

**FCC 15.407
(Permissive Change)
WLAN 6GHz Test Report**

for

LG Electronics Inc.

**222, LG-ro, Jinwi-myeon Pyeongtaek-Si, Gyeonggi-Do,
17709 Republic of Korea**

Product Name : Notebook Computer
**Model Name : (1)16Z90Q (2)16ZB90Q
(3)16ZD90Q (4)16ZG90Q**
Brand : LG
FCC ID : BEJNT-16Z90Q

**Prepared by: : AUDIX Technology Corporation,
EMC Department**



The test report is based on a single evaluation of one sample of the above-mentioned products. It does not imply an assessment of the whole production and does not permit the use of the test lab logo.

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APPENDIX A TEST DATA AND PLOTS

APPENDIX B TESTPHOTOGRAPHS

TEST REPORT (Permissive Change)

Applicant : LG Electronics Inc.
Manufacturer : LG Electronics Inc.
Factory : LG Electronics Nanjing New Technology Co., Ltd.
EUT Description
(1) Product : Notebook Computer
(2) Model : (1)16Z90Q (2)16ZB90Q (3)16ZD90Q (4)16ZG90Q
(3) Brand : LG
(4) Power Supply: DC 20V

Applicable Standards:

Title 47 FCC CFR Part 15 Subpart E

Audix Technology Corp. tested the equipment mentioned in accordance with the requirements set forth in the above standards. Test results indicate that the equipment tested is capable of demonstrating compliance with the requirements as documented within this report.

Audix Technology Corp. does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens and samples.

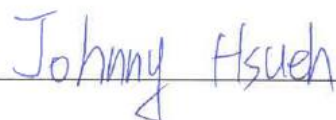
Date of Report: 2022. 07. 01

Reviewed by:



(Annie Yu/Administrator)

Approved by:



(Johnny Hsueh/Section Manager)

1. REVISION RECORD OF TEST REPORT

| Edition No | Issued Data | Revision Summary | Report Number |
|------------|--------------|----------------------------------|---------------|
| 0 | 2022. 06. 13 | Original Report | EM-F220380 |
| A | 2022. 07. 01 | To revise band edge test result. | EM-F220380 |

2. SUMMARY OF TEST RESULTS

| FCC Part Section(s) | Description | Results |
|---|---|----------------------|
| 15.207 | Conducted Emission | PASS |
| 15.205/15.209 15.407 (b)(6) | Radiated Band Edge and Radiated Spurious Emission | N/A, NOTE 2/3 |
| 15.407(a)(8) | Maximum Power Spectral Density | N/A, NOTE 2 |
| 15.407(a)(8) | Maximum Conducted Output Power | PASS |
| 2.1049 15.407(a)(10) | Occupied Bandwidth/26dB Bandwidth | N/A, NOTE 2 |
| 15.407(b)(6) | Undesirable emission limits: out of band (conducted) | N/A, NOTE 2 |
| 15.407(b)(7) | In-Band Emission (Channel Mask) | N/A, NOTE 2 |
| 15.407(d)(6) | Contention Based Protocol | N/A, NOTE 2 |
| 15.203 | Antenna Requirement | N/A, NOTE 2 |
| Note: 1. The uncertainties value is not used in determining the result. 2. To add new Configuration with new components is not influence on this item 3. Due to the above difference, it is unnecessary to test Radiated Band Edge. | | |

3. GENERAL INFORMATION

3.1. Description of Application

| | |
|----------------------|---|
| Applicant | LG Electronics Inc. 222, LG-ro, Jinwi-myeon Pyeongtaek-Si, Gyeonggi-Do, 17709 Republic of Korea |
| Manufacturer | LG Electronics Inc. 222, LG-ro, Jinwi-myeon Pyeongtaek-Si, Gyeonggi-Do, 17709 Republic of Korea |
| Factory | LG Electronics Nanjing New Technology Co., Ltd. No.346, Yaoxin Road, Economic & Technical Development Zone, Nanjing, China. |
| Product | Notebook Computer |
| Model | (1)16Z90Q (2)16ZB90Q (3)16ZD90Q (4)16ZG90Q The difference between all models is different in the sales customers. |
| Configuration (HVIN) | 16Z90Q-K, 16Z90Q-N, 16Z90Q-A, 16Z90Q-R The difference please refer to the following. |
| Brand | LG |

The difference list for Configuration (HVIN):

| Difference Configuration (HVIN) | Main Board | GPU | TPM (Trusted Platform Module) |
|---------------------------------------|------------------------------|----------------------------|-------------------------------------|
| 16Z90Q-K | Queen MAIN B/D PCB | Intel Iris Xe UHD Graphics | Not Support |
| 16Z90Q-N | Queen MAIN B/D PCB | Intel Iris Xe UHD Graphics | Support |
| 16Z90Q-A | QUEEN NVIDIA MAIN B/D PCB | NVIDIA RTX2050 | Not Support |
| 16Z90Q-R | QUEEN NVIDIA MAIN B/D PCB | NVIDIA RTX2050 | Support |

3.2. Description of EUT

| | | |
|------------------|--|--|
| Test Model | 16Z90Q | |
| Serial Number | N/A | |
| Power Rating | DC 20V, 3.25A | |
| Software Version | XY (X, Y can be 0 to 9 for different SW version not influence RF parameter) | |
| RF Features | WLAN:802.11 a/b/g/n/ac/ax Bluetooth: BT and BLE (BT 5.1) | |
| Transmit Type | 2.4 GHz | |
| | 802.11b | 1T1R |
| | 802.11g | 1T1R |
| | 802.11n-HT20 | 2T2R |
| | 802.11n-HT40 | 2T2R |
| | 802.11ax-HE20 | 2T2R |
| | 802.11ax-HE40 | 2T2R |
| | BT/BLE | 1T1R |
| | U-NII Bands | |
| | 802.11a | 1T1R |
| | 802.11n-HT20/802.11ac-VHT20/802.11ax-HE20 | 2T2R |
| | 802.11n-HT40/802.11ac-VHT40/802.11ax-HE40 | 2T2R |
| | 802.11ac-VHT80/802.11ax-HE80 | 2T2R |
| | 802.11ac-VHT160/802.11ax-HE160 | 2T2R |
| | The MIMO is uncorrelated and supported SDM mode only. | |
| Device Category | <input type="checkbox"/> Outdoor Access Point <input type="checkbox"/> Fixed point-to-point Access Point <input type="checkbox"/> Indoor Access Point <input checked="" type="checkbox"/> Mobile and Portable client device | |
| Test Sample | Sample No. | Test Item |
| | 03 | AC Conduction, Radiated, RF Conducted |
| | 04 | |
| | Firmware | N/A |
| Sample Status | Trial sample | |
| Date of Receipt | 2022. 03. 24 | |
| Date of Test | 2022. 05. 21 ~ 06. 30 | |

| | |
|------------------------|---|
| Interface Ports of EUT | <ul style="list-style-type: none"> • One HDMI Port • Two USB Type C Ports • One Earphone Port • One Micro SD Card Slot • Two USB 3.0 Ports |
| Accessories Supplied | <ul style="list-style-type: none"> • AC Adapter • LAN Gender |

3.3. Reference Test Guidance

ANSI C63.10:2013

KDB 789033 D02 v02r01, KDB 662911 D01 v02r01, KDB 987594 D02 v01v01

3.4. Information for Permissive Change

- The EUT is an addition version with original FCC ID: BEJNT-16Z90Q and IC: 2703H-16Z90Q is to add new Configuration (HVIN) and components, and the detail for component list please refer to section 3.7.1
- The differences between this application and original's ID as clarify in following list.

| Difference | | Main Board | GPU | TPM (Trusted Platform Module) |
|-------------------|----------|---------------------------|----------------------------|----------------------------------|
| Original | 16Z90Q | Queen MAIN B/D PCB | Intel Iris Xe UHD Graphics | Not Support |
| | | Queen MAIN B/D PCB | Intel Iris Xe UHD Graphics | Support |
| Permissive Change | 16Z90Q-K | Queen MAIN B/D PCB | Intel Iris Xe UHD Graphics | Not Support |
| | 16Z90Q-N | Queen MAIN B/D PCB | Intel Iris Xe UHD Graphics | Support |
| | 16Z90Q-A | QUEEN NVIDIA MAIN B/D PCB | NVIDIA RTX2050 | Not Support |
| | 16Z90Q-R | QUEEN NVIDIA MAIN B/D PCB | NVIDIA RTX2050 | Support |

Note: 1. The Configuration (HVIN) 16Z90Q-K and 16Z90Q-N with original components were measured in the original application.
 2 The Configuration (HVIN) 16Z90Q-A and 16Z90Q-R with new components were measured in this Permissive Change application.

- Due to above different item, there have some test item should be re-tested (see section 2), the test data are recorded in this report.

3.5. Antenna Information

| No. | Antenna Part Number | Manufacture | Antenna Type | Frequency (MHz) | Max Gain(dBi) | |
|---|---------------------|--------------|--------------|-----------------|---------------|------------|
| | | | | | Main | AUX |
| 1. | WA-P-LELE-04-009 | INPAQ | Mono-Pole | 2400 | 2.3 | 2.0 |
| | | | | 2450 | 2.4 | 2.6 |
| | | | | 2500 | 3.2 | 2.4 |
| | | | | 5150 | 4.2 | 3.5 |
| | | | | 5400 | 4.2 | 3.6 |
| | | | | 5850 | 4.4 | 3.5 |
| | | | | 5925 | 4.1 | 3.4 |
| | | | | 6525 | 4.1 | 3.2 |
| | | | 7125 | 4.2 | 2.3 | |
| <p>Note 1. 2.4G: Directional gain = $10 \log[(10^{3.2/10} + 10^{2.6/10})/2] = 2.91\text{dBi}$</p> <p>Note 2. UNII Band (WLAN 5G): Directional gain = $10 \log[(10^{4.4/10} + 10^{3.6/10})/2] = 4.02\text{dBi}$</p> <p>Note 3. UNII Band (WLAN 6G):</p> <p>5925MHz: Directional gain = $10 \log[(10^{4.1/10} + 10^{3.4/10})/2] = 3.76\text{dBi}$</p> <p>6525MHz: Directional gain = $10 \log[(10^{4.1/10} + 10^{3.2/10})/2] = 3.67\text{dBi}$</p> <p>7125MHz: Directional gain = $10 \log[(10^{4.2/10} + 10^{2.3/10})/2] = 3.35\text{dBi}$</p> | | | | | | |
| 2. | L1LRF008-CS-H | LUXSHARE-ICT | Mono-Pole | 2400 | 6.3 | 0.9 |
| | | | | 2450 | 5.7 | 1.6 |
| | | | | 2500 | 2.7 | 3.5 |
| | | | | 5150 | -1.5 | 2.3 |
| | | | | 5400 | 3.4 | 4.5 |
| | | | | 5850 | 3.3 | 5.8 |
| | | | | 5925 | 2.9 | 4.7 |
| | | | | 6525 | 3.4 | 1.3 |
| | | | 7125 | -4.9 | -1.6 | |
| <p>Note 1. 2.4G: Directional gain = $10 \log[(10^{6.3/10} + 10^{3.5/10})/2] = 5.12\text{dBi}$</p> <p>Note 2. UNII Band (WLAN 5G): Directional gain = $10 \log[(10^{3.3/10} + 10^{5.8/10})/2] = 4.73\text{dBi}$</p> <p>Note 3. UNII Band (WLAN 6G):</p> <p>5925MHz: Directional gain = $10 \log[(10^{2.9/10} + 10^{4.7/10})/2] = 3.89\text{dBi}$</p> <p>6525MHz: Directional gain = $10 \log[(10^{3.4/10} + 10^{1.3/10})/2] = 2.48\text{dBi}$</p> <p>7125MHz: Directional gain = $10 \log[(10^{-4.9/10} + 10^{-1.6/10})/2] = -2.94\text{dBi}$</p> | | | | | | |

3.6. EUT Specifications Assessed in Current Report

| Mode | U-NII Band | Fundamental Range (MHz) | Channel Number |
|----------------|------------|-------------------------|----------------|
| 802.11ax-HE20 | 5 | 5955-6415 | 24 |
| | 6 | 6435-6515 | 5 |
| | 7 | 6535-6855 | 17 |
| | 8 | 6875-7115 | 13 |
| 802.11ax-HE40 | 5 | 5965-6405 | 12 |
| | 6 | 6445-6485 | 2 |
| | 7 | 6525-6845 | 9 |
| | 8 | 6885-7085 | 6 |
| 802.11ax-HE80 | 5 | 5985-6385 | 6 |
| | 6 | 6465-6545 | 2 |
| | 7 | 6625-6785 | 3 |
| | 8 | 6865-7025 | 3 |
| 802.11ax-HE160 | 5 | 6025-6345 | 3 |
| | 6 | 6505 | 1 |
| | 7 | 6665 | 1 |
| | 8 | 6825-6985 | 2 |

| Mode | Modulation | Data Rate (Mbps) |
|----------------|---|------------------|
| 802.11ax-HE20 | OFDMA (BPSK/ QPSK/ 16QAM/ 64QAM/ 256QAM/1024QAM) | Up to 287 |
| 802.11ax-HE40 | | Up to 574 |
| 802.11ax-HE80 | | Up to 1201 |
| 802.11ax-HE160 | | Up to 2402 |

| Channel List | | | | | | | | |
|---------------|----------------|-------------|------------|----------------|-------------|------------|----------------|-------------|
| 802.11ax-HE20 | | | | | | | | |
| U-NII Band | Channel Number | Freq. (MHz) | U-NII Band | Channel Number | Freq. (MHz) | U-NII Band | Channel Number | Freq. (MHz) |
| 5 | 1 | 5955 | 5 | 81 | 6335 | 7 | 161 | 6755 |
| | 5 | 5975 | | 85 | 6375 | | 165 | 6775 |
| | 9 | 5995 | | 89 | 6395 | | 169 | 6795 |
| | 13 | 6015 | | 93 | 6415 | | 173 | 6815 |
| | 17 | 6035 | | 97 | 6435 | | 177 | 6835 |
| | 21 | 6055 | 6 | 101 | 6455 | 181 | 6855 | |
| | 25 | 6075 | | 105 | 6475 | 185 | 6875 | |
| | 29 | 6095 | | 109 | 6495 | 189 | 6895 | |
| | 33 | 6115 | | 113 | 6515 | 193 | 6915 | |
| | 37 | 6135 | | 117 | 6535 | 197 | 6935 | |
| | 41 | 6155 | 7 | 121 | 6555 | 201 | 6955 | |
| | 45 | 6175 | | 125 | 6575 | 205 | 6975 | |
| | 49 | 6195 | | 129 | 6595 | 209 | 6995 | |
| | 53 | 6215 | | 133 | 6615 | 213 | 7015 | |
| | 57 | 6235 | | 137 | 6635 | 217 | 7035 | |
| | 61 | 6255 | | 141 | 6655 | 221 | 7055 | |
| | 65 | 6275 | | 145 | 6675 | 225 | 7075 | |
| | 69 | 6295 | | 149 | 6695 | 229 | 7095 | |
| | 73 | 6315 | | 153 | 6715 | 233 | 7115 | |
| | 77 | 6335 | | 157 | 6735 | | | |

| Channel List | | | | | | | | |
|---------------|----------------|-------------|------------|----------------|-------------|------------|----------------|-------------|
| 802.11ax-HE40 | | | | | | | | |
| U-NII Band | Channel Number | Freq. (MHz) | U-NII Band | Channel Number | Freq. (MHz) | U-NII Band | Channel Number | Freq. (MHz) |
| 5 | 3 | 5965 | 5 | 83 | 6365 | 7 | 163 | 6765 |
| | 11 | 6005 | | 91 | 6405 | | 171 | 6805 |
| | 19 | 6045 | | 99 | 6445 | | 179 | 6845 |
| | 27 | 6085 | 6 | 107 | 6485 | 8 | 187 | 6885 |
| | 35 | 6125 | | 115 | 6525 | | 195 | 6925 |
| | 43 | 6165 | 7 | 123 | 6565 | | 203 | 6965 |
| | 51 | 6205 | | 131 | 6505 | | 211 | 7005 |
| | 59 | 6245 | | 139 | 6645 | | 219 | 7045 |
| | 67 | 6285 | | 147 | 6685 | | 227 | 7085 |
| | 75 | 6325 | | 155 | 6725 | | | |

| Channel List | | | | | | | | |
|---------------|----------------|-------------|------------|----------------|-------------|------------|----------------|-------------|
| 802.11ax-HE80 | | | | | | | | |
| U-NII Band | Channel Number | Freq. (MHz) | U-NII Band | Channel Number | Freq. (MHz) | U-NII Band | Channel Number | Freq. (MHz) |
| 5 | 7 | 5985 | 5 | 87 | 6385 | 7 | 167 | 6785 |
| | 23 | 6065 | 6 | 103 | 6465 | 8 | 183 | 6865 |
| | 39 | 6145 | | 119 | 6545 | | 199 | 6945 |
| | 55 | 6225 | 7 | 135 | 6625 | | 215 | 7025 |
| | 71 | 6305 | | 151 | 6705 | | | |

| Channel List | | | | | |
|----------------|----------------|-----------------|------------|----------------|-----------------|
| 802.11ax-HE160 | | | | | |
| U-NII Band | Channel Number | Frequency (MHz) | U-NII Band | Channel Number | Frequency (MHz) |
| 5 | 15 | 6025 | 7 | 143 | 6665 |
| | 47 | 6185 | 8 | 175 | 6825 |
| | 79 | 6345 | | 207 | 6985 |
| 6 | 111 | 6505 | | | |

Note: Test modes are presented at section 3.6.

3.7. Description of Key Components

3.7.1. For the All Component Lists

| Item | Supplier | Model / Type | Character |
|--------------------------|-------------------|----------------------------------|--|
| System | Microsoft | Win11 Home | --- |
| Main Board | LG | Queen MAIN B/D PCB | Main Board (GM) Manufacturer: #1 Hannstar Board Tech(Jiang Yin) Corp.,Ltd. #2 Elec & Eltek Company (MCO) Limited. |
| | | QUEEN NVIDIA MAIN B/D PCB | Main Board (PM)* Manufacturer: #1 Hannstar Board Tech(Jiang Yin) Corp.,Ltd. #2 Elec & Eltek Company (MCO) Limited. |
| WLAN SUB Board | LG | 16Z90Q Sub B/D | Manufacturer: #1 Hannstar Board Tech(Jiang Yin) Corp.,Ltd. #2 Elec & Eltek Company (MCO) Limited. #3 JiangSu HuaShen Electronic co.,ltd (HXF) |
| CPU (Socket: BGA1744) | Intel | i7-1260P | 2.5GHz |
| | Intel | i5-1240P | 2.1GHz |
| 16" LCD Panel | LG Display | LP160WQ1(SP)(B2) | Resolution: 2560 x 1600, 60Hz WQXGA IPS (Non Touch) |
| Storage (SSD) | SK hynix | HFM001TD3JX013N | 1TB |
| | | HFM512GD3JX013N | 512GB |
| | | HFM256GD3JX013N | 256GB |
| | Samsung | MZ-VL21T00 | 1TB |
| | | MZ-VL25120 | 512GB |
| | | MZ-VL22560 | 256GB |
| MZ-VL22T00 | | 2TB* | |
| Memory (RAM) | Samsung | --- | 16GB LPDDR5x(On Board) |
| | | --- | 8GB LPDDR5x(On Board) |
| | | --- | 32GB LPDDR5x(On Board)* |
| | SK Hynix | --- | 16GB LPDDR5x(On Board) |
| | | --- | 8GB LPDDR5x(On Board) |
| | | --- | 32GB LPDDR5x(On Board)* |
| Battery Pack | LG | LBV7227E | 80Wh, DC 7.74V, 80Wh Typ 10336mAh |
| | LG | LBV122CM | 90Wh, DC 7.76V, 90Wh Typ 11600mAh |
| WLAN Combo Card | Intel | AX211D2W | WLAN and BT, 2x2 PCIe M.2 1216 SD adapter card FCC ID: PD9AX211D2 IC: 1000M-AX211D2 |
| WLAN Combo Antenna | LG (INPAQ) | WA-P-LELE-04-009 | PCB, Mono-pole Type Main: Black, Aux: Gray |
| | LG (LUXSHARE-ICT) | L1LRF008-CS-H | PCB, Mono-pole Type Main: Black, Aux: Gray |

| Item | Supplier | Model / Type | Character | |
|---|--|--------------------|---|--|
| Keyboard | TIC | KT0120B8E | --- | |
| | LITE ON | SN8101 | --- | |
| Web Camera | Chicony | CKFLF26 | --- | |
| | Luxvisions | 1BF225N3 | --- | |
| LAN Gender (Type C to LAN) | SUZHOU MEC ELECTRONICS | 80-5946-111 | (White) 10/100 Megabit Ethernet | |
| | | 80-5946-101 | (Black) 10/100 Megabit Ethernet | |
| | | 80-5946-230 | (White) 10/100/1000 Megabit Ethernet | |
| | | 80-5946-240 | (Black) 10/100/1000 Megabit Ethernet | |
| | Type C to LAN: Shielded, Undetached, 0.12m | | | |
| | ARIN TECH CO. LTD | GD-08MF-36-WH-LP10 | (White) 10/100 Megabit Ethernet | |
| | | GD-08MF-36-BK-LP11 | (Black) 10/100 Megabit Ethernet | |
| | | GD-08MF-50-WH-LP12 | (White) 10/100/1000 Megabit Ethernet | |
| | | GD-08MF-50-BK-LP13 | (Black) 10/100/1000 Megabit Ethernet | |
| | Type C to LAN: Shielded, Undetached, 0.12m | | | |
| AC Adapter (65W) | LG (HONOR) | ADT-65DSU-D03-2 | I/P: AC 100-240V, 1.6A, 50-60Hz O/P: DC 20V, 3.25A | |
| | DC Power Cord: Non-Shielded, Undetached, 1.5m | | | |
| | AC Power Cord: Non-Shielded, Detached, 1.0m (2C) (For Other Countries) AC Power Cord: Non-Shielded, Detached, 1.55m (2C) (For US, Canada, Mexico) | | | |
| Note: “*” Standing for adding new configuration. | | | | |

Remark: For more detailed features description, please refer to the manufacturer’s specifications or the user manual.

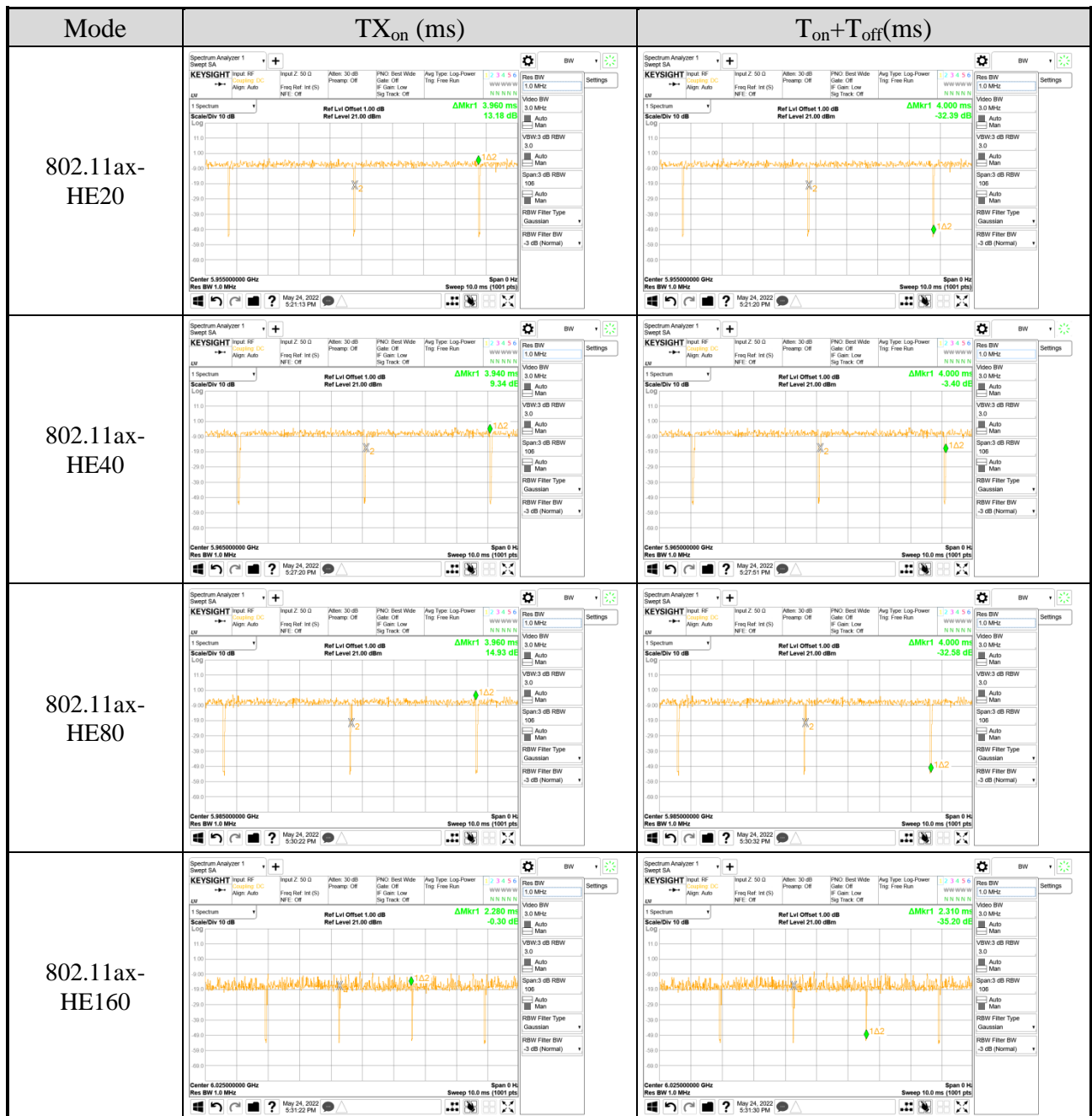
3.7.2. The EUT collocates with the original worst mode and new components, which are used to establish a basic configuration of system during test:

| SKU (Mode) | | 1 | 2 |
|--------------------|--|---|---|
| Main Board | LG, QUEEN NVIDIA MAIN B/D PCB (w/ TPM) | √ | |
| | LG, QUEEN NVIDIA MAIN B/D PCB (w/o TPM) | | √ |
| SUB Board | LG, 16Z90Q Sub B/D (Type A) | √ | √ |
| CPU | Intel, i7-1260P | √ | √ |
| 16” LCD Panel | LG Display, LP160WQ1(SP)(B2) | √ | √ |
| Storage (SSD) | Samsung, 2TB | √ | √ |
| | SK hynix, 1TB | √ | √ |
| Memory (RAM) | 32GB | √ | √ |
| Battery Pack | LG, 90Wh | √ | √ |
| Keyboard | TIC, KT0120B8E | √ | √ |
| Web Camera | Chicony, CKFLF26 | √ | √ |
| WLAN Combo Card | Intel, AX211D2W | √ | √ |
| WLAN Combo Antenna | LG (INPAQ), WA-P-LELE-04-009 | √ | |
| | LG (LUXSHARE-ICT), L1LRF008-CS-H | | √ |
| Type C #1 | AC Adapter | √ | √ |
| Type C #2 | Link to LAN Gender | √ | √ |

3.8. Test Configuration

| Mode | T _{Xon} (ms) | 1/T _{Xon} (kHz) | T _{Xon+off} (ms) | Duty Cycle (x) | Duty Cycle Factor [10log(1/x)] (dB) |
|----------------|-----------------------|--------------------------|---------------------------|----------------|-------------------------------------|
| 802.11ax-HE20 | 3.960 | 0.253 | 4.000 | 0.990 | N/A |
| 802.11ax-HE40 | 3.940 | 0.254 | 4.000 | 0.985 | N/A |
| 802.11ax-HE80 | 3.960 | 0.253 | 4.000 | 0.990 | N/A |
| 802.11ax-HE160 | 2.280 | 0.439 | 2.310 | 0.987 | N/A |

Note: When duty cycle is less than 98% (0.98) that duty cycle factor 10log(1/x) is needed to add in conducted test items measured in average detector.



| AC Conduction | |
|---------------|--|
| SKU #1 | Normal operation (with INPAQ Antenna) |
| SKU #2 | Normal operation (with LUXSHARE-ICT Antenna) |

| Item | | Mode | Data Rate | Test Channel | |
|--------------------|--------|---|----------------|--------------|----|
| Radiated Test Case | SKU #1 | Radiated Spurious Emission (30MHz~1GHz) Note 7 | 802.11ax-HE160 | HE0 | 79 |
| | SKU #2 | | 802.11ax-HE160 | HE0 | 79 |

● OFDM Modulation

| Item | | Mode | Data Rate | Test Channel | |
|--------------------|--------|---|----------------|--------------|--------|
| Radiated Test Case | SKU #2 | Radiated Spurious Emission (Above 1GHz) Note 3 | 802.11ax-HE160 | HE0 | 79 |
| | SKU #2 | Band Edge | 802.11ax-HE20 | HE0 | 1/233 |
| | | | 802.11ax-HE40 | HE0 | 3/227 |
| | | | 802.11ax-HE80 | HE0 | 7/215 |
| | | | 802.11ax-HE160 | HE0 | 15/207 |

| Item | | Mode | Data Rate | Test Channel |
|---------------------|--------------------------------|----------------|-----------|--|
| Conducted Test Case | Maximum Conducted Output power | 802.11ax-HE20 | HE0 | 2/45/93/97/105/1 13/117/149/181/ 185/209/233 |
| | | 802.11ax-HE40 | HE0 | 3/43/91/99/107/1 15/147/179/187/ 211/227 |
| | | 802.11ax-HE80 | HE0 | 7/39/87/103/119/ 135/151/16/183/ 199/215 |
| | | 802.11ax-HE160 | HE0 | 15/47/79/111/14 3/175/207 |

● OFDMA Modulation ^{Note 6}

| Item | | Tones | RU Index | Mode | Data Rate | Test Channel | |
|--------------------|--------|---|----------|------|----------------|--------------|-----|
| Radiated Test Case | SKU #2 | Radiated Spurious Emission (Above 1GHz) ^{Note 3} | 996T | 67 | 802.11ax-HE160 | HE0 | 79 |
| | SKU #2 | Band Edge | 26T | 0 | 802.11ax-HE80 | HE0 | 7 |
| | | | | 0 | 802.11ax-HE40 | HE0 | 227 |
| | | | 52T | 37 | 802.11ax-HE20 | HE0 | 1 |
| | | | | 44 | 802.11ax-HE40 | HE0 | 227 |
| | | | 106T | 53 | 802.11ax-HE40 | HE0 | 3 |
| | | | | 56 | 802.11ax-HE40 | HE0 | 227 |
| | | | 242T | 61 | 802.11ax-HE80 | HE0 | 7 |
| | | | | 62 | 802.11ax-HE40 | HE0 | 227 |
| | | | 484T | 65 | 802.11ax-HE80 | HE0 | 7 |
| | | | | S66 | 802.11ax-HE160 | HE0 | 207 |
| | | | 996T | 67 | 802.11ax-HE160 | HE0 | 15 |
| | | | | S67 | 802.11ax-HE160 | HE0 | 207 |

| Item | | Tones | RU Index | Mode | Data Rate | Test Channel |
|---------------------|--------------------------------|-------|-------------------------|----------------|-----------|--|
| Conducted Test Case | Maximum Conducted Output power | 26T | 0/4/8 | 802.11ax-HE20 | HE0 | 2/45/93/97/105/ 113/117/149/ 181/185/209/ 233 |
| | | 52T | 37/39/40 | | | |
| | | 106T | 53/54 | | | |
| | | 242T | 61 | | | |
| | | 26T | 0/8/17 | 802.11ax-HE40 | HE0 | 3/43/91/99/107/ 115/147/179/ 187/211/227 |
| | | 52T | 37/40/44 | | | |
| | | 106T | 53/54/56 | | | |
| | | 242T | 61/62 | | | |
| | | 484T | 65 | 802.11ax-HE80 | HE0 | 7/39/87/103/119/ /135/151/16/183 /199/215 |
| | | 26T | 0/18/36 | | | |
| | | 52T | 37/44/52 | | | |
| | | 106T | 53/56/60 | | | |
| | | 242T | 61/62/64 | | | |
| | | 484T | 65/66 | 802.11ax-HE160 | HE0 | 15/47/79/111/ 143/175/207 |
| | | 996T | 67 | | | |
| | | 26T | 0/18/36 S0/S18/S36 | | | |
| | | 52T | 37/44/52 S37/S44/S52 | | | |
| | | 106T | 53/56/60 S53/S56/S60 | | | |
| | | 242T | 61/62/64 S61/S62/S64 | 802.11ax-HE160 | HE0 | 15/47/79/111/ 143/175/207 |
| | | 484T | 65/66 S65/S66 | | | |
| 996T | 65/S67 | | | | | |

Note 1: Mobile Device

Portable Device, and 3 axis were assessed. The worst scenario for Radiated Spurious Emission as follow: Lie Side Stand

Note 2: Low, mid, and high channels were measured, only the worst channel of each modulation was presented in this report.

Note 3: Both of the antennas are the same type, and we presented the worst case in the report. The max-gain condition MIMO is SKU #2, we estimated the worst case at maximum power on each OFDM and OFDMA Configuration. The MIMO is uncorrelated and supported SDM mode only.

Note 4: The modulation and bandwidth are similar for 802.11n mode for HT20/HT40 and 802.11ac mode for VHT20/VHT40, therefore investigated worst case to representative mode in the test report.

Note 5: The data rates were selected based on preliminary testing that identified rate as the worst case for output power.

Note 6: After preliminary test, we present worst case with maximum power of each RU type.

Note 7: We estimated the worst case at maximum power.

3.9. Output Power Setting

| Mode | U-NII Band | Centre Frequency (MHz) | Power Setting | | Mode | U-NII Band | Centre Frequency (MHz) | Power Setting | |
|---------------|------------|------------------------|---------------|----------------|---------------|------------|------------------------|---------------|----------------|
| | | | Chain A (AUX) | Chain B (Main) | | | | Chain A (AUX) | Chain B (Main) |
| 802.11ax-HE20 | 5 | 5955 | 1.50 | 1.50 | 802.11ax-HE20 | 7 | 6535 | 0.75 | 0.75 |
| | | 6175 | 1.50 | 1.50 | | | 6695 | 0.75 | 0.75 |
| | | 6415 | 1.50 | 1.50 | | | 6855 | 0.75 | 0.75 |
| | 6 | 6435 | 1.50 | 1.50 | | 8 | 6875 | 0.75 | 0.75 |
| | | 6475 | 1.50 | 1.50 | | | 6995 | 0.75 | 0.75 |
| | | 6515 | 1.50 | 1.50 | | | 7115 | -3.00 | -3.00 |

| Mode | U-NII Band | Centre Frequency (MHz) | Power Setting | | Mode | U-NII Band | Centre Frequency (MHz) | Power Setting | |
|---------------|------------|------------------------|---------------|----------------|--------------|------------|------------------------|---------------|----------------|
| | | | Chain A (AUX) | Chain B (Main) | | | | Chain A (AUX) | Chain B (Main) |
| 802.11ax-HE40 | 5 | 5965 | 4.75 | 4.75 | 802.11ax-HE0 | 7 | 6525 | 4.75 | 4.75 |
| | | 6165 | 4.75 | 4.75 | | | 6685 | 4.00 | 4.00 |
| | | 6405 | 4.75 | 4.75 | | | 6845 | 4.00 | 4.00 |
| | 6 | 6445 | 4.75 | 4.75 | | 8 | 6885 | 4.00 | 4.00 |
| | | 6485 | 4.75 | 4.75 | | | 7005 | 4.00 | 4.00 |
| | | | | | | | 7085 | 14.50 | 14.50 |

| Mode | U-NII Band | Centre Frequency (MHz) | Power Setting | | Mode | U-NII Band | Centre Frequency (MHz) | Power Setting | |
|---------------|------------|------------------------|---------------|----------------|---------------|------------|------------------------|---------------|----------------|
| | | | Chain A (AUX) | Chain B (Main) | | | | Chain A (AUX) | Chain B (Main) |
| 802.11ax-HE80 | 5 | 5985 | 7.25 | 7.25 | 802.11ax-HE80 | 7 | 6625 | 6.50 | 6.50 |
| | | 6145 | 7.25 | 7.25 | | | 6705 | 6.50 | 6.50 |
| | | 6385 | 7.25 | 7.25 | | | 6785 | 6.50 | 6.50 |
| | 6 | 6465 | 7.25 | 7.25 | | 8 | 6865 | 6.50 | 6.50 |
| | | 6545 | 7.25 | 7.25 | | | 6945 | 6.50 | 6.50 |
| | | | | | | | 7025 | 6.50 | 6.50 |

| Mode | U-NII Band | Centre Frequency (MHz) | Power Setting | | Mode | U-NII Band | Centre Frequency (MHz) | Power Setting | |
|----------------|------------|------------------------|---------------|----------------|----------------|------------|------------------------|---------------|----------------|
| | | | Chain A (AUX) | Chain B (Main) | | | | Chain A (AUX) | Chain B (Main) |
| 802.11ax-HE160 | 5 | 6025 | 10.00 | 10.00 | 802.11ax-HE160 | 7 | 6665 | 9.25 | 9.25 |
| | | 6185 | 10.00 | 10.00 | | | 6825 | 9.25 | 9.25 |
| | | 6345 | 10.00 | 10.00 | | | 8 | 6985 | 9.25 |
| | 6505 | 10.00 | 10.00 | | | | | | |

3.10. Tested Supporting System List

3.10.1. Support Peripheral Unit

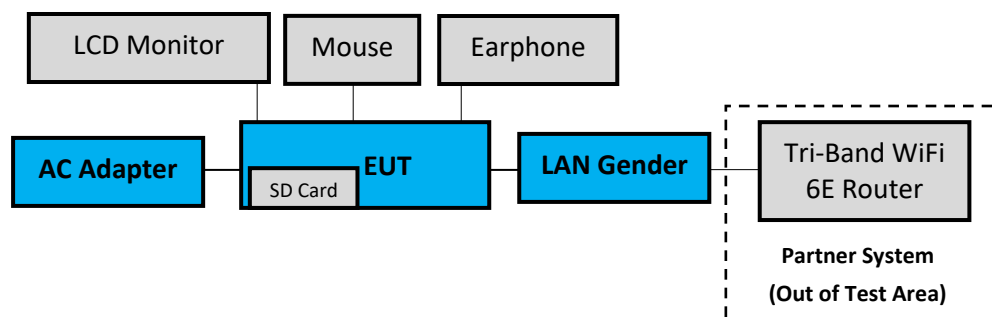
| No. | Product | Brand | Model No. | Serial No. | Approval |
|---|---|---------|----------------|------------|---------------------|
| 1. | TV | LG | 22LK330-DB | N/A | N/A |
| 2. | USB Mouse | hp | M-U0026 | N/A | N/A |
| 3. | Earphone | APPLE | N/A | N/A | N/A |
| 4. | SD Card | ADATA | MicroSDHC Card | N/A | N/A |
| Partner System | | | | | |
| 5. | Tri-Band WiFi 6E Router | NETGEAR | RAXE500 | N/A | FCC ID: PY320300508 |
| For Contention Based Protocol Test only | | | | | |
| 6. | Wireless-AXE11000 Tri-band Gigabit Router | ASUS | GT-AXE1100 | N/A | FCC ID: MSR-RTAXJF0 |

3.10.2. Cable Lists

| No. | Cable Description Of The Above Support Units |
|-----|--|
| 1. | HDMI Cable: Shielded, Detachable, 1.2m AC Power Cord: Unshielded, Detachable, 1.8m |
| 2. | USB Cable: Shielded, Undetachable, 2.0m |
| 3. | Earphone Cable: Unshielded, Undetachable, 1.2m |
| 4. | N/A |
| 5. | AC adapter: METGEAR, Model: 2ABS060K, Power Cable: Unshielded, Undetachable, 1.8m LAN cable: Unshielded, Detachable, 3.0m |
| 6. | Adapter: AcBel, ADD011, DC Power cable: Non-shielded, 11.5m, Power Cable: Non-Shielded, 0.9m |

3.11. Setup Configuration

3.11.1. EUT Configuration for Power Line & Radiated Emission



3.11.2. EUT Configuration for RF Conducted Test Items



3.12. Operating Condition of EUT

Test program “DRTU” is used for enabling EUT WLAN function under continues transmitting and choosing data rate/ channel.

[Chain 0 is aux port (A Button in DRTU) Chain 1 is main port (B Button in DRTU)].

3.13. Description of Test Facility

| | |
|-------------------|--|
| Name of Test Firm | Audix Technology Corporation / EMC Department No. 491, Zhongfu Rd., Linkou Dist., New Taipei City 244, Taiwan Tel: +886-2-26092133 Fax: +886-2-26099303 Website : www.audixtech.com Contact e-mail: attemc_report@audixtech.com |
| Accreditations | The laboratory is accredited by following organizations under ISO/IEC 17025:2017 (1) NVLAP(USA) NVLAP Lab Code 200077-0 (2) TAF(Taiwan) No. 1724 |
| Test Facilities | FCC OET Designation Number under APEC MRA by NCC is : TW1724 ISED CAB Identifier Number under APEC TEL MRA by NCC is TW1724 (1) No.8 Shielded Room (2) No.1 3m Semi Anechoic Chamber |

3.14. Measurement Uncertainty

| Test Items/Facilities | | Frequency Range | Uncertainty | |
|-----------------------|-------------------------------------|-------------------------------|--------------------------------|---------|
| Conduction Test | | 9kHz-150kHz | ±3.7dB | |
| | | 150kHz-30MHz | ±3.4dB | |
| Radiation Test | <input checked="" type="checkbox"/> | No.1 3m Semi Anechoic Chamber | 30MHz-200MHz, 3m, Horizontal | ±3.8dB |
| | | | 200MHz-1000MHz, 3m, Horizontal | ±4.1dB |
| | | | 30MHz-200MHz, 3m, Vertical | ±4.5dB |
| | | | 200MHz-1000MHz, 3m, Vertical | ±4.5dB |
| | | | 1GHz-6GHz, 3m | ±4.7dB |
| | | | 6GHz-18GHz, 3m | ±4.1dB |
| | | | 18GHz-40GHz, 3m | ±3.52dB |
| | <input type="checkbox"/> | No.3 3m Semi Anechoic Chamber | 30MHz-200MHz, 3m, Horizontal | ±3.9dB |
| | | | 200MHz-1000MHz, 3m, Horizontal | ±4.2dB |
| | | | 30MHz-200MHz, 3m, Vertical | ±4.3dB |
| | | | 200MHz-1000MHz, 3m, Vertical | ±4.5dB |
| | <input type="checkbox"/> | No.4 3m Semi Anechoic Chamber | 30MHz-200MHz, 3m, Horizontal | ±4.1dB |
| | | | 200MHz-1000MHz, 3m, Horizontal | ±4.5dB |
| | | | 30MHz-200MHz, 3m, Vertical | ±4.4dB |
| | | | 200MHz-1000MHz, 3m, Vertical | ±4.8dB |
| | | | 1GHz-6GHz, 3m | ±5.0dB |
| | | | 6GHz-18GHz, 3m | ±4.7dB |
| | <input type="checkbox"/> | No.5 3m Semi Anechoic Chamber | 30MHz-200MHz, 3m, Horizontal | ±4.2dB |
| | | | 200MHz-1000MHz, 3m, Horizontal | ±4.3dB |
| | | | 30MHz-200MHz, 3m, Vertical | ±4.3dB |
| | | | 200MHz-1000MHz, 3m, Vertical | ±4.7dB |
| | | | 1GHz-6GHz, 3m | ±4.8dB |
| | | | 6GHz-18GHz, 3m | ±4.5dB |

Remark : Uncertainty = $ku_c(y)$

| Test Items | Uncertainty |
|--------------------------------|-------------|
| Maximum Power Spectral Density | ± 0.52dB |
| Maximum Conducted Output Power | ± 0.72dB |
| Emission Bandwidth | ± 0.38% |
| Contention Based Protocol | ± 2% |

4. MEASUREMENT EQUIPMENT LIST

4.1. Conducted Emission Measurement

| Item | Type | Manufacturer | Model No. | Serial No. | Cal. Date | Cal. Interval |
|------|----------------------------|--------------|-----------|------------|--------------|---------------|
| 1. | Test Receiver | R&S | ESR3 | 101774 | 2022. 01. 11 | 1 Year |
| 2. | A.M.N. | R&S | ENV4200 | 100169 | 2021. 11. 04 | 1 Year |
| 3. | L.I.S.N. | Kyoritsu | KNW-407 | 8-855-9 | 2021. 12. 19 | 1 Year |
| 4. | Pulse Limiter | R&S | ESH3-Z2 | 100354 | 2021. 12. 23 | 1 Year |
| 5. | Digital Thermo-Hygro Meter | iMax | HTC-1 | No.8 S/R | 2022. 04. 14 | 1 Year |
| 6. | Coaxial Cable | Yeida | RG/58AU | CE-08 | 2021. 09. 13 | 1 Year |
| 7. | Test Software | Audix | e3 | V6.120619c | N.C.R. | N.C.R. |

4.2. Radiated Emission Measurement

| Item | Type | Manufacturer | Model No. | Serial No. | Cal. Date | Cal. Interval |
|------|---------------------------------|------------------|----------------------|-----------------|--------------|---------------|
| 1. | Spectrum Analyzer | Agilent | N9010A-526 | MY53400071 | 2021. 09. 09 | 1 Year |
| 2. | Spectrum Analyzer | Agilent | N9030A-526 | MY53310269 | 2022. 02. 21 | 1 Year |
| 3. | Spectrum Analyzer | Keysight | N9010B-544 | MY55460198 | 2022. 04. 08 | 1 Year |
| 4. | Test Receiver | R&S | ESCS30 | 100039 | 2022. 04. 08 | 1 Year |
| 5. | Amplifier | HP | 8447D | 2944A06305 | 2022. 01. 05 | 1 Year |
| 6. | Microwave Amplifier | Keysight | 83051A | MY53010042 | 2021. 07. 30 | 1 Year |
| 7. | Microwave Amplifier | Keysight | 83017A | MY53270365 | 2021. 05. 27 | 1 Year |
| 8. | Microwave Amplifier | Agilent | 8449B | 3008A02678 | 2022. 02. 22 | 1 Year |
| 9. | Loop Antenna | ETS· LINDGREN | 6512 | 00035867 | 2021. 09. 29 | 1 Year |
| 10. | Bilog Antenna | TESEQ | CBL6112D | 33821 | 2021. 07. 16 | 1 Year |
| 11. | Double-Ridged Waveguide Horn | EMCO | 3115 | 9609-4927 | 2021. 07. 02 | 1 Year |
| 12. | Double-Ridged Waveguide Horn | ETS-Lindgre n | 3117 | 00135902 | 2022. 03. 21 | 1 Year |
| 13. | Horn Antenna | COM-POWE R | AH-840 | 101092 | 2022. 01. 06 | 1 Year |
| 14. | Notch Filter | Warison | WFIL-N5925 -6425F | WR61CFWC 4B1 | 2022 .01. 14 | 1 Year |
| 15. | Coaxial Cable | MIYAZAKI | 5D2W | RE-11 | 2022. 01. 20 | 1 Year |
| 16. | Coaxial Cable | HUBER+SU HNER | SUCOFLEX 106 | RE-14 | 2021. 01. 29 | 1 Year |
| 17. | Coaxial Cable | HUBER+SU HNER | SUCOFLEX 102 | RE-30 | 2021. 08. 25 | 1 Year |
| 18. | Coaxial Cable | HUBER+SU HNER | SUCOFLEX 104 | RE-29 | 2021. 09. 13 | 1 Year |
| 19. | Digital Thermo-Hygro Meter | iMax | HTC-1 | No.3 3m A/C | 2022. 04. 14 | 1 Year |
| 20. | Test Software | Audix | e3 | V6.120619c | N.C.R. | N.C.R. |

4.3. RF Conducted Measurement

| Item | Type | Manufacturer | Model No. | Serial No. | Cal. Date | Cal. Interval |
|------|-----------------------------------|--------------|-----------|------------|--------------|---------------|
| 1. | Spectrum Analyzer | Keysight | N9030B | MY61330403 | 2021. 12. 21 | 1 Year |
| 2. | Power Meter | Anritsu | ML2495A | 1145008 | 2021. 06. 30 | 1 Year |
| 3. | Power Sensor | Anritsu | MA2411B | 1126096 | 2021. 06. 30 | 1 Year |
| 4. | MXG RF Vector Signal Generator | Agilent | N5182B | MY53050409 | 2022. 02. 15 | 1 Year |
| 5. | Digital Thermo-Hygro Meter | iMax | HTC-1 | RF-03 | 2022. 04. 14 | 1 Year |

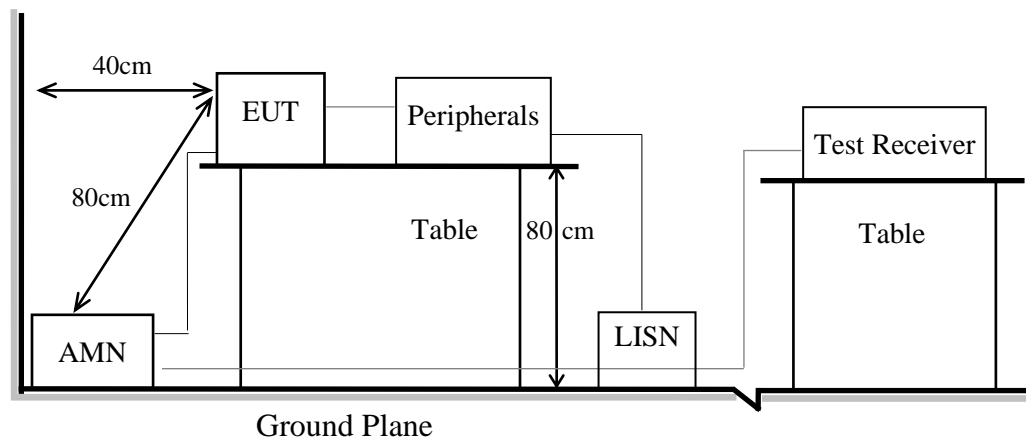
5. CONDUCTED EMISSION

5.1. Block Diagram of Test Setup

5.1.1. Block Diagram of EUT

Indicated as section 3.11

5.1.2. Shielded Room Setup Diagram



5.2. Conducted Emission Limit

| Frequency | Conducted Limit | |
|-----------------|--------------------|--------------------|
| | Quasi-Peak Level | Average Level |
| 150kHz ~ 500kHz | 66 ~ 56 dB μ V | 56 ~ 46 dB μ V |
| 500kHz ~ 5MHz | 56 dB μ V | 46 dB μ V |
| 5MHz ~ 30MHz | 60 dB μ V | 50 dB μ V |

Remark 1.: If the average limit is met when using a Quasi-Peak detector, the measurement using the average detector is not required.

2.: The lower limit applies to the band edges.

5.3. Test Procedure

- 5.3.1. To set up the EUT as indicated in ANSI C63.10. The EUT was placed on the table which has 80 cm height to the ground and 40 cm distance to the conducting wall.
- 5.3.2. Power supplier of the EUT was connected to the AC mains through an Artificial Mains Network (A.M.N.).
- 5.3.3. The AC power supplies to all peripheral devices must be provided through line impedance stabilization network (L.I.S.N.)
- 5.3.4. Checking frequency range from 150 kHz to 30 MHz and record the emission which does not have 20 dB below limit.

5.4. Test Results

Please refer to Appendix A.

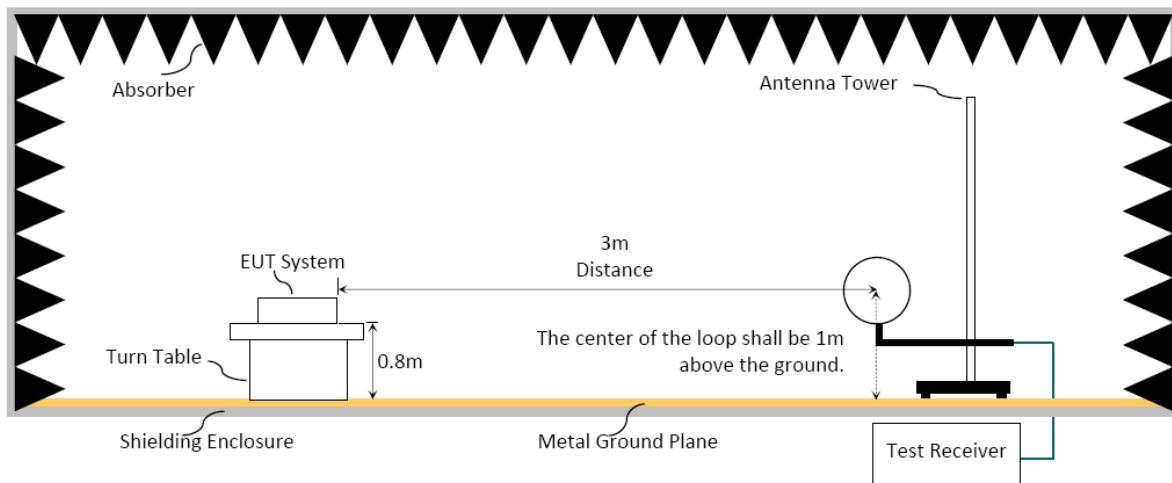
6. RADIATED EMISSION

6.1. Block Diagram of Test Setup

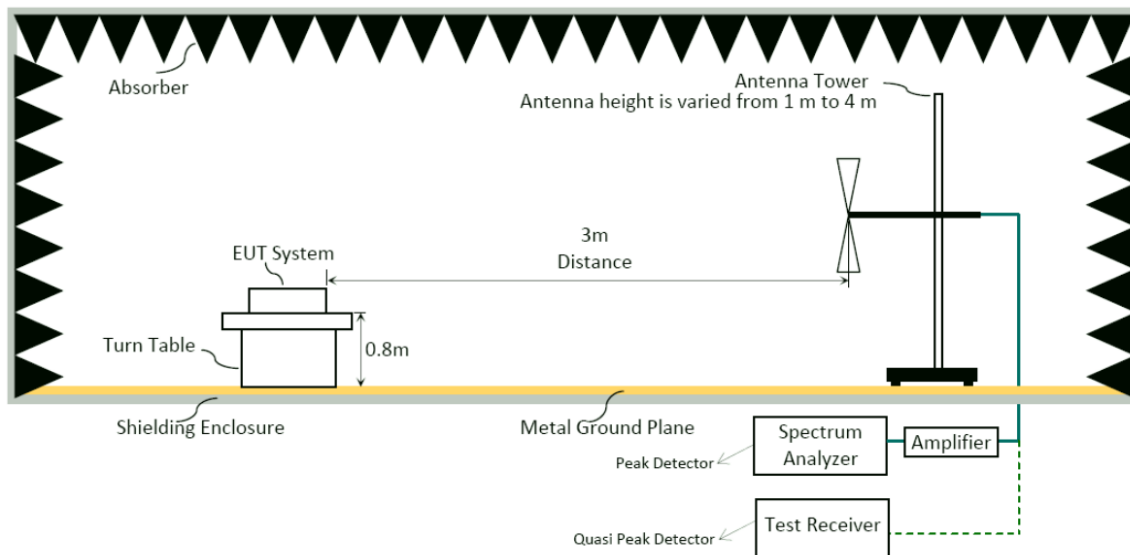
6.1.1. Block Diagram of EUT

Indicated as section 3.11

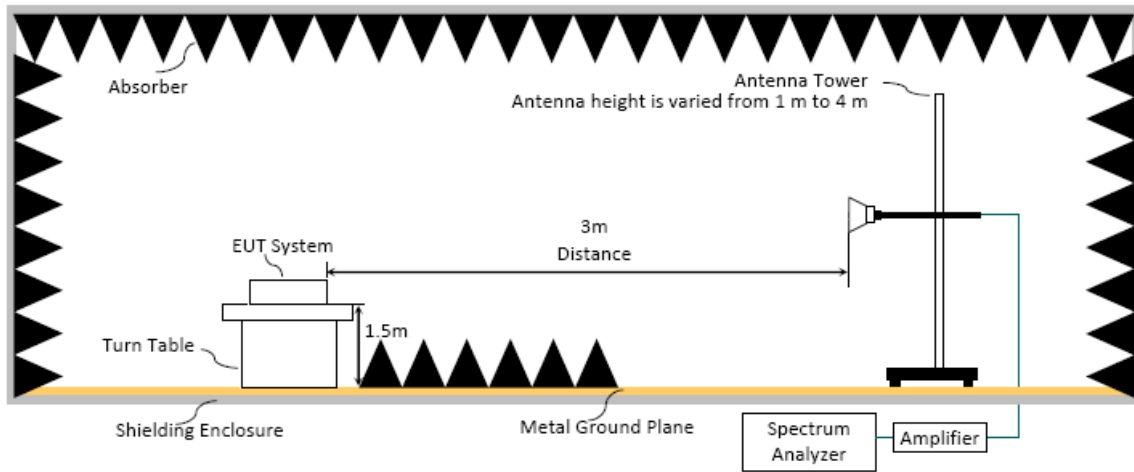
6.1.2. Setup Diagram for 9kHz-30MHz



6.1.3. Setup Diagram for 30-1000MHz



6.1.4. Setup Diagram for above 1GHz



6.2. Radiated Emission Limits

Radiated emissions fall in restricted bands, as defined in FCC Section 15.205/RSS-Gen Section 8.10 table 7 must be in compliance with the radiated emission limits specified in FCC Section 15.209/RSS-Gen Section 8.9 table 6 as below.

6.2.1. General Limit

| Frequency (MHz) | Distance(m) | Limits | |
|-----------------|-------------|---|-------------|
| | | dB μ V/m | μ V/m |
| 0.009 - 0.490 | 300 | 67.6-20 log f(kHz) | 2400/f kHz |
| 0.490 - 1.705 | 30 | 87.6-20 log f(kHz) | 24000/f kHz |
| 1.705 - 30 | 30 | 29.5 | 30 |
| 30 - 88 | 3 | 40.0 | 100 |
| 88- 216 | 3 | 43.5 | 150 |
| 216- 960 | 3 | 46.0 | 200 |
| Above 960 | 3 | 54.0 | 500 |
| Above 1000 | 3 | 74.0 dB μ V/m (Peak) 54.0 dB μ V/m (Average) | |

Remark : (1) dB μ V/m = 20 log (μ V/m)

- (2) The tighter limit applies to the edge between two frequency bands.
- (3) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
- (4) Fundamental and emission fall within operation band are exempted from this section.
- (5) Pursuant to ANSI C63.10: 6.6.4.3, if the maximized peak measured value complies with the average limit, then it is unnecessary to perform an average measurement.

6.2.2. Limit for non-restricted frequency above 1 GHz

| Frequency Band (MHz) | E.I.R.P. Limit | Field Strength Limit at 3 m |
|----------------------|----------------|-----------------------------|
| Out of 5925 to 7125 | -27 dBm/MHz | 68.2 |

Note: Field Strength at 3 m= E.I.R.P. + 95.2 dB

6.3. Test Procedure

Frequency Range 9kHz~30MHz:

The EUT setup on the turntable which has 0.8 m height to the ground. The turn table rotated 360 degrees and antenna fixed to 1 m to find the maximum emission level. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10-2013 regulation.

- (1) RBW = 9kHz with peak and average detector.
- (2) Detector: average and peak (9kHz-490kHz)
Q.P. (490kHz-30MHz)

Frequency Range 30MHz ~ 40GHz:

The EUT setup on the turn table which has 80cm (for 30-1000MHz) and 1.5m (for above 1GHz) height to the ground. The turn table rotated 360 degrees and antenna varied from 1 m to 4 m to find the maximum emission level. Both horizontal and vertical polarization are required. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10-2013 regulation.

Frequency below 1GHz:

Spectrum Analyzer is used for pre-testing with following setting:

- (1)RBW = 120kHz
- (2)VBW $\geq 3 \times$ RBW.
- (3)Detector = Peak.
- (4)Sweep time = auto.
- (5)Trace mode = max hold.
- (6)Allow sweeps to continue until the trace stabilizes.

Note 1: When peak-detected value is lower than limit that the measurement using the Q.P. detector is not required, otherwise using Q.P. for final measurement.

Note 2: When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds.

Frequency above 1GHz to 10th harmonic(up to 40 GHz):

Peak Detector:

- (1)RBW = 1MHz
- (2)VBW $\geq 3 \times$ RBW.
- (3)Detector = Peak.
- (4)Sweep time = auto.
- (5)Trace mode = max hold.
- (6)Allow sweeps to continue until the trace stabilizes.

Note: When peak-detected value is lower than limit that the measurement using the average detector is not required, otherwise using average detector for final measurement.

Average Detector:**■ Option 1:**

- (1) RBW = 1MHz
- (2) VBW $\geq 1/T$.

| Modulation Type | TX _{on} (ms) | 1/ TX _{on} (kHz) | VBW Setting |
|-----------------|-----------------------|---------------------------|-------------|
| 802.11ax-HE20 | 3.960 | 0.253 | 10Hz |
| 802.11ax-HE40 | 3.940 | 0.254 | 10Hz |
| 802.11ax-HE80 | 3.960 | 0.253 | 10Hz |
| 802.11ax-HE160 | 2.280 | 0.439 | 10Hz |

N/A: 1/ TX_{on} is not implemented when duty cycle presented in section 3.8 is $\geq 98\%$.

- (1) Detector = Peak.
- (2) Sweep time = auto.
- (3) Trace mode = max hold.
- (4) Allow sweeps to continue until the trace stabilizes.

□ Option 2:

Average Emission Level = Peak Emission Level + D.C.C.F.

6.4. Measurement Result Explanation

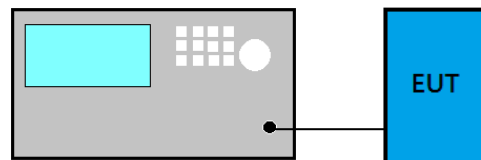
- Peak Emission Level (dB μ V/m) = Antenna Factor (dB/m) + Cable Loss (dB) + Meter Reading (dB μ V) (including Preamp factor if test used)
- Average Emission Level (dB μ V/m) = Antenna Factor (dB/m) + Cable Loss (dB) + Meter Reading (dB μ V) (including Preamp factor if test used)
- Average Emission Level (dB μ V/m) = Peak Emission Level (dB μ V/m) + DCCF (dB)
Duty Cycle Correction Factor (DCCF) = $20\log(TX_{on}/TX_{on+off})$ presented in section 3.8.
- ERP = Peak Emission Level (dB μ V/m) - 95.2dB - 2.14dB

6.5. Test Results

Please refer to Appendix A.

7. MAXIMUM CONDUCTED OUTPUT POWER

7.1. Block Diagram of Test Setup



7.2. Specification Limits

For client devices operating under the control of an indoor access point in the 5.925-7.125 GHz bands, the maximum e.i.r.p. over the frequency band of operation must not exceed 24 dBm.

7.3. Test Procedure

Following measurement procedure is reference to KDB 789033 D02 General UNII Test Procedures New Rules v02r01:

■ **Method AVGPM (Measurement using an RF average power meter):**

EUT is connected to power sensor and record the maximum average output power and duty cycle factor is added when duty cycle presented in section 3.8 is < 98%.

■ **Method AVGSA-2 (Spectrum channel power) for 802.11ac-VHT80/160, 802.11ax-HE80/160 modes only**

- (1) Set span to at least 1.5 times the OBW
- (2) Set RBW = 1 MHz
- (3) Set the video bandwidth (VBW) \geq 3 MHz.
- (4) Detector = RMS.
- (5) Trace mode = trace average at least 100 traces
- (6) Sweep = auto couple.
- (7) Compute power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function with band limits set equal to the OBW band edges.
- (8) Duty cycle factor is added when duty cycle presented in section 3.8 is < 98%.

7.4. Test Results

Please refer to Appendix A

8. DEVIATION TO TEST SPECIFICATIONS

【NONE】



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APPDNDIX A

TEST DATA AND PLOTS

(Model: 16Z90Q)



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APPDNDIX B

TEST PHOTOGRAPHS

(Model: 16Z90Q)