Report Reference ID:	REP089405

Test specification:	Title 47 – Telecommunication Chapter I – Federal Communications Commission Subchapter B – Common carrier services Part 27 – Miscellaneous wireless communications services

Applicant:	John Mezzalingua Associates, LLC dba JMA Wireless, P.O. Box 580, Syracuse NY 13205 USA
Apparatus:	Next Generation High Power Remote Unit 2496 - 2690 MHz
Model:	XR25WH2/ACY-R
FCC ID:	2A9VB-X25H2-R

Testing laboratory:	**Nemko Italy Spa** Via del Carroccio, 4 20853 Biassono (MB) – Italy Telephone: +39 039 2201201 Facsimile: +39 039 2201221

	Name and title	**Date**
Tested by:	L. Anticona, Wireless/EMC Specialist	2025-03-26
Reviewed by:	O. Frau, EMC Technical Laboratory Manager	2025-03-26

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Section 1: Report summary

1.1 Test specification

Specifications	**Part 27 – Miscellaneous wireless communications services**

1.2 Statement of compliance

Compliance	In the configuration tested the EUT was found compliant Yes ☒ No ☐ Test method: ANSI C63.26-2015, 662911 D01 Multiple Transmitter Output v02r01, 662911 D02 MIMO with Cross-Polarized Antennas v01, 935210 D05 Measurements guidance for industrial and non-consumer signal booster, repeater and amplifier devices v01r04

1.3 Exclusions

Exclusions	None

1.4 Registration number

FCC site number	682159

1.5 Test report revision history

Revision #	Details of changes made to test report
REP089405	Original report issued

1.6 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.

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Section 2: Summary of test results

2.1 FCC Part 27, test results

Part	Methods	Test description	Verdict
	§ 935210 D05v01r04 (3.2)	AGC threshold	Pass
	§ 935210 D05v01r04 (3.3)	Out of band rejection	Pass
§27.53(m)(6)	§ 935210 D05v01r04 (3.4)	Occupied bandwidth	Pass
§27.50(h)	§ 935210 D05v01r04 (3.5)	Peak output power at RF antenna connector	Pass
§27.53(m)	§ 935210 D05v01r04 (3.6)	Spurious emissions at RF antenna connector	Pass
§27.53(m)	§ 935210 D05v01r04 (3.8)	Radiated spurious emissions	Pass
§27.54	§ 935210 D05v01r04 (3.7)	Frequency stability	N/A a)

Notes:

a) NOT APPLICABLE: Modulation/frequency conversion circuitry not in use. No frequency change in EUT (input and output have same frequency).

Section 3: Equipment under test (EUT) and application details

3.1 Applicant details

Applicant complete business name	Name:	John Mezzalingua Associates, LLC dba JMA Wireless
	Federal Registration Number (FRN):	0032973943
	Grantee code	2A9VB
Mailing address	Address: City: Province/State: Post code: Country:	P.O. Box 580 Syracuse NY 13205 USA

3.2 Modular equipment

a) Single modular approval	Single modular approval Yes ☐ No ☒
b) Limited single modular approval	Limited single modular approval Yes ☐ No ☒

3.3 Product details

FCC ID	Grantee code:	2A9VB
	Product code:	-X25H2-R
Equipment class	B2I	
Description of product as it is marketed	Booster	
	Model name/number:	XR25WH2/ACY-R
	Serial number:	1052005002

3.4 Application purpose

Type of application	☒ Original certification ☐ Change in identification of presently authorized equipment Original FCC ID: Grant date: ☐ Class II permissive change or modification of presently authorized equipment

Section 3: Equipment under test

3.5 Composite/related equipment

a) Composite equipment	The EUT is a composite device subject to an additional equipment authorization Yes ☐ No ☒
b) Related equipment	The EUT is part of a system that operates with, or is marketed with, another device that requires an equipment authorization Yes ☐ No ☒
c) Related FCC ID	If either of the above is "yes": ☐ has been granted under the FCC ID(s) listed below: ☐ is in the process of being filled under the FCC ID(s) listed below: ☐ is pending with the FCC ID(s) listed below: ☐ has a mix of pending and granted statues under the FCC ID(s) listed below: i FCC ID: ii FCC ID:

3.6 Sample information

Receipt date:	2025-03-12
Nemko sample ID number:	PRJ00761650001

3.7 EUT technical specifications

Operating band:	Down Link – Up Link: 2496–2690 MHz
Operating frequency:	Wideband
Modulation type:	LTE-TDD (QAM and QPSK)
Occupied bandwidth:	LTE: 5 MHz, 10 MHz, 15 MHz, 20 MHz
Channel spacing:	standard
Emission designator:	LTE: D7W
RF Output	Down Link: - max composite output power per path: 37dBm (5W) - MIMO max composite output power per path: 40dBm (10W) Up Link: N.A. (The EUT does not transmit over the air in the up-link direction)
Gain	Down Link: 39dB Up Link: N.A. (The EUT does not transmit over the air in the up-link direction)
Antenna type:	External Antenna is not provided, equipment that has an external 50 Ω RF connector
Power source:	100-240 Vac

Section 3: Equipment under test

3.8 Accessories and support equipment

The following information identifies accessories used to exercise the EUT during testing:

Item # 1	
Type of equipment:	Next Generation OTRX
Brand name:	JMA
Model name or number:	ED25D
Serial number:	1052004002
Nemko sample number:	----------
Connection port:	DL/UL RF connector (to connect to the base station) SFP/Optical port (to connect to remote unit)
Cable length and type:	----------
Item # 2	
Type of equipment:	
Brand name:	
Model name or number:	
Serial number:	
Nemko sample number:	
Connection port:	
Cable length and type:	
Item # 3	
Type of equipment:	
Brand name:	
Model name or number:	
Serial number:	
Nemko sample number:	
Connection port:	
Cable length and type:	
Item # 4	
Type of equipment:	
Brand name:	
Model name or number:	
Serial number:	
Nemko sample number:	
Connection port:	
Cable length and type:	

Section 3: Equipment under test

3.9 Operation of the EUT during testing

Details:	In down-link direction, normal working at max gain with max RF power output.

3.10 EUT setup diagram

In this system, Next Generation Remote Unit is the EUT. Next Generation OTRX includes only management of optical conversion (to convert RF signal in optical signal in down-link direction and vice versa optical signal in RF signal in up-link direction). As described in “Operational description”, OTRX is connected directly to base station, so the system doesn’t use another equipment (under another FCC ID) to exercise the EUT. Signal generator is linked directly to the RF connector of the OTRX.

Test setup for output power, occupied bandwidth, spurious emissions:

Procedure

Connect the signal modulated generator to the input of the EUT, so that the EUT works at the max gain. Raise the input level to the EUT until reach the maximum output power. Connect the spectrum analyzer to the RF output connector of the EUT.

Section 4: Engineering considerations

4.1 Modifications incorporated in the EUT

Modifications	Modifications performed to the EUT during this assessment None ☒ Yes ☐, performed by Client ☐ or Nemko ☐ Details:

4.2 Deviations from laboratory tests procedures

Deviations	Deviations from laboratory test procedures None ☒ Yes ☐ - details are listed below:

4.3 Technical judgment

Judgment	None

Section 5: Test conditions

5.1 Deviations from laboratory tests procedures

No deviations were made from laboratory test procedures.

5.2 Test conditions, power source and ambient temperatures

Normal temperature, humidity and air pressure test conditions	Temperature: 18–33 °C Relative humidity: 25–75 % Air pressure: 86–106 kPa When it is impracticable to carry out tests under these conditions, a note to this effect stating the ambient temperature and relative humidity during the tests shall be recorded and stated.
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 ±5 %, for which the equipment was designed.

5.3 Measurement uncertainty

The measurement uncertainty was calculated for each test and quantity listed in this test report, according to CISPR 16-4-2 and other specific test standard and is documented in Nemko Spa working manual WML1002. 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:

Section 5: Test conditions, continued

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	5.0 ms	(1)
		Attack time – power behaviour	1 MHz ÷ 18 GHz	2.5 ms	(1)
		Release time – frequency behaviour	1 MHz ÷ 18 GHz	5.0 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)
Receiver	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)
		Sensitivity measurement	1 MHz ÷ 18 GHz	6.0 dB	(1)
	Conducted	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)

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 5: Test conditions, continued

5.4 Test equipment

Equipment	Manufacturer	Model No.	Asset/Serial No.	Next cal.
Vector Signal Generator	Keysight	N5182B MXG	MY59100262	2025-07
Vector Signal Generator	Keysight	N5182B MXG	MY61252595	2025-11
Spectrum Analyzer	Keysight	N9030B PXA	MY62282033	2026-01
Combiner	Miczen	MZP200506GA (0.5-6 GHz)	210314001	COU
Antenna Trilog 25MHz - 8GHz	Schwarzbeck	VULB9168	9168-242	2027-08
Antenna 1-18 GHz	Schwarzbeck	STLP 9148	STPL 9148-123	2027-08
Double Ridge Horn Antenna	RFSpin	DRH40	061106A40	2026-05
Broadband Amplifier	Schwarzbeck	BBV9718C	00121	2026-01
Broadband Bench Top Amplifier	Sage	STB-1834034030-KFKF-L1	18490-01	2025-09
EMI Receiver	Rohde & Schwarz	ESU8	100202	2025-09
EMI Receiver	Rohde & Schwarz	ESW44	101620	2025-09
Controller	Maturo	FCU3.0	10041	NCR
Tilt antenna mast	Maturo	TAM4.0-E	10042	NCR
Turntable	Maturo	TT4.0-5T	2.527	NCR
3m Semi anechoic chamber	Comtest	SAC-3	1711-150	NCR

Note: N/A = Not Applicable, NCR = No Cal Required, COU = CAL On Use
(*) Equipment supplied by manufacturer's

Appendix A: Test results

Clause 935210 D05v01r04 (3.2) AGC threshold

Measure of EUT AGC Threshold

Test date: 2025-03-18 to 2025-03-19

Test results: Pass

Special notes

- Broadband amplifiers: AWGN test signal used (5 MHz LTE channel)

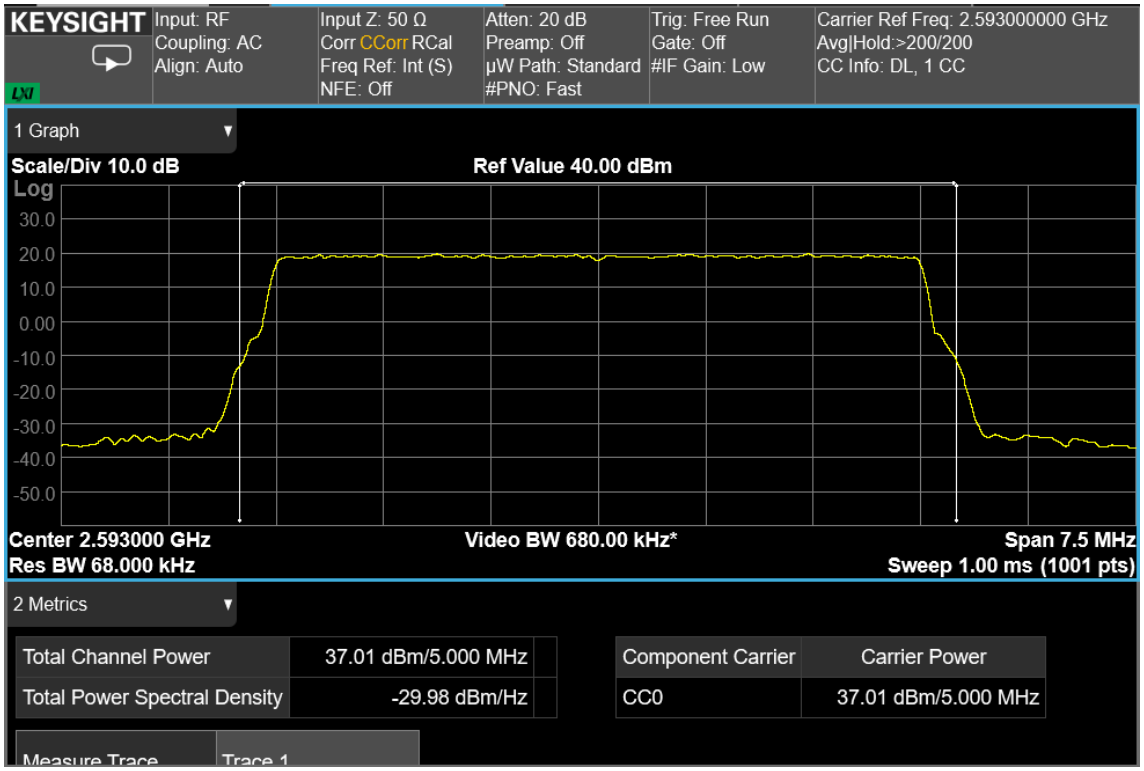
Test equipment

Equipment	Manufacturer	Model No.	Asset/Serial No.	Next cal.
Vector Signal Generator	Keysight	N5182B MXG	MY59100262	2025-07
Spectrum Analyzer	Keysight	N9030B PXA	MY62282033	2026-01

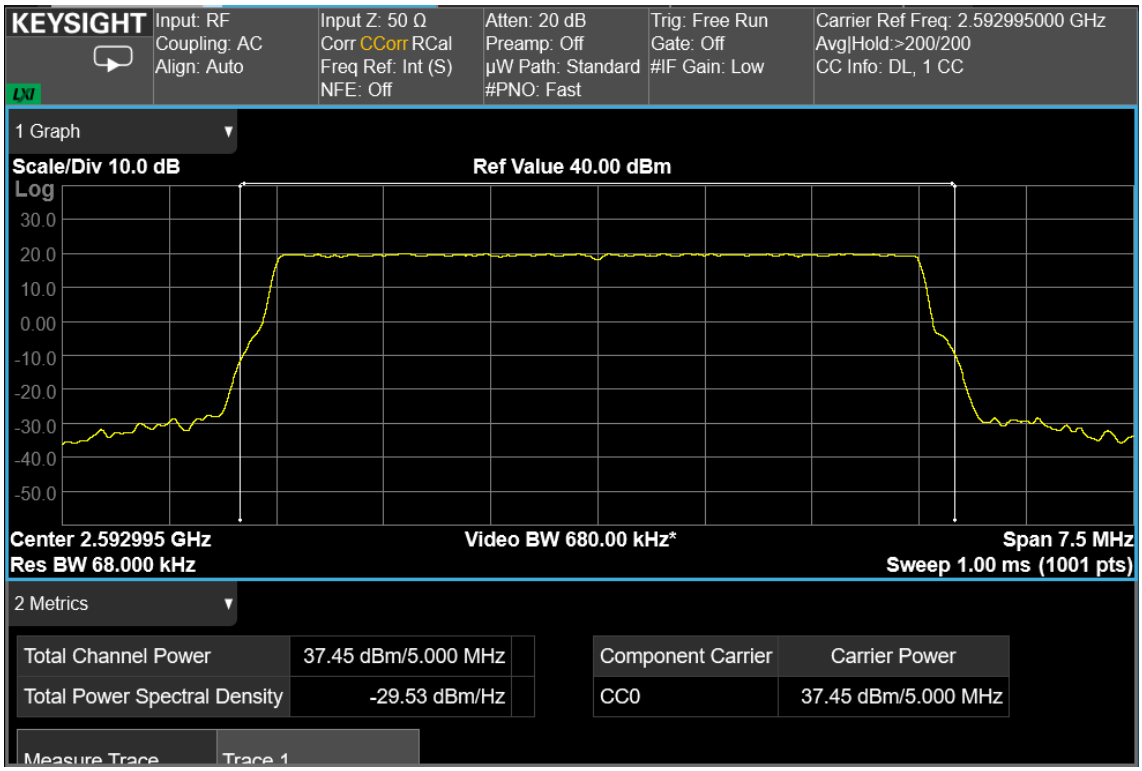
Note: N/A = Not Applicable, NCR = No Cal Required, COU = CAL On Use
(*) Equipment supplied by manufacturer's

Test data

RF PORT 1

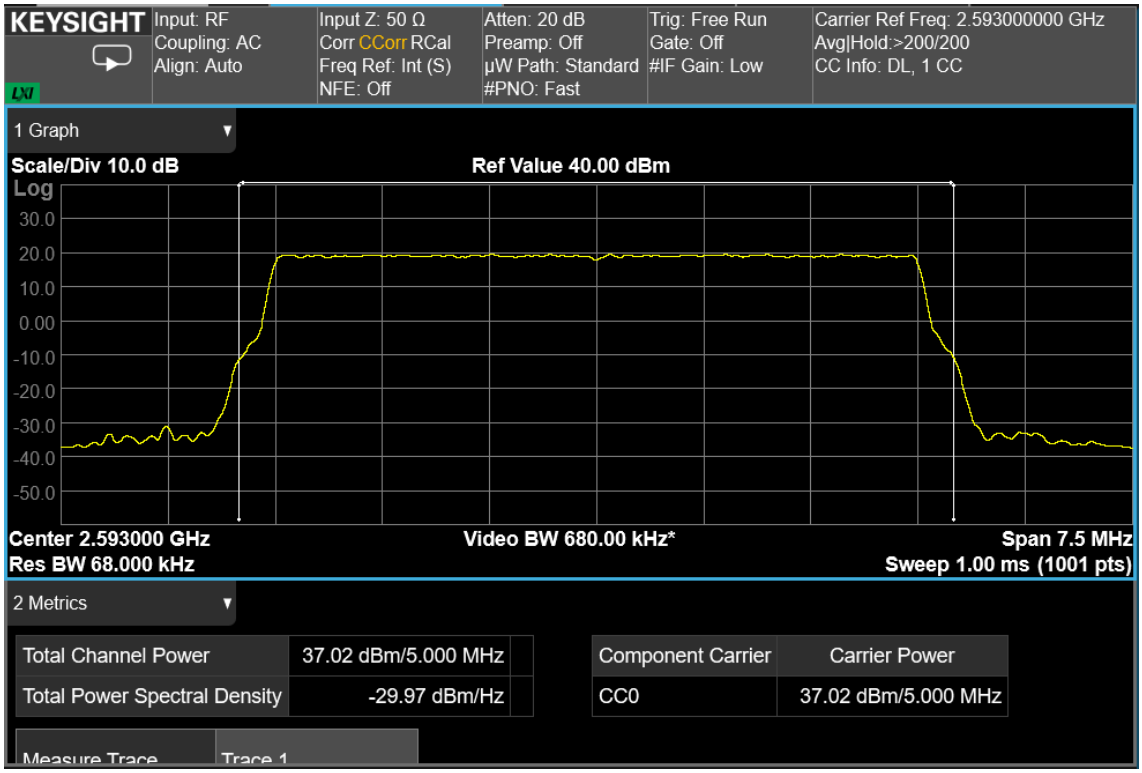


AWGN signal, middle channel, nominal input signal

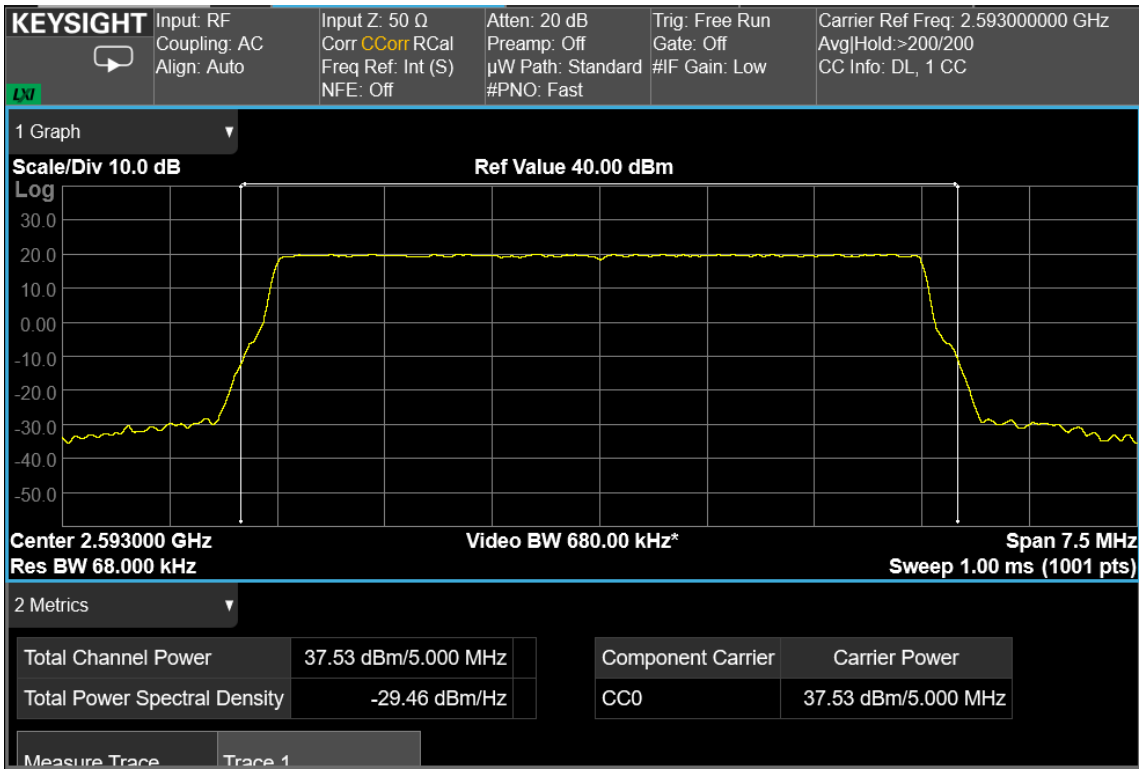


AWGN signal, middle channel, nominal input signal +1 dB

RF PORT 2



AWGN signal, middle channel, nominal input signal



AWGN signal, middle channel, nominal input signal +1 dB

Clause 935210 D05v01r04 (3.3) Out of band rejection

Out of Band Rejection – Test for rejection of out of band signals.

Test date: 2025-03-18 to 2025-03-19

Test results: Pass

Special notes

–

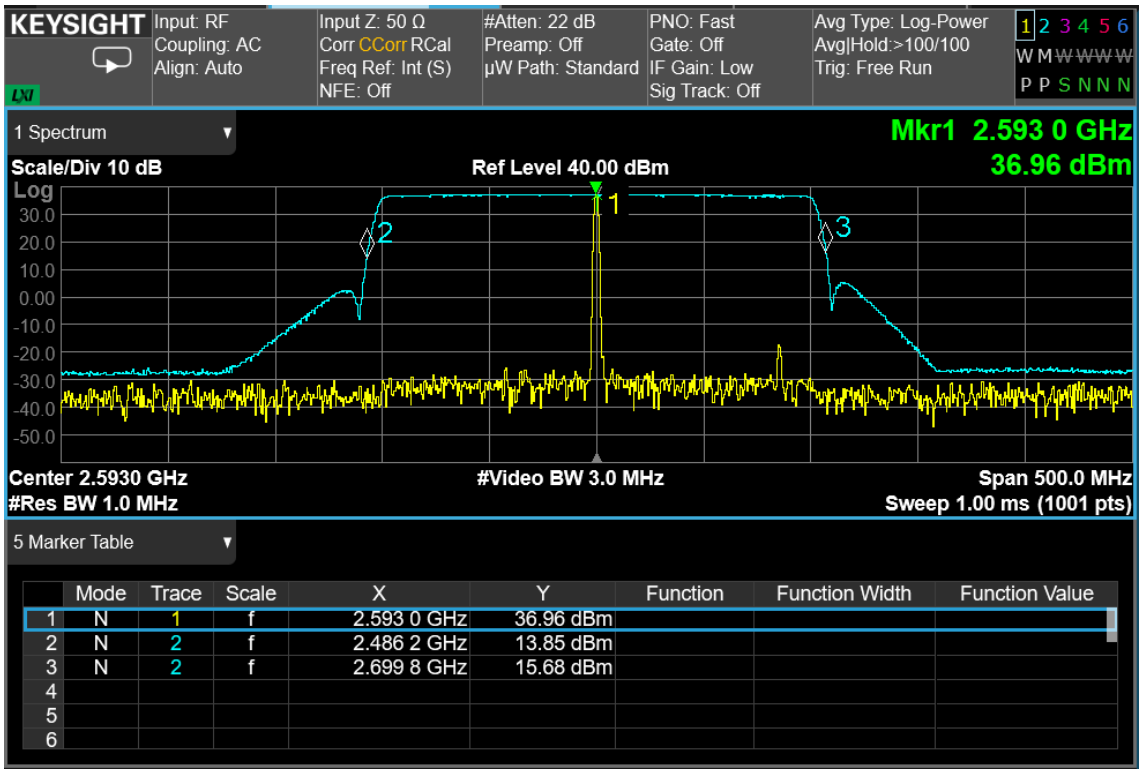
Test equipment

Equipment	Manufacturer	Model No.	Asset/Serial No.	Next cal.
Vector Signal Generator	Keysight	N5182B MXG	MY59100262	2025-07
Spectrum Analyzer	Keysight	N9030B PXA	MY62282033	2026-01

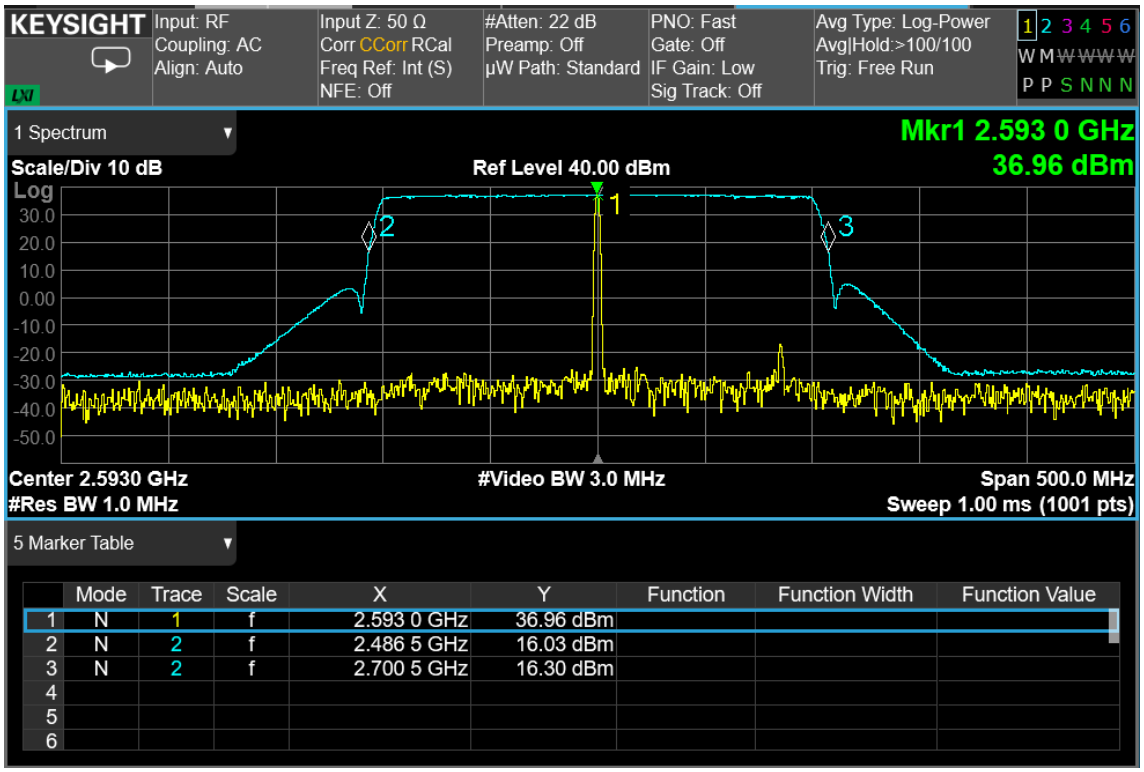
Note: N/A = Not Applicable, NCR = No Cal Required, COU = CAL On Use
(*) Equipment supplied by manufacturer's

Test data

RF PORT 1



RF PORT 2



Clause 27.53(m)(6) Occupied bandwidth

The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

Test date: 2025-03-18 to 2025-03-19

Test results: Pass

Special notes

- Broadband amplifiers: AWGN test signal used (5 MHz LTE channel)

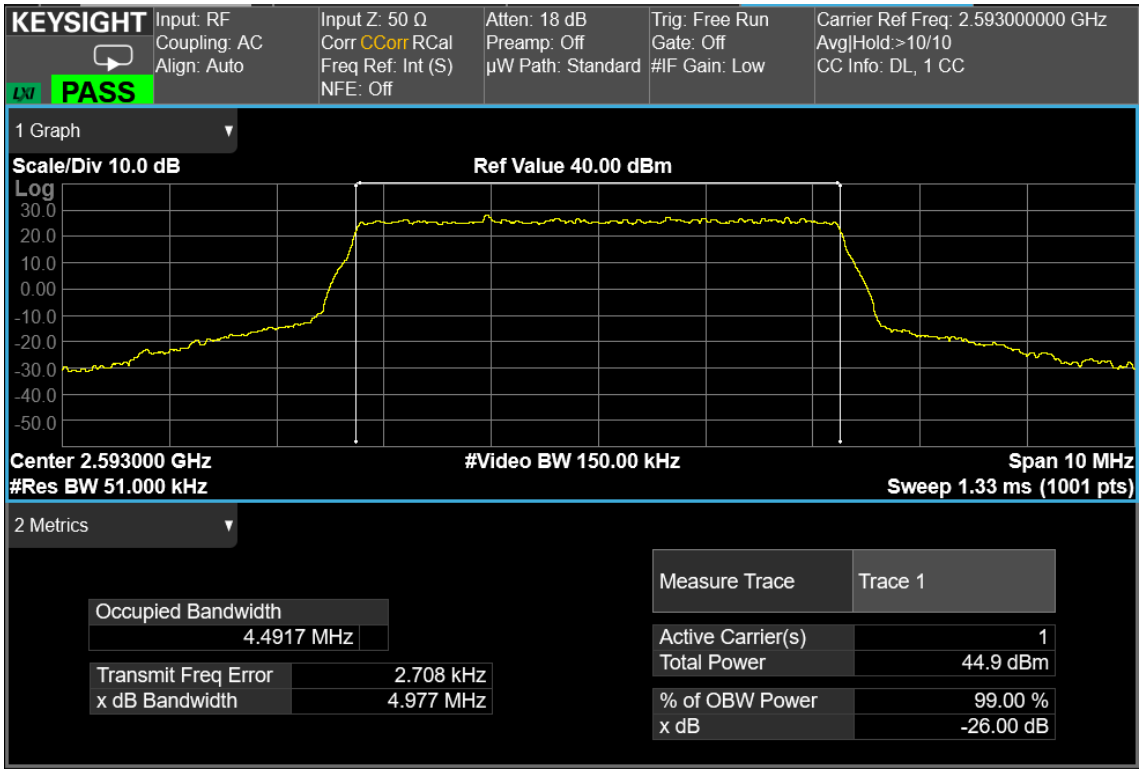
Test equipment

Equipment	Manufacturer	Model No.	Asset/Serial No.	Next cal.
Vector Signal Generator	Keysight	N5182B MXG	MY59100262	2025-07
Spectrum Analyzer	Keysight	N9030B PXA	MY62282033	2026-01

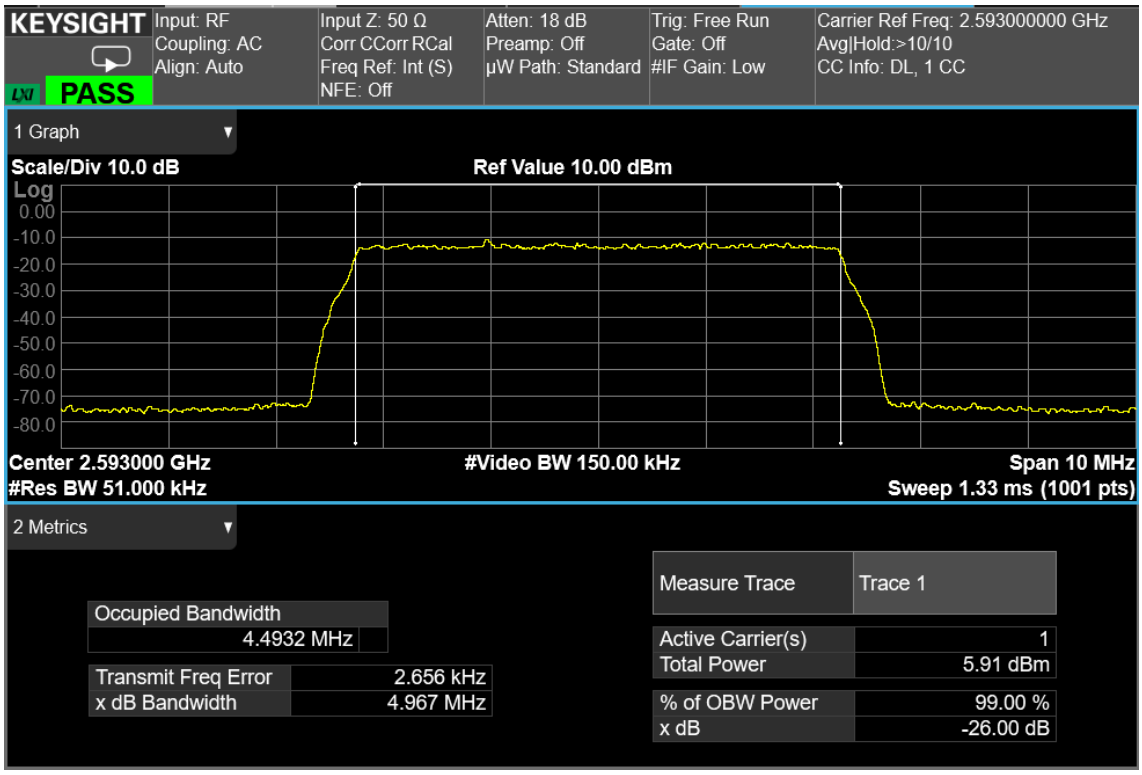
Note: N/A = Not Applicable, NCR = No Cal Required, COU = CAL On Use
(*) Equipment supplied by manufacturer's

Test data

RF PORT 1

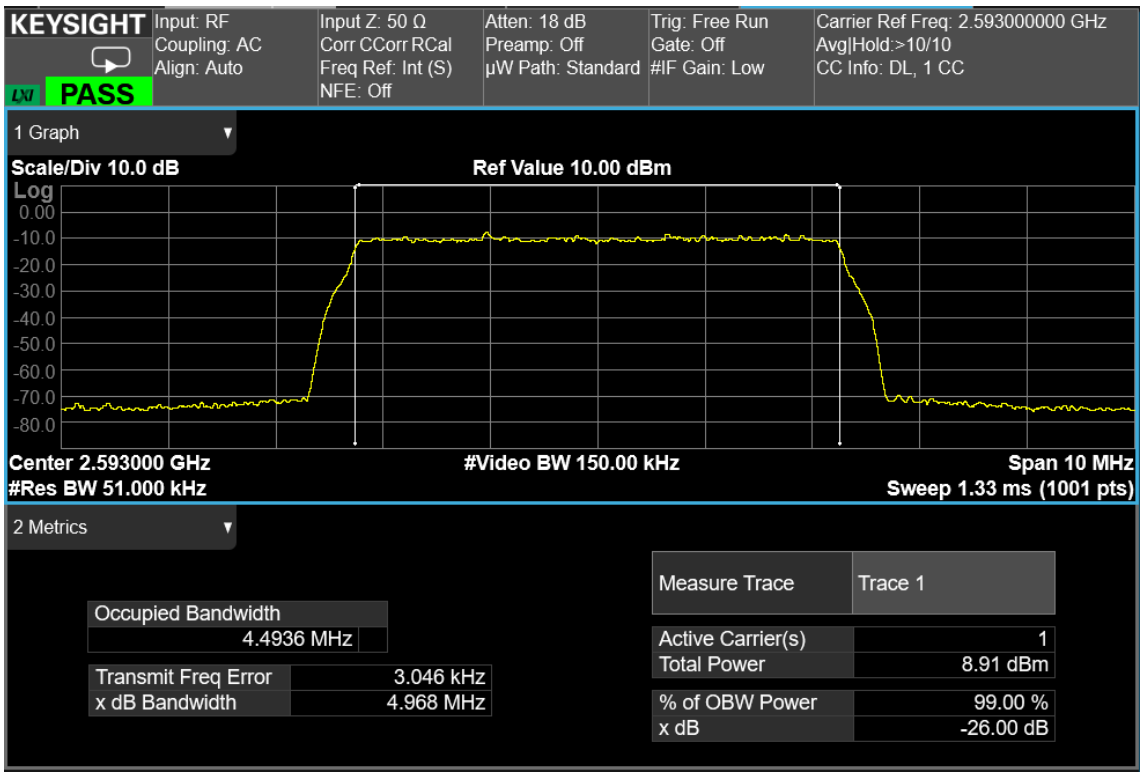


AWGN signal, middle channel, nominal input signal - Output



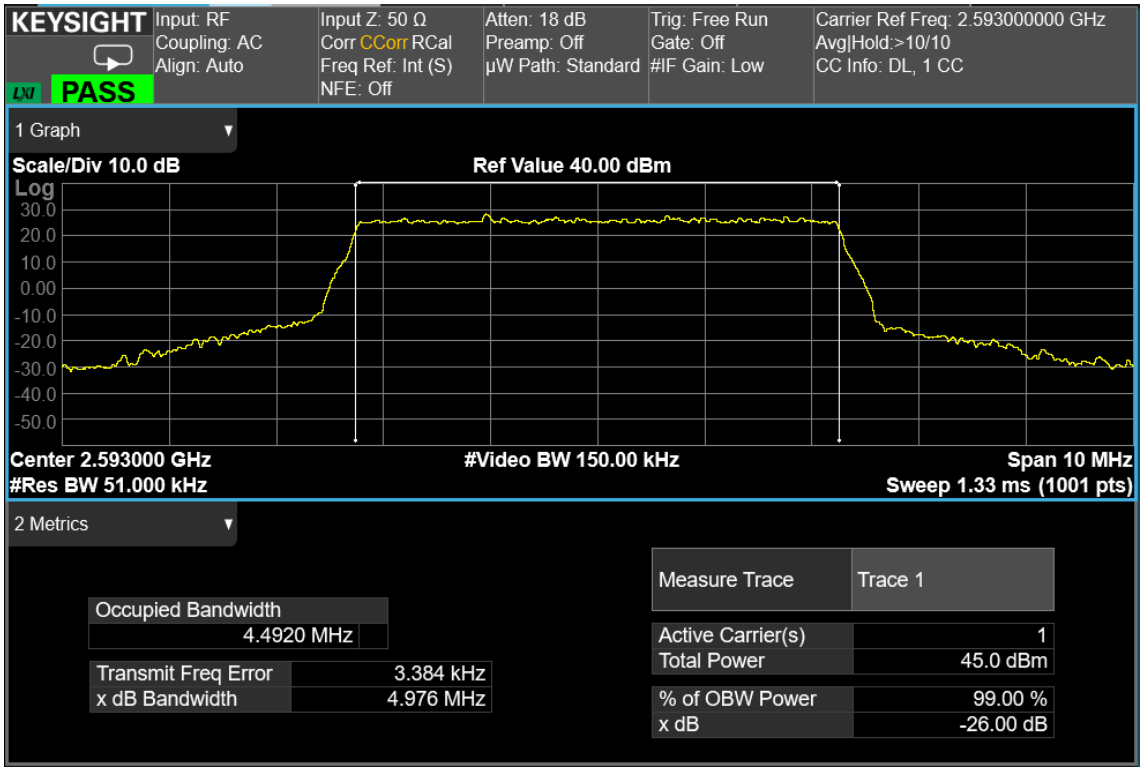
AWGN signal, middle channel, nominal input signal - Input

AWGN signal, middle channel, nominal input signal + 3dB - Output

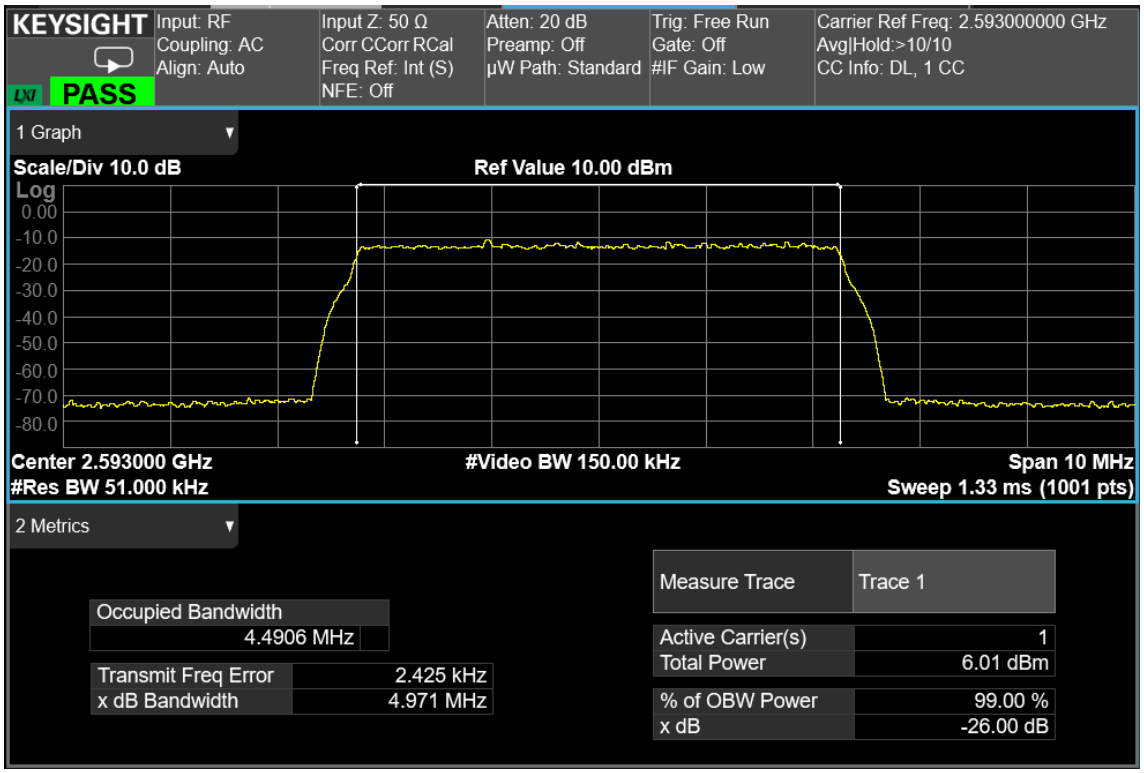


AWGN signal, middle channel, nominal input signal + 3dB - Input

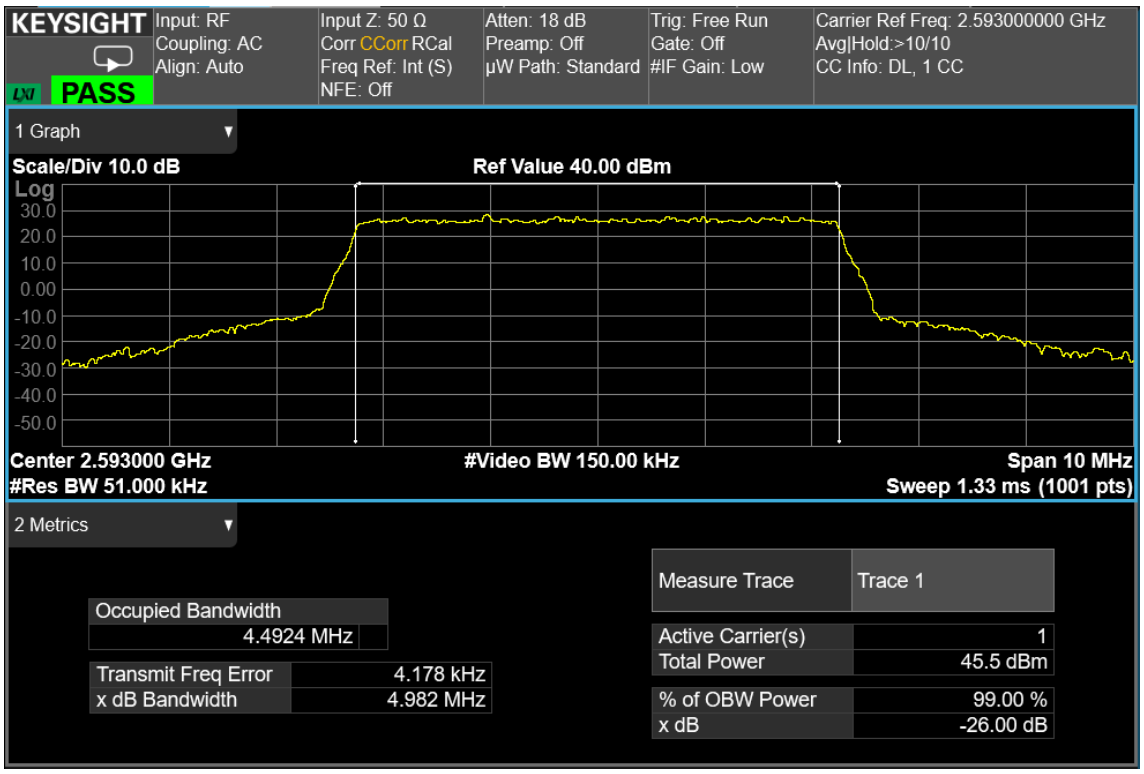
RF PORT 2



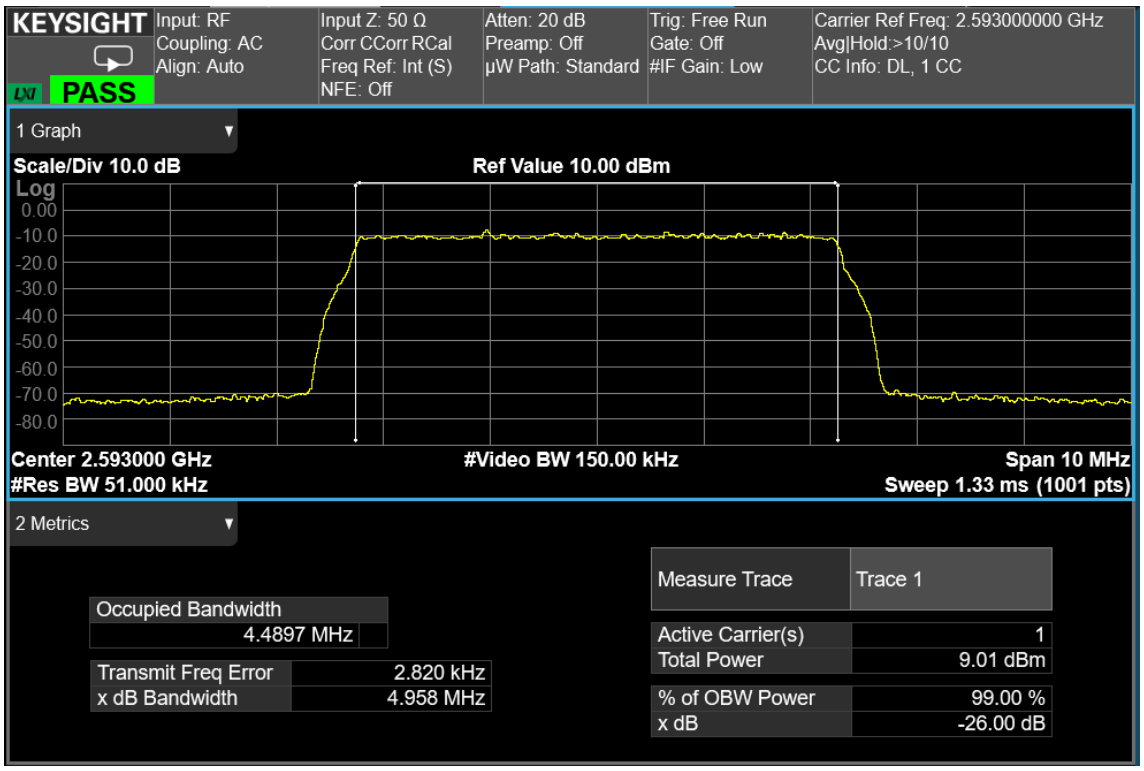
AWGN signal, middle channel, nominal input signal - Output



AWGN signal, middle channel, nominal input signal - Input



AWGN signal, middle channel, nominal input signal + 3dB - Output



AWGN signal, middle channel, nominal input signal + 3dB - Input

Clause 27.50(h) Peak output power at RF antenna connector

§ 27.50(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 dBW + 10log(X/Y) 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: EIRP = 33 dBW + 10 log(X/Y) dBW + 10 log (360/beamwidth) 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.

Test date: 2025-03-18 to 2025-03-19

Test results: Pass

Special notes

- Broadband amplifiers: AWGN test signal used (5 MHz LTE channel)

Test equipment

Equipment	Manufacturer	Model No.	Asset/Serial No.	Next cal.
Vector Signal Generator	Keysight	N5182B MXG	MY59100262	2025-07
Spectrum Analyzer	Keysight	N9030B PXA	MY62282033	2026-01

Note: N/A = Not Applicable, NCR = No Cal Required, COU = CAL On Use
(*) Equipment supplied by manufacturer's

Test data

RF PORT 1

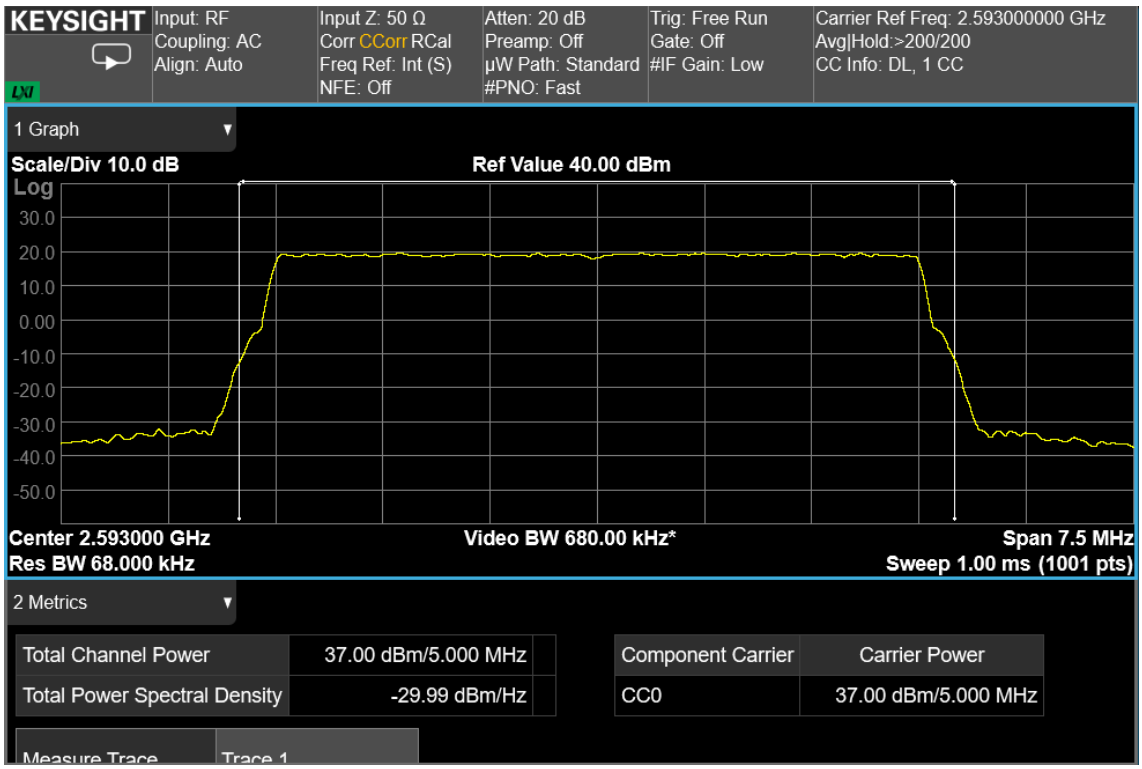
AWGN signal, nominal input signal

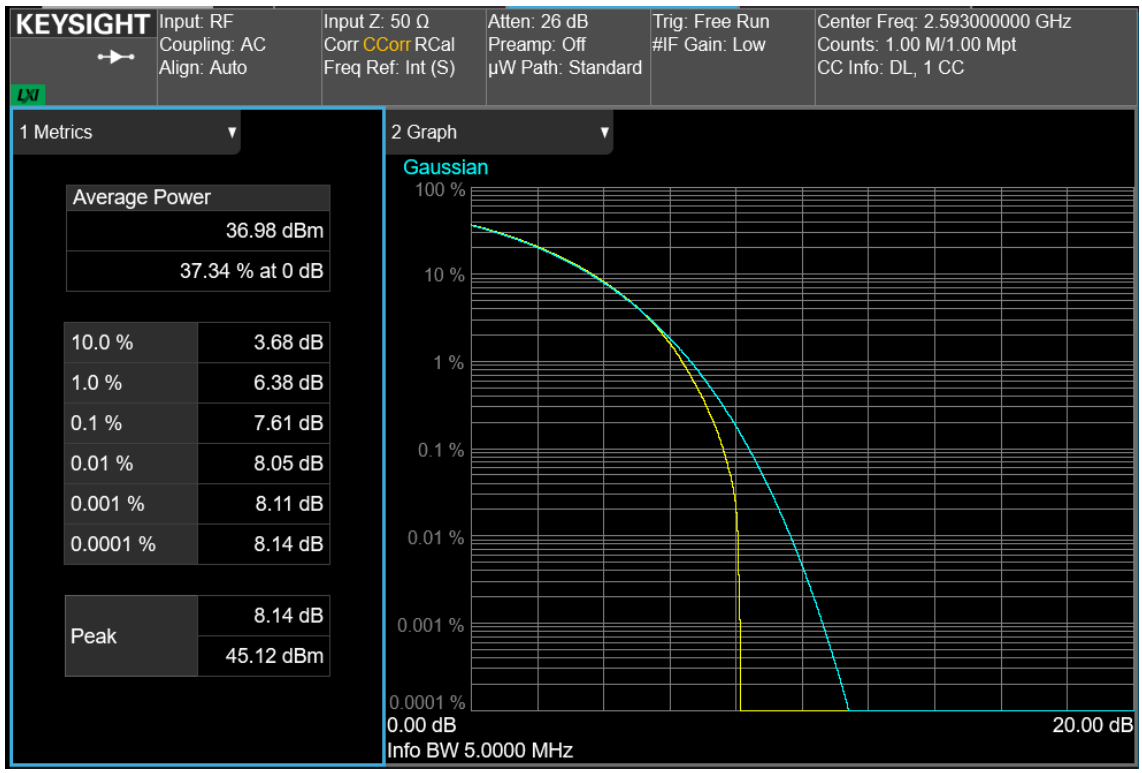
Test data						
Direction	Modulation	Frequency (MHz)	RF output Power (dBm)	RF output channel Power (W)	RF output Power (W/MHz)	PAR (dB)
Down-link	AWGN (LTE, 5MHz)	2593.0	37.0	5.0	1.0	8.1

AWGN signal, nominal input signal + 3dB

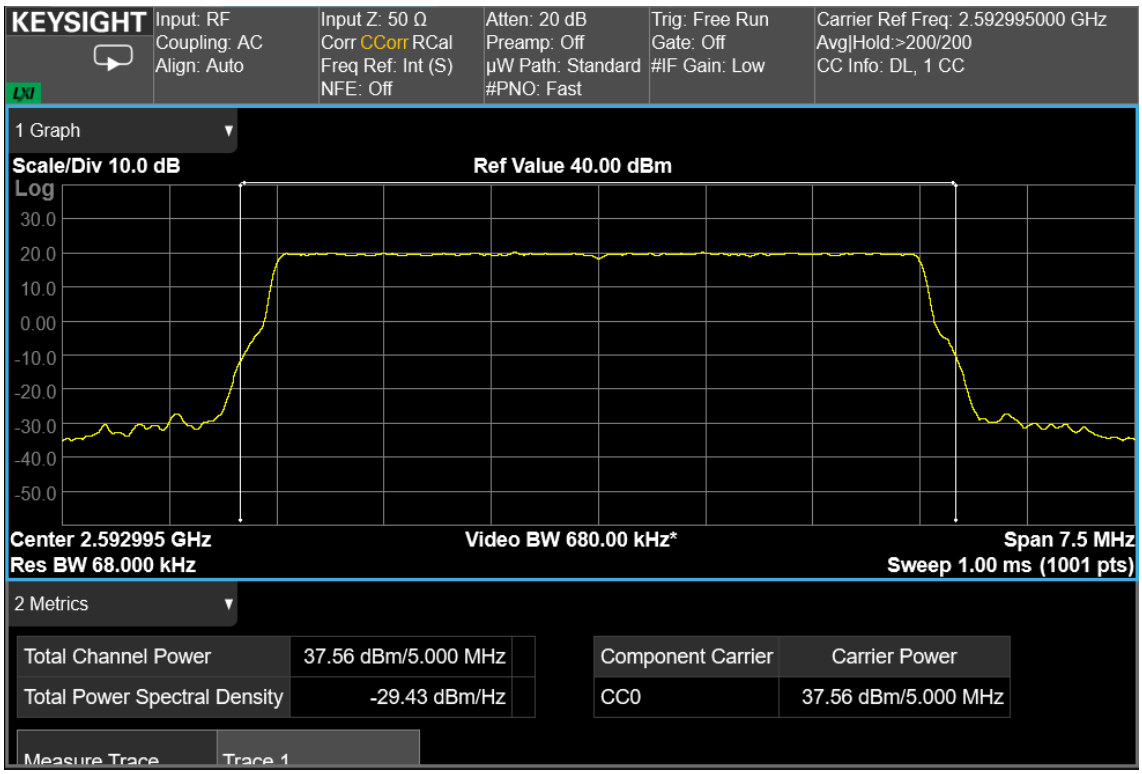
Test data						
Direction	Modulation	Frequency (MHz)	RF output Power (dBm)	RF output channel Power (W)	RF output Power (W/MHz)	PAR (dB)
Down-link	AWGN (LTE, 5MHz)	2593.0	37.6	5.8	1.2	7.9

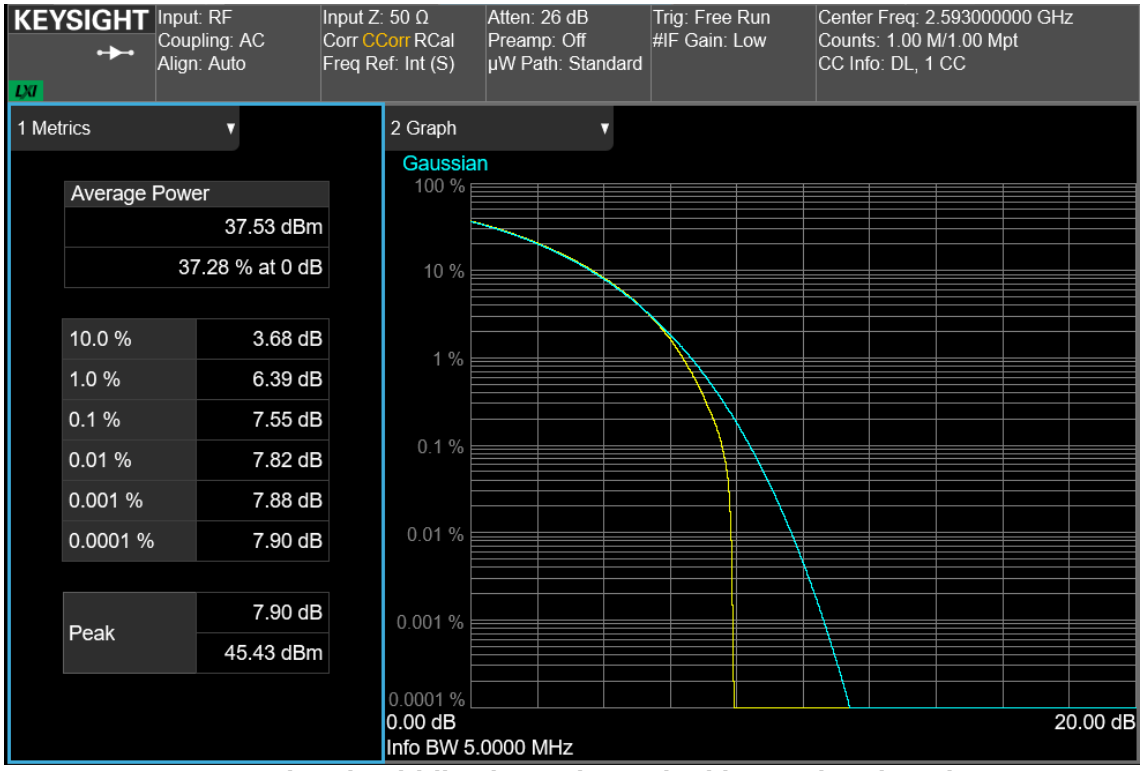
Note: PAR measure is performed by the “CCDF” function installed on Spectrum analyzer that provides average power (the same measured with “Channel power” function), peak power and PAR.





AWGN signal, middle channel, nominal input signal





AWGN signal, middle channel, nominal input signal + 3dB

RF PORT 2

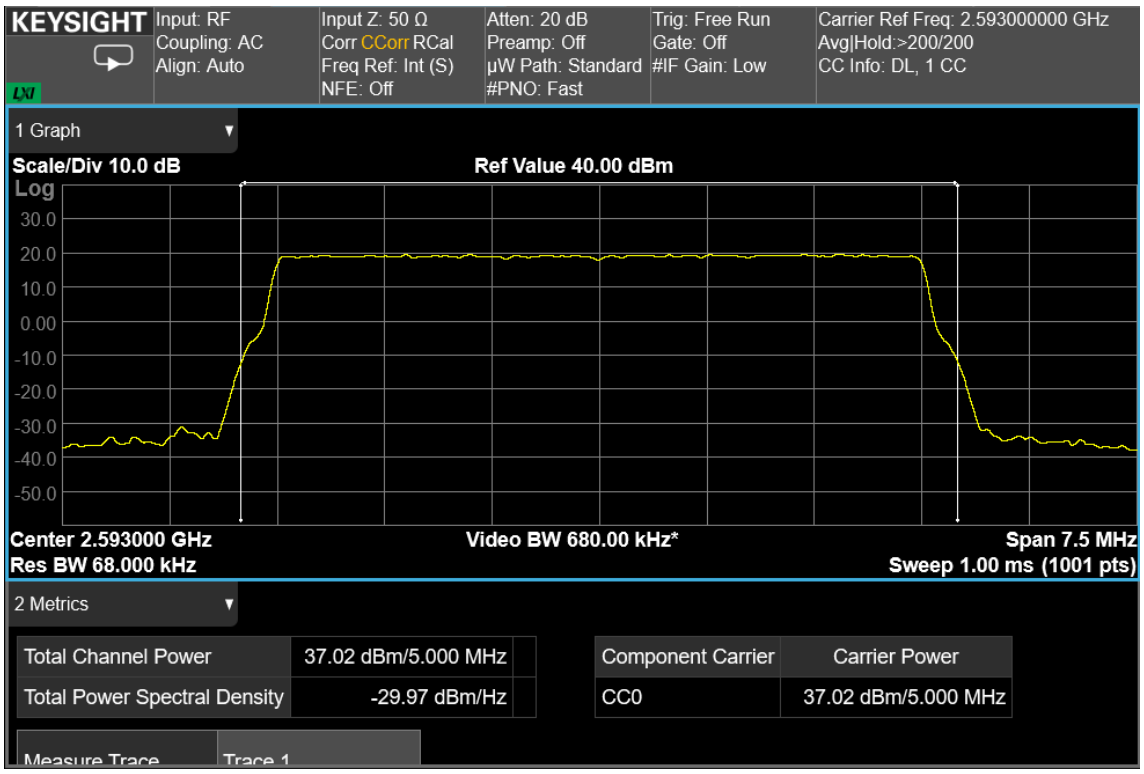
AWGN signal, nominal input signal

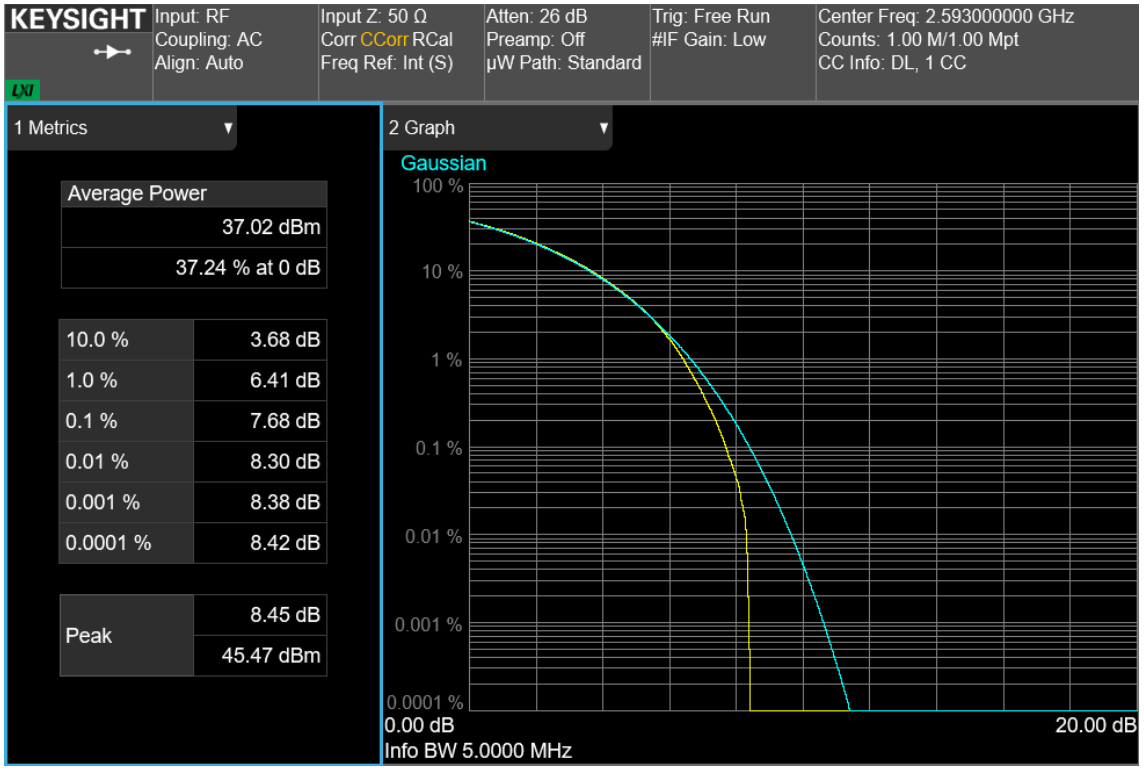
Test data						
Direction	Modulation	Frequency (MHz)	RF output Power (dBm)	RF output channel Power (W)	RF output Power (W/MHz)	PAR (dB)
Down-link	AWGN (LTE, 5MHz)	2593.0	37.0	5.0	1.0	8.5

AWGN signal, nominal input signal + 3dB

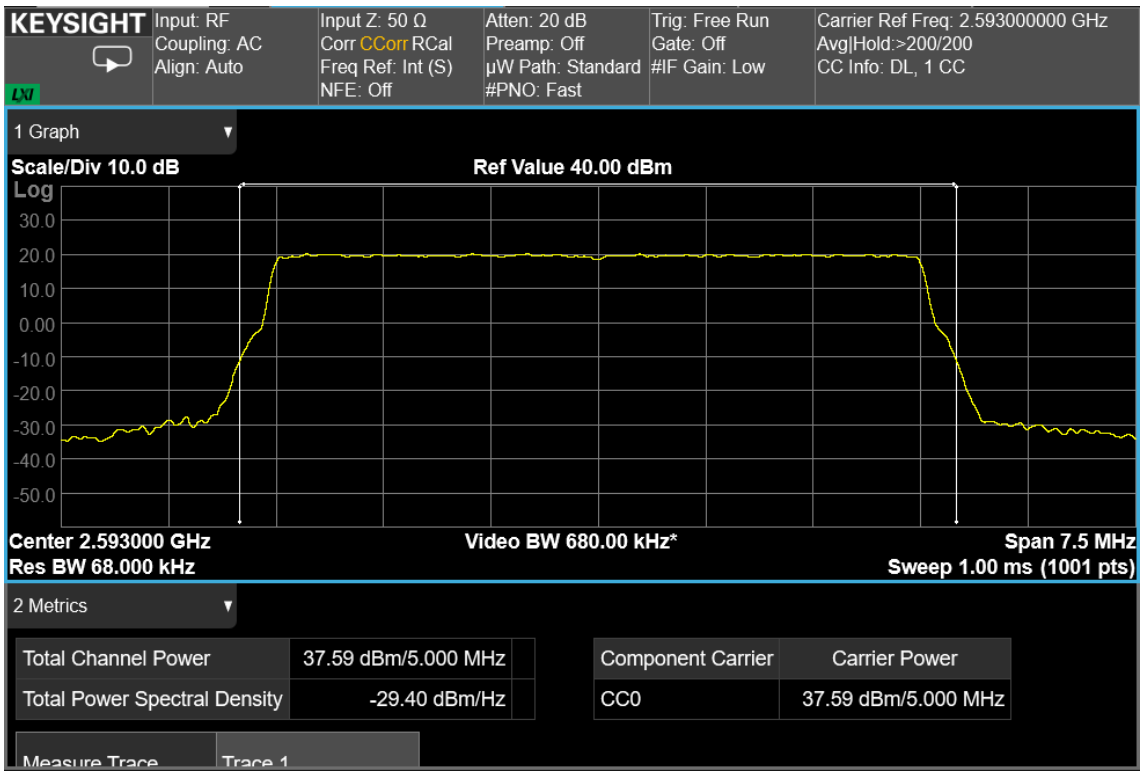
Test data						
Direction	Modulation	Frequency (MHz)	RF output Power (dBm)	RF output channel Power (W)	RF output Power (W/MHz)	PAR (dB)
Down-link	AWGN (LTE, 5MHz)	2593.0	37.6	5.8	1.2	7.9

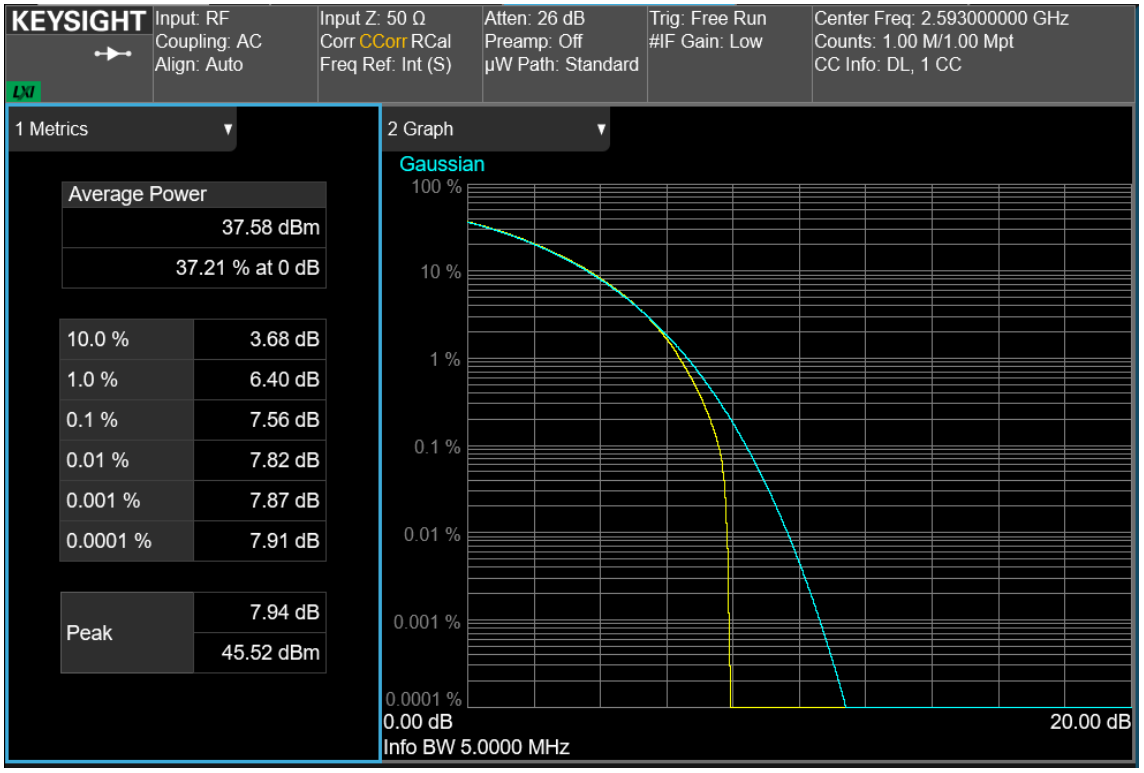
Note: PAR measure is performed by the “CCDF” function installed on Spectrum analyzer that provides average power (the same measured with “Channel power” function), peak power and PAR.





AWGN signal, middle channel, nominal input signal





AWGN signal, middle channel, nominal input signal + 3dB

Clause 27.53(m) Spurious emissions at RF antenna connector

(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:

(6) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed; for mobile digital stations, in the 1 megahertz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed, except when the 1 megahertz band is 2495–2496 MHz, in which case a resolution bandwidth of at least one percent may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 megahertz or 1 percent of emission bandwidth, as specified; or 1 megahertz or 2 percent for mobile digital stations, except in the band 2495–2496 MHz). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power. With respect to television operations, measurements must be made of the separate visual and aural operating powers at sufficiently frequent intervals to ensure compliance with the rules.

Test date: 2025-03-18 to 2025-03-19

Test results: Pass

Special notes

- Broadband amplifiers: AWGN test signal used (5 MHz LTE channel)

Test equipment

Equipment	Manufacturer	Model No.	Asset/Serial No.	Next cal.
Vector Signal Generator	Keysight	N5182B MXG	MY59100262	2025-07
Vector Signal Generator	Keysight	N5182B MXG	MY61252595	2025-11
Spectrum Analyzer	Keysight	N9030B PXA	MY62282033	2026-01
Combiner	Miczen	MZP200506GA (0.5-6 GHz)	210314001	COU

Note: N/A = Not Applicable, NCR = No Cal Required, COU = CAL On Use
(*) Equipment supplied by manufacturer's

Test data

See Plots below

Spurious emissions measurement results:

Frequency (MHz)	Spurious emission (dBm)	Limit (dBm)	Margin (dB)
First channel	Negligible	-16	
Mid channel	Negligible	-16	
Last channel	Negligible	-16	

MIMO consideration

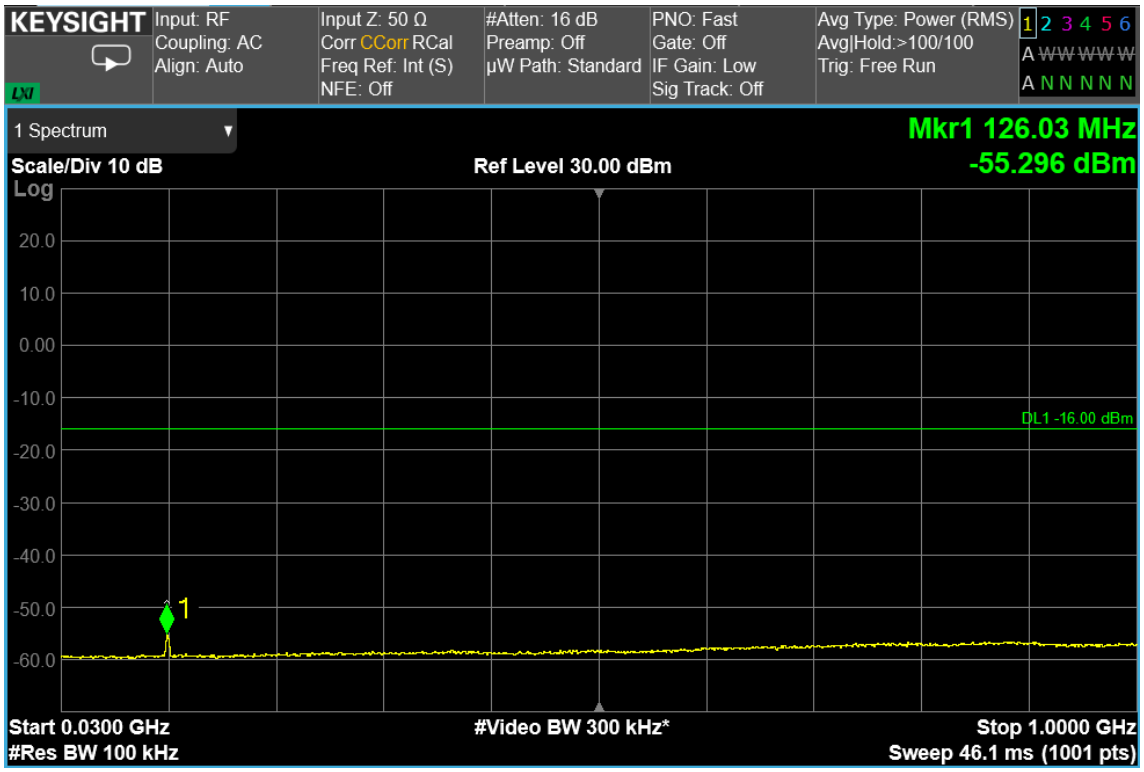
In the final Remote Unit, the EUT could be used in MIMO configuration according to KDB 662911-D01 v02r01 and 662911-D02 v01 with completely uncorrelated signals.
So, the maximum emission is calculated as follows:

- MIMO Maximum Emission = Emission at each path + 10log(Nant) dB =
  = Emission at each path + 10log(2) = Emission at each path + 3dB

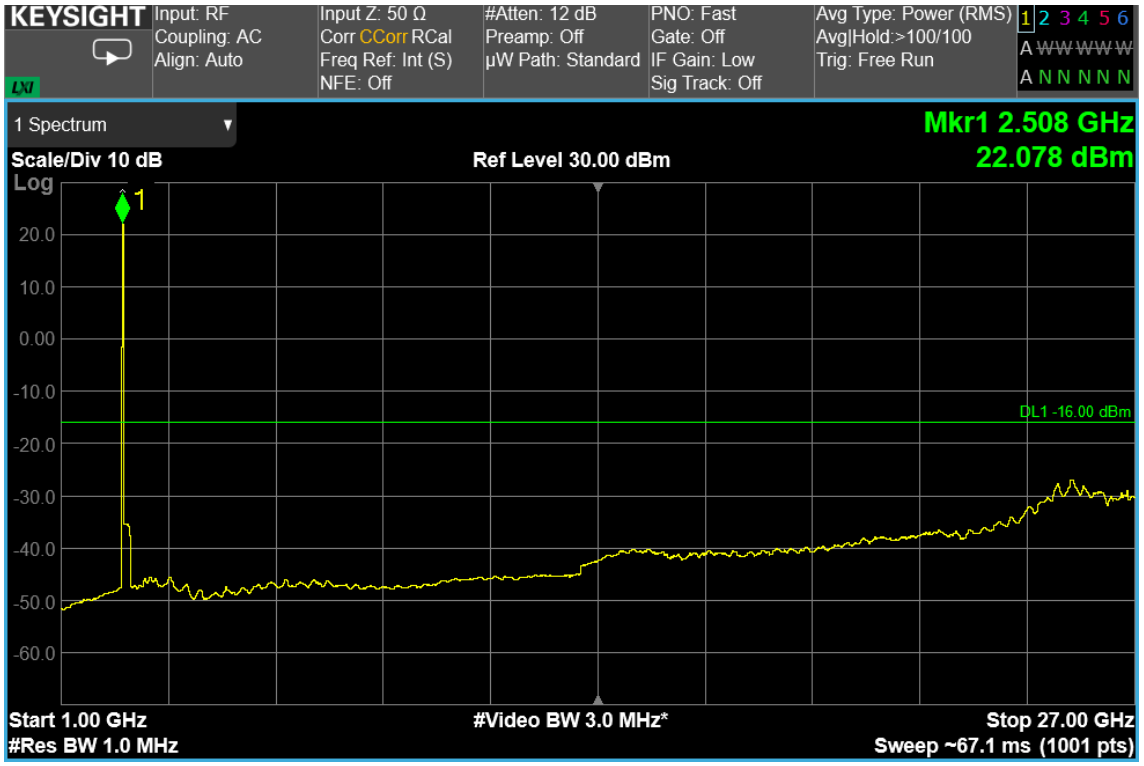
- Spurious emission limit is -16dBm.

Test data, continued: spurious emissions at antenna terminal

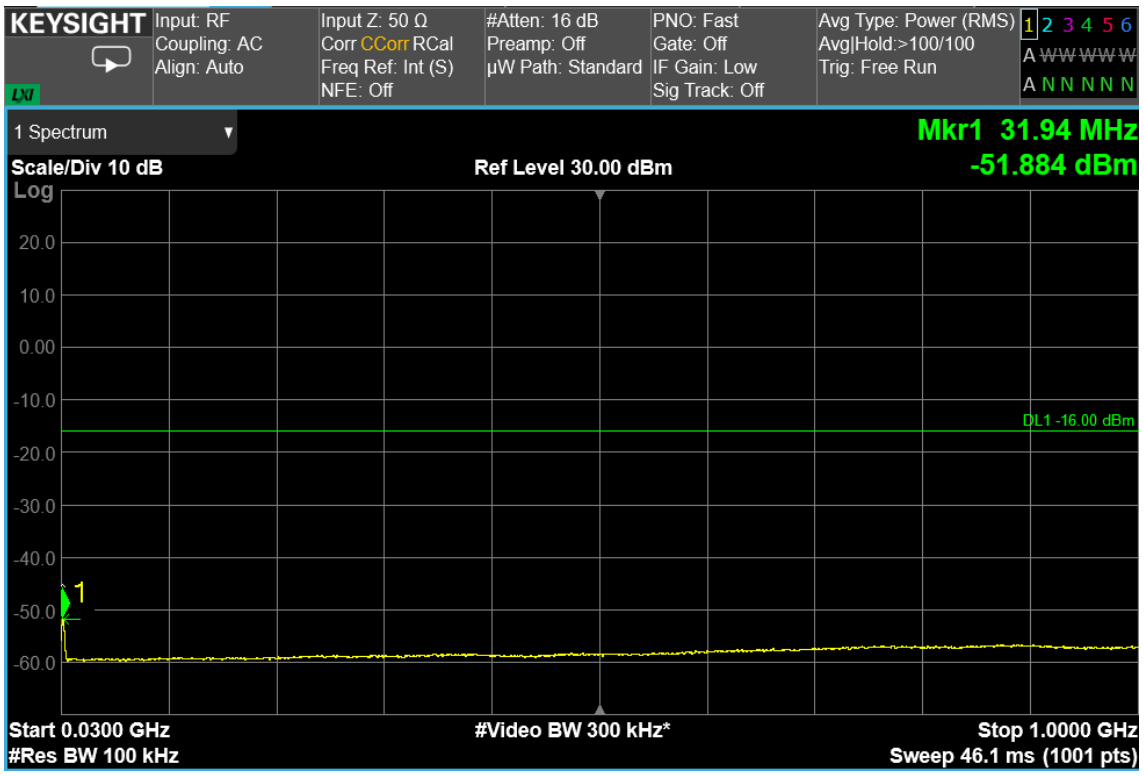
RF PORT 1



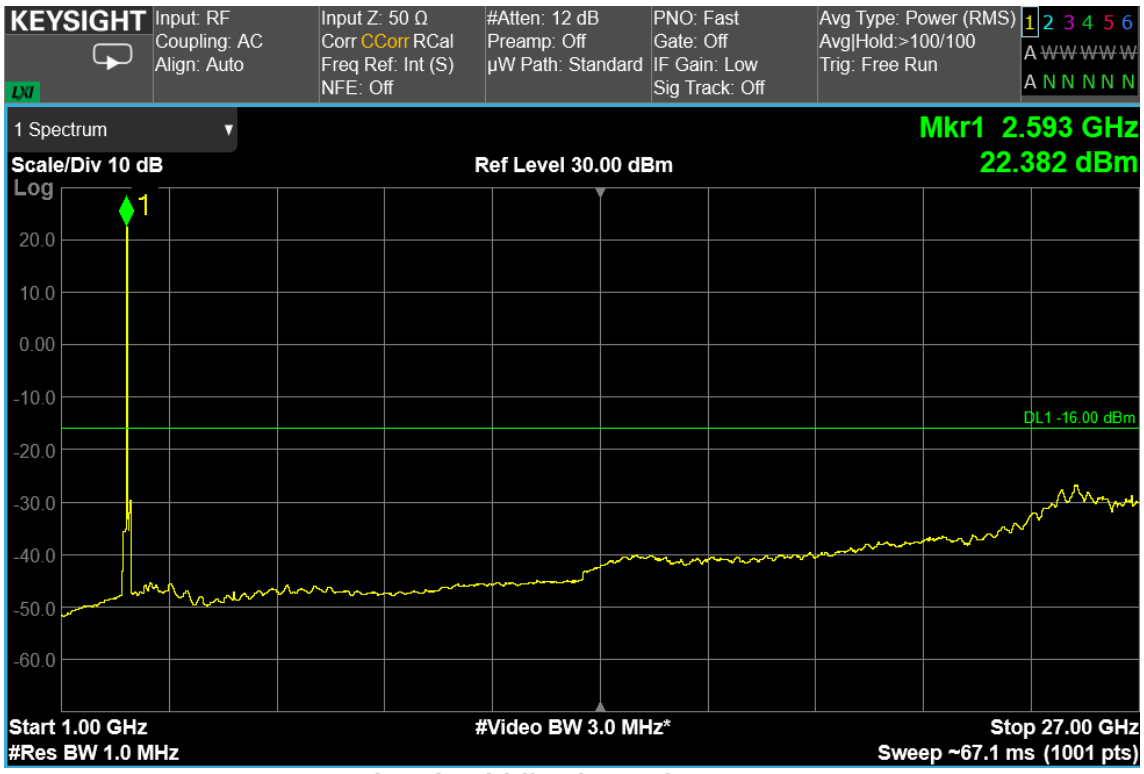
AWGN signal, bottom channel, 30MHz – 1GHz



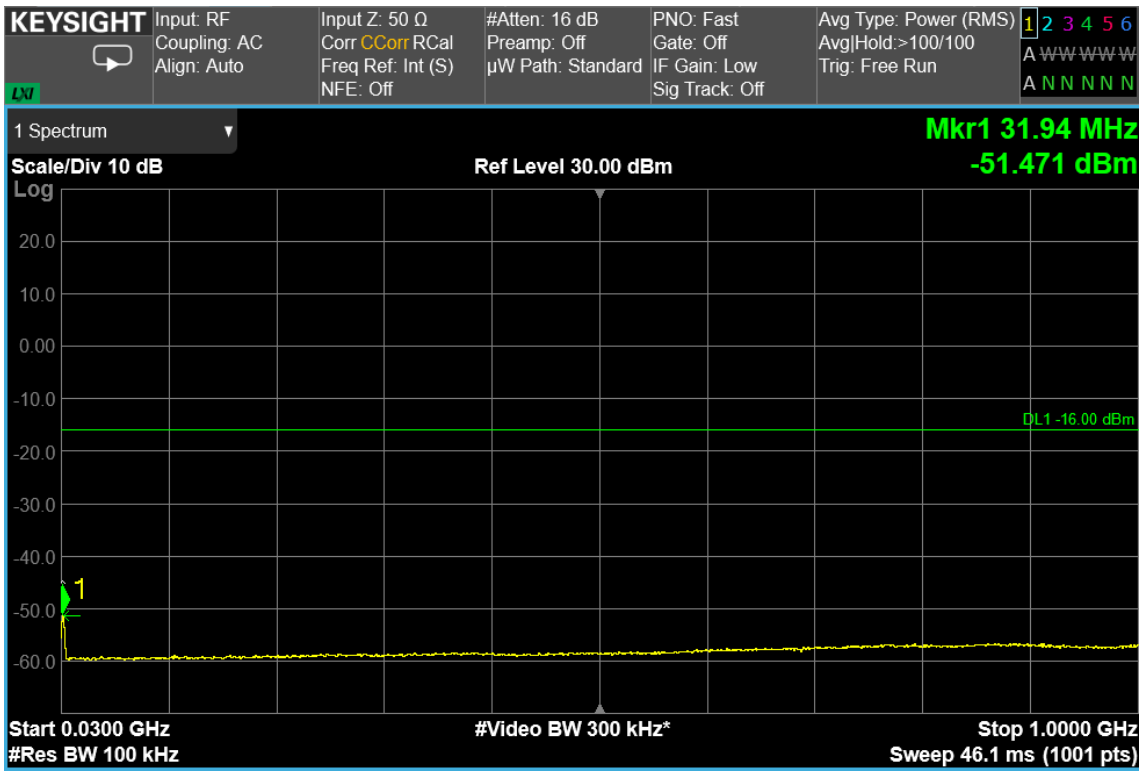
AWGN signal, bottom channel, 1GHz – 27GHz



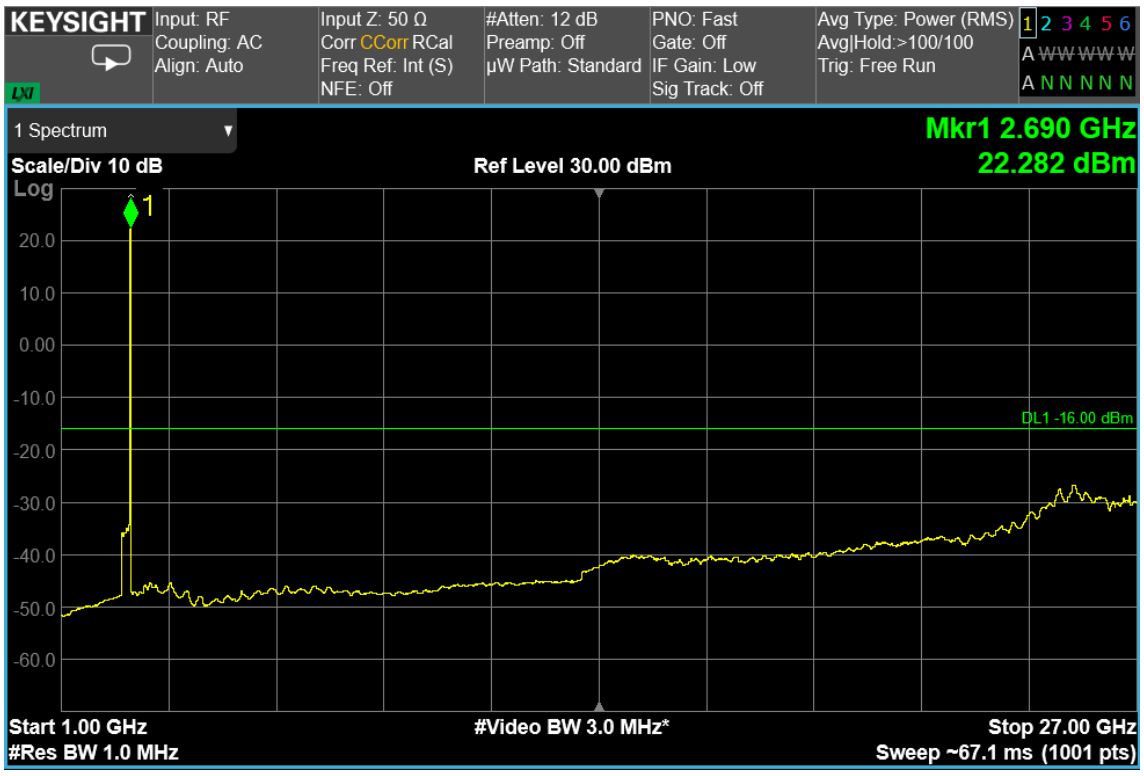
AWGN signal, middle channel, 30MHz – 1GHz



AWGN signal, middle channel, 1GHz – 27GHz

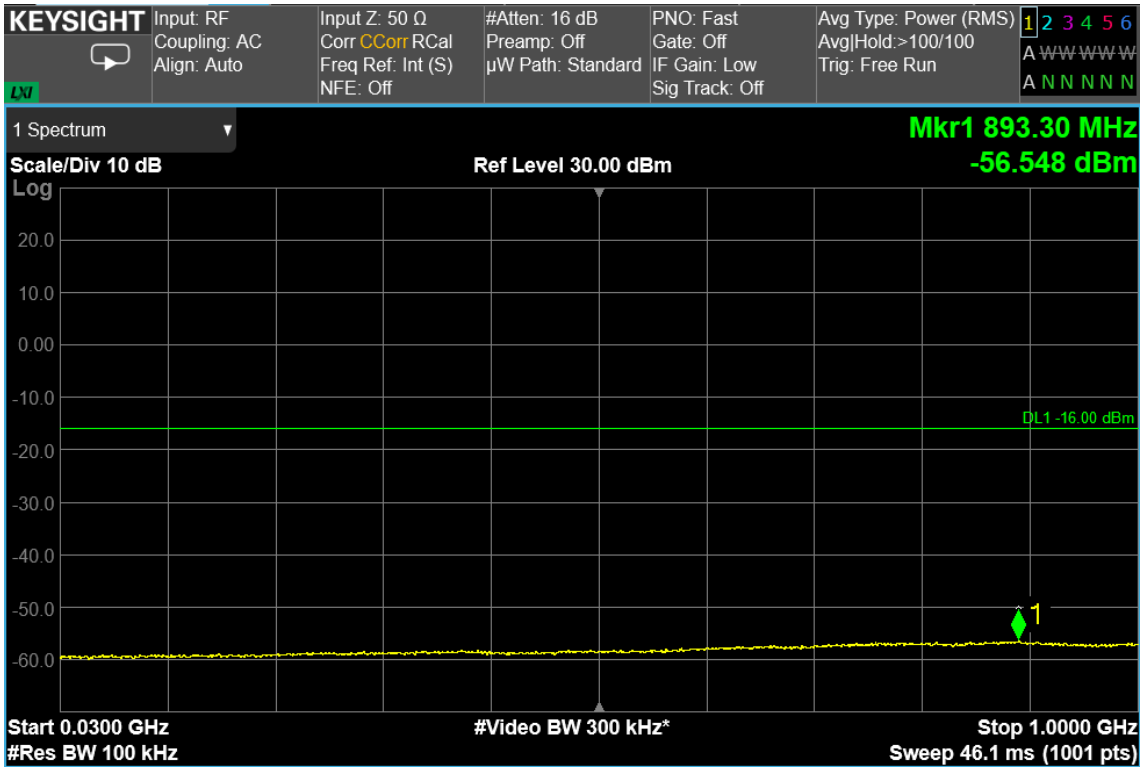


AWGN signal, top channel, 30MHz – 1GHz

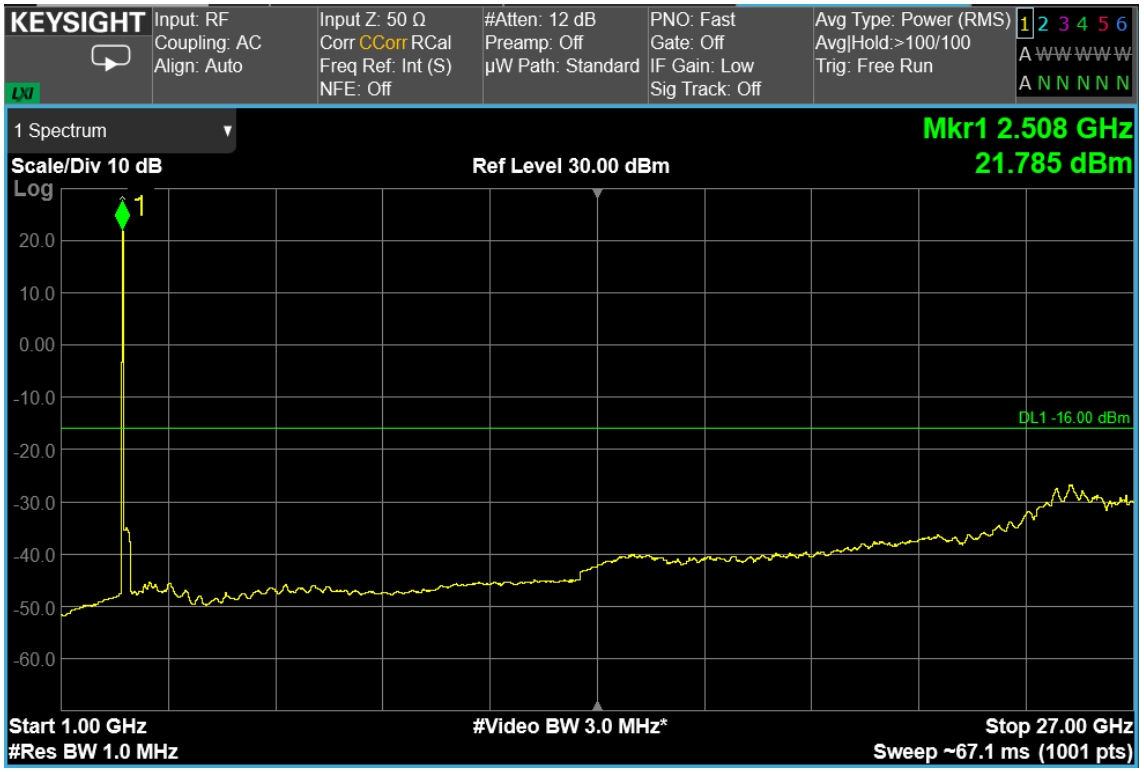


AWGN signal, top channel, 1GHz – 27GHz

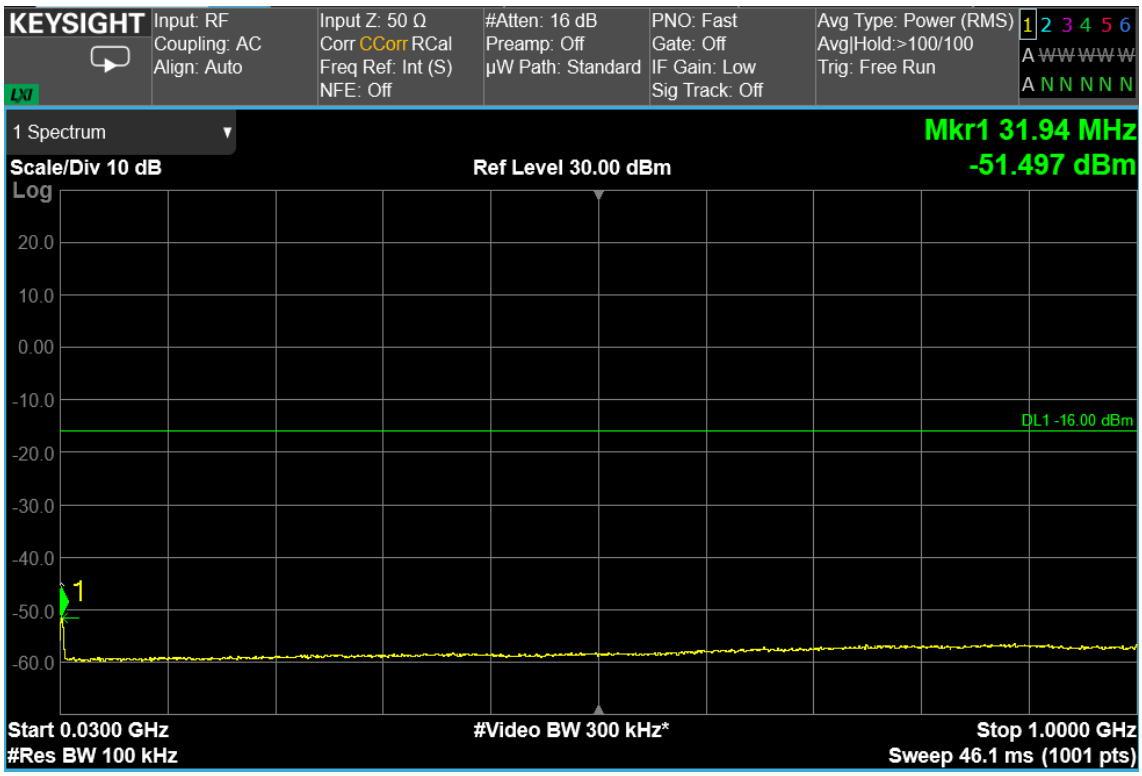
RF PORT 2



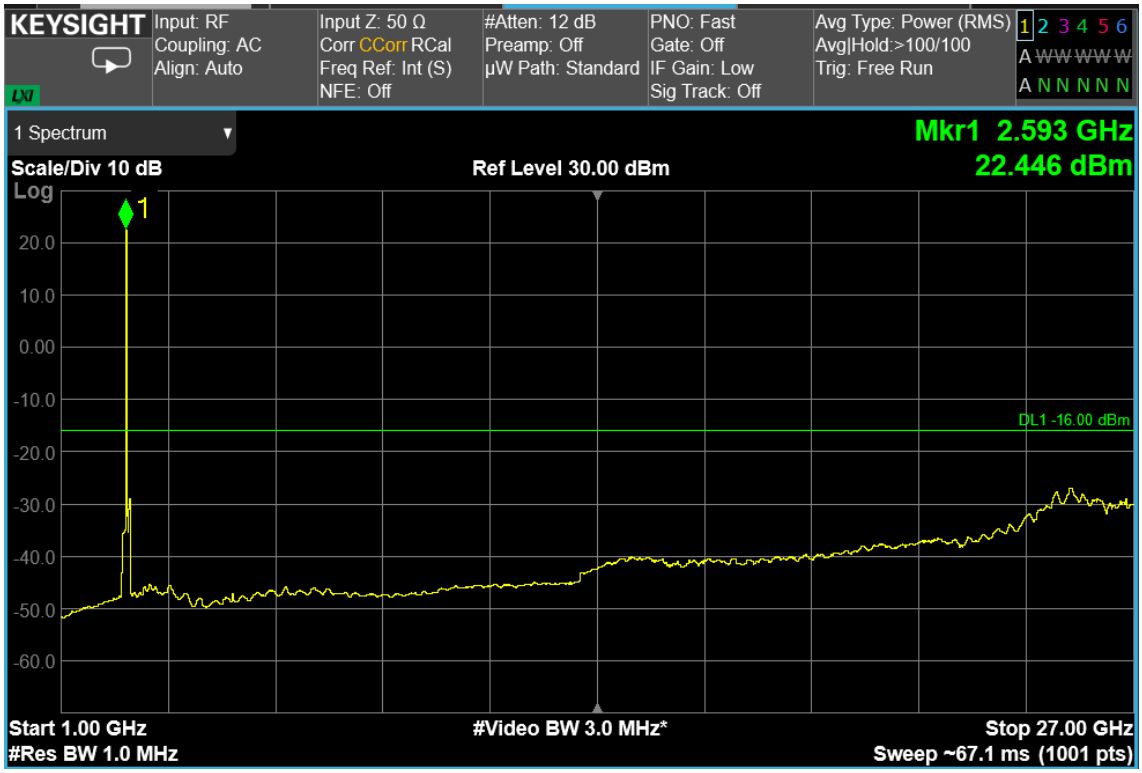
AWGN signal, bottom channel, 30MHz – 1GHz



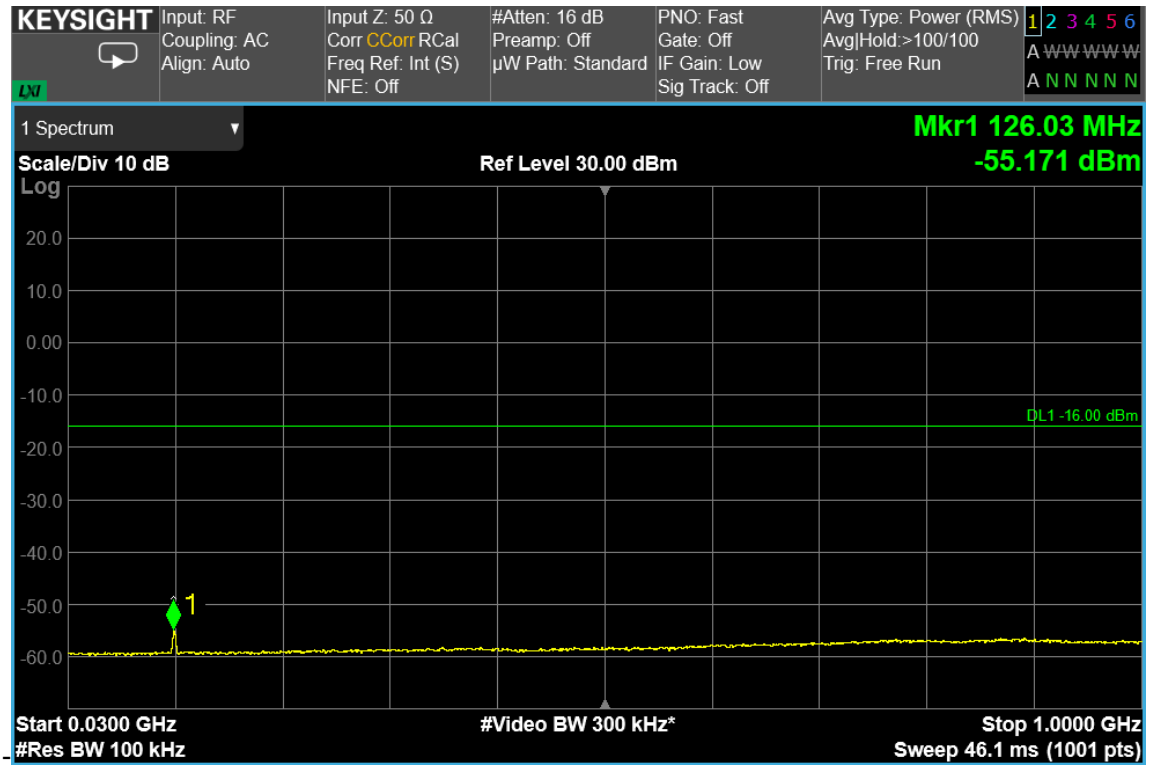
AWGN signal, bottom channel, 1GHz – 27GHz



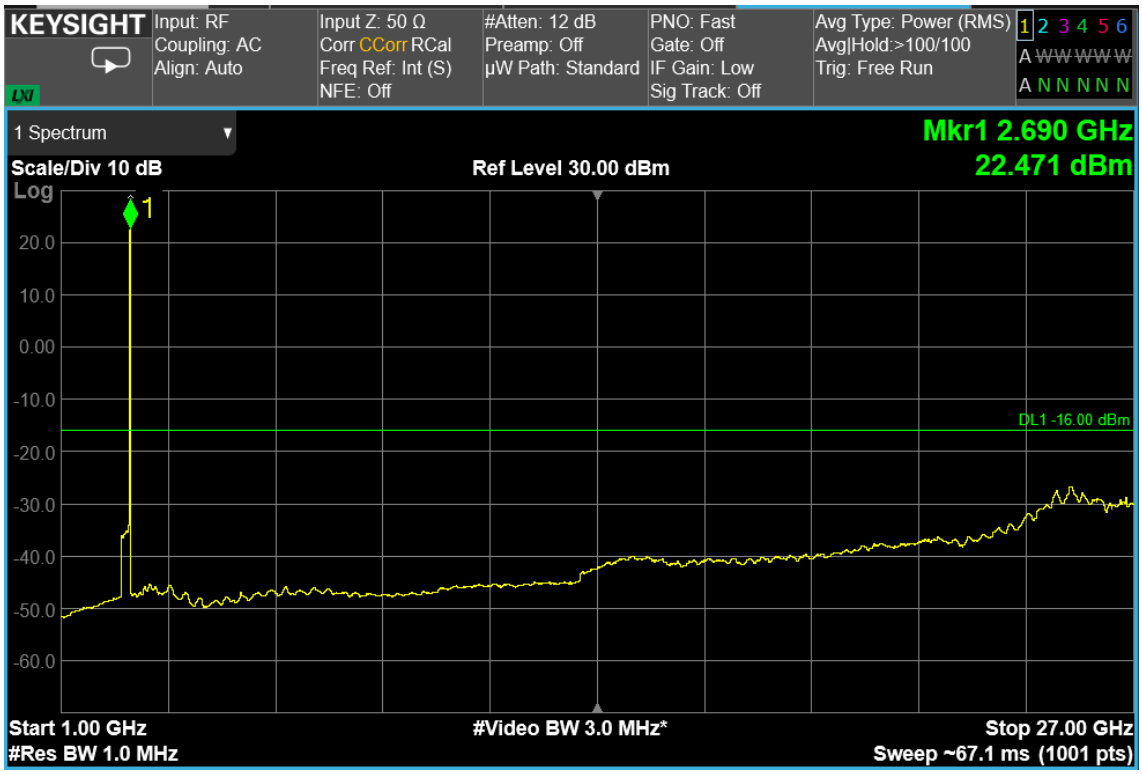
AWGN signal, middle channel, 30MHz – 1GHz



AWGN signal, middle channel, 1GHz – 27GHz



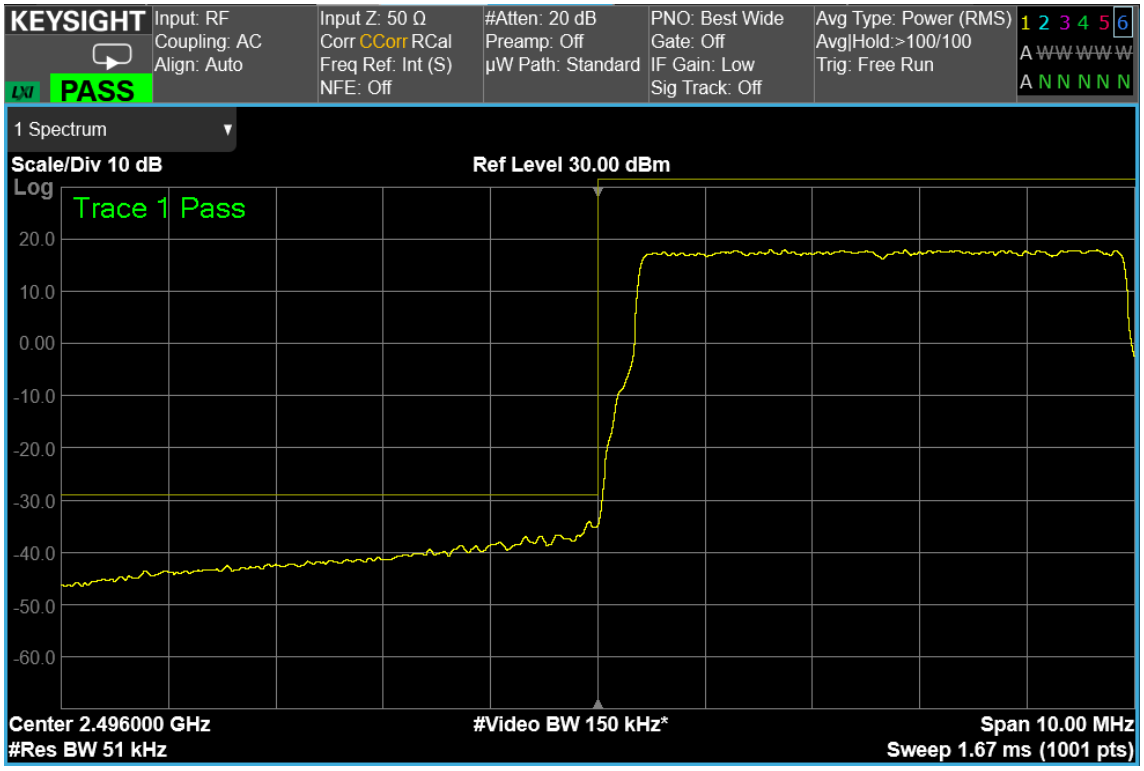
AWGN signal, top channel, 30MHz – 1GHz



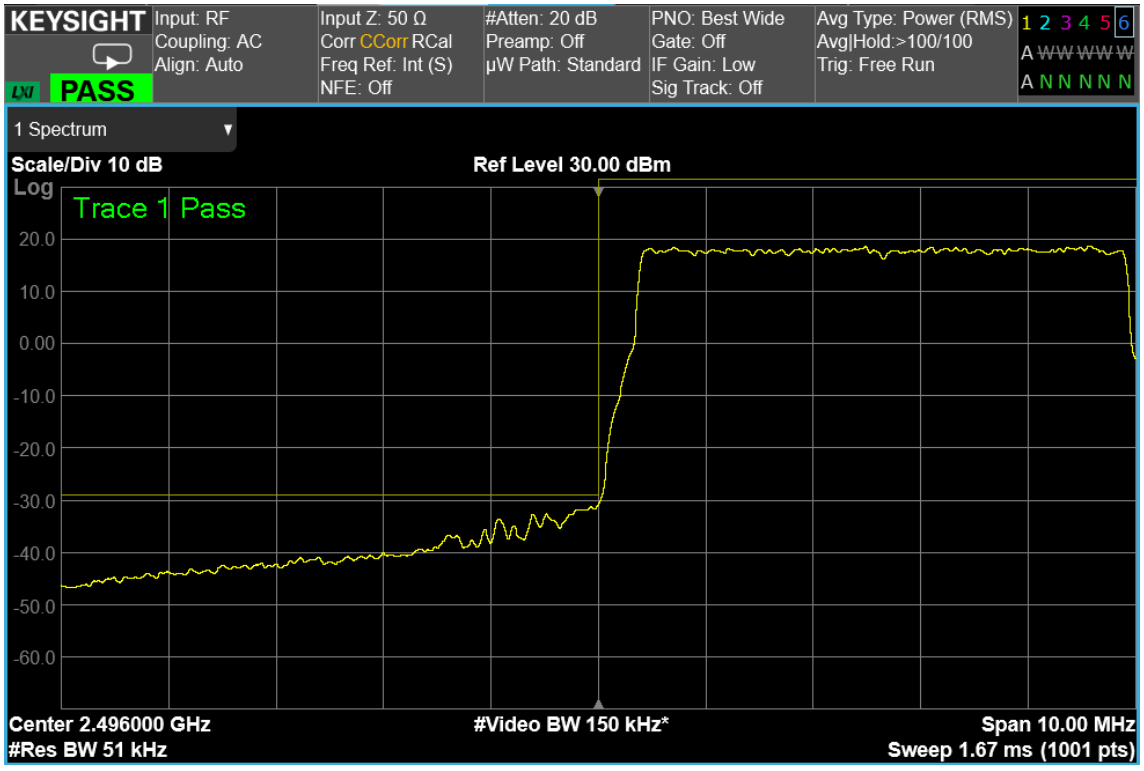
AWGN signal, top channel, 1GHz – 27GHz

Test data, continued: band edges Inter modulation

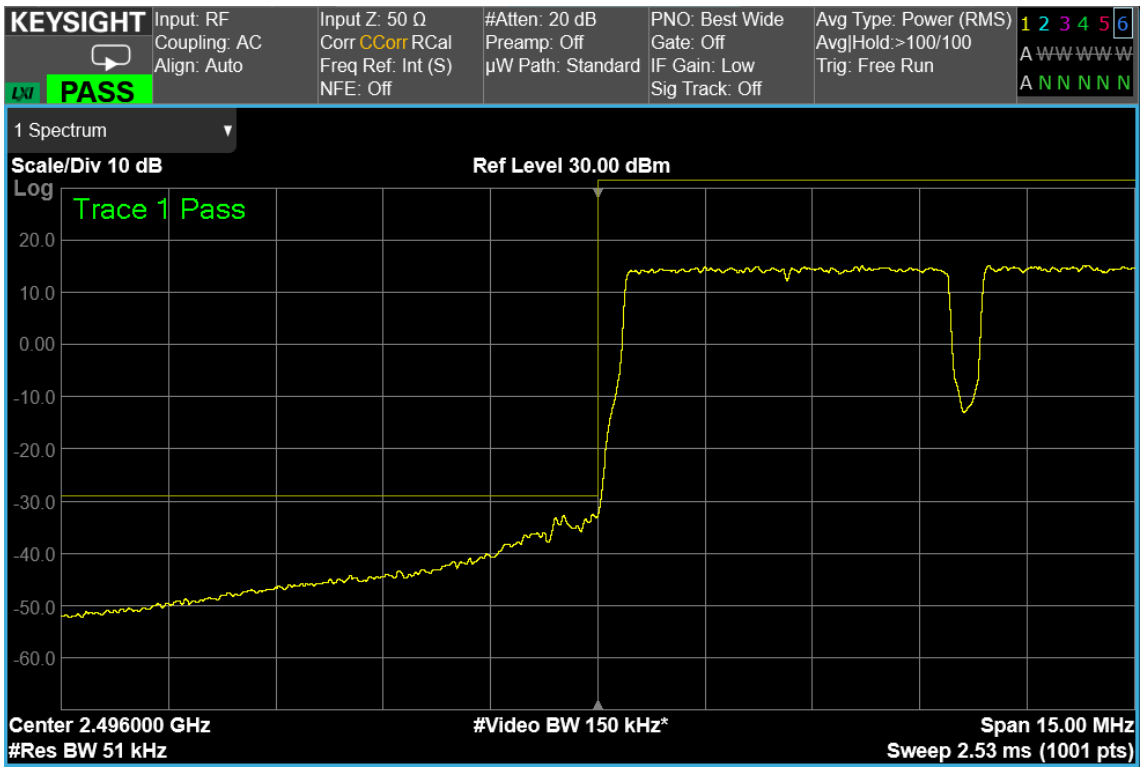
RF PORT 1



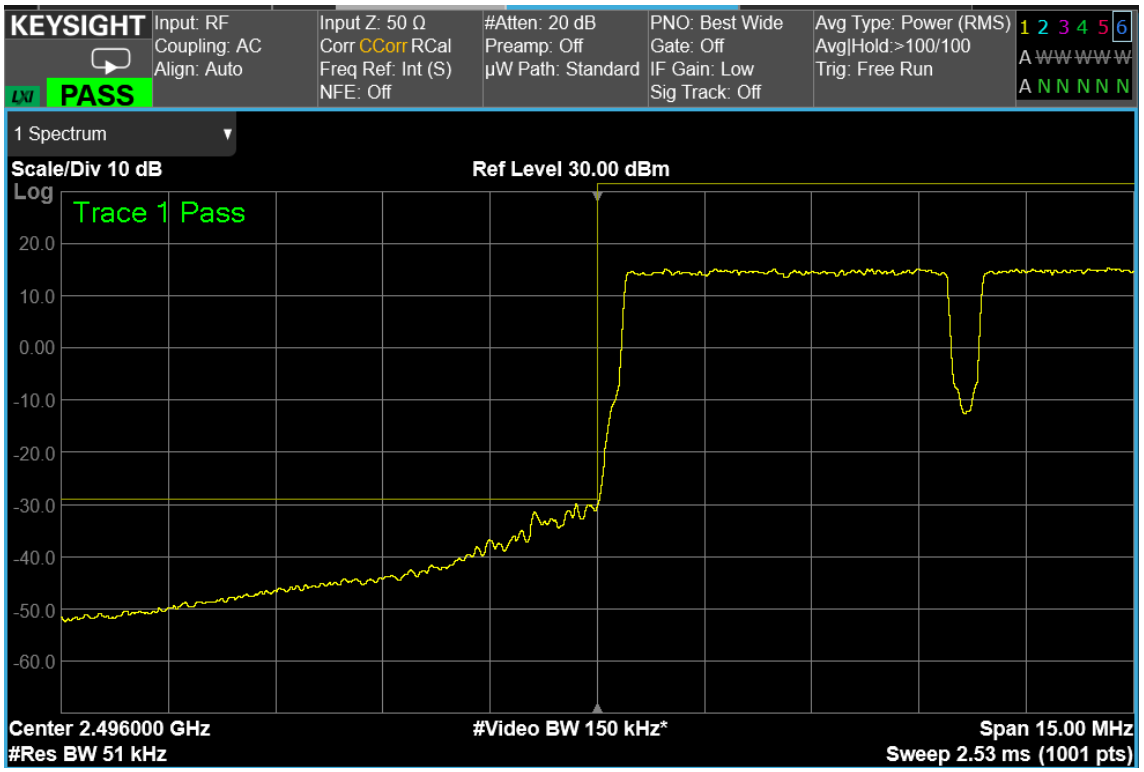
AWGN signal, Low Band Edge, 1 carrier, nominal input signal



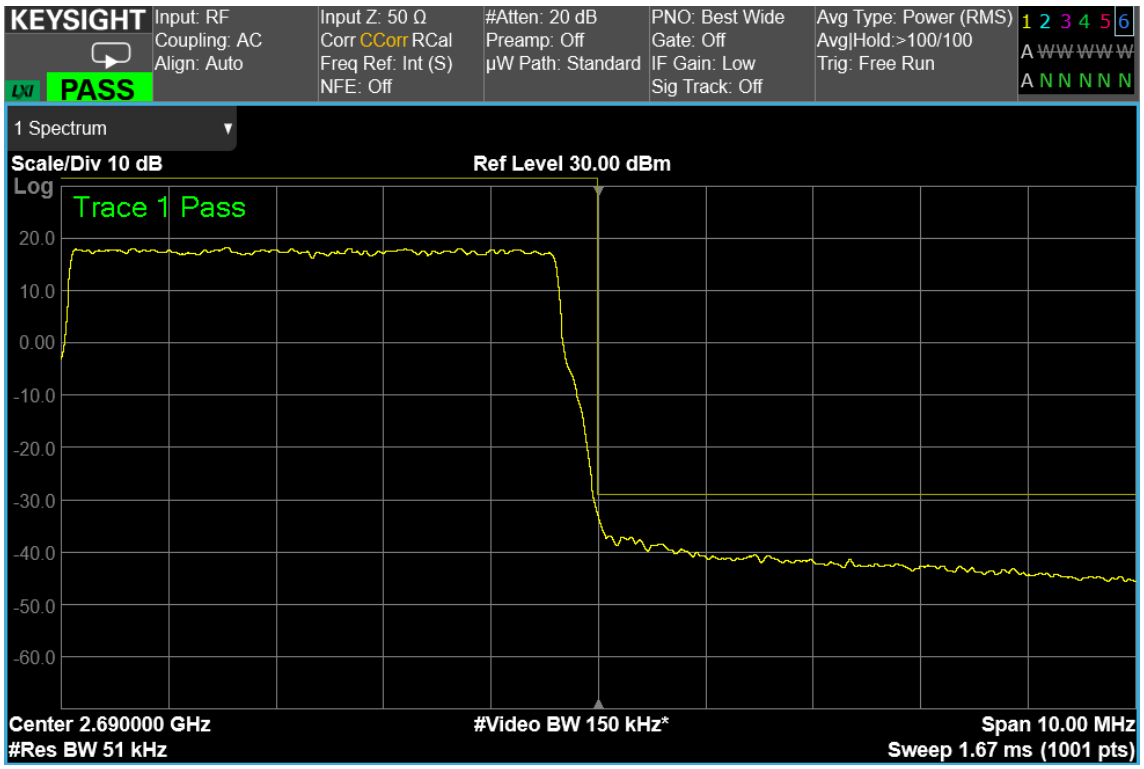
AWGN signal, Low Band Edge, 1 carrier, nominal input signal + 3dB



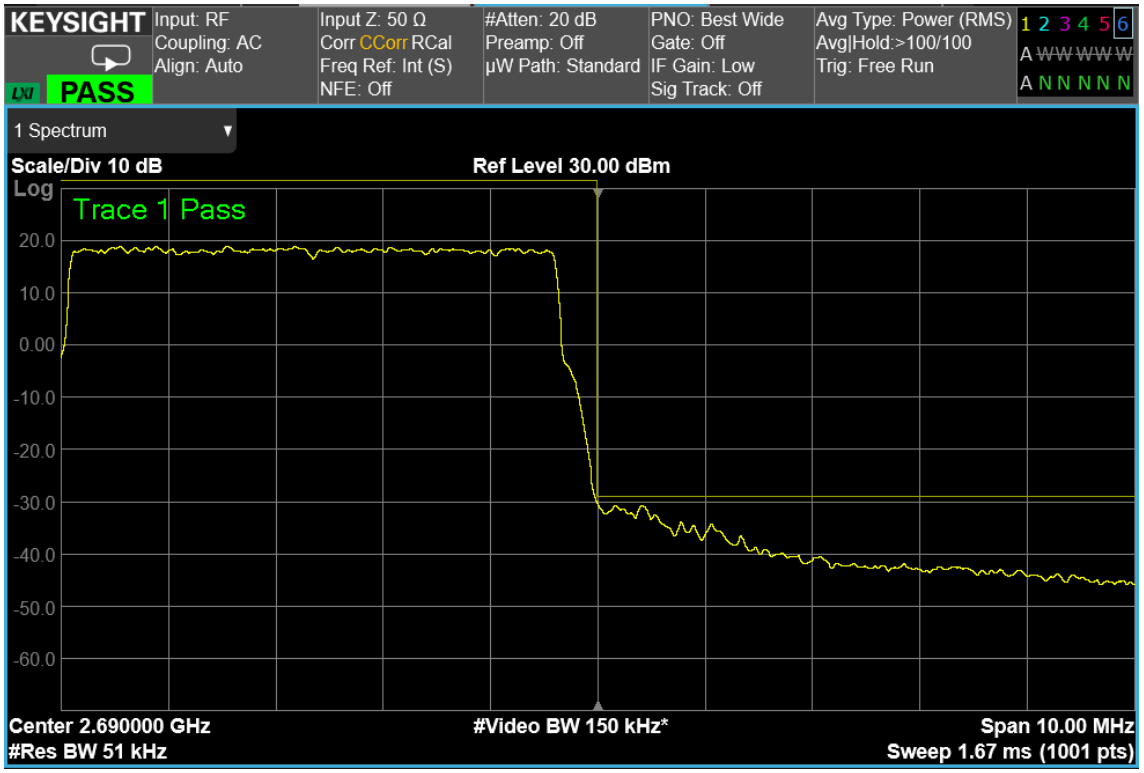
AWGN signal, Low Band Edge, 2 carriers, nominal input signal



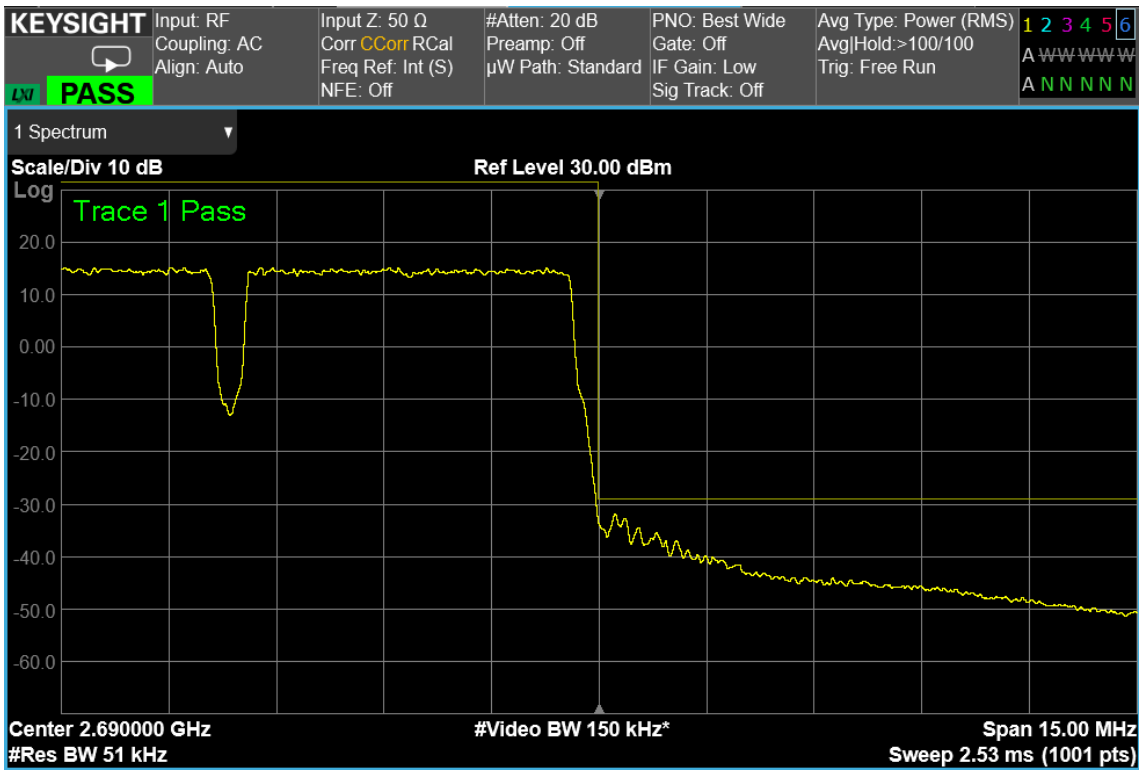
AWGN signal, High Band Edge, 2 carrier, nominal input signal + 3dB



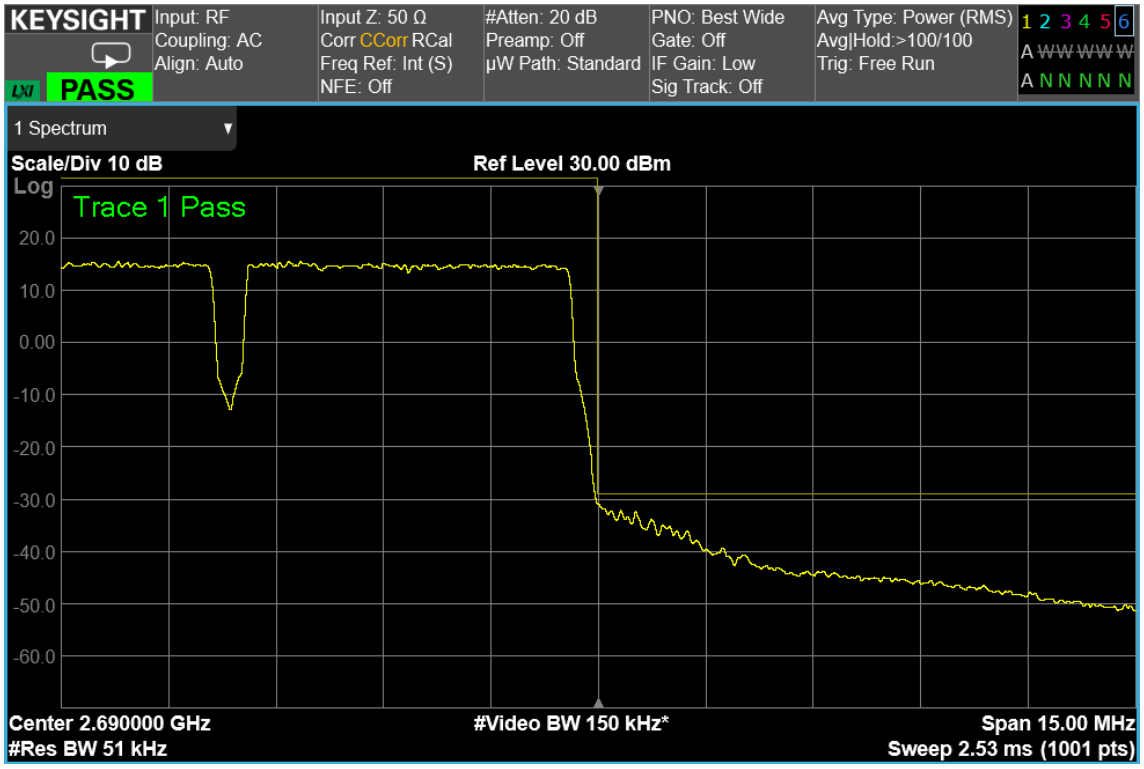
AWGN signal, High Band Edge, 1 carrier, nominal input signal



AWGN signal, High Band Edge, 1 carrier, nominal input signal + 3dB

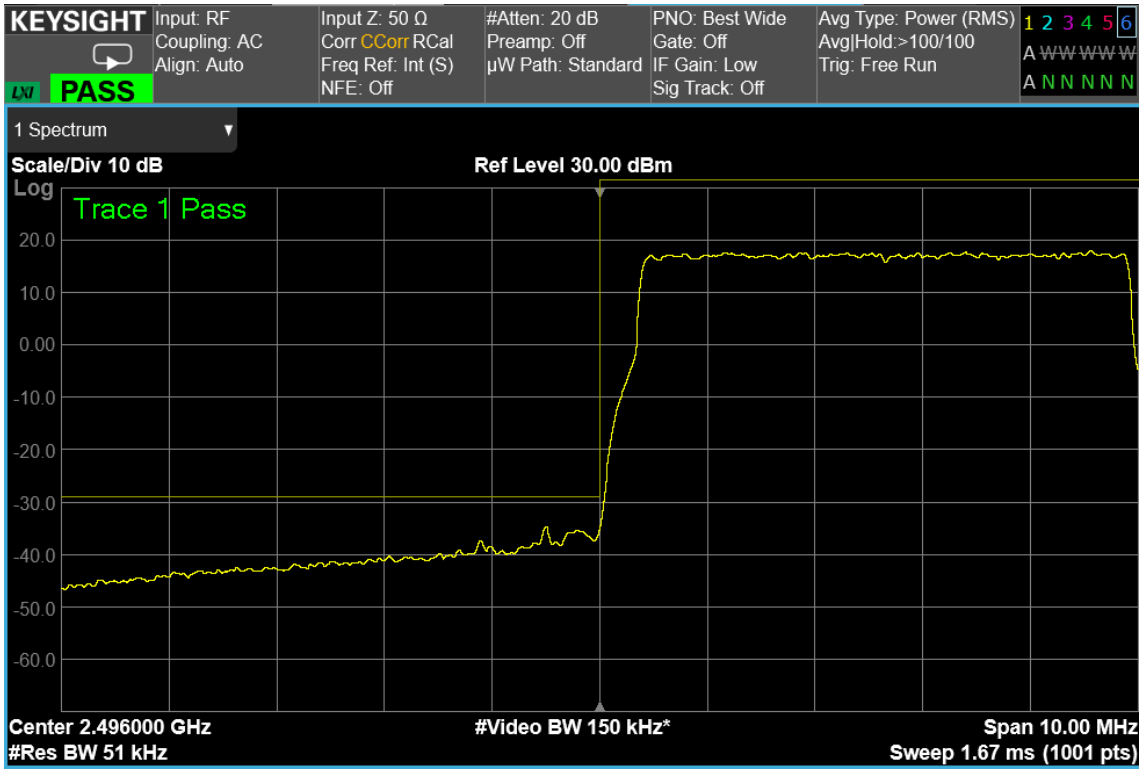


AWGN signal, High Band Edge, 2 carrier, nominal input signal

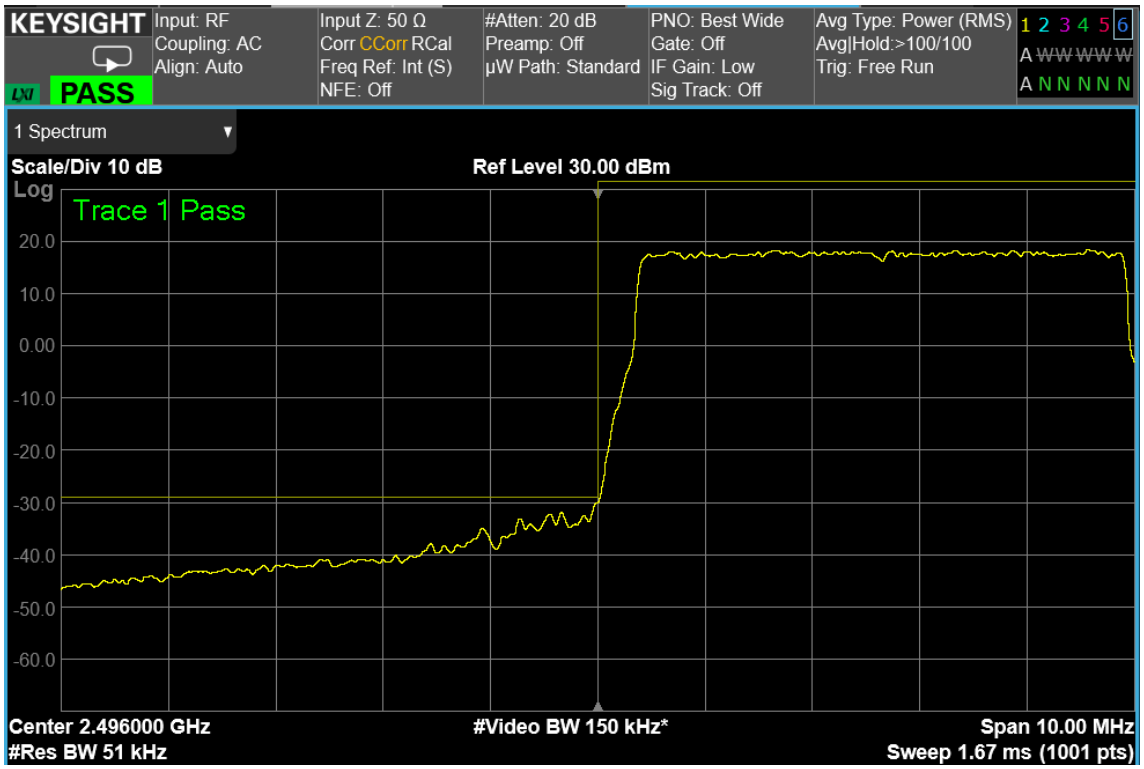


AWGN signal, High Band Edge, 2 carrier, nominal input signal + 3dB

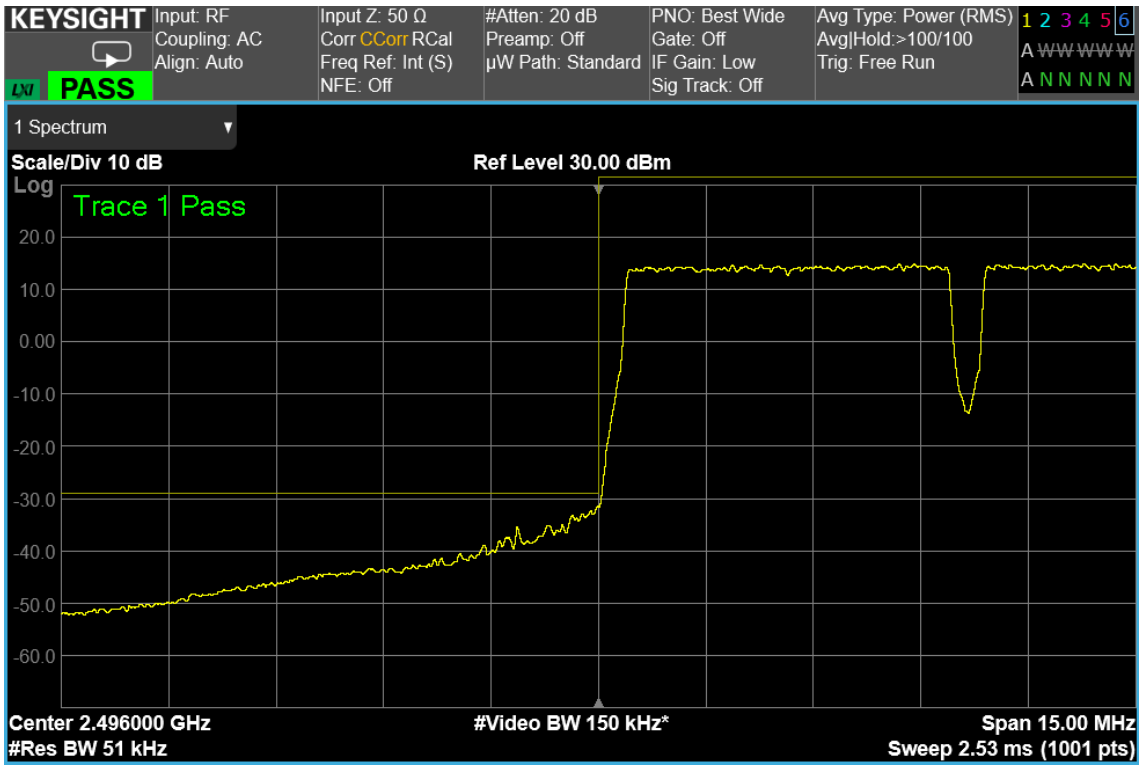
RF PORT 2



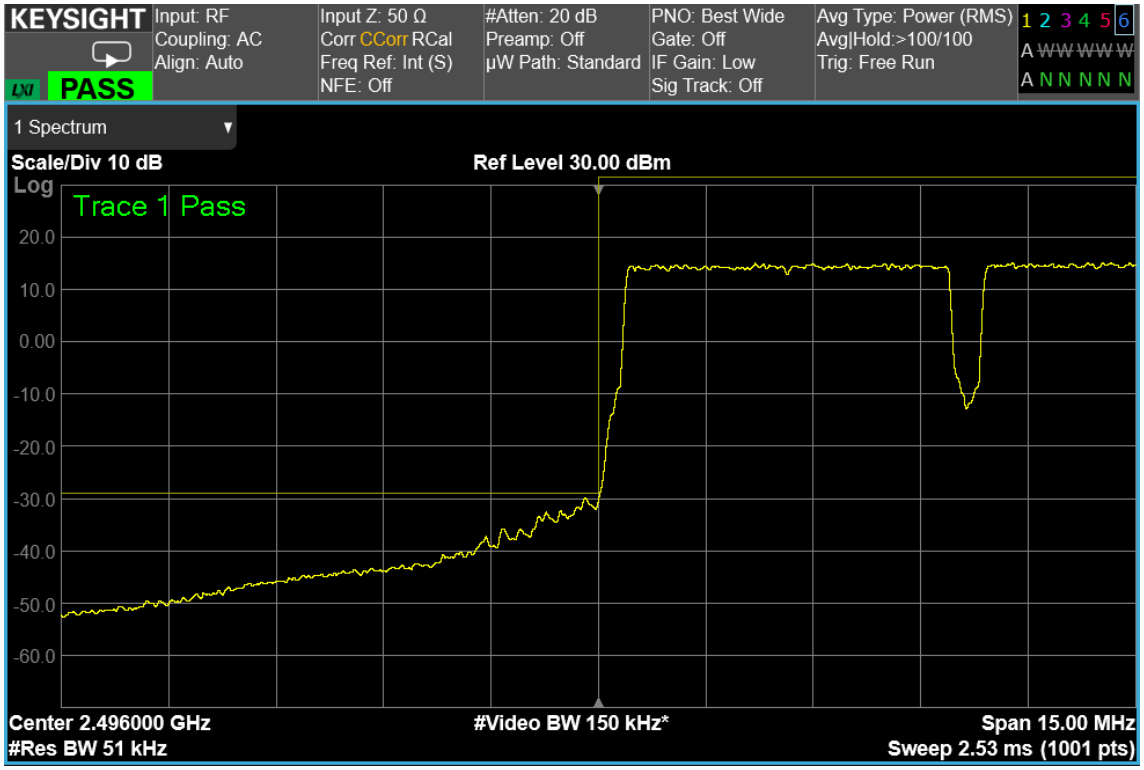
AWGN signal, Low Band Edge, 1 carrier, nominal input signal



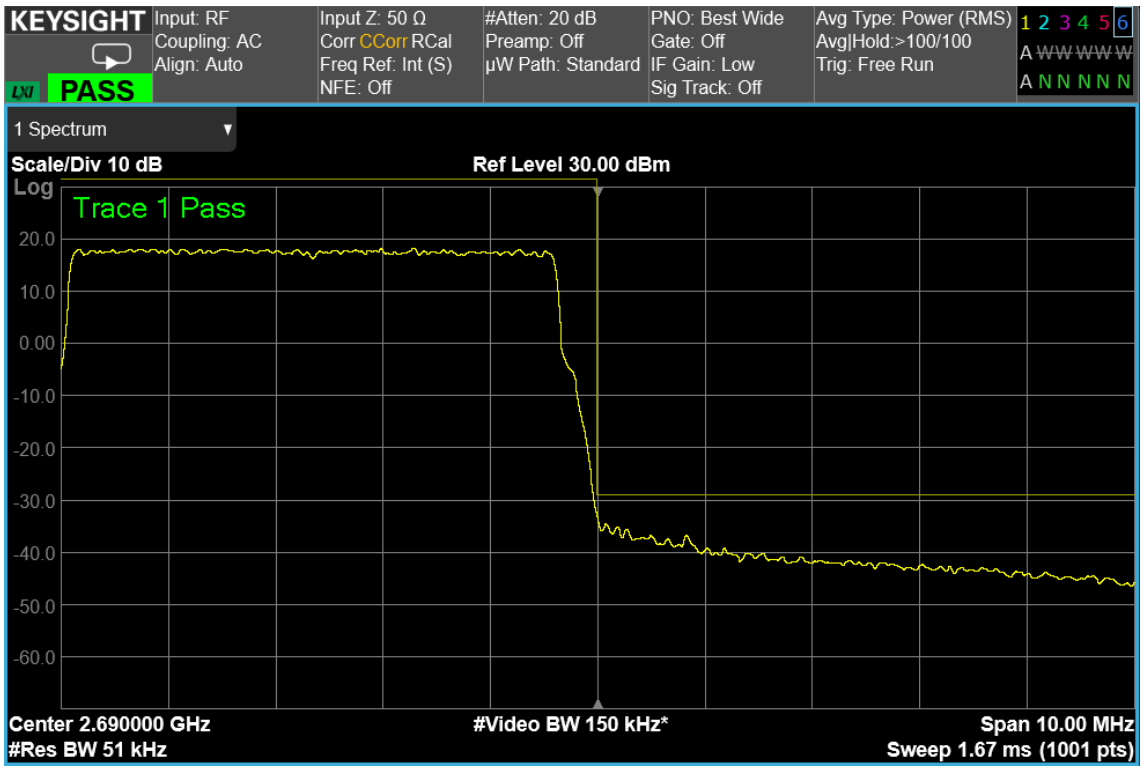
AWGN signal, Low Band Edge, 1 carrier, nominal input signal + 3dB



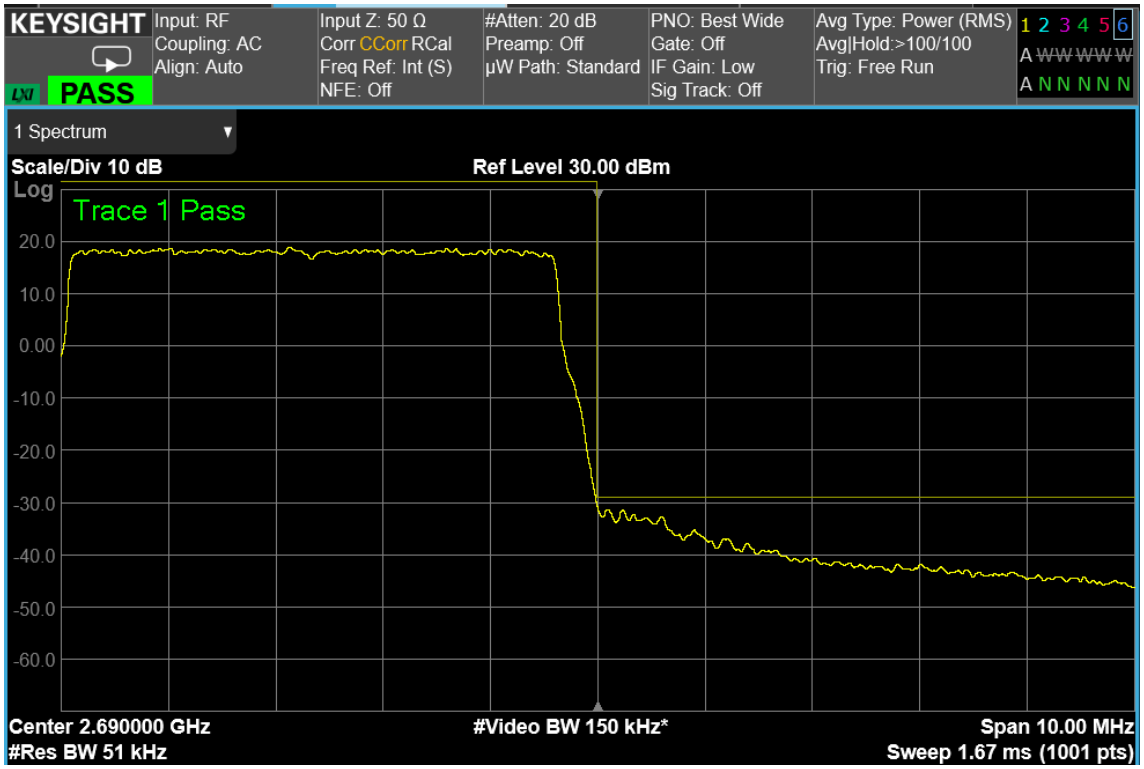
AWGN signal, Low Band Edge, 2 carriers, nominal input signal



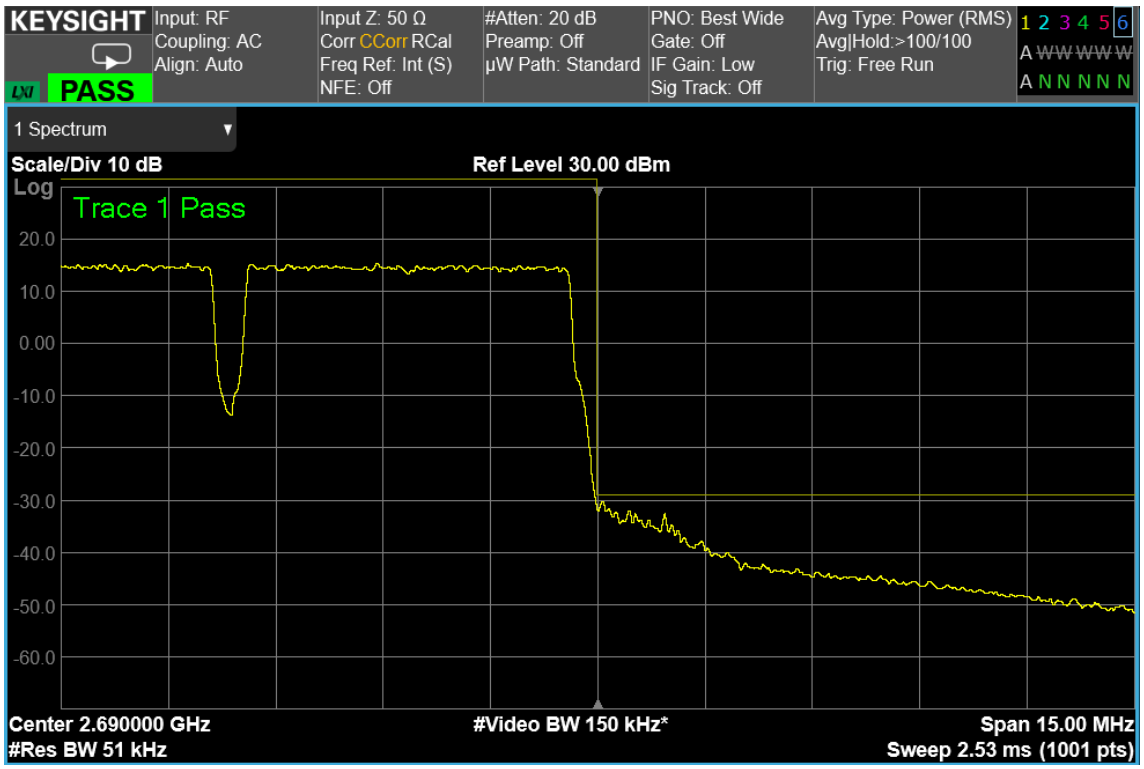
AWGN signal, High Band Edge, 2 carrier, nominal input signal + 3dB



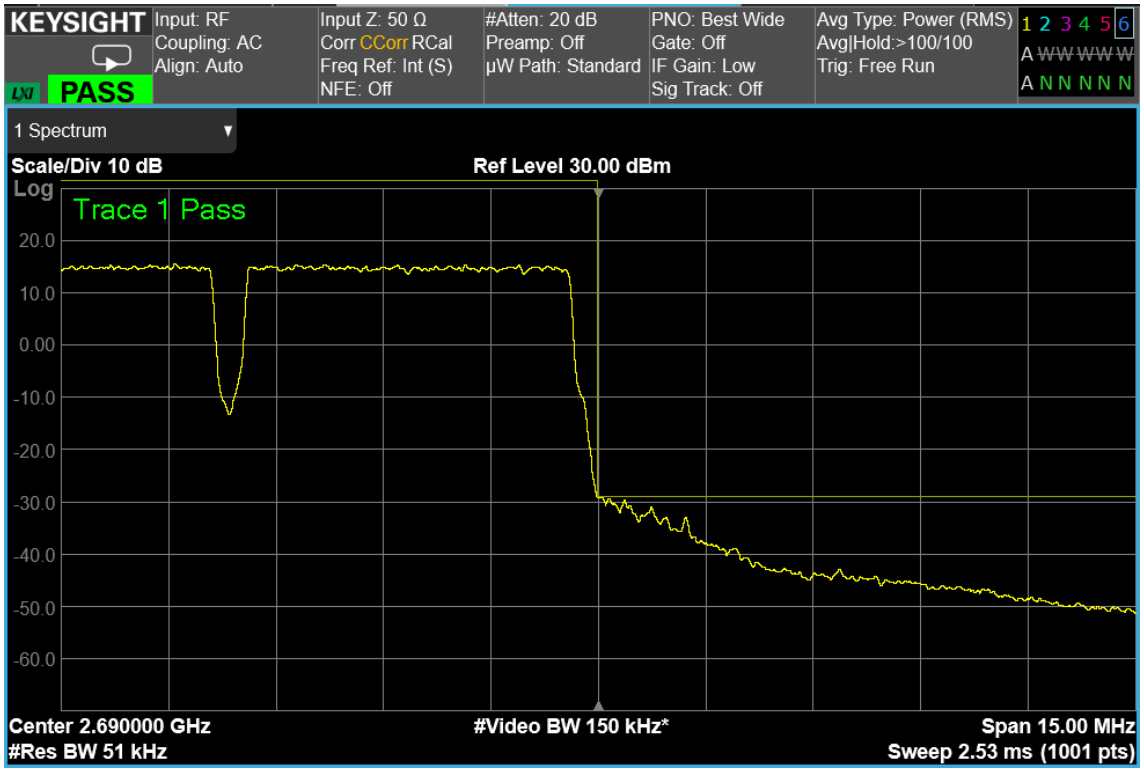
AWGN signal, High Band Edge, 1 carrier, nominal input signal



AWGN signal, High Band Edge, 1 carrier, nominal input signal + 3dB



AWGN signal, High Band Edge, 2 carrier, nominal input signal



AWGN signal, High Band Edge, 2 carrier, nominal input signal + 3dB

Clause 27.53(m) Radiated Spurious emissions

(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:

(6) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed; for mobile digital stations, in the 1 megahertz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed, except when the 1 megahertz band is 2495–2496 MHz, in which case a resolution bandwidth of at least one percent may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 megahertz or 1 percent of emission bandwidth, as specified; or 1 megahertz or 2 percent for mobile digital stations, except in the band 2495–2496 MHz). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power. With respect to television operations, measurements must be made of the separate visual and aural operating powers at sufficiently frequent intervals to ensure compliance with the rules.

Test date: 2025-03-24 to 2025-03-25

Test results: PASS

Special notes

Test equipment				
Equipment	Manufacturer	Model No.	Asset/Serial No.	Next cal.
Vector Signal Generator	Keysight	N5182B MXG	MY59100262	2025-07
Vector Signal Generator	Keysight	N5182B MXG	MY61252595	2025-11
Spectrum Analyzer	Keysight	N9030B PXA	MY62282033	2026-01
Combiner	Miczen	MZP200506GA (0.5-6 GHz)	210314001	COU
Antenna Trilog 25MHz - 8GHz	Schwarzbeck	VULB9168	9168-242	2027-08
Antenna 1-18 GHz	Schwarzbeck	STLP 9148	STPL 9148-123	2027-08
Double Ridge Horn Antenna	RFSpin	DRH40	061106A40	2026-05
Broadband Amplifier	Schwarzbeck	BBV9718C	00121	2026-01
Broadband Bench Top Amplifier	Sage	STB-1834034030-KFKF-L1	18490-01	2025-09
EMI Receiver	Rohde & Schwarz	ESU8	100202	2025-09
EMI Receiver	Rohde & Schwarz	ESW44	101620	2025-09
Controller	Maturo	FCU3.0	10041	NCR
Tilt antenna mast	Maturo	TAM4.0-E	10042	NCR
Turntable	Maturo	TT4.0-5T	2.527	NCR
3m Semi anechoic chamber	Comtest	SAC-3	1711-150	NCR

Note: N/A = Not Applicable, NCR = No Cal Required, COU = CAL On Use
(*) Equipment supplied by manufacturer's

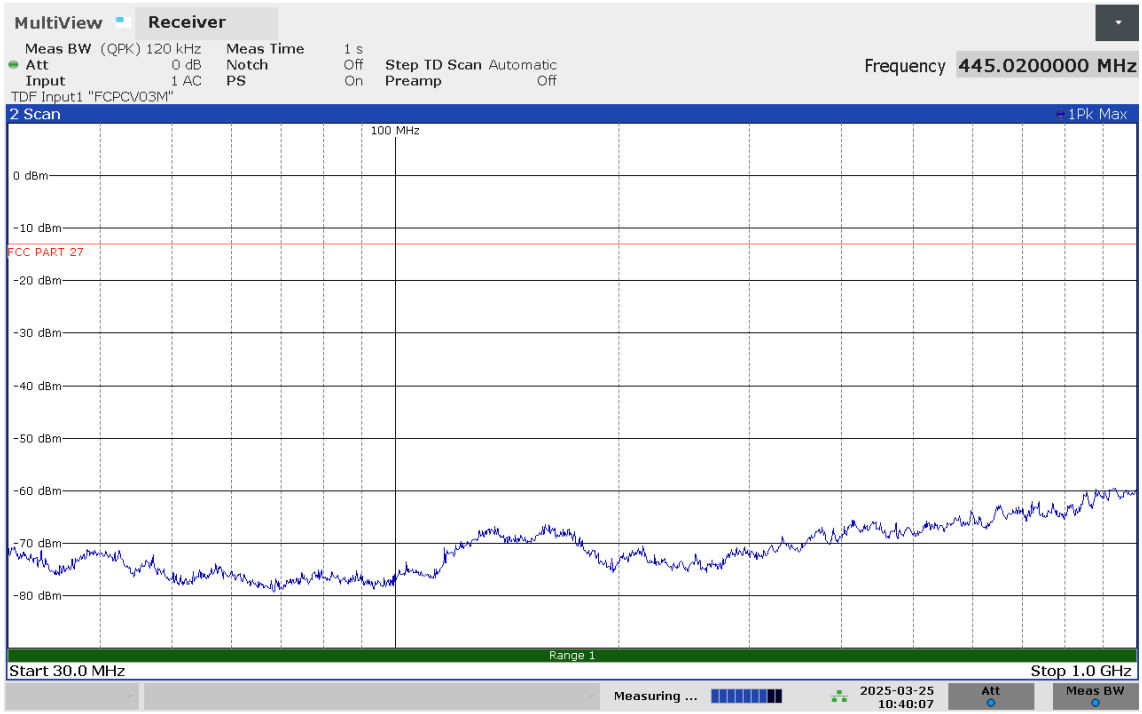
Clause 27.53(m) Radiated spurious emissions, continued

Test data

See Plots below

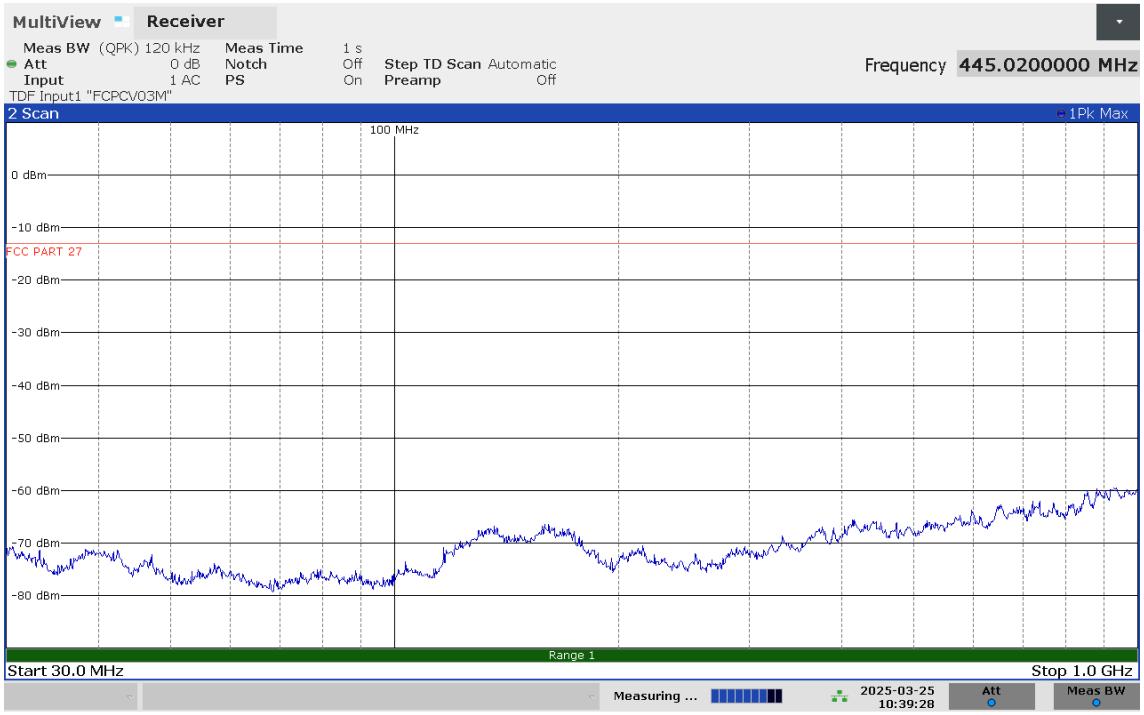
Spurious emissions measurement results:

Frequency (MHz)	Spurious emission (dBm)	Limit (dBm)	Margin (dB)
First channel	Negligible	-13	
Mid channel	Negligible	-13	
Last channel	Negligible	-13	



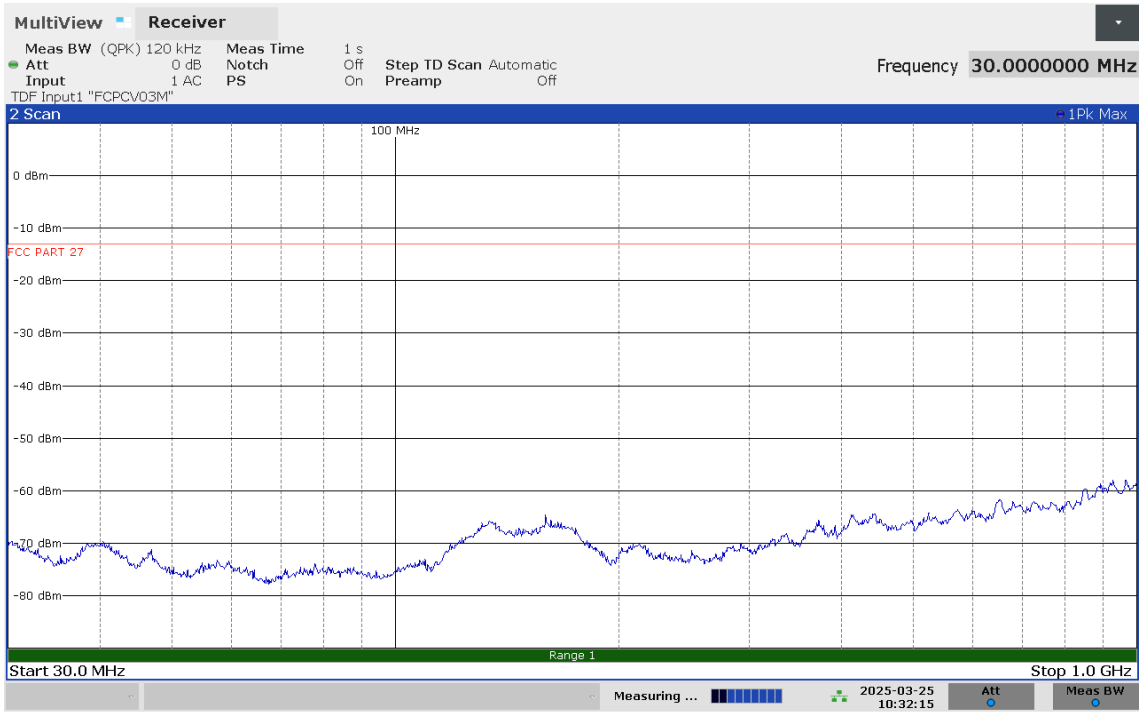
10:40:08 AM 03/25/2025 **Page 0/0**

AWGN signal, bottom channel, 30MHz – 1GHz – H Pol



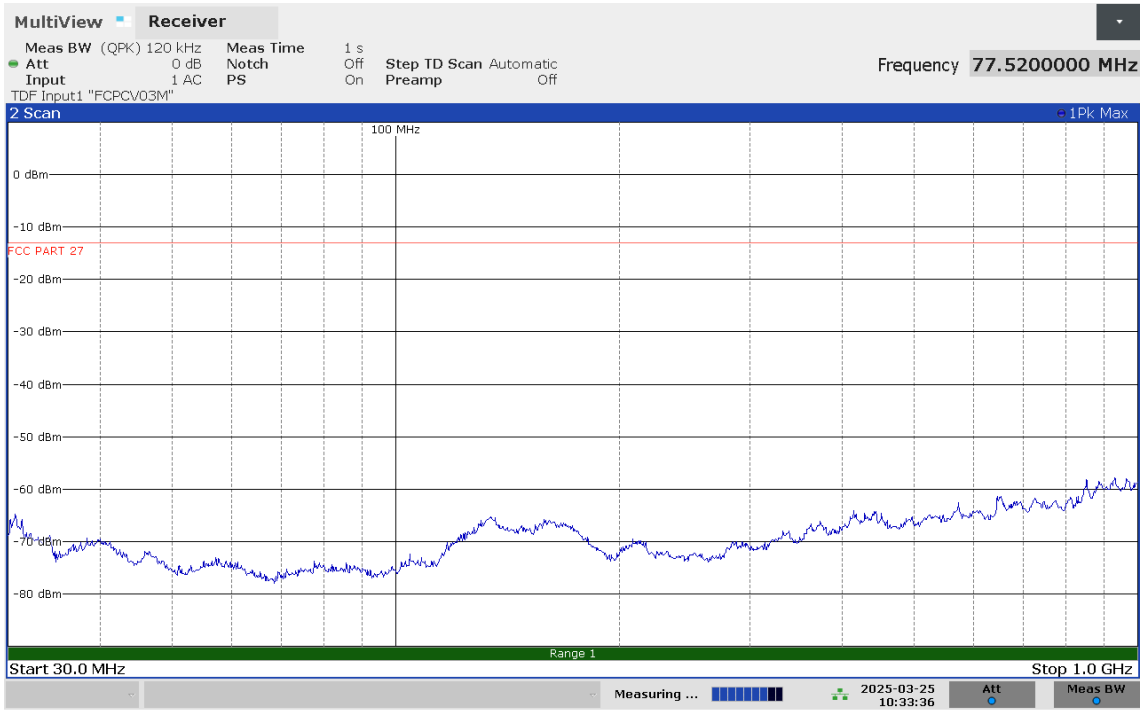
10:39:28 AM 03/25/2025 **Page 0/0**

AWGN signal, bottom channel, 30MHz – 1GHz – V Pol



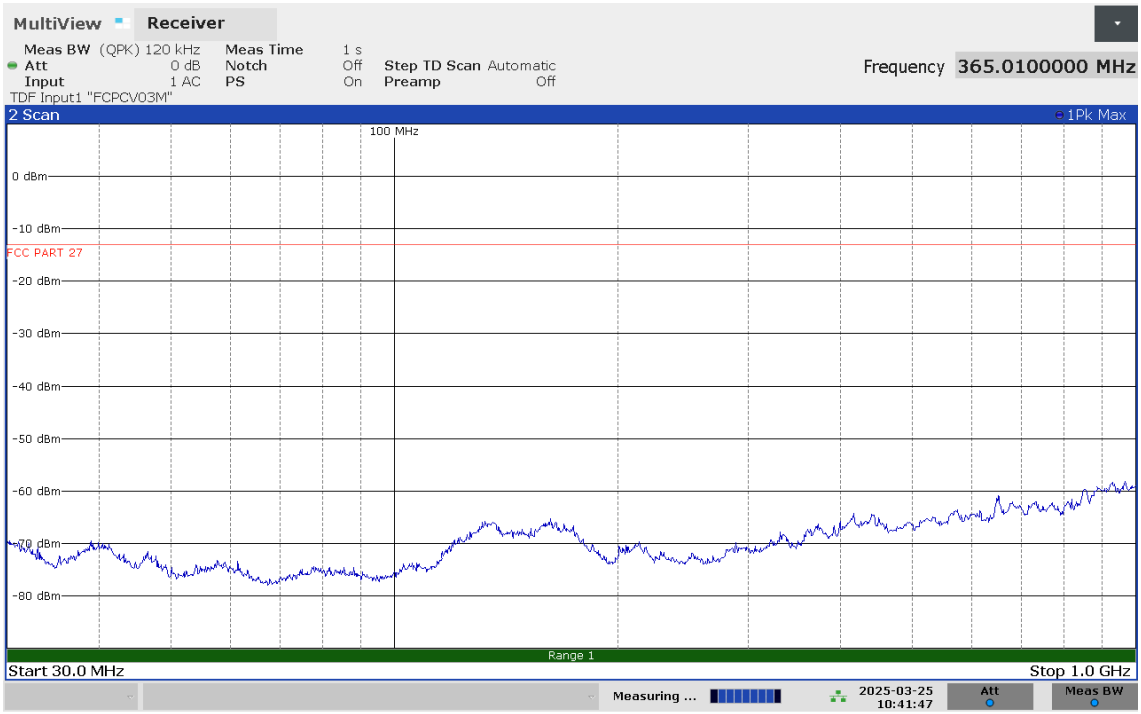
10:32:15 AM 03/25/2025 **Page 0/0**

AWGN signal, middle channel, 30MHz – 1GHz – H Pol



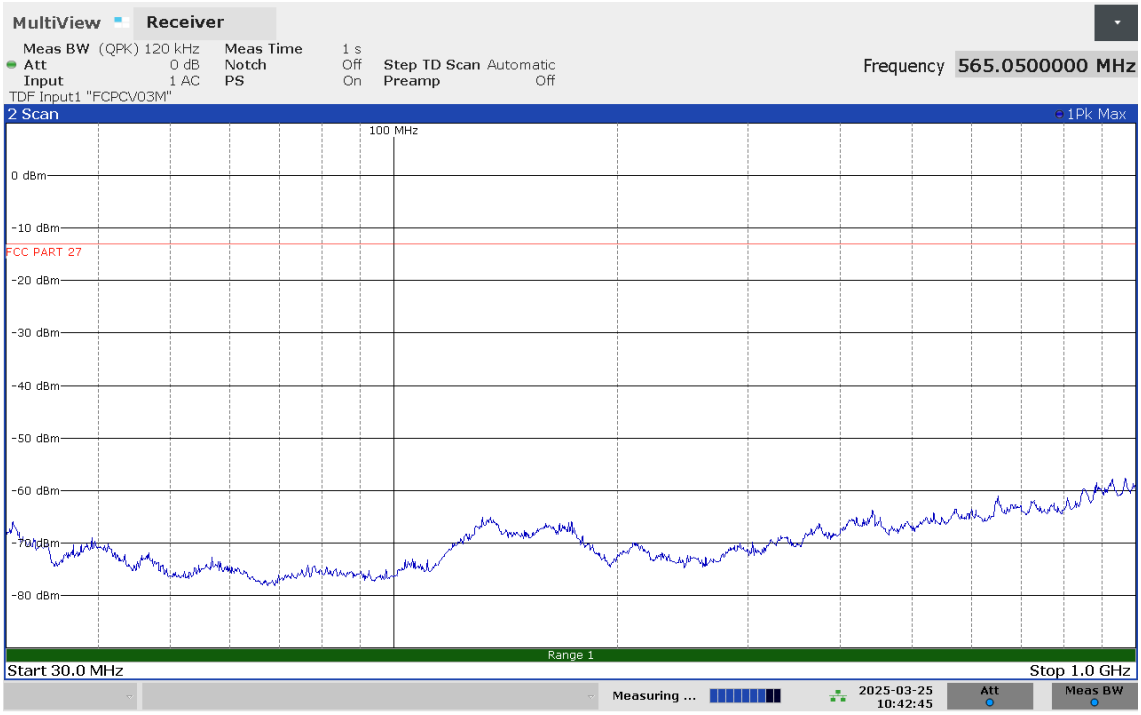
10:33:36 AM 03/25/2025 **Page 0/0**

AWGN signal, middle channel, 30MHz – 1GHz – V Pol



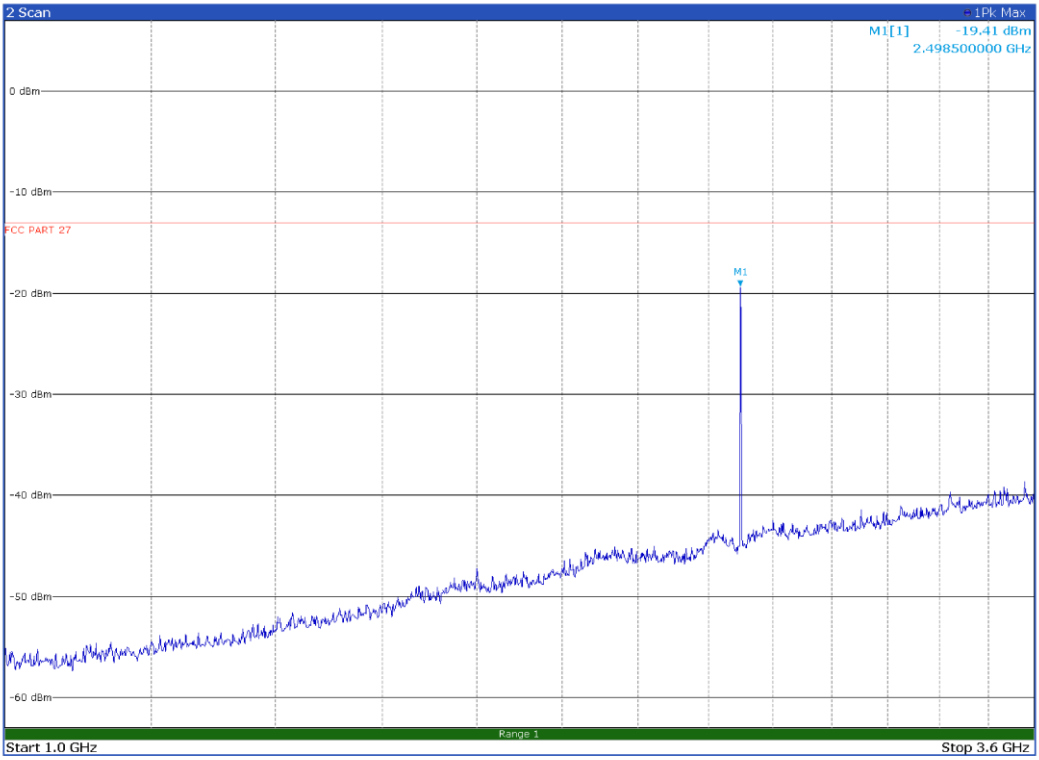
10:41:47 AM 03/25/2025 **Page 0/0**

AWGN signal, top channel, 30MHz – 1GHz – H Pol

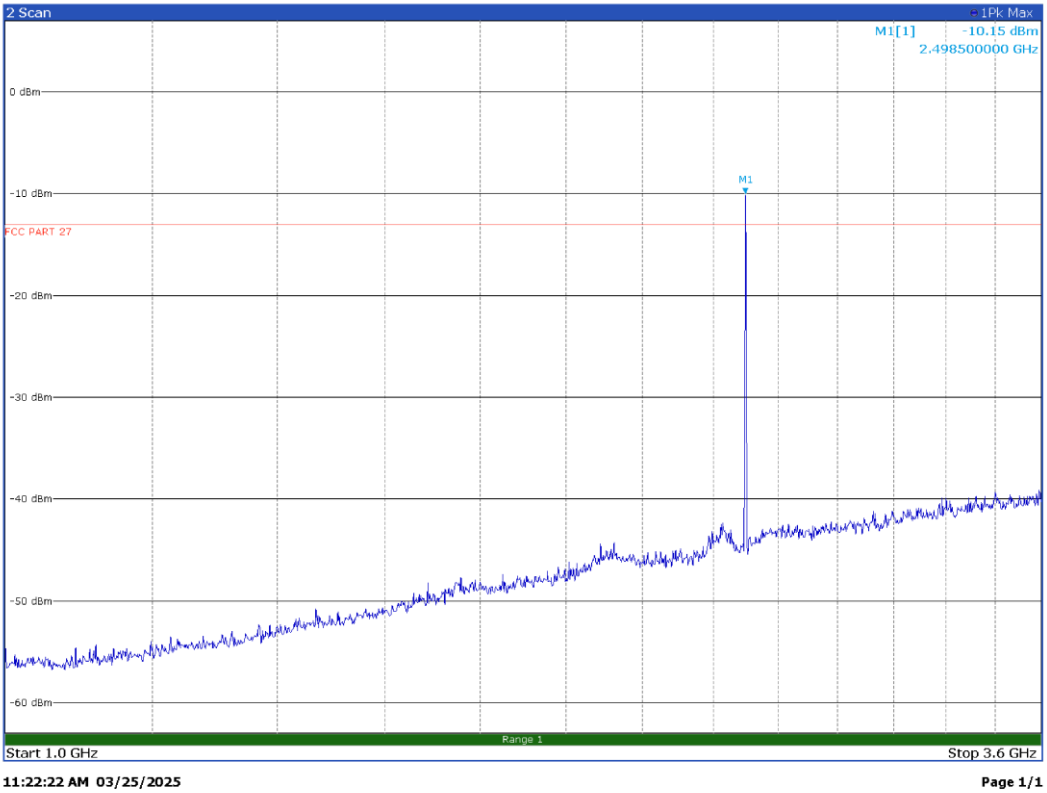


10:42:46 AM 03/25/2025 **Page 0/0**

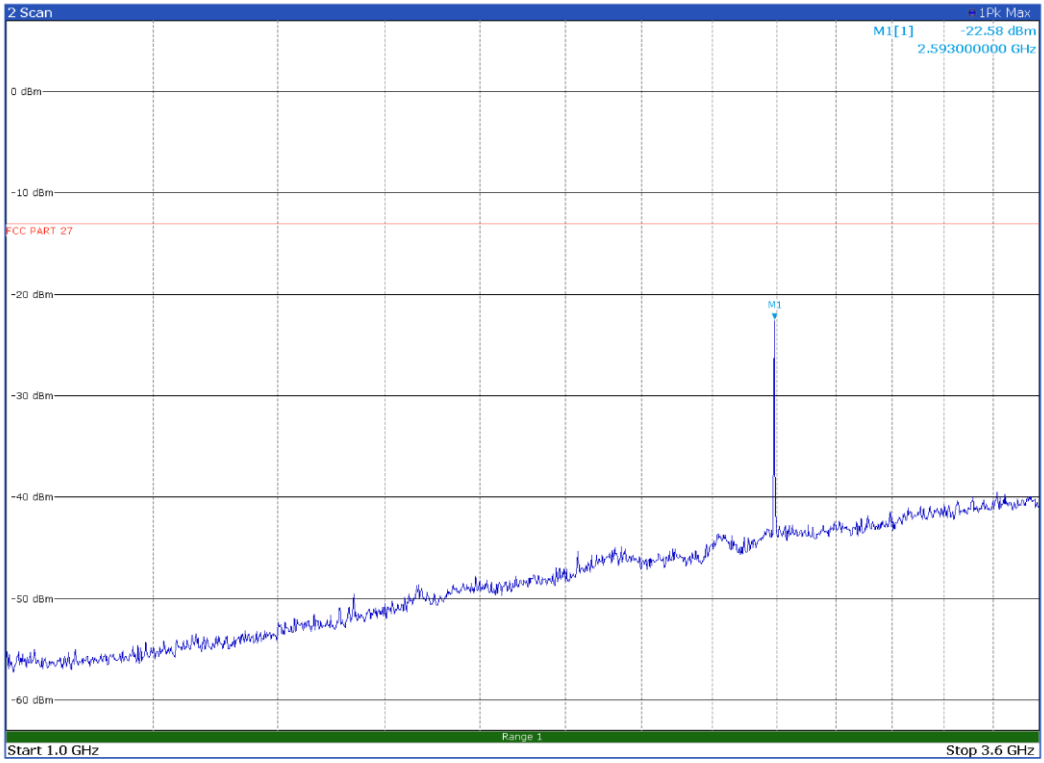
AWGN signal, top channel, 30MHz – 1GHz – V Pol



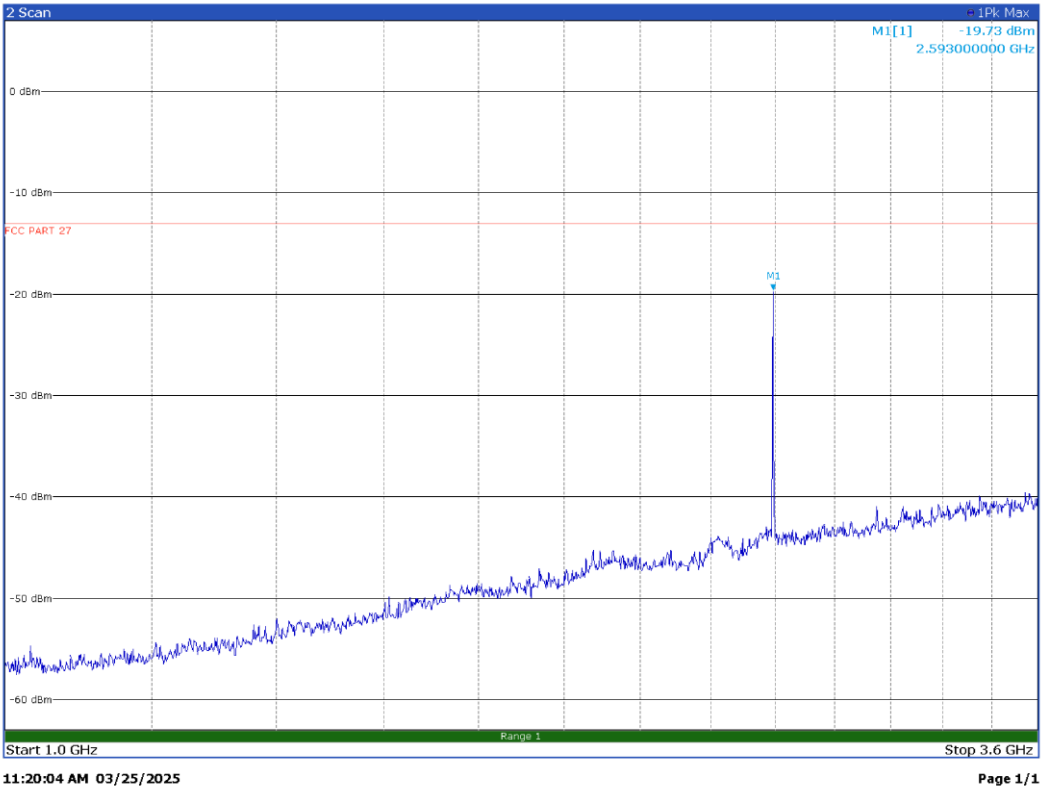
AWGN signal, bottom channel, 1GHz – 3.6GHz – H Pol



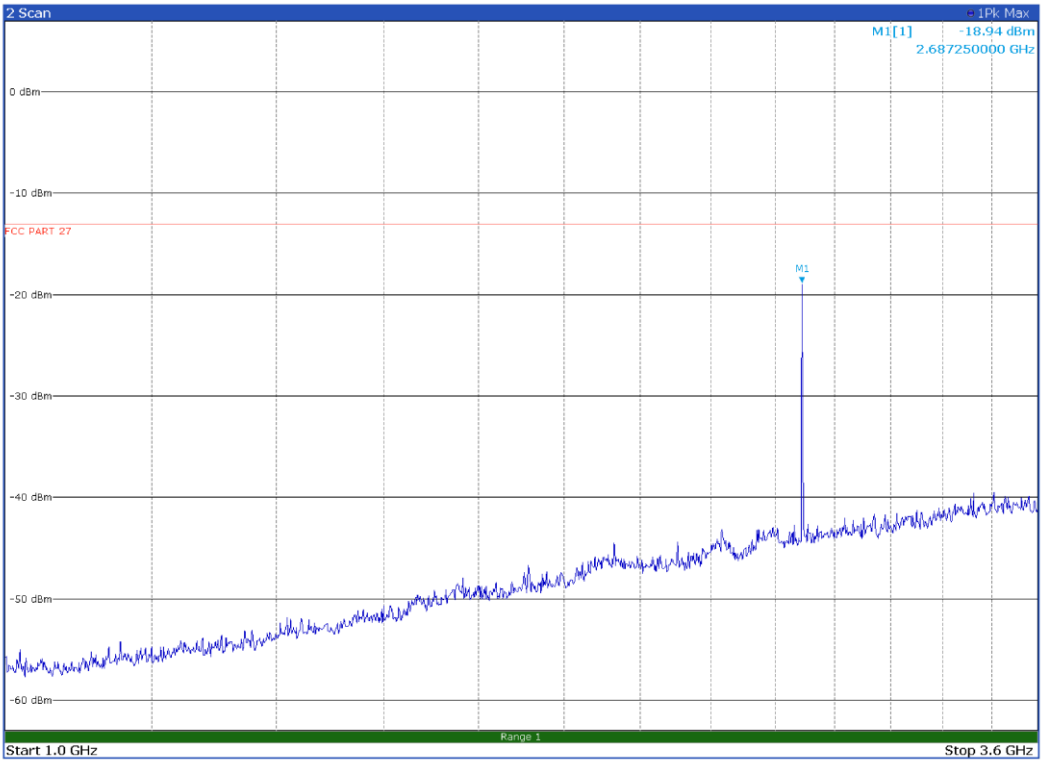
AWGN signal, bottom channel, 1GHz – 3.6GHz – V Pol



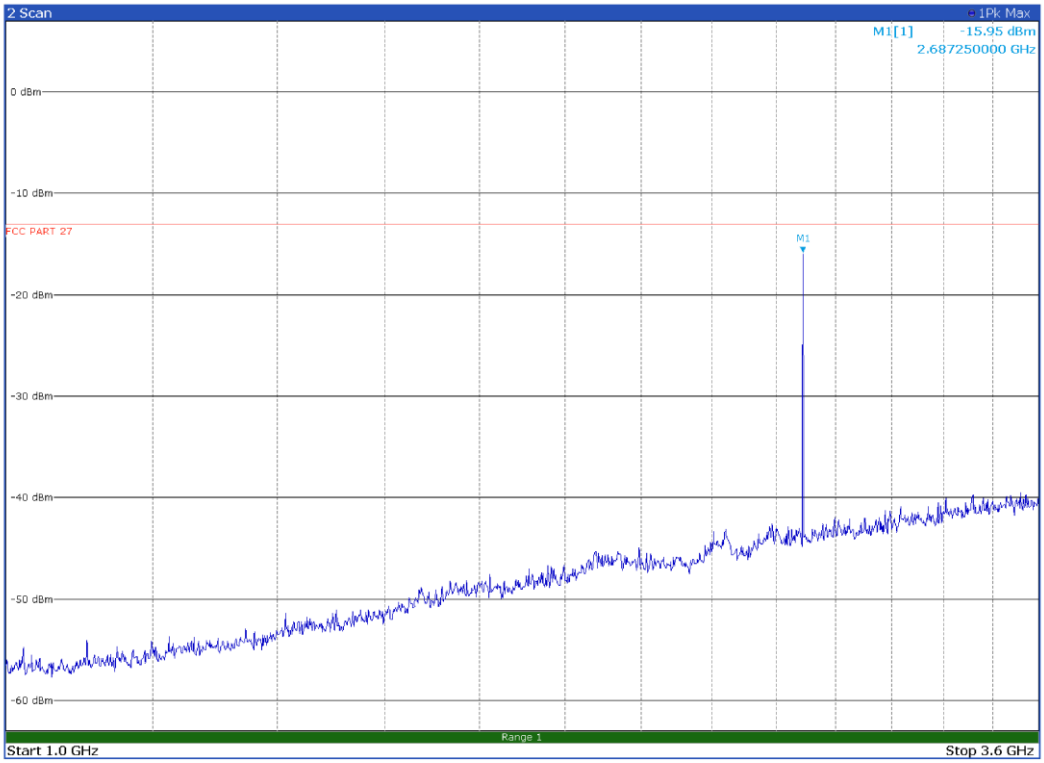
AWGN signal, middle channel, 1GHz – 3.6GHz – H Pol



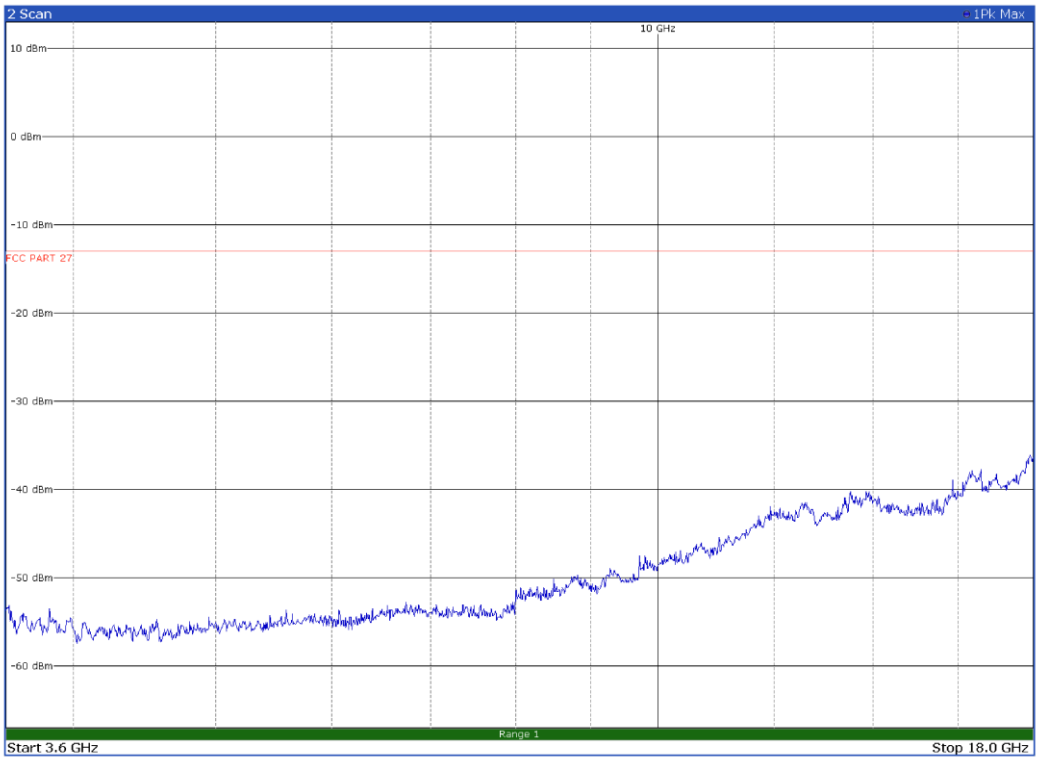
AWGN signal, middle channel, 1GHz – 3.6GHz – V Pol



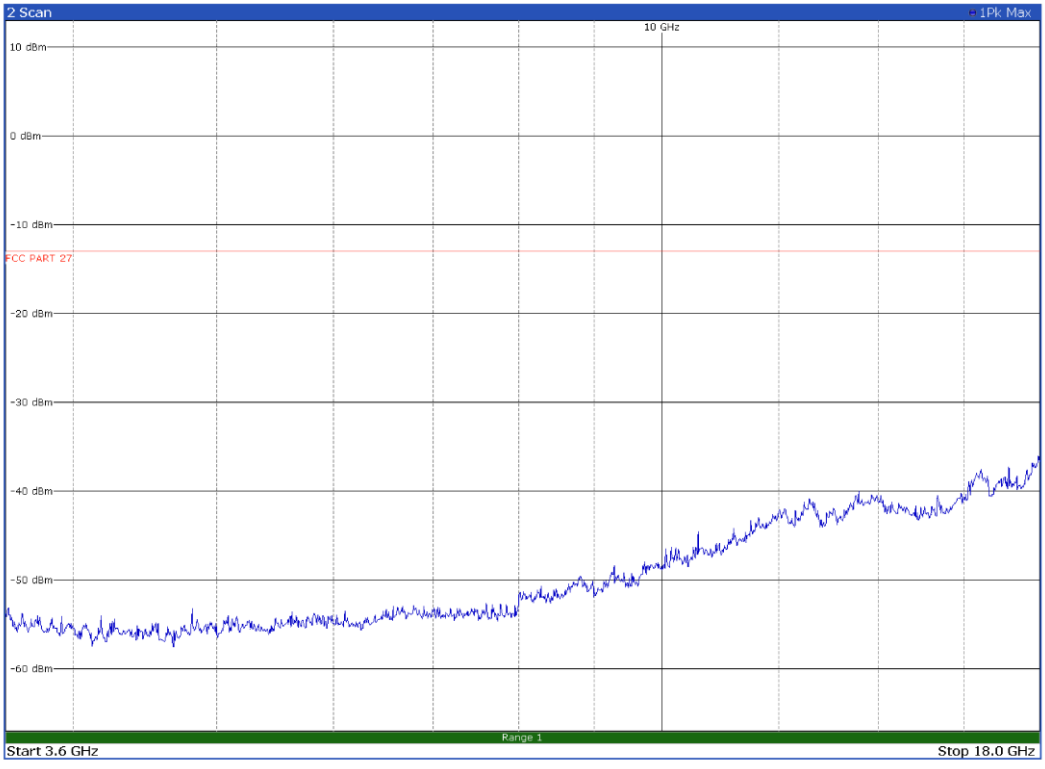
AWGN signal, top channel, 1GHz – 3.6GHz – H Pol



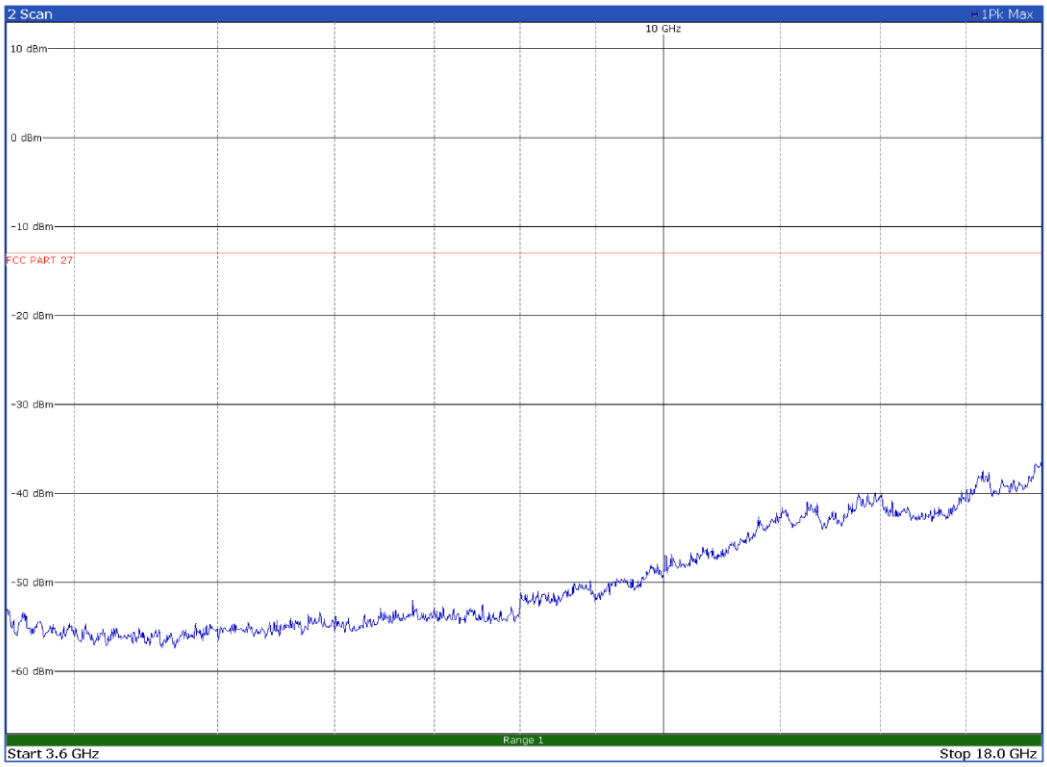
AWGN signal, top channel, 1GHz – 3.6GHz – V Pol



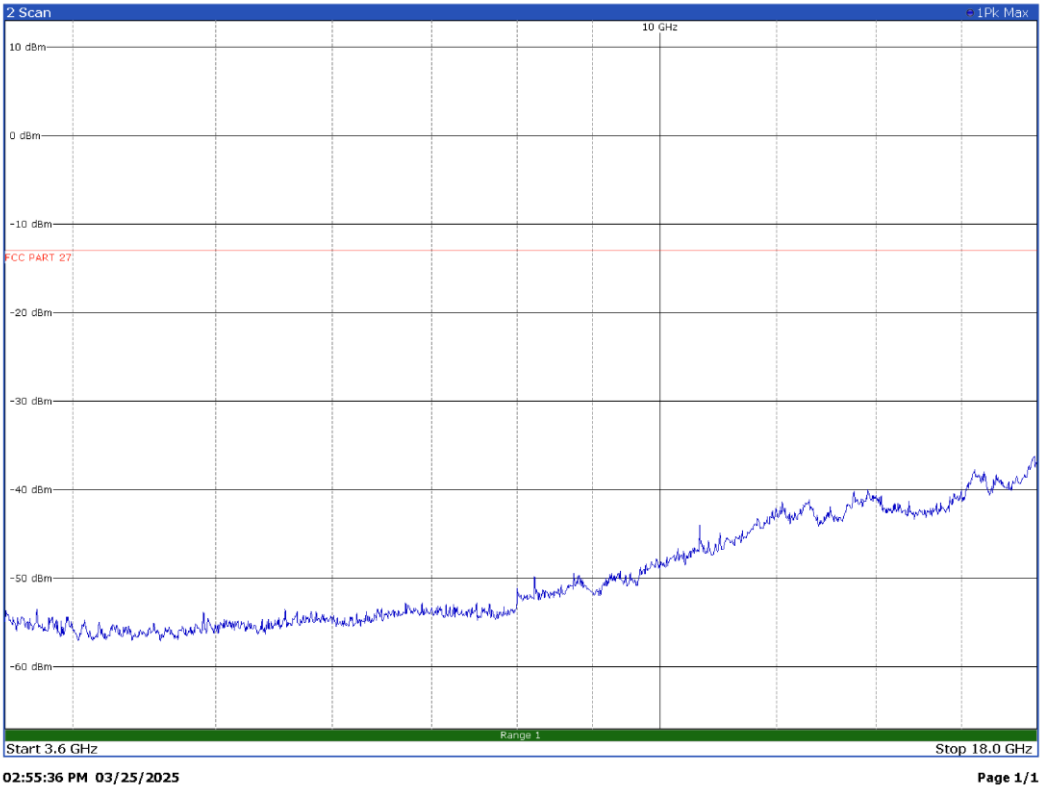
AWGN signal, bottom channel, 3.6GHz – 18GHz – H Pol



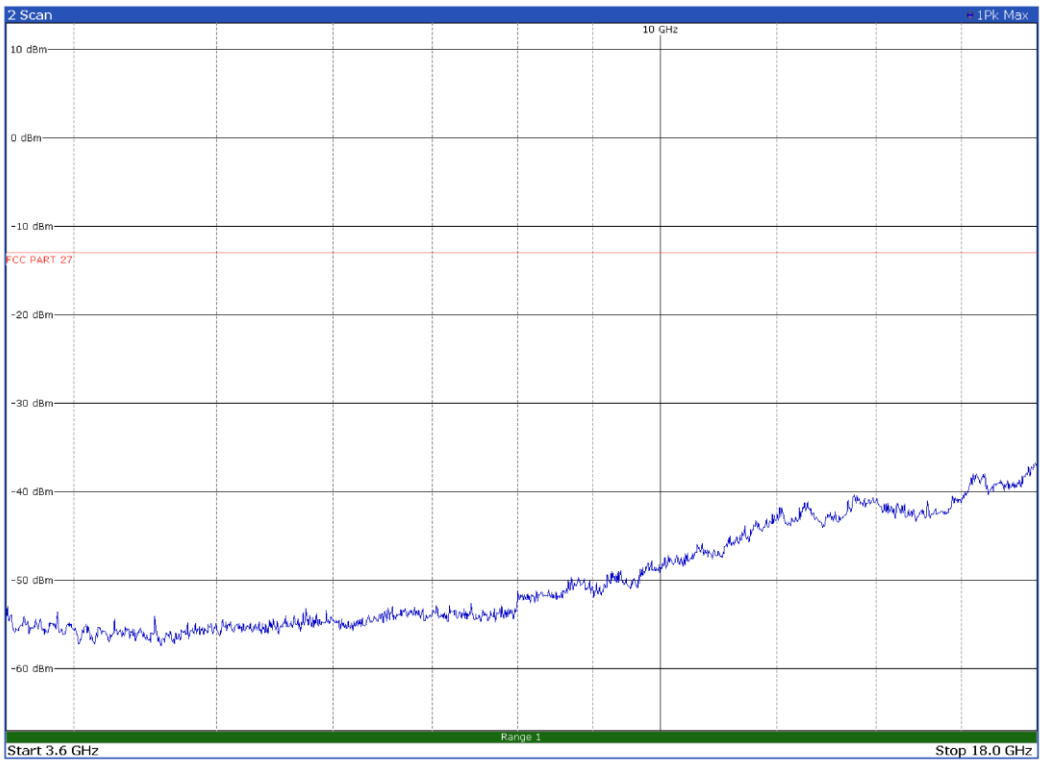
AWGN signal, bottom channel, 3.6GHz – 18GHz – V Pol



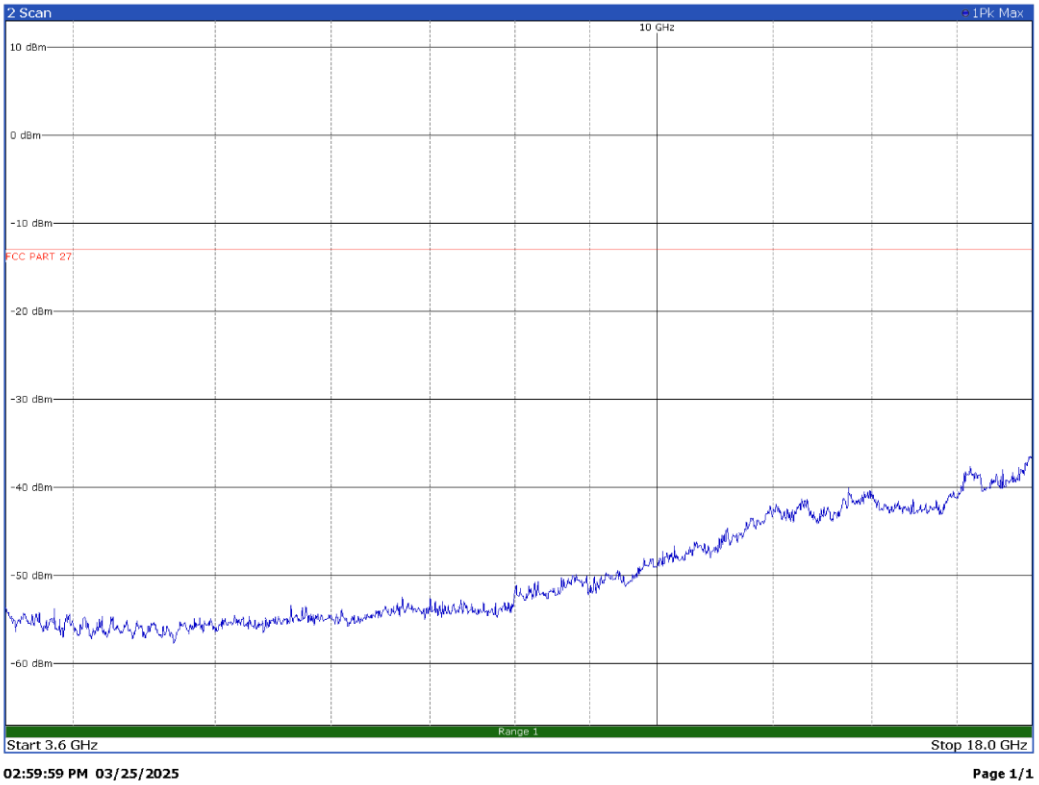
AWGN signal, middle channel, 3.6GHz – 18GHz – H Pol



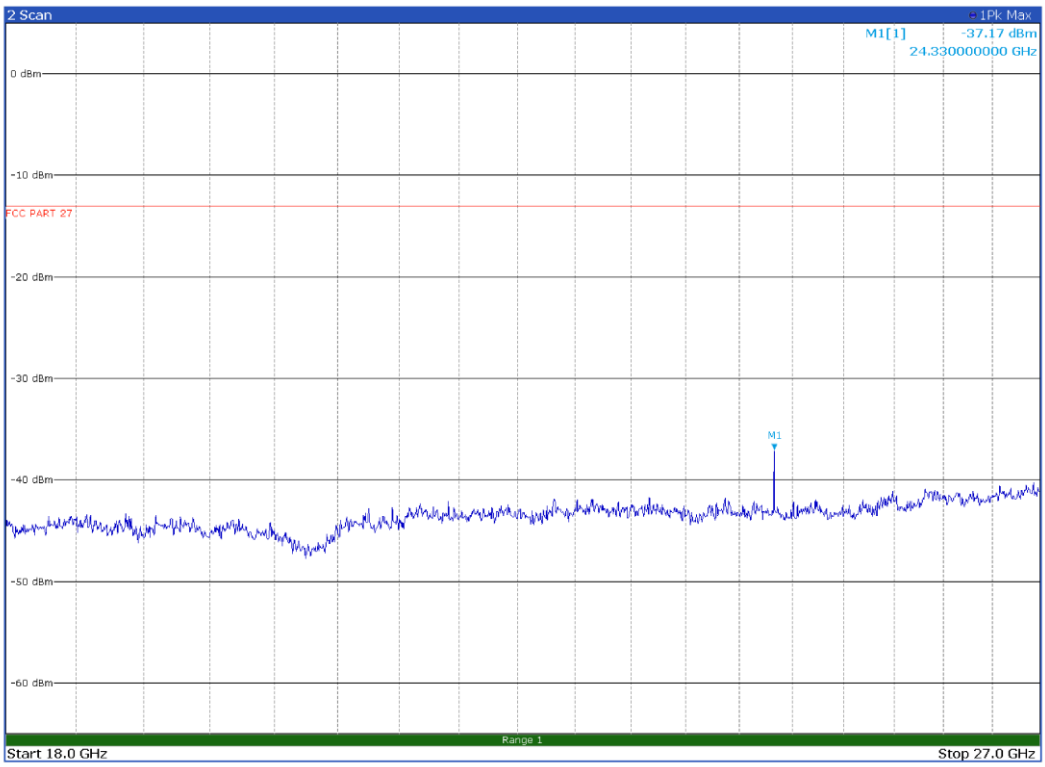
AWGN signal, middle channel, 3.6GHz – 18GHz – V Pol



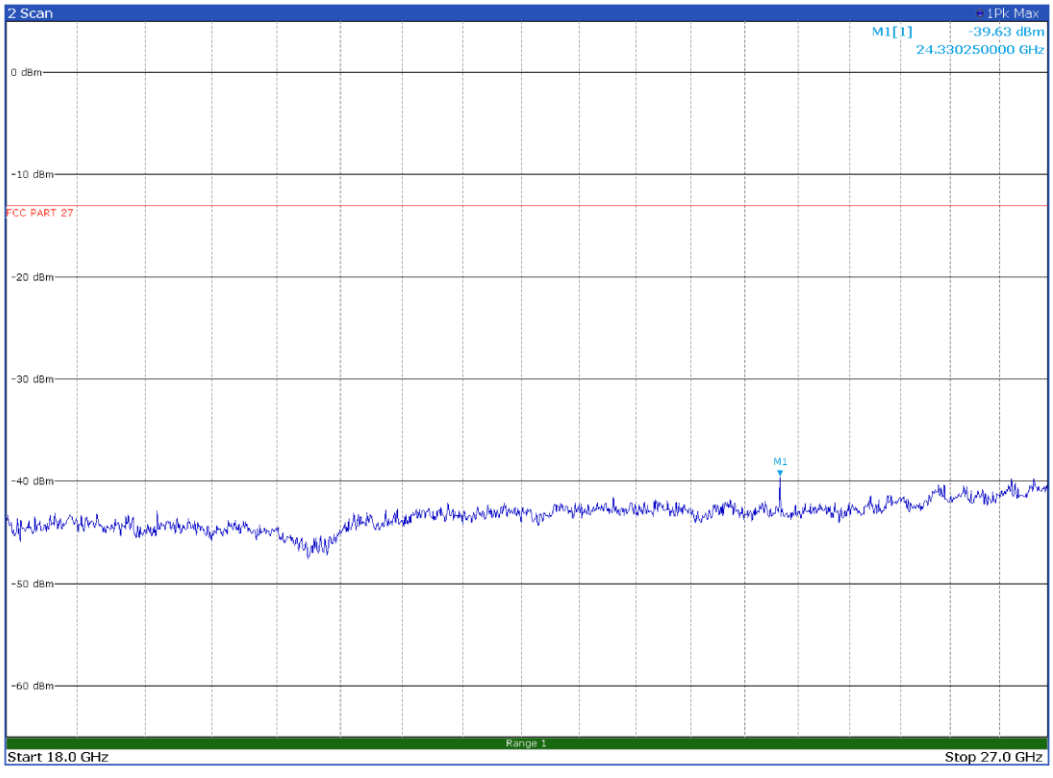
AWGN signal, top channel, 3.6GHz – 18GHz – H Pol



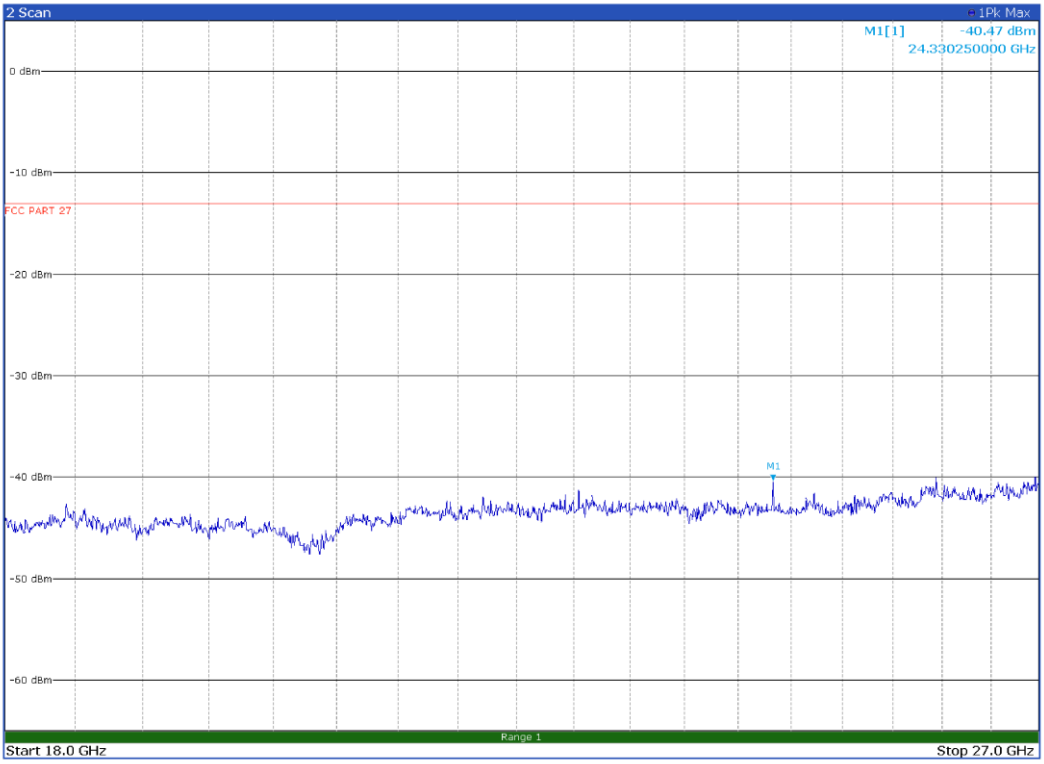
AWGN signal, top channel, 3.6GHz – 18GHz – V Pol



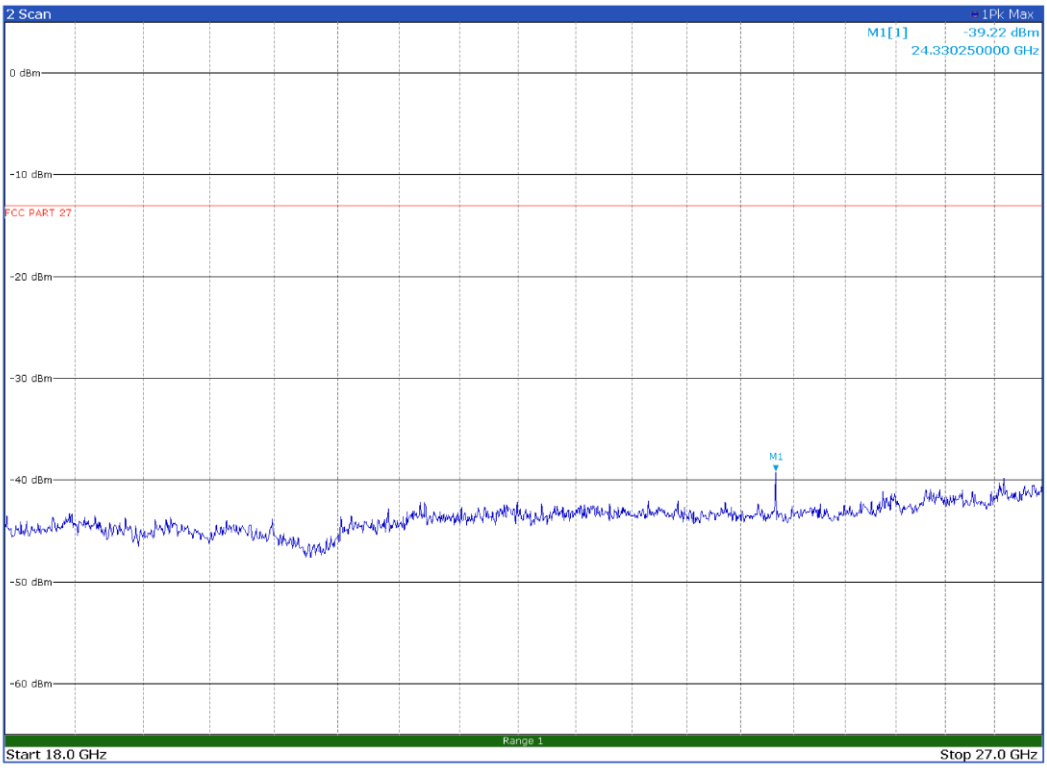
AWGN signal, bottom channel, 18GHz – 27GHz – H Pol



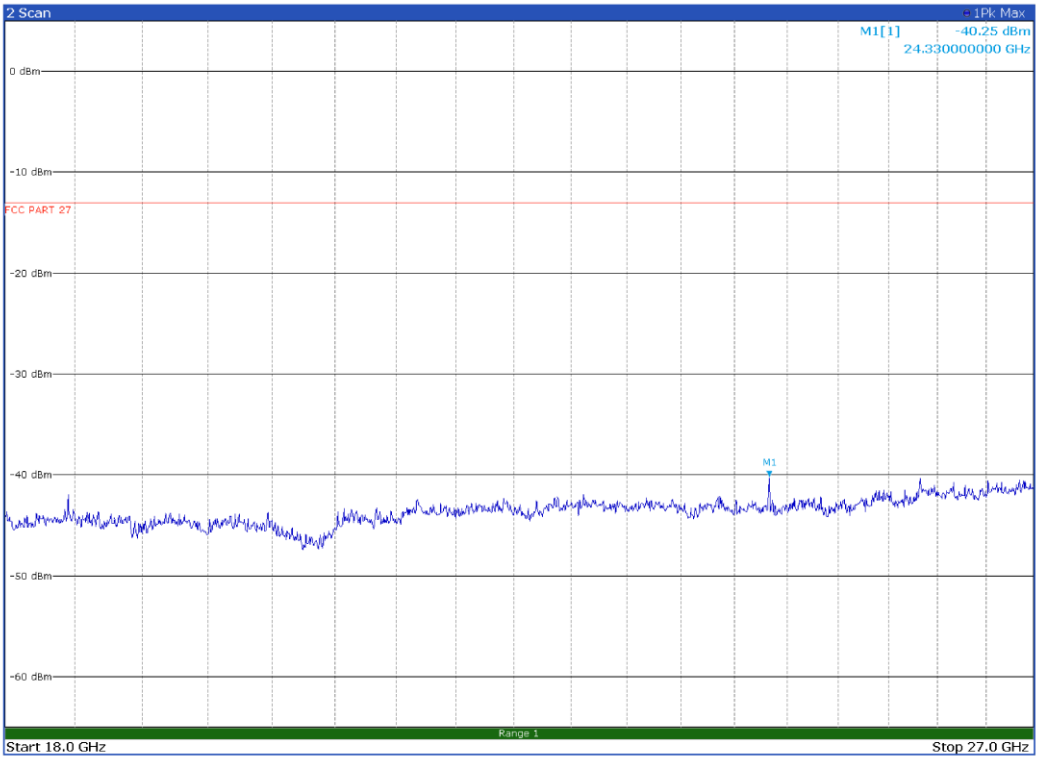
AWGN signal, bottom channel, 18GHz – 27GHz – V Pol



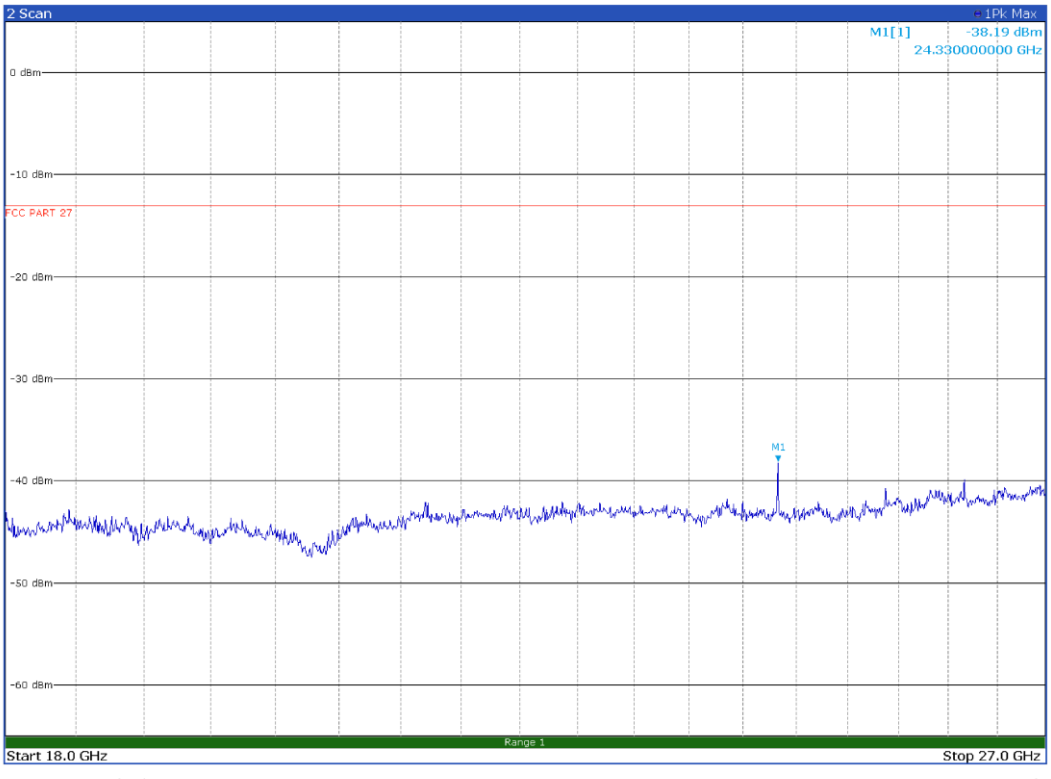
AWGN signal, middle channel, 18GHz – 27GHz – H Pol



AWGN signal, middle channel, 18GHz – 27GHz – V Pol



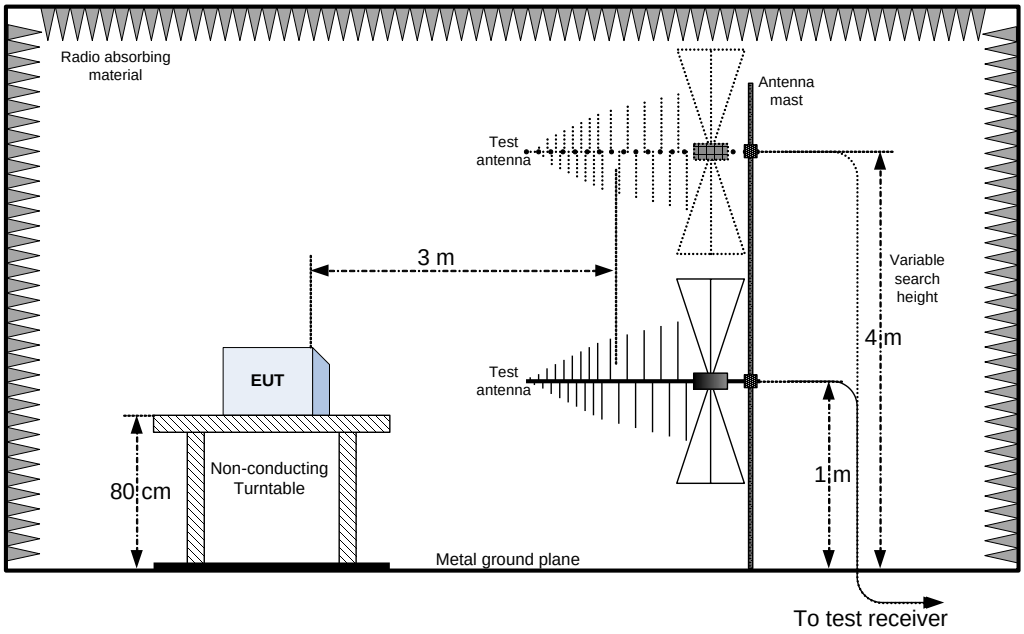
AWGN signal, top channel, 18GHz – 27GHz – H Pol



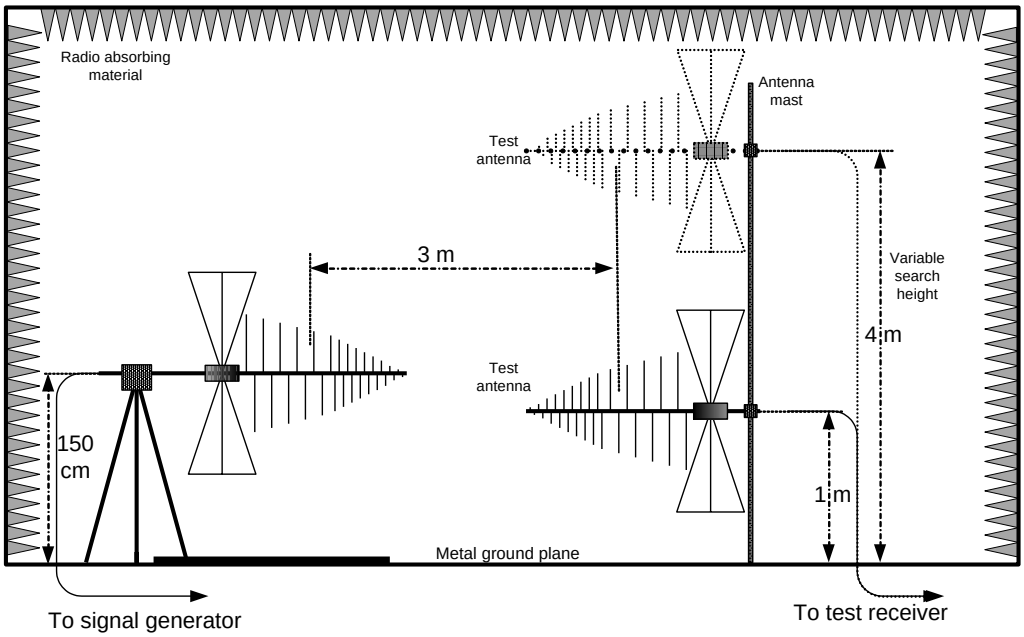
AWGN signal, top channel, 18GHz – 27GHz – V Pol

Appendix B: Block diagrams of test set-ups

Radiated emissions set-up



Substitution method set-up



Appendix C: EUT Photos

Photo Set up

Conducted measures

30MHz-1000MHz P. Hor

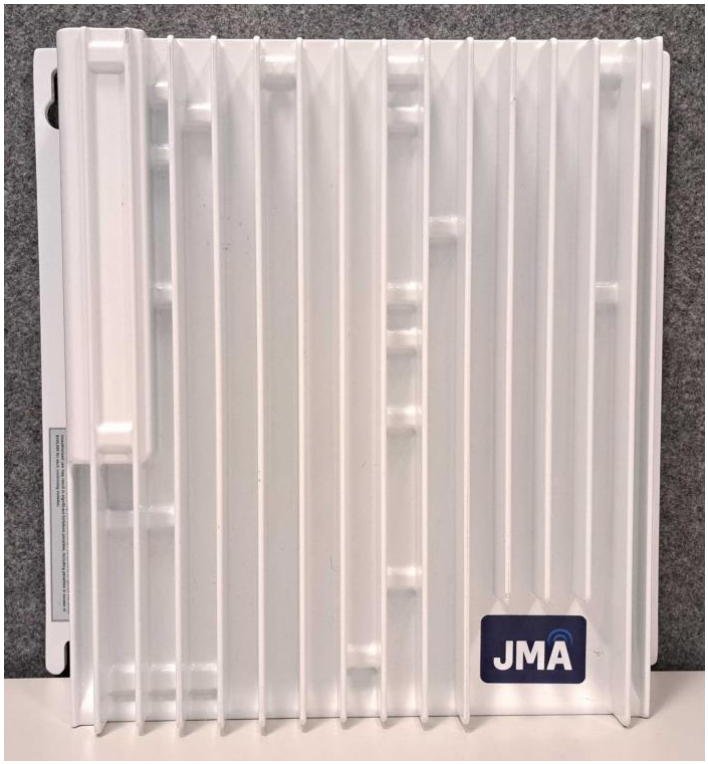
30MHz-1000MHz P. Vert

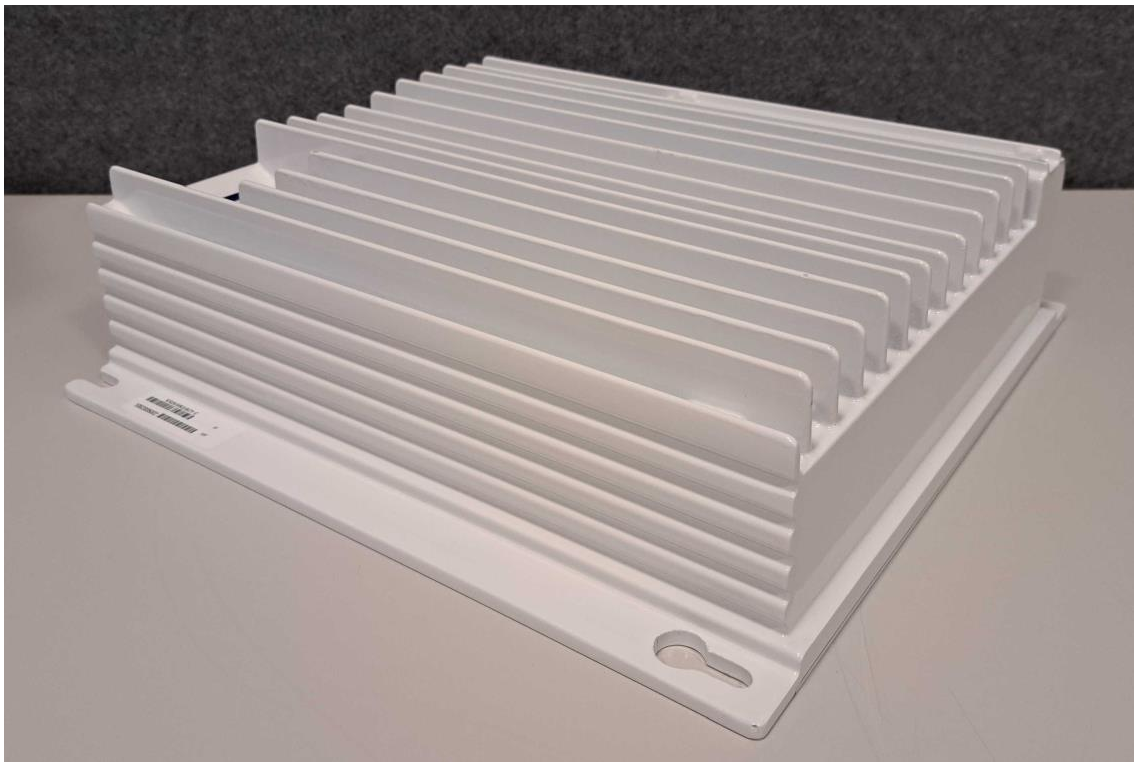
1GHz-3.6GHz

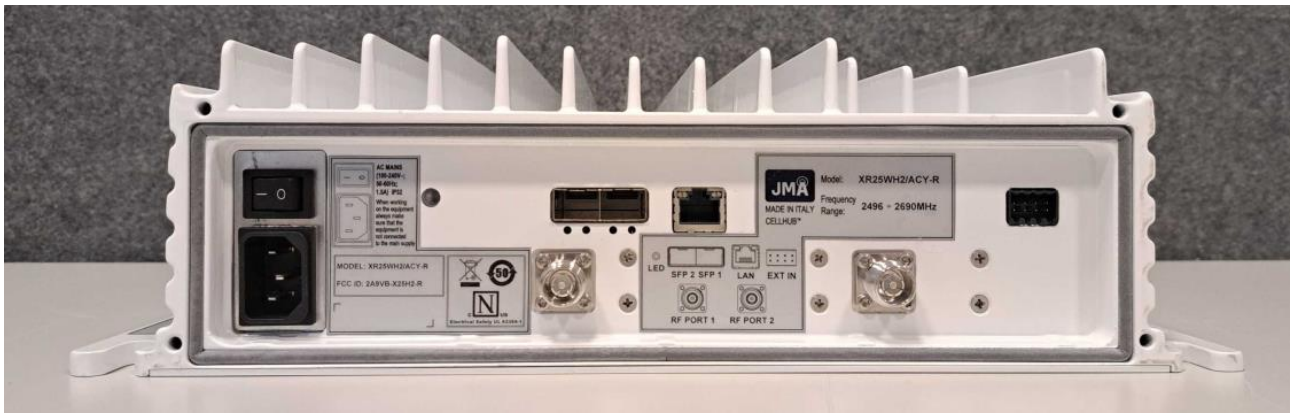
3.6GHz-18GHz

18GHz-27GHz

Photo EUT







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