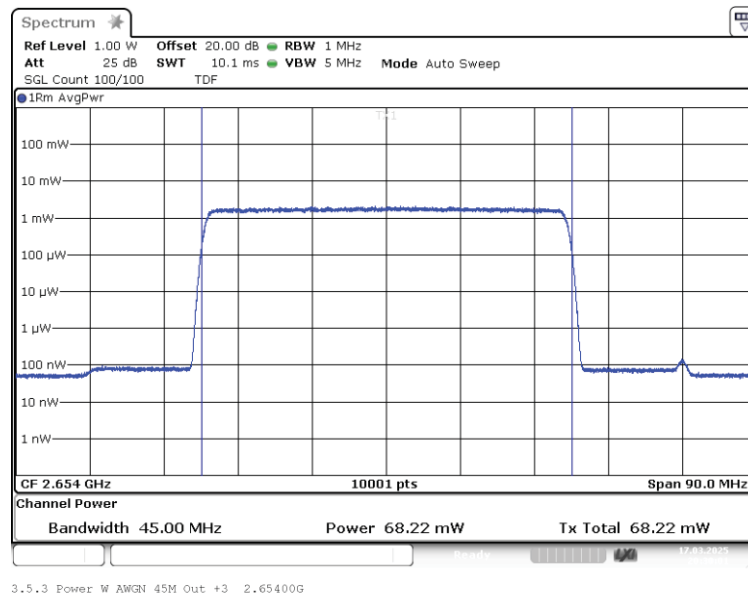
Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

Band: BRS UBS; Frequency: 2.6540 GHz; Band edge: mid; Mod: AWGN 45M;
Input power 3 dB > AGC



Band: BRS UBS; Frequency: 2.6540 GHz; Band edge: mid; Mod: AWGN 45M;
Output power 3 dB > AGC





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Tests performed on UAP-XR [BRS]

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5.1.6 TEST EQUIPMENT USED

- Conducted

Test Report No.: 25-0072

Tests performed on UAP-XR [BRS]

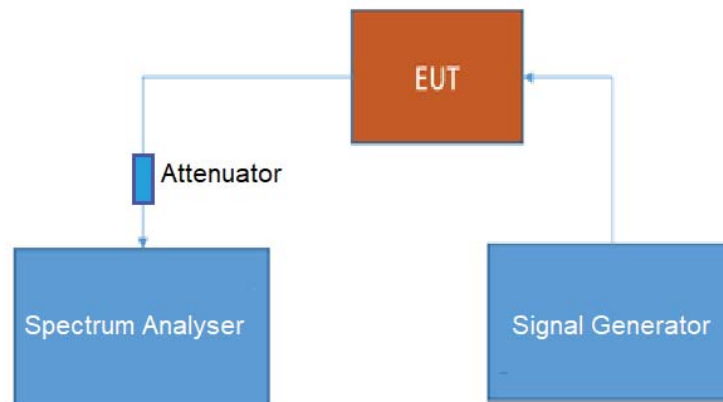
5.2 PEAK TO AVERAGE RATIO

Standard FCC Part 27, §27.50

The test was performed according to:
ANSI C63.26**Test date:** 2025-03-17 – 2025-03-18**Environmental conditions:** 22.8 °C; 26 % r. H./23.5 °C; 23 % r. H.**Test engineer:** Thomas Hufnagel**5.2.1 TEST DESCRIPTION**

This test case is intended to demonstrate compliance to the signal booster power and gain limits and requirements for industrial signal boosters.

The EUT was connected to the test setup according to the following diagram:



The attenuation of the measuring and stimulus path are known for each measured frequency and are considered.

The Spectrum Analyzer settings can be directly found in the measurement diagrams.

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Tests performed on UAP-XR [BRS]

5.2.2 TEST REQUIREMENTS/LIMITSAbstract from FCC Part 27:**Subpart C – Technical standards****§ 27.50****Band 41:**

For the band 41(BRS, LBS/UBS) exists no FCC peak-to-average power ratio (PAPR) limit. Although here no limit exists, a fictive limit with the usual 13 dB value is set and the margin to this fictive limit is calculated.

Abstract from RSS-199:**RSS-199; 5.5 Transmitter output power**

In addition, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1% of the time and shall use a signal corresponding to the highest PAPR during periods of continuous transmission.

5.2.3 TEST PROTOCOL

Band 41 BRS (LBS), downlink						
Signal Type	Input Power	Frequency [MHz]	Input Power [dBm]	PAPR [dB]	Fictive Limit PAPR [dB]	Margin to fictive Limit [dB]
Wideband	0.3 dB < AGC	2500.0	0.6	8.3	13.0	4.7
Wideband	3 dB > AGC	2500.0	4.0	8.4	13.0	4.6
Narrowband	0.3 dB < AGC	2500.0	0.6	0.2	13.0	12.8
Narrowband	3 dB > AGC	2500.0	3.7	0.1	13.0	12.9
Wideband 5G	0.3 dB < AGC	2532.0	-0.5	8.4	13.0	4.6
Wideband 5G	3 dB > AGC	2532.0	2.8	8.4	13.0	4.6

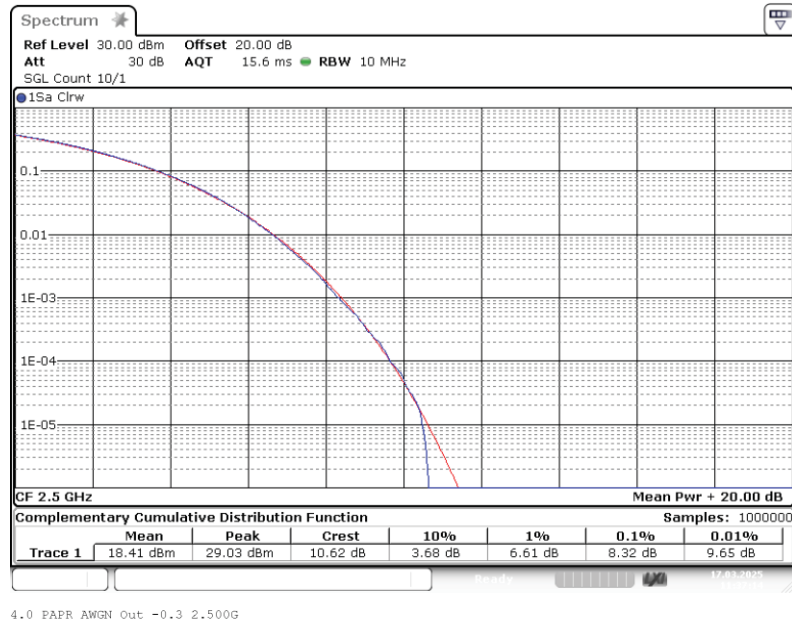
Band 41 BRS (MBS), downlink						
Signal Type	Input Power	Frequency [MHz]	Input Power [dBm]	PAPR [dB]	Fictive Limit PAPR [dB]	Margin to fictive Limit [dB]
Wideband	0.3 dB < AGC	2589.6	-0.9	8.4	13.0	4.6
Wideband	3 dB > AGC	2589.6	2.5	8.4	13.0	4.6
Narrowband	0.3 dB < AGC	2589.6	-0.9	0.2	13.0	12.8
Narrowband	3 dB > AGC	2589.6	2.5	0.2	13.0	12.8
Wideband 5G	0.3 dB < AGC	2593.0	-0.6	8.5	13.0	4.5
Wideband 5G	3 dB > AGC	2593.0	2.7	8.4	13.0	4.6

Band 41 BRS (UBS), downlink						
Signal Type	Input Power	Frequency [MHz]	Input Power [dBm]	PAPR [dB]	Fictive Limit PAPR [dB]	Margin to Fictive Limit [dB]
Wideband	0.3 dB < AGC	2661.8	-0.8	8.5	13.0	4.5
Wideband	3 dB > AGC	2661.8	2.6	8.4	13.0	4.6
Narrowband	0.3 dB < AGC	2661.8	-0.8	0.1	13.0	12.9
Narrowband	3 dB > AGC	2661.8	2.6	0.2	13.0	12.8
Wideband 5G	0.3 dB < AGC	2654.0	0.0	8.5	13.0	4.5
Wideband 5G	3 dB > AGC	2654.0	3.3	8.4	13.0	4.6

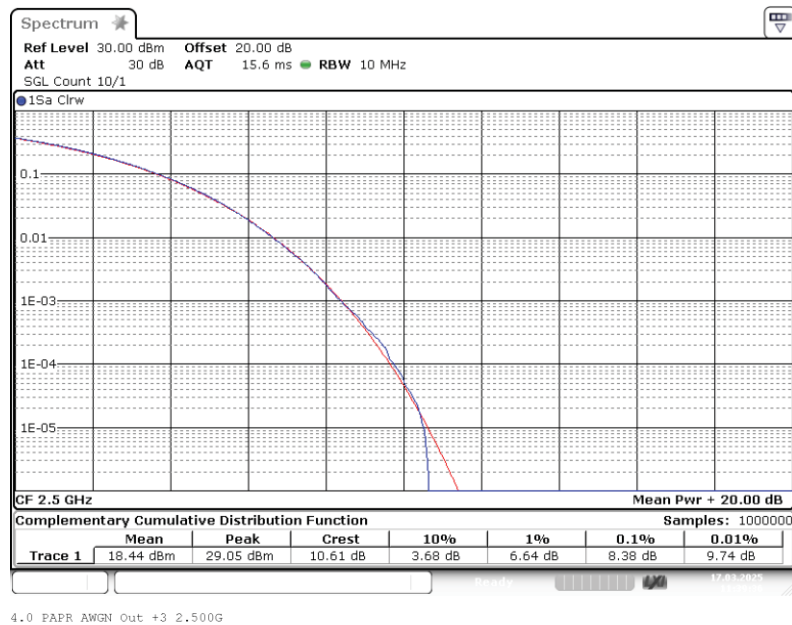
Remark: Please see next sub-clause for the measurement plot.

5.2.4 MEASUREMENT PLOT

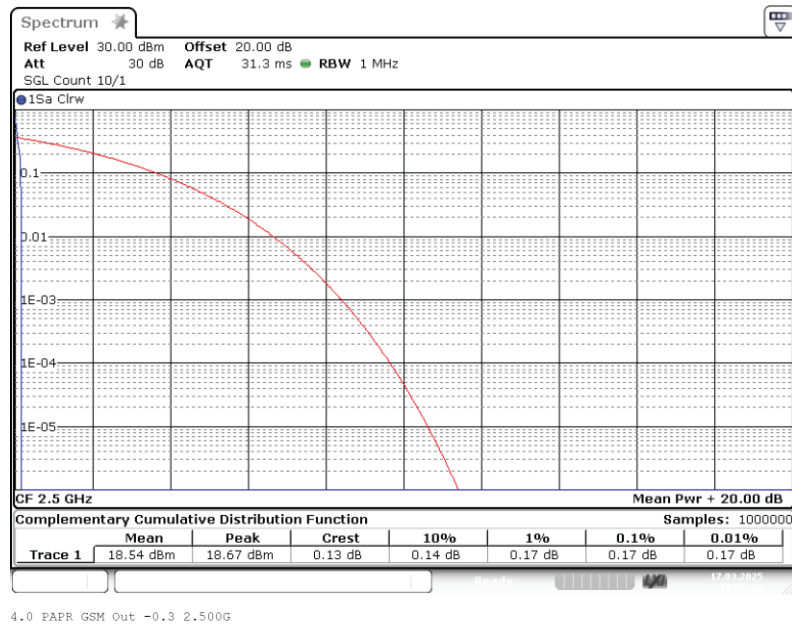
Band: BRS LBS; Frequency: 2,5000 GHz; Band edge: f0; Mod: AWGN; PAPR 0,3 dB < AGC



Band: BRS LBS; Frequency: 2,5000 GHz; Band edge: f0; Mod: AWGN; PAPR 3 dB > AGC



Band: BRS LBS; Frequency: 2,5000 GHz; Band edge: f0; Mod: GSM; PAPR 0,3 dB < AGC



Band: BRS LBS; Frequency: 2,5000 GHz; Band edge: f0; Mod: GSM; PAPR 3 dB > AGC

