

FCC and ISED Test Report

Apple Inc
Model: A2348

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

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

FCC ID: BCGA2348

IC: 579C-A2348

COMMERCIAL-IN-CONFIDENCE

Document 75949235-10 Issue 01



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SIGNATURE

NAME	JOB TITLE	RESPONSIBLE FOR	ISSUE DATE
N Rousell	Senior Engineer	Authorised Signatory	14 October 2020

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	Mehadi Choudhury	14 October 2020	
Testing	Faisal Malyar	14 October 2020	
Testing	Jaiyanth Balendrarajah	14 October 2020	
Testing	Mohammad Malik	14 October 2020	
Testing	Ahmad Javid	14 October 2020	
Testing	Liang Tian	14 October 2020	

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: 2019, ISED RSS-247: Issue 2 (02-2017) and ISED RSS-GEN: Issue 5 (04-2018) + A1 (03-2019) for the tests detailed in section 1.3.



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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	14-October-2020

Table 1

1.2 Introduction

Applicant	Apple Inc
Manufacturer	Apple Inc
Model Number(s)	A2348
Serial Number(s)	C07D100W02H7 and C07D100D02DH
Hardware Version(s)	REV1.0
Software Version(s)	20W102770t
Number of Samples Tested	2
Test Specification/Issue/Date	FCC 47 CFR Part 15: 2019 ISED RSS-247 Issue 2 (02-2017) ISED RSS-GEN: Issue 5 (04-2018) + A1 (03-2019)
Order Number	0540205400
Date	07-April-2020
Date of Receipt of EUT	03-July-2020 & 17-August-2020
Start of Test	18-July-2020
Finish of Test	01-October-2020
Name of Engineer(s)	Mehadi Choudhury, Faisal Malyar, Jaiyanth Balendrarajah, Mohammad Malik, Ahmad Javid and Liang Tian
Related Document(s)	ANSI C63.10 (2013) ANSI C63.4 (2015) 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, ISSED RSS-247 and ISSED 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 Bluetooth Low Energy (DTS)						
-	15.203	-	-	Antenna Requirement	N/T	The devices complies with the provisions of this section, as it uses a permanently attached antenna.
2.1	15.247 (a)(2)	5.2	6.7	Emission Bandwidth	Pass	
2.2	15.247 (b)	5.4	6.12	Maximum Conducted Output Power	Pass	
2.3	15.247 (d)	5.5	-	Authorised Band Edges	Pass	
2.4	15.205	-	8.10	Restricted Band Edges	Pass	
2.5	15.247 (d) and 15.205	5.5	6.13	Spurious Radiated Emissions	Pass	
2.6	15.247 (e)	5.2	6.12	Power Spectral Density	Pass	

Table 2



1.4 Product Information

1.4.1 Technical Description

The Equipment Under Test (EUT) was a desktop computer with Bluetooth, Bluetooth Low Energy and 802.11 a/b/g/n/ac/ax capabilities in the 2.4 GHz and 5 GHz bands.

1.4.2 Test Set-up

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. In addition conducted measurements were performed on BT Core 2 which is a dedicated Bluetooth Core. Radiated tests were performed on all Cores. The EUT supports TxBF on Core 0 + Core 1 only.

Bluetooth Low Energy and HDR was assessed as a DTS system. The EUT supports Bluetooth Low Energy and HDR on the following mode of operations across it's antenna ports:

- BT Core 0 – SISO (iPA and ePA), TxBF (iPA and ePA)
- BT Core 1 – SISO (iPA and ePA), TxBF (iPA and ePA)
- BT Core 2 – SISO (iPA)

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.

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

1.4.3 Antenna Gain Table (2.4GHz Bluetooth)

Antenna Port	Frequency Range (MHz)	Peak Gain (dBi)	Conducted Cable Loss (dB)
Core 0	2400 to 2483.5	5.00	0.70
Core 1	2400 to 2483.5	0.25	0.70
Core 2	2400 to 2483.5	0	0.70

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: A2348, Serial Number: C07D100D02DH			
0	As supplied by the customer	Not Applicable	Not Applicable
Model: A2348, Serial Number: C07D100W02H7			
0	As supplied by the customer	Not Applicable	Not Applicable

Table 4

1.7 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 Bluetooth Low Energy (DTS)		
Emission Bandwidth	Mehadi Choudhury	UKAS
Maximum Conducted Output Power	Mehadi Choudhury	UKAS
Authorised Band Edges	Faisal Malyar, Jaiyanth Balendrarajah, Mohammad Malik, Ahmad Javid and Liang Tian	UKAS
Restricted Band Edges	Faisal Malyar, Jaiyanth Balendrarajah, Mohammad Malik, Ahmad Javid and Liang Tian	UKAS
Spurious Radiated Emissions	Faisal Malyar, Jaiyanth Balendrarajah, Mohammad Malik, Ahmad Javid and Liang Tian	UKAS
Power Spectral Density	Mehadi Choudhury	UKAS

Table 5

Office Address:

Octagon House
Concorde Way
Segensworth North
Fareham
Hampshire
PO15 5RL
United Kingdom



2 Test Details

2.1 Emission Bandwidth

2.1.1 Specification Reference

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

2.1.2 Equipment Under Test and Modification State

A2348, S/N: C07D100D02DH - Modification State 0

2.1.3 Date of Test

30-September-2020 to 01-October 2020

2.1.4 Test Method

This test was performed in accordance with ANSI C63.10, clause 11.8.1.

2.1.5 Environmental Conditions

Ambient Temperature 22.4 °C
Relative Humidity 48.7 %

2.1.6 Test Results

2.4 GHz Bluetooth Low Energy (DTS)

iPA

Antenna Port Configuration: SISO

Modulation: 8-DPSK (HDR4)

Test Frequency (MHz)	6 dB Bandwidth (MHz)
	Port(s)
	Core 0
2404	1.552
2441	1.560
2478	1.544

Table 6 - 6 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)
	Port(s)
	Core 0
2404	2.344
2441	2.344
2478	2.344

Table 7 - 99% Bandwidth Results

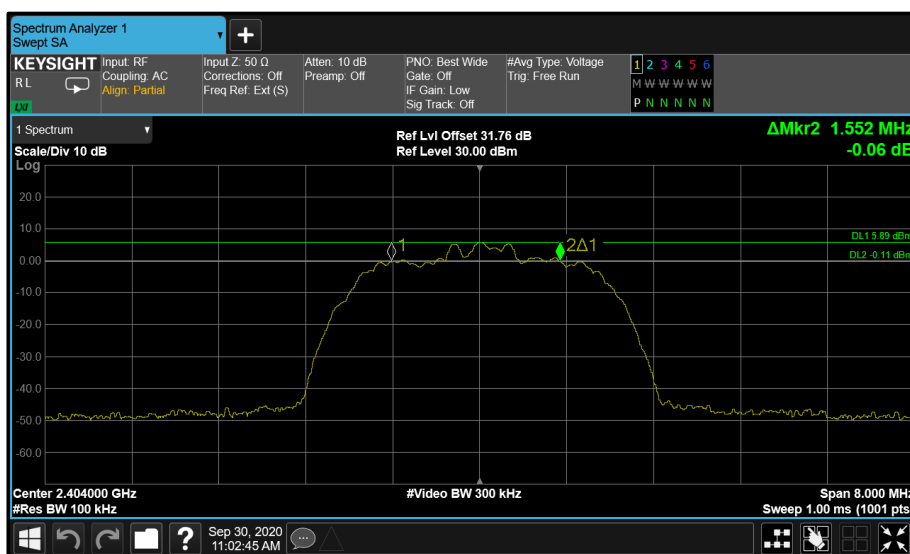


Figure 1 - Core 0 HDR4 2404 MHz (CH2) 6dB & 99% Bandwidth

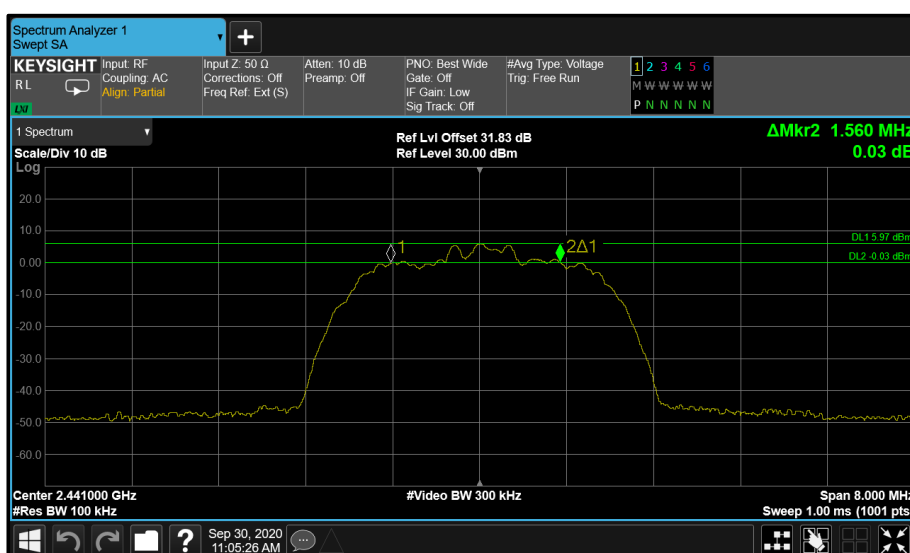


Figure 2 - Core 0 HDR4 2441 MHz (CH39) 6dB & 99% Bandwidth

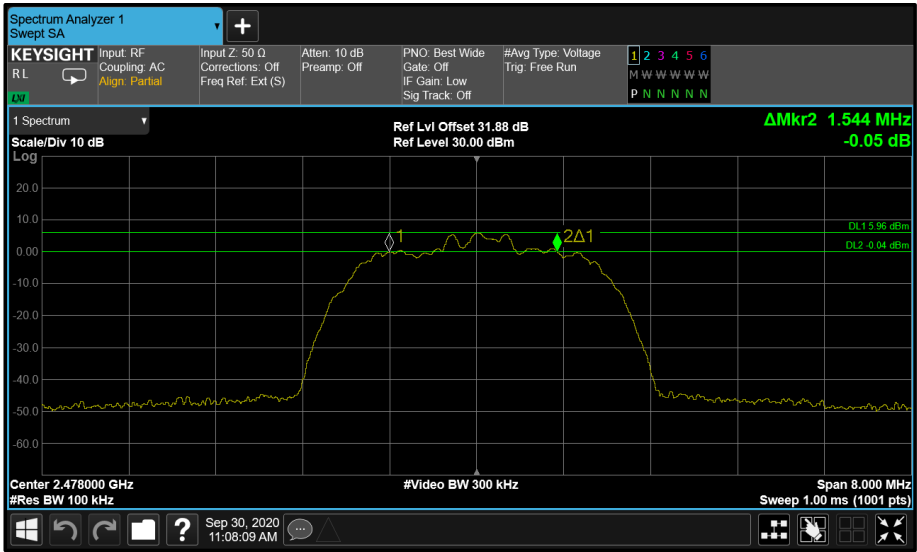


Figure 3 - Core 0 HDR4 2478 MHz (CH76) 6dB & 99% Bandwidth



Test Frequency (MHz)	6 dB Bandwidth (MHz)
	Port(s)
	Core 2
2404	1.560
2441	1.536
2478	1.552

Table 8 - 6 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)
	Port(s)
	Core 2
2404	2.344
2441	2.344
2478	2.344

Table 9 - 99% Bandwidth Results

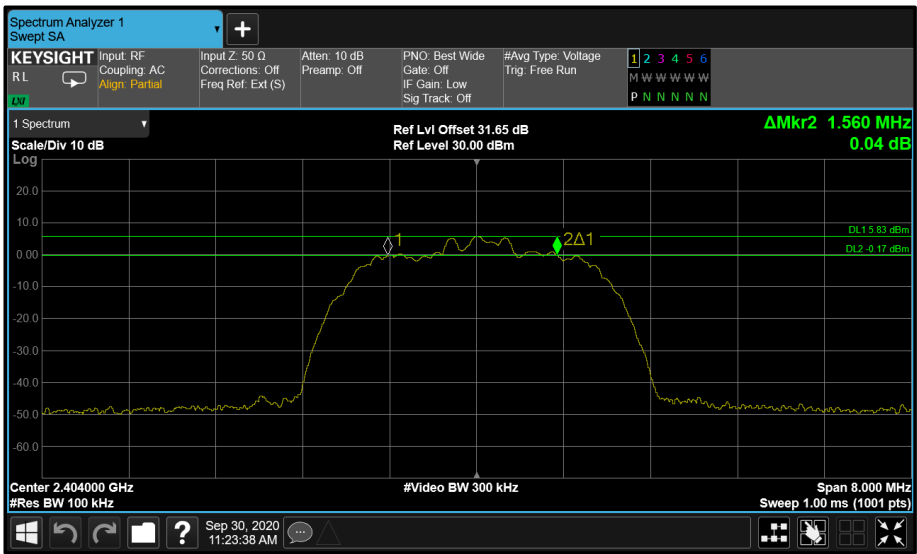


Figure 4 - Core 2 HDR4 2404 MHz (CH2) 6dB & 99% Bandwidth

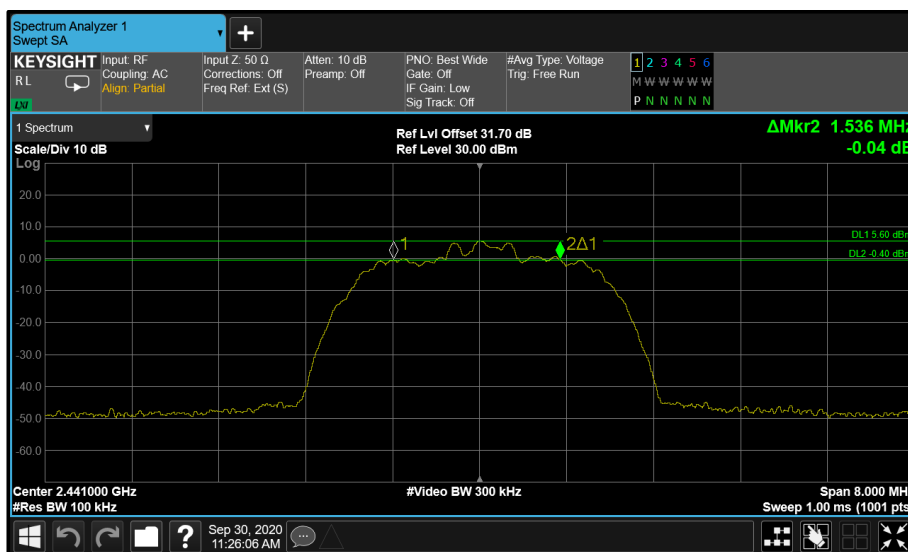


Figure 5 - Core 2 HDR4 2441 MHz (CH39) 6dB & 99% Bandwidth

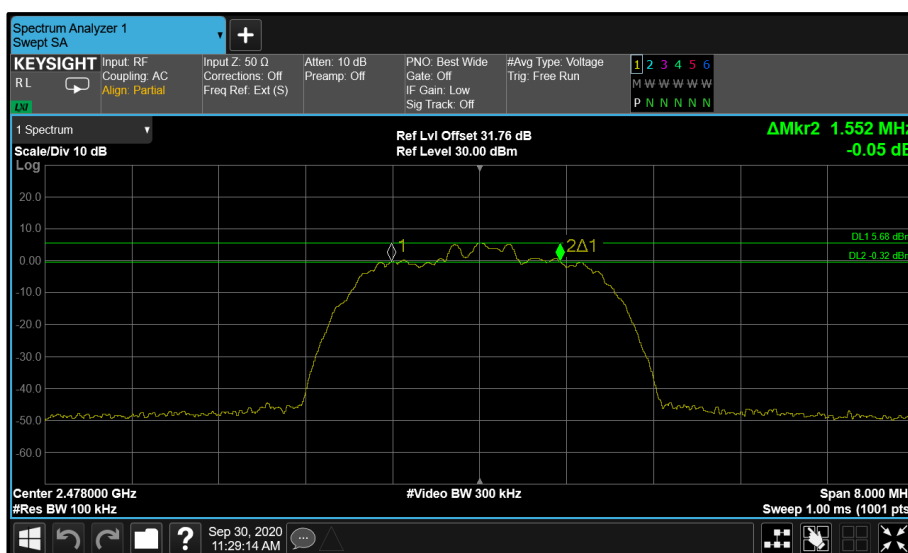


Figure 6 - Core 2 HDR4 2478 MHz (CH76) 6dB & 99% Bandwidth



Modulation: 8-DPSK (HDR8)

Test Frequency (MHz)	6 dB Bandwidth (MHz)
	Port(s)
	Core 0
2404	1.030
2441	1.030
2478	1.030

Table 10 - 6 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)
	Port(s)
	Core 0
2404	4.560
2441	4.550
2478	4.560

Table 11 - 99% Bandwidth Results

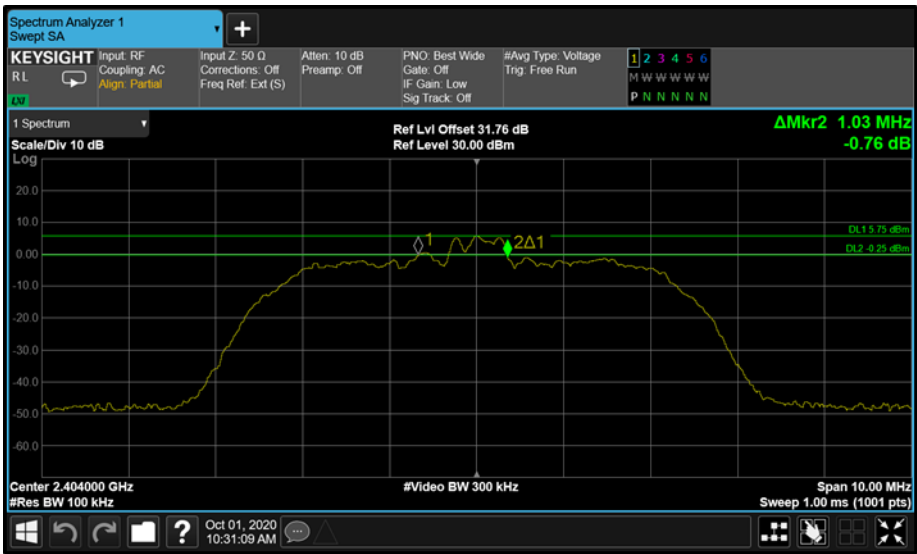


Figure 7 - Core 0 HDR8 2404 MHz (CH2) 6dB & 99% Bandwidth

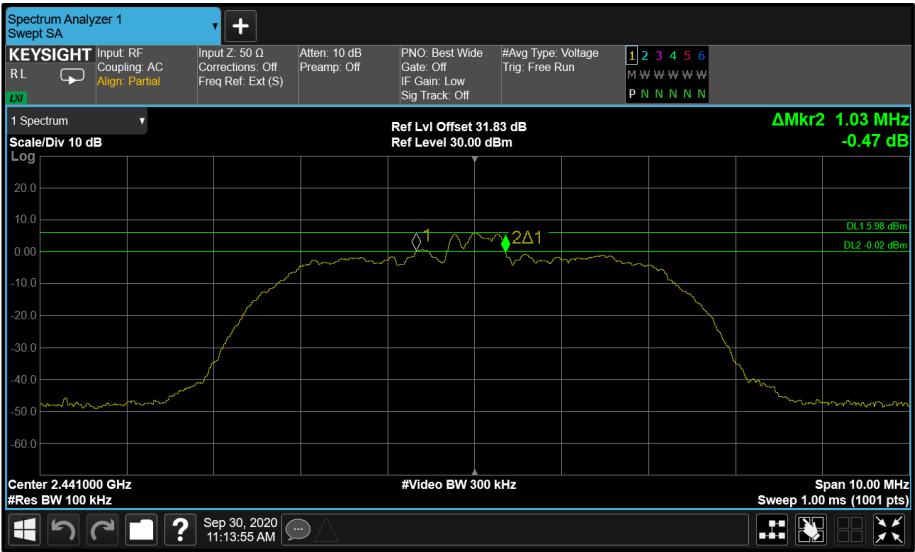


Figure 8 - Core 0 HDR8 2441 MHz (CH39) 6dB & 99% Bandwidth

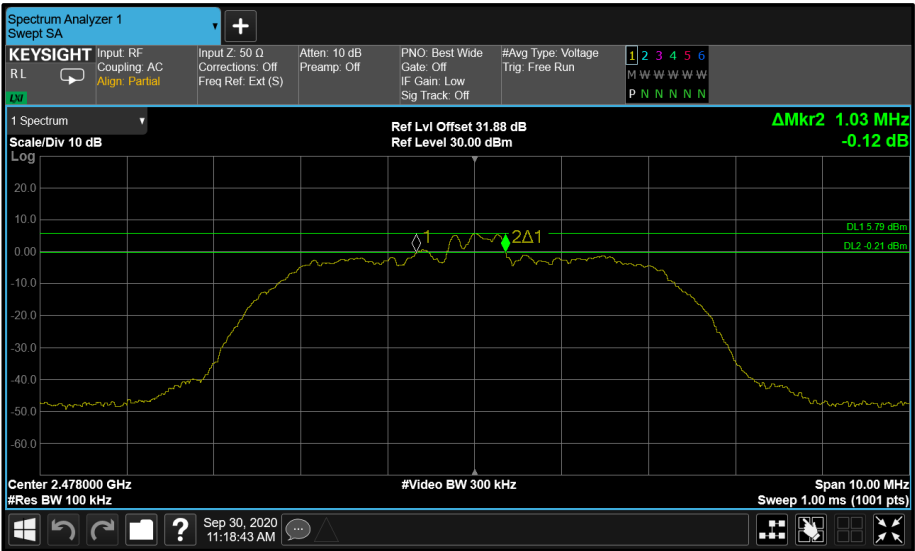


Figure 9 - Core 0 HDR8 2478 MHz (CH76) 6dB & 99% Bandwidth



Test Frequency (MHz)	6 dB Bandwidth (MHz)
	Port(s)
	Core 2
2404	1.030
2441	1.020
2478	1.040

Table 12 - 6 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)
	Port(s)
	Core 2
2404	4.560
2441	4.550
2478	4.560

Table 13 - 99% Bandwidth Results

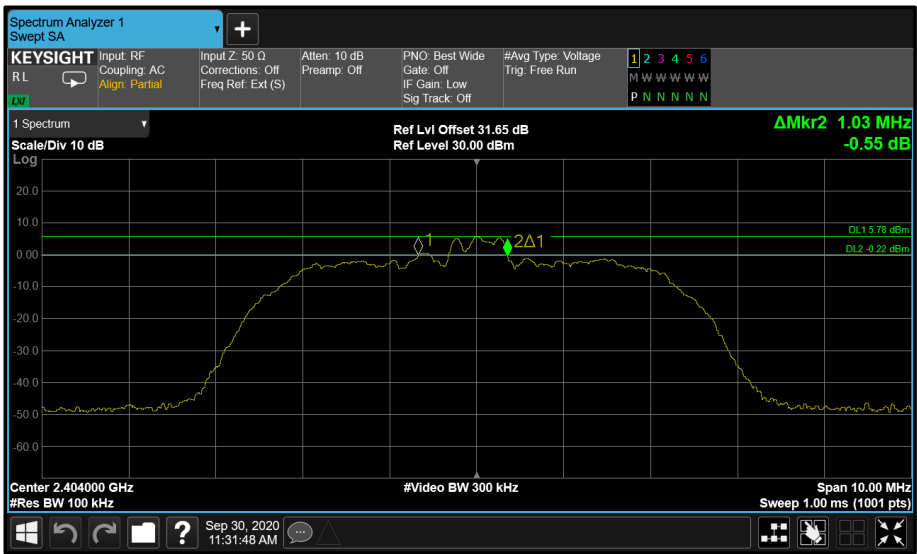
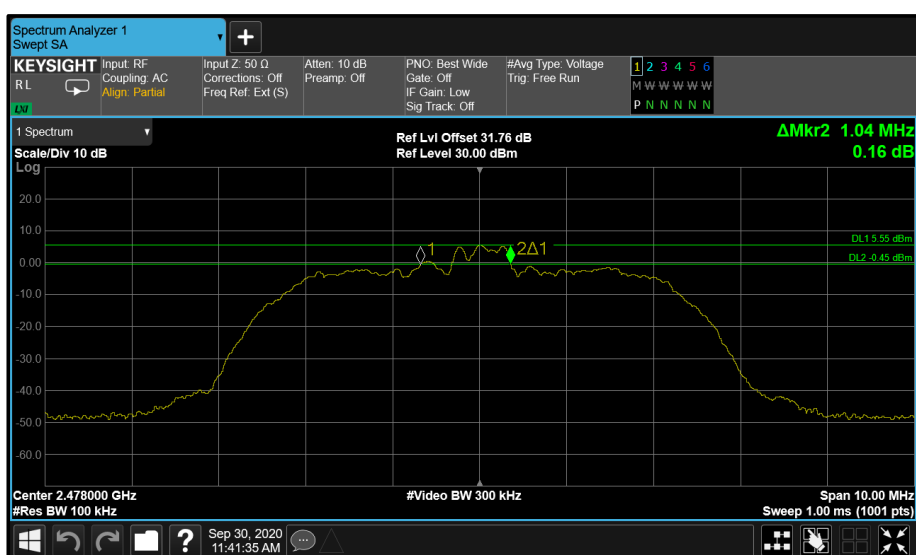
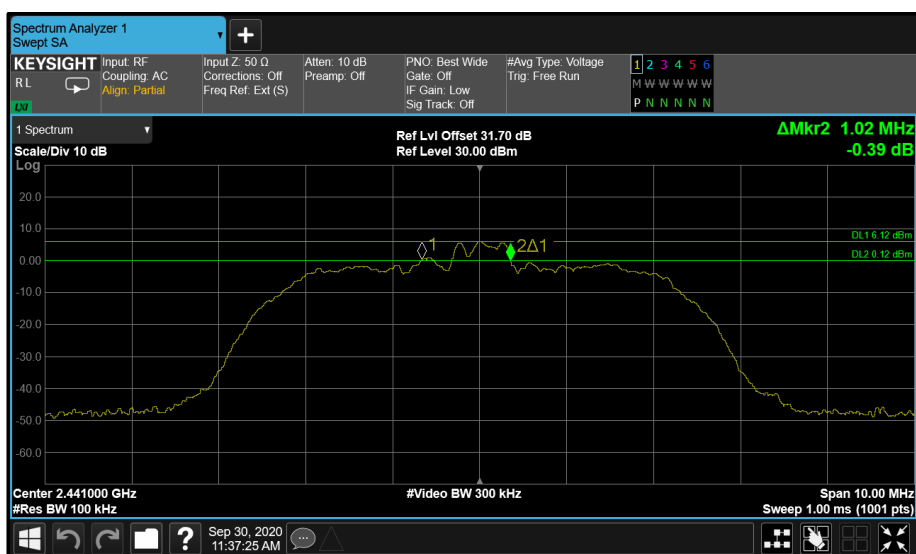


Figure 10 - Core 2 HDR8 2404 MHz (CH2) 6dB & 99% Bandwidth



Modulation: GFSK (LE 1M)

Test Frequency (MHz)	6 dB Bandwidth (MHz)
	Port(s)
	Core 0
2402	0.692
2440	0.692
2480	0.700

Table 14 - 6 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)
	Port(s)
	Core 0
2402	1.080
2440	1.084
2480	1.080

Table 15 - 99% Bandwidth Results

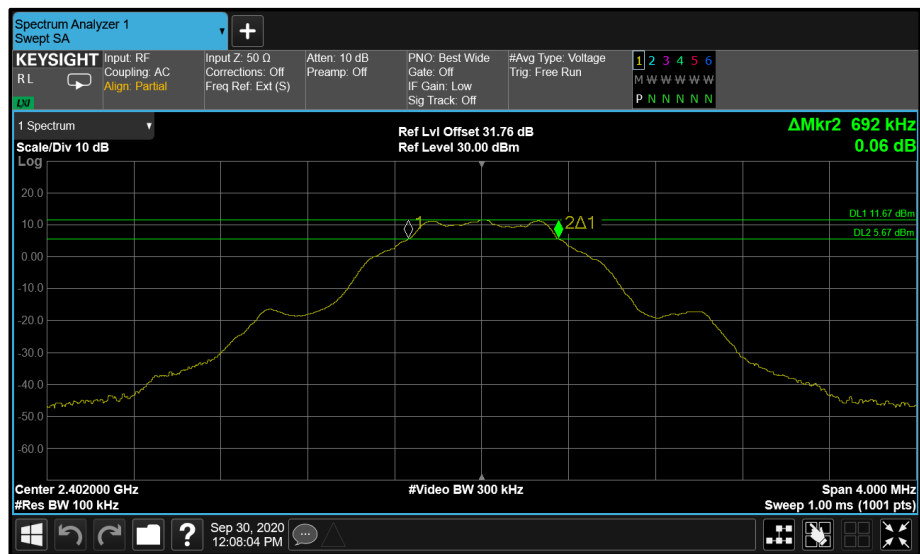


Figure 13 - Core 0 LE 1M 2402 MHz (CH0) 6dB & 99% Bandwidth

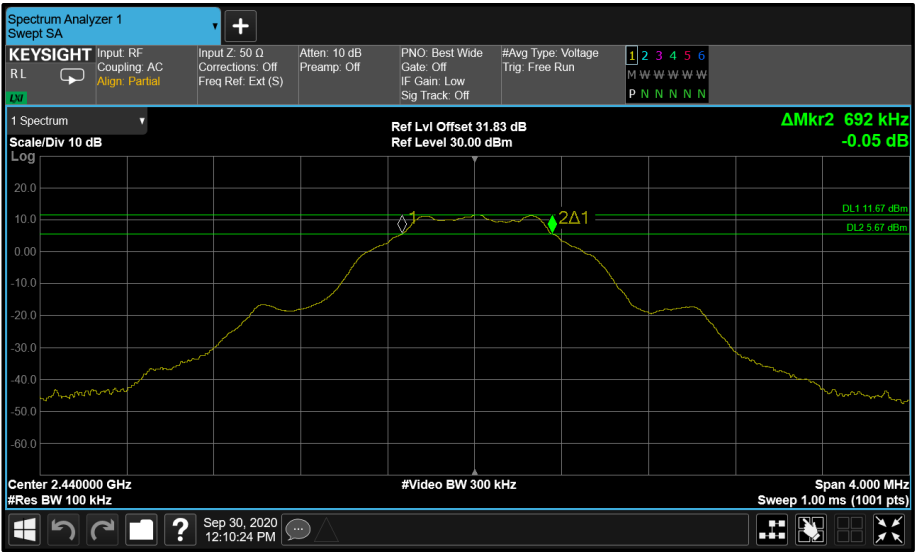


Figure 14 - Core 0 LE 1M 2440 MHz (CH19) 6dB & 99% Bandwidth

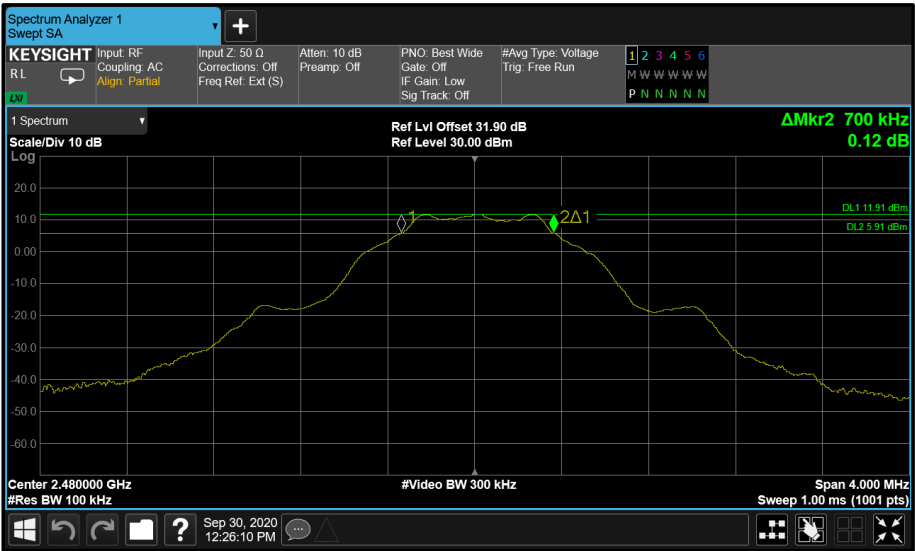


Figure 15 - Core 0 LE 1M 2480 MHz (CH39) 6dB & 99% Bandwidth



Test Frequency (MHz)	6 dB Bandwidth (MHz)
	Port(s)
	Core 2
2402	0.692
2440	0.688
2480	0.692

Table 16 - 6 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)
	Port(s)
	Core 2
2402	1.080
2440	1.084
2480	1.084

Table 17 - 99% Bandwidth Results

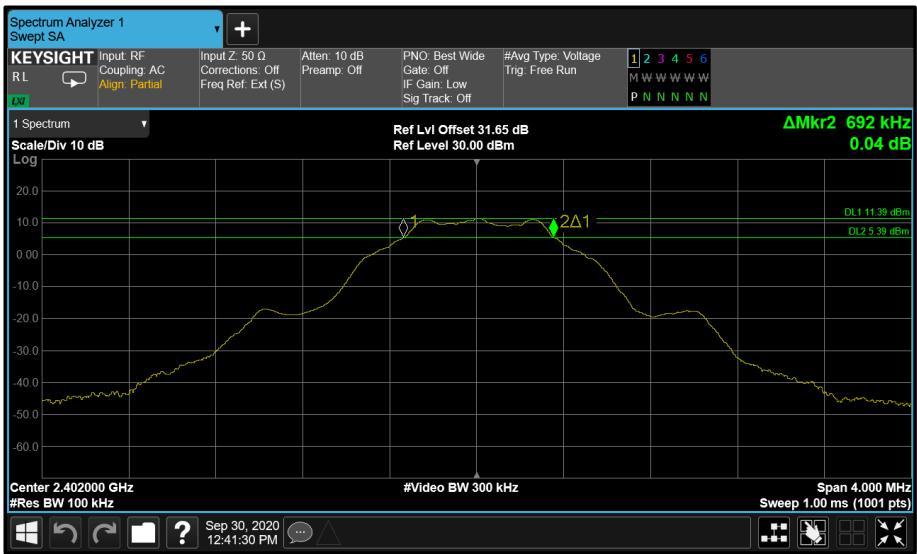


Figure 16 - Core 2 LE 1M 2402 MHz (CH0) 6dB & 99% Bandwidth

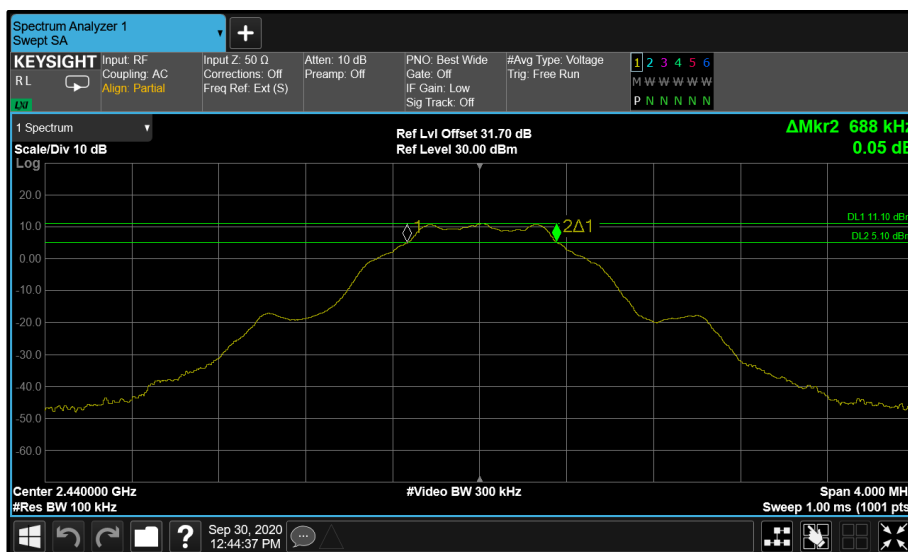


Figure 17 - Core 2 LE 1M 2440 MHz (CH19) 6dB & 99% Bandwidth

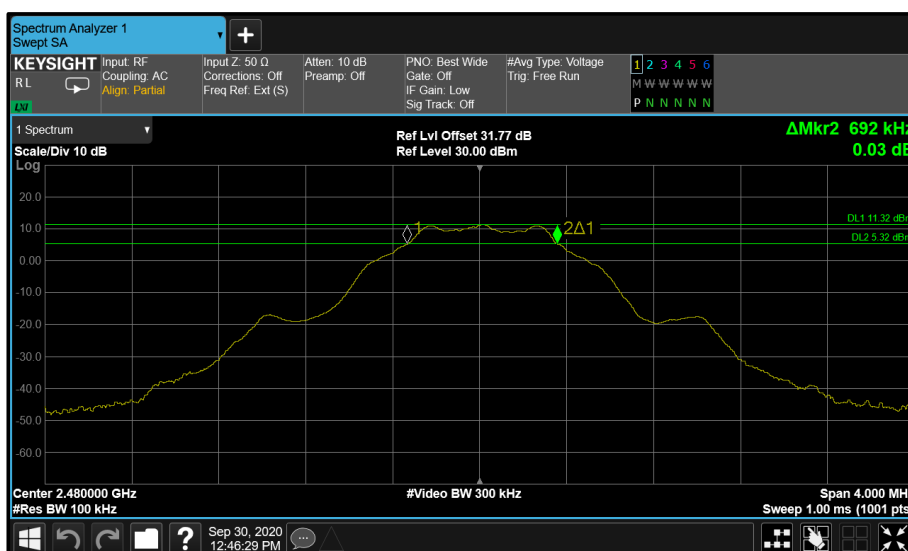


Figure 18 - Core 2 LE 1M 2480 MHz (CH39) 6dB & 99% Bandwidth

Modulation: GFSK (LE 2M)

Test Frequency (MHz)	6 dB Bandwidth (MHz)
	Port(s)
	Core 0
2402	1.224
2440	1.224
2480	1.264

Table 18 - 6 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)
	Port(s)
	Core 0
2402	2.080
2440	2.088
2480	2.088

Table 19 - 99% Bandwidth Results

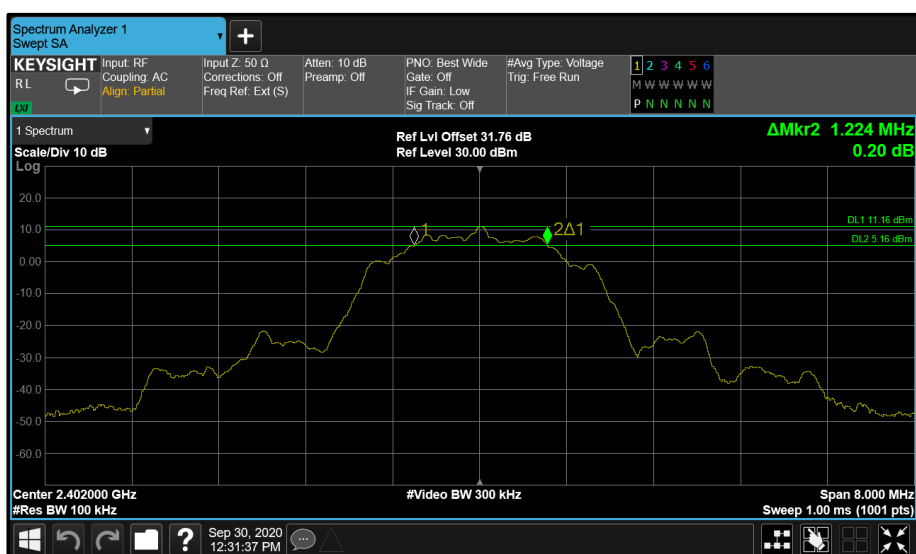


Figure 19 - Core 0 LE 2M 2402 MHz (CH0) 6dB & 99% Bandwidth

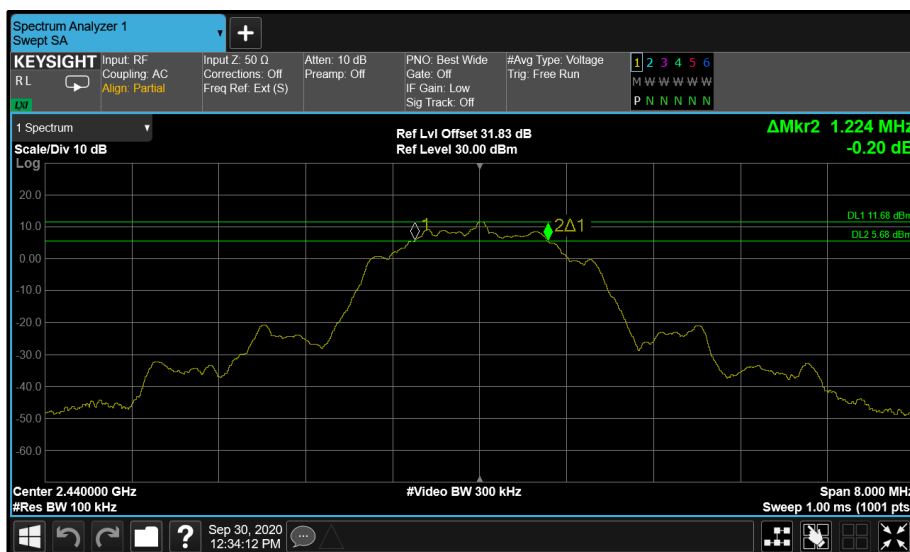


Figure 20 - Core 0 LE 2M 2440 MHz (CH19) 6dB & 99% Bandwidth

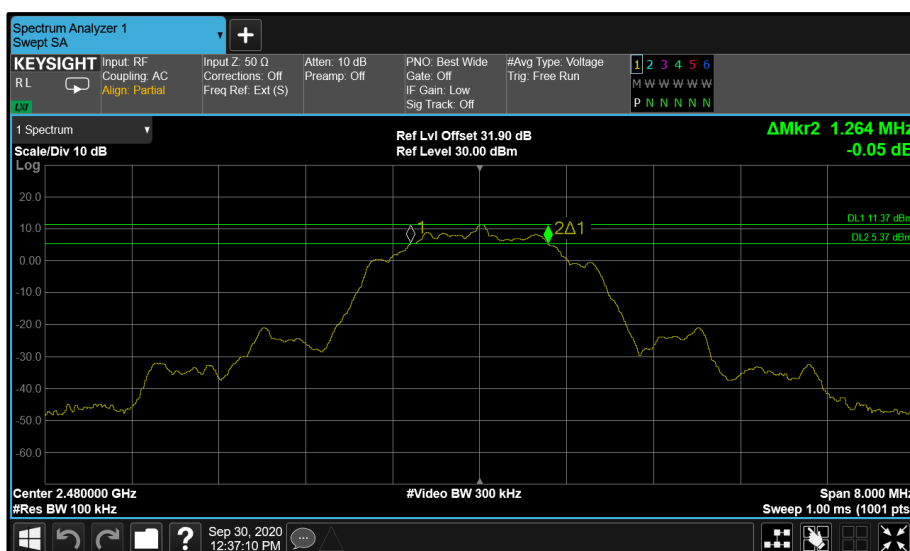


Figure 21 - Core 0 LE 2M 2480 MHz (CH39) 6dB & 99% Bandwidth



Test Frequency (MHz)	6 dB Bandwidth (MHz)
	Port(s)
	Core 2
2402	1.232
2440	1.232
2480	1.224

Table 20 - 6 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)
	Port(s)
	Core 2
2402	2.080
2440	2.088
2480	2.088

Table 21 - 99% Bandwidth Results

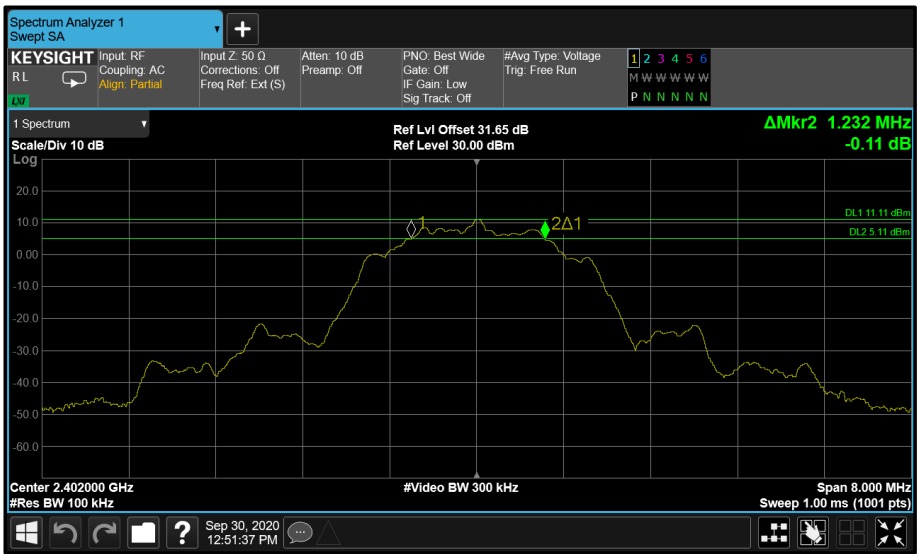


Figure 22 - Core 2 LE 2M 2402 MHz (CH0) 6dB & 99% Bandwidth

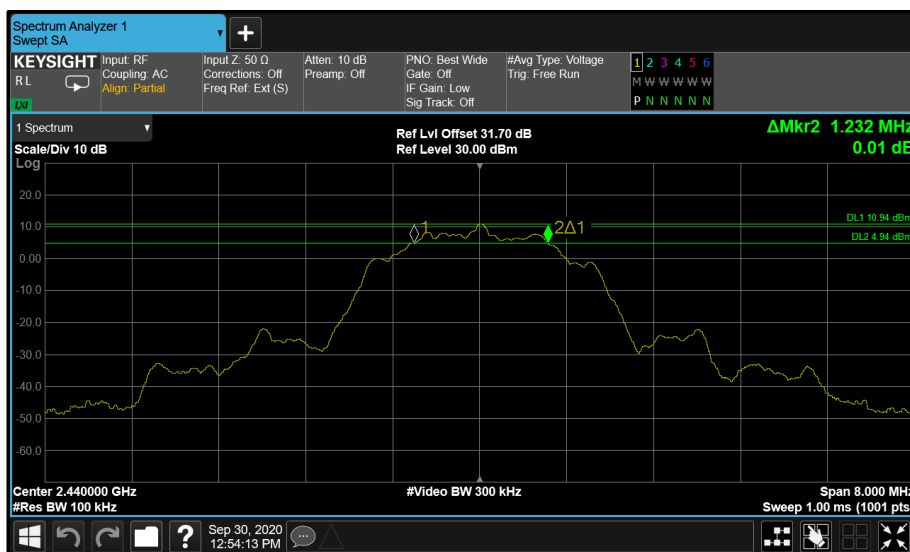


Figure 23 - Core 2 LE 2M 2440 MHz (CH19) 6dB & 99% Bandwidth

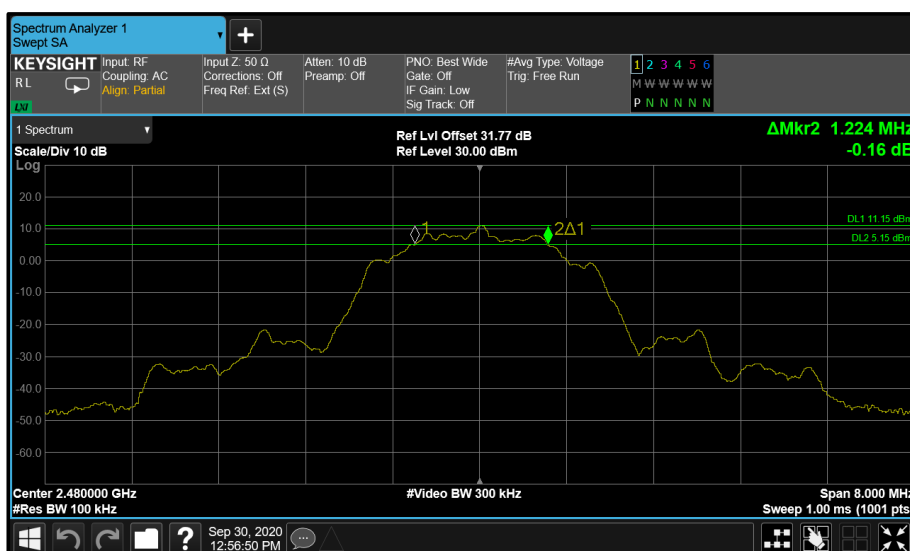


Figure 24 - Core 2 LE 2M 2480 MHz (CH39) 6dB & 99% Bandwidth

Antenna Port Configuration: Beamforming

Modulation: 8-DPSK (HDR4)

Test Frequency (MHz)	6 dB Bandwidth (MHz)	
	Port(s)	
	Core 0	Core 1
2404	1.760	1.544
2441	1.544	1.496
2478	1.552	1.568

Table 22 - 6 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)	
	Port(s)	
	Core 0	Core 1
2404	2.352	2.352
2441	2.336	2.352
2478	2.344	2.344

Table 23 - 99% Bandwidth Results

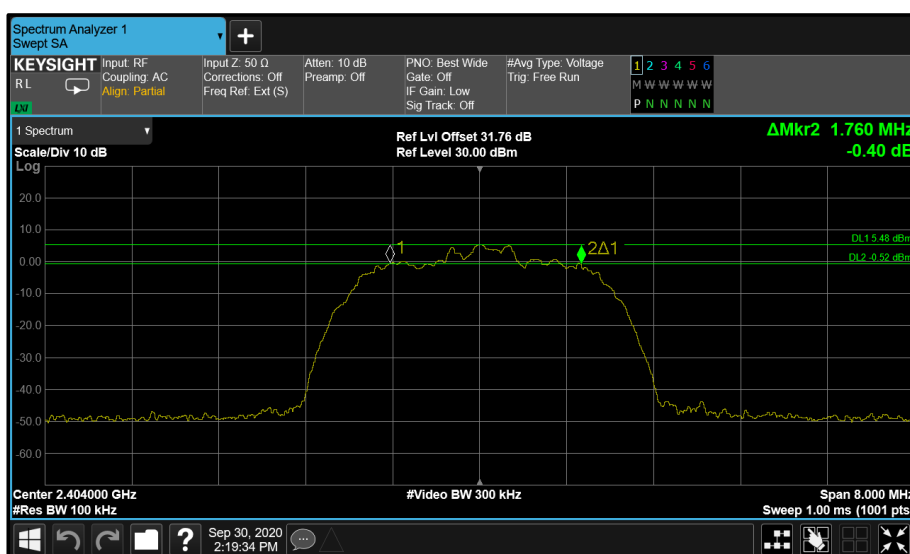


Figure 25 - Core 0 HDR4 2404 MHz (CH2) 6dB & 99% Bandwidth

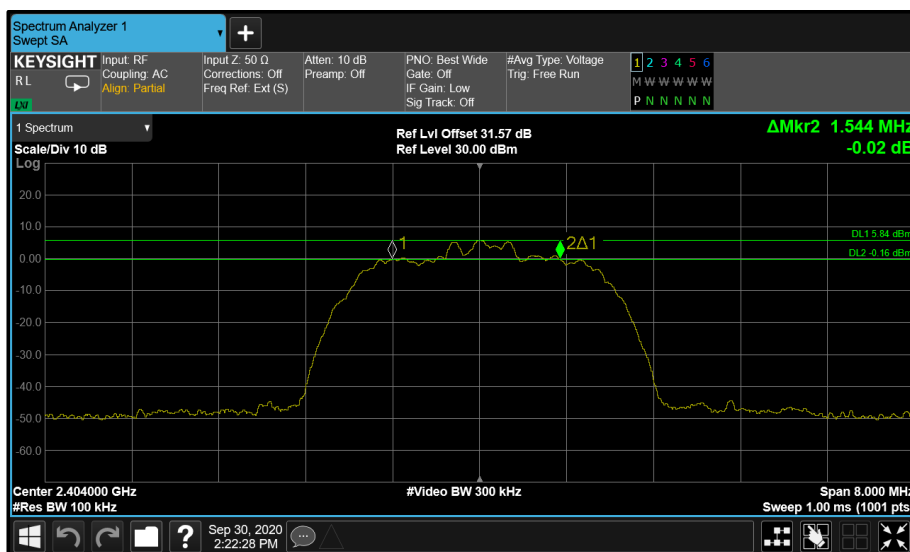


Figure 26 - Core 1 HDR4 2404 MHz (CH2) 6dB & 99% Bandwidth

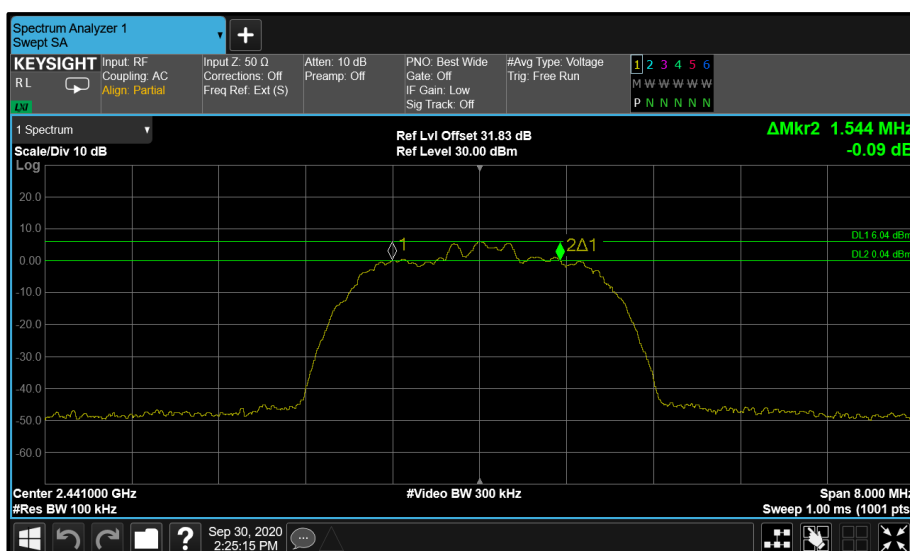


Figure 27 - Core 0 HDR4 2441 MHz (CH39) 6dB & 99% Bandwidth

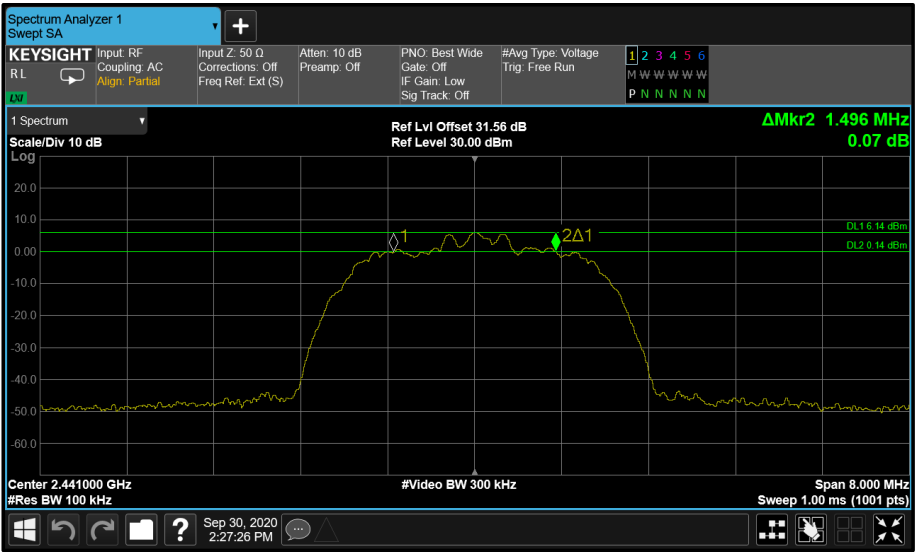


Figure 28 - Core 1 HDR4 2441 MHz (CH39) 6dB & 99% Bandwidth

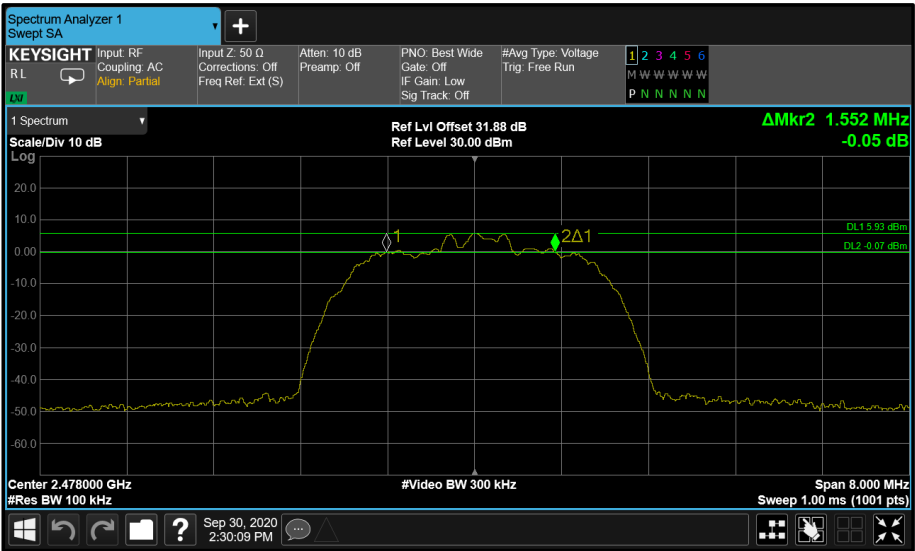


Figure 29 - Core 0 HDR4 2478 MHz (CH76) 6dB & 99% Bandwidth

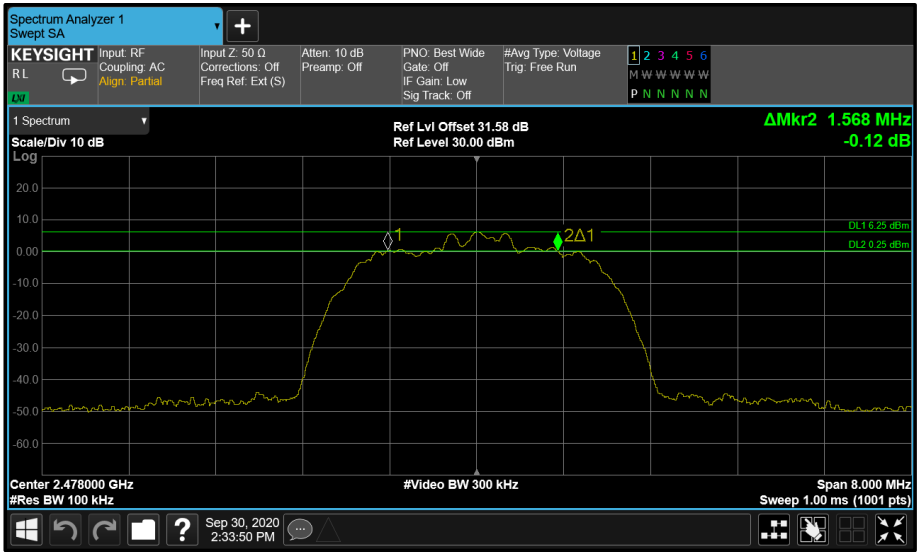


Figure 30 - Core 1 HDR4 2478 MHz (CH76) 6dB & 99% Bandwidth



Modulation: 8-DPSK (HDR8)

Test Frequency (MHz)	6 dB Bandwidth (MHz)	
	Port(s)	
	Core 0	Core 1
2404	0.680	1.030
2441	1.030	1.040
2478	1.020	1.040

Table 24 - 6 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)	
	Port(s)	
	Core 0	Core 1
2404	4.560	4.560
2441	4.560	4.560
2478	4.580	4.560

Table 25 - 99% Bandwidth Results

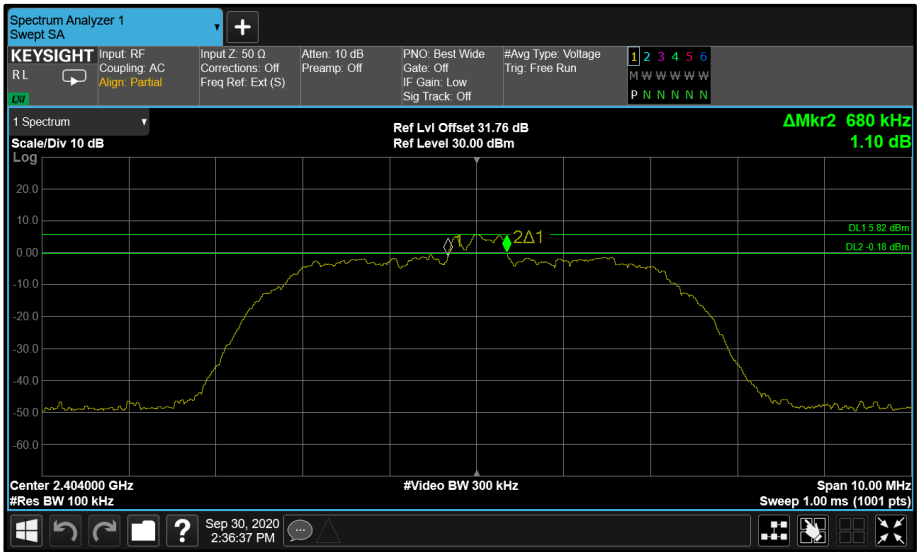


Figure 31 - Core 0 HDR8 2404 MHz (CH2) 6dB & 99% Bandwidth

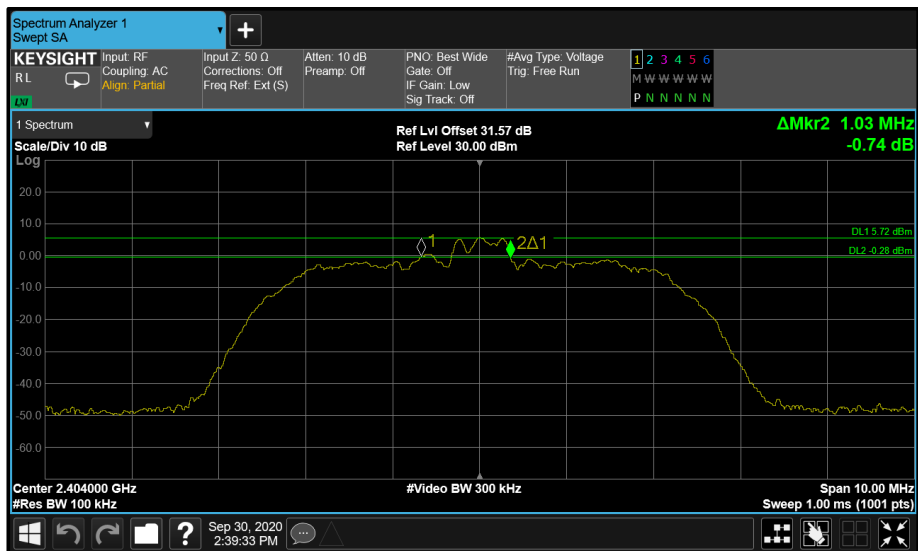


Figure 32 - Core 1 HDR8 2404 MHz (CH2) 6dB & 99% Bandwidth

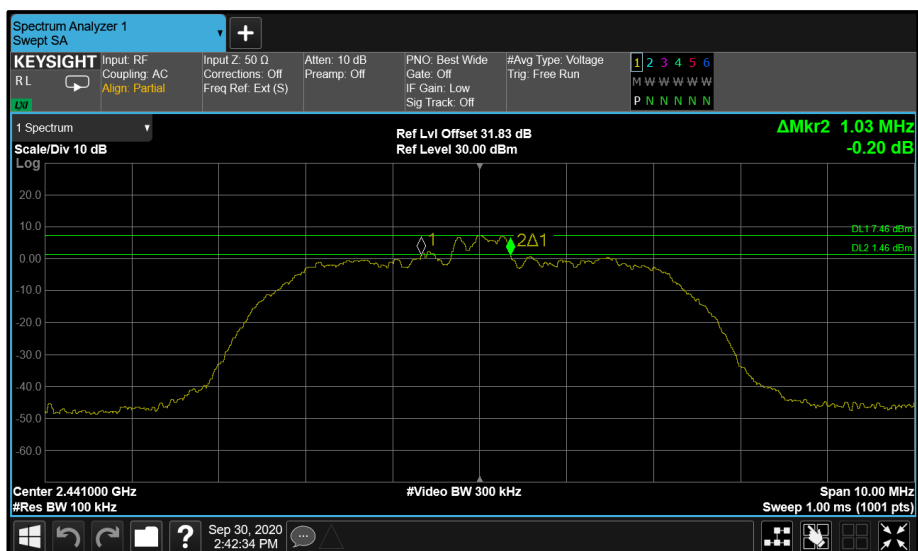


Figure 33 - Core 0 HDR8 2441 MHz (CH39) 6dB & 99% Bandwidth

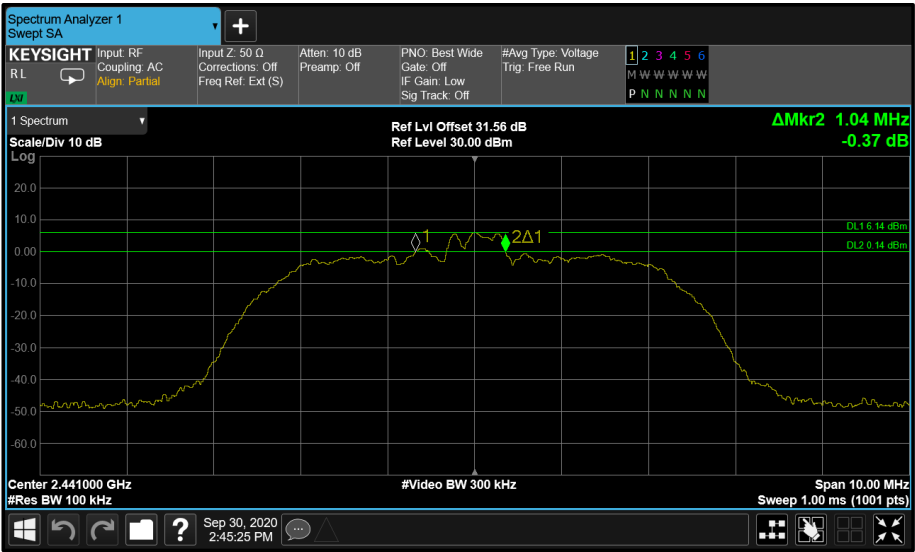


Figure 34 - Core 1 HDR8 2441 MHz (CH39) 6dB & 99% Bandwidth

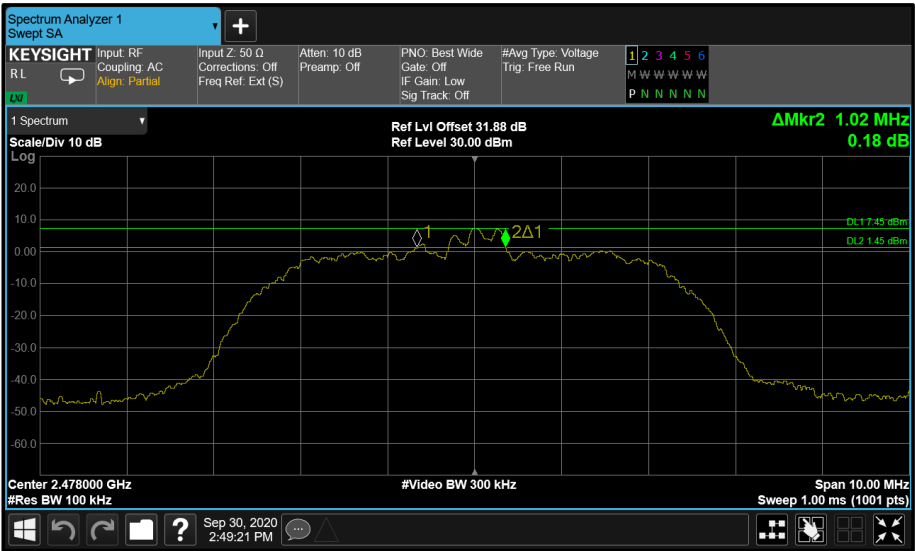


Figure 35 - Core 0 HDR8 2478 MHz (CH76) 6dB & 99% Bandwidth

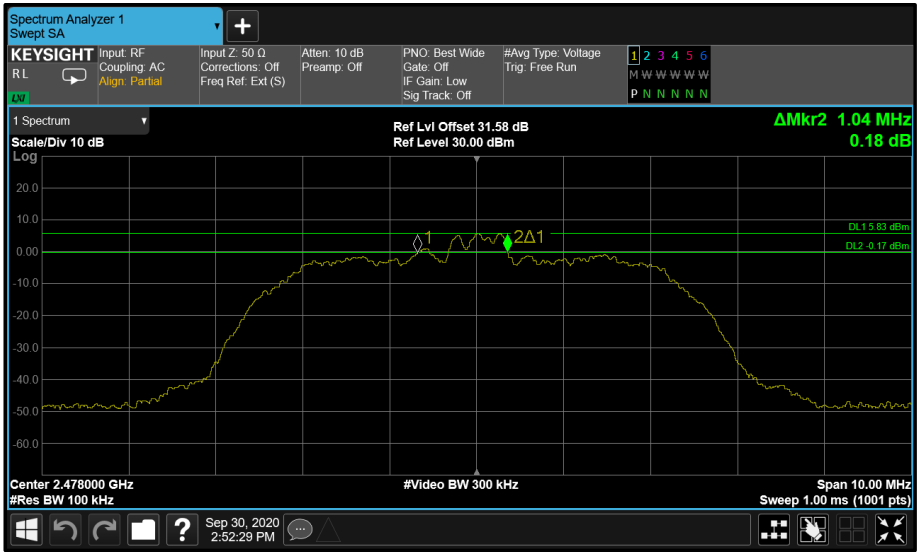


Figure 36 - Core 1 HDR8 2478 MHz (CH76) 6dB & 99% Bandwidth

Modulation: GFSK (LE 1M)

Test Frequency (MHz)	6 dB Bandwidth (MHz)	
	Port(s)	
	Core 0	Core 1
2402	0.688	0.696
2440	0.692	0.696
2480	0.700	0.692

Table 26 - 6 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)	
	Port(s)	
	Core 0	Core 1
2402	1.080	1.080
2440	1.080	1.084
2480	1.080	1.080

Table 27 - 99% Bandwidth Results

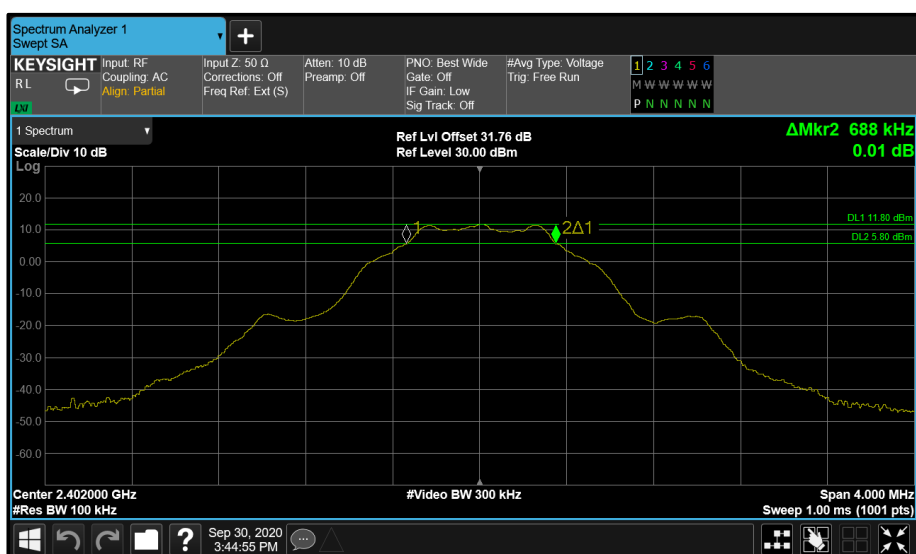


Figure 37 - Core 0 LE 1M 2402 MHz (CH0) 6dB & 99% Bandwidth

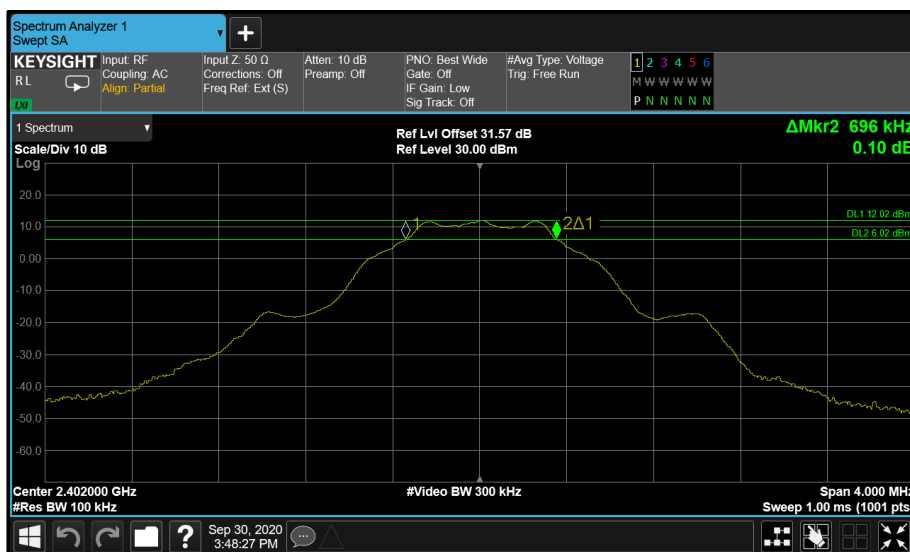


Figure 38 - Core 1 LE 1M 2402 MHz (CH0) 6dB & 99% Bandwidth

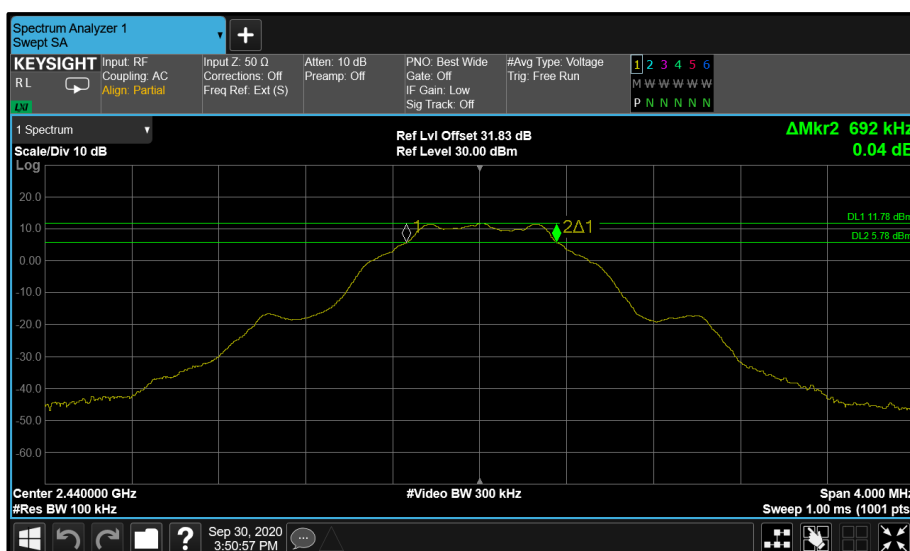


Figure 39 - Core 0 LE 1M 2440 MHz (CH19) 6dB & 99% Bandwidth

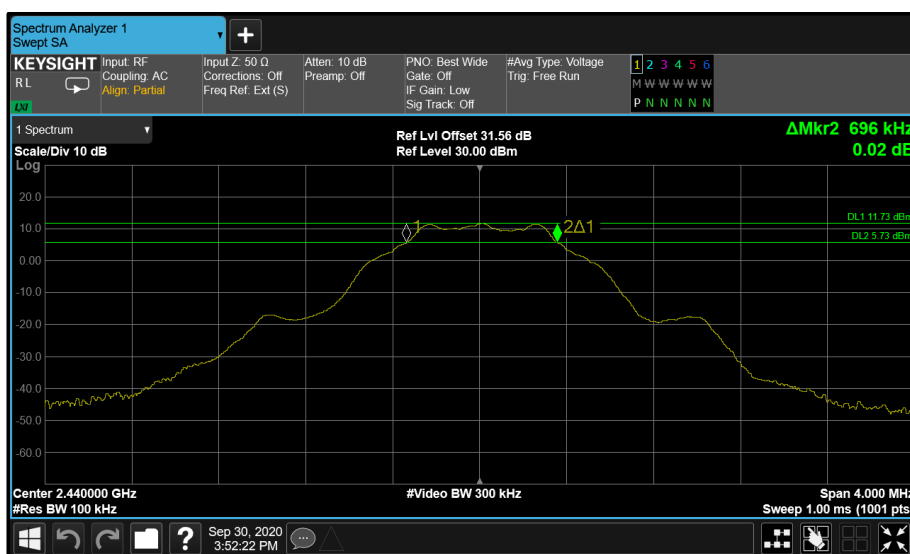


Figure 40 - Core 1 LE 1M 2440 MHz (CH19) 6dB & 99% Bandwidth

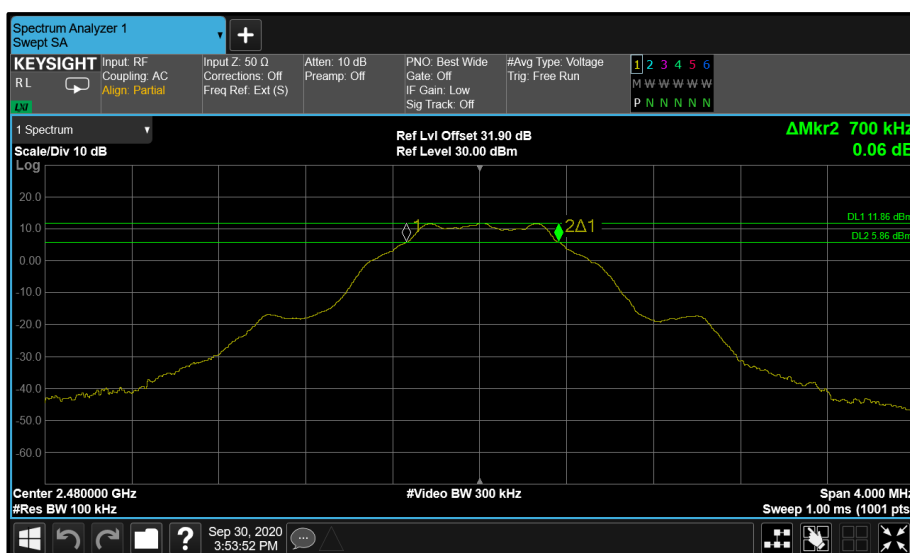


Figure 41 - Core 0 LE 1M 2480 MHz (CH39) 6dB & 99% Bandwidth

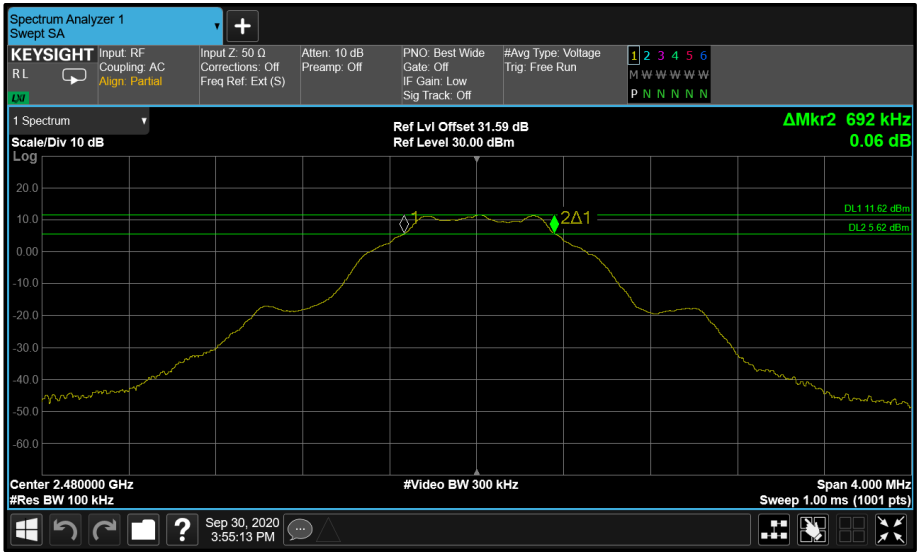


Figure 42 - Core 1 LE 1M 2480 MHz (CH39) 6dB & 99% Bandwidth



Modulation: GFSK (LE 2M)

Test Frequency (MHz)	6 dB Bandwidth (MHz)	
	Port(s)	
	Core 0	Core 1
2402	1.224	1.224
2440	1.224	1.264
2480	1.272	1.272

Table 28 - 6 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)	
	Port(s)	
	Core 0	Core 1
2402	2.080	2.088
2440	2.088	2.088
2480	2.088	2.088

Table 29 - 99% Bandwidth Results

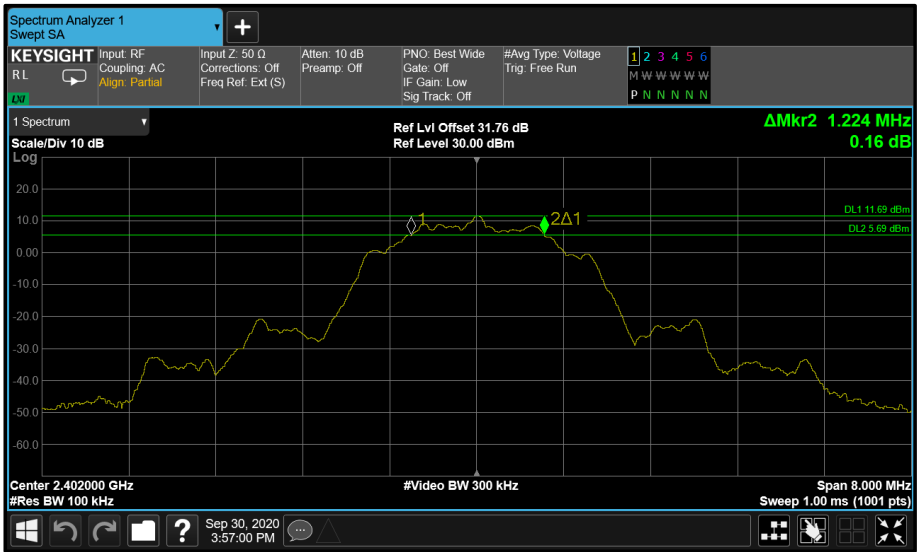


Figure 43 - Core 0 LE 2M 2402 MHz (CH0) 6dB & 99% Bandwidth

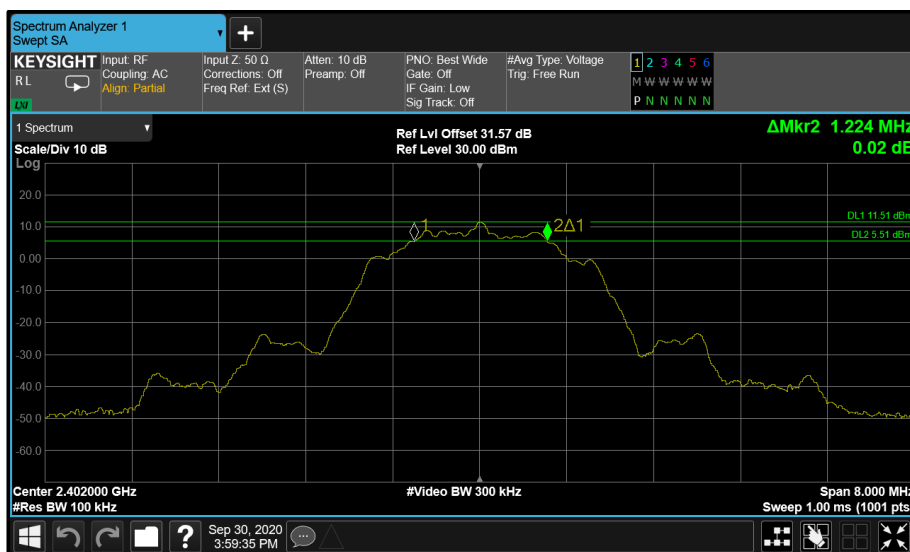


Figure 44 - Core 1 LE 2M 2402 MHz (CH0) 6dB & 99% Bandwidth

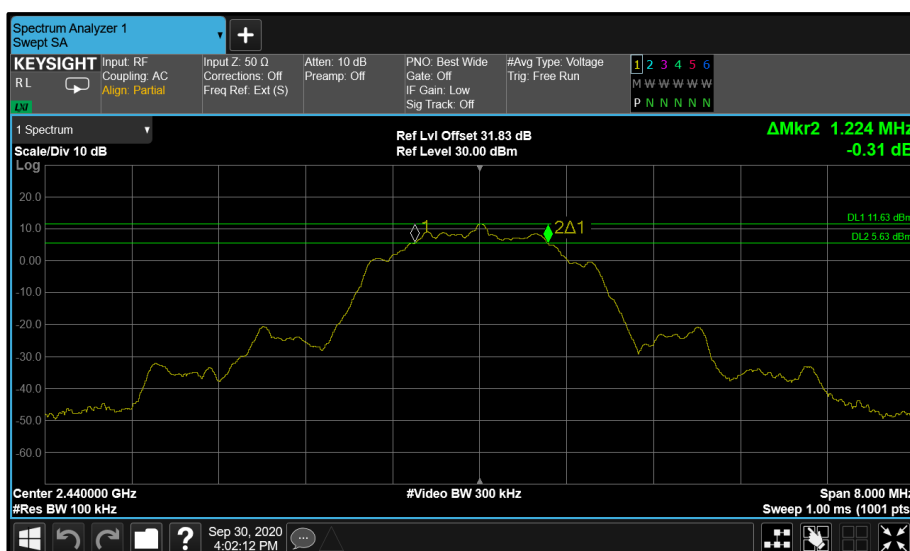


Figure 45 - Core 0 LE 2M 2440 MHz (CH19) 6dB & 99% Bandwidth

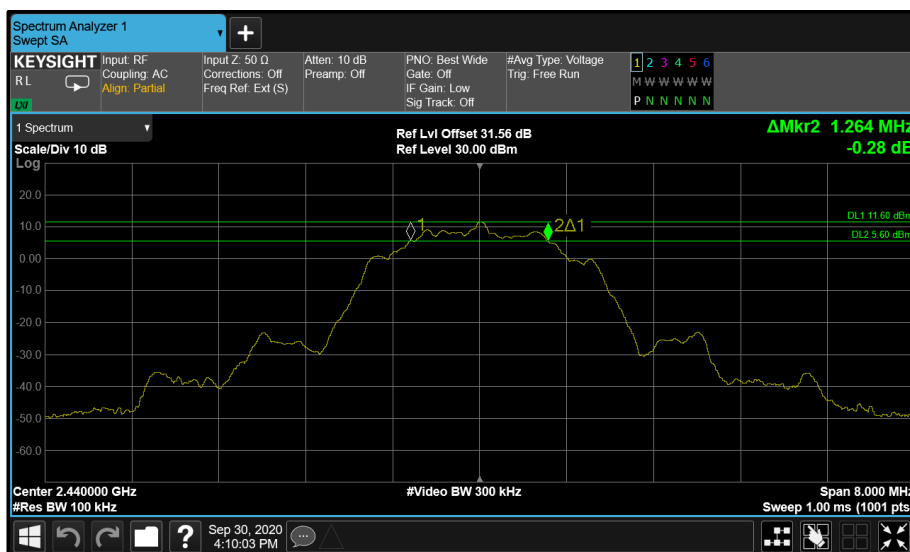


Figure 46 - Core 1 LE 2M 2440 MHz (CH19) 6dB & 99% Bandwidth

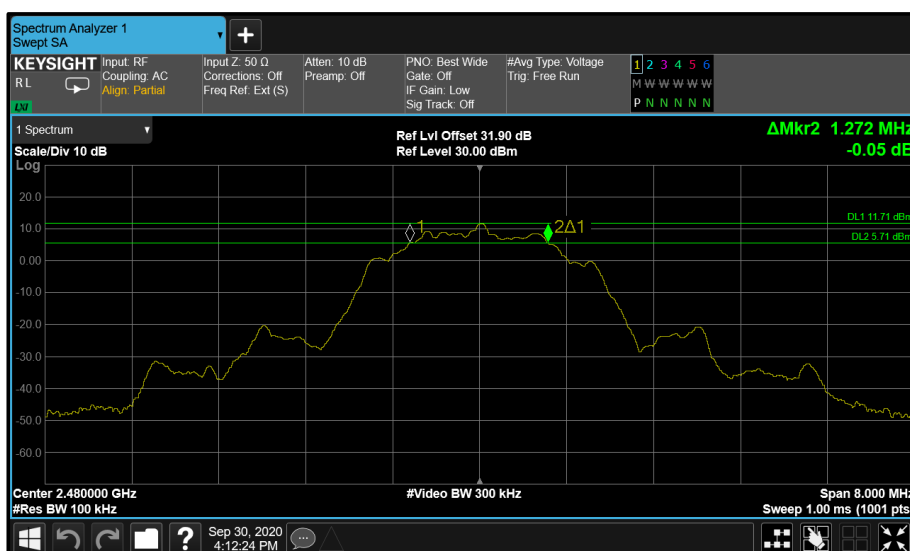


Figure 47 - Core 0 LE 2M 2480 MHz (CH39) 6dB & 99% Bandwidth

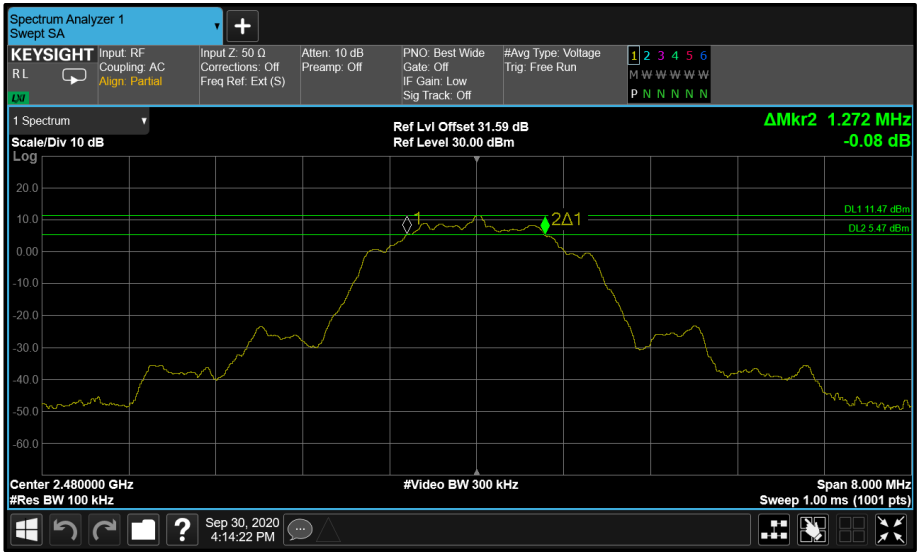


Figure 48 - Core 1 LE 2M 2480 MHz (CH39) 6dB & 99% Bandwidth

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Antenna Port Configuration: SISO

Modulation: 8-DPSK (HDR4)

Test Frequency (MHz)	6 dB Bandwidth (MHz)
	Port(s)
	Core 0
2404	1.560
2441	1.552
2478	1.536

Table 30 - 6 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)
	Port(s)
	Core 0
2404	2.352
2441	2.352
2478	2.352

Table 31 - 99% Bandwidth Results

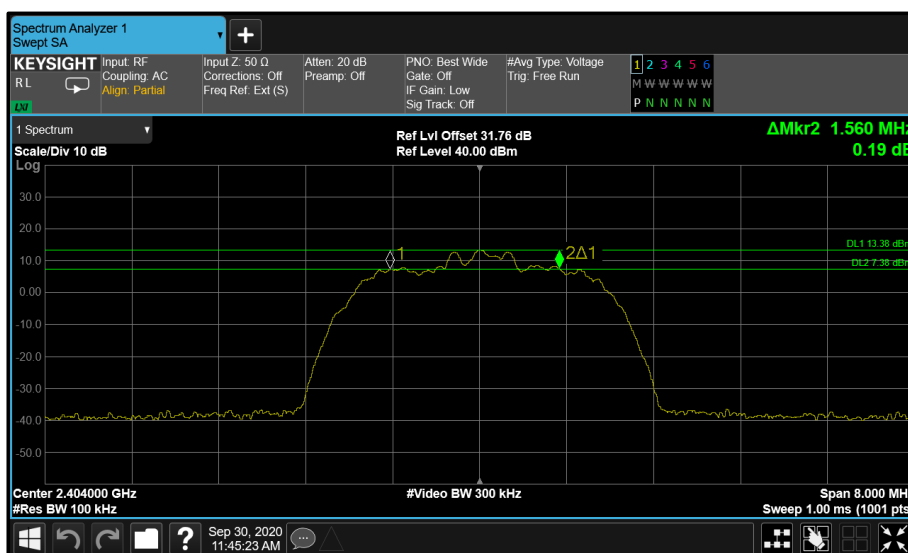


Figure 49 - Core 0 HDR4 2404 MHz (CH2) 6dB & 99% Bandwidth

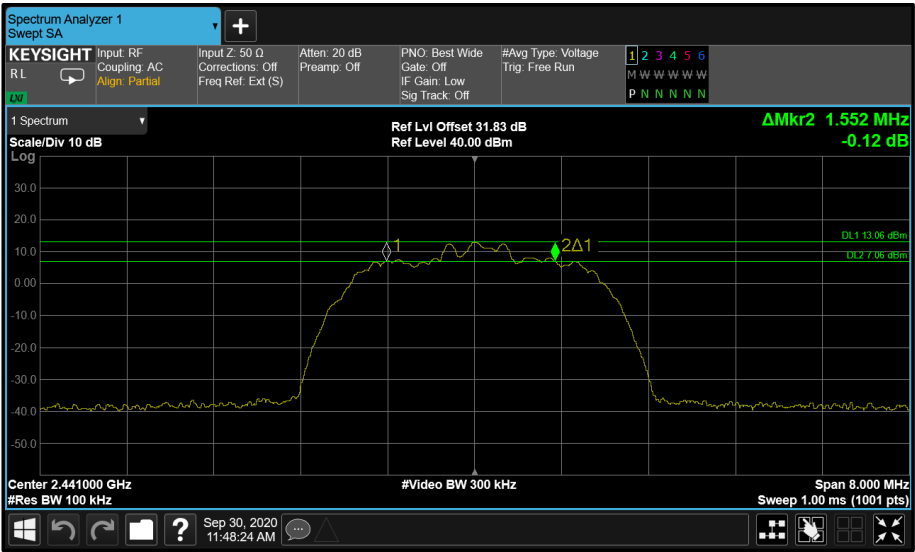


Figure 50 - Core 0 HDR4 2441 MHz (CH39) 6dB & 99% Bandwidth

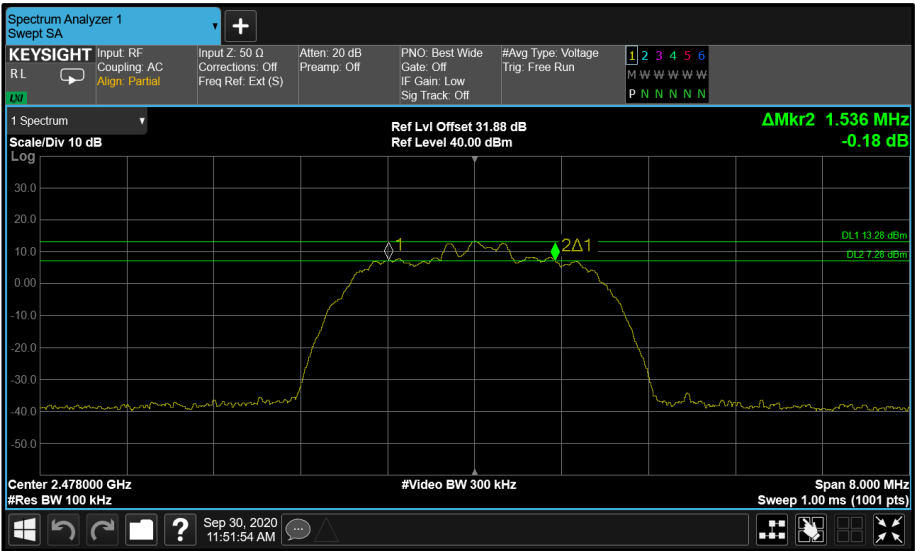


Figure 51 - Core 0 HDR4 2478 MHz (CH76) 6dB & 99% Bandwidth



Modulation: 8-DPSK (HDR8)

Test Frequency (MHz)	6 dB Bandwidth (MHz)
	Port(s)
	Core 0
2404	1.040
2441	1.030
2478	1.020

Table 32 - 6 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)
	Port(s)
	Core 0
2404	4.560
2441	4.560
2478	4.570

Table 33 - 99% Bandwidth Results

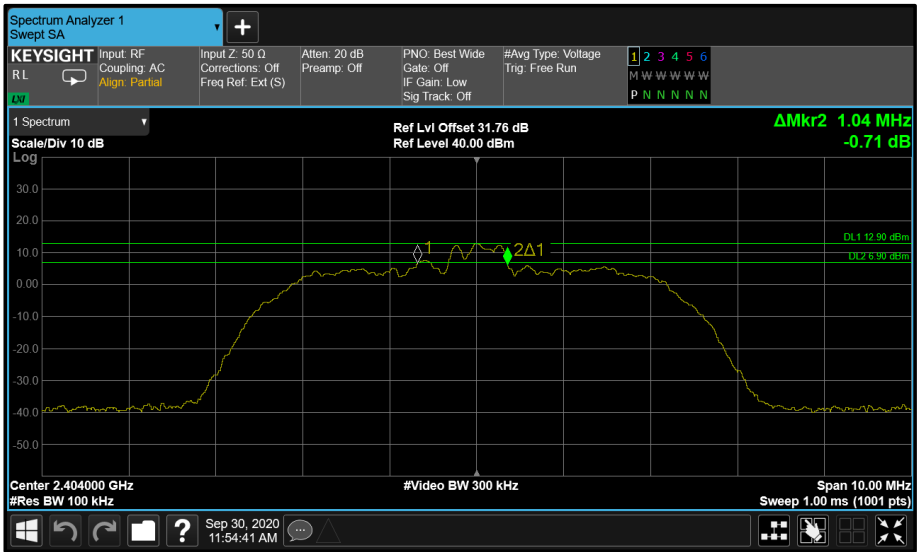


Figure 52 - Core 0 HDR8 2404 MHz (CH2) 6dB & 99% Bandwidth

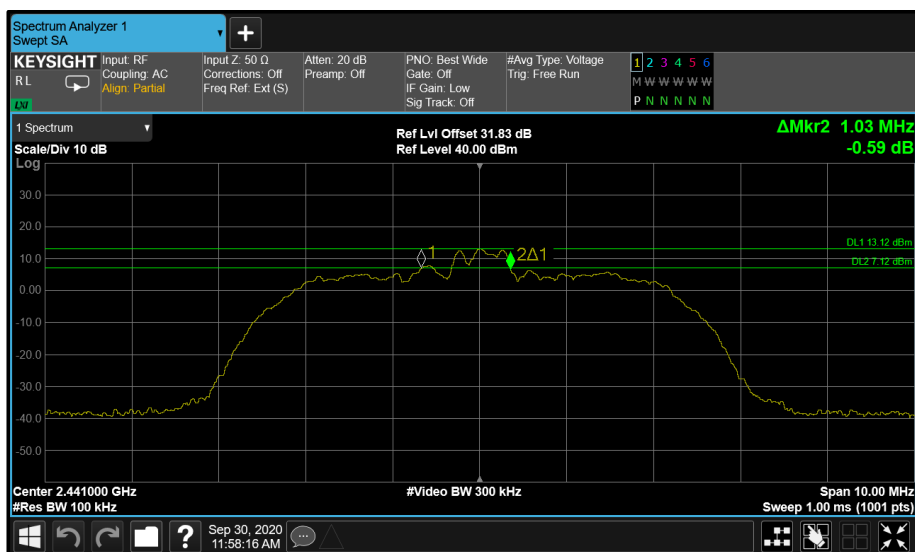


Figure 53 - Core 0 HDR8 2441 MHz (CH39) 6dB & 99% Bandwidth

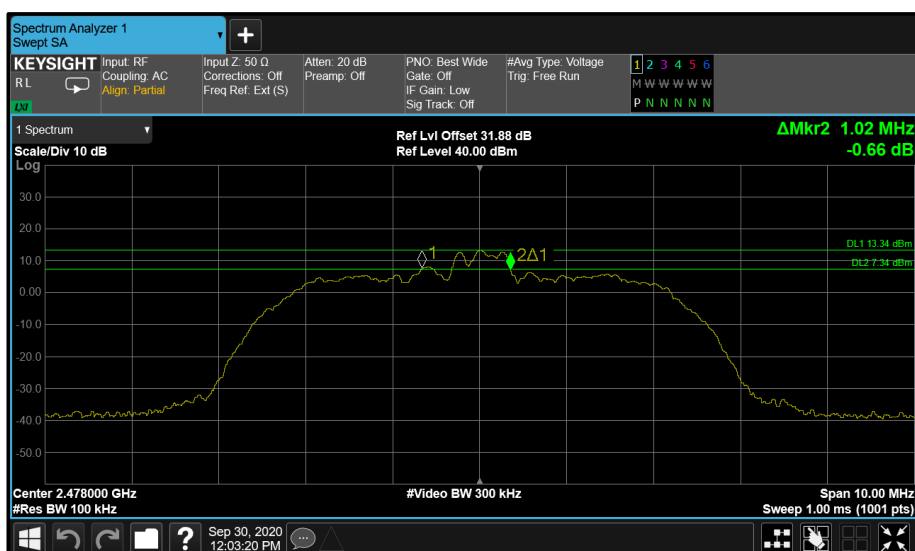


Figure 54 - Core 0 HDR8 2478 MHz (CH76) 6dB & 99% Bandwidth

Modulation: GFSK (LE 1M)

Test Frequency (MHz)	6 dB Bandwidth (MHz)
	Port(s)
	Core 0
2402	0.680
2440	0.676
2480	0.680

Table 34 - 6 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)
	Port(s)
	Core 0
2402	1.092
2440	1.088
2480	1.092

Table 35 - 99% Bandwidth Results

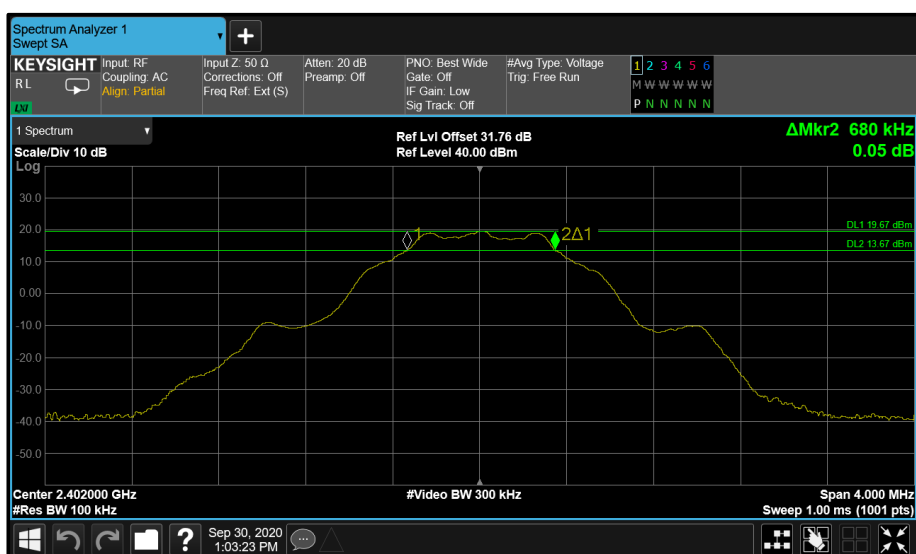


Figure 55 - Core 0 LE 1M 2402 MHz (CH0) 6dB & 99% Bandwidth

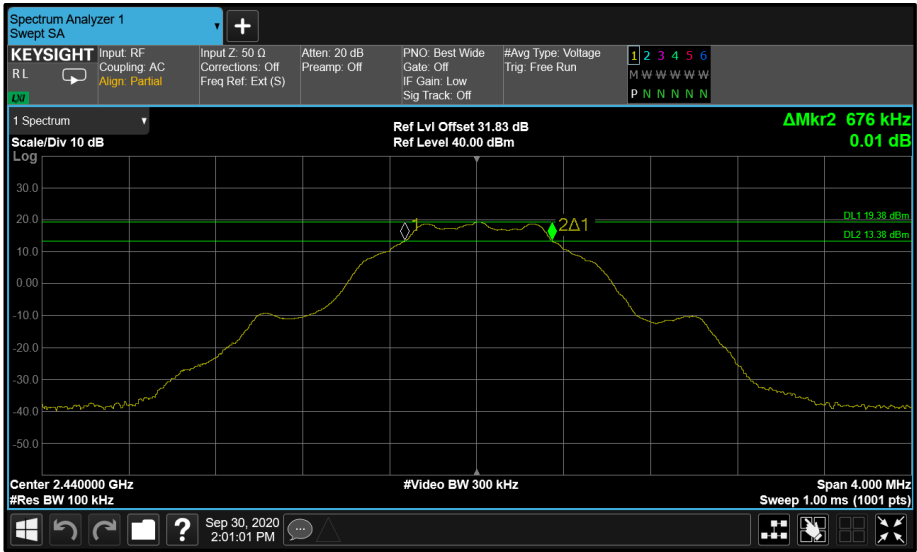


Figure 56 - Core 0 LE 1M 2440 MHz (CH19) 6dB & 99% Bandwidth

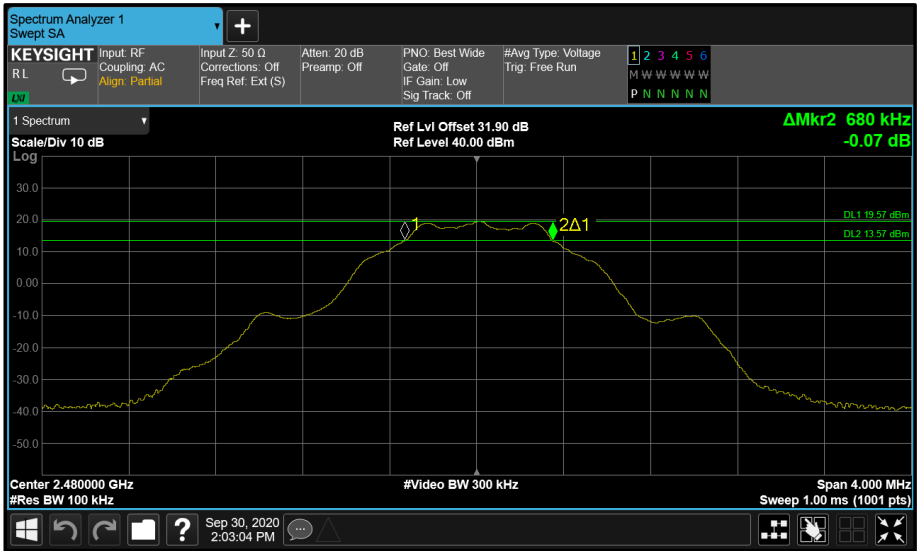


Figure 57 - Core 0 LE 1M 2480 MHz (CH39) 6dB & 99% Bandwidth



Modulation: GFSK (LE 2M)

Test Frequency (MHz)	6 dB Bandwidth (MHz)
	Port(s)
	Core 0
2402	1.224
2440	1.224
2480	1.216

Table 36 - 6 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)
	Port(s)
	Core 0
2402	2.088
2440	2.088
2480	2.088

Table 37 - 99% Bandwidth Results

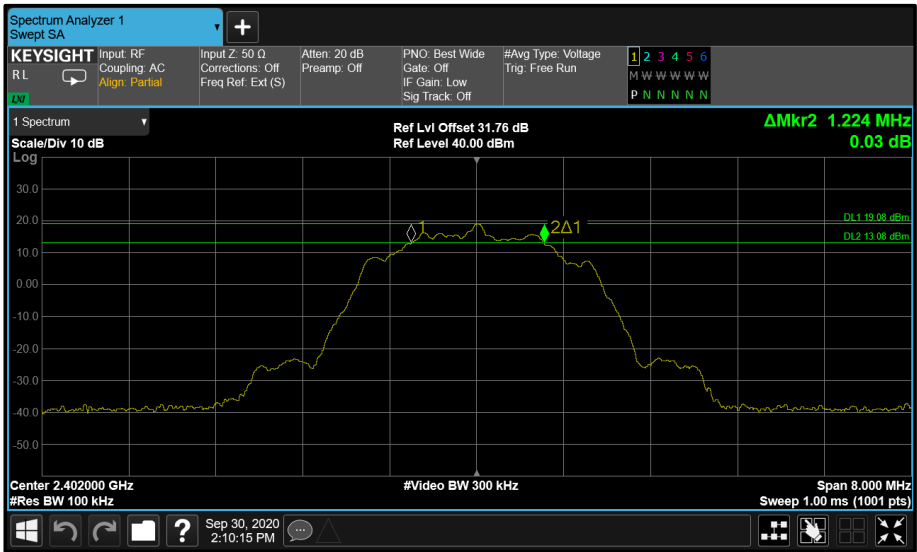


Figure 58 - Core 0 LE 2M 2402 MHz (CH0) 6dB & 99% Bandwidth

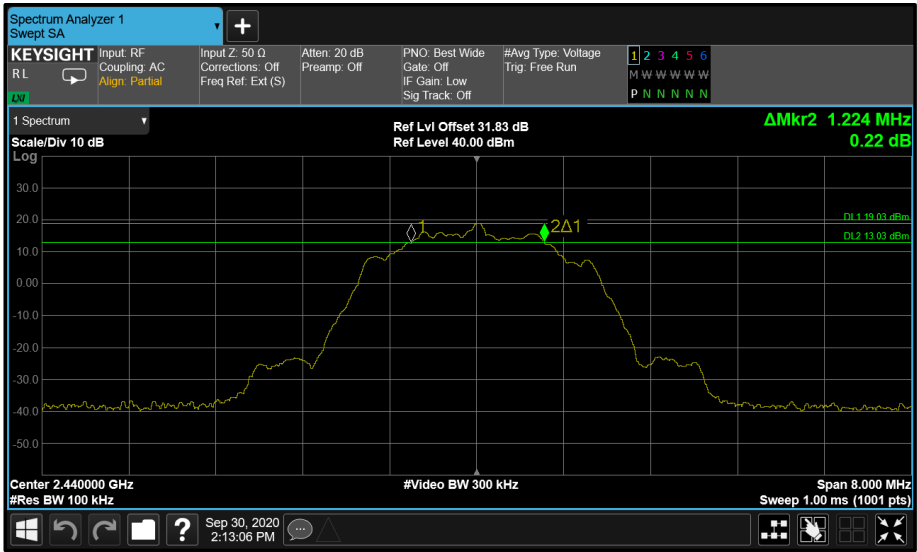


Figure 59 - Core 0 LE 2M 2440 MHz (CH19) 6dB & 99% Bandwidth

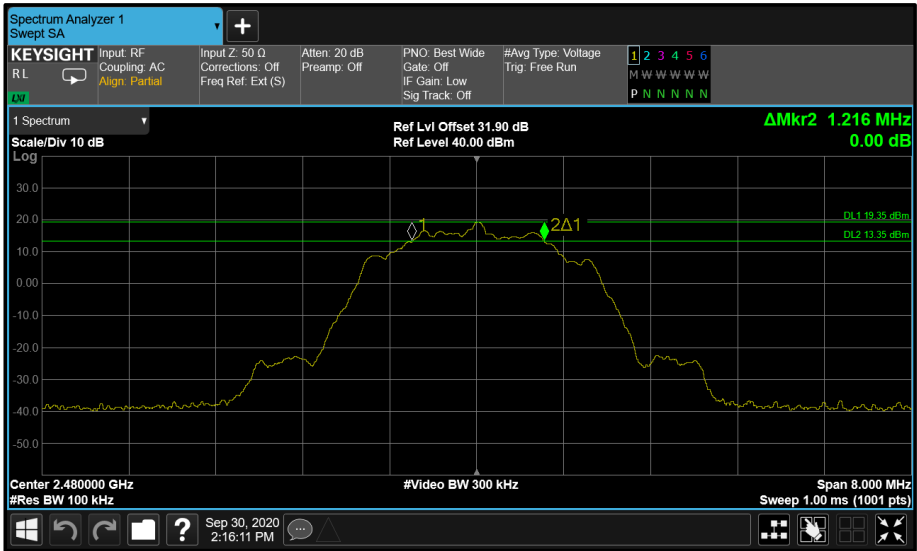


Figure 60 - Core 0 LE 2M 2480 MHz (CH39) 6dB & 99% Bandwidth

Antenna Port Configuration: Beamforming

Modulation: 8-DPSK (HDR4)

Test Frequency (MHz)	6 dB Bandwidth (MHz)	
	Port(s)	
	Core 0	Core 1
2404	1.560	1.768
2441	1.936	1.568
2478	1.544	1.568

Table 38 - 6 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)	
	Port(s)	
	Core 0	Core 1
2404	2.352	2.352
2441	2.392	2.344
2478	2.352	2.352

Table 39 - 99% Bandwidth Results

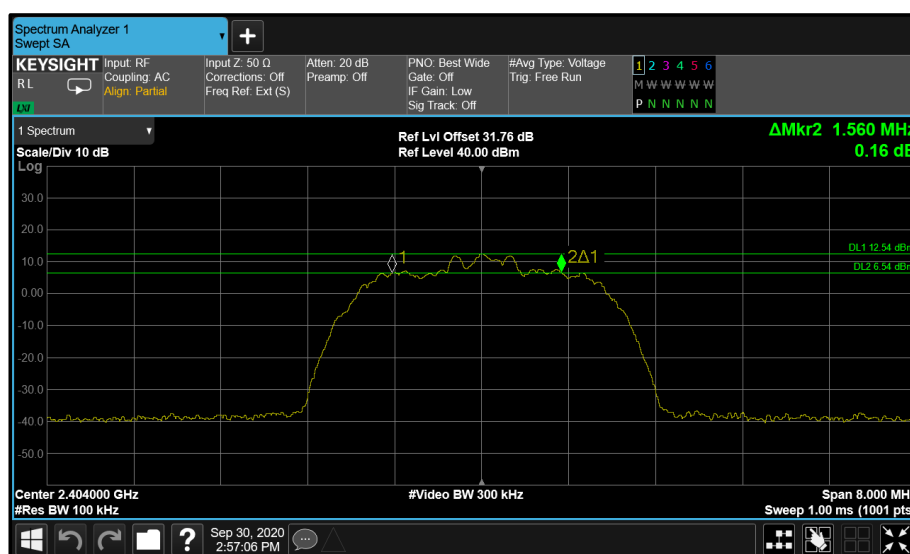


Figure 61 - Core 0 HDR4 2404 MHz (CH2) 6dB & 99% Bandwidth

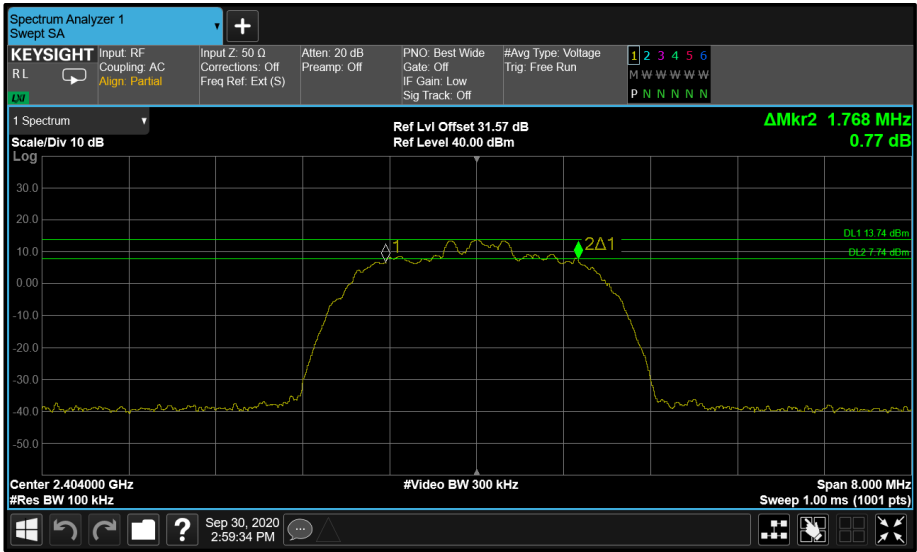


Figure 62 - Core 1 HDR4 2404 MHz (CH2) 6dB & 99% Bandwidth

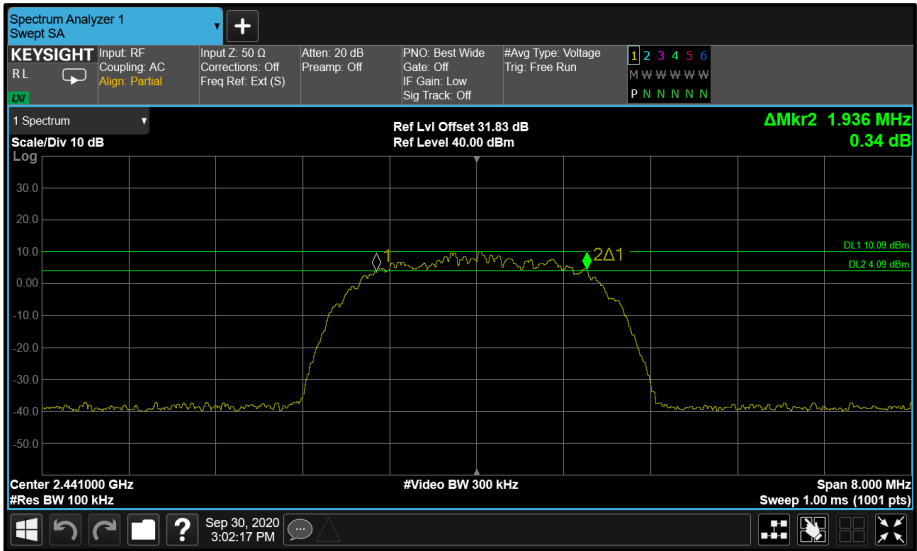


Figure 63 - Core 0 HDR4 2441 MHz (CH39) 6dB & 99% Bandwidth

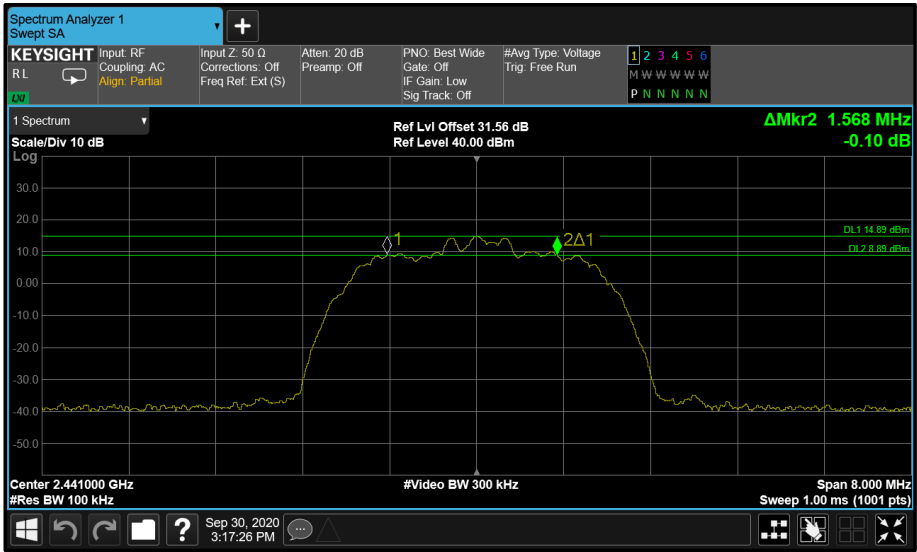


Figure 64 - Core 1 HDR4 2441 MHz (CH39) 6dB & 99% Bandwidth

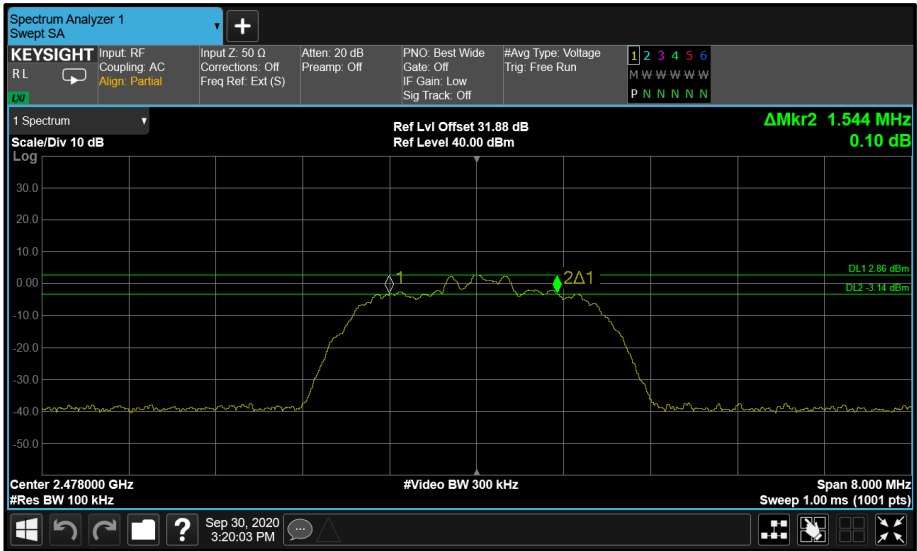


Figure 65 - Core 0 HDR4 2478 MHz (CH76) 6dB & 99% Bandwidth

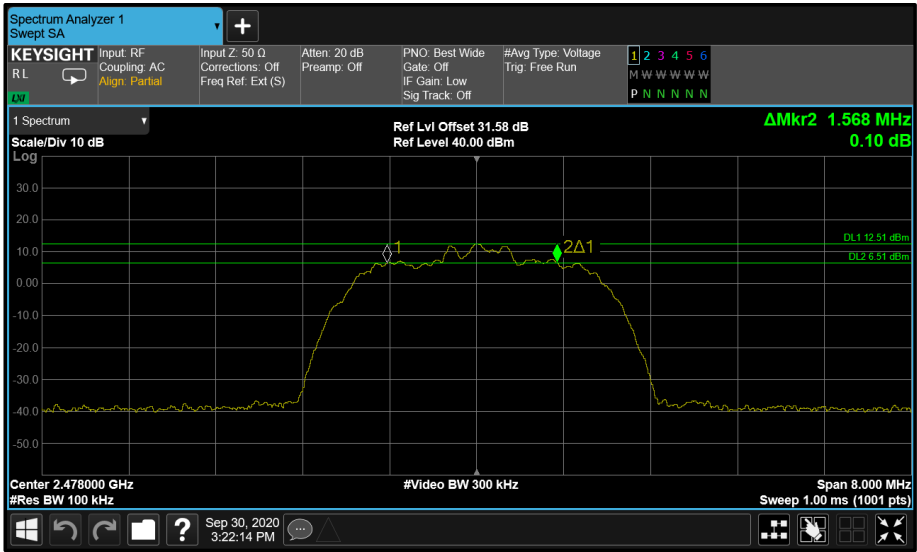


Figure 66 - Core 1 HDR4 2478 MHz (CH76) 6dB & 99% Bandwidth



Modulation: 8-DPSK (HDR8)

Test Frequency (MHz)	6 dB Bandwidth (MHz)	
	Port(s)	
	Core 0	Core 1
2404	1.020	1.030
2441	1.030	1.010
2478	2.750	0.670

Table 40 - 6 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)	
	Port(s)	
	Core 0	Core 1
2404	4.570	4.570
2441	4.570	4.560
2478	4.630	4.540

Table 41 - 99% Bandwidth Results

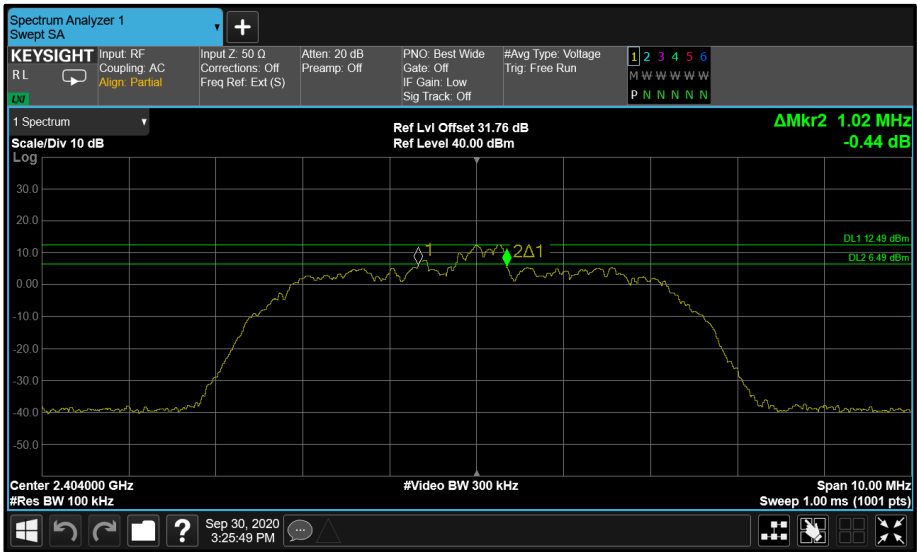
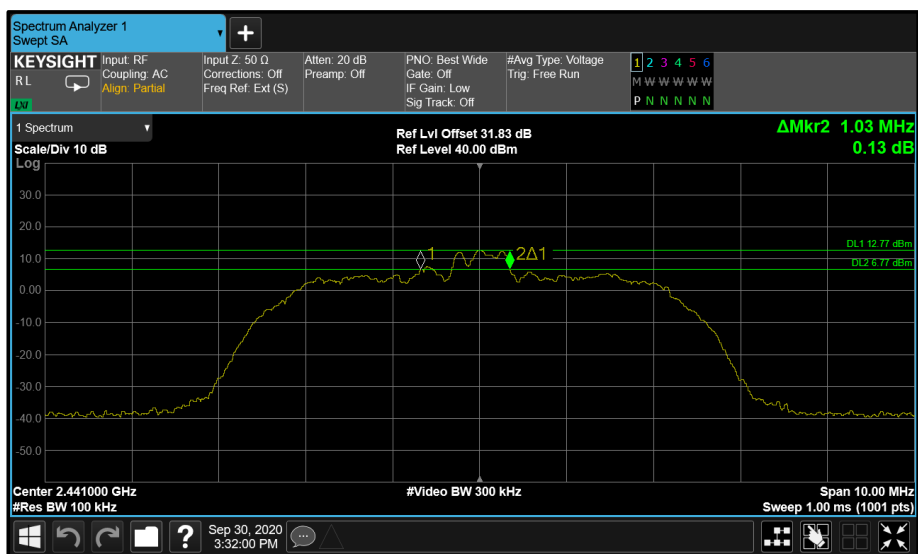
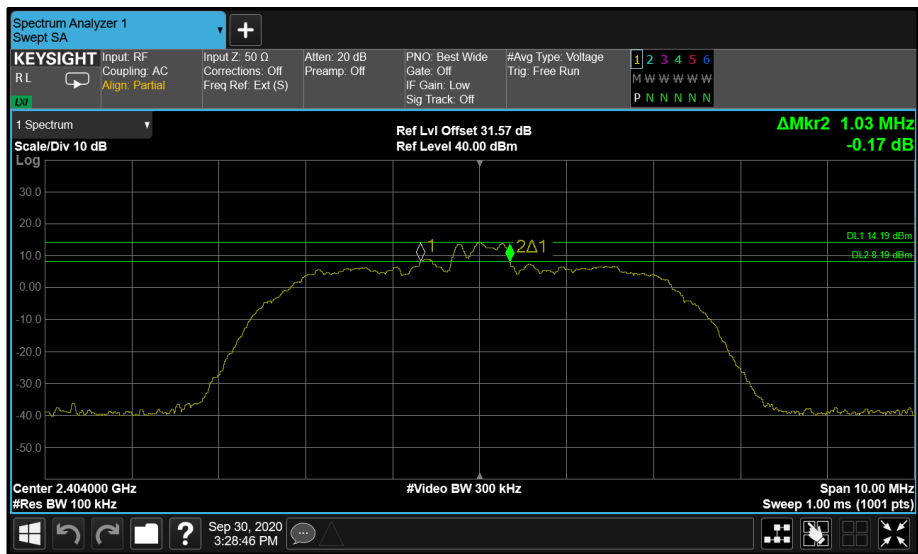


Figure 67 - Core 0 HDR8 2404 MHz (CH2) 6dB & 99% Bandwidth



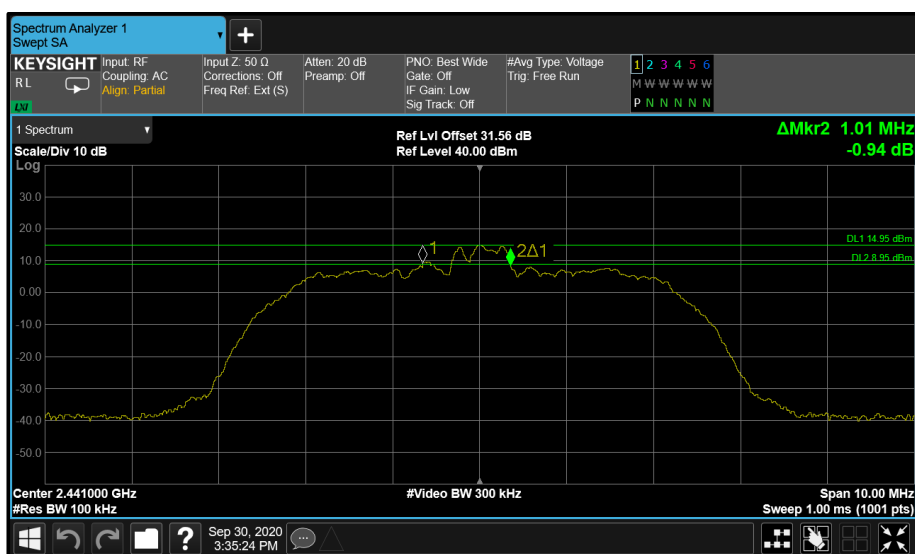


Figure 70 - Core 1 HDR8 2441 MHz (CH39) 6dB & 99% Bandwidth

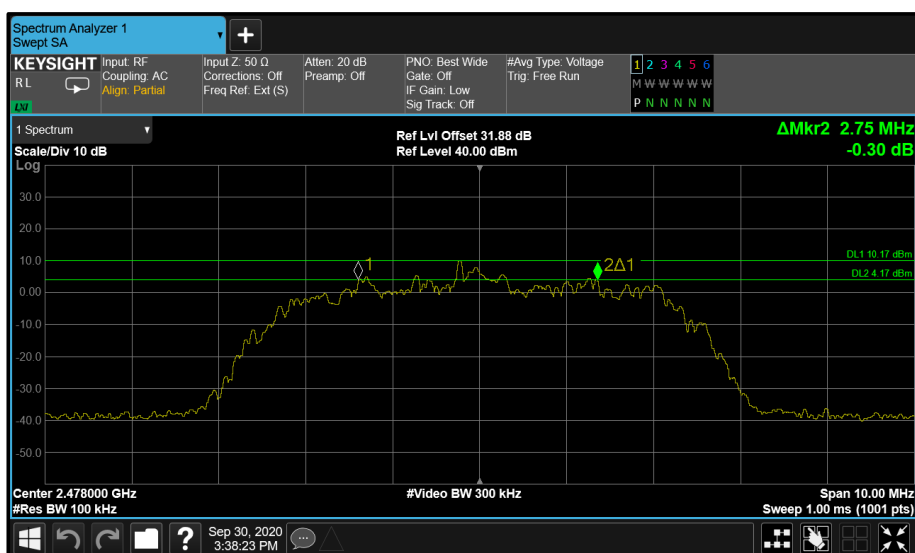


Figure 71 - Core 0 HDR8 2478 MHz (CH76) 6dB & 99% Bandwidth

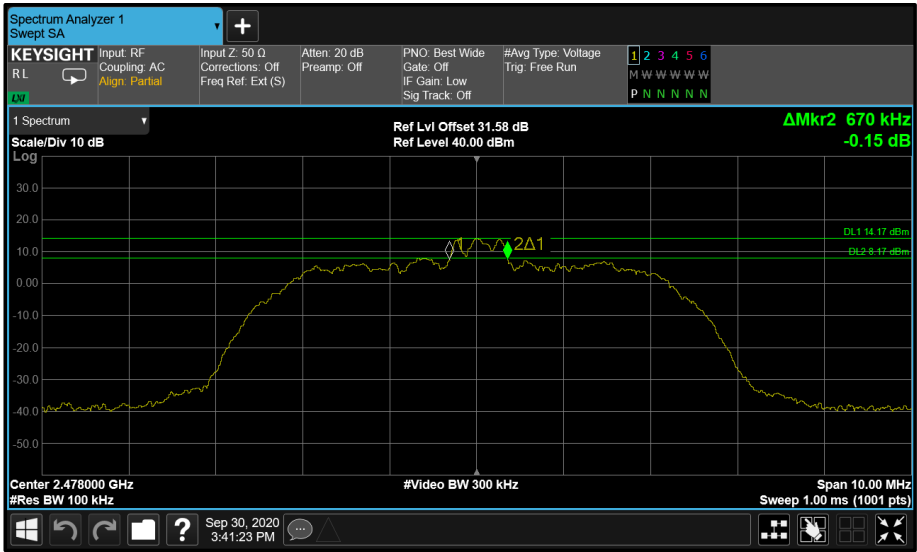


Figure 72 - Core 1 HDR8 2478 MHz (CH76) 6dB & 99% Bandwidth

Modulation: GFSK (LE 1M)

Test Frequency (MHz)	6 dB Bandwidth (MHz)	
	Port(s)	
	Core 0	Core 1
2402	0.700	0.708
2440	0.704	0.708
2480	0.712	0.704

Table 42 - 6 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)	
	Port(s)	
	Core 0	Core 1
2402	1.072	1.076
2440	1.076	1.080
2480	1.080	1.080

Table 43 - 99% Bandwidth Results

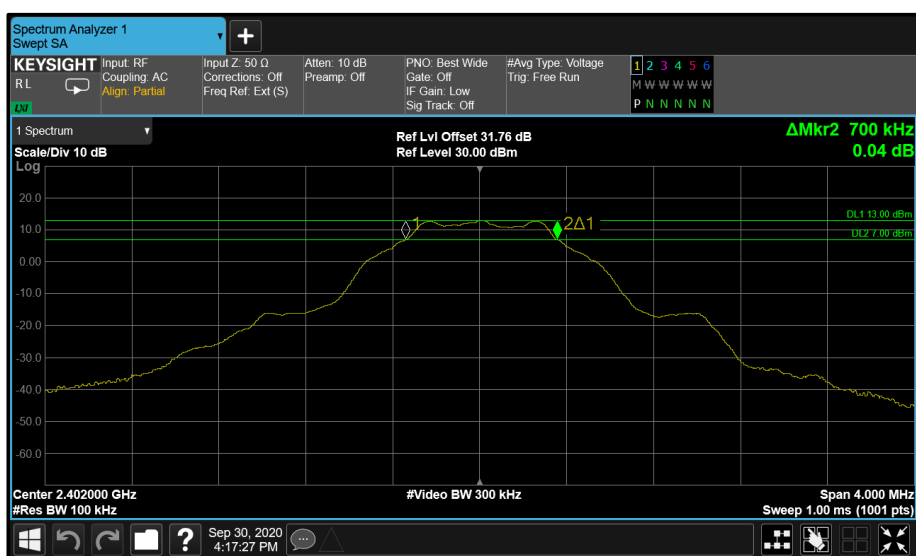


Figure 73 - Core 0 LE 1M 2402 MHz (CH0) 6dB & 99% Bandwidth

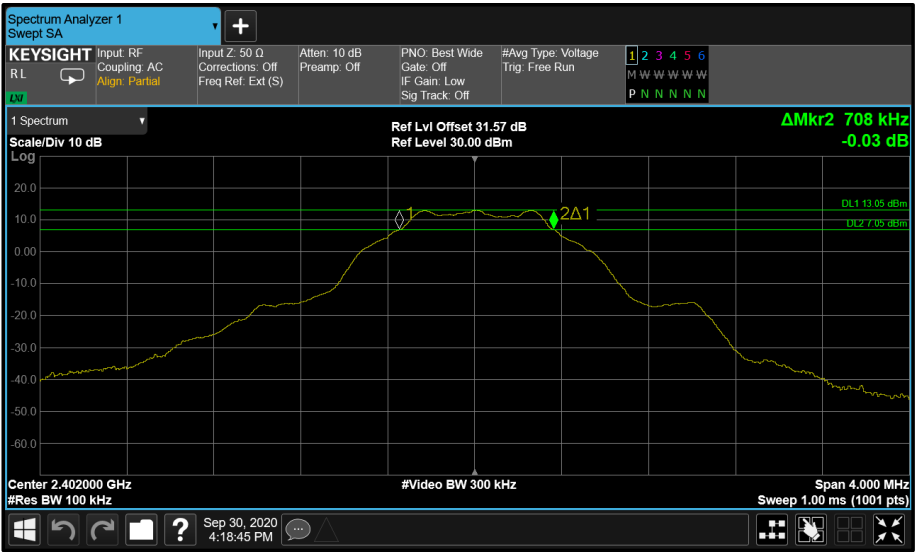


Figure 74 - Core 1 LE 1M 2402 MHz (CH0) 6dB & 99% Bandwidth

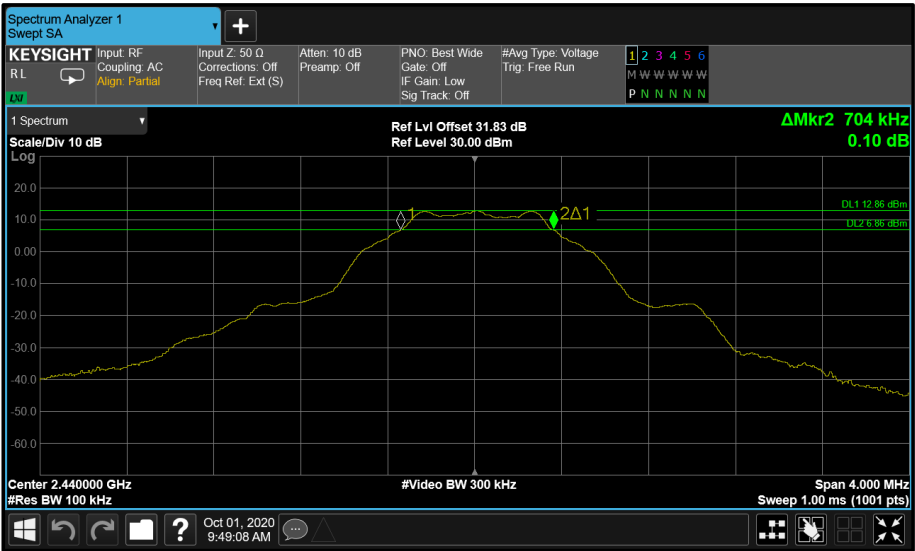


Figure 75 - Core 0 LE 1M 2440 MHz (CH19) 6dB & 99% Bandwidth

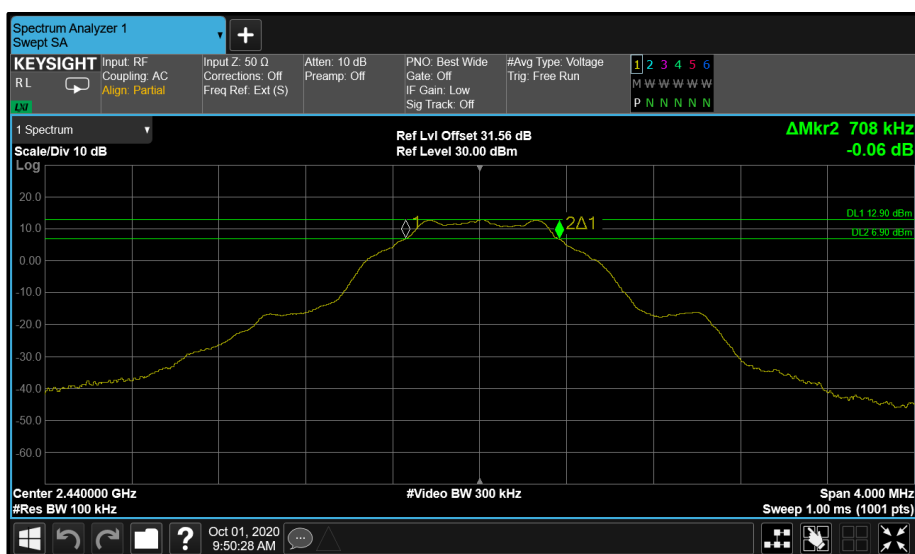


Figure 76 - Core 1 LE 1M 2440 MHz (CH19) 6dB & 99% Bandwidth

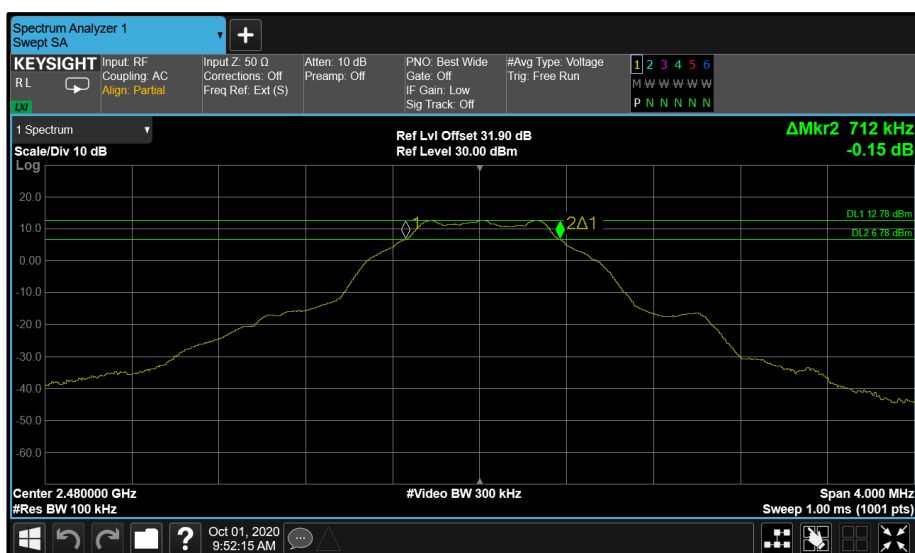


Figure 77 - Core 0 LE 1M 2480 MHz (CH39) 6dB & 99% Bandwidth

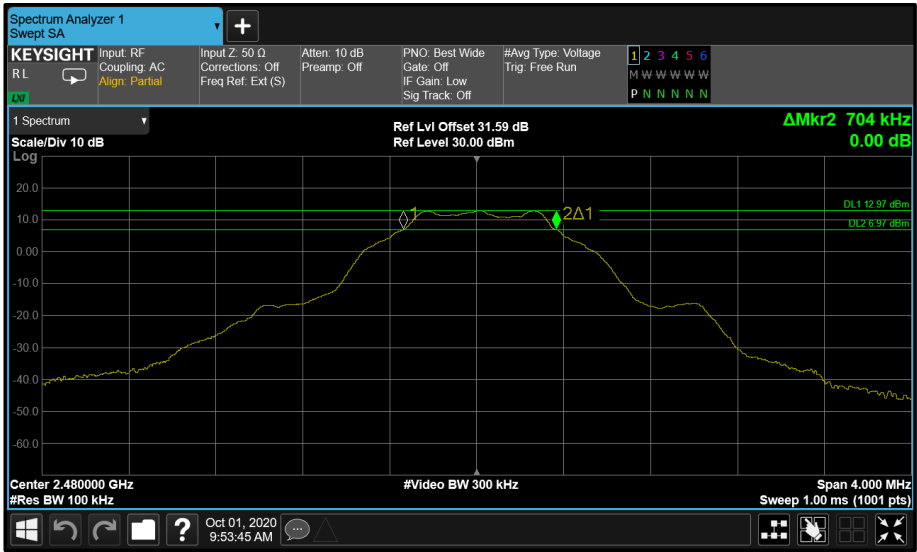


Figure 78 - Core 1 LE 1M 2480 MHz (CH39) 6dB & 99% Bandwidth

Modulation: GFSK (LE 2M)

Test Frequency (MHz)	6 dB Bandwidth (MHz)	
	Port(s)	
	Core 0	Core 1
2402	1.264	1.272
2440	1.272	1.272
2480	1.272	1.272

Table 44 - 6 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)	
	Port(s)	
	Core 0	Core 1
2402	2.080	2.088
2440	2.088	2.088
2480	2.096	2.096

Table 45 - 99% Bandwidth Results

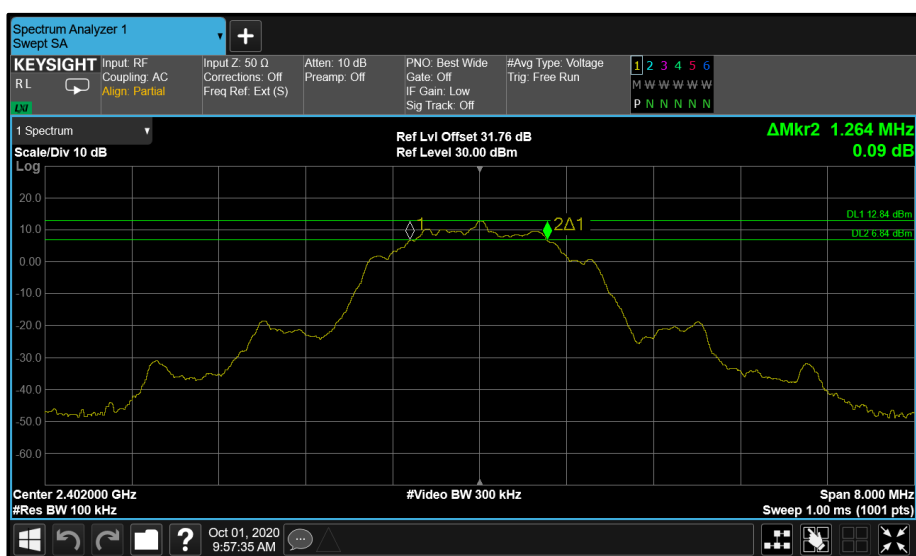


Figure 79 - Core 0 LE 2M 2402 MHz (CH0) 6dB & 99% Bandwidth

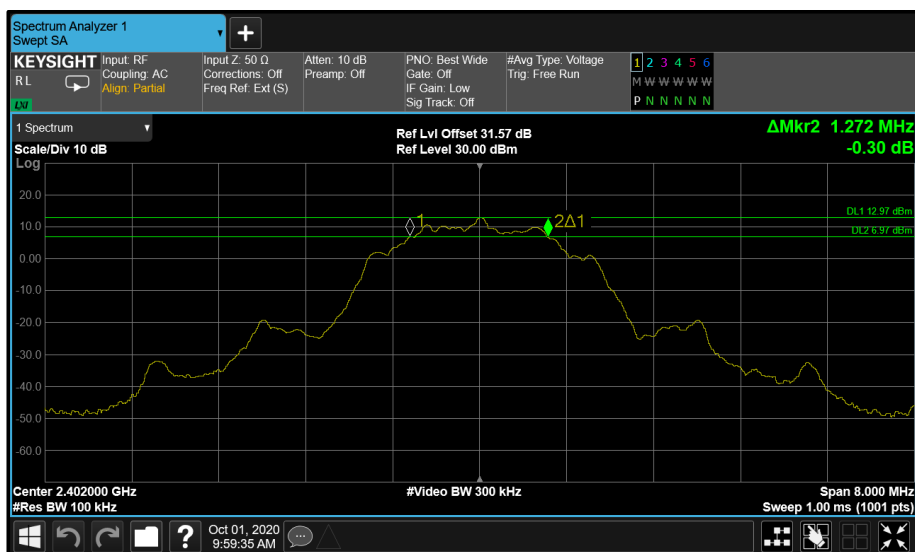


Figure 80 - Core 1 LE 2M 2402 MHz (CH0) 6dB & 99% Bandwidth

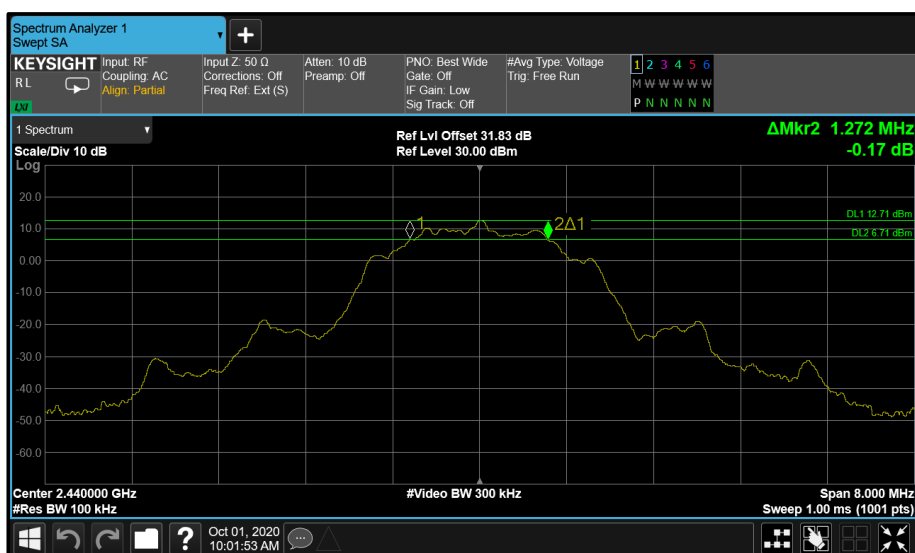


Figure 81 - Core 0 LE 2M 2440 MHz (CH19) 6dB & 99% Bandwidth

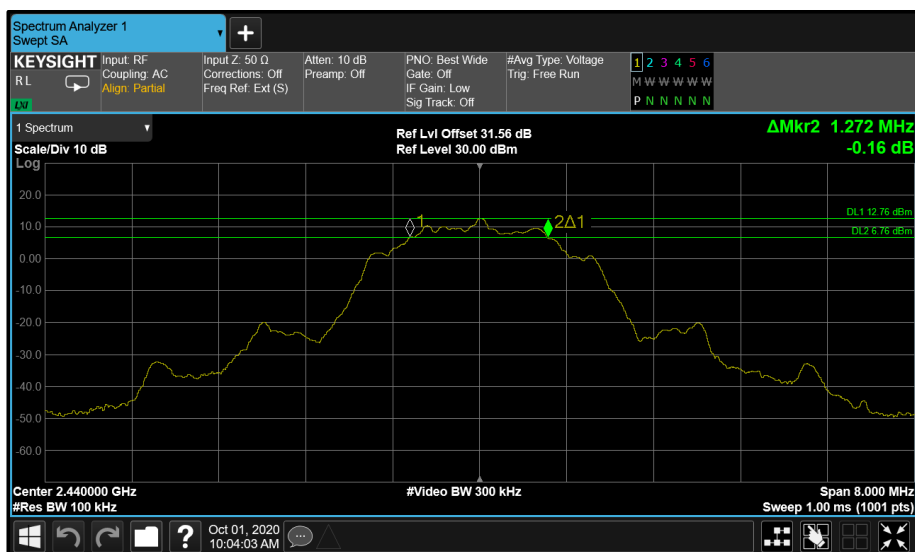


Figure 82 - Core 1 LE 2M 2440 MHz (CH19) 6dB & 99% Bandwidth

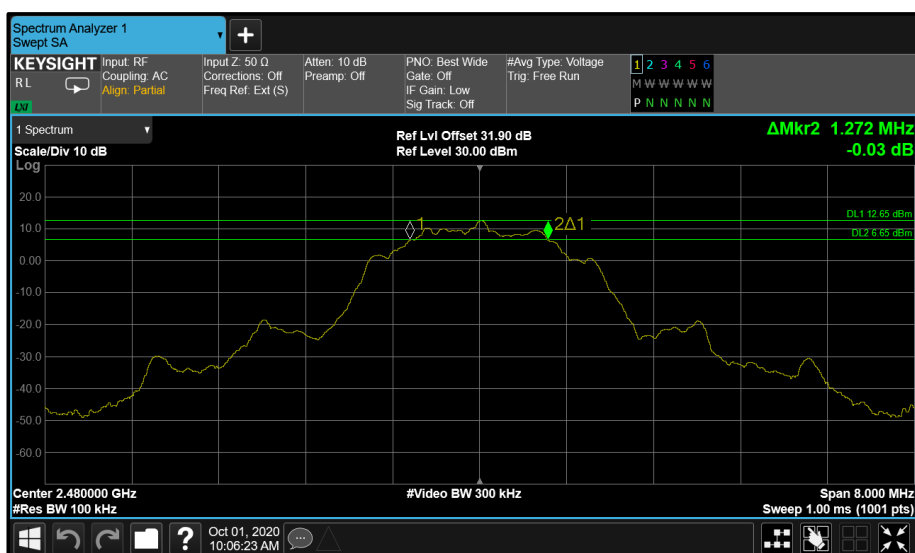


Figure 83 - Core 0 LE 2M 2480 MHz (CH39) 6dB & 99% Bandwidth

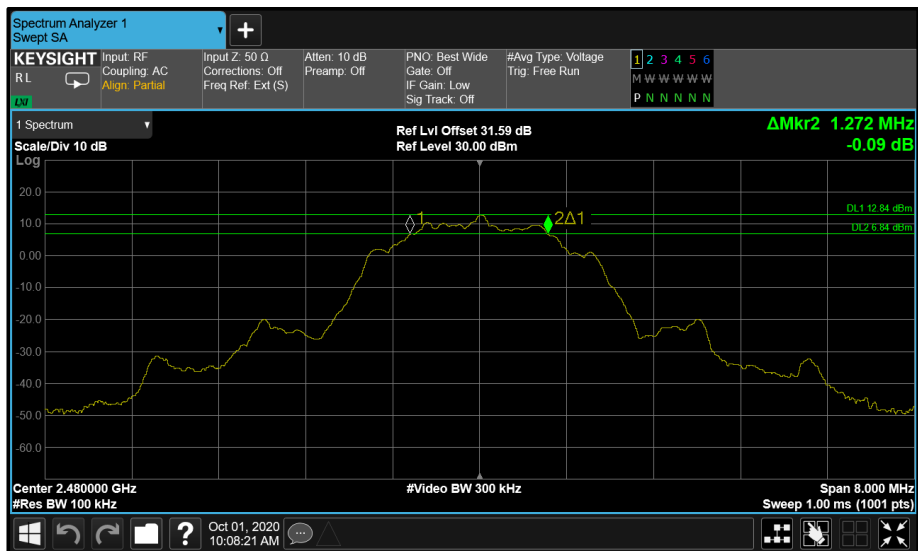


Figure 84 - Core 1 LE 2M 2480 MHz (CH39) 6dB & 99% Bandwidth

FCC 47 CFR Part 15, Limit Clause 15.247(a)(2) and ISED RSS-247, Clause 5.2(a)

The minimum 6 dB Bandwidth shall be at least 500 kHz.