

|                                                       |                                          |
|-------------------------------------------------------|------------------------------------------|
| <b>Case No. :</b> <u>CTA24071502301</u>               |                                          |
| <b>Ambient Condition:</b> <u>23</u> °C, <u>52</u> %RH |                                          |
| <b>According Standard:</b> ■Part15C                   |                                          |
| <b>Test Date:</b> <u>2024.7.31</u>                    | <b>Test Engineer:</b> <u>Lushan Kong</u> |

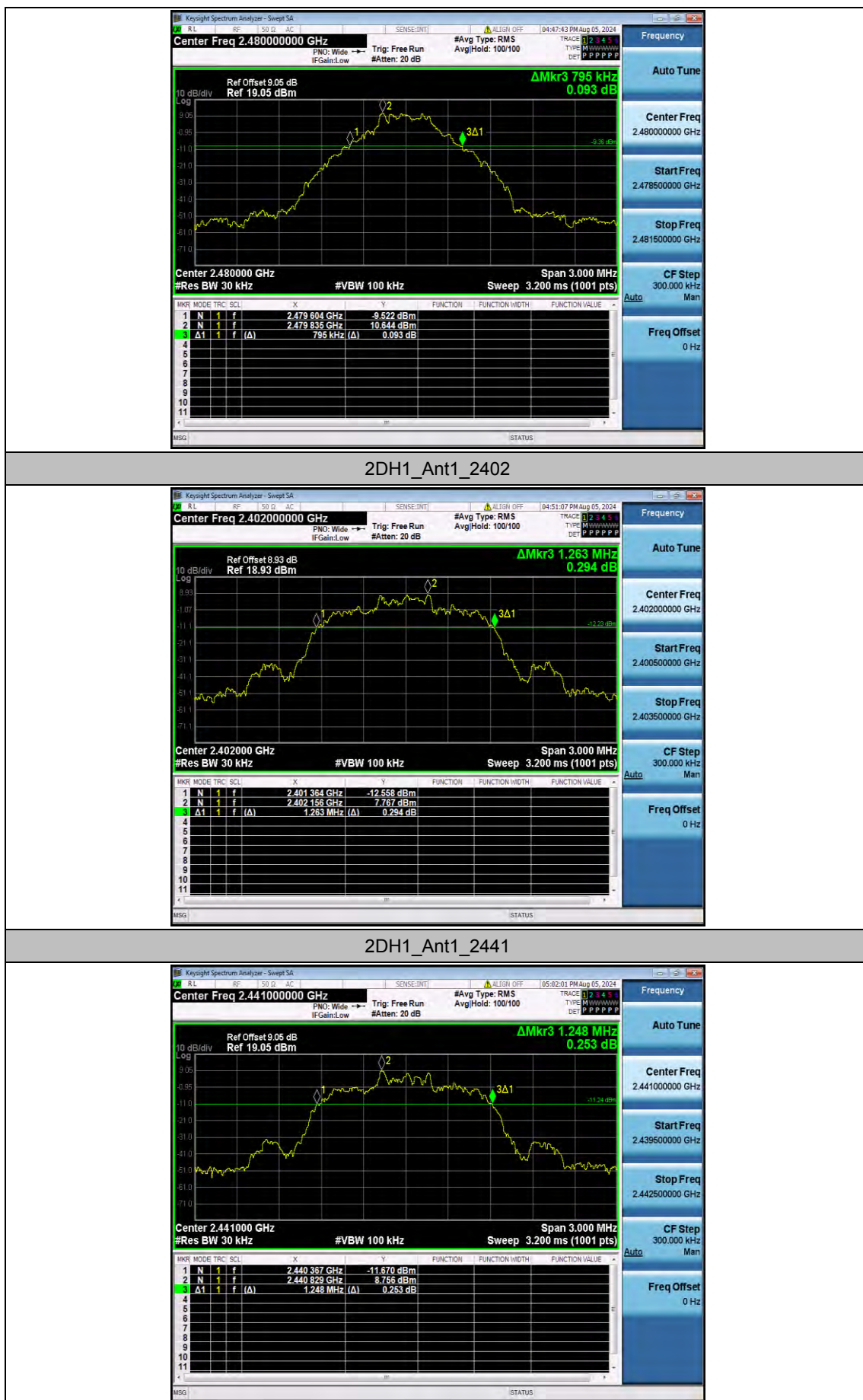
## Appendix A.1: 20dB Emission Bandwidth

### Test Result

| TestMode | Antenna | Freq(MHz) | 20dB<br>EBW[MHz] | FL[MHz]  | FH[MHz]  | Limit[MHz] | Verdict |
|----------|---------|-----------|------------------|----------|----------|------------|---------|
| DH1      | Ant1    | 2402      | 0.795            | 2401.598 | 2402.393 | ---        | ---     |
|          |         | 2441      | 0.858            | 2440.553 | 2441.411 | ---        | ---     |
|          |         | 2480      | 0.795            | 2479.604 | 2480.399 | ---        | ---     |
| 2DH1     | Ant1    | 2402      | 1.263            | 2401.364 | 2402.627 | ---        | ---     |
|          |         | 2441      | 1.248            | 2440.367 | 2441.615 | ---        | ---     |
|          |         | 2480      | 1.206            | 2479.376 | 2480.582 | ---        | ---     |
| 3DH1     | Ant1    | 2402      | 1.230            | 2401.391 | 2402.621 | ---        | ---     |
|          |         | 2441      | 1.221            | 2440.394 | 2441.615 | ---        | ---     |
|          |         | 2480      | 1.203            | 2479.397 | 2480.600 | ---        | ---     |

Test Graphs





## 2DH1\_Ant1\_2480



## 3DH1\_Ant1\_2402



## 3DH1\_Ant1\_2441

Keysight Spectrum Analyzer - Swept SA

Center Freq 2.480000000 GHz

Ref Offset 9.05 dB  
Ref 19.05 dBm

ΔMkr3 1.203 MHz  
0.200 dB

Center 2.480000 GHz  
#Res BW 30 kHz  
#VBW 100 kHz  
Sweep 3.200 ms (1001 pts)

| Mkr | Mode | Trc | SCL   | X             | Y           | Function | Function Width | Function Value |
|-----|------|-----|-------|---------------|-------------|----------|----------------|----------------|
| 1   | N    | 1   | f     | 2.479 397 GHz | -11.732 dBm |          |                |                |
| 2   | N    | 1   | f     | 2.479 823 GHz | 8.584 dBm   |          |                |                |
| 3   | A    | 1   | f (Δ) | 1.203 MHz (Δ) | 0.200 dB    |          |                |                |

Frequency

Auto Tune

Center Freq  
2.480000000 GHz

Start Freq  
2.478500000 GHz

Stop Freq  
2.481500000 GHz

CF Step  
300.000 kHz

Auto Man

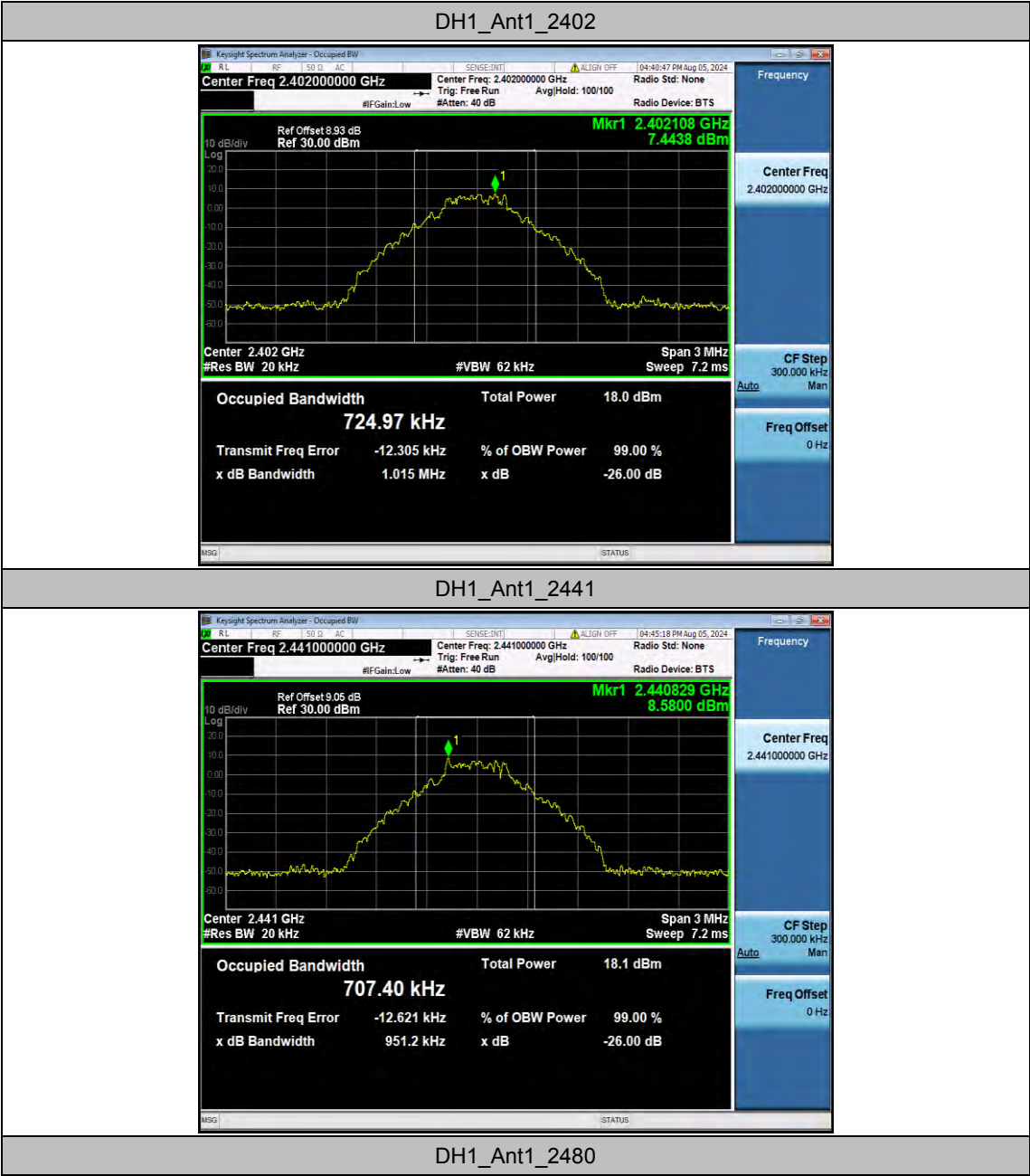
Freq Offset  
0 Hz

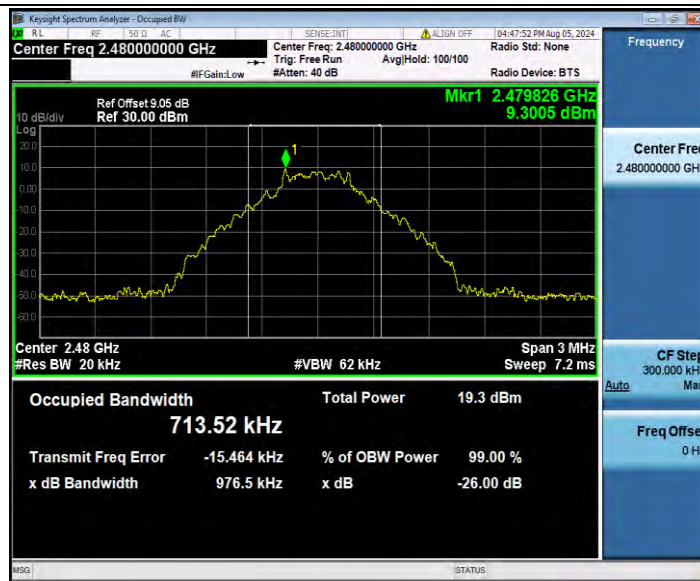
## Appendix A.2: Occupied Channel Bandwidth

### Test Result

| TestMode | Antenna | Freq(MHz) | OCB [MHz] | FL[MHz]   | FH[MHz]   | Limit[MHz] | Verdict |
|----------|---------|-----------|-----------|-----------|-----------|------------|---------|
| DH1      | Ant1    | 2402      | 0.72497   | 2401.6252 | 2402.3502 | ---        | ---     |
|          |         | 2441      | 0.70740   | 2440.6337 | 2441.3411 | ---        | ---     |
|          |         | 2480      | 0.71352   | 2479.6278 | 2480.3413 | ---        | ---     |
| 2DH1     | Ant1    | 2402      | 1.1266    | 2401.4294 | 2402.5560 | ---        | ---     |
|          |         | 2441      | 1.1204    | 2440.4285 | 2441.5489 | ---        | ---     |
|          |         | 2480      | 1.1317    | 2479.4276 | 2480.5593 | ---        | ---     |
| 3DH1     | Ant1    | 2402      | 1.1302    | 2401.4372 | 2402.5674 | ---        | ---     |
|          |         | 2441      | 1.1323    | 2440.4375 | 2441.5698 | ---        | ---     |
|          |         | 2480      | 1.1313    | 2479.4360 | 2480.5673 | ---        | ---     |

Test Graphs





2DH1\_Ant1\_2402



2DH1\_Ant1\_2441



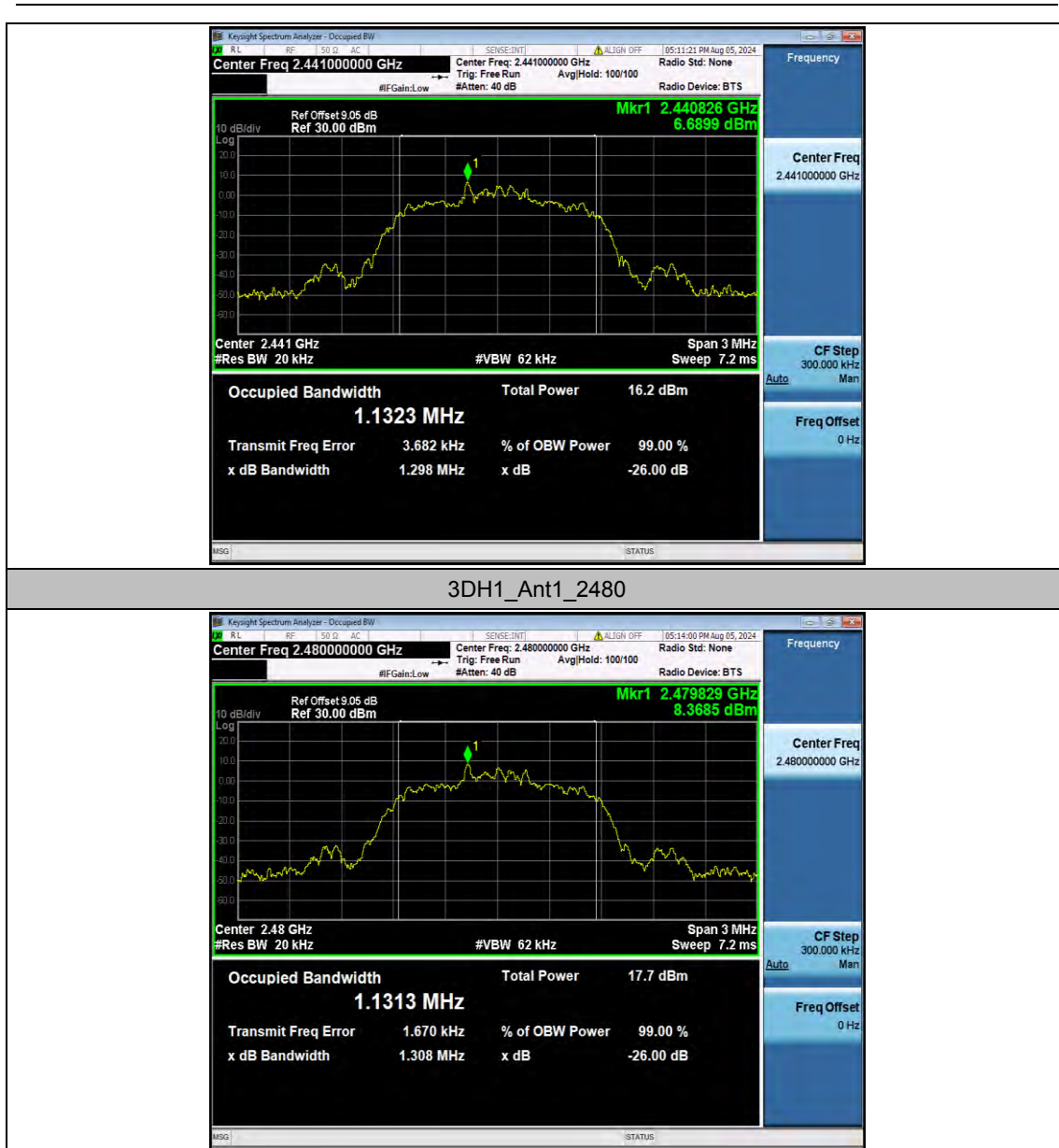
## 2DH1\_Ant1\_2480



## 3DH1\_Ant1\_2402



## 3DH1\_Ant1\_2441



## Appendix A.3: Maximum conducted output power

### Test Result Peak

| Test Mode | Antenna | Freq(MHz) | Conducted Peak Power[dBm] | Conducted Limit[dBm] | Verdict |
|-----------|---------|-----------|---------------------------|----------------------|---------|
| DH1       | Ant1    | 2402      | 12.66                     | $\leq 20.97$         | PASS    |
|           |         | 2441      | 12.19                     | $\leq 20.97$         | PASS    |
|           |         | 2480      | 13.86                     | $\leq 20.97$         | PASS    |
| 2DH1      | Ant1    | 2402      | 11.75                     | $\leq 20.97$         | PASS    |
|           |         | 2441      | 11.36                     | $\leq 20.97$         | PASS    |
|           |         | 2480      | 12.71                     | $\leq 20.97$         | PASS    |
| 3DH1      | Ant1    | 2402      | 11.63                     | $\leq 20.97$         | PASS    |
|           |         | 2441      | 11.29                     | $\leq 20.97$         | PASS    |
|           |         | 2480      | 12.57                     | $\leq 20.97$         | PASS    |

## Appendix A.4: Carrier frequency separation

### Test Result

| TestMode | Antenna | Freq(MHz) | Result[MHz] | Limit[MHz]   | Verdict |
|----------|---------|-----------|-------------|--------------|---------|
| DH1      | Ant1    | Hop_2402  | 1.156       | $\geq 0.572$ | PASS    |
|          |         | Hop_2441  | 0.84        | $\geq 0.572$ | PASS    |
|          |         | Hop_2480  | 0.864       | $\geq 0.572$ | PASS    |
| 2DH1     | Ant1    | Hop_2402  | 1.226       | $\geq 0.842$ | PASS    |
|          |         | Hop_2441  | 0.988       | $\geq 0.842$ | PASS    |
|          |         | Hop_2480  | 1.02        | $\geq 0.842$ | PASS    |
| 3DH1     | Ant1    | Hop_2402  | 1.012       | $\geq 0.820$ | PASS    |
|          |         | Hop_2441  | 0.994       | $\geq 0.820$ | PASS    |
|          |         | Hop_2480  | 1.002       | $\geq 0.820$ | PASS    |

## Test Graphs

DH1\_Ant1\_Hop\_2402



DH1\_Ant1\_Hop\_2441



DH1\_Ant1\_Hop\_2480



2DH1\_Ant1\_Hop\_2402



2DH1\_Ant1\_Hop\_2441



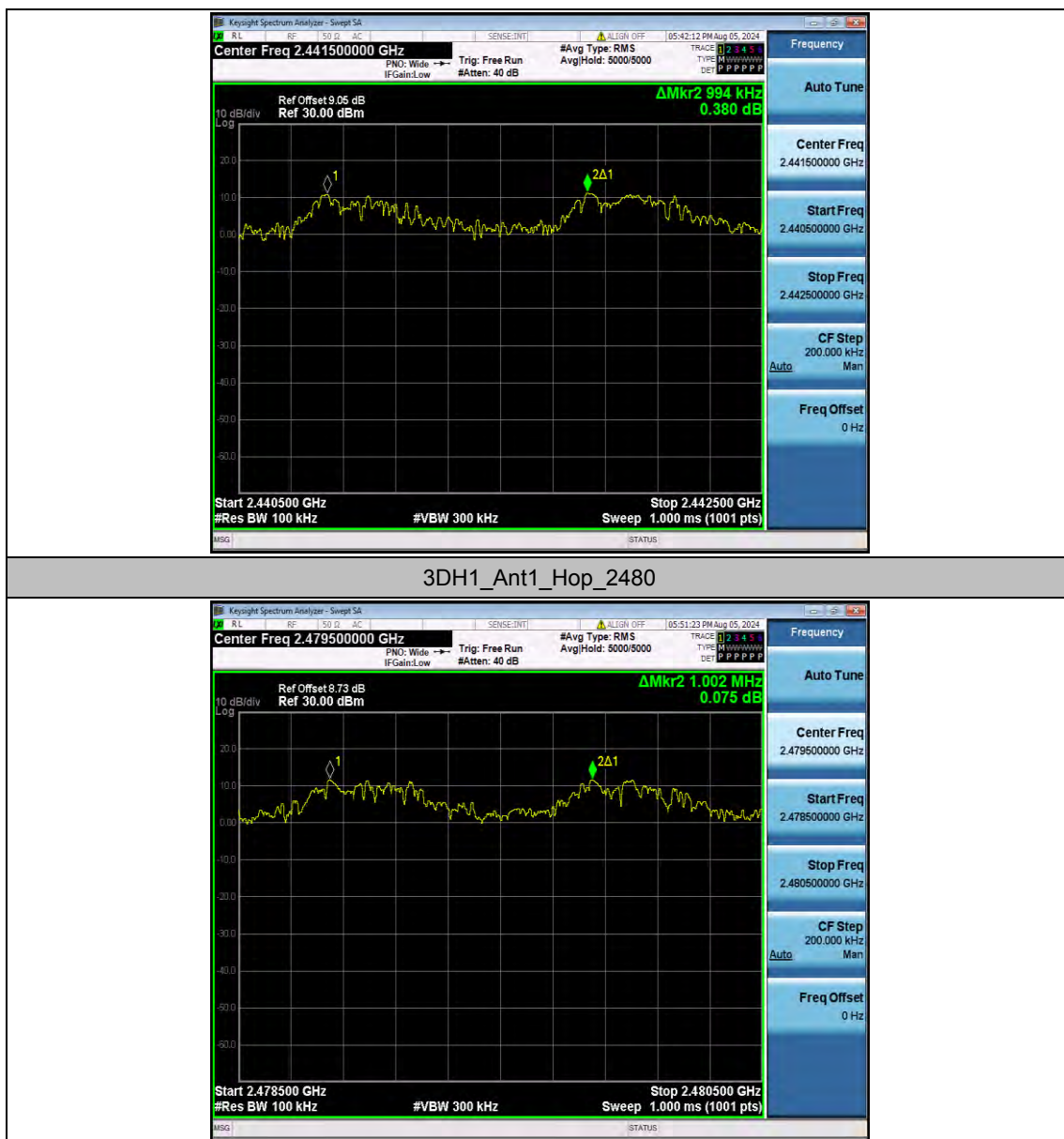
## 2DH1\_Ant1\_Hop\_2480



## 3DH1\_Ant1\_Hop\_2402



## 3DH1\_Ant1\_Hop\_2441

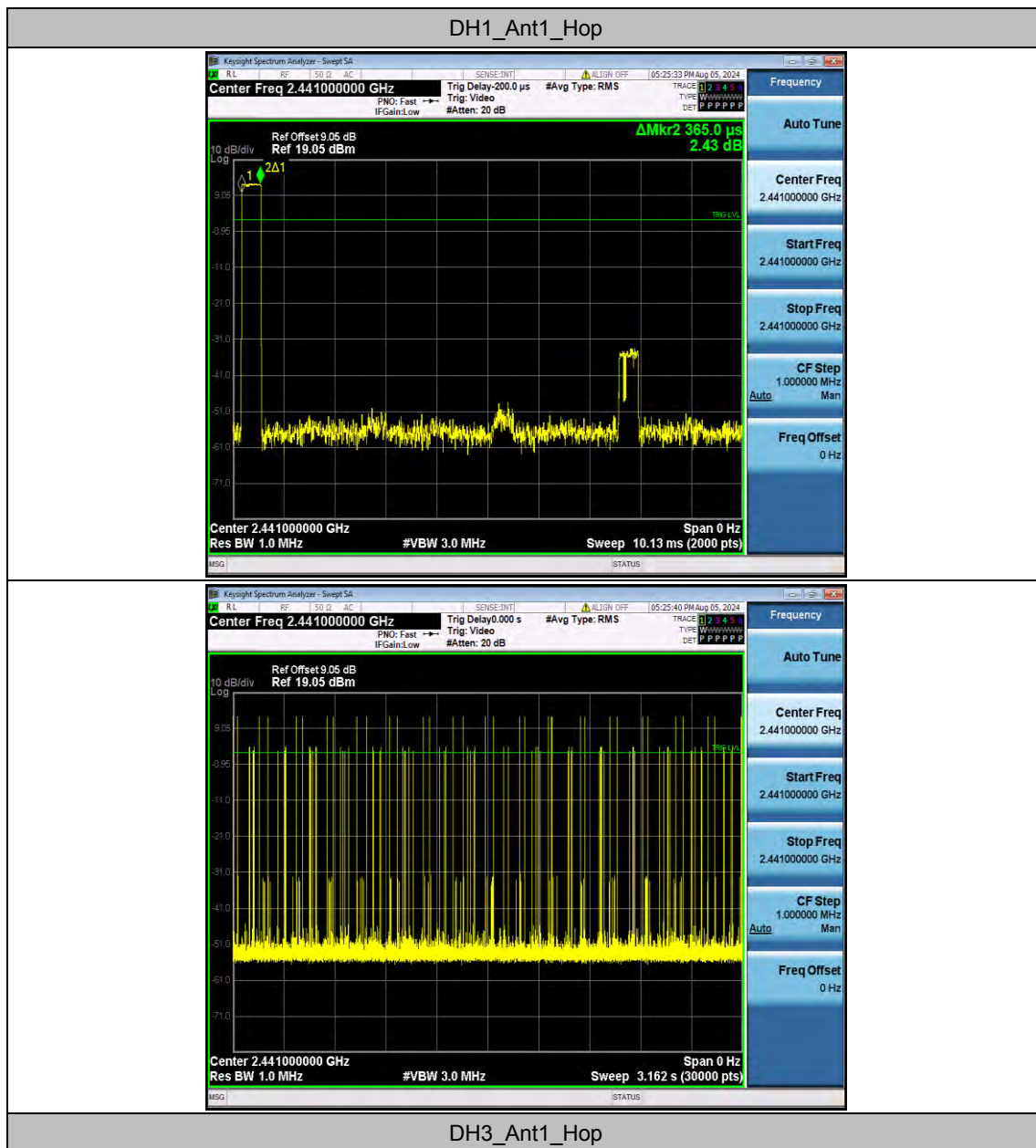


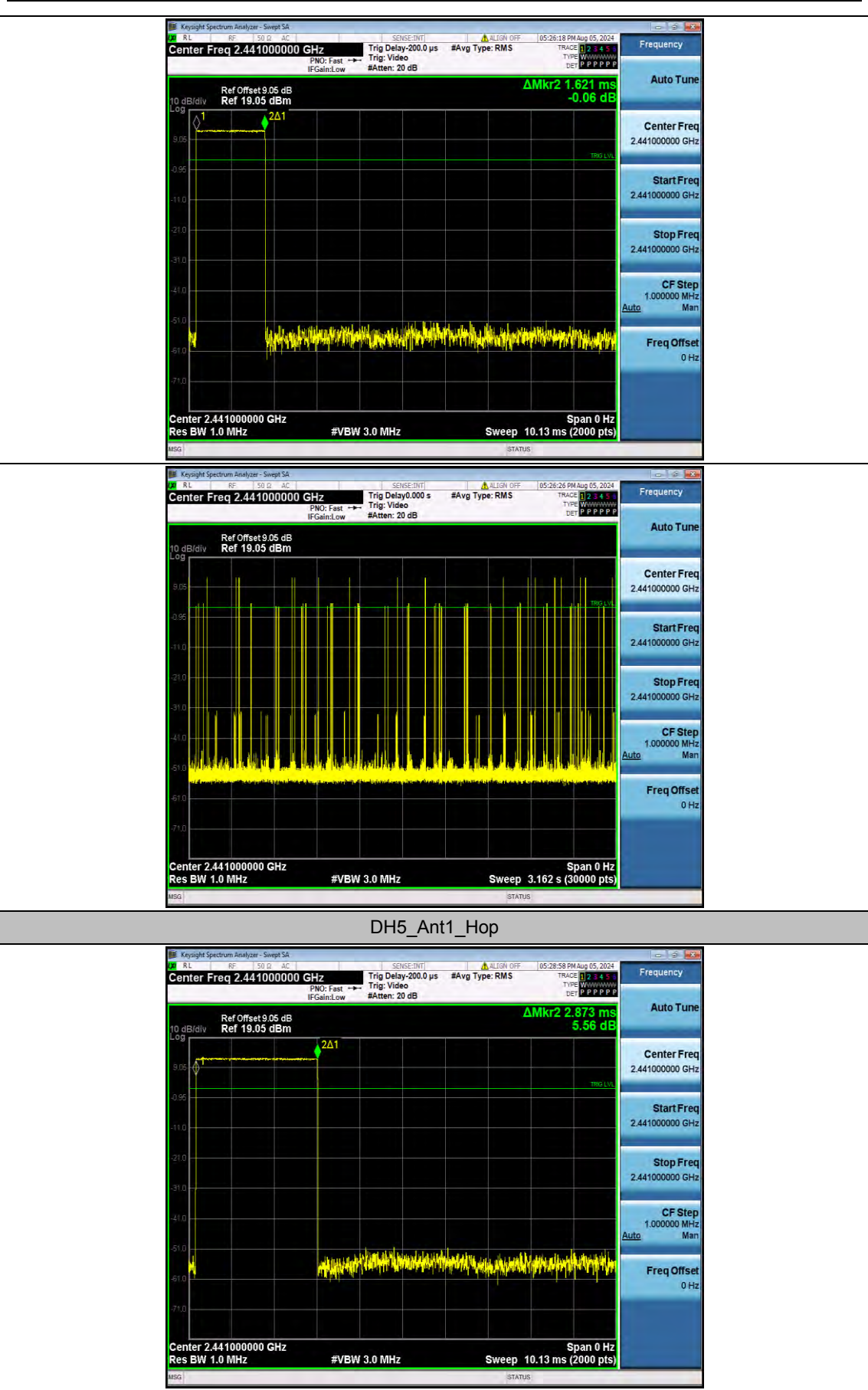
## Appendix A.5: Time of occupancy

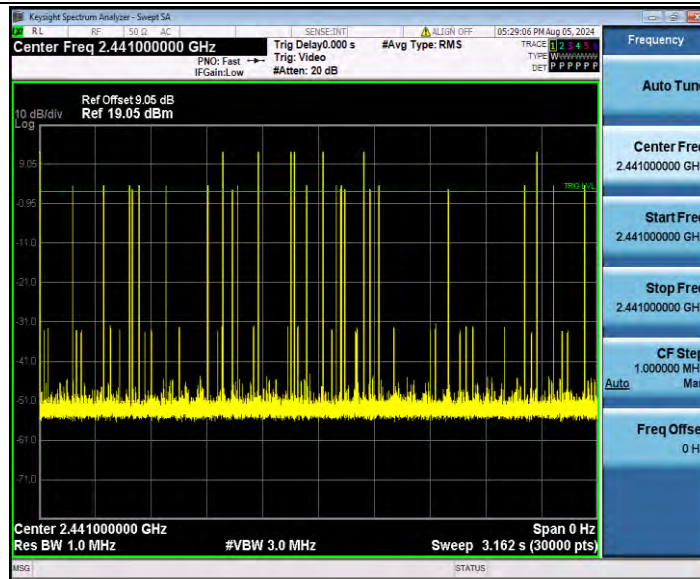
### Test Result

| TestMode | Antenna | Freq(MHz) | BurstWidth<br>[ms] | TotalHops<br>[Num] | Result[s] | Limit[s] | Verdict |
|----------|---------|-----------|--------------------|--------------------|-----------|----------|---------|
| DH1      | Ant1    | Hop       | 0.365              | 330                | 0.12      | ≤0.4     | PASS    |
| DH3      | Ant1    | Hop       | 1.621              | 180                | 0.292     | ≤0.4     | PASS    |
| DH5      | Ant1    | Hop       | 2.873              | 80                 | 0.23      | ≤0.4     | PASS    |
| 2DH1     | Ant1    | Hop       | 0.375              | 330                | 0.124     | ≤0.4     | PASS    |
| 2DH3     | Ant1    | Hop       | 1.626              | 160                | 0.26      | ≤0.4     | PASS    |
| 2DH5     | Ant1    | Hop       | 2.873              | 120                | 0.345     | ≤0.4     | PASS    |
| 3DH1     | Ant1    | Hop       | 0.375              | 320                | 0.12      | ≤0.4     | PASS    |
| 3DH3     | Ant1    | Hop       | 1.626              | 180                | 0.293     | ≤0.4     | PASS    |
| 3DH5     | Ant1    | Hop       | 2.873              | 110                | 0.316     | ≤0.4     | PASS    |

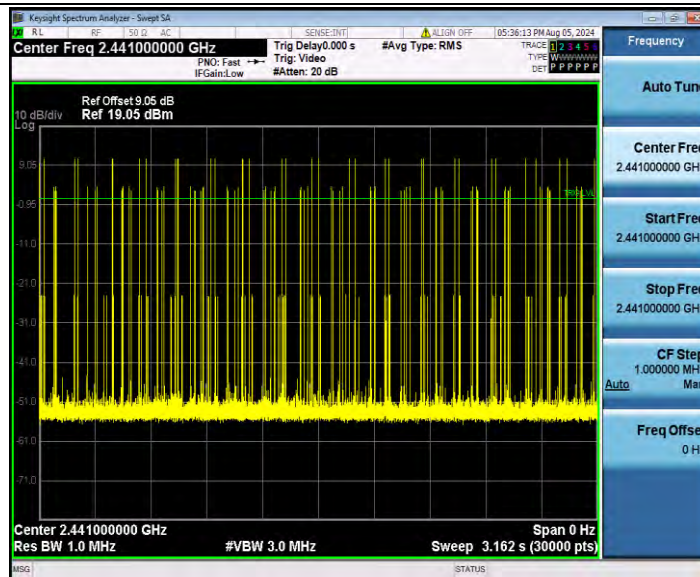
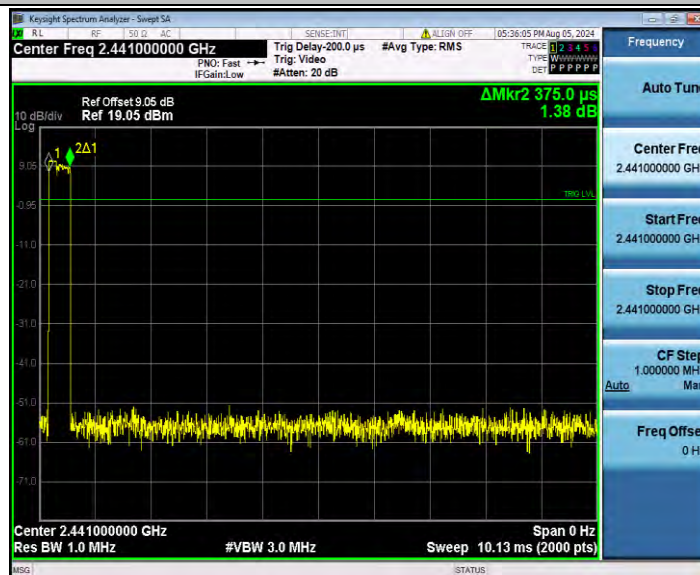
## Test Graphs



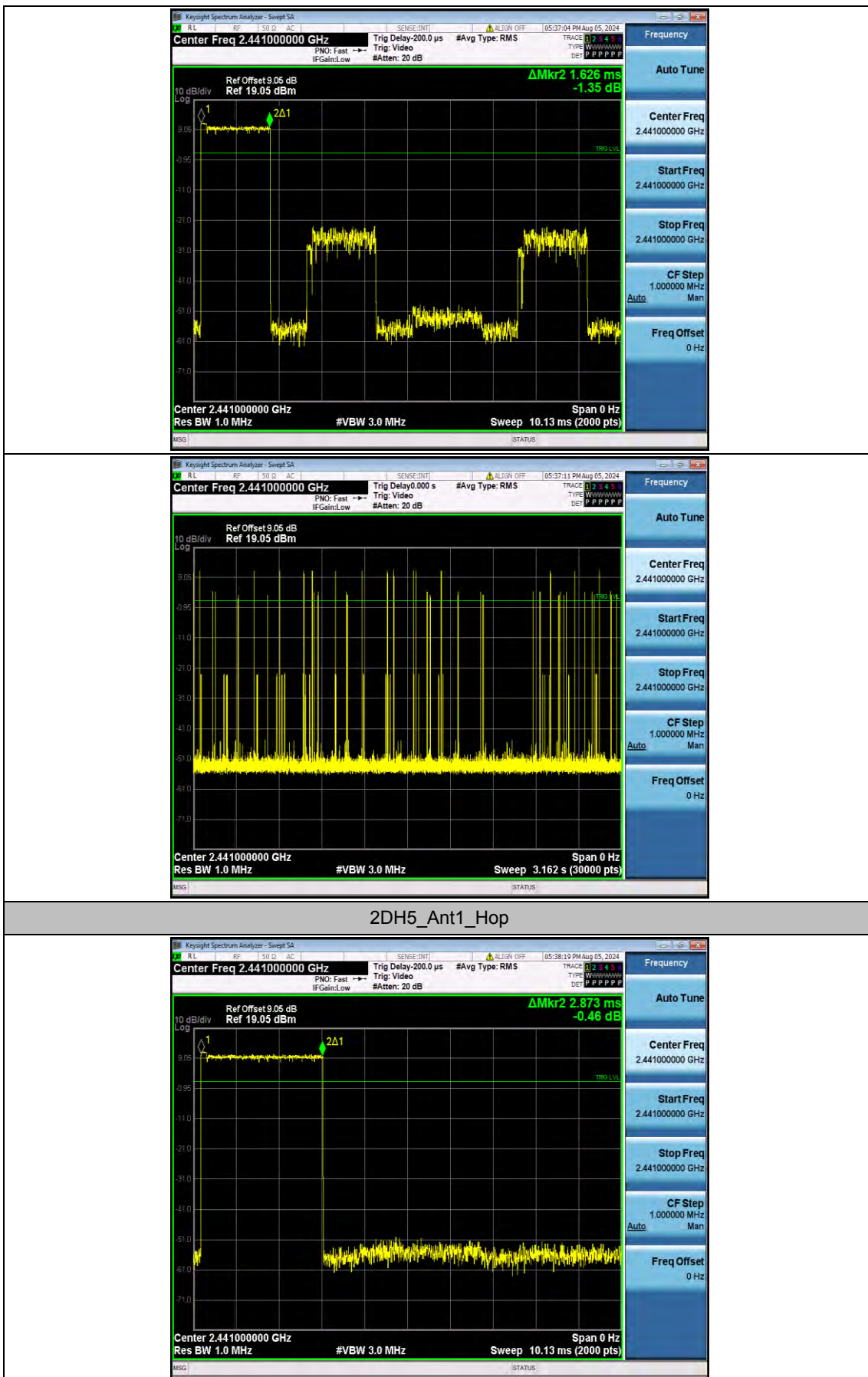


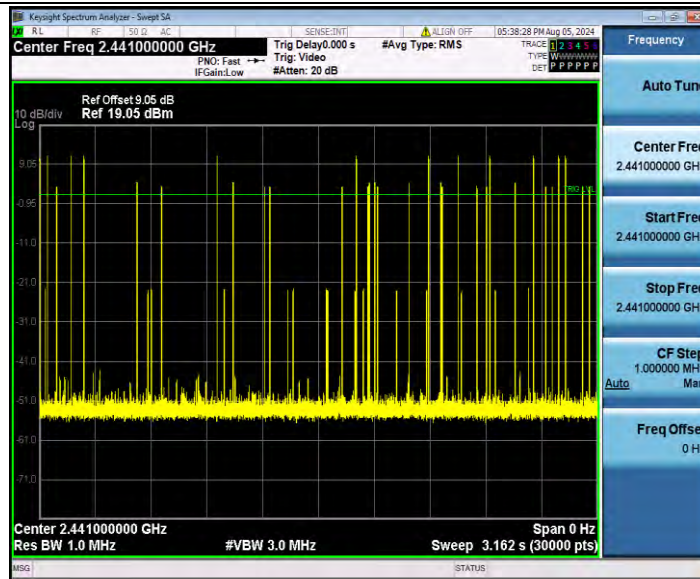


2DH1\_Ant1\_Hop

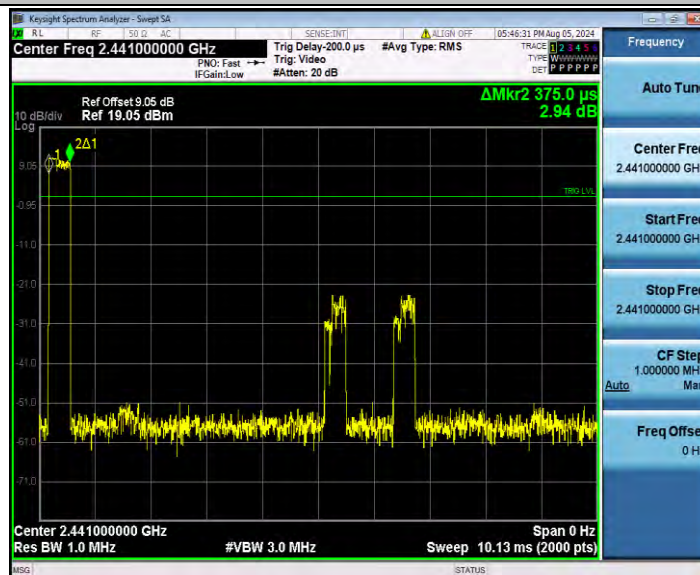


2DH3\_Ant1\_Hop

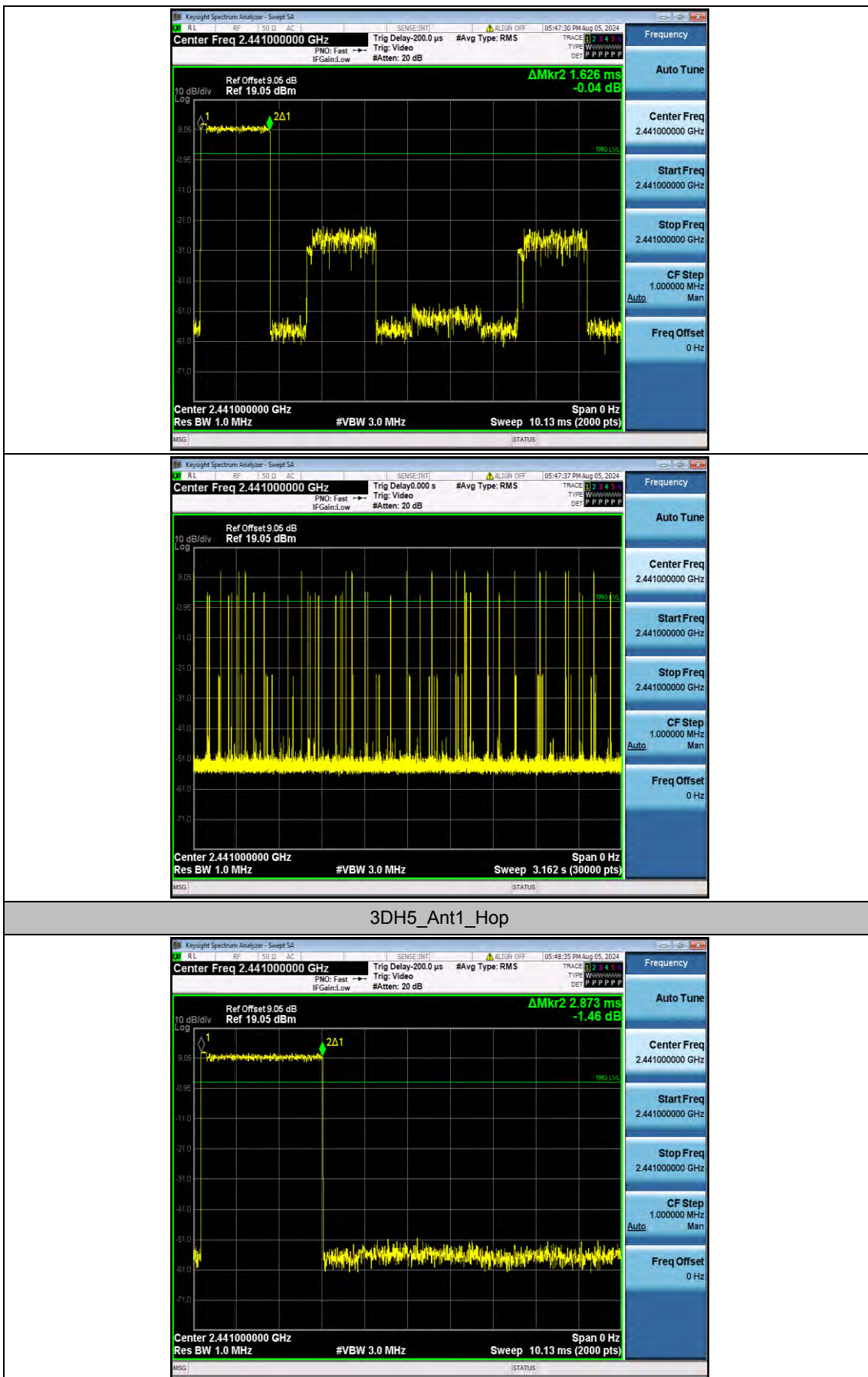


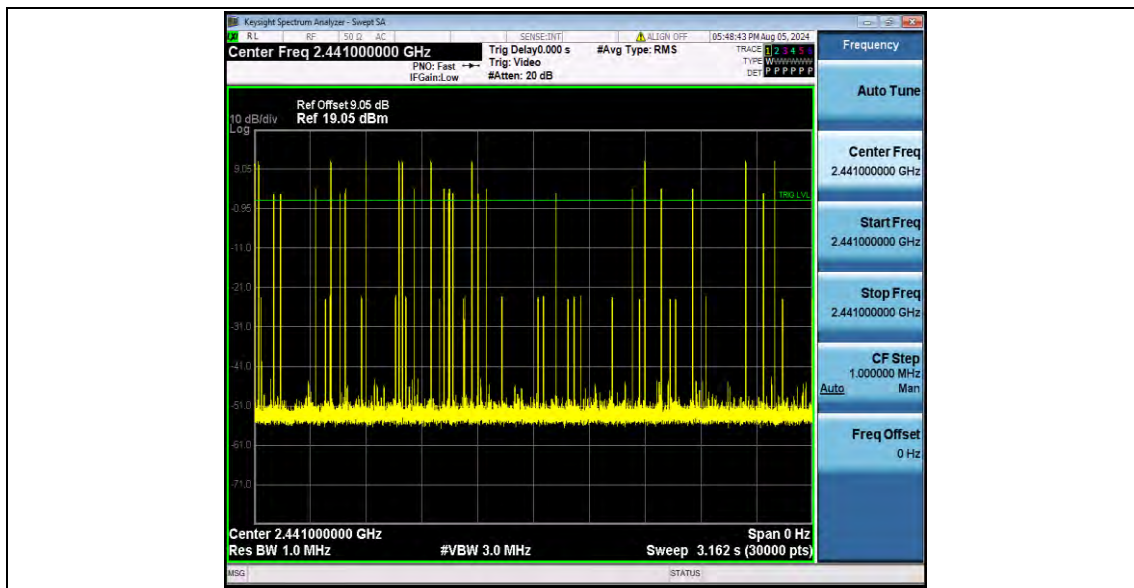


3DH1\_Ant1\_Hop



3DH3\_Ant1\_Hop



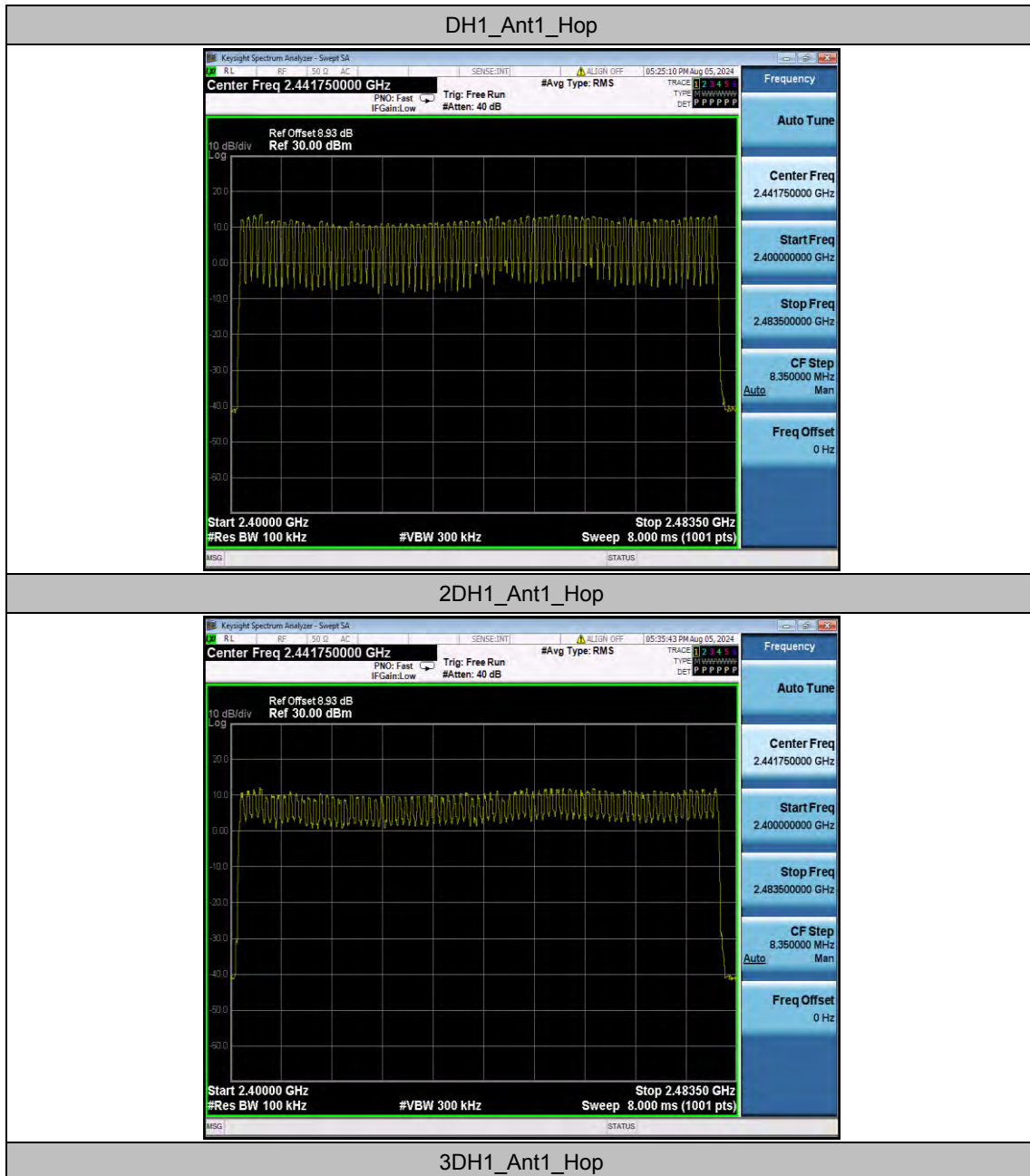


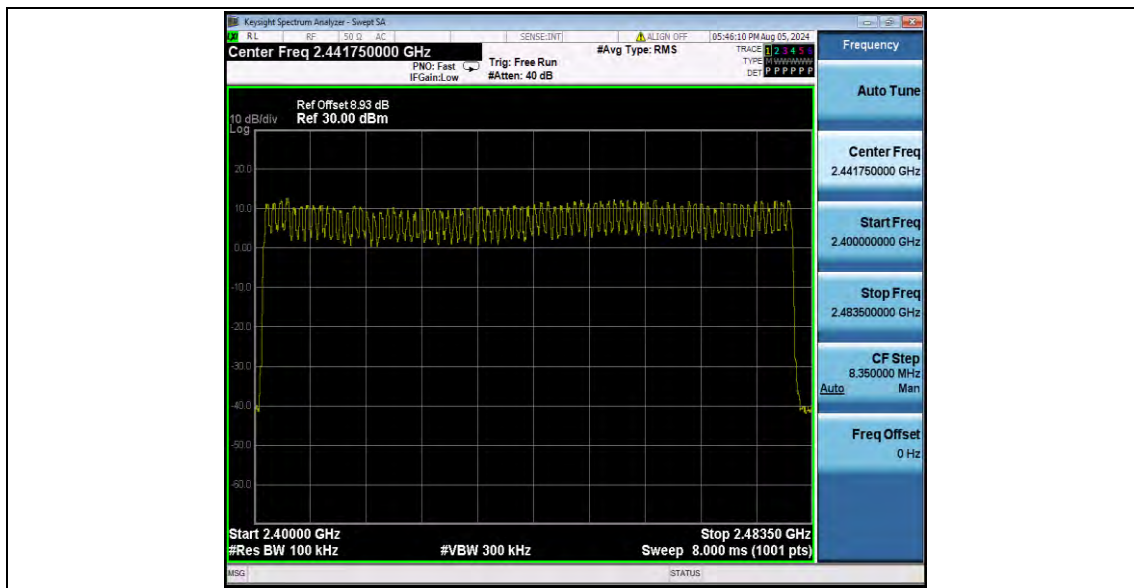
## Appendix A.6: Number of hopping channels

### Test Result

| TestMode | Antenna | Freq(MHz) | Result[Num] | Limit[Num] | Verdict |
|----------|---------|-----------|-------------|------------|---------|
| DH1      | Ant1    | Hop       | 79          | ≥15        | PASS    |
| 2DH1     | Ant1    | Hop       | 79          | ≥15        | PASS    |
| 3DH1     | Ant1    | Hop       | 79          | ≥15        | PASS    |

## Test Graphs



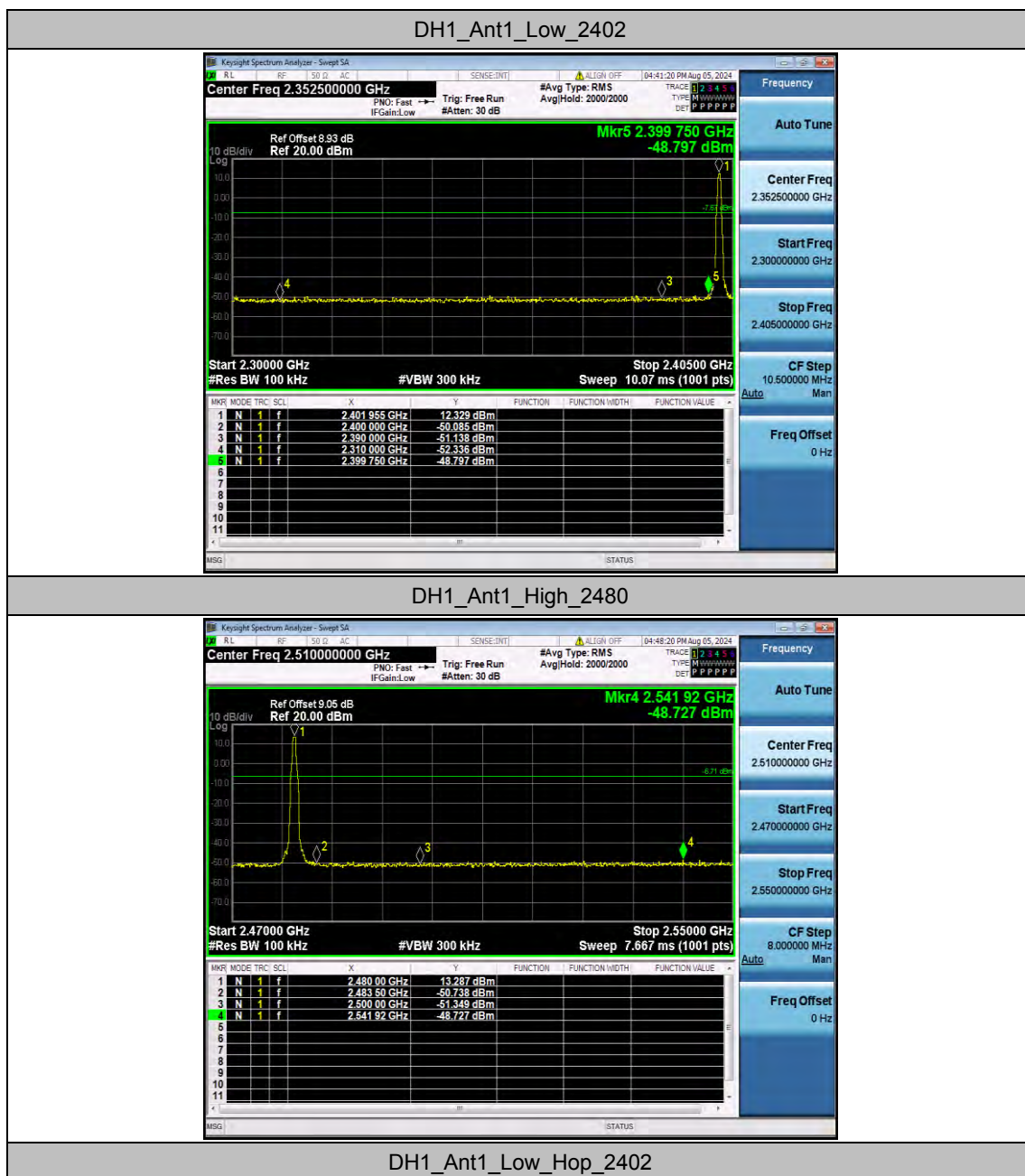


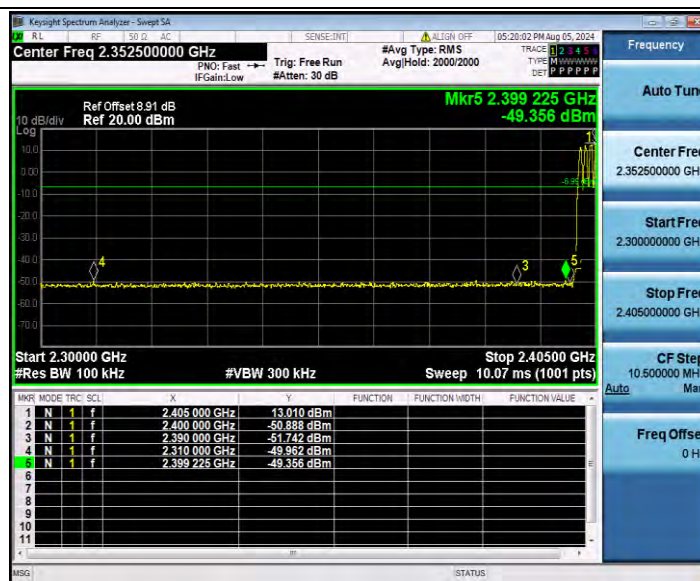
## Appendix A.7: Band edge measurements

### Test Result

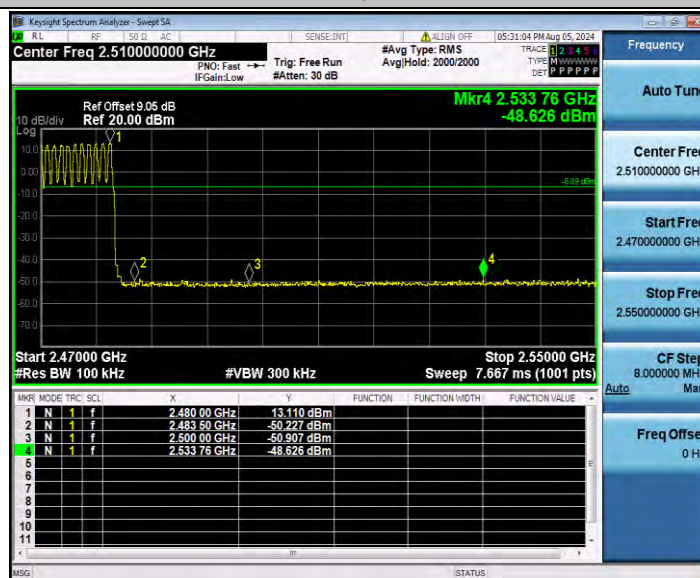
| TestMode | Antenna | ChName | Freq(MHz) | RefLevel [dBm] | Result [dBm] | Limit [dBm]  | Verdict |
|----------|---------|--------|-----------|----------------|--------------|--------------|---------|
| DH1      | Ant1    | Low    | 2402      | 12.33          | -48.8        | $\leq -7.67$ | PASS    |
|          |         | High   | 2480      | 13.29          | -48.73       | $\leq -6.71$ | PASS    |
|          |         | Low    | Hop_2402  | 13.01          | -49.36       | $\leq -6.99$ | PASS    |
|          |         | High   | Hop_2480  | 13.11          | -48.63       | $\leq -6.89$ | PASS    |
| 2DH1     | Ant1    | Low    | 2402      | 11.35          | -48.89       | $\leq -8.65$ | PASS    |
|          |         | High   | 2480      | 12.41          | -48.46       | $\leq -7.59$ | PASS    |
|          |         | Low    | Hop_2402  | 11.48          | -49.28       | $\leq -8.52$ | PASS    |
|          |         | High   | Hop_2480  | 12.19          | -48.01       | $\leq -7.81$ | PASS    |
| 3DH1     | Ant1    | Low    | 2402      | 11.23          | -49.32       | $\leq -8.77$ | PASS    |
|          |         | High   | 2480      | 12.32          | -48.93       | $\leq -7.68$ | PASS    |
|          |         | Low    | Hop_2402  | 12.13          | -49.76       | $\leq -7.87$ | PASS    |
|          |         | High   | Hop_2480  | 12.35          | -48.9        | $\leq -7.66$ | PASS    |

## Test Graphs

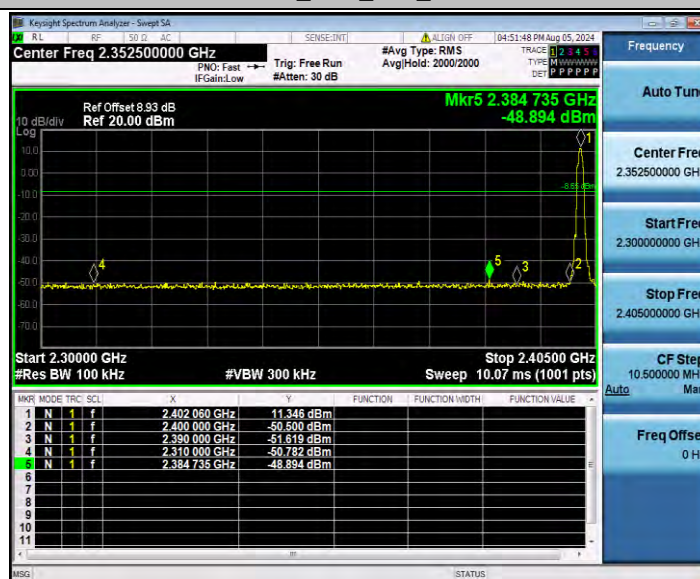




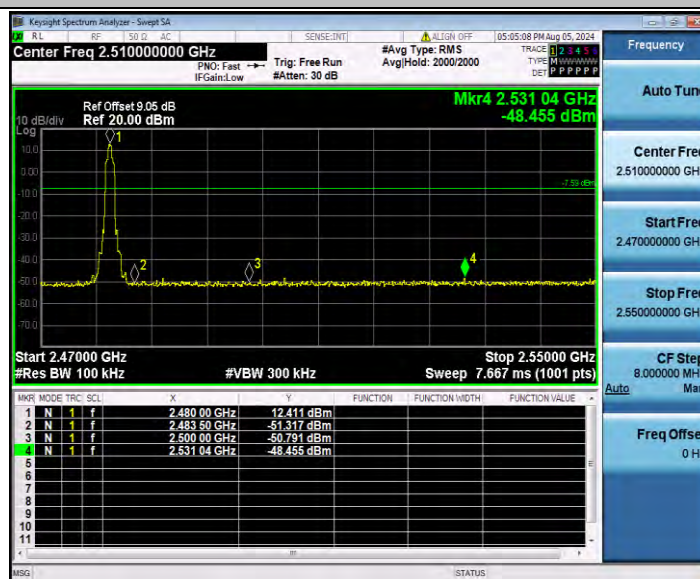
DH1\_Ant1\_High\_Hop\_2480



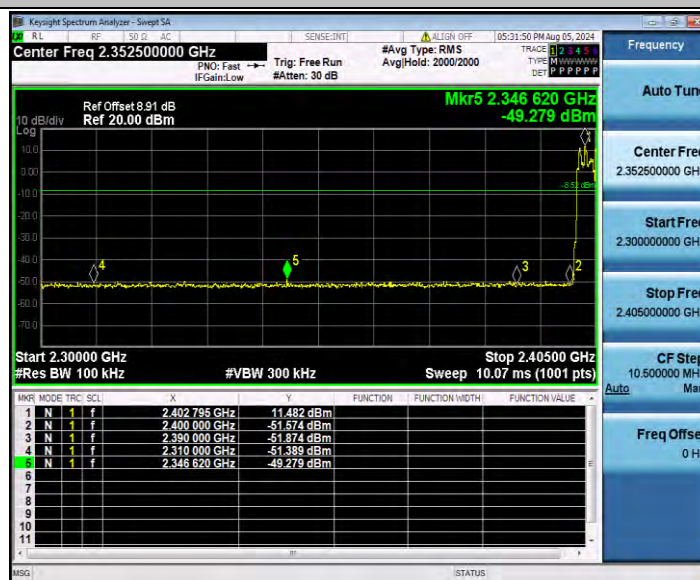
2DH1\_Ant1\_Low\_2402



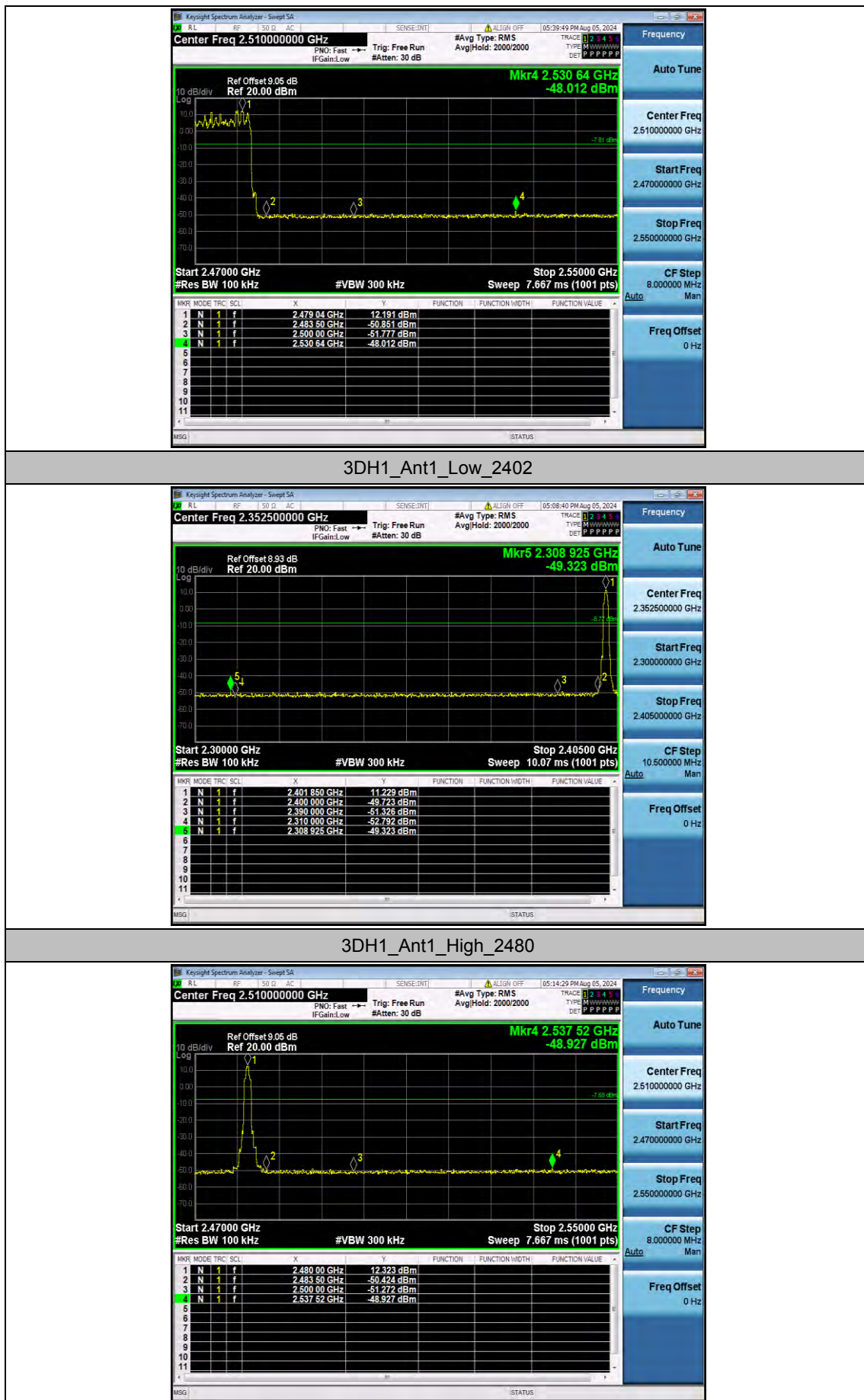
## 2DH1\_Ant1\_High\_2480



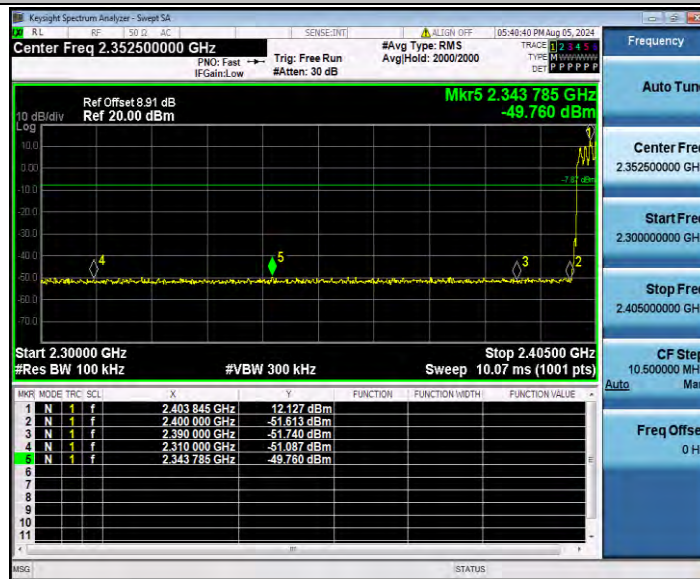
## 2DH1\_Ant1\_Low\_Hop\_2402



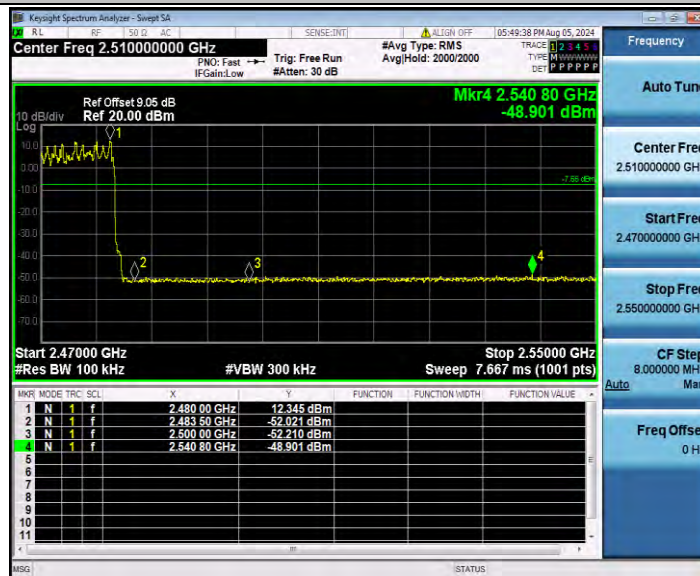
## 2DH1\_Ant1\_High\_Hop\_2480



## 3DH1\_Ant1\_Low\_Hop\_2402



## 3DH1\_Ant1\_High\_Hop\_2480

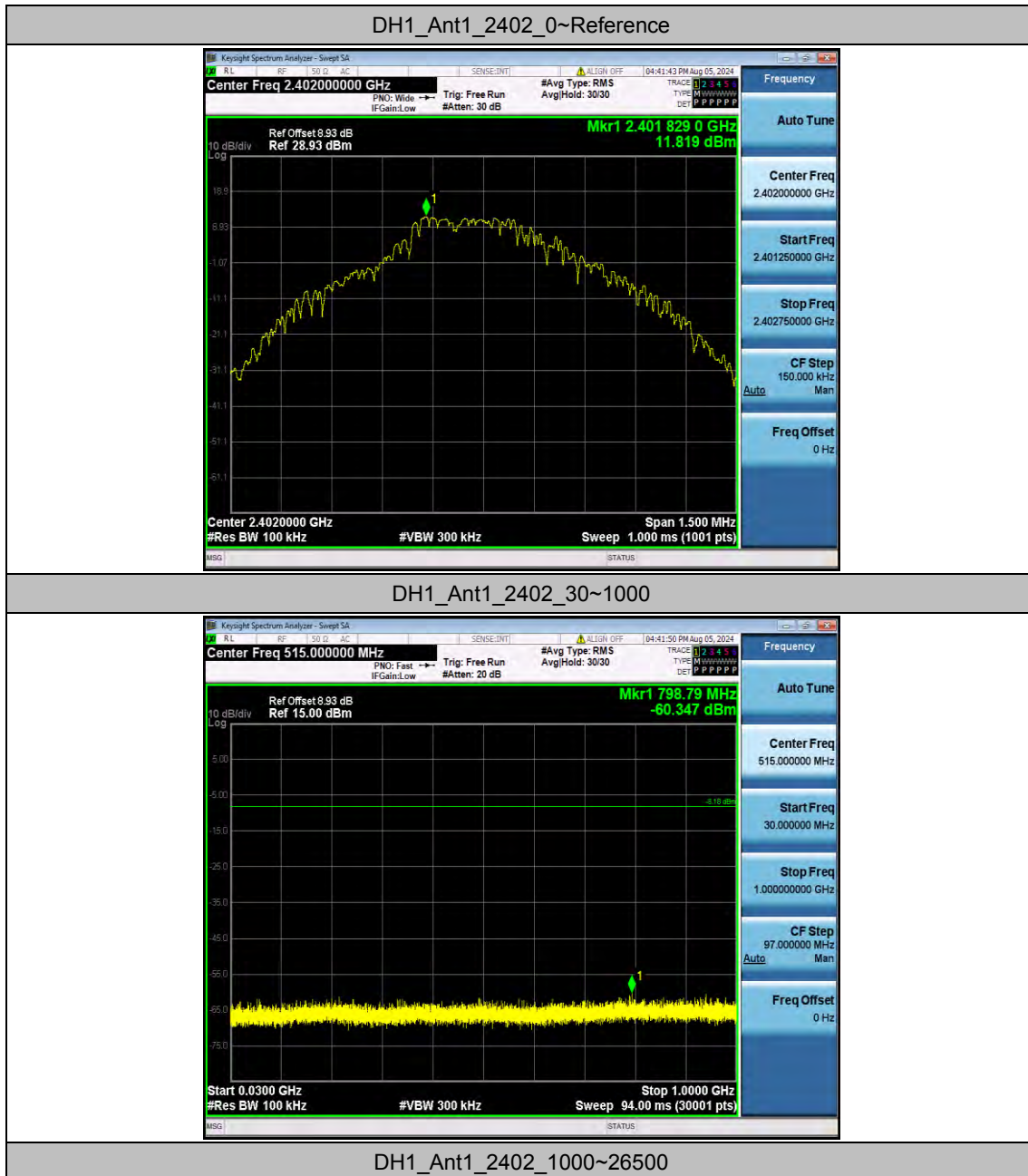


## Appendix A.8: Conducted Spurious Emission

### Test Result

| TestMode | Antenna | Freq(MHz) | FreqRange [MHz] | RefLevel [dBm] | Result [dBm] | Limit [dBm]  | Verdict |
|----------|---------|-----------|-----------------|----------------|--------------|--------------|---------|
| DH1      | Ant1    | 2402      | Reference       | 11.82          | 11.82        | ---          | PASS    |
|          |         |           | 30~1000         | 11.82          | -60.35       | $\leq -8.18$ | PASS    |
|          |         |           | 1000~26500      | 11.82          | -47.92       | $\leq -8.18$ | PASS    |
|          |         | 2441      | Reference       | 11.41          | 11.41        | ---          | PASS    |
|          |         |           | 30~1000         | 11.41          | -44.19       | $\leq -8.59$ | PASS    |
|          |         |           | 1000~26500      | 11.41          | -44.73       | $\leq -8.59$ | PASS    |
|          |         | 2480      | Reference       | 12.77          | 12.77        | ---          | PASS    |
|          |         |           | 30~1000         | 12.77          | -42.17       | $\leq -7.23$ | PASS    |
|          |         |           | 1000~26500      | 12.77          | -47.37       | $\leq -7.23$ | PASS    |
| 2DH1     | Ant1    | 2402      | Reference       | 10.76          | 10.76        | ---          | PASS    |
|          |         |           | 30~1000         | 10.76          | -60.01       | $\leq -9.24$ | PASS    |
|          |         |           | 1000~26500      | 10.76          | -48.04       | $\leq -9.24$ | PASS    |
|          |         | 2441      | Reference       | 10.63          | 10.63        | ---          | PASS    |
|          |         |           | 30~1000         | 10.63          | -51.24       | $\leq -9.37$ | PASS    |
|          |         |           | 1000~26500      | 10.63          | -48.05       | $\leq -9.37$ | PASS    |
|          |         | 2480      | Reference       | 12.28          | 12.28        | ---          | PASS    |
|          |         |           | 30~1000         | 12.28          | -60.41       | $\leq -7.72$ | PASS    |
|          |         |           | 1000~26500      | 12.28          | -47.52       | $\leq -7.72$ | PASS    |
| 3DH1     | Ant1    | 2402      | Reference       | 10.66          | 10.66        | ---          | PASS    |
|          |         |           | 30~1000         | 10.66          | -60.9        | $\leq -9.34$ | PASS    |
|          |         |           | 1000~26500      | 10.66          | -48.2        | $\leq -9.34$ | PASS    |
|          |         | 2441      | Reference       | 10.17          | 10.17        | ---          | PASS    |
|          |         |           | 30~1000         | 10.17          | -59.84       | $\leq -9.83$ | PASS    |
|          |         |           | 1000~26500      | 10.17          | -47.93       | $\leq -9.83$ | PASS    |
|          |         | 2480      | Reference       | 12.25          | 12.25        | ---          | PASS    |
|          |         |           | 30~1000         | 12.25          | -53.11       | $\leq -7.75$ | PASS    |
|          |         |           | 1000~26500      | 12.25          | -46.93       | $\leq -7.75$ | PASS    |

## Test Graphs

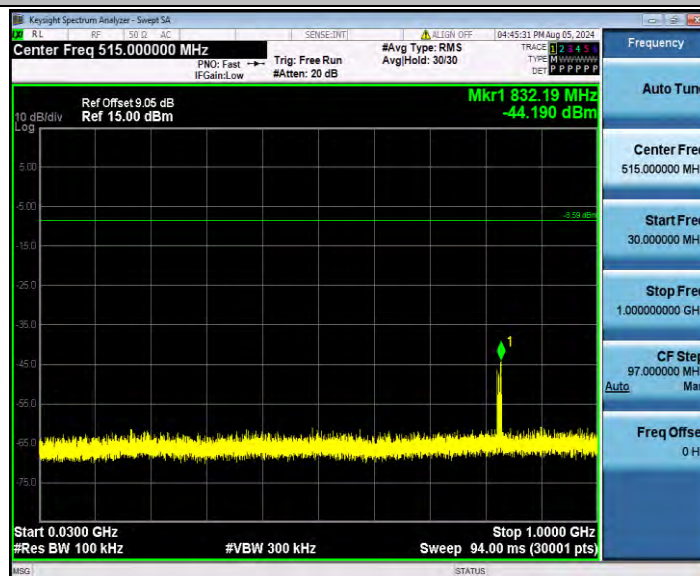




DH1\_Ant1\_2441\_0~Reference



DH1\_Ant1\_2441\_30~1000



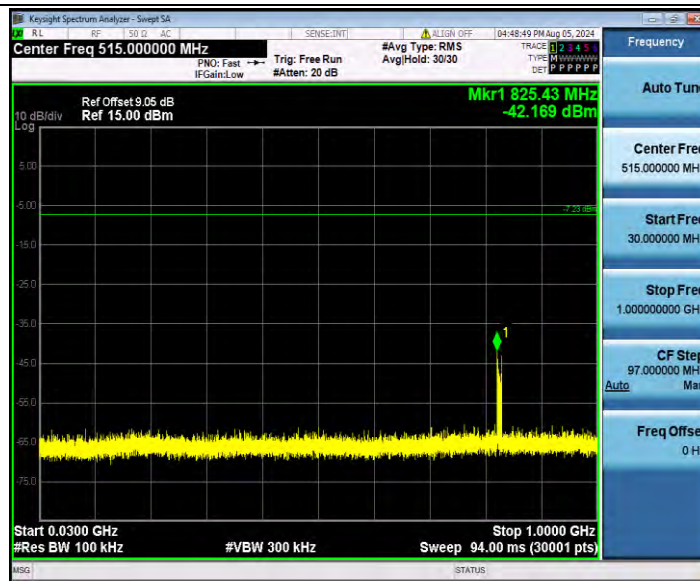
## DH1\_Ant1\_2441\_1000~26500



## DH1\_Ant1\_2480\_0~Reference



## DH1\_Ant1\_2480\_30~1000

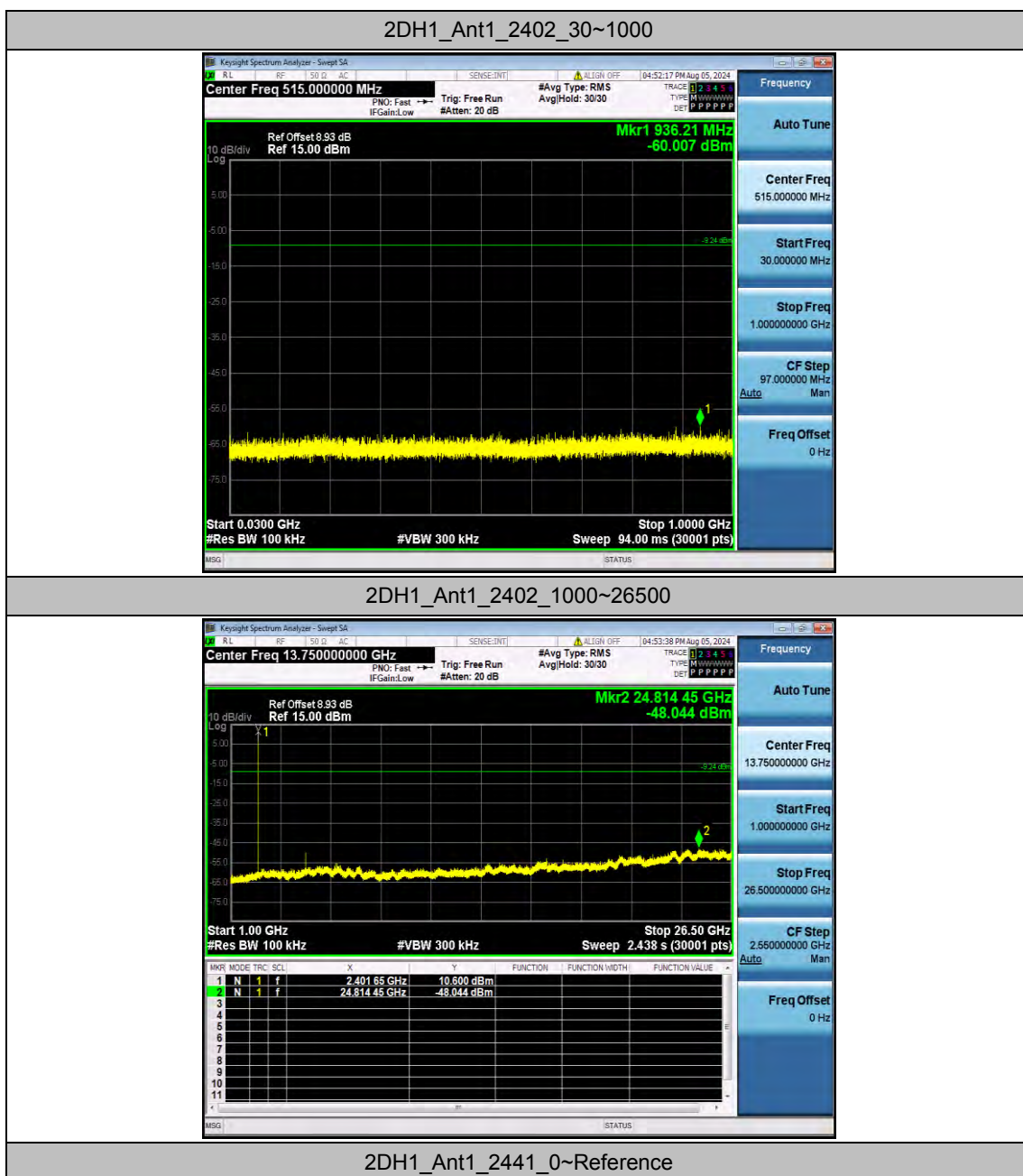


DH1\_Ant1\_2480\_1000~26500



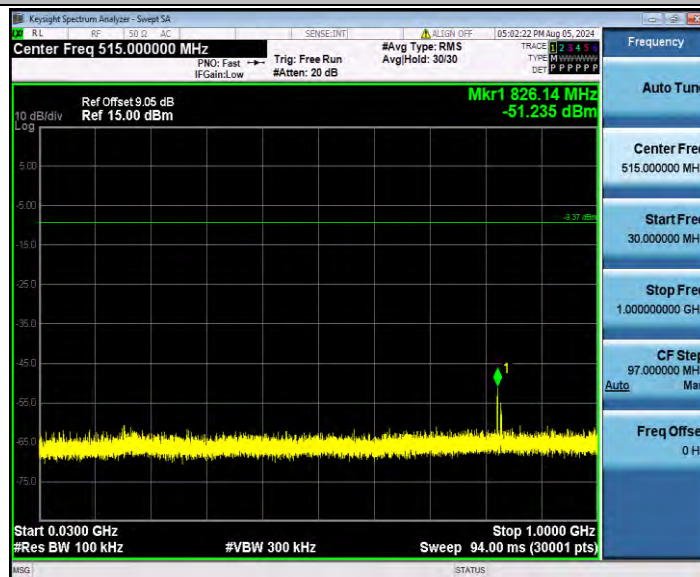
2DH1\_Ant1\_2402\_0~Reference







2DH1\_Ant1\_2441\_30~1000



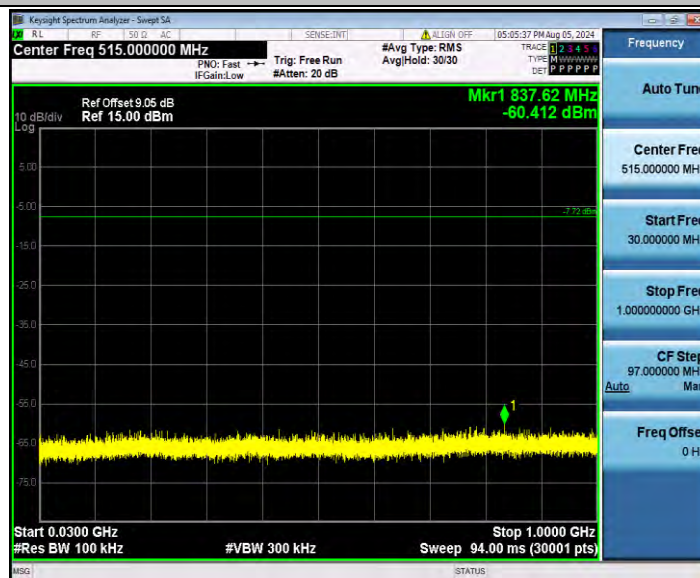
2DH1\_Ant1\_2441\_1000~26500



## 2DH1\_Ant1\_2480\_0~Reference



## 2DH1\_Ant1\_2480\_30~1000



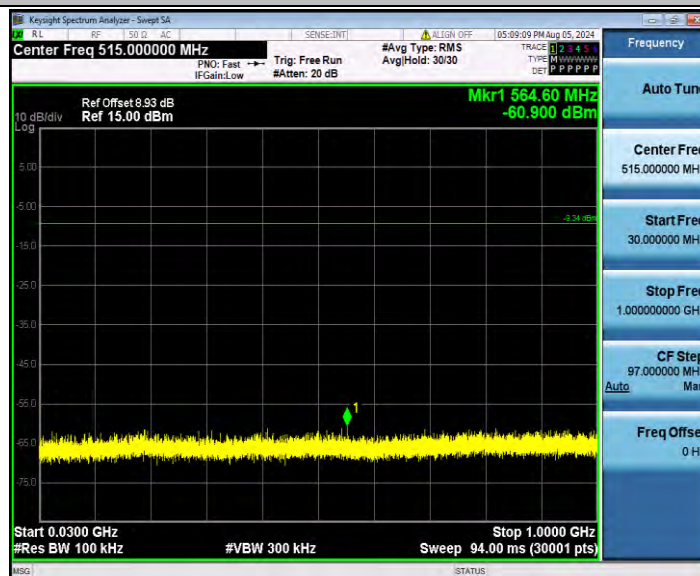
## 2DH1\_Ant1\_2480\_1000~26500



3DH1\_Ant1\_2402\_0~Reference



3DH1\_Ant1\_2402\_30~1000



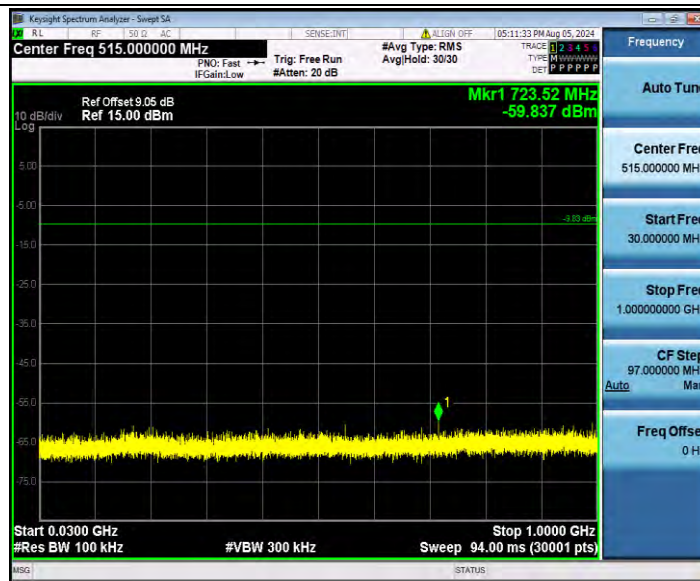
## 3DH1\_Ant1\_2402\_1000~26500



## 3DH1\_Ant1\_2441\_0~Reference



## 3DH1\_Ant1\_2441\_30~1000

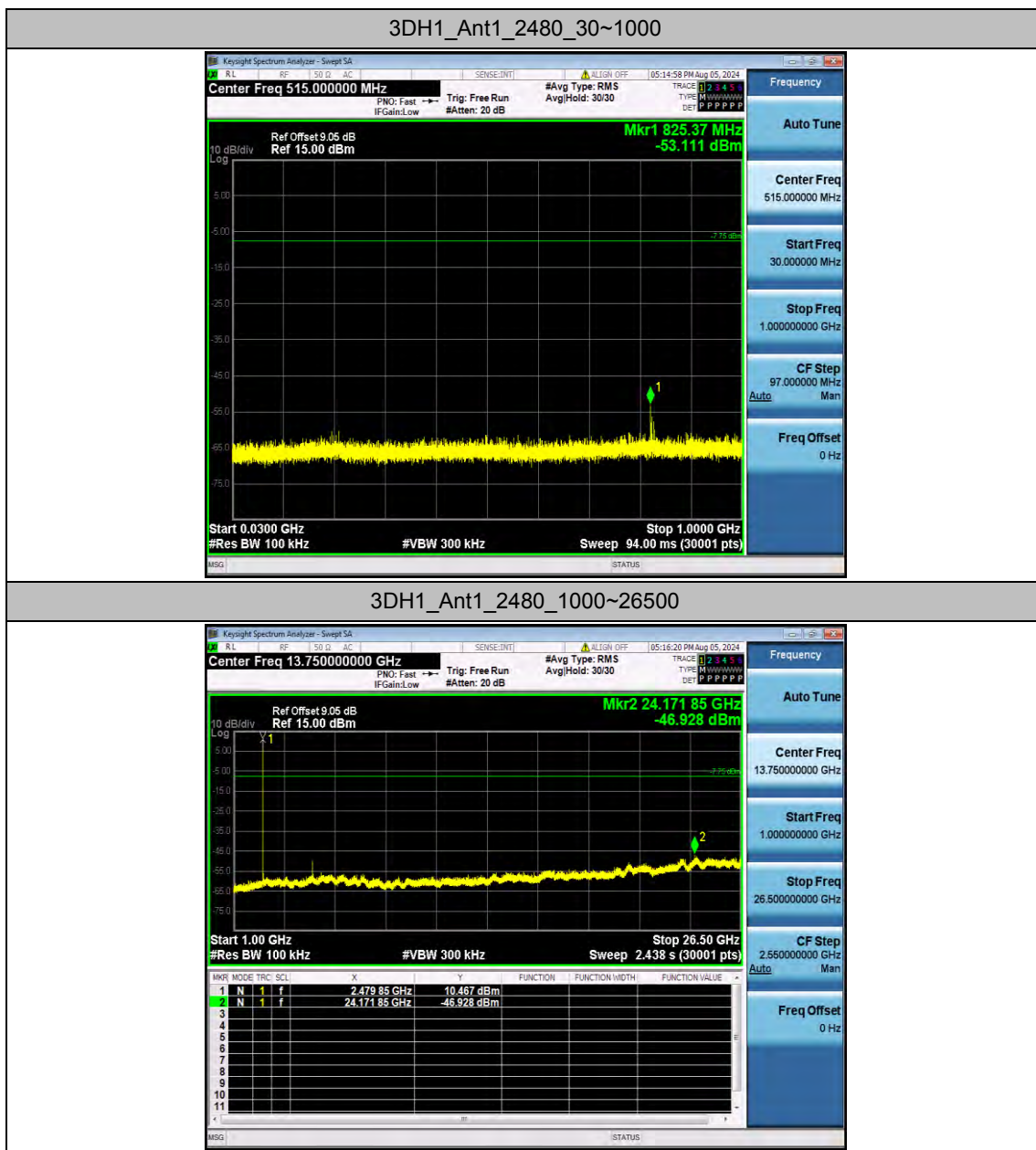


3DH1\_Ant1\_2441\_1000~26500



3DH1\_Ant1\_2480\_0~Reference





## Appendix A.9: Emissions in Restricted Bands

### Test Result

| TestMode | Antenna | ChName | Freq(MHz ) | Detector | Freq [MHz] | Result [dBm] | Limit [dBm] | Result [dBuV/m] | Limit [dBuV/m] | Verdict |
|----------|---------|--------|------------|----------|------------|--------------|-------------|-----------------|----------------|---------|
| DH1      | Ant1    | Low    | 2402       | AV       | 2310.000   | -49.43       | ≤-41.20     | 45.77           | ≤54            | PASS    |
|          |         |        |            | AV       | 2385.680   | -48.74       | ≤-41.20     | 46.46           | ≤54            | PASS    |
|          |         |        |            | AV       | 2390.000   | -48.96       | ≤-41.20     | 46.24           | ≤54            | PASS    |
|          |         |        |            | Peak     | 2310.000   | -41.48       | ≤-21.20     | 53.72           | ≤74            | PASS    |
|          |         |        |            | Peak     | 2332.550   | -38.28       | ≤-21.20     | 56.92           | ≤74            | PASS    |
|          |         |        |            | Peak     | 2390.000   | -40.81       | ≤-21.20     | 54.39           | ≤74            | PASS    |
|          |         | High   | 2480       | AV       | 2483.500   | -46.21       | ≤-41.20     | 48.99           | ≤54            | PASS    |
|          |         |        |            | AV       | 2483.520   | -46.21       | ≤-41.20     | 48.99           | ≤54            | PASS    |
|          |         |        |            | AV       | 2500.000   | -48.75       | ≤-41.20     | 46.45           | ≤54            | PASS    |
|          |         |        |            | Peak     | 2483.500   | -39.6        | ≤-21.20     | 55.60           | ≤74            | PASS    |
|          |         |        |            | Peak     | 2486.000   | -38.91       | ≤-21.20     | 56.29           | ≤74            | PASS    |
|          |         |        |            | Peak     | 2500.000   | -40.73       | ≤-21.20     | 54.47           | ≤74            | PASS    |
| 2DH1     | Ant1    | Low    | 2402       | AV       | 2310.000   | -49.45       | ≤-41.20     | 45.75           | ≤54            | PASS    |
|          |         |        |            | AV       | 2387.045   | -48.87       | ≤-41.20     | 46.33           | ≤54            | PASS    |
|          |         |        |            | AV       | 2390.000   | -49.02       | ≤-41.20     | 46.18           | ≤54            | PASS    |
|          |         |        |            | Peak     | 2310.000   | -40.75       | ≤-21.20     | 54.45           | ≤74            | PASS    |
|          |         |        |            | Peak     | 2337.170   | -39.29       | ≤-21.20     | 55.91           | ≤74            | PASS    |
|          |         |        |            | Peak     | 2390.000   | -40.66       | ≤-21.20     | 54.54           | ≤74            | PASS    |
|          |         | High   | 2480       | AV       | 2483.500   | -46.22       | ≤-41.20     | 48.98           | ≤54            | PASS    |
|          |         |        |            | AV       | 2483.520   | -46.22       | ≤-41.20     | 48.98           | ≤54            | PASS    |
|          |         |        |            | AV       | 2500.000   | -48.75       | ≤-41.20     | 46.45           | ≤54            | PASS    |
|          |         |        |            | Peak     | 2483.500   | -39.84       | ≤-21.20     | 55.36           | ≤74            | PASS    |
|          |         |        |            | Peak     | 2484.160   | -38.06       | ≤-21.20     | 57.14           | ≤74            | PASS    |
|          |         |        |            | Peak     | 2500.000   | -41.47       | ≤-21.20     | 53.73           | ≤74            | PASS    |
| 3DH1     | Ant1    | Low    | 2402       | AV       | 2310.000   | -49.37       | ≤-41.20     | 45.83           | ≤54            | PASS    |
|          |         |        |            | AV       | 2386.205   | -48.84       | ≤-41.20     | 46.36           | ≤54            | PASS    |
|          |         |        |            | AV       | 2390.000   | -49.1        | ≤-41.20     | 46.10           | ≤54            | PASS    |
|          |         |        |            | Peak     | 2310.000   | -40.6        | ≤-21.20     | 54.60           | ≤74            | PASS    |
|          |         |        |            | Peak     | 2330.345   | -38.9        | ≤-21.20     | 56.30           | ≤74            | PASS    |
|          |         |        |            | Peak     | 2390.000   | -41.01       | ≤-21.20     | 54.19           | ≤74            | PASS    |
|          |         | High   | 2480       | AV       | 2483.500   | -46.31       | ≤-41.20     | 48.89           | ≤54            | PASS    |
|          |         |        |            | AV       | 2483.520   | -46.31       | ≤-41.20     | 48.89           | ≤54            | PASS    |
|          |         |        |            | AV       | 2500.000   | -48.69       | ≤-41.20     | 46.51           | ≤54            | PASS    |
|          |         |        |            | Peak     | 2483.500   | -41.41       | ≤-21.20     | 53.79           | ≤74            | PASS    |
|          |         |        |            | Peak     | 2487.280   | -38.01       | ≤-21.20     | 57.19           | ≤74            | PASS    |

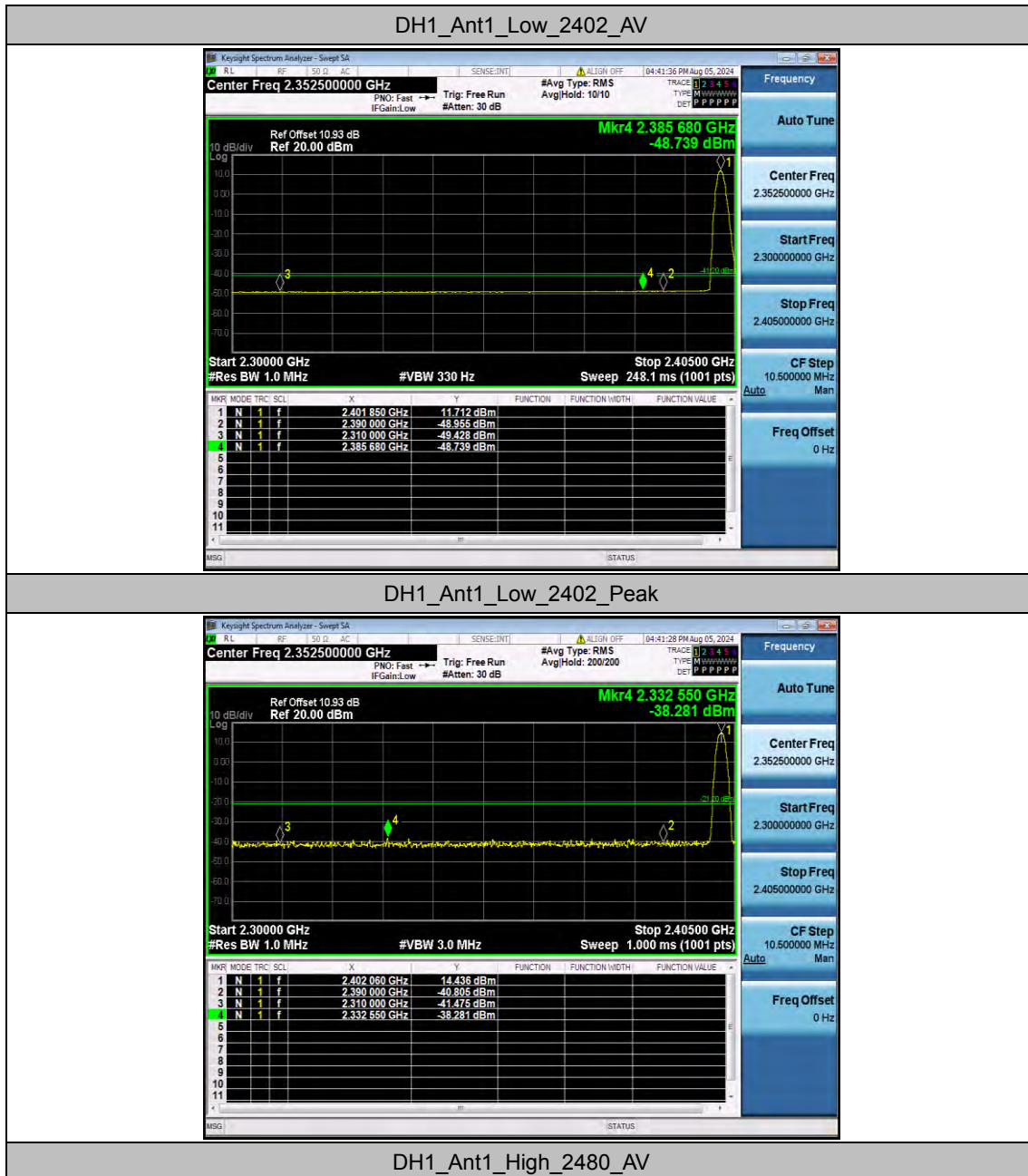
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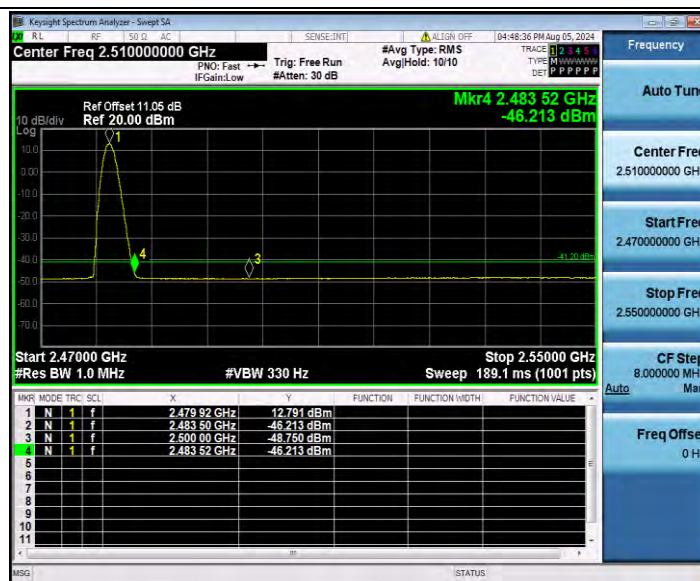
|  |  |  |  |      |          |       |               |       |           |      |
|--|--|--|--|------|----------|-------|---------------|-------|-----------|------|
|  |  |  |  | Peak | 2500.000 | -39.5 | $\leq -21.20$ | 55.70 | $\leq 74$ | PASS |
|--|--|--|--|------|----------|-------|---------------|-------|-----------|------|

## Note:

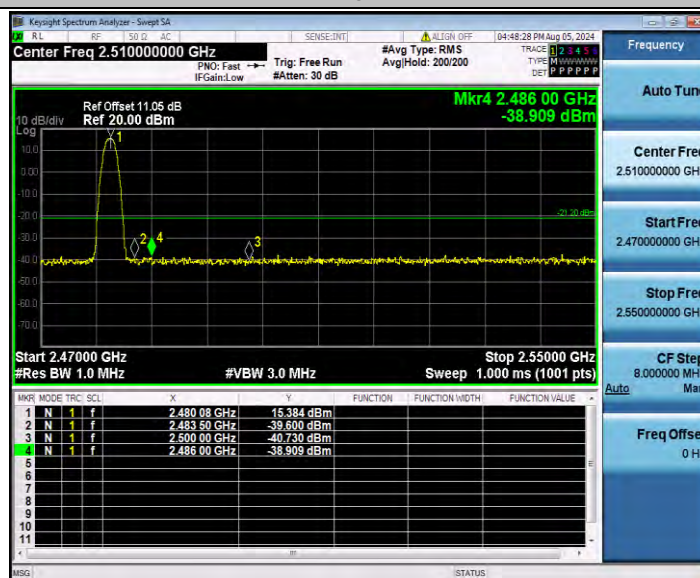
1. The Antenna Gain is compensated in the graph.
2. The Duty Cycle Factor and RBW Factor is compensated in the graph.
3. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

## Test Graphs

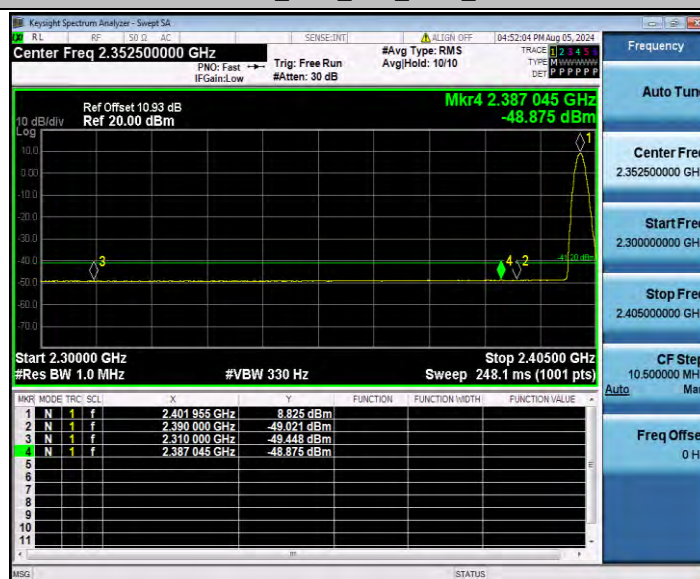




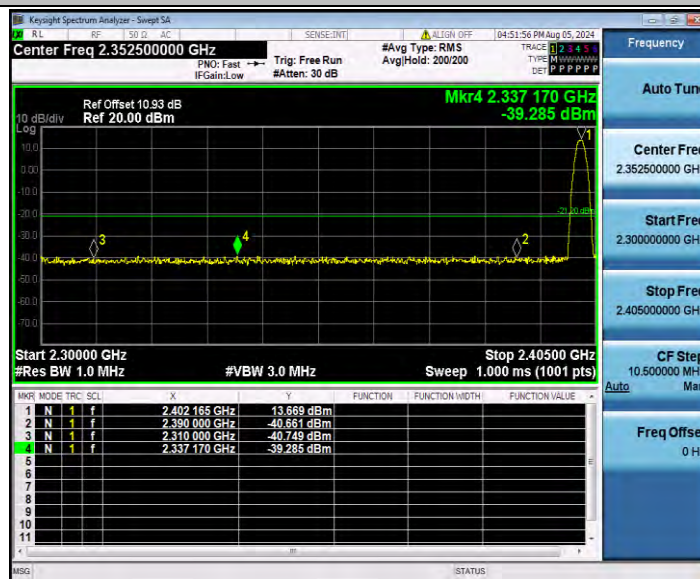
DH1\_Ant1\_High\_2480\_Peak



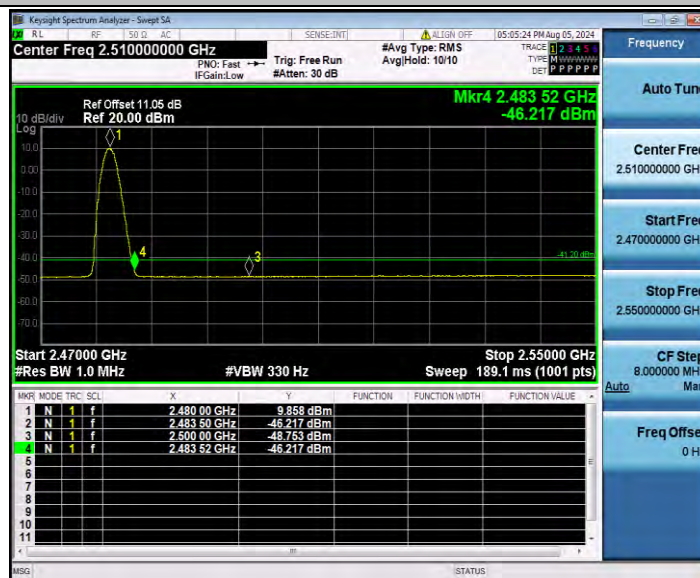
2DH1\_Ant1\_Low\_2402\_AV



## 2DH1\_Ant1\_Low\_2402\_Peak



## 2DH1\_Ant1\_High\_2480\_AV



## 2DH1\_Ant1\_High\_2480\_Peak

