

## Annex for FCC BLE

Test Report No. : CTL2103245011-WF02

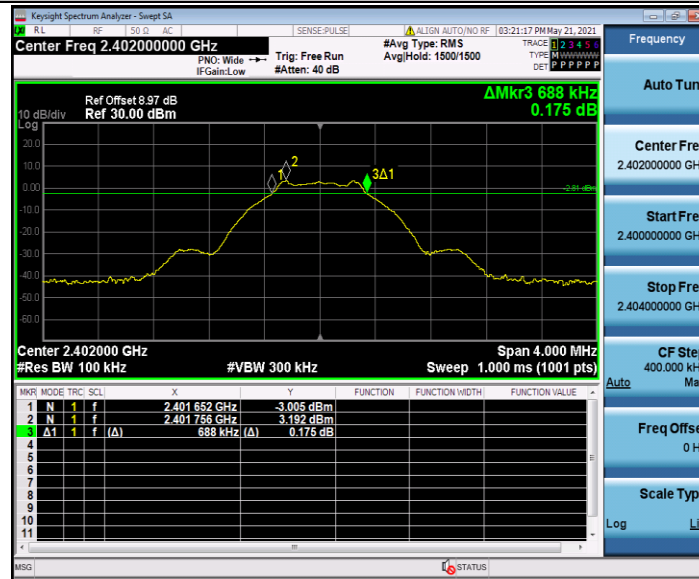
### Appendix A: DTS Bandwidth

#### Test Result

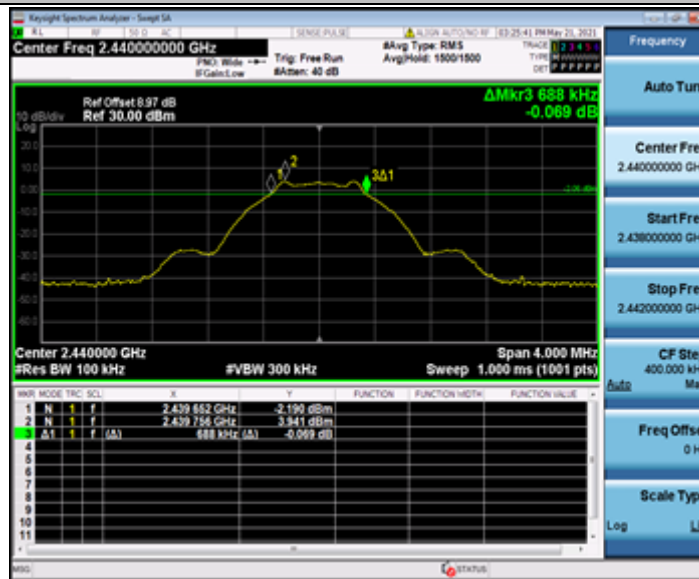
| TestMode  | Antenna | Channel | DTS BW<br>[MHz] | FL[MHz]  | FH[MHz]  | Limit[MHz] | Verdict |
|-----------|---------|---------|-----------------|----------|----------|------------|---------|
| BLE_BT4.0 | Ant1    | 2402    | 0.688           | 2401.652 | 2402.340 | 0.5        | PASS    |
|           |         | 2440    | 0.688           | 2439.652 | 2440.340 | 0.5        | PASS    |
|           |         | 2480    | 0.684           | 2479.652 | 2480.336 | 0.5        | PASS    |
| BLE_BT5.0 | Ant1    | 2402    | 1.260           | 2401.344 | 2402.604 | 0.5        | PASS    |
|           |         | 2440    | 1.256           | 2439.344 | 2440.600 | 0.5        | PASS    |
|           |         | 2480    | 1.260           | 2479.340 | 2480.600 | 0.5        | PASS    |

## Test Graphs

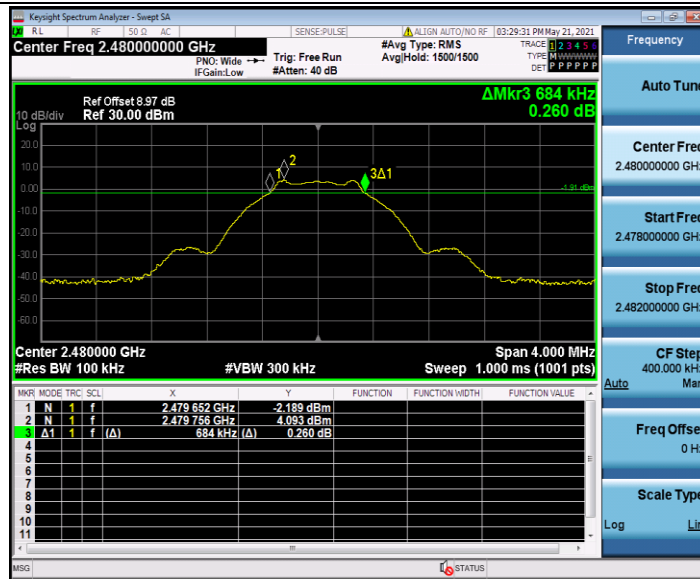
BLE\_BT4.0\_Ant1\_2402



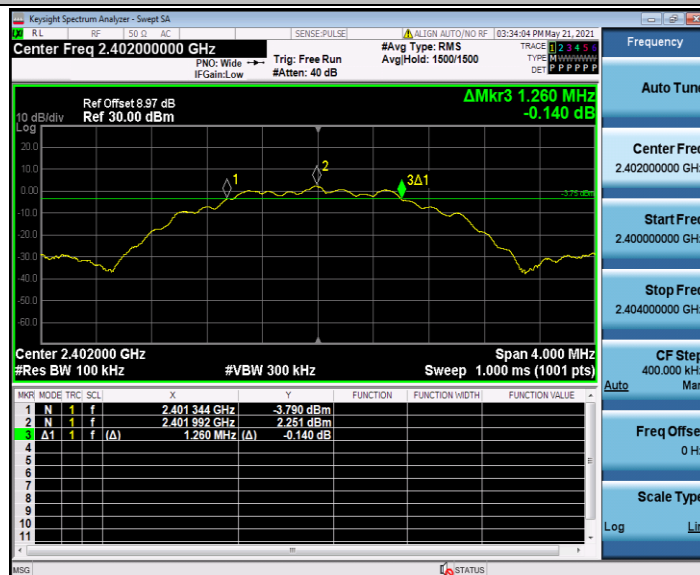
BLE\_BT4.0\_Ant1\_2440



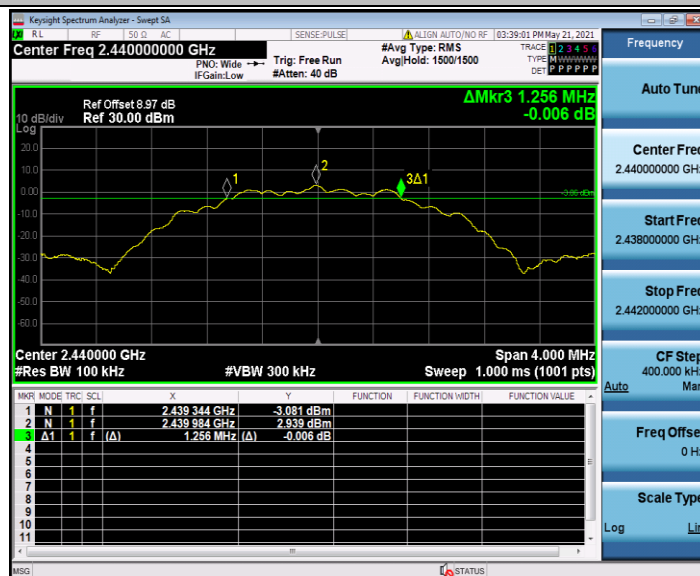
BLE\_BT4.0\_Ant1\_2480



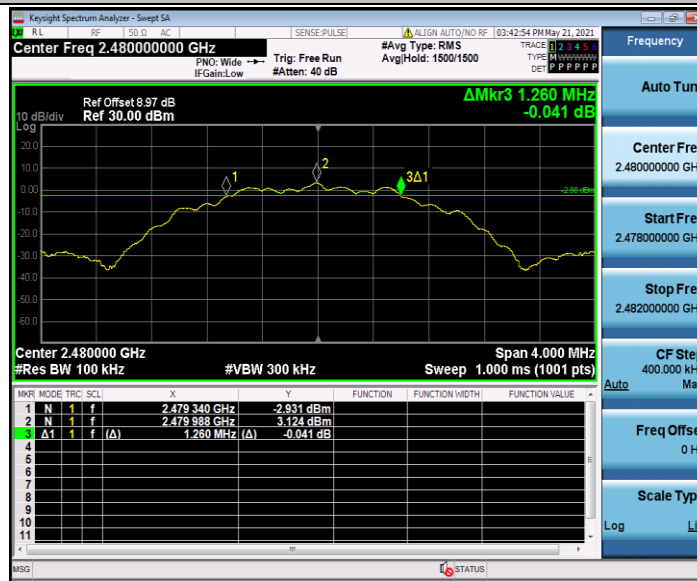
BLE\_BT5.0\_Ant1\_2402



BLE\_BT5.0\_Ant1\_2440



# BLE\_BT5.0\_Ant1\_2480

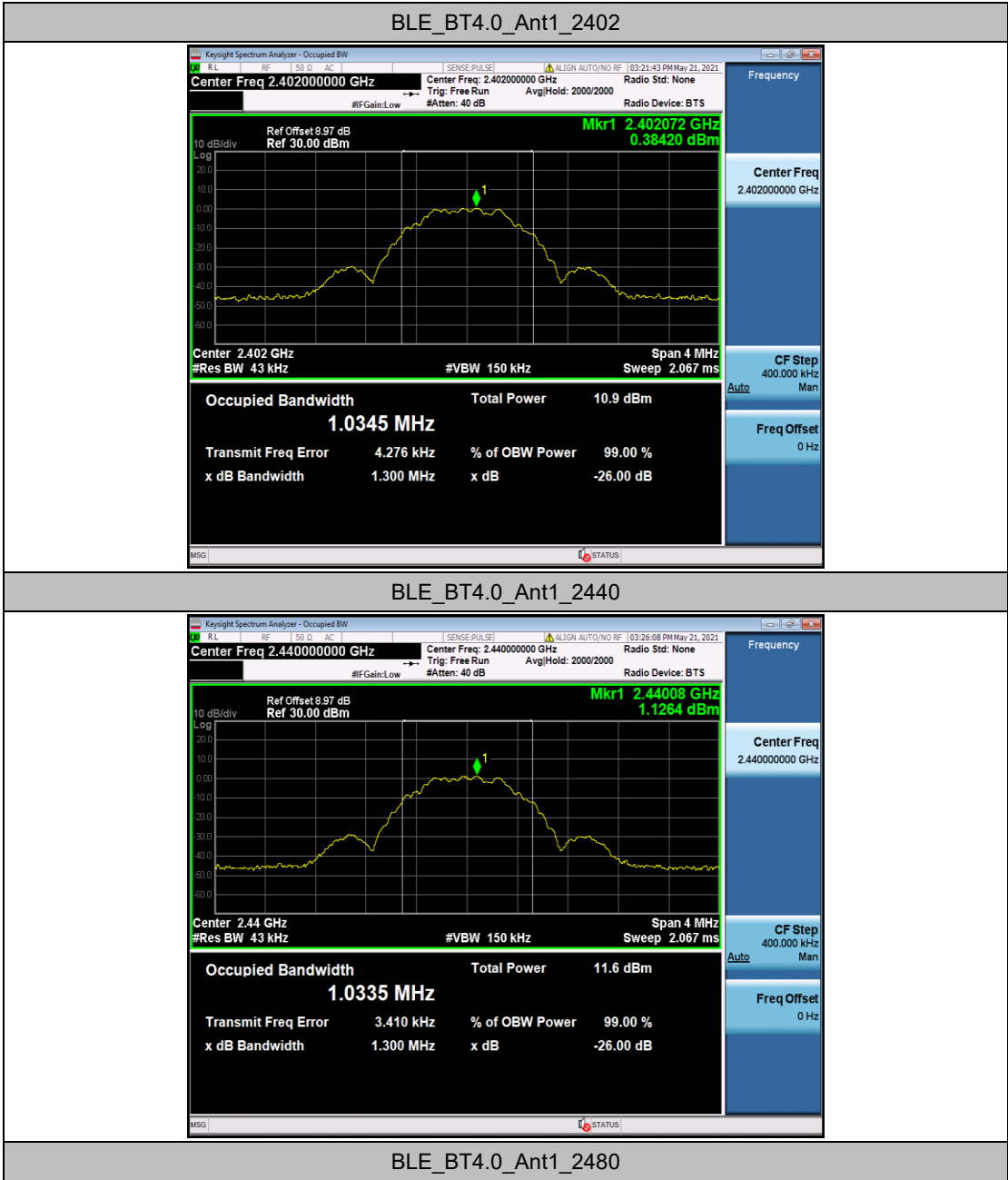


## Appendix B: Occupied Channel Bandwidth

### Test Result

| TestMode  | Antenna | Channel | OCB [MHz] | FL[MHz]  | FH[MHz]  | Limit[MHz] | Verdict |
|-----------|---------|---------|-----------|----------|----------|------------|---------|
| BLE_BT4.0 | Ant1    | 2402    | 1.0345    | 2401.487 | 2402.522 | ---        | PASS    |
|           |         | 2440    | 1.0335    | 2439.487 | 2440.520 | ---        | PASS    |
|           |         | 2480    | 1.0337    | 2479.486 | 2480.519 | ---        | PASS    |
| BLE_BT5.0 | Ant1    | 2402    | 2.0852    | 2400.976 | 2403.061 | ---        | PASS    |
|           |         | 2440    | 2.0840    | 2438.974 | 2441.058 | ---        | PASS    |
|           |         | 2480    | 2.0843    | 2478.972 | 2481.056 | ---        | PASS    |

Test Graphs

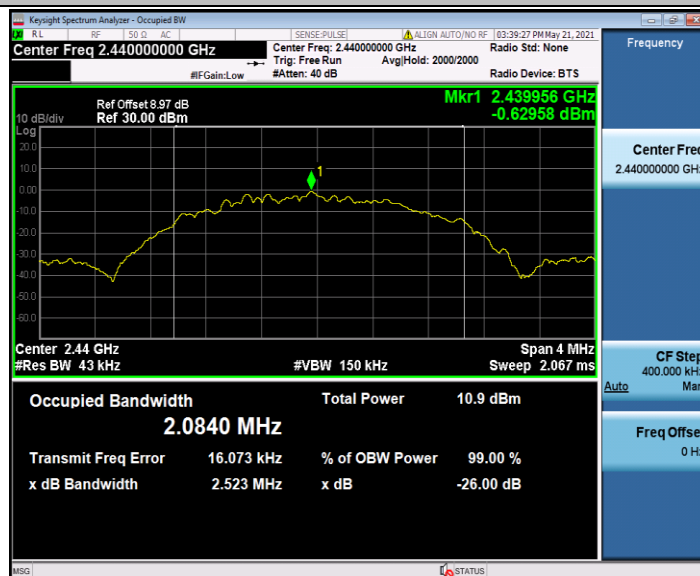




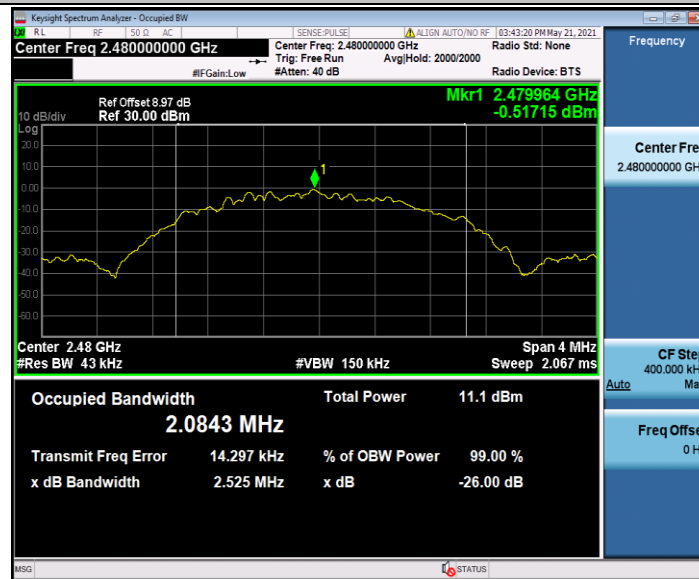
BLE\_BT5.0\_Ant1\_2402



BLE\_BT5.0\_Ant1\_2440



# BLE\_BT5.0\_Ant1\_2480



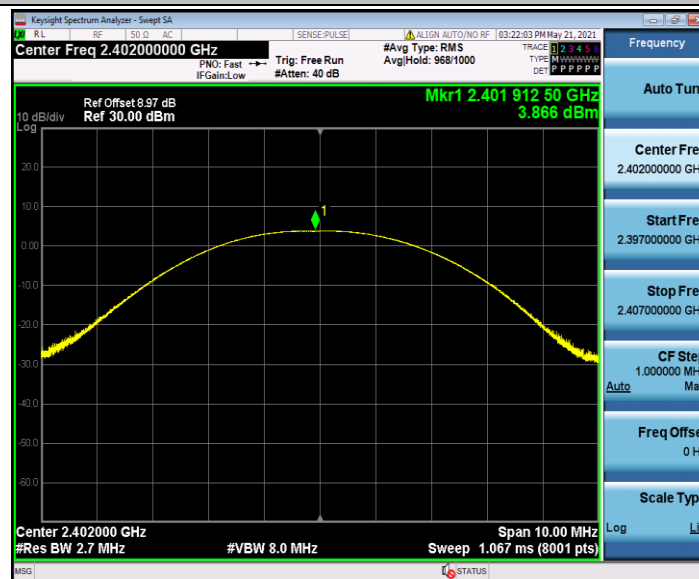
## Appendix C: Maximum conducted output power

### Test Result

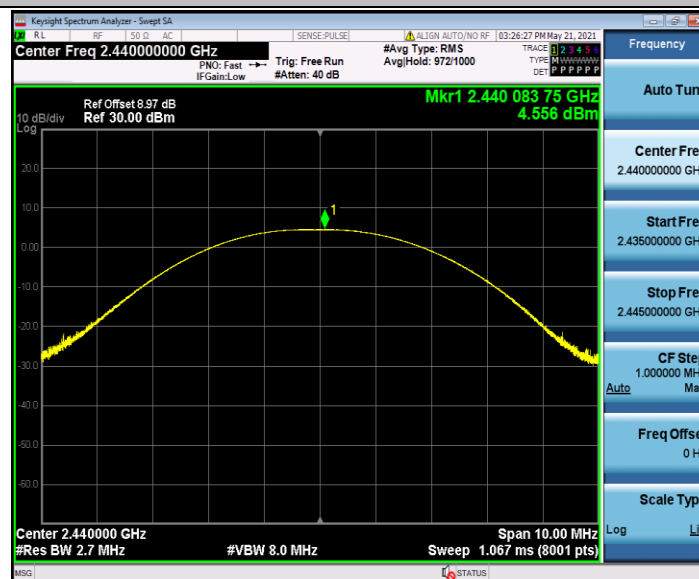
| TestMode  | Antenna | Channel | Result[dBm] | Limit[dBm] | Verdict |
|-----------|---------|---------|-------------|------------|---------|
| BLE_BT4.0 | Ant1    | 2402    | 3.87        | <=30       | PASS    |
|           |         | 2440    | 4.56        | <=30       | PASS    |
|           |         | 2480    | 4.72        | <=30       | PASS    |
| BLE_BT5.0 | Ant1    | 2402    | 3.88        | <=30       | PASS    |
|           |         | 2440    | 4.58        | <=30       | PASS    |
|           |         | 2480    | 4.76        | <=30       | PASS    |

## Test Graphs

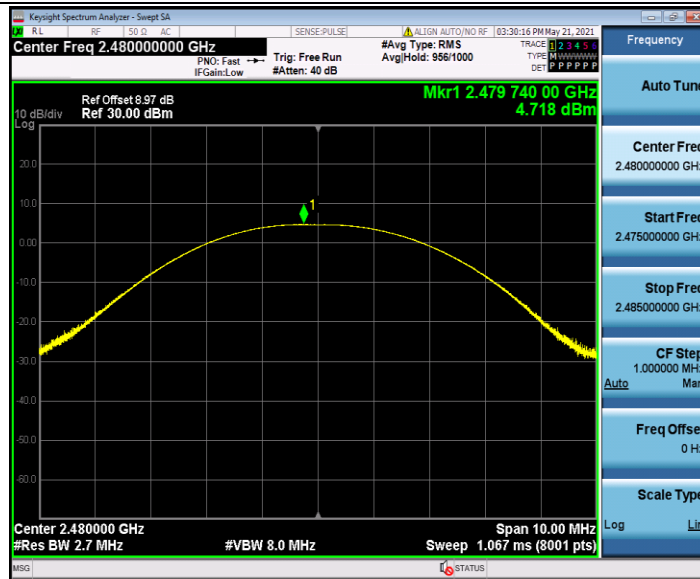
BLE\_BT4.0\_Ant1\_2402



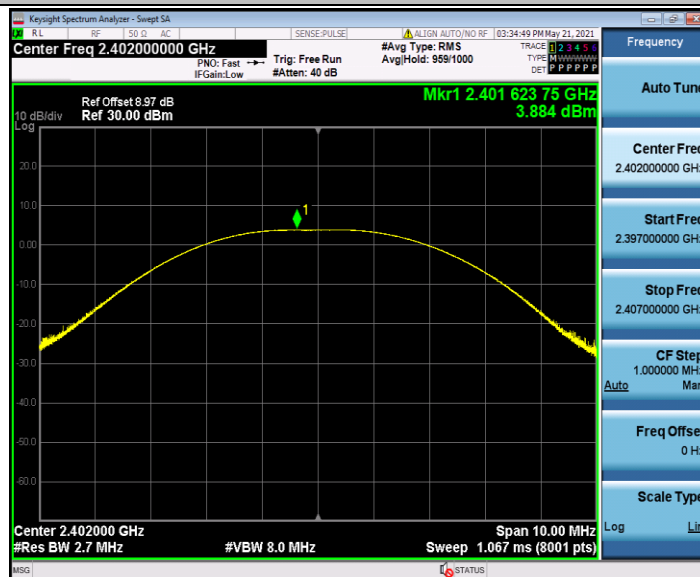
BLE\_BT4.0\_Ant1\_2440



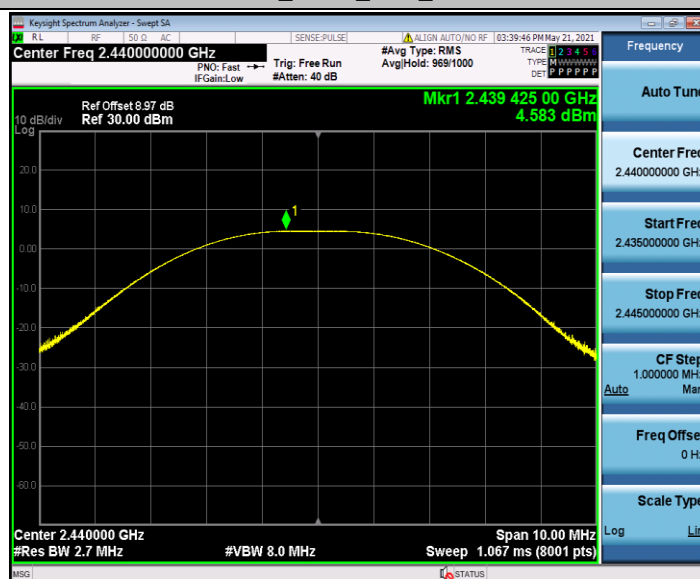
BLE\_BT4.0\_Ant1\_2480



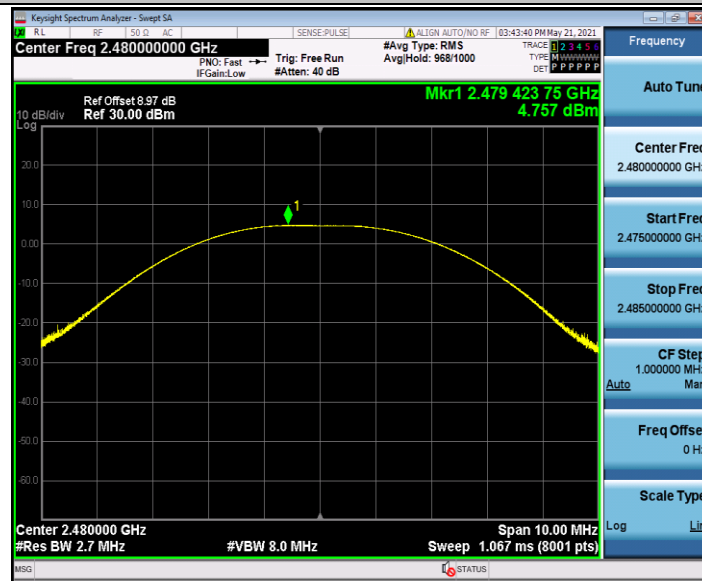
BLE\_BT5.0\_Ant1\_2402



BLE\_BT5.0\_Ant1\_2440



# BLE\_BT5.0\_Ant1\_2480



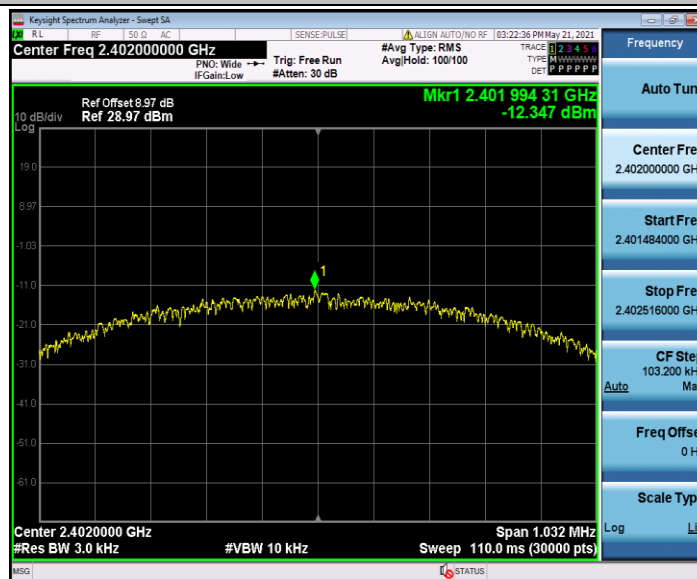
## Appendix D: Maximum power spectral density

### Test Result

| TestMode  | Antenna | Channel | Result[dBm/3-100kHz] | Limit[dBm/3kHz] | Verdict |
|-----------|---------|---------|----------------------|-----------------|---------|
| BLE_BT4.0 | Ant1    | 2402    | -12.35               | <=8             | PASS    |
|           |         | 2440    | -11.57               | <=8             | PASS    |
|           |         | 2480    | -11.35               | <=8             | PASS    |
| BLE_BT5.0 | Ant1    | 2402    | -15.55               | <=8             | PASS    |
|           |         | 2440    | -14.83               | <=8             | PASS    |
|           |         | 2480    | -14.62               | <=8             | PASS    |

## Test Graphs

BLE\_BT4.0\_Ant1\_2402



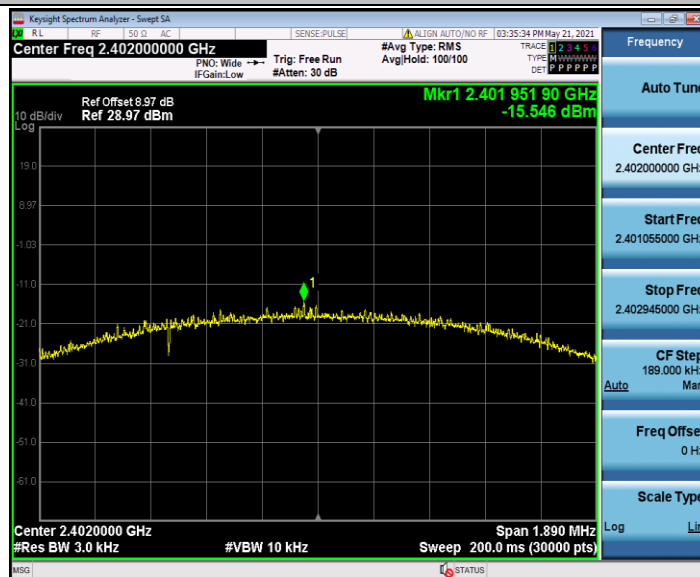
BLE\_BT4.0\_Ant1\_2440



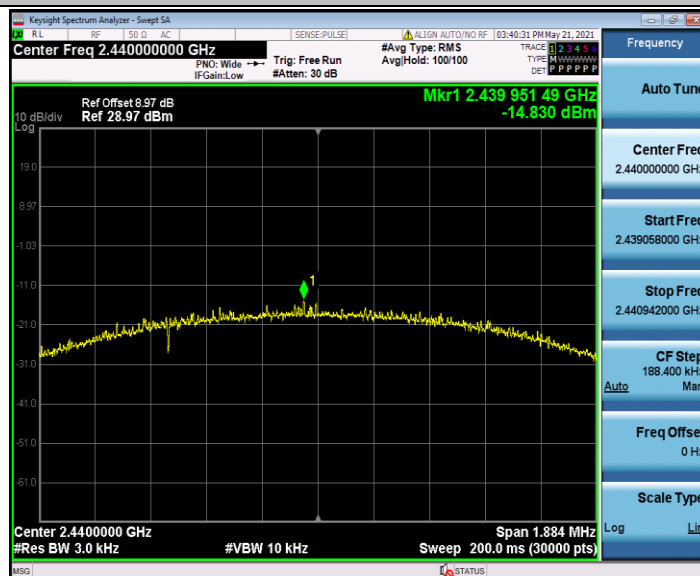
BLE\_BT4.0\_Ant1\_2480



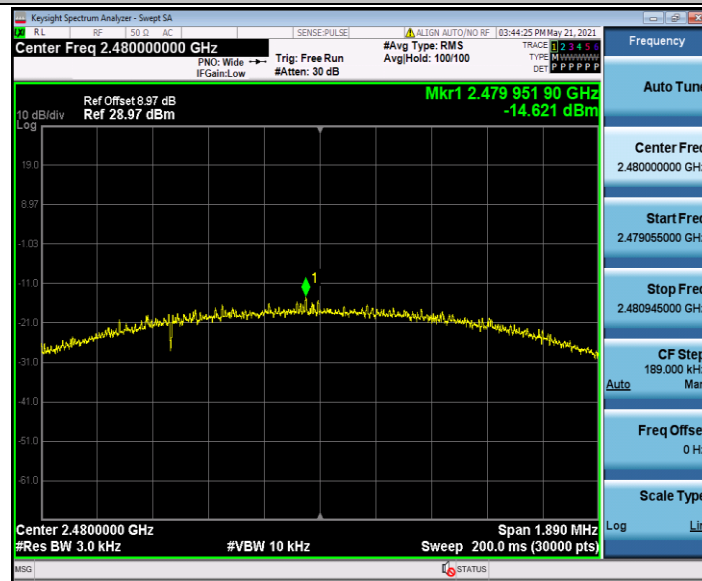
BLE\_BT5.0\_Ant1\_2402



BLE\_BT5.0\_Ant1\_2440



# BLE\_BT5.0\_Ant1\_2480



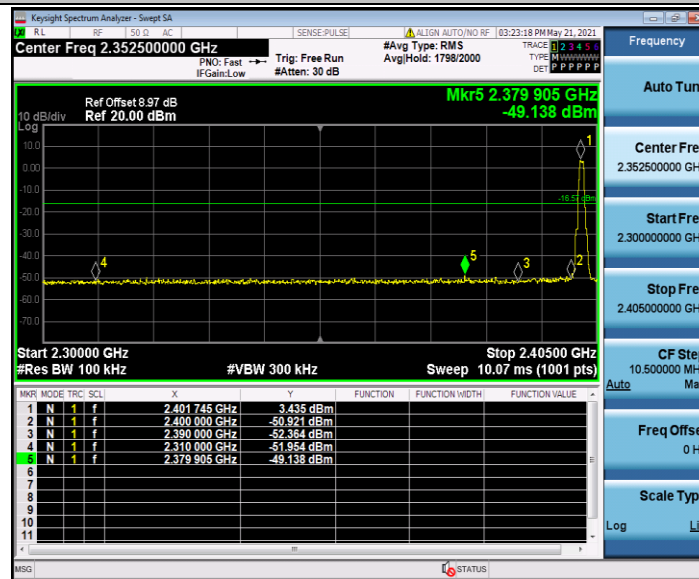
## Appendix E: Band edge measurements

### Test Result

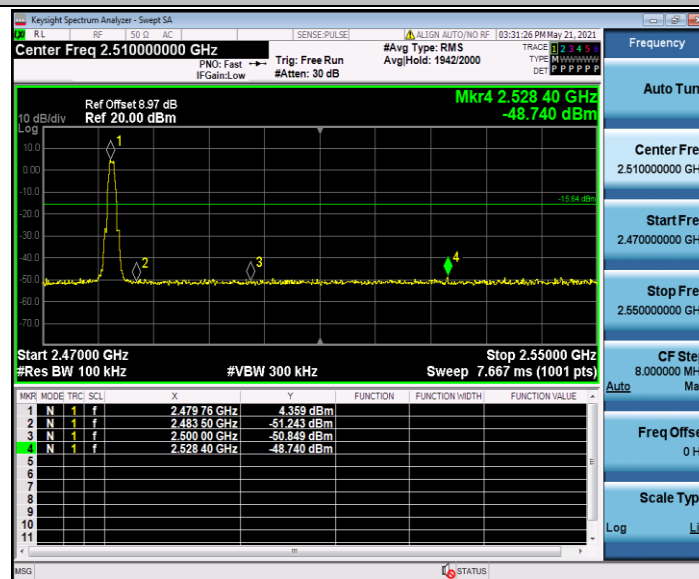
| TestMode  | Antenna | ChName | Channel | RefLevel[dBm] | Result[dBm] | Limit[dBm] | Verdict |
|-----------|---------|--------|---------|---------------|-------------|------------|---------|
| BLE_BT4.0 | Ant1    | Low    | 2402    | 3.44          | -49.14      | <=-16.57   | PASS    |
|           |         | High   | 2480    | 4.36          | -48.74      | <=-15.64   | PASS    |
| BLE_BT5.0 | Ant1    | Low    | 2402    | 2.40          | -28.97      | <=-17.6    | PASS    |
|           |         | High   | 2480    | 3.30          | -48.7       | <=-16.7    | PASS    |

## Test Graphs

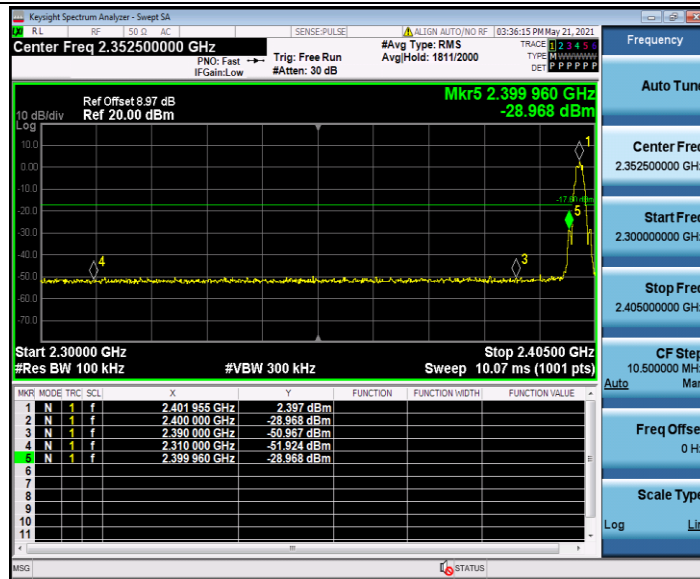
BLE\_BT4.0\_Ant1\_Low\_2402



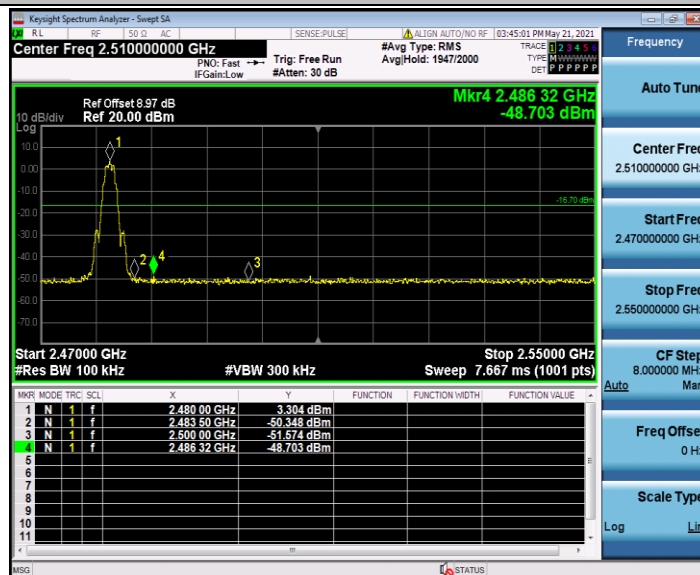
BLE\_BT4.0\_Ant1\_High\_2480



BLE\_BT5.0\_Ant1\_Low\_2402



BLE\_BT5.0\_Ant1\_High\_2480

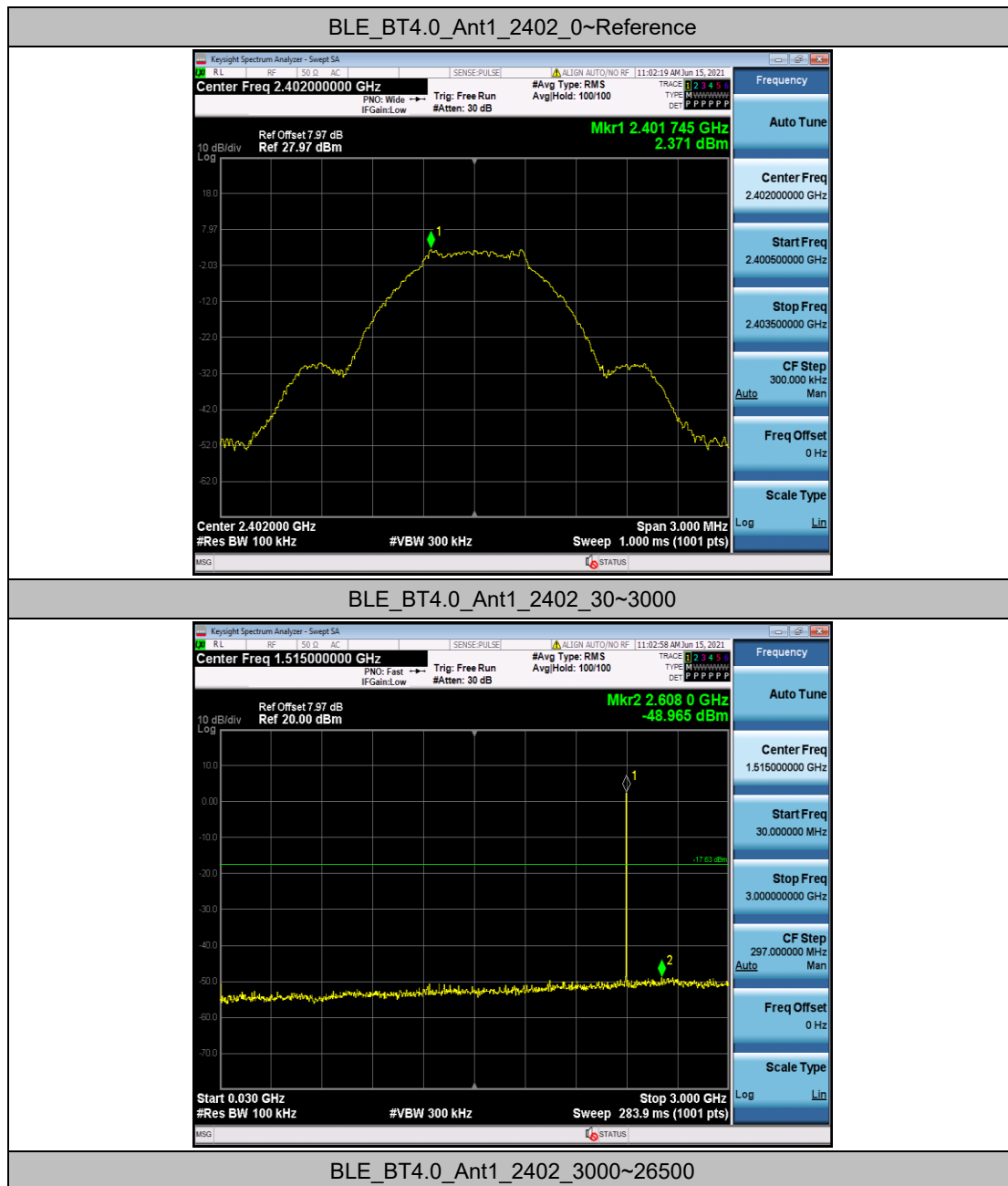


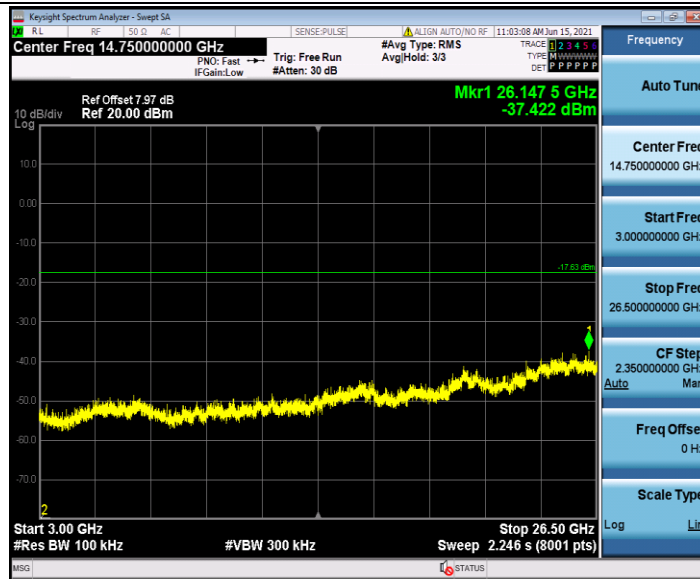
## Appendix F: Conducted Spurious Emission

### Test Result

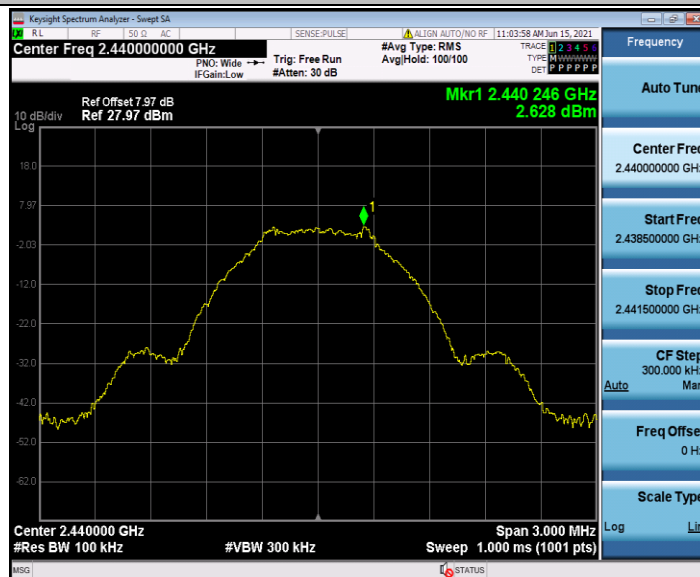
| TestMode  | Antenna | Channel | FreqRange<br>[MHz] | RefLevel<br>[dBm] | Result[dBm] | Limit[dBm] | Verdict |
|-----------|---------|---------|--------------------|-------------------|-------------|------------|---------|
| BLE_BT4.0 | Ant1    | 2402    | Reference          | 2.37              | 2.37        | ---        | PASS    |
|           |         |         | 30~3000            | 2.37              | -48.97      | <=-17.63   | PASS    |
|           |         |         | 3000~26500         | 2.37              | -37.42      | <=-17.63   | PASS    |
|           |         | 2440    | Reference          | 2.63              | 2.63        | ---        | PASS    |
|           |         |         | 30~3000            | 2.63              | -48.9       | <=-17.37   | PASS    |
|           |         |         | 3000~26500         | 2.63              | -37.62      | <=-17.37   | PASS    |
|           |         | 2480    | Reference          | 4.06              | 4.06        | ---        | PASS    |
|           |         |         | 30~3000            | 4.06              | -47.77      | <=-15.94   | PASS    |
|           |         |         | 3000~26500         | 4.06              | -37.06      | <=-15.94   | PASS    |
| BLE_BT5.0 | Ant1    | 2402    | Reference          | 3.34              | 3.34        | ---        | PASS    |
|           |         |         | 30~3000            | 3.34              | -48.66      | <=-16.66   | PASS    |
|           |         |         | 3000~26500         | 3.34              | -38.2       | <=-16.66   | PASS    |
|           |         | 2440    | Reference          | 3.24              | 3.24        | ---        | PASS    |
|           |         |         | 30~3000            | 3.24              | -48.21      | <=-16.76   | PASS    |
|           |         |         | 3000~26500         | 3.24              | -38.54      | <=-16.76   | PASS    |
|           |         | 2480    | Reference          | 0.55              | 0.55        | ---        | PASS    |
|           |         |         | 30~3000            | 0.55              | -48.86      | <=-19.45   | PASS    |
|           |         |         | 3000~26500         | 0.55              | -38.06      | <=-19.45   | PASS    |

## Test Graphs

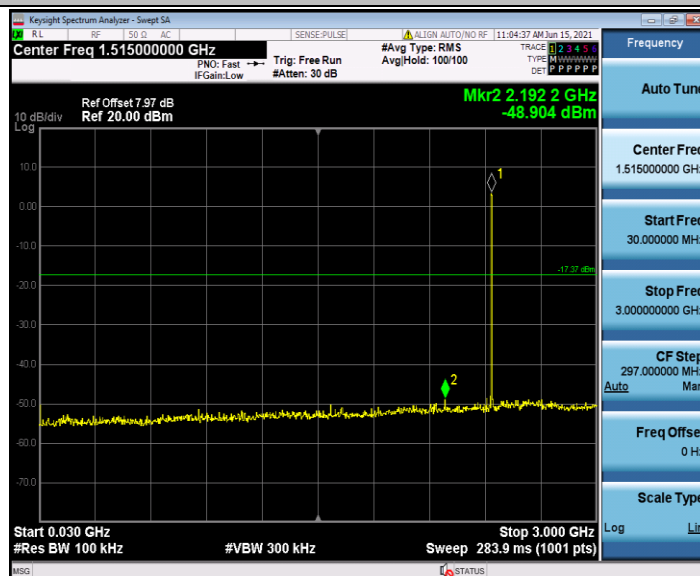




BLE\_BT4.0\_Ant1\_2440\_0~Reference



BLE\_BT4.0\_Ant1\_2440\_30~3000



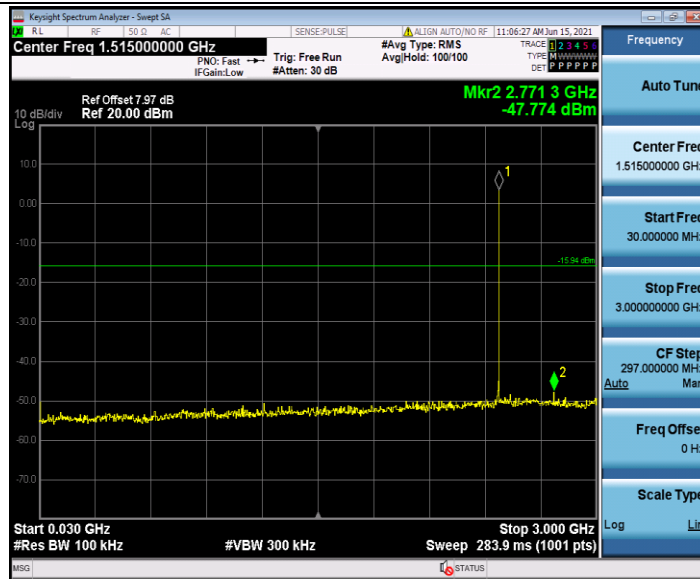
# BLE\_BT4.0\_Ant1\_2440\_3000~26500



# BLE\_BT4.0\_Ant1\_2480\_0~Reference



# BLE\_BT4.0\_Ant1\_2480\_30~3000



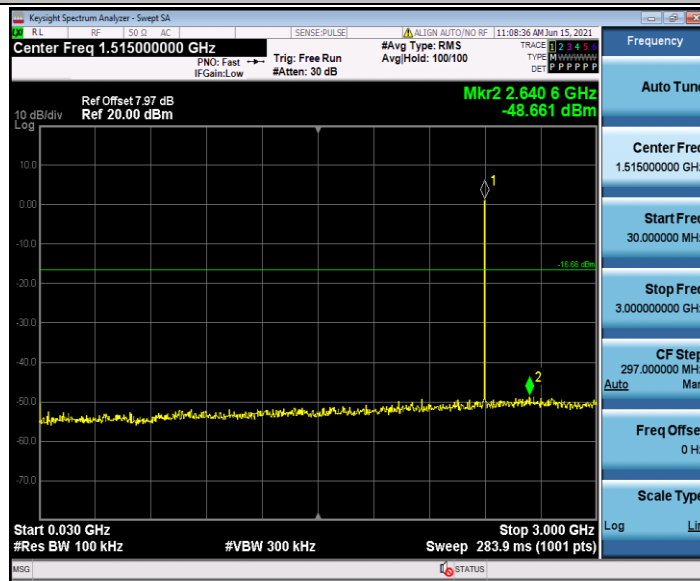
BLE\_BT4.0\_Ant1\_2480\_3000~26500



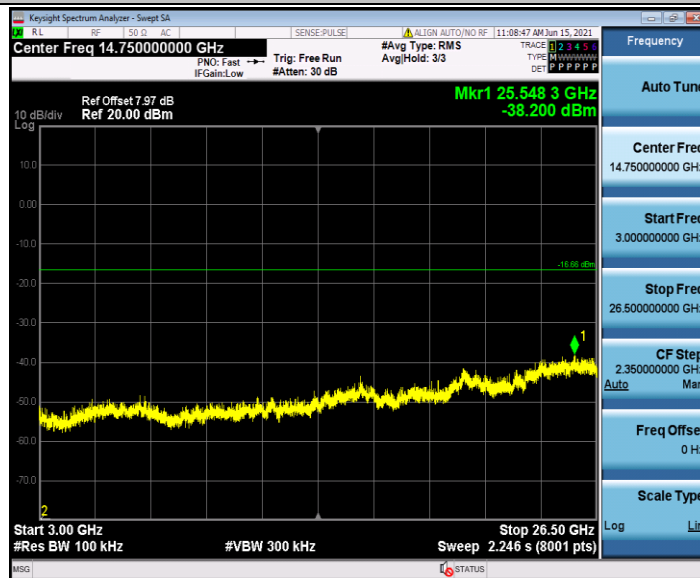
BLE\_BT5.0\_Ant1\_2402\_0~Reference



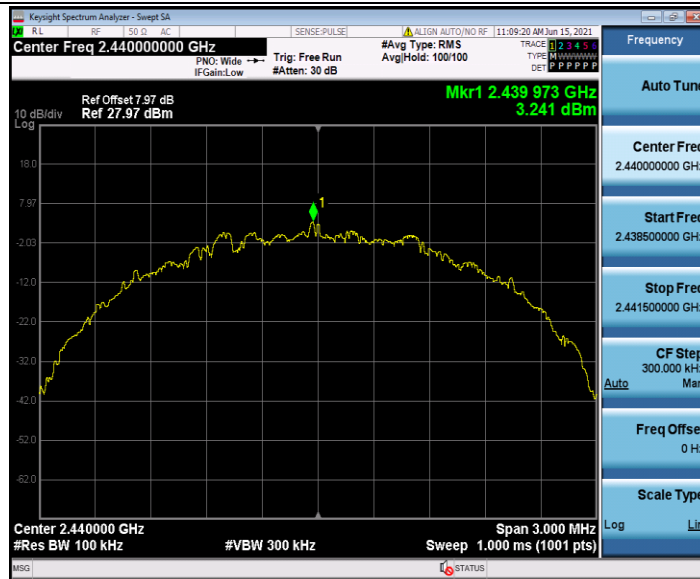
# BLE\_BT5.0\_Ant1\_2402\_30~3000



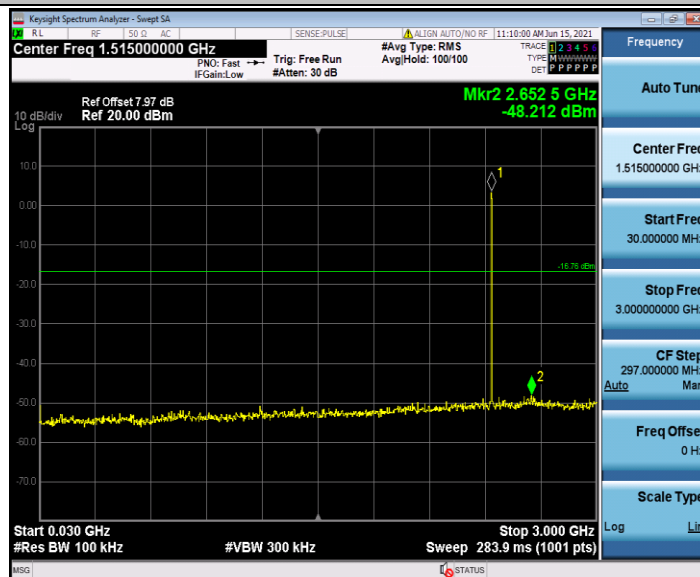
# BLE\_BT5.0\_Ant1\_2402\_3000~26500



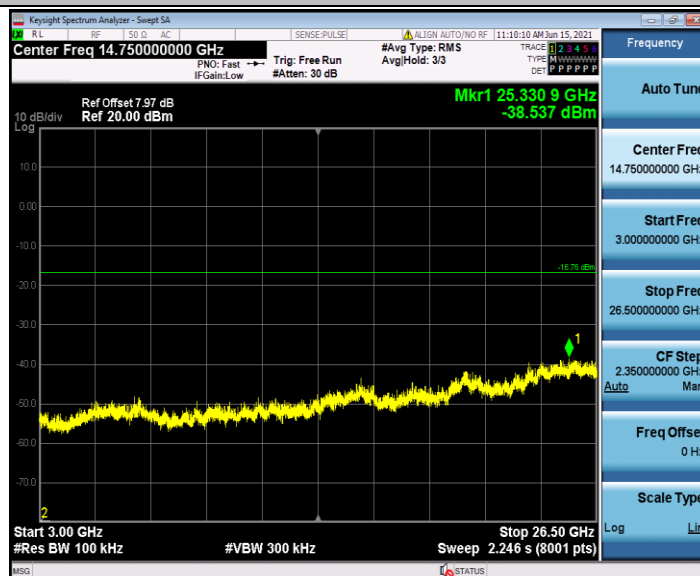
# BLE\_BT5.0\_Ant1\_2440\_0~Reference



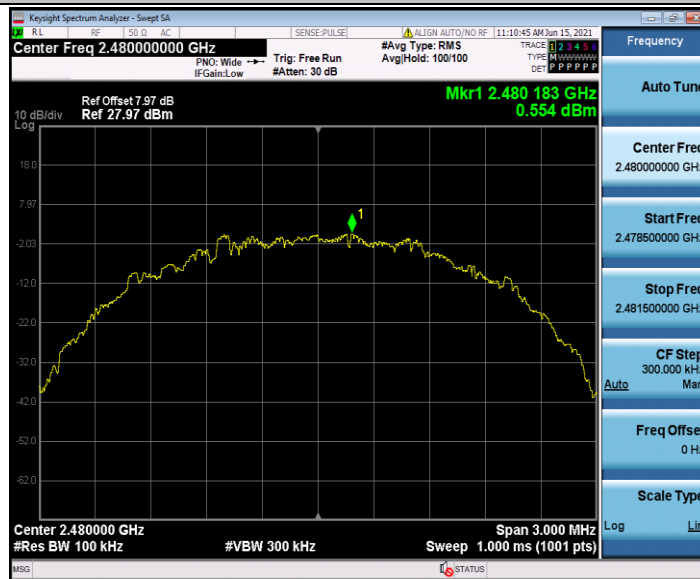
BLE\_BT5.0\_Ant1\_2440\_30~3000



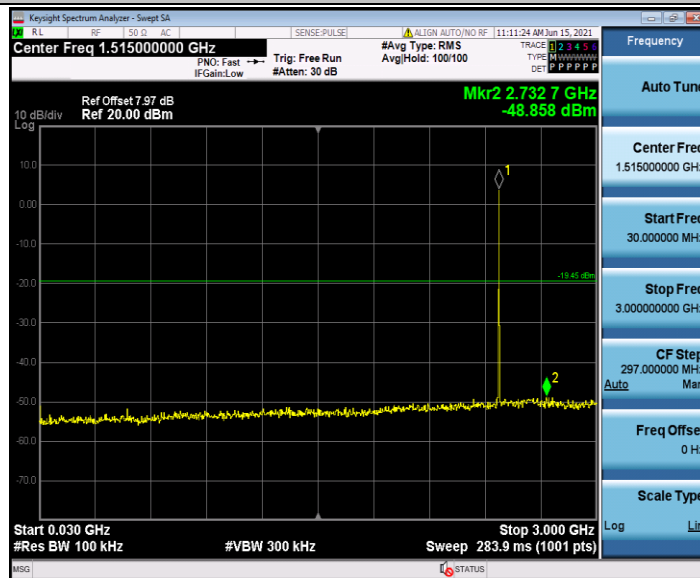
BLE\_BT5.0\_Ant1\_2440\_3000~26500



# BLE\_BT5.0\_Ant1\_2480\_0~Reference



# BLE\_BT5.0\_Ant1\_2480\_30~3000



# BLE\_BT5.0\_Ant1\_2480\_3000~26500

