



2360

**Radio Test Report**  
**Cambridge Communication Systems Ltd**  
**MetNet 60G**  
**G60UM040000**

47 CFR Part 15.255 Effective Date 1st October 2019  
DXX: Part 15 Low Power Communication Device Transmitter  
Test Date: 26th April 2021 to 10th May 2021  
Report Number: 05-11387-1-21 Issue 03  
Supersedes Report Number: 05-11387-1-21 Issue 02

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### Certificate of Test 11387-1

The equipment noted below has been fully tested by R.N. Electronics Limited and, where appropriate, conforms to the relevant subpart of 47 CFR Part 15C. This is a certificate of test only and should not be confused with an equipment authorisation. Other standards may also apply.

Equipment:	MetNet 60G
Model Number:	G60UM040000
Unique Serial Number:	ASY038902.000000869
Applicant:	Cambridge Communication Systems Ltd Victory House Chivers Way Histon Cambridge CB24 9ZR
Proposed FCC ID	2ACV4-M60G-xxx
Full measurement results are detailed in Report Number:	05-11387-1-21 Issue 03
Test Standards:	47 CFR Part 15.255 Effective Date 1st October 2019 DXX: Part 15 Low Power Communication Device Transmitter

**NOTE:**

Certain tests were not performed based upon manufacturer's declarations. For details refer to section 3 of this report.

**DEVIATIONS:**

No deviations have 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: 26th April 2021 to 10th May 2021

Test Engineer:

Approved By:  
Technical Manager

Customer  
Representative:



## 0 Revision History

Issue Number	Revision History	Page Reference(s)
01	First Issue	-
02	Corrected Software Version	6
03	Model number/HVIN reference table updated and models tested statement revised.	5
	Antenna Gain updated to 22dBi.	7
	Revised EIRP beam overlap text and included additional diagram demonstrating where beam overlap could occur between radios.	9, 10
	Revised procedural text in regards volumetric pre-scan.	21, 22
	Revised procedural text for further clarity on detector and 10MHz filter.	27
	Added example calculation for field strength to EIRP in dBm.	28
	Updated conducted power calculated results in relation to 22dBi Ant gain not 21dBi gain.	29, 30

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## 2 Equipment under test (EUT)

### 2.1 Equipment specification

Applicant	Cambridge Communication Systems Ltd (CCS) Victory House Chivers Way Histon Cambridge CB24 9ZR	
Manufacturer of EUT	Cambridge Communication Systems Ltd (CCS)	
Full Name of EUT	MetNet 60G	
Model Number of EUT	G60UM040000	
Serial Number of EUT	ASY038902.000000869	
Date Received	23rd April 2021	
Date of Test:	26th April 2021 to 10th May 2021	
Purpose of Test	To demonstrate design compliance to the relevant rules of Chapter 47 of the Code of Federal Regulations.	
Date Report Issued	9 <sup>th</sup> July 2021	
Main Function	60GHz mmWave Fixed Wireless Access backhaul.	
Information Specification	Height	270 mm
	Width	140 mm
	Depth	105 mm
	Weight	4 kg
	Voltage	100-240 V AC
	Current	1.2 A

The CCS 60GHz Metnet Mesh V2 Node has several variants dependent upon the options fitted; options are power supply type, fibre optic expansion ports and colour. All variants have the same digital board, modem, gps, radios and metalwork.

A power supply must be fitted, the options are:-

- AC Mains
- 48V DC/PoE combined relay switched
- 48V DC only, No PoE input
- PoE only, No 48V DC input

All variants have the same metalwork and construction, the only exception being the top cover which has two extra access holes in the top cover when a fibre board is fitted.

A node can come in different colours, this is purely a cosmetic change, and currently a node is only available in black or grey.

The following Models/HVIN's are available for this EUT:

- G60UM00 AC mains PSU without fibre
- G60UM04 AC mains PSU with fibre
- G60UM01 48V DC/PoE PSU, No Fibre
- G60UM02 48V DC PSU, No Fibre
- G60UM03 PoE PSU, No Fibre
- G60UM05 48V DC/PoE PSU, Fibre
- G60UM06 48V DC PSU, Fibre
- G60UM07 PoE PSU, Fibre

HVIN/Model cross reference to Product code and variants:

HVIN	Description	Colour	Power	Fibre	Product Code
G60UM00	Metnet 60G Mesh v2	Black	AC	N/A	G60UM000000
G60UM01	Metnet 60G Mesh v2	Black	48vdc or PoE	N/A	G60UM010000
G60UM02	Metnet 60G Mesh v2	Black	48vdc only	N/A	G60UM020000
G60UM03	Metnet 60G Mesh v2	Black	PoE only	N/A	G60UM030000
<b>G60UM04</b>	<b>Metnet 60G Mesh v2</b>	<b>Black</b>	<b>AC</b>	<b>1G/10G</b>	<b>G60UM040000</b>
G60UM05	Metnet 60G Mesh v2	Black	48vdc or PoE	1G/10G	G60UM050000
G60UM06	Metnet 60G Mesh v2	Black	48vdc only	1G/10G	G60UM060000
G60UM07	Metnet 60G Mesh v2	Black	PoE only	1G/10G	G60UM070000
G60UM00	Metnet 60G Mesh v2	Grey	AC	N/A	G60UM000088
G60UM01	Metnet 60G Mesh v2	Grey	48vdc or PoE	N/A	G60UM010088
G60UM02	Metnet 60G Mesh v2	Grey	48vdc only	N/A	G60UM020088
G60UM03	Metnet 60G Mesh v2	Grey	PoE only	N/A	G60UM030088
<b>G60UM04</b>	<b>Metnet 60G Mesh v2</b>	<b>Grey</b>	<b>AC</b>	<b>1G/10G</b>	<b>G60UM040088</b>
G60UM05	Metnet 60G Mesh v2	Grey	48vdc or PoE	1G/10G	G60UM050088
G60UM06	Metnet 60G Mesh v2	Grey	48vdc only	1G/10G	G60UM060088
G60UM07	Metnet 60G Mesh v2	Grey	PoE only	1G/10G	G60UM070088

Models listed in Green in the table above are covered by this test report. Namely G60UM04.

## 2.2 Configurations for testing

General Parameters	
EUT Normal use position	Vertically mounted
Choice of model(s) for type tests	Production samples
Antenna details	Integral. Phase array beamforming. 22 dBi gain.
Antenna port	None
Baseband Data port (yes/no)?	No
Highest Signal generated in EUT	69.12 GHz
Lowest Signal generated in EUT	25 MHz
Hardware Version	V1.0
Software Version	radio-integration-unreleased-154
Firmware Version	Not applicable
Type of Equipment	60 GHz radio
Technology Type	IEEE 802.11 ad
Geo-location (yes/no)	Yes
TX Parameters	
Alignment range – transmitter	57-71 GHz
EUT Declared Modulation Parameters	DSSS, BPSK, QPSK, 16QAM
EUT Declared Power level	+40 dBm EIRP
EUT Declared Signal Bandwidths	2.16 GHz
EUT Declared Channel Spacing's	2.16 GHz
EUT Declared Duty Cycle	Not declared
Unmodulated carrier available?	Yes
Declared frequency stability	Not declared
RX Parameters	
Alignment range – receiver	57-71 GHz
EUT Declared RX Signal Bandwidth	2.16 GHz
Receiver Signal Level (RSL)	Not declared
Method of Monitoring Receiver BER	1 % PER
FCC Parameters	
FCC Transmitter Class	DXC: Part 15 Low Power Communication Device Transmitter

## 2.3 Functional description

The product is a 60GHz 802.11 ad transceiver node capable of sustaining simultaneous links with multiple CPE providing and to provide wireless backhaul for access equipment such as cellular base stations.

- Topologies
  - MultiPoint-to-MultiPoint (MPtMP) mesh
  - Point-to-MultiPoint (PtMP)
  - Point-to-Point (PtP)

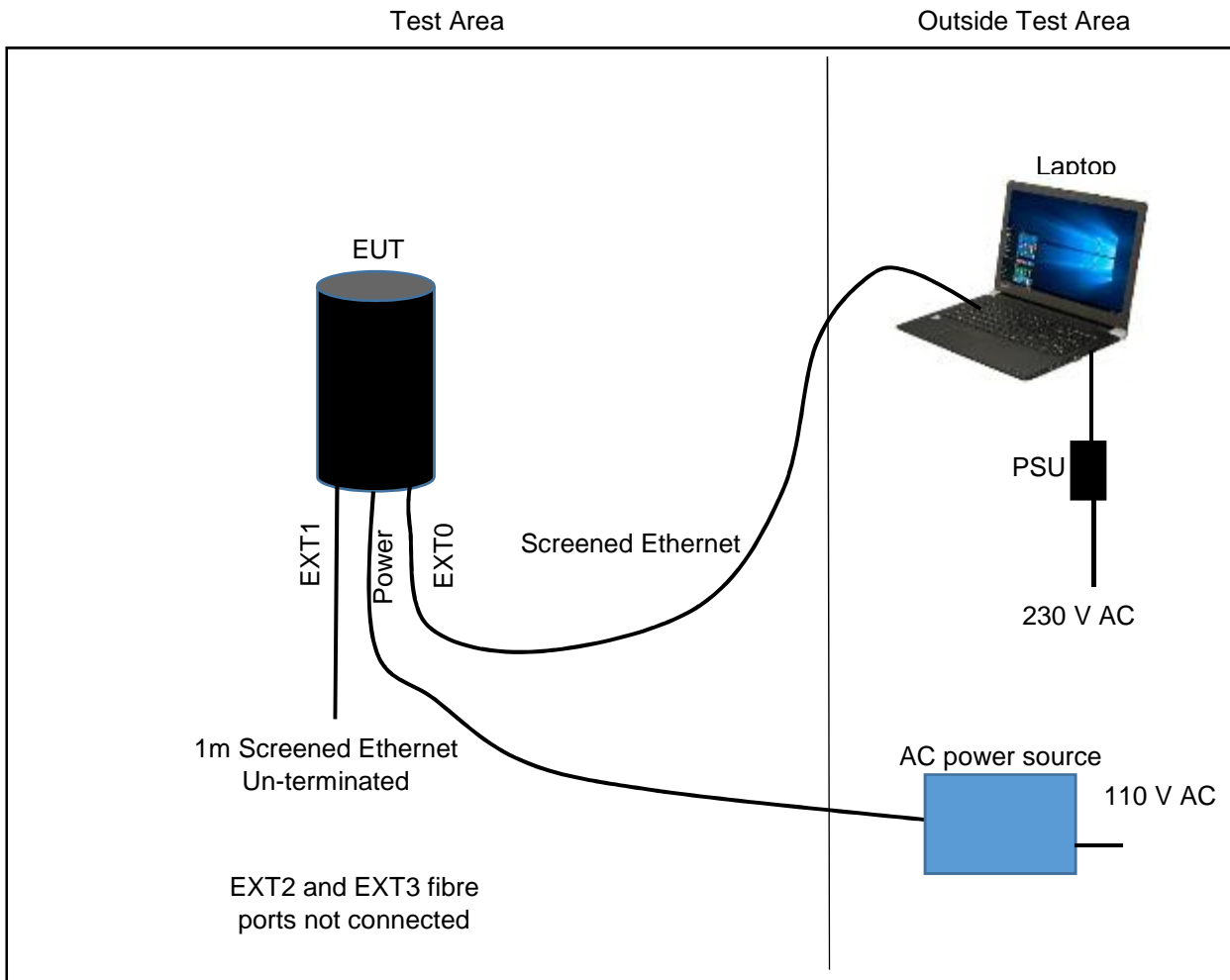
The product is designed to be mounted on street furniture such as a pole, lamppost or residential or commercial property.

## 2.4 Modes of operation

Mode Reference	Description	Used for testing
TX1	Transmitting 58.32 GHz 40 dBm mcs0	No
TX2	Transmitting 58.32 GHz 40 dBm mcs1	Yes
TX3	Transmitting 58.32 GHz 40 dBm mcs2	Yes
TX4	Transmitting 58.32 GHz 40 dBm mcs3	Yes
TX5	Transmitting 58.32 GHz 40 dBm mcs4	Yes
TX6	Transmitting 58.32 GHz 40 dBm mcs5	Yes
TX7	Transmitting 58.32 GHz 40 dBm mcs6	Yes
TX8	Transmitting 58.32 GHz 40 dBm mcs7	Yes
TX9	Transmitting 58.32 GHz 40 dBm mcs8	Yes
TX10	Transmitting 58.32 GHz 40 dBm mcs9	Yes
TX11	Transmitting 58.32 GHz 40 dBm mcs10	Yes
TX12	Transmitting 58.32 GHz 40 dBm mcs11	Yes
TX13	Transmitting 58.32 GHz 40 dBm mcs12	Yes
TX14	Transmitting 62.64 GHz 40 dBm mcs0	No
TX15	Transmitting 62.64 GHz 40 dBm mcs1	Yes
TX16	Transmitting 62.64 GHz 40 dBm mcs2	Yes
TX17	Transmitting 62.64 GHz 40 dBm mcs3	Yes
TX18	Transmitting 62.64 GHz 40 dBm mcs4	Yes
TX19	Transmitting 62.64 GHz 40 dBm mcs5	Yes
TX20	Transmitting 62.64 GHz 40 dBm mcs6	Yes
TX21	Transmitting 62.64 GHz 40 dBm mcs7	Yes
TX22	Transmitting 62.64 GHz 40 dBm mcs8	Yes
TX23	Transmitting 62.64 GHz 40 dBm mcs9	Yes
TX24	Transmitting 62.64 GHz 40 dBm mcs10	Yes
TX25	Transmitting 62.64 GHz 40 dBm mcs11	Yes
TX26	Transmitting 62.64 GHz 40 dBm mcs12	Yes
TX27	Transmitting 69.12 GHz 40 dBm mcs0	No
TX28	Transmitting 69.12 GHz 40 dBm mcs1	Yes
TX29	Transmitting 69.12 GHz 40 dBm mcs2	Yes
TX30	Transmitting 69.12 GHz 40 dBm mcs3	Yes
TX31	Transmitting 69.12 GHz 40 dBm mcs4	Yes
TX32	Transmitting 69.12 GHz 40 dBm mcs5	Yes
TX33	Transmitting 69.12 GHz 40 dBm mcs6	Yes
TX34	Transmitting 69.12 GHz 40 dBm mcs7	Yes
TX35	Transmitting 69.12 GHz 40 dBm mcs8	Yes
TX36	Transmitting 69.12 GHz 40 dBm mcs9	Yes
TX37	Transmitting 69.12 GHz 40 dBm mcs10	Yes
TX38	Transmitting 69.12 GHz 40 dBm mcs11	Yes
TX39	Transmitting 69.12 GHz 40 dBm mcs12	Yes
TX40	Transmitting CW 58.32 GHz 99.687 MHz tone	Yes
TX41	Transmitting CW 62.64 GHz 99.687 MHz tone	Yes

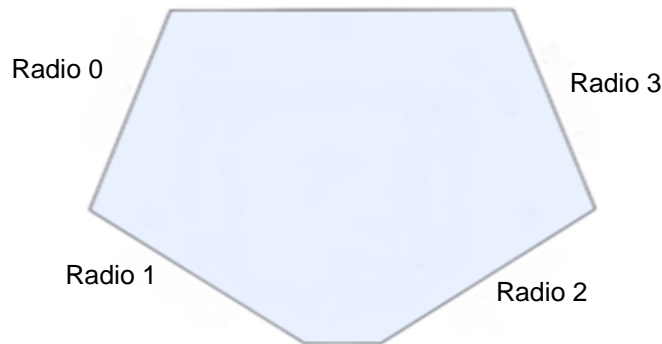
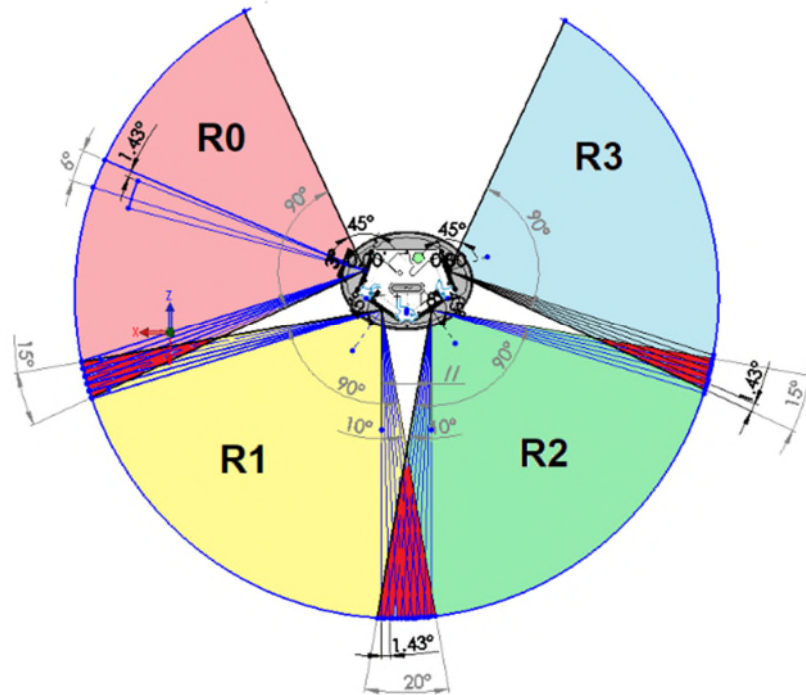


## 2.5 Emissions configuration



The unit was powered from 110 V AC mains. The unit was configured with engineering menus via a terminal program to allow permanent transmit modes of the device on the each of 4 radios, and on the channels and modulation schemes as stated within section 2.4 of this report. The applicant declares that each radio operates on a different channel and that they can transmit at the same time. In addition, each radio allows circular beam steering as defined in ANSI C63.10 section 13. The beam value is settable between 0 and 64, with 0 being omnidirectional and 1 to 63 being a sector angle. The applicant declares that it is possible for beam overlap from adjacent radios (but each radio is on a different channel). RN Electronics performed initial investigations in 0.5° steps on each of the radios through a 360° EUT rotation for all beam settings. The -3 dB beamwidth was found to be approximately  $\pm 4^\circ$  and is steerable over roughly 95° thereby providing near 360° coverage with all four radios. It was found that individual antenna beamwidth increased slightly on antenna beams at each end of the antenna arrays, but EIRP from those same beam settings at the outer arrays was reduced. From this information it was possible to determine the effect of having adjacent radios with beam overlap and where maximum EIRP would occur. Highest EIRP was still measured when there was no beam overlap.

Additional information provided by CCS Ltd confirmed where beam overlap could occur between specific radios:



View from above showing arrangement of radios

- Channel 1 = 58.32 GHz, power level +40 dBm (all modulation schemes)
- Channel 2 = 60.48 GHz, power level +40 dBm (all modulation schemes)
- Channel 3 = 62.64 GHz, power level +40 dBm (all modulation schemes)
- Channel 4 = 64.8 GHz, power level +40 dBm (all modulation schemes)
- Channel 5 = 66.96 GHz, power level +40 dBm (all modulation schemes)
- Channel 6 = 69.12 GHz, power level +40 dBm (all modulation schemes)

Modulation schemes available were DBPSK (MCS0), BPSK (MCS1 to MCS5), QPSK (MCS6 to MCS9) and 16QAM (MCS10 to MCS12).

Measured duty cycles for the schemes were as follows (MCS0 declared as not in use by applicant): -

- MCS1 99.8 %
- MCS2 99.5 %
- MCS3 99.4 %
- MCS4 99.3 %
- MCS5 99.2 %
- MCS6 99 %
- MCS7 98.8 %
- MCS8 98.6 %
- MCS9 98.5 %

MCS10 98.1 %  
MCS11 97.7 %  
MCS12 97.3 %

### 2.5.1 Signal leads

Port Name	Cable Type	Connected
Power (AC)	Exterior grade cable. Commercial connector	Yes
EXT0	CAT5e screened. RJ45 connector	Yes
EXT1	CAT5e screened. RJ45 connector	Yes
EXT2	Optical fibre	No
EXT3	Optical fibre	No

### 3 Summary of test results

The MetNet 60G, G60UM040000 was tested for compliance to the following standard(s) :

47 CFR Part 15.255 Effective Date 1st October 2019  
DXX: Part 15 Low Power Communication Device Transmitter

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
<b>Transmitter Tests</b>		
1. AC power line conducted emissions	47 CFR Part 15C Part 15.207	PASSED
2. Radiated emissions 9 - 150 kHz	47 CFR Part 15C Part 15.209	NOT APPLICABLE <sup>1</sup>
3. Radiated emissions 150 kHz - 30 MHz	47 CFR Part 15C Part 15.209	PASSED
4. Radiated emissions 30 MHz -1 GHz	47 CFR Part 15C Part 15.255(d)(2)	PASSED
5. Radiated emissions above 1 GHz	47 CFR Part 15C Part 15.255(d)(2)/(3)/(4)	PASSED <sup>2</sup>
6. Frequency stability	47 CFR Part 15C Part 15.255(f)	PASSED
7. Peak & Average EIRP	47 CFR Part 15C Part 15.255(c)(1)(i)/(ii)	PASSED
8. Peak Conducted Power	47 CFR Part 15C Part 15.255(c)(3)/(4)	PASSED <sup>3</sup>
9. 6dB Occupied bandwidth	47 CFR Part 15C Part 15.255(e)(1)	PASSED

<sup>1</sup> Spectrum below 30MHz started at a frequency of 150 kHz up to a frequency of 30MHz based on the lowest signal generated/used within the equipment of 25 MHz as declared by the applicant.

<sup>2</sup> Spectrum investigated up to a frequency of 200 GHz.

<sup>3</sup> EUT does not have a conducted RF port, however, calculation has been provided to determine conducted power against the limit from maximum EIRP measured and antenna gain.

## 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	47 CFR Part 15C	2019	Federal Communications Commission PART 15 – RADIO FREQUENCY DEVICES
4.1.2	ANSI C63.10	2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
4.1.3	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
4.1.4	KDB 842590 D01 v01	2019	Federal Communications Commission Office of Engineering and Technology Laboratory Division; Basic certification requirements and measurement procedures for Upper Microwave Flexible Use Service (UMFUS) devices

### 4.2 Deviations

No deviations were 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	-20 °C	V minimum	93.5V AC
T maximum	50 °C	V maximum	126.5V AC

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

The ambient test conditions of humidity and pressure in the laboratory were as specified in each specific 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 front door of the chamber was replaced with a 100 mm thick Styrofoam panel and the tests performed radiated with EUT directing power out of the chamber towards the measuring equipment.

## 5 Tests, methods and results

### 5.1 AC power line conducted emissions

#### 5.1.1 Test methods

Test Requirements:	47 CFR Part 15C Part 15.207 [Reference 4.1.1 of this report]
Test Method:	ANSI C63.10 Clause 6.2 [Reference 4.1.2 of this report]
Limits:	47 CFR Part 15C Part 15.207 [Reference 4.1.1 of this report]

#### 5.1.2 Configuration of EUT

The EUT was placed on a wooden table 0.8m above the ground plane and connected to a LISN via a 1m mains cable. Details of the Peripheral and Ancillary Equipment connected for this test are listed in section 10. During the initial scan, no discernible difference in emissions could be observed when operating on different channels or modulation schemes. For final test the EUT was operated with all four radios in mode TX6.

#### 5.1.3 Test procedure

Tests were made in accordance with FCC Part 15 using the measuring equipment listed in the 'Test Equipment' Section. Measurements were made on the live and neutral conductors using both average and quasi-peak detection.

At least 6 signals within 20dB and/or all signals within 10dB of the limit were investigated.

Tests were performed in Test Site F.

#### 5.1.4 Test equipment

E150, E035, ZSW1, E624, E411

See Section 9 for more details

#### 5.1.5 Test results

Temperature of test environment	20°C
Humidity of test environment	50%
Pressure of test environment	101kPa

Band	57-71 GHz
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs5
Single channel	62.64 GHz

Plot refs	
11387-1 Cond 1 AC Live 150k-30M Average	
11387-1 Cond 1 AC Live 150k-30M Quasi-Peak	
11387-1 Cond 1 AC Neutral 150k-30M Average	
11387-1 Cond 1 AC Neutral 150k-30M Quasi-Peak	

**Table of signals measured for Cond 1 AC Live 150k-30M**

Signal No.	Freq (MHz)	Peak Amp (dBuV)	QP Amp (dBuV)	QP -Lim (dB)	AV Amp (dBuV)	AV -Lim (dB)
1	0.201	52.0	47.3	-16.3	30.8	-22.8
2	0.272	54.5	51.0	-10.1	29.3	-21.8
3	0.307	52.4	49.4	-10.7	27.5	-22.6
4	0.372	42.7	37.9	-20.6	18.2	-30.3
5	0.372	42.5	37.9	-20.6	18.3	-30.2
6	0.372	42.9	38.0	-20.5	18.2	-30.3
7	0.461	39.0	35.1	-21.6	24.8	-21.9
8	0.515	41.6	37.6	-18.4	30.4	-15.6
9	0.515	41.9	37.2	-18.8	30.3	-15.7
10	0.597	34.5	32.4	-23.6	29.0	-17.0
11	0.620	33.2	29.1	-26.9	11.6	-34.4
12	0.714	29.1	23.8	-32.2	6.8	-39.2
13	3.819	21.6	17.7	-38.3	1.9	-44.1
14	11.458	13.6	8.1	-51.9	1.7	-48.3
15	17.171	28.5	19.6	-40.4	12.0	-38.0
16	17.666	29.9	21.7	-38.3	12.7	-37.3
17	18.418	39.1	27.9	-32.1	17.1	-32.9
18	18.577	37.9	27.7	-32.3	16.3	-33.7
19	18.909	35.5	27.2	-32.8	14.8	-35.2
20	19.162	32.9	26.2	-33.8	11.6	-38.4
21	19.408	30.4	22.8	-37.2	9.2	-40.8
22	20.489	25.7	17.8	-42.2	5.1	-44.9
23	22.230	24.1	16.6	-43.4	4.2	-45.8
24	26.180	25.8	14.7	-45.3	3.9	-46.1
25	27.539	23.9	14.4	-45.6	3.8	-46.2
26	29.686	25.2	15.4	-44.6	2.9	-47.1

**Table of signals measured for Cond 1 AC Neutral 150k-30M**

Signal No.	Freq (MHz)	Peak Amp (dBuV)	QP Amp (dBuV)	QP -Lim (dB)	AV Amp (dBuV)	AV -Lim (dB)
1	0.198	54.0	48.9	-14.8	30.7	-23.0
2	0.271	56.7	52.9	-8.2	30.6	-20.5
3	0.307	54.2	50.6	-9.5	26.6	-23.5
4	0.370	44.8	41.0	-17.5	20.8	-27.7
5	0.429	40.0	36.3	-21.0	17.7	-29.6
6	0.429	40.8	36.3	-21.0	16.7	-30.6
7	0.433	40.4	36.7	-20.5	19.3	-27.9
8	0.492	42.7	39.1	-17.0	19.5	-26.6
9	0.500	43.5	39.9	-16.1	20.2	-25.8
10	0.516	44.0	40.2	-15.8	34.2	-11.8
11	0.597	39.3	36.6	-19.4	33.9	-12.1
12	0.598	40.0	37.2	-18.8	34.0	-12.0
13	0.654	34.0	29.4	-26.6	11.8	-34.2
14	3.771	28.8	28.0	-28.0	27.0	-19.0
15	3.811	27.4	20.6	-35.4	4.1	-41.9
16	11.363	14.7	8.1	-51.9	1.4	-48.6
17	17.626	31.1	22.1	-37.9	12.7	-37.3
18	18.024	36.2	25.4	-34.6	14.4	-35.6
19	18.514	39.2	28.7	-31.3	16.9	-33.1
20	19.032	36.0	25.2	-34.8	12.9	-37.1
21	19.636	30.9	22.7	-37.3	7.5	-42.5
22	22.872	26.3	16.1	-43.9	3.8	-46.2
23	23.871	28.1	15.8	-44.2	3.0	-47.0
24	24.583	26.8	15.5	-44.5	3.5	-46.5
25	27.374	25.9	15.1	-44.9	4.0	-46.0
26	27.867	24.7	15.5	-44.5	3.3	-46.7
27	28.519	26.5	15.4	-44.6	2.6	-47.4
28	29.653	23.0	16.1	-43.9	2.8	-47.2

Peak detector "Max held" Analyser plots against the Quasi-Peak / Average limit line(s) can be found in Section 6 of this report.

**LIMITS:**

15.207: as given in the above tables / drawn on the respective plots.

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:

150kHz to 30MHz ±3.6dB.



## 5.2 Radiated emissions 9 - 150 kHz

NOT APPLICABLE: Spectrum below 30MHz started at a frequency of 150 kHz based on the lowest declared signal generated within the equipment of 25 MHz.

## 5.3 Radiated emissions 150 kHz - 30 MHz

### 5.3.1 Test methods

Test Requirements:	47 CFR Part 15C Part 15.255(d)(2) [Reference 4.1.1 of this report]
Test Method:	ANSI C63.10 Clause 6.3 & 6.4 [Reference 4.1.2 of this report]
Limits:	47 CFR Part 15C Part 15.209/15.255(d)(2) [Reference 4.1.1 of this report]

### 5.3.2 Configuration of EUT

The EUT was placed on a 0.8 metres high turntable. The front edge of the EUT was initially positioned facing the antenna. The EUT was measured at a distance of 3 metres. The EUT was examined in its normal use position. Radiated Emissions testing was performed with the EUT powered from 110 V AC. During the initial scan no discernible difference in emissions could be observed when operating on different channels or modulation schemes. The EUT was operated with all four radios in TX19 mode.

### 5.3.3 Test procedure

Tests were made in accordance with FCC Part 15 using the measuring equipment noted below.

Measurements were made in a semi-anechoic chamber (pre-scan) with any final measurements required performed on an OATS without a ground plane. The antenna was placed 1m above the ground. The equipment was rotated 360 degrees to record the worst case emissions.

At least 6 signals within 20dB and all signals within 10dB of the limit were investigated.

Tests were performed using Test Site M.

### 5.3.4 Test equipment

TMS81, ZSW1, E624, E411. E465

See Section 9 for more details

### 5.3.5 Test results

Temperature of test environment	18°C
Humidity of test environment	36%
Pressure of test environment	102kPa

Band	57-71 GHz
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs5
Single channel	62.64 GHz

Plot refs
11387-1 Rad 1 150k-30MHz Para
11387-1 Rad 1 150k-30MHz Perp

Peak detector "Max held" Analyser plots against the Quasi-Peak / Average limit line(s) can be found in Section 6 of this report.

#### LIMITS:

15.209 limits are applicable in the restricted bands of 15.205 with the relevant detector. The general limits of 15.209 are as drawn on the respective plots.

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:  
9kHz - 30MHz ±3.9dB

## 5.4 Radiated emissions 30 MHz -1 GHz

### 5.4.1 Test methods

Test Requirements:	47 CFR Part 15C Part 15.255(d)(2) [Reference 4.1.1 of this report]
Test Method:	ANSI C63.10 Clause 6.3 & 6.5 [Reference 4.1.2 of this report]
Limits:	47 CFR Part 15C Part 15.255(d)(2) [Reference 4.1.1 of this report]

### 5.4.2 Configuration of EUT

The EUT was placed on a 0.8 metres high turntable. The front edge of the EUT was initially positioned facing the antenna. The EUT was measured at a distance of 3 metres. The EUT was examined in its normal use position. Radiated Emissions testing was performed with the EUT powered from 110 V AC. During the initial scan no discernible difference in emissions could be observed when operating on different channels or modulation schemes. The EUT was operated with all four radios in TX19 mode.

### 5.4.3 Test procedure

Tests were made in accordance with FCC Part 15 using the measuring equipment listed below. Measurements were made on a site listed with the FCC. The equipment was rotated 360 degrees and the antenna scanned 1 – 4 metres in both horizontal and vertical polarisations to record the worst case emissions.

At least 6 signals within 20dB and all signals within 10dB of the limit were investigated.

Tests were performed using Test Site M.

### 5.4.4 Test equipment

LPE364, E743, NSA-M, ZSW1, E624, E411, E465

See Section 9 for more details

### 5.4.5 Test results

Temperature of test environment	20°C
Humidity of test environment	36%
Pressure of test environment	102kPa

Band	57-71 GHz
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs5
Mid channel	62.64 GHz

Plot refs	
11387-1 Rad 1 VHF Horiz	
11387-1 Rad 1 VHF Vert	
11387-1 Rad 1 UHF Horiz	
11387-1 Rad 1 UHF Vert	

**Table of signals measured for Rad 1 Horizontal Sig List**

Signal No.	Freq (MHz)	Peak Amp (dBuV/m)	QP Amp (dBuV/m)	QP -Lim (dB)
1	46.584	24.6	19.1	-20.9
2	48.961	23.0	16.8	-23.2
3	414.413	35.7	30.8	-15.2
4	534.540	33.2	27.1	-18.9
5	535.057	33.3	27.1	-18.9
6	549.360	34.8	28.4	-17.6
7	560.182	33.8	28.4	-17.6
8	627.480	35.2	29.7	-16.3
9	646.250	35.4	29.7	-16.3

**Table of signals measured for Rad 1 Vertical Sig List**

Signal No.	Freq (MHz)	Peak Amp (dBuV/m)	QP Amp (dBuV/m)	QP -Lim (dB)
1	45.067	27.0	18.5	-21.5
2	49.009	22.8	16.7	-23.3
3	52.829	21.9	13.7	-26.3
4	54.355	22.7	14.4	-25.6
5	71.607	22.6	13.6	-26.4
6	441.583	36.3	31.3	-14.7
7	492.343	37.6	34.0	-12.0
8	564.994	41.5	36.9	-9.1

Peak detector “Max held” Analyser plots against the Quasi-Peak / Average limit line(s) can be found in Section 6 of this report.

Whilst Low, Mid and High channels were tested, plots are for illustrative purposes only and only Mid channel plots are shown in this report.

**LIMITS:**

15.209 limits are applicable in the restricted bands of 15.205 with the relevant detector. The general limits of 15.209 are as drawn on the respective plots.

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: 30MHz - 1000MHz ±6.1dB.

## 5.5 Radiated emissions above 1 GHz

### 5.5.1 Test methods

Test Requirements:	47 CFR Part 15C Part 15.255(d)(2)/(3)/(4) [Reference 4.1.1 of this report]
Test Method:	ANSI C63.10 Clause 6.3 & 6.6 & 9.8 [Reference 4.1.2 of this report]
Limits:	47 CFR Part 15C Part 15.255(d)(2)/(3)/(4) [Reference 4.1.1 of this report]

### 5.5.2 Configuration of EUT

The EUT was placed on a 1.5 metres high turntable. The front edge of the EUT was initially positioned facing the antenna. The EUT was measured at a distance listed in 5.5.3. The EUT was examined in its normal use position. Radiated Emissions testing was performed with the EUT powered from 110 V AC. During the initial scan no modulation scheme was seen to be worst case so mcs5 was used. The EUT was operated with all four radios in TX6, TX19 and TX32 modes.

### 5.5.3 Test procedure

Tests were made in accordance with FCC Part 15 using the measuring equipment listed below.

Measurements were made in a semi-anechoic chamber with appropriate absorbing material for use in this range. Horn antennas were used at heights where the whole of the EUT was contained within the main beam. The EUT was rotated through 360 degrees to record the worst case emissions. A measurement distance of 3m was used between the test range 1 - 6GHz, 1.2m was used in the test range 6 - 18GHz, 0.5m was used in the test range 18 – 26.5GHz, 0.3m was used in the test range 26.5 - 110GHz, 0.03m was used in the test range 110-140GHz and 0.01m was used in the test range 140-200 GHz.

Above 26.5 GHz, volumetric pre-scan measurements were performed over the entire EUT to identify any point sources of radiation for measuring in the vertical/horizontal plane, single plots covering both Horizontal and vertical polarisations were taken in these frequency ranges only.

At least 6 signals within 20dB and all signals within 10dB of the limit were investigated.

Tests were performed using test Sites A, M.

### 5.5.4 Test equipment

E136, E329, E330, E404, E411, E412, E452, E465, E485, E503, E550, E555, E562, E576, E579, E580, E624, E714, E716, E717, E718, E719, E720, E722, E755, E759, E760, E771, E777, E781, E903, E908, E940, E941, E942, H070, H071, P198, TMS78

See Section 9 for more details

### 5.5.5 Test results

Temperature of test environment	20-22°C
Humidity of test environment	35-41%
Pressure of test environment	100-102kPa

Setup Table

Band	57-71 GHz
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs5
Low channel	58.32 GHz

Spurious Frequency (MHz)	Measured Peak Level (dBµV/m)	Difference to Peak Limit (dB)	Measured Average Level (dBµV/m)	Difference to Average Limit (dB)	EUT Polarisation	Antenna Polarisation
2187.472	42.6	-31.4	36.5	-17.5	Upright	Horizontal
2187.474	44.0	-30.0	39.5	-14.5	Upright	Vertical
2474.999	42.8	-31.2	38.0	-16.0	Upright	Horizontal
2499.999	48.0	-26.0	43.6	-10.4	Upright	Horizontal
2499.999	46.8	-27.2	42.1	-11.9	Upright	Vertical
4999.998	47.5	-26.5	42.5	-11.5	Upright	Horizontal
4999.998	46.7	-27.3	41.0	-13.0	Upright	Vertical
9999.996	46.4	-27.6	40.9	-13.1	Upright	Horizontal
10312.471	43.6	-30.4	36.1	-17.9	Upright	Vertical
56694	77.4	-7.9	66.9	-18.4	Upright	Vertical

Plots	
11387-1 58.32 mcs5 56-57.1 GHz	
11387-1 58.32 mcs5 70.9-75 GHz	

Setup Table

Band	57-71 GHz
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs5
Mid channel	62.64 GHz

Spurious Frequency (MHz)	Measured Peak Level (dBµV/m)	Difference to Peak Limit (dB)	Measured Average Level (dBµV/m)	Difference to Average Limit (dB)	EUT Polarisation	Antenna Polarisation
2187.472	42.6	-31.4	36.5	-17.5	Upright	Horizontal
2187.474	44.0	-30.0	39.5	-14.5	Upright	Vertical
2474.999	42.8	-31.2	38.0	-16.0	Upright	Horizontal
2499.999	48.0	-26.0	43.6	-10.4	Upright	Horizontal
2499.999	46.8	-27.2	42.1	-11.9	Upright	Vertical
4999.998	47.5	-26.5	42.5	-11.5	Upright	Horizontal
4999.998	46.7	-27.3	41.0	-13.0	Upright	Vertical
7160.542	56.2	-17.8	34.4	-19.6	Upright	Horizontal
7161.516	54.4	-19.6	32.9	-21.1	Upright	Vertical
9999.996	46.4	-27.6	40.9	-13.1	Upright	Horizontal
10312.471	43.6	-30.4	36.1	-17.9	Upright	Vertical

Plots
11387-1 Rad 1 1-2GHz Horiz
11387-1 Rad 1 1-2GHz Vert
11387-1 Rad 1 2-5GHz Horiz
11387-1 Rad 1 2-5GHz Vert
11387-1 Rad 1 5-6GHz Horiz
11387-1 Rad 1 5-6GHz Vert
11387-1 Rad 1 6upto10GHz Horiz
11387-1 Rad 1 6upto10GHz Vert
11387-1 Rad 1 10upto12_5GHz Horiz
11387-1 Rad 1 10upto12_5GHz Vert
11387-1 12.5-15 Horiz
11387-1 12.5-15 Vert
11387-1 15-18 Horiz
11387-1 15-18 Vert
11387-1 Horiz 18-21GHz
11387-1 Vert 18-21GHz
11387-1 Horiz 21-23GHz
11387-1 Vert 21-23GHz
11387-1 Horiz 23-26.5GHz
11387-1 Vert 23-26.5GHz
11387-1 62.64 mcs5 26.5-30 GHz
11387-1 62.64 mcs5 30-34 GHz
11387-1 62.64 mcs5 34-38 GHz
11387-1 62.64 mcs5 38-40 GHz
11387-1 62.64 mcs5 40-44 GHz
11387-1 62.64 mcs5 44-48 GHz
11387-1 62.64 mcs5 48-52 GHz
11387-1 62.64 mcs5 52-56 GHz
11387-1 62.64 mcs5 56-57.1 GHz
11387-1 62.64 mcs5 70.9-75 GHz
11387-1 62.64 mcs5 75-80 GHz
11387-1 62.64 mcs5 80-90 GHz
11387-1 62.64 mcs5 90-100 GHz
11387-1 62.64 mcs5 100-110 GHz
11387-1 62.64 mcs5 110-120 GHz
11387-1 62.64 mcs5 120-130 GHz
11387-1 62.64 mcs5 130-140 GHz
11387-1 62.64 mcs5 140-150 GHz
11387-1 62.64 mcs5 150-160 GHz
11387-1 62.64 mcs5 160-170 GHz
11387-1 62.64 mcs5 170-180 GHz
11387-1 62.64 mcs5 180-190 GHz
11387-1 62.64 mcs5 190-200 GHz

Setup Table

Band	57-71 GHz
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs5
High channel	69.12 GHz

Spurious Frequency (MHz)	Measured Peak Level (dBµV/m)	Difference to Peak Limit (dB)	Measured Average Level (dBµV/m)	Difference to Average Limit (dB)	EUT Polarisation	Antenna Polarisation
2187.472	42.6	-31.4	36.5	-17.5	Upright	Horizontal
2187.474	44.0	-30.0	39.5	-14.5	Upright	Vertical
2474.999	42.8	-31.2	38.0	-16.0	Upright	Horizontal
2499.999	48.0	-26.0	43.6	-10.4	Upright	Horizontal
2499.999	46.8	-27.2	42.1	-11.9	Upright	Vertical
4999.998	47.5	-26.5	42.5	-11.5	Upright	Horizontal
4999.998	46.7	-27.3	41.0	-13.0	Upright	Vertical
7160.542	56.2	-17.8	34.4	-19.6	Upright	Horizontal
7161.516	54.4	-19.6	32.9	-21.1	Upright	Vertical
9999.996	46.4	-27.6	40.9	-13.1	Upright	Horizontal
10312.471	43.6	-30.4	36.1	-17.9	Upright	Vertical

Plots	
11387-1 69.12 mcs5 56-57.1 GHz	
11387-1 69.12 mcs5 70.9-75 GHz	

Peak detector “Max held” Analyser plots against the average limit line can be found in Section 6 of this report.

Note: Whilst Low, Mid and High channels were tested, plots are for illustrative purposes only and only Mid channel plots are shown in this report with the exception of upper and lower band plots for low and high channels.

**LIMITS:**

15.209 limits are applicable in the restricted bands of 15.205 with the relevant detector.

15.255 (d)(3) between 40 GHz and 200 GHz the level of the emissions shall not exceed 90pW/cm<sup>2</sup> at a distance of 3m. This is equivalent to 85.3 dBµV/m at a distance of 3 m. Calculations are based on ANSI C63.10 clauses 9.4-9.7.

The general limits of 15.209 are as drawn on the respective plots.

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 – 18 GHz ±3.5dB, 18 – 26.5 GHz ±3.9dB, 26.5 – 60 GHz ±3.9dB, 60 – 110 GHz ±4.4dB, 110 – 200 GHz ±5.9dB



## 5.6 Frequency stability

### 5.6.1 Test methods

Test Requirements:	47 CFR Part 15C Part 15.255(f) [Reference 4.1.1 of this report]
Test Method:	ANSI C63.10 Clause 6.8 / 9.14 [Reference 4.1.2 of this report]
Limits:	47 CFR Part 15C Part 15.255(f) [Reference 4.1.1 of this report]

### 5.6.2 Configuration of EUT

The EUT was placed in a temperature controlled chamber. The EUT's emissions were observed by means of a test fixture. The EUT was operated in TX40, TX41 and TX42 modes for this test.

### 5.6.3 Test procedure

Tests were made in accordance with FCC Part 15 using the measuring equipment listed below. Temperature stability was achieved at each test temperature level before taking measurements using the counter function of a spectrum analyser. The CW signal produced an offset tone of +99.687 MHz.

Tests were performed using Test Site A.

### 5.6.4 Test equipment

E434, E555, E755, F138, F140, L264, TMS38, TMS57

See Section 9 for more details

### 5.6.5 Test results

Temperature of test environment	21°C
Humidity of test environment	55%
Pressure of test environment	100kPa

Band	57-71 GHz (rad1)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	CW tone
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

Test conditions		Frequency (MHz) Low channel	Frequency (MHz) Mid channel	Frequency (MHz) High channel
-40°C	Volts Nominal (110)	58419.685179	62739.685153	69219.685183
-20°C	Volts Nominal (110)	58419.685722	62739.685992	69219.686488
-10°C	Volts Nominal (110)	58419.688554	62739.688853	69219.689084
0°C	Volts Nominal (110)	58419.686879	62739.686951	69219.686965
10°C	Volts Nominal (110)	58419.684638	62739.684430	69219.684086
20°C	Volts Minimum (93.5)	58419.678670	62739.677610	69219.676168
	Volts Nominal (110)	58419.678670	62739.677610	69219.676168
	Volts Maximum (126.5)	58419.678670	62739.677610	69219.676168
30°C	Volts Nominal (110)	58419.687272	62739.687084	69219.686936
40°C	Volts Nominal (110)	58419.675987	62739.675115	69219.673922
50°C	Volts Nominal (110)	58419.674714	62739.673268	69219.671315
Max Frequency Error per chan (Hz)		+1554 / -12286	+1853 / -13732	+2084 / -15685
Max Frequency Error observed (MHz)		-0.012286	-0.013732	-0.015685

Results shown above include the offset tone of +99.687 MHz.

Maximum variation observed was +2.084 kHz, -15.685 kHz. Refer to 6 dB BW test results for BW of signal contained within the band 57-71 GHz.

**LIMITS:**

15.255 (f) Fundamental emissions must be contained within the frequency band specified during all conditions of operation.

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.

## 5.7 Peak & Average EIRP

### 5.7.1 Test methods

Test Requirements:	47 CFR Part 15C Part 15.255(c)(1)(i)/(ii) [Reference 4.1.1 of this report]
Test Method:	ANSI C63.10 Clause 9.10 & 9.11 [Reference 4.1.2 of this report]
Limits:	47 CFR Part 15C Part 15.255(c)(1)(i)/(ii) [Reference 4.1.1 of this report]

### 5.7.2 Configuration of EUT

The EUT was placed on a 1.5 metres high turntable. The EUT antenna was positioned and aligned with the measuring antenna. The EUT was measured at a distance of 0.6 metres. EIRP testing was performed with the EUT powered from 110 V AC. During initial scans modulation scheme mcs5 was found to produce the most power. The EUT was operated in TX6, TX19 and TX32 modes.

### 5.7.3 Test procedure

Tests were made in accordance with FCC Part 15 using the measuring equipment listed below. Measurements were made in a semi-anechoic chamber with appropriate absorbing material for use in this range. A Horn antenna was used to align with and measure the radiated power from the EUT. A wideband RF detector covering the entire band was used with a 10MHz LP filter and a digital oscilloscope to measure the Peak and Average power. A measurement distance of 0.6 m was used to maintain the far field condition at the frequency of interest whilst maintaining enough EUT transmitted signal into the detector. Substitution was performed to determine the results. Vertical measuring polarisation provided highest EIRP results.

Tests were performed using test Site A.

### 5.7.4 Test equipment

E555, E577, E602, E717, E781, E783, E851, E852, E908, F024, F136, P198

See Section 9 for more details

### 5.7.5 Test results

Temperature of test environment	21°C
Humidity of test environment	40%
Pressure of test environment	101kPa

Band	57-71 GHz (rad0)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs5
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

Test conditions	Low channel	Mid channel	High channel
Peak EIRP measured (dBm)	38.2	38.1	38.3
Difference to peak limit (dB)	-4.8	-4.9	-4.7
Average EIRP measured (dBm)	37.7	37.5	37.7
Difference to average limit (dB)	-2.3	-2.5	-2.3
Beam setting for maximum EIRP	29	37	39

Band	57-71 GHz (rad1)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs5
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

Test conditions	Low channel	Mid channel	High channel
Peak EIRP measured (dBm)	37.7	36.8	39.2
Difference to peak limit (dB)	-5.3	-6.2	-3.8
Average EIRP measured (dBm)	37.3	36.2	38.6
Difference to average limit (dB)	-2.7	-3.8	-1.4
Beam setting for maximum EIRP	37	33	27

Band	57-71 GHz (rad2)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs5
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.16 GHz

Test conditions	Low channel	Mid channel	High channel
Peak EIRP measured (dBm)	38.4	38.9	39.4
Difference to peak limit (dB)	-4.6	-4.1	-3.6
Average EIRP measured (dBm)	37.9	38.4	38.9
Difference to average limit (dB)	-2.1	-1.6	-1.1
Beam setting for maximum EIRP	29	36	27

Band	57-71 GHz (rad3)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs5
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.16 GHz

Test conditions	Low channel	Mid channel	High channel
Peak EIRP measured (dBm)	39.6	38.4	38.2
Difference to peak limit (dB)	-4.4	-4.6	-4.8
Average EIRP measured (dBm)	39.1	37.8	37.5
Difference to average limit (dB)	-0.9	-2.2	-2.5
Beam setting for maximum EIRP	29	27	24

Example of EIRP calculation from measured dBuV/m at 0.6m. using ANSI C63.10:2013 equation 22:

Using 148.77 dBuV/m PK @0.6m as highest measured E field (radio 3 low channel):

$$(22): EIRP = E_{Meas} + 20\log(d_{Meas}) - 104.7, = 148.77 + (-4.44) - 104.7 = +39.6 \text{ dBm.}$$

**LIMITS:**

15.255 (c(i) the average power of any emission shall not exceed 40 dBm and the peak power of any emission shall not exceed 43 dBm.

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:  
<± 4.6 dB.

## 5.8 Peak Conducted Power

### 5.8.1 Test methods

Test Requirements:	47 CFR Part 15C Part 15.255(e) [Reference 4.1.1 of this report]
Test Method:	ANSI C63.10 Clause 9.7 [Reference 4.1.2 of this report]
Limits:	47 CFR Part 15C Part 15.255(e) [Reference 4.1.1 of this report]

### 5.8.2 Configuration of EUT

The results from the EIRP tests in section 5.7 above were used.

### 5.8.3 Test procedure

A calculation was performed in accordance with ANSI C63.10:2013 clause 9.7. Equation 27 using the following formula:

$$P_{COND} = EIRP_{LINEAR} / G_{EUT}$$

Where:

$P_{COND}$  is conducted power in Watts.

$EIRP_{LINEAR}$  is equivalent isotropically radiated power in Watts

$G_{EUT}$  is numeric gain of EUT radiating element (Antenna)

### 5.8.4 Test equipment

Not required

### 5.8.5 Test results

Band	57-71 GHz (rad0)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs5
Low channel	58.32 GHz
Mid channel	64.8 GHz
High channel	69.12 GHz

Test conditions	Low channel	Mid channel	High channel
Peak EIRP measured (dBm)	38.2	38.1	38.3
Beam setting for maximum	29	37	39
Peak EIRP measured in Watts	6.607	6.457	6.761
Calculated Peak conducted power (W)	0.042	0.041	0.043

Band	57-71 GHz (rad1)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs5
Low channel	58.32 GHz
Mid channel	64.8 GHz
High channel	69.12 GHz

Test conditions	Low channel	Mid channel	High channel
Peak EIRP measured (dBm)	37.7	36.8	39.2
Beam setting for maximum	37	33	27
Peak EIRP measured in Watts	5.888	4.365	8.318
Calculated Peak conducted power (W)	0.037	0.028	0.052

Band	57-71 GHz (rad2)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs5
Low channel	58.32 GHz
Mid channel	64.8 GHz
High channel	69.12 GHz

Test conditions	Low channel	Mid channel	High channel
Peak EIRP measured (dBm)	38.4	38.9	39.4
Beam setting for maximum	29	36	27
Peak EIRP measured in Watts	6.918	7.762	8.710
Calculated Peak conducted power (W)	0.044	0.049	0.055

Band	57-71 GHz (rad3)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs5
Low channel	58.32 GHz
Mid channel	64.8 GHz
High channel	69.12 GHz

Test conditions	Low channel	Mid channel	High channel
Peak EIRP measured (dBm)	39.6	38.4	38.2
Beam setting for maximum	29	27	24
Peak EIRP measured in Watts	9.120	6.918	6.610
Calculated Peak conducted power (W)	0.058	0.044	0.042

Antenna gain is declared as 22dBi (numeric gain is therefore 158.5)

15.255 (e) the peak transmitter conducted output power shall not exceed 500 mW.

These results show that the EUT has PASSED this test.

## 5.9 6 dB Occupied bandwidth

### 5.9.1 Test methods

Test Requirements: 47 CFR Part 15C Part 15.255(e)(1) [Reference 4.1.1 of this report]  
 Test Method: ANSI C63.10 Clause 9.3 [Reference 4.1.2 of this report]  
 Limits: 47 CFR Part 15C Part 15.255(e)(1) [Reference 4.1.1 of this report]

### 5.9.2 Configuration of EUT

The EUT was placed on a 1.5 metres high turntable. The front edge of the EUT was initially positioned facing the antenna. The EUT was measured at a distance of 0.6 metres. The EUT was tested with the EUT powered from 110 V AC. The EUT was operated in TX2 to TX13, TX15 to TX26 and TX28 to TX39 modes.

### 5.9.3 Test procedure

Tests were made in accordance with FCC Part 15 using the measuring equipment listed below. A 100 kHz RBW, 3x VBW, peak detector, auto sweep time and max hold settings were used for the 6 dB bandwidth.

Tests were performed using test Site A.

### 5.9.4 Test equipment

E555, E602, E717, E755, E781, E908, E920

See Section 9 for more details

### 5.9.5 Test results

Temperature of test environment 21°C  
 Humidity of test environment 40%  
 Pressure of test environment 101kPa

Band	57-71 GHz (rad0)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs1
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1165.2	1570.9	1443.9
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad0 58.32 GHz 40 dBm mcs1	11387-1 OBW rad0 62.64 GHz 40 dBm mcs1	11387-1 OBW rad0 69.12 GHz 40 dBm mcs1
FLOW Worst case (MHz)	57766.8	61907.9	68346.4
FHIGH Worst case (MHz)	58932	63478.8	69790.3



Band	57-71 GHz (rad1)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs1
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1244.3	1512.6	1333.7
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad1 58.32 GHz 40 dBm mcs1	11387-1 OBW rad1 62.64 GHz 40 dBm mcs1	11387-1 OBW rad1 69.12 GHz 40 dBm mcs1

FLOW Worst case (MHz)	57856.2	61969.7	68514.9
FHIGH Worst case (MHz)	59100.5	63482.3	69848.6

Band	57-71 GHz (rad2)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs1
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.16 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1505.7	1622.3	1478
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad2 58.32 GHz 40 dBm mcs1	11387-1 OBW rad2 62.64 GHz 40 dBm mcs1	11387-1 OBW rad2 69.12 GHz 40 dBm mcs1

FLOW Worst case (MHz)	57505.4	61821.9	68381
FHIGH Worst case (MHz)	59011.1	63444.2	69859

Band	57-71 GHz (rad3)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs1
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.16 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1430	1626.2	1368.3
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad3 58.32 GHz 40 dBm mcs1	11387-1 OBW rad3 62.64 GHz 40 dBm mcs1	11387-1 OBW rad3 69.12 GHz 40 dBm mcs1

FLOW Worst case (MHz)	57574.1	61856.1	68415.1
FHIGH Worst case (MHz)	59004.1	63482.3	69783.4

Band	57-71 GHz (rad0)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs2
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1237.4	1591.7	1481.9
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad0 58.32 GHz 40 dBm mcs2	11387-1 OBW rad0 62.64 GHz 40 dBm mcs2	11387-1 OBW rad0 69.12 GHz 40 dBm mcs2

FLOW Worst case (MHz)	57694.6	61890.6	68418.6
FHIGH Worst case (MHz)	58932	63482.3	69900.5

Band	57-71 GHz (rad1)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs2
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1131	1505.7	1402.4
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad1 58.32 GHz 40 dBm mcs2	11387-1 OBW rad1 62.64 GHz 40 dBm mcs2	11387-1 OBW rad1 69.12 GHz 40 dBm mcs2

FLOW Worst case (MHz)	57804.4	61969.7	68501.1
FHIGH Worst case (MHz)	58935.4	63475.4	69903.5

Band	57-71 GHz (rad2)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs2
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.16 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1564	1677.6	1443.9
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad2 58.32 GHz 40 dBm mcs2	11387-1 OBW rad2 62.64 GHz 40 dBm mcs2	11387-1 OBW rad2 69.12 GHz 40 dBm mcs2

FLOW Worst case (MHz)	57529.6	61808.1	68418.6
FHIGH Worst case (MHz)	59093.6	63485.7	69862.5

Band	57-71 GHz (rad3)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs2
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1495.3	1612.4	1570.9
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad3 58.32 GHz 40 dBm mcs2	11387-1 OBW rad3 62.64 GHz 40 dBm mcs2	11387-1 OBW rad3 69.12 GHz 40 dBm mcs2

FLOW Worst case (MHz)	57563.7	61866.4	68336.1
FHIGH Worst case (MHz)	59059	63478.8	69907

Band	57-71 GHz (rad0)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs3
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1069.3	1629.7	1450.8
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad0 58.32 GHz 40 dBm mcs3	11387-1 OBW rad0 62.64 GHz 40 dBm mcs3	11387-1 OBW rad0 69.12 GHz 40 dBm mcs3

FLOW Worst case (MHz)	57859.2	61852.6	68346.4
FHIGH Worst case (MHz)	58928.5	63482.3	69797.2

Band	57-71 GHz (rad1)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs3
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1282.3	1581.3	1299.2
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad1 58.32 GHz 40 dBm mcs3	11387-1 OBW rad1 62.64 GHz 40 dBm mcs3	11387-1 OBW rad1 69.12 GHz 40 dBm mcs3

FLOW Worst case (MHz)	57725.3	61894.1	68556.4
FHIGH Worst case (MHz)	59007.6	63475.4	69855.6

Band	57-71 GHz (rad2)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs3
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.16 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1488.8	1615.8	1495.3
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad2 58.32 GHz 40 dBm mcs3	11387-1 OBW rad2 62.64 GHz 40 dBm mcs3	11387-1 OBW rad2 69.12 GHz 40 dBm mcs3

FLOW Worst case (MHz)	57532.6	61863	68343
FHIGH Worst case (MHz)	59021.4	63478.8	69838.3

Band	57-71 GHz (rad3)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs3
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1512.6	1557.1	1385.6
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad3 58.32 GHz 40 dBm mcs3	11387-1 OBW rad3 62.64 GHz 40 dBm mcs3	11387-1 OBW rad3 69.12 GHz 40 dBm mcs3

FLOW Worst case (MHz)	57501.9	61918.3	68408.2
FHIGH Worst case (MHz)	59014.5	63475.4	69793.8

Band	57-71 GHz (rad0)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs4
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1055	1588.2	1457.7
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad0 58.32 GHz 40 dBm mcs4	11387-1 OBW rad0 62.64 GHz 40 dBm mcs4	11387-1 OBW rad0 69.12 GHz 40 dBm mcs4

FLOW Worst case (MHz)	57825.1	61887.2	68343
FHIGH Worst case (MHz)	58880.1	63475.4	69800.7

Band	57-71 GHz (rad1)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs4
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1364.8	1454.3	1440.4
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad1 58.32 GHz 40 dBm mcs4	11387-1 OBW rad1 62.64 GHz 40 dBm mcs4	11387-1 OBW rad1 69.12 GHz 40 dBm mcs4

FLOW Worst case (MHz)	57649.7	61966.2	68418.6
FHIGH Worst case (MHz)	59014.5	63420.5	69859

Band	57-71 GHz (rad2)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs4
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.16 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1364.8	1584.8	1450.8
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad2 58.32 GHz 40 dBm mcs4	11387-1 OBW rad2 62.64 GHz 40 dBm mcs4	11387-1 OBW rad2 69.12 GHz 40 dBm mcs4

FLOW Worst case (MHz)	57642.8	61890.6	68343
FHIGH Worst case (MHz)	59007.6	63475.4	69793.8

Band	57-71 GHz (rad3)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs4
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1516	1591.6	1460.7
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad3 58.32 GHz 40 dBm mcs4	11387-1 OBW rad3 62.64 GHz 40 dBm mcs4	11387-1 OBW rad3 69.12 GHz 40 dBm mcs4

FLOW Worst case (MHz)	57505.4	61887.2	68381
FHIGH Worst case (MHz)	59021.4	63478.8	69841.7

Band	57-71 GHz (rad0)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs5
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1089.7	1649.9	1371.8
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad0 58.32 GHz 40 dBm mcs5	11387-1 OBW rad0 62.64 GHz 40 dBm mcs5	11387-1 OBW rad0 69.12 GHz 40 dBm mcs5

FLOW Worst case (MHz)	57797.4	61835.8	68422
FHIGH Worst case (MHz)	58887.1	63485.7	69793.8

Band	57-71 GHz (rad1)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs5
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1103.5	1577.8	1227.4
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad1 58.32 GHz 40 dBm mcs5	11387-1 OBW rad1 62.64 GHz 40 dBm mcs5	11387-1 OBW rad1 69.12 GHz 40 dBm mcs5

FLOW Worst case (MHz)	57859.2	61894.1	68562.9
FHIGH Worst case (MHz)	58962.7	63471.9	69790.3

Band	57-71 GHz (rad2)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs5
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.16 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1484.9	1598.5	1405.9
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad2 58.32 GHz 40 dBm mcs5	11387-1 OBW rad2 62.64 GHz 40 dBm mcs5	11387-1 OBW rad2 69.12 GHz 40 dBm mcs5

FLOW Worst case (MHz)	57529.6	61825.4	68387.9
FHIGH Worst case (MHz)	59014.5	63423.9	69793.8

Band	57-71 GHz (rad3)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs5
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1516.1	1550.2	1591.6
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad3 58.32 GHz 40 dBm mcs5	11387-1 OBW rad3 62.64 GHz 40 dBm mcs5	11387-1 OBW rad3 69.12 GHz 40 dBm mcs5

FLOW Worst case (MHz)	57577.5	61925.2	68343
FHIGH Worst case (MHz)	59093.6	63475.4	69934.6

Band	57-71 GHz (rad0)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs6
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1154.9	1629.7	1292.7
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad0 58.32 GHz 40 dBm mcs6	11387-1 OBW rad0 62.64 GHz 40 dBm mcs6	11387-1 OBW rad0 69.12 GHz 40 dBm mcs6

FLOW Worst case (MHz)	57728.7	61852.6	68415.1
FHIGH Worst case (MHz)	58883.6	63482.3	69707.8

Band	57-71 GHz (rad1)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs6
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1069.3	1289.3	1231
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad1 58.32 GHz 40 dBm mcs6	11387-1 OBW rad1 62.64 GHz 40 dBm mcs6	11387-1 OBW rad1 69.12 GHz 40 dBm mcs6

FLOW Worst case (MHz)	57859.2	62048.7	68559.6
FHIGH Worst case (MHz)	58928.5	63338	69790.6

Band	57-71 GHz (rad2)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs6
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.16 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1674.2	1591.6	1495.3
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad2 58.32 GHz 40 dBm mcs6	11387-1 OBW rad2 62.64 GHz 40 dBm mcs6	11387-1 OBW rad2 69.12 GHz 40 dBm mcs6

FLOW Worst case (MHz)	57481.2	61887.2	68343
FHIGH Worst case (MHz)	59155.4	63478.8	69838.3

Band	57-71 GHz (rad3)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs6
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1584.7	1584.7	1516
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad3 58.32 GHz 40 dBm mcs6	11387-1 OBW rad3 62.64 GHz 40 dBm mcs6	11387-1 OBW rad3 69.12 GHz 40 dBm mcs6

FLOW Worst case (MHz)	57567.2	61894.1	68274.3
FHIGH Worst case (MHz)	59151.9	63478.8	69790.3

Band	57-71 GHz (rad0)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs7
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1223.6	1564	1450.8
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad0 58.32 GHz 40 dBm mcs7	11387-1 OBW rad0 62.64 GHz 40 dBm mcs7	11387-1 OBW rad0 69.12 GHz 40 dBm mcs7

FLOW Worst case (MHz)	57701.5	61921.7	68339.5
FHIGH Worst case (MHz)	58925.1	63485.7	69790.3



Band	57-71 GHz (rad1)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs7
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1014.5	1502.2	1237.4
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad1 58.32 GHz 40 dBm mcs7	11387-1 OBW rad1 62.64 GHz 40 dBm mcs7	11387-1 OBW rad1 69.12 GHz 40 dBm mcs7

FLOW Worst case (MHz)	57859.2	61976.6	68556.4
FHIGH Worst case (MHz)	58873.7	63478.8	69793.8

Band	57-71 GHz (rad2)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs7
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.16 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1433.5	1581.2	1584.8
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad2 58.32 GHz 40 dBm mcs7	11387-1 OBW rad2 62.64 GHz 40 dBm mcs7	11387-1 OBW rad2 69.12 GHz 40 dBm mcs7

FLOW Worst case (MHz)	57570.6	61842.7	68284.6
FHIGH Worst case (MHz)	59004.1	63423.9	69869.4

Band	57-71 GHz (rad3)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs7
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1584.7	1516	1488.4
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad3 58.32 GHz 40 dBm mcs7	11387-1 OBW rad3 62.64 GHz 40 dBm mcs7	11387-1 OBW rad3 69.12 GHz 40 dBm mcs7

FLOW Worst case (MHz)	57567.2	61962.8	68277.7
FHIGH Worst case (MHz)	59151.9	63478.8	69766.1

Band	57-71 GHz (rad0)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs8
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1072.7	1629.3	1488.4
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad0 58.32 GHz 40 dBm mcs8	11387-1 OBW rad0 62.64 GHz 40 dBm mcs8	11387-1 OBW rad0 69.12 GHz 40 dBm mcs8

FLOW Worst case (MHz)	57862.7	61846.1	68343
FHIGH Worst case (MHz)	58935.4	63475.4	69831.4

Band	57-71 GHz (rad1)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs8
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	942.3	1567.5	1340.7
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad1 58.32 GHz 40 dBm mcs8	11387-1 OBW rad1 62.64 GHz 40 dBm mcs8	11387-1 OBW rad1 69.12 GHz 40 dBm mcs8

FLOW Worst case (MHz)	57859.2	61914.8	68559.4
FHIGH Worst case (MHz)	58801.5	63482.3	69900.1

Band	57-71 GHz (rad2)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs8
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.16 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1584.7	1643	1625.8
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad2 58.32 GHz 40 dBm mcs8	11387-1 OBW rad2 62.64 GHz 40 dBm mcs8	11387-1 OBW rad2 69.12 GHz 40 dBm mcs8

FLOW Worst case (MHz)	57512.3	61842.7	68281.2
FHIGH Worst case (MHz)	59097	63485.7	69907

Band	57-71 GHz (rad3)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs8
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1485.4	1570.9	1478
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad3 58.32 GHz 40 dBm mcs8	11387-1 OBW rad3 62.64 GHz 40 dBm mcs8	11387-1 OBW rad3 69.12 GHz 40 dBm mcs8

FLOW Worst case (MHz)	57532.6	61911.4	68363.7
FHIGH Worst case (MHz)	59018	63482.3	69841.7

Band	57-71 GHz (rad0)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs9
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1013.5	1660.4	1564
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad0 58.32 GHz 40 dBm mcs9	11387-1 OBW rad0 62.64 GHz 40 dBm mcs9	11387-1 OBW rad0 69.12 GHz 40 dBm mcs9

FLOW Worst case (MHz)	57866.6	61821.9	68281.2
FHIGH Worst case (MHz)	58880.1	63482.3	69845.2

Band	57-71 GHz (rad1)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs9
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1141.5	1437	1278.8
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad1 58.32 GHz 40 dBm mcs9	11387-1 OBW rad1 62.64 GHz 40 dBm mcs9	11387-1 OBW rad1 69.12 GHz 40 dBm mcs9

FLOW Worst case (MHz)	57800.9	61904.4	68511.5
FHIGH Worst case (MHz)	58942.4	63341.4	69790.3

Band	57-71 GHz (rad2)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs9
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.16 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1570.9	1591.6	1405.9
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad2 58.32 GHz 40 dBm mcs9	11387-1 OBW rad2 62.64 GHz 40 dBm mcs9	11387-1 OBW rad2 69.12 GHz 40 dBm mcs9

FLOW Worst case (MHz)	57522.7	61887.2	68425.5
FHIGH Worst case (MHz)	59093.6	63478.8	69831.4

Band	57-71 GHz (rad3)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs9
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1677.7	1522.9	1629.2
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad3 58.32 GHz 40 dBm mcs9	11387-1 OBW rad3 62.64 GHz 40 dBm mcs9	11387-1 OBW rad3 69.12 GHz 40 dBm mcs9

FLOW Worst case (MHz)	57477.7	61962.8	68274.3
FHIGH Worst case (MHz)	59155.4	63485.7	69903.5

Band	57-71 GHz (rad0)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs10
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1024.8	1591.7	1550.2
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad0 58.32 GHz 40 dBm mcs10	11387-1 OBW rad0 62.64 GHz 40 dBm mcs10	11387-1 OBW rad0 69.12 GHz 40 dBm mcs10

FLOW Worst case (MHz)	57859.2	61890.6	68281.2
FHIGH Worst case (MHz)	58884	63482.3	69831.4

Band	57-71 GHz (rad1)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs10
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1357.9	1512.6	1234.4
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad1 58.32 GHz 40 dBm mcs10	11387-1 OBW rad1 62.64 GHz 40 dBm mcs10	11387-1 OBW rad1 69.12 GHz 40 dBm mcs10

FLOW Worst case (MHz)	57649.7	61962.8	68559.4
FHIGH Worst case (MHz)	59007.6	63475.4	69793.8

Band	57-71 GHz (rad2)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs10
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1650	1622.8	1522.9
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad2 58.32 GHz 40 dBm mcs10	11387-1 OBW rad2 62.64 GHz 40 dBm mcs10	11387-1 OBW rad2 69.12 GHz 40 dBm mcs10

FLOW Worst case (MHz)	57508.8	61852.6	68343
FHIGH Worst case (MHz)	59158.8	63475.4	69865.9

Band	57-71 GHz (rad3)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs10
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1625.8	1591.6	1584.7
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad3 58.32 GHz 40 dBm mcs10	11387-1 OBW rad3 62.64 GHz 40 dBm mcs10	11387-1 OBW rad3 69.12 GHz 40 dBm mcs10

FLOW Worst case (MHz)	57533	61894.1	68281.2
FHIGH Worst case (MHz)	59158.8	63485.7	69865.9

Band	57-71 GHz (rad0)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs11
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1230.9	1577.8	1612.3
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad0 58.32 GHz 40 dBm mcs11	11387-1 OBW rad0 62.64 GHz 40 dBm mcs11	11387-1 OBW rad0 69.12 GHz 40 dBm mcs11

FLOW Worst case (MHz)	57653.1	61894.1	68291.6
FHIGH Worst case (MHz)	58884	63471.9	69903.9

Band	57-71 GHz (rad1)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs11
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1145	1509.2	1354.5
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad1 58.32 GHz 40 dBm mcs11	11387-1 OBW rad1 62.64 GHz 40 dBm mcs11	11387-1 OBW rad1 69.12 GHz 40 dBm mcs11

FLOW Worst case (MHz)	57866.1	61966.2	68439.3
FHIGH Worst case (MHz)	59011.1	63475.4	69793.8

Band	57-71 GHz (rad2)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs11
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1602	1571.3	1375.2
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad2 58.32 GHz 40 dBm mcs11	11387-1 OBW rad2 62.64 GHz 40 dBm mcs11	11387-1 OBW rad2 69.12 GHz 40 dBm mcs11

FLOW Worst case (MHz)	57495	61852.6	68415.1
FHIGH Worst case (MHz)	59097	63423.9	69790.3

Band	57-71 GHz (rad3)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs11
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1639.6	1581.3	1371.8
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad3 58.32 GHz 40 dBm mcs11	11387-1 OBW rad3 62.64 GHz 40 dBm mcs11	11387-1 OBW rad3 69.12 GHz 40 dBm mcs11

FLOW Worst case (MHz)	57522.7	61897.5	68422
FHIGH Worst case (MHz)	59162.3	63478.8	69793.8

Band	57-71 GHz (rad0)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs12
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1292.7	1591.7	1502.2
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad0 58.32 GHz 40 dBm mcs12	11387-1 OBW rad0 62.64 GHz 40 dBm mcs12	11387-1 OBW rad0 69.12 GHz 40 dBm mcs12

FLOW Worst case (MHz)	57721.8	61890.6	68336.1
FHIGH Worst case (MHz)	59014.5	63482.3	69838.3

Band	57-71 GHz (rad1)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs12
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1010.1	1505.7	1484.9
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad1 58.32 GHz 40 dBm mcs12	11387-1 OBW rad1 62.64 GHz 40 dBm mcs12	11387-1 OBW rad1 69.12 GHz 40 dBm mcs12

FLOW Worst case (MHz)	57866.6	61969.7	68425.5
FHIGH Worst case (MHz)	58876.7	63475.4	69910.4

Band	57-71 GHz (rad2)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs12
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1492.3	1643.1	1501.8
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad2 58.32 GHz 40 dBm mcs12	11387-1 OBW rad2 62.64 GHz 40 dBm mcs12	11387-1 OBW rad2 69.12 GHz 40 dBm mcs12
FLOW Worst case (MHz)	57532.6	61828.8	68336.5
FHIGH Worst case (MHz)	59024.9	63471.9	69838.3

Band	57-71 GHz (rad3)
Power Level	40 dBm (EIRP)
Channel Spacing	2.16 GHz
Mod Scheme	mcs12
Low channel	58.32 GHz
Mid channel	62.64 GHz
High channel	69.12 GHz

	Low channel	Mid channel	High channel
6 dB Bandwidth (MHz) Nominal Temp & Volts	1674.2	1512.6	1361.4
Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts	11387-1 OBW rad3 58.32 GHz 40 dBm mcs12	11387-1 OBW rad3 62.64 GHz 40 dBm mcs12	11387-1 OBW rad3 69.12 GHz 40 dBm mcs12
FLOW Worst case (MHz)	57488.1	61969.7	68422
FHIGH Worst case (MHz)	59162.3	63482.3	69783.4

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

Applying frequency stability results from Section 5.6 of +2.084 kHz or -15.685 kHz to the above results for FLOW and FHIGH shows that all emissions remain within the 57-71 GHz band.

**LIMITS:**

15.255(e)(1) & 15.255(f) The 6 dB bandwidth of the emission must be contained within the designated frequency band.

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:

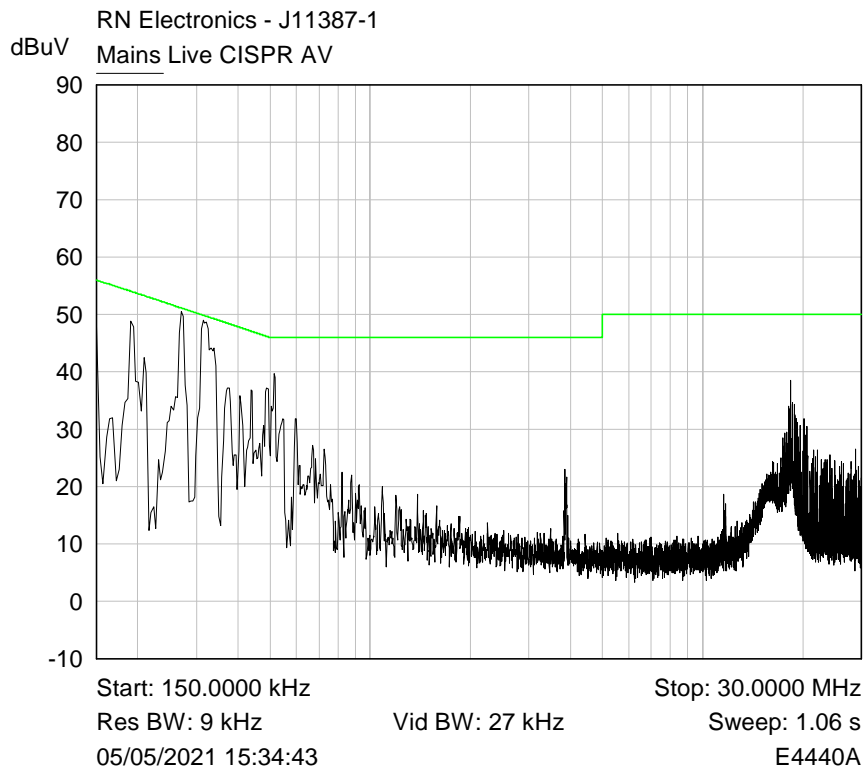
<± 1.9 %.



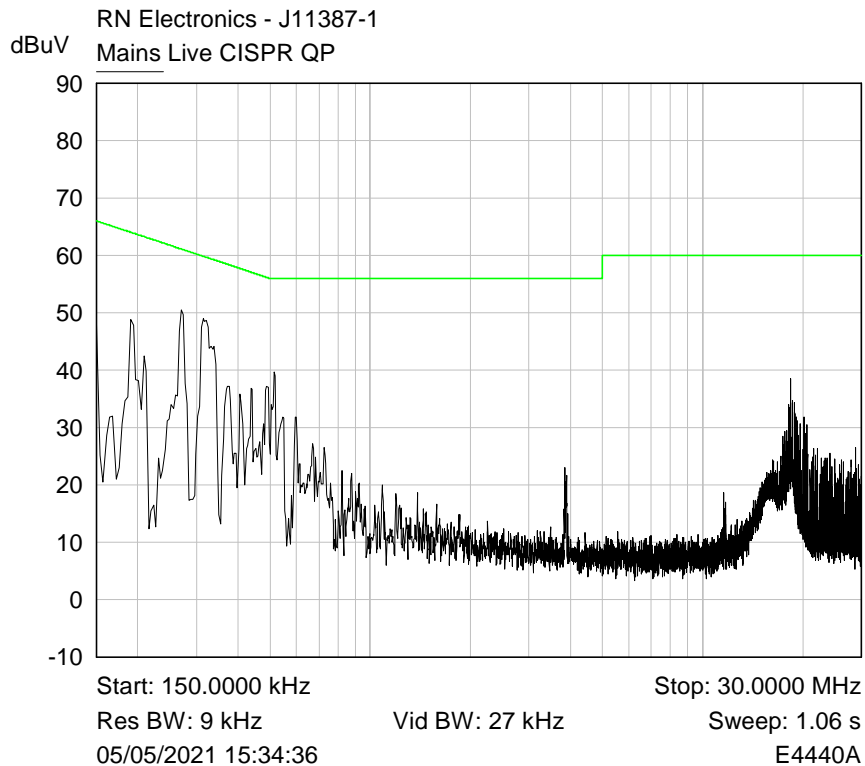
## 6 Plots/Graphical results

### 6.1 AC power line conducted emissions

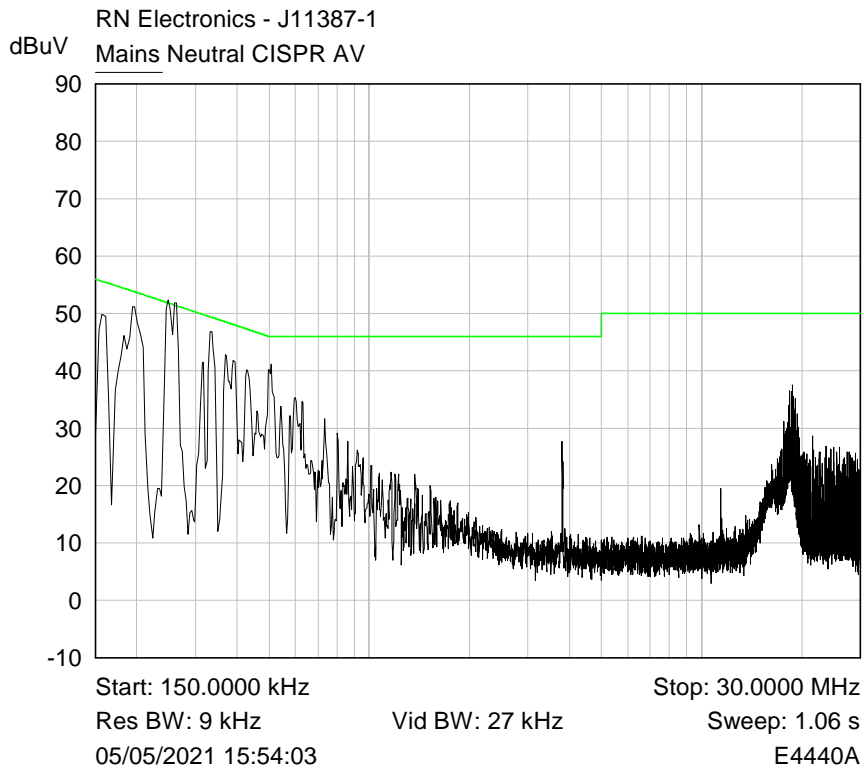
RF Parameters: Band 57-71 GHz, Power 40 dBm (EIRP), Channel Spacing 2.16 GHz, Modulation mcs5, Channel 62.64 GHz



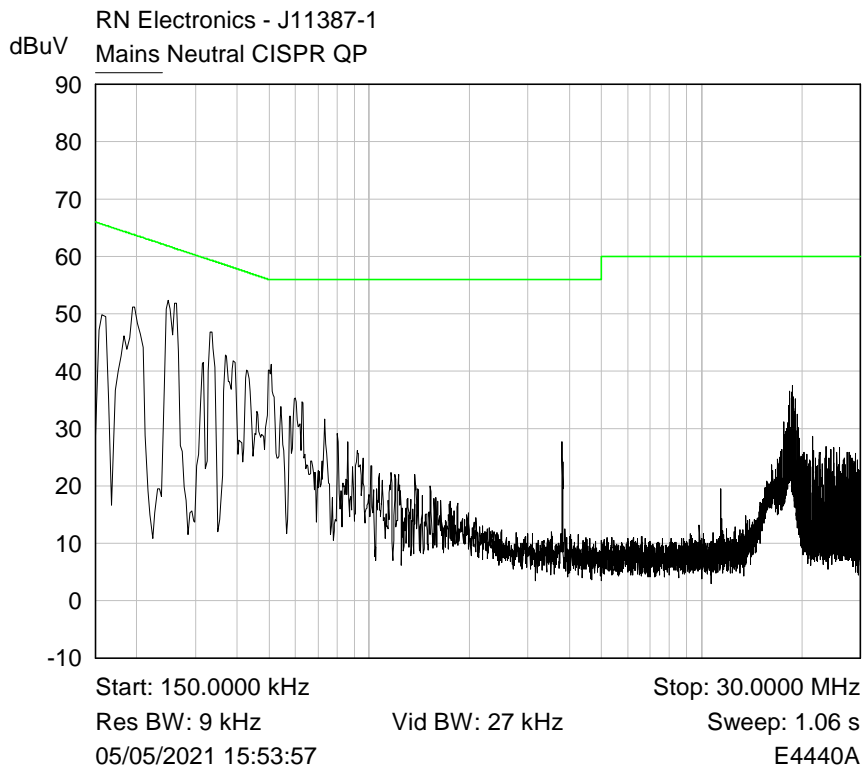
Plot of Live150k-30M Average



Plot of Live150k-30M Quasi-Peak



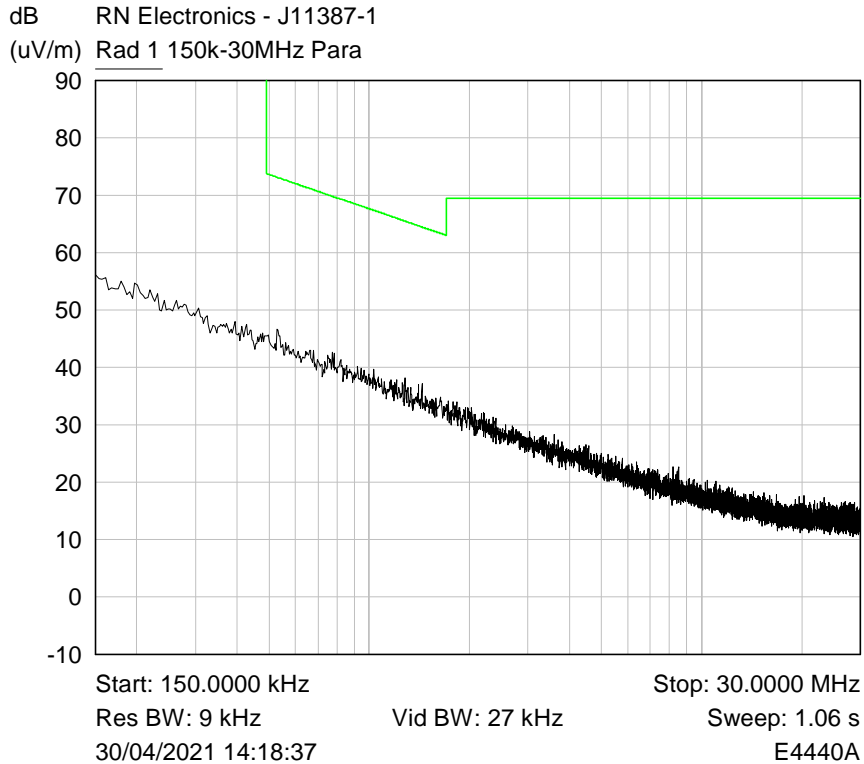
Plot of Neutral150k-30M Average



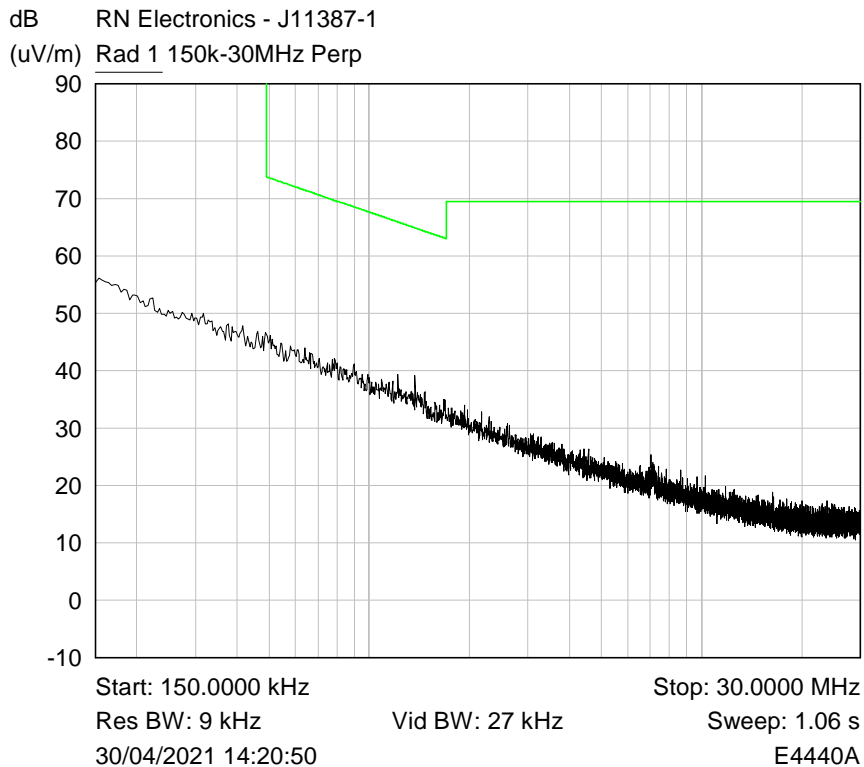
Plot of Neutral150k-30M Quasi-Peak

## 6.2 Radiated emissions 150 kHz - 30 MHz

RF Parameters: Band 57-71 GHz, Power 40 dBm (EIRP), Channel Spacing 2.16 GHz,  
Modulation mcs5, Channel 62.64 GHz



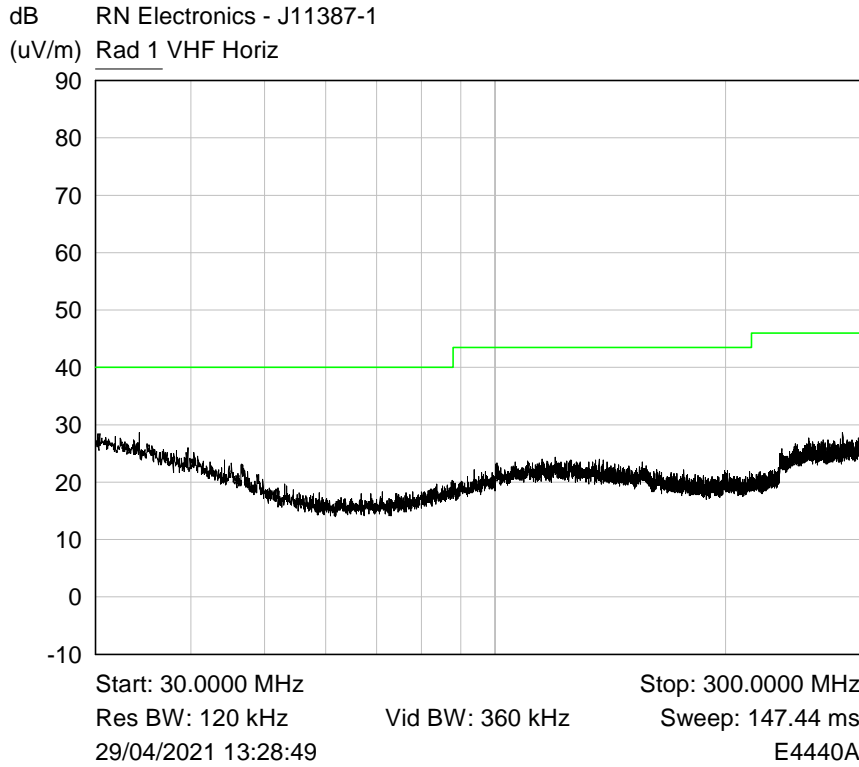
Plot of 150kHz-30MHz Parallel



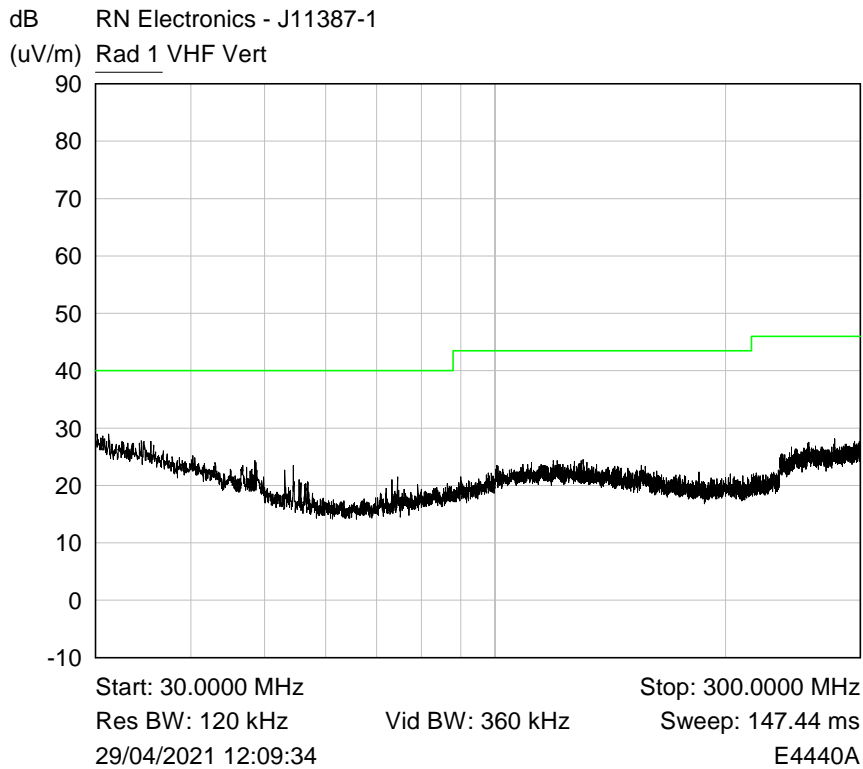
Plot of 150kHz-30MHz Perpendicular

### 6.3 Radiated emissions 30 MHz -1 GHz

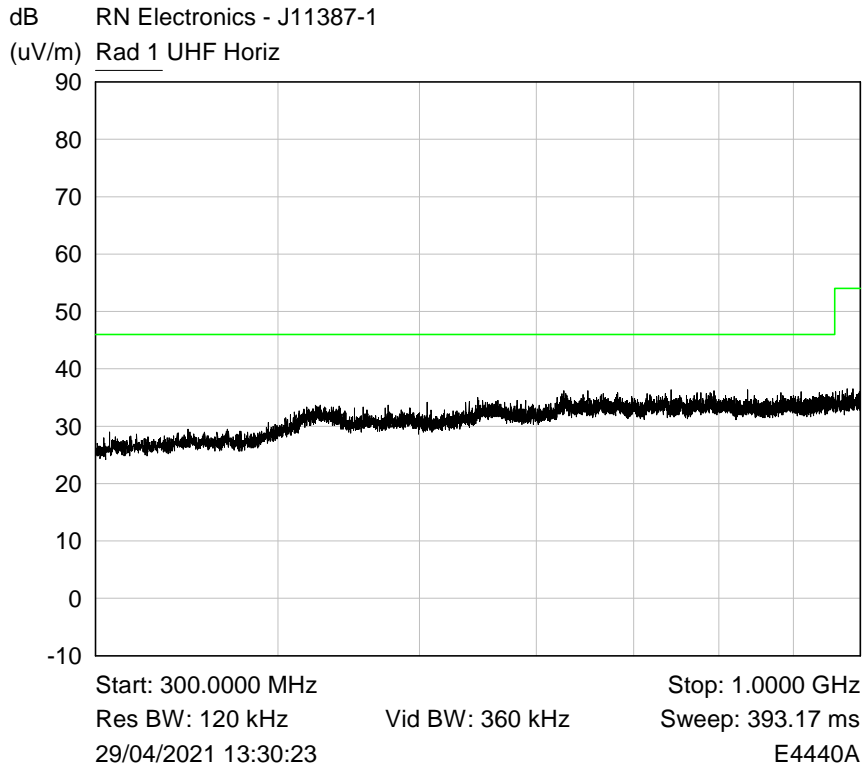
RF Parameters: Band 57-71 GHz, Power 40 dBm (EIRP), Channel Spacing 2.16 GHz,  
Modulation mcs5, Channel 62.64 GHz



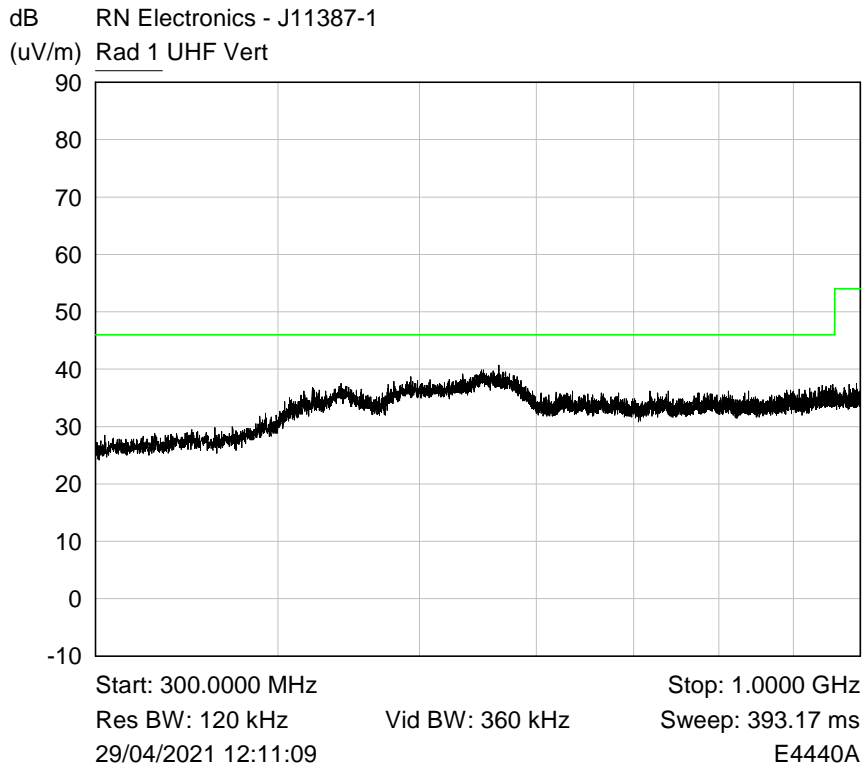
Plot of Peak emissions for VHF Horizontal against the QP limit line.



Plot of Peak emissions for VHF Vertical against the QP limit line.



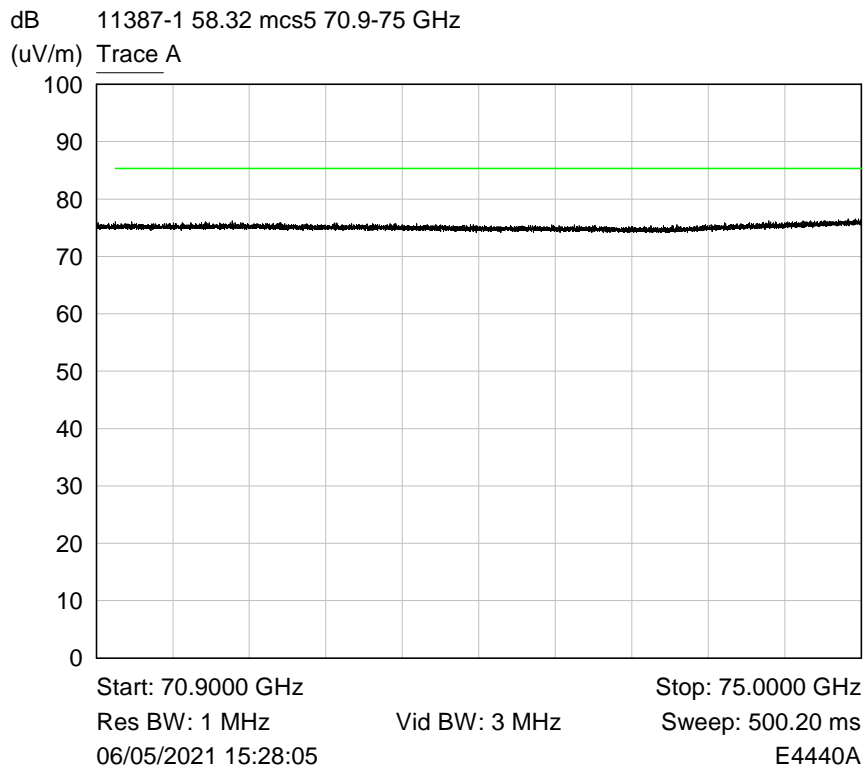
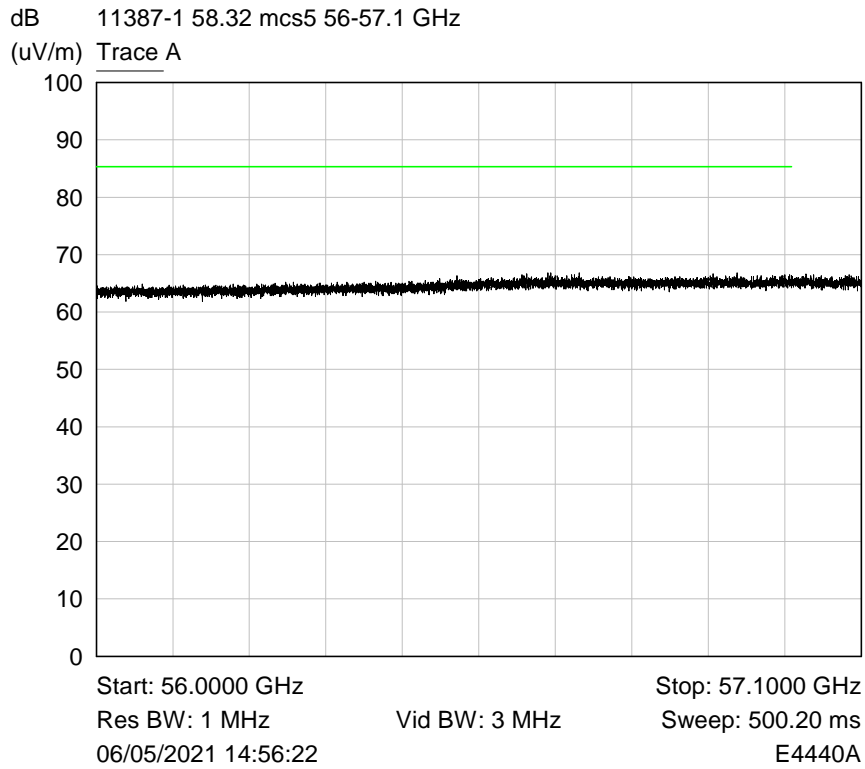
Plot of Peak emissions for UHF Horizontal against the QP limit line.



Plot of Peak emissions for UHF Vertical against the QP limit line.

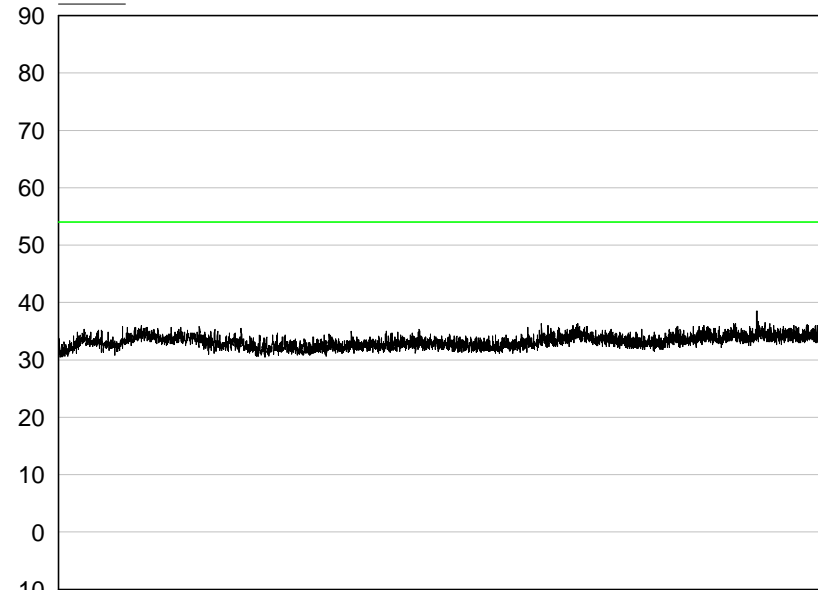
## 6.4 Radiated emissions above 1 GHz

RF Parameters: Band 57-71 GHz, Power 40 dBm (EIRP), Channel Spacing 2.16 GHz,  
Modulation mcs5, Channel 58.32 GHz



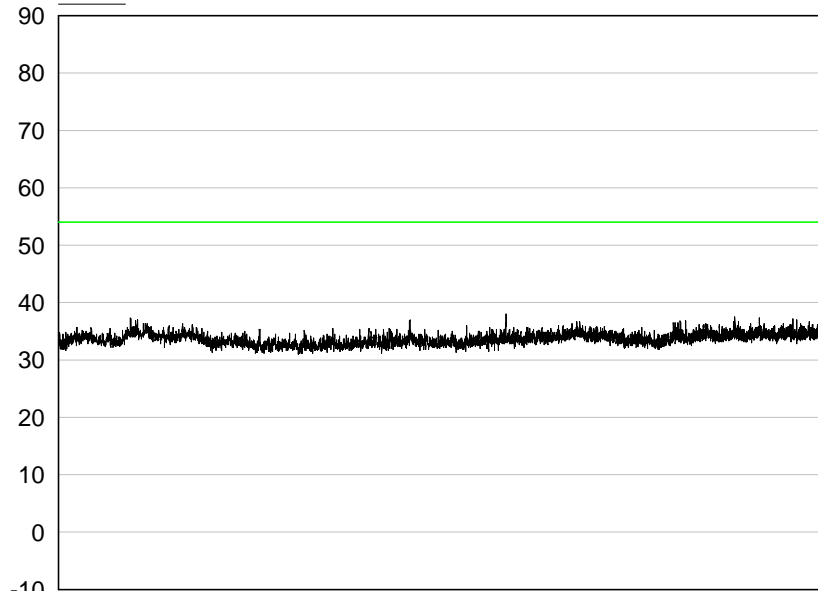
RF Parameters: Band 57-71 GHz, Power 40 dBm (EIRP), Channel Spacing 2.16 GHz,  
Modulation mcs5, Channel 62.64 GHz

dB RN Electronics - J11387-1  
(uV/m) Rad 1 1-2GHz Horiz

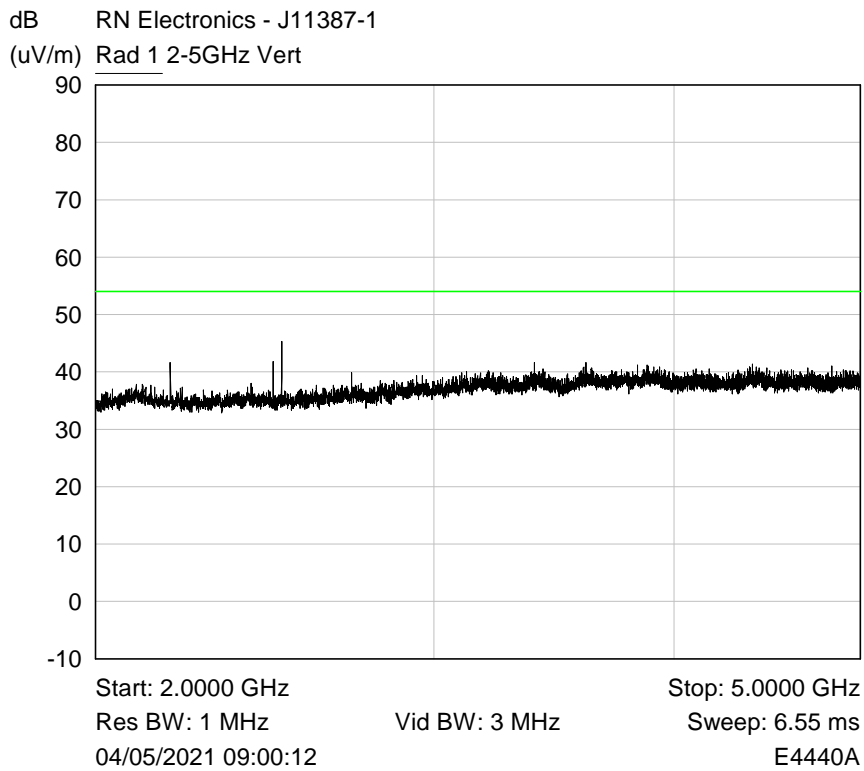
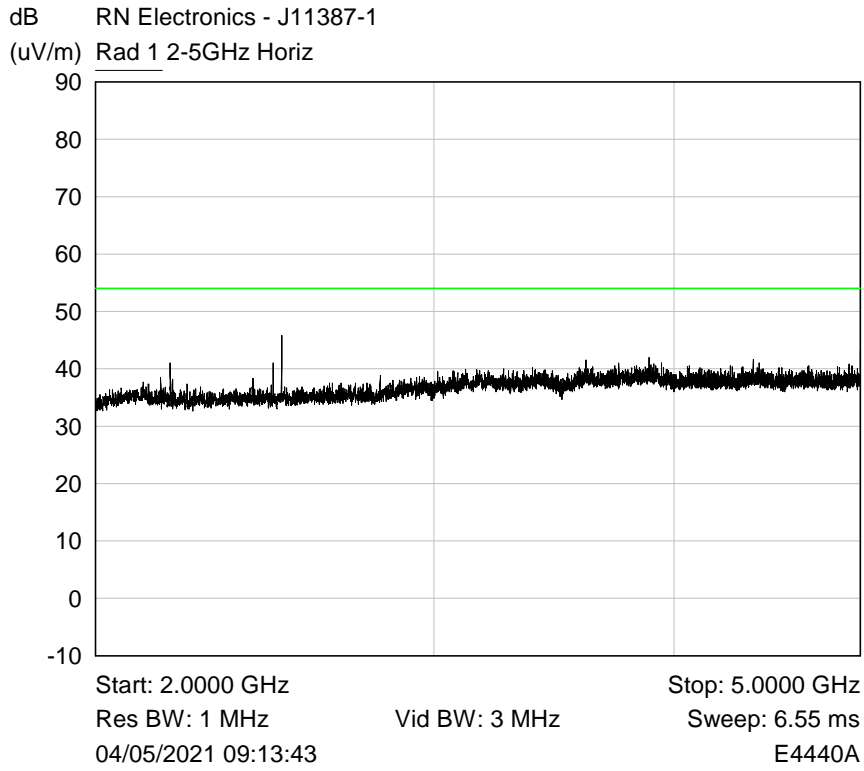


Start: 1.0000 GHz Stop: 2.0000 GHz  
Res BW: 1 MHz Vid BW: 3 MHz Sweep: 2.18 ms  
04/05/2021 09:12:23 E4440A

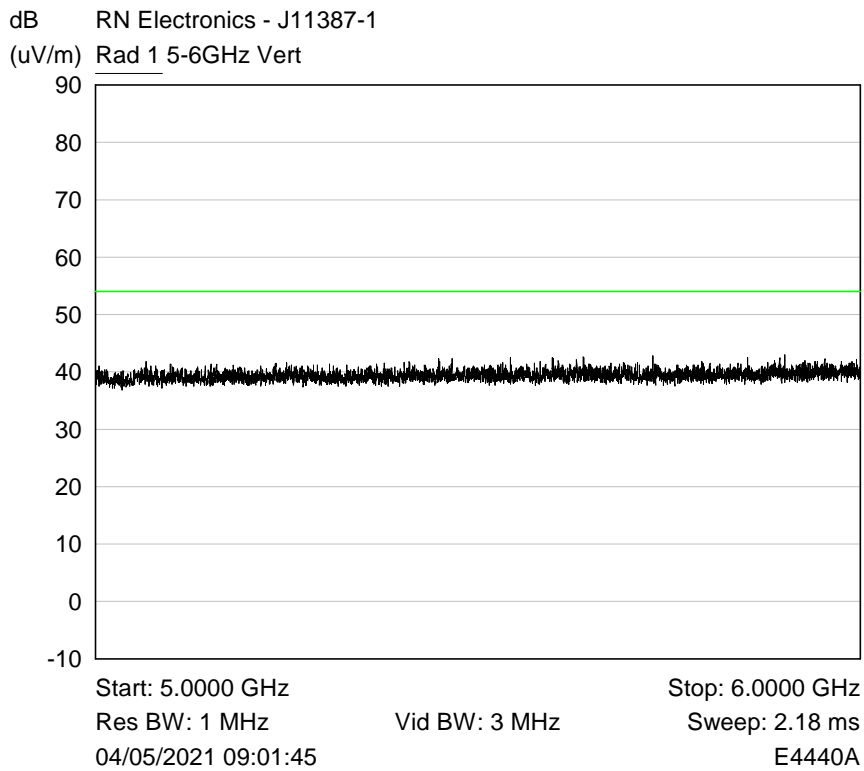
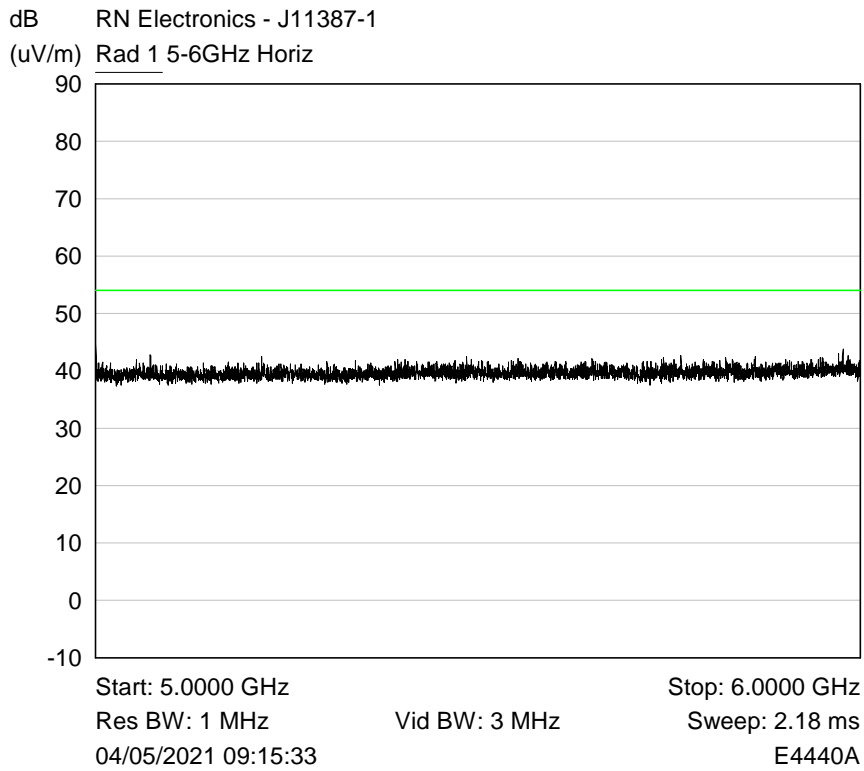
dB RN Electronics - J11387-1  
(uV/m) Rad 1 1-2GHz Vert

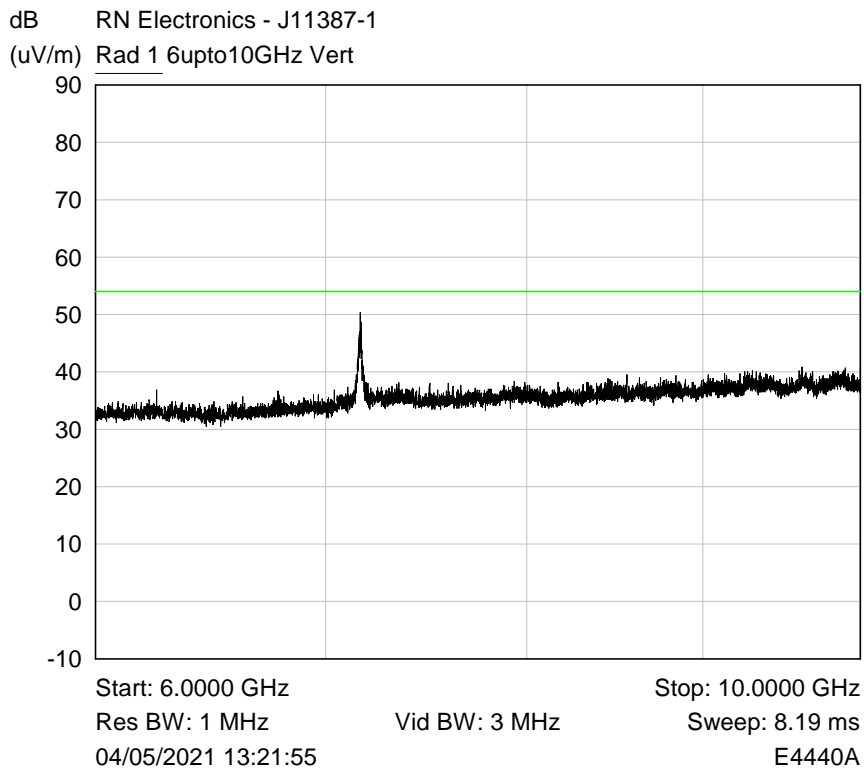
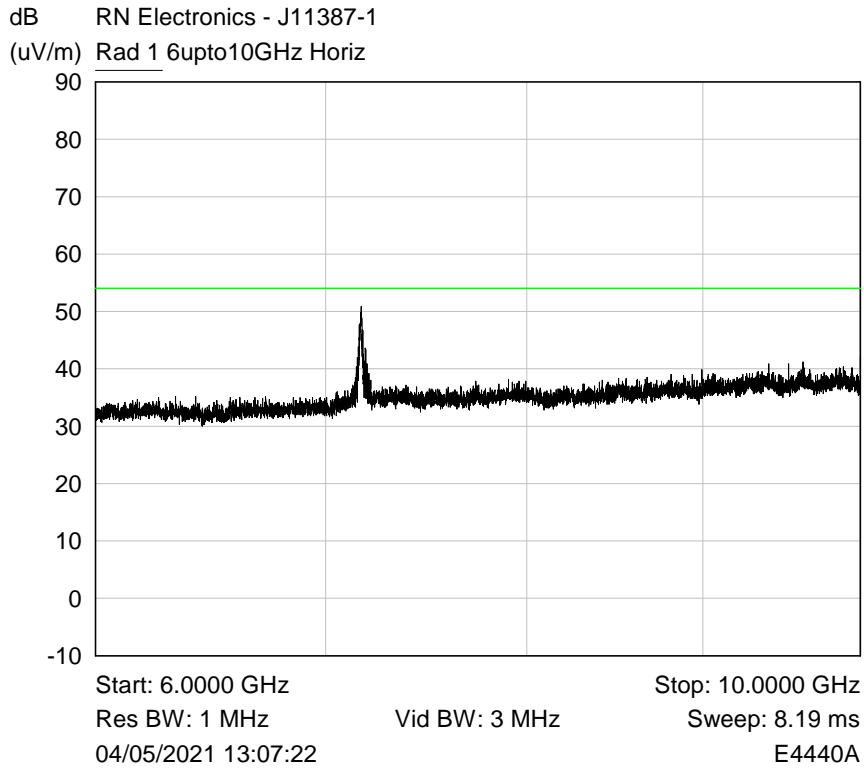


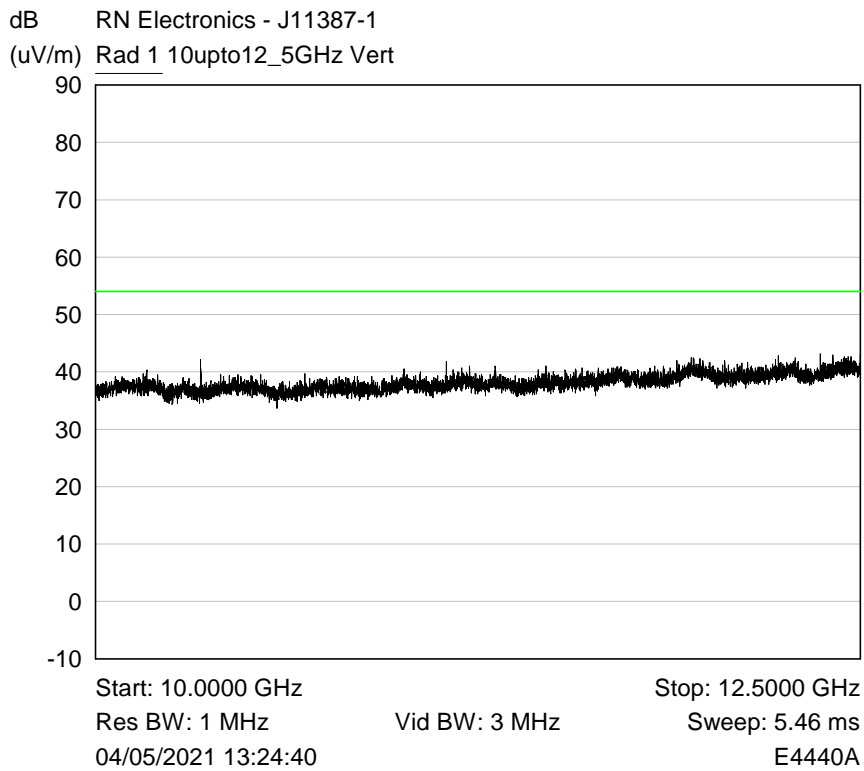
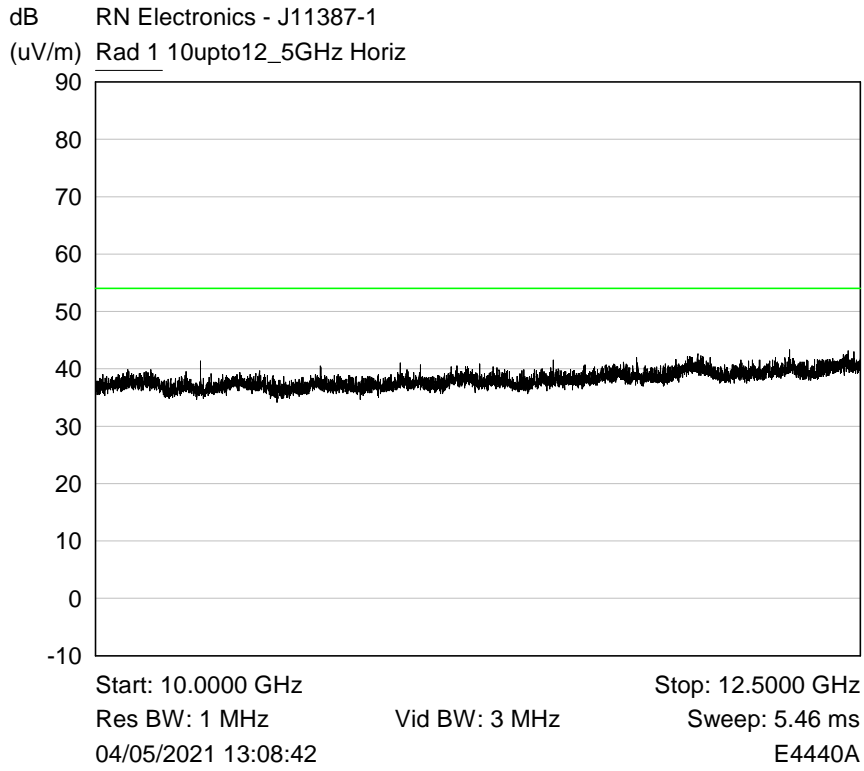
Start: 1.0000 GHz Stop: 2.0000 GHz  
Res BW: 1 MHz Vid BW: 3 MHz Sweep: 2.18 ms  
04/05/2021 08:59:00 E4440A

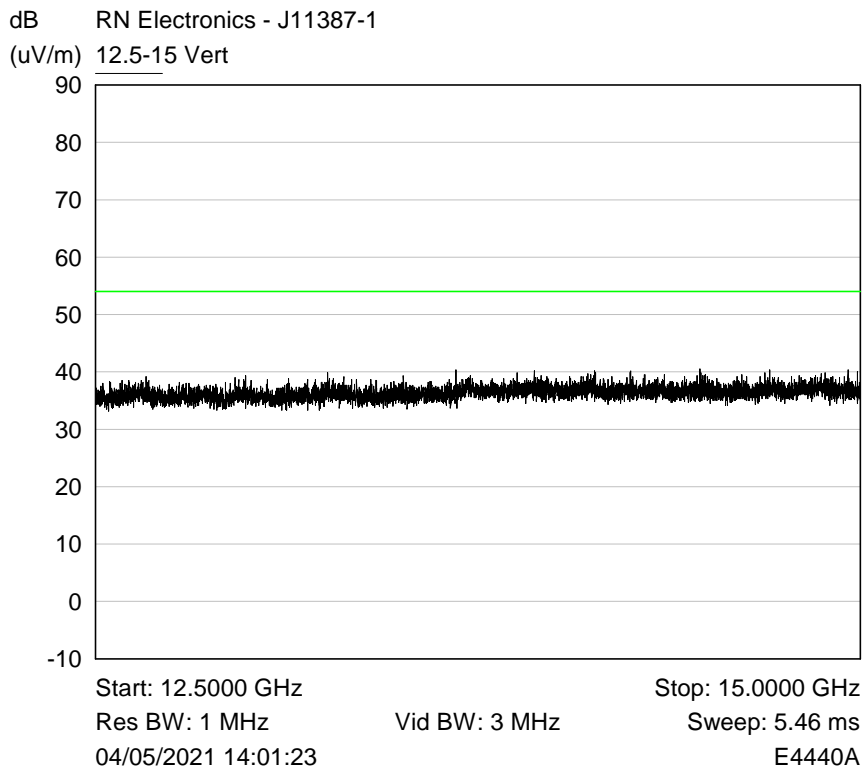
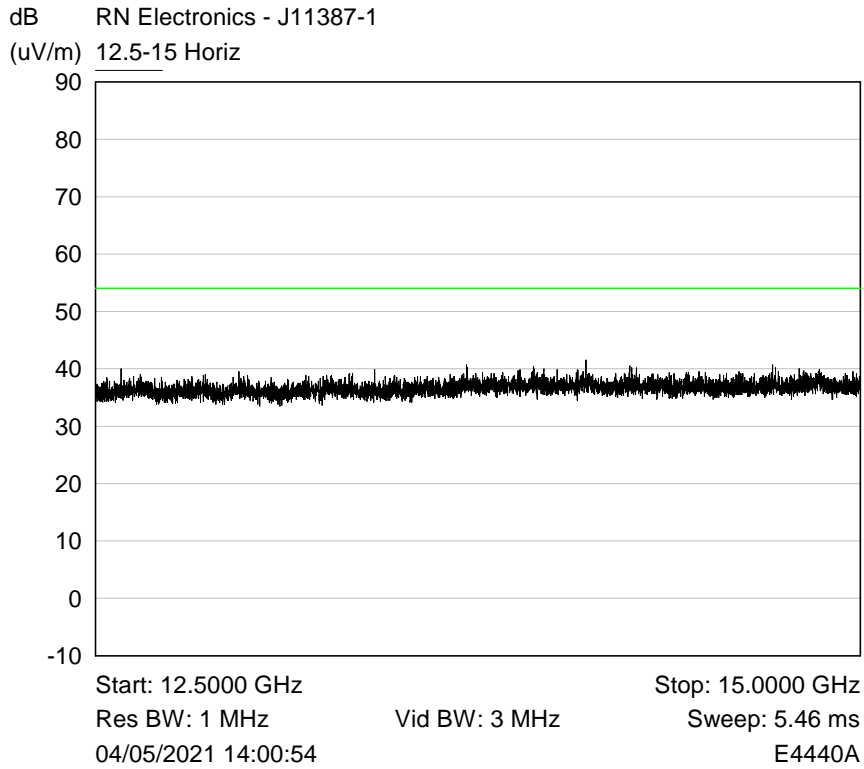


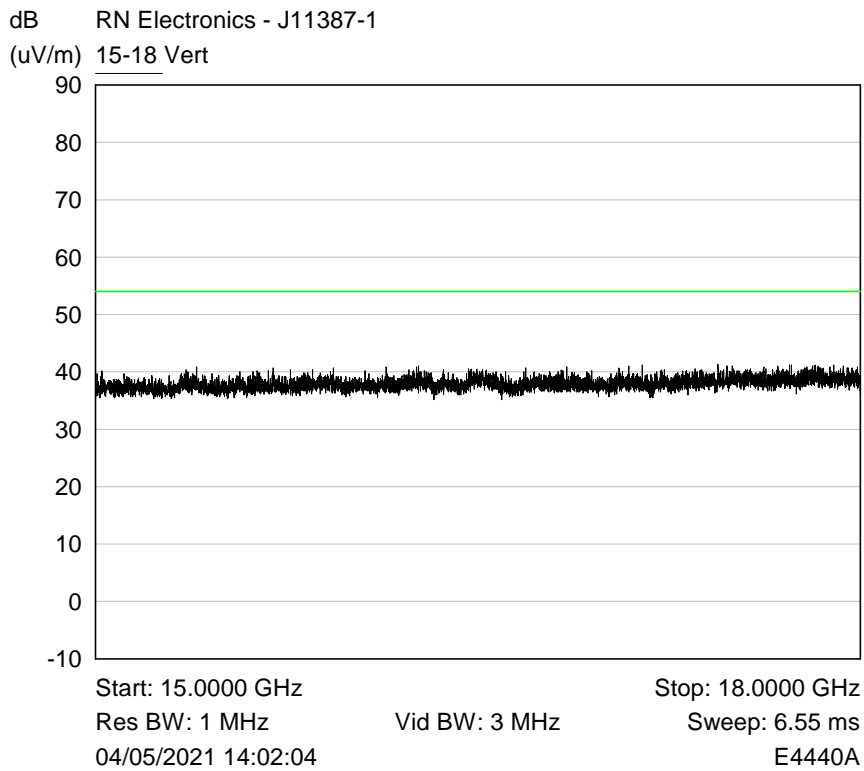
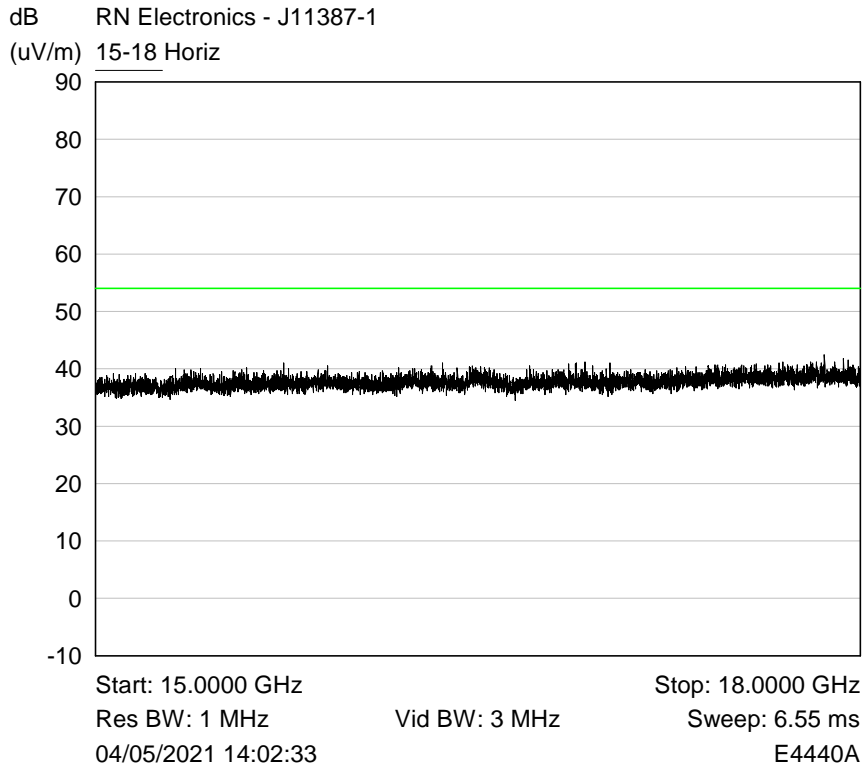


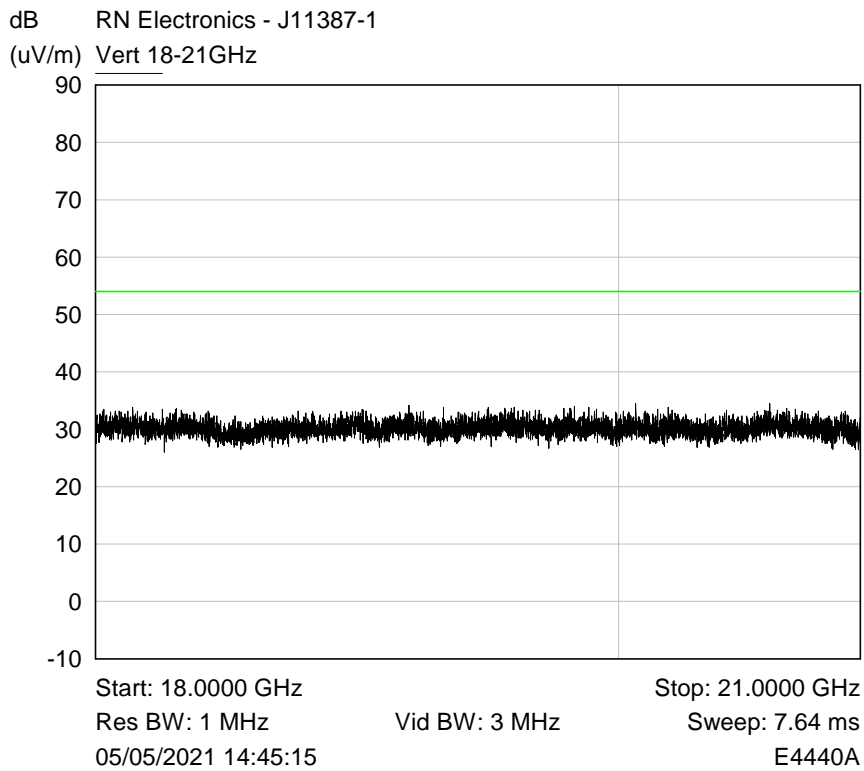
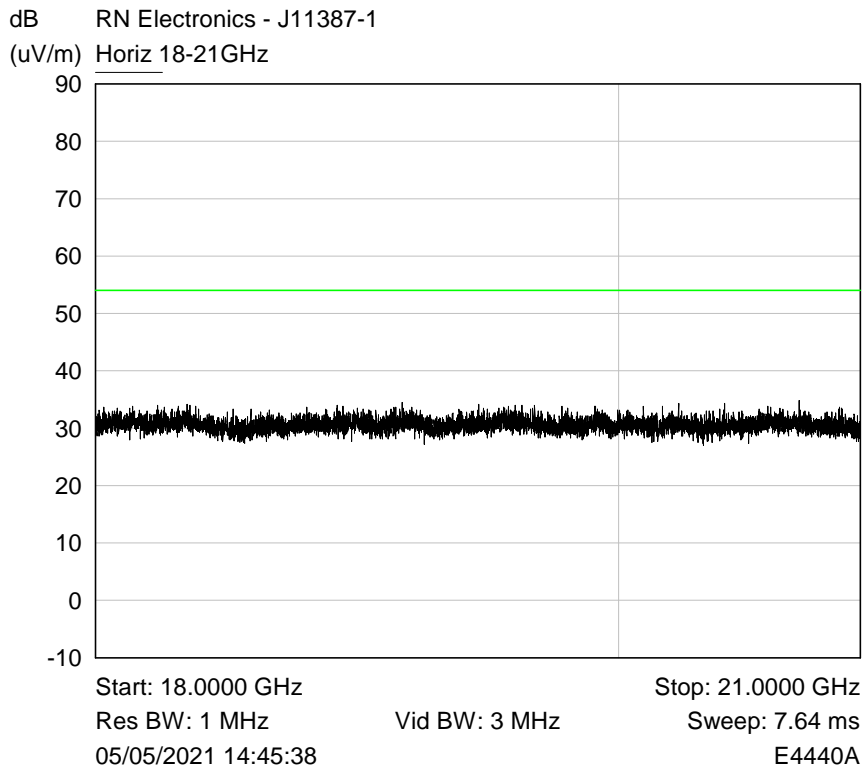


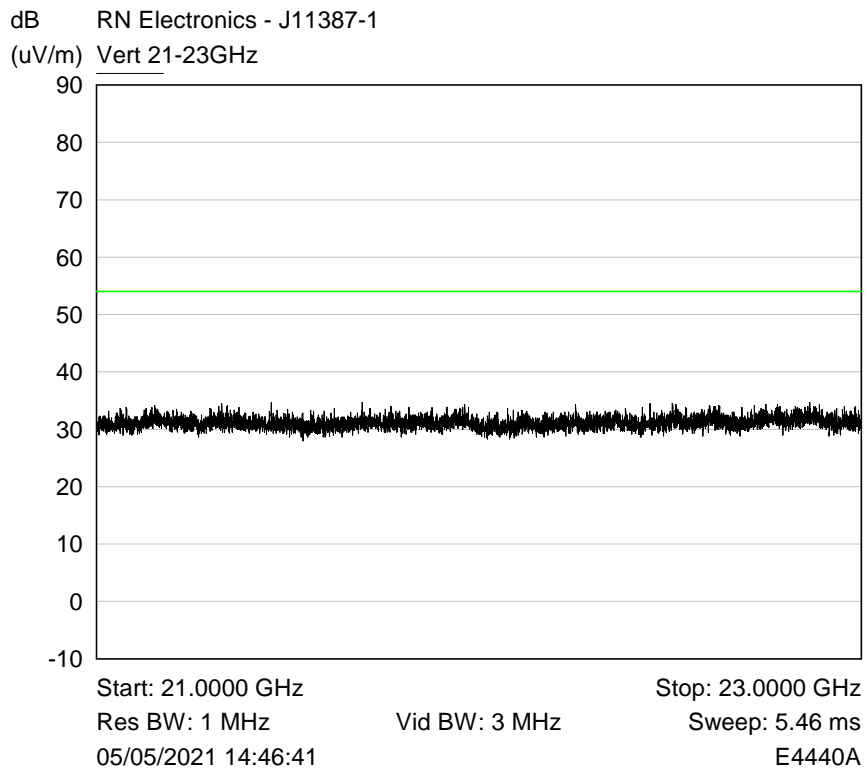
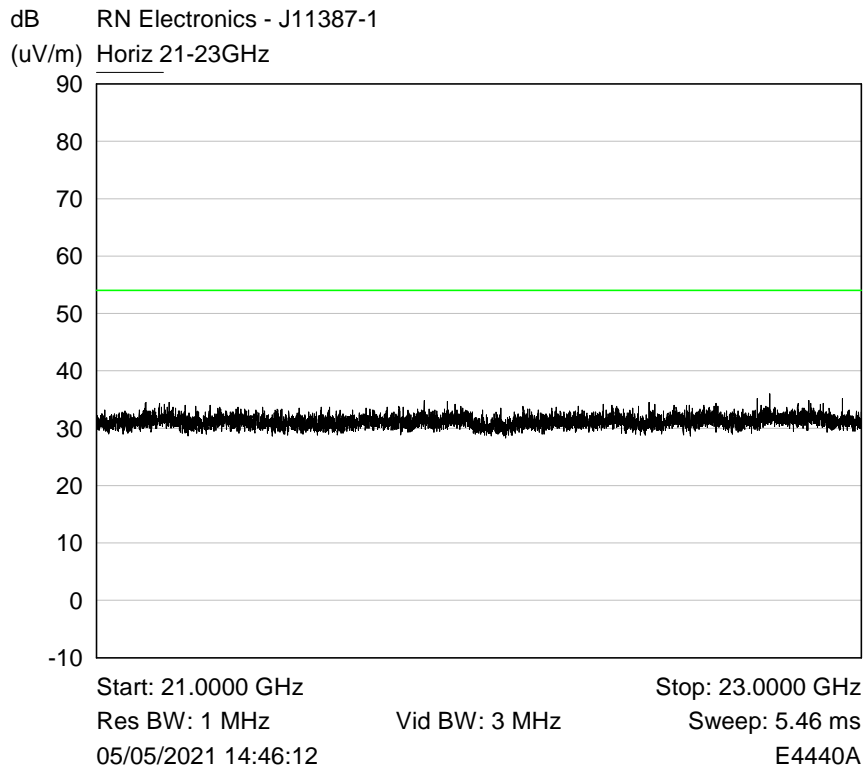


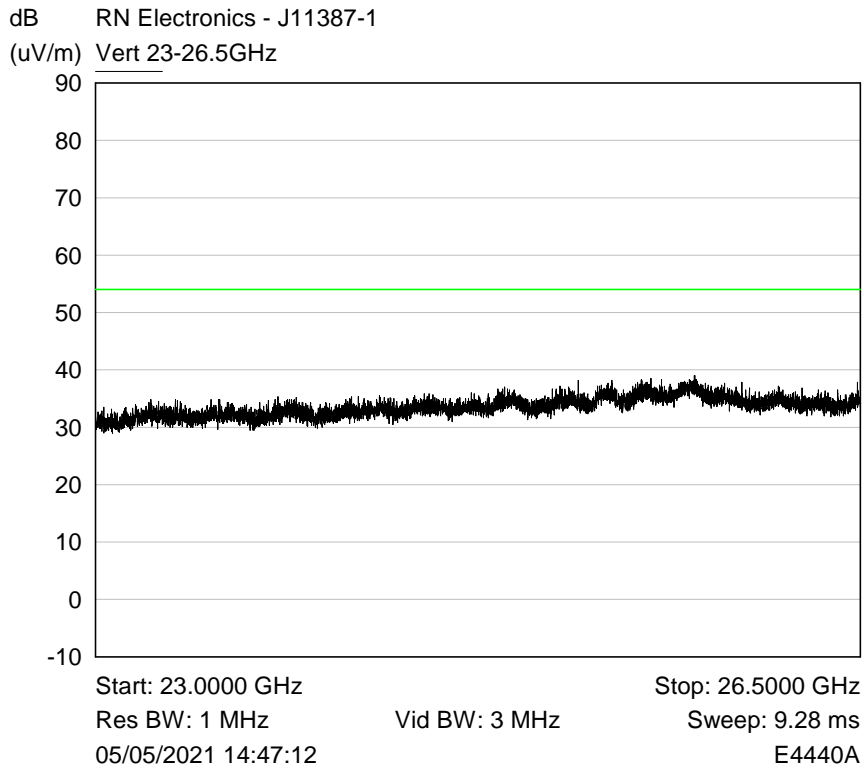
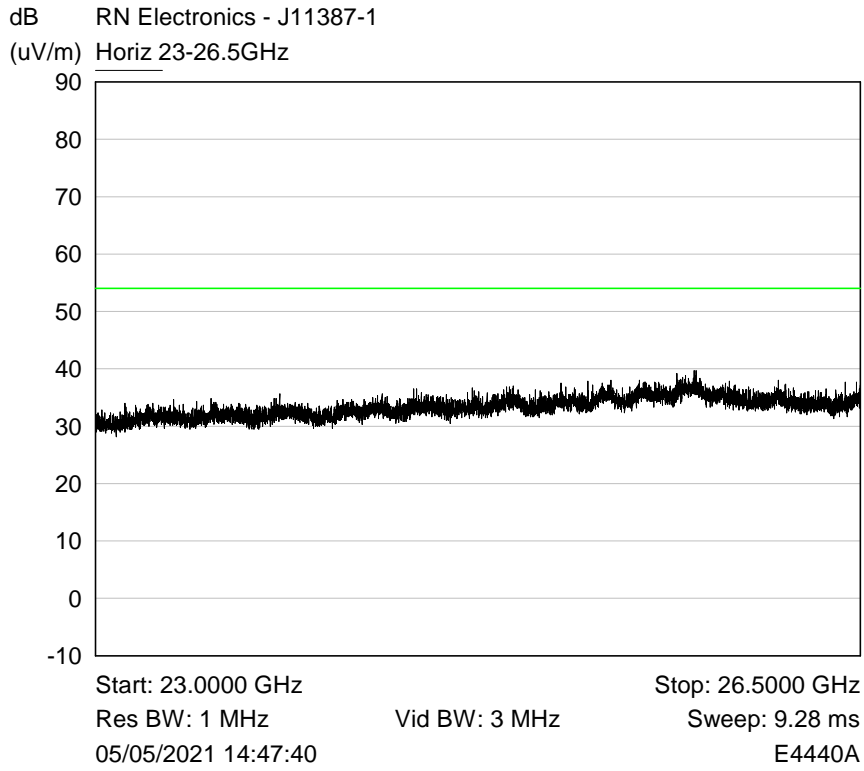








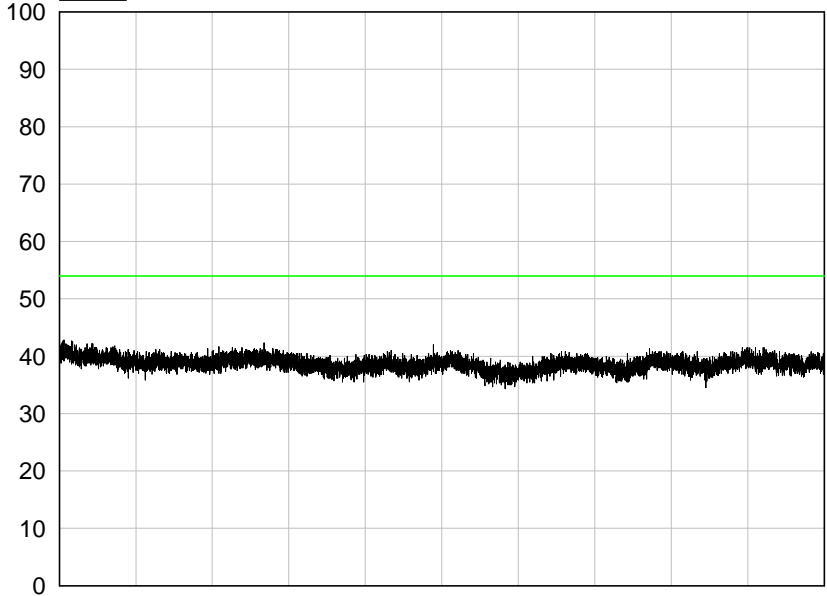






dB 11387-1 62.64 mcs5 26.5-30 GHz

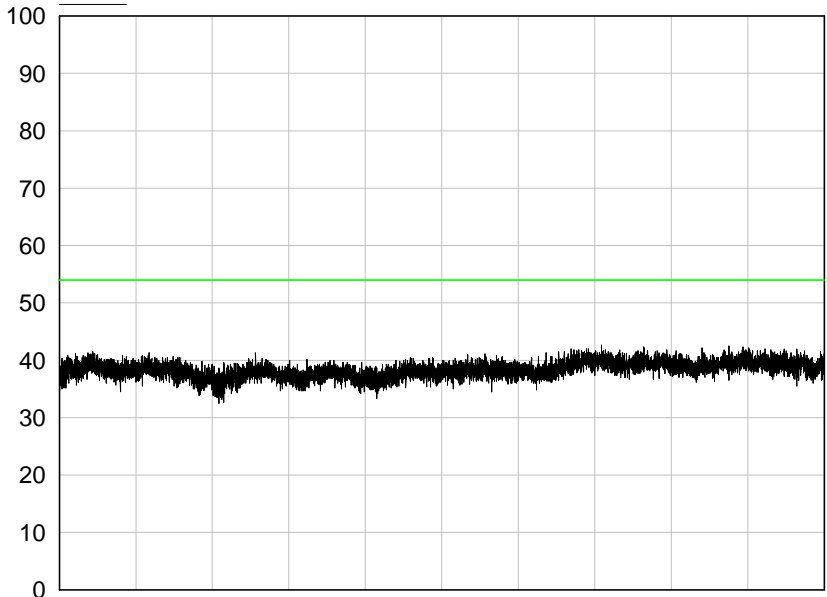
(uV/m) Trace A



Start: 26.5000 GHz Stop: 30.0000 GHz  
Res BW: 1 MHz Vid BW: 3 MHz Sweep: 502.62 ms  
06/05/2021 12:23:20 N9030B

dB 11387-1 62.64 mcs5 30-34 GHz

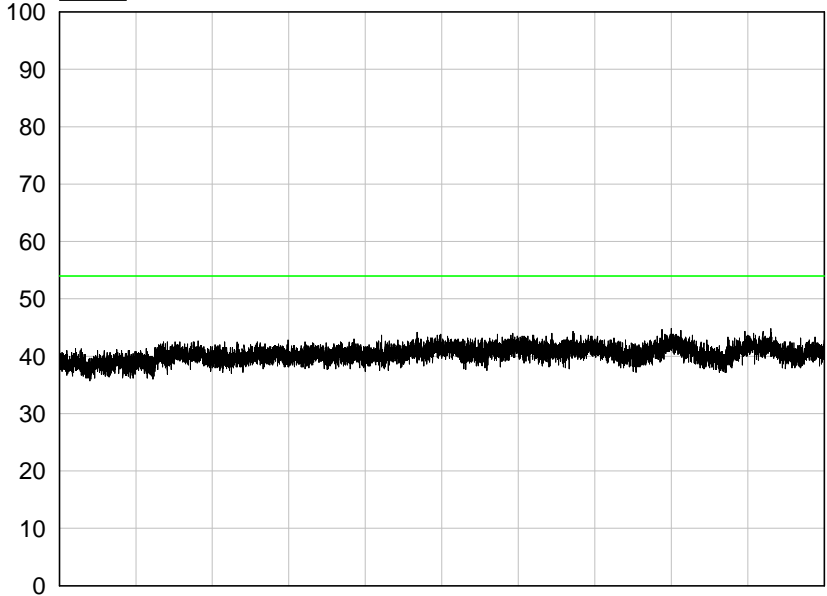
(uV/m) Trace A



Start: 30.0000 GHz Stop: 34.0000 GHz  
Res BW: 1 MHz Vid BW: 3 MHz Sweep: 502.62 ms  
06/05/2021 12:24:32 N9030B

dB 11387-1 62.64 mcs5 34-38 GHz

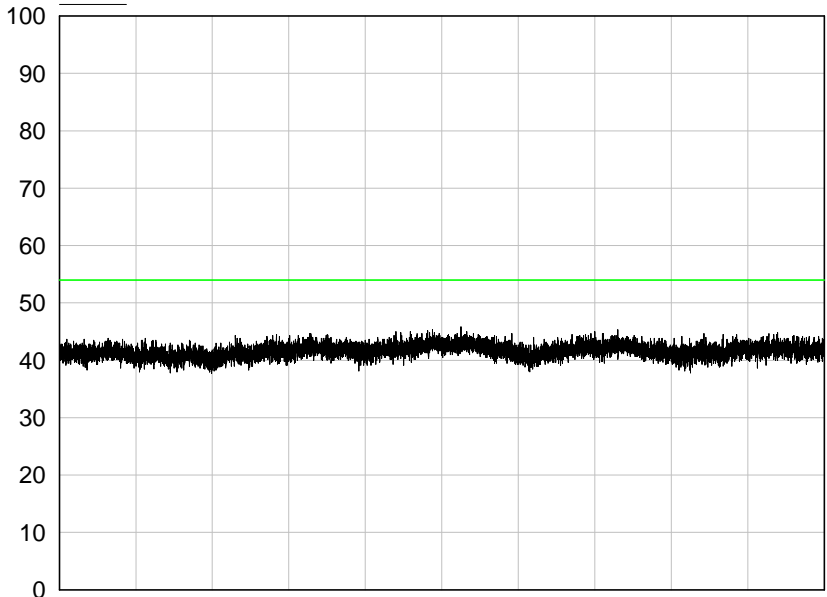
(uV/m) Trace A



Start: 34.0000 GHz Stop: 38.0000 GHz  
Res BW: 1 MHz Vid BW: 3 MHz Sweep: 502.62 ms  
06/05/2021 12:26:27 N9030B

dB 11387-1 62.64 mcs5 38-40 GHz

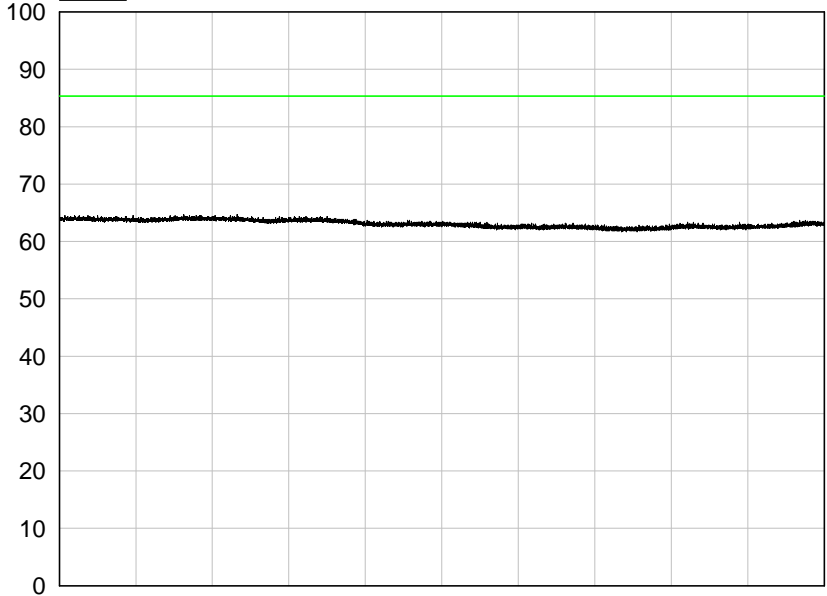
(uV/m) Trace A



Start: 38.0000 GHz Stop: 40.0000 GHz  
Res BW: 1 MHz Vid BW: 3 MHz Sweep: 502.62 ms  
06/05/2021 12:28:15 N9030B

dB 11387-1 62.64 mcs5 40-44 GHz

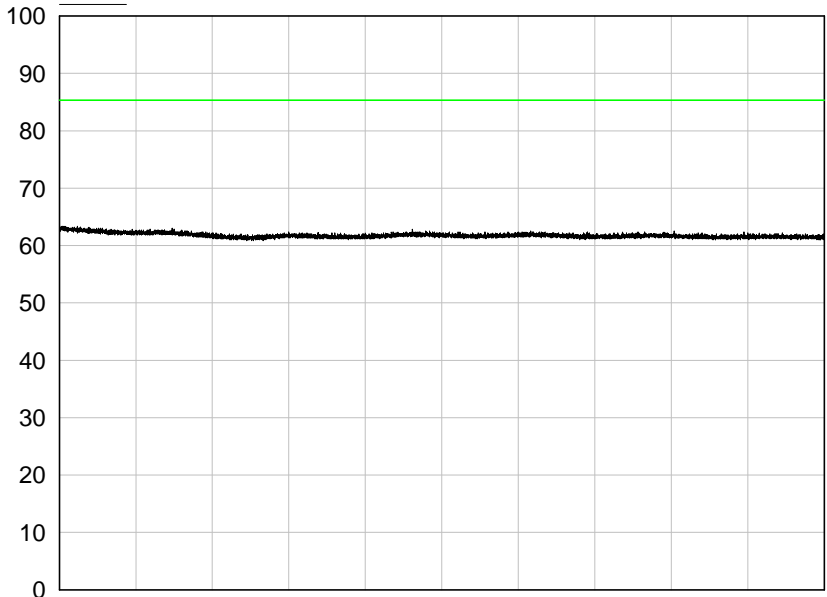
(uV/m) Trace A



Start: 40.0000 GHz Stop: 44.0000 GHz  
Res BW: 1 MHz Vid BW: 3 MHz Sweep: 500.20 ms  
06/05/2021 14:38:42 E4440A

dB 11387-1 62.64 mcs5 44-48 GHz

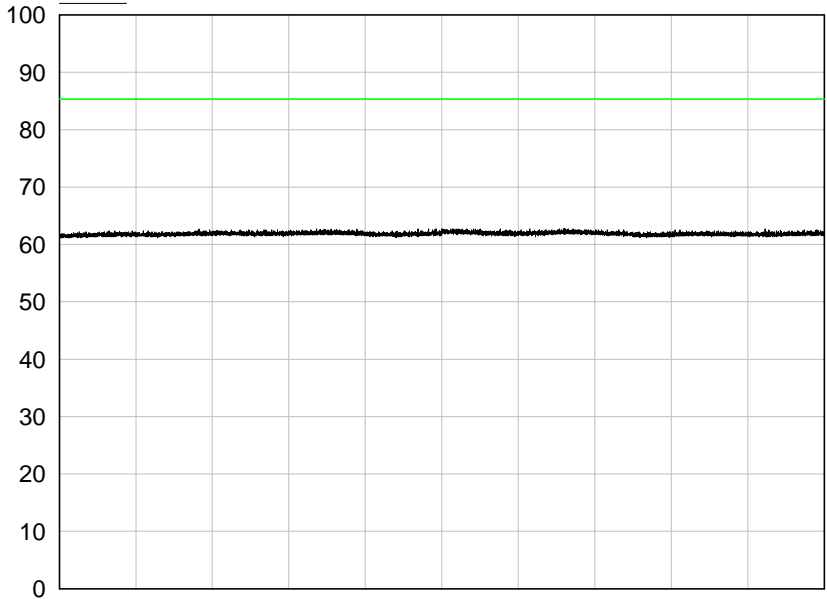
(uV/m) Trace A



Start: 44.0000 GHz Stop: 48.0000 GHz  
Res BW: 1 MHz Vid BW: 3 MHz Sweep: 500.20 ms  
06/05/2021 14:39:59 E4440A

dB 11387-1 62.64 mcs5 48-52 GHz

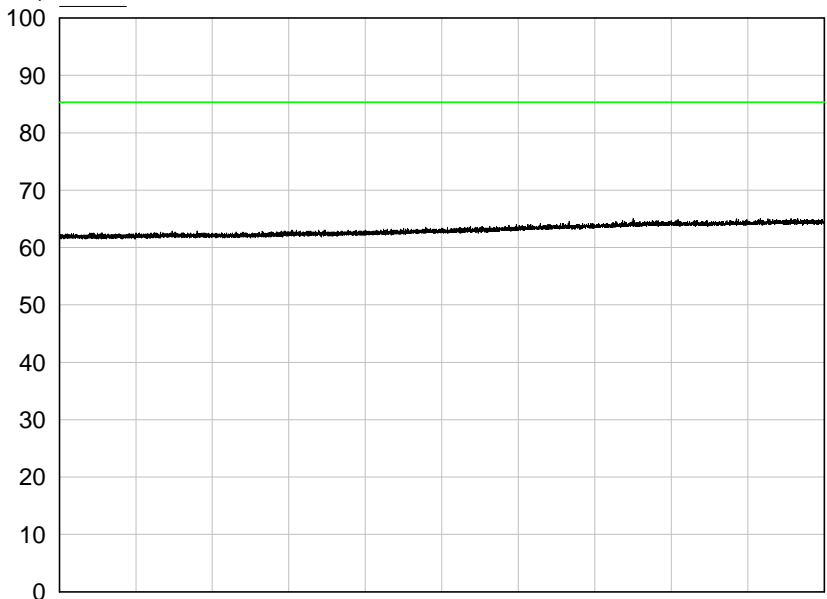
(uV/m) Trace A



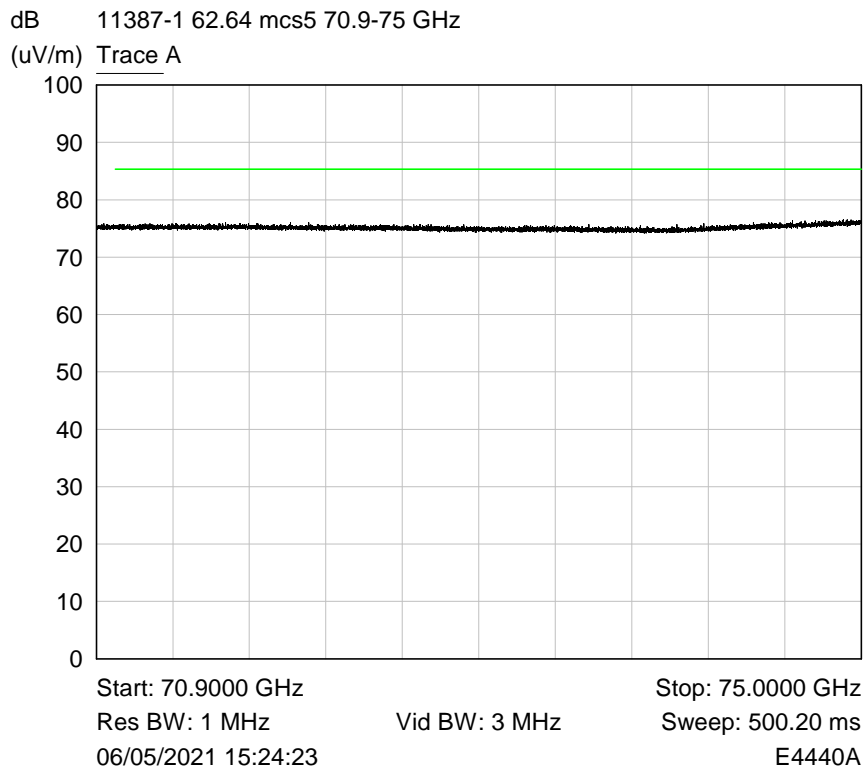
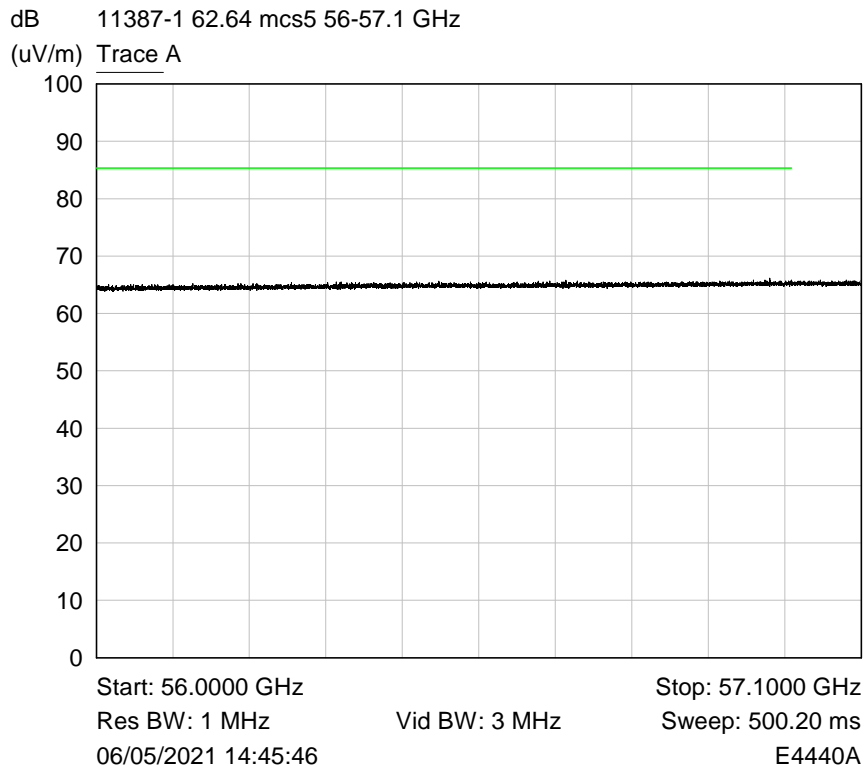
Start: 48.0000 GHz Stop: 52.0000 GHz  
Res BW: 1 MHz Vid BW: 3 MHz Sweep: 500.20 ms  
06/05/2021 14:41:00 E4440A

dB 11387-1 62.64 mcs5 52-56 GHz

(uV/m) Trace A

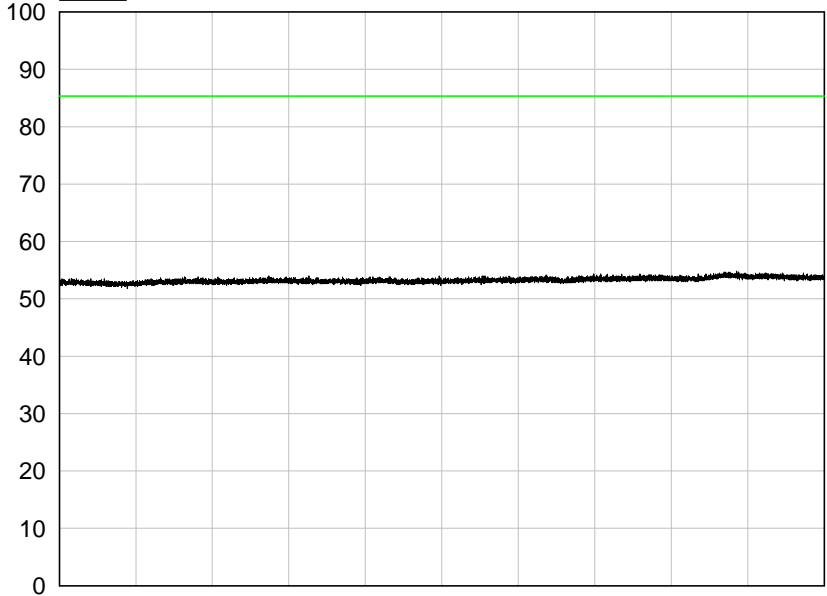


Start: 52.0000 GHz Stop: 56.0000 GHz  
Res BW: 1 MHz Vid BW: 3 MHz Sweep: 500.20 ms  
07/05/2021 13:58:40 E4440A



dB 11387-1 62.64 mcs5 75-80 GHz

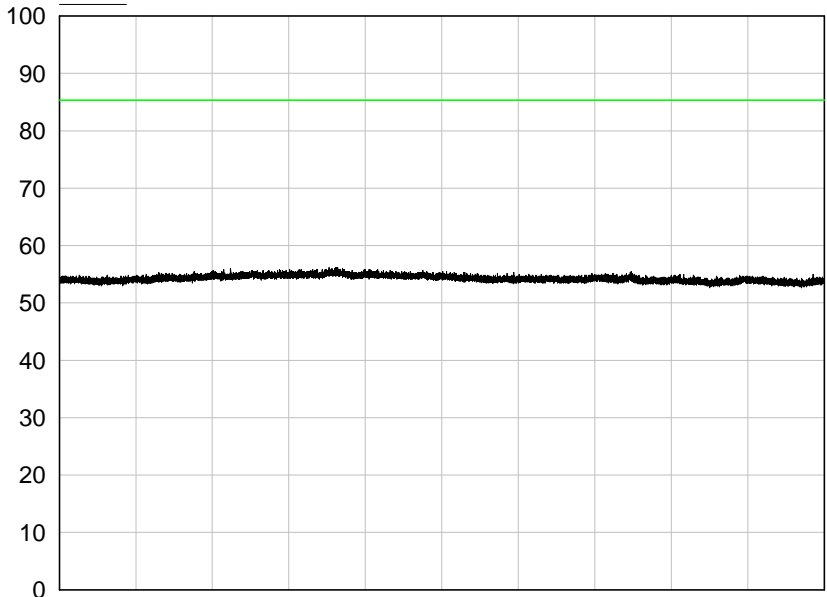
(uV/m) Trace A



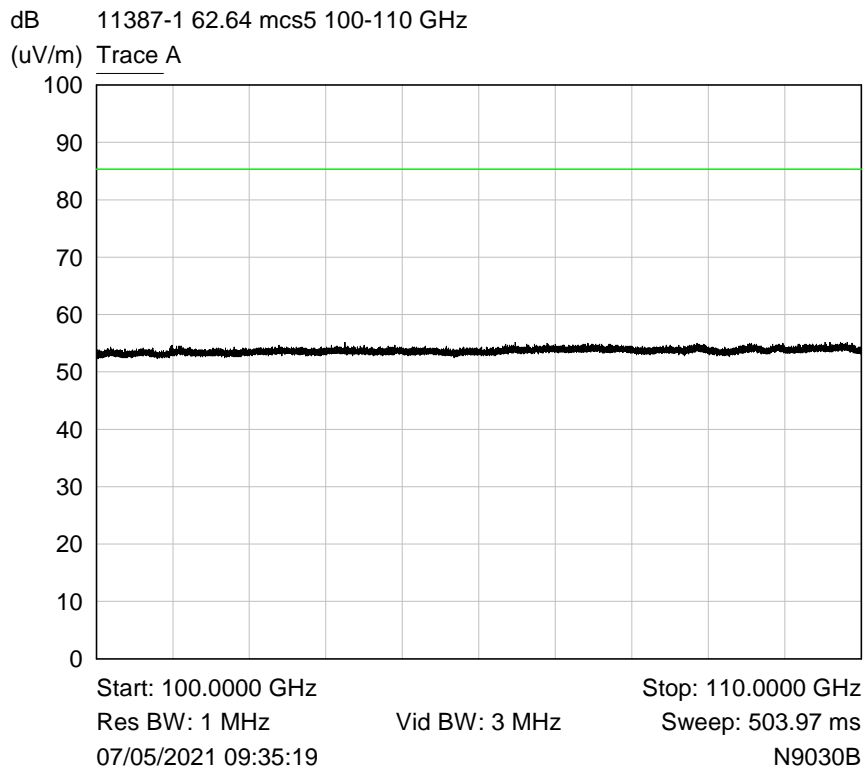
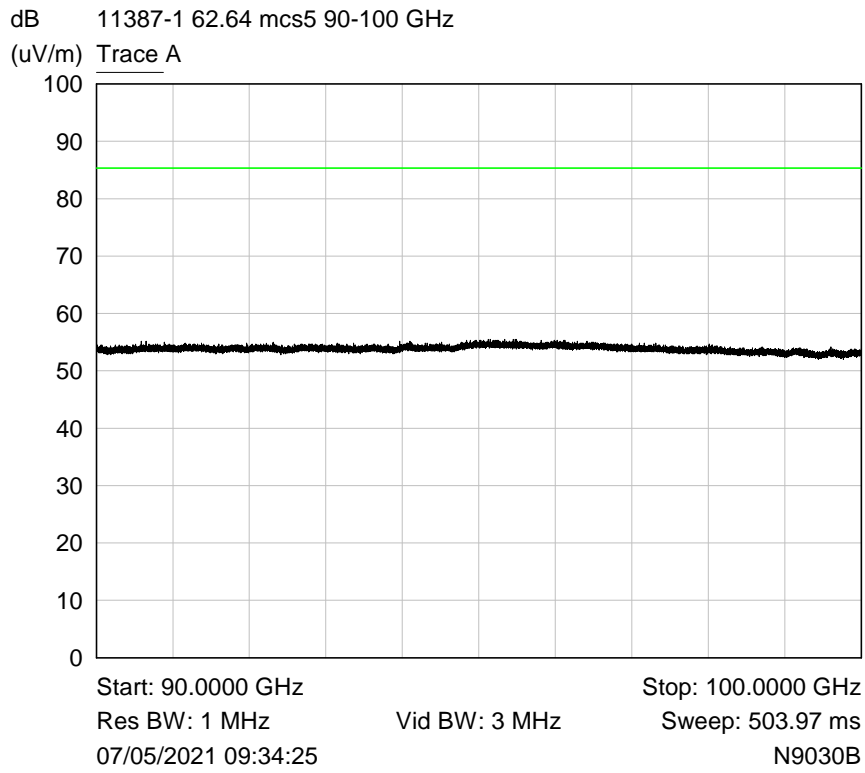
Start: 75.0000 GHz Stop: 80.0000 GHz  
Res BW: 1 MHz Vid BW: 3 MHz Sweep: 503.95 ms  
07/05/2021 09:32:21 N9030B

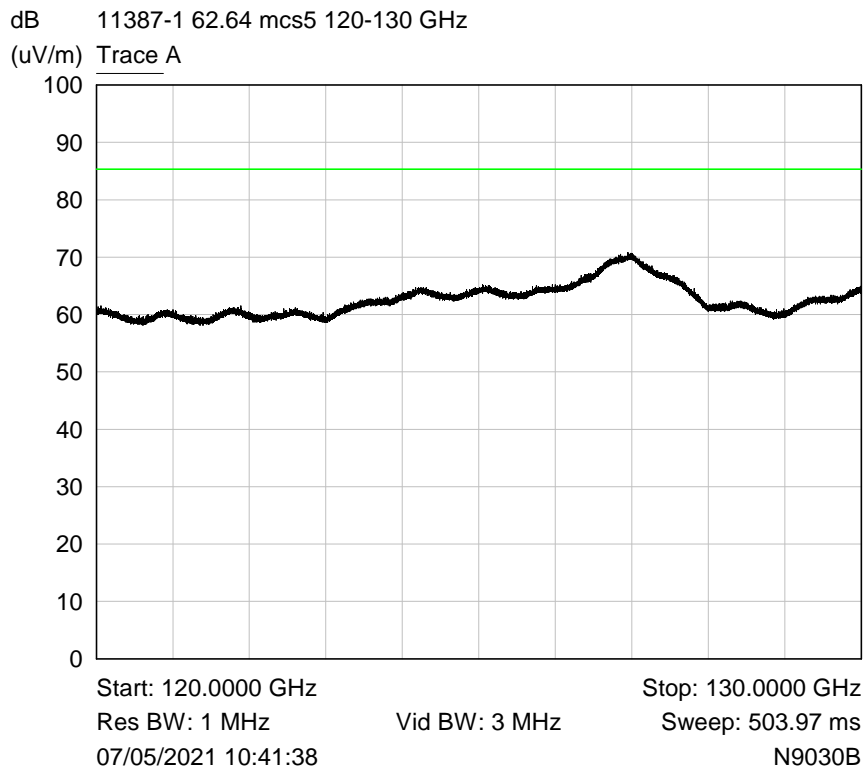
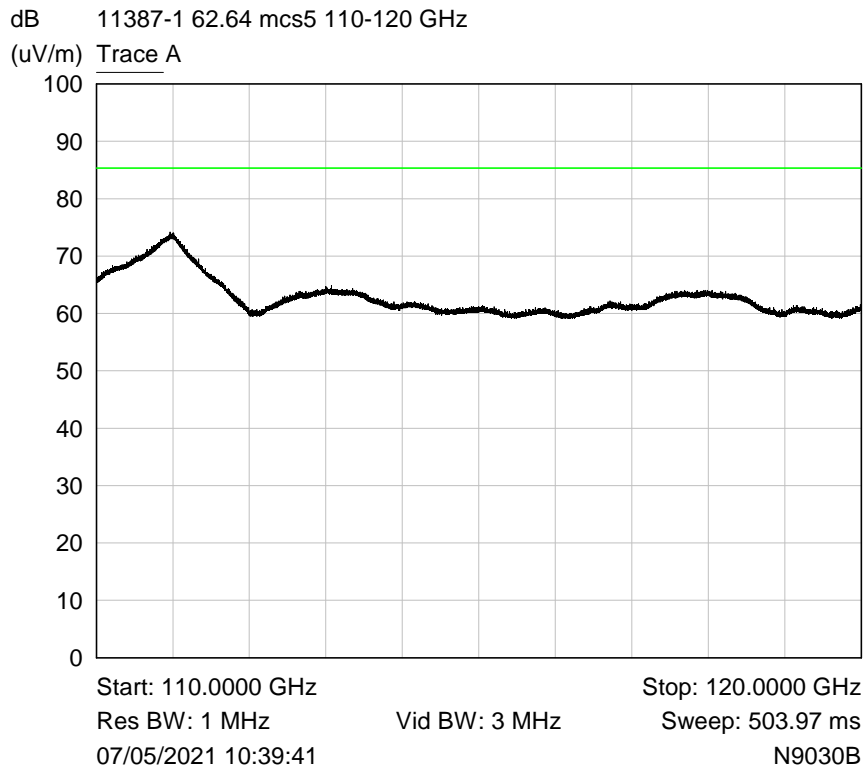
dB 11387-1 62.64 mcs5 80-90 GHz

(uV/m) Trace A

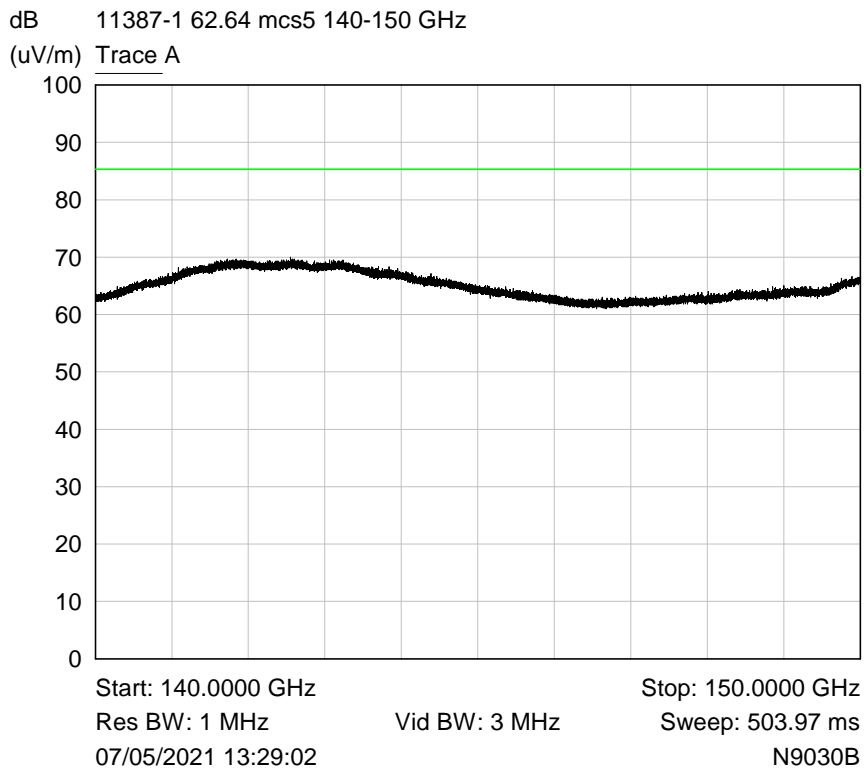
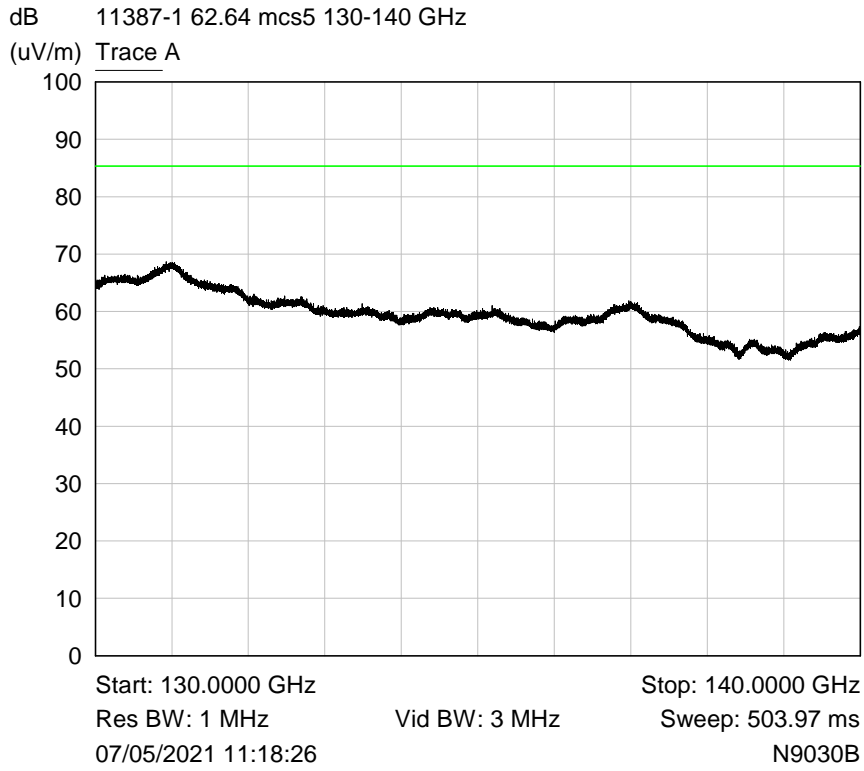


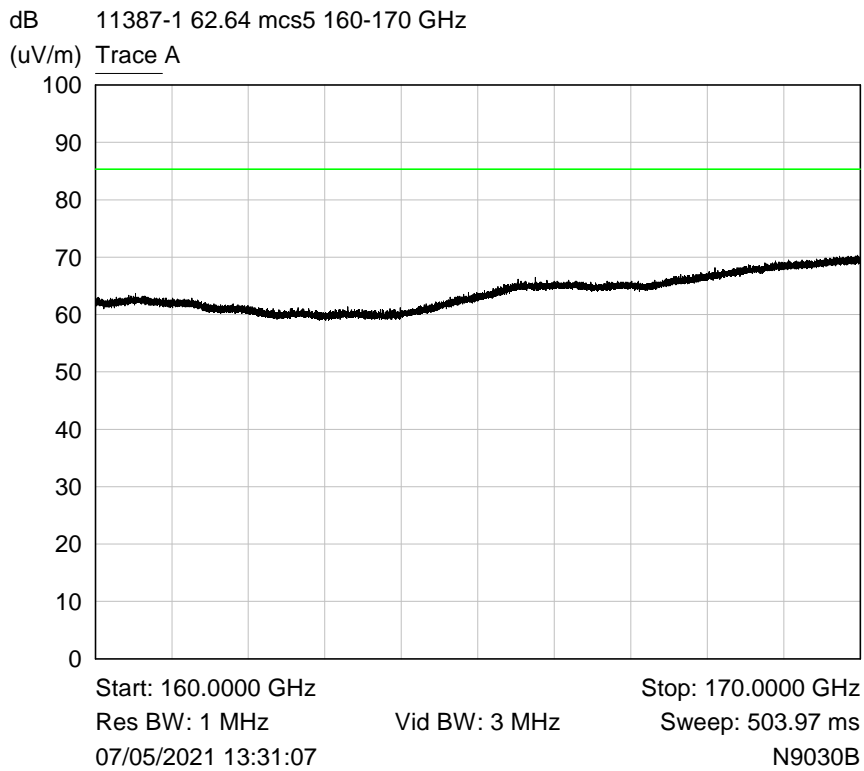
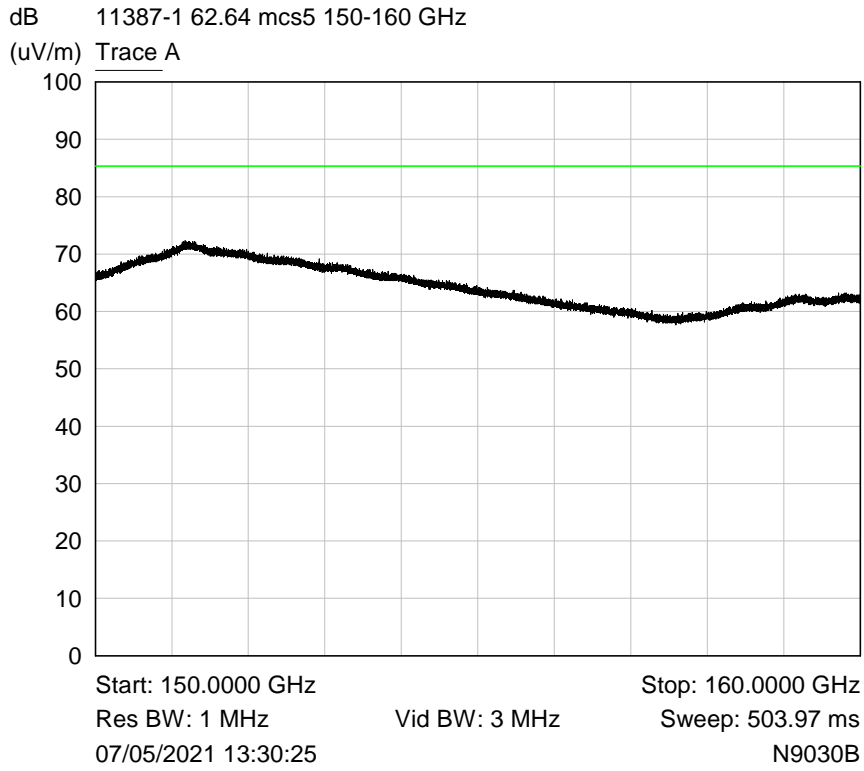
Start: 80.0000 GHz Stop: 90.0000 GHz  
Res BW: 1 MHz Vid BW: 3 MHz Sweep: 503.97 ms  
07/05/2021 09:33:25 N9030B

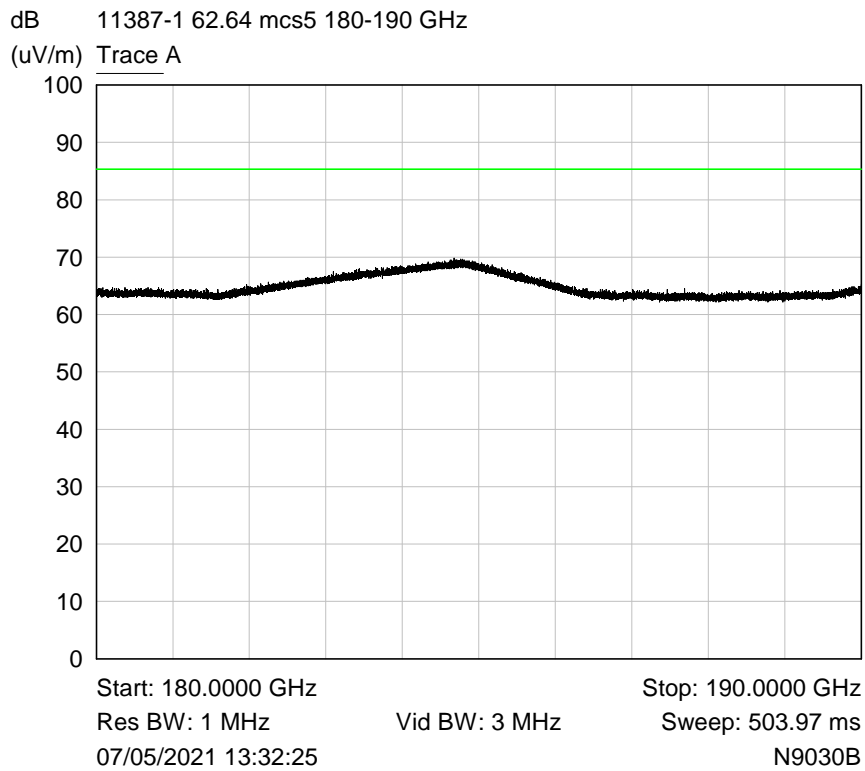
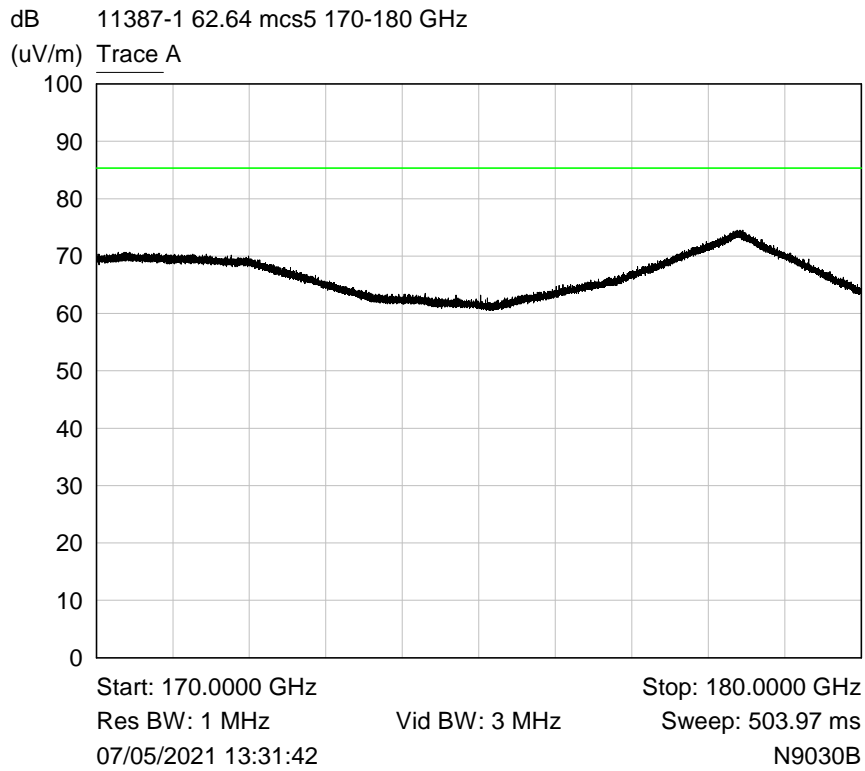


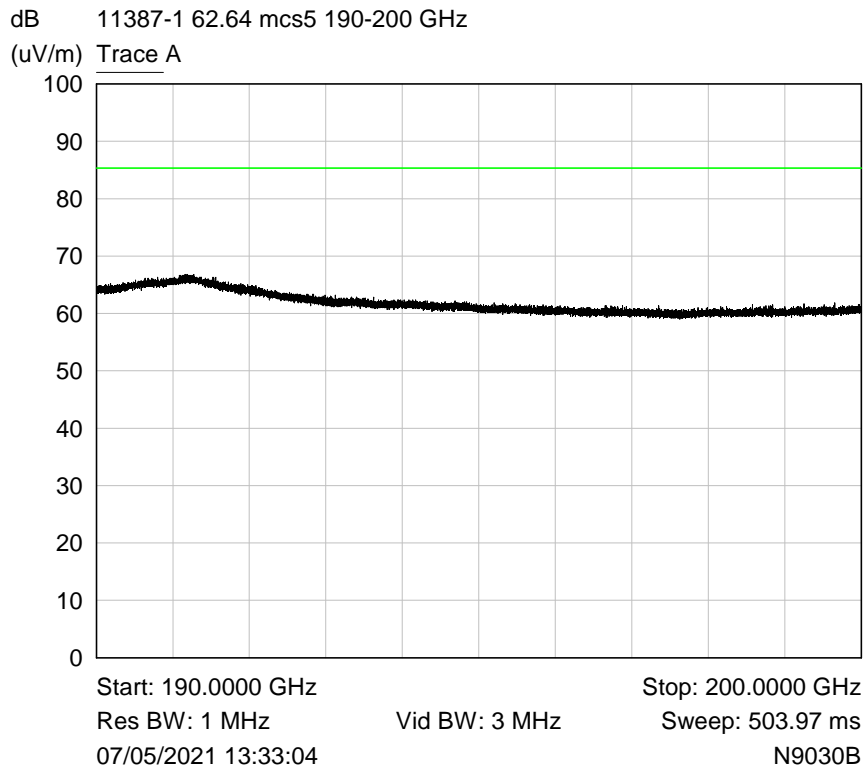








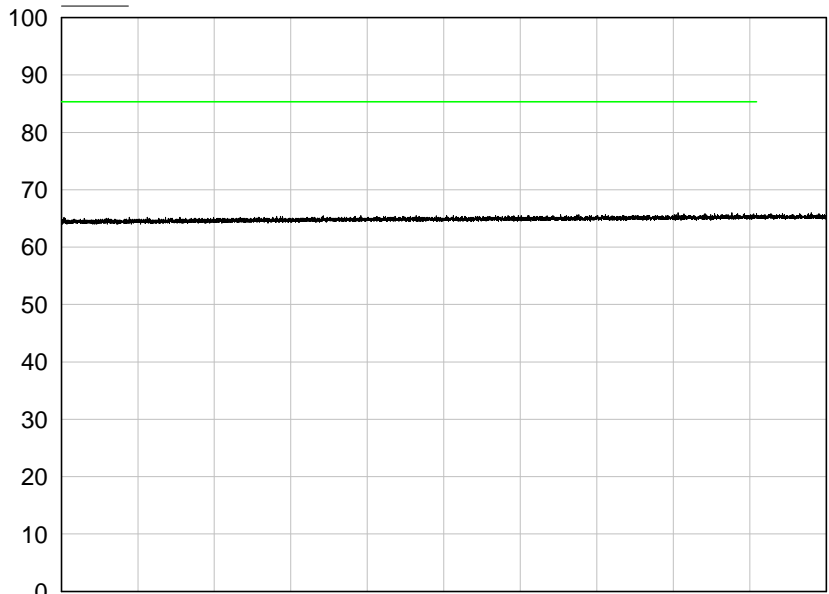




RF Parameters: Band 57-71 GHz, Power 40 dBm (EIRP), Channel Spacing 2.16 GHz,  
Modulation mcs5, Channel 69.12 GHz

dB 11387-1 69.12 mcs5 56-57.1 GHz

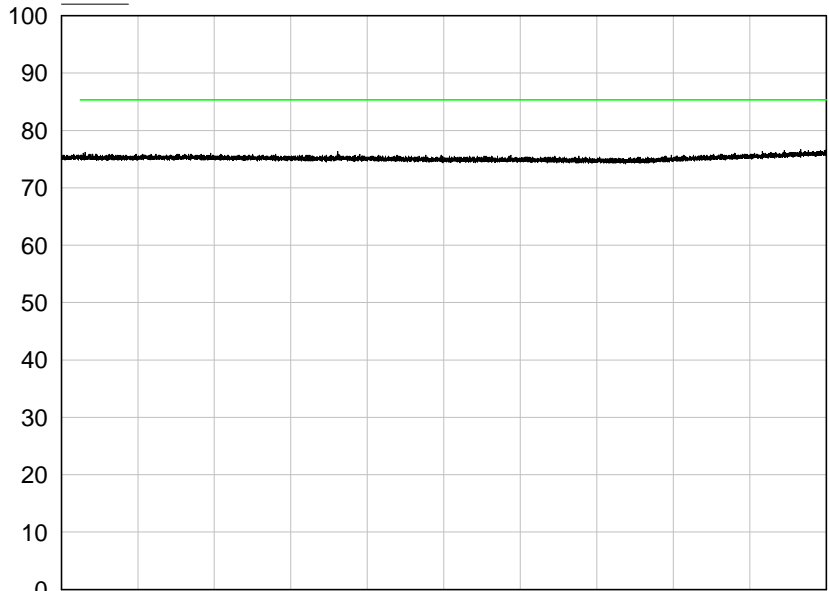
(uV/m) Trace A



Start: 56.0000 GHz Stop: 57.1000 GHz  
Res BW: 1 MHz Vid BW: 3 MHz Sweep: 500.20 ms  
06/05/2021 15:01:37 E4440A

dB 11387-1 69.12 mcs5 70.9-75 GHz

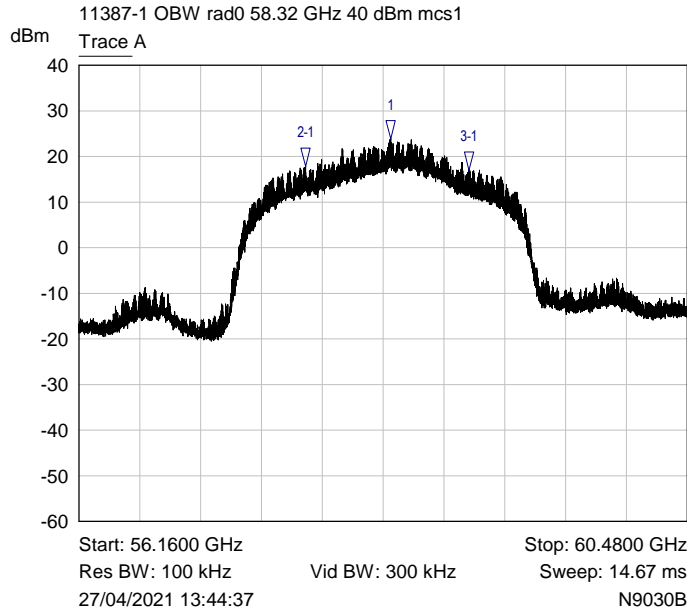
(uV/m) Trace A



Start: 70.9000 GHz Stop: 75.0000 GHz  
Res BW: 1 MHz Vid BW: 3 MHz Sweep: 500.20 ms  
06/05/2021 15:30:56 E4440A

## 6.5 6 dB Occupied bandwidth

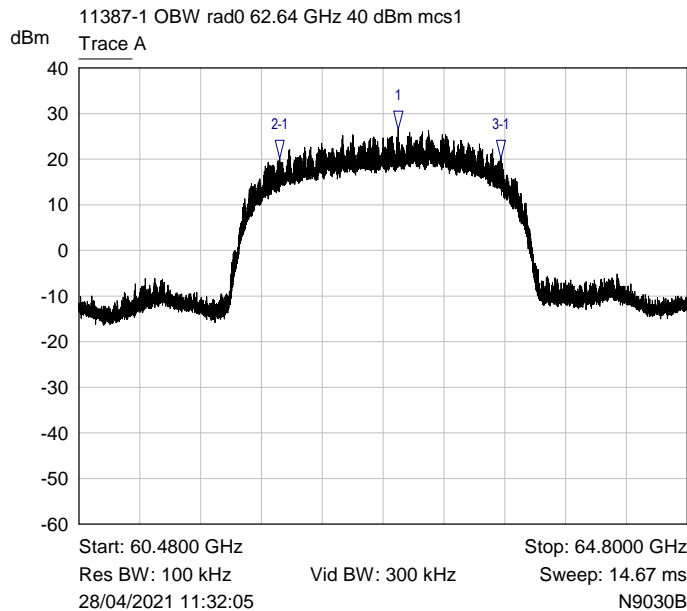
RF Parameters: Band 57-71 GHz (rad0), Power 40 dBm (EIRP), Channel Spacing 2.16 GHz,  
Modulation mcs1, Channel 58.32 GHz



Mkr	Trace	X-Axis	Value	Notes
1 ▽	Trace A	58.3716 GHz	23.77 dBm	
2-1 ▽	Trace A	57.7668 GHz	-6.00 dB	
3-1 ▽	Trace A	58.9320 GHz	-6.81 dB	

Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts

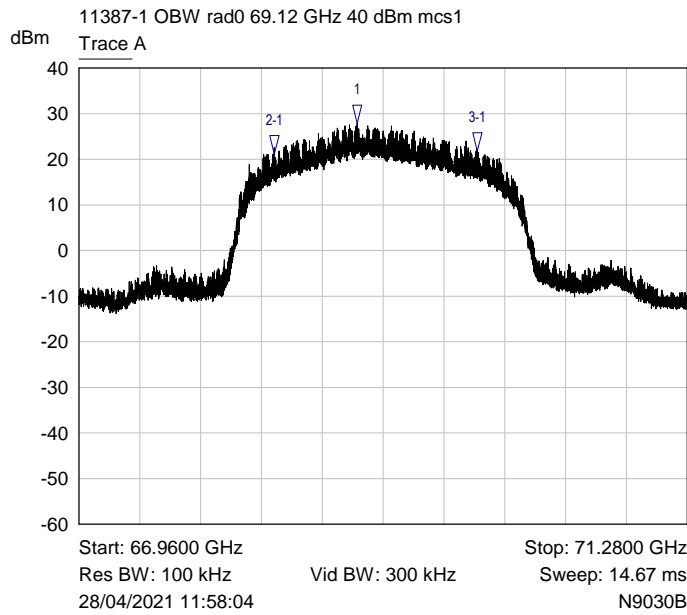
RF Parameters: Band 57-71 GHz (rad0), Power 40 dBm (EIRP), Channel Spacing 2.16 GHz,  
Modulation mcs1, Channel 62.64 GHz



Mkr	Trace	X-Axis	Value	Notes
1 ▽	Trace A	62.7465 GHz	26.58 dBm	
2-1 ▽	Trace A	61.9079 GHz	-6.37 dB	
3-1 ▽	Trace A	63.4788 GHz	-6.43 dB	

Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts

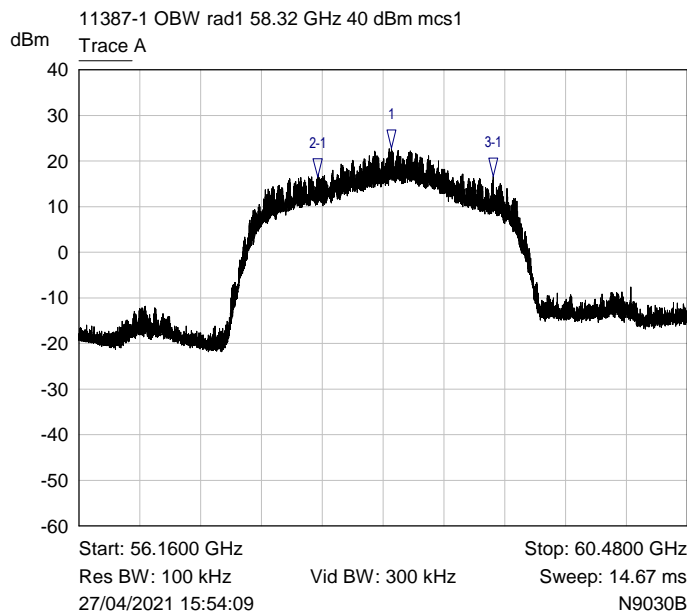
RF Parameters: Band 57-71 GHz (rad0), Power 40 dBm (EIRP), Channel Spacing 2.16 GHz,  
Modulation mcs1, Channel 69.12 GHz



Mkr	Trace	X-Axis	Value	Notes
1 ▽	Trace A	68.9379 GHz	27.81 dBm	
2-1 ▽	Trace A	68.3464 GHz	-6.57 dB	
3-1 ▽	Trace A	69.7903 GHz	-5.93 dB	

Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts

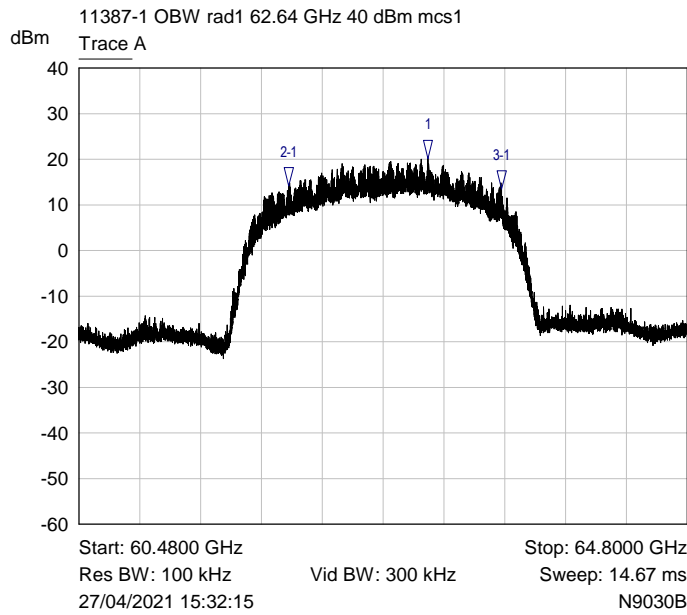
RF Parameters: Band 57-71 GHz (rad1), Power 40 dBm (EIRP), Channel Spacing 2.16 GHz,  
Modulation mcs1, Channel 58.32 GHz



Mkr	Trace	X-Axis	Value	Notes
1 ▽	Trace A	58.3820 GHz	22.82 dBm	
2-1 ▽	Trace A	57.8562 GHz	-6.39 dB	
3-1 ▽	Trace A	59.1005 GHz	-6.20 dB	

Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts

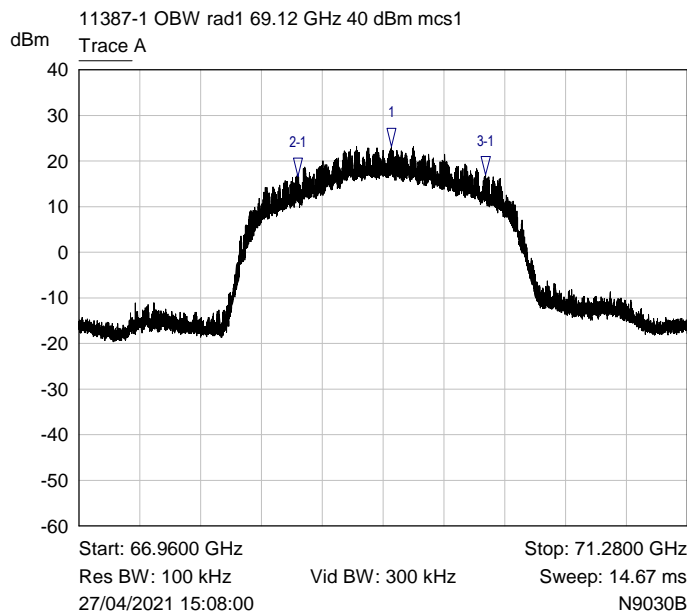
RF Parameters: Band 57-71 GHz (rad1), Power 40 dBm (EIRP), Channel Spacing 2.16 GHz,  
Modulation mcs1, Channel 62.64 GHz



Mkr	Trace	X-Axis	Value	Notes
1 ▽	Trace A	62.9595 GHz	20.16 dBm	
2-1 ▽	Trace A	61.9697 GHz	-5.94 dB	
3-1 ▽	Trace A	63.4823 GHz	-6.63 dB	

Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts

RF Parameters: Band 57-71 GHz (rad1), Power 40 dBm (EIRP), Channel Spacing 2.16 GHz,  
Modulation mcs1, Channel 69.12 GHz



Mkr	Trace	X-Axis	Value	Notes
1 ▽	Trace A	69.1785 GHz	23.12 dBm	
2-1 ▽	Trace A	68.5149 GHz	-6.47 dB	
3-1 ▽	Trace A	69.8486 GHz	-6.16 dB	

Plot for 6 dB Bandwidth (MHz) Nominal Temp & Volts