

## Appendix: Bluetooth LE

## Content

|                                                               |    |
|---------------------------------------------------------------|----|
| 1. Duty Cycle .....                                           | 4  |
| 1.1 Test Result .....                                         | 4  |
| 1.1.1 Ant1 .....                                              | 4  |
| 1.2 Test Graph .....                                          | 5  |
| 1.2.1 Ant1 .....                                              | 5  |
| 2. Bandwidth .....                                            | 7  |
| 2.1 Test Result .....                                         | 7  |
| 2.1.1 OBW .....                                               | 7  |
| 2.1.2 6dB BW .....                                            | 7  |
| 2.2 Test Graph .....                                          | 8  |
| 2.2.1 OBW .....                                               | 8  |
| 2.2.2 6dB BW .....                                            | 10 |
| 3. Maximum Conducted Output Power .....                       | 12 |
| 3.1 Test Result .....                                         | 12 |
| 3.1.1 Power .....                                             | 12 |
| 3.2 Test Graph .....                                          | 13 |
| 3.2.1 Power .....                                             | 13 |
| 4. Maximum Power Spectral Density .....                       | 15 |
| 4.1 Test Result .....                                         | 15 |
| 4.1.1 PSD .....                                               | 15 |
| 4.2 Test Graph .....                                          | 16 |
| 4.2.1 PSD .....                                               | 16 |
| 5. Unwanted Emissions In Non-restricted Frequency Bands ..... | 18 |
| 5.1 Test Result .....                                         | 18 |

5.1.1 Ref..... 18

5.1.2 CSE..... 18

5.2 Test Graph..... 19

5.2.1 Ref..... 19

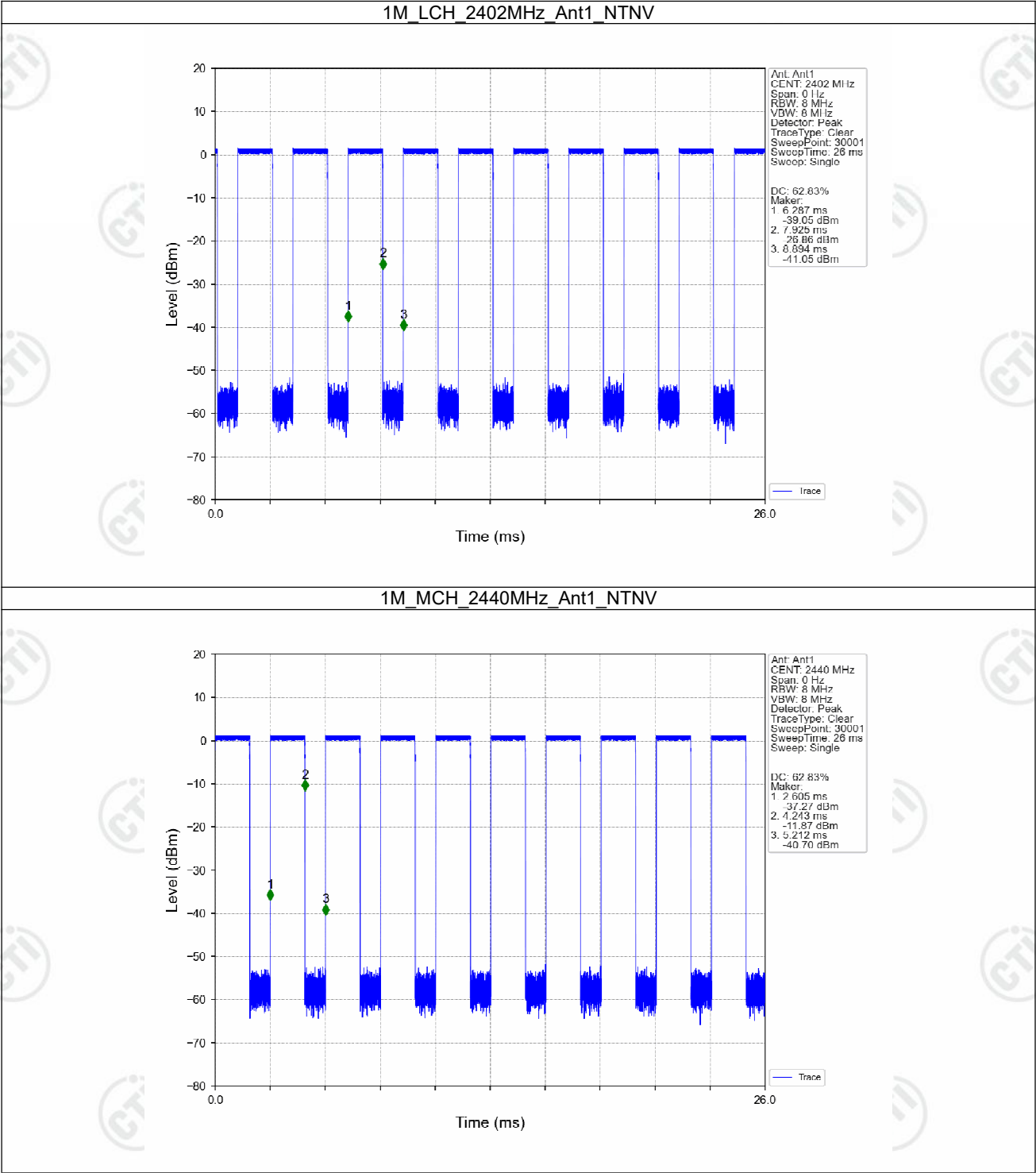
5.2.2 CSE..... 21

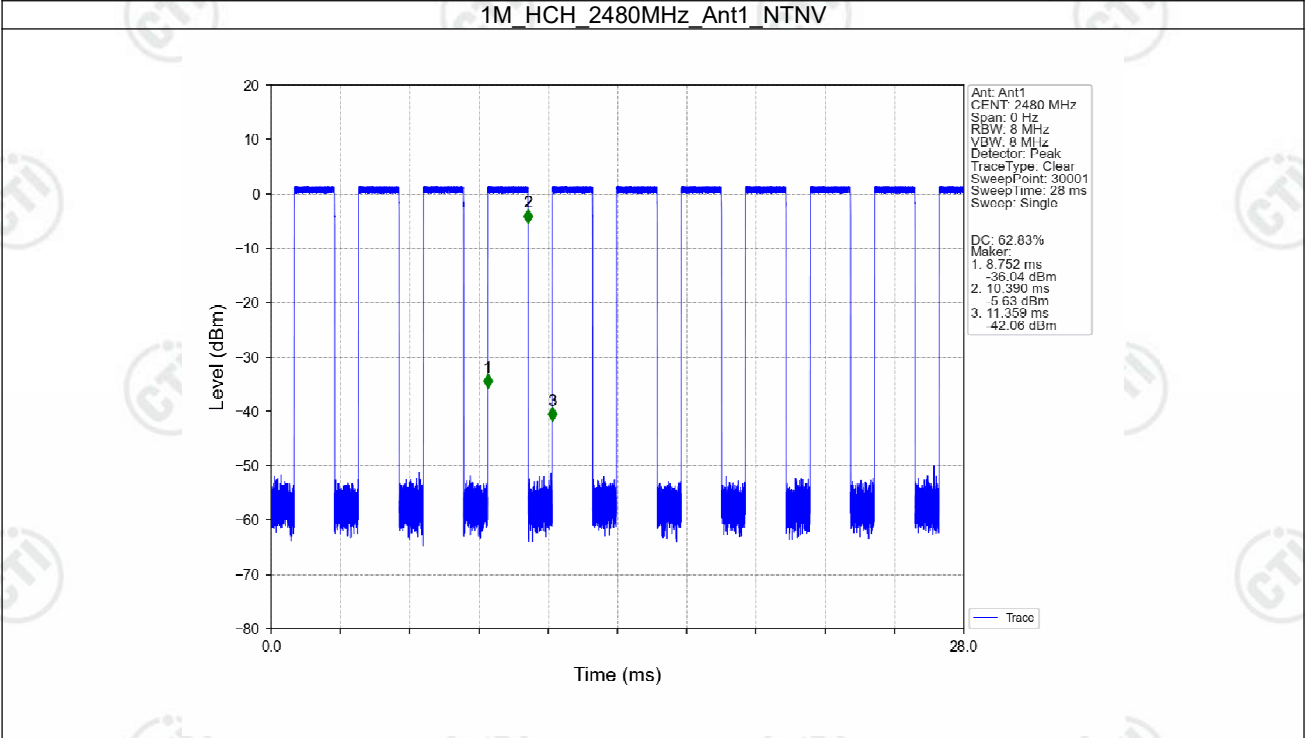
1.1 Test Result

1.1.1 Ant1

| Ant1 |         |                 |           |             |                |                                   |                       |
|------|---------|-----------------|-----------|-------------|----------------|-----------------------------------|-----------------------|
| Mode | TX Type | Frequency (MHz) | T_on (ms) | Period (ms) | Duty Cycle (%) | Duty Cycle Correction Factor (dB) | Max. DC Variation (%) |
| 1M   | SISO    | 2402            | 1.638     | 2.607       | 62.83          | 2.02                              | 0.03                  |
|      |         | 2440            | 1.638     | 2.607       | 62.83          | 2.02                              | 0.01                  |
|      |         | 2480            | 1.638     | 2.607       | 62.83          | 2.02                              | 0.01                  |

1.2.1 Ant1





2. Bandwidth

2.1 Test Result

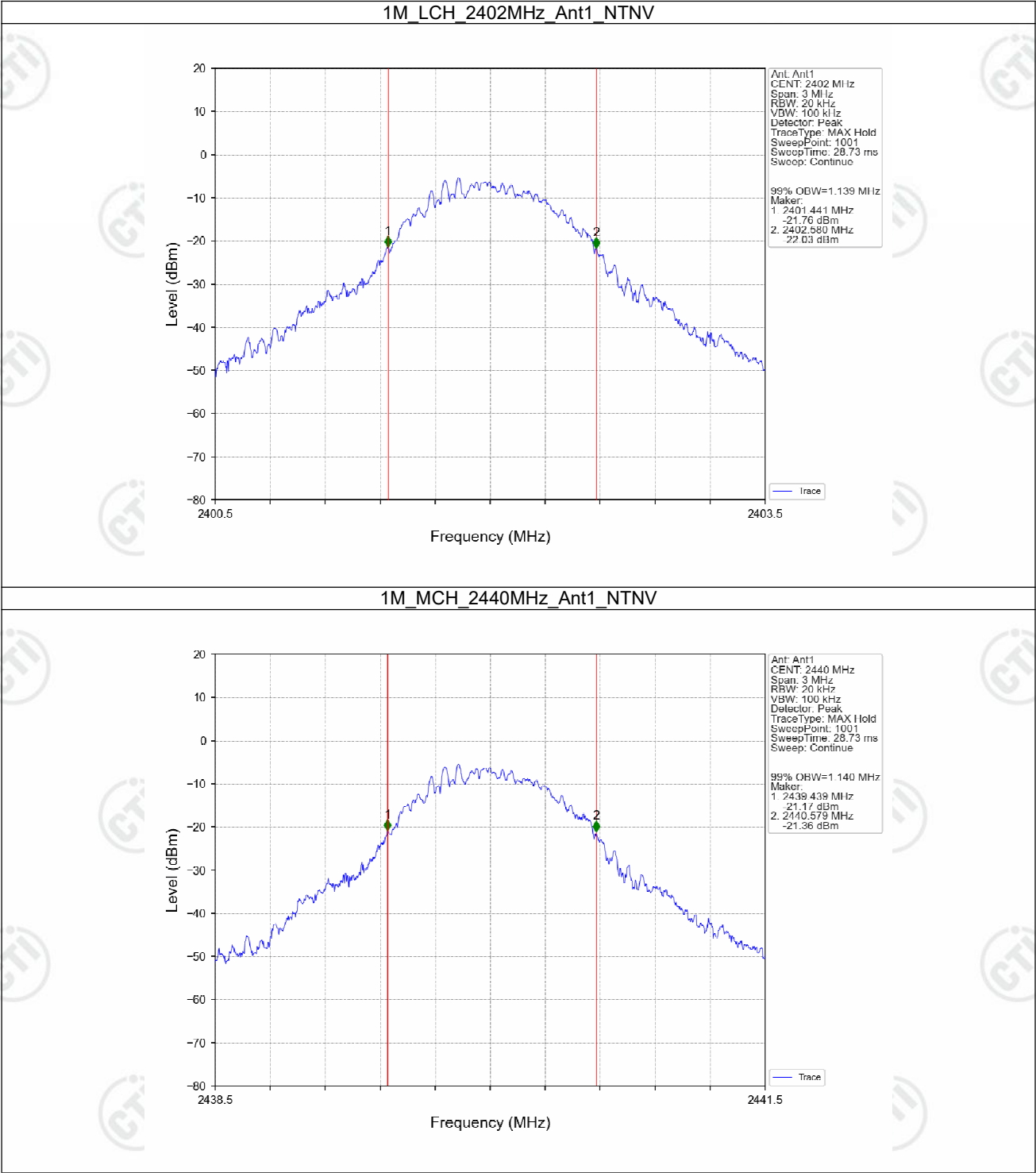
2.1.1 OBW

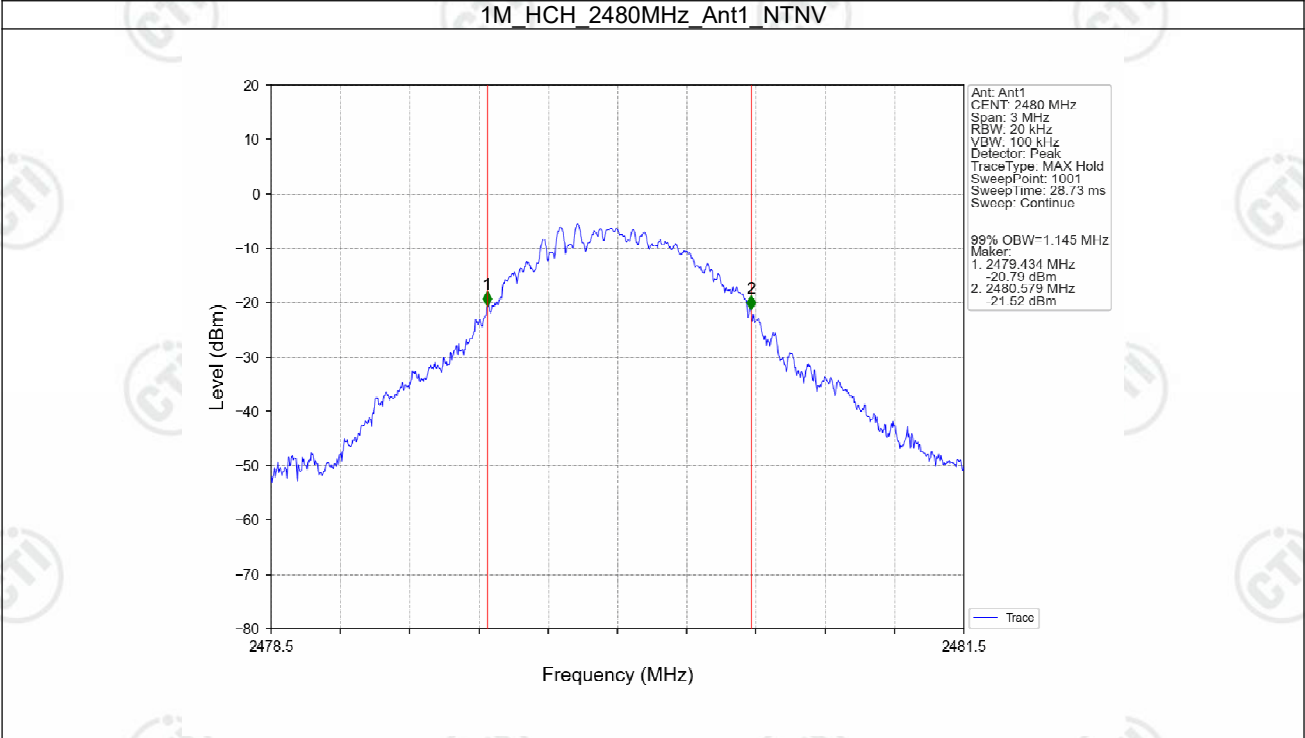
| Mode | TX Type | Frequency (MHz) | ANT | 99% Occupied Bandwidth (MHz) |       | Verdict |
|------|---------|-----------------|-----|------------------------------|-------|---------|
|      |         |                 |     | Result                       | Limit |         |
| 1M   | SISO    | 2402            | 1   | 1.139                        | /     | Pass    |
|      |         | 2440            | 1   | 1.140                        | /     | Pass    |
|      |         | 2480            | 1   | 1.145                        | /     | Pass    |

2.1.2 6dB BW

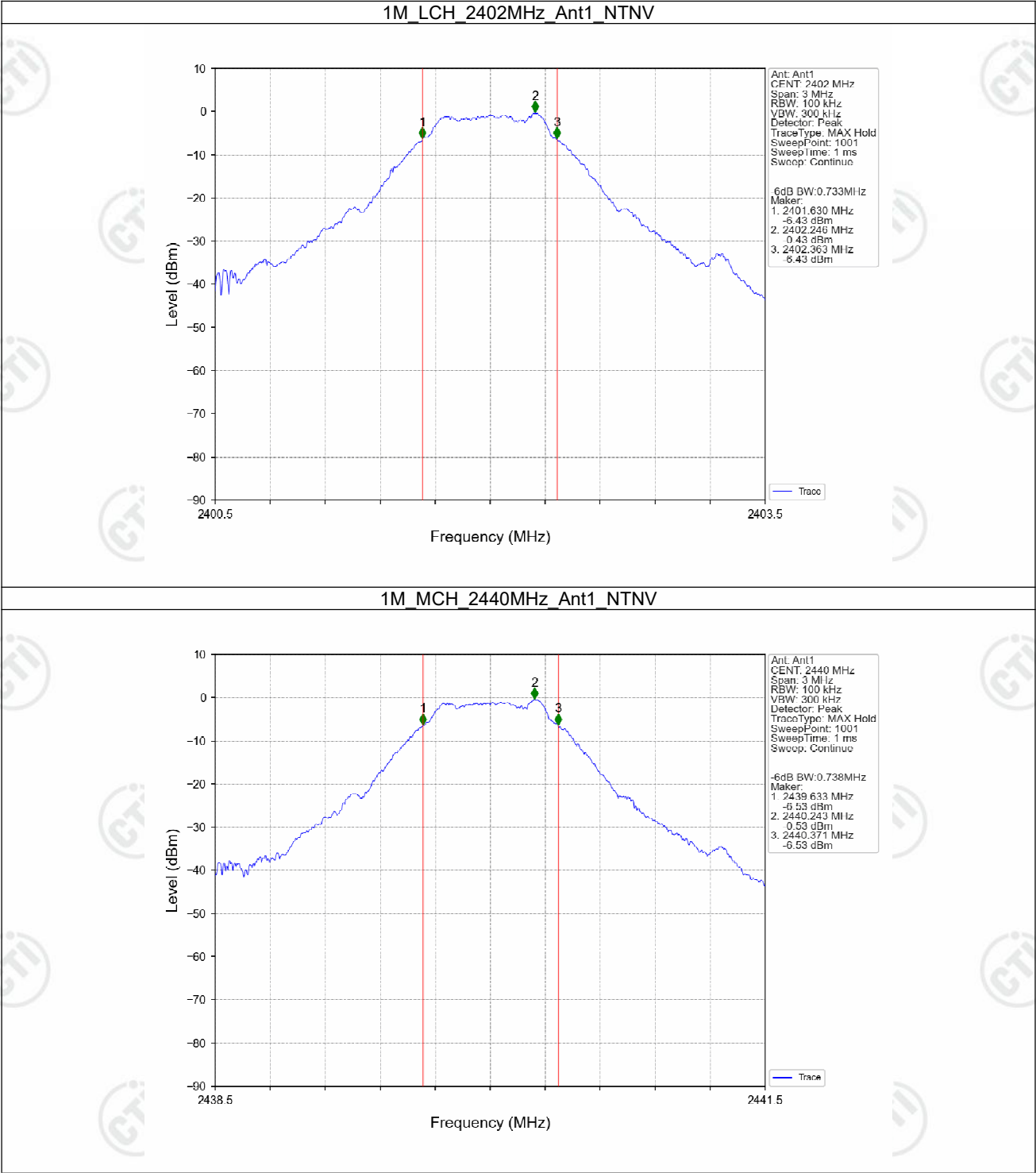
| Mode | TX Type | Frequency (MHz) | ANT | 6dB Bandwidth (MHz) |       | Verdict |
|------|---------|-----------------|-----|---------------------|-------|---------|
|      |         |                 |     | Result              | Limit |         |
| 1M   | SISO    | 2402            | 1   | 0.733               | >=0.5 | Pass    |
|      |         | 2440            | 1   | 0.738               | >=0.5 | Pass    |
|      |         | 2480            | 1   | 0.740               | >=0.5 | Pass    |

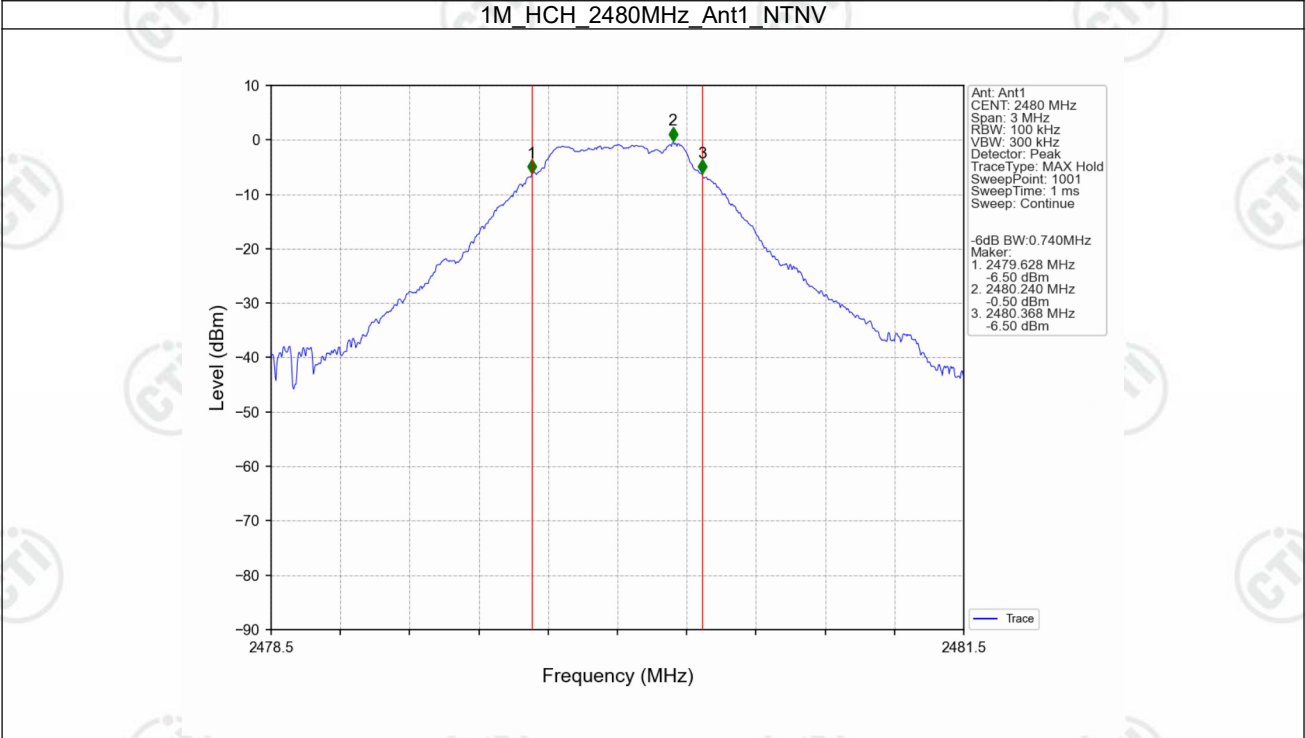
2.2.1 OBW





2.2.2 6dB BW





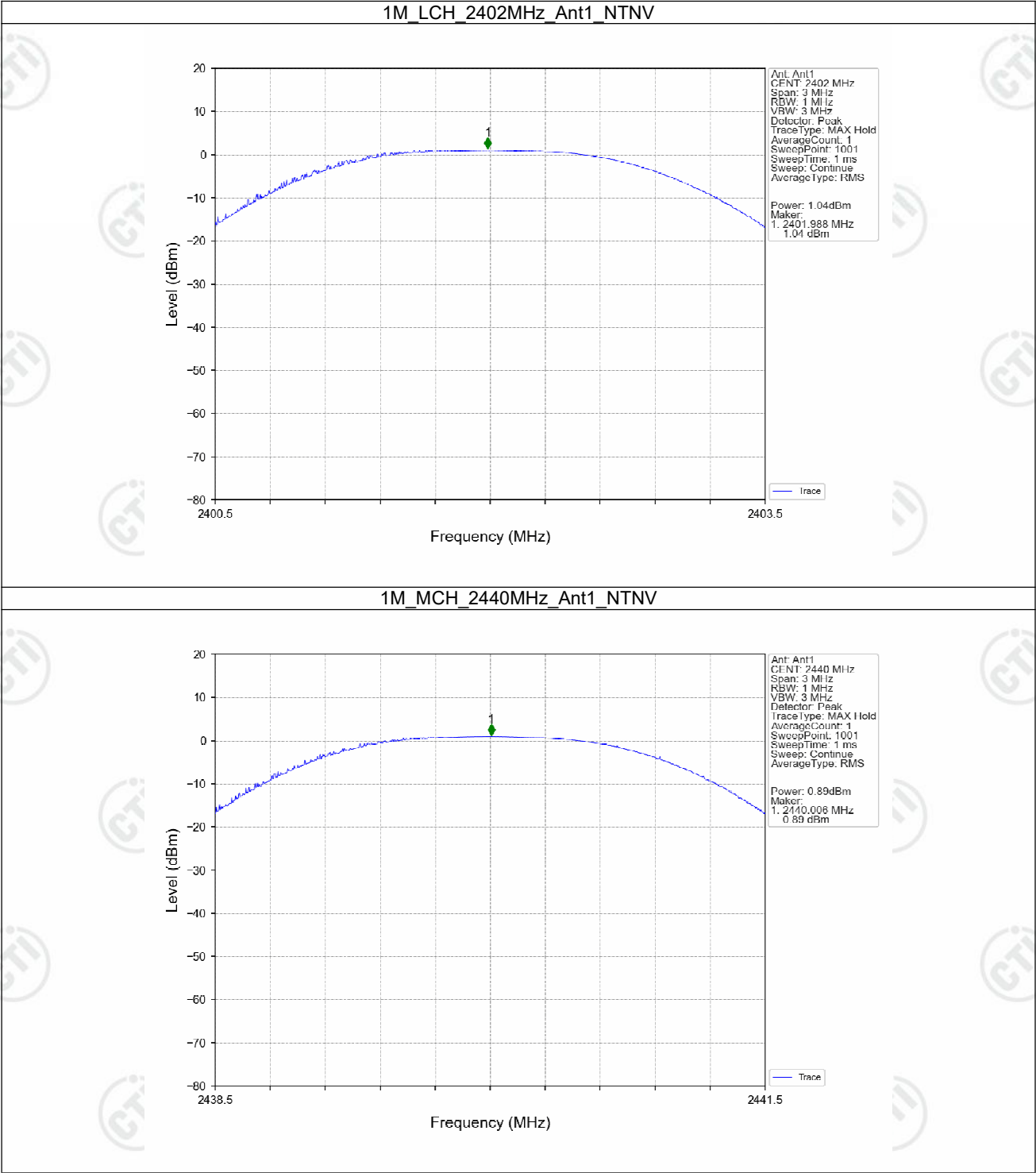
3. Maximum Conducted Output Power

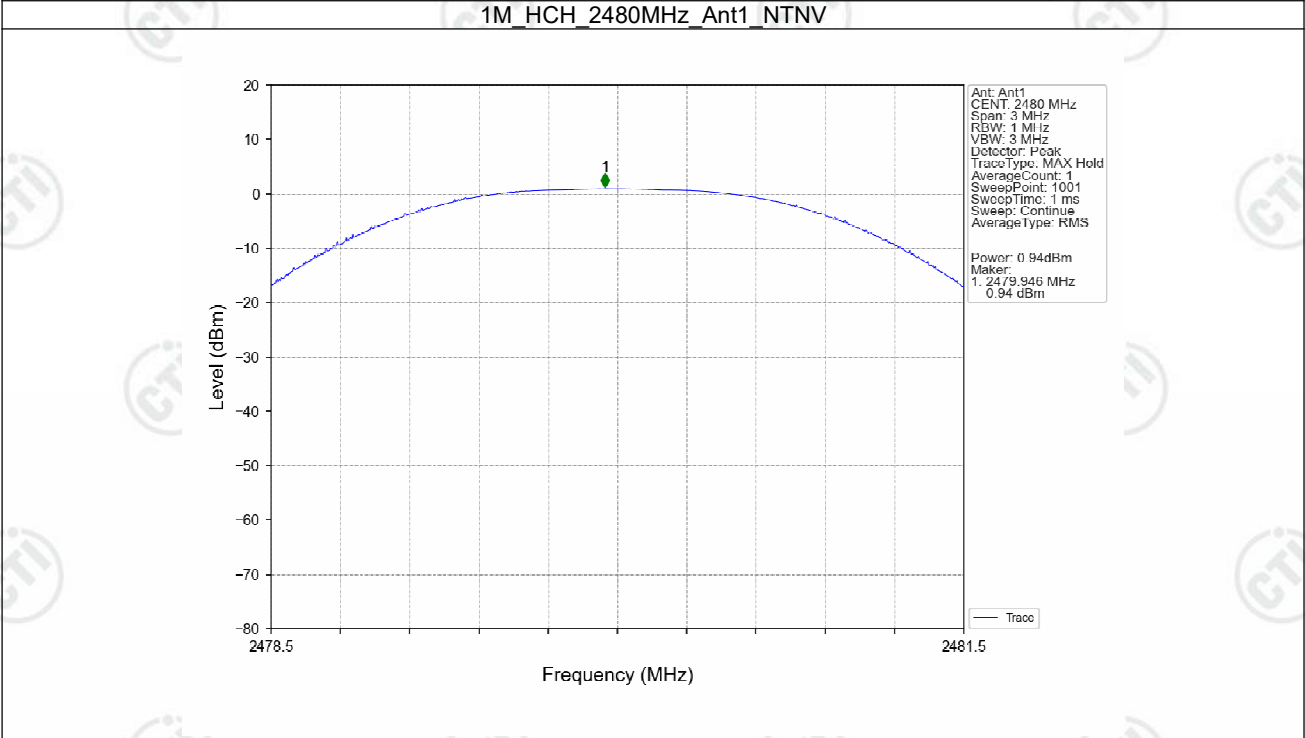
3.1 Test Result

3.1.1 Power

| Mode                                | TX Type | Frequency (MHz) | Maximum Peak Conducted Output Power (dBm) |       | Verdict |
|-------------------------------------|---------|-----------------|-------------------------------------------|-------|---------|
|                                     |         |                 | ANT1                                      | Limit |         |
| 1M                                  | SISO    | 2402            | 1.04                                      | <=30  | Pass    |
|                                     |         | 2440            | 0.89                                      | <=30  | Pass    |
|                                     |         | 2480            | 0.94                                      | <=30  | Pass    |
| Note1: Antenna Gain: Ant1: 2.58dBi; |         |                 |                                           |       |         |

3.2.1 Power





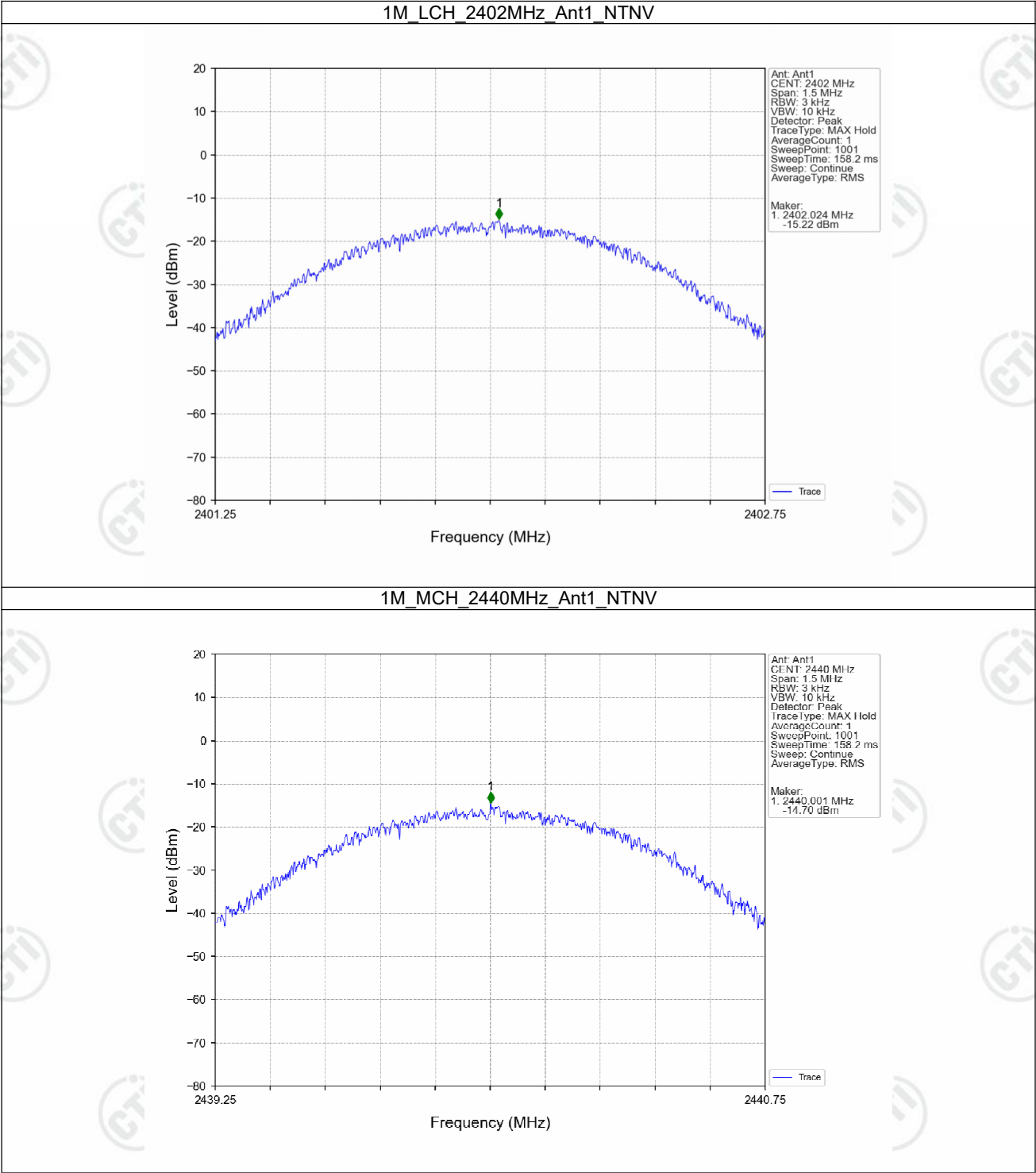
4. Maximum Power Spectral Density

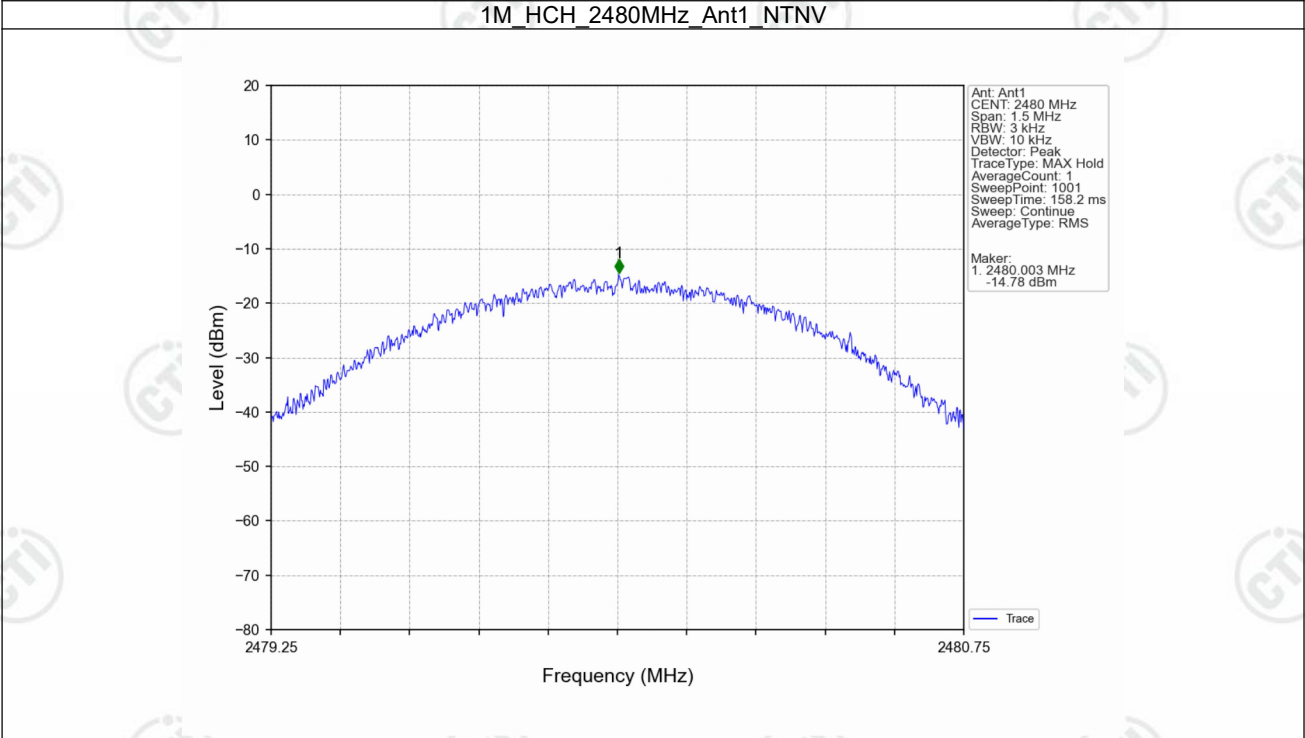
4.1 Test Result

4.1.1 PSD

| Mode                                | TX Type | Frequency (MHz) | Maximum PSD (dBm/3kHz) |                 | Verdict |
|-------------------------------------|---------|-----------------|------------------------|-----------------|---------|
|                                     |         |                 | ANT1                   | Limit(dBm/3kHz) |         |
| 1M                                  | SISO    | 2402            | -15.22dBm/3kHz         | <=8             | Pass    |
|                                     |         | 2440            | -14.70dBm/3kHz         | <=8             | Pass    |
|                                     |         | 2480            | -14.78dBm/3kHz         | <=8             | Pass    |
| Note1: Antenna Gain: Ant1: 2.58dBi; |         |                 |                        |                 |         |

4.2.1 PSD





5. Unwanted Emissions In Non-restricted Frequency Bands

5.1 Test Result

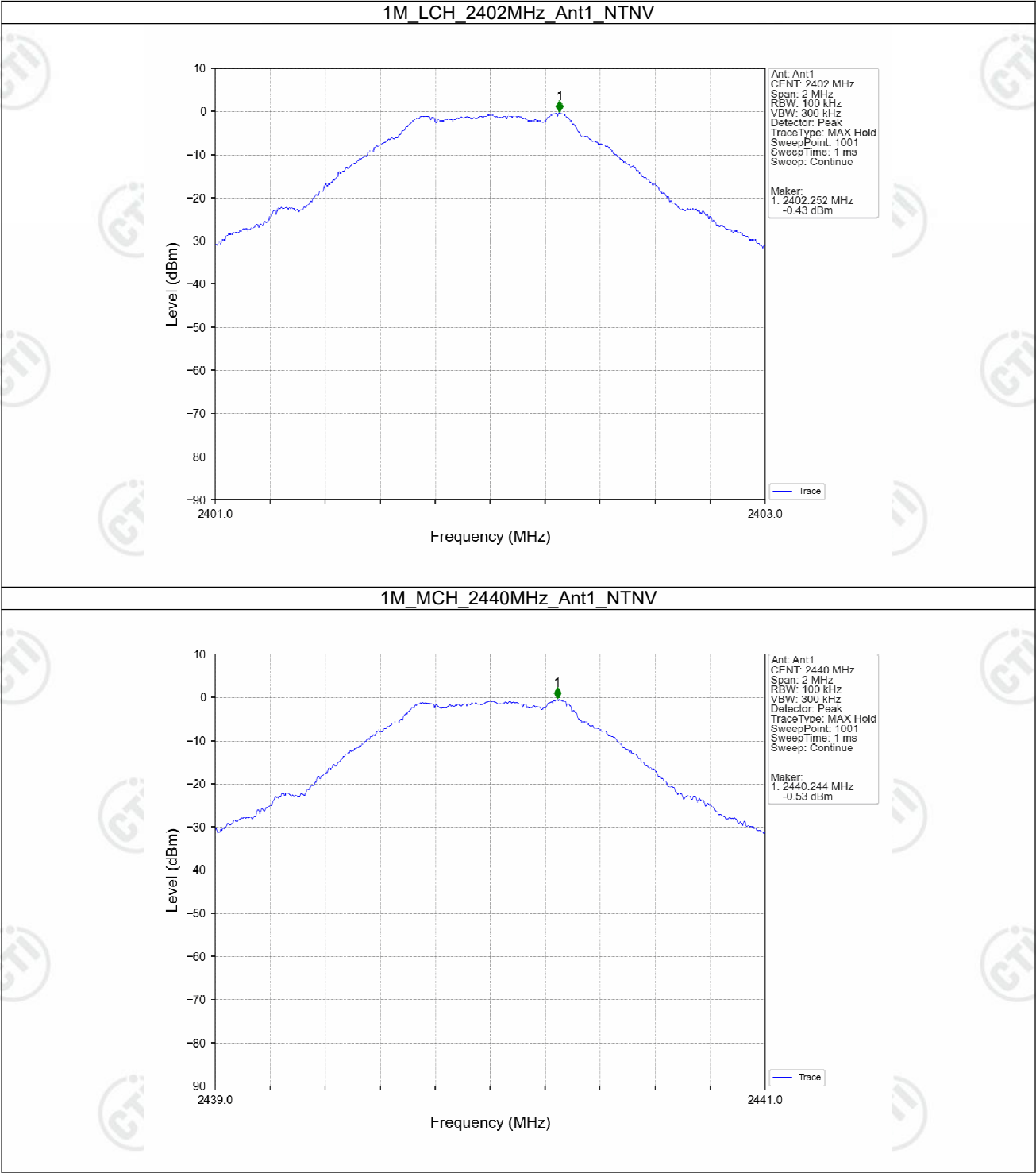
5.1.1 Ref

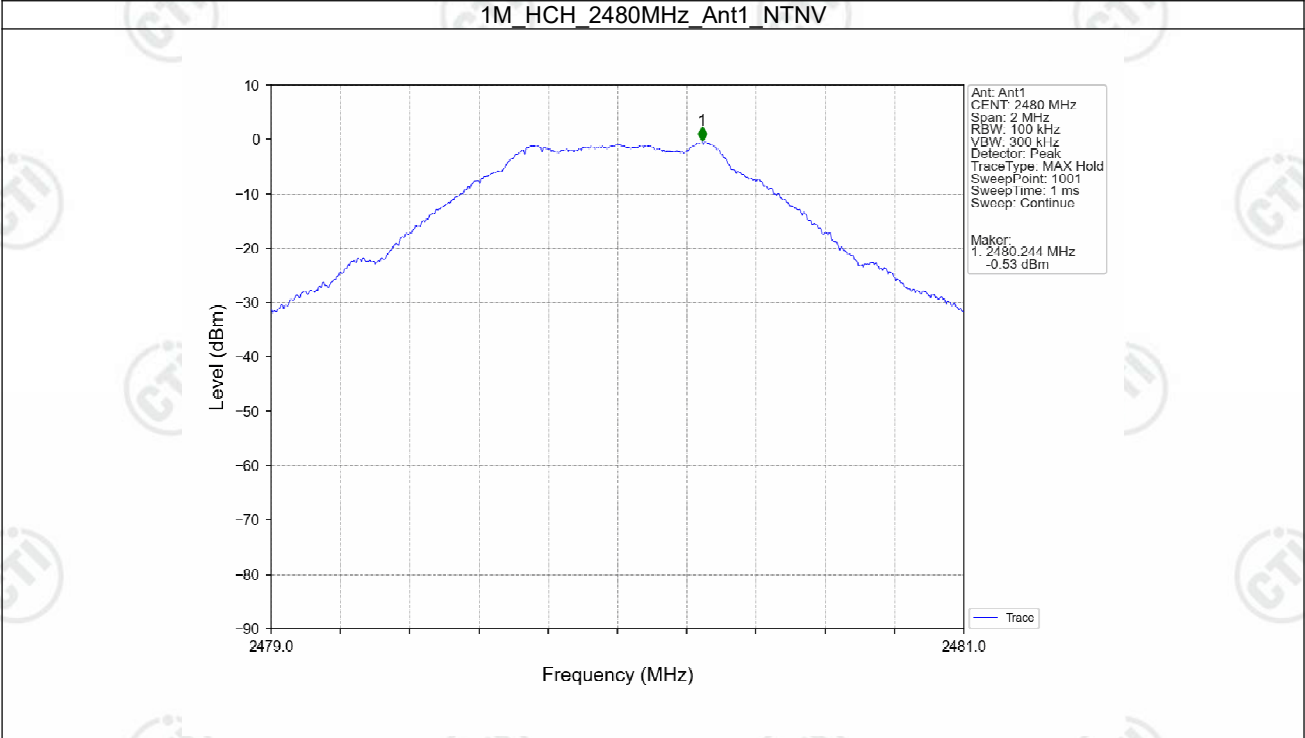
| Mode | TX Type | Frequency (MHz) | ANT | Level of Reference (dBm) |
|------|---------|-----------------|-----|--------------------------|
| 1M   | SISO    | 2402            | 1   | -0.43                    |
|      |         | 2440            | 1   | -0.53                    |
|      |         | 2480            | 1   | -0.53                    |

5.1.2 CSE

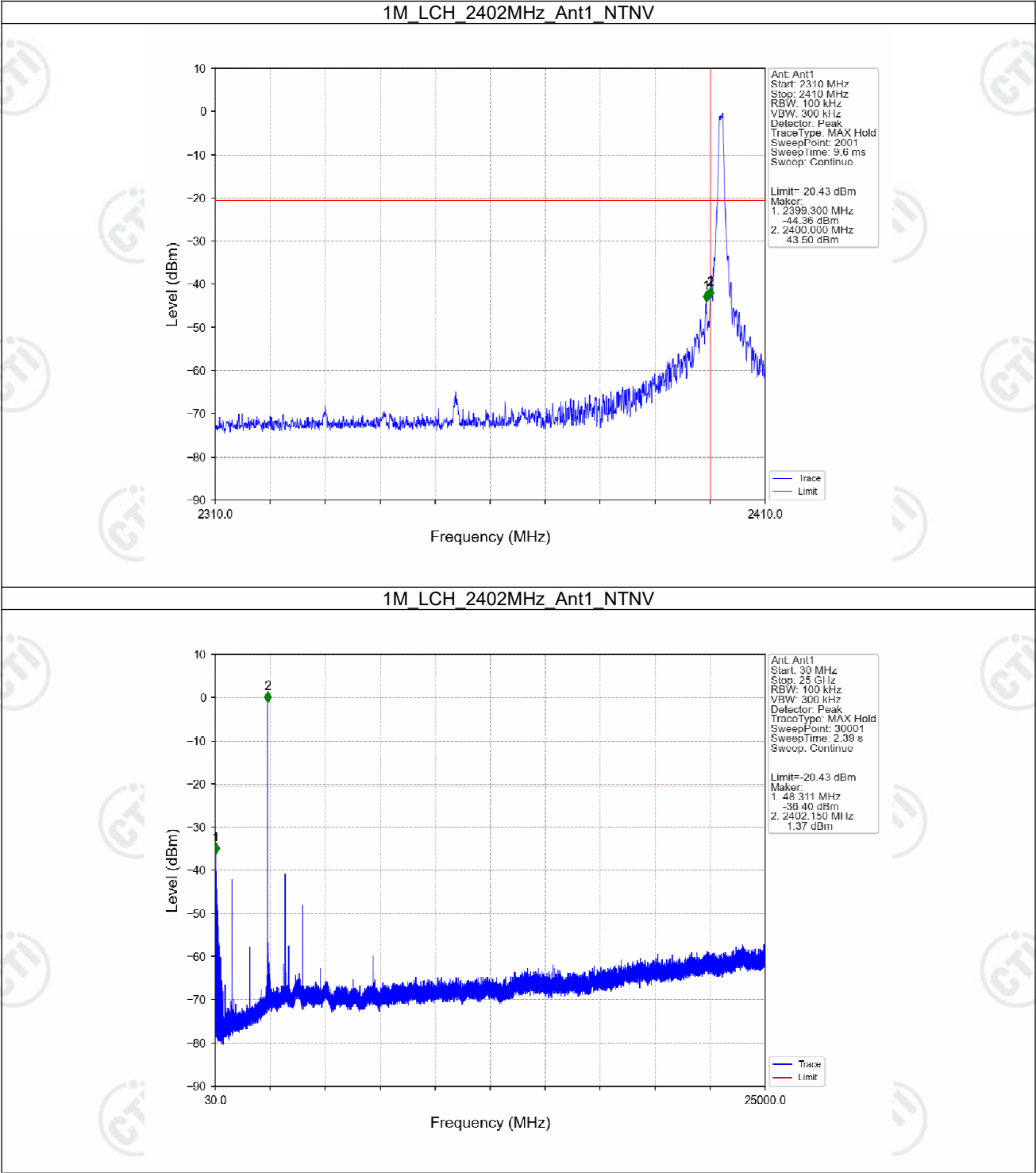
| Mode | TX Type | Frequency (MHz) | ANT | Level of Reference (dBm) | Limit (dBm) | Verdict |
|------|---------|-----------------|-----|--------------------------|-------------|---------|
| 1M   | SISO    | 2402            | 1   | -0.43                    | -20.43      | Pass    |
|      |         | 2440            | 1   | -0.43                    | -20.43      | Pass    |
|      |         | 2480            | 1   | -0.43                    | -20.43      | Pass    |

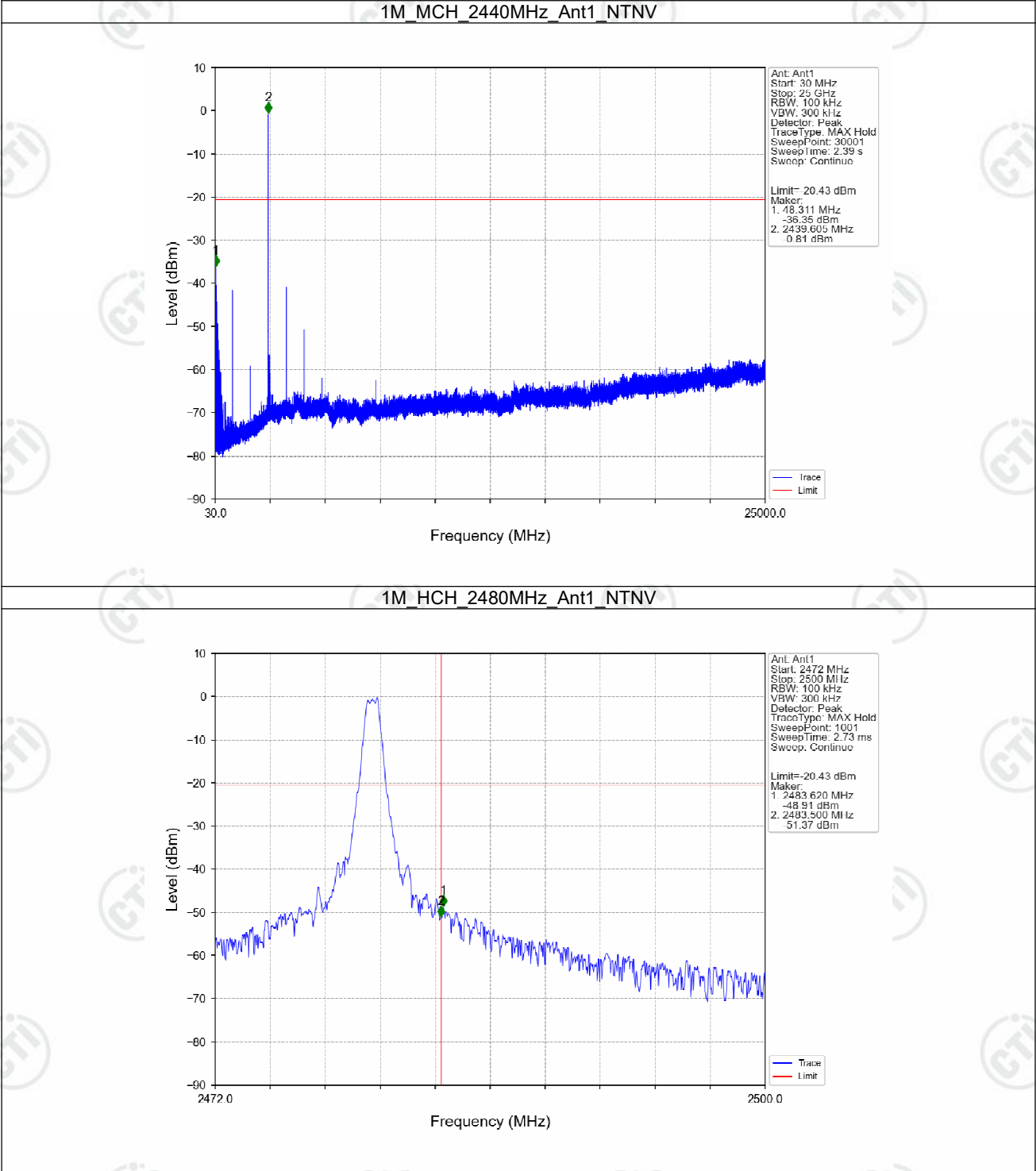
5.2.1 Ref

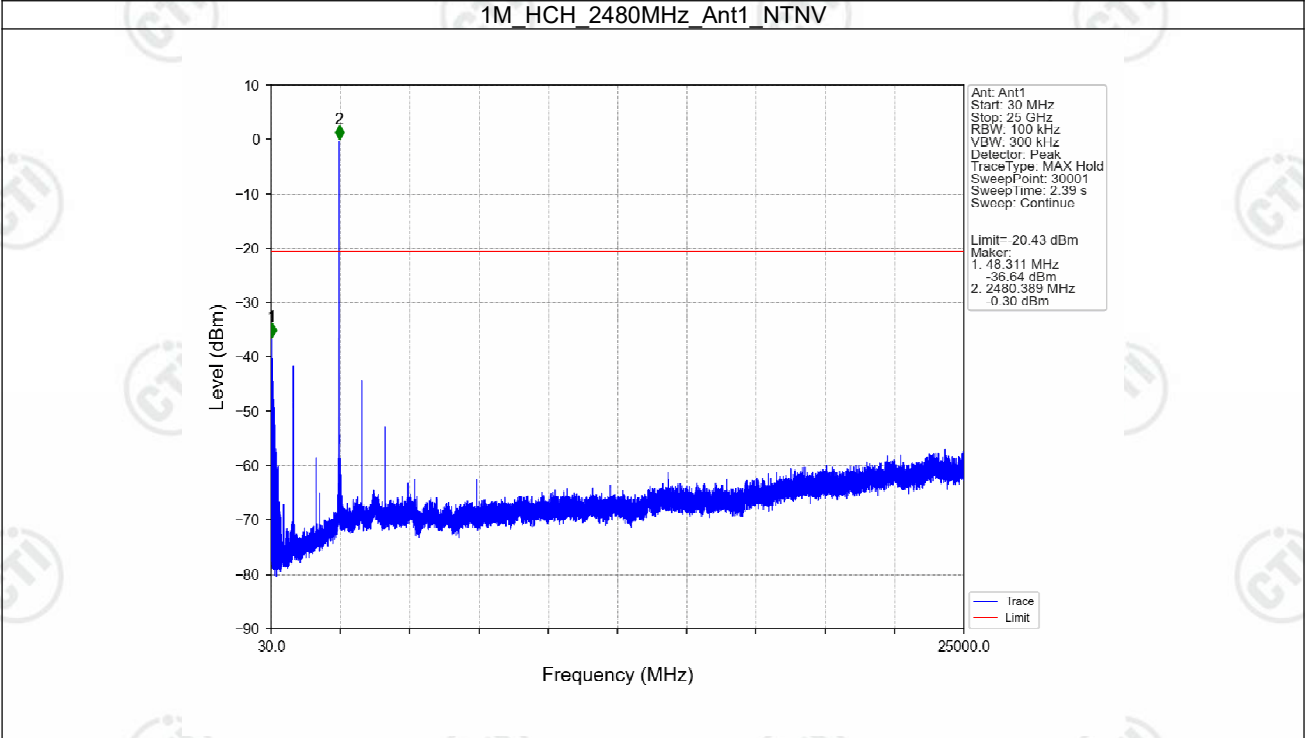




5.2.2 CSE







\*\*\* End of Report \*\*\*