

## Appendix A

### RF Test Data for BT(BDR/EDR) (Conducted Measurement)

Product Name: Wireless Outdoor Subwoofer

Trade Mark: OSD AUDIO

Test Model: BOM 4.1.2

FCC ID: 2A4UH-BOM412

### Environmental Conditions

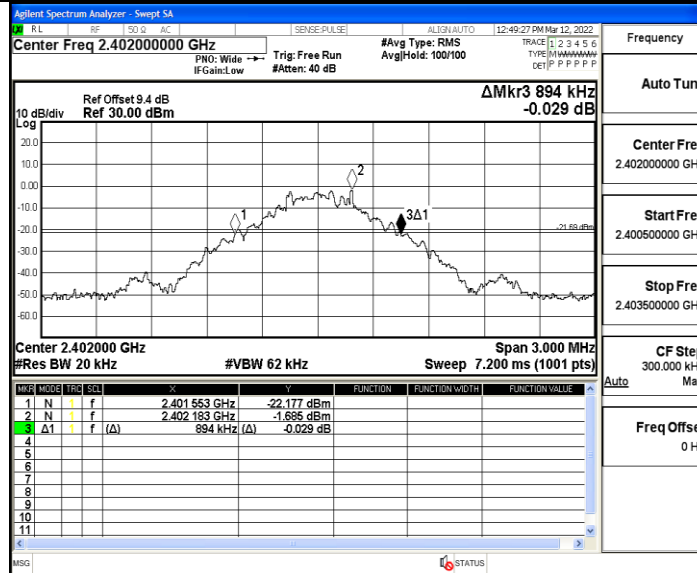
|                    |           |
|--------------------|-----------|
| Temperature:       | 22.8° C   |
| Relative Humidity: | 56%       |
| ATM Pressure:      | 100.0 kPa |
| Test Engineer:     | Nancy Li  |
| Supervised by:     | Hugo Chen |

### A.1 20 dB Bandwidth

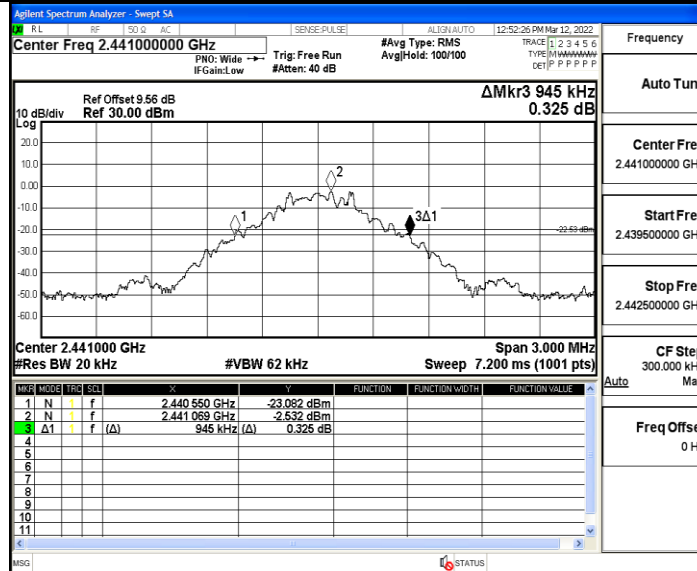
| TestMode | Antenna | Channel | 20db EBW[MHz] | FL[MHz]  | FH[MHz]  | Limit[MHz] | Verdict |
|----------|---------|---------|---------------|----------|----------|------------|---------|
| DH5      | Ant1    | 2402    | 0.894         | 2401.553 | 2402.447 | ---        | ---     |
|          |         | 2441    | 0.945         | 2440.550 | 2441.495 | ---        | ---     |
|          |         | 2480    | 0.921         | 2479.553 | 2480.474 | ---        | ---     |
| 2DH5     | Ant1    | 2402    | 1.311         | 2401.355 | 2402.666 | ---        | ---     |
|          |         | 2441    | 1.320         | 2440.349 | 2441.669 | ---        | ---     |
|          |         | 2480    | 1.311         | 2479.355 | 2480.666 | ---        | ---     |
| 3DH5     | Ant1    | 2402    | 1.272         | 2401.361 | 2402.633 | ---        | ---     |
|          |         | 2441    | 1.296         | 2440.361 | 2441.657 | ---        | ---     |
|          |         | 2480    | 1.272         | 2479.367 | 2480.639 | ---        | ---     |

## Test Graph

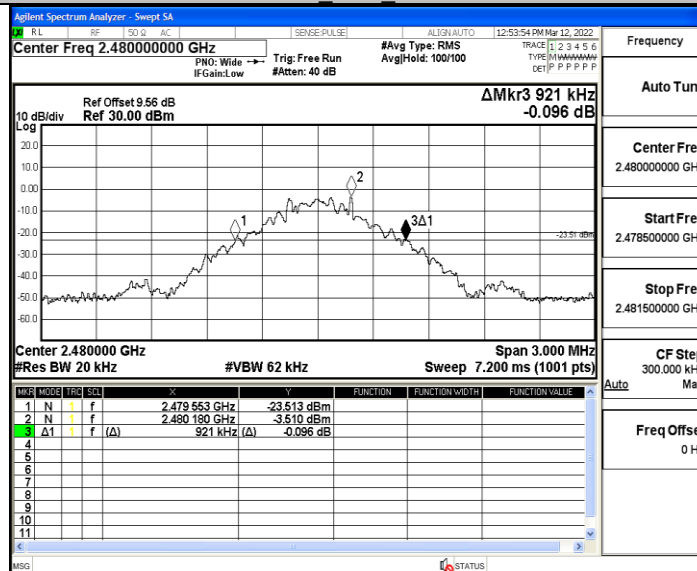
DH5\_Ant1\_2402



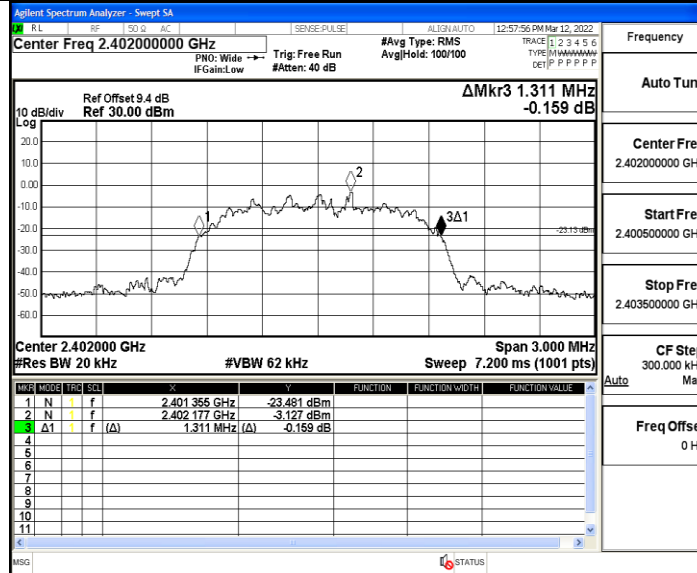
DH5\_Ant1\_2441



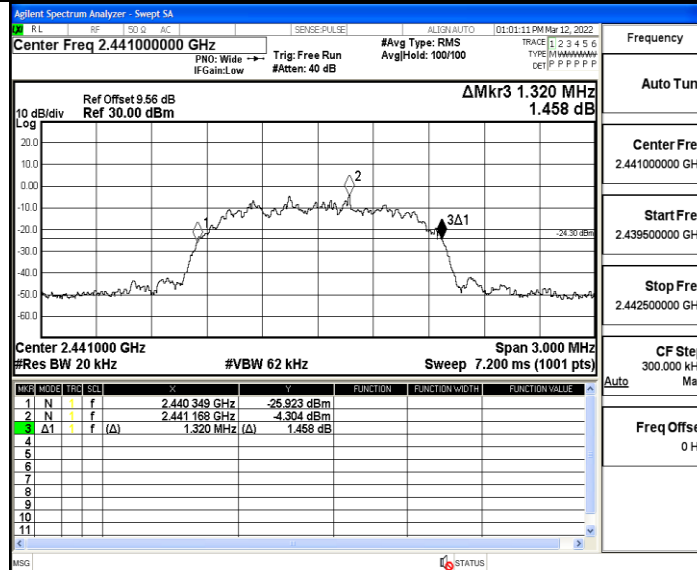
DH5\_Ant1\_2480



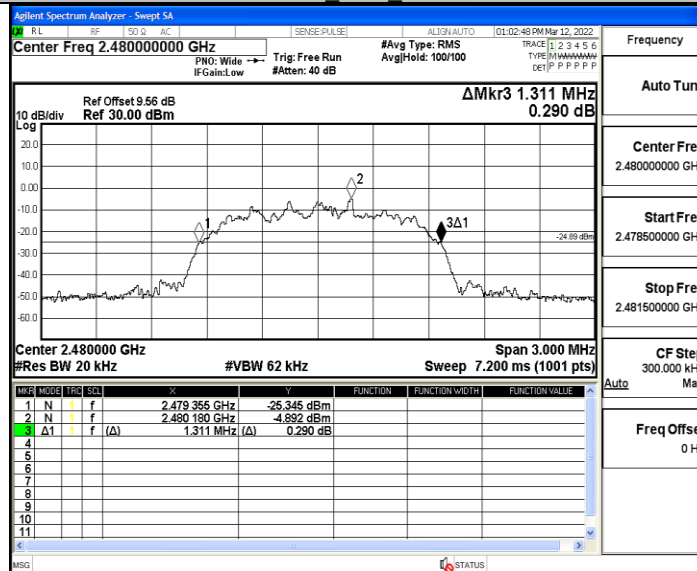
## 2DH5\_Ant1\_2402



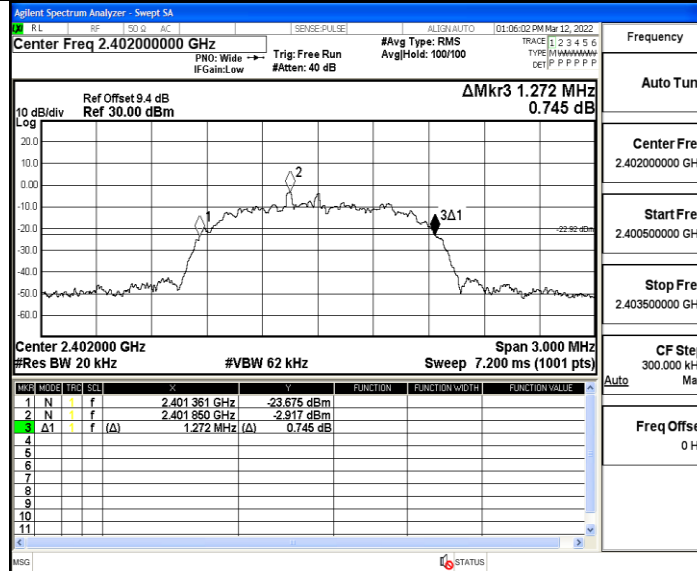
## 2DH5\_Ant1\_2441



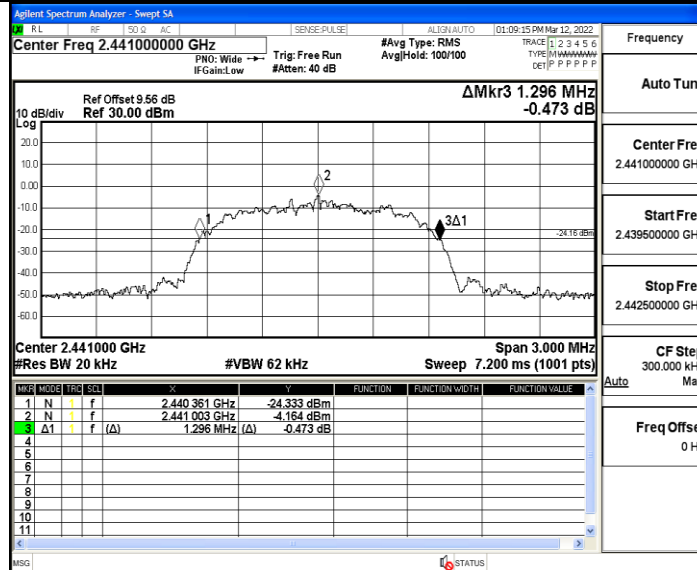
## 2DH5\_Ant1\_2480



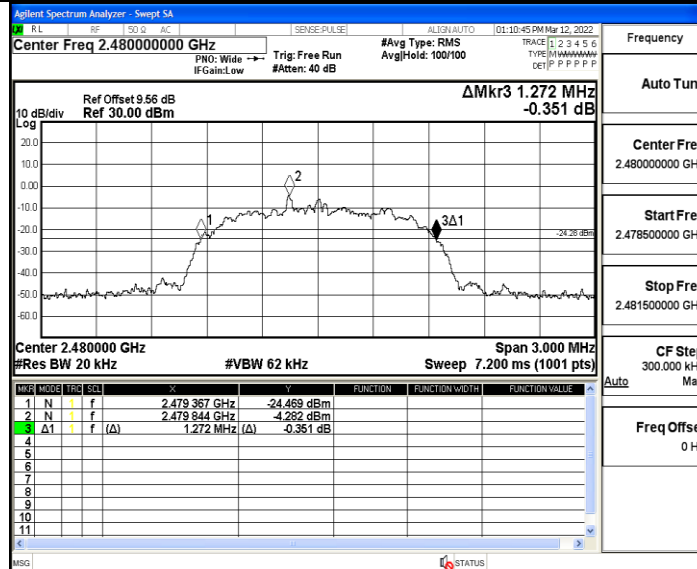
## 3DH5\_Ant1\_2402



## 3DH5\_Ant1\_2441



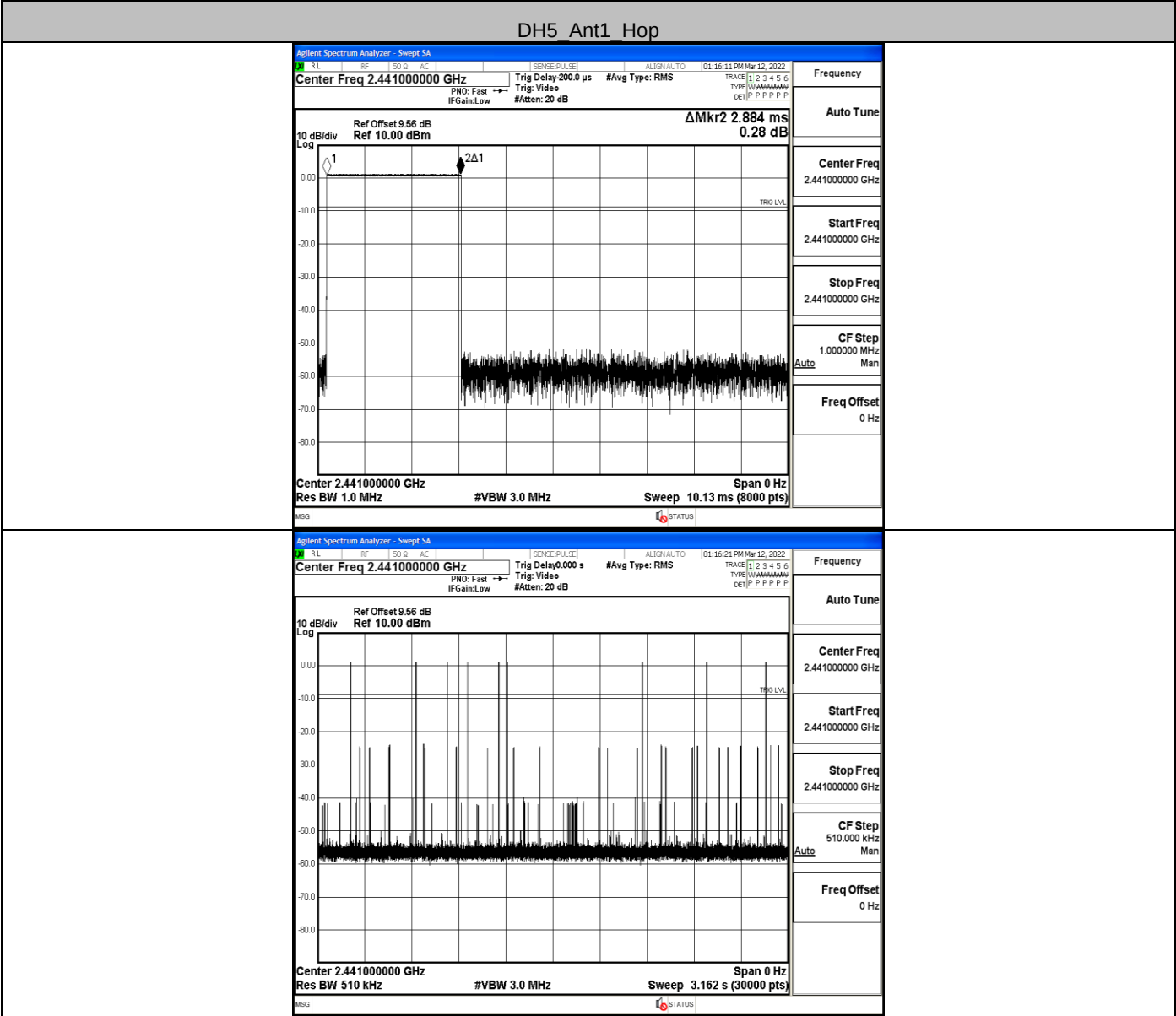
## 3DH5\_Ant1\_2480

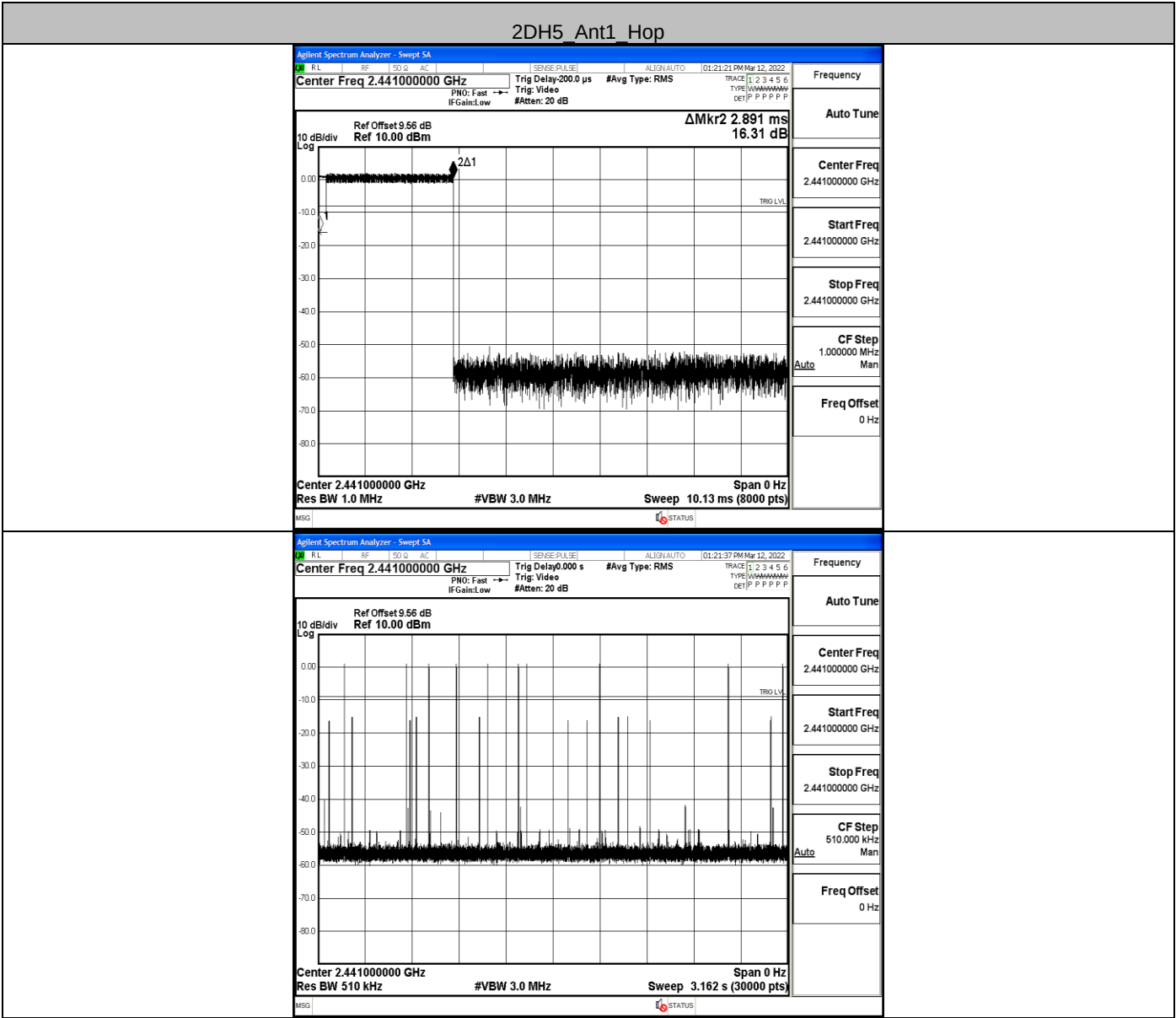


**A.2 Dwell Time**

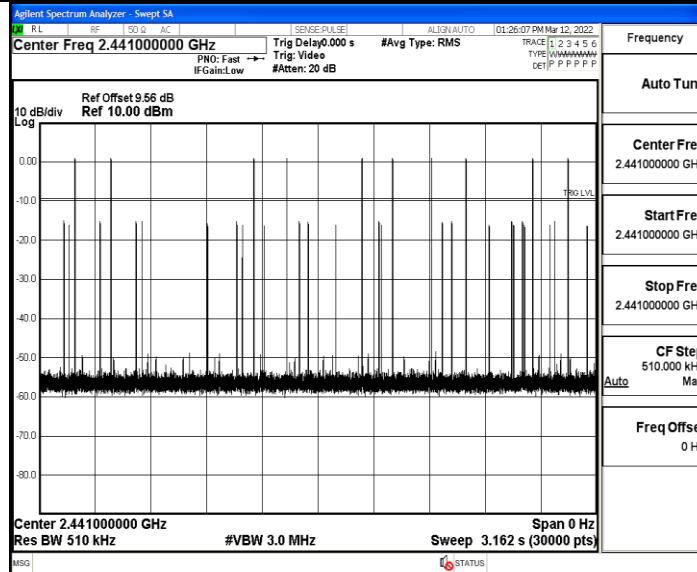
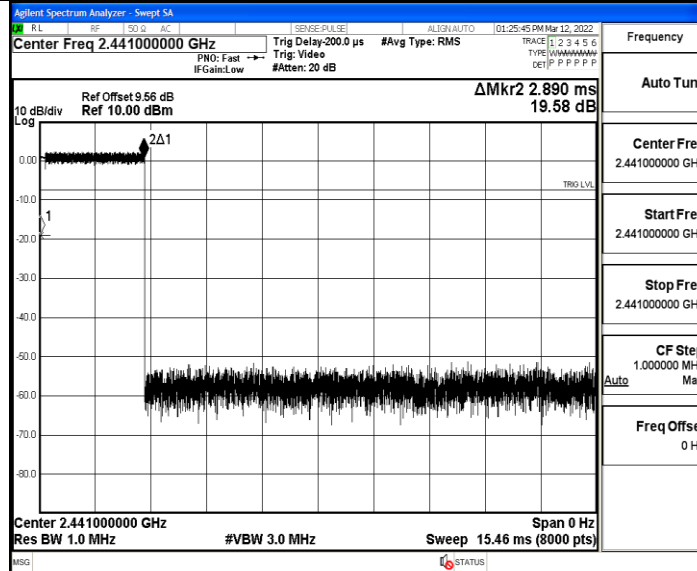
| TestMode | Antenna | Channel | BurstWidth<br>[ms] | TotalHops<br>[Num] | Result[s] | Limit[s] | Verdict |
|----------|---------|---------|--------------------|--------------------|-----------|----------|---------|
| DH5      | Ant1    | Hop     | 2.88               | 100                | 0.288     | ≤0.4     | PASS    |
| 2DH5     | Ant1    | Hop     | 2.89               | 110                | 0.318     | ≤0.4     | PASS    |
| 3DH5     | Ant1    | Hop     | 2.89               | 120                | 0.347     | ≤0.4     | PASS    |

Test Graph





## 3DH5\_Ant1\_Hop



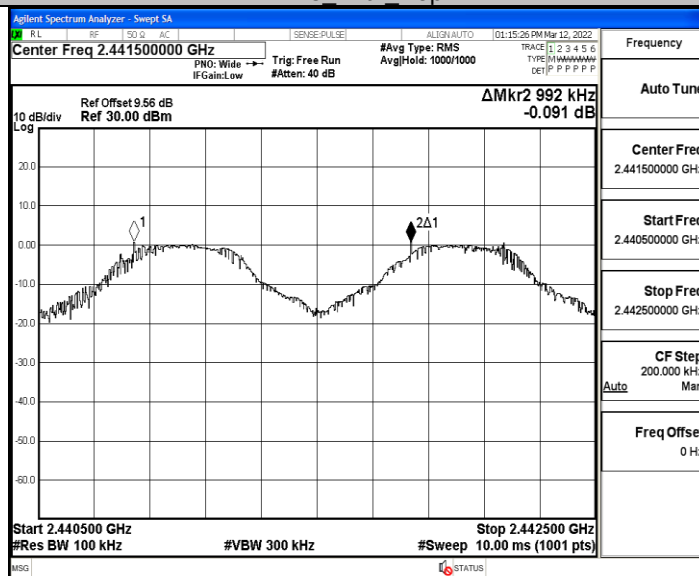


### A.3 Carrier Frequency Separation

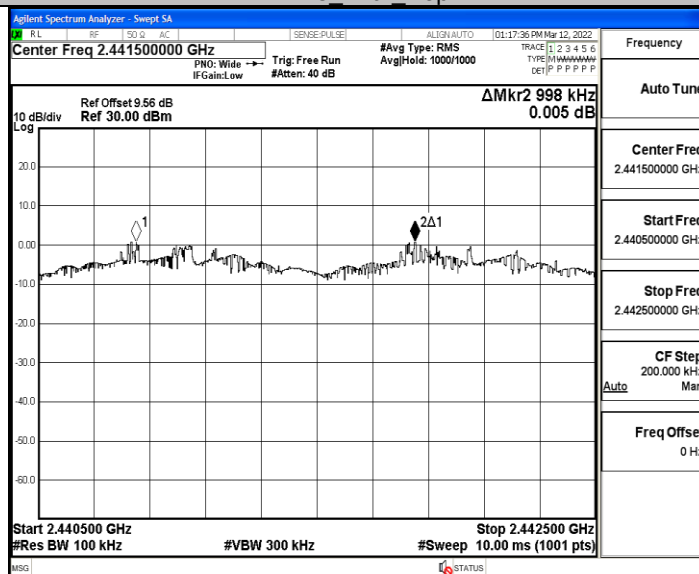
| TestMode | Antenna | Channel | Result[MHz] | Limit[MHz]   | Verdict |
|----------|---------|---------|-------------|--------------|---------|
| DH5      | Ant1    | Hop     | 0.992       | $\geq 0.945$ | PASS    |
| 2DH5     | Ant1    | Hop     | 0.998       | $\geq 0.880$ | PASS    |
| 3DH5     | Ant1    | Hop     | 1.014       | $\geq 0.864$ | PASS    |

## Test Graph

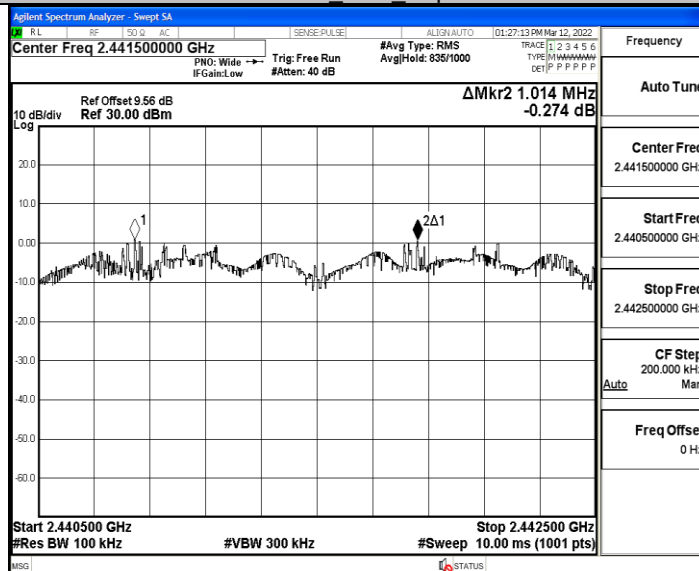
## DH5\_Ant1\_Hop



## 2DH5\_Ant1\_Hop



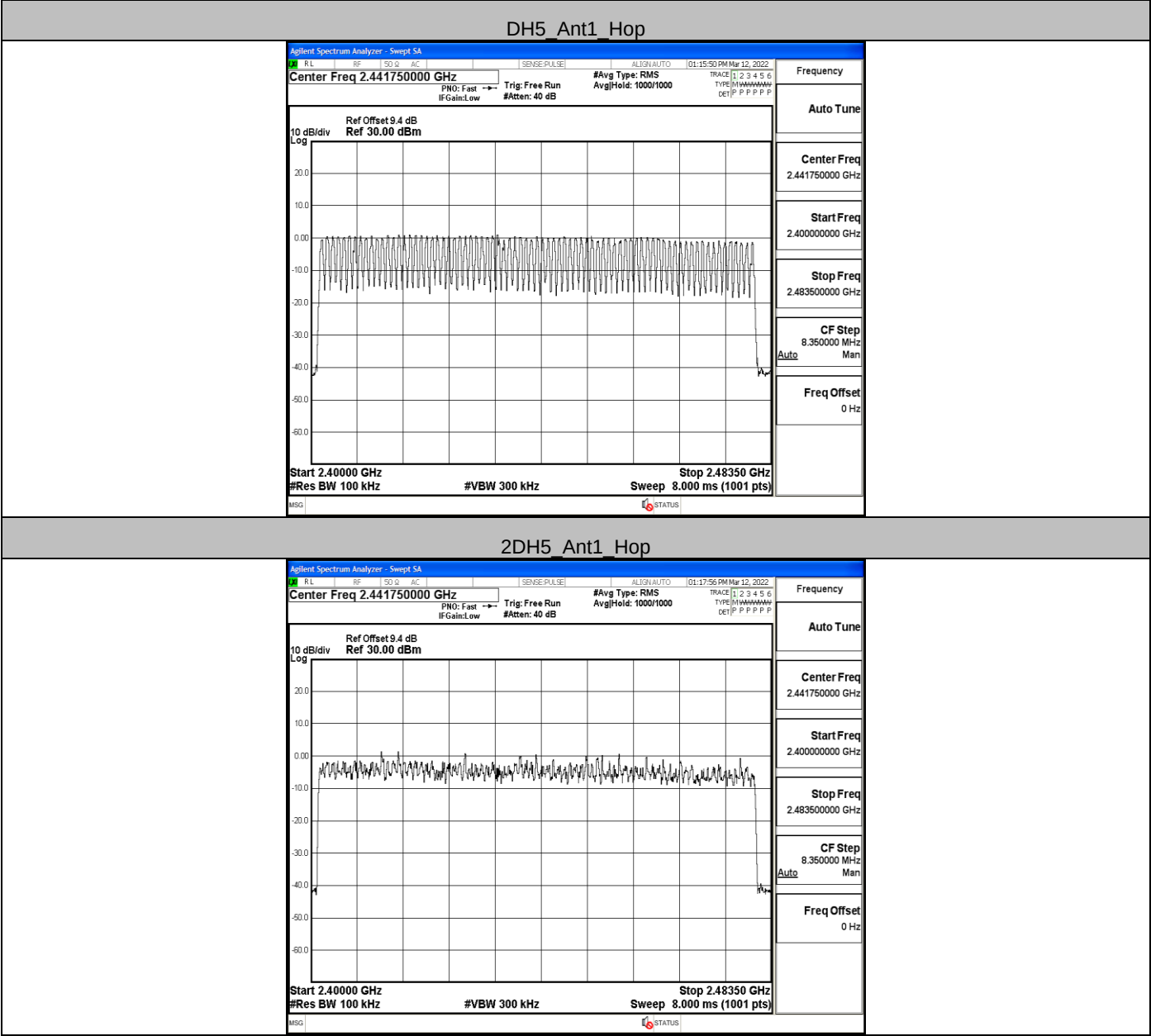
## 3DH5\_Ant1\_Hop

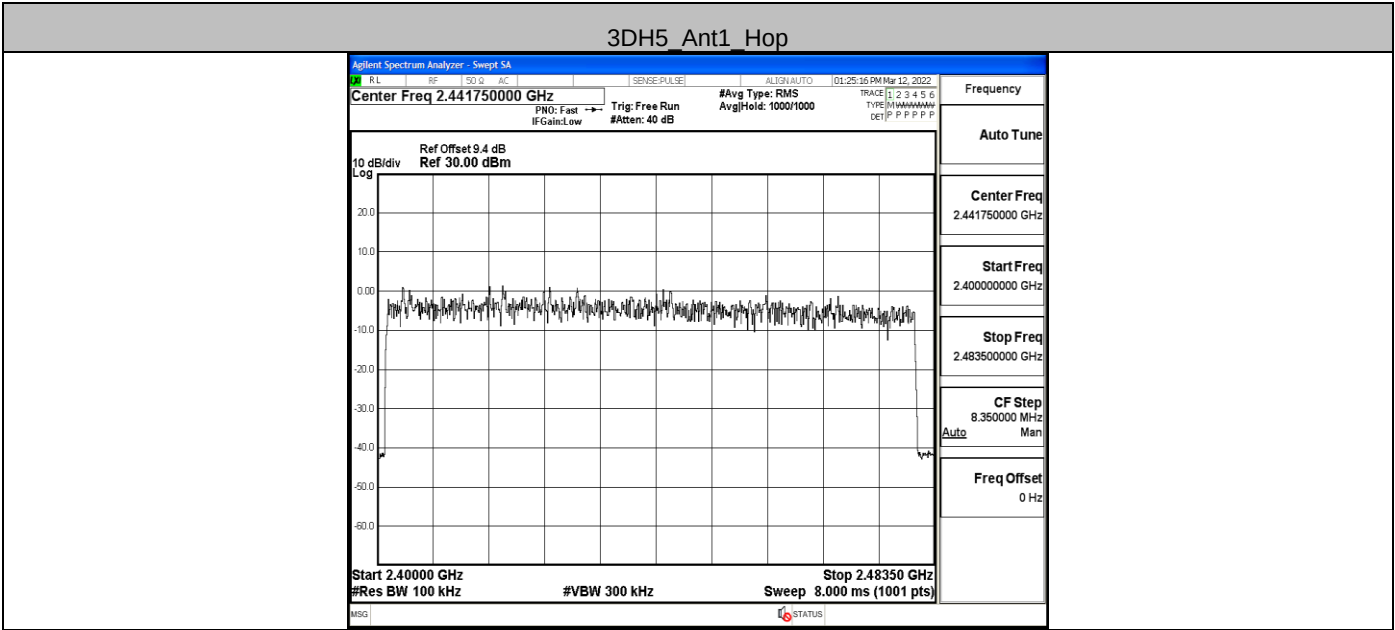


A.4 Hopping Channel Number

| TestMode | Antenna | Channel | Result[Num] | Limit[Num] | Verdict |
|----------|---------|---------|-------------|------------|---------|
| DH5      | Ant1    | Hop     | 79          | >=15       | PASS    |
| 2DH5     | Ant1    | Hop     | 79          | >=15       | PASS    |
| 3DH5     | Ant1    | Hop     | 79          | >=15       | PASS    |

Test Graph

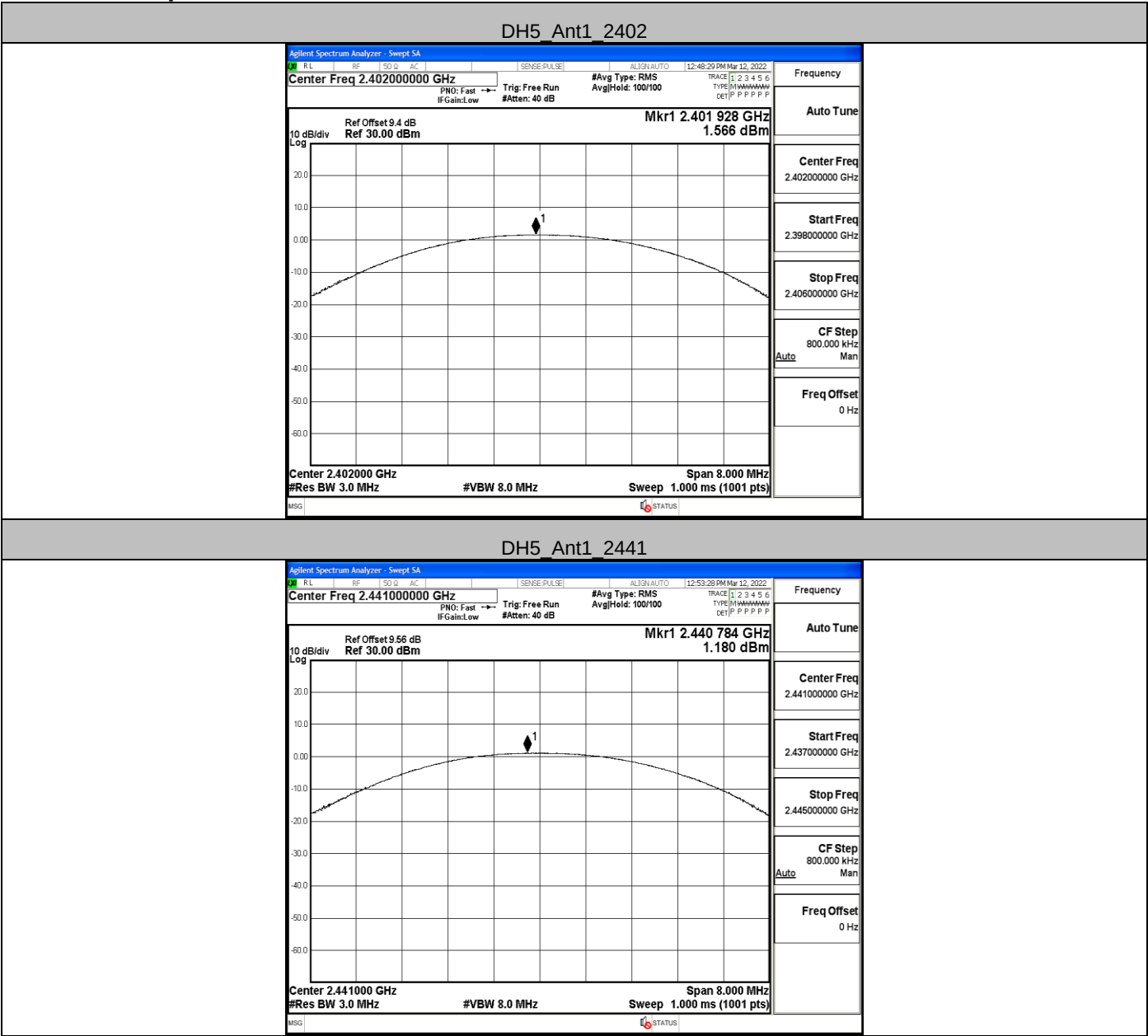




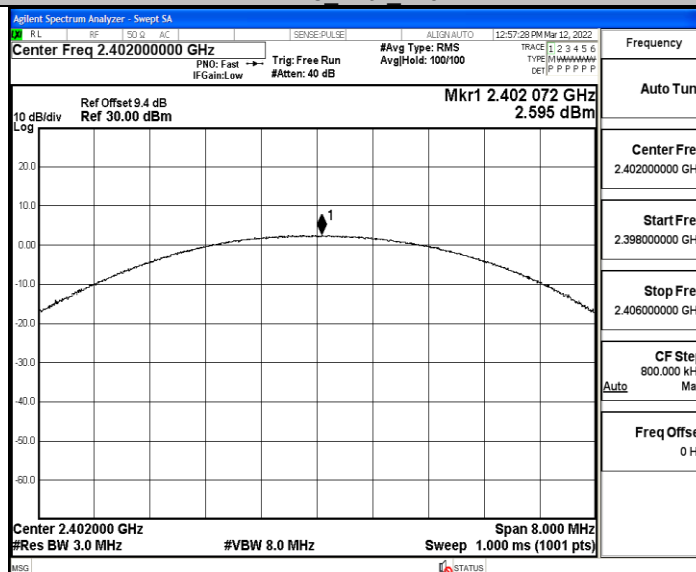
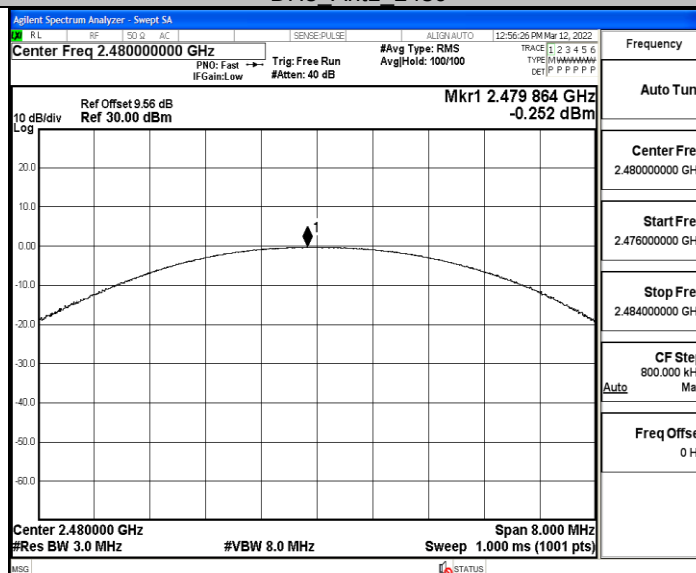
A.5 Conducted Peak Output Power

| TestMode | Antenna | Channel | Result[dBm] | Limit[dBm] | Verdict |
|----------|---------|---------|-------------|------------|---------|
| DH5      | Ant1    | 2402    | 1.57        | ≤30        | PASS    |
|          |         | 2441    | 1.18        | ≤30        | PASS    |
|          |         | 2480    | -0.25       | ≤30        | PASS    |
| 2DH5     | Ant1    | 2402    | 2.6         | ≤20.97     | PASS    |
|          |         | 2441    | 2.25        | ≤20.97     | PASS    |
|          |         | 2480    | 0.84        | ≤20.97     | PASS    |
| 3DH5     | Ant1    | 2402    | 2.94        | ≤20.97     | PASS    |
|          |         | 2441    | 2.68        | ≤20.97     | PASS    |
|          |         | 2480    | 1.4         | ≤20.97     | PASS    |

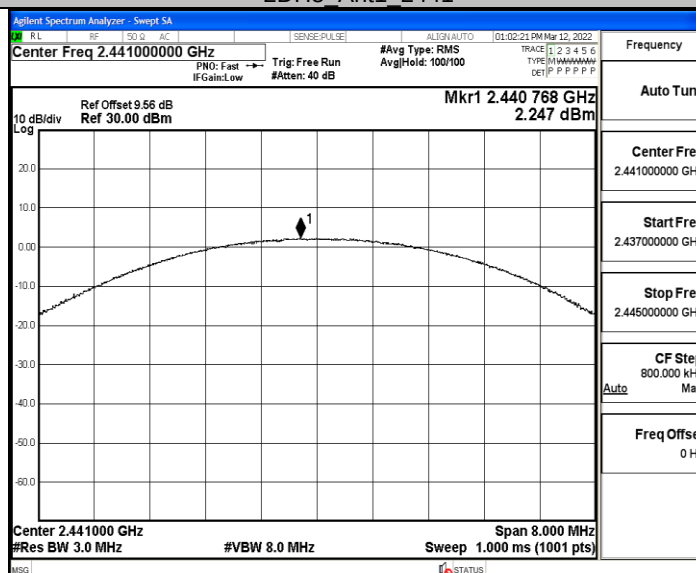
Test Graph



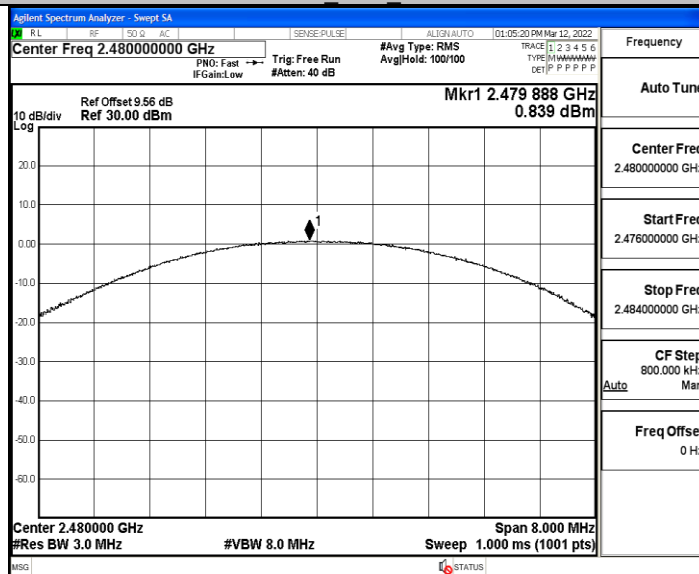
## 2DH5 Ant1 2402



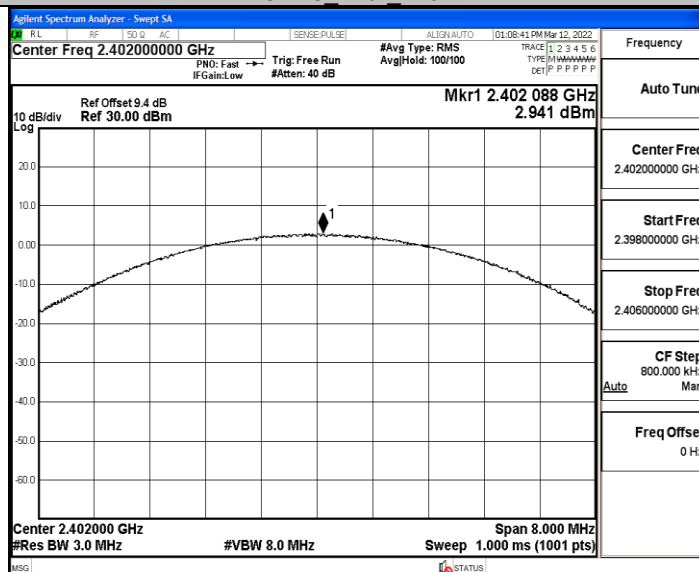
## 2DH5 Ant1 2441



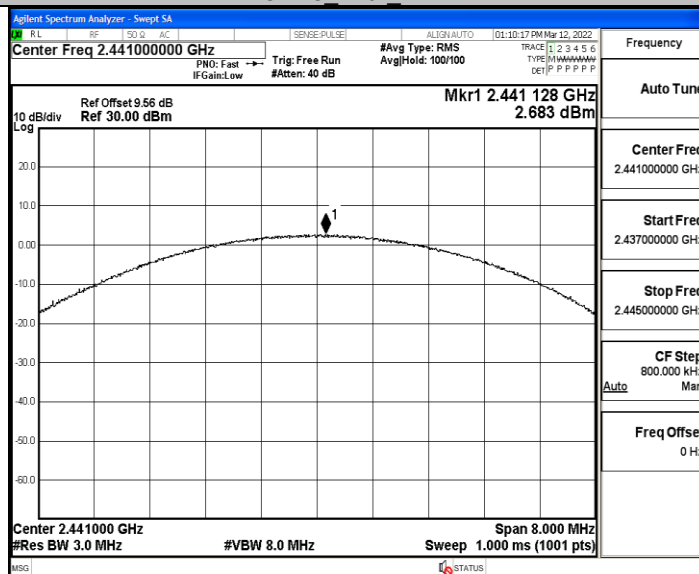
## 2DH5 Ant1 2480

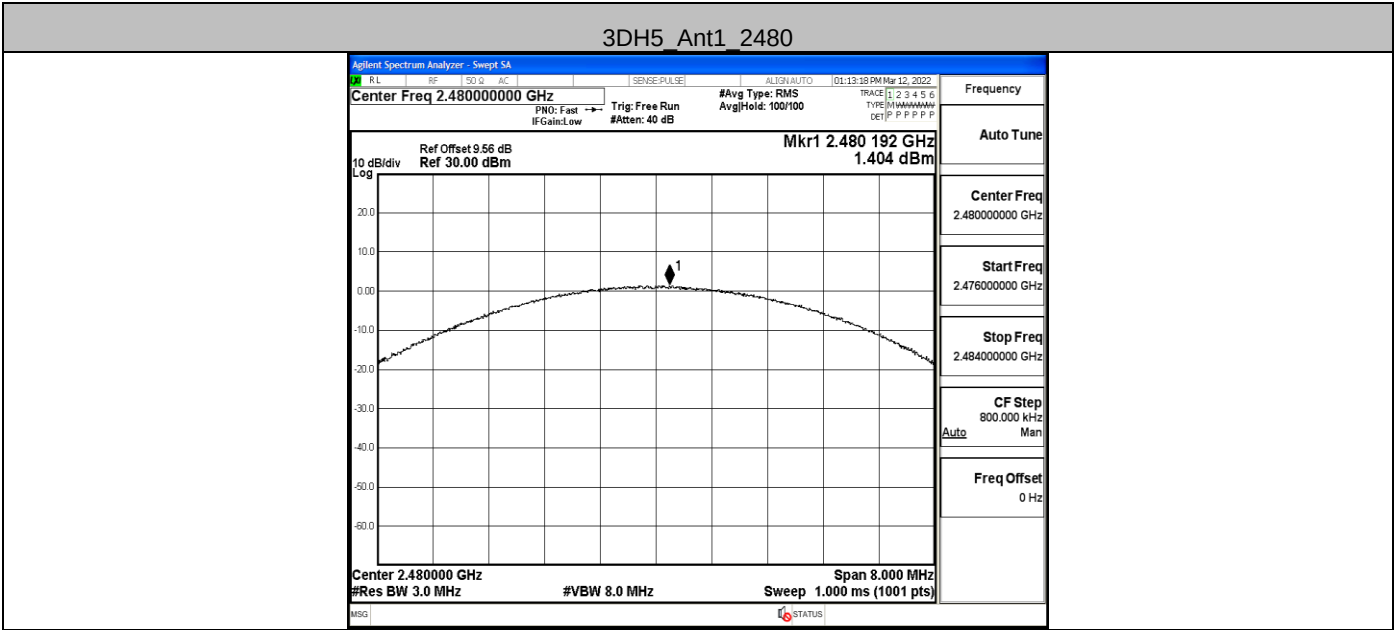


## 3DH5 Ant1 2402



## 3DH5 Ant1 2441





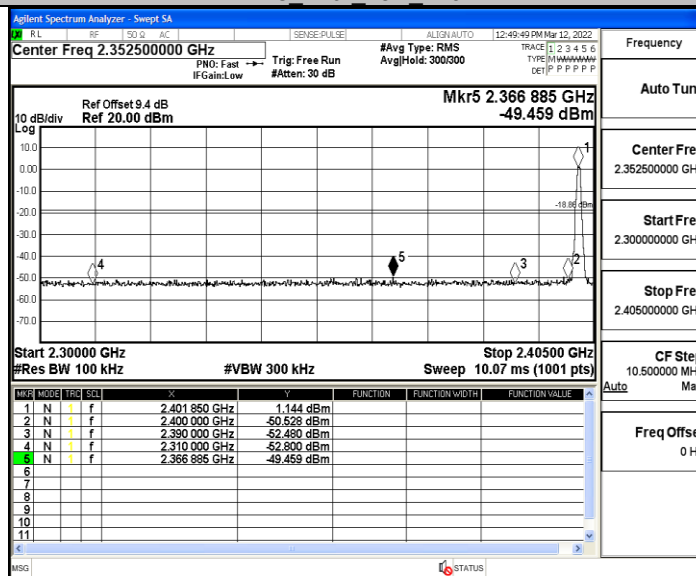


**A.6 Band-edge for RF Conducted Emissions**

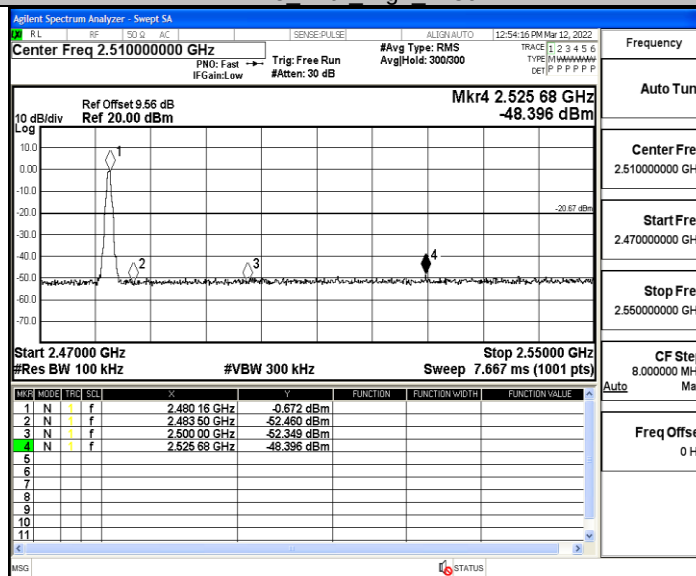
| TestMode | Antenna | ChName | Channel  | RefLevel<br>[dBm] | Result<br>[dBm] | Limit<br>[dBm] | Verdict |
|----------|---------|--------|----------|-------------------|-----------------|----------------|---------|
| DH5      | Ant1    | Low    | 2402     | 1.14              | -49.46          | $\leq -18.86$  | PASS    |
|          |         | High   | 2480     | -0.67             | -48.4           | $\leq -20.67$  | PASS    |
|          |         | Low    | Hop_2402 | 0.59              | -50.56          | $\leq -19.41$  | PASS    |
|          |         | High   | Hop_2480 | -0.49             | -48.5           | $\leq -20.49$  | PASS    |
| 2DH5     | Ant1    | Low    | 2402     | 0.96              | -49.26          | $\leq -19.04$  | PASS    |
|          |         | High   | 2480     | -0.78             | -48.66          | $\leq -20.78$  | PASS    |
|          |         | Low    | Hop_2402 | -1.86             | -50.18          | $\leq -21.86$  | PASS    |
|          |         | High   | Hop_2480 | -3.29             | -48.84          | $\leq -23.29$  | PASS    |
| 3DH5     | Ant1    | Low    | 2402     | 0.01              | -50.01          | $\leq -19.99$  | PASS    |
|          |         | High   | 2480     | -0.73             | -48.95          | $\leq -20.73$  | PASS    |
|          |         | Low    | Hop_2402 | -3.17             | -50.18          | $\leq -23.17$  | PASS    |
|          |         | High   | Hop_2480 | -2.91             | -48.91          | $\leq -22.91$  | PASS    |

## Test Graph

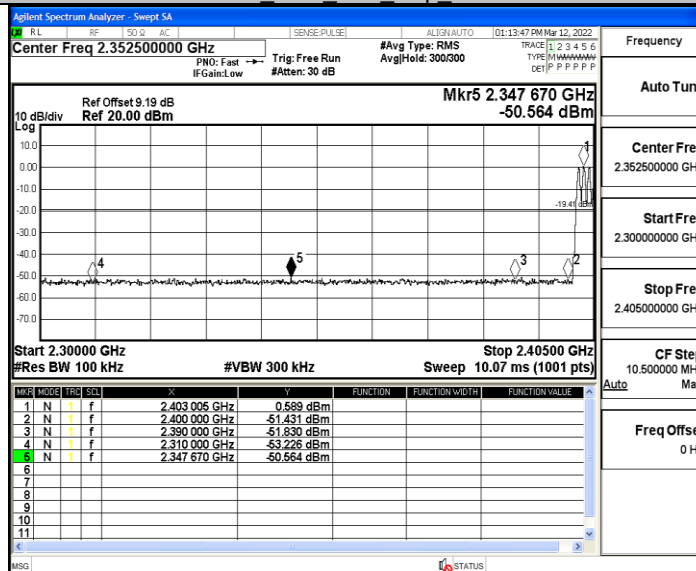
DH5\_Ant1\_Low\_2402



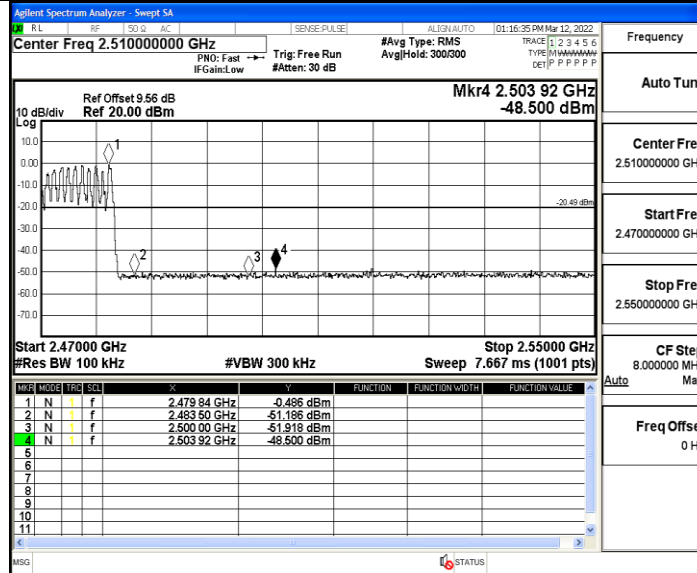
DH5\_Ant1\_High\_2480



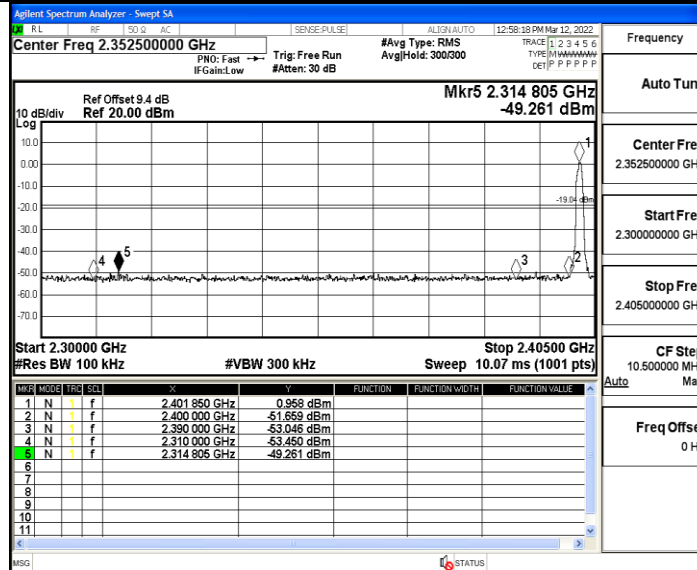
DH5\_Ant1\_Low\_Hop\_2402



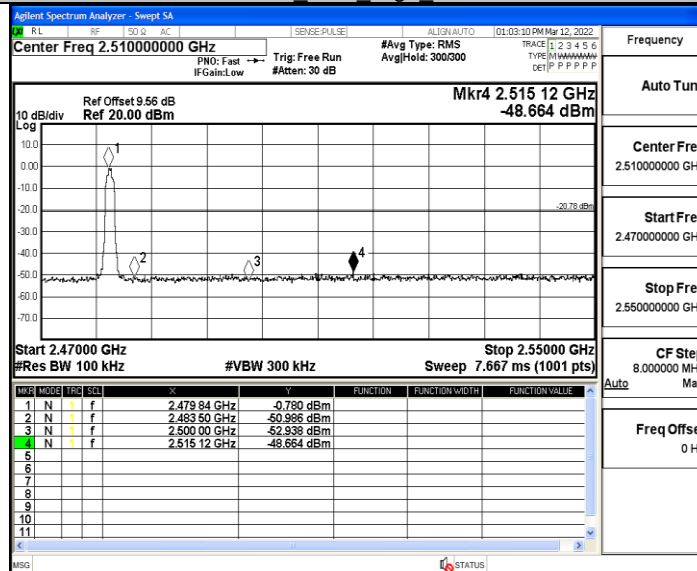
## DH5\_Ant1\_High\_Hop\_2480



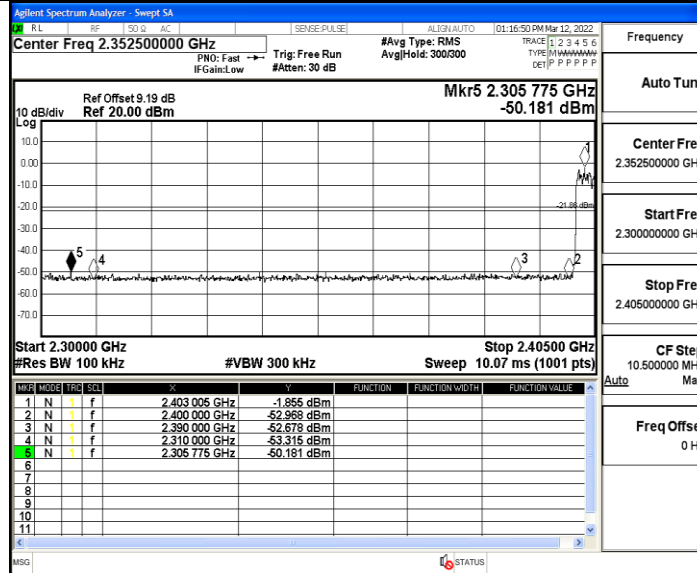
## 2DH5\_Ant1\_Low\_2402



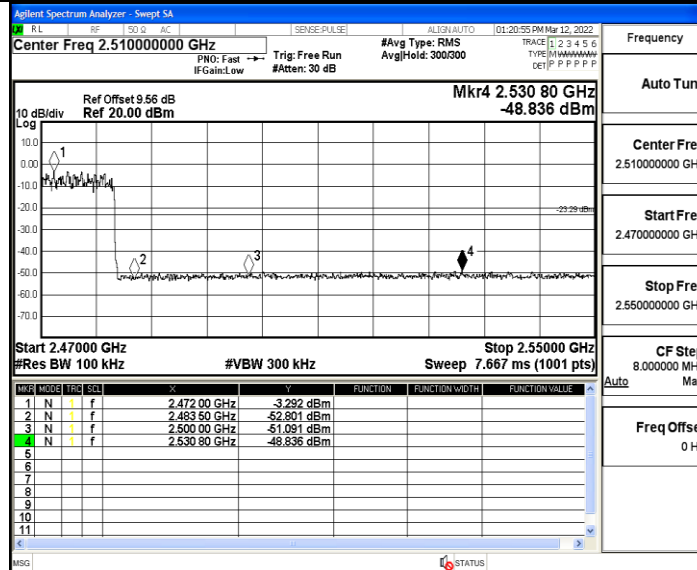
## 2DH5\_Ant1\_High\_2480



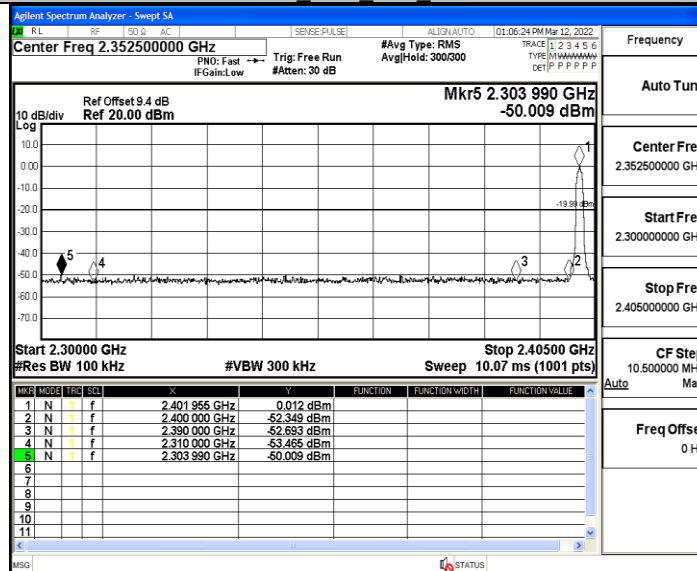
## 2DH5 Ant1 Low Hop 2402



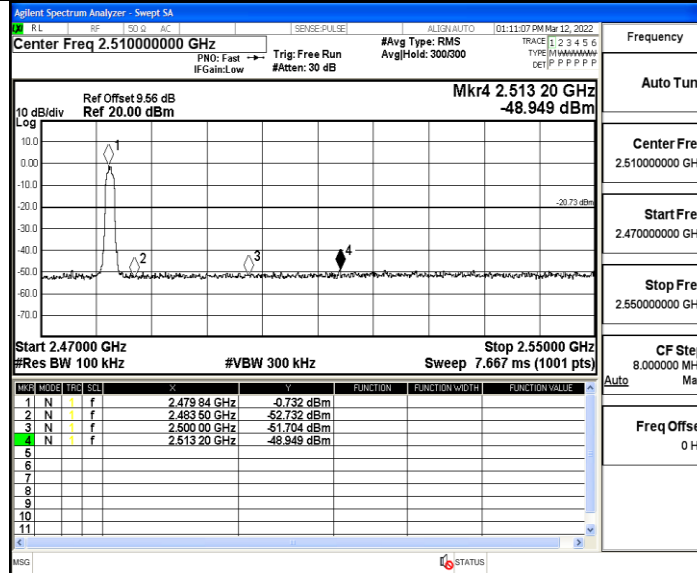
## 2DH5 Ant1 High Hop 2480



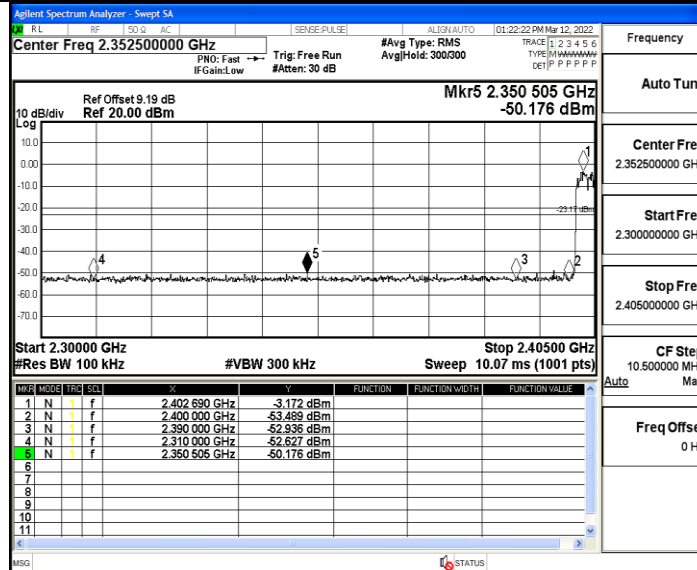
## 3DH5 Ant1 Low 2402



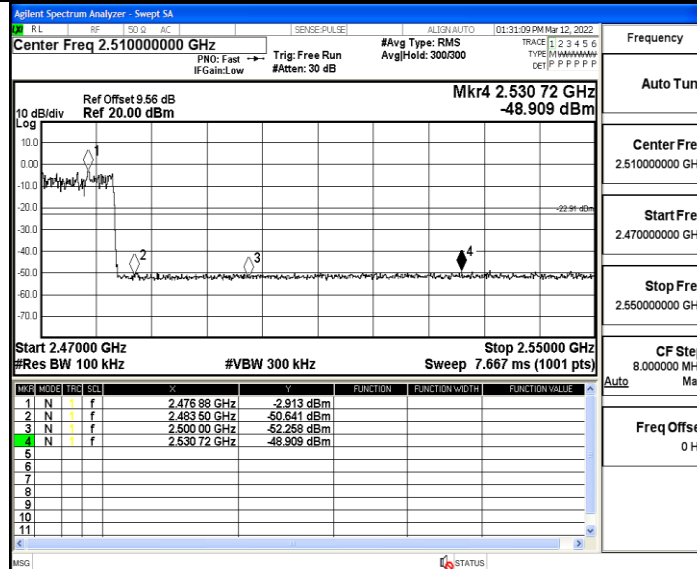
## 3DH5 Ant1\_High 2480



## 3DH5 Ant1\_Low Hop 2402

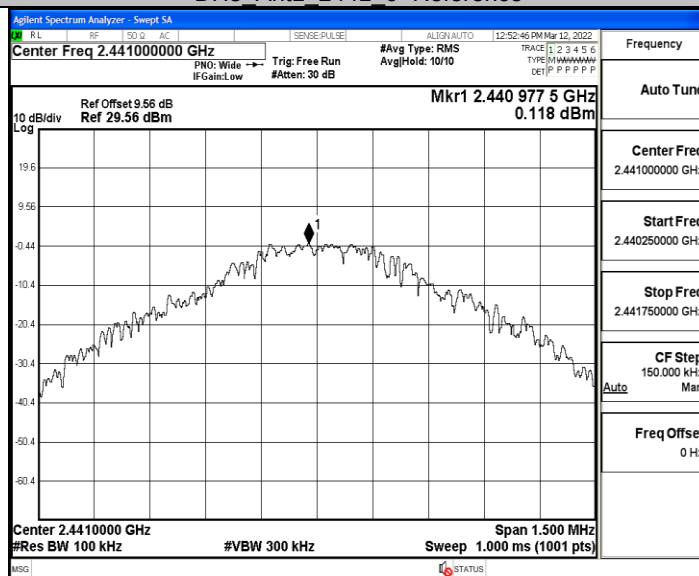


## 3DH5 Ant1\_High Hop 2480

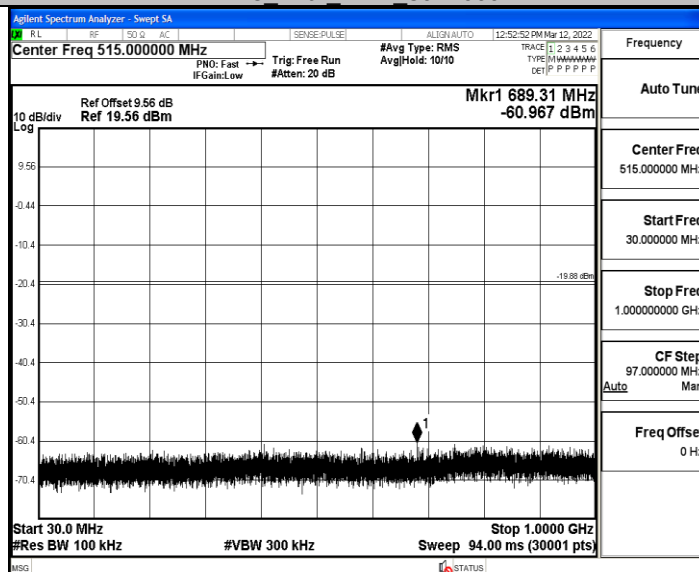




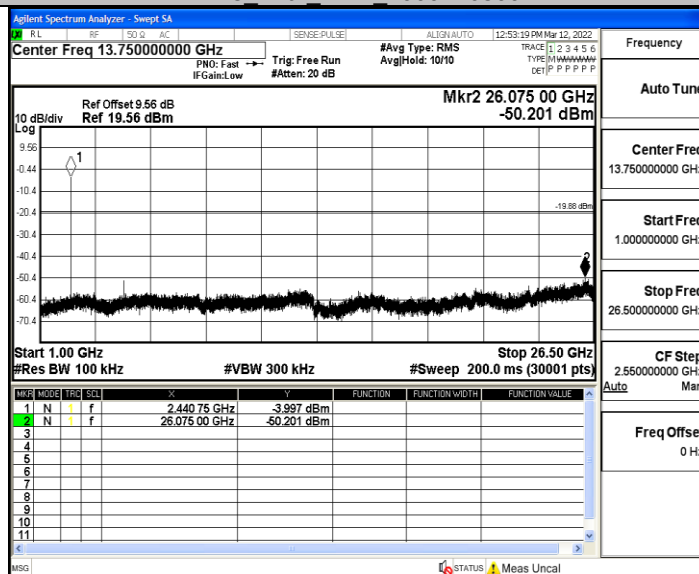
## DH5\_Ant1\_2441\_0-Reference



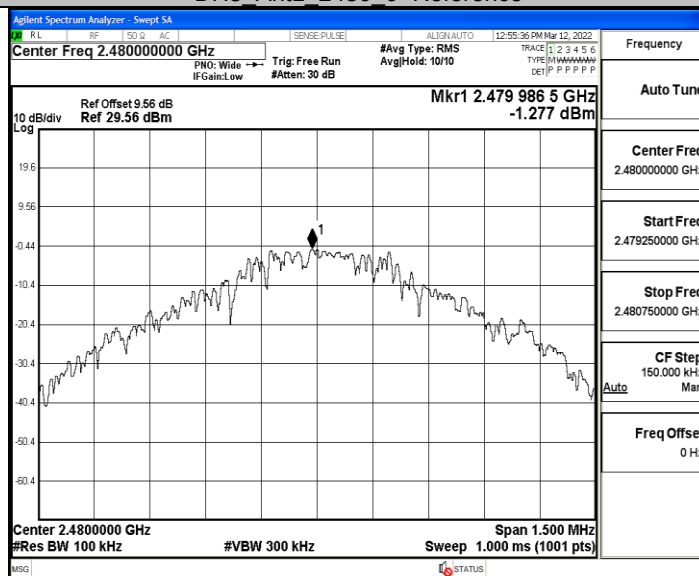
## DH5\_Ant1\_2441\_30~1000



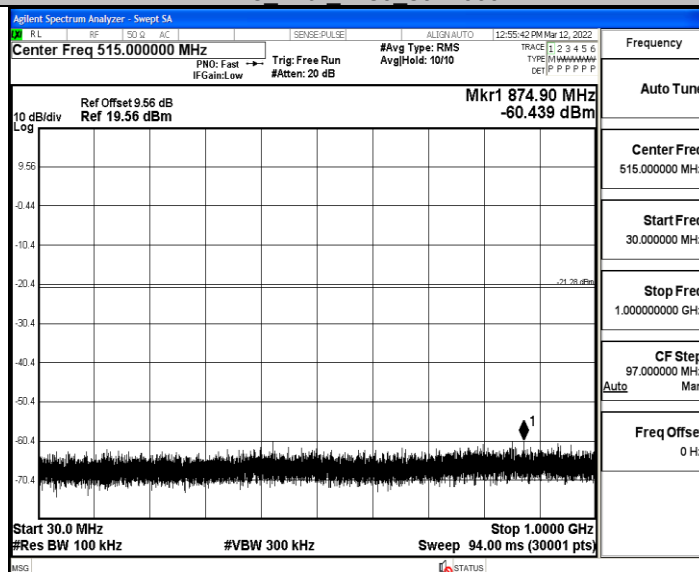
## DH5\_Ant1\_2441\_1000~26500



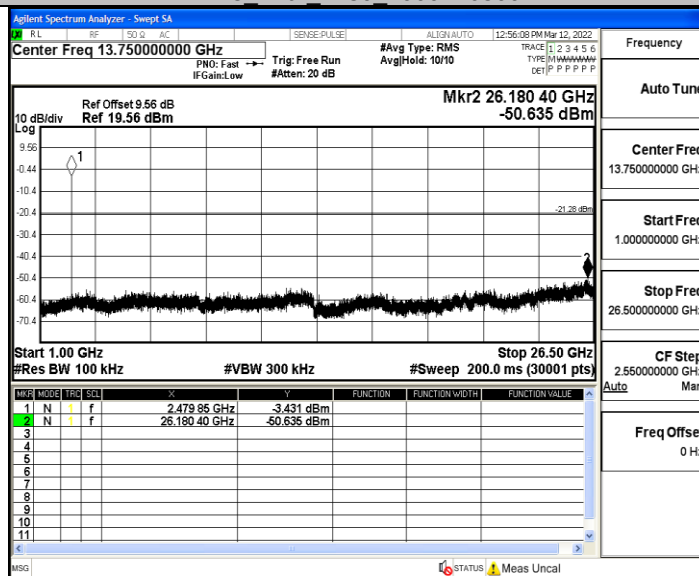
## DH5\_Ant1\_2480\_0-Reference



## DH5\_Ant1\_2480\_30~1000

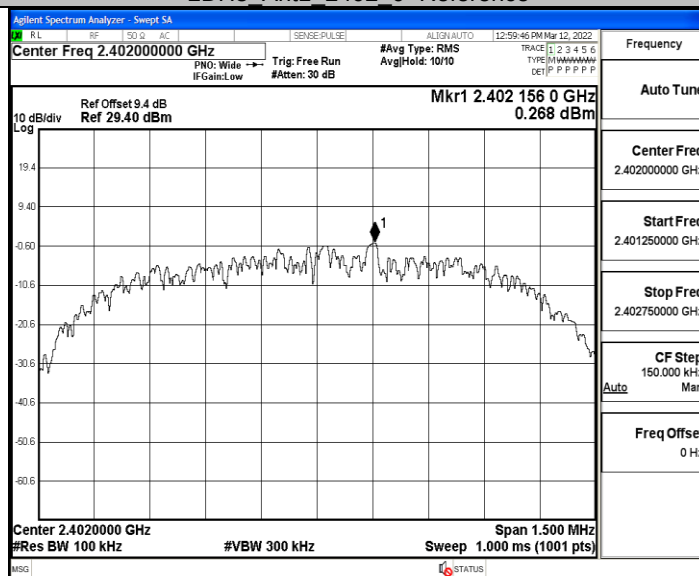


## DH5\_Ant1\_2480\_1000~26500

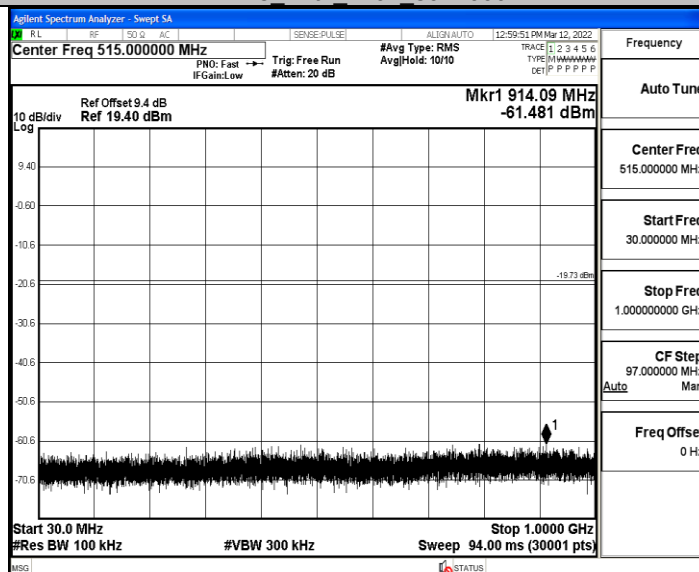




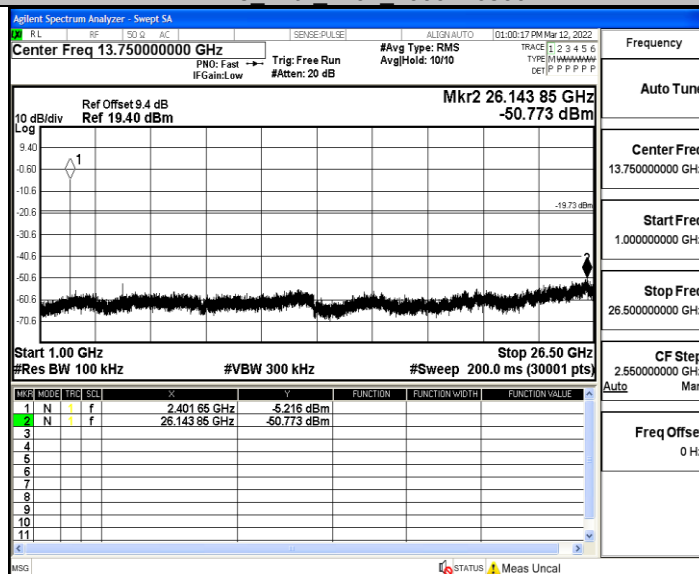
## 2DH5\_Ant1\_2402\_0~Reference



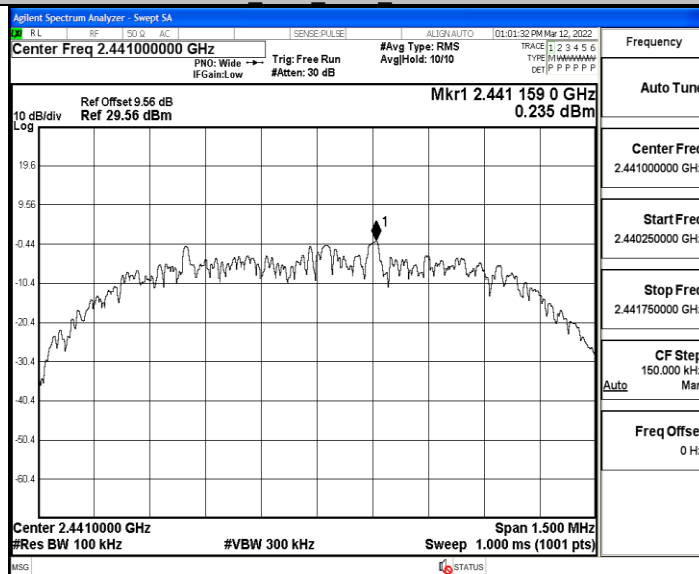
## 2DH5\_Ant1\_2402\_30~1000



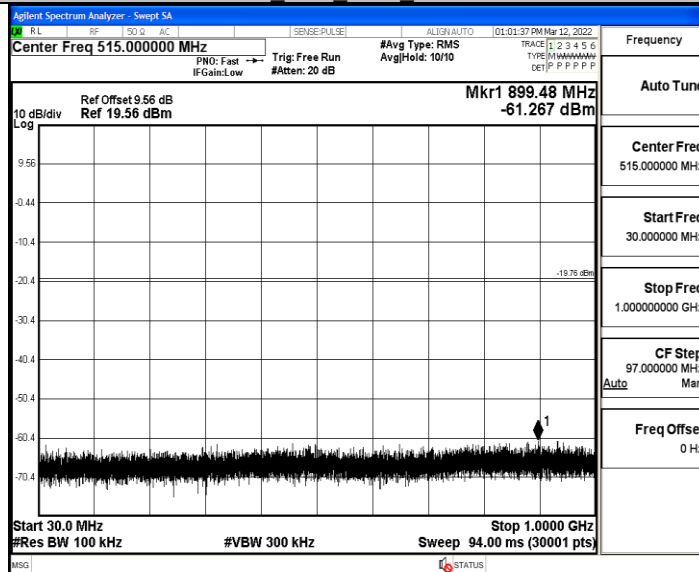
## 2DH5\_Ant1\_2402\_1000~26500



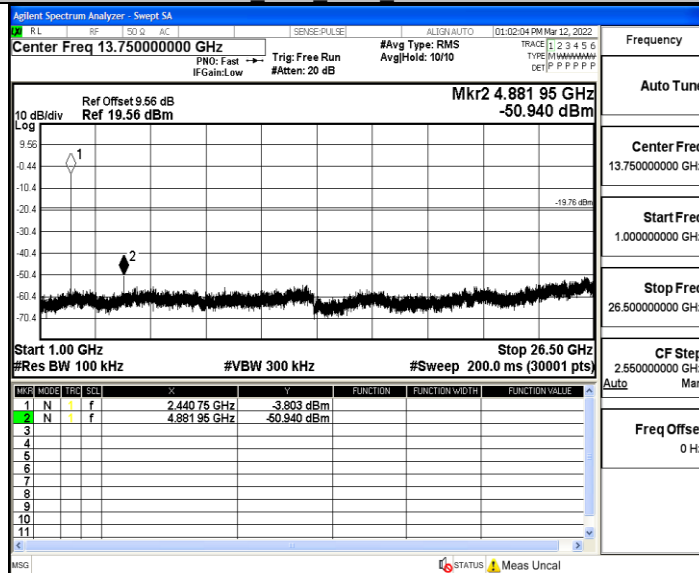
## 2DH5\_Ant1\_2441\_0~Reference



## 2DH5\_Ant1\_2441\_30~1000



## 2DH5\_Ant1\_2441\_1000~26500



Agilent Spectrum Analyzer - Sweep SA

Center Freq 2.48000000 GHz

Ref Offset 9.56 dB  
Ref 29.56 dBm

Span 1.500 MHz  
Res BW 100 kHz

Trig: Free Run  
#Atten: 30 dB

Mkr1 2.479 803 5 GHz  
-3.075 dBm

Center 2.4800000 GHz  
#Res BW 100 kHz

Span 1.500 MHz  
Sweep 1.000 ms (1001 pts)

Agilent Spectrum Analyzer - Sweep SA

RL RF SO G AC SENSE-PULSE ALIAS/AUTO 01:04:36 PM Mar 12, 2022

Center Freq 515.000000 MHz

PHO: Fast IFCalmLow Trig: Free Run #Avg Type: RMS Avg/Hold: 10/10 TYPE: [HAWWWWW] DET: P P P P P

Ref Offset 9.56 dB

Ref 19.56 dBm

Mkr1 979.31 MHz -60.902 dBm

10 dB/div

Log

9.56

-0.44

-10.4

-20.4

-30.4

-40.4

-50.4

-60.4

-70.4

-23.08 dBm

Start 30.0 MHz

Stop 1.0000 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 94.00 ms (30001 pts)

Frequency

Auto Tun

Center Freq

515.000000 MHz

Start Freq

30.000000 MHz

Stop Freq

1.000000000 GHz

CF Ste

97.000000 MHz

Ma

Auto

Freq Offset

0 Hz

MSG

STATUS

The image shows a spectrum analyzer display with a grid. The vertical axis represents power in dBm, ranging from -70.4 to 9.56. The horizontal axis represents frequency in MHz, ranging from 30.0 to 1.0000 GHz. A dense noise floor is visible across the entire frequency range, centered around -60.9 dBm. A single marker is placed on the noise floor at a frequency of 979.31 MHz, with a power reading of -60.902 dBm. The display includes various control buttons and readouts at the top and bottom, such as 'Center Freq 515.000000 MHz', 'Ref Offset 9.56 dB', 'Ref 19.56 dBm', 'Start 30.0 MHz', 'Stop 1.0000 GHz', '#Res BW 100 kHz', '#VBW 300 kHz', and 'Sweep 94.00 ms (30001 pts)'. The Agilent logo and 'Spectrum Analyzer - Sweep SA' are visible at the top left.

Agilent Spectrum Analyzer - Sweep SA

RL RF SO G AC SENSE/PAUSE ALIGN/AUTO 01:05:02 PM Mar 12, 2022

Center Freq 13.75000000 GHz PNO: Fast IF Gain: Low Trig: Free Run #Avg Type: RMS Avg/Idet: 1010 #Auto Meas: 2 3 4 5 6 TYPE: WWWWWWWW DET: P P P P P P

Ref Offset 9.56 dB Mkr2 26.080 95 GHz  
Ref 19.56 dBm -50.022 dBm

10 dB/div Log

Start 1.00 GHz Stop 26.50 GHz  
#Res BW 100 kHz #VBW 300 kHz #Sweep 200.0 ms (30001 pts)

| MFR | MODE | TRIG | SQL | X             | Y           | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE |
|-----|------|------|-----|---------------|-------------|----------|----------------|----------------|
| 1   | N    | f    | f   | 2.480 70 GHz  | -3.083 dBm  |          |                |                |
| 2   | N    | f    | f   | 26.080 95 GHz | -50.022 dBm |          |                |                |
| 3   |      |      |     |               |             |          |                |                |
| 4   |      |      |     |               |             |          |                |                |
| 5   |      |      |     |               |             |          |                |                |
| 6   |      |      |     |               |             |          |                |                |
| 7   |      |      |     |               |             |          |                |                |
| 8   |      |      |     |               |             |          |                |                |
| 9   |      |      |     |               |             |          |                |                |
| 10  |      |      |     |               |             |          |                |                |
| 11  |      |      |     |               |             |          |                |                |

Frequency Auto Tun

Center Freq 13.750000000 GHz

Start Freq 1.000000000 GHz

Stop Freq 26.500000000 GHz

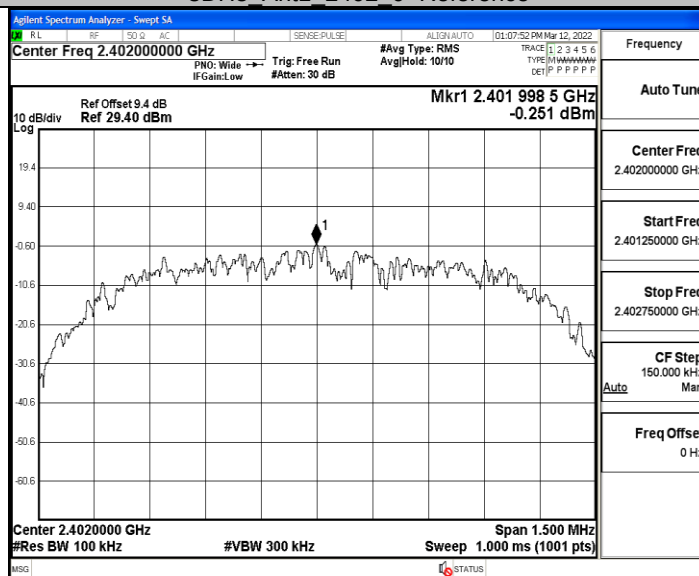
CF Stop 2.550000000 GHz

Auto

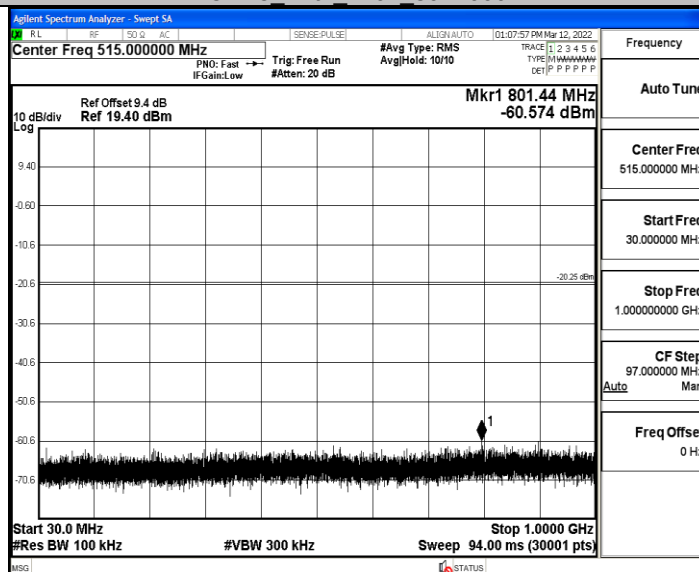
Freq Offset 0 Hz

STATUS Meas Uncal

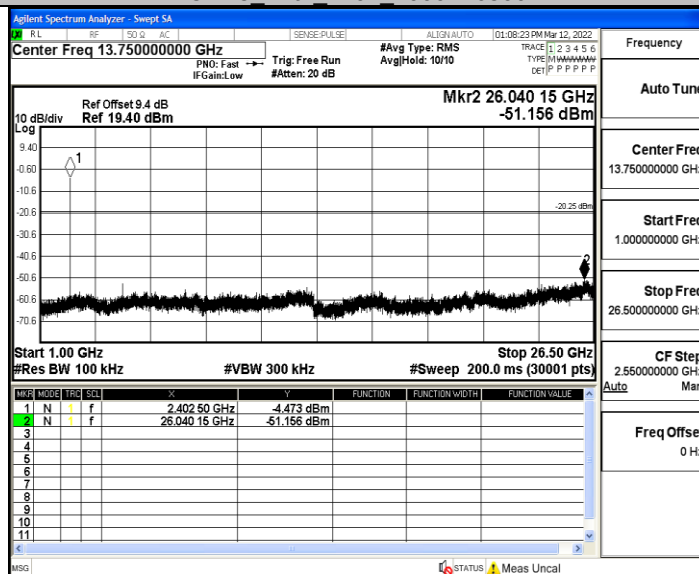
## 3DH5\_Ant1\_2402\_0~Reference



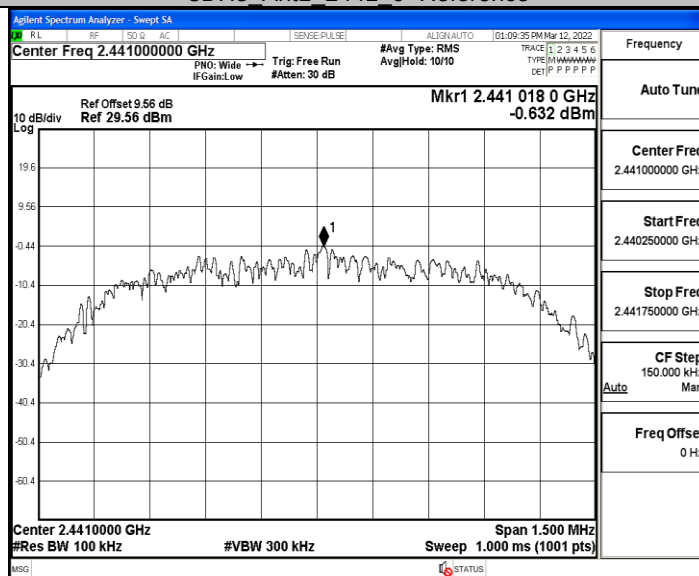
## 3DH5\_Ant1\_2402\_30~1000



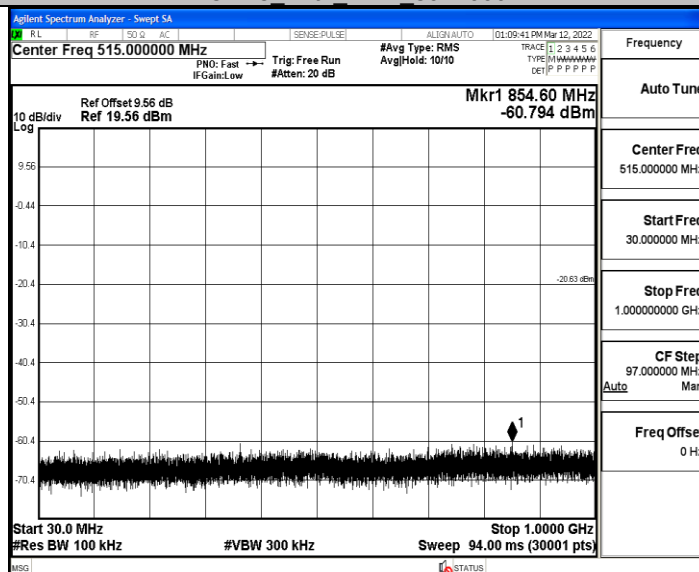
## 3DH5\_Ant1\_2402\_1000~26500



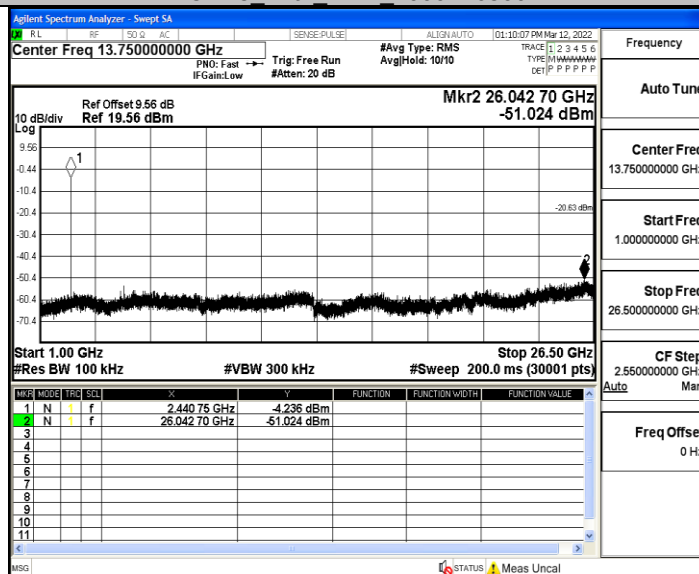
## 3DH5\_Ant1\_2441\_0~Reference

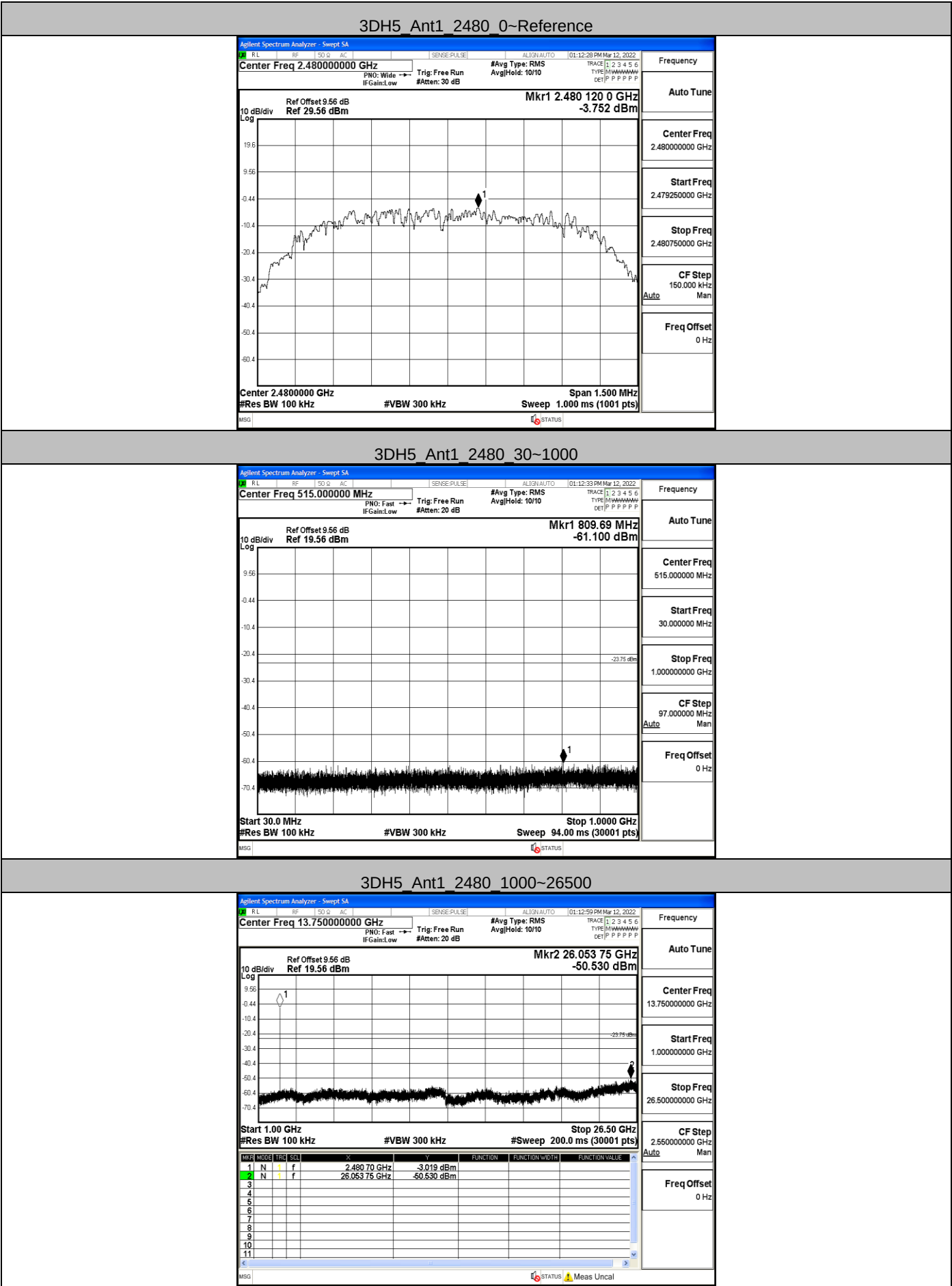


## 3DH5\_Ant1\_2441\_30~1000



## 3DH5\_Ant1\_2441\_1000~26500





A.8 Restrict-band band-edge measurements

| TestMode | Antenna | ChName | Channel | Detector | Freq(MHz) | Result(dBm) | Limit(dBm) | Verdict |
|----------|---------|--------|---------|----------|-----------|-------------|------------|---------|
| DH5      | Ant1    | Low    | 2402    | AV       | 2310.000  | -49         | ≤-41.20    | PASS    |
|          |         |        |         | AV       | 2387.255  | -48.64      | ≤-41.20    | PASS    |
|          |         |        |         | AV       | 2390.000  | -48.74      | ≤-41.20    | PASS    |
|          |         |        |         | Peak     | 2310.000  | -42.95      | ≤-21.20    | PASS    |
|          |         |        |         | Peak     | 2364.260  | -38.54      | ≤-21.20    | PASS    |
|          |         |        |         | Peak     | 2390.000  | -41.34      | ≤-21.20    | PASS    |
|          |         | High   | 2480    | AV       | 2483.500  | -48.13      | ≤-41.20    | PASS    |
|          |         |        |         | AV       | 2499.680  | -47.97      | ≤-41.20    | PASS    |
|          |         |        |         | AV       | 2500.000  | -48.11      | ≤-41.20    | PASS    |
|          |         |        |         | Peak     | 2483.500  | -40.71      | ≤-21.20    | PASS    |
|          |         |        |         | Peak     | 2486.960  | -37.52      | ≤-21.20    | PASS    |
|          |         |        |         | Peak     | 2500.000  | -40.71      | ≤-21.20    | PASS    |
| 2DH5     | Ant1    | Low    | 2402    | AV       | 2310.000  | -49.09      | ≤-41.20    | PASS    |
|          |         |        |         | AV       | 2389.250  | -48.61      | ≤-41.20    | PASS    |
|          |         |        |         | AV       | 2390.000  | -48.74      | ≤-41.20    | PASS    |
|          |         |        |         | Peak     | 2310.000  | -42.46      | ≤-21.20    | PASS    |
|          |         |        |         | Peak     | 2329.820  | -38.81      | ≤-21.20    | PASS    |
|          |         |        |         | Peak     | 2390.000  | -42.11      | ≤-21.20    | PASS    |
|          |         | High   | 2480    | AV       | 2483.500  | -47.89      | ≤-41.20    | PASS    |
|          |         |        |         | AV       | 2483.520  | -47.89      | ≤-41.20    | PASS    |
|          |         |        |         | AV       | 2500.000  | -48.08      | ≤-41.20    | PASS    |
|          |         |        |         | Peak     | 2483.500  | -38.79      | ≤-21.20    | PASS    |
|          |         |        |         | Peak     | 2499.520  | -38.63      | ≤-21.20    | PASS    |
|          |         |        |         | Peak     | 2500.000  | -41.02      | ≤-21.20    | PASS    |
| 3DH5     | Ant1    | Low    | 2402    | AV       | 2310.000  | -49.01      | ≤-41.20    | PASS    |
|          |         |        |         | AV       | 2387.675  | -48.62      | ≤-41.20    | PASS    |
|          |         |        |         | AV       | 2390.000  | -48.73      | ≤-41.20    | PASS    |
|          |         |        |         | Peak     | 2310.000  | -42.62      | ≤-21.20    | PASS    |
|          |         |        |         | Peak     | 2389.565  | -38.45      | ≤-21.20    | PASS    |
|          |         |        |         | Peak     | 2390.000  | -41.44      | ≤-21.20    | PASS    |
|          |         | High   | 2480    | AV       | 2483.500  | -47.98      | ≤-41.20    | PASS    |
|          |         |        |         | AV       | 2496.960  | -47.94      | ≤-41.20    | PASS    |
|          |         |        |         | AV       | 2500.000  | -48.03      | ≤-41.20    | PASS    |
|          |         |        |         | Peak     | 2483.500  | -40.96      | ≤-21.20    | PASS    |
|          |         |        |         | Peak     | 2486.320  | -38.29      | ≤-21.20    | PASS    |
|          |         |        |         | Peak     | 2500.000  | -41.33      | ≤-21.20    | PASS    |

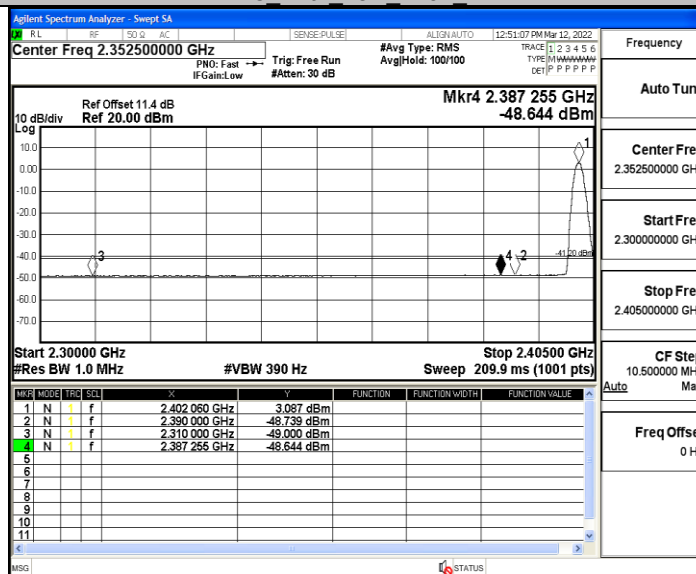
1. The Antenna Gain is compensated in the graph with 2dBi and Antenna Gain which is Higher.

2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

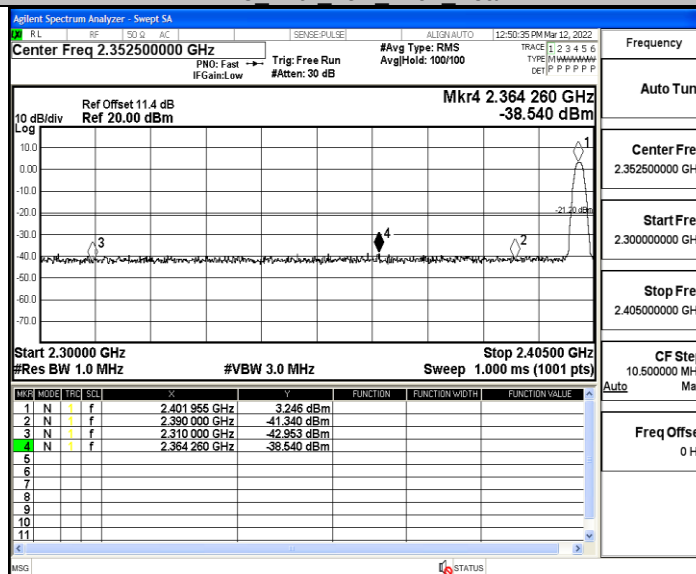


## Test Graphs

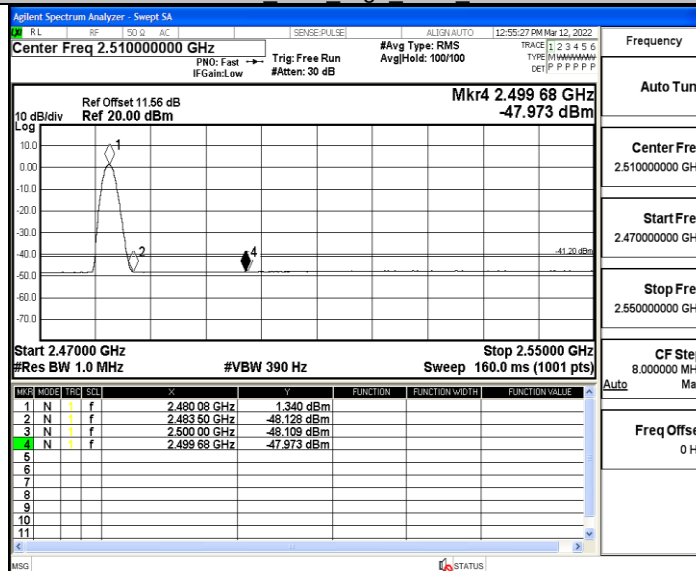
DH5 Ant1 Low 2402 AV



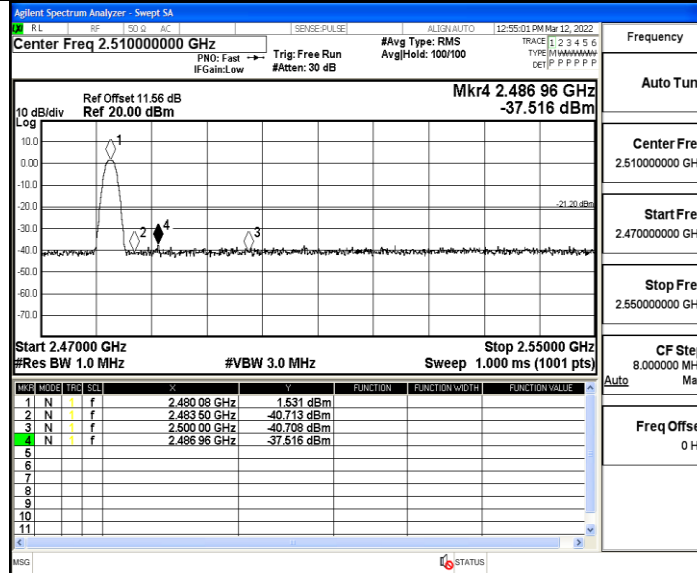
DH5 Ant1 Low 2402 Peak



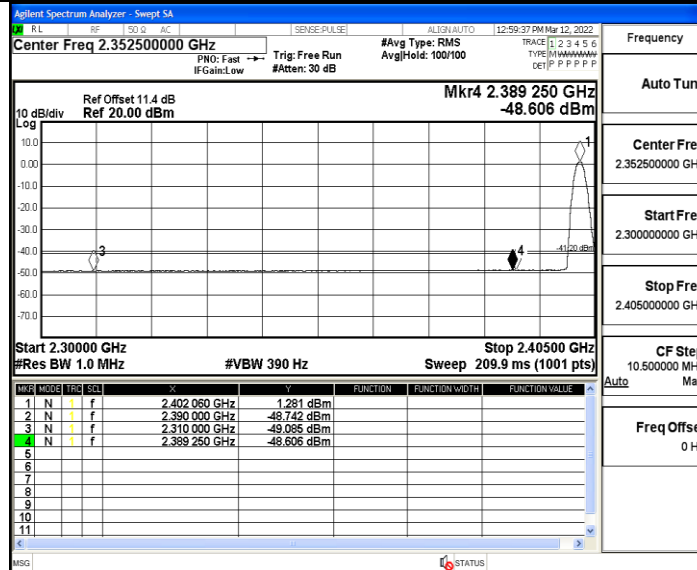
DH5 Ant1 High 2480 AV



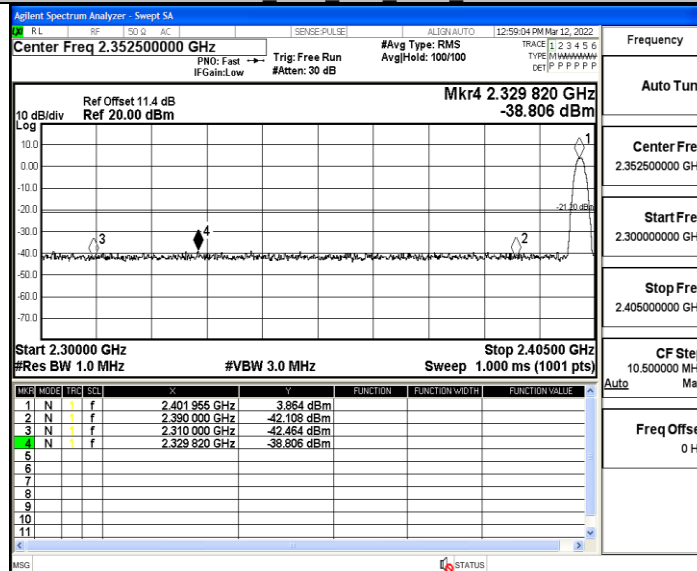
## DH5 Ant1 High 2480 Peak



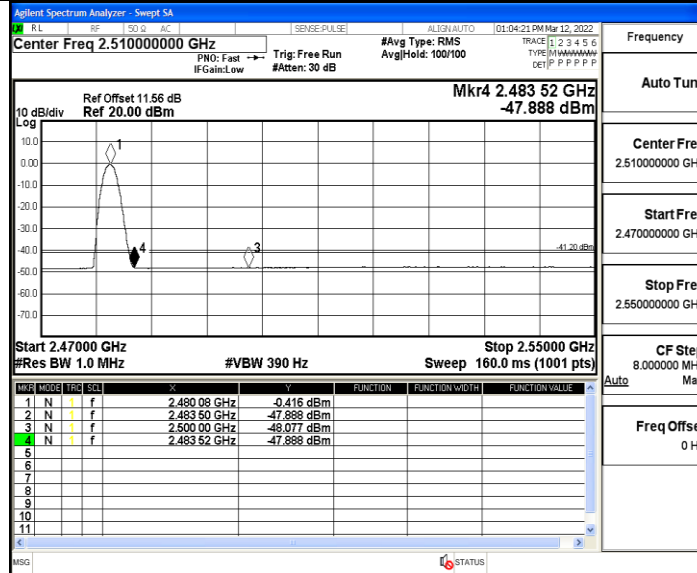
## 2DH5 Ant1 Low 2402 AV



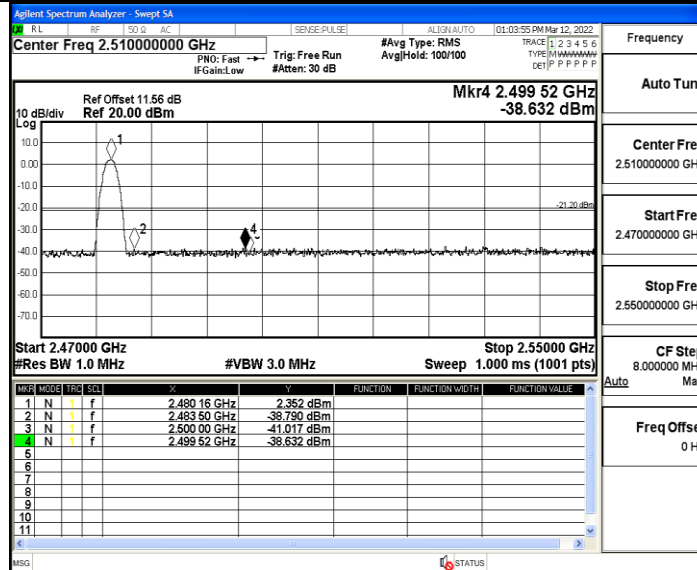
## 2DH5 Ant1 Low 2402 Peak



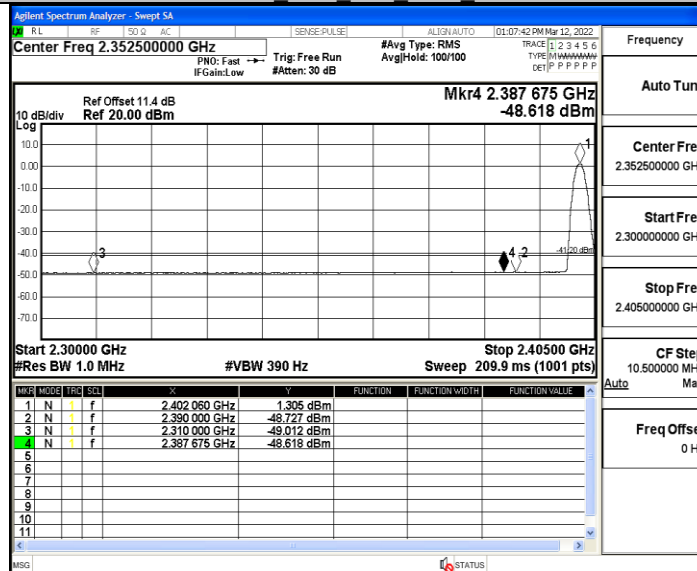
## 2DH5 Ant1\_High\_2480\_AV



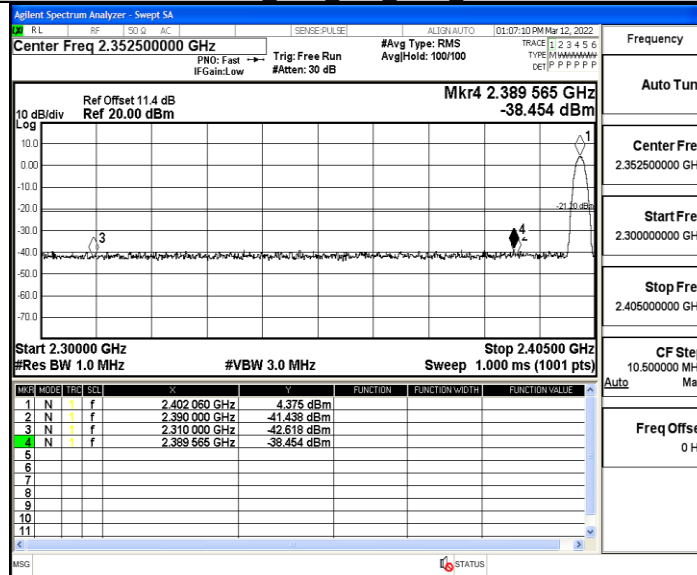
## 2DH5 Ant1\_High\_2480\_Peak



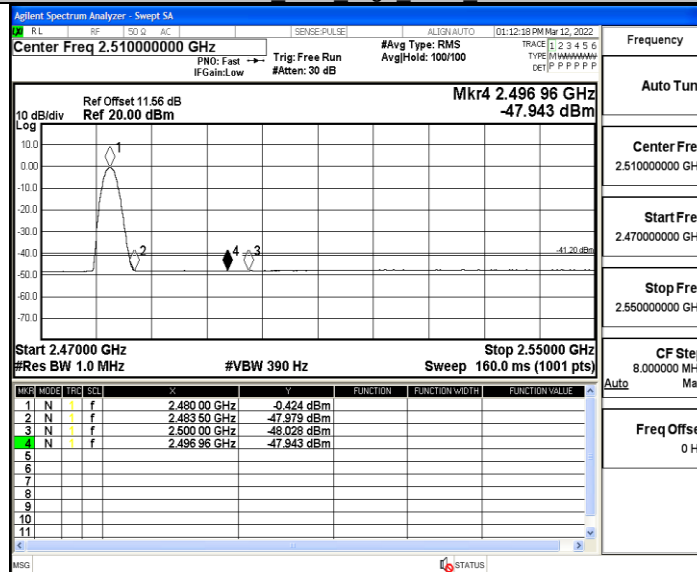
## 3DH5 Ant1\_Low\_2402\_AV



## 3DH5\_Ant1\_Low\_2402\_Peak



## 3DH5\_Ant1\_High\_2480\_AV



## 3DH5\_Ant1\_High\_2480\_Peak

