# FCC - TEST REPORT

| | | | | |
|---|---|---|---|---|
| Report Number | : | **709502405776-00C** | Date of Issue: | November 19, 2024 |

| | | |
|---|---|---|
| Model | : | Refer to page 4 |
| Product Type | : | Acoustic Thermal Imager |
| Applicant | : | FOTRIC INC. |
| Address | : | No. 14, Lane 2500, Xiupu Road, Pudong, 201201 Shanghai, PEOPLE'S REPUBLIC OF CHINA |
| Manufacturer | : | FOTRIC INC. |
| Address | : | No. 14, Lane 2500, Xiupu Road, Pudong, 201201 Shanghai, PEOPLE'S REPUBLIC OF CHINA |

| | | |
|---|---|---|
| Test Result | : | ■ **Positive** ☐ **Negative** |
| Total pages including Appendices | : | 46 |

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TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch
3-13, No.151, Heng Tong Road, Shanghai, 200070, P.R. China
Phone: +86 21 61410123, Fax:+86 21 61408600

# 1 Table of Contents




TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch
3-13, No.151, Heng Tong Road, Shanghai, 200070, P.R. China
Phone: +86 21 61410123, Fax:+86 21 61408600

## 2 Report Modification Record

Alterations and additions to this report will be issued to the holders of each copy in the form of a complete document.

| Issue | Description of Change | Date of Issue |
|---|---|---|
| 709502405776-00C | First Issue | 11/19/2024 |

## 3 Details about the Test Laboratory

Test Site 1

Company name: TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch
No.16 Lane, 1951 Du Hui Road,
Shanghai 201108,
P.R. China

Test Firm FCC Registration Number: 820234

Designation number: CN1183

IC Company Number: 31668

CAB identifier: CN0101

Telephone: +86 21 6141 0123
Fax: +86 21 6140 8600

# 4 Description of the Equipment under Test

Product: Acoustic Thermal Imager

Model no.:

| | | | | | |
|---|---|---|---|---|---|
| Fotric 330MiX | Fotric 340MiX | Fotric 850MiX | Fotric V0MiX | Fotric EE0VM | Fotric EE0IM |
| Fotric 331MiX | Fotric 341MiX | Fotric 851MiX | Fotric V1MiX | Fotric EE1VM | Fotric EE1IM |
| Fotric 332MiX | Fotric 342MiX | Fotric 852MiX | Fotric V2MiX | Fotric EE2VM | Fotric EE2IM |
| Fotric 333MiX | Fotric 343MiX | Fotric 853MiX | Fotric V3MiX | Fotric EE3VM | Fotric EE3IM |
| Fotric 334MiX | Fotric 344MiX | Fotric 854MiX | Fotric V4MiX | Fotric EE4VM | Fotric EE4IM |
| Fotric 335MiX | Fotric 345MiX | Fotric 855MiX | Fotric V5MiX | Fotric EE5VM | Fotric EE5IM |
| Fotric 336MiX | Fotric 346MiX | Fotric 856MiX | Fotric V6MiX | Fotric EE6VM | Fotric EE6IM |
| Fotric 337MiX | Fotric 347MiX | Fotric 857MiX | Fotric V7MiX | Fotric EE7VM | Fotric EE7IM |
| Fotric 338MiX | Fotric 348MiX | Fotric 858MiX | Fotric V8MiX | Fotric EE8VM | Fotric EE8IM |
| Fotric 339MiX | Fotric 349MiX | Fotric 859MiX | Fotric V9MiX | Fotric EE9VM | Fotric EE9IM |
| Fotric 3310MiX | Fotric 3410MiX | Fotric 8510MiX | Fotric V10MiX | Fotric EE10VM | Fotric EE10IM |
| WWZDH2 | WVZDH2 | RUZDH2 | 4ZDH2 | LLZ4D | LLZHD |
| WWYDH2 | WVYDH2 | RUYDH2 | 4YDH2 | LLY4D | LLYHD |
| WWXDH2 | WVXDH2 | RUXDH2 | 4XDH2 | LLX4D | LLXHD |
| WWWDH2 | WVWDH2 | RUWDH2 | 4WDH2 | LLW4D | LLWHD |
| WWVDH2 | WVVDH2 | RUVDH2 | 4VDH2 | LLV4D | LLVHD |
| WWUDH2 | WVUDH2 | RUUDH2 | 4UDH2 | LLU4D | LLUHD |
| WWTDH2 | WVTDH2 | RUTDH2 | 4TDH2 | LLT4D | LLTHD |
| WWSDH2 | WVSDH2 | RUSDH2 | 4SDH2 | LLS4D | LLSHD |
| WWRDH2 | WVRDH2 | RURDH2 | 4RDH2 | LLR4D | LLRHD |
| WWQDH2 | WVQDH2 | RUQDH2 | 4QDH2 | LLQ4D | LLQHD |
| WWYZDH2 | WVYZDH2 | RUYZDH2 | 4YZDH2 | LLYZ4D | LLYZHD |
| UniC78Mix | 5CHNDH2 | | | | |

FCC ID: 2AZTCFCAC2IN1F

Options and accessories: NA

Rating: DC 7.4V for Acoustic Thermal Imager
Input: AC 100-240V, 50/60Hz, Output DC 12V for adapter

RF Transmission Frequency: For Bluetooth:2402~2480MHz
For 2.4G Wi-Fi:802.11b/g/n-HT20: 2412~2462 MHz
802.11n-HT40: 2422~2452 MHz
For 5G Wi-Fi:5180~5240 MHz (U-NII-1)
5260~5320 MHz (U-NII-2A)
5500~5720 MHz (U-NII-2C)
5745~5825 MHz (U-NII-3)


TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch
3-13, No.151, Heng Tong Road, Shanghai, 200070, P.R. China
Phone: +86 21 61410123, Fax:+86 21 61408600

No. of Operated Channel:

79 channels for Bluetooth EDR

| Ch | Fre (MH) | Ch | Fre (MH) | Ch | Fre (MH) | Ch | Fre (MH) | Ch | Fre (MHz) |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2402 | 17 | 2418 | 33 | 2434 | 49 | 2450 | 65 | 2466 |
| 2 | 2403 | 18 | 2419 | 34 | 2435 | 50 | 2451 | 66 | 2467 |
| 3 | 2404 | 19 | 2420 | 35 | 2436 | 51 | 2452 | 67 | 2468 |
| 4 | 2405 | 20 | 2421 | 36 | 2437 | 52 | 2453 | 68 | 2469 |
| 5 | 2406 | 21 | 2422 | 37 | 2438 | 53 | 2454 | 69 | 2470 |
| 6 | 2407 | 22 | 2423 | 38 | 2439 | 54 | 2455 | 70 | 2471 |
| 7 | 2408 | 23 | 2424 | 39 | 2440 | 55 | 2456 | 71 | 2472 |
| 8 | 2409 | 24 | 2425 | 40 | 2441 | 56 | 2457 | 72 | 2473 |
| 9 | 2410 | 25 | 2426 | 41 | 2442 | 57 | 2458 | 73 | 2474 |
| 10 | 2411 | 26 | 2427 | 42 | 2443 | 58 | 2459 | 74 | 2475 |
| 11 | 2412 | 27 | 2428 | 43 | 2444 | 59 | 2460 | 75 | 2476 |
| 12 | 2413 | 28 | 2429 | 44 | 2445 | 60 | 2461 | 76 | 2477 |
| 13 | 2414 | 29 | 2430 | 45 | 2446 | 61 | 2462 | 77 | 2478 |
| 14 | 2415 | 30 | 2431 | 46 | 2447 | 62 | 2463 | 78 | 2479 |
| 15 | 2416 | 31 | 2432 | 47 | 2448 | 63 | 2464 | 79 | 2480 |
| 16 | 2417 | 32 | 2433 | 48 | 2449 | 64 | 2465 | | |

40 channels for Bluetooth 4.2 BLE

| Ch | Fre(MHz) | Ch | Fre(MHz) | Ch | Fre(MHz) | Ch | Fre(MHz) |
|---|---|---|---|---|---|---|---|
| 0 | 2402 | 10 | 2422 | 20 | 2442 | 30 | 2462 |
| 1 | 2404 | 11 | 2424 | 21 | 2444 | 31 | 2464 |
| 2 | 2406 | 12 | 2426 | 22 | 2446 | 32 | 2466 |
| 3 | 2408 | 13 | 2428 | 23 | 2448 | 33 | 2468 |
| 4 | 2410 | 14 | 2430 | 24 | 2450 | 34 | 2470 |
| 5 | 2412 | 15 | 2432 | 25 | 2452 | 35 | 2472 |
| 6 | 2414 | 16 | 2434 | 26 | 2454 | 36 | 2474 |
| 7 | 2416 | 17 | 2436 | 27 | 2456 | 37 | 2476 |
| 8 | 2418 | 18 | 2438 | 28 | 2458 | 38 | 2478 |
| 9 | 2420 | 19 | 2440 | 29 | 2460 | 39 | 2480 |

2.4GHz WIFI: 11 for 802.11b/802.11g/802.11(H20);
7 for 802.11n(HT40)

| 802.11b/g/n(HT20) | | | | | 802.11n(HT40) | | |
|---|---|---|---|---|---|---|---|
| Ch | Fre(MHz) | Ch | Fre(MHz) | Ch | Fre(MHz) | Ch | Fre(MHz) |
| 1 | 2412 | 7 | 2442 | 3 | 2422 | 8 | 2447MHz |
| 2 | 2417 | 8 | 2447 | 4 | 2427 | 9 | 2452MHz |
| 3 | 2422 | 9 | 2452 | 5 | 2432 | | |
| 4 | 2427 | 10 | 2457 | 6 | 2437 | | |
| 5 | 2432 | 11 | 2462 | 7 | 2442 | | |
| 6 | 2437 | | | | | | |

5180~5240 MHz (U-NII-1):

4 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|
| 36 | 5180 | 44 | 5220 |
| 40 | 5200 | 48 | 5240 |



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2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|
| 38 | 5190 | 46 | 5230 |

1 channel is provided for 802.11ac (VHT80):

| Channel | Frequency (MHz) |
|---|---|
| 42 | 5210 |

## 5260~5320 MHz (U-NII-2A)

4 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

| Channel | Frequency （MHz） | Channel | Frequency （MHz） |
|---|---|---|---|
| 52 | 5260 | 60 | 5300 |
| 56 | 5280 | 64 | 5320 |

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

| Channel | Frequency （MHz） | Channel | Frequency （MHz） |
|---|---|---|---|
| 54 | 5270 | 62 | 5310 |

1 channel is provided for 802.11ac (VHT80):

| Channel | Frequency （MHz） | Channel | Frequency （MHz） |
|---|---|---|---|
| 58 | 5290 | | |

## 5500~5720 MHz (U-NII-2C)

12 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

| Channel | Frequency (MHz) | Channel | Frequency(MHz) |
|---|---|---|---|
| 100 | 5500 | 124 | 5620 |
| 104 | 5520 | 128 | 5640 |
| 108 | 5540 | 132 | 5660 |
| 112 | 5560 | 136 | 5680 |
| 116 | 5580 | 140 | 5700 |
| 120 | 5600 | 144 | 5720 |

6 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

| Channel | Frequency (MHz) | Channel | Frequency(MHz) |
|---|---|---|---|
| 102 | 5510 | 126 | 5630 |
| 110 | 5550 | 134 | 5670 |
| 118 | 5590 | 142 | 5710 |

3 channels are provided for 802.11ac (VHT80):

| Channel | Frequency (MHz) | Channel | Frequency(MHz) |
|---|---|---|---|
| 106 | 5530 | 138 | 5690 |
| 122 | 5610 | | |



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5745~5825 MHz (U-NII-3): Channel 149 – 165

5 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|
| 149 | 5745 | 161 | 5805 |
| 153 | 5765 | 165 | 5825 |
| 157 | 5785 | | |

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|
| 151 | 5755 | 159 | 5795 |

1 channel is provided for 802.11ac (VHT80):

| Channel | Frequency (MHz) |
|---|---|
| 155 | 5755 |

| | |
|---|---|
| Modulation: | Bluetooth EDR FHSS: GFSK, π/4 DQPSK, 8DPSK<br>Bluetooth 4.2+BLE DHSS: GFSK<br>For Wi-Fi: Direct Sequence Spread Spectrum (DSSS) for 802.11b<br>Orthogonal Frequency Division Multiplexing (OFDM) for 802.11a/b/g/n/ac |
| Hardware Version: | V01 |
| Software Version: | V6.2.0 |
| Data speed: | 1. Bluetooth EDR FHSS: 1Mbps, 2Mbps, 3Mbps<br>2. Bluetooth 4.2+BLE DHSS: 1Mbps<br>3. Wi-Fi: 11b 1 ~ 11Mbps,<br>11g/a 6 ~ 54Mbps, 11n HT20 6.5 ~ 72.2Mbps,<br>11n HT 40 13.5 ~ 150Mbps,<br>11ac VHT40 13.5 ~ 200Mbps,<br>11ac VHT80 29.3 ~ 433.3Mbps |
| Antenna Type: | PIFA Antenna |
| Antenna Gain: | 1.76dBi for 2.4GHz; 5.96dBi for 5GHz |
| Description of the EUT: | The Equipment Under Test (EUT) is an Acoustic Thermal Imager with Bluetooth and Wi-Fi Module. The EUT support Bluetooth EDR, BLE function, Wi-Fi 2.4GHz and Wi-Fi 5GHz.<br>According to the client's declaration, all the models share the same schematic, hardware circuit, PCB layout, including RF parameters, except for the number of enabled microphone modules. We chose model Fotric V0MiX to perform all the tests and listed the worst data in this report. Only 2.4GHz BLE RF testing results were included in this report. |
| Test sample no.: | SHA-832647-2 (RF Conducted); SHA-832647-3 (RF Radiated) |


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3-13, No.151, Heng Tong Road, Shanghai, 200070, P.R. China
Phone: +86 21 61410123, Fax:+86 21 61408600

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



TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch
3-13, No.151, Heng Tong Road, Shanghai, 200070, P.R. China
Phone: +86 21 61410123, Fax:+86 21 61408600

# 5 Summary of Test Standards

| Test Standards | |
|---|---|
| FCC Part 15 Subpart C<br>10-1-2023 Edition | PART 15 - RADIO FREQUENCY DEVICES<br>Subpart C - Intentional Radiators |

All the test methods were according to KDB 558074 D01 15.247 Meas Guidance v05r02 Measurement Guidance and ANSI C63.10-2020.


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# 6 Summary of Test Results

| Technical Requirements | | | | | | |
|---|---|---|---|---|---|---|
| **FCC Part 15 Subpart C** | | | | | | |
| Test Condition | | Pages | Test Site | Test Result | | |
| | | | | Pass | Fail | N/A |
| §15.207 | Conducted emission AC power port | 16-20 | Site 1 | ☒ | ☐ | ☐ |
| §15.247 (b) (3) | Conducted peak output power | 21-24 | Site 1 | ☒ | ☐ | ☐ |
| §15.247(a)(1) | 20dB bandwidth | --- | --- | ☐ | ☐ | ☒ |
| §15.247(a)(1) | Carrier frequency separation | --- | --- | ☐ | ☐ | ☒ |
| §15.247(a)(1)(iii) | Number of hopping frequencies | --- | --- | ☐ | ☐ | ☒ |
| §15.247(a)(1)(iii) | Dwell Time | --- | --- | ☐ | ☐ | ☒ |
| §15.247(a)(2) | 6dB bandwidth | 25-26 | Site 1 | ☒ | ☐ | ☐ |
| §15.247(e) | Power spectral density | 27-28 | Site 1 | ☒ | ☐ | ☐ |
| §15.247(d) | Spurious RF conducted emissions | 29-32 | Site 1 | ☒ | ☐ | ☐ |
| §15.247(d) | Band edge | 33-35 | Site 1 | ☒ | ☐ | ☐ |
| §15.247(d) & §15.209 | Spurious radiated emissions for transmitter | 36-42 | Site 1 | ☒ | ☐ | ☐ |
| §15.203 | Antenna requirement | See note 1 | | ☒ | ☐ | ☐ |

Remark 1: N/A – Not Applicable.
Note 1: The EUT uses a PIFA antenna, which gain is 1.76dBi for 2.4GHz and 5.96dBi for 5GHz.
In accordance to §15.203, It is considered sufficiently to comply with the provisions of this section.


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# 7 General Remarks

**Remarks**

This submittal(s) (test report) is intended for FCC ID: 2AZTCFCAC2IN1F complies with Section 15.205,15.207, 15.209, 15.247 of the FCC Part 15, Subpart C rules.

This report in only for 2.4GHz BLE.

**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: | July 12, 2024 |
| Testing Start Date: | July 12, 2024 |
| Testing End Date: | October 23, 2024 |

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

| Reviewed by: | Prepared by: | Tested by: |
|---|---|---|
| Hui TONG | Wenqiang LU | Chengjie GUO |
| Review Engineer | Project Engineer | Test Engineer |



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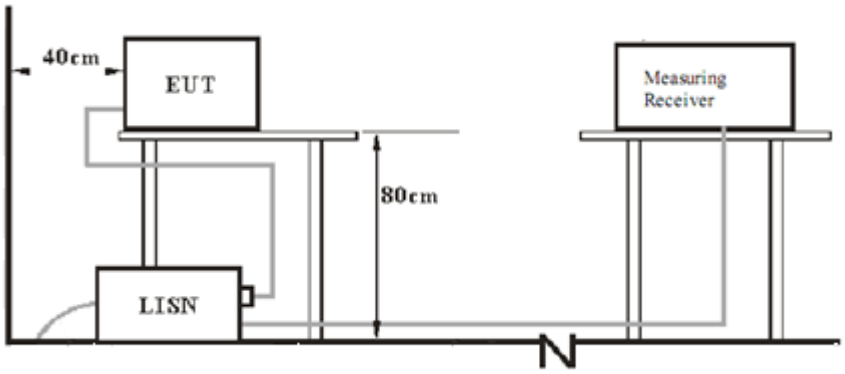
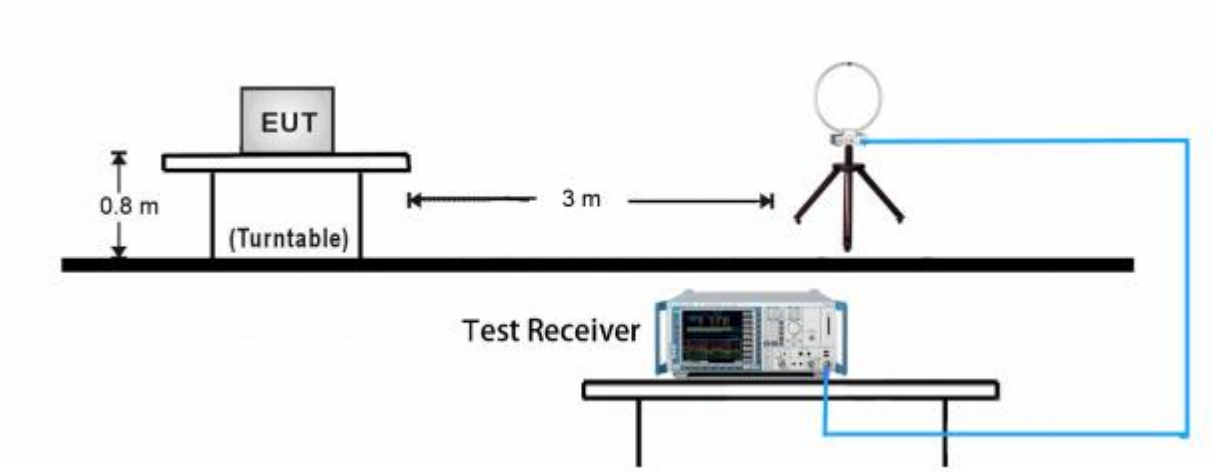
# 8 Test Setups

## 8.1 AC Power Line Conducted Emission test setups




## 8.2 Radiated test setups

9kHz ~ 30MHz Test Setup:





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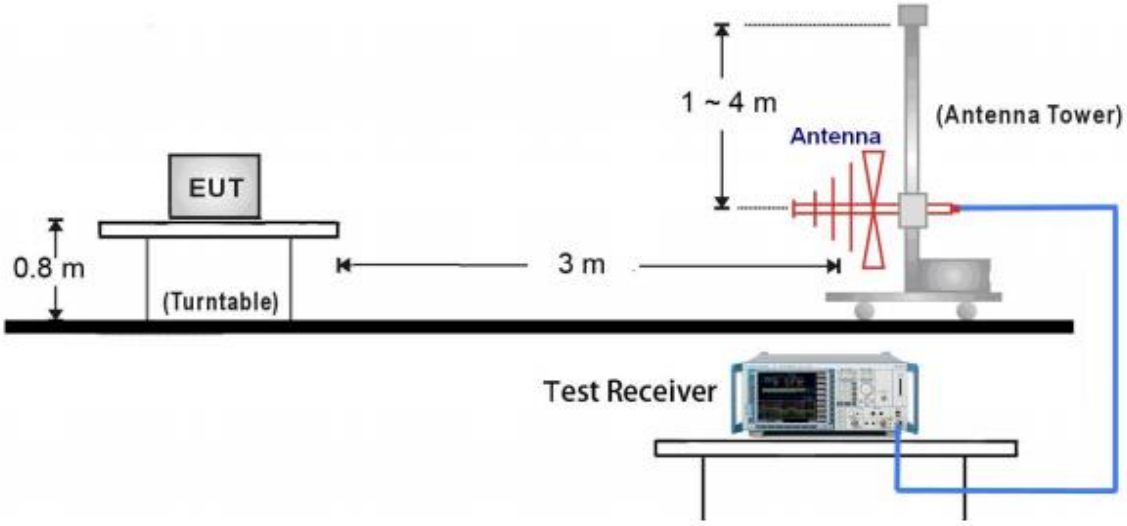
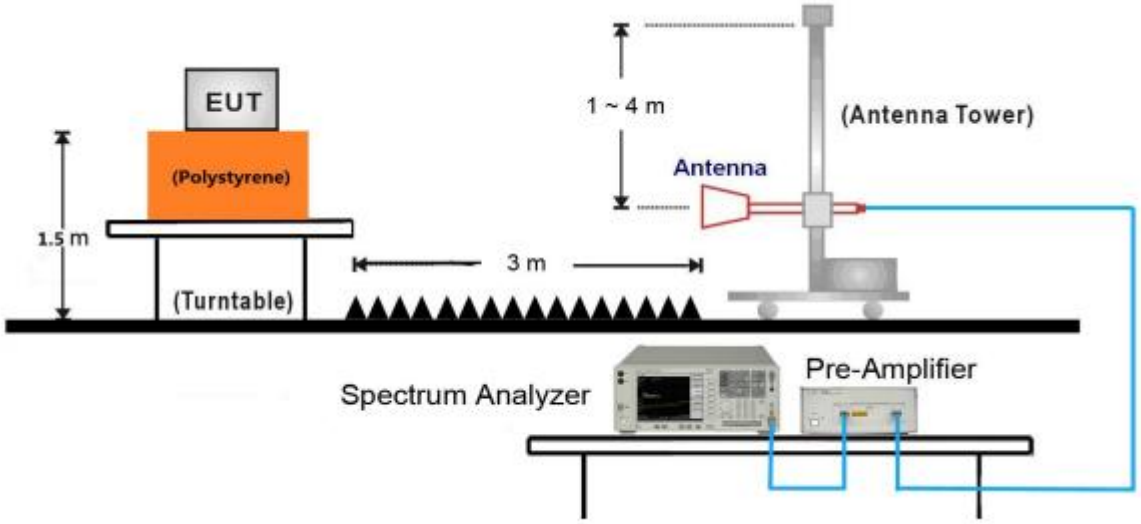
30MHz ~ 1GHz Test Setup:




1GHz ~ 18GHz Test Setup:



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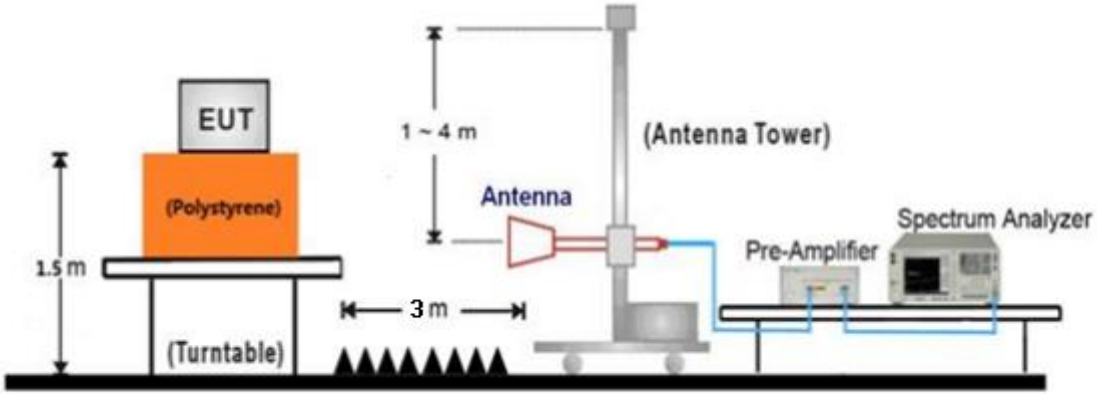
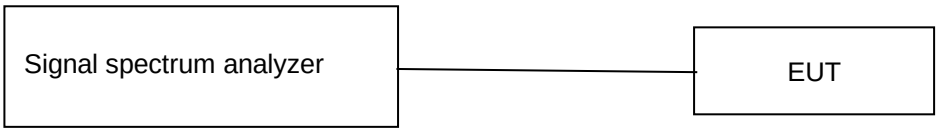
18GHz ~ 25GHz Test Setup:




8.3 Conducted RF test setups





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# 9 Systems test configuration

Auxiliary Equipment Used during Test:

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

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

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

Test Mode Applicability and Tested Channel Detail:

| Mode | Tested Channel | Data Rate (Mbps) | Modulation | Index Value (Power level setting) |
|---|---|---|---|---|
| BLE | 1 | 1 | GFSK | By manufacturer |
| | 19 | 1 | GFSK | By manufacturer |
| | 39 | 1 | GFSK | By manufacturer |

Non-hopping mode: The system was configured to operate at a signal channel transmitting. The test software allows the configuration and operation at the worst-case duty and the highest transmit power.


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# 10 Technical Requirement

## 10.1 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**

According to §15.207, conducted emissions limit as below:

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

*Decreasing linearly with logarithm of the frequency



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## Conducted Emission

Conducted Emission worse case test result as below:

# 150k-30MHz Conducted Emission Test

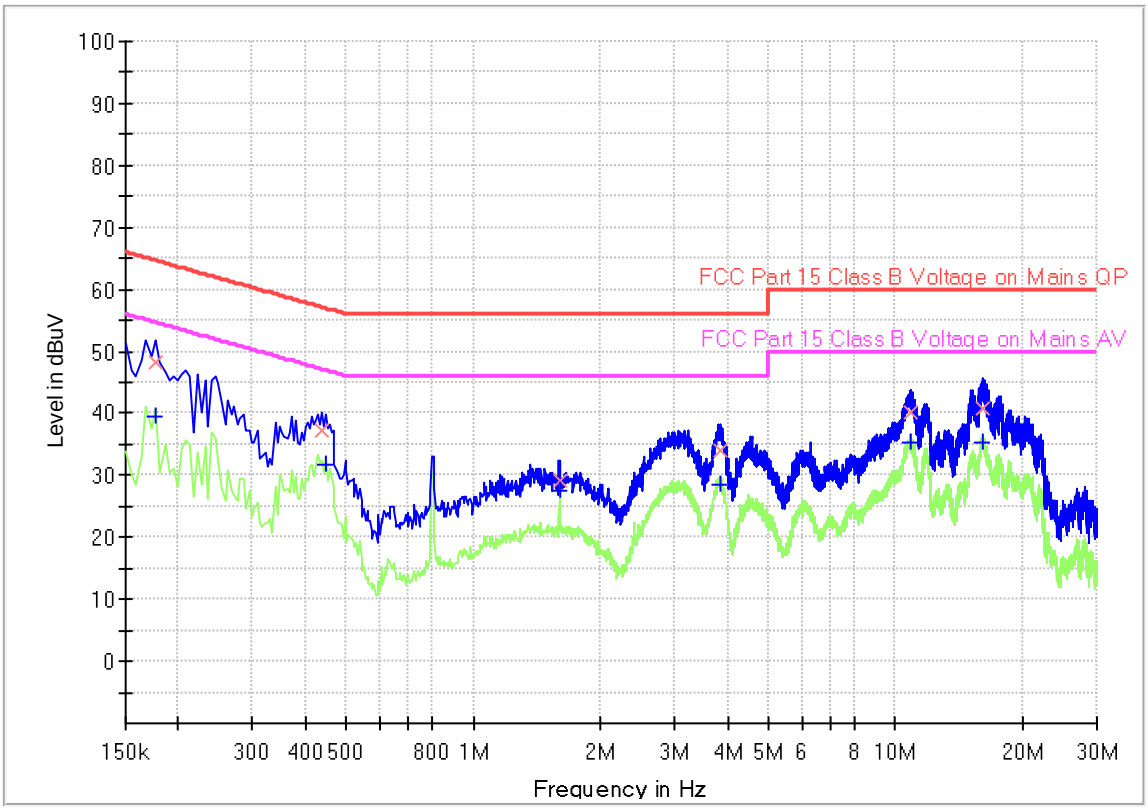
## EUT Information

| | |
|---|---|
| EUT Name: | Acoustic Thermal Imager |
| Model | Fotric V0MiX |
| Client: | FOTRIC INC |
| Op Cond | Power on, TX at 2480MHz, AC 120V/60Hz (worse case) |
| Operator: | Chengjie GUO |
| Standard | FCC Part 15.207(a) |
| Comment: | Phase L |
| Sample No.: | SHA-832647-2 |

## Scan Setup: Voltage with 2-Line-LISN pre [EMI conducted]

| | |
|---|---|
| Hardware Setup: | Voltage with 2-Line-LISN |
| Receiver: | [ESR 3] |
| Level Unit: | dBuV |

| Subrange | Step Size | Detectors | IF BW | Meas. Time | Preamp |
|---|---|---|---|---|---|
| 9 kHz - 150 kHz | 100 Hz | PK+ | 200 Hz | 0.02 s | 0 dB |
| 150 kHz - 30 MHz | 4.5 kHz | PK+; AVG | 9 kHz | 0.01 s | 0 dB |



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## Final_Result

| Frequency (MHz) | QuasiPeak (dBuV) | CAverage (dBuV) | Limit (dBuV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Corr. (dB) |
|---|---|---|---|---|---|---|---|---|
| 0.177000 | --- | 39.51 | 54.63 | 15.12 | 1000.0 | 9.000 | L1 | 19.4 |
| 0.177000 | 48.30 | --- | 64.63 | 16.33 | 1000.0 | 9.000 | L1 | 19.4 |
| 0.438000 | 37.15 | --- | 57.10 | 19.95 | 1000.0 | 9.000 | L1 | 19.5 |
| 0.447000 | --- | 31.62 | 46.93 | 15.31 | 1000.0 | 9.000 | L1 | 19.5 |
| 1.599000 | --- | 27.43 | 46.00 | 18.57 | 1000.0 | 9.000 | L1 | 19.5 |
| 1.603500 | 29.28 | --- | 56.00 | 26.72 | 1000.0 | 9.000 | L1 | 19.5 |
| 3.858000 | 33.86 | --- | 56.00 | 22.14 | 1000.0 | 9.000 | L1 | 19.6 |
| 3.862500 | --- | 28.64 | 46.00 | 17.36 | 1000.0 | 9.000 | L1 | 19.6 |
| 10.810500 | 40.10 | --- | 60.00 | 19.90 | 1000.0 | 9.000 | L1 | 19.8 |
| 10.851000 | --- | 35.15 | 50.00 | 14.85 | 1000.0 | 9.000 | L1 | 19.8 |
| 16.035000 | --- | 35.19 | 50.00 | 14.81 | 1000.0 | 9.000 | L1 | 20.1 |
| 16.084500 | 40.82 | --- | 60.00 | 19.18 | 1000.0 | 9.000 | L1 | 20.1 |

Note 1: Measure Level = Reading Level + Factor
Factor = Cable Loss + LISN Factor + 10dB Attenuator
(The Reading Level is recorded by software which is not shown in the sheet)


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# 150k-30MHz Conducted Emission Test

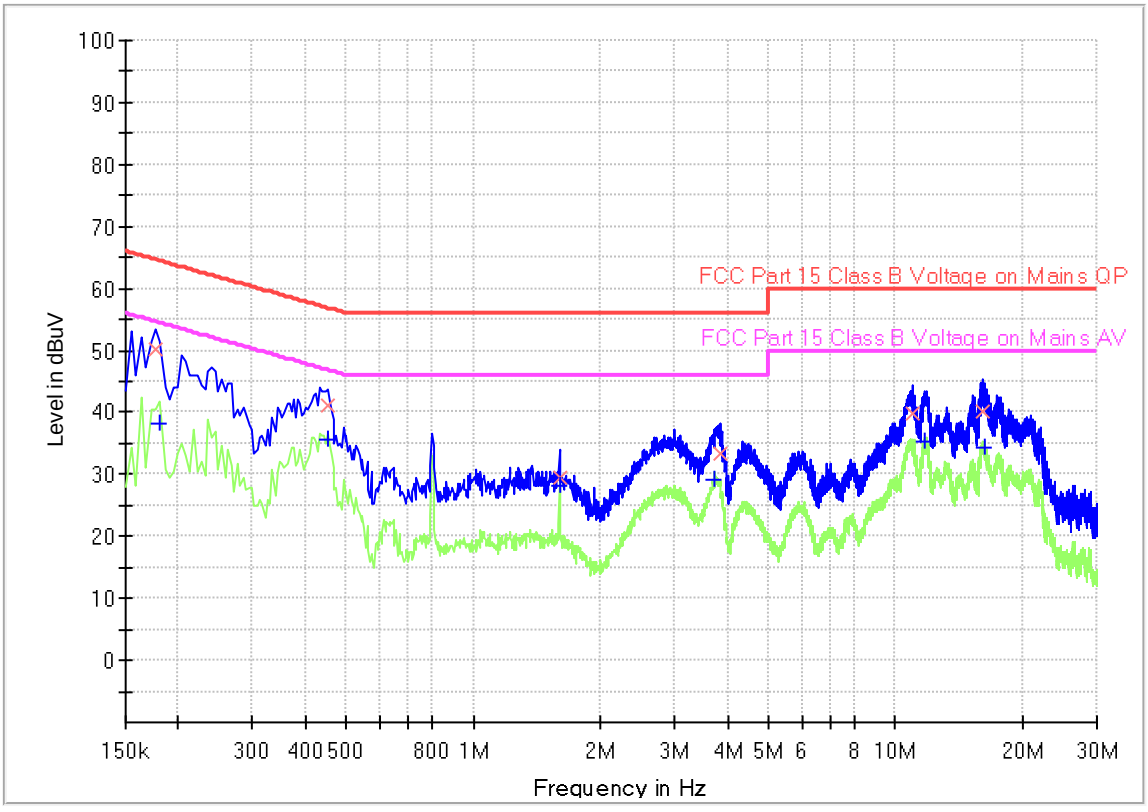
## EUT Information

| | |
|---|---|
| EUT Name: | Acoustic Thermal Imager |
| Model | Fotric V0MiX |
| Client: | FOTRIC INC |
| Op Cond | Power on, TX at 2480MHz, AC 120V/60Hz (worse case) |
| Operator: | Chengjie GUO |
| Standard | FCC Part 15.207(a) |
| Comment: | Phase N |
| Sample No.: | SHA-832647-2 |

## Scan Setup: Voltage with 2-Line-LISN pre [EMI conducted]

| | |
|---|---|
| Hardware Setup: | Voltage with 2-Line-LISN |
| Receiver: | [ESR 3] |
| Level Unit: | dBuV |

| Subrange | Step Size | Detectors | IF BW | Meas. Time | Preamp |
|---|---|---|---|---|---|
| 9 kHz - 150 kHz | 100 Hz | PK+ | 200 Hz | 0.02 s | 0 dB |
| 150 kHz - 30 MHz | 4.5 kHz | PK+; AVG | 9 kHz | 0.01 s | 0 dB |



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## Final_Result

| Frequency (MHz) | QuasiPeak (dBuV) | CAverage (dBuV) | Limit (dBuV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Corr. (dB) |
|---|---|---|---|---|---|---|---|---|
| 0.177000 | 50.08 | --- | 64.63 | 14.55 | 1000.0 | 9.000 | N | 19.4 |
| 0.181500 | --- | 38.16 | 54.42 | 16.26 | 1000.0 | 9.000 | N | 19.4 |
| 0.451500 | --- | 35.65 | 46.85 | 11.20 | 1000.0 | 9.000 | N | 19.5 |
| 0.451500 | 41.03 | --- | 56.85 | 15.82 | 1000.0 | 9.000 | N | 19.5 |
| 1.599000 | --- | 28.13 | 46.00 | 17.87 | 1000.0 | 9.000 | N | 19.5 |
| 1.599000 | 29.55 | --- | 56.00 | 26.45 | 1000.0 | 9.000 | N | 19.5 |
| 3.741000 | --- | 29.18 | 46.00 | 16.82 | 1000.0 | 9.000 | N | 19.6 |
| 3.849000 | 33.51 | --- | 56.00 | 22.49 | 1000.0 | 9.000 | N | 19.6 |
| 10.936500 | 39.72 | --- | 60.00 | 20.28 | 1000.0 | 9.000 | N | 19.7 |
| 11.773500 | --- | 35.25 | 50.00 | 14.75 | 1000.0 | 9.000 | N | 19.8 |
| 16.093500 | 40.15 | --- | 60.00 | 19.85 | 1000.0 | 9.000 | N | 20.0 |
| 16.192500 | --- | 34.30 | 50.00 | 15.70 | 1000.0 | 9.000 | N | 20.0 |

Note 1: Measure Level = Reading Level + Factor
Factor = Cable Loss + LISN Factor + 10dB Attenuator
(The Reading Level is recorded by software which is not shown in the sheet)


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## 10.2 Conducted peak output power

**Test Method (1)**

1. Use the following spectrum analyzer settings:
   RBW > the 6 dB bandwidth of the emission being measured, VBW≥3RBW, Span≥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.

**Test Method (2)**

1. Measure the duty cycle D of the transmitter output signal.
2. Set span to at least 1.5 times the OBW.
3. Set RBW = 1% to 5% of the OBW, not to exceed 1 MHz.
4. Set VBW ≥ [3 × RBW].
5. Number of points in sweep ≥ [2 × span / RBW]. (This gives bin-to-bin spacing ≤ RBW / 2, so that narrowband signals are not lost between frequency bins.)
6. Sweep time = auto.
7. Detector = RMS (i.e., power averaging), if available. Otherwise, use the sample detector mode.
8. Do not use sweep triggering. Allow the sweep to “free run.”
9. Trace average at least 100 traces in power averaging (rms) mode; however, the number of traces to be averaged shall be increased above 100 as needed such that the average accurately represents the true average over the ON and OFF periods of the transmitter.
10. Compute power by integrating the spectrum across the OBW of the signal using the instrument’s band power measurement function with band limits set equal to the OBW band edges. If the instrument does not have a band power function, then sum the spectrum levels (in power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.
11. Add [10 log (1 / D)], where D is the duty cycle, to the measured power to compute the average power during the actual transmission times (because the measurement represents an average over both the ON and OFF times of the transmission).

**Limits**

According to §15.247 (b) (3), conducted peak (average) output power limit as below:

Conducted peak output power

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


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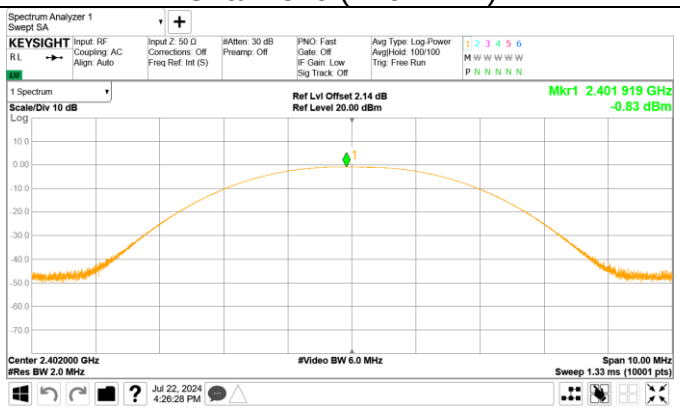
Test result (conducted peak) as below:

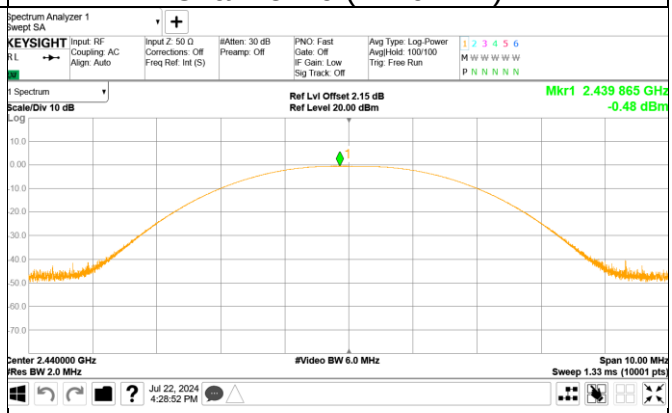
| Data transmission rate:1Mbps | | |
|---|---|---|
| Frequency | Conducted Peak Output Power | Result |
| MHz | dBm | |
| Low channel 2402MHz | -0.83 | Pass |
| Middle channel 2440MHz | -0.48 | Pass |
| High channel 2480MHz | -0.32 | Pass |

Peak output power

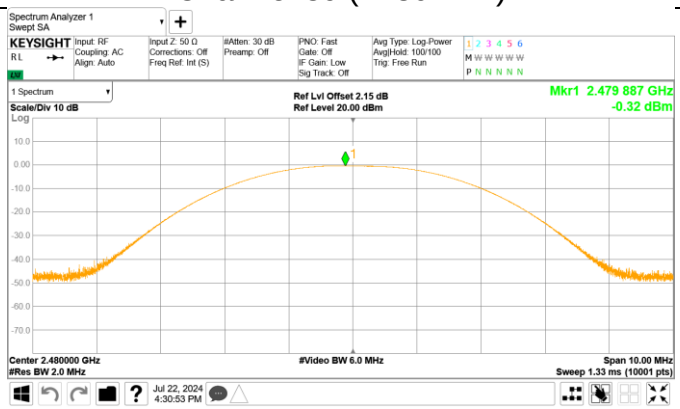
Channel 0 (2402MHz)




Channel 19 (2440MHz)




Channel 39 (2480MHz)




Test result (average power) as below table:

| Frequency (MHz) | Duty cycle Factor (dB) | Conducted Power (dBm) | Total Power (dBm) | Result |
|---|---|---|---|---|
| 2402MHz | 2.02 | -2.93 | -0.91 | Pass |
| 2440MHz | 2.02 | -2.74 | -0.72 | Pass |
| 2480MHz | 2.02 | -1.98 | 0.04 | Pass |



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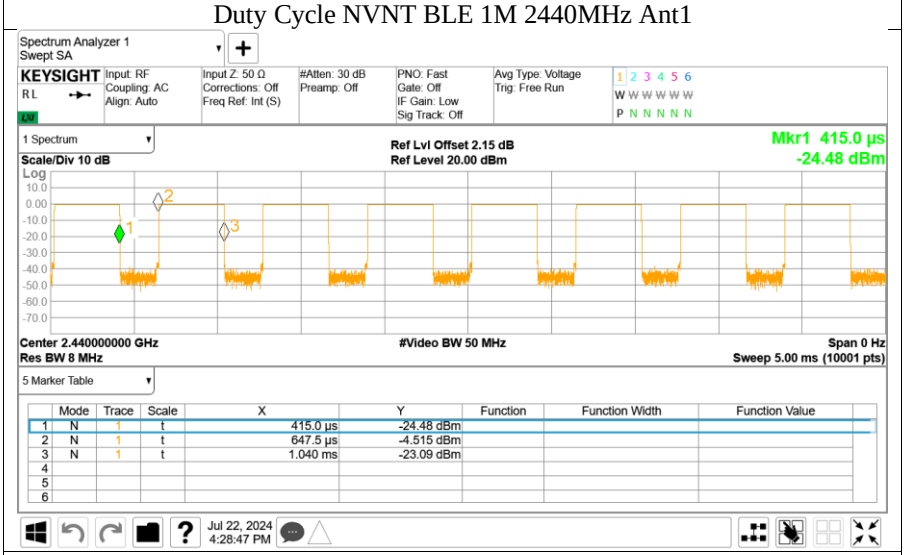
## Duty cycle

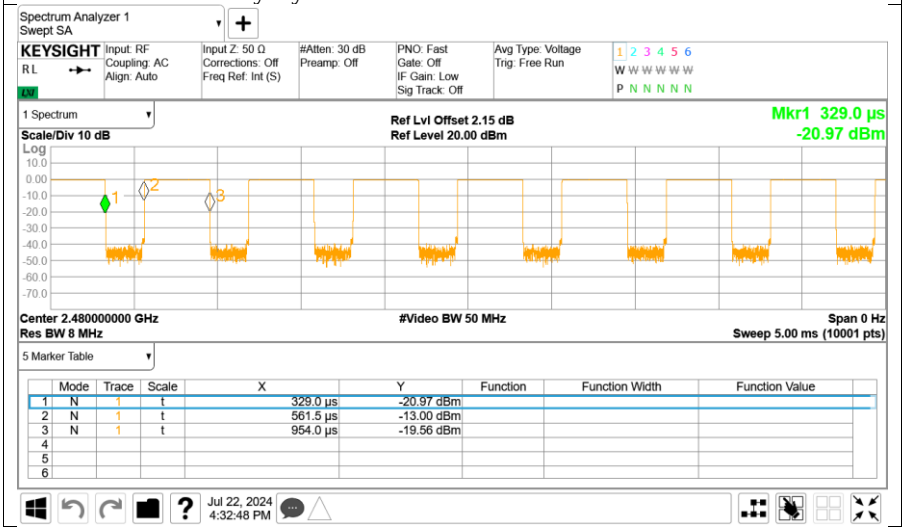
Test Graphs

Duty Cycle NVNT BLE 1M 2402MHz Ant1


Duty Cycle NVNT BLE 1M 2440MHz Ant1




Duty Cycle NVNT BLE 1M 2480MHz Ant1



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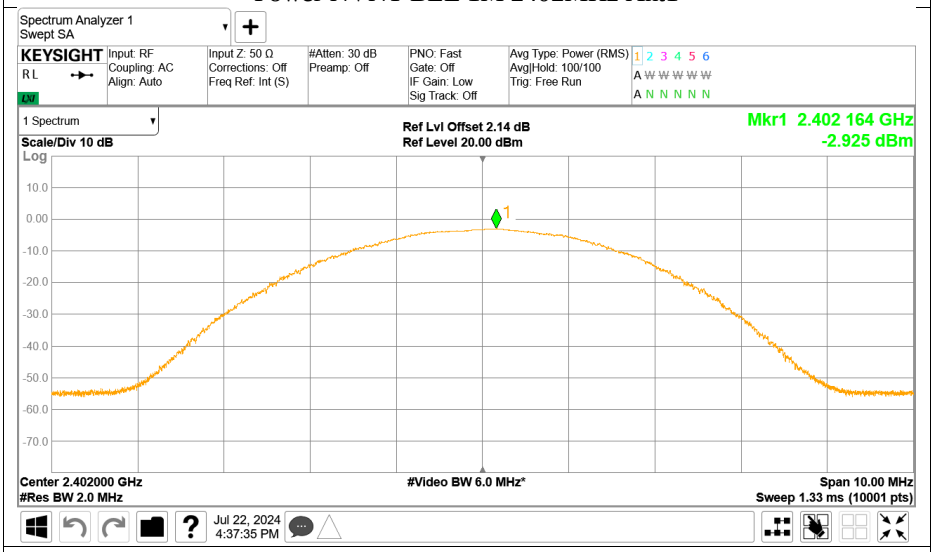
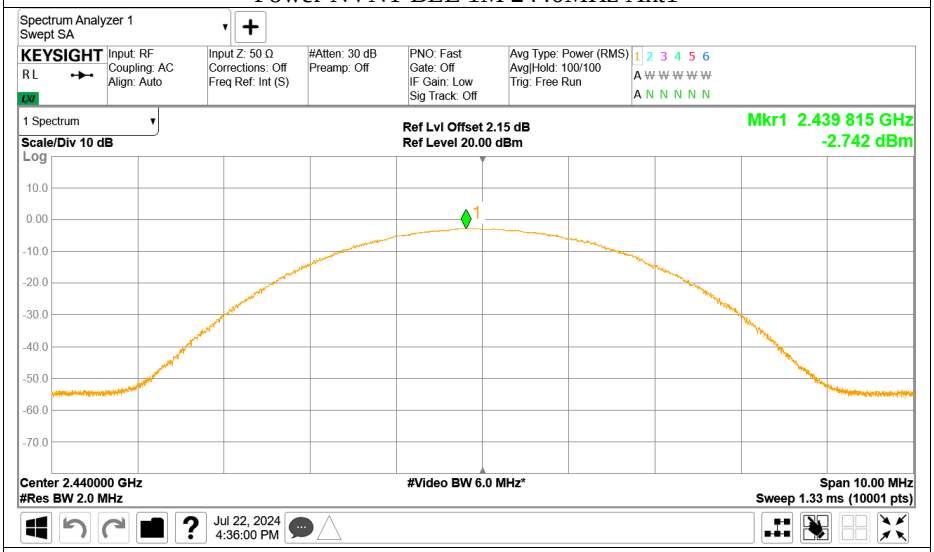
# Conducted Output Power

Test Graphs

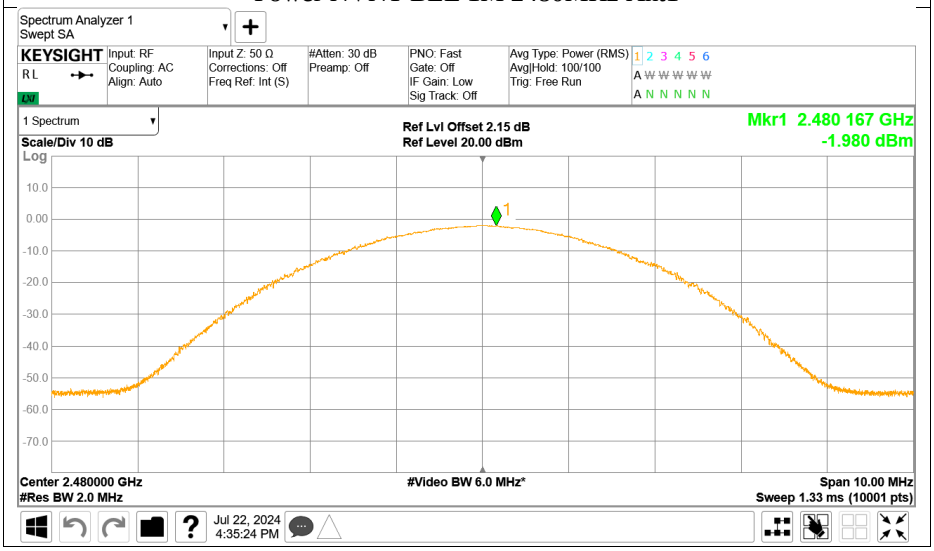
Power NVNT BLE 1M 2402MHz Ant1




Power NVNT BLE 1M 2440MHz Ant1




Power NVNT BLE 1M 2480MHz Ant1



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## 10.3 6dB bandwidth

**Test Method for 6 dB Bandwidth**

1. The RF output of EUT was connected to the spectrum analyzer. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting, the instrument center frequency is set to the nominal EUT channel center frequency enable the EUT transmit continuously.
3. Use the following spectrum analyzer settings:
   RBW=100KHz, VBW≥3RBW, Sweep = auto, Detector function = peak, Trace = max hold
4. Use the automatic bandwidth measurement capability of an instrument, use the X dB bandwidth mode with X set to 6 dB.
5. Allow the trace to stabilize, record the 6 dB Bandwidth value.

**Limit**

| 6dB bandwidth Limit [kHz] |
|---|
| ≥500 |

**Test result**

| Data transmission rate | Frequency MHz | 6dB bandwidth (MHz) | | Result |
|---|---|---|---|---|
| | | result | limit | verdict |
| 1Mbps | 2402 | 0.657 | ≥0.5 | Pass |
| | 2440 | 0.663 | ≥0.5 | Pass |
| | 2480 | 0.645 | ≥0.5 | Pass |


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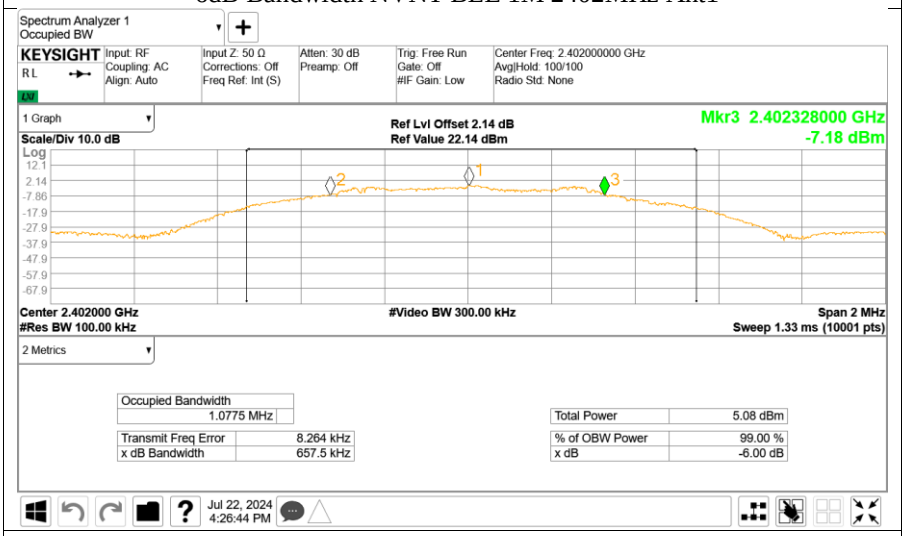
## 6dB Bandwidth

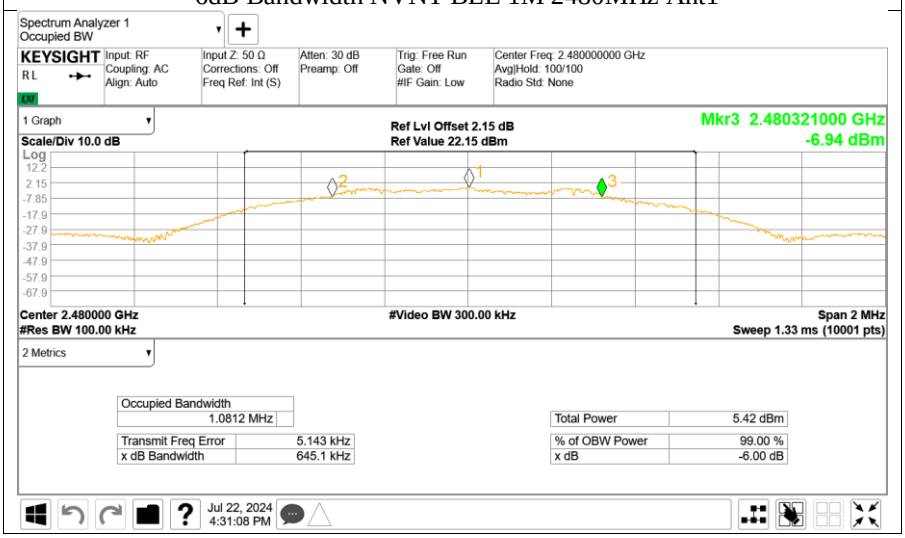
Test Graphs

-6dB Bandwidth NVNT BLE 1M 2402MHz Ant1




-6dB Bandwidth NVNT BLE 1M 2440MHz Ant1


-6dB Bandwidth NVNT BLE 1M 2480MHz Ant1



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## 10.4 Power spectral density

**Test Method**

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

1. The RF output of EUT was connected to the spectrum analyzer. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting, the instrument center frequency is set to the nominal EUT channel center frequency enable the EUT transmit continuously.
3. Use the following spectrum analyzer settings:
4. 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.
5. Allow trace to fully stabilize, use the peak marker function to determine the maximum amplitude level within the RBW.
6. Repeat above procedures until other frequencies measured were completed.

**Limit**

| Limit [dBm/3kHz] |
|---|
| ≤8 |

**Test result**

| Data transmission rate | Frequency | Power spectral density | Result |
|---|---|---|---|
| 1Mbps | MHz | dBm/3kHz | |
| | Top channel 2402MHz | -15.96 | Pass |
| | Middle channel 2440MHz | -15.59 | Pass |
| | Bottom channel 2480MHz | -15.48 | Pass |


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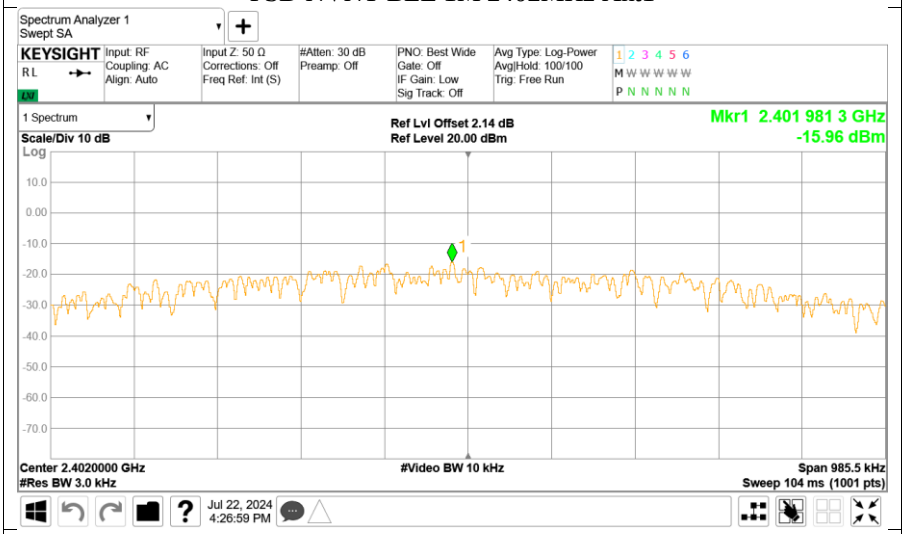
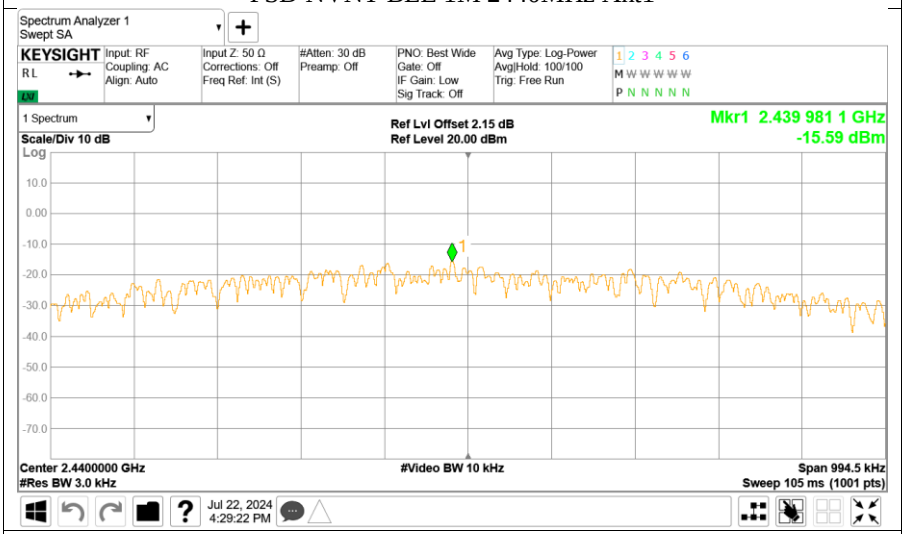
## Test Graphs

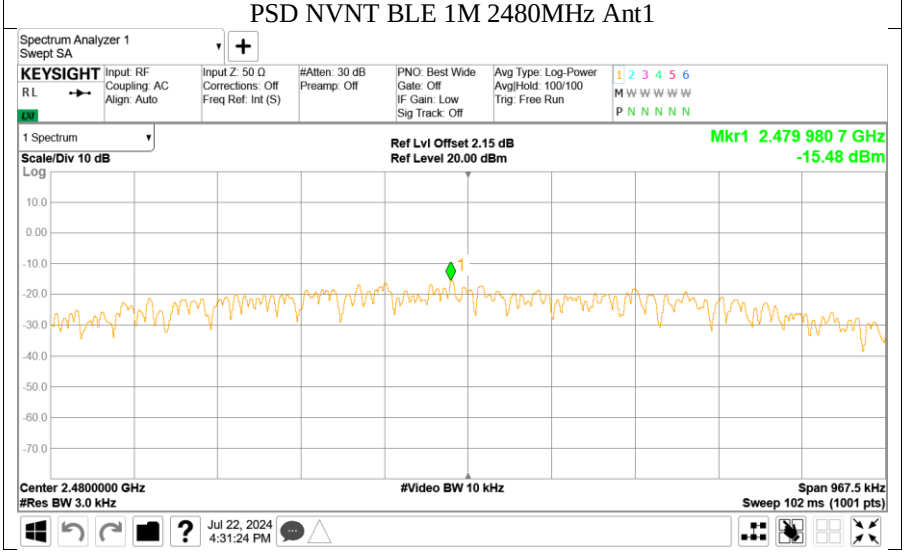
PSD NVNT BLE 1M 2402MHz Ant1




PSD NVNT BLE 1M 2440MHz Ant1




PSD NVNT BLE 1M 2480MHz Ant1



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## 10.5 Spurious RF conducted emissions

**Test Method**

1. The RF output of EUT was connected to the spectrum analyzer by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting, the instrument center frequency is set to the nominal EUT channel center frequency enable the EUT transmit continuously.
3. Use the following spectrum analyzer settings:
   Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10$^{th}$ harmonic. Typically, several plots are required to cover this entire span.
   RBW = 100 kHz, VBW≥3RBW, Sweep = auto, Detector function = peak, Trace = max hold
4. Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded.
5. The level displayed must comply with the limit specified in this Section. Submit these plots.
6. Repeat above procedures until all frequencies measured were complete.

**Limit**

| Frequency Range MHz | Limit (dBc) |
|---|---|
| 30-25000 | -20 |


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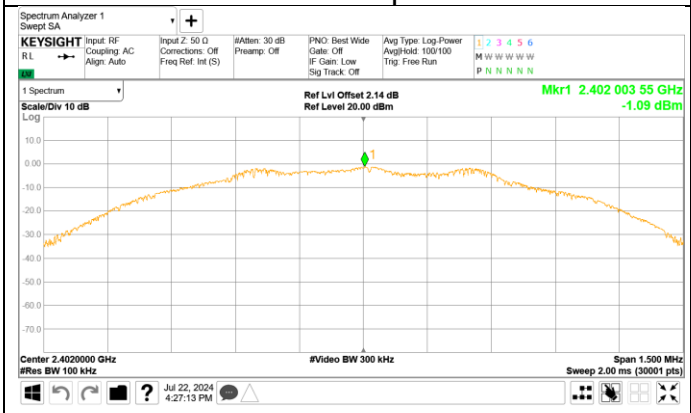
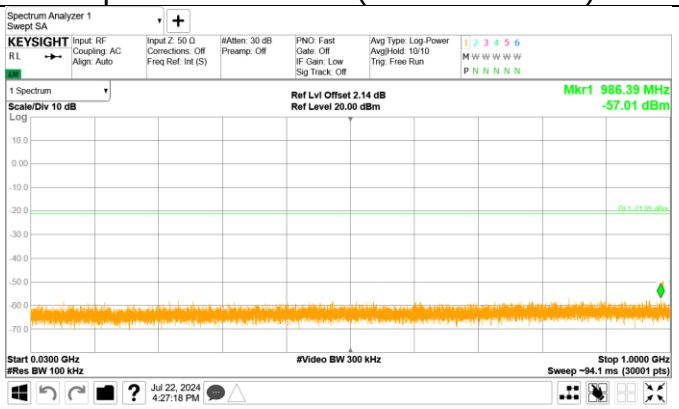
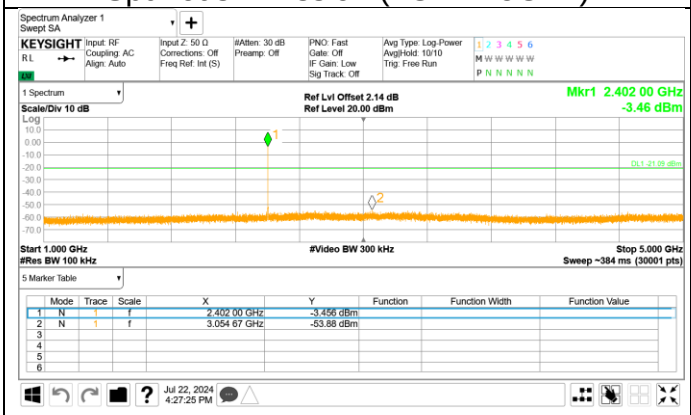
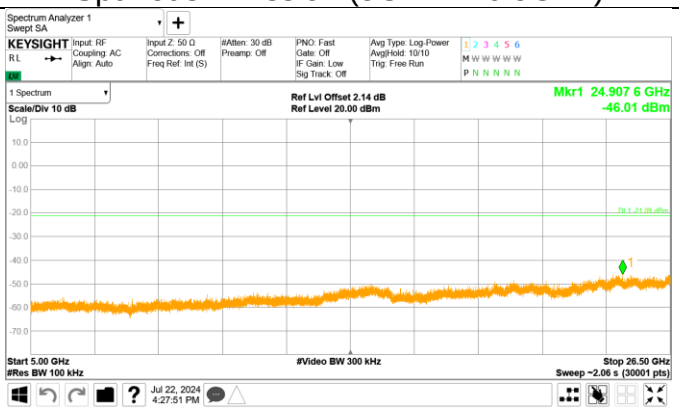
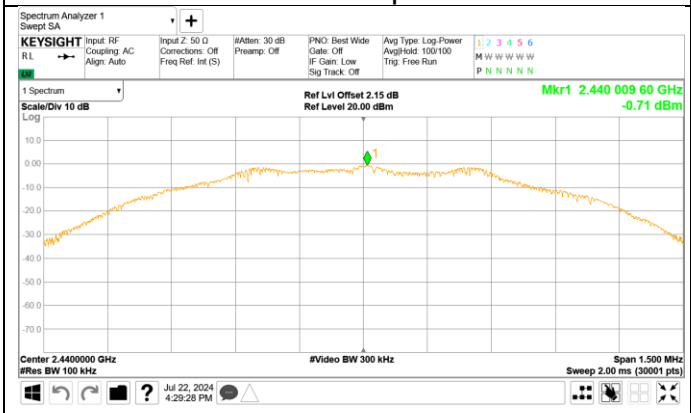
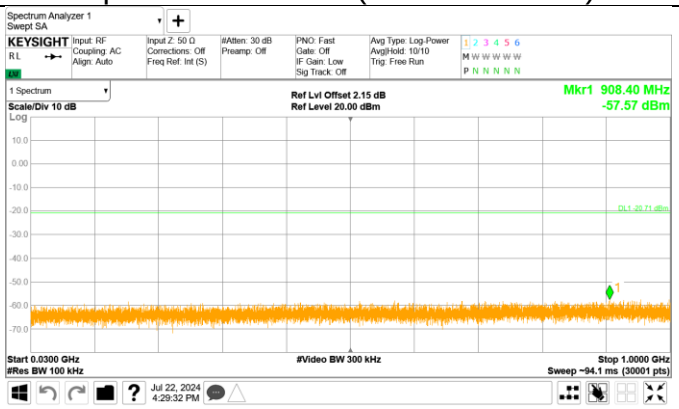
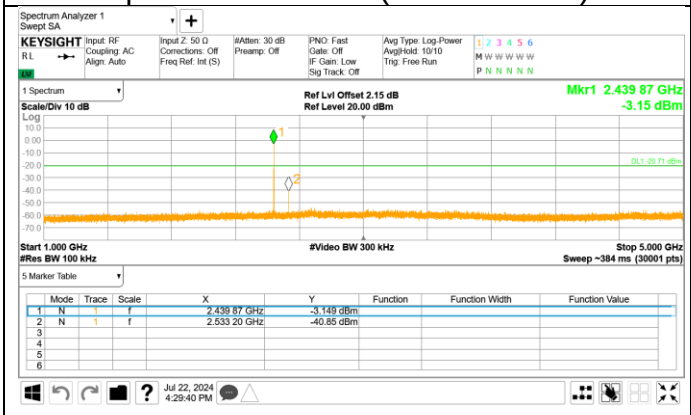
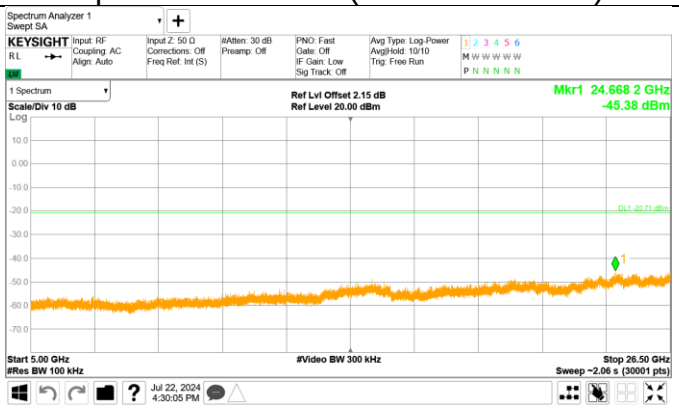
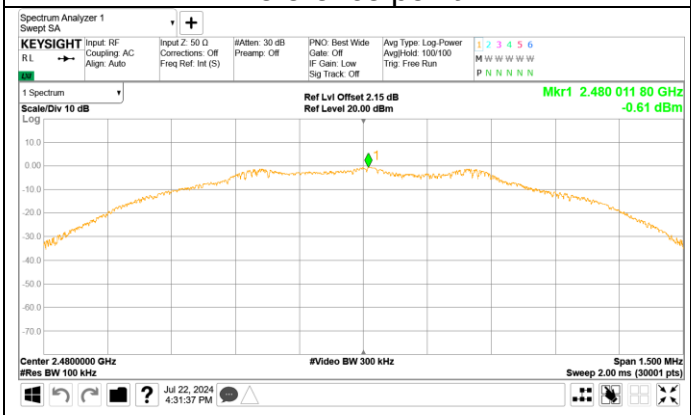
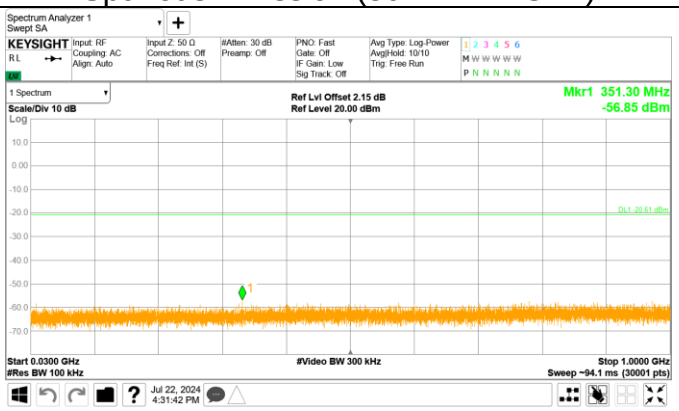
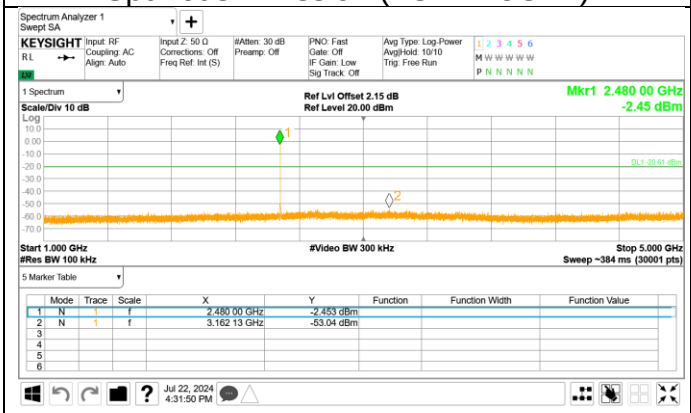
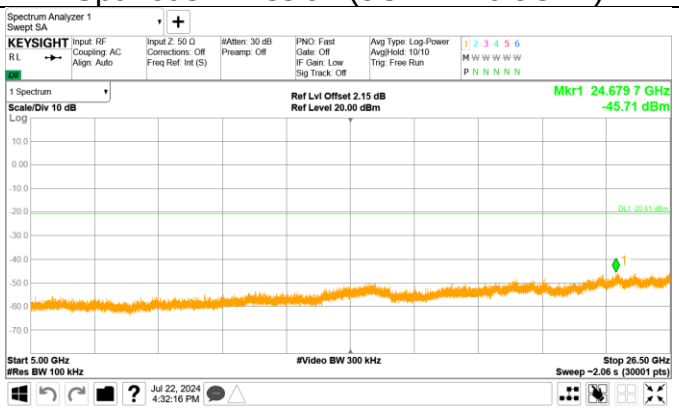
## Spurious RF conducted emissions

| Out-of-Band Emissions | |
|---|---|
| Channel 0 (2402MHz) | |
| Reference point | Spurious Emission (30MHz – 1GHz) |
|  |  |
| Spurious Emission (1GHz –5GHz) | Spurious Emission (5GHz –26.5GHz) |
|  |  |

| Out-of-Band Emissions | |
|---|---|
| Channel 19 (2440MHz) | |
| Reference point | Spurious Emission (30MHz – 1GHz) |
|  |  |
| Spurious Emission (1GHz –5GHz) | Spurious Emission (5GHz –26.5GHz) |
|  |  |

| Out-of-Band Emissions | |
|---|---|
| Channel 39 (2480MHz) | |
| Reference point | Spurious Emission (30MHz – 1GHz) |
|  |  |
| Spurious Emission (1GHz –5GHz) | Spurious Emission (5GHz –26.5GHz) |
|  |  |



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## 10.6 Band edge

**Test Method**

1. The RF output of EUT was connected to the spectrum analyzer by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting, the instrument center frequency is set to the nominal EUT channel center frequency enable the EUT transmit continuously.
3. 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≥3RBW, Sweep = auto, Detector function = peak, Trace = max hold
4. Allow the trace to stabilize, use the peak and delta measurement to record the result.
5. The level displayed must comply with the limit specified in this Section.
6. Repeat above procedures until all frequencies measured were complete and submit all the plots.

**Limit**

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced 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 that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under § 15.247(b)(3), the attenuation required shall be 30 dB instead of 20 dB.

| Frequency Range MHz | Limit (dBc) |
|---|---|
| 30-25000 | -20 |


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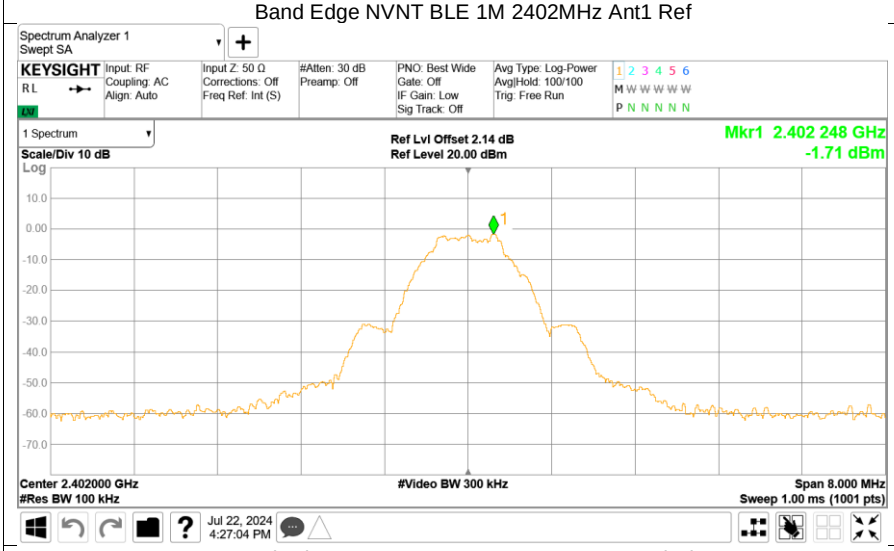
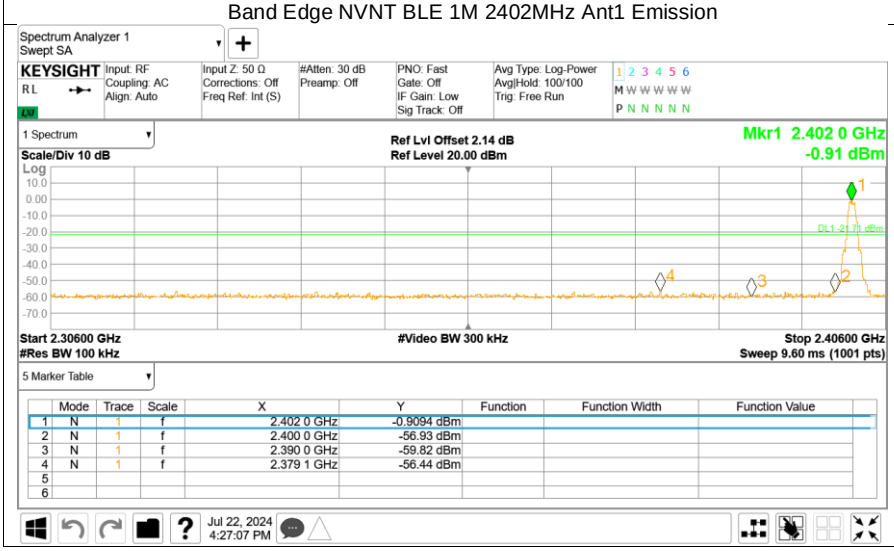
## Test result

Test Graphs

Band Edge NVNT BLE 1M 2402MHz Ant1 Ref




Band Edge NVNT BLE 1M 2402MHz Ant1 Emission




| | Mode | Trace | Scale | X | Y | Function | Function Width | Function Value |
|---|---|---|---|---|---|---|---|---|
| 1 | N | 1 | f | 2.402 0 GHz | -0.9094 dBm | | | |
| 2 | N | 1 | f | 2.400 0 GHz | -56.93 dBm | | | |
| 3 | N | 1 | f | 2.390 0 GHz | -59.82 dBm | | | |
| 4 | N | 1 | f | 2.379 1 GHz | -56.44 dBm | | | |
| 5 | | | | | | | | |
| 6 | | | | | | | | |



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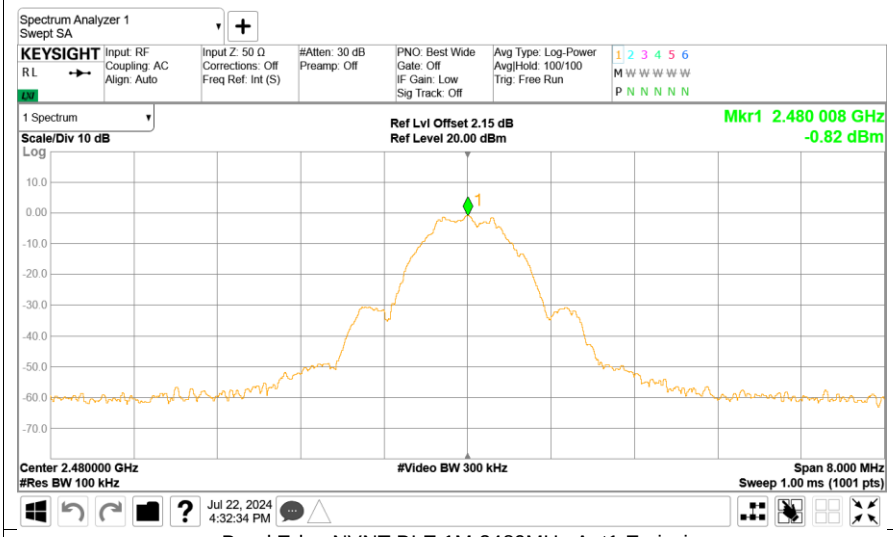
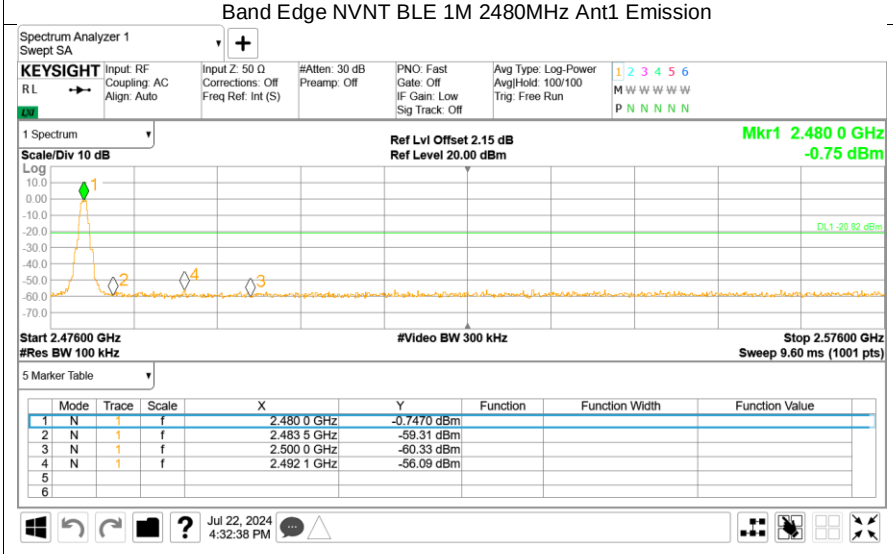
Band Edge NVNT BLE 1M 2480MHz Ant1 Ref




Band Edge NVNT BLE 1M 2480MHz Ant1 Emission



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## 10.7 Spurious radiated emissions for transmitter

**Test Method**

1. The EUT was place 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

   1) Procedure for Unwanted Emissions Measurements Below 1000 MHz

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

   2) 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 1GHz

   a) RBW = 1MHz.

   b) VBW \ [3 × RBW].

   c) Detector = RMS (power averaging), if [span / (# of points in sweep)] \ 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.


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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 (AV) at frequency above 1GHz.

**Limit**

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced 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 that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under § 15.247(b)(3), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in§ 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a).

| Frequency MHz | Field Strength μV/m | Field Strength dBμV/m | Detector | Measurement distance meters |
|---|---|---|---|---|
| 0.009-0.490 | 2400/F(kHz) | 48.5-13.8 | AV | 300 |
| 0.490-1.705 | 24000/F(kHz) | 33.8-23.0 | QP | 30 |
| 1.705-30 | 30 | 29.5 | QP | 30 |
| 30-88 | 100 | 40 | QP | 3 |
| 88-216 | 150 | 43.5 | QP | 3 |
| 216-960 | 200 | 46 | QP | 3 |
| 960-1000 | 500 | 54 | QP | 3 |
| Above 1000 | 500 | 54 | AV | 3 |
| Above 1000 | 5000 | 74 | PK | 3 |

Note 1: Limit 3m(dBμV/m)=Limit 300m(dBμV/m)+40Log(300m/3m) (Below 30MHz)
Note 2: Limit 3m(dBμV/m)=Limit 30m(dBμV/m)+40Log(30m/3m) (Below 30MHz)


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## 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.
Data of measurement within frequency range 9kHz-30MHz and 18-25GHz is the noise floor or attenuated more than 20dB below the permissible limits or the field strength is too small to be measured, so test data does not present in this report.

### Test result

### Above 1GHz Transmitting spurious emission test result as below:

| Test mode:2.4G_BLE_2402MHz | | | | | |
|---|---|---|---|---|---|
| **Frequency MHz** | **Measure Level (dBuV/m)** | **Limit (dBuV/m)** | **Margin (dB)** | **Detector** | **Polarization** |
| 2381.62 | 40.49 | 74.00 | 33.51 | PK | Horizontal |
| 2383.10 | 40.79 | 74.00 | 33.21 | PK | Vertical |
| 4805.34 | 41.64 | 74.00 | 32.36 | PK | Horizontal |
| 4803.75 | 41.70 | 74.00 | 32.30 | PK | Vertical |

| Test mode:2.4G_BLE_2440MHz | | | | | |
|---|---|---|---|---|---|
| **Frequency MHz** | **Measure Level (dBuV/m)** | **Limit (dBuV/m)** | **Margin (dB)** | **Detector** | **Polarization** |
| 4880.78 | 40.51 | 74.00 | 33.49 | PK | Horizontal |
| 4880.78 | 40.84 | 74.00 | 33.16 | PK | Vertical |

| Test mode:2.4G_BLE_2480MHz | | | | | |
|---|---|---|---|---|---|
| **Frequency MHz** | **Measure Level (dBuV/m)** | **Limit (dBuV/m)** | **Margin (dB)** | **Detector** | **Polarization** |
| 2483.55 | 43.22 | 74.00 | 30.78 | PK | Vertical |
| 2483.59 | 45.75 | 74.00 | 28.25 | PK | Horizontal |
| 4960.47 | 41.44 | 74.00 | 32.56 | PK | Vertical |
| 4958.88 | 41.64 | 74.00 | 32.36 | PK | Horizontal |

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


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The worst case of Radiated Emission below 1GHz:

# 30-1000MHz Radiated Emission

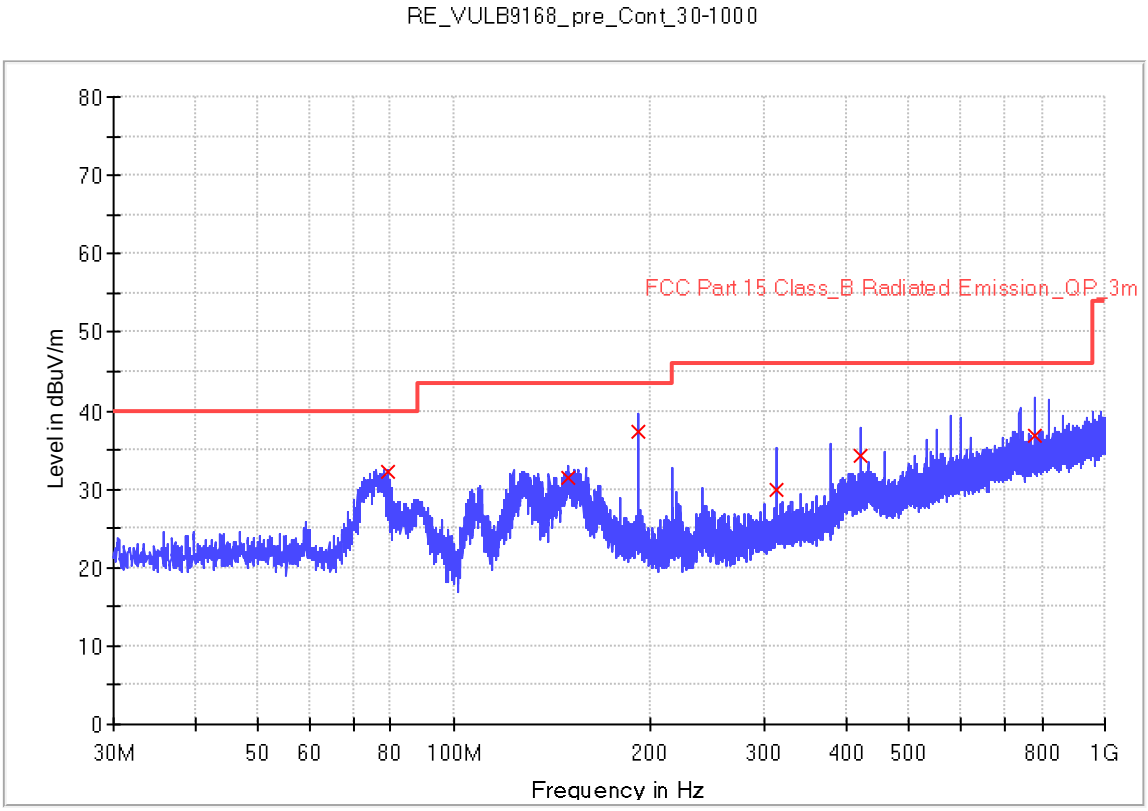
## EUT Information

| | |
|---|---|
| EUT Name: | Acoustic Thermal Imager |
| Model: | Fotric V0MiX |
| Client: | FOTRIC INC |
| Op Cond: | Power on, TX at 2480MHz, AC120V/60Hz |
| Operator: | Chengjie GUO |
| Test Spec: | FCC Part 15.209(a) |
| Comment: | Horizontal |
| Sample No: | SHA-832647-2 |

## Sweep Setup: RE_VULB9168_pre_Cont_30-1000 [EMI radiated]

| | |
|---|---|
| Hardware Setup: | RE_VULB9168 |
| Receiver: | [ESR 3] |
| Level Unit: | dBuV/m |

| Subrange | Step Size | Detectors | Bandwidth | Sweep Time | Preamp |
|---|---|---|---|---|---|
| 30 MHz - 1 GHz | 48.5 kHz | PK+ | 120 kHz | 0.2 s | 20 dB |



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## Limit and Margin

| Frequency (MHz) | QuasiPeak (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB) | Margin - QPK (dB) |
|---|---|---|---|---|---|---|---|---|
| 79.360000 | 32.3 | 1000.0 | 120.000 | 162.0 | H | 132.0 | 16.1 | 7.8 |
| 149.880000 | 31.5 | 1000.0 | 120.000 | 134.0 | H | 124.0 | 20.9 | 12.0 |
| 192.000000 | 37.2 | 1000.0 | 120.000 | 222.0 | H | 168.0 | 18.3 | 6.3 |
| 311.960000 | 29.9 | 1000.0 | 120.000 | 194.0 | H | 182.0 | 21.9 | 16.1 |
| 420.000000 | 34.2 | 1000.0 | 120.000 | 150.0 | H | 116.0 | 24.7 | 11.8 |
| 780.000000 | 36.7 | 1000.0 | 120.000 | 157.0 | H | 178.0 | 32.0 | 9.3 |

**(continuation of the "Limit and Margin" table from column 16 ...)**

| Frequency (MHz) | Limit - QPK (dBuV/m) | Comment |
|---|---|---|
| 79.360000 | 40.0 | |
| 149.880000 | 43.5 | |
| 192.000000 | 43.5 | |
| 311.960000 | 46.0 | |
| 420.000000 | 46.0 | |
| 780.000000 | 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 ~ 25GHz), therefore no data appear in the report.


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# 30-1000MHz Radiated Emission

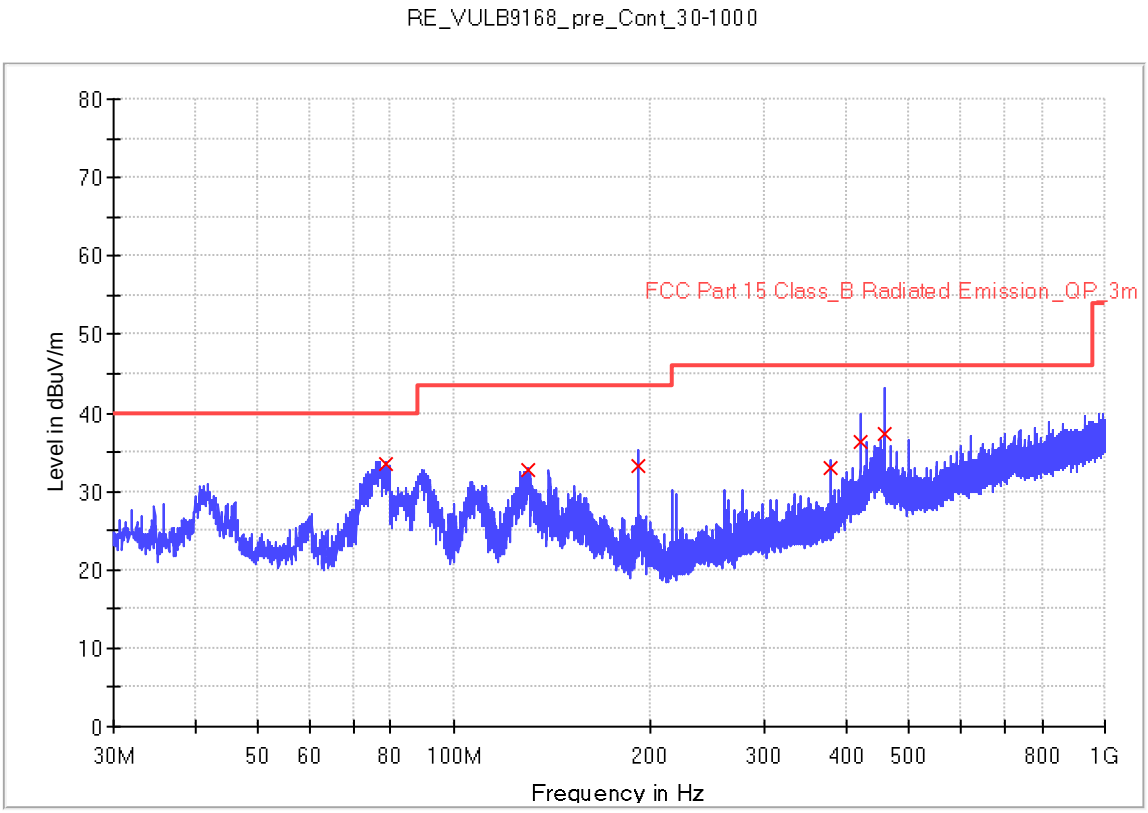
## EUT Information

| | |
|---|---|
| EUT Name: | Acoustic Thermal Imager |
| Model: | Fotric V0MiX |
| Client: | FOTRIC INC |
| Op Cond: | Power on, TX at 2480MHz, AC120V/60Hz |
| Operator: | Chengjie GUO |
| Test Spec: | FCC Part 15.209(a) |
| Comment: | Vertical |
| Sample No: | SHA-832647-2 |

## Sweep Setup: RE_VULB9168_pre_Cont_30-1000 [EMI radiated]

| | |
|---|---|
| Hardware Setup: | RE_VULB9168 |
| Receiver: | [ESR 3] |
| Level Unit: | dBuV/m |

| Subrange | Step Size | Detectors | Bandwidth | Sweep Time | Preamp |
|---|---|---|---|---|---|
| 30 MHz - 1 GHz | 48.5 kHz | PK+ | 120 kHz | 0.2 s | 20 dB |



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## Limit and Margin

| Frequency (MHz) | QuasiPeak (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB) | Margin - QPK (dB) |
|---|---|---|---|---|---|---|---|---|
| 78.560000 | 33.5 | 1000.0 | 120.000 | 100.0 | V | 165.0 | 16.4 | 6.5 |
| 130.280000 | 32.7 | 1000.0 | 120.000 | 135.0 | V | 125.0 | 19.3 | 10.8 |
| 192.000000 | 33.3 | 1000.0 | 120.000 | 162.0 | V | 109.0 | 18.3 | 10.2 |
| 380.040000 | 33.0 | 1000.0 | 120.000 | 184.0 | V | 94.0 | 23.7 | 13.0 |
| 420.000000 | 36.2 | 1000.0 | 120.000 | 196.0 | V | 254.0 | 24.7 | 9.8 |
| 460.000000 | 37.3 | 1000.0 | 120.000 | 154.0 | V | 266.0 | 25.8 | 8.7 |

**(continuation of the "Limit and Margin" table from column 16 ...)**

| Frequency (MHz) | Limit - QPK (dBuV/m) | Comment |
|---|---|---|
| 78.560000 | 40.0 | |
| 130.280000 | 43.5 | |
| 192.000000 | 43.5 | |
| 380.040000 | 46.0 | |
| 420.000000 | 46.0 | |
| 460.000000 | 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 ~ 25GHz), therefore no data appear in the report.


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# 11 Test Equipment List

List of Test Instruments
Test Site1

| | DESCRIPTION | MANUFACTURER | MODEL NO. | SERIAL NO. | CAL. DATE | CAL. DUE DATE |
|---|---|---|---|---|---|---|
| C | Signal spectrum analyzer | Agilent | N9020B | MY59050168 | 2024-2-19 | 2025-2-18 |
| RE | EMI Test Receiver | Rohde & Schwarz | ESR3 | 101906 | 2023-8-1 | 2024-7-31 |
| | EMI Test Receiver | Rohde & Schwarz | ESR3 | 101906 | 2024-8-1 | 2025-7-31 |
| | Signal Analyzer | Rohde & Schwarz | FSV40 | 101091 | 2023-8-1 | 2024-7-31 |
| | Signal Analyzer | Rohde & Schwarz | FSV40 | 101091 | 2024-8-1 | 2025-7-31 |
| | Trilog Super Broadband Test Antenna | Schwarzbeck | VULB 9168 | 961 | 2021-9-23 | 2024-9-22 |
| | Trilog Super Broadband Test Antenna | Schwarzbeck | VULB 9168 | 961 | 2024-8-30 | 2025-8-29 |
| | Double-ridged waveguide horn antenna | Rohde & Schwarz | HF907 | 102868 | 2024-4-14 | 2027-4-13 |
| | Pre-amplifier | Shenzhen HzEMC | HPA-081843 | HYPA23026 | 2024-4-16 | 2025-4-15 |
| | Loop antenna | Rohde & Schwarz | HFH2-Z2 | 100443 | 2024-6-26 | 2025-6-25 |
| | Double Ridged Horn Antenna | ETS-Lindgren | 3116C | 00246076 | 2023-7-7 | 2026-7-6 |
| | 3m Semi-anechoic chamber | TDK | 9X6X6 | ---- | 2024-5-8 | 2027-5-7 |
| CE | EMI Test Receiver | Rohde & Schwarz | ESR3 | 101907 | 2023-8-1 | 2024-7-31 |
| | EMI Test Receiver | Rohde & Schwarz | ESR3 | 101907 | 2024-8-1 | 2025-7-31 |
| | LISN | Rohde & Schwarz | ENV216 | 101924 | 2023-8-1 | 2024-7-31 |
| | LISN | Rohde & Schwarz | ENV216 | 101924 | 2024-8-1 | 2025-7-31 |

| Measurement Software Information | | | |
|---|---|---|---|
| Test Item | Software | Manufacturer | Version |
| C | MTS 8310 | MWRFtest | 2.0.0.0 |
| RE | EMC 32 | Rohde & Schwarz | V10.50.40 |
| 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


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## 12 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, 3.16dB |
| Radiated Disturbance | 9kHz to 30MHz, 3.52dB<br>30MHz to 1GHz, 5.03dB (Horizontal)<br>5.12dB (Vertical)<br>1GHz to 18GHz, 5.49dB<br>18GHz to 40GHz, 5.63dB |
| RF Conducted Measurement | Power related： 1.16dB<br>Frequency related： $6.00\times10^{-8}$ |

Measurement Uncertainty Decision Rule:

Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115: 2023, clause 4.3.3.


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3-13, No.151, Heng Tong Road, Shanghai, 200070, P.R. China
Phone: +86 21 61410123, Fax:+86 21 61408600

# 13 Photographs of Test Set-ups

Refer to the < Test Setup photos >.



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# 14 Photographs of EUT

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

**----------End of Test Report----------**



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