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Certificate: 1152.01

Date: 16 Jun 2022

I.T.L. Product Testing Ltd.
FCC/IC Radio Test Report

for

Amimon Ltd.

Equipment under test:

Wireless HD Video System - Video Source Unit (VSU)

AMN41012

Tested by: _____
M. Zohar

Approved by: _____
David Shidlowsky

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Measurement/Technical Report for

Amimon Ltd.

Wireless HD Video System - Video Source Unit (VSU)

AMN41012

FCC ID: VQSAMN41012

IC: 7680A-AMN42012

This report concerns:	Original Grant
Equipment type:	FCC: (NII) Unlicensed National Information Infrastructure TX IC: Wireless Local Area Network Device
Limits used:	47CFR15, Part 15, Subpart E, Section 15.407 RSS 248, Issue 1, November 19, 2021

Measurement procedures used:

FCC: KDB 789033 D02 v02r01, ANSI C63.10:2013 and KDB 987594 D02 U-NII 6GHz EMC Measurement v01

IC: RSS 248 Issue 1

Application for Certification prepared by:
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Applicant for this device:
(Manufacturer)
Gabi Nocham
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Table of Contents

1. General Information

1.1 Administrative Information

Manufacturer:	Amimon Ltd.
Manufacturer's Address:	26 Zarhin St., PO Box 2308, Raanana 4366250, Israel
Manufacturer's Representative:	Gabi Nocham
Equipment Under Test (E.U.T):	Wireless HD Video System - Video Source Unit (VSU)
Equipment Model:	AMN41012
Equipment Serial No.:	3TBX2539190477
Date of Receipt of E.U.T:	December 27, 2020
Start of Test (original):	December 27, 2020
Start of Radiated Emission above 1 GHz test:	December 8, 2021
Start of PSD retesting:	May 29, 2022
End of Test (original):	March 03, 2021
End of Radiated Emission above 1 GHz test:	December 15, 2021
End of PSD retesting:	May 29, 2022
Test Laboratory Location:	1. I.T.L Product Testing Ltd. 1 Bat Sheva St., Lod 7120101, Israel 2. Electrical and Electronics Laboratory, SII 42 Haim Levanon St., Tel Aviv 69977, Israel
Test Specifications:	47CFR15, Part 15, Subpart E, Section 15.407 KDB 987594 D02 U-NII 6GHz EMC Measurement v01 RSS 248 Issue 1, November 19, 2021

1.2 List of Accreditations

The EMC laboratory of I.T.L. is accredited by the following bodies:

1. The American Association for Laboratory Accreditation (A2LA) (U.S.A.), Certificate No. 1152.01.
2. The Federal Communications Commission (FCC) (U.S.A.), FCC Designation No. IL1005.
3. Department of Innovation, Science and Economic Development (ISED) Canada, CAB identifier: IL1002
4. Electrical and Electronics Laboratory, SII (Israel), Registration No. IL1003

I.T.L. Product Testing Ltd. is accredited by the American Association for Laboratory Accreditation (A2LA) and the results shown in this test report have been determined in accordance with I.T.L.'s terms of accreditation unless stated otherwise in the report.

1.3 Product Description

The Draco system provides high-end, high performance wireless HD video connection that can operate in challenging unmanned environment.

AMN41012 is the video source unit, which is connected to a camera to capture video signals and to transmit these signals to its companion device AMN42012 thus creating a wireless video link.

AMN42012 is the video display unit that receives the video information transmitted from AMN41012 unit and transfers the images to various types of computer monitors/displays. This enables the user or camera operator to monitor the video transmitted from the remoted camera connected to the AMN41012.

Supply Voltage Range	5VDC ± 10%
Mode of operation	Transceiver (2 ports TX /4 ports TX)
Modulations	OFDM 16/64 QAM
Assigned Frequency Range	5925.0-7125.0 MHz
Operating Frequency Range	5925.0-6425.0 MHz
Total transmit power(conducted)	~14.0 dBm (for 20MHz BW) ~18.0 dBm (for 40MHz BW)
Antenna Gain	2.0 dBi
Modulation BW	20 MHz and 40 MHz

1.4 Test Methodology

Both conducted and radiated testing were performed according to the procedures in KDB 789003 D02 v02r01, KDB 987594 D02 U-NII 6GHz EMC Measurement v01 987594 D02 v01 and ANSI C63.10: 2013, and in RSS 248, Issue 1, November 19, 2021, and RSS-Gen Issue 5, March 2019, Amendment 1. Radiated testing was performed at an antenna to EUT distance of three meters.

1.5 Test Facility

Emissions tests were performed at I.T.L.'s testing facility in Lod, Israel. I.T.L.'s EMC Laboratory is accredited by A2LA, certificate No. 1152.01 and its FCC Designation Number is IL1005, and at the Electrical and Electronics Laboratory, SII, Registration No. IL1003

1.6 Measurement Uncertainty

Conducted Emission
Conducted Emission (CISPR 11, EN 55011, CISPR 22, EN 55022, ANSI C63.4)

0.15 – 30 MHz:
Expanded Uncertainty (95% Confidence, K=2):
± 3.44 dB

Radiated Emission
Radiated Emission (CISPR 11, EN 55011, CISPR 22, EN 55022, ANSI C63.4) for open site:

30-1000MHz:
Expanded Uncertainty (95% Confidence, K=2):
± 4.96 dB

1 GHz to 6 GHz
Expanded Uncertainty (95% Confidence, K=2):
±5.19 dB

>6 GHz
Expanded Uncertainty (95% Confidence, K=2):
±5.51 dB

2. System Test Configuration

2.1 Justification

1. The E.U.T contains a 6G band transceiver module that can transmit at 2 ports or 4 ports and at 2 optional BW's: 20MHz or 40MHz.
2. The EUT was tested for usage at UNII5.
3. The unit was evaluated while transmitting at 20MHz BW: the low channel (5935.0MHz), the mid channel (6175.0MHz) and the high channel (6415.0MHz) and at 40MHz BW: the low channel (5945.0MHz), the mid channel (6185.0MHz) and the high channel (6405.0MHz) , each one with duty cycle above 98%.
4. Conducted emission tests were performed with the E.U.T. antenna terminal connected by a RF cable to the Spectrum Analyzer through external attenuator.
5. Only for testing, the E.U.T was powered by a typical AC/DC adapter.
6. As agreed upon with the customer and his TCB, Peak Power and PSD tests were performed on all Tx ports, but all other tests will be performed on the highest power port.
7. Final radiated emission tests were performed after exploratory band edge emission testing that was performed with two optional antenna types: "mushroom", model AMN_ASN_1011, or "dipole", model AMN_ANT_1010 to determine the "worst case" radiation each one for different transmission BW.
8. Complimentary radiated emission tests above 1GHz were performed at the SII laboratory; see section 1.2 for accreditation)
9. According to the below screening results, the "worst case" antenna type related to band edge radiation was the "dipole" type.

BW	Frequency	"Mushroom" antenna type	"Dipole" antenna type
(MHz)	(MHz)	(dBuV/m)	(dBuV/m)
20.0	5935.0	62.1	62.2
	6415.0	61.3	61.5
40.0	5945.0	62.0	62.0
	6405.0	61.5	61.5

Figure 1. Screening Results

2.2 EUT Exercise Software

No special exercise software was used.

2.3 Special Accessories

No special accessories were used

2.4 Equipment Modifications

Customer reduced the power for each port to comply with the PSD limits.

2.5 Configuration of Tested System

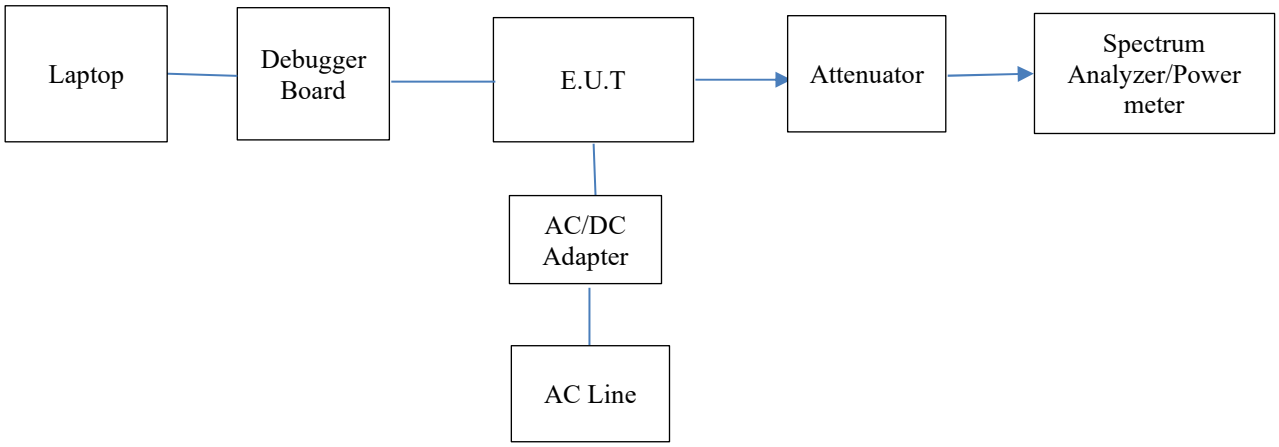

Figure 2. Configuration of Tested System Conducted

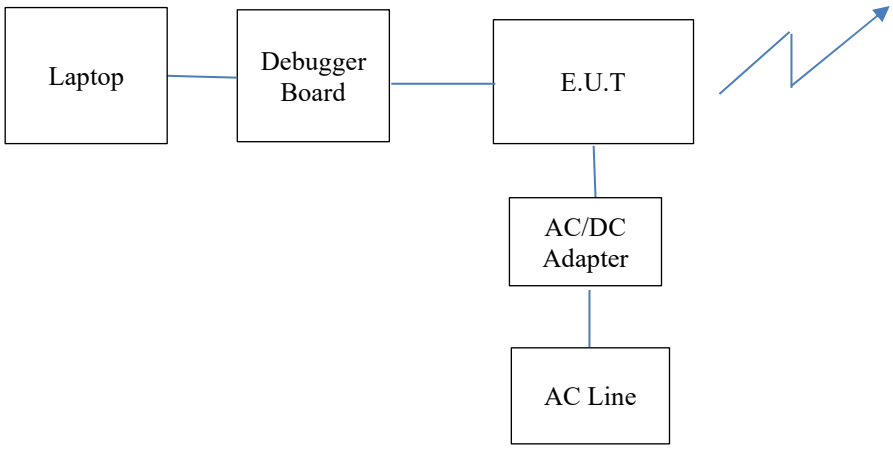

Figure 3. Configuration of Tested System Radiated

3. Conducted and Radiated Measurement Test Setup Photos

See a separate file.

4. Conducted Emission from AC Mains

4.1 Test Specification

FCC Part 15, Subpart C, Section 15.207

RSS-Gen, Issue 5, March 2019, Amendment 1, Section 8.8

4.2 Test Procedure

(Temperature (22°C)/ Humidity (56%RH))

The E.U.T operation mode and test setup are as described in Section 2 of this report. In order to minimize background noise interference, the conducted emission testing was performed inside a shielded room, with the E.U.T placed on a 0.8 meter high wooden table, 0.4 meter from the room's vertical wall. In the case of a floor-standing E.U.T., it was placed on the horizontal ground plane.

The E.U.T was powered from 115 V AC / 60 Hz via 50 Ohm / 50 µHn Line Impedance Stabilization Network (LISN) on the phase and neutral lines. The LISN's were grounded to the shielded room ground plane (floor), and were kept at least 0.8 meters from the nearest boundary of the E.U.T.

The center of the E.U.T.'s AC cable was folded back and forth, in order to form a bundle less than 0.40 meters and a total cable length of 1 meter.

The effect of varying the position of the cables was investigated to find the configuration that produces maximum emission.

The emission voltages at the LISN's outputs were measured using a computerized receiver, complying with CISPR 16 requirements. The specification limits are loaded to the receiver and are displayed on the receiver's spectrum display.

The E.U.T was evaluated in TX operation mode.

A frequency scan between 0.15 and 30 MHz was performed at 9 kHz I.F. band width, using peak detection.

The spectral components having the highest level on each line were measured using a quasi-peak and average detector.

4.3 Test Limit

Frequency of Emission (MHz)	Conducted Limit (dBµV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

** Decreases with the logarithm of the frequency.*

4.4 Test Results

JUDGEMENT: Passed by 9.37 dB

The EUT met the FCC Part 15, Subpart C, and RSS-Gen Issue 5 March 2019 Amendment 1 specification requirements.

The margin between the emission levels and the specification limit is, in the worst case, -9.37dB for the phase line at 24.018MHz and -9.88dB at 24.018MHz for the neutral line.

The details of the highest emissions are given in *Figure 4* to *Figure 7*.

Conducted Emission

Specification:	FCC Part 15, Subpart C; RSS-Gen, Issue 5
Lead:	Phase
Detectors: :	Peak, Quasi-peak, Average
Power Operation	AC/DC Adapter

EDIT PEAK LIST (Final Measurement Results)

Trace1: CE22BQP
Trace2: CE22BAP
Trace3: ---

	TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
1	Quasi Peak	170 kHz	36.91	-28.04
2	Average	230 kHz	14.12	-38.32
1	Quasi Peak	426 kHz	26.91	-30.41
2	Average	426 kHz	20.87	-26.45
2	Average	446 kHz	23.37	-23.57
1	Quasi Peak	450 kHz	29.87	-26.99
2	Average	966 kHz	18.19	-27.80
1	Quasi Peak	1.122 MHz	22.58	-33.41
1	Quasi Peak	1.35 MHz	20.88	-35.11
2	Average	1.43 MHz	16.99	-29.00
2	Average	2.202 MHz	15.18	-30.81
1	Quasi Peak	2.97 MHz	19.33	-36.66
1	Quasi Peak	3.71 MHz	19.59	-36.40
2	Average	3.73 MHz	14.95	-31.05
1	Quasi Peak	8.294 MHz	25.54	-34.45
2	Average	8.434 MHz	19.56	-30.43
1	Quasi Peak	11.022 MHz	24.30	-35.69
2	Average	11.494 MHz	19.74	-30.25
1	Quasi Peak	24.018 MHz	40.50	-19.49
2	Average	24.018 MHz	40.62	-9.37

Date: 27.DEC.2020 09:20:32

Figure 4. Detectors: Peak, Quasi-peak, Average

Note: QP Delta/Av Delta refers to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.

Conducted Emission

Specification:	FCC Part 15, Subpart C; RSS-Gen, Issue 5
Lead:	Phase
Detectors:	Peak, Quasi-peak, Average
Power Operation	AC/DC Adapter

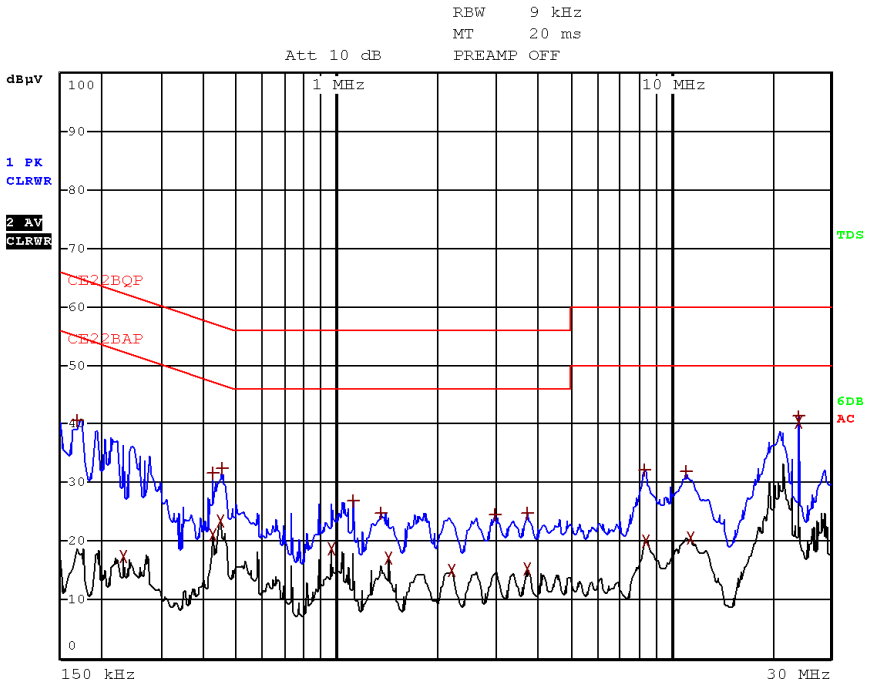

Figure 5. Detectors: Peak, Quasi-peak, Average

Conducted Emission

Specification:	FCC Part 15, Subpart C; RSS-Gen, Issue 5
Lead:	Neutral
Detectors:	Peak, Quasi-peak, Average
Power Operation	AC/DC Adapter

EDIT PEAK LIST (Final Measurement Results)

Trace1: CE22BQP
Trace2: CE22BAP
Trace3: ---

	TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
1	Quasi Peak	150 kHz	37.92	-28.07
2	Average	242 kHz	16.77	-35.25
1	Quasi Peak	266 kHz	29.31	-31.92
2	Average	426 kHz	17.02	-30.31
2	Average	450 kHz	22.46	-24.41
1	Quasi Peak	462 kHz	27.84	-28.81
1	Quasi Peak	1.034 MHz	19.41	-36.58
2	Average	1.042 MHz	14.67	-31.32
1	Quasi Peak	1.41 MHz	18.82	-37.17
2	Average	1.43 MHz	13.96	-32.04
2	Average	2.626 MHz	13.90	-32.09
1	Quasi Peak	2.662 MHz	18.97	-37.02
1	Quasi Peak	4.102 MHz	19.28	-36.71
2	Average	4.174 MHz	14.56	-31.43
1	Quasi Peak	8.326 MHz	26.17	-33.82
2	Average	8.406 MHz	19.94	-30.05
2	Average	11.082 MHz	19.89	-30.10
1	Quasi Peak	11.194 MHz	25.11	-34.88
1	Quasi Peak	24.018 MHz	39.99	-20.00
2	Average	24.018 MHz	40.11	-9.88

Date: 27.DEC.2020 09:42:20

Figure 6. Detectors: Peak, Quasi-peak, Average

Note: QP Delta/Av Delta refers to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.

Conducted Emission

Specification:	FCC Part 15, Subpart C; RSS-Gen, Issue 5
Lead:	Neutral
Detectors:	Peak, Quasi-peak, Average
Power Operation	AC/DC Adapter

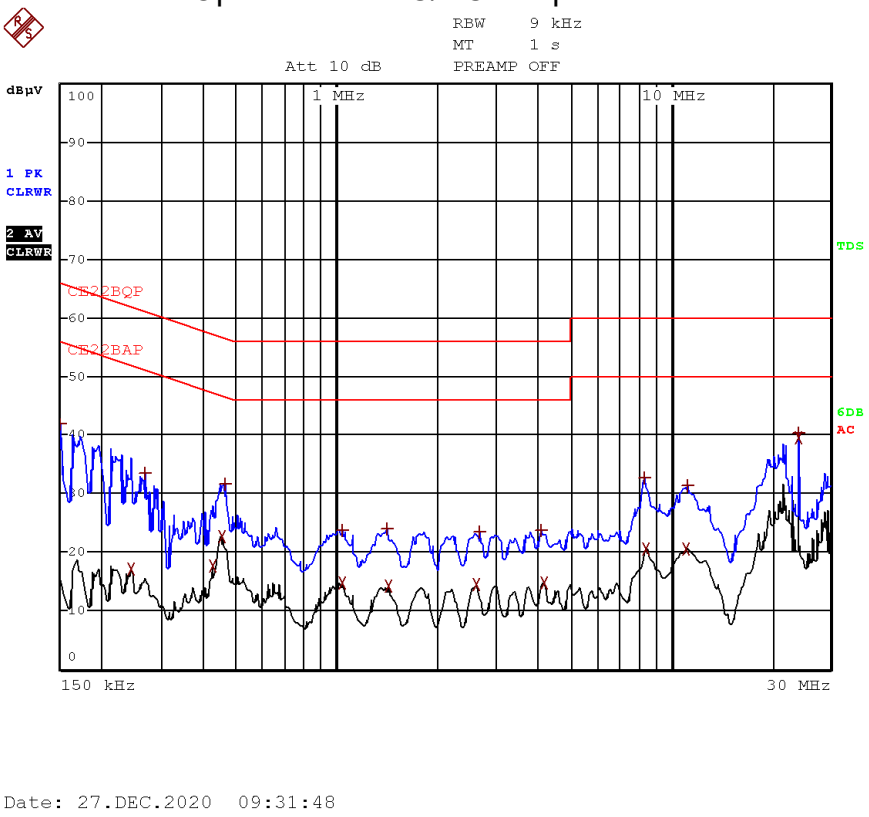

Figure 7 Detectors: Peak, Quasi-peak, Average

4.5 *Test Equipment Used; Conducted Emission*

Instrument	Manufacturer	Model	Serial No.	Last Calibration Date	Next Calibration Due
LISN	Fischer	FCC-LISN-25A	127	October 28, 2020	October 31, 2021
Transient Limiter	HP	11947A	3107A03041	October 28, 2020	October 31, 2021
EMI Receiver	Rohde & Schwarz	ESCI7	100724	March 9, 2020	March 31, 2021
RF Cable	Telrad	RJ214	-	October 28, 2020	October 31, 2021

Figure 8 Test Equipment Used

5. Maximum Conducted Output Power

5.1 Test Specification

FCC, Part 15, Subpart E, Section 407(a)

RSS 248 Issue 1 November 19, 2021, Section 4.6.3(b)

5.2 Test Procedure

(Temperature (20°C)/ Humidity (51%RH))

The E.U.T operation mode and test set-up are as described in Section 2 of this report. The E.U.T. antenna terminal was connected to the Spectrum Analyzer through an external attenuator and an appropriate coaxial cable (total loss=31.0 dB). Special attention was taken to prevent Spectrum Analyzer RF input overload.
Spectrum setting was done according to KDB 789033, method PM instructions (section E.3.a).

5.3 FCC Test Limit

For an indoor access point operating in the 5.925-7.125 GHz band the maximum e.i.r.p. over the frequency band of operation must not exceed 30 dBm.

5.4 IC Test Limit

For client devices, the maximum e.i.r.p. over the 5.925-7.125 GHz frequency band shall not exceed 24 dBm.

5.5 Test Results

JUDGMENT: passed by 9.7dB

The EUT met the requirements of the FCC Part 15, Subpart E, Section 15.407(a), and RSS-Gen, Issue 5, March 2019, Amendment 1, Section 4.6.3 specification

For additional information see *Figure 9* and *Figure 10.*

BW	Operation Frequency	Port 1 Reading	Port 2 Reading	Total Power*	Antenna Gain	EIRP	Limit	Margin
(MHz)	(MHz)	(dBm)	(dBm)	(dBm)	(dBi)	(dBm)	(dBm)	(dB)
20.0	5935.0	11.5	11.4	14.5	2.0	16.5	30.0	-13.5
	6175.0	12.1	10.8	14.5	2.0	16.5	30.0	-13.5
	6415.0	12.9	10.0	14.7	2.0	16.7	30.0	-13.3
40.0	5945.0	15.1	14.8	17.9	2.0	19.9	30.0	-10.1
	6185.0	15.0	14.8	17.9	2.0	19.9	30.0	-10.1
	6405.0	15.0	13.4	17.3	2.0	19.3	30.0	-10.7

*Note: total power (dBm)= 10 log [port1(W)+port2(W)]

Figure 9 FCC and IC Test Results 2TX mode

BW	Operation Frequency	Port 1 Reading	Port 2 Reading	Port 3 Reading	Port 4 Reading	Total Power*	Antenna Gain	EIRP	Limit	Margin
(MHz)	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dBm)	(dBi)	(dBm)	(dBm)	(dB)
20.0	5935.0	8.0	7.3	7.5	5.0	13.0	2.0	15.0	30.0	-15.0
	6175.0	8.0	9.3	9.3	6.8	14.5	2.0	16.5	30.0	-13.5
	6415.0	8.8	5.7	7.8	8.7	13.9	2.0	15.9	30.0	-14.1
40.0	5945.0	12.6	11.5	12.0	10.9	17.8	2.0	19.8	30.0	-10.2
	6185.0	11.3	12.0	12.2	10.6	17.5	2.0	19.5	30.0	-10.5
	6405.0	11.7	12.0	10.7	11.6	17.5	2.0	19.5	30.0	-10.5

*Note: total power (dBm)= 10 log [port1(W)+port2(W)+ port3(W)+port4(W)]

Figure 10 FCC and IC Test Results 4TX mode

5.6 Test Equipment Used; Maximum Peak Power Output*

Instrument	Manufacturer	Model	Serial No.	Last Calibration Date	Next Calibration Due
Power Meter	HP	437B	3043U04017	February 26, 2019	February 28, 2021
Power Sensor	HP	8481A	2702A73530	February 26, 2019	February 28, 2021
30dB Attenuator	MCL	BW-S30W5	533	August 23, 2020	August 31, 2021
RF Cable	Huber Suhner	Sucofelex	28239/4PEA	August 23, 2020	August 31, 2021

*Testing was performed on February 4, 2021

Figure 11 Test Equipment Used

6. Maximum Power Spectral Density (PSD)

6.1 Test Specification

FCC, Part 15, Subpart E, Section 407(a)

RSS 248 Issue 1 November 19, 2021, Section 4.6.3(a)

6.2 Test Procedure

(Temperature (22°C)/ Humidity (56%RH))

The E.U.T operation mode and test set-up are as described in Section 2 of this report. The E.U.T. antenna terminal was connected to the Spectrum Analyzer through an external attenuator and an appropriate coaxial cable (total loss= 31.0dB). Special attention was taken to prevent Spectrum Analyzer RF input overload. Spectrum setting done according KDB 789033 instructions (section F).

6.3 FCC Test Limit

For an indoor access point operating in the 5.925-7.125 GHz band, the maximum power spectral density shall not exceed 5 dBm e.i.r.p. in any 1-megahertz band.

6.4 IC Test Limit

For client devices, the maximum e.i.r.p. spectral density shall not exceed -1 dBm/MHz

6.5 Test Results

JUDGEMENT: Passed by 0.5 dB

The EUT met the requirements of the F.C.C. Part 15, Subpart E, Section 15.407(a) specifications.

For additional information see *Figure 14* to *Figure 48.*

BW	Operation Frequency	Port 1 Reading	Port 2 Reading	Total Power*	Antenna Gain	EIRP	Limit	Margin
(MHz)	(MHz)	(dBm)	(dBm)	(dBm)	(dBi)	(dBm)	(dBm)	(dB)
20.0	5935.0	-0.258	-0.448	2.658	2.000	4.658	5.000	-0.342
	6175.0	-0.254	-0.224	2.771	2.000	4.771	5.000	-0.229
	6415.0	0.461	-2.499	2.238	2.000	4.238	5.000	-0.762
40.0	5945.0	-0.243	-0.444	2.667	2.000	4.667	5.000	-0.333
	6185.0	-1.224	-0.381	2.228	2.000	4.228	5.000	-0.772
	6405.0	1.176	-2.699	2.667	2.000	4.667	5.000	-0.333

**Note: total power (dBm)= 10 log [port1(W)+port2(W)]*

Figure 12 FCC and IC 2TX mode Test Results

BW	Operation Frequency	Port 1 Reading	Port 2 Reading	Port 3 Reading	Port 4 Reading	Total Power*	Antenna Gain	EIRP	Limit	Margin
(MHz)	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dBm)	(dBi)	(dBm)	(dBm)	(dB)
20.0	5935.0	-3.013	-3.269	-2.021	-5.455	2.749	2.000	4.749	5.000	-0.251
	6175.0	-4.853	-3.321	-2.51	-3.112	2.653	2.000	4.653	5.000	-0.347
	6415.0	-3.057	-5.881	-3.089	-2.664	2.517	2.000	4.517	5.000	-0.483
40.0	5945.0	-3.004	-3.414	-3.087	-5.605	2.362	2.000	4.362	5.000	-0.638
	6185.0	-4.172	-4.011	-2.553	-2.843	2.683	2.000	4.683	5.000	-0.317
	6405.0	-3.398	-6.746	-3.025	-1.296	2.808	2.000	4.808	5.000	-0.192

**Note: total power (dBm)= 10 log [port1(W)+port2(W)+ port3(W)+port4(W)]*

Figure 13 FCC and IC 4TX mode Test Results

2TX mode:

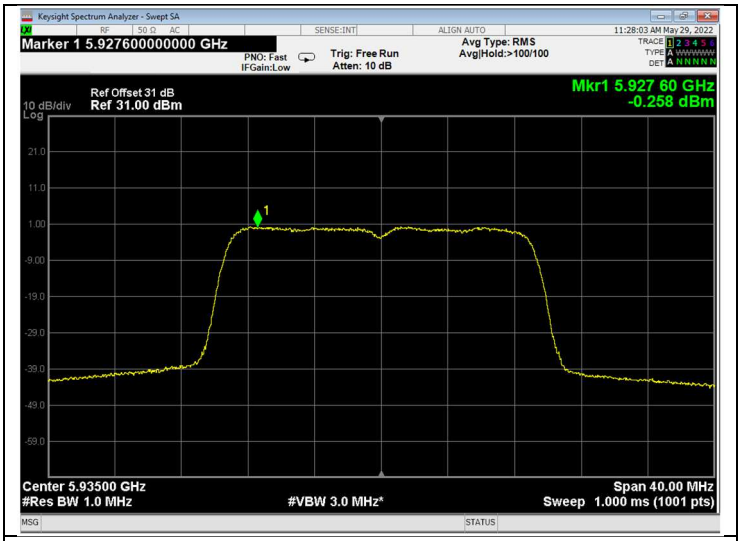

Figure 14. 5935.0MHz,20MHz BW, port1

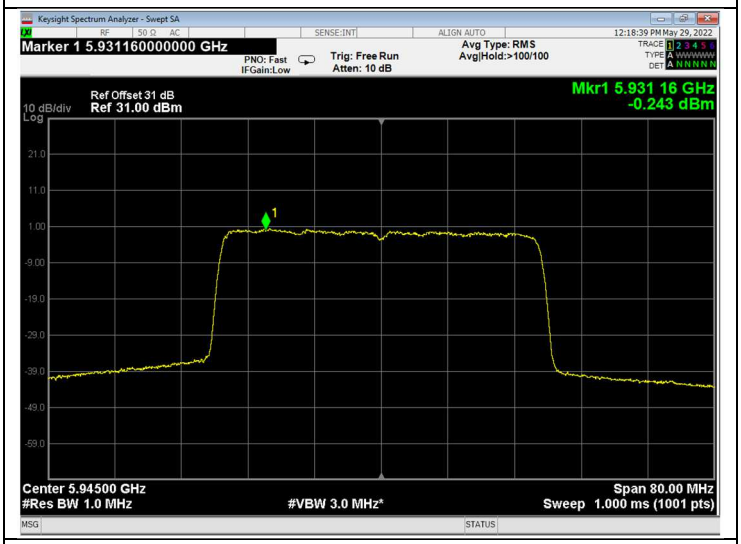

Figure 15. 5945.0MHz,40MHz BW, port1

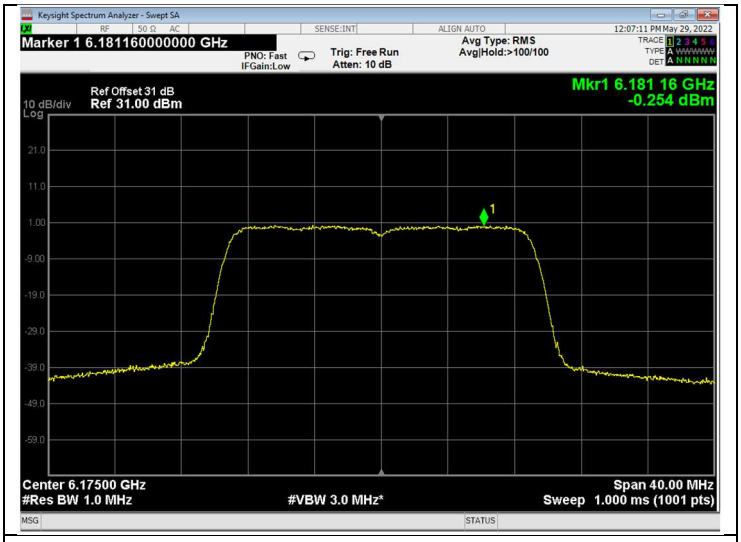

Figure 16. 6175.0MHz,20MHz BW, port1

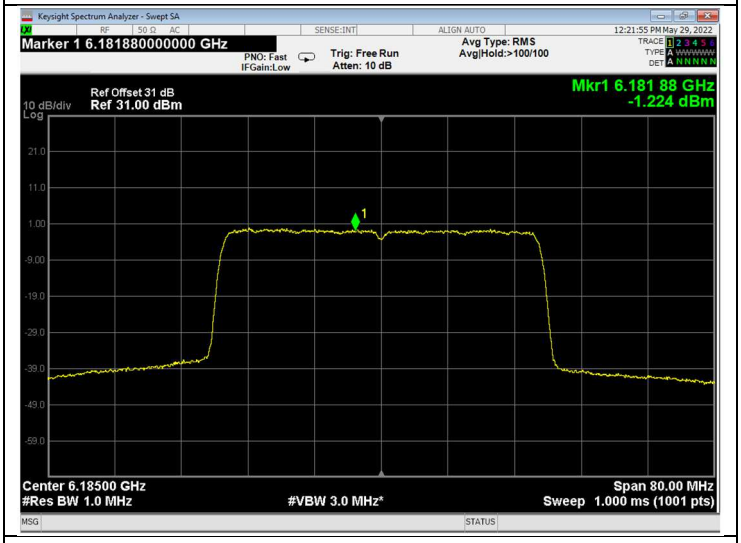

Figure 17. 6185.0MHz,40MHz BW, port1

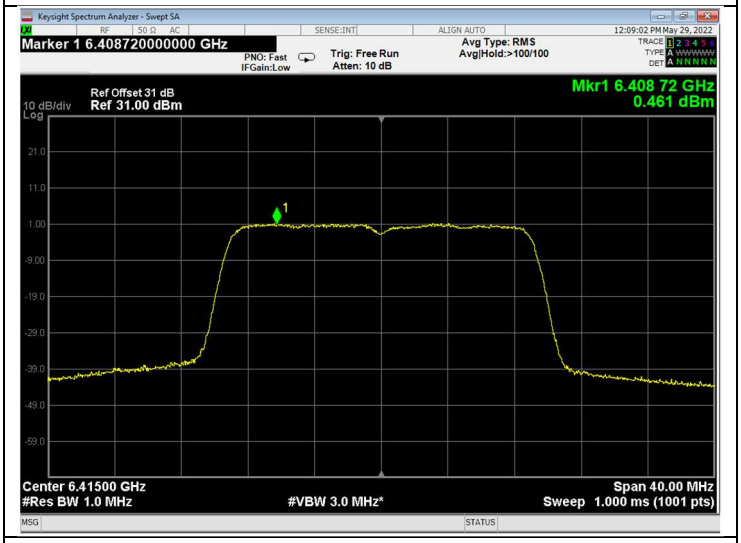

Figure 18. 6415.0MHz,20MHz BW, port1

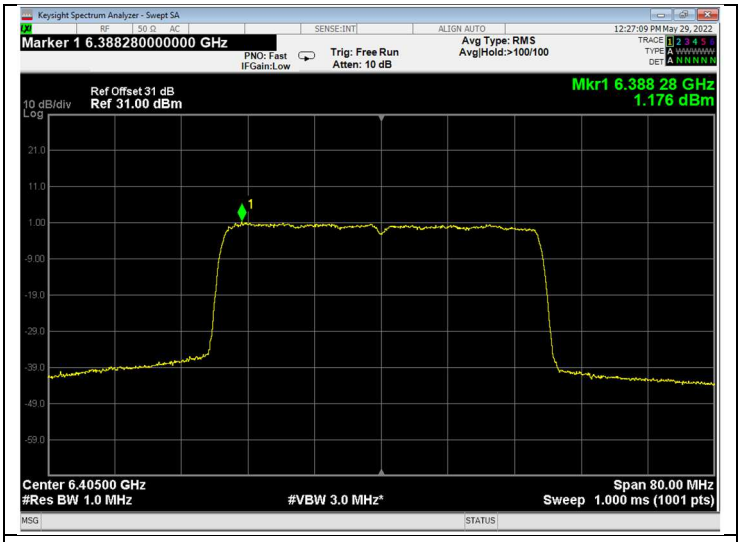

Figure 19. 6405.0MHz,40MHz BW, port1

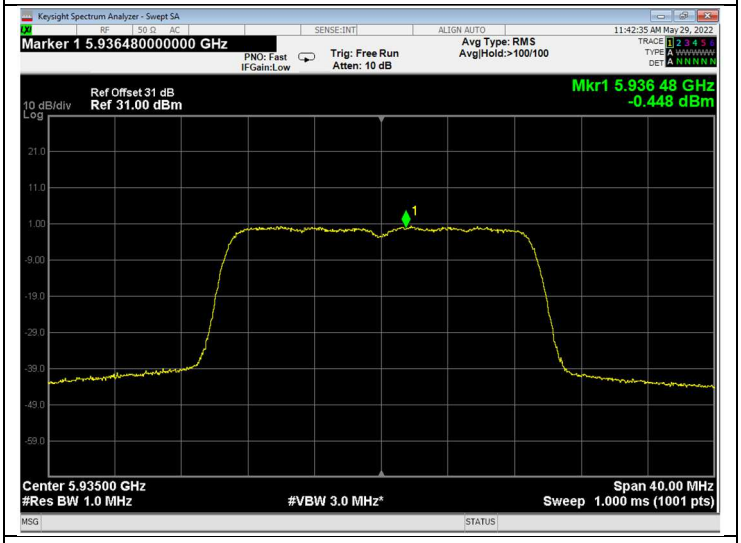

Figure 20. 5935.0MHz,20MHz BW, port2

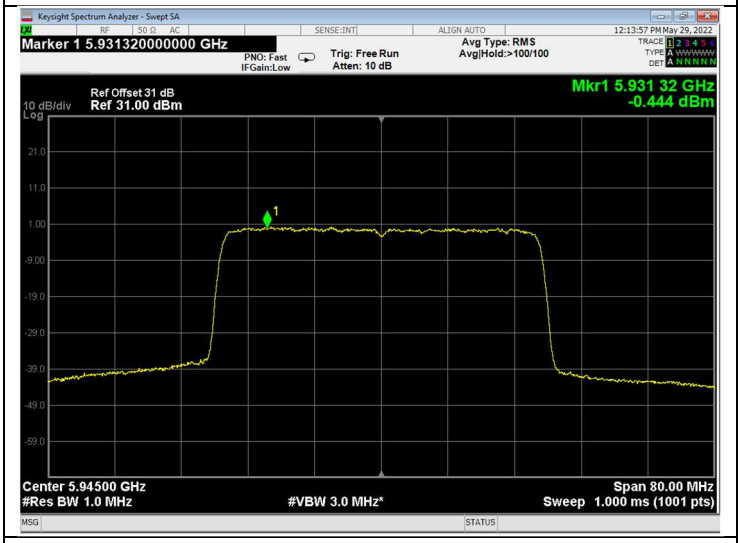

Figure 21. 5945.0MHz,40MHz BW, port2

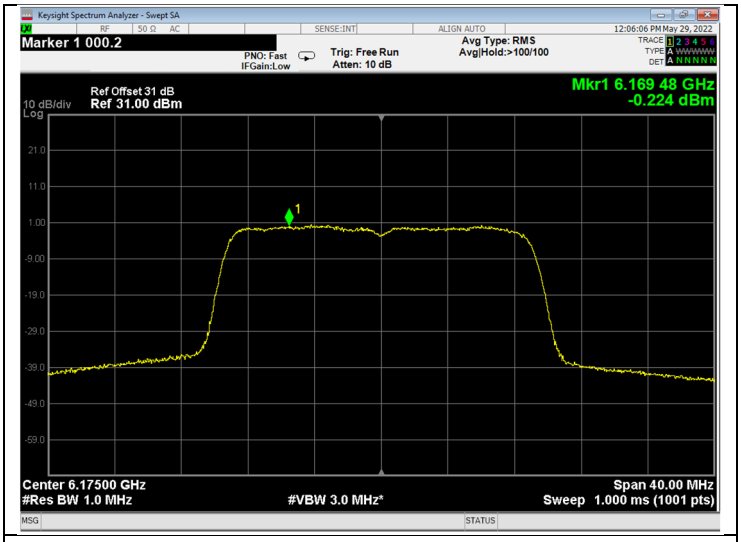

Figure 22. 6175.0MHz,20MHz BW, port2

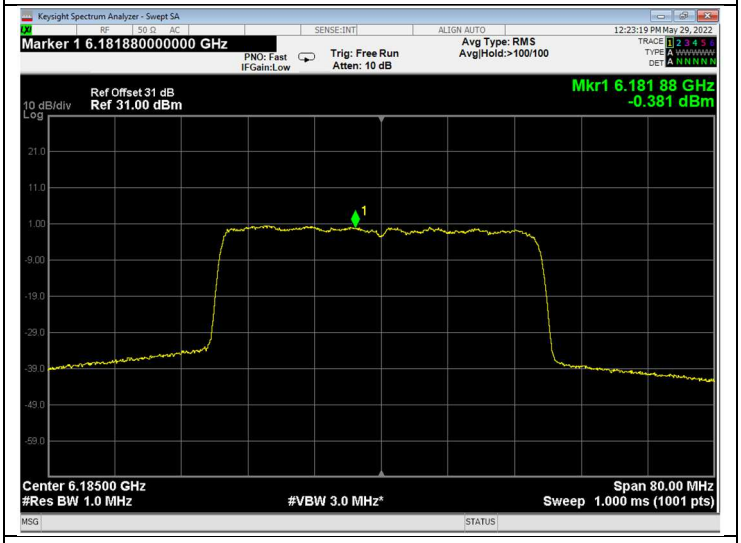

Figure 23. 6185.0MHz,40MHz BW, port2

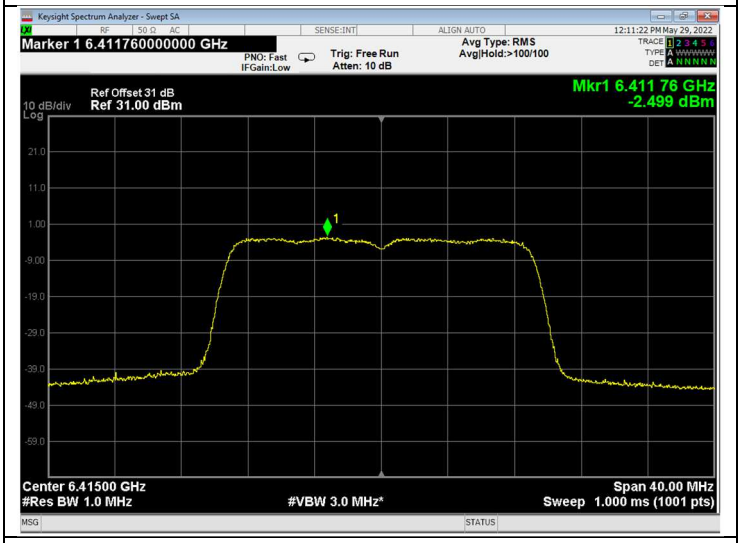

Figure 24. 6415.0MHz,20MHz BW, port2

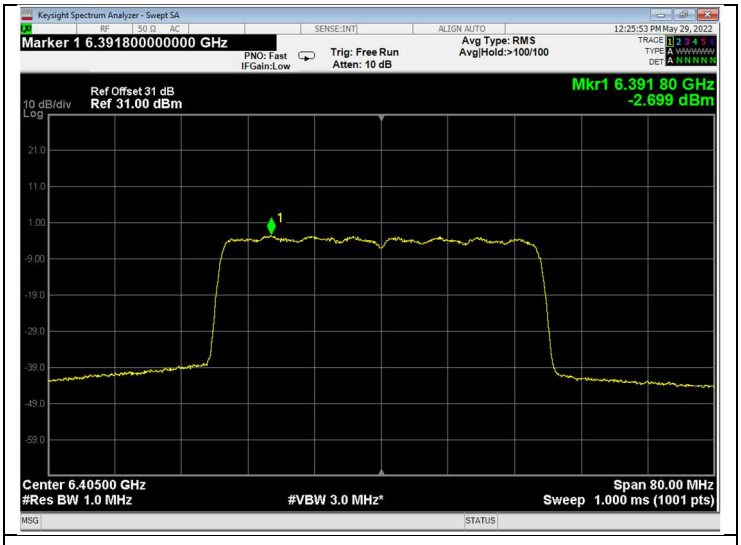

Figure 25. 6405.0MHz,40MHz BW, port2

4TX mode:

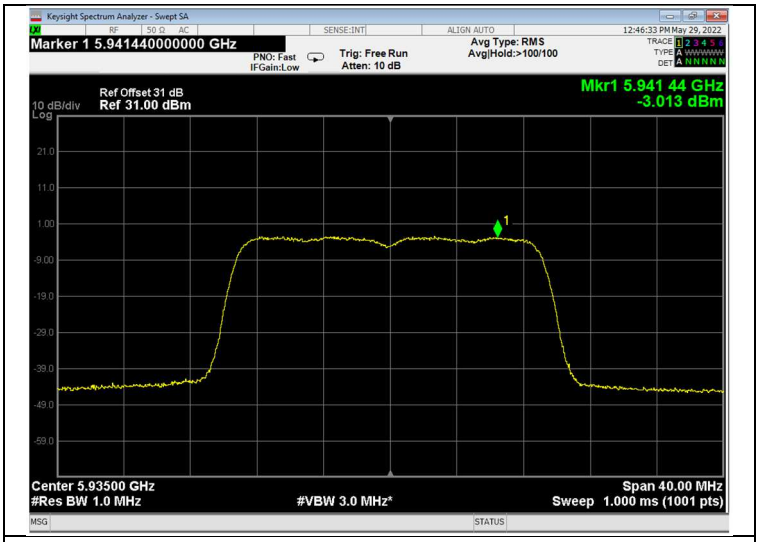

Figure 26. 5935.0MHz,20MHz BW, port1

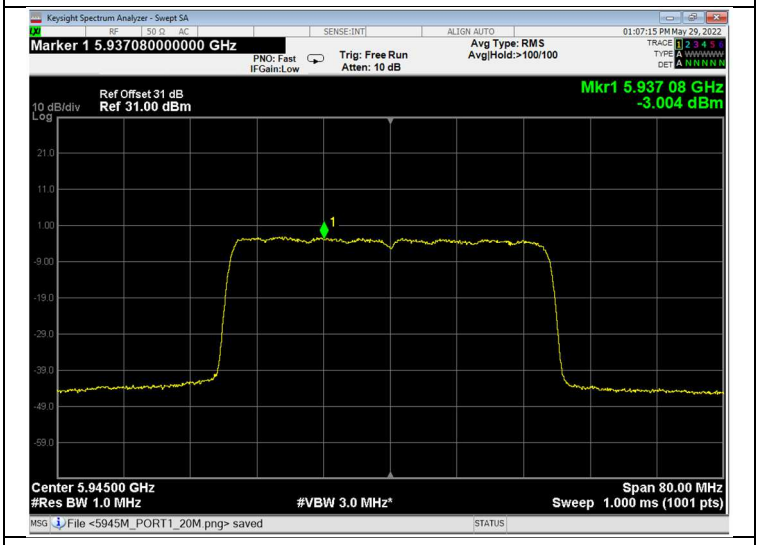

Figure 27. 5945.0MHz,40MHz BW, port1

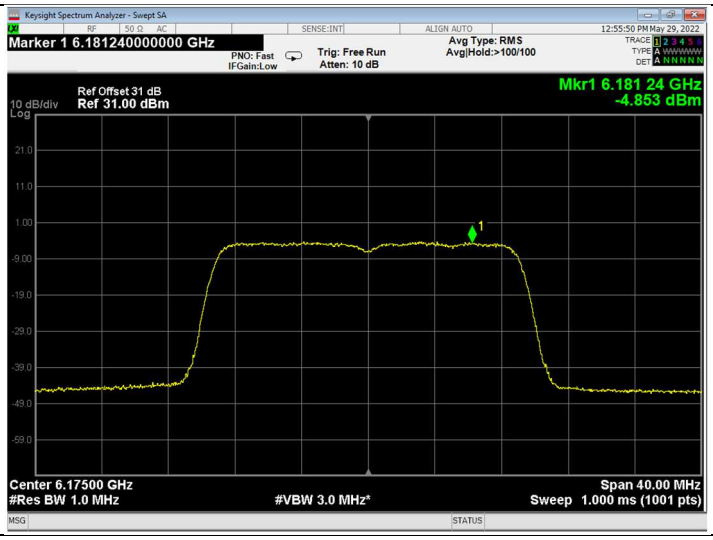

Figure 28. 6175.0MHz,20MHz BW, port1

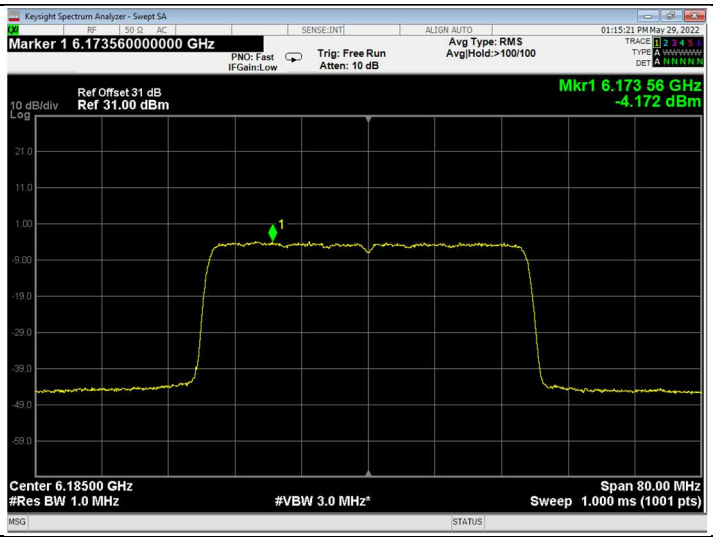

Figure 29. 6185.0MHz,40MHz BW, port1

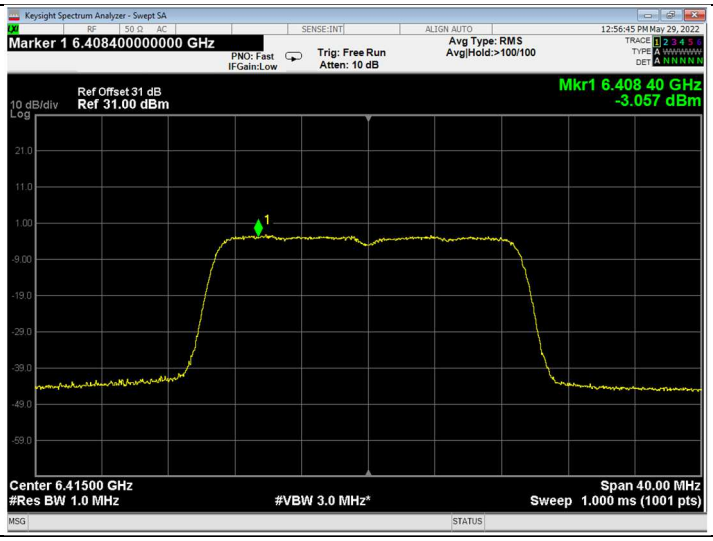

Figure 30. 6415.0MHz,20MHz BW, port1

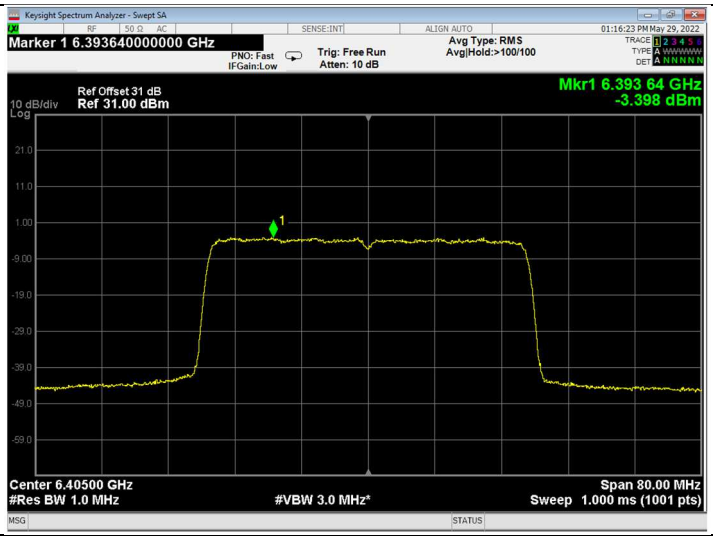

Figure 31. 6405.0MHz,40MHz BW, port1

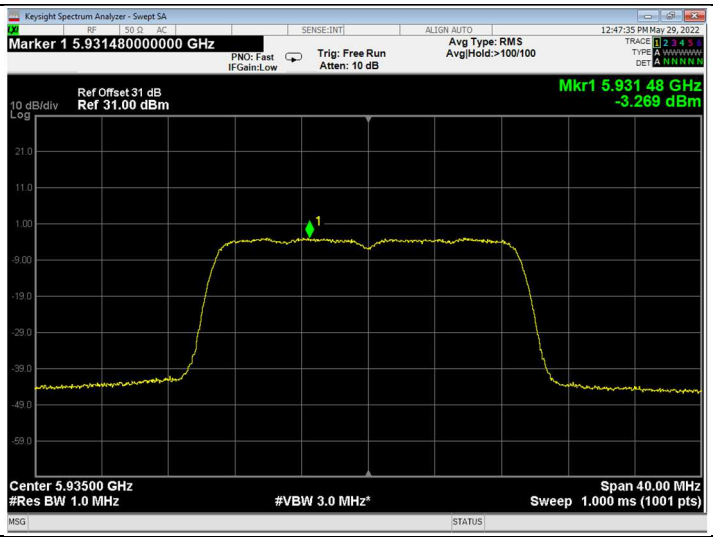

Figure 32. 5935.0MHz,20MHz BW, port2

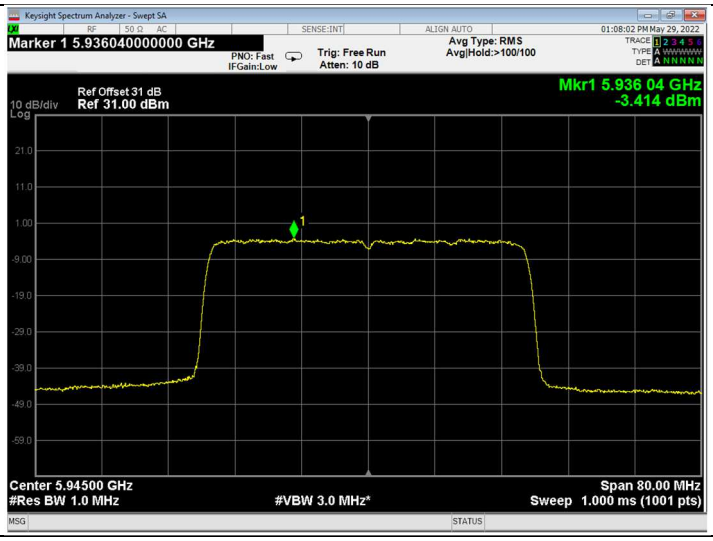

Figure 33. 5945.0MHz,40MHz BW, port2

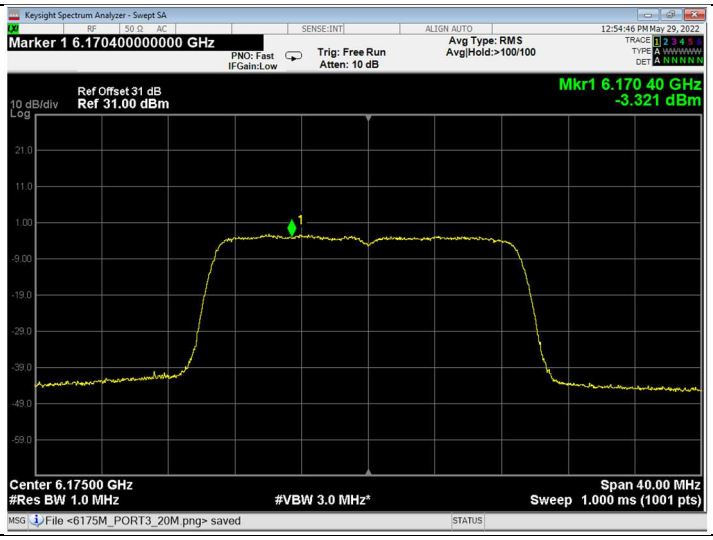

Figure 34. 6175.0MHz,20MHz BW, port2

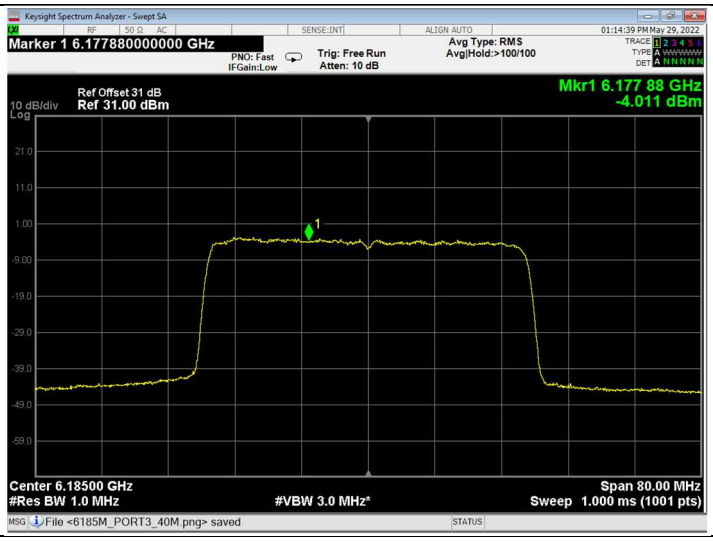

Figure 35. 6185.0MHz,40MHz BW, port2

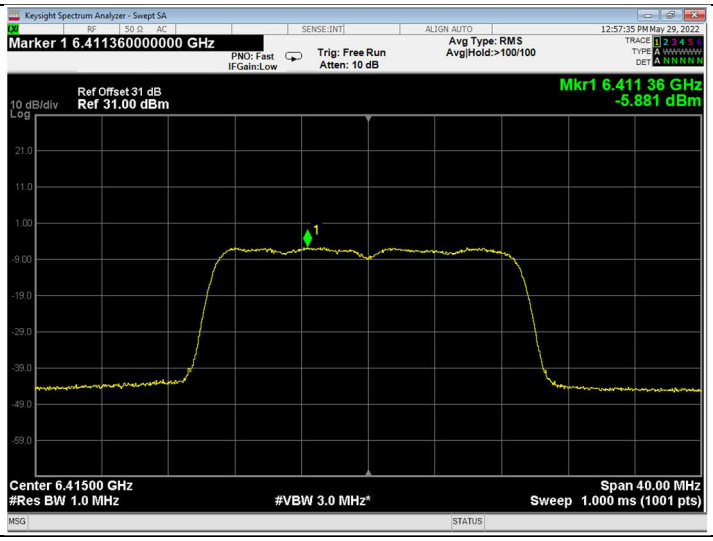

Figure 36. 6415.0MHz,20MHz BW, port2

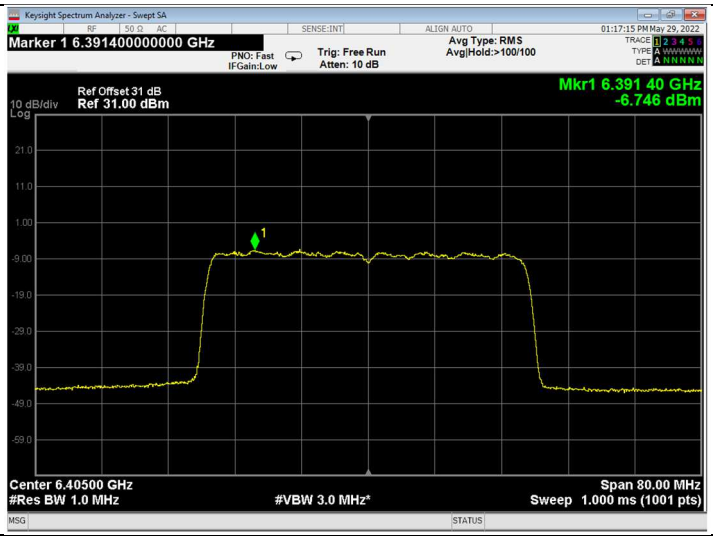

Figure 37. 6405.0MHz,40MHz BW, port2

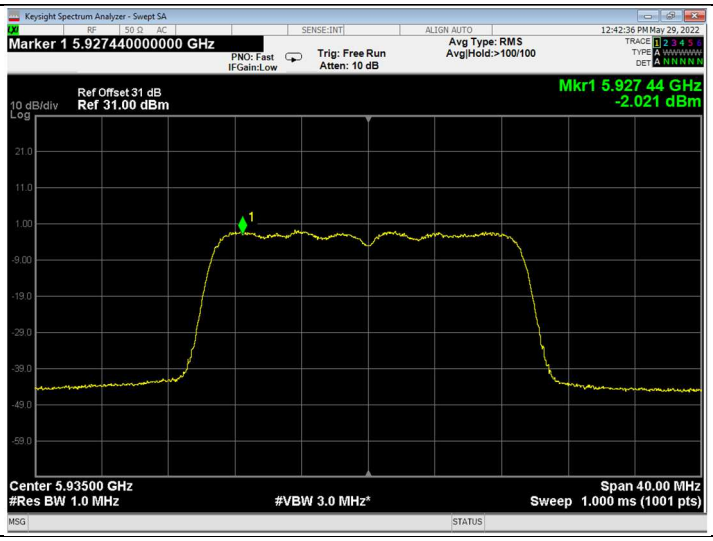

Figure 38. 5935.0MHz,20MHz BW, port3

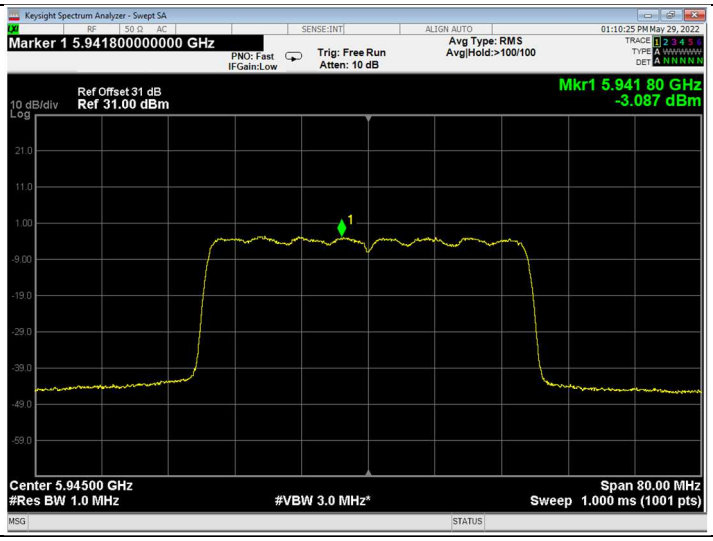

Figure 39. 5945.0MHz,40MHz BW, port3

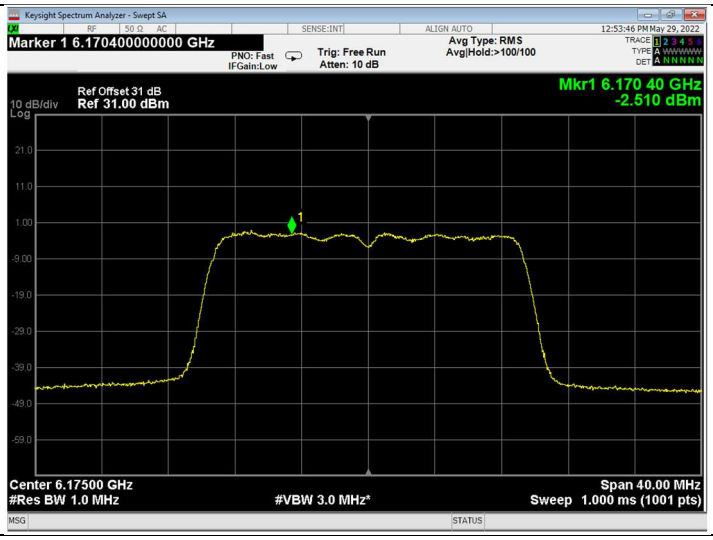

Figure 40. 6175.0MHz,20MHz BW, port3

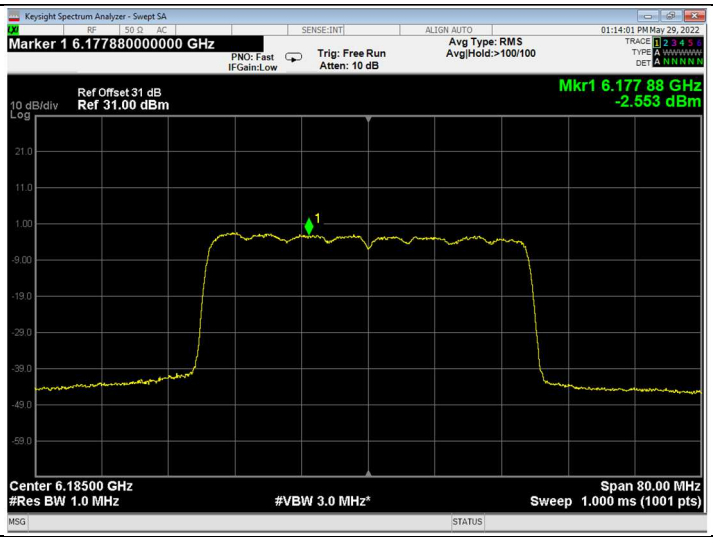

Figure 41. 6185.0MHz,40MHz BW, port3

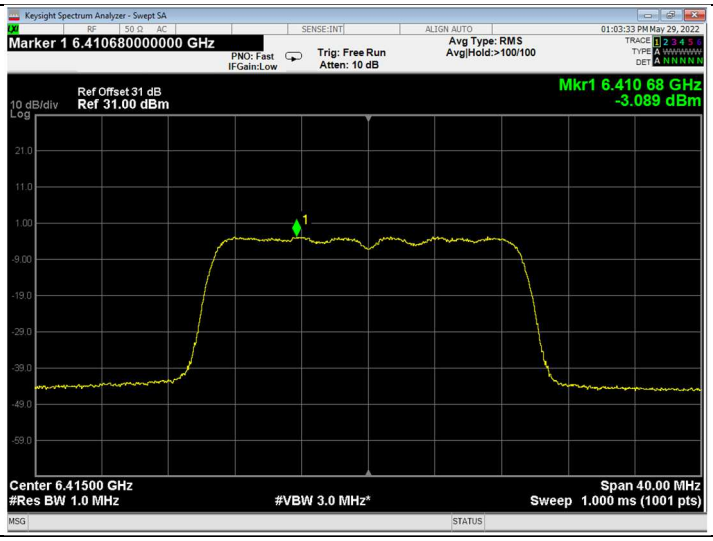

Figure 42. 6415.0MHz,20MHz BW, port3

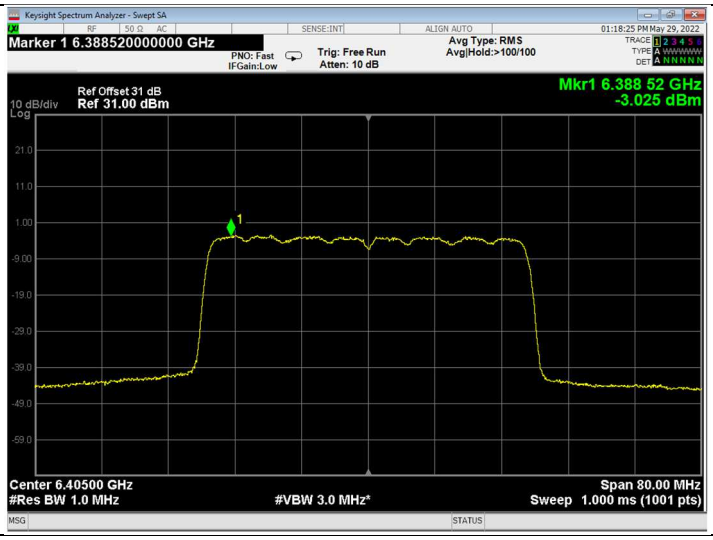

Figure 43. 6405.0MHz,40MHz BW, port3

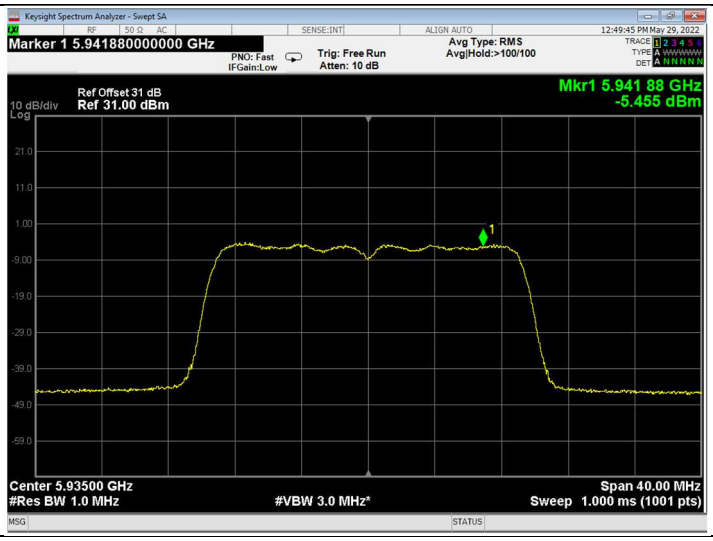

Figure 44. 5935.0MHz,20MHz BW, port4

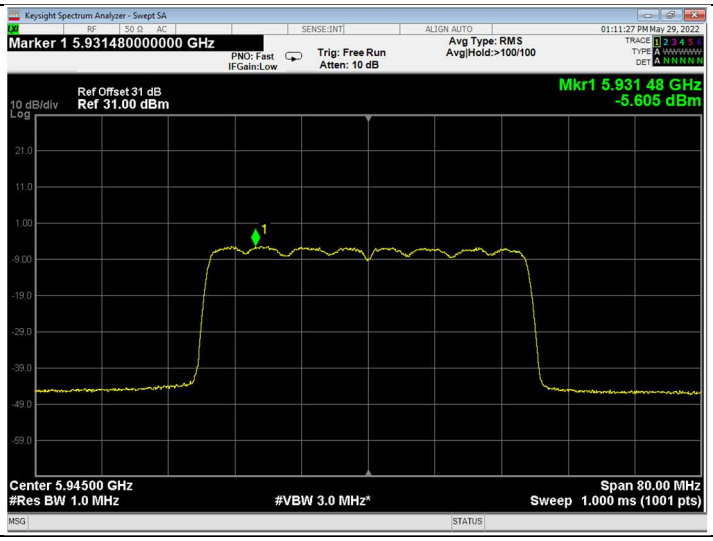

Figure 45. 5945.0MHz,40MHz BW, port4

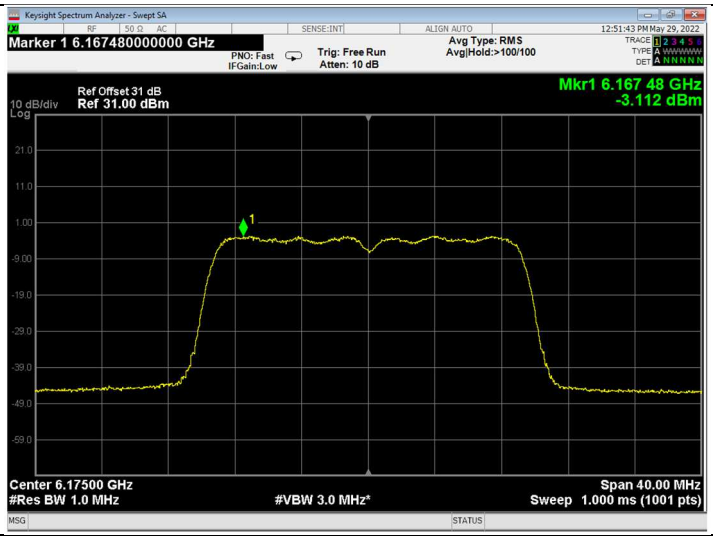

Figure 46. 6175.0MHz,20MHz BW, port4

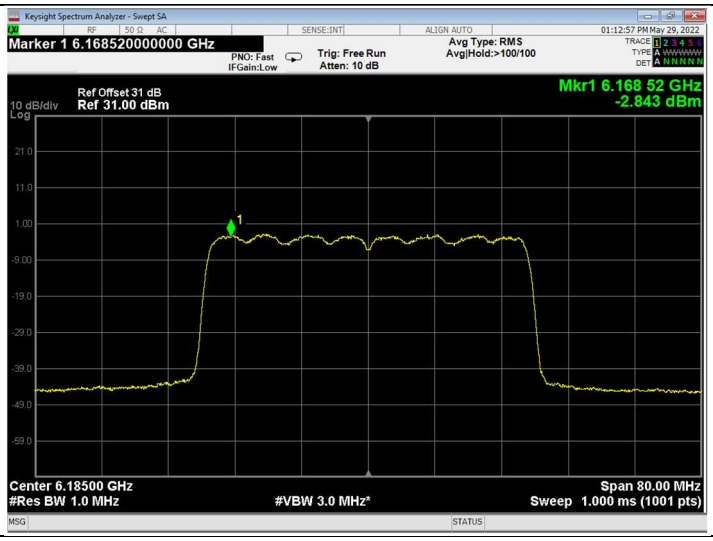

Figure 47. 6185.0MHz,40MHz BW, port4

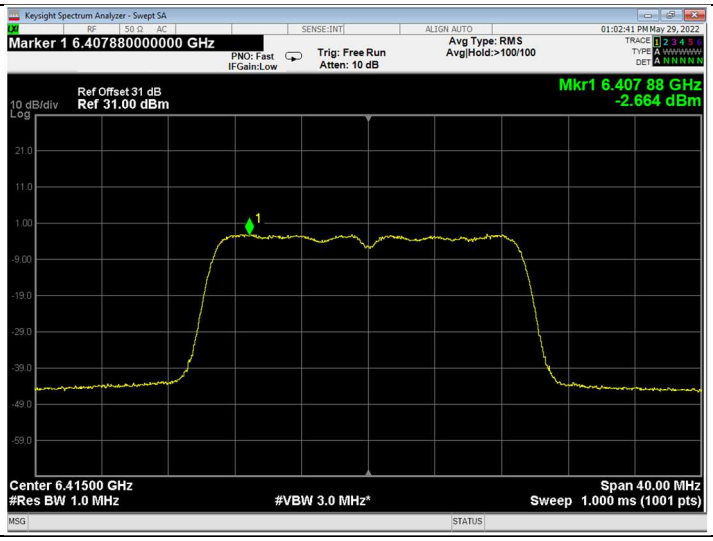

Figure 23. 6415.0MHz,20MHz BW, port4

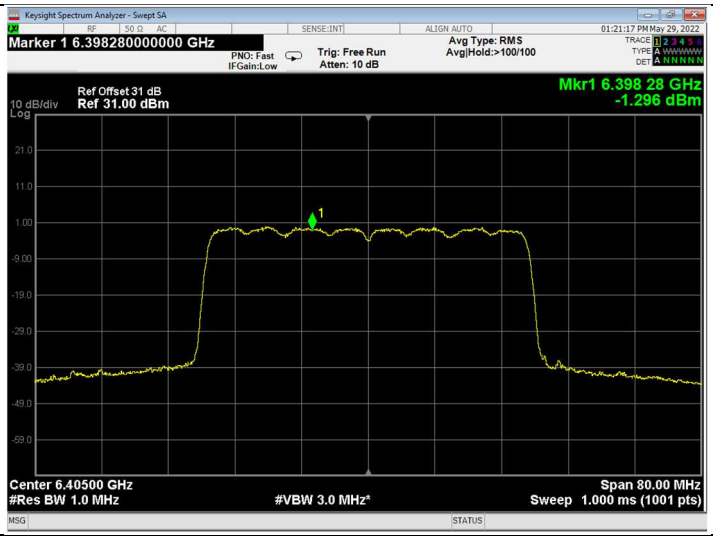

Figure 48. 6405.0MHz,40MHz BW, port4

6.6 Test Equipment Used; Transmitted Power Density

Instrument	Manufacturer	Model	Serial No.	Last Calibration Date	Next Calibration Due
Signal analyzer	Keysight	N9010A	my51170071	13/02/2022	13/02/2024
30dB Attenuator	MCL	BW-S30W5	533	16/05/2022	16/05/2023
RF Cable	Huber Suhner	Sucofelex	28239/4PEA	23/05/2021	31/05/2022

Figure 49 Test Equipment Used

7. Band Edge

7.1 Test Specification

FCC Part 15, Subpart E, Section 15.407(b)(5)
RSS 248 Issue 1 November 19, 2021, Section 4.7.2(a)

7.2 Test Procedure

(Temperature (22°C)/ Humidity (56%RH))

The E.U.T. antenna terminal was connected to the Spectrum Analyzer through an external attenuator and an appropriate coaxial cable (loss = 33.0dB). The offset calculation: attenuator (30dB) + cable loss(1dB) E.U.T gain antenna (2dBi) +=33.0dB. channel power over 1MHz used

7.3 FCC Test Limits

For transmitters operating within the 5.925-7.125 GHz band: Any emissions outside of the 5.925-7.125 GHz band must not exceed an e.i.r.p. of −27 dBm/MHz.

7.4 IC Test Limits

Any emission outside the 5925-7125 MHz band shall not exceed –27 dBm/MHz e.i.r.p.

7.5 Test Results

JUDGEMENT: Passed

The EUT met the requirements of F.C.C. Part 15, Subpart E, Section 15.407(b)(5) specification, and RSS-Gen, Issue 5, March 2019, Amendment 1, Section 4.7.2(a) specifications.

For details see *Figure 50* to *Figure 57.*

2TX mode:

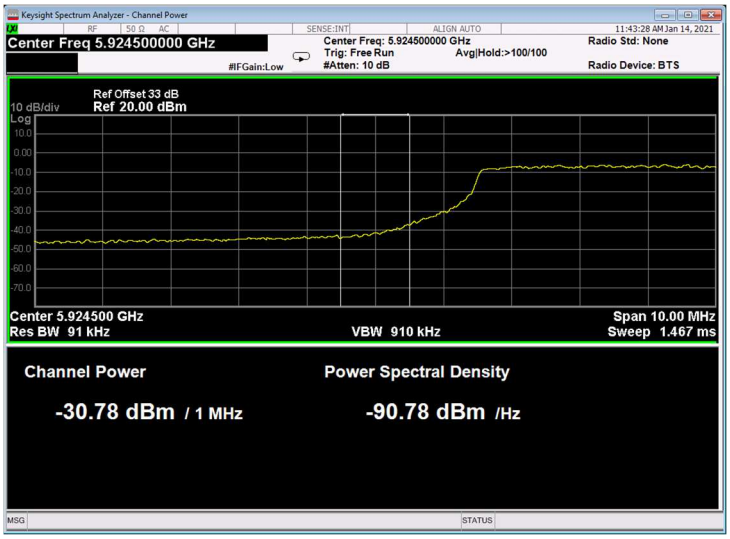

Figure 50 Lower Band Edge, 20MHz BW

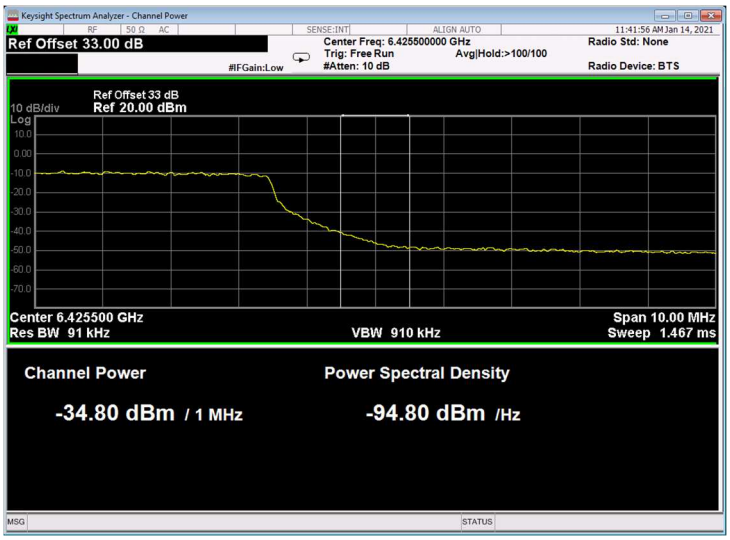

Figure 51 Upper Band Edge, 20MHz BW

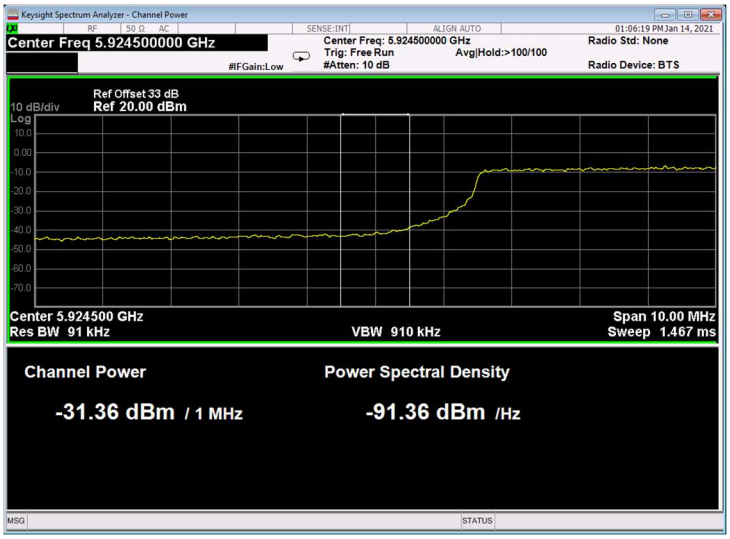

Figure 52 Lower Band Edge, 40MHz BW

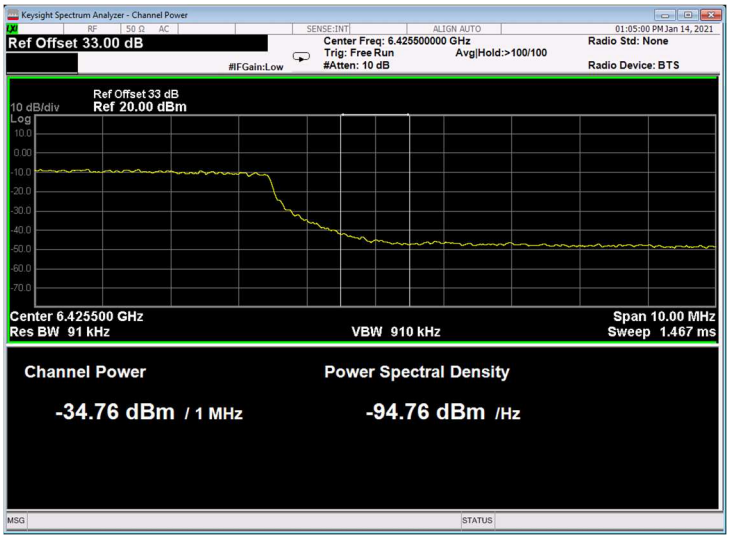

Figure 53 Upper Band Edge, 40MHz BW

4TX mode:

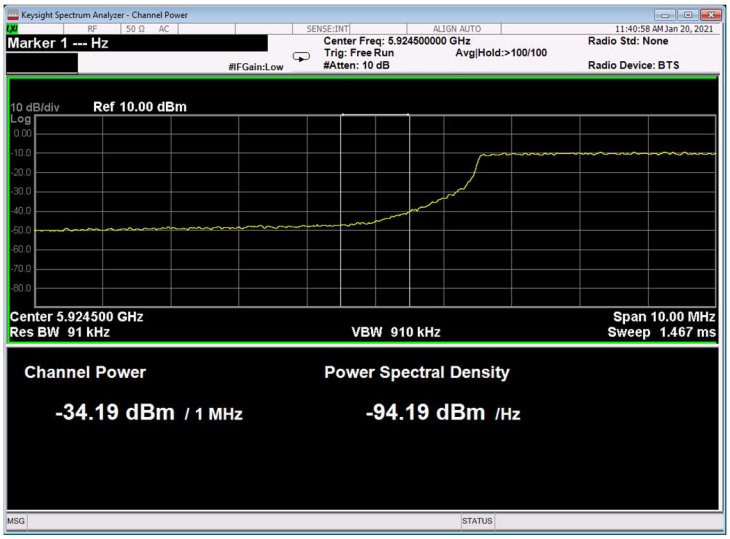

Figure 54 Lower Band Edge, 20MHz BW

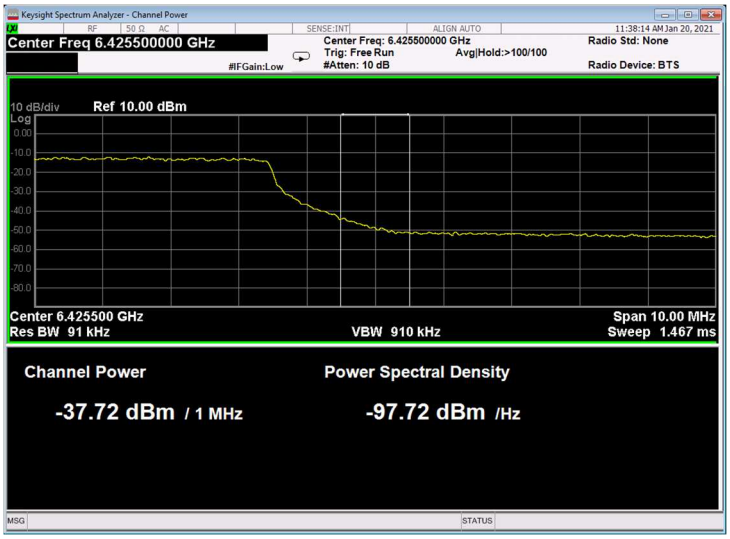

Figure 55 Upper Band Edge, 20MHz BW

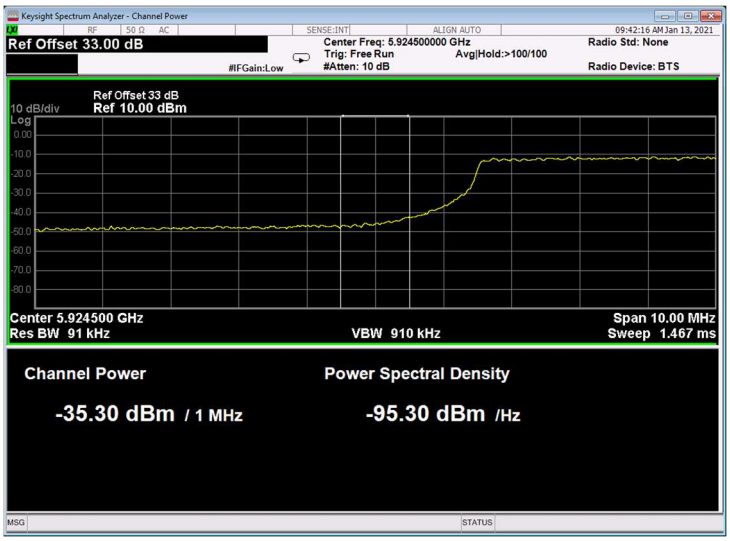

Figure 56 Lower Band Edge, 40MHz BW

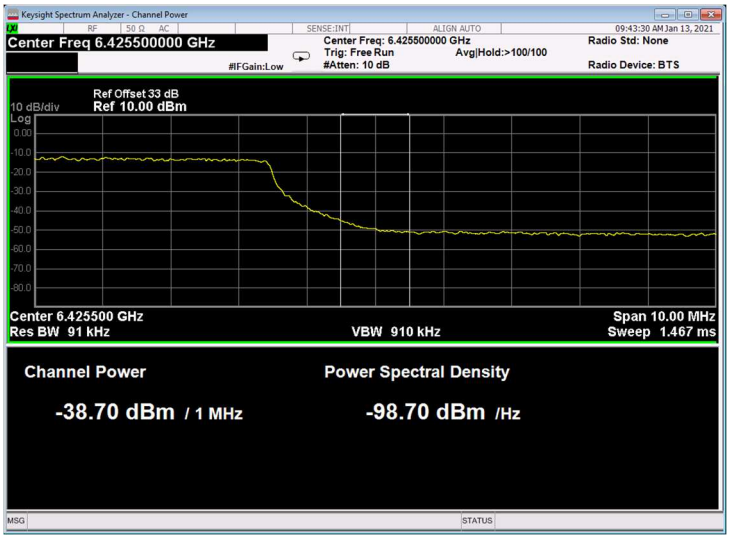

Figure 57 Upper Band Edge, 40MHz BW

7.6 Test Instrumentation Used, Band Edge

Instrument	Manufacturer	Model	Serial No.	Last Calibration Date	Next Calibration Due
EXA Signal Analyzer	Agilent Technologies	N9010A	902A000401	March 1, 2019	March 31, 2021
30dB Attenuator	MCL	BW-S30W5	533	August 23, 2020	August 31, 2021
RF Cable	Huber Suhner	Sucofelex	28239/4PEA	August 23, 2020	August 31, 2021

Figure 58 Test Equipment Used

8. Undesirable/Unwanted Emissions

8.1 Test Specification

FCC Part 15, Subpart E, Section 15.407(b)(1-7)
RSS 248, Issue 1, November 19, 2021, Section 4.7.2(c&d)

8.2 Test Procedure

(Temperature (22°C)/ Humidity (56%RH))
Testing was performed for both Radiated Emission for Emissions in the Non-Restricted Bands & in the Restricted Bands:

For measurements between 0.009-30MHz:

The E.U.T was tested inside the shielded room and placed on a non-metallic table, 0.8 meters above the ground. The emissions were measured at a distance of 3 meters. The readings were maximized by the turntable azimuth between 0-360°, and the antenna polarization.
The frequency range 0.009MHz-30MHz was scanned.

For measurements between 30-1000MHz:
A preliminary measurement to characterize the E.U.T was performed inside the shielded room at a distance of 3 meters, using peak detection mode and broadband antennas. The preliminary measurements produced a list of the highest emissions. The E.U.T was then transferred to the open site, and placed on a remote-controlled turntable. The E.U.T was placed on a non-metallic table, 0.8 meters above the ground. The emissions were measured at a distance of 3 meters. The readings were maximized by adjusting the antenna height between 1-4 meters, the turntable azimuth between 0-360°, and the antenna polarization. The frequency range 30MHz -1000MHz was scanned and the list of the highest emissions was verified and updated accordingly.

For measurements between 1GHz-40GHz:

The E.U.T was tested inside the shielded room and placed on a non-metallic table, 1.5 meters above the ground. The emissions were measured at a distance of 3 meters. The readings were maximized by the turntable azimuth between 0-360°, and the antenna polarization. The antenna scanned from 1m to 4m
The frequency range 1GHz - 40GHz was scanned.

Evaluation was performed for both 20 and 40MHz BW transmissions.

The highest radiations are described in the tables below.

8.3 FCC and IC Test Limits

EIRP Above 1.0GHz	Field strength Above 1.0GHz	Below 1.0GHz
(dBm/MHz)	(dBµV/m/MHz@3m)	(dBµV/m)
-27.0	68.2	As describe in section 15.209 and RSS-Gen

Figure 59 Non-Restricted Band Limits

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)	Field strength (dBµV/m)	Field strength* (dBµV/m)@3m
0.009-0.490	2400/F(kHz)	300	48.5-13.8	128.5-73.8
0.490-1.705	24000/F(kHz)	30	33.8-23.0	73.8-63.0
1.705-30.0	30	30	29.5	69.5
30-88	100	3	40.0	40.0
88-216	150	3	43.5	43.5
216-960	200	3	46.0	46.0
Above 960	500	3	54.0	54.0

*The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector. For average radiated emission measurements above 1000 MHz, there is also a limit corresponding to 20 dB above the indicated values in the table is specified when measuring with peak detector function.

Figure 60 FCC Restricted Band Limits

Frequency (MHz)	Magnetic Field strength (microampere/meter)	Measurement distance (meters)	Magnetic Field strength (dBµA/m)	Magnetic Field strength* (dBµA/m)@3m
0.009-0.490	6.37/F(kHz)	300	-3.0-(-37.7)	77.0-42.2
0.490-1.705	63.7/F(kHz)	30	-17.7-(-28.5)	22.3-11.4
1.705-30.0	0.08	30	-21.9	18.0
Frequency (MHz)	**Field strength (microvolts/meter)**	**Measurement distance (meters)**	**Field strength (dBµV/m)**	**Field strength* (dBµV/m)@3m**
30-88	100	3	40.0	40.0
88-216	150	3	43.5	43.5
216-960	200	3	46.0	46.0
Above 960	500	3	54.0	54.0

*The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector. For average radiated emission measurements above 1000 MHz, there is also a limit corresponding to 20 dB above the indicated values in the table is specified when measuring with peak detector function.

Figure 61 IC Restricted Band Limits

8.4 Test Results

JUDGEMENT: Passed

The EUT met the requirements of the F.C.C. Part 15, Subpart E, Section 15.407(b)(1-7), and RSS 248, Issue 1, November 19, 2021, Section 4.7.2(c&d) specification.

2TX mode:

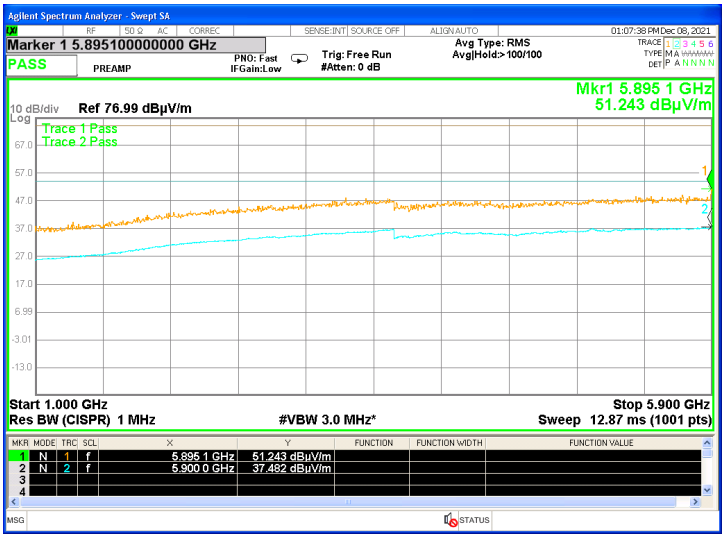

Figure 62 Fundamental: 5.935 GHz ,20 MHz, band 1

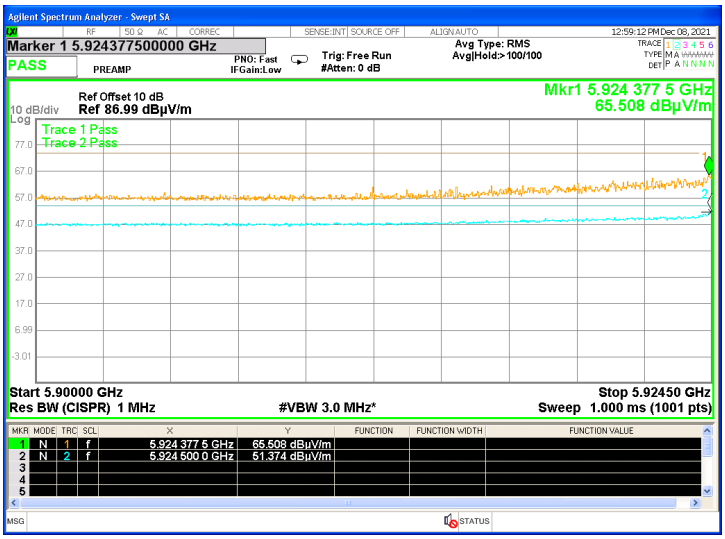

Figure 63 Fundamental: 5.935 GHz ,20 MHz, band 2

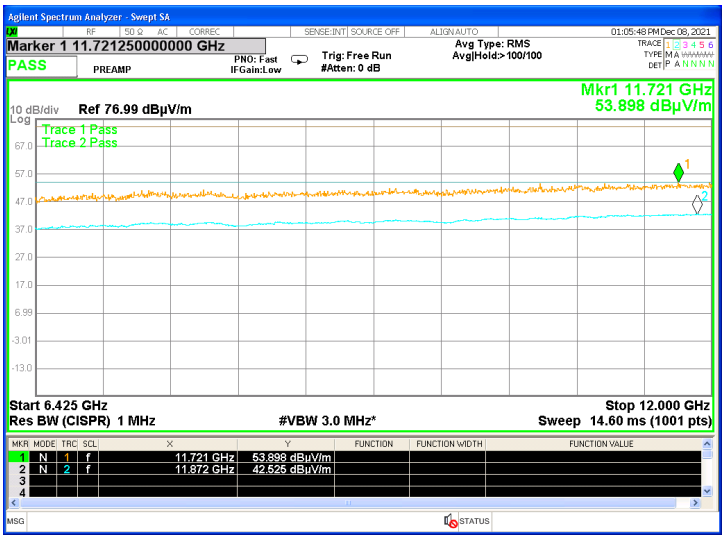

Figure 64 Fundamental: 5.935 GHz ,20 MHz, band 3