

FCC and ISED Test Report

Apple Inc
Model: A2686

In accordance with FCC 47 CFR Part 15E, ISED
RSS-247 and ISED RSS-GEN
(Narrowband)

Prepared for: Apple Inc
One Apple Park Way
Cupertino, California
95014, USA



Add value.
Inspire trust.

FCC ID: BCGA2686

IC: 579C-A2686

COMMERCIAL-IN-CONFIDENCE

Document 75954423-16 Issue 01

SIGNATURE

NAME	JOB TITLE	RESPONSIBLE FOR	ISSUE DATE
Steven Wwhite	Key Account Manager	Authorised Signatory	04 November 2022

Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD document control rules.

ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC 47 CFR Part 15E, ISED RSS-247 and ISED RSS-GEN. The sample tested was found to comply with the requirements defined in the applied rules.

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Report Generation	Hollie Marshall	04 November 2022	

FCC Accreditation
90987 Octagon House, Fareham Test Laboratory

ISED Accreditation
12669A Octagon House, Fareham Test Laboratory

EXECUTIVE SUMMARY

A sample of this product was tested and found to be compliant with FCC 47 CFR Part 15E: 2020, ISED RSS-247: Issue 2 (2017-02) and ISED RSS-GEN: Issue 5 (2018-04) + A2 (2021-02) for the tests detailed in section 1.3.



DISCLAIMER AND COPYRIGHT

This non-binding report has been prepared by TÜV SÜD with all reasonable skill and care. The document is confidential to the potential Client and TÜV SÜD. No part of this document may be reproduced without the prior written approval of TÜV SÜD. © 2022 TÜV SÜD. This report relates only to the actual item/items tested.

ACCREDITATION

Our UKAS Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our UKAS Accreditation. Results of tests not covered by our UKAS Accreditation Schedule are marked NUA (Not UKAS Accredited).

TÜV SÜD
is a trading name of TÜV SÜD Ltd
Registered in Scotland at East Kilbride,
Glasgow G75 0QF, United Kingdom
Registered number: SC215164

TÜV SÜD Ltd is a
TÜV SÜD Group Company

Phone: +44 (0) 1489 558100
Fax: +44 (0) 1489 558101
www.tuvsud.com/en

TÜV SÜD
Octagon House
Concorde Way
Fareham
Hampshire PO15 5RL
United Kingdom

TÜV SÜD

TÜV®



Contents

1	Report Summary	2
1.1	Report Modification Record.....	2
1.2	Introduction.....	2
1.3	Brief Summary of Results	3
1.4	Product Information	4
1.5	Deviations from the Standard.....	4
1.6	EUT Modification Record	5
1.7	Test Location	6
2	Test Details	7
2.1	Restricted Band Edges.....	7
2.2	Emission Bandwidth	23
2.3	Maximum Conducted Output Power	115
2.4	Maximum Conducted Power Spectral Density	133
2.5	Authorised Band Edges	145
2.6	Spurious Radiated Emissions	172
3	Measurement Uncertainty	193



1 Report Summary

1.1 Report Modification Record

Alterations and additions to this report will be issued to the holders of each copy in the form of a complete document.

Issue	Description of Change	Date of Issue
1	First Issue	04-Nov-2022

Table 1

1.2 Introduction

Applicant	Apple Inc
Manufacturer	Apple Inc
Model Number(s)	A2686
Serial Number(s)	XVFXG6M544, F4W3G4XCD4 and FP3F23QFHX
Hardware Version(s)	REV 1.0
Software Version(s)	22A12310t, 22A12310t and 22A12310s
Number of Samples Tested	3
Test Specification/Issue/Date	FCC 47 CFR Part 15E: 2020 ISED RSS-247: Issue 2 (2017-02) ISED RSS-GEN: Issue 5 (2018-04) + A2 (2021-02)
Order Number	0540246998
Start of Test	19-June-2022
Finish of Test	27-October-2022
Name of Engineer(s)	Ian Hart, Daniel Cameron, Colin Brain, Thomas Randall and Danial Shafique
Related Document(s)	KDB 662911 D01 v02r01 ANSI C63.10 (2013) ANSI C63.10 (2020)



1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with FCC 47 CFR Part 15E, ISED RSS-247 and ISED RSS-GEN is shown below.

Section	Specification Clause			Test Description	Result	Comments/Base Standard
	FCC Part 15E	RSS-247	RSS-GEN			
Configuration and Mode: NarrowBand						
-	15.203	-	-	Antenna Requirement	N/T	The device complies with the provisions of this section, as it uses permanently attached integral antennas.
2.1	15.205	3.3	8.10	Restricted Band Edges	Pass	
2.2	15.407 (a)	6.2	-	Emission Bandwidth	Pass	
2.3	15.407 (a)	6.2	-	Maximum Conducted Output Power	Pass	
2.4	15.407 (a)	6.2	-	Maximum Conducted Power Spectral Density	Pass	
2.5	15.407 (b)	6.2	-	Authorised Band Edges	Pass	
2.6	15.407 (b) and 15.209	6.2	6.13 and 8.9	Spurious Radiated Emissions	Pass	

Table 2



1.4 Product Information

1.4.1 Technical Description

The Equipment under test (EUT) was an Apple desktop computer with Bluetooth® and IEEE 802.11 a/b/g/n/ac/ax Wi-Fi in the 2.4GHz, 5GHz and 6GHz bands.

1.4.2 Test Setup

For conducted tests, a conducted test point was provided by the manufacturer via a UFL connector and cable. The loss of these test cables were known and compensated for in any conducted measurements.

For tests in SISO operation, conducted tests were performed on the core with the highest antenna gain as Core 0 and Core 1 are identical but with unequal antenna gains.

Narrowband was supported in the following frequency bands:

US: 5162-5245 MHz

US and Canada: 5733-5844 MHz

The following modes were supported:

Core 0 (SISO) – iPA BDR/HDR and ePA HDR

Core 1 (SISO) – iPA BDR/EDR and ePA HDR

Core 0 + Core 1 (TxBF) – iPA HDR and ePA HDR

For all tests, the EUT was put into a continuous transmit test mode with the manufacturer's test commands via a script running in the EUTs terminal application. The EUT then transmitted the required type of modulation/packet type on a static channel selected within the test script.

All testing was performed with the EUT powered via a 120 V AC, 60 Hz source.

1.4.3 Antenna Gain Table

Antenna Port	Frequency Range (MHz)	Peak Gain (dBi)	Conducted Cable Loss (dB)
Core 0	5150 to 5250	0.15	1.20
	5725 to 5820	0.88	1.30
Core 1	5150 to 5250	6.25	1.20
	5725 to 5820	6.66	1.30

Table 3

1.5 Deviations from the Standard

No deviations from the applicable test standard were made during testing.



1.6 EUT Modification Record

The table below details modifications made to the EUT during the test programme.

The modifications incorporated during each test are recorded on the appropriate test pages.

Modification State	Description of Modification still fitted to EUT	Modification Fitted By	Date Modification Fitted
Model: A2686, Serial Number: F4W3G4XCD4			
0	As supplied by the customer	Not Applicable	Not Applicable
Model: A2686, Serial Number: XVFXG6M544			
0	As supplied by the customer	Not Applicable	Not Applicable
Model: A2686, Serial Number: FP3F23QFHX			
0	As supplied by the customer	Not Applicable	Not Applicable

Table 4



1.7 Test Location

TÜV SÜD conducted the following tests at our Octagon House Test Laboratory.

Test Name	Name of Engineer(s)	Accreditation
Configuration and Mode: NarrowBand		
Emission Bandwidth	Daniel Cameron	UKAS
Maximum Conducted Output Power	Daniel Cameron	UKAS
Maximum Conducted Power Spectral Density	Daniel Cameron	UKAS

Table 5

Office Address:

TÜV SÜD
Octagon House
Concorde Way
Fareham
Hampshire
PO15 5RL
United Kingdom

TÜV SÜD conducted the following tests at our Concorde Park Test Laboratory.

Test Name	Name of Engineer(s)	Accreditation
Configuration and Mode: NarrowBand		
Restricted Band Edges	Ian Hart	UKAS
Authorised Band Edges	Ian Hart	UKAS
Spurious Radiated Emissions	Colin Brain, Thomas Randall and Danial Shafique	UKAS

Table 6

Office Address:

TÜV SÜD
Concorde Park
Concorde Way
Fareham
Hampshire
PO15 5FG
United Kingdom



2 Test Details

2.1 Restricted Band Edges

2.1.1 Specification Reference

FCC 47 CFR Part 15E, Clause 15.205
ISED RSS-247, Clause 3.3
ISED RSS-GEN, Clause 8.10

2.1.2 Equipment Under Test and Modification State

A2686, S/N: XVFXG6M544 - Modification State 0
A2686, S/N: FP3F23QFHX - Modification State 0

2.1.3 Date of Test

19-June -2022 to 25-October-2022

2.1.4 Test Method

The test was performed in accordance with ANSI C63.10, clause 6.10.5.

Restricted Band Edge measurements were performed with the device operating in SISO and TxBF, across the various modes supported by the device.

The measurements displayed within this report have been limited to those modes which have been shown to be worst case.

Further measurements are held on file by TÜV SÜD and are available if required.

2.1.5 Environmental Conditions

Ambient Temperature	21.3 °C
Relative Humidity	40.5 %

2.1.6 Test Results

NarrowBand

iPA - SISO

Mode	Modulation	Core	Packet Type	Tx Frequency (MHz)	Band Edge Frequency (MHz)	Peak Level (dBμV/m)	Average Level (dBμV/m)
Static	GFSK	1	DH5	5162	5150	56.04	43.57
Static	$\pi/4$ DQPSK	1	4-DH5	5162	5150	55.58	43.51
Static	$\pi/4$ DQPSK	1	8-DH5	5162	5150	55.93	43.53
Static	GFSK	1	DH5	5245	5350	56.93	44.60
Static	$\pi/4$ DQPSK	1	4-DH5	5245	5350	56.56	44.67
Static	$\pi/4$ DQPSK	1	8-DH5	5245	5350	56.27	44.63

Table 7 - Restricted Band Edge Results

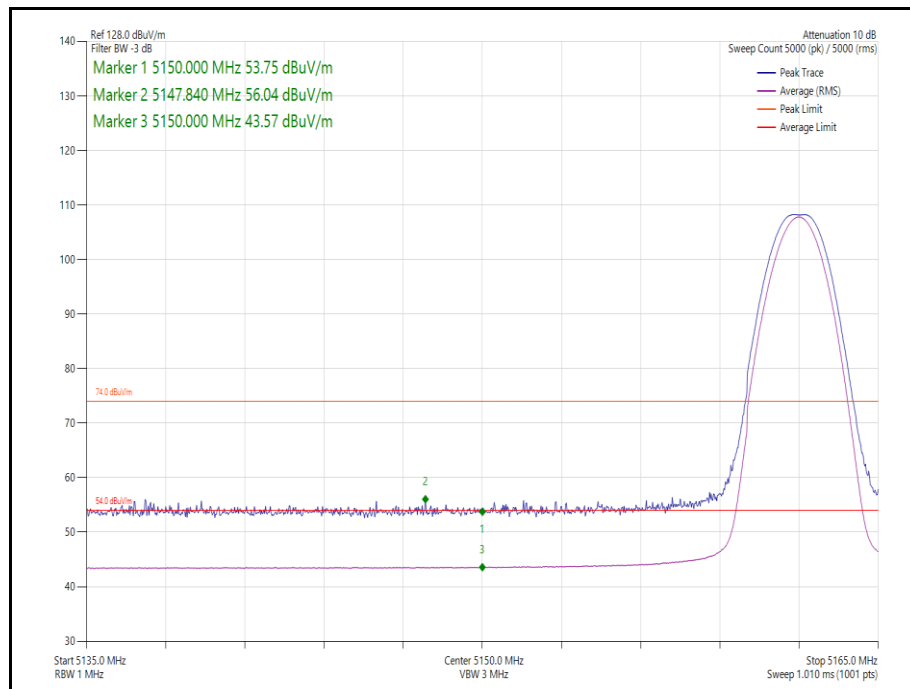


Figure 1 - Static - GFSK/DH5 - 5162 MHz - Band Edge Frequency 5150 MHz

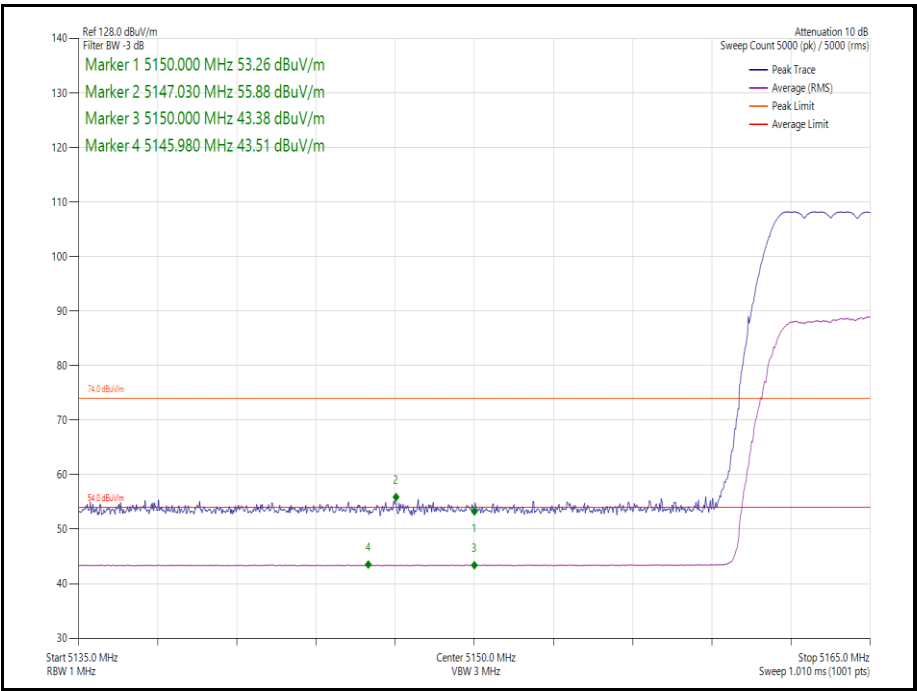


Figure 2 - Static - $\pi/4$ DQPSK/4-DH5 - 5162 MHz - Band Edge Frequency 5150 MHz

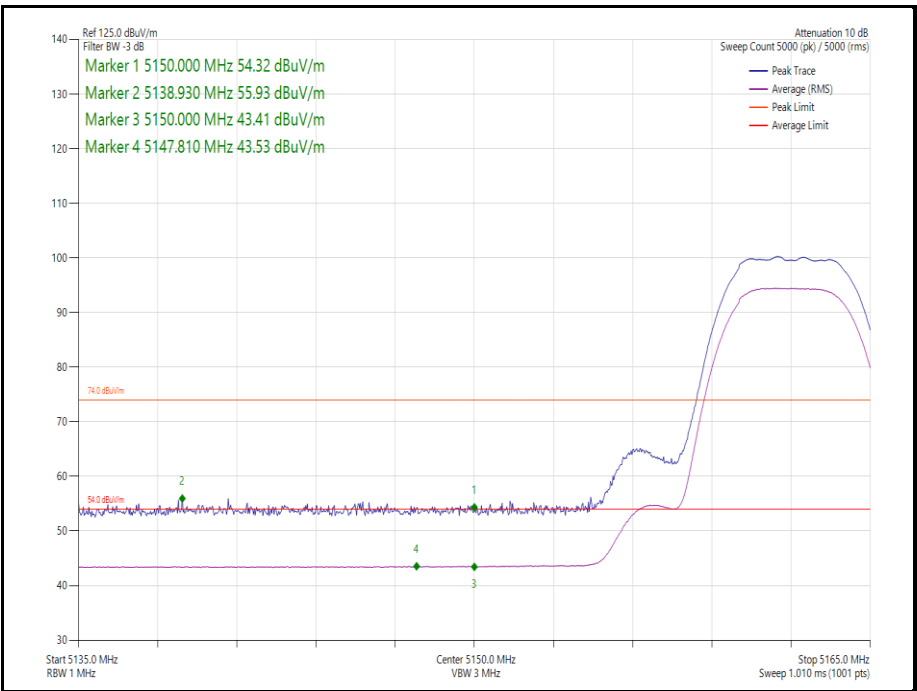


Figure 3 - Static - $\pi/4$ DQPSK/8-DH5 - 5162 MHz - Band Frequency 5150 MHz

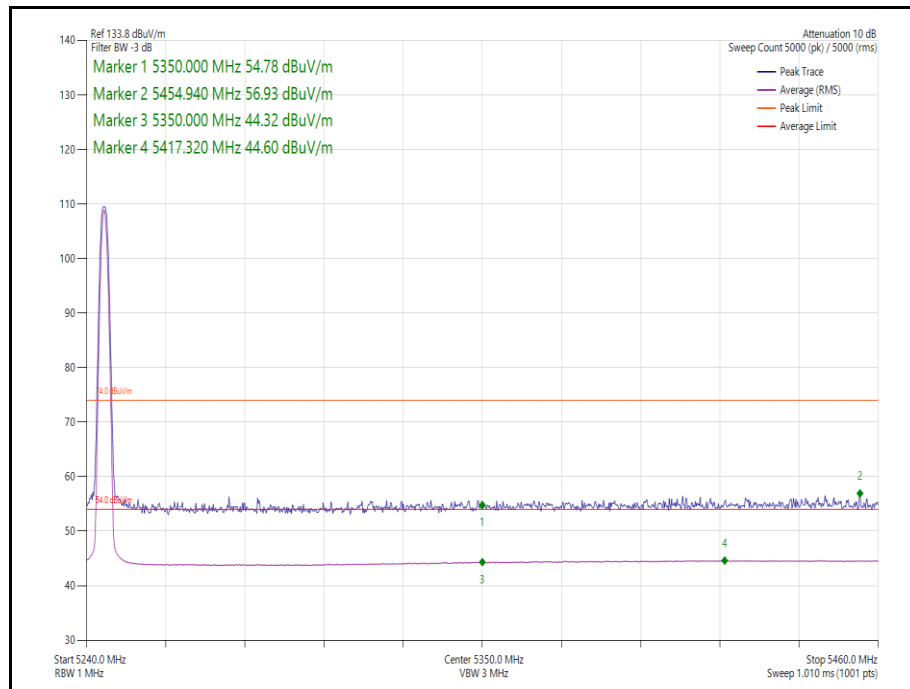


Figure 4 - Static - GFSK/DH5 - 5245 MHz - Band Edge Frequency 5350 MHz

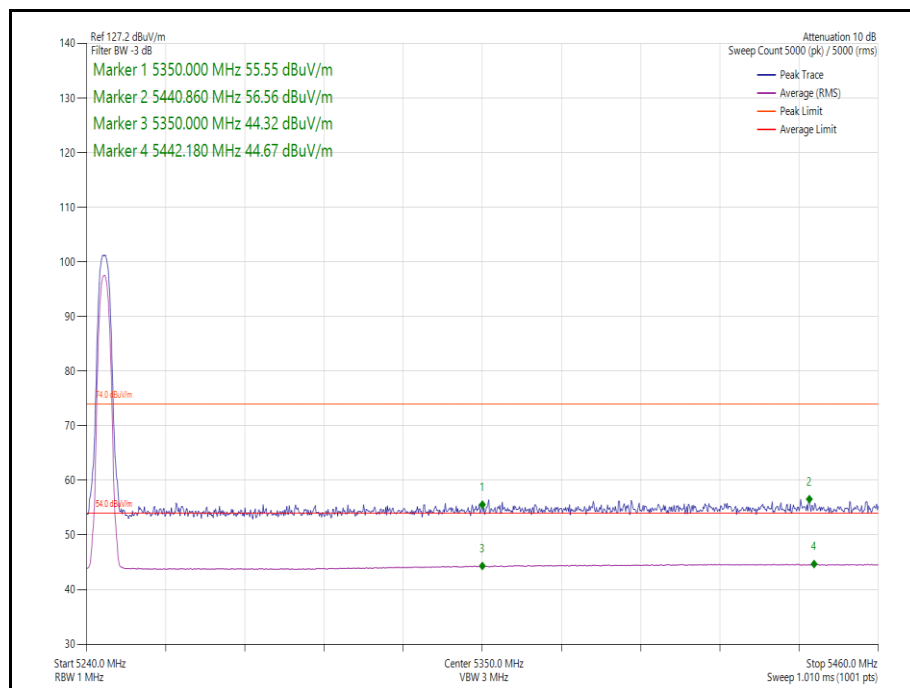


Figure 5 - Static - $\pi/4$ DQPSK/4-DH5 - 5245 MHz - Band Edge Frequency 5350 MHz

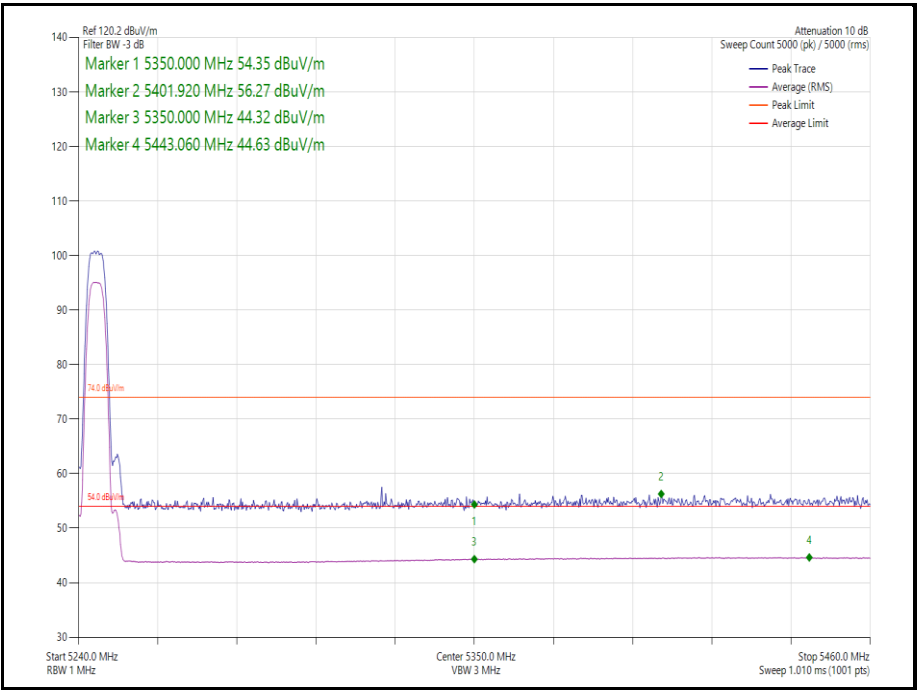


Figure 6 - Static - $\pi/4$ DQPSK/8-DH5 - 5245 MHz - Band Edge Frequency 5350 MHz

iPA – TXBF

Mode	Modulation	Core	Packet Type	Tx Frequency (MHz)	Band Edge Frequency (MHz)	Peak Level (dBμV/m)	Average Level (dBμV/m)
Static	GFSK	0-1	DH5	5162	5150	56.0	43.99
Static	$\pi/4$ DQPSK	0-1	4-DH5	5162	5150	56.53	44.04
Static	$\pi/4$ DQPSK	0-1	8-DH5	5162	5150	55.98	44.03
Static	GFSK	0-1	DH5	5245	5350	56.70	44.81
Static	$\pi/4$ DQPSK	0-1	4-DH5	5245	5350	56.83	44.84
Static	$\pi/4$ DQPSK	0-1	8-DH5	5245	5350	56.85	44.81

Table 8 - Restricted Band Edge Results

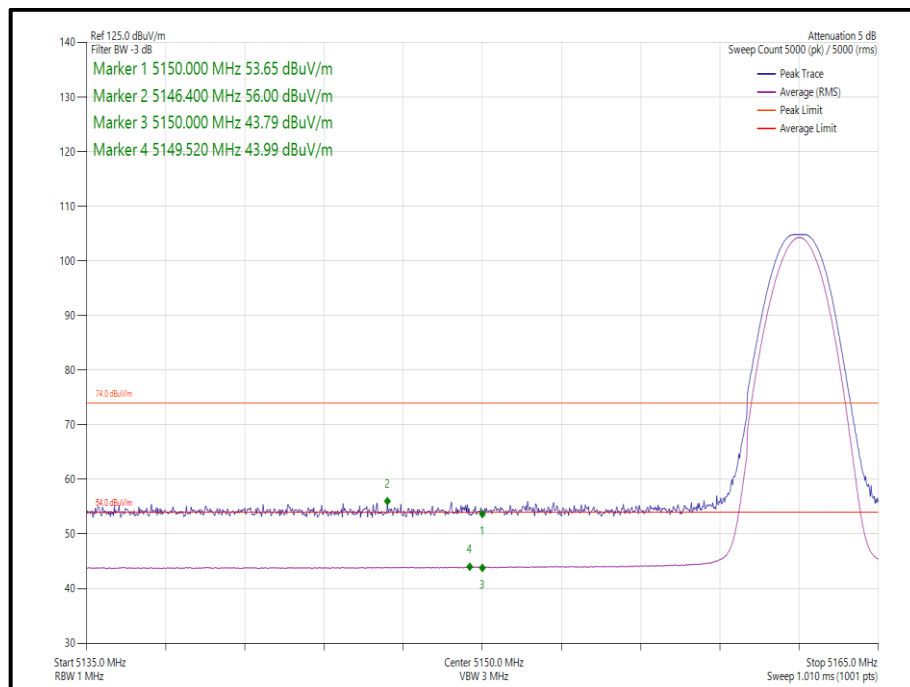


Figure 7 - Static - GFSK/DH5 - 5162 MHz - Band Edge Frequency 5150 MHz

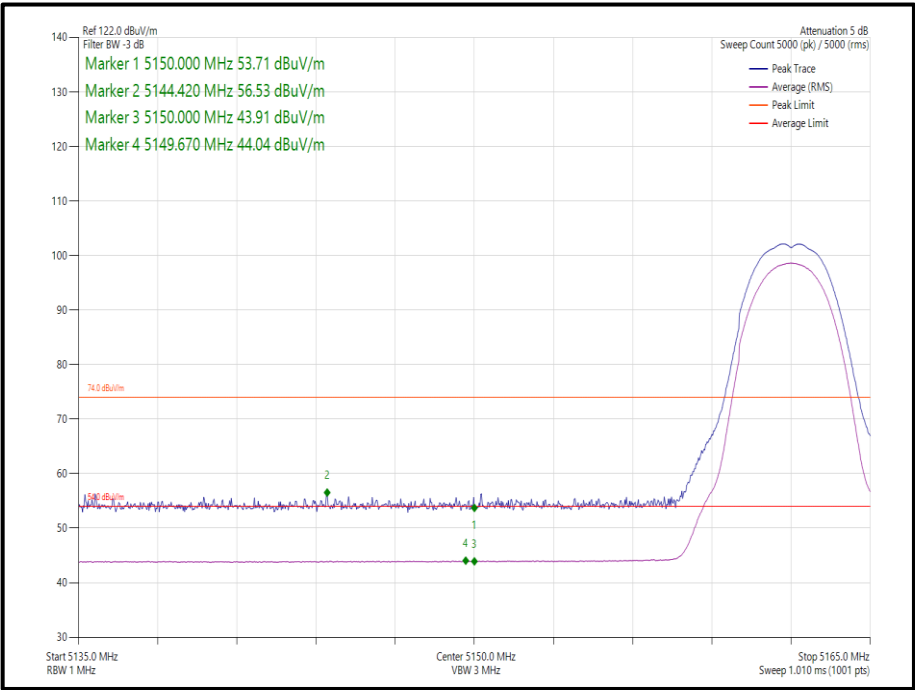


Figure 8 - Static - $\pi/4$ DQPSK/4-DH5 - 5162 MHz - Band Edge Frequency 5150 MHz

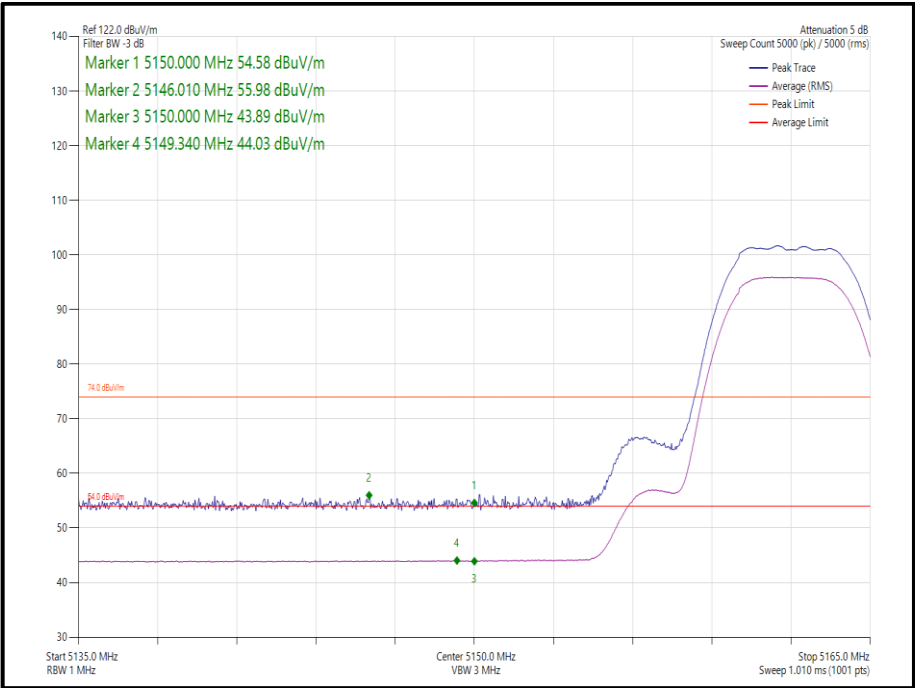


Figure 9 - Static - $\pi/4$ DQPSK/8-DH5 - 5162 MHz - Band Edge Frequency 5150 MHz

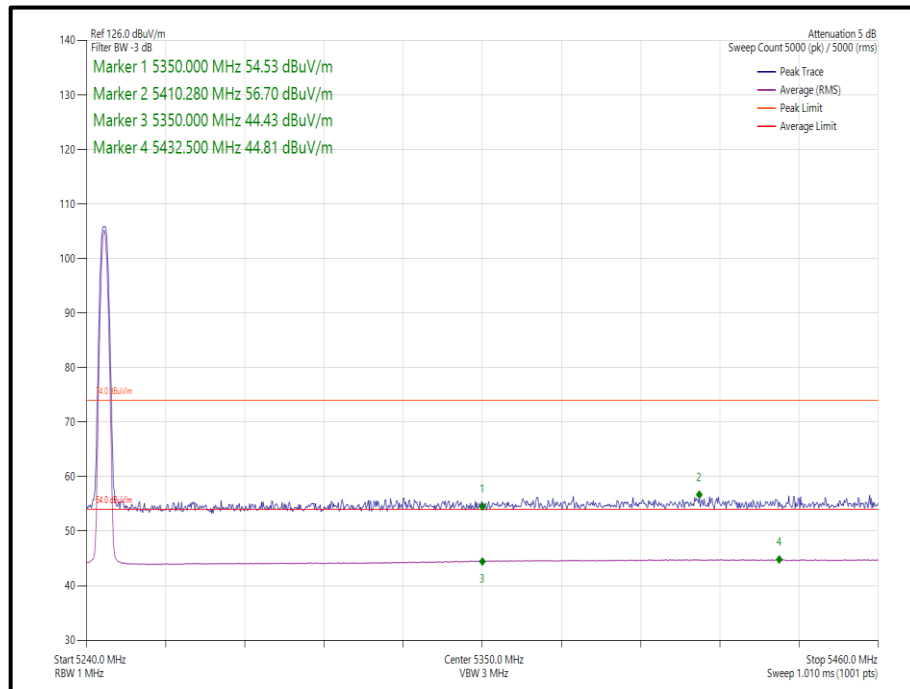


Figure 10 - Static - GFSK/DH5 - 5245 MHz - Band Edge Frequency 5350 MHz

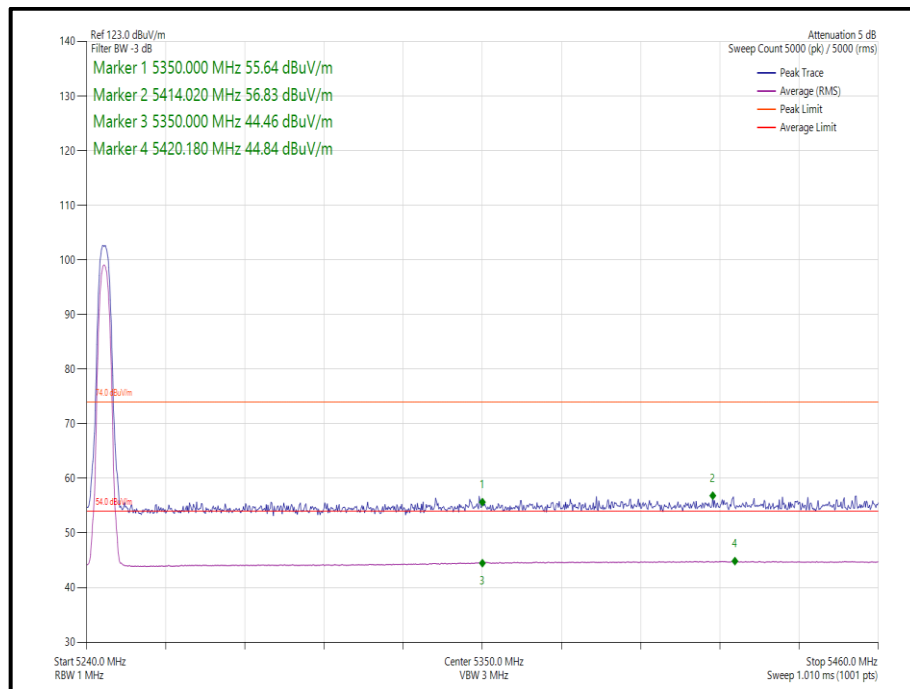


Figure 11 - Static - $\pi/4$ DQPSK/4-DH5 - 5245 MHz - Band Edge Frequency 5350 MHz

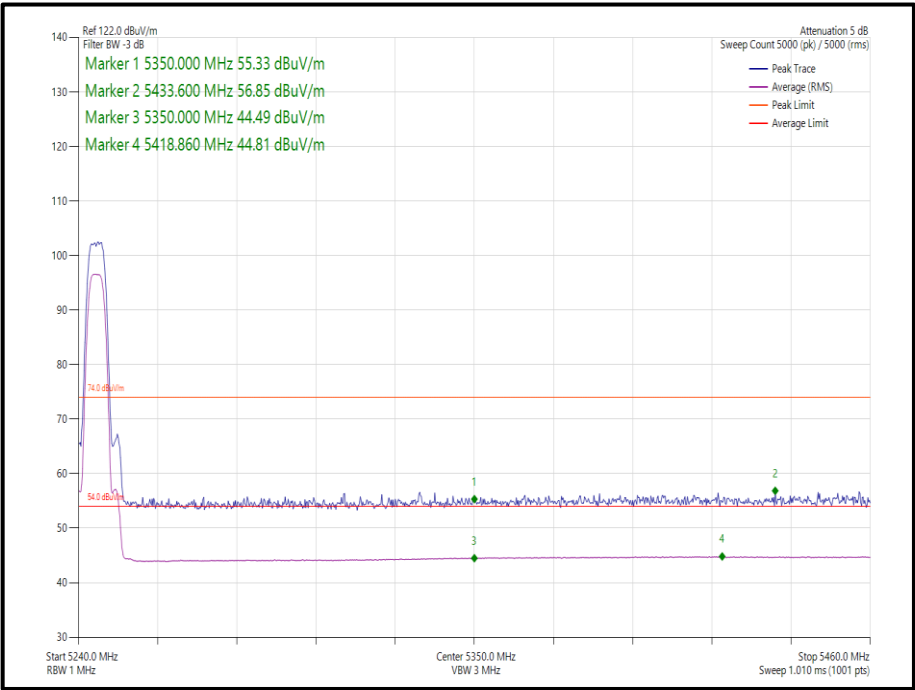


Figure 12 - Static - $\pi/4$ DQPSK/8-DH5 - 5245 MHz - Band Edge Frequency 5350 MHz

ePA - SISO

Mode	Modulation	Core	Packet Type	Tx Frequency (MHz)	Band Edge Frequency (MHz)	Peak Level (dBμV/m)	Average Level (dBμV/m)
Static	$\pi/4$ DQPSK	1	4-DH5	5162	5150	56.63	44.36
Static	$\pi/4$ DQPSK	1	8-DH5	5162	5150	56.56	45.22
Static	$\pi/4$ DQPSK	1	4-DH5	5245	5350	56.73	44.75
Static	$\pi/4$ DQPSK	1	8-DH5	5245	5350	56.64	44.75

Table 9 - Restricted Band Edge Results

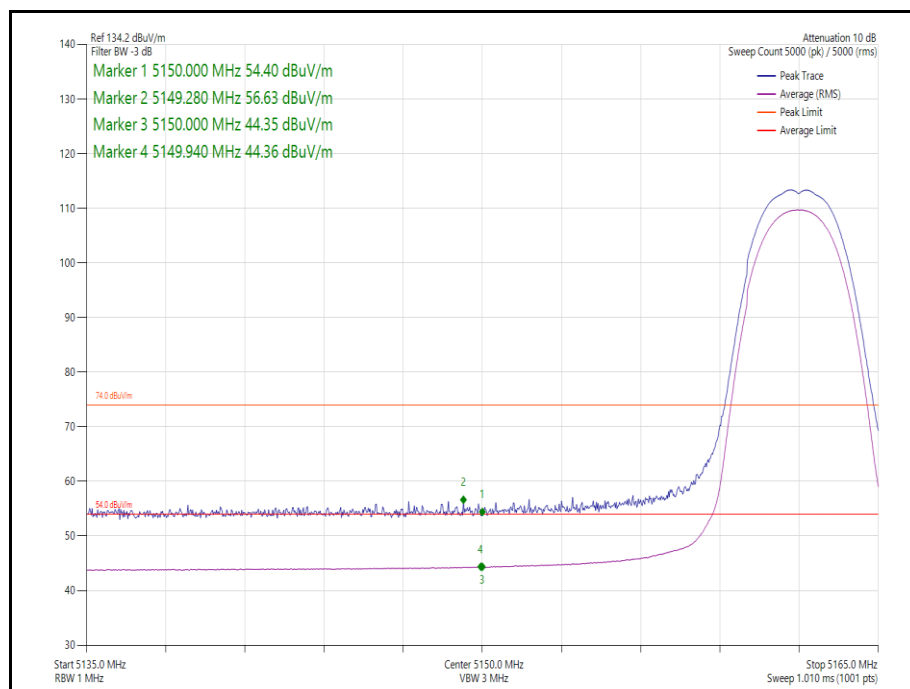


Figure 13 - Static - $\pi/4$ DQPSK/4-DH5 - 5162 MHz - Band Edge Frequency 5150 MHz

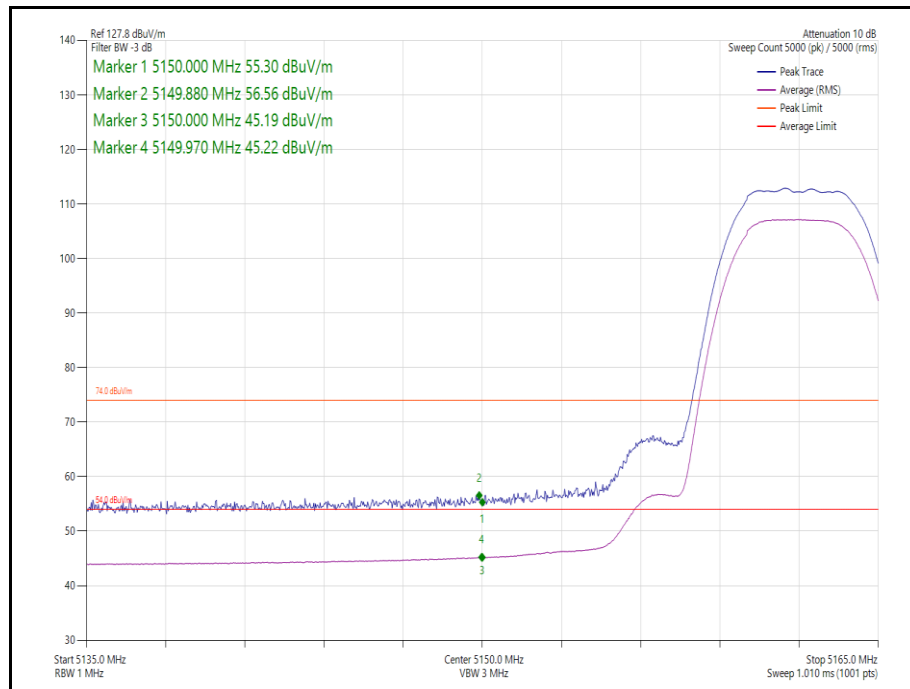


Figure 14 - Static - $\pi/4$ DQPSK/8-DH5 - 5162 MHz - Band Edge Frequency 5150 MHz

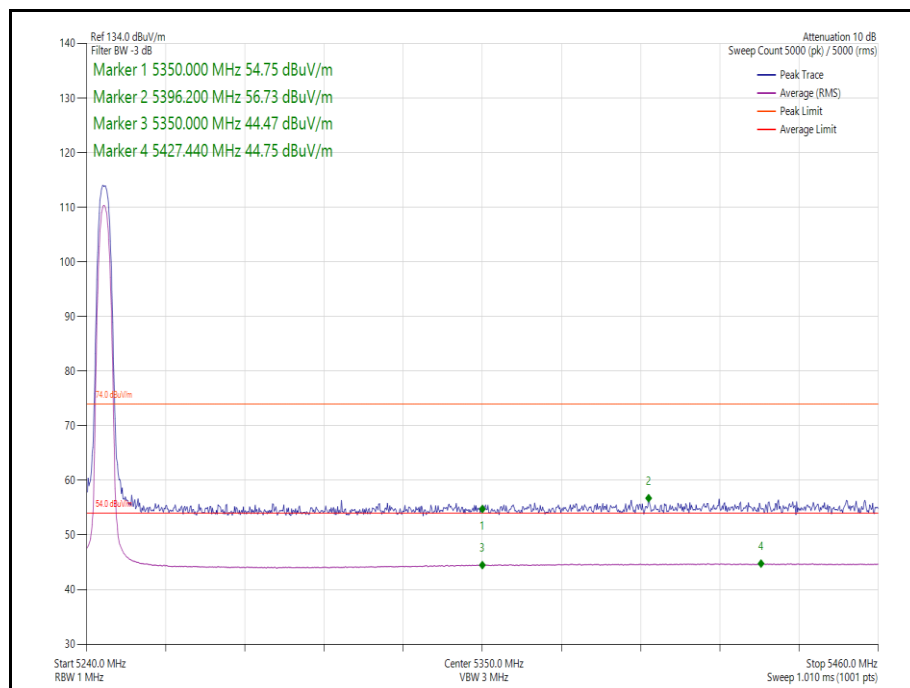


Figure 15 - Static - $\pi/4$ DQPSK/4-DH5 - 5245 MHz - Band Edge Frequency 5350 MHz

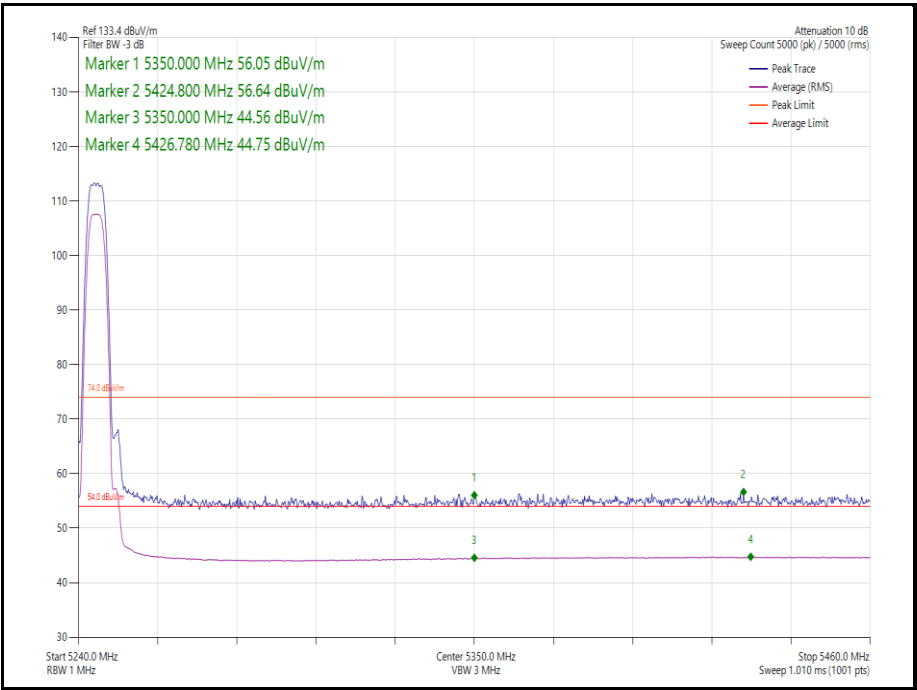


Figure 16 - Static - $\pi/4$ DQPSK/8-DH5 - 5245 MHz - Band Edge Frequency 5350 MHz



ePA - TXBF

Mode	Modulation	Core	Packet Type	Tx Frequency (MHz)	Band Edge Frequency (MHz)	Peak Level (dBμV/m)	Average Level (dBμV/m)
Static	$\pi/4$ DQPSK	0-1	4-DH5	5162	5150	55.96	44.19
Static	$\pi/4$ DQPSK	0-1	8-DH5	5162	5150	56.75	44.23
Static	$\pi/4$ DQPSK	0-1	4-DH5	5245	5350	57.62	44.88
Static	$\pi/4$ DQPSK	0-1	8-DH5	5245	5350	56.51	44.91

Table 10 - Restricted Band Edge Results

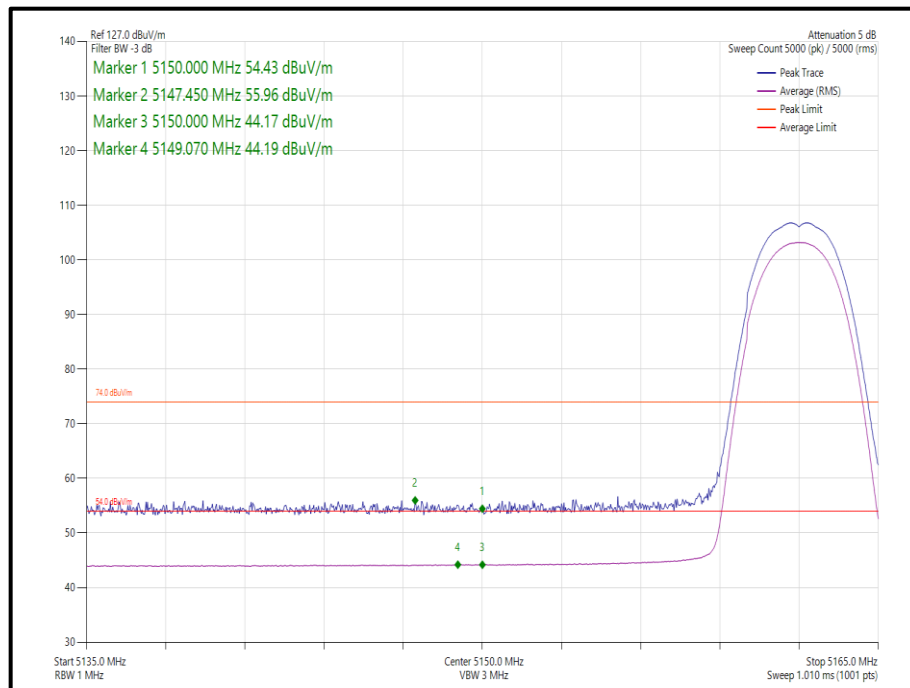


Figure 17 - Static - $\pi/4$ DQPSK/4-DH5 - 5162 MHz - Band Edge Frequency 5150 MHz

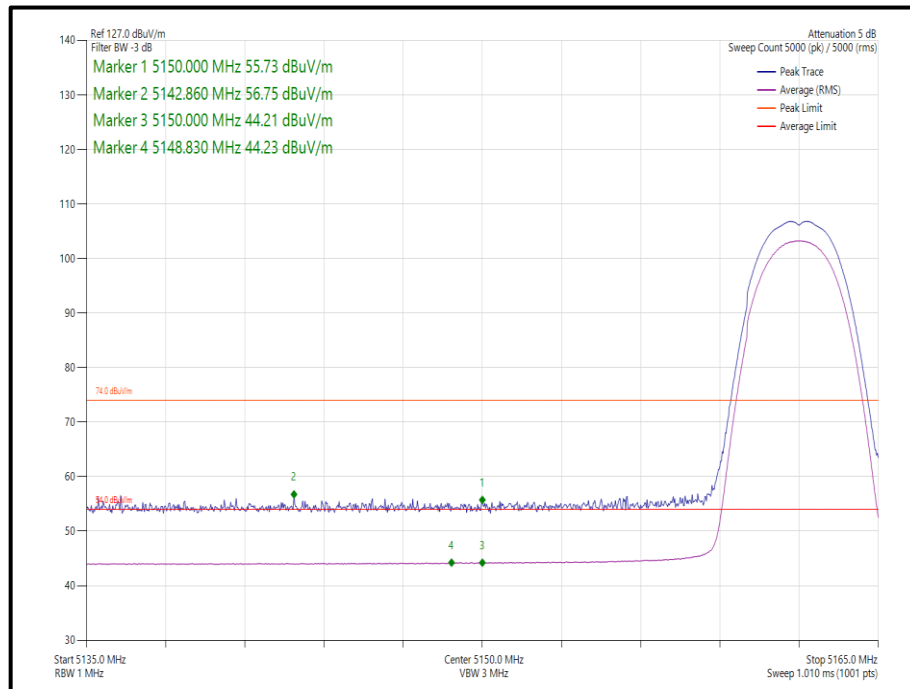


Figure 18 - Static - $\pi/4$ DQPSK/8-DH5 - 5162 MHz - Band Edge Frequency 5150 MHz

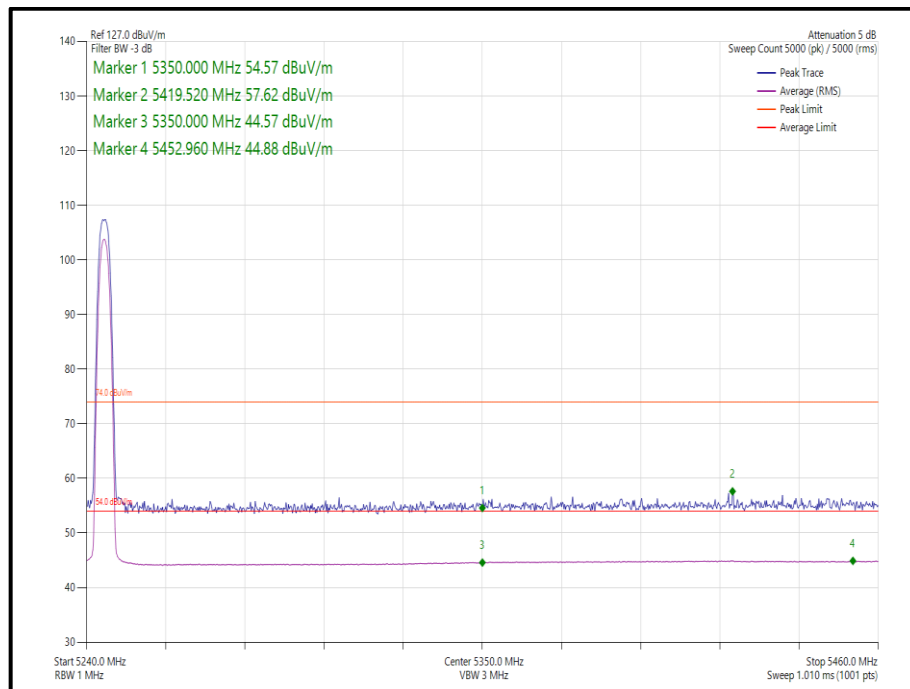


Figure 19 - Static - $\pi/4$ DQPSK/4-DH5 - 5245 MHz - Band Edge Frequency 5350 MHz

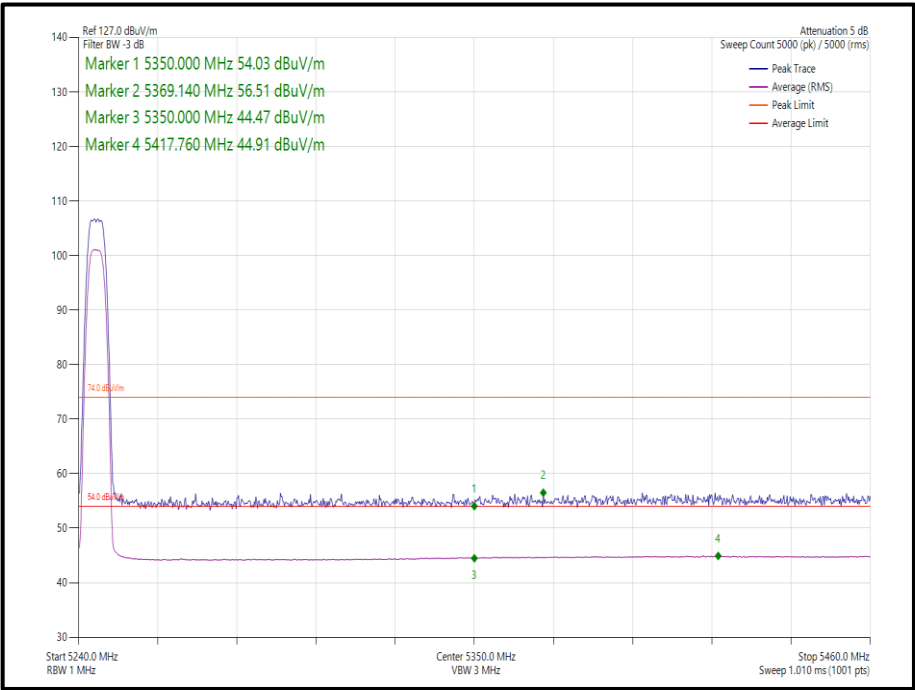


Figure 20 - Static - $\pi/4$ DQPSK/8-DH5 - 5245 MHz - Band Edge Frequency 5350 MHz

FCC 47 CFR Part 15, Limit Clause 15.205 and ISED RSS-GEN Limit Clause 8.10

	Peak (dBμV/m)	Average (dBμV/m)
Restricted Bands of Operation	74	54

Table 11 - Restricted Band Edge Limit Table



2.1.7 Test Location and Test Equipment Used

This test was carried out in RF Chamber 14.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
EMI Test Receiver	Rohde & Schwarz	ESW44	5912	12	17-Feb-2023
5m Semi-Anechoic Chamber (Dual-Axis)	Albatross Projects	RF Chamber 14	5958	36	26-Apr-2025
Mast & Turntable Controller	Maturo Gmbh	FCU3.0	5960	-	TU
Tilt Antenna Mast	Maturo Gmbh	BAM4.5-P	5961	-	TU
Turntable	Maturo Gmbh	TT1.5SI	5962	-	TU
Turntable	Maturo Gmbh	TT1.5SI	5968	-	TU
10dB/5W Attenuator	Aaren	AT40A-404-D18-10	5486	12	12-May-2023
Pre Amp 1 - 26.5 GHz	Agilent Technologies	8449B	5445	12	11-April-2023
Cable (SMA to SMA 1m)	Junkosha	MWX221-01000AMSAMS/A	5997	12	06-Jun-2023
Cable (SMA to SMA 1m)	Junkosha	MWX221-01000AMSAMS/A	6008	12	06-Jun-2023
Horn Antenna (1-10 GHz)	Schwarzbeck	BBHA9120B	5215	12	28-May-2023
Horn Antenna (1-10 GHz)	Schwarzbeck	BBHA9120B	6141	12	21-Jun-2023*
SAC Switch Unit	TUV SUD	SSU001	6144	12	07-Jul-2023*
Humidity & Temperature meter	R.S Components	1364	6150	12	17-Jun-2023

Table 12

TU - Traceability Unscheduled

*Equipment was only employed during its calibration period.



2.2 Emission Bandwidth

2.2.1 Specification Reference

FCC 47 CFR Part 15E, Clause 15.407 (a),
ISED RSS-247, Clause 6.2

2.2.2 Equipment Under Test and Modification State

A2686, S/N: F4W3G4XCD4 - Modification State 0

2.2.3 Date of Test

23-October-2022 to 27-October-2022

2.2.4 Test Method

The test was performed in accordance with ANSI C63.10, clause 12.4.2, KDB 789033 D02 v02r01 II.C.2. and ISED RSS-GEN, clause 6.7.

For modes of operation using multiple cores, measurements were made on each core but only the worst case results are reported. Worst case was considered as the narrowest results for 6 dB bandwidth and the widest result for 26 dB bandwidth and 99% occupied bandwidth.

2.2.5 Environmental Conditions

Ambient Temperature	23.0 - 23.6 °C
Relative Humidity	59.4 - 62.4 %



2.2.6 Test Results

NarrowBand

Test Configuration			
Frequency Range:	5.150-5.250 GHz	Band:	U-NII-1
Limit Clause(s):	-	Test Method(s):	Refer to Test Method
Additional Reference(s):	-		

DUT Configuration			
Mode:	ePA $\pi/4$ DQPSK (4-DH5)	Duty Cycle (%):	-
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	B (Core 1)	Peak Antenna Gain (dBi):	-

Test Frequency (MHz)	26 dB Bandwidth (MHz)				Limit (kHz)
	A	B	C	D	
5162	-	2.768	-	-	≥ 500.0
5204	-	2.768	-	-	≥ 500.0
5245	-	2.768	-	-	≥ 500.0

Table 13 - 26 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)				Limit (kHz)
	A	B	C	D	
5162	-	2.328	-	-	-
5204	-	2.328	-	-	-
5245	-	2.328	-	-	-

Table 14 - 99% Bandwidth Results

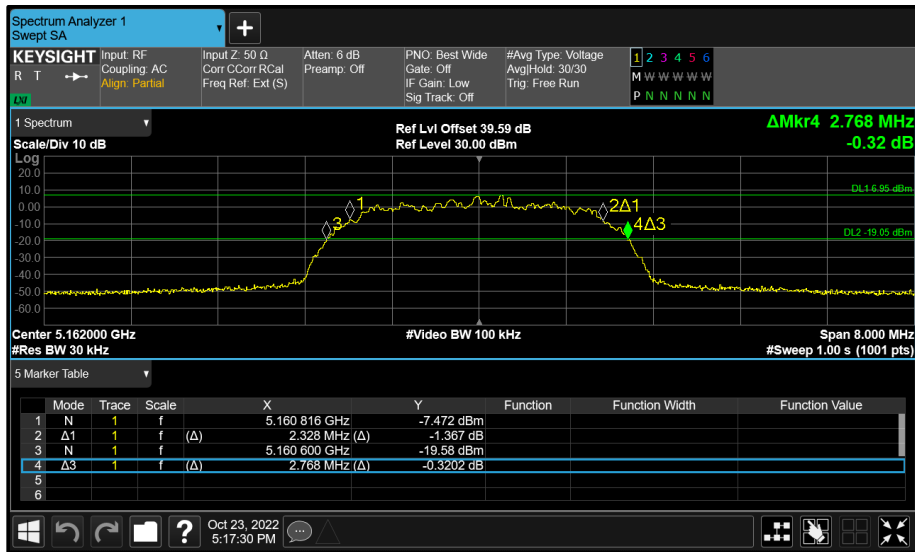


Figure 21 - Core 1 (B) 5162 MHz (CH12) 26 dB and 99% Bandwidth

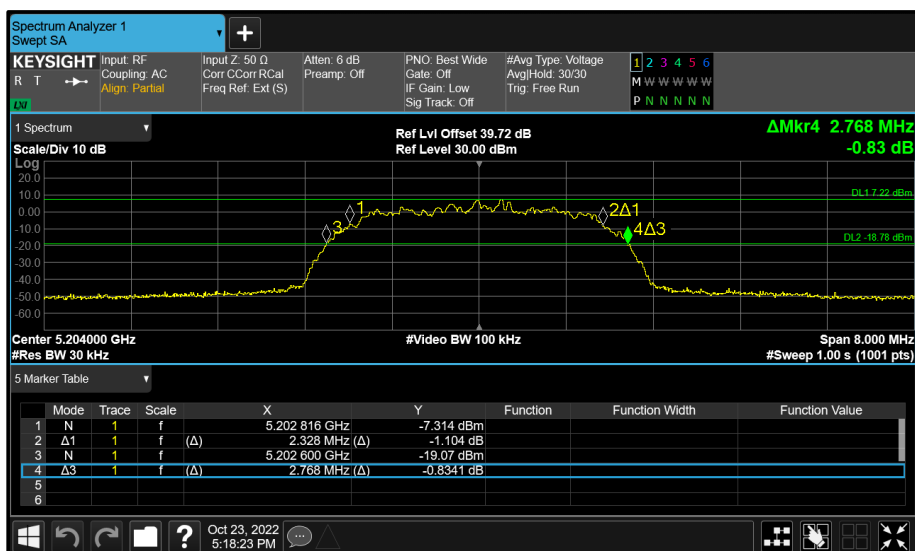


Figure 22 - Core 1 (B) 5204 MHz (CH54) 26 dB and 99% Bandwidth

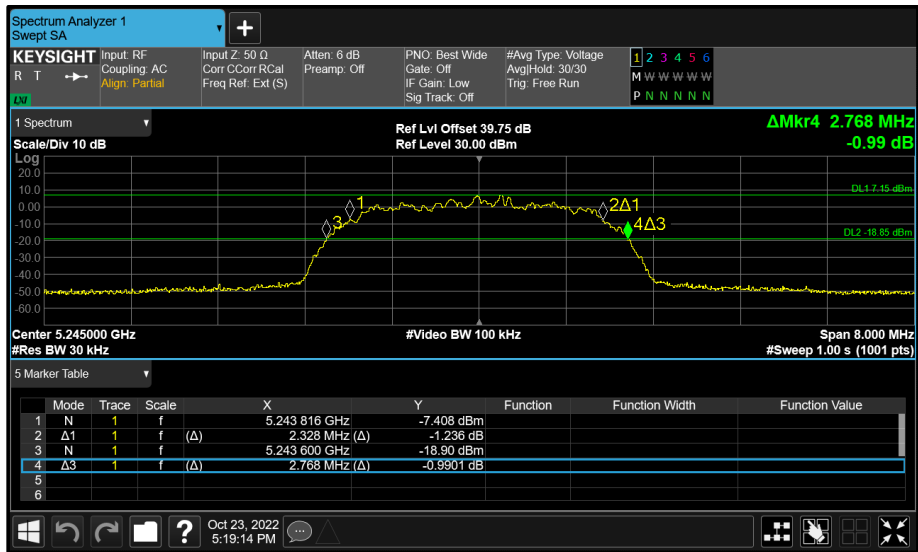


Figure 23 - Core 1 (B) 5245 MHz (CH95) 26 dB and 99% Bandwidth



Test Configuration			
Frequency Range:	5.150-5.250 GHz	Band:	U-NII-1
Limit Clause(s):	-	Test Method(s):	Refer to Test Method
Additional Reference(s):	-		

DUT Configuration			
Mode:	ePA $\pi/4$ DQPSK (8-DH5)	Duty Cycle (%):	-
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	B (Core 1)	Peak Antenna Gain (dBi):	-

Test Frequency (MHz)	26 dB Bandwidth (MHz)				Limit (kHz)
	A	B	C	D	
5162	-	5.325	-	-	≥ 500.0
5204	-	5.325	-	-	≥ 500.0
5245	-	5.325	-	-	≥ 500.0

Table 15 - 26 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)				Limit (kHz)
	A	B	C	D	
5162	-	4.635	-	-	-
5204	-	4.635	-	-	-
5245	-	4.635	-	-	-

Table 16 - 99% Bandwidth Results

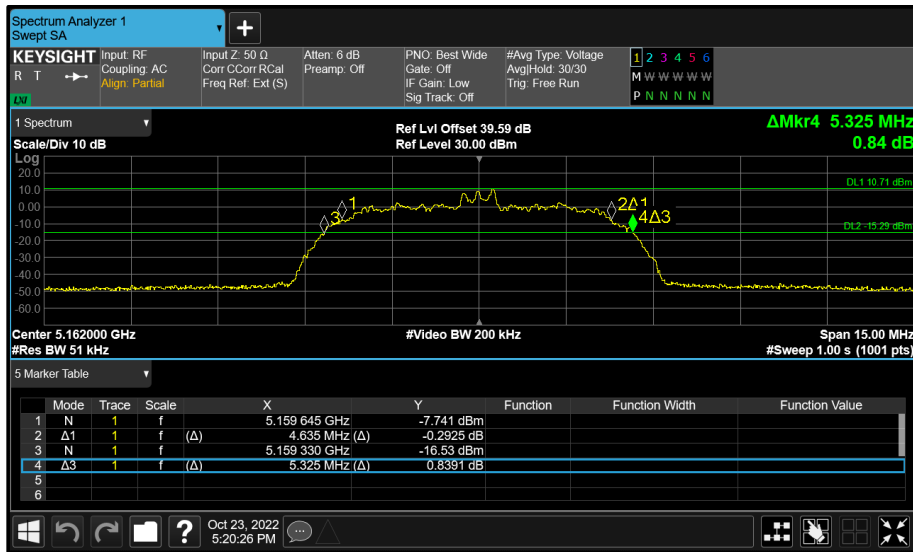


Figure 24 - Core 1 (B) 5162 MHz (CH12) 26 dB and 99% Bandwidth

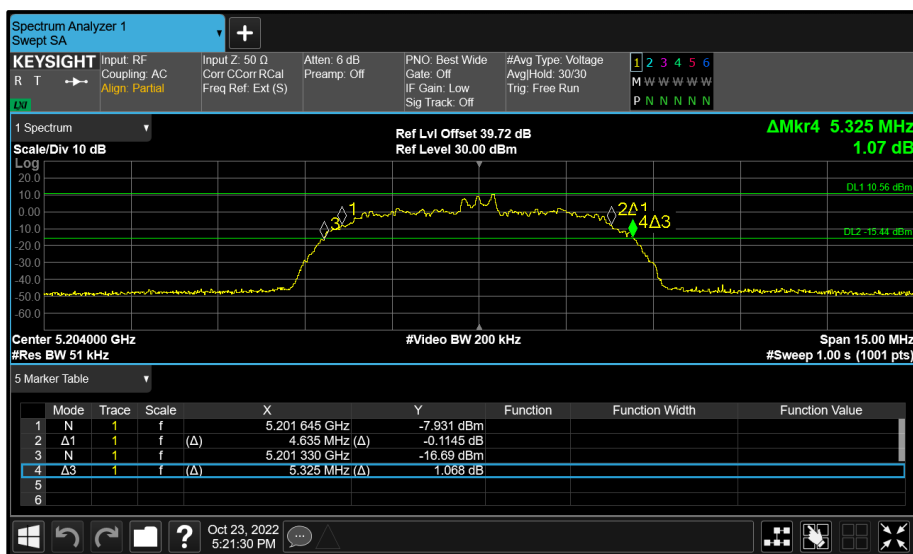


Figure 25 - Core 1 (B) 5204 MHz (CH54) 26 dB and 99% Bandwidth

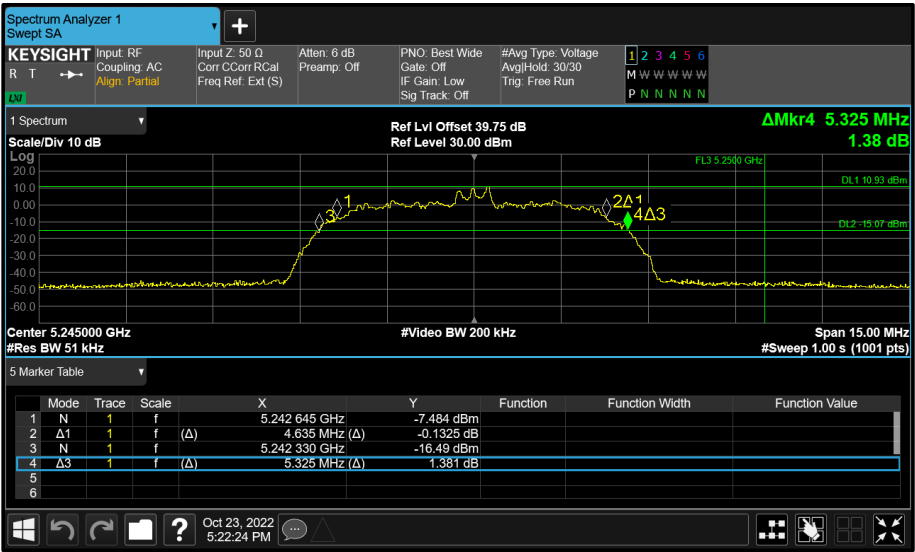


Figure 26 - Core 1 (B) 5245 MHz (CH95) 26 dB and 99% Bandwidth



Test Configuration			
Frequency Range:	5.150-5.250 GHz	Band:	U-NII-1
Limit Clause(s):	-	Test Method(s):	Refer to Test Method
Additional Reference(s):	-		

DUT Configuration			
Mode:	ePA $\pi/4$ DQPSK (4-DH5)	Duty Cycle (%):	-
Antenna Configuration:	Beamforming	DCCF (dB):	-
Active Port(s):	A+B (Core 0 + Core 1)	Peak Antenna Gain (dBi):	-

Test Frequency (MHz)	26 dB Bandwidth (MHz)				Limit (kHz)
	A	B	C	D	
5162	2.768	2.792	-	-	≥ 500.0
5204	2.792	2.776	-	-	≥ 500.0
5245	2.768	2.784	-	-	≥ 500.0

Table 17 - 26 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)				Limit (kHz)
	A	B	C	D	
5162	2.344	2.344	-	-	-
5204	2.344	2.344	-	-	-
5245	2.344	2.344	-	-	-

Table 18 - 99% Bandwidth Results

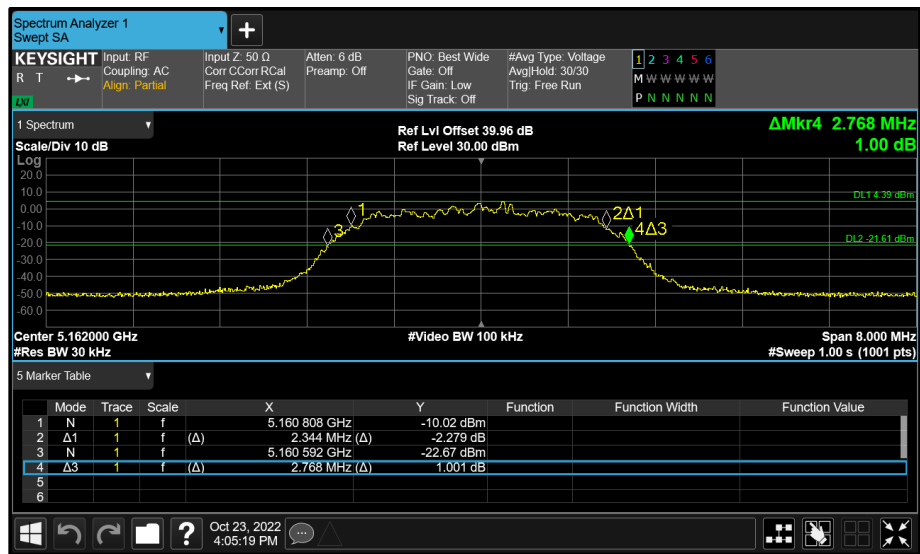


Figure 27 - Core 0 (A) 5162 MHz (CH12) 26 dB and 99% Bandwidth

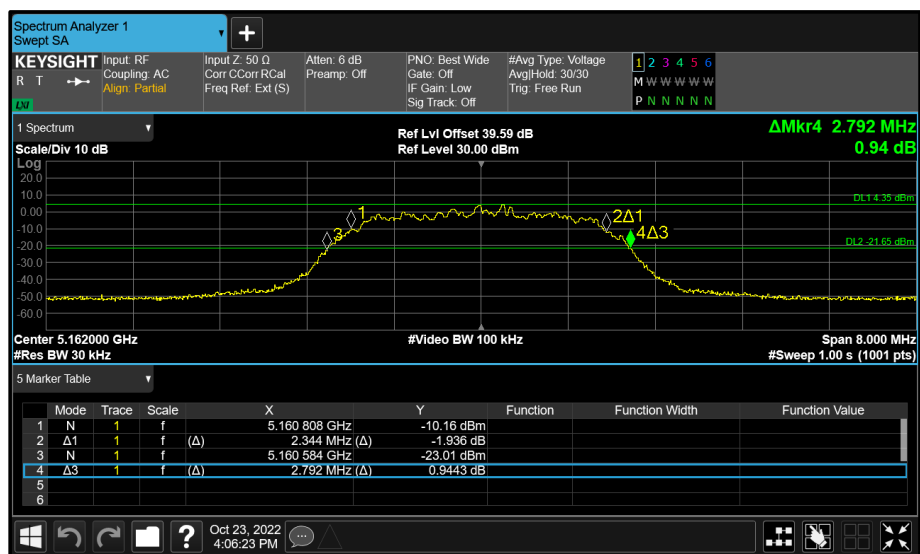


Figure 28 - Core 1 (B) 5162 MHz (CH12) 26 dB and 99% Bandwidth

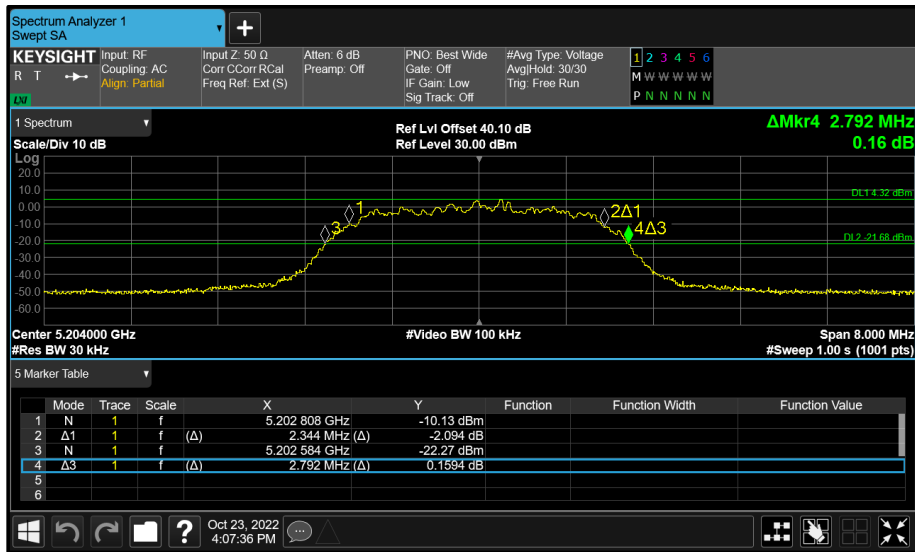


Figure 29 - Core 0 (A) 5204 MHz (CH54) 26 dB and 99% Bandwidth

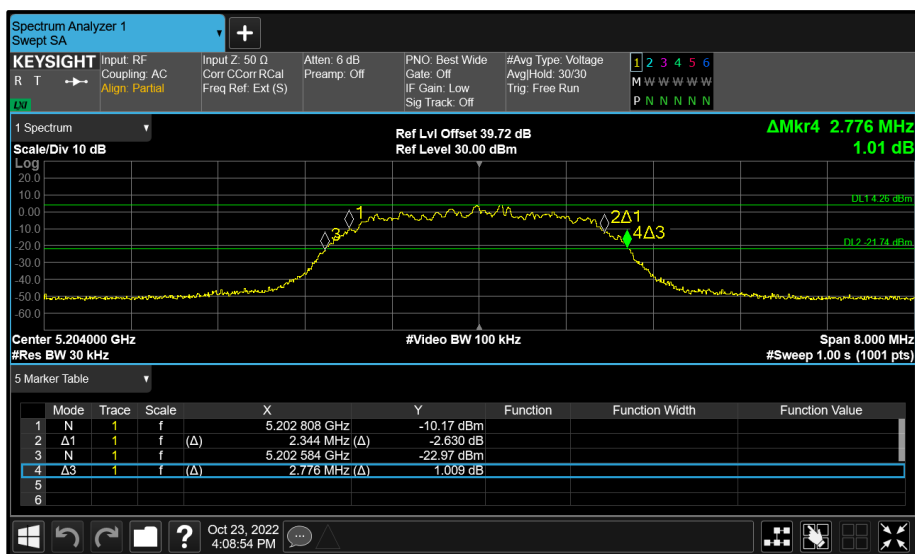


Figure 30 - Core 1 (B) 5204 MHz (CH54) 26 dB and 99% Bandwidth

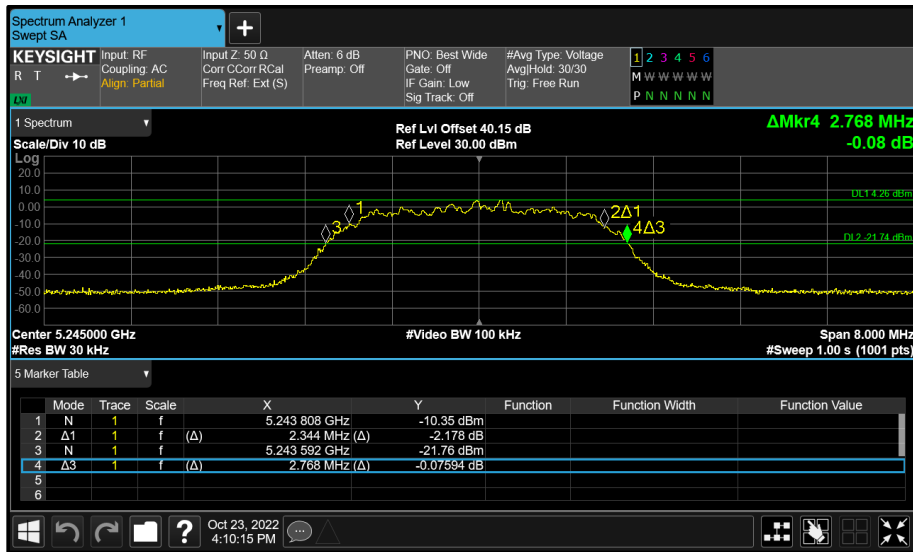


Figure 31 - Core 0 (A) 5245 MHz (CH95) 26 dB and 99% Bandwidth

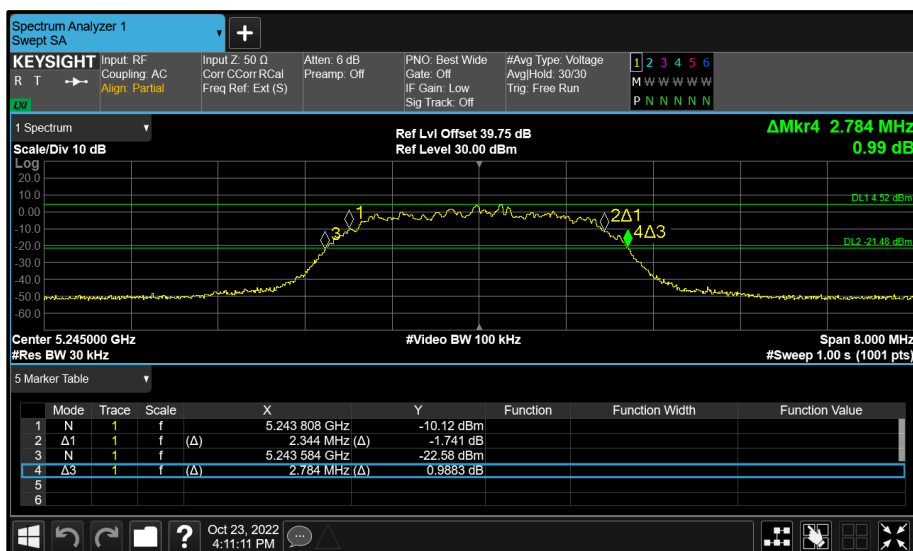


Figure 32 - Core 1 (B) 5245 MHz (CH95) 26 dB and 99% Bandwidth



Test Configuration			
Frequency Range:	5.150-5.250 GHz	Band:	U-NII-1
Limit Clause(s):	-	Test Method(s):	Refer to Test Method
Additional Reference(s):	-		

DUT Configuration			
Mode:	ePA $\pi/4$ DQPSK (8-DH5)	Duty Cycle (%):	-
Antenna Configuration:	Beamforming	DCCF (dB):	-
Active Port(s):	A+B (Core 0 + Core 1)	Peak Antenna Gain (dBi):	-

Test Frequency (MHz)	26 dB Bandwidth (MHz)				Limit (kHz)
	A	B	C	D	
5162	5.340	5.325	-	-	≥ 500.0
5204	5.325	5.325	-	-	≥ 500.0
5245	5.325	5.340	-	-	≥ 500.0

Table 19 - 26 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)				Limit (kHz)
	A	B	C	D	
5162	4.650	4.650	-	-	-
5204	4.650	4.635	-	-	-
5245	4.635	4.650	-	-	-

Table 20 - 99% Bandwidth Results

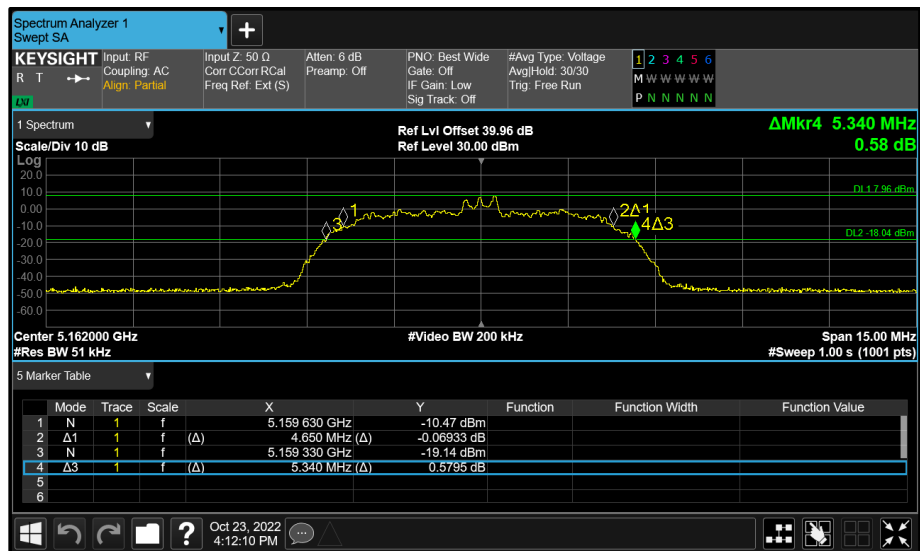


Figure 33 - Core 0 (A) 5162 MHz (CH12) 26 dB and 99% Bandwidth

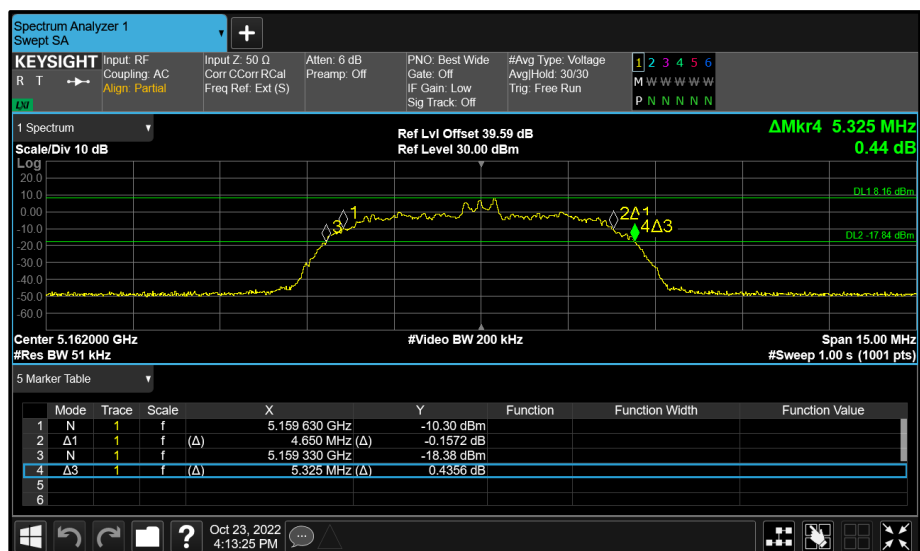


Figure 34 - Core 1 (B) 5162 MHz (CH12) 26 dB and 99% Bandwidth

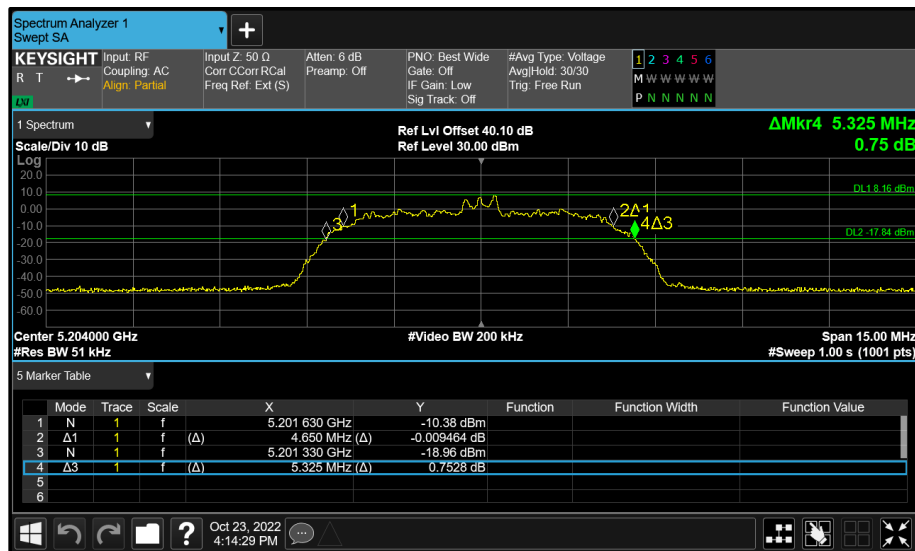


Figure 35 - Core 0 (A) 5204 MHz (CH54) 26 dB and 99% Bandwidth

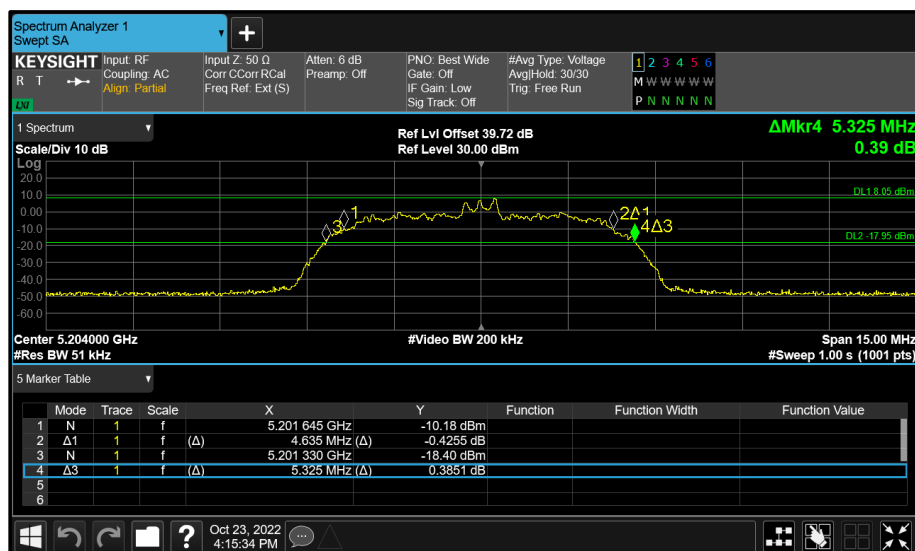


Figure 36 - Core 1 (B) 5204 MHz (CH54) 26 dB and 99% Bandwidth

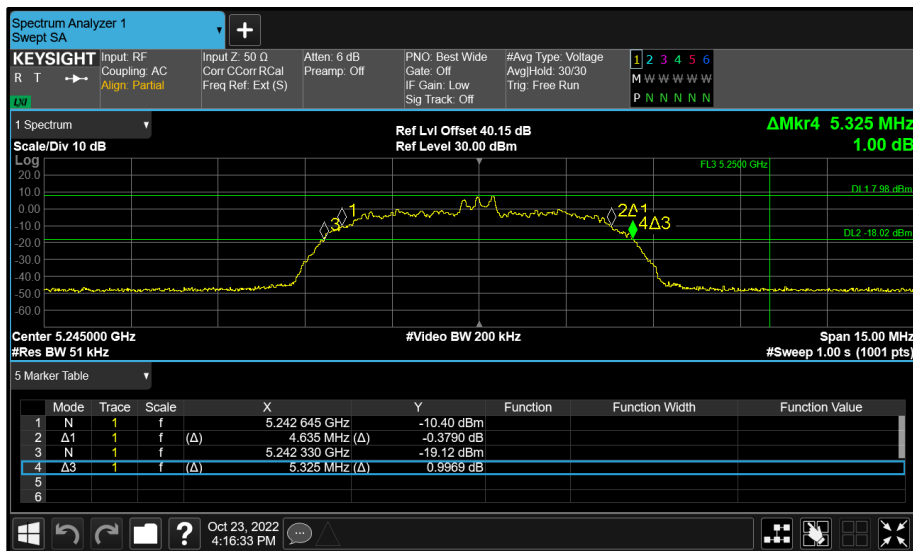


Figure 37 - Core 0 (A) 5245 MHz (CH95) 26 dB and 99% Bandwidth

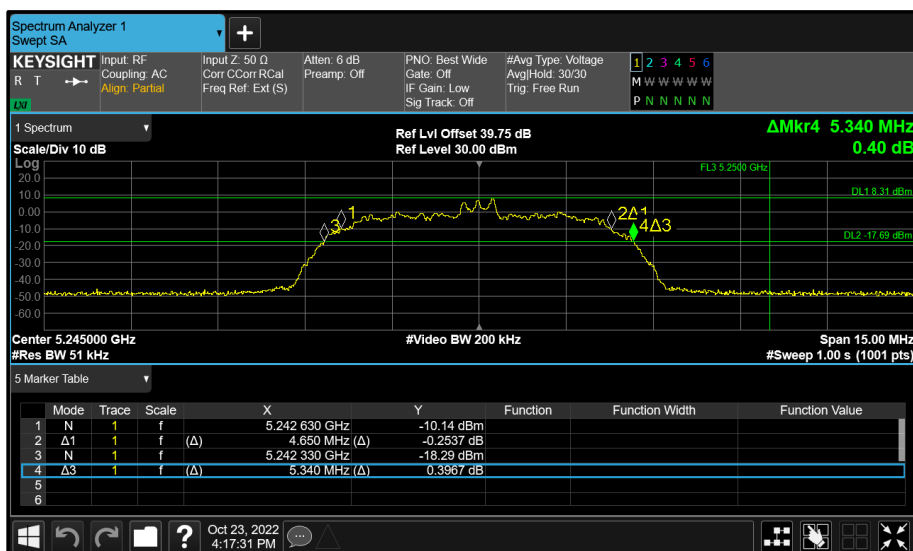


Figure 38 - Core 1 (B) 5245 MHz (CH95) 26 dB and 99% Bandwidth



Test Configuration			
Frequency Range:	5.725-5.850 GHz	Band:	U-NII-3
Limit Clause(s):	15.407(e) RSS-247 6.2.4.1	Test Method(s):	Refer to Test Method
Additional Reference(s):	-		

DUT Configuration			
Mode:	ePA $\pi/4$ DQPSK (4-DH5)	Duty Cycle (%):	-
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	B (Core 1)	Peak Antenna Gain (dBi):	-

Test Frequency (MHz)	6 dB Bandwidth (MHz)				Limit (kHz)
	A	B	C	D	
5733	-	1.888	-	-	≥ 500.0
5789	-	1.888	-	-	≥ 500.0
5844	-	1.888	-	-	≥ 500.0

Table 21 - 6 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)				Limit (kHz)
	A	B	C	D	
5733	-	2.328	-	-	-
5789	-	2.328	-	-	-
5844	-	2.328	-	-	-

Table 22 - 99% Bandwidth Results

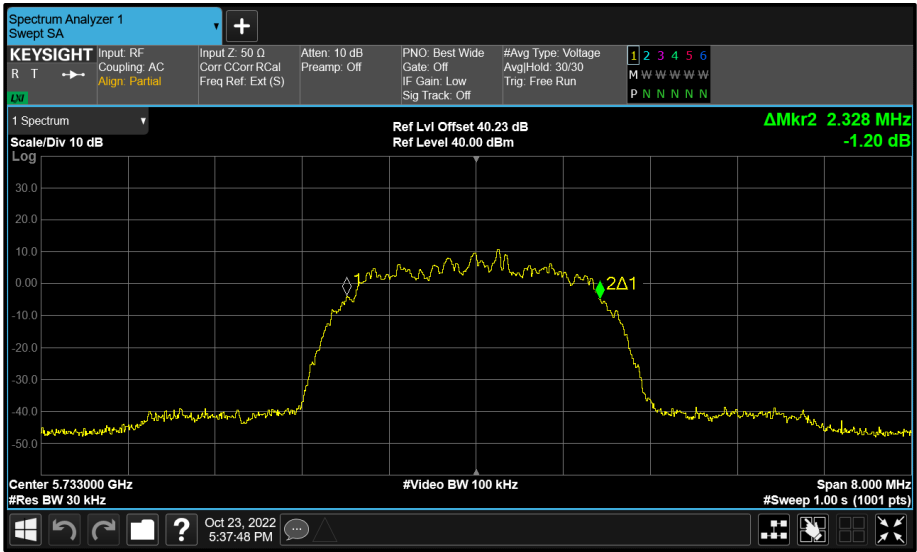


Figure 39 - Core 1 (B) 5733 MHz (CH8) 99% Bandwidth

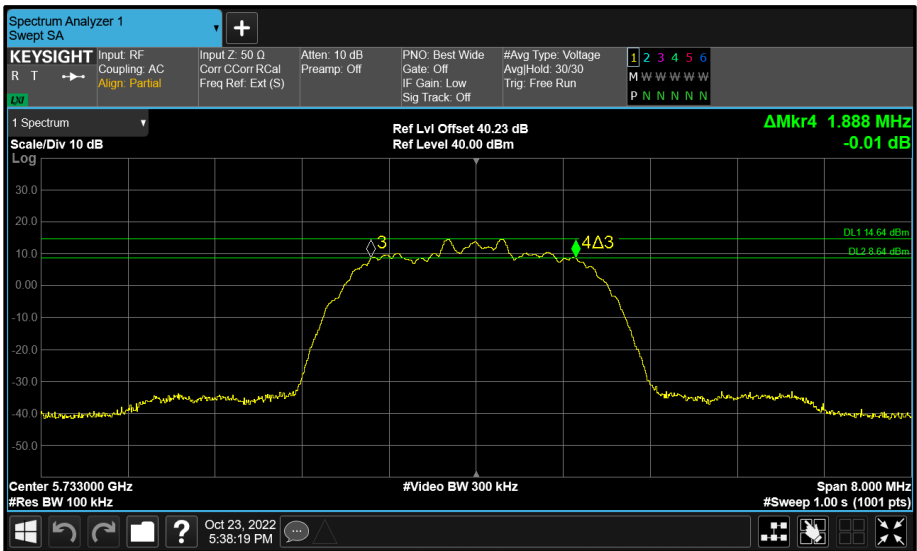


Figure 40 - Core 1 (B) 5733 MHz (CH8) 6 dB Bandwidth

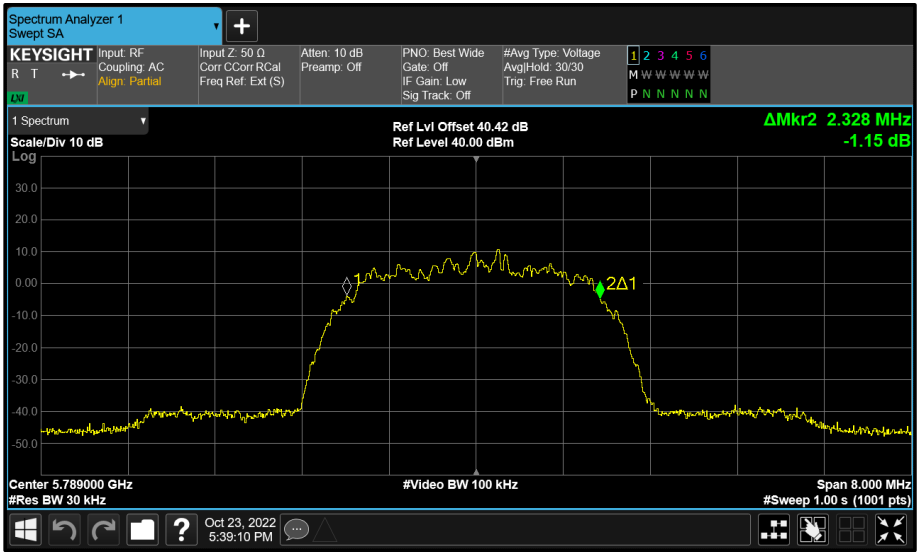


Figure 41 - Core 1 (B) 5789 MHz (CH64) 99% Bandwidth

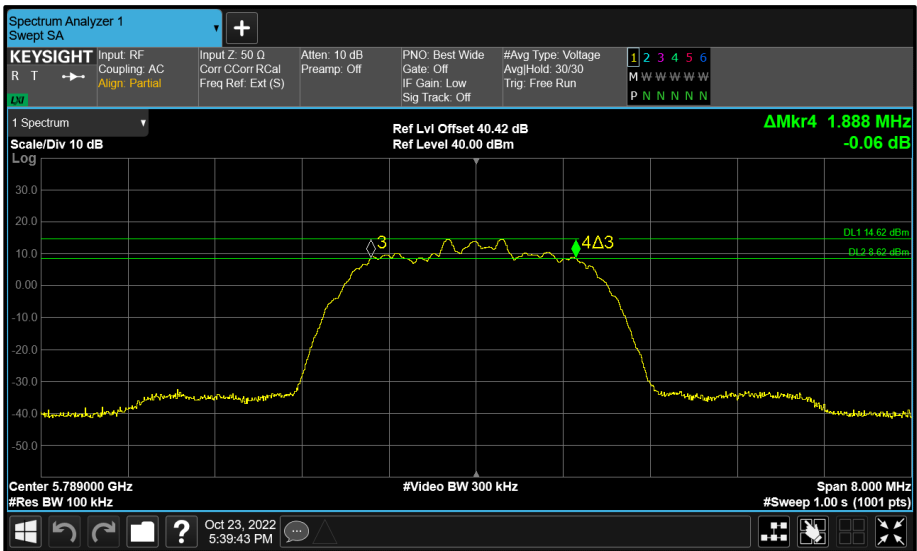


Figure 42 - Core 1 (B) 5789 MHz (CH64) 6 dB Bandwidth

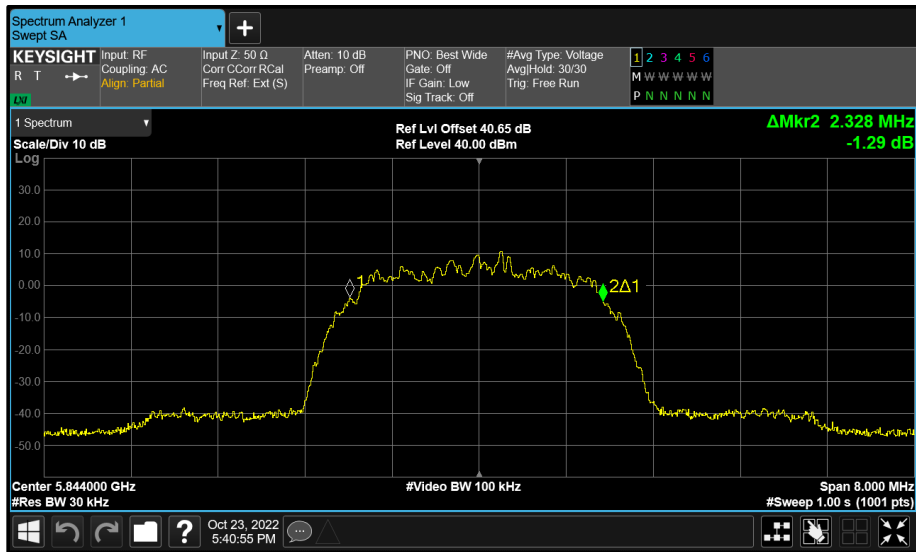


Figure 43 - Core 1 (B) 5844 MHz (CH119) 99% Bandwidth

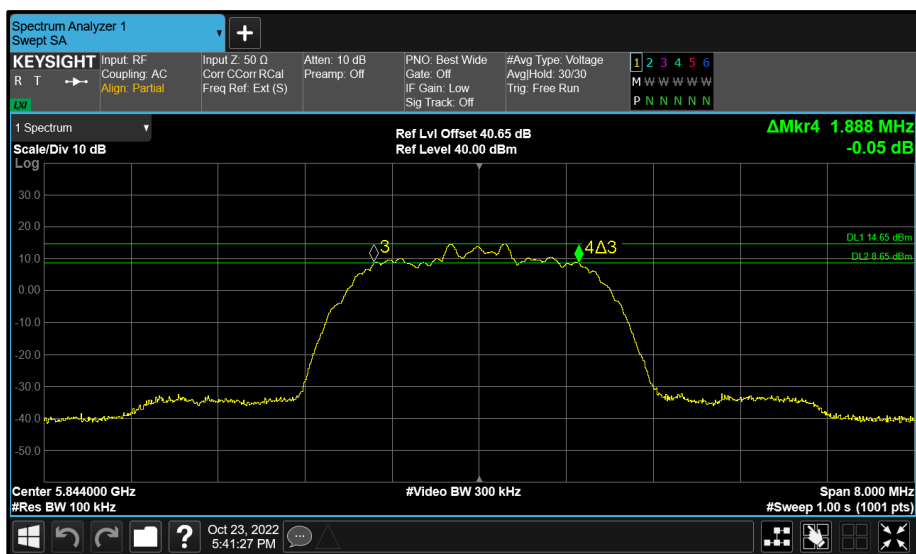


Figure 44 - Core 1 (B) 5844 MHz (CH119) 6 dB Bandwidth



Test Configuration			
Frequency Range:	5.725-5.850 GHz	Band:	U-NII-3
Limit Clause(s):	15.407(e) RSS-247 6.2.4.1	Test Method(s):	Refer to Test Method
Additional Reference(s):	-		

DUT Configuration			
Mode:	ePA $\pi/4$ DQPSK (8-DH5)	Duty Cycle (%):	-
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	B (Core 1)	Peak Antenna Gain (dBi):	-

Test Frequency (MHz)	6 dB Bandwidth (MHz)				Limit (kHz)
	A	B	C	D	
5733	-	1.005	-	-	≥ 500.0
5789	-	1.035	-	-	≥ 500.0
5844	-	0.960	-	-	≥ 500.0

Table 23 - 6 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)				Limit (kHz)
	A	B	C	D	
5733	-	4.635	-	-	-
5789	-	4.635	-	-	-
5844	-	4.635	-	-	-

Table 24 - 99% Bandwidth Results

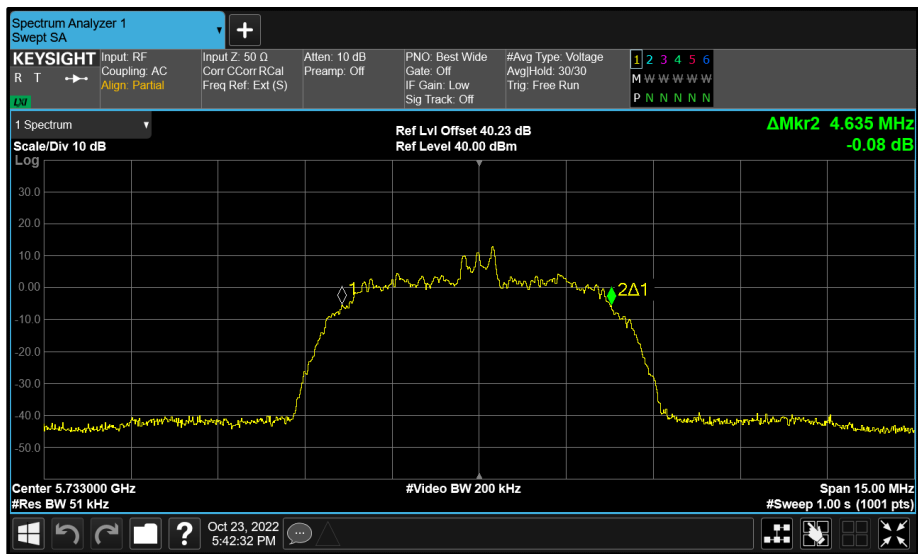


Figure 45 - Core 1 (B) 5733 MHz (CH8) 99% Bandwidth

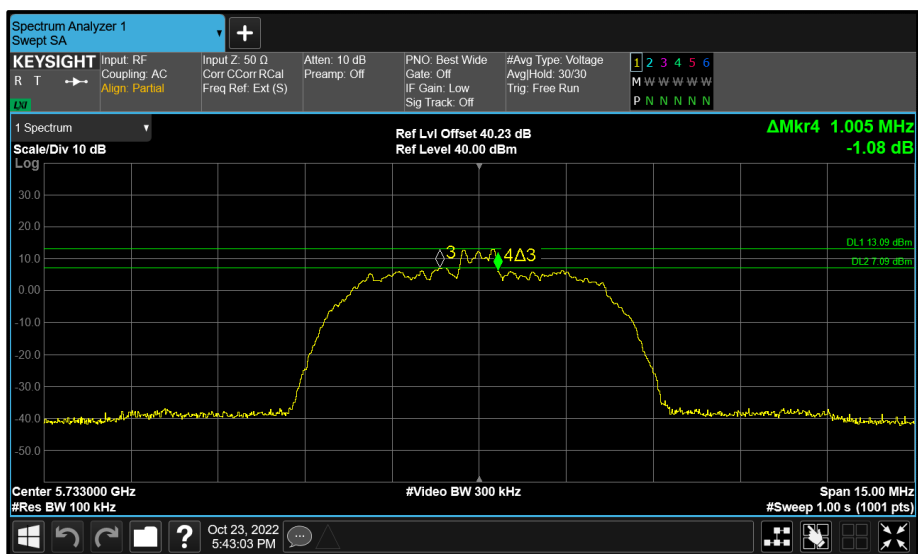


Figure 46 - Core 1 (B) 5733 MHz (CH8) 6 dB Bandwidth

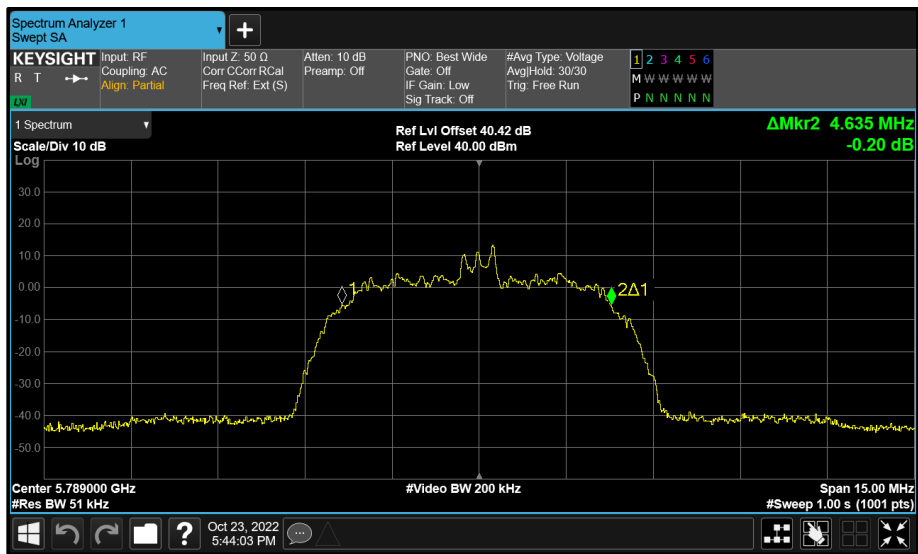


Figure 47 - Core 1 (B) 5789 MHz (CH64) 99% Bandwidth

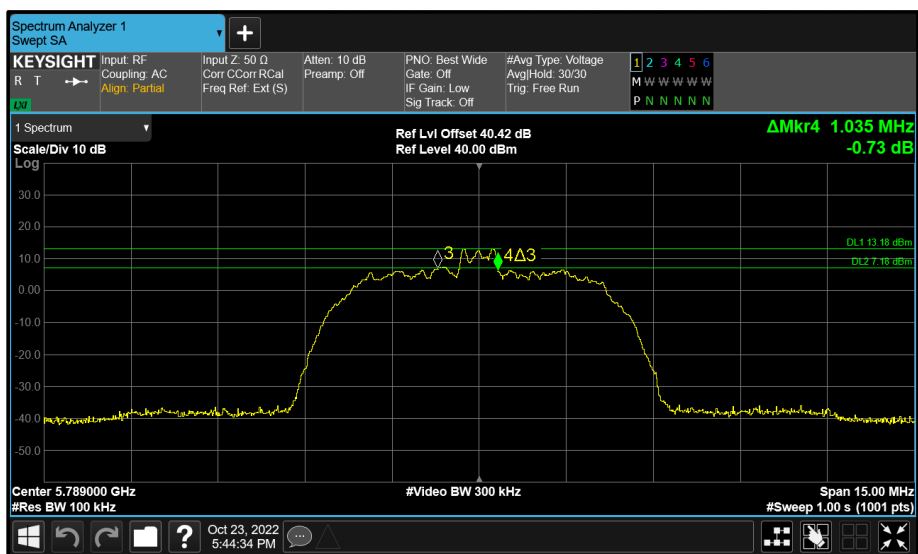


Figure 48 - Core 1 (B) 5789 MHz (CH64) 6 dB Bandwidth

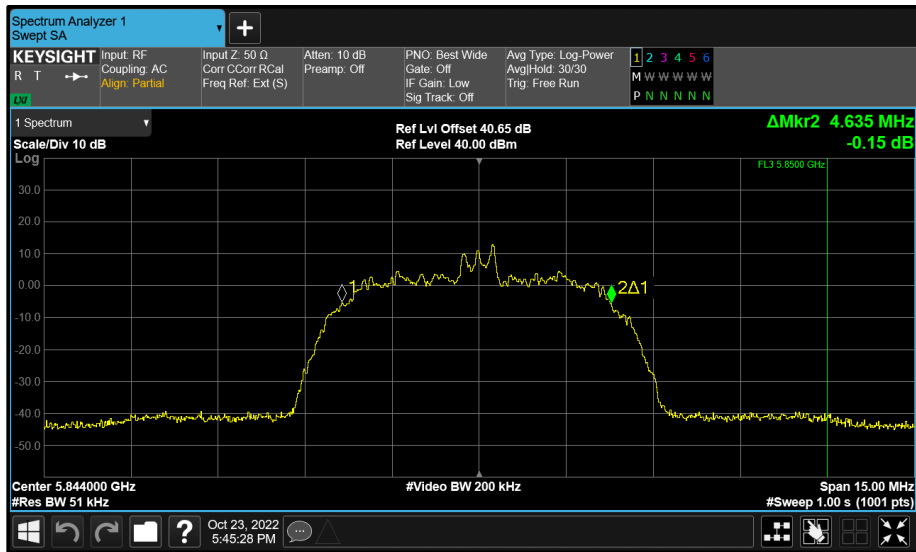


Figure 49 - Core 1 (B) 5844 MHz (CH119) 99% Bandwidth

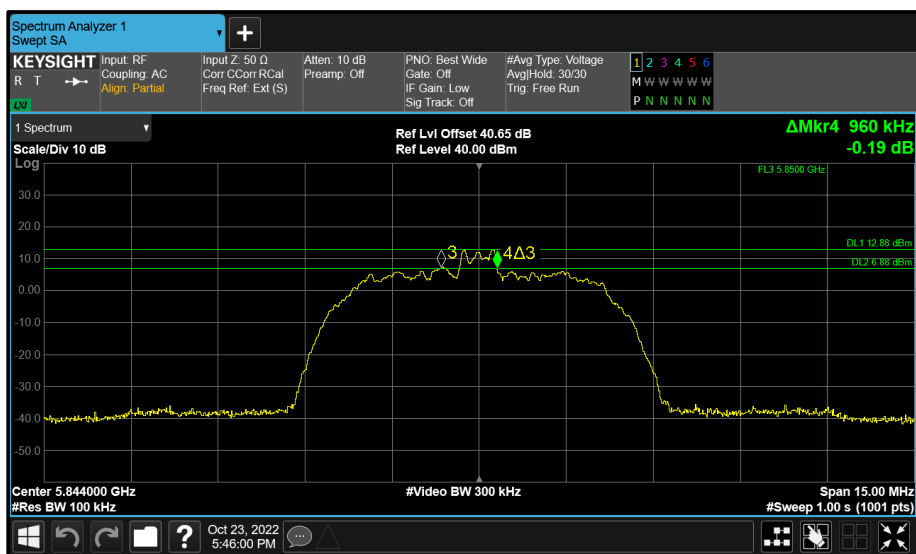


Figure 50 - Core 1 (B) 5844 MHz (CH119) 6 dB Bandwidth



Test Configuration			
Frequency Range:	5.725-5.850 GHz	Band:	U-NII-3
Limit Clause(s):	15.407(e) RSS-247 6.2.4.1	Test Method(s):	Refer to Test Method
Additional Reference(s):	-		

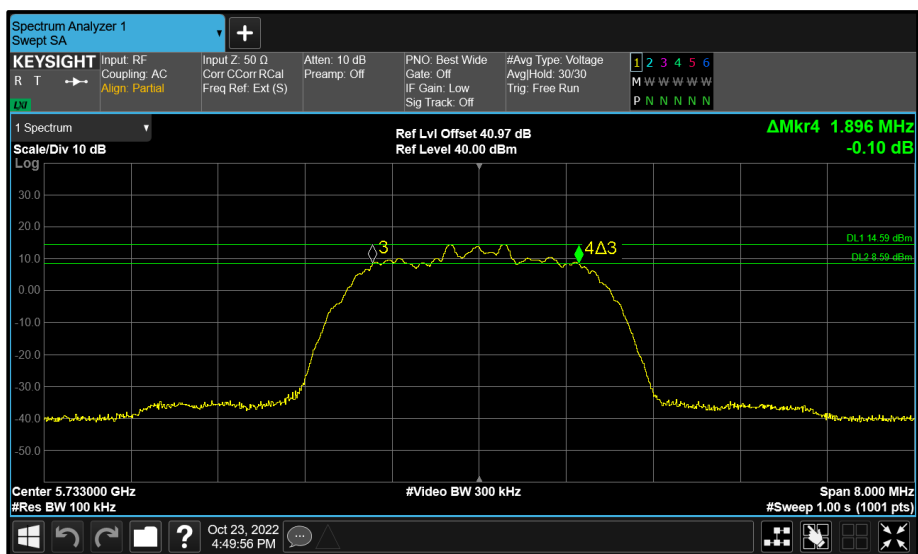
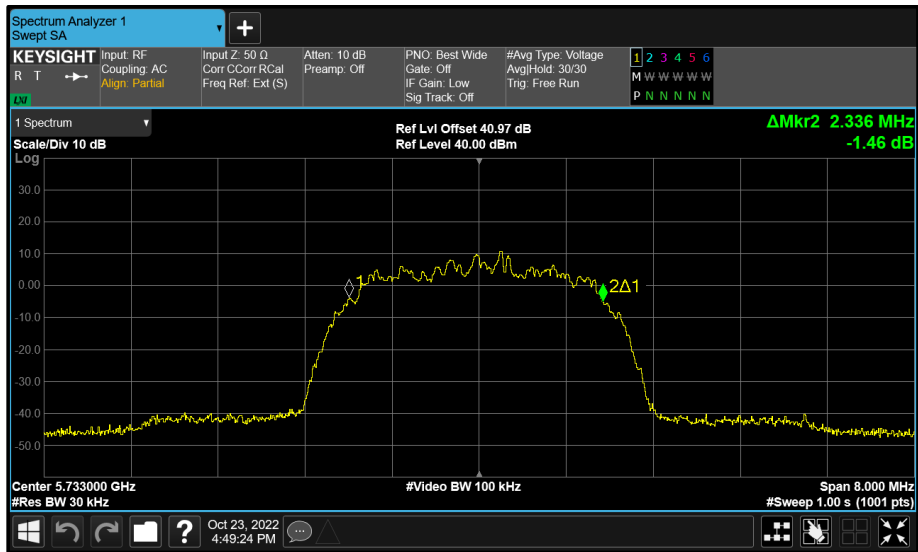
DUT Configuration			
Mode:	ePA $\pi/4$ DQPSK (4-DH5)	Duty Cycle (%):	-
Antenna Configuration:	Beamforming	DCCF (dB):	-
Active Port(s):	A+B (Core 0 + Core 1)	Peak Antenna Gain (dBi):	-

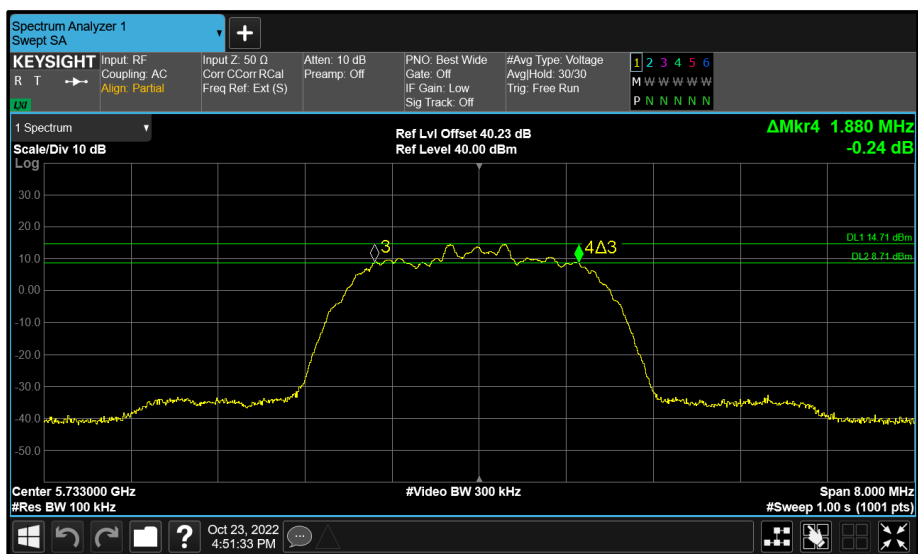
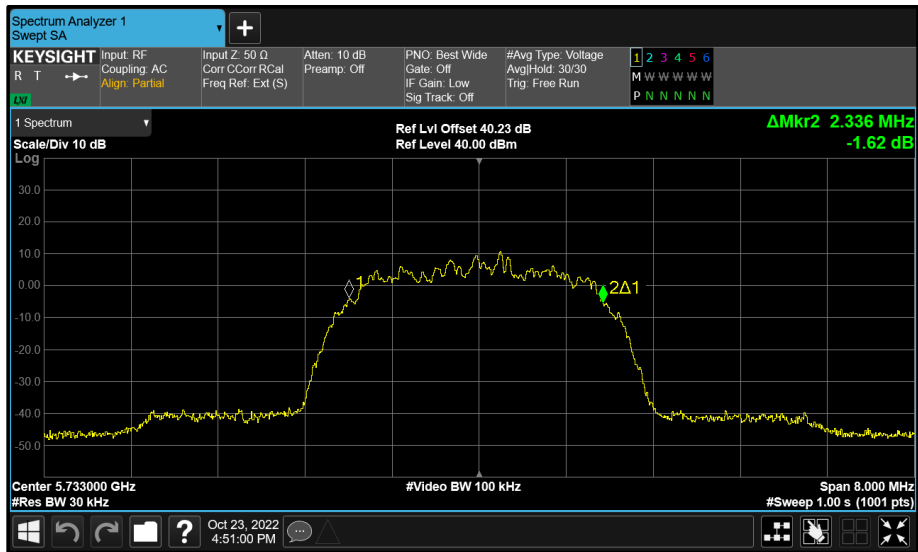
Test Frequency (MHz)	6 dB Bandwidth (MHz)				Limit (kHz)
	A	B	C	D	
5733	1.896	1.880	-	-	≥ 500.0
5789	1.896	1.888	-	-	≥ 500.0
5844	1.888	1.888	-	-	≥ 500.0

Table 25 - 6 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)				Limit (kHz)
	A	B	C	D	
5733	2.336	2.336	-	-	-
5789	2.336	2.328	-	-	-
5844	2.336	2.328	-	-	-

Table 26 - 99% Bandwidth Results





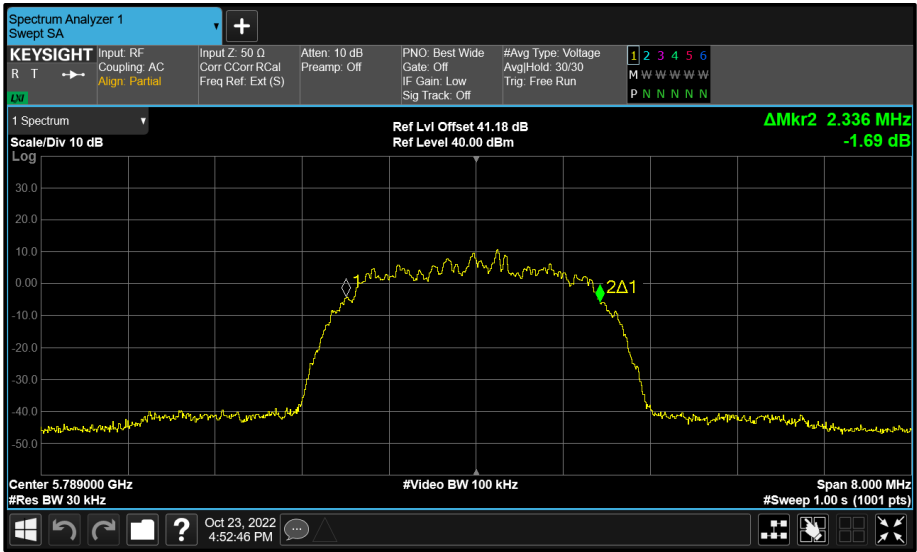


Figure 55 - Core 0 (A) 5789 MHz (CH64) 99% Bandwidth

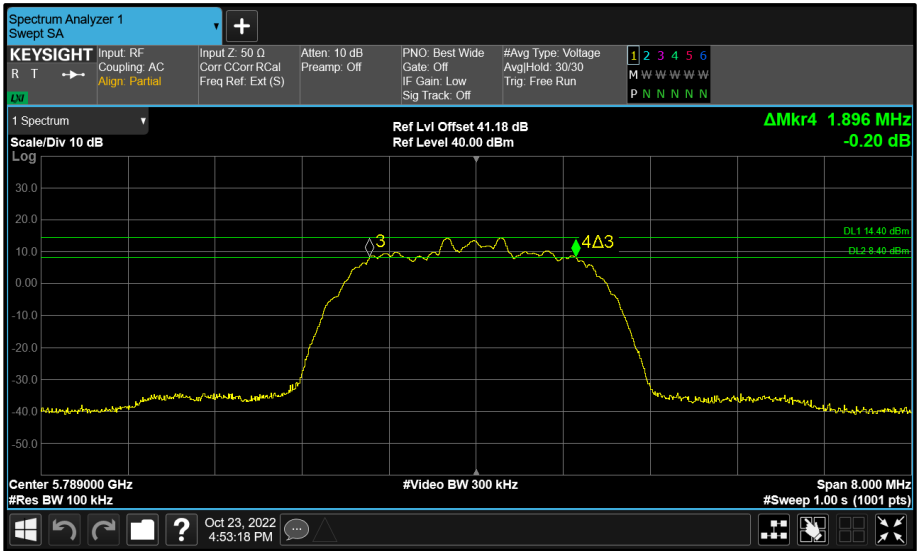


Figure 56 - Core 0 (A) 5789 MHz (CH64) 6 dB Bandwidth

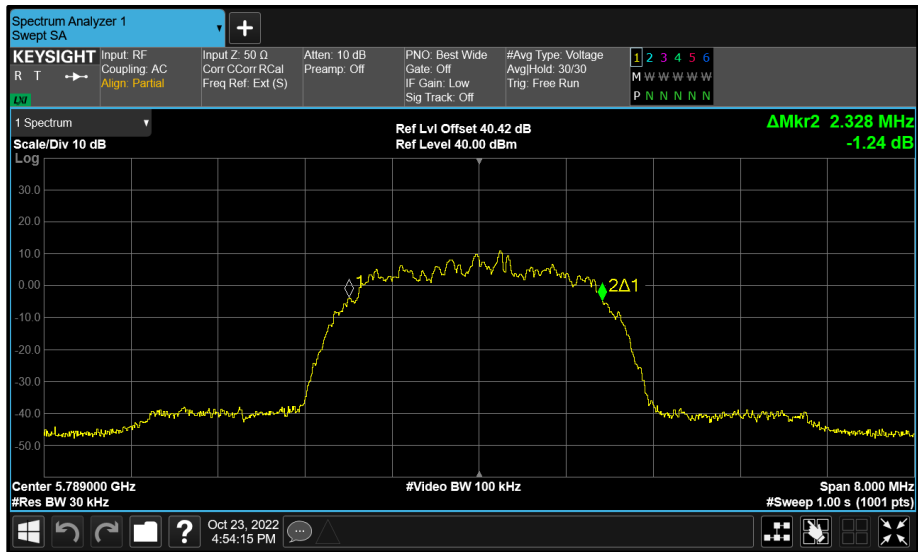


Figure 57 - Core 1 (B) 5789 MHz (CH64) 99% Bandwidth

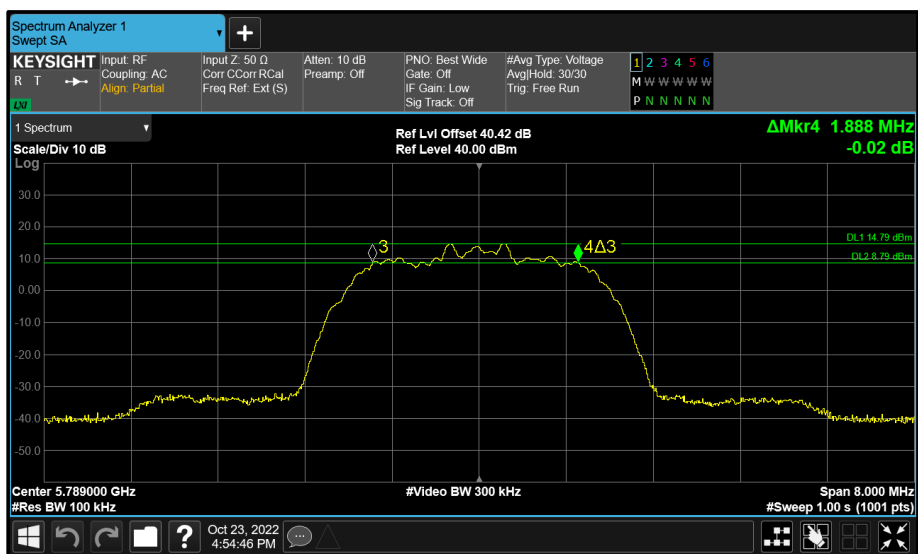


Figure 58 - Core 1 (B) 5789 MHz (CH64) 6 dB Bandwidth

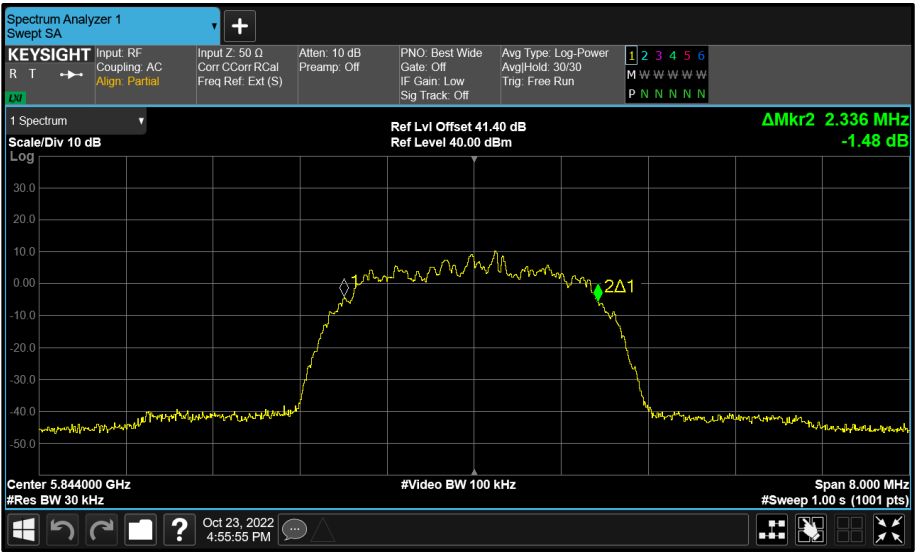


Figure 59 - Core 0 (A) 5844 MHz (CH119) 99% Bandwidth

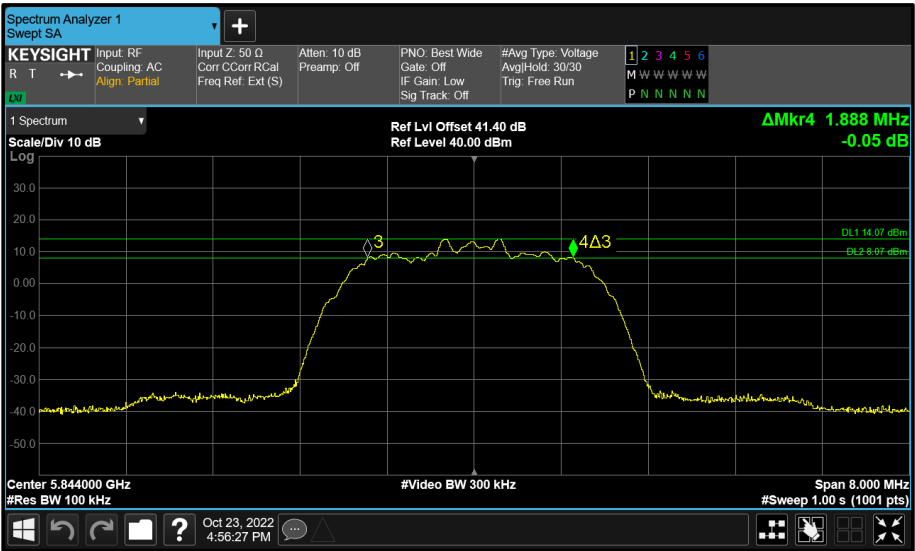


Figure 60 - Core 0 (A) 5844 MHz (CH119) 6 dB Bandwidth

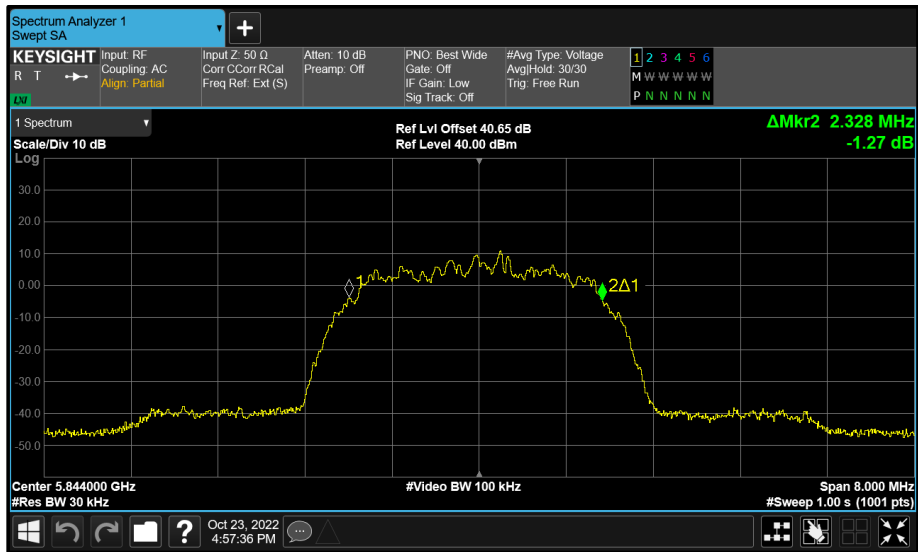


Figure 61 - Core 1 (B) 5844 MHz (CH119) 99% Bandwidth

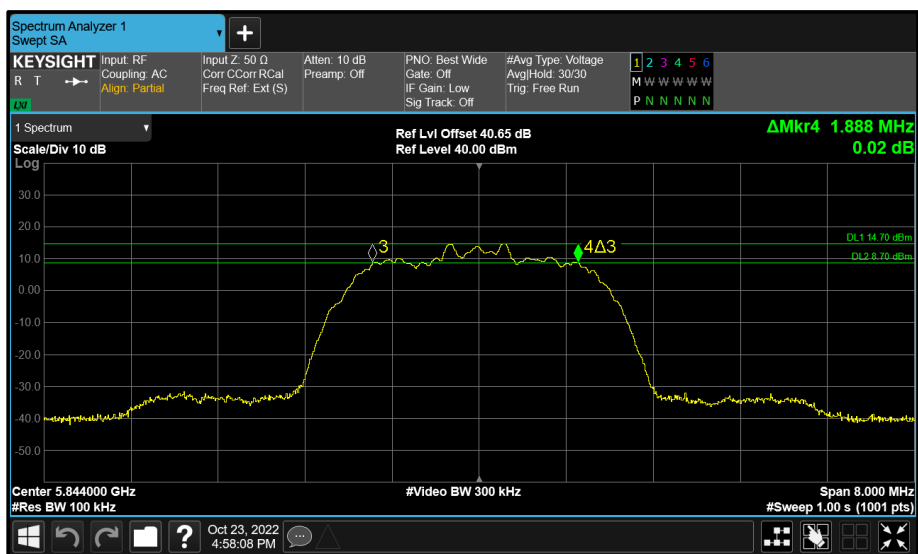


Figure 62 - Core 1 (B) 5844 MHz (CH119) 6 dB Bandwidth



Test Configuration			
Frequency Range:	5.725-5.850 GHz	Band:	U-NII-3
Limit Clause(s):	15.407(e) RSS-247 6.2.4.1	Test Method(s):	Refer to Test Method
Additional Reference(s):	-		

DUT Configuration			
Mode:	ePA $\pi/4$ DQPSK (8-DH5)	Duty Cycle (%):	-
Antenna Configuration:	Beamforming	DCCF (dB):	-
Active Port(s):	A+B (Core 0 + Core 1)	Peak Antenna Gain (dBi):	-

Test Frequency (MHz)	6 dB Bandwidth (MHz)				Limit (kHz)
	A	B	C	D	
5733	0.960	1.005	-	-	≥ 500.0
5789	1.005	1.020	-	-	≥ 500.0
5844	1.005	1.020	-	-	≥ 500.0

Table 27 - 6 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)				Limit (kHz)
	A	B	C	D	
5733	4.635	4.650	-	-	-
5789	4.635	4.650	-	-	-
5844	4.650	4.650	-	-	-

Table 28 - 99% Bandwidth Results

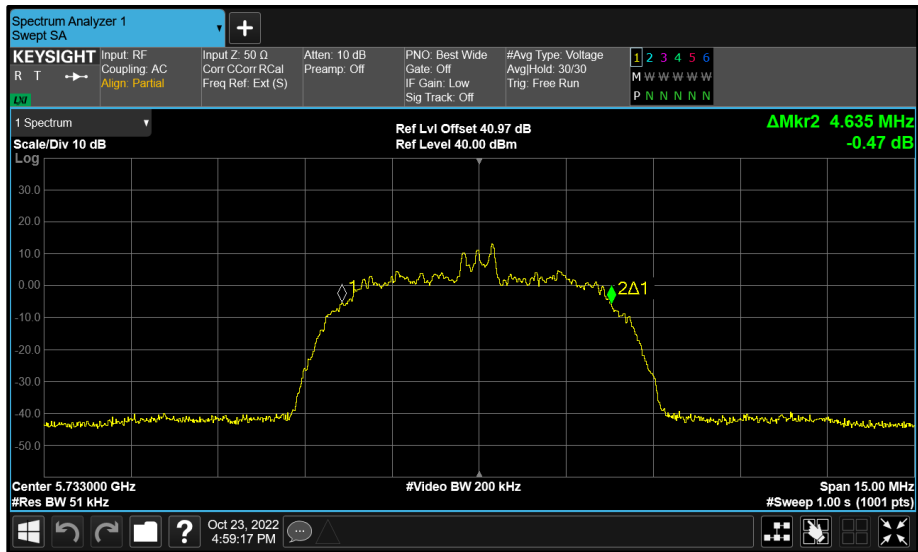


Figure 63 - Core 0 (A) 5733 MHz (CH8) 99% Bandwidth

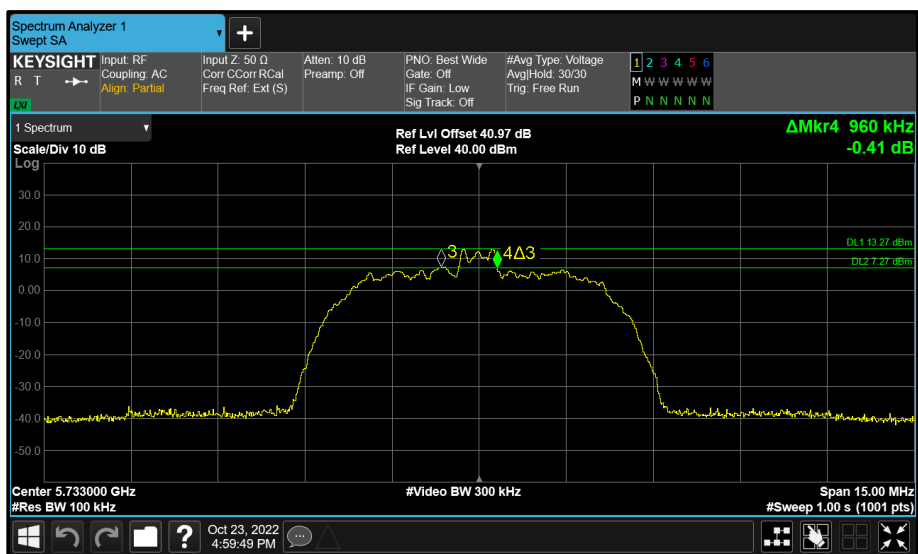


Figure 64 - Core 0 (A) 5733 MHz (CH8) 6 dB Bandwidth

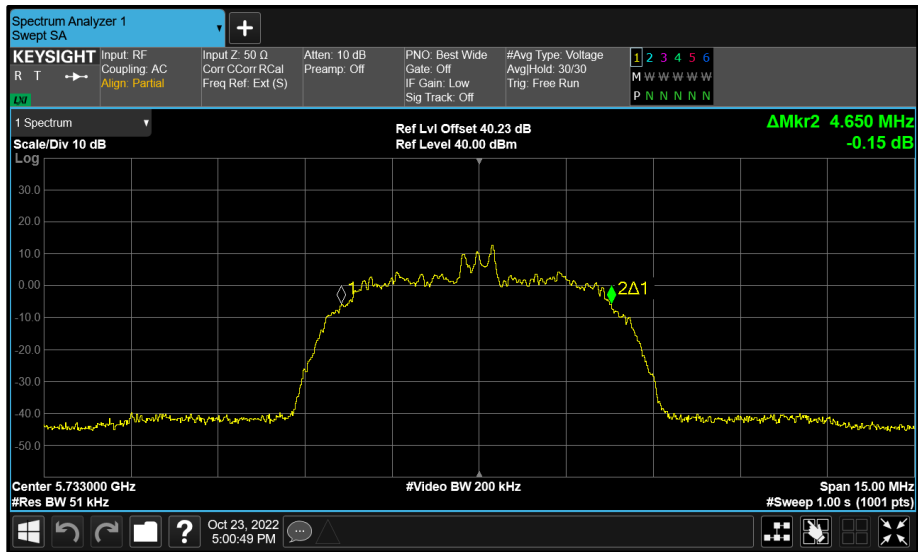


Figure 65 - Core 1 (B) 5733 MHz (CH8) 99% Bandwidth

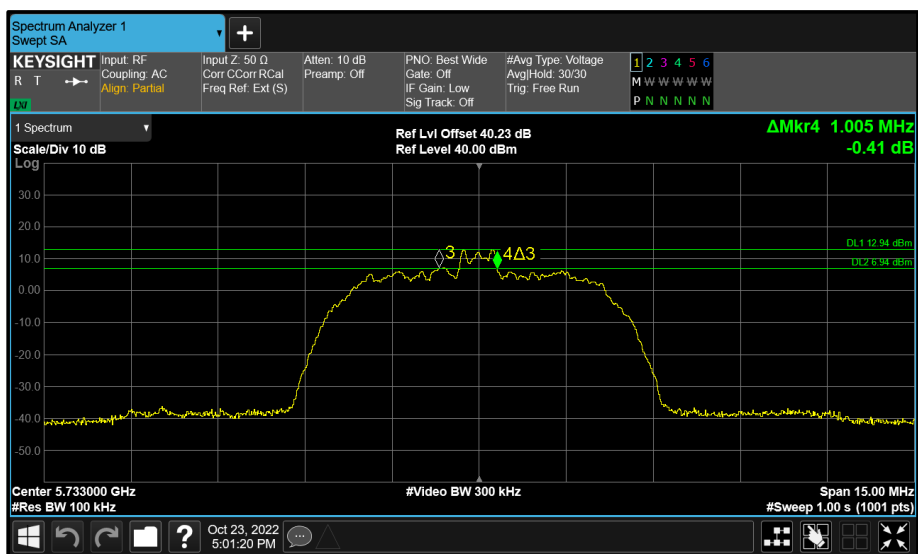


Figure 66 - Core 1 (B) 5733 MHz (CH8) 6 dB Bandwidth

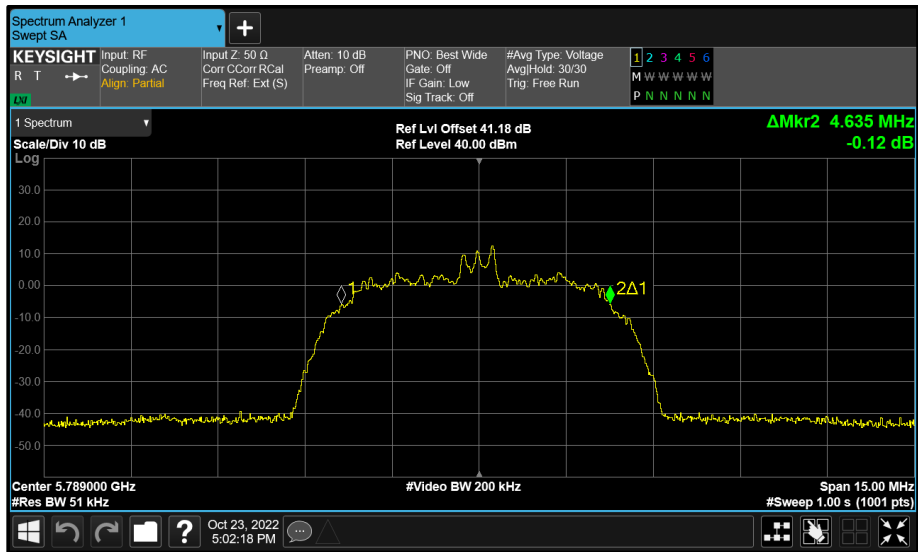


Figure 67 - Core 0 (A) 5789 MHz (CH64) 99% Bandwidth

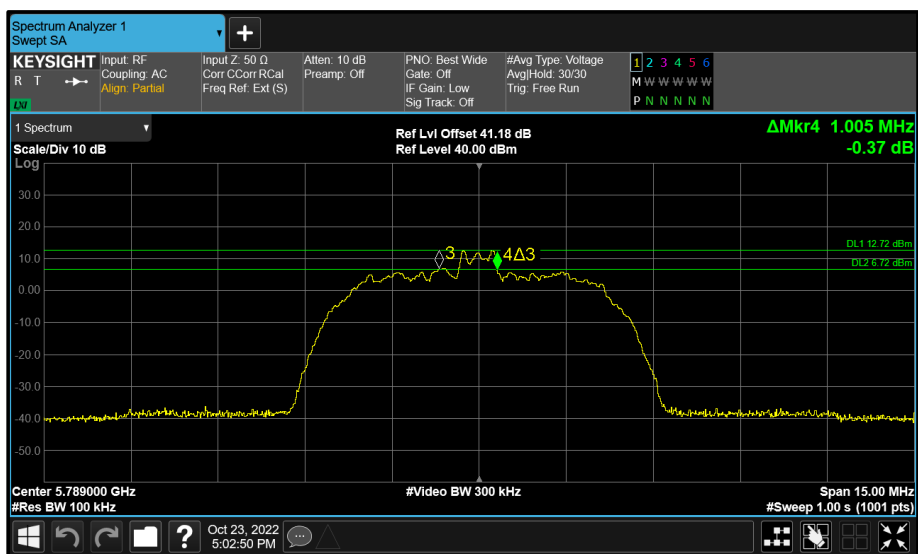


Figure 68 - Core 0 (A) 5789 MHz (CH64) 6 dB Bandwidth

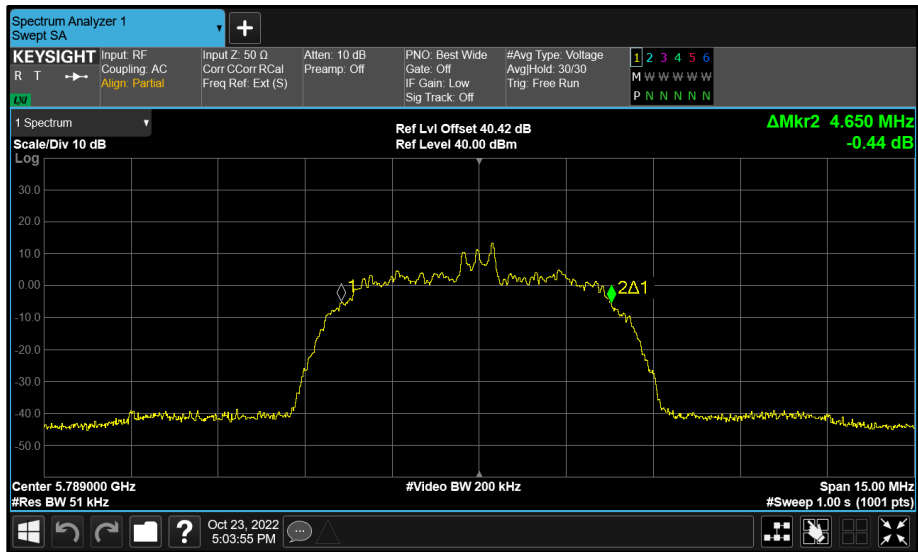


Figure 69 - Core 1 (B) 5789 MHz (CH64) 99% Bandwidth

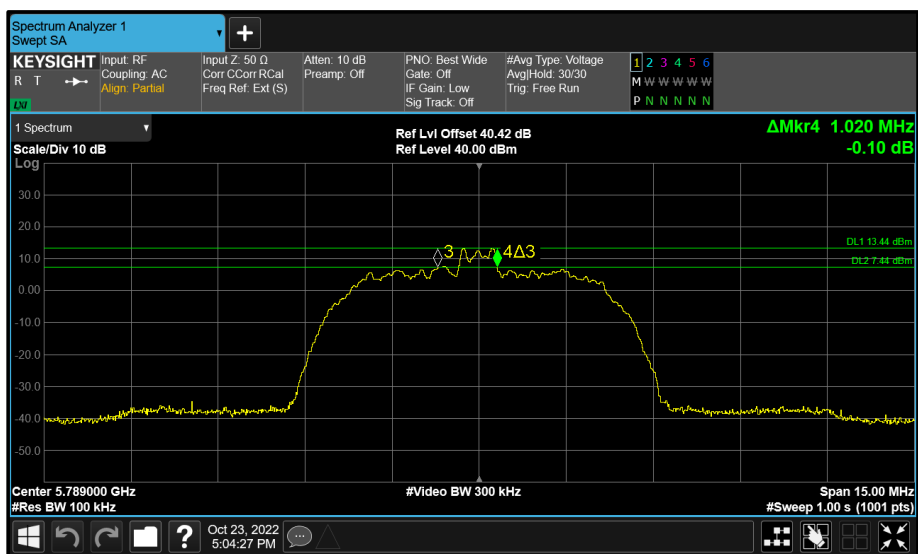
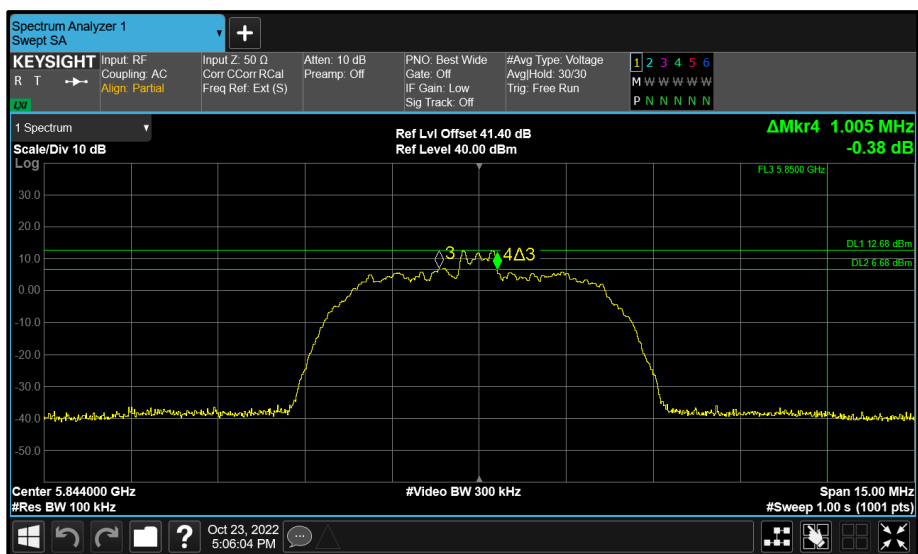
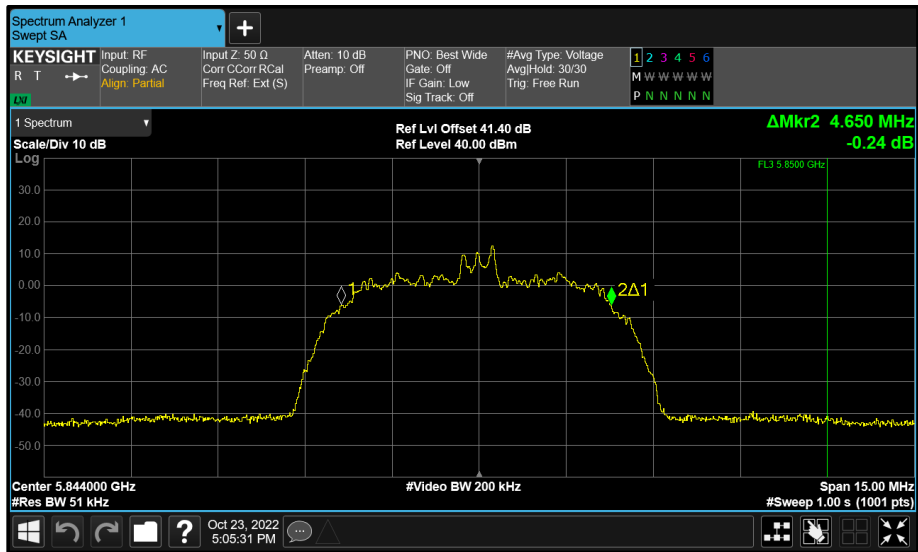


Figure 70 - Core 1 (B) 5789 MHz (CH64) 6 dB Bandwidth



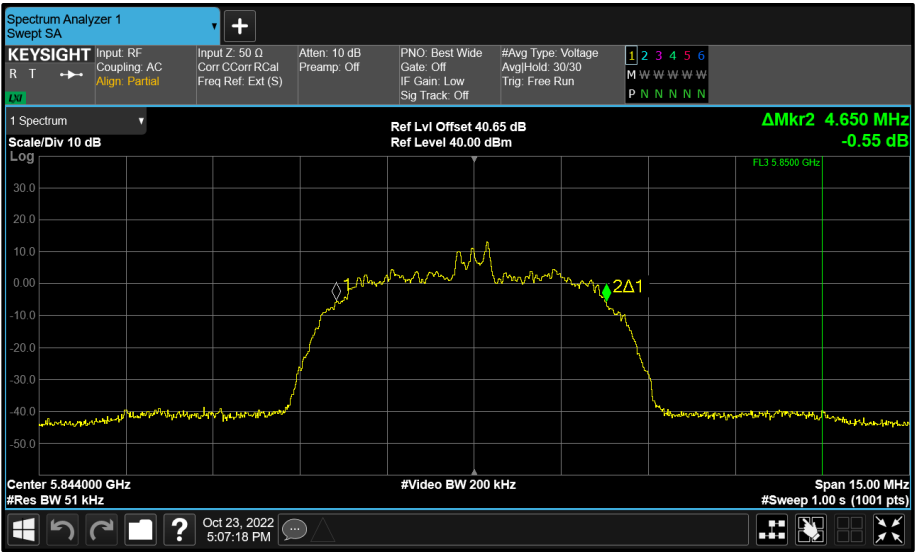


Figure 73 - Core 1 (B) 5844 MHz (CH119) 99% Bandwidth

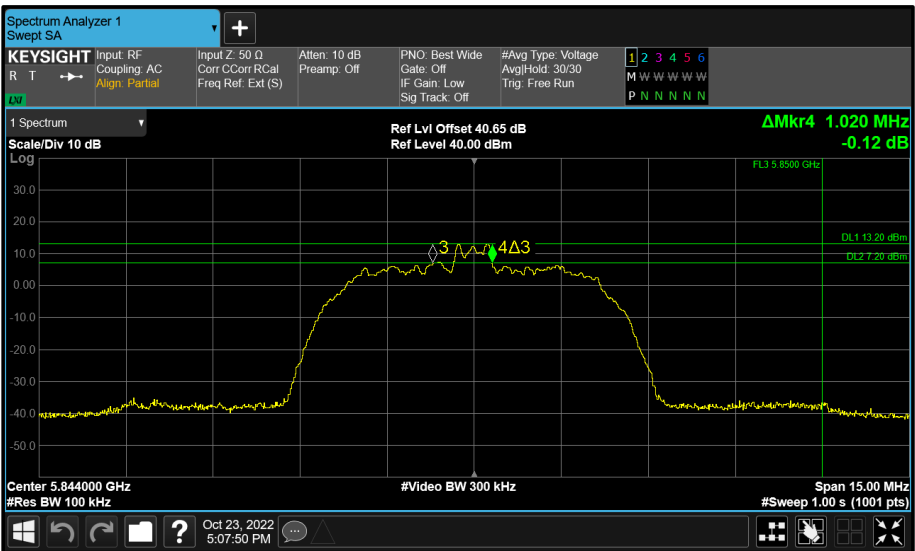


Figure 74 - Core 1 (B) 5844 MHz (CH119) 6 dB Bandwidth



Test Configuration			
Frequency Range:	5.150-5.250 GHz	Band:	U-NII-1
Limit Clause(s):	-	Test Method(s):	Refer to Test Method
Additional Reference(s):	-		

DUT Configuration			
Mode:	iPA GFSK (DH5)	Duty Cycle (%):	-
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	B (Core 1)	Peak Antenna Gain (dBi):	-

Test Frequency (MHz)	26 dB Bandwidth (MHz)				Limit (kHz)
	A	B	C	D	
5162	-	1.248	-	-	≥500.0
5204	-	1.248	-	-	≥500.0
5245	-	1.248	-	-	≥500.0

Table 29 - 26 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)				Limit (kHz)
	A	B	C	D	
5162	-	0.996	-	-	-
5204	-	0.996	-	-	-
5245	-	0.992	-	-	-

Table 30 - 99% Bandwidth Results

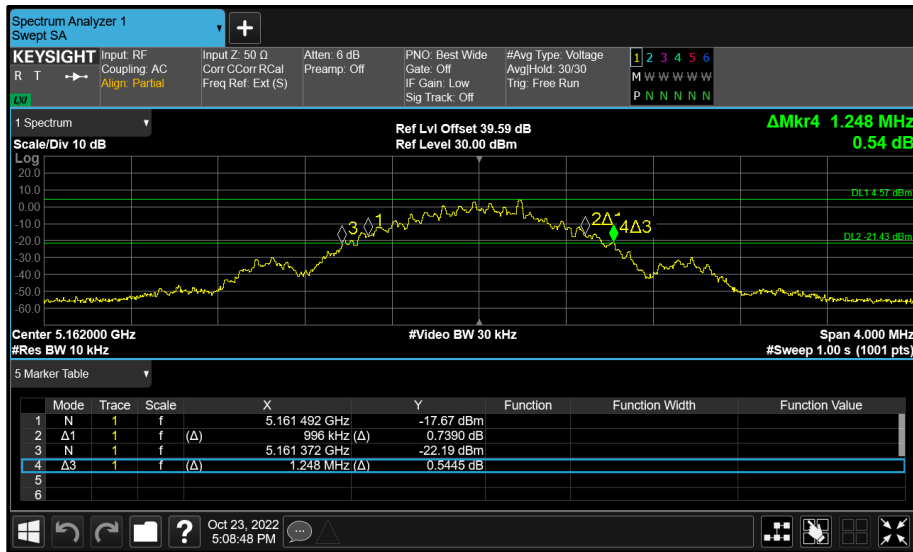


Figure 75 - Core 1 (B) 5162 MHz (CH12) 26 dB and 99% Bandwidth

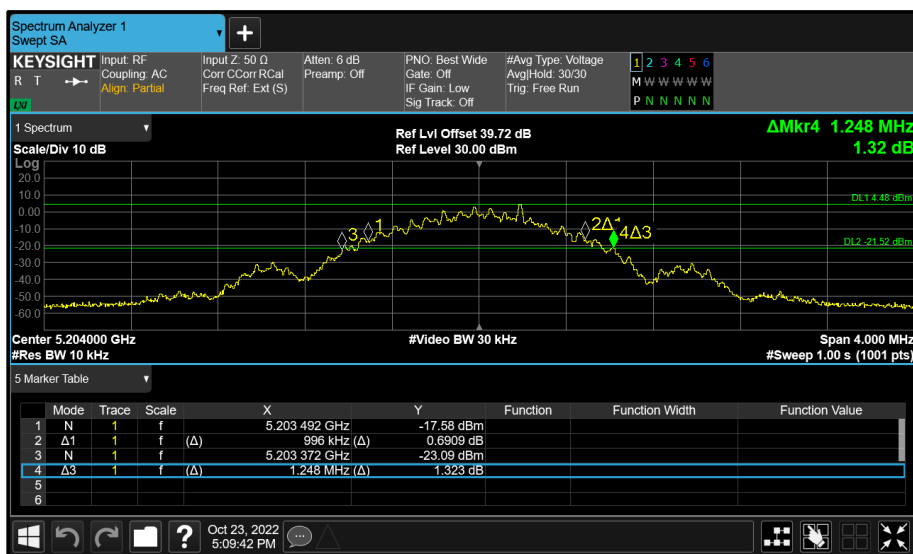


Figure 76 - Core 1 (B) 5204 MHz (CH54) 26 dB and 99% Bandwidth

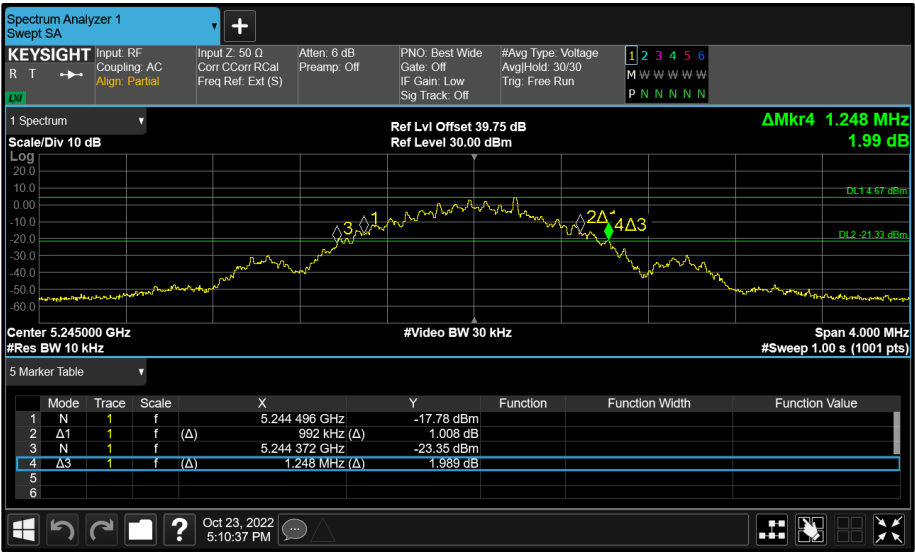


Figure 77 - Core 1 (B) 5245 MHz (CH95) 26 dB and 99% Bandwidth