FCC and ISED Test Report

Dyson Technology Limited
Robot Vacuum Cleaner, Model: RB03

In accordance with FCC 47 CFR Part 15C, ISED RSS-247 and ISED RSS-GEN (2.4 GHz WLAN)

Prepared for: Dyson Technology Limited
Tetbury Hill
Malmesbury
SN16 0RP
United Kingdom

FCC ID: QVHRB03002 IC: 7986A-RB03002

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Document 75951525-02 Issue 01

SIGNATURE			
NAME	**JOB TITLE**	**RESPONSIBLE FOR**	**ISSUE DATE**
Steve Marshall	Senior Engineer	Authorised Signatory	16 May 2023

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 15C, 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
Testing	Anthony Hubbard	16 May 2023	
Testing	George Porter	16 May 2023	
Testing	Graeme Lawler	16 May 2023	
Testing	Paul Dickson	16 May 2023	

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 15C: 2020, ISED RSS-247: Issue 2 (02-2017) and ISED RSS-GEN: Issue 5 (04-2018) + A2 (02-2021) for the tests detailed in section 1.3.

TÜV SÜD
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Glasgow G75 0QF, United Kingdom
Registered number: SC215164

TUV SUD 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

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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	16-May-2023

Table 1

1.2 Introduction

Applicant	Dyson Technology Limited
Manufacturer	Dyson Technology Limited
Model Number(s)	RB03
Serial Number(s)	H8U-JP-FJN0002X and H9C-UK-PCA0009A
Hardware Version(s)	OR1.5
HLP Version	2
PCBA Version	289439-01
Software Version(s)	RB03ED.01.00.002.0012
Number of Samples Tested	2
Test Specification/Issue/Date	FCC 47 CFR Part 15C: 2020 ISED RSS-247: Issue 2 (02-2017 ISED RSS-GEN: Issue 5 (04-2018) + A2 (02-2021)
Order Number Date	6000112313 25-February-2021
Date of Receipt of EUT	15-April-2021 and 28-September-2021
Start of Test	23-April-2021
Finish of Test	25-October-2021
Name of Engineer(s)	Anthony Hubbard, Graeme Lawler, George Porter and Paul Dickson
Related Document(s)	ANSI C63.10 (2013) KDB 662911 D01 v02r01

1.3 Brief Summary of Results

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

Section	Specification Clause			Test Description	Result	Comments/Base Standard
	Part 15C	RSS-247	RSS-GEN			
Configuration and Mode: 2.4 GHz WLAN						
-	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	-	8.10	Restricted Band Edges	Pass	
2.2	15.207	-	8.8	AC Power Line Conducted Emissions	Pass	
2.3	15.247 (a)(2)	5.2	6.7	Emission Bandwidth	Pass	
2.4	15.247 (b)	5.4	6.12	Maximum Conducted Output Power	Pass	
2.5	15.247 (d)	5.5	-	Authorised Band Edges	Pass	
2.6	15.247 (d) and 15.205	3.3 and 5.5	6.13 and 8.9	Spurious Radiated Emissions	Pass	
2.7	15.247 (e)	5.2	6.12	Power Spectral Density	Pass	

Table 2

1.4 Application Form

Equipment Description

Technical Description: *(Please provide a brief description of the intended use of the equipment including the technologies the product supports)*	Robotic vacuum cleaner with 2.4GHz, 5GHz Wi-Fi and Bluetooth Low Energy wireless technologies
Manufacturer:	Dyson Technology Ltd
Model:	RB03
Part Number:	RB03
Hardware Version:	OR1.5
Software Version:	RB03ED.01.00.002.0012
FCC ID of the product under test – see guidance here	QVHRB03002
IC ID of the product under test – see guidance here	7986A-RB03002

Table 3

Intentional Radiators

Technology	BLE	2.4 GHz	5 GHz			
Frequency Range (MHz to MHz)	2400 MHz – 2483.5 MHz	2400 MHz – 2483.5 MHz	5150 MHz to 5850 MHz			
Conducted Declared Output Power (dBm)	Refer to Supplied RF Power Tables					
Antenna Gain (dBi)	4.08	4.08	6.3			
Supported Bandwidth(s) (MHz) (e.g 1 MHz, 20 MHz, 40 MHz)	1 MHz	20/40 MHz	20/40/80 MHz			
Modulation Scheme(s) (e.g GFSK, QPSK etc)	GFSK	DQPSK, DBPSK, DSSS, CCK and OFDM	OFDM			
ITU Emission Designator (see guidance here) (not mandatory for Part 15 devices)	N/A	N/A	N/A			
Bottom Frequency (MHz)	2402	2412	5180			
Middle Frequency (MHz)	2440	2437	5500			
Top Frequency (MHz)	2480	2462	5825			

Table 4

Un-intentional Radiators

Highest frequency generated or used in the device or on which the device operates or tunes	5850 MHz
Lowest frequency generated or used in the device or on which the device operates or tunes	30 MHz
Class A Digital Device (Use in commercial, industrial or business environment) ☐ Class B Digital Device (Use in residential environment only) ☒	

Table 5

AC Power Source

AC supply frequency:	50/60	Hz
Voltage	100 - 240	V
Max current:	2.4	A
Single Phase ☒ Three Phase ☐		

Table 6

DC Power Source

Nominal voltage:		V
Extreme upper voltage:		V
Extreme lower voltage:		V
Max current:		A

Table 7

Battery Power Source

Voltage:	21.6	V
End-point voltage:	15.9	V *(Point at which the battery will terminate)*
Alkaline ☐ Leclanche ☐ Lithium ☒ Nickel Cadmium ☐ Lead Acid* ☐ **(Vehicle regulated)*		
Other ☐ Please detail:		

Table 8

Charging

Can the EUT transmit whilst being charged	Yes ☒ No ☐

Table 9

Temperature

Minimum temperature:	0	°C
Maximum temperature:	60	°C

Table 10

Antenna Characteristics

Antenna connector ☐			State impedance		Ohm
Temporary antenna connector ☐			State impedance		Ohm
Integral antenna ☒	Type:	Patch Antenna	Gain	2.4GHz: 4.1 5GHz: 6.3	dBi
External antenna ☐	Type:		Gain		dBi
For external antenna only: Standard Antenna Jack ☐ If yes, describe how user is prohibited from changing antenna (if not professional installed): Equipment is only ever professionally installed ☐ Non-standard Antenna Jack ☐					

Table 11

Ancillaries (if applicable)

Manufacturer:		Part Number:	
Model:		Country of Origin:	

Table 12

The above information was provided by the applicant.

1.5 Product Information

1.5.1 Technical Description

The EUT is a Robotic vacuum cleaner with 2.4 GHz, 5 GHz Wi-Fi and Bluetooth Low Energy wireless technologies.

1.5.2 Antenna Gain

The manufacturer provided antenna gain values for each operating channel which have been used to calculate EIRP where required:

Band	Chan # (20MHz)	Max Gain (dBi)
2.4 GHz	1	3.77
	2	3.59
	3	3.46
	4	3.67
	5	3.89
	6	4.08
	7	4.08
	8	4.01
	9	3.92
	10	3.90
	11	3.99
	12	4.04
	13	4.05

Table 13 – Antenna Gain

The antenna gain as specified for the channels as per the table above were used for all EIRP results recorded in this report.

1.6 Deviations from the Standard

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

1.7 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: RB03, Serial Number: H8U-JP-FJN0002X			
0	As supplied by the customer	Not Applicable	Not Applicable
Model: RB03, Serial Number: H9C-UK-PCA0009A			
0	As supplied by the customer	Not Applicable	Not Applicable

Table 14

1.8 Test Location

TÜV SÜD conducted the following tests at our Fareham Test Laboratory.

Test Name	Name of Engineer(s)	Accreditation
Configuration and Mode: 2.4 GHz WLAN		
Restricted Band Edges	Anthony Hubbard	UKAS
AC Power Line Conducted Emissions	Graeme Lawler	UKAS
Emission Bandwidth	George Porter	UKAS
Maximum Conducted Output Power	George Porter	UKAS
Authorised Band Edges	Anthony Hubbard	UKAS
Spurious Radiated Emissions	Paul Dickson and Graeme Lawler	UKAS
Power Spectral Density	George Porter	UKAS

Table 15

Office Address:

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

2 Test Details

2.1 Restricted Band Edges

2.1.1 Specification Reference

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

2.1.2 Equipment Under Test and Modification State

RB03, S/N: H8U-JP-FJN0002X - Modification State 0

2.1.3 Date of Test

23-April-2021 to 01-June-2021

2.1.4 Test Method

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

Plots for average measurements were taken in accordance with ANSI C63.10, clause 4.1.4.2.5. These are shown for information purposes and were used to determine the worst-case measurement point. Final average measurements were then taken in accordance with ANSI C63.10, clause 4.1.4.2.2 to obtain the measurement result recorded in the test results tables.

The following conversion can be applied to convert from dBµV/m to µV/m:
10^(Field Strength in dBµV/m/20).

2.1.5 Environmental Conditions

Ambient Temperature	16.9 - 23.3 °C
Relative Humidity	23.4 - 56.3 %

2.1.6 Test Results

2.4 GHz WLAN

Mode	Data Rate /MCS	TX Frequency (MHz)	Band Edge Frequency (MHz)	Peak Level (dBµV/m)	Average Level (dBµV/m)
802.11b (Main + Aux)	1 Mbps	2412	2390.0	58.54	50.82
802.11b (Main + Aux)	1 Mbps	2462	2483.5	59.24	51.33

Table 16 - 802.11b, Restricted Band Edge Results

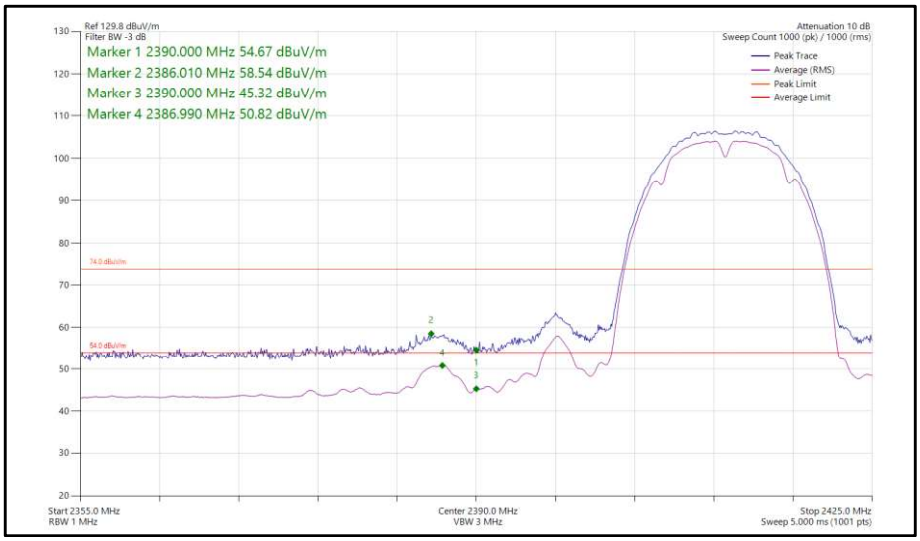

Figure 1 - 802.11b, 2412 MHz, Band Edge Frequency 2390.0 MHz

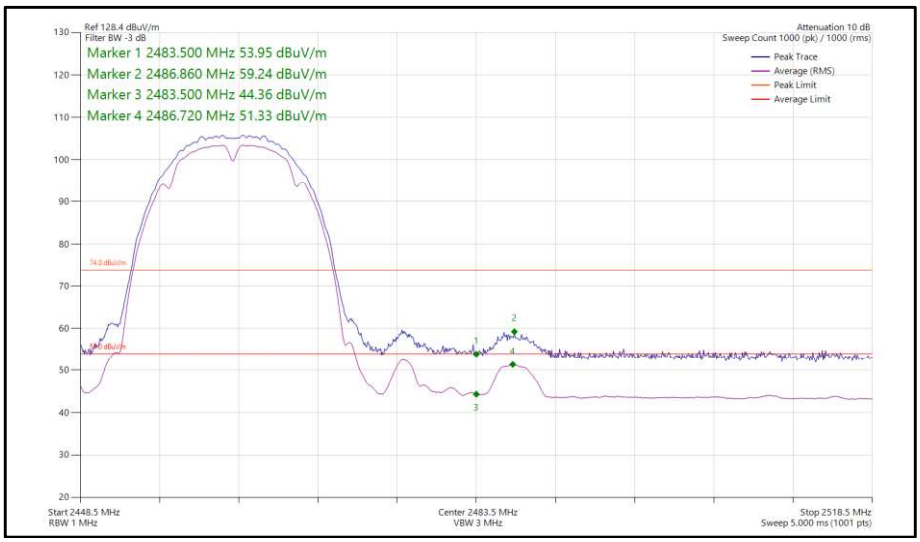

Figure 2 - 802.11b, 2462 MHz, Band Edge Frequency 2483.5 MHz

Mode	Data Rate /MCS	TX Frequency (MHz)	Band Edge Frequency (MHz)	Peak Level (dBµV/m)	Average Level (dBµV/m)
802.11g, Main + Aux	6 Mbps	2412	2390.0	65.32	50.93
802.11g, Main + Aux	6 Mbps	2462	2483.5	62.61	47.86

Table 17 - 802.11g, Restricted Band Edge Results

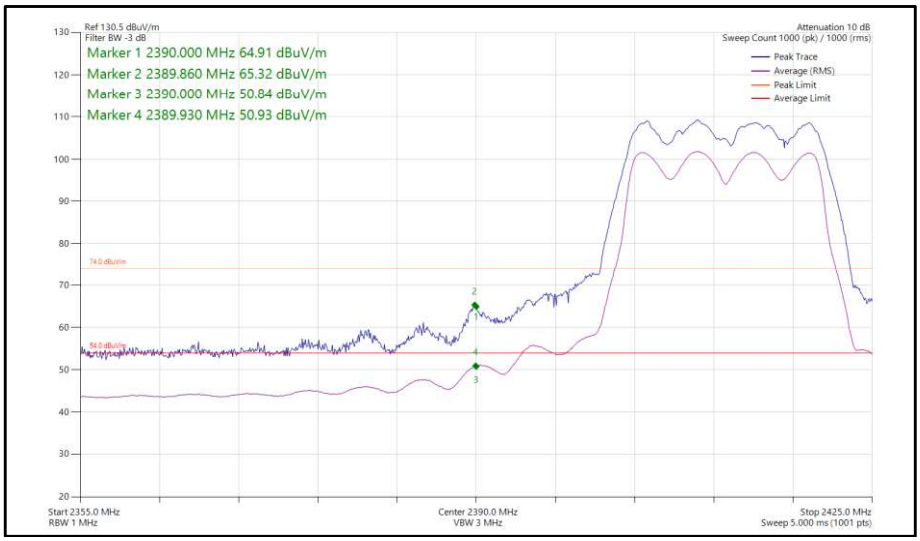

Figure 3 - 802.11g, 2412 MHz, Band Edge Frequency 2390 MHz

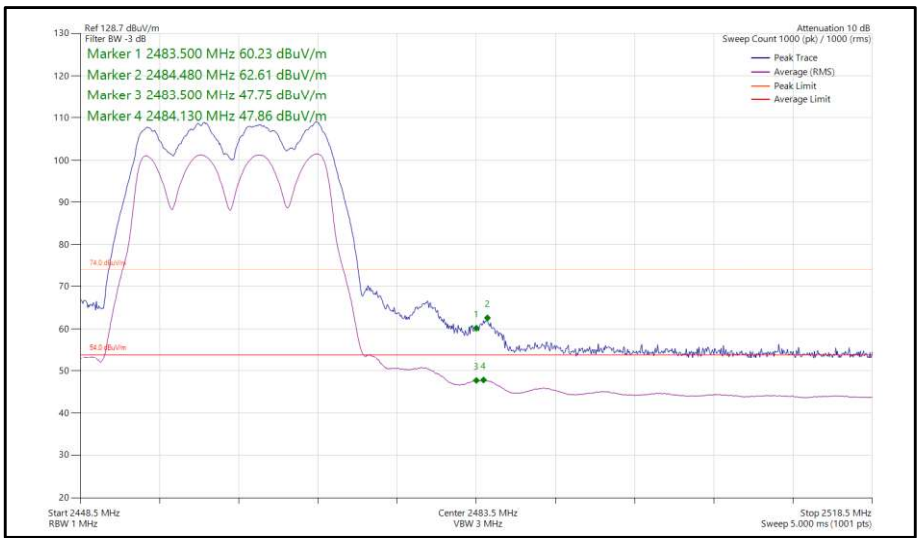

Figure 4 - 802.11g, 2462 MHz, Band Edge Frequency 2483.5 MHz

Mode	Data Rate /MCS	TX Frequency (MHz)	Band Edge Frequency (MHz)	Peak Level (dBµV/m)	Average Level (dBµV/m)
802.11 HT20, Main + Aux	MCS0	2412	2390.0	67.48	53.53
802.11 HT20, Main + Aux	MCS0	2462	2483.5	63.50	49.27

Table 18 - 802.11HT20, Restricted Band Edge Results

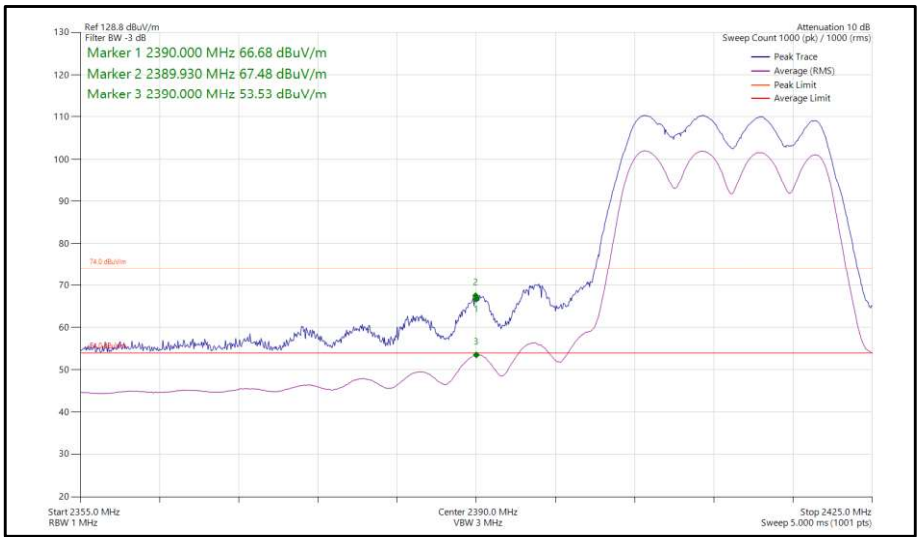

Figure 5 - 802.11HT20, 2412 MHz, Band Edge Frequency 2390.0 MHz

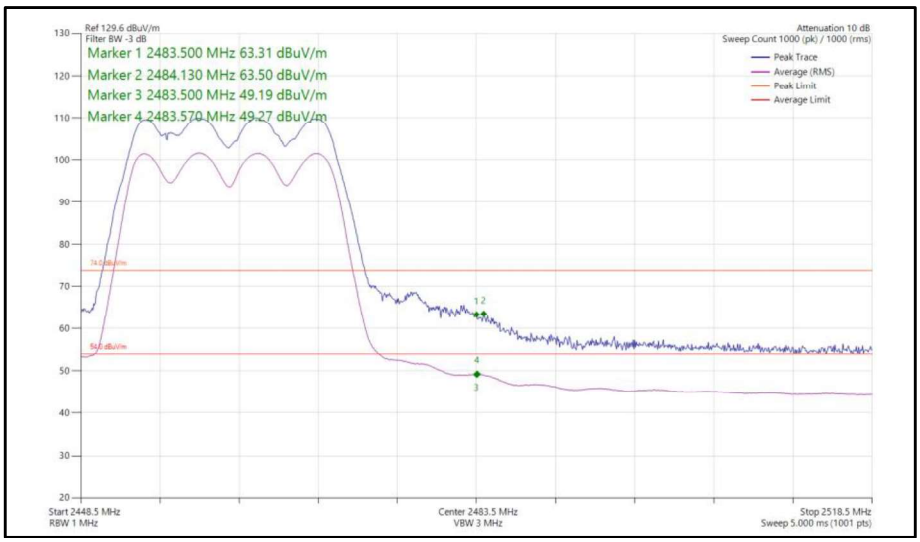

Figure 6 - 802.11HT20, 2462 MHz, Band Edge Frequency 2483.5 MHz

Mode	Data Rate /MCS	TX Frequency (MHz)	Band Edge Frequency (MHz)	Peak Level (dBµV/m)	Average Level (dBµV/m)
802.11 HT40, Main + Aux	MCS0	2422	2390.0	64.66	53.71
802.11 HT40, Main + Aux	MCS0	2427	2390.0	62.94	51.22
802.11 HT24, Main + Aux	MCS0	2452	2483.5	61.24	48.64

Table 19 - 802.11HT40, Restricted Band Edge Results

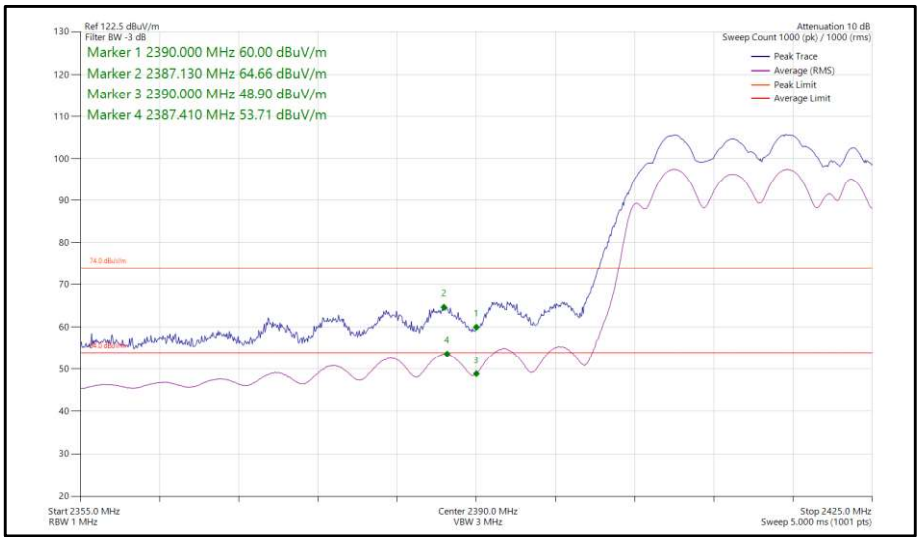

Figure 7 - 802.11HT40, 2422 MHz, Band Edge Frequency 2390 MHz

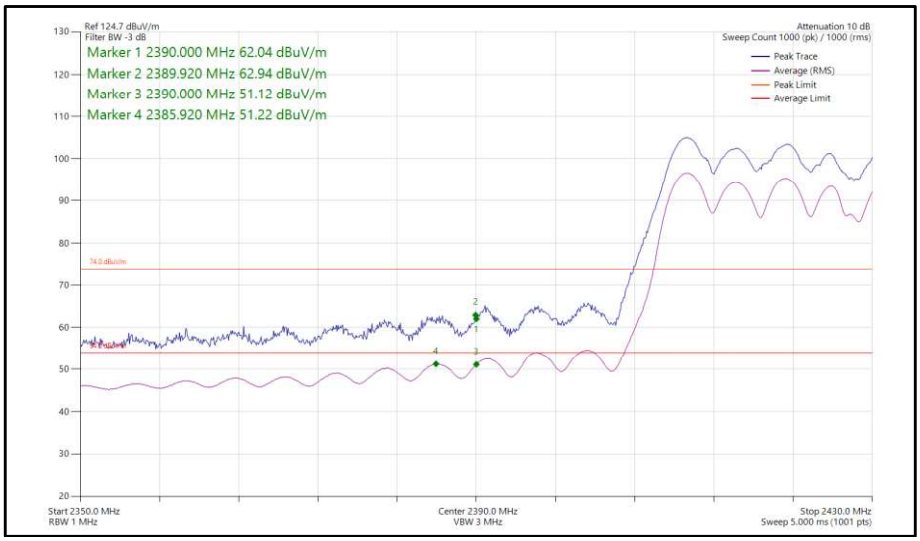

Figure 8 - 802.11HT40, 2427 MHz, Band Edge Frequency 2390 MHz

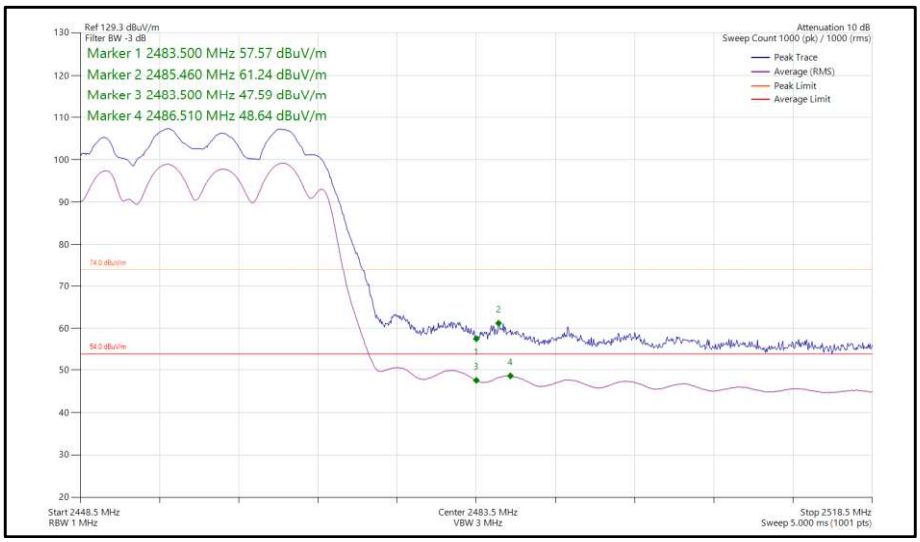

Figure 9 - 802.11HT40, 2452 MHz, Band Edge Frequency 2483.5 MHz

FCC 47 CFR Part 15, Limit Clause 15.209

Frequency (MHz)	Field Strength (µV/m at 3 m)
30 to 88	100
88 to 216	150
216 to 960	200
Above 960	500

Table 20

ISED RSS-GEN, Limit Clause 8.9

Frequency (MHz)	Field Strength (µV/m at 3 m)
30 to 88	100
88 to 216	150
216 to 960	200
Above 960*	500

Table 21

*Unless otherwise specified, for all frequencies greater than 1 GHz, the radiated emission limits for licence-exempt radio apparatus stated in applicable RSSs (including RSS-Gen) are based on measurements using a linear average detector function having a minimum resolution bandwidth of 1 MHz. If an average limit is specified for the EUT, then the peak emission shall also be measured with instrumentation properly adjusted for such factors as pulse desensitization to ensure the peak emission is less than 20 dB above the average limit.

2.1.7 Test Location and Test Equipment Used

This test was carried out in EMC Chamber 12.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
Test Receiver	Rohde & Schwarz	ESU40	3506	12	18-Mar-2022
EmX Emissions Software	TUV SUD		5125	-	Software
Cable (sma-sma, 2 m)	Junkosha	MWX221-02000DMS	5428	12	15-Oct-2021
Thermo-Hygro-Barometer	PCE Instruments	PCE-THB-40	5473	12	01-Apr-2022
Thermo-Hygro-Barometer	PCE Instruments	PCE-THB-40	5481	12	31-Mar-2022
1m K-Type Cable	Junkosha	MWX241-01000KMSKMS/A	5511	12	09-Apr-2022
Thermo-Hygro-Barometer	PCE Instruments	PCE-THB 40	5604	12	08-Sep-2021
Broadband Horn Antenna (1-10 GHz)	Schwarzbeck	BBHA 9120 B	5611	12	22-Sep-2021
Turntable & Mast Controller	Maturo Gmbh	NCD/498/2799.01	5612	-	TU
Tilt Antenna Mast TAM 4.0-P	Maturo Gmbh	TAM 4.0-P	5613	-	TU
Turntable	Maturo Gmbh	Turntable 1.5 SI-2t	5614	-	TU
Screened Room (12)	MVG	EMC-3	5621	36	11-Aug-2023
Cable Assembly - 18GHz 8m	Junkosha	MWX221-08000NMSNMS/B	5732	6	05-Aug-2021

Table 22

TU - Traceability Unscheduled

2.2 AC Power Line Conducted Emissions

2.2.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.207
ISED RSS-GEN, Clause 8.8

2.2.2 Equipment Under Test and Modification State

RB03, S/N: H9C-UK-PCA0009A - Modification State 0

2.2.3 Date of Test

25-October-2021

2.2.4 Test Method

The test was performed in accordance with ANSI C63.10, clause 6.2.

The EUT was placed on a non-conductive table 0.8m above a reference ground plane and 0.4m away from a vertical coupling plane

All power was connected to the EUT through an Artificial Mains Network (AMN).

Conducted disturbance voltage measurements on mains lines were made at the output of the AMN.

2.2.5 Environmental Conditions

Ambient Temperature	26.3 °C
Relative Humidity	37.8 %

2.2.6 Test Results

2.4 GHz WLAN

Applied supply voltage: 117 V AC
Applied supply frequency: 60 Hz

Frequency (MHz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
0.150	35.1	66.0	-30.9	Q-Peak
0.150	15.5	56.0	-40.5	CISPR Avg
8.297	29.2	60.0	-30.8	Q-Peak
8.297	12.9	50.0	-37.1	CISPR Avg

Table 23 - Live Line Emissions Results

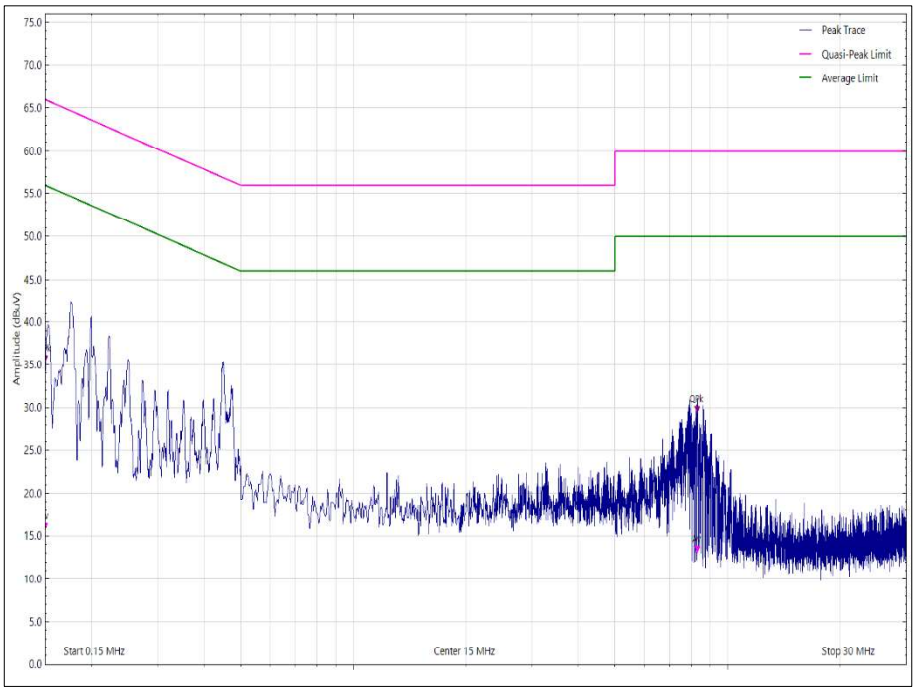

Figure 10 - Live Line - 150 kHz to 30 MHz

Frequency (MHz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
0.151	34.8	66.0	-31.2	Q-Peak
0.151	14.6	56.0	-41.4	CISPR Avg
0.196	30.4	63.8	-33.4	Q-Peak
0.196	13.5	53.8	-40.3	CISPR Avg
7.898	19.5	60.0	-40.5	Q-Peak
7.898	9.6	50.0	-40.4	CISPR Avg

Table 24 - Neutral Line Emissions Results

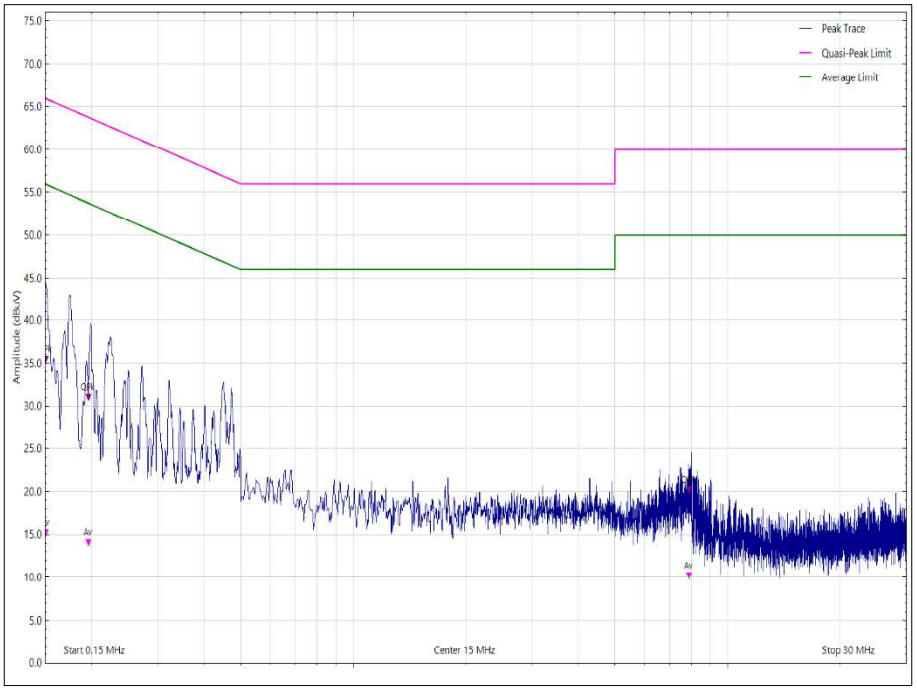

Figure 11 - Neutral Line - 150 kHz to 30 MHz

FCC 47 CFR Part 15, Limit Clause 15.207 and ISED RSS-GEN, Limit Clause 8.8

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

Table 25

*Decreases with the logarithm of the frequency.

2.2.7 Test Location and Test Equipment Used

This test was carried out in EMC Chamber 12.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
LISN	Rohde & Schwarz	ESH3-Z5	1390	12	28-Jan-2022
Transient Limiter	Hewlett Packard	11947A	2377	12	01-Mar-2022
Test Receiver	Rohde & Schwarz	ESU40	3506	12	18-Mar-2022
Cable (K-Type to K-Type, 2 m)	Scott Cables	KPS-1501-2000-KPS	4526	6	06-Mar-2022
EmX Emissions Software	TUV SUD		5125	-	Software
Cable (N-Type to N-Type, 8 m)	Teledyne	PR90-088-8MTR	5450	6	08-Mar-2022
Thermo-Hygro-Barometer	PCE Instruments	PCE-THB-40	5481	12	31-Mar-2022
Screened Room (12)	MVG	EMC-3	5621	36	11-Aug-2023

Table 26

2.3 Emission Bandwidth

2.3.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.247 (a)(2)
ISED RSS-247, Clause 5.2
ISED RSS-GEN, Clause 6.7

2.3.2 Equipment Under Test and Modification State

RB03, S/N: H8U-JP-FJN0002X - Modification State 0

2.3.3 Date of Test

06-May-2021

2.3.4 Test Method

This test was performed in accordance with ANSI C63.10, clause 11.1.8.1 for 6 dB bandwidth and 6.9.3 for 99% occupied bandwidth measurements.

2.3.5 Environmental Conditions

Ambient Temperature	23.2 °C
Relative Humidity	24.1 %

2.3.6 Test Results

2.4 GHz WLAN

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (a)(2) RSS-247 5.2 a)	Test Method(s):	C63.10 6.9.3 C63.10 11.8.1
Additional Reference(s):	-		

DUT Configuration			
Mode:	802.11b	Duty Cycle (%):	-
Data Rate:	1 Mbps	DCCF (dB):	-
Antenna Configuration:	Spatial Diversity	Peak Antenna Gain (dBi):	-
Active Port(s):	A+B (Main + Aux)	Active Chain(s):	1+2

Test Frequency (MHz)	6 dB Bandwidth (MHz)					Limit (kHz)
	A	B	C	D	Minimum	
2412	10.200	10.200	-	-	10.200	≥500.0
2437	10.200	10.200	-	-	10.200	≥500.0
2462	10.200	10.200	-	-	10.200	≥500.0

Table 27 - 6 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)					Limit (kHz)
	A	B	C	D	Minimum	
2412	13.500	13.500	-	-	13.500	-
2437	13.500	13.500	-	-	13.500	-
2462	13.500	13.500	-	-	13.500	-

Table 28 - 99% Bandwidth Results

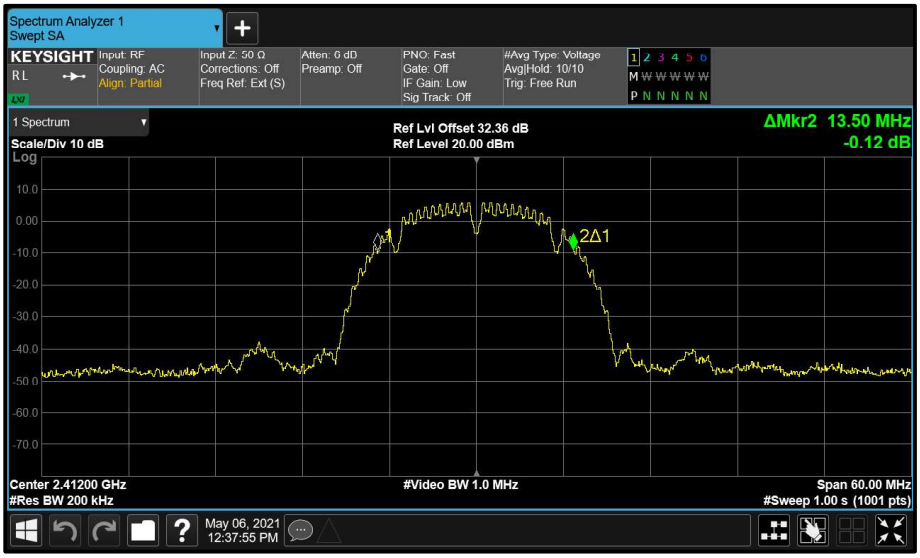

Figure 12 - Main (A) 2412 MHz (CH1) 99% Bandwidth

Figure 13 - Main (A) 2412 MHz (CH1) 6 dB Bandwidth

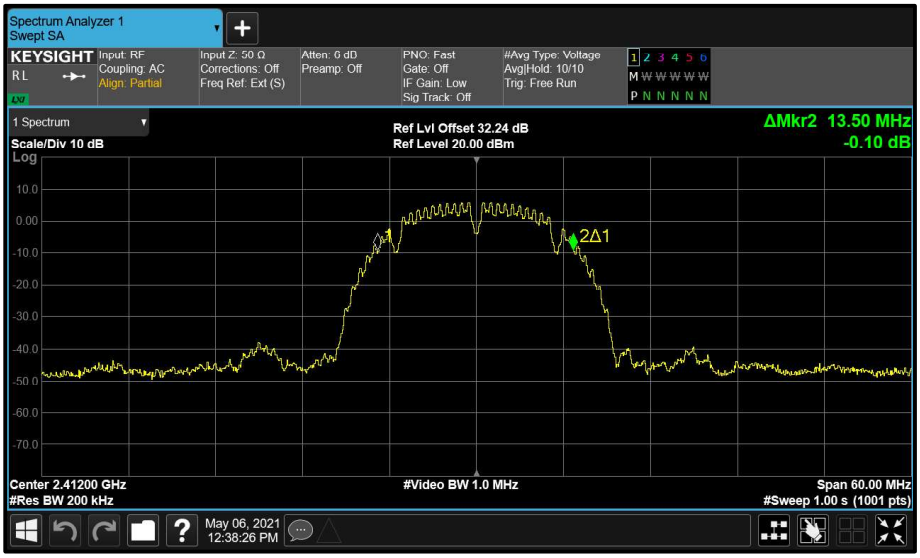

Figure 14 - Aux (B) 2412 MHz (CH1) 99% Bandwidth

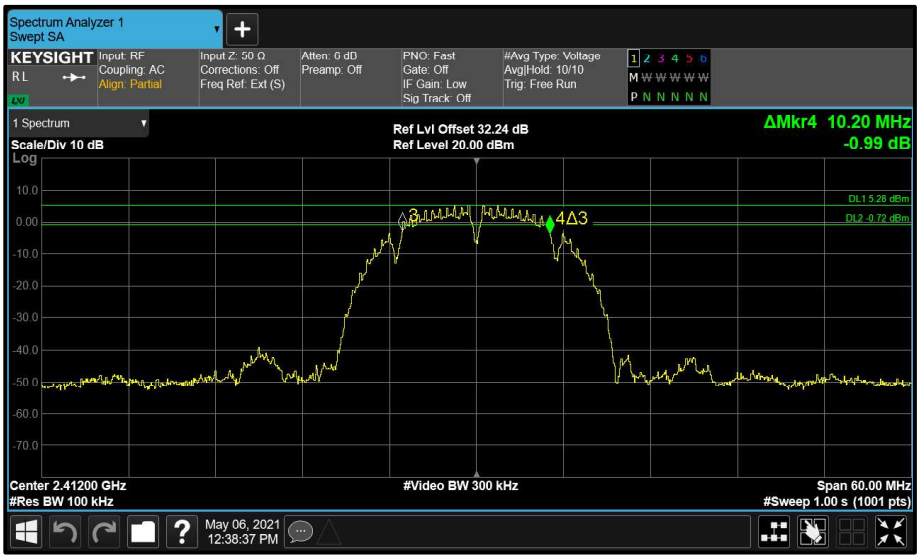

Figure 15 - Aux (B) 2412 MHz (CH1) 6 dB Bandwidth

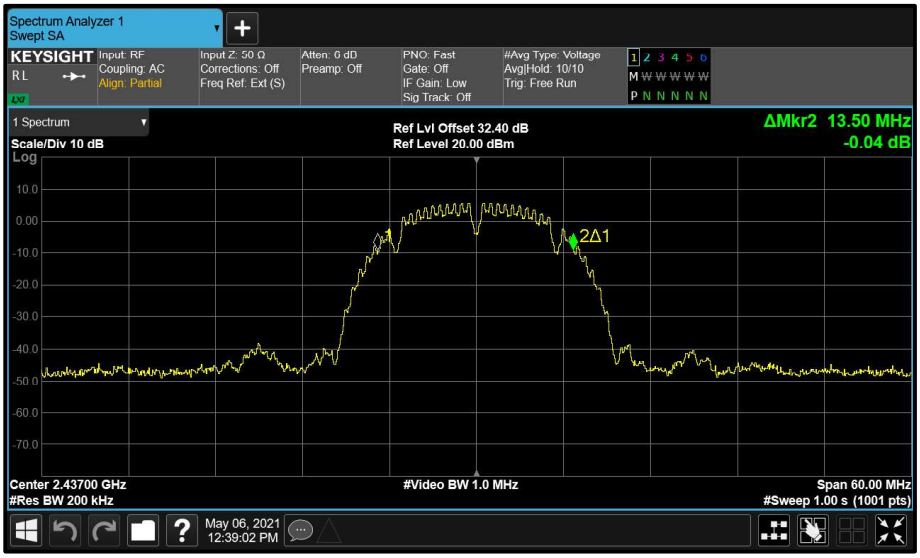

Figure 16 - Main (A) 2437 MHz (CH6) 99% Bandwidth

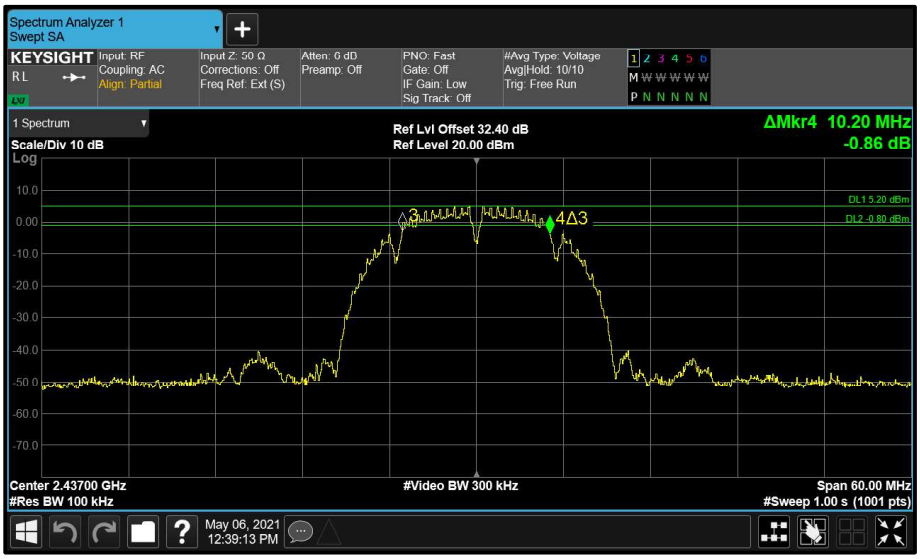

Figure 17 - Main (A) 2437 MHz (CH6) 6 dB Bandwidth

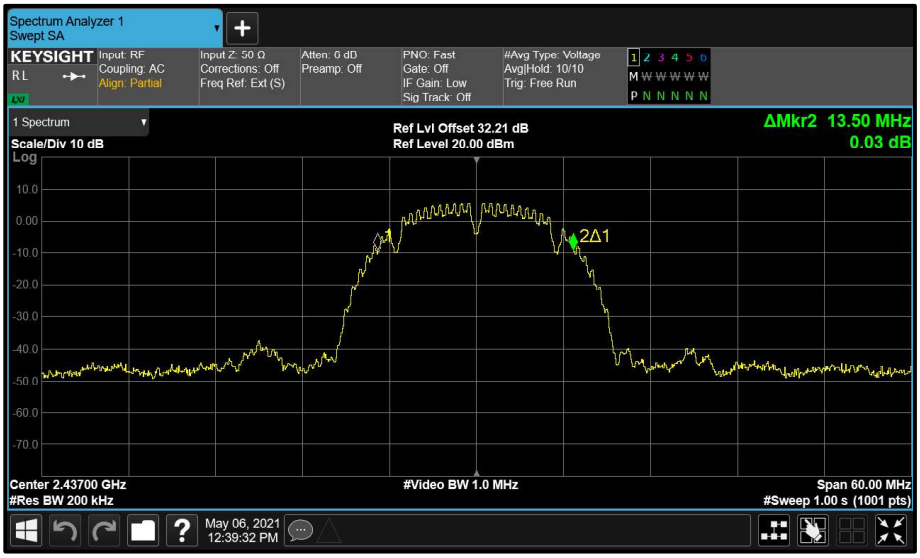

Figure 18 - Aux (B) 2437 MHz (CH6) 99% Bandwidth

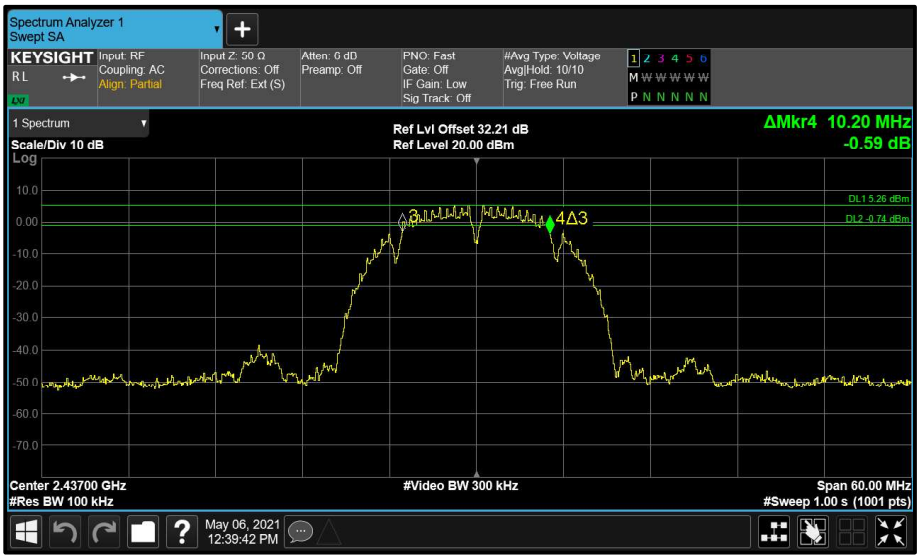

Figure 19 - Aux (B) 2437 MHz (CH6) 6 dB Bandwidth

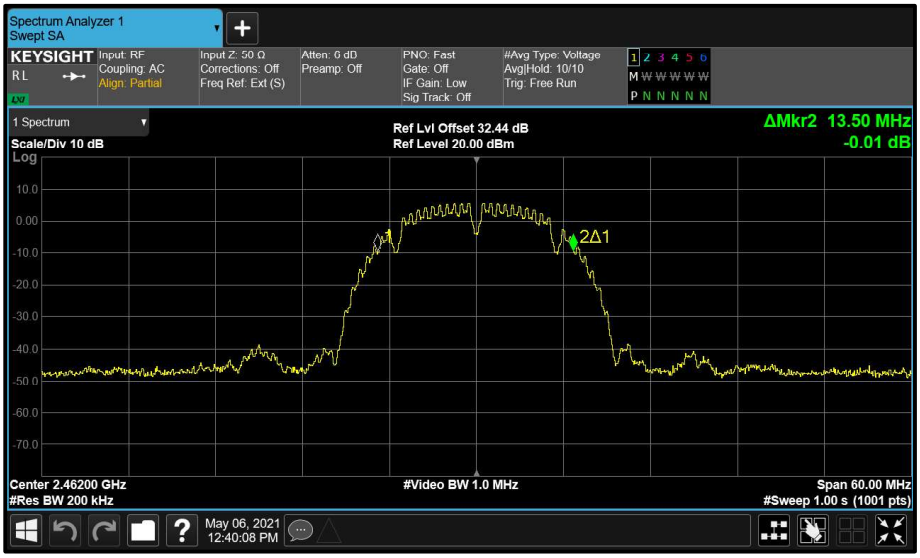

Figure 20 - Main (A) 2462 MHz (CH11) 99% Bandwidth

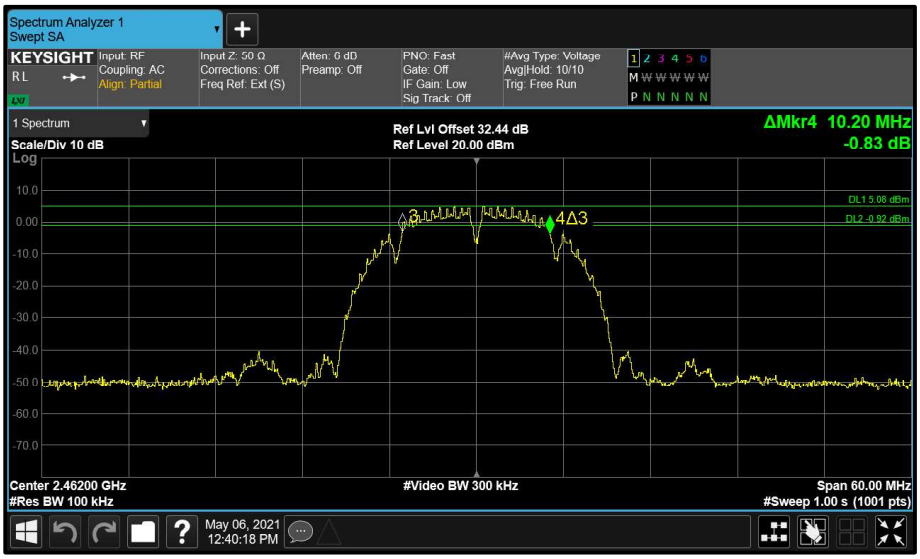

Figure 21 - Main (A) 2462 MHz (CH11) 6 dB Bandwidth

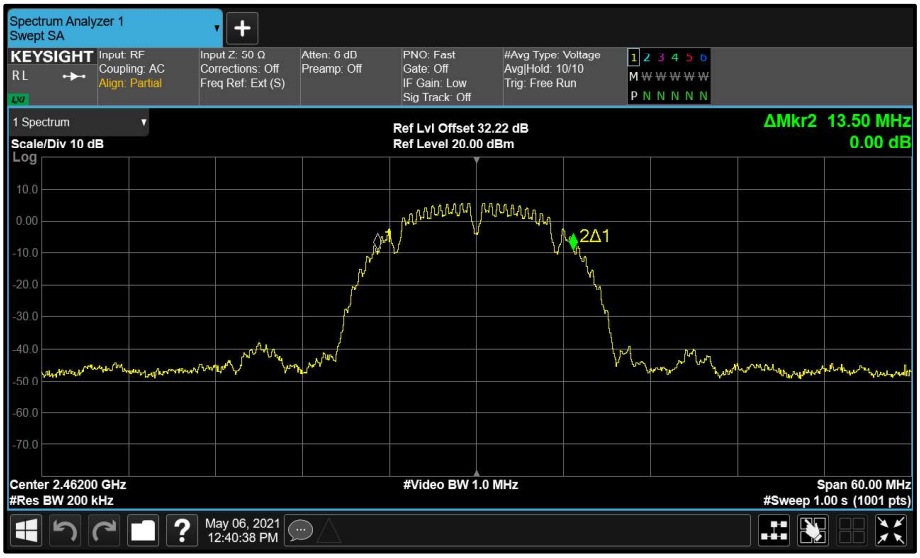

Figure 22 - Aux (B) 2462 MHz (CH11) 99% Bandwidth

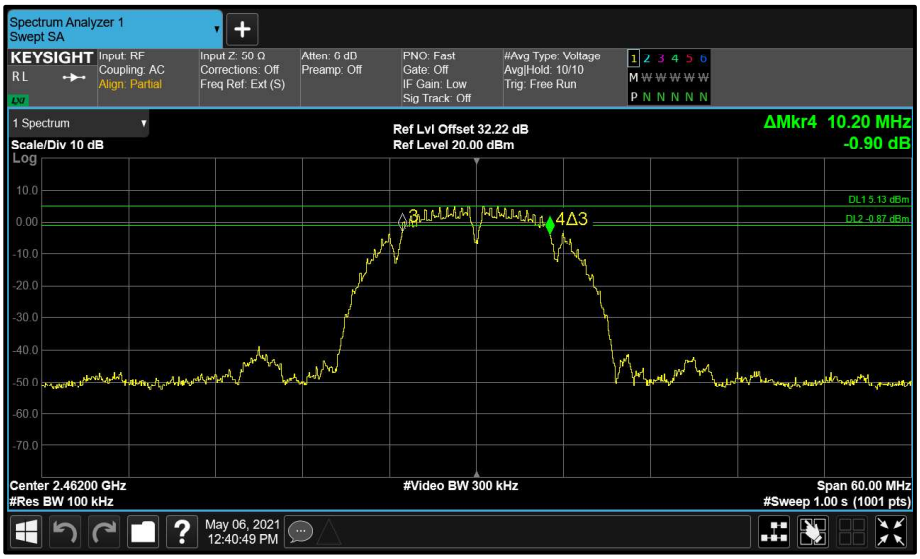

Figure 23 - Aux (B) 2462 MHz (CH11) 6 dB Bandwidth

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (a)(2) RSS-247 5.2 a)	Test Method(s):	C63.10 6.9.3 C63.10 11.8.1
Additional Reference(s):	-		

DUT Configuration			
Mode:	802.11g	Duty Cycle (%):	-
Data Rate:	6 Mbps	DCCF (dB):	-
Antenna Configuration:	Spatial Diversity	Peak Antenna Gain (dBi):	-
Active Port(s):	A+B (Main + Aux)	Active Chain(s):	1+2

Test Frequency (MHz)	6 dB Bandwidth (MHz)					Limit (kHz)
	A	B	C	D	Minimum	
2412	16.440	16.440	-	-	16.440	≥500.0
2437	16.440	16.440	-	-	16.440	≥500.0
2462	16.440	16.440	-	-	16.440	≥500.0

Table 29 - 6 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)					Limit (kHz)
	A	B	C	D	Minimum	
2412	16.620	16.680	-	-	16.620	-
2437	16.620	16.680	-	-	16.620	-
2462	16.620	16.680	-	-	16.620	-

Table 30 - 99% Bandwidth Results

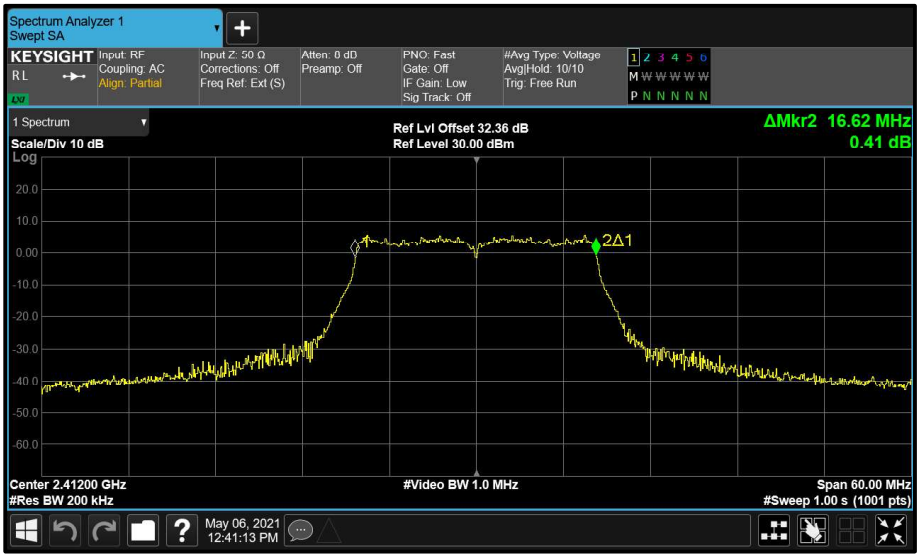

Figure 24 - Main (A) 2412 MHz (CH1) 99% Bandwidth

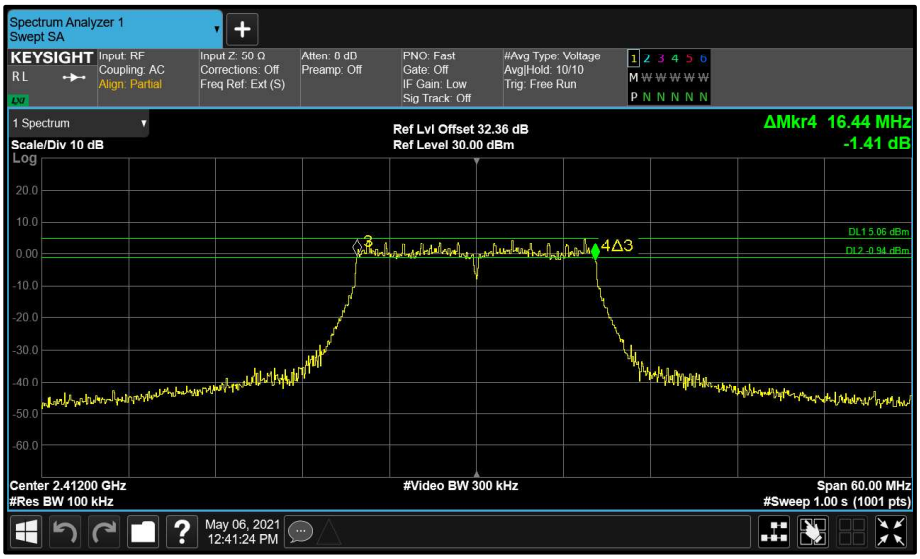

Figure 25 - Main (A) 2412 MHz (CH1) 6 dB Bandwidth

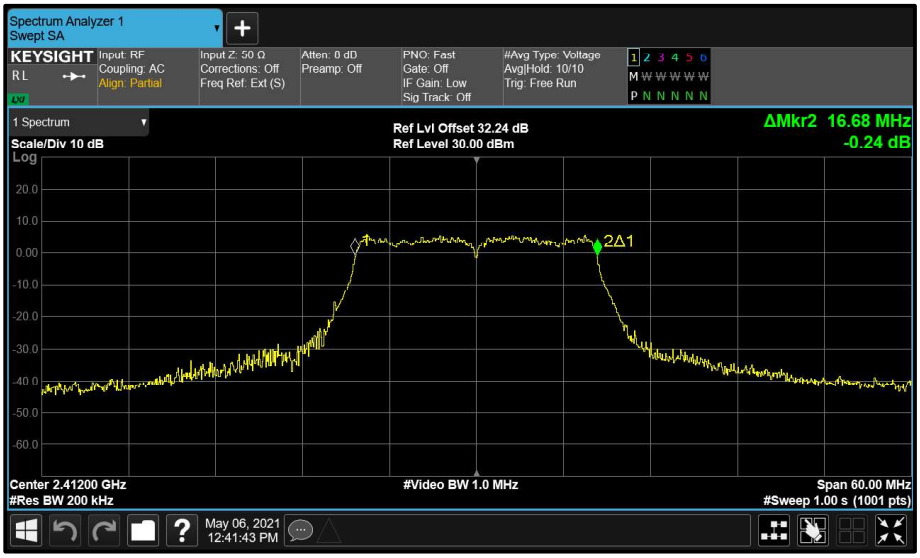

Figure 26 - Aux (B) 2412 MHz (CH1) 99% Bandwidth

Figure 27 - Aux (B) 2412 MHz (CH1) 6 dB Bandwidth

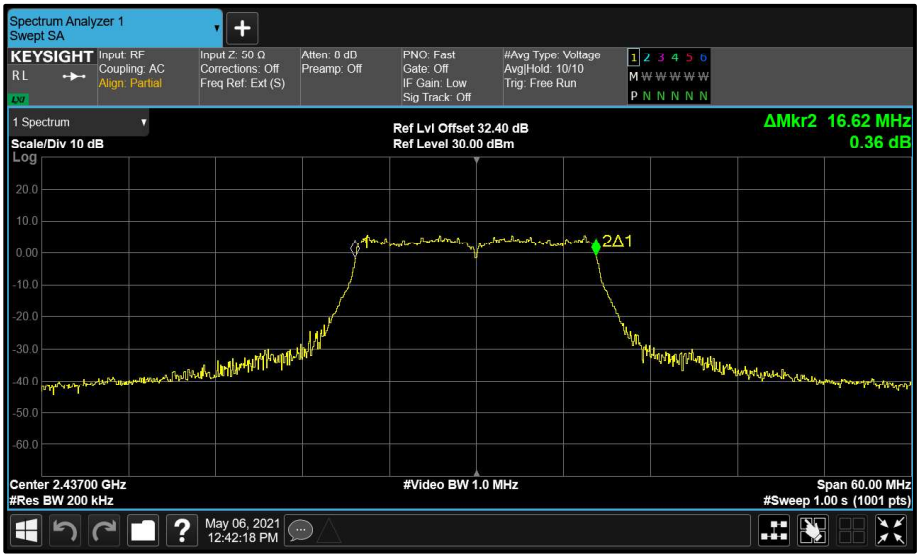

Figure 28 - Main (A) 2437 MHz (CH6) 99% Bandwidth

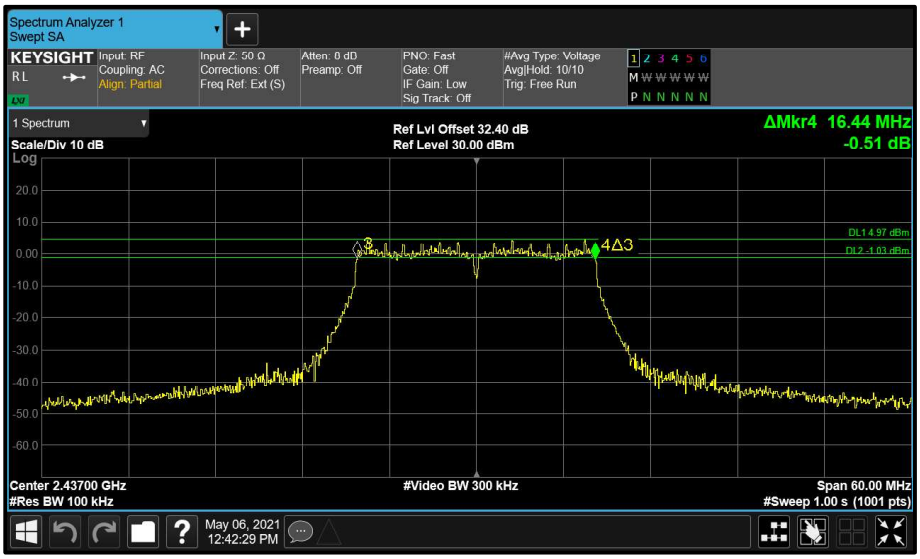

Figure 29 - Main (A) 2437 MHz (CH6) 6 dB Bandwidth

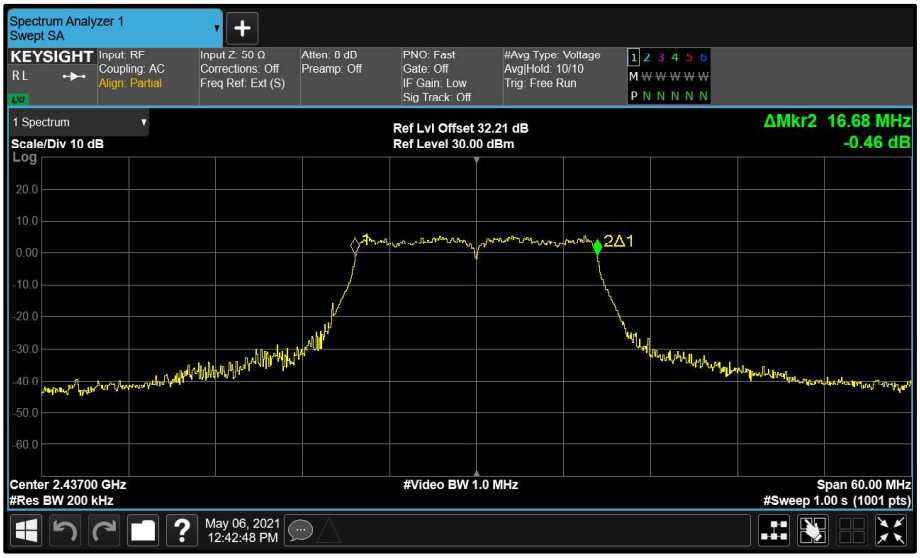

Figure 30 - Aux (B) 2437 MHz (CH6) 99% Bandwidth

Figure 31 - Aux (B) 2437 MHz (CH6) 6 dB Bandwidth

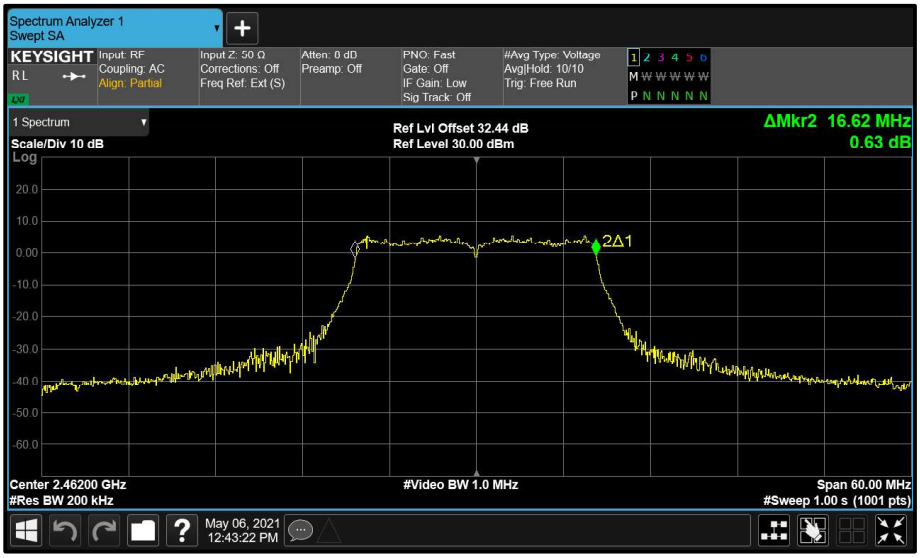

Figure 32 - Main (A) 2462 MHz (CH11) 99% Bandwidth

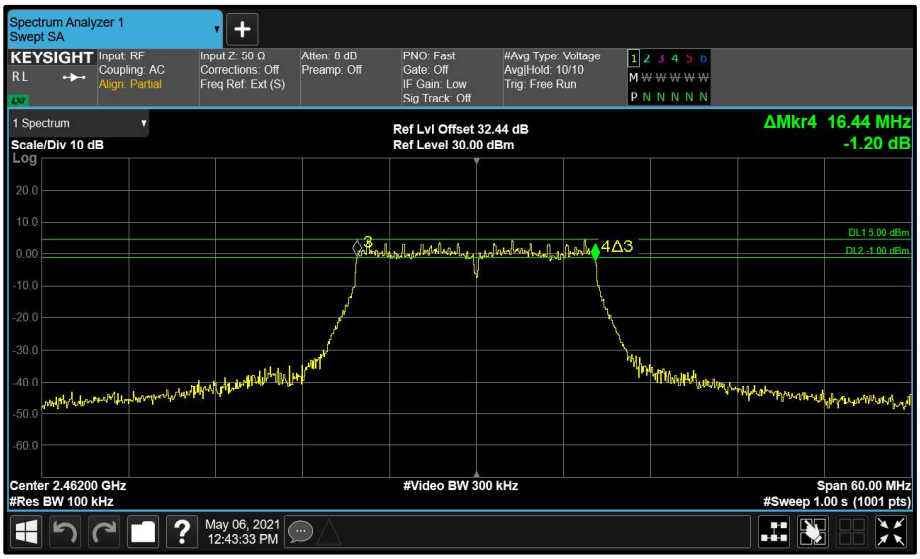

Figure 33 - Main (A) 2462 MHz (CH11) 6 dB Bandwidth

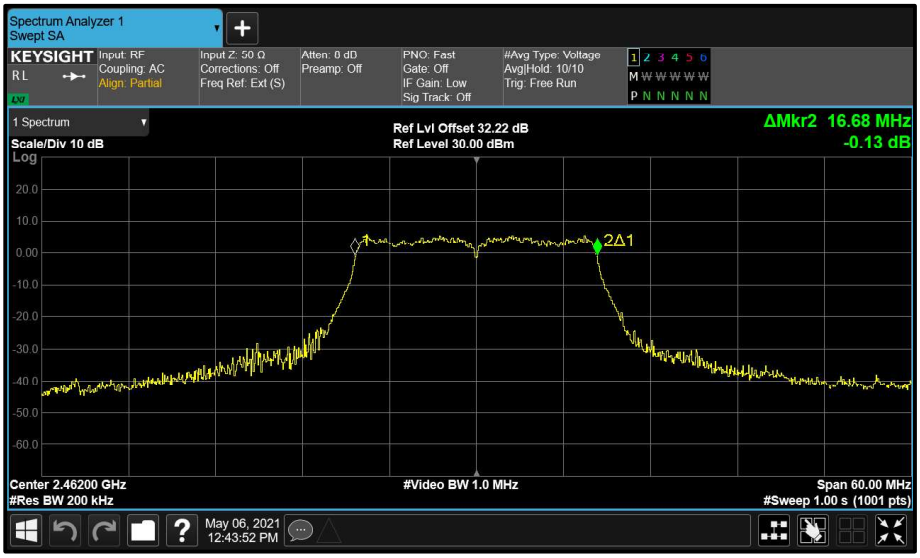

Figure 34 - Aux (B) 2462 MHz (CH11) 99% Bandwidth

Figure 35 - Aux (B) 2462 MHz (CH11) 6 dB Bandwidth

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (a)(2) RSS-247 5.2 a)	Test Method(s):	C63.10 6.9.3 C63.10 11.8.1
Additional Reference(s):	-		

DUT Configuration			
Mode:	802.11n HT20	Duty Cycle (%):	-
Modulation Coding Scheme:	MCS8	DCCF (dB):	-
Antenna Configuration:	Spatial Diversity	Peak Antenna Gain (dBi):	-
Active Port(s):	A+B (Main + Aux)	Active Chain(s):	1+2

Test Frequency (MHz)	6 dB Bandwidth (MHz)					Limit (kHz)
	A	B	C	D	Minimum	
2412	17.700	17.640	-	-	17.640	≥500.0
2437	17.640	17.640	-	-	17.640	≥500.0
2462	17.640	17.640	-	-	17.640	≥500.0

Table 31 - 6 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)					Limit (kHz)
	A	B	C	D	Minimum	
2412	17.640	17.640	-	-	17.640	-
2437	17.640	17.640	-	-	17.640	-
2462	17.640	17.640	-	-	17.640	-

Table 32 - 99% Bandwidth Results

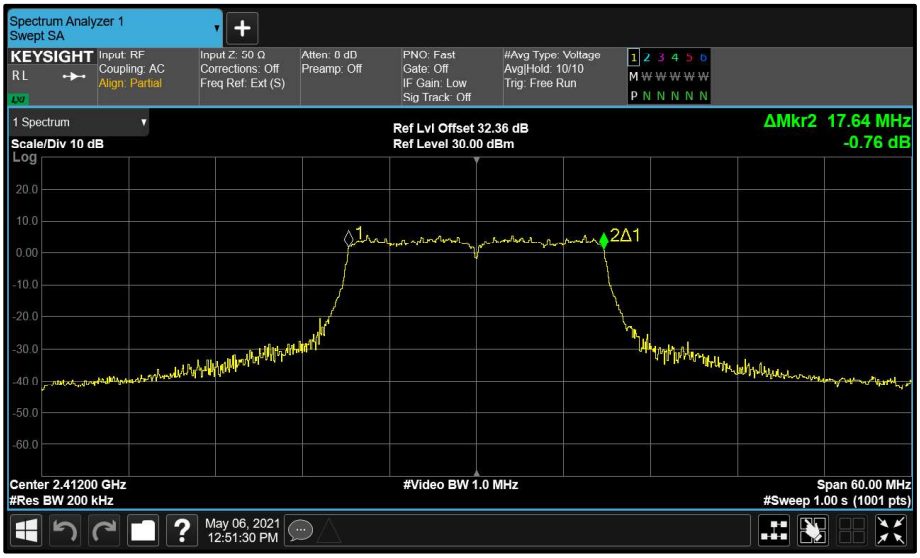

Figure 36 - Main (A) 2412 MHz (CH1) 99% Bandwidth

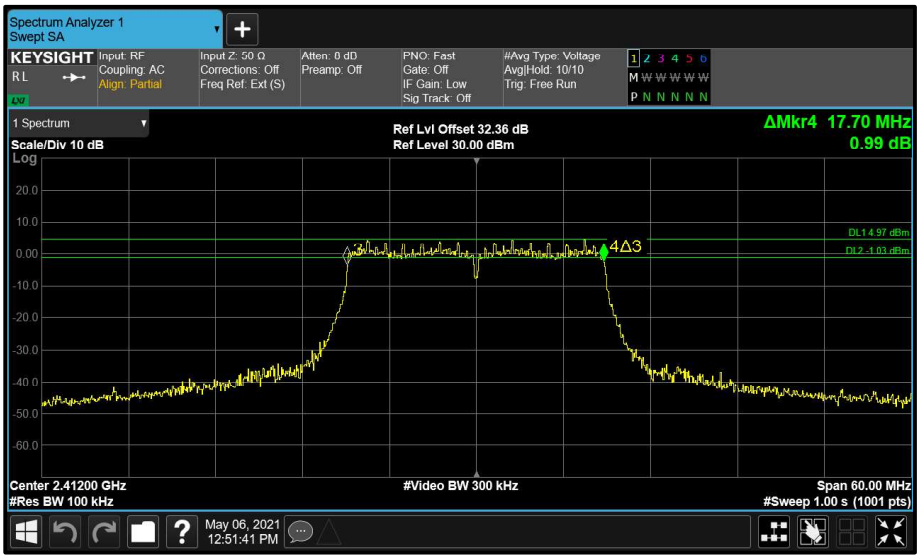

Figure 37 - Main (A) 2412 MHz (CH1) 6 dB Bandwidth

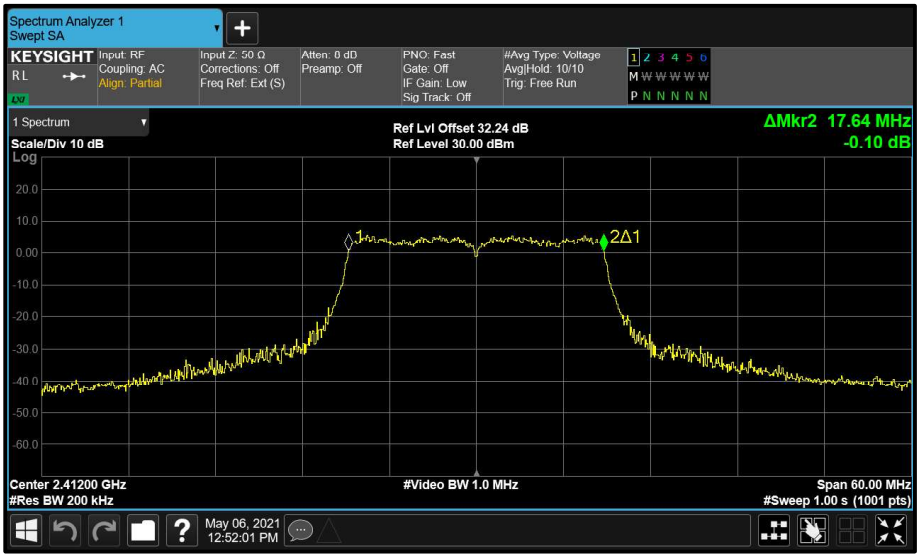

Figure 38 - Aux (B) 2412 MHz (CH1) 99% Bandwidth

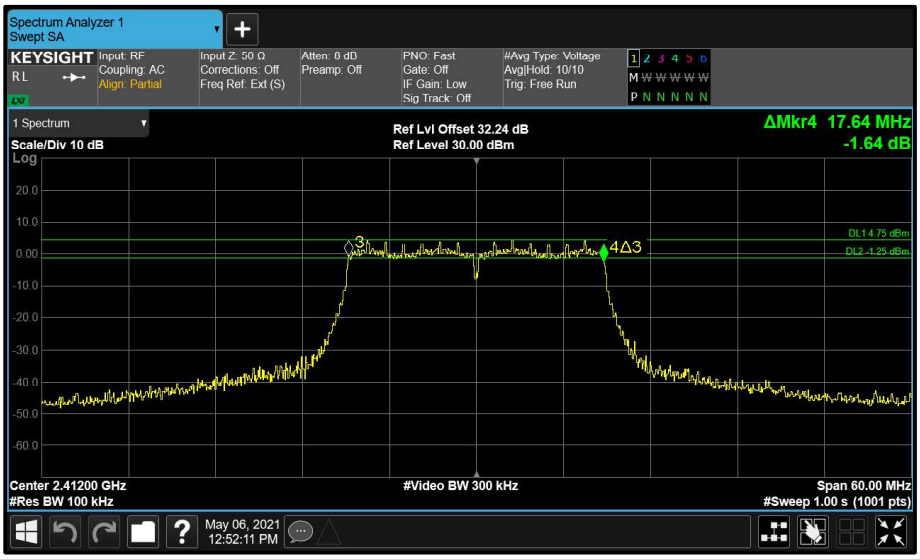

Figure 39 - Aux (B) 2412 MHz (CH1) 6 dB Bandwidth

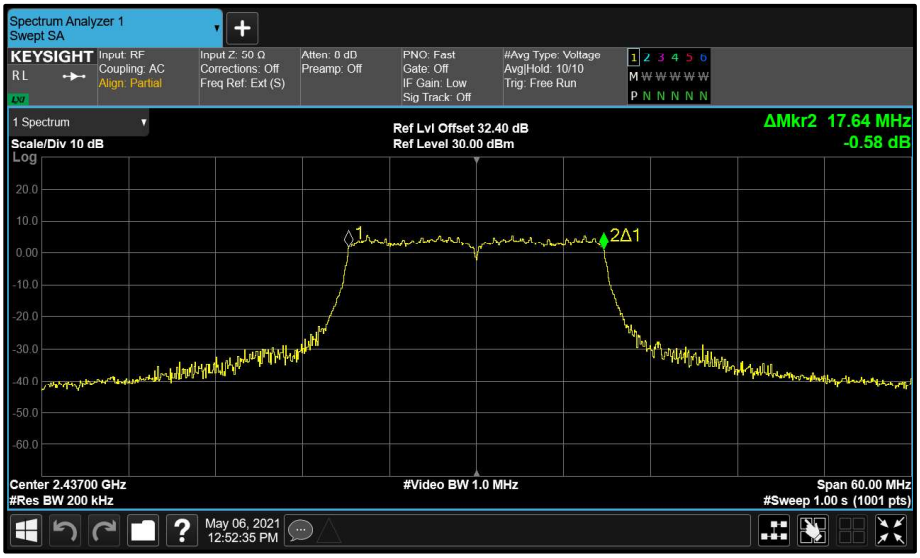

Figure 40 - Main (A) 2437 MHz (CH6) 99% Bandwidth

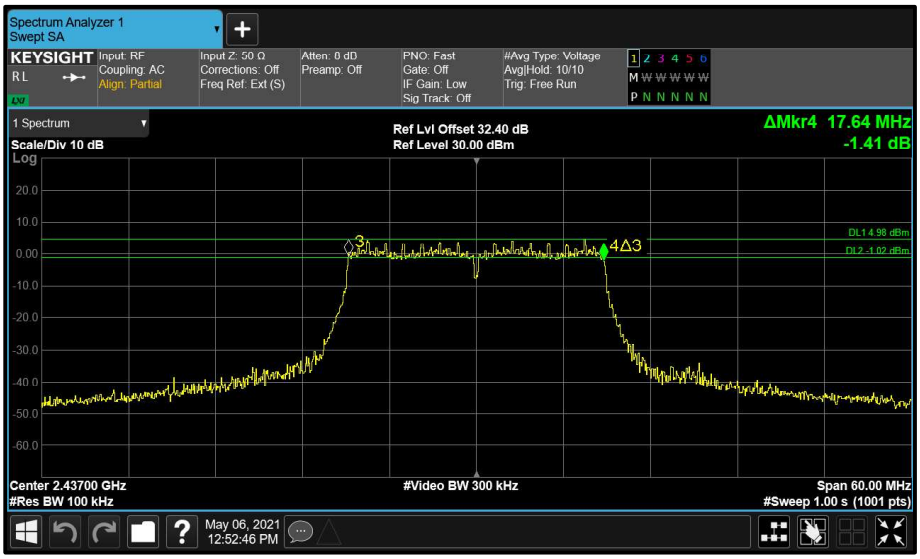

Figure 41 - Main (A) 2437 MHz (CH6) 6 dB Bandwidth

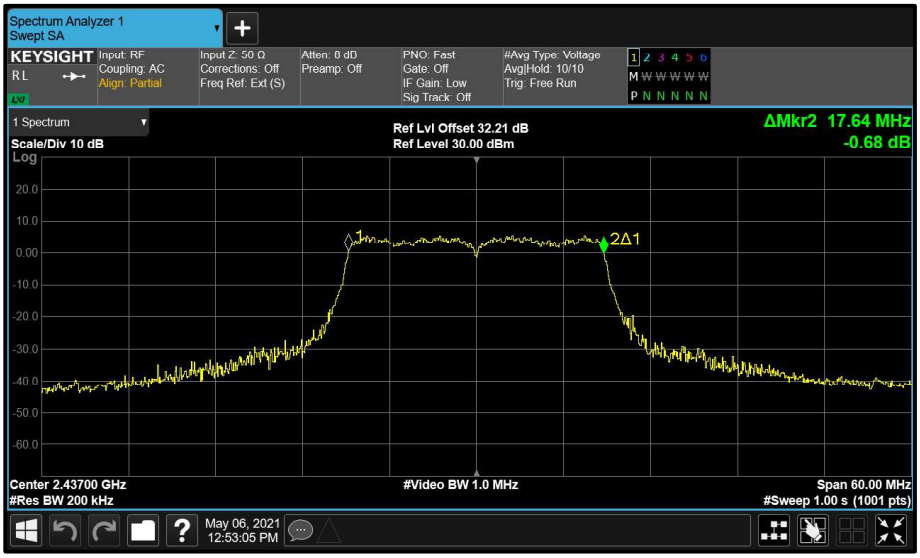

Figure 42 - Aux (B) 2437 MHz (CH6) 99% Bandwidth

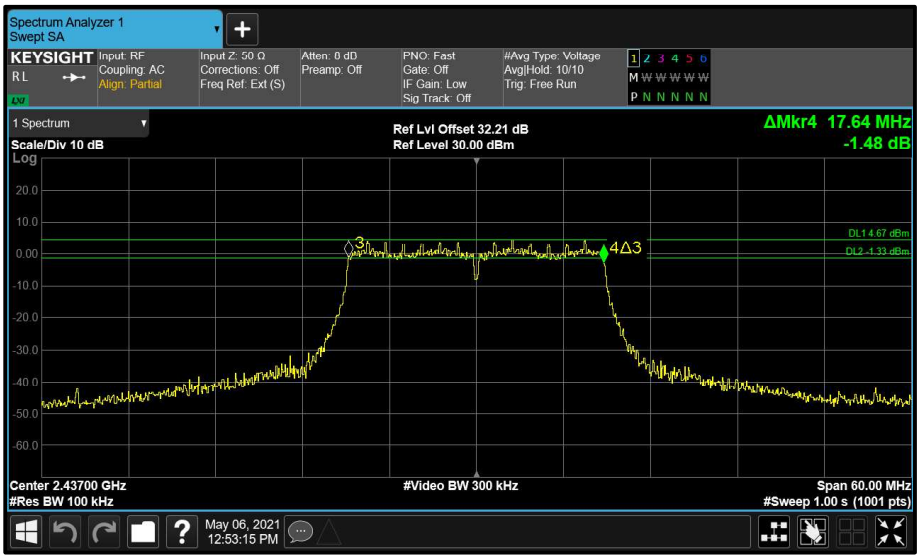

Figure 43 - Aux (B) 2437 MHz (CH6) 6 dB Bandwidth

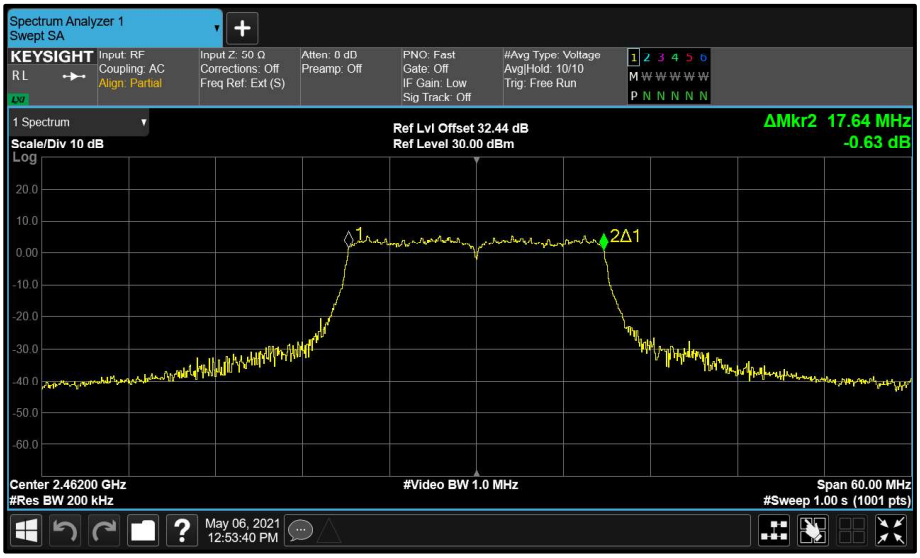

Figure 44 - Main (A) 2462 MHz (CH11) 99% Bandwidth

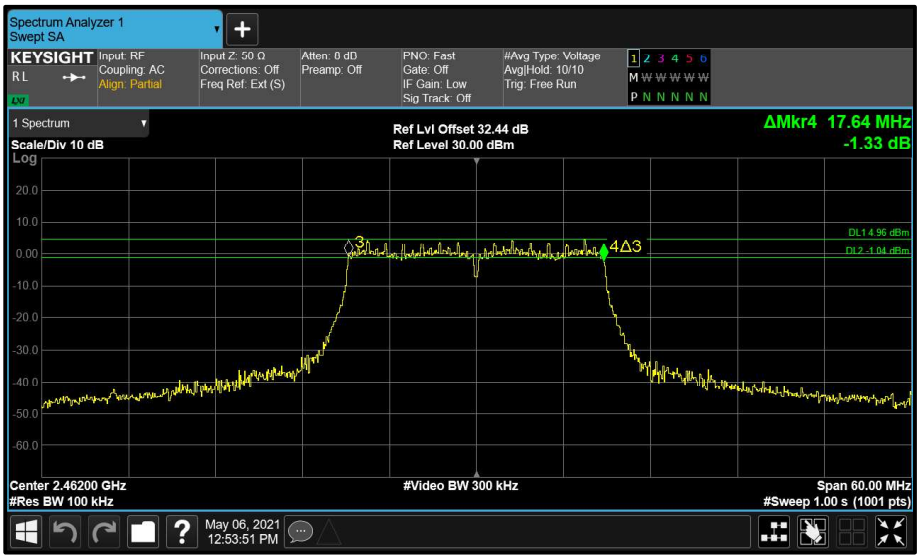

Figure 45 - Main (A) 2462 MHz (CH11) 6 dB Bandwidth

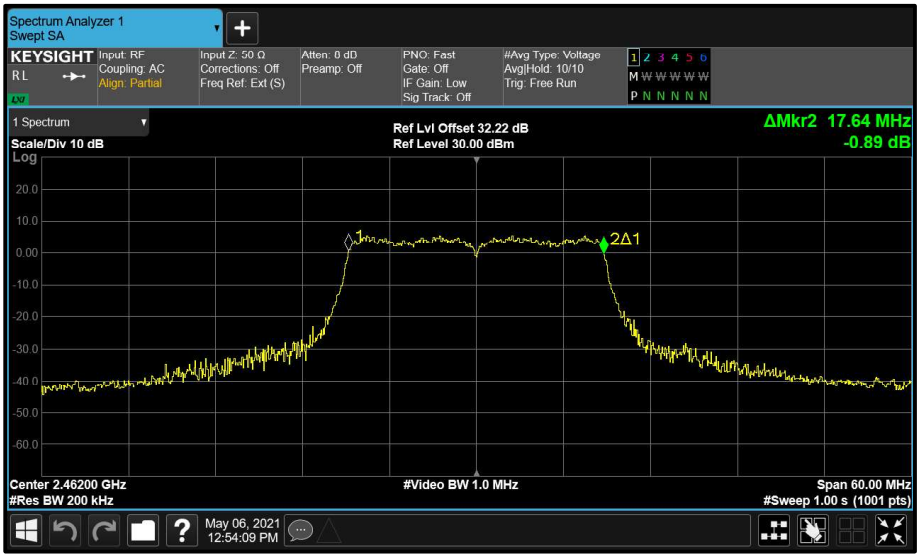

Figure 46 - Aux (B) 2462 MHz (CH11) 99% Bandwidth

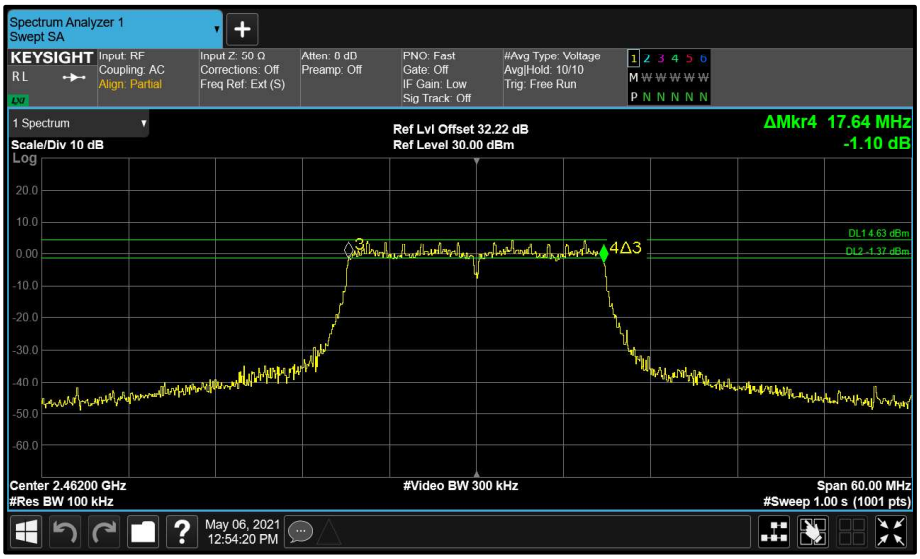

Figure 47 - Aux (B) 2462 MHz (CH11) 6 dB Bandwidth

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (a)(2) RSS-247 5.2 a)	Test Method(s):	C63.10 6.9.3 C63.10 11.8.1
Additional Reference(s):	-		

DUT Configuration			
Mode:	802.11n HT20	Duty Cycle (%):	-
Modulation Coding Scheme:	MCS0	DCCF (dB):	-
Antenna Configuration:	Spatial Diversity	Peak Antenna Gain (dBi):	-
Active Port(s):	A+B (Main + Aux)	Active Chain(s):	1+2

Test Frequency (MHz)	6 dB Bandwidth (MHz)					Limit (kHz)
	A	B	C	D	Minimum	
2412	17.640	17.640	-	-	17.640	≥500.0
2437	17.640	17.640	-	-	17.640	≥500.0
2462	17.640	17.700	-	-	17.640	≥500.0

Table 33 - 6 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)					Limit (kHz)
	A	B	C	D	Minimum	
2412	17.640	17.640	-	-	17.640	-
2437	17.640	17.640	-	-	17.640	-
2462	17.640	17.640	-	-	17.640	-

Table 34 - 99% Bandwidth Results

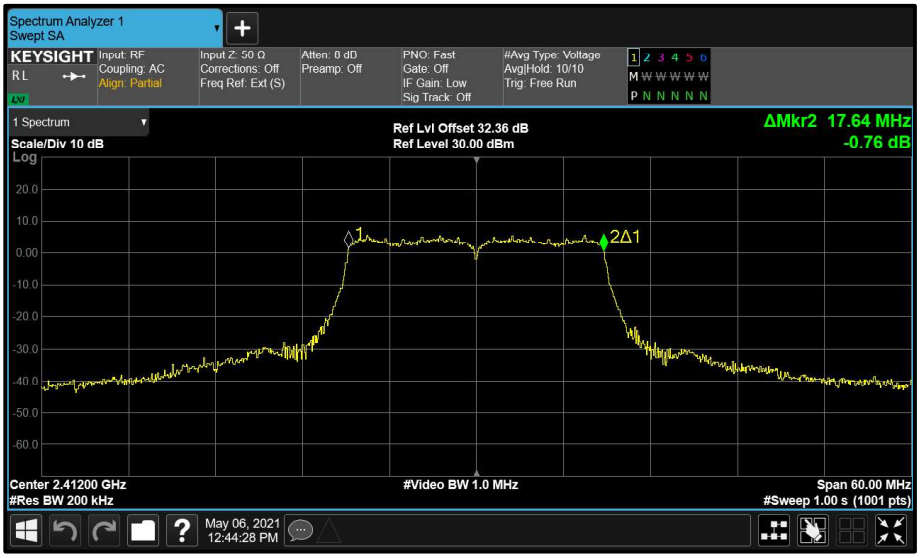

Figure 48 - Main (A) 2412 MHz (CH1) 99% Bandwidth

Figure 49 - Main (A) 2412 MHz (CH1) 6 dB Bandwidth

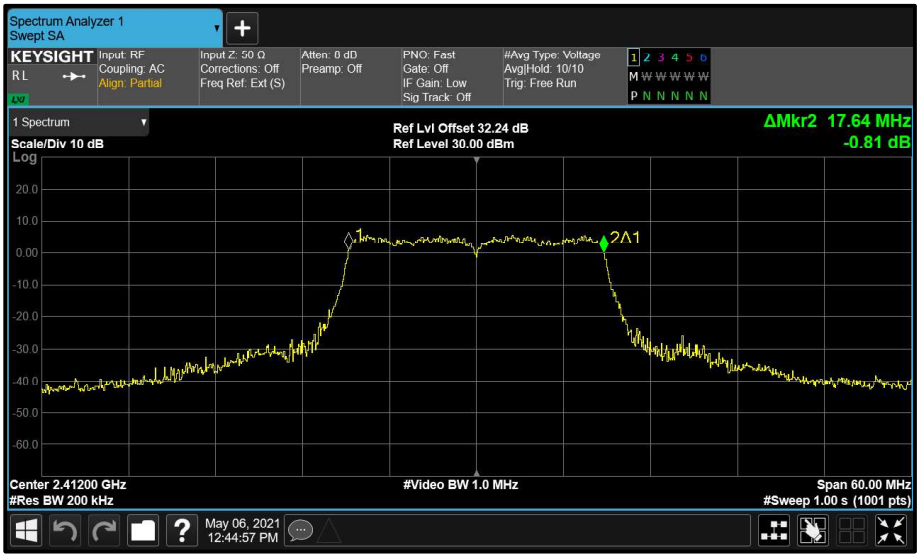

Figure 50 - Aux (B) 2412 MHz (CH1) 99% Bandwidth

Figure 51 - Aux (B) 2412 MHz (CH1) 6 dB Bandwidth

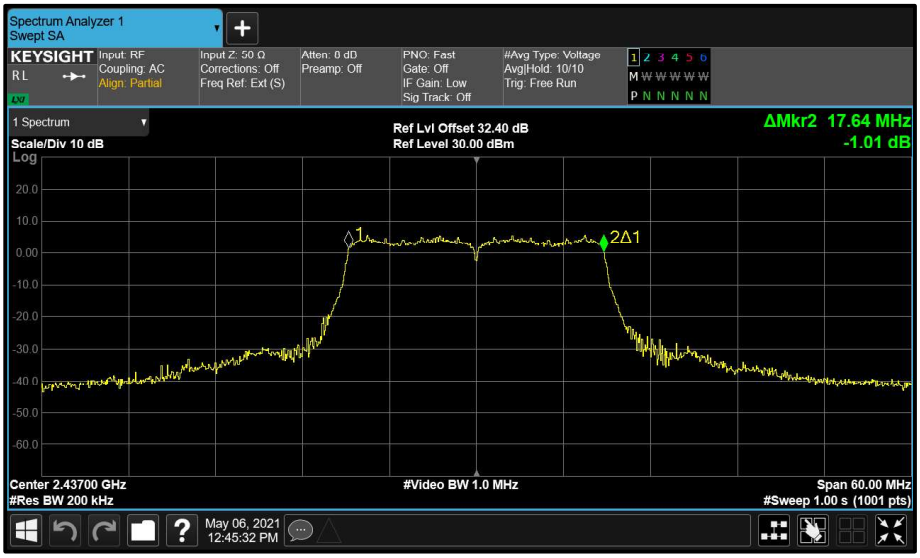

Figure 52 - Main (A) 2437 MHz (CH6) 99% Bandwidth

Figure 53 - Main (A) 2437 MHz (CH6) 6 dB Bandwidth

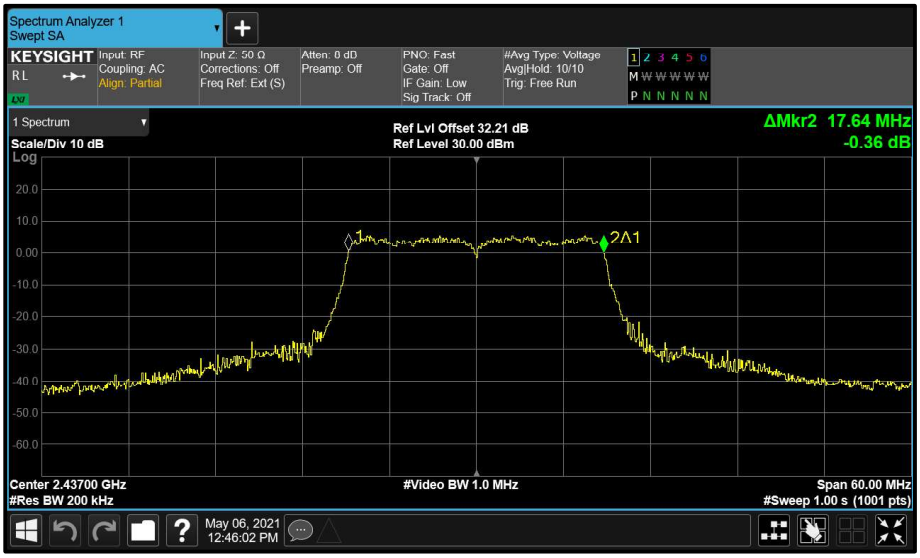

Figure 54 - Aux (B) 2437 MHz (CH6) 99% Bandwidth

Figure 55 - Aux (B) 2437 MHz (CH6) 6 dB Bandwidth

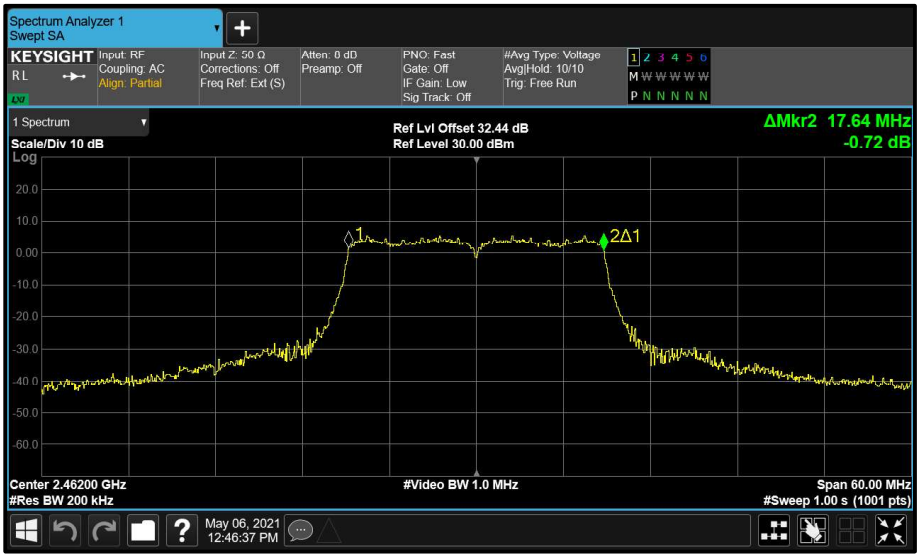

Figure 56 - Main (A) 2462 MHz (CH11) 99% Bandwidth

Figure 57 - Main (A) 2462 MHz (CH11) 6 dB Bandwidth

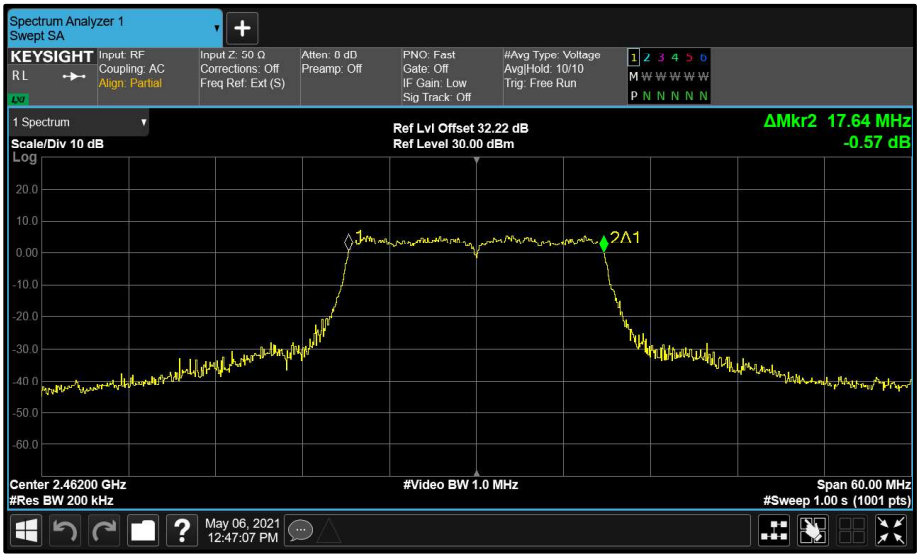

Figure 58 - Aux (B) 2462 MHz (CH11) 99% Bandwidth

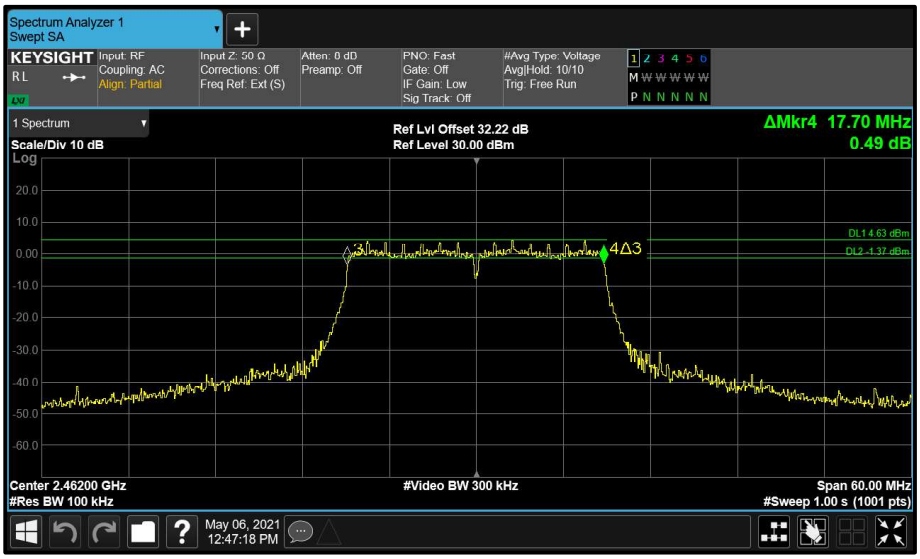

Figure 59 - Aux (B) 2462 MHz (CH11) 6 dB Bandwidth

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (a)(2) RSS-247 5.2 a)	Test Method(s):	C63.10 6.9.3 C63.10 11.8.1
Additional Reference(s):	-		

DUT Configuration			
Mode:	802.11n HT40	Duty Cycle (%):	-
Modulation Coding Scheme:	MCS0	DCCF (dB):	-
Antenna Configuration:	Spatial Diversity	Peak Antenna Gain (dBi):	-
Active Port(s):	A+B (Main + Aux)	Active Chain(s):	1+2

Test Frequency (MHz)	6 dB Bandwidth (MHz)					Limit (kHz)
	A	B	C	D	Minimum	
2422	36.200	35.700	-	-	35.700	≥500.0
2437	35.500	35.600	-	-	35.500	≥500.0
2452	35.900	35.800	-	-	35.800	≥500.0

Table 35 - 6 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)					Limit (kHz)
	A	B	C	D	Minimum	
2422	36.200	36.300	-	-	36.200	-
2437	36.200	36.300	-	-	36.200	-
2452	36.200	36.400	-	-	36.200	-

Table 36 - 99% Bandwidth Results

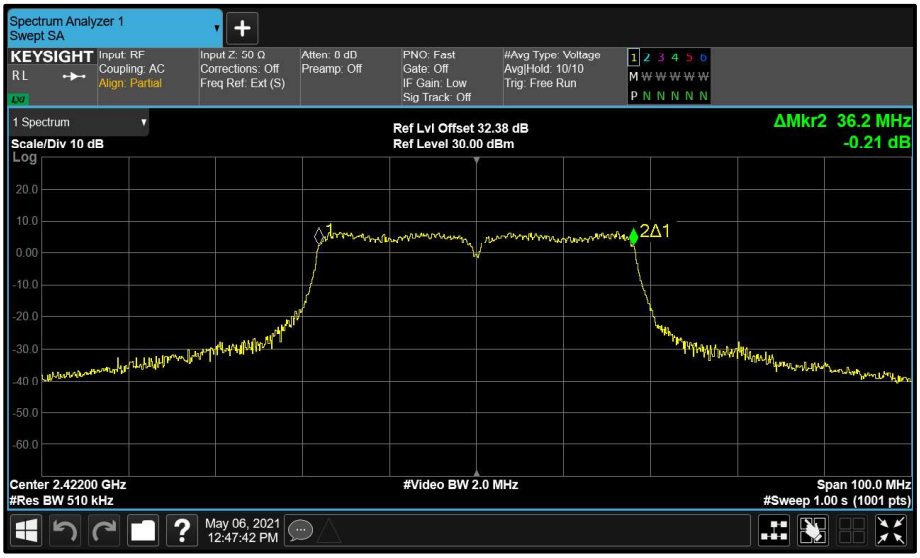

Figure 60 - Main (A) 2422 MHz (CH3) 99% Bandwidth

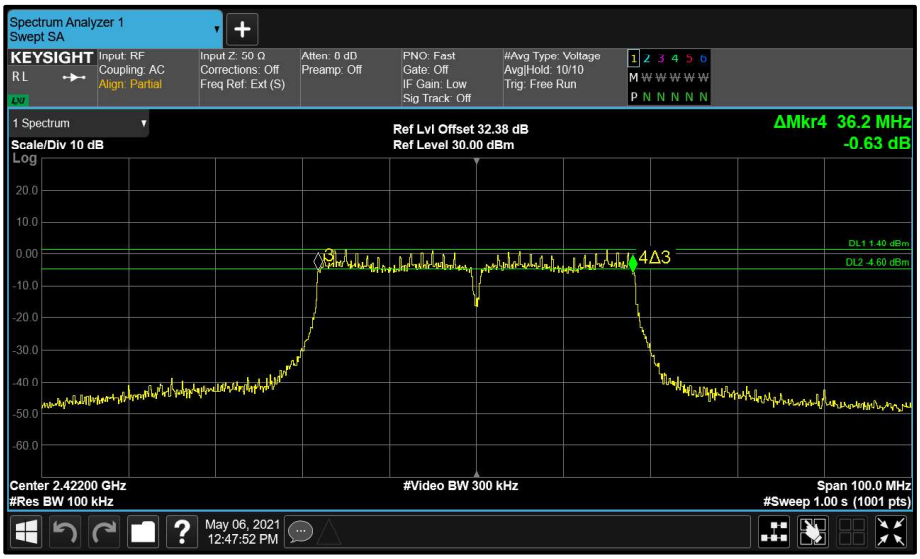

Figure 61 - Main (A) 2422 MHz (CH3) 6 dB Bandwidth

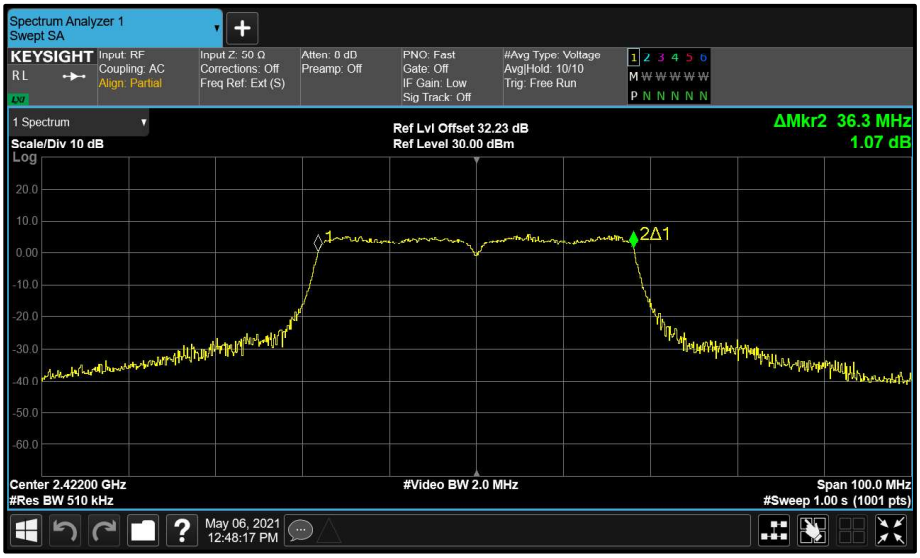

Figure 62 - Aux (B) 2422 MHz (CH3) 99% Bandwidth

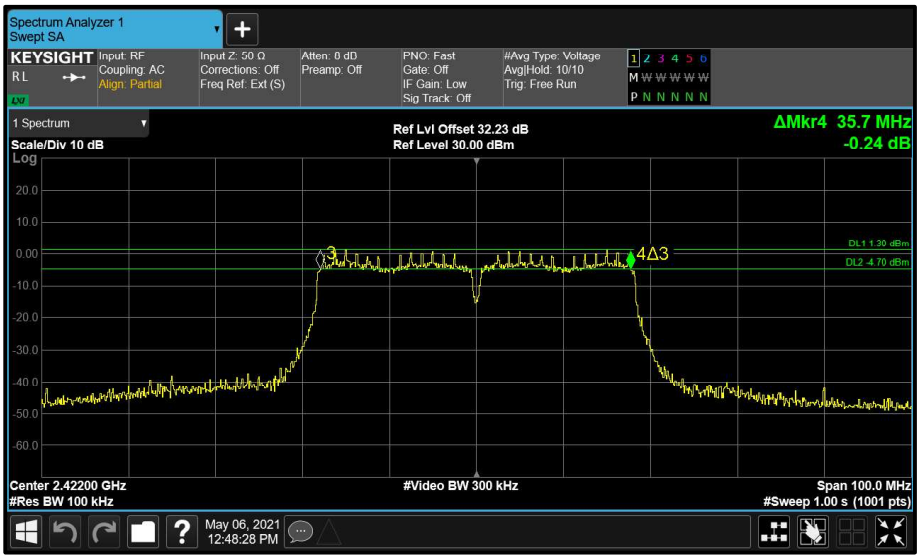

Figure 63 - Aux (B) 2422 MHz (CH3) 6 dB Bandwidth

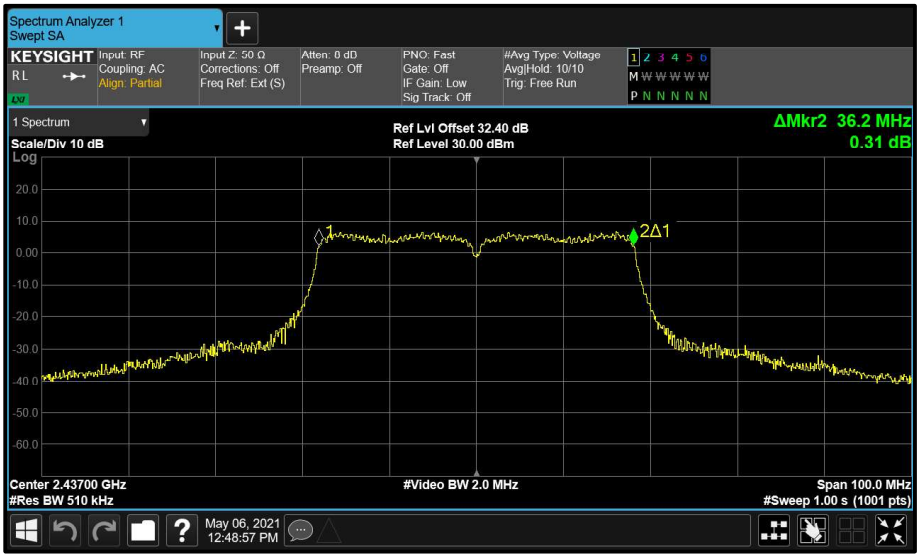

Figure 64 - Main (A) 2437 MHz (CH6) 99% Bandwidth

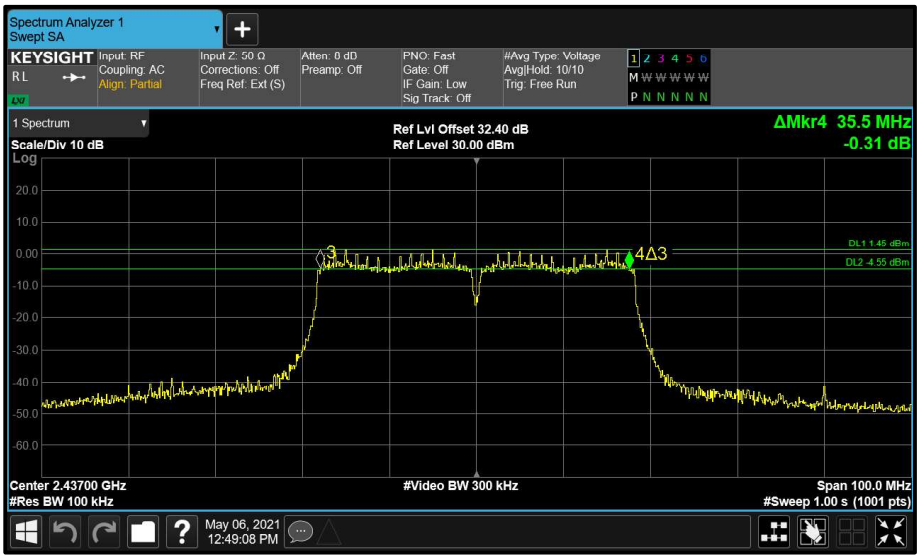

Figure 65 - Main (A) 2437 MHz (CH6) 6 dB Bandwidth

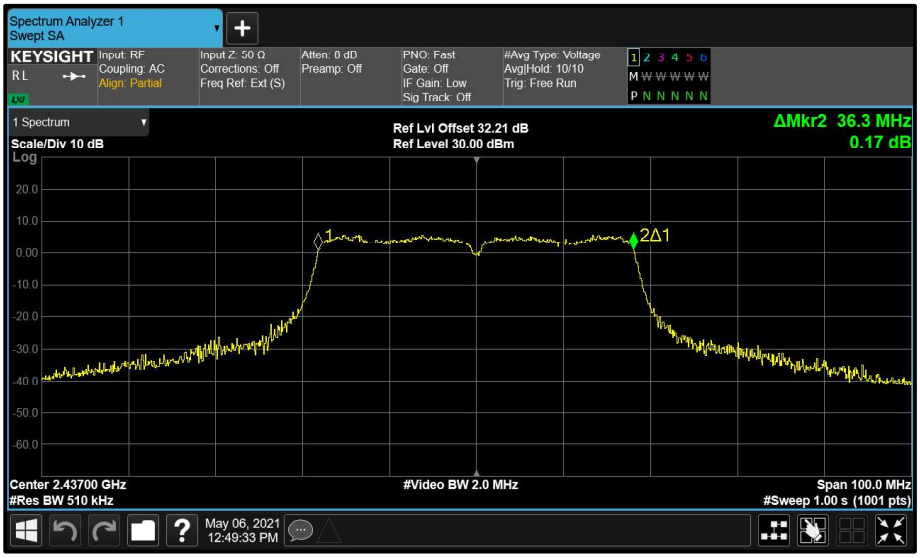

Figure 66 - Aux (B) 2437 MHz (CH6) 99% Bandwidth

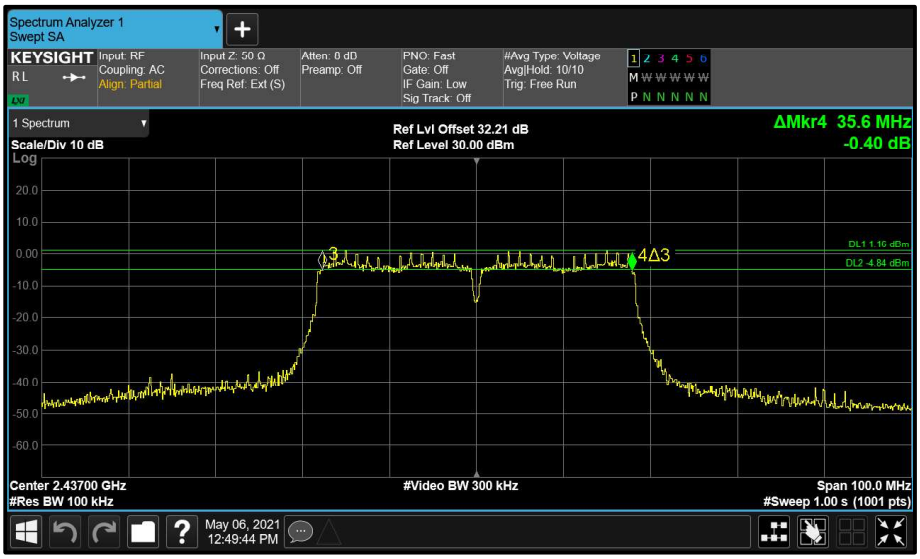

Figure 67 - Aux (B) 2437 MHz (CH6) 6 dB Bandwidth

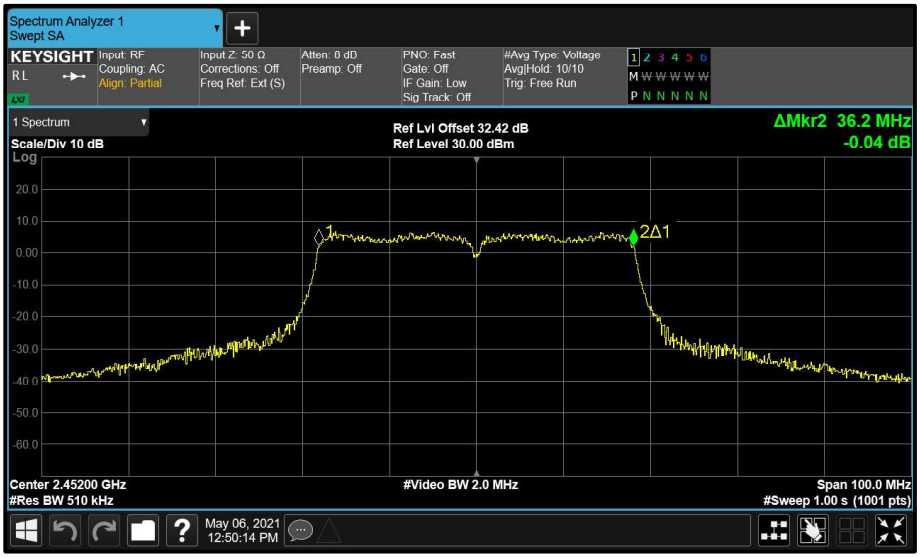

Figure 68 - Main (A) 2452 MHz (CH9) 99% Bandwidth

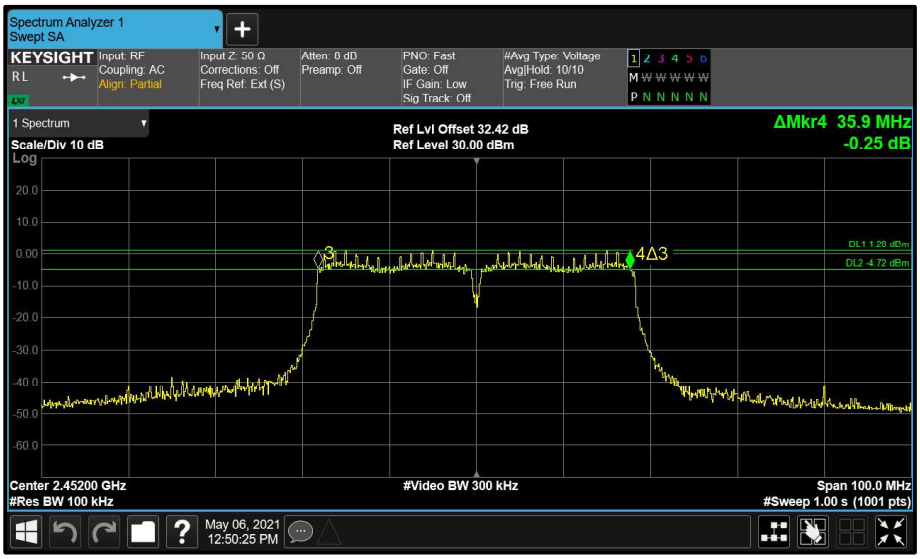

Figure 69 - Main (A) 2452 MHz (CH9) 6 dB Bandwidth

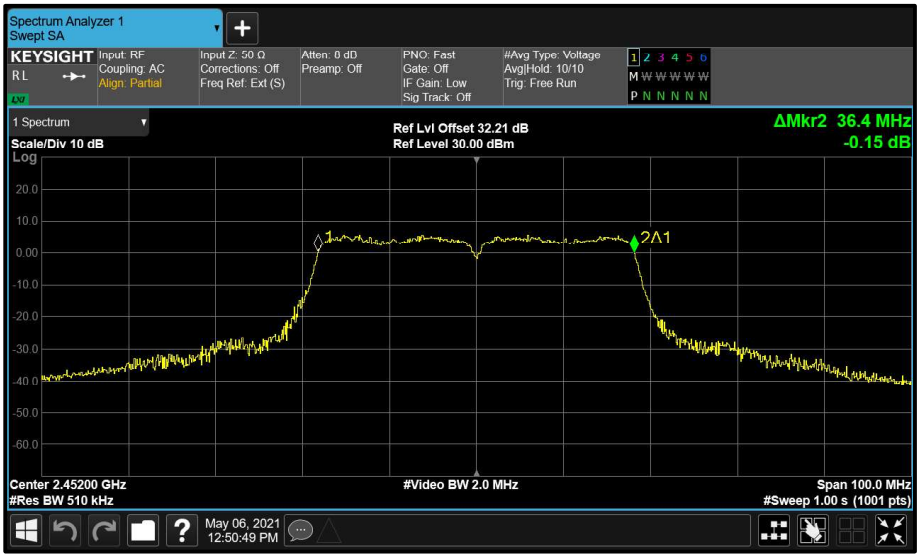

Figure 70 - Aux (B) 2452 MHz (CH9) 99% Bandwidth

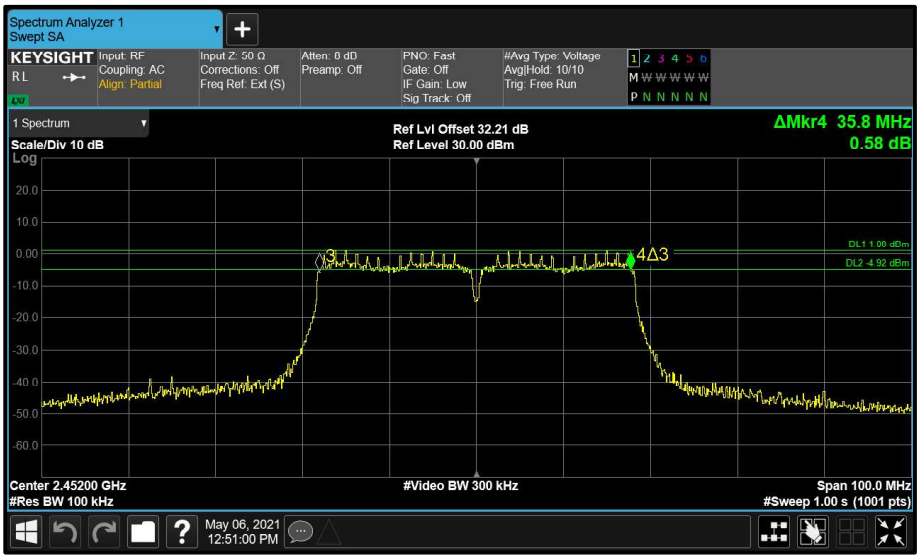

Figure 71 - Aux (B) 2452 MHz (CH9) 6 dB Bandwidth

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (a)(2) RSS-247 5.2 a)	Test Method(s):	C63.10 6.9.3 C63.10 11.8.1
Additional Reference(s):	-		

DUT Configuration			
Mode:	802.11n HT40	Duty Cycle (%):	-
Modulation Coding Scheme:	MCS8	DCCF (dB):	-
Antenna Configuration:	Spatial Diversity	Peak Antenna Gain (dBi):	-
Active Port(s):	A+B (Main + Aux)	Active Chain(s):	1+2

Test Frequency (MHz)	6 dB Bandwidth (MHz)					Limit (kHz)
	A	B	C	D	Minimum	
2422	36.000	35.800	-	-	35.800	≥500.0
2437	36.000	35.700	-	-	35.700	≥500.0
2452	36.000	35.800	-	-	35.800	≥500.0

Table 37 - 6 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)					Limit (kHz)
	A	B	C	D	Minimum	
2422	36.300	36.400	-	-	36.300	-
2437	36.200	36.400	-	-	36.200	-
2452	36.200	36.400	-	-	36.200	-

Table 38 - 99% Bandwidth Results

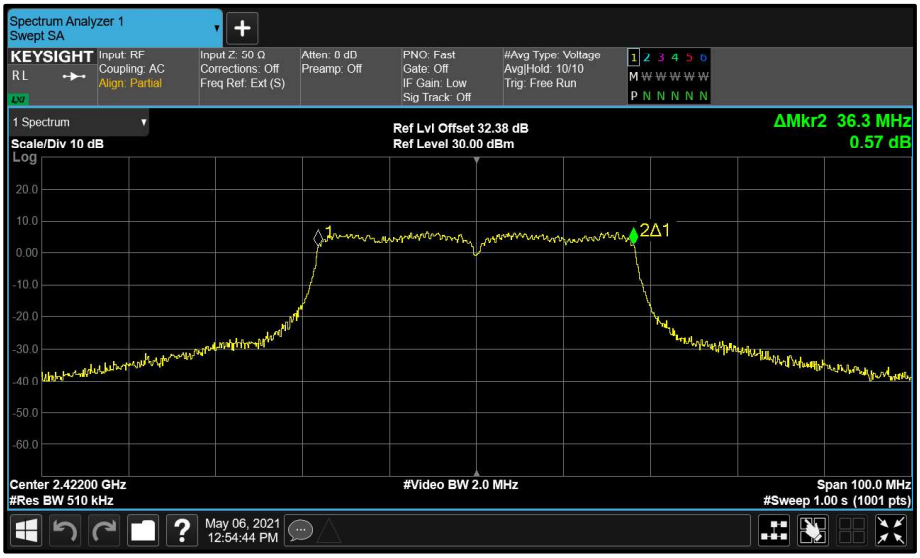

Figure 72 - Main (A) 2422 MHz (CH3) 99% Bandwidth

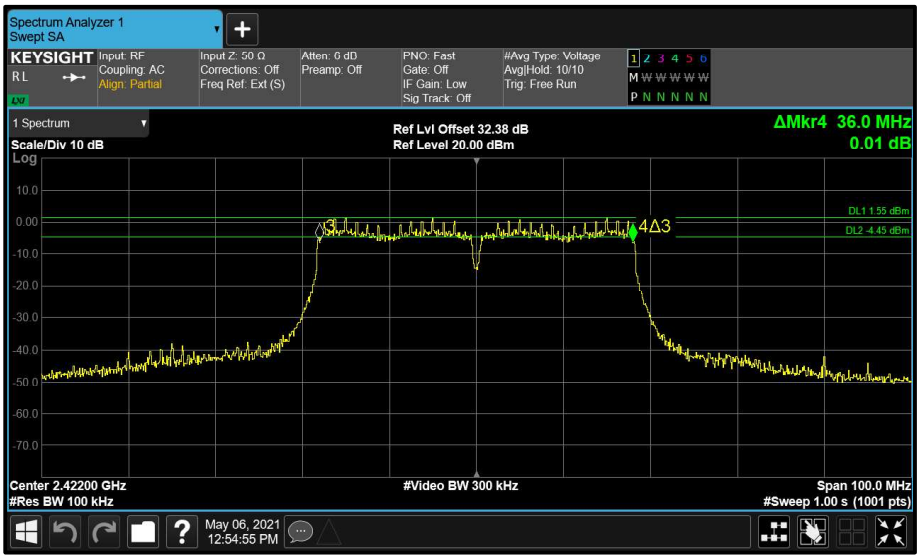

Figure 73 - Main (A) 2422 MHz (CH3) 6 dB Bandwidth