

MEASUREMENT REPORT
FCC PART 15.407 / ISED RSS-247 UNII 802.11a/n/ac/ax(SU)

Applicant Name:

Apple Inc.
One Apple Park Way
Cupertino, CA 95014
United States

Date of Testing:

2/10/2023 - 5/4/2023

Test Report Issue Date:

11/30/2023

Test Site/Location:

Element Materials Technology Morgan Hill, CA, USA

Test Report Serial No.:

1C2302130007-07.BCG

| | |
|-------------------|-------------------|
| FCC ID: | BCGA2117 |
| IC: | 579C-A2117 |
| APPLICANT: | Apple Inc. |

Application Type:

Certification

Model/HVIN:

A2117

EUT Type:

Head Mounted Device

Frequency Range:

5180 – 5825MHz

Modulation Type:

OFDM

FCC Classification:

Unlicensed National Information Infrastructure (UNII)

FCC Rule Part(s):

Part 15 Subpart E (15.407)

ISED Specification:

RSS-247 Issue 3

Test Procedure(s):

ANSI C63.10-2013, KDB 789033 D02 v02r01

KDB 662911 D01 v02r01

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.10-2013 and KDB 789033 D02 v02r01. Test results reported herein relate only to the item(s) tested.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.



RJ Ortanez


Executive Vice President

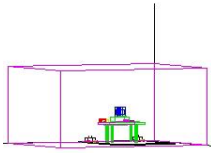


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|--|---|---|--|
| FCC ID: BCGA2117 IC: 579C-A2117 |  | MEASUREMENT REPORT (CERTIFICATION) | Approved by: Technical Manager |
| Test Report S/N: 1C2302130007-07.BCG | Test Dates: 2/10/2023 - 5/4/2023 | EUT Type: Head Mounted Device | Page 1 of 322 |

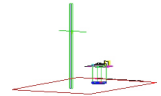
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| FCC ID: BCGA2117 IC: 579C-A2117 |  MEASUREMENT REPORT (CERTIFICATION) | Approved by: Technical Manager |
| Test Report S/N: 1C2302130007-07.BCG | Test Dates: 2/10/2023 - 5/4/2023 | EUT Type: Head Mounted Device |



MEASUREMENT REPORT



| UNII Band | Channel Bandwidth (MHz) | Mode | Tx Frequency (MHz) | SISO | | | | CDD/SDM | | | | | |
|-----------|-------------------------|---------------|--------------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|
| | | | | Ant1 | | Ant2 | | Ant1 | | Ant2 | | Summed | |
| | | | | Max. Power (mW) | Max. Power (dBm) | Max. Power (mW) | Max. Power (dBm) | Max. Power (mW) | Max. Power (dBm) | Max. Power (mW) | Max. Power (dBm) | Max. Power (mW) | Max. Power (dBm) |
| 1 | 20 | 802.11a/n | 5180 - 5240 | 89.125 | 19.50 | 88.105 | 19.45 | 44.259 | 16.46 | 44.668 | 16.50 | 88.105 | 19.45 |
| 2A | | 802.11a/n | 5260 - 5320 | 88.920 | 19.49 | 88.920 | 19.49 | 43.954 | 16.43 | 44.566 | 16.49 | 87.700 | 19.43 |
| 2C | | 802.11a/n | 5500 - 5720 | 89.125 | 19.50 | 89.125 | 19.50 | 44.259 | 16.46 | 44.668 | 16.50 | 88.920 | 19.49 |
| 3 | | 802.11a/n | 5745 - 5825 | 98.401 | 19.93 | 99.770 | 19.99 | 100.000 | 20.00 | 100.000 | 20.00 | 199.526 | 23.00 |
| 1 | 40 | 802.11n | 5190 - 5230 | 94.624 | 19.76 | 93.325 | 19.70 | 76.033 | 18.81 | 79.250 | 18.99 | 155.239 | 21.91 |
| 2A | | 802.11n | 5270 - 5310 | 100.000 | 20.00 | 95.060 | 19.78 | 78.343 | 18.94 | 78.705 | 18.96 | 157.036 | 21.96 |
| 2C | | 802.11n | 5510 - 5710 | 100.000 | 20.00 | 99.083 | 19.96 | 77.983 | 18.92 | 79.433 | 19.00 | 157.398 | 21.97 |
| 3 | | 802.11n | 5755 - 5795 | 97.051 | 19.87 | 97.724 | 19.90 | 94.406 | 19.75 | 99.770 | 19.99 | 194.089 | 22.88 |
| 1 | 80 | 802.11ac | 5210 | 23.714 | 13.75 | 23.174 | 13.65 | 16.181 | 12.09 | 16.482 | 12.17 | 32.659 | 15.14 |
| 2A | | 802.11ac | 5290 | 24.660 | 13.92 | 23.605 | 13.73 | 21.038 | 13.23 | 21.086 | 13.24 | 42.170 | 16.25 |
| 2C | | 802.11ac | 5530 - 5690 | 100.000 | 20.00 | 99.770 | 19.99 | 99.312 | 19.97 | 98.855 | 19.95 | 198.153 | 22.97 |
| 3 | | 802.11ac | 5775 | 67.298 | 18.28 | 70.146 | 18.46 | 73.790 | 18.68 | 74.989 | 18.75 | 148.936 | 21.73 |
| 1 | 20 | 802.11ax (SU) | 5180 - 5240 | 88.716 | 19.48 | 86.696 | 19.38 | 44.668 | 16.50 | 44.668 | 16.50 | 89.331 | 19.51 |
| 2A | | 802.11ax (SU) | 5260 - 5320 | 84.918 | 19.29 | 87.096 | 19.40 | 44.055 | 16.44 | 44.055 | 16.44 | 88.105 | 19.45 |
| 2C | | 802.11ax (SU) | 5500 - 5720 | 88.512 | 19.47 | 89.125 | 19.50 | 44.668 | 16.50 | 44.668 | 16.50 | 88.920 | 19.49 |
| 3 | | 802.11ax (SU) | 5745 - 5825 | 97.499 | 19.89 | 100.000 | 20.00 | 100.000 | 20.00 | 98.401 | 19.93 | 198.609 | 22.98 |
| 1 | 40 | 802.11ax (SU) | 5190 - 5230 | 97.724 | 19.90 | 93.756 | 19.72 | 75.683 | 18.79 | 79.433 | 19.00 | 155.239 | 21.91 |
| 2A | | 802.11ax (SU) | 5270 - 5310 | 98.175 | 19.92 | 99.770 | 19.99 | 77.804 | 18.91 | 76.913 | 18.86 | 154.882 | 21.90 |
| 2C | | 802.11ax (SU) | 5510 - 5710 | 97.949 | 19.91 | 99.770 | 19.99 | 78.343 | 18.94 | 77.804 | 18.91 | 156.315 | 21.94 |
| 3 | | 802.11ax (SU) | 5755 - 5795 | 99.541 | 19.98 | 99.541 | 19.98 | 97.949 | 19.91 | 99.541 | 19.98 | 197.697 | 22.96 |
| 1 | 80 | 802.11ax (SU) | 5210 | 16.596 | 12.20 | 17.539 | 12.44 | 13.900 | 11.43 | 13.490 | 11.30 | 27.416 | 14.38 |
| 2A | | 802.11ax (SU) | 5290 | 21.380 | 13.30 | 21.232 | 13.27 | 19.724 | 12.95 | 19.815 | 12.97 | 39.537 | 15.97 |
| 2C | | 802.11ax (SU) | 5530 - 5690 | 99.083 | 19.96 | 98.401 | 19.93 | 93.756 | 19.72 | 93.756 | 19.72 | 187.499 | 22.73 |
| 3 | | 802.11ax (SU) | 5775 | 64.269 | 18.08 | 65.615 | 18.17 | 58.614 | 17.68 | 59.156 | 17.72 | 117.761 | 20.71 |

FCC EUT Overview (Low Data Rate)

| UNII Band | Channel Bandwidth (MHz) | Mode | Tx Frequency (MHz) | SISO | | | | CDD/SDM | | | | | |
|-----------|-------------------------|---------------|--------------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|
| | | | | Ant1 | | Ant2 | | Ant1 | | Ant2 | | Summed | |
| | | | | Max. Power (mW) | Max. Power (dBm) | Max. Power (mW) | Max. Power (dBm) | Max. Power (mW) | Max. Power (dBm) | Max. Power (mW) | Max. Power (dBm) | Max. Power (mW) | Max. Power (dBm) |
| 1 | 20 | 802.11a/n | 5180 - 5240 | 30.903 | 14.90 | 31.261 | 14.95 | 17.701 | 12.48 | 17.418 | 12.41 | 34.914 | 15.43 |
| 2A | | 802.11a/n | 5260 - 5320 | 88.920 | 19.49 | 88.920 | 19.49 | 43.954 | 16.43 | 44.566 | 16.49 | 87.700 | 19.43 |
| 2C | | 802.11a/n | 5500 - 5720 | 89.125 | 19.50 | 89.125 | 19.50 | 44.259 | 16.46 | 44.668 | 16.50 | 88.920 | 19.49 |
| 3 | | 802.11a/n | 5745 - 5825 | 98.401 | 19.93 | 99.770 | 19.99 | 100.000 | 20.00 | 100.000 | 20.00 | 199.526 | 23.00 |
| 1 | 40 | 802.11n | 5190 - 5230 | 56.105 | 17.49 | 54.200 | 17.34 | 31.117 | 14.93 | 31.477 | 14.98 | 62.373 | 17.95 |
| 2A | | 802.11n | 5270 - 5310 | 100.000 | 20.00 | 95.060 | 19.78 | 78.343 | 18.94 | 78.705 | 18.96 | 157.036 | 21.96 |
| 2C | | 802.11n | 5510 - 5710 | 100.000 | 20.00 | 98.175 | 19.92 | 77.983 | 18.92 | 79.433 | 19.00 | 157.398 | 21.97 |
| 3 | | 802.11n | 5755 - 5795 | 97.051 | 19.87 | 97.724 | 19.90 | 94.406 | 19.75 | 99.770 | 19.99 | 194.089 | 22.88 |
| 1 | 80 | 802.11ac | 5210 | 23.714 | 13.75 | 23.174 | 13.65 | 16.181 | 12.09 | 16.482 | 12.17 | 32.659 | 15.14 |
| 2A | | 802.11ac | 5290 | 24.660 | 13.92 | 23.605 | 13.73 | 21.038 | 13.23 | 21.086 | 13.24 | 42.170 | 16.25 |
| 2C | | 802.11ac | 5530 - 5690 | 100.000 | 20.00 | 99.770 | 19.99 | 99.312 | 19.97 | 98.855 | 19.95 | 198.153 | 22.97 |
| 3 | | 802.11ac | 5775 | 67.298 | 18.28 | 70.146 | 18.46 | 73.790 | 18.68 | 74.989 | 18.75 | 148.936 | 21.73 |
| 1 | 20 | 802.11ax (SU) | 5180 - 5240 | 30.409 | 14.83 | 31.046 | 14.92 | 17.100 | 12.33 | 17.338 | 12.39 | 34.435 | 15.37 |
| 2A | | 802.11ax (SU) | 5260 - 5320 | 84.918 | 19.29 | 87.096 | 19.40 | 44.055 | 16.44 | 44.055 | 16.44 | 88.105 | 19.45 |
| 2C | | 802.11ax (SU) | 5500 - 5720 | 88.512 | 19.47 | 89.125 | 19.50 | 44.668 | 16.50 | 44.668 | 16.50 | 88.920 | 19.49 |
| 3 | | 802.11ax (SU) | 5745 - 5825 | 97.499 | 19.89 | 100.000 | 20.00 | 100.000 | 20.00 | 98.401 | 19.93 | 198.609 | 22.98 |
| 1 | 40 | 802.11ax (SU) | 5190 - 5230 | 53.951 | 17.32 | 55.081 | 17.41 | 31.333 | 14.96 | 30.130 | 14.79 | 61.518 | 17.89 |
| 2A | | 802.11ax (SU) | 5270 - 5310 | 98.175 | 19.92 | 99.770 | 19.99 | 77.804 | 18.91 | 76.913 | 18.86 | 154.882 | 21.90 |
| 2C | | 802.11ax (SU) | 5510 - 5710 | 97.949 | 19.91 | 99.770 | 19.99 | 77.625 | 18.90 | 77.446 | 18.89 | 155.239 | 21.91 |
| 3 | | 802.11ax (SU) | 5755 - 5795 | 99.541 | 19.98 | 99.541 | 19.98 | 97.949 | 19.91 | 99.541 | 19.98 | 197.697 | 22.96 |
| 1 | 80 | 802.11ax (SU) | 5210 | 16.596 | 12.20 | 17.539 | 12.44 | 13.900 | 11.43 | 13.490 | 11.30 | 27.416 | 14.38 |
| 2A | | 802.11ax (SU) | 5290 | 21.380 | 13.30 | 21.232 | 13.27 | 19.724 | 12.95 | 19.815 | 12.97 | 39.537 | 15.97 |
| 2C | | 802.11ax (SU) | 5530 - 5690 | 99.083 | 19.96 | 98.401 | 19.93 | 93.756 | 19.72 | 93.756 | 19.72 | 187.499 | 22.73 |
| 3 | | 802.11ax (SU) | 5775 | 64.269 | 18.08 | 65.615 | 18.17 | 58.614 | 17.68 | 59.156 | 17.72 | 117.761 | 20.71 |

ISED EUT Overview (Low Data Rate)


| | | | |
|---|-------------------------------------|---|--|
| FCC ID: BCGA2117 IC: 579C-A2117 | | MEASUREMENT REPORT (CERTIFICATION) | Approved by: Technical Manager |
| Test Report S/N: 1C2302130007-07.BCG | Test Dates: 2/10/2023 - 5/4/2023 | EUT Type: Head Mounted Device | Page 3 of 322 |

| UNII Band | Channel Bandwidth (MHz) | Mode | Tx Frequency (MHz) | SISO | | | | CDD/SDM | | | | | |
|-----------|-------------------------|---------------|--------------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|
| | | | | Ant1 | | Ant2 | | Ant1 | | Ant2 | | Summed | |
| | | | | Max. Power (mW) | Max. Power (dBm) | Max. Power (mW) | Max. Power (dBm) | Max. Power (mW) | Max. Power (dBm) | Max. Power (mW) | Max. Power (dBm) | Max. Power (mW) | Max. Power (dBm) |
| 1 | 20 | 802.11a/n | 5180 - 5240 | 89.125 | 19.50 | 87.902 | 19.44 | 44.668 | 16.50 | 44.259 | 16.46 | 88.920 | 19.49 |
| 2A | | 802.11a/n | 5260 - 5320 | 88.105 | 19.45 | 88.716 | 19.48 | 44.668 | 16.50 | 44.566 | 16.49 | 89.331 | 19.51 |
| 2C | | 802.11a/n | 5500 - 5720 | 89.125 | 19.50 | 89.125 | 19.50 | 44.668 | 16.50 | 44.259 | 16.46 | 88.512 | 19.47 |
| 3 | | 802.11a/n | 5745 - 5825 | 99.312 | 19.97 | 99.770 | 19.99 | 99.083 | 19.96 | 98.401 | 19.93 | 196.789 | 22.94 |
| 1 | 40 | 802.11n | 5190 - 5230 | 98.628 | 19.94 | 93.325 | 19.70 | 77.446 | 18.89 | 78.886 | 18.97 | 156.315 | 21.94 |
| 2A | | 802.11n | 5270 - 5310 | 98.175 | 19.92 | 97.275 | 19.88 | 74.131 | 18.70 | 79.433 | 19.00 | 153.462 | 21.86 |
| 2C | | 802.11n | 5510 - 5710 | 98.628 | 19.94 | 100.000 | 20.00 | 76.208 | 18.82 | 79.250 | 18.99 | 155.597 | 21.92 |
| 3 | | 802.11n | 5755 - 5795 | 99.312 | 19.97 | 94.842 | 19.77 | 93.972 | 19.73 | 94.842 | 19.77 | 188.799 | 22.76 |
| 1 | 80 | 802.11ac | 5210 | 20.464 | 13.11 | 20.137 | 13.04 | 13.900 | 11.43 | 13.274 | 11.23 | 27.164 | 14.34 |
| 2A | | 802.11ac | 5290 | 21.878 | 13.40 | 21.878 | 13.40 | 19.953 | 13.00 | 19.907 | 12.99 | 39.902 | 16.01 |
| 2C | | 802.11ac | 5530 - 5690 | 96.161 | 19.83 | 96.828 | 19.86 | 98.855 | 19.95 | 95.499 | 19.80 | 194.536 | 22.89 |
| 3 | | 802.11ac | 5775 | 69.343 | 18.41 | 69.343 | 18.41 | 59.293 | 17.73 | 56.754 | 17.54 | 116.145 | 20.65 |
| 1 | 20 | 802.11ax (SU) | 5180 - 5240 | 87.902 | 19.44 | 88.105 | 19.45 | 44.361 | 16.47 | 43.853 | 16.42 | 88.308 | 19.46 |
| 2A | | 802.11ax (SU) | 5260 - 5320 | 88.920 | 19.49 | 88.716 | 19.48 | 44.566 | 16.49 | 44.259 | 16.46 | 88.920 | 19.49 |
| 2C | | 802.11ax (SU) | 5500 - 5720 | 88.920 | 19.49 | 88.920 | 19.49 | 44.668 | 16.50 | 44.055 | 16.44 | 88.716 | 19.48 |
| 3 | | 802.11ax (SU) | 5745 - 5825 | 97.275 | 19.88 | 100.000 | 20.00 | 98.855 | 19.95 | 100.000 | 20.00 | 199.067 | 22.99 |
| 1 | 40 | 802.11ax (SU) | 5190 - 5230 | 84.140 | 19.25 | 80.353 | 19.05 | 71.614 | 18.55 | 74.473 | 18.72 | 146.218 | 21.65 |
| 2A | | 802.11ax (SU) | 5270 - 5310 | 94.406 | 19.75 | 99.541 | 19.98 | 76.560 | 18.84 | 78.886 | 18.97 | 155.597 | 21.92 |
| 2C | | 802.11ax (SU) | 5510 - 5710 | 100.000 | 20.00 | 97.051 | 19.87 | 77.804 | 18.91 | 79.433 | 19.00 | 157.398 | 21.97 |
| 3 | | 802.11ax (SU) | 5755 - 5795 | 96.161 | 19.83 | 97.949 | 19.91 | 99.541 | 19.98 | 100.000 | 20.00 | 199.526 | 23.00 |
| 1 | 80 | 802.11ax (SU) | 5210 | 13.996 | 11.46 | 13.583 | 11.33 | 11.749 | 10.70 | 12.445 | 10.95 | 24.210 | 13.84 |
| 2A | | 802.11ax (SU) | 5290 | 15.524 | 11.91 | 15.101 | 11.79 | 15.488 | 11.90 | 15.524 | 11.91 | 31.046 | 14.92 |
| 2C | | 802.11ax (SU) | 5530 - 5690 | 98.855 | 19.95 | 95.719 | 19.81 | 95.719 | 19.81 | 97.499 | 19.89 | 193.197 | 22.86 |
| 3 | | 802.11ax (SU) | 5775 | 64.714 | 18.11 | 63.533 | 18.03 | 48.529 | 16.86 | 47.643 | 16.78 | 96.161 | 19.83 |

FCC EUT Overview (Mid Data Rate)

| UNII Band | Channel Bandwidth (MHz) | Mode | Tx Frequency (MHz) | SISO | | | | CDD/SDM | | | | | |
|-----------|-------------------------|---------------|--------------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|
| | | | | Ant1 | | Ant2 | | Ant1 | | Ant2 | | Summed | |
| | | | | Max. Power (mW) | Max. Power (dBm) | Max. Power (mW) | Max. Power (dBm) | Max. Power (mW) | Max. Power (dBm) | Max. Power (mW) | Max. Power (dBm) | Max. Power (mW) | Max. Power (dBm) |
| 1 | 20 | 802.11a/n | 5180 - 5240 | 31.117 | 14.93 | 31.550 | 14.99 | 17.620 | 12.46 | 17.783 | 12.50 | 35.400 | 15.49 |
| 2A | | 802.11a/n | 5260 - 5320 | 88.105 | 19.45 | 88.716 | 19.48 | 44.668 | 16.50 | 44.566 | 16.49 | 89.331 | 19.51 |
| 2C | | 802.11a/n | 5500 - 5720 | 88.920 | 19.49 | 89.125 | 19.50 | 44.668 | 16.50 | 44.259 | 16.46 | 88.512 | 19.47 |
| 3 | | 802.11a/n | 5745 - 5825 | 99.312 | 19.97 | 99.770 | 19.99 | 99.083 | 19.96 | 98.401 | 19.93 | 196.789 | 22.94 |
| 1 | 40 | 802.11n | 5190 - 5230 | 54.954 | 17.40 | 53.827 | 17.31 | 30.832 | 14.89 | 31.623 | 15.00 | 62.517 | 17.96 |
| 2A | | 802.11n | 5270 - 5310 | 98.175 | 19.92 | 97.275 | 19.88 | 74.131 | 18.70 | 79.433 | 19.00 | 153.462 | 21.86 |
| 2C | | 802.11n | 5510 - 5710 | 96.828 | 19.86 | 100.000 | 20.00 | 76.208 | 18.82 | 79.250 | 18.99 | 155.597 | 21.92 |
| 3 | | 802.11n | 5755 - 5795 | 99.312 | 19.97 | 94.842 | 19.77 | 93.972 | 19.73 | 94.842 | 19.77 | 188.799 | 22.76 |
| 1 | 80 | 802.11ac | 5210 | 20.464 | 13.11 | 20.137 | 13.04 | 13.900 | 11.43 | 13.274 | 11.23 | 27.164 | 14.34 |
| 2A | | 802.11ac | 5290 | 21.878 | 13.40 | 21.878 | 13.40 | 19.953 | 13.00 | 19.907 | 12.99 | 39.902 | 16.01 |
| 2C | | 802.11ac | 5530 - 5690 | 96.161 | 19.83 | 96.828 | 19.86 | 98.855 | 19.95 | 95.499 | 19.80 | 194.536 | 22.89 |
| 3 | | 802.11ac | 5775 | 69.343 | 18.41 | 69.343 | 18.41 | 59.293 | 17.73 | 56.754 | 17.54 | 116.145 | 20.65 |
| 1 | 20 | 802.11ax (SU) | 5180 - 5240 | 31.623 | 15.00 | 31.550 | 14.99 | 17.701 | 12.48 | 17.620 | 12.46 | 35.075 | 15.45 |
| 2A | | 802.11ax (SU) | 5260 - 5320 | 88.920 | 19.49 | 88.716 | 19.48 | 44.566 | 16.49 | 44.259 | 16.46 | 88.920 | 19.49 |
| 2C | | 802.11ax (SU) | 5500 - 5720 | 88.920 | 19.49 | 88.920 | 19.49 | 44.668 | 16.50 | 44.055 | 16.44 | 88.716 | 19.48 |
| 3 | | 802.11ax (SU) | 5745 - 5825 | 97.275 | 19.88 | 100.000 | 20.00 | 98.855 | 19.95 | 100.000 | 20.00 | 199.067 | 22.99 |
| 1 | 40 | 802.11ax (SU) | 5190 - 5230 | 53.088 | 17.25 | 52.845 | 17.23 | 30.269 | 14.81 | 30.549 | 14.85 | 60.814 | 17.84 |
| 2A | | 802.11ax (SU) | 5270 - 5310 | 94.406 | 19.75 | 99.541 | 19.98 | 76.560 | 18.84 | 78.886 | 18.97 | 155.597 | 21.92 |
| 2C | | 802.11ax (SU) | 5510 - 5710 | 99.770 | 19.99 | 97.051 | 19.87 | 77.804 | 18.91 | 79.433 | 19.00 | 157.398 | 21.97 |
| 3 | | 802.11ax (SU) | 5755 - 5795 | 96.161 | 19.83 | 97.949 | 19.91 | 99.541 | 19.98 | 100.000 | 20.00 | 199.526 | 23.00 |
| 1 | 80 | 802.11ax (SU) | 5210 | 13.996 | 11.46 | 13.583 | 11.33 | 11.749 | 10.70 | 12.445 | 10.95 | 24.210 | 13.84 |
| 2A | | 802.11ax (SU) | 5290 | 15.524 | 11.91 | 15.101 | 11.79 | 15.488 | 11.90 | 15.524 | 11.91 | 31.046 | 14.92 |
| 2C | | 802.11ax (SU) | 5530 - 5690 | 98.855 | 19.95 | 95.719 | 19.81 | 95.719 | 19.81 | 97.499 | 19.89 | 193.197 | 22.86 |
| 3 | | 802.11ax (SU) | 5775 | 64.714 | 18.11 | 63.533 | 18.03 | 48.529 | 16.86 | 47.643 | 16.78 | 96.161 | 19.83 |

ISED EUT Overview (Mid Data Rate)


| | | | |
|--|---|---|--|
| FCC ID: BCGA2117 IC: 579C-A2117 |  | MEASUREMENT REPORT (CERTIFICATION) | Approved by: Technical Manager |
| Test Report S/N: 1C2302130007-07.BCG | Test Dates: 2/10/2023 - 5/4/2023 | EUT Type: Head Mounted Device | Page 4 of 322 |

| UNII Band | Channel Bandwidth (MHz) | Mode | Tx Frequency (MHz) | SISO | | | | CDD/SDM | | | | | |
|-----------|-------------------------|---------------|--------------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|
| | | | | Ant1 | | Ant2 | | Ant1 | | Ant2 | | Summed | |
| | | | | Max. Power (mW) | Max. Power (dBm) | Max. Power (mW) | Max. Power (dBm) | Max. Power (mW) | Max. Power (dBm) | Max. Power (mW) | Max. Power (dBm) | Max. Power (mW) | Max. Power (dBm) |
| 1 | 20 | 802.11a/n | 5180 - 5240 | 86.696 | 19.38 | 87.902 | 19.44 | 44.157 | 16.45 | 44.361 | 16.47 | 87.498 | 19.42 |
| 2A | | 802.11a/n | 5260 - 5320 | 89.125 | 19.50 | 88.308 | 19.46 | 44.668 | 16.50 | 43.652 | 16.40 | 88.308 | 19.46 |
| 2C | | 802.11a/n | 5500 - 5720 | 87.902 | 19.44 | 88.920 | 19.49 | 44.668 | 16.50 | 44.566 | 16.49 | 88.716 | 19.48 |
| 3 | | 802.11a/n | 5745 - 5825 | 99.312 | 19.97 | 100.000 | 20.00 | 98.855 | 19.95 | 100.000 | 20.00 | 198.609 | 22.98 |
| 1 | 40 | 802.11n | 5190 - 5230 | 99.541 | 19.98 | 98.628 | 19.94 | 77.804 | 18.91 | 78.705 | 18.96 | 156.675 | 21.95 |
| 2A | | 802.11n | 5270 - 5310 | 95.940 | 19.82 | 95.060 | 19.78 | 77.446 | 18.89 | 79.250 | 18.99 | 156.675 | 21.95 |
| 2C | | 802.11n | 5510 - 5710 | 97.949 | 19.91 | 99.541 | 19.98 | 79.068 | 18.98 | 77.804 | 18.91 | 157.036 | 21.96 |
| 3 | | 802.11n | 5755 - 5795 | 98.628 | 19.94 | 98.401 | 19.93 | 94.406 | 19.75 | 97.949 | 19.91 | 192.309 | 22.84 |
| 1 | 80 | 802.11ac | 5210 | 17.660 | 12.47 | 17.061 | 12.32 | 11.776 | 10.71 | 11.940 | 10.77 | 23.714 | 13.75 |
| 2A | | 802.11ac | 5290 | 19.907 | 12.99 | 19.409 | 12.88 | 17.258 | 12.37 | 17.418 | 12.41 | 34.674 | 15.40 |
| 2C | | 802.11ac | 5530 - 5690 | 97.724 | 19.90 | 97.949 | 19.91 | 99.083 | 19.96 | 98.628 | 19.94 | 197.697 | 22.96 |
| 3 | | 802.11ac | 5775 | 65.464 | 18.16 | 64.269 | 18.08 | 55.590 | 17.45 | 52.845 | 17.23 | 108.393 | 20.35 |
| 1 | 20 | 802.11ax (SU) | 5180 - 5240 | 87.700 | 19.43 | 87.297 | 19.41 | 44.361 | 16.47 | 44.259 | 16.46 | 87.902 | 19.44 |
| 2A | | 802.11ax (SU) | 5260 - 5320 | 86.896 | 19.39 | 88.308 | 19.46 | 43.451 | 16.38 | 43.954 | 16.43 | 87.498 | 19.42 |
| 2C | | 802.11ax (SU) | 5500 - 5720 | 86.696 | 19.38 | 88.716 | 19.48 | 44.668 | 16.50 | 44.259 | 16.46 | 88.512 | 19.47 |
| 3 | | 802.11ax (SU) | 5745 - 5825 | 97.949 | 19.91 | 95.499 | 19.80 | 97.051 | 19.87 | 97.949 | 19.91 | 193.642 | 22.87 |
| 1 | 40 | 802.11ax (SU) | 5190 - 5230 | 84.140 | 19.25 | 83.946 | 19.24 | 68.077 | 18.33 | 66.374 | 18.22 | 134.586 | 21.29 |
| 2A | | 802.11ax (SU) | 5270 - 5310 | 100.000 | 20.00 | 97.051 | 19.87 | 79.068 | 18.98 | 77.804 | 18.91 | 157.036 | 21.96 |
| 2C | | 802.11ax (SU) | 5510 - 5710 | 95.719 | 19.81 | 99.312 | 19.97 | 78.705 | 18.96 | 77.268 | 18.88 | 155.955 | 21.93 |
| 3 | | 802.11ax (SU) | 5755 - 5795 | 100.000 | 20.00 | 100.000 | 20.00 | 100.000 | 20.00 | 99.541 | 19.98 | 199.067 | 22.99 |
| 1 | 80 | 802.11ax (SU) | 5210 | 13.614 | 11.34 | 13.397 | 11.27 | 11.535 | 10.62 | 11.614 | 10.65 | 23.174 | 13.65 |
| 2A | | 802.11ax (SU) | 5290 | 12.190 | 10.86 | 11.885 | 10.75 | 12.417 | 10.94 | 12.417 | 10.94 | 24.831 | 13.95 |
| 2C | | 802.11ax (SU) | 5530 - 5690 | 93.756 | 19.72 | 99.770 | 19.99 | 100.000 | 20.00 | 93.972 | 19.73 | 194.089 | 22.88 |
| 3 | | 802.11ax (SU) | 5775 | 60.395 | 17.81 | 59.979 | 17.78 | 48.978 | 16.90 | 49.774 | 16.97 | 98.855 | 19.95 |

FCC EUT Overview (High Data Rate)

| UNII Band | Channel Bandwidth (MHz) | Mode | Tx Frequency (MHz) | SISO | | | | CDD/SDM | | | | | |
|-----------|-------------------------|---------------|--------------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|
| | | | | Ant1 | | Ant2 | | Ant1 | | Ant2 | | Summed | |
| | | | | Max. Power (mW) | Max. Power (dBm) | Max. Power (mW) | Max. Power (dBm) | Max. Power (mW) | Max. Power (dBm) | Max. Power (mW) | Max. Power (dBm) | Max. Power (mW) | Max. Power (dBm) |
| 1 | 20 | 802.11a/n | 5180 - 5240 | 31.405 | 14.97 | 31.550 | 14.99 | 17.783 | 12.50 | 17.783 | 12.50 | 35.563 | 15.51 |
| 2A | | 802.11a/n | 5260 - 5320 | 89.125 | 19.50 | 88.308 | 19.46 | 44.668 | 16.50 | 43.652 | 16.40 | 88.308 | 19.46 |
| 2C | | 802.11a/n | 5500 - 5720 | 87.902 | 19.44 | 88.920 | 19.49 | 44.668 | 16.50 | 44.566 | 16.49 | 88.716 | 19.48 |
| 3 | | 802.11a/n | 5745 - 5825 | 99.312 | 19.97 | 100.000 | 20.00 | 98.855 | 19.95 | 100.000 | 20.00 | 198.609 | 22.98 |
| 1 | 40 | 802.11n | 5190 - 5230 | 54.954 | 17.40 | 56.234 | 17.50 | 30.269 | 14.81 | 31.623 | 15.00 | 61.944 | 17.92 |
| 2A | | 802.11n | 5270 - 5310 | 95.940 | 19.82 | 95.060 | 19.78 | 77.446 | 18.89 | 79.250 | 18.99 | 156.675 | 21.95 |
| 2C | | 802.11n | 5510 - 5710 | 96.828 | 19.86 | 99.541 | 19.98 | 79.068 | 18.98 | 77.804 | 18.91 | 157.036 | 21.96 |
| 3 | | 802.11n | 5755 - 5795 | 98.628 | 19.94 | 98.401 | 19.93 | 94.406 | 19.75 | 97.949 | 19.91 | 192.309 | 22.84 |
| 1 | 80 | 802.11ac | 5210 | 17.742 | 12.49 | 17.579 | 12.45 | 11.776 | 10.71 | 11.940 | 10.77 | 23.714 | 13.75 |
| 2A | | 802.11ac | 5290 | 19.907 | 12.99 | 19.409 | 12.88 | 17.258 | 12.37 | 17.418 | 12.41 | 34.674 | 15.40 |
| 2C | | 802.11ac | 5530 - 5690 | 97.724 | 19.90 | 97.949 | 19.91 | 99.083 | 19.96 | 98.628 | 19.94 | 197.697 | 22.96 |
| 3 | | 802.11ac | 5775 | 65.464 | 18.16 | 64.269 | 18.08 | 55.590 | 17.45 | 52.845 | 17.23 | 108.393 | 20.35 |
| 1 | 20 | 802.11ax (SU) | 5180 - 5240 | 31.623 | 15.00 | 30.269 | 14.81 | 17.298 | 12.38 | 17.539 | 12.44 | 34.834 | 15.42 |
| 2A | | 802.11ax (SU) | 5260 - 5320 | 86.896 | 19.39 | 88.308 | 19.46 | 43.451 | 16.38 | 43.954 | 16.43 | 87.498 | 19.42 |
| 2C | | 802.11ax (SU) | 5500 - 5720 | 86.696 | 19.38 | 88.716 | 19.48 | 44.668 | 16.50 | 44.259 | 16.46 | 88.512 | 19.47 |
| 3 | | 802.11ax (SU) | 5745 - 5825 | 97.949 | 19.91 | 95.499 | 19.80 | 97.051 | 19.87 | 97.949 | 19.91 | 193.642 | 22.87 |
| 1 | 40 | 802.11ax (SU) | 5190 - 5230 | 54.954 | 17.40 | 56.234 | 17.50 | 31.623 | 15.00 | 30.903 | 14.90 | 62.517 | 17.96 |
| 2A | | 802.11ax (SU) | 5270 - 5310 | 100.000 | 20.00 | 97.051 | 19.87 | 79.068 | 18.98 | 77.804 | 18.91 | 157.036 | 21.96 |
| 2C | | 802.11ax (SU) | 5510 - 5710 | 95.719 | 19.81 | 99.312 | 19.97 | 78.705 | 18.96 | 77.268 | 18.88 | 155.955 | 21.93 |
| 3 | | 802.11ax (SU) | 5755 - 5795 | 100.000 | 20.00 | 100.000 | 20.00 | 100.000 | 20.00 | 99.541 | 19.98 | 199.067 | 22.99 |
| 1 | 80 | 802.11ax (SU) | 5210 | 12.560 | 10.99 | 12.162 | 10.85 | 11.535 | 10.62 | 11.614 | 10.65 | 23.174 | 13.65 |
| 2A | | 802.11ax (SU) | 5290 | 12.190 | 10.86 | 11.885 | 10.75 | 12.417 | 10.94 | 12.417 | 10.94 | 24.831 | 13.95 |
| 2C | | 802.11ax (SU) | 5530 - 5690 | 93.756 | 19.72 | 99.770 | 19.99 | 100.000 | 20.00 | 93.972 | 19.73 | 194.089 | 22.88 |
| 3 | | 802.11ax (SU) | 5775 | 60.395 | 17.81 | 59.979 | 17.78 | 48.978 | 16.90 | 49.774 | 16.97 | 98.855 | 19.95 |

ISED EUT Overview (High Data Rate)

| | | | |
|--|---|---|--|
| FCC ID: BCGA2117 IC: 579C-A2117 |  | MEASUREMENT REPORT (CERTIFICATION) | Approved by: Technical Manager |
| Test Report S/N: 1C2302130007-07.BCG | Test Dates: 2/10/2023 - 5/4/2023 | EUT Type: Head Mounted Device | Page 5 of 322 |

1.0 INTRODUCTION

1.1 Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Innovation, Science and Economic Development Canada.


1.2 Element Materials Technology Morgan Hill Test Location

These measurement tests were conducted at the Element Materials Technology Morgan Hill facility located at 18855 Adams Court, Morgan Hill, CA 95037. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014 and KDB 414788 D01 v01r01.

1.3 Test Facility / Accreditations

Measurements were performed at Element Materials Technology located in Morgan Hill, CA 95037, U.S.A.

- Element Materials Technology Morgan Hill is an ISO 17025-2017 accredited test facility under the American Association for Laboratory Accreditation (A2LA) with Certificate number 2041.02 for Specific Absorption Rate (SAR), Hearing Aid Compatibility (HAC) testing, where applicable, and Electromagnetic Compatibility (EMC) testing for FCC and Innovation, Science, and Economic Development Canada rules.
- Element Washington DC LLC TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC 17065-2012 by A2LA (Certificate number 2041.03) in all scopes of FCC Rules and ISED Standards (RSS).
- Element Materials Technology Morgan Hill facility is a registered (22831) test laboratory with the site description on file with ISED.
- Element Washington DC LLC is a Recognized U.S. Certification Assessment Body (CAB # US0110) for ISED Canada as designated by NIST under the U.S. and Canada Mutual Recognition Agreements (MRAs)

| | | | |
|--|---|---|--|
| FCC ID: BCGA2117 IC: 579C-A2117 |  | MEASUREMENT REPORT (CERTIFICATION) | Approved by: Technical Manager |
| Test Report S/N: 1C2302130007-07.BCG | Test Dates: 2/10/2023 - 5/4/2023 | EUT Type: Head Mounted Device | Page 6 of 322 |

2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Apple Head Mounted Device FCC ID: BCGA2117** and **IC: 579C-A2117**. The test data contained in this report pertains only to the emissions due to the EUT's UNII 802.11a/n/ac/ax(SU) transmitter.

Test Device Serial No.: GPG3017001F20N78X, PYVWK6LLC6, WFGF7D9H60, MHP0XYH0XK, HP14K0WJ0Q

2.2 Device Capabilities

This device contains the following capabilities:

802.11b/g/n/ax WLAN, 802.11a/n/ac/ax UNII, Bluetooth (1x, EDR, LE1M, LE2M, HDR4, HDR8), NB UNII (1x, LE1M, LE2M, HDR4, HDR8, HDRp4, HDRp8)

This device supports BT Beamforming

| Band 1 | | Band 2A | | Band 2C | | Band 3 | |
|--------|-----------------|---------|-----------------|---------|-----------------|--------|-----------------|
| Ch. | Frequency (MHz) | Ch. | Frequency (MHz) | Ch. | Frequency (MHz) | Ch. | Frequency (MHz) |
| 36 | 5180 | 52 | 5260 | 100 | 5500 | 149 | 5745 |
| : | : | : | : | : | : | : | : |
| 42 | 5210 | 56 | 5280 | 116 | 5580 | 157 | 5785 |
| : | : | : | : | : | : | : | : |
| 48 | 5240 | 64 | 5320 | 144 | 5720 | 165 | 5825 |


Table 2-1. 802.11a / 802.11n / 802.11ac / 802.11ax (20MHz) Frequency / Channel Operations

| Band 1 | | Band 2A | | Band 2C | | Band 3 | |
|--------|-----------------|---------|-----------------|---------|-----------------|--------|-----------------|
| Ch. | Frequency (MHz) | Ch. | Frequency (MHz) | Ch. | Frequency (MHz) | Ch. | Frequency (MHz) |
| 38 | 5190 | 54 | 5270 | 102 | 5510 | 151 | 5755 |
| : | : | : | : | : | : | : | : |
| 46 | 5230 | 62 | 5310 | 110 | 5550 | 159 | 5795 |
| | | | | : | : | | |
| | | | | 142 | 5710 | | |

Table 2-2. 802.11n / 802.11ac / 802.11ax (40MHz BW) Frequency / Channel Operations

| Band 1 | | Band 2A | | Band 2C | | Band 3 | |
|--------|-----------------|---------|-----------------|---------|-----------------|--------|-----------------|
| Ch. | Frequency (MHz) | Ch. | Frequency (MHz) | Ch. | Frequency (MHz) | Ch. | Frequency (MHz) |
| 42 | 5210 | 58 | 5290 | 106 | 5530 | 155 | 5775 |
| | | | | : | : | | |
| | | | | 138 | 5690 | | |

Table 2-3. 802.11ac / 802.11ax (80MHz BW) Frequency / Channel Operations


| | | | |
|---|---|----------------------------------|-----------------------------------|
| FCC ID: BCGA2117 IC: 579C-A2117 |  MEASUREMENT REPORT (CERTIFICATION) | | Approved by: Technical Manager |
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Notes:

- 5GHz NII operation is possible in 20MHz, and 40MHz, and 80MHz channel bandwidths. The maximum achievable duty cycles for all modes were determined based on measurements performed on a spectrum analyzer in zero-span mode with RBW = 8MHz, VBW = 50MHz, and detector = peak per the guidance of Section B)2)b) KDB 789033 D02 v02r01 and ANSI C63.10-2013. The RBW and VBW were both greater than 50/T, where T is the minimum transmission duration, and the number of sweep points across T was greater than 100. The duty cycles are as follows:

| Measured Duty Cycles | | | | |
|-------------------------|-------------------------|----------------|------|---------|
| 802.11 Mode/Band | | Duty Cycle [%] | | |
| | | Ant1 | Ant2 | CDD/SDM |
| 5GHz | a (Low Rate) | 97.8 | 97.3 | 97.6 |
| | a (Mid Rate) | 95.7 | 95.6 | 96.1 |
| | a (High Rate) | 92.6 | 92.0 | 92.4 |
| | n (HT20) (Low Rate) | 96.5 | 96.7 | 96.5 |
| | n (HT20) (Mid Rate) | 94.3 | 93.1 | 94.0 |
| | n (HT20) (High Rate) | 91.6 | 90.9 | 91.1 |
| | ax(SU) (HT20 Low Rate) | 95.7 | 95.7 | 95.2 |
| | ax(SU) (HT20 Mid Rate) | 92.4 | 92.4 | 92.3 |
| | ax(SU) (HT20 High Rate) | 84.9 | 84.9 | 87.2 |
| | n (HT40 Low Rate) | 93.3 | 93.3 | 93.8 |
| | n (HT40 Mid Rate) | 89.2 | 88.9 | 89.1 |
| | n (HT40 High Rate) | 85.2 | 86.8 | 86.7 |
| | ax(SU) (HT40 Low Rate) | 93.4 | 92.7 | 92.7 |
| | ax(SU) (HT40 Mid Rate) | 89.4 | 88.1 | 89.4 |
| | ax(SU) (HT40 High Rate) | 83.4 | 83.4 | 82.9 |
| | ac (HT80 Low Rate) | 88.1 | 89.5 | 84.0 |
| | ac (HT80 Mid Rate) | 83.5 | 83.9 | 78.8 |
| | ac (HT80 High Rate) | 78.4 | 78.1 | 75.6 |
| | ax(SU) (HT80 Low Rate) | 87.4 | 87.2 | 88.7 |
| | ax(SU) (HT80 Mid Rate) | 82.5 | 83.1 | 83.7 |
| ax(SU) (HT80 High Rate) | 79.8 | 79.8 | 79.6 | |

Table 2-4. Measured Duty Cycles

| | | | |
|--|---|---|--|
| FCC ID: BCGA2117 IC: 579C-A2117 |  | MEASUREMENT REPORT (CERTIFICATION) | Approved by: Technical Manager |
| Test Report S/N: 1C2302130007-07.BCG | Test Dates: 2/10/2023 - 5/4/2023 | EUT Type: Head Mounted Device | Page 8 of 322 |

2. The device employs MIMO technology. Below are the possible configurations.

| WiFi Configurations | | SISO | | CDD | | SDM | | STBC | |
|---------------------|------------------|------|------|------|------|------|------|------|------|
| | | Ant1 | Ant2 | Ant1 | Ant2 | Ant1 | Ant2 | Ant1 | Ant2 |
| 5GHz | 11a | ✓ | ✓ | ✓ | ✓ | ✗ | ✗ | ✗ | ✗ |
| | 11n (20MHz) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 11ax(SU) (20MHz) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 11n (40MHz) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 11ax(SU) (40MHz) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 11ac (80MHz) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 11ax(SU) (80MHz) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

Table 2-5. WIFI Configurations

✓ = Support ; ✗ = NOT Support


SISO = Single Input Single Output

SDM = Spatial Diversity Multiplexing – MIMO function

CDD = Cyclic Delay Diversity - 2Tx Function

STBC = Space-Time Block Coding – 2Tx Function

Data Rate(s) Tested: 6, 9, 12, 18, 24, 36, 48, 54Mbps (802.11a)
 6.5/7.2, 13/14.4, 19.5/21.7, 26/28.9, 39/43.3, 52/57.8, 58.5/65, 65/72.2 (n – 20MHz)
 13.5/15, 27/30, 40.5/45, 54/60, 81/90, 108/120, 121.5/135, 135/150 (n – 40MHz BW)
 29.3/32.5, 58.5/65, 87.8/97.5, 117/130, 175.5/195, 234/260, 263.3/292.5, 292.5/325, 351/390, 390/433.3 (ac – 80MHz BW)
 13/14.4, 26.28.9, 39/43.3, 52/57.8, 78/86.7, 104/115.6, 117/130, 130/144.4Mbps (MIMO n/ac – 20MHz)
 156/173Mbps (MIMO ac – 20MHz)
 27/30, 54/60, 81/90, 108/120, 162/180, 216/240, 243,270, 270/300Mbps (MIMO n/ac – 40MHz) 324/360, 360/400Mbps (MIMO ac – 40MHz)
 58.5/65, 117/130, 175.5/195, 234/260, 351/390, 468/520, 526.5/585, 585/650, 702/780, 780/866.7Mbps (MIMO ac – 80MHz)
 8/8.6, 16/17.2, 24/25.8, 33/34.4, 49/51.6, 65/68.8, 73/77.4, 81/86.0, 98/103.2, 108/114.7, 122/129.0, 135/143.4 (ax – 20MHz)
 16/17.2, 33/34.4, 49/51.6, 65/68.8, 98/103.2, 130/137.6, 146/154.9, 163/172.1, 195/206.5, 217/229.4, 244/258.1, 271/286.8 (ax – 40MHz BW)
 34/36.0, 68/72.1, 102/108.1, 136/144.1, 204/216.2, 272/288.2, 306/324.4, 340/360.3, 408/432.4, 453/480.4, 510/540.4, 567/600.5 (ax – 80MHz BW)

| | | | |
|--|---|---|--|
| FCC ID: BCGA2117 IC: 579C-A2117 |  | MEASUREMENT REPORT (CERTIFICATION) | Approved by: Technical Manager |
| Test Report S/N: 1C2302130007-07.BCG | Test Dates: 2/10/2023 - 5/4/2023 | EUT Type: Head Mounted Device | Page 9 of 322 |


3. This device supports simultaneous transmission operations. The table below shows all configurations possible.

| Simultaneous Tx Config | Ant1 | | | Ant2 | | | NB UNII_L | | NB UNII_R |
|------------------------|------------------------------|---|-----------------------------|------------------------------|---|-----------------------------|--|---|---|
| | WLAN 2.4G 802.11 b/g/n/ax | BT 2.4G BDR, EDR, HDR4/8, LE1M/2M, HDRp4/p8 | WIFI 5G 802.11 a/n/ac/ax | WLAN 2.4G 802.11 b/g/n/ax | BT 2.4G BDR, EDR, HDR4/8, LE1M/2M, HDRp4/p8 | WIFI 5G 802.11 a/n/ac/ax | BT 2.4G BDR, HDR4/8, LE1M/2M, HDRp4/p8 | NB_UNII 5G BDR, HDR4/8, LE1M/2M, HDRp4/p8 | NB_UNII 5G BDR, HDR4/8, LE1M/2M, HDRp4/p8 |
| Config 1 | ✓ | ✗ | ✓ | ✗ | ✗ | ✗ | ✗ | ✓ | ✓ |
| Config 2 | ✗ | ✗ | ✗ | ✓ | ✗ | ✓ | ✗ | ✓ | ✓ |
| Config 3 | ✗ | ✓ | ✓ | ✗ | ✗ | ✗ | ✗ | ✓ | ✓ |
| Config 4 | ✗ | ✓ | ✗ | ✗ | ✗ | ✓ | ✗ | ✓ | ✓ |
| Config 5 | ✗ | ✓ | ✓ | ✗ | ✓ | ✗ | ✗ | ✗ | ✗ |
| Config 6 | ✗ | ✓ | ✗ | ✗ | ✓ | ✓ | ✗ | ✗ | ✗ |
| Config 7 | ✓ | ✗ | ✓ | ✗ | ✗ | ✗ | ✓ | ✓ | ✓ |
| Config 8 | ✓ | ✗ | ✗ | ✗ | ✗ | ✓ | ✓ | ✓ | ✓ |
| Config 9 | ✓ | ✗ | ✓ | ✗ | ✓ | ✗ | ✗ | ✗ | ✗ |
| Config 10 | ✓ | ✗ | ✗ | ✗ | ✓ | ✓ | ✗ | ✗ | ✗ |
| Config 11 | ✓ | ✗ | ✓ | ✓ | ✗ | ✓ | ✗ | ✗ | ✗ |
| Config 12 | ✗ | ✓ | ✓ | ✗ | ✗ | ✓ | ✗ | ✗ | ✗ |
| Config 13 | ✓ | ✗ | ✓ | ✗ | ✗ | ✓ | ✓ | ✗ | ✗ |

Table 2-6. Simultaneous Transmission Configurations

✓ = Support; ✗ = Not Support

4. TDWR channels are not supported for ISED.

| | | | |
|--|---|---|--|
| FCC ID: BCGA2117 IC: 579C-A2117 |  | MEASUREMENT REPORT (CERTIFICATION) | Approved by: Technical Manager |
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2.3 Antenna Description

Following antenna gains provided by manufacturer were used for the testing.


| Frequency [GHz] | Antenna Gain (dBi) | |
|-----------------|--------------------|------|
| | Ant1 | Ant2 |
| 5.150 – 5.250 | 3.30 | 2.5 |
| 5.250 – 5.350 | 3.4 | 2.3 |
| 5.470 – 5.725 | 2.6 | 1.8 |
| 5.725 – 5.850 | 1.2 | 2.3 |

Table 2-7. Highest Antenna Gain

2.4 Test Support Equipment

| | | | | | |
|---|--------------------|--------|---------|------|--------------------|
| 1 | Apple Macbook Pro | Model: | A2289 | S/N: | C02DV7VGM6T |
| | w/ AD/DC Adapter | Model: | A2164 | S/N: | N/A |
| 2 | Apple USB-C Cable | Model: | Spartan | S/N: | 000MKTR02U |
| 3 | Right Temple | Model: | N/A | S/N: | HTFGR70005J000020R |
| | Left Temple | Model: | N/A | S/N: | HTFGR40004A00002GY |
| | Headband | Model: | N/A | S/N: | GKNGNC0001H0000215 |
| 4 | Light Seal | Model: | N/A | S/N: | GKNGQF000RX00003KB |
| | Light Seal Padding | Model: | N/A | S/N: | GKNGQ8001RD00002XA |
| 5 | EUT Power Pack | Model: | N/A | S/N: | HTFGQW0009800001MV |

Table 2-8. Test Support Equipment List

| | | | |
|--|---|---|--|
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2.5 Test Configuration

The EUT was tested per the guidance of ANSI C63.10-2013 and KDB 789033 D02 v02r01. ANSI C63.10-2013 was used to reference the appropriate EUT setup for radiated spurious emissions testing and AC line conducted testing. See Sections 3.2 for AC line conducted emissions test setups, 3.3 for radiated emissions test setups, and 7.2, 7.3, 7.4, and 7.5 for antenna port conducted emissions test setups.

There are two vendors of the WiFi/Bluetooth radio modules, variant 1 and variant 2. Both radio modules have the same mechanical outline, same on-board antenna matching circuit, identical antenna structure, and are built and tested to conform to the same specifications and to operate within the same tolerances. The worst case configuration was found between the two variants. The EUT was also investigated with and without charger.

For emissions from 1GHz – 18GHz, low, mid, and high channels were tested with highest power and worst case configuration. The emissions below 1GHz and above 18GHz were tested with the highest transmitting power and the worst case channel.

The EUT was manipulated through three orthogonal planes of X-orientation (flatbed), Y-orientation (landscape), and Z-orientation (portrait) during the testing. Only the worst case emissions were reported in this test report.

For AC line conducted and radiated test below 1GHz, following configuration were investigated and EUT powered by AC/DC was the worst case.

- EUT powered by AC/DC adaptor to USB-C Power Pack to Magnetic Charging Cable
- EUT powered by host PC via USB-C Power Pack to Magnetic Charging Cable

802.11n HT20/40, 11ax(SU) HE20/40/80 and acVHT80 2TX CDD/SDM mode test data provided in this report covers 802.11n HT20/40, 11ax(SU) HE20/40/80 and 802.11acVHT80 2TX STBC mode

802.11ac VHT20 and VHT40 mode are different from 802.11n HT20 and HT40 only in control messages and have the same power settings.

The data rates have been classified into three different groups; low data rate, middle data rate, and high data rate. All three groups of data rate have been investigated and only the worst case data rate per group is reported. The worst case data rate for each group per mode are as follows:

- 802.11a:
 - Low Data Rate: 12Mbps
 - Mid Data Rate: 24Mbps
 - High Data Rate: 48Mbps
- 802.11n HT20/40:
 - Low Data Rate: MCS2/MCS10 (SISO/CDD/SDM)
 - Mid Data Rate: MCS4/MCS12 (SISO/CDD/SDM)
 - High Data Rate: MCS7/MCS15 (SISO/CDD/SDM)
- 802.11ac VHT80:
 - Low Data Rate: MCS2 (SISO/CDD/SDM)
 - Mid Data Rate: MCS4 (SISO/CDD/SDM)
 - High Data Rate: MCS8 (SISO/CDD/SDM)
- 802.11ax(SU) HE20/HE40/HE80:
 - Low Data Rate: MCS2
 - Mid Data Rate: MCS4
 - High Data Rate: MCS11

2.6 Software and Firmware

The test was conducted with firmware version 20.94.1.18 installed on the EUT.

2.7 EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and/or no modifications were made during testing.

| | | | |
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3.0 DESCRIPTION OF TESTS

3.1 Evaluation Procedure

The measurement procedures described in the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices (ANSI C63.10-2013) and the guidance provided in KDB 789033 D02 v02r01 were used in the measurement of the EUT.

Deviation from measurement procedure.....None

3.2 AC Line Conducted Emissions

The line-conducted facility is located inside a 7m x 3.66m x 2.7m shielded enclosure. The shielded enclosure is manufactured by AP Americas. The shielding effectiveness of the shielded room is in accordance with MIL-Std-285 or NSA 65-6. A 1m x 1.5m wooden table 80cm high is placed 40cm away from the vertical wall and 80cm away from the sidewall of the shielded room. Two 10kHz-30MHz, 50Ω/50μH Line-Impedance Stabilization Networks (LISNs) are bonded to the shielded room floor. Power to the LISNs is filtered by external high-current high-insertion loss power line filters. The external power line filter is EPCOS 2X60A Power Line Filter (100dB Attenuation, 14kHz-18GHz) and the two EPCOs 2X48A filters (100dB Minimum Insertion Loss, 14kHz - 10GHz). These filters attenuate ambient signal noise from entering the measurement lines. These filters are also bonded to the shielded enclosure.

The EUT is powered from one LISN and the support equipment is powered from the second LISN. If the EUT is a DC-powered device, power will be derived from the source power supply it normally will be powered from and this supply line(s) will be connected to the second LISN. All interconnecting cables more than 1 meter were shortened to a 1 meter length by non-inductive bundling (serpentine fashion) and draped over the back edge of the test table. All cables were at least 40cm above the horizontal reference ground plane. Power cables for support equipment were routed down to the second LISN while ensuring that that cables were not draped over the second LISN.

Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The RF output of the LISN was connected to the spectrum analyzer and exploratory measurements were made to determine the frequencies producing the maximum emission from the EUT. The spectrum was scanned from 150kHz to 30MHz with a spectrum analyzer. The detector function was set to peak mode for exploratory measurements while the bandwidth of the analyzer was set to 10kHz. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Once the worst case emissions have been identified, the one EUT cable configuration/arrangement and mode of operation that produced these emissions is used for final measurements on the same test site. The analyzer is set to CISPR quasi-peak and average detectors with a 9kHz resolution bandwidth for final measurements.

Line conducted emissions test results are shown in Section 7.8. Automated test software was used to perform the AC line conducted emissions testing. Automated measurement software utilized is Rohde & Schwarz EMC32, Version 10.50.40.

| | | | |
|--|---|---|--|
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3.3 Radiated Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. The test site inside the chamber is a 6m x 5.2m elliptical, obstruction-free area in accordance with Figure 5.7 of Clause 5 in ANSI C63.4-2014. Absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections for measurements above 1GHz. An 80cm tall test table made of Styrodur is placed on top of the turn table. For measurements above 1GHz, an additional Styrodur pedestal is placed on top of the test table to bring the total table height to 1.5m.

Per KDB 414788, radiated emission test sites other than open-field test sites (e.g., shielded anechoic chambers), may be employed for emission measurements below 30MHz if characterized so that the measurements correspond to those obtained at an open-field test site. To determine test site equivalency, a reference sample transmitting at 149kHz was measured on an open field test site (asphalt with no ground plane) and then measured in the 3m semi-anechoic chamber. A calibrated 60cm loop antenna was used while the reference device was rotated through the X, Y and Z axis in order to capture the worst case level. A maximum deviation of 2.77dB at 149kHz was measured when comparing the 3 meter semi-anechoic chamber to the open field site.

For all measurements, the spectrum was scanned through all EUT azimuths and from 1 to 4 meter receive antenna height using a broadband antenna from 30MHz up to the upper frequency shown in 15.33 depending on the highest frequency generated or used in the device or on which the device operates or tunes. For frequencies above 1GHz, linearly polarized double ridge horn antennas were used. For frequencies below 30MHz, a calibrated loop antenna was used. When exploratory measurements were necessary, they were performed at 1 meter test distance inside the semi-anechoic chamber using broadband antennas, broadband amplifiers, and spectrum analyzers to determine the frequencies and modes producing the maximum emissions. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The test set-up was placed on top of the 1 x 1.5 meter table. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Appropriate precaution was taken to ensure that all emissions from the EUT were maximized and investigated. The system configuration, mode of operation, turntable azimuth, and receive antenna height was noted for each frequency found.

Final measurements were made in the semi-anechoic chamber using calibrated, linearly polarized broadband and horn antennas. The test setup was configured to the setup that produced the worst case emissions. The spectrum analyzer was set to investigate all frequencies required for testing to compare the highest radiated disturbances with respect to the specified limits. The turntable containing the EUT was rotated through 360 degrees and the height of the receive antenna was varied 1 to 4 meters and stopped at the azimuth and height producing the maximum emission. Each emission was maximized by changing the orientation of the EUT through three orthogonal planes and changing the polarity of the receive antenna, whichever produced the worst-case emissions.

3.4 Environmental Conditions

The temperature is controlled within range of 15°C to 35°C. The relative humidity is controlled within range of 10% to 75%. The atmospheric pressure is monitored within the range 86-106kPa (860-1060mbar).

| | | | |
|--|---|---|--|
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4.0 ANTENNA REQUIREMENTS


Excerpt from §15.203 of the FCC Rules/Regulations:

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.”

- The antennas of the EUT are **permanently attached**.
- There are no provisions for connection to an external antenna.

Conclusion:

The EUT complies with the requirement of §15.203.


| | | | |
|--|---|---|--|
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5.0 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.23-2012. All measurement uncertainty values are shown with a coverage factor of $k = 2$ to indicate a 95% level of confidence. The measurement uncertainty shown below meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

| Contribution | Expanded Uncertainty (\pm dB) |
|-------------------------------------|----------------------------------|
| Conducted Bench Top Measurements | 1.77 |
| Line Conducted Disturbance | 2.70 |
| Radiated Disturbance (<30MHz) | 4.38 |
| Radiated Disturbance (30MHz - 1GHz) | 4.75 |
| Radiated Disturbance (1 - 18GHz) | 5.20 |
| Radiated Disturbance (>18GHz) | 4.72 |

| | | | |
|---|---|---------------------------------------|-----------------------------------|
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6.0 TEST EQUIPMENT CALIBRATION DATA


Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST). Measurements antennas used during testing were calibrated in accordance to the requirements of ANSI C63.5-2017.

| Manufacturer | Model | Description | Cal Date | Cal Interval | Cal Due | Serial # |
|-----------------------|-------------|---|------------|--------------|------------|------------|
| Agilent | N9020A | MXA Signal Analyzer | 4/26/2022 | Annual | 4/26/2023 | MY56470202 |
| Anritsu | MA2411B | Pulse Power Sensor | 5/19/2022 | Annual | 5/19/2023 | 1911106 |
| Anritsu | ML2496A | Power Meter | 10/17/2022 | Annual | 10/17/2023 | 2002005 |
| ETS-Lindgren | 3117 | Double Ridged Guide Horn Antenna (1-18 GHz) | 5/24/2022 | Annual | 5/24/2023 | 240049 |
| Keysight Technologies | N9030A | PXA Signal Analyzer | 6/10/2022 | Annual | 6/10/2023 | MY49430244 |
| Rohde & Schwarz | 180-442A-KF | Horn (Small) | 3/6/2023 | Annual | 3/6/2024 | T058701-2 |
| Rohde & Schwarz | ENV216 | Two-Line V-Network | 3/30/2023 | Annual | 3/30/2024 | 101364 |
| Rohde & Schwarz | FSVA3044 | Signal Analyzer 44GHz | 5/12/2022 | Annual | 5/12/2023 | 101098 |
| Rohde & Schwarz | FSW43 | Signal and Spectrum Analyzer 2Hz to 43GHz | 5/19/2022 | Annual | 5/19/2023 | 104093 |
| Rohde & Schwarz | FSW67 | Signal and Spectrum Analyzer (2Hz-67GHz) | 4/21/2022 | Annual | 4/21/2023 | 101366 |
| Rohde & Schwarz | HFH-222 | 9kHz - 30MHz Loop Antenna | 4/13/2022 | Annual | 4/13/2023 | 100546 |
| Rohde & Schwarz | TS-PR1 | Preamplifier - Antenna System; 30MHz - 1GHz | 4/18/2022 | Annual | 4/18/2023 | 102081 |
| Rohde & Schwarz | TS-PR18 | Pre Amplifier 1-18GHz | 3/3/2023 | Annual | 3/3/2024 | 102130 |
| Rohde & Schwarz | TS-PR1840 | Pre Amplifier 18-40GHz | 4/18/2022 | Annual | 4/18/2023 | 100050 |
| Schwarzbeck | VULB9162 | Biconilog Antenna - (30MHz-6GHz) | 7/27/2022 | Annual | 7/27/2023 | 121034 |

Table 6-1. Test Equipment List

Note:

For equipment listed above that has a calibration date or calibration due date that falls within the test date range, care was taken to ensure that this equipment was used after the calibration date and before the calibration due date.

| | | | |
|--|---|---|--|
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7.0 TEST RESULTS

7.1 Summary


Company Name: Apple Inc.
 FCC ID: BCGA2117
 IC: 579C-A2117
 FCC Classification: Unlicensed National Information Infrastructure (UNII)

| FCC Part Section(s) | RSS Section(s) | Test Description | Test Limit | Test Condition | Test Result | Reference |
|-------------------------------|----------------|---|--|----------------|-------------|---|
| 15.407 | RSS-Gen [6.7] | 26dB Bandwidth | N/A | CONDUCTED | N/A | Section 7.2 |
| 15.407(e) | RSS-Gen [6.7] | 6dB Bandwidth | >500kHz(5725-5850MHz) | | PASS | Section 7.3 |
| 2.1049 | RSS-Gen [6.7] | Occupied Bandwidth | N/A | | PASS | Section 7.2, Section 7.3 |
| 15.407 (a.1.iv), (a.2), (a.3) | RSS-247 [6.2] | Maximum Conducted Output Power | Maximum conducted powers must meet the limits detailed in 15.407 (a) (RSS-247 [6.2]) | | PASS | Section 7.4 |
| 15.407 (a.1.iv), (a.2), (a.3) | RSS-247 [6.2] | Maximum Power Spectral Density | Maximum power spectral density must meet the limits detailed in 15.407 (a) (RSS-247 [6.2]) | | PASS | Section 7.5 |
| 15.407(h) | RSS-247 [6.3] | Dynamic Frequency Selection | See DFS Test Report | RADIATED | PASS | See DFS Test Report (1C23021300 07 -11.BCG) |
| 15.407(b.1), (2), (3), (4) | RSS-247 [6.2] | Undesirable Emissions | Undesirable emissions must meet the limits detailed in 15.407(b) (RSS-247 [6.2]) | | PASS | Section 7.6 |
| 15.205, 15.407(b.1), (4) | RSS-Gen [8.9] | General Field Strength Limits (Restricted Bands and Radiated Emission Limits) | Emissions in restricted bands must meet the radiated limits detailed in 15.209 (RSS-Gen [8.9]) | | PASS | Section 7.6, 7.7 |
| 15.207 | RSS-Gen [8.8] | AC Conducted Emissions 150kHz – 30MHz | < FCC 15.207 (RSS-Gen [8.8]) limits | LINE CONDUCTED | PASS | Section 7.8 |

Table 7-1. Summary of Test Results

Notes:

- 1) All channels, modes, and modulations/data rates were investigated among all UNII bands. The test results shown in the following sections represent the worst case emissions.
- 2) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
- 3) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables and attenuators.
- 4) For conducted spurious emissions, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is Element “UNII Automation,” Version 7.0.
- 5) For radiated band edge, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is Element “Chamber Automation,” Version 2.0.
- 6) Per RSS-247 Section 6.2.3, transmission on channels which overlap the 5600-5650 MHz is prohibited. This device operates under these frequencies only under the control of a certified master device and does not support active scanning on these channels. This device does not transmit any beacons or initiate any transmissions in UNII Bands 2A or 2C.

| | | | |
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7.2 26dB & 99% Bandwidth Measurement – 802.11a/n/ac/ax(SU)

§2.1049; §15.407; RSS-Gen [6.7]

Test Overview and Limit

The bandwidth at 26dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating at its maximum duty cycle, at its maximum power control level, as defined in ANSI C63.10-2013 and KDB 789033 D02 v02r01, and at the appropriate frequencies. The spectrum analyzer's bandwidth measurement function is configured to measure the 26dB bandwidth.

The 26dB bandwidth is used to determine the conducted power limits.

Test Procedure Used

ANSI C63.10-2013 – Section 12.4
KDB 789033 D02 v02r01 – Section C

Test Settings

1. The signal analyzers' automatic bandwidth measurement capability was used to perform the 26dB bandwidth measurement. The "X" dB bandwidth parameter was set to X = 26. The automatic bandwidth measurement function also has the capability of simultaneously measuring the 99% occupied bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = approximately 1% of the emission bandwidth
3. VBW \geq 3 x RBW
4. Detector = Peak
5. Trace mode = max hold

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



Figure 7-1. Test Instrument & Measurement Setup

Test Notes


1. All antenna configurations and data rates were investigated and only the worst case are reported.
2. The data rates have been classified into three different groups; Low Data Rate, Middle Data Rate, and High Data Rate. All three data rate groups of data rate have been investigated and only the worst case data rate per group is reported.
3. Low, mid, and high channels were tested and tabular data has been reported. Only mid channel bandwidth plots have been reported.

| | | | |
|---|---|---------------------------------------|-----------------------------------|
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Ant1 26dB & 99% Bandwidth Measurements


| | Frequency [MHz] | Channel No. | 802.11 Mode | Data Rate [Mbps] | Measured 99% Occupied Bandwidth [MHz] | Measured 26dB Bandwidth [MHz] |
|---------|-----------------|-----------------|------------------|------------------|---------------------------------------|-------------------------------|
| Band 1 | 5180 | 36 | n (20MHz) | 19.5/21.7 (MCS2) | 17.83 | 21.98 |
| | 5200 | 40 | n (20MHz) | 19.5/21.7 (MCS2) | 17.73 | 20.98 |
| | 5240 | 48 | n (20MHz) | 19.5/21.7 (MCS2) | 17.71 | 20.69 |
| | 5180 | 36 | ax (SU) (20MHz) | 24/25.8 (MCS2) | 19.10 | 25.27 |
| | 5200 | 40 | ax (SU) (20MHz) | 24/25.8 (MCS2) | 19.05 | 21.37 |
| | 5240 | 48 | ax (SU) (20MHz) | 24/25.8 (MCS2) | 19.04 | 21.48 |
| | 5190 | 38 | n (40MHz) | 40.5/45 (MCS2) | 36.38 | 42.38 |
| | 5230 | 46 | n (40MHz) | 40.5/45 (MCS2) | 36.33 | 41.12 |
| | 5190 | 38 | ax (SU) (40MHz) | 49/51.6 (MCS2) | 38.12 | 48.18 |
| | 5230 | 46 | ax (SU) (40MHz) | 49/51.6 (MCS2) | 37.98 | 41.20 |
| | 5210 | 42 | ac (80MHz) | 87.8/97.5 (MCS2) | 75.43 | 81.33 |
| | 5210 | 42 | ax (SU) (80MHz) | 102/108.1 (MCS2) | 77.21 | 84.56 |
| Band 2A | 5260 | 52 | n (20MHz) | 19.5/21.7 (MCS2) | 17.74 | 21.03 |
| | 5280 | 56 | n (20MHz) | 19.5/21.7 (MCS2) | 17.72 | 20.90 |
| | 5320 | 64 | n (20MHz) | 19.5/21.7 (MCS2) | 17.85 | 21.61 |
| | 5260 | 52 | ax (SU) (20MHz) | 24/25.8 (MCS2) | 19.04 | 21.27 |
| | 5280 | 56 | ax (SU) (20MHz) | 24/25.8 (MCS2) | 19.04 | 21.13 |
| | 5320 | 64 | ax (SU) (20MHz) | 24/25.8 (MCS2) | 19.08 | 23.71 |
| | 5270 | 54 | n (40MHz) | 40.5/45 (MCS2) | 36.33 | 41.30 |
| | 5310 | 62 | n (40MHz) | 40.5/45 (MCS2) | 36.49 | 41.57 |
| | 5270 | 54 | ax (SU) (40MHz) | 49/51.6 (MCS2) | 38.04 | 41.57 |
| | 5310 | 62 | ax (SU) (40MHz) | 49/51.6 (MCS2) | 38.11 | 49.81 |
| | 5290 | 58 | ac (80MHz) | 87.8/97.5 (MCS2) | 75.60 | 83.42 |
| | 5290 | 58 | ax (SU) (80MHz) | 102/108.1 (MCS2) | 77.31 | 86.10 |
| Band 2C | 5500 | 100 | n (20MHz) | 19.5/21.7 (MCS2) | 17.90 | 22.96 |
| | 5580 | 116 | n (20MHz) | 19.5/21.7 (MCS2) | 17.72 | 21.03 |
| | 5720 | 144 | n (20MHz) | 19.5/21.7 (MCS2) | 17.72 | 20.93 |
| | 5500 | 100 | ax (SU) (20MHz) | 24/25.8 (MCS2) | 19.22 | 27.07 |
| | 5580 | 116 | ax (SU) (20MHz) | 24/25.8 (MCS2) | 19.02 | 21.21 |
| | 5720 | 144 | ax (SU) (20MHz) | 24/25.8 (MCS2) | 19.03 | 21.13 |
| | 5510 | 102 | n (40MHz) | 40.5/45 (MCS2) | 36.48 | 41.73 |
| | 5550 | 110 | n (40MHz) | 40.5/45 (MCS2) | 36.30 | 41.33 |
| | 5710 | 142 | n (40MHz) | 40.5/45 (MCS2) | 36.38 | 41.67 |
| | 5510 | 102 | ax (SU) (40MHz) | 49/51.6 (MCS2) | 38.08 | 52.38 |
| | 5550 | 110 | ax (SU) (40MHz) | 49/51.6 (MCS2) | 37.97 | 41.10 |
| | 5710 | 142 | ax (SU) (40MHz) | 49/51.6 (MCS2) | 37.97 | 41.48 |
| 5530 | 106 | ac (80MHz) | 87.8/97.5 (MCS2) | 75.47 | 83.02 | |
| 5690 | 138 | ac (80MHz) | 87.8/97.5 (MCS2) | 75.37 | 81.05 | |
| 5530 | 106 | ax (SU) (80MHz) | 102/108.1 (MCS2) | 77.19 | 83.63 | |
| 5690 | 138 | ax (SU) (80MHz) | 102/108.1 (MCS2) | 77.22 | 81.49 | |

Table 7-2. Conducted Bandwidth Measurements Ant1 (Low Data Rate)

| | | | |
|---|---|---|-----------------------------------|
| FCC ID: BCGA2117 IC: 579C-A2117 |  | MEASUREMENT REPORT (CERTIFICATION) | Approved by: Technical Manager |
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| | Frequency [MHz] | Channel No. | 802.11 Mode | Data Rate [Mbps] | Measured 99% Occupied Bandwidth [MHz] | Measured 26dB Bandwidth [MHz] |
|---------|-----------------|-----------------|------------------|------------------|---------------------------------------|-------------------------------|
| Band 1 | 5180 | 36 | n (20MHz) | 39/43.3 (MCS4) | 17.79 | 21.01 |
| | 5200 | 40 | n (20MHz) | 39/43.3 (MCS4) | 17.76 | 20.97 |
| | 5240 | 48 | n (20MHz) | 39/43.3 (MCS4) | 17.72 | 20.82 |
| | 5180 | 36 | ax (SU) (20MHz) | 49/51.6 (MCS4) | 19.07 | 22.54 |
| | 5200 | 40 | ax (SU) (20MHz) | 49/51.6 (MCS4) | 19.07 | 21.27 |
| | 5240 | 48 | ax (SU) (20MHz) | 49/51.6 (MCS4) | 19.02 | 21.26 |
| | 5190 | 38 | n (40MHz) | 81/90 (MCS4) | 36.38 | 41.88 |
| | 5230 | 46 | n (40MHz) | 81/90 (MCS4) | 36.35 | 41.76 |
| | 5190 | 38 | ax (SU) (40MHz) | 98/103.2 (MCS4) | 37.92 | 41.44 |
| | 5230 | 46 | ax (SU) (40MHz) | 98/103.2 (MCS4) | 38.06 | 41.97 |
| | 5210 | 42 | ac (80MHz) | 175.5/195 (MCS4) | 75.36 | 81.27 |
| 5210 | 42 | ax (SU) (80MHz) | 204/216.2 (MCS4) | 77.07 | 81.65 | |
| Band 2A | 5260 | 52 | n (20MHz) | 39/43.3 (MCS4) | 17.74 | 20.91 |
| | 5280 | 56 | n (20MHz) | 39/43.3 (MCS4) | 17.78 | 20.75 |
| | 5320 | 64 | n (20MHz) | 39/43.3 (MCS4) | 17.79 | 21.12 |
| | 5260 | 52 | ax (SU) (20MHz) | 49/51.6 (MCS4) | 19.04 | 21.21 |
| | 5280 | 56 | ax (SU) (20MHz) | 49/51.6 (MCS4) | 19.03 | 21.31 |
| | 5320 | 64 | ax (SU) (20MHz) | 49/51.6 (MCS4) | 19.07 | 23.89 |
| | 5270 | 54 | n (40MHz) | 81/90 (MCS4) | 36.40 | 40.66 |
| | 5310 | 62 | n (40MHz) | 81/90 (MCS4) | 36.43 | 40.91 |
| | 5270 | 54 | ax (SU) (40MHz) | 98/103.2 (MCS4) | 38.05 | 41.89 |
| | 5310 | 62 | ax (SU) (40MHz) | 98/103.2 (MCS4) | 37.92 | 42.09 |
| | 5290 | 58 | ac (80MHz) | 175.5/195 (MCS4) | 75.49 | 81.18 |
| 5290 | 58 | ax (SU) (80MHz) | 102/108.1 (MCS2) | 77.30 | 81.93 | |
| Band 2C | 5500 | 100 | n (20MHz) | 39/43.3 (MCS4) | 17.78 | 20.92 |
| | 5580 | 116 | n (20MHz) | 39/43.3 (MCS4) | 17.76 | 20.91 |
| | 5720 | 144 | n (20MHz) | 39/43.3 (MCS4) | 17.78 | 20.87 |
| | 5500 | 100 | ax (SU) (20MHz) | 49/51.6 (MCS4) | 19.11 | 22.28 |
| | 5580 | 116 | ax (SU) (20MHz) | 49/51.6 (MCS4) | 19.02 | 21.29 |
| | 5720 | 144 | ax (SU) (20MHz) | 49/51.6 (MCS4) | 19.05 | 21.13 |
| | 5510 | 102 | n (40MHz) | 81/90 (MCS4) | 36.52 | 42.27 |
| | 5550 | 110 | n (40MHz) | 81/90 (MCS4) | 36.48 | 42.06 |
| | 5710 | 142 | n (40MHz) | 81/90 (MCS4) | 36.78 | 41.89 |
| | 5510 | 102 | ax (SU) (40MHz) | 98/103.2 (MCS4) | 38.03 | 43.87 |
| | 5550 | 110 | ax (SU) (40MHz) | 98/103.2 (MCS4) | 38.01 | 41.96 |
| | 5710 | 142 | ax (SU) (40MHz) | 98/103.2 (MCS4) | 38.07 | 47.29 |
| | 5530 | 106 | ac (80MHz) | 175.5/195 (MCS4) | 75.25 | 80.65 |
| | 5690 | 138 | ac (80MHz) | 175.5/195 (MCS4) | 75.43 | 80.92 |
| 5530 | 106 | ax (SU) (80MHz) | 204/216.2 (MCS4) | 77.09 | 81.80 | |
| 5690 | 138 | ax (SU) (80MHz) | 204/216.2 (MCS4) | 77.20 | 82.11 | |

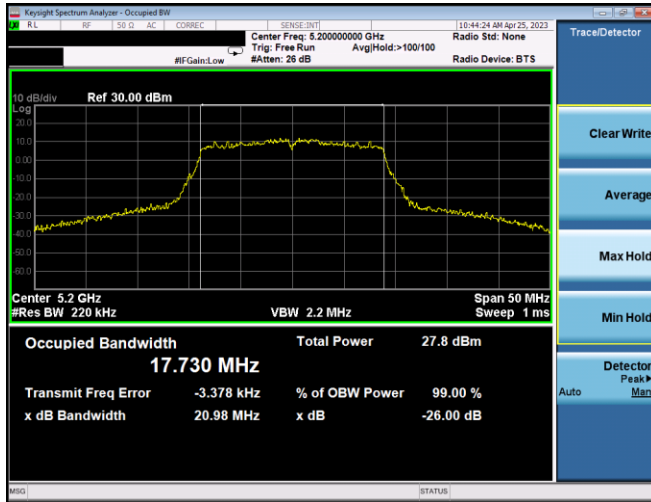
Table 7-3. Conducted Bandwidth Measurements Ant1 (Mid Data Rate)

| | | | |
|---|---|---|-----------------------------------|
| FCC ID: BCGA2117 IC: 579C-A2117 |  | MEASUREMENT REPORT (CERTIFICATION) | Approved by: Technical Manager |
| Test Report S/N: 1C2302130007-07.BCG | Test Dates: 2/10/2023 - 5/4/2023 | EUT Type: Head Mounted Device | Page 21 of 322 |

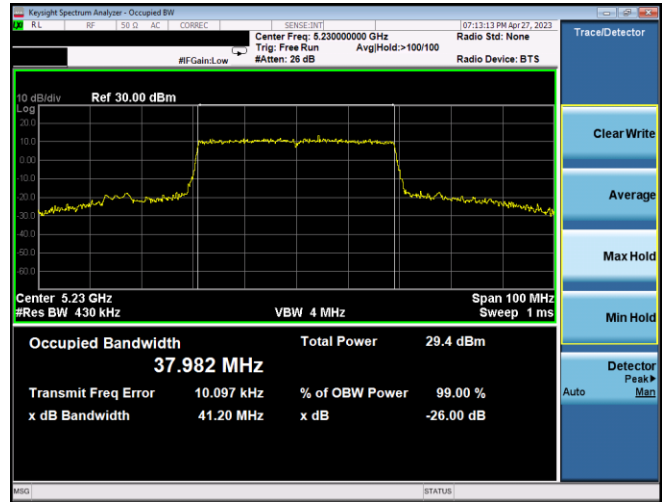
| | Frequency [MHz] | Channel No. | 802.11 Mode | Data Rate [Mbps] | Measured 99% Occupied Bandwidth [MHz] | Measured 26dB Bandwidth [MHz] |
|---------|-----------------|-----------------|-------------------|-------------------|---------------------------------------|-------------------------------|
| Band 1 | 5180 | 36 | n (20MHz) | 65/72.2 (MCS7) | 17.83 | 20.97 |
| | 5200 | 40 | n (20MHz) | 65/72.2 (MCS7) | 17.89 | 21.48 |
| | 5240 | 48 | n (20MHz) | 65/72.2 (MCS7) | 17.92 | 21.50 |
| | 5180 | 36 | ax (SU) (20MHz) | 135/143.4 (MCS11) | 19.06 | 21.08 |
| | 5200 | 40 | ax (SU) (20MHz) | 135/143.4 (MCS11) | 19.07 | 24.83 |
| | 5240 | 48 | ax (SU) (20MHz) | 135/143.4 (MCS11) | 19.10 | 21.74 |
| | 5190 | 38 | n (40MHz) | 135/150 (MCS7) | 36.45 | 41.36 |
| | 5230 | 46 | n (40MHz) | 135/150 (MCS7) | 36.76 | 58.33 |
| | 5190 | 38 | ax (SU) (40MHz) | 271/286.8 (MCS11) | 37.86 | 41.48 |
| | 5230 | 46 | ax (SU) (40MHz) | 271/286.8 (MCS11) | 37.99 | 57.05 |
| | 5210 | 42 | ac (80MHz) | 351/390 (MCS8) | 75.84 | 81.03 |
| | 5210 | 42 | ax (SU) (80MHz) | 567/600.5 (MCS11) | 77.04 | 81.35 |
| Band 2A | 5260 | 52 | n (20MHz) | 65/72.2 (MCS7) | 17.94 | 21.47 |
| | 5280 | 56 | n (20MHz) | 65/72.2 (MCS7) | 17.91 | 21.42 |
| | 5320 | 64 | n (20MHz) | 65/72.2 (MCS7) | 17.85 | 21.26 |
| | 5260 | 52 | ax (SU) (20MHz) | 135/143.4 (MCS11) | 19.11 | 22.56 |
| | 5280 | 56 | ax (SU) (20MHz) | 135/143.4 (MCS11) | 19.09 | 21.58 |
| | 5320 | 64 | ax (SU) (20MHz) | 135/143.4 (MCS11) | 19.08 | 21.16 |
| | 5270 | 54 | n (40MHz) | 135/150 (MCS7) | 36.77 | 47.14 |
| | 5310 | 62 | n (40MHz) | 135/150 (MCS7) | 36.43 | 41.32 |
| | 5270 | 54 | ax (SU) (40MHz) | 271/286.8 (MCS11) | 38.03 | 57.25 |
| | 5310 | 62 | ax (SU) (40MHz) | 271/286.8 (MCS11) | 37.93 | 41.20 |
| | 5290 | 58 | ac (80MHz) | 351/390 (MCS8) | 75.84 | 81.63 |
| | 5290 | 58 | ax (SU) (80MHz) | 567/600.5 (MCS11) | 77.16 | 81.27 |
| Band 2C | 5500 | 100 | n (20MHz) | 65/72.2 (MCS7) | 17.81 | 20.98 |
| | 5580 | 116 | n (20MHz) | 65/72.2 (MCS7) | 17.94 | 21.28 |
| | 5720 | 144 | n (20MHz) | 65/72.2 (MCS7) | 17.89 | 21.56 |
| | 5500 | 100 | ax (SU) (20MHz) | 135/143.4 (MCS11) | 19.07 | 21.27 |
| | 5580 | 116 | ax (SU) (20MHz) | 135/143.4 (MCS11) | 19.06 | 22.20 |
| | 5720 | 144 | ax (SU) (20MHz) | 135/143.4 (MCS11) | 19.11 | 21.07 |
| | 5510 | 102 | n (40MHz) | 135/150 (MCS7) | 36.46 | 41.11 |
| | 5550 | 110 | n (40MHz) | 135/150 (MCS7) | 36.70 | 47.77 |
| | 5710 | 142 | n (40MHz) | 135/150 (MCS7) | 37.24 | 60.29 |
| | 5510 | 102 | ax (SU) (40MHz) | 271/286.8 (MCS11) | 37.85 | 41.33 |
| | 5550 | 110 | ax (SU) (40MHz) | 271/286.8 (MCS11) | 38.01 | 49.77 |
| | 5710 | 142 | ax (SU) (40MHz) | 271/286.8 (MCS11) | 38.20 | 57.32 |
| 5530 | 106 | ac (80MHz) | 351/390 (MCS8) | 75.72 | 81.59 | |
| 5690 | 138 | ac (80MHz) | 351/390 (MCS8) | 76.18 | 98.95 | |
| 5530 | 106 | ax (SU) (80MHz) | 567/600.5 (MCS11) | 76.98 | 81.20 | |
| 5690 | 138 | ax (SU) (80MHz) | 567/600.5 (MCS11) | 77.21 | 81.74 | |

Table 7-4. Conducted Bandwidth Measurements Ant1 (High Data Rate)

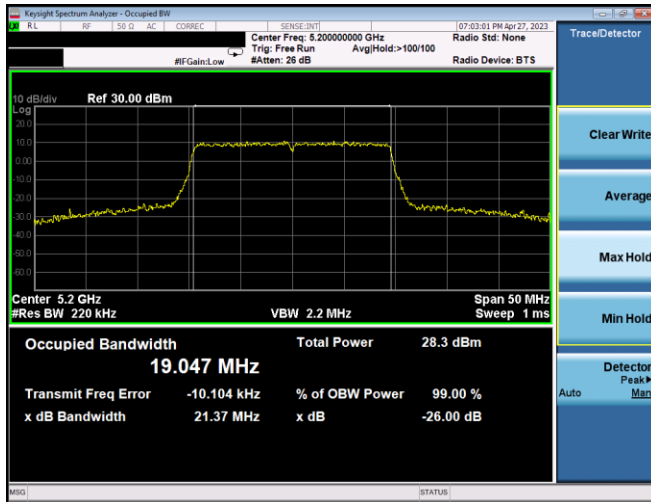
| | | | |
|--|---|---|--|
| FCC ID: BCGA2117 IC: 579C-A2117 |  | MEASUREMENT REPORT (CERTIFICATION) | Approved by: Technical Manager |
| Test Report S/N: 1C2302130007-07.BCG | Test Dates: 2/10/2023 - 5/4/2023 | EUT Type: Head Mounted Device | Page 22 of 322 |



Plot 7-1. 26dB BW & 99% OBW Ant1 (20MHz BW 802.11n – Ch. 40, MCS2)



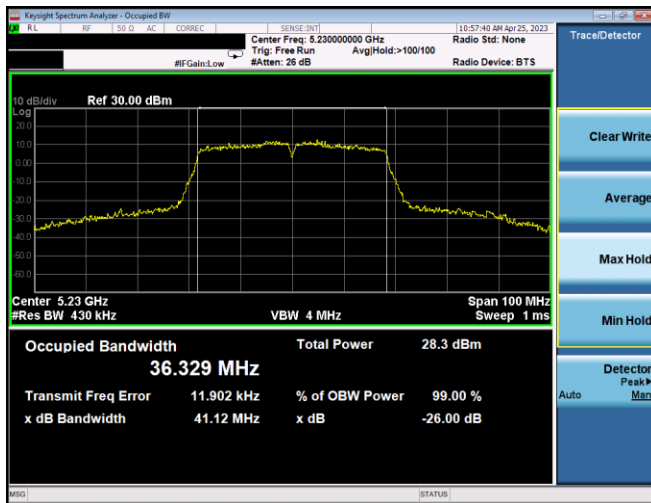
Plot 7-4. 26dB BW & 99% OBW Ant1 (40MHz BW 802.11ax(SU) – Ch. 46, MCS2)



Plot 7-2. 26dB BW & 99% OBW Ant1 (20MHz BW 802.11ax(SU) – Ch. 40, MCS2)



Plot 7-5. 26dB BW & 99% OBW Ant1 (80MHz BW 802.11ac – Ch. 42, MCS2)

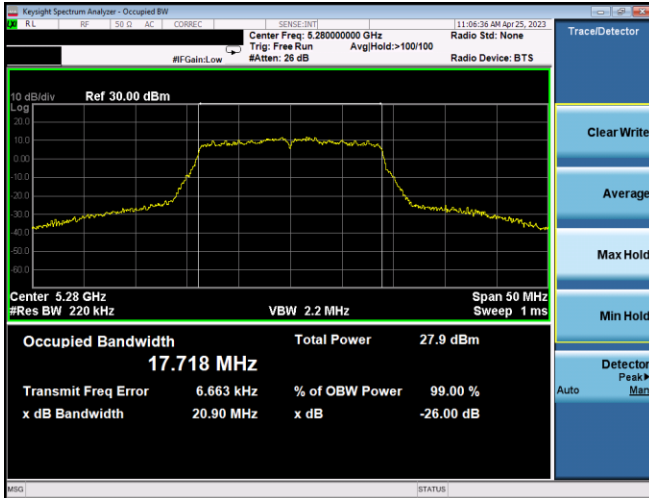


Plot 7-3. 26dB BW & 99% OBW Ant1 (40MHz BW 802.11n – Ch. 46, MCS2)

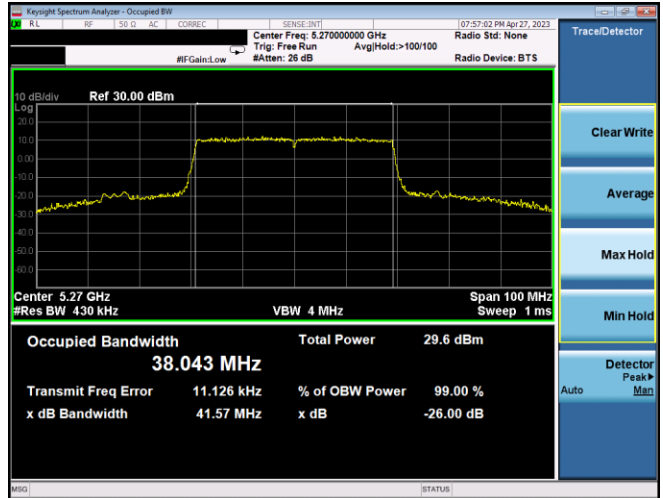


Plot 7-6. 26dB BW & 99% OBW Ant1 (80MHz BW 802.11ax(SU) – Ch. 42, MCS2)

| | | | |
|---|-------------------------------------|---------------------------------------|-----------------------------------|
| FCC ID: BCGA2117 IC: 579C-A2117 | | MEASUREMENT REPORT (CERTIFICATION) | Approved by: Technical Manager |
| Test Report S/N: 1C2302130007-07.BCG | Test Dates: 2/10/2023 - 5/4/2023 | EUT Type: Head Mounted Device | Page 23 of 322 |



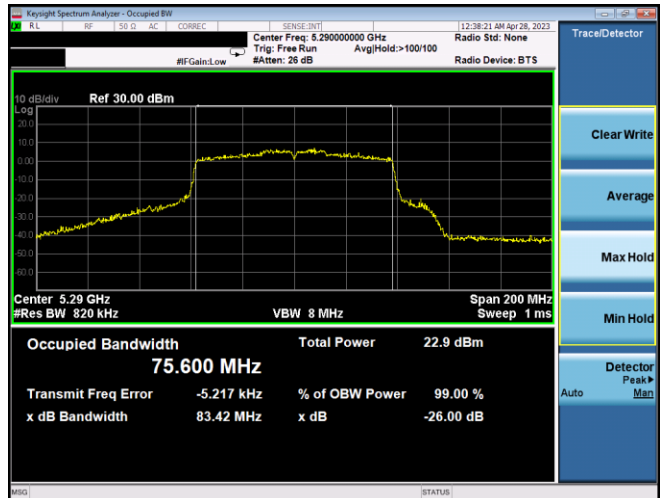
Plot 7-7. 26dB BW & 99% OBW Ant1 (20MHz BW 802.11n – Ch. 56, MCS2)



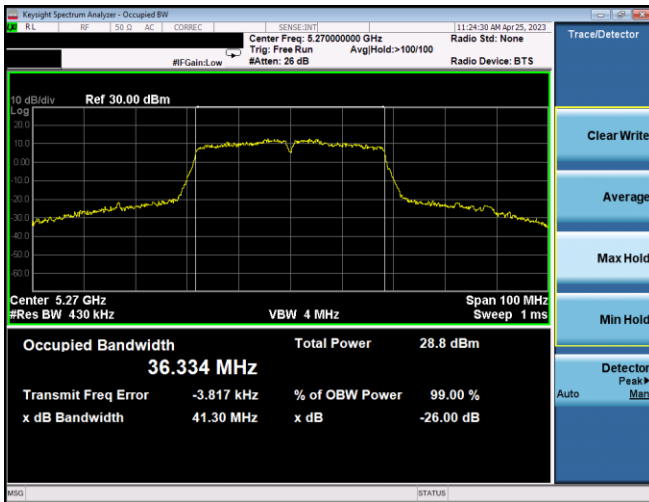
Plot 7-10. 26dB BW & 99% OBW Ant1 (40MHz BW 802.11ax(SU) – Ch. 54, MCS2)



Plot 7-8. 26dB BW & 99% OBW Ant1 (20MHz BW 802.11ax(SU) – Ch. 56, MCS2)



Plot 7-11. 26dB BW & 99% OBW Ant1 (80MHz BW 802.11ac – Ch. 58, MCS2)

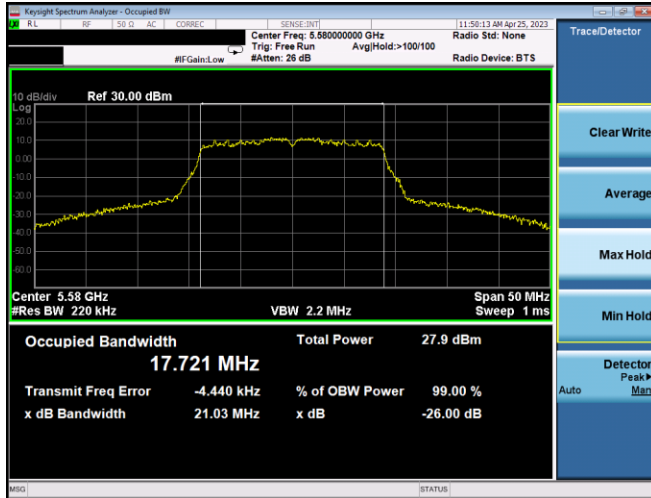


Plot 7-9. 26dB BW & 99% OBW Ant1 (40MHz BW 802.11n – Ch. 54, MCS2)

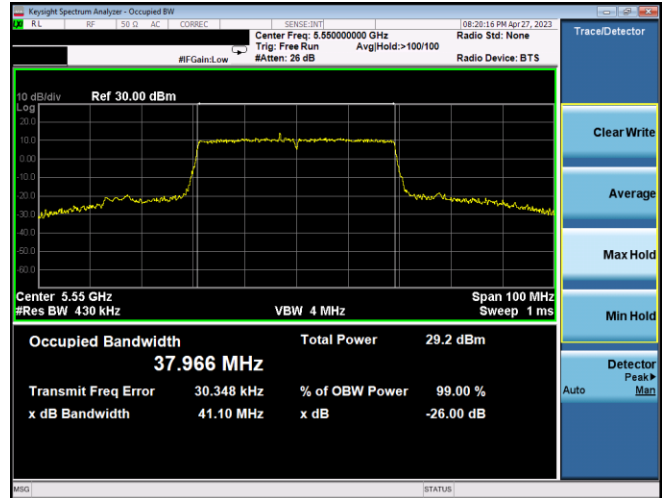


Plot 7-12. 26dB BW & 99% OBW Ant1 (80MHz BW 802.11ax(SU) – Ch. 58, MCS2)

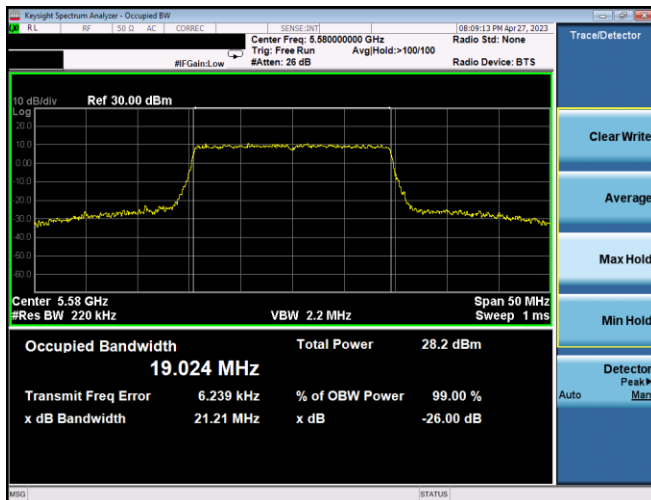
| | | | |
|---|-------------------------------------|---------------------------------------|-----------------------------------|
| FCC ID: BCGA2117 IC: 579C-A2117 | | MEASUREMENT REPORT (CERTIFICATION) | Approved by: Technical Manager |
| Test Report S/N: 1C2302130007-07.BCG | Test Dates: 2/10/2023 - 5/4/2023 | EUT Type: Head Mounted Device | Page 24 of 322 |



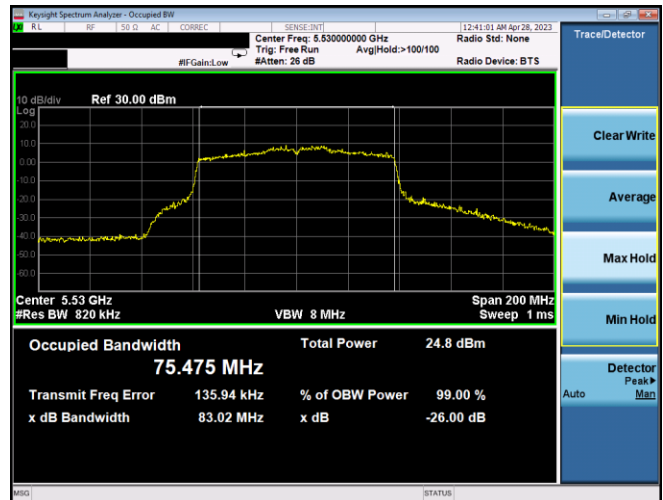
Plot 7-13. 26dB BW & 99% OBW Ant1 (20MHz BW 802.11n – Ch. 116, MCS2)



Plot 7-16. 26dB BW & 99% OBW Ant1 (40MHz BW 802.11ax(SU) – Ch. 110, MCS2)



Plot 7-14. 26dB BW & 99% OBW Ant1 (20MHz BW 802.11ax(SU) – Ch. 116, MCS2)



Plot 7-17. 26dB BW & 99% OBW Ant1 (80MHz BW 802.11ac – Ch. 106, MCS2)

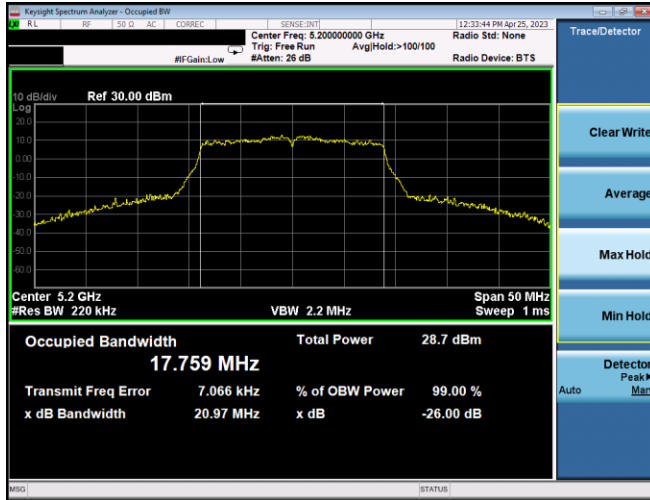


Plot 7-15. 26dB BW & 99% OBW Ant1 (40MHz BW 802.11n – Ch. 110, MCS2)

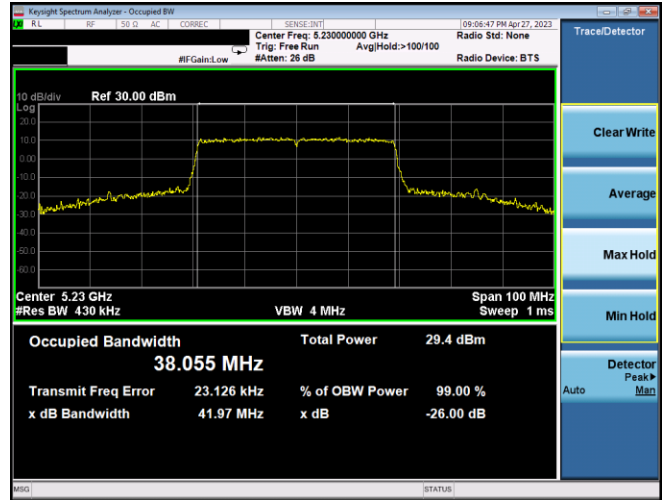


Plot 7-18. 26dB BW & 99% OBW Ant1 (80MHz BW 802.11ax(SU) – Ch. 106, MCS2)

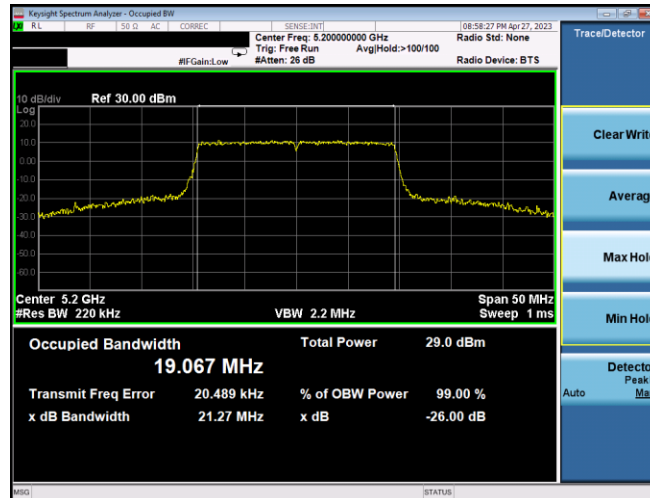
| | | | |
|---|-------------------------------------|---------------------------------------|-----------------------------------|
| FCC ID: BCGA2117 IC: 579C-A2117 | | MEASUREMENT REPORT (CERTIFICATION) | Approved by: Technical Manager |
| Test Report S/N: 1C2302130007-07.BCG | Test Dates: 2/10/2023 - 5/4/2023 | EUT Type: Head Mounted Device | Page 25 of 322 |



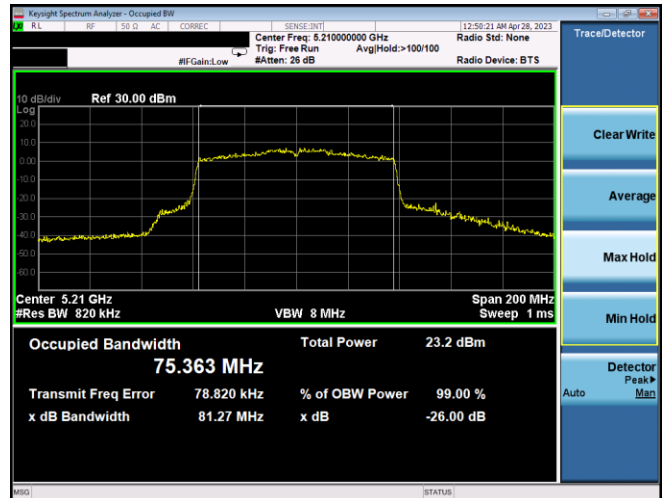
Plot 7-19. 26dB BW & 99% OBW Ant1 (20MHz BW 802.11n – Ch. 40, MCS4)



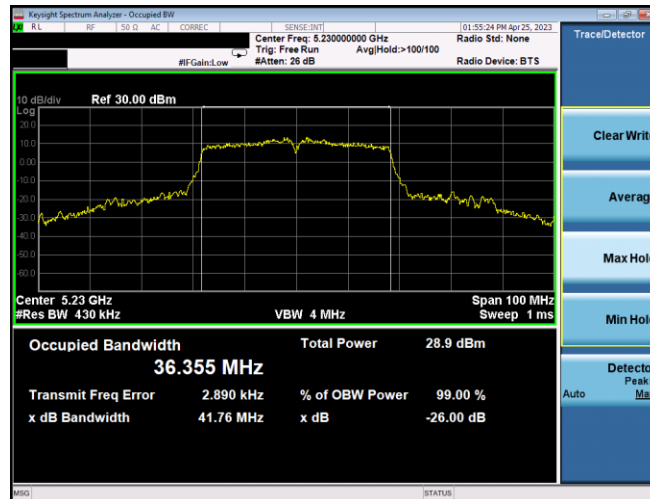
Plot 7-22. 26dB BW & 99% OBW Ant1 (40MHz BW 802.11ax(SU) – Ch. 46, MCS4)



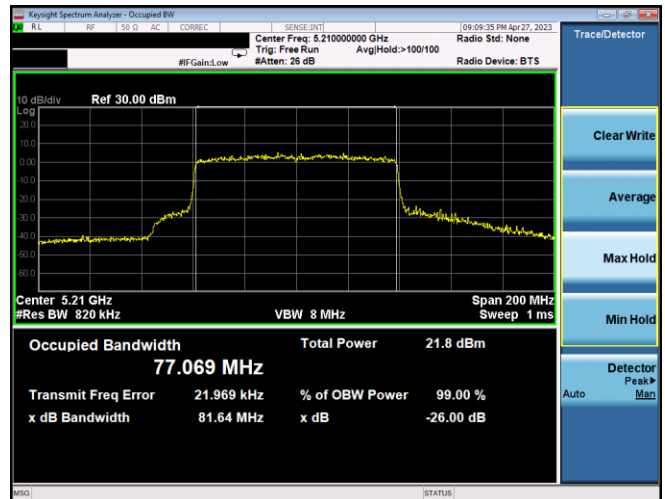
Plot 7-20. 26dB BW & 99% OBW Ant1 (20MHz BW 802.11ax(SU) – Ch. 40, MCS4)



Plot 7-23. 26dB BW & 99% OBW Ant1 (80MHz BW 802.11ac – Ch. 42, MCS4)



Plot 7-21. 26dB BW & 99% OBW Ant1 (40MHz BW 802.11n – Ch. 46, MCS4)

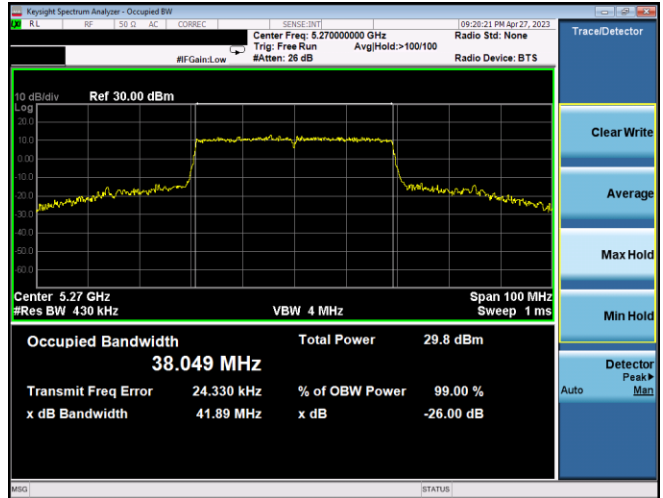


Plot 7-24. 26dB BW & 99% OBW Ant1 (80MHz BW 802.11ax(SU) – Ch. 42, MCS4)

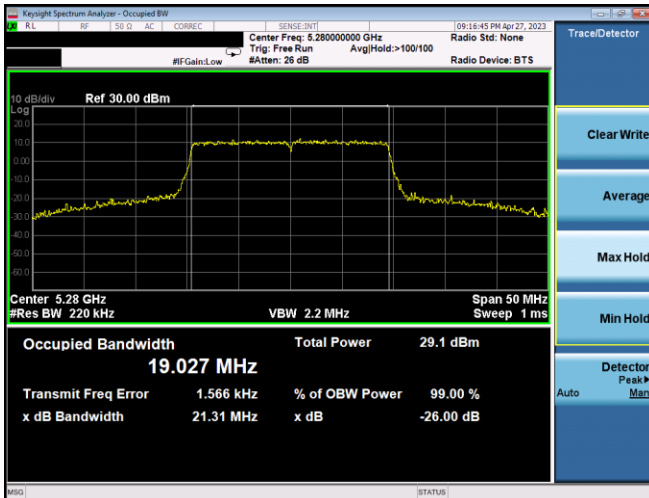
| | | | |
|---|-------------------------------------|---|-----------------------------------|
| FCC ID: BCGA2117 IC: 579C-A2117 | | MEASUREMENT REPORT (CERTIFICATION) | Approved by: Technical Manager |
| Test Report S/N: 1C2302130007-07.BCG | Test Dates: 2/10/2023 - 5/4/2023 | EUT Type: Head Mounted Device | Page 26 of 322 |



Plot 7-25. 26dB BW & 99% OBW Ant1 (20MHz BW 802.11n – Ch. 56, MCS4)



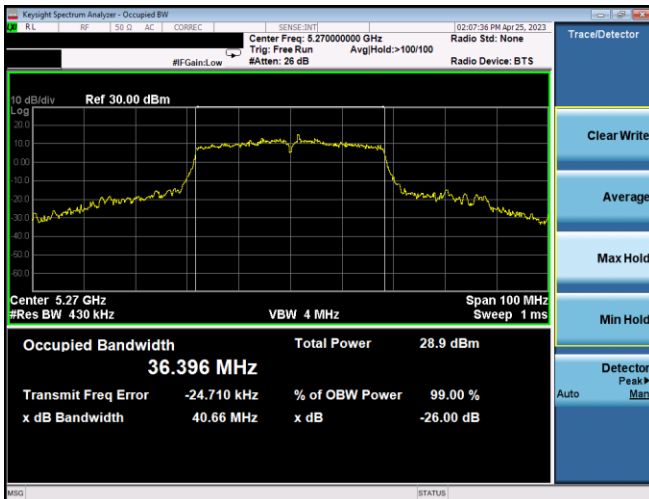
Plot 7-28. 26dB BW & 99% OBW Ant1 (40MHz BW 802.11ax(SU) – Ch. 54, MCS4)



Plot 7-26. 26dB BW & 99% OBW Ant1 (20MHz BW 802.11ax(SU) – Ch. 56, MCS4)



Plot 7-29. 26dB BW & 99% OBW Ant1 (80MHz BW 802.11ac – Ch. 58, MCS4)



Plot 7-27. 26dB BW & 99% OBW Ant1 (40MHz BW 802.11n – Ch. 54, MCS4)



Plot 7-30. 26dB BW & 99% OBW Ant1 (80MHz BW 802.11ax(SU) – Ch. 58, MCS4)

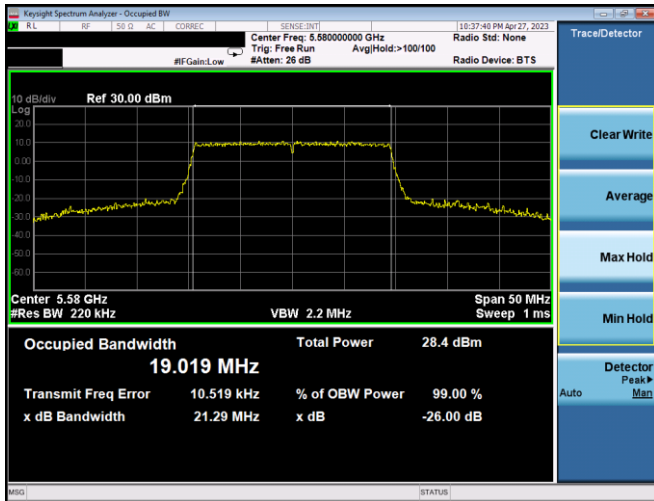
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|---|-------------------------------------|---------------------------------------|-----------------------------------|
| FCC ID: BCGA2117 IC: 579C-A2117 | | MEASUREMENT REPORT (CERTIFICATION) | Approved by: Technical Manager |
| Test Report S/N: 1C2302130007-07.BCG | Test Dates: 2/10/2023 - 5/4/2023 | EUT Type: Head Mounted Device | Page 27 of 322 |



Plot 7-31. 26dB BW & 99% OBW Ant1 (20MHz BW 802.11n – Ch. 116, MCS4)



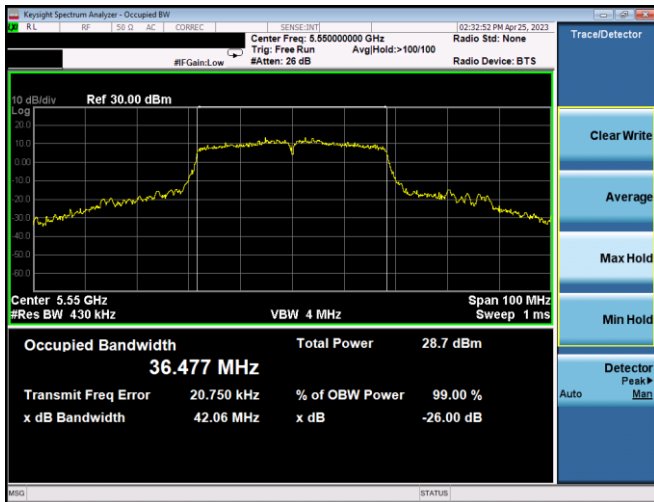
Plot 7-34. 26dB BW & 99% OBW Ant1 (40MHz BW 802.11ax(SU) – Ch. 110, MCS4)



Plot 7-32. 26dB BW & 99% OBW Ant1 (20MHz BW 802.11ax(SU) – Ch. 116, MCS4)



Plot 7-35. 26dB BW & 99% OBW Ant1 (80MHz BW 802.11ac – Ch. 106, MCS4)

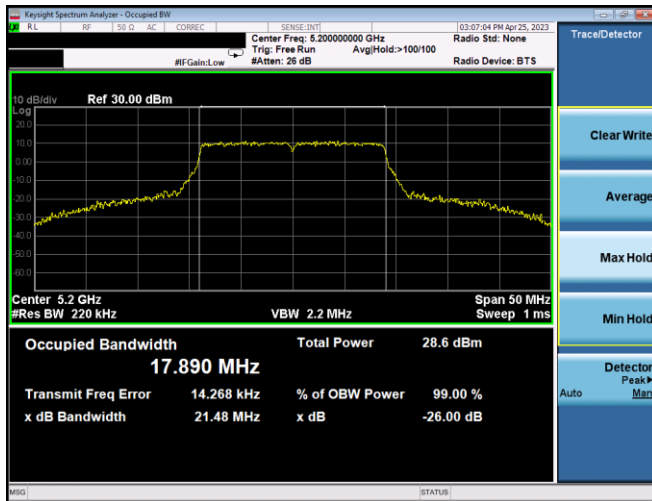


Plot 7-33. 26dB BW & 99% OBW Ant1 (40MHz BW 802.11n – Ch. 110, MCS4)

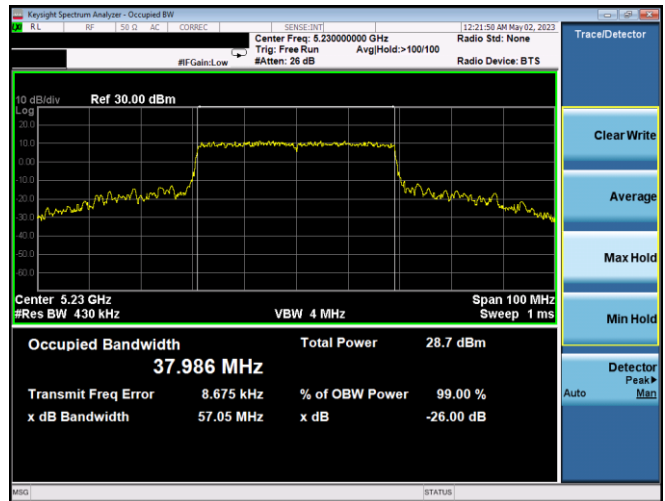


Plot 7-36. 26dB BW & 99% OBW Ant1 (80MHz BW 802.11ax(SU) – Ch. 106, MCS4)

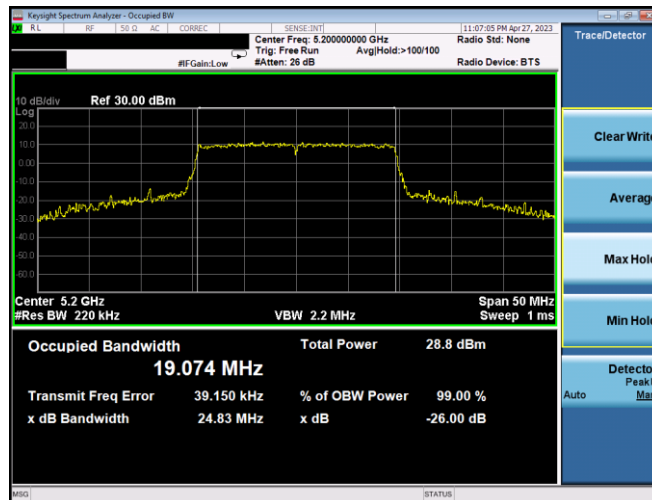
| | | | |
|---|-------------------------------------|---------------------------------------|-----------------------------------|
| FCC ID: BCGA2117 IC: 579C-A2117 | | MEASUREMENT REPORT (CERTIFICATION) | Approved by: Technical Manager |
| Test Report S/N: 1C2302130007-07.BCG | Test Dates: 2/10/2023 - 5/4/2023 | EUT Type: Head Mounted Device | Page 28 of 322 |



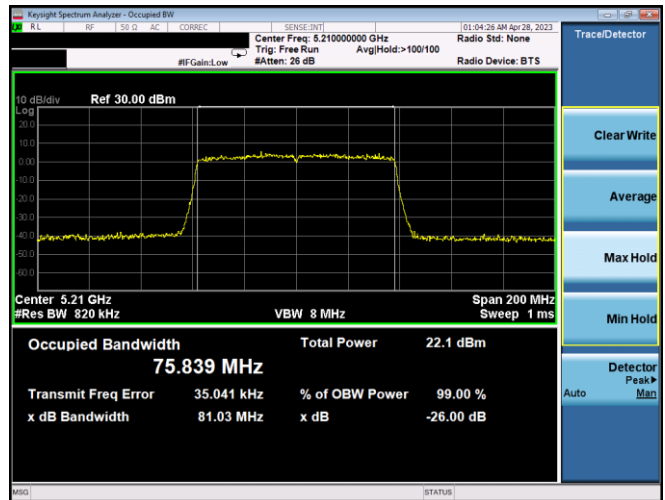
Plot 7-37. 26dB BW & 99% OBW Ant1 (20MHz BW 802.11n – Ch. 40, MCS7)



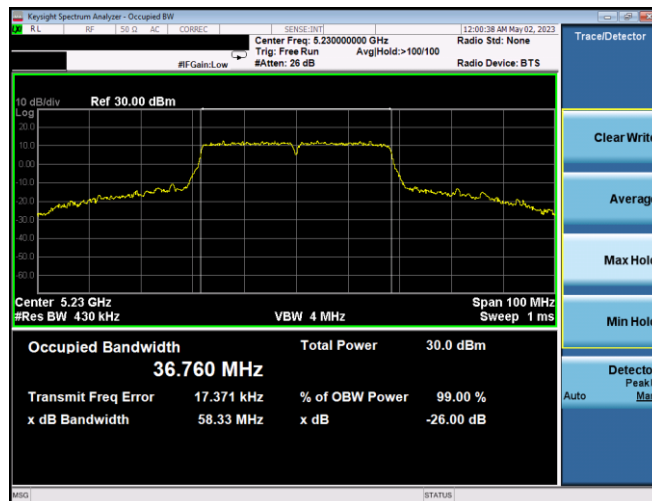
Plot 7-40. 26dB BW & 99% OBW Ant1 (40MHz BW 802.11ax(SU) – Ch. 46, MCS11)



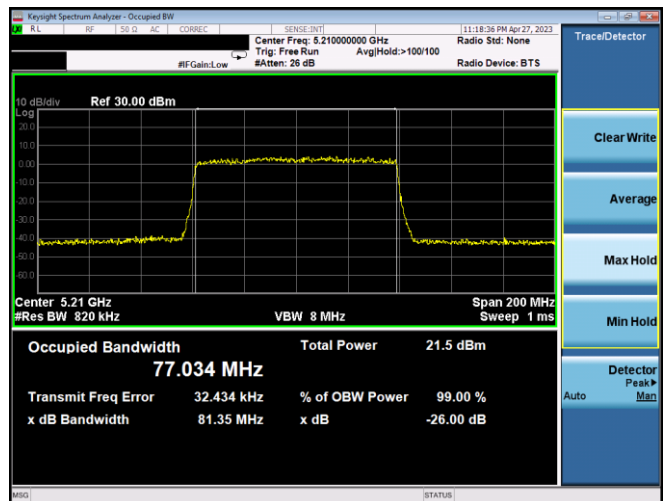
Plot 7-38. 26dB BW & 99% OBW Ant1 (20MHz BW 802.11ax(SU) – Ch. 40, MCS11)



Plot 7-41. 26dB BW & 99% OBW Ant1 (80MHz BW 802.11ac – Ch. 42, MCS8)

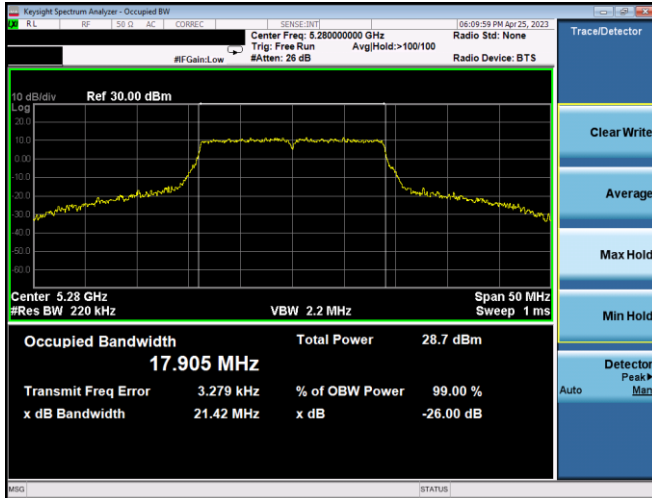


Plot 7-39. 26dB BW & 99% OBW Ant1 (40MHz BW 802.11n – Ch. 46, MCS7)

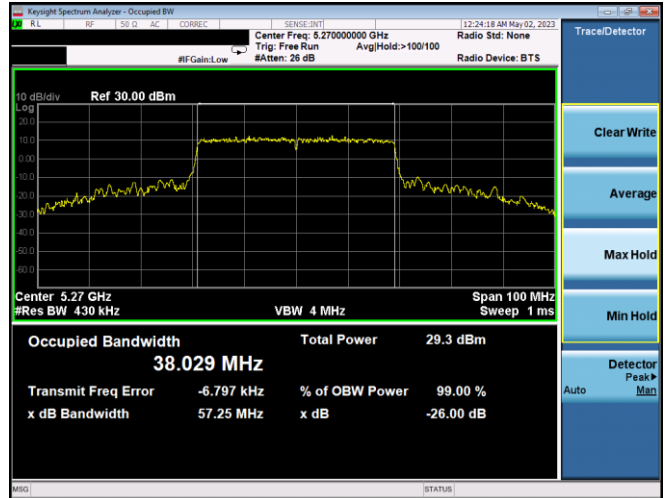


Plot 7-42. 26dB BW & 99% OBW Ant1 (80MHz BW 802.11ax(SU) – Ch. 42, MCS11)

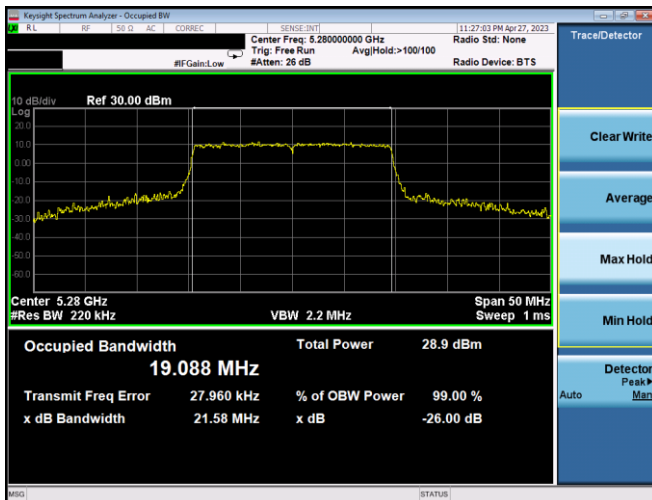
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| FCC ID: BCGA2117 IC: 579C-A2117 | | MEASUREMENT REPORT (CERTIFICATION) | Approved by: Technical Manager |
| Test Report S/N: 1C2302130007-07.BCG | Test Dates: 2/10/2023 - 5/4/2023 | EUT Type: Head Mounted Device | Page 29 of 322 |



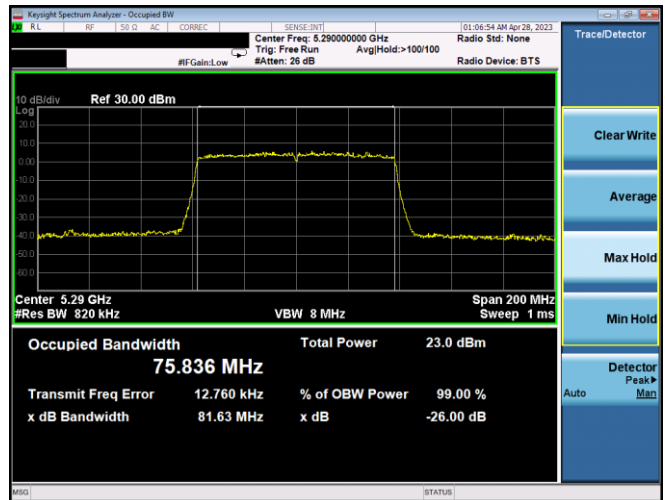
Plot 7-43. 26dB BW & 99% OBW Ant1 (20MHz BW 802.11n – Ch. 56, MCS7)



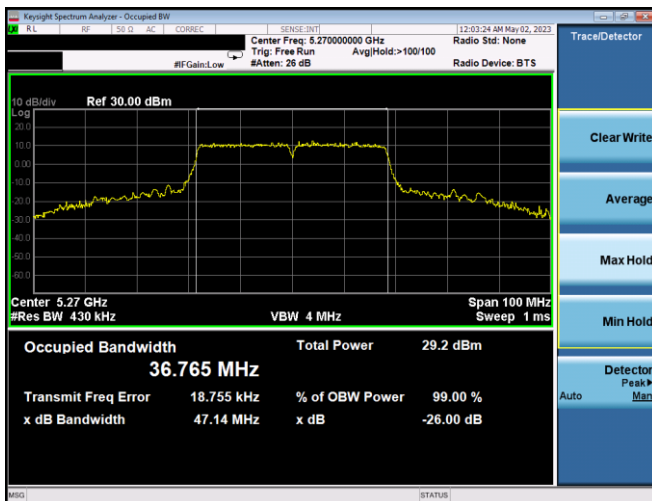
Plot 7-46. 26dB BW & 99% OBW Ant1 (40MHz BW 802.11ax(SU) – Ch. 54, MCS11)



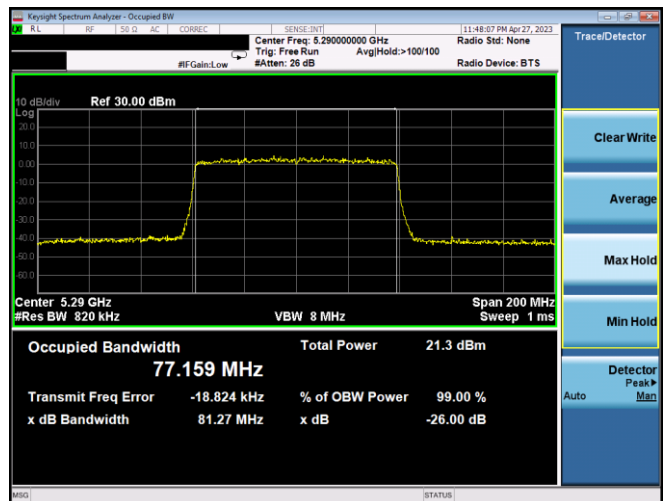
Plot 7-44. 26dB BW & 99% OBW Ant1 (20MHz BW 802.11ax(SU) – Ch. 56, MCS11)



Plot 7-47. 26dB BW & 99% OBW Ant1 (80MHz BW 802.11ac – Ch. 58, MCS8)



Plot 7-45. 26dB BW & 99% OBW Ant1 (40MHz BW 802.11n – Ch. 54, MCS7)



Plot 7-48. 26dB BW & 99% OBW Ant1 (80MHz BW 802.11ax(SU) – Ch. 58, MCS11)

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|---|-------------------------------------|---------------------------------------|-----------------------------------|
| FCC ID: BCGA2117 IC: 579C-A2117 | | MEASUREMENT REPORT (CERTIFICATION) | Approved by: Technical Manager |
| Test Report S/N: 1C2302130007-07.BCG | Test Dates: 2/10/2023 - 5/4/2023 | EUT Type: Head Mounted Device | Page 30 of 322 |