

Project No.: TM-2303000028P  
Report No.: TMWK2303000589KR

FCC ID: KA2M30A01

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Rev.: 01

# RADIO TEST REPORT

## FCC 47 CFR PART 15 SUBPART C

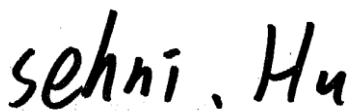
|                          |                                                                                                                                                     |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Standard            | FCC Part 15.247                                                                                                                                     |
| Product name             | AX3000 Dual-Band Wi-Fi 6 Router (Single pack),<br>AX3000 Dual-Band Wi-Fi 6 Mesh System (multi-pack)                                                 |
| Brand Name               | D-Link                                                                                                                                              |
| Model No.                | M30                                                                                                                                                 |
| Test Result              | Pass                                                                                                                                                |
| Statements of Conformity | Determination of compliance is based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty. |

The test Result was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were given in ANSI C63.10: 2013 and compliance standards.

The test results of this report relate only to the tested sample (EUT) identified in this report.

The test Report of full or partial shall not copy. Without written approval of Compliance Certification Services Inc. (Wugu Laboratory)

Approved by:



Sehni Hu  
Supervisor

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

除非另有說明，此報告結果僅對測試之樣品負責，同時此樣品僅保留90天。本報告未經本公司書面許可，不可部份複製。

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### **Revision History**

| Rev. | Issue Date    | Revisions                       | Effect Page | Revised By   |
|------|---------------|---------------------------------|-------------|--------------|
| 00   | June 20, 2023 | Initial Issue                   | ALL         | Allison Chen |
| 01   | July 24, 2023 | See the following Note Rev.(01) | P.4         | Allison Chen |

**Note:**

**Rev.(01)**

1. Modify HW/SW version.



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## 1. GENERAL INFORMATION

### 1.1 EUT INFORMATION

|                          |                                                                                                             |
|--------------------------|-------------------------------------------------------------------------------------------------------------|
| <b>Applicant</b>         | D-Link Corporation<br>14420 Myford Road Suite 100 Irvine California United States<br>92606                  |
| <b>Manufacturer</b>      | D-Link Corporation<br>14420 Myford Road Suite 100 Irvine California United States<br>92606                  |
| <b>Equipment</b>         | AX3000 Dual-Band Wi-Fi 6 Router (Single pack),<br>AX3000 Dual-Band Wi-Fi 6 Mesh System (multi-pack)         |
| <b>Model Name</b>        | M30                                                                                                         |
| <b>Model Discrepancy</b> | N/A                                                                                                         |
| <b>Brand Name</b>        | D-Link                                                                                                      |
| <b>Received Date</b>     | March 25, 2023                                                                                              |
| <b>Date of Test</b>      | March 27 ~ May 18, 2023                                                                                     |
| <b>Power Supply</b>      | Power from Power Adapter<br>AMIGO / AMS159A-1201000FU<br>I/P: 100-240Vac, 50/60Hz, 0.5A<br>O/P: 12Vdc, 1.0A |
| <b>HW Version</b>        | A1                                                                                                          |
| <b>SW Version</b>        | 1.00                                                                                                        |

**Remark:**

1. For more details, please refer to the User's manual of the EUT.
2. Disclaimer: Antenna information is provided by the applicant, test results of this report are applicable to the sample EUT received.

## 1.2 EUT CHANNEL INFORMATION

|                    |                                                                                                                                                                                                                                                    |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Frequency Range    | 802.11b/g/n HT20 /ax (HE20): 2412 MHz ~ 2462 MHz<br>802.11n HT40/ax (HE40): 2422 MHz ~ 2452 MHz                                                                                                                                                    |
| Modulation Type    | 1. IEEE 802.11b mode: DSSS<br>2. IEEE 802.11g mode: OFDM<br>3. IEEE 802.11n HT20 mode: OFDM<br>4. IEEE 802.11n HT40 mode: OFDM<br>5. IEEE 802.11ax (HE20) mode: OFDMA<br>6. IEEE 802.11ax (HE40) mode: OFDMA                                       |
| Number of channels | 1. IEEE 802.11b mode: 11 Channels<br>2. IEEE 802.11g mode: 11 Channels<br>3. IEEE 802.11n HT20 mode: 11 Channels<br>4. IEEE 802.11n HT40 mode: 7 Channels<br>5. IEEE 802.11ax (HE20) mode: 11 Channels<br>6. IEEE 802.11ax (HE40) mode: 7 Channels |

### Remark:

Refer as ANSI C63.10: 2013 clause 5.6.1 Table 4 for test channels

| Number of frequencies to be tested                   |                       |                                              |
|------------------------------------------------------|-----------------------|----------------------------------------------|
| Frequency range in which device operates             | Number of frequencies | Location in frequency range of operation     |
| <input type="checkbox"/> 1 MHz or less               | 1                     | Middle                                       |
| <input type="checkbox"/> 1 MHz to 10 MHz             | 2                     | 1 near top and 1 near bottom                 |
| <input checked="" type="checkbox"/> More than 10 MHz | 3                     | 1 near top, 1 near middle, and 1 near bottom |

### 1.3 ANTENNA INFORMATION

|                       |                                                                                                                                            |                                    |                                    |                     |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|------------------------------------|---------------------|
| Antenna Specification | <input type="checkbox"/> PIFA <input type="checkbox"/> PCB <input checked="" type="checkbox"/> Short Dipole <input type="checkbox"/> Coils |                                    |                                    |                     |
| Antenna Gain          |                                                                                                                                            |                                    |                                    |                     |
|                       | Frequency                                                                                                                                  | 2G-1<br>(Chain 0)<br>Gain<br>(dBi) | 2G-2<br>(Chain 1)<br>Gain<br>(dBi) | Total Gain<br>(dBi) |
|                       | 2412-2462 MHz                                                                                                                              | 2.44                               | 1.94                               | 5.20                |
| Antenna Brand/Model   | Chain 0: WIESON / ARY196-0030-014-00<br>Chain 1: WIESON / ARY196-0030-015-00                                                               |                                    |                                    |                     |
| Antenna connector     | MHF compatible                                                                                                                             |                                    |                                    |                     |

**Notes:**

1. The antenna(s) of the EUT are permanently attached and there are no provisions for connection to an external antenna. So the EUT complies with the requirements of §15.203.
2. Power Directional Gain =  $10 \cdot \log \{ [ 10^{(Ant1/20)} + 10^{(Ant2/20)} + \dots + 10^{(Ant N / 20)} ]^2 / N \text{ ANT} \}$  dBi

## 1.4 MEASUREMENT UNCERTAINTY

| PARAMETER                                    | UNCERTAINTY    |
|----------------------------------------------|----------------|
| AC Powerline Conducted Emission              | $\pm 2.213$ dB |
| Channel Bandwidth                            | $\pm 2.7$ %    |
| RF output power (Power Meter + Power sensor) | $\pm 0.243$ dB |
| Power Spectral density                       | $\pm 2.739$ dB |
| Conducted Bandedge                           | $\pm 2.739$ dB |
| Conducted Spurious Emission                  | $\pm 2.742$ dB |
| Radiated Emission_9kHz-30MHz                 | $\pm 3.761$ dB |
| Radiated Emission_30MHz-200MHz               | $\pm 3.473$ dB |
| Radiated Emission_200MHz-1GHz                | $\pm 3.946$ dB |
| Radiated Emission_1GHz-6GHz                  | $\pm 4.797$ dB |
| Radiated Emission_6GHz-18GHz                 | $\pm 4.803$ dB |
| Radiated Emission_18GHz-26GHz                | $\pm 3.459$ dB |
| Radiated Emission_26GHz-40GHz                | $\pm 3.297$ dB |

### Remark:

- 1.This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=2$
2. ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report.



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## 1.5 FACILITIES AND TEST LOCATION

All measurement facilities used to collect the measurement data are located at

☒ No.11, Wugong 6th Rd., Wugu Dist., New Taipei City, Taiwan.

☐ No. 12, Ln. 116, Wugong 3rd Rd., Wugu Dist., New Taipei City, Taiwan 24803

CAB identifier: TW1309

| Test site          | Test Engineer     | Remark |
|--------------------|-------------------|--------|
| AC Conduction Room | Tony Chao         | -      |
| Radiation          | Ray Li, Tony Chao | -      |
| RF Conducted       | David Li          | -      |

**Remark:** The lab has been recognized as the FCC accredited lab. under the KDB 974614 D01 and is listed in the FCC pubic Access Link (PAL) database, FCC Registration No. :444940, the FCC Designation No.:TW1309.

## 1.6 INSTRUMENT CALIBRATION

| RF Conducted Test Site |                                                     |         |               |            |            |
|------------------------|-----------------------------------------------------|---------|---------------|------------|------------|
| Name of Equipment      | Manufacturer                                        | Model   | Serial Number | Cal Date   | Cal Due    |
| Power Sensor           | Anritsu                                             | MA2411B | 1911386       | 2022-08-08 | 2023-08-07 |
| Power Sensor           | Anritsu                                             | MA2411B | 1911387       | 2022-08-08 | 2023-08-07 |
| EXA Signal Analyzer    | Keysight                                            | N9010B  | MY60242460    | 2023-02-02 | 2024-02-01 |
| Power Meter            | Anritsu                                             | ML2496A | 2136002       | 2022-11-24 | 2023-11-23 |
| Software               | Radio Test Software Ver. 21 & E3-Ver: 6.11-20180413 |         |               |            |            |

**Remark:**

1. Each piece of equipment is scheduled for calibration once a year.
2. N.C.R. = No Calibration Required.





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| 3M 966 Chamber Test Site |                       |                    |                      |            |            |
|--------------------------|-----------------------|--------------------|----------------------|------------|------------|
| Name of Equipment        | Manufacturer          | Model              | Serial Number        | Cal Date   | Cal Due    |
| Loop Antenna             | SCHWARZBECK           | FMZB 1513_60       | 1513_60_028          | 2022-12-27 | 2023-12-26 |
| Preamplifier             | EMEC                  | EM330              | 060609               | 2023-02-22 | 2024-02-21 |
| Thermo-Hygro Meter       | WISEWIND              | 1206               | D07                  | 2022-12-19 | 2023-12-18 |
| PXA Signal Analyzer      | Keysight Technologies | N9030B             | MY62291089           | 2022-10-14 | 2023-10-13 |
| Preamplifier             | HP                    | 8449B              | 3008A00965           | 2022-12-23 | 2023-12-22 |
| Bi-Log Antenna           | Sunol Sciences        | JB3                | A030105              | 2022-08-03 | 2023-08-02 |
| Cable                    | Huber+Suhner          | 104PEA             | 20995+11112+182330   | 2023-02-22 | 2024-02-21 |
| Coaxial Cable            | EMCI                  | EMC105             | 190914+33953         | 2022-06-15 | 2023-06-14 |
| Horn Antenna             | ETC                   | MCTD 1209          | DRH13M02003          | 2023-01-12 | 2024-01-11 |
| High Pass Filters        | Titan Microwave       | T04H30001800070S01 | 22011402-4           | 2022-06-29 | 2023-06-28 |
| Horn Antenna             | SCHWARZBECK           | BBHA9170           | 1047                 | 2022-12-30 | 2023-12-29 |
| Pre-Amplifier            | EMCI                  | EMC184045SE        | 980860               | 2022-12-27 | 2023-12-26 |
| Cable                    | EMCI                  | EMC101G            | 211010+211011+211012 | 2022-12-12 | 2023-12-11 |
| Turn Table               | CCS                   | CC-T-1F            | N/A                  | N.C.R      | N.C.R      |
| Controller               | CCS                   | CC-C-1F            | N/A                  | N.C.R      | N.C.R      |
| Antenna Tower            | CCS                   | CC-A-1F            | N/A                  | N.C.R      | N.C.R      |
| Software                 | e3 V9-210616c         |                    |                      |            |            |

| AC Conducted Emissions Test Site |                         |           |               |            |            |
|----------------------------------|-------------------------|-----------|---------------|------------|------------|
| Name of Equipment                | Manufacturer            | Model     | Serial Number | Cal Date   | Cal Due    |
| EMI Test Receiver                | R&S                     | ESCI      | 100064        | 2022-06-17 | 2023-06-16 |
| LISN                             | TESEQ                   | LN2-16N   | 22012         | 2023-03-08 | 2024-03-07 |
| Cable                            | EMCI                    | CFD300-NL | CERF          | 2022-06-27 | 2023-06-26 |
| Software                         | EZ-EMC(CCS-3A1-CE-wugu) |           |               |            |            |

**Remark:**

1. Each piece of equipment is scheduled for calibration once a year.
2. N.C.R. = No Calibration Required.



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## 1.7 SUPPORT AND EUT ACCESSORIES EQUIPMENT

| EUT Accessories Equipment |           |       |       |            |        |    |
|---------------------------|-----------|-------|-------|------------|--------|----|
| No.                       | Equipment | Brand | Model | Series No. | FCC ID | IC |
|                           | N/A       |       |       |            |        |    |
|                           |           |       |       |            |        |    |

| Support Equipment |           |        |       |            |        |     |
|-------------------|-----------|--------|-------|------------|--------|-----|
| No.               | Equipment | Brand  | Model | Series No. | FCC ID | IC  |
| 1                 | NB(E)     | Lenovo | T460  | N/A        | N/A    | N/A |

## 1.8 TEST METHODOLOGY AND APPLIED STANDARDS

The test methodology, setups and results comply with all requirements in accordance with ANSI C63.10:2013, FCC Part 2, FCC Part 15.247, KDB 662911 and KDB 558074.



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## 2. TEST SUMMARY

| FCC Standard Section | Report Section | Test Item                   | Result |
|----------------------|----------------|-----------------------------|--------|
| 15.203               | 1.3            | Antenna Requirement         | Pass   |
| 15.207(a)            | 4.1            | AC Conducted Emission       | Pass   |
| 15.247(a)(2)         | 4.2            | 6 dB Bandwidth              | Pass   |
| -                    | 4.2            | Occupied Bandwidth (99%)    | Pass   |
| 15.247(b)            | 4.3            | Output Power Measurement    | Pass   |
| 15.247(e)            | 4.4            | Power Spectral Density      | Pass   |
| 15.247(d)            | 4.5            | Conducted Band Edge         | Pass   |
| 15.247(d)            | 4.5            | Conducted Spurious Emission | Pass   |
| 15.247(d)            | 4.6            | Radiation Band Edge         | Pass   |
| 15.247(d)            | 4.6            | Radiation Spurious Emission | Pass   |

### 3. DESCRIPTION OF TEST MODES

#### 3.1 THE WORST MODE OF OPERATING CONDITION

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation mode           | IEEE 802.11b mode:1Mbps<br>IEEE 802.11g mode:6Mbps<br>IEEE 802.11n HT20 mode: MCS0<br>IEEE 802.11n HT40 mode: MCS0<br>IEEE 802.11ax (HE20) mode: MCS0<br>IEEE 802.11ax (HE40) mode: MCS0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Operation Transmitter    | IEEE 802.11b mode: 2T2R(SISO)<br>IEEE 802.11g mode: 2T2R(SISO)<br>IEEE 802.11n HT20 mode: 2T2R(MIMO)<br>IEEE 802.11n HT40 mode: 2T2R(MIMO)<br>IEEE 802.11ax (HE20) mode: 2T2R(MIMO)<br>IEEE 802.11ax (HE40) mode: 2T2R(MIMO)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Test Channel Frequencies | <b>IEEE 802.11b mode:</b><br>1. Lowest Channel: 2412 MHz<br>2. Middle Channel: 2437MHz<br>3. Highest Channel: 2462 MHz<br><b>IEEE 802.11g mode :</b><br>1. Lowest Channel: 2412 MHz<br>2. Middle Channel: 2437MHz<br>3. Highest Channel: 2462 MHz<br><b>IEEE 802.11n HT20 mode :</b><br>1. Lowest Channel: 2412 MHz<br>2. Middle Channel: 2437MHz<br>3. Highest Channel: 2462 MHz<br><b>IEEE 802.11 ax(HE20) mode :</b><br>1. Lowest Channel: 2412 MHz<br>2. Middle Channel: 2437MHz<br>3. Highest Channel: 2462 MHz<br><b>IEEE 802.11n HT40 mode :</b><br>1. Lowest Channel: 2422 MHz<br>2. Middle Channel: 2437MHz<br>3. Highest Channel: 2452 MHz<br><b>IEEE 802.11 ax(HE40) mode :</b><br>1. Lowest Channel: 2422 MHz<br>2. Middle Channel: 2437MHz<br>3. Highest Channel: 2452 MHz |

**Remark:**

1. EUT pre-scanned data rate of output power for each mode, the worst data rate were recorded in this report.

### 3.2 THE WORST MODE OF MEASUREMENT

| Radiated Emission Measurement Above 1G |                                                                                                                                                                                                                                                                                               |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Condition                         | Radiated Emission Above 1G                                                                                                                                                                                                                                                                    |
| Power supply Mode                      | Mode 1: EUT power by Adapter                                                                                                                                                                                                                                                                  |
| Worst Mode                             | <input checked="" type="checkbox"/> Mode 1 <input type="checkbox"/> Mode 2 <input type="checkbox"/> Mode 3 <input type="checkbox"/> Mode 4                                                                                                                                                    |
| Worst Position                         | <input type="checkbox"/> Placed in fixed position.<br><input checked="" type="checkbox"/> Placed in fixed position at X-Plane (E2-Plane)<br><input type="checkbox"/> Placed in fixed position at Y-Plane (E1-Plane)<br><input type="checkbox"/> Placed in fixed position at Z-Plane (H-Plane) |

| Radiated Emission Measurement Below 1G |                                                                                                                                            |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Test Condition                         | Radiated Emission Below 1G                                                                                                                 |
| Power supply Mode                      | Mode 1: EUT power by Adapter                                                                                                               |
| Worst Mode                             | <input checked="" type="checkbox"/> Mode 1 <input type="checkbox"/> Mode 2 <input type="checkbox"/> Mode 3 <input type="checkbox"/> Mode 4 |

| AC Power Line Conducted Emission |                                                                                                                                            |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Test Condition                   | AC Power line conducted emission for line and neutral                                                                                      |
| Power supply Mode                | Mode 1: EUT power by Adapter                                                                                                               |
| Worst Mode                       | <input checked="" type="checkbox"/> Mode 1 <input type="checkbox"/> Mode 2 <input type="checkbox"/> Mode 3 <input type="checkbox"/> Mode 4 |

Remark:

1. The worst mode was record in this test report.
2. EUT pre-scanned in three axis ,X,Y, Z and two polarity, for radiated measurement. The worst case(X-Plane) were recorded in this report.
3. AC power line conducted emission and for below 1G radiation emission were performed the EUT transmit at the highest output power channel as worst case.
4. The device supports SISO and MIMO at 802.11n20/n40/ax20/ax40 mode, per pre-test, MIMO 2TX mode was the worst and reported.
5. The device supports non\_BF and BF modes. Since the non\_BF mode has higher power and similar to BF radio frequency characteristics, some test items of BF mode will be exempted.



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### 3.3 EUT DUTY CYCLE

Temperature: 22.0°C

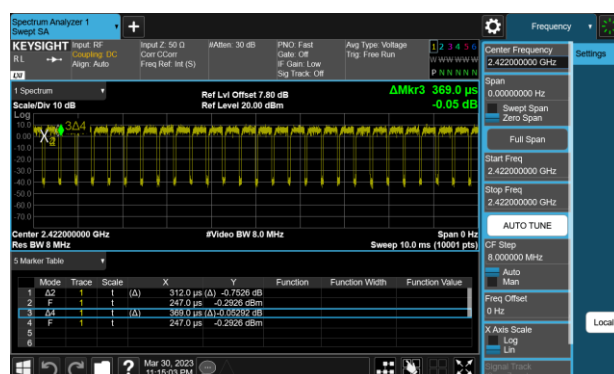
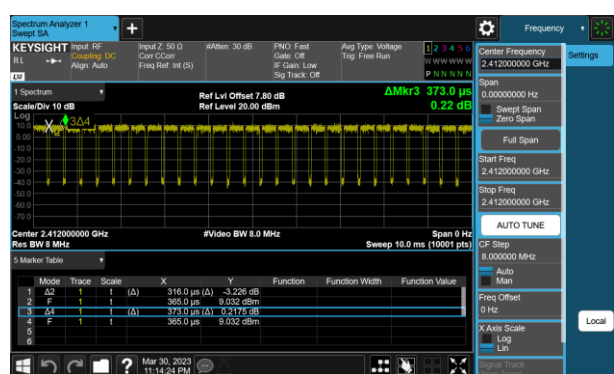
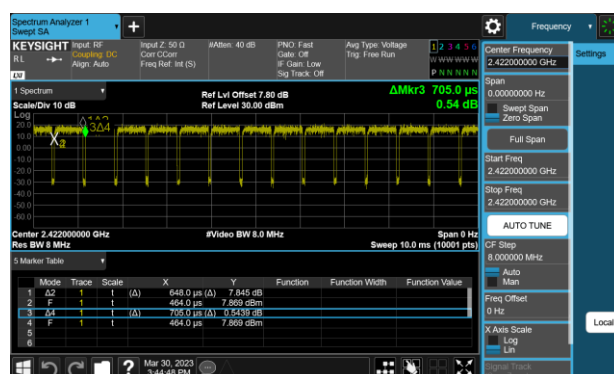
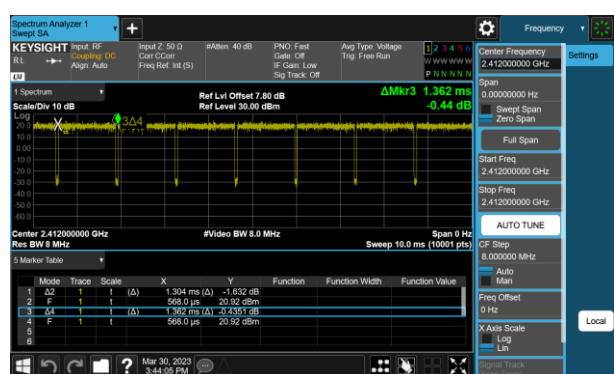
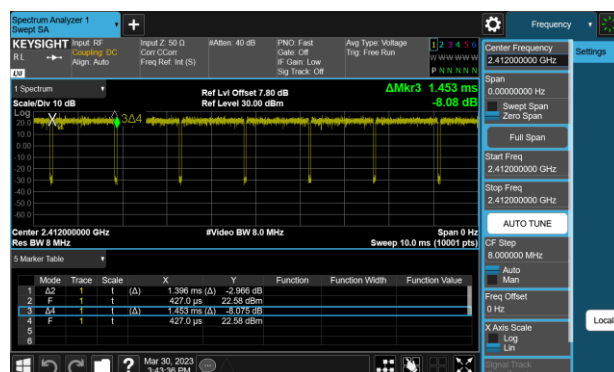
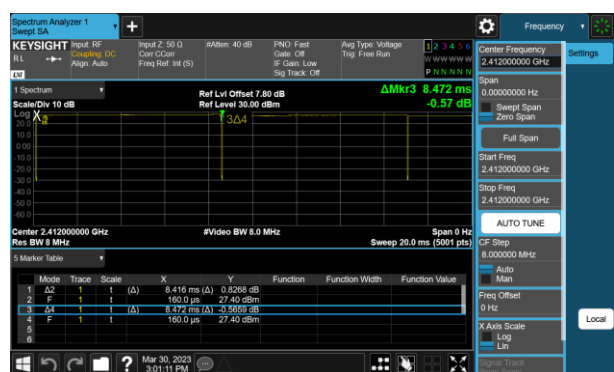
Test date: March 30, 2023

Humidity: 65% RH

Tested by: David Li

| Duty Cycle    |                |                                            |           |                   |
|---------------|----------------|--------------------------------------------|-----------|-------------------|
| Configuration | Duty Cycle (%) | Duty Factor (dB)<br>=10*log (1/Duty Cycle) | 1/T (kHz) | VBW setting (kHz) |
| 802.11b       | 99.34          | 0.03                                       | 0.12      | 0.01              |
| 802.11g       | 96.08          | 0.17                                       | 0.72      | 1.00              |
| 802.11n_20    | 95.74          | 0.19                                       | 0.77      | 1.00              |
| 802.11n_40    | 91.91          | 0.37                                       | 1.54      | 2.00              |
| 802.11ax_20   | 84.72          | 0.72                                       | 3.16      | 4.00              |
| 802.11ax_40   | 84.55          | 0.73                                       | 3.21      | 4.00              |

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## 4. TEST RESULT

### 4.1 AC POWER LINE CONDUCTED EMISSION

#### 4.1.1 Test Limit

According to §15.207(a)(2)

| Frequency Range<br>(MHz) | Limits(dBμV) |           |
|--------------------------|--------------|-----------|
|                          | Quasi-peak   | Average   |
| 0.15 to 0.50             | 66 to 56*    | 56 to 46* |
| 0.50 to 5                | 56           | 46        |
| 5 to 30                  | 60           | 50        |

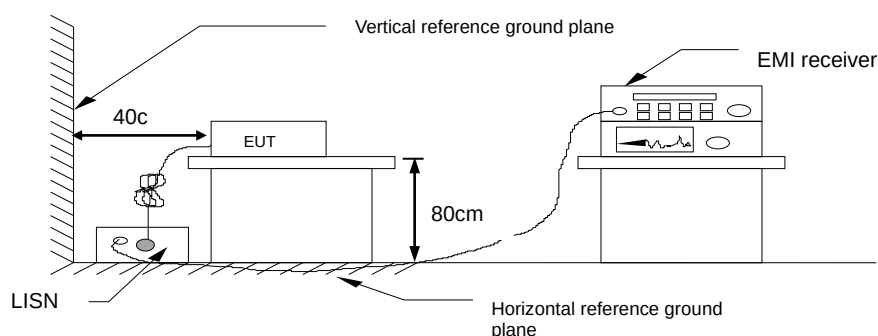
\* Decreases with the logarithm of the frequency.

#### 4.1.2 Test Procedure

Test method Refer as ANSI C63.10: 2013 clause 6.2,

1. The EUT was placed on a non-conducted table, which is 0.8m above horizontal ground plane and 0.4m above vertical ground plane.
2. EUT connected to the line impedance stabilization network (LISN)
3. Receiver set RBW of 9kHz and Detector Peak, and note as quasi-peak and average.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. Recorded Line for Neutral and Line.

#### 4.1.3 Test Setup



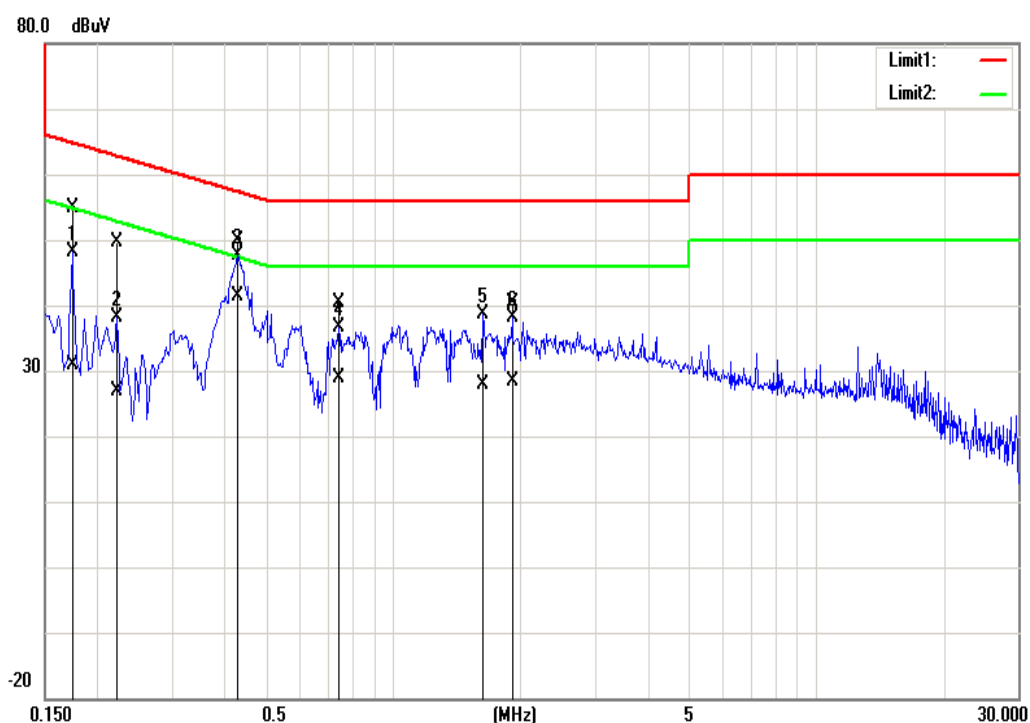
#### 4.1.4 Test Result

**Pass.**



## Test Data

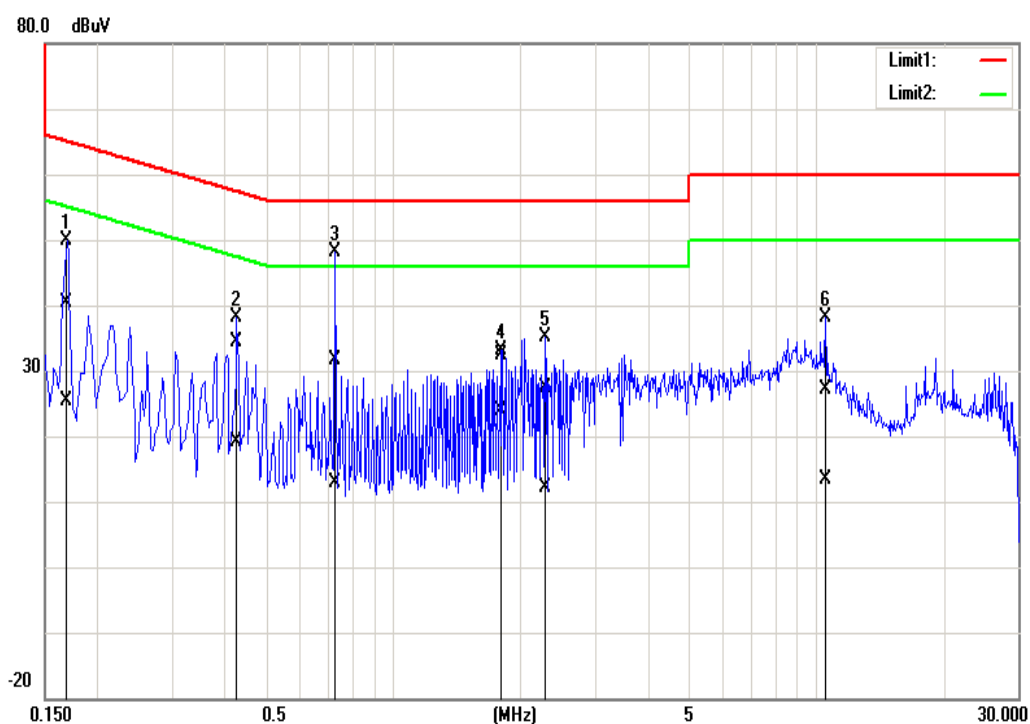
|               |              |               |                 |
|---------------|--------------|---------------|-----------------|
| Test Mode:    | Mode 1       | Temp/Hum      | 23.4(°C)/ 58%RH |
| Phase:        | Line         | Test Date     | April 6, 2023   |
| Test Voltage: | 120Vac, 60Hz | Test Engineer | Tony Chao       |



| Frequency (MHz) | Quasi Peak reading (dBuV) | Average reading (d uV) | Correction factor (dB) | Quasi Peak result (dBuV) | Average result (dBuV) | Quasi Peak limit (dBuV) | Average limit (dBuV) | Quasi Peak margin (dB) | Average margin (dB) | Remark |
|-----------------|---------------------------|------------------------|------------------------|--------------------------|-----------------------|-------------------------|----------------------|------------------------|---------------------|--------|
| 0.1740          | 54.75                     | 30.61                  | 0.15                   | 54.90                    | 30.76                 | 64.77                   | 54.77                | -9.87                  | -24.01              | Pass   |
| 0.2220          | 49.46                     | 26.76                  | 0.15                   | 49.61                    | 26.91                 | 62.74                   | 52.74                | -13.13                 | -25.83              | Pass   |
| 0.4300          | 49.62                     | 41.27                  | 0.15                   | 49.77                    | 41.42                 | 57.25                   | 47.25                | -7.48                  | -5.83               | Pass   |
| 0.7460          | 40.21                     | 28.74                  | 0.16                   | 40.37                    | 28.90                 | 56.00                   | 46.00                | -15.63                 | -17.10              | Pass   |
| 1.6340          | 38.37                     | 27.66                  | 0.19                   | 38.56                    | 27.85                 | 56.00                   | 46.00                | -17.44                 | -18.15              | Pass   |
| 1.9140          | 40.15                     | 28.08                  | 0.21                   | 40.36                    | 28.29                 | 56.00                   | 46.00                | -15.64                 | -17.71              | Pass   |

**Note:** 1. Correction factor = LISN loss + Cable loss.

|               |              |               |                 |
|---------------|--------------|---------------|-----------------|
| Test Mode:    | Mode 1       | Temp/Hum      | 23.4(°C)/ 58%RH |
| Phase:        | Neutral      | Test Date     | April 6, 2023   |
| Test Voltage: | 120Vac, 60Hz | Test Engineer | Tony Chao       |



| Frequency (MHz) | Quasi Peak reading (dBuV) | Average reading (dBuV) | Correction factor (dB) | Quasi Peak result (dBuV) | Average result (dBuV) | Quasi Peak limit (dBuV) | Average limit (dBuV) | Quasi Peak margin (dB) | Average margin (dB) | Remark |
|-----------------|---------------------------|------------------------|------------------------|--------------------------|-----------------------|-------------------------|----------------------|------------------------|---------------------|--------|
| 0.1700          | 40.08                     | 25.11                  | 0.19                   | 40.27                    | 25.30                 | 64.96                   | 54.96                | -24.69                 | -29.66              | Pass   |
| 0.4260          | 34.07                     | 19.01                  | 0.19                   | 34.26                    | 19.20                 | 57.33                   | 47.33                | -23.07                 | -28.13              | Pass   |
| 0.7300          | 31.35                     | 12.70                  | 0.21                   | 31.56                    | 12.91                 | 56.00                   | 46.00                | -24.44                 | -33.09              | Pass   |
| 1.8060          | 32.21                     | 23.60                  | 0.24                   | 32.45                    | 23.84                 | 56.00                   | 46.00                | -23.55                 | -22.16              | Pass   |
| 2.2860          | 27.22                     | 11.96                  | 0.25                   | 27.47                    | 12.21                 | 56.00                   | 46.00                | -28.53                 | -33.79              | Pass   |
| 10.5220         | 26.65                     | 13.01                  | 0.38                   | 27.03                    | 13.39                 | 60.00                   | 50.00                | -32.97                 | -36.61              | Pass   |

**Note:** 1. Correction factor = LISN loss + Cable loss.

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## 4.2 6dB BANDWIDTH AND OCCUPIED BANDWIDTH (99%)

### 4.2.1 Test Limit

According to §15.247(a)(2)

**6 dB Bandwidth** :

|       |                          |
|-------|--------------------------|
| Limit | Shall be at least 500kHz |
|-------|--------------------------|

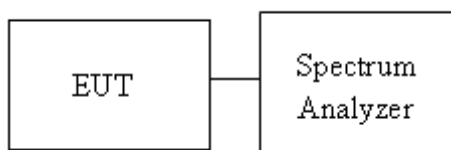
**Occupied Bandwidth(99%)** : For reporting purposes only.

### 4.2.2 Test Procedure

Test method Refer as ANSI C63.10: 2013,

1. The EUT RF output connected to the spectrum analyzer by RF cable.
2. Setting maximum power transmit of EUT
3. SA set RBW = 100kHz, VBW = 300kHz and Detector = Peak, to measurement 6 dB Bandwidth.
4. SA set RBW = 1% ~ 5% OBW, VBW = three times the RBW and Detector = Peak, to measurement 99% Bandwidth
5. Measure and record the result of 6 dB Bandwidth and 99% Bandwidth. in the test report.

### 4.2.3 Test Setup



## 4.2.4 Test Result

### Non-Beamforming

Temperature: 22.0°C

Test date: March 30, 2023

Humidity: 65% RH

Tested by: David Li

| Test mode: IEEE 802.11b mode / 2412-2462 MHz |                 |                         |                         |                      |                      |                 |
|----------------------------------------------|-----------------|-------------------------|-------------------------|----------------------|----------------------|-----------------|
| Channel                                      | Frequency (MHz) | Chain 0 OBW (99%) (MHz) | Chain 1 OBW (99%) (MHz) | Chain 0 6dB BW (kHz) | Chain 1 6dB BW (kHz) | 6dB limit (kHz) |
| 1                                            | 2412            | 12.673                  | <b>12.823</b>           | 8076.00              | 8059.00              | ≥500            |
| 6                                            | 2437            | 12.708                  | 12.71                   | 8084.00              | <b>8099.00</b>       |                 |
| 11                                           | 2462            | <b>12.731</b>           | 12.728                  | <b>8091.00</b>       | 8086.00              |                 |

| Test mode: IEEE 802.11g mode / 2412-2462 MHz |                 |                         |                         |                      |                      |                 |
|----------------------------------------------|-----------------|-------------------------|-------------------------|----------------------|----------------------|-----------------|
| Channel                                      | Frequency (MHz) | Chain 0 OBW (99%) (MHz) | Chain 1 OBW (99%) (MHz) | Chain 0 6dB BW (kHz) | Chain 1 6dB BW (kHz) | 6dB limit (kHz) |
| 1                                            | 2412            | 16.931                  | 16.755                  | 15680.00             | 15760.00             | ≥500            |
| 6                                            | 2437            | <b>17.28</b>            | <b>17.517</b>           | <b>15740.00</b>      | <b>16070.00</b>      |                 |
| 11                                           | 2462            | 16.956                  | 16.875                  | 15510.00             | 16060.00             |                 |

| Test mode: IEEE 802.11n HT20 mode / 2412-2462 MHz |                 |                         |                         |                      |                      |                 |
|---------------------------------------------------|-----------------|-------------------------|-------------------------|----------------------|----------------------|-----------------|
| Channel                                           | Frequency (MHz) | Chain 0 OBW (99%) (MHz) | Chain 1 OBW (99%) (MHz) | Chain 0 6dB BW (kHz) | Chain 1 6dB BW (kHz) | 6dB limit (kHz) |
| 1                                                 | 2412            | 17.906                  | 17.795                  | 16130.00             | 16380.00             | ≥500            |
| 6                                                 | 2437            | <b>18.192</b>           | <b>17.966</b>           | <b>16530.00</b>      | <b>17560.00</b>      |                 |
| 11                                                | 2462            | 17.953                  | 17.941                  | 16120.00             | 17160.00             |                 |

| Test mode: IEEE 802.11n HT40 mode / 2422-2452 MHz |                 |                         |                         |                      |                      |                 |
|---------------------------------------------------|-----------------|-------------------------|-------------------------|----------------------|----------------------|-----------------|
| Channel                                           | Frequency (MHz) | Chain 0 OBW (99%) (MHz) | Chain 1 OBW (99%) (MHz) | Chain 0 6dB BW (kHz) | Chain 1 6dB BW (kHz) | 6dB limit (kHz) |
| 3                                                 | 2422            | 36.196                  | 36.151                  | 35290.00             | 35160.00             | ≥500            |
| 6                                                 | 2437            | <b>36.454</b>           | <b>36.217</b>           | <b>35500.00</b>      | <b>35170.00</b>      |                 |
| 9                                                 | 2452            | 36.43                   | 36.174                  | 35190.00             | <b>35170.00</b>      |                 |



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| Test mode: IEEE 802.11ax HE20 mode / 2412-2462 MHz |                 |           |                         |                         |                      |                      |                 |
|----------------------------------------------------|-----------------|-----------|-------------------------|-------------------------|----------------------|----------------------|-----------------|
| Channel                                            | Frequency (MHz) | RU Config | Chain 0 OBW (99%) (MHz) | Chain 1 OBW (99%) (MHz) | Chain 0 6dB BW (kHz) | Chain 1 6dB BW (kHz) | 6dB limit (kHz) |
| 1                                                  | 2412            | full      | 18.855                  | 18.878                  | 18060.00             | 18280.00             | ≥500            |
| 6                                                  | 2437            | full      | <b>19.127</b>           | 19.063                  | <b>18690.00</b>      | 17940.00             |                 |
| 11                                                 | 2462            | full      | 19.014                  | 19.079                  | 18570.00             | <b>18340.00</b>      |                 |

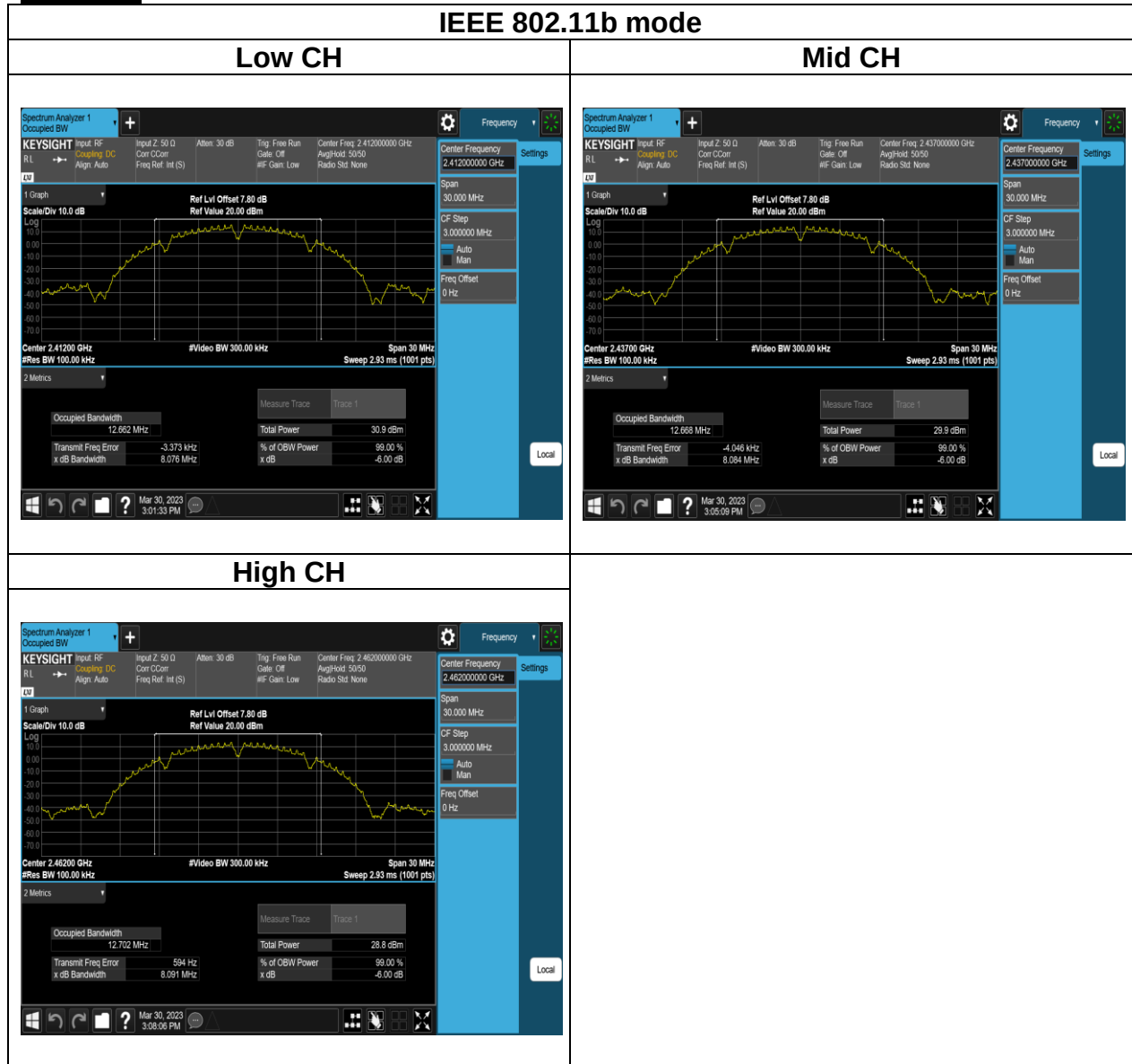
| Test mode: IEEE 802.11ax HE40 mode / 2422-2452 MHz |                 |           |                         |                         |                      |                      |                 |
|----------------------------------------------------|-----------------|-----------|-------------------------|-------------------------|----------------------|----------------------|-----------------|
| Channel                                            | Frequency (MHz) | RU Config | Chain 0 OBW (99%) (MHz) | Chain 1 OBW (99%) (MHz) | Chain 0 6dB BW (kHz) | Chain 1 6dB BW (kHz) | 6dB limit (kHz) |
| 3                                                  | 2422            | full      | 37.6                    | 37.641                  | 36480.00             | <b>37340.00</b>      | ≥500            |
| 6                                                  | 2437            | full      | 37.615                  | 37.701                  | 36490.00             | 36030.00             |                 |
| 9                                                  | 2452            | full      | <b>37.725</b>           | 37.696                  | <b>36580.00</b>      | 36100.00             |                 |

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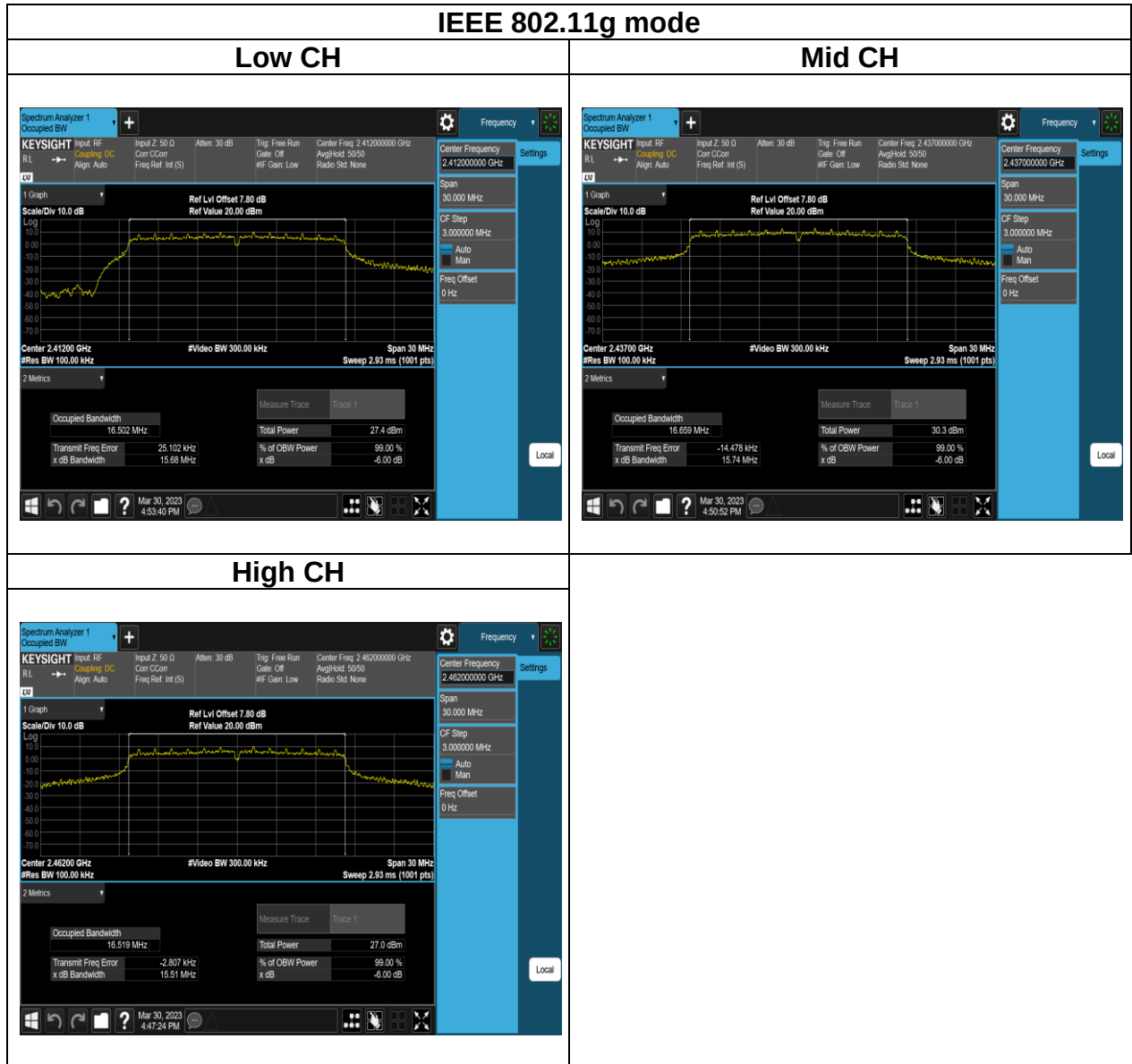
## Test Data

### 6dB BANDWIDTH

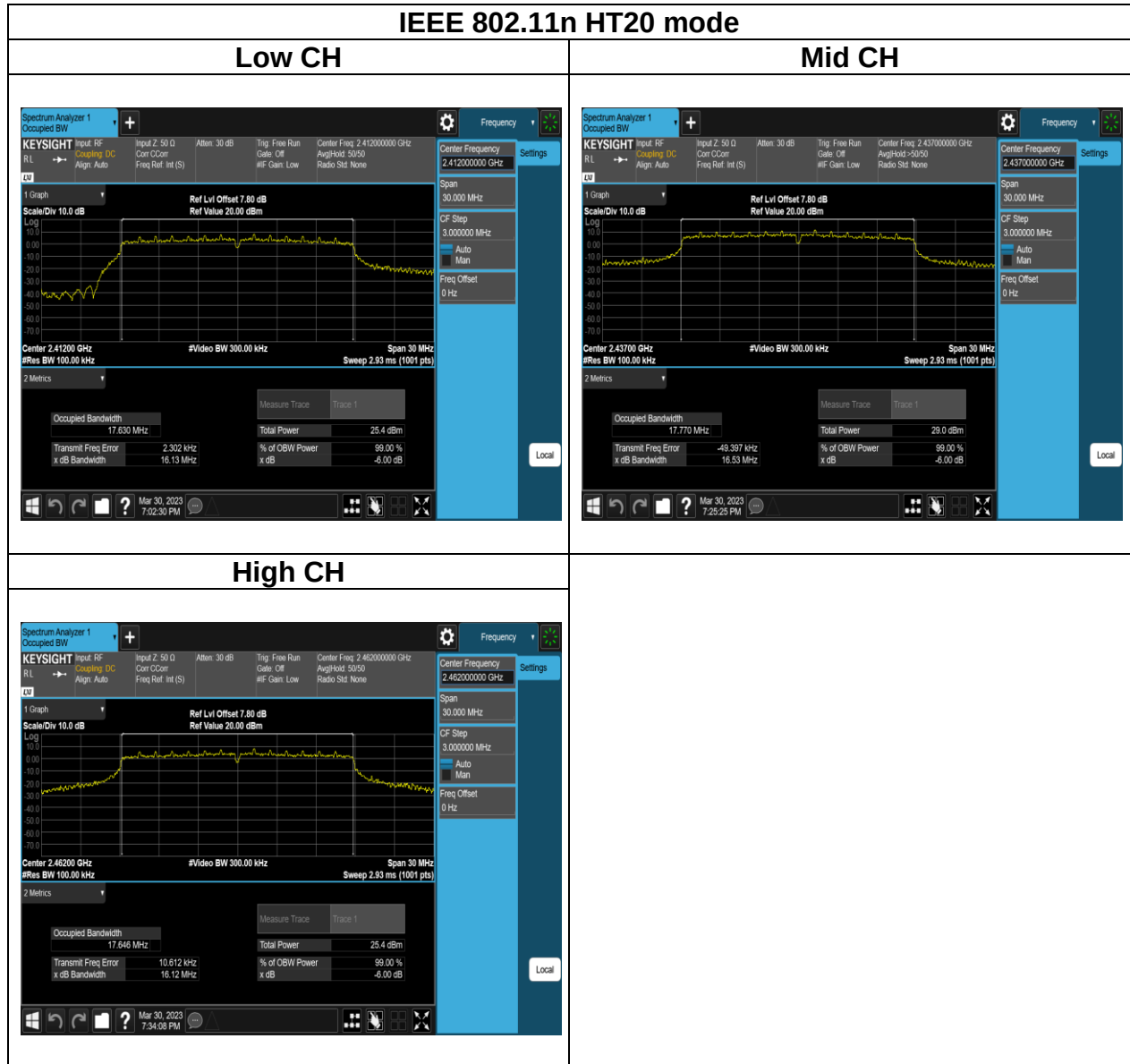
### Chain 0



Report No.: TMWK2303000589KR

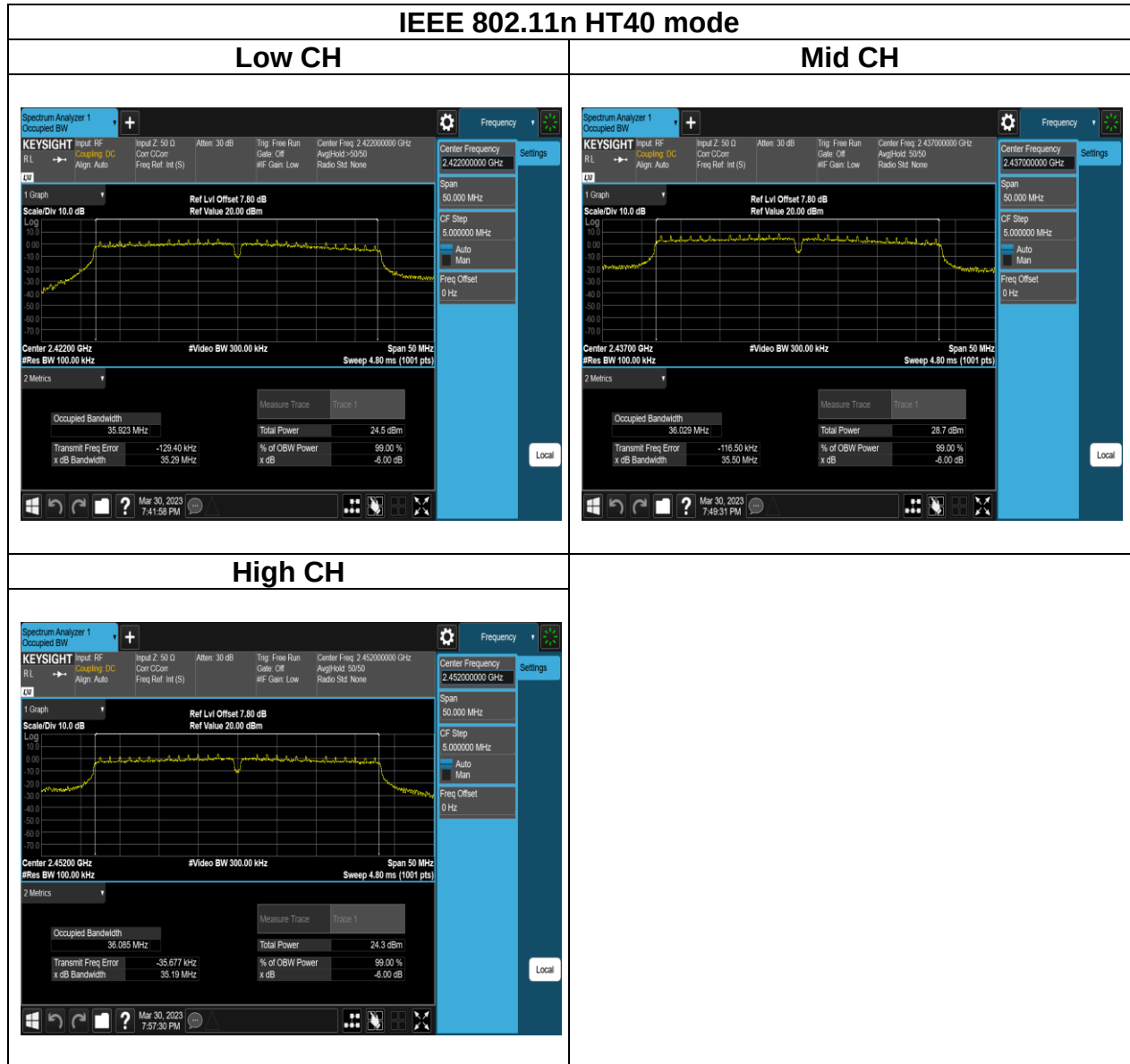


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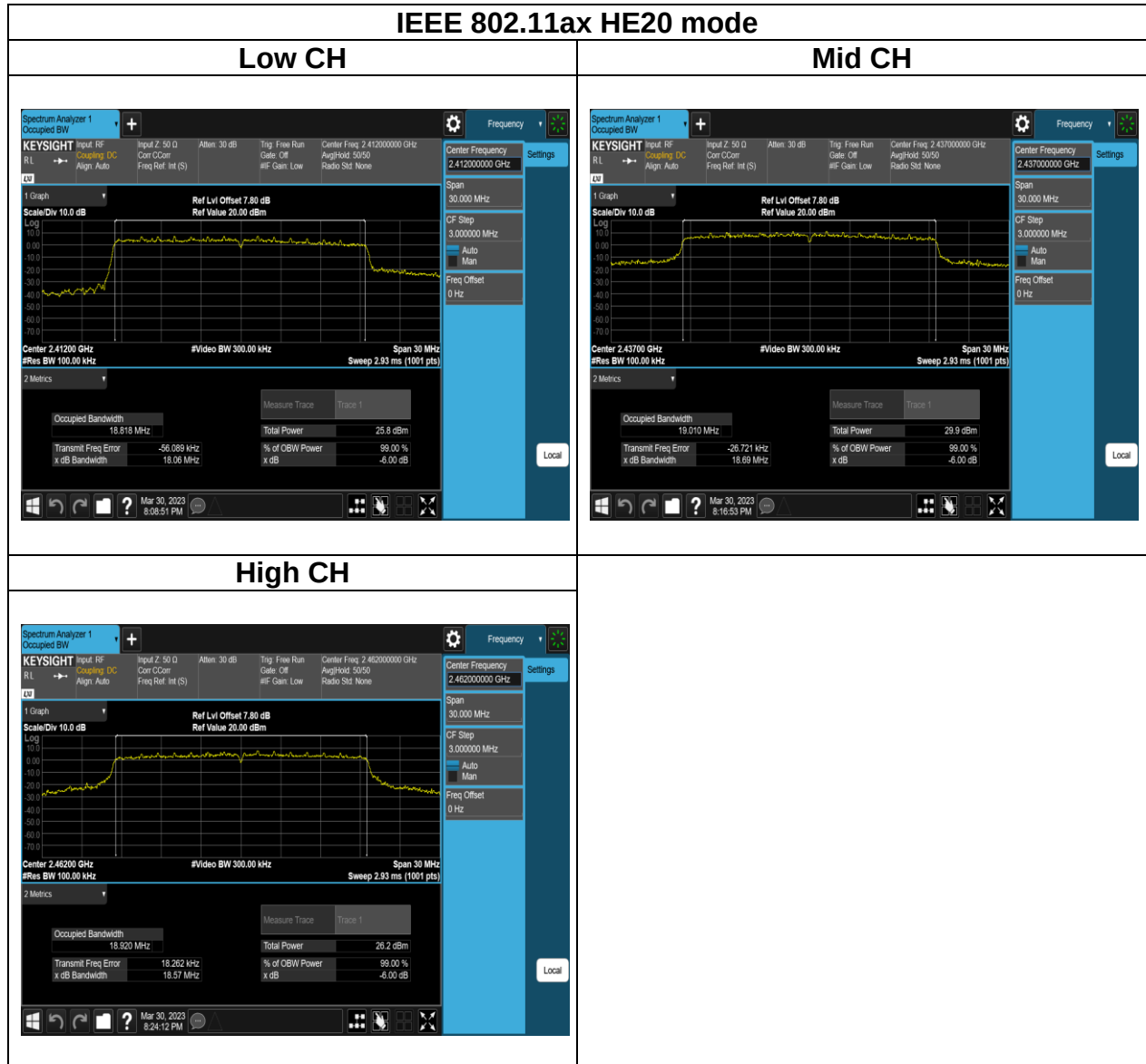




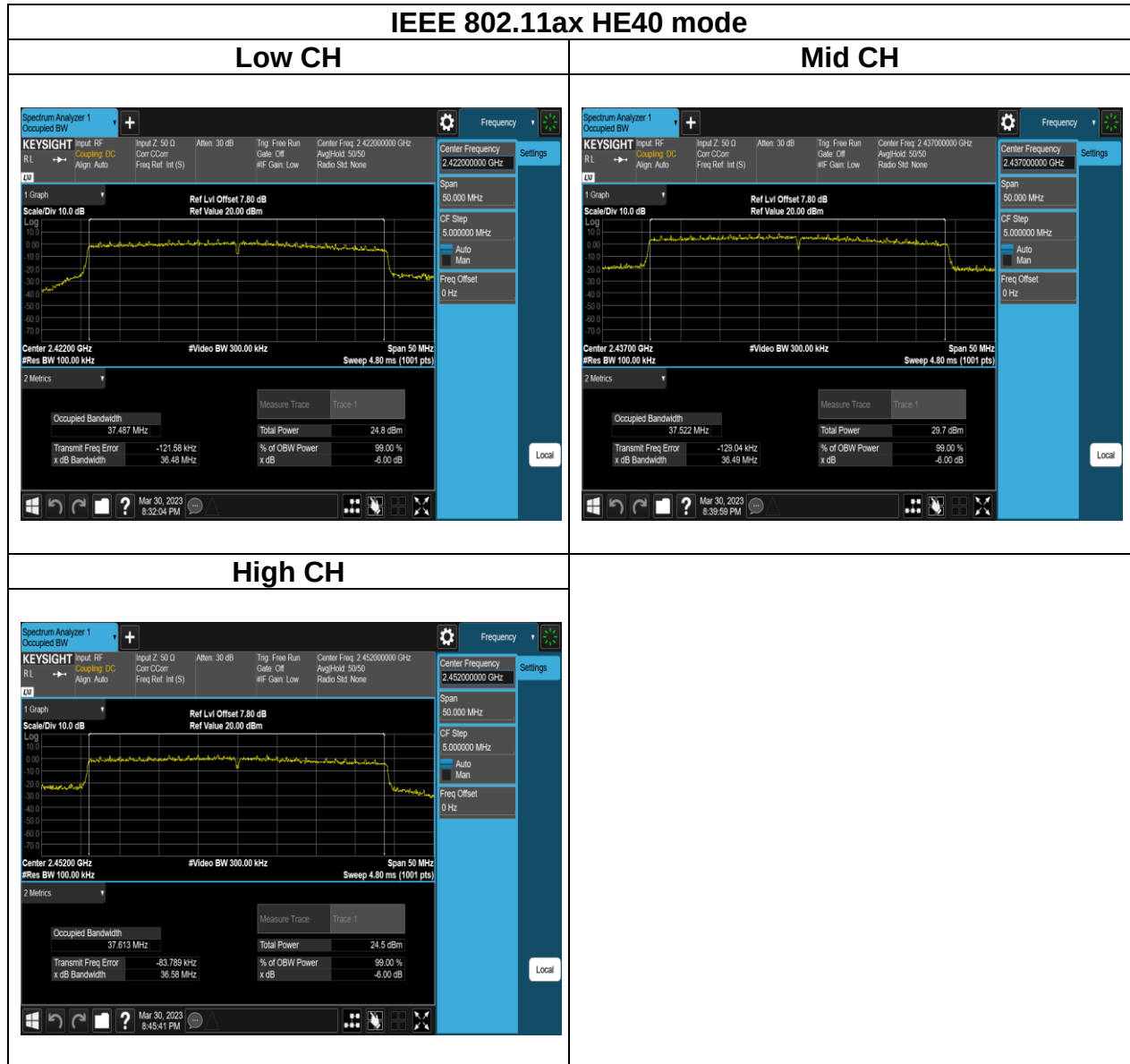
Report No.: TMWK2303000589KR



Report No.: TMWK2303000589KR

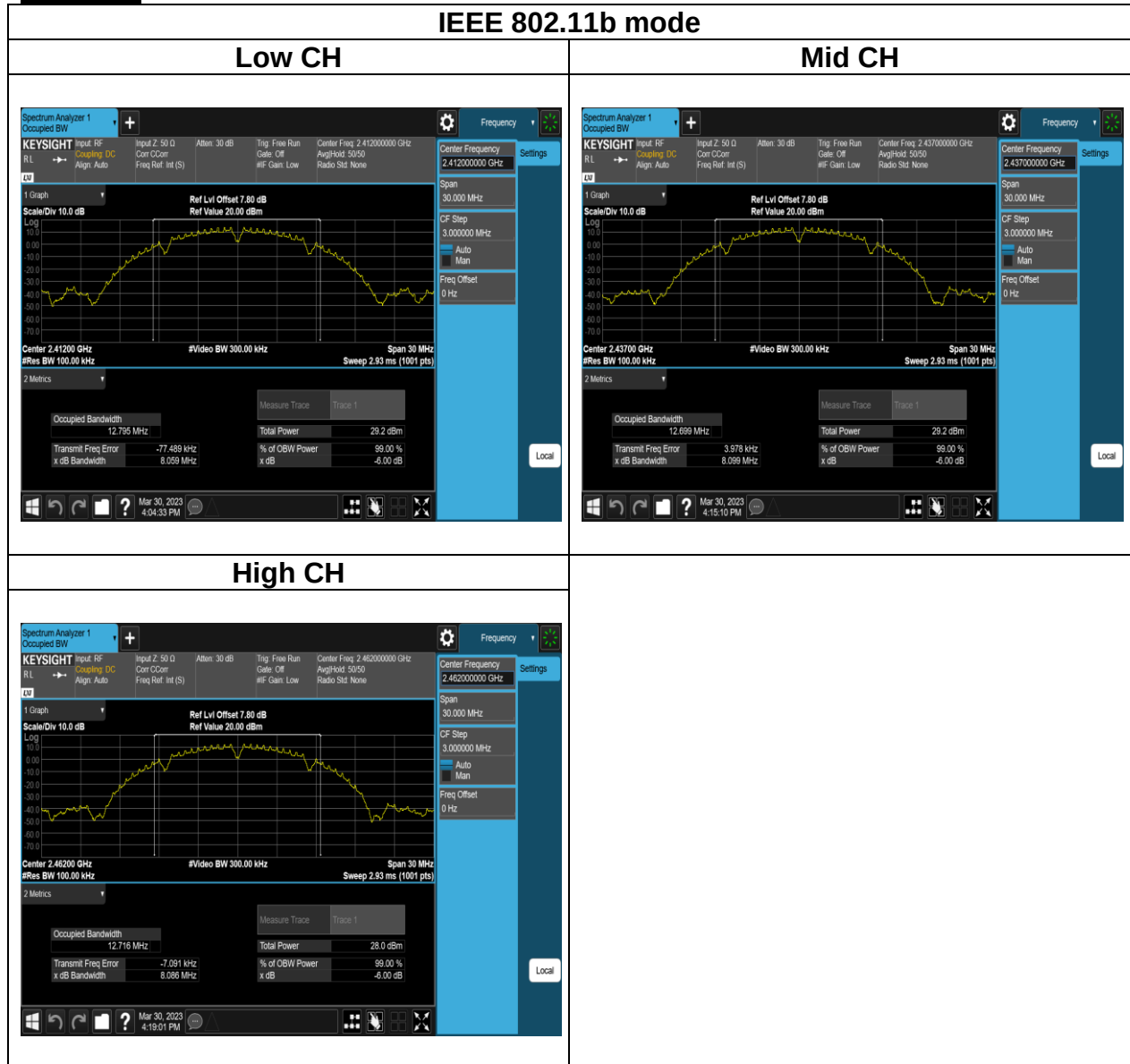


Report No.: TMWK2303000589KR

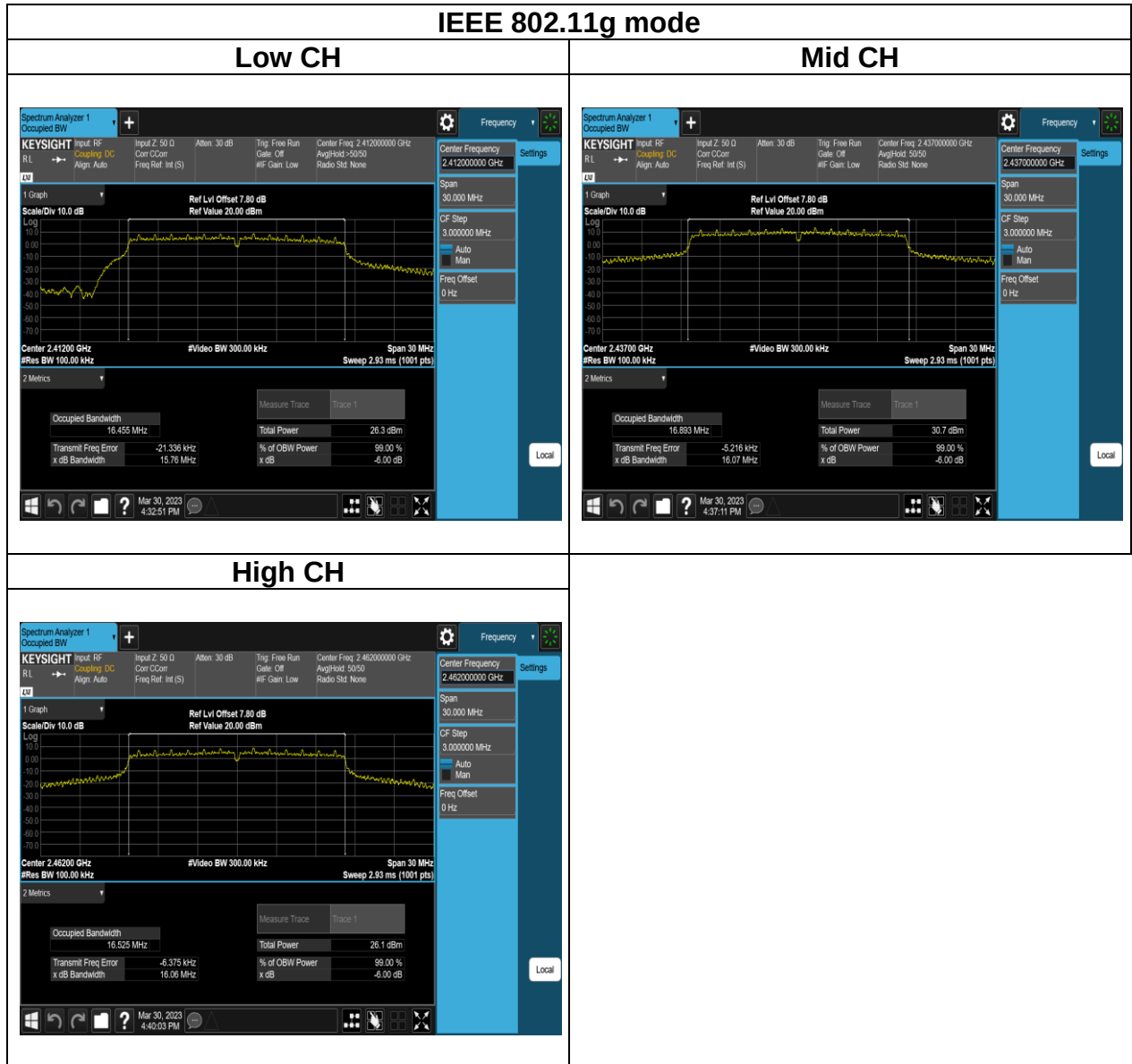


Report No.: TMWK2303000589KR

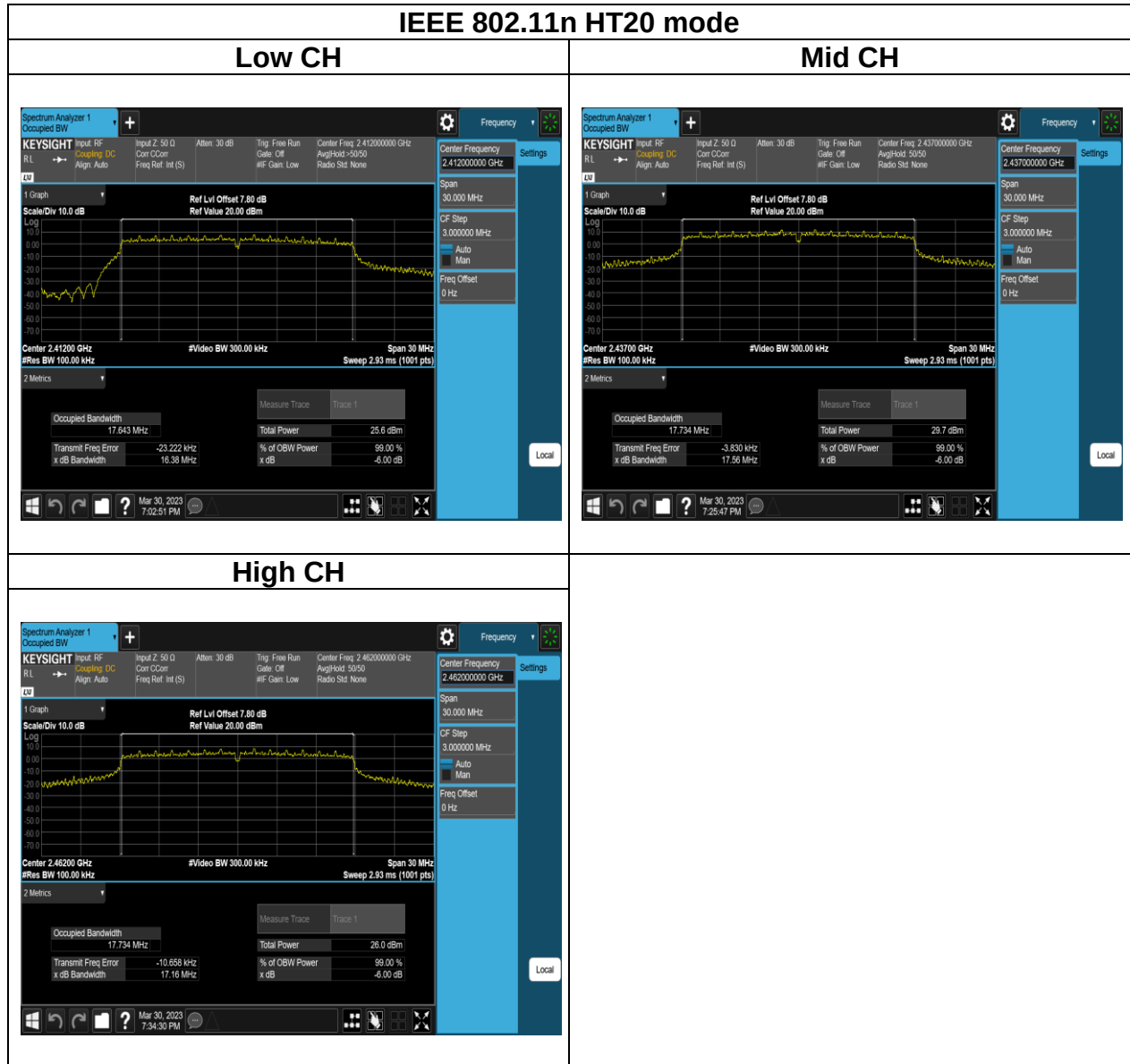
## Chain 1



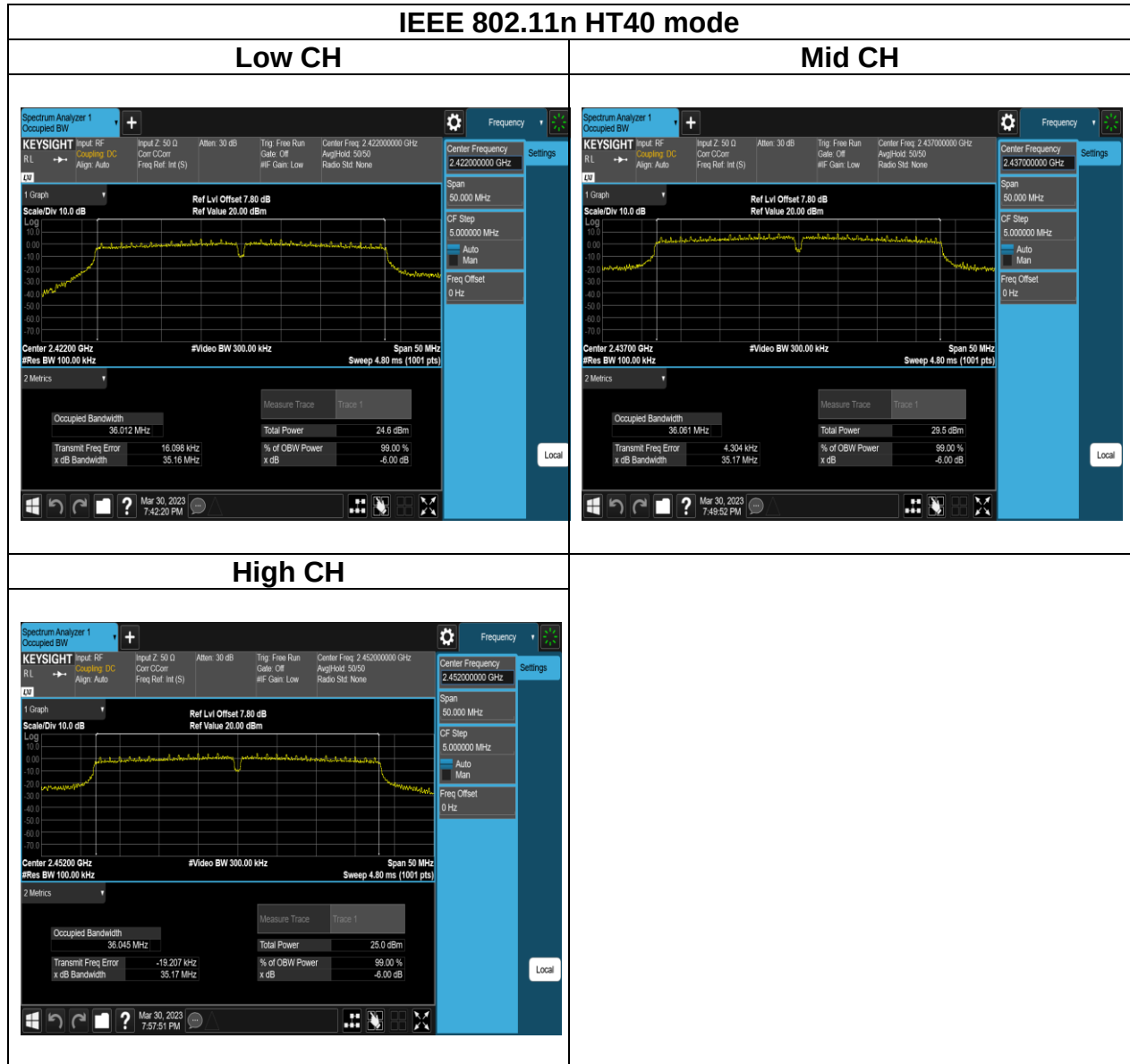
Report No.: TMWK2303000589KR



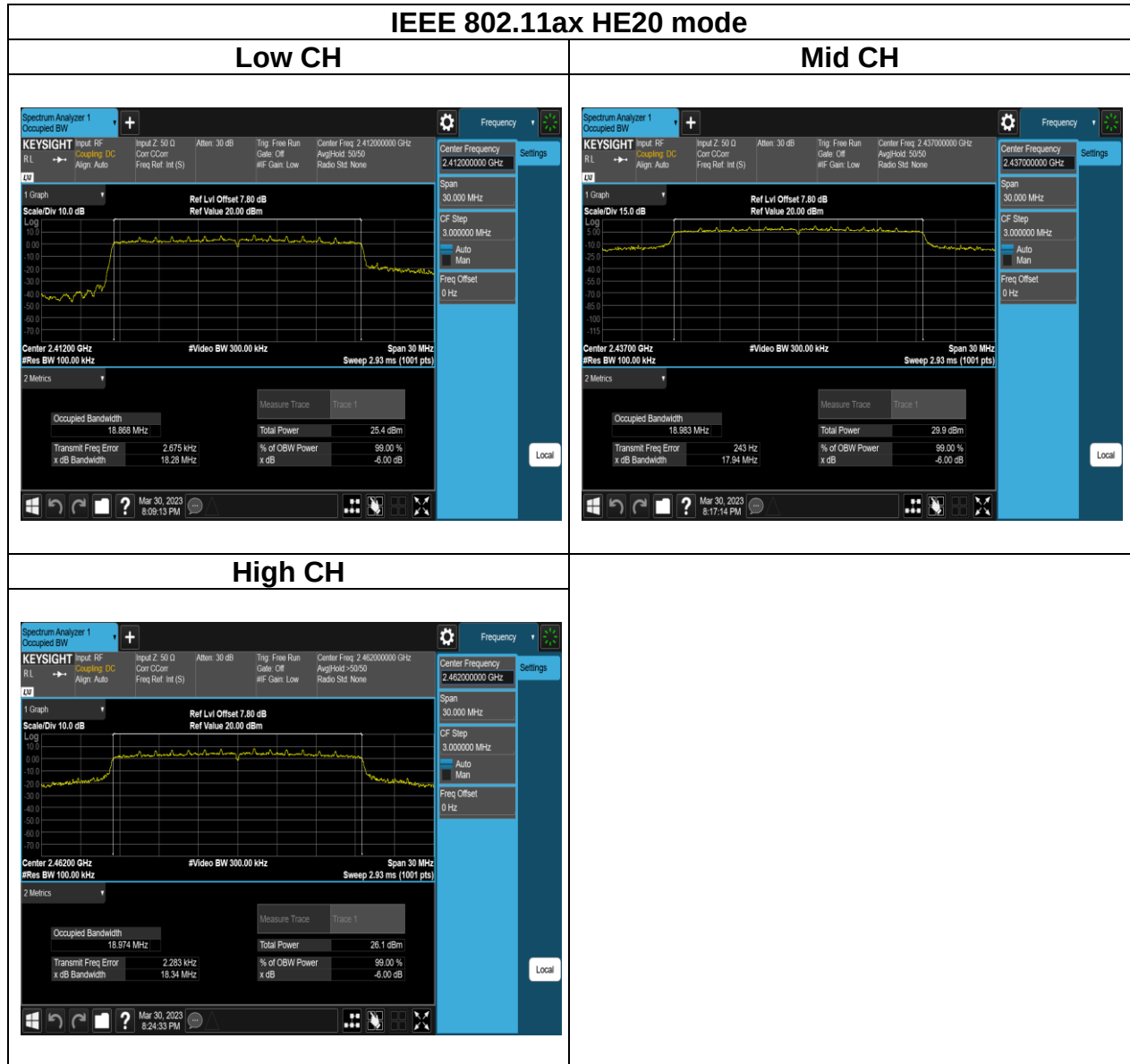
Report No.: TMWK2303000589KR



Report No.: TMWK2303000589KR

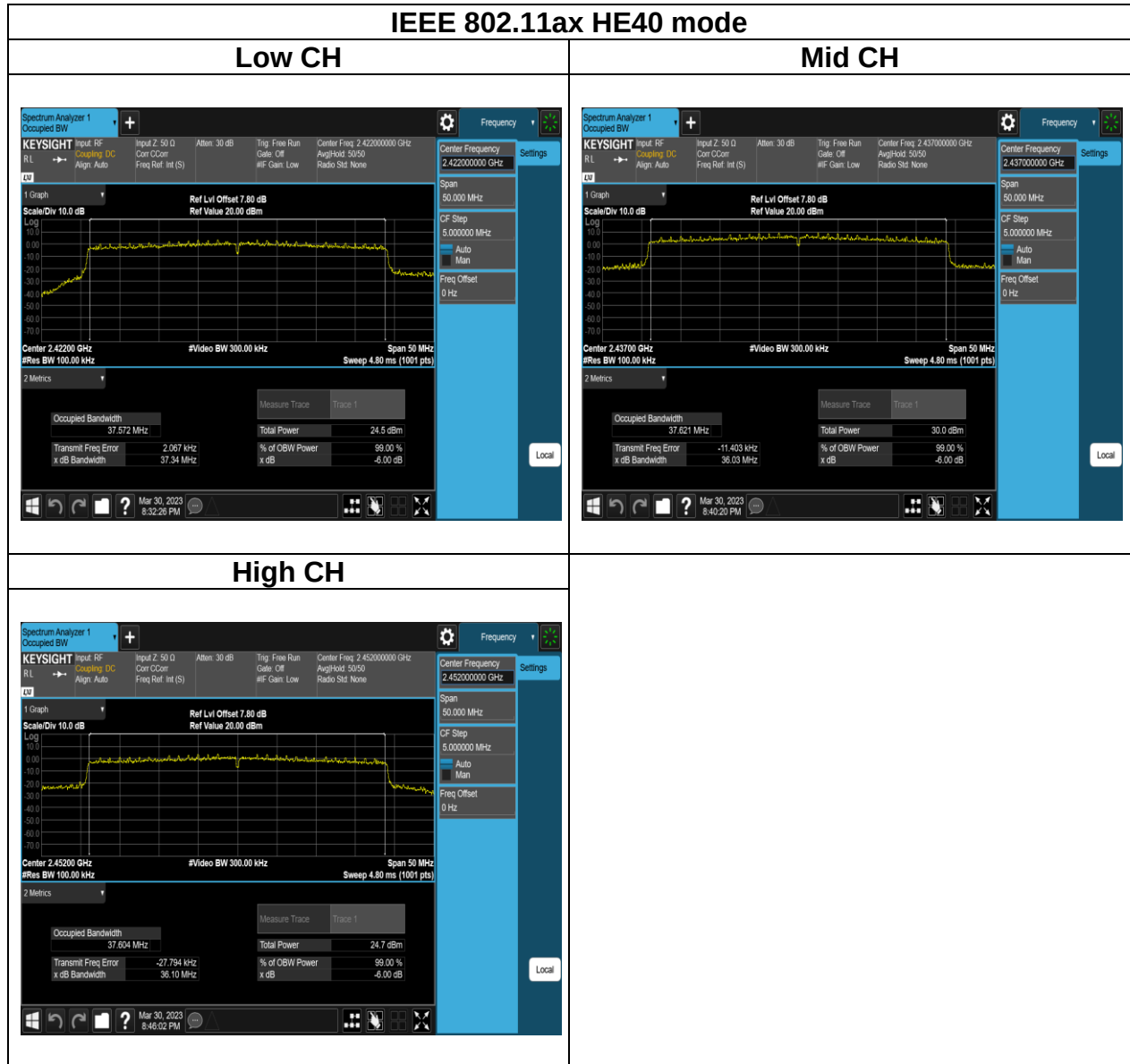


Report No.: TMWK2303000589KR





Report No.: TMWK2303000589KR

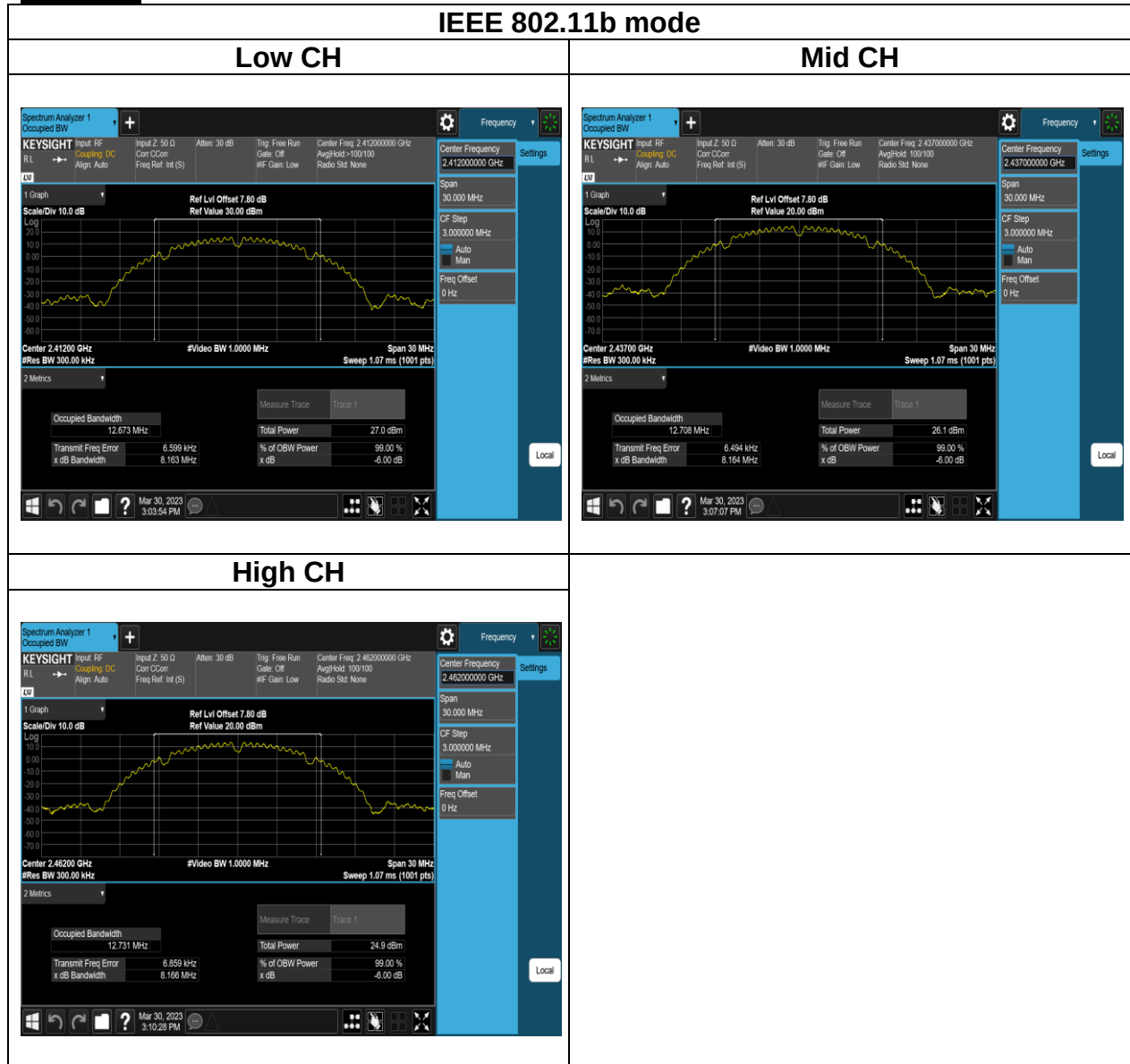


Report No.: TMWK2303000589KR

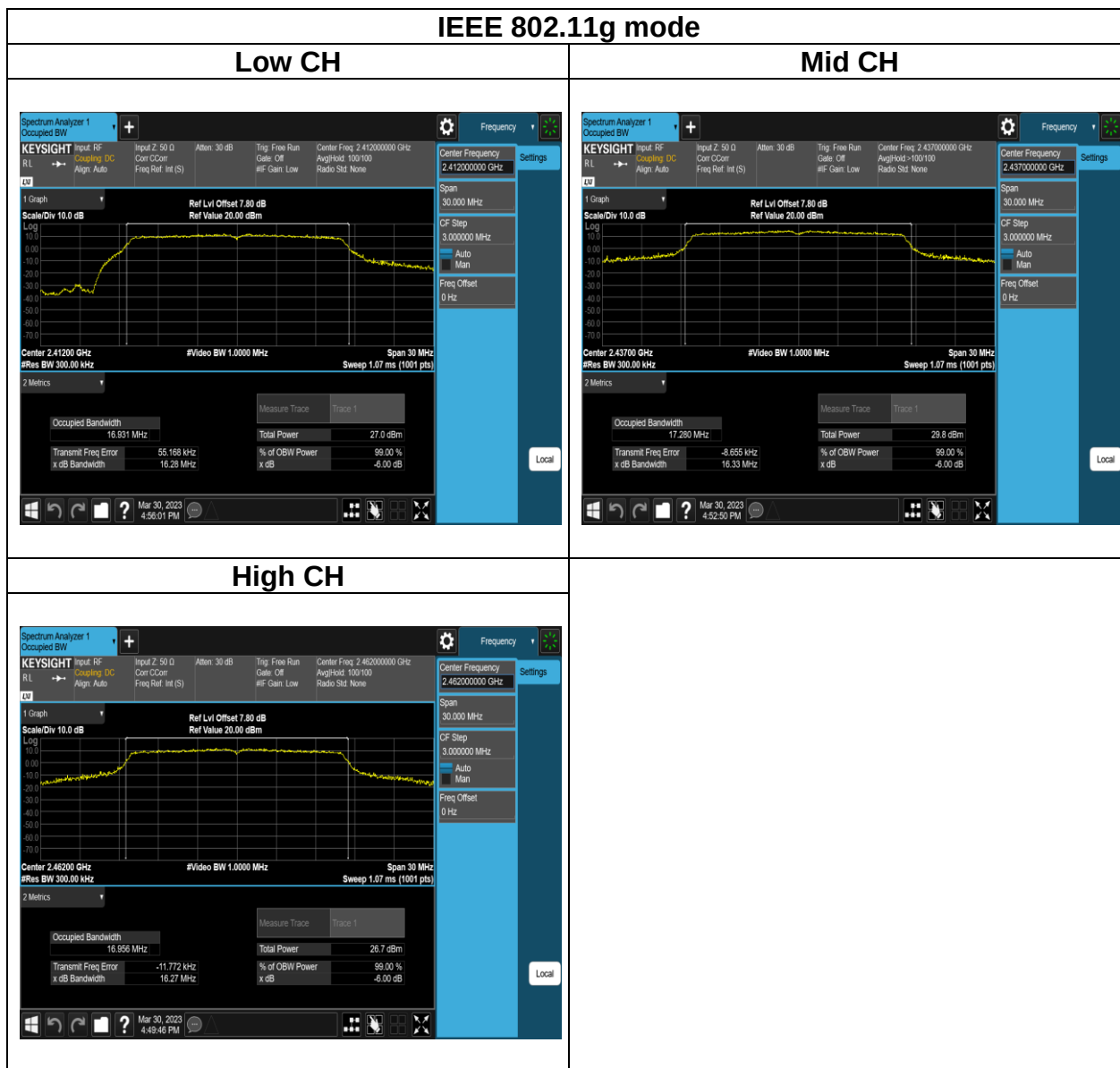
## Test Data

### BANDWIDTH 99%

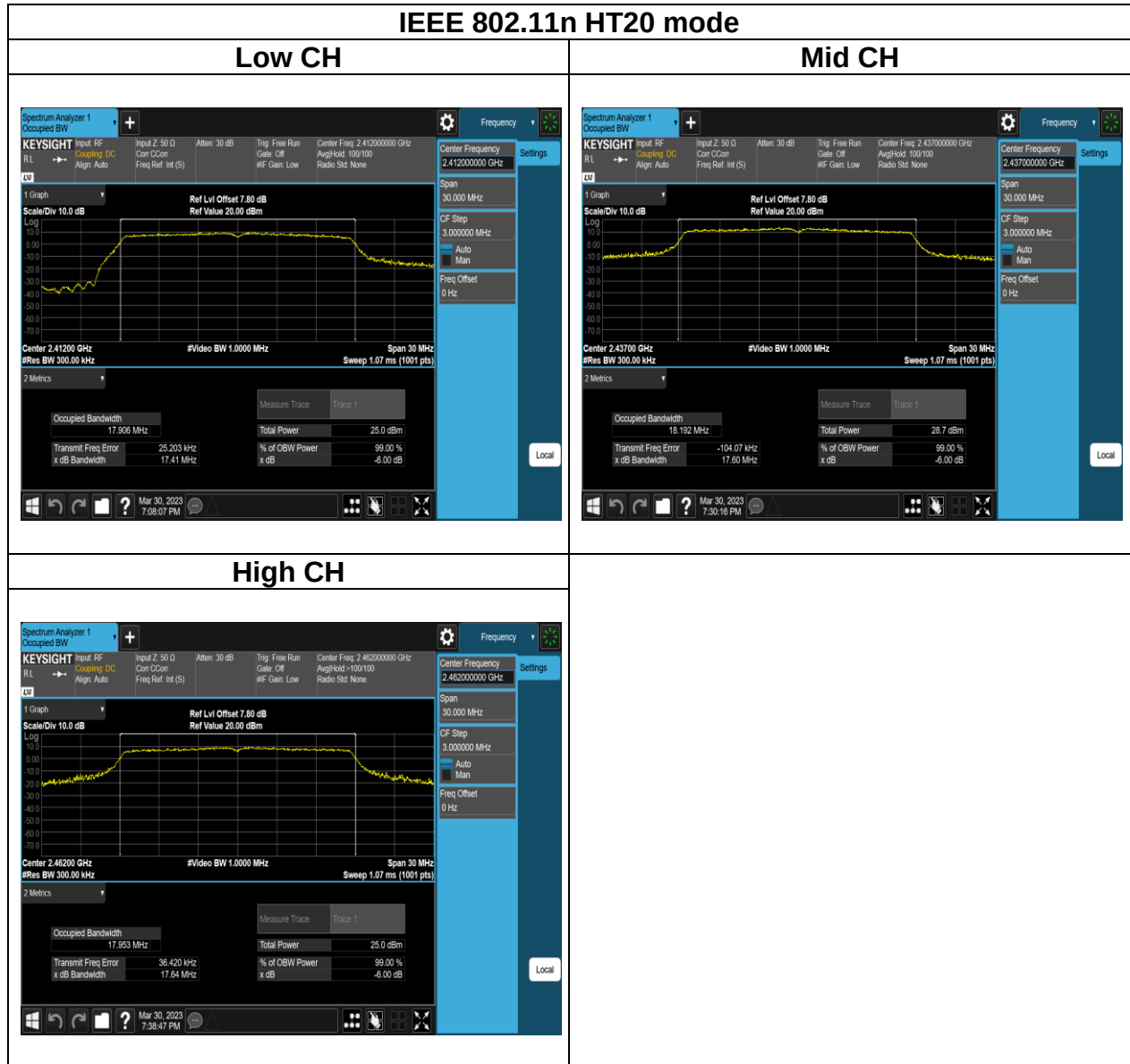
### Chain 0



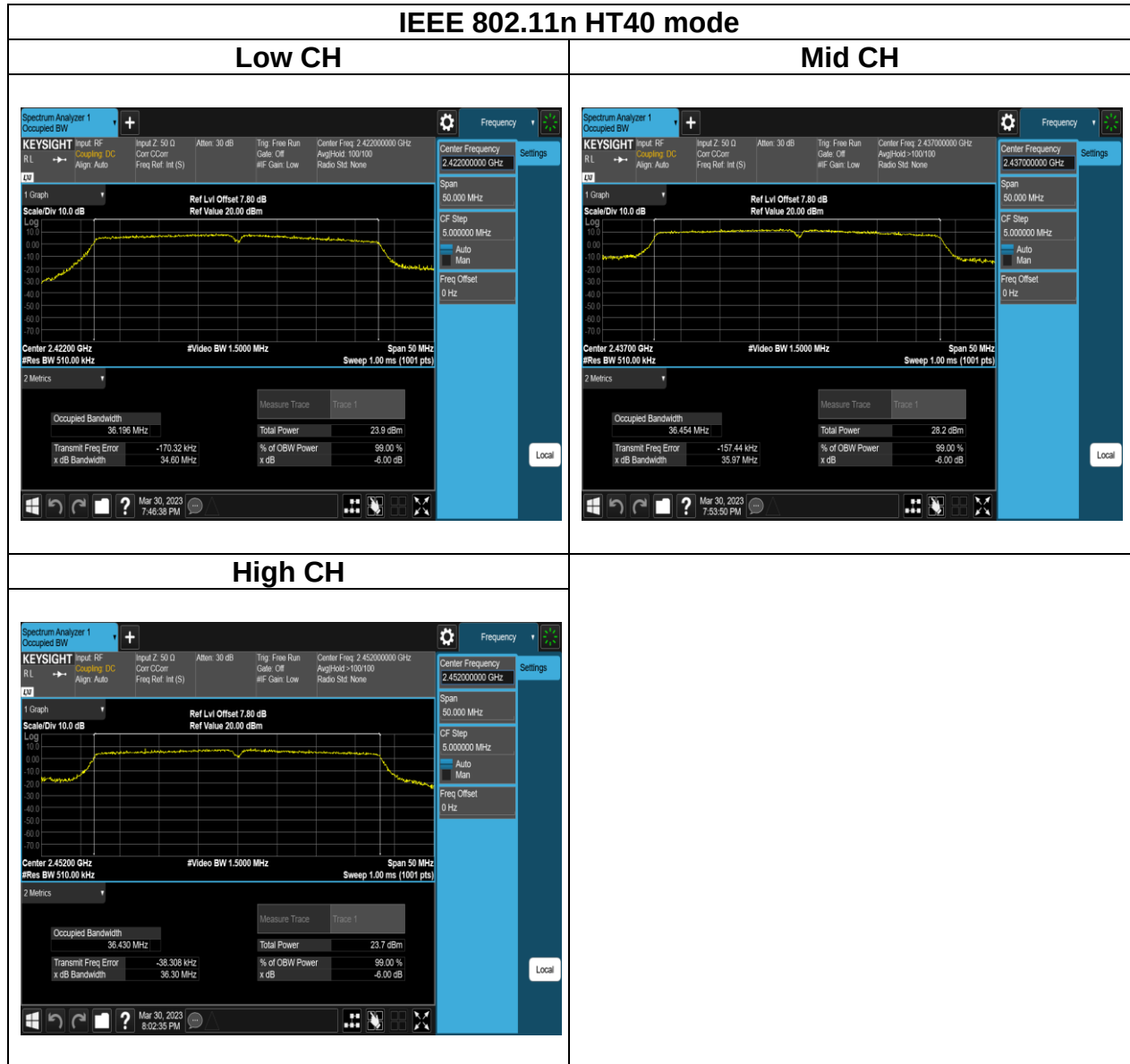
Report No.: TMWK2303000589KR



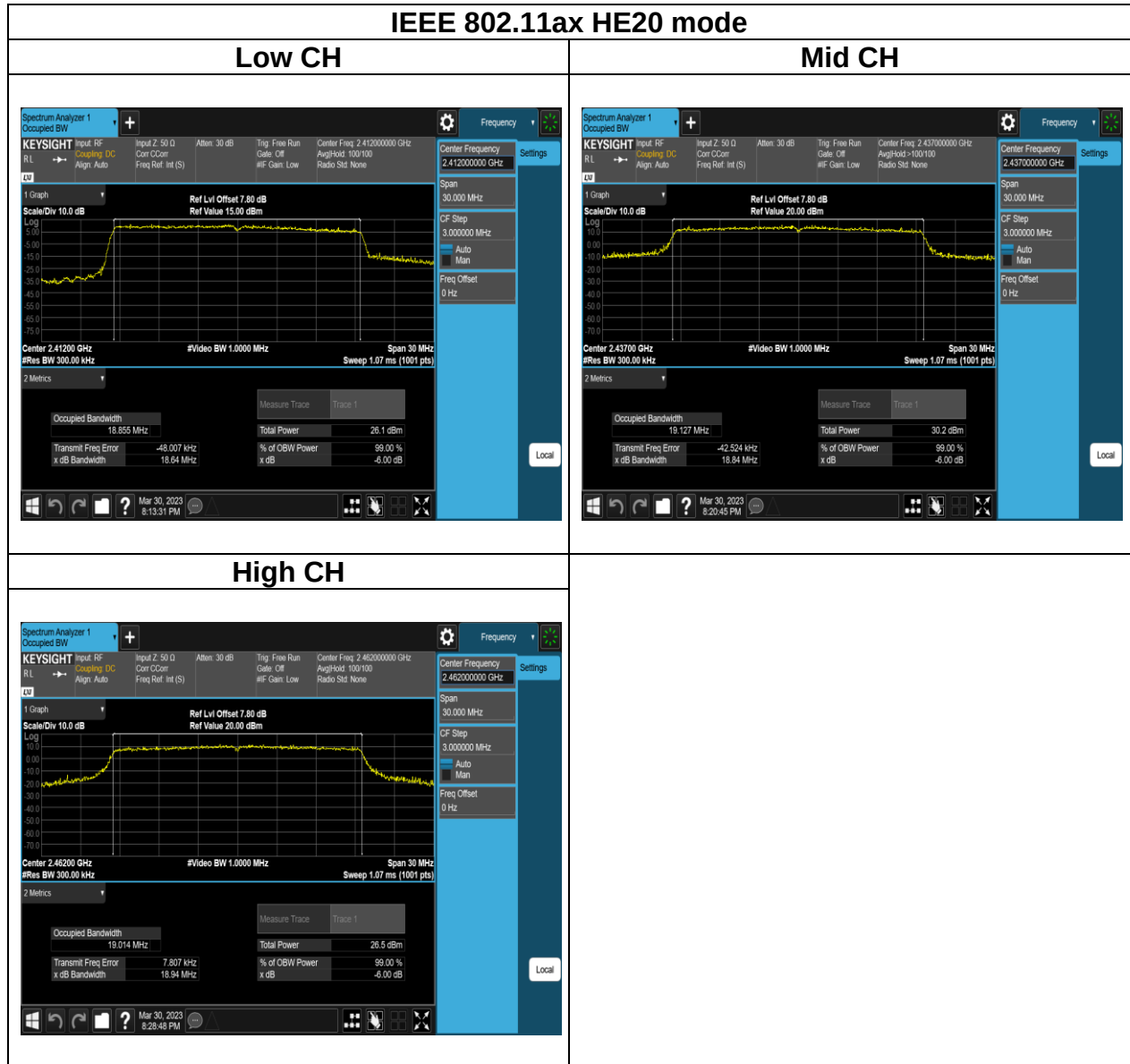
Report No.: TMWK2303000589KR



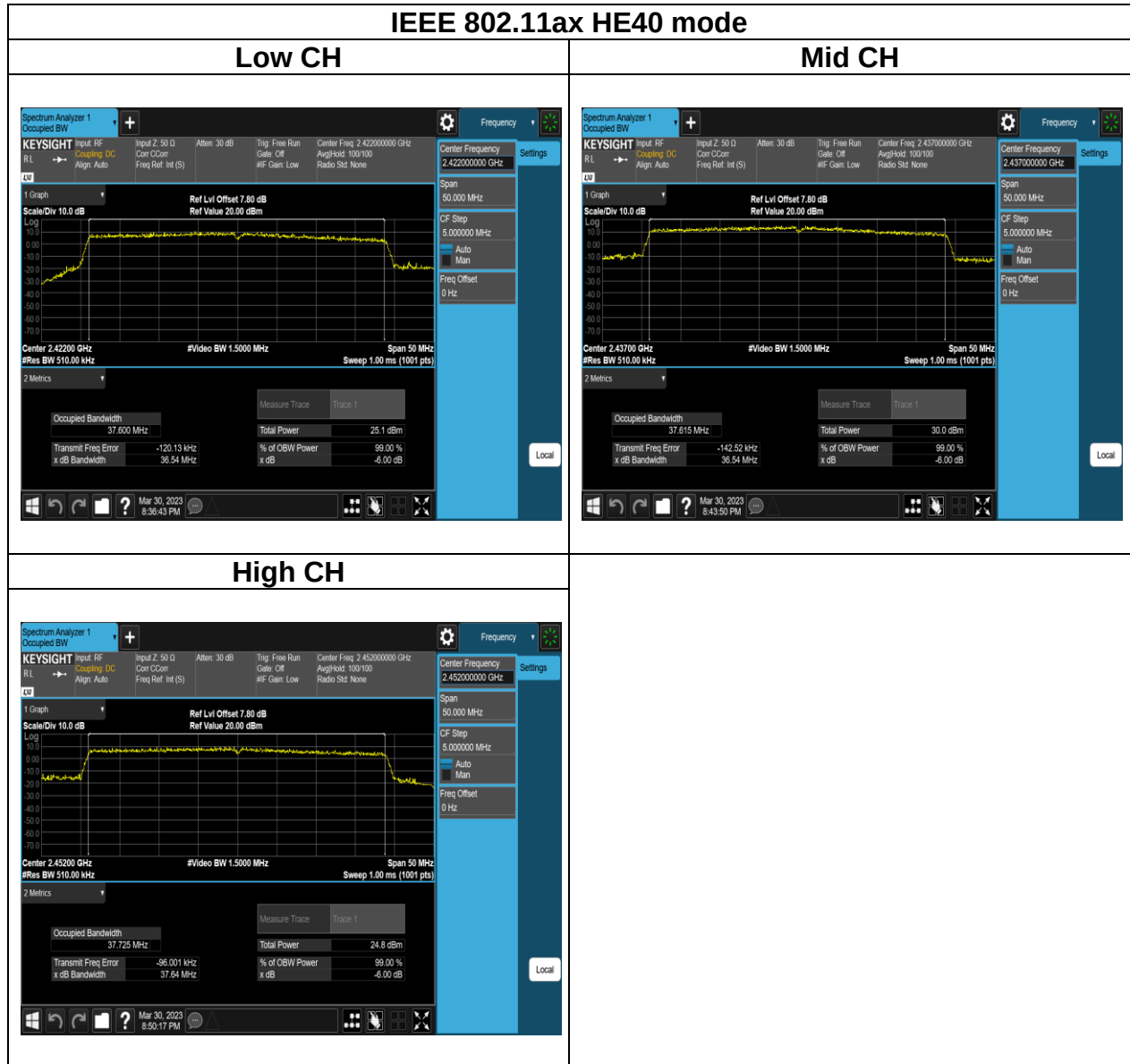
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Report No.: TMWK2303000589KR

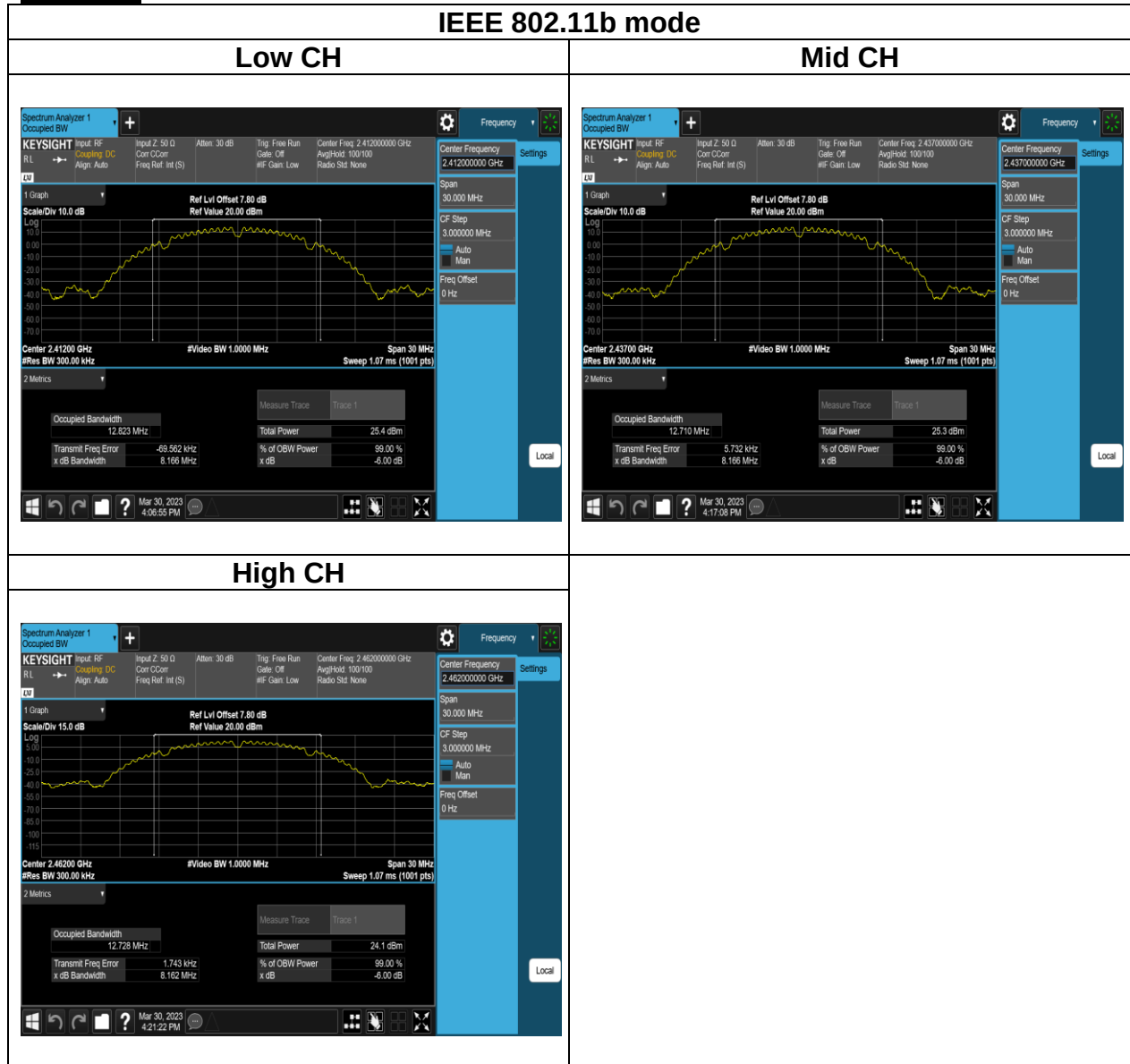


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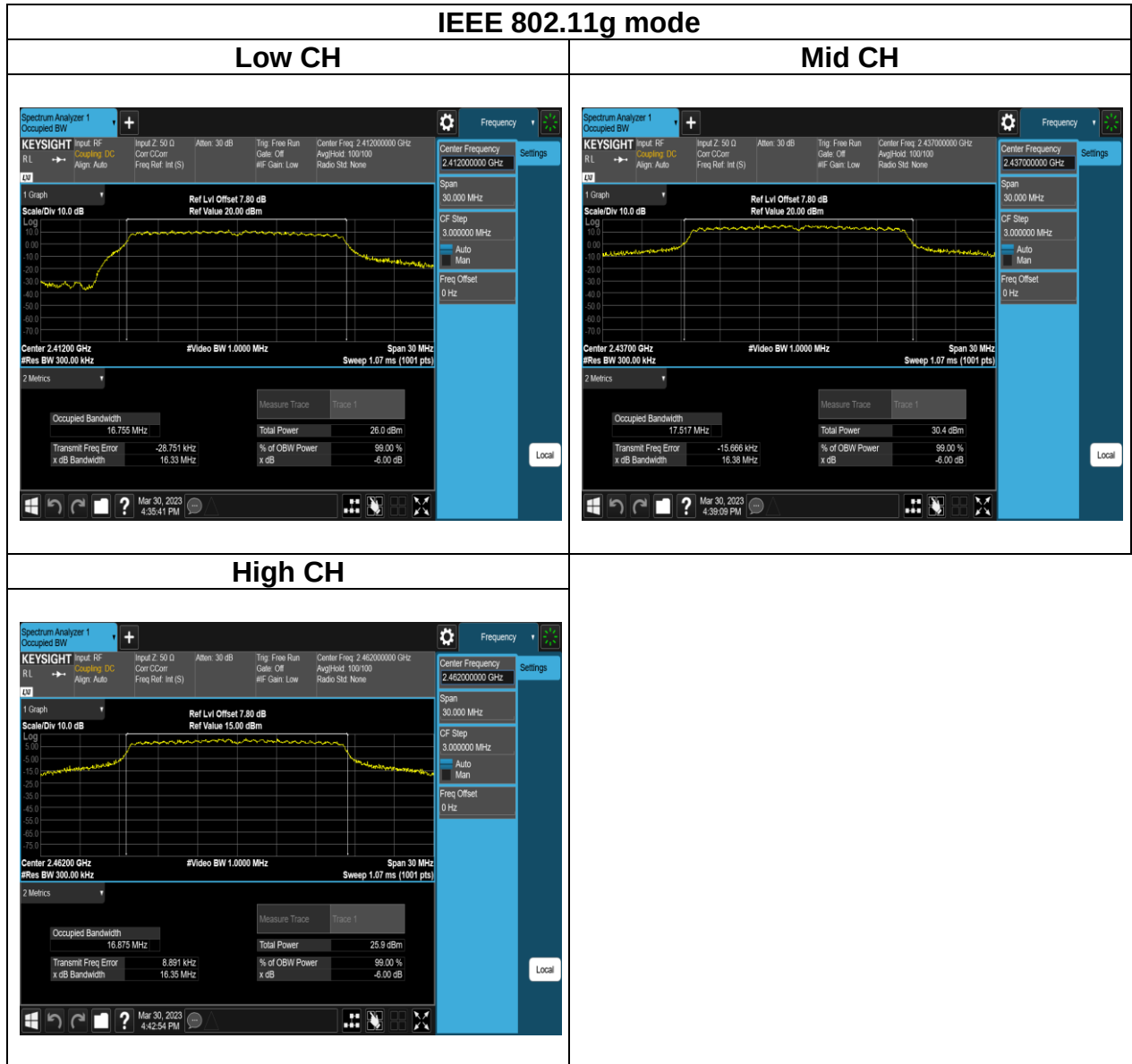
Report No.: TMWK2303000589KR

## Chain 1

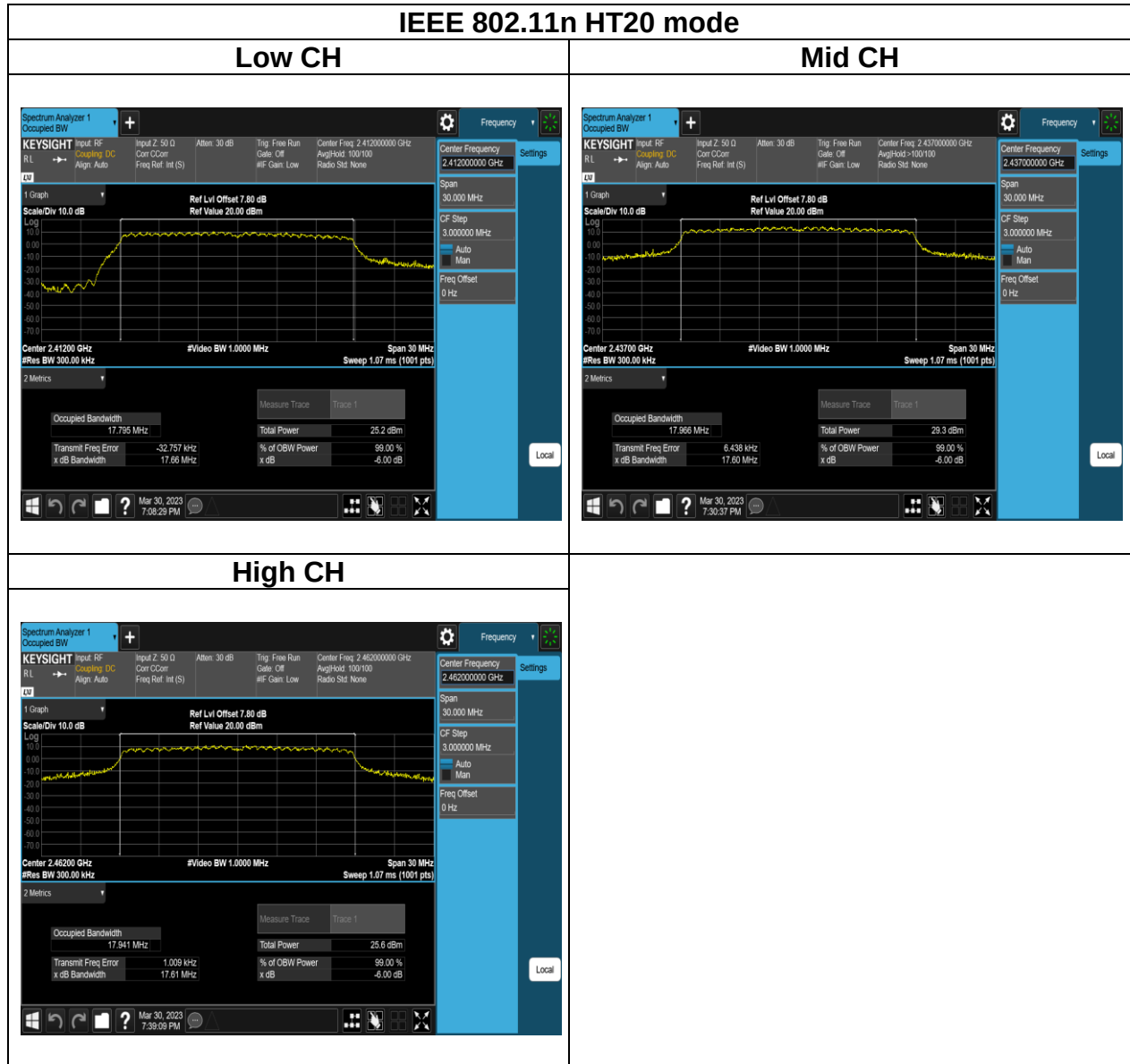




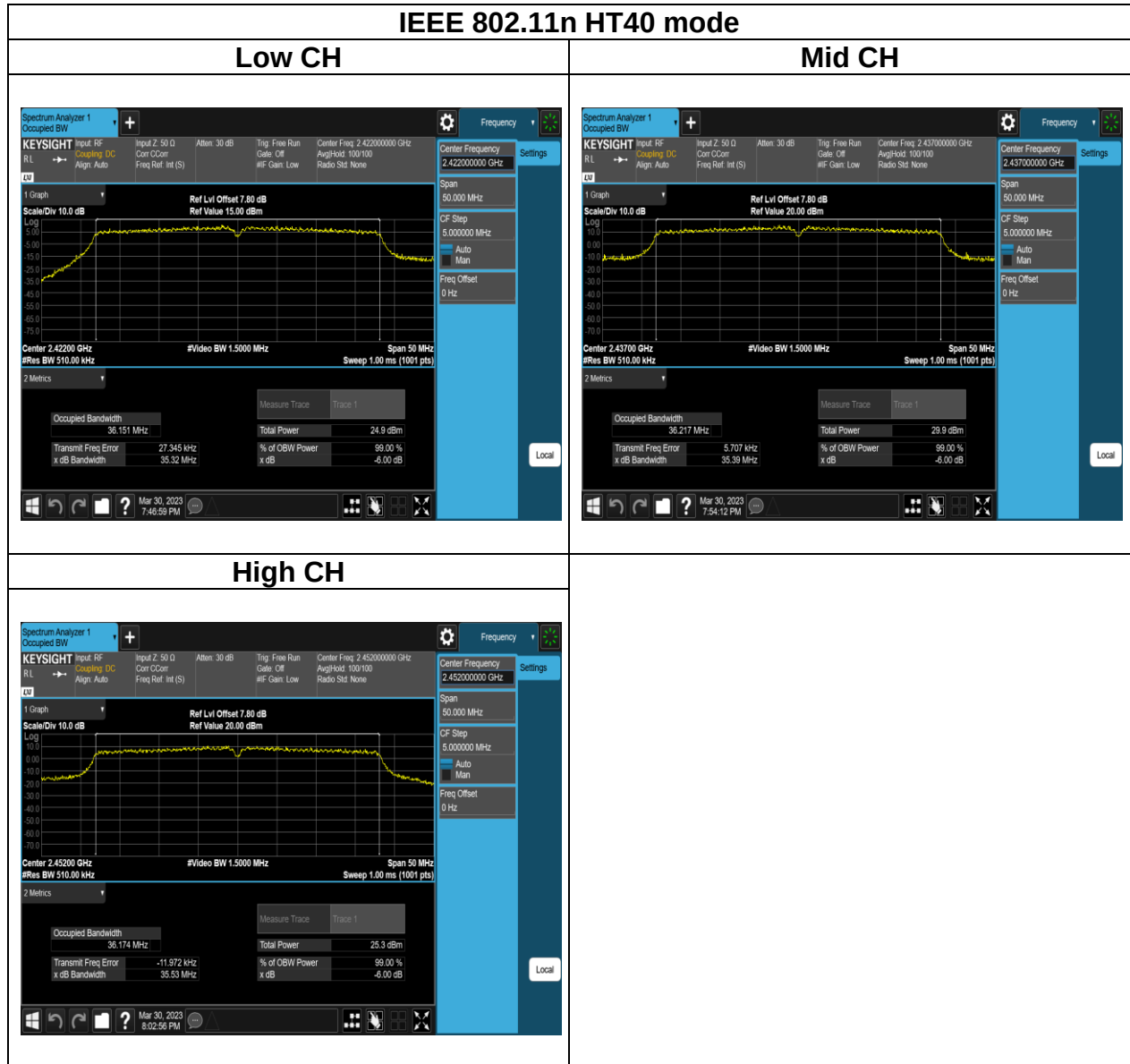
Report No.: TMWK2303000589KR



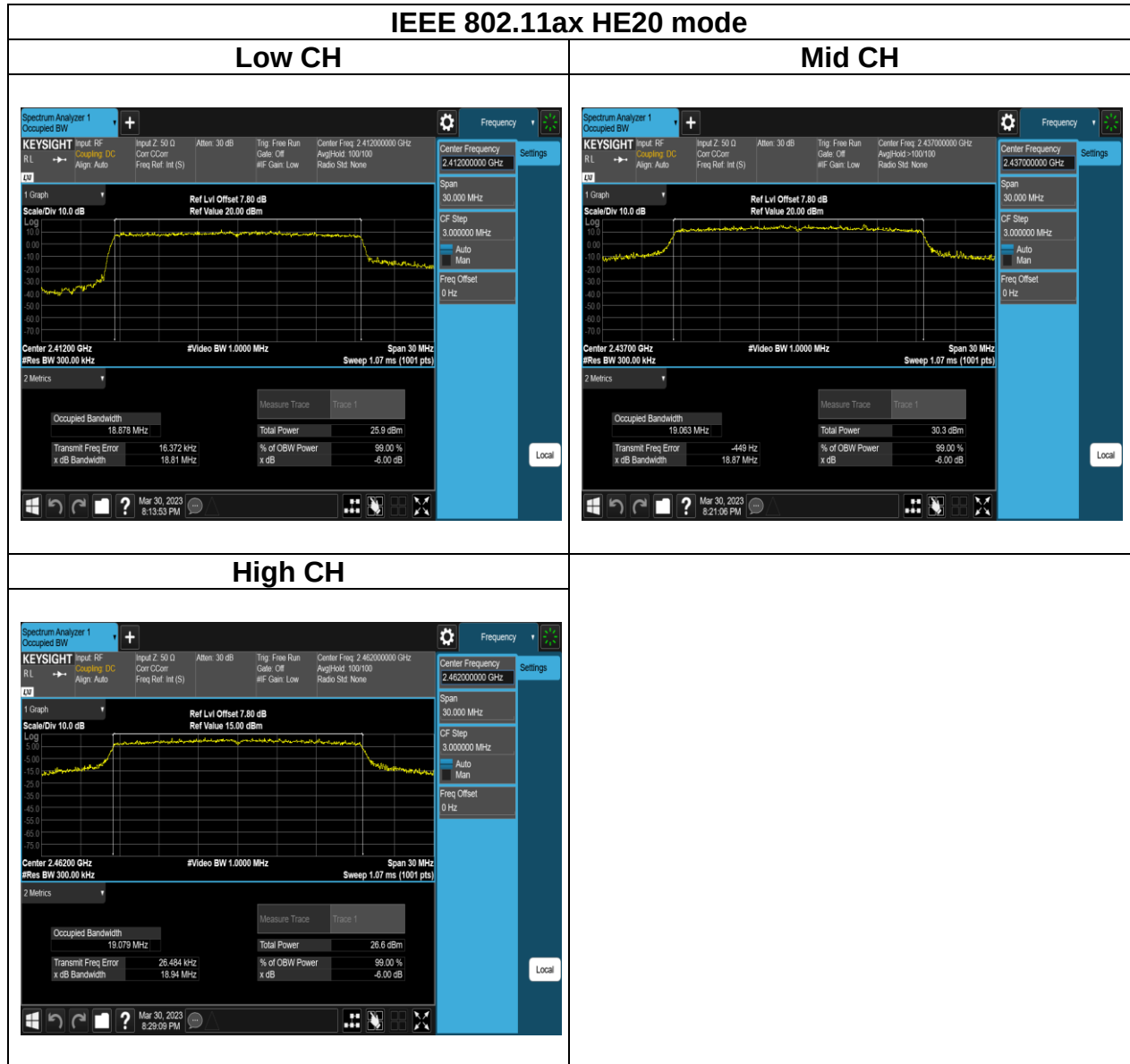
Report No.: TMWK2303000589KR



Report No.: TMWK2303000589KR



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Report No.: TMWK2303000589KR

