

## Appendix A

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

Product Name: BLUETOOTH NOISE ISOLATING EARMUFFS

Trade Mark: TZUMI, SOUNDGUARDS

Test Model: RN01

FCC ID: 2AON7-8445

### Environmental Conditions

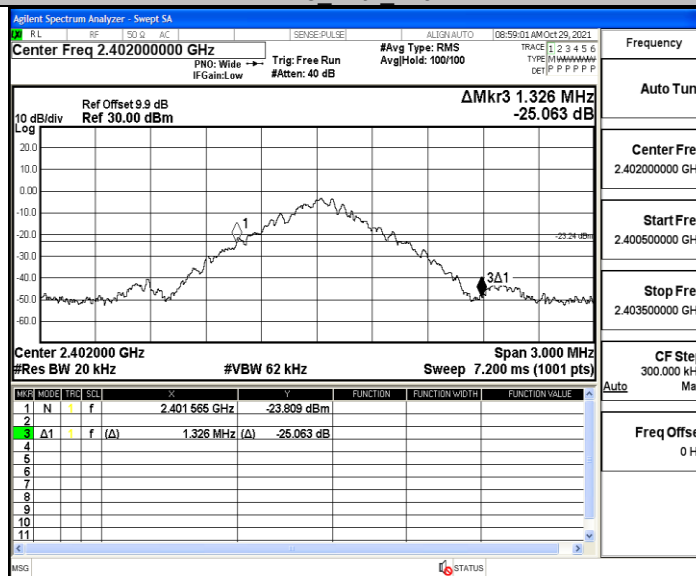
|                    |           |
|--------------------|-----------|
| Temperature:       | 22.8° C   |
| Relative Humidity: | 56%       |
| ATM Pressure:      | 100.0 kPa |
| Test Engineer:     | Anna Hu   |
| Supervised by:     | Hugo Chen |

#### A.1 20 dB Bandwidth

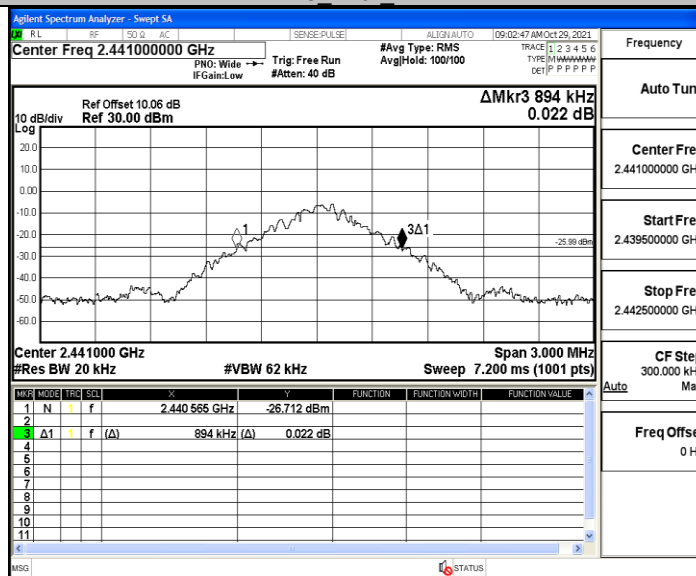
| TestMode | Antenna | Channel | 20db EBW[MHz] | FL[MHz]  | FH[MHz]  | Limit[MHz] | Verdict |
|----------|---------|---------|---------------|----------|----------|------------|---------|
| DH5      | Ant1    | 2402    | 0.891         | 2401.565 | 2402.456 | ---        | PASS    |
|          |         | 2441    | 0.894         | 2440.565 | 2441.459 | ---        | PASS    |
|          |         | 2480    | 0.936         | 2479.565 | 2480.501 | ---        | PASS    |
| 2DH5     | Ant1    | 2402    | 1.338         | 2401.358 | 2402.696 | ---        | PASS    |
|          |         | 2441    | 1.359         | 2440.352 | 2441.711 | ---        | PASS    |
|          |         | 2480    | 1.359         | 2479.352 | 2480.711 | ---        | PASS    |

## Test Graph

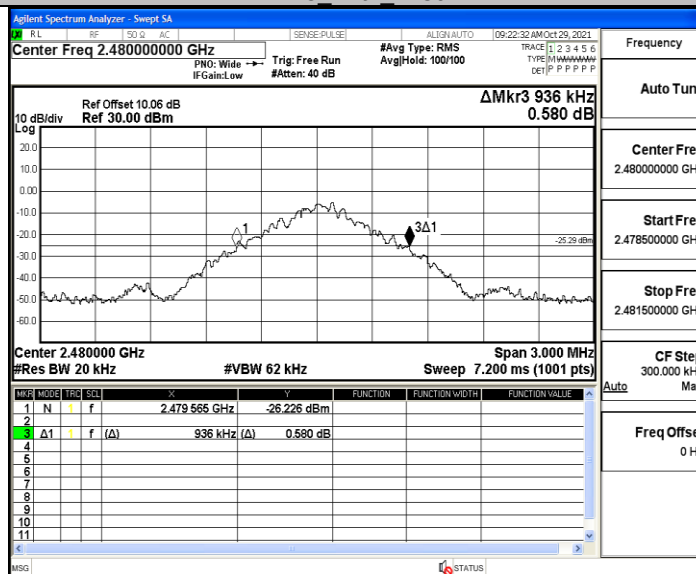
DH5\_Ant1\_2402



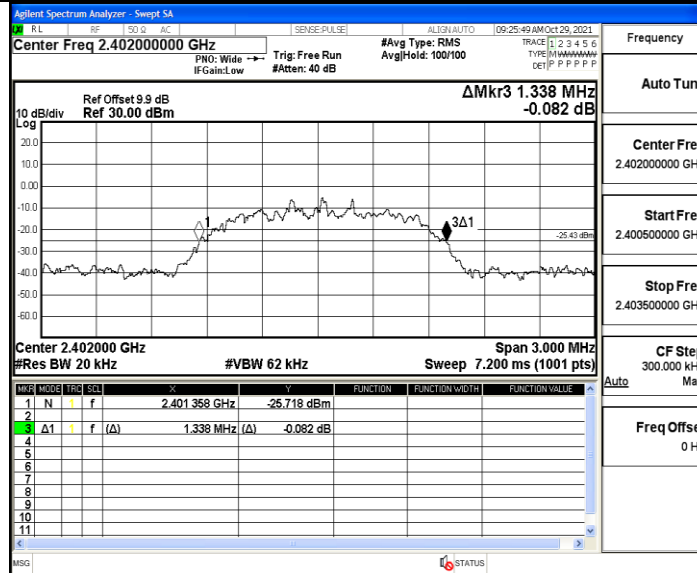
DH5\_Ant1\_2441



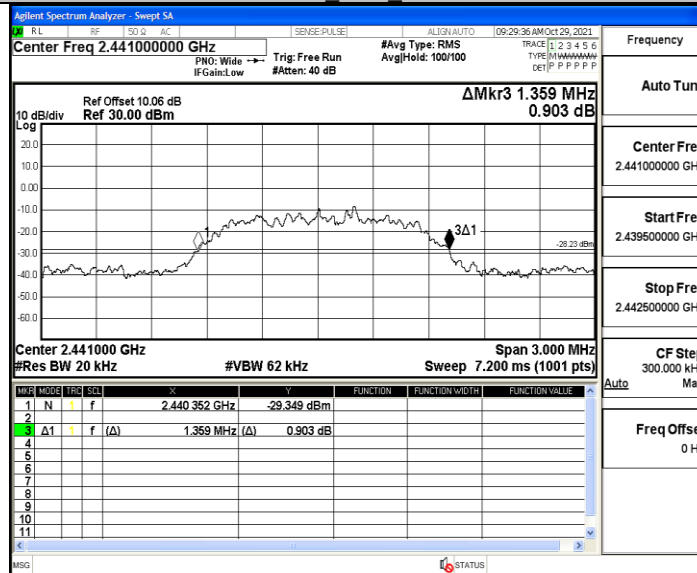
DH5\_Ant1\_2480



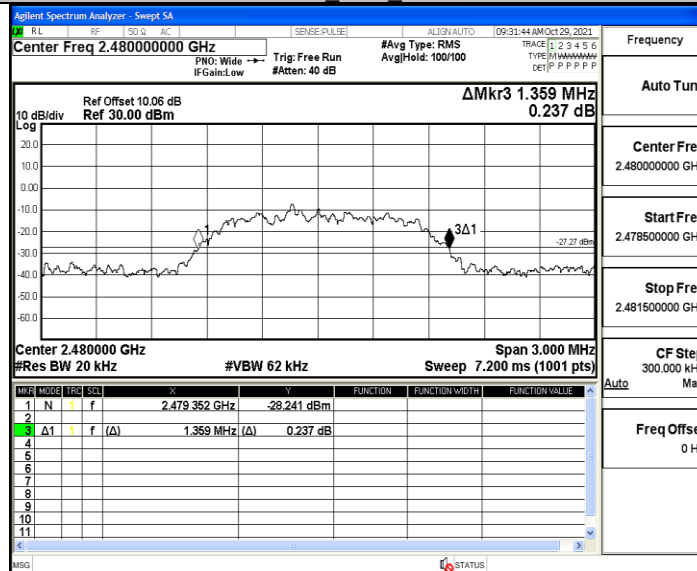
## 2DH5\_Ant1\_2402



## 2DH5\_Ant1\_2441



## 2DH5\_Ant1\_2480

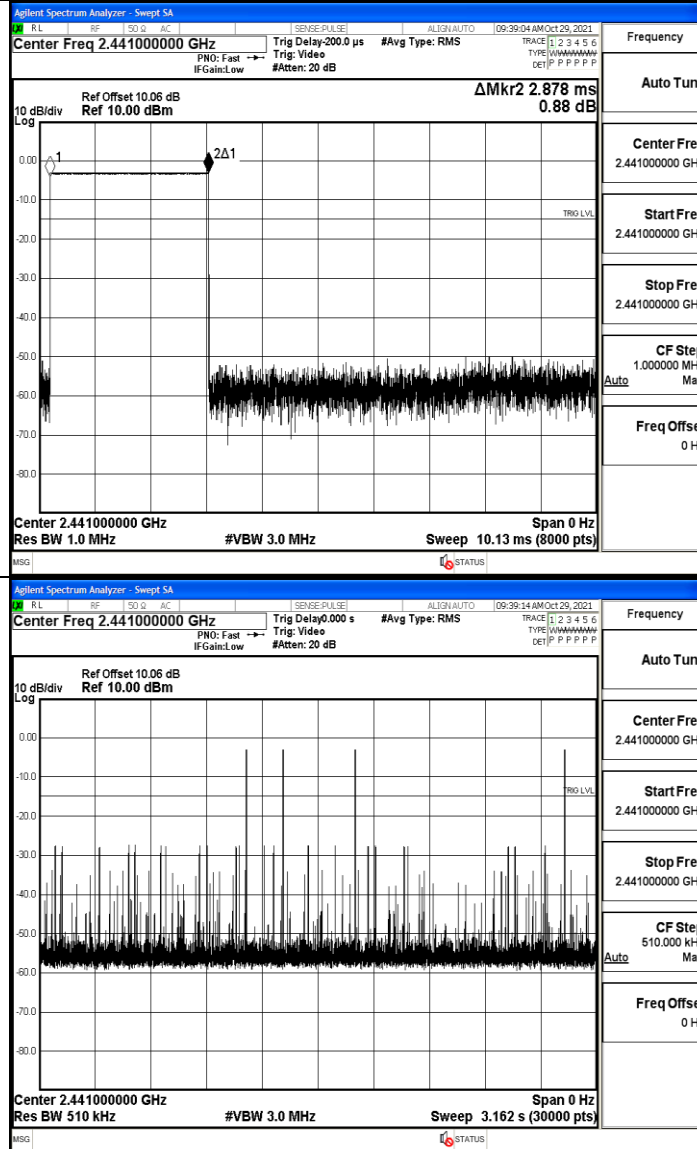


**A.2 Dwell Time**

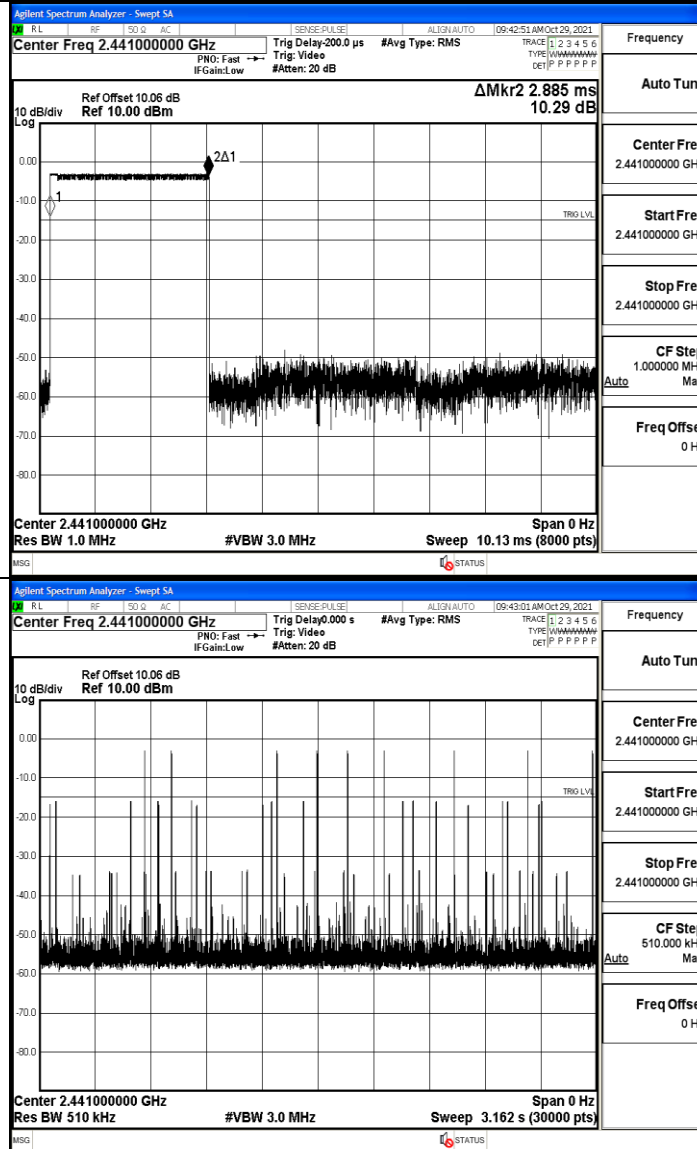
| TestMode | Antenna | Channel | BurstWidth<br>[ms] | TotalHops<br>[Num] | Result[s] | Limit[s] | Verdict |
|----------|---------|---------|--------------------|--------------------|-----------|----------|---------|
| DH5      | Ant1    | Hop     | 2.88               | 50                 | 0.144     | ≤0.4     | PASS    |
| 2DH5     | Ant1    | Hop     | 2.89               | 100                | 0.289     | ≤0.4     | PASS    |

## Test Graph

## DH5\_Ant1\_Hop



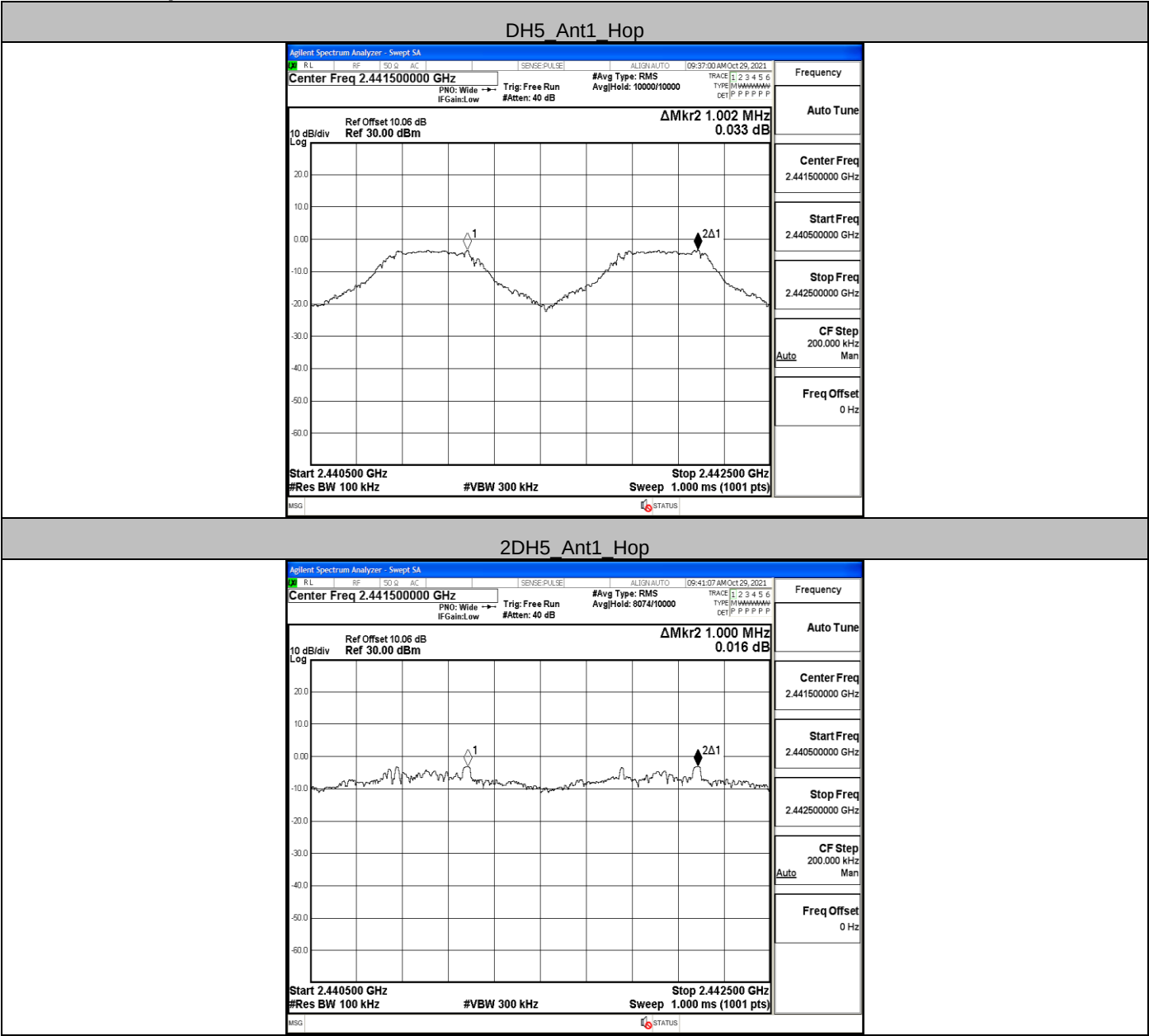
## 2DH5\_Ant1\_Hop



**A.3 Carrier Frequency Separation**

| TestMode | Antenna | Channel | Result[MHz] | Limit[MHz]   | Verdict |
|----------|---------|---------|-------------|--------------|---------|
| DH5      | Ant1    | Hop     | 1.002       | $\geq 0.936$ | PASS    |
| 2DH5     | Ant1    | Hop     | 1.000       | $\geq 0.906$ | PASS    |

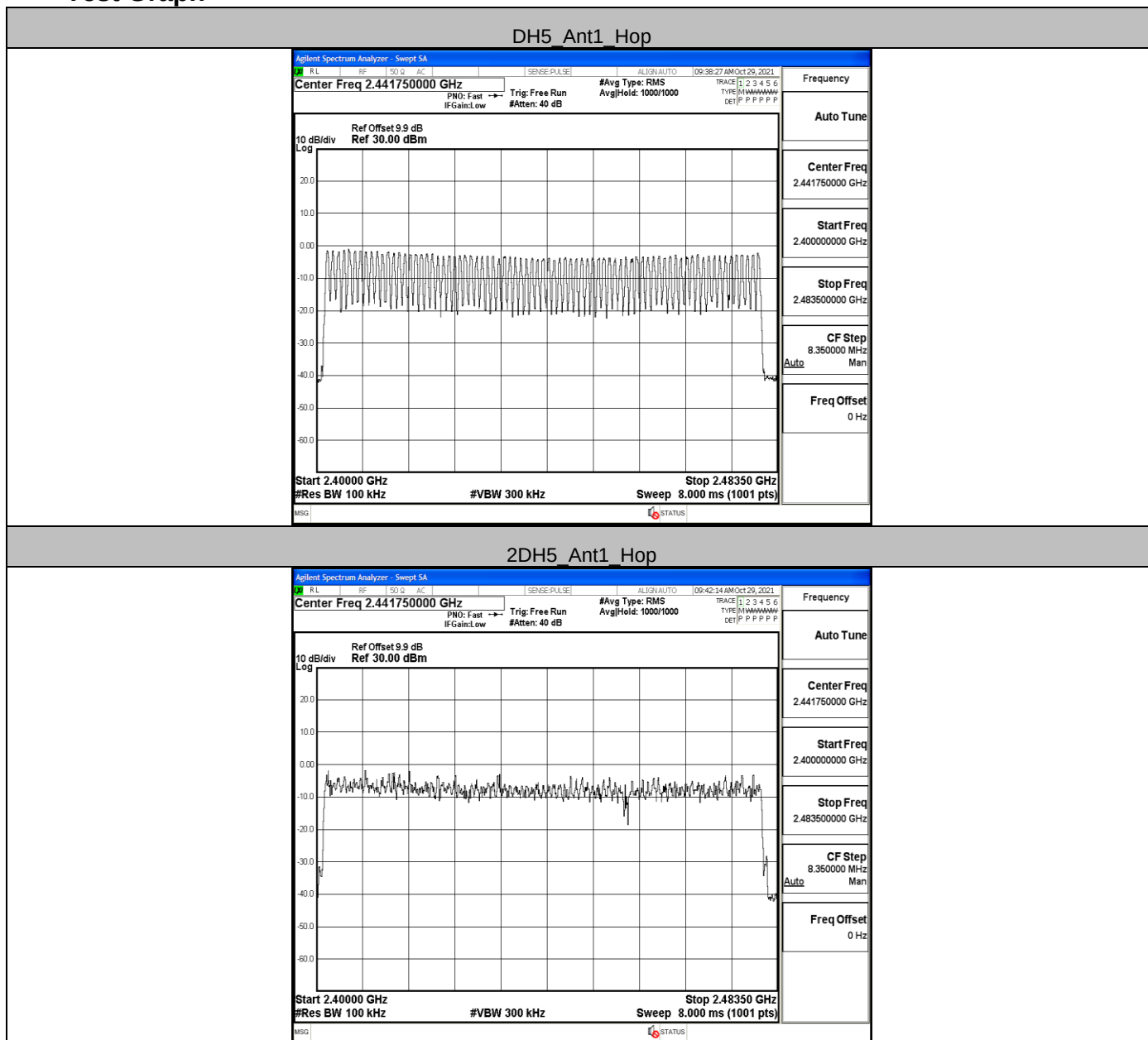
Test Graph



## 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    |

## Test Graph

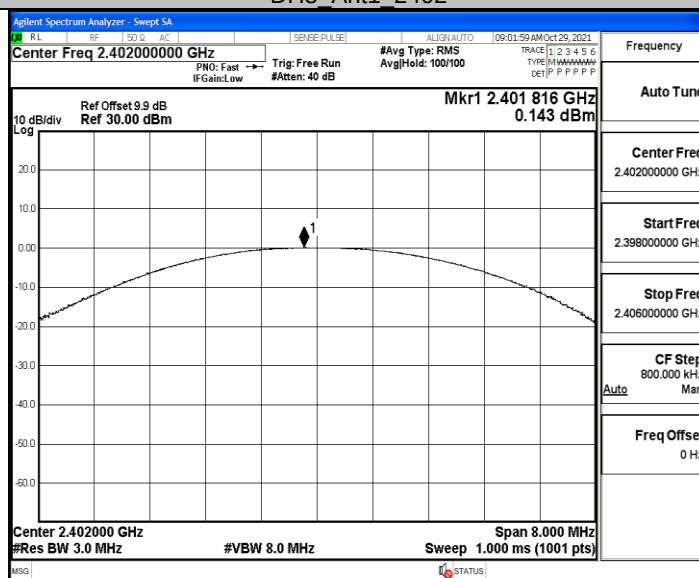


## A.5 Conducted Peak Output Power

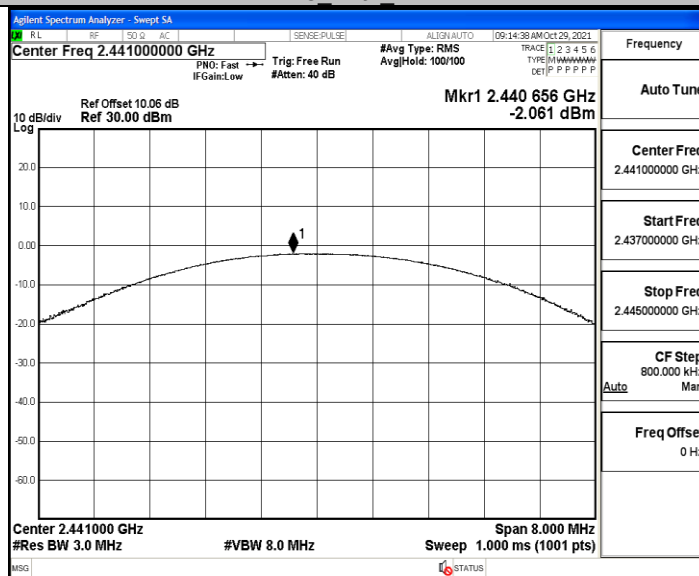
| TestMode | Antenna | Channel | Result[dBm] | Limit[dBm] | Verdict |
|----------|---------|---------|-------------|------------|---------|
| DH5      | Ant1    | 2402    | 0.14        | ≤20.97     | PASS    |
|          |         | 2441    | -2.06       | ≤20.97     | PASS    |
|          |         | 2480    | -1.61       | ≤20.97     | PASS    |
| 2DH5     | Ant1    | 2402    | -0.46       | ≤20.97     | PASS    |
|          |         | 2441    | -2.59       | ≤20.97     | PASS    |
|          |         | 2480    | -1.4        | ≤20.97     | PASS    |

## Test Graph

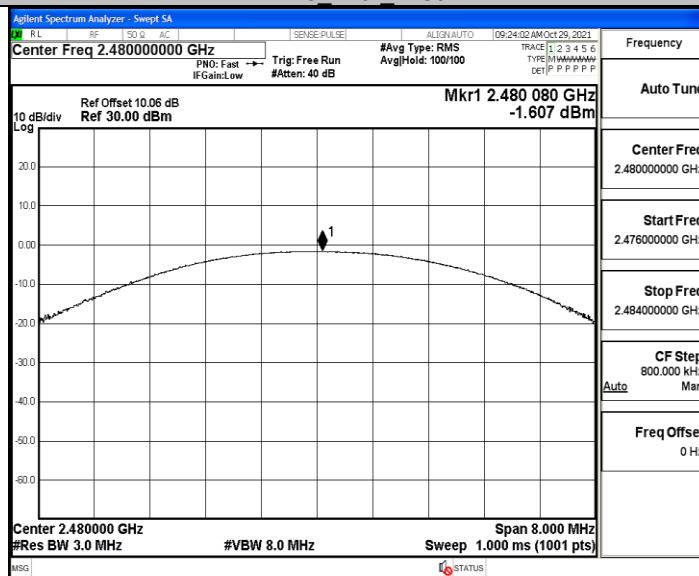
DH5\_Ant1\_2402



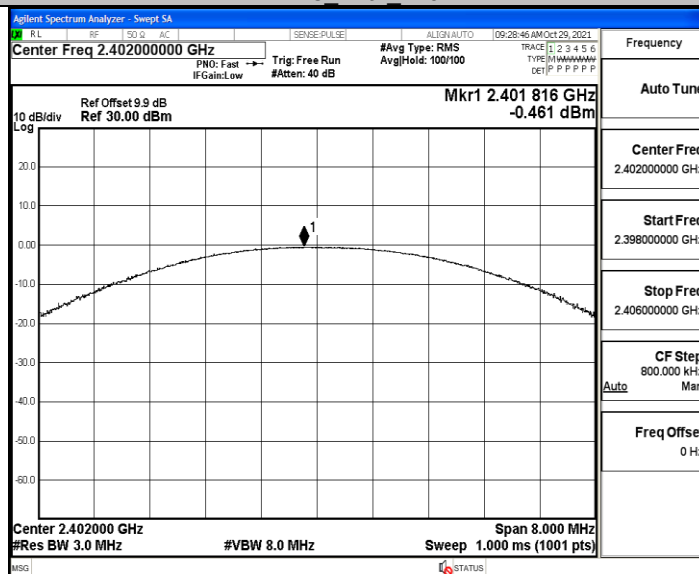
DH5\_Ant1\_2441



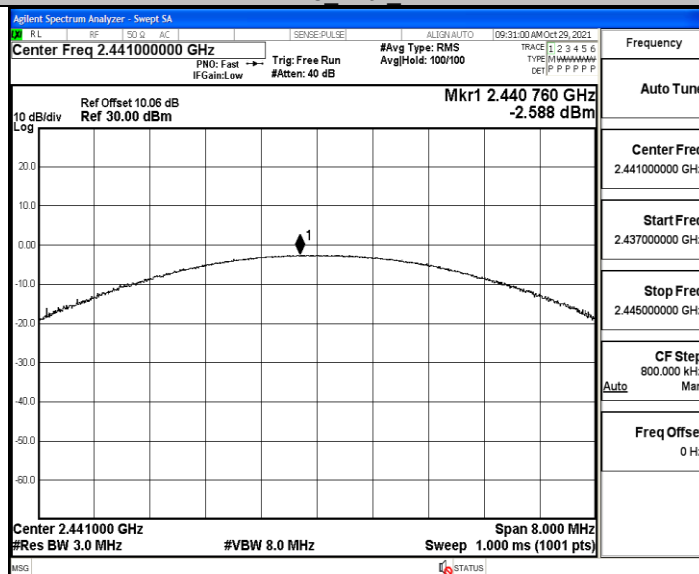
## DH5\_Ant1\_2480

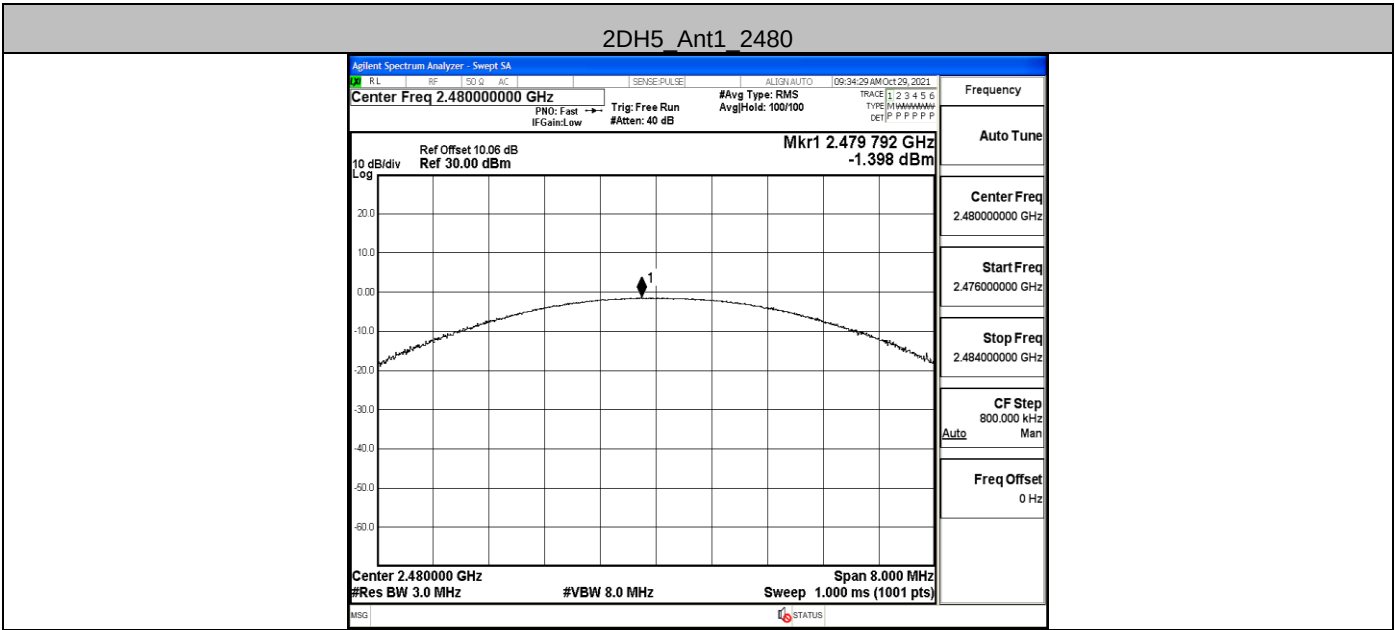


## 2DH5\_Ant1\_2402



## 2DH5\_Ant1\_2441



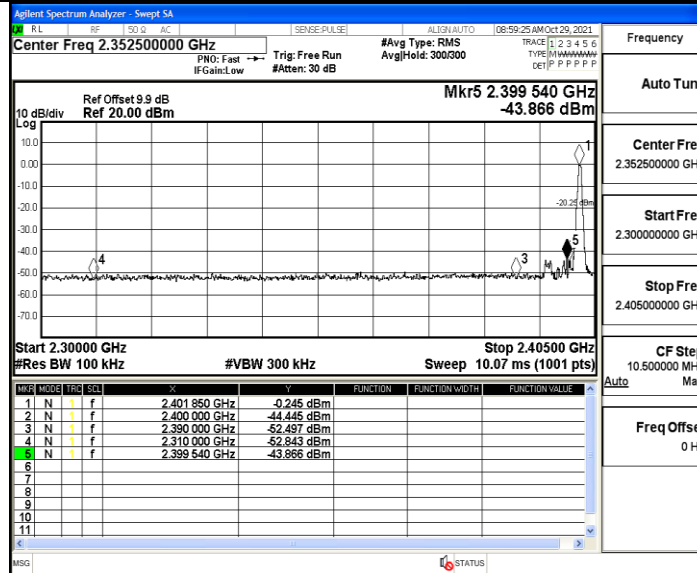


**A.6 Band-edge for RF Conducted Emissions**

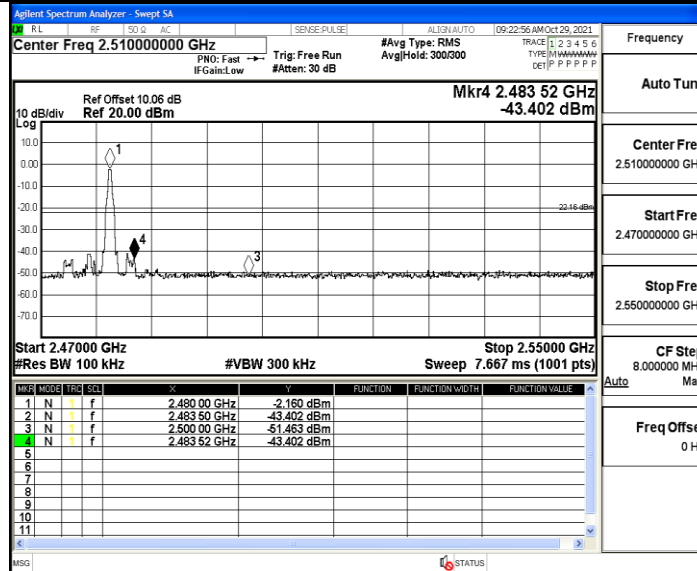
| TestMode | Antenna | ChName | Channel  | RefLevel<br>[dBm] | Result<br>[dBm] | Limit<br>[dBm] | Verdict |
|----------|---------|--------|----------|-------------------|-----------------|----------------|---------|
| DH5      | Ant1    | Low    | 2402     | -0.25             | -43.87          | $\leq -20.25$  | PASS    |
|          |         | High   | 2480     | -2.16             | -43.4           | $\leq -22.16$  | PASS    |
|          |         | Low    | Hop_2402 | -1.53             | -49.8           | $\leq -21.53$  | PASS    |
|          |         | High   | Hop_2480 | -2.27             | -47.72          | $\leq -22.27$  | PASS    |
| 2DH5     | Ant1    | Low    | 2402     | -1.63             | -44.2           | $\leq -21.63$  | PASS    |
|          |         | High   | 2480     | -1.98             | -43.85          | $\leq -21.98$  | PASS    |
|          |         | Low    | Hop_2402 | -1.75             | -49.68          | $\leq -21.75$  | PASS    |
|          |         | High   | Hop_2480 | -2.87             | -48.38          | $\leq -22.87$  | PASS    |

## Test Graph

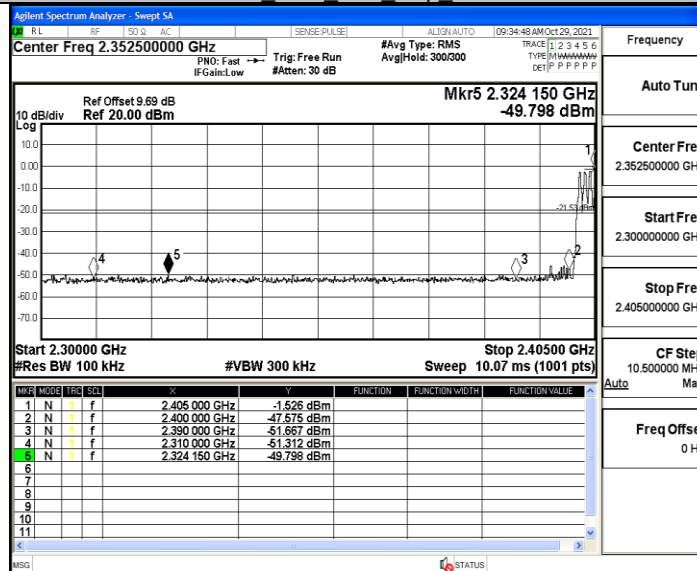
DH5\_Ant1\_Low\_2402



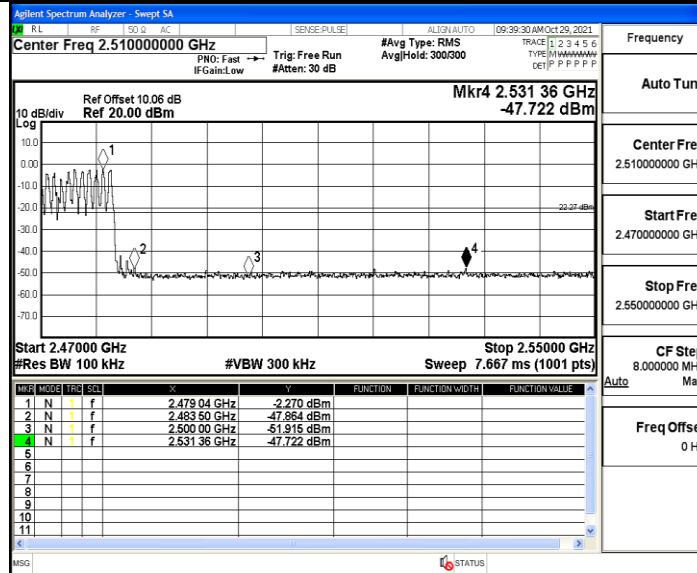
DH5\_Ant1\_High\_2480



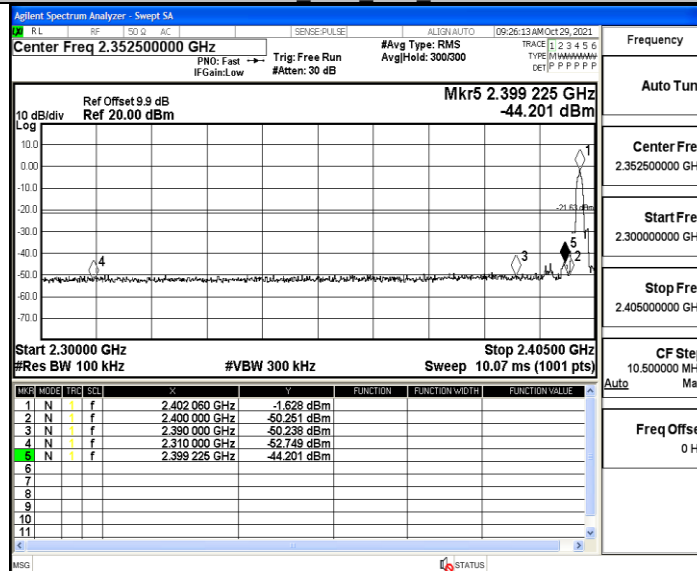
DH5\_Ant1\_Low\_Hop\_2402



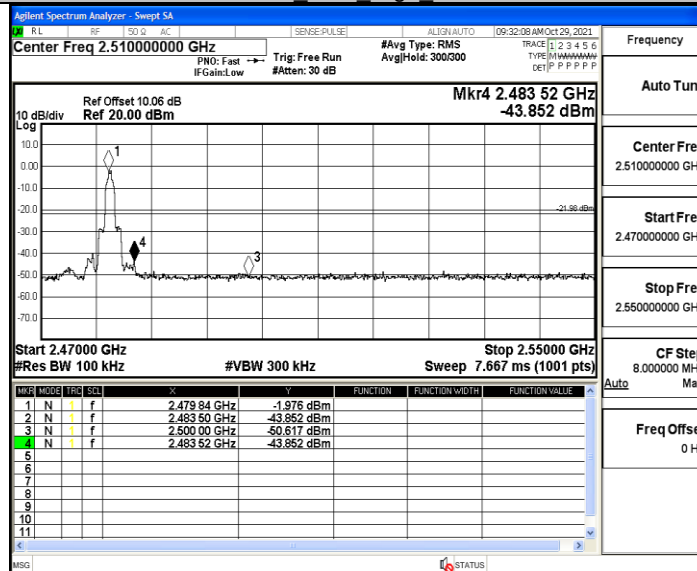
## DH5 Ant1\_High\_Hop\_2480



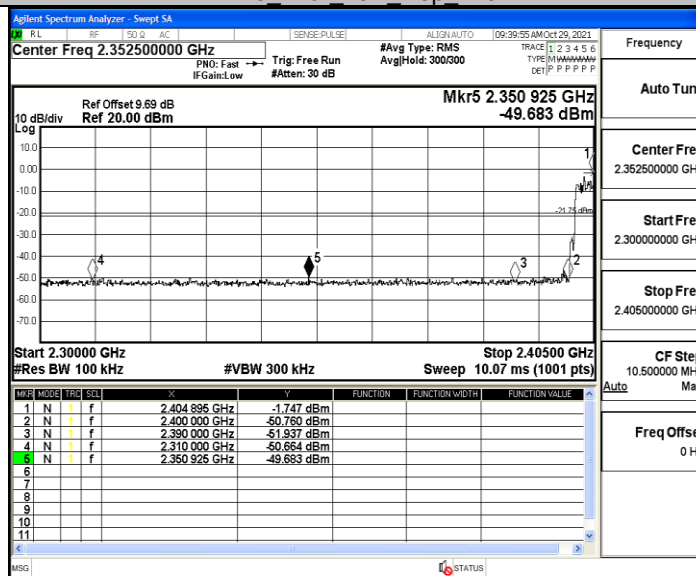
## 2DH5 Ant1\_Low\_2402



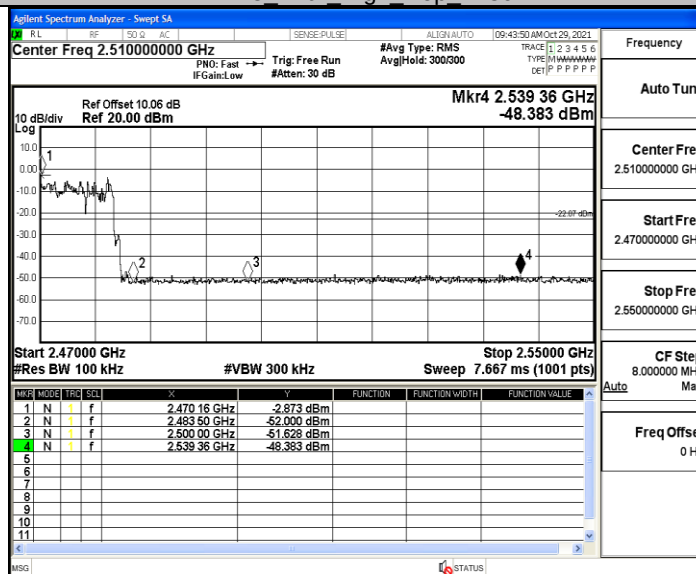
## 2DH5 Ant1\_High\_2480



## 2DH5 Ant1 Low Hop 2402

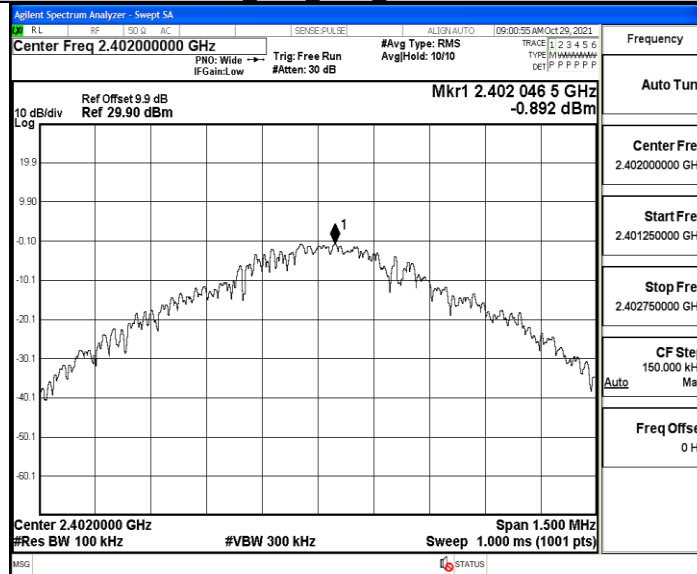


## 2DH5 Ant1 High Hop 2480

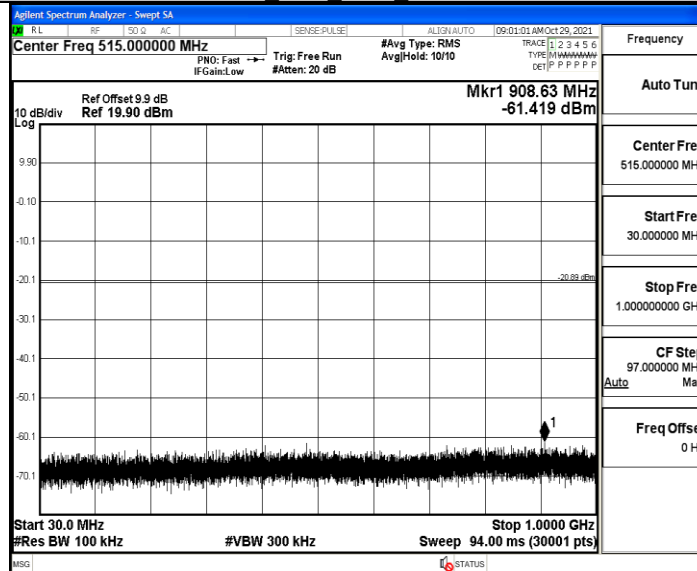


## A.7 RF Conducted Spurious Emissions Test Graph

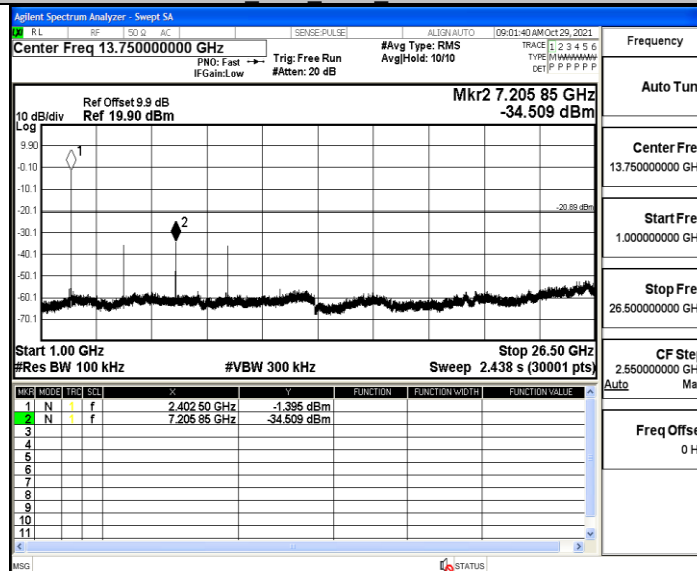
DH5\_Ant1\_2402\_0-Reference



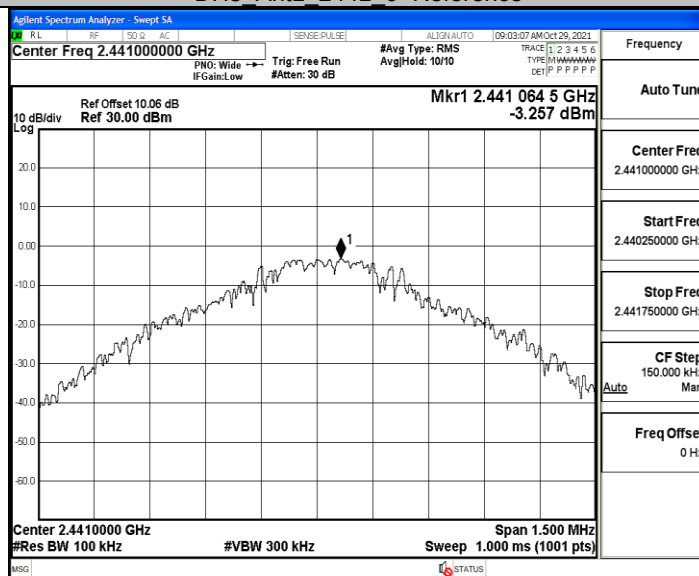
DH5\_Ant1\_2402\_30~1000



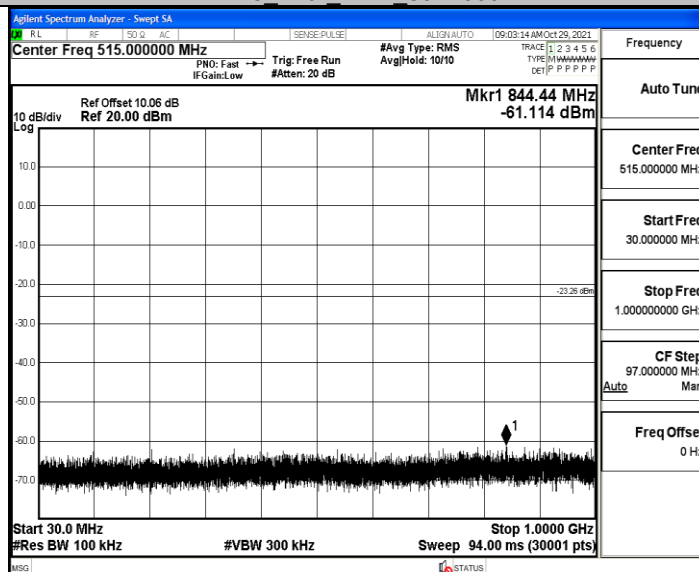
DH5\_Ant1\_2402\_1000~26500



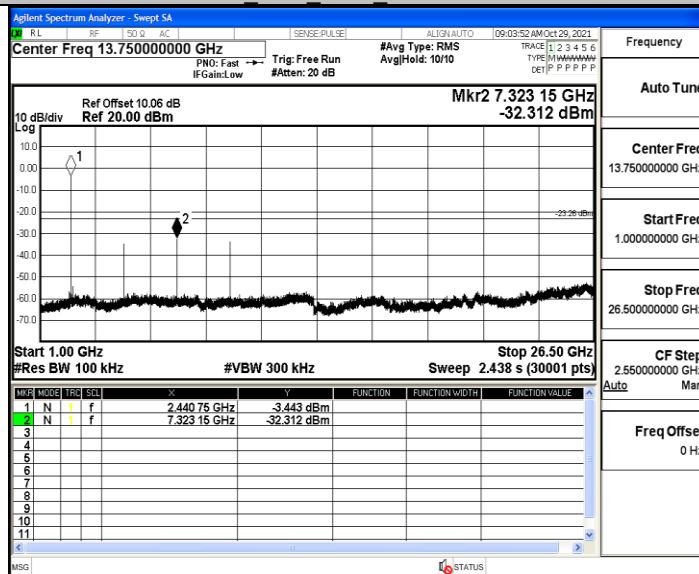
## DH5\_Ant1\_2441\_0-Reference



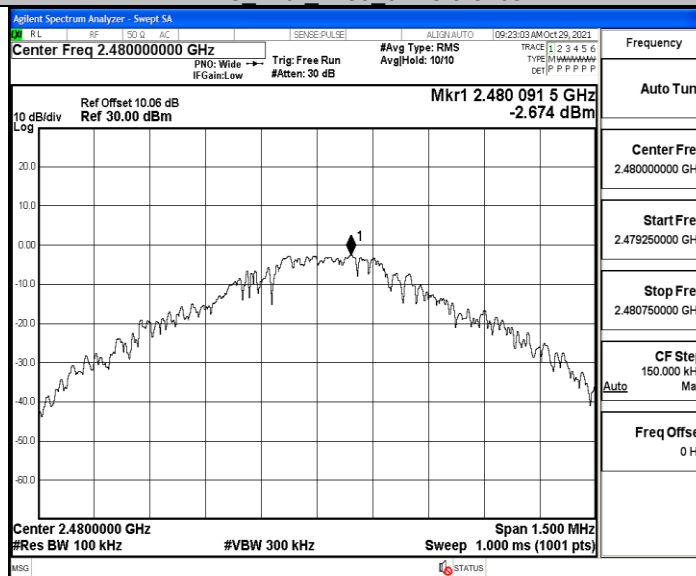
## DH5\_Ant1\_2441\_30~1000



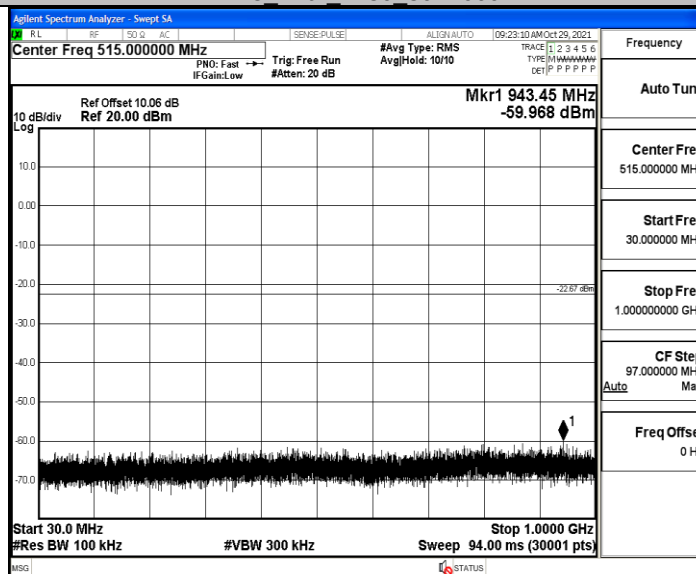
## DH5\_Ant1\_2441\_1000~26500



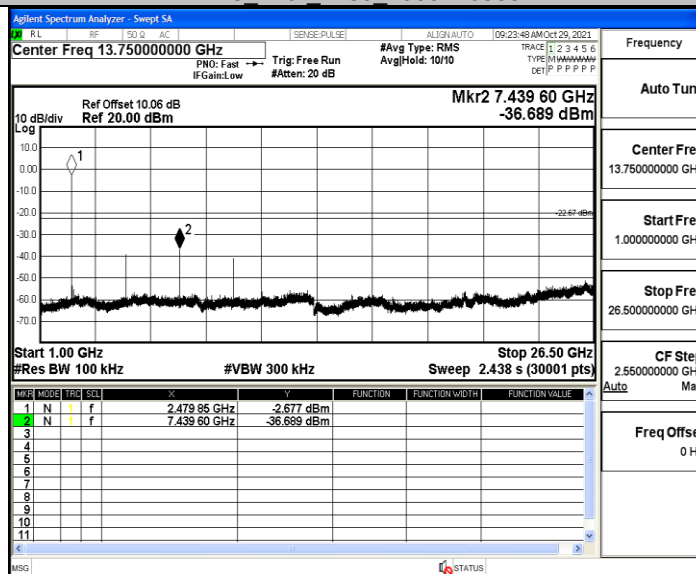
## DH5\_Ant1\_2480\_0-Reference



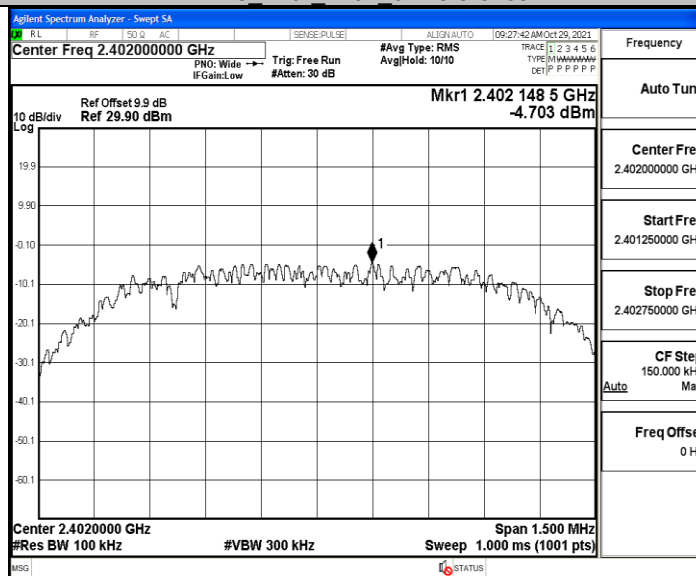
## DH5\_Ant1\_2480\_30~1000



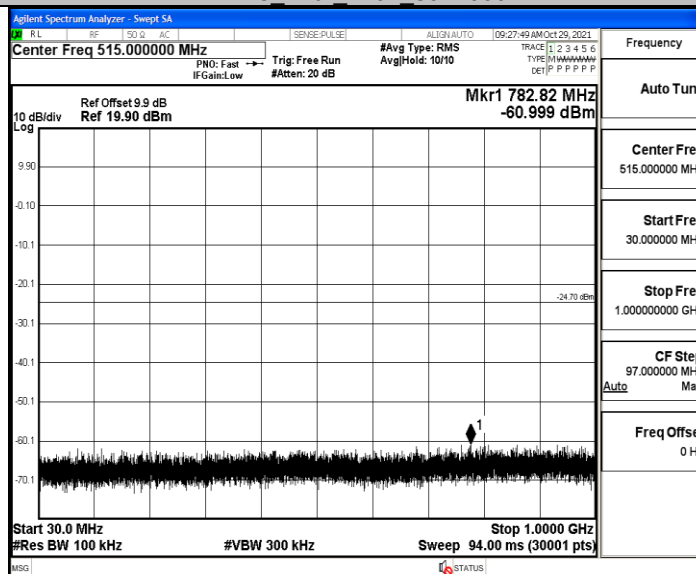
## DH5\_Ant1\_2480\_1000~26500



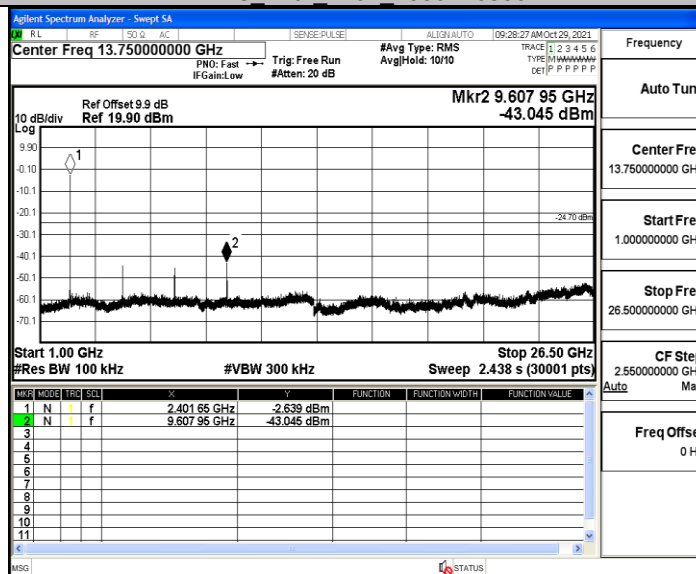
## 2DH5\_Ant1\_2402\_0~Reference



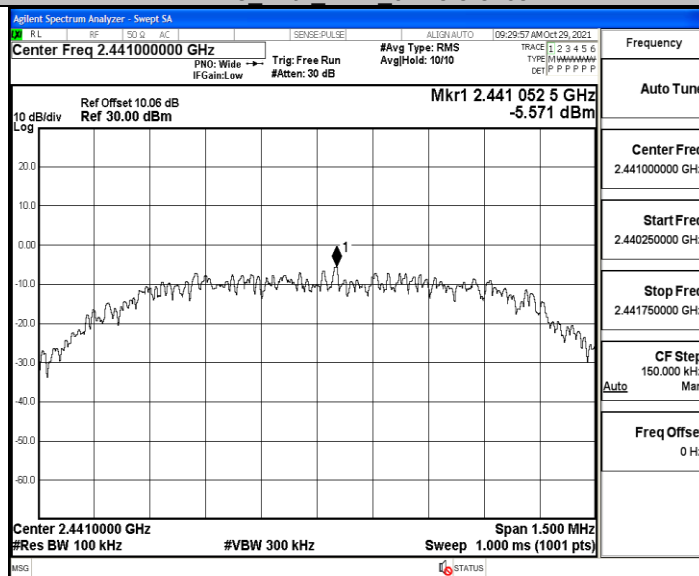
## 2DH5\_Ant1\_2402\_30~1000



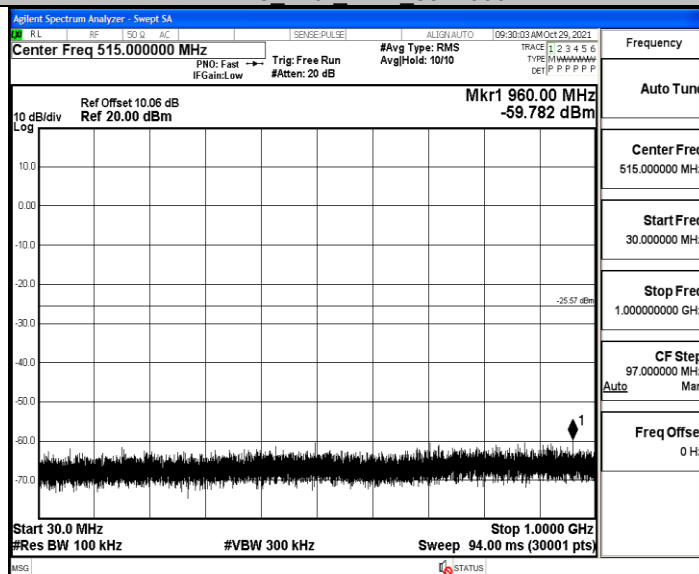
## 2DH5\_Ant1\_2402\_1000~26500



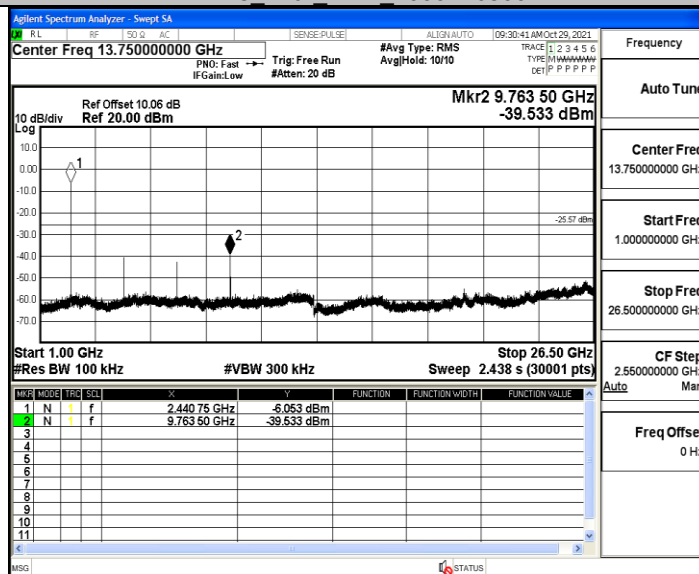
## 2DH5\_Ant1\_2441\_0~Reference



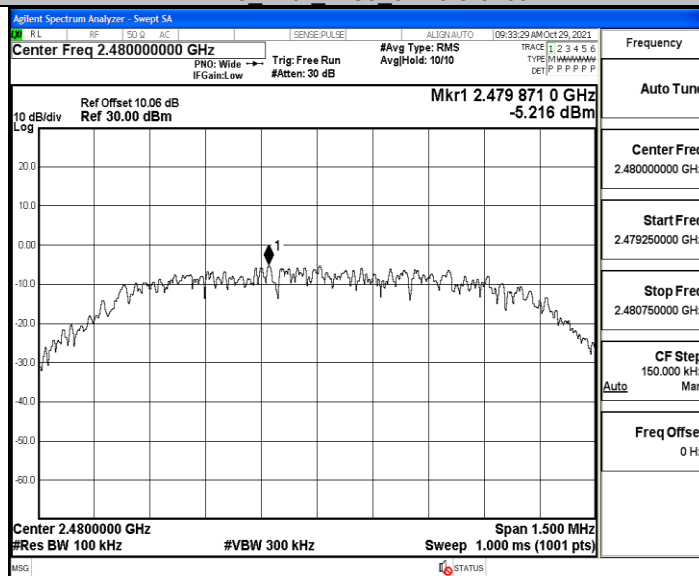
## 2DH5\_Ant1\_2441\_30~1000



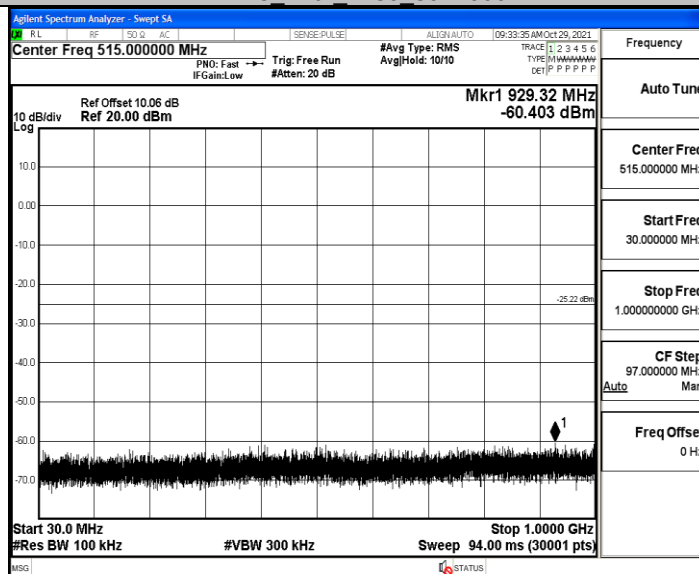
## 2DH5\_Ant1\_2441\_1000~26500



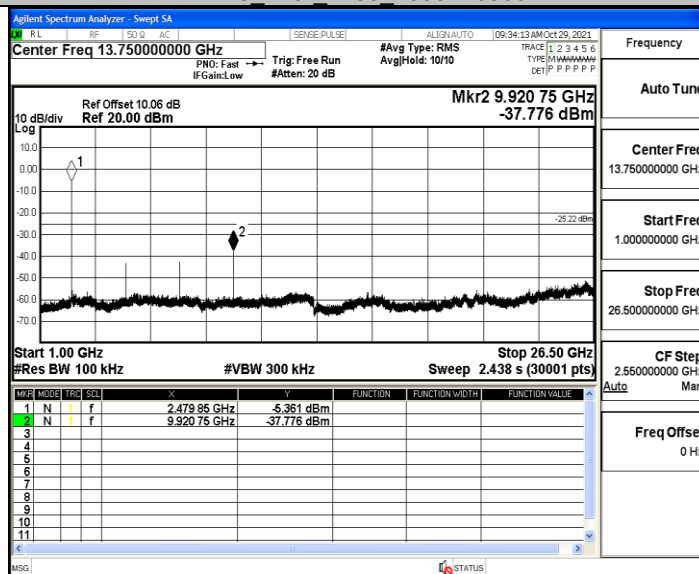
## 2DH5\_Ant1\_2480\_0~Reference



## 2DH5\_Ant1\_2480\_30~1000



## 2DH5\_Ant1\_2480\_1000~26500



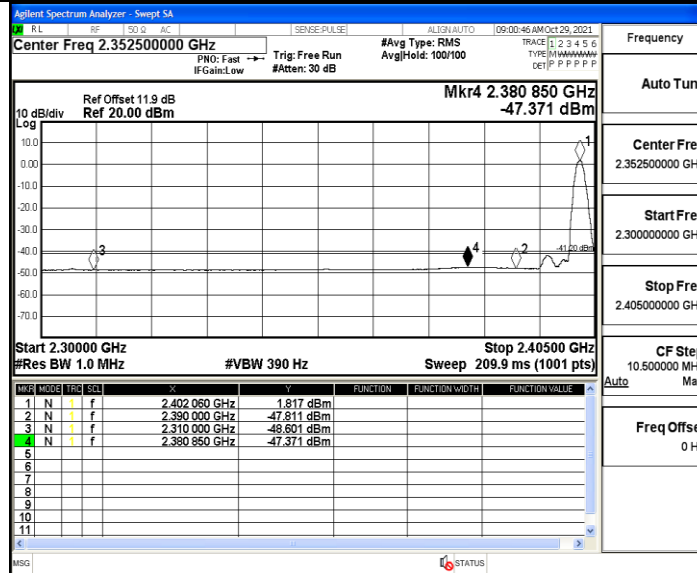
**A.8 Restrict-band band-edge measurements**

| TestMode | Antenna | ChName | Channel | Detector | Freq(MHz) | Result(dBm) | Limit(dBm) | Verdict |
|----------|---------|--------|---------|----------|-----------|-------------|------------|---------|
| DH5      | Ant1    | Low    | 2402    | AV       | 2310.000  | -48.6       | ≤-41.20    | PASS    |
|          |         |        |         | AV       | 2380.850  | -47.37      | ≤-41.20    | PASS    |
|          |         |        |         | AV       | 2390.000  | -47.81      | ≤-41.20    | PASS    |
|          |         |        |         | Peak     | 2310.000  | -41.11      | ≤-21.20    | PASS    |
|          |         |        |         | Peak     | 2384.210  | -38.36      | ≤-21.20    | PASS    |
|          |         |        |         | Peak     | 2390.000  | -40.51      | ≤-21.20    | PASS    |
|          |         | High   | 2480    | AV       | 2483.500  | -43.35      | ≤-41.20    | PASS    |
|          |         |        |         | AV       | 2483.520  | -43.35      | ≤-41.20    | PASS    |
|          |         |        |         | AV       | 2500.000  | -54.86      | ≤-41.20    | PASS    |
|          |         |        |         | Peak     | 2483.500  | -40         | ≤-21.20    | PASS    |
|          |         |        |         | Peak     | 2483.840  | -39.38      | ≤-21.20    | PASS    |
|          |         |        |         | Peak     | 2500.000  | -47.96      | ≤-21.20    | PASS    |
| 2DH5     | Ant1    | Low    | 2402    | AV       | 2310.000  | -58.54      | ≤-41.20    | PASS    |
|          |         |        |         | AV       | 2379.695  | -52.3       | ≤-41.20    | PASS    |
|          |         |        |         | AV       | 2390.000  | -54.07      | ≤-41.20    | PASS    |
|          |         |        |         | Peak     | 2310.000  | -51.95      | ≤-21.20    | PASS    |
|          |         |        |         | Peak     | 2379.905  | -42.6       | ≤-21.20    | PASS    |
|          |         |        |         | Peak     | 2390.000  | -46.82      | ≤-21.20    | PASS    |
|          |         | High   | 2480    | AV       | 2483.500  | -45.58      | ≤-41.20    | PASS    |
|          |         |        |         | AV       | 2483.520  | -45.58      | ≤-41.20    | PASS    |
|          |         |        |         | AV       | 2500.000  | -54.11      | ≤-41.20    | PASS    |
|          |         |        |         | Peak     | 2483.500  | -40.5       | ≤-21.20    | PASS    |
|          |         |        |         | Peak     | 2483.680  | -40.09      | ≤-21.20    | PASS    |
|          |         |        |         | Peak     | 2500.000  | -47.26      | ≤-21.20    | PASS    |

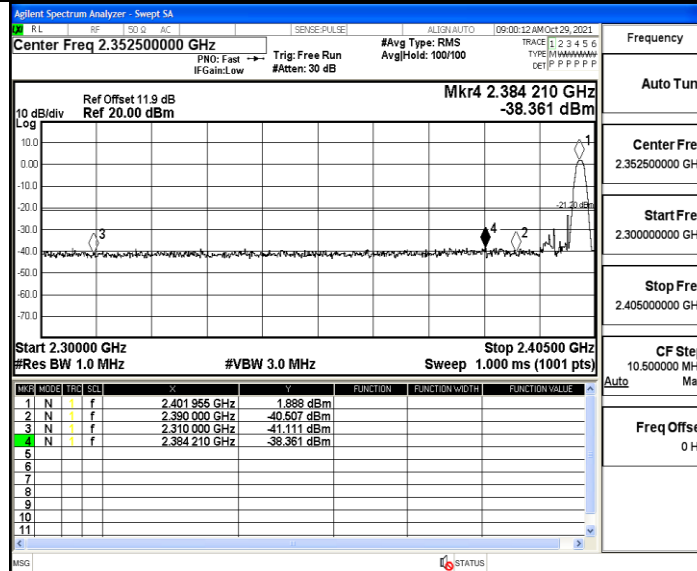
Note:

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.

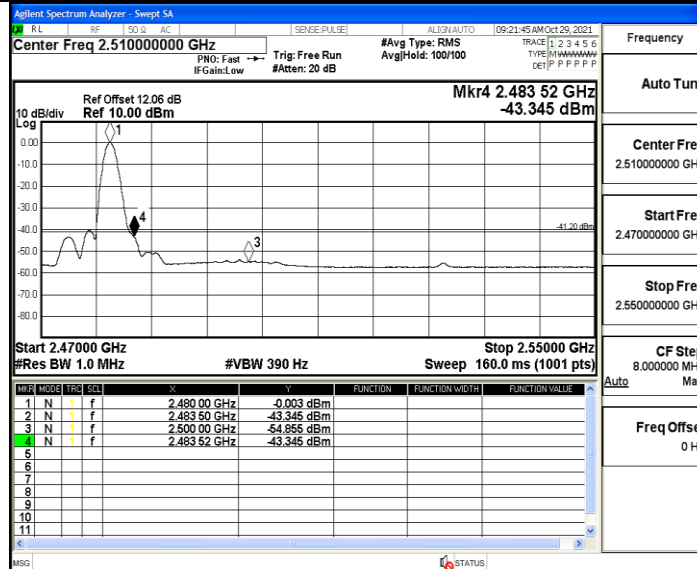
## DH5 Ant1 Low 2402 AV



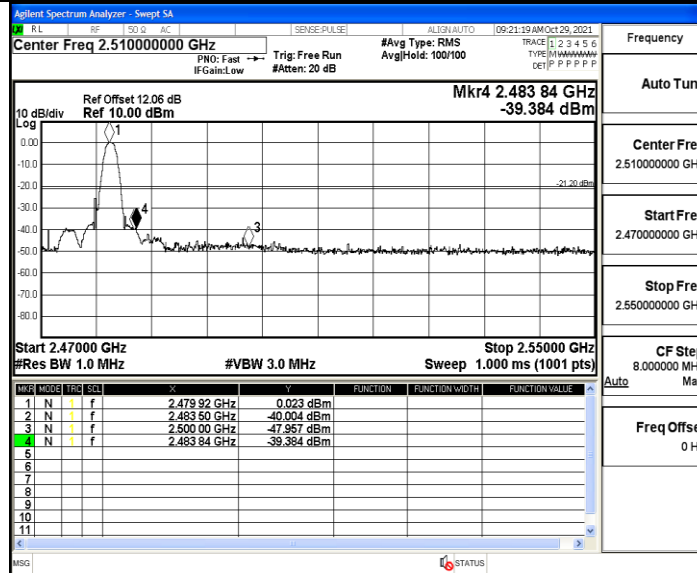
## DH5 Ant1 Low 2402 Peak



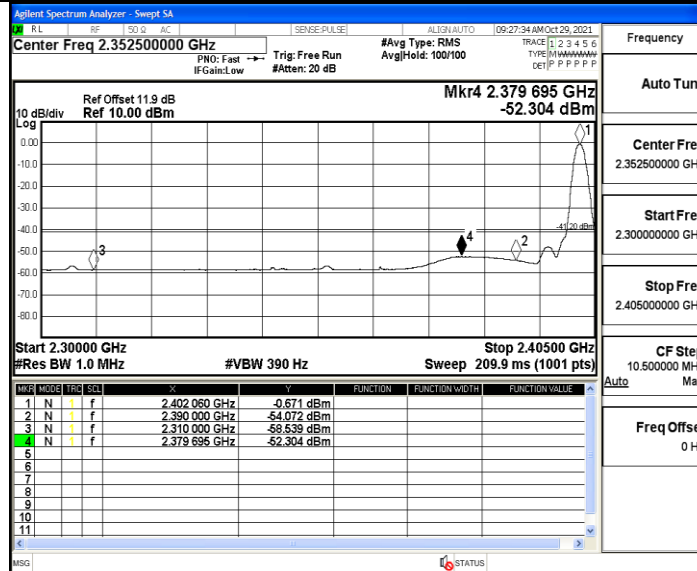
## DH5 Ant1 High 2480 AV



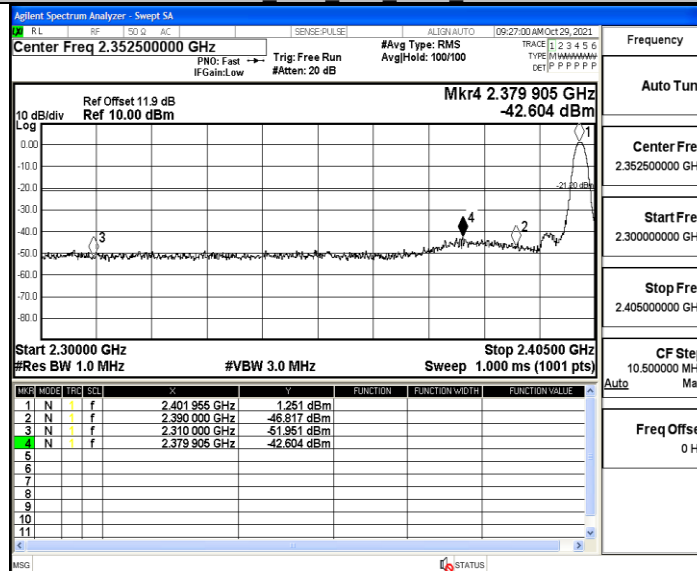
## DH5 Ant1 High 2480 Peak



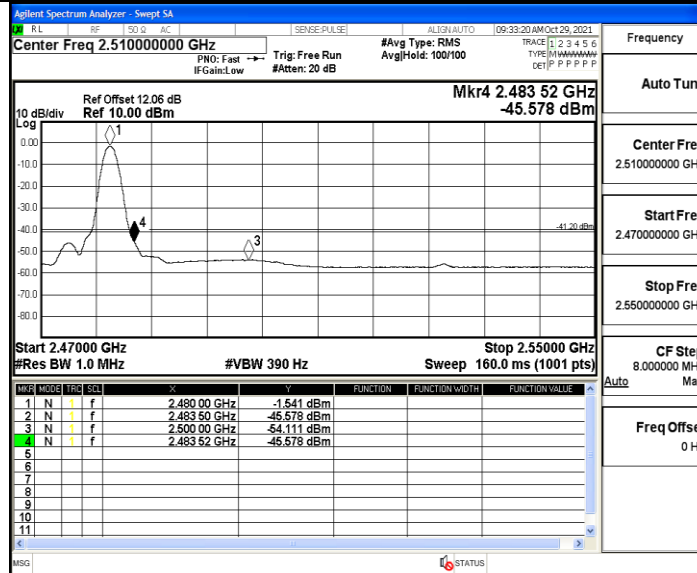
## 2DH5 Ant1 Low 2402 AV



## 2DH5 Ant1 Low 2402 Peak



## 2DH5 Ant1\_High\_2480\_AV



## 2DH5 Ant1\_High\_2480 Peak

