

**FCC - TEST REPORT**Report Number : **709502306225-00B** Date of Issue: January 22, 2024Model : LKOUT PProduct Type : Wireless DisplayApplicant : Fellowes IncAddress : 1789 Norwood Avenue Itasca, IL 60143 United StatesProduction Facility : Fellowes Office Products(Suzhou) Co, LtdAddress : 1# Shilin Road, Suzhou New & Hi-tech District,  
215151 Suzhou, Jiangsu, People's Republic of ChinaTest Result : ☒ **Positive** ☐ **Negative**Total pages including  
Appendices : 70

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## 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 |
|-------|-----------------------|---------------|
| 1     | First Issue           | 01/22/2024    |

## 3 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 CAB identifier CN0101

IC Registration No.: 31668



#### 4 Description of the Equipment under Test

Product: Wireless Display

Model no.: LKOUT P

FCC ID: IDH-RMTDSPY

Options and accessories: NA

Rating: DC 12V for Wireless Display  
100-240V~, 50/60Hz for adapter

RF Transmission Frequency: 2402~2480MHz for Bluetooth  
For 2.4G & 5G Wi-Fi  
For 802.11b/g/n-HT20: 2412~2462 MHz  
For 802.11n-HT40: 2422~2452 MHz  
5180~5240 MHz (U-NII-1)  
5745~5825 MHz (U-NII-3)  
WCDMA Band II/IV/V  
LTE Band 2/4/5/12/13/14/66/71

No. of Operated Channel: 79 channels for Bluetooth 2.1+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            |

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            |

## 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 2.1+EDR FHSS: GFSK, $\pi/4$ 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:       | V2.0                                                                                                                                                                                                                                                    |
| Software Version:       | 11.0.1_#7210_10.1_2168A1-V2.0                                                                                                                                                                                                                           |
| Data speed:             | 1. Bluetooth 2.1+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:           | PCB Antenna                                                                                                                                                                                                                                             |
| Antenna Gain:           | 1.99dBi for 2.4GHz; 1.98dBi for 5GHz                                                                                                                                                                                                                    |
| Description of the EUT: | The Equipment Under Test (EUT) is an Infrared Thermal Camera with Bluetooth and Wi-Fi Module. The EUT support Bluetooth 4.2+EDR and support BLE function and Wi-Fi operated at 5GHz and 2.4GHz. Only Bluetooth 4.2+EDR included in this report.         |
| Test sample no.:        | SHA-749413-2 (RF Conducted); SHA-749413-3 (RF Radiated)                                                                                                                                                                                                 |

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, antenna gain or any information supplied.



## 5 Summary of Test Standards

| Test Standards                             |                                                                        |
|--------------------------------------------|------------------------------------------------------------------------|
| FCC Part 15 Subpart C<br>10-1-2021 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.



## 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            | 14-18      | Site 1    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| §15.247 (b) (3)                | Conducted peak output power                 | 19-28      | Site 1    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| §15.247(a)(1)                  | 20dB bandwidth and 99% Occupied Bandwidth   | ---        | ---       | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| §15.247(a)(1)                  | Carrier frequency separation                | ---        | ---       | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| §15.247(a)(1)(iii)             | Number of hopping frequencies               | ---        | ---       | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| §15.247(a)(1)(iii)             | Dwell Time - Average Time of Occupancy      | ---        | ---       | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| §15.247(a)(2)                  | 6dB bandwidth                               | 29-33      | Site 1    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| §15.247(e)                     | Power spectral density                      | 34-38      | Site 1    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| §15.247(e)                     | Spurious RF conducted emissions             | 39-51      | Site 1    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| §15.247(d)                     | Band edge                                   | 52-60      | Site 1    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| §15.247(d) & §15.209 & §15.205 | Spurious radiated emissions for transmitter | 61-70      | Site 1    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| §15.203                        | 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 a PCB antenna, which gain is 1.99dBi for 2.4GHz and 1.98dBi for 5GHz. In accordance to §15.203, It is considered sufficiently to comply with the provisions of this section.





## 7 General Remarks

### Remarks

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

This report is only for 2.4G Wi-Fi.

### 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: August 10, 2023

Testing Start Date: August 14, 2023

Testing End Date: December 21, 2023

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

Reviewed by:

Prepared by:

Tested by:



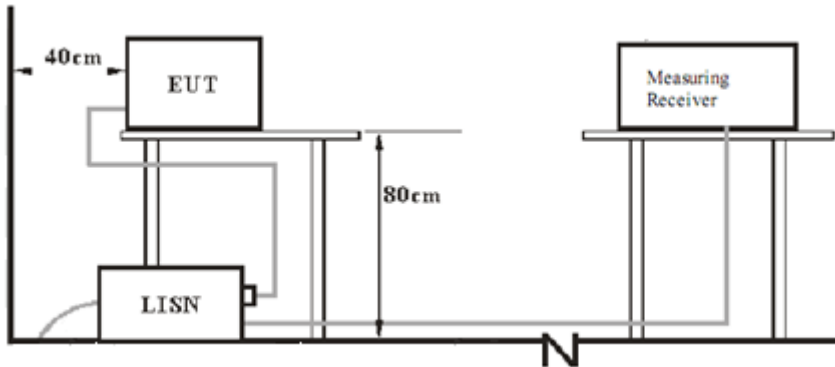
Hui TONG  
Review Engineer

Jiaxi XU  
Project Engineer

Cheng Huali  
Test Engineer

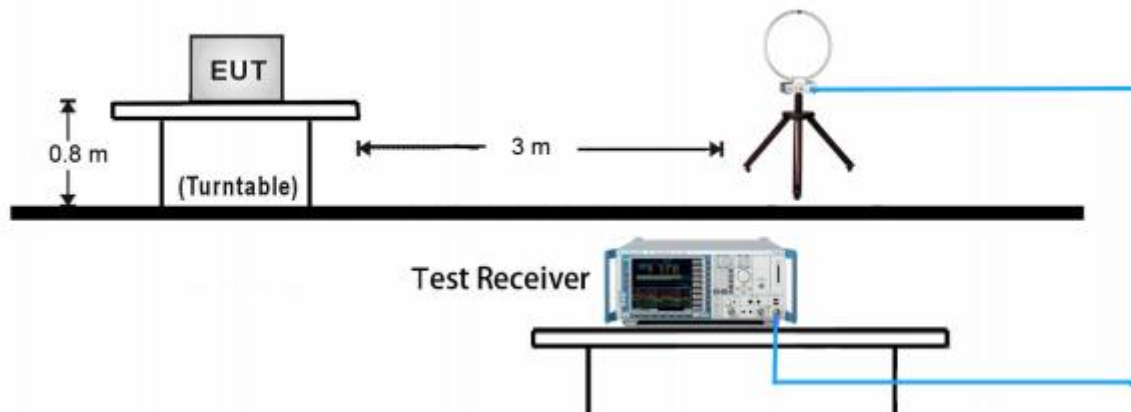
## 8 Test Setups

### 7.1 AC Power Line Conducted Emission test setups

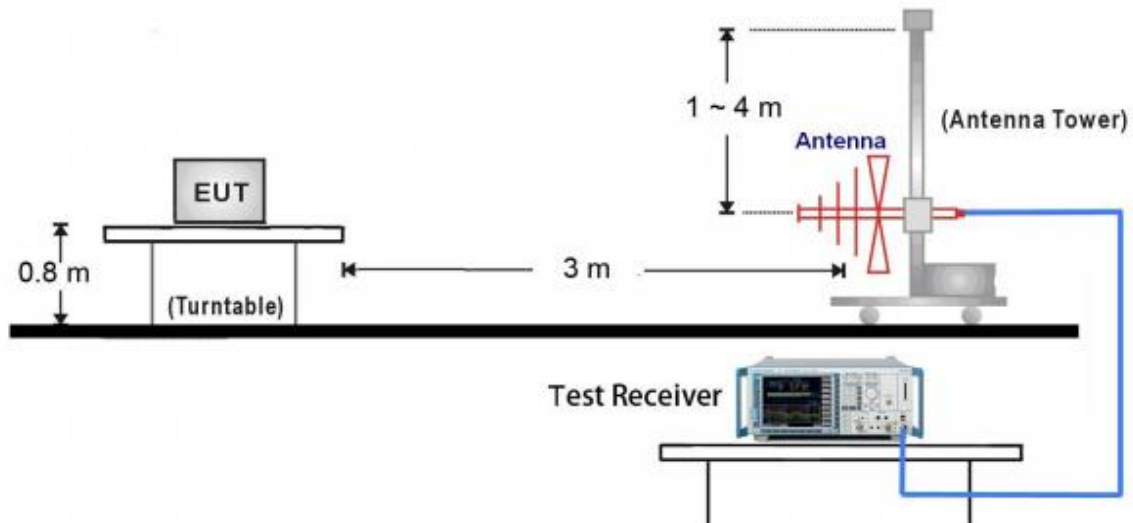


### 7.2 Radiated test setups

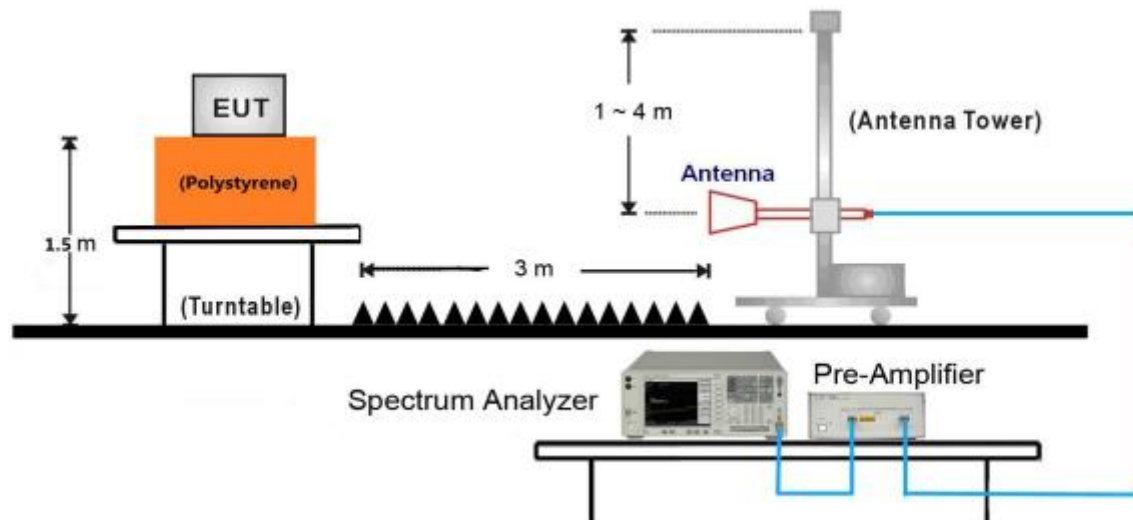
#### 9kHz ~ 30MHz Test Setup:



### 30MHz ~ 1GHz Test Setup:

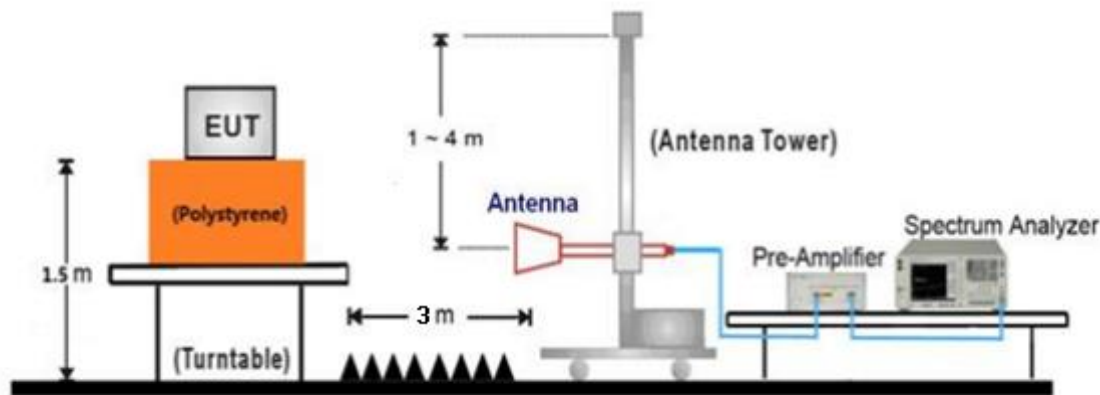


### 1GHz ~ 18GHz Test Setup:

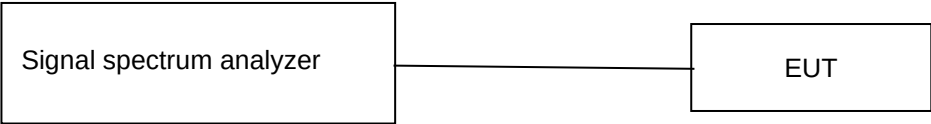




18GHz ~ 25GHz Test Setup:



7.3 Conducted RF test setups



## 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: adb commend, which used to control the EUT in continues transmitting mode

The system was configured to channel 1(2412MHz), 6(2437MHz), and 11(2462MHz) for 802.11 b/g/n HT20 test and channel 3(2422MHz), 6(2437MHz), 9(2452MHz) for 802.11n (HT40).

Test Mode Applicability and Tested Channel Detail:

| Mode         | Tested Channel | Data Rate (Mbps) | Modulation | Index Value (Power level setting) |
|--------------|----------------|------------------|------------|-----------------------------------|
| 802.11b      | 1              | 1                | CCK        | 33                                |
|              | 6              | 1                | CCK        | 33                                |
|              | 11             | 1                | CCK        | 33                                |
| 802.11g      | 1              | 6                | OFDM       | 33                                |
|              | 6              | 6                | OFDM       | 33                                |
|              | 11             | 6                | OFDM       | 33                                |
| 802.11n HT20 | 1              | MCS0             | OFDM       | 33                                |
|              | 6              | MCS0             | OFDM       | 33                                |
|              | 11             | MCS0             | OFDM       | 33                                |
| 802.11n HT40 | 1              | MCS0             | OFDM       | 33                                |
|              | 6              | MCS0             | OFDM       | 33                                |
|              | 11             | MCS0             | OFDM       | 33                                |

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.



## 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<br>MHz | QP Limit<br>dB $\mu$ V | AV Limit<br>dB $\mu$ 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

# 150k-30MHz Conducted Emission Test

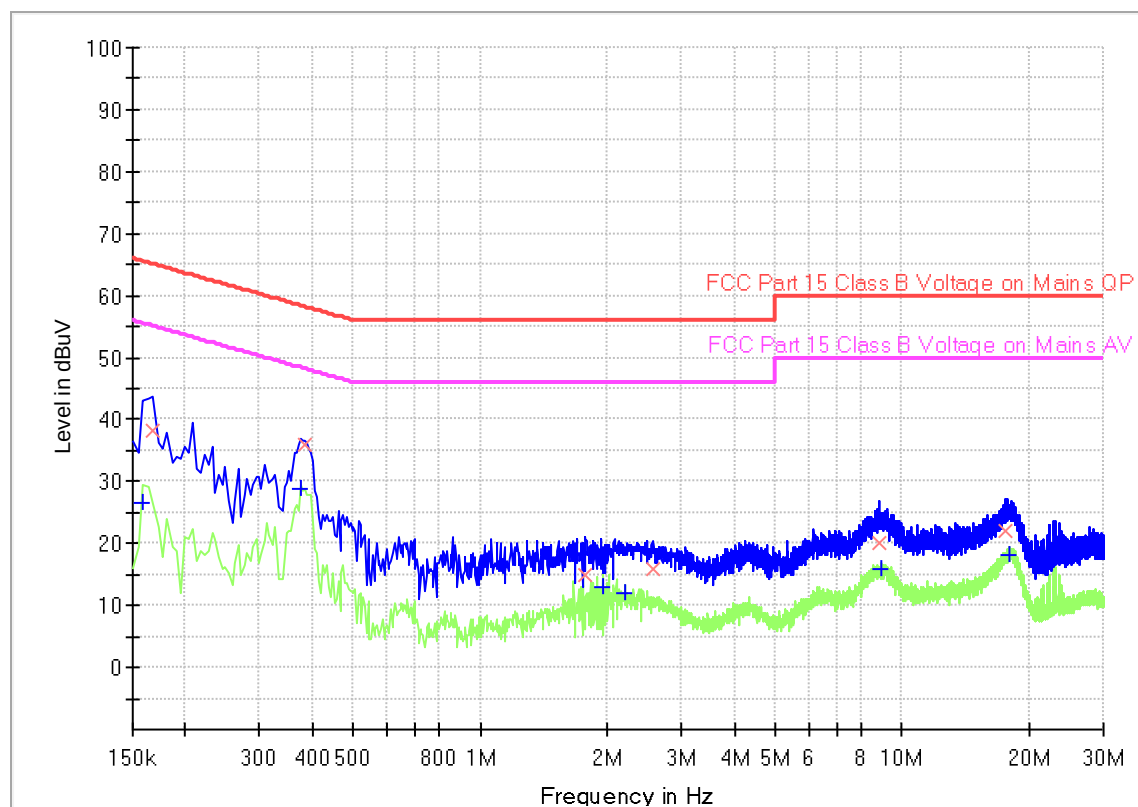
## EUT Information

|             |                                                                                  |
|-------------|----------------------------------------------------------------------------------|
| EUT Name:   | Wireless Display                                                                 |
| Model       | LKOUT P                                                                          |
| Client:     | Fellowes Inc.                                                                    |
| Op Cond     | Power on, transmitting at 802.11b_2462MH, AC 120V/60Hz, T24.1, H39.1%, P102.5kPa |
| Operator:   | Cheng Huali                                                                      |
| Standard    | FCC Part 15.207(a)                                                               |
| Comment:    | Phase L                                                                          |
| Sample No.: | SHA-749413-2                                                                     |

## 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   |





## Final Result

| Frequency (MHz) | QuasiPeak (dBuV) | CAverage (dBuV) | Limit (dBuV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|------------|
| 0.159000        | ---              | 26.42           | 55.52        | 29.10       | 1000.0          | 9.000           | L1   | 19.4       |
| 0.168000        | 38.23            | ---             | 65.06        | 26.83       | 1000.0          | 9.000           | L1   | 19.4       |
| 0.375000        | ---              | 28.70           | 48.39        | 19.69       | 1000.0          | 9.000           | L1   | 19.5       |
| 0.384000        | 36.04            | ---             | 58.19        | 22.15       | 1000.0          | 9.000           | L1   | 19.5       |
| 1.774500        | 15.06            | ---             | 56.00        | 40.94       | 1000.0          | 9.000           | L1   | 19.5       |
| 1.945500        | ---              | 12.94           | 46.00        | 33.06       | 1000.0          | 9.000           | L1   | 19.5       |
| 2.211000        | ---              | 11.88           | 46.00        | 34.12       | 1000.0          | 9.000           | L1   | 19.5       |
| 2.557500        | 15.85            | ---             | 56.00        | 40.15       | 1000.0          | 9.000           | L1   | 19.5       |
| 8.848500        | 20.02            | ---             | 60.00        | 39.98       | 1000.0          | 9.000           | L1   | 19.8       |
| 8.934000        | ---              | 15.89           | 50.00        | 34.11       | 1000.0          | 9.000           | L1   | 19.8       |
| 17.655000       | 22.16            | ---             | 60.00        | 37.84       | 1000.0          | 9.000           | L1   | 20.2       |
| 18.015000       | ---              | 18.23           | 50.00        | 31.77       | 1000.0          | 9.000           | L1   | 20.2       |



# 150k-30MHz Conducted Emission Test

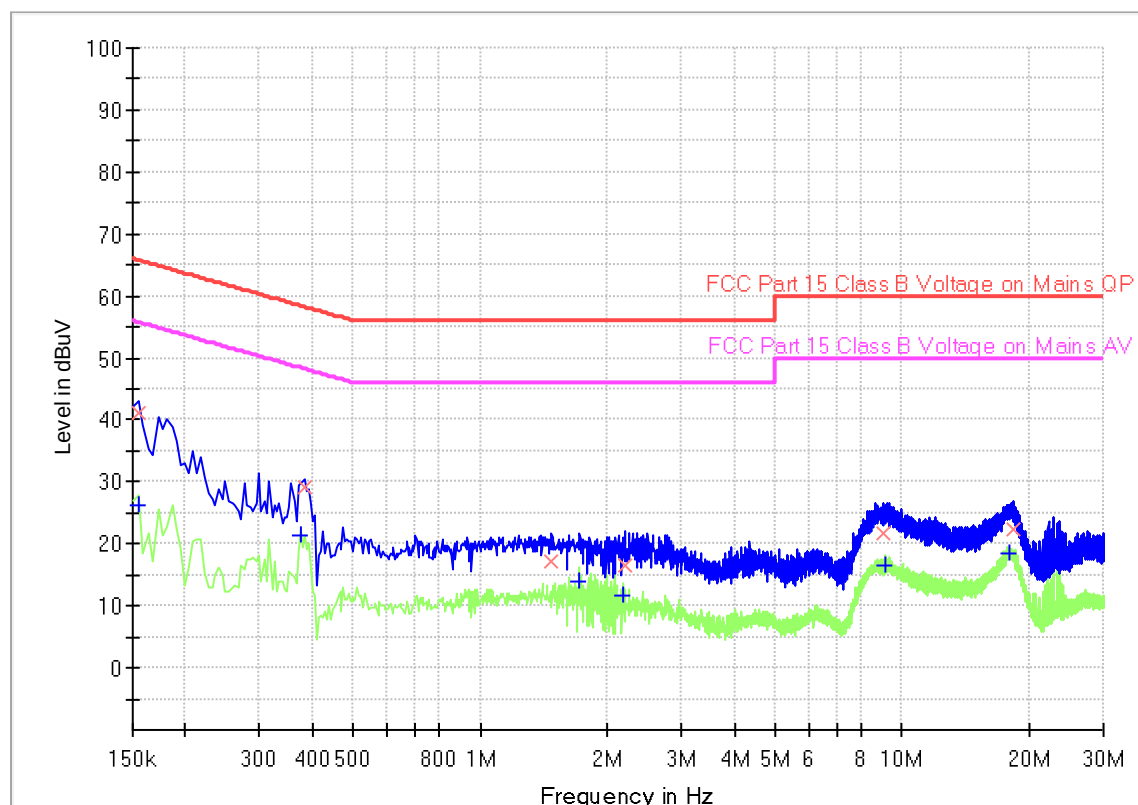
## EUT Information

|             |                                                                                  |
|-------------|----------------------------------------------------------------------------------|
| EUT Name:   | Wireless Display                                                                 |
| Model       | LKOUT P                                                                          |
| Client:     | Fellowes Inc.                                                                    |
| Op Cond     | Power on, transmitting at 802.11b_2462MH, AC 120V/60Hz, T24.1, H39.1%, P102.5kPa |
| Operator:   | Cheng Huali                                                                      |
| Standard    | FCC Part 15.207(a)                                                               |
| Comment:    | Phase N                                                                          |
| Sample No.: | SHA-749413-2                                                                     |

## 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 | Preamplifier |
|------------------|-----------|-----------|--------|------------|--------------|
| 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         |





## Final Result

| Frequency (MHz) | QuasiPeak (dBuV) | CAverage (dBuV) | Limit (dBuV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|------------|
| 0.154500        | ---              | 26.39           | 55.75        | 29.36       | 1000.0          | 9.000           | N    | 19.4       |
| 0.154500        | 40.98            | ---             | 65.75        | 24.77       | 1000.0          | 9.000           | N    | 19.4       |
| 0.375000        | ---              | 21.39           | 48.39        | 27.00       | 1000.0          | 9.000           | N    | 19.5       |
| 0.384000        | 29.16            | ---             | 58.19        | 29.03       | 1000.0          | 9.000           | N    | 19.5       |
| 1.477500        | 17.22            | ---             | 56.00        | 38.78       | 1000.0          | 9.000           | N    | 19.5       |
| 1.711500        | ---              | 14.05           | 46.00        | 31.95       | 1000.0          | 9.000           | N    | 19.5       |
| 2.179500        | ---              | 11.83           | 46.00        | 34.17       | 1000.0          | 9.000           | N    | 19.5       |
| 2.202000        | 16.69            | ---             | 56.00        | 39.31       | 1000.0          | 9.000           | N    | 19.5       |
| 9.051000        | 21.57            | ---             | 60.00        | 38.43       | 1000.0          | 9.000           | N    | 19.7       |
| 9.123000        | ---              | 16.66           | 50.00        | 33.34       | 1000.0          | 9.000           | N    | 19.7       |
| 18.051000       | ---              | 18.52           | 50.00        | 31.48       | 1000.0          | 9.000           | N    | 20.1       |
| 18.307500       | 22.28            | ---             | 60.00        | 37.72       | 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



## 10.2 Conducted peak output power

### Test Method

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  $\geq [3 \times \text{RBW}]$ .
5. Number of points in sweep  $\geq [2 \times \text{span} / \text{RBW}]$ . (This gives bin-to-bin spacing  $\leq \text{RBW} / 2$ , 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) (1), conducted peak output power limit as below:

|                             | Frequency Range | Limit    | Limit     |
|-----------------------------|-----------------|----------|-----------|
|                             | MHz             | W        | dBm       |
| Conducted peak output power | 2400-2483.5     | $\leq 1$ | $\leq 30$ |



Test result as below table

802.11b

| Frequency (MHz) | Duty cycle Factor (dB) | Conducted Power (dBm) | Total Power (dBm)<br>§15.247 (b) (1) | Result |
|-----------------|------------------------|-----------------------|--------------------------------------|--------|
| 2412MHz         | 0                      | 11.63                 | 11.63                                | Pass   |
| 2437MHz         | 0                      | 11.57                 | 11.57                                | Pass   |
| 2462MHz         | 0                      | 11.82                 | 11.82                                | Pass   |

802.11g

| Frequency (MHz) | Duty cycle Factor (dB) | Conducted Power (dBm) | Total Power (dBm)<br>§15.247 (b) (1) | Result |
|-----------------|------------------------|-----------------------|--------------------------------------|--------|
| 2412MHz         | 0.22                   | 5.89                  | 6.11                                 | Pass   |
| 2437MHz         | 0.24                   | 5.88                  | 6.12                                 | Pass   |
| 2462MHz         | 0.22                   | 6.20                  | 6.42                                 | Pass   |

802.11n(HT20)

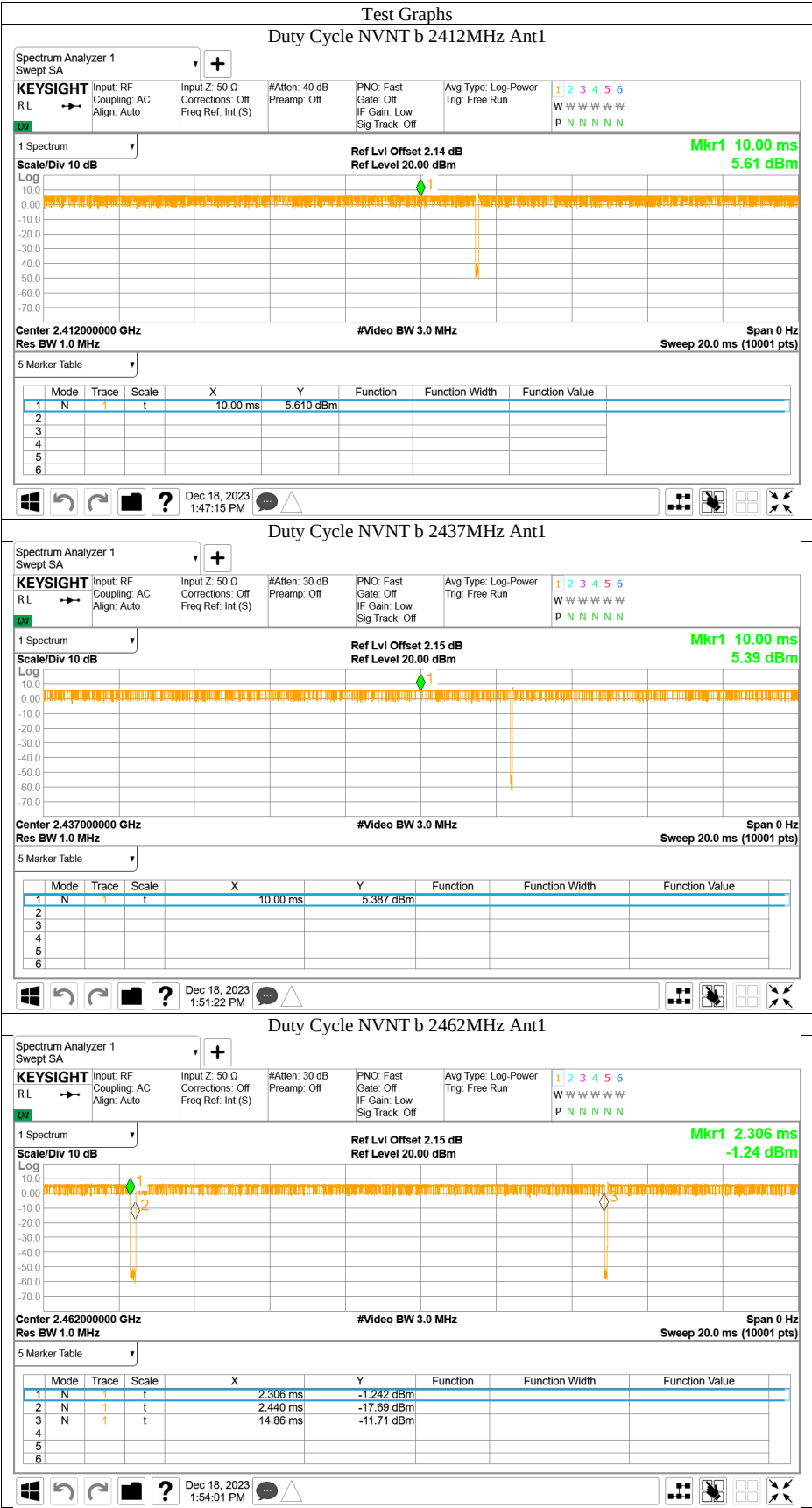
| Frequency (MHz) | Duty cycle Factor (dB) | Conducted Power (dBm) | Total Power (dBm)<br>§15.247 (b) (1) | Result |
|-----------------|------------------------|-----------------------|--------------------------------------|--------|
| 2412MHz         | 0.18                   | 5.70                  | 5.88                                 | Pass   |
| 2437MHz         | 0.18                   | 5.70                  | 5.88                                 | Pass   |
| 2462MHz         | 0.18                   | 5.96                  | 6.14                                 | Pass   |

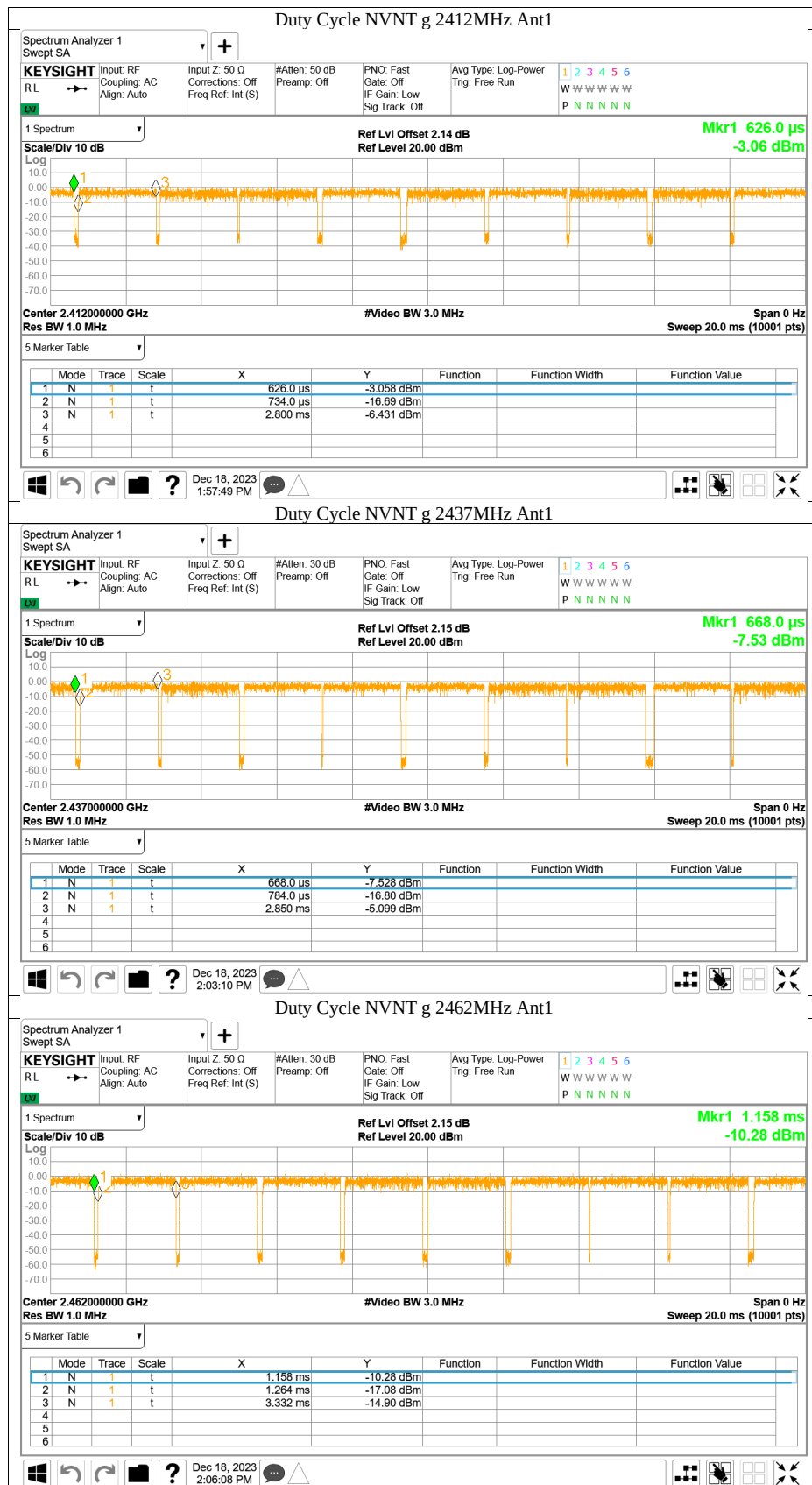
802.11(HT40)

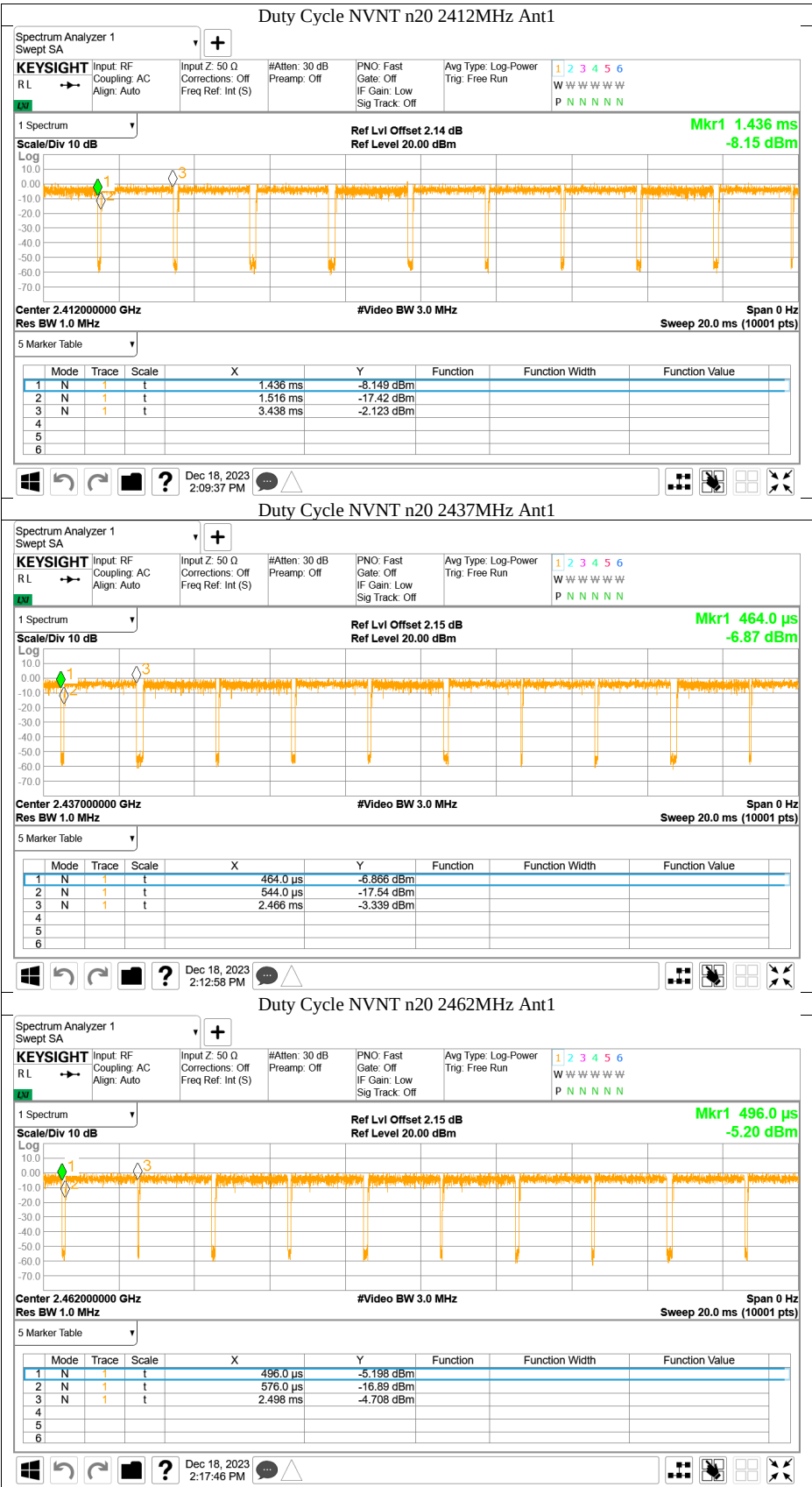
| Frequency (MHz) | Duty cycle Factor (dB) | Conducted Power (dBm) | Total Power (dBm)<br>§15.247 (b) (1) | Result |
|-----------------|------------------------|-----------------------|--------------------------------------|--------|
| 2412MHz         | 0.39                   | 5.65                  | 6.04                                 | Pass   |
| 2437MHz         | 0.24                   | 5.70                  | 5.94                                 | Pass   |
| 2462MHz         | 0.35                   | 5.80                  | 6.15                                 | Pass   |

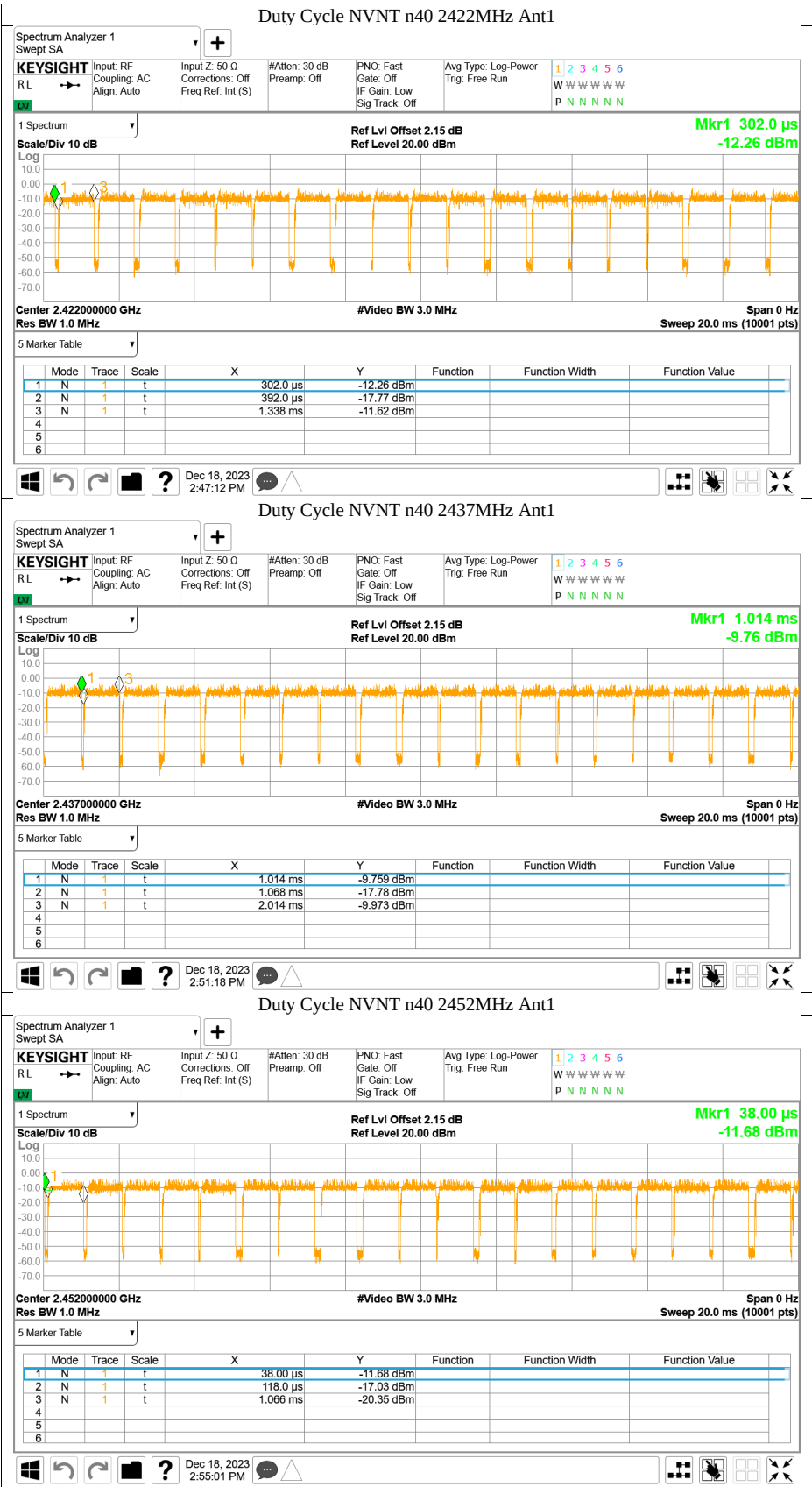


Duty cycle





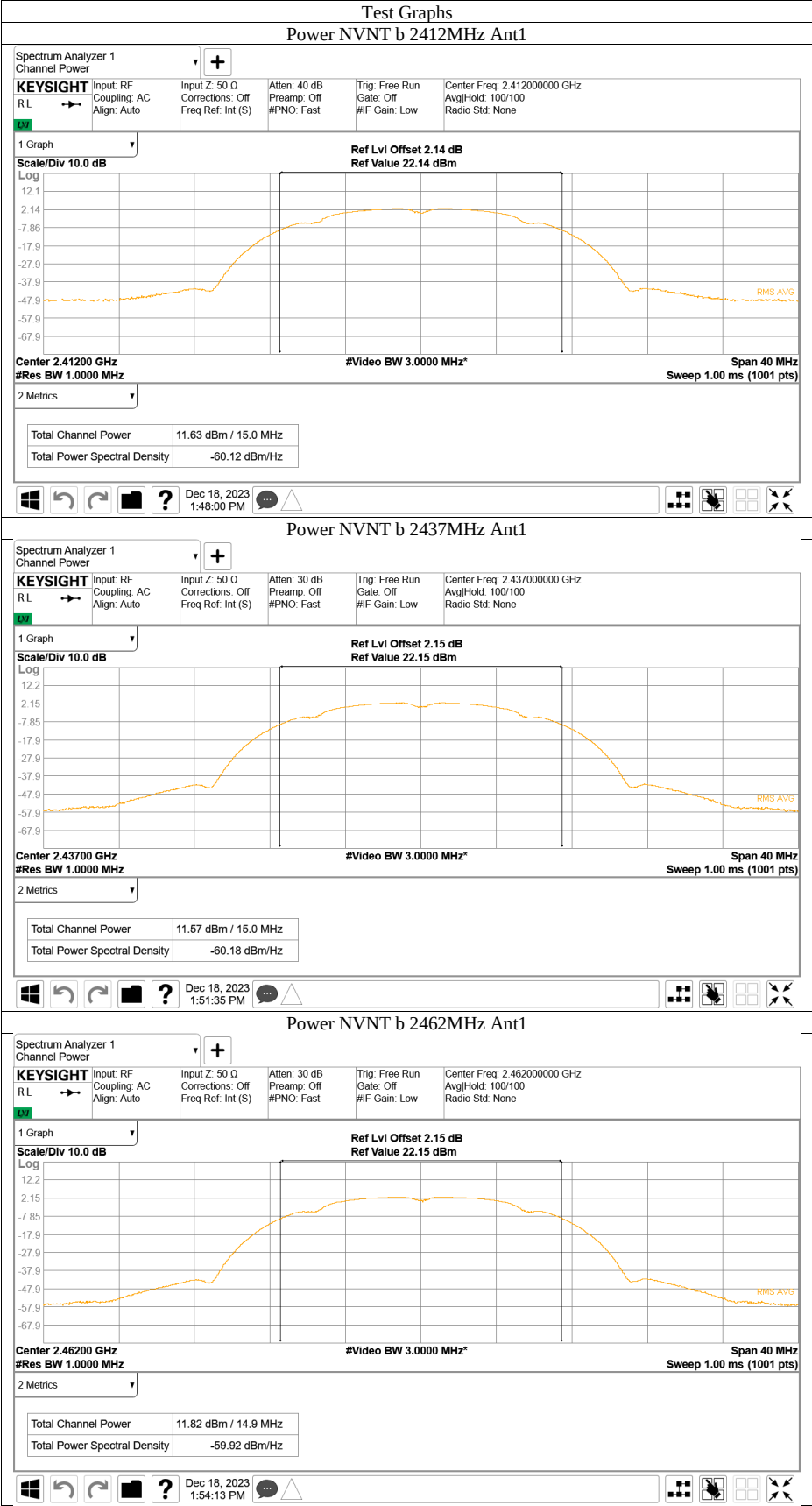


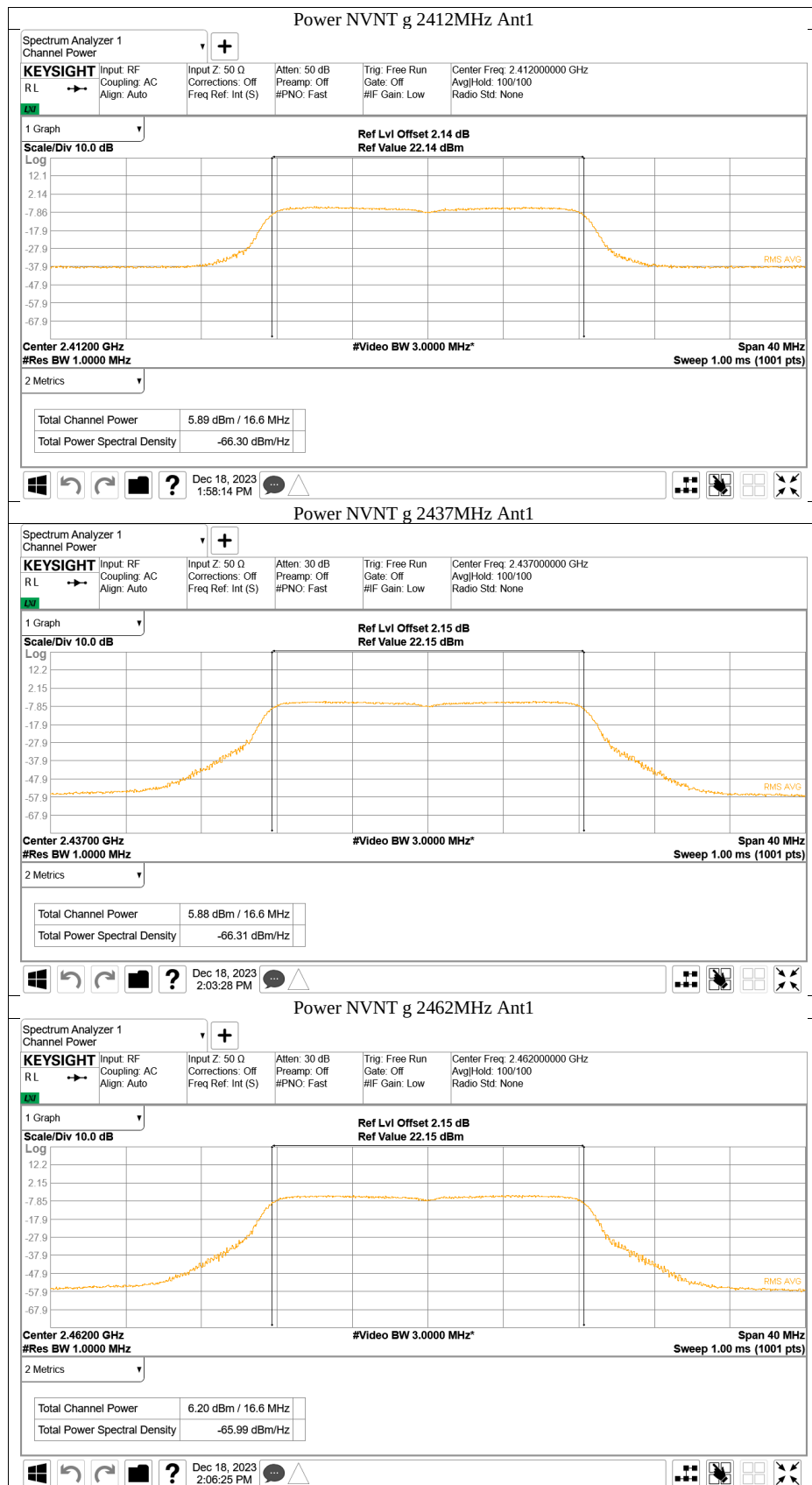


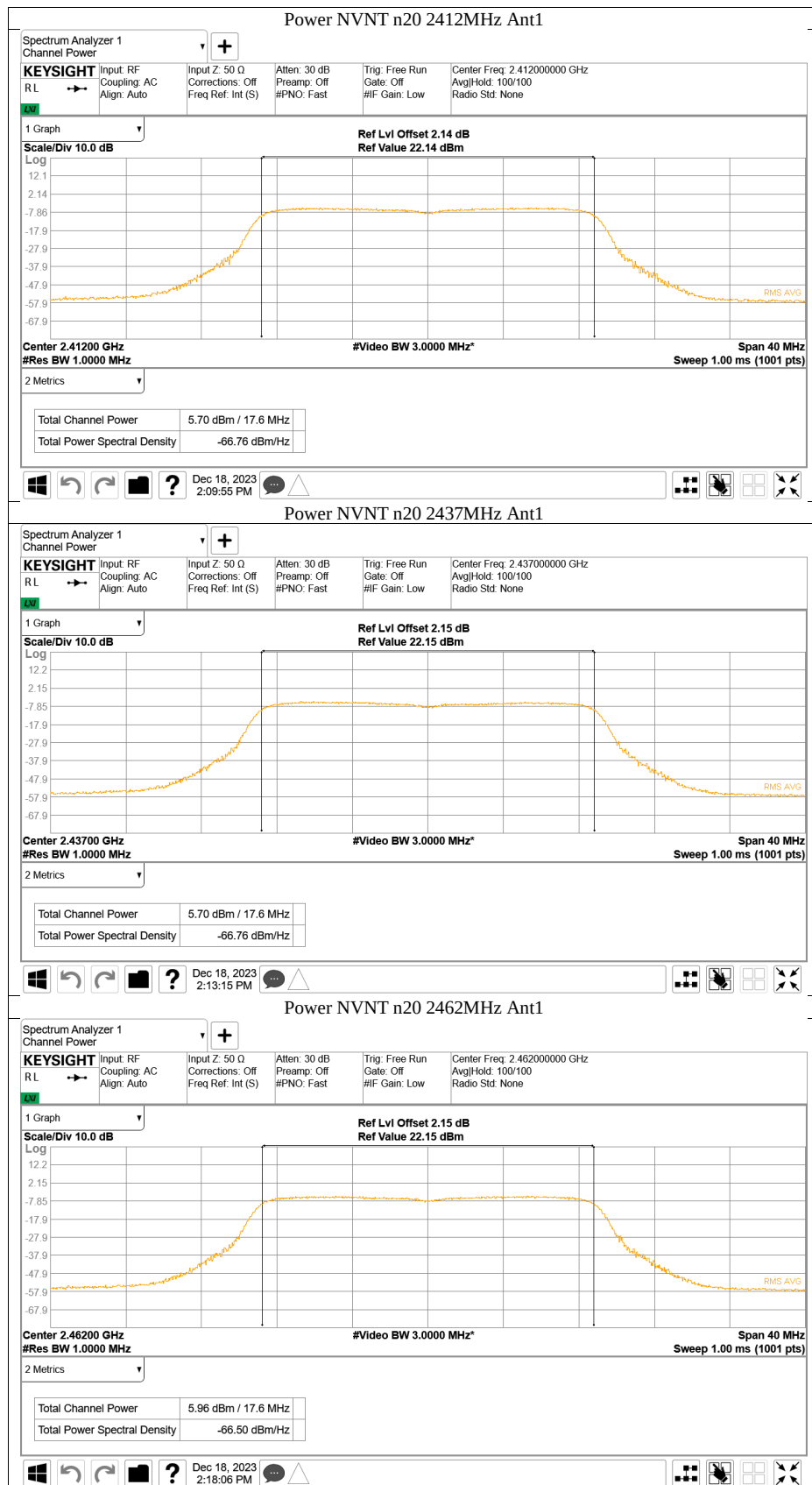


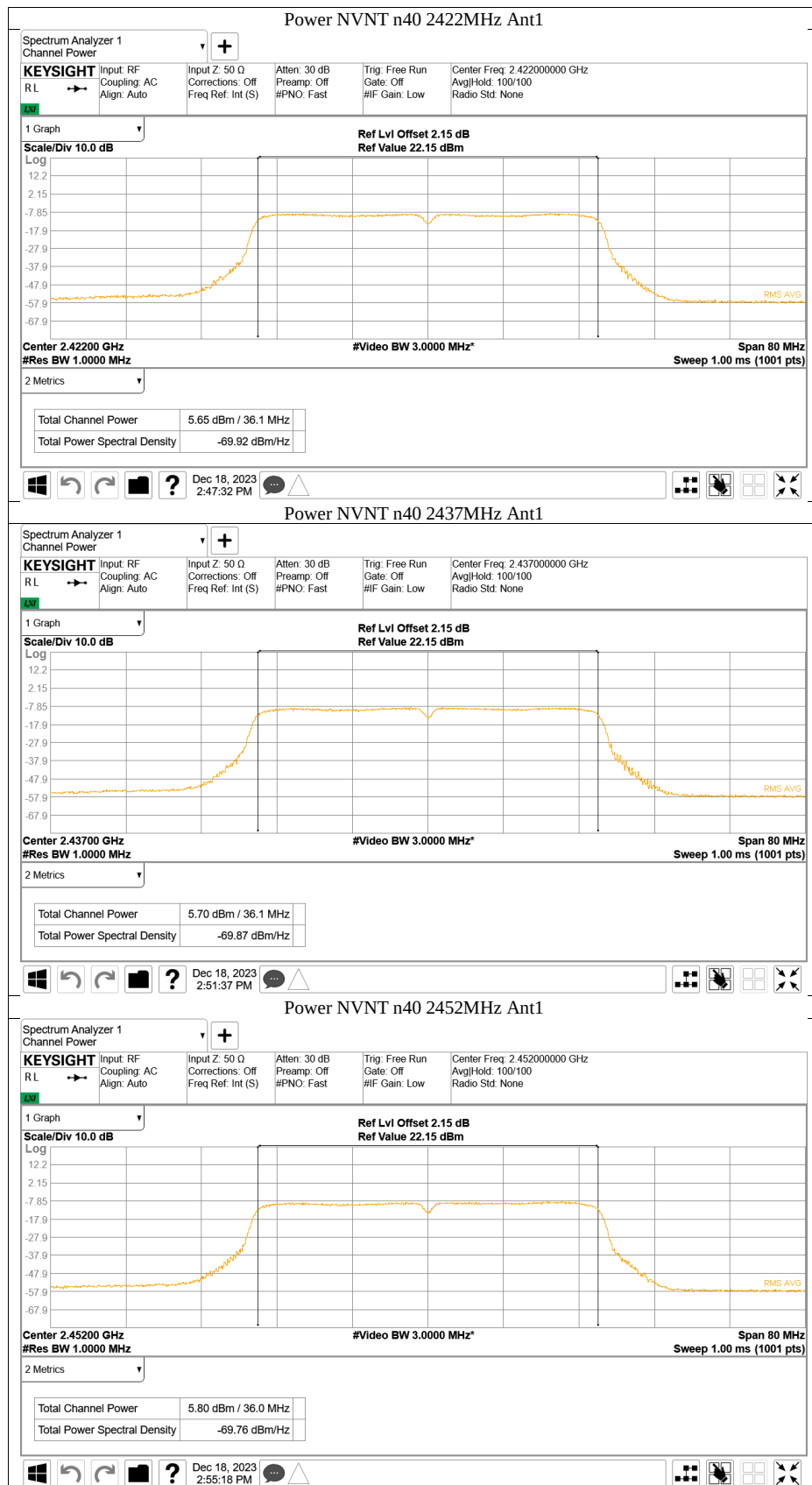


# Conducted Output Power









## 10.36dB 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 $\geq$ 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.

### Test Method for 99 % Bandwidth

1. Connect EUT test port to spectrum analyzer.  
Use the following spectrum analyzer settings:  
RBW=1% to 5% of the actual occupied, VBW $\geq$ 3RBW, Sweep = auto,  
Detector function = peak, Trace = max hold
2. Use the occupied bandwidth measurement capability of test receiver.
3. Allow the trace to stabilize, record the occupied bandwidth value.

### Limit

#### 6dB bandwidth Limit [kHz]

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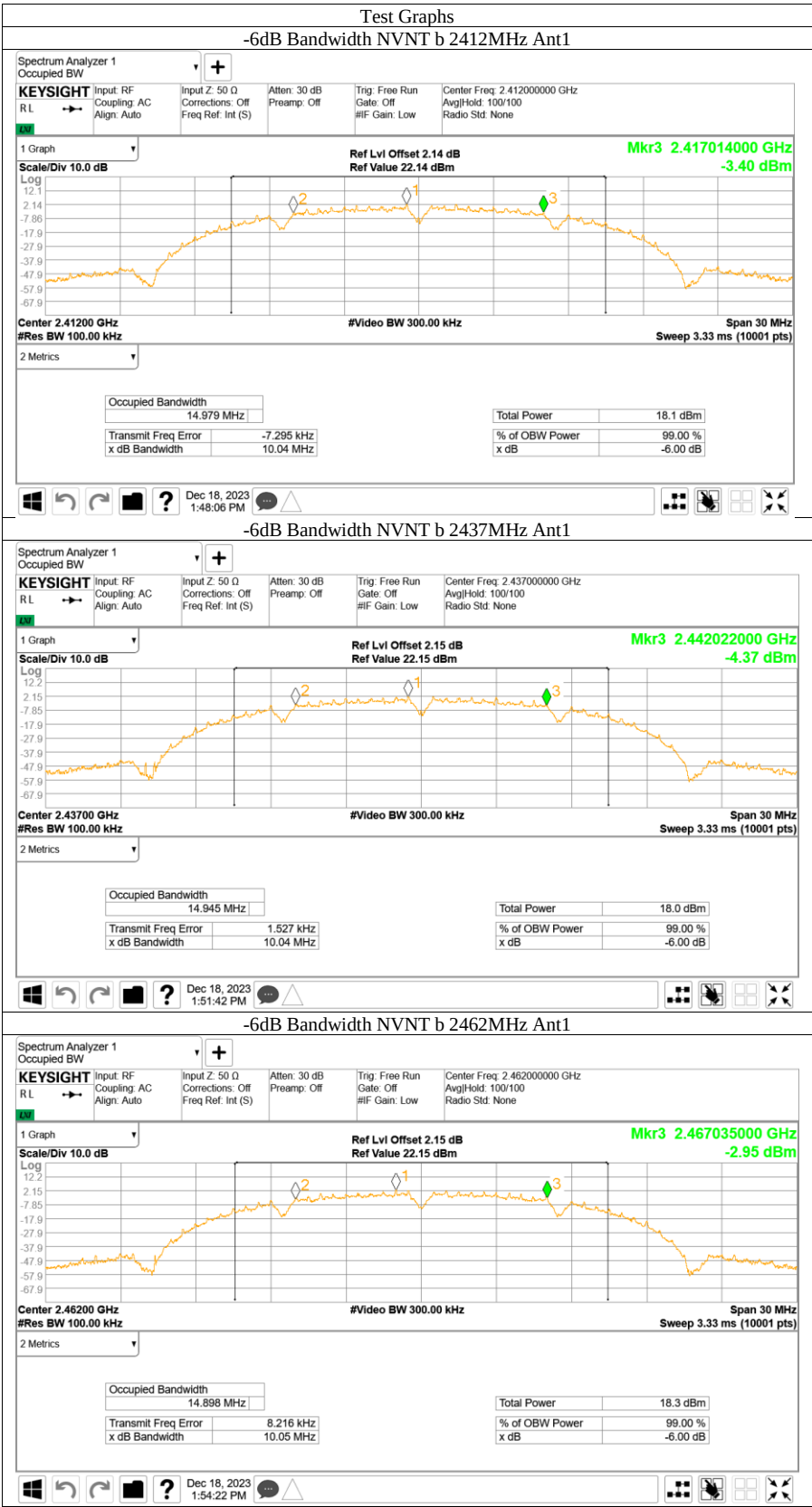
$\geq 500$

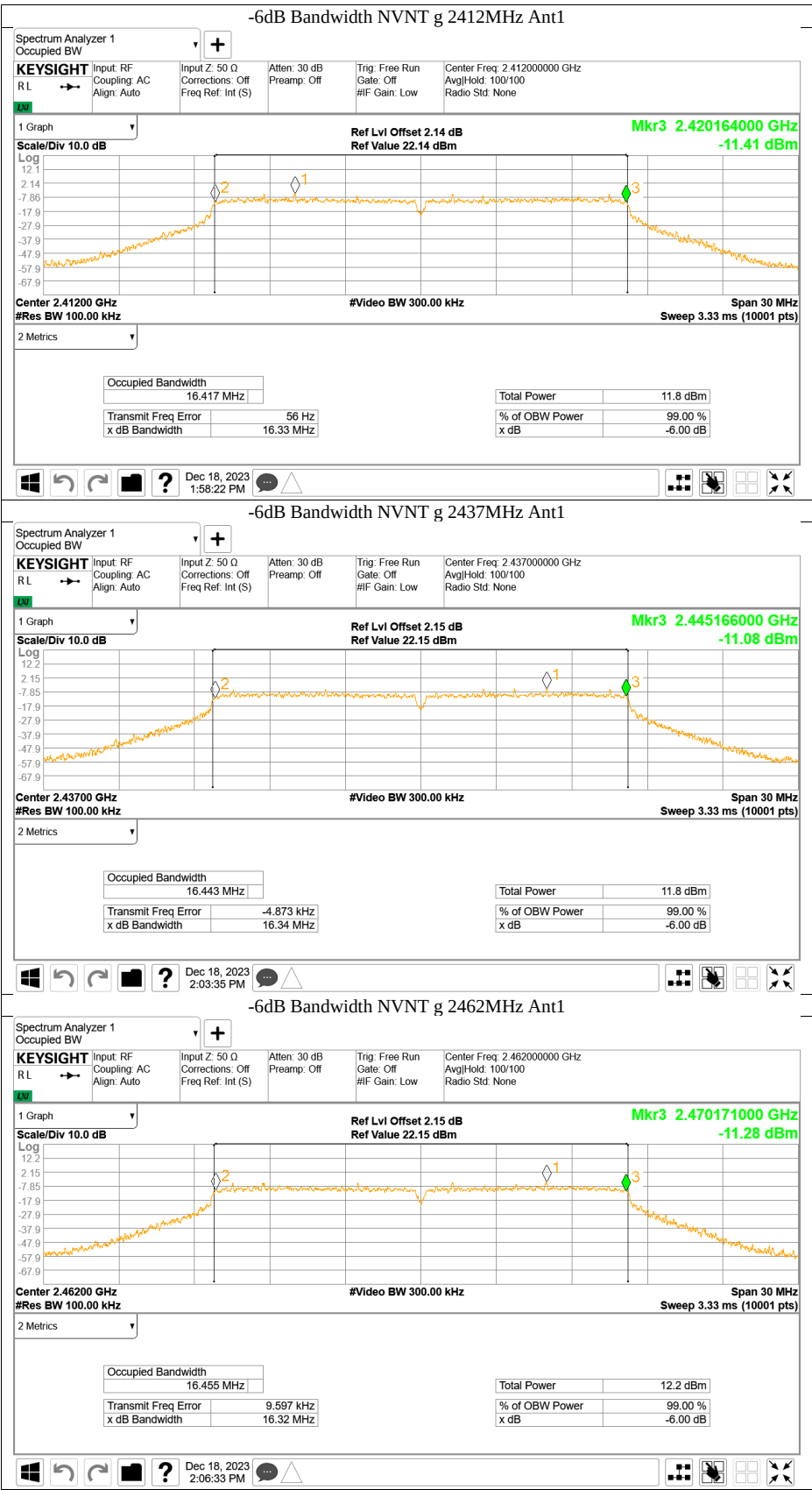
### Test result

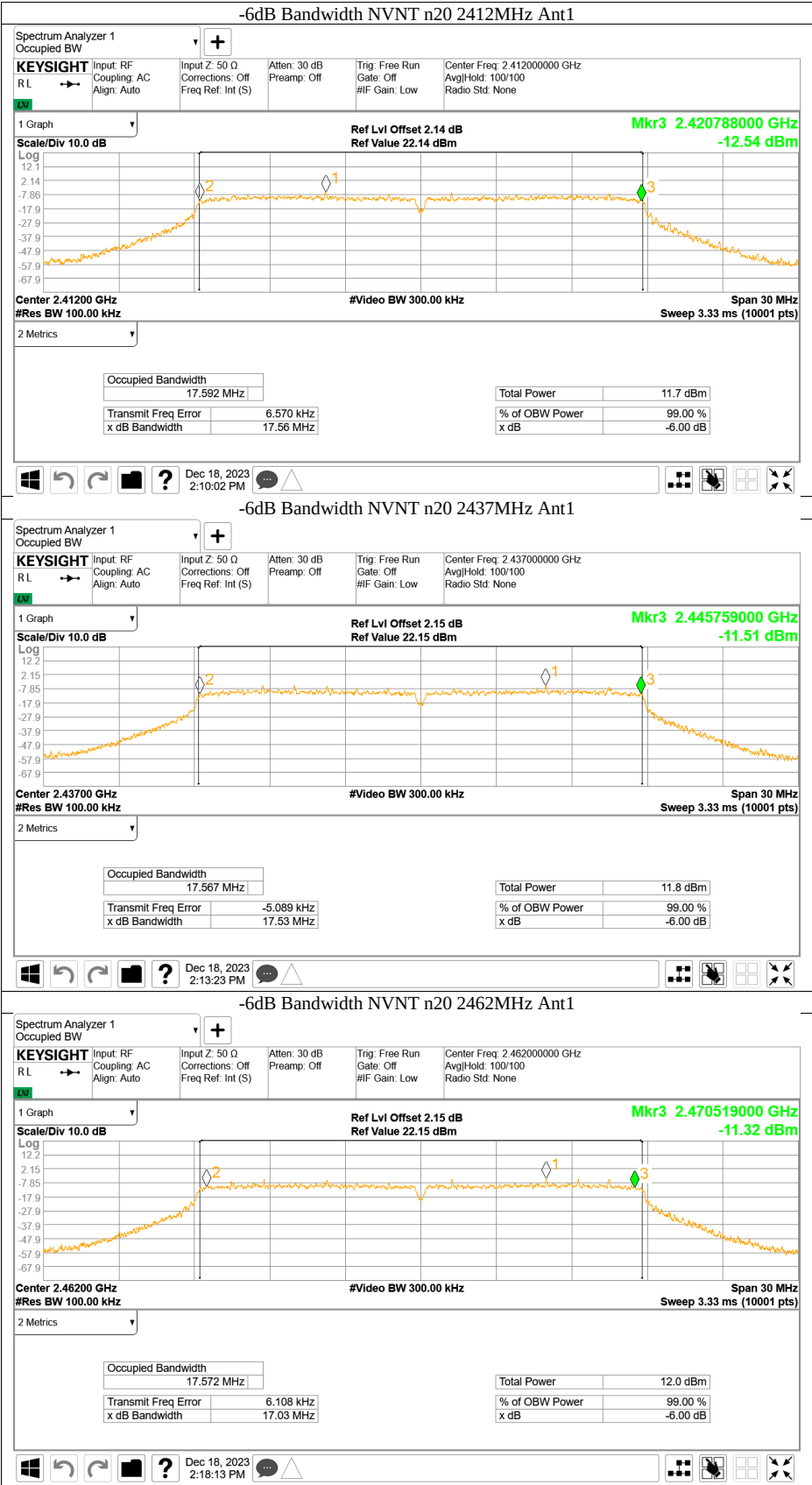
| Test Mode     | Frequency MHz | 6dB bandwidth (MHz) |            | Result  |
|---------------|---------------|---------------------|------------|---------|
|               |               | result              | limit      | verdict |
| 802.11b       | 2412          | 10.043              | $\geq 0.5$ | Pass    |
|               | 2437          | 10.042              | $\geq 0.5$ | Pass    |
|               | 2462          | 10.054              | $\geq 0.5$ | Pass    |
| 802.11g       | 2412          | 16.328              | $\geq 0.5$ | Pass    |
|               | 2437          | 16.343              | $\geq 0.5$ | Pass    |
|               | 2462          | 16.322              | $\geq 0.5$ | Pass    |
| 802.11n(HT20) | 2412          | 17.563              | $\geq 0.5$ | Pass    |
|               | 2437          | 17.528              | $\geq 0.5$ | Pass    |
|               | 2462          | 17.026              | $\geq 0.5$ | Pass    |
| 802.11n(HT40) | 2422          | 35.333              | $\geq 0.5$ | Pass    |
|               | 2437          | 35.06               | $\geq 0.5$ | Pass    |
|               | 2452          | 35.061              | $\geq 0.5$ | Pass    |



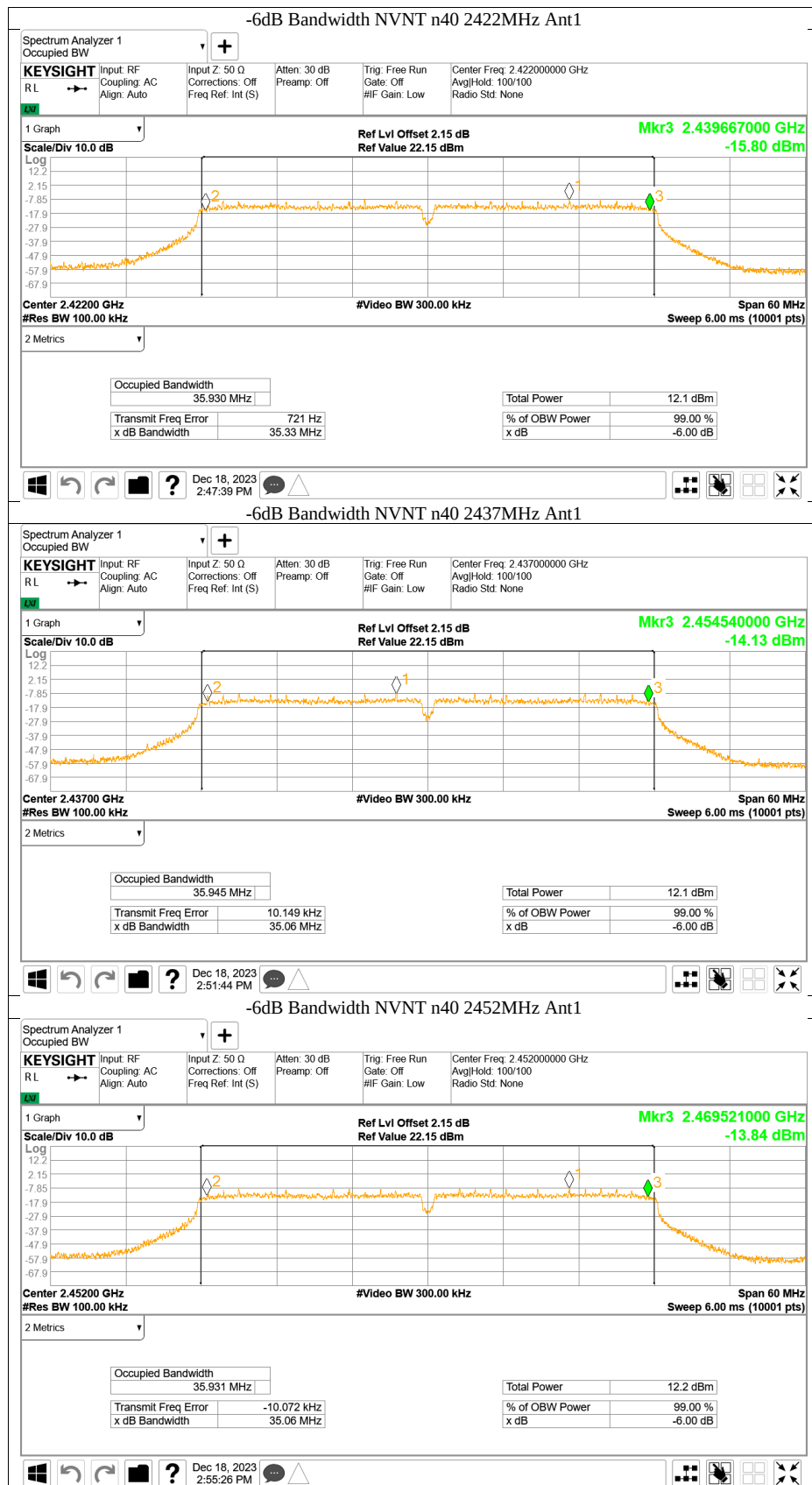
6 dB Bandwidth











## 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 $\geq$ 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]  
 $\leq 8$

### Test result

802.11 B

| Frequency<br>MHz       | Power spectral<br>density<br>dBm/3kHz | Result |
|------------------------|---------------------------------------|--------|
| Low channel 2412MHz    | -10.20                                | Pass   |
| Middle channel 2437MHz | -11.92                                | Pass   |
| High channel 2462MHz   | -11.67                                | Pass   |

802.11 G

| Frequency<br>MHz       | Power spectral<br>density<br>dBm/3kHz | Result |
|------------------------|---------------------------------------|--------|
| Low channel 2412MHz    | -19.15                                | Pass   |
| Middle channel 2437MHz | -18.97                                | Pass   |
| High channel 2462MHz   | -19.22                                | Pass   |

802.11 N20

| Frequency<br>MHz       | Power spectral<br>density<br>dBm/3kHz | Result |
|------------------------|---------------------------------------|--------|
| Low channel 2412MHz    | -19.71                                | Pass   |
| Middle channel 2437MHz | -19.35                                | Pass   |
| High channel 2462MHz   | -17.69                                | Pass   |

802.11 N40

| Frequency<br>MHz       | Power spectral<br>density<br>dBm/3kHz | Result |
|------------------------|---------------------------------------|--------|
| Low channel 2412MHz    | -22.3                                 | Pass   |
| Middle channel 2437MHz | -22.15                                | Pass   |
| High channel 2462MHz   | -21.00                                | Pass   |



Power Spectral Density Level

