



| Test Configuration       |                                    |                 |              |  |
|--------------------------|------------------------------------|-----------------|--------------|--|
| Frequency Range:         | 2400-2483.5 MHz                    | Band:           | 2.4 GHz      |  |
| Limit Clause(s):         | FCC 15.247(a)(1)<br>RSS-247 5.1 b) | Test Method(s): | C63.10 7.8.2 |  |
| Additional Reference(s): | -                                  |                 |              |  |

| DUT Configuration      |                       |                          |   |
|------------------------|-----------------------|--------------------------|---|
| Mode:                  | ePA 8-DPSK (3-DH5)    | Duty Cycle (%):          | - |
| Antenna Configuration: | Beamforming           | DCCF (dB):               | - |
| Active Port(s):        | A+B (Core 0 + Core 1) | Peak Antenna Gain (dBi): | - |

| Test Frequency<br>(MHz) | 20 dB Bandwidth<br>(MHz) | Carrier Frequency Separation (MHz) |          |       | Limit<br>(kHz) |
|-------------------------|--------------------------|------------------------------------|----------|-------|----------------|
|                         |                          | F1C                                | F2C      | FHS   |                |
| 2441                    | 1.333                    | 2441.006                           | 2442.007 | 1.001 | ≥888.8         |

Table 43 - Carrier Frequency Separation Results

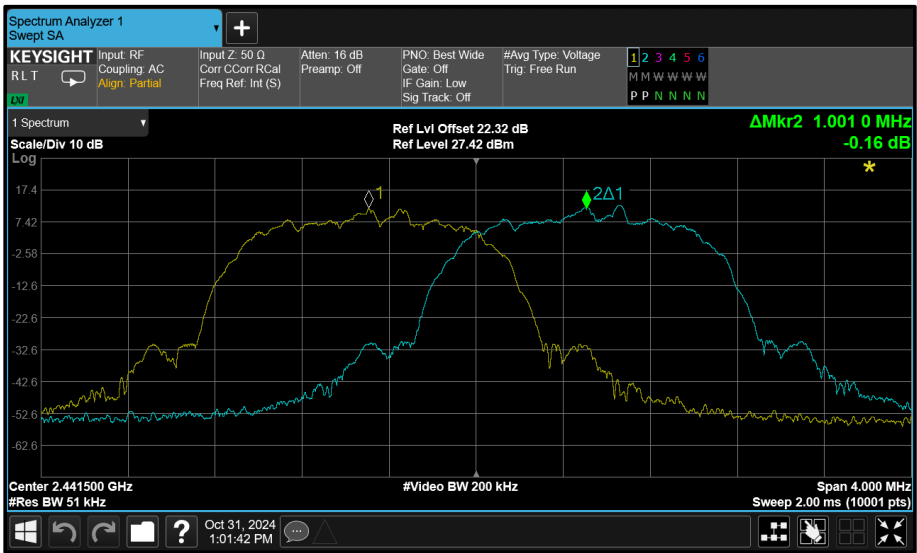


Figure 62 - 8-DPSK - 2441 MHz (CH39)



FCC 47 CFR Part 15, Limit Clause 15.247 (a)(1)

Frequency Hopping systems shall have Hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the Hopping channel, whichever is greater.

Alternatively, frequency Hopping systems operating in the band 2400-2483.5 MHz may have Hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the Hopping channel, whichever is greater, provided the systems operate with an output power no greater than 0.125 W.

ISED RSS-247, Limit Clause 5.1 (b)

FHSs shall have Hopping channel carrier frequencies separated by a minimum of 25 kHz or the -20 dB bandwidth of the Hopping channel, whichever is greater. Alternatively, FHSs operating in the band 2400-2483.5 MHz may have Hopping channel carrier frequencies that are separated by 25 kHz or two thirds of the 20 dB bandwidth of the Hopping channel, whichever is greater, provided that the systems operate with an output power no greater than 0.125 W.

### 2.3.7 Test Location and Test Equipment Used

This test was carried out in RF Laboratory 14.

| Instrument               | Manufacturer          | Type No.        | TE No. | Calibration Period (months) | Calibration Expiry Date |
|--------------------------|-----------------------|-----------------|--------|-----------------------------|-------------------------|
| Hygrometer               | Rotronic              | I-1000          | 3068   | 12                          | 07-Nov-2024             |
| 1500VA AC Power Supply   | iTech                 | IT7324          | 5907   | -                           | O/P Mon                 |
| MXA Signal Analyser      | Keysight Technologies | N9020B          | 5919   | 24                          | 18-Mar-2026             |
| Digital Multimeter       | Fluke                 | 115             | 6145   | 12                          | 06-Jun-2025             |
| Signal Conditioning Unit | TUV SUD               | SPECTRUM_SCU001 | 6519   | 12                          | 08-Feb-2025             |
| SCU Cable Assembly       | TUV SUD               | SPECTRUM_SCU_CA | 6520   | 12                          | 09-Feb-2025             |
| SCU Cable Assembly       | TUV SUD               | SPECTRUM_SCU_CA | 6521   | 12                          | 09-Feb-2025             |
| SCU Cable Assembly       | TUV SUD               | SPECTRUM_SCU_CA | 6522   | 12                          | 09-Feb-2025             |

**Table 44**

O/P Mon - Output Monitored using calibrated equipment



## **2.4 Frequency Hopping Systems - Number of Hopping Channels**

### **2.4.1 Specification Reference**

FCC 47 CFR Part 15C, Clause 15.247 (a)(1)  
ISED RSS-247, Clause 5.1

### **2.4.2 Equipment Under Test and Modification State**

A3389, S/N: MGC29YC7F7 - Modification State 0

### **2.4.3 Date of Test**

30-October-2024

### **2.4.4 Test Method**

The test was performed in accordance with ANSI C63.10, clause 7.8.3.

### **2.4.5 Environmental Conditions**

|                     |         |
|---------------------|---------|
| Ambient Temperature | 21.0 °C |
| Relative Humidity   | 57.0 %  |



2.4.6 Test Results

2.4 GHz Bluetooth BDR/EDR

| Test Configuration       |                                         |                 |              |
|--------------------------|-----------------------------------------|-----------------|--------------|
| Frequency Range:         | 2400-2483.5 MHz                         | Band:           | 2.4 GHz      |
| Limit Clause(s):         | FCC 15.247(a)(1)(iii)<br>RSS-247 5.1 d) | Test Method(s): | C63.10 7.8.3 |
| 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): | - |

| Number of Hopping Frequencies |  | Limit |
|-------------------------------|--|-------|
| 79                            |  | ≥15.0 |

Table 45 - Number of Hopping Frequencies Results

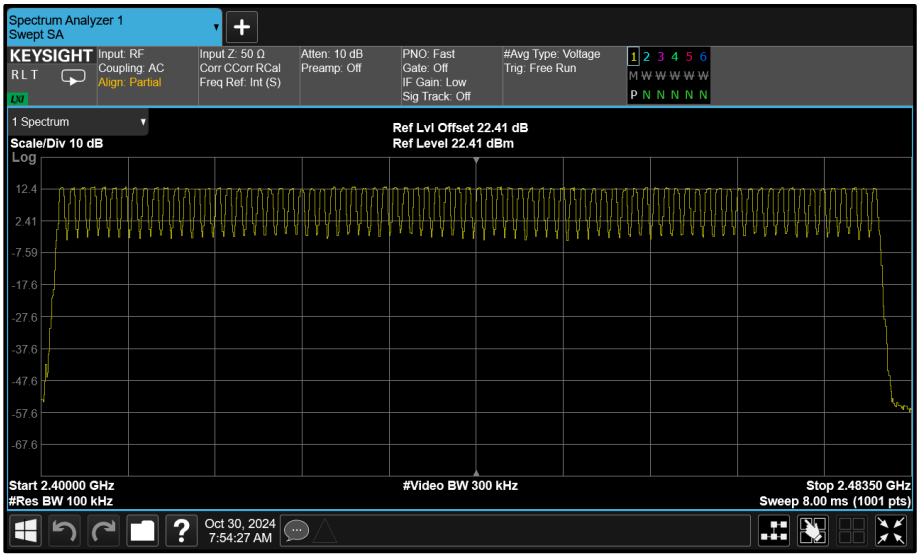


Figure 63 - GFSK (DH5) - Number of Hopping Channels



| Test Configuration       |                                         |                 |              |
|--------------------------|-----------------------------------------|-----------------|--------------|
| Frequency Range:         | 2400-2483.5 MHz                         | Band:           | 2.4 GHz      |
| Limit Clause(s):         | FCC 15.247(a)(1)(iii)<br>RSS-247 5.1 d) | Test Method(s): | C63.10 7.8.3 |
| Additional Reference(s): | -                                       |                 |              |

| DUT Configuration      |                           |                          |   |
|------------------------|---------------------------|--------------------------|---|
| Mode:                  | iPA $\pi/4$ DQPSK (2-DH5) | Duty Cycle (%):          | - |
| Antenna Configuration: | SISO                      | DCCF (dB):               | - |
| Active Port(s):        | B (Core 1)                | Peak Antenna Gain (dBi): | - |

| Number of Hopping Frequencies | Limit       |
|-------------------------------|-------------|
| 79                            | $\geq 15.0$ |

Table 46 - Number of Hopping Frequencies Results

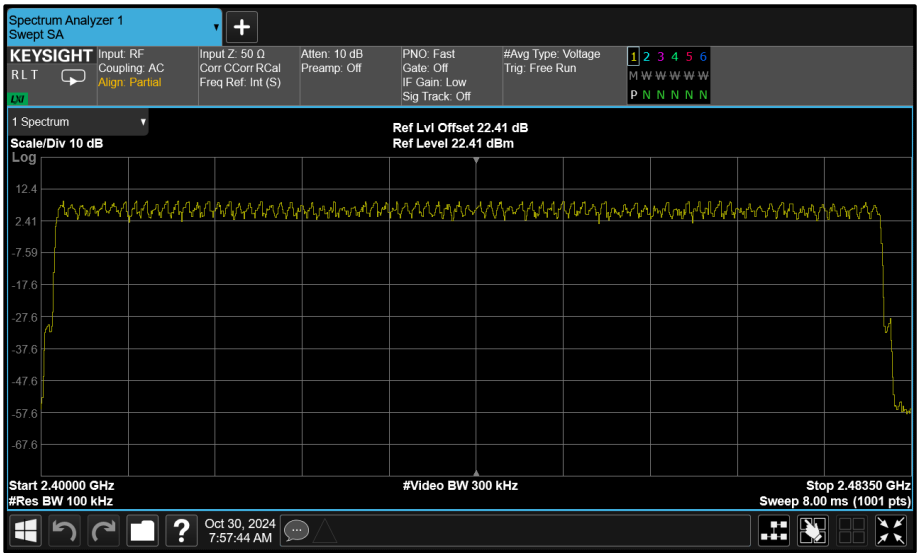


Figure 64 -  $\pi/4$  DQPSK (2-DH5) - Number of Hopping Channels



| Test Configuration       |                                         |                 |              |
|--------------------------|-----------------------------------------|-----------------|--------------|
| Frequency Range:         | 2400-2483.5 MHz                         | Band:           | 2.4 GHz      |
| Limit Clause(s):         | FCC 15.247(a)(1)(iii)<br>RSS-247 5.1 d) | Test Method(s): | C63.10 7.8.3 |
| Additional Reference(s): | -                                       |                 |              |

| DUT Configuration      |                    |                          |   |
|------------------------|--------------------|--------------------------|---|
| Mode:                  | iPA 8-DPSK (3-DH5) | Duty Cycle (%):          | - |
| Antenna Configuration: | SISO               | DCCF (dB):               | - |
| Active Port(s):        | B (Core 1)         | Peak Antenna Gain (dBi): | - |

| Number of Hopping Frequencies | Limit |
|-------------------------------|-------|
| 79                            | ≥15.0 |

Table 47 - Number of Hopping Frequencies Results

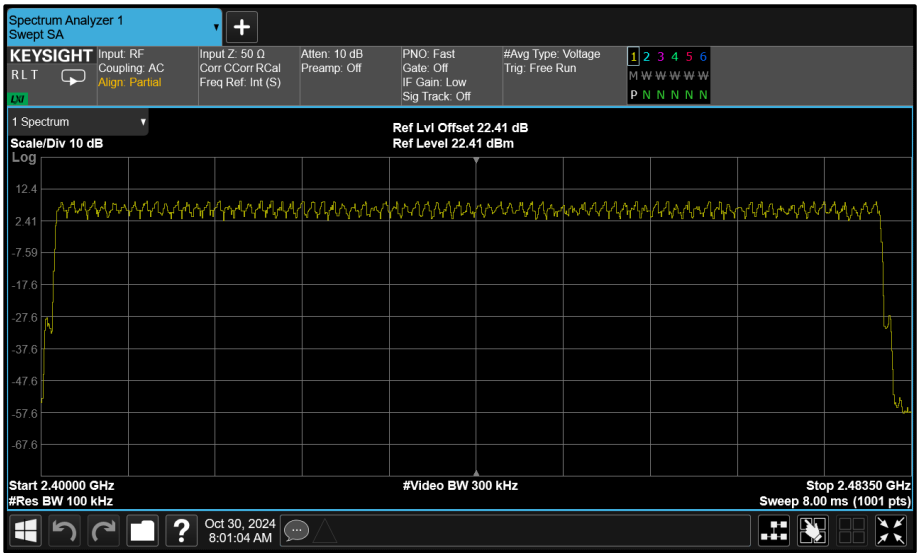


Figure 65 - 8-DPSK (3-DH5) - Number of Hopping Channels



| Test Configuration       |                                         |                 |              |
|--------------------------|-----------------------------------------|-----------------|--------------|
| Frequency Range:         | 2400-2483.5 MHz                         | Band:           | 2.4 GHz      |
| Limit Clause(s):         | FCC 15.247(a)(1)(iii)<br>RSS-247 5.1 d) | Test Method(s): | C63.10 7.8.3 |
| Additional Reference(s): | -                                       |                 |              |

| DUT Configuration      |                |                          |   |
|------------------------|----------------|--------------------------|---|
| Mode:                  | iPA GFSK (DH5) | Duty Cycle (%):          | - |
| Antenna Configuration: | SISO           | DCCF (dB):               | - |
| Active Port(s):        | C (Core 2)     | Peak Antenna Gain (dBi): | - |

| Number of Hopping Frequencies | Limit |
|-------------------------------|-------|
| 79                            | ≥15.0 |

Table 48 - Number of Hopping Frequencies Results

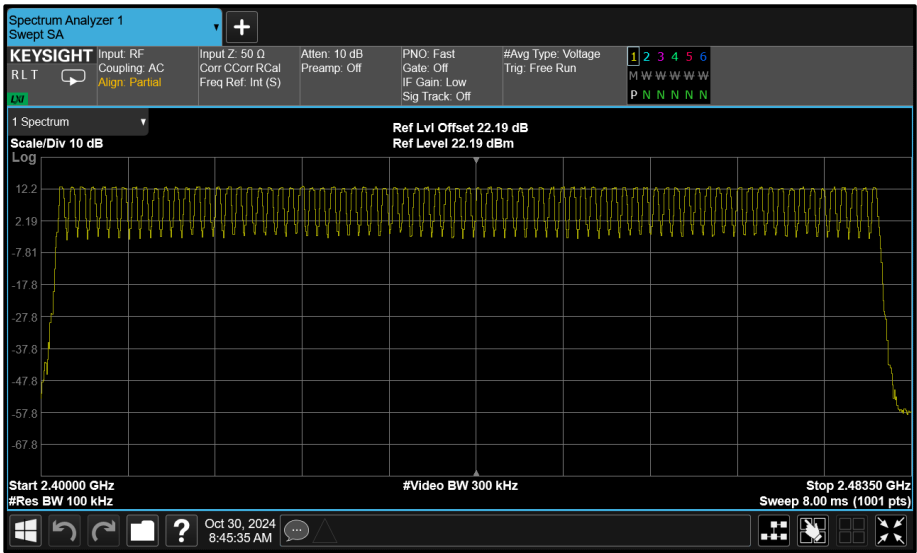


Figure 66 - GFSK (DH5) - Number of Hopping Channels



| Test Configuration       |                                         |                 |              |
|--------------------------|-----------------------------------------|-----------------|--------------|
| Frequency Range:         | 2400-2483.5 MHz                         | Band:           | 2.4 GHz      |
| Limit Clause(s):         | FCC 15.247(a)(1)(iii)<br>RSS-247 5.1 d) | Test Method(s): | C63.10 7.8.3 |
| Additional Reference(s): | -                                       |                 |              |

| DUT Configuration      |                           |                          |   |
|------------------------|---------------------------|--------------------------|---|
| Mode:                  | iPA $\pi/4$ DQPSK (2-DH5) | Duty Cycle (%):          | - |
| Antenna Configuration: | SISO                      | DCCF (dB):               | - |
| Active Port(s):        | C (Core 2)                | Peak Antenna Gain (dBi): | - |

| Number of Hopping Frequencies | Limit       |
|-------------------------------|-------------|
| 79                            | $\geq 15.0$ |

Table 49 - Number of Hopping Frequencies Results

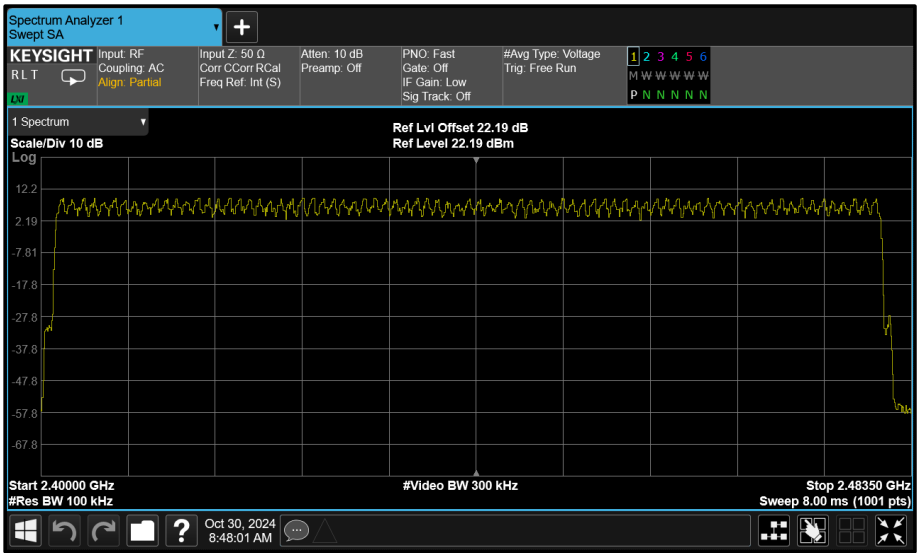


Figure 67 -  $\pi/4$  DQPSK (2-DH5) - Number of Hopping Channels





| Test Configuration       |                                         |                 |              |
|--------------------------|-----------------------------------------|-----------------|--------------|
| Frequency Range:         | 2400-2483.5 MHz                         | Band:           | 2.4 GHz      |
| Limit Clause(s):         | FCC 15.247(a)(1)(iii)<br>RSS-247 5.1 d) | Test Method(s): | C63.10 7.8.3 |
| Additional Reference(s): | -                                       |                 |              |

| DUT Configuration      |                    |                          |   |
|------------------------|--------------------|--------------------------|---|
| Mode:                  | iPA 8-DPSK (3-DH5) | Duty Cycle (%):          | - |
| Antenna Configuration: | SISO               | DCCF (dB):               | - |
| Active Port(s):        | C (Core 2)         | Peak Antenna Gain (dBi): | - |

| Number of Hopping Frequencies |  | Limit |
|-------------------------------|--|-------|
| 79                            |  | ≥15.0 |

Table 50 - Number of Hopping Frequencies Results

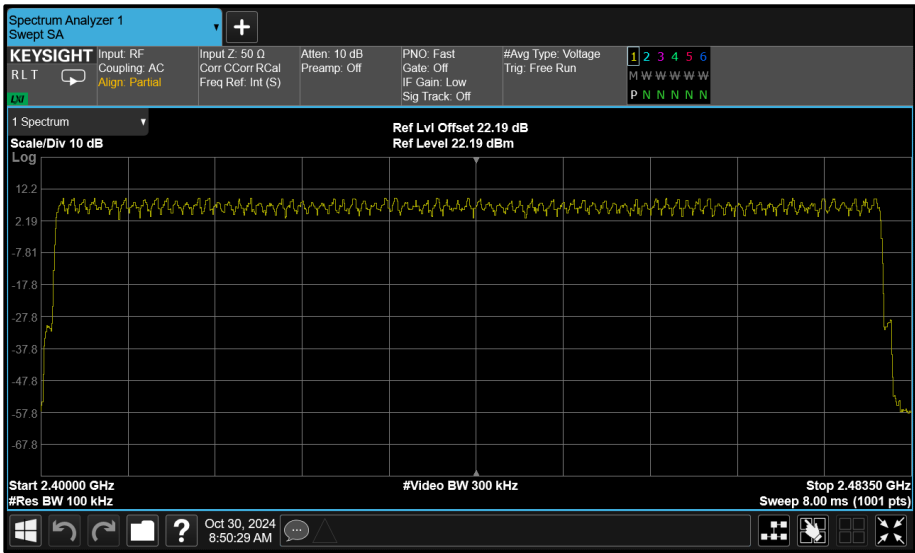


Figure 68 - 8-DPSK (3-DH5) - Number of Hopping Channels



| Test Configuration       |                                         |                 |              |
|--------------------------|-----------------------------------------|-----------------|--------------|
| Frequency Range:         | 2400-2483.5 MHz                         | Band:           | 2.4 GHz      |
| Limit Clause(s):         | FCC 15.247(a)(1)(iii)<br>RSS-247 5.1 d) | Test Method(s): | C63.10 7.8.3 |
| Additional Reference(s): | -                                       |                 |              |

| DUT Configuration      |                           |                          |   |
|------------------------|---------------------------|--------------------------|---|
| Mode:                  | ePA $\pi/4$ DQPSK (2-DH5) | Duty Cycle (%):          | - |
| Antenna Configuration: | SISO                      | DCCF (dB):               | - |
| Active Port(s):        | B (Core 1)                | Peak Antenna Gain (dBi): | - |

| Number of Hopping Frequencies | Limit       |
|-------------------------------|-------------|
| 79                            | $\geq 15.0$ |

Table 51 - Number of Hopping Frequencies Results

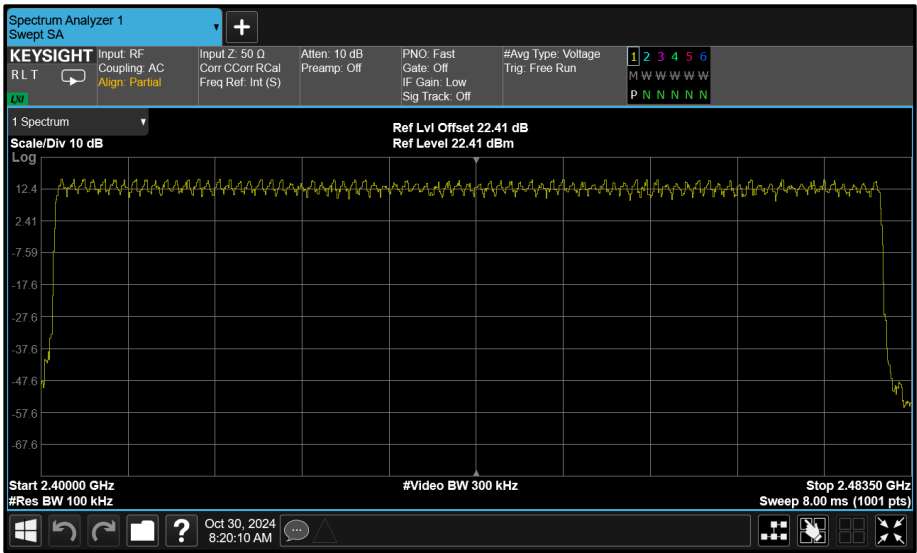
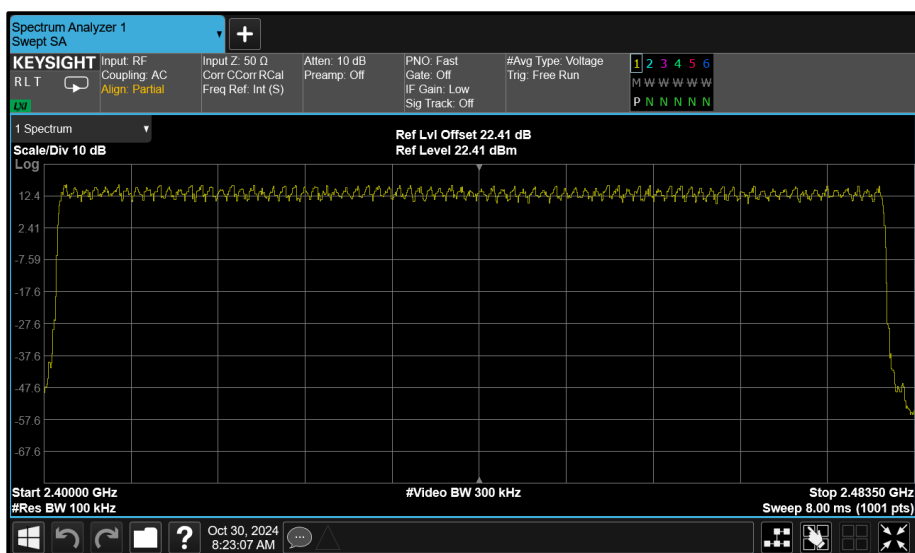


Figure 69 -  $\pi/4$  DQPSK (2-DH5) - Number of Hopping Channels

|                               |       |
|-------------------------------|-------|
| Number of Hopping Frequencies | Limit |
| 79                            | ≥15.0 |

**Table 52 - Number of Hopping Frequencies Results**



### Figure 70 - 8-DPSK (3-DH5) - Number of Hopping Channels



| Test Configuration       |                                         |                 |              |
|--------------------------|-----------------------------------------|-----------------|--------------|
| Frequency Range:         | 2400-2483.5 MHz                         | Band:           | 2.4 GHz      |
| Limit Clause(s):         | FCC 15.247(a)(1)(iii)<br>RSS-247 5.1 d) | Test Method(s): | C63.10 7.8.3 |
| Additional Reference(s): | -                                       |                 |              |

| DUT Configuration      |                       |                          |   |
|------------------------|-----------------------|--------------------------|---|
| Mode:                  | iPA GFSK (DH5)        | Duty Cycle (%):          | - |
| Antenna Configuration: | Beamforming           | DCCF (dB):               | - |
| Active Port(s):        | A+B (Core 0 + Core 1) | Peak Antenna Gain (dBi): | - |

| Number of Hopping Frequencies | Limit |
|-------------------------------|-------|
| 79                            | ≥15.0 |

Table 53 - Number of Hopping Frequencies Results

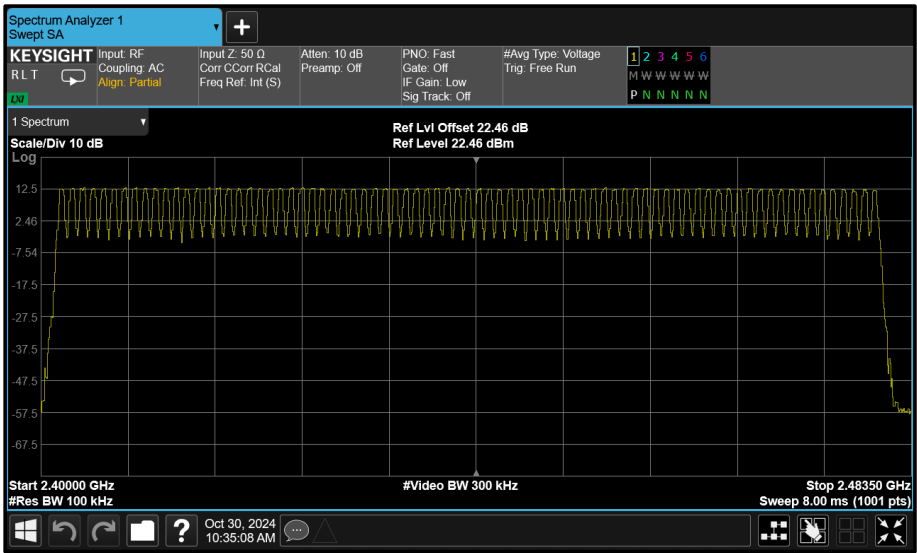


Figure 71 - GFSK (DH5) - Number of Hopping Channels



| Test Configuration       |                                         |                 |              |
|--------------------------|-----------------------------------------|-----------------|--------------|
| Frequency Range:         | 2400-2483.5 MHz                         | Band:           | 2.4 GHz      |
| Limit Clause(s):         | FCC 15.247(a)(1)(iii)<br>RSS-247 5.1 d) | Test Method(s): | C63.10 7.8.3 |
| Additional Reference(s): | -                                       |                 |              |

| DUT Configuration      |                           |                          |   |
|------------------------|---------------------------|--------------------------|---|
| Mode:                  | iPA $\pi/4$ DQPSK (2-DH5) | Duty Cycle (%):          | - |
| Antenna Configuration: | Beamforming               | DCCF (dB):               | - |
| Active Port(s):        | A+B (Core 0 + Core 1)     | Peak Antenna Gain (dBi): | - |

| Number of Hopping Frequencies | Limit       |
|-------------------------------|-------------|
| 79                            | $\geq 15.0$ |

Table 54 - Number of Hopping Frequencies Results

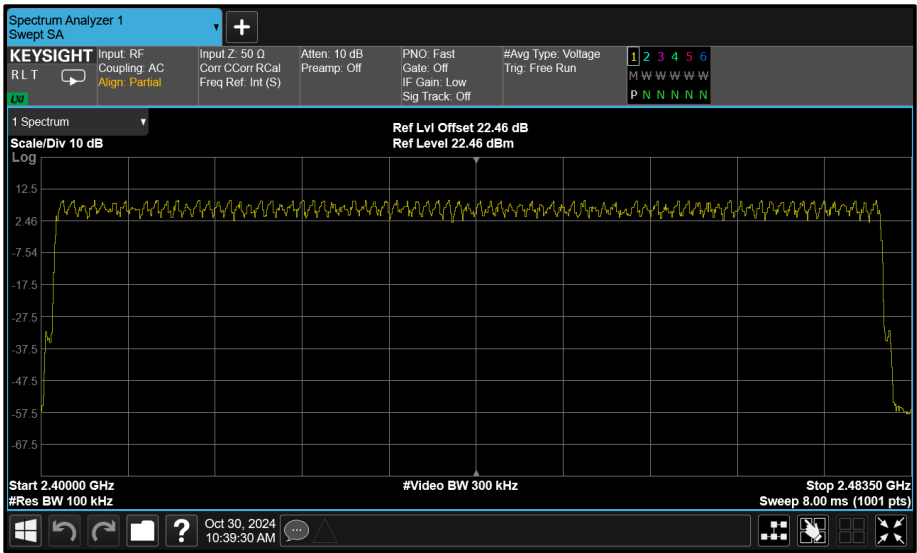


Figure 72 -  $\pi/4$  DQPSK (2-DH5) - Number of Hopping Channels



| Test Configuration       |                                         |                 |              |
|--------------------------|-----------------------------------------|-----------------|--------------|
| Frequency Range:         | 2400-2483.5 MHz                         | Band:           | 2.4 GHz      |
| Limit Clause(s):         | FCC 15.247(a)(1)(iii)<br>RSS-247 5.1 d) | Test Method(s): | C63.10 7.8.3 |
| Additional Reference(s): | -                                       |                 |              |

| DUT Configuration      |                       |                          |   |
|------------------------|-----------------------|--------------------------|---|
| Mode:                  | iPA 8-DPSK (3-DH5)    | Duty Cycle (%):          | - |
| Antenna Configuration: | Beamforming           | DCCF (dB):               | - |
| Active Port(s):        | A+B (Core 0 + Core 1) | Peak Antenna Gain (dBi): | - |

| Number of Hopping Frequencies | Limit |
|-------------------------------|-------|
| 79                            | ≥15.0 |

Table 55 - Number of Hopping Frequencies Results

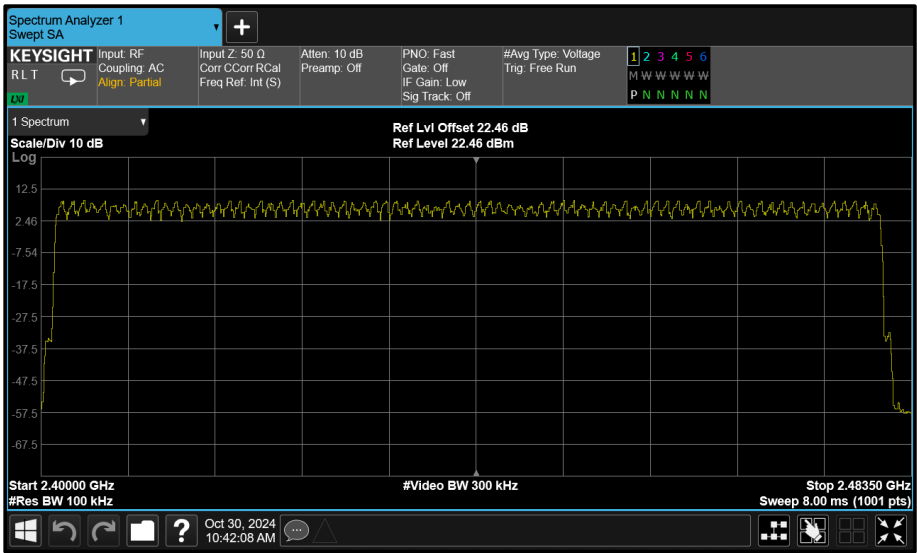
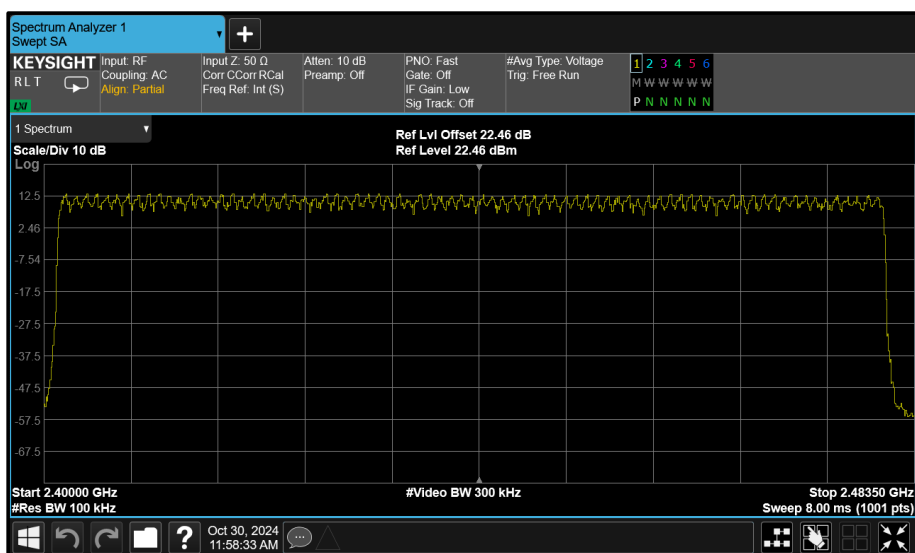


Figure 73 - 8-DPSK (3-DH5) - Number of Hopping Channels

|                               |       |
|-------------------------------|-------|
| Number of Hopping Frequencies | Limit |
| 79                            | ≥15.0 |





| Test Configuration       |                                         |                 |              |
|--------------------------|-----------------------------------------|-----------------|--------------|
| Frequency Range:         | 2400-2483.5 MHz                         | Band:           | 2.4 GHz      |
| Limit Clause(s):         | FCC 15.247(a)(1)(iii)<br>RSS-247 5.1 d) | Test Method(s): | C63.10 7.8.3 |
| Additional Reference(s): | -                                       |                 |              |

| DUT Configuration      |                       |                          |   |
|------------------------|-----------------------|--------------------------|---|
| Mode:                  | ePA 8-DPSK (3-DH5)    | Duty Cycle (%):          | - |
| Antenna Configuration: | Beamforming           | DCCF (dB):               | - |
| Active Port(s):        | A+B (Core 0 + Core 1) | Peak Antenna Gain (dBi): | - |

| Number of Hopping Frequencies | Limit |
|-------------------------------|-------|
| 79                            | ≥15.0 |

Table 57 - Number of Hopping Frequencies Results

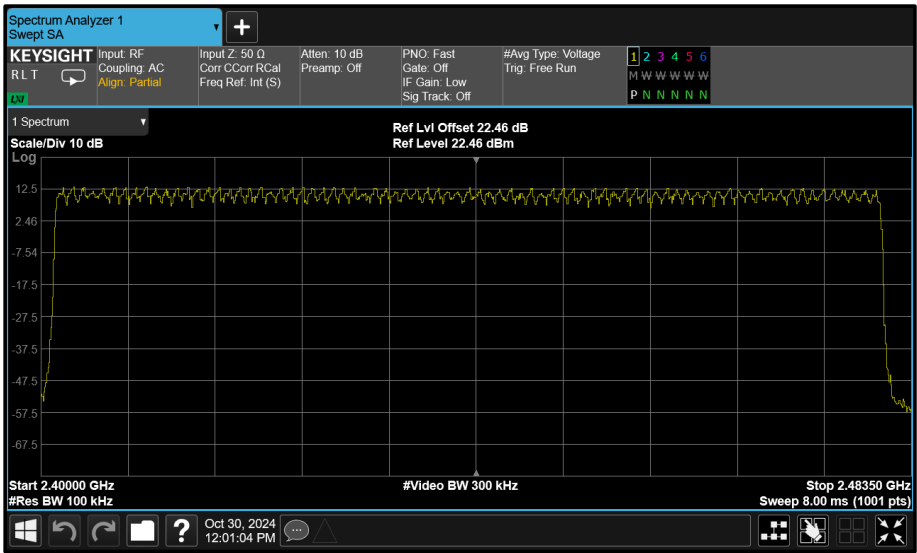


Figure 75 - 8-DPSK (3-DH5) - Number of Hopping Channels

FCC 47 CFR Part 15, Limit Clause 15.247 (a)(1)(iii)

≥ 15 channels

ISED RSS-247, Limit Clause 5.1 (d)

FHSSs operating in the band 2400-2483.5 MHz shall use at least 15 hopping channels.





#### 2.4.7 Test Location and Test Equipment Used

This test was carried out in RF Laboratory 14.

| Instrument               | Manufacturer          | Type No.        | TE No. | Calibration Period (months) | Calibration Expiry Date |
|--------------------------|-----------------------|-----------------|--------|-----------------------------|-------------------------|
| Hygrometer               | Rotronic              | I-1000          | 3068   | 12                          | 07-Nov-2024             |
| 1500VA AC Power Supply   | iTech                 | IT7324          | 5907   | -                           | O/P Mon                 |
| MXA Signal Analyser      | Keysight Technologies | N9020B          | 5919   | 24                          | 18-Mar-2026             |
| Digital Multimeter       | Fluke                 | 115             | 6145   | 12                          | 06-Jun-2025             |
| Signal Conditioning Unit | TUV SUD               | SPECTRUM_SCU001 | 6519   | 12                          | 08-Feb-2025             |
| SCU Cable Assembly       | TUV SUD               | SPECTRUM_SCU_CA | 6520   | 12                          | 09-Feb-2025             |
| SCU Cable Assembly       | TUV SUD               | SPECTRUM_SCU_CA | 6521   | 12                          | 09-Feb-2025             |
| SCU Cable Assembly       | TUV SUD               | SPECTRUM_SCU_CA | 6522   | 12                          | 09-Feb-2025             |

**Table 58**

O/P Mon - Output Monitored using calibrated equipment



## **2.5 Frequency Hopping Systems - 99% & 20 dB Bandwidth**

### **2.5.1 Specification Reference**

FCC 47 CFR Part 15C, Clause 15.247 (a)(1)  
ISED RSS-247, Clause 5.1  
ISED RSS-GEN, Clause 6.7

### **2.5.2 Equipment Under Test and Modification State**

A3389, S/N: MGC29YC7F7 - Modification State 0

### **2.5.3 Date of Test**

30-October-2024 to 01-November-2024

### **2.5.4 Test Method**

The test was performed in accordance with ANSI C63.10, clause 6.9.2 for 20 dB Bandwidth and ANSI C63.10, clause 6.9.3 for 99% Bandwidth

### **2.5.5 Environmental Conditions**

|                     |                |
|---------------------|----------------|
| Ambient Temperature | 21.0 - 21.4 °C |
| Relative Humidity   | 51.6 - 57.0 %  |



## 2.5.6 Test Results

### 2.4 GHz Bluetooth BDR/EDR

| Test Configuration       |                                  |                 |                              |
|--------------------------|----------------------------------|-----------------|------------------------------|
| Frequency Range:         | 2400-2483.5 MHz                  | Band:           | 2.4 GHz                      |
| Limit Clause(s):         | FCC 15.247 (a)(1)<br>RSS-247 5.1 | Test Method(s): | C63.10 6.9.3<br>C63.10 6.9.2 |
| 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) | 20 dB Bandwidth (MHz) |       |   |   |
|----------------------|-----------------------|-------|---|---|
|                      | A                     | B     | C | D |
| 2402                 | -                     | 0.855 | - | - |
| 2441                 | -                     | 0.855 | - | - |
| 2480                 | -                     | 0.855 | - | - |

**Table 59 - 20 dB Bandwidth Results**

| Test Frequency (MHz) | 99% Bandwidth (MHz) |       |   |   | Limit (kHz) |
|----------------------|---------------------|-------|---|---|-------------|
|                      | A                   | B     | C | D |             |
| 2402                 | -                   | 0.852 | - | - | -           |
| 2441                 | -                   | 0.855 | - | - | -           |
| 2480                 | -                   | 0.855 | - | - | -           |

**Table 60 - 99% Bandwidth Results**

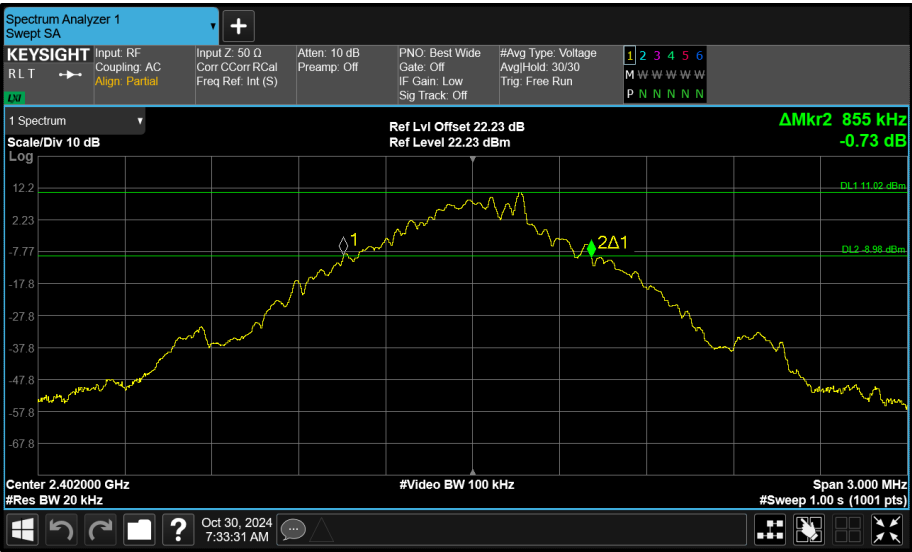


Figure 76 - Core 1 (B) 2402 MHz (CH0) 20 dB Bandwidth

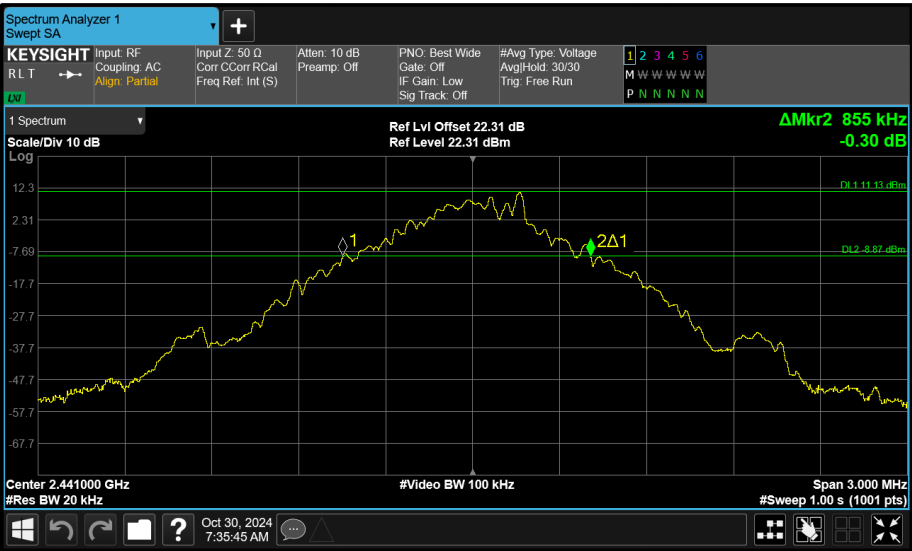


Figure 77 - Core 1 (B) 2441 MHz (CH39) 20 dB Bandwidth

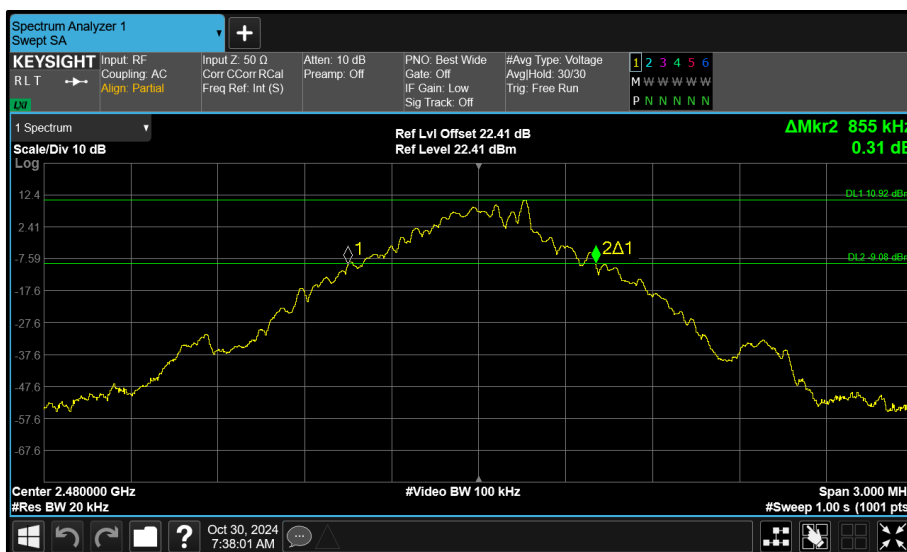


Figure 78 - Core 1 (B) 2480 MHz (CH78) 20 dB Bandwidth

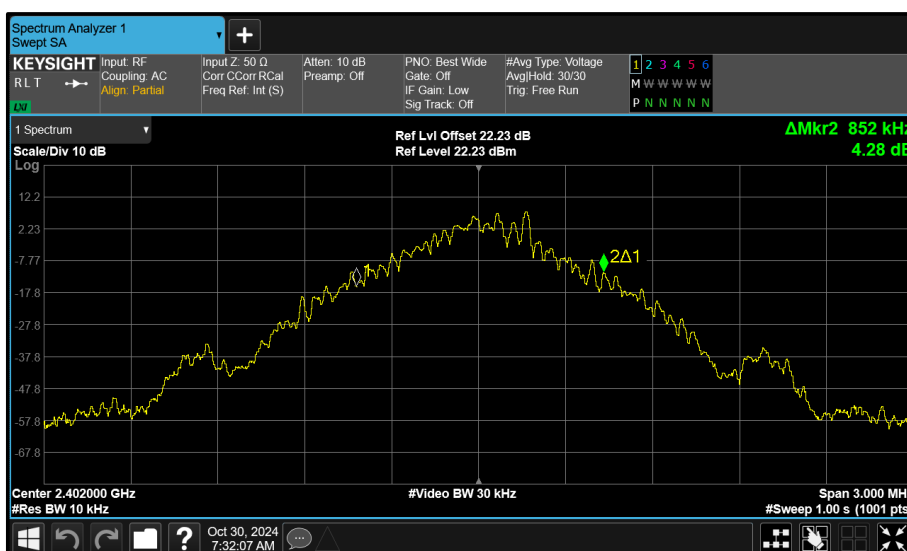


Figure 79 - Core 1 (B) 2402 MHz (CH0) 99% Bandwidth

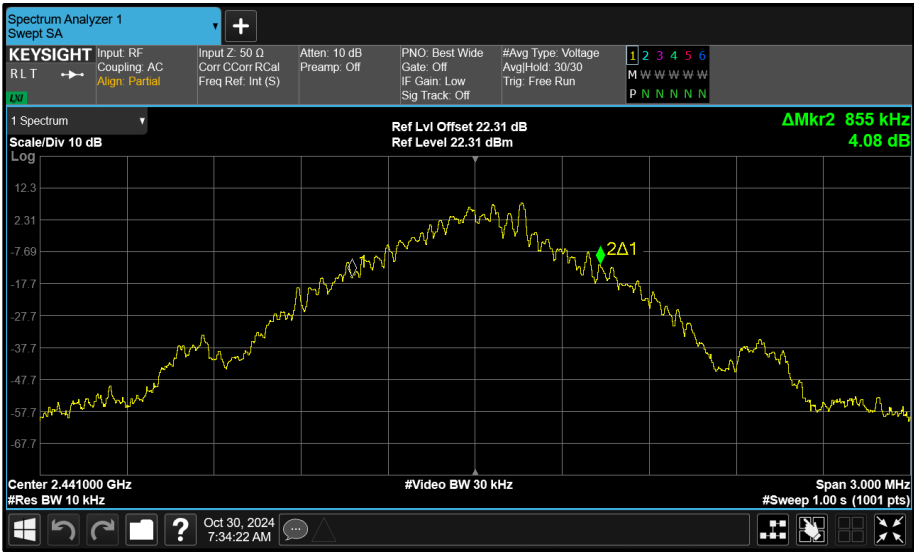


Figure 80 - Core 1 (B) 2441 MHz (CH39) 99% Bandwidth

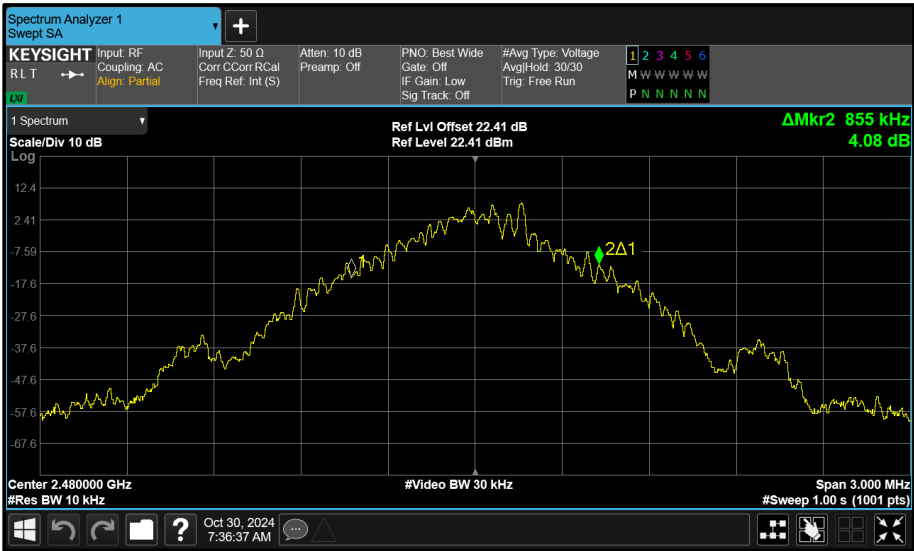


Figure 81 - Core 1 (B) 2480 MHz (CH78) 99% Bandwidth



| Test Configuration       |                                  |                 |                              |
|--------------------------|----------------------------------|-----------------|------------------------------|
| Frequency Range:         | 2400-2483.5 MHz                  | Band:           | 2.4 GHz                      |
| Limit Clause(s):         | FCC 15.247 (a)(1)<br>RSS-247 5.1 | Test Method(s): | C63.10 6.9.3<br>C63.10 6.9.2 |
| Additional Reference(s): | -                                |                 |                              |

| DUT Configuration      |                           |                          |   |
|------------------------|---------------------------|--------------------------|---|
| Mode:                  | iPA $\pi/4$ DQPSK (2-DH5) | Duty Cycle (%):          | - |
| Antenna Configuration: | SISO                      | DCCF (dB):               | - |
| Active Port(s):        | B (Core 1)                | Peak Antenna Gain (dBi): | - |

| Test Frequency (MHz) | 20 dB Bandwidth (MHz) |       |   |   |
|----------------------|-----------------------|-------|---|---|
|                      | A                     | B     | C | D |
| 2402                 | -                     | 1.325 | - | - |
| 2441                 | -                     | 1.330 | - | - |
| 2480                 | -                     | 1.325 | - | - |

**Table 61 - 20 dB Bandwidth Results**

| Test Frequency (MHz) | 99% Bandwidth (MHz) |       |   |   | Limit (kHz) |
|----------------------|---------------------|-------|---|---|-------------|
|                      | A                   | B     | C | D |             |
| 2402                 | -                   | 1.184 | - | - | -           |
| 2441                 | -                   | 1.184 | - | - | -           |
| 2480                 | -                   | 1.184 | - | - | -           |

**Table 62 - 99% Bandwidth Results**

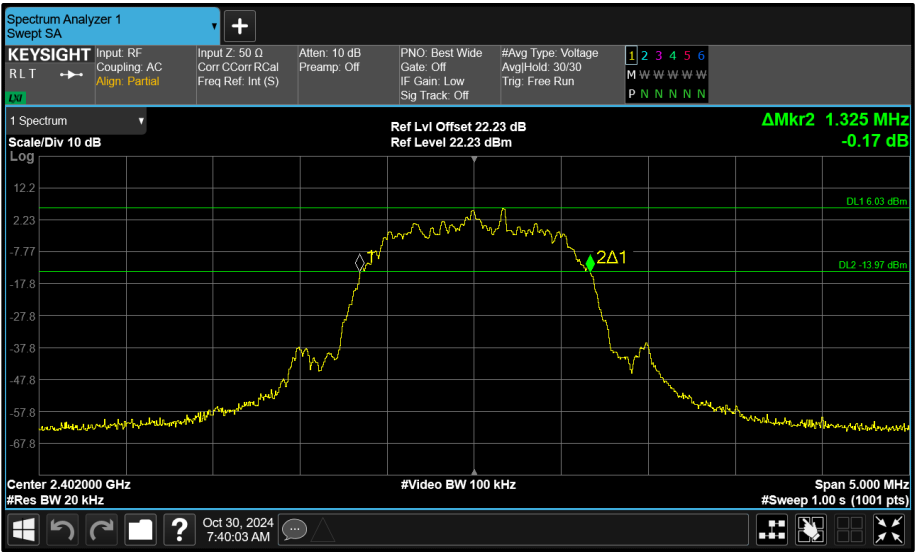


Figure 82 - Core 1 (B) 2402 MHz (CH0) 20 dB Bandwidth

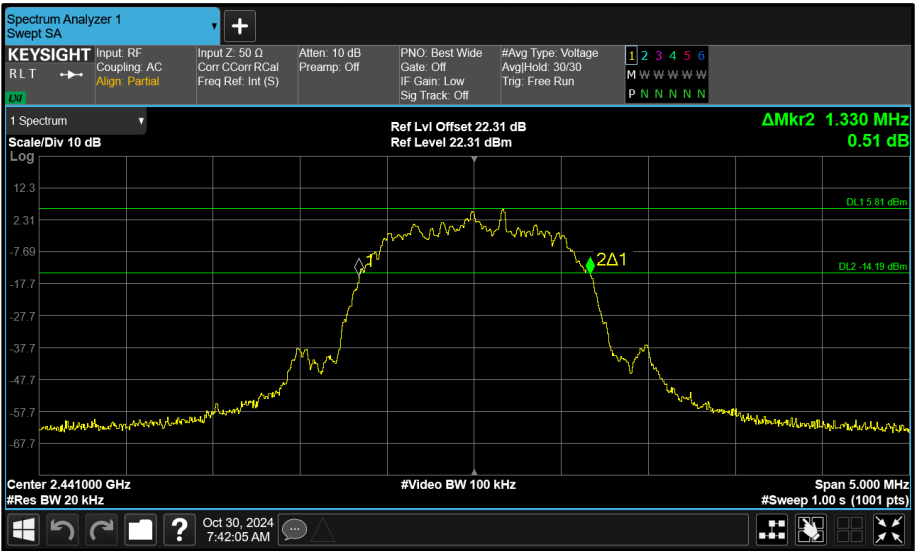


Figure 83 - Core 1 (B) 2441 MHz (CH39) 20 dB Bandwidth



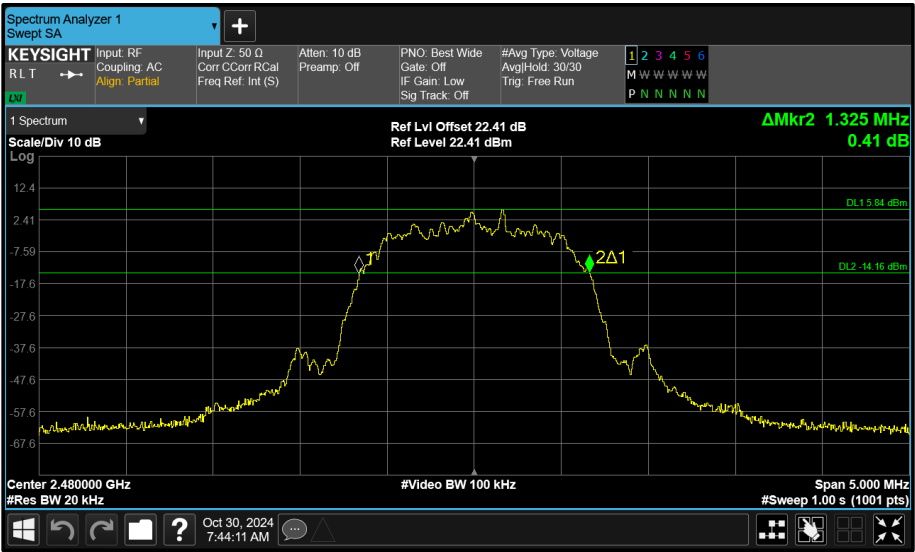


Figure 84 - Core 1 (B) 2480 MHz (CH78) 20 dB Bandwidth

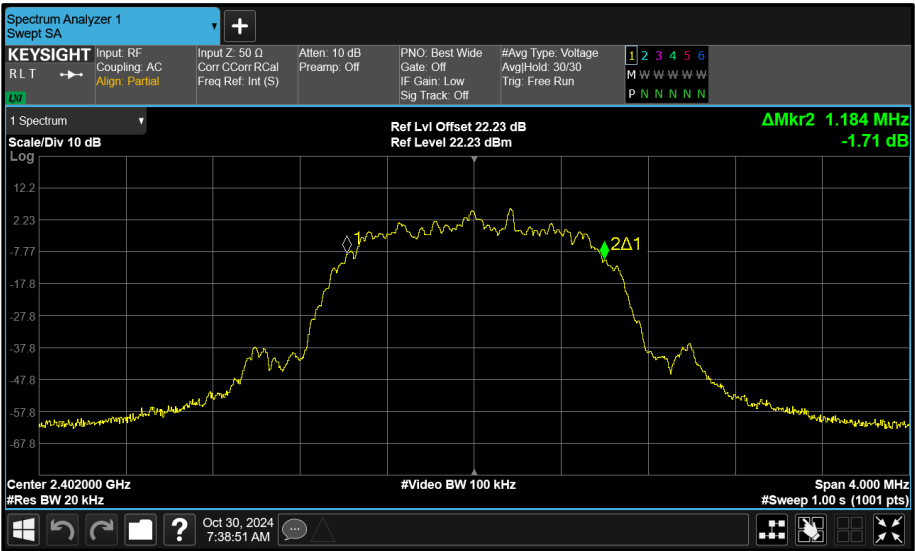


Figure 85 - Core 1 (B) 2402 MHz (CH0) 99% Bandwidth

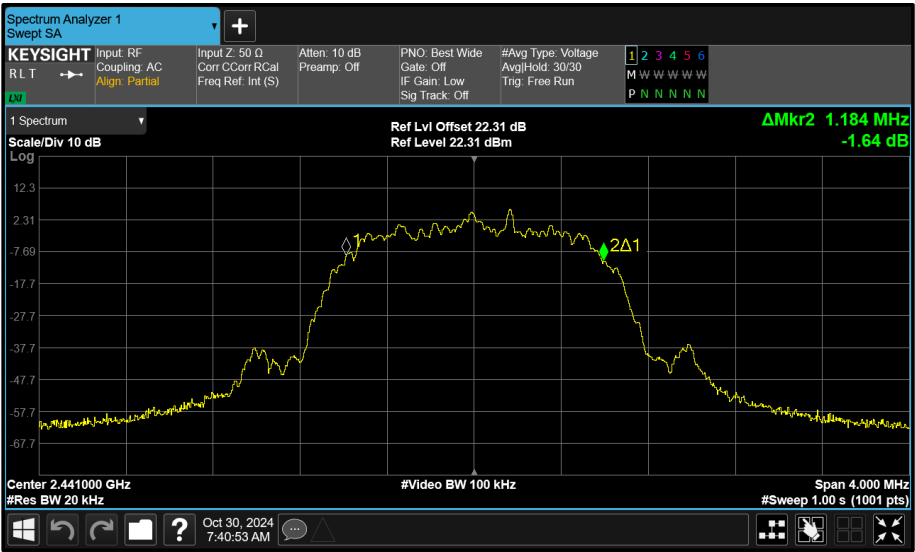


Figure 86 - Core 1 (B) 2441 MHz (CH39) 99% Bandwidth

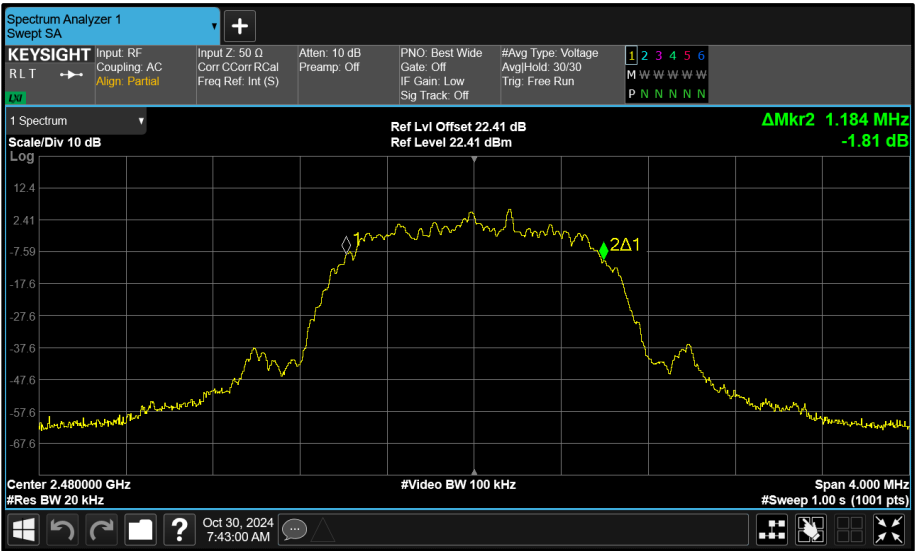


Figure 87 - Core 1 (B) 2480 MHz (CH78) 99% Bandwidth



| Test Configuration       |                                  |                 |                              |
|--------------------------|----------------------------------|-----------------|------------------------------|
| Frequency Range:         | 2400-2483.5 MHz                  | Band:           | 2.4 GHz                      |
| Limit Clause(s):         | FCC 15.247 (a)(1)<br>RSS-247 5.1 | Test Method(s): | C63.10 6.9.3<br>C63.10 6.9.2 |
| Additional Reference(s): | -                                |                 |                              |

| DUT Configuration      |                    |                          |   |
|------------------------|--------------------|--------------------------|---|
| Mode:                  | iPA 8-DPSK (3-DH5) | Duty Cycle (%):          | - |
| Antenna Configuration: | SISO               | DCCF (dB):               | - |
| Active Port(s):        | B (Core 1)         | Peak Antenna Gain (dBi): | - |

| Test Frequency (MHz) | 20 dB Bandwidth (MHz) |       |   |   |
|----------------------|-----------------------|-------|---|---|
|                      | A                     | B     | C | D |
| 2402                 | -                     | 1.260 | - | - |
| 2441                 | -                     | 1.260 | - | - |
| 2480                 | -                     | 1.260 | - | - |

**Table 63 - 20 dB Bandwidth Results**

| Test Frequency (MHz) | 99% Bandwidth (MHz) |       |   |   | Limit (kHz) |
|----------------------|---------------------|-------|---|---|-------------|
|                      | A                   | B     | C | D |             |
| 2402                 | -                   | 1.188 | - | - | -           |
| 2441                 | -                   | 1.184 | - | - | -           |
| 2480                 | -                   | 1.188 | - | - | -           |

**Table 64 - 99% Bandwidth Results**

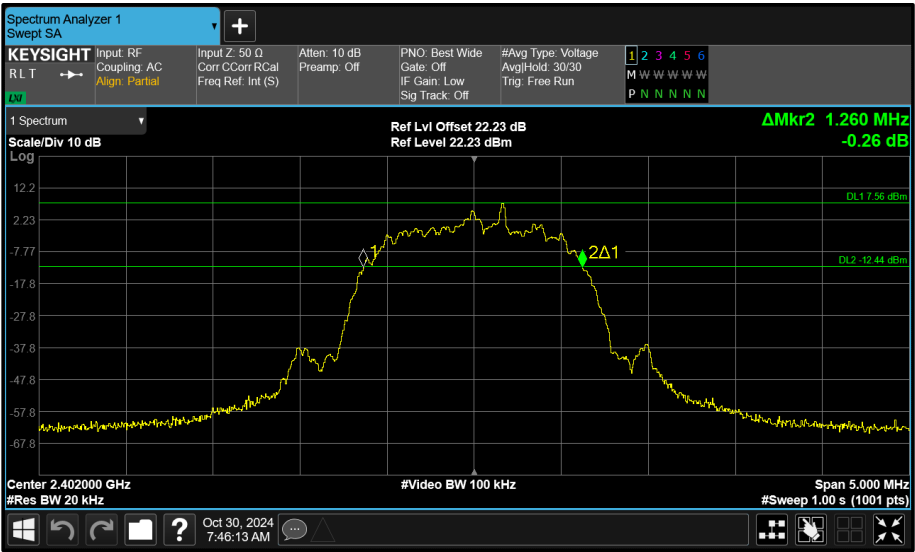


Figure 88 - Core 1 (B) 2402 MHz (CH0) 20 dB Bandwidth

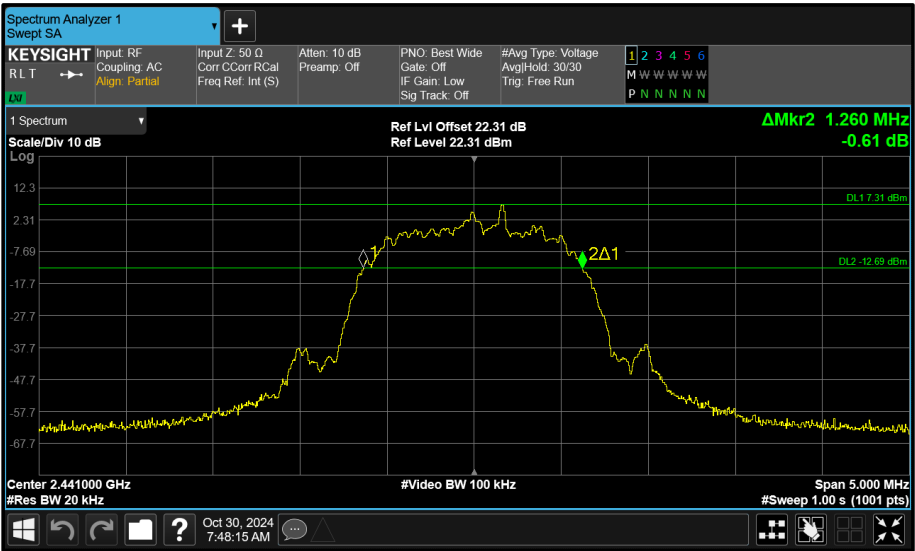


Figure 89 - Core 1 (B) 2441 MHz (CH39) 20 dB Bandwidth

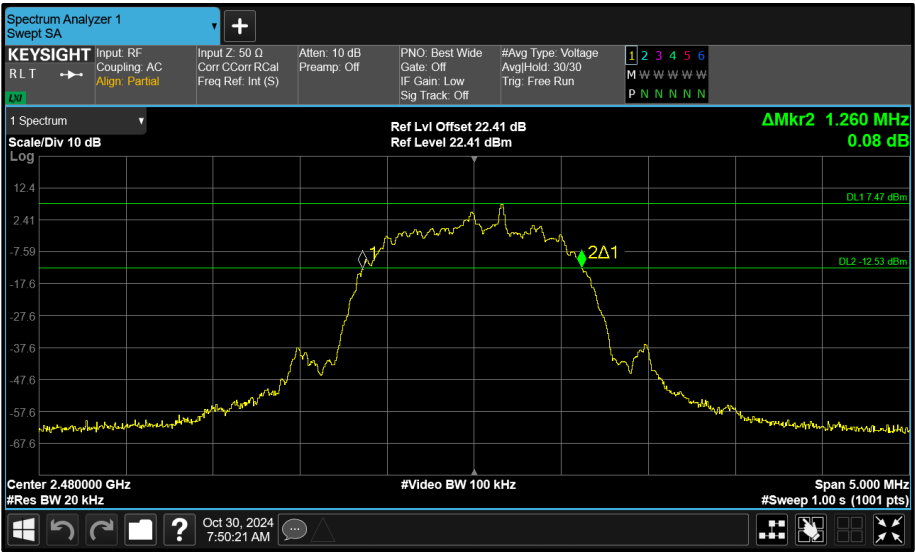


Figure 90 - Core 1 (B) 2480 MHz (CH78) 20 dB Bandwidth

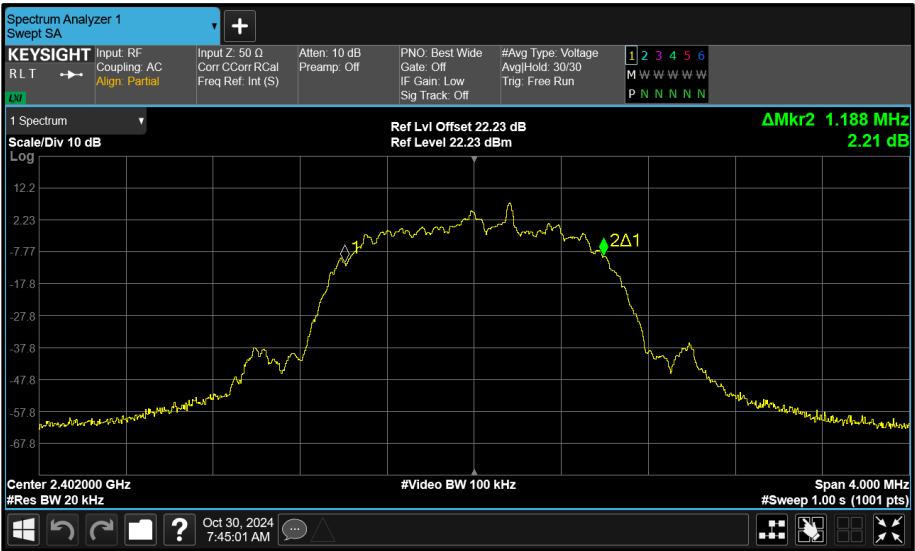


Figure 91 - Core 1 (B) 2402 MHz (CH0) 99% Bandwidth

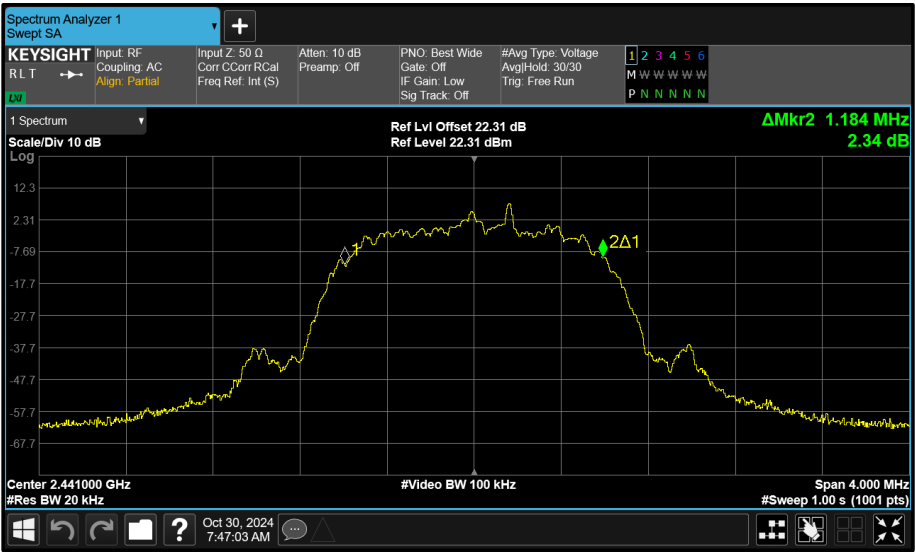


Figure 92 - Core 1 (B) 2441 MHz (CH39) 99% Bandwidth

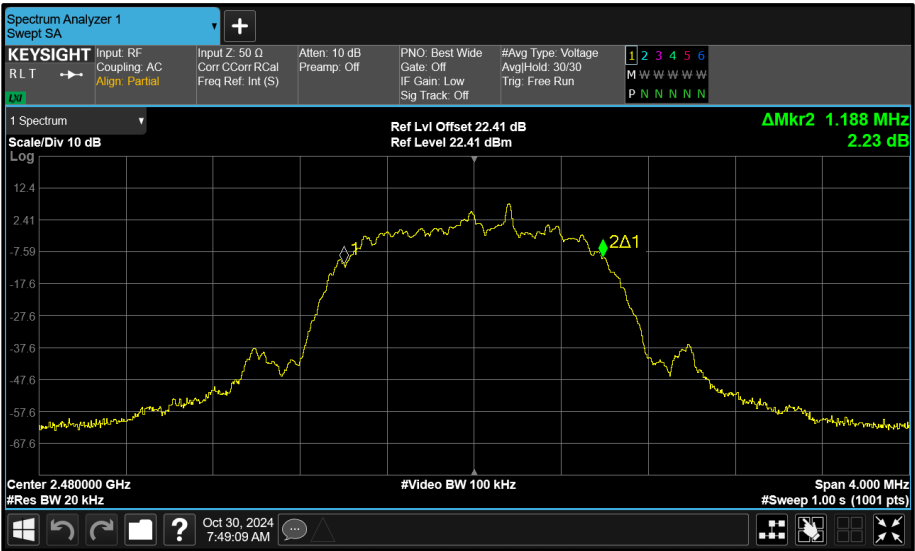


Figure 93 - Core 1 (B) 2480 MHz (CH78) 99% Bandwidth



| Test Configuration       |                                  |                 |                              |
|--------------------------|----------------------------------|-----------------|------------------------------|
| Frequency Range:         | 2400-2483.5 MHz                  | Band:           | 2.4 GHz                      |
| Limit Clause(s):         | FCC 15.247 (a)(1)<br>RSS-247 5.1 | Test Method(s): | C63.10 6.9.3<br>C63.10 6.9.2 |
| Additional Reference(s): | -                                |                 |                              |

| DUT Configuration      |                |                          |   |
|------------------------|----------------|--------------------------|---|
| Mode:                  | iPA GFSK (DH5) | Duty Cycle (%):          | - |
| Antenna Configuration: | SISO           | DCCF (dB):               | - |
| Active Port(s):        | C (Core 2)     | Peak Antenna Gain (dBi): | - |

| Test Frequency (MHz) | 20 dB Bandwidth (MHz) |   |       |   |
|----------------------|-----------------------|---|-------|---|
|                      | A                     | B | C     | D |
| 2402                 | -                     | - | 0.858 | - |
| 2441                 | -                     | - | 0.855 | - |
| 2480                 | -                     | - | 0.855 | - |

**Table 65 - 20 dB Bandwidth Results**

| Test Frequency (MHz) | 99% Bandwidth (MHz) |   |       |   | Limit (kHz) |
|----------------------|---------------------|---|-------|---|-------------|
|                      | A                   | B | C     | D |             |
| 2402                 | -                   | - | 0.858 | - | -           |
| 2441                 | -                   | - | 0.861 | - | -           |
| 2480                 | -                   | - | 0.858 | - | -           |

**Table 66 - 99% Bandwidth Results**

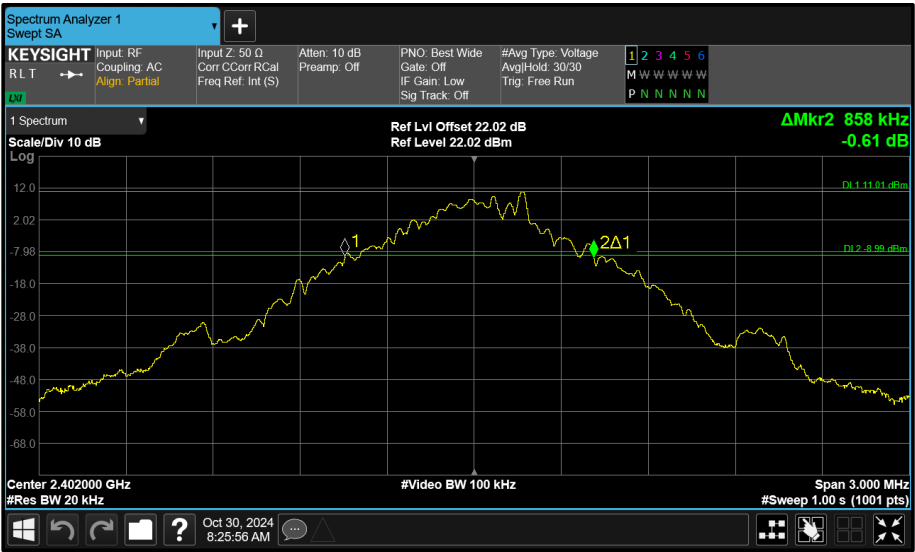


Figure 94 - Core 2 (C) 2402 MHz (CH0) 20 dB Bandwidth

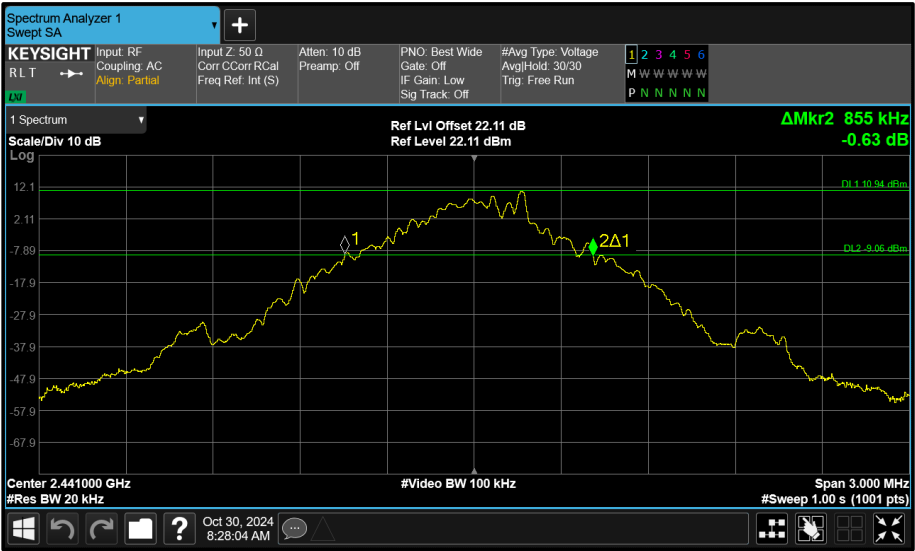


Figure 96 - Core 2 (C) 2441 MHz (CH39) 20 dB Bandwidth



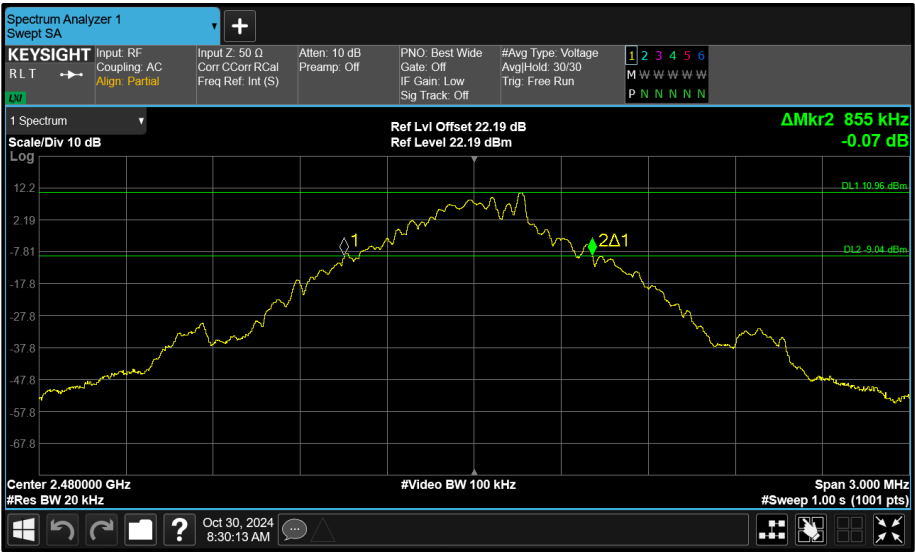


Figure 98 - Core 2 (C) 2480 MHz (CH78) 20 dB Bandwidth

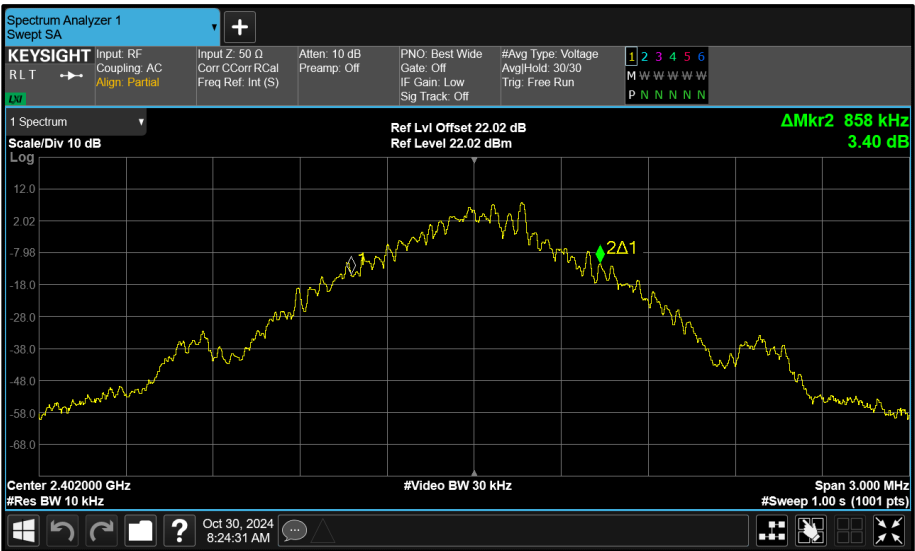


Figure 100 - Core 2 (C) 2402 MHz (CH0) 99% Bandwidth

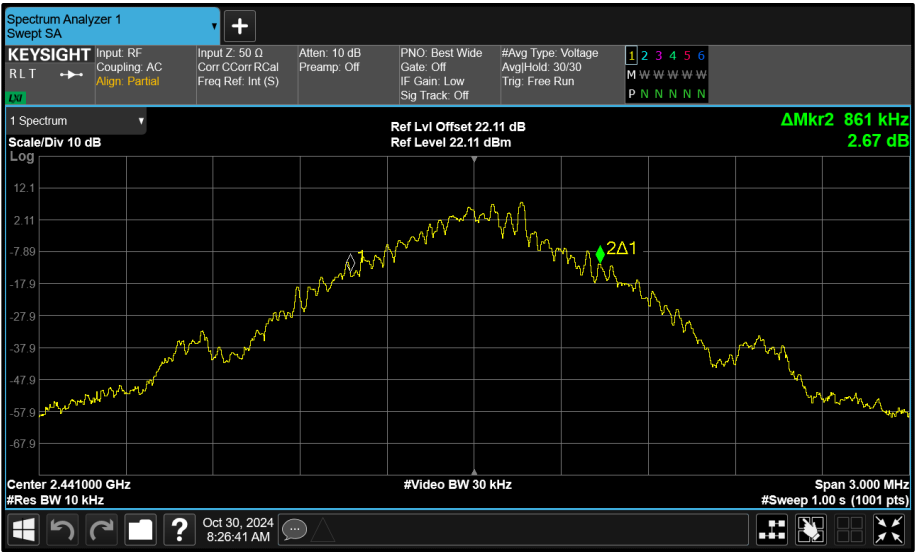


Figure 101 - Core 2 (C) 2441 MHz (CH39) 99% Bandwidth

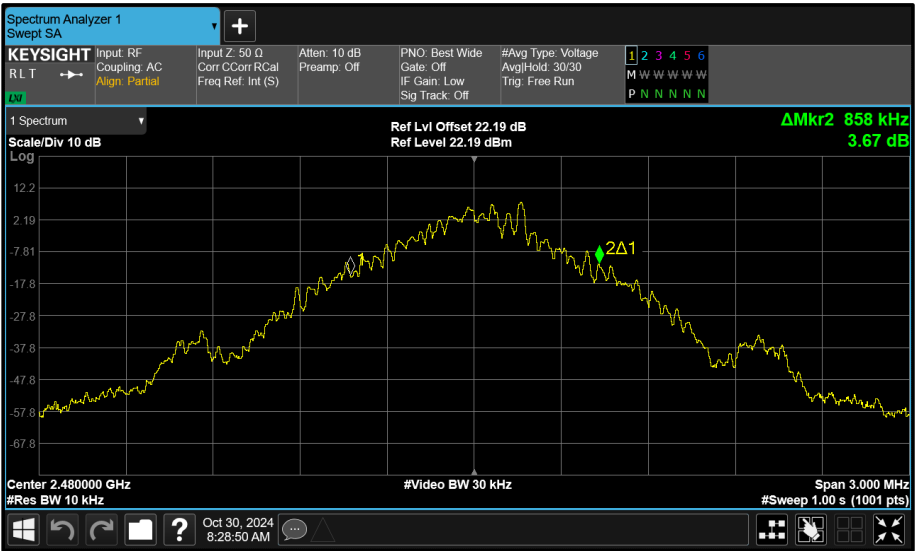


Figure 102 - Core 2 (C) 2480 MHz (CH78) 99% Bandwidth



| Test Configuration       |                                  |                 |                              |
|--------------------------|----------------------------------|-----------------|------------------------------|
| Frequency Range:         | 2400-2483.5 MHz                  | Band:           | 2.4 GHz                      |
| Limit Clause(s):         | FCC 15.247 (a)(1)<br>RSS-247 5.1 | Test Method(s): | C63.10 6.9.3<br>C63.10 6.9.2 |
| Additional Reference(s): | -                                |                 |                              |

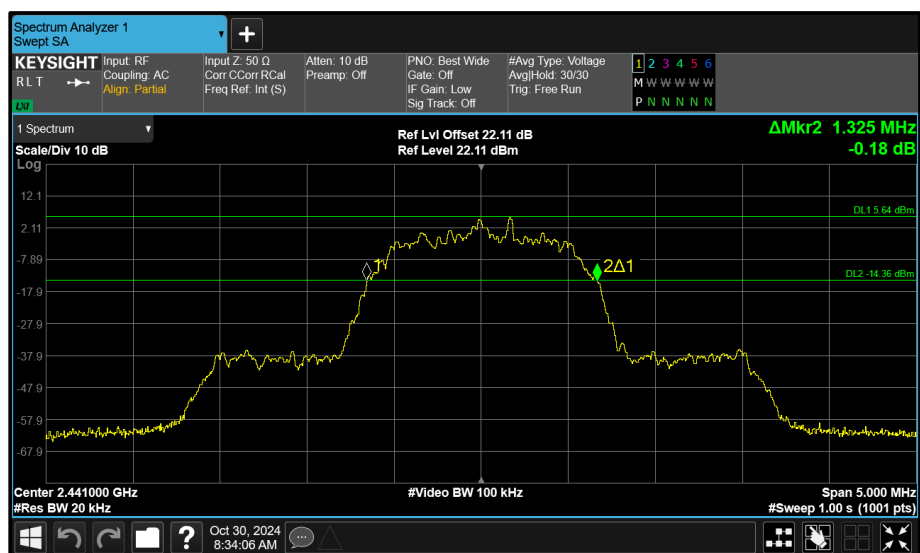
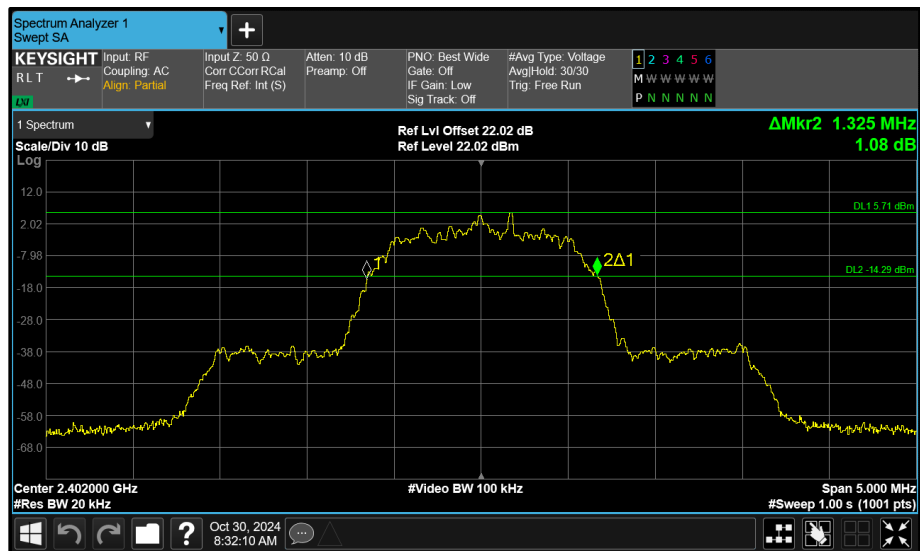
| DUT Configuration      |                           |                          |   |
|------------------------|---------------------------|--------------------------|---|
| Mode:                  | iPA $\pi/4$ DQPSK (2-DH5) | Duty Cycle (%):          | - |
| Antenna Configuration: | SISO                      | DCCF (dB):               | - |
| Active Port(s):        | C (Core 2)                | Peak Antenna Gain (dBi): | - |

| Test Frequency (MHz) | 20 dB Bandwidth (MHz) |   |       |   |
|----------------------|-----------------------|---|-------|---|
|                      | A                     | B | C     | D |
| 2402                 | -                     | - | 1.325 | - |
| 2441                 | -                     | - | 1.325 | - |
| 2480                 | -                     | - | 1.330 | - |

**Table 67 - 20 dB Bandwidth Results**

| Test Frequency (MHz) | 99% Bandwidth (MHz) |   |       |   | Limit (kHz) |
|----------------------|---------------------|---|-------|---|-------------|
|                      | A                   | B | C     | D |             |
| 2402                 | -                   | - | 1.188 | - | -           |
| 2441                 | -                   | - | 1.188 | - | -           |
| 2480                 | -                   | - | 1.188 | - | -           |

**Table 68 - 99% Bandwidth Results**



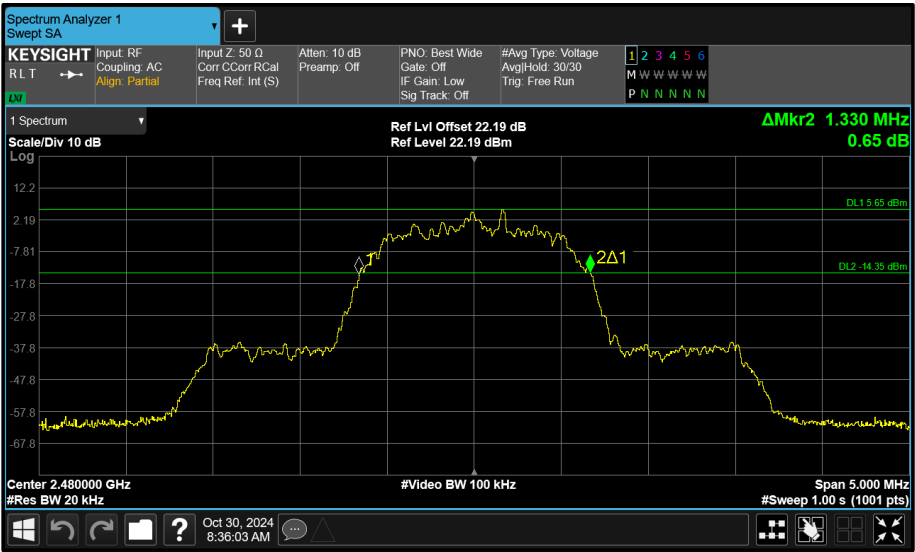


Figure 107 - Core 2 (C) 2480 MHz (CH78) 20 dB Bandwidth

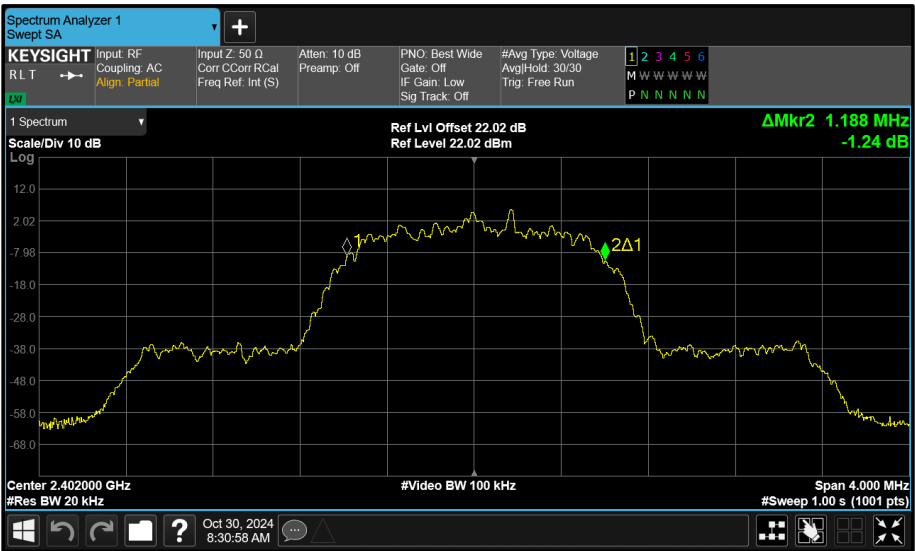


Figure 109 - Core 2 (C) 2402 MHz (CH0) 99% Bandwidth

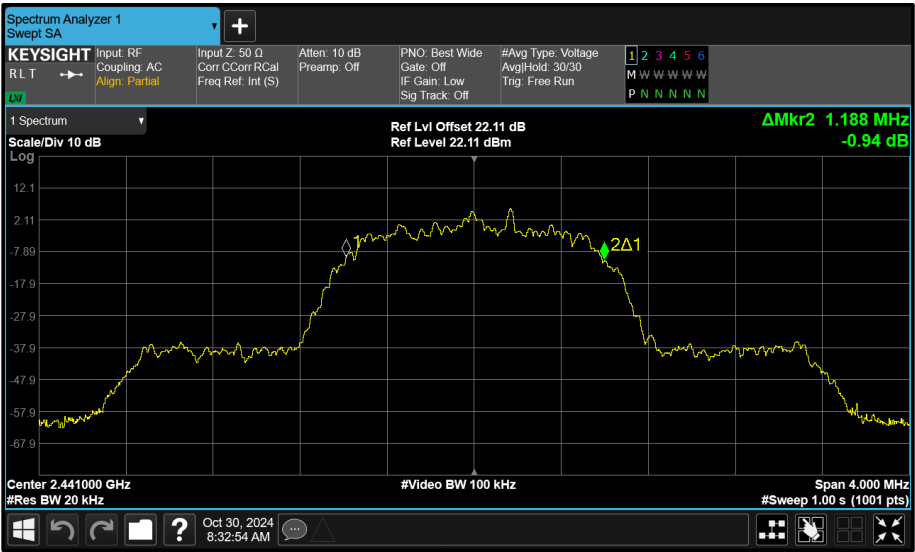


Figure 110 - Core 2 (C) 2441 MHz (CH39) 99% Bandwidth

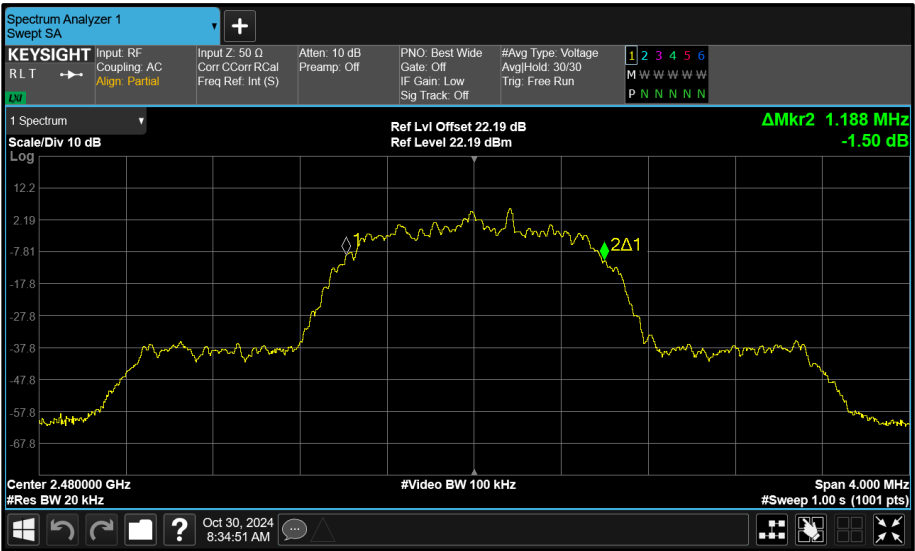


Figure 111 - Core 2 (C) 2480 MHz (CH78) 99% Bandwidth



| Test Configuration       |                                  |                 |                              |
|--------------------------|----------------------------------|-----------------|------------------------------|
| Frequency Range:         | 2400-2483.5 MHz                  | Band:           | 2.4 GHz                      |
| Limit Clause(s):         | FCC 15.247 (a)(1)<br>RSS-247 5.1 | Test Method(s): | C63.10 6.9.3<br>C63.10 6.9.2 |
| Additional Reference(s): | -                                |                 |                              |

| DUT Configuration      |                    |                          |   |
|------------------------|--------------------|--------------------------|---|
| Mode:                  | iPA 8-DPSK (3-DH5) | Duty Cycle (%):          | - |
| Antenna Configuration: | SISO               | DCCF (dB):               | - |
| Active Port(s):        | C (Core 2)         | Peak Antenna Gain (dBi): | - |

| Test Frequency (MHz) | 20 dB Bandwidth (MHz) |   |       |   |
|----------------------|-----------------------|---|-------|---|
|                      | A                     | B | C     | D |
| 2402                 | -                     | - | 1.265 | - |
| 2441                 | -                     | - | 1.260 | - |
| 2480                 | -                     | - | 1.265 | - |

**Table 69 - 20 dB Bandwidth Results**

| Test Frequency (MHz) | 99% Bandwidth (MHz) |   |       |   | Limit (kHz) |
|----------------------|---------------------|---|-------|---|-------------|
|                      | A                   | B | C     | D |             |
| 2402                 | -                   | - | 1.196 | - | -           |
| 2441                 | -                   | - | 1.192 | - | -           |
| 2480                 | -                   | - | 1.196 | - | -           |

**Table 70 - 99% Bandwidth Results**





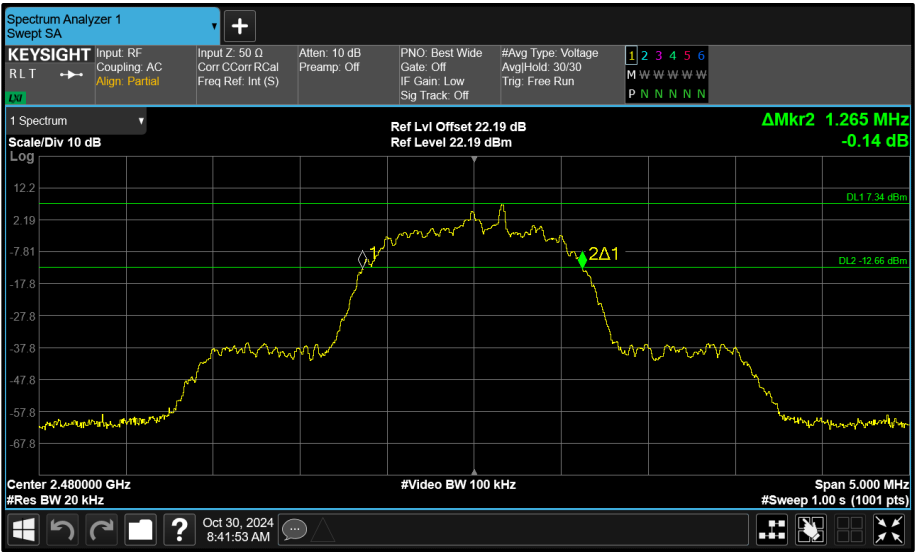


Figure 116 - Core 2 (C) 2480 MHz (CH78) 20 dB Bandwidth

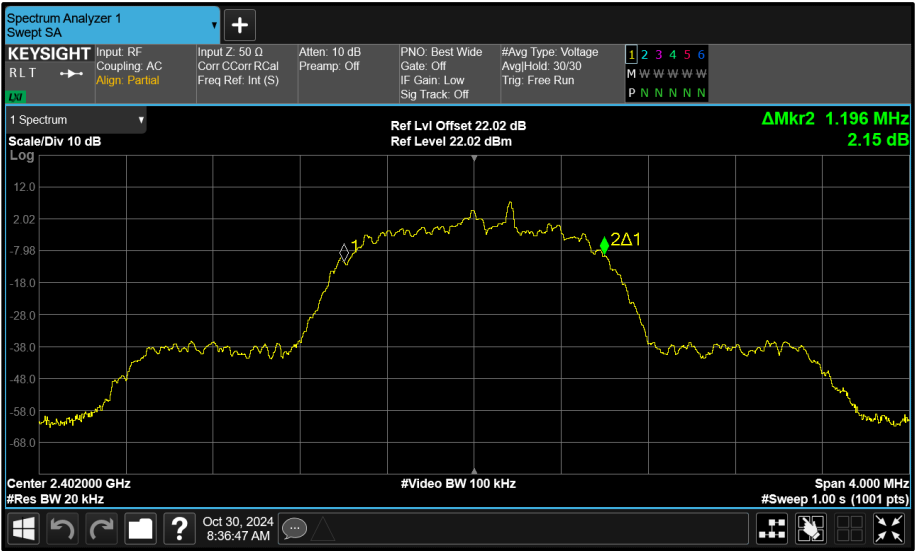


Figure 118 - Core 2 (C) 2402 MHz (CH0) 99% Bandwidth

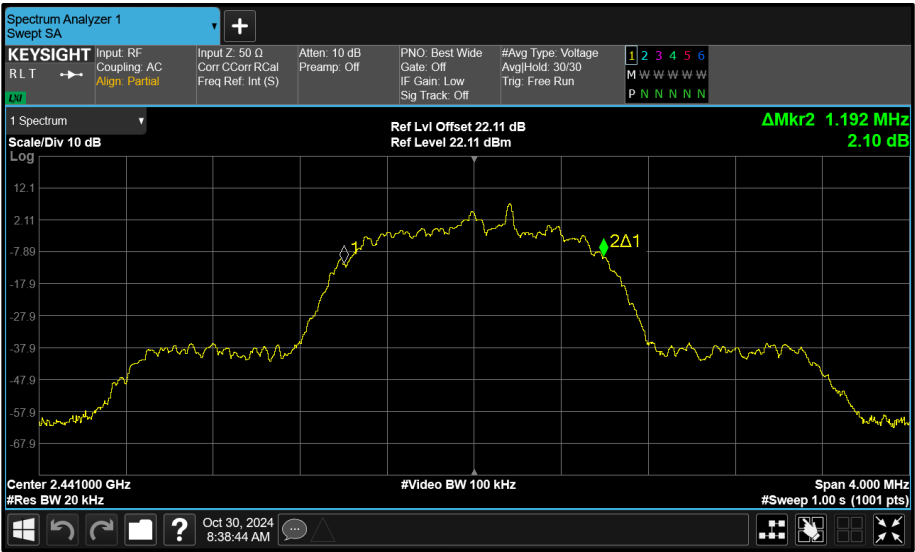


Figure 119 - Core 2 (C) 2441 MHz (CH39) 99% Bandwidth

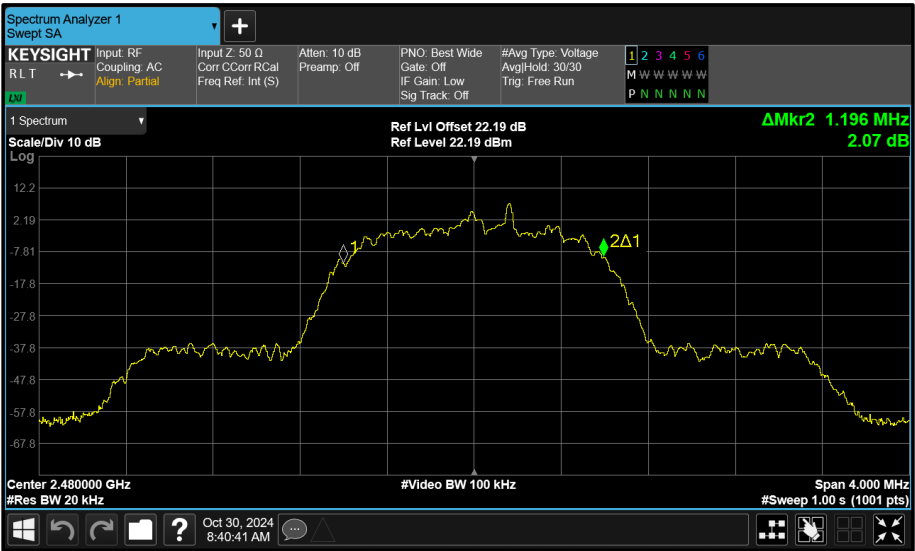


Figure 120 - Core 2 (C) 2480 MHz (CH78) 99% Bandwidth



| Test Configuration       |                                  |                 |                              |
|--------------------------|----------------------------------|-----------------|------------------------------|
| Frequency Range:         | 2400-2483.5 MHz                  | Band:           | 2.4 GHz                      |
| Limit Clause(s):         | FCC 15.247 (a)(1)<br>RSS-247 5.1 | Test Method(s): | C63.10 6.9.3<br>C63.10 6.9.2 |
| Additional Reference(s): | -                                |                 |                              |

| DUT Configuration      |                           |                          |   |
|------------------------|---------------------------|--------------------------|---|
| Mode:                  | ePA $\pi/4$ DQPSK (2-DH5) | Duty Cycle (%):          | - |
| Antenna Configuration: | SISO                      | DCCF (dB):               | - |
| Active Port(s):        | B (Core 1)                | Peak Antenna Gain (dBi): | - |

| Test Frequency (MHz) | 20 dB Bandwidth (MHz) |       |   |   |
|----------------------|-----------------------|-------|---|---|
|                      | A                     | B     | C | D |
| 2402                 | -                     | 1.325 | - | - |
| 2441                 | -                     | 1.325 | - | - |
| 2480                 | -                     | 1.325 | - | - |

**Table 71 - 20 dB Bandwidth Results**

| Test Frequency (MHz) | 99% Bandwidth (MHz) |       |   |   | Limit (kHz) |
|----------------------|---------------------|-------|---|---|-------------|
|                      | A                   | B     | C | D |             |
| 2402                 | -                   | 1.180 | - | - | -           |
| 2441                 | -                   | 1.184 | - | - | -           |
| 2480                 | -                   | 1.188 | - | - | -           |

**Table 72 - 99% Bandwidth Results**

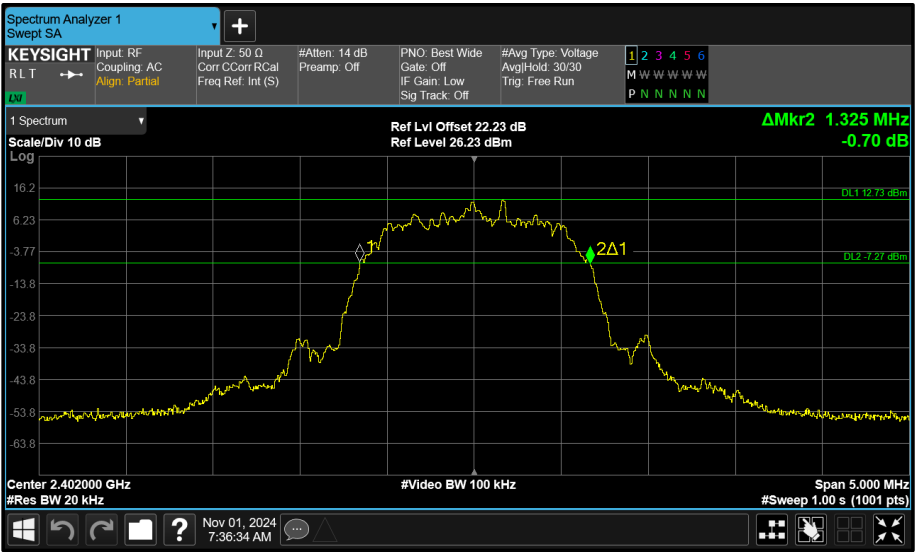


Figure 121 - Core 1 (B) 2402 MHz (CH0) 20 dB Bandwidth

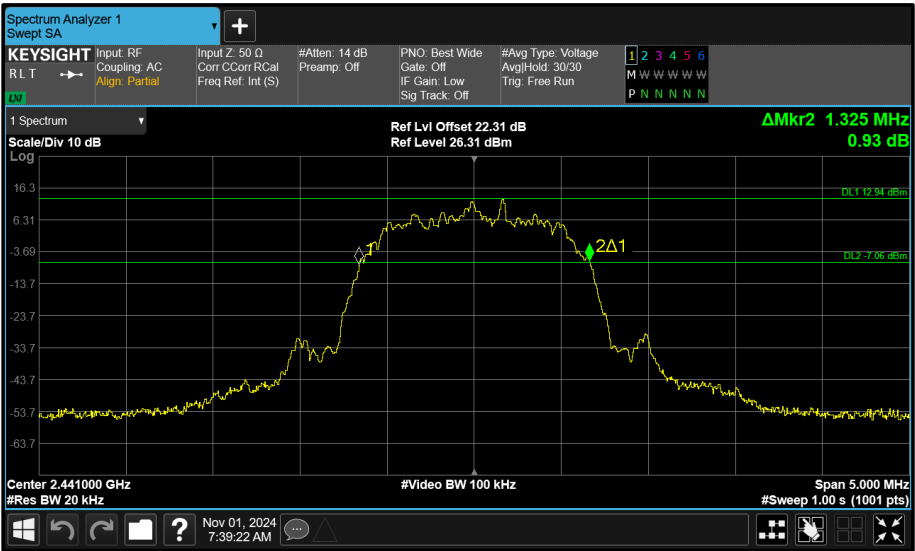


Figure 122 - Core 1 (B) 2441 MHz (CH39) 20 dB Bandwidth

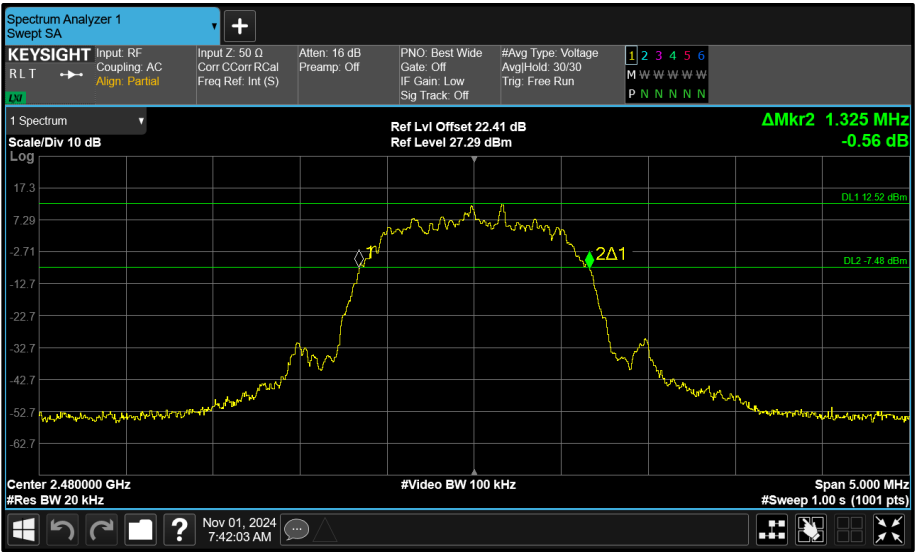


Figure 123 - Core 1 (B) 2480 MHz (CH78) 20 dB Bandwidth

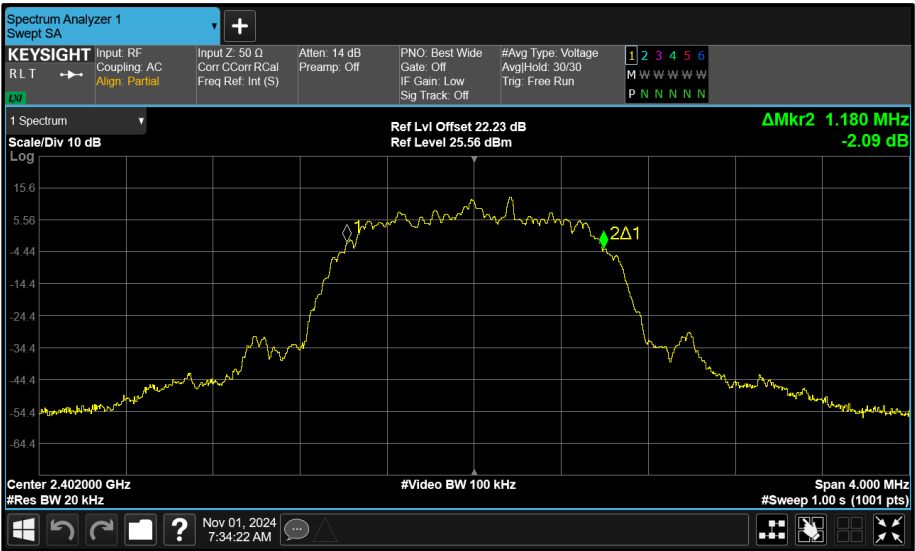


Figure 124 - Core 1 (B) 2402 MHz (CH0) 99% Bandwidth

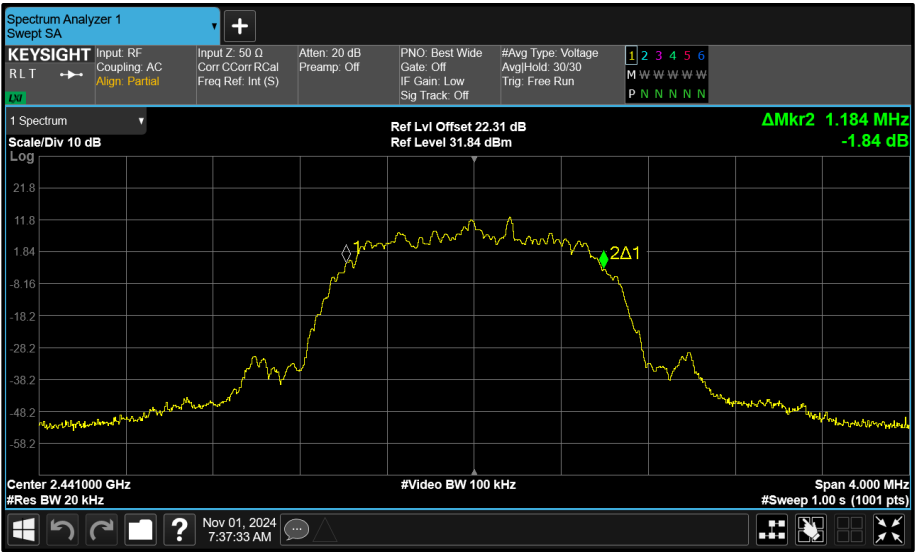


Figure 125 - Core 1 (B) 2441 MHz (CH39) 99% Bandwidth

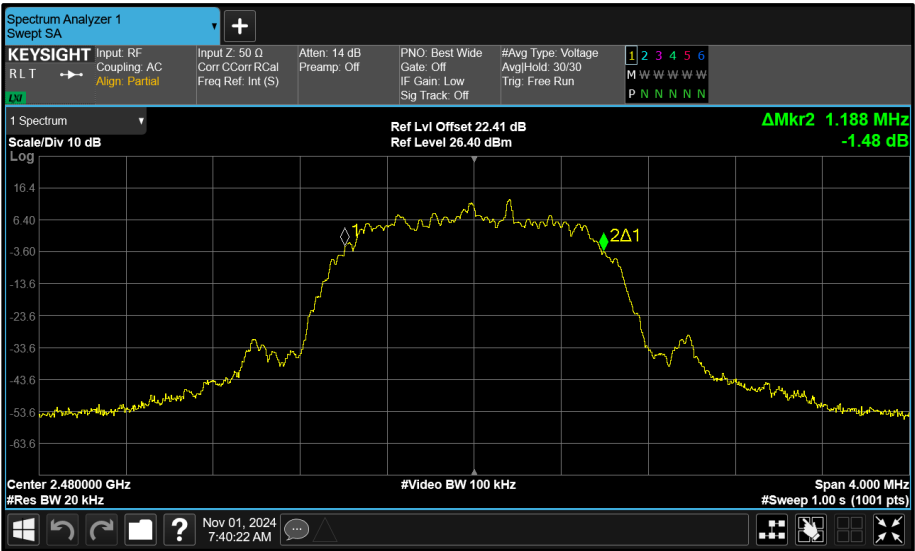


Figure 126 - Core 1 (B) 2480 MHz (CH78) 99% Bandwidth



| Test Configuration       |                                  |                 |                              |
|--------------------------|----------------------------------|-----------------|------------------------------|
| Frequency Range:         | 2400-2483.5 MHz                  | Band:           | 2.4 GHz                      |
| Limit Clause(s):         | FCC 15.247 (a)(1)<br>RSS-247 5.1 | Test Method(s): | C63.10 6.9.3<br>C63.10 6.9.2 |
| Additional Reference(s): | -                                |                 |                              |

| DUT Configuration      |                    |                          |   |
|------------------------|--------------------|--------------------------|---|
| Mode:                  | ePA 8-DPSK (3-DH5) | Duty Cycle (%):          | - |
| Antenna Configuration: | SISO               | DCCF (dB):               | - |
| Active Port(s):        | B (Core 1)         | Peak Antenna Gain (dBi): | - |

| Test Frequency (MHz) | 20 dB Bandwidth (MHz) |       |   |   |
|----------------------|-----------------------|-------|---|---|
|                      | A                     | B     | C | D |
| 2402                 | -                     | 1.260 | - | - |
| 2441                 | -                     | 1.255 | - | - |
| 2480                 | -                     | 1.260 | - | - |

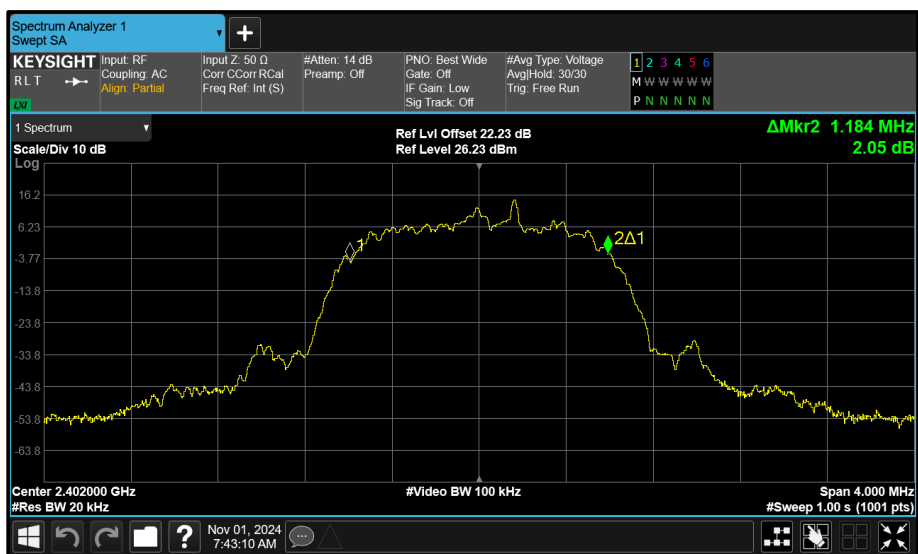
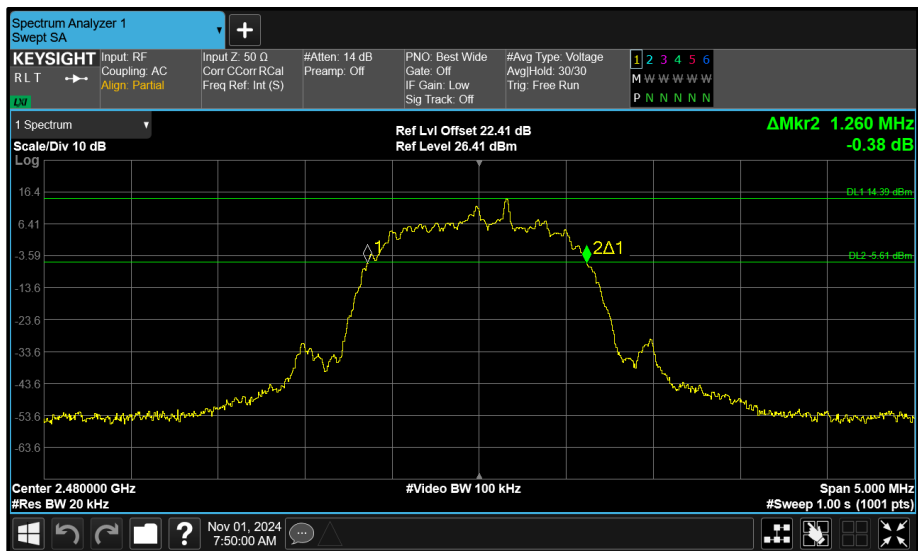
**Table 73 - 20 dB Bandwidth Results**

| Test Frequency (MHz) | 99% Bandwidth (MHz) |       |   |   | Limit (kHz) |
|----------------------|---------------------|-------|---|---|-------------|
|                      | A                   | B     | C | D |             |
| 2402                 | -                   | 1.184 | - | - | -           |
| 2441                 | -                   | 1.184 | - | - | -           |
| 2480                 | -                   | 1.188 | - | - | -           |

**Table 74 - 99% Bandwidth Results**







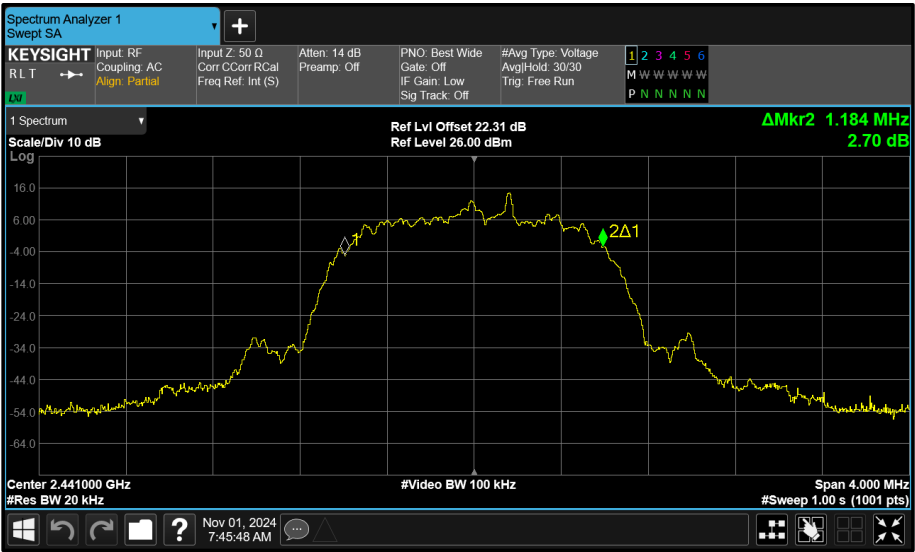


Figure 131 - Core 1 (B) 2441 MHz (CH39) 99% Bandwidth

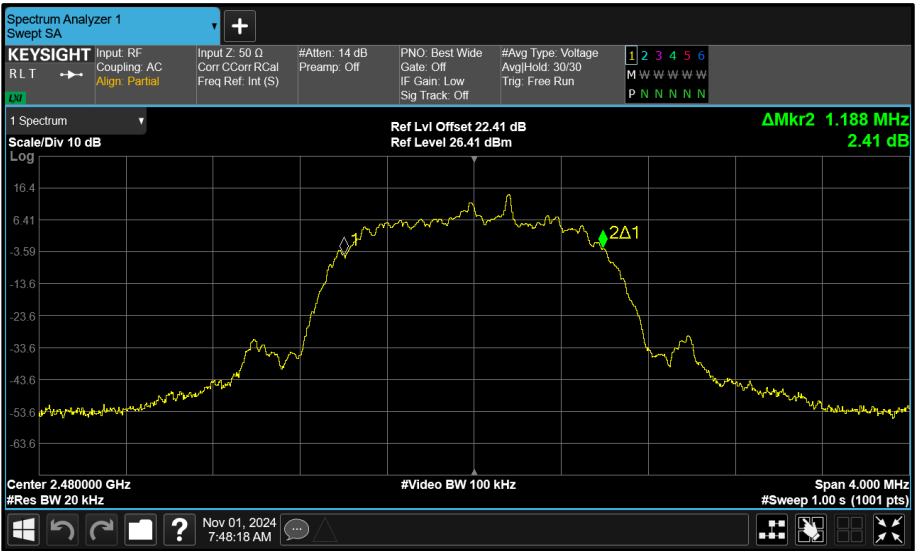


Figure 132 - Core 1 (B) 2480 MHz (CH78) 99% Bandwidth



| Test Configuration       |                                  |                 |                              |
|--------------------------|----------------------------------|-----------------|------------------------------|
| Frequency Range:         | 2400-2483.5 MHz                  | Band:           | 2.4 GHz                      |
| Limit Clause(s):         | FCC 15.247 (a)(1)<br>RSS-247 5.1 | Test Method(s): | C63.10 6.9.3<br>C63.10 6.9.2 |
| Additional Reference(s): | -                                |                 |                              |

| DUT Configuration      |                       |                          |   |
|------------------------|-----------------------|--------------------------|---|
| Mode:                  | iPA GFSK (DH5)        | Duty Cycle (%):          | - |
| Antenna Configuration: | Beamforming           | DCCF (dB):               | - |
| Active Port(s):        | A+B (Core 0 + Core 1) | Peak Antenna Gain (dBi): | - |

| Test Frequency (MHz) | 20 dB Bandwidth (MHz) |       |   |   |
|----------------------|-----------------------|-------|---|---|
|                      | A                     | B     | C | D |
| 2402                 | 0.855                 | 0.855 | - | - |
| 2441                 | 0.858                 | 0.855 | - | - |
| 2480                 | 0.855                 | 0.855 | - | - |

**Table 75 - 20 dB Bandwidth Results**

| Test Frequency (MHz) | 99% Bandwidth (MHz) |       |   |   | Limit (kHz) |
|----------------------|---------------------|-------|---|---|-------------|
|                      | A                   | B     | C | D |             |
| 2402                 | 0.855               | 0.864 | - | - | -           |
| 2441                 | 0.855               | 0.858 | - | - | -           |
| 2480                 | 0.855               | 0.864 | - | - | -           |

**Table 76 - 99% Bandwidth Results**

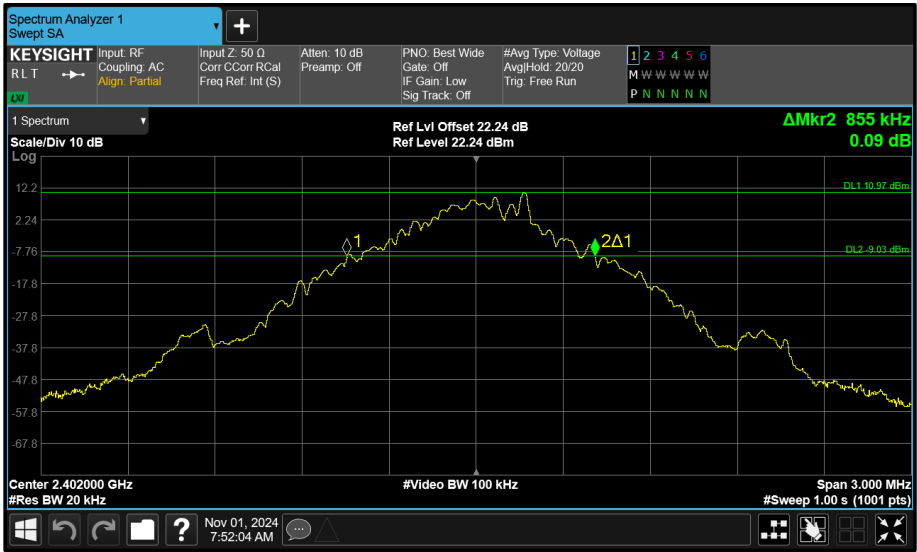


Figure 133 - Core 0 (A) 2402 MHz (CH0) 20 dB Bandwidth

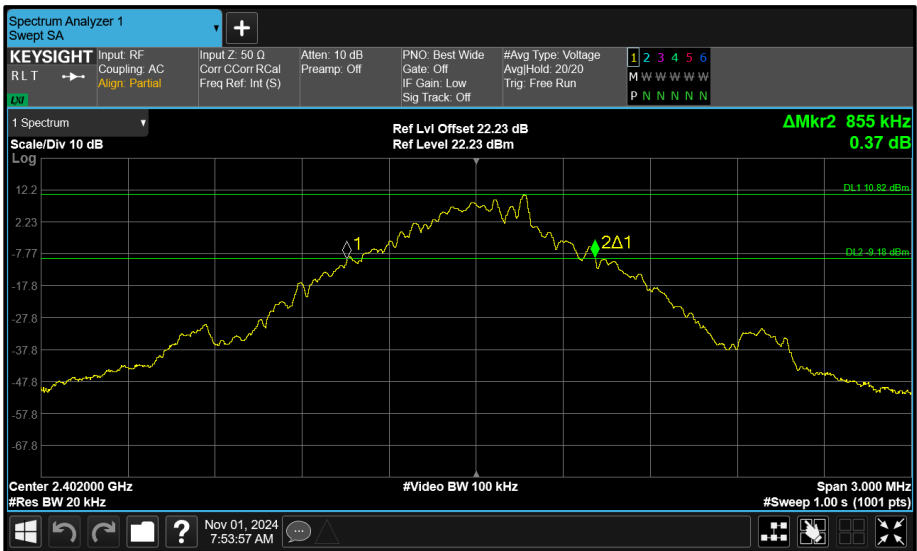


Figure 134 - Core 1 (B) 2402 MHz (CH0) 20 dB Bandwidth

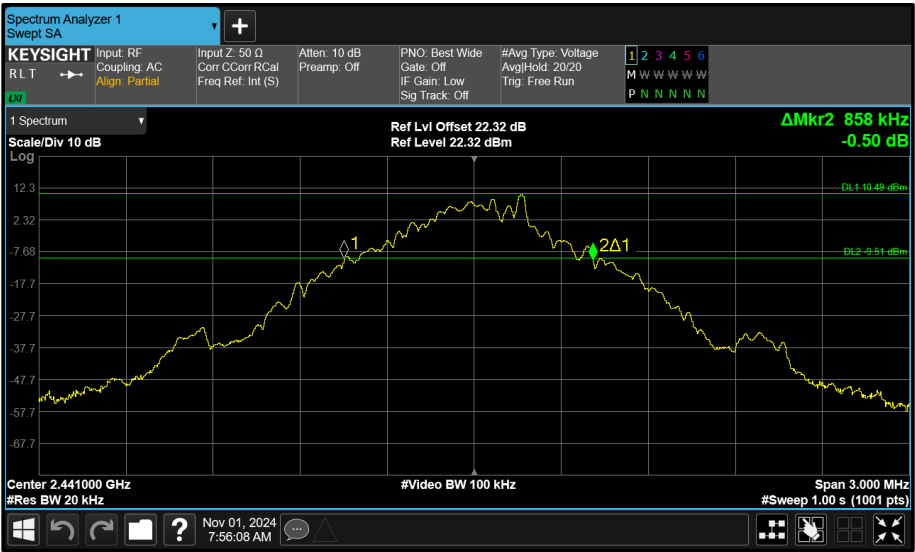


Figure 135 - Core 0 (A) 2441 MHz (CH39) 20 dB Bandwidth

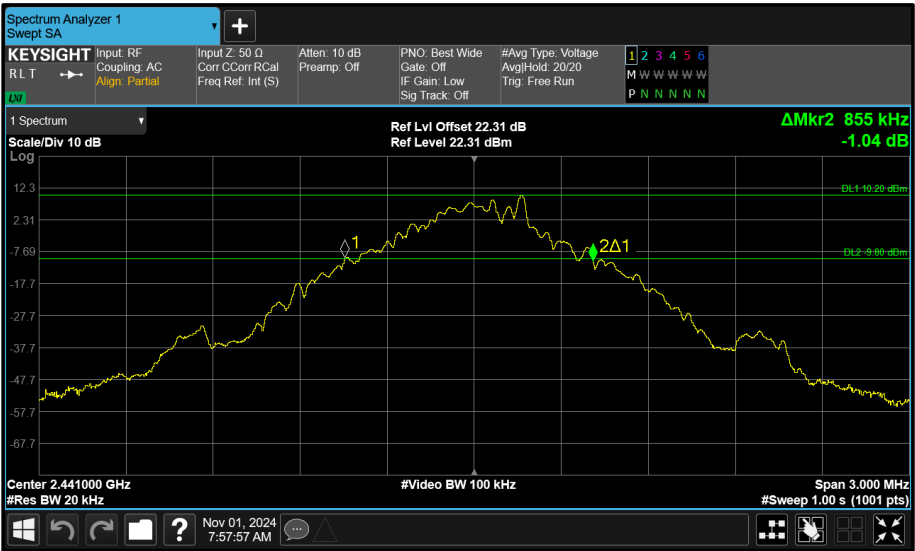


Figure 136 - Core 1 (B) 2441 MHz (CH39) 20 dB Bandwidth

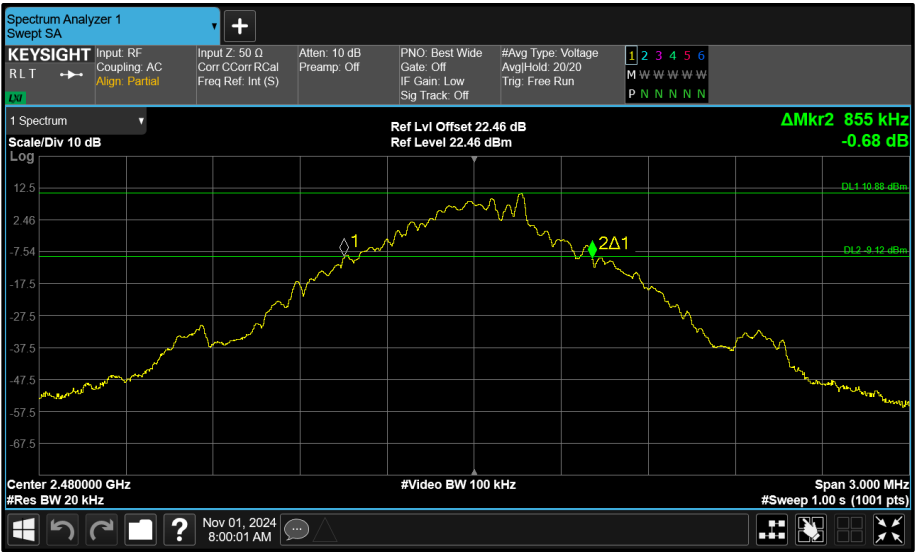


Figure 137 - Core 0 (A) 2480 MHz (CH78) 20 dB Bandwidth

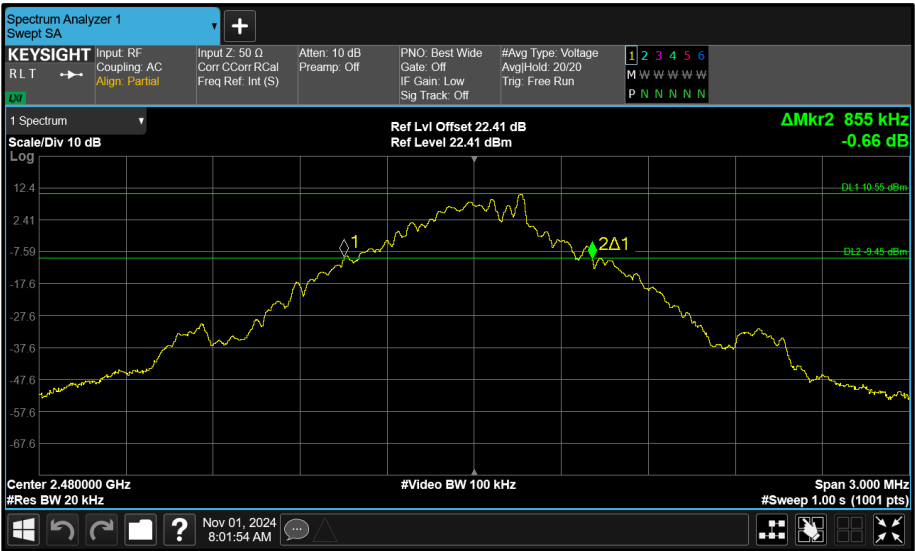


Figure 138 - Core 1 (B) 2480 MHz (CH78) 20 dB Bandwidth

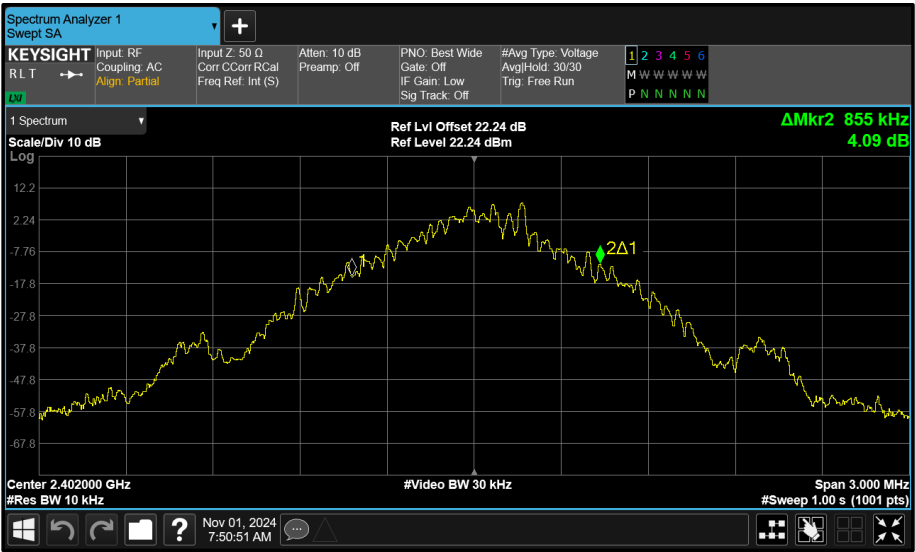


Figure 139 - Core 0 (A) 2402 MHz (CH0) 99% Bandwidth

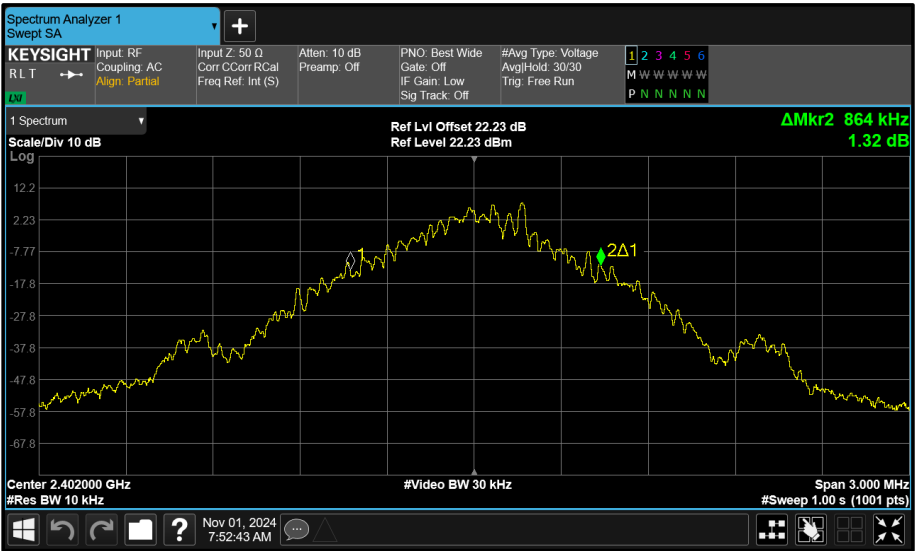


Figure 140 - Core 1 (B) 2402 MHz (CH0) 99% Bandwidth

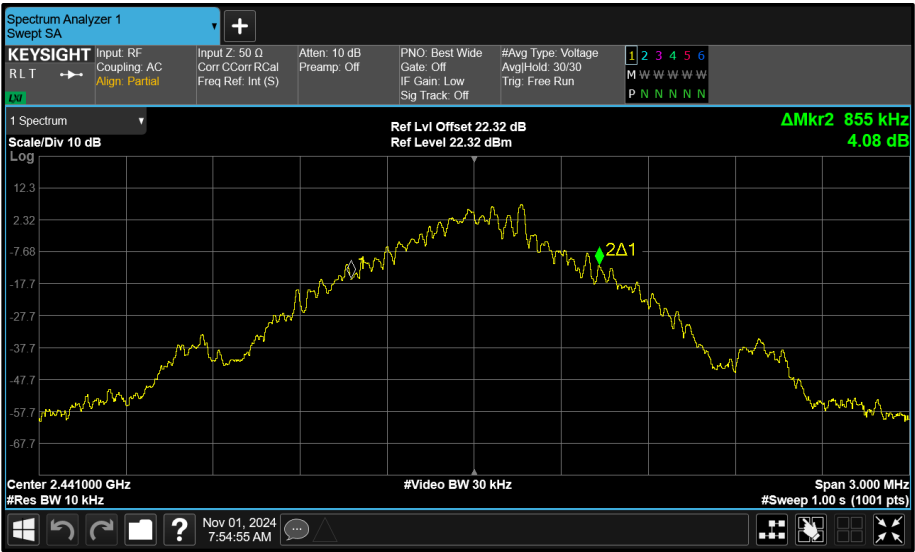


Figure 141 - Core 0 (A) 2441 MHz (CH39) 99% Bandwidth

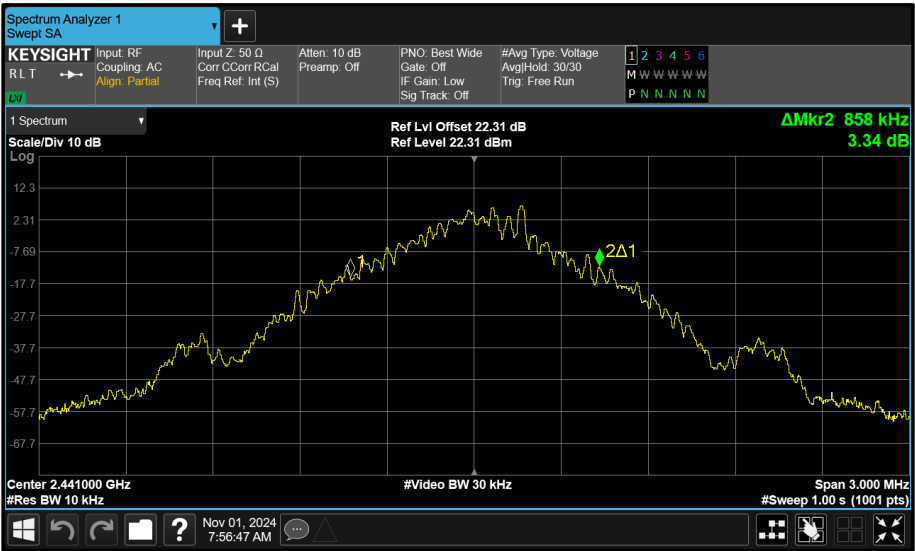


Figure 142 - Core 1 (B) 2441 MHz (CH39) 99% Bandwidth



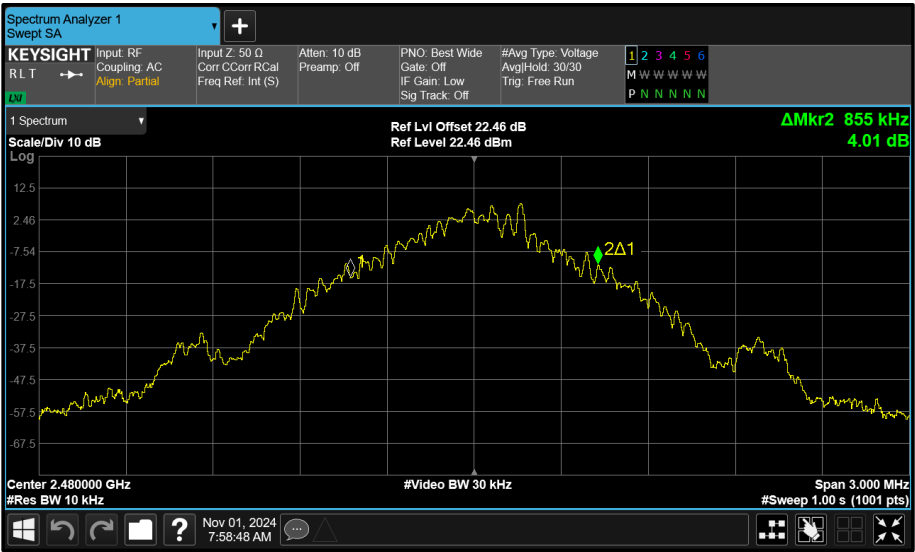


Figure 143 - Core 0 (A) 2480 MHz (CH78) 99% Bandwidth

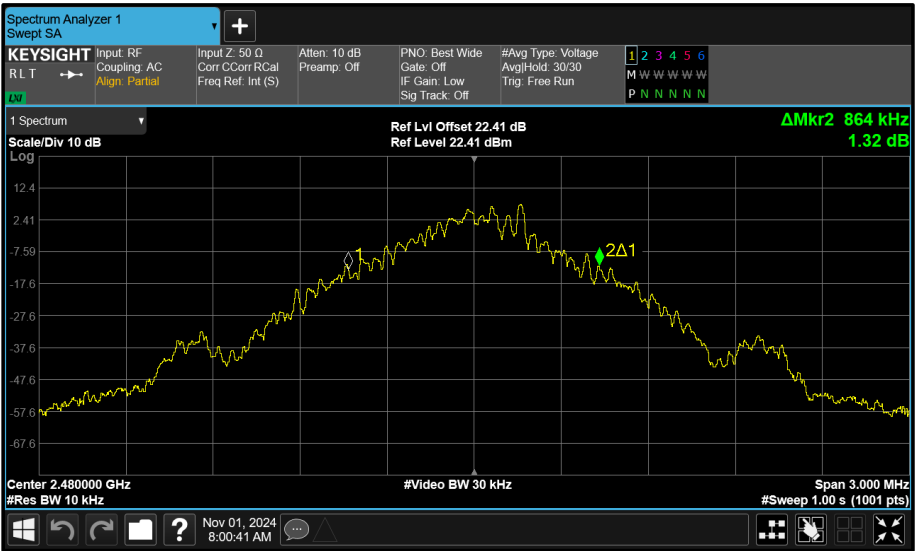


Figure 144 - Core 1 (B) 2480 MHz (CH78) 99% Bandwidth



| Test Configuration       |                                  |                 |                              |
|--------------------------|----------------------------------|-----------------|------------------------------|
| Frequency Range:         | 2400-2483.5 MHz                  | Band:           | 2.4 GHz                      |
| Limit Clause(s):         | FCC 15.247 (a)(1)<br>RSS-247 5.1 | Test Method(s): | C63.10 6.9.3<br>C63.10 6.9.2 |
| Additional Reference(s): | -                                |                 |                              |

| DUT Configuration      |                           |                          |   |
|------------------------|---------------------------|--------------------------|---|
| Mode:                  | iPA $\pi/4$ DQPSK (2-DH5) | Duty Cycle (%):          | - |
| Antenna Configuration: | Beamforming               | DCCF (dB):               | - |
| Active Port(s):        | A+B (Core 0 + Core 1)     | Peak Antenna Gain (dBi): | - |

| Test Frequency (MHz) | 20 dB Bandwidth (MHz) |       |   |   |
|----------------------|-----------------------|-------|---|---|
|                      | A                     | B     | C | D |
| 2402                 | 1.325                 | 1.325 | - | - |
| 2441                 | 1.325                 | 1.330 | - | - |
| 2480                 | 1.330                 | 1.325 | - | - |

**Table 77 - 20 dB Bandwidth Results**

| Test Frequency (MHz) | 99% Bandwidth (MHz) |       |   |   | Limit (kHz) |
|----------------------|---------------------|-------|---|---|-------------|
|                      | A                   | B     | C | D |             |
| 2402                 | 1.188               | 1.192 | - | - | -           |
| 2441                 | 1.188               | 1.188 | - | - | -           |
| 2480                 | 1.188               | 1.192 | - | - | -           |

**Table 78 - 99% Bandwidth Results**

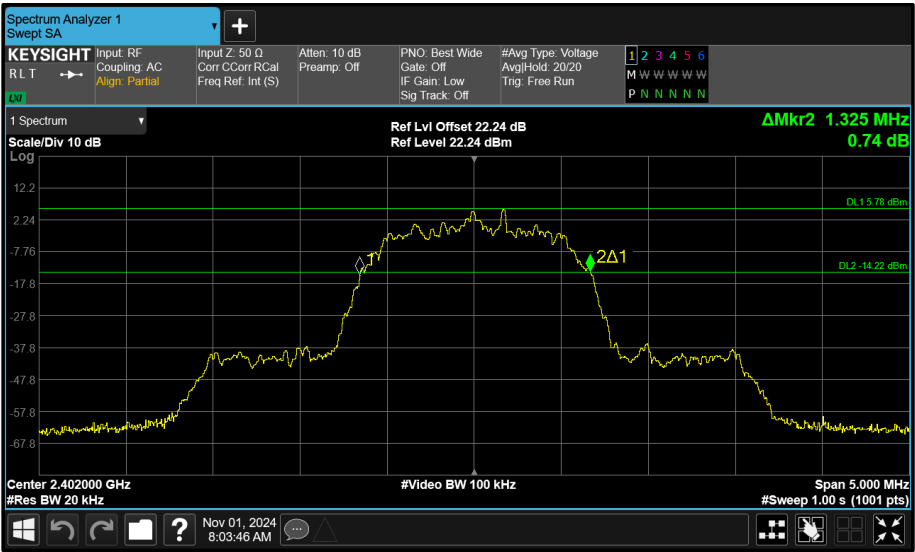


Figure 145 - Core 0 (A) 2402 MHz (CH0) 20 dB Bandwidth

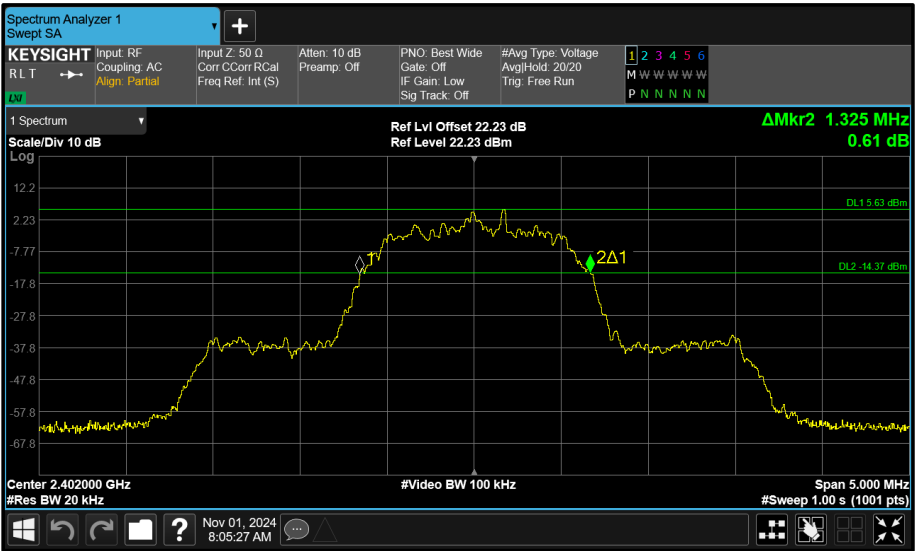


Figure 146 - Core 1 (B) 2402 MHz (CH0) 20 dB Bandwidth

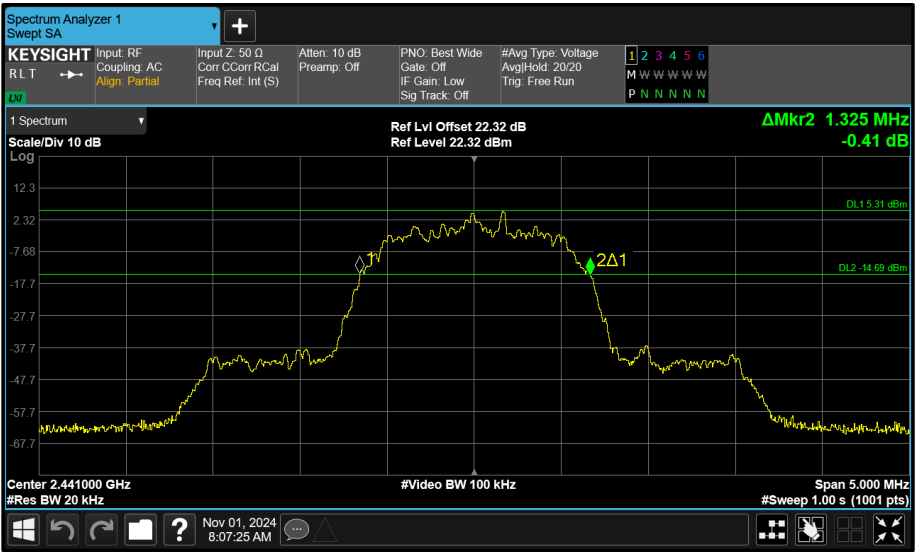


Figure 147 - Core 0 (A) 2441 MHz (CH39) 20 dB Bandwidth

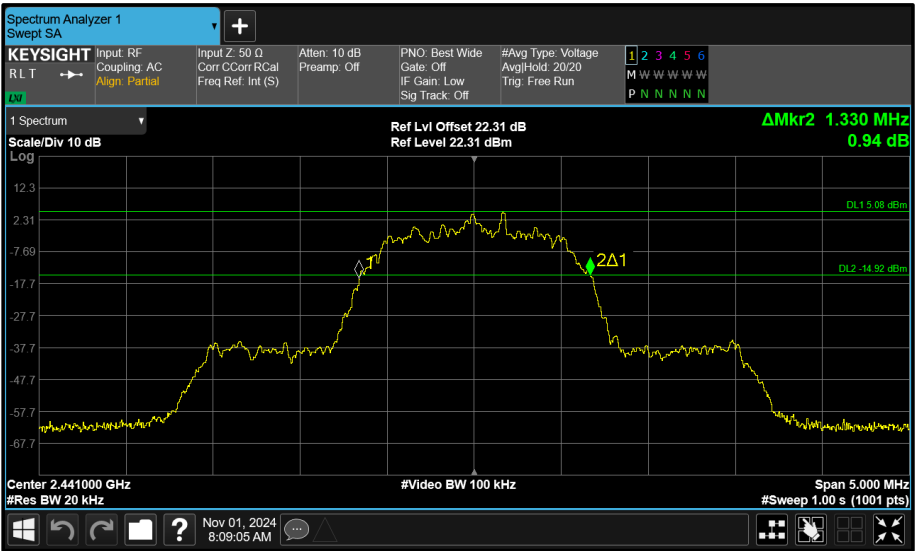


Figure 148 - Core 1 (B) 2441 MHz (CH39) 20 dB Bandwidth

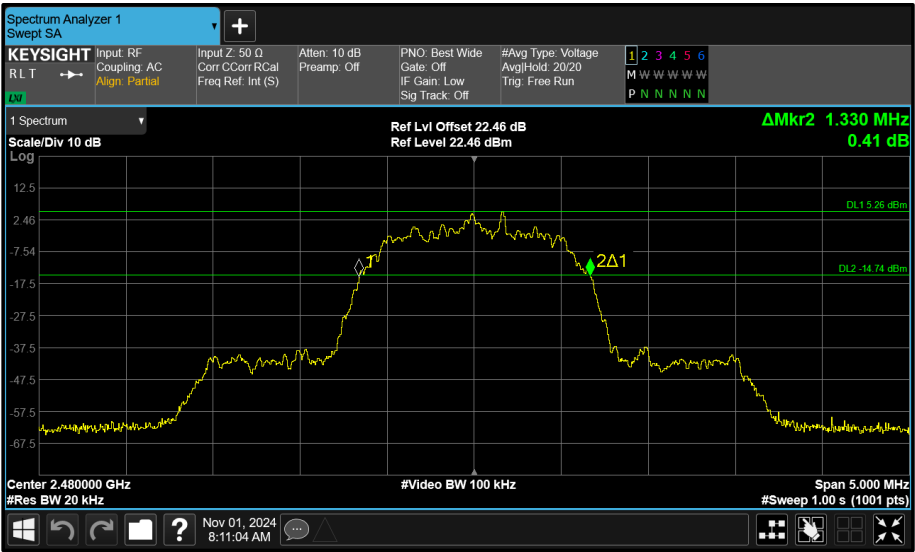


Figure 149 - Core 0 (A) 2480 MHz (CH78) 20 dB Bandwidth

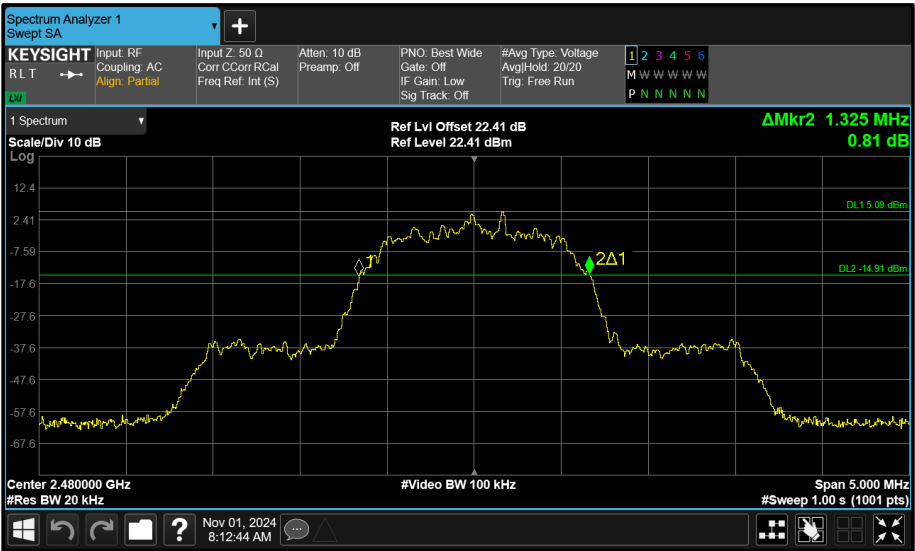


Figure 150 - Core 1 (B) 2480 MHz (CH78) 20 dB Bandwidth