2360

Radio Test Report

Cambridge Communication Systems Ltd

FCC 28GHz Dual Band

Metnet1200

47 CFR Part 101C Effective date 1st October 2016
↳ 47CFR part 2J Effective date 1st October 2016
TNB: Licensed Non-Broadcast Station Transmitter
47 CFR Part 30E Effective date 1st October 2016
↳ 47CFR part 2J Effective date 1st October 2016
5GB: Part 30 Fixed Transmitter
Test Date: 30th August 2016 to 7th October 2016
Report Number: 10-9006-1-16 Issue 02

R.N. Electronics Ltd.
Arnolds Court
Arnolds Farm Lane
Mountnessing
Essex
CM13 1UT
U.K.

www.RNelectronics.com

Telephone: +44 (0) 1277 352219
Email: sales@RNelectronics.com

Arnolds Court, Arnolds Farm Lane, Mountnessing, Brentwood Essex, CM13 1UT

Certificate of Test 9006-1

The equipment noted below has been fully tested and where appropriate conforms to the relevant subpart of 47CFR part 101C and part 30E. This is a certificate of test only and should not be confused with an equipment authorisation. Other standards may also apply.

Equipment:	FCC 28GHz Dual Band
Model Number:	Metnet1200
Unique Serial Number:	002921
Applicant:	Cambridge Communication Systems Ltd Victory House, Vision Park, Chivers Way Cambridge CB24 9ZR
Proposed FCC ID	2ACV4-M1200-001
Full measurement results are detailed in Report Number:	10-9006-1-16 Issue 02
Test Standards:	47 CFR Part 101C Effective Date 1st October 2016 ↳ 47CFR part 2J Effective Date 1st October 2016 47 CFR Part 30E Effective date 1st October 2016 ↳ 47CFR part 2J Effective date 1st October 2016

DEVIATIONS:
Deviations have not been applied.

This certificate relates only to the unit tested as identified by a unique serial number and in the condition at the time it was tested. It does not relate to any other similar equipment and performance of the product before or after the test cannot be guaranteed. Whilst every effort is made to assure quality of testing, type tests are not exhaustive and although no non-conformances may be found, this doesn't exclude the possibility of unit not meeting the intentions of the standard or the requirements of the Federal Regulations, particularly under different conditions to those during testing. Any compliance statements are made reliant on (a) the application of the product and use of the assigned band being acceptable to the FCC and (b) the modes of operation as instructed to us by the Customer based on their specific knowledge of the application and functionality of the EUT. Statements of compliance, where measurements were made, do not include the measurement uncertainty. The measurement uncertainty, where stated, is the expanded uncertainty based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.

Date Of Test: 30th August 2016 to 7th October 2016

Test Engineer: Ian Rose
Digitally signed by: Ian Rose
DN: CN = Ian Rose email = Ian@rnnelectronics.com C = GB O = RN Electronics
Date: 2017.09.15 09:54:22 Z

Approved By:
Radio Approvals Manager
Digitally signed by: Daniel Sims
DN: CN = Daniel Sims C = GB O = RN Electronics Ltd
Date: 2017.09.15 09:50:42 Z

Customer Representative:

2360

1 Contents

1 Contents 3
2 Equipment under test (EUT) 4
2.1 Equipment specification 4
2.2 Configurations for testing 5
2.3 Functional description 6
2.4 Modes of operation 6
2.5 Emissions configuration 8
3 Summary of test results 10
4 Specifications 11
4.1 Relevant standards 11
4.2 Deviations 11
4.3 Tests at extremes of temperature & voltage 11
4.4 Test fixtures 11
5 Tests, methods and results 12
5.1 Spurious emissions at antenna terminals 12
5.2 RF Power Output 14
5.3 Frequency stability 27
5.4 Occupied bandwidth 29
5.5 Field strength of spurious radiations 42
5.6 Band edge / spectrum mask additional emissions limitations 45
5.7 Modulation characteristics 54
6 Plots/Graphical results 67
6.1 Spurious emissions at antenna terminals 67
6.2 Occupied bandwidth 79
6.3 Band edge / spectrum mask additional emissions limitations 133
6.4 Modulation characteristics 169
7 Explanatory Notes 223
7.1 Explanation of waveguide cut-off frequency 223
8 Photographs 224
8.1 EUT Front View 224
8.2 EUT Reverse Angle 225
8.3 EUT Antenna Port 226
8.4 EUT Display & Controls & ID label 227
8.5 EUT Internal photos 228
8.6 30-1000MHz Spurious emissions test set-up 229
8.7 Above 1GHz Spurious emissions test set-up 230
8.8 Radiated emission diagram 234
9 Test equipment calibration list 235
10 Auxiliary and peripheral equipment 236
10.1 Customer supplied equipment 236
10.2 RN Electronics supplied equipment 236
11 Condition of the equipment tested 237
11.1 Modifications before test 237
11.2 Modifications during test 237
12 Description of test sites 238
13 Abbreviations and units 239

2 Equipment under test (EUT)

2.1 Equipment specification

Applicant	Cambridge Communication Systems Ltd Victory House Vision Park Chivers Way Cambridge CB24 9ZR	
Manufacturer of EUT	Cambridge Communication Systems Ltd.	
Full Name of EUT	FCC 28GHz Dual Band	
Model Number of EUT	Metnet1200	
Serial Number of EUT	002921	
Date Received	26th August 2016	
Date of Test:	30th August 2016 to 7th October 2016	
Purpose of Test	To demonstrate design compliance to the relevant rules of Chapter 47 of the Code of Federal Regulations.	
Date Report Created	12th September 2017	
Main Function	28 GHz wireless backhaul	
Information Specification	Height	185 mm
	Width	202 mm
	Depth	202 mm
	Weight	4.2 kg
	Voltage	90-265 V AC
	Current	0.6 A

2.2 Configurations for testing

General Parameters	
EUT Normal use position	Mounted on lamppost
Choice of model(s) for type tests	Production models
Antenna details	Integral. Also external dish antenna option available (high gain node)
Antenna port	WR34 waveguide
Baseband Data port (yes/no)?	No
Highest Signal generated in EUT	29.5 GHz
Lowest Signal generated in EUT	25 MHz
Hardware Version	V5
Software Version	Not declared
Firmware Version	Not declared
Type of Equipment	Dual channel microwave transceiver
Technology Type	Proprietary STDMA multipoint dual channel transceiver
Geo-location (yes/no)	Yes
TX Parameters	
Alignment range – transmitter	27.5 GHz to 29.5 GHz
EUT Declared Modulation Parameters	QPSK, 16QAM, 64QAM, 256QAM
EUT Declared Power level	Single TX QPSK=20.5 dBm, 16QAM=20 dBm, 64QAM=19 dBm, 256QAM=18 dBm. Dual TX QPSK=16.5 dBm, 16QAM=16 dBm, 64QAM=15 dBm, 256QAM=14 dBm.
EUT Declared Signal Bandwidths	50 MHz, 100 MHz, 112 MHz
EUT Declared Channel Spacing's	50 MHz, 100 MHz, 112 MHz
EUT Declared Duty Cycle	Not declared
Unmodulated carrier available?	Yes
Declared frequency stability	+/- 2.5 ppm over 20 years
Fixed Link Parameters	
ATPC used	Yes
RTPC used	RTPC-2 used, RTPC-1 not used
Adaptive/Dynamic Modulation Used	Node software changes modulation used on a per slot basis, depending on the conditions of the particular link the slot is assigned to.

2.3 Functional description

The product is a 28 GHz self-organising transceiver capable of sustaining simultaneous links with peer nodes to provide wireless backhaul for access equipment such as cellular base stations. The product is designed to be mounted on street furniture such as lampposts to support dense deployments of small cell base stations.

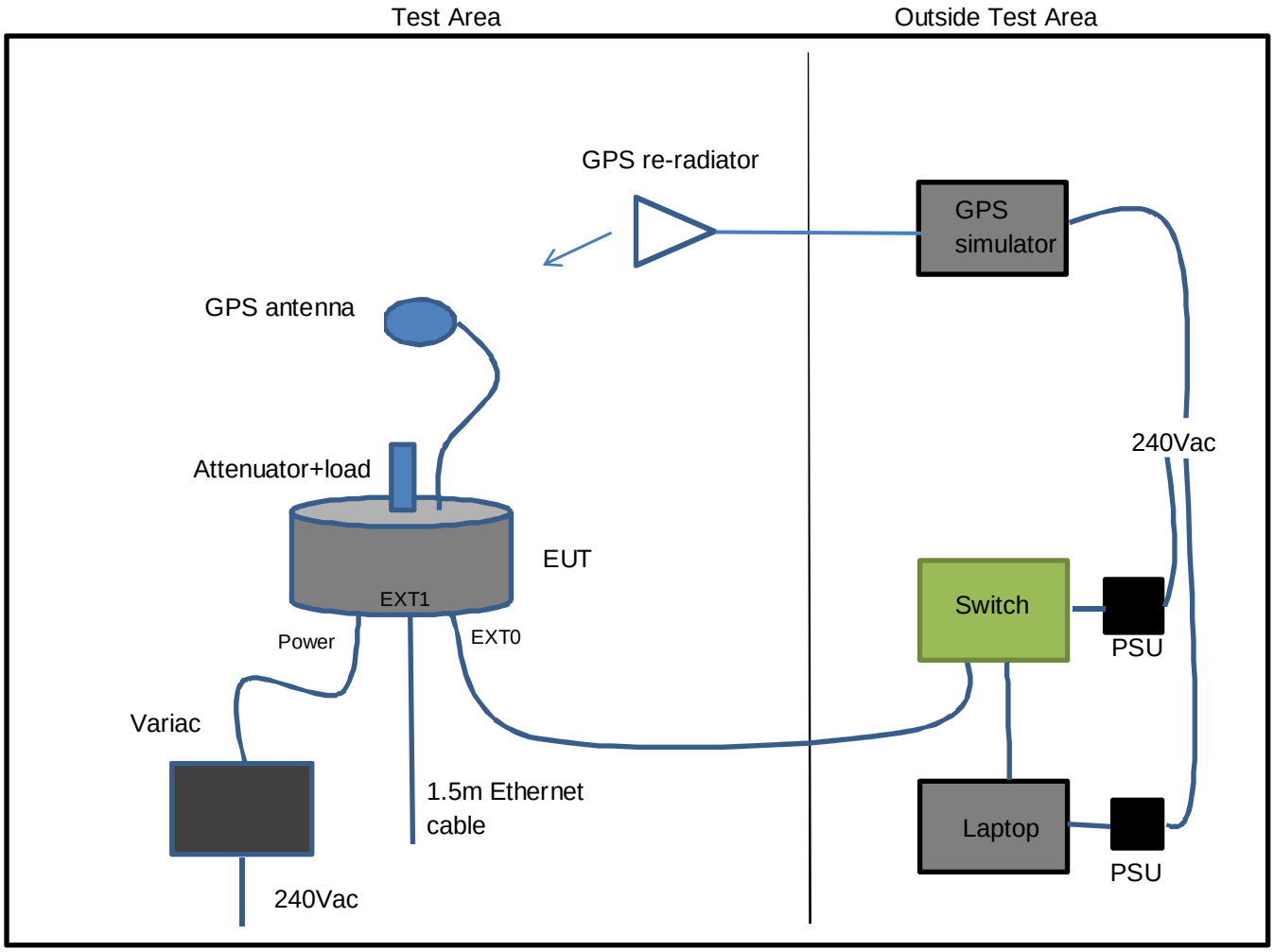
2.4 Modes of operation

Mode Reference	Description	Used for testing
TX1	27604.5 MHz and 28248.5 MHz, 10 dBm, CW tone	Yes
TX2	28248.5 MHz and 29187.5 MHz, 10 dBm, CW tone	Yes
TX3	27604.5 MHz, 50 MHz BW, QPSK, 20.5 dBm	Yes
TX4	27604.5 MHz, 50 MHz BW, 16QAM, 20 dBm	Yes
TX5	27604.5 MHz, 50 MHz BW, 64QAM, 19 dBm	Yes
TX6	27604.5 MHz, 50 MHz BW, 256QAM, 18 dBm	Yes
TX7	27604.5 MHz, 100 MHz BW, QPSK, 20.5 dBm	Yes
TX8	27604.5 MHz, 100 MHz BW, 16QAM, 20 dBm	Yes
TX9	27604.5 MHz, 100 MHz BW, 64QAM, 19 dBm	Yes
TX10	27604.5 MHz, 100 MHz BW, 256QAM, 18 dBm	Yes
TX11	27604.5 MHz, 112 MHz BW, QPSK, 20.5 dBm	Yes
TX12	27604.5 MHz, 112 MHz BW, 16QAM, 20 dBm	Yes
TX13	27604.5 MHz, 112 MHz BW, 64QAM, 19 dBm	Yes
TX14	27604.5 MHz, 112 MHz BW, 256QAM, 18 dBm	Yes
TX15	28248.5 MHz, 50 MHz BW, QPSK, 20.5 dBm	Yes
TX16	28248.5 MHz, 50 MHz BW, 16QAM, 20 dBm	Yes
TX17	28248.5 MHz, 50 MHz BW, 64QAM, 19 dBm	Yes
TX18	28248.5 MHz, 50 MHz BW, 256QAM, 18 dBm	Yes
TX19	28248.5 MHz, 100 MHz BW, QPSK, 20.5 dBm	Yes
TX20	28248.5 MHz, 100 MHz BW, 16QAM, 20 dBm	Yes
TX21	28248.5 MHz, 100 MHz BW, 64QAM, 19 dBm	Yes
TX22	28248.5 MHz, 100 MHz BW, 256QAM, 18 dBm	Yes
TX23	28248.5 MHz, 112 MHz BW, QPSK, 20.5 dBm	Yes
TX24	28248.5 MHz, 112 MHz BW, 16QAM, 20 dBm	Yes
TX25	28248.5 MHz, 112 MHz BW, 64QAM, 19 dBm	Yes
TX26	28248.5 MHz, 112 MHz BW, 256QAM, 18 dBm	Yes
TX27	29187.5 MHz, 50 MHz BW, QPSK, 20.5 dBm	Yes
TX28	29187.5 MHz, 50 MHz BW, 16QAM, 20 dBm	Yes
TX29	29187.5 MHz, 50 MHz BW, 64QAM, 19 dBm	Yes
TX30	29187.5 MHz, 50 MHz BW, 256QAM, 18 dBm	Yes
TX31	29187.5 MHz, 100 MHz BW, QPSK, 20.5 dBm	Yes
TX32	29187.5 MHz, 100 MHz BW, 16QAM, 20 dBm	Yes
TX33	29187.5 MHz, 100 MHz BW, 64QAM, 19 dBm	Yes
TX34	29187.5 MHz, 100 MHz BW, 256QAM, 18 dBm	Yes
TX35	29187.5 MHz, 112 MHz BW, QPSK, 20.5 dBm	Yes
TX36	29187.5 MHz, 112 MHz BW, 16QAM, 20 dBm	Yes
TX37	29187.5 MHz, 112 MHz BW, 64QAM, 19 dBm	Yes
TX38	29187.5 MHz, 112 MHz BW, 256QAM, 18 dBm	Yes
TX39	27604.5 MHz (with 28248.5 MHz), 50 MHz BW, QPSK, 16.5 dBm	Yes
TX40	27604.5 MHz (with 28248.5 MHz), 50 MHz BW, 16QAM, 16 dBm	Yes
TX41	27604.5 MHz (with 28248.5 MHz), 50 MHz BW, 64QAM, 15 dBm	Yes
TX42	27604.5 MHz (with 28248.5 MHz), 50 MHz BW, 256QAM, 14 dBm	Yes

TX43	27604.5 MHz (with 28248.5 MHz), 100 MHz BW, QPSK, 16.5 dBm	Yes
TX44	27604.5 MHz (with 28248.5 MHz), 100 MHz BW, 16QAM, 16 dBm	Yes
TX45	27604.5 MHz (with 28248.5 MHz), 100 MHz BW, 64QAM, 15 dBm	Yes
TX46	27604.5 MHz (with 28248.5 MHz), 100 MHz BW, 256QAM, 14 dBm	Yes
TX47	27604.5 MHz (with 28248.5 MHz), 112 MHz BW, QPSK, 16.5 dBm	Yes
TX48	27604.5 MHz (with 28248.5 MHz), 112 MHz BW, 16QAM, 16 dBm	Yes
TX49	27604.5 MHz (with 28248.5 MHz), 112 MHz BW, 64QAM, 15 dBm	Yes
TX50	27604.5 MHz (with 28248.5 MHz), 112 MHz BW, 256QAM, 14 dBm	Yes
TX51	27604.5 MHz (with 29187.5 MHz), 50 MHz BW, QPSK, 16.5 dBm	Yes
TX52	27604.5 MHz (with 29187.5 MHz), 50 MHz BW, 16QAM, 16 dBm	Yes
TX53	27604.5 MHz (with 29187.5 MHz), 50 MHz BW, 64QAM, 15 dBm	Yes
TX54	27604.5 MHz (with 29187.5 MHz), 50 MHz BW, 256QAM, 14 dBm	Yes
TX55	27604.5 MHz (with 29187.5 MHz), 100 MHz BW, QPSK, 16.5 dBm	Yes
TX56	27604.5 MHz (with 29187.5 MHz), 100 MHz BW, 16QAM, 16 dBm	Yes
TX57	27604.5 MHz (with 29187.5 MHz), 100 MHz BW, 64QAM, 15 dBm	Yes
TX58	27604.5 MHz (with 29187.5 MHz), 100 MHz BW, 256QAM, 14 dBm	Yes
TX59	27604.5 MHz (with 29187.5 MHz), 112 MHz BW, QPSK, 16.5 dBm	Yes
TX60	27604.5 MHz (with 29187.5 MHz), 112 MHz BW, 16QAM, 16 dBm	Yes
TX61	27604.5 MHz (with 29187.5 MHz), 112 MHz BW, 64QAM, 15 dBm	Yes
TX62	27604.5 MHz (with 29187.5 MHz), 112 MHz BW, 256QAM, 14 dBm	Yes
TX63	28248.5 MHz (with 29187.5 MHz), 50 MHz BW, QPSK, 16.5 dBm	Yes
TX64	28248.5 MHz (with 29187.5 MHz), 50 MHz BW, 16QAM, 16 dBm	Yes
TX65	28248.5 MHz (with 29187.5 MHz), 50 MHz BW, 64QAM, 15 dBm	Yes
TX66	28248.5 MHz (with 29187.5 MHz), 50 MHz BW, 256QAM, 14 dBm	Yes
TX67	28248.5 MHz (with 29187.5 MHz), 100 MHz BW, QPSK, 16.5 dBm	Yes
TX68	28248.5 MHz (with 29187.5 MHz), 100 MHz BW, 16QAM, 16 dBm	Yes
TX69	28248.5 MHz (with 29187.5 MHz), 100 MHz BW, 64QAM, 15 dBm	Yes
TX70	28248.5 MHz (with 29187.5 MHz), 100 MHz BW, 256QAM, 14 dBm	Yes
TX71	28248.5 MHz (with 29187.5 MHz), 112 MHz BW, QPSK, 16.5 dBm	Yes
TX72	28248.5 MHz (with 29187.5 MHz), 112 MHz BW, 16QAM, 16 dBm	Yes
TX73	28248.5 MHz (with 29187.5 MHz), 112 MHz BW, 64QAM, 15 dBm	Yes
TX74	28248.5 MHz (with 29187.5 MHz), 112 MHz BW, 256QAM, 14 dBm	Yes
Normal mode	EUT set up in a multi-mesh network communicating with several other nodes using dynamic modulation dependent on link quality	No

Note: No requirement to perform link mode testing in part 101 or part 30.

2.5 Emissions configuration



The unit was powered from AC mains. All conducted test were performed at the waveguide port. For radiated tests a transition with an attenuator plus load were fitted to the waveguide port. The unit also required a GPS lock in order for it to operate. To obtain a GPS signal for the unit a GPS simulator was connected to an internal GPS re-radiator antenna located in close proximity to the EUT. Special GUI software was provided by CCS Ltd to access and set up the EUT channel frequency, power level and modulation schemes. The EUT can operate on a single channel or on two channels simultaneously. The unit operates in the 27.5 – 28.35 GHz band and the 29.1 – 29.25 GHz band. However, the EUT does not offer dual channel operation in the 29GHz band on its own (both TX channels cannot operate in the 29GHz band). The transmit mode was 100% continuous with modulation and the power settings for each channel and modulation scheme were as stated below: -

Low Channel (27604.5 MHz)
Mid Channel (28248.5 MHz)
High Channel (29187.5 MHz)

Single channel operation power levels: -
QPSK=20.5 dBm, 16QAM=20 dBm, 64QAM=19 dBm, 256QAM=18 dBm

Dual channel operation power levels: -
QPSK=16.5 dBm, 16QAM=16 dBm, 64QAM=15 dBm, 256QAM=14 dBm

Tests were performed in both single TX channel modes and dual TX channel modes where appropriate in order to check for any intermodulation products during tests.

2.5.1 Signal leads

Port Name	Cable Type	Connected
Power	3-core 0.75 mm^2	Yes
EXT0	CAT5E/CAT6	Yes
EXT1	CAT5E/CAT6	Yes

3 Summary of test results

The FCC 28GHz Dual Band, Metnet1200 was tested for compliance to the following standard(s) :

47 CFR Part 101C Effective Date 1st October 2016
↳ 47CFR part 2J Effective Date 1st October 2016
47 CFR Part 30E Effective date 1st October 2016
↳ 47CFR part 2J Effective Date 1st October 2016

Any compliance statements are made reliant on (a) the application of the product and use of the assigned band being acceptable to the FCC and (b) the modes of operation as instructed to us by the Customer based on their specific knowledge of the application and functionality of the EUT. Whilst every effort is made to assure quality of testing, type tests are not exhaustive and although no non-conformances may be found, this doesn't exclude the possibility of equipment not meeting the intentions of the standard or the essential requirements of the directive, particularly under different conditions to those during testing. Statements of compliance, where measurements were made, do not include the measurement uncertainty. The measurement uncertainty, where stated, is the expanded uncertainty based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.

Title	References	Results
Transmitter Tests		
1. Spurious emissions at antenna terminals	47CFR part 2J Part 2.1051, 47CFR part 101C Part 101.111 47CFR part 30E Part 30.404	PASSED[1]
2. RF Power Output	47CFR part 2J Part 2.1046, 47CFR part 101C Part 101.113 47CFR part 30E Part 30.405	PASSED
3. Frequency stability	47CFR part 2J Part 2.1055, 47CFR part 101C Part 101.107 47CFR part 30E Part 30.402	PASSED
4. Occupied bandwidth	47CFR part 2J Part 2.1049, 47CFR part 101C Part 101.109 47CFR part 30E Part 30.403	PASSED
5. Field strength of spurious radiations	47CFR part 2J Part 2.1053, 47CFR part 101C Part 101.111 47CFR part 30E Part 30.404	PASSED
6. Band edge / spectrum mask additional emissions limitations	47CFR part 2J Part 2.1051, 47CFR part 101C Part 101.113 47CFR part 30E Part 30.404	PASSED
7. Modulation characteristics	47CFR part 2J Part 2.1047, 47CFR part 101C Part 101.109 47CFR part 30E Part 30.403	PASSED

[1] Spectrum investigated started at a frequency of 17 GHz due to the EUT's WR34 waveguide port low frequency cut off being 17.3 GHz. Please see section 7 calculations / explanations for further justification.

4 Specifications

The tests were performed and operated in accordance with R.N. Electronics Ltd procedures and the relevant standards listed below.

4.1 Relevant standards

Ref.	Standard Number	Version	Description
4.1.1	47CFR part 101C	2016	Part 101 – Fixed Microwave Services
4.1.2	47CFR part 30E	2016	Part 30 – Upper Microwave Flexible Use Service
4.1.3	47CFR part 2J	2016	Part 2 – Frequency Allocations and radio treaty matters; General rules and regulations
4.1.4	KDB 971168 D01 v02r02	2014	Measurement Guidance for Certification of Licensed Digital Transmitters
4.1.5	ANSI C63.4	2014	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
4.1.6	ITU-R SM.329-12	2012	Unwanted emissions in the spurious domain
4.1.7	TIA-603-D	2010	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards, Telecommunications Industry Association, June 2010

4.2 Deviations

No Deviations applied.

4.3 Tests at extremes of temperature & voltage

The following test conditions were used to simulate testing at nominal or extremes.

Temperature Test Conditions		Voltage Test Conditions	
T nominal	20 °C	V nominal	110V AC
T minimum	-30 °C	V minimum	93.5V AC
T maximum	50 °C	V maximum	126.5V AC

Extremes of voltage are based on nominal +/-15%.

Extremes of temperature are based upon specification requirement.
The ambient test conditions of humidity and pressure in the laboratory are stated in each test section within this report

4.4 Test fixtures

In order to measure RF parameters at temperature extremes, the EUT was tested in a temperature controlled chamber as follows:

The equipment internal waveguide port was used for testing.

5 Tests, methods and results

5.1 Spurious emissions at antenna terminals

5.1.1 Test methods

Test Requirements:	47CFR part 2J Part 2.1051 [Reference 4.1.3 of this report], 47CFR part 101C Part 101.111 [Reference 4.1.1 of this report] 47CFR part 30E Part 30.404 [Reference 4.1.2 of this report]
Test Method:	KDB 971168 D01 v02r02 [Reference 4.1.4 of this report], ITU-R SM.329-12 [Reference 4.1.6 of this report]
Limits:	47CFR part 101C Part 101.111 [Reference 4.1.1 of this report] 47CFR part 30E Part 30.404 [Reference 4.1.2 of this report]

5.1.2 Configuration of EUT

The EUT was operated on a test bench. Measurements were made at the waveguide port. All test modes specified in section 2.4 were initially checked; dual channel operation with QPSK modulation scheme using 50 MHz bandwidth settings were found to be worst case for emissions and, therefore, the EUT was operated in TX63 mode for this test.

5.1.3 Test procedure

Tests were made in accordance with the Test Method noted above, using the measuring equipment listed in the 'Test Equipment' Section. A complete scan of emissions from 17 GHz up to 100GHz was made, to identify any signals within 20dB of the limits. The 17GHz start frequency was used as the EUT's WR34 waveguide ports lowest cut-off frequency is stated as 17.3GHz Any identified spurious signals were measured in the required bandwidths using an RMS detector. Emissions limitations of part 101C for conducted spectrum mask requirements are included within section 5.6 of this report.

The EUT was tested in Site S.

5.1.4 Test equipment

E296-6, E329, E412, E433, E455, E486, E490, E602, E498, E485, E456, E487, E489, E562, E550, E555

See Section 9 for more details

5.1.5 Test results

Temperature of test environment	23°C
Humidity of test environment	56%
Pressure of test environment	102kPa

Setup Table

Band	27.5-29.25 GHz Dual Channel
Power Level	16.5 dBm
Channel Spacing	50 MHz
Mod Scheme	QPSK
Dual channels	28.2485 with 29.1875 GHz

Spurious Frequency (MHz)	Measured Spurious Level (dBm)	Difference to Limit (dB)
No spurious emissions found within 20 dB of limits		

Plots
9006-1 17-20 GHz
9006-1 20-23 GHz
9006-1 23-26.5 GHz
9006-1 28.2485 GHz+29.1875 GHz, 50 MHz BW, QPSK, 16.5 dBm, 26.5-30 GHz
9006-1 30-34 GHz
9006-1 34-38 GHz
9006-1 38-40 GHz
9006-1 40-44 GHz
9006-1 44-48 GHz
9006-1 48-52 GHz
9006-1 52-56 GHz
9006-1 56-60 GHz
9006-1 60-64 GHz
9006-1 64-68 GHz
9006-1 68-72 GHz
9006-1 72-75 GHz
9006-1 75-79 GHz
9006-1 79-83 GHz
9006-1 83-87 GHz
9006-1 87-91 GHz
9006-1 91-95 GHz
9006-1 95-99 GHz
9006-1 99-100 GHz

The plots referred to in the above table may be found in section 6.
Note: For additional emissions limitations at the band edge/spectrum mask, plots for all combinations of modulation schemes, channel bandwidths and Low and high channel frequencies have been shown in sections 5.6 and 5.7. All modes/channels specified in section 2.4 have been tested and any associated signals within 20dB of the limits reported, however, only middle (dual channel operation) channel plots are shown within this report to minimise report size.

LIMITS:
Part 101.111, -13dBm
Part 30.404, -13dBm

These results show that the EUT has PASSED this test.

The uncertainty gives a 95% confidence interval in the measurement. Expanded uncertainty (K=2) is as follows:
<± 2.8 dB

5.2 RF Power Output

5.2.1 Test methods

Test Requirements:	47CFR part 2J Part 2.1046 [Reference 4.1.3 of this report], 47CFR part 101C Part 101.113 [Reference 4.1.1 of this report] 47CFR part 30E Part 30.405 [Reference 4.1.2 of this report]
Test Method:	KDB 971168 D01 v02r02 [Reference 4.1.4 of this report], TIA-603-D [Reference 4.1.7 of this report]
Limits:	47CFR part 101C Part 101.113 [Reference 4.1.1 of this report] 47CFR part 30E Part 30.405 [Reference 4.1.2 of this report]

5.2.2 Configuration of EUT

The EUT was measured on a bench using a power meter connected to the external waveguide port.
The EUT was operated in TX3 to TX74 modes for this test covering all bandwidths, modulation schemes and channel settings.

5.2.3 Test procedure

Tests were made in accordance with the Test Method noted above using the measuring equipment listed in the 'Test Equipment' Section. Power meter reading stated is maximum power observed using an average power head.

Measurements were made on a test bench in site S.

5.2.4 Test equipment

E291-2, E632, E555

See Section 9 for more details

5.2.5 Test results

Temperature of test environment	22°C
Humidity of test environment	58%
Pressure of test environment	102kPa

Band	27.5-29.25 GHz Single Channel
Power Level	20.5 dBm
Channel Spacing	50 MHz
Mod Scheme	QPSK
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

Test conditions		Carrier Power (dBm) Low	Carrier Power (dBm) Mid	Carrier Power (dBm) High
Temp Ambient	Volts Nominal	20.90	20.50	20.40
Maximum TX Power observed (dBm)		20.90	20.50	20.40
Variation in TX power observed to nominal (dB)		0.4	0	-0.1

Band	27.5-29.25 GHz Dual Channel
Power Level	16.5 dBm
Channel Spacing	50 MHz
Mod Scheme	QPSK
Low1 channel	27.6045 (with 28.2485 on) GHz
Low2 channel	27.6045 (with 29.1875 on) GHz
Mid1 channel	28.2485 (with 27.6045 on) GHz
Mid2 channel	28.2485 (with 29.1875 on) GHz
High1 channel	29.1875 (with 27.6045 on) GHz
High2 channel	29.1875 (with 28.2485 on) GHz

Test conditions		Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)
		Low1	Low2	Mid1	Mid2	High1	High2
Temp Ambient	Volts Nominal	17.20	17.60	16.90	17.00	18.10	16.70
Maximum TX Power observed (dBm)		17.20	17.60	16.90	17.00	18.10	16.70
Variation in TX power observed to nominal (dB)		0.7	1.1	0.4	0.5	1.6	0.2

Band	27.5-29.25 GHz Single Channel
Power Level	20.5 dBm
Channel Spacing	100 MHz
Mod Scheme	QPSK
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

Test conditions		Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)
		Low	Mid	High
Temp Ambient	Volts Nominal	20.80	20.60	19.20
Maximum TX Power observed (dBm)		20.80	20.60	19.20
Variation in TX power observed to nominal (dB)		0.3	0.1	-1.3

Band	27.5-29.25 GHz Dual Channel
Power Level	16.5 dBm
Channel Spacing	100 MHz
Mod Scheme	QPSK
Low1 channel	27.6045 (with 28.2485 on) GHz
Low2 channel	27.6045 (with 29.1875 on) GHz
Mid1 channel	28.2485 (with 27.6045 on) GHz
Mid2 channel	28.2485 (with 29.1875 on) GHz
High1 channel	29.1875 (with 27.6045 on) GHz
High2 channel	29.1875 (with 28.2485 on) GHz

Test conditions		Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)
		Low1	Low2	Mid1	Mid2	High1	High2
Temp Ambient	Volts Nominal	17.00	17.40	16.80	16.90	17.90	16.50
Maximum TX Power observed (dBm)		17.00	17.40	16.80	16.90	17.90	16.50
Variation in TX power observed to nominal (dB)		0.5	0.9	0.3	0.4	1.4	0

Band	27.5-29.25 GHz Single Channel
Power Level	20.5 dBm
Channel Spacing	112 MHz
Mod Scheme	QPSK
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

Test conditions		Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)
		Low	Mid	High
Temp Ambient	Volts Nominal	20.70	20.50	19.20
Maximum TX Power observed (dBm)		20.70	20.50	19.20
Variation in TX power observed to nominal (dB)		0.2	0	-1.3

Band	27.5-29.25 GHz Dual Channel
Power Level	16.5 dBm
Channel Spacing	112 MHz
Mod Scheme	QPSK
Low1 channel	27.6045 (with 28.2485 on) GHz
Low2 channel	27.6045 (with 29.1875 on) GHz
Mid1 channel	28.2485 (with 27.6045 on) GHz
Mid2 channel	28.2485 (with 29.1875 on) GHz
High1 channel	29.1875 (with 27.6045 on) GHz
High2 channel	29.1875 (with 28.2485 on) GHz

Test conditions		Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)
		Low1	Low2	Mid1	Mid2	High1	High2
Temp Ambient	Volts Nominal	16.90	17.40	16.70	16.80	17.80	16.40
Maximum TX Power observed (dBm)		16.90	17.40	16.70	16.80	17.80	16.40
Variation in TX power observed to nominal (dB)		0.4	0.9	0.2	0.3	1.3	-0.1

Band	27.5-29.25 GHz Single Channel
Power Level	20 dBm
Channel Spacing	50 MHz
Mod Scheme	16QAM
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

Test conditions		Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)
		Low	Mid	High
Temp Ambient	Volts Nominal	19.50	20.50	19.20
Maximum TX Power observed (dBm)		19.50	20.50	19.20
Variation in TX power observed to nominal (dB)		-0.5	0.5	-0.8

Band	27.5-29.25 GHz Dual Channel
Power Level	16 dBm
Channel Spacing	50 MHz
Mod Scheme	16QAM
Low1 channel	27.6045 (with 28.2485 on) GHz
Low2 channel	27.6045 (with 29.1875 on) GHz
Mid1 channel	28.2485 (with 27.6045 on) GHz
Mid2 channel	28.2485 (with 29.1875 on) GHz
High1 channel	29.1875 (with 27.6045 on) GHz
High2 channel	29.1875 (with 28.2485 on) GHz

Test conditions		Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)
		Low1	Low2	Mid1	Mid2	High1	High2
Temp Ambient	Volts Nominal	17.10	16.40	16.80	15.90	16.50	15.70
Maximum TX Power observed (dBm)		17.10	16.40	16.80	15.90	16.50	15.70
Variation in TX power observed to nominal (dB)		1.1	0.4	0.8	-0.1	0.5	-0.3

Band	27.5-29.25 GHz Single Channel
Power Level	20 dBm
Channel Spacing	100 MHz
Mod Scheme	16QAM
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

Test conditions		Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)
		Low	Mid	High
Temp Ambient	Volts Nominal	19.40	20.50	19.10
Maximum TX Power observed (dBm)		19.40	20.50	19.10
Variation in TX power observed to nominal (dB)		-0.6	0.5	-0.9

Band	27.5-29.25 GHz Dual Channel
Power Level	16 dBm
Channel Spacing	100 MHz
Mod Scheme	16QAM
Low1 channel	27.6045 (with 28.2485 on) GHz
Low2 channel	27.6045 (with 29.1875 on) GHz
Mid1 channel	28.2485 (with 27.6045 on) GHz
Mid2 channel	28.2485 (with 29.1875 on) GHz
High1 channel	29.1875 (with 27.6045 on) GHz
High2 channel	29.1875 (with 28.2485 on) GHz

Test conditions		Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)
		Low1	Low2	Mid1	Mid2	High1	High2
Temp Ambient	Volts Nominal	17.00	16.20	16.70	15.80	16.40	15.60
Maximum TX Power observed (dBm)		17.00	16.20	16.70	15.80	16.40	15.60
Variation in TX power observed to nominal (dB)		1	0.2	0.7	-0.2	0.4	-0.4

Band	27.5-29.25 GHz Single Channel
Power Level	20 dBm
Channel Spacing	112 MHz
Mod Scheme	16QAM
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

Test conditions		Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)
		Low	Mid	High
Temp Ambient	Volts Nominal	19.30	20.40	19.10
Maximum TX Power observed (dBm)		19.30	20.40	19.10
Variation in TX power observed to nominal (dB)		-0.7	0.4	-0.9

Band	27.5-29.25 GHz Dual Channel
Power Level	16 dBm
Channel Spacing	112 MHz
Mod Scheme	16QAM
Low1 channel	27.6045 (with 28.2485 on) GHz
Low2 channel	27.6045 (with 29.1875 on) GHz
Mid1 channel	28.2485 (with 27.6045 on) GHz
Mid2 channel	28.2485 (with 29.1875 on) GHz
High1 channel	29.1875 (with 27.6045 on) GHz
High2 channel	29.1875 (with 28.2485 on) GHz

Test conditions		Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)
		Low1	Low2	Mid1	Mid2	High1	High2
Temp Ambient	Volts Nominal	16.90	16.20	16.60	15.70	16.30	15.50
Maximum TX Power observed (dBm)		16.90	16.20	16.60	15.70	16.30	15.50
Variation in TX power observed to nominal (dB)		0.9	0.2	0.6	-0.3	0.3	-0.5

Band	27.5-29.25 GHz Single Channel
Power Level	19 dBm
Channel Spacing	50 MHz
Mod Scheme	64QAM
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

Test conditions		Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)
		Low	Mid	High
Temp Ambient	Volts Nominal	19.70	19.40	19.40
Maximum TX Power observed (dBm)		19.70	19.40	19.40
Variation in TX power observed to nominal (dB)		0.7	0.4	0.4

Band	27.5-29.25 GHz Dual Channel
Power Level	15 dBm
Channel Spacing	50 MHz
Mod Scheme	64QAM
Low1 channel	27.6045 (with 28.2485 on) GHz
Low2 channel	27.6045 (with 29.1875 on) GHz
Mid1 channel	28.2485 (with 27.6045 on) GHz
Mid2 channel	28.2485 (with 29.1875 on) GHz
High1 channel	29.1875 (with 27.6045 on) GHz
High2 channel	29.1875 (with 28.2485 on) GHz

Test conditions		Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)
		Low1	Low2	Mid1	Mid2	High1	High2
Temp Ambient	Volts Nominal	16.30	15.50	16.00	16.10	15.80	15.90
Maximum TX Power observed (dBm)		16.30	15.50	16.00	16.10	15.80	15.90
Variation in TX power observed to nominal (dB)		1.3	0.5	1	1.1	0.8	0.9

Band	27.5-29.25 GHz Single Channel
Power Level	19 dBm
Channel Spacing	100 MHz
Mod Scheme	64QAM
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

Test conditions		Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)
		Low	Mid	High
Temp Ambient	Volts Nominal	19.60	19.40	18.40
Maximum TX Power observed (dBm)		19.60	19.40	18.40
Variation in TX power observed to nominal (dB)		0.6	0.4	-0.6

Band	27.5-29.25 GHz Dual Channel
Power Level	15 dBm
Channel Spacing	100 MHz
Mod Scheme	64QAM
Low1 channel	27.6045 (with 28.2485 on) GHz
Low2 channel	27.6045 (with 29.1875 on) GHz
Mid1 channel	28.2485 (with 27.6045 on) GHz
Mid2 channel	28.2485 (with 29.1875 on) GHz
High1 channel	29.1875 (with 27.6045 on) GHz
High2 channel	29.1875 (with 28.2485 on) GHz

Test conditions		Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)
		Low1	Low2	Mid1	Mid2	High1	High2
Temp Ambient	Volts Nominal	16.20	15.40	16.00	16.00	15.70	15.70
Maximum TX Power observed (dBm)		16.20	15.40	16.00	16.00	15.70	15.70
Variation in TX power observed to nominal (dB)		1.2	0.4	1	1	0.7	0.7

Band	27.5-29.25 GHz Single Channel
Power Level	19 dBm
Channel Spacing	112 MHz
Mod Scheme	64QAM
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

Test conditions		Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)
		Low	Mid	High
Temp Ambient	Volts Nominal	19.50	19.40	18.40
Maximum TX Power observed (dBm)		19.50	19.40	18.40
Variation in TX power observed to nominal (dB)		0.5	0.4	-0.6

Band	27.5-29.25 GHz Dual Channel
Power Level	15 dBm
Channel Spacing	112 MHz
Mod Scheme	64QAM
Low1 channel	27.6045 (with 28.2485 on) GHz
Low2 channel	27.6045 (with 29.1875 on) GHz
Mid1 channel	28.2485 (with 27.6045 on) GHz
Mid2 channel	28.2485 (with 29.1875 on) GHz
High1 channel	29.1875 (with 27.6045 on) GHz
High2 channel	29.1875 (with 28.2485 on) GHz

Test conditions		Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)
		Low1	Low2	Mid1	Mid2	High1	High2
Temp Ambient	Volts Nominal	16.10	15.30	15.90	15.90	15.60	15.70
Maximum TX Power observed (dBm)		16.10	15.30	15.90	15.90	15.60	15.70
Variation in TX power observed to nominal (dB)		1.1	0.3	0.9	0.9	0.6	0.7

Band	27.5-29.25 GHz Single Channel
Power Level	18 dBm
Channel Spacing	50 MHz
Mod Scheme	256QAM
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

Test conditions		Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)
		Low	Mid	High
Temp Ambient	Volts Nominal	18.80	18.50	18.50
Maximum TX Power observed (dBm)		18.80	18.50	18.50
Variation in TX power observed to nominal (dB)		0.8	0.5	0.5

Band	27.5-29.25 GHz Dual Channel
Power Level	14 dBm
Channel Spacing	50 MHz
Mod Scheme	256QAM
Low1 channel	27.6045 (with 28.2485 on) GHz
Low2 channel	27.6045 (with 29.1875 on) GHz
Mid1 channel	28.2485 (with 27.6045 on) GHz
Mid2 channel	28.2485 (with 29.1875 on) GHz
High1 channel	29.1875 (with 27.6045 on) GHz
High2 channel	29.1875 (with 28.2485 on) GHz

Test conditions		Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)
		Low1	Low2	Mid1	Mid2	High1	High2
Temp Ambient	Volts Nominal	15.50	13.40	14.80	14.20	13.80	13.90
Maximum TX Power observed (dBm)		15.50	13.40	14.80	14.20	13.80	13.90
Variation in TX power observed to nominal (dB)		1.5	-0.6	0.8	0.2	-0.2	-0.1

Band	27.5-29.25 GHz Single Channel
Power Level	18 dBm
Channel Spacing	100 MHz
Mod Scheme	256QAM
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

Test conditions		Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)
		Low	Mid	High
Temp Ambient	Volts Nominal	18.70	18.50	18.40
Maximum TX Power observed (dBm)		18.70	18.50	18.40
Variation in TX power observed to nominal (dB)		0.7	0.5	0.4

Band	27.5-29.25 GHz Dual Channel
Power Level	14 dBm
Channel Spacing	100 MHz
Mod Scheme	256QAM
Low1 channel	27.6045 (with 28.2485 on) GHz
Low2 channel	27.6045 (with 29.1875 on) GHz
Mid1 channel	28.2485 (with 27.6045 on) GHz
Mid2 channel	28.2485 (with 29.1875 on) GHz
High1 channel	29.1875 (with 27.6045 on) GHz
High2 channel	29.1875 (with 28.2485 on) GHz

Test conditions		Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)
		Low1	Low2	Mid1	Mid2	High1	High2
Temp Ambient	Volts Nominal	15.20	14.30	14.80	14.10	14.50	13.70
Maximum TX Power observed (dBm)		15.20	14.30	14.80	14.10	14.50	13.70
Variation in TX power observed to nominal (dB)		1.2	0.3	0.8	0.1	0.5	-0.3

Band	27.5-29.25 GHz Single Channel
Power Level	18 dBm
Channel Spacing	112 MHz
Mod Scheme	256QAM
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

Test conditions		Carrier Power (dBm)	Carrier Power (dBm)	Carrier Power (dBm)
		Low	Mid	High
Temp Ambient	Volts Nominal	18.60	18.50	18.50
Maximum TX Power observed (dBm)		18.60	18.50	18.50
Variation in TX power observed to nominal (dB)		0.6	0.5	0.5

Band	27.5-29.25 GHz Dual Channel
Power Level	14 dBm
Channel Spacing	112 MHz
Mod Scheme	256QAM
Low1 channel	27.6045 (with 28.2485 on) GHz
Low2 channel	27.6045 (with 29.1875 on) GHz
Mid1 channel	28.2485 (with 27.6045 on) GHz
Mid2 channel	28.2485 (with 29.1875 on) GHz
High1 channel	29.1875 (with 27.6045 on) GHz
High2 channel	29.1875 (with 28.2485 on) GHz

Test conditions		Carrier Power (dBm) Low1	Carrier Power (dBm) Low2	Carrier Power (dBm) Mid1	Carrier Power (dBm) Mid2	Carrier Power (dBm) High1	Carrier Power (dBm) High2
Temp Ambient	Volts Nominal	15.30	14.30	14.70	14.00	14.50	13.60
Maximum TX Power observed (dBm)		15.30	14.30	14.70	14.00	14.50	13.60
Variation in TX power observed to nominal (dB)		1.3	0.3	0.7	0	0.5	-0.4

LIMITS:
Part 101.113, +55dBW
Part 30.405, +55dBW

These results show that the EUT has PASSED this test.

The uncertainty gives a 95% confidence interval in the measurement. Expanded uncertainty (K=2) is as follows:
<± 1.0 dB

5.3 Frequency stability

5.3.1 Test methods

Test Requirements: 47CFR part 2J Part 2.1055 [Reference 4.1.3 of this report],
47CFR part 101C Part 101.107 [Reference 4.1.1 of this report]
47CFR part 30E Part 30.402 [Reference 4.1.2 of this report]

Test Method: KDB 971168 D01 v02r02 [Reference 4.1.4 of this report],
TIA-603-D [Reference 4.1.7 of this report]

Limits: 47CFR part 101C Part 101.107 [Reference 4.1.1 of this report]
47CFR part 30E Part 30.402 [Reference 4.1.2 of this report]

5.3.2 Configuration of EUT

The EUT was placed in a temperature controlled chamber. The EUT emissions were observed by means of connection to the waveguide port. The EUT was operated in TX1 and TX2 modes for this test.

5.3.3 Test procedure

Tests were made in accordance with the Test Method noted above, using the measuring equipment listed in the 'Test Equipment' Section. Temperature stability was achieved at each test level before taking measurements. The measurement was performed on a CW signal with a 10 MHz tone offset, which was accounted for in the measurement results. Frequency error is referenced to the channel frequency.

Tests were performed using Test Site S.

5.3.4 Test equipment

E555, L264, S036, TMS57, LPE377, E490

See Section 9 for more details

5.3.5 Test results

Temperature of test environment	23°C
Humidity of test environment	48%
Pressure of test environment	103kPa

Band	27.5-29.25 GHz
Power Level	10 dBm
Channel Spacing	50 MHz
Mod Scheme	CW tone
Low channel	27604.5 MHz
Mid channel	28248.5 MHz
High channel	29187.5 MHz

Test conditions		Frequency Error (MHz) Low	Frequency Error (MHz) Mid	Frequency Error (MHz) High
-30°C	Volts Nominal (110)	27604.500184	28248.500199	29187.500200
-20°C	Volts Nominal (110)	27604.500181	28248.500179	29187.500195
-10°C	Volts Nominal (110)	27604.500173	28248.500180	29187.500190
0°C	Volts Nominal (110)	27604.500170	28248.500185	29187.500179
10°C	Volts Nominal (110)	27604.500185	28248.500183	29187.500207
20°C	Volts Minimum (93.5)	27604.500162	28248.500185	29187.500194
	Volts Nominal (110)	27604.500151	28248.500159	29187.500171
	Volts Maximum (126.5)	27604.500158	28248.500173	29187.500158
30°C	Volts Nominal (110)	27604.500157	28248.500175	29187.500173
40°C	Volts Nominal (110)	27604.500187	28248.500177	29187.500177
50°C	Volts Nominal (110)	27604.500190	28248.500171	29187.500178

Max Frequency Error per chan (Hz)	+190 / 151	+199 / 159	+207 / 158
Max Frequency Error observed (MHz)	0.000190	0.000199	0.000207

Maximum variation observed was 0.000000709 %

LIMITS:
Part 101.107, +/-0.001%
Part 30.402, +/-0.001%

These results show that the EUT has PASSED this test.

The uncertainty gives a 95% confidence interval in the measurement. Expanded uncertainty (K=2) is as follows:
<± 0.7 ppm

5.4 Occupied bandwidth

5.4.1 Test methods

Test Requirements:	47CFR part 2J Part 2.1049 [Reference 4.1.3 of this report], 47CFR part 101C Part 101.109 [Reference 4.1.1 of this report] 47CFR part 30E Part 30.403 [Reference 4.1.2 of this report]
Test Method:	KDB 971168 D01 v02r02 [Reference 4.1.4 of this report], TIA-603-D [Reference 4.1.7 of this report]
Limits:	47CFR part 101C Part 101.109 [Reference 4.1.1 of this report] 47CFR part 30E Part 30.403 [Reference 4.1.2 of this report]

5.4.2 Configuration of EUT

The EUT was tested on a bench. The EUT was operated in TX3 to TX74 modes.

5.4.3 Test procedure

Tests were performed using Test Site S. Tests were made in accordance with the Test Method noted above using the measuring equipment noted in the 'Test Equipment' Section. A 2 MHz RBW, 3x VBW, auto sweep time and max hold settings were used for the 99% bandwidth. The EUT was set to each bandwidth/mod scheme in turn (see section 2.4) and 99% bandwidth recorded.

5.4.4 Test equipment

E555, E412, E486, E490, E602, E562, E485, E329

See Section 9 for more detail details

5.4.5 Test results

Temperature of test environment	23°C
Humidity of test environment	54%
Pressure of test environment	102kPa

Band	27.5-29.25 GHz Single Channel
Power Level	20.5 dBm
Channel Spacing	50 MHz
Mod Scheme	QPSK
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

	Low	Mid	High
99% Bandwidth (MHz)	47.2508	47.2566	47.2532
Plot reference	9006-1 27.6045 GHz, 50 MHz BW, QPSK, 20.5 dBm	9006-1 28.2485 GHz, 50 MHz BW, QPSK, 20.5 dBm	9006-1 29.1875 GHz, 50 MHz BW, QPSK, 20.5 dBm

Band	27.5-29.25 GHz Dual Channel
Power Level	16.5 dBm
Channel Spacing	50 MHz
Mod Scheme	QPSK
Low1 channel	27.6045 (with 28.2485 on) GHz
Low2 channel	27.6045 (with 29.1875 on) GHz
Mid1 channel	28.2485 (with 27.6045 on) GHz
Mid2 channel	28.2485 (with 29.1875 on) GHz
High1 channel	29.1875 (with 27.6045 on) GHz
High2 channel	29.1875 (with 28.2485 on) GHz

	Low1	Low2	Mid1	Mid2	High1	High2
99% Bandwidth (MHz)	47.2057	47.2642	47.285	47.261	47.2468	47.2125
Plot reference	9006-1 27.6045 GHz (+28.2485 GHz), 50 MHz BW, QPSK, 16.5 dBm	9006-1 27.6045 GHz (+29.1875 GHz), 50 MHz BW, QPSK, 16.5 dBm	9006-1 28.2485 GHz (+27.6045 GHz), 50 MHz BW, QPSK, 16.5 dBm	9006-1 28.2485 GHz (+29.1875 GHz), 50 MHz BW, QPSK, 16.5 dBm	9006-1 29.1875 GHz (+27.6045 GHz), 50 MHz BW, QPSK, 16.5 dBm	9006-1 29.1875 GHz (+28.2485 GHz), 50 MHz BW, QPSK, 16.5 dBm

Band	27.5-29.25 GHz Single Channel
Power Level	20.5 dBm
Channel Spacing	100 MHz
Mod Scheme	QPSK
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

	Low	Mid	High
99% Bandwidth (MHz)	93.3052	93.3743	93.3209
Plot reference	9006-1 27.6045 GHz, 100 MHz BW, QPSK, 20.5 dBm	9006-1 28.2485 GHz, 100 MHz BW, QPSK, 20.5 dBm	9006-1 29.1875 GHz, 100 MHz BW, QPSK, 20.5 dBm

Band	27.5-29.25 GHz Dual Channel
Power Level	16.5 dBm
Channel Spacing	100 MHz
Mod Scheme	QPSK
Low1 channel	27.6045 (with 28.2485 on) GHz
Low2 channel	27.6045 (with 29.1875 on) GHz
Mid1 channel	28.2485 (with 27.6045 on) GHz
Mid2 channel	28.2485 (with 29.1875 on) GHz
High1 channel	29.1875 (with 27.6045 on) GHz
High2 channel	29.1875 (with 28.2485 on) GHz

	Low1	Low2	Mid1	Mid2	High1	High2
99% Bandwidth (MHz)	93.1796	93.2411	93.291	93.5312	93.3385	93.2934
Plot reference	9006-1 27.6045 GHz (+28.2485 GHz), 100 MHz BW, QPSK, 16.5 dBm	9006-1 27.6045 GHz (+29.1875 GHz), 100 MHz BW, QPSK, 16.5 dBm	9006-1 28.2485 GHz (+27.6045 GHz), 100 MHz BW, QPSK, 16.5 dBm	9006-1 28.2485 GHz (+29.1875 GHz), 100 MHz BW, QPSK, 16.5 dBm	9006-1 29.1875 GHz (+27.6045 GHz), 100 MHz BW, QPSK, 16.5 dBm	9006-1 29.1875 GHz (+28.2485 GHz), 100 MHz BW, QPSK, 16.5 dBm

Band	27.5-29.25 GHz Single Channel
Power Level	20.5 dBm
Channel Spacing	112 MHz
Mod Scheme	QPSK
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

	Low	Mid	High
99% Bandwidth (MHz)	104.376	104.4412	104.4037
Plot reference	9006-1 27.6045 GHz, 112 MHz BW, QPSK, 20.5 dBm	9006-1 28.2485 GHz, 112 MHz BW, QPSK, 20.5 dBm	9006-1 29.1875 GHz, 112 MHz BW, QPSK, 20.5 dBm

Band	27.5-29.25 GHz Dual Channel
Power Level	16.5 dBm
Channel Spacing	112 MHz
Mod Scheme	QPSK
Low1 channel	27.6045 (with 28.2485 on) GHz
Low2 channel	27.6045 (with 29.1875 on) GHz
Mid1 channel	28.2485 (with 27.6045 on) GHz
Mid2 channel	28.2485 (with 29.1875 on) GHz
High1 channel	29.1875 (with 27.6045 on) GHz
High2 channel	29.1875 (with 28.2485 on) GHz

	Low1	Low2	Mid1	Mid2	High1	High2
99% Bandwidth (MHz)	104.2599	104.3079	104.3216	104.2983	104.308	104.3436
Plot reference	9006-1 27.6045 GHz (+28.2485 GHz), 112 MHz BW, QPSK, 16.5 dBm	9006-1 27.6045 GHz (+29.1875 GHz), 112 MHz BW, QPSK, 16.5 dBm	9006-1 28.2485 GHz (+27.6045 GHz), 112 MHz BW, QPSK, 16.5 dBm	9006-1 28.2485 GHz (+29.1875 GHz), 112 MHz BW, QPSK, 16.5 dBm	9006-1 29.1875 GHz (+27.6045 GHz), 112 MHz BW, QPSK, 16.5 dBm	9006-1 29.1875 GHz (+28.2485 GHz), 112 MHz BW, QPSK, 16.5 dBm

Band	27.5-29.25 GHz Single Channel
Power Level	20 dBm
Channel Spacing	50 MHz
Mod Scheme	16QAM
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

	Low	Mid	High
99% Bandwidth (MHz)	47.2558	47.3271	47.2626
Plot reference	9006-1 27.6045 GHz, 50 MHz BW, 16QAM, 20 dBm	9006-1 28.2485 GHz, 50 MHz BW, 16QAM, 20 dBm	9006-1 29.1875 GHz, 50 MHz BW, 16QAM, 20 dBm

Band	27.5-29.25 GHz Dual Channel
Power Level	16 dBm
Channel Spacing	50 MHz
Mod Scheme	16QAM
Low1 channel	27.6045 (with 28.2485 on) GHz
Low2 channel	27.6045 (with 29.1875 on) GHz
Mid1 channel	28.2485 (with 27.6045 on) GHz
Mid2 channel	28.2485 (with 29.1875 on) GHz
High1 channel	29.1875 (with 27.6045 on) GHz
High2 channel	29.1875 (with 28.2485 on) GHz

	Low1	Low2	Mid1	Mid2	High1	High2
99% Bandwidth (MHz)	47.2523	47.2552	47.3027	47.3221	47.1924	47.2716
Plot reference	9006-1 27.6045 GHz (+28.2485 GHz), 50 MHz BW, 16QAM, 16 dBm	9006-1 27.6045 GHz (+29.1875 GHz), 50 MHz BW, 16QAM, 16 dBm	9006-1 28.2485 GHz (+27.6045 GHz), 50 MHz BW, 16QAM, 16 dBm	9006-1 28.2485 GHz (+29.1875 GHz), 50 MHz BW, 16QAM, 16 dBm	9006-1 29.1875 GHz (+27.6045 GHz), 50 MHz BW, 16QAM, 16 dBm	9006-1 29.1875 GHz (+28.2485 GHz), 50 MHz BW, 16QAM, 16 dBm

Band	27.5-29.25 GHz Single Channel
Power Level	20 dBm
Channel Spacing	100 MHz
Mod Scheme	16QAM
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

	Low	Mid	High
99% Bandwidth (MHz)	93.268	93.4134	93.3274
Plot reference	9006-1 27.6045 GHz, 100 MHz BW, 16QAM, 20 dBm	9006-1 28.2485 GHz, 100 MHz BW, 16QAM, 20 dBm	9006-1 29.1875 GHz, 100 MHz BW, 16QAM, 20 dBm

Band	27.5-29.25 GHz Dual Channel
Power Level	16 dBm
Channel Spacing	100 MHz
Mod Scheme	16QAM
Low1 channel	27.6045 (with 28.2485 on) GHz
Low2 channel	27.6045 (with 29.1875 on) GHz
Mid1 channel	28.2485 (with 27.6045 on) GHz
Mid2 channel	28.2485 (with 29.1875 on) GHz
High1 channel	29.1875 (with 27.6045 on) GHz
High2 channel	29.1875 (with 28.2485 on) GHz

	Low1	Low2	Mid1	Mid2	High1	High2
99% Bandwidth (MHz)	93.2681	93.2806	93.2925	93.4232	93.3214	93.4454
Plot reference	9006-1 27.6045 GHz (+28.2485 GHz), 100 MHz BW, 16QAM, 16 dBm	9006-1 27.6045 GHz (+29.1875 GHz), 100 MHz BW, 16QAM, 16 dBm	9006-1 28.2485 GHz (+27.6045 GHz), 100 MHz BW, 16QAM, 16 dBm	9006-1 28.2485 GHz (+29.1875 GHz), 100 MHz BW, 16QAM, 16 dBm	9006-1 29.1875 GHz (+27.6045 GHz), 100 MHz BW, 16QAM, 16 dBm	9006-1 29.1875 GHz (+28.2485 GHz), 100 MHz BW, 16QAM, 16 dBm

Band	27.5-29.25 GHz Single Channel
Power Level	20 dBm
Channel Spacing	112 MHz
Mod Scheme	16QAM
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

	Low	Mid	High
99% Bandwidth (MHz)	104.3865	104.3517	104.4079
Plot reference	9006-1 27.6045 GHz, 112 MHz BW, 16QAM, 20 dBm	9006-1 28.2485 GHz, 112 MHz BW, 16QAM, 20 dBm	9006-1 29.1875 GHz, 112 MHz BW, 16QAM, 20 dBm

Band	27.5-29.25 GHz Dual Channel
Power Level	16 dBm
Channel Spacing	112 MHz
Mod Scheme	16QAM
Low1 channel	27.6045 (with 28.2485 on) GHz
Low2 channel	27.6045 (with 29.1875 on) GHz
Mid1 channel	28.2485 (with 27.6045 on) GHz
Mid2 channel	28.2485 (with 29.1875 on) GHz
High1 channel	29.1875 (with 27.6045 on) GHz
High2 channel	29.1875 (with 28.2485 on) GHz

	Low1	Low2	Mid1	Mid2	High1	High2
99% Bandwidth (MHz)	104.3442	104.2467	104.3402	1004.4096	104.3959	104.4336
Plot reference	9006-1 27.6045 GHz (+28.2485 GHz), 112 MHz BW, 16QAM, 16 dBm	9006-1 27.6045 GHz (+29.1875 GHz), 112 MHz BW, 16QAM, 16 dBm	9006-1 28.2485 GHz (+27.6045 GHz), 112 MHz BW, 16QAM, 16 dBm	9006-1 28.2485 GHz (+29.1875 GHz), 112 MHz BW, 16QAM, 16 dBm	9006-1 29.1875 GHz (+27.6045 GHz), 112 MHz BW, 16QAM, 16 dBm	9006-1 29.1875 GHz (+28.2485 GHz), 112 MHz BW, 16QAM, 16 dBm

Band	27.5-29.25 GHz Single Channel
Power Level	19 dBm
Channel Spacing	50 MHz
Mod Scheme	64QAM
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

	Low	Mid	High
99% Bandwidth (MHz)	47.2767	47.2614	47.2697
Plot reference	9006-1 27.6045 GHz, 50 MHz BW, 64QAM, 19 dBm	9006-1 28.2485 GHz, 50 MHz BW, 64QAM, 19 dBm	9006-1 29.1875 GHz, 50 MHz BW, 64QAM, 19 dBm

Band	27.5-29.25 GHz Dual Channel
Power Level	15 dBm
Channel Spacing	50 MHz
Mod Scheme	64QAM
Low1 channel	27.6045 (with 28.2485 on) GHz
Low2 channel	27.6045 (with 29.1875 on) GHz
Mid1 channel	28.2485 (with 27.6045 on) GHz
Mid2 channel	28.2485 (with 29.1875 on) GHz
High1 channel	29.1875 (with 27.6045 on) GHz
High2 channel	29.1875 (with 28.2485 on) GHz

	Low1	Low2	Mid1	Mid2	High1	High2
99% Bandwidth (MHz)	47.1765	47.2458	47.2739	47.2614	47.211	47.238
Plot reference	9006-1 27.6045 GHz (+28.2485 GHz), 50 MHz BW, 64QAM, 15 dBm	9006-1 27.6045 GHz (+29.1875 GHz), 50 MHz BW, 64QAM, 15 dBm	9006-1 28.2485 GHz (+27.6045 GHz), 50 MHz BW, 64QAM, 15 dBm	9006-1 28.2485 GHz (+29.1875 GHz), 50 MHz BW, 64QAM, 15 dBm	9006-1 29.1875 GHz (+27.6045 GHz), 50 MHz BW, 64QAM, 15 dBm	9006-1 29.1875 GHz (+28.2485 GHz), 50 MHz BW, 64QAM, 15 dBm

Band	27.5-29.25 GHz Single Channel
Power Level	19 dBm
Channel Spacing	100 MHz
Mod Scheme	64QAM
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

	Low	Mid	High
99% Bandwidth (MHz)	93.3248	93.3931	93.3411
Plot reference	9006-1 27.6045 GHz, 100 MHz BW, 64QAM, 19 dBm	9006-1 28.2485 GHz, 100 MHz BW, 64QAM, 19 dBm	9006-1 29.1875 GHz, 100 MHz BW, 64QAM, 19 dBm

Band	27.5-29.25 GHz Dual Channel
Power Level	15 dBm
Channel Spacing	100 MHz
Mod Scheme	64QAM
Low1 channel	27.6045 (with 28.2485 on) GHz
Low2 channel	27.6045 (with 29.1875 on) GHz
Mid1 channel	28.2485 (with 27.6045 on) GHz
Mid2 channel	28.2485 (with 29.1875 on) GHz
High1 channel	29.1875 (with 27.6045 on) GHz
High2 channel	29.1875 (with 28.2485 on) GHz

	Low1	Low2	Mid1	Mid2	High1	High2
99% Bandwidth (MHz)	93.2313	93.2225	93.3084	93.3046	93.2538	93.2915
Plot reference	9006-1 27.6045 GHz (+28.2485 GHz), 100 MHz BW, 64QAM, 15 dBm	9006-1 27.6045 GHz (+29.1875 GHz), 100 MHz BW, 64QAM, 15 dBm	9006-1 28.2485 GHz (+27.6045 GHz), 100 MHz BW, 64QAM, 15 dBm	9006-1 28.2485 GHz (+29.1875 GHz), 100 MHz BW, 64QAM, 15 dBm	9006-1 29.1875 GHz (+27.6045 GHz), 100 MHz BW, 64QAM, 15 dBm	9006-1 29.1875 GHz (+28.2485 GHz), 100 MHz BW, 64QAM, 15 dBm

Band	27.5-29.25 GHz Single Channel
Power Level	19 dBm
Channel Spacing	112 MHz
Mod Scheme	64QAM
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

	Low	Mid	High
99% Bandwidth (MHz)	104.3691	104.4617	104.3932
Plot reference	9006-1 27.6045 GHz, 112 MHz BW, 64QAM, 19 dBm	9006-1 28.2485 GHz, 112 MHz BW, 64QAM, 19 dBm	9006-1 29.1875 GHz, 112 MHz BW, 64QAM, 19 dBm

Band	27.5-29.25 GHz Dual Channel
Power Level	15 dBm
Channel Spacing	112 MHz
Mod Scheme	64QAM
Low1 channel	27.6045 (with 28.2485 on) GHz
Low2 channel	27.6045 (with 29.1875 on) GHz
Mid1 channel	28.2485 (with 27.6045 on) GHz
Mid2 channel	28.2485 (with 29.1875 on) GHz
High1 channel	29.1875 (with 27.6045 on) GHz
High2 channel	29.1875 (with 28.2485 on) GHz

	Low1	Low2	Mid1	Mid2	High1	High2
99% Bandwidth (MHz)	104.1994	104.2343	104.3789	104.3451	104.4015	105.2418
Plot reference	9006-1 27.6045 GHz (+28.2485 GHz), 112 MHz BW, 64QAM, 15 dBm	9006-1 27.6045 GHz (+29.1875 GHz), 112 MHz BW, 64QAM, 15 dBm	9006-1 28.2485 GHz (+27.6045 GHz), 112 MHz BW, 64QAM, 15 dBm	9006-1 28.2485 GHz (+29.1875 GHz), 112 MHz BW, 64QAM, 15 dBm	9006-1 29.1875 GHz (+27.6045 GHz), 112 MHz BW, 64QAM, 15 dBm	9006-1 29.1875 GHz (+28.2485 GHz), 112 MHz BW, 64QAM, 15 dBm

Band	27.5-29.25 GHz Single Channel
Power Level	18 dBm
Channel Spacing	50 MHz
Mod Scheme	256QAM
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

	Low	Mid	High
99% Bandwidth (MHz)	47.2227	47.2371	47.1259
Plot reference	9006-1 27.6045 GHz, 50 MHz BW, 256QAM, 18 dBm	9006-1 28.2485 GHz, 50 MHz BW, 256QAM, 18 dBm	9006-1 29.1875 GHz, 50 MHz BW, 256QAM, 18 dBm

Band	27.5-29.25 GHz Dual Channel
Power Level	14 dBm
Channel Spacing	50 MHz
Mod Scheme	256QAM
Low1 channel	27.6045 (with 28.2485 on) GHz
Low2 channel	27.6045 (with 29.1875 on) GHz
Mid1 channel	28.2485 (with 27.6045 on) GHz
Mid2 channel	28.2485 (with 29.1875 on) GHz
High1 channel	29.1875 (with 27.6045 on) GHz
High2 channel	29.1875 (with 28.2485 on) GHz

	Low1	Low2	Mid1	Mid2	High1	High2
99% Bandwidth (MHz)	47.1997	47.2378	47.2444	47.2517	47.2196	47.1936
Plot reference	9006-1 27.6045 GHz (+28.2485 GHz), 50 MHz BW, 256QAM, 14 dBm	9006-1 27.6045 GHz (+29.1875 GHz), 50 MHz BW, 256QAM, 14 dBm	9006-1 28.2485 GHz (+27.6045 GHz), 50 MHz BW, 256QAM, 14 dBm	9006-1 28.2485 GHz (+29.1875 GHz), 50 MHz BW, 256QAM, 14 dBm	9006-1 29.1875 GHz (+27.6045 GHz), 50 MHz BW, 256QAM, 14 dBm	9006-1 29.1875 GHz (+28.2485 GHz), 50 MHz BW, 256QAM, 14 dBm

Band	27.5-29.25 GHz Single Channel
Power Level	18 dBm
Channel Spacing	100 MHz
Mod Scheme	256QAM
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

	Low	Mid	High
99% Bandwidth (MHz)	93.3363	93.3561	93.2293
Plot reference	9006-1 27.6045 GHz, 100 MHz BW, 256QAM, 18 dBm	9006-1 28.2485 GHz, 100 MHz BW, 256QAM, 18 dBm	9006-1 29.1875 GHz, 100 MHz BW, 256QAM, 18 dBm

Band	27.5-29.25 GHz Dual Channel
Power Level	14 dBm
Channel Spacing	100 MHz
Mod Scheme	256QAM
Low1 channel	27.6045 (with 28.2485 on) GHz
Low2 channel	27.6045 (with 29.1875 on) GHz
Mid1 channel	28.2485 (with 27.6045 on) GHz
Mid2 channel	28.2485 (with 29.1875 on) GHz
High1 channel	29.1875 (with 27.6045 on) GHz
High2 channel	29.1875 (with 28.2485 on) GHz

	Low1	Low2	Mid1	Mid2	High1	High2
99% Bandwidth (MHz)	93.171	93.2514	93.3171	93.3404	93.3603	93.2973
Plot reference	9006-1 27.6045 GHz (+28.2485 GHz), 100 MHz BW, 256QAM, 14 dBm	9006-1 27.6045 GHz (+29.1875 GHz), 100 MHz BW, 256QAM, 14 dBm	9006-1 28.2485 GHz (+27.6045 GHz), 100 MHz BW, 256QAM, 14 dBm	9006-1 28.2485 GHz (+29.1875 GHz), 100 MHz BW, 256QAM, 14 dBm	9006-1 29.1875 GHz (+27.6045 GHz), 100 MHz BW, 256QAM, 14 dBm	9006-1 29.1875 GHz (+28.2485 GHz), 100 MHz BW, 256QAM, 14 dBm

Band	27.5-29.25 GHz Single Channel
Power Level	18 dBm
Channel Spacing	112 MHz
Mod Scheme	256QAM
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

	Low	Mid	High
99% Bandwidth (MHz)	104.4052	104.4322	104.342
Plot reference	9006-1 27.6045 GHz, 112 MHz BW, 256QAM, 18 dBm	9006-1 28.2485 GHz, 112 MHz BW, 256QAM, 18 dBm	9006-1 29.1875 GHz, 112 MHz BW, 256QAM, 18 dBm

Band	27.5-29.25 GHz Dual Channel
Power Level	14 dBm
Channel Spacing	112 MHz
Mod Scheme	256QAM
Low1 channel	27.6045 (with 28.2485 on) GHz
Low2 channel	27.6045 (with 29.1875 on) GHz
Mid1 channel	28.2485 (with 27.6045 on) GHz
Mid2 channel	28.2485 (with 29.1875 on) GHz
High1 channel	29.1875 (with 27.6045 on) GHz
High2 channel	29.1875 (with 28.2485 on) GHz

	Low1	Low2	Mid1	Mid2	High1	High2
99% Bandwidth (MHz)	104.193	104.2335	104.4083	104.4208	104.3964	105.1655
Plot reference	9006-1 27.6045 GHz (+28.2485 GHz), 112 MHz BW, 256QAM, 14 dBm	9006-1 27.6045 GHz (+29.1875 GHz), 112 MHz BW, 256QAM, 14 dBm	9006-1 28.2485 GHz (+27.6045 GHz), 112 MHz BW, 256QAM, 14 dBm	9006-1 28.2485 GHz (+29.1875 GHz), 112 MHz BW, 256QAM, 14 dBm	9006-1 29.1875 GHz (+27.6045 GHz), 112 MHz BW, 256QAM, 14 dBm	9006-1 29.1875 GHz (+28.2485 GHz), 112 MHz BW, 256QAM, 14 dBm

Analyser plots for the 99% bandwidth can be found in Section 6 of this report.

LIMITS:
Part 101.109: 150 MHz (band 29.1 – 29.25 GHz)
Part 30.403: 850 MHz (band 27.5 – 28.35 GHz)

These results show that the EUT has PASSED this test.

The uncertainty gives a 95% confidence interval in the measurement. Expanded uncertainty (K=2) is as follows:
<± 1.9 %

5.5 Field strength of spurious radiations

5.5.1 Test methods

Test Requirements:	47CFR part 2J Part 2.1053 [Reference 4.1.3 of this report], 47CFR part 101C Part 101.111 [Reference 4.1.1 of this report] 47CFR part 30E Part 30.404 [Reference 4.1.2 of this report]
Test Method:	KDB 971168 D01 v02r02 [Reference 4.1.4 of this report], TIA-603-D [Reference 4.1.7 of this report]
Limits:	47CFR part 101C Part 101.111 [Reference4.1.1 of this report] 47CFR part 30E Part 30.404 [Reference 4.1.2 of this report]

5.5.2 Configuration of EUT

The EUT was tested in an ALSE and ambient conditions were monitored. The EUT was examined in its declared normal use position. All test modes specified in section 2.4 were initially checked; QPSK modulation scheme using 50 MHz bandwidth settings were found to be worst case for emissions and, therefore, the EUT was operated in TX3, TX15, TX27, TX39, TX51 and TX63 single and dual channel modes for this test.

5.5.3 Test procedure

Tests were made in accordance with the Test Method noted above, using the measuring equipment listed in the 'Test Equipment' Section. Peak field strength from the EUT was maximised by rotating it 360 degrees. An RMS detector was used for final measurements.

25MHz - 1GHz.
The measuring antenna was scanned 1 - 4m in both Horizontal and Vertical polarisations. Substitution method was performed using tuned dipoles / a calibrated bi-conical antenna. Measurement distance of 3metres was used.
1GHz – 100GHz.
The measuring antenna was used in both Horizontal and Vertical polarisations. Substitution method was performed using standard gain horn antennas. Measurement distances used were: 1 – 6 GHz at 3metres, 6 – 18 GHz at 1.2metres, 18 – 75 GHz at 0.3metres, & 75 – 100 GHz at 0.1metres

The EUT was tested in Site B.

5.5.4 Test equipment

E005, E268, E296-2, E296-4, E296-5, E296-6, E327, E329, E330, E428, E433, E453, E503, E579, E580, E602, E642, TMS78, TMS79, TMS814, E268, E433, TMS78, TMS79, E454, E453, E455

See Section 9 for more details

5.5.5 Test results

Temperature of test environment	17°C
Humidity of test environment	52%
Pressure of test environment	103kPa

Setup Table

Band	27.5-29.25 GHz Single Channel
Power Level	20.5 dBm
Channel Spacing	50 MHz
Mod Scheme	QPSK
Low channel	27.6045 GHz

Spurious Frequency (MHz)	Measured Spurious Level (dBm)	Difference to Limit (dB)	Antenna Polarisation	EUT Polarisation
No spurious emissions found within 20 dB of limits				

Setup Table

Band	27.5-29.25 GHz Single Channel
Power Level	20.5 dBm
Channel Spacing	50 MHz
Mod Scheme	QPSK
Mid channel	28.2485 GHz

Spurious Frequency (MHz)	Measured Spurious Level (dBm)	Difference to Limit (dB)	Antenna Polarisation	EUT Polarisation
No spurious emissions found within 20 dB of limits				

Setup Table

Band	27.5-29.25 GHz Single Channel
Power Level	20.5 dBm
Channel Spacing	50 MHz
Mod Scheme	QPSK
High channel	29.1875 GHz

Spurious Frequency (MHz)	Measured Spurious Level (dBm)	Difference to Limit (dB)	Antenna Polarisation	EUT Polarisation
No spurious emissions found within 20 dB of limits				

Setup Table

Band	27.5-29.25 GHz Dual Channel
Power Level	16.5 dBm
Channel Spacing	50 MHz
Mod Scheme	QPSK
Low channel	27.6045 (with 28.2485 on) GHz

Spurious Frequency (MHz)	Measured Spurious Level (dBm)	Difference to Limit (dB)	Antenna Polarisation	EUT Polarisation
No spurious emissions found within 20 dB of limits				

Setup Table

Band	27.5-29.25 GHz Dual Channel
Power Level	16.5 dBm
Channel Spacing	50 MHz
Mod Scheme	QPSK
Mid channel	27.6045 (with 29.1875 on) GHz

Spurious Frequency (MHz)	Measured Spurious Level (dBm)	Difference to Limit (dB)	Antenna Polarisation	EUT Polarisation
No spurious emissions found within 20 dB of limits				

Setup Table

Band	27.5-29.25 GHz Dual Channel
Power Level	16.5 dBm
Channel Spacing	50 MHz
Mod Scheme	QPSK
High channel	28.2485 (with 29.1875 on) GHz

Spurious Frequency (MHz)	Measured Spurious Level (dBm)	Difference to Limit (dB)	Antenna Polarisation	EUT Polarisation
No spurious emissions found within 20 dB of limits				

No spurious emissions found within 20dB of limits for any of the channel frequencies, in combination with the channel bandwidths & modulation schemes.

LIMITS:
Part 101.111, -13dBm
Part 30.404, -13dBm

These results show that the EUT has PASSED this test.

The uncertainty gives a 95% confidence interval in the measurement. Expanded uncertainty (K=2) is as follows: 25MHz - 1GHz ± 3.9 dB, 1 – 18 GHz ±3.5dB, 18 – 26.5 GHz ±3.9dB, 26.5 – 60 GHz ±3.9dB, 60 – 110 GHz ±4.4dB

5.6 Band edge / spectrum mask additional emissions limitations

5.6.1 Test methods

Test Requirements:	47CFR part 2J Part 2.1051 [Reference 4.1.3 of this report], 47CFR part 101C Part 101.113 [Reference 4.1.1 of this report] 47CFR part 30E Part 30.404 [Reference 4.1.2 of this report]
Test Method:	KDB 971168 D01 v02r02 [Reference 4.1.4 of this report], TIA-603-D [Reference 4.1.7 of this report]
Limits:	47CFR part 101C Part 101.111 [Reference 4.1.1 of this report] 47CFR part 30E Part 30.404 [Reference 4.1.2 of this report]

5.6.2 Configuration of EUT

The EUT was operated on a test bench. Measurements were made at the waveguide port. The EUT was operated in TX3 to TX74 modes for this test.

5.6.3 Test procedure

Tests were made in accordance with the Test Method noted above, using the measuring equipment listed in the 'Test Equipment' Section. A 1 MHz RBW, 3x VBW, auto sweep time and max hold settings were used to show the band edge. All modulation schemes / rates in combination with channel bandwidths and all channel frequency combinations were assessed and plotted. (See section 2.4 for modes details).

The EUT was tested in Site S.

5.6.4 Test equipment

E412, E555, E486, E490, E602, E562, E485, E329

See Section 9 for more details

5.6.5 Test results

Temperature of test environment	24°C
Humidity of test environment	56%
Pressure of test environment	102kPa

Band	27.5-29.25 GHz Single Channel
Power Level	20.5 dBm
Channel Spacing	50 MHz
Mod Scheme	QPSK
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

	Low	Mid	High
Nominal plot reference	9006-1 27.6045 GHz, 50 MHz BW, QPSK, 20.5 dBm	9006-1 28.2485 GHz, 50 MHz BW, QPSK, 20.5 dBm	9006-1 29.1875 GHz, 50 MHz BW, QPSK, 20.5 dBm

Band	27.5-29.25 GHz Dual Channel
Power Level	16.5 dBm
Channel Spacing	50 MHz
Mod Scheme	QPSK
Low channel	27.6045 (with 28.2485 on) GHz
Mid channel	27.6045 (with 29.1875 on) GHz
High channel	28.2485 (with 29.1875 on) GHz

	Low	Mid	High
Nominal plot reference	9006-1 27.6045+28.2485 GHz, 50 MHz BW, QPSK, 16.5 dBm	9006-1 27.6045+29.1875 GHz, 50 MHz BW, QPSK, 16.5 dBm	9006-1 28.2485+29.1875 GHz, 50 MHz BW, QPSK, 16.5 dBm

Band	27.5-29.25 GHz Single Channel
Power Level	20.5 dBm
Channel Spacing	100 MHz
Mod Scheme	QPSK
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

	Low	Mid	High
Nominal plot reference	9006-1 27.6045 GHz, 100 MHz BW, QPSK, 20.5 dBm	9006-1 28.2485 GHz, 100 MHz BW, QPSK, 20.5 dBm	9006-1 29.1875 GHz, 100 MHz BW, QPSK, 20.5 dBm

Band	27.5-29.25 GHz Dual Channel
Power Level	16.5 dBm
Channel Spacing	100 MHz
Mod Scheme	QPSK
Low channel	27.6045 (with 28.2485 on) GHz
Mid channel	27.6045 (with 29.1875 on) GHz
High channel	28.2485 (with 29.1875 on) GHz

	Low	Mid	High
Nominal plot reference	9006-1 27.6045+28.2485 GHz, 100 MHz BW, QPSK, 16.5 dBm	9006-1 27.6045+29.1875 GHz, 100 MHz BW, QPSK, 16.5 dBm	9006-1 28.2485+29.1875 GHz, 100 MHz BW, QPSK, 16.5 dBm

Band	27.5-29.25 GHz Single Channel
Power Level	20.5 dBm
Channel Spacing	112 MHz
Mod Scheme	QPSK
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

	Low	Mid	High
Nominal plot reference	9006-1 27.6045 GHz, 112 MHz BW, QPSK, 20.5 dBm	9006-1 28.2485 GHz, 100 MHz BW, QPSK, 20.5 dBm	9006-1 29.1875 GHz, 100 MHz BW, QPSK, 20.5 dBm

Band	27.5-29.25 GHz Dual Channel
Power Level	16.5 dBm
Channel Spacing	112 MHz
Mod Scheme	QPSK
Low channel	27.6045 (with 28.2485 on) GHz
Mid channel	27.6045 (with 29.1875 on) GHz
High channel	28.2485 (with 29.1875 on) GHz

	Low	Mid	High
Nominal plot reference	9006-1 27.6045+28.2485 GHz, 112 MHz BW, QPSK, 16.5 dBm	9006-1 27.6045+29.1875 GHz, 112 MHz BW, QPSK, 16.5 dBm	9006-1 28.2485+29.1875 GHz, 112 MHz BW, QPSK, 16.5 dBm

Band	27.5-29.25 GHz Single Channel
Power Level	20 dBm
Channel Spacing	50 MHz
Mod Scheme	16QAM
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

	Low	Mid	High
Nominal plot reference	9006-1 27.6045 GHz, 50 MHz BW, 16QAM, 20 dBm	9006-1 28.2485 GHz, 50 MHz BW, 16QAM, 20 dBm	9006-1 29.1875 GHz, 50 MHz BW, 16QAM, 20 dBm

Band	27.5-29.25 GHz Dual Channel
Power Level	16 dBm
Channel Spacing	50 MHz
Mod Scheme	16QAM
Low channel	27.6045 (with 28.2485 on) GHz
Mid channel	27.6045 (with 29.1875 on) GHz
High channel	28.2485 (with 29.1875 on) GHz

	Low	Mid	High
Nominal plot reference	9006-1 27.6045+28.2485 GHz, 50 MHz BW, 16QAM, 16 dBm	9006-1 27.6045+29.1875 GHz, 50 MHz BW, 16QAM, 16 dBm	9006-1 28.2485+29.1875 GHz, 50 MHz BW, 16QAM, 16 dBm

Band	27.5-29.25 GHz Single Channel
Power Level	20 dBm
Channel Spacing	100 MHz
Mod Scheme	16QAM
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

	Low	Mid	High
Nominal plot reference	9006-1 27.6045 GHz, 100 MHz BW, 16QAM, 20 dBm	9006-1 28.2485 GHz, 100 MHz BW, 16QAM, 20 dBm	9006-1 29.1875 GHz, 100 MHz BW, 16QAM, 20 dBm

Band	27.5-29.25 GHz Dual Channel
Power Level	16 dBm
Channel Spacing	100 MHz
Mod Scheme	16QAM
Low channel	27.6045 (with 28.2485 on) GHz
Mid channel	27.6045 (with 29.1875 on) GHz
High channel	28.2485 (with 29.1875 on) GHz

	Low	Mid	High
Nominal plot reference	9006-1 27.6045+28.2485 GHz, 100 MHz BW, 16QAM, 16 dBm	9006-1 27.6045+29.1875 GHz, 100 MHz BW, 16QAM, 16 dBm	9006-1 28.2485+29.1875 GHz, 100 MHz BW, 16QAM, 16 dBm

Band	27.5-29.25 GHz Single Channel
Power Level	20 dBm
Channel Spacing	112 MHz
Mod Scheme	16QAM
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

	Low	Mid	High
Nominal plot reference	9006-1 27.6045 GHz, 112 MHz BW, 16QAM, 20 dBm	9006-1 28.2485 GHz, 112 MHz BW, 16QAM, 20 dBm	9006-1 29.1875 GHz, 112 MHz BW, 16QAM, 20 dBm

Band	27.5-29.25 GHz Dual Channel
Power Level	16 dBm
Channel Spacing	112 MHz
Mod Scheme	16QAM
Low channel	27.6045 (with 28.2485 on) GHz
Mid channel	27.6045 (with 29.1875 on) GHz
High channel	28.2485 (with 29.1875 on) GHz

	Low	Mid	High
Nominal plot reference	9006-1 27.6045+28.2485 GHz, 112 MHz BW, 16QAM, 16 dBm	9006-1 27.6045+29.1875 GHz, 112 MHz BW, 16QAM, 16 dBm	9006-1 28.2485+29.1875 GHz, 112 MHz BW, 16QAM, 16 dBm

Band	27.5-29.25 GHz Single Channel
Power Level	19 dBm
Channel Spacing	50 MHz
Mod Scheme	64QAM
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

	Low	Mid	High
Nominal plot reference	9006-1 27.6045 GHz, 50 MHz BW, 64QAM, 19 dBm	9006-1 28.2485 GHz, 50 MHz BW, 64QAM, 19 dBm	9006-1 29.1875 GHz, 50 MHz BW, 64QAM, 19 dBm

Band	27.5-29.25 GHz Dual Channel
Power Level	15 dBm
Channel Spacing	50 MHz
Mod Scheme	64QAM
Low channel	27.6045 (with 28.2485 on) GHz
Mid channel	27.6045 (with 29.1875 on) GHz
High channel	28.2485 (with 29.1875 on) GHz

	Low	Mid	High
Nominal plot reference	9006-1 27.6045+28.2485 GHz, 50 MHz BW, 64QAM, 15 dBm	9006-1 27.6045+29.1875 GHz, 50 MHz BW, 64QAM, 15 dBm	9006-1 28.2485+29.1875 GHz, 50 MHz BW, 64QAM, 15 dBm

Band	27.5-29.25 GHz Single Channel
Power Level	19 dBm
Channel Spacing	100 MHz
Mod Scheme	64QAM
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

	Low	Mid	High
Nominal plot reference	9006-1 27.6045 GHz, 100 MHz BW, 64QAM, 19 dBm	9006-1 28.2485 GHz, 100 MHz BW, 64QAM, 19 dBm	9006-1 29.1875 GHz, 100 MHz BW, 64QAM, 19 dBm

Band	27.5-29.25 GHz Dual Channel
Power Level	15 dBm
Channel Spacing	100 MHz
Mod Scheme	64QAM
Low channel	27.6045 (with 28.2485 on) GHz
Mid channel	27.6045 (with 29.1875 on) GHz
High channel	28.2485 (with 29.1875 on) GHz

	Low	Mid	High
Nominal plot reference	9006-1 27.6045+28.2485 GHz, 100 MHz BW, 64QAM, 15 dBm	9006-1 27.6045+29.1875 GHz, 100 MHz BW, 64QAM, 15 dBm	9006-1 28.2485+29.1875 GHz, 100 MHz BW, 64QAM, 15 dBm

Band	27.5-29.25 GHz Single Channel
Power Level	19 dBm
Channel Spacing	112 MHz
Mod Scheme	64QAM
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

	Low	Mid	High
Nominal plot reference	9006-1 27.6045 GHz, 112 MHz BW, 64QAM, 19 dBm	9006-1 28.2485 GHz, 112 MHz BW, 64QAM, 19 dBm	9006-1 29.1875 GHz, 112 MHz BW, 64QAM, 19 dBm

Band	27.5-29.25 GHz Dual Channel
Power Level	15 dBm
Channel Spacing	112 MHz
Mod Scheme	64QAM
Low channel	27.6045 (with 28.2485 on) GHz
Mid channel	27.6045 (with 29.1875 on) GHz
High channel	28.2485 (with 29.1875 on) GHz

	Low	Mid	High
Nominal plot reference	9006-1 27.6045+28.2485 GHz, 112 MHz BW, 64QAM, 15 dBm	9006-1 27.6045+29.1875 GHz, 112 MHz BW, 64QAM, 15 dBm	9006-1 28.2485+29.1875 GHz, 112 MHz BW, 64QAM, 15 dBm

Band	27.5-29.25 GHz Single Channel
Power Level	18 dBm
Channel Spacing	50 MHz
Mod Scheme	256QAM
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

	Low	Mid	High
Nominal plot reference	9006-1 27.6045 GHz, 50 MHz BW, 256QAM, 18 dBm	9006-1 28.2485 GHz, 50 MHz BW, 256QAM, 18 dBm	9006-1 29.1875 GHz, 50 MHz BW, 256QAM, 18 dBm

Band	27.5-29.25 GHz Dual Channel
Power Level	14 dBm
Channel Spacing	50 MHz
Mod Scheme	256QAM
Low channel	27.6045 (with 28.2485 on) GHz
Mid channel	27.6045 (with 29.1875 on) GHz
High channel	28.2485 (with 29.1875 on) GHz

	Low	Mid	High
Nominal plot reference	9006-1 27.6045+28.2485 GHz, 50 MHz BW, 256QAM, 14 dBm	9006-1 27.6045+29.1875 GHz, 50 MHz BW, 256QAM, 14 dBm	9006-1 28.2485+29.1875 GHz, 50 MHz BW, 256QAM, 14 dBm

Band	27.5-29.25 GHz Single Channel
Power Level	18 dBm
Channel Spacing	100 MHz
Mod Scheme	256QAM
Low channel	27.6045 GHz
Mid channel	27.6045 GHz
High channel	28.2485 GHz

	Low	Mid	High
Nominal plot reference	9006-1 27.6045+28.2485 GHz, 100 MHz BW, 256QAM, 18 dBm	9006-1 27.6045+29.1875 GHz, 100 MHz BW, 256QAM, 18 dBm	9006-1 28.2485+29.1875 GHz, 100 MHz BW, 256QAM, 18 dBm

Band	27.5-29.25 GHz Dual Channel
Power Level	14 dBm
Channel Spacing	100 MHz
Mod Scheme	256QAM
Low channel	27.6045 (with 28.2485 on) GHz
Mid channel	27.6045 (with 29.1875 on) GHz
High channel	28.2485 (with 29.1875 on) GHz

	Low	Mid	High
Nominal plot reference	9006-1 27.6045+28.2485 GHz, 100 MHz BW, 256QAM, 14 dBm	9006-1 27.6045+29.1875 GHz, 100 MHz BW, 256QAM, 14 dBm	9006-1 28.2485+29.1875 GHz, 100 MHz BW, 256QAM, 14 dBm

Band	27.5-29.25 GHz Single Channel
Power Level	18 dBm
Channel Spacing	112 MHz
Mod Scheme	256QAM
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

	Low	Mid	High
Nominal plot reference	9006-1 27.6045 GHz, 112 MHz BW, 256QAM, 18 dBm	9006-1 28.2485 GHz, 112 MHz BW, 256QAM, 18 dBm	9006-1 29.1875 GHz, 112 MHz BW, 256QAM, 18 dBm

Band	27.5-29.25 GHz Dual Channel
Power Level	14 dBm
Channel Spacing	112 MHz
Mod Scheme	256QAM
Low channel	27.6045 (with 28.2485 on) GHz
Mid channel	27.6045 (with 29.1875 on) GHz
High channel	28.2485 (with 29.1875 on) GHz

	Low	Mid	High
Nominal plot reference	9006-1 27.6045+28.2485 GHz, 112 MHz BW, 256QAM, 14 dBm	9006-1 27.6045+29.1875 GHz, 112 MHz BW, 256QAM, 14 dBm	9006-1 28.2485+29.1875 GHz, 112 MHz BW, 256QAM, 14 dBm

Analyser plots for the bandwidth masks can be found in Section 6 of this report.

LIMITS:
Part 101.111, mask calculation to (a)(2)(ii).
Part 30.404, mask calculation to (a)(2)(i).

These results show that the EUT has PASSED this test.

The uncertainty gives a 95% confidence interval in the measurement. Expanded uncertainty (K=2) is as follows:
<± 4.1 dB

5.7 Modulation characteristics

5.7.1 Test methods

Test Requirements:	47CFR part 2J Part 2.1047 [Reference 4.1.3 of this report], 47CFR part 101C Part 101.113 [Reference 4.1.1 of this report] 47CFR part 30E Part 30.403 [Reference 4.1.2 of this report]
Test Method:	KDB 971168 D01 v02r02 [Reference 4.1.4 of this report], TIA-603-D [Reference 4.1.7 of this report]
Limits:	47CFR part 101C Part 101.109 [Reference 4.1.1 of this report] 47CFR part 30E Part 30.403 [Reference 4.1.2 of this report]

5.7.2 Configuration of EUT

The EUT was operated on a test bench. Measurements were made at the waveguide port. The EUT was operated in TX3 to TX74 modes for this test.

5.7.3 Test procedure

Tests were made in accordance with the Test Method noted above, using the measuring equipment listed in the 'Test Equipment' Section. A 2MHz RBW, 3x VBW, auto sweep time and max hold settings were used to show the modulation characteristics. All modulation schemes / rates in combination with channel bandwidths and channel frequency combinations were assessed and plotted. (See section 2.4 for modes details).

The EUT was tested in Site S.

5.7.4 Test equipment

E555, E412, E486, E490, E602, E562, E485, E329

See Section 9 for more details

5.7.5 Test results

Temperature of test environment	23°C
Humidity of test environment	54%
Pressure of test environment	102kPa

Band	27.5-29.25 GHz Single Channel
Power Level	20.5 dBm
Channel Spacing	50 MHz
Mod Scheme	QPSK
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

	Low	Mid	High
Nominal plot reference	9006-1 27.6045 GHz, 50 MHz BW, QPSK, 20.5 dBm	9006-1 28.2485 GHz, 50 MHz BW, QPSK, 20.5 dBm	9006-1 29.1875 GHz, 50 MHz BW, QPSK, 20.5 dBm

Band	27.5-29.25 GHz Dual Channel
Power Level	16.5 dBm
Channel Spacing	50 MHz
Mod Scheme	QPSK
Low1 channel	27.6045 (with 28.2485 on) GHz
Low2 channel	27.6045 (with 29.1875 on) GHz
Mid1 channel	28.2485 (with 27.6045 on) GHz
Mid2 channel	28.2485 (with 29.1875 on) GHz
High1 channel	29.1875 (with 27.6045 on) GHz
High2 channel	29.1875 (with 28.2485 on) GHz

	Low1	Low2	Mid1	Mid2	High1	High2
Nominal plot reference	9006-1 27.6045 GHz (+28.2485 GHz), 50 MHz BW, QPSK, 16.5 dBm	9006-1 27.6045 GHz (+29.1875 GHz), 50 MHz BW, QPSK, 16.5 dBm	9006-1 28.2485 GHz (+27.6045 GHz), 50 MHz BW, QPSK, 16.5 dBm	9006-1 28.2485 GHz (+29.1875 GHz), 50 MHz BW, QPSK, 16.5 dBm	9006-1 29.1875 GHz (+27.6045 GHz), 50 MHz BW, QPSK, 16.5 dBm	9006-1 29.1875 GHz (+28.2485 GHz), 50 MHz BW, QPSK, 16.5 dBm

Band	27.5-29.25 GHz Single Channel
Power Level	20.5 dBm
Channel Spacing	100 MHz
Mod Scheme	QPSK
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

	Low	Mid	High
Nominal plot reference	9006-1 27.6045 GHz, 100 MHz BW, QPSK, 20.5 dBm	9006-1 28.2485 GHz, 100 MHz BW, QPSK, 20.5 dBm	9006-1 29.1875 GHz, 100 MHz BW, QPSK, 20.5 dBm

Band	27.5-29.25 GHz Dual Channel
Power Level	16.5 dBm
Channel Spacing	100 MHz
Mod Scheme	QPSK
Low1 channel	27.6045 (with 28.2485 on) GHz
Low2 channel	27.6045 (with 29.1875 on) GHz
Mid1 channel	28.2485 (with 27.6045 on) GHz
Mid2 channel	28.2485 (with 29.1875 on) GHz
High1 channel	29.1875 (with 27.6045 on) GHz
High2 channel	29.1875 (with 28.2485 on) GHz

	Low1	Low2	Mid1	Mid2	High1	High2
Nominal plot reference	9006-1 27.6045 GHz (+28.2485 GHz), 100 MHz BW, QPSK, 16.5 dBm	9006-1 27.6045 GHz (+29.1875 GHz), 100 MHz BW, QPSK, 16.5 dBm	9006-1 28.2485 GHz (+27.6045 GHz), 100 MHz BW, QPSK, 16.5 dBm	9006-1 28.2485 GHz (+29.1875 GHz), 100 MHz BW, QPSK, 16.5 dBm	9006-1 29.1875 GHz (+27.6045 GHz), 100 MHz BW, QPSK, 16.5 dBm	9006-1 29.1875 GHz (+28.2485 GHz), 100 MHz BW, QPSK, 16.5 dBm

Band	27.5-29.25 GHz Single Channel
Power Level	20.5 dBm
Channel Spacing	112 MHz
Mod Scheme	QPSK
Low1 channel	27.6045 GHz
Mid1 channel	28.2485 GHz
High1 channel	29.1875 GHz

	Low	Mid	High
Nominal plot reference	9006-1 27.6045 GHz, 112 MHz BW, QPSK, 20.5 dBm	9006-1 28.2485 GHz, 112 MHz BW, QPSK, 20.5 dBm	9006-1 29.1875 GHz, 112 MHz BW, QPSK, 20.5 dBm

Band	27.5-29.25 GHz Dual Channel
Power Level	16.5 dBm
Channel Spacing	112 MHz
Mod Scheme	QPSK
Low1 channel	27.6045 (with 28.2485 on) GHz
Low2 channel	27.6045 (with 29.1875 on) GHz
Mid1 channel	28.2485 (with 27.6045 on) GHz
Mid2 channel	28.2485 (with 29.1875 on) GHz
High1 channel	29.1875 (with 27.6045 on) GHz
High2 channel	29.1875 (with 28.2485 on) GHz

	Low1	Low2	Mid1	Mid2	High1	High2
Nominal plot reference	9006-1 27.6045 GHz (+28.2485 GHz), 112 MHz BW, QPSK, 16.5 dBm	9006-1 27.6045 GHz (+29.1875 GHz), 112 MHz BW, QPSK, 16.5 dBm	9006-1 28.2485 GHz (+27.6045 GHz), 112 MHz BW, QPSK, 16.5 dBm	9006-1 28.2485 GHz (+29.1875 GHz), 112 MHz BW, QPSK, 16.5 dBm	9006-1 29.1875 GHz (+27.6045 GHz), 112 MHz BW, QPSK, 16.5 dBm	9006-1 29.1875 GHz (+28.2485 GHz), 112 MHz BW, QPSK, 16.5 dBm

Band	27.5-29.25 GHz Single Channel
Power Level	20 dBm
Channel Spacing	50 MHz
Mod Scheme	16QAM
Low1 channel	27.6045 GHz
Mid1 channel	28.2485 GHz
High1 channel	29.1875 GHz

	Low1	Mid1	High1
Nominal plot reference	9006-1 27.6045 GHz, 50 MHz BW, 16QAM, 20 dBm	9006-1 28.2485 GHz, 50 MHz BW, 16QAM, 20 dBm	9006-1 29.1875 GHz, 50 MHz BW, 16QAM, 20 dBm

Band	27.5-29.25 GHz Dual Channel
Power Level	16 dBm
Channel Spacing	50 MHz
Mod Scheme	16QAM
Low1 channel	27.6045 (with 28.2485 on) GHz
Low2 channel	27.6045 (with 29.1875 on) GHz
Mid1 channel	28.2485 (with 27.6045 on) GHz
Mid2 channel	28.2485 (with 29.1875 on) GHz
High1 channel	29.1875 (with 27.6045 on) GHz
High2 channel	29.1875 (with 28.2485 on) GHz

	Low1	Low2	Mid1	Mid2	High1	High2
Nominal plot reference	9006-1 27.6045 GHz (+28.2485 GHz), 50 MHz BW, 16QAM, 16 dBm	9006-1 27.6045 GHz (+29.1875 GHz), 50 MHz BW, 16QAM, 16 dBm	9006-1 28.2485 GHz (+27.6045 GHz), 50 MHz BW, 16QAM, 16.5 dBm	9006-1 28.2485 GHz (+29.1875 GHz), 50 MHz BW, 16QAM, 16 dBm	9006-1 29.1875 GHz (+27.6045 GHz), 50 MHz BW, 16QAM, 16 dBm	9006-1 29.1875 GHz (+28.2485 GHz), 50 MHz BW, 16QAM, 16 dBm

Band	27.5-29.25 GHz Single Channel
Power Level	20 dBm
Channel Spacing	100 MHz
Mod Scheme	16QAM
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

	Low	Mid	High
Nominal plot reference	9006-1 27.6045 GHz, 100 MHz BW, 16QAM, 20 dBm	9006-1 28.2485 GHz, 100 MHz BW, 16QAM, 20 dBm	9006-1 29.1875 GHz, 100 MHz BW, 16QAM, 20 dBm

Band	27.5-29.25 GHz Dual Channel
Power Level	16 dBm
Channel Spacing	100 MHz
Mod Scheme	16QAM
Low1 channel	27.6045 (with 28.2485 on) GHz
Low2 channel	27.6045 (with 29.1875 on) GHz
Mid1 channel	28.2485 (with 27.6045 on) GHz
Mid2 channel	28.2485 (with 29.1875 on) GHz
High1 channel	29.1875 (with 27.6045 on) GHz
High2 channel	29.1875 (with 28.2485 on) GHz

	Low1	Low2	Mid1	Mid2	High1	High2
Nominal plot reference	9006-1 27.6045 GHz (+28.2485 GHz), 100 MHz BW, 16QAM, 16 dBm	9006-1 27.6045 GHz (+29.1875 GHz), 100 MHz BW, 16QAM, 16 dBm	9006-1 28.2485 GHz (+27.6045 GHz), 100 MHz BW, 16QAM, 16 dBm	9006-1 28.2485 GHz (+29.1875 GHz), 100 MHz BW, 16QAM, 16 dBm	9006-1 29.1875 GHz (+27.6045 GHz), 100 MHz BW, 16QAM, 16 dBm	9006-1 29.1875 GHz (+28.2485 GHz), 100 MHz BW, 16QAM, 16 dBm

Band	27.5-29.25 GHz Single Channel
Power Level	20 dBm
Channel Spacing	112 MHz
Mod Scheme	16QAM
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

	Low	Mid	High
Nominal plot reference	9006-1 27.6045 GHz, 112 MHz BW, 16QAM, 20 dBm	9006-1 28.2485 GHz, 112 MHz BW, 16QAM, 20 dBm	9006-1 29.1875 GHz, 112 MHz BW, 16QAM, 20 dBm

Band	27.5-29.25 GHz Dual Channel
Power Level	16 dBm
Channel Spacing	112 MHz
Mod Scheme	16QAM
Low1 channel	27.6045 (with 28.2485 on) GHz
Low2 channel	27.6045 (with 29.1875 on) GHz
Mid1 channel	28.2485 (with 27.6045 on) GHz
Mid2 channel	28.2485 (with 29.1875 on) GHz
High1 channel	29.1875 (with 27.6045 on) GHz
High2 channel	29.1875 (with 28.2485 on) GHz

	Low1	Low2	Mid1	Mid2	High1	High2
Nominal plot reference	9006-1 27.6045 GHz (+28.2485 GHz), 112 MHz BW, 16QAM, 16 dBm	9006-1 27.6045 GHz (+29.1875 GHz), 112 MHz BW, 16QAM, 16 dBm	9006-1 28.2485 GHz (+27.6045 GHz), 112 MHz BW, 16QAM, 16 dBm	9006-1 28.2485 GHz (+29.1875 GHz), 112 MHz BW, 16QAM, 16 dBm	9006-1 29.1875 GHz (+27.6045 GHz), 112 MHz BW, 16QAM, 16 dBm	9006-1 29.1875 GHz (+28.2485 GHz), 112 MHz BW, 16QAM, 16 dBm

Band	27.5-29.25 GHz Single Channel
Power Level	19 dBm
Channel Spacing	50 MHz
Mod Scheme	64QAM
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

	Low	Mid	High
Nominal plot reference	9006-1 27.6045 GHz, 50 MHz BW, 64QAM, 19 dBm	9006-1 28.2485 GHz, 50 MHz BW, 64QAM, 19 dBm	9006-1 29.1875 GHz, 50 MHz BW, 64QAM, 19 dBm

Band	27.5-29.25 GHz Dual Channel
Power Level	15 dBm
Channel Spacing	50 MHz
Mod Scheme	64QAM
Low1 channel	27.6045 (with 28.2485 on) GHz
Low2 channel	27.6045 (with 29.1875 on) GHz
Mid1 channel	28.2485 (with 27.6045 on) GHz
Mid2 channel	28.2485 (with 29.1875 on) GHz
High1 channel	29.1875 (with 27.6045 on) GHz
High2 channel	29.1875 (with 28.2485 on) GHz

	Low1	Low2	Mid1	Mid2	High1	High2
Nominal plot reference	9006-1 27.6045 GHz (+28.2485 GHz), 50 MHz BW, 64QAM, 15 dBm	9006-1 27.6045 GHz (+29.1875 GHz), 50 MHz BW, 64QAM, 15 dBm	9006-1 28.2485 GHz (+27.6045 GHz), 50 MHz BW, 64QAM, 15 dBm	9006-1 28.2485 GHz (+29.1875 GHz), 50 MHz BW, 64QAM, 15 dBm	9006-1 29.1875 GHz (+27.6045 GHz), 50 MHz BW, 64QAM, 15 dBm	9006-1 29.1875 GHz (+28.2485 GHz), 50 MHz BW, 64QAM, 15 dBm

Band	27.5-29.25 GHz Single Channel
Power Level	19 dBm
Channel Spacing	100 MHz
Mod Scheme	64QAM
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

	Low	Mid	High
Nominal plot reference	9006-1 27.6045 GHz, 100 MHz BW, 64QAM, 19 dBm	9006-1 28.2485 GHz, 100 MHz BW, 64QAM, 19 dBm	9006-1 29.1875 GHz, 100 MHz BW, 64QAM, 19 dBm

Band	27.5-29.25 GHz Dual Channel
Power Level	15 dBm
Channel Spacing	100 MHz
Mod Scheme	64QAM
Low1 channel	27.6045 (with 28.2485 on) GHz
Low2 channel	27.6045 (with 29.1875 on) GHz
Mid1 channel	28.2485 (with 27.6045 on) GHz
Mid2 channel	28.2485 (with 29.1875 on) GHz
High1 channel	29.1875 (with 27.6045 on) GHz
High2 channel	29.1875 (with 28.2485 on) GHz

	Low1	Low2	Mid1	Mid2	High1	High2
Nominal plot reference	9006-1 27.6045 GHz (+28.2485 GHz), 100 MHz BW, 64QAM, 15 dBm	9006-1 27.6045 GHz (+29.1875 GHz), 100 MHz BW, 64QAM, 15 dBm	9006-1 28.2485 GHz (+27.6045 GHz), 100 MHz BW, 64QAM, 15 dBm	9006-1 28.2485 GHz (+29.1875 GHz), 100 MHz BW, 64QAM, 15 dBm	9006-1 29.1875 GHz (+27.6045 GHz), 100 MHz BW, 64QAM, 15 dBm	9006-1 29.1875 GHz (+28.2485 GHz), 100 MHz BW, 64QAM, 15 dBm

Band	27.5-29.25 GHz Single Channel
Power Level	19 dBm
Channel Spacing	112 MHz
Mod Scheme	64QAM
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

	Low	Mid	High
Nominal plot reference	9006-1 27.6045 GHz, 112 MHz BW, 64QAM, 19 dBm	9006-1 28.2485 GHz, 112 MHz BW, 64QAM, 19 dBm	9006-1 29.1875 GHz, 112 MHz BW, 64QAM, 19 dBm

Band	27.5-29.25 GHz Dual Channel
Power Level	15 dBm
Channel Spacing	112 MHz
Mod Scheme	64QAM
Low1 channel	27.6045 (with 28.2485 on) GHz
Low2 channel	27.6045 (with 29.1875 on) GHz
Mid1 channel	28.2485 (with 27.6045 on) GHz
Mid2 channel	28.2485 (with 29.1875 on) GHz
High1 channel	29.1875 (with 27.6045 on) GHz
High2 channel	29.1875 (with 28.2485 on) GHz

	Low1	Low2	Mid1	Mid2	High1	High2
Nominal plot reference	9006-1 27.6045 GHz (+28.2485 GHz), 112 MHz BW, 64QAM, 15 dBm	9006-1 27.6045 GHz (+29.1875 GHz), 112 MHz BW, 64QAM, 15 dBm	9006-1 28.2485 GHz (+27.6045 GHz), 112 MHz BW, 64QAM, 15 dBm	9006-1 28.2485 GHz (+29.1875 GHz), 112 MHz BW, 64QAM, 15 dBm	9006-1 29.1875 GHz (+27.6045 GHz), 112 MHz BW, 64QAM, 15 dBm	9006-1 29.1875 GHz (+28.2485 GHz), 112 MHz BW, 64QAM, 15 dBm

Band	27.5-29.25 GHz Single Channel
Power Level	18 dBm
Channel Spacing	50 MHz
Mod Scheme	256QAM
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

	Low	Mid	High
Nominal plot reference	9006-1 27.6045 GHz, 50 MHz BW, 256QAM, 18 dBm	9006-1 28.2485 GHz, 50 MHz BW, 256QAM, 18 dBm	9006-1 29.1875 GHz, 50 MHz BW, 256QAM, 18 dBm

Band	27.5-29.25 GHz Dual Channel
Power Level	14 dBm
Channel Spacing	50 MHz
Mod Scheme	256QAM
Low1 channel	27.6045 (with 28.2485 on) GHz
Low2 channel	27.6045 (with 29.1875 on) GHz
Mid1 channel	28.2485 (with 27.6045 on) GHz
Mid2 channel	28.2485 (with 29.1875 on) GHz
High1 channel	29.1875 (with 27.6045 on) GHz
High2 channel	29.1875 (with 28.2485 on) GHz

	Low1	Low2	Mid1	Mid2	High1	High2
Nominal plot reference	9006-1 27.6045 GHz (+28.2485 GHz), 50 MHz BW, 256QAM, 14 dBm	9006-1 27.6045 GHz (+29.1875 GHz), 50 MHz BW, 256QAM, 14 dBm	9006-1 28.2485 GHz (+27.6045 GHz), 50 MHz BW, 256QAM, 14 dBm	9006-1 28.2485 GHz (+29.1875 GHz), 50 MHz BW, 256QAM, 14 dBm	9006-1 29.1875 GHz (+27.6045 GHz), 50 MHz BW, 256QAM, 14 dBm	9006-1 29.1875 GHz (+28.2485 GHz), 50 MHz BW, 256QAM, 14 dBm

Band	27.5-29.25 GHz Single Channel
Power Level	18 dBm
Channel Spacing	100 MHz
Mod Scheme	256QAM
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

	Low	Mid	High
Nominal plot reference	9006-1 27.6045 GHz, 100 MHz BW, 256QAM, 18 dBm	9006-1 28.2485 GHz, 100 MHz BW, 256QAM, 18 dBm	9006-1 29.1875 GHz, 100 MHz BW, 256QAM, 18 dBm

Band	27.5-29.25 GHz Dual Channel
Power Level	14 dBm
Channel Spacing	100 MHz
Mod Scheme	256QAM
Low1 channel	27.6045 (with 28.2485 on) GHz
Low2 channel	27.6045 (with 29.1875 on) GHz
Mid1 channel	28.2485 (with 27.6045 on) GHz
Mid2 channel	28.2485 (with 29.1875 on) GHz
High1 channel	29.1875 (with 27.6045 on) GHz
High2 channel	29.1875 (with 28.2485 on) GHz

	Low1	Low2	Mid1	Mid2	High1	High2
Nominal plot reference	9006-1 27.6045 GHz (+28.2485 GHz), 100 MHz BW, 256QAM, 14 dBm	9006-1 27.6045 GHz (+29.1875 GHz), 100 MHz BW, 256QAM, 14 dBm	9006-1 28.2485 GHz (+27.6045 GHz), 100 MHz BW, 256QAM, 14 dBm	9006-1 28.2485 GHz (+29.1875 GHz), 100 MHz BW, 256QAM, 14 dBm	9006-1 29.1875 GHz (+27.6045 GHz), 100 MHz BW, 256QAM, 14 dBm	9006-1 29.1875 GHz (+28.2485 GHz), 100 MHz BW, 256QAM, 14 dBm

Band	27.5-29.25 GHz Single Channel
Power Level	18 dBm
Channel Spacing	112 MHz
Mod Scheme	256QAM
Low channel	27.6045 GHz
Mid channel	28.2485 GHz
High channel	29.1875 GHz

	Low	Mid	High
Nominal plot reference	9006-1 27.6045 GHz, 112 MHz BW, 256QAM, 18 dBm	9006-1 28.2485 GHz, 112 MHz BW, 256QAM, 18 dBm	9006-1 29.1875 GHz, 112 MHz BW, 256QAM, 18 dBm

Band	27.5-29.25 GHz Dual Channel
Power Level	14 dBm
Channel Spacing	112 MHz
Mod Scheme	256QAM
Low1 channel	27.6045 (with 28.2485 on) GHz
Low2 channel	27.6045 (with 29.1875 on) GHz
Mid1 channel	28.2485 (with 27.6045 on) GHz
Mid2 channel	28.2485 (with 29.1875 on) GHz
High1 channel	29.1875 (with 27.6045 on) GHz
High2 channel	29.1875 (with 28.2485 on) GHz

	Low1	Low2	Mid1	Mid2	High1	High2
Nominal plot reference	9006-1 27.6045 GHz (+28.2485 GHz), 112 MHz BW, 256QAM, 14 dBm	9006-1 27.6045 GHz (+29.1875 GHz), 112 MHz BW, 256QAM, 14 dBm	9006-1 28.2485 GHz (+27.6045 GHz), 112 MHz BW, 256QAM, 14 dBm	9006-1 28.2485 GHz (+29.1875 GHz), 112 MHz BW, 256QAM, 14 dBm	9006-1 29.1875 GHz (+27.6045 GHz), 112 MHz BW, 256QAM, 14 dBm	9006-1 29.1875 GHz (+28.2485 GHz), 112 MHz BW, 256QAM, 14 dBm

Analyser plots showing the modulation characteristics can be found in Section 6 of this report.

LIMITS:
Part 101.109: 150 MHz (band 29.1 – 29.25 GHz)
Part 30.403: 850 MHz (band 27.5 – 28.35 GHz)

These results show that the EUT has PASSED this test.

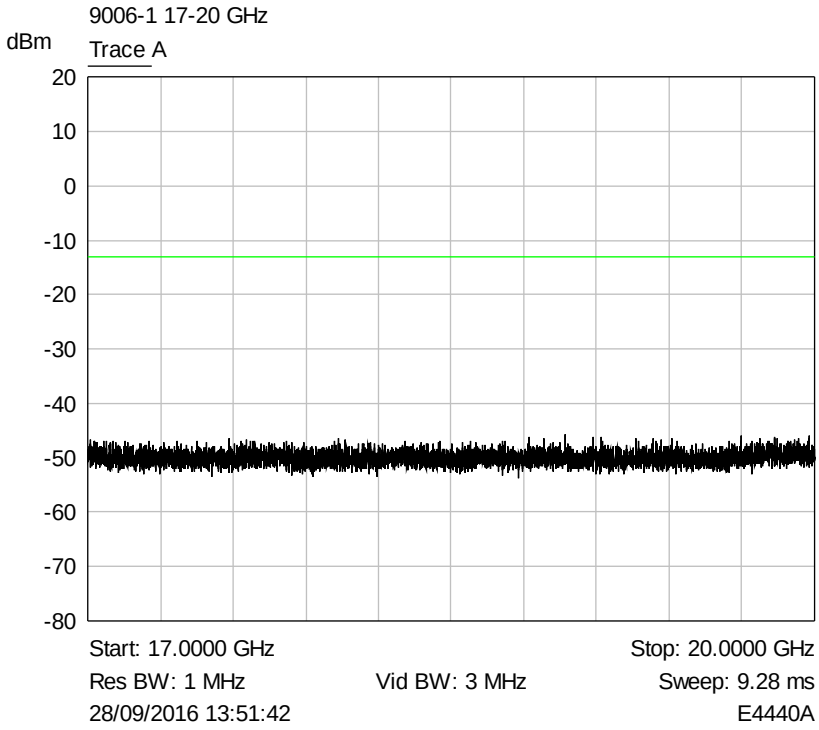
The uncertainty gives a 95% confidence interval in the measurement. Expanded uncertainty (K=2) is as follows:
Bandwidth <± 1.9 %

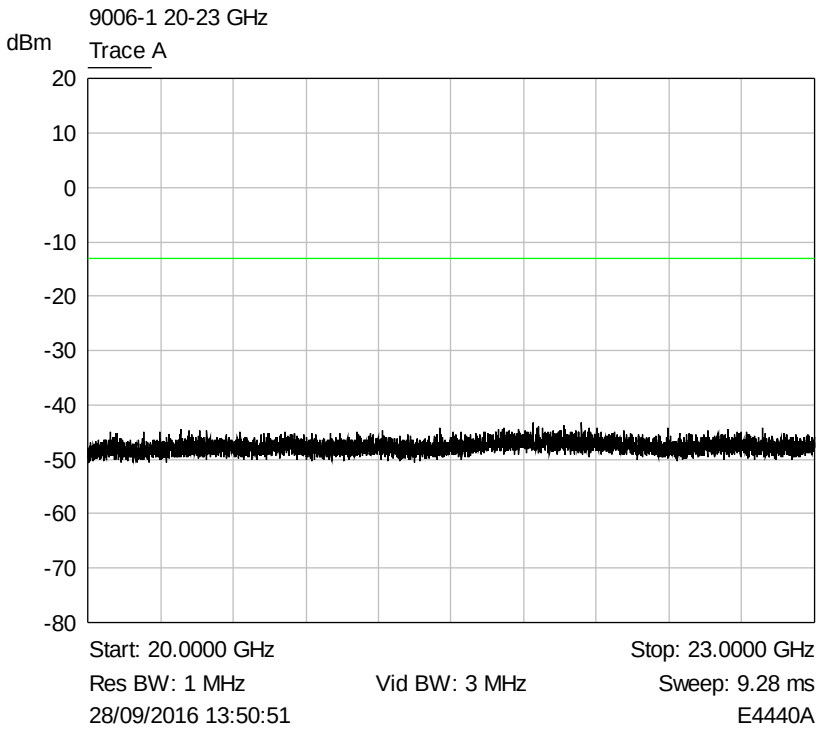
6 Plots/Graphical results

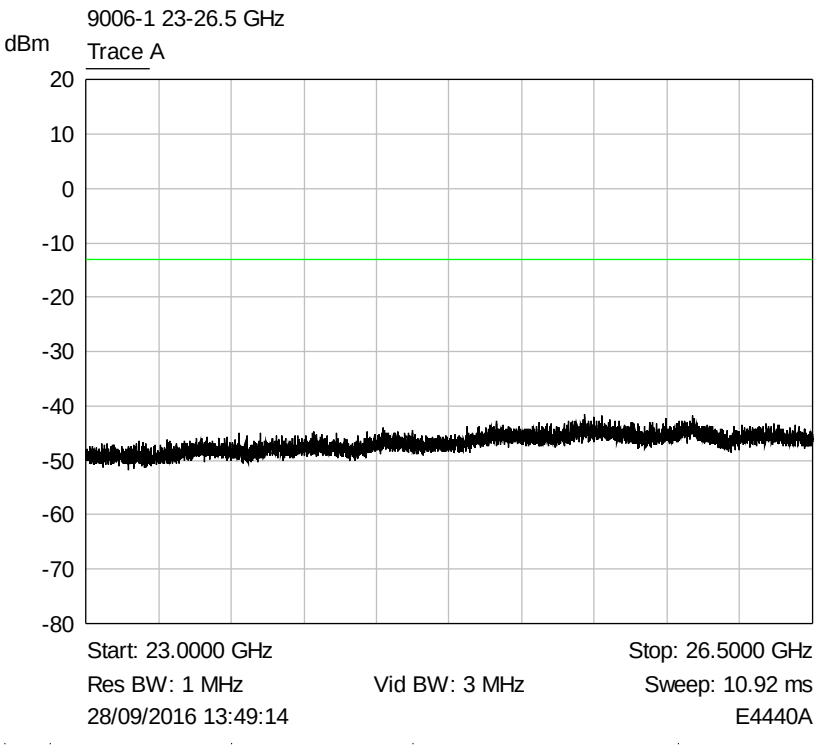
6.1 Spurious emissions at antenna terminals

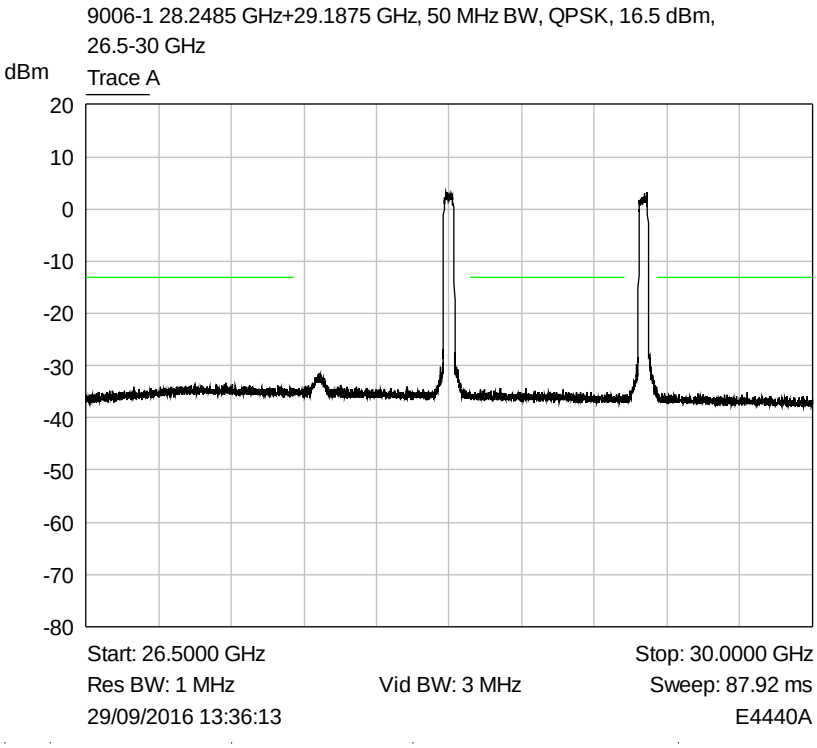
Note: Whilst all channels and single/dual channels modes have been tested/checked, only middle channel (dual operation) plots have been shown, to minimise report size.

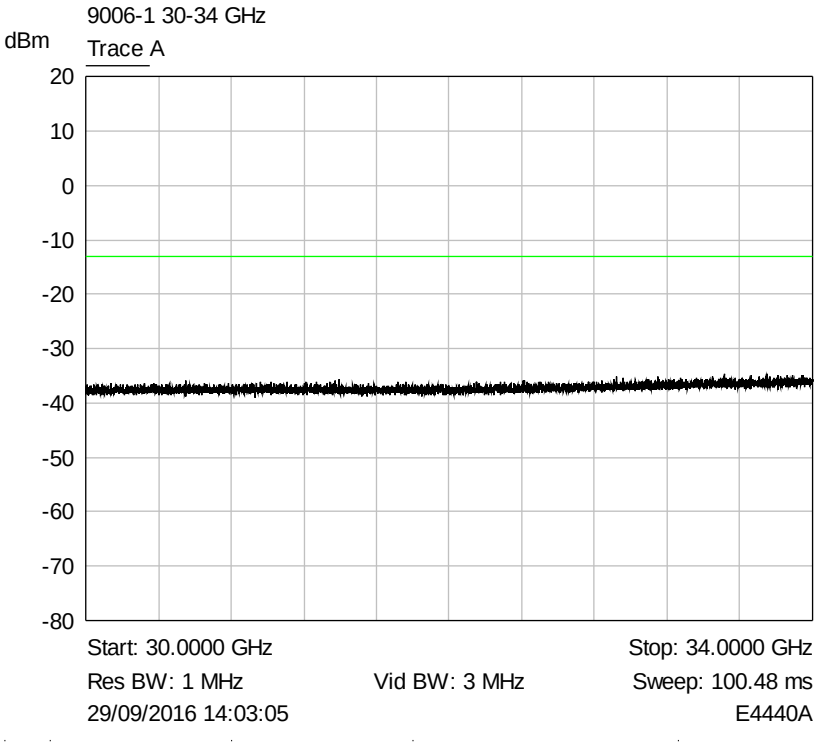
RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5 dBm, Channel Spacing 50 MHz, Modulation QPSK, Channel 28.2485 GHz (with 29.1875 GHz on)

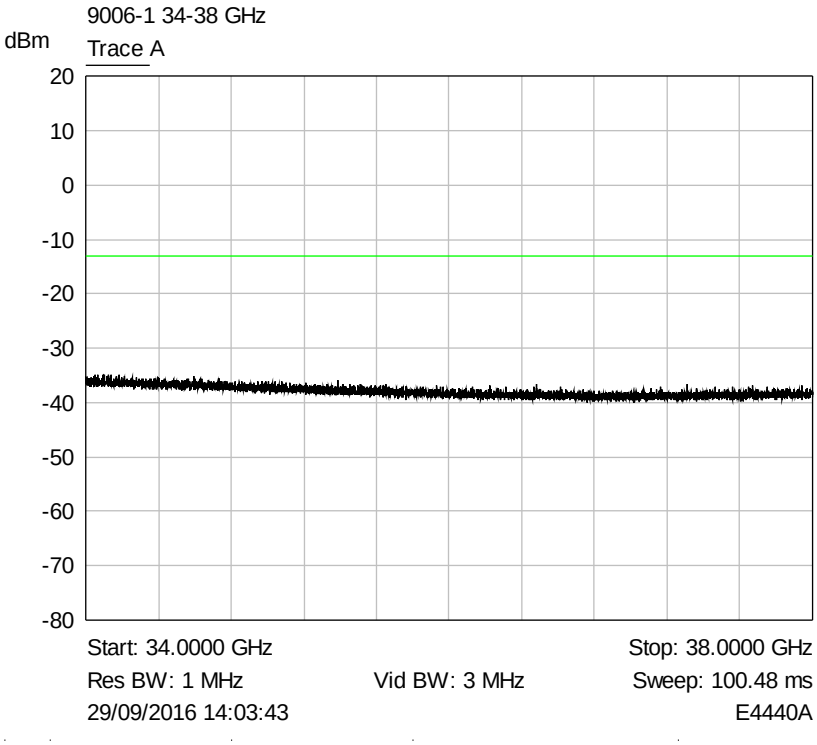


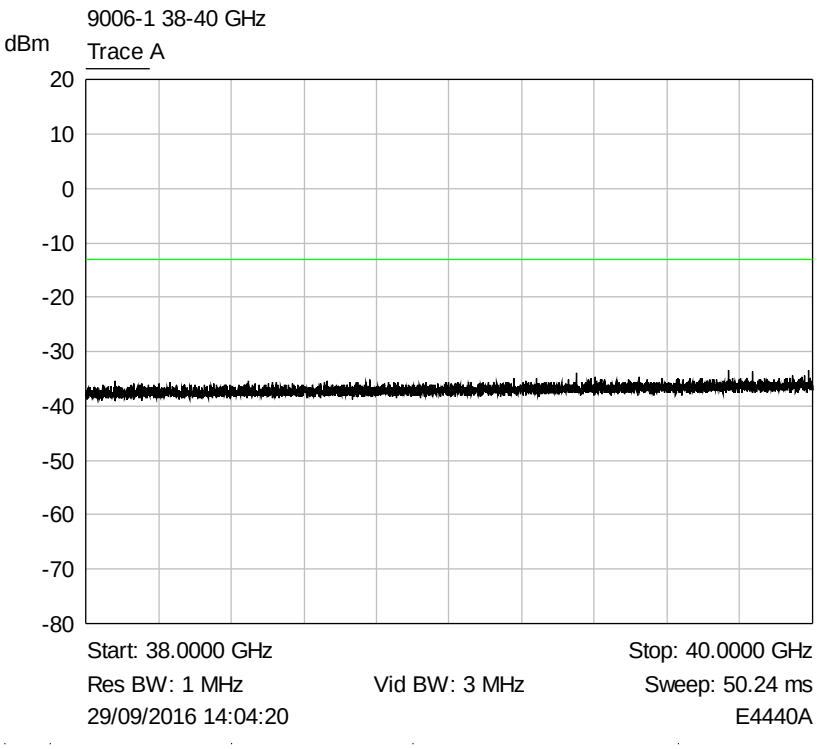


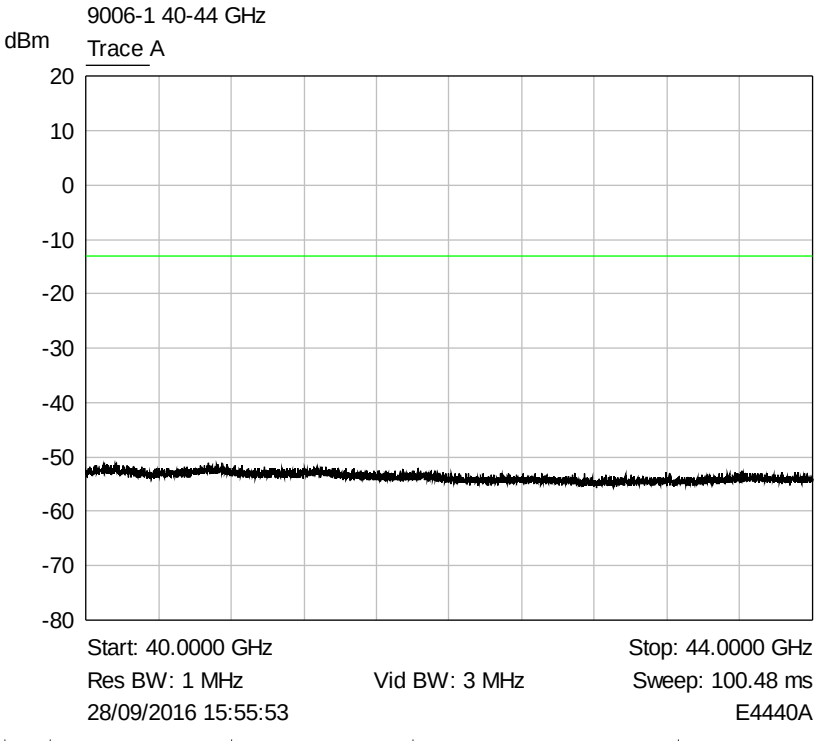

9006-1 23-26.5 GHz
dBm
Trace A
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Start: 23.0000 GHz
Stop: 26.5000 GHz
Res BW: 1 MHz
Vid BW: 3 MHz
Sweep: 10.92 ms
28/09/2016 13:49:14
E4440A

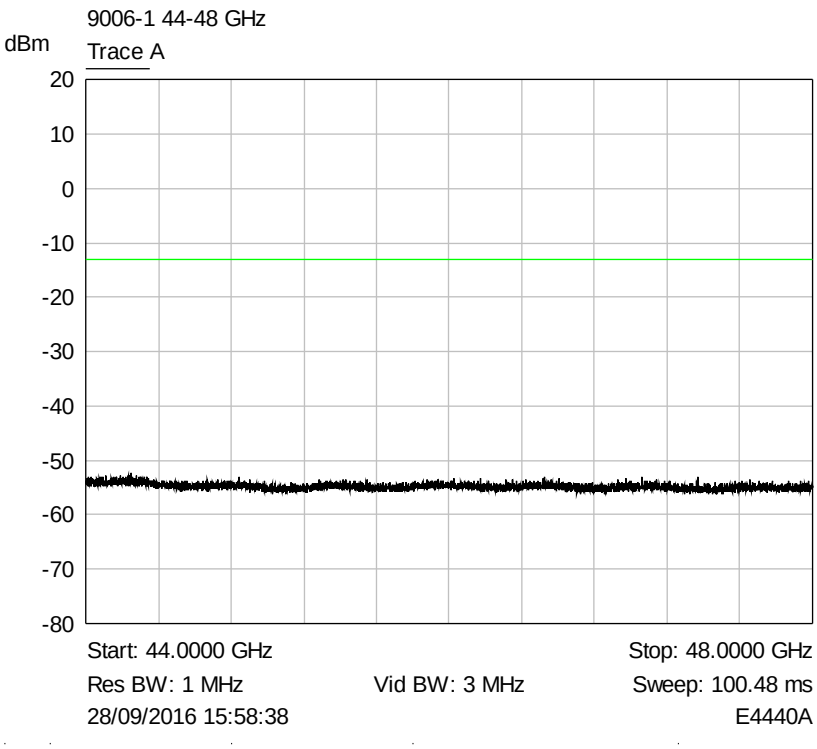

9006-1 28.2485 GHz+29.1875 GHz, 50 MHz BW, QPSK, 16.5 dBm,
26.5-30 GHz
dBm
Trace A
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Start: 26.5000 GHz
Stop: 30.0000 GHz
Res BW: 1 MHz
Vid BW: 3 MHz
Sweep: 87.92 ms
29/09/2016 13:36:13
E4440A

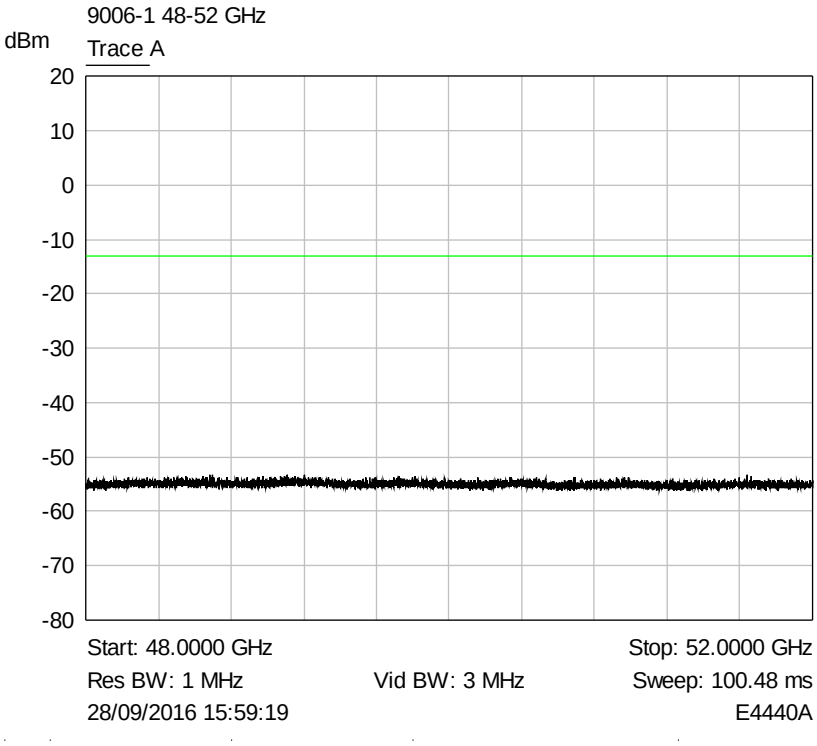

9006-1 30-34 GHz
dBm
Trace A
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Start: 30.0000 GHz
Stop: 34.0000 GHz
Res BW: 1 MHz
Vid BW: 3 MHz
Sweep: 100.48 ms
29/09/2016 14:03:05
E4440A

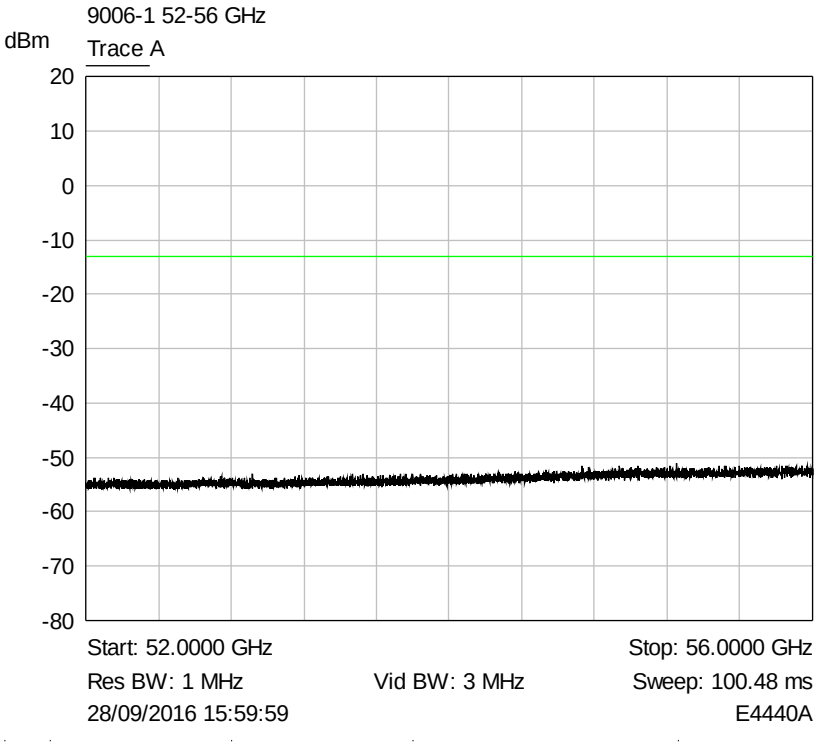

9006-1 34-38 GHz
dBm
Trace A
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Start: 34.0000 GHz
Stop: 38.0000 GHz
Res BW: 1 MHz
Vid BW: 3 MHz
Sweep: 100.48 ms
29/09/2016 14:03:43
E4440A

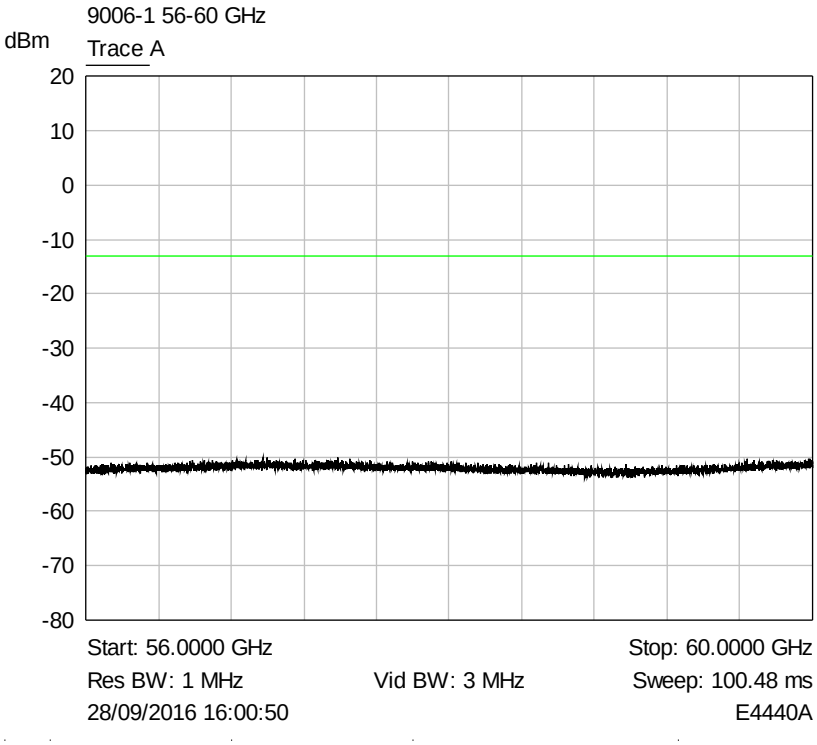

9006-1 38-40 GHz
dBm
Trace A
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Start: 38.0000 GHz
Stop: 40.0000 GHz
Res BW: 1 MHz
Vid BW: 3 MHz
Sweep: 50.24 ms
29/09/2016 14:04:20
E4440A

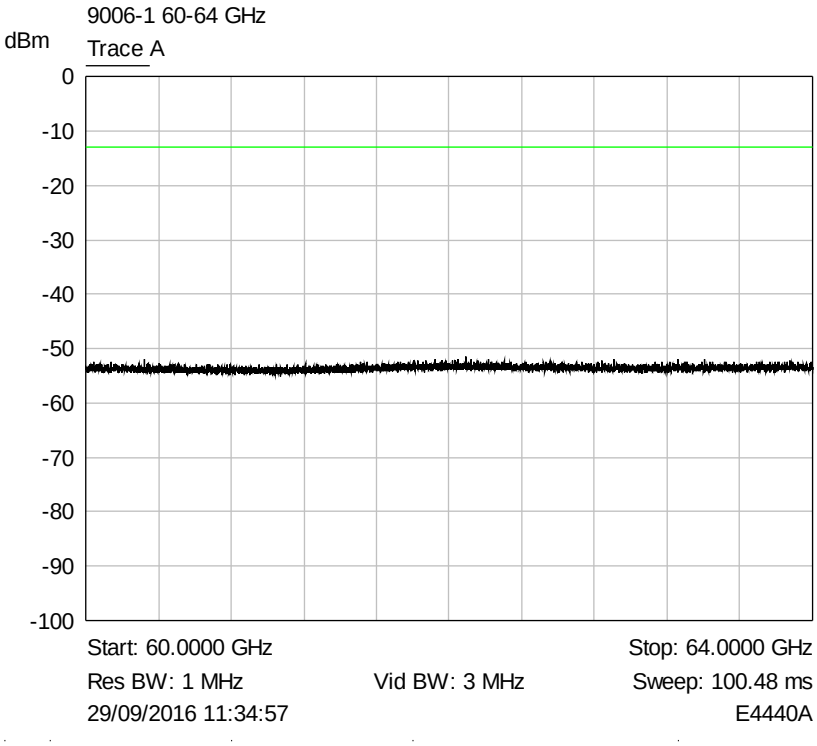

9006-1 40-44 GHz
dBm
Trace A
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Start: 40.0000 GHz
Stop: 44.0000 GHz
Res BW: 1 MHz
Vid BW: 3 MHz
Sweep: 100.48 ms
28/09/2016 15:55:53
E4440A

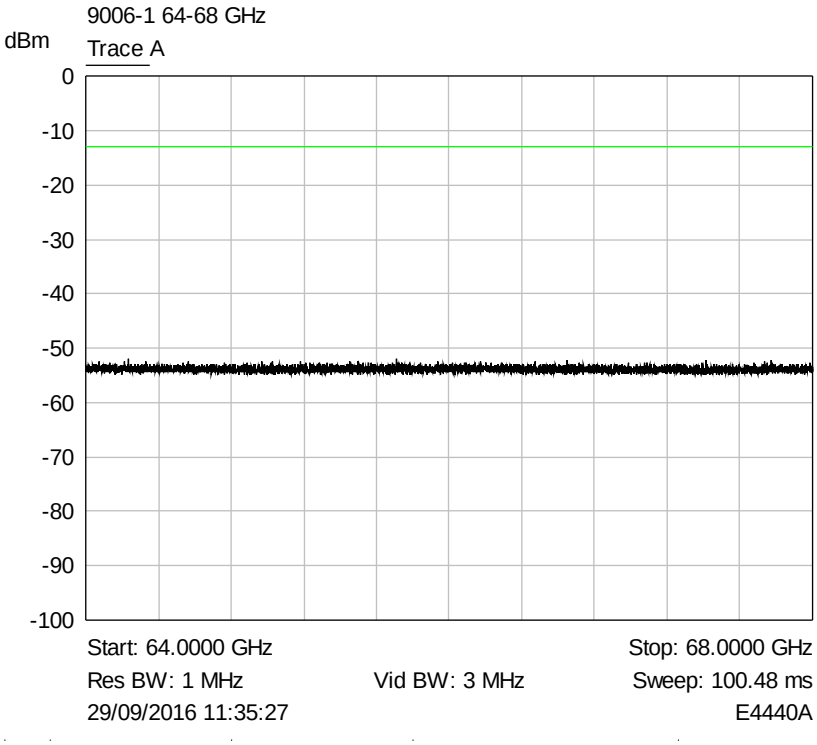

9006-1 44-48 GHz
dBm
Trace A
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Start: 44.0000 GHz
Stop: 48.0000 GHz
Res BW: 1 MHz
Vid BW: 3 MHz
Sweep: 100.48 ms
28/09/2016 15:58:38
E4440A

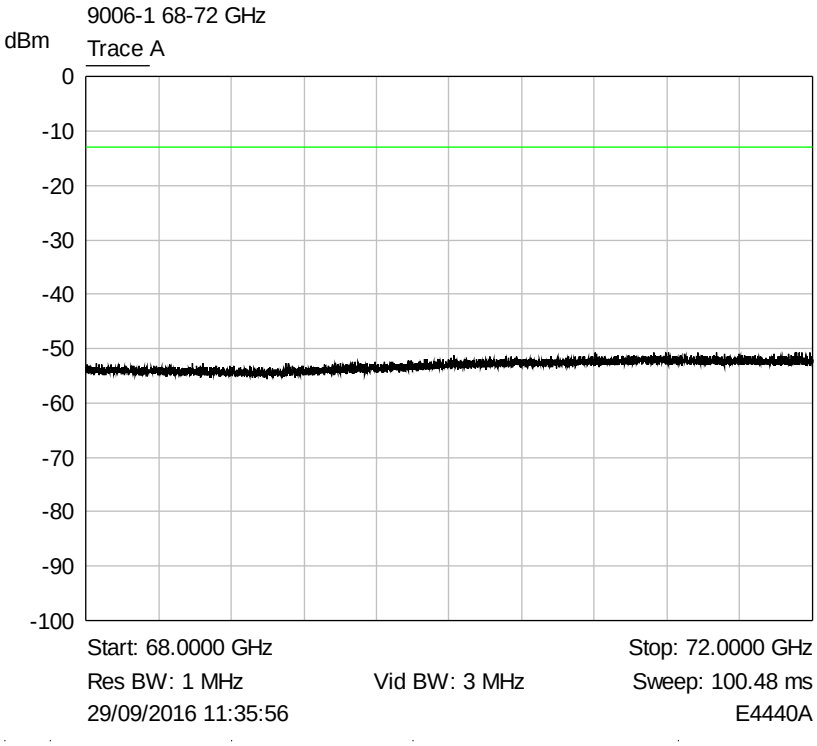

9006-1 48-52 GHz
dBm
Trace A
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Start: 48.0000 GHz
Stop: 52.0000 GHz
Res BW: 1 MHz
Vid BW: 3 MHz
Sweep: 100.48 ms
28/09/2016 15:59:19
E4440A

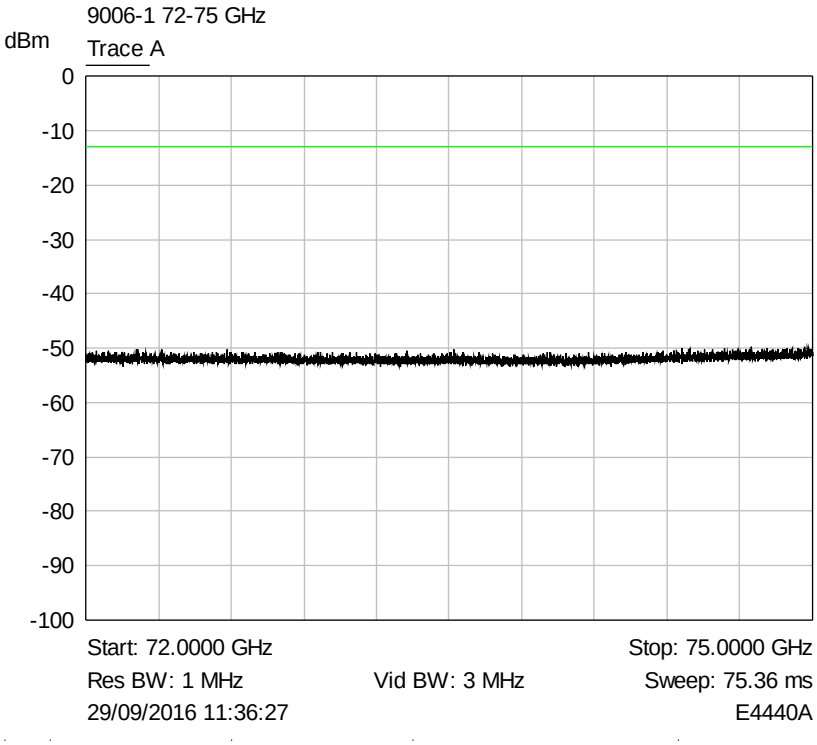

9006-1 52-56 GHz
dBm
Trace A
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Start: 52.0000 GHz
Stop: 56.0000 GHz
Res BW: 1 MHz
Vid BW: 3 MHz
Sweep: 100.48 ms
28/09/2016 15:59:59
E4440A

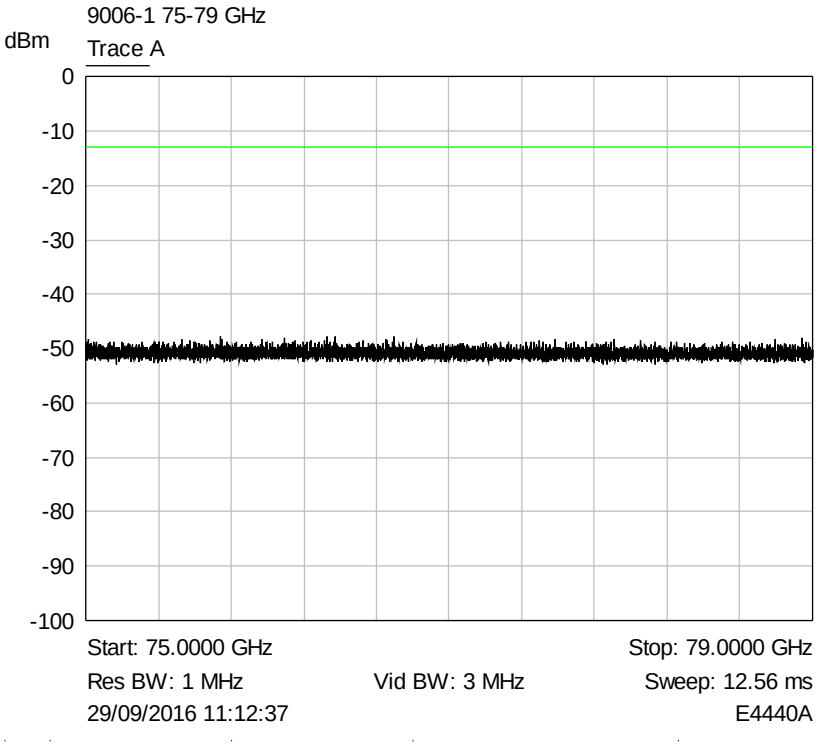

9006-1 56-60 GHz
dBm
Trace A
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Start: 56.0000 GHz
Stop: 60.0000 GHz
Res BW: 1 MHz
Vid BW: 3 MHz
Sweep: 100.48 ms
28/09/2016 16:00:50
E4440A

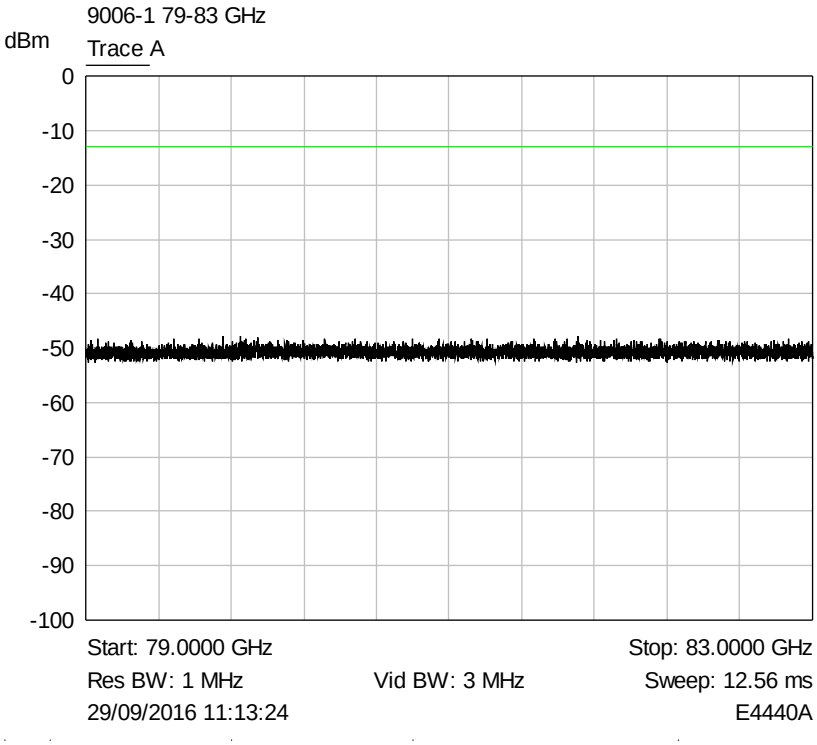

9006-1 60-64 GHz
dBm
Trace A
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
Start: 60.0000 GHz
Stop: 64.0000 GHz
Res BW: 1 MHz
Vid BW: 3 MHz
Sweep: 100.48 ms
29/09/2016 11:34:57
E4440A

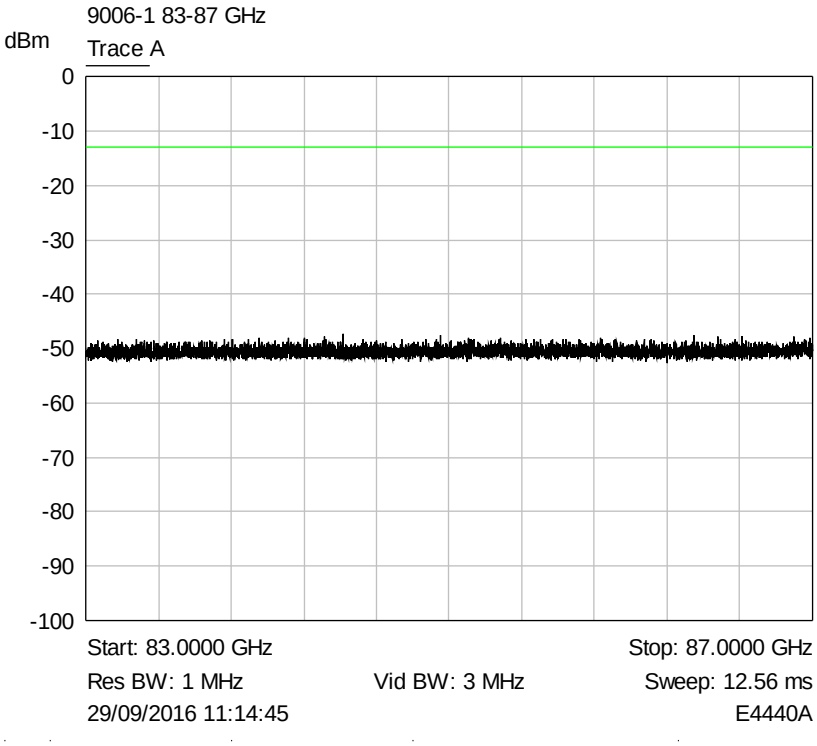

9006-1 64-68 GHz
dBm
Trace A
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
Start: 64.0000 GHz
Stop: 68.0000 GHz
Res BW: 1 MHz
Vid BW: 3 MHz
Sweep: 100.48 ms
29/09/2016 11:35:27
E4440A

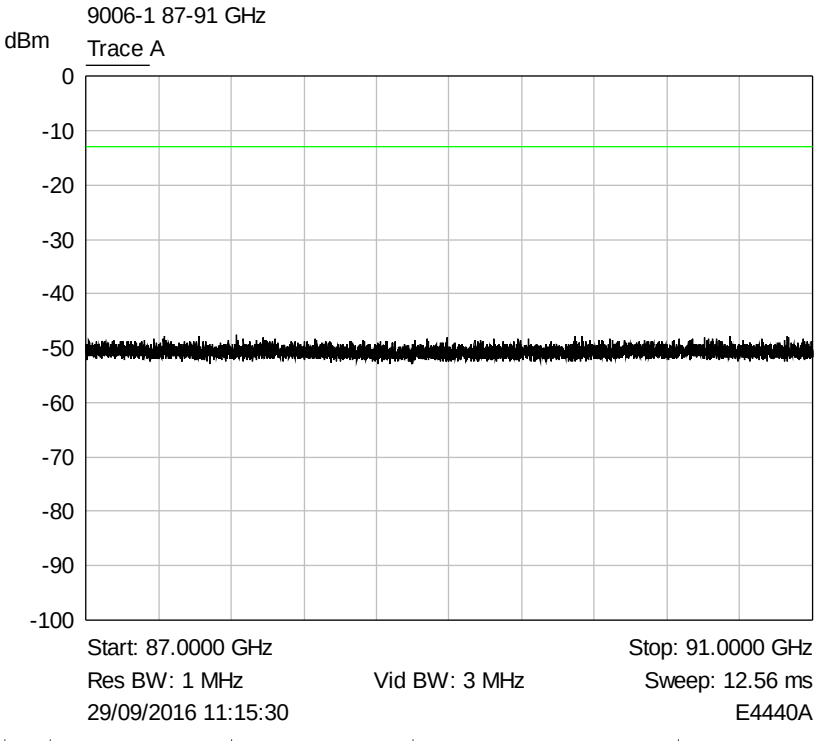


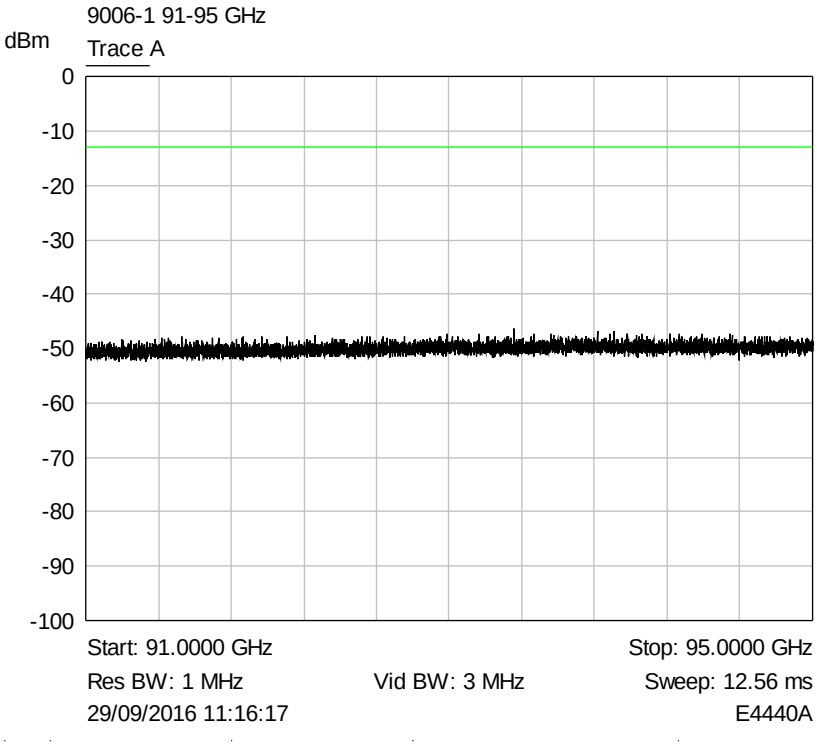


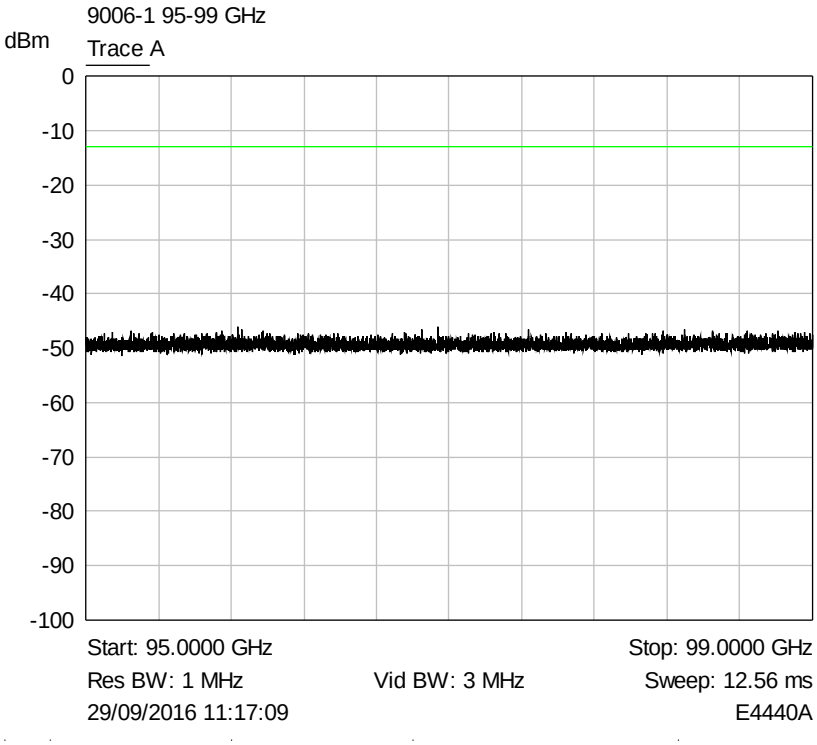

9006-1 75-79 GHz
dBm
Trace A
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
Start: 75.0000 GHz
Stop: 79.0000 GHz
Res BW: 1 MHz
Vid BW: 3 MHz
Sweep: 12.56 ms
29/09/2016 11:12:37
E4440A

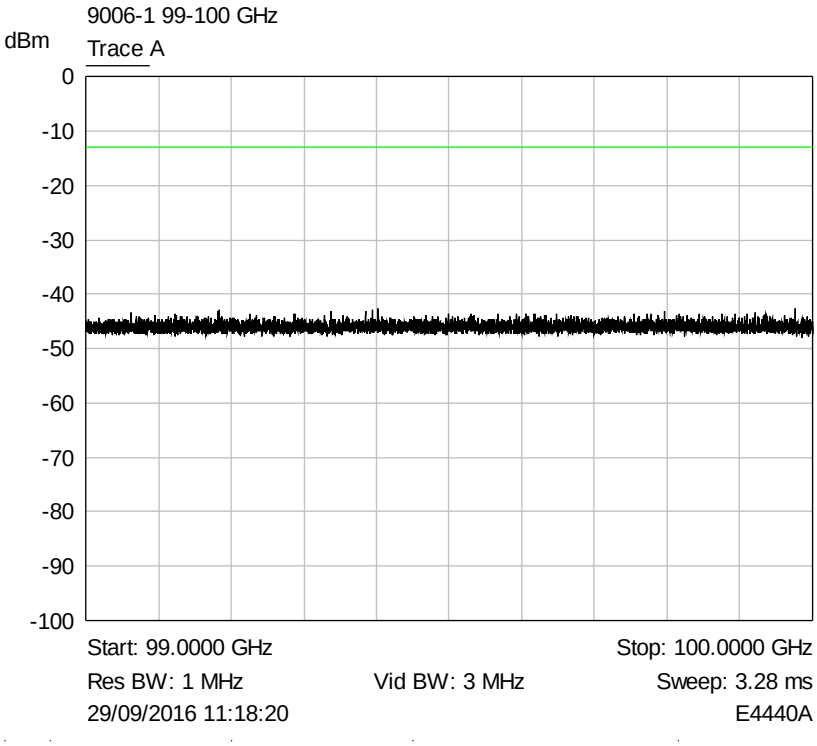

9006-1 79-83 GHz
dBm
Trace A
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
Start: 79.0000 GHz
Stop: 83.0000 GHz
Res BW: 1 MHz
Vid BW: 3 MHz
Sweep: 12.56 ms
29/09/2016 11:13:24
E4440A





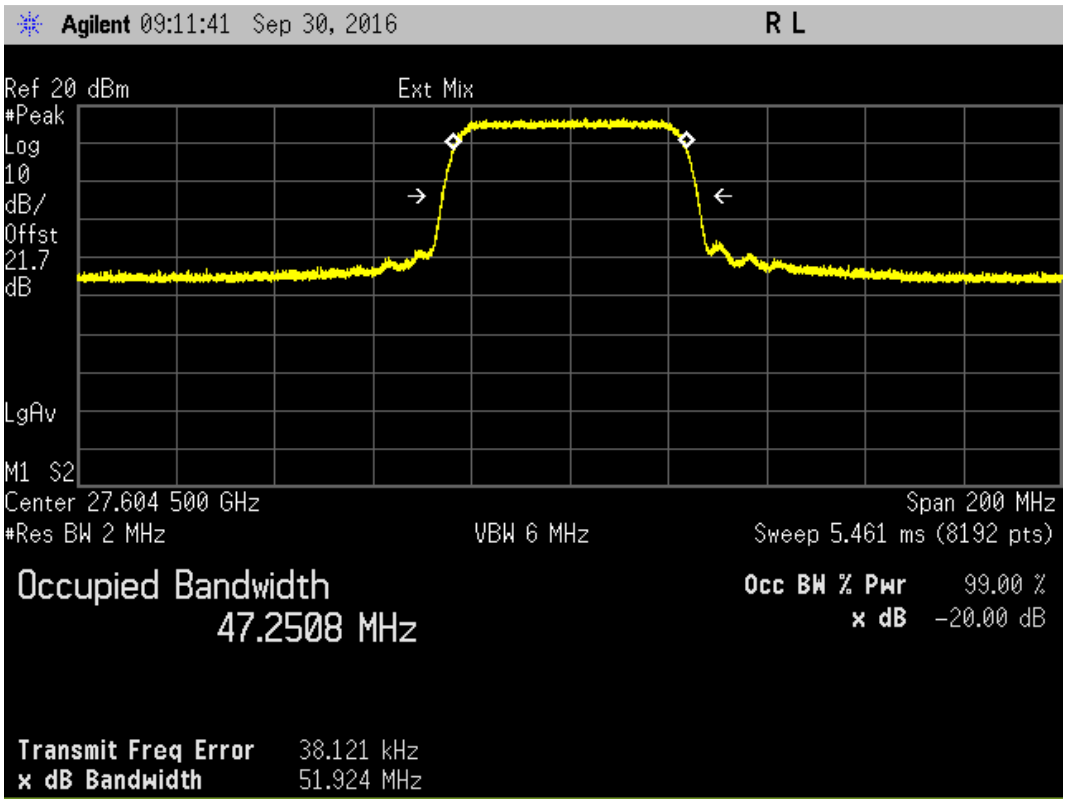

9006-1 91-95 GHz
dBm
Trace A
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
Start: 91.0000 GHz
Stop: 95.0000 GHz
Res BW: 1 MHz
Vid BW: 3 MHz
Sweep: 12.56 ms
29/09/2016 11:16:17
E4440A


9006-1 95-99 GHz
dBm
Trace A
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
Start: 95.0000 GHz
Stop: 99.0000 GHz
Res BW: 1 MHz
Vid BW: 3 MHz
Sweep: 12.56 ms
29/09/2016 11:17:09
E4440A



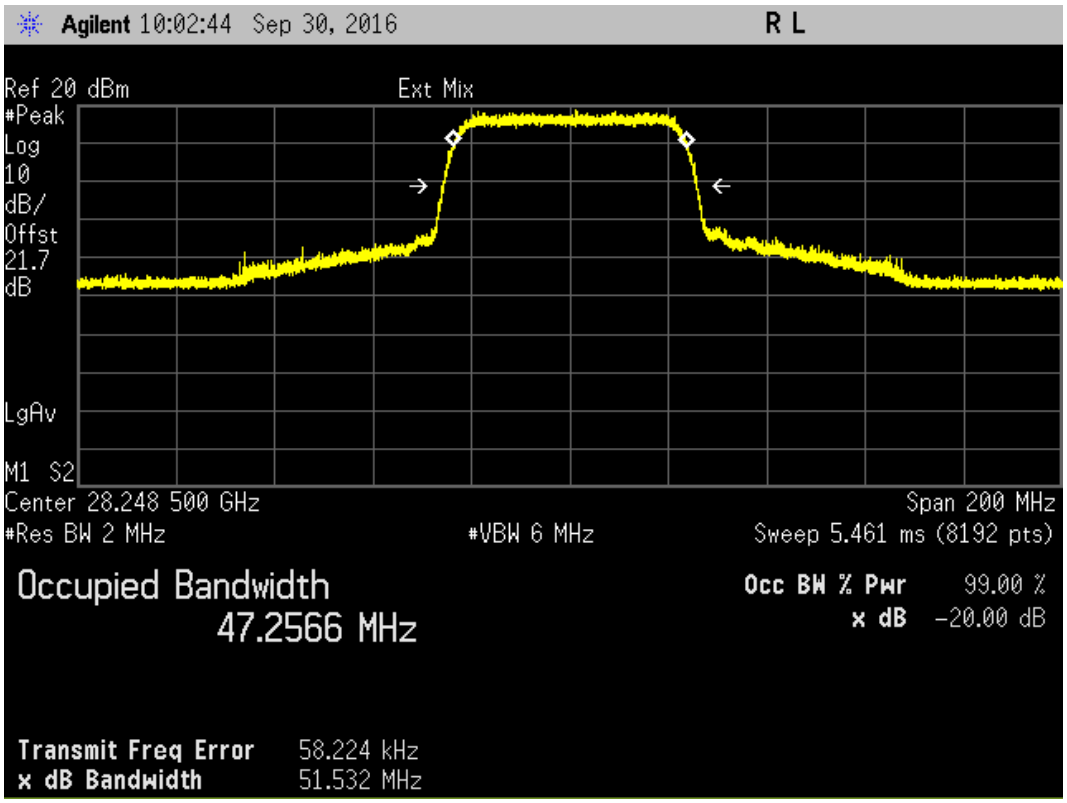
6.2 Occupied bandwidth

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20.5 dBm, Channel Spacing 50 MHz, Modulation QPSK, Channel 27.6045 GHz



Plot for 99% Bandwidth (MHz)

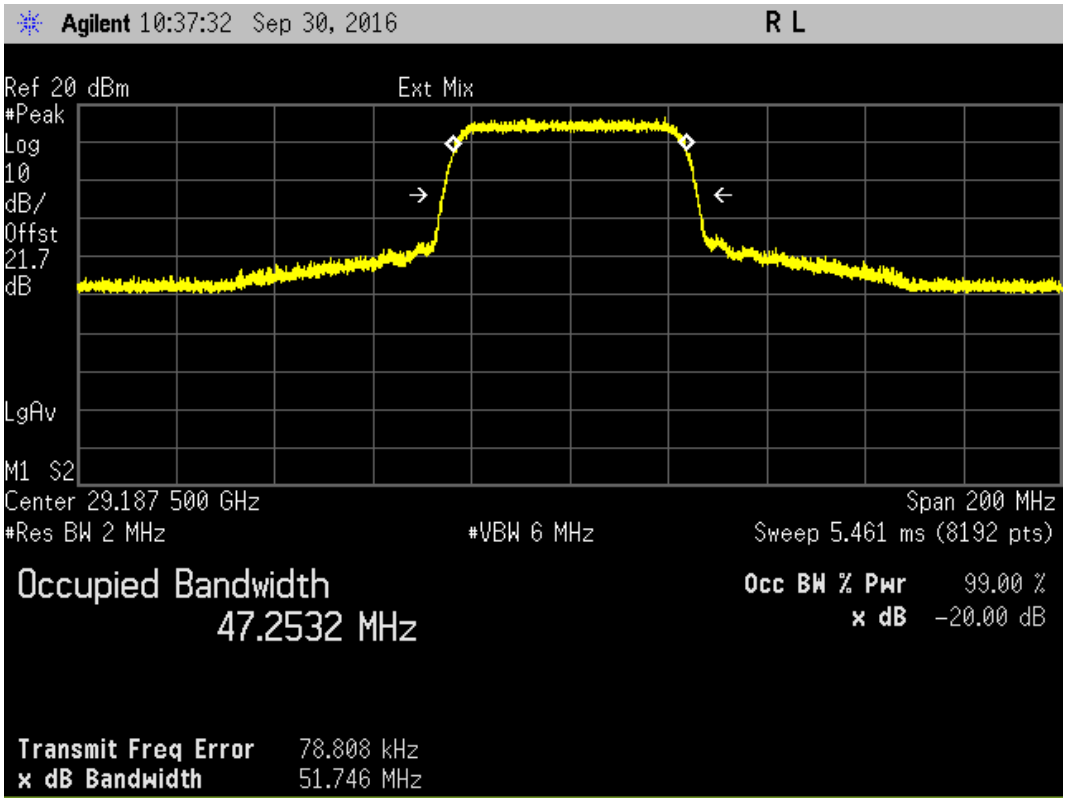
RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20.5dBm, Channel Spacing 50 MHz, Modulation QPSK, Channel 28.2485 GHz



Plot for 99% Bandwidth (MHz)

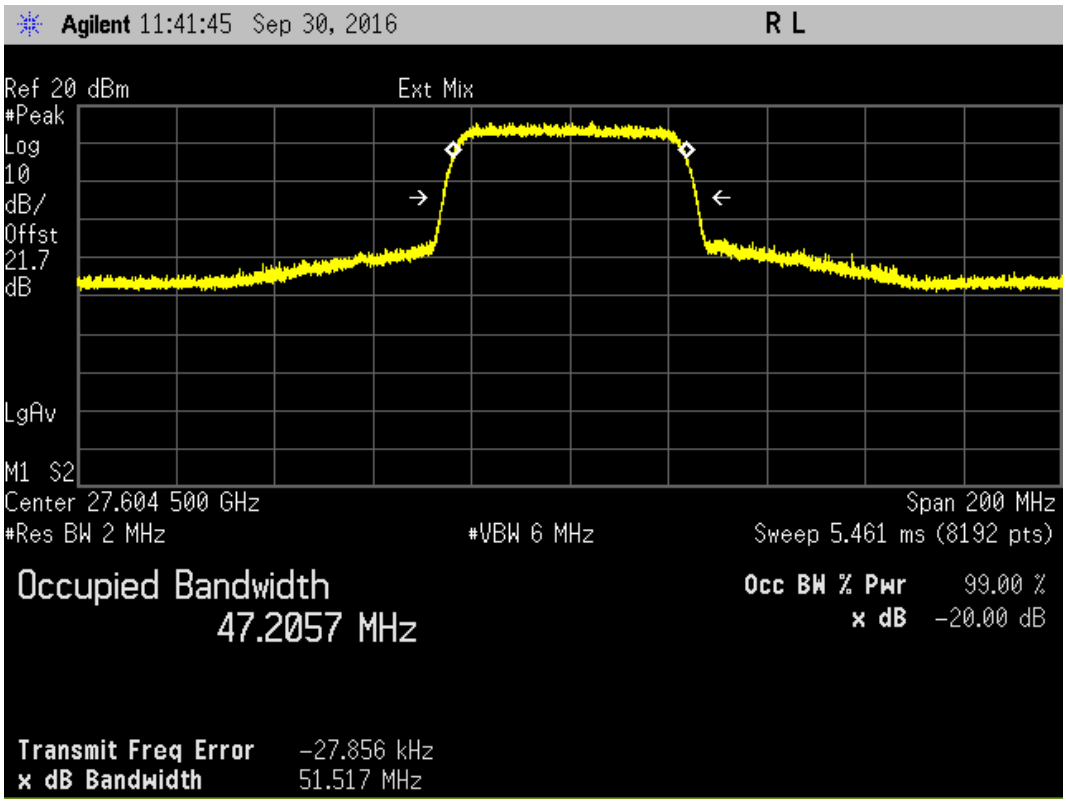
RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20.5 dBm, Channel Spacing

50 MHz, Modulation QPSK, Channel 29.1875 GHz



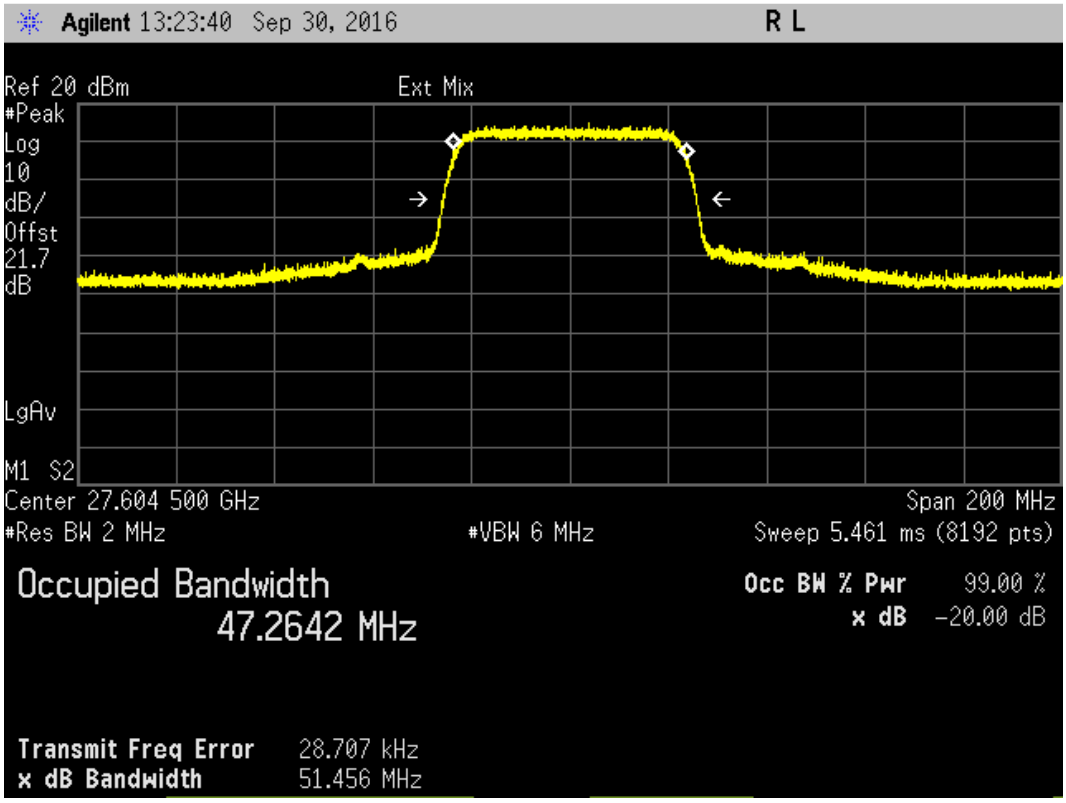
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5 dBm, Channel Spacing 50 MHz, Modulation QPSK, Channel 27.6045 GHz (+28.2485 GHz)



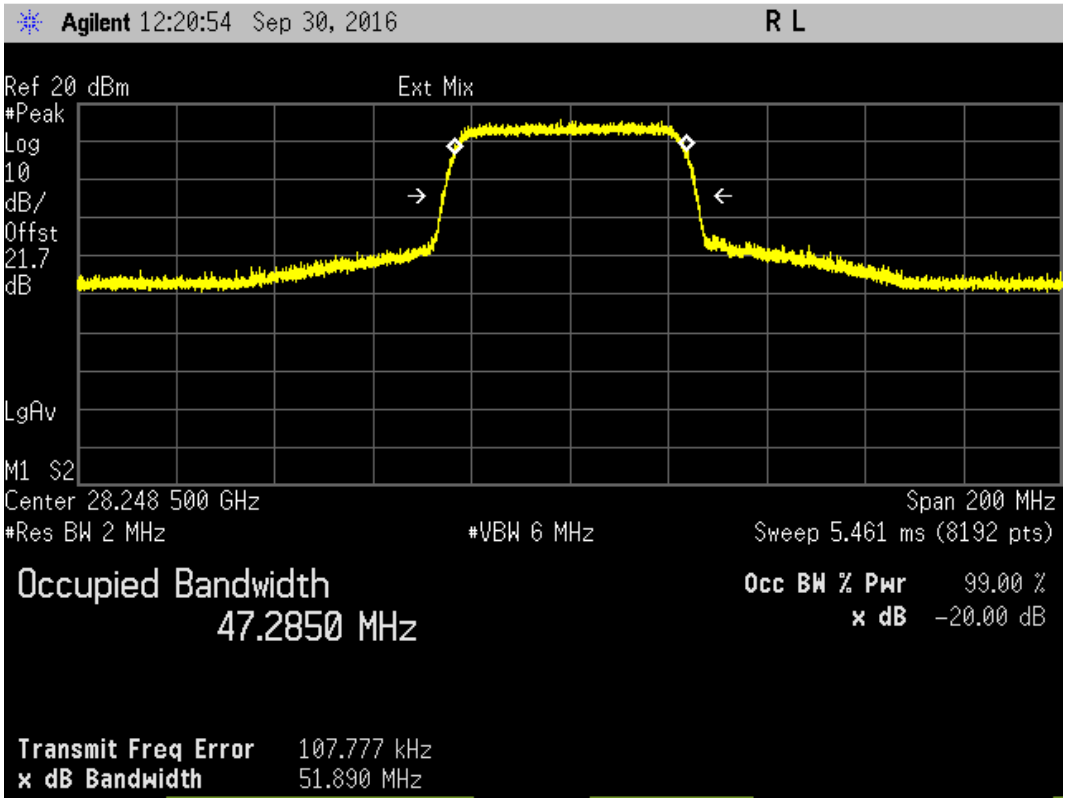
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5 dBm, Channel Spacing 50 MHz, Modulation QPSK, Channel 27.6045 GHz (+29.1875 GHz)



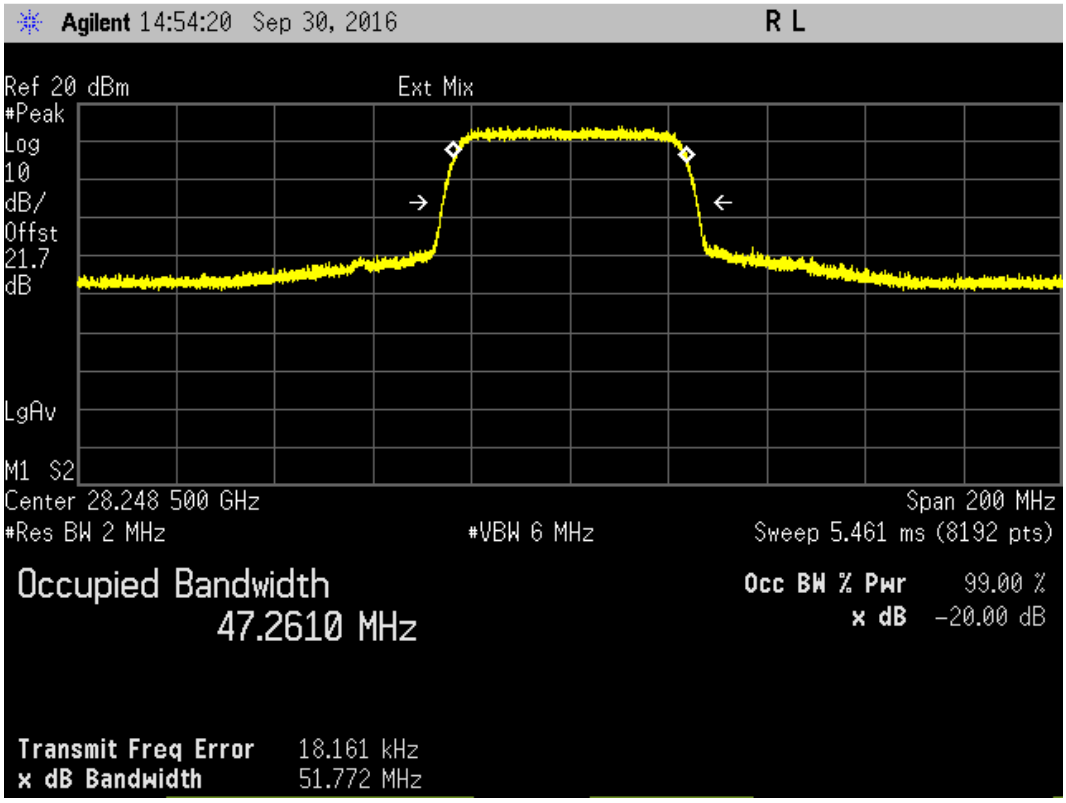
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 16.5 dBm, Channel Spacing 50 MHz, Modulation QPSK, Channel 28.2485 GHz (+27.60445 GHz)



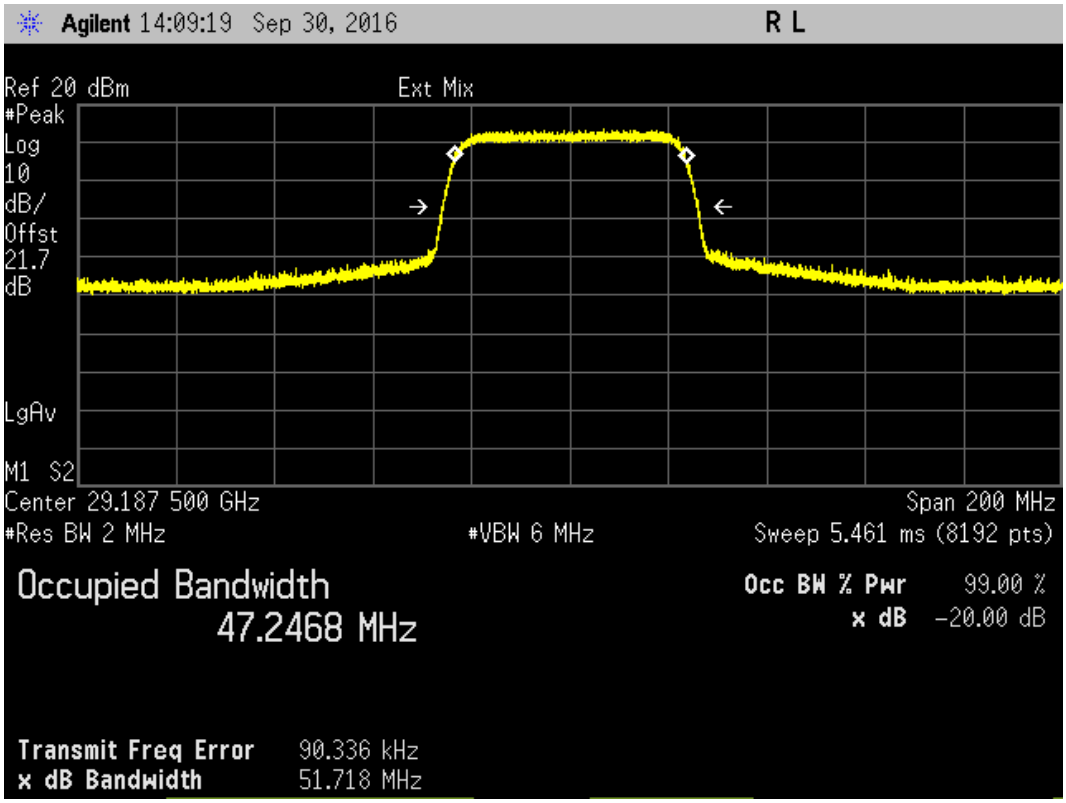
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 16.5 dBm, Channel Spacing 50 MHz, Modulation QPSK, Channel 28.2485 GHz (+29.1875 GHz)



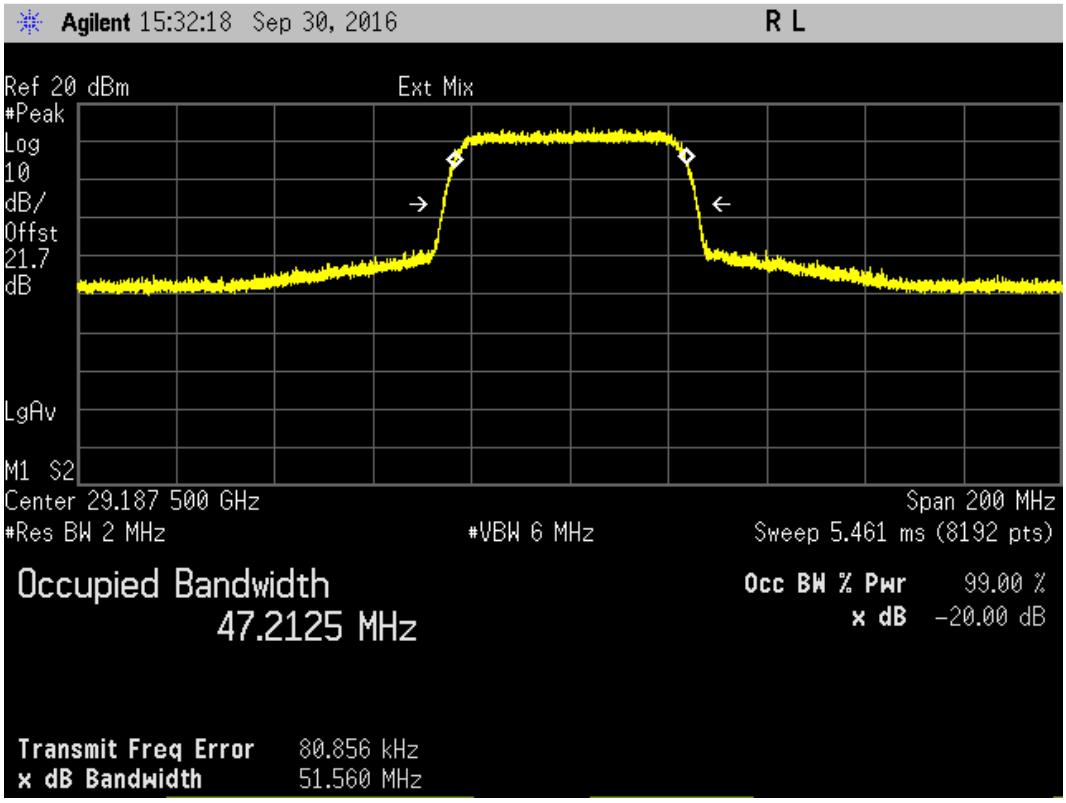
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 16.5 dBm, Channel Spacing 50 MHz, Modulation QPSK, Channel 29.1875 GHz (+27.60445 GHz)



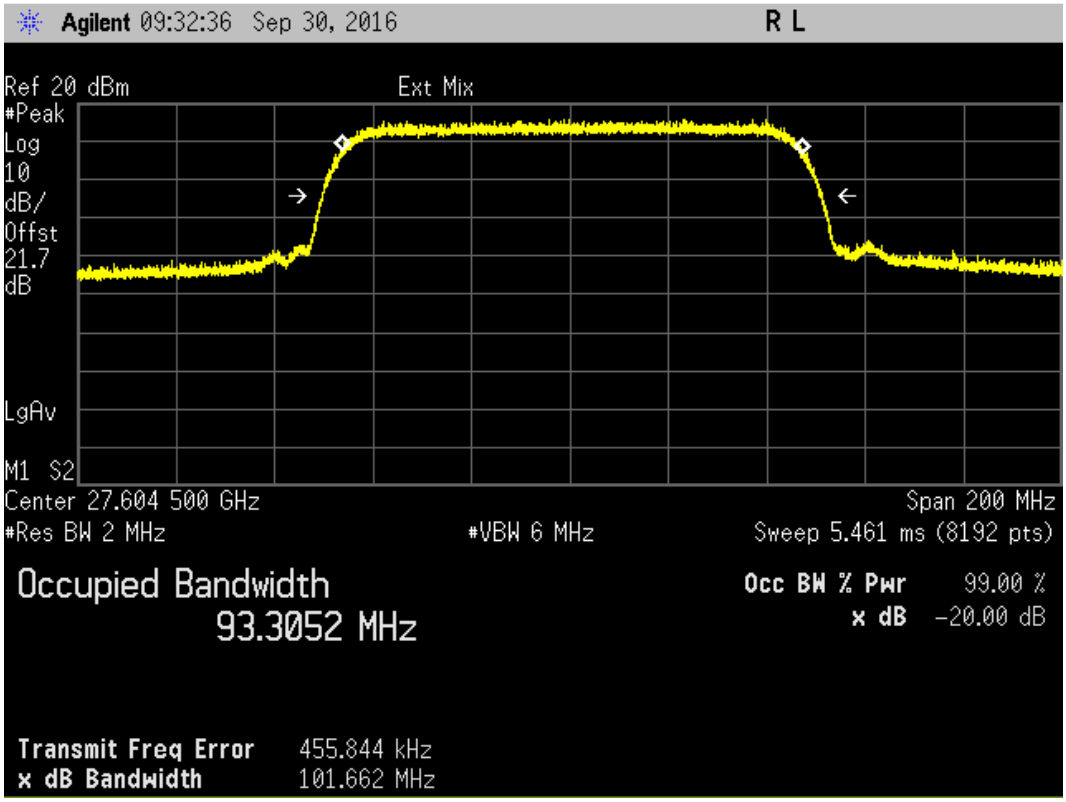
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 16.5 dBm, Channel Spacing 50 MHz, Modulation QPSK, Channel 29.1875 GHz (+28.2485 GHz)



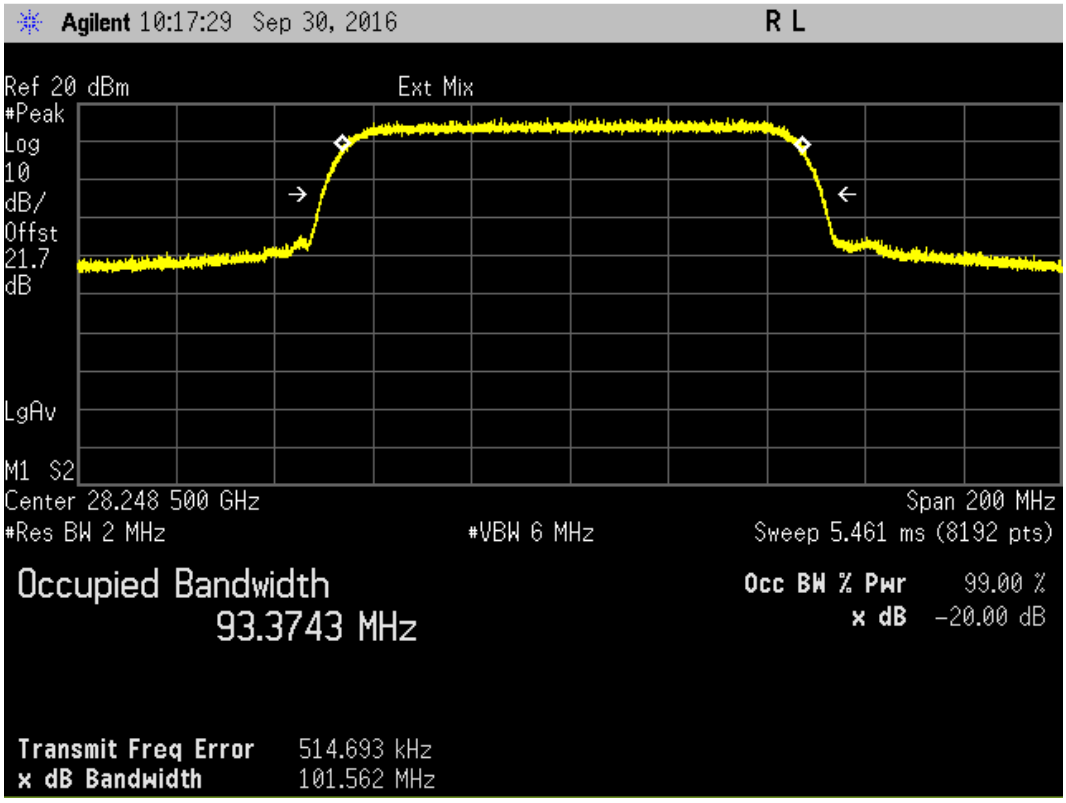
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 20.5 dBm, Channel Spacing 100 MHz, Modulation QPSK, Channel 27.6045 GHz



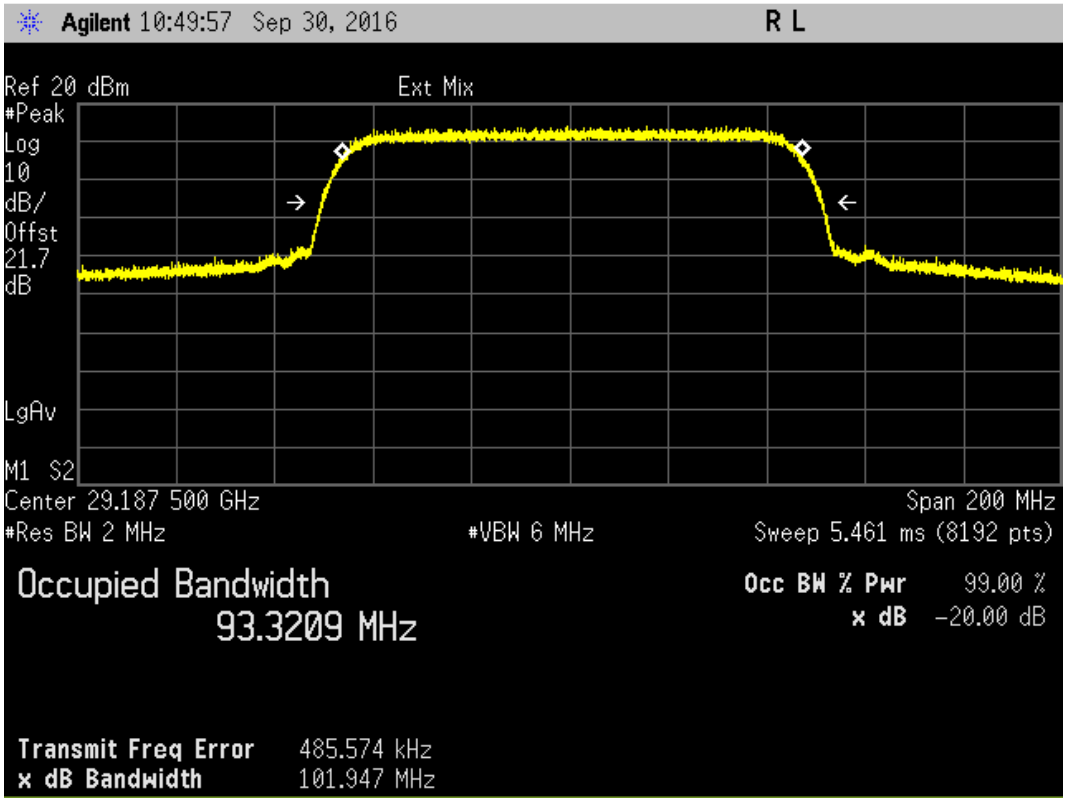
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 20.5 dBm, Channel Spacing 100 MHz, Modulation QPSK, Channel 28.2485 GHz



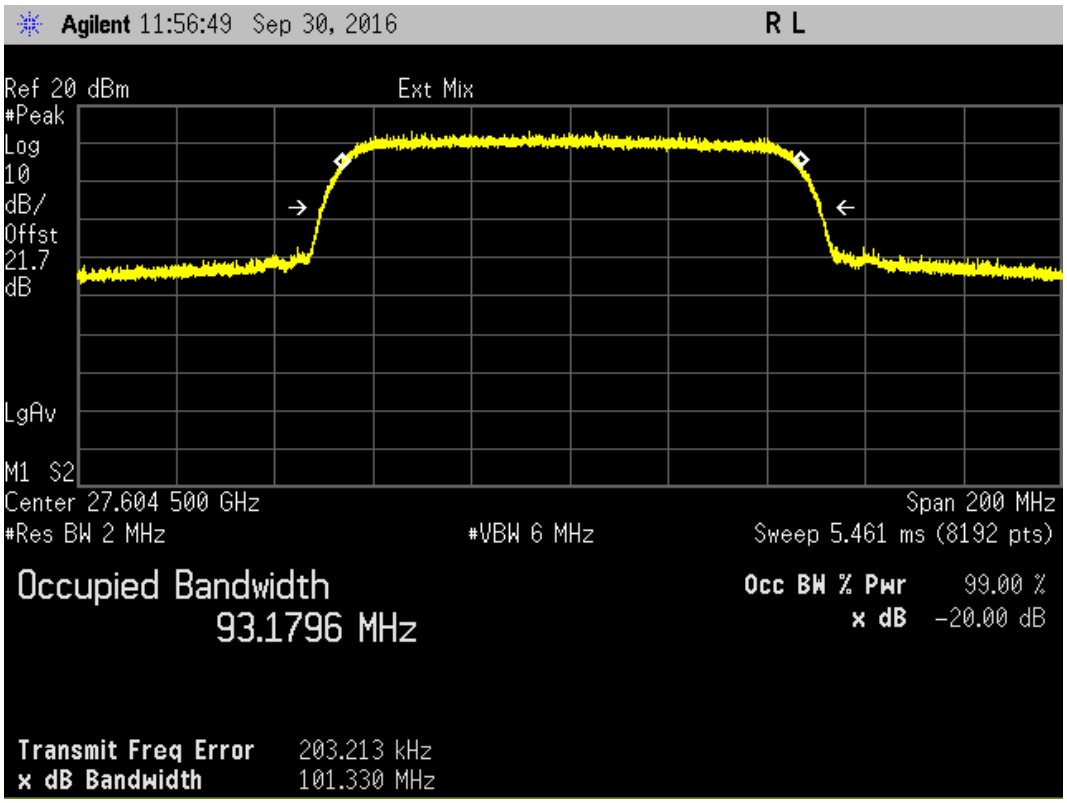
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 20.5 dBm, Channel Spacing 100 MHz, Modulation QPSK, Channel 29.1875 GHz



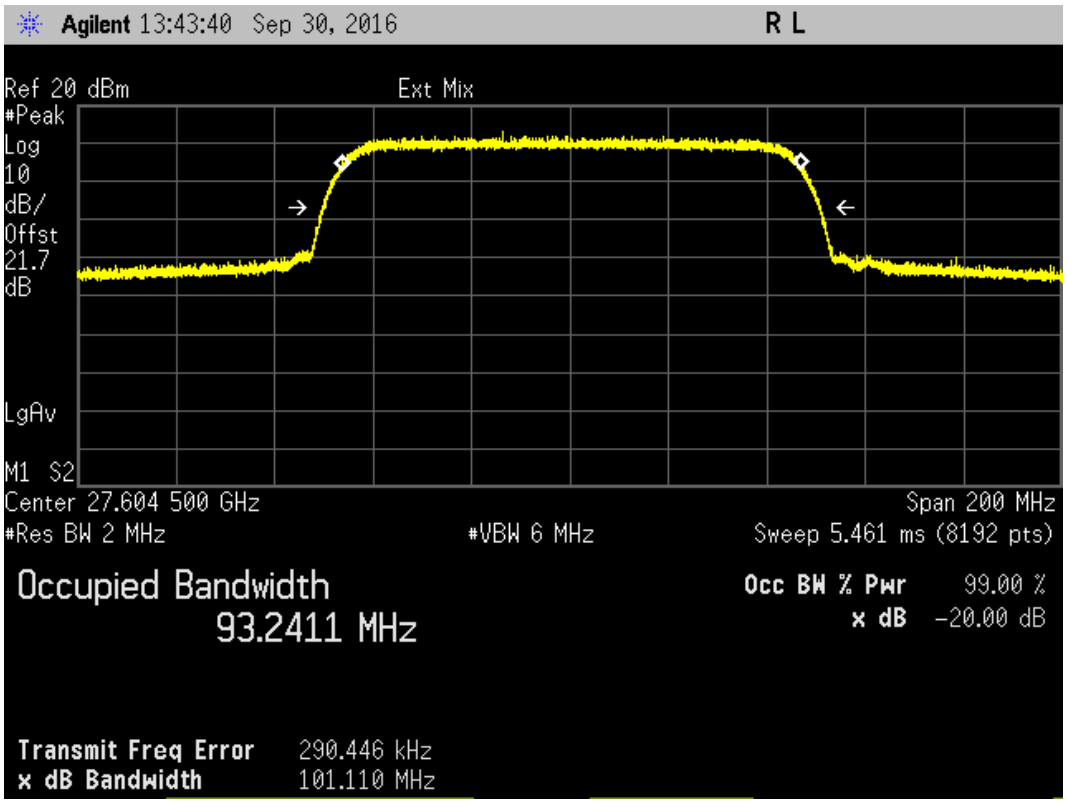
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5 dBm, Channel Spacing 100 MHz, Modulation QPSK, Channel 27.6045 GHz (+28.2485 GHz)



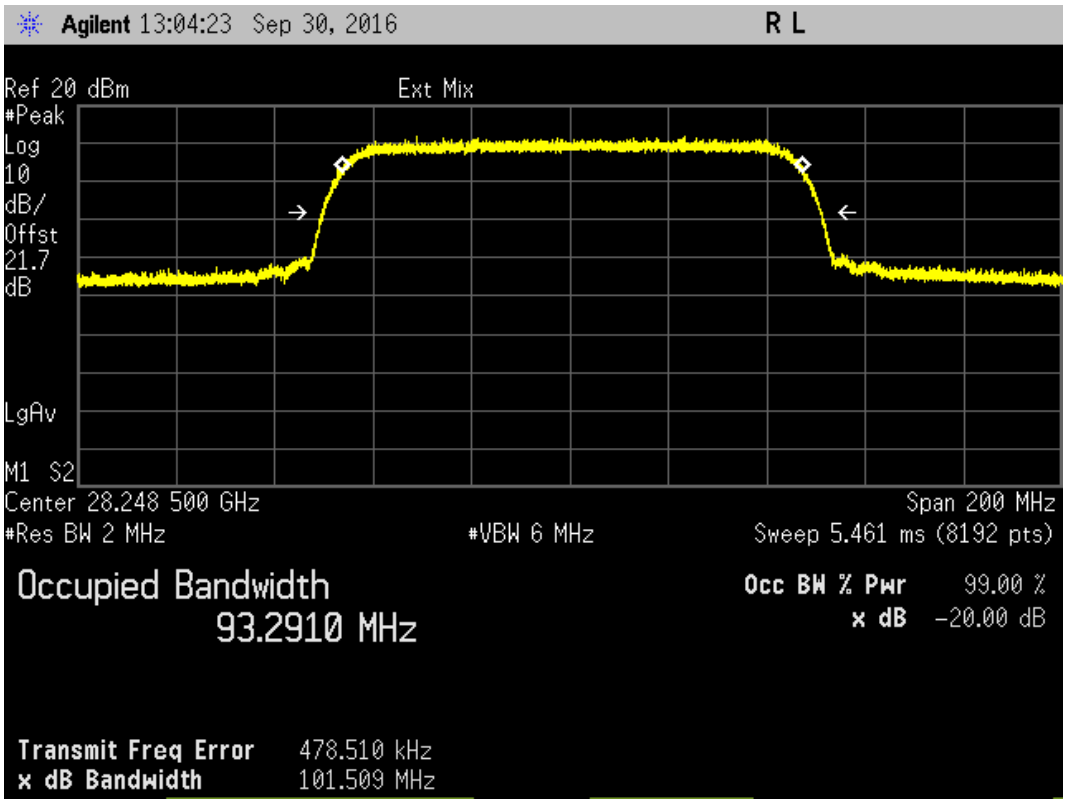
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5 dBm, Channel Spacing 100 MHz, Modulation QPSK, Channel 27.6045 GHz (+29.1875 GHz)



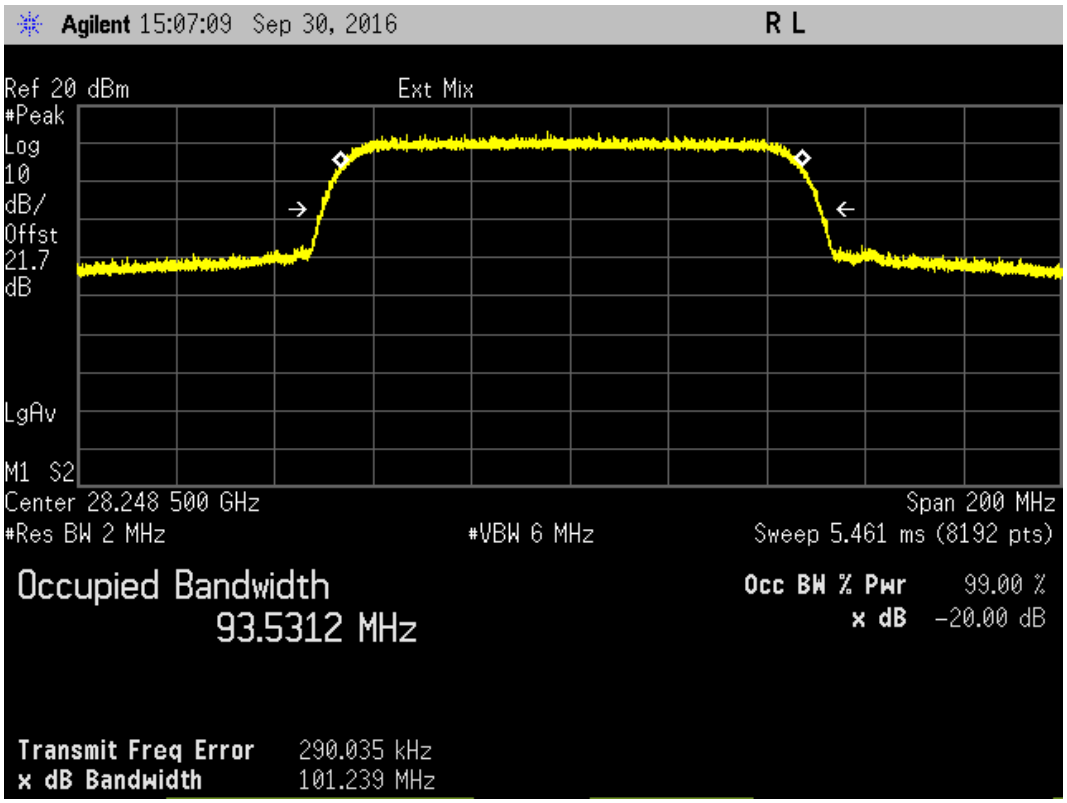
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5 dBm, Channel Spacing 100 MHz, Modulation QPSK, Channel 28.2485 GHz (+27.6045 GHz)



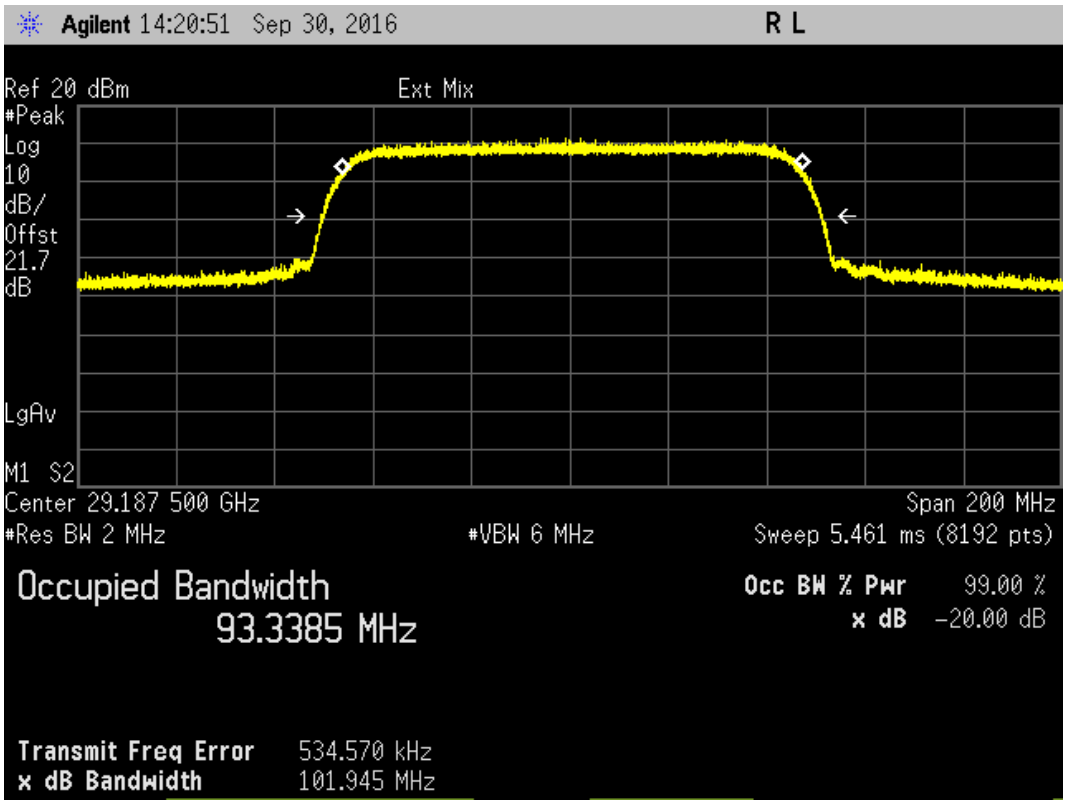
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5 dBm, Channel Spacing 100 MHz, Modulation QPSK, Channel 28.2485 GHz (+29.1875 GHz)



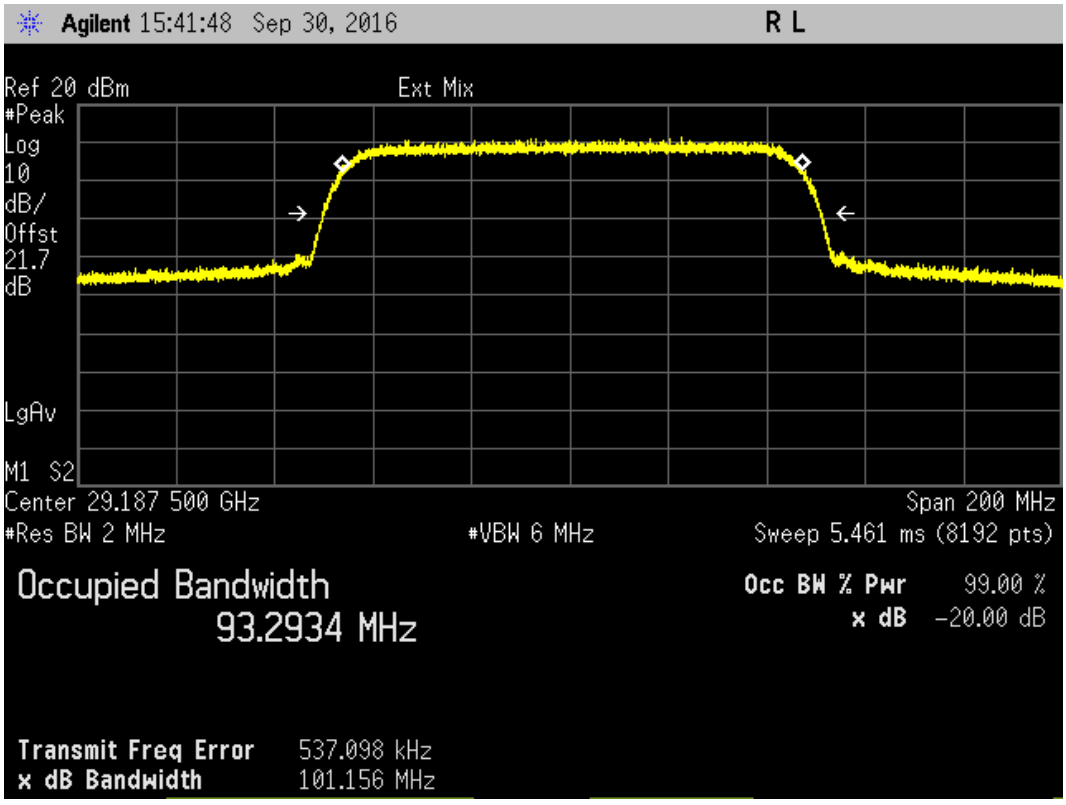
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5 dBm, Channel Spacing 100 MHz, Modulation QPSK, Channel 29.1875 GHz (+27.6045 GHz)



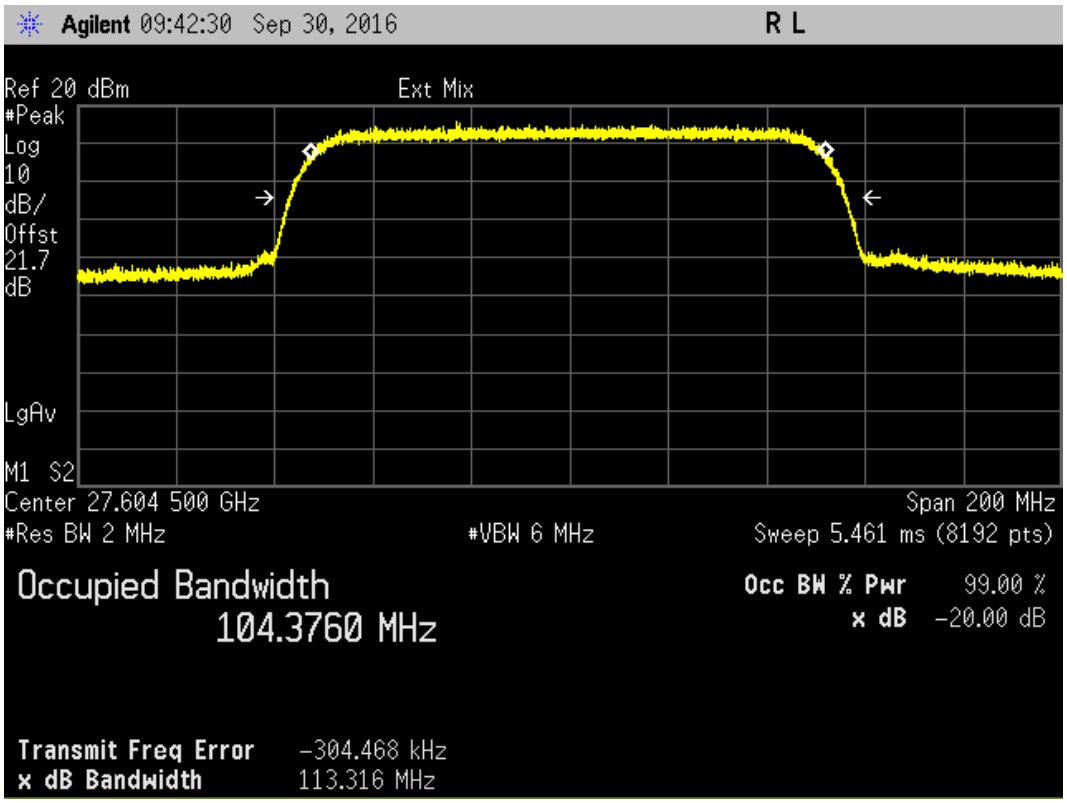
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5 dBm, Channel Spacing 100 MHz, Modulation QPSK, Channel 29.1875 GHz (+28.2485 GHz)



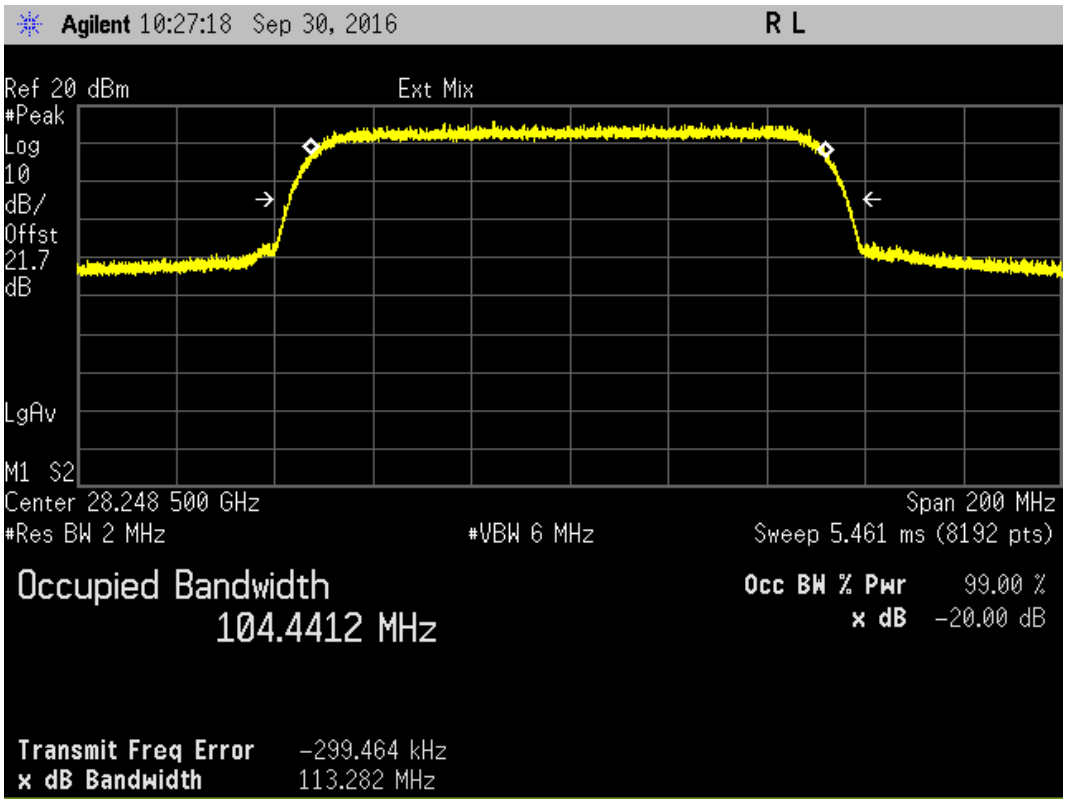
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20.5 dBm, Channel Spacing 100 MHz, Modulation QPSK, Channel 27.6045 GHz



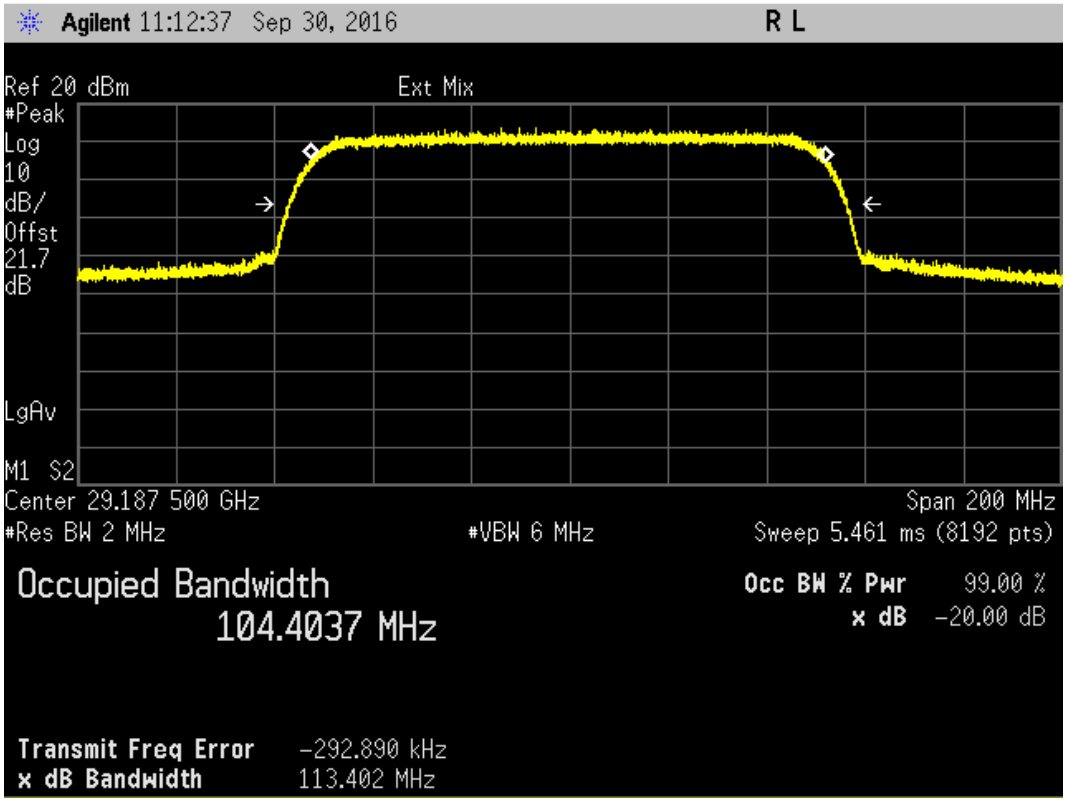
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20.5 dBm, Channel Spacing 100 MHz, Modulation QPSK, Channel 28.2485 GHz



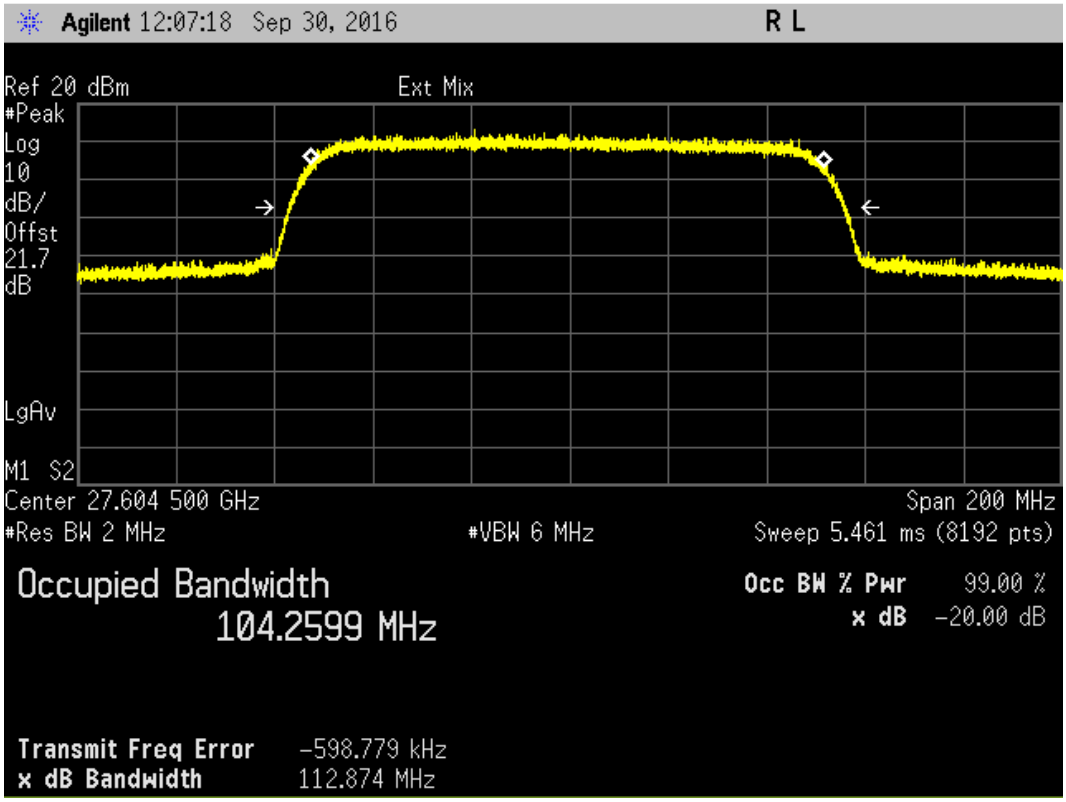
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20.5 dBm, Channel Spacing 100 MHz, Modulation QPSK, Channel 29.1875 GHz



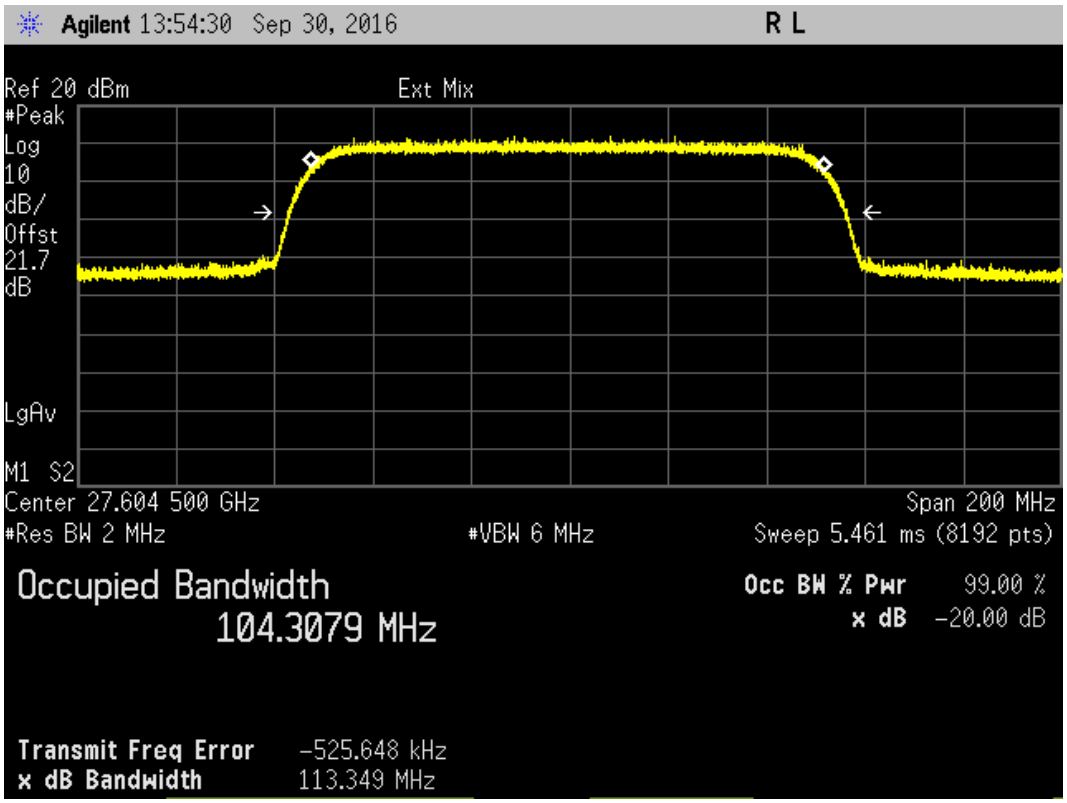
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5dBm, Channel Spacing 112 MHz, Modulation QPSK, Channel 27.6045 GHz (+28.2485 GHz)



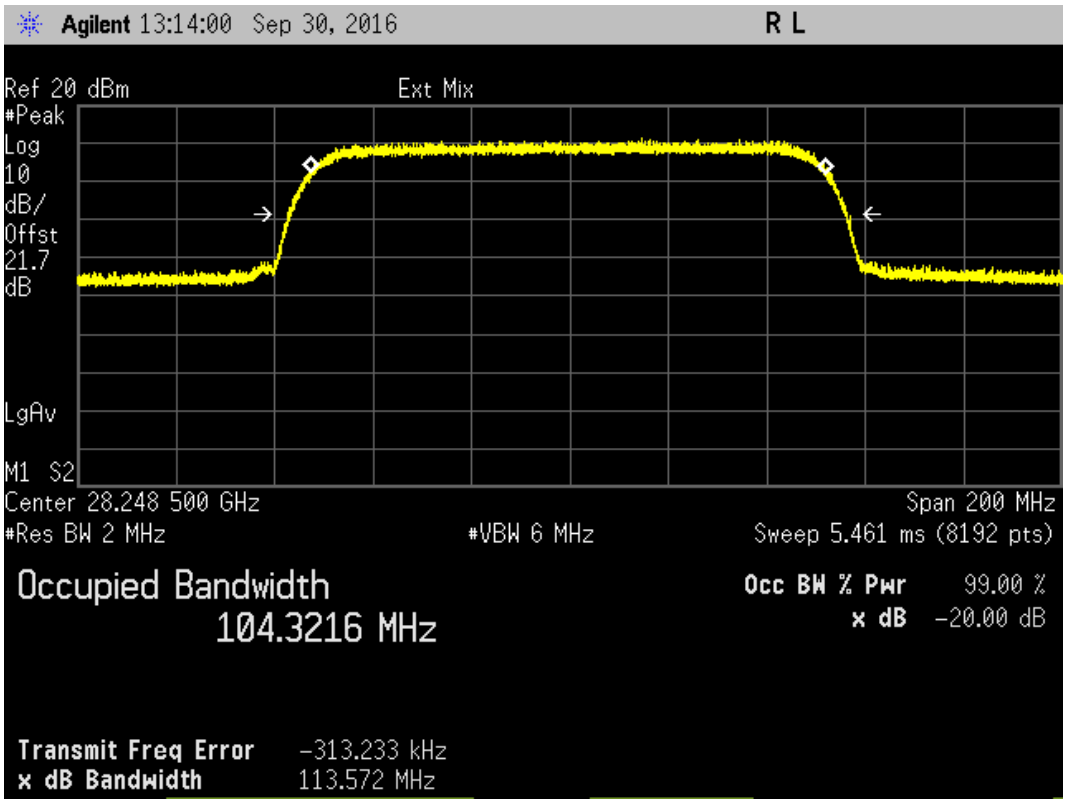
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5dBm, Channel Spacing 112 MHz, Modulation QPSK, Channel 27.6045 GHz (+29.1875 GHz)



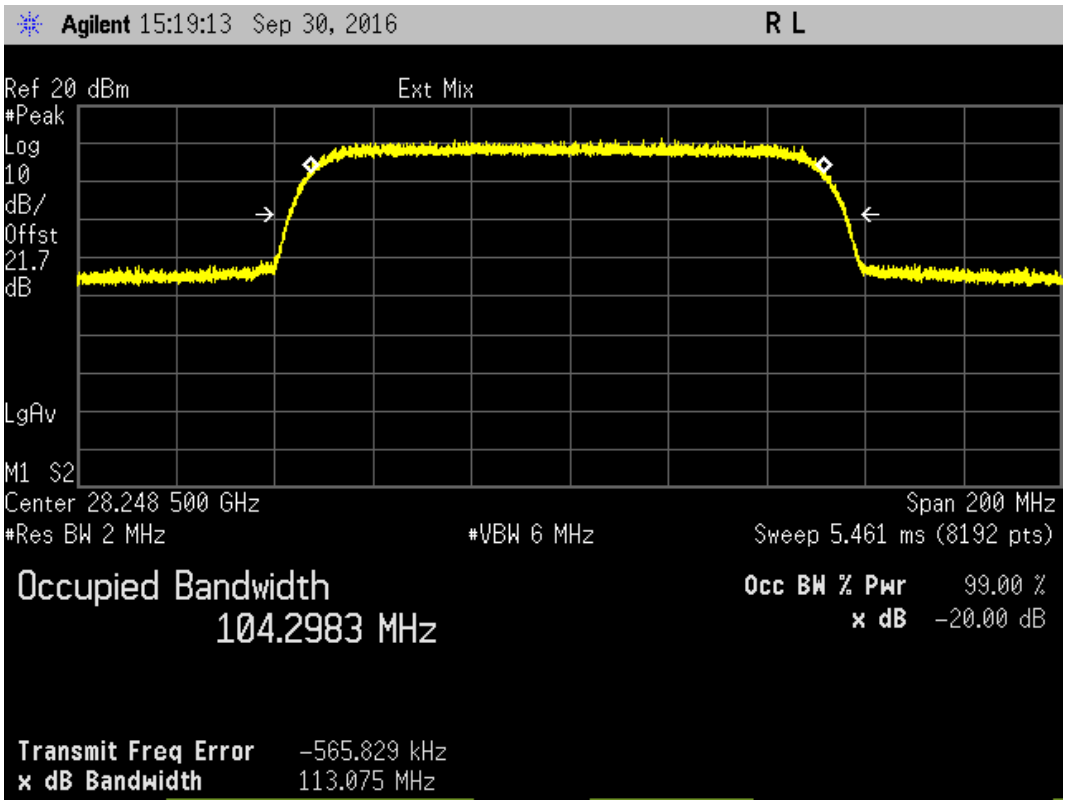
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5dBm, Channel Spacing 112 MHz, Modulation QPSK, Channel 28.2485 GHz (+27.6045 GHz)



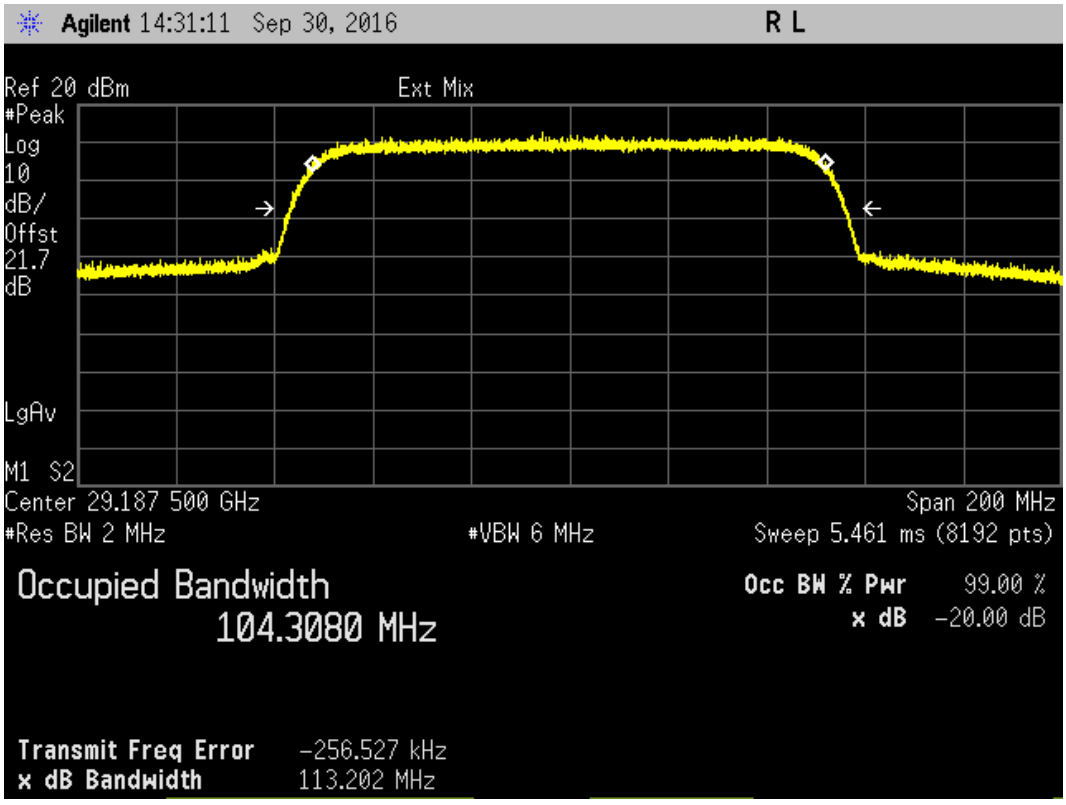
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5dBm, Channel Spacing 112 MHz, Modulation QPSK, Channel 28.2485 GHz (+29.1875 GHz)



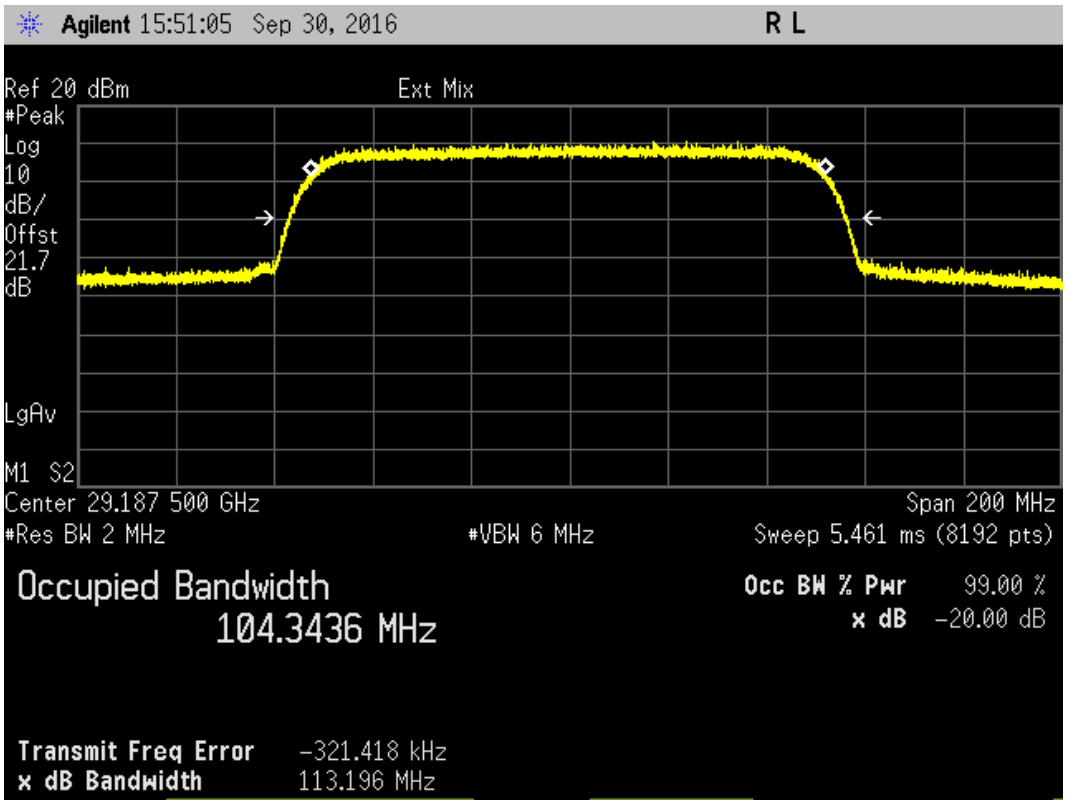
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5dBm, Channel Spacing 112 MHz, Modulation QPSK, Channel 29.1875 GHz (+27.6045 GHz)



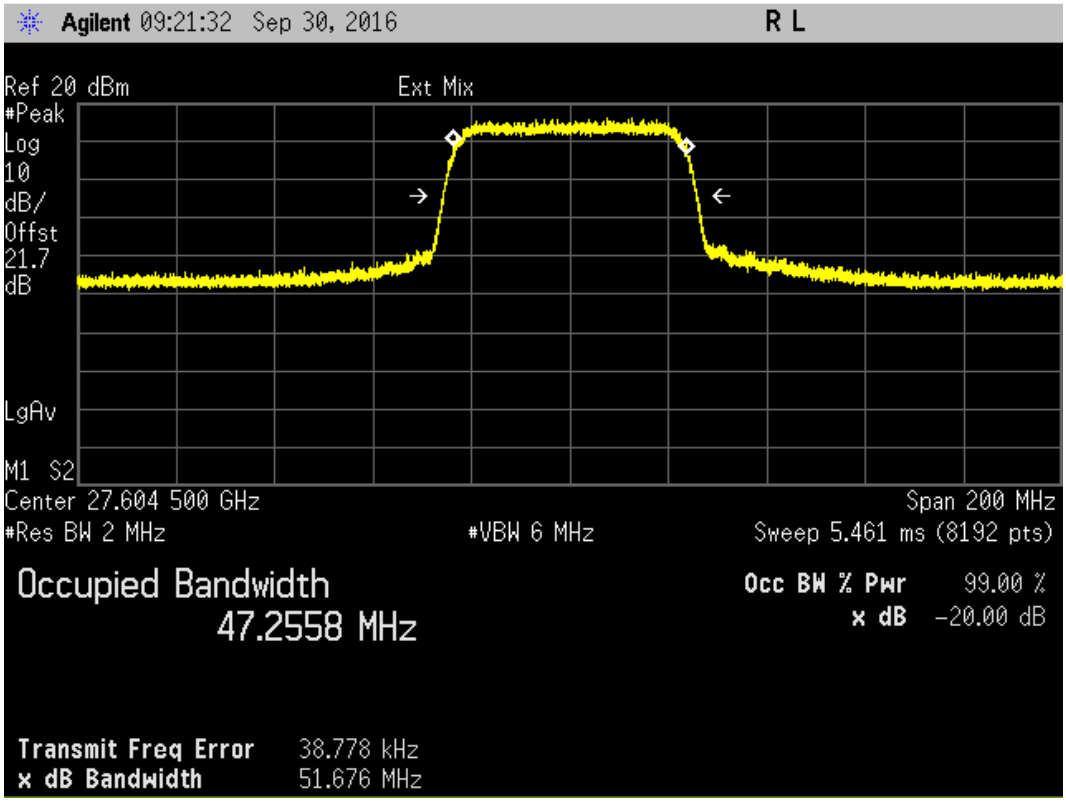
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5dBm, Channel Spacing 112 MHz, Modulation QPSK, Channel 29.1875 GHz (+28.2485 GHz)



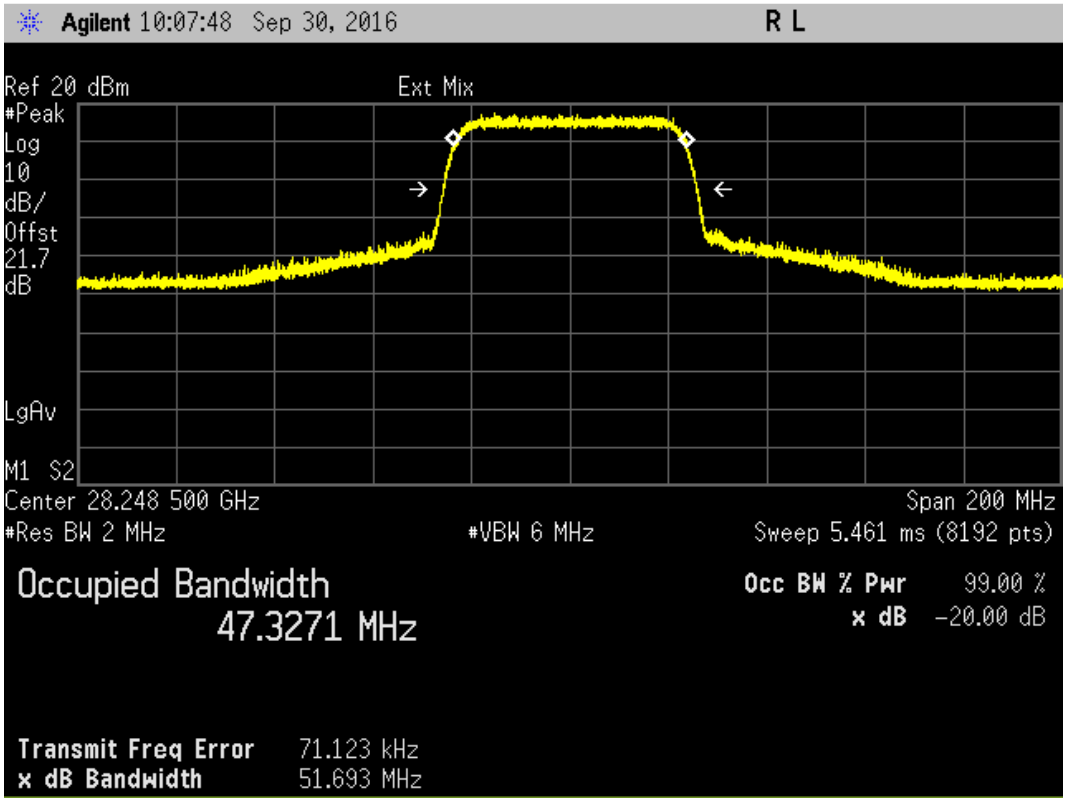
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20 dBm, Channel Spacing 50 MHz, Modulation 16QAM, Channel 27.6045 GHz



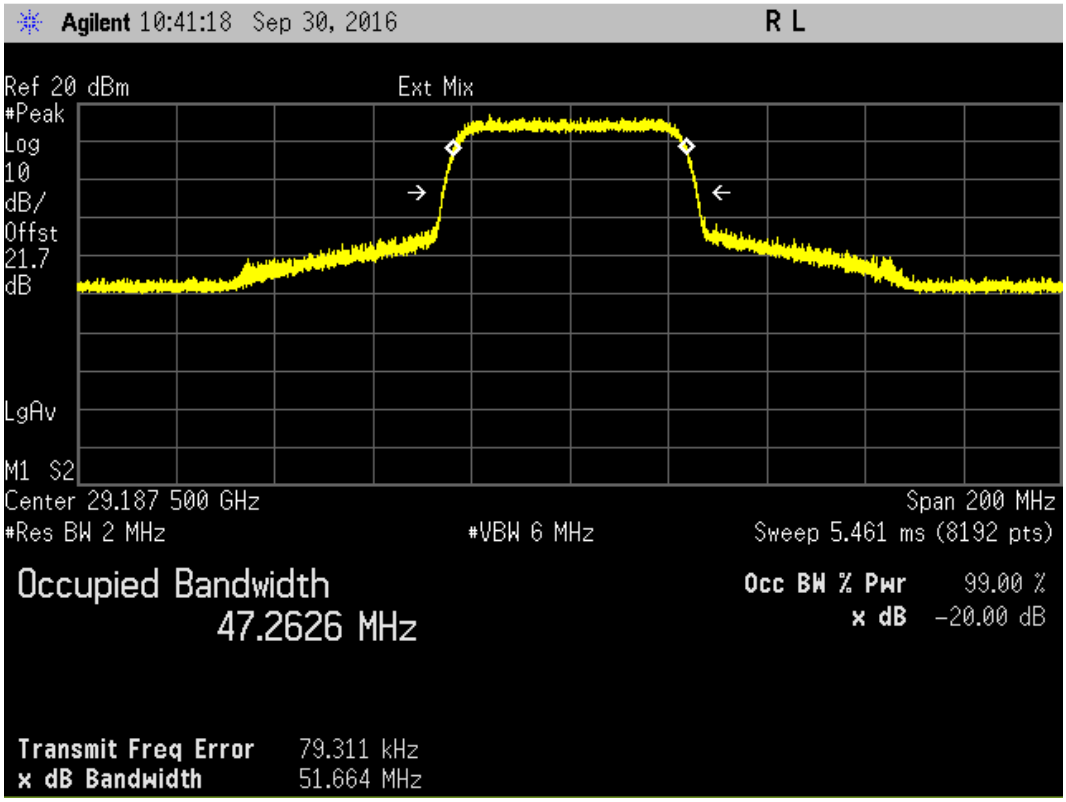
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20 dBm, Channel Spacing 50 MHz, Modulation 16QAM, Channel 28.2485 GHz



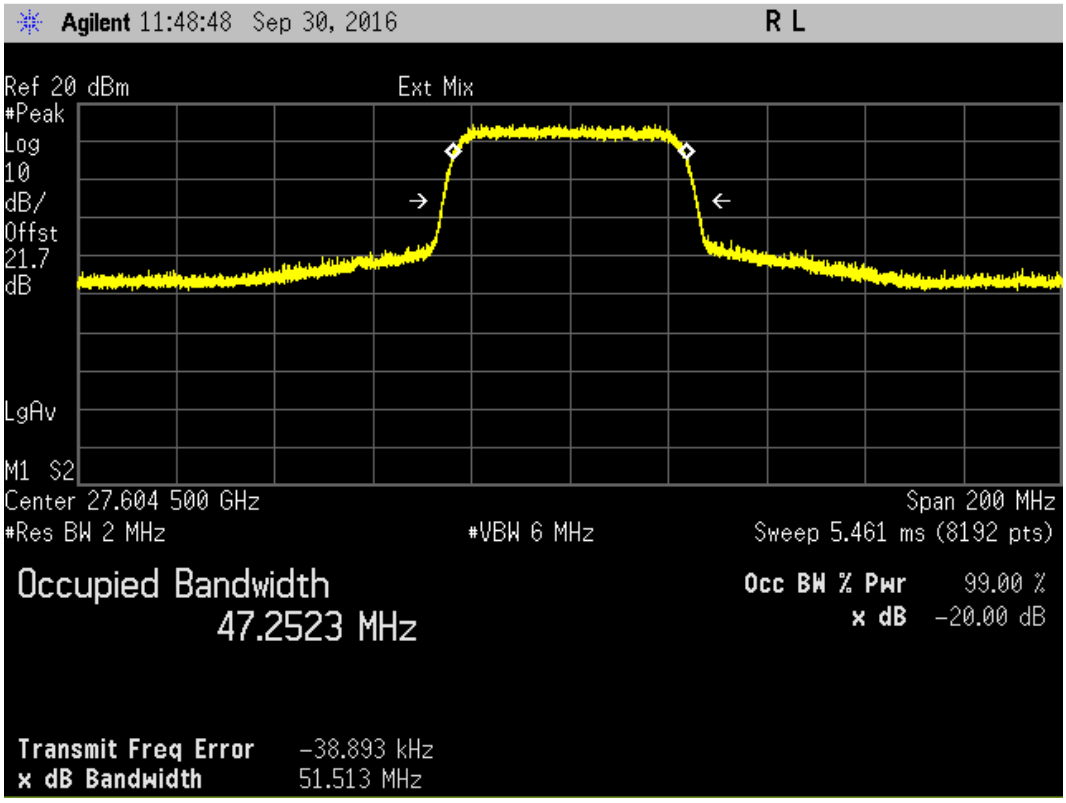
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20 dBm, Channel Spacing 50 MHz, Modulation 16QAM, Channel 29.1875 GHz



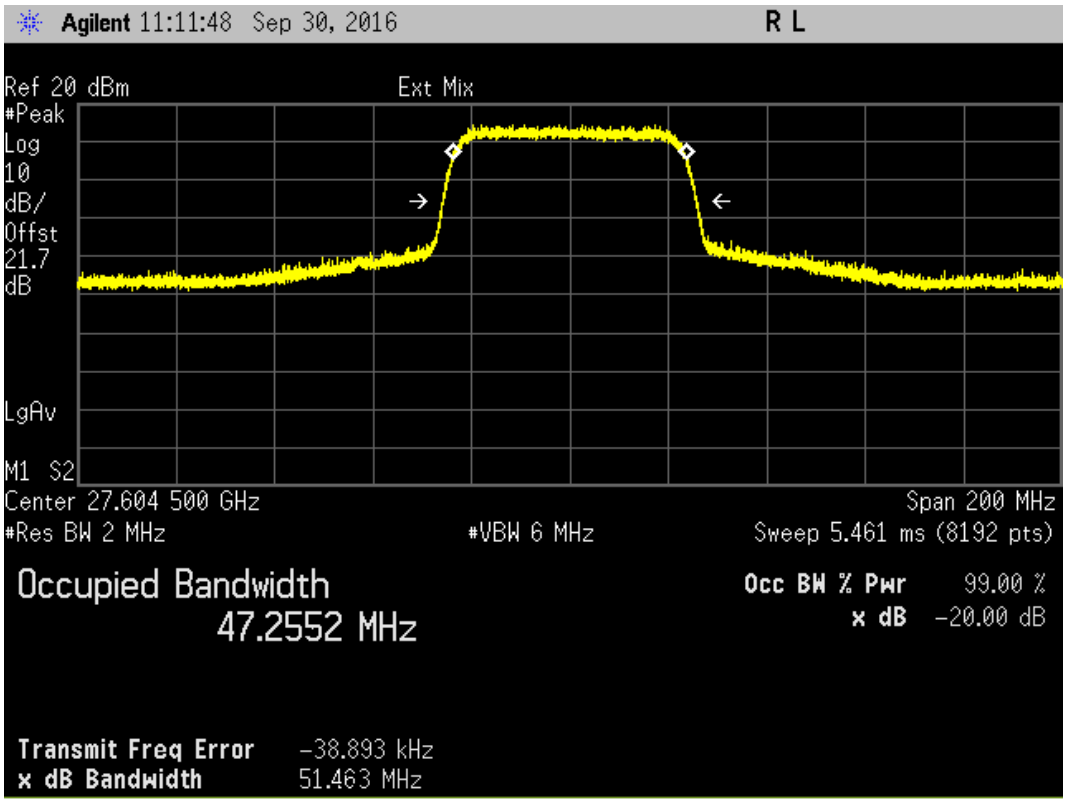
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 50 MHz, Modulation 16QAM, Channel 27.6045 GHz (+28.2485 GHz)



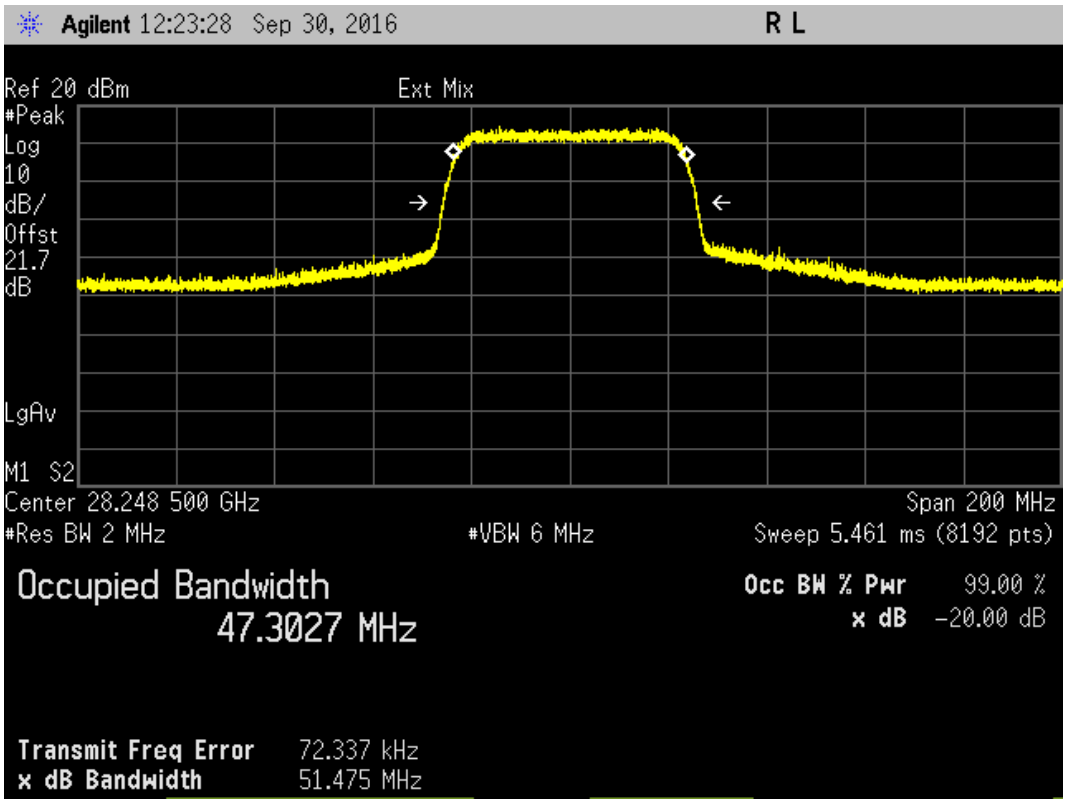
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 50 MHz, Modulation 16QAM, Channel 27.6045 GHz (+29.1875 GHz)



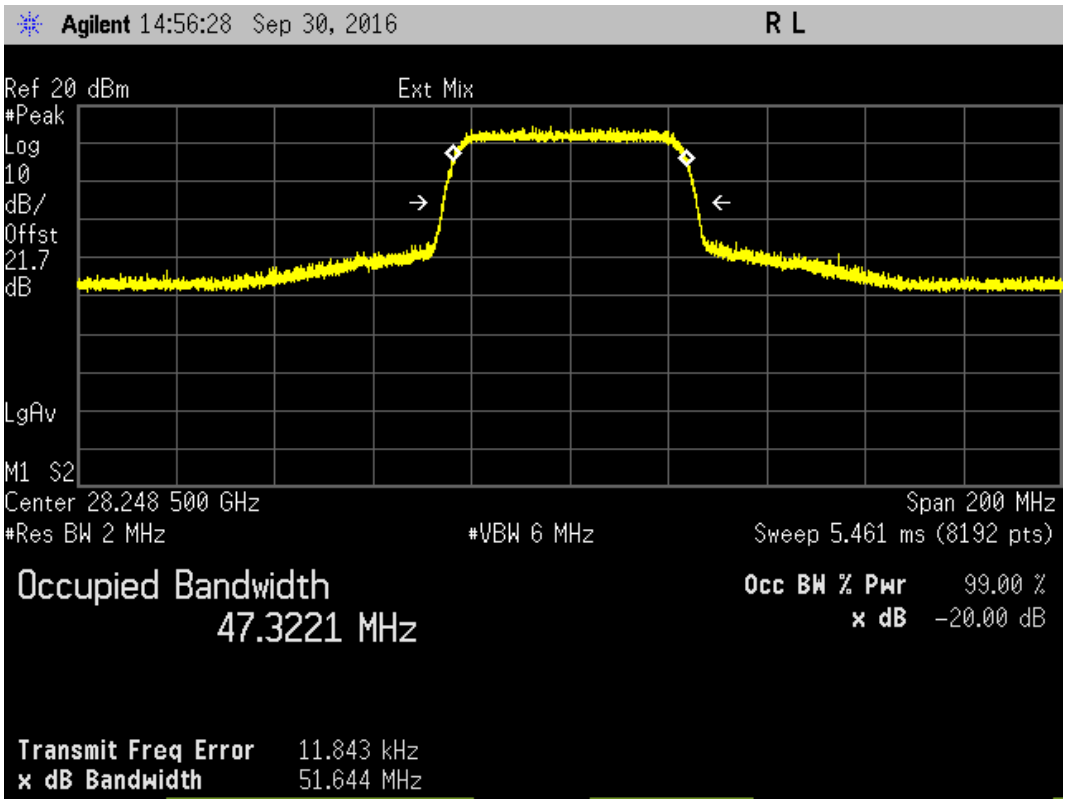
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 50 MHz, Modulation 16QAM, Channel 28.2485 GHz (+27.6045 GHz)



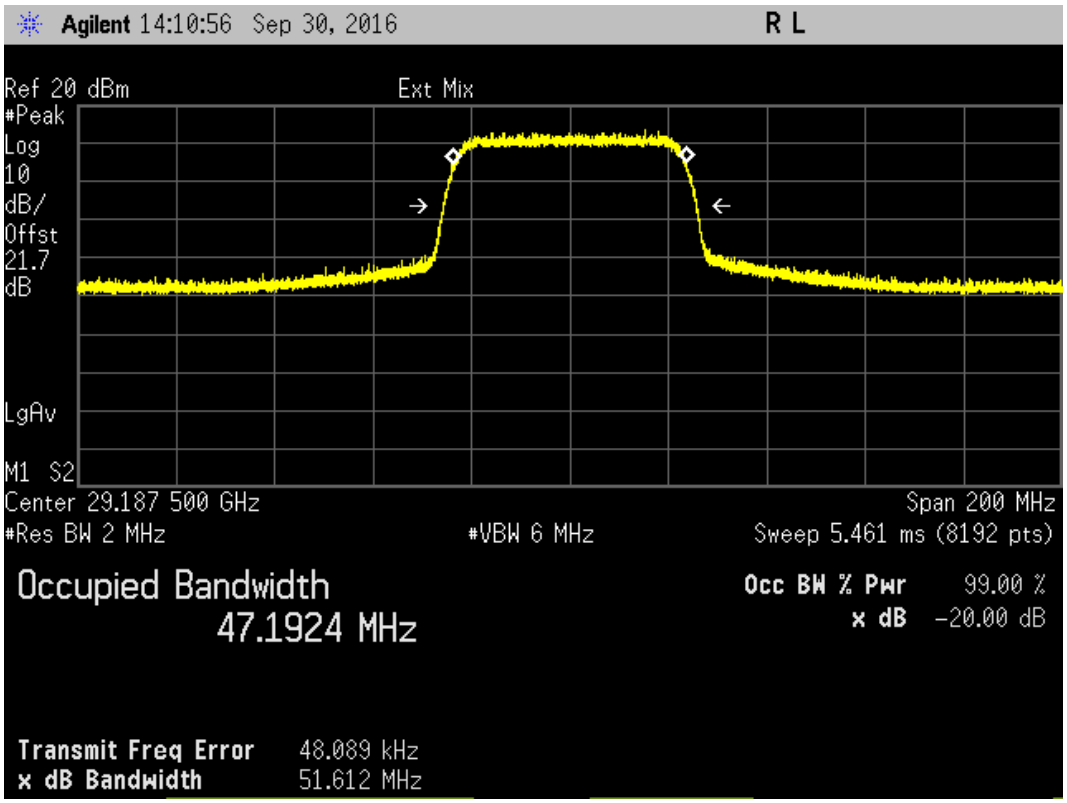
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 50 MHz, Modulation 16QAM, Channel 28.2485 GHz (+29.1875 GHz)



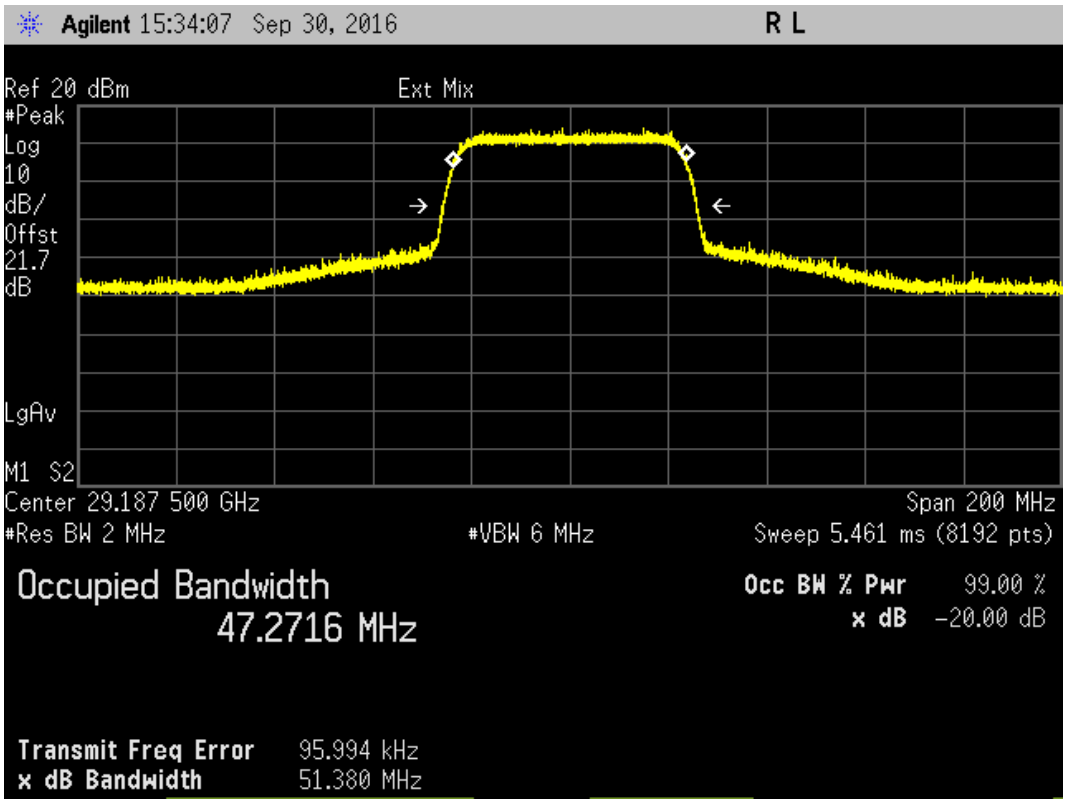
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 50 MHz, Modulation 16QAM, Channel 29.1875 GHz (+27.6045 GHz)



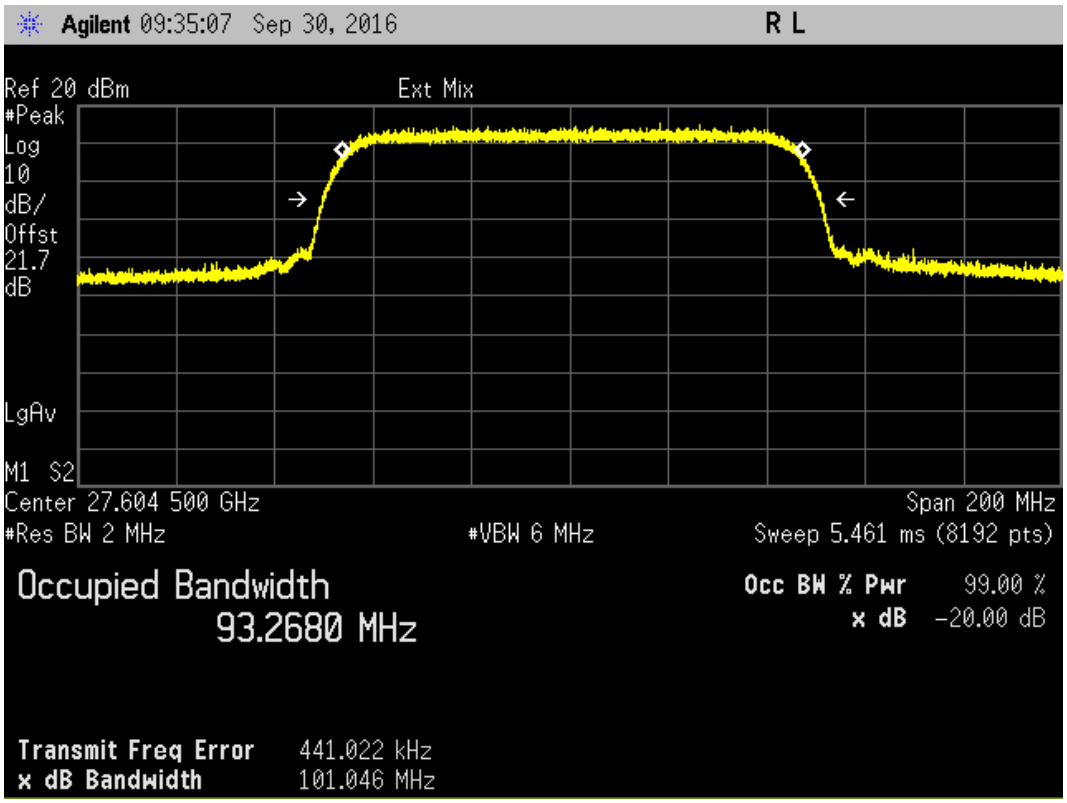
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 50 MHz, Modulation 16QAM, Channel 29.1875 GHz (+28.2485 GHz)



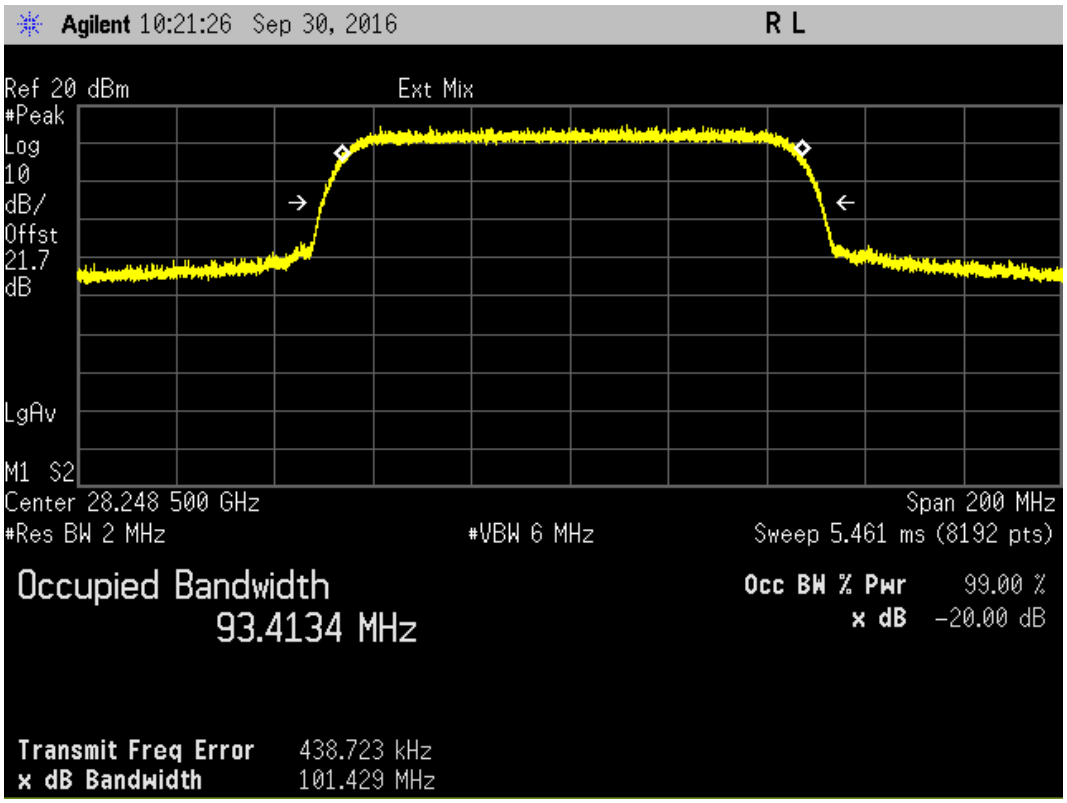
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20 dBm, Channel Spacing 100 MHz, Modulation 16QAM, Channel 27.6045 GHz



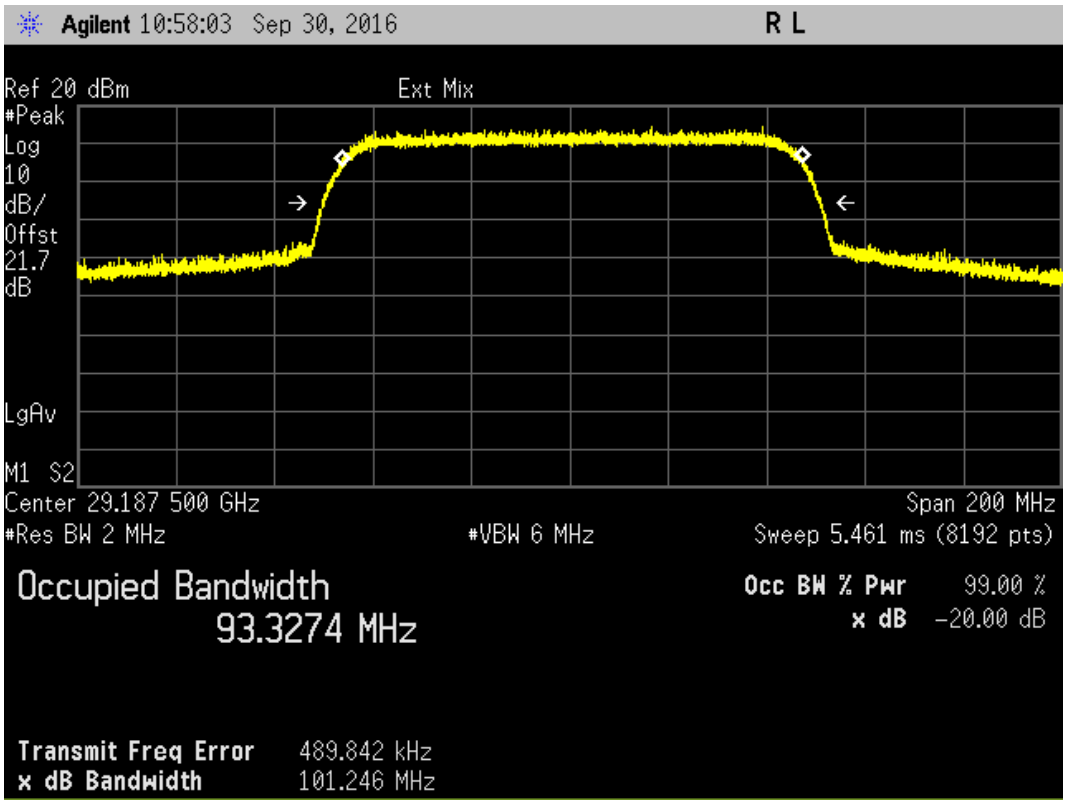
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20 dBm, Channel Spacing 100 MHz, Modulation 16QAM, Channel 28.2485 GHz



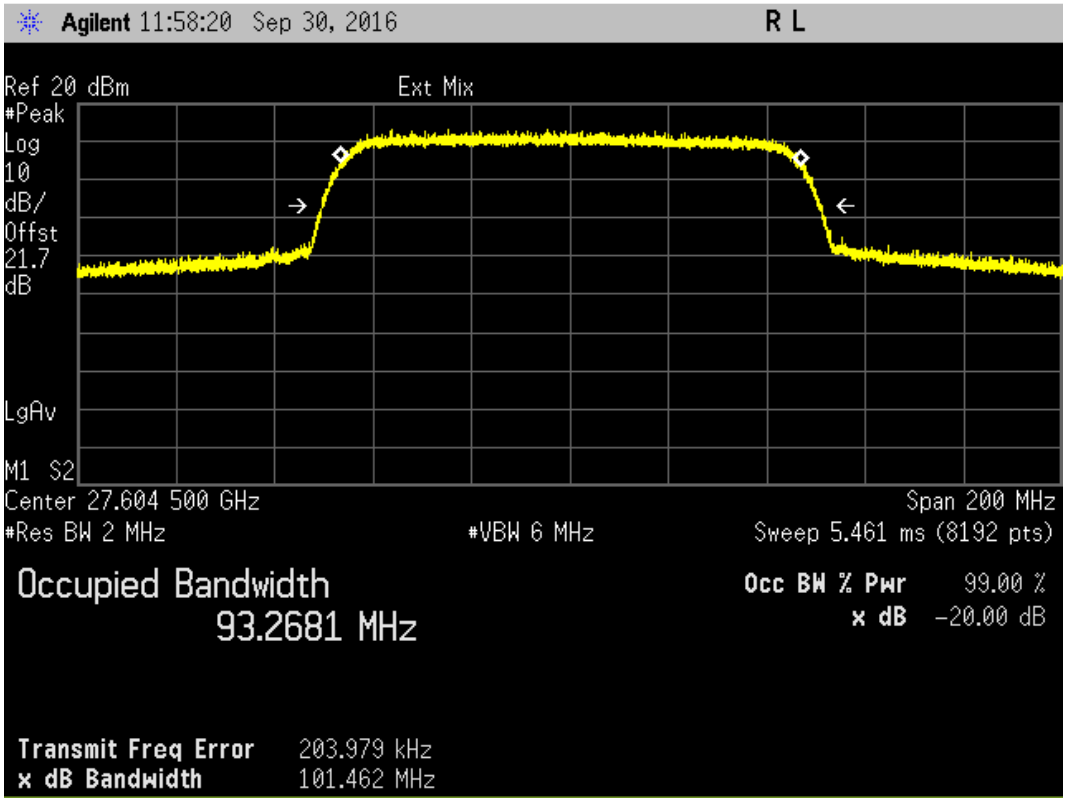
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20 dBm, Channel Spacing 100 MHz, Modulation 16QAM, Channel 29.1875 GHz



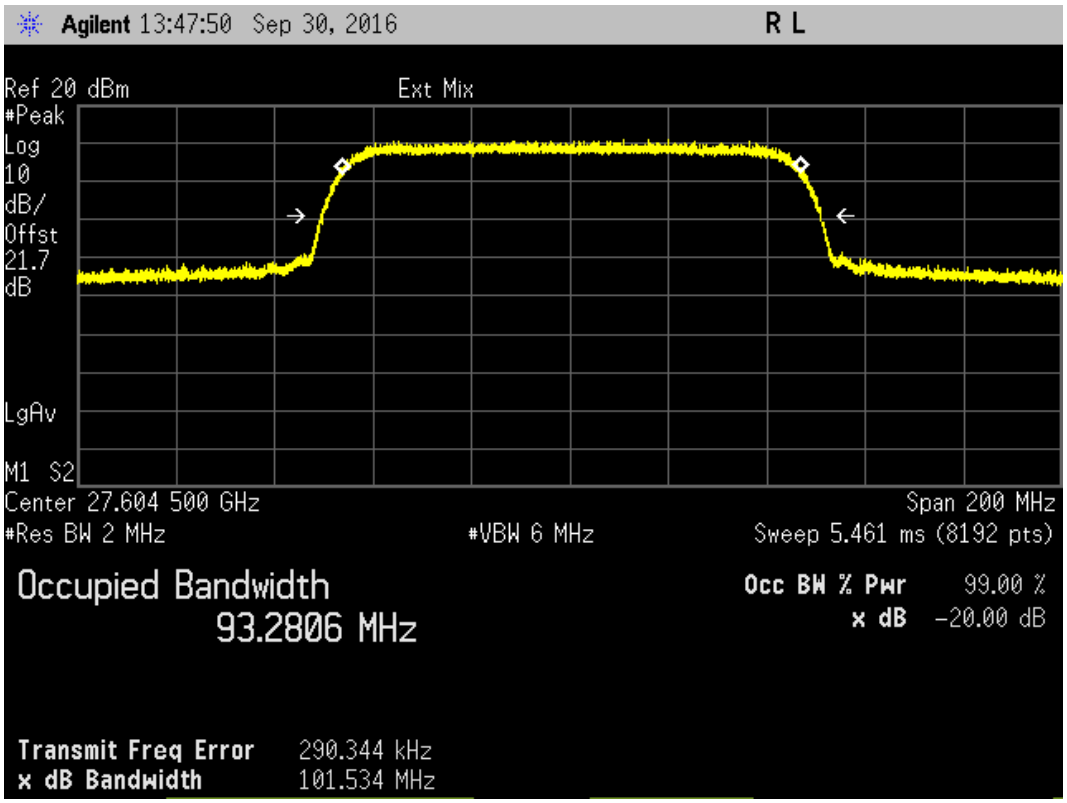
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 100 MHz, Modulation 16QAM, Channel 27.6045 GHz (+28.2485 GHz)



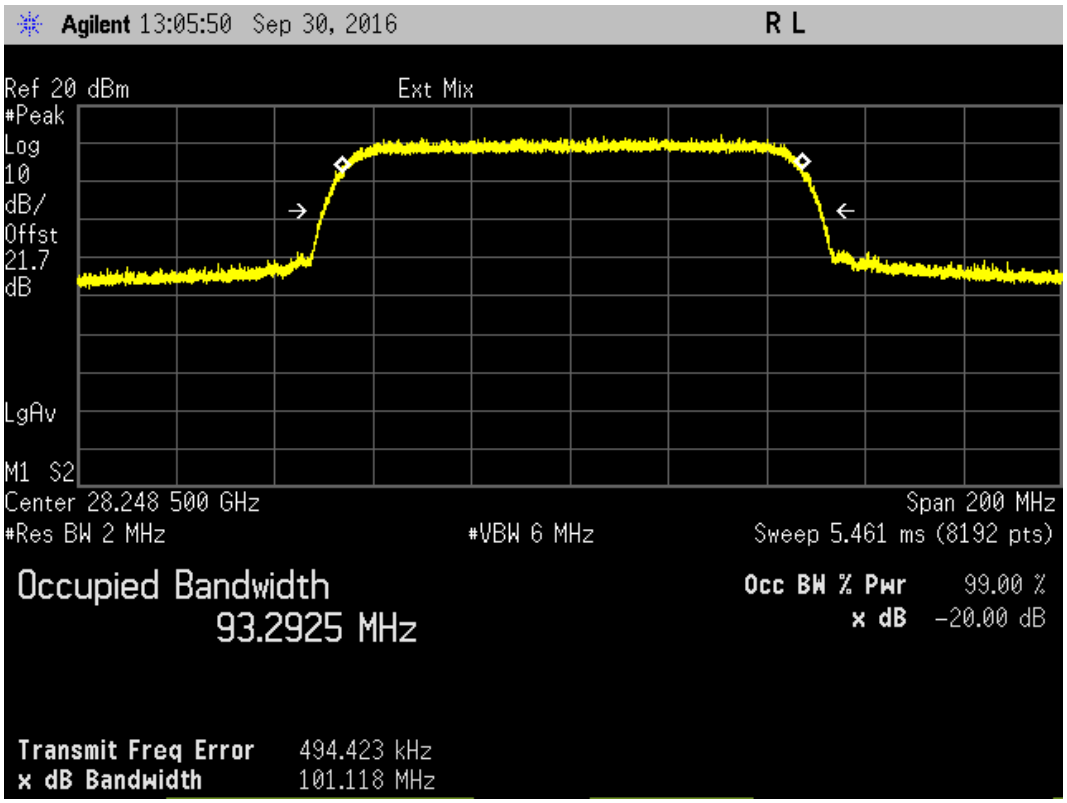
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 100 MHz, Modulation 16QAM, Channel 27.6045 GHz (+29.1875 GHz)



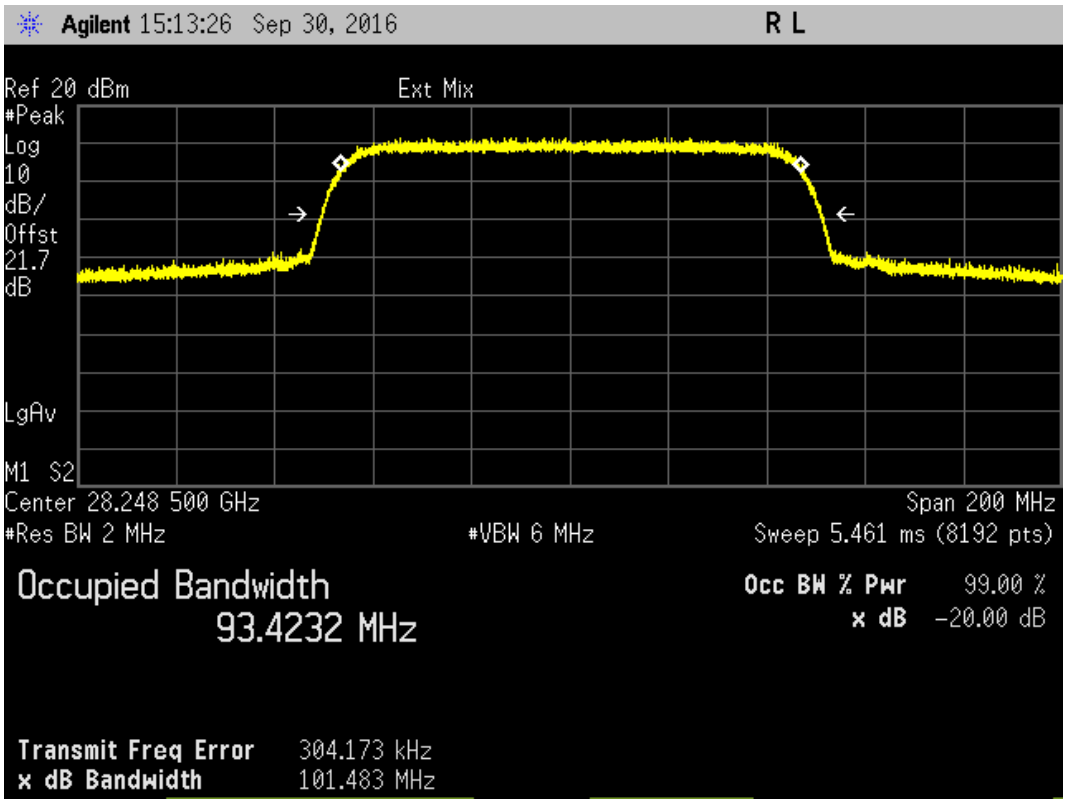
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 100 MHz, Modulation 16QAM, Channel 28.2485 GHz (+27.6045 GHz)



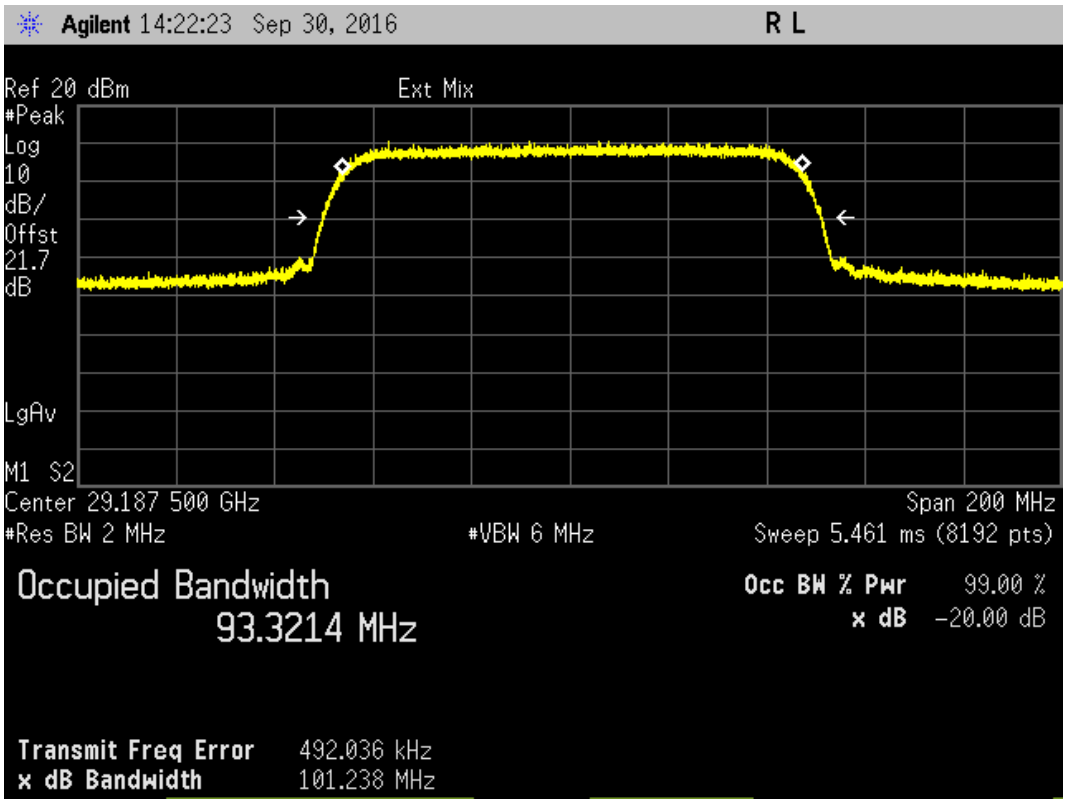
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 100 MHz, Modulation 16QAM, Channel 28.2485 GHz (+29.1875 GHz)



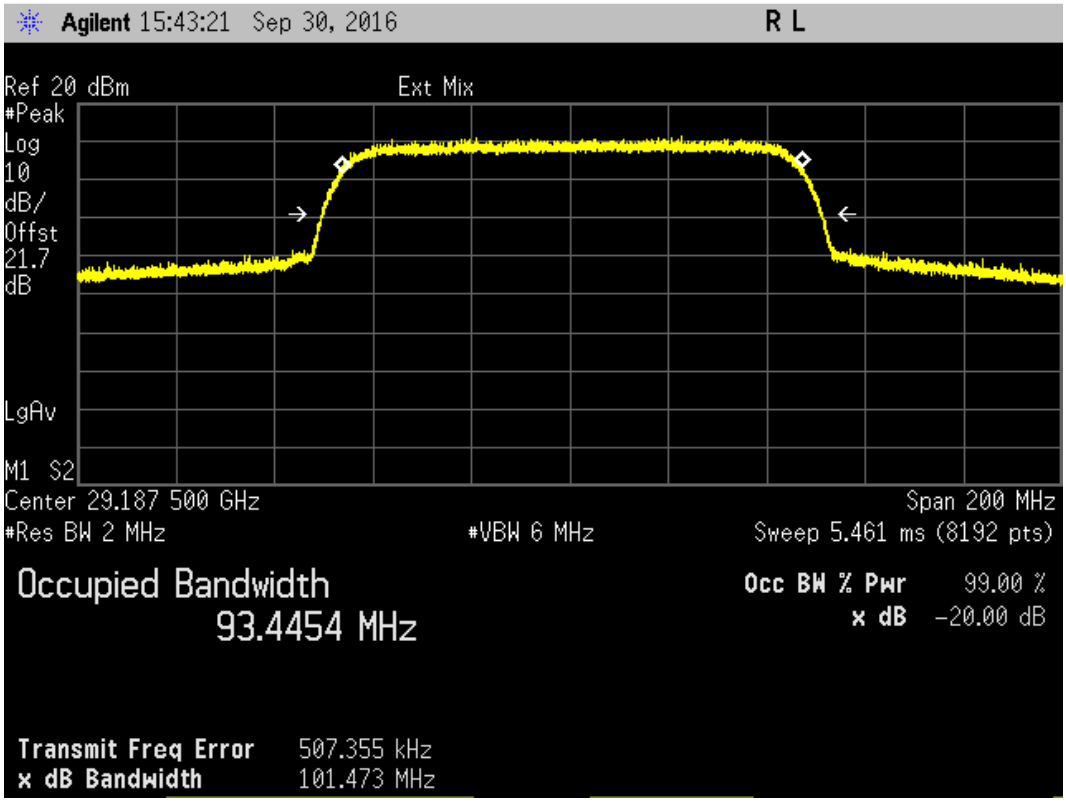
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 100 MHz, Modulation 16QAM, Channel 29.1875 GHz (+27.6045 GHz)



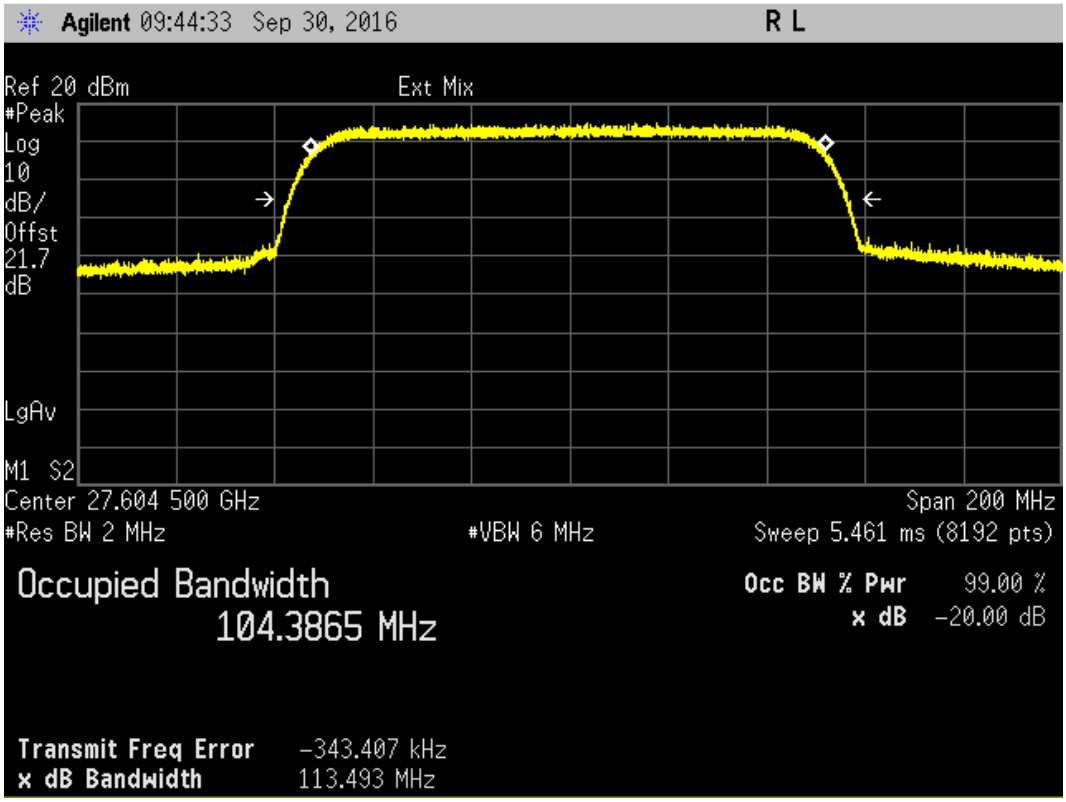
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 100 MHz, Modulation 16QAM, Channel 29.1875 GHz (+28.2485 GHz)



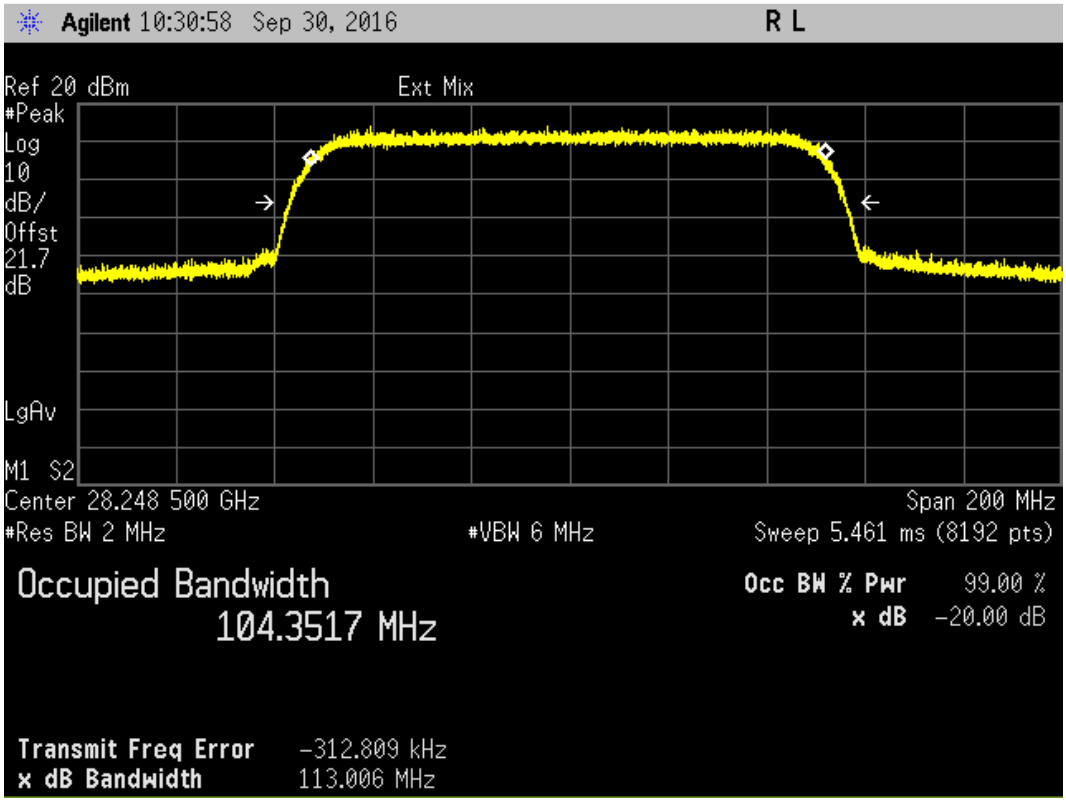
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20 dBm, Channel Spacing 112 MHz, Modulation 16QAM, Channel 27.6045 GHz



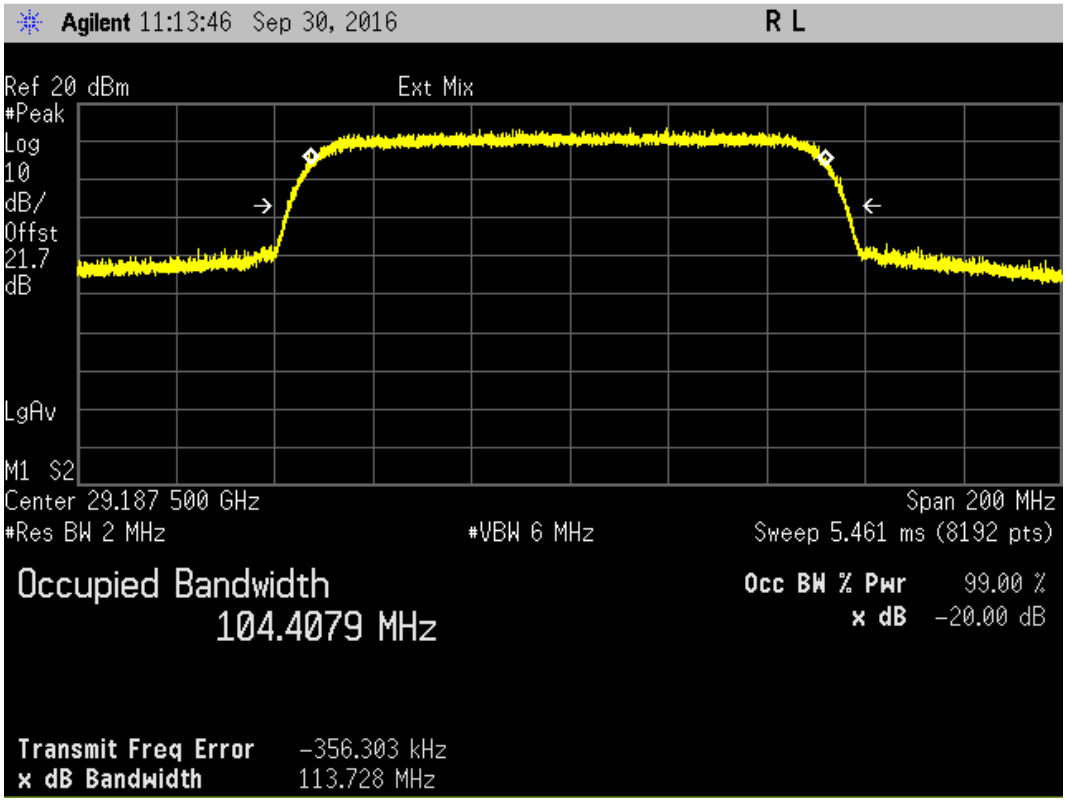
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20 dBm, Channel Spacing 112 MHz, Modulation 16QAM, Channel 28.2485 GHz



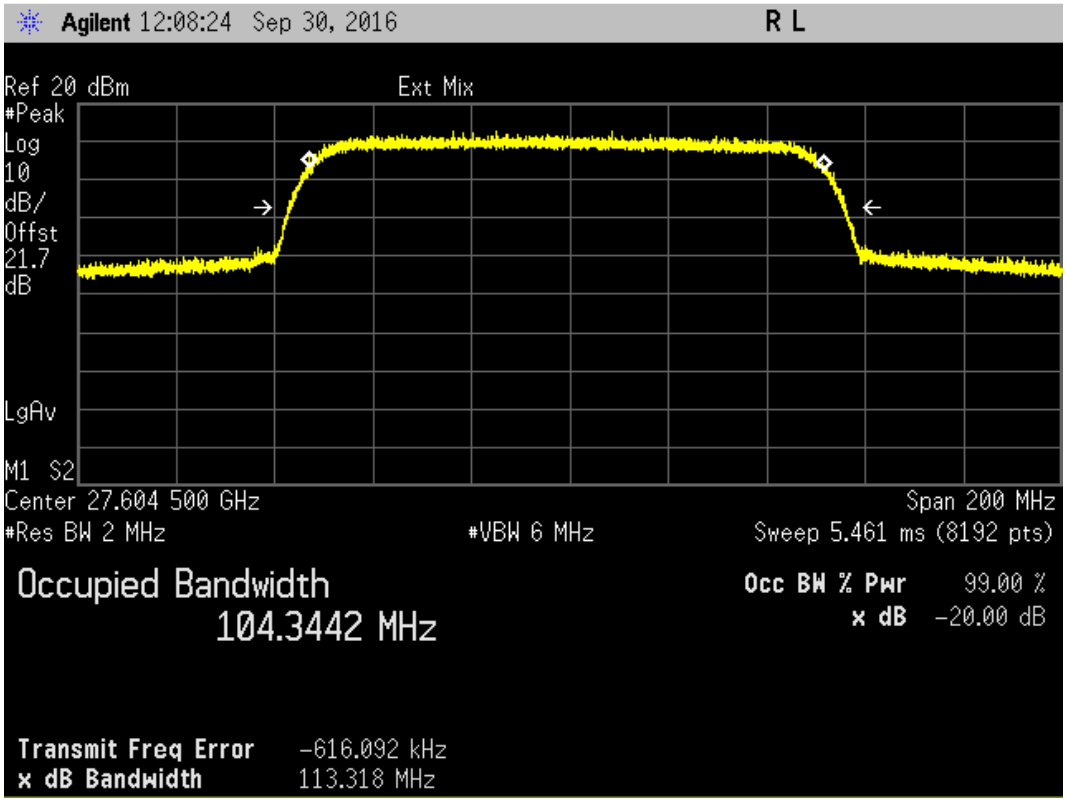
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20 dBm, Channel Spacing 112 MHz, Modulation 16QAM, Channel 29.1875 GHz



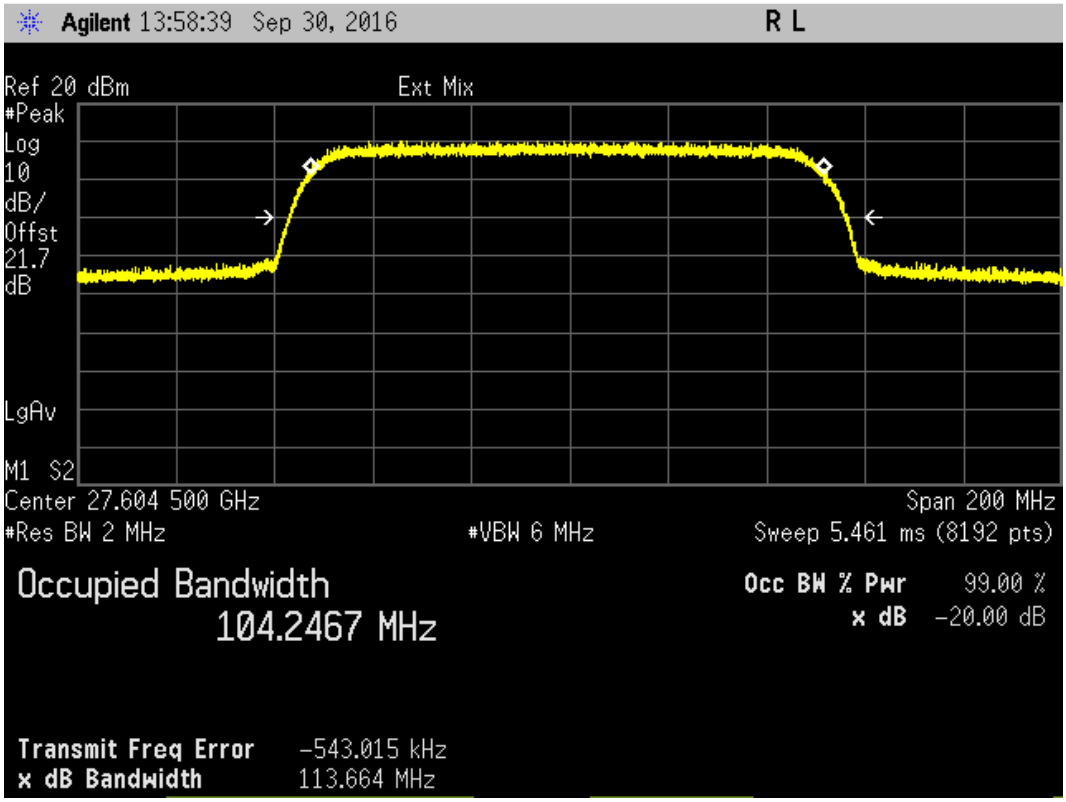
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 112 MHz, Modulation 16QAM, Channel 27.6045 GHz (+28.2485 GHz)



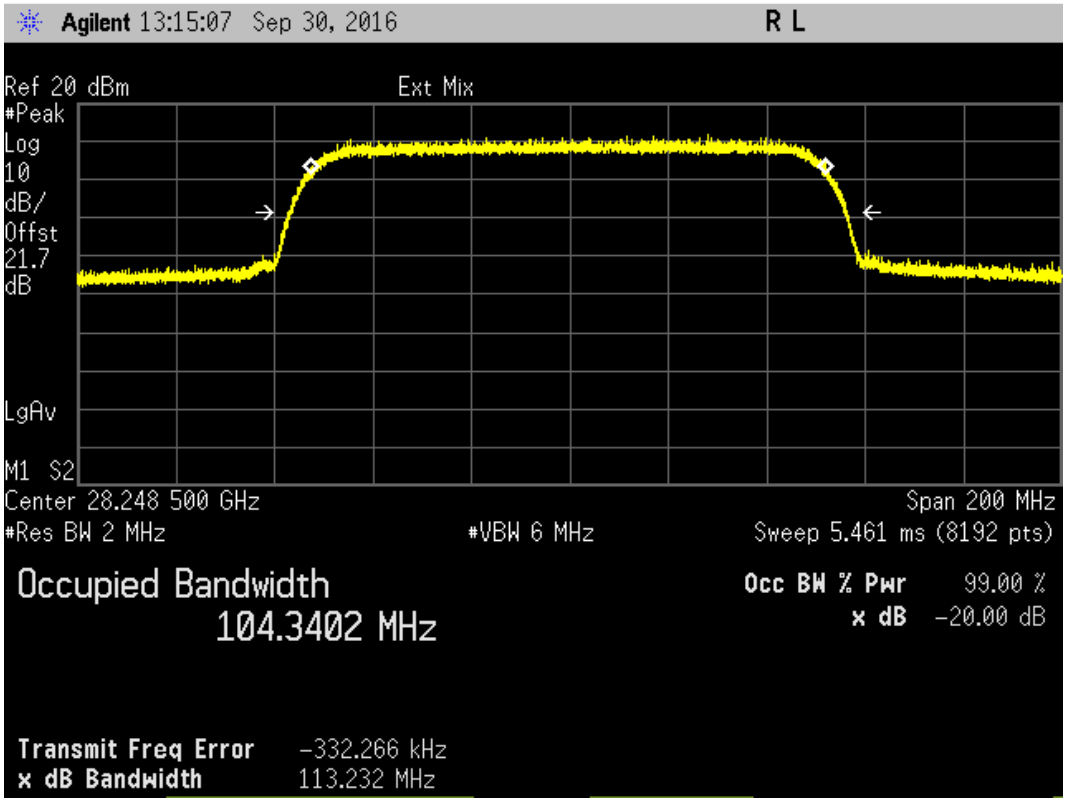
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 112 MHz, Modulation 16QAM, Channel 27.6045 GHz (+29.1875 GHz)



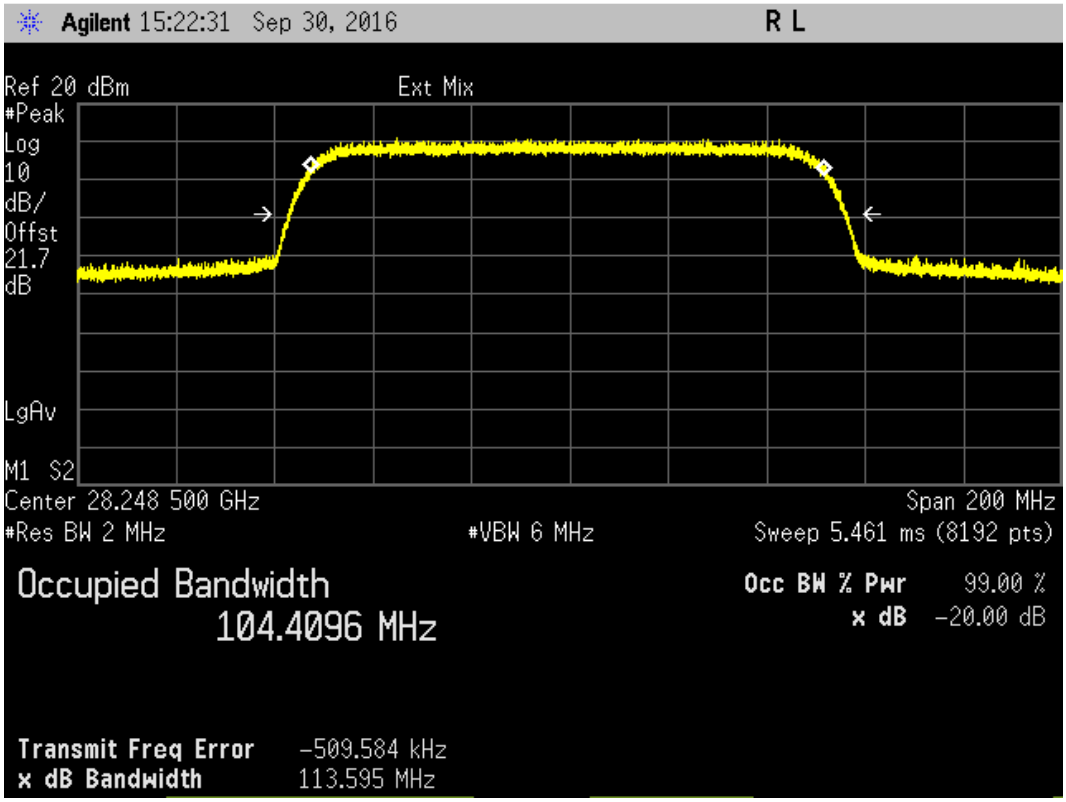
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 112 MHz, Modulation 16QAM, Channel 28.2485 GHz (+27.6045 GHz)



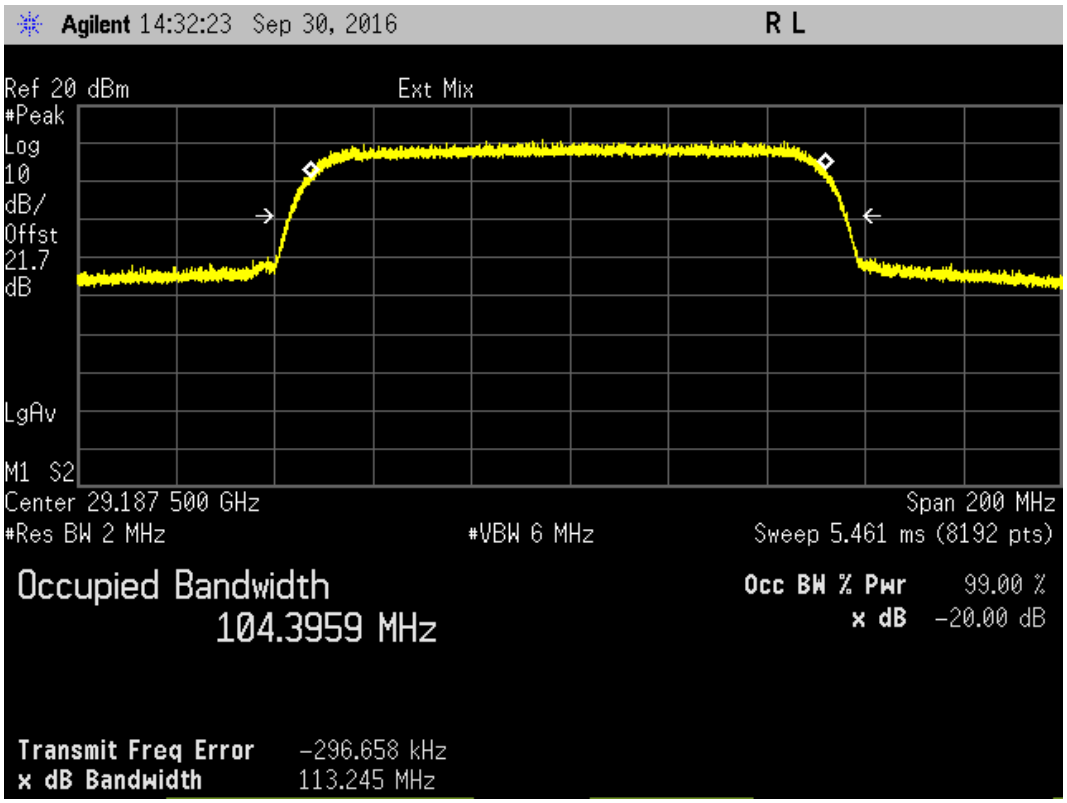
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 112 MHz, Modulation 16QAM, Channel 28.2485 GHz (+29.1875 GHz)



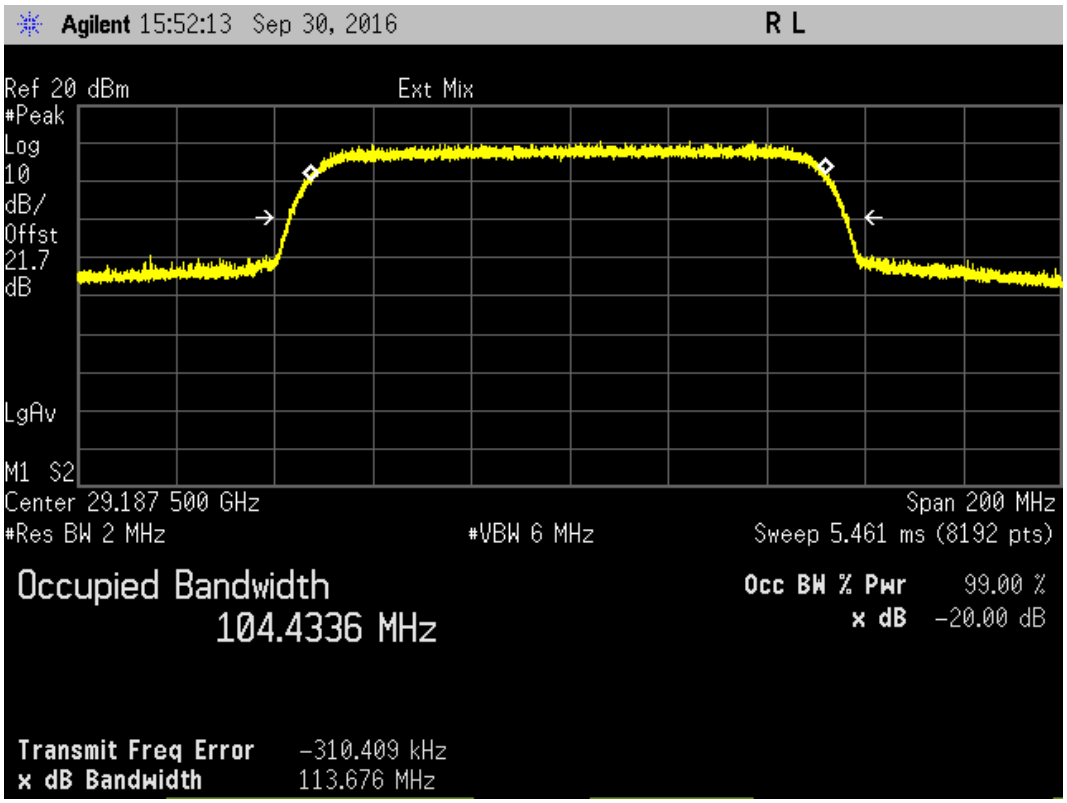
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 112 MHz, Modulation 16QAM, Channel 29.1875 GHz (+27.6045 GHz)



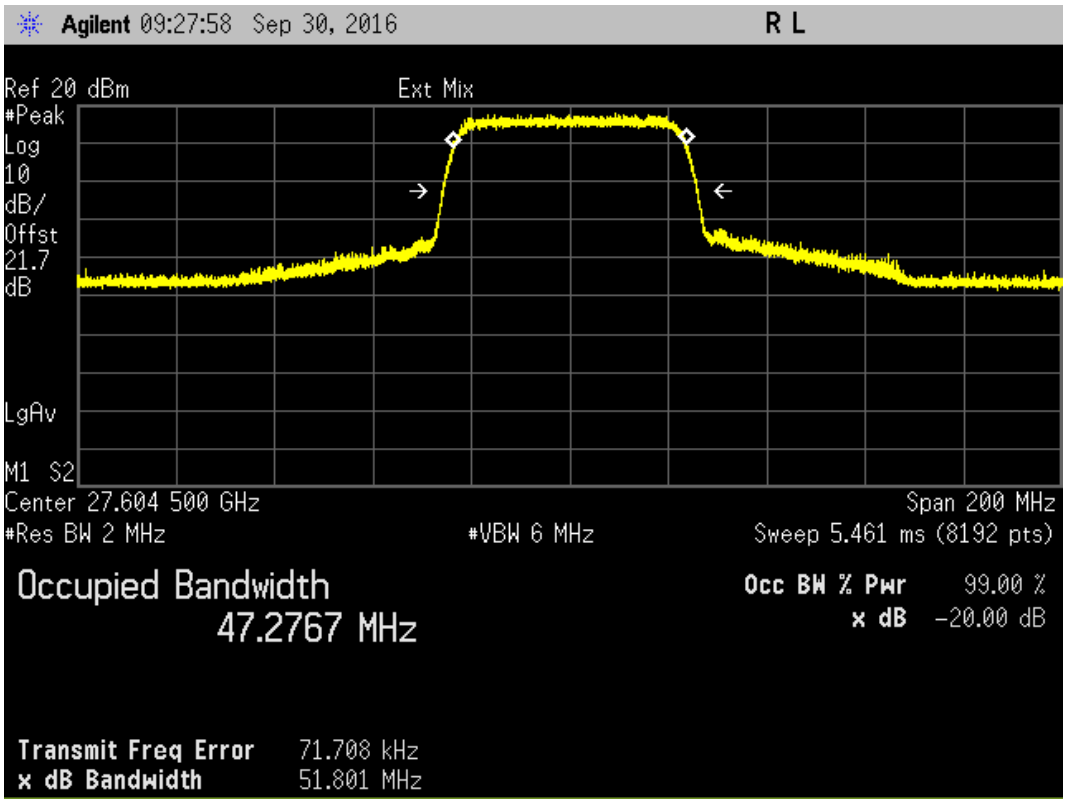
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 112 MHz, Modulation 16QAM, Channel 29.1875 GHz (+28.2485 GHz)



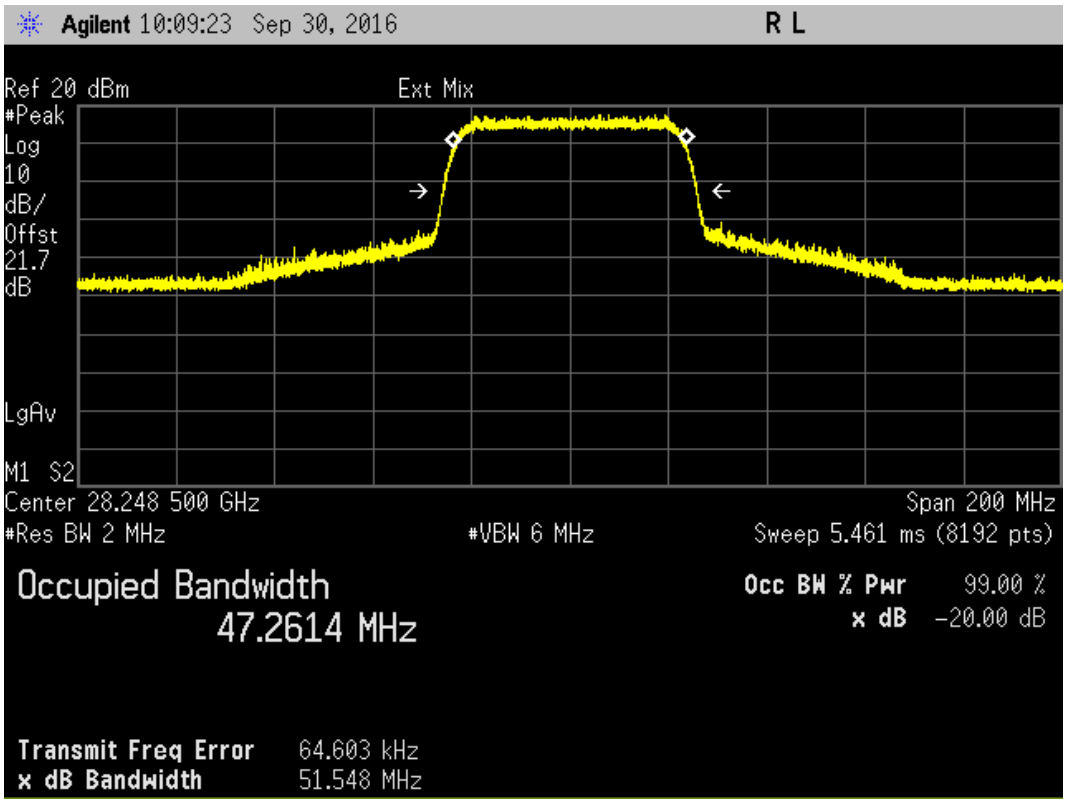
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 19 dBm, Channel Spacing 50 MHz, Modulation 64QAM, Channel 27.6045 GHz



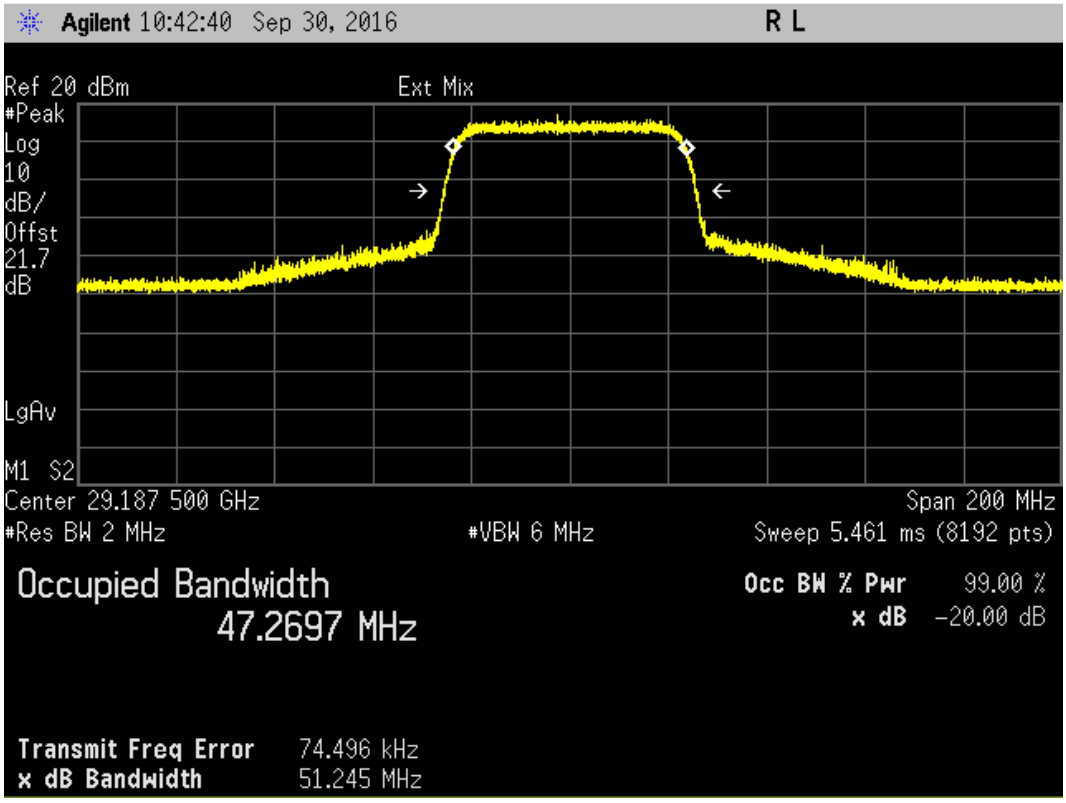
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 19 dBm, Channel Spacing 50 MHz, Modulation 64QAM, Channel 28.2485 GHz



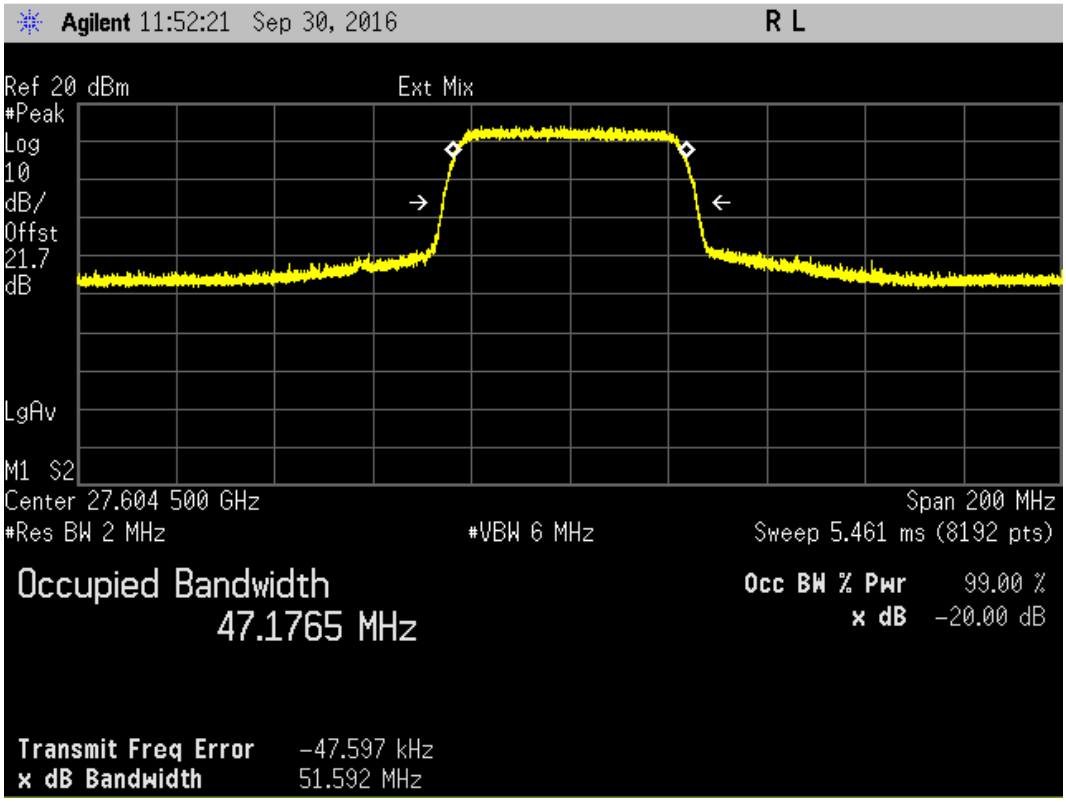
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 19 dBm, Channel Spacing 50 MHz, Modulation 64QAM, Channel 29.1875 GHz



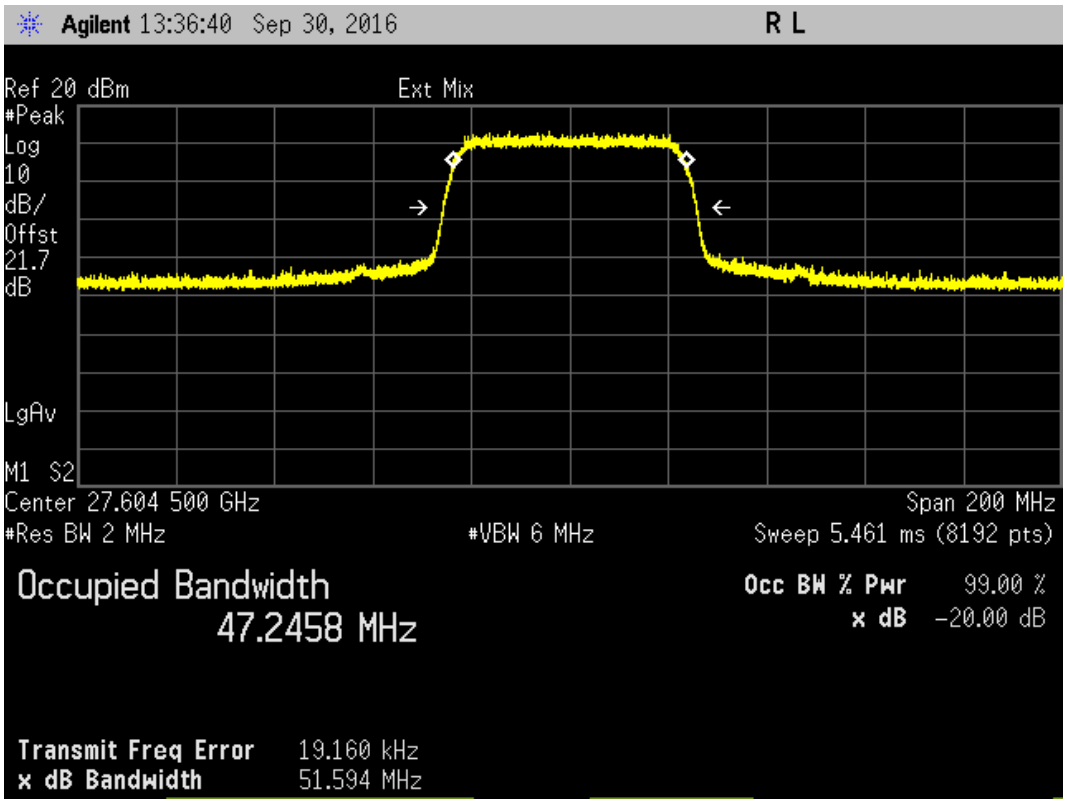
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 50 MHz, Modulation 64QAM, Channel 27.6045 GHz (+28.2485 GHz)



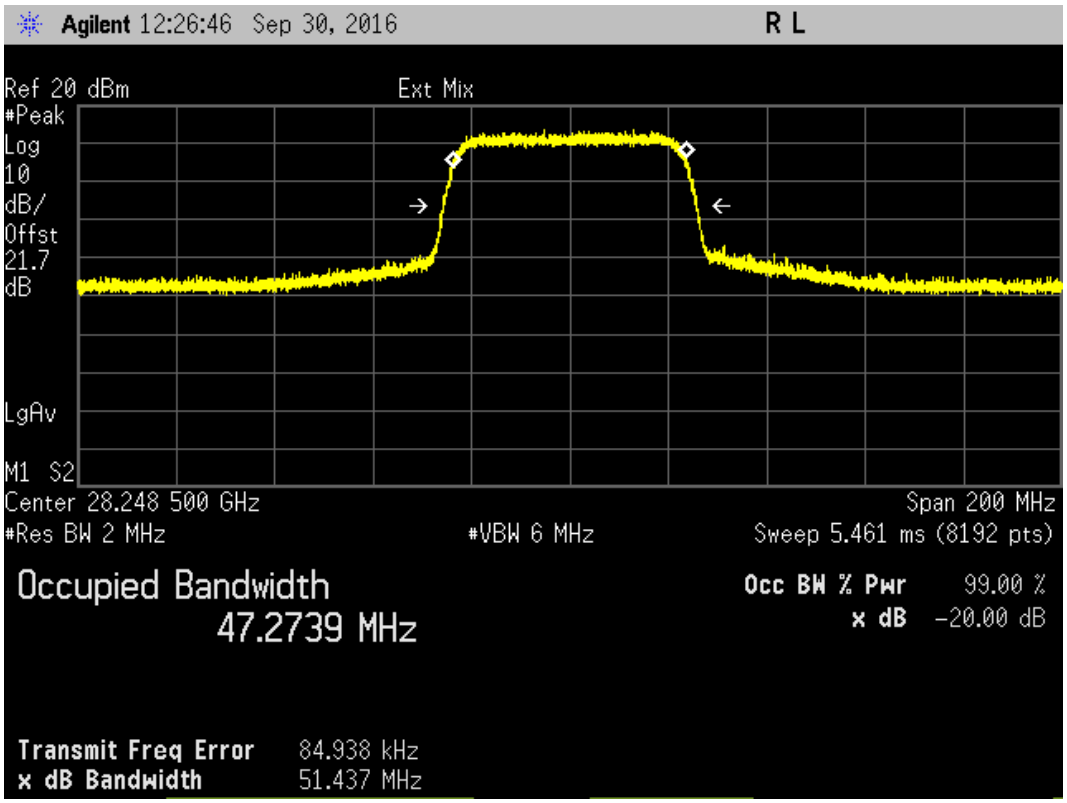
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 50 MHz, Modulation 64QAM, Channel 27.6045 GHz (+29.1875 GHz)



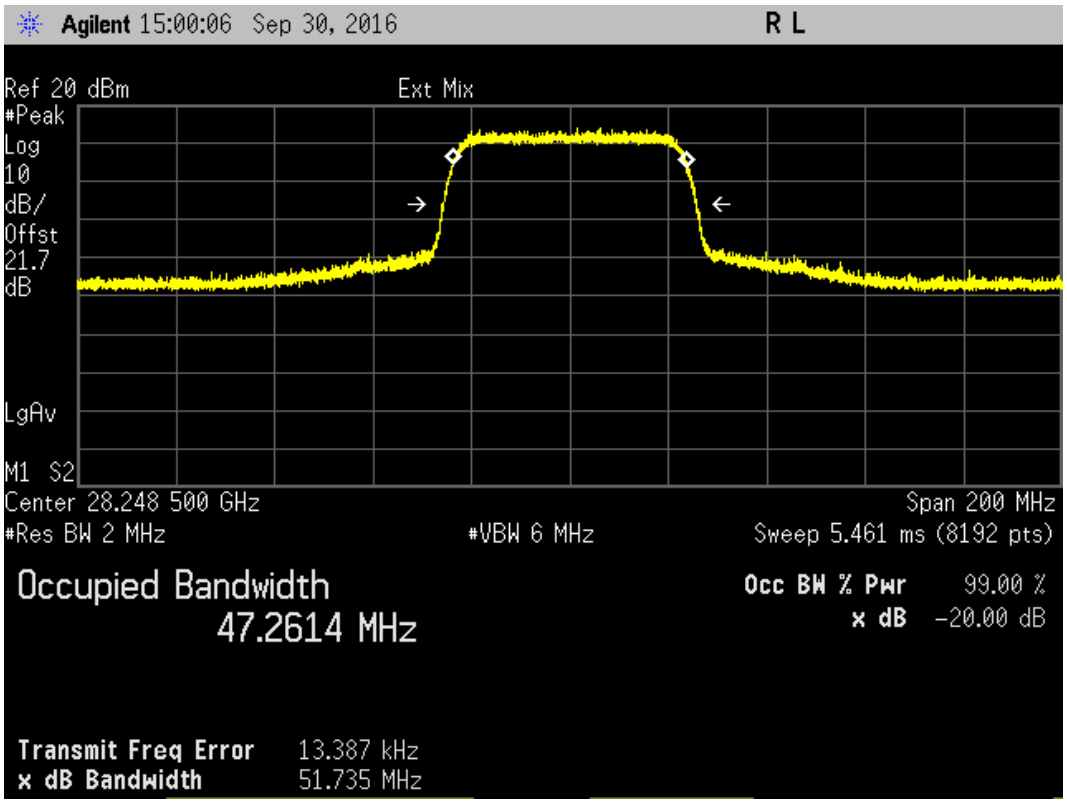
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 50 MHz, Modulation 64QAM, Channel 28.2485 GHz (+27.6045 GHz)



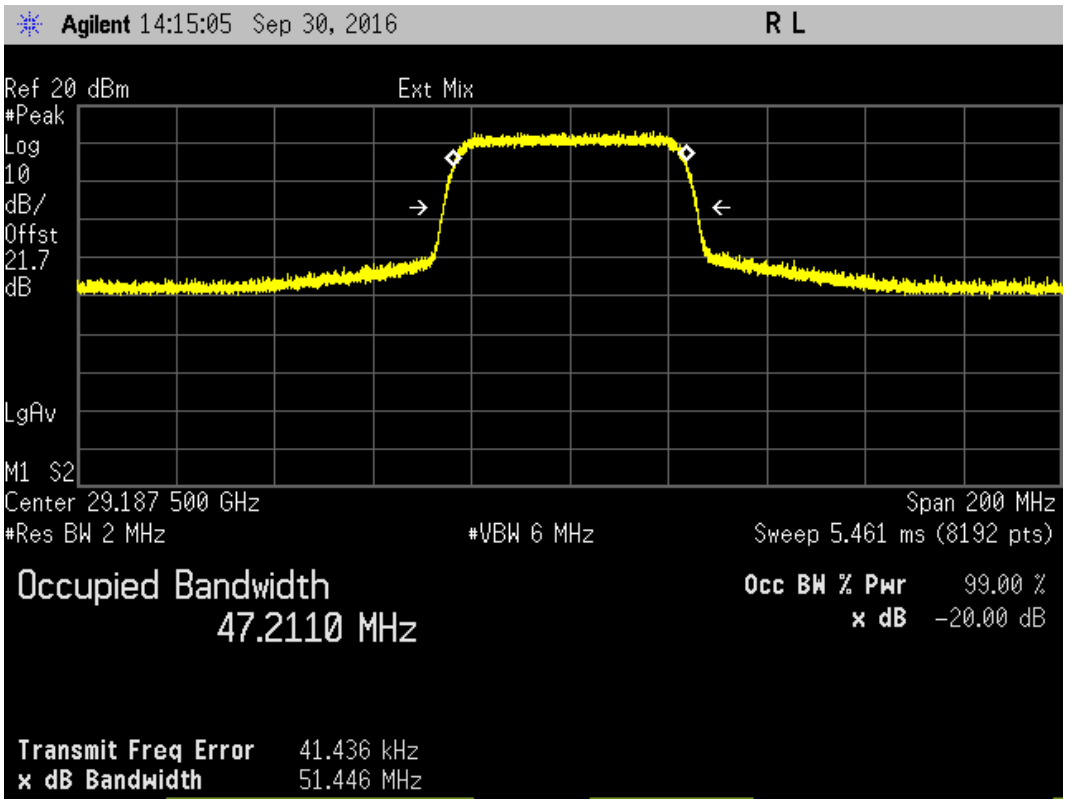
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 50 MHz, Modulation 64QAM, Channel 28.2485 GHz (+29.1875 GHz)



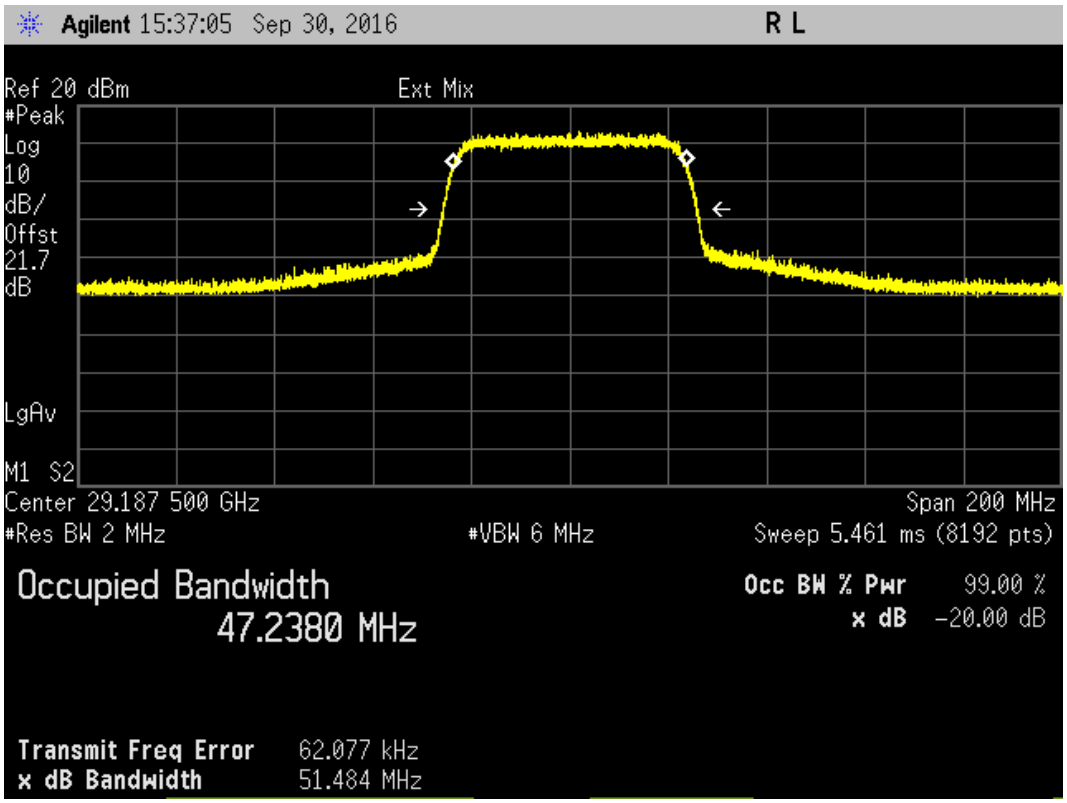
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 50 MHz, Modulation 64QAM, Channel 29.1875 GHz (+27.6045 GHz)



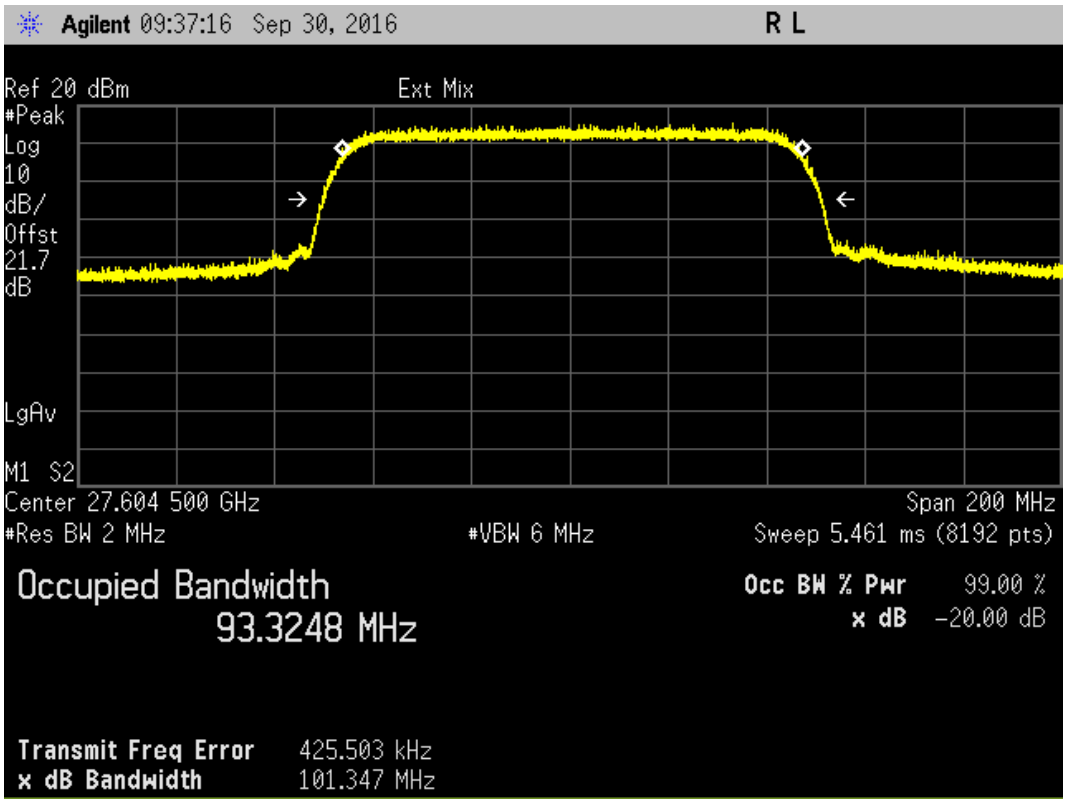
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 50 MHz, Modulation 64QAM, Channel 29.1875 GHz (+28.2485 GHz)



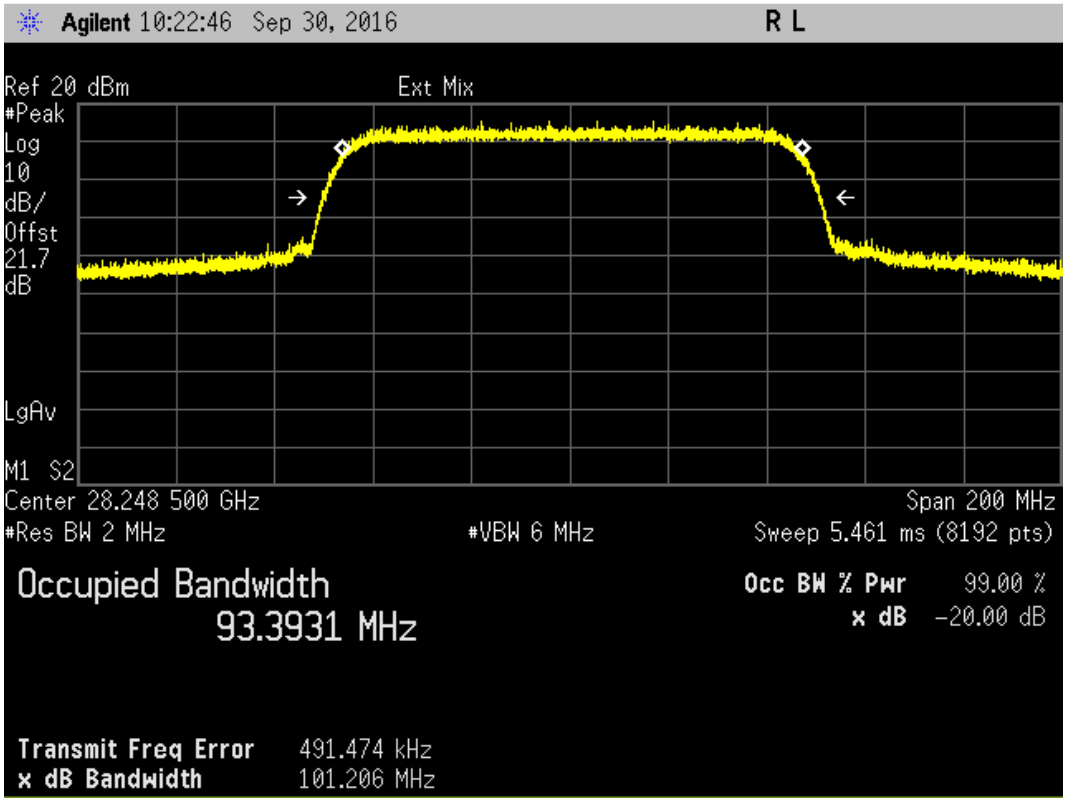
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 19 dBm, Channel Spacing 100 MHz, Modulation 64QAM, Channel 27.6045 GHz



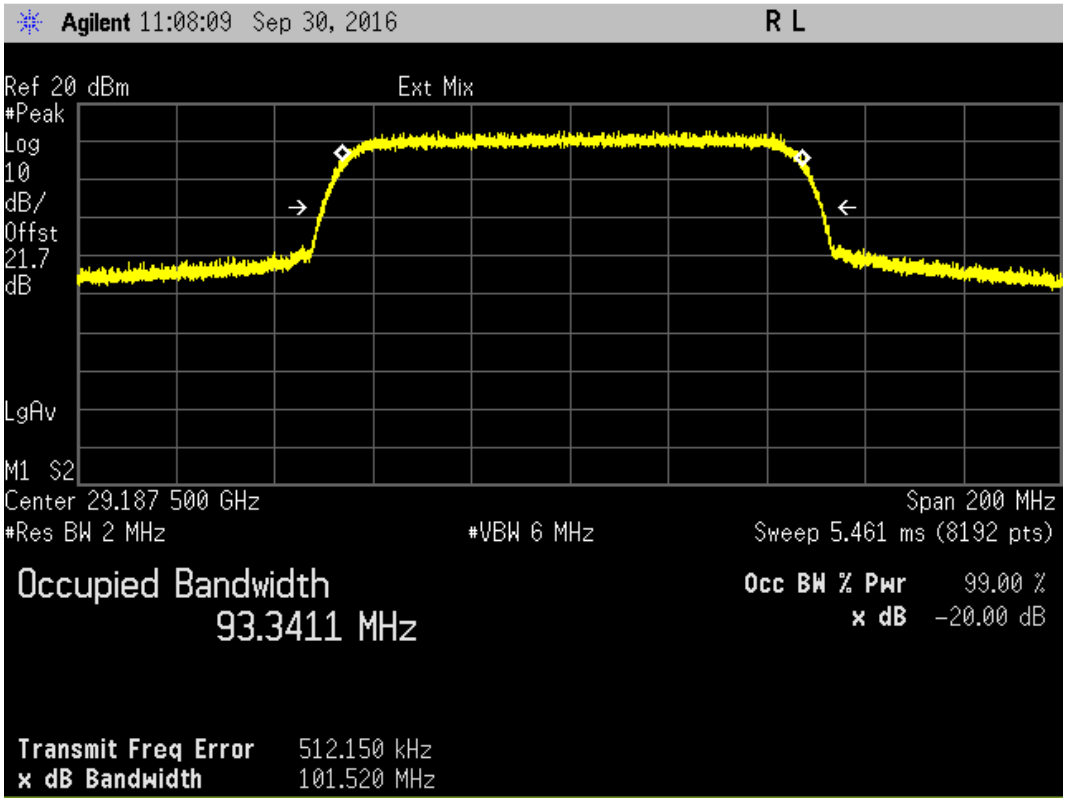
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 19 dBm, Channel Spacing 100 MHz, Modulation 64QAM, Channel 28.2485 GHz



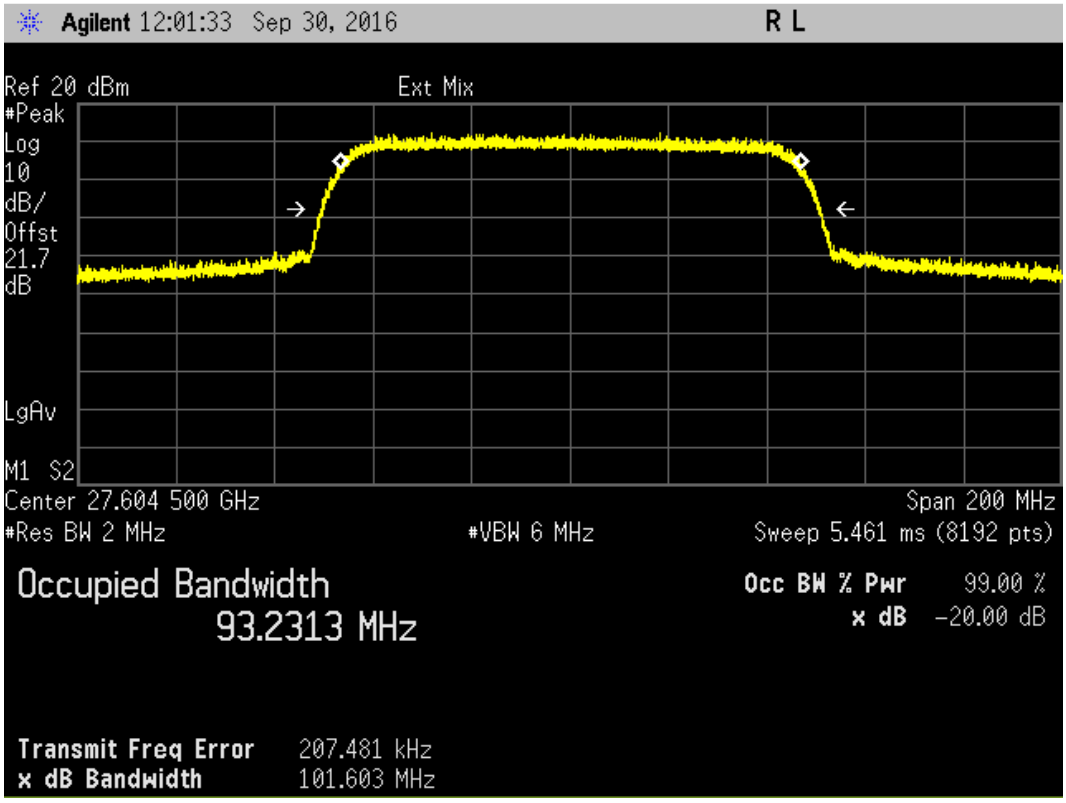
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 19 dBm, Channel Spacing 100 MHz, Modulation 64QAM, Channel 29.1875 GHz



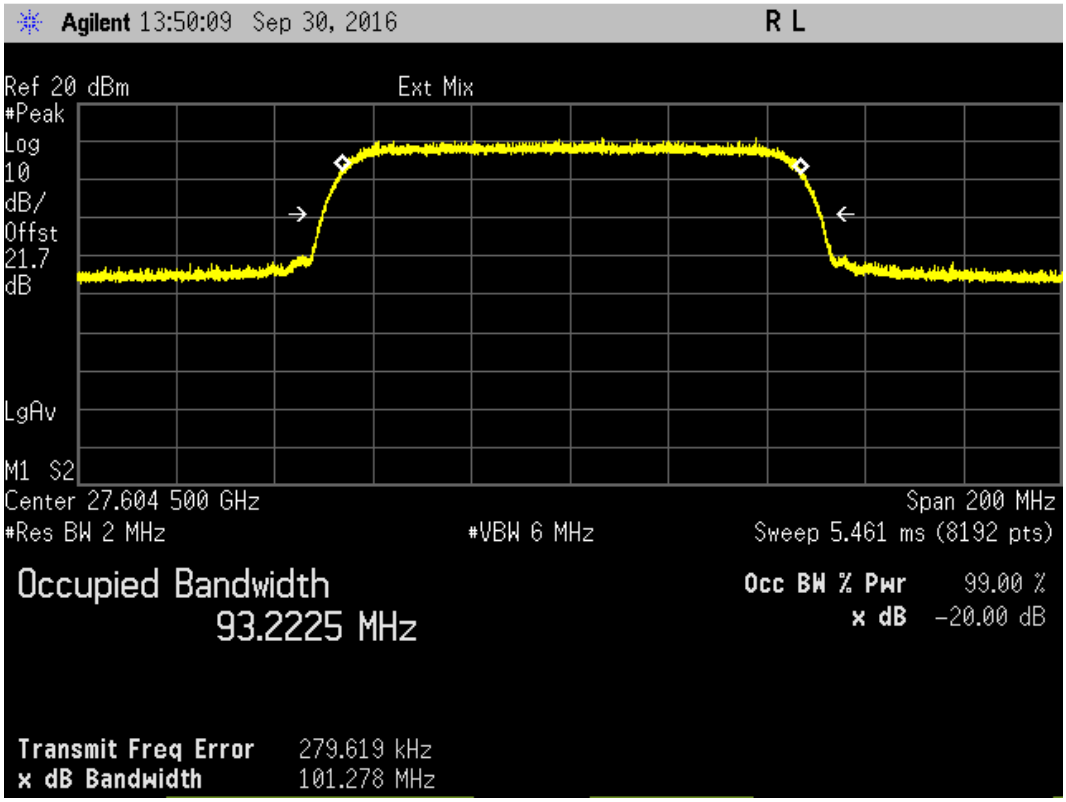
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 100 MHz, Modulation 64QAM, Channel 27.6045 GHz (+28.2485 GHz)



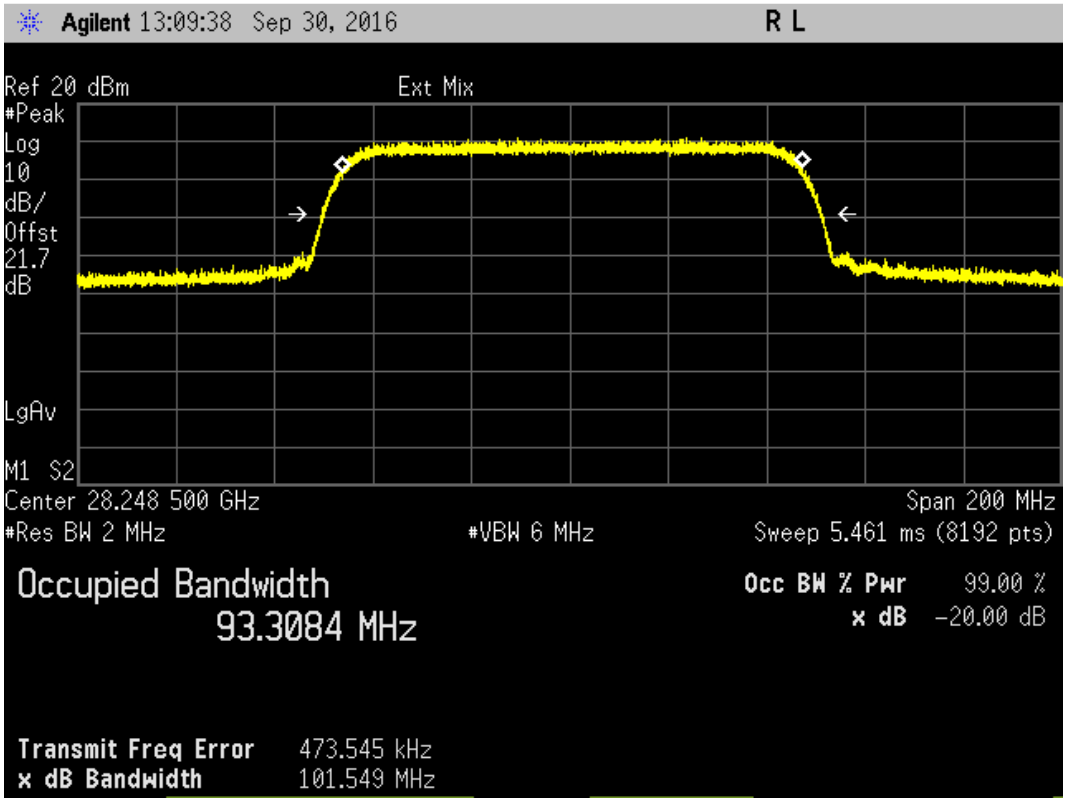
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 100 MHz, Modulation 64QAM, Channel 27.6045 GHz (+29.1875 GHz)



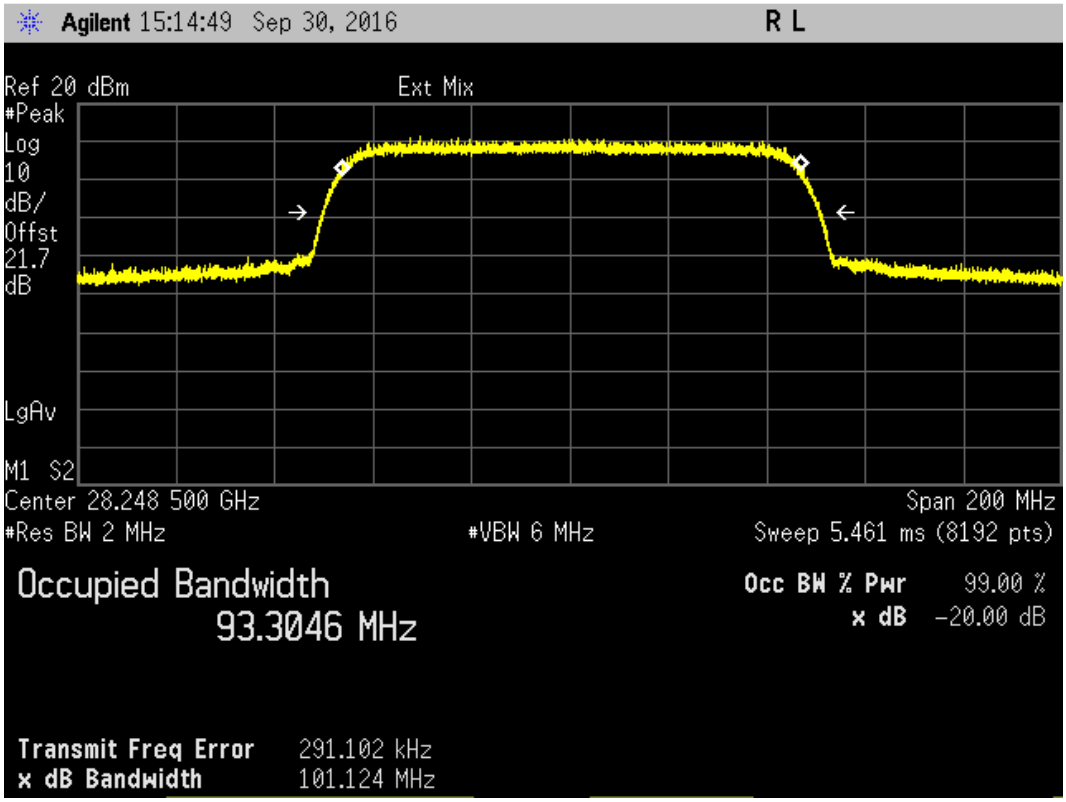
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 100 MHz, Modulation 64QAM, Channel 28.2485 GHz (+27.6045 GHz)



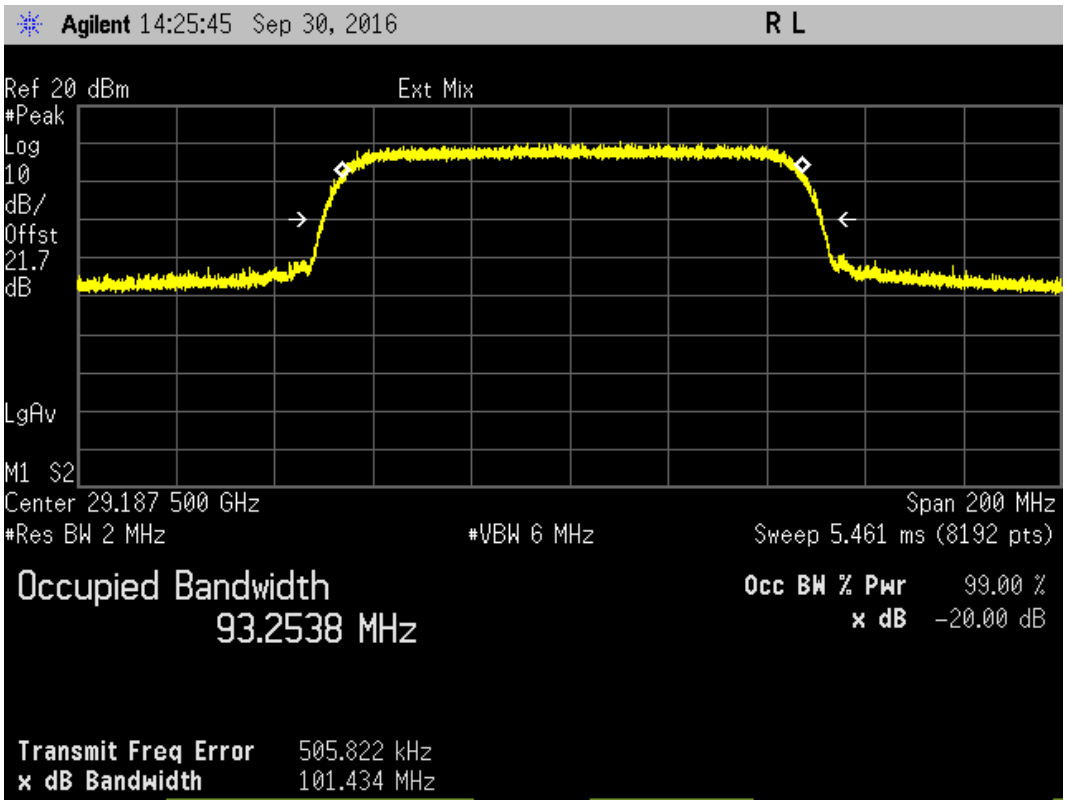
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 100 MHz, Modulation 64QAM, Channel 28.2485 GHz (+27.6045GHz)



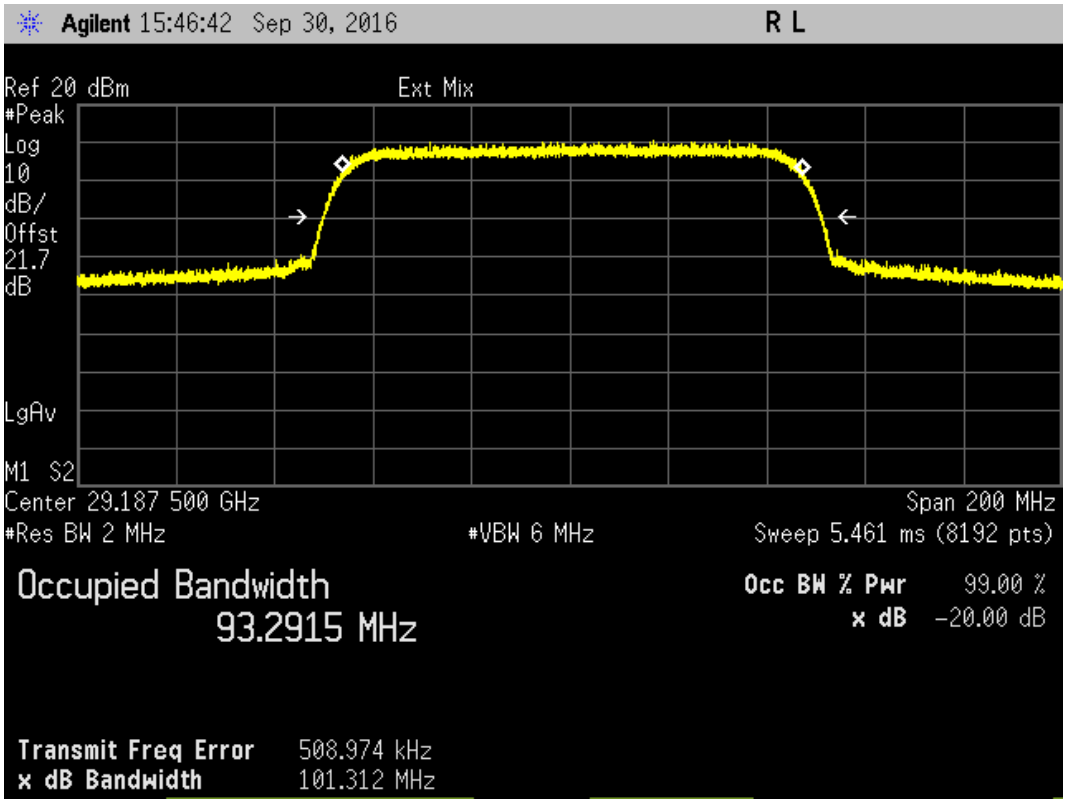
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 100 MHz, Modulation 64QAM, Channel 28.2485 GHz (+27.6045 GHz)



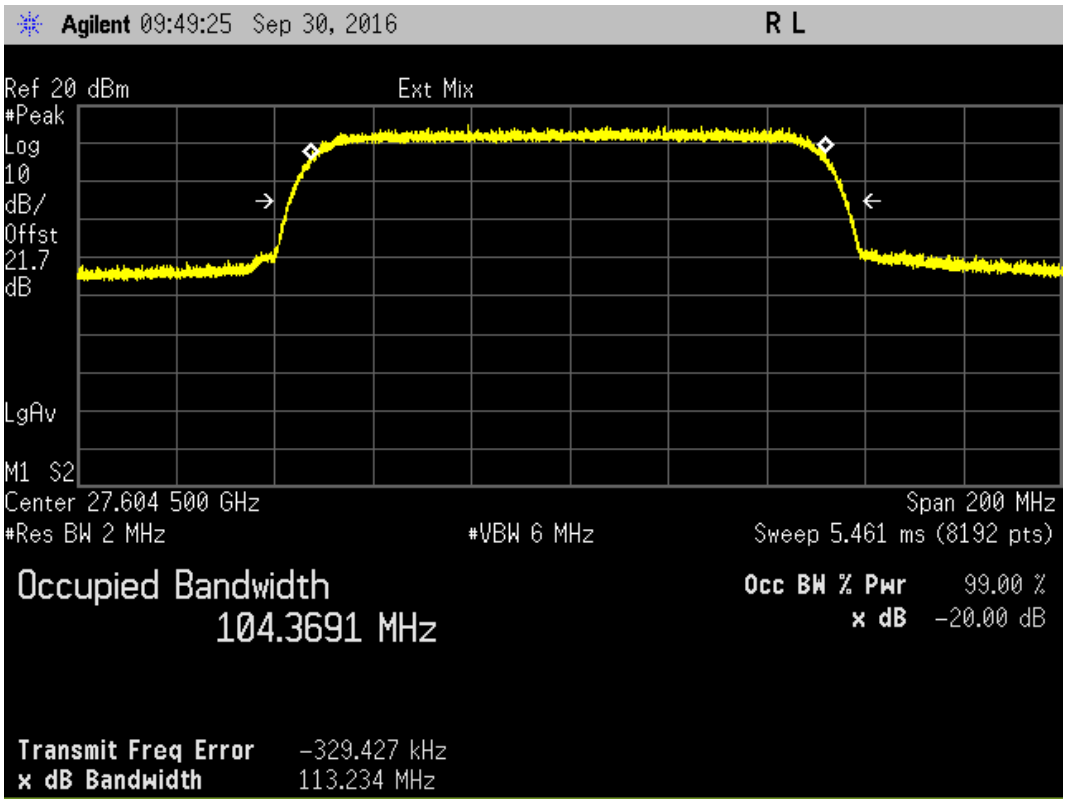
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 100 MHz, Modulation 64QAM, Channel 29.1875 GHz (+28.2485 GHz)



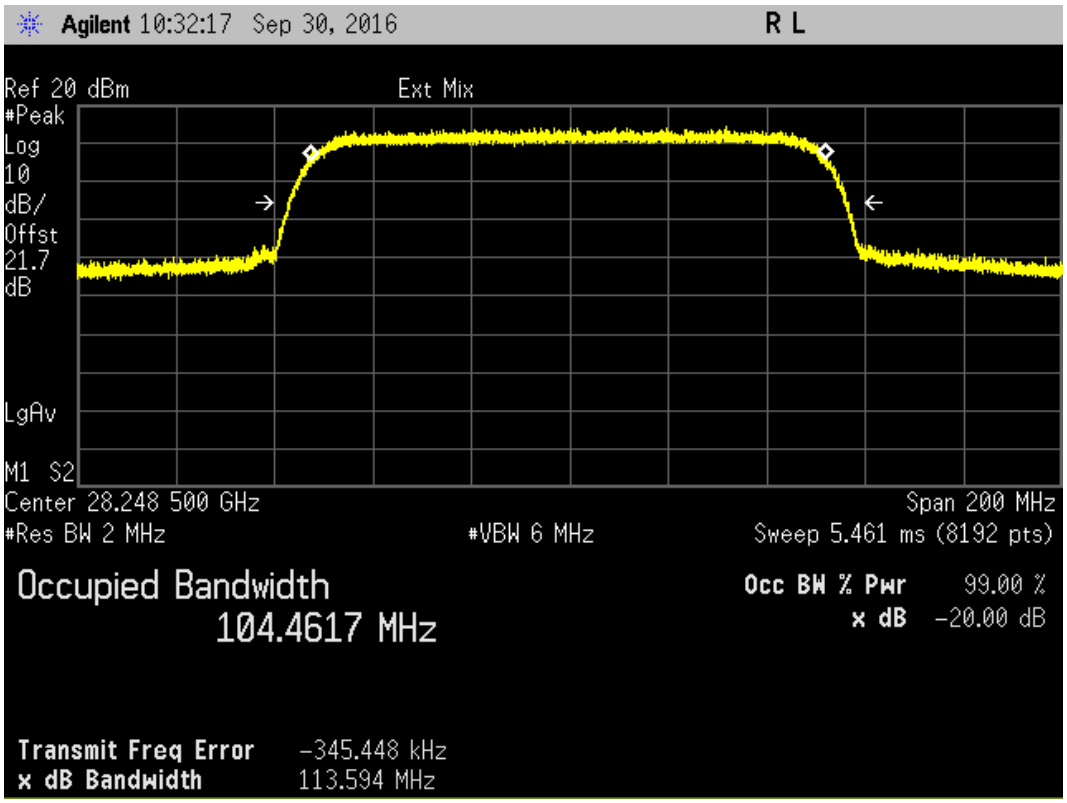
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 19 dBm, Channel Spacing 112 MHz, Modulation 64QAM, Channel 27.6045 GHz



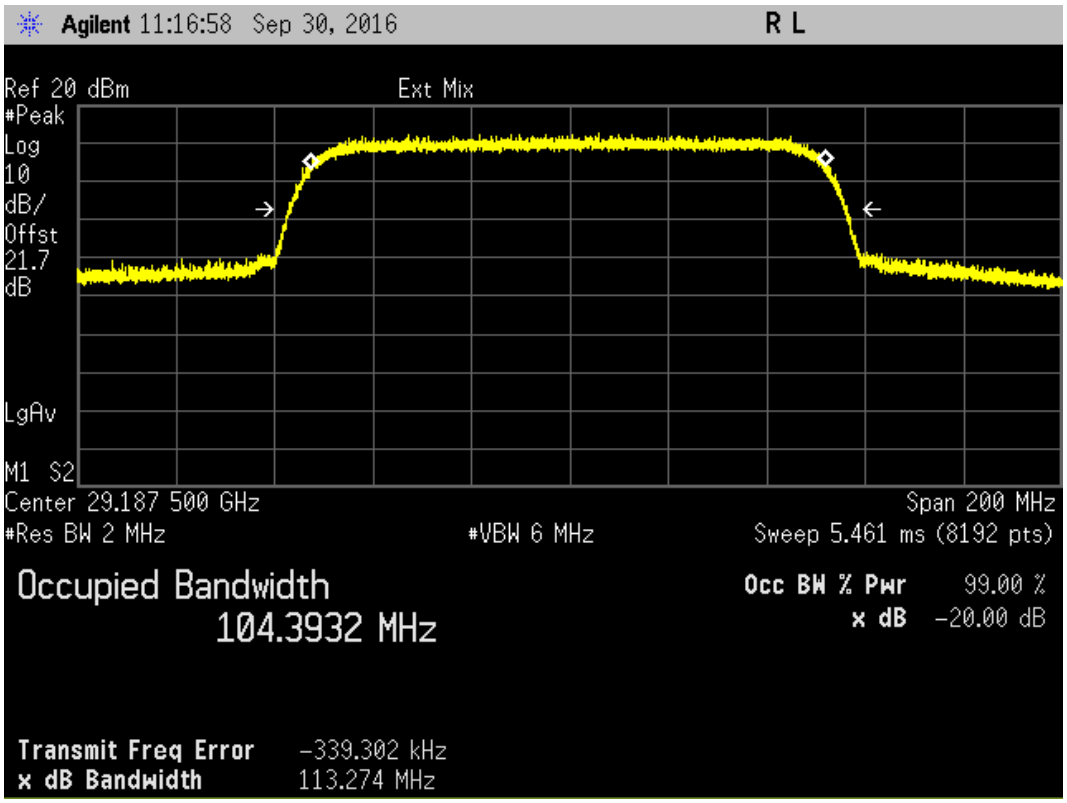
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 19 dBm, Channel Spacing 112 MHz, Modulation 64QAM, Channel 28.2485 GHz



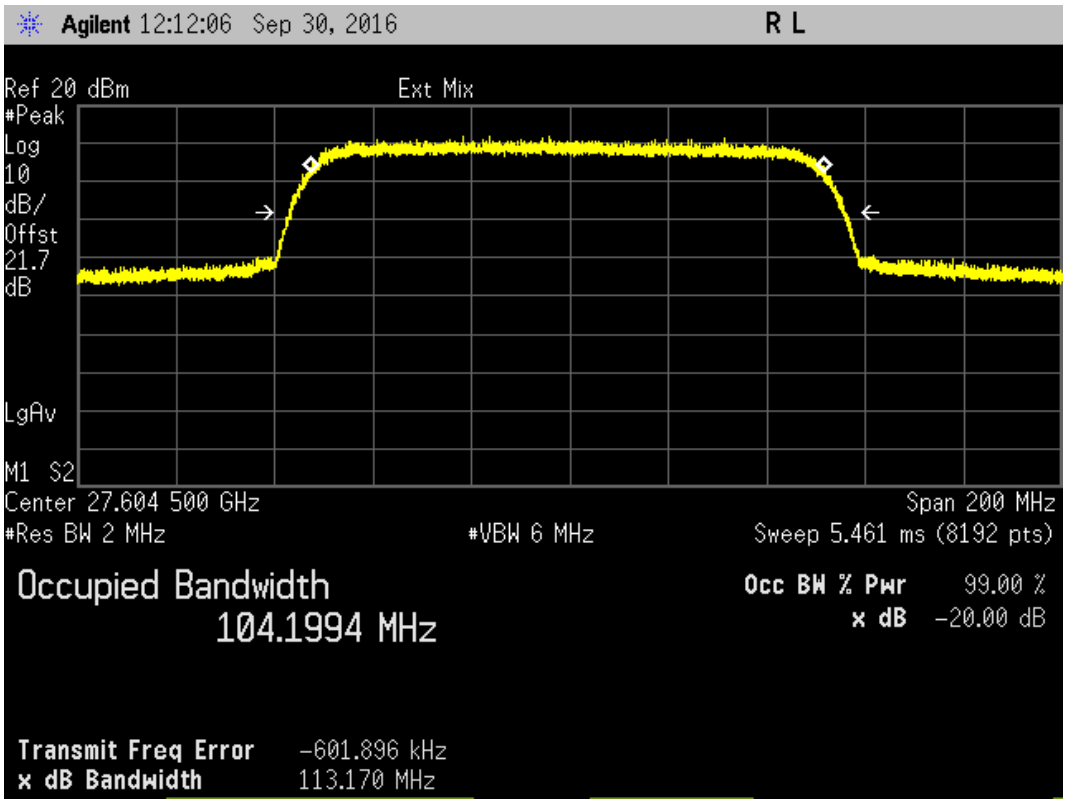
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 19 dBm, Channel Spacing 112 MHz, Modulation 64QAM, Channel 29.1875 GHz



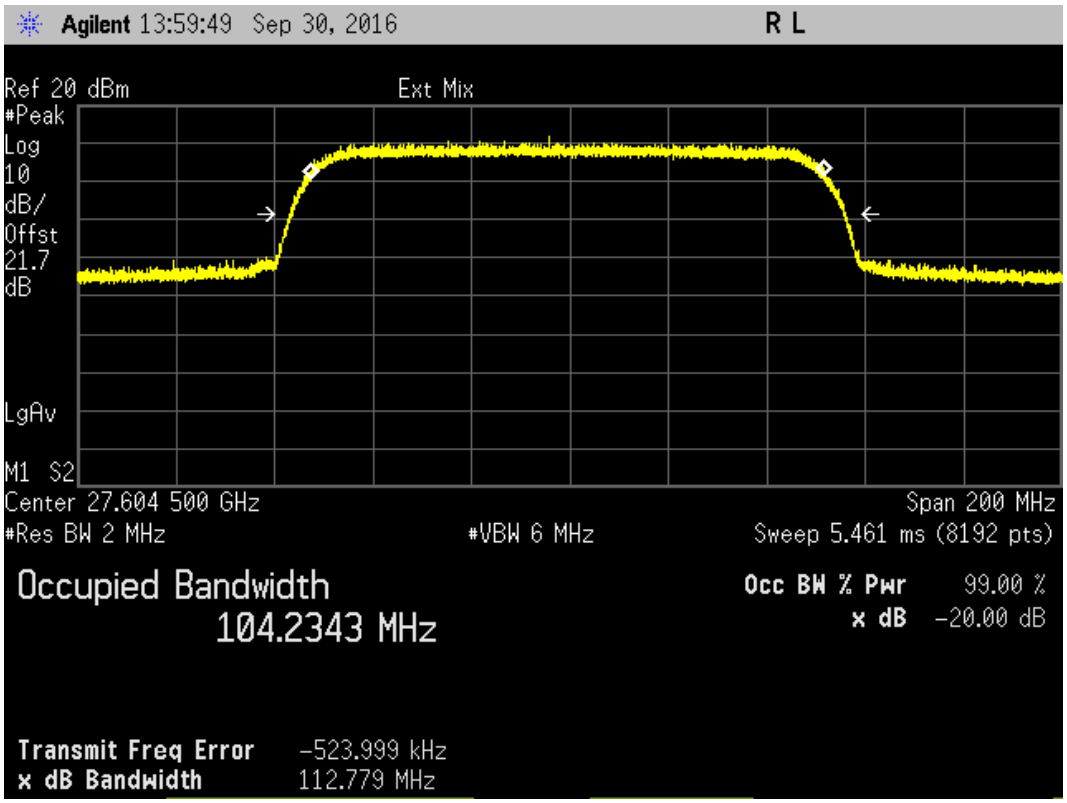
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 112 MHz, Modulation 64QAM, Channel 27.6045 GHz (+28.2485 GHz)



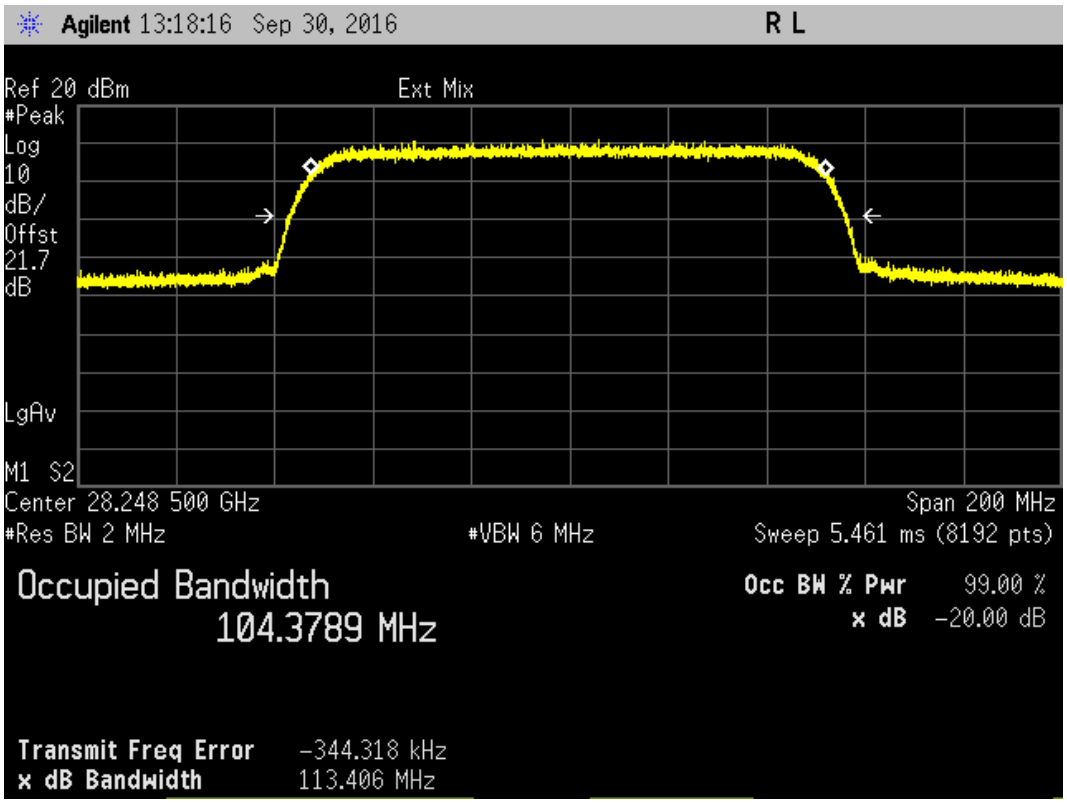
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 112 MHz, Modulation 64QAM, Channel 27.6045 GHz (+29.1875 GHz)



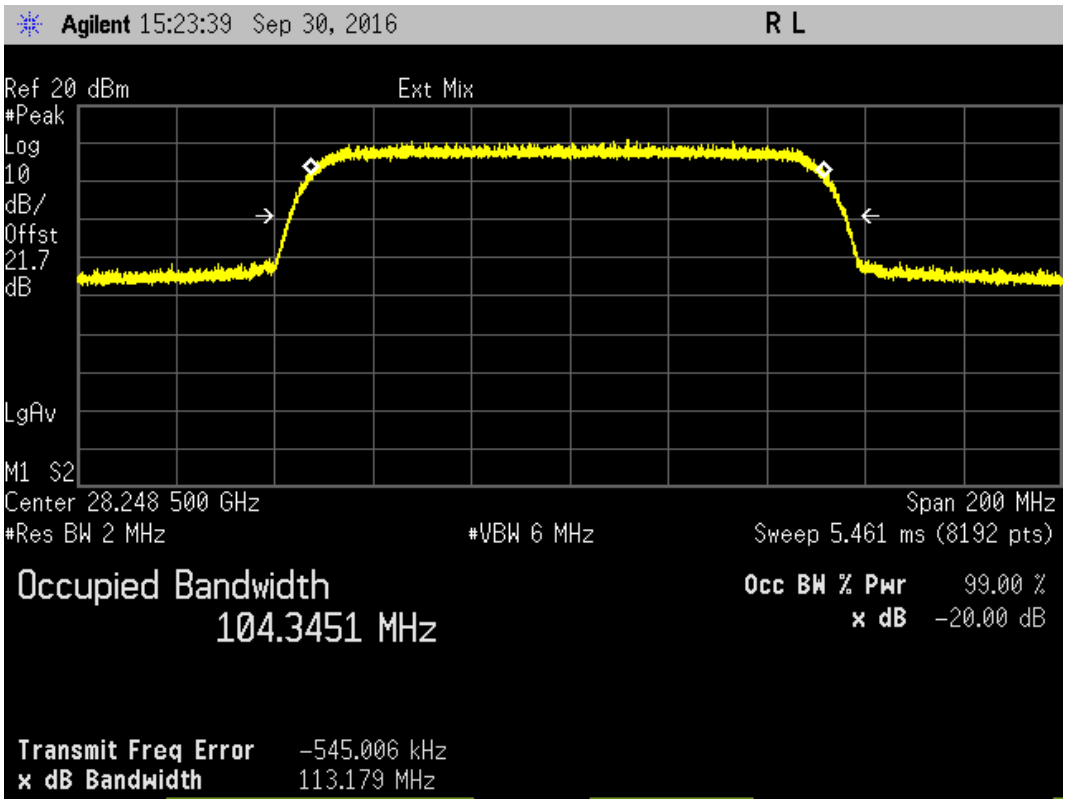
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 112 MHz, Modulation 64QAM, Channel 27.6045 GHz (+29.1875 GHz)



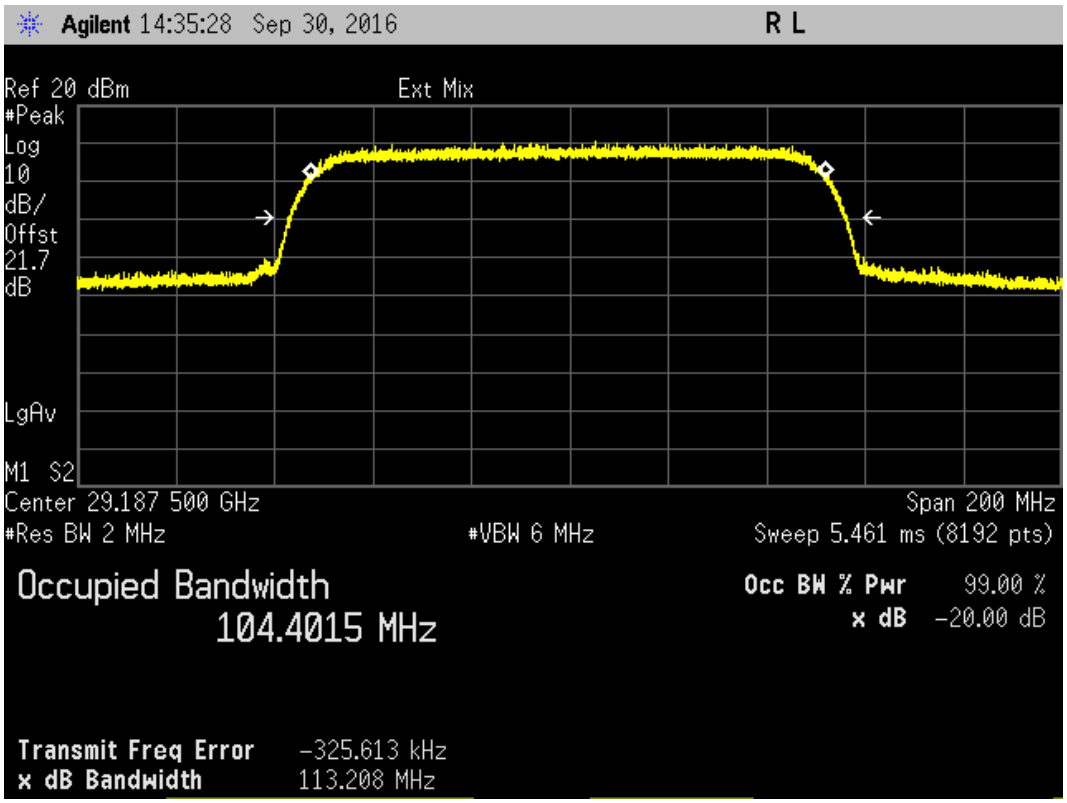
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 112 MHz, Modulation 64QAM, Channel 28.2485 GHz (+29.1875 GHz)



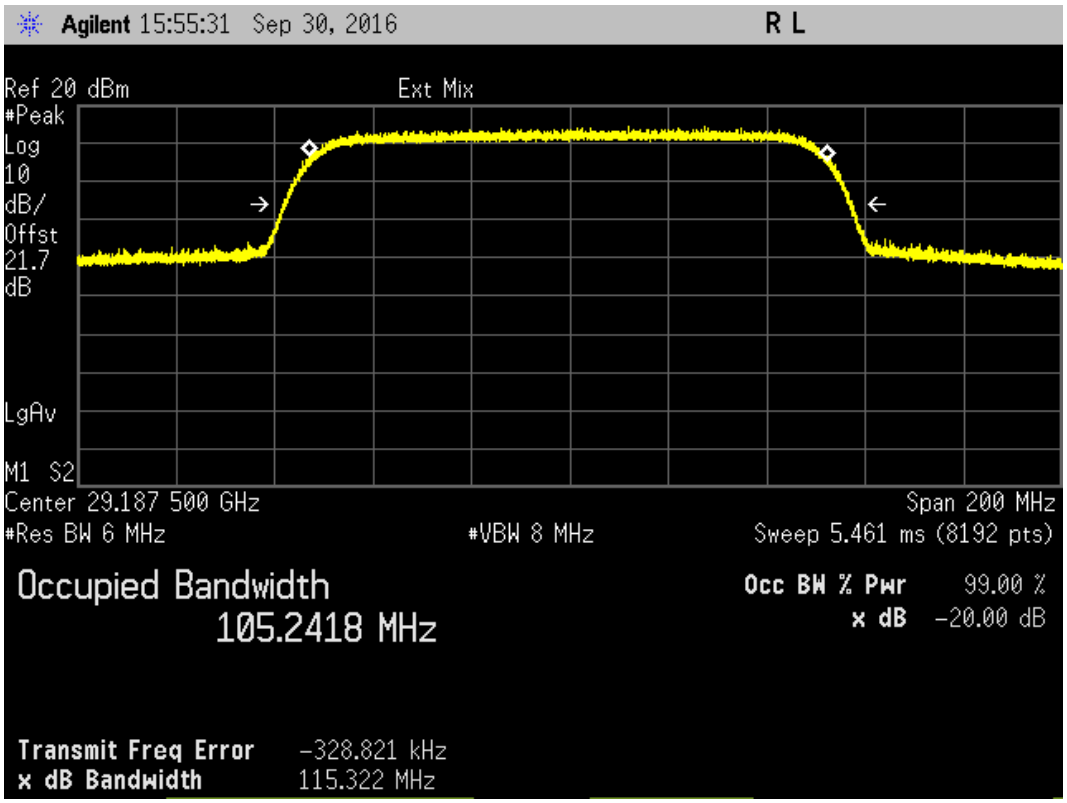
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 112 MHz, Modulation 64QAM, Channel 29.1875 GHz (+27.6045 GHz)



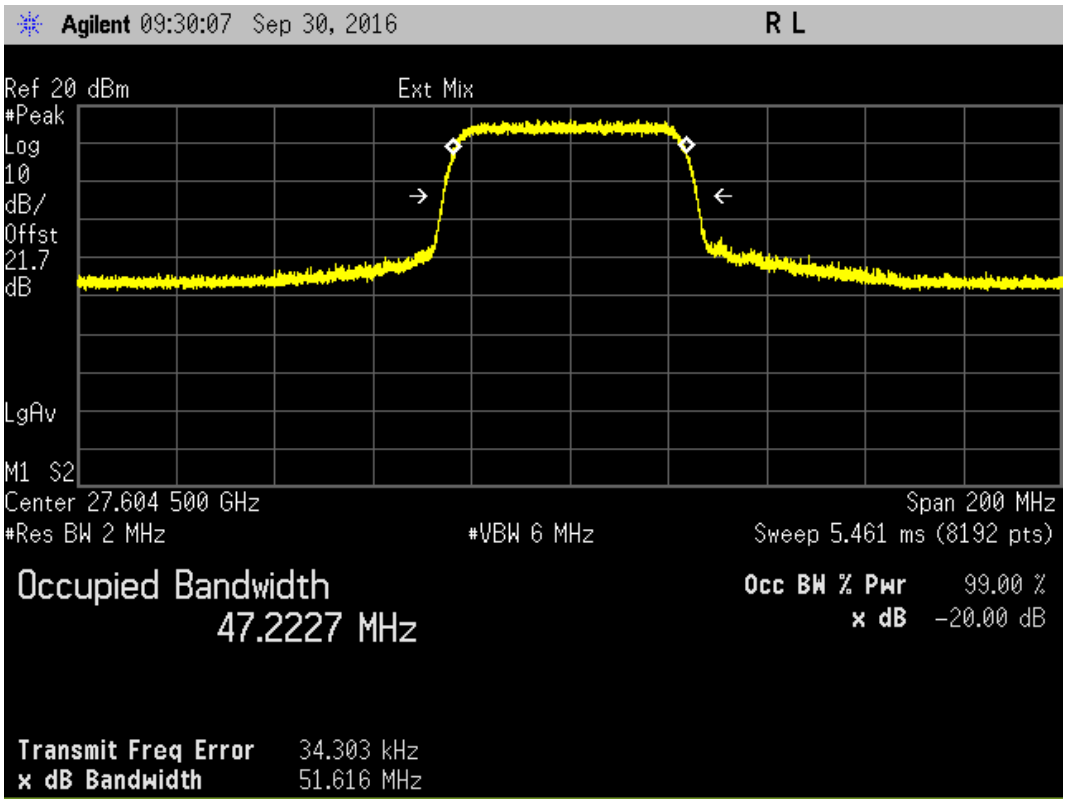
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 112 MHz, Modulation 64QAM, Channel 29.1875 GHz (+28.2485 GHz)



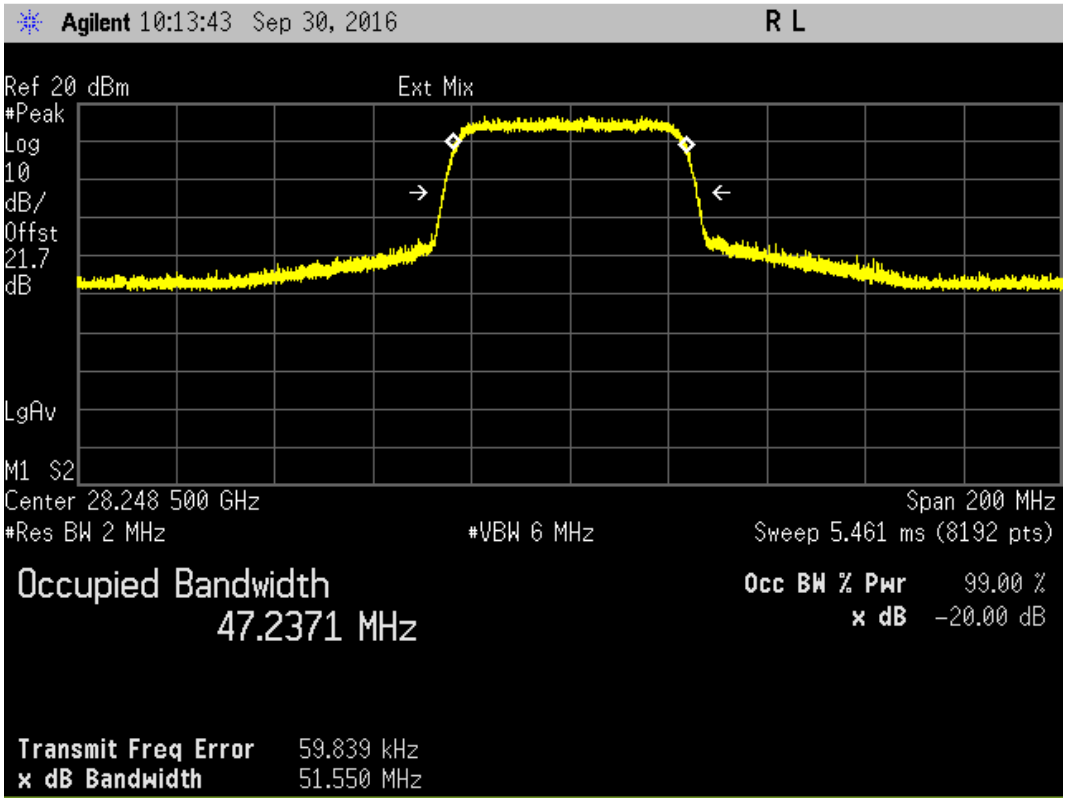
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 18 dBm, Channel Spacing 50 MHz, Modulation 256QAM, Channel 27.6045 GHz



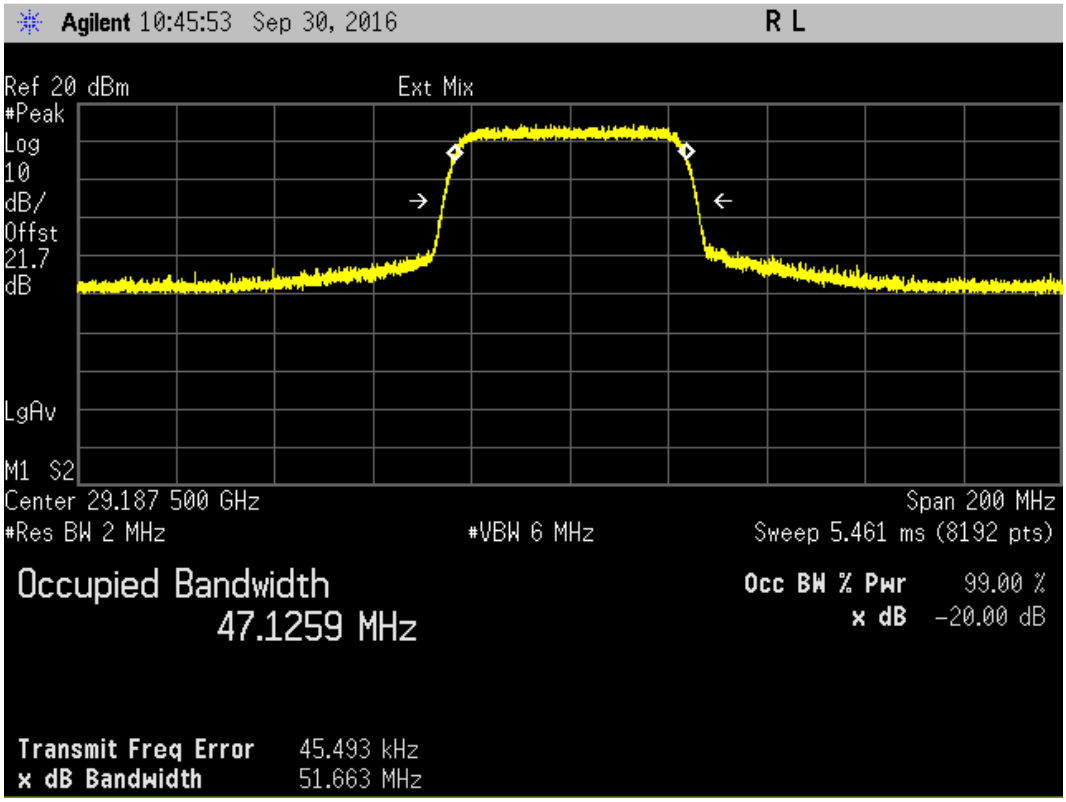
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 18 dBm, Channel Spacing 50 MHz, Modulation 256QAM, Channel 28.2485 GHz



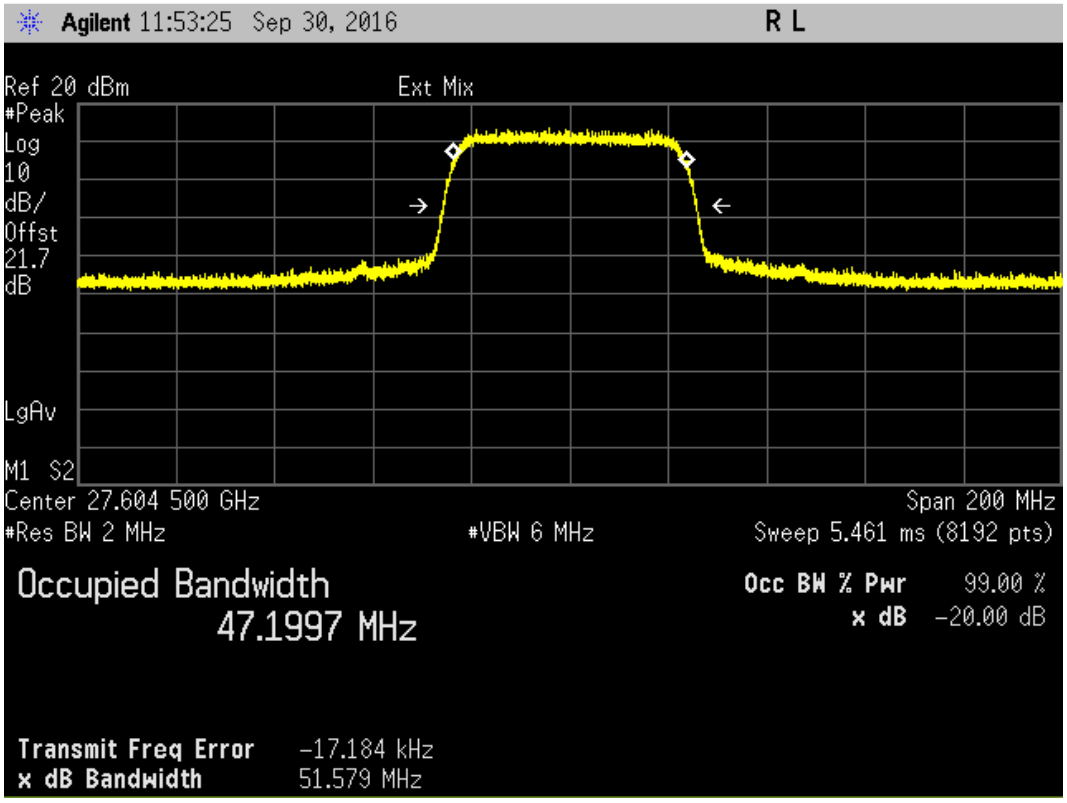
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 18 dBm, Channel Spacing 50 MHz, Modulation 256QAM, Channel 29.1875 GHz



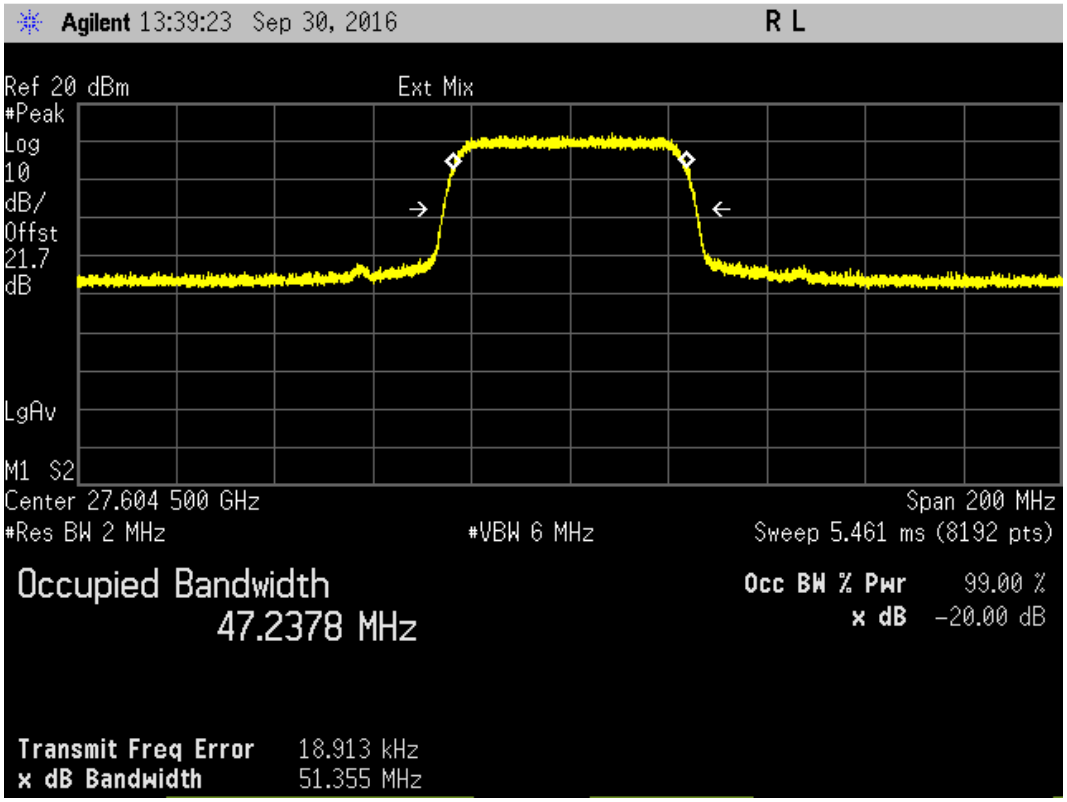
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 50 MHz, Modulation 256QAM, Channel 27.6045 GHz (+28.2485 GHz)



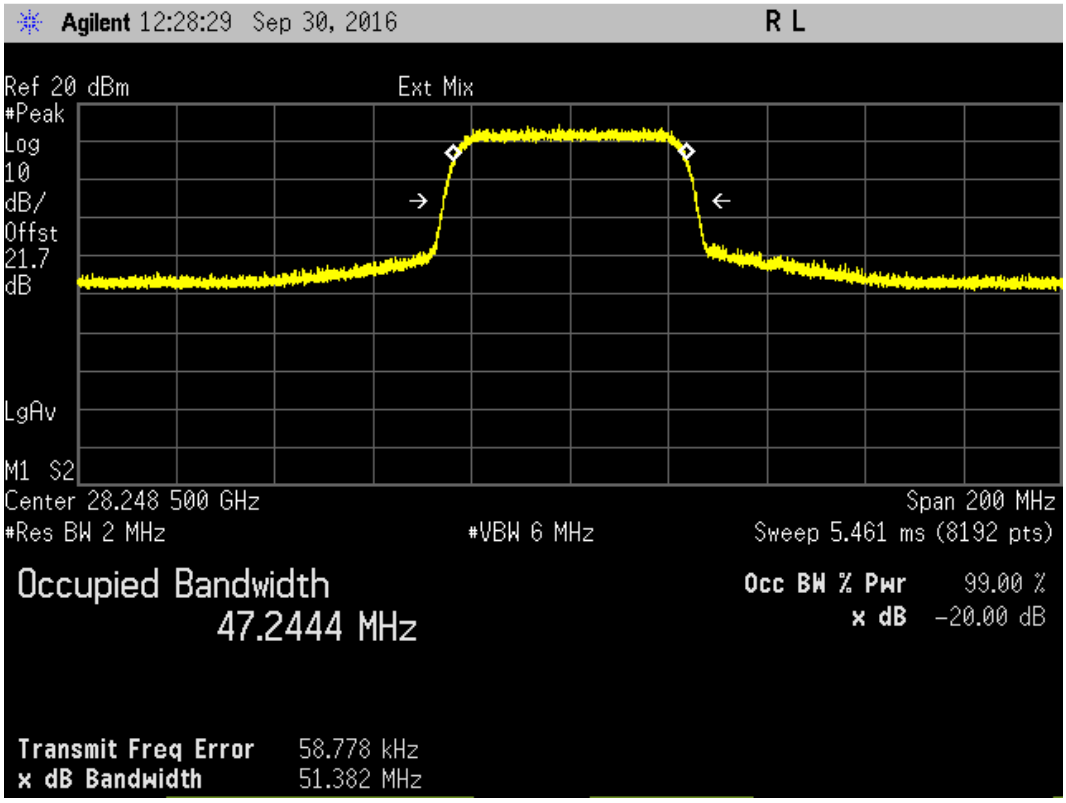
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 50 MHz, Modulation 256QAM, Channel 27.6045 GHz (+29.1875 GHz)



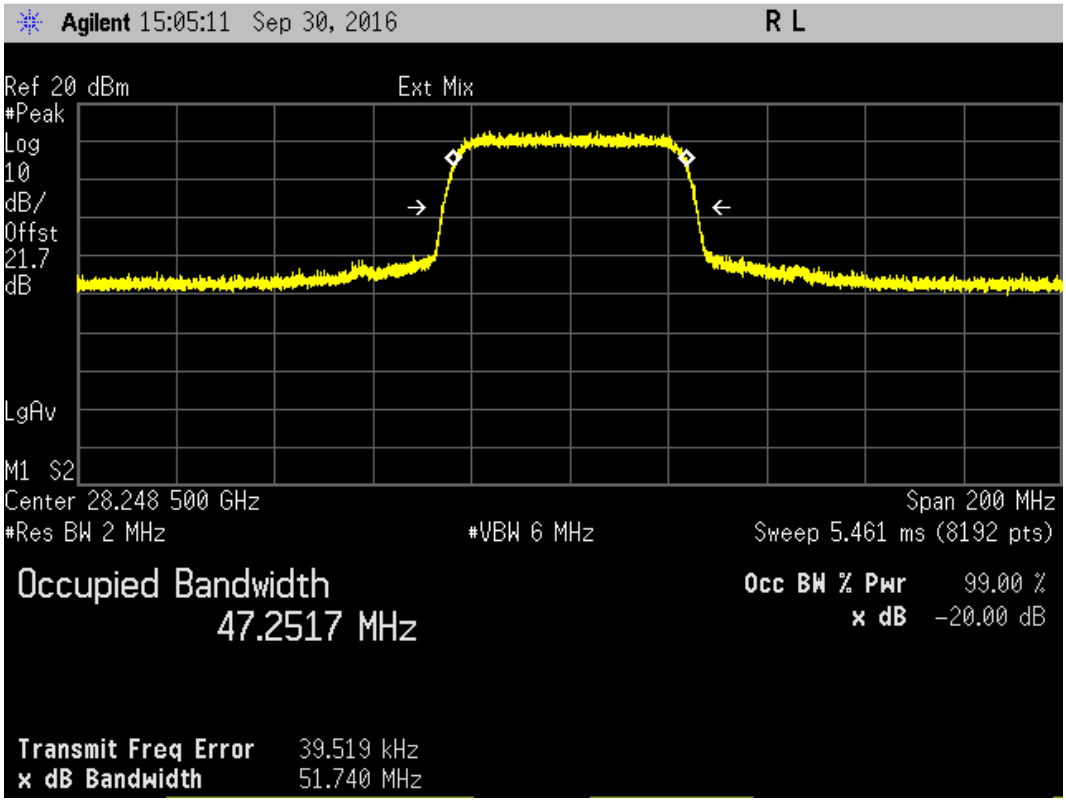
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 50 MHz, Modulation 256QAM, Channel 28.2485 GHz (+27.6045 GHz)



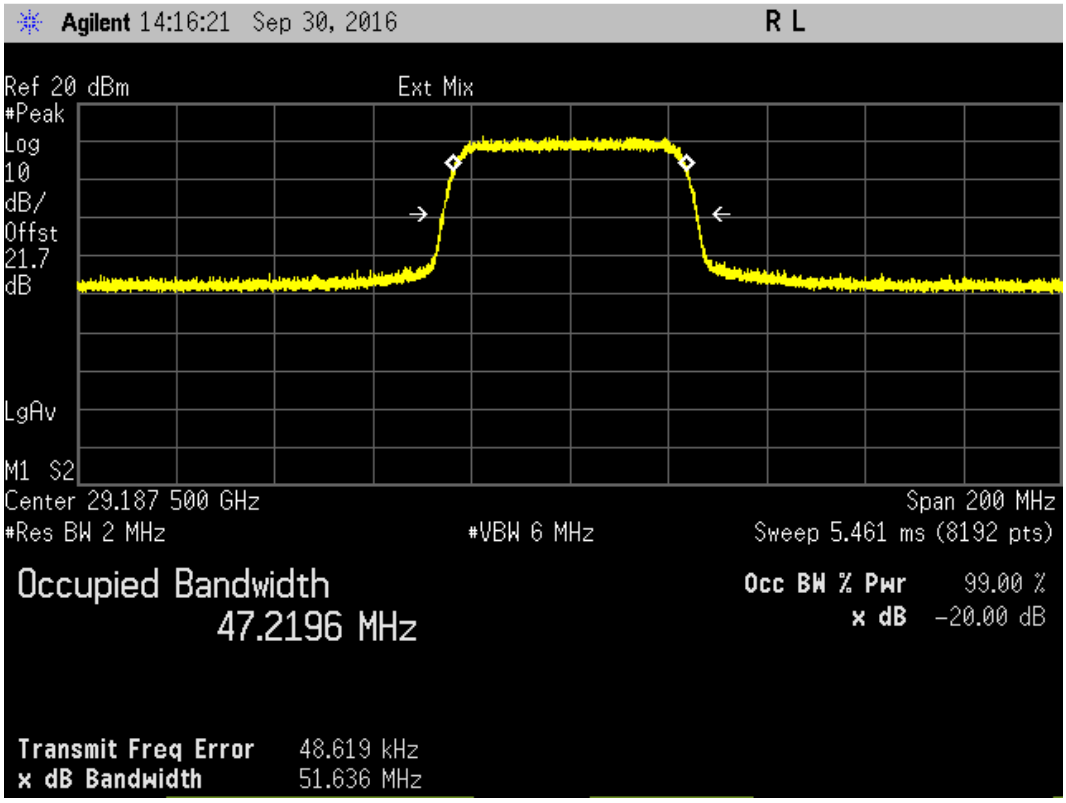
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 50 MHz, Modulation 256QAM, Channel 28.2485 GHz (+29.1875 GHz)



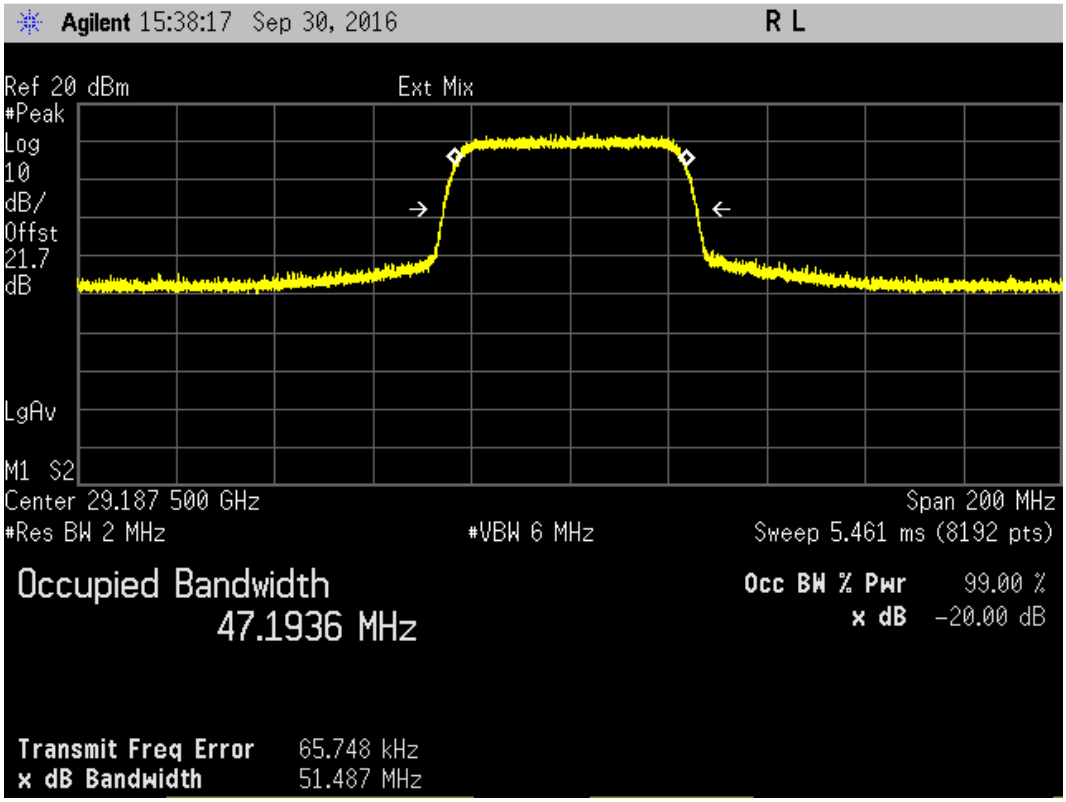
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 50 MHz, Modulation 256QAM, Channel 29.1875 GHz (+27.6045 GHz)



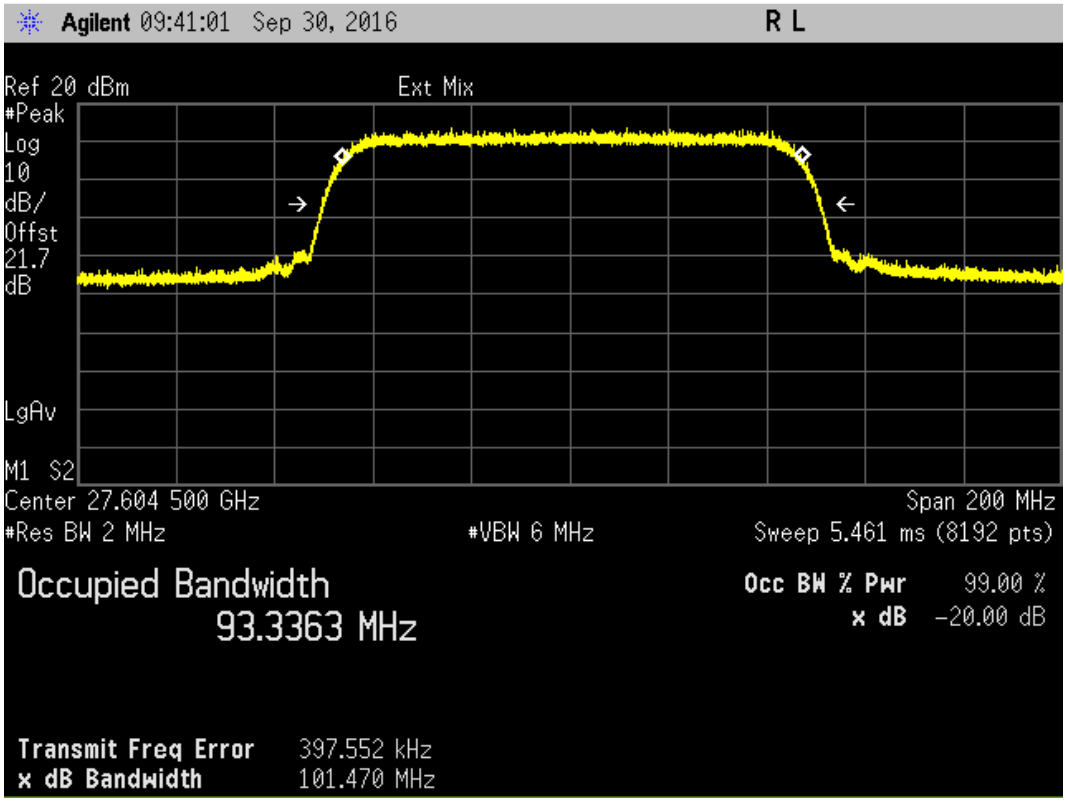
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 50 MHz, Modulation 256QAM, Channel 29.1875 GHz (+28.2485 GHz)



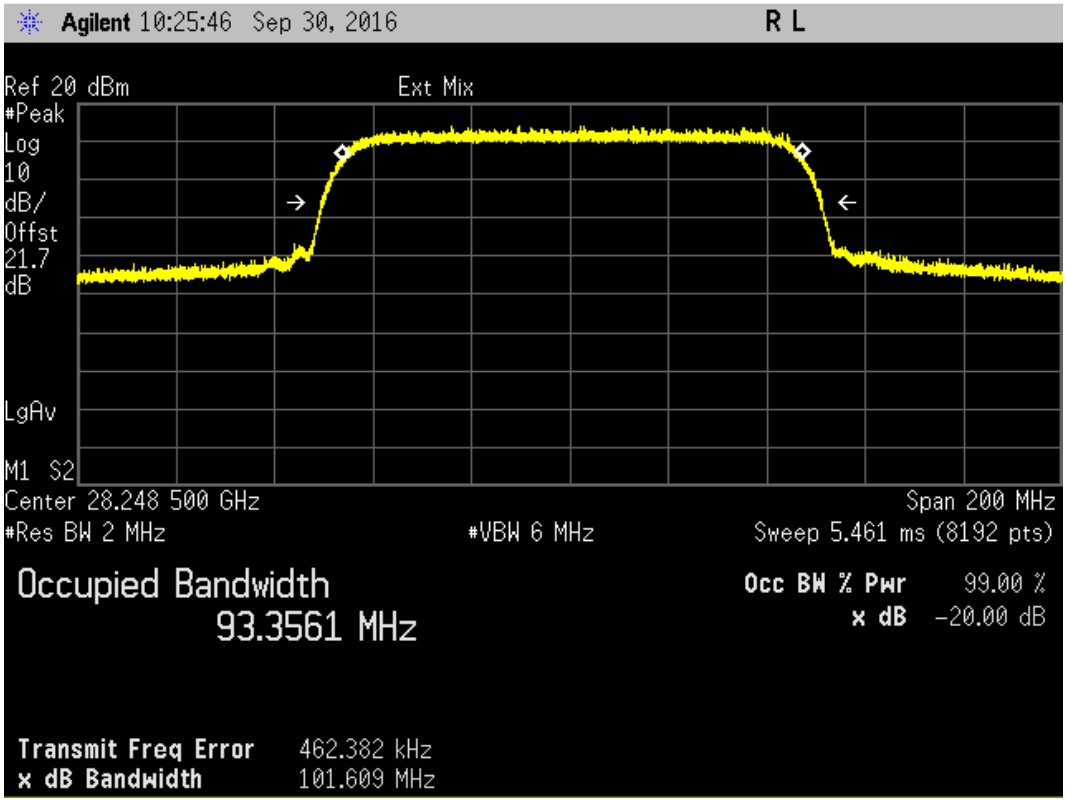
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 18 dBm, Channel Spacing 100 MHz, Modulation 256QAM, Channel 27.6045 GHz



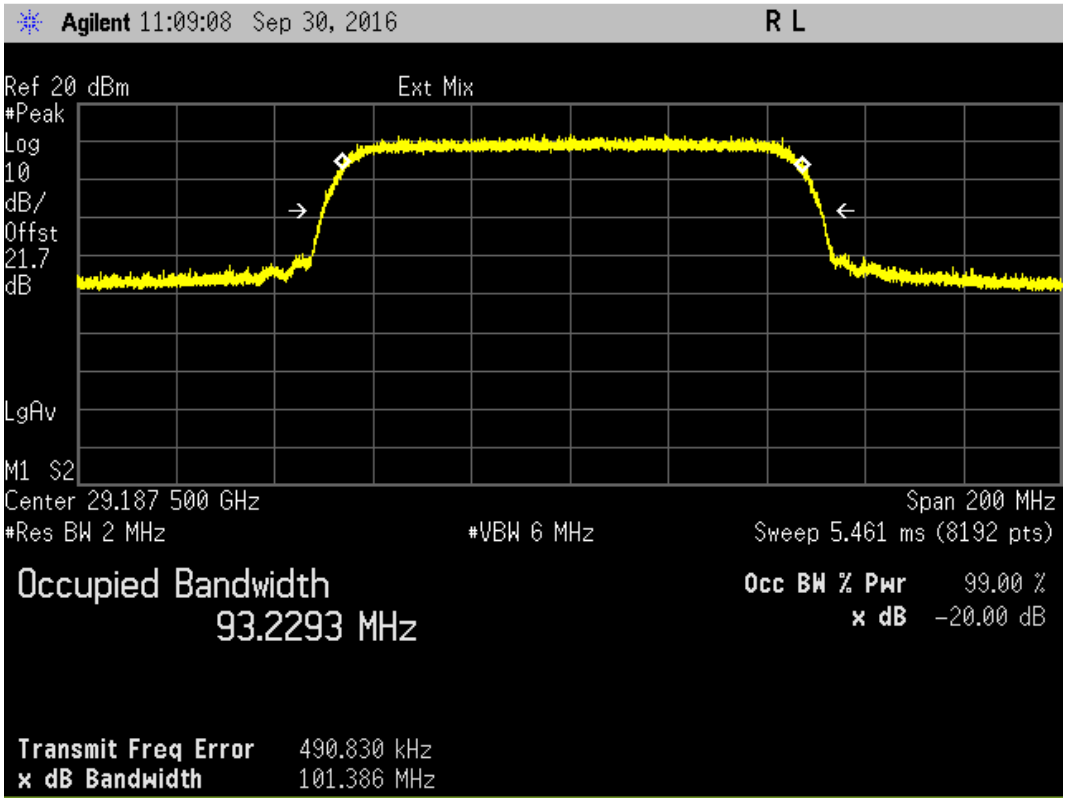
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 18 dBm, Channel Spacing 100 MHz, Modulation 256QAM, Channel 28.2485GHz



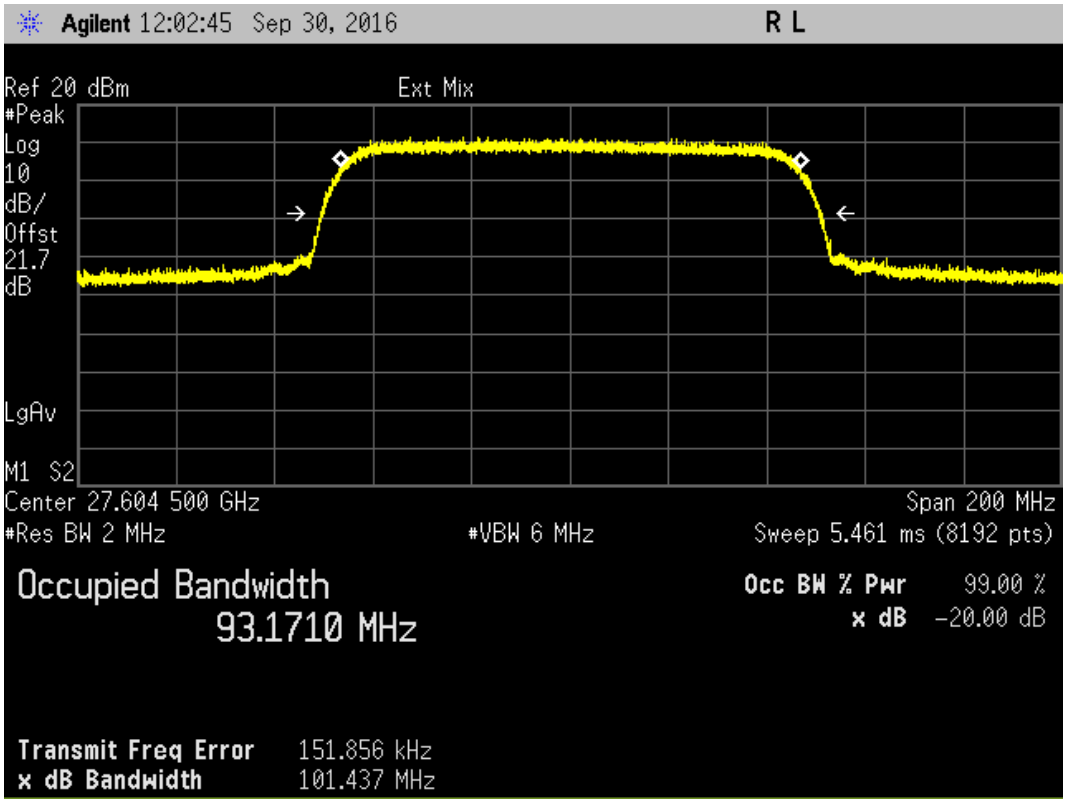
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 18 dBm, Channel Spacing 100 MHz, Modulation 256QAM, Channel 29.1875 GHz



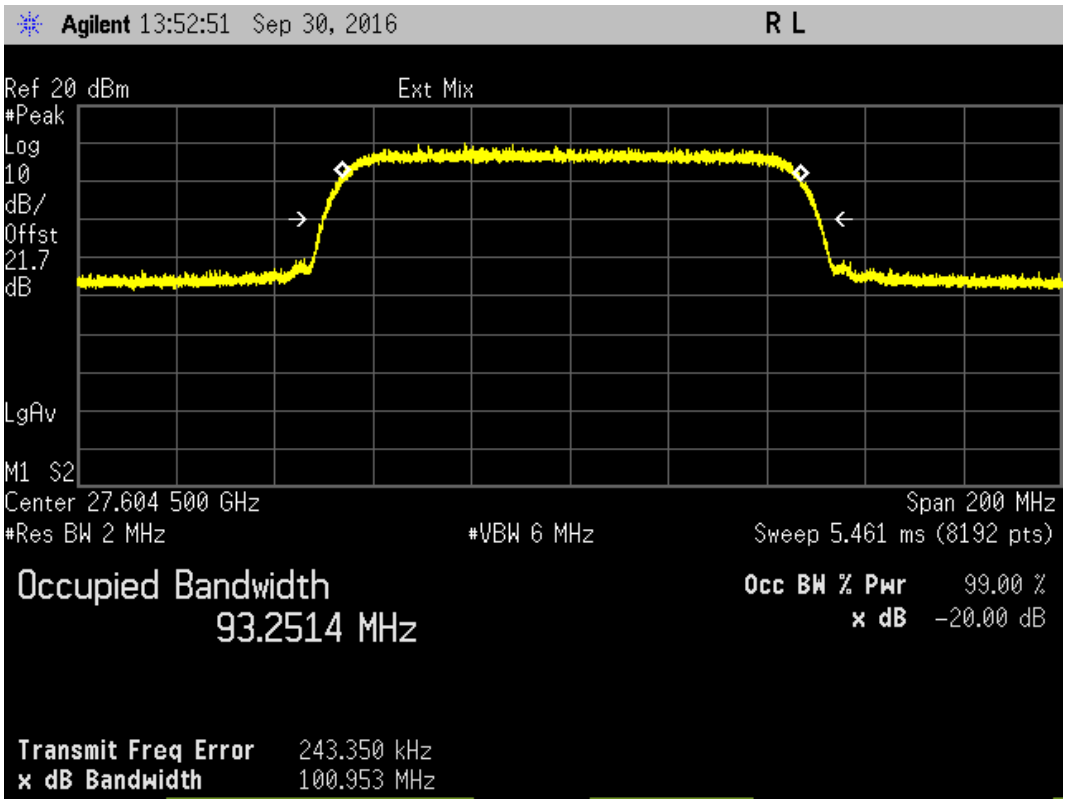
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 100 MHz, Modulation 256QAM, Channel 27.6045 GHz (+28.2485 GHz)



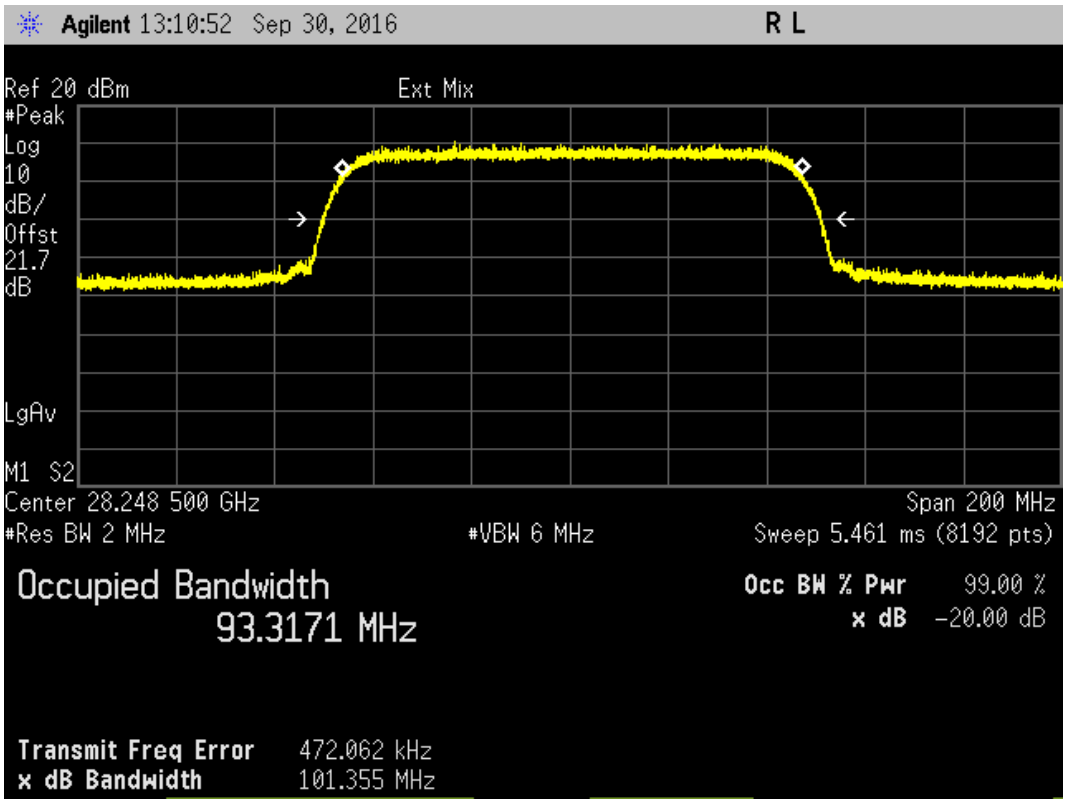
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 100 MHz, Modulation 256QAM, Channel 27.6045 GHz (+29.1875 GHz)



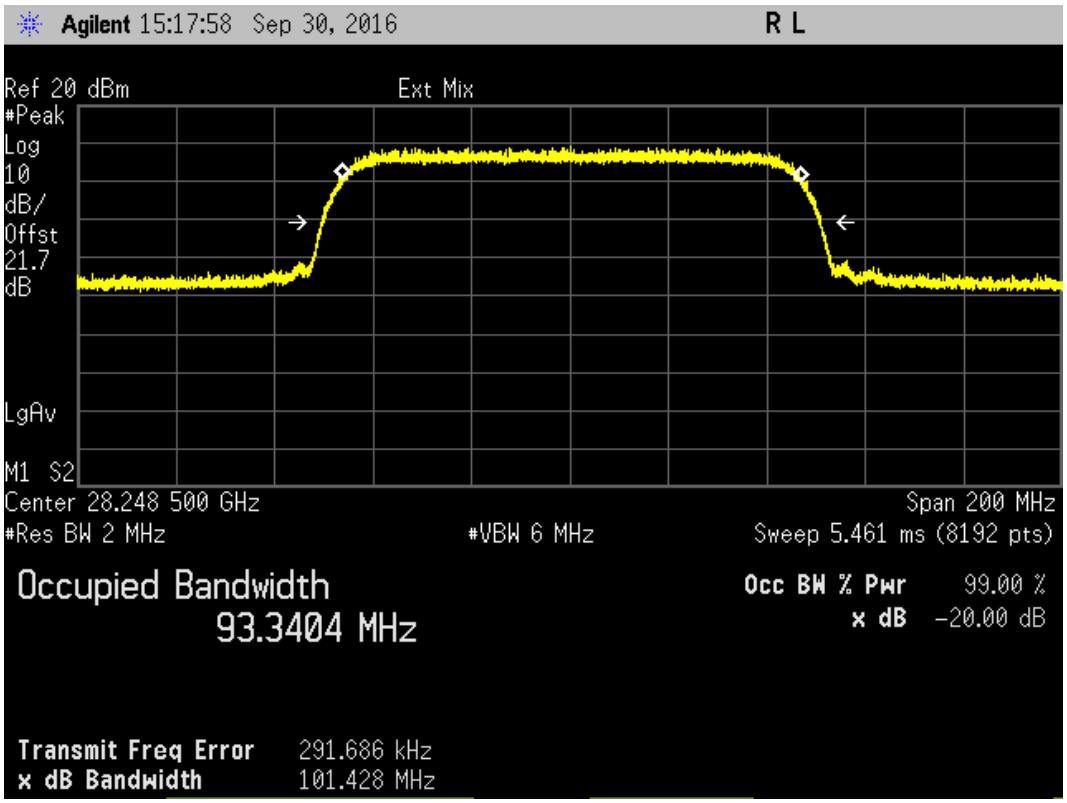
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 100 MHz, Modulation 256QAM, Channel 28.2485 GHz (+27.6045 GHz)



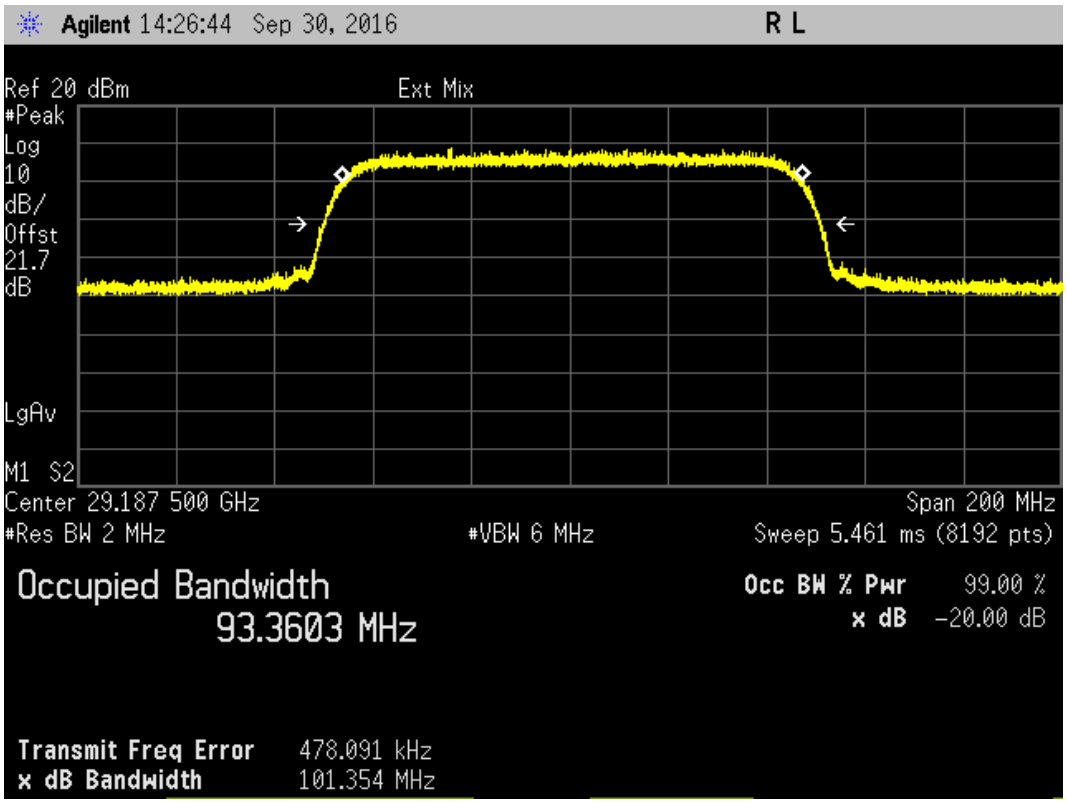
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 100 MHz, Modulation 256QAM, Channel 28.2485 GHz (+29.1875GHz)



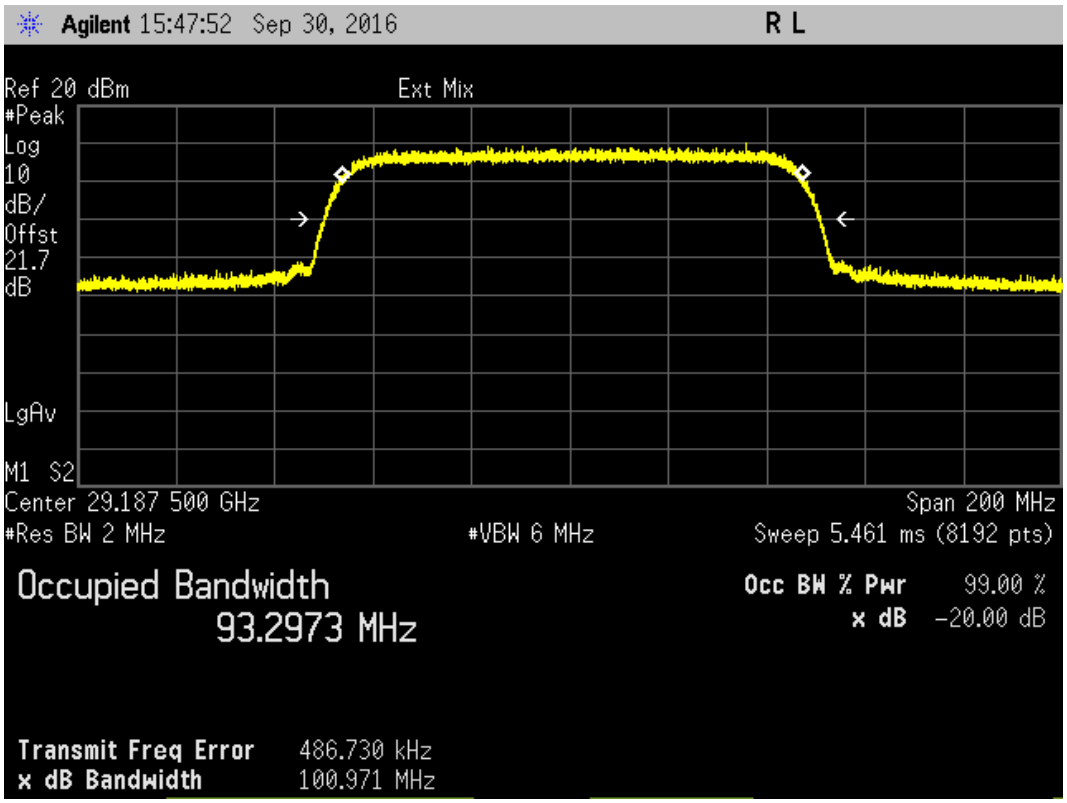
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 100 MHz, Modulation 256QAM, Channel 29.1875 GHz (+27.6045 GHz)



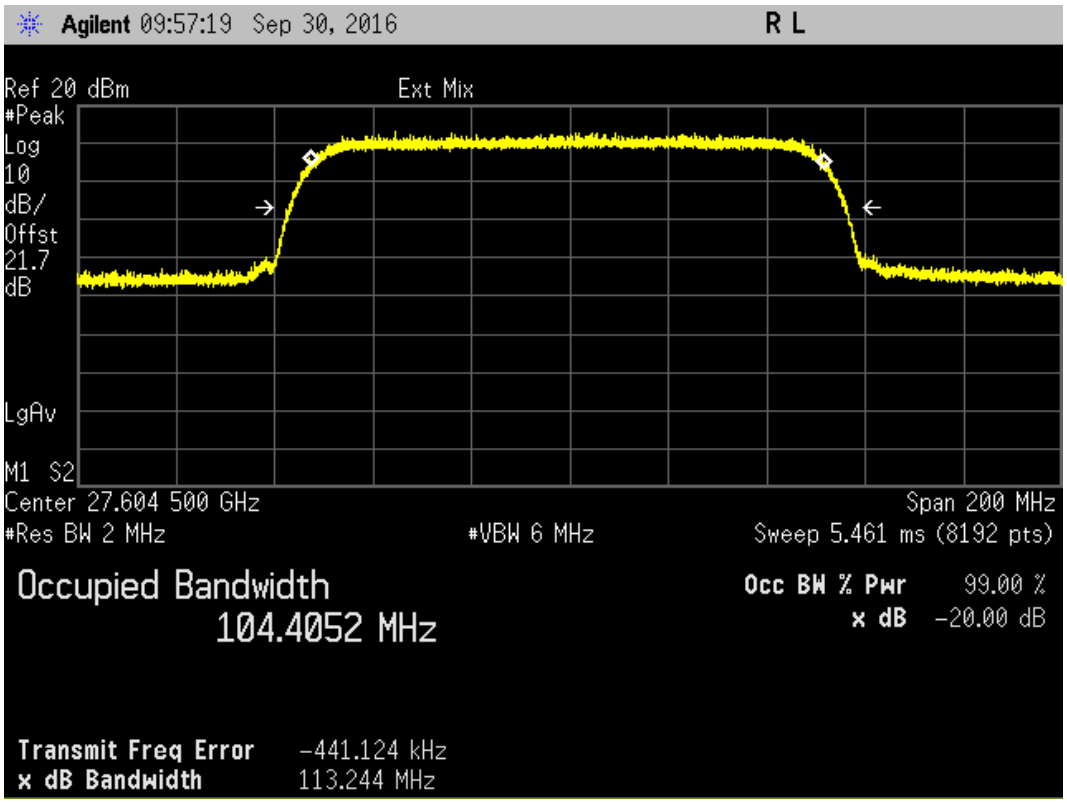
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 100 MHz, Modulation 256QAM, Channel 29.1875GHz (+28.2485 GHz)



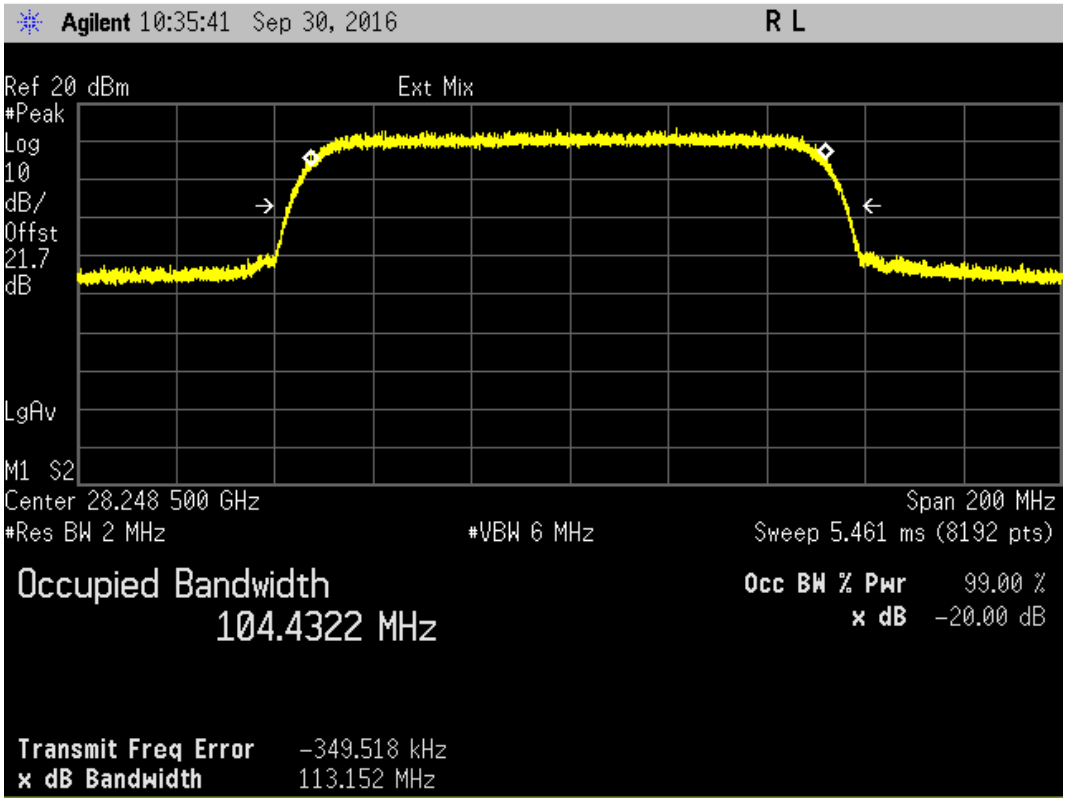
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 18 dBm, Channel Spacing 112 MHz, Modulation 256QAM, Channel 27.6045 GHz



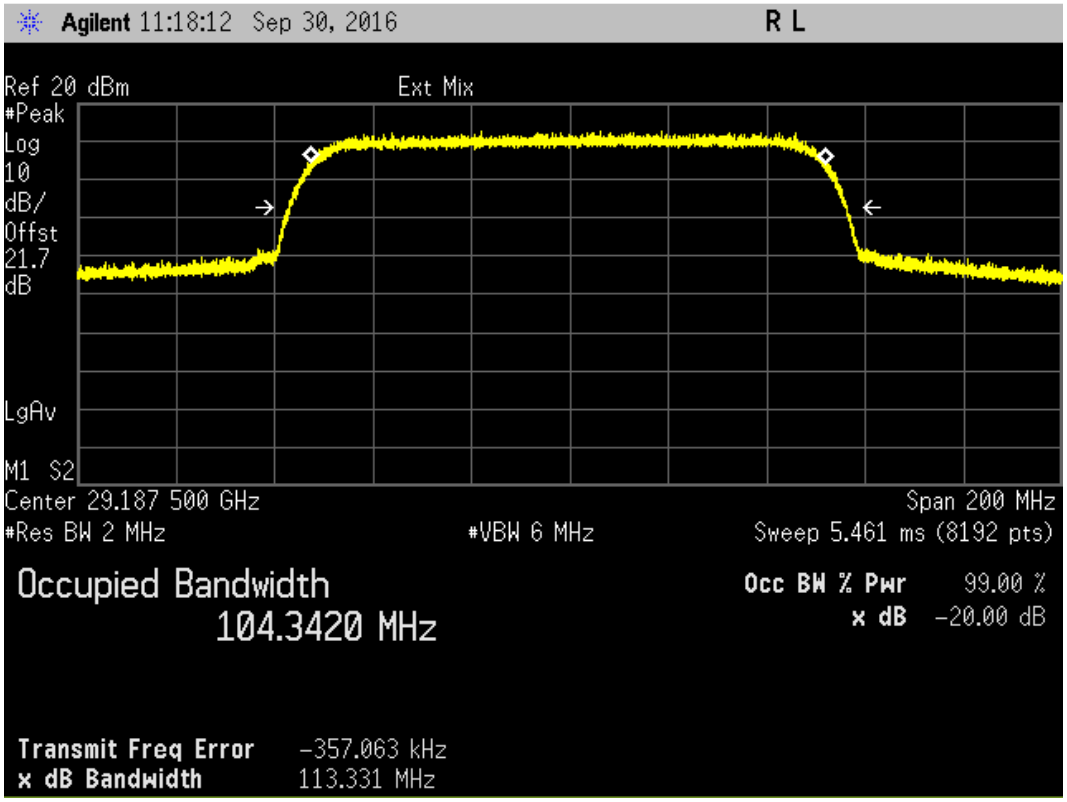
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 18 dBm, Channel Spacing 112 MHz, Modulation 256QAM, Channel 28.2485 GHz



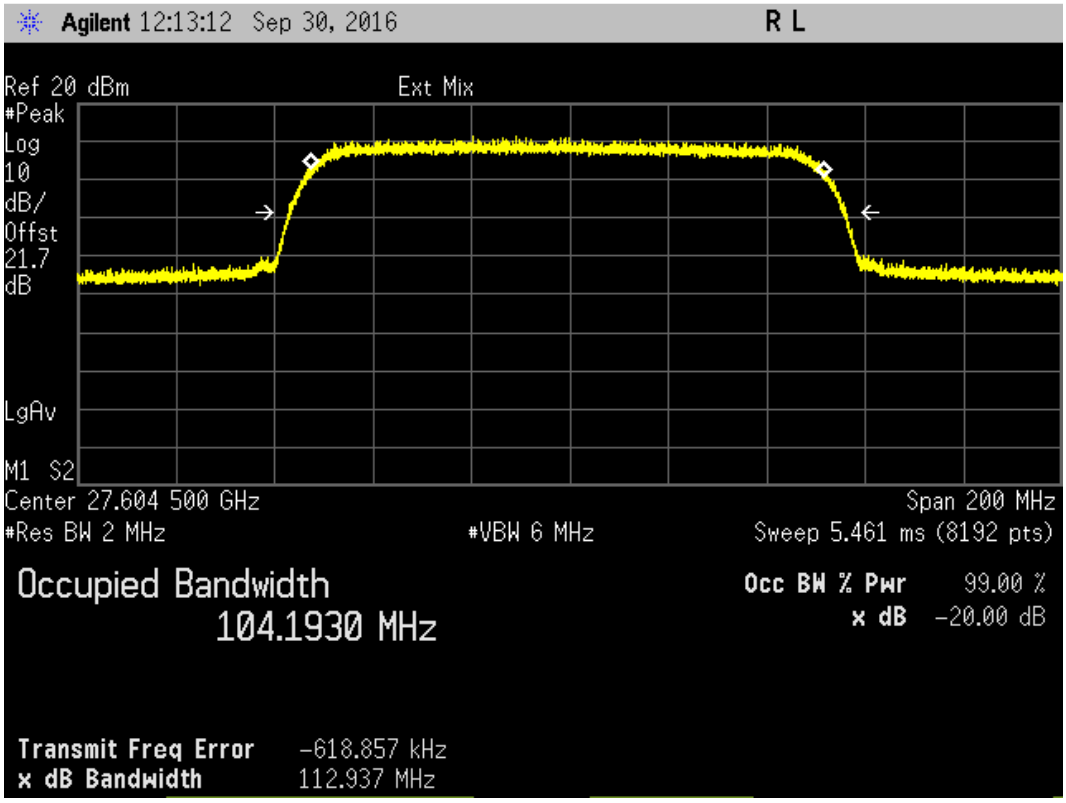
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 18 dBm, Channel Spacing 112 MHz, Modulation 256QAM, Channel 29.1875 GHz



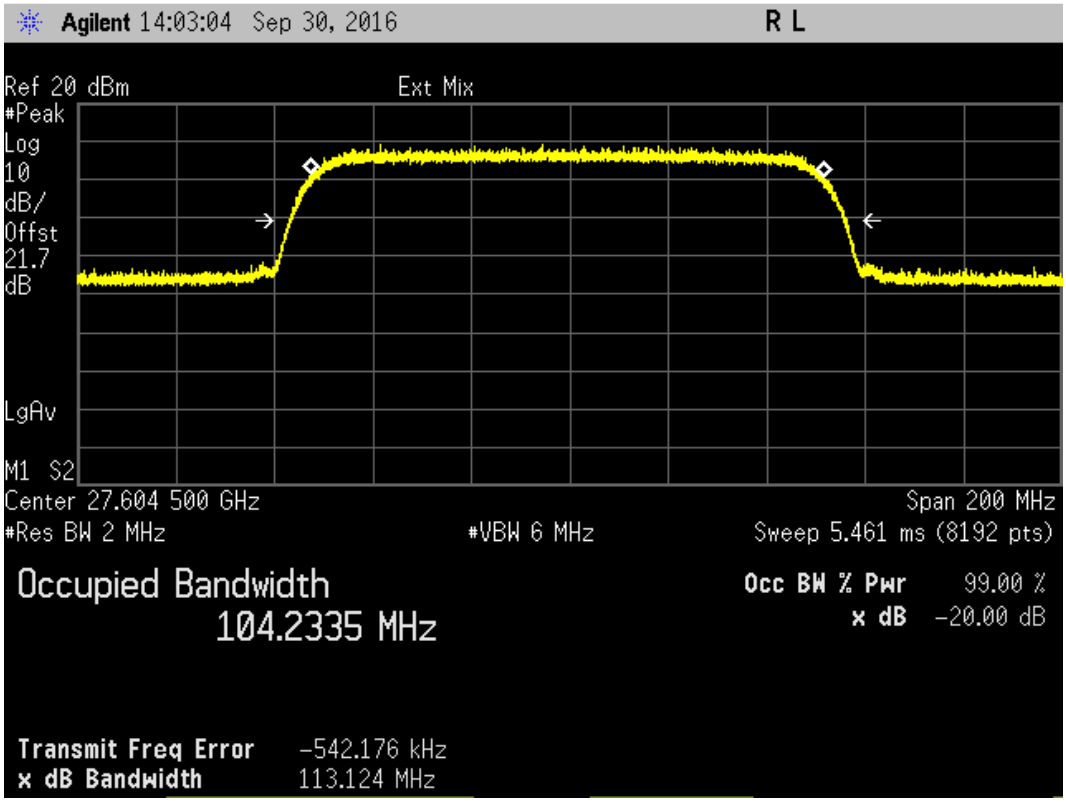
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 112 MHz, Modulation 256QAM, Channel 27.6045 GHz (+28.2485 GHz)



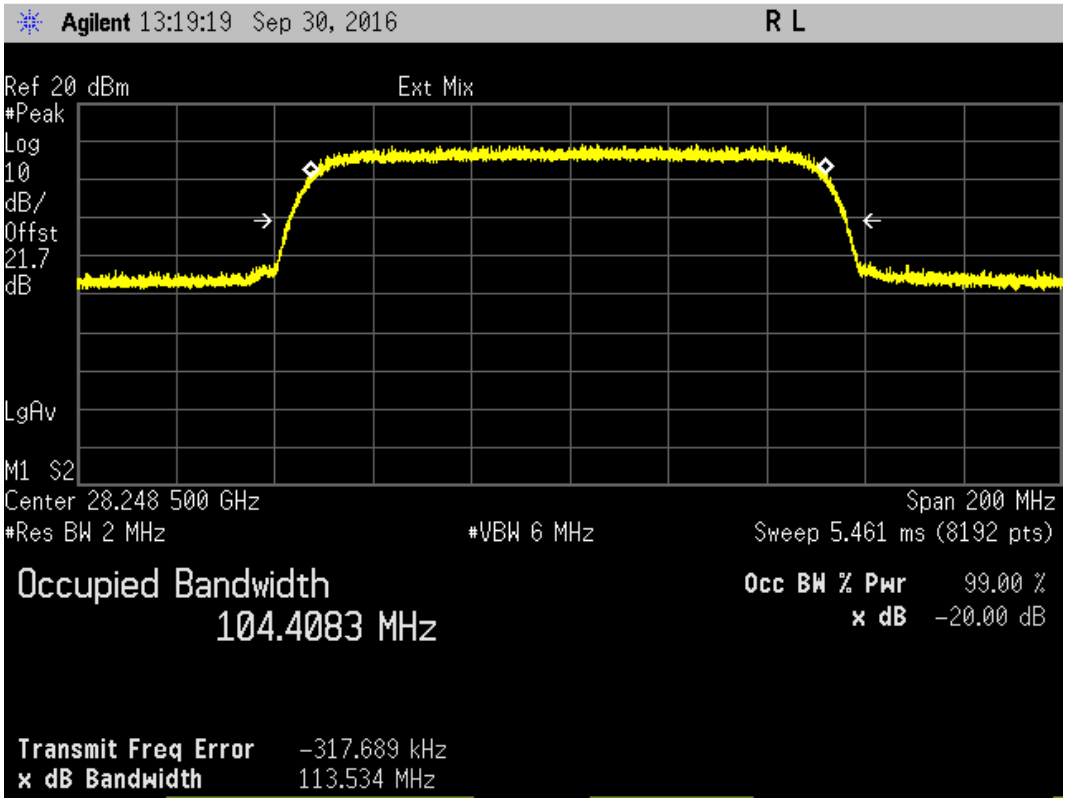
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 112 MHz, Modulation 256QAM, Channel 27.6045 GHz (+29.1875 GHz)



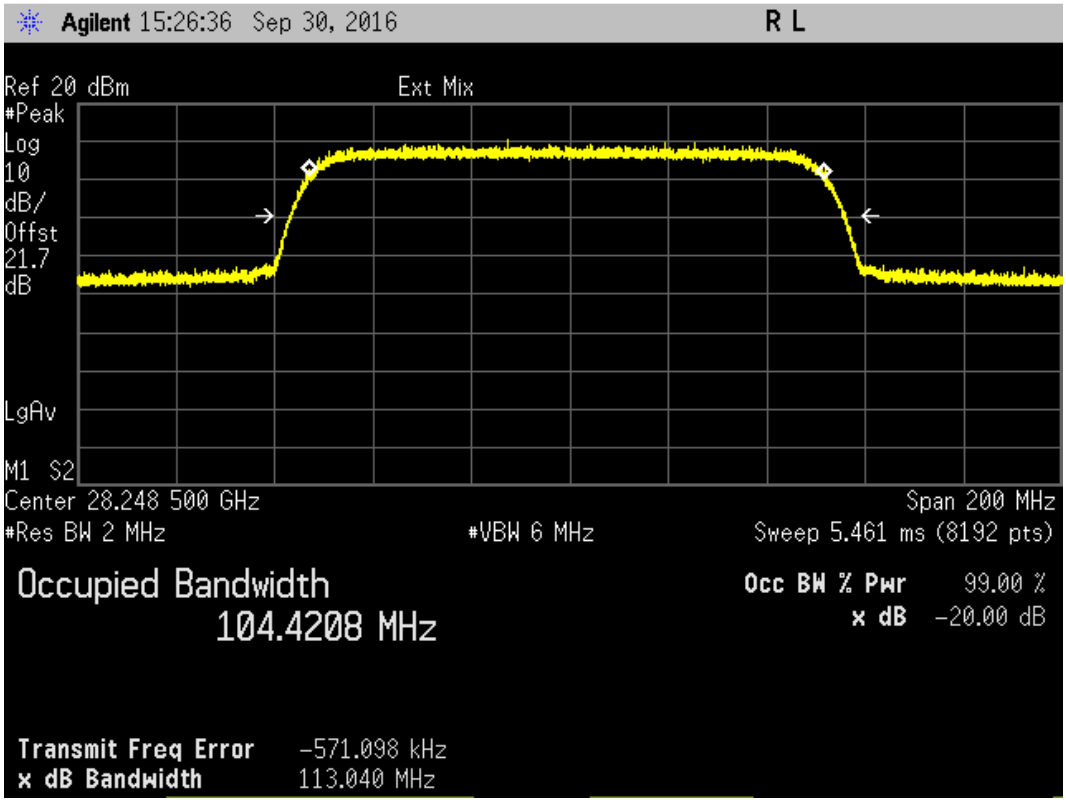
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 112 MHz, Modulation 256QAM, Channel 28.2485 GHz (+27.6045 GHz)



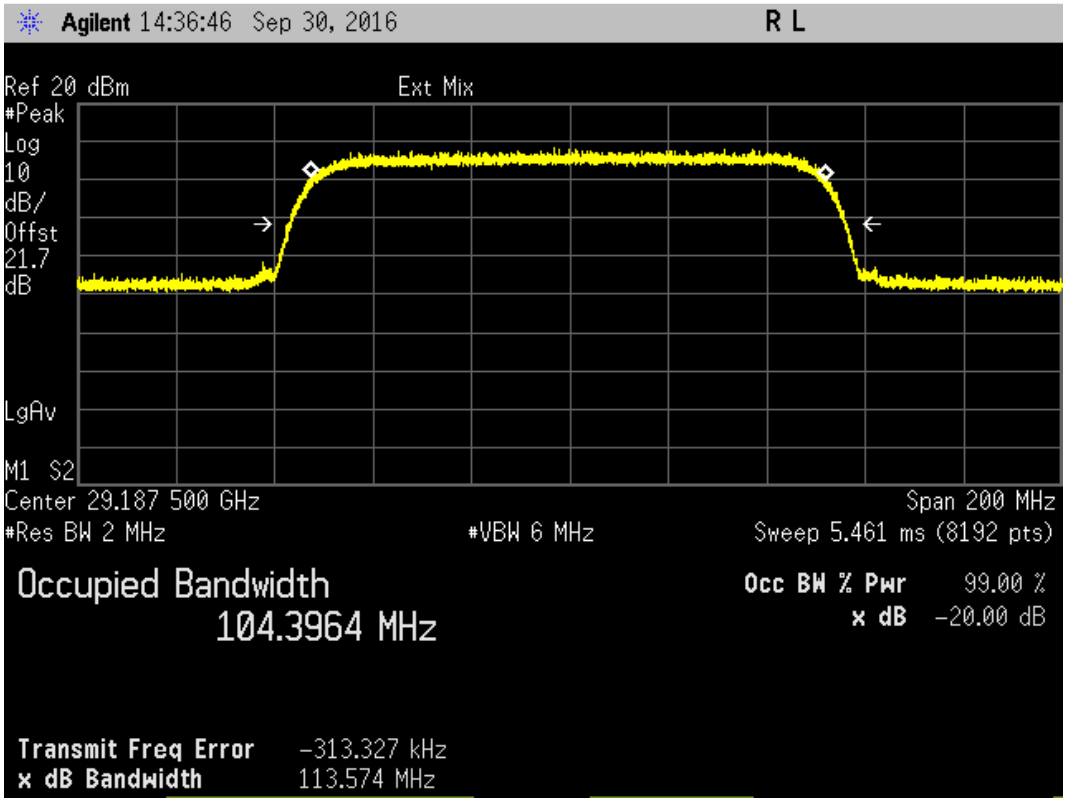
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 112 MHz, Modulation 256QAM, Channel 28.2485 GHz (+29.1875 GHz)



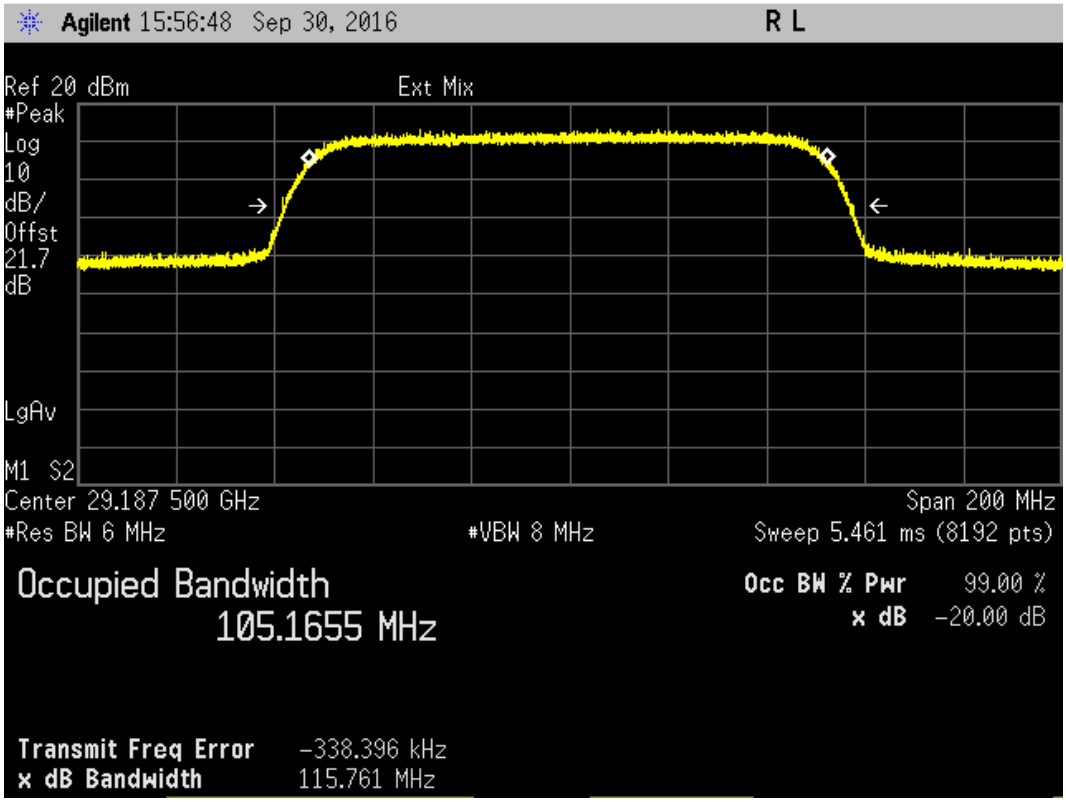
Plot for 99% Bandwidth (MHz)

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 112 MHz, Modulation 256QAM, Channel 29.1875 GHz (+27.6045 GHz)



Plot for 99% Bandwidth (MHz)

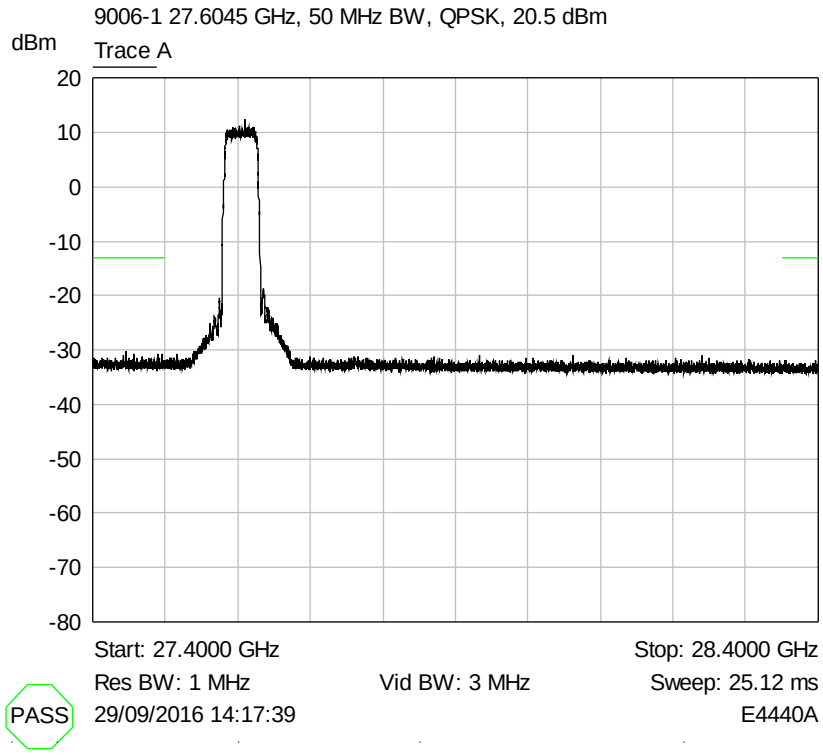
RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 112 MHz, Modulation 256QAM, Channel 29.1875 GHz (+27.6045 GHz)



Plot for 99% Bandwidth (MHz)

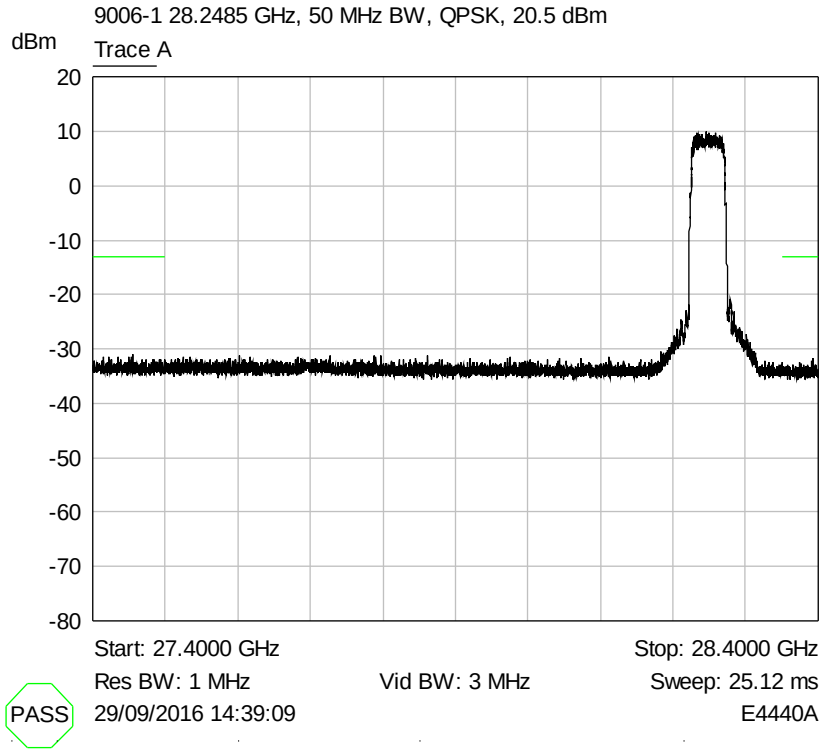
6.3 Band edge / spectrum mask additional emissions limitations

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20.5 dBm, Channel Spacing 50 MHz, Modulation QPSK, Channel 27.6045 GHz



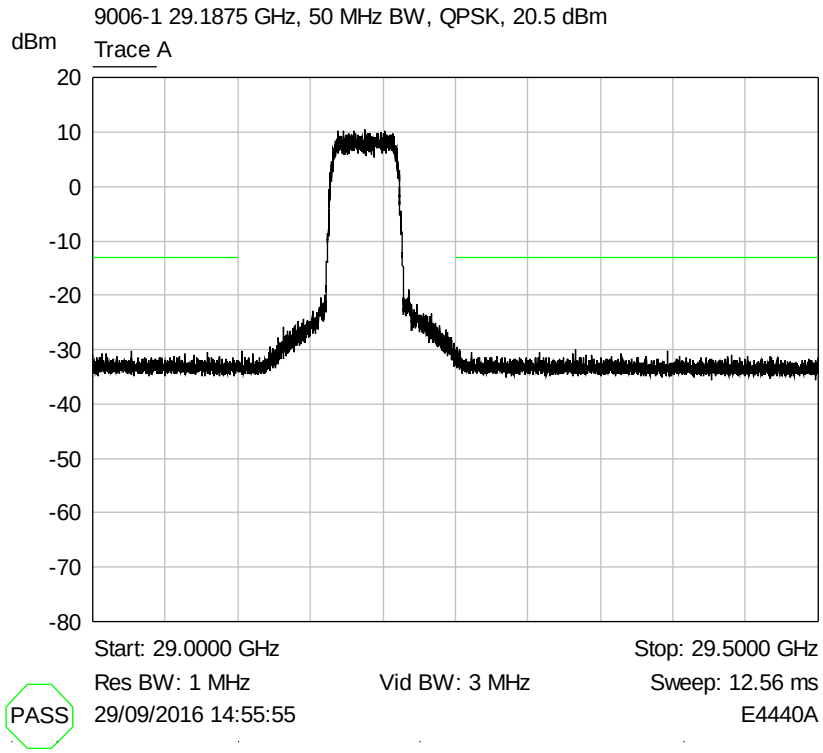
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20.5 dBm, Channel Spacing 50 MHz, Modulation QPSK, Channel 28.2485 GHz



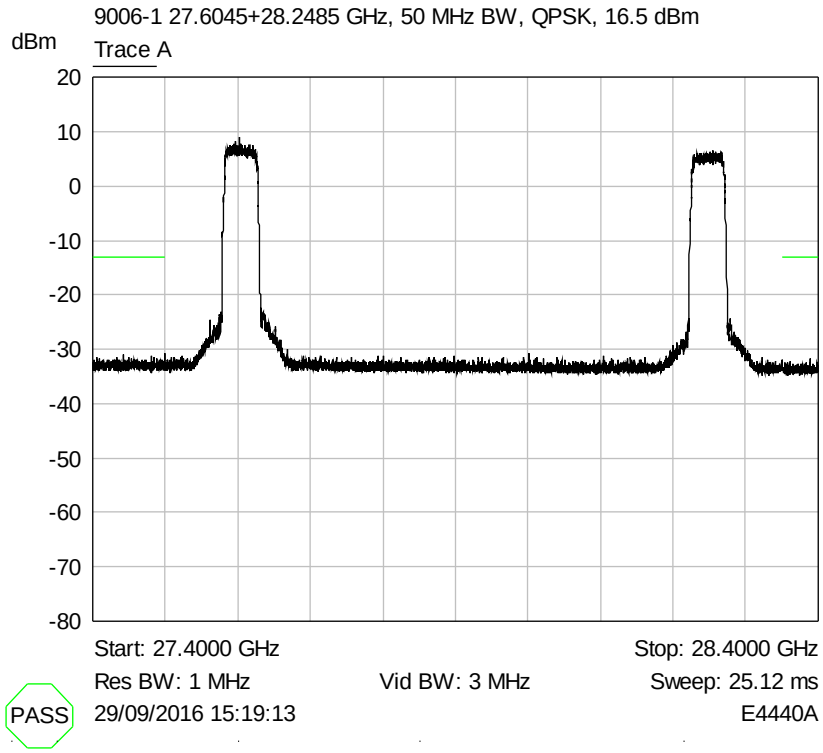
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20.5 dBm, Channel Spacing 50 MHz, Modulation QPSK, Channel 29.1875 GHz



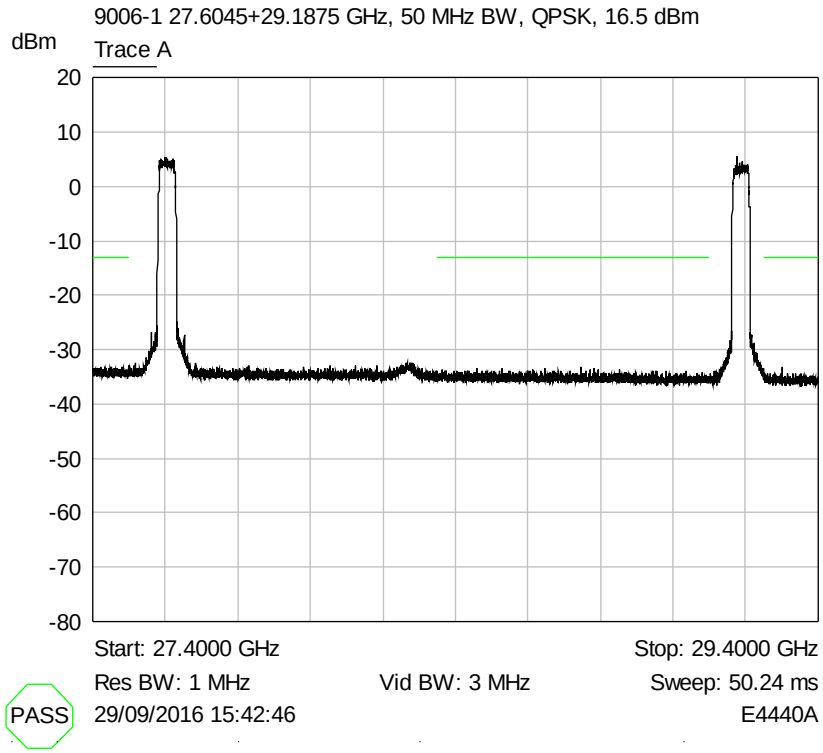
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5 dBm, Channel Spacing 50 MHz, Modulation QPSK, Channel 27.6045 (with 28.2485 on) GHz



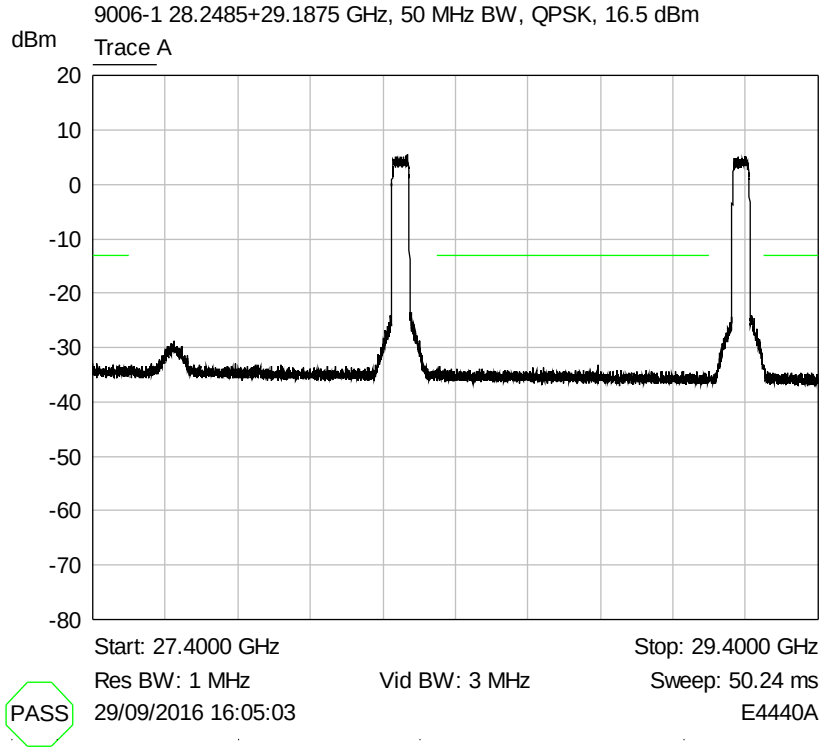
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5 dBm, Channel Spacing 50 MHz, Modulation QPSK, Channel 27.6045 (with 29.1875 on) GHz



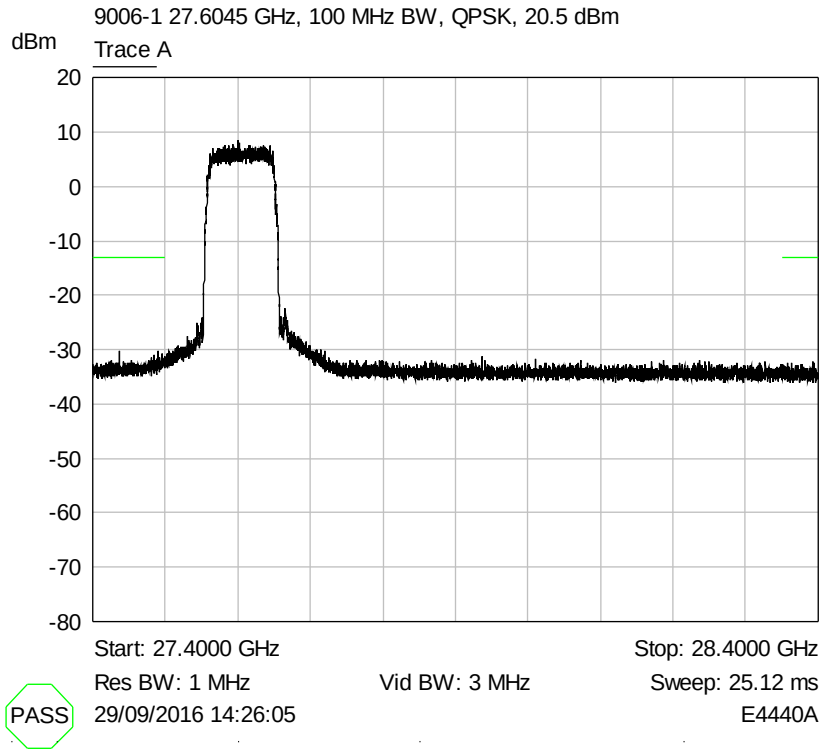
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5 dBm, Channel Spacing 50 MHz, Modulation QPSK, Channel 28.2485 (with 29.1875 on) GHz



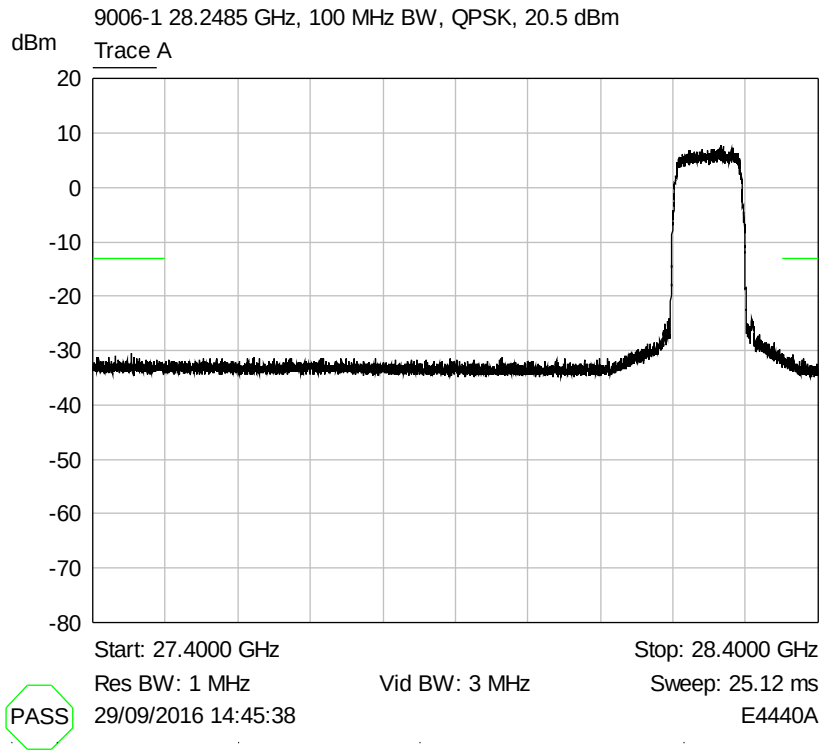
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20.5 dBm, Channel Spacing 100 MHz, Modulation QPSK, Channel 27.6045 GHz



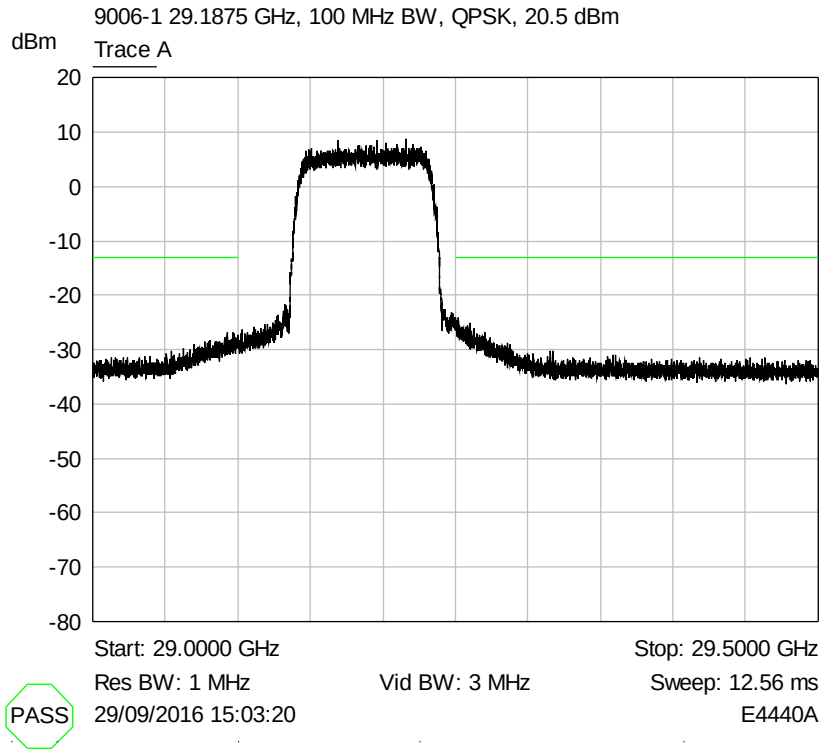
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20.5 dBm, Channel Spacing 100 MHz, Modulation QPSK, Channel 28.2485 GHz



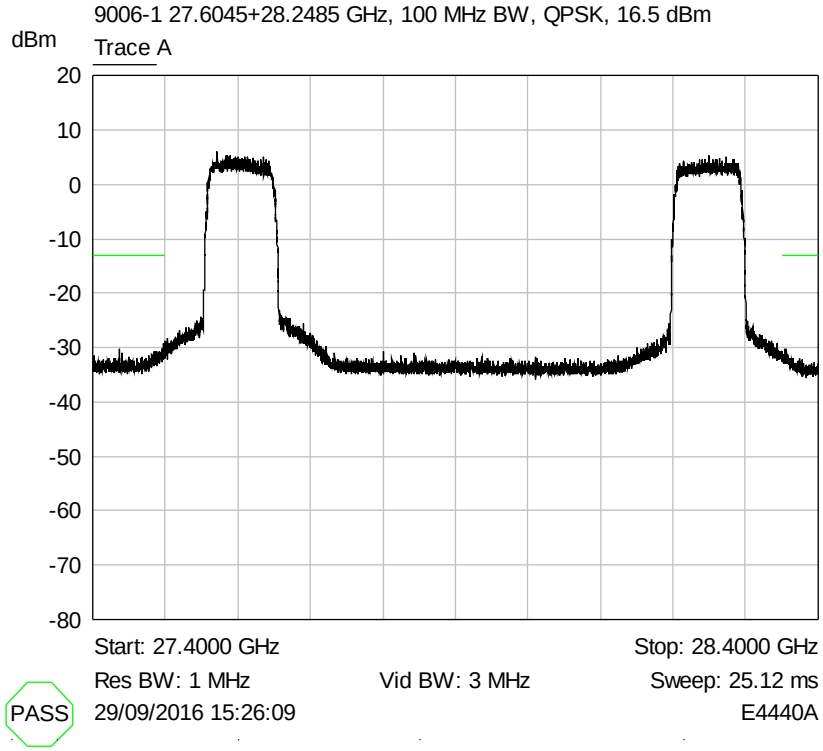
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20.5 dBm, Channel Spacing 100 MHz, Modulation QPSK, Channel 29.1875 GHz



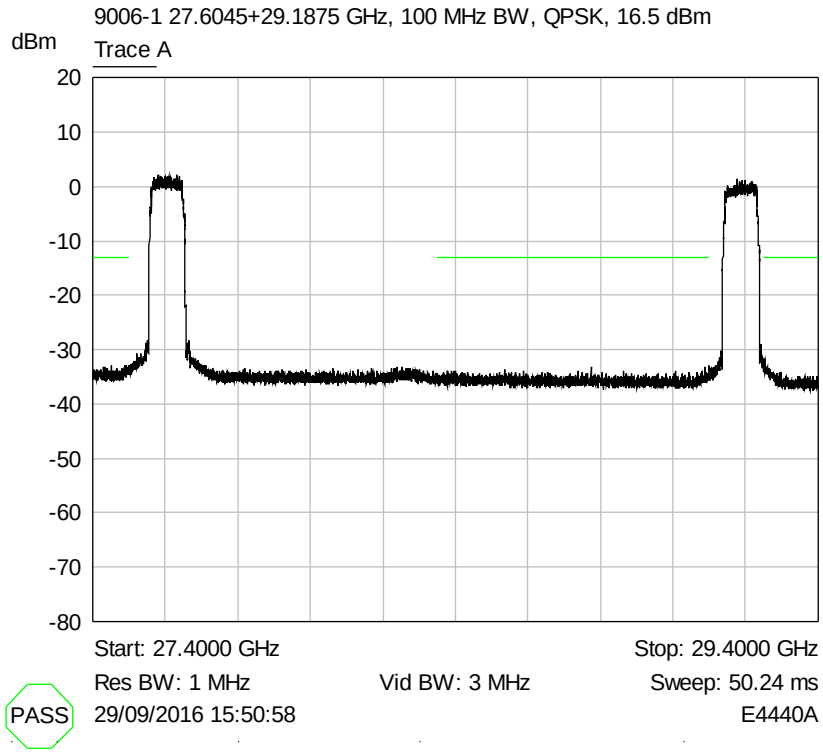
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5 dBm, Channel Spacing 100 MHz, Modulation QPSK, Channel 27.6045 (with 28.2485 on) GHz



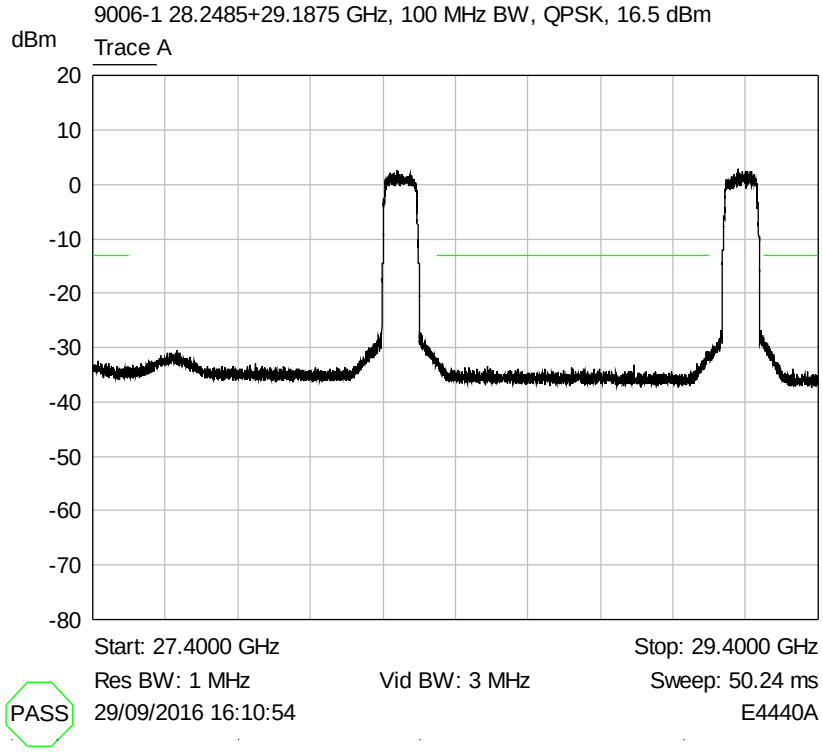
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5 dBm, Channel Spacing 100 MHz, Modulation QPSK, Channel 27.6045 (with 29.1875 on) GHz



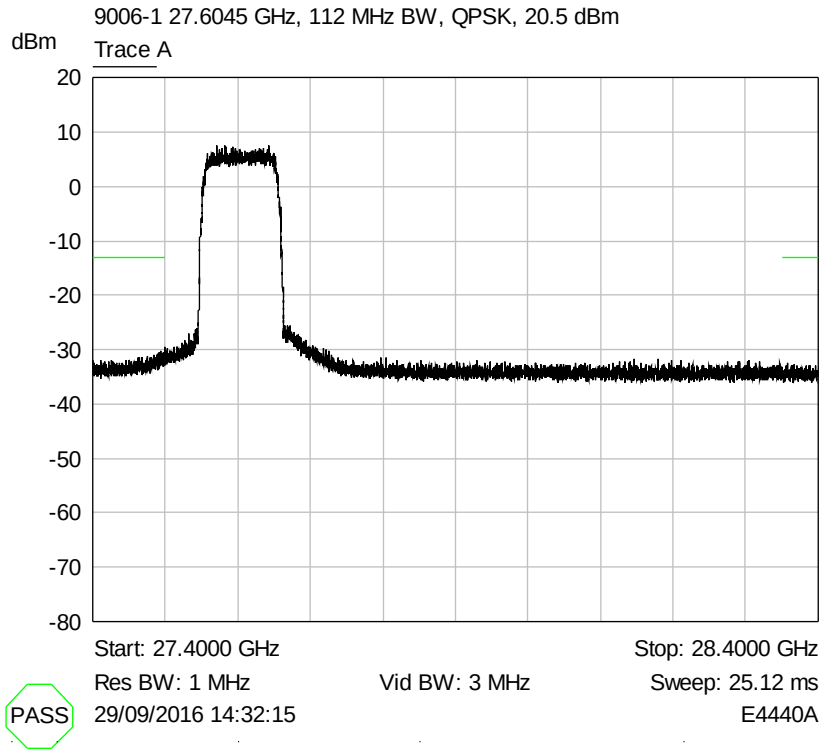
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5 dBm, Channel Spacing 100 MHz, Modulation QPSK, Channel 28.2485 (with 29.1875 on) GHz



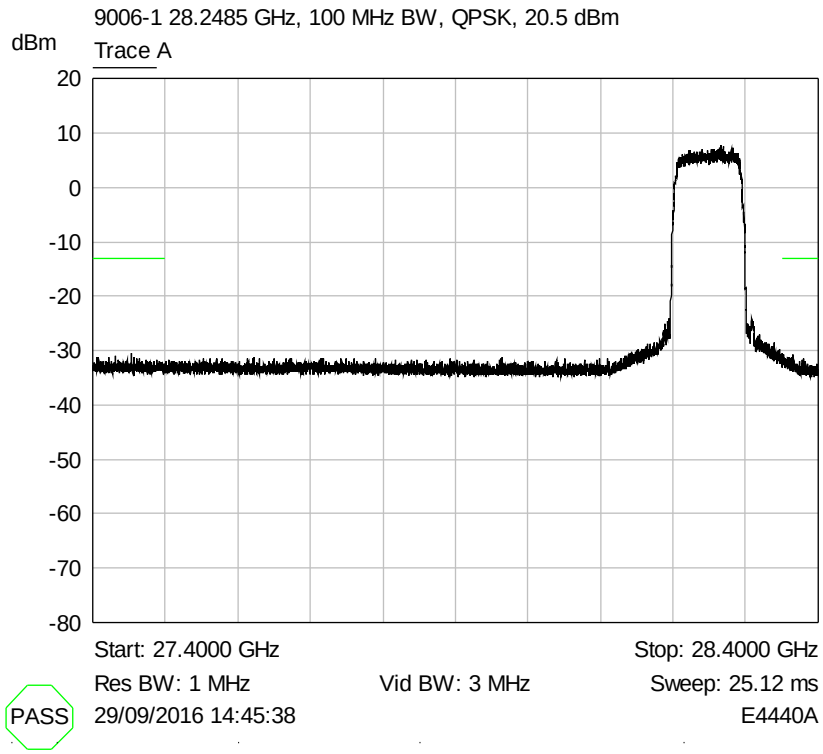
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20.5 dBm, Channel Spacing 112 MHz, Modulation QPSK, Channel 27.6045 GHz



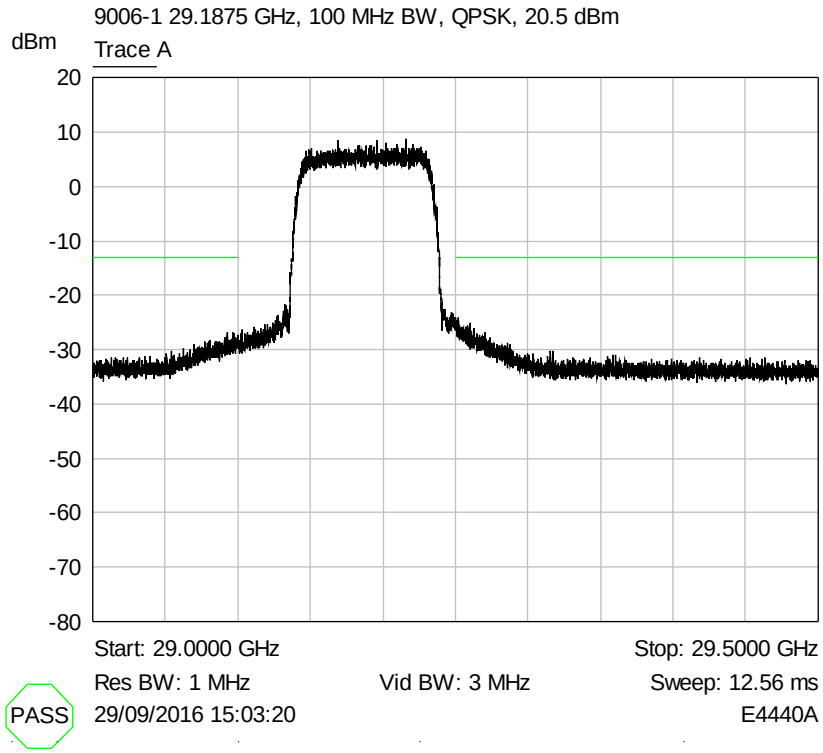
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20.5 dBm, Channel Spacing 100 MHz, Modulation QPSK, Channel 28.2485 GHz



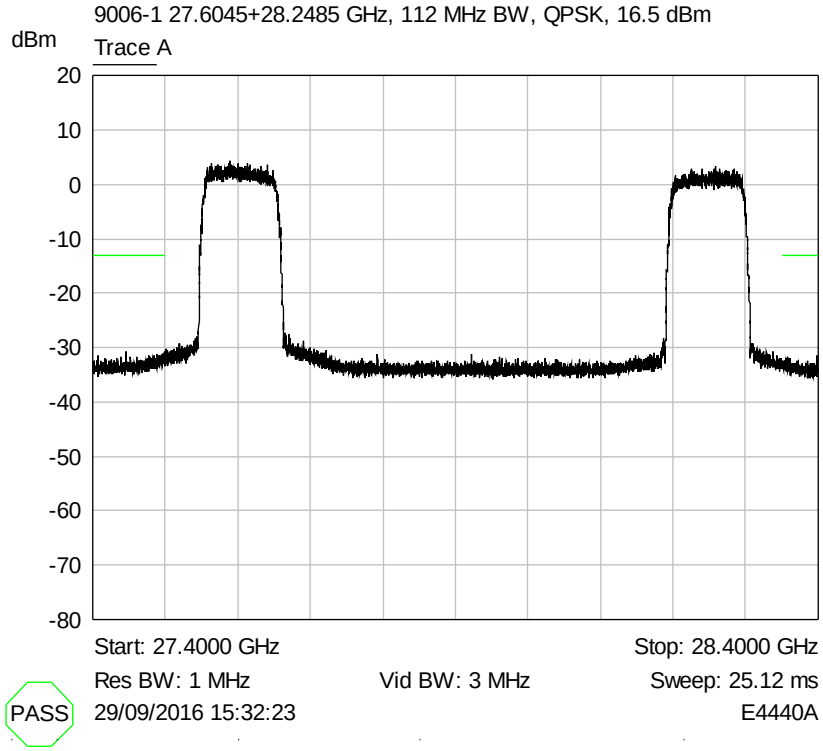
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20.5 dBm, Channel Spacing 100 MHz, Modulation QPSK, Channel 29.1875 GHz



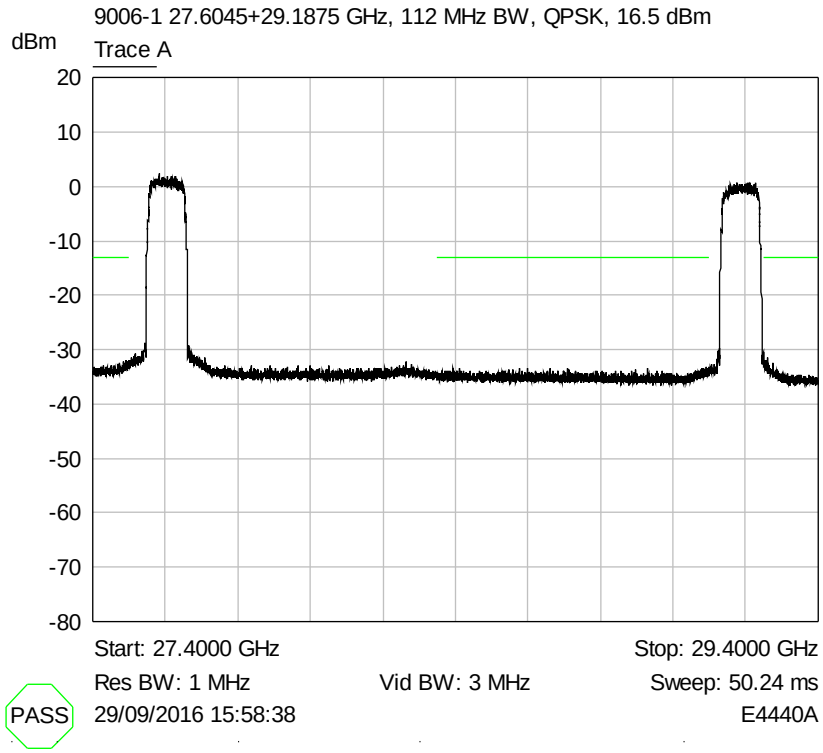
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5 dBm, Channel Spacing 112 MHz, Modulation QPSK, Channel 27.6045 (with 28.2485 on) GHz



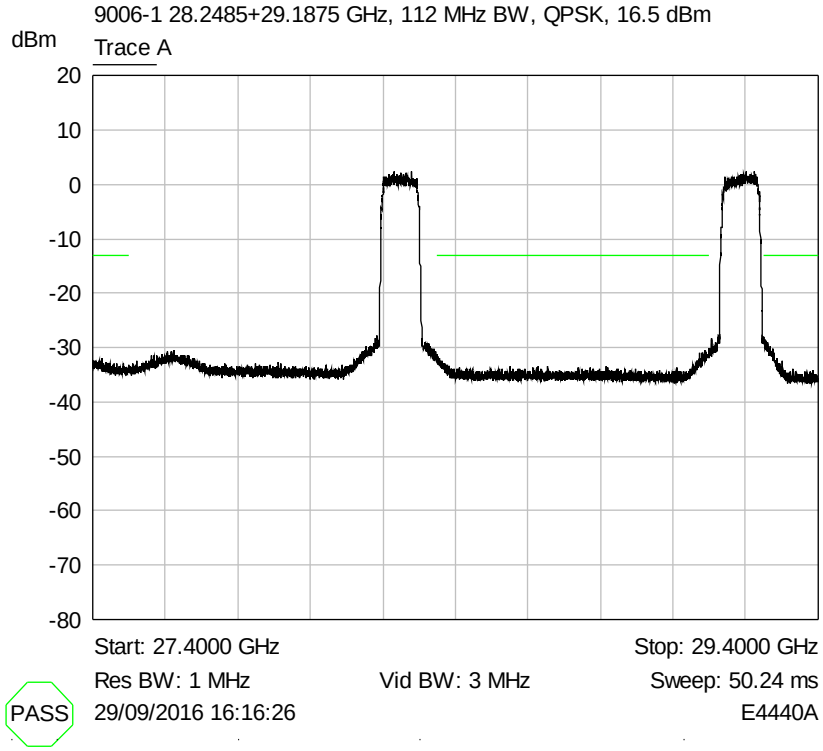
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5 dBm, Channel Spacing 112 MHz, Modulation QPSK, Channel 27.6045 (with 29.1875 on) GHz



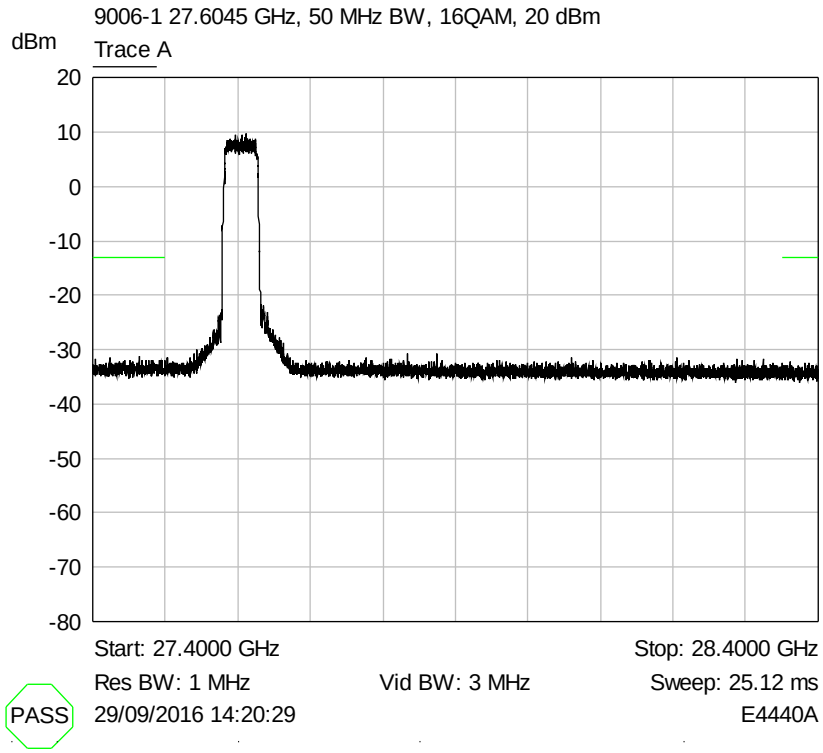
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5 dBm, Channel Spacing 112 MHz, Modulation QPSK, Channel 28.2485 (with 29.1875 on) GHz



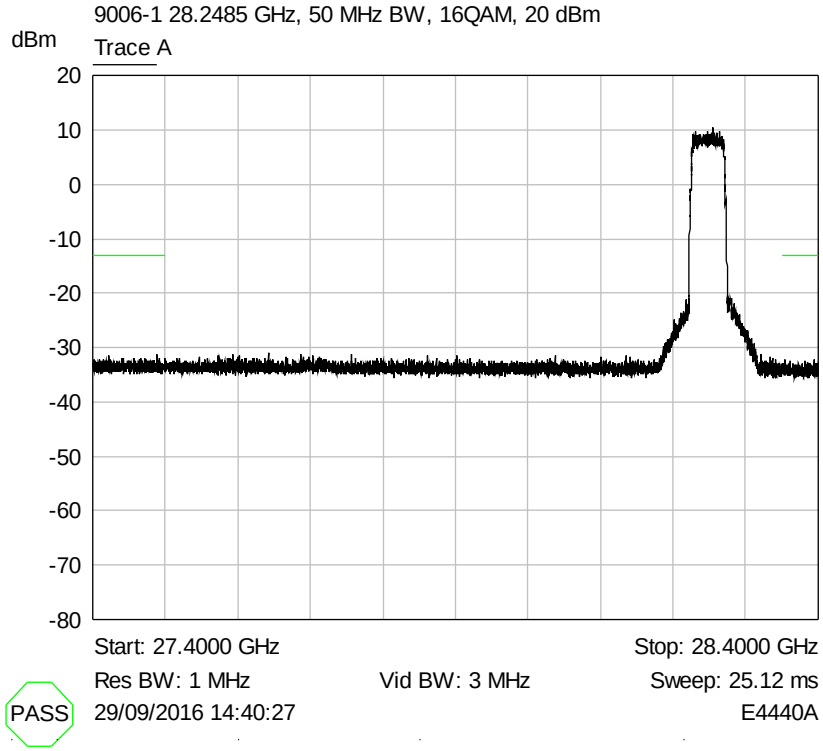
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20 dBm, Channel Spacing 50 MHz, Modulation 16QAM, Channel 27.6045 GHz



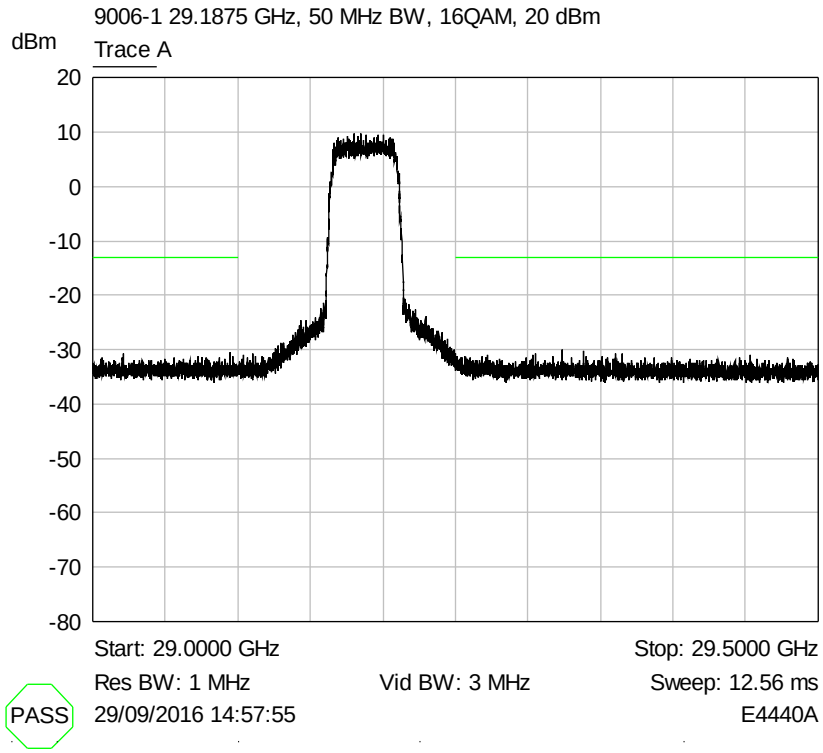
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20 dBm, Channel Spacing 50 MHz, Modulation 16QAM, Channel 28.2485 GHz



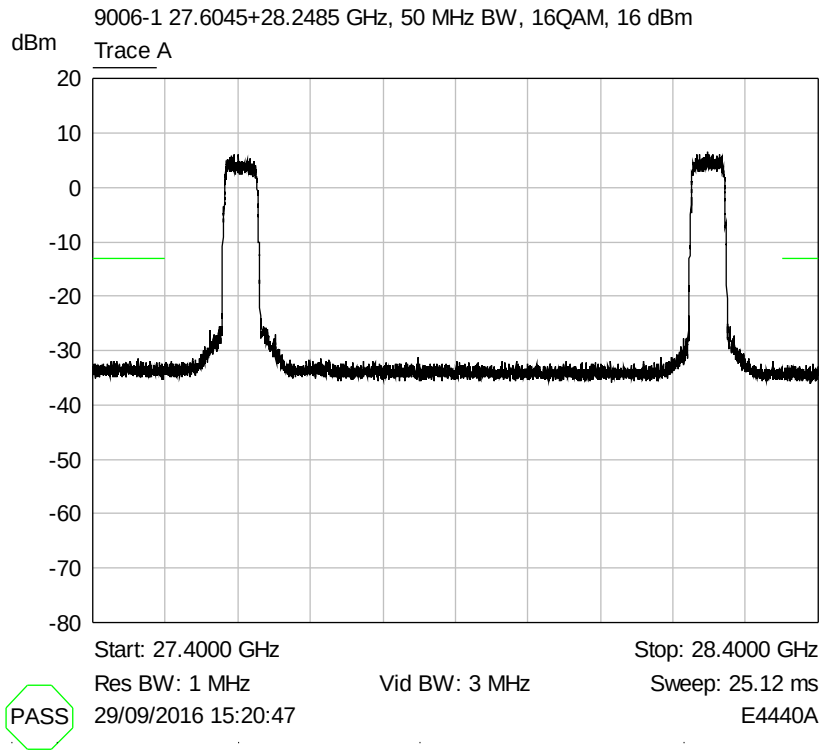
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20 dBm, Channel Spacing 50 MHz, Modulation 16QAM, Channel 29.1875 GHz



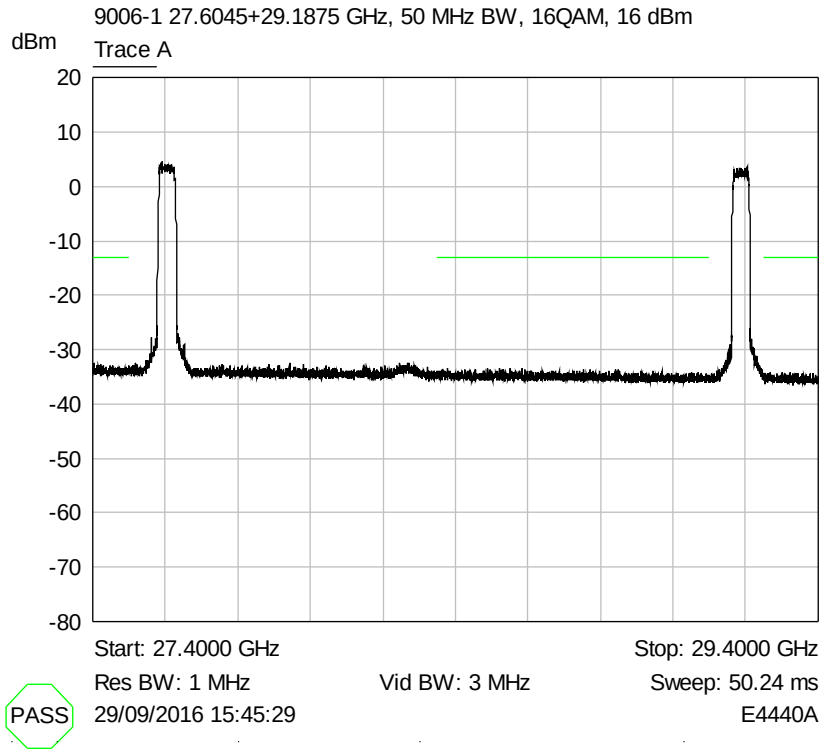
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 50 MHz, Modulation 16QAM, Channel 27.6045 (with 28.2485 on) GHz



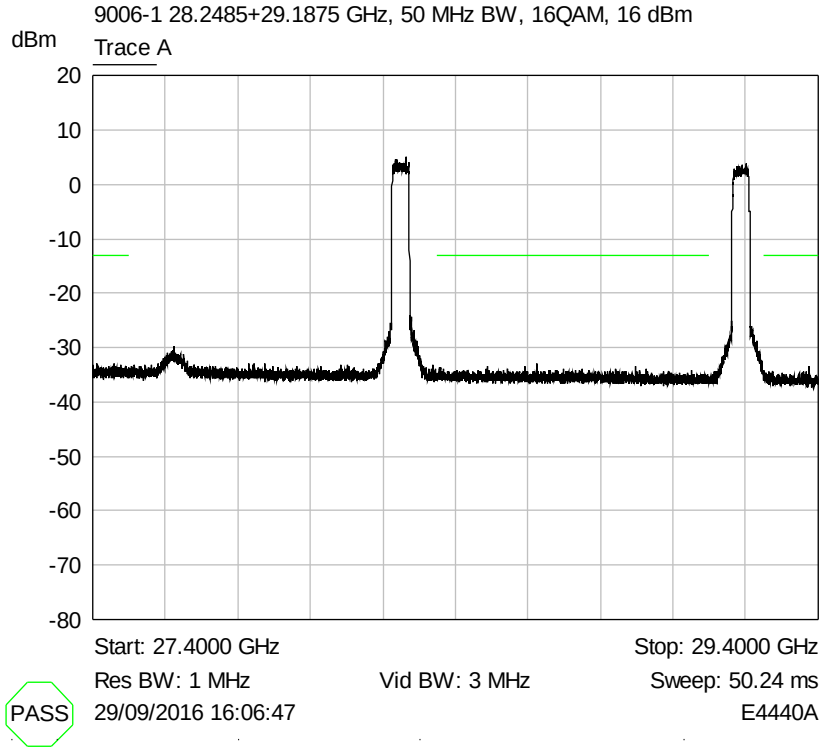
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 50 MHz, Modulation 16QAM, Channel 27.6045 (with 29.1875 on) GHz



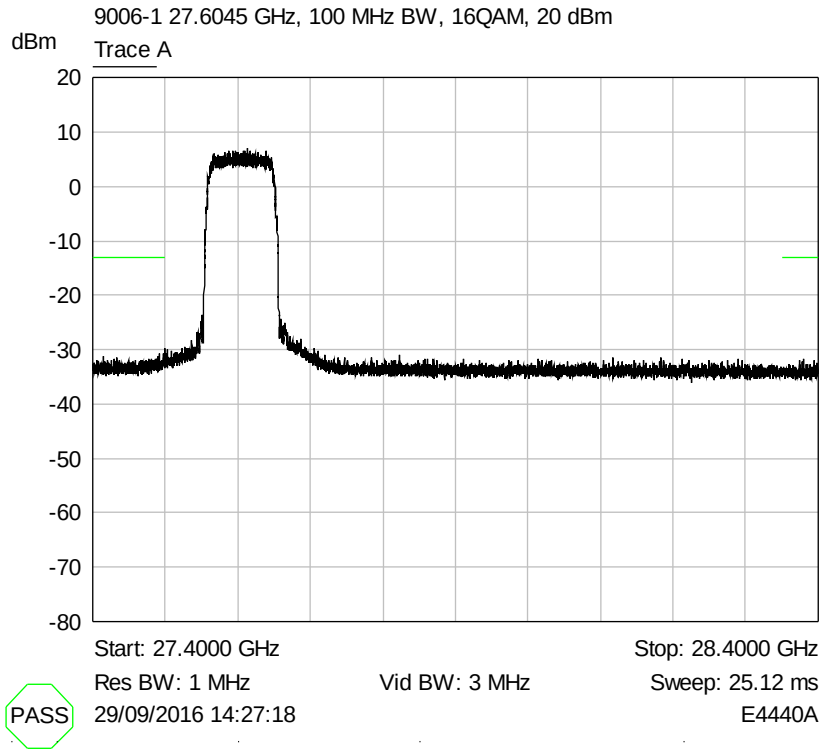
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 50 MHz, Modulation 16QAM, Channel 28.2485 (with 29.1875 on) GHz



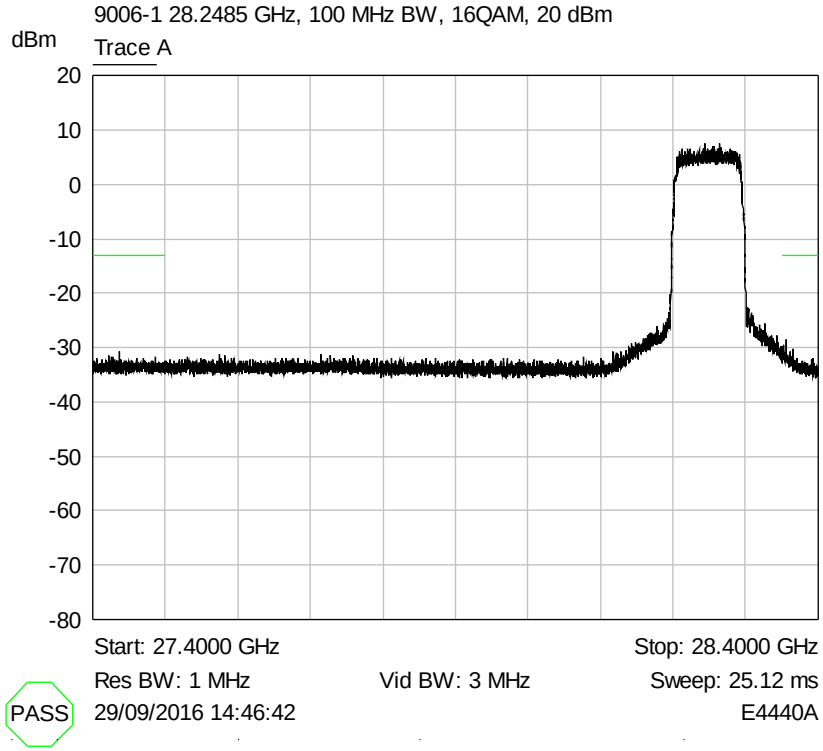
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20 dBm, Channel Spacing 100 MHz, Modulation 16QAM, Channel 27.6045 GHz



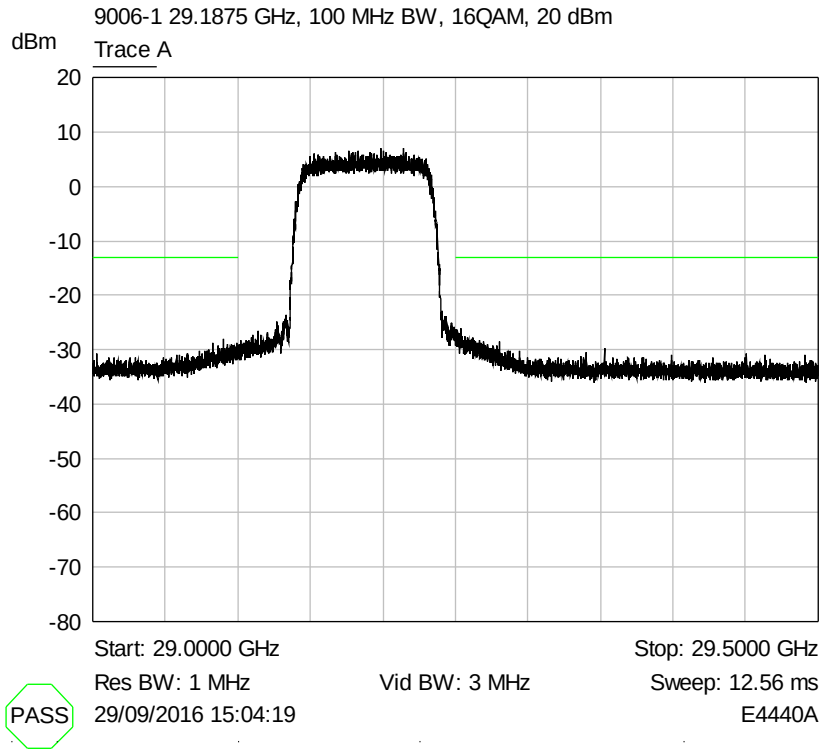
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20 dBm, Channel Spacing 100 MHz, Modulation 16QAM, Channel 28.2485 GHz



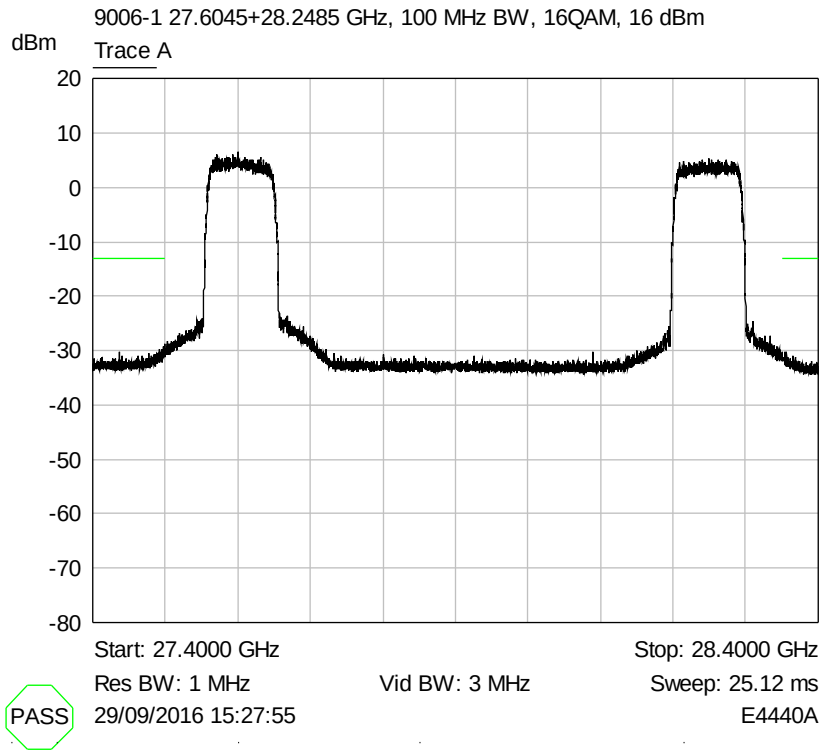
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20 dBm, Channel Spacing 100 MHz, Modulation 16QAM, Channel 29.1875 GHz



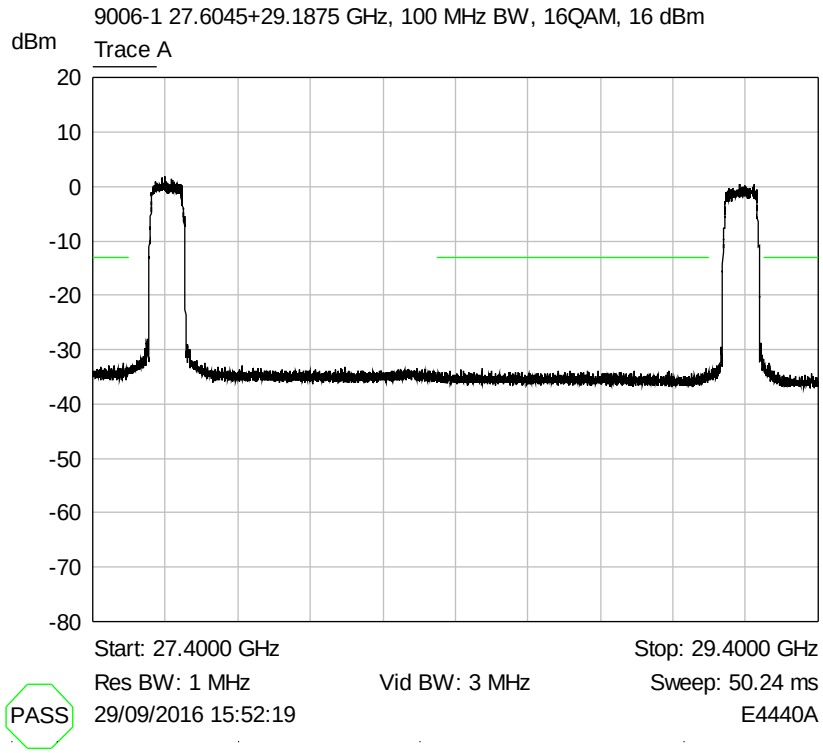
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 100 MHz, Modulation 16QAM, Channel 27.6045 (with 28.2485 on) GHz



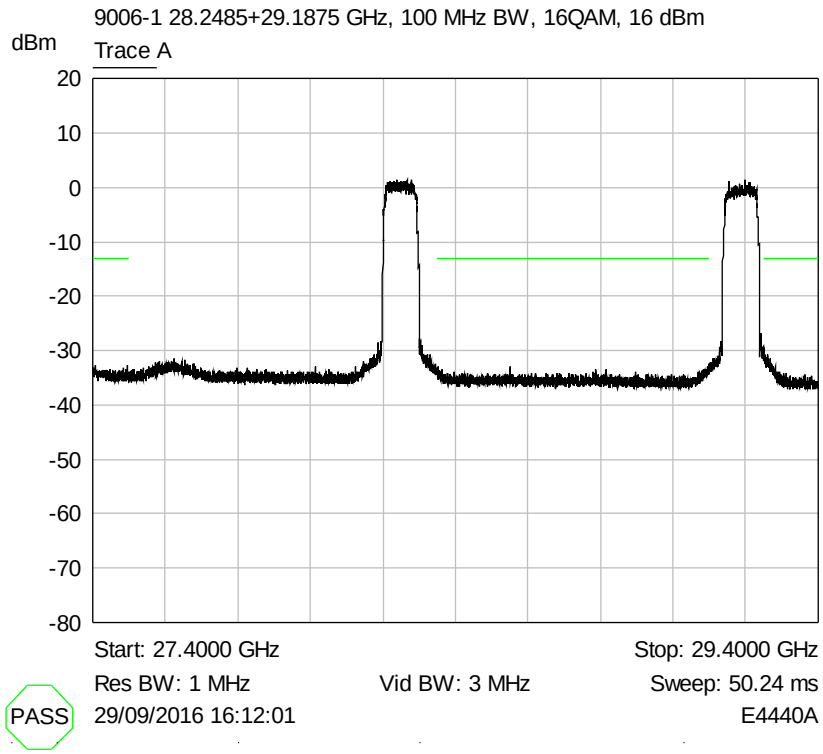
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 100 MHz, Modulation 16QAM, Channel 27.6045 (with 29.1875 on) GHz



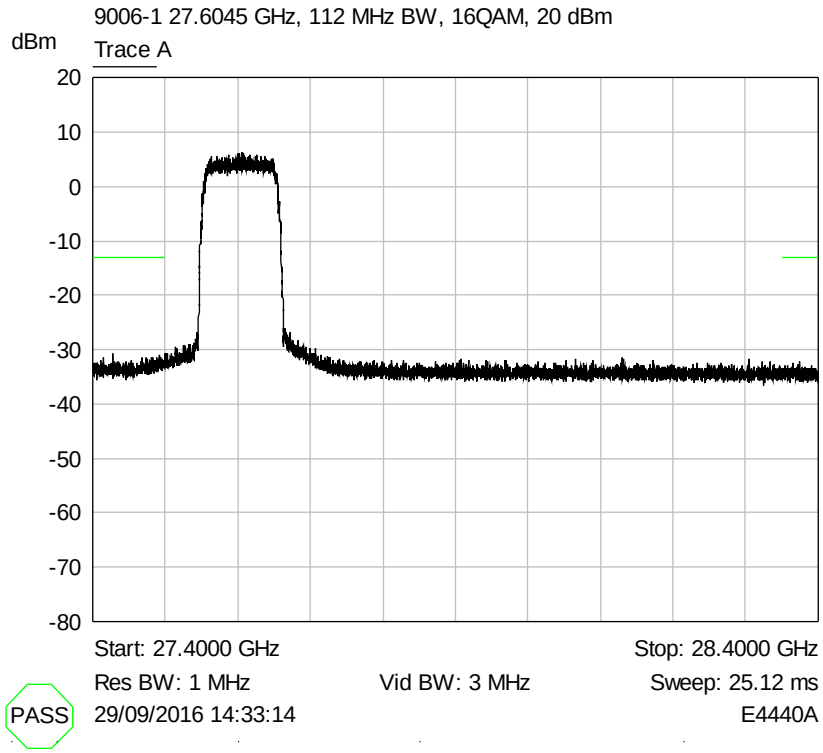
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 100 MHz, Modulation 16QAM, Channel 28.2485 (with 29.1875 on) GHz



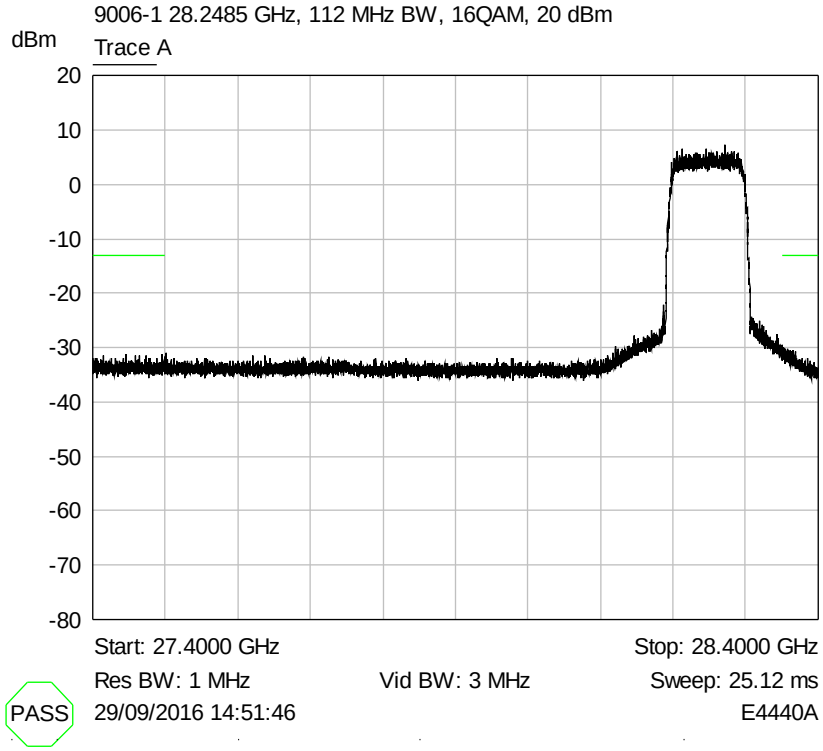
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20 dBm, Channel Spacing 112 MHz, Modulation 16QAM, Channel 27.6045 GHz



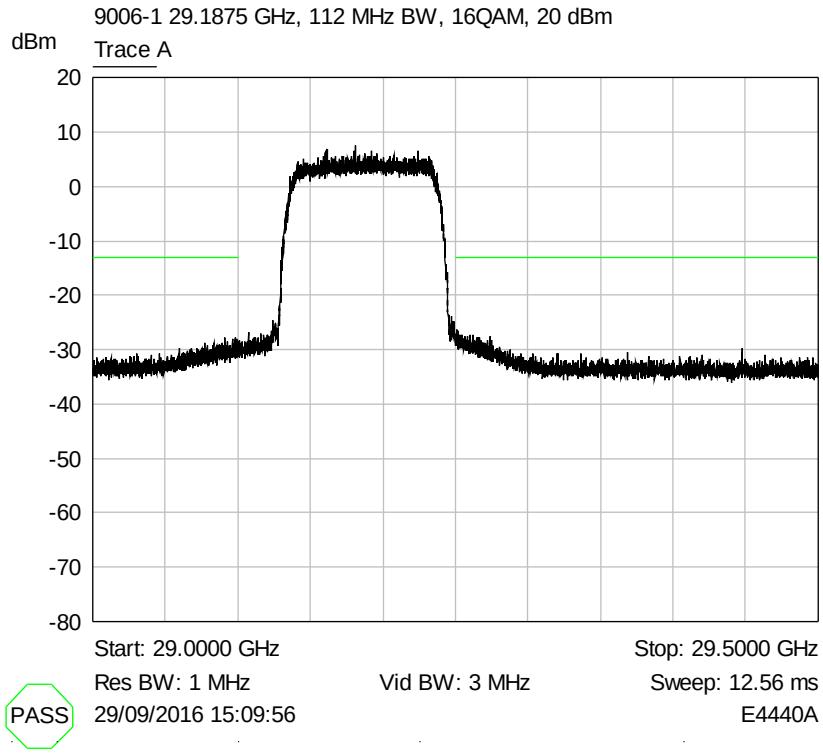
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20 dBm, Channel Spacing 112 MHz, Modulation 16QAM, Channel 28.2485 GHz



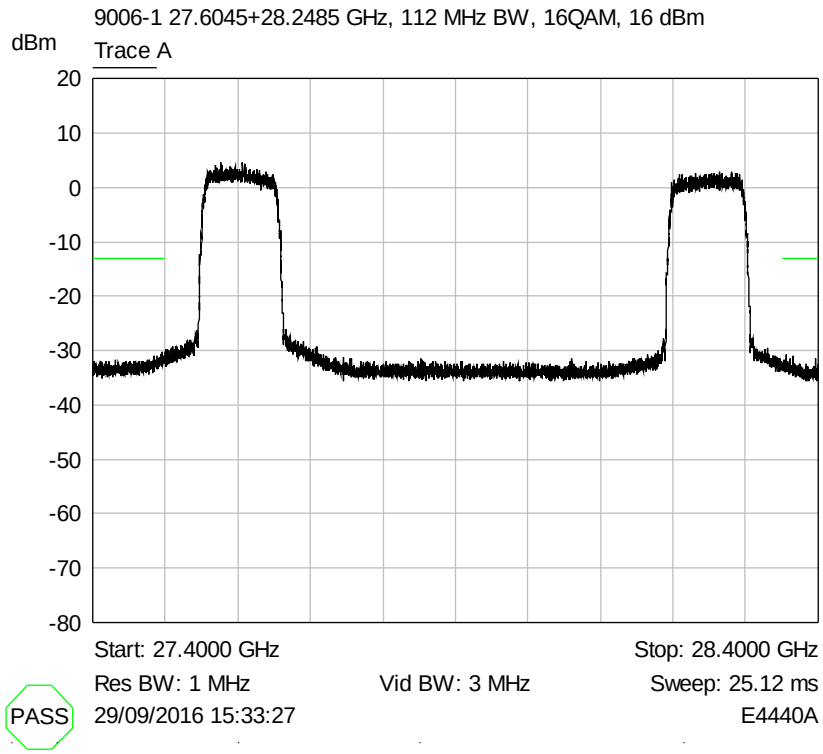
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20 dBm, Channel Spacing 112 MHz, Modulation 16QAM, Channel 29.1875 GHz



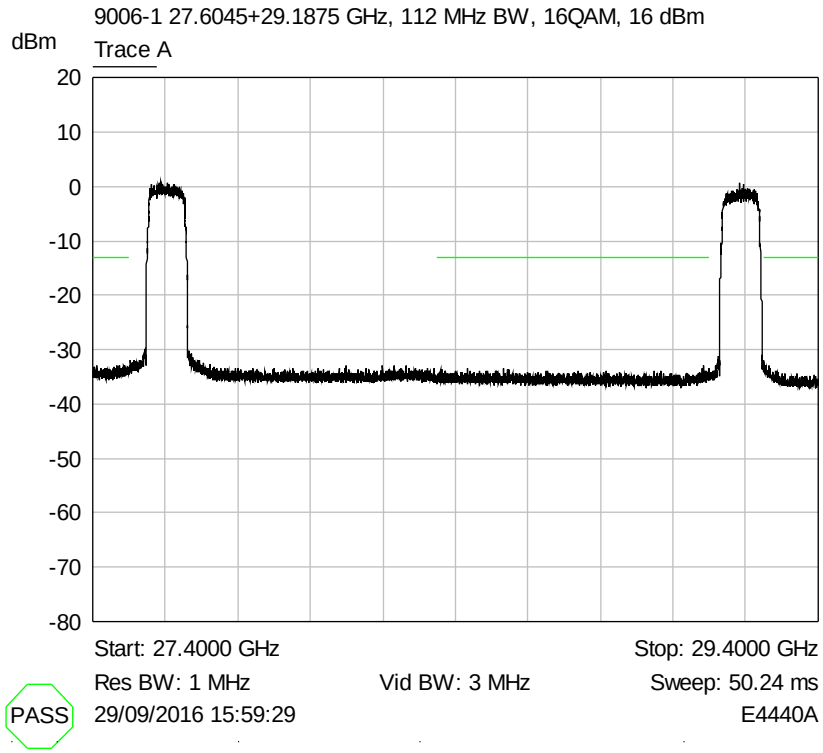
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 112 MHz, Modulation 16QAM, Channel 27.6045 (with 28.2485 on) GHz



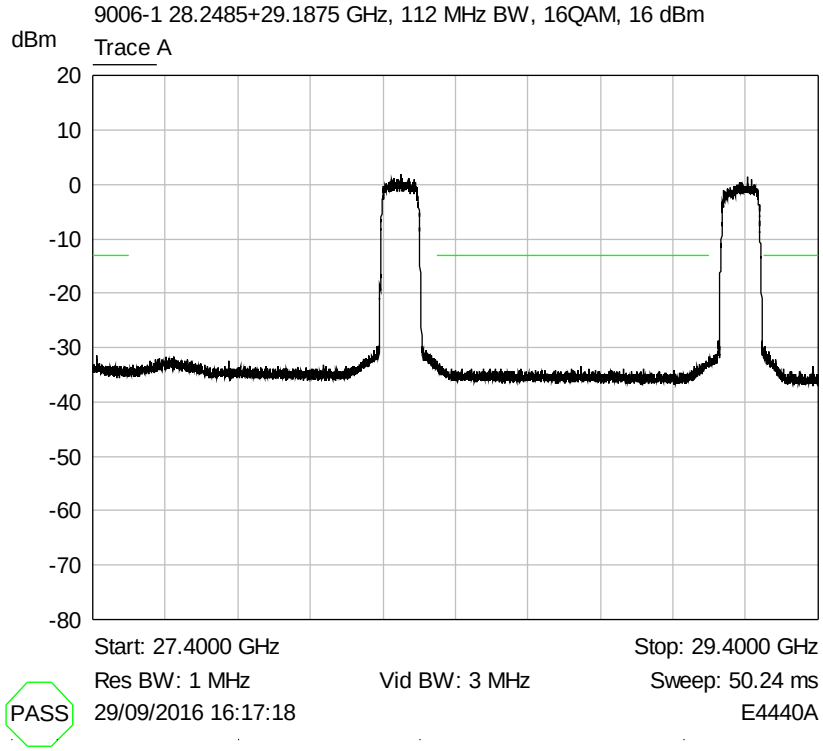
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 112 MHz, Modulation 16QAM, Channel 27.6045 (with 29.1875 on) GHz



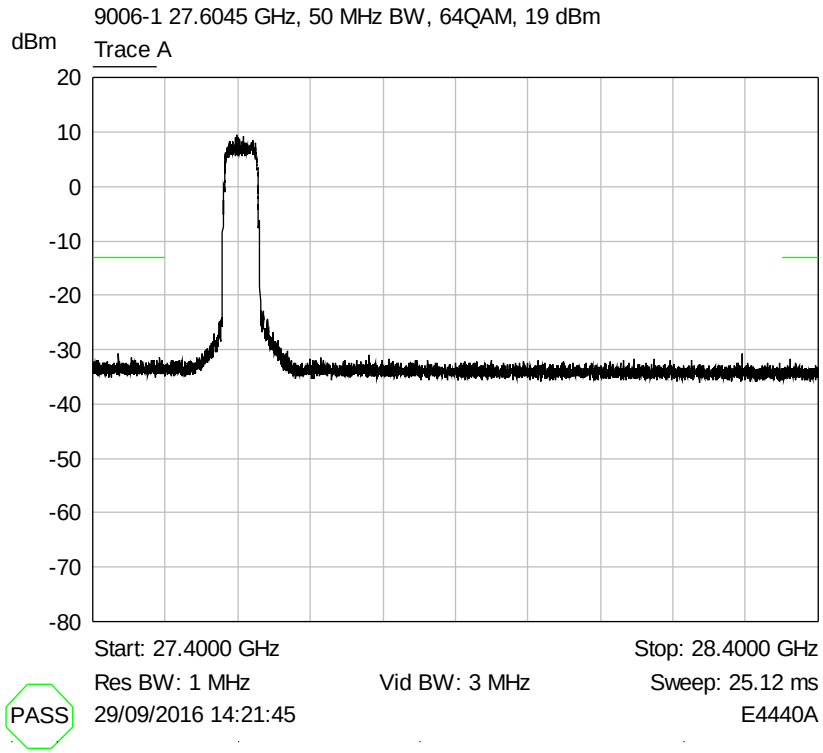
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 112 MHz, Modulation 16QAM, Channel 28.2485 (with 29.1875 on) GHz



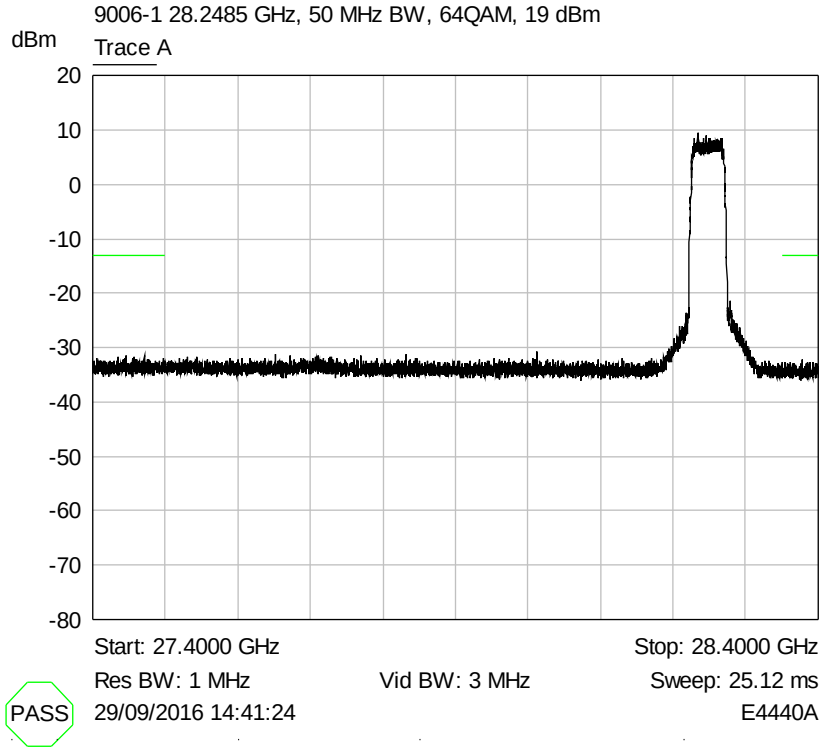
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 19 dBm, Channel Spacing 50 MHz, Modulation 64QAM, Channel 27.6045 GHz



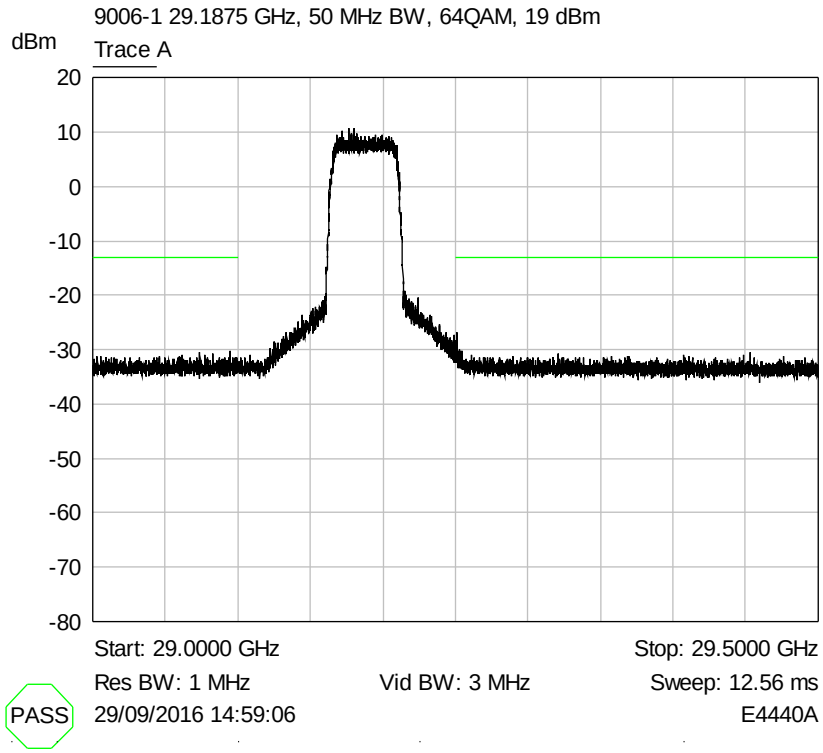
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 19 dBm, Channel Spacing 50 MHz, Modulation 64QAM, Channel 28.2485 GHz



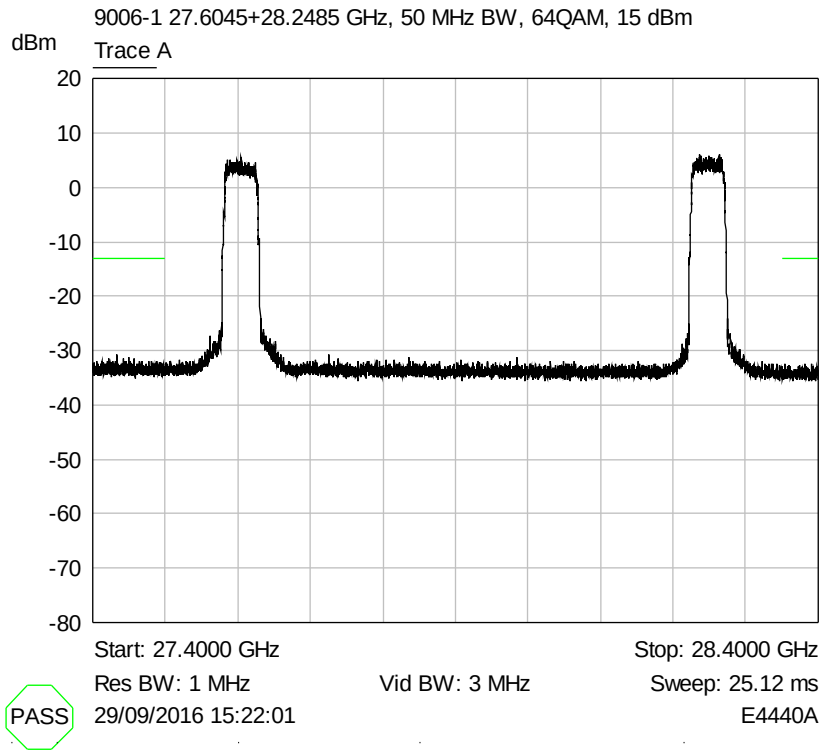
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 19 dBm, Channel Spacing 50 MHz, Modulation 64QAM, Channel 29.1875 GHz



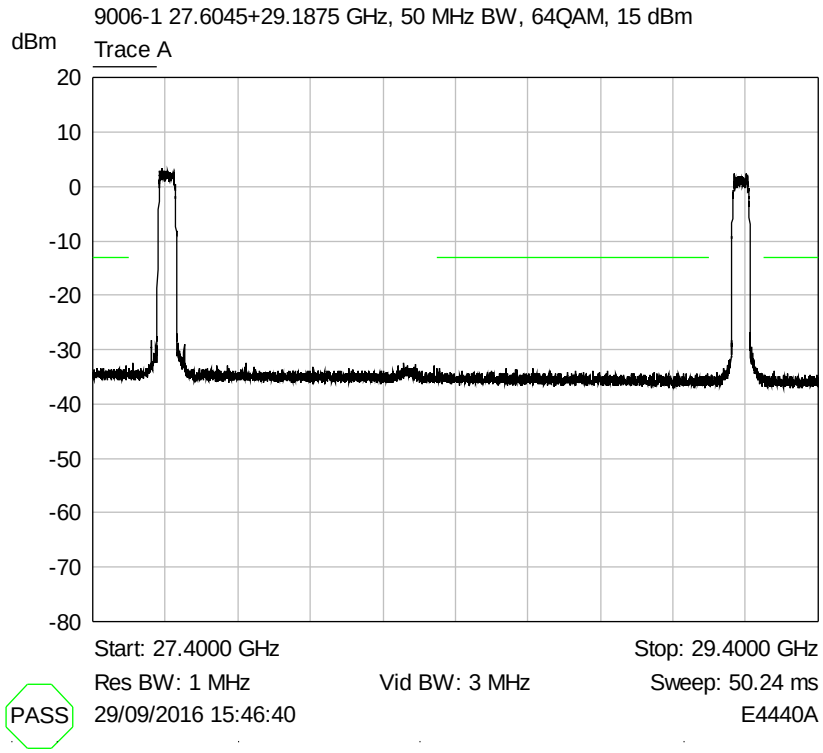
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 50 MHz, Modulation 64QAM, Channel 27.6045 (with 28.2485 on) GHz



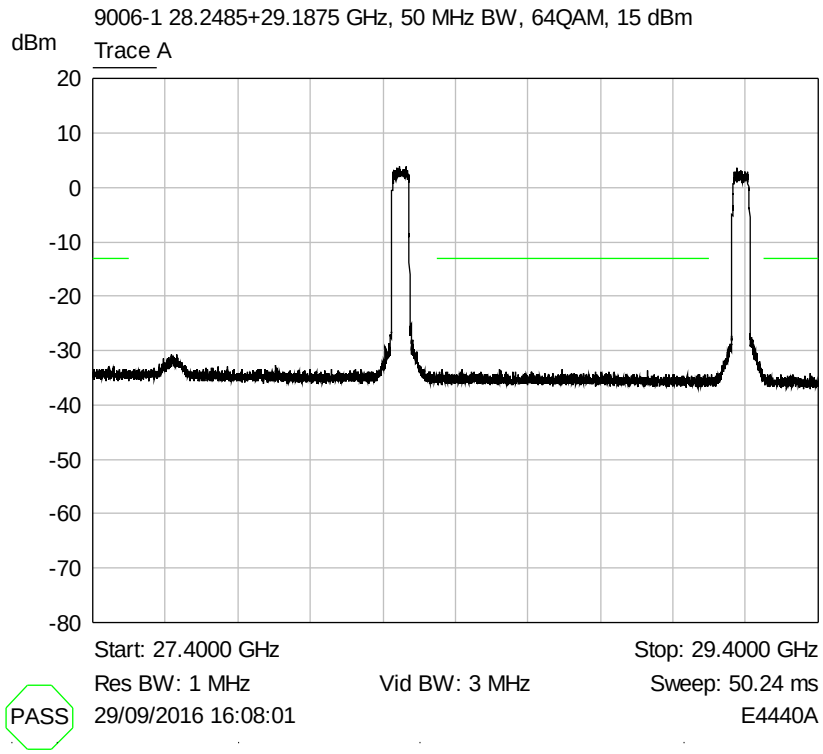
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 50 MHz, Modulation 64QAM, Channel 27.6045 (with 29.1875 on) GHz



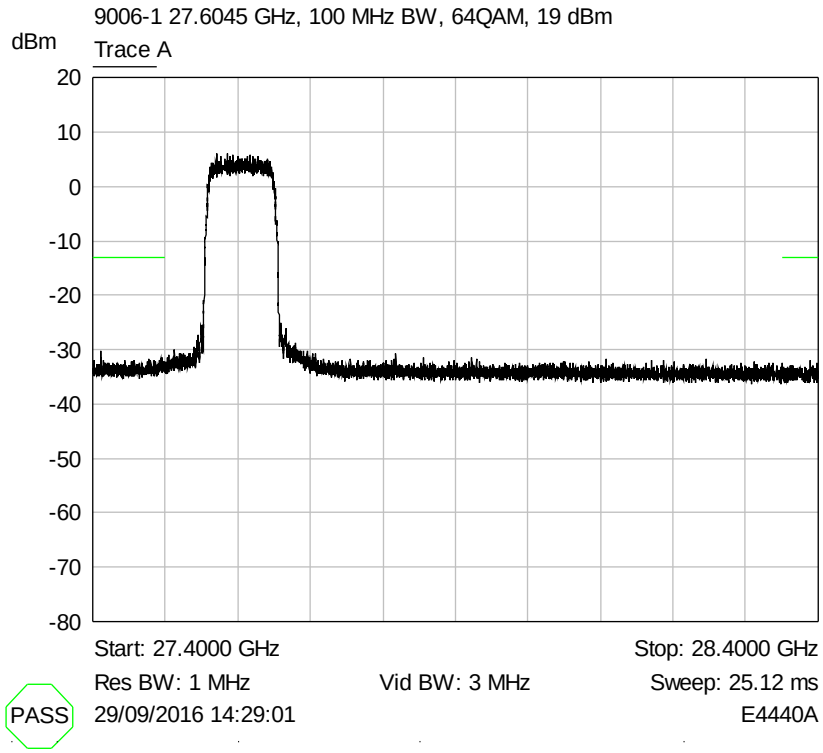
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 50 MHz, Modulation 64QAM, Channel 28.2485 (with 29.1875 on) GHz



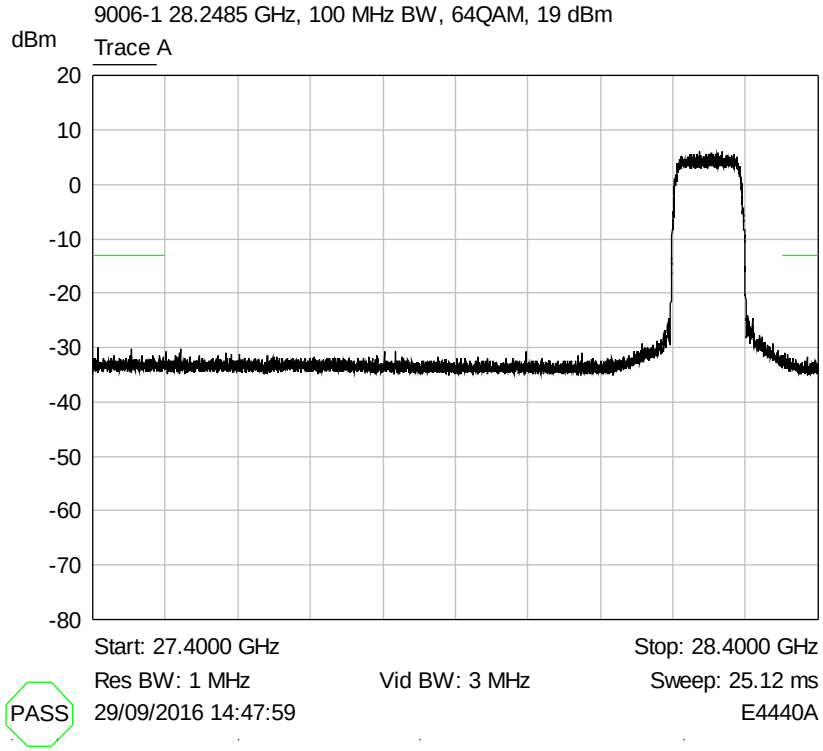
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 19 dBm, Channel Spacing 100 MHz, Modulation 64QAM, Channel 27.6045 GHz



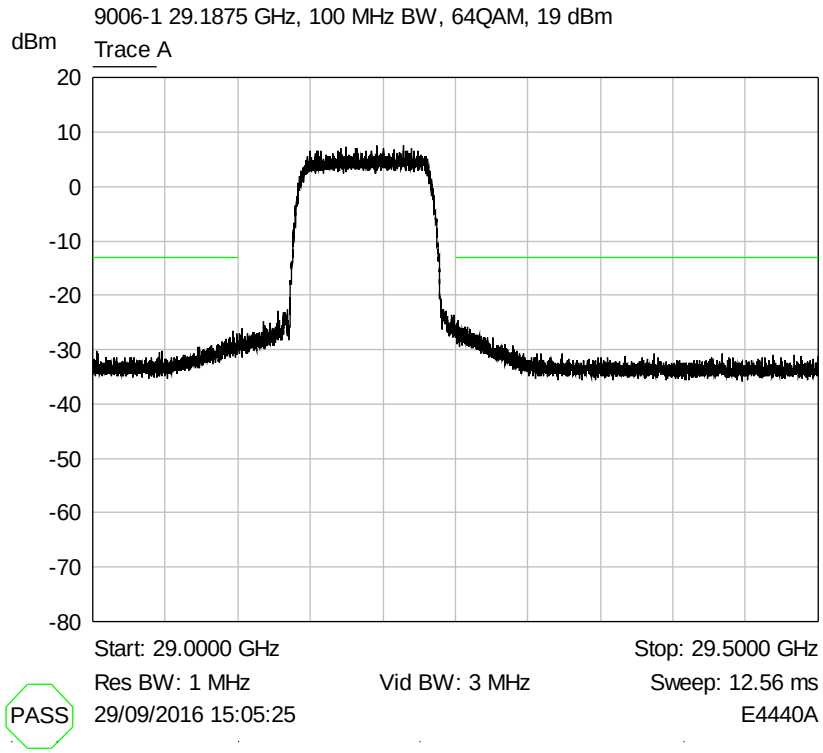
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 19 dBm, Channel Spacing 100 MHz, Modulation 64QAM, Channel 28.2485 GHz



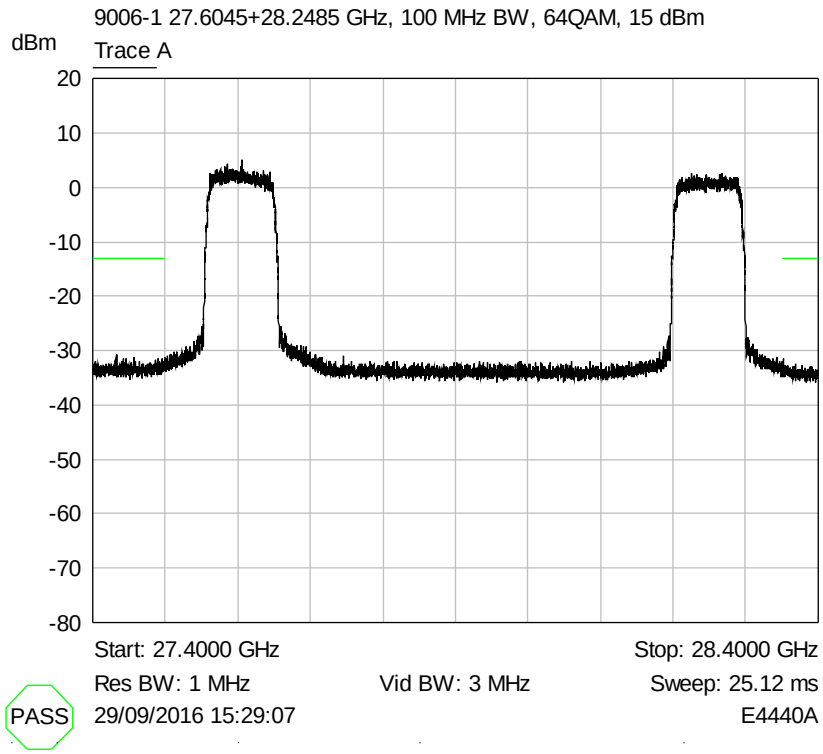
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 19 dBm, Channel Spacing 100 MHz, Modulation 64QAM, Channel 29.1875 GHz



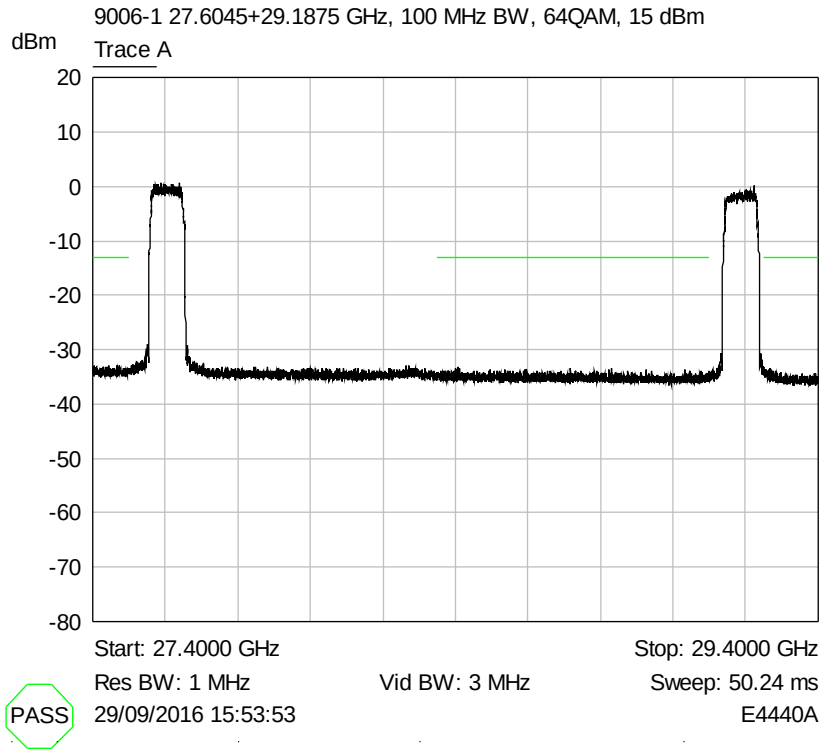
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 100 MHz, Modulation 64QAM, Channel 27.6045 (with 28.2485 on) GHz



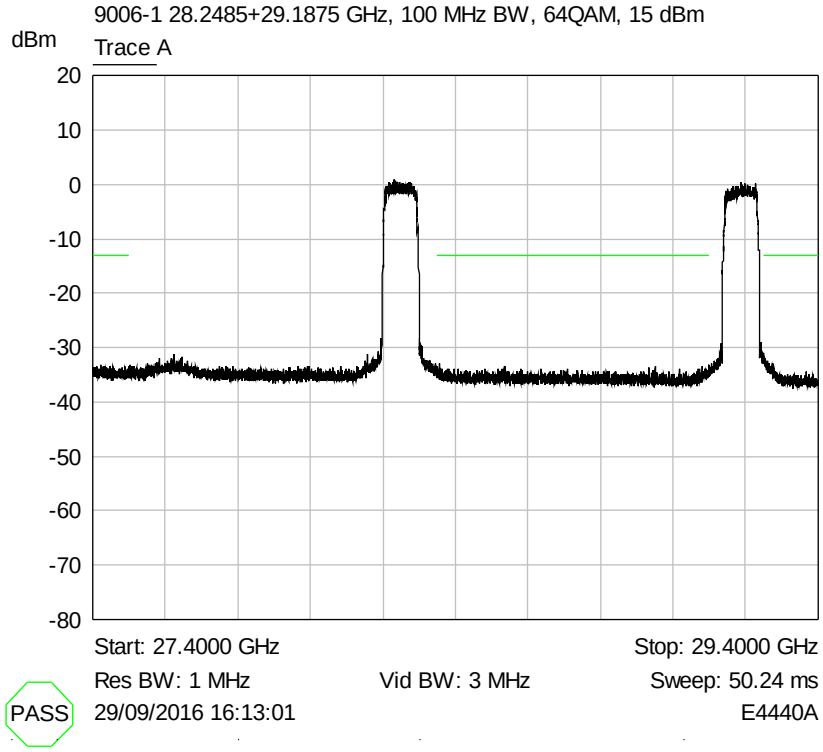
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 100 MHz, Modulation 64QAM, Channel 27.6045 (with 29.1875 on) GHz



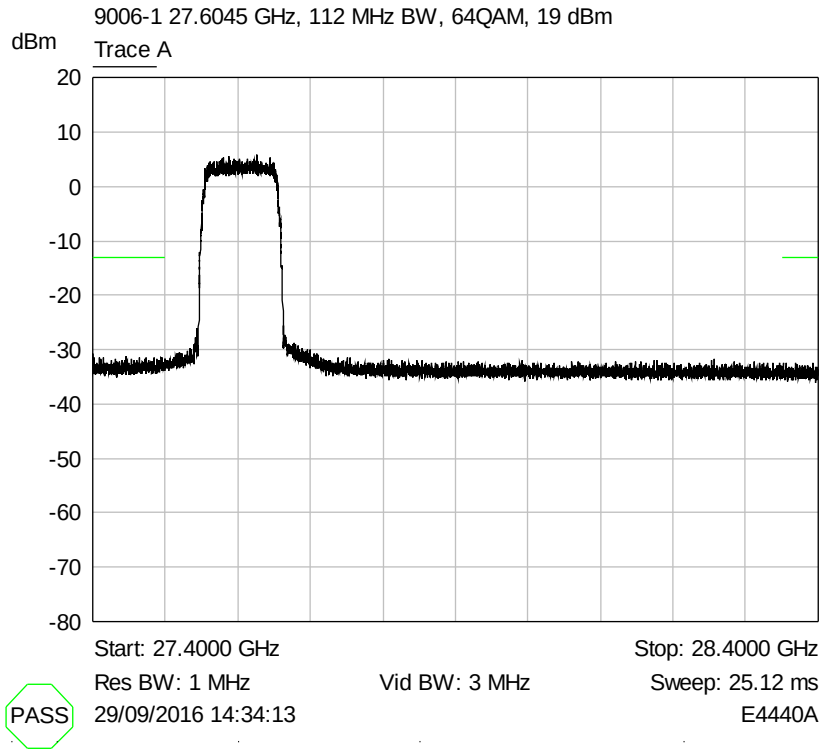
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 100 MHz, Modulation 64QAM, Channel 28.2485 (with 29.1875 on) GHz



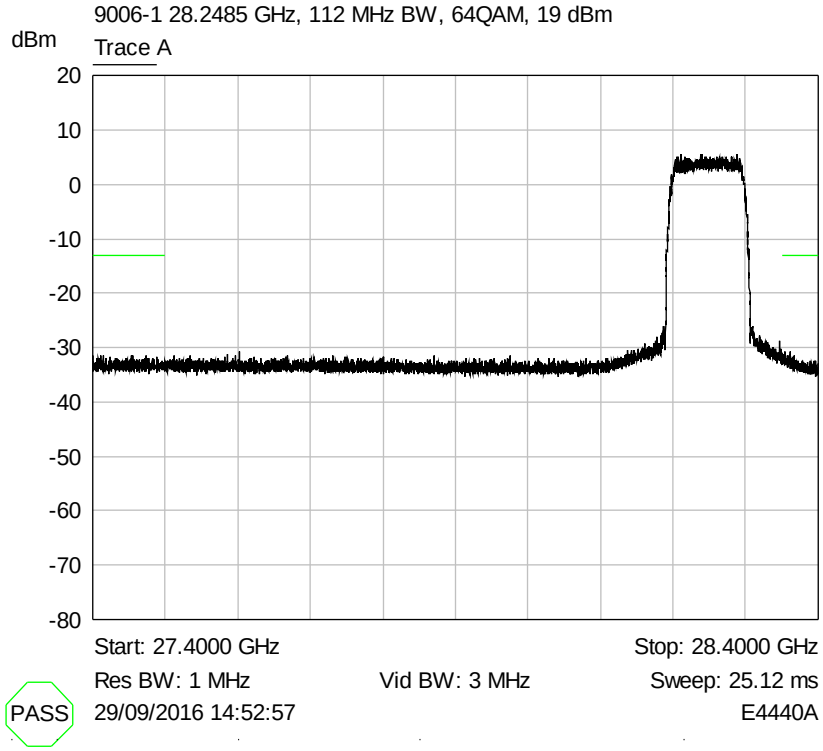
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 19 dBm, Channel Spacing 112 MHz, Modulation 64QAM, Channel 27.6045 GHz



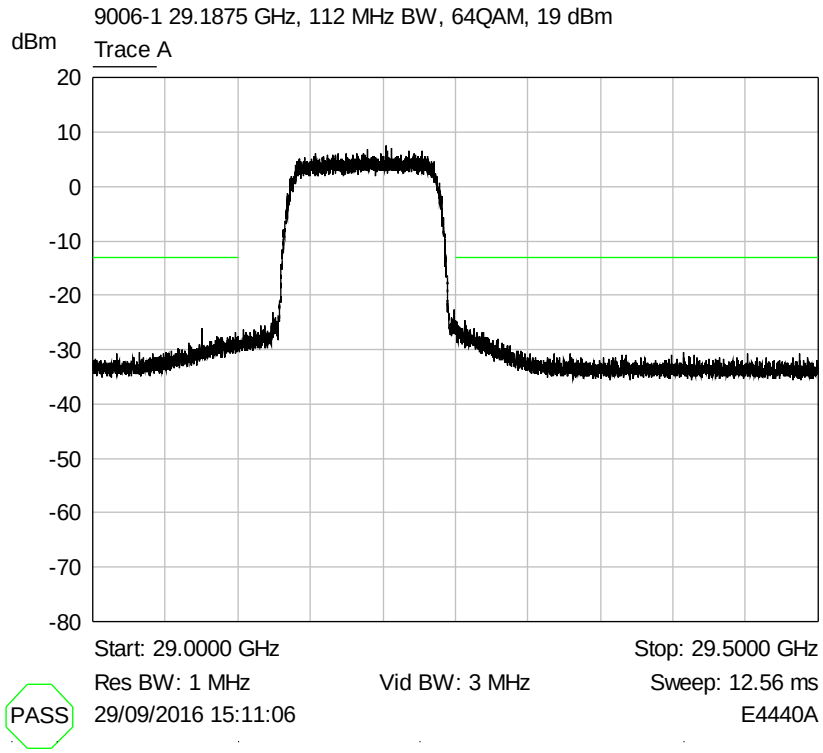
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 19 dBm, Channel Spacing 112 MHz, Modulation 64QAM, Channel 28.2485 GHz



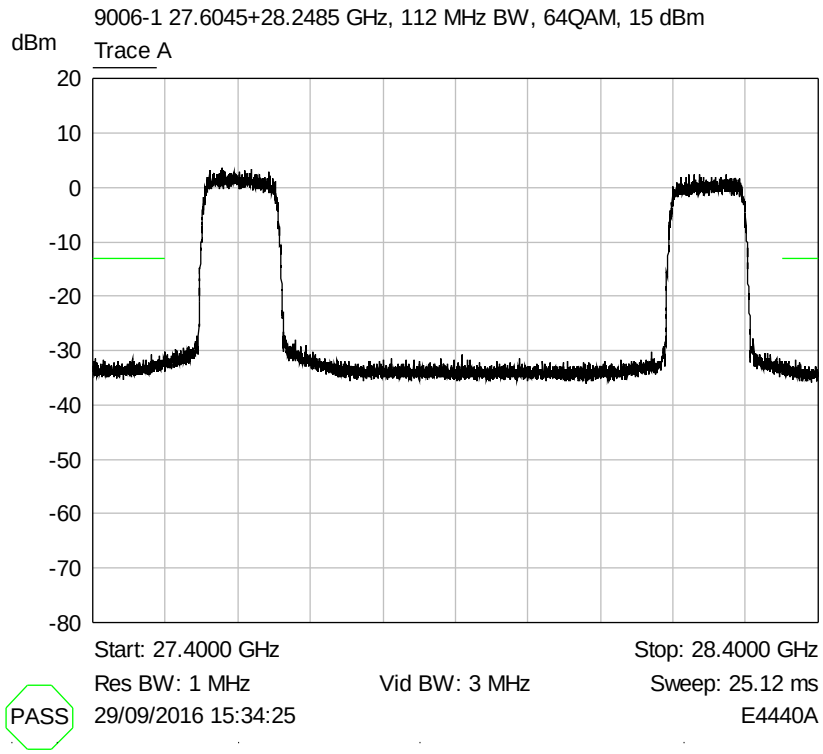
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 19 dBm, Channel Spacing 112 MHz, Modulation 64QAM, Channel 29.1875 GHz



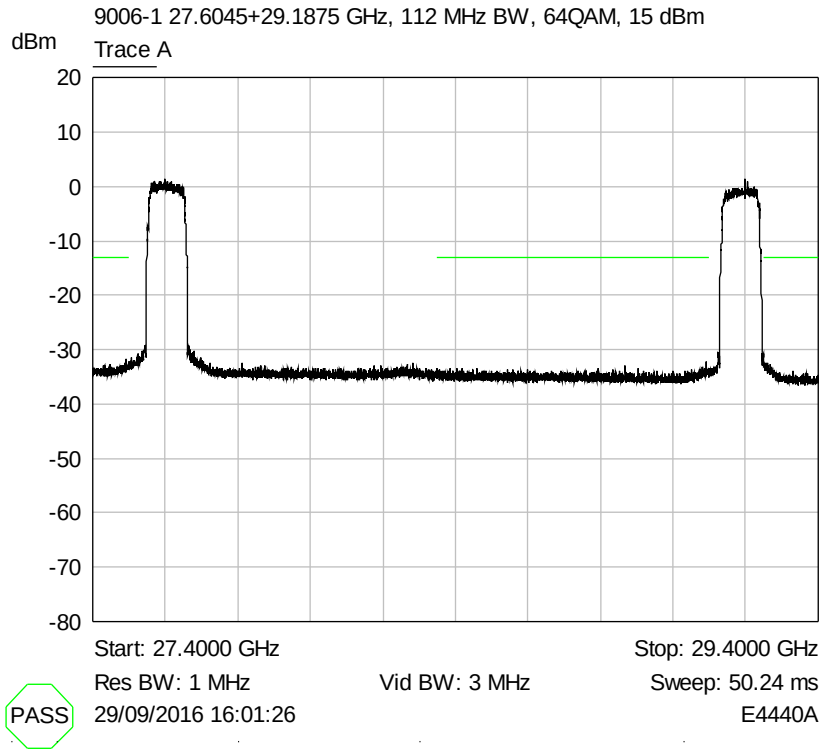
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 112 MHz, Modulation 64QAM, Channel 27.6045 (with 28.2485 on) GHz



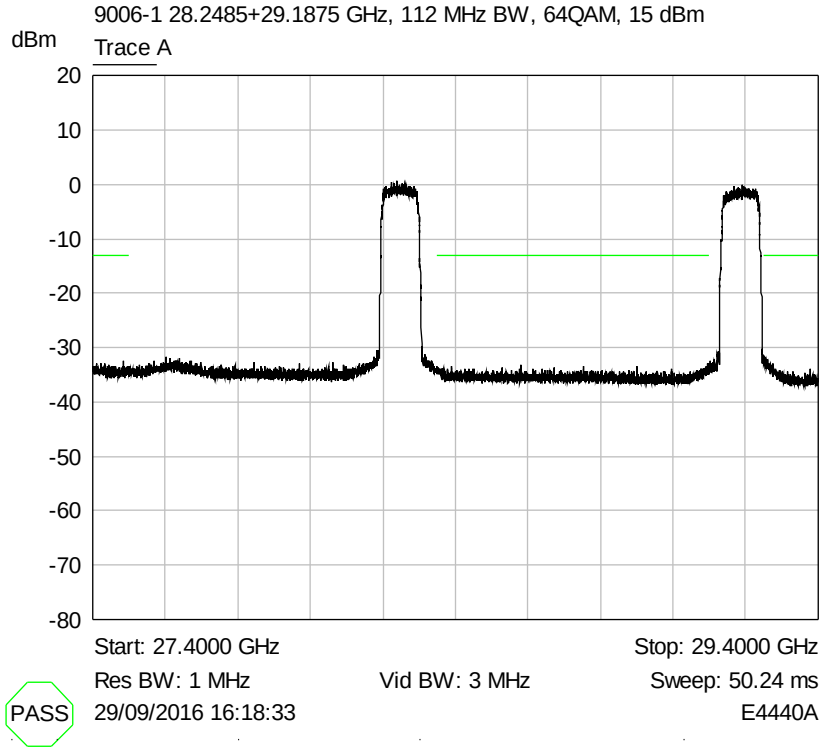
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 112 MHz, Modulation 64QAM, Channel 27.6045 (with 29.1875 on) GHz



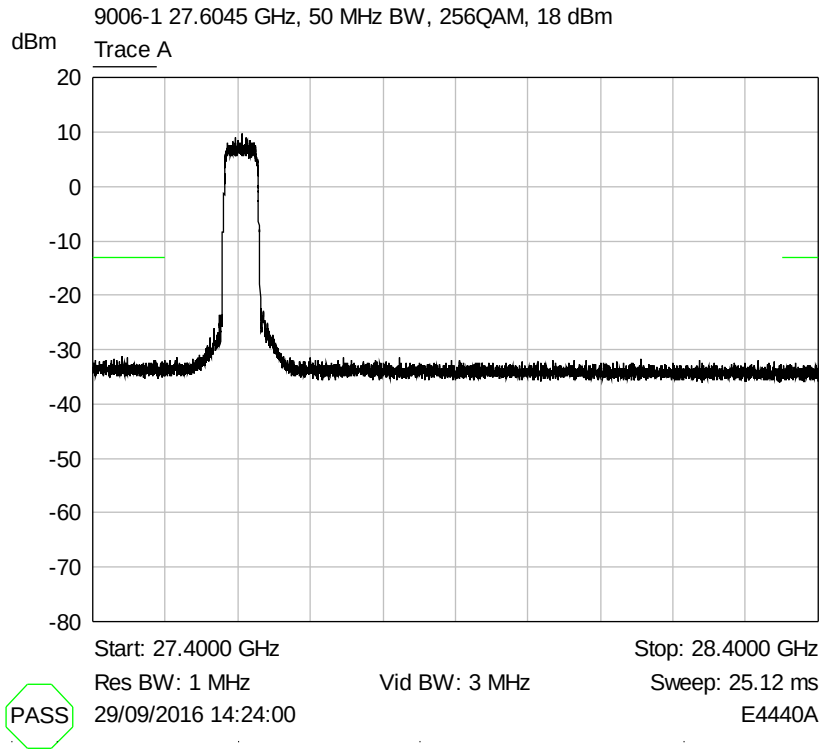
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 112 MHz, Modulation 64QAM, Channel 28.2485 (with 29.1875 on) GHz



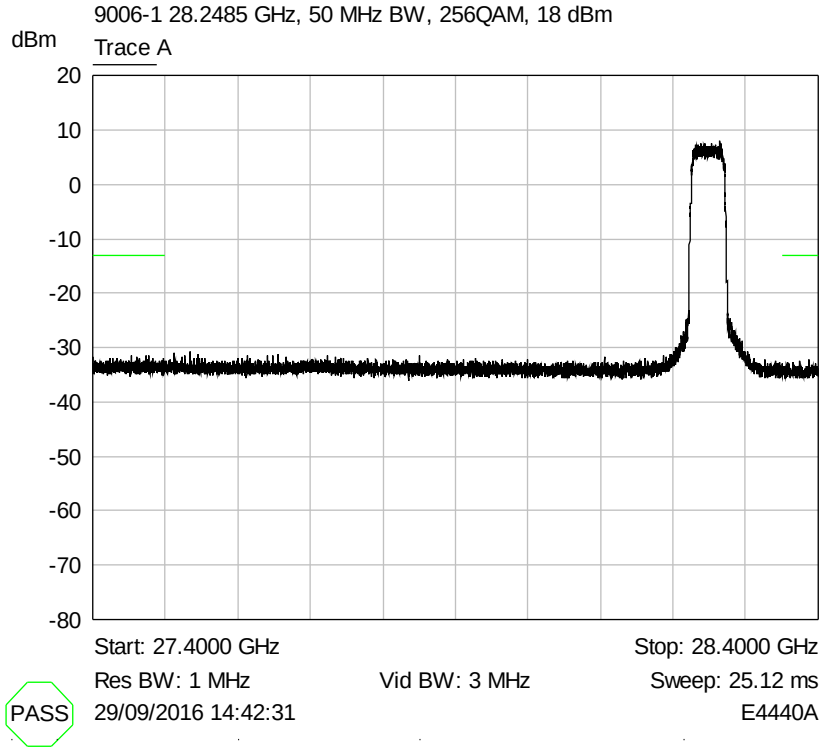
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 18 dBm, Channel Spacing 50 MHz, Modulation 256QAM, Channel 27.6045 GHz



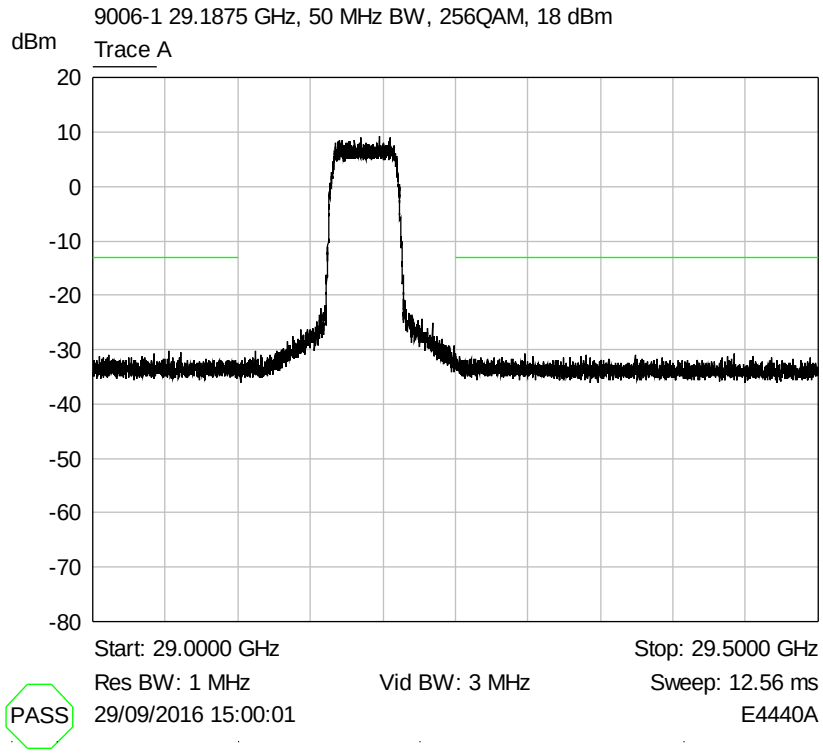
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 18 dBm, Channel Spacing 50 MHz, Modulation 256QAM, Channel 28.2485 GHz



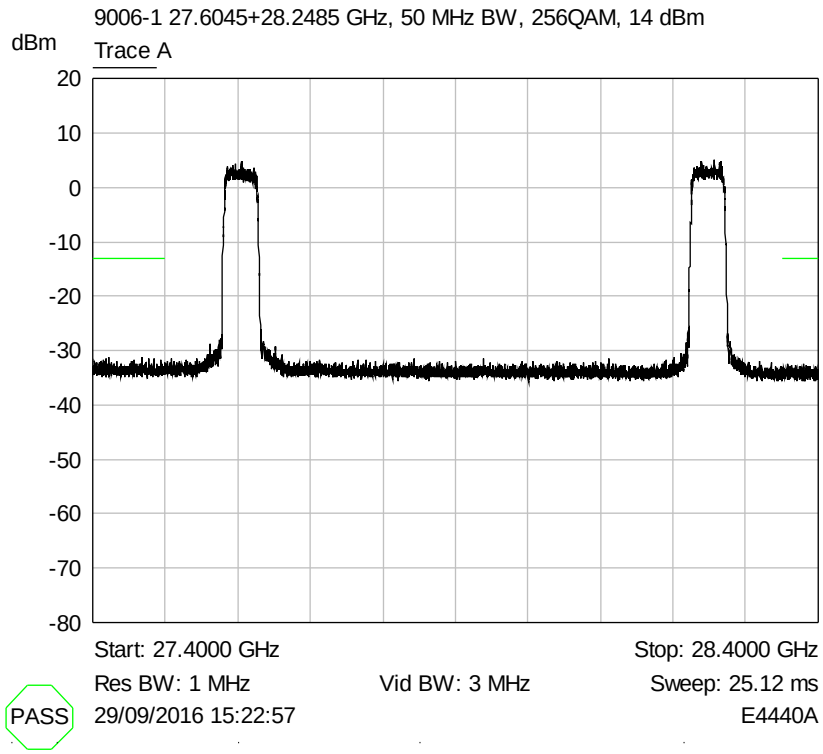
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 18 dBm, Channel Spacing 50 MHz, Modulation 256QAM, Channel 29.1875 GHz



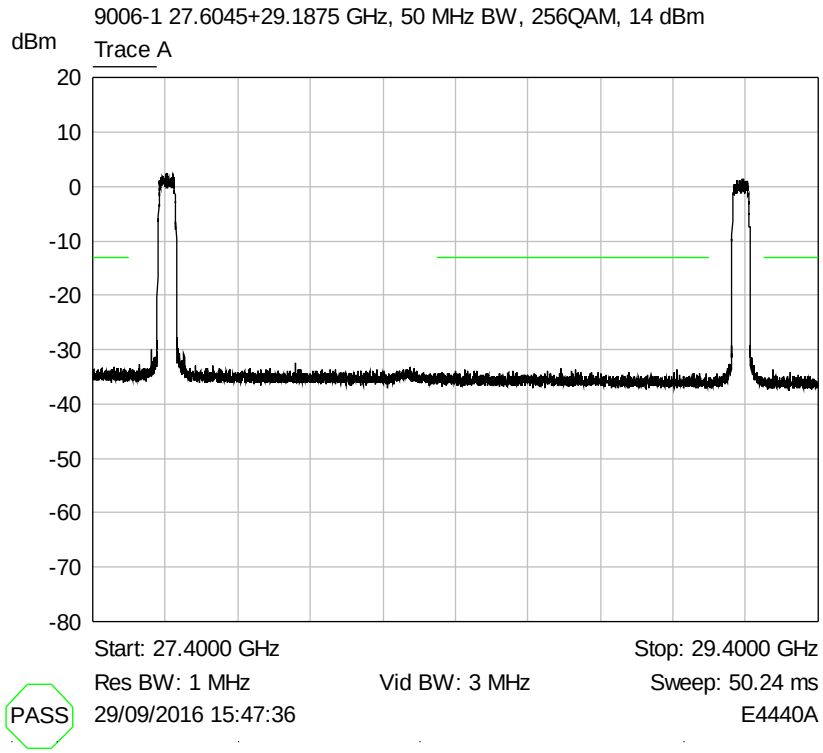
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 50 MHz, Modulation 256QAM, Channel 27.6045 (with 28.2485 on) GHz



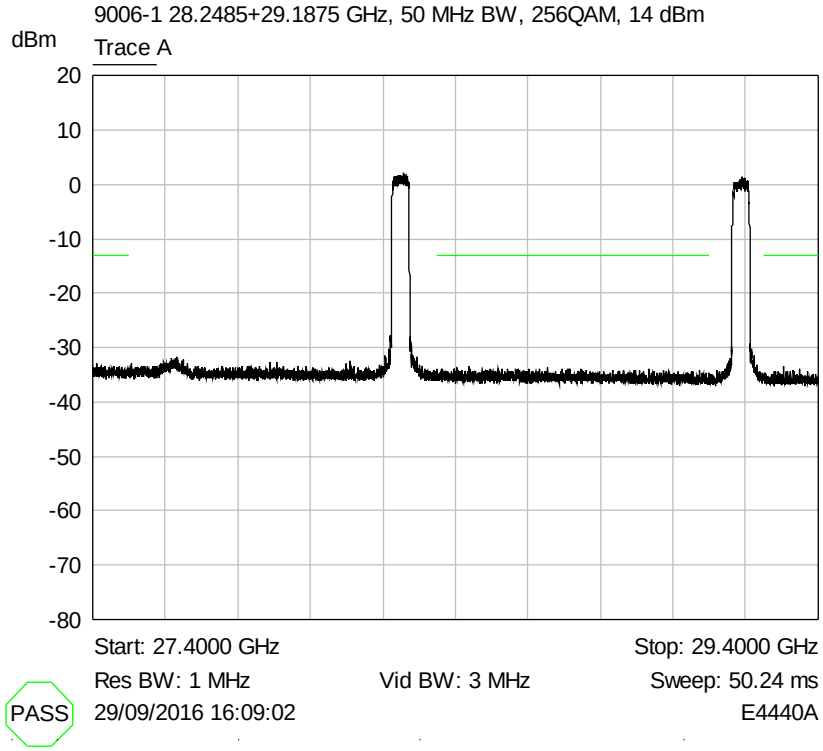
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 50 MHz, Modulation 256QAM, Channel 27.6045 (with 29.1875 on) GHz



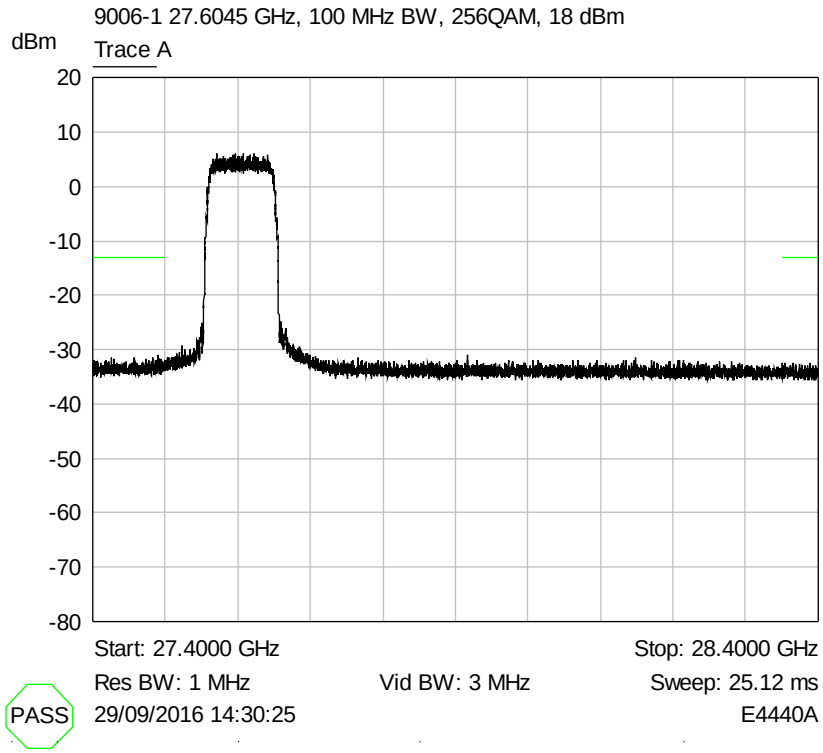
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 50 MHz, Modulation 256QAM, Channel 28.2485 (with 29.1875 on) GHz



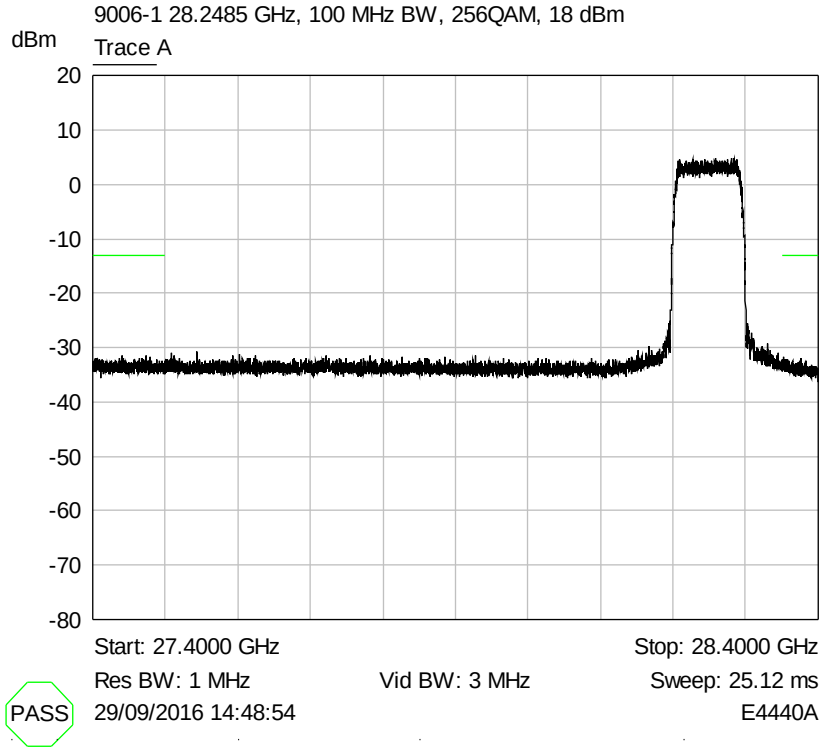
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 18 dBm, Channel Spacing 100 MHz, Modulation 256QAM, Channel 27.6045 GHz



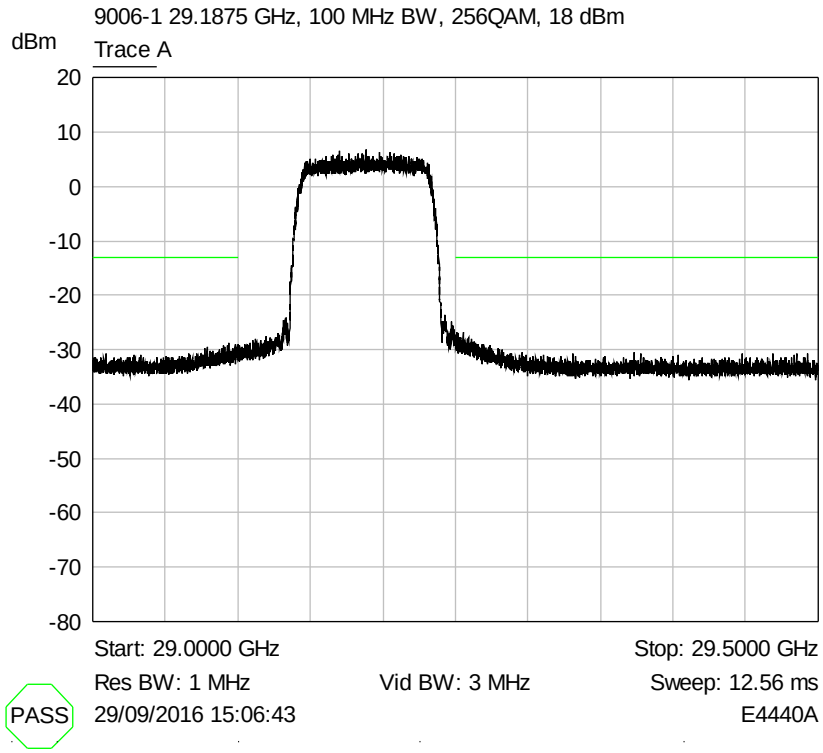
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 18 dBm, Channel Spacing 100 MHz, Modulation 256QAM, Channel 28.2485 GHz



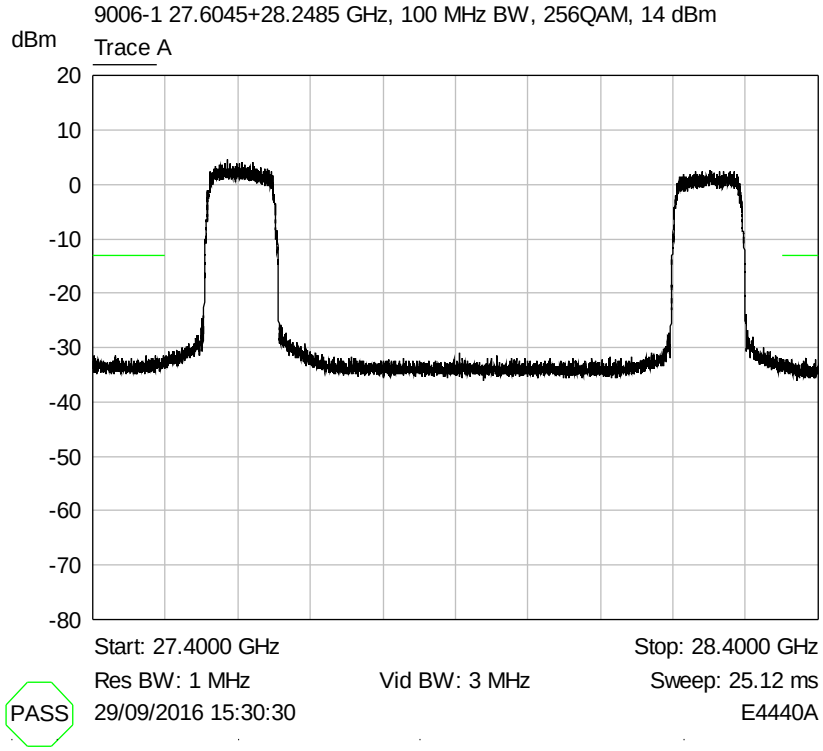
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 18 dBm, Channel Spacing 100 MHz, Modulation 256QAM, Channel 29.1875 GHz



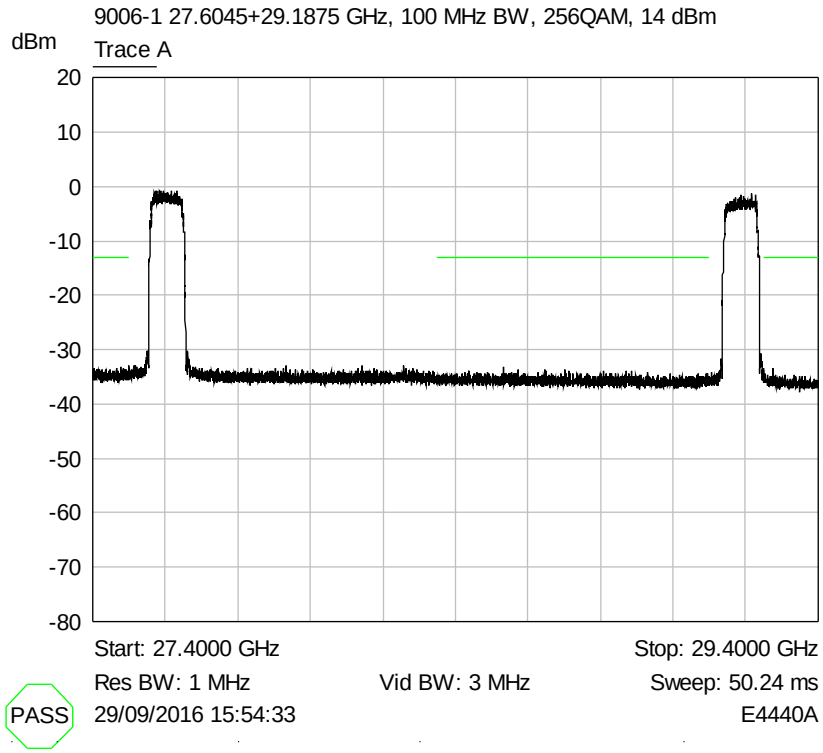
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 100 MHz, Modulation 256QAM, Channel 27.6045 (with 28.2485 on) GHz



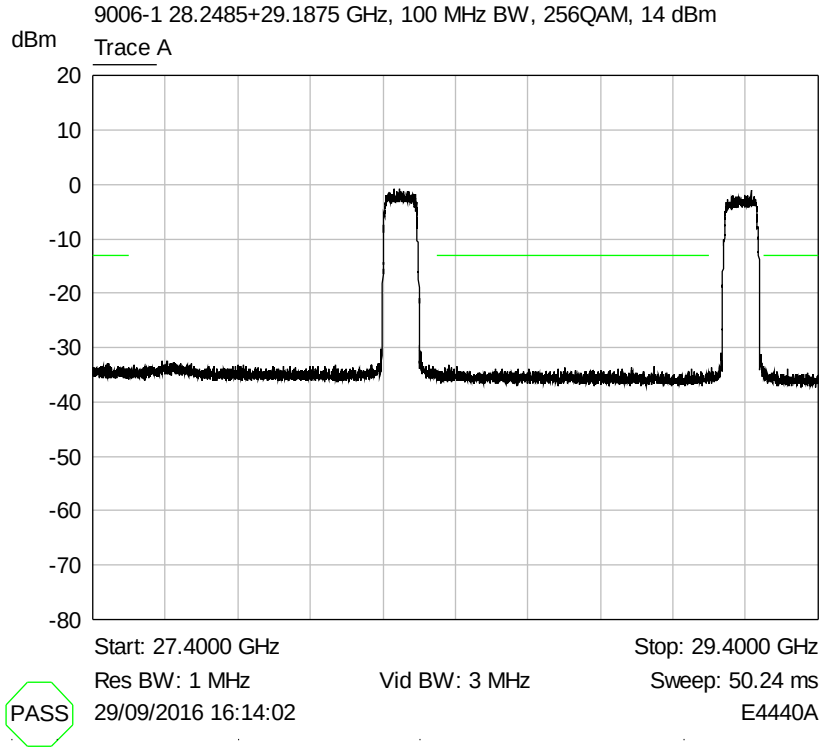
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 100 MHz, Modulation 256QAM, Channel 27.6045 (with 29.1875 on) GHz



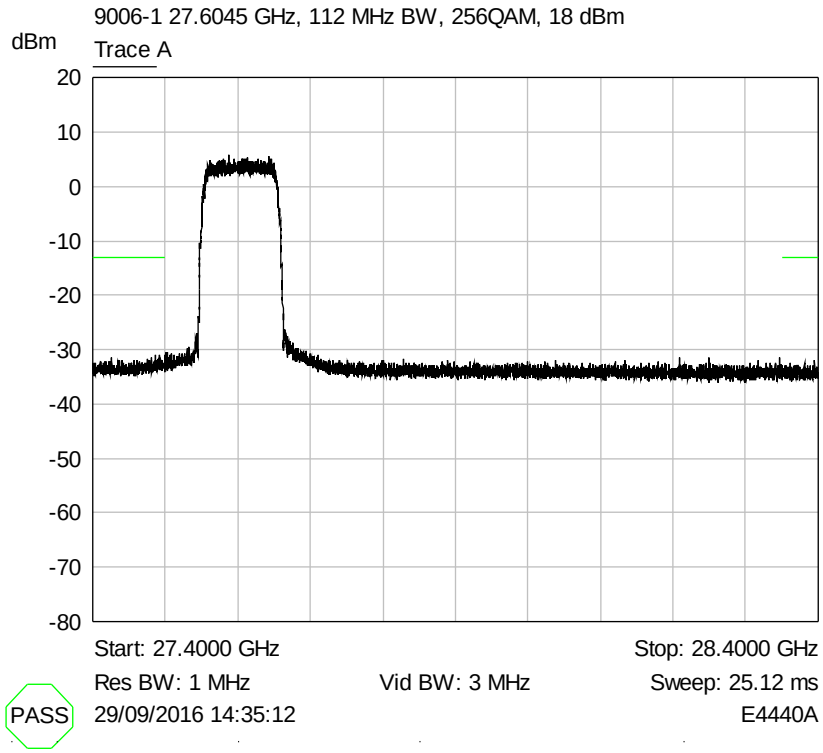
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 100 MHz, Modulation 256QAM, Channel 28.2485 (with 29.1875 on) GHz



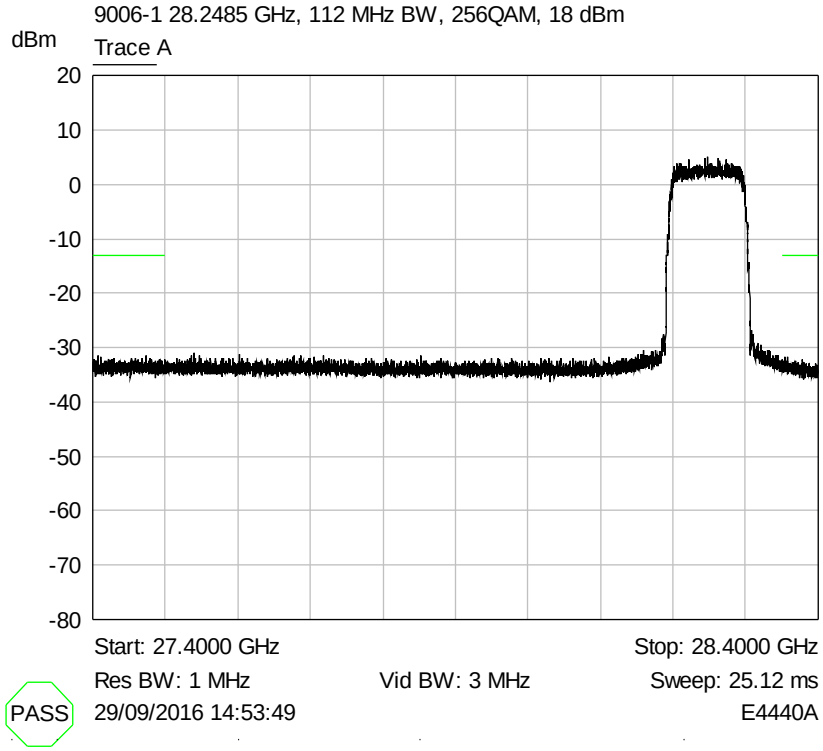
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 18 dBm, Channel Spacing 112 MHz, Modulation 256QAM, Channel 27.6045 GHz



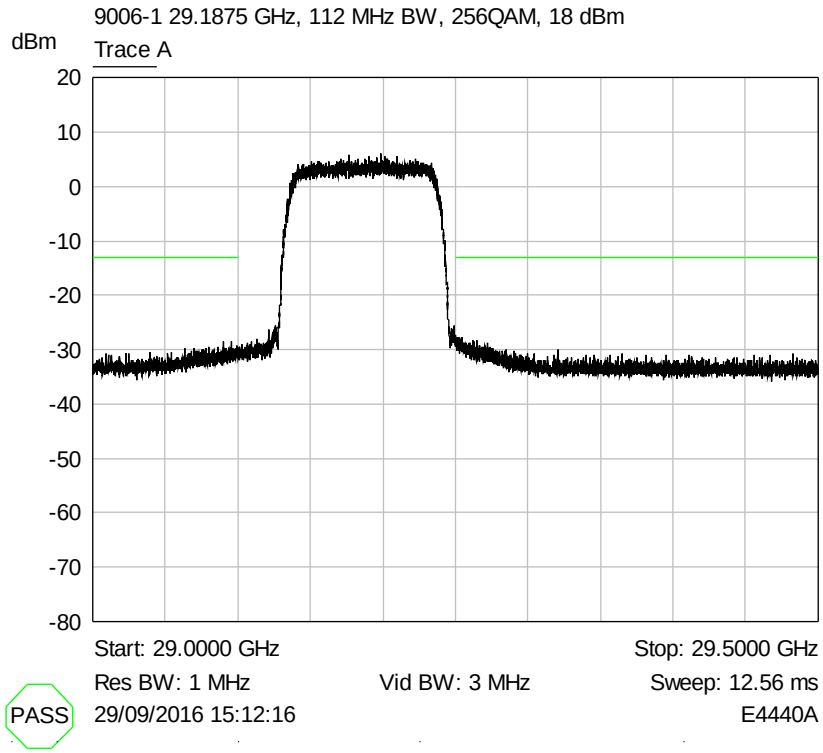
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 18 dBm, Channel Spacing 112 MHz, Modulation 256QAM, Channel 28.2485 GHz



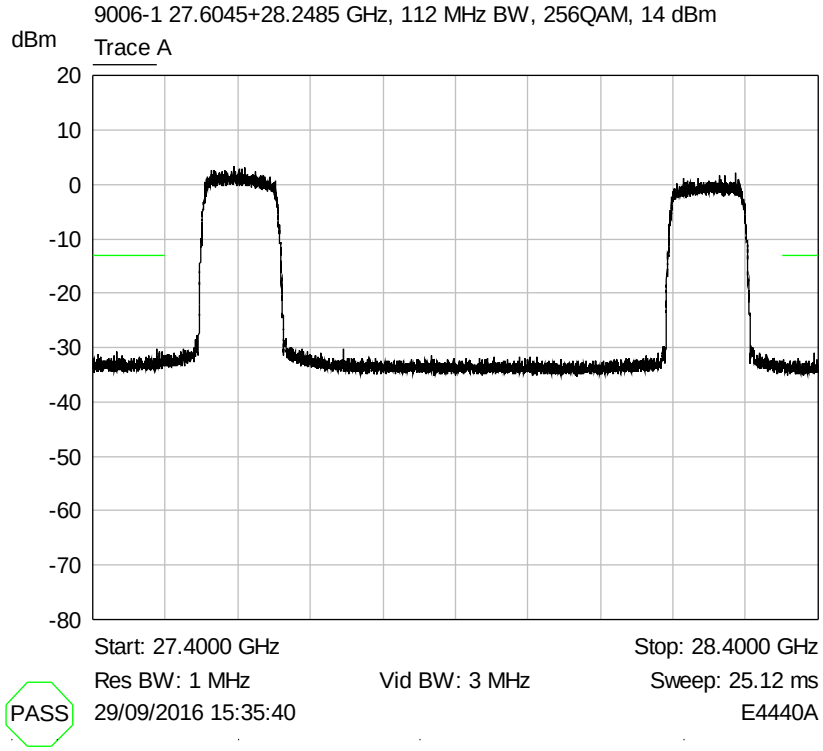
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 18 dBm, Channel Spacing 112 MHz, Modulation 256QAM, Channel 29.1875 GHz



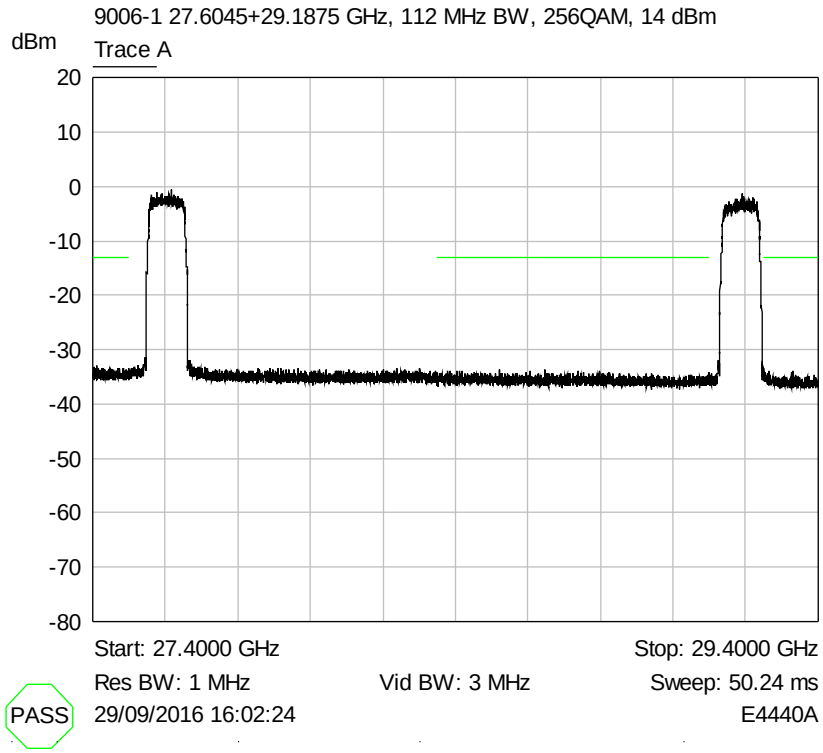
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 112 MHz, Modulation 256QAM, Channel 27.6045 (with 28.2485 on) GHz



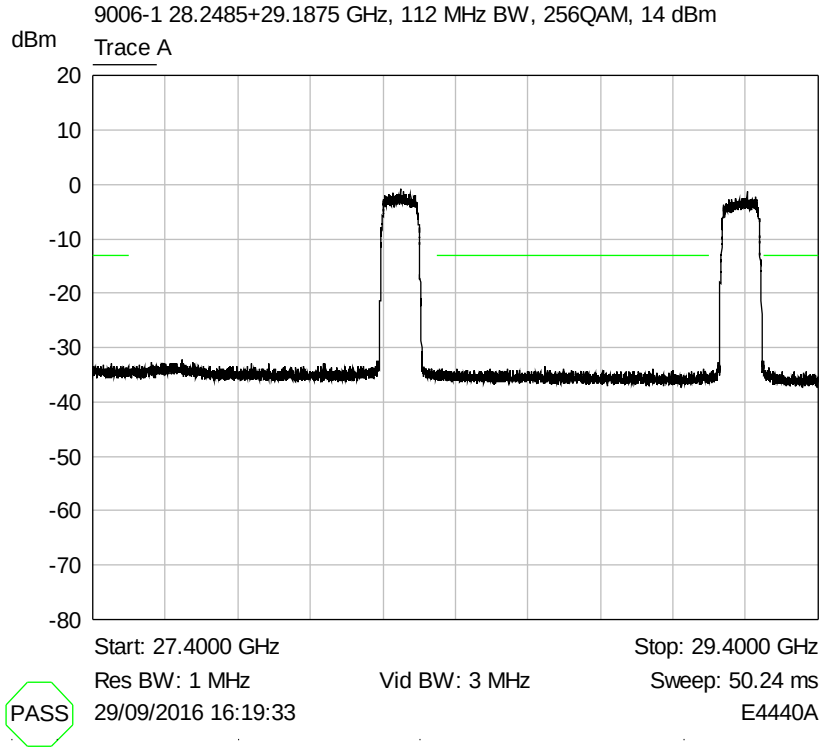
Nominal Temperature, Nominal Voltage

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 112 MHz, Modulation 256QAM, Channel 27.6045 (with 29.1875 on) GHz



Nominal Temperature, Nominal Voltage

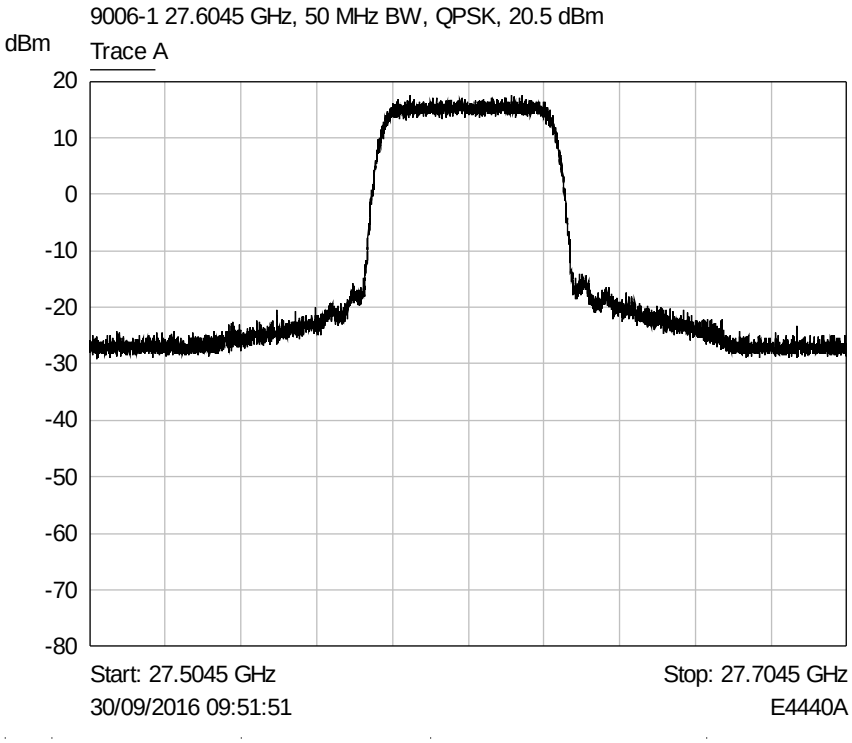
RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 112 MHz, Modulation 256QAM, Channel 28.2485 (with 29.1875 on) GHz



Nominal Temperature, Nominal Voltage

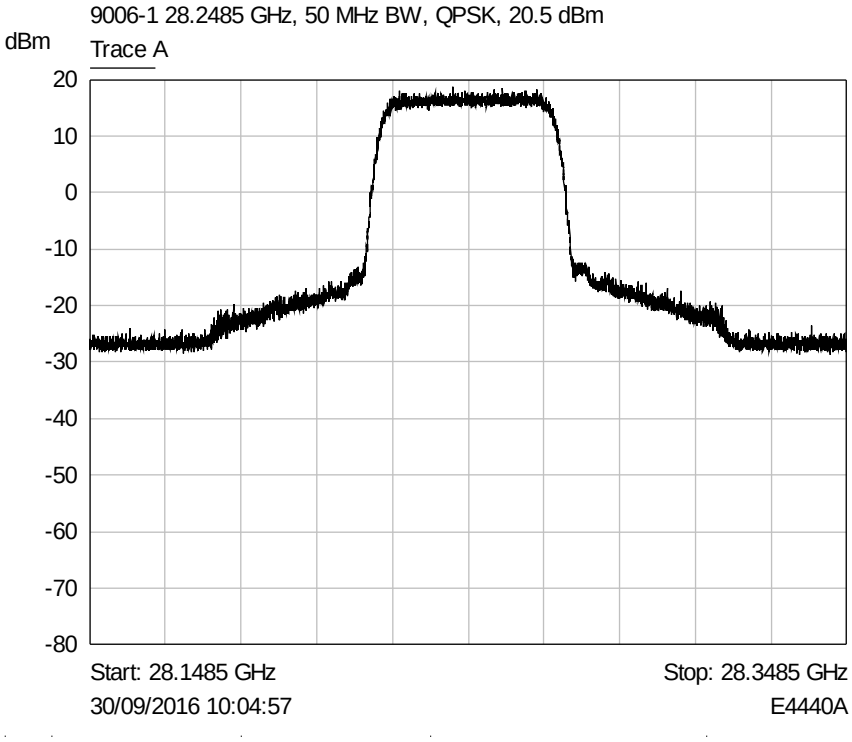
6.4 Modulation characteristics

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20.5 dBm, Channel Spacing 50 MHz, Modulation QPSK, Channel 27.6045 GHz



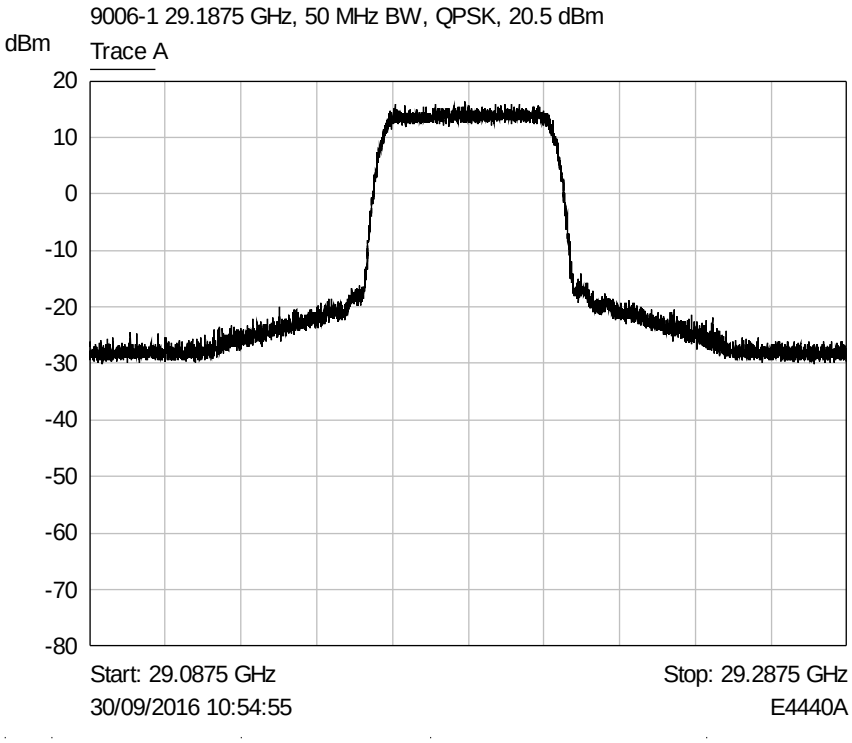
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20.5 dBm, Channel Spacing 50 MHz, Modulation QPSK, Channel 28.2485 GHz



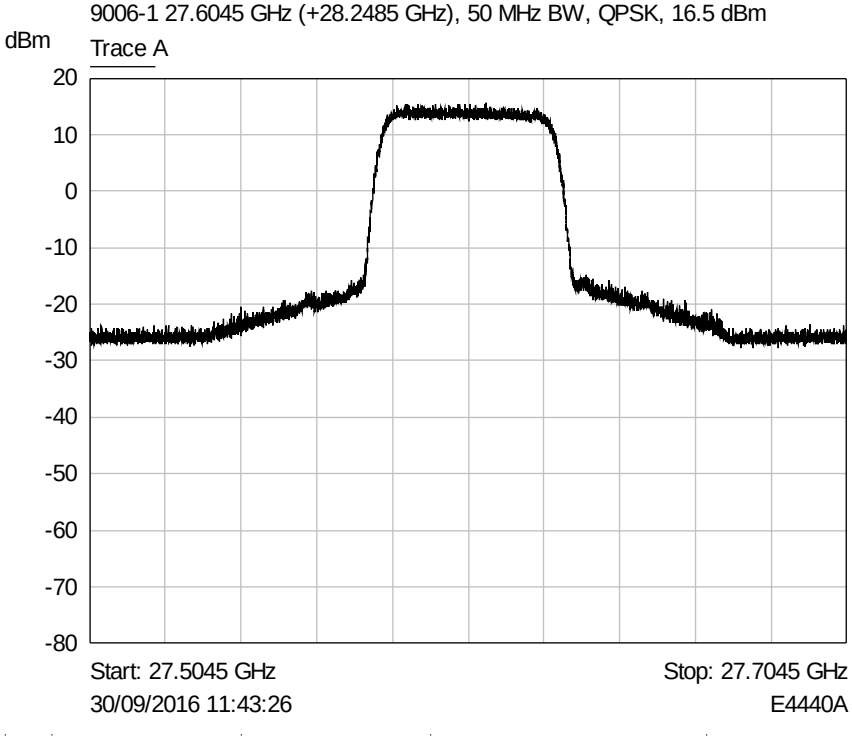
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20.5 dBm, Channel Spacing 50 MHz, Modulation QPSK, Channel 29.1875 GHz



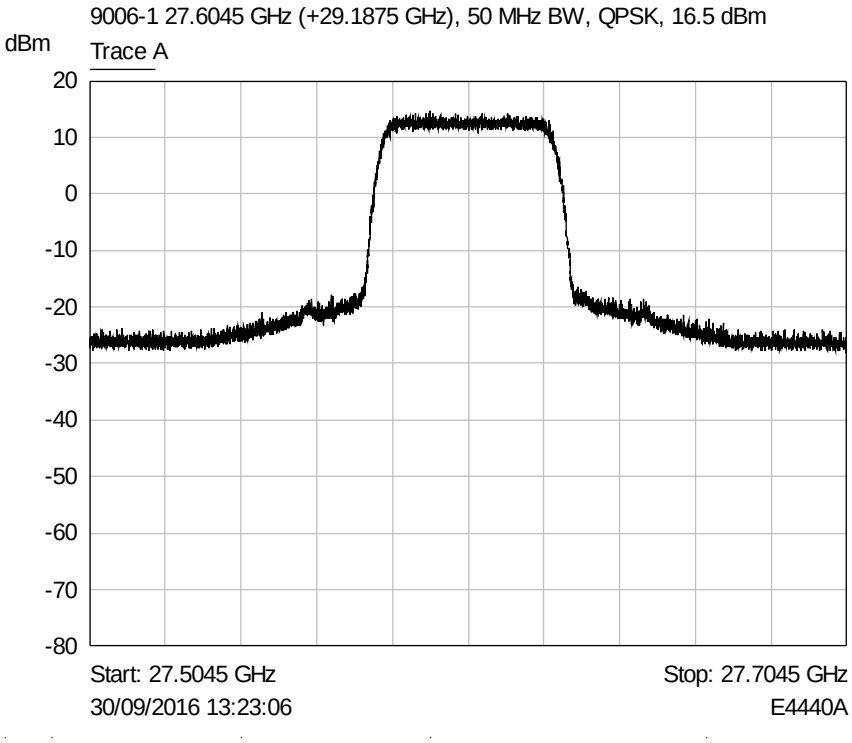
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5 dBm, Channel Spacing 50 MHz, Modulation QPSK, Channel 27.6045 GHz (+28.2485 GHz)



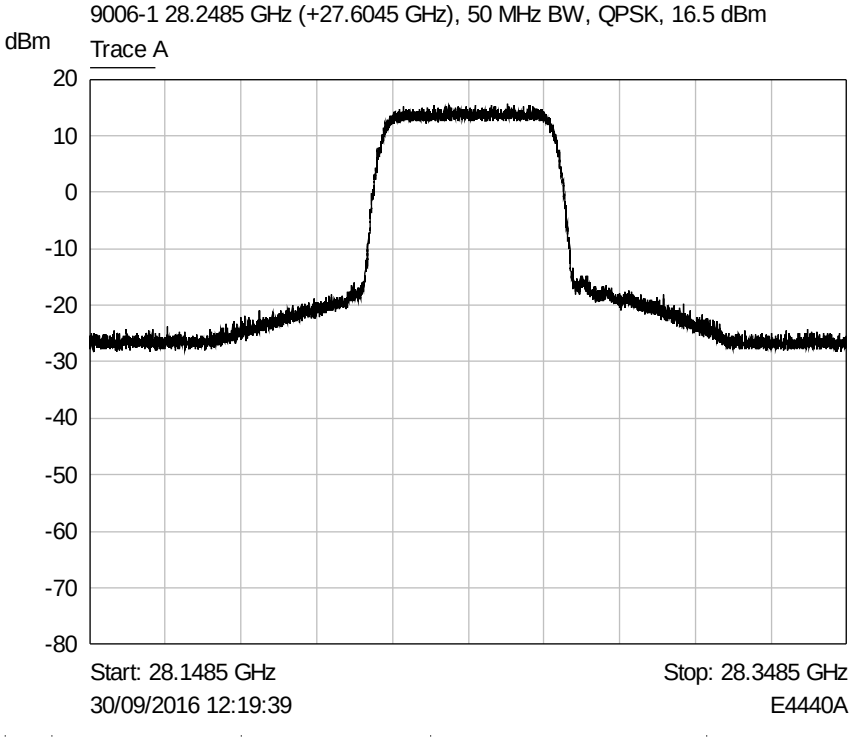
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5 dBm, Channel Spacing 50 MHz, Modulation QPSK, Channel 27.6045 GHz (+29.1875 GHz)



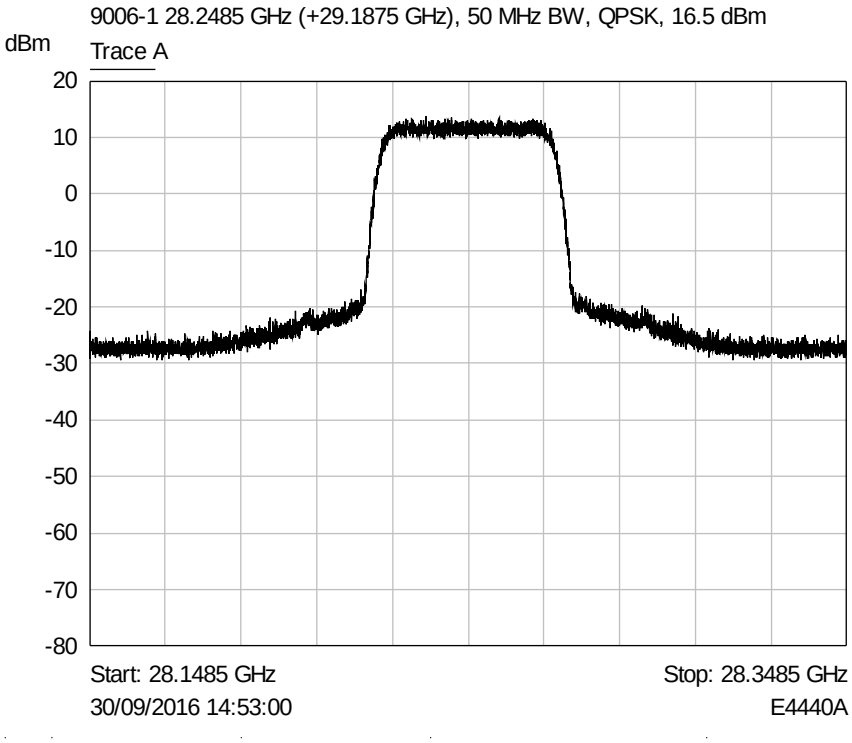
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5 dBm, Channel Spacing 50 MHz, Modulation QPSK, Channel 28.2485 GHz (+27.6045 GHz)



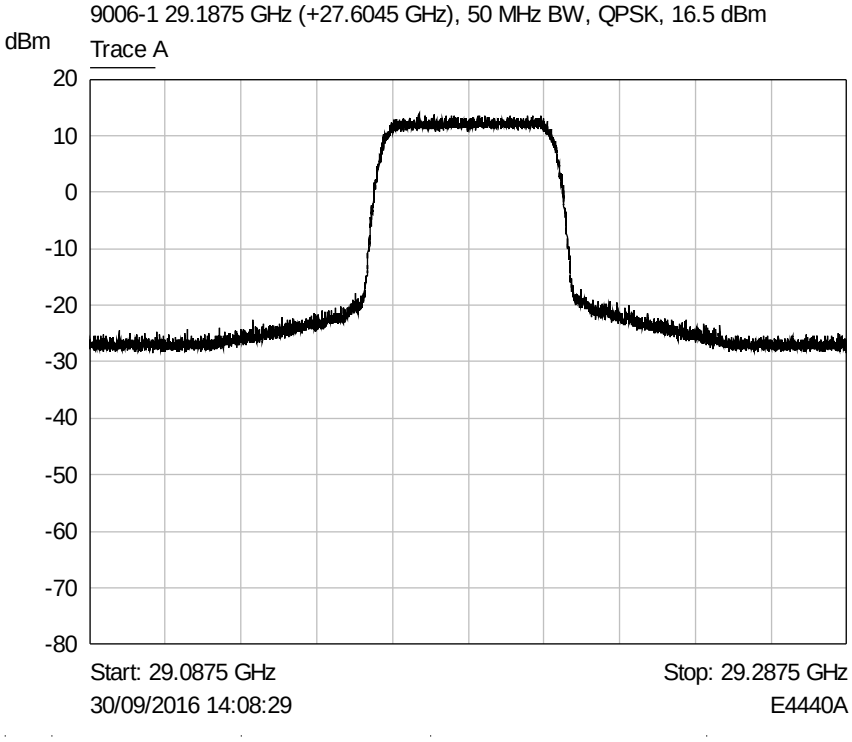
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5 dBm, Channel Spacing 50 MHz, Modulation QPSK, Channel 28.2485 GHz (+29.1875 GHz)



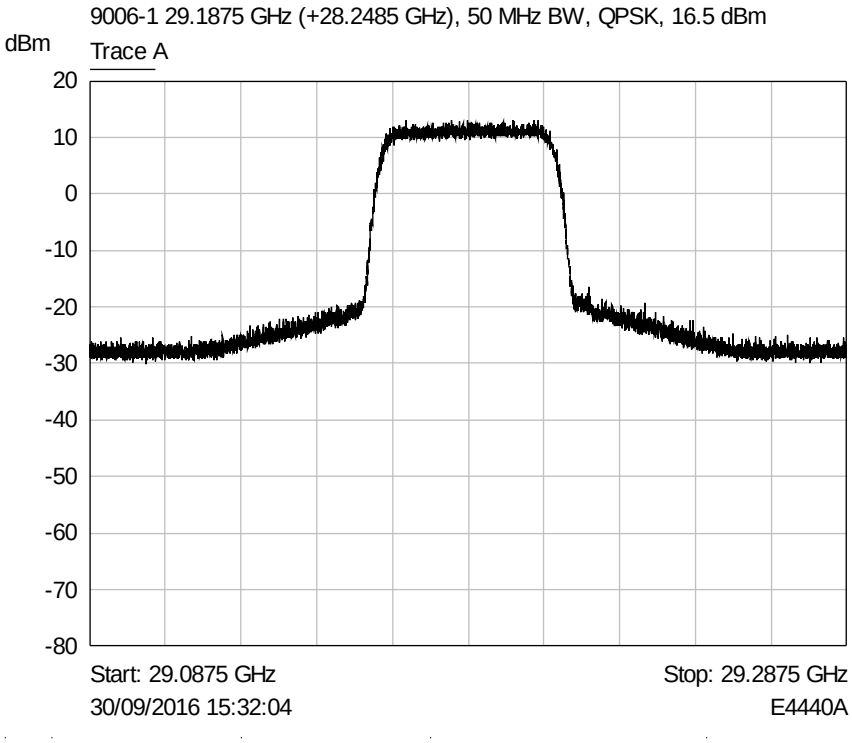
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5 dBm, Channel Spacing 50 MHz, Modulation QPSK, Channel 29.1875 GHz (+27.6045 GHz)



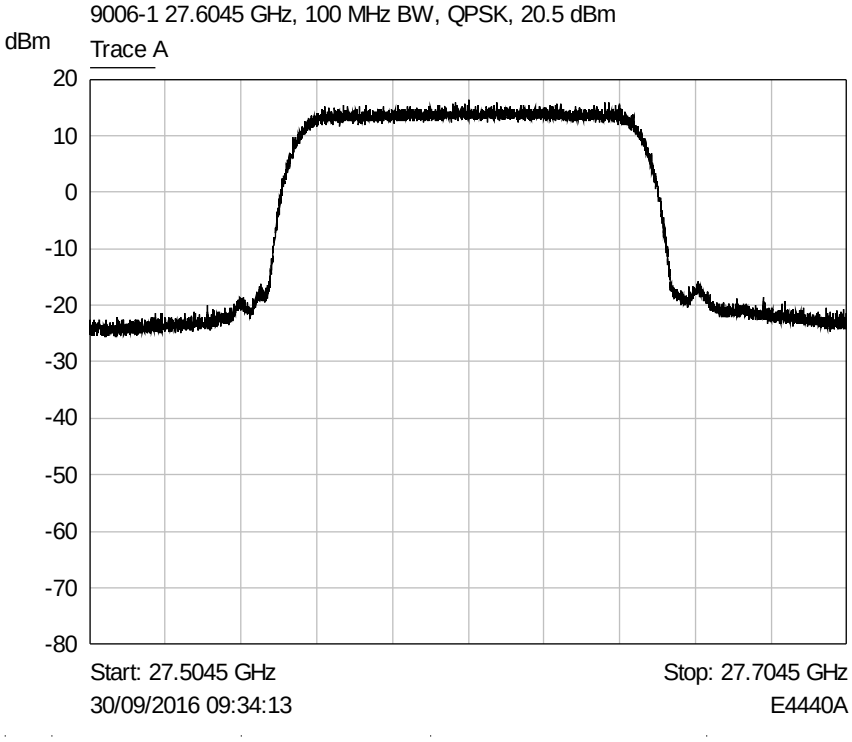
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5 dBm, Channel Spacing 50 MHz, Modulation QPSK, Channel 29.1875 GHz (+28.2485 GHz)



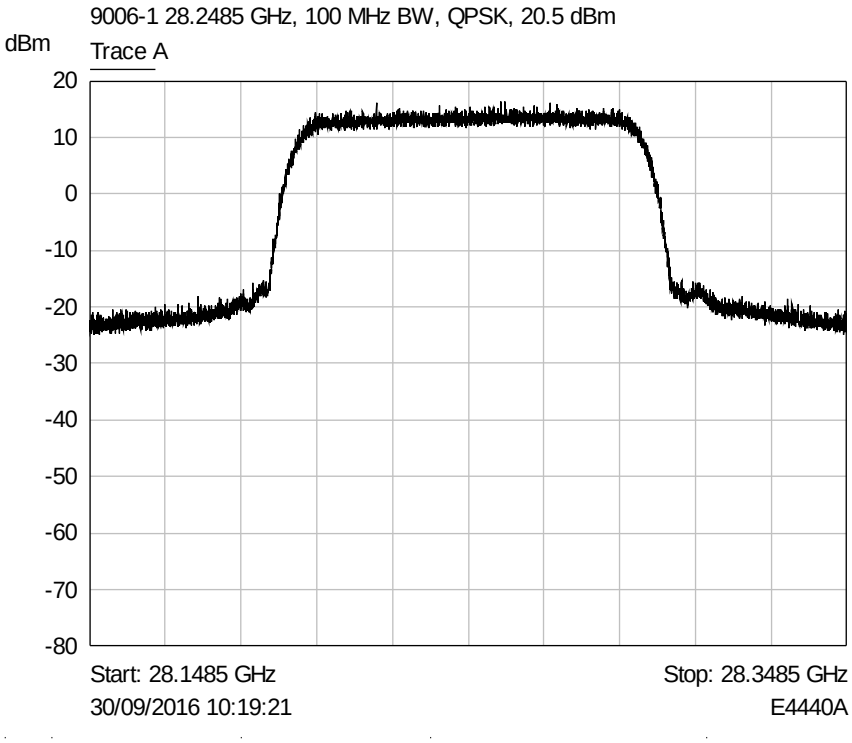
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20.5 dBm, Channel Spacing 100 MHz, Modulation QPSK, Channel 27.6045 GHz



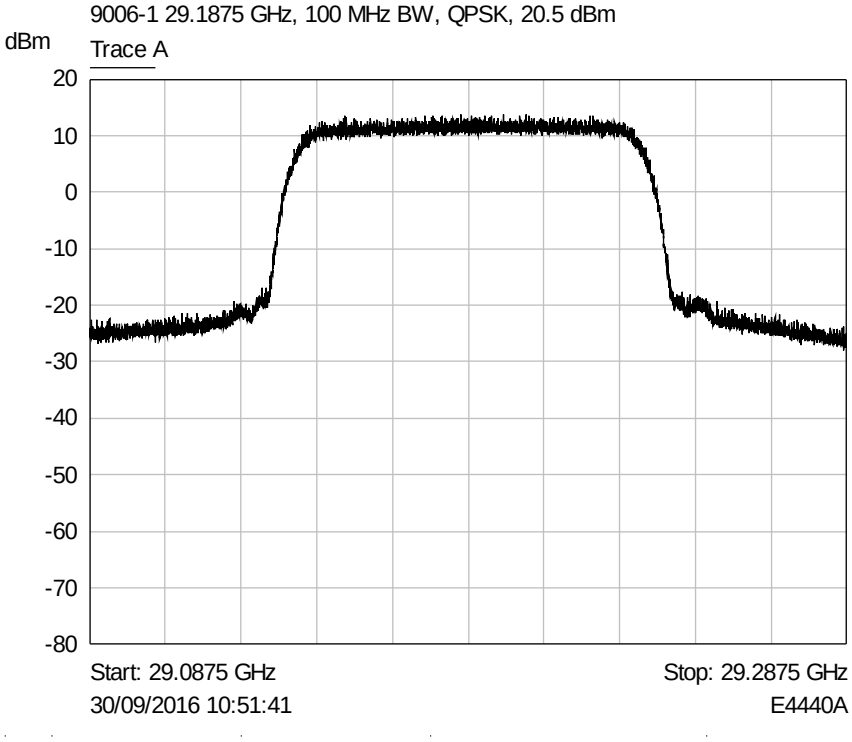
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20.5 dBm, Channel Spacing 100 MHz, Modulation QPSK, Channel 28.2485 GHz



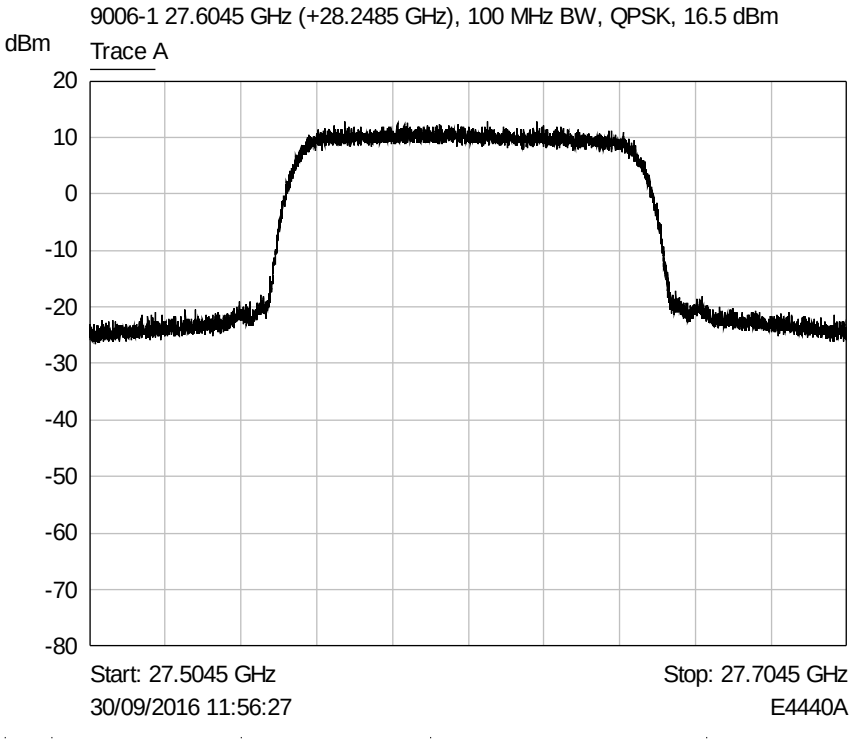
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20.5 dBm, Channel Spacing 100 MHz, Modulation QPSK, Channel 29.1875 GHz



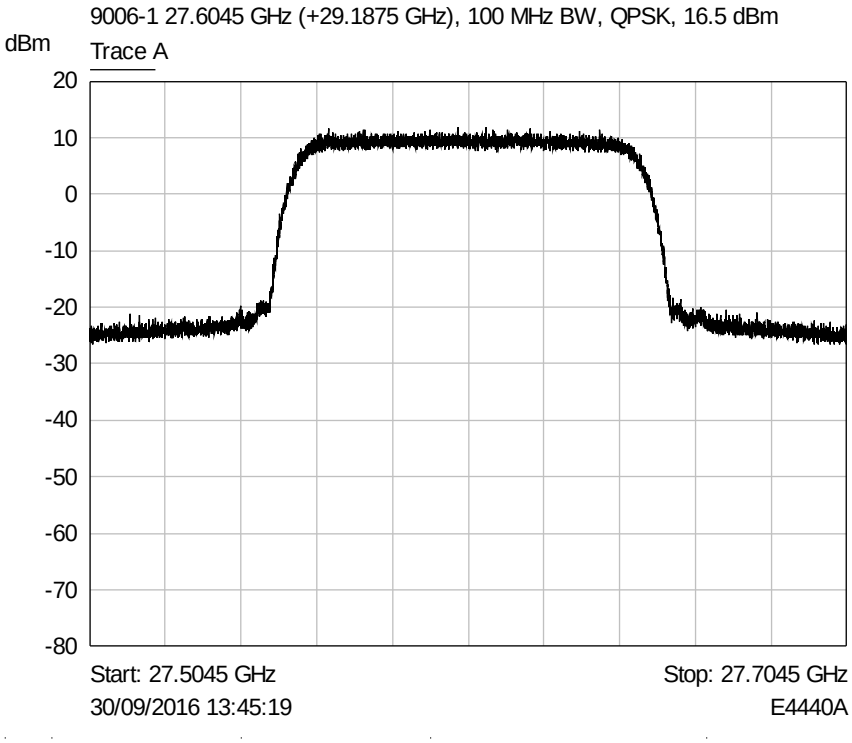
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5 dBm, Channel Spacing 100 MHz, Modulation QPSK, Channel 27.6045 GHz (+28.2485 GHz)



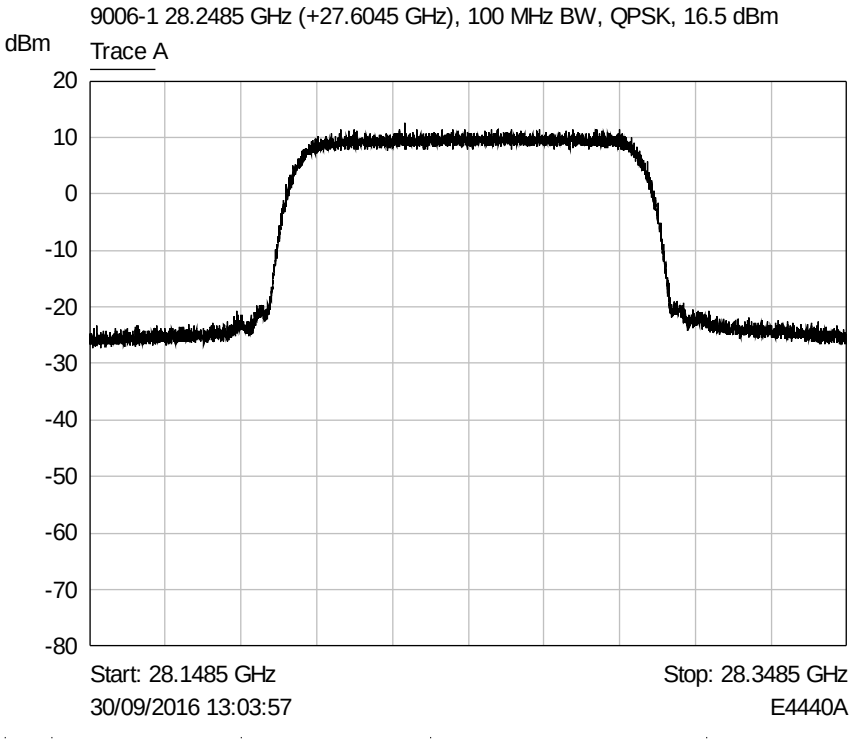
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5 dBm, Channel Spacing 100 MHz, Modulation QPSK, Channel 27.6045 GHz (+29.1875 GHz)



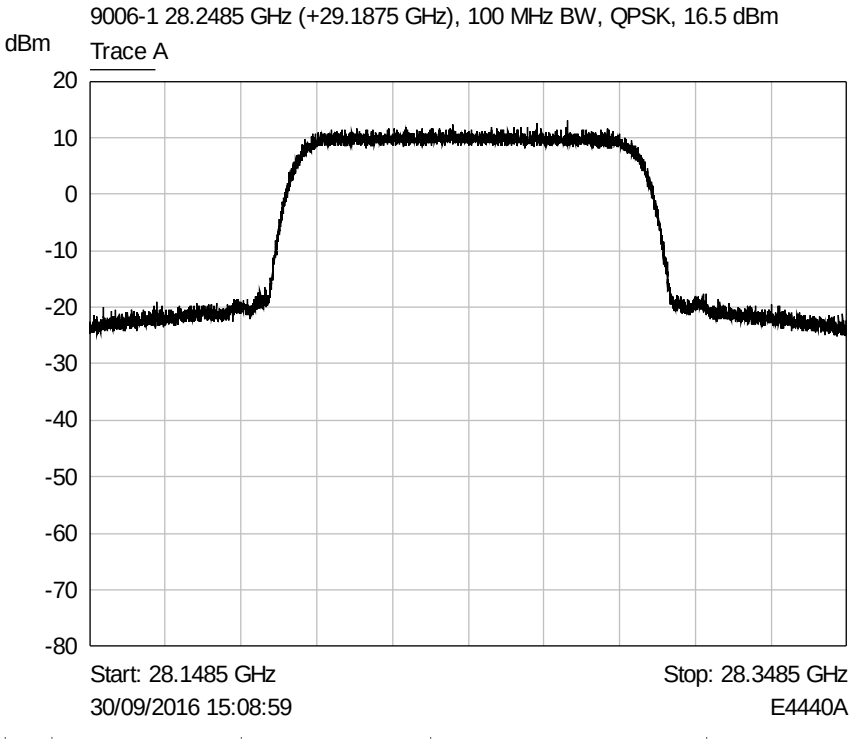
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5 dBm, Channel Spacing 100 MHz, Modulation QPSK, Channel 28.2485GHz (+27.6045 GHz)



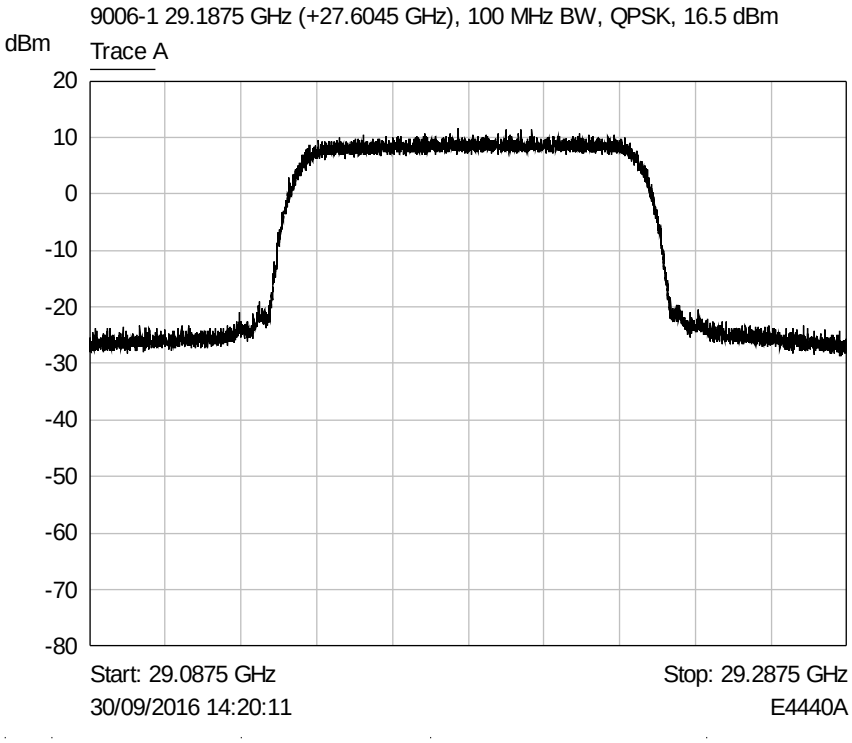
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5 dBm, Channel Spacing 100 MHz, Modulation QPSK, Channel 28.2485 GHz (+29.1875 GHz)



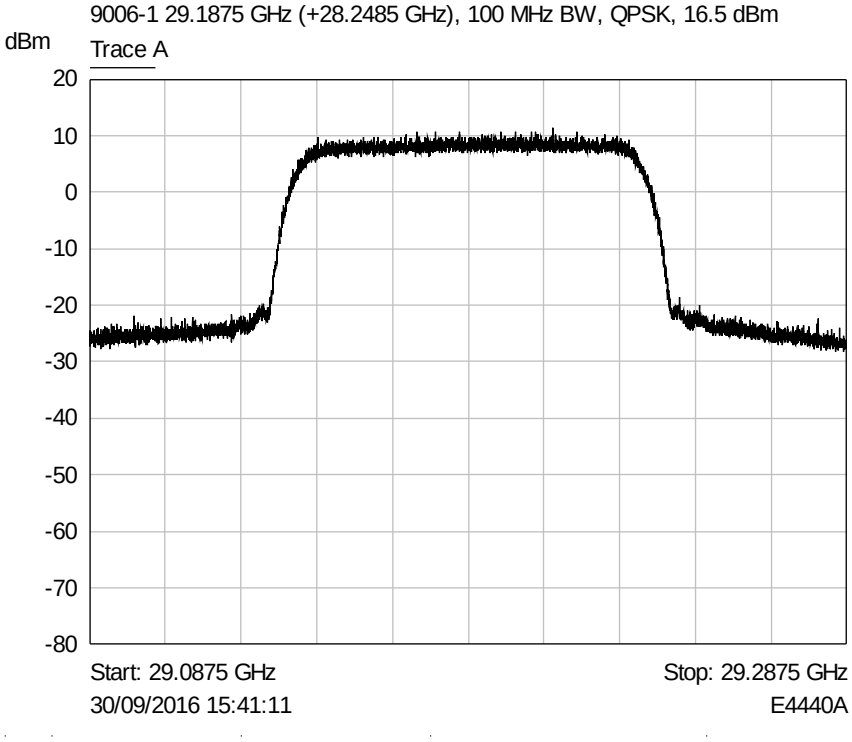
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5 dBm, Channel Spacing 100 MHz, Modulation QPSK, Channel 29.1875 GHz (+27.6045 GHz)



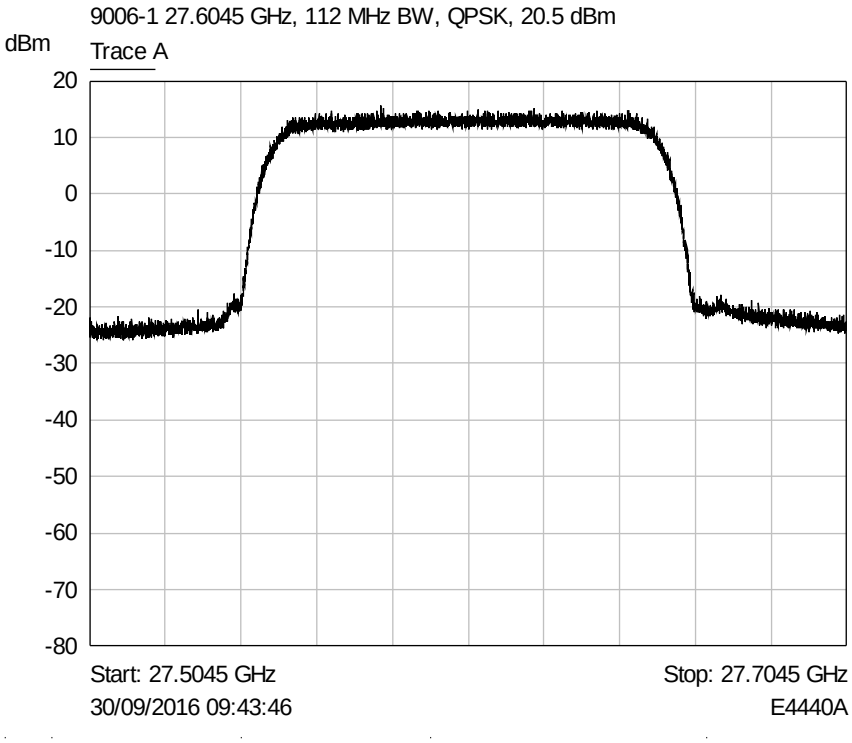
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5 dBm, Channel Spacing 100 MHz, Modulation QPSK, Channel 29.1875 GHz (+28.2485 GHz)



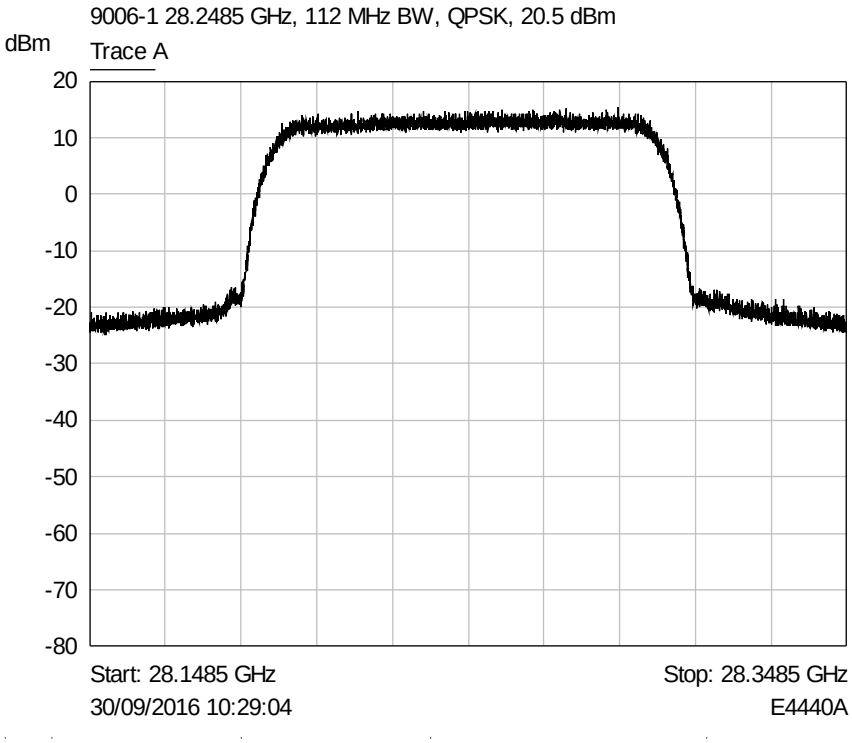
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20.5 dBm, Channel Spacing 112 MHz, Modulation QPSK, Channel 27.6045 GHz



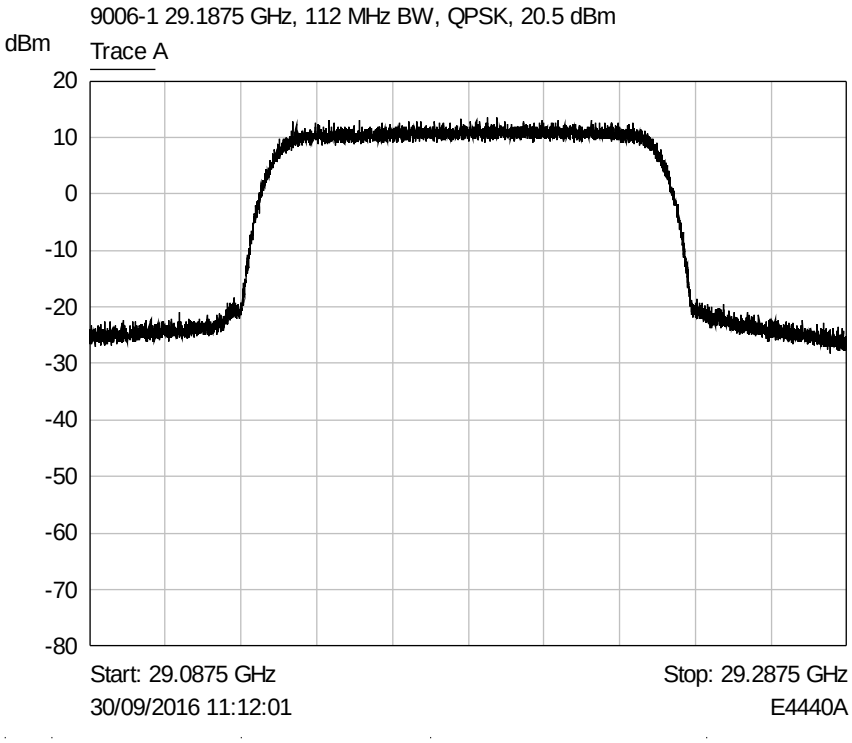
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20.5 dBm, Channel Spacing 112 MHz, Modulation QPSK, Channel 28.2485 GHz



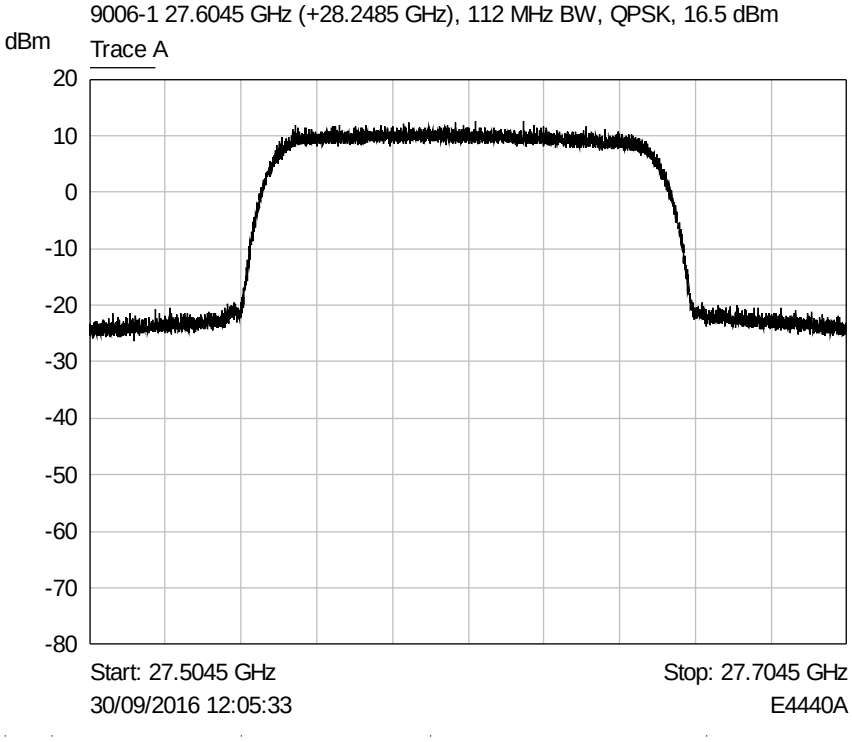
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20.5 dBm, Channel Spacing 112 MHz, Modulation QPSK, Channel 29.1875GHz



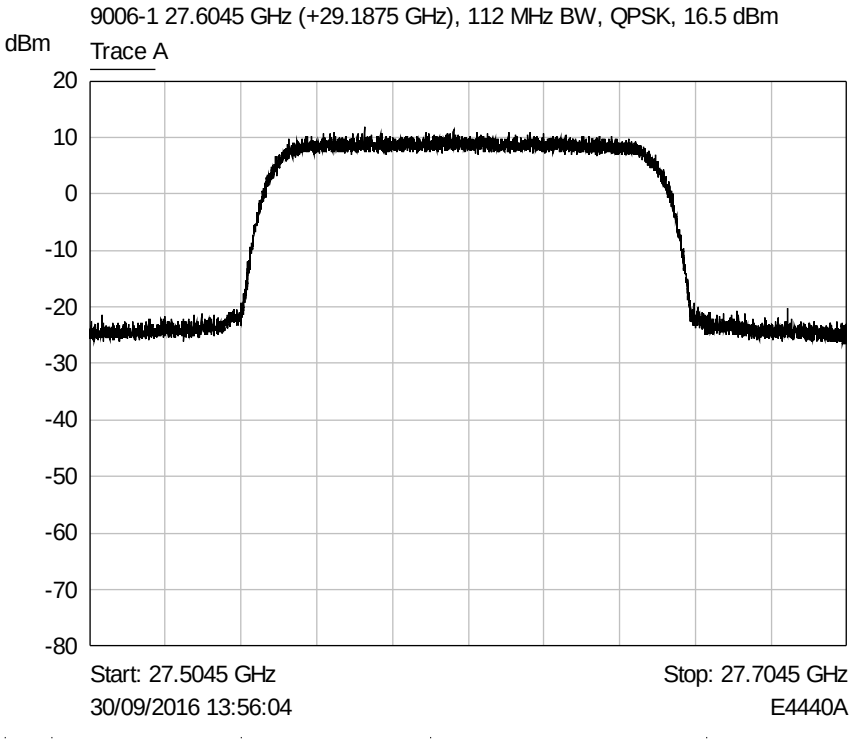
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5 dBm, Channel Spacing 112 MHz, Modulation QPSK, Channel 27.6045 GHz (+28.2485 GHz)



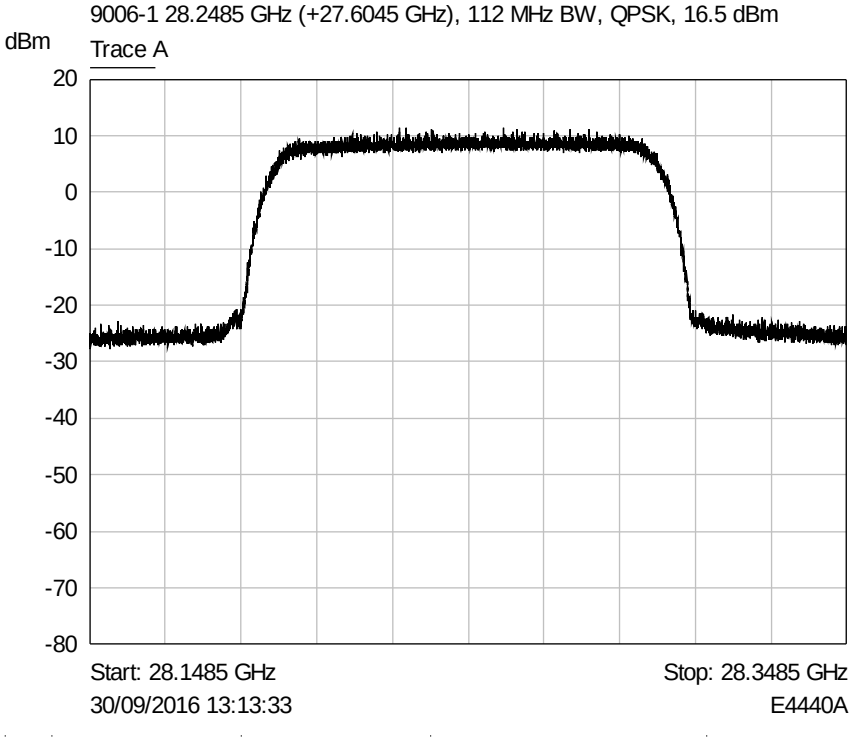
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5 dBm, Channel Spacing 112 MHz, Modulation QPSK, Channel 27.6045 GHz (+29.1875 GHz)



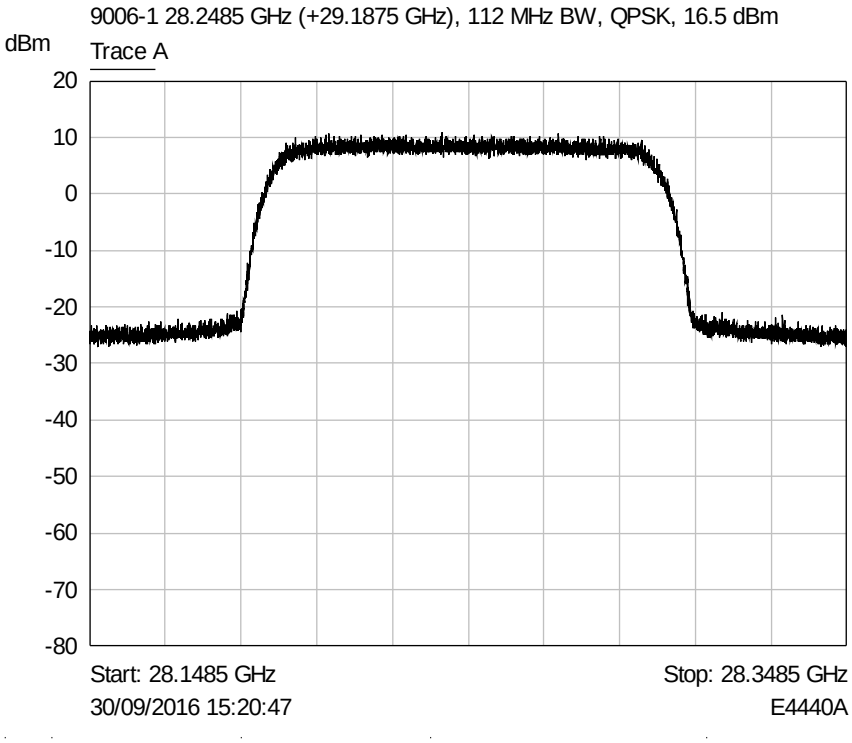
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5 dBm, Channel Spacing 112 MHz, Modulation QPSK, Channel 28.2485 GHz (+27.6045 GHz)



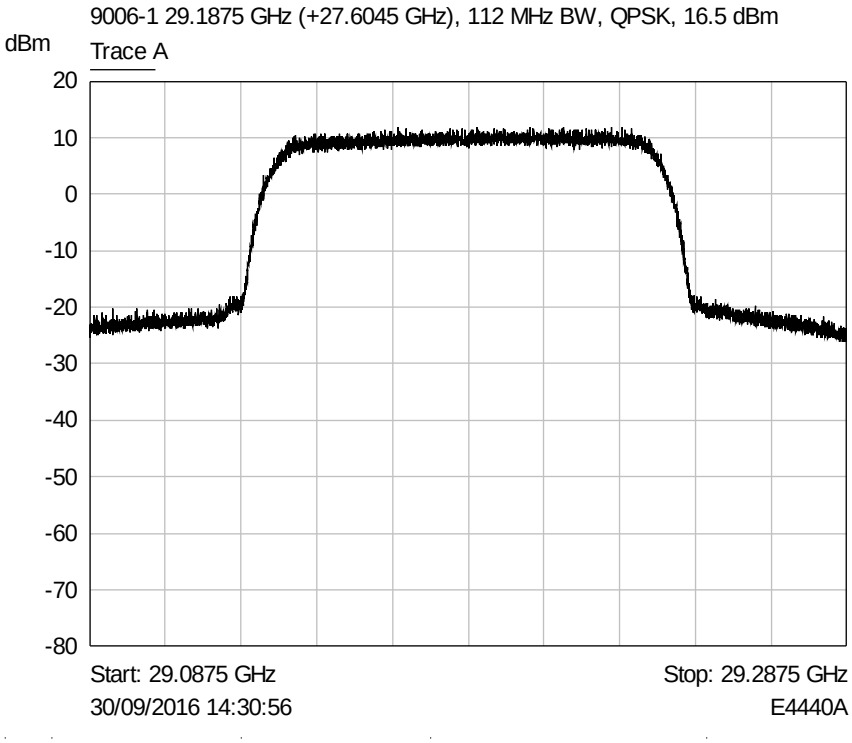
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5 dBm, Channel Spacing 112 MHz, Modulation QPSK, Channel 28.2485 GHz (+29.1875 GHz)



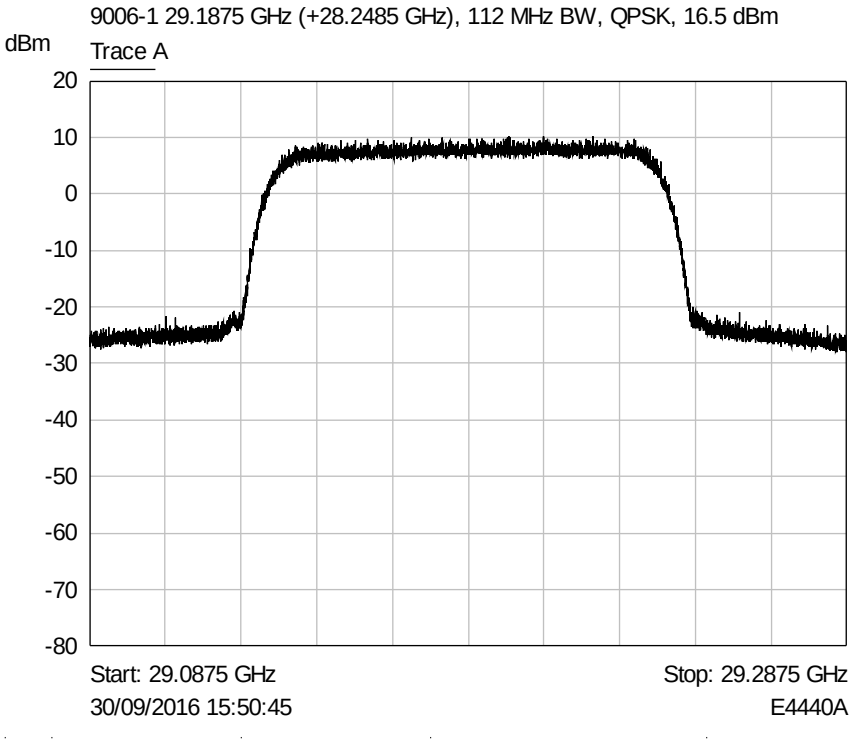
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5 dBm, Channel Spacing 112 MHz, Modulation QPSK, Channel 29.1875 GHz (+27.6045 GHz)



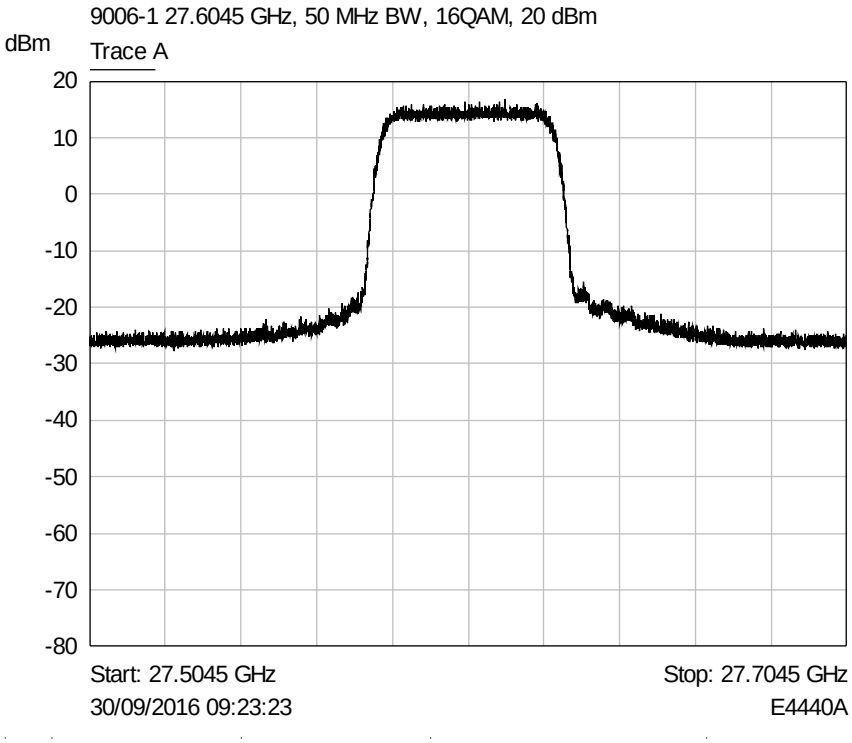
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16.5 dBm, Channel Spacing 112 MHz, Modulation QPSK, Channel 29.1875 GHz (+28.2485 GHz)



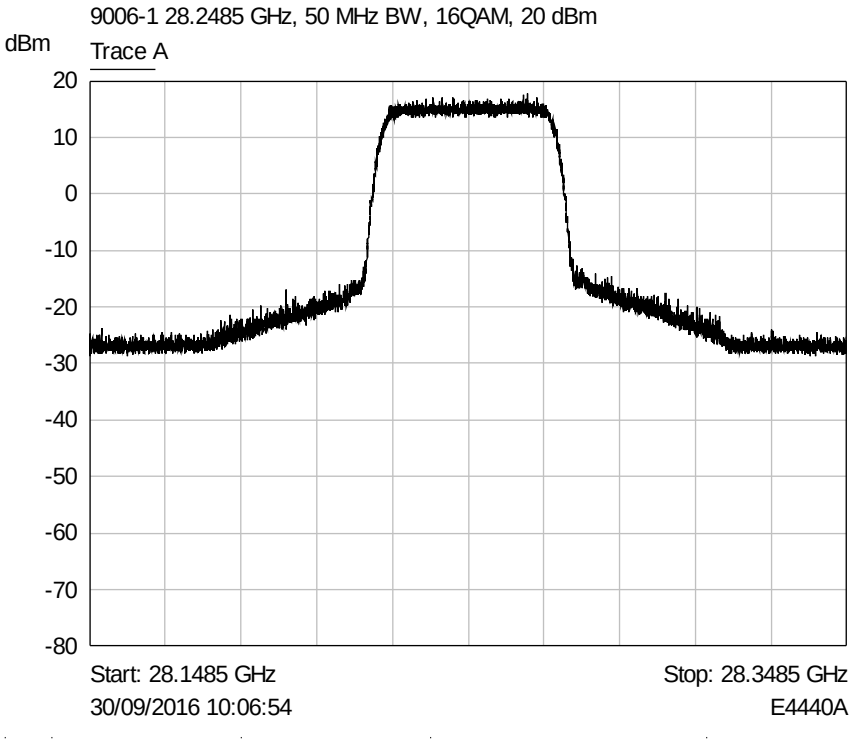
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20 dBm, Channel Spacing 50 MHz, Modulation 16QAM, Channel 27.6045 GHz



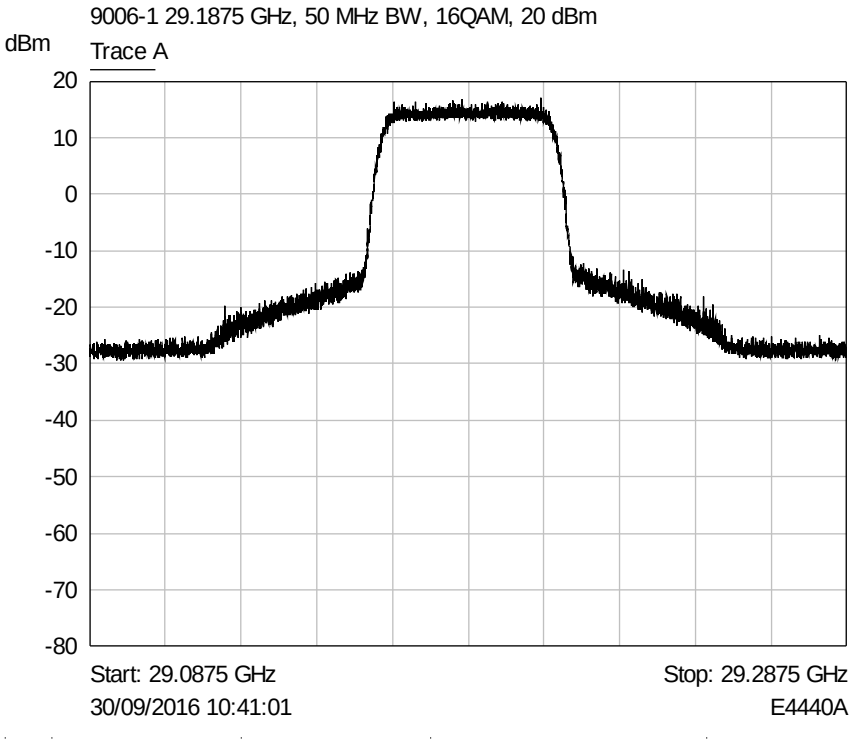
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20 dBm, Channel Spacing 50 MHz, Modulation 16QAM, Channel 28.2485 GHz



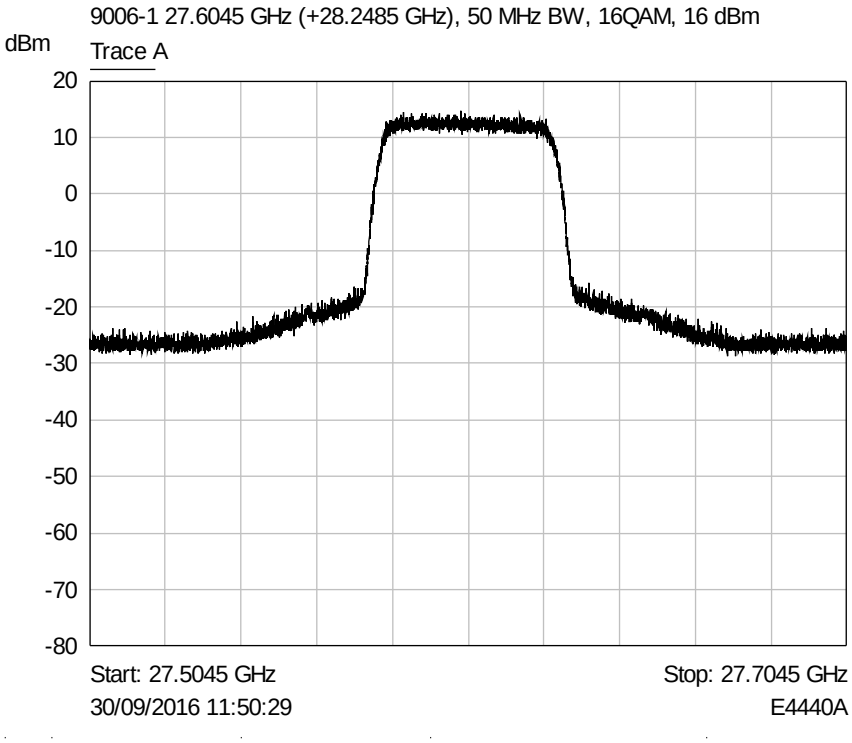
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20 dBm, Channel Spacing 50 MHz, Modulation 16QAM, Channel 29.1875 GHz



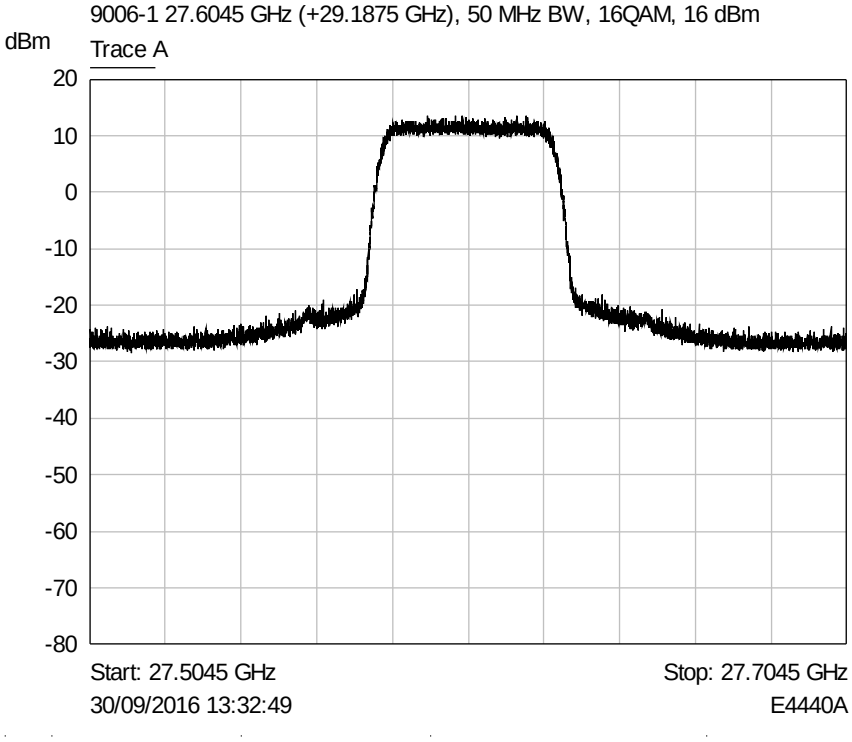
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 50 MHz, Modulation 16QAM, Channel 27.6045 GHz (+28.2485 GHz)



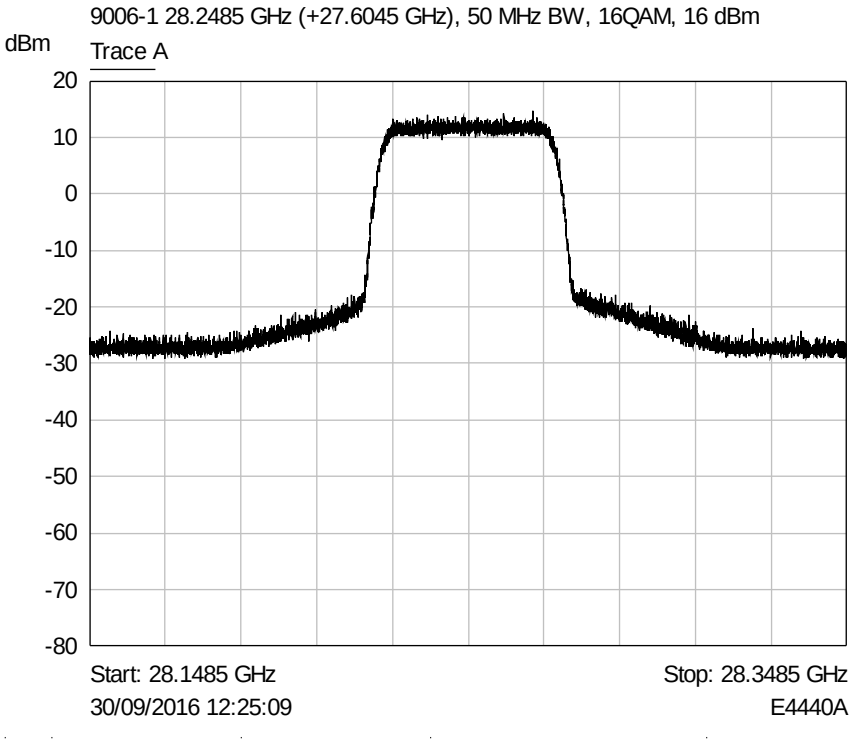
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 50 MHz, Modulation 16QAM, Channel 27.6045 GHz (+29.1875 GHz)



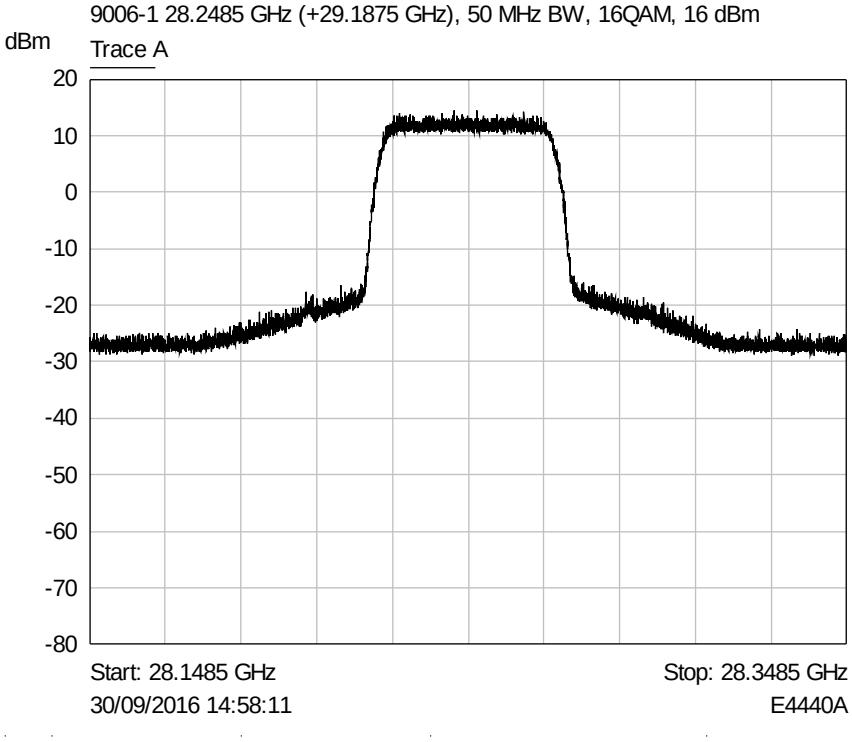
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 50 MHz, Modulation 16QAM, Channel 28.2485 GHz (+27.6045 GHz)



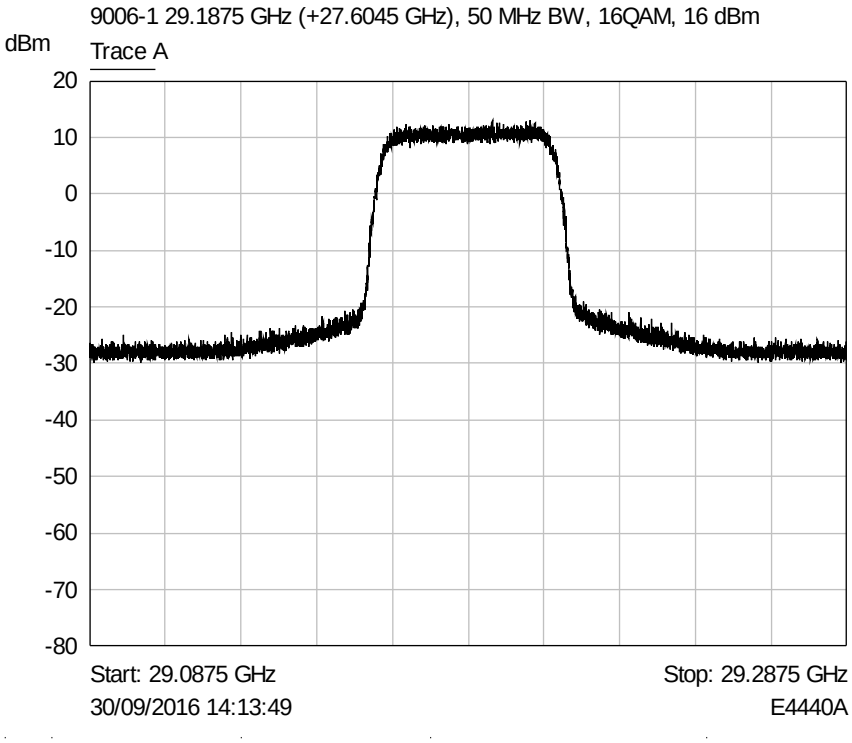
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 50 MHz, Modulation 16QAM, Channel 28.2485 GHz (+29.1875 GHz)



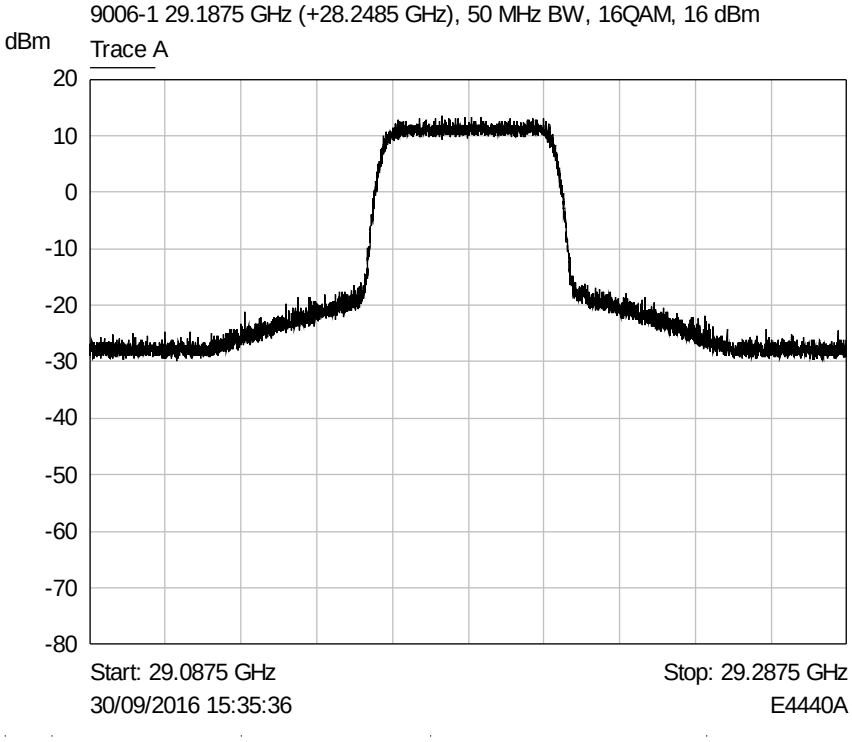
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 50 MHz, Modulation 16QAM, Channel 29.1875 GHz (+27.6045 GHz)



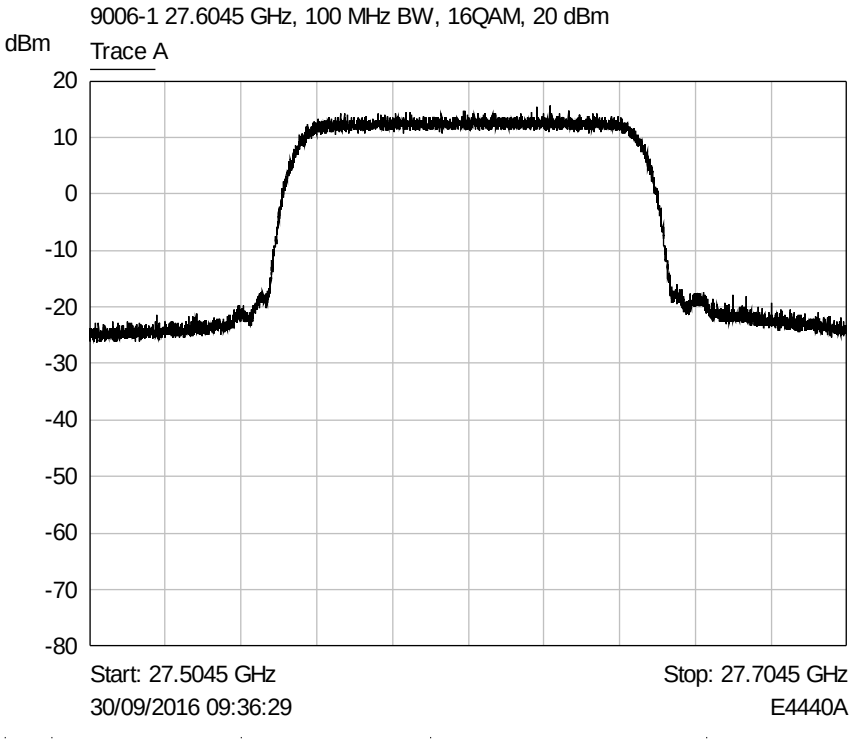
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 50 MHz, Modulation 16QAM, Channel 29.1875 GHz (+28.2485 GHz)



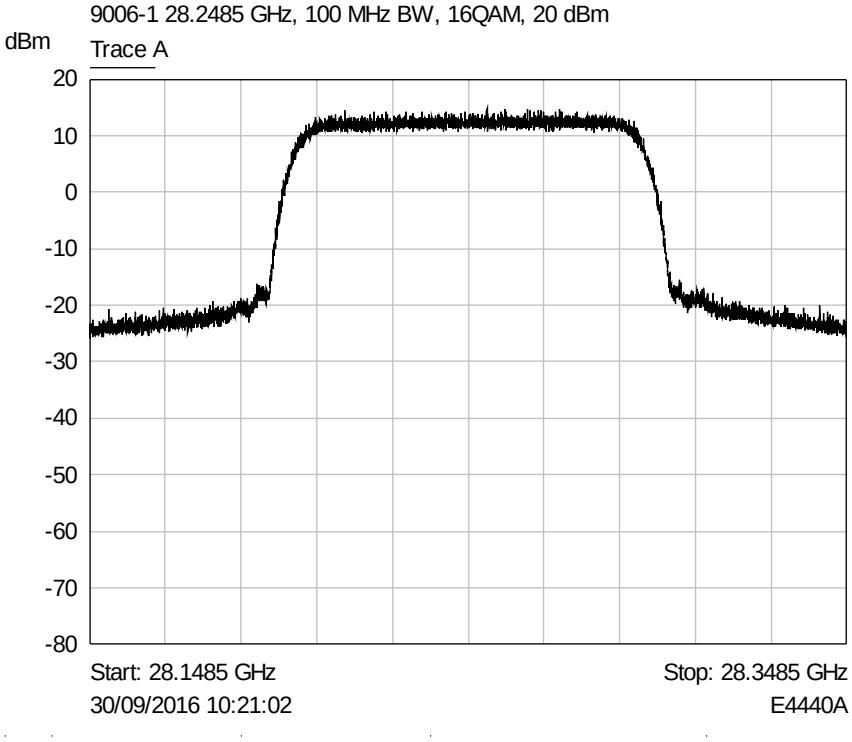
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20 dBm, Channel Spacing 100 MHz, Modulation 16QAM, Channel 27.6045 GHz



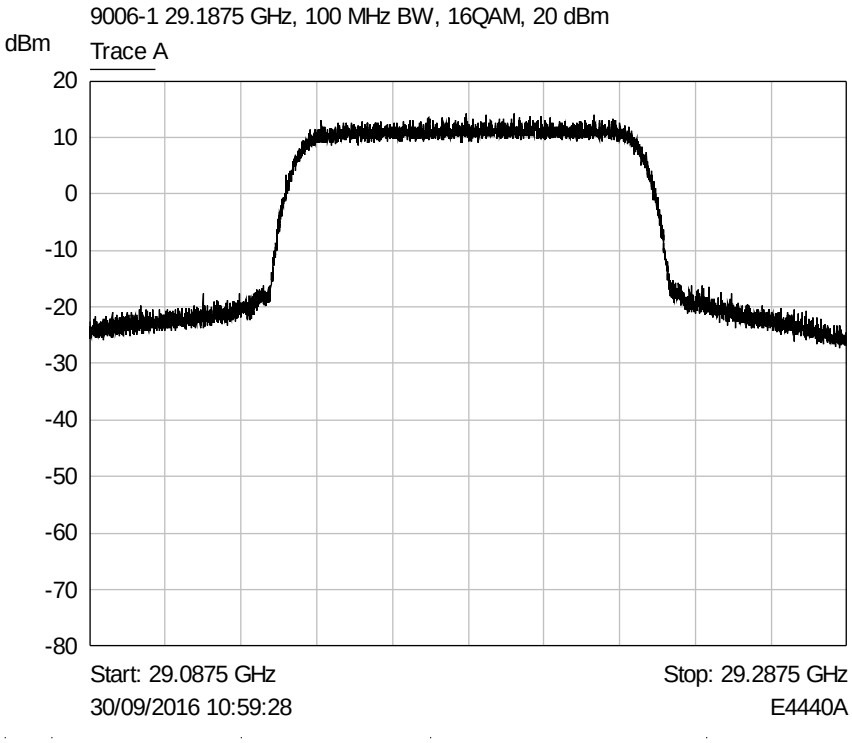
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20 dBm, Channel Spacing 100 MHz, Modulation 16QAM, Channel 28.2485 GHz



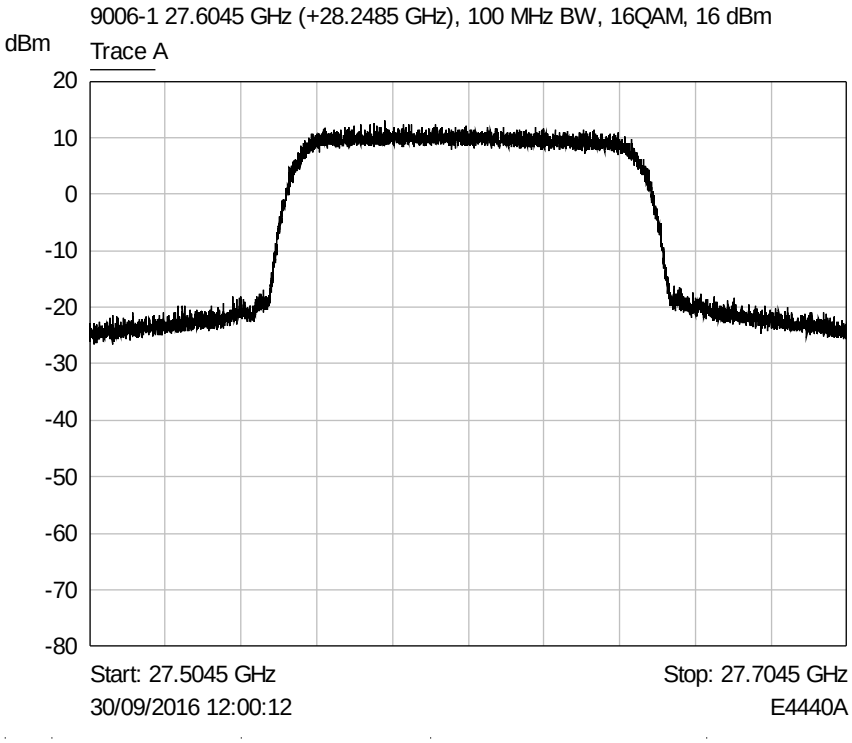
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20 dBm, Channel Spacing 100 MHz, Modulation 16QAM, Channel 29.1875 GHz



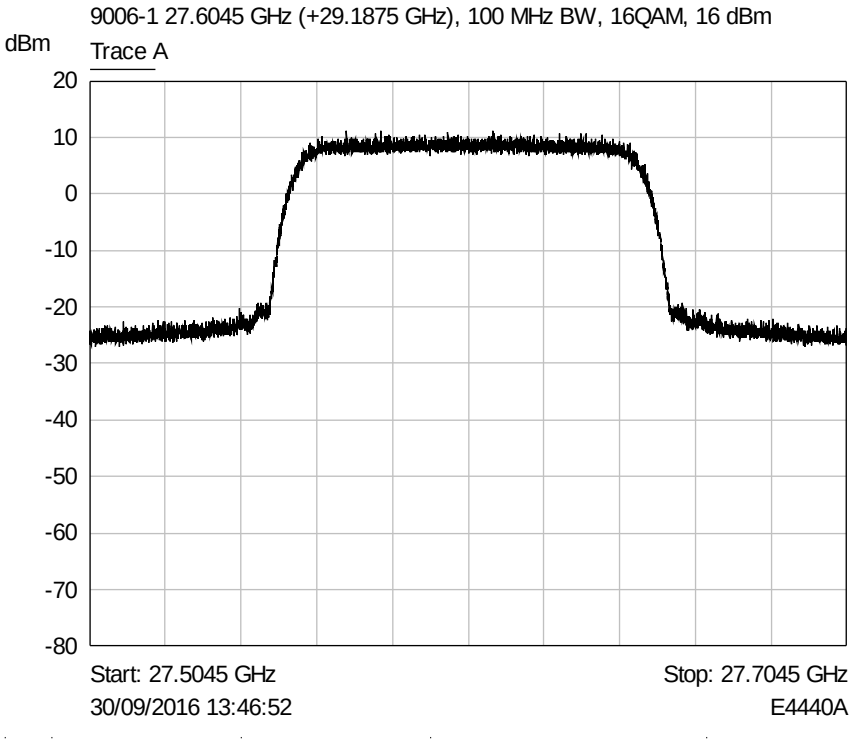
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 100 MHz, Modulation 16QAM, Channel 27.6045 GHz (+28.2485 GHz)



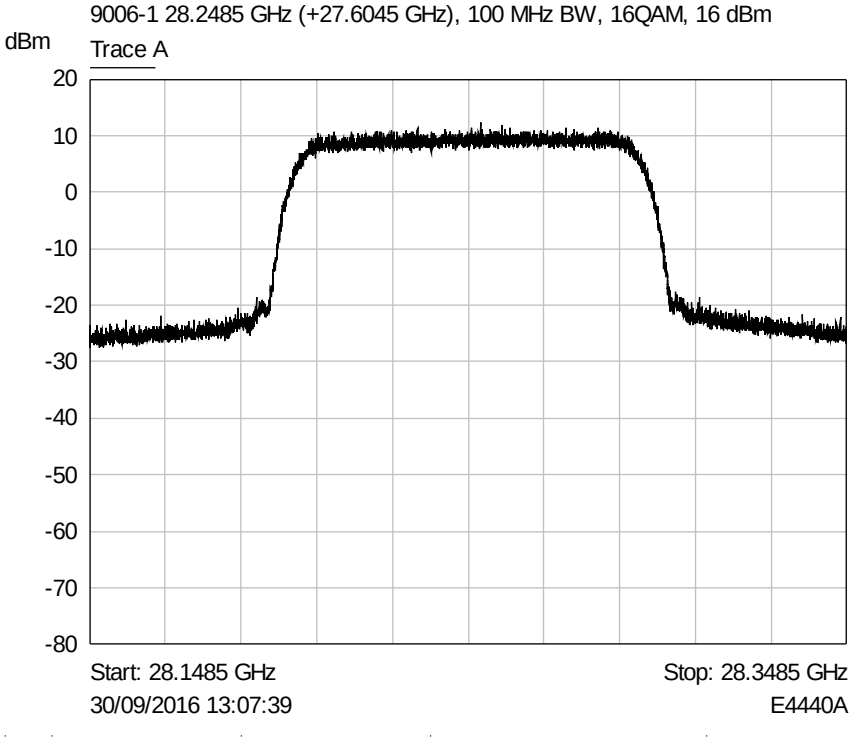
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 100 MHz, Modulation 16QAM, Channel 27.6045 GHz (+29.1875 GHz)



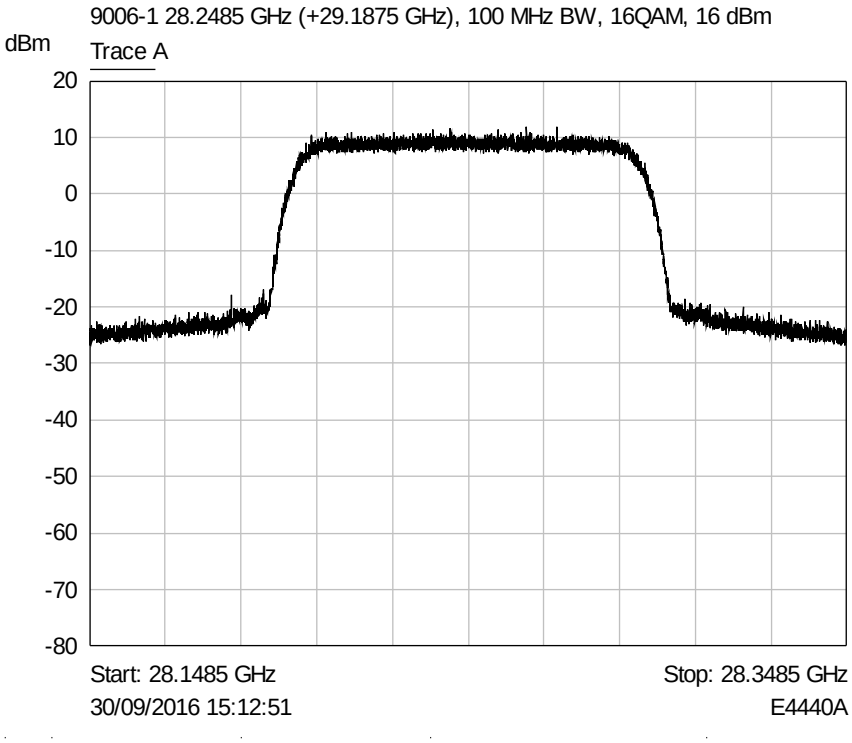
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 100 MHz, Modulation 16QAM, Channel 28.2485 GHz (+27.6045 GHz)



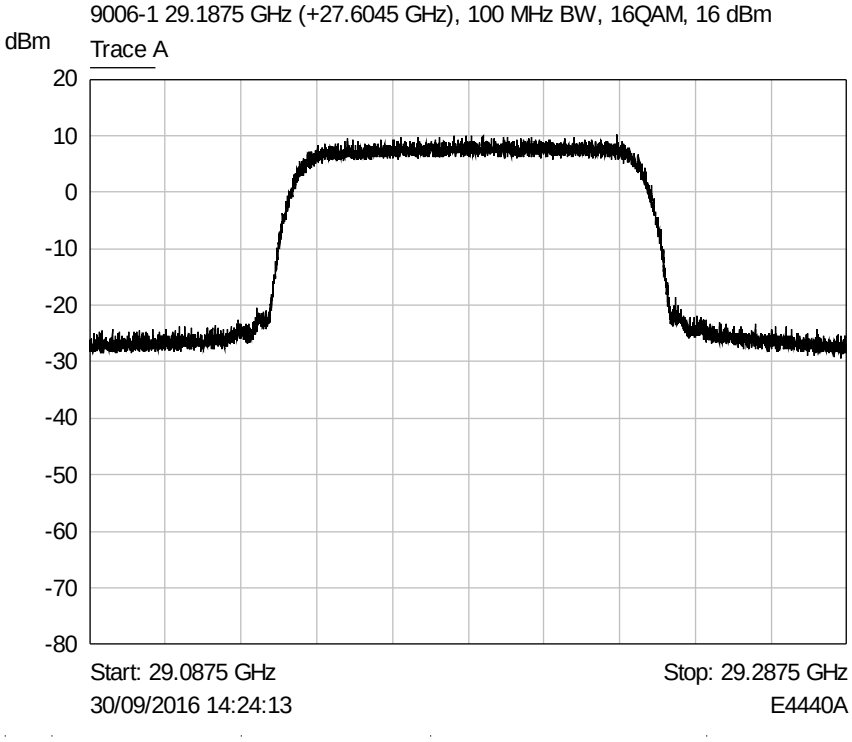
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 100 MHz, Modulation 16QAM, Channel 28.2485 GHz (+29.1875 GHz)



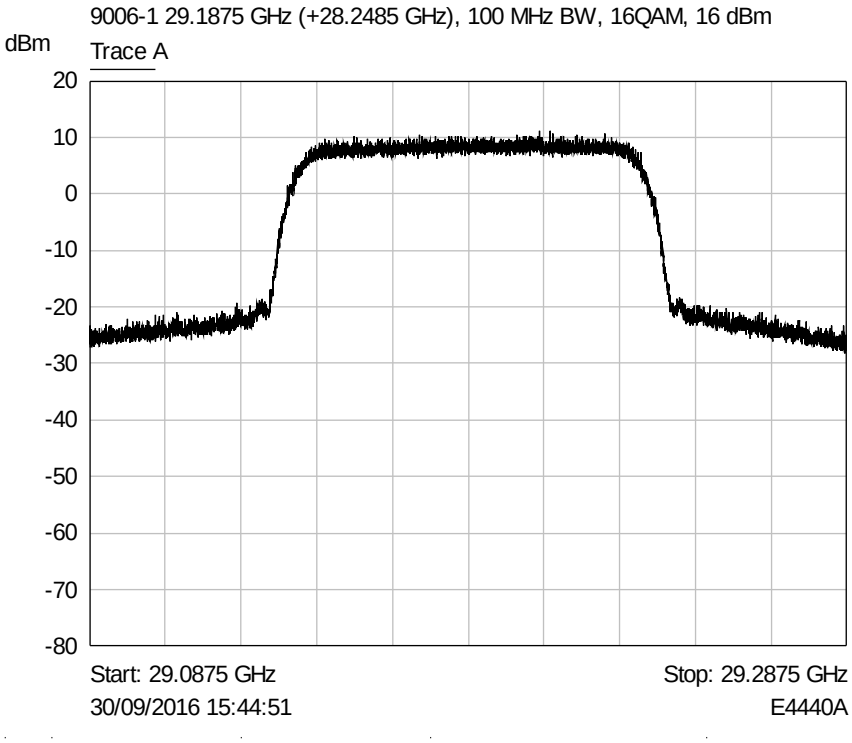
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 100 MHz, Modulation 16QAM, Channel 29.1875 GHz (+27.6045 GHz)



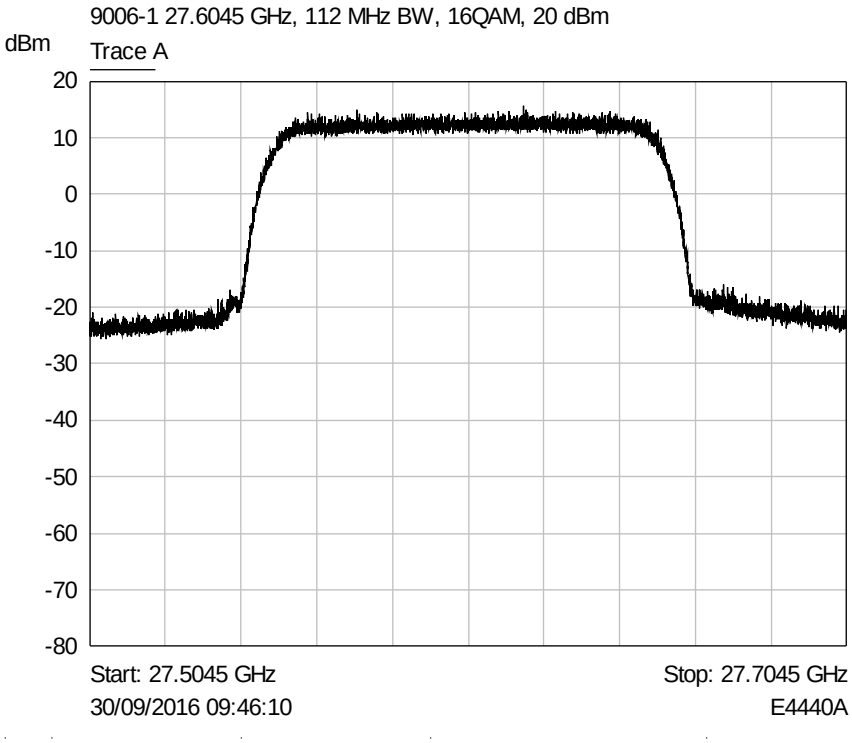
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 100 MHz, Modulation 16QAM, Channel 29.1875 GHz (+28.2485 GHz)



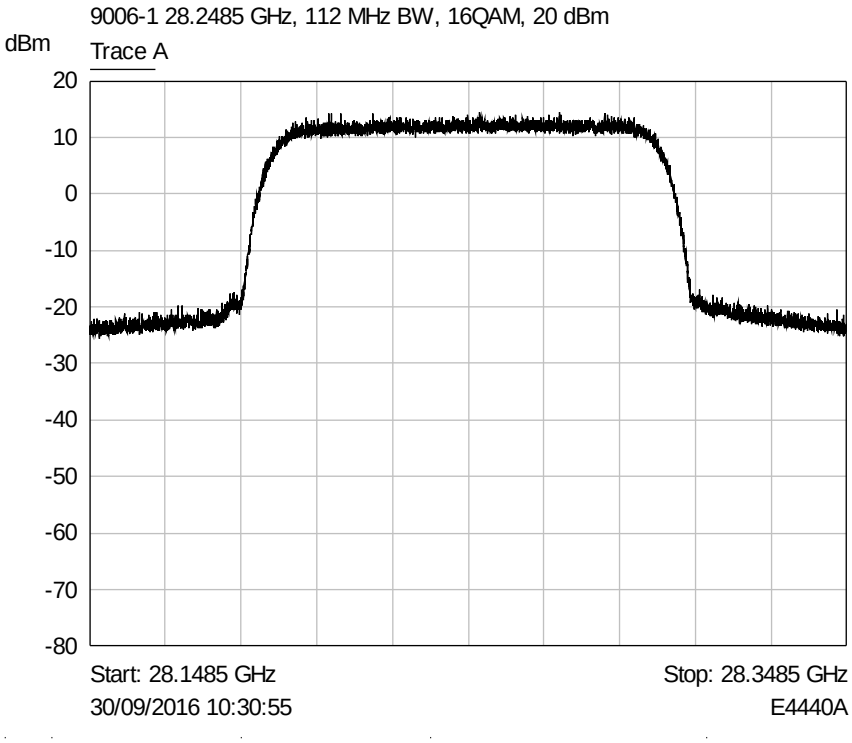
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20 dBm, Channel Spacing 112 MHz, Modulation 16QAM, Channel 27.6045 GHz



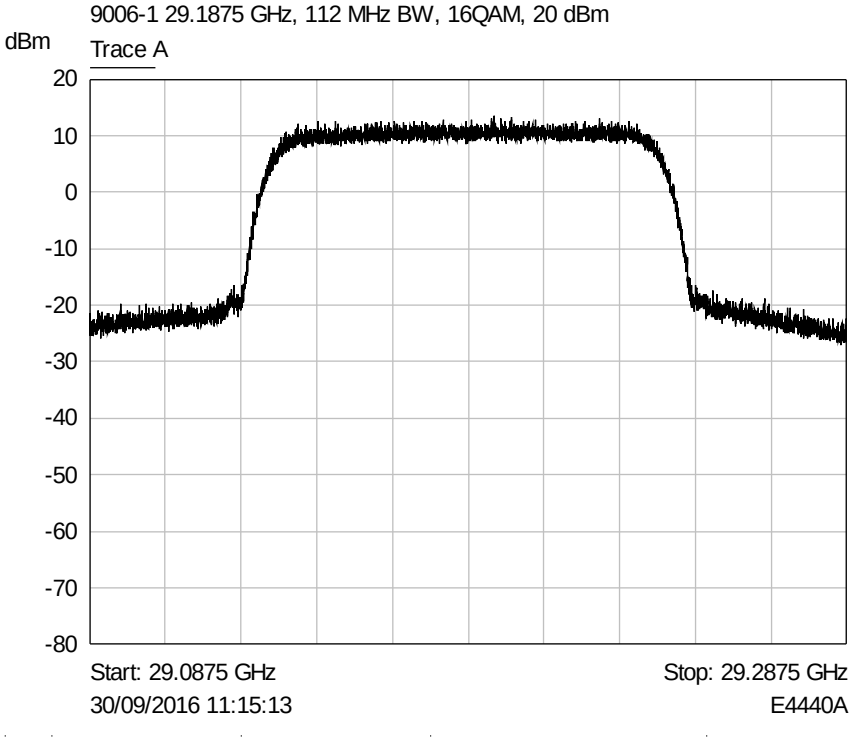
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20 dBm, Channel Spacing 112 MHz, Modulation 16QAM, Channel 28.2485 GHz



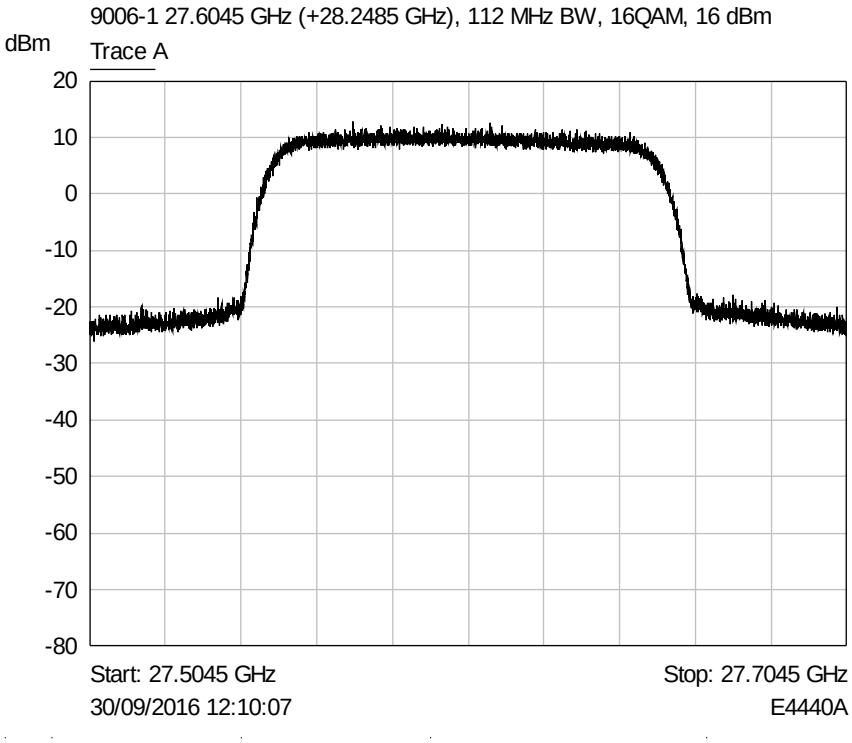
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 20 dBm, Channel Spacing 112 MHz, Modulation 16QAM, Channel 29.1875 GHz



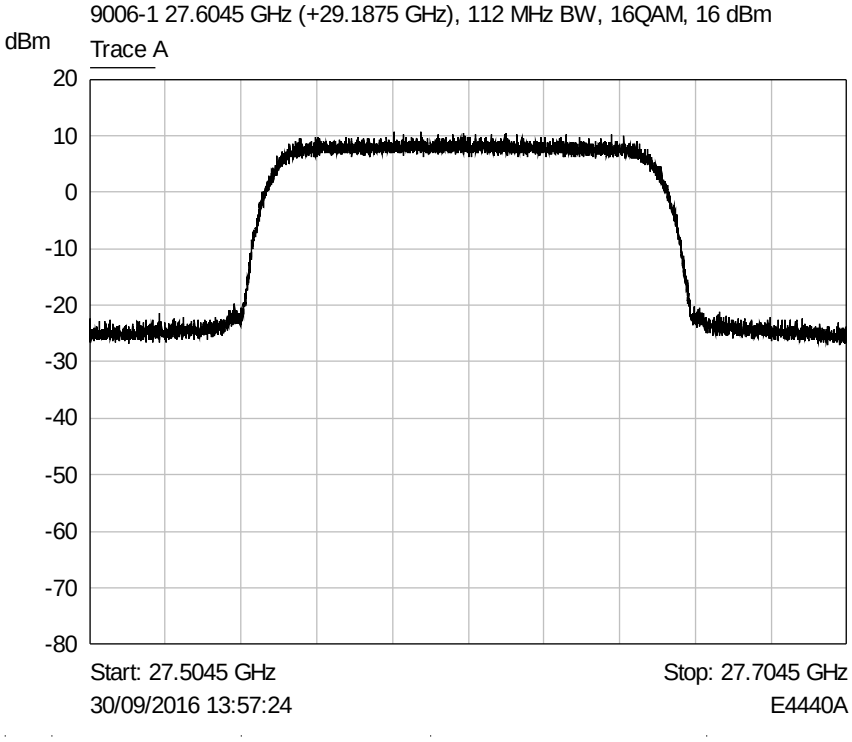
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 112 MHz, Modulation 16QAM, Channel 27.6045 GHz (+28.2485 GHz)



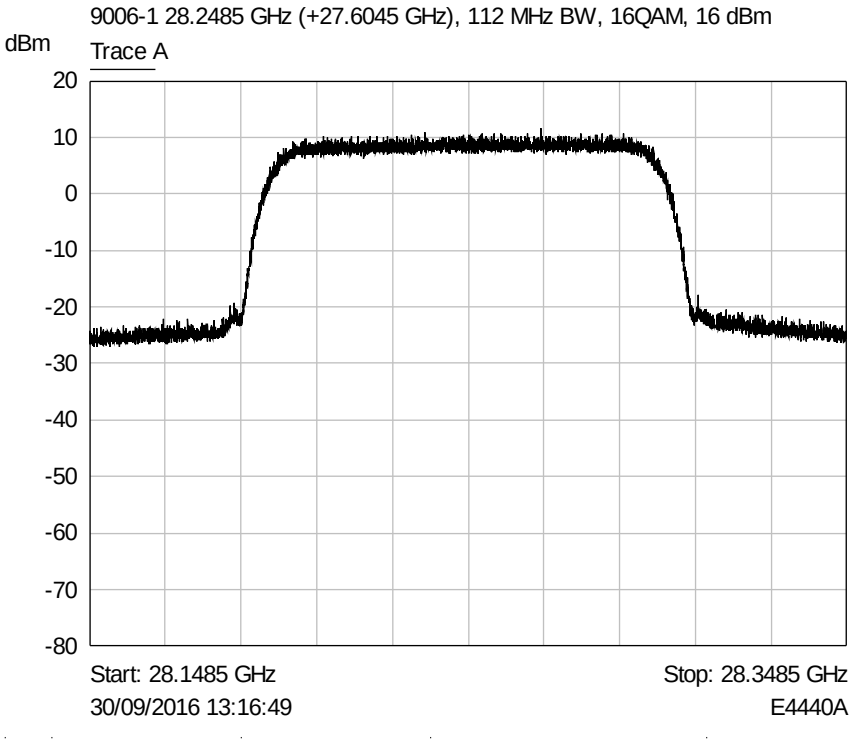
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 112 MHz, Modulation 16QAM, Channel 27.6045 GHz (+29.1875 GHz)



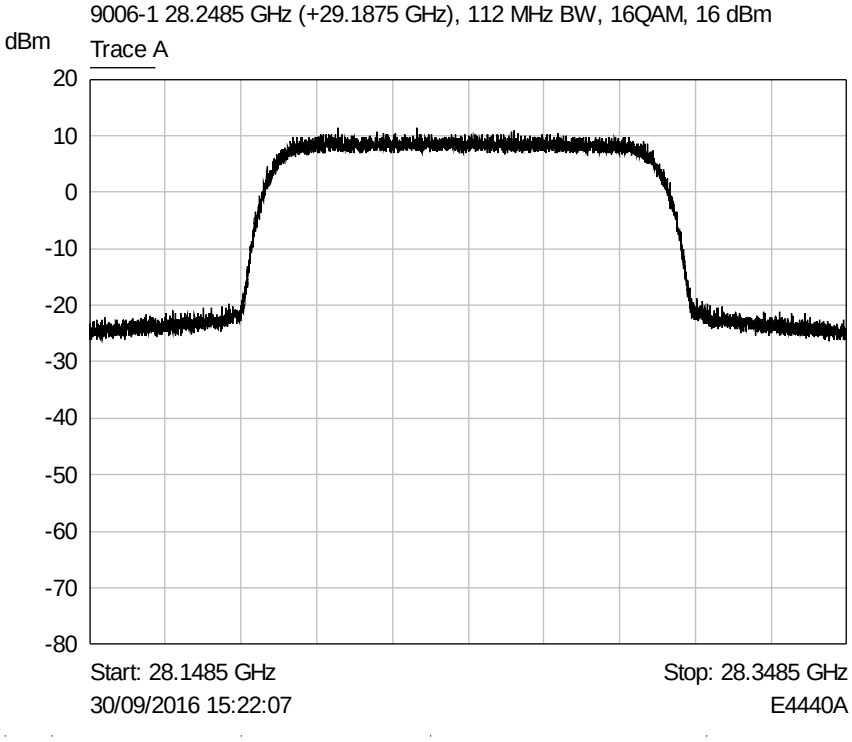
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 112 MHz, Modulation 16QAM, Channel 28.2485 GHz (+27.6045 GHz)



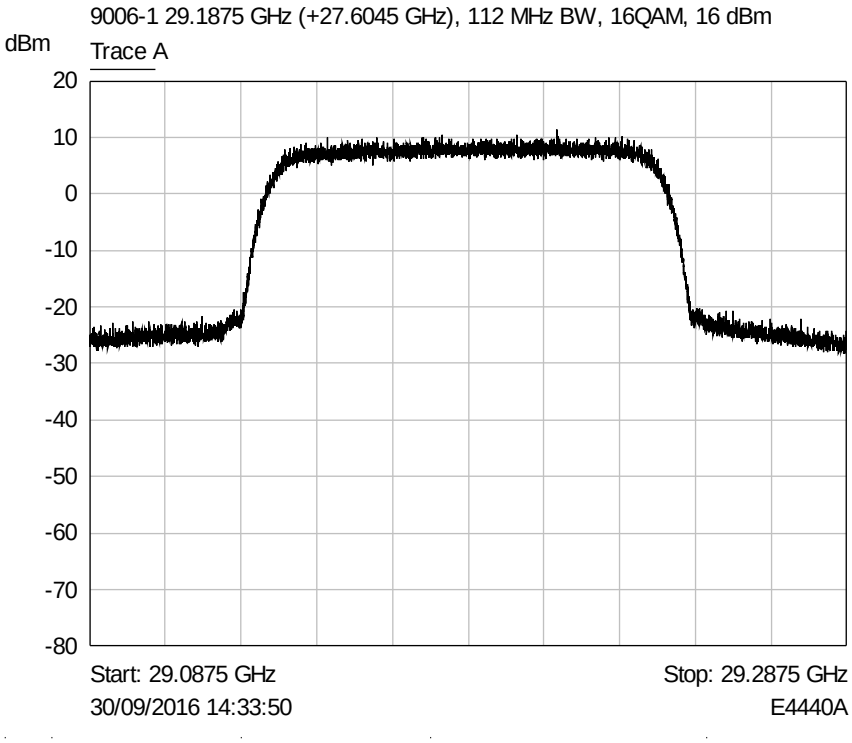
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 112 MHz, Modulation 16QAM, Channel 28.2485 GHz (+29.1875 GHz)



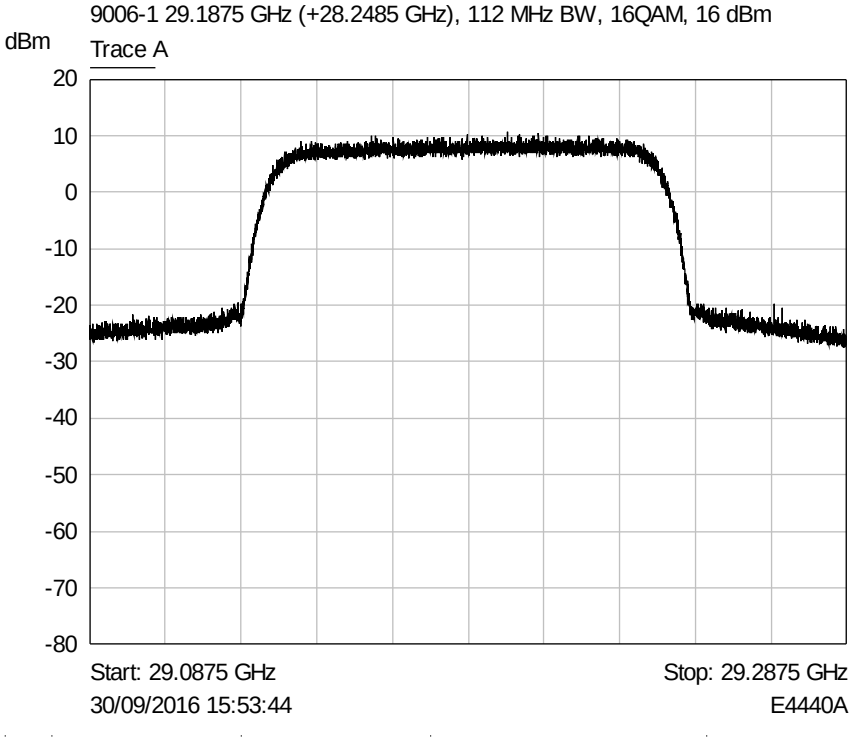
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 112 MHz, Modulation 16QAM, Channel 29.1875 GHz (+27.6045 GHz)



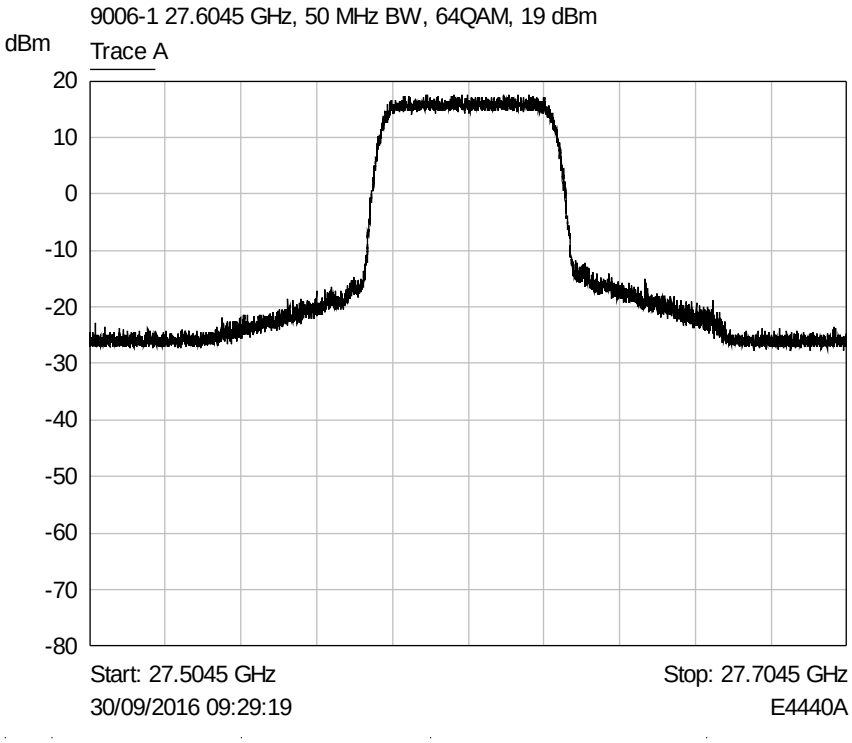
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 16 dBm, Channel Spacing 112 MHz, Modulation 16QAM, Channel 29.1875 GHz (+28.2485 GHz)



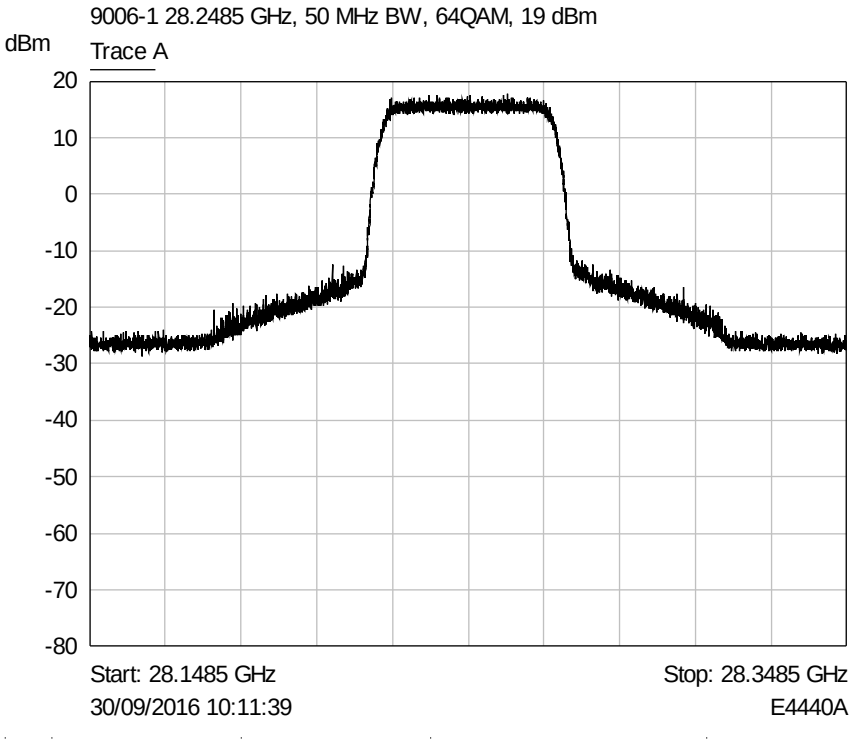
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 19 dBm, Channel Spacing 50 MHz, Modulation 64QAM, Channel 27.6045 GHz



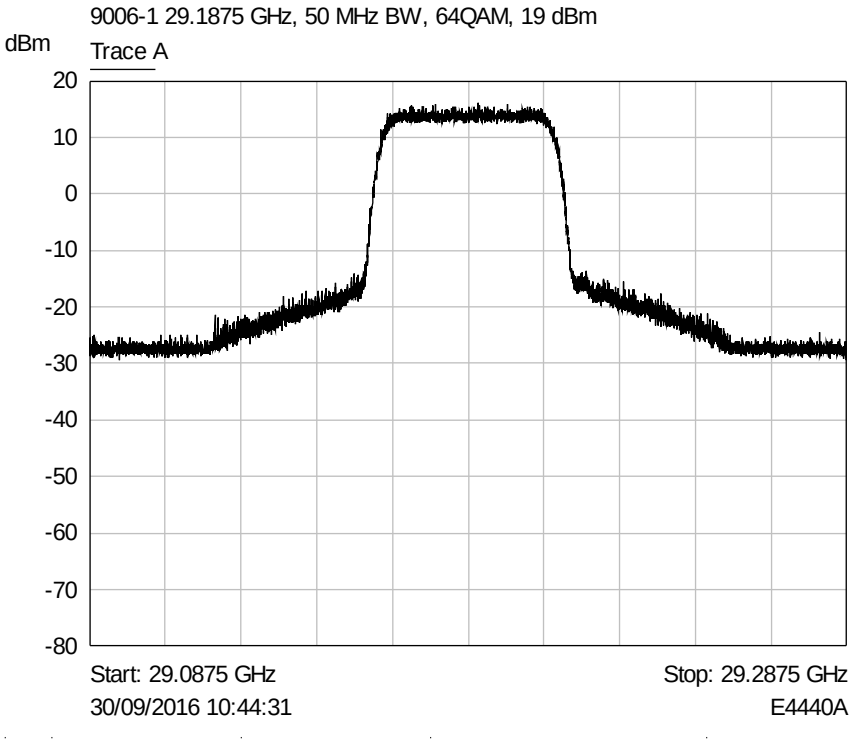
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 19 dBm, Channel Spacing 50 MHz, Modulation 64QAM, Channel 28.2485 GHz



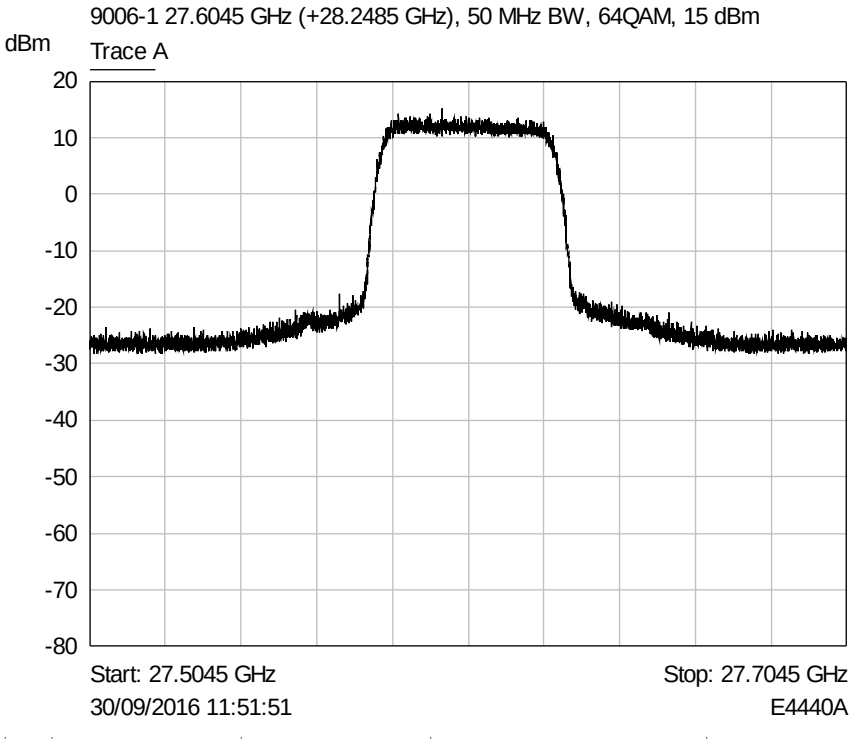
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 19 dBm, Channel Spacing 50 MHz, Modulation 64QAM, Channel 29.1875 GHz



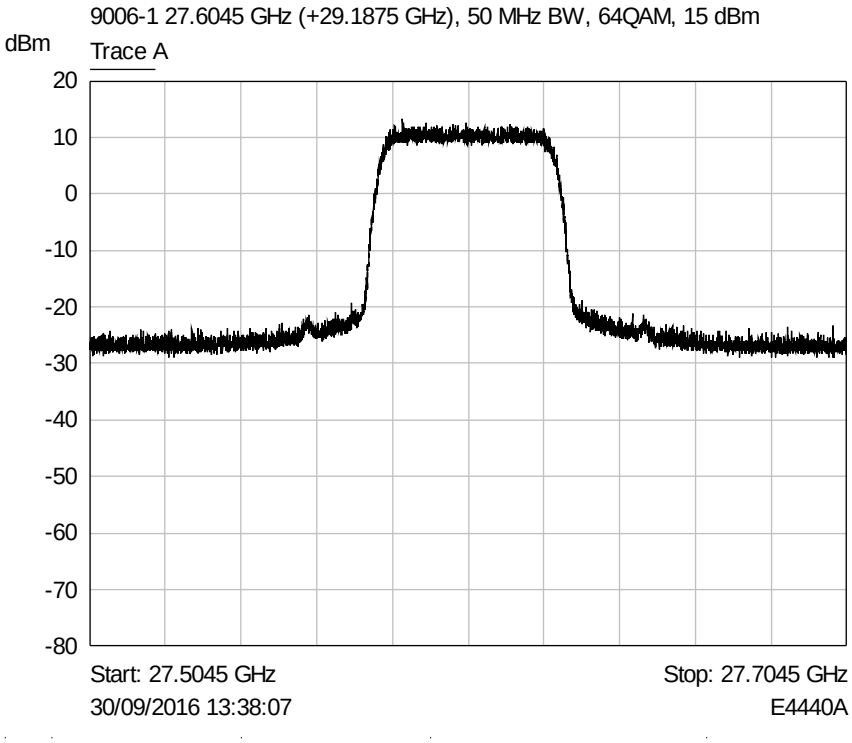
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 50 MHz, Modulation 64QAM, Channel 27.6045 GHz (+28.2485 GHz)



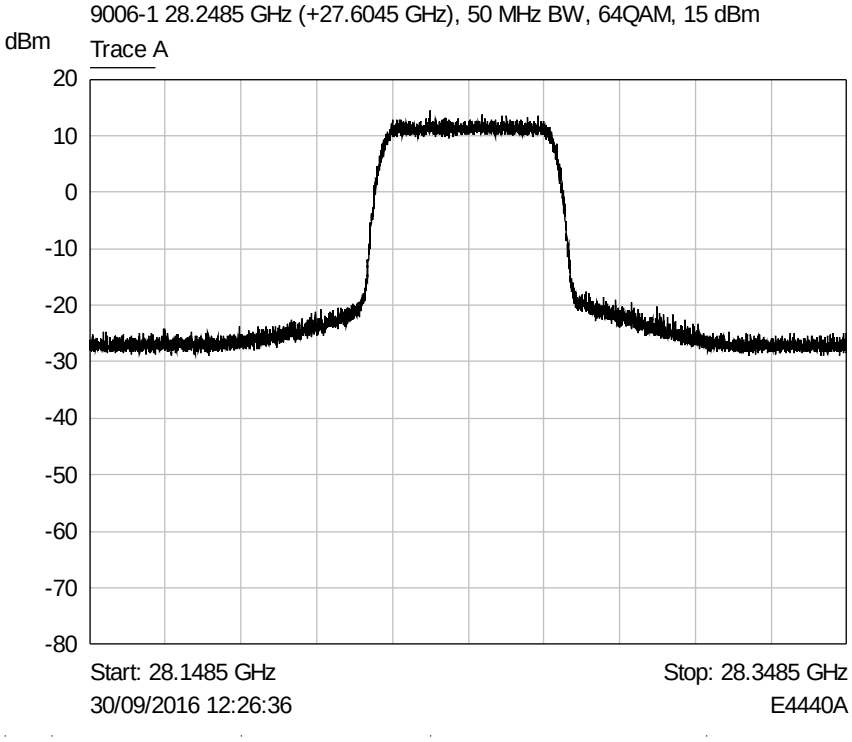
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 50 MHz, Modulation 64QAM, Channel 27.6045 GHz (+29.1875 GHz)



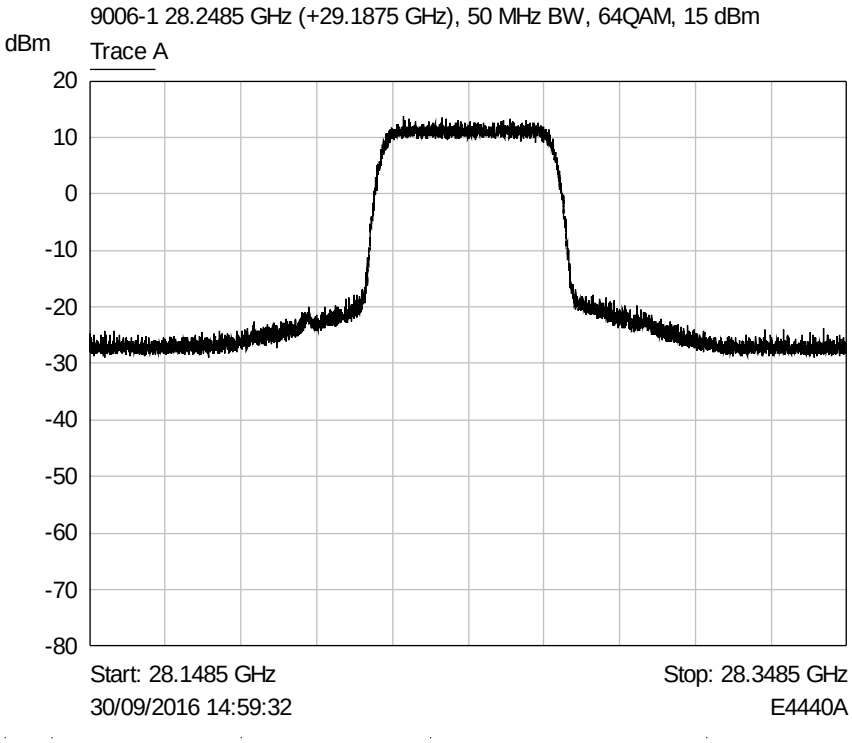
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 50 MHz, Modulation 64QAM, Channel 28.2485GHz (+27.6045 GHz)



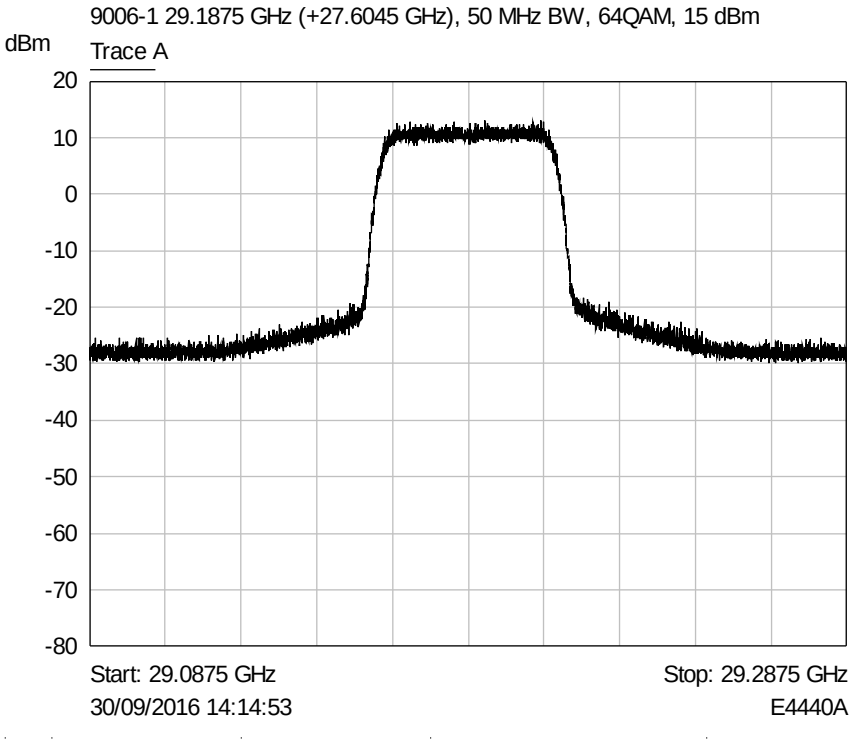
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 50 MHz, Modulation 64QAM, Channel 28.2485 GHz (+29.1875 GHz)



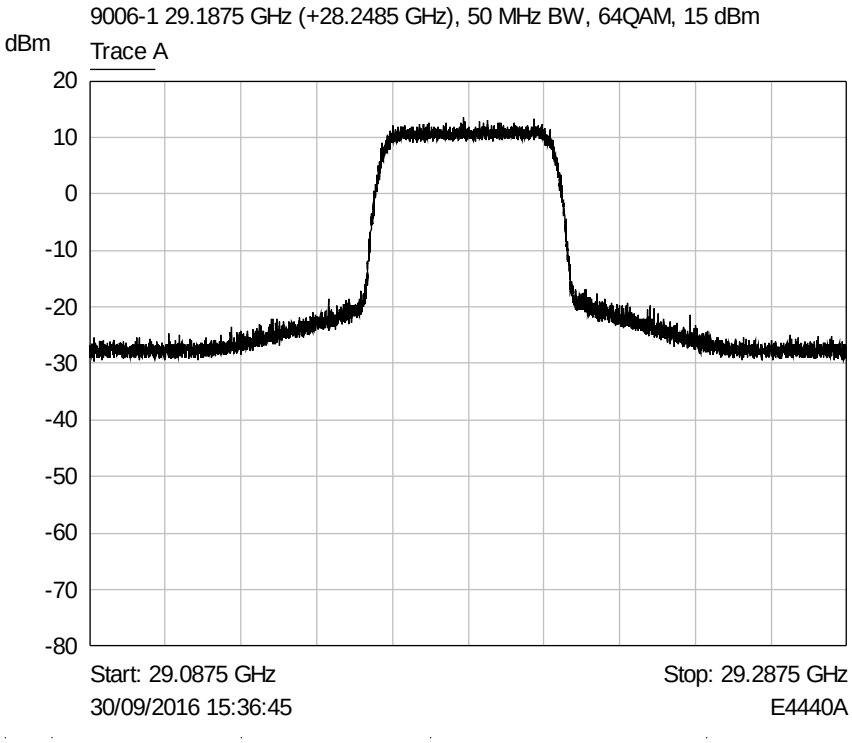
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 50 MHz, Modulation 64QAM, Channel 29.1875 GHz (+27.6045 GHz)



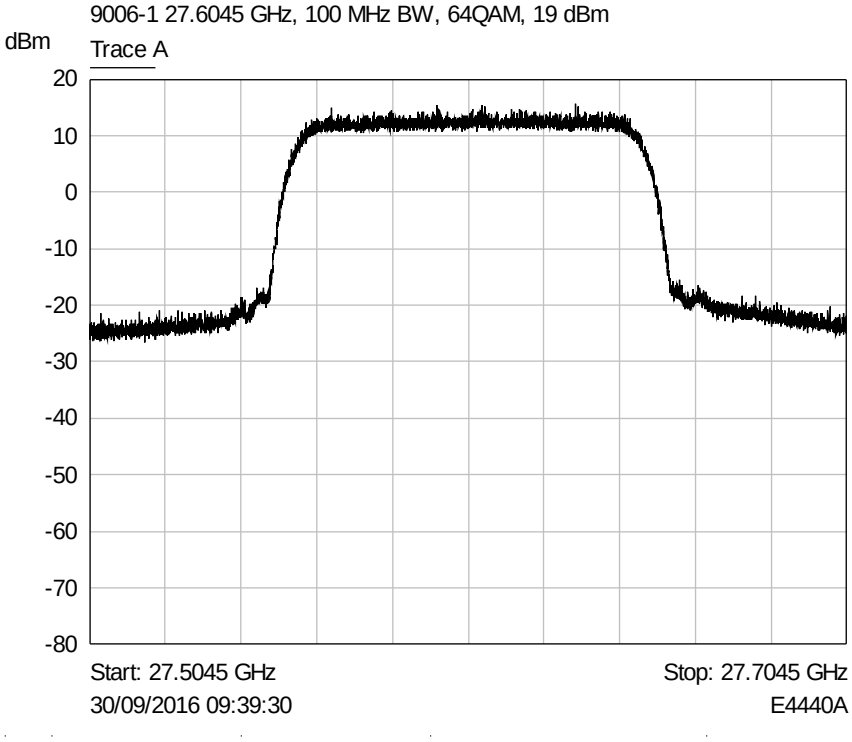
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 50 MHz, Modulation 64QAM, Channel 29.1875 GHz (+28.2485 GHz)



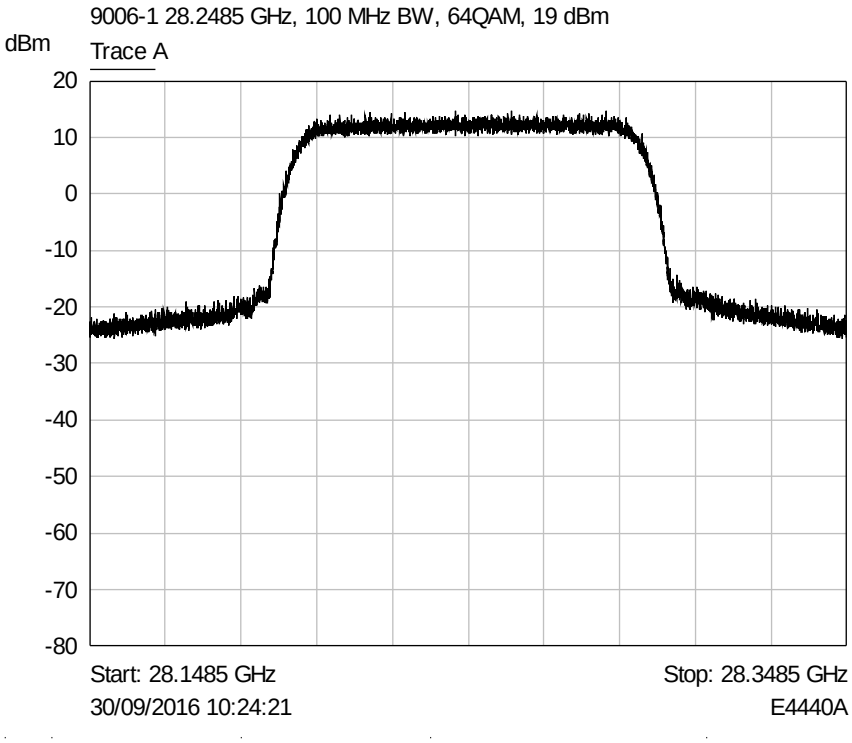
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 19 dBm, Channel Spacing 100 MHz, Modulation 64QAM, Channel 27.6045 GHz



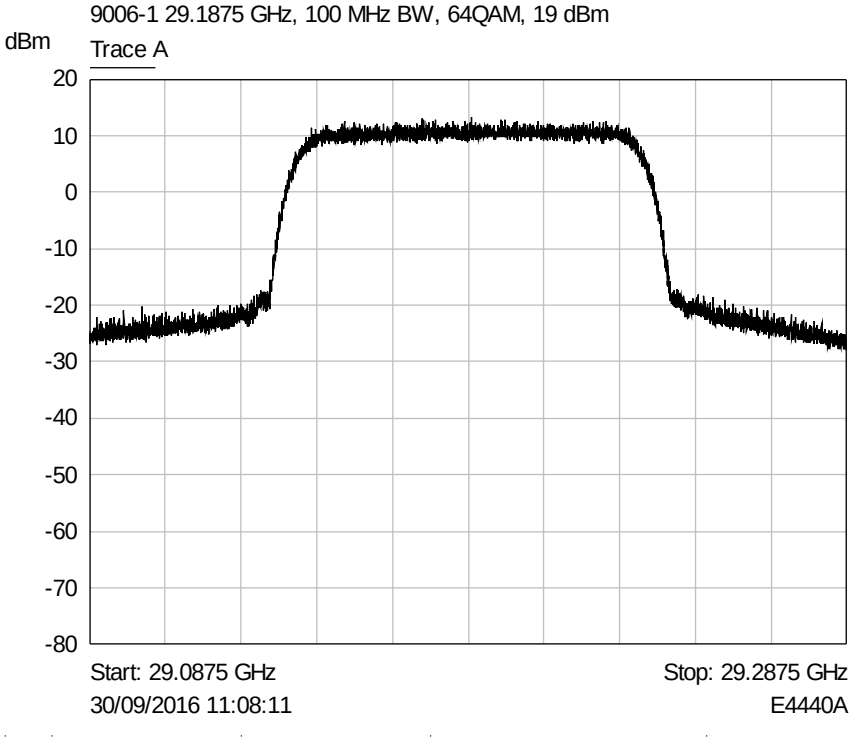
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 19 dBm, Channel Spacing 100 MHz, Modulation 64QAM, Channel 28.2485 GHz



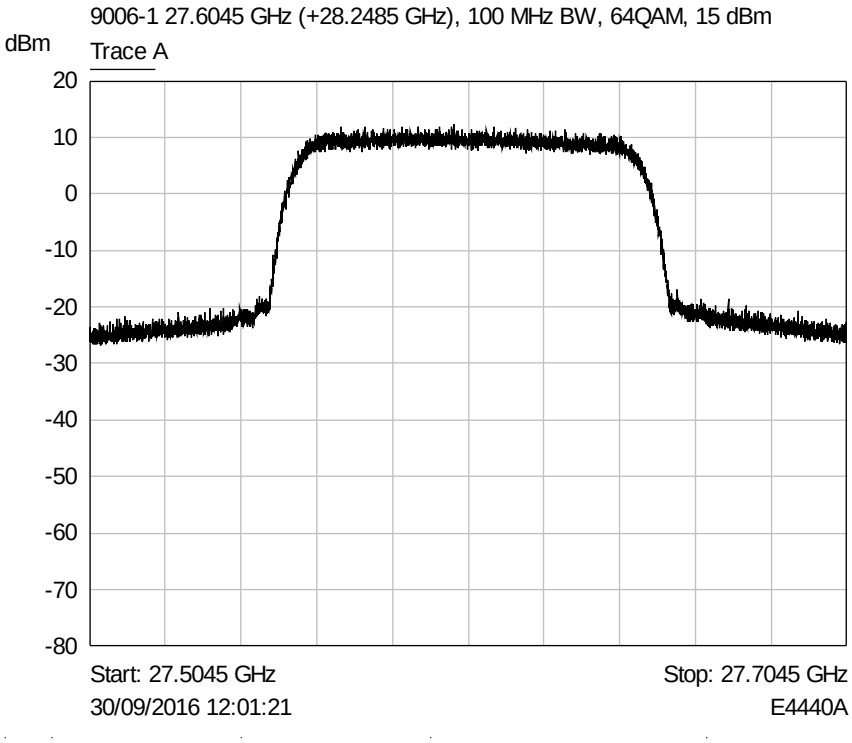
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 19 dBm, Channel Spacing 100 MHz, Modulation 64QAM, Channel 29.1875 GHz



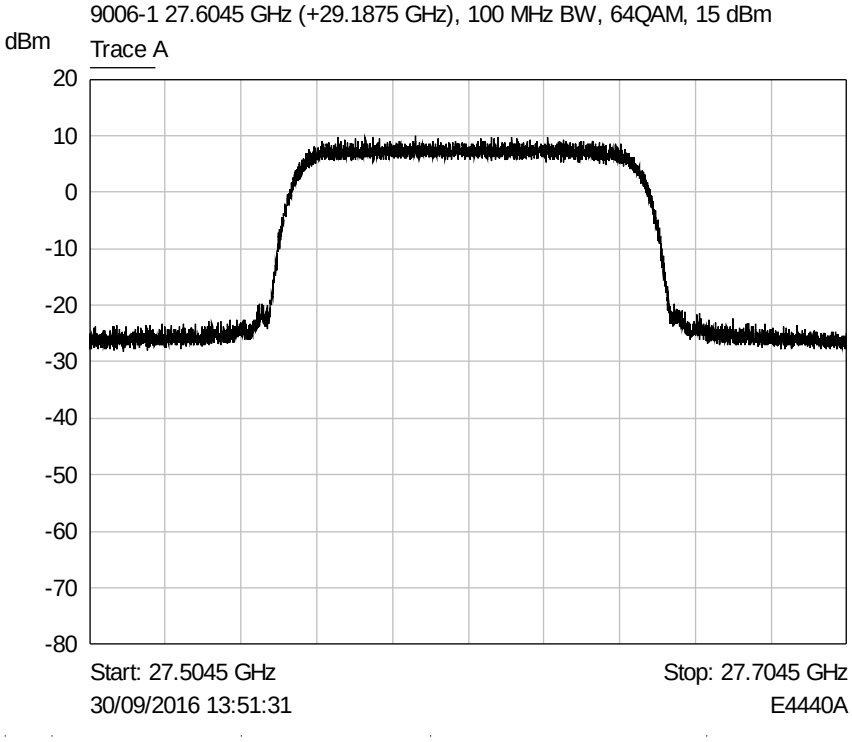
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 100 MHz, Modulation 64QAM, Channel 27.6045 GHz (+28.2485 GHz)



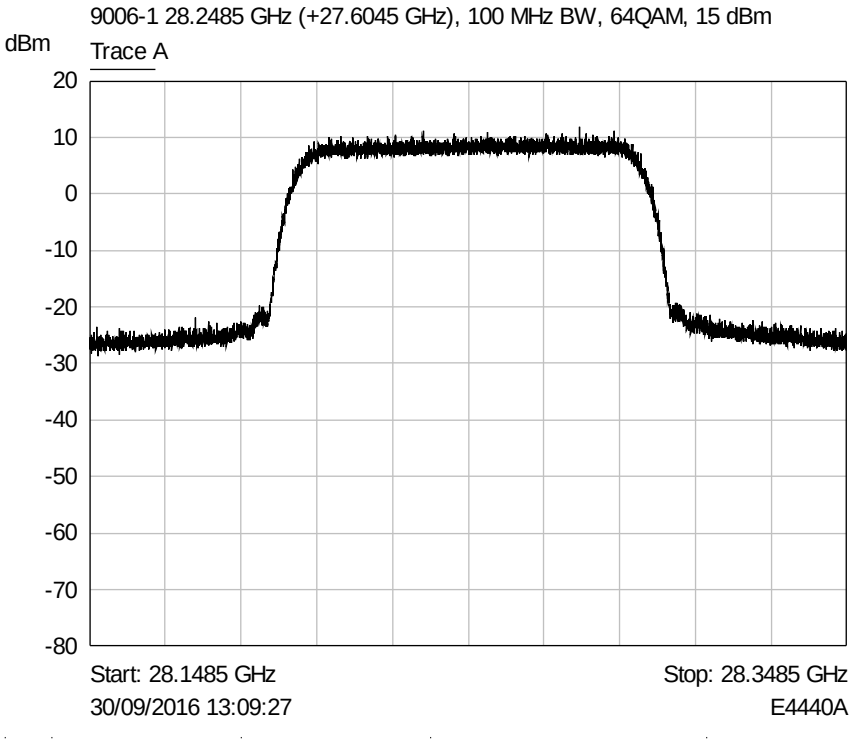
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 100 MHz, Modulation 64QAM, Channel 27.6045 GHz (+29.1875 GHz)



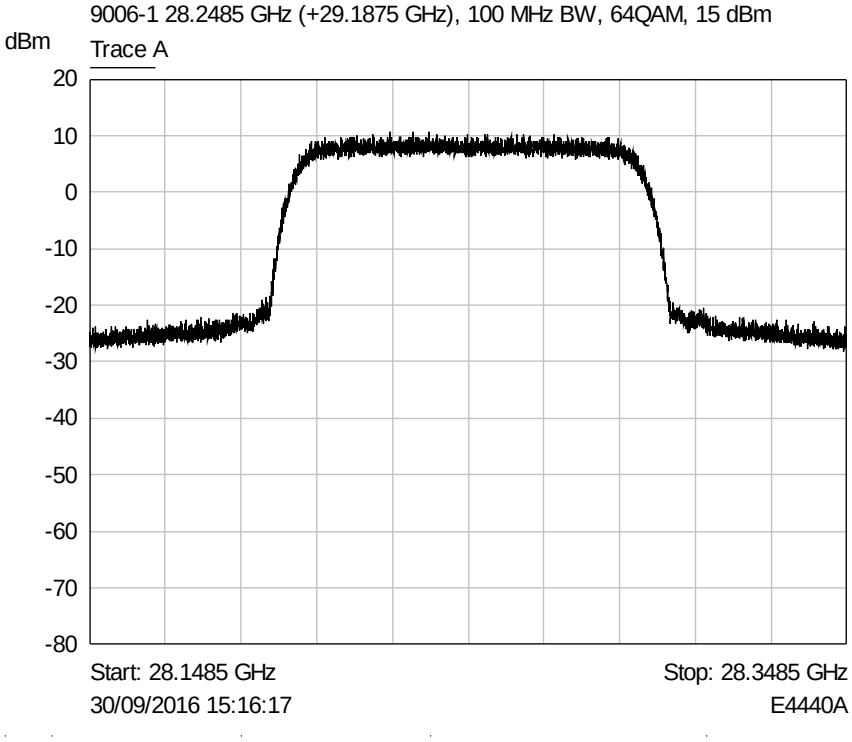
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 100 MHz, Modulation 64QAM, Channel 28.2485 GHz (+27.6045 GHz)



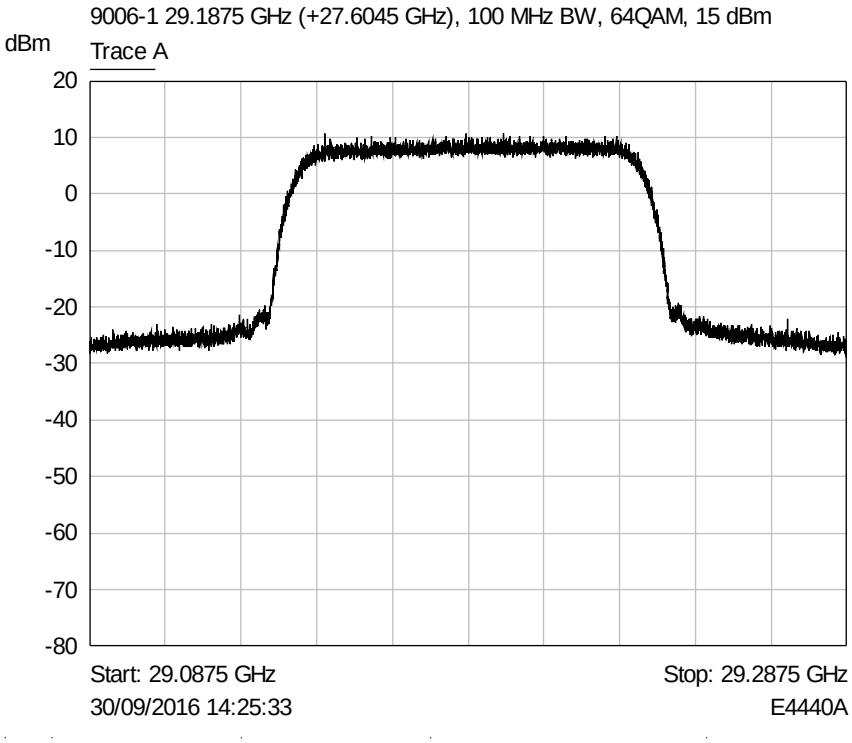
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 100 MHz, Modulation 64QAM, Channel 28.2485 GHz (+29.1875 GHz)



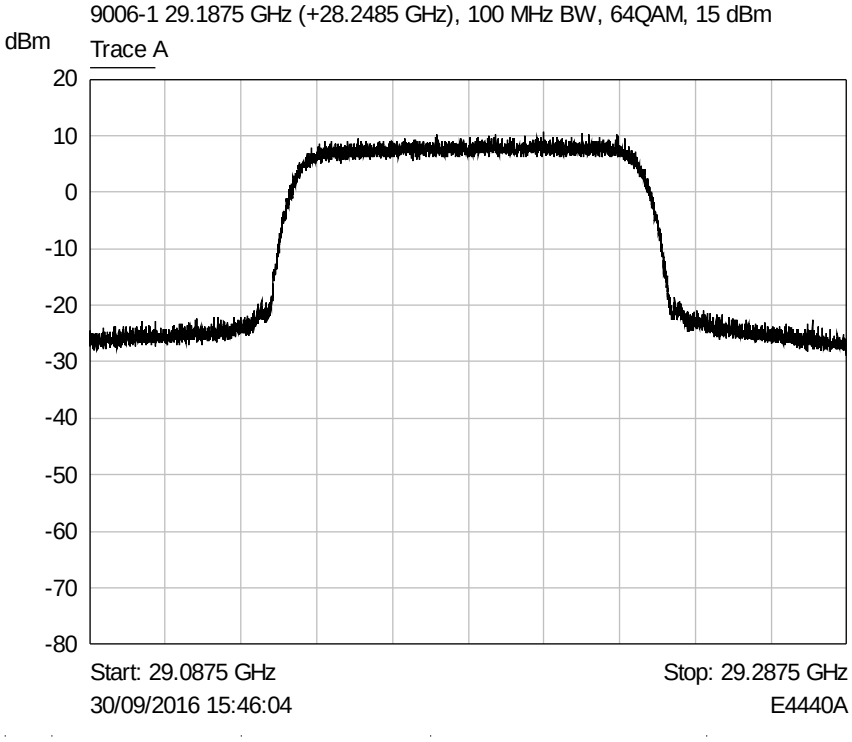
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 100 MHz, Modulation 64QAM, Channel 29.1875 GHz (+27.6045 GHz)



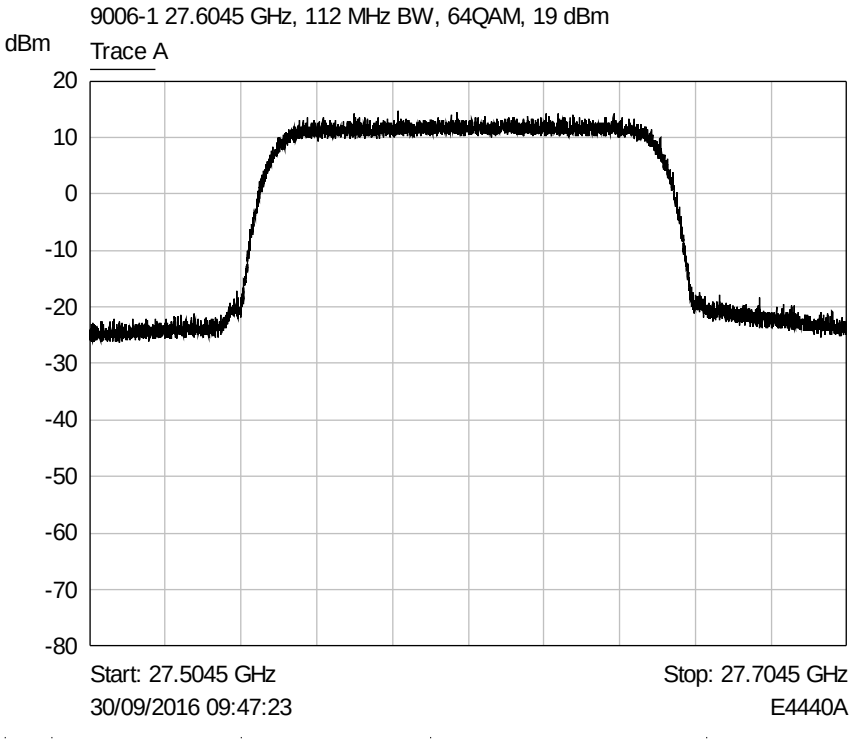
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 100 MHz, Modulation 64QAM, Channel 29.1875 GHz (+28.2485 GHz)



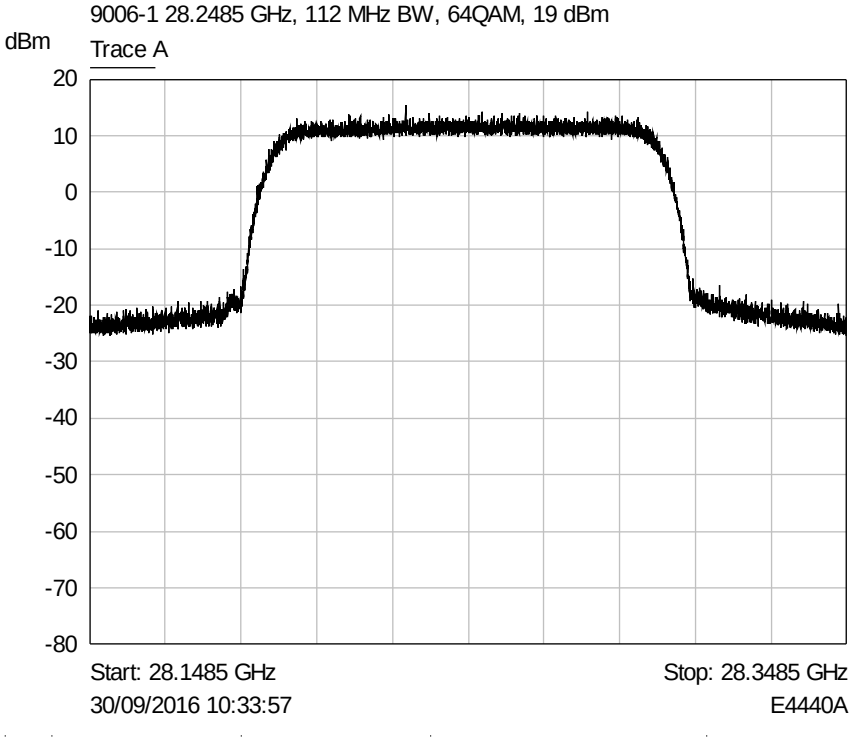
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 19 dBm, Channel Spacing 112 MHz, Modulation 64QAM, Channel 27.6045 GHz



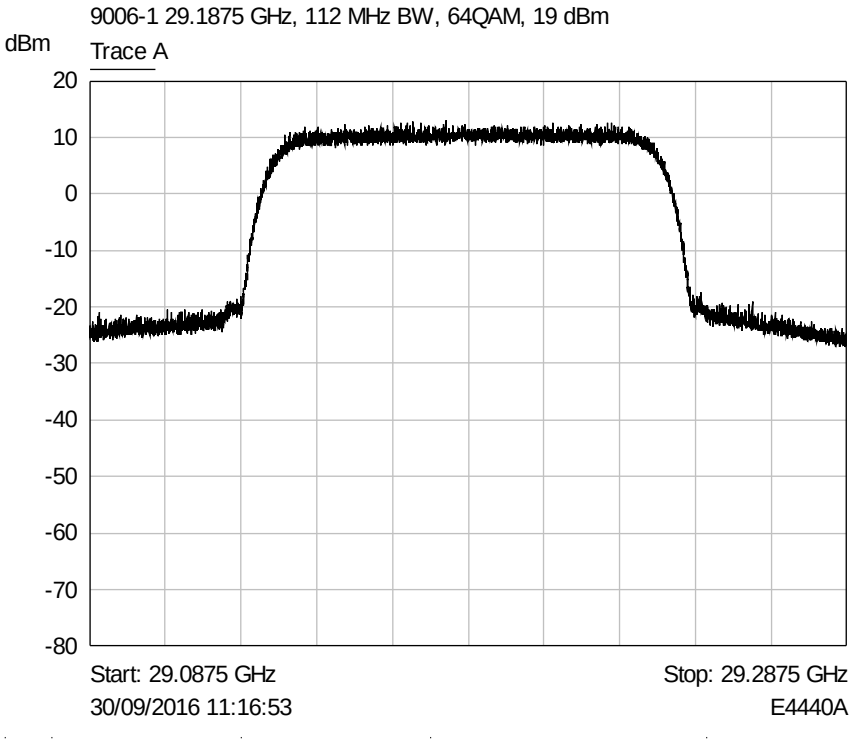
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 19 dBm, Channel Spacing 112 MHz, Modulation 64QAM, Channel 28.2485 GHz



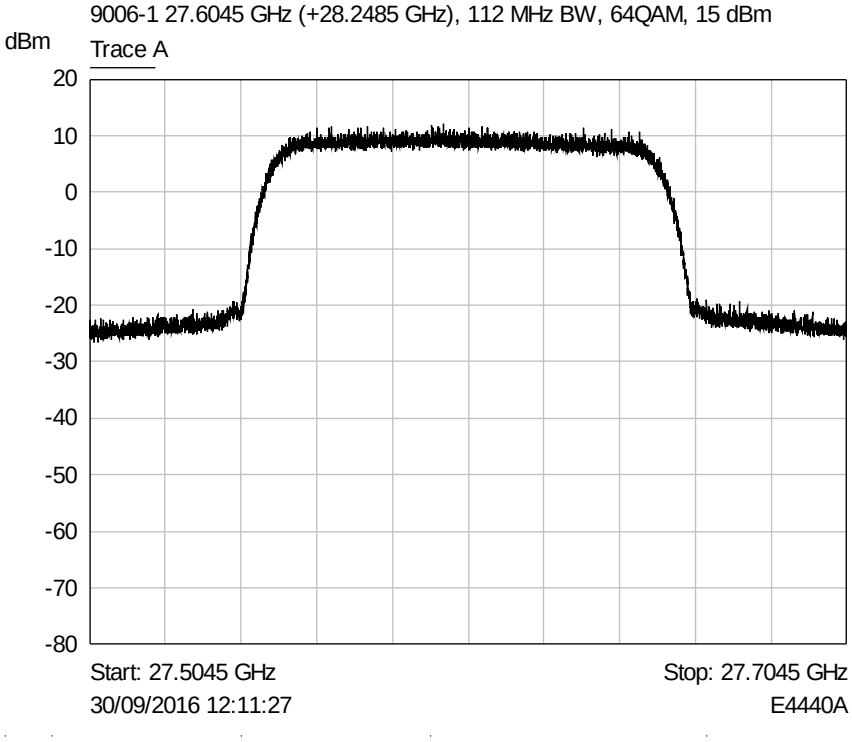
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 19 dBm, Channel Spacing 112 MHz, Modulation 64QAM, Channel 29.1875 GHz



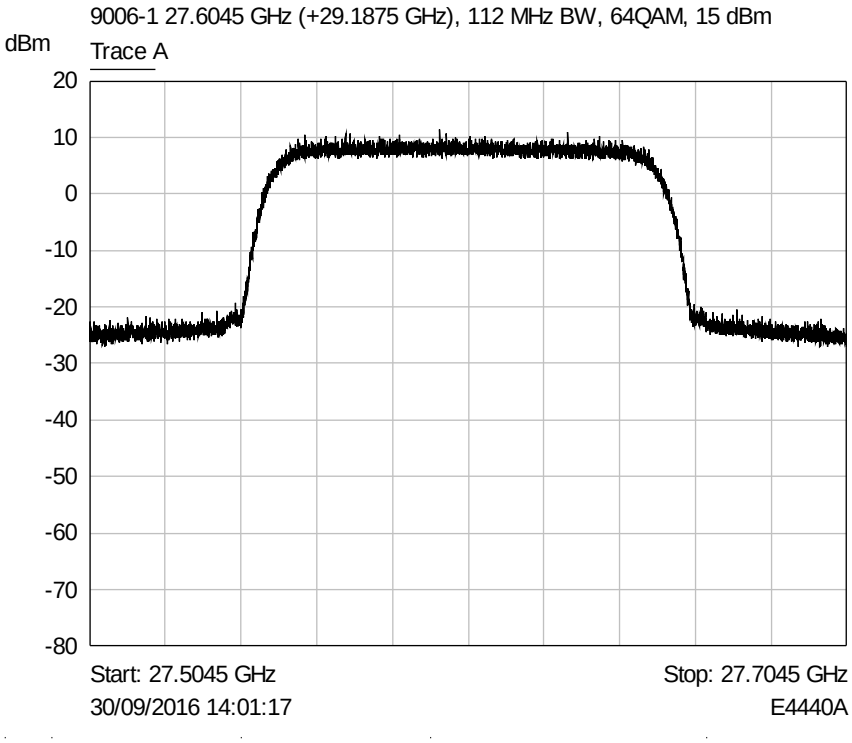
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 112 MHz, Modulation 64QAM, Channel 27.6045 GHz (+28.2485 GHz)



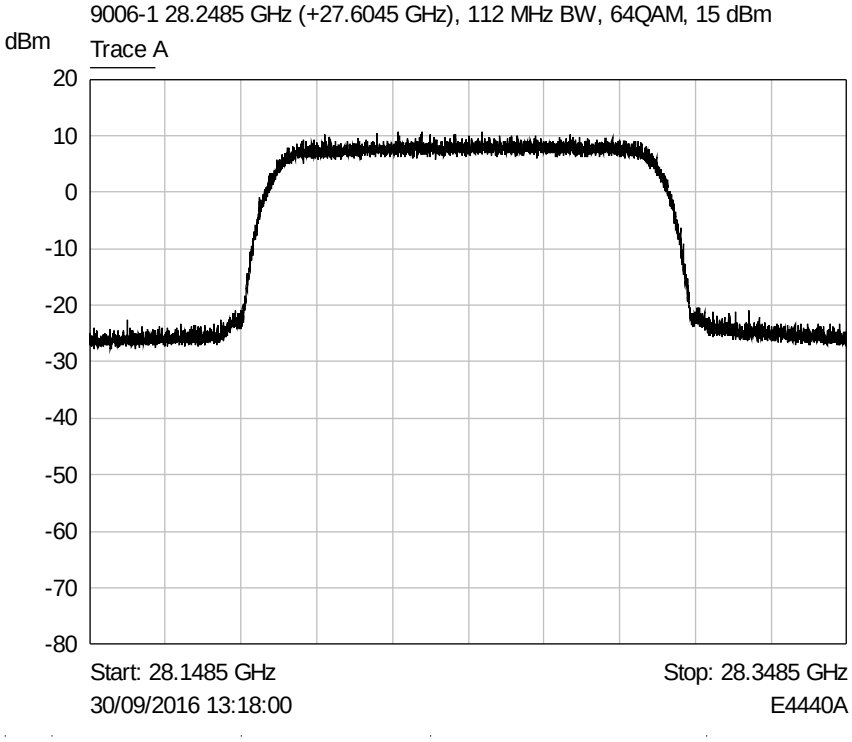
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 112 MHz, Modulation 64QAM, Channel 27.6045 GHz (+29.1875 GHz)



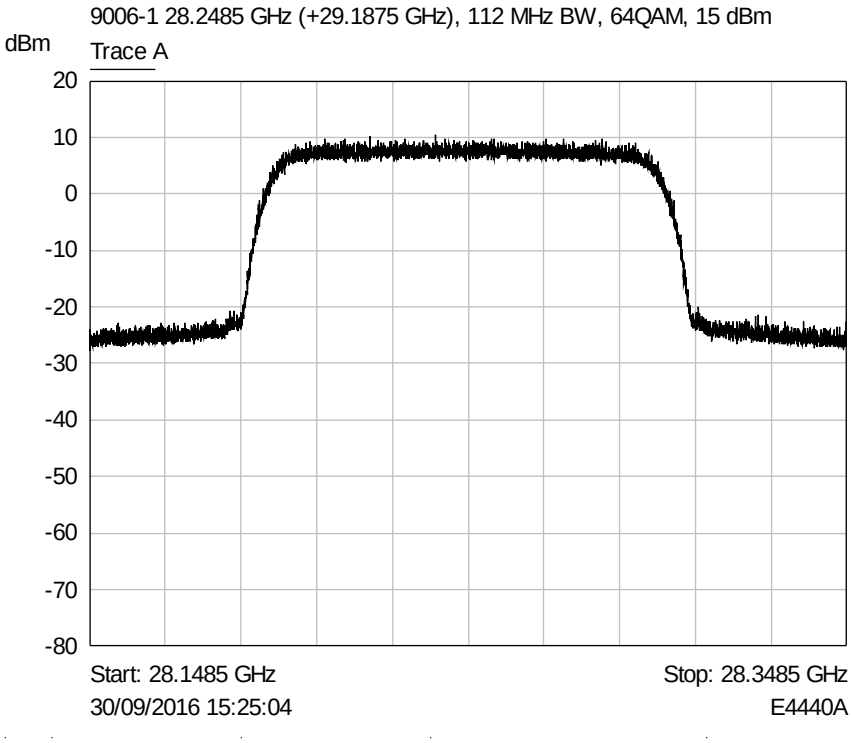
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 112 MHz, Modulation 64QAM, Channel 28.2485 GHz (+27.6045 GHz)



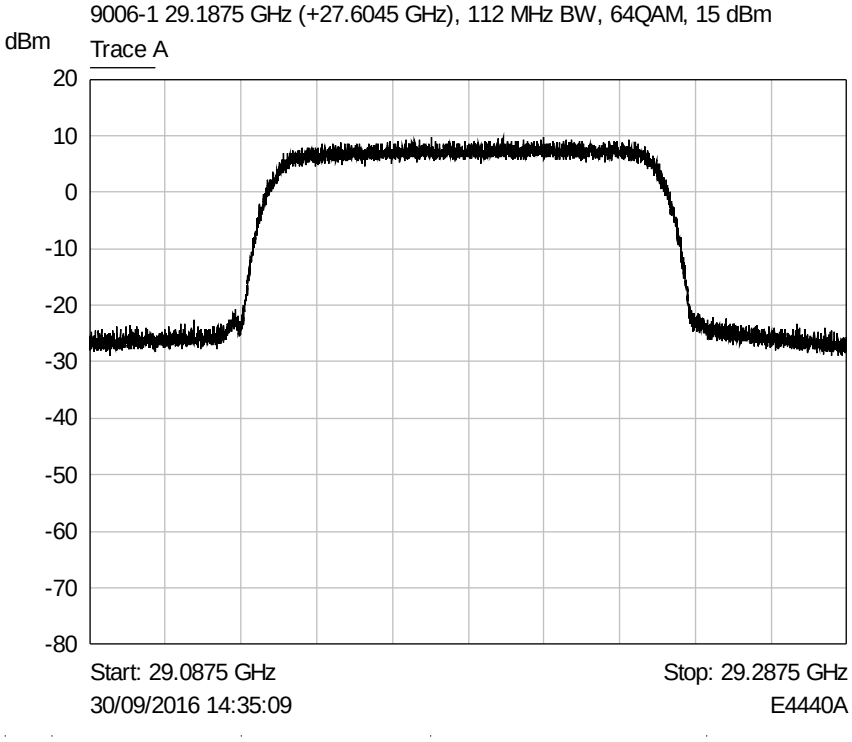
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 112 MHz, Modulation 64QAM, Channel 28.2485 GHz (+29.1875 GHz)



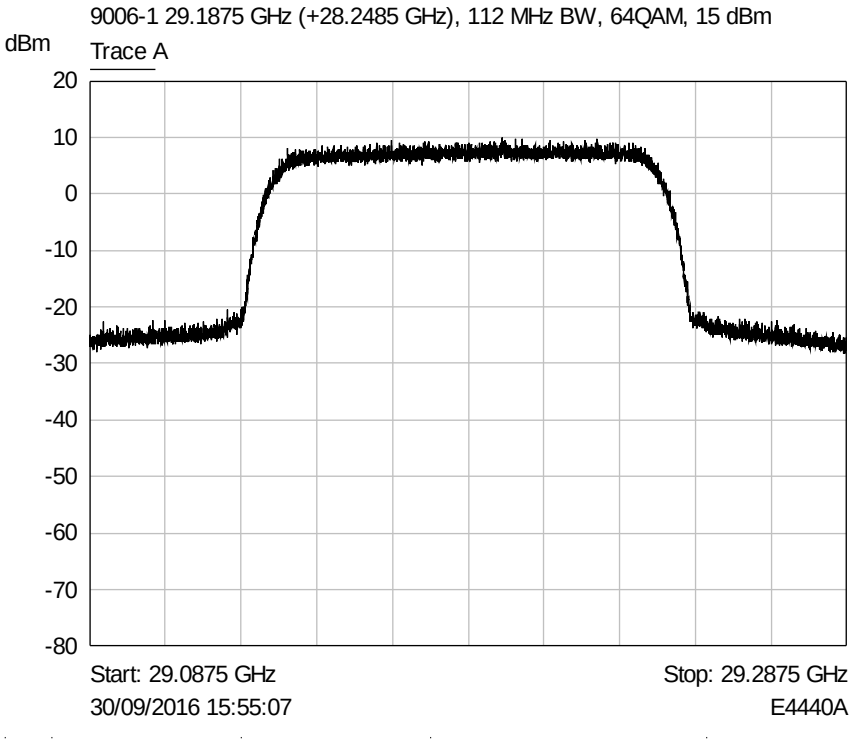
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 112 MHz, Modulation 64QAM, Channel 29.1875GHz (+27.6045 GHz)



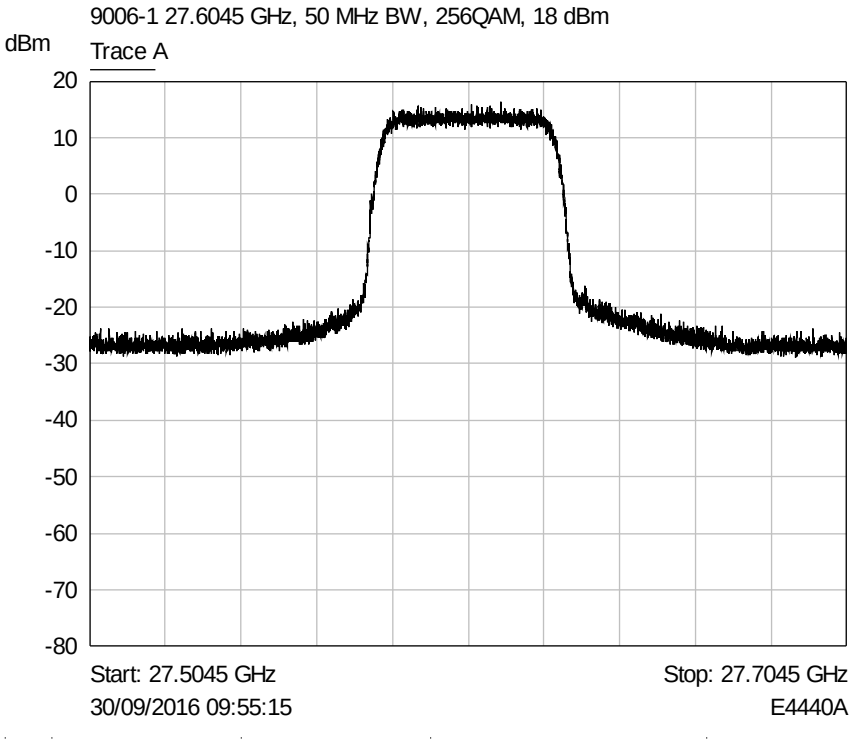
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 15 dBm, Channel Spacing 112 MHz, Modulation 64QAM, Channel 29.1875 GHz (+28.2485 GHz)



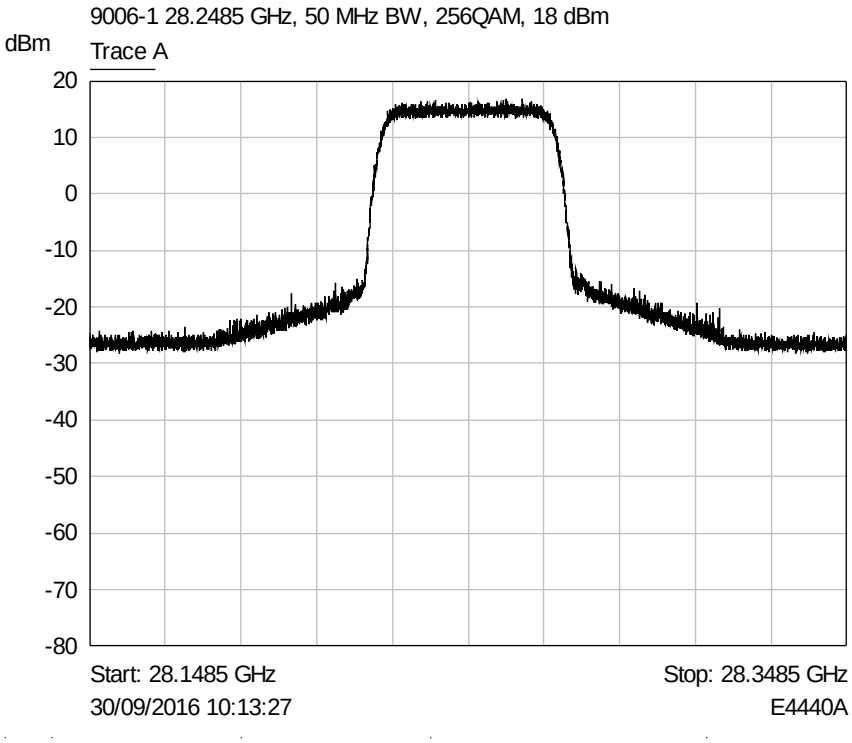
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 18 dBm, Channel Spacing 50 MHz, Modulation 256QAM, Channel 27.6045 GHz



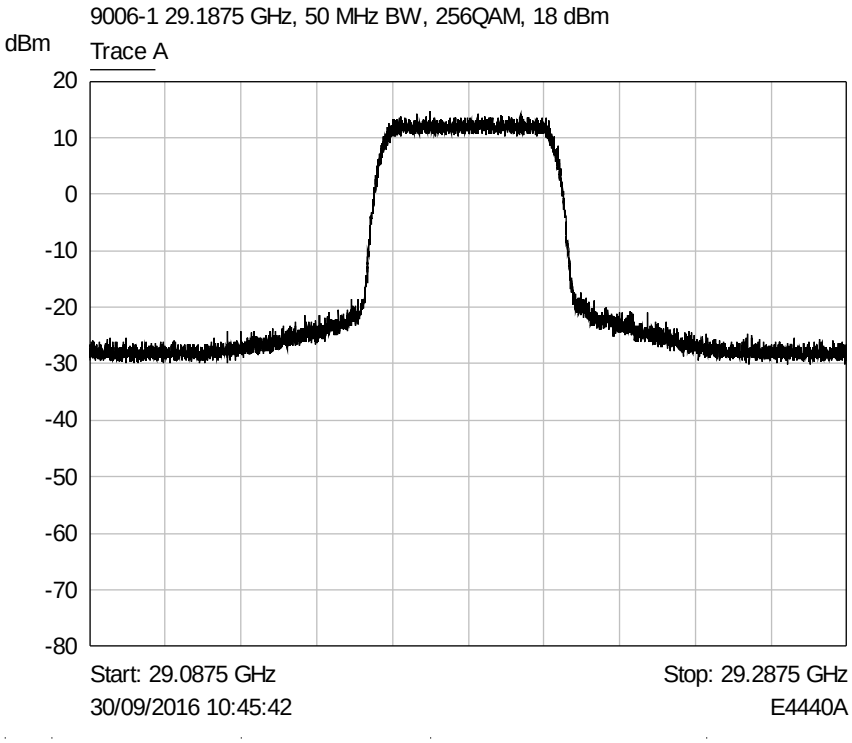
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 18 dBm, Channel Spacing 50 MHz, Modulation 256QAM, Channel 28.2485 GHz



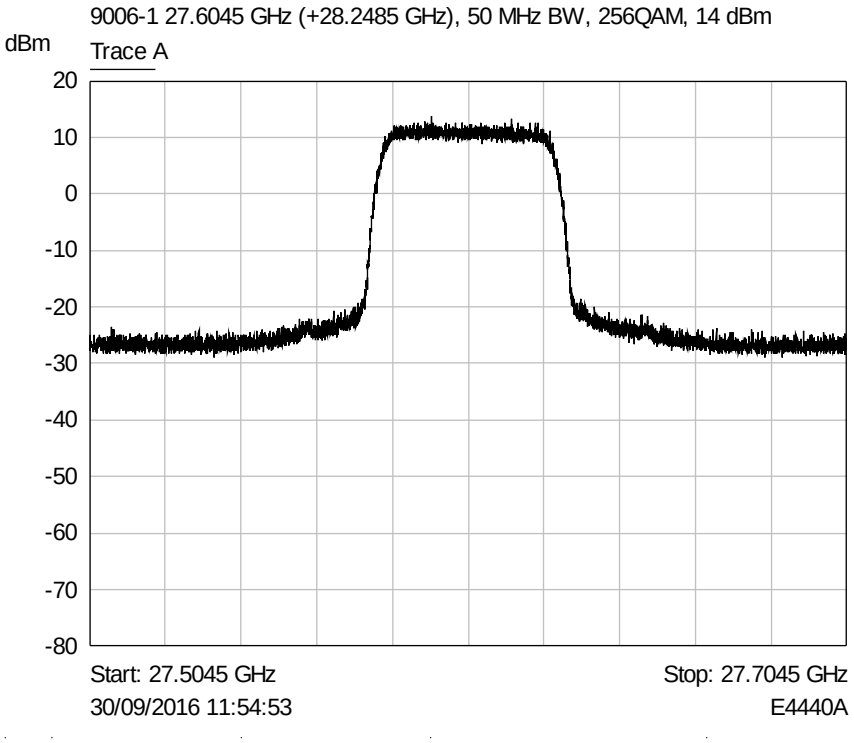
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 18 dBm, Channel Spacing 50 MHz, Modulation 256QAM, Channel 29.1875 GHz



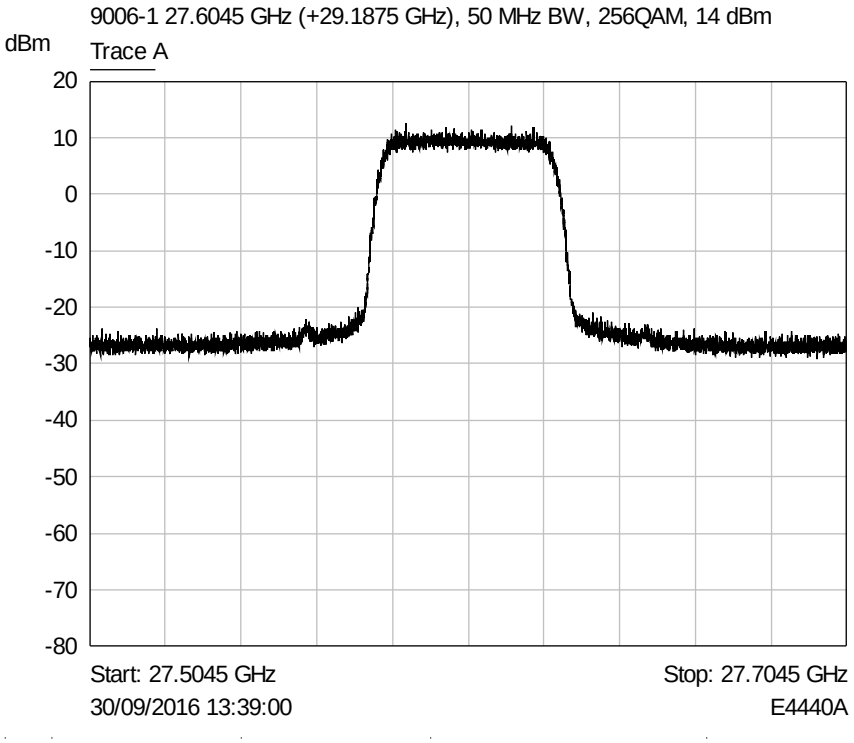
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 50 MHz, Modulation 256QAM, Channel 27.6045 GHz (+28.2485 GHz)



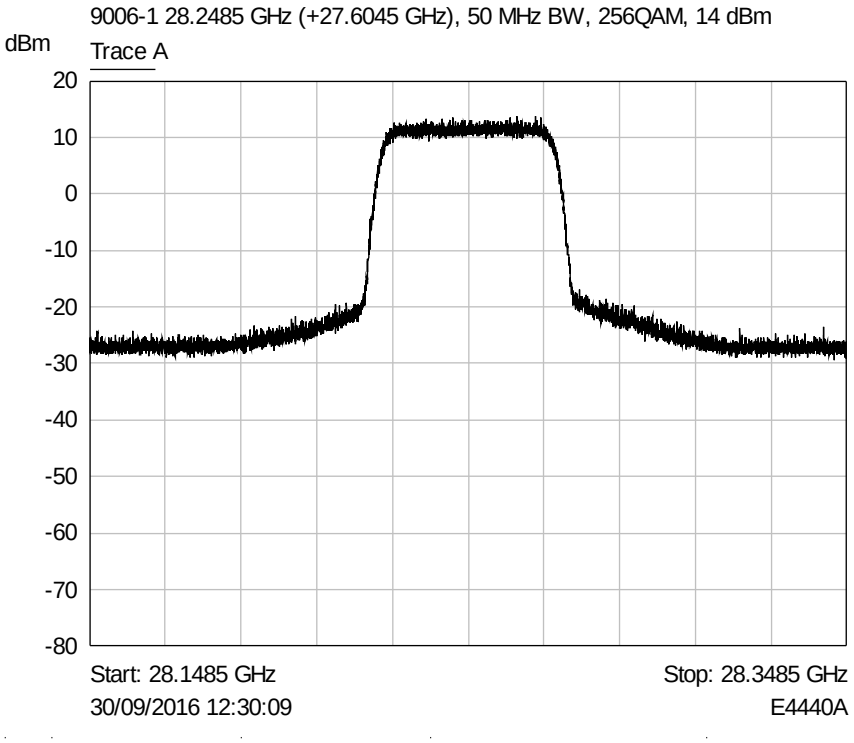
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 50 MHz, Modulation 256QAM, Channel 27.6045 GHz (+29.1875 GHz)



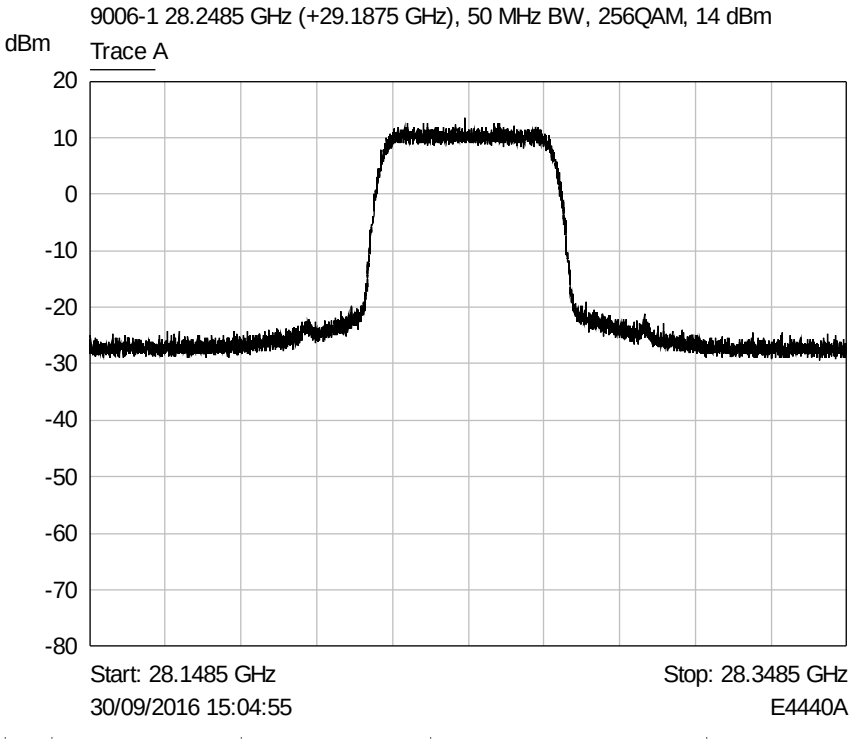
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 50 MHz, Modulation 256QAM, Channel 28.2485 GHz (+27.6045 GHz)



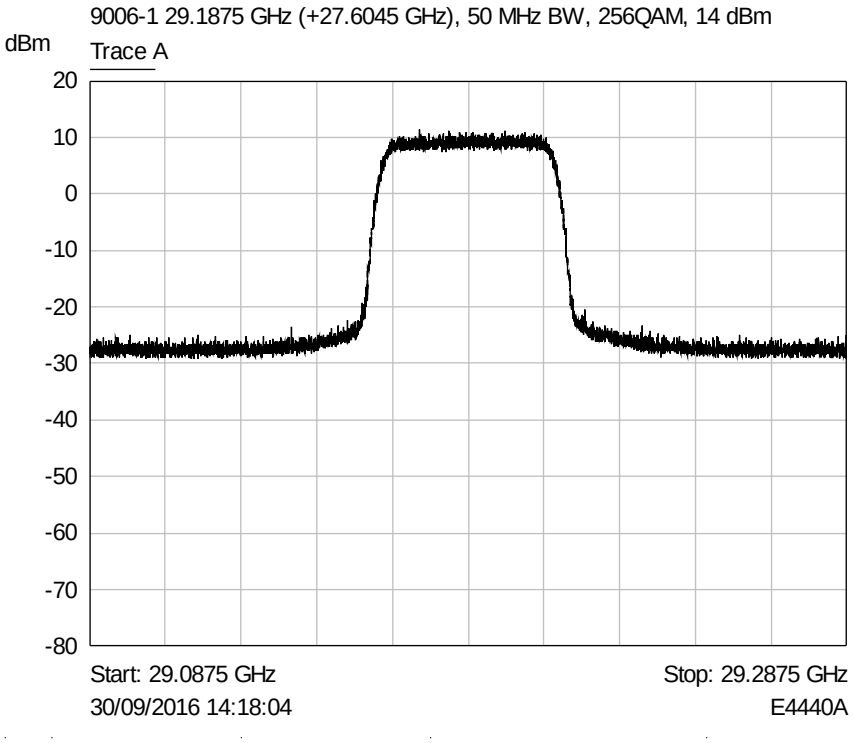
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 50 MHz, Modulation 256QAM, Channel 28.2485 GHz (+29.1875 GHz)



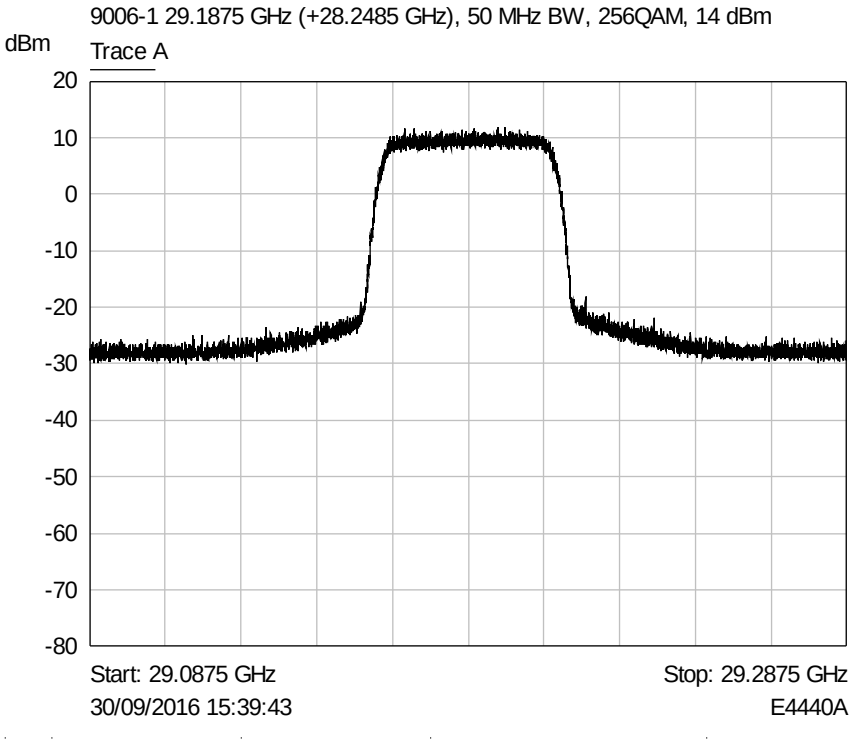
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 50 MHz, Modulation 256QAM, Channel 29.1875 GHz (+27.6045 GHz)



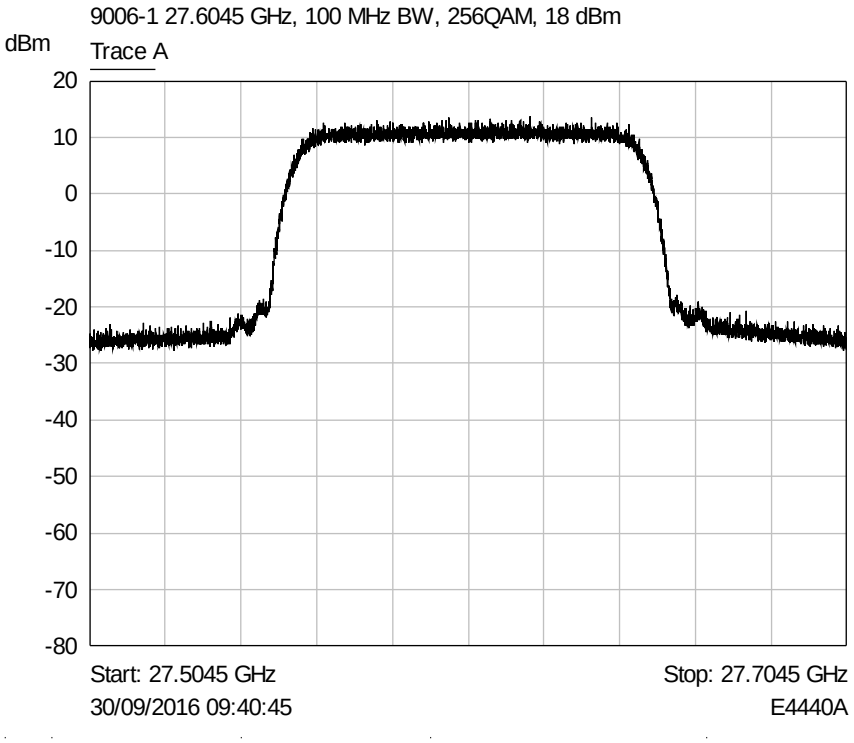
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 50 MHz, Modulation 256QAM, Channel 29.1875 GHz (+28.2485 GHz)



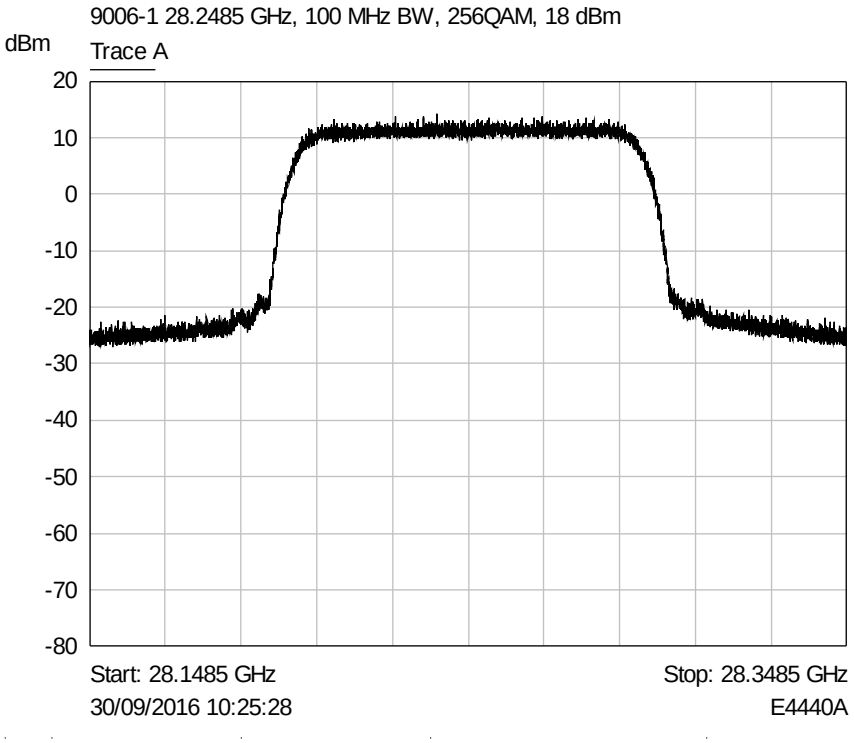
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 18 dBm, Channel Spacing 100 MHz, Modulation 256QAM, Channel 27.6045 GHz



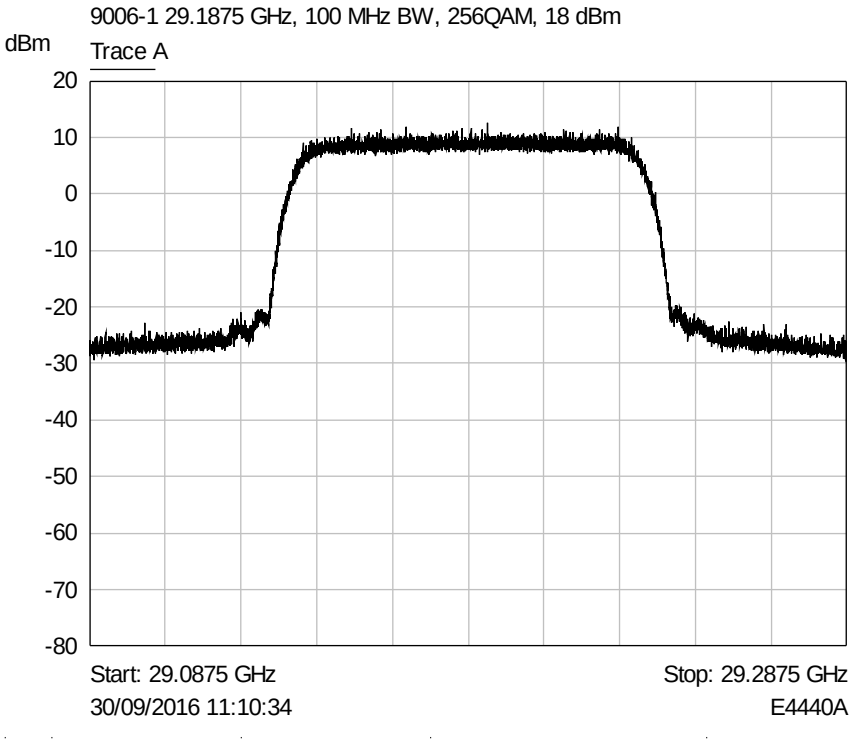
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 18 dBm, Channel Spacing 100 MHz, Modulation 256QAM, Channel 28.2485 GHz



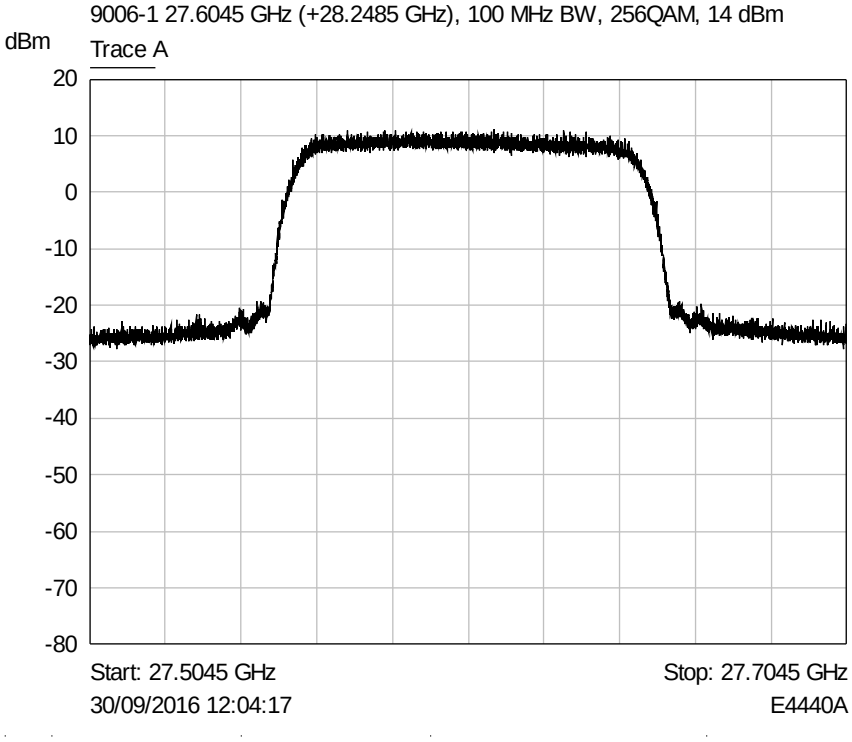
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 18 dBm, Channel Spacing 100 MHz, Modulation 256QAM, Channel 29.1875 GHz



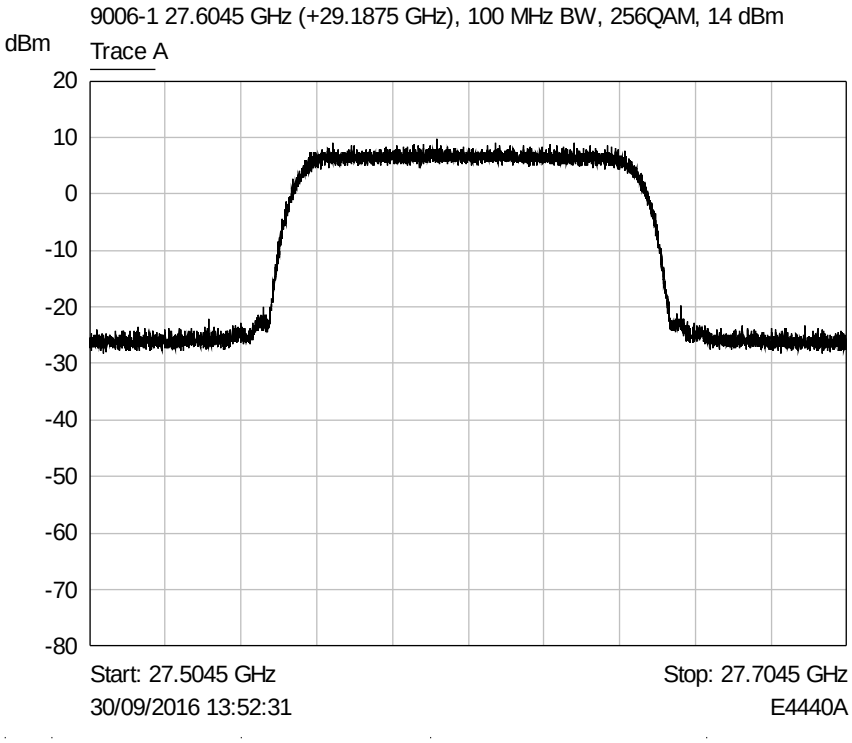
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 100 MHz, Modulation 256QAM, Channel 27.6045 GHz (+28.2485 GHz)



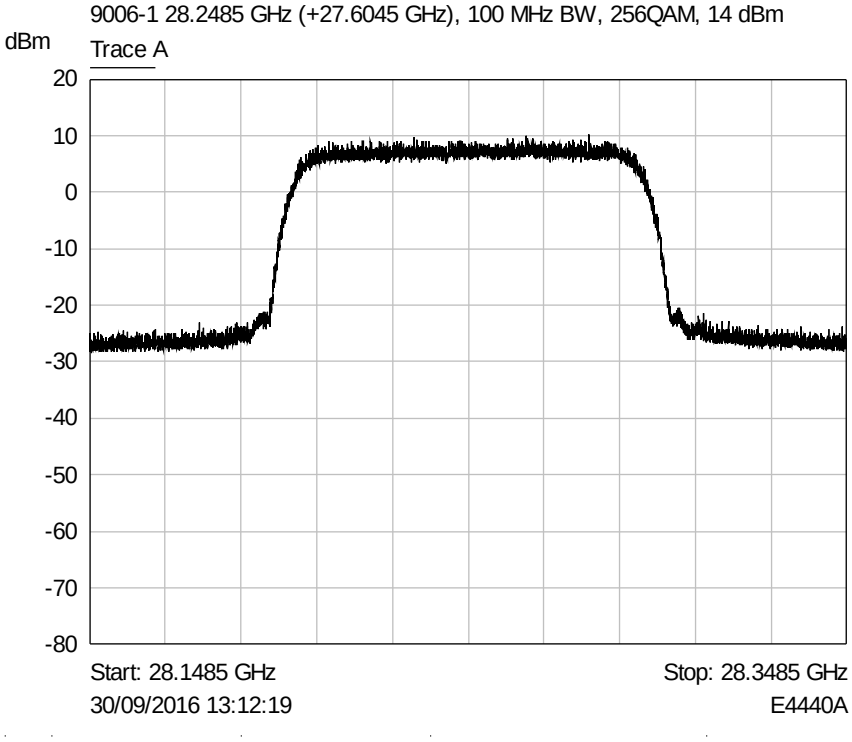
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 100 MHz, Modulation 256QAM, Channel 27.6045 GHz (+29.1875 GHz)



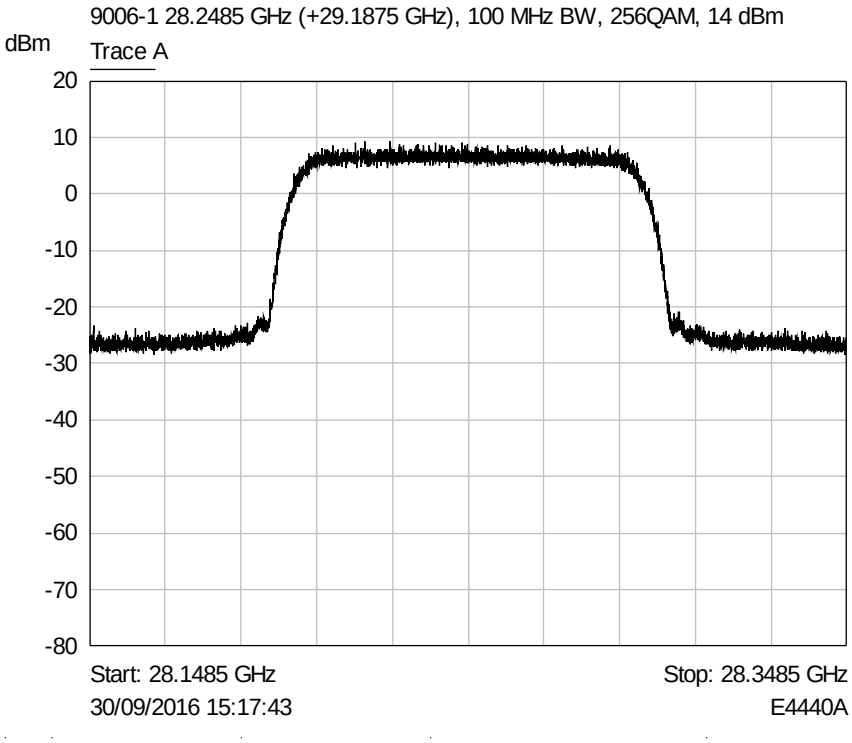
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 100 MHz, Modulation 256QAM, Channel 28.2485 GHz (+27.6045 GHz)



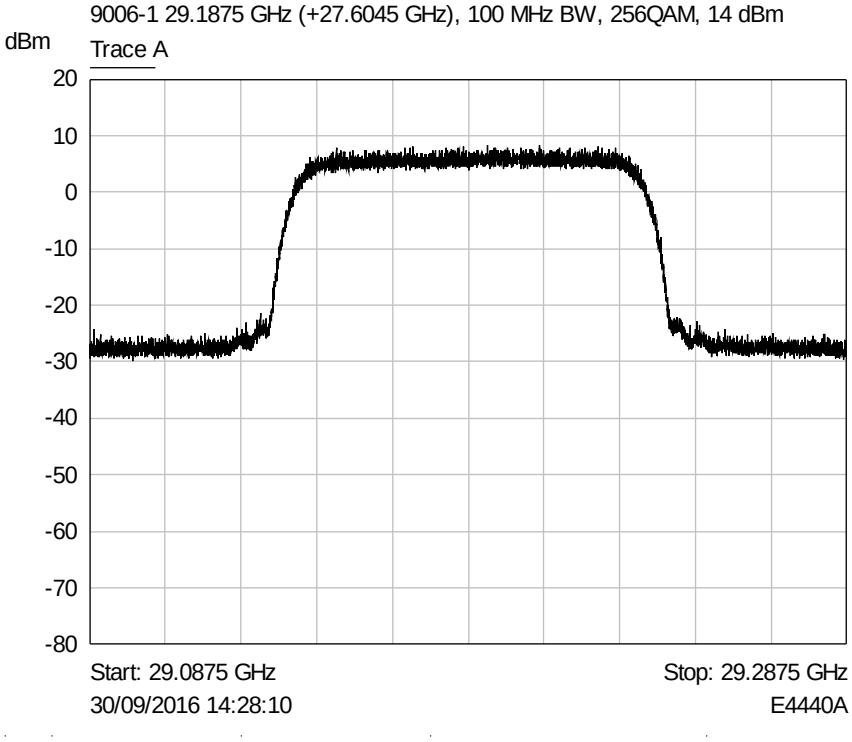
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 100 MHz, Modulation 256QAM, Channel 28.2485 GHz (+29.1875 GHz)



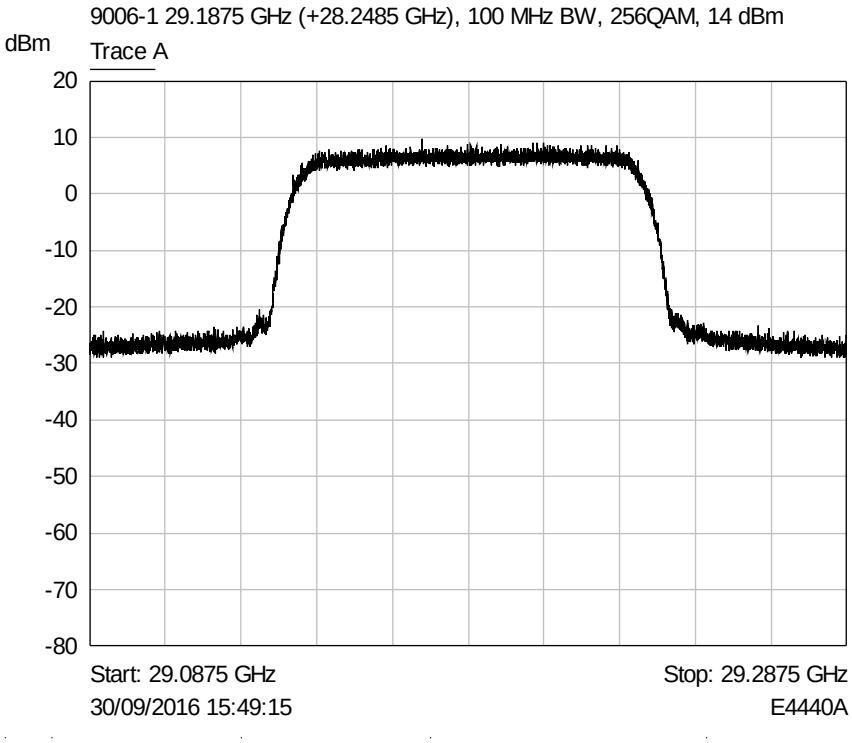
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 100 MHz, Modulation 256QAM, Channel 29.1875 GHz (+27.6045 GHz)



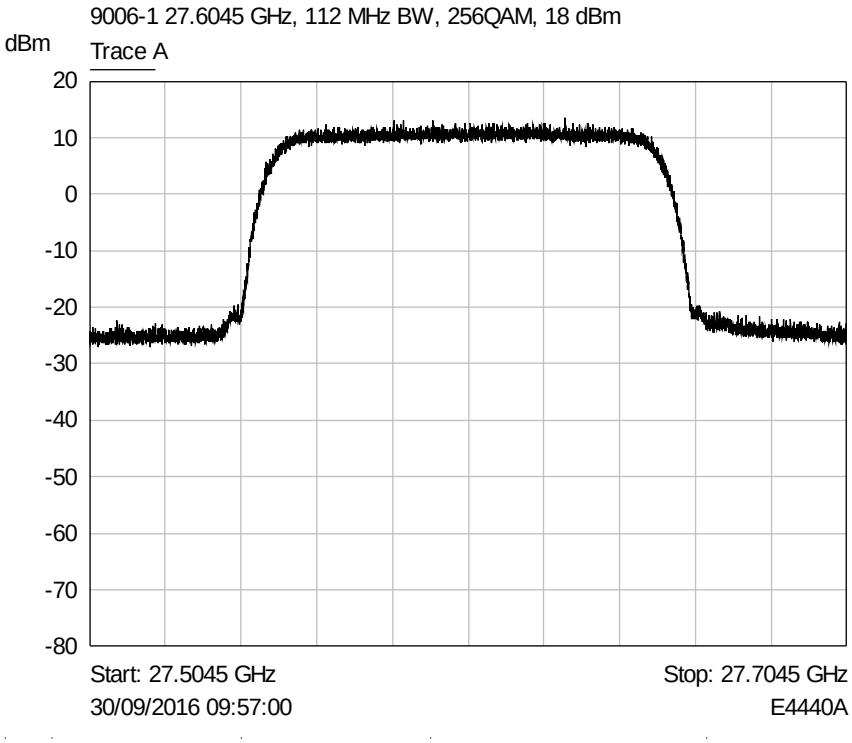
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 100 MHz, Modulation 256QAM, Channel 29.1875 GHz (+28.2485 GHz)



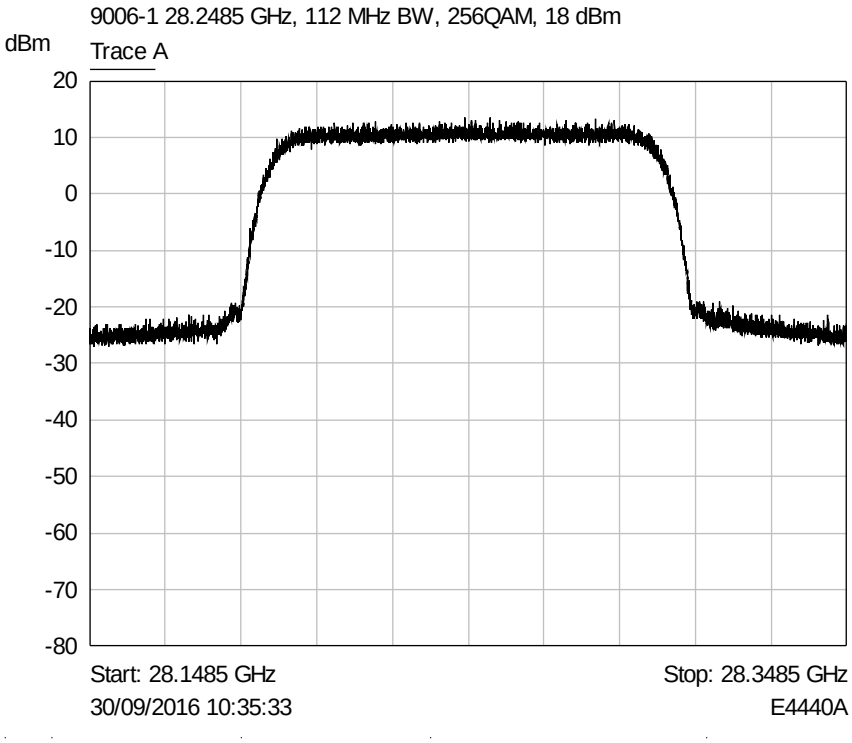
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 18 dBm, Channel Spacing 112 MHz, Modulation 256QAM, Channel 27.6045 GHz



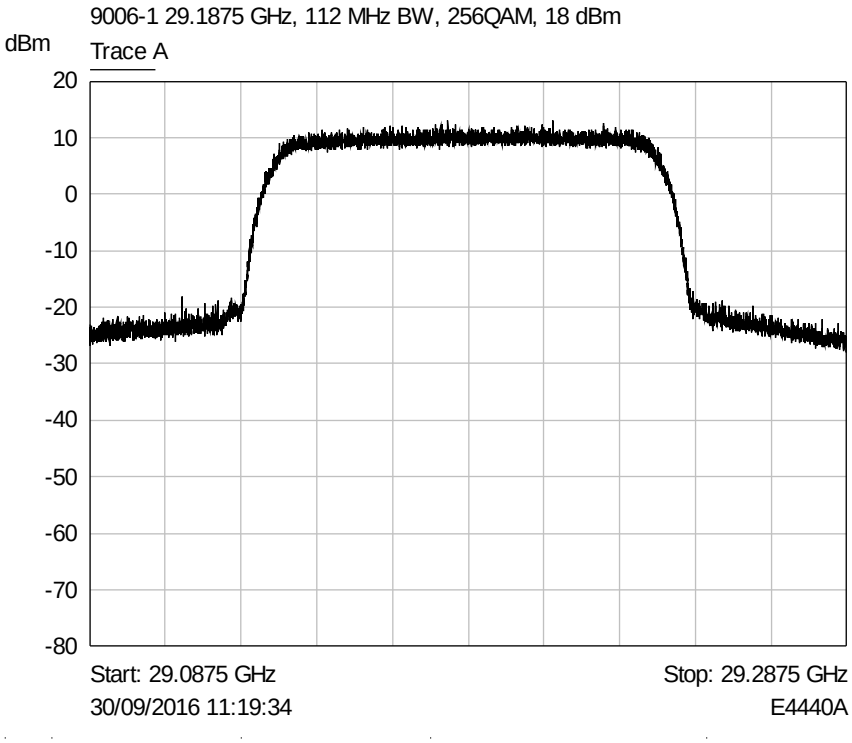
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 18 dBm, Channel Spacing 112 MHz, Modulation 256QAM, Channel 28.2485 GHz



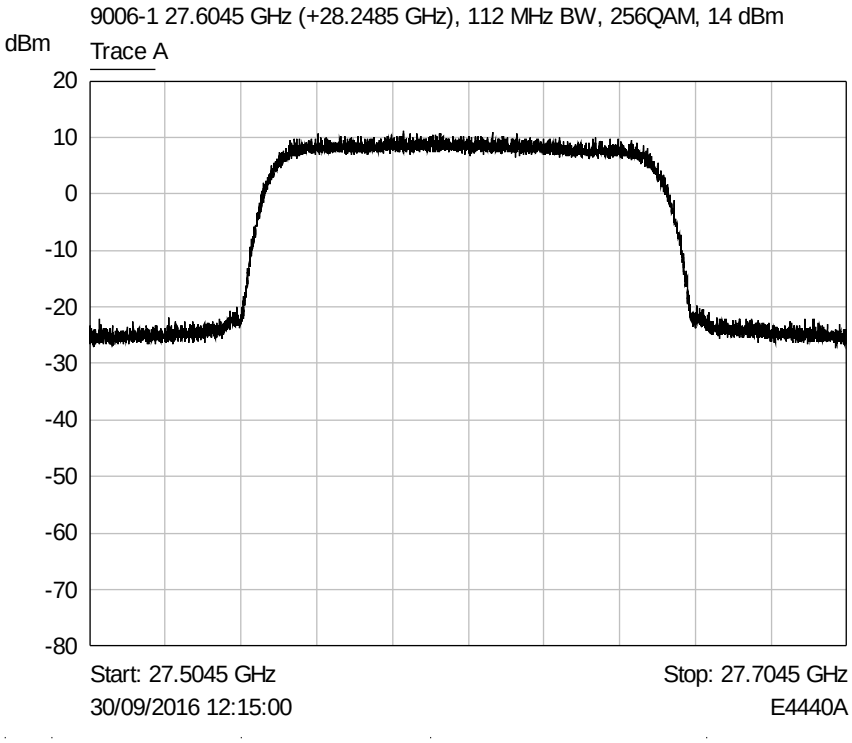
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Single Channel, Power 18 dBm, Channel Spacing 112 MHz, Modulation 256QAM, Channel 29.1875 GHz



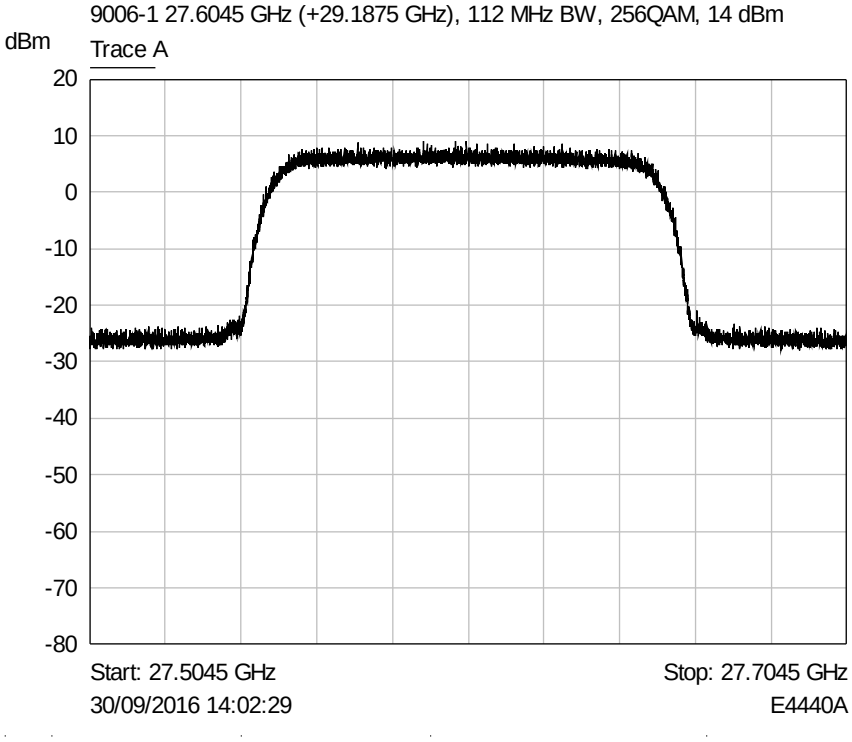
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 112 MHz, Modulation 256QAM, Channel 27.6045 GHz (+28.2485 GHz)



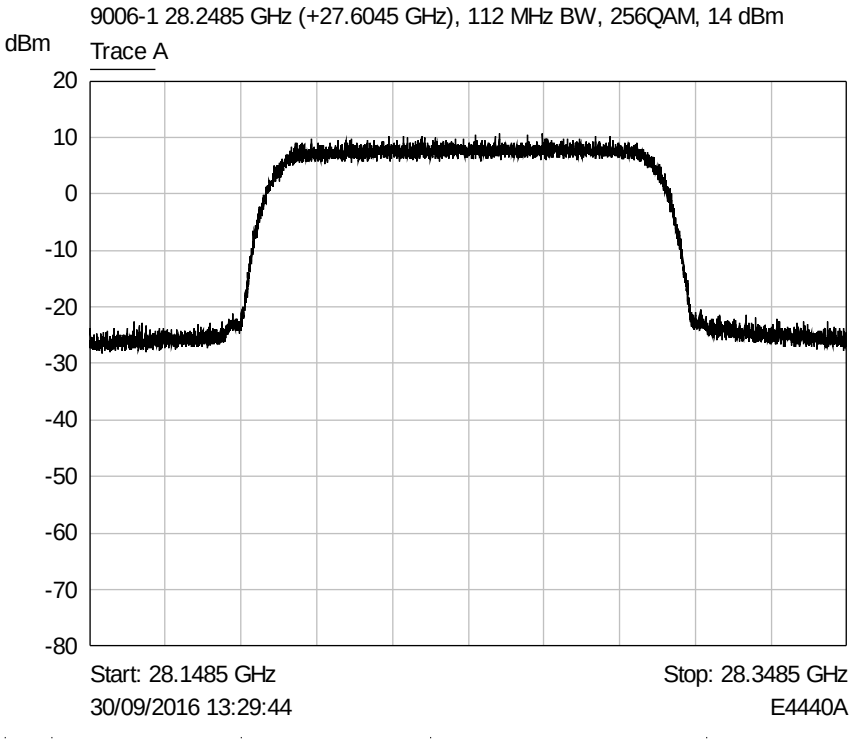
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 112 MHz, Modulation 256QAM, Channel 27.6045 GHz (+29.1875 GHz)



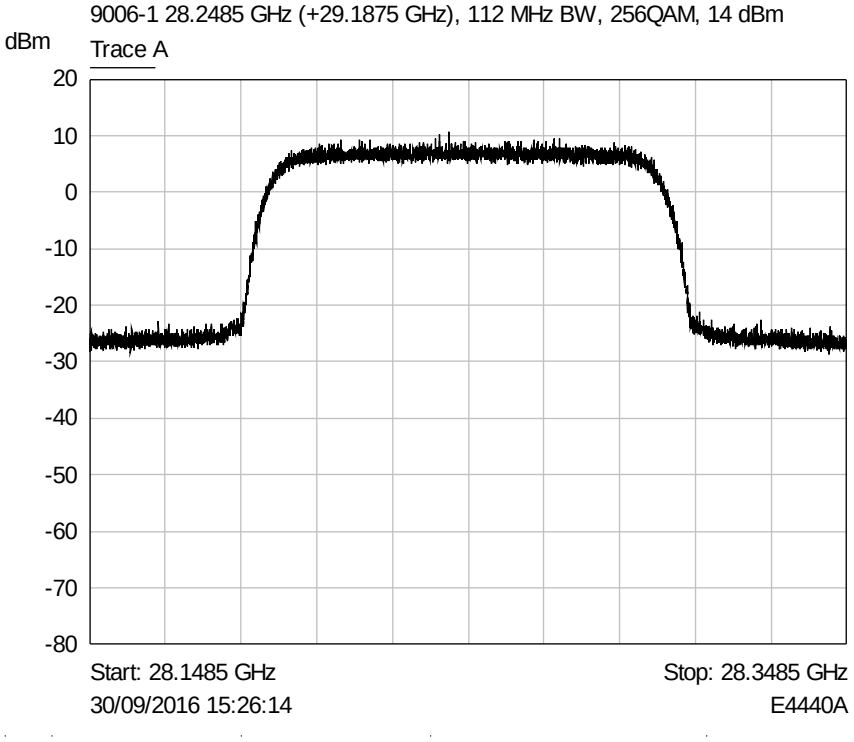
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 112 MHz, Modulation 256QAM, Channel 28.2485 GHz (+27.6045 GHz)



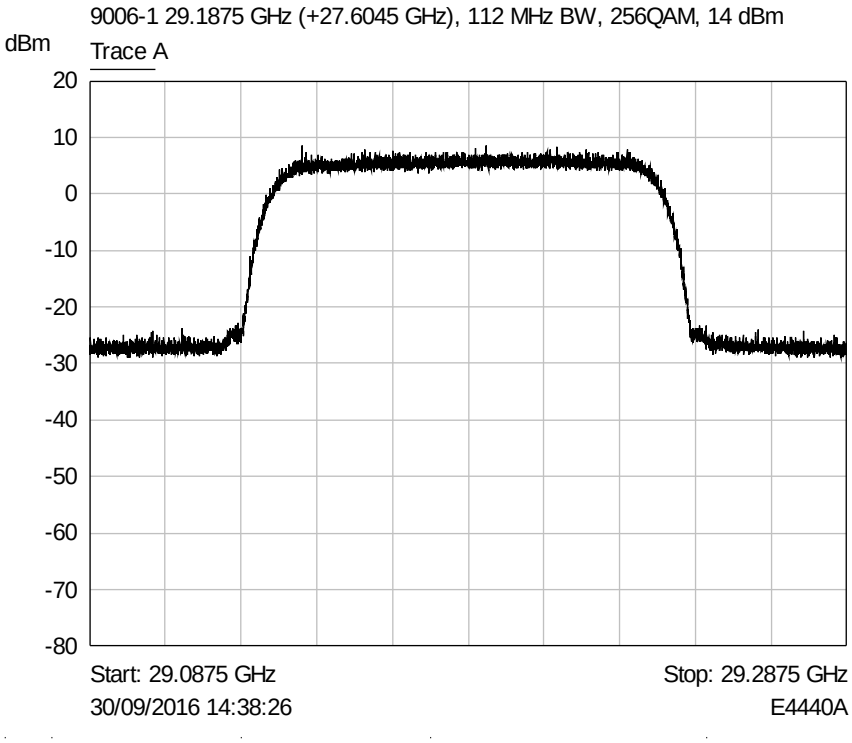
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 112 MHz, Modulation 256QAM, Channel 28.2485 GHz (+29.1875 GHz)



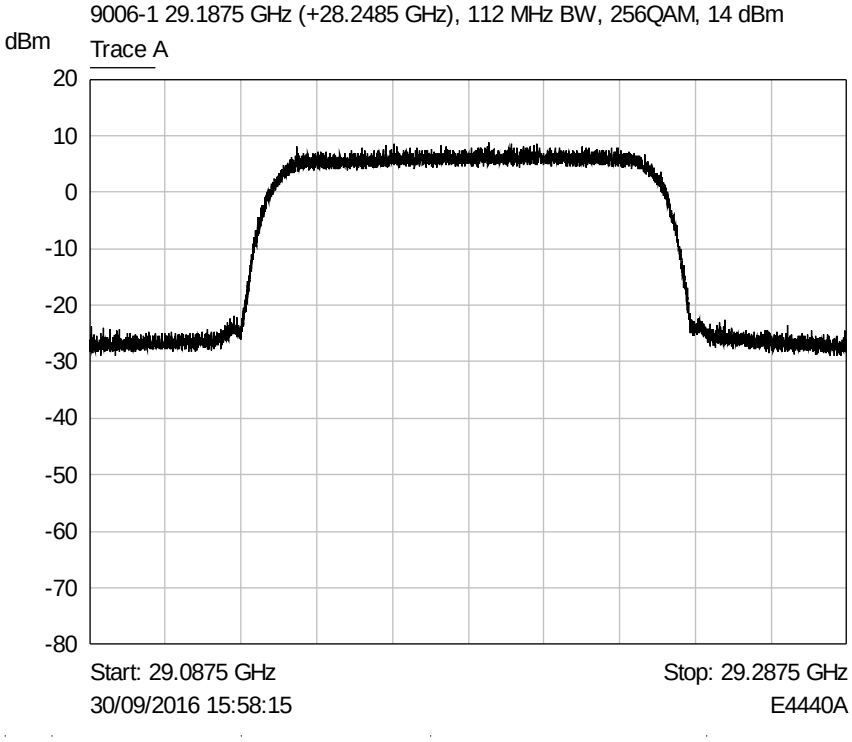
Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 112 MHz, Modulation 256QAM, Channel 29.1875 GHz (+27.6045 GHz)



Nominal, Maximised RF Output / field strength

RF Parameters: Band 27.5-29.25 GHz Dual Channel, Power 14 dBm, Channel Spacing 112 MHz, Modulation 256QAM, Channel 29.1875 GHz (+28.2485 GHz)



Nominal, Maximised RF Output / field strength

7 Explanatory Notes

7.1 Explanation of waveguide cut-off frequency

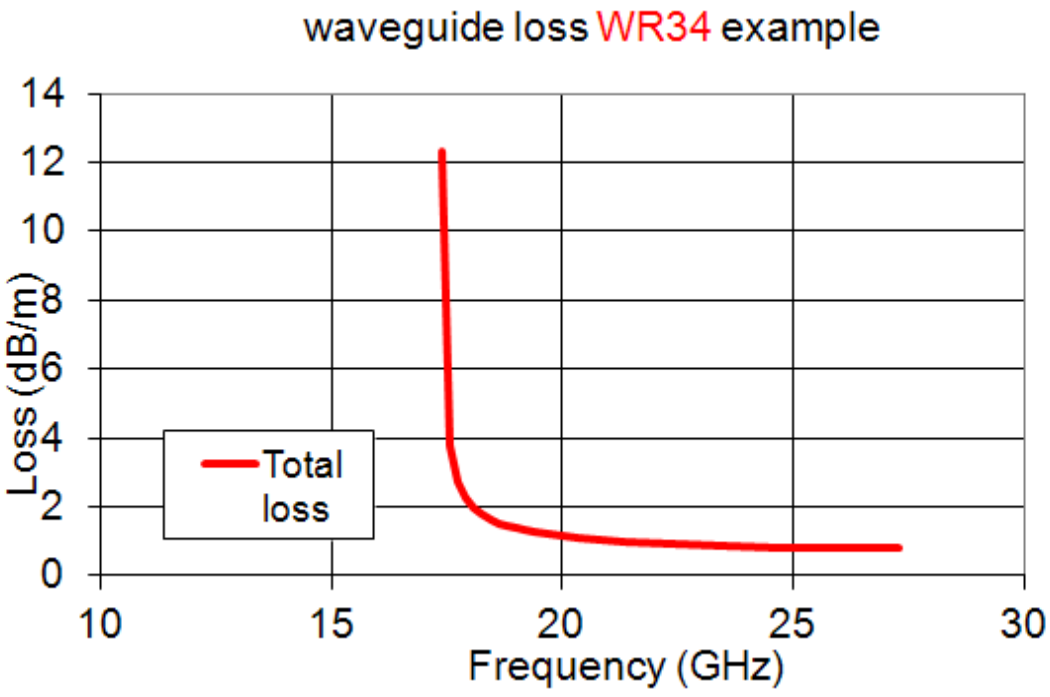
Rationale for lowest conducted emissions test frequency for EUT's using Waveguide RF ports:
In order to determine lowest frequency cut-off of a waveguide the following must be known:
Broadwall (largest) Dimension in mm of waveguide (for purposes of this equation = A)
Speed of light (29.979 cm/ns) (for purposes of this equation = B)
The wavelength (λ) upper frequency cut-off distance in cm (= 2 x A).

Waveguide used by the EUT within this test report is WR34 which has a Broadwall (largest) dimension of = 8.636mm.
Thus:
The wavelength (λ) upper frequency cut-off distance in cm is 2 x 0.8636 = 1.7272.cm

The following equation may then be used to calculate the lowest cut off frequency of the waveguide:

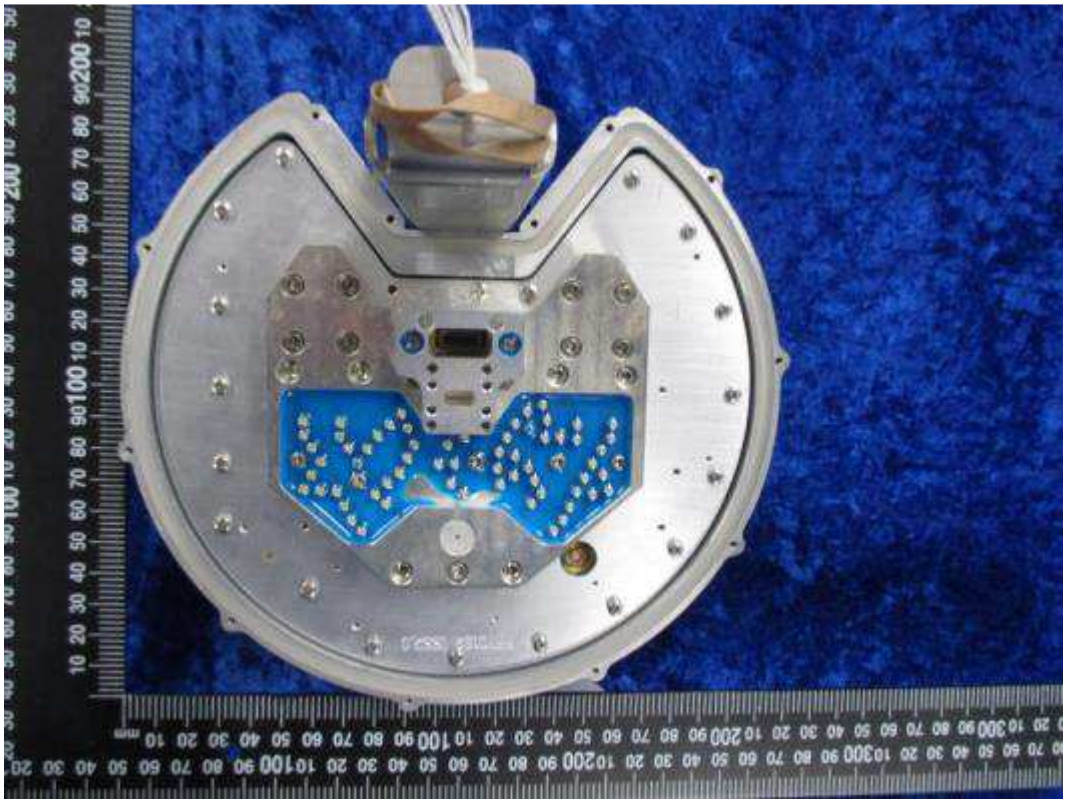
$f_{lowercutoff}$ = (B / 2A)

$f_{lowercutoff}$ = 29.979 / 1.7272 = 17.35699398 GHz.



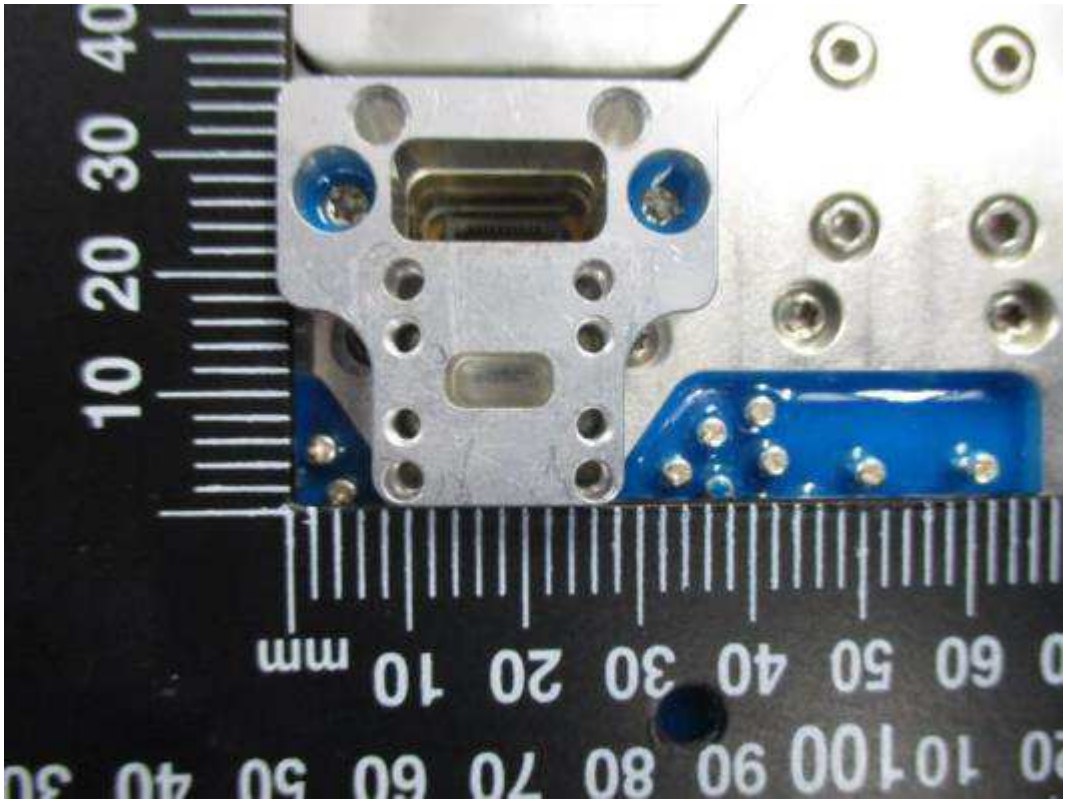
8 Photographs

8.1 EUT Front View



8.2 EUT Reverse Angle

8.3 EUT Antenna Port

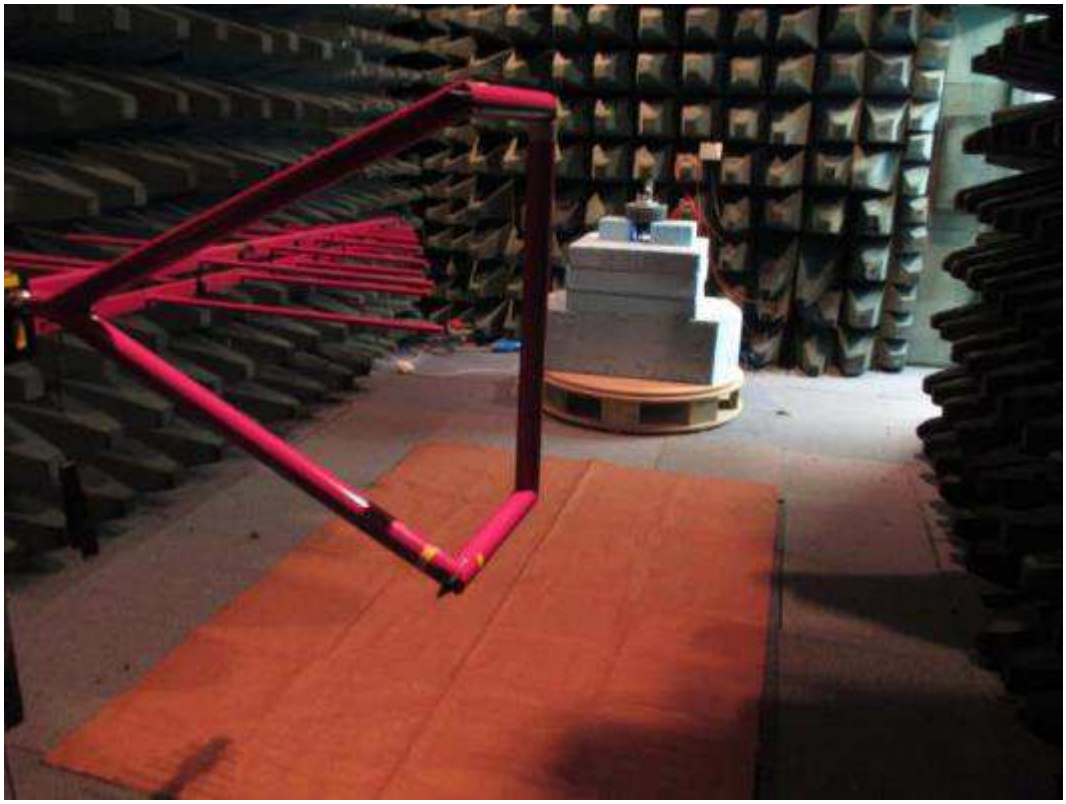


8.4 EUT Display & Controls & ID label

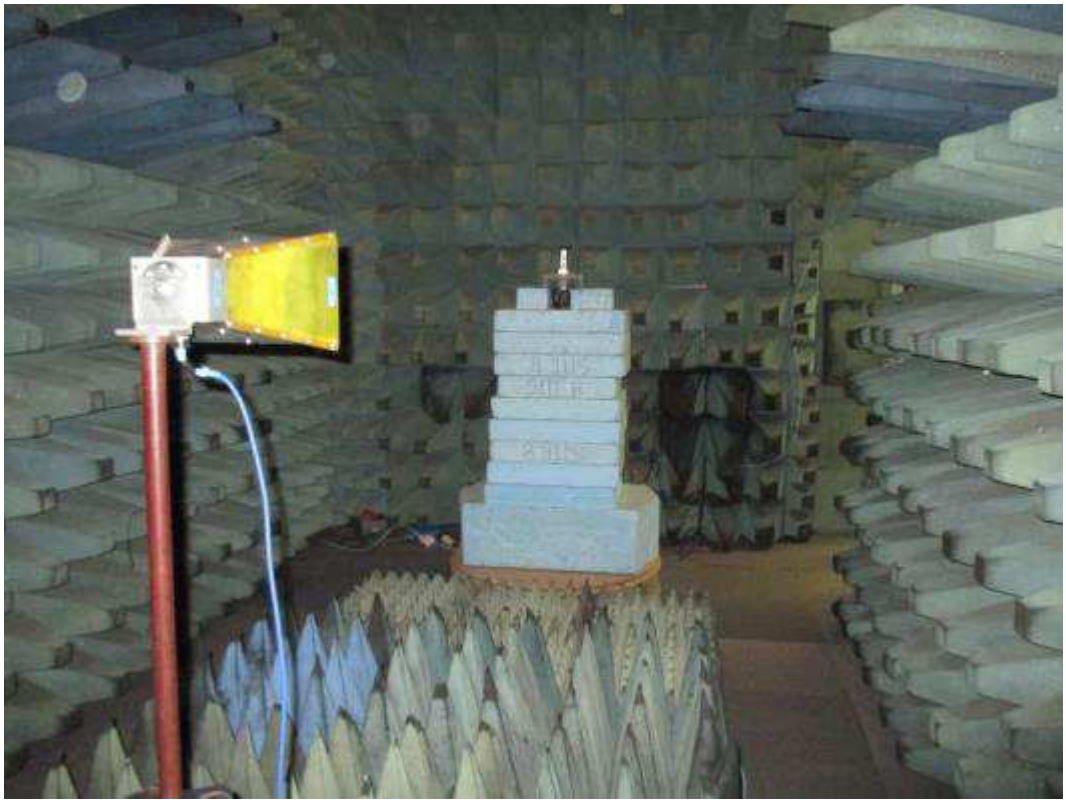
8.5 EUT Internal photos

Due to the complexity of the unit it was not possible to take internal photos.

8.6 30-1000MHz Spurious emissions test set-up

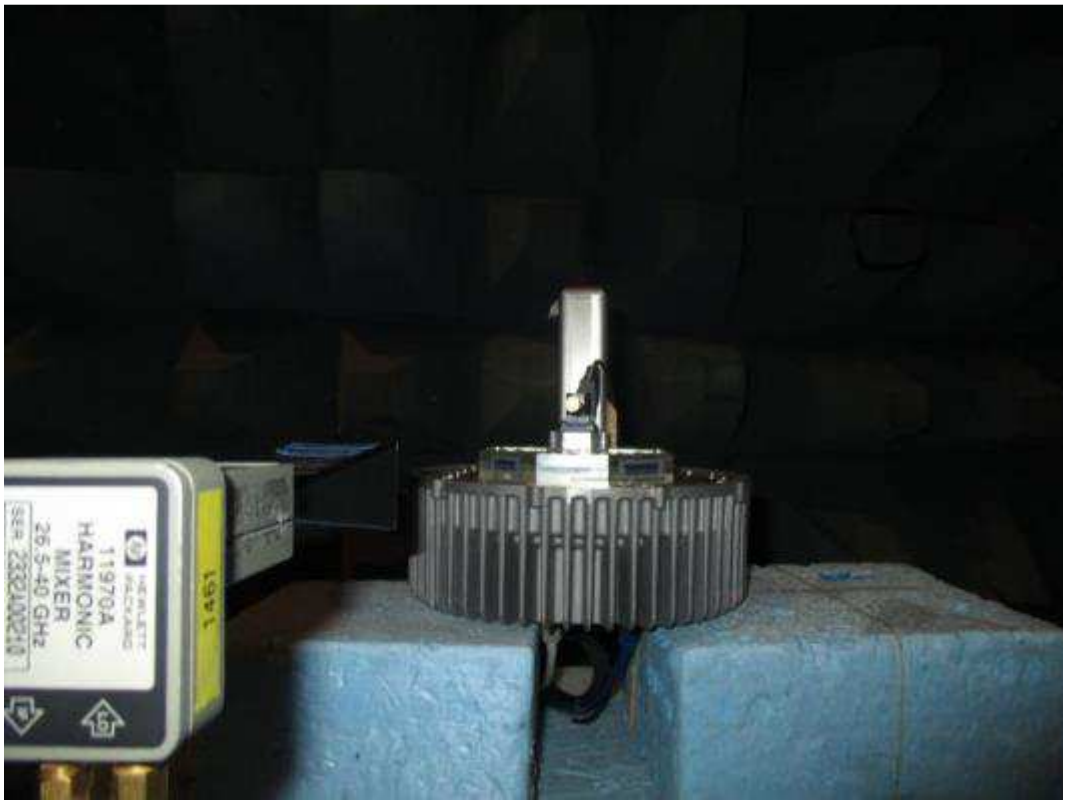


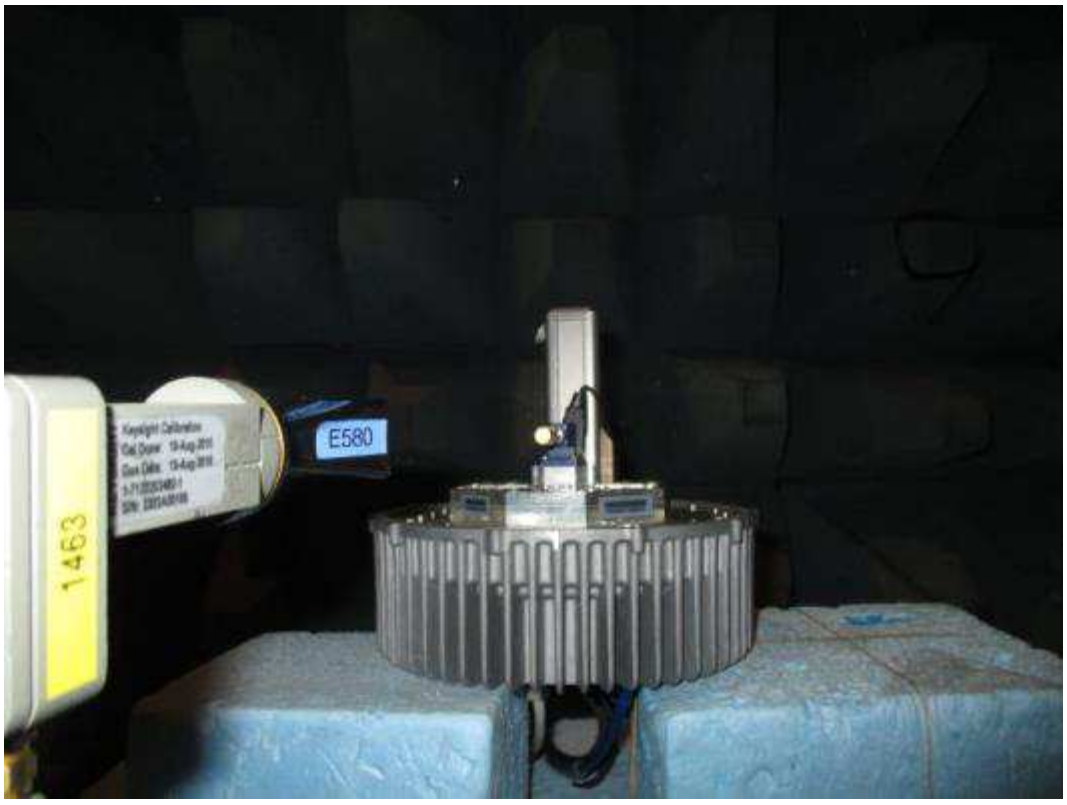
8.7 Above 1GHz Spurious emissions test set-up

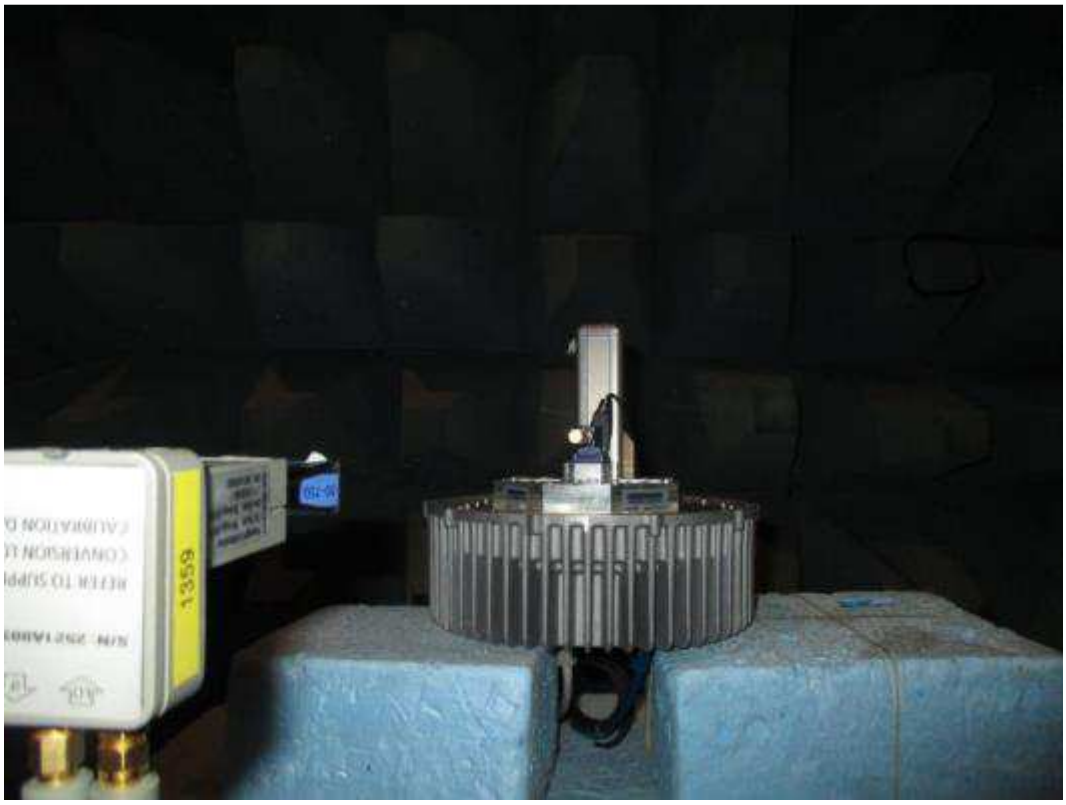


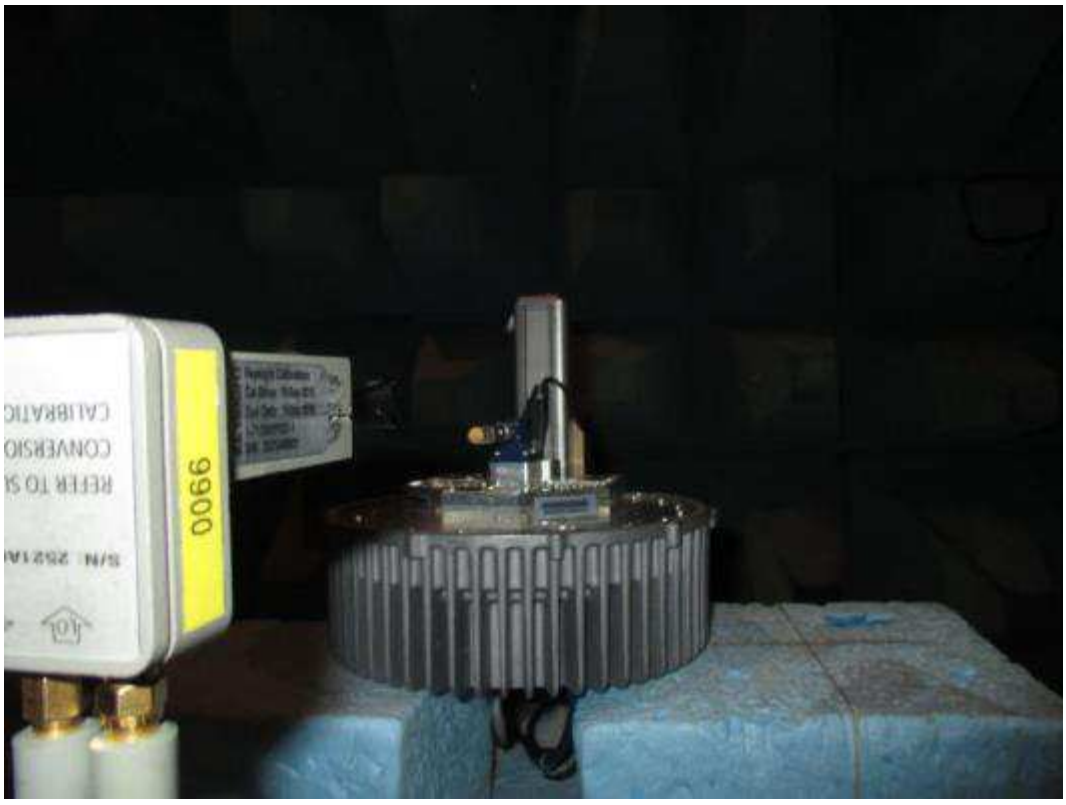

SITE B
SITE B
SITE B


SITE D


HEWLETT PACKARD
11970A
HARMONIC MIXER
26.5-40 GHz
1451


E580
1463


1359


0066

8.8 Radiated emission diagram

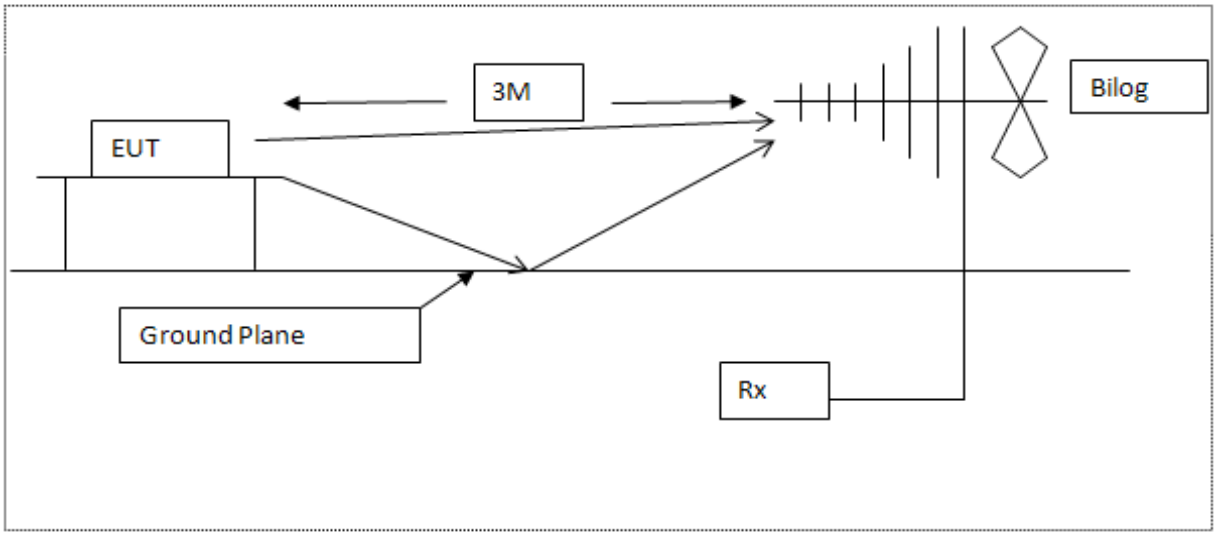


Diagram of the radiated emissions test setup 30 - 1000 MHz

9 Test equipment calibration list

The following is a list of the test equipment used by R.N. Electronics Ltd to test the unit detailed within this report. In line with our procedures, the equipment was within calibration for the period during which testing was carried out.

RN No.	Model No.	Description	Manufacturer	Calibration date	Cal period
E005	8447F	Pre-Amplifier	Hewlett Packard	01-Mar-2016	12 months
E268	BHA 9118	1-18 GHz Horn Antenna	Schaffner	08-Apr-2015	24 months
E291-2	6960B	RF Power Meter	Marconi Instruments	22-Mar-2016	24 months
E296-2	11970A	Harmonic Mixer 26.5-40 GHz	Hewlett Packard	07-Sep-2015	24 months
E296-4	11970U	Harmonic Mixer 40-60 GHz	Hewlett Packard	19-Aug-2015	24 months
E296-5	11970V	Harmonic Mixer 50-75 GHz	Hewlett Packard	20-Aug-2015	24 months
E296-6	11970W	Harmonic Mixer 75-110 GHz	Hewlett Packard	03-Sep-2015	24 months
E327	CBL6141A	Bi-log Antenna	Schaffner	20-Jul-2016	24 months
E329	8349B	Microwave Amplifier 2-20 GHz	Hewlett Packard	07-Nov-2015	12 months
E330	2224-20	Flann Horn 26.5-40 GHz	FMI	26-Apr-2016	12 months
E412	E4440A	PSA 3 Hz - 26.5 GHz	Agilent Technologies	06-Jul-2016	24 months
E428	HF906	1-18 GHz Horn Antenna	Rohde & Schwarz	04-Apr-2016	12 months
E433	MG3693A	Signal Generator 30GHz	Anritsu	23-Jun-2016	24 months
E453	20240-20-AA	Std Gain Horn Antenna 17.6 - 26.7 GHz	FMI Ltd	05-May-2016	12 months
E454	18240-20	Std Gain Horn Antenna 11.9 - 18.0 GHz	FMI Ltd	03-Jun-2016	12 months
E455	85100V	Wave Source Module 50 - 75 GHz	Hewlett Packard	19-Sep-2015	24 months
E456	83554A MM	Wave Source Module 26.5 - 40.0 GHz	Hewlett Packard	07-Sep-2015	24 months
E485	11974-60028	Preselector PSU	Agilent Technologies	N/A	N/A
E486	11974A	Preselect Mixer 26.5 - 40GHz	Agilent Technologies	07-Sep-2015	24 months
E487	11974U	Preselect Mixer 40 - 60GHz	Agilent Technologies	13-Jun-2015	24 months
E489	24/11	WR19 Rotary Attenuator 40-60GHz	Flann Microwave	29-Apr-2016	24 months
E490	22/11	WR28 Rotary Attenuator 26.5-40GHz	Flann Microwave	29-Apr-2016	24 months
E498	4768-20	Attenuator 20dB 40GHz	Narda	07-Oct-2015	12 months
E503	2524-20	50-75 GHz Horn Antenna	FMI	26-Apr-2016	12 months
E550	11974V	Preselected Mixer 50 - 75GHz	Hewlett Packard	19-May-2015	24 months
E555	CMV 5E-1	5A Variac	Carroll & Meynell Ltd	N/A	N/A
E562	83555A	33-50GHz mm Source	Agilent Technologies	*11-Sep-2016	12 months
E579	27240	Standard Gain Horn 75GHz - 110GHz	FMI Ltd	26-Apr-2016	12 months
E580	24240	Standard Gain Horn 40GHz - 60GHz	FMI Ltd	26-Apr-2016	12 months
E602	MG3692A	Signal Generator 10MHz - 20GHz	Anritsu	20-Jan-2015	24 months
E632	6934	Power Sensor - 50Ω	IFR	26-Aug-2015	24 months
E642	E4440A	PSA 3 Hz - 26.5 GHz	Keysight	27-Nov-2015	24 months
L264	DT75	Digital Thermometer	Instrotech Ltd	02-Dec-2015	24 months
LPE377	8564E	Spectrum Analyser 9kHz - 40GHz	Hewlett Packard	11-Jul-2016	24 months
S036	FMH1 420	Temperature & Humidity Test Chamber	JTS Ltd	N/A	N/A
TMS57	2534	Digital Multimeter	Philips	06-Mar-2015	24 months
TMS78	3160-08	Std Gain Horn Antenna 12.4-18 GHz	ETS Systems	03-Jun-2016	12 months
TMS79	3160-09	Std Gain Horn Antenna 18-26.5 GHz	ETS Systems	03-Jun-2016	12 months
TMS814	MP627A	Doublet Antenna 200-1700 MHz	Anritsu Electric Co Ltd	26-Apr-2016	12 months

* Equipment was in calibration for tests and has since been re-calibrated.

10 Auxiliary and peripheral equipment

10.1 Customer supplied equipment

Item No.	Model No.	Description	Manufacturer	Serial No.
1	E15	Laptop	Acer	NXMLTEK059514097F63400
2	GS108	Network switch	Netgear	21622C3H00FE1
3	GSG-5 4 CH	GPS simulator	Spectracom	200271

10.2 RN Electronics supplied equipment

RN No.	Model No.	Description	Manufacturer	Serial No
E341	WBH218	Broadband Horn Antenna 1.5 - 18 GHz	Q-par	2532

11 Condition of the equipment tested

In order for the EUT to produce the results shown within this report the following modifications, if any, were implemented.

11.1 Modifications before test

No modifications were made before test by RN Electronics Ltd.

11.2 Modifications during test

No modifications were made during test by RN Electronics Ltd.

12 Description of test sites

Site A Radio / Calibration Laboratory and anechoic chamber

Site B Semi-anechoic chamber
FCC Registration No. 293246
IC Registration No. 5612A-4

Site B1 Control Room for Site B

Site C Transient Laboratory

Site D Screened Room (Conducted Immunity)

Site E Screened Room (Control Room for Site D)

Site F Screened Room (Conducted Emissions)

Site G Screened Room (Control Room for Site H)

Site H 3m Semi-anechoic chamber (indoor OATS)
FCC Registration No. 293246
IC Registration No. 5612A-2

Site J Screened Room

Site K Screened Room (Control Room for Site M)

Site M 3m Semi-anechoic chamber (indoor OATS)
FCC Registration No. 293246
IC Registration No. 5612A-3

Site Q Fully-anechoic chamber

Site OATS 3m and 10m Open Area Test Site
FCC Registration No. 293246
IC Registration No. 5612A-1

Site R Screened Room (Conducted Immunity)

Site S Safety Laboratory

Site T Transient Laboratory

13 Abbreviations and units

%	Percent
µA/m	microAmps per metre
µV	microVolts
µW	microWatts
AC	Alternating Current
ALSE	Absorber Lined Screened Enclosure
AM	Amplitude Modulation
Amb	Ambient
ATPC	Automatic Transmit Power Control
BER	Bit Error Rate
ºC	Degrees Celsius
C/I	Carrier / Interferer
CEPT	European Conference of Postal and Telecommunications Administrations
COFDM	Coherent OFDM
CS	Channel Spacing
CW	Continuous Wave
dB	deciBels
dBµA/m	deciBels relative to 1µA/m
dBµV	deciBels relative to 1µV
dBc	deciBels relative to Carrier
dBm	deciBels relative to 1mW
DC	Direct Current
DTA	Digital Transmission Analyser
EIRP	Equivalent Isotropic Radiated Power
ERP	Effective Radiated Power
EU	European Union
EUT	Equipment Under Test
FM	Frequency Modulation
FSK	Frequency Shift Keying
g	Grams
GHz	GigaHertz
Hz	Hertz
IF	Intermediate Frequency
kHz	kiloHertz
LBT	Listen Before Talk
LO	Local Oscillator
mA	milliAmps
max	maximum
kPa	Kilopascal
Mbit/s	MegaBits per second
MHz	MegaHertz
mic	Microphone
min	minimum
mm	milliMetres
ms	milliSeconds
mW	milliWatts
NA	Not Applicable
nom	Nominal
nW	nanoWatt
OATS	Open Area Test Site
OFDM	Orthogonal Frequency Division Multiplexing
ppm	Parts per million
PRBS	Pseudo Random Bit Sequence
QAM	Quadrature Amplitude Modulation
QPSK	Quadrature Phase Shift Keying
R&TTE	Radio and Telecommunication Terminal Equipment
Ref	Reference
RF	Radio Frequency
RFC	Remote Frequency Control
RSL	Received Signal Level
RTP	Room Temperature and Pressure
RTPC	Remote Transmit Power Control
Rx	Receiver
s	Seconds
SINAD	Signal to Noise And Distortion
Tx	Transmitter
V	Volts