

FCC/ISED - TEST REPORT

Report Number : **709502203709-00A** Date of Issue: January 26, 2022

Model : 9290031345, 9290031347

Product Type : LED light

Trademark : PHILIPS

FCC ID: : 9290031345: 2AGBW9290031345X
9290031347: 2AGBW9290031347X

IC: : 9290031345: 20812-31345X
9290031347: 20812-31347X

Applicant : Signify (China) Investment Co., Ltd.

Address : Building no.9, Lane 888, Tianlin Road, Minhang District Shanghai,
200233 China

Production Facility : Ningbo Klite Electric Manufacture Co., Ltd

Address : No.5 Dapu River, Beilun, 315800 Ningbo
PEOPLE'S REPUBLIC OF CHINA

Test Result : **Positive** **Negative**

Total pages including Appendices : 81

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2 Details about the Test Laboratory

Details about the Test Laboratory

Test Site 1

Company name: TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch
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FCC Registration No.: 820234

FCC Designation Number: CN1183

ISED#: 25988

CAB identifier CN0101

3 Description of the Equipment under Test

Description of the Equipment Under Test

Product: LED light

Model no.: 9290031345, 9290031347

FCC ID: 9290031345: 2AGBW9290031345X
9290031347: 2AGBW9290031347X

IC: 9290031345: 20812-31345X
9290031347: 20812-31347X

Options and accessories: 4" metal can

Rating: 120 Vac, 60Hz

RF Transmission Frequency: 2402~2480MHz for BT 5.0 LE

No. of Operated Channel: 40 for Bluetooth

Bluetooth Working Frequency of Each Channel:

| Channel | Frequency | Channel | Frequency | Channel | Frequency | Channel | Frequency |
|---------|-----------|---------|-----------|---------|-----------|---------|-----------|
| 00 | 2402 MHz | 01 | 2404 MHz | 02 | 2406 MHz | 03 | 2408 MHz |
| 04 | 2410 MHz | 05 | 2412 MHz | 06 | 2414 MHz | 06 | 2416 MHz |
| 08 | 2418 MHz | 09 | 2420 MHz | 10 | 2422 MHz | 11 | 2424 MHz |
| 12 | 2426 MHz | 13 | 2428 MHz | 14 | 2430 MHz | 15 | 2432 MHz |
| 16 | 2434 MHz | 17 | 2436 MHz | 18 | 2438 MHz | 19 | 2440 MHz |
| 20 | 2442 MHz | 21 | 2444 MHz | 22 | 2446 MHz | 23 | 2448 MHz |
| 24 | 2450 MHz | 25 | 2452 MHz | 26 | 2454 MHz | 27 | 2456 MHz |
| 28 | 2458 MHz | 29 | 2460 MHz | 30 | 2462 MHz | 31 | 2464 MHz |
| 32 | 2466 MHz | 33 | 2468 MHz | 34 | 2470 MHz | 35 | 2472 MHz |
| 36 | 2474 MHz | 37 | 2476 MHz | 38 | 2478 MHz | 39 | 2480 MHz |

Modulation: GFSK PHY for BT 5.0 LE (LE Coded S=2/8, LE 1M, LE 2M)

Data transmission rate: 2 Mbit/s Max for BT 5.0 LE (125 Kbit/s, 500 Kbit/s, 1Mbit/s, 2Mbit/s)

Antenna Type: Integral PCB Antenna

Antenna Gain: 0.76dBi

Description of the EUT: The Equipment Under Test (EUT) is a LED light support Bluetooth 5.0 and Zigbee.



We tested it and listed the worst data in this report.

Test sample no.: SHA-616767-5 (9290031345) for RF conducted test
SHA-616767-6 (9290031345), SHA-616767-7 (9290031347) for
RF radiated test and Conducted emission AC power port test.

The sample's mentioned in this report is supplied by client. The laboratory therefore assumes no responsibility for accuracy of information on the brand name, model number, origin of manufacture, consignment, antenna gain or any information supplied.

4 Summary of Test Standards

| Test Standards | |
|--|--|
| FCC Part 15 Subpart C 10-1-2014 Edition | PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators |
| RSS-Gen Issue 5 Amendment 1 March 2019 | General Requirements for Compliance of Radio Apparatus |
| RSS-247 Issue 2 February 2017 | Digital Transmission Systems (DTSS), Frequency Hopping Systems (FHSS) and License-Exempt Local Area Network (LE-LAN) Devices |

All the test methods were according to KDB 558074 D01 15.247 Meas Guidance v05r02 and ANSI C63.10 (2013).

5 Summary of Test Results

| Technical Requirements | | | | | | |
|---|---|------------|-------------|-------------------------------------|--------------------------|-------------------------------------|
| FCC Part 15 Subpart C | | | | | | |
| Test Condition | Pages | Test Site | Test Result | | | |
| | | | Pass | Fail | N/A | |
| §15.207 & RSS-GEN 8.8 | Conducted emission AC power port | 14-18 | Site 1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| §15.247 (b) (3) & RSS-247 5.4(d) | Conducted peak output power | 19-24 | Site 1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| §15.247(a)(1) & RSS-247 5.1(b) | 20dB bandwidth | --- | --- | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| §15.247(a)(1) & RSS-247 5.1(b) | Carrier frequency separation | --- | --- | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| §15.247(a)(1)(iii) & RSS-247 5.1(d) | Number of hopping frequencies | --- | --- | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| §15.247(a)(1)(iii) & RSS-247 5.1(d) | Dwell Time | --- | --- | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| §15.247(a)(2) & RSS-247 5.2(a) & RSSGEN 6.7 | 6dB bandwidth and 99% Occupied Bandwidth | 25-34 | Site 1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| §15.247(e) & RSS-247 5.2(b) | Power spectral density | 35-39 | Site 1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| §15.247(d) & RSS-247 5.5 | Spurious RF conducted emissions | 40-57 | Site 1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| §15.247(d) & RSS-247 5.5 | Band edge | 58-63 | Site 1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| §15.247(d) & §15.209 & RSS-247 5.5 & RSS-Gen 6.13 | Spurious radiated emissions for transmitter | 64-77 | Site 1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| §15.203 & RSS-Gen 6.8 | Antenna requirement | See note 1 | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Remark 1: N/A – Not Applicable.

Note 1: The EUT uses an Integral PCB Antenna, which gain is 0.76dBi. In accordance to §15.203 and RSS-Gen 6.8, It is considered sufficiently to comply with the provisions of this section.

6 General Remarks

Remarks

This submittal(s) (test report) is intended for FCC ID: 2AGBW9290031345X and 2AGBW9290031347X, IC: 20812-31345X and 20812-31347X complies with Section 15.207, 15.209, 15.247 of the FCC Part 15, Subpart C Rules and RSS-247, RSS-GEN.

According to the client's declaration, 9290031345 and 9290031347 are use same Bluetooth and Zigbee module. So we chose the 9290031345 to perform the conductive RF tests and chose 9290031345 and 9290031347 to perform the conducted emission AC power port test and radiated emission test.

| Model No | Input Voltage | Wattage | Frequency |
|-------------------------|---|---------|-----------|
| 9290031345 | 120VAC | 10W | 60Hz |
| 9290031347 | 120VAC | 10W | 60Hz |
| Wireless control | PCB layout | | |
| BT 5.0/Zigbee | The driver and the wireless board are the same, the light source board is different. | | |
| BT 5.0/Zigbee | | | |

This report is only for the 2.4GHz BLE test report, for the 2.4GHz Zigbee test report please refer to 709502203709-00B.



SUMMARY: All tests according to the regulations cited on page 5 were

■ - Performed

□ - **Not** Performed

The Equipment under Test

■ - **Fulfills** the general approval requirements.

□ - **Does not** fulfill the general approval requirements.

Sample Received Date: November 18, 2021

Testing Start Date: November 19, 2021

Testing End Date: January 6, 2022

- TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch

Reviewed by:

Prepared by:

Tested by:

Handwritten signature of Hui Tong in blue ink.

Hui TONG
EMC Section Manager

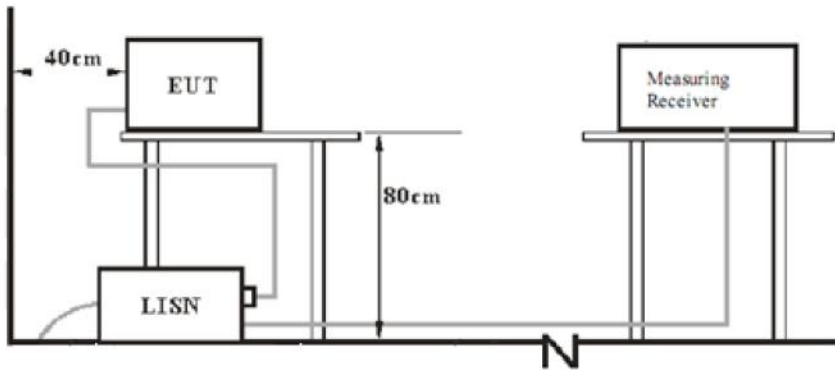
Handwritten signature of Chengjie Guo in blue ink.

Zhining ZHNAG
EMC Project Engineer

Chengjie GUO
EMC Test Engineer

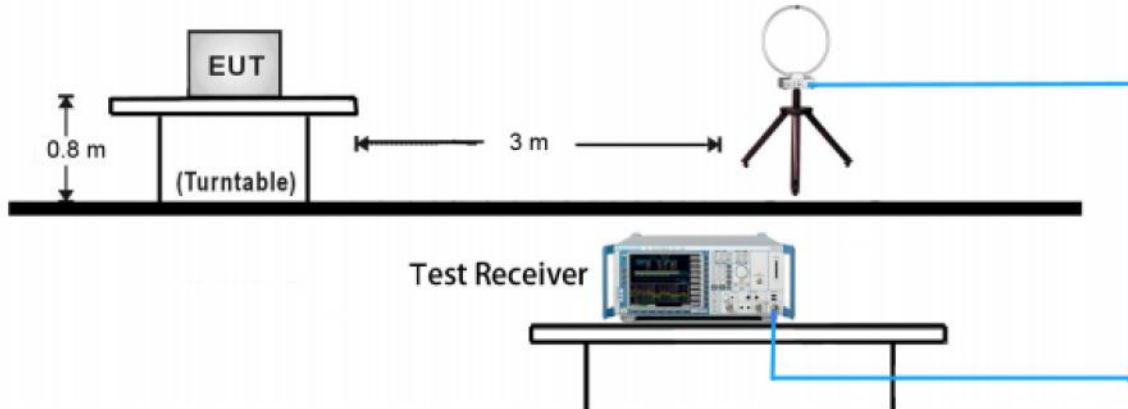
7 Test Setups

7.1 AC Power Line Conducted Emission test setups

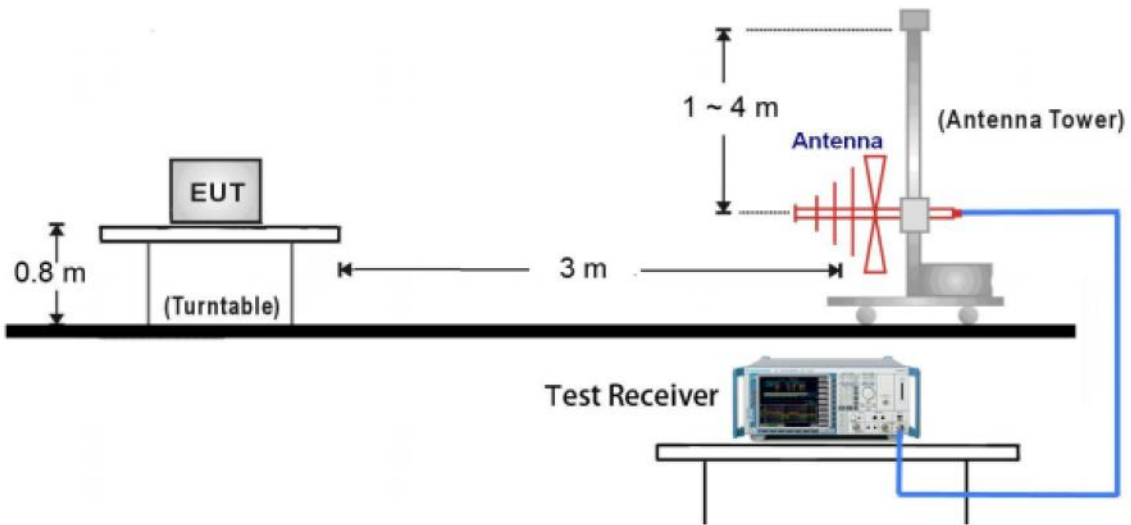


7.2 Radiated test setups

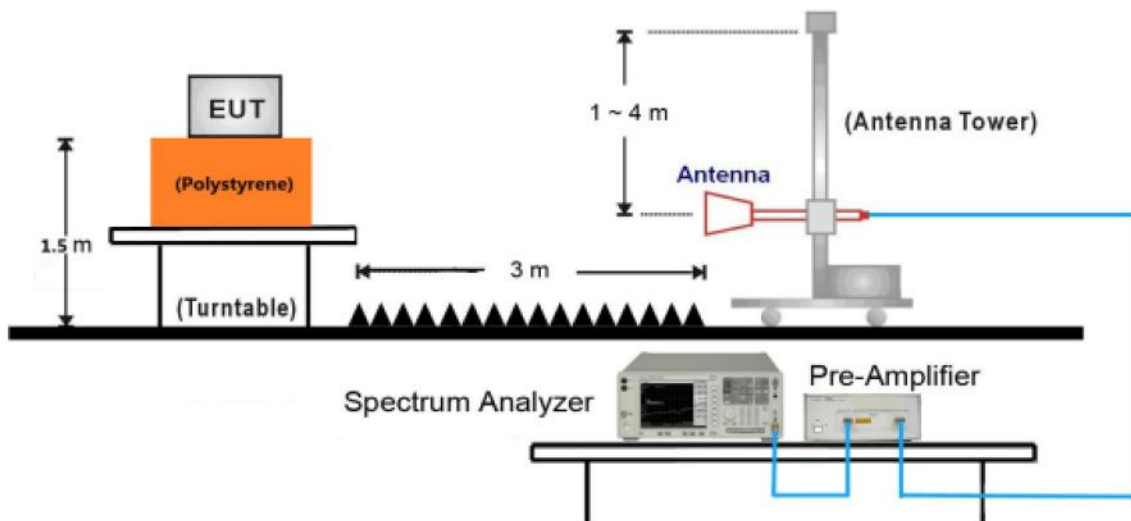
9kHz ~ 30MHz Test Setup:



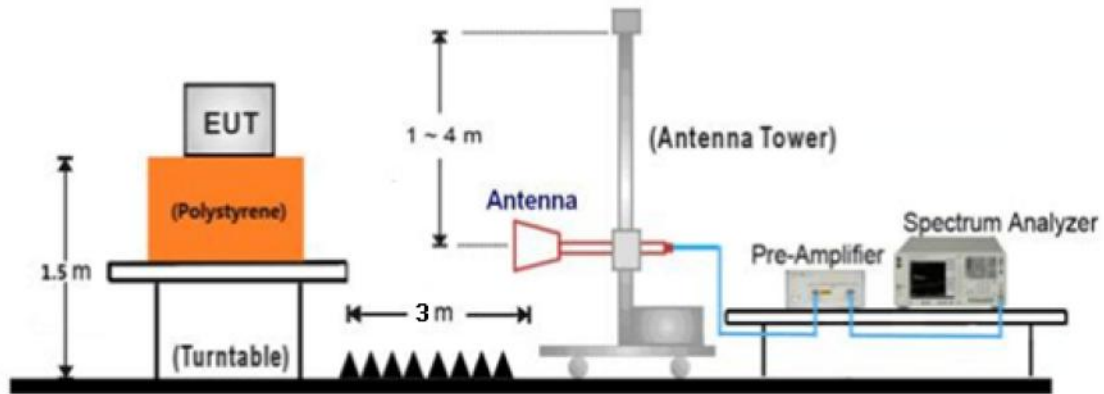
30MHz ~ 1GHz Test Setup:



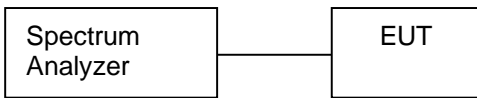
1GHz ~ 18GHz Test Setup:



18GHz ~ 25GHz Test Setup:



7.2 Conducted RF test setups



8 Systems test configuration

Auxiliary Equipment Used during Test:

| DESCRIPTION | MANUFACTURER | MODEL NO.(SHIELD) | S/N(LENGTH) |
|-------------|--------------|-------------------|-----------------|
| Notebook | Lenovo | E470 | PF-OU5TS7 17/09 |

Test software: HueApprobatonTool, which used to control the EUT in continues transmitting mode.

Power level setting at 10dBm.

The system was configured to channel 0, 19, and 39 for the test.

9 Technical Requirement

9.1 Conducted Emission

Test Method

1. The EUT was placed on a table, which is 0.8m above ground plane
2. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.).
3. Maximum procedure was performed to ensure EUT compliance
4. A EMI test receiver is used to test the emissions from both sides of AC line

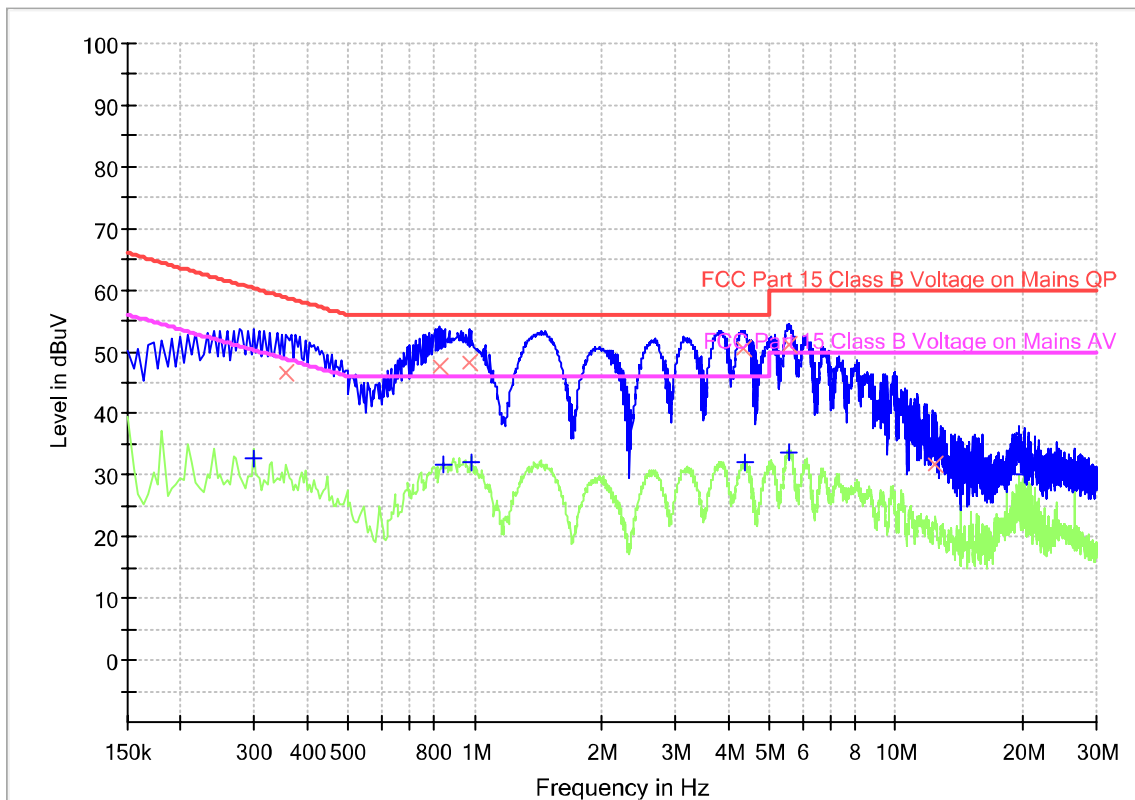
Limit

| Frequency MHz | QP Limit dB μ V | AV Limit dB μ V |
|------------------|------------------------|------------------------|
| 0.150-0.500 | 66-56* | 56-46* |
| 0.500-5 | 56 | 46 |
| 5-30 | 60 | 50 |

Decreasing linearly with logarithm of the frequency

Conducted Emission

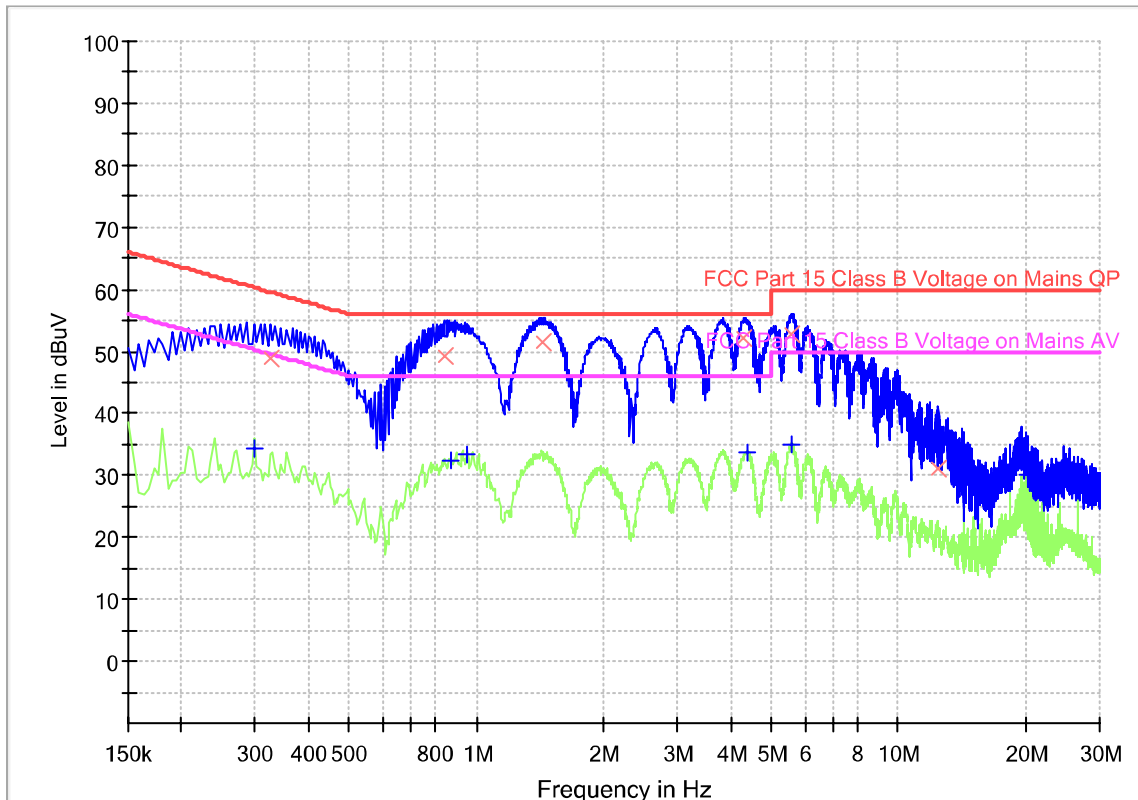
Product Type : LED light
 M/N : 9290031345
 Operating Condition : Mode 1: Tx_2440MHz BLE_1Mbit/s
 Test Specification : L-Line
 Comment : AC 120V 60Hz



Final Result

| Frequency (MHz) | QuasiPeak (dBuV) | CAverage (dBuV) | Limit (dBuV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|------------|
| 0.298500 | --- | 32.60 | 50.28 | 17.68 | 1000.0 | 9.000 | L1 | 19.5 |
| 0.357000 | 46.69 | --- | 58.80 | 12.11 | 1000.0 | 9.000 | L1 | 19.5 |
| 0.820500 | 47.47 | --- | 56.00 | 8.53 | 1000.0 | 9.000 | L1 | 19.5 |
| 0.843000 | --- | 31.81 | 46.00 | 14.19 | 1000.0 | 9.000 | L1 | 19.5 |
| 0.969000 | 48.18 | --- | 56.00 | 7.82 | 1000.0 | 9.000 | L1 | 19.5 |
| 0.978000 | --- | 32.20 | 46.00 | 13.80 | 1000.0 | 9.000 | L1 | 19.5 |
| 4.353000 | 50.54 | --- | 56.00 | 5.46 | 1000.0 | 9.000 | L1 | 19.6 |
| 4.380000 | --- | 32.03 | 46.00 | 13.97 | 1000.0 | 9.000 | L1 | 19.6 |
| 5.595000 | 51.11 | --- | 60.00 | 8.89 | 1000.0 | 9.000 | L1 | 19.6 |
| 5.595000 | --- | 33.82 | 50.00 | 16.18 | 1000.0 | 9.000 | L1 | 19.6 |
| 12.412500 | 31.63 | --- | 60.00 | 28.37 | 1000.0 | 9.000 | L1 | 19.7 |
| 20.238000 | --- | 30.04 | 50.00 | 19.96 | 1000.0 | 9.000 | L1 | 19.8 |

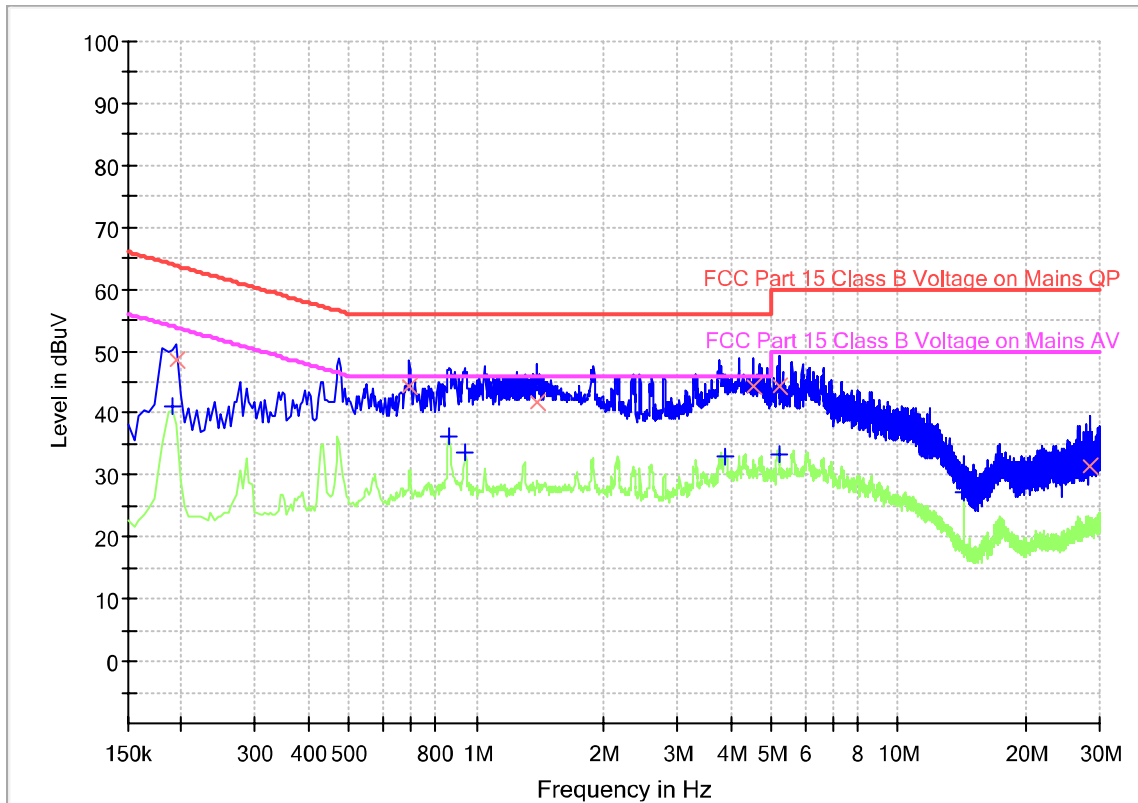
Product Type : LED light
 M/N : 9290031345
 Operating Condition : Mode 1: Tx_2440MHz BLE_1Mbit/s
 Test Specification : N-Line
 Comment : AC 120V 60Hz



Final Result

| Frequency (MHz) | QuasiPeak (dBuV) | CAverage (dBuV) | Limit (dBuV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|------------|
| 0.298500 | --- | 34.27 | 50.28 | 16.01 | 1000.0 | 9.000 | N | 19.5 |
| 0.325500 | 48.78 | --- | 59.57 | 10.79 | 1000.0 | 9.000 | N | 19.5 |
| 0.838500 | 49.35 | --- | 56.00 | 6.65 | 1000.0 | 9.000 | N | 19.5 |
| 0.870000 | --- | 32.46 | 46.00 | 13.54 | 1000.0 | 9.000 | N | 19.5 |
| 0.955500 | --- | 33.44 | 46.00 | 12.56 | 1000.0 | 9.000 | N | 19.5 |
| 1.446000 | 51.62 | --- | 56.00 | 4.38 | 1000.0 | 9.000 | N | 19.5 |
| 4.312500 | 52.15 | --- | 56.00 | 3.85 | 1000.0 | 9.000 | N | 19.5 |
| 4.380000 | --- | 33.55 | 46.00 | 12.45 | 1000.0 | 9.000 | N | 19.5 |
| 5.554500 | 52.62 | --- | 60.00 | 7.38 | 1000.0 | 9.000 | N | 19.6 |
| 5.608500 | --- | 34.87 | 50.00 | 15.13 | 1000.0 | 9.000 | N | 19.6 |
| 12.448500 | 30.97 | --- | 60.00 | 29.03 | 1000.0 | 9.000 | N | 19.7 |
| 20.238000 | --- | 30.00 | 50.00 | 20.00 | 1000.0 | 9.000 | N | 19.8 |

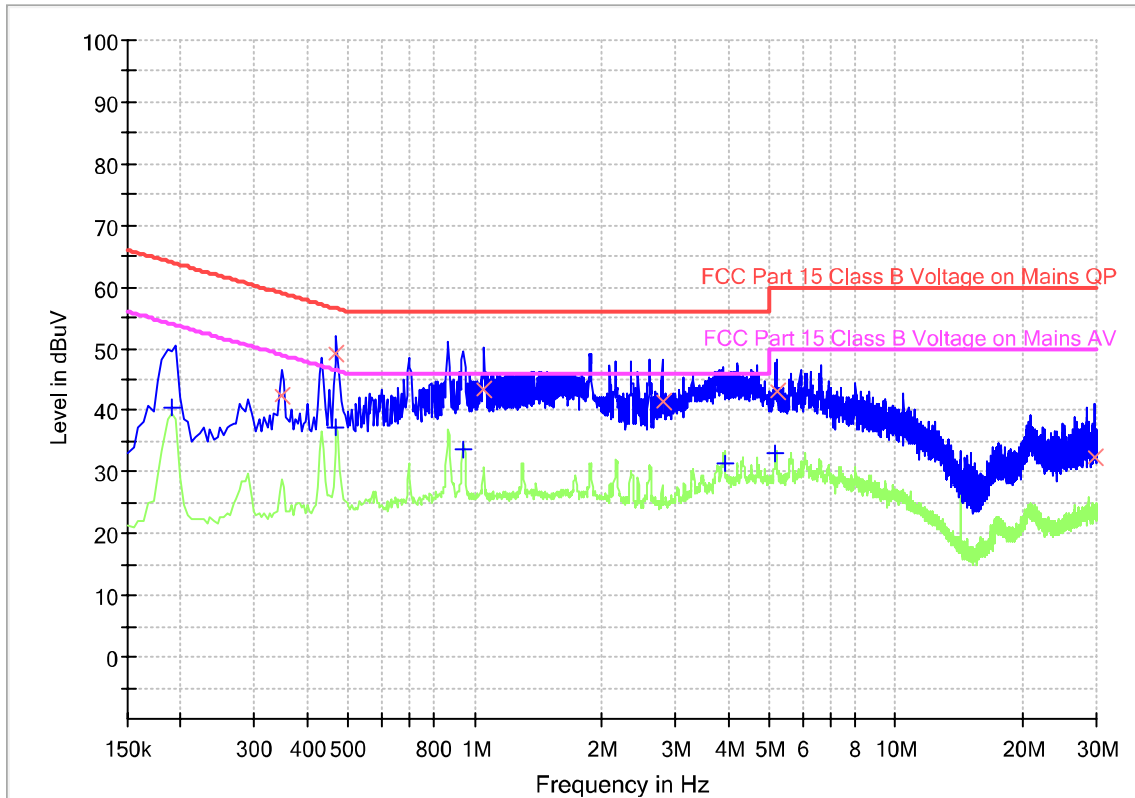
Product Type : LED light
 M/N : 9290031347
 Operating Condition : Mode 1: Tx_2440MHz BLE_1Mbit/s
 Test Specification : L-Line
 Comment : AC 120V 60Hz



Final Result

| Frequency (MHz) | QuasiPeak (dBuV) | CAverage (dBuV) | Limit (dBuV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|------------|
| 0.190500 | --- | 41.16 | 54.01 | 12.85 | 1000.0 | 9.000 | L1 | 19.5 |
| 0.195000 | 48.64 | --- | 63.82 | 15.18 | 1000.0 | 9.000 | L1 | 19.5 |
| 0.694500 | 44.36 | --- | 56.00 | 11.64 | 1000.0 | 9.000 | L1 | 19.5 |
| 0.861000 | --- | 36.19 | 46.00 | 9.81 | 1000.0 | 9.000 | L1 | 19.5 |
| 0.942000 | --- | 33.76 | 46.00 | 12.24 | 1000.0 | 9.000 | L1 | 19.5 |
| 1.392000 | 41.78 | --- | 56.00 | 14.22 | 1000.0 | 9.000 | L1 | 19.5 |
| 3.903000 | --- | 33.03 | 46.00 | 12.97 | 1000.0 | 9.000 | L1 | 19.6 |
| 4.537500 | 44.35 | --- | 56.00 | 11.65 | 1000.0 | 9.000 | L1 | 19.6 |
| 5.212500 | 44.27 | --- | 60.00 | 15.73 | 1000.0 | 9.000 | L1 | 19.6 |
| 5.212500 | --- | 33.38 | 50.00 | 16.62 | 1000.0 | 9.000 | L1 | 19.6 |
| 14.334000 | --- | 27.30 | 50.00 | 22.70 | 1000.0 | 9.000 | L1 | 19.8 |
| 28.270500 | 31.29 | --- | 60.00 | 28.71 | 1000.0 | 9.000 | L1 | 20.0 |

Product Type : LED light
 M/N : 9290031347
 Operating Condition : Mode 1: Tx_2440MHz BLE_1Mbit/s
 Test Specification : N-Line
 Comment : AC 120V 60Hz



Final Result

| Frequency (MHz) | QuasiPeak (dBuV) | CAverage (dBuV) | Limit (dBuV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|------------|
| 0.190500 | --- | 40.42 | 54.01 | 13.59 | 1000.0 | 9.000 | N | 19.5 |
| 0.348000 | 42.29 | --- | 59.01 | 16.72 | 1000.0 | 9.000 | N | 19.5 |
| 0.469500 | --- | 37.20 | 46.52 | 9.32 | 1000.0 | 9.000 | N | 19.5 |
| 0.469500 | 49.14 | --- | 56.52 | 7.38 | 1000.0 | 9.000 | N | 19.5 |
| 0.942000 | --- | 33.67 | 46.00 | 12.33 | 1000.0 | 9.000 | N | 19.5 |
| 1.050000 | 43.46 | --- | 56.00 | 12.54 | 1000.0 | 9.000 | N | 19.5 |
| 2.791500 | 41.55 | --- | 56.00 | 14.45 | 1000.0 | 9.000 | N | 19.5 |
| 3.916500 | --- | 31.54 | 46.00 | 14.46 | 1000.0 | 9.000 | N | 19.5 |
| 5.185500 | --- | 32.88 | 50.00 | 17.12 | 1000.0 | 9.000 | N | 19.6 |
| 5.212500 | 43.00 | --- | 60.00 | 17.00 | 1000.0 | 9.000 | N | 19.6 |
| 14.334000 | --- | 27.71 | 50.00 | 22.29 | 1000.0 | 9.000 | N | 19.7 |
| 29.665500 | 32.28 | --- | 60.00 | 27.72 | 1000.0 | 9.000 | N | 20.1 |

Note 1: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)
 Factor (dB) = Cable Loss (dB) + LISN Factor (dB) + 10dB Attenuator

9.2 Conducted peak output power

Test Method

1. Use the following spectrum analyzer settings:
RBW > the 6 dB bandwidth of the emission being measured, VBW \geq 3RBW, Span \geq 3RBW
Sweep = auto, Detector function = peak, Trace = max hold.
2. Add a correction factor to the display.
3. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power.

Limits

According to §15.247 (b) (1) & RSS-247 5.4(d), conducted peak output power limit as below:

| Frequency Range MHz | Limit W | Limit dBm |
|------------------------|------------|--------------|
| 2400-2483.5 | ≤ 1 | ≤ 30 |

| Frequency Range MHz | Limit (EIRP) W | Limit dBm |
|------------------------|-------------------|--------------|
| 2400-2483.5 | ≤ 4 | ≤ 36 |

Test result

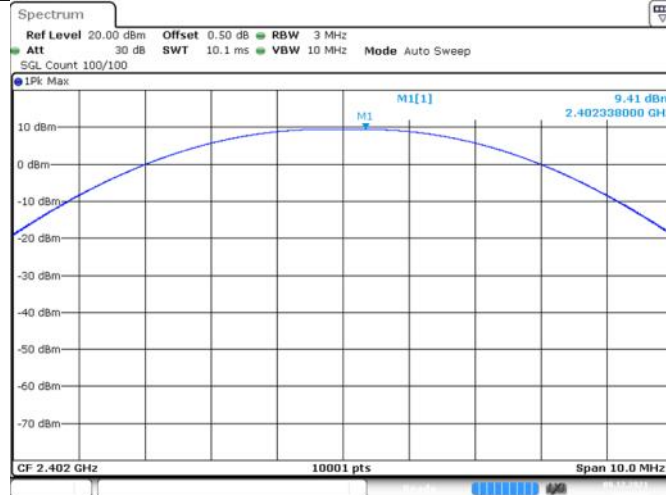
| TestMode | Channel | Conducted Peak Output Power Result[dBm] | Limit[dBm] | Verdict |
|----------|---------|---|------------|---------|
| BLE_125K | 2402 | 9.41 | ≤ 30 | PASS |
| | 2440 | 9.49 | ≤ 30 | PASS |
| | 2480 | 9.47 | ≤ 30 | PASS |
| BLE_500K | 2402 | 9.42 | ≤ 30 | PASS |
| | 2440 | 9.51 | ≤ 30 | PASS |
| | 2480 | 9.48 | ≤ 30 | PASS |
| BLE_1M | 2402 | 9.46 | ≤ 30 | PASS |
| | 2440 | 9.53 | ≤ 30 | PASS |
| | 2480 | 9.51 | ≤ 30 | PASS |
| BLE_2M | 2402 | 9.45 | ≤ 30 | PASS |
| | 2440 | 9.52 | ≤ 30 | PASS |
| | 2480 | 9.50 | ≤ 30 | PASS |



| TestMode | Channel | EIRP Result[dBm] | Limit[dBm] | Verdict |
|----------|---------|------------------|------------|---------|
| BLE_125K | 2402 | 10.17 | <=36 | PASS |
| | 2440 | 10.25 | <=36 | PASS |
| | 2480 | 10.23 | <=36 | PASS |
| BLE_500K | 2402 | 10.18 | <=36 | PASS |
| | 2440 | 10.27 | <=36 | PASS |
| | 2480 | 10.24 | <=36 | PASS |
| BLE_1M | 2402 | 10.22 | <=36 | PASS |
| | 2440 | 10.29 | <=36 | PASS |
| | 2480 | 10.27 | <=36 | PASS |
| BLE_2M | 2402 | 10.17 | <=36 | PASS |
| | 2440 | 10.25 | <=36 | PASS |
| | 2480 | 10.23 | <=36 | PASS |

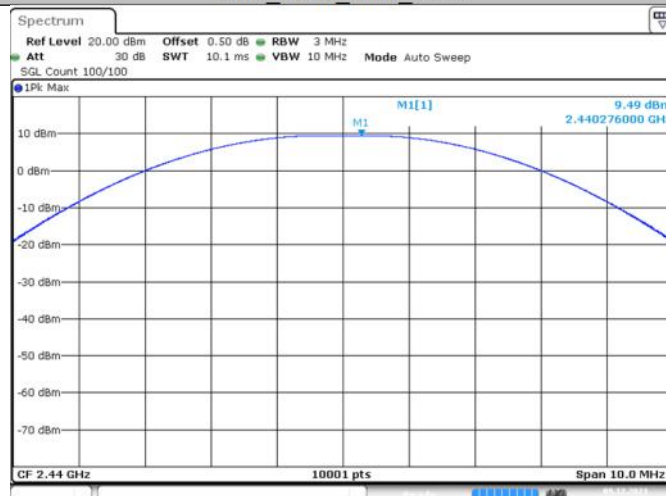
Test Graphs

BLE_125K_Ant1_2402



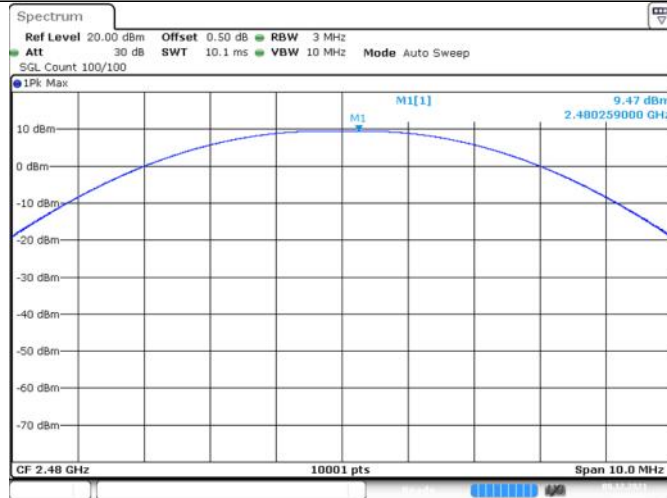
Date: 9 DEC 2021 13:39:03

BLE_125K_Ant1_2440



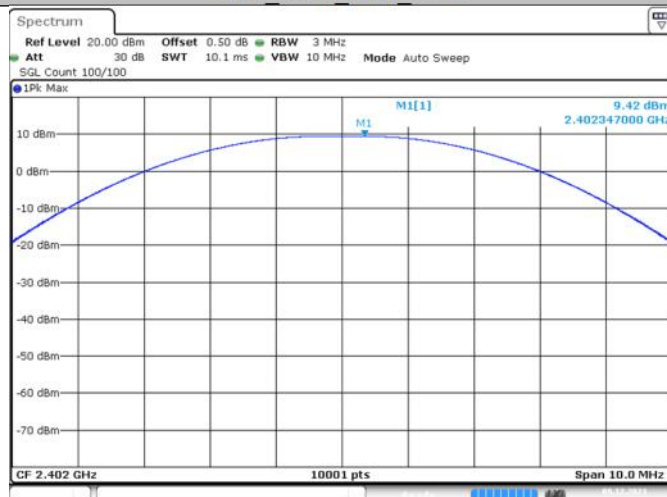
Date: 9 DEC 2021 13:40:12

BLE 125K Ant1_2480



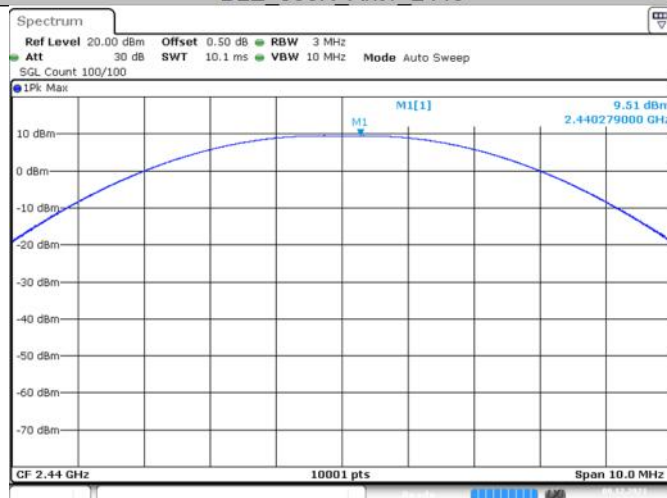
Date: 9 DEC.2021 13:41:12

BLE 500K Ant1_2402



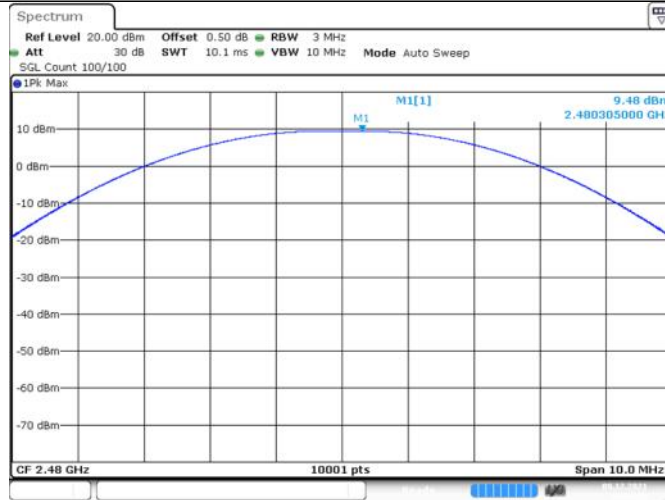
Date: 9 DEC.2021 13:31:02

BLE 500K Ant1_2440



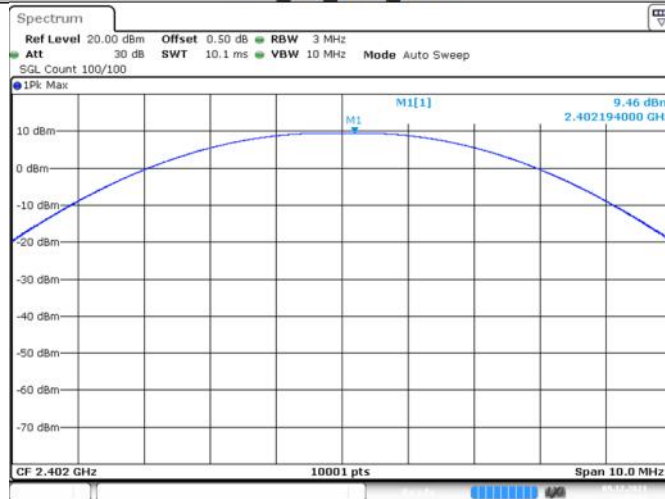
Date: 9 DEC.2021 13:33:18

BLE_500K_Ant1_2480



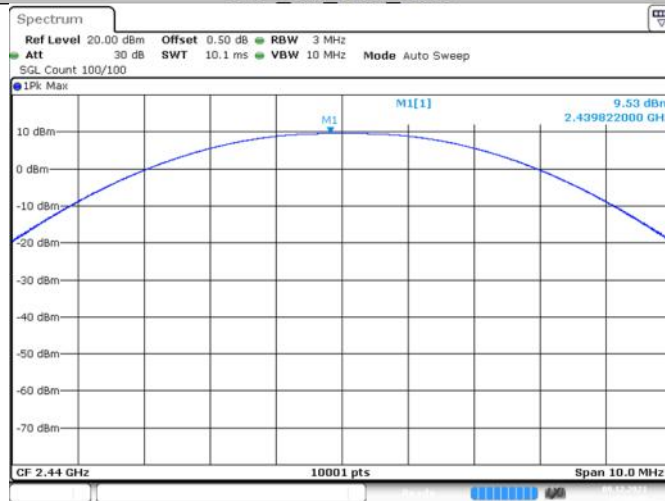
Date: 9 DEC.2021 13:34:15

BLE_1M_Ant1_2402



Date: 9 DEC.2021 12:57:11

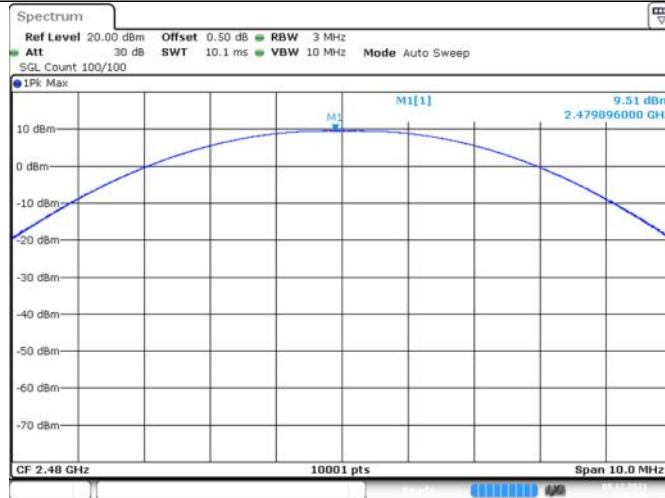
BLE_1M_Ant1_2440



Date: 9 DEC.2021 13:06:09



BLE_1M_Ant1_2480



Date: 9 DEC.2021 13:07:31

BLE_2M_Ant1_2402



Date: 9 DEC.2021 13:09:17

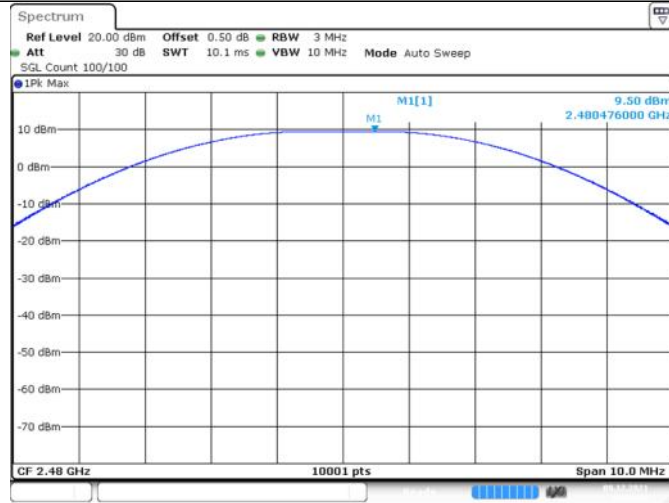
BLE_2M_Ant1_2440



Date: 9 DEC.2021 13:10:39



BLE_2M_Ant1_2480



Date: 9 DEC.2021 13:11:48

9.3 6dB bandwidth and 99% Occupied Bandwidth

Test Method

1. Use the following spectrum analyzer settings:
RBW=100K, VBW≥3RBW, Sweep = auto, Detector function = peak, Trace = max hold
2. Use the automatic bandwidth measurement capability of an instrument, may be employed using the X dB bandwidth mode with X set to 6 dB, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be ≥ 6 dB.
3. Allow the trace to stabilize, record the X dB Bandwidth value.

Test Method for 99 % Bandwidth

1. Use the following spectrum analyzer settings:
RBW=1% to 5% of the actual occupied, VBW≥3RBW, Sweep = auto, Detector function = peak, Trace = max hold
2. Use the automatic bandwidth measurement capability of an instrument, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be ≥ 6 dB.
3. Allow the trace to stabilize, record the X dB Bandwidth value.

Limit

Limit [kHz]

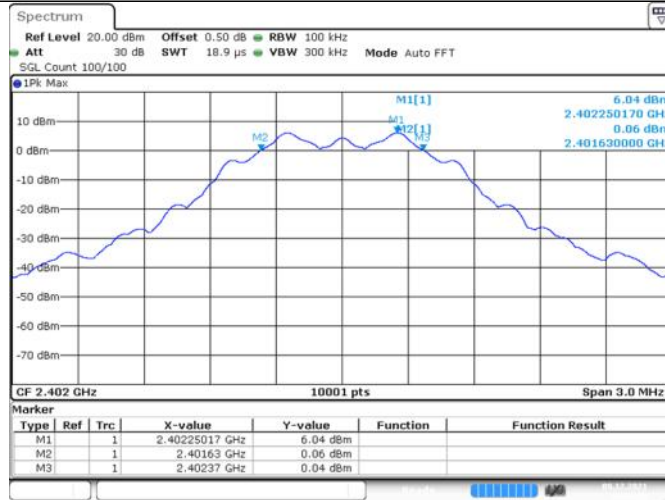
≥500

Test result

6dB Bandwidth

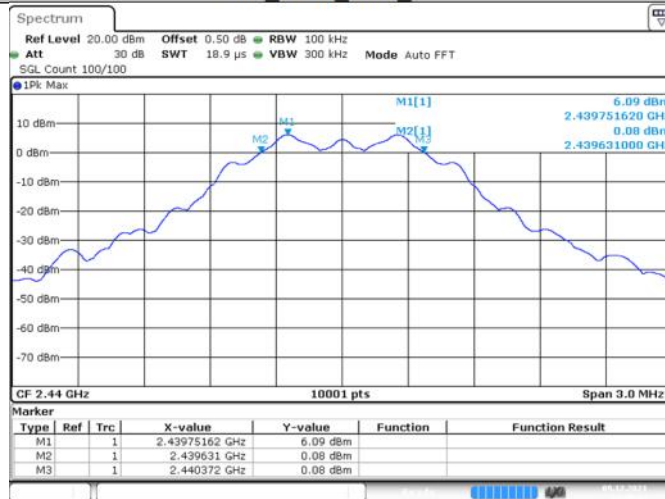
| TestMode | Channel | DTS BW [MHz] | Limit[MHz] | Verdict |
|----------|---------|--------------|------------|---------|
| BLE_125K | 2402 | 0.74 | 0.5 | PASS |
| | 2440 | 0.74 | 0.5 | PASS |
| | 2480 | 0.718 | 0.5 | PASS |
| BLE_1M | 2402 | 0.667 | 0.5 | PASS |
| | 2440 | 0.712 | 0.5 | PASS |
| | 2480 | 0.696 | 0.5 | PASS |
| BLE_2M | 2402 | 1.349 | 0.5 | PASS |
| | 2440 | 1.351 | 0.5 | PASS |
| | 2480 | 1.344 | 0.5 | PASS |
| BLE_500K | 2402 | 0.813 | 0.5 | PASS |
| | 2440 | 0.752 | 0.5 | PASS |
| | 2480 | 0.752 | 0.5 | PASS |

BLE 125K Ant1_2402



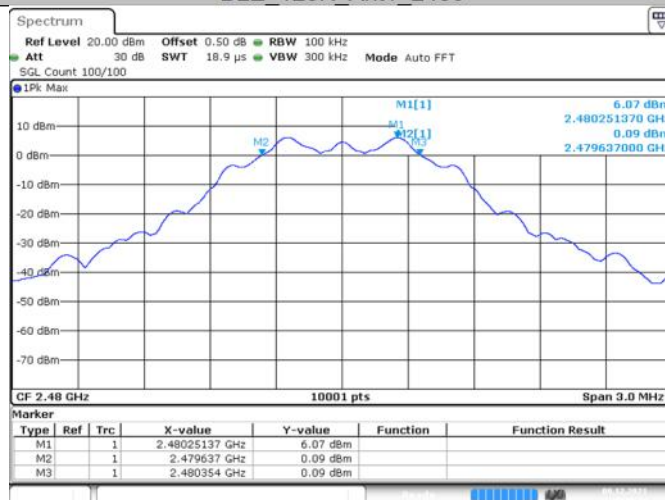
Date: 9 DEC 2021 13:39:15

BLE 125K Ant1_2440



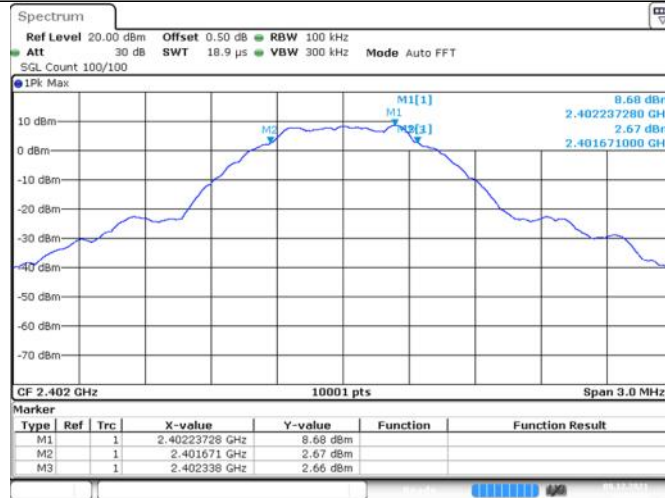
Date: 9 DEC 2021 13:40:24

BLE 125K Ant1_2480



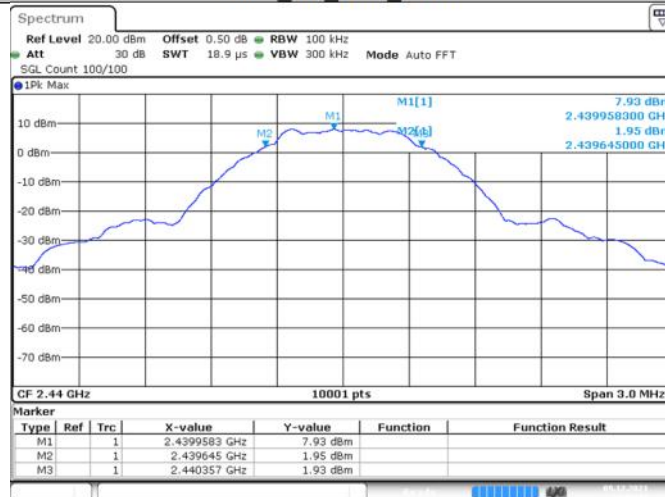
Date: 9 DEC 2021 13:41:23

BLE 1M_Ant1_2402



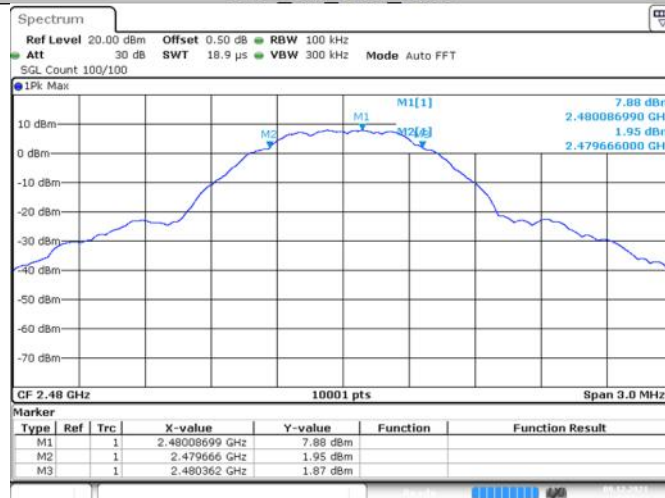
Date: 9 DEC 2021 12:57:20

BLE 1M_Ant1_2440



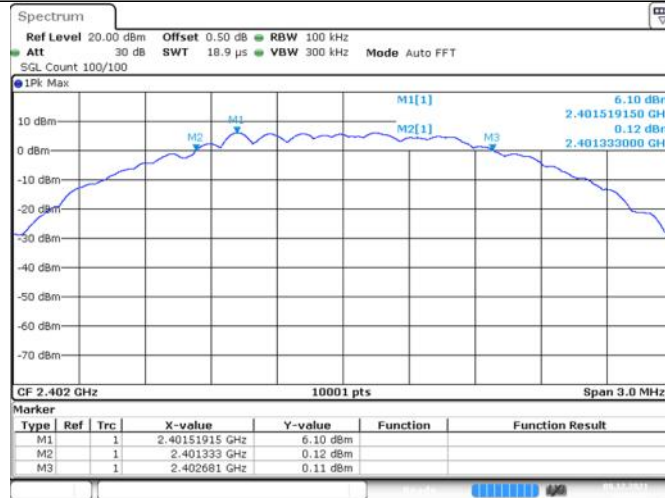
Date: 9 DEC 2021 13:06:20

BLE 1M_Ant1_2480



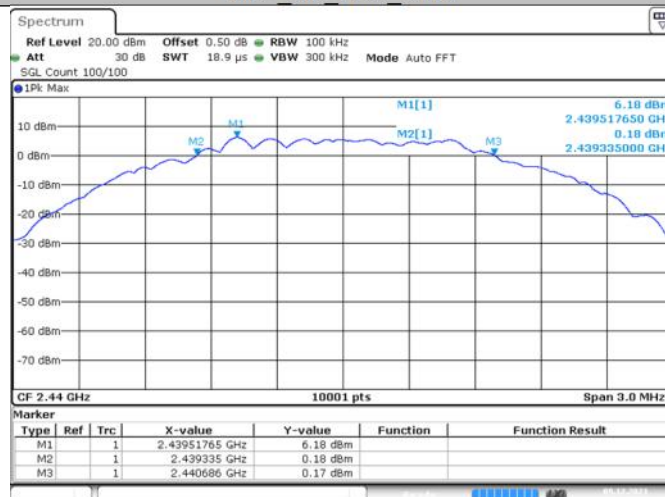
Date: 9 DEC 2021 13:07:42

BLE_2M_Ant1_2402



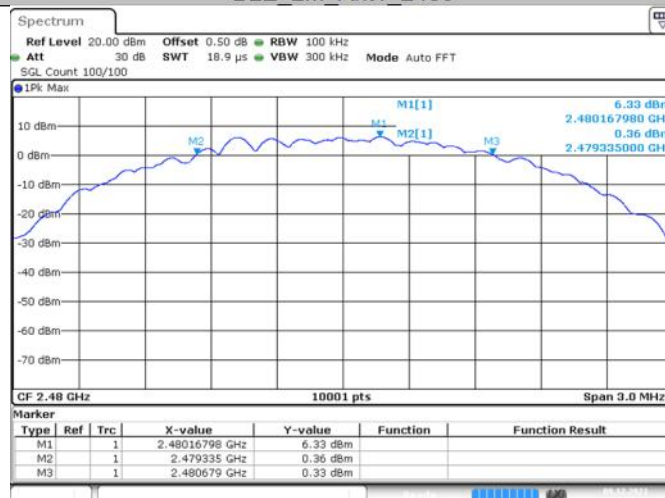
Date: 9 DEC 2021 13:09:28

BLE_2M_Ant1_2440



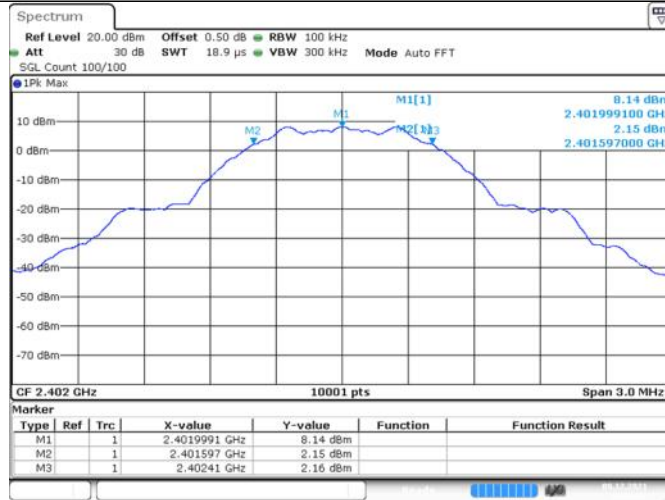
Date: 9 DEC 2021 13:10:50

BLE_2M_Ant1_2480



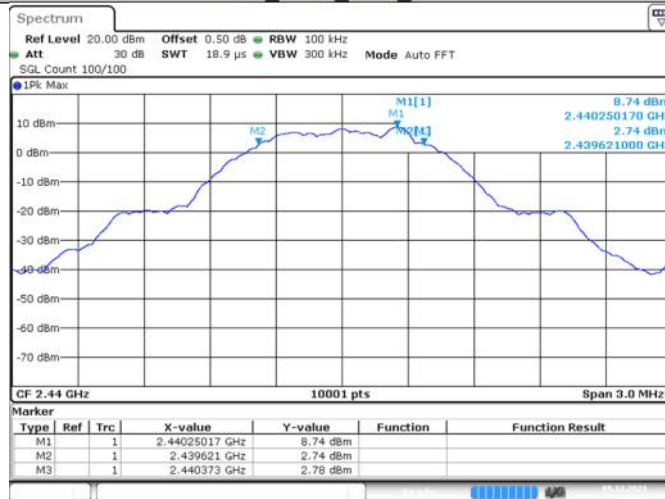
Date: 9 DEC 2021 13:12:00

BLE 500K Ant1_2402



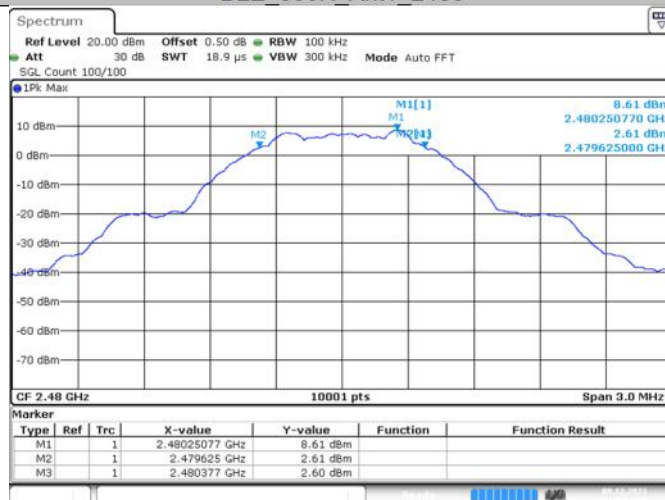
Date: 9 DEC 2021 13:31:12

BLE 500K Ant1_2440



Date: 9 DEC 2021 13:33:28

BLE 500K Ant1_2480



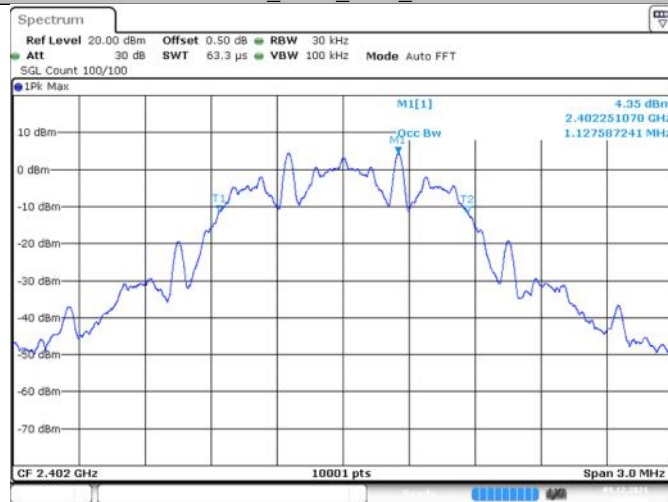
Date: 9 DEC 2021 13:34:25



99% Occupied Bandwidth

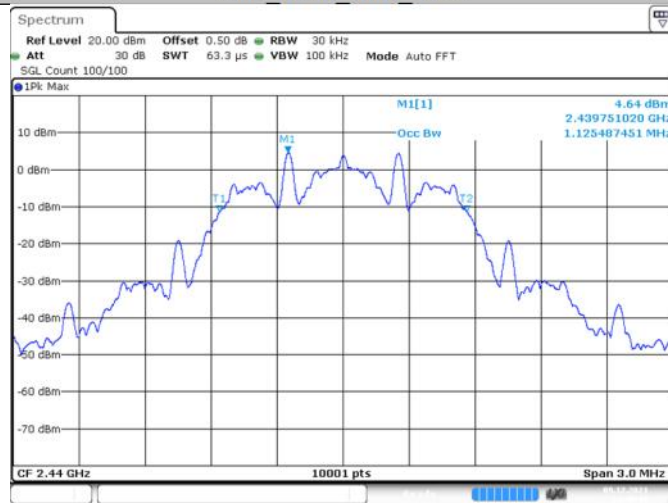
| TestMode | Channel | OCB [MHz] | Limit[MHz] | Verdict |
|----------|---------|-----------|------------|---------|
| BLE_125K | 2402 | 1.128 | --- | PASS |
| | 2440 | 1.125 | --- | PASS |
| | 2480 | 1.123 | --- | PASS |
| BLE_1M | 2402 | 1.035 | --- | PASS |
| | 2440 | 1.036 | --- | PASS |
| | 2480 | 1.033 | --- | PASS |
| BLE_2M | 2402 | 2.084 | --- | PASS |
| | 2440 | 2.09 | --- | PASS |
| | 2480 | 2.092 | --- | PASS |
| BLE_500K | 2402 | 1.083 | --- | PASS |
| | 2440 | 1.081 | --- | PASS |
| | 2480 | 1.082 | --- | PASS |

BLE_125K_Ant1_2402



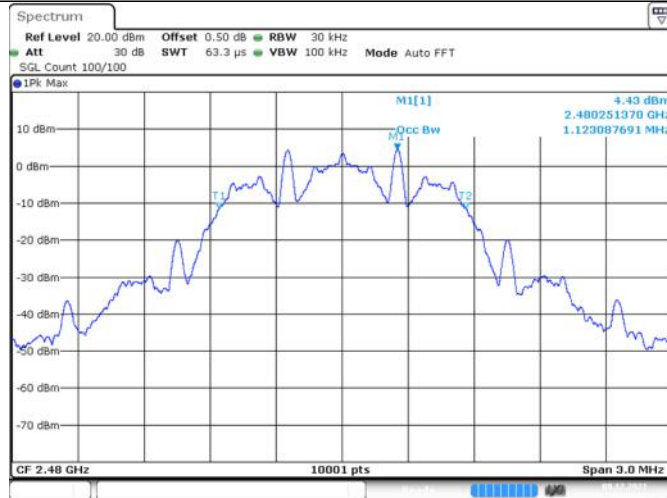
Date: 9 DEC 2021 13:39:09

BLE_125K_Ant1_2440



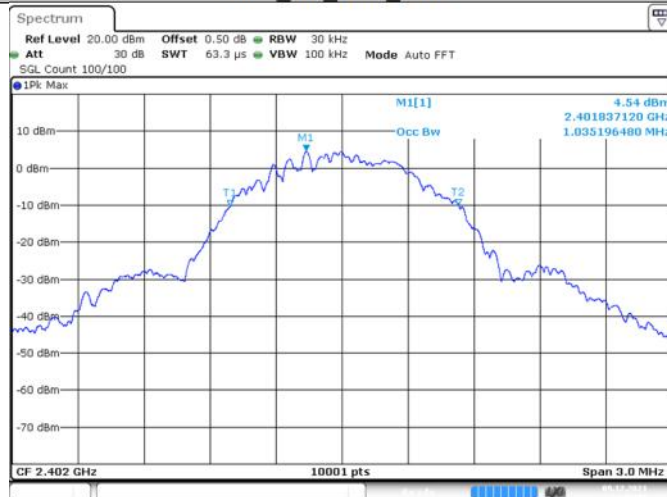
Date: 9 DEC 2021 13:40:18

BLE 125K_Ant1_2480



Date: 9 DEC 2021 13:41:17

BLE 1M_Ant1_2402



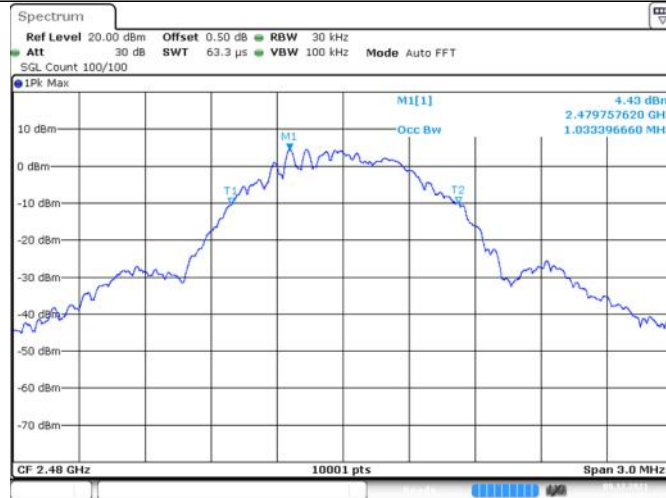
Date: 9 DEC 2021 12:57:15

BLE 1M_Ant1_2440



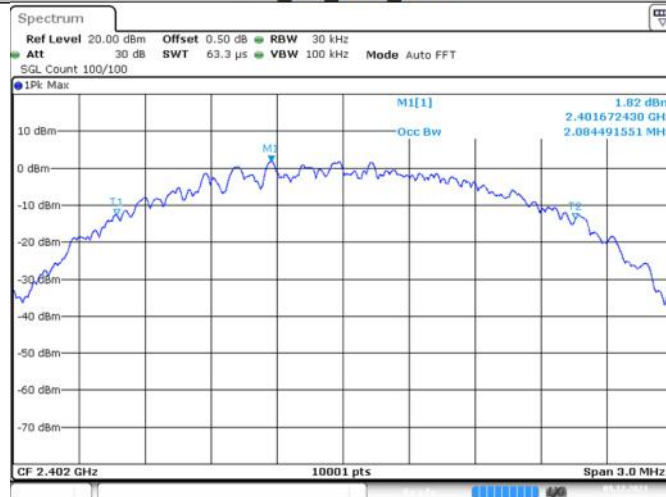
Date: 9 DEC 2021 13:06:14

BLE_1M_Ant1_2480



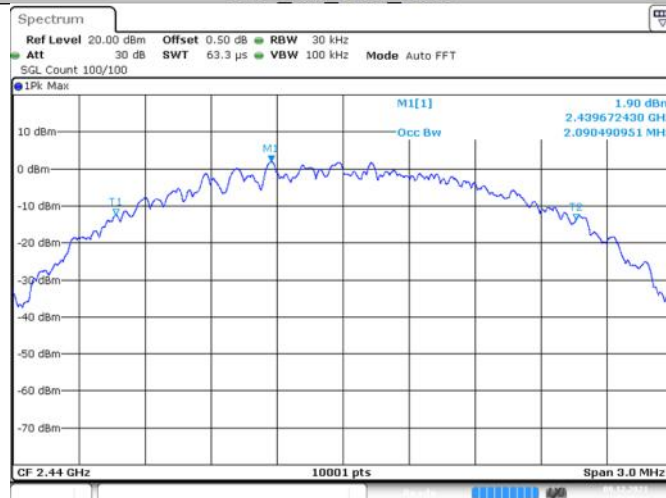
Date: 9 DEC 2021 13:07:36

BLE_2M_Ant1_2402



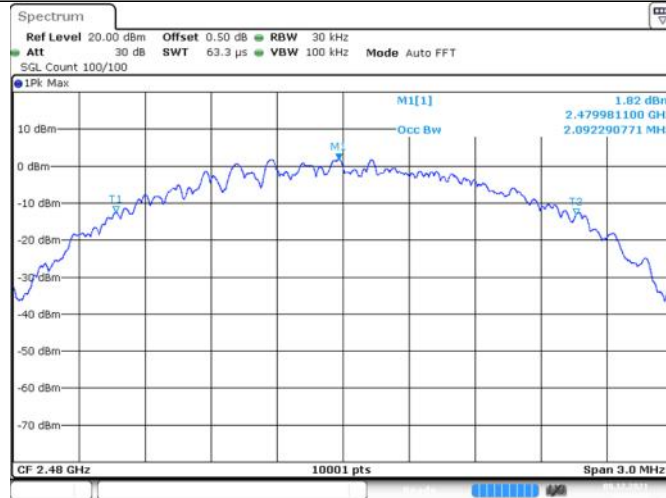
Date: 9 DEC 2021 13:09:22

BLE_2M_Ant1_2440



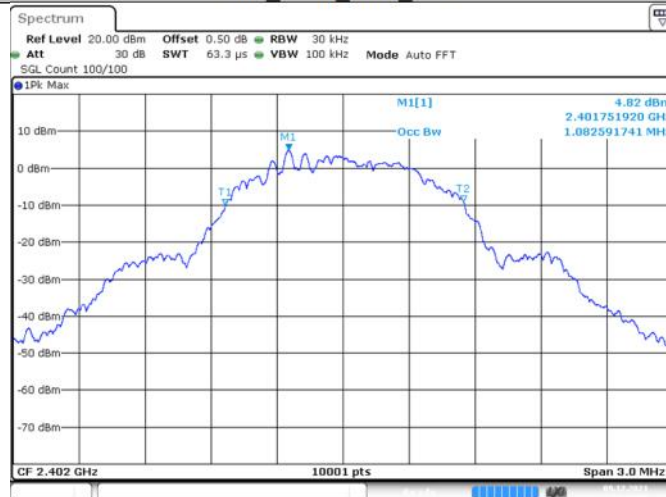
Date: 9 DEC 2021 13:10:44

BLE_2M_Ant1_2480



Date: 9 DEC.2021 13:11:54

BLE 500K Ant1_2402



Date: 9 DEC.2021 13:31:07

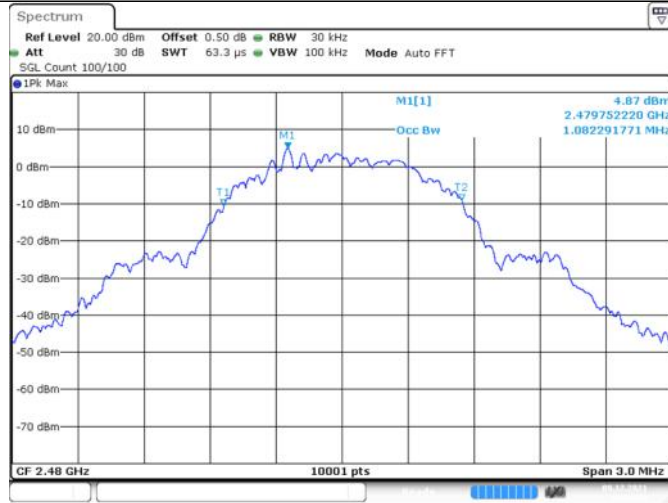
BLE 500K Ant1_2440



Date: 9 DEC.2021 13:33:23



BLE_500K_Ant1_2480



Date: 9 DEC.2021 13:34:19

9.4 Power spectral density

Test Method

This procedure shall be used if maximum peak conducted output power was used to demonstrate compliance:

1. Set analyzer center frequency to DTS channel center frequency.
RBW=3kHz, VBW≥3RBW, Span=1.5 times DTS bandwidth, Detector=Peak, Sweep=auto, Trace= max hold.
2. Allow trace to fully stabilize, use the peak marker function to determine the maximum amplitude level within the RBW.
3. Repeat above procedures until other frequencies measured were completed.

Limit

Limit [dBm/3kHz]

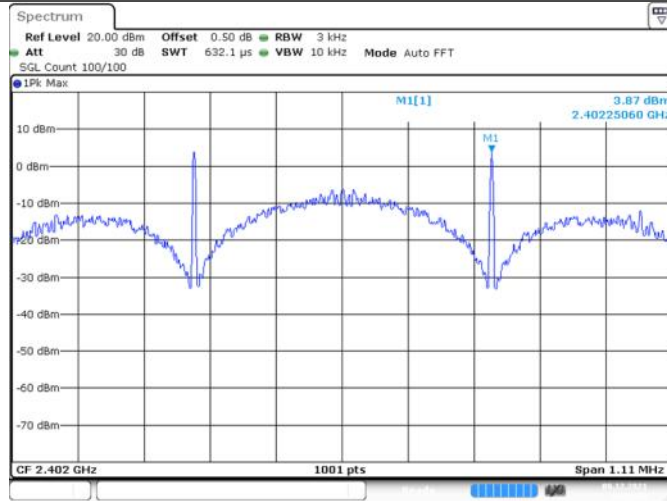
≤8

Test result

| TestMode | Channel | Result[dBm/3kHz] | Limit[dBm/3kHz] | Verdict |
|----------|---------|------------------|-----------------|---------|
| BLE_125K | 2402 | 3.87 | ≤8 | PASS |
| | 2440 | 3.94 | ≤8 | PASS |
| | 2480 | 3.90 | ≤8 | PASS |
| BLE_1M | 2402 | -6.39 | ≤8 | PASS |
| | 2440 | -6.36 | ≤8 | PASS |
| | 2480 | -6.36 | ≤8 | PASS |
| BLE_2M | 2402 | -8.36 | ≤8 | PASS |
| | 2440 | -8.26 | ≤8 | PASS |
| | 2480 | -8.29 | ≤8 | PASS |
| BLE_500K | 2402 | -9.12 | ≤8 | PASS |
| | 2440 | -8.94 | ≤8 | PASS |
| | 2480 | -9.00 | ≤8 | PASS |

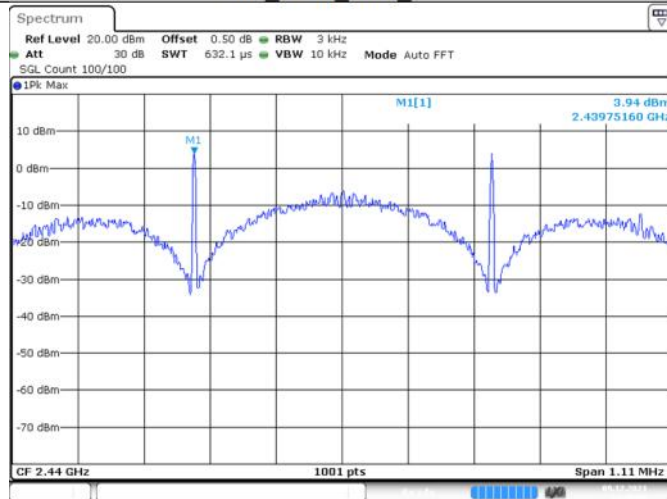
Test Graphs

BLE 125K_Ant1_2402



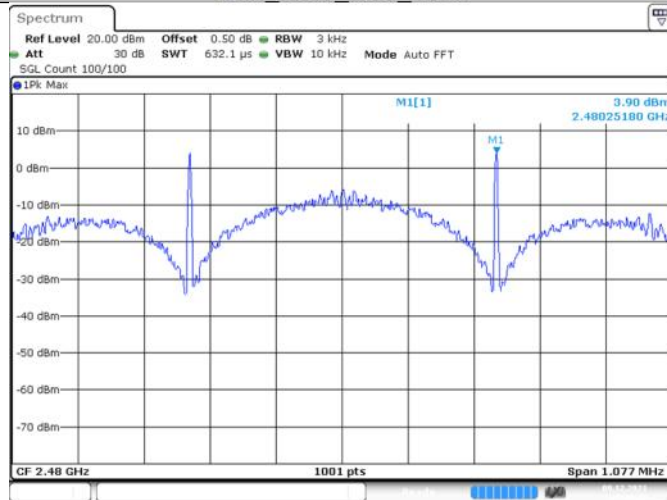
Date: 9 DEC 2021 13:39:20

BLE 125K_Ant1_2440



Date: 9 DEC 2021 13:40:29

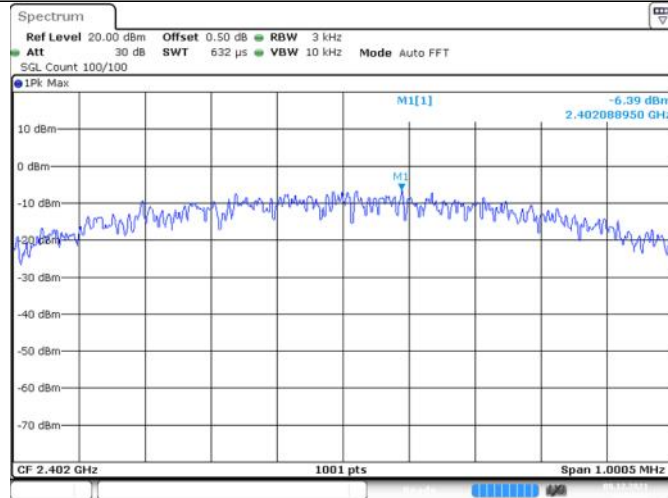
BLE 125K_Ant1_2480



Date: 9 DEC 2021 13:41:29

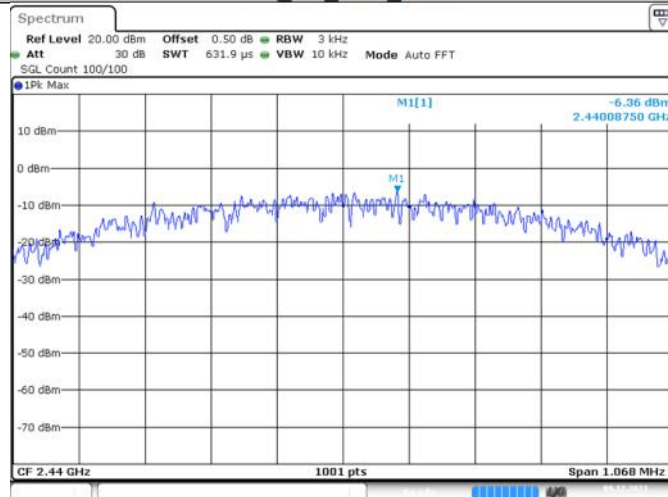


BLE 1M_Ant1_2402



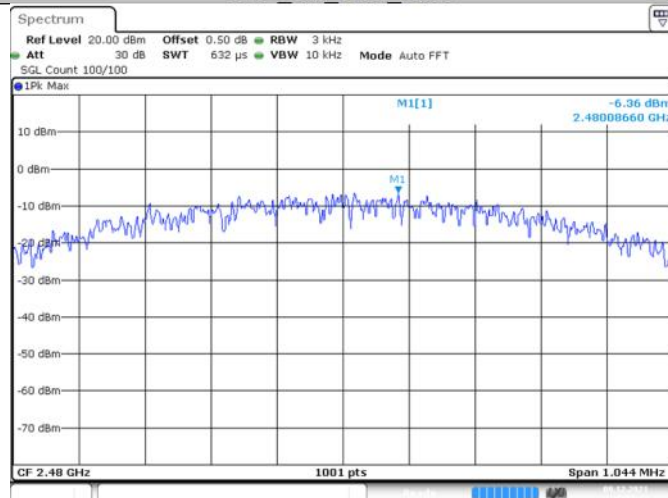
Date: 9 DEC.2021 12:57:23

BLE 1M_Ant1_2440



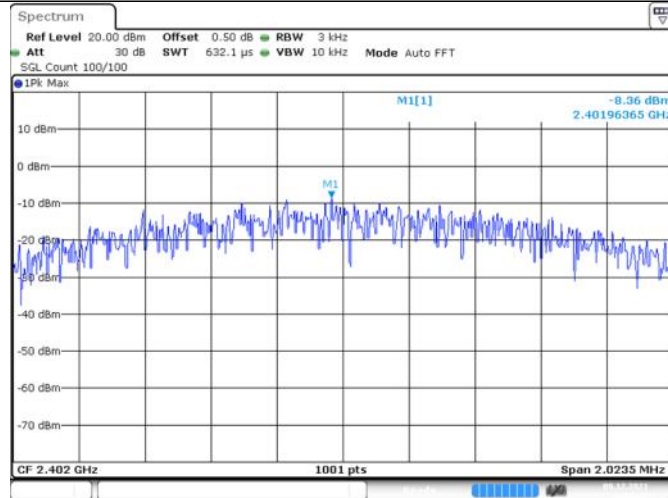
Date: 9 DEC.2021 13:06:25

BLE 1M_Ant1_2480



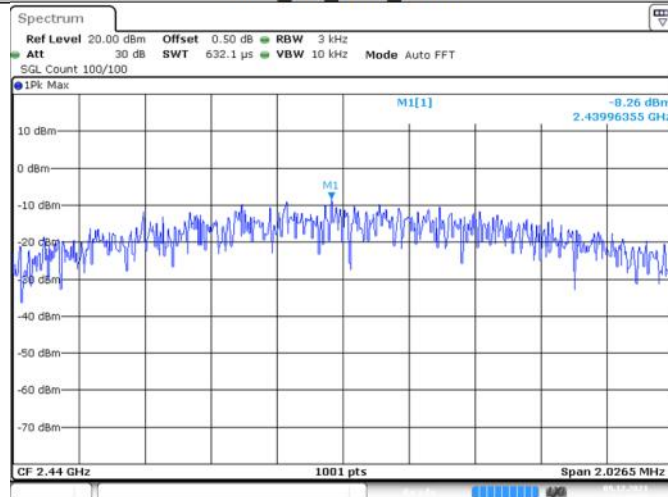
Date: 9 DEC.2021 13:07:46

BLE_2M_Ant1_2402



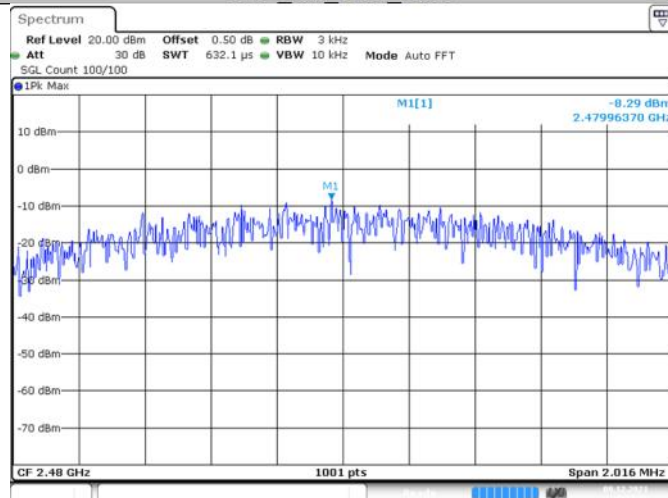
Date: 9 DEC.2021 13:09:33

BLE_2M_Ant1_2440



Date: 9 DEC.2021 13:10:55

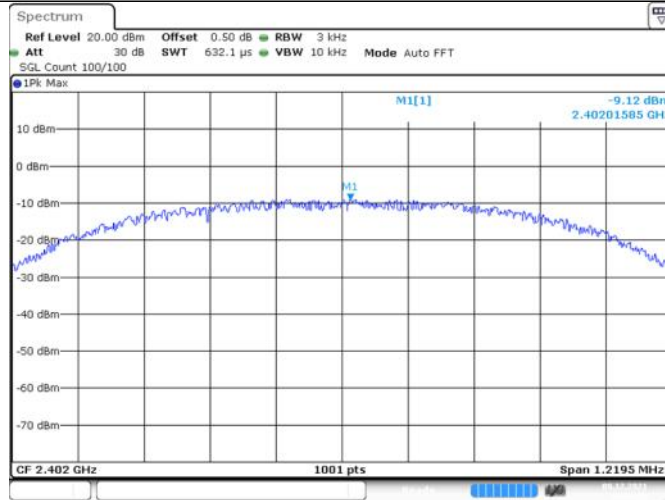
BLE_2M_Ant1_2480



Date: 9 DEC.2021 13:12:05

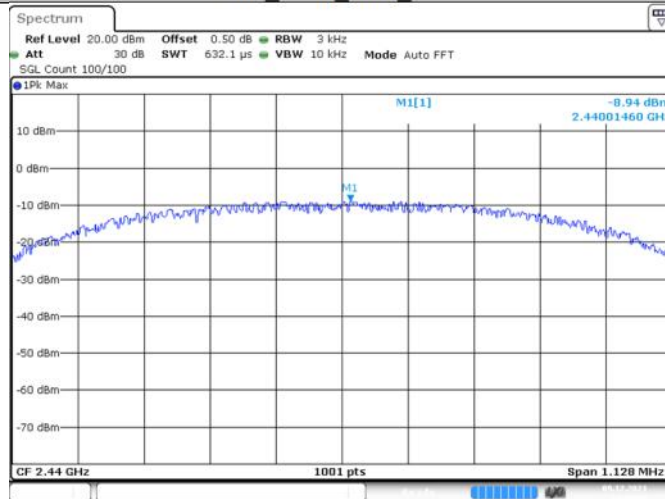


BLE 500K_Ant1_2402



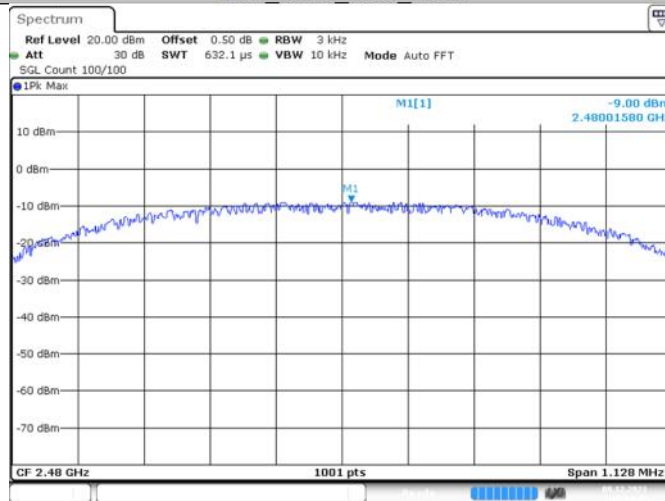
Date: 9 DEC 2021 13:31:16

BLE 500K_Ant1_2440



Date: 9 DEC 2021 13:33:32

BLE 500K_Ant1_2480



Date: 9 DEC 2021 13:34:29

9.5 Spurious RF conducted emissions

Test Method

1. Establish a reference level by using the following procedure:
 - a. Set RBW=100 kHz. VBW \geq 3RBW. Detector =peak, Sweep time = auto couple, Trace mode = max hold.
 - b. Allow trace to fully stabilize, use the peak marker function to determine the maximum PSD level.
2. Use the maximum PSD level to establish the reference level.
 - a. Set the center frequency and span to encompass frequency range to be measured.
 - b. Use the peak marker function to determine the maximum amplitude level. Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) are attenuated by at least the minimum requirements, report the three highest emissions relative to the limit.
3. Repeat above procedures until other frequencies measured were completed.

Limit

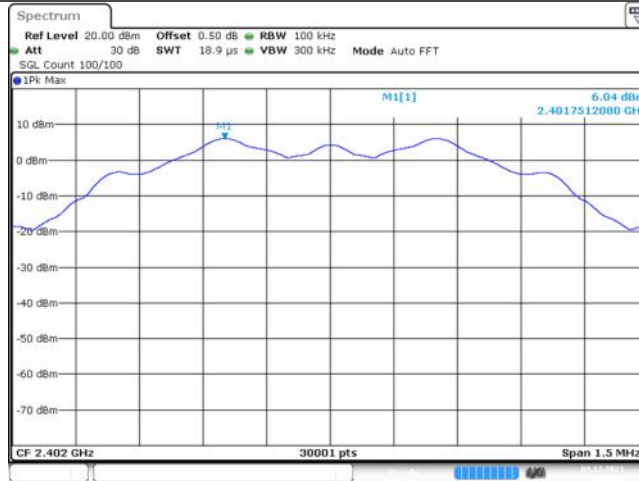
| Frequency Range MHz | Limit (dBc) |
|------------------------|-------------|
| 30-26500 | -20 |



| TestMode | Channel | FreqRange [MHz] | RefLevel [dBm] | Result[dBm] | Limit[dBm] | Verdict |
|----------|---------|-----------------|----------------|-------------|------------|---------|
| BLE_125K | 2402 | Reference | 6.04 | 6.04 | --- | PASS |
| | | 30~1000 | 6.04 | -64.64 | <=-13.96 | PASS |
| | | 1000~5000 | 6.04 | -62.87 | <=-13.96 | PASS |
| | | 5000~26500 | 6.04 | -53.36 | <=-13.96 | PASS |
| | 2440 | Reference | 6.11 | 6.11 | --- | PASS |
| | | 30~1000 | 6.11 | -65.11 | <=-13.89 | PASS |
| | | 1000~5000 | 6.11 | -62.28 | <=-13.89 | PASS |
| | | 5000~26500 | 6.11 | -50.54 | <=-13.89 | PASS |
| | 2480 | Reference | 6.05 | 6.05 | --- | PASS |
| | | 30~1000 | 6.05 | -65.26 | <=-13.95 | PASS |
| | | 1000~5000 | 6.05 | -61.30 | <=-13.95 | PASS |
| | | 5000~26500 | 6.05 | -51.67 | <=-13.95 | PASS |
| BLE_1M | 2402 | Reference | 8.25 | 8.25 | --- | PASS |
| | | 30~1000 | 8.25 | -67.23 | <=-11.75 | PASS |
| | | 1000~5000 | 8.25 | -64.45 | <=-11.75 | PASS |
| | | 5000~26500 | 8.25 | -54.07 | <=-11.75 | PASS |
| | 2440 | Reference | 8.10 | 8.10 | --- | PASS |
| | | 30~1000 | 8.10 | -64.47 | <=-11.90 | PASS |
| | | 1000~5000 | 8.10 | -48.81 | <=-11.90 | PASS |
| | | 5000~26500 | 8.10 | -67.76 | <=-11.90 | PASS |
| | 2480 | Reference | 8.34 | 8.34 | --- | PASS |
| | | 30~1000 | 8.34 | -67.76 | <=-11.66 | PASS |
| | | 1000~5000 | 8.34 | -61.41 | <=-11.66 | PASS |
| | | 5000~26500 | 8.34 | -52.71 | <=-11.66 | PASS |
| BLE_2M | 2402 | Reference | 6.39 | 6.39 | --- | PASS |
| | | 30~1000 | 6.39 | -65.43 | <=-13.61 | PASS |
| | | 1000~5000 | 6.39 | -62.08 | <=-13.61 | PASS |
| | | 5000~26500 | 6.39 | -53.46 | <=-13.61 | PASS |
| | 2440 | Reference | 5.69 | 5.69 | --- | PASS |
| | | 30~1000 | 5.69 | -64.12 | <=-14.31 | PASS |
| | | 1000~5000 | 5.69 | -61.85 | <=-14.31 | PASS |
| | | 5000~26500 | 5.69 | -49.55 | <=-14.31 | PASS |
| | 2480 | Reference | 6.38 | 6.38 | --- | PASS |
| | | 30~1000 | 6.38 | -65.01 | <=-13.62 | PASS |
| | | 1000~5000 | 6.38 | -62.1 | <=-13.62 | PASS |
| | | 5000~26500 | 6.38 | -53.67 | <=-13.62 | PASS |
| BLE_500K | 2402 | Reference | 7.97 | 7.97 | --- | PASS |
| | | 30~1000 | 7.97 | -66.6 | <=-12.03 | PASS |
| | | 1000~5000 | 7.97 | -64.37 | <=-12.03 | PASS |
| | | 5000~26500 | 7.97 | -55.43 | <=-12.03 | PASS |
| | 2440 | Reference | 8.73 | 8.73 | --- | PASS |
| | | 30~1000 | 8.73 | -68.17 | <=-11.27 | PASS |
| | | 1000~5000 | 8.73 | -63.83 | <=-11.27 | PASS |
| | | 5000~26500 | 8.73 | -48.27 | <=-11.27 | PASS |
| | 2480 | Reference | 8.48 | 8.48 | --- | PASS |
| | | 30~1000 | 8.48 | -67.43 | <=-11.52 | PASS |
| | | 1000~5000 | 8.48 | -62.48 | <=-11.52 | PASS |
| | | 5000~26500 | 8.48 | -53.23 | <=-11.52 | PASS |

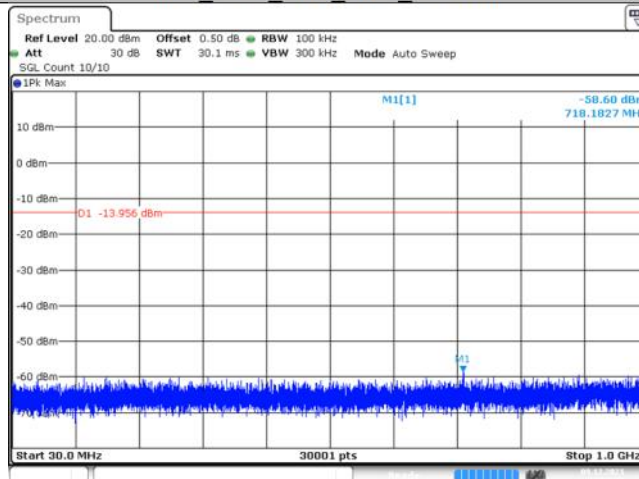
Test Graphs

BLE_125K_Ant1_2402_0~Reference



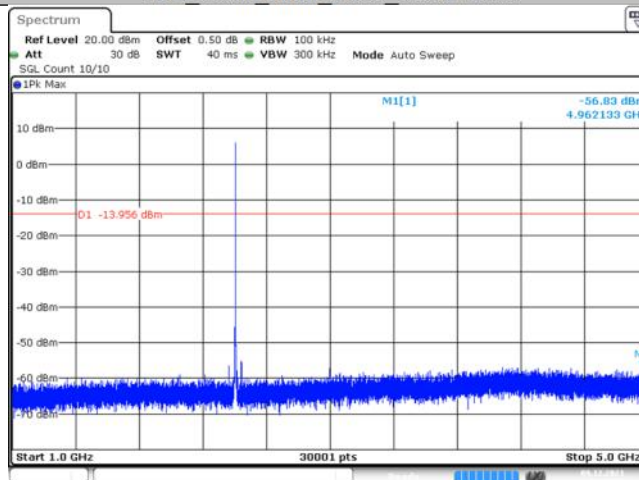
Date: 9 DEC 2021 13:39:32

BLE_125K_Ant1_2402_30~1000



Date: 9 DEC 2021 13:39:35

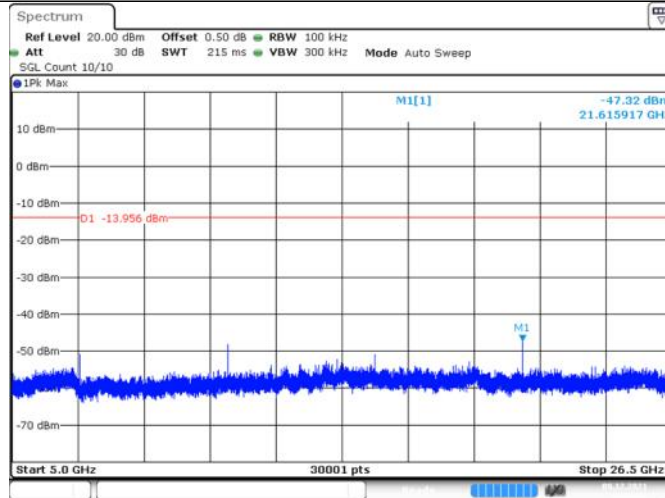
BLE_125K_Ant1_2402_1000~5000



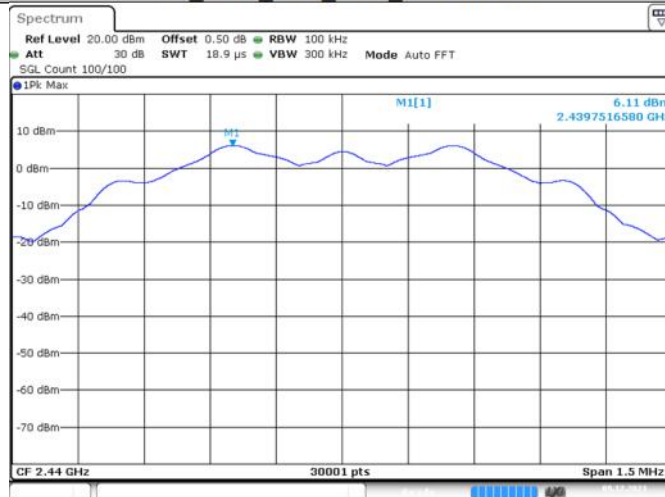
Date: 9 DEC 2021 13:39:37

Note: The emission which exceed the limit is the fundamental.

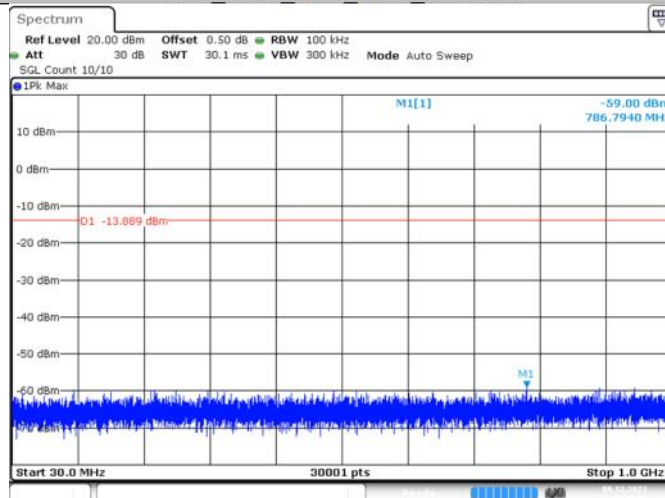
BLE_125K_Ant1_2402_5000~26500



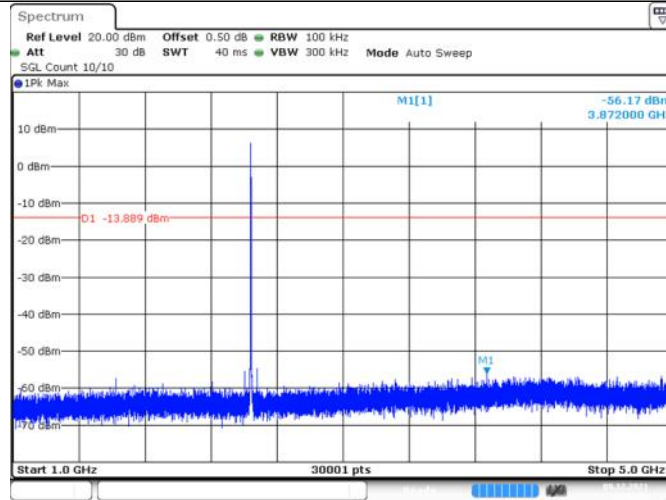
BLE_125K_Ant1_2440_0-Reference



BLE_125K_Ant1_2440_30~1000



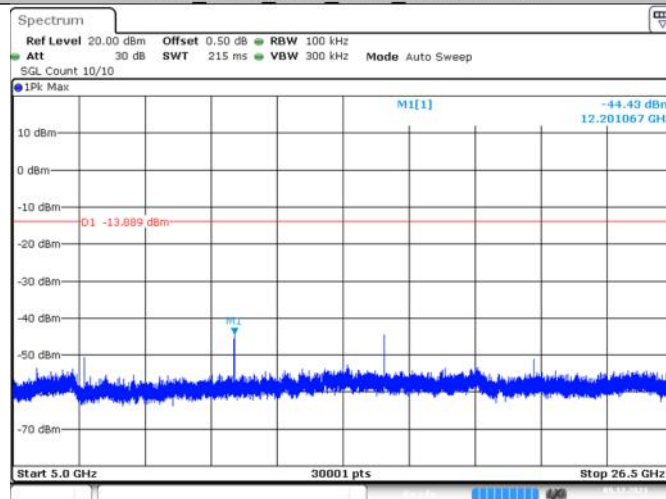
BLE_125K_Ant1_2440_1000~5000



Date: 9 DEC 2021 13:40:39

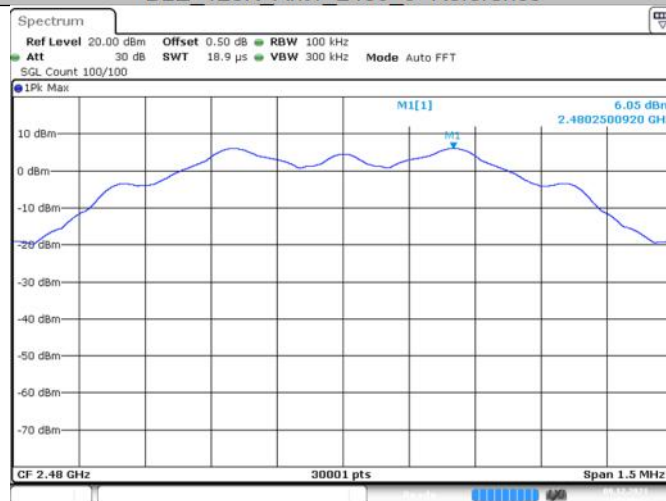
Note: The emission which exceed the limit is the fundamental.

BLE_125K_Ant1_2440_5000~26500



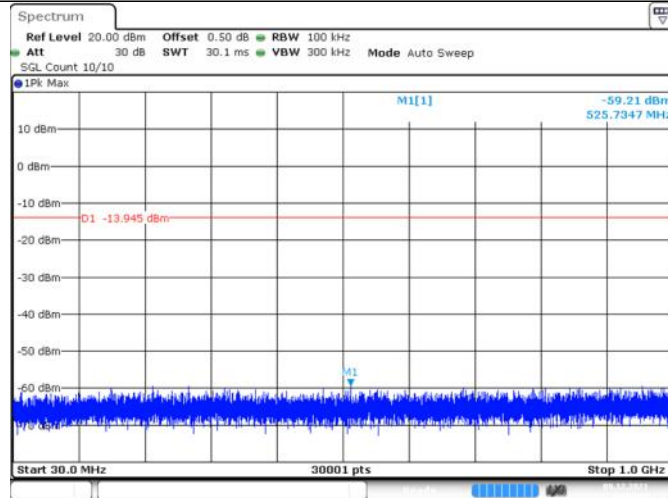
Date: 9 DEC 2021 13:40:48

BLE_125K_Ant1_2480_0~Reference



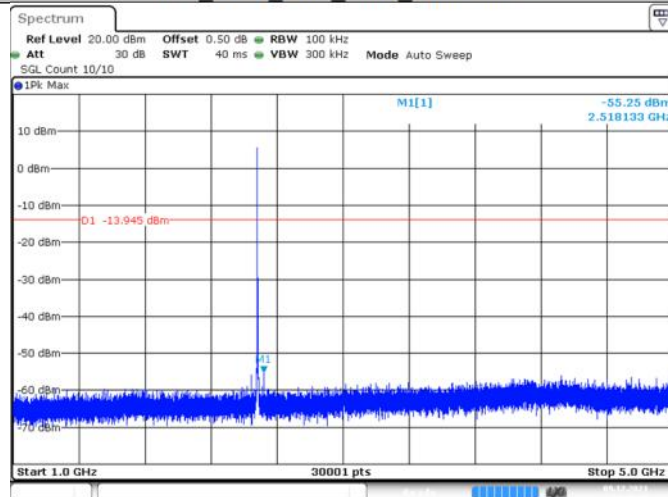
Date: 9 DEC 2021 13:41:42

BLE 125K Ant1_2480_30~1000



Date: 9 DEC.2021 13:41:44

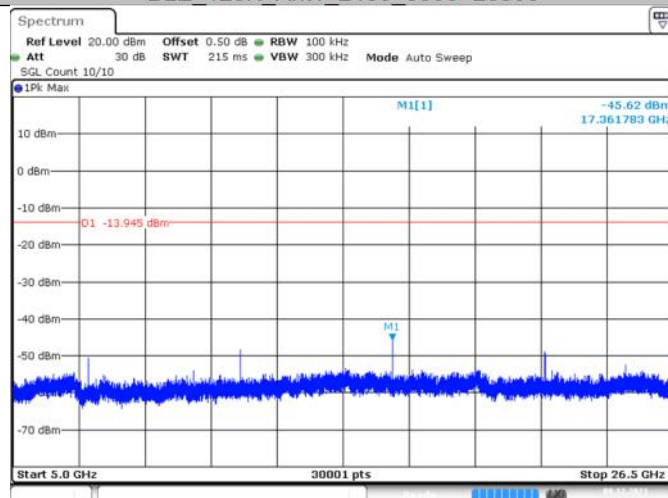
BLE 125K Ant1_2480_1000~5000



Date: 9 DEC.2021 13:41:47

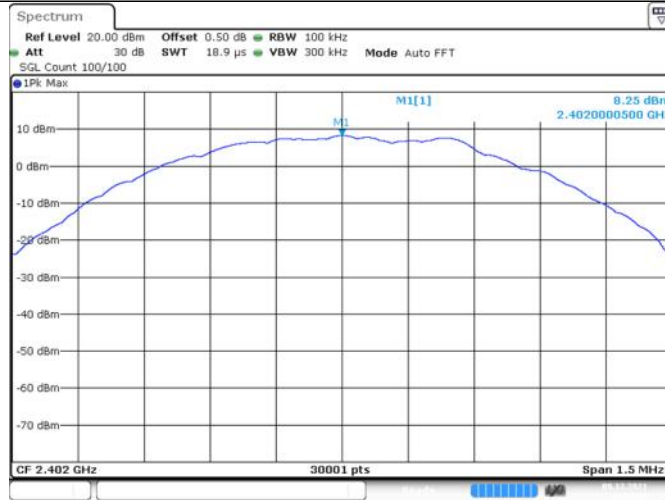
Note: The emission which exceed the limit is the fundamental.

BLE 125K Ant1_2480_5000~26500



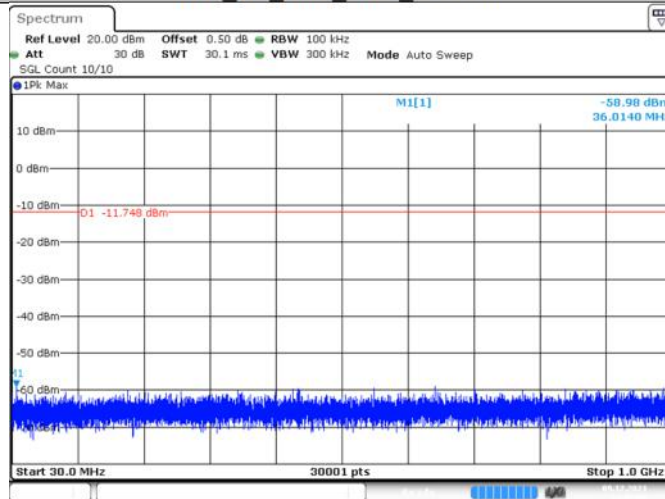
Date: 9 DEC.2021 13:41:56

BLE 1M_Ant1_2402_0~Reference



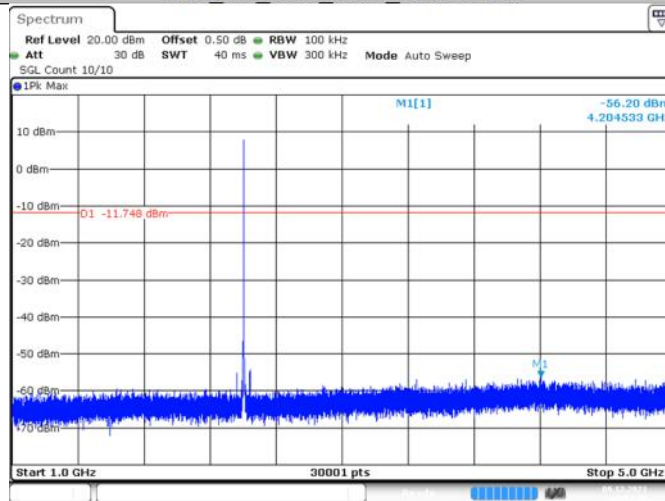
Date: 9 DEC.2021 12:57:34

BLE 1M_Ant1_2402_30~1000



Date: 9 DEC.2021 12:57:36

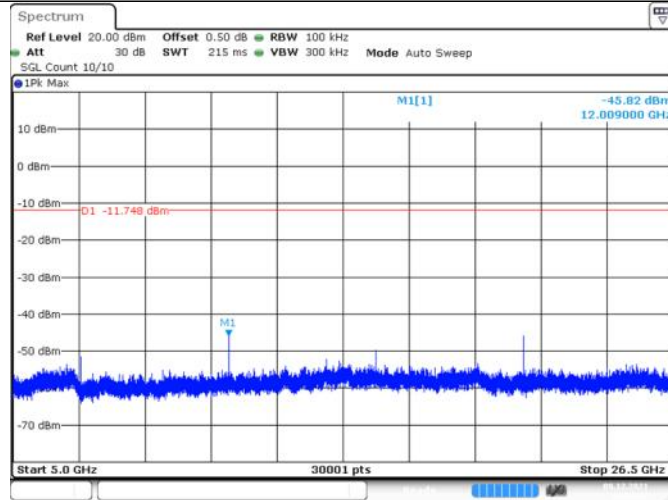
BLE 1M_Ant1_2402_1000~5000



Date: 9 DEC.2021 12:57:39

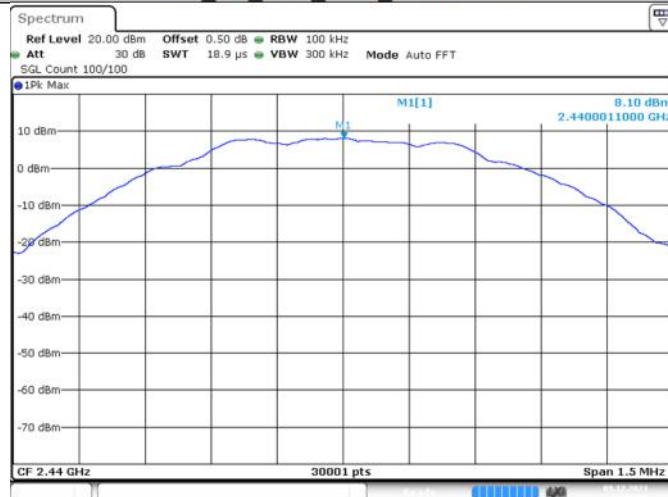
Note: The emission which exceed the limit is the fundamental.

BLE 1M_Ant1_2402_5000~26500



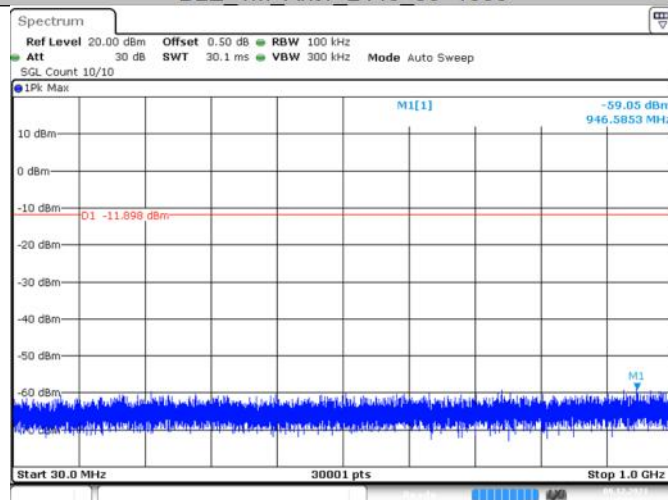
Date: 9 DEC.2021 12:57:48

BLE 1M_Ant1_2440_0~Reference



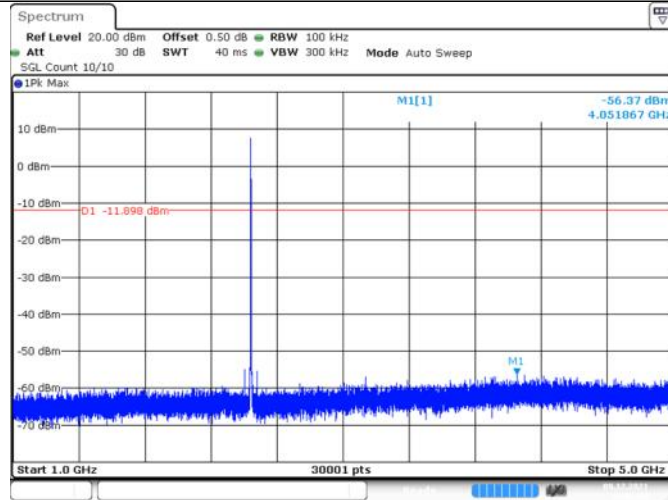
Date: 9 DEC.2021 13:06:29

BLE 1M_Ant1_2440_30~1000



Date: 9 DEC.2021 13:06:31

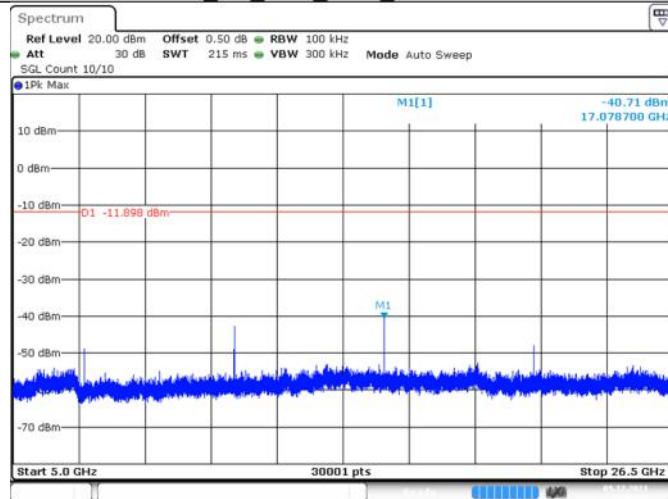
BLE 1M_Ant1_2440_1000~5000



Date: 9 DEC.2021 13:06:34

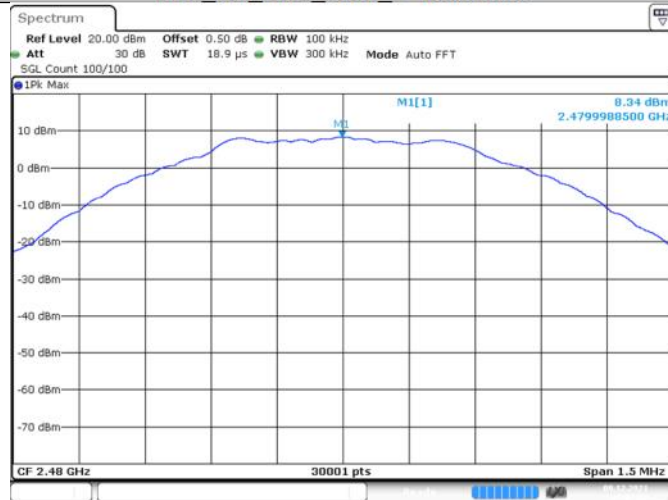
Note: The emission which exceed the limit is the fundamental.

BLE 1M_Ant1_2440_5000~26500



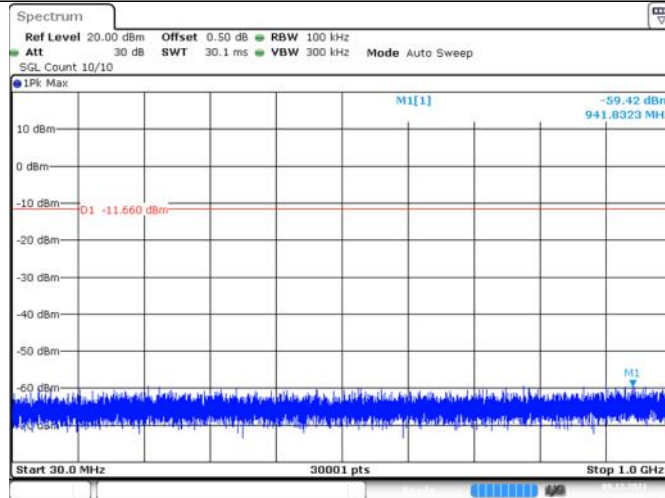
Date: 9 DEC.2021 13:06:43

BLE 1M_Ant1_2480_0~Reference



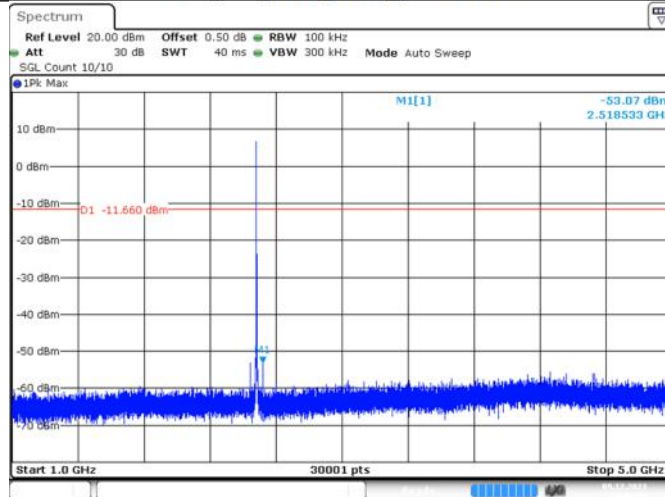
Date: 9 DEC.2021 13:07:59

BLE 1M Ant1 2480 30~1000



Date: 9 DEC.2021 13:08:01

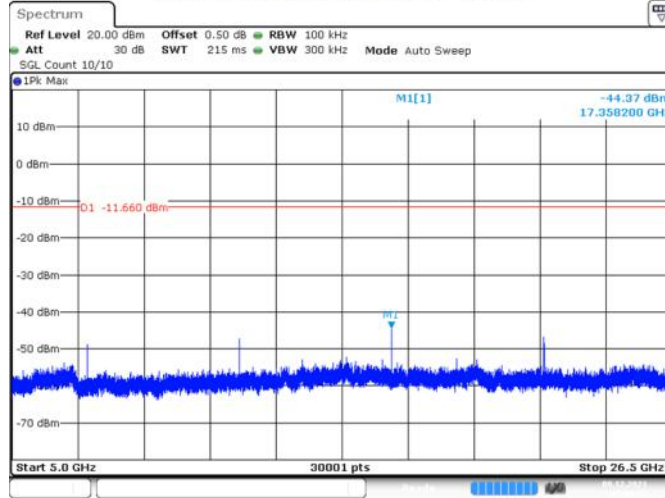
BLE 1M Ant1 2480 1000~5000



Date: 9 DEC.2021 13:08:04

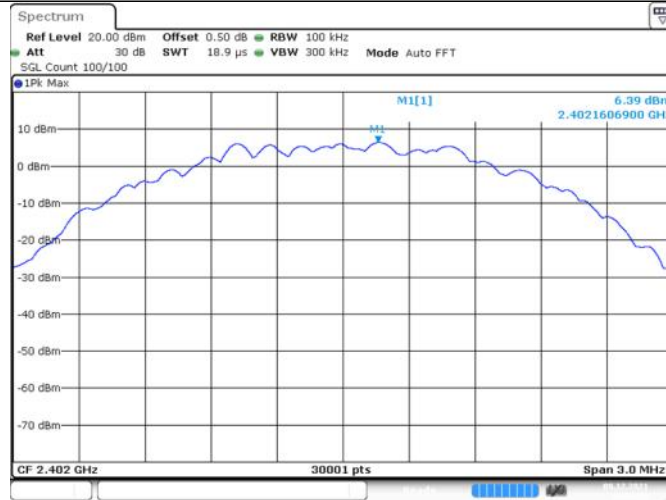
Note: The emission which exceed the limit is the fundamental.

BLE 1M Ant1 2480 5000~26500



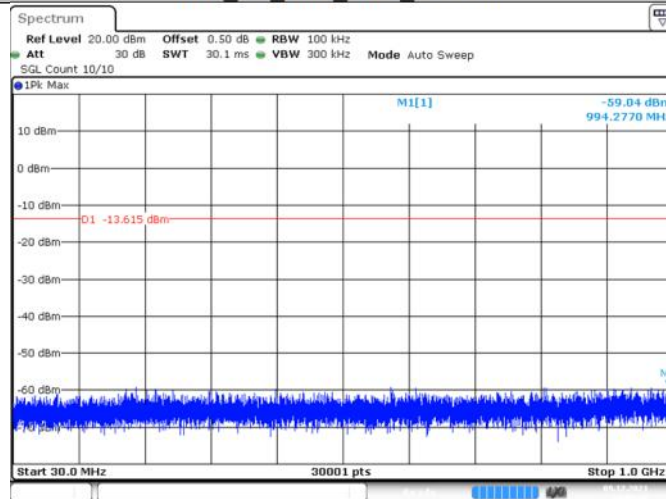
Date: 9 DEC.2021 13:08:13

BLE_2M_Ant1_2402_0~Reference



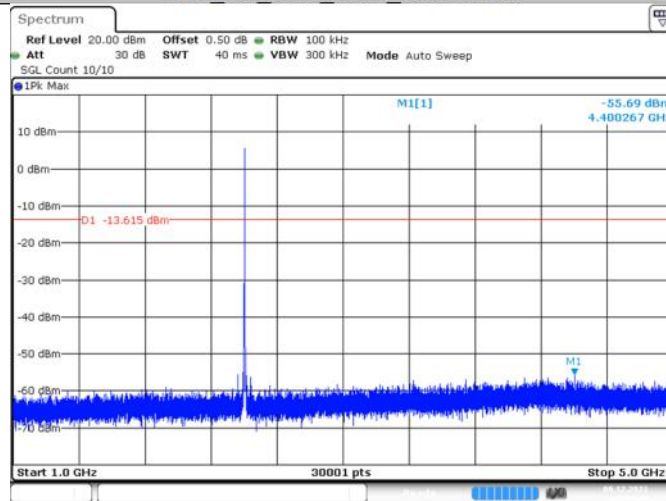
Date: 9 DEC.2021 13:09:45

BLE_2M_Ant1_2402_30~1000



Date: 9 DEC.2021 13:09:47

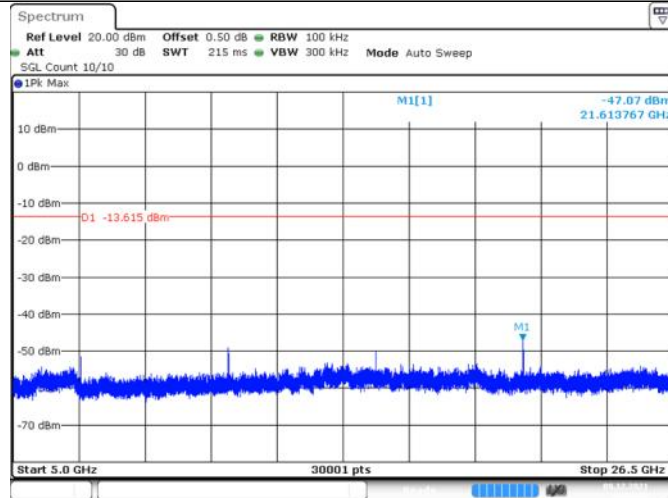
BLE_2M_Ant1_2402_1000~5000



Date: 9 DEC.2021 13:09:50

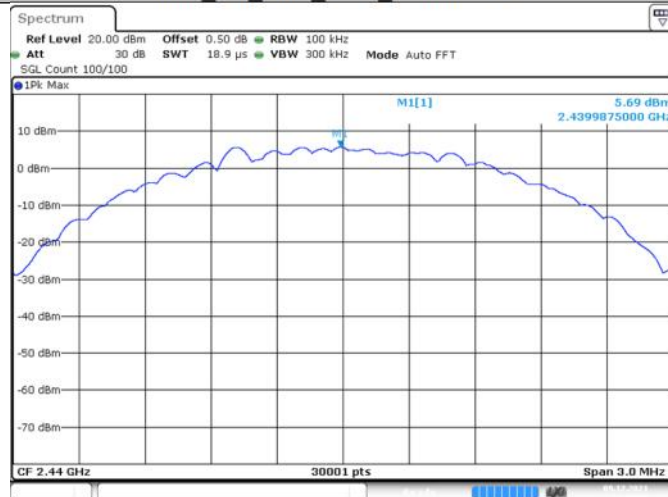
Note: The emission which exceed the limit is the fundamental.

BLE 2M Ant1 2402_5000~26500



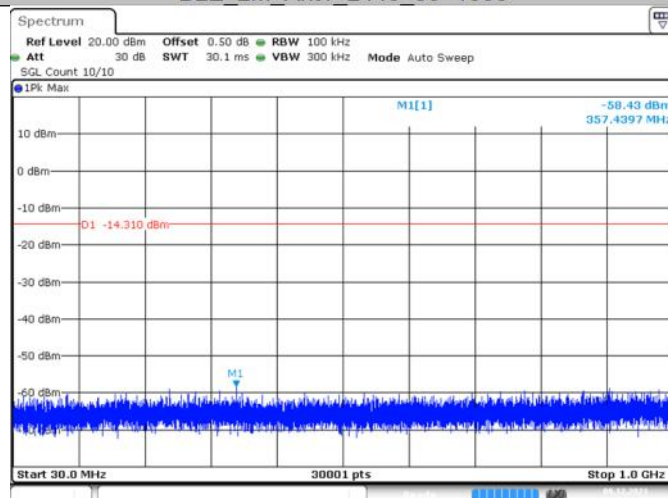
Date: 9 DEC 2021 13:09:59

BLE 2M Ant1 2440_0~Reference



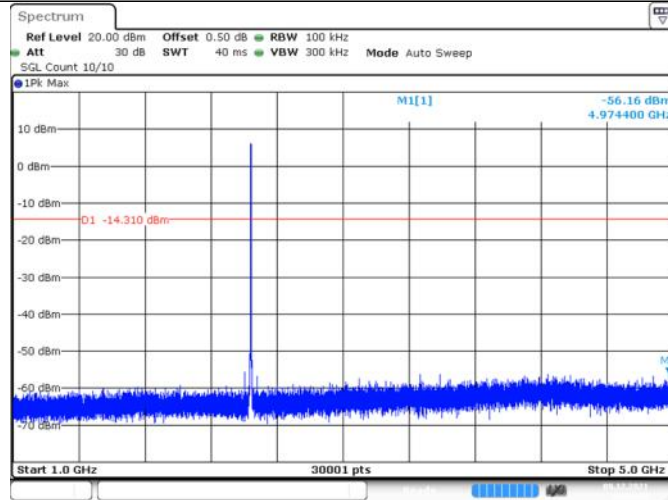
Date: 9 DEC 2021 13:11:00

BLE 2M Ant1 2440_30~1000



Date: 9 DEC 2021 13:11:02

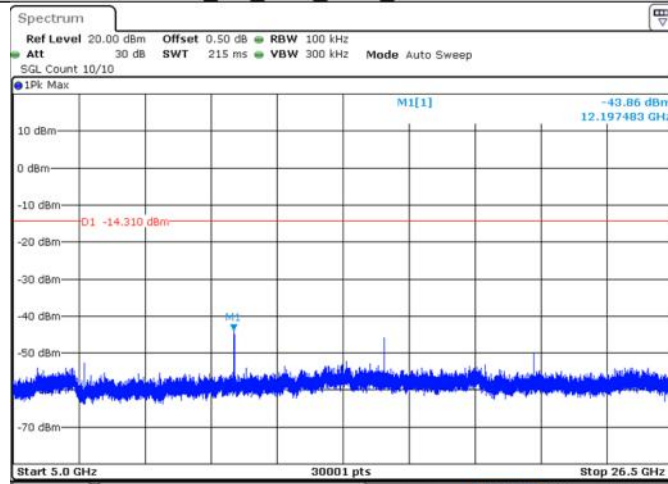
BLE 2M_Ant1_2440_1000~5000



Date: 9 DEC 2021 13:11:05

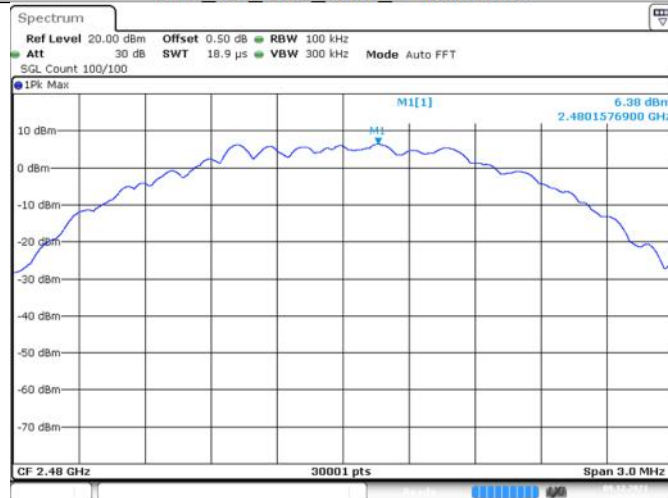
Note: The emission which exceed the limit is the fundamental.

BLE 2M_Ant1_2440_5000~26500



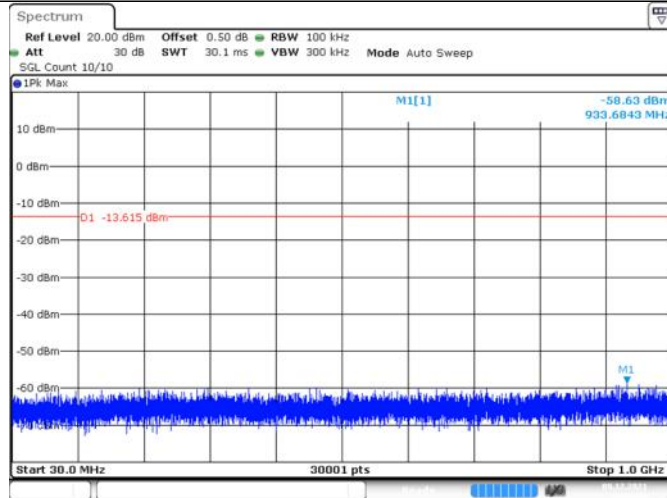
Date: 9 DEC 2021 13:11:14

BLE 2M_Ant1_2480_0~Reference



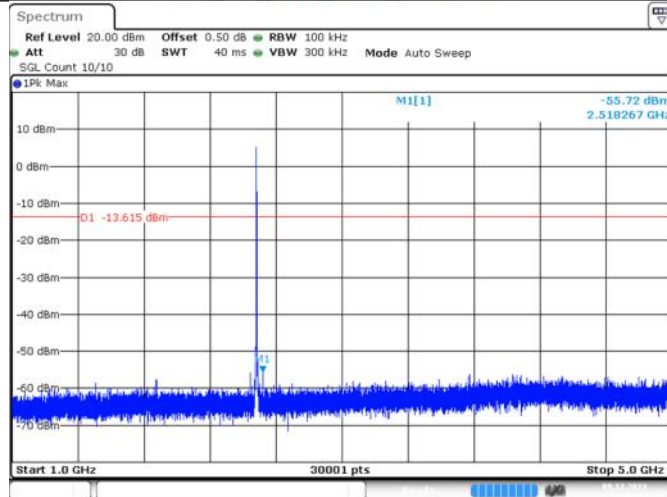
Date: 9 DEC 2021 13:12:18

BLE 2M Ant1_2480_30~1000



Date: 9 DEC.2021 13:12:21

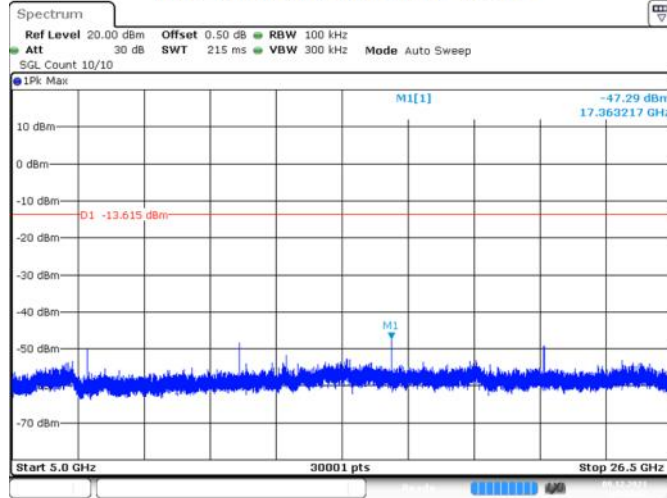
BLE 2M Ant1_2480_1000~5000



Date: 9 DEC.2021 13:12:23

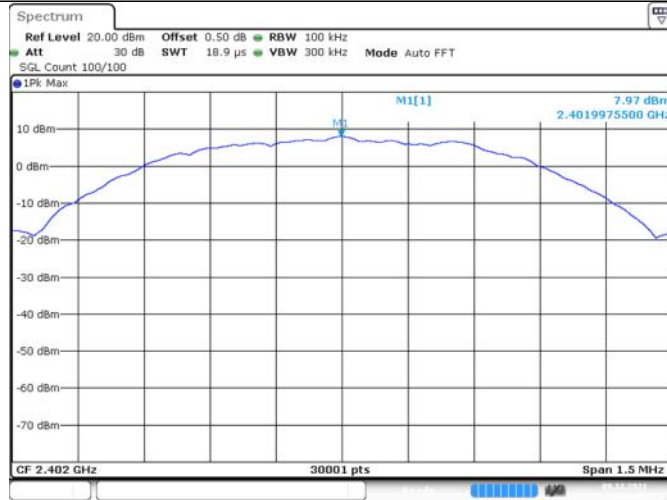
Note: The emission which exceed the limit is the fundamental.

BLE 2M Ant1_2480_5000~26500



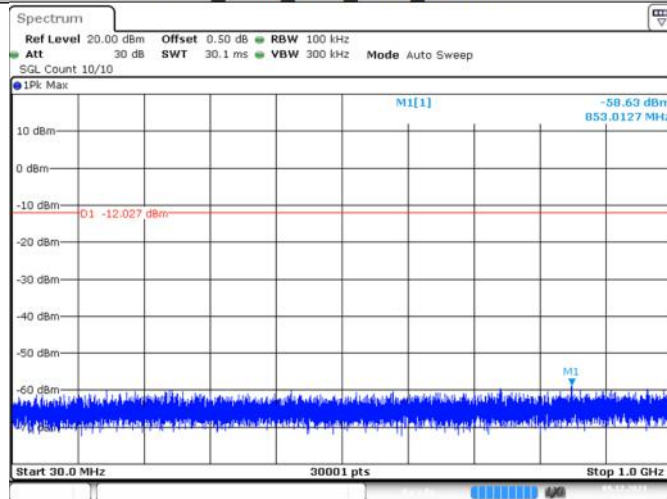
Date: 9 DEC.2021 13:12:32

BLE_500K_Ant1_2402_0~Reference



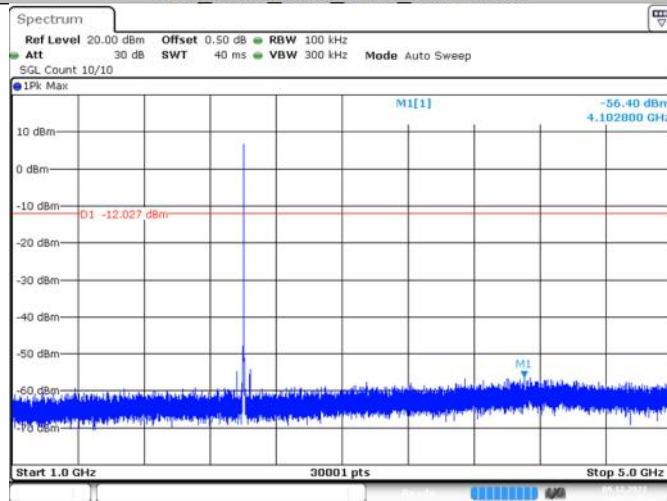
Date: 9 DEC.2021 13:31:27

BLE_500K_Ant1_2402_30~1000



Date: 9 DEC.2021 13:31:29

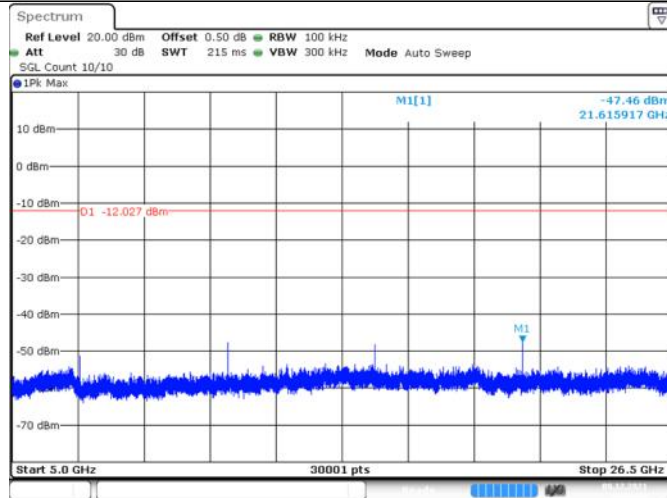
BLE_500K_Ant1_2402_1000~5000



Date: 9 DEC.2021 13:31:32

Note: The emission which exceed the limit is the fundamental.

BLE_500K_Ant1_2402_5000~26500



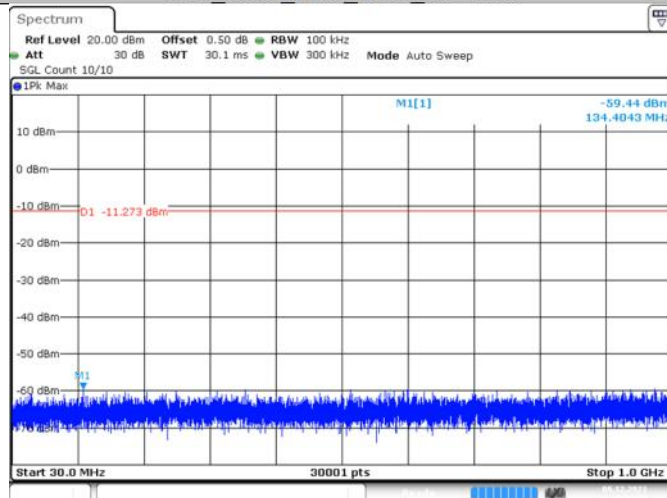
Date: 9 DEC.2021 13:31:41

BLE_500K_Ant1_2440_0~Reference



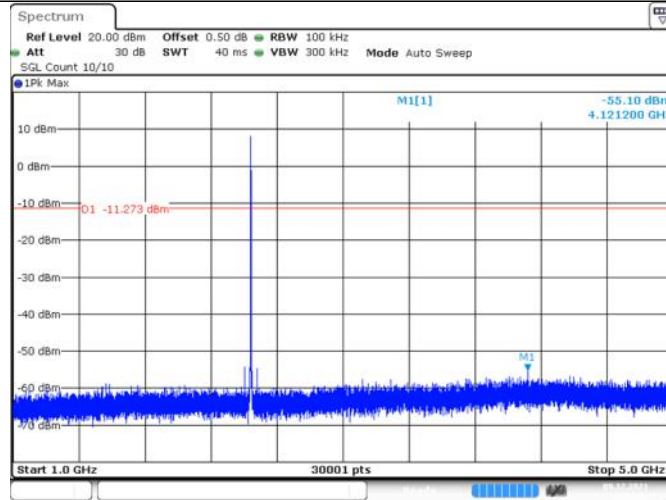
Date: 9 DEC.2021 13:33:36

BLE_500K_Ant1_2440_30~1000



Date: 9 DEC.2021 13:33:36

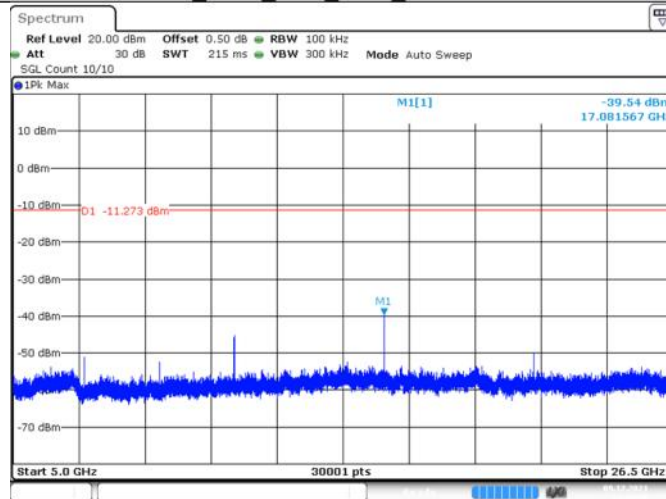
BLE_500K_Ant1_2440_1000~5000



Date: 9 DEC 2021 13:33:41

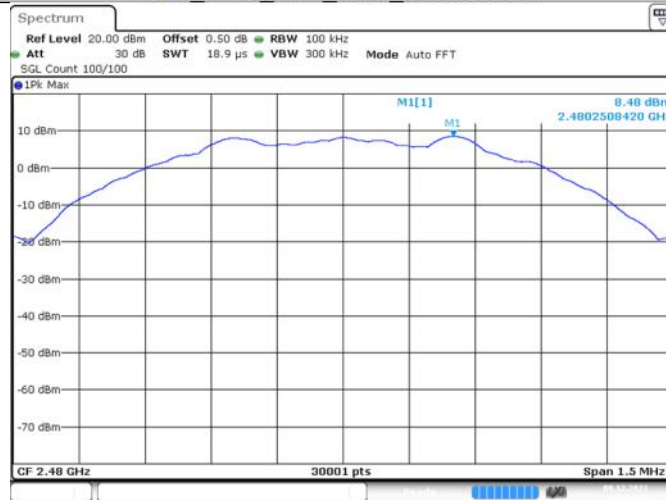
Note: The emission which exceed the limit is the fundamental.

BLE_500K_Ant1_2440_5000~26500



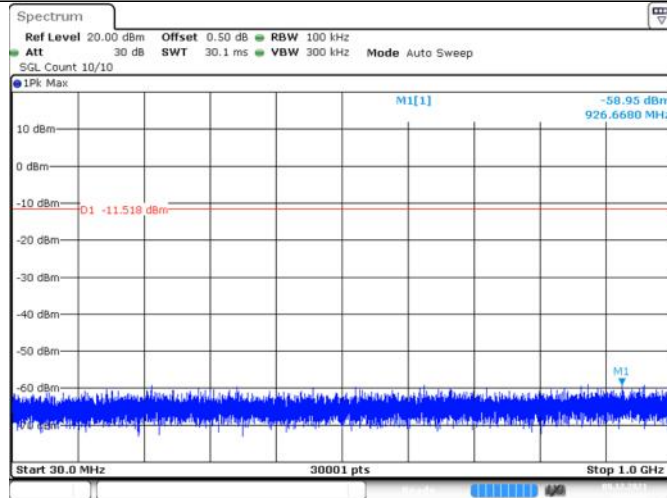
Date: 9 DEC 2021 13:33:50

BLE_500K_Ant1_2480_0~Reference



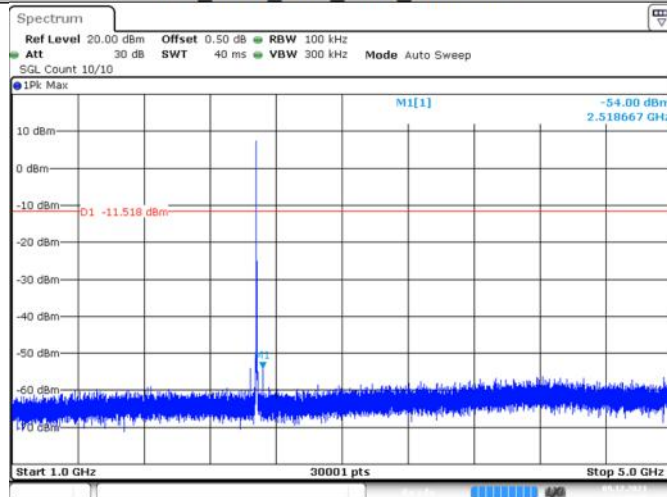
Date: 9 DEC 2021 13:34:41

BLE_500K_Ant1_2480_30~1000



Date: 9 DEC.2021 13:34:43

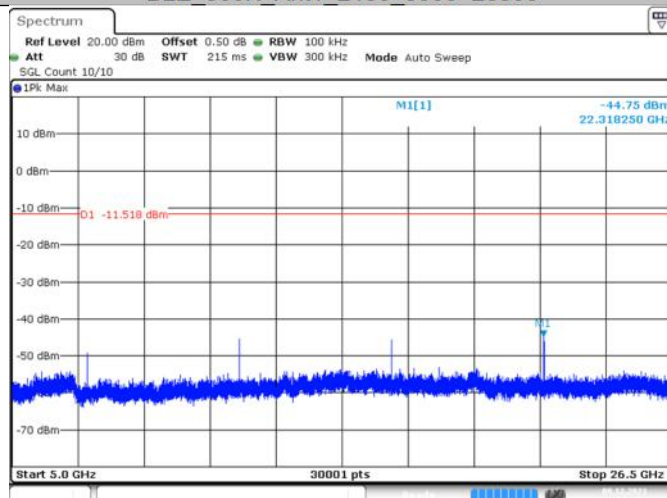
BLE_500K_Ant1_2480_1000~5000



Date: 9 DEC.2021 13:34:45

Note: The emission which exceed the limit is the fundamental.

BLE_500K_Ant1_2480_5000~26500



Date: 9 DEC.2021 13:34:54

9.6 Band edge

Test Method

- 1 Use the following spectrum analyzer settings:
Span = wide enough to capture the peak level of the in-band emission and all spurious
RBW = 100 kHz, VBW \geq RBW, Sweep = auto, Detector function = peak, Trace = max hold.
- 2 Allow the trace to stabilize, use the peak and delta measurement to record the result.
- 3 The level displayed must comply with the limit specified in this Section.

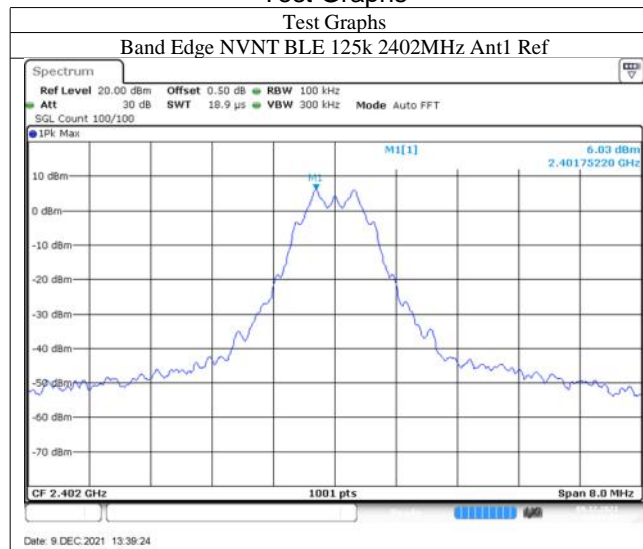
Limit

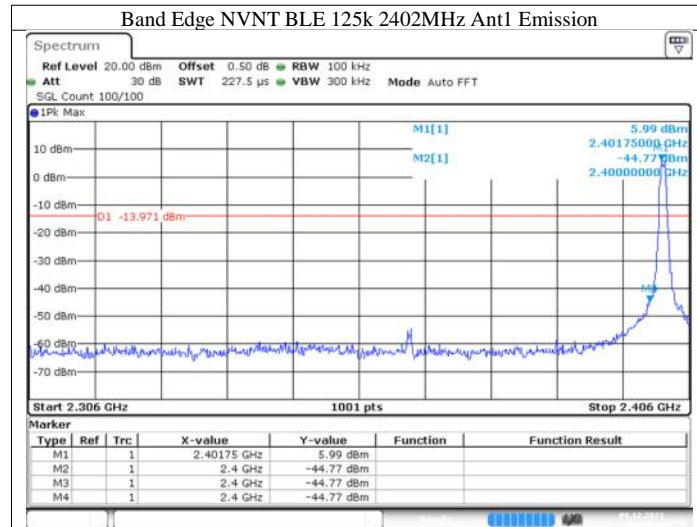
According to §15.247(d) and RSS-247 5.5, in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a) and RSS-Gen 8.10, must also comply with the radiated emission limits specified in 15.209(a) (see Section 15.205(c)) and RSS-Gen.

Test result

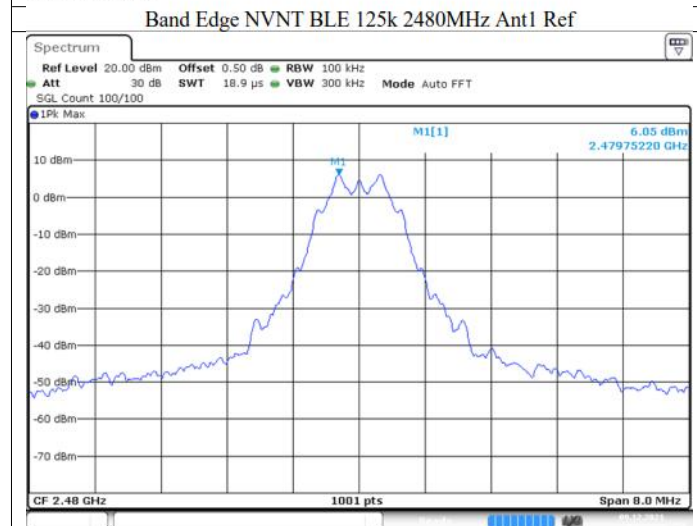
| TestMode | ChName | Channel | Result[dBm] | Limit (dBc) | Verdict |
|----------|--------|---------|-------------|-------------|---------|
| BLE_125K | Low | 2402 | -50.80 | -20 | PASS |
| | High | 2480 | -56.28 | -20 | PASS |
| BLE_1M | Low | 2402 | -52.82 | -20 | PASS |
| | High | 2480 | -58.39 | -20 | PASS |
| BLE_2M | Low | 2402 | -31.56 | -20 | PASS |
| | High | 2480 | -53.17 | -20 | PASS |
| BLE_500K | Low | 2402 | -53.50 | -20 | PASS |
| | High | 2480 | -57.49 | -20 | PASS |

Test Graphs

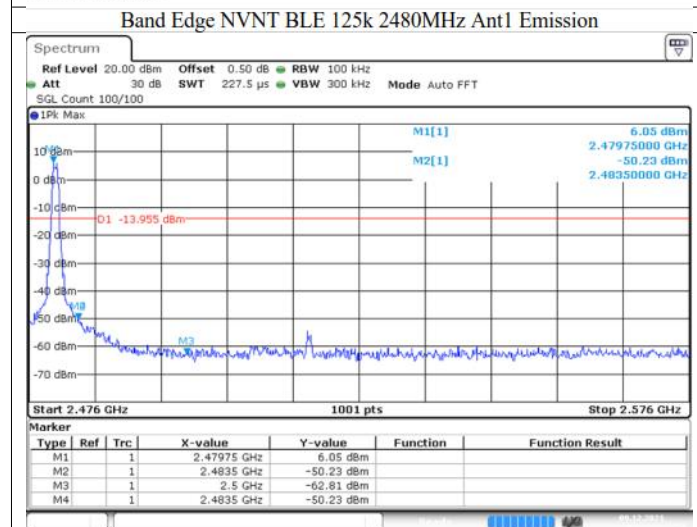




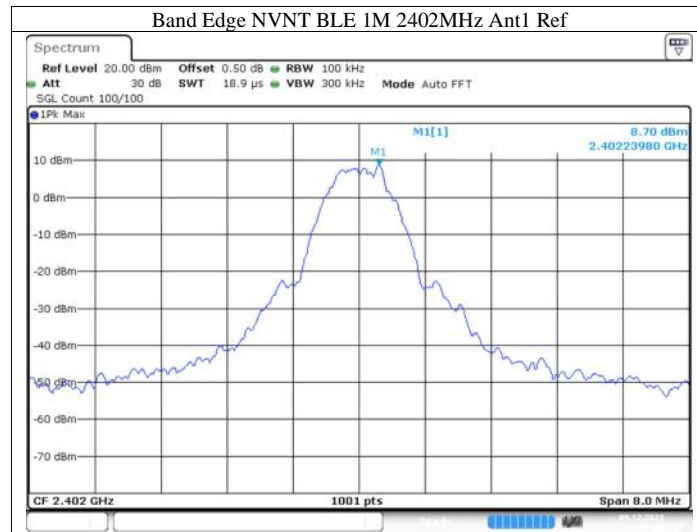
Date: 9 DEC 2021 13:39:27



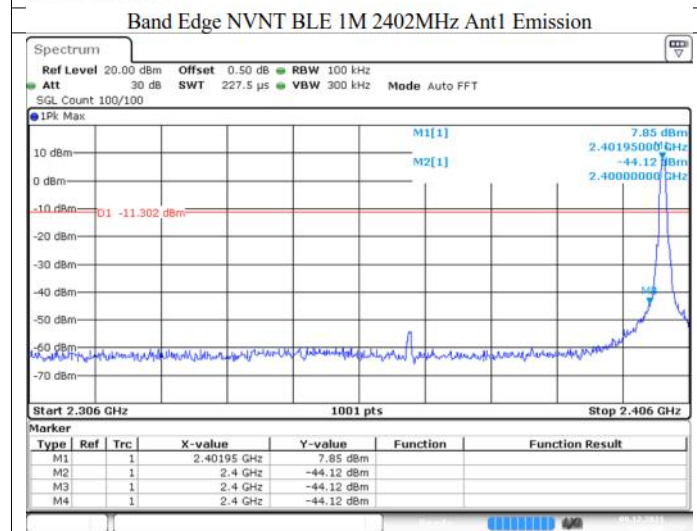
Date: 9 DEC 2021 13:41:33



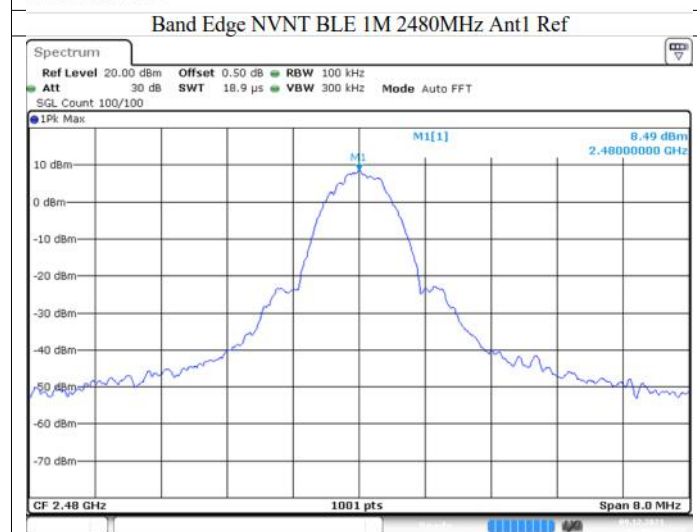
Date: 9 DEC 2021 13:41:37



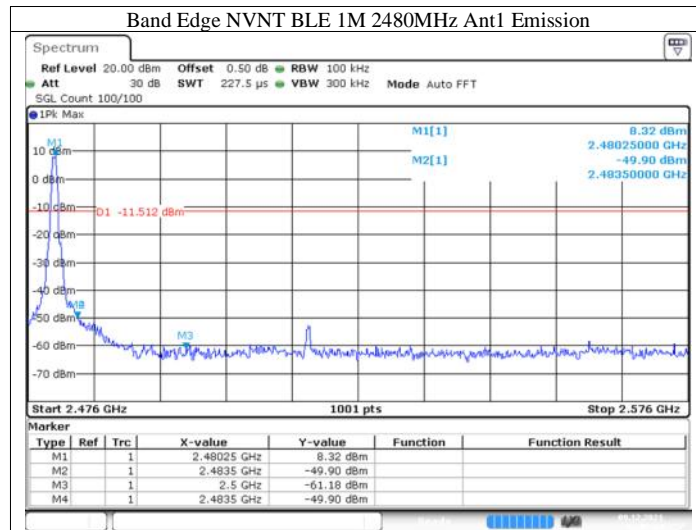
Date: 9 DEC 2021 12:57:26



Date: 9 DEC 2021 12:57:30



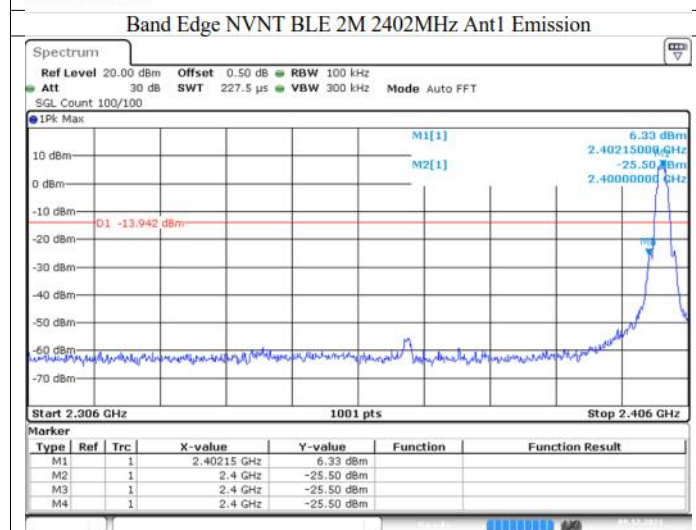
Date: 9 DEC 2021 13:07:50



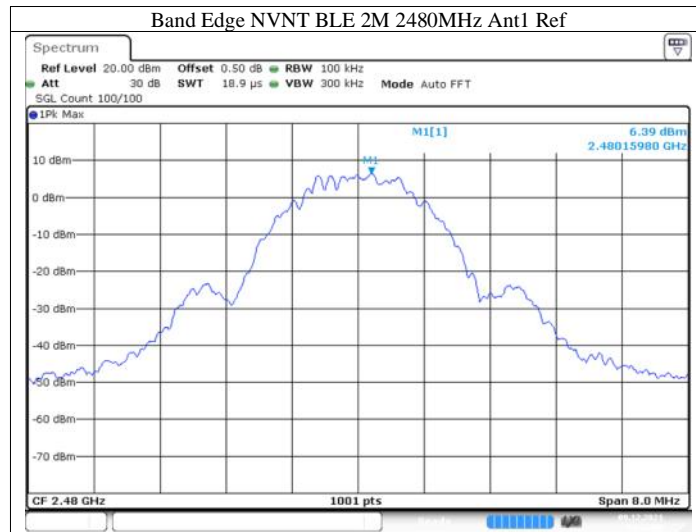
Date: 9 DEC 2021 13:07:54



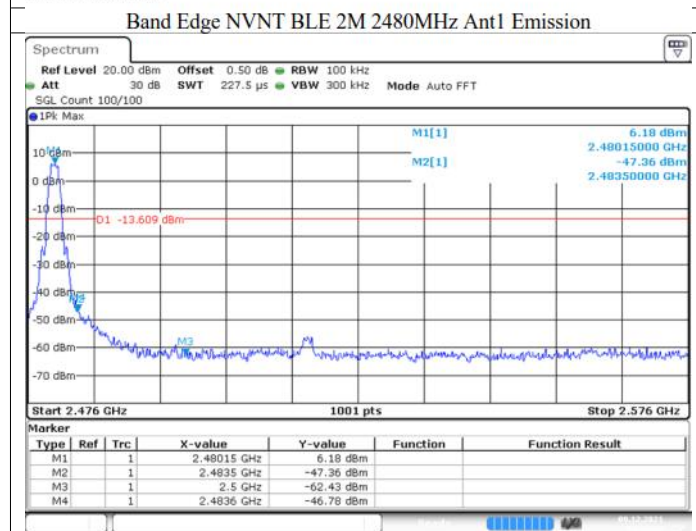
Date: 9 DEC 2021 13:09:37



Date: 9 DEC 2021 13:09:40



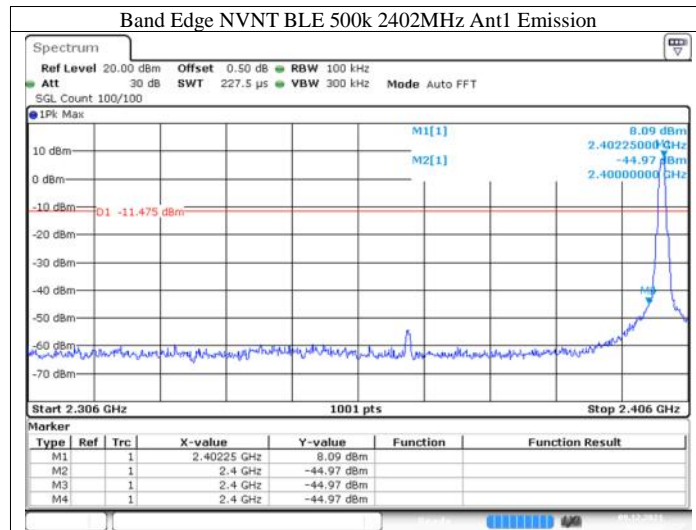
Date: 9 DEC 2021 13:12:10



Date: 9 DEC 2021 13:12:13



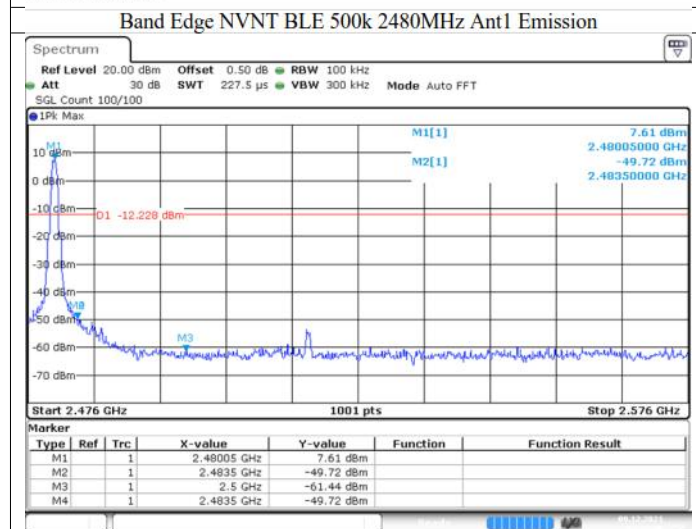
Date: 9 DEC 2021 13:31:19



Date: 9 DEC 2021 13:31:23



Date: 9 DEC 2021 13:34:33



Date: 9 DEC 2021 13:34:36

9.7 Spurious radiated emissions for transmitter

Test Method

1. The EUT was placed on a turn table which is 1.5m above ground plane for above 1GHz and 0.8m above ground for below 1GHz at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference – receiving antenna, which was mounted on the top of a variable – height antenna tower.
3. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. Use the following spectrum analyzer settings According to C63.10:

For Below 1GHz

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious
 RBW = 100 kHz to 120 kHz, VBW ≥ RBW for peak measurement, Sweep = auto, Detector function = peak, Trace = max hold.

For Peak unwanted emissions Above 1GHz:

Span = wide enough to capture the peak level of the in-band emission and all spurious
 RBW = 1MHz, VBW ≥ RBW for peak measurement, Sweep = auto, Detector function = peak, Trace = max hold.

Procedures for average unwanted emissions measurements above 1000 MHz

- a) RBW = 1MHz.
- b) VBW ≥ [3 × RBW].
- c) Detector = RMS (power averaging), if $[\text{span} / (\# \text{ of points in sweep})] \leq \text{RBW} / 2$. Satisfying this condition can require increasing the number of points in the sweep or reducing the span. If the condition is not satisfied, then the detector mode shall be set to peak.
- d) Averaging type = power (i.e., rms) (As an alternative, the detector and averaging type may be set for linear voltage averaging. Some instruments require linear display mode to use linear voltage averaging. Log or dB averaging shall not be used.)
- e) Sweep time = auto.
- f) Perform a trace average of at least 100 traces if the transmission is continuous. If the transmission is not continuous, then the number of traces shall be increased by a factor of $1 / D$, where D is the duty cycle. For example, with 50% duty cycle, at least 200 traces shall be averaged. (If a specific emission is demonstrated to be continuous—i.e., 100% duty cycle—then rather than turning ON and OFF with the transmit cycle, at least 100 traces shall be averaged.)
- g) If tests are performed with the EUT transmitting at a duty cycle less than 98%, then a correction factor shall be added to the measurement results prior to comparing with the emission limit, to compute the emission level that would have been measured had the test been performed at 100% duty cycle. The correction factor is computed as follows:
 - 1) If power averaging (rms) mode was used in the preceding step e), then the correction

factor is $[10 \log (1 / D)]$, where D is the duty cycle. For example, if the transmit duty cycle was 50%, then 3 dB shall be added to the measured emission levels.

2) If linear voltage averaging mode was used in the preceding step e), then the correction factor is $[20 \log (1 / D)]$, where D is the duty cycle. For example, if the transmit duty cycle was 50%, then 6 dB shall be added to the measured emission levels.

3) If a specific emission is demonstrated to be continuous (100% duty cycle) rather than turning ON and OFF with the transmit cycle, then no duty cycle correction is required for that emission.

Limit

The radio emission outside the operating frequency band shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power. Radiated emissions which fall in the restricted bands, as defined in section 15.205 and RSS-GEN 8.10 must comply with the radiated emission limits specified in section 15.209.

| Frequency MHz | Field Strength uV/m | Measured Distance Meters |
|------------------|------------------------|-----------------------------|
| 0.009~0.490 | 2400/F (kHz) | 300 |
| 0.490~1.705 | 24000/F (kHz) | 30 |
| 1.705~30 | 30 | 30 |

| Frequency MHz | Field Strength uV/m | Field Strength dBµV/m | Detector |
|------------------|------------------------|--------------------------|----------|
| 30-88 | 100 | 40 | QP |
| 88-216 | 150 | 43.5 | QP |
| 216-960 | 200 | 46 | QP |
| 960-1000 | 500 | 54 | QP |
| Above 1000 | 500 | 54 | AV |
| Above 1000 | 5000 | 74 | PK |

Spurious radiated emissions for transmitter

According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

Model: 9290031345 Transmitting spurious emission test result as below:

Test mode: GFSK (125 kbit/s) Channel (2402MHz)

| Frequency MHz | Mmission Level dBuV/m | Limit dB μ V/m | Margin dB | Detector | Polarization |
|------------------|-----------------------------|-----------------------|--------------|----------|--------------|
| 2389.8 | 41.26 | 74.0 | 32.74 | Peak | Horizontal |
| 7205.3 | 46.25 | 74.0 | 27.75 | Peak | Horizontal |
| 2382.8 | 42.17 | 74.0 | 31.83 | Peak | Vertical |
| 7205.3 | 50.13 | 74.0 | 23.87 | Peak | Vertical |
| 7205.3 | 45.26 | 54.0 | 8.74 | AV | Vertical |

Test mode: GFSK (125 kbit/s) Channel (2440MHz)

| Frequency MHz | Mmission Level dBuV/m | Limit dB μ V/m | Margin dB | Detector | Polarization |
|------------------|-----------------------------|-----------------------|--------------|----------|--------------|
| 7319.8 | 49.27 | 74.0 | 24.73 | Peak | Horizontal |
| 7319.8 | 49.63 | 74.0 | 24.37 | Peak | Vertical |

Test mode: GFSK (125 kbit/s) Channel (2480MHz)

| Frequency MHz | Mmission Level dBuV/m | Limit dB μ V/m | Margin dB | Detector | Polarization |
|------------------|-----------------------------|-----------------------|--------------|----------|--------------|
| 2483.5 | 45.21 | 74.0 | 28.79 | Peak | Horizontal |
| 7440.7 | 48.12 | 74.0 | 25.88 | Peak | Horizontal |
| 2483.5 | 47.74 | 74.0 | 26.26 | Peak | Vertical |
| 7439.6 | 49.35 | 74.0 | 24.65 | Peak | Vertical |

Test mode: GFSK (500 kbit/s)**Channel (2402MHz)**

| Frequency | Mmission Level | Limit | Margin | Detector | Polarization |
|------------------|-----------------------|---------------|---------------|-----------------|---------------------|
| MHz | dBuV/m | dBuV/m | dB | | |
| 2389.7 | 41.75 | 74.0 | 32.25 | Peak | Horizontal |
| 7205.5 | 46.27 | 74.0 | 27.73 | Peak | Horizontal |
| 2382.8 | 43.15 | 74.0 | 30.85 | Peak | Vertical |
| 7205.4 | 49.64 | 74.0 | 24.36 | Peak | Vertical |

Test mode: GFSK (500 kbit/s)**Channel (2440MHz)**

| Frequency | Mmission Level | Limit | Margin | Detector | Polarization |
|------------------|-----------------------|---------------|---------------|-----------------|---------------------|
| MHz | dBuV/m | dBuV/m | dB | | |
| 7319.7 | 47.62 | 74.0 | 26.38 | Peak | Horizontal |
| 7319.7 | 53.28 | 74.0 | 20.72 | Peak | Vertical |
| 7319.7 | 49.16 | 54.0 | 4.84 | AV | Vertical |

Test mode: GFSK (500 kbit/s)**Channel (2480MHz)**

| Frequency | Mmission Level | Limit | Margin | Detector | Polarization |
|------------------|-----------------------|---------------|---------------|-----------------|---------------------|
| MHz | dBuV/m | dBuV/m | dB | | |
| 2483.5 | 46.26 | 74.0 | 27.74 | Peak | Horizontal |
| 7440.4 | 50.26 | 74.0 | 23.74 | Peak | Horizontal |
| 7440.4 | 45.12 | 54.0 | 8.88 | AV | Horizontal |
| 2483.5 | 48.15 | 74.0 | 25.85 | Peak | Vertical |
| 7439.4 | 49.75 | 74.0 | 24.25 | Peak | Vertical |



**Test mode: GFSK (1 Mbit/s)
Channel (2402MHz)**

| Frequency MHz | Mmission Level dBuV/m | Limit dBuV/m | Margin dB | Detector | Polarization |
|------------------|-----------------------------|-----------------|--------------|----------|--------------|
| 2389.8 | 42.46 | 74.0 | 31.54 | Peak | Horizontal |
| 7205.5 | 48.05 | 74.0 | 25.95 | Peak | Horizontal |
| 2382.8 | 44.53 | 74.0 | 29.47 | Peak | Vertical |
| 7205.8 | 51.37 | 74.0 | 22.63 | Peak | Vertical |
| 7205.8 | 46.75 | 54.0 | 7.25 | AV | Vertical |

**Test mode: GFSK (1 Mbit/s)
Channel (2440MHz)**

| Frequency MHz | Mmission Level dBuV/m | Limit dBuV/m | Margin dB | Detector | Polarization |
|------------------|-----------------------------|-----------------|--------------|----------|--------------|
| 7319.8 | 48.65 | 74.0 | 25.35 | Peak | Horizontal |
| 7319.8 | 54.85 | 74.0 | 19.15 | Peak | Vertical |
| 7319.8 | 51.64 | 54.0 | 2.36 | AV | Vertical |

**Test mode: GFSK (1 Mbit/s)
Channel (2480MHz)**

| Frequency MHz | Mmission Level dBuV/m | Limit dBuV/m | Margin dB | Detector | Polarization |
|------------------|-----------------------------|-----------------|--------------|----------|--------------|
| 2483.5 | 47.75 | 74.0 | 26.25 | Peak | Horizontal |
| 7440.5 | 50.89 | 74.0 | 23.11 | Peak | Horizontal |
| 7440.5 | 46.27 | 54.0 | 7.73 | AV | Horizontal |
| 2483.5 | 50.62 | 74.0 | 23.38 | Peak | Vertical |
| 2483.5 | 42.15 | 54.0 | 11.85 | AV | Vertical |
| 7439.8 | 54.39 | 74.0 | 19.61 | Peak | Vertical |
| 7439.8 | 50.43 | 54.0 | 3.57 | AV | Vertical |

**Test mode: GFSK (2 Mbit/s)
Channel (2402MHz)**

| Frequency MHz | Mmission Level dBuV/m | Limit dBuV/m | Margin dB | Detector | Polarization |
|------------------|-----------------------------|-----------------|--------------|----------|--------------|
| 2389.6 | 42.73 | 74.0 | 31.27 | Peak | Horizontal |
| 7205.6 | 48.19 | 74.0 | 25.81 | Peak | Horizontal |
| 2382.6 | 44.39 | 74.0 | 29.61 | Peak | Vertical |
| 7205.5 | 51.49 | 74.0 | 22.51 | Peak | Vertical |
| 7205.5 | 46.82 | 54.0 | 7.18 | AV | Vertical |

**Test mode: GFSK (2 Mbit/s)
Channel (2440MHz)**

| Frequency MHz | Mmission Level dBuV/m | Limit dBuV/m | Margin dB | Detector | Polarization |
|------------------|-----------------------------|-----------------|--------------|----------|--------------|
| 7319.4 | 49.88 | 74.0 | 24.12 | Peak | Horizontal |
| 7319.4 | 55.06 | 74.0 | 18.94 | Peak | Vertical |
| 7319.4 | 51.87 | 54.0 | 2.13 | AV | Vertical |

**Test mode: GFSK (2 Mbit/s)
Channel (2480MHz)**

| Frequency MHz | Mmission Level dBuV/m | Limit dBuV/m | Margin dB | Detector | Polarization |
|------------------|-----------------------------|-----------------|--------------|----------|--------------|
| 2483.5 | 47.93 | 74.0 | 26.07 | Peak | Horizontal |
| 7440.7 | 51.23 | 74.0 | 22.77 | Peak | Horizontal |
| 7440.7 | 46.71 | 54.0 | 7.29 | AV | Horizontal |
| 2483.5 | 50.85 | 74.0 | 23.15 | Peak | Vertical |
| 2483.5 | 42.53 | 54.0 | 11.47 | AV | Vertical |
| 7439.6 | 54.92 | 74.0 | 19.08 | Peak | Vertical |
| 7439.6 | 51.26 | 54.0 | 2.74 | AV | Vertical |

Model: 9290031347 Transmitting spurious emission test result as below:

**Test mode: GFSK (125 kbit/s)
Channel (2402MHz)**

| Frequency MHz | Mmission Level dBuV/m | Limit dBuV/m | Margin dB | Detector | Polarization |
|------------------|-----------------------------|-----------------|--------------|----------|--------------|
| 2389.9 | 40.82 | 74.0 | 33.18 | Peak | Horizontal |
| 7205.9 | 45.19 | 74.0 | 28.81 | Peak | Horizontal |
| 2382.9 | 43.69 | 74.0 | 30.31 | Peak | Vertical |
| 7205.8 | 51.21 | 74.0 | 22.79 | Peak | Vertical |
| 7205.8 | 47.82 | 54.0 | 6.18 | AV | Vertical |

**Test mode: GFSK (125 kbit/s)
Channel (2440MHz)**

| Frequency MHz | Mmission Level dBuV/m | Limit dBuV/m | Margin dB | Detector | Polarization |
|------------------|-----------------------------|-----------------|--------------|----------|--------------|
| 7319.8 | 48.12 | 74.0 | 25.88 | Peak | Horizontal |
| 7319.8 | 49.68 | 74.0 | 24.32 | Peak | Vertical |

**Test mode: GFSK (125 kbit/s)
Channel (2480MHz)**

| Frequency MHz | Mmission Level dBuV/m | Limit dBuV/m | Margin dB | Detector | Polarization |
|------------------|-----------------------------|-----------------|--------------|----------|--------------|
| 2483.5 | 46.94 | 74.0 | 27.06 | Peak | Horizontal |
| 7440.7 | 48.51 | 74.0 | 25.49 | Peak | Horizontal |
| 2483.5 | 48.17 | 74.0 | 25.83 | Peak | Vertical |
| 7439.6 | 49.93 | 74.0 | 24.07 | Peak | Vertical |

**Test mode: GFSK (500 kbit/s)****Channel (2402MHz)**

| Frequency | Mmission Level | Limit | Margin | Detector | Polarization |
|------------------|-----------------------|---------------|---------------|-----------------|---------------------|
| MHz | dBuV/m | dBuV/m | dB | | |
| 2389.7 | 40.89 | 74.0 | 33.11 | Peak | Horizontal |
| 7205.9 | 47.20 | 74.0 | 26.8 | Peak | Horizontal |
| 2382.8 | 44.28 | 74.0 | 29.72 | Peak | Vertical |
| 7205.9 | 48.25 | 74.0 | 25.75 | Peak | Vertical |

Test mode: GFSK (500 kbit/s)**Channel (2440MHz)**

| Frequency | Mmission Level | Limit | Margin | Detector | Polarization |
|------------------|-----------------------|---------------|---------------|-----------------|---------------------|
| MHz | dBuV/m | dBuV/m | dB | | |
| 7319.8 | 48.57 | 74.0 | 25.43 | Peak | Horizontal |
| 7319.8 | 49.92 | 74.0 | 24.08 | Peak | Vertical |

Test mode: GFSK (500 kbit/s)**Channel (2480MHz)**

| Frequency | Mmission Level | Limit | Margin | Detector | Polarization |
|------------------|-----------------------|---------------|---------------|-----------------|---------------------|
| MHz | dBuV/m | dBuV/m | dB | | |
| 2483.5 | 45.19 | 74.0 | 28.81 | Peak | Horizontal |
| 7440.1 | 50.32 | 74.0 | 23.68 | Peak | Horizontal |
| 7440.1 | 46.63 | 54.0 | 7.37 | AV | Horizontal |
| 2483.5 | 47.45 | 74.0 | 26.55 | Peak | Vertical |
| 7439.2 | 48.89 | 74.0 | 25.11 | Peak | Vertical |



**Test mode: GFSK (1 Mbit/s)
Channel (2402MHz)**

| Frequency MHz | Mmission Level dBuV/m | Limit dBuV/m | Margin dB | Detector | Polarization |
|------------------|-----------------------------|-----------------|--------------|----------|--------------|
| 2389.9 | 43.17 | 74.0 | 30.83 | Peak | Horizontal |
| 7205.5 | 48.51 | 74.0 | 25.49 | Peak | Horizontal |
| 2382.8 | 45.18 | 74.0 | 28.82 | Peak | Vertical |
| 7205.8 | 50.92 | 74.0 | 23.08 | Peak | Vertical |
| 7205.8 | 46.53 | 54.0 | 7.47 | AV | Vertical |

**Test mode: GFSK (1 Mbit/s)
Channel (2440MHz)**

| Frequency MHz | Mmission Level dBuV/m | Limit dBuV/m | Margin dB | Detector | Polarization |
|------------------|-----------------------------|-----------------|--------------|----------|--------------|
| 7319.8 | 47.29 | 74.0 | 26.71 | Peak | Horizontal |
| 7319.8 | 54.26 | 74.0 | 19.74 | Peak | Vertical |
| 7319.8 | 50.81 | 54.0 | 3.19 | AV | Vertical |

**Test mode: GFSK (1 Mbit/s)
Channel (2480MHz)**

| Frequency MHz | Mmission Level dBuV/m | Limit dBuV/m | Margin dB | Detector | Polarization |
|------------------|-----------------------------|-----------------|--------------|----------|--------------|
| 2483.5 | 48.16 | 74.0 | 25.84 | Peak | Horizontal |
| 7440.2 | 50.92 | 74.0 | 23.08 | Peak | Horizontal |
| 7440.2 | 46.51 | 54.0 | 7.49 | AV | Horizontal |
| 2483.5 | 50.79 | 74.0 | 23.21 | Peak | Vertical |
| 2483.5 | 43.42 | 54.0 | 10.58 | AV | Vertical |
| 7439.9 | 54.82 | 74.0 | 19.18 | Peak | Vertical |
| 7439.9 | 51.65 | 54.0 | 2.35 | AV | Vertical |



**Test mode: GFSK (2 Mbit/s)
Channel (2402MHz)**

| Frequency MHz | Mmission Level dBuV/m | Limit dBuV/m | Margin dB | Detector | Polarization |
|------------------|-----------------------------|-----------------|--------------|----------|--------------|
| 2389.8 | 42.18 | 74.0 | 31.82 | Peak | Horizontal |
| 7205.9 | 48.57 | 74.0 | 25.43 | Peak | Horizontal |
| 2382.8 | 43.45 | 74.0 | 30.55 | Peak | Vertical |
| 7205.8 | 50.84 | 74.0 | 23.16 | Peak | Vertical |
| 7205.8 | 46.25 | 54.0 | 7.75 | AV | Vertical |

**Test mode: GFSK (2 Mbit/s)
Channel (2440MHz)**

| Frequency MHz | Mmission Level dBuV/m | Limit dBuV/m | Margin dB | Detector | Polarization |
|------------------|-----------------------------|-----------------|--------------|----------|--------------|
| 7319.8 | 48.73 | 74.0 | 5.16 | Peak | Horizontal |
| 7319.8 | 53.03 | 74.0 | 5.16 | Peak | Vertical |
| 7319.8 | 48.84 | 54.0 | 5.16 | AV | Vertical |

**Test mode: GFSK (2 Mbit/s)
Channel (2480MHz)**

| Frequency MHz | Mmission Level dBuV/m | Limit dBuV/m | Margin dB | Detector | Polarization |
|------------------|-----------------------------|-----------------|--------------|----------|--------------|
| 2483.5 | 48.24 | 74.0 | 25.76 | Peak | Horizontal |
| 7440.9 | 50.81 | 74.0 | 23.19 | Peak | Horizontal |
| 7440.9 | 47.26 | 54.0 | 6.74 | AV | Horizontal |
| 2483.5 | 50.72 | 74.0 | 23.28 | Peak | Vertical |
| 2483.5 | 41.03 | 54.0 | 12.97 | AV | Vertical |
| 7439.8 | 54.07 | 74.0 | 19.93 | Peak | Vertical |
| 7439.8 | 51.89 | 54.0 | 2.11 | Peak | Vertical |

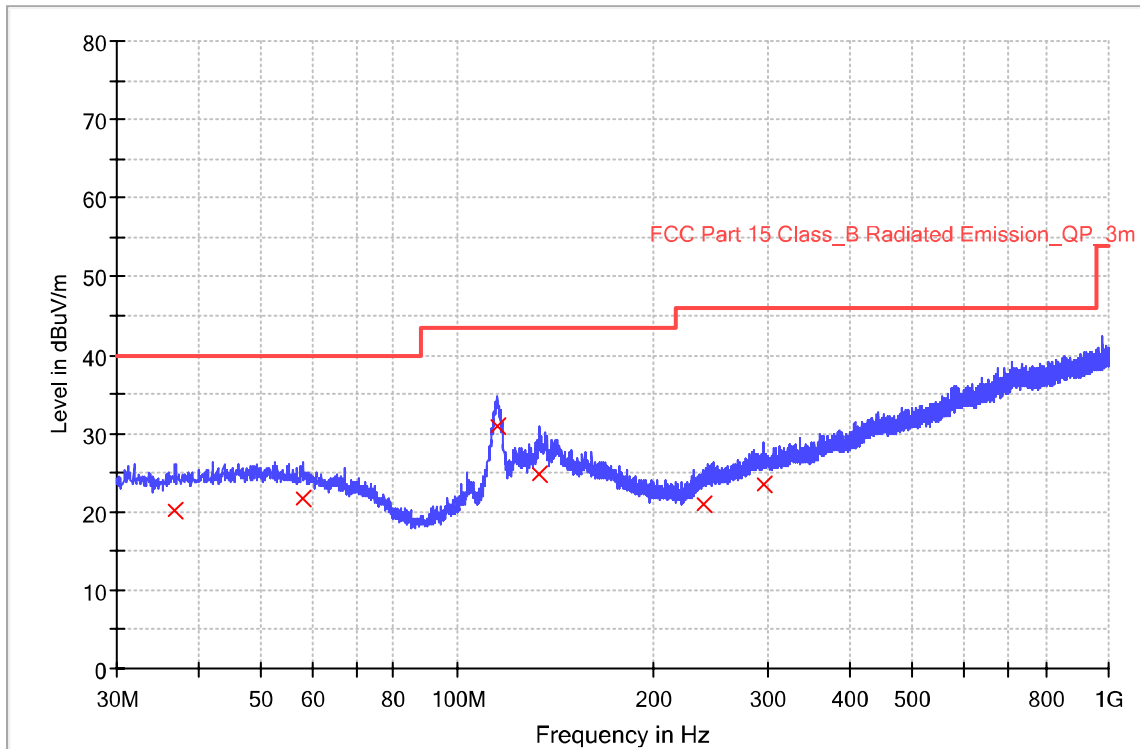
Remark:

- (1) Emission level= Original Receiver Reading + Correct Factor
- (2) Correct Factor = Antenna Factor + Cable Loss -Amplifier gain
- (3) Margin = limit – Corrected Reading

The worst case of Radiated Emission below 1GHz:

| | |
|---|--------------------------|
| Site: 3 meter chamber | Time: 2022/01/06 - 15:54 |
| Limit: FCC_Part15.209 and RSS-GEN 8.8_RE(3m) | Engineer: Chengjie Guo |
| Probe: VULB9168 | Polarity: Horizontal |
| EUT: LED light, Model no: 9290031345 | Power: AC 120V, 60Hz |
| Note: Transmit by at channel 2440MHz BLE_1Mbit/s. | |

RE_VULB9168_pre_Cont_30-1000

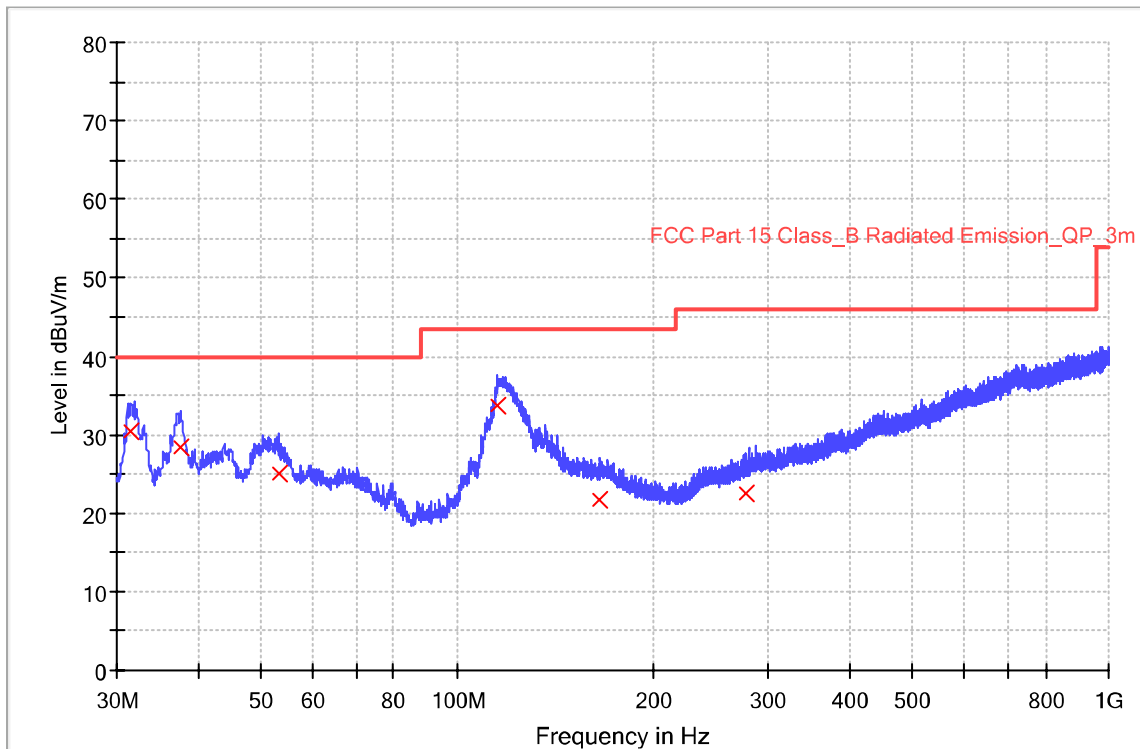


Limit and Margin

| Frequency (MHz) | QuasiPeak (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB) | Margin - QPK (dB) | Limit - QPK (dBuV/m) |
|-----------------|--------------------|-----------------|-----------------|-------------|-----|---------------|------------|-------------------|----------------------|
| 36.920000 | 20.1 | 1000.0 | 120.000 | 100.0 | H | 142.0 | 19.8 | 19.9 | 40.0 |
| 57.880000 | 21.8 | 1000.0 | 120.000 | 150.0 | H | 237.0 | 20.3 | 18.3 | 40.0 |
| 115.400000 | 30.9 | 1000.0 | 120.000 | 200.0 | H | 352.0 | 17.7 | 12.6 | 43.5 |
| 133.600000 | 24.9 | 1000.0 | 120.000 | 150.0 | H | 129.0 | 19.7 | 18.6 | 43.5 |
| 239.280000 | 21.0 | 1000.0 | 120.000 | 100.0 | H | 81.0 | 19.5 | 25.0 | 46.0 |
| 294.920000 | 23.5 | 1000.0 | 120.000 | 150.0 | H | 216.0 | 21.3 | 22.5 | 46.0 |

| | |
|---|--------------------------|
| Site: 3 meter chamber | Time: 2022/01/06 - 16:02 |
| Limit: FCC_Part15.209 and RSS-GEN 8.8_RE(3m) | Engineer: Chengjie Guo |
| Probe: VULB9168 | Polarity: Vertical |
| EUT: LED light, Model no: 9290031345 | Power: AC 120V, 60Hz |
| Note: Transmit by at channel 2440MHz BLE_1Mbit/s. | |

RE_VULB9168_pre_Cont_30-1000

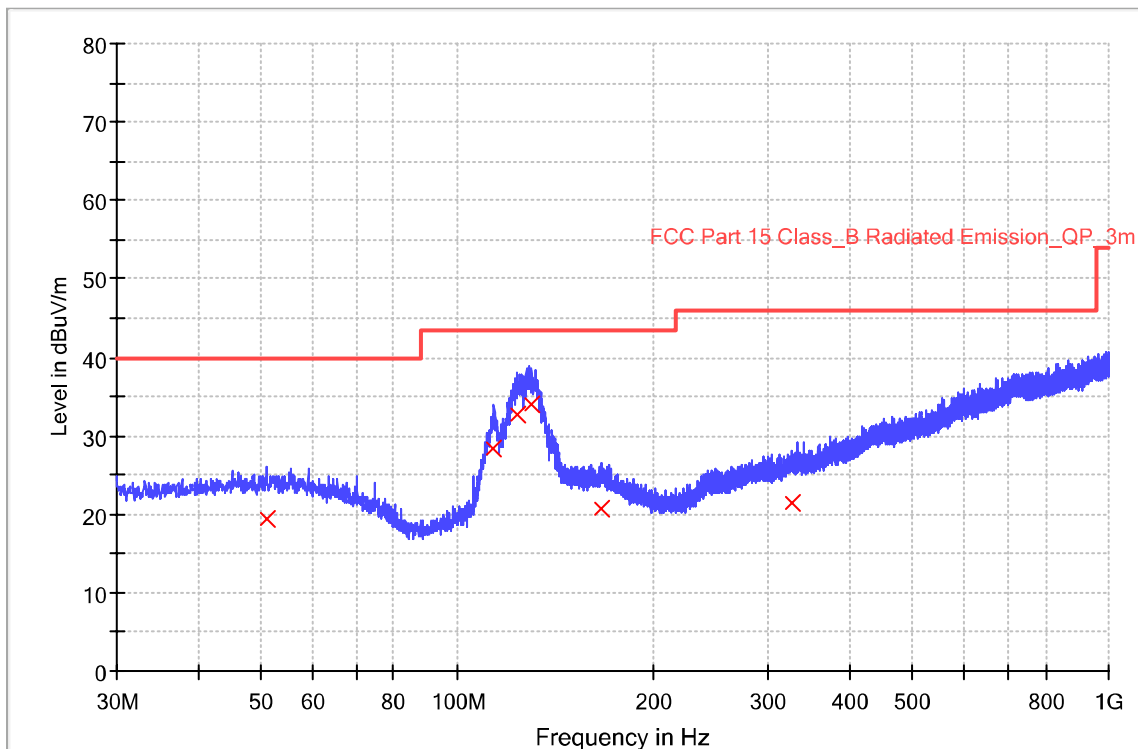


Limit and Margin

| Frequency (MHz) | QuasiPeak (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB) | Margin - QPK (dB) | Limit - QPK (dBuV/m) |
|-----------------|--------------------|-----------------|-----------------|-------------|-----|---------------|------------|-------------------|----------------------|
| 31.600000 | 30.5 | 1000.0 | 120.000 | 100.0 | V | 286.0 | 19.4 | 9.5 | 40.0 |
| 37.560000 | 28.5 | 1000.0 | 120.000 | 100.0 | V | 152.0 | 19.7 | 11.5 | 40.0 |
| 53.120000 | 24.9 | 1000.0 | 120.000 | 150.0 | V | 142.0 | 20.4 | 15.1 | 40.0 |
| 115.560000 | 33.7 | 1000.0 | 120.000 | 100.0 | V | 16.0 | 17.8 | 9.8 | 43.5 |
| 165.960000 | 21.8 | 1000.0 | 120.000 | 100.0 | V | 229.0 | 20.5 | 21.7 | 43.5 |
| 276.520000 | 22.6 | 1000.0 | 120.000 | 100.0 | V | 347.0 | 20.8 | 23.4 | 46.0 |

| | |
|---|--------------------------|
| Site: 3 meter chamber | Time: 2022/01/06 - 16:07 |
| Limit: FCC_Part15.209 and RSS-GEN 8.8_RE(3m) | Engineer: Chengjie Guo |
| Probe: VULB9168 | Polarity: Horizontal |
| EUT: LED light, Model no: 9290031347 | Power: AC 120V, 60Hz |
| Note: Transmit by at channel 2440MHz BLE_1Mbit/s. | |

RE_VULB9168_pre_Cont_30-1000

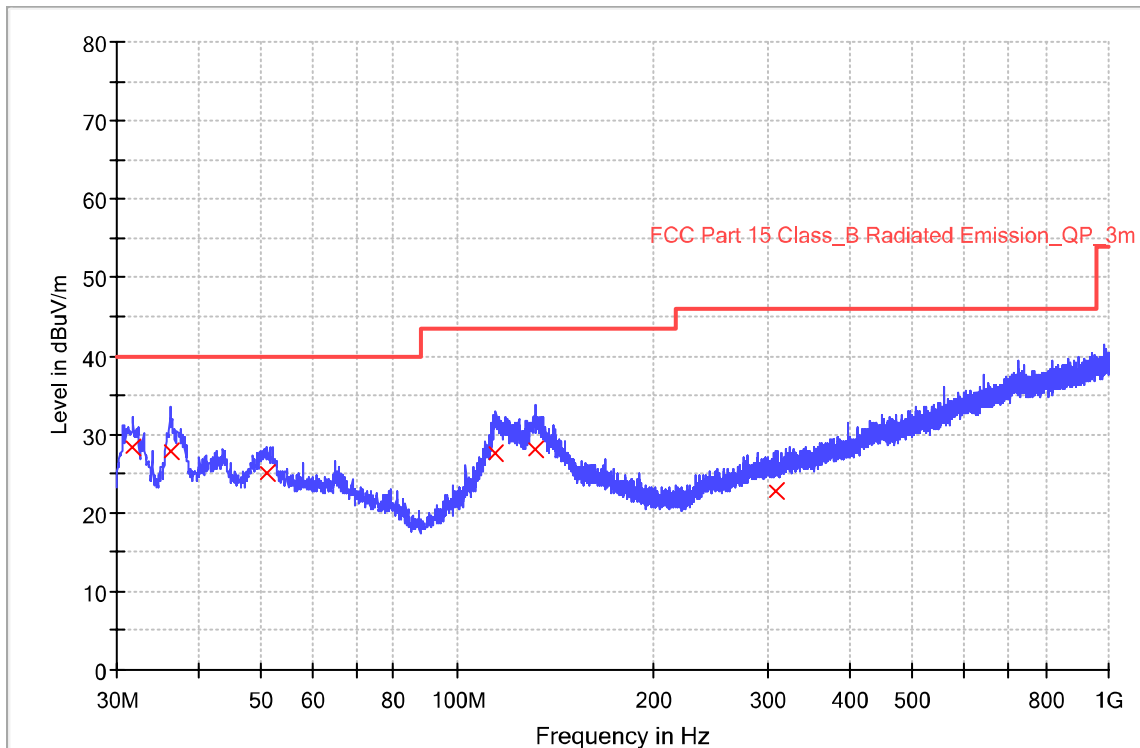


Limit and Margin

| Frequency (MHz) | QuasiPeak (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB) | Margin - QPK (dB) | Limit - QPK (dBuV/m) |
|-----------------|--------------------|-----------------|-----------------|-------------|-----|---------------|------------|-------------------|----------------------|
| 50.960000 | 19.4 | 1000.0 | 120.000 | 100.0 | H | 321.0 | 20.6 | 20.6 | 40.0 |
| 114.000000 | 28.3 | 1000.0 | 120.000 | 150.0 | H | 347.0 | 17.6 | 15.2 | 43.5 |
| 123.800000 | 32.6 | 1000.0 | 120.000 | 100.0 | H | 11.0 | 18.4 | 10.9 | 43.5 |
| 130.400000 | 34.1 | 1000.0 | 120.000 | 150.0 | H | 154.0 | 19.3 | 9.4 | 43.5 |
| 166.920000 | 20.6 | 1000.0 | 120.000 | 150.0 | H | 53.0 | 20.5 | 22.9 | 43.5 |
| 327.320000 | 21.4 | 1000.0 | 120.000 | 150.0 | H | 164.0 | 22.5 | 24.6 | 46.0 |

| | |
|---|--------------------------|
| Site: 3 meter chamber | Time: 2022/01/06 - 16:14 |
| Limit: FCC_Part15.209 and RSS-GEN 8.8_RE(3m) | Engineer: Chengjie Guo |
| Probe: VULB9168 | Polarity: Vertical |
| EUT: LED light, Model no: 9290031347 | Power: AC 120V, 60Hz |
| Note: Transmit by at channel 2440MHz BLE_1Mbit/s. | |

RE_VULB9168_pre_Cont_30-1000



Limit and Margin

| Frequency (MHz) | QuasiPeak (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB) | Margin - QPK (dB) | Limit - QPK (dBuV/m) |
|-----------------|--------------------|-----------------|-----------------|-------------|-----|---------------|------------|-------------------|----------------------|
| 31.760000 | 28.3 | 1000.0 | 120.000 | 100.0 | V | 292.0 | 19.4 | 11.7 | 40.0 |
| 36.360000 | 28.0 | 1000.0 | 120.000 | 100.0 | V | 260.0 | 19.7 | 12.0 | 40.0 |
| 51.000000 | 25.2 | 1000.0 | 120.000 | 200.0 | V | 227.0 | 20.6 | 14.8 | 40.0 |
| 114.840000 | 27.7 | 1000.0 | 120.000 | 100.0 | V | 199.0 | 17.7 | 15.8 | 43.5 |
| 131.560000 | 28.1 | 1000.0 | 120.000 | 200.0 | V | 170.0 | 19.4 | 15.4 | 43.5 |
| 308.240000 | 22.8 | 1000.0 | 120.000 | 100.0 | V | 11.0 | 21.7 | 23.2 | 46.0 |

Note 1: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible (the test frequency range: 9kHz ~ 30MHz, 18GHz ~ 26.5GHz), therefore no data appear in the report.

10 Test Equipment List

List of Test Instruments

Test Site1

| TEST ITEM | DESCRIPTION | MANUFACTURER | MODEL NO. | SERIAL NO. | CAL. DATE | CAL. DUE DATE |
|-----------|---|-----------------|-----------|------------|-----------|---------------|
| C | Signal Analyzer | Rohde & Schwarz | FSV40 | 101091 | 2021-8-2 | 2022-8-1 |
| RE | EMI Test Receiver | Rohde & Schwarz | ESR3 | 101906 | 2021-8-2 | 2022-8-1 |
| | Signal Analyzer | Rohde & Schwarz | FSV40 | 101091 | 2021-8-2 | 2022-8-1 |
| | Trilog Super Broadband Test Antenna | Schwarzbeck | VULB 9168 | 961 | 2019-3-16 | 2022-3-15 |
| | Horn Antenna | Rohde & Schwarz | HF907 | 102393 | 2021-3-15 | 2022-3-14 |
| | Pre-amplifier | Rohde & Schwarz | SCU-18D | 19006451 | 2021-8-2 | 2022-8-1 |
| | Loop antenna | Rohde & Schwarz | HFH2-Z2 | 100443 | 2021-5-21 | 2022-5-20 |
| | DOUBLE-RIDGED WAVEGUIDE HORN WITH PRE-AMPLIFIER (18 GHZ - 40 GHZ) | ETS-Lindgren | 3116C-PA | 002222727 | 2020-9-23 | 2023-9-22 |
| | 3m Semi-anechoic chamber | TDK | 9X6X6 | ---- | 2021-5-8 | 2024-5-7 |
| | EMI Test Receiver | Rohde & Schwarz | ESR3 | 101907 | 2021-8-2 | 2022-8-1 |
| | LISN | Rohde & Schwarz | ENV216 | 101924 | 2021-8-2 | 2022-8-1 |

| Measurement Software Information | | | |
|----------------------------------|--------------------------------|------------------------------|-------------|
| Test Item | Software | Manufacturer | Version |
| C | Bluetooth and WiFi Test System | Shenzhen JS tonscond co.,ltd | 2.6.77.0518 |
| RE | EMC 32 | Rohde & Schwarz | V9.15.00 |
| CE | EMC 32 | Rohde & Schwarz | V9.15.03 |

C - Conducted RF tests

- Conducted peak output power
- 6dB bandwidth and 99% Occupied Bandwidth
- Power spectral density*
- Spurious RF conducted emissions
- Band edge



11 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

| Items | Extended Uncertainty |
|--|--|
| Conducted Disturbance at Mains Terminals | 150kHz to 30MHz, LISN, ± 3.16 dB |
| Radiated Disturbance | 30MHz to 1GHz, ± 5.03 dB (Horizontal) ± 5.12 dB (Vertical) 1GHz to 18GHz, ± 5.49 dB 18GHz to 40GHz, ± 5.63 dB |
| Carrier power conducted measurement | 50MHz~18GHz, ± 1.238 dB |
| Spurious Emission Conducted Measurement | 9kHz ~40GHz, ± 1.224 dB |



12 Photographs of Test Set-ups

Refer to the < Test Setup photos >.



13 Photographs of EUT

Refer to the < External Photos > & < Internal Photos >.

THE END