Audix Technology Corp.
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FCC 15.247 & RSS-247
(Permissive Change)
2.4GHz 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)15Z90ST (2)15ZB90ST (3)15ZD90ST (4)15ZG90ST**
Brand		**LG**
FCC ID	**:**	**BEJNT-15Z90RT**
IC	**:**	**2703H-15Z90RT**

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

Testing Laboratory
1724

TESTING
NVLAP LAB CODE 200077-0

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.
The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government.

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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)15Z90ST (2)15ZB90ST (3)15ZD90ST (4)15ZG90ST
(3) Brand	:	LG
(4) Power Supply	:	DC 20V, 3.25A

Applicable Standards:

Title 47 CFR FCC Part 15 Subpart C
RSS-Gen (Issue 5), Amendment 2, February 2021
RSS-247 (Issue 3), August 2023

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: 2023. 12. 08

Reviewed by: Annie Yu (Annie Yu/Administrator)

Approved by: Johnny Hsueh (Johnny Hsueh/Section Manager)

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1. REVISION RECORD OF TEST REPORT

Edition No	Issued Data	Revision Summary	Report Number
0	2023. 12. 08	Original Report	EM-F230611

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2. SUMMARY OF TEST RESULTS

Rule		Description	Results
FCC	IC		
15.207	RSS-Gen §8.8	Conducted Emission	**PASS**
15.247(d)/ 15.205	RSS-Gen §8.9 RSS-247 §5.5	Radiated Band Edge and Radiated Spurious Emission	**PASS**
15.247(a)(2)	RSS-247 §5.2(1)	DTS/Occupied Bandwidth	**N/A** Note3
15.247(b)(3)	RSS-247 §5.4(4)	Maximum Peak Output Power	**PASS**
15.247(d)	RSS-247 §5.5	Conducted Band Edges and Conducted Spurious Emission	**N/A** Note3
15.247 (e)	RSS-247 §5.2(2)	Peak Power Spectral Density	**N/A** Note3
15.203	---	Antenna Requirement	**Compliance**

Note: 1. Decision rule according to the limit of the test standard chapter, the test value is lower than the limit specified in the test chapter, and it is judged as Pass.
2. The uncertainties value is not used in determining the result.
3. Due to the difference mentioned by cover letter don't influence on RF characteristics, so it is unnecessary to re-test.

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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)15Z90ST (2)15ZB90ST (3)15ZD90ST (4)15ZG90ST The difference between all models is different in the sales customers.
Brand	LG

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3.2. Description of EUT

<table>
<tr><td>Test Model</td><td>15Z90ST</td></tr>
<tr><td>Serial Number</td><td>N/A</td></tr>
<tr><td>Power Rating</td><td>DC 20V, 3.25A</td></tr>
<tr><td>Software Version</td><td>XY (X, Y can be 0 to 9 for different SW version not influence RF parameter)</td></tr>
<tr><td>RF Features</td><td>WLAN:802.11 a/b/g/n/ac/ax
Bluetooth: BT and BLE (BT 5.1)</td></tr>
<tr><td>Transmit Type</td><td>
<table>
<tr><th colspan="2">2.4 GHz</th></tr>
<tr><td>802.11b</td><td>1T1R</td></tr>
<tr><td>802.11g</td><td>1T1R</td></tr>
<tr><td>802.11n-HT20</td><td>2T2R</td></tr>
<tr><td>802.11n-HT40</td><td>2T2R</td></tr>
<tr><td>802.11ax-HE20</td><td>2T2R</td></tr>
<tr><td>802.11ax-HE40</td><td>2T2R</td></tr>
<tr><td>BT/BLE</td><td>1T1R</td></tr>
</table>
<table>
<tr><th colspan="2">U-NII Bands</th></tr>
<tr><td>802.11a</td><td>1T1R</td></tr>
<tr><td>802.11n-HT20/802.11ac-VHT20/802.11ax-HE20</td><td>2T2R</td></tr>
<tr><td>802.11n-HT40/802.11ac-VHT40/802.11ax-HE40</td><td>2T2R</td></tr>
<tr><td>802.11ac-VHT80/802.11ax-HE80</td><td>2T2R</td></tr>
<tr><td>802.11ac-VHT160/802.11ax-HE160</td><td>2T2R</td></tr>
</table>
The MIMO is uncorrelated and supported SDM(Spatial Division Multiplexing) mode only. This radio device doesn't support beamforming and Cyclic Delay Diversity (CDD).
</td></tr>
<tr><td>Sample Status</td><td>Trial sample</td></tr>
<tr><td>Test Sample</td><td>
<table>
<tr><th>Sample No.</th><th>Test Item</th><th>Firmware</th></tr>
<tr><td>01</td><td>AC Conduction, RSE, Output Power</td><td>N/A</td></tr>
</table>
</td></tr>
<tr><td>Date of Receipt</td><td>2023. 11. 09</td></tr>
<tr><td>Date of Test</td><td>2023. 11. 15 ~ 23</td></tr>
<tr><td>Interface Ports of EUT</td><td>• Three USB Type C Port
• One Earphone Port</td></tr>
<tr><td>Accessories Supplied</td><td>• AC Adapter
• USB C Cable
• LAN Gender</td></tr>
</table>

Note: Pursuant ISO 17025:2017 section 7.8.2, Audix Technology Corp. does not assume responsibility for all EUT's information including RF features, transmit type, antenna information…etc are provided by customer.

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3.3. Reference Test Guidance

KDB 662911 D01 Multiple Transmitter Output v02r01
ANSI C63.10:2013

3.4. Information for Permissive Change

- The EUT is an addition version with original FCC ID: BEJNT-15Z90RT and IC: 2703H-15Z90RT are as following.
  (a) To add new models 15Z90ST, 15ZB90ST, 15ZD90ST and 15ZG90ST, the difference with original are in Main board, WLAN Sub board and CPU.
  (b) Based on original 15Z90RT MAIN B/D PCB main board, the difference between 15Z90RT MAIN B/D PCB main board and 15Z90ST MAIN B/D PCB main board is refer to next table. The 15Z90ST MAIN B/D PCB main board is for new models.
  (c) Based on original 15Z90RT SUB B/D WLAN Sub board, the difference between 15Z90RT SUB B/D WLAN Sub board and 15Z90ST SUB B/D WLAN Sub board is refer to next table. The 15Z90ST SUB B/D WLAN sub board is for new models.
  (d) To add new CPUs for 15Z90ST MAIN B/D PCB main board.
  (e) To add new Type C cable (3A).
  (f) To modify panel model from ATNA56YX08-0to ATNA56YX09.6.
- The differences between this application and original's ID as clarify in following list.

Difference / Model		Main Board	WLAN Sub Board	CPU
Original	15Z90RT	15Z90RT MAIN B/D PCB	15Z90RT SUB B/D	Intel, i7-1360P Intel, i5-1340P Intel, i3-1315U
	15ZB90RT			
	15ZD90RT			
	15ZG90RT			
This Time	**15Z90ST**	**15Z90ST MAIN B/D PCB**	**15Z90ST SUB B/D**	**Intel, Ultra 7 155H** **Intel, Ultra 5 125H**
	15ZB90ST			
	15ZD90ST			
	15ZG90ST			

- 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.

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3.5. Antenna Information

No.	Antenna Part Number	Manufacture	Antenna Type	Frequency (MHz)	Gain(dBi)		Directional Gain Note1 & 2
					Main	AUX	
1.	WA-P-LELE-04 -044	INPAQ	Mono-Pole	2400	3.20	3.70	3.46
				2450	3.60	3.90	3.75
				2500	3.30	4.20	3.77
				5150	1.90	2.40	2.16
				5470	2.70	1.10	1.97
				5850	1.30	1.10	1.20
				5925	1.60	1.60	1.60
				6525	-0.50	0.30	-0.08
				7125	3.90	3.00	3.47

According to KDB 662911 D01 d) ii), transmit signals are completely uncorrelated, then
Directional gain = 10 log[($10^{G1/10}$ + $10^{G2/10}$ + … + $10^{GN/10}$)/N_{ANT}] dBi

Note 1. WLAN 2.4GHz: Directional gain =
2400MHz: Directional gain = 10 log[($10^{3.2/10}$ +$10^{3.7/10}$)/2]= 3.46dBi
2450MHz: Directional gain = 10 log[($10^{3.6/10}$ +$10^{3.9/10}$)/2]= 3.75dBi
2500MHz: Directional gain = 10 log[($10^{3.3/10}$ +$10^{4.2/10}$)/2]= 3.77dBi

Note 2. WLAN 5G/6GHz: Directional gain =
5150MHz: Directional gain = 10 log[($10^{1.9/10}$ +$10^{2.4/10}$)/2]= 2.16dBi
5470MHz: Directional gain = 10 log[($10^{2.7/10}$ +$10^{1.1/10}$)/2]= 1.97dBi
5850MHz: Directional gain = 10 log[($10^{1.3/10}$ +$10^{1.1/10}$)/2]= 1.20dBi
5925MHz: Directional gain = 10 log[($10^{1.6/10}$ +$10^{1.6/10}$)/2]= 1.60dBi
6525MHz: Directional gain = 10 log[($10^{-0.5/10}$ +$10^{0.3/10}$)/2]= -0.08dBi
7125MHz: Directional gain = 10 log[($10^{3.9/10}$ +$10^{3.0/10}$)/2]= 3.47dBi

We chose the antenna gain corresponding to the frequency listed on the table which is closer to center frequency of WLAN/BT.

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3.6. EUT Specifications Assessed in Current Report

Mode	Fundamental Range (MHz)	Channel Number	Modulation	Data Rate (Mbps)
802.11b	2412-2472	13	DSSS (DBPSK/DQPSK/CCK)	Up to 11
802.11g		13	OFDM (BPSK/QPSK/16QAM/64QAM)	Up to 54
802.11n-HT20				Up to 144.4
802.11n-HT40	2422-2462	9	OFDM (BPSK/QPSK/16QAM/64QAM)	Up to 300
802.11ax-HE20	2412-2472	13	OFDMA (BPSK/ QPSK/ 16QAM/ 64QAM/ 256QAM/1024QAM)	Up to 287
802.11ax-HE40	2422-2462	9		Up to 574
BLE	2402-2480	40	GFSK (1Mbps, 2Mbps, PHY Coded S8, PHY Coded S2)	Up to 2

Channel List			
802.11 b/g/n-HT20/ax-HE20		802.11n-HT40/ax-HE40	
Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)
1	2412	3	2422
2	2417	4	2427
3	2422	5	2432
4	2427	6	2437
5	2432	7	2442
6	2437	8	2447
7	2442	9	2452
8	2447	10	2457
9	2452	11	2462
10	2457		
11	2462		
12	2467		
13	2472		

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Channel List							
BLE							
Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)
37	2402	09	2422	18	2442	28	2462
00	2404	10	2424	19	2444	29	2464
01	2406	38	2426	20	2446	30	2466
02	2408	11	2428	21	2448	31	2468
03	2410	12	2430	22	2450	32	2470
04	2412	13	2432	23	2452	33	2472
05	2414	14	2434	24	2454	34	2474
06	2416	15	2436	25	2456	35	2476
07	2418	16	2438	26	2458	36	2478
08	2420	17	2440	27	2460	39	2480

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3.7. Descriptions of Key Components

3.7.1. For the All Component Lists

Item	Supplier	Model / Type	Character
System	Microsoft	Win 11	---
	---	Non-OS	---
Main Board	LG	15Z90RT MAIN B/D PCB	Manufacturer: #1 Hannstar Board Tech (Jiang Yin) Corp.,Ltd. #2 Elec&Eltek Company (MCO) Limited.
	LG	**15Z90ST MAIN B/D PCB***	**Manufacturer:** **#1 Hannstar Board Tech (Jiang Yin) Corp.,Ltd.** **#2 Elec&Eltek Company (MCO) Limited.**
WLAN SUB Board	LG	15Z90RT SUB B/D	Manufacturer: #1 Hannstar Board Tech (Jiang Yin)Corp.,Ltd. #2 Elec&Eltek Company (MCO) Limited.
	LG	**15Z90ST SUB B/D***	**Manufacturer:** **#1 Hannstar Board Tech (Jiang Yin)Corp.,Ltd.** **#2 Elec&Eltek Company (MCO) Limited.**
CPU (Socket: BGA1744)	Intel	i7-1360P	2.2GHz
	Intel	i5-1340P	1.9GHz
	Intel	i3-1315U	1.2GHz
CPU (Socket: BGA2049)	**Intel**	**Ultra 7 155H***	**3.8GHz**
	Intel	**Ultra 5 125H***	**3.6GHz**
15.6” LCD Panel	Samsung	ATNA56YX09-0	Resolution: 1920x1080@60Hz (OLED,FHD)
Storage (SSD)	SK hynix	---	256GB/512GB/1TB/2TB
	Samsung	---	128GB/256GB/512GB/1TB/2TB
Memory (RAM)	Samsung	---	8GB/16GB32GB LPDDR5X 7500MHz (On Board)
	SK Hynix	---	8GB/16GB32GB LPDDR5X 7500MHz (On Board)
Battery Pack	LG	LB2122LM	DC15.52V, 60Wh Typ 3866 mAh
WLAN Combo Card	Intel	AX211D2W	WLAN and BT, 2x2 PCle M.2 1216 SD adapter card FCC ID: PD9AX211D2 IC: 1000M-AX211D2
WLAN Combo Antenna	LG (INPAQ)	WA-P-LELE-04-044	PCB, Mono-pole Type Main: Black, Aux: Gray
Touch Pad	Lite on	SP8000(SG-A0620-00A)	---
	Elan	SB068D-26H0	---
Keyboard	TIC	KT0122L2	---
Web Camera	Luxvisions	2BG204N3(2Mic)	---

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Item	Supplier	Model / Type	Character
LAN Gender (Type C to LAN)	SUZHOU MEC ELECTRONICS	80-5946-111	(White) 10/100Megabit Ethernet
		80-5946-101	(Black) 10/100 Megabit Ethernet
	ARIN TECH CO. LTD	GD-08MF-36-WH-LP10	(White) 10/100Megabit Ethernet
		GD-08MF-36-BK-LP11	(Black) 10/100 Megabit Ethernet
	HUIZHOU DEHONG TECHNOLOGY CO.,LTD.	370-50713	(White) 10/100Megabit Ethernet
		370-50714	(Black) 10/100 Megabit Ethernet
	Type C to LAN: Shielded, Undetached, 0.12m		
AC Adapter	LG (PI ELECTRONICS)	LP65WFC20P-NJ W	(White) I/P: AC 100-240V, 1.6A, 50-60Hz O/P: (PDO) DC5V, 3A (15W) or DC9V, 3A (27W) or DC 15V,3A (45W) or DC 20V, 3.25A (65W) O/P: (PPS) DC5V- 20V, 3.25A, Max 65W Wall-Mounted: (2C)
	LG (PI ELECTRONICS)	LP65WFC20P-NJ B	(Black) I/P: AC 100-240V, 1.6A, 50-60Hz O/P: (PDO) DC5V, 3A (15W) or DC9V, 3A (27W) or DC 15V,3A (45W) or DC 20V, 3.25A (65W) O/P: (PPS) DC5V- 20V, 3.25A, Max 65W Wall-Mounted: (2C)
	#1 Type C Cable, Shielded, Undetached, 2.0m (5A) **#2 Type C Cable, Shielded, Undetached, 1.8m (3A)***		
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 following worst components, which are used to establish a basic configuration of system during test:

SKU (Mode) 1		
Main Board		**LG, 15Z90ST MAIN B/D PCB**
WLAN SUB Board		**LG, 15Z90ST SUB B/D**
CPU		**Intel, Ultra 7 155H**
Memory (RAM)		32GB
15.6" LCD Panel		Samsung, ATNA56YX09-0
Storage (SSD)		SK hynix, 256GB
		Samsung,2TB
Battery Pack		LG, LB2122LM, 60Wh
Touch Pad		Lite on, SP8000(SG-A0620-00A)
WLAN Combo Card		Intel, AX211D2W
WLAN Combo Antenna		LG (INPAQ), WA-P-LELE-04-044
Type C	AC Adapter	LG(PI ELECTRONICS), LP65WFC20P-NJ W
	Link to LAN Gender	10/100Mbps
	Link to USB HUB	---

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3.8. Test Configuration

Mode	TX_{on} (ms)	TX_{on+off} (ms)	Duty Cycle (x)	Duty Cycle Factor [10log(1/x)] (dB)
802.11b	8.360	8.600	0.972	0.123
802.11g	2.085	2.340	0.891	0.501
802.11n-HT20	4.000	4.040	0.990	N/A
802.11n-HT40	3.990	4.040	0.988	N/A
802.11ax-HE20	2.605	2.655	0.981	N/A
802.11ax-HE40	3.990	4.030	0.990	N/A
802.11ax-HE20 (RU Config 26)	0.740	0.800	0.925	0.339
802.11ax-HE20 (RU Config 52)	1.455	1.505	0.967	0.146
802.11ax-HE20 (RU Config 106)	3.035	3.085	0.984	N/A
802.11ax-HE40 (RU Config 242)	5.210	5.260	0.990	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.

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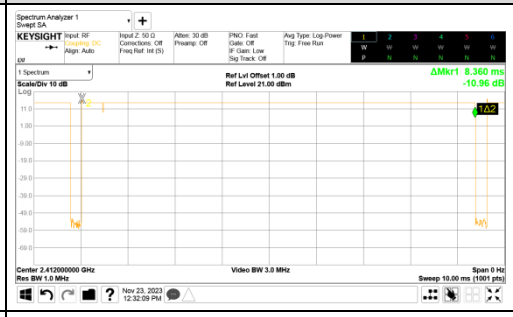
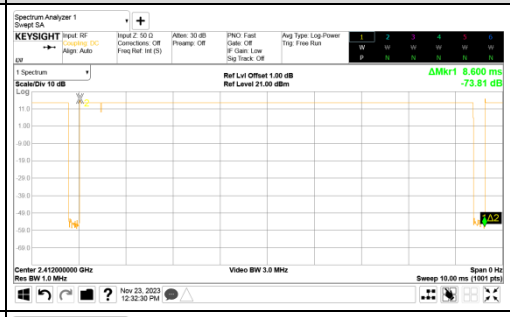
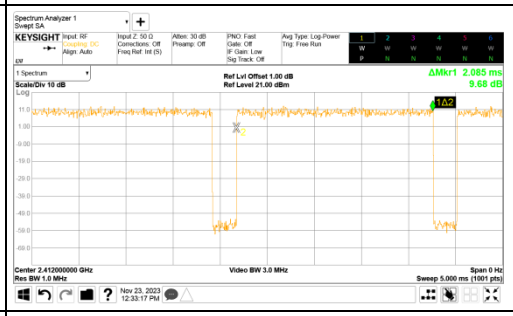
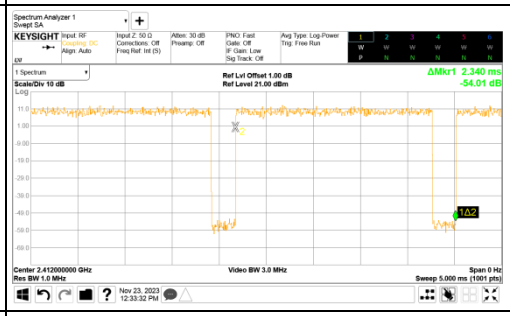
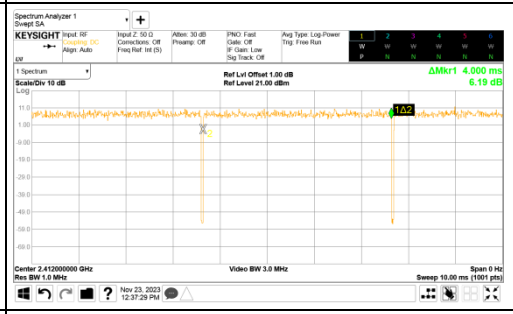
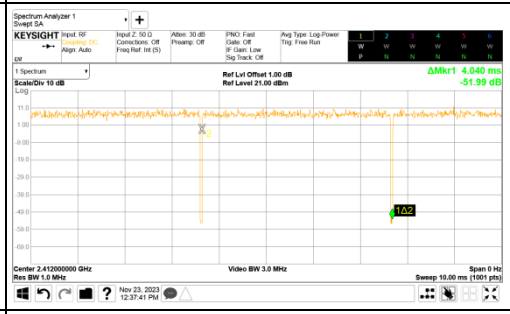
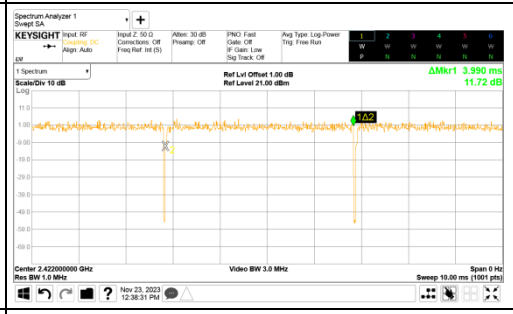
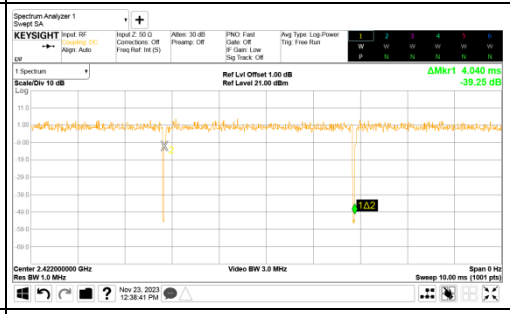
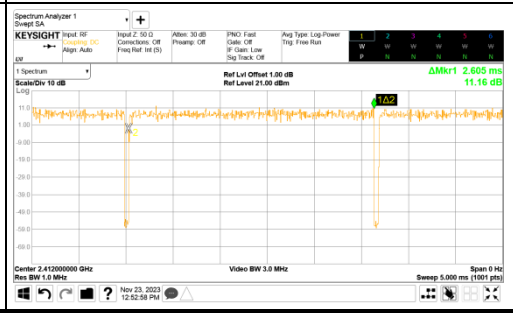
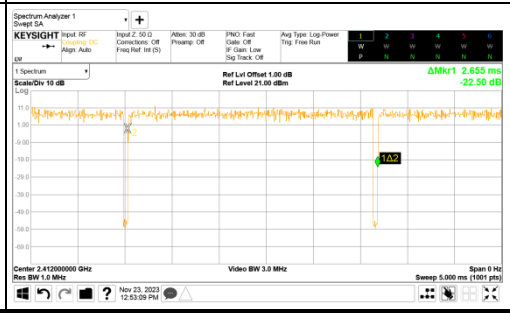
Mode	TX_{on} (ms)	$T_{on}+T_{off}$(ms)
802.11b		
802.11g		
802.11n-HT20		
802.11n-HT40		
802.11ax-HE20		

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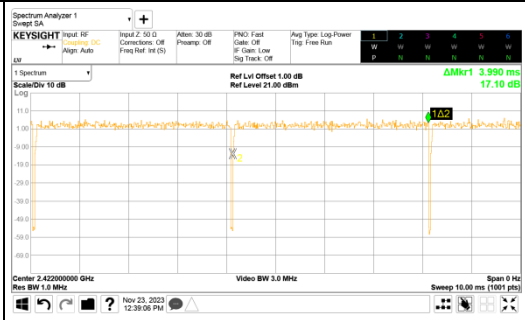
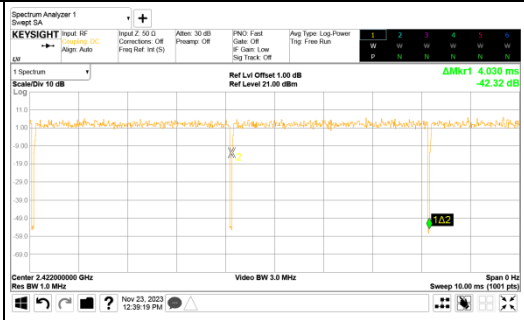
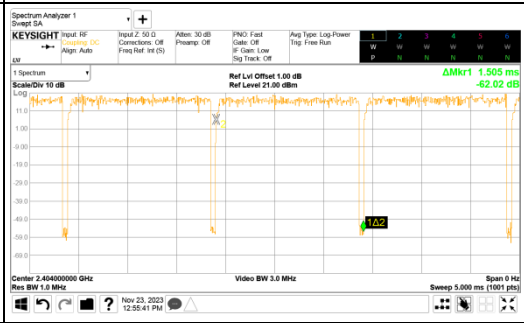
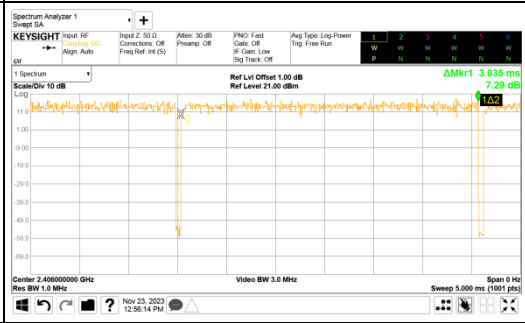
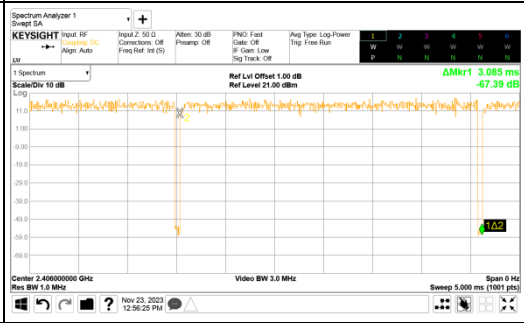
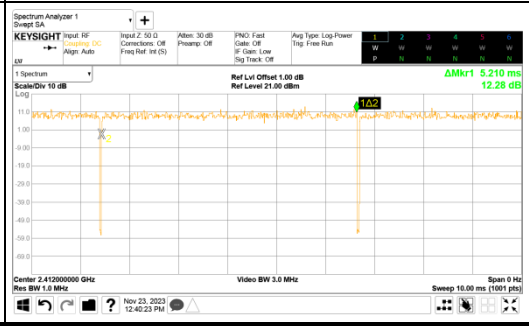
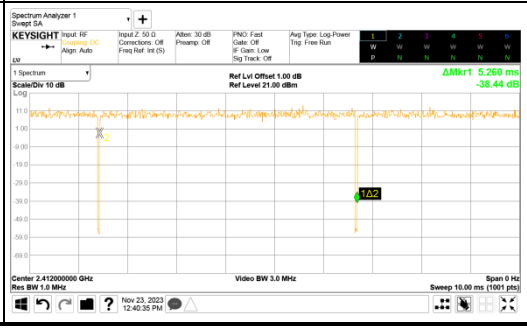
Mode	TX_{on} (ms)	$T_{on}+T_{off}$(ms)
802.11ax-HE40		
802.11ax-HE20 (RU Config 26)		
802.11ax-HE20 (RU Config 52)		
802.11ax-HE20 (RU Config 106)		
802.11ax-HE40 (RU Config 242)		

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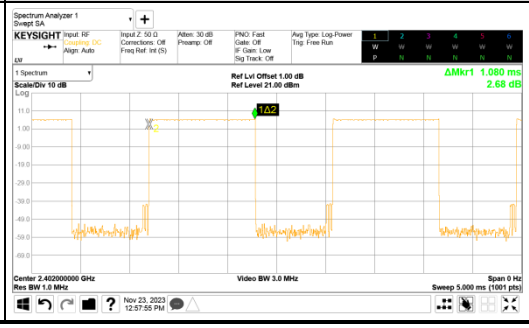
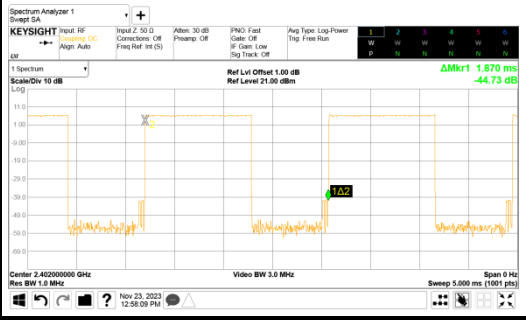
Mode	TX_{on} (ms)	TX_{on+off} (ms)	Duty Cycle (x)	Duty Cycle Factor [10log(1/x)] (dB)
BLE (2Mbps)	1.080	1.870	0.578	2.381

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.

Mode	TX_{on} (ms)	$T_{on}+T_{off}$(ms)
BLE (2Mbps)		

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AC Conduction
Normal operation

Item		Mode	Data Rate	Test Channel
Radiated Test Case	Radiated Spurious Emission (30MHz~1GHz)	802.11ax-HE20	HE0	7
		BLE	2M	39

Item		Mode	Data Rate	Test Channel
Radiated Test Case	Radiated Band Edge Note1	BLE	2Mbps	37
	Radiated Spurious Emission Note1 & 2	802.11n-HT40	MCS8	7
		BLE	1Mbps	37

Item		Mode	RU Config	Test Channel
Radiated Test Case	Radiated Band Edge Note 1	802.11ax-HE20	26/8	13

Item		Mode	Data Rate	Test Channel
Conducted Test Case	Peak Output Power	802.11b	1Mbps	1/7/11/12/13
		802.11g	6Mbps	1/2/7/10/11/12/13
		802.11n-HT20	MCS8	1/2/3/7/10/11/12/13
		802.11n-HT40	MCS8	3/7/9/10/11
		802.11ax-HE20	HE0	1/2/3/7/10/11/12/13
		802.11ax-HE40	HE0	3/7/9/10/11
		BLE	1Mbps	37/17/39
			2Mbps	37/17/39
			PHY Coded S2	37/17/39
			PHY Coded S8	37/17/39

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Item		Mode	Data Rate	RU Configuration	Test Channel
Conducted Test Case	Peak Output Power	802.11ax-HE20	HE0	26/0	1
				52/37	
				106/53	
			HE0	26/8	13
				52/40	
				106/5	
		802.11ax-HE40	HE0	242/61	3
			HE0	242/62	11

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

Note 5: Based on these differences, we will conduct testing according to the worst-case scenarios for RSE/band-edge as originally reported.

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3.9. Output Power Setting

Mode	Centre Frequency (MHz)	Power Setting		Mode	Centre Frequency (MHz)	Power Setting	
		AUX	Main			AUX	Main
802.11b	2412	20.000	20.000	802.11g	2412	17.000	17.000
	2442	20.000	20.000		2417	19.000	19.250
	2462	20.000	20.000		2442	20.000	20.000
	2467	19.000	18.750		2457	18.750	18.500
	2472	16.500	15.500		2462	16.750	16.750
					2467	14.500	14.250
					2472	11.500	11.500

Mode	Centre Frequency (MHz)	Power Setting		Mode	Centre Frequency (MHz)	Power Setting	
		AUX	Main			AUX	Main
802.11n-HT20	2412	14.750	14.750	802. 11n-HT40	2422	13.750	13.750
	2417	17.250	17.250		2442	14.750	14.750
	2422	18.250	18.250		2452	13.750	13.750
	2442	20.000	20.000		2457	7.250	7.250
	2457	18.250	18.250		2462	5.500	5.500
	2462	15.000	15.000				
	2467	11.000	11.000				
	2472	6.000	6.000				

Mode	Centre Frequency (MHz)	Power Setting		Mode	Centre Frequency (MHz)	Power Setting	
		AUX	Main			AUX	Main
802.11ax-HE20	2412	14.750	14.750	802.11ax-HE40	2422	13.750	13.750
	2417	17.250	17.250		2442	14.750	14.750
	2422	18.250	18.250		2452	13.750	13.750
	2442	20.000	20.000		2457	7.250	7.250
	2457	18.250	18.250		2462	5.500	5.500
	2462	15.000	15.000				
	2467	11.000	11.000				
	2472	6.000	6.000				

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Mode	RU Configuration	Centre Frequency (MHz)	Power Setting	
			ANT (AUX)	ANT (Main)
802.11ax-HE20	26/0	2412	18.250	18.250
	52/37		18.500	18.500
	106/53		18.250	18.250
	26/0	2472	5.500	5.500
	52/37		6.000	6.000
	106/53		6.000	6.000
802.11ax-HE40	242/61	2422	15.000	15.000
	242/62	2462	6.000	6.000

Mode	Centre Frequency (MHz)	Power Setting			
		1M	2M	PHY Coded S2	PHY Coded S8
BLE	2402	Default	Default	Default	Default
	2440	Default	Default	Default	Default
	2480	Default	Default	Default	Default

3.10. Tested Supporting System List

3.10.1. Support Peripheral Unit

No.	Product	Brand	Model No.	Serial No.	Approval
1.	Earphone	APPLE	N/A	N/A	N/A
Partner System					
2.	AP Server	ASUS	RT-AX88U	N/A	FCC ID: MSQ-RTAXHP00 IC: 3568A-RTAXHP00

3.10.2. Cable Lists

No.	Cable Description Of The Above Support Units
1.	Earphone Cable: Unshielded, Undetachable, 1.2m
2.	AC adapter: M/N:WA-30B12, Cable: Unshielded, Detachable, 1.2m LAN cable: Unshielded, Detachable,3.0m
3.	LAN cable: Unshielded, Detachable, 1.8m

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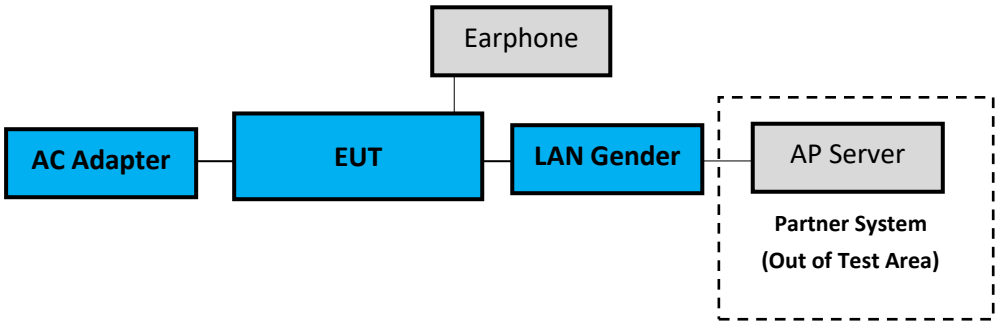
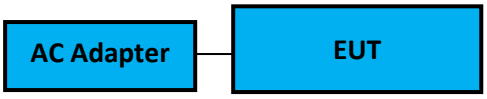
3.11. Setup Configuration

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 BT or WLAN function under continues transmitting and choosing data rate/ channel.
[ANT AUX port (A Button in DRTU), ANT Main port (B Button in DRTU)].

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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

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3.14.Measurement Uncertainty

The measurement uncertainty levels have been estimated as specified in ETSI TR 100 028-2001

Test Items/Facilities			Frequency Range	Uncertainty
Conduction Test	☐	No. 7 Shielded Room	9kHz-150kHz	±3.7dB
			150kHz-30MHz	±3.4dB
	☒	No. 8 Shielded Room	9kHz-150kHz	±3.7dB
			150kHz-30MHz	±3.5dB
Radiation Test	☒	No.1 3m Semi Anechoic Chamber	30MHz-200MHz, 3m, Horizontal	±3.6dB
			200MHz-1000MHz, 3m, Horizontal	±4.3dB
			30MHz-200MHz, 3m, Vertical	±4.4dB
			200MHz-1000MHz, 3m, Vertical	±4.8dB
			1GHz-6GHz, 3m	±4.8dB
			6GHz-18GHz, 3m	±4.5dB
	☐	No.3 3m Semi Anechoic Chamber	30MHz-200MHz, 3m, Horizontal	±4.0dB
			200MHz-1000MHz, 3m, Horizontal	±4.4dB
			30MHz-200MHz, 3m, Vertical	±4.7dB
			200MHz-1000MHz, 3m, Vertical	±4.5dB
			1GHz-6GHz, 3m	±4.8dB
			6GHz-18GHz, 3m	±4.5dB
	☐	No.4 3m Semi Anechoic Chamber	30MHz-200MHz, 3m, Horizontal	±4.3dB
			200MHz-1000MHz, 3m, Horizontal	±4.2dB
			30MHz-200MHz, 3m, Vertical	±4.8dB
			200MHz-1000MHz, 3m, Vertical	±4.7dB
			1GHz-6GHz, 3m	±4.6dB
			6GHz-18GHz, 3m	±4.4dB
	☐	No.5 3m Semi Anechoic Chamber	30MHz-200MHz, 3m, Horizontal	±4.6dB
			200MHz-1000MHz, 3m, Horizontal	±4.4dB
			30MHz-200MHz, 3m, Vertical	±4.5dB
			200MHz-1000MHz, 3m, Vertical	±4.9dB
			1GHz-6GHz, 3m	±4.9dB
			6GHz-18GHz, 3m	±4.6dB
	Radiated emissions (18GHz-40GHz)		18GHz-40GHz, 3m	±3.4dB

Remark：Uncertainty = $ku_c(y)$

Test Item	Uncertainty
Maximum peak output power	± 0.33dB

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4. MEASUREMENT EQUIPMENTLIST

4.1. Conducted Emission Measurement

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Test Receiver	R&S	ESR3	101774	2023. 01. 11	1 Year
2.	A.M.N.	R&S	ENV432	101567	2023. 06. 02	1 Year
3.	L.I.S.N.	Kyoritsu	KNW-407	8-855-9	2022. 12. 19	1 Year
4.	Pulse Limiter	R&S	ESH3-Z2	100354	2022. 12. 14	1 Year
5.	Digital Thermo-Hygro Meter	iMax	HTC-1	No.8 S/R	2023. 04. 13	1 Year
6.	Coaxial Cable	Yeida	RG/58AU	CE-08	2023. 09. 06	1 Year
7.	Test Software	Audix	e3	V9 18621a	N.C.R.	N.C.R.

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4.2. Radiated Emission Measurement

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Spectrum Analyzer	Agilent	N9010A-526	MY53400071	2023.08.16	1 Year
2.	Spectrum Analyzer	Keysight	N9010B-544	MY55460198	2023.03.29	1 Year
3.	Test Receiver	R&S	ESCS30	100338	2023.06.20	1 Year
4.	Amplifier	HP	8447D	2944A06305	2022.12.29	1 Year
5.	Microwave Amplifier	Keysight	83051A	MY56480113	2023.09.11	1 Year
6.	Microwave Amplifier	Agilent	8449B	3008A02678	2023.02.17	1 Year
7.	Loop Antenna	TESEQ	HLA 6121	60478	2023.02.21	1 Year
8.	Bilog Antenna	TESEQ	CBL6112D	33821	2023.06.30	1 Year
9.	Horn Antenna	EMCO	3115	9112-3775	2023.05.04	1 Year
10.	Horn Antenna	COM-POWER	AH-840	101092	2022.12.30	1 Year
11.	2.4GHz Notch Filter	K&L Microwave	7NSL10-2441.5/E130.5-O/O	2	2023.07.22	1 Year
12.	3GHz Notch Filter	Microwave	H3G018G1	484796	2023.07.22	1 Year
13.	Coaxial Cable	MIYAZAKI	5D2W	RE-11	2023.01.07	1 Year
14.	Coaxial Cable	HUBER+SUHNER	RG223/U	RE-33	2023.03.02	1 Year
15.	Coaxial Cable	HUBER+SUHNER	SUCOFLEX 106	RE-14	2023.01.07	1 Year
16.	Coaxial Cable	HUBER+SUHNER	SUCOFLEX 102	RE-30	2023.08.21	1 Year
17.	Digital Thermo-Hygro Meter	iMax	HTC-1	No.1 3m A/C	2023.04.13	1 Year
18.	Test Software	Audix	e3	V9 18621a	N.C.R.	N.C.R.

4.3. RF Conducted Measurement

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Power Meter	Anritsu	ML2495A	2127005	2022. 12. 01	1 Year
2.	Power Meter	Anritsu	ML2495A	2127004	2022. 12. 07	1 Year
3.	Power Sensor	Anritsu	MA2411B	1911360	2022. 12. 07	1 Year
4.	Power Sensor	Anritsu	MA2411B	1911356	2022. 12. 01	1 Year
5.	Spectrum Analyzer	Keysight	N9020B	MY57120357	2023. 02. 02	1 Year
6.	Digital Thermo-Hygro Meter	iMax	HTC-1	RF-03	2023. 04. 13	1 Year

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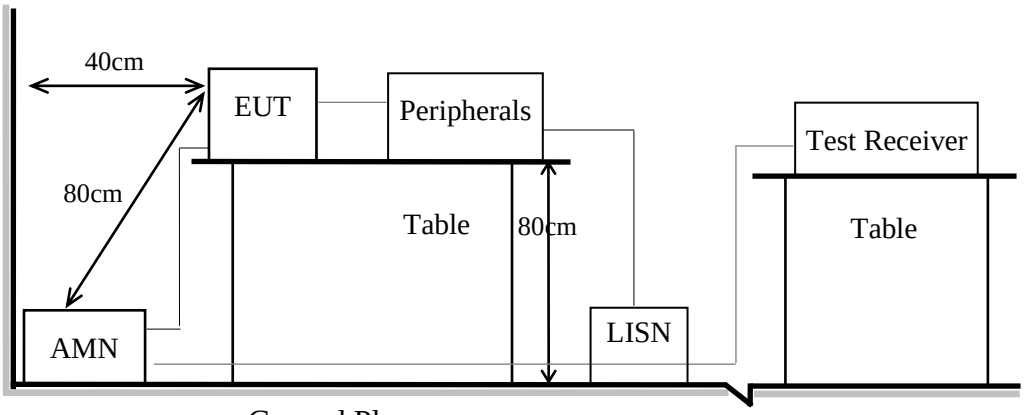
5. CONDUCTED EMISSION

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 dBμV	56 ~ 46 dBμV
500kHz ~ 5MHz	56 dBμV	46 dBμV
5MHz ~ 30MHz	60 dBμV	50 dBμV

Remark1.: 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 150kHz to 30 MHz and record the emission which does not have 20 dB below limit.

5.4. Test Results

Please refer to Appendix A.

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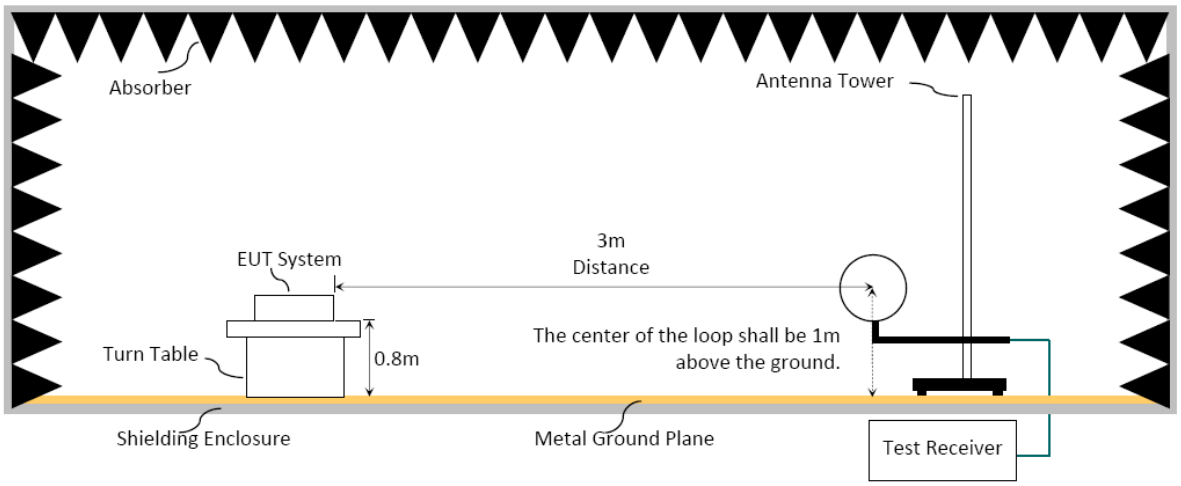
6. RADIATED EMISSION

6.1. Block Diagram of Test Setup

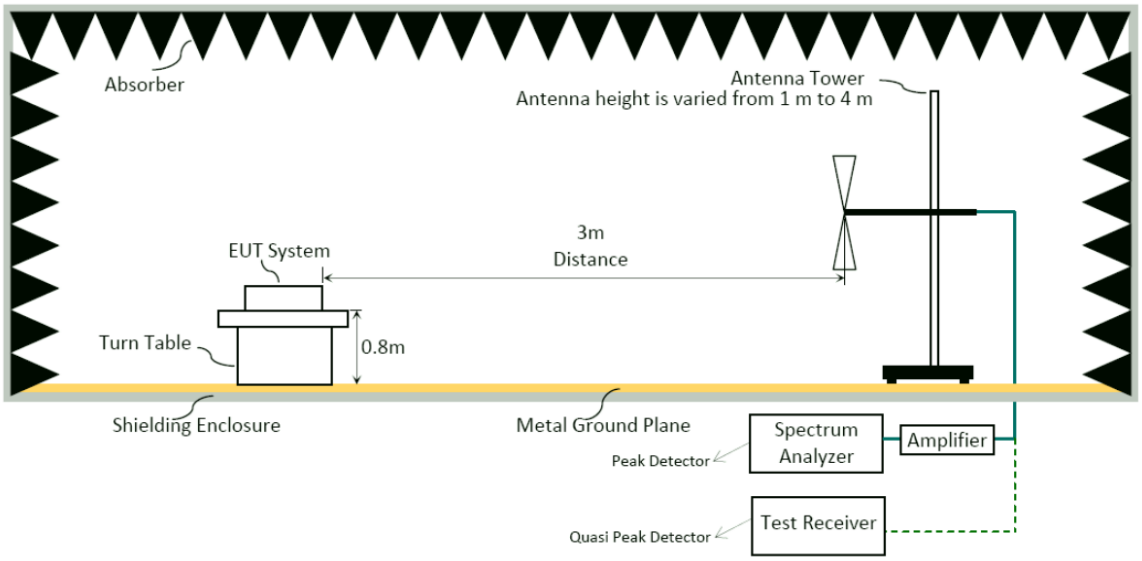
6.1.1. Block Diagram of EUT

Indicated as section 3.11

6.1.2. Setup Diagram for 9kHz-30MHz



6.1.3. Setup Diagram for 30-1000MHz



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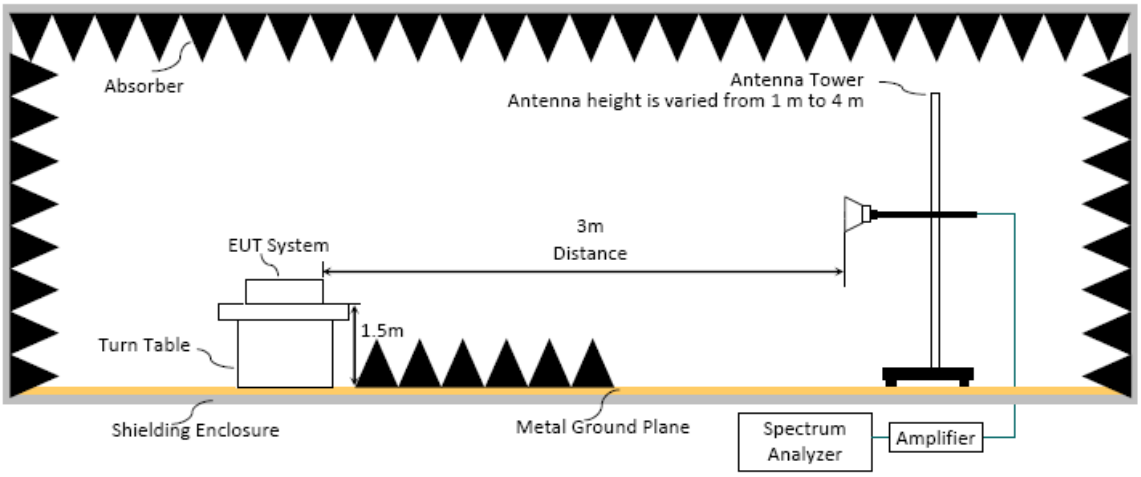
6.1.4. Setup Diagram for above 1GHz



6.2. Radiated Emission Limits

In any 100kHz bandwidth outside the frequency band, the radio frequency power produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level. In addition, radiated emissions which fall in restricted bands, as defined in Section 15.205/RSS-Gen Section 8.10 table 6, must also comply with the radiated emission limits specified as below.

Frequency (MHz)	Distance(m)	Limits	
		dBμV/m	μV/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 dBμV/m (Peak) 54.0 dBμV/m (Average)	

Remark：(1) dBμV/m = 20 log (μV/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.

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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 ~ 25GHz:
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 ≥ 3 x 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 25 GHz):
Peak Detector:
(1)RBW = 1MHz
(2)VBW ≥ 3 x 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.

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Average Detector:

■**Option 1:**

(1)RBW = 1MHz

(2)VBW ≥ 1/ T. (Duty Cycle < 98%, when duty cycle presented in section 3.8)

Modulation Type	VBW Setting (VBW ≥ 1/ T)
802.11b	120Hz
802.11g	510Hz
802.11ax-HE20 (RU Config 26)	1.5kHz
802.11ax-HE20 (RU Config 52)	750Hz
BLE (2Mbps)	1kHz

(3)VBW = 10Hz (Duty Cycle ≥ 98%, when duty cycle presented in section 3.8)

Modulation Type	VBW Setting
802.11n-HT20	10Hz
802.11n-HT40	10Hz
802.11ax-HE20	10Hz
802.11ax-HE40	10Hz
802.11ax-HE20 (RU Config 106)	10Hz
802.11ax-HE40 (RU Config 242)	10Hz

(4)Detector = Peak.

(5)Sweep time = auto.

(6)Trace mode = max hold.

(7)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(dBμV/m)=Antenna Factor(dB/m) + Cable Loss (dB)– Preamp Gain (dB)+ Reading(dBμV).

■Average Emission Level(dBμV/m)= Antenna Factor(dB/m) + Cable Loss (dB)– Preamp Gain (dB)+ Reading(dBμV).

□Average Emission Level(dBμV/m)= Peak Emission Level(dBμV/m)+ DCCF(dB)
Duty Cycle Correction Factor (DCCF)(dB)= 20log(TX_{on}/TX_{on+off}) presented in section 3.8.

□ERP(dBm)= Peak Emission Level(dBμV/m) -95.2dB-2.14dB

6.5. Test Results

Please refer to Appendix A.

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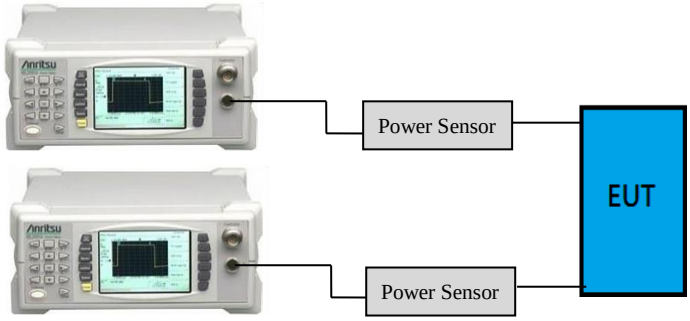
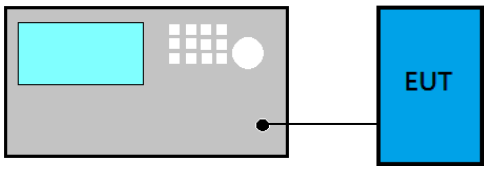
7. MAXIMUM PEAK OUTPUT POWER

7.1. Block Diagram of Test Setup

- For WLAN Function



- For BLE Function



7.2. Specification Limits

The Limits of maximum Peak Output Power for digital modulation in 2400-2483.5MHz is : 1Watt. (30dBm), and E.I.R.P.: 4Watt (36dBm)

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7.3. Test Procedure

Following measurement procedure is reference to ANSI C63.10:2013:

■PKPM1 Peak power meter method:

EUT is connected to power sensor and record the maximum output power.

■Maximum peak conducted output power method:

(1) Set the RBW ≥ DTS bandwidth
(2) Set VBW ≥ 3 × RBW
(3) Set span ≥ 3 × RBW.
(4) Sweep time = auto couple
(5) Detector = peak.
(6) Trace mode = max hold.
(7) Allow trace to fully stabilize.
(8) Use peak marker function to determine the peak amplitude level.

■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)

(1) Set span to at least 1.5 times the OBW
(2) Set RBW = 1 -5%of OBW
(3) Set the video bandwidth (VBW) ≥ 3 × RBW.
(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

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8. DEVIATION TO TEST SPECIFICATIONS

【NONE】

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APPDNDIX A

TEST DATA AND PLOTS

(Model: 15Z90ST)

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Audix Technology Corp.
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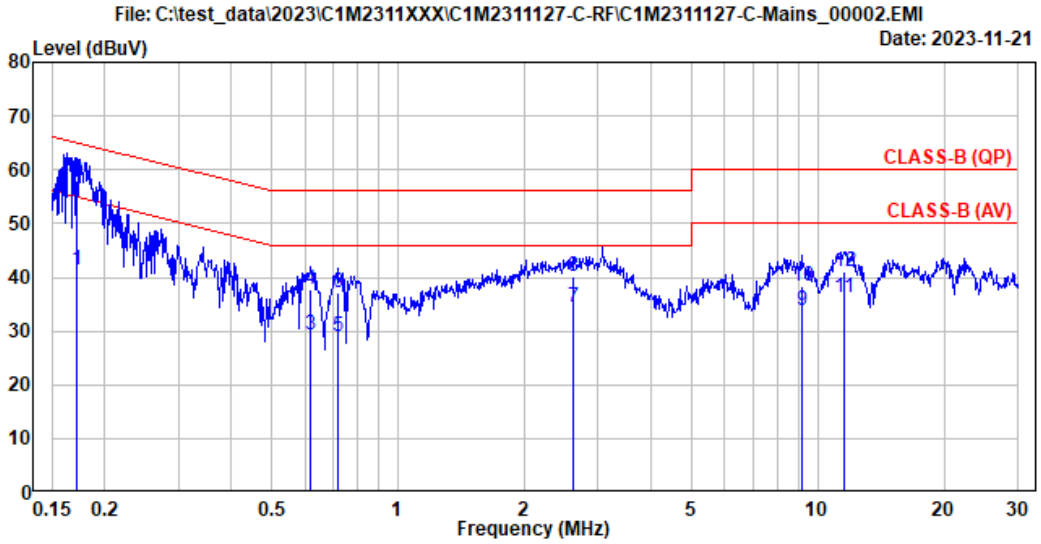
A.1 CONDUCTED EMISSION

Test Date	2023/11/21	Temp./Hum.	26℃/57%
Test Voltage	AC 120V 60Hz (Via AC Adapter)	Tested By	Bruce Tseng




```
Site No.        : No.8 Shielded Room                    Data No.     : 2
Instrument 1    : Receiver ESR(774)
Instrument 2    : ENV432 (567)(A)|CE-08|ESH3-Z2 (354)
Limit           : CLASS-B (QP)                          Phase        : Neutral
Environment     : 26*C/57%                              Test Rating  : 120Vac/60Hz
EUT Model       : 15Z90ST                               Engineer     : Bruce
Test Mode       : Operating
```

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBµV)	Emission Level (dBµV)	Limits (dBµV)	Margin (dB)	Remark
1	0.172	10.30	0.03	9.85	21.15	41.33	54.88	13.55	Average
2	0.172	10.30	0.03	9.85	37.78	57.96	64.88	6.92	QP
3	0.621	10.28	0.03	9.85	9.19	29.35	46.00	16.65	Average
4	0.621	10.28	0.03	9.85	17.44	37.60	56.00	18.40	QP
5	0.717	10.29	0.04	9.85	8.92	29.10	46.00	16.90	Average
6	0.717	10.29	0.04	9.85	17.02	37.20	56.00	18.80	QP
7	2.622	10.34	0.07	9.86	14.30	34.57	46.00	11.43	Average
8	2.622	10.34	0.07	9.86	19.78	40.05	56.00	15.95	QP
9	9.161	10.55	0.13	9.88	13.19	33.75	50.00	16.25	Average
10	9.161	10.55	0.13	9.88	17.82	38.38	60.00	21.62	QP
11	11.579	10.66	0.15	9.90	15.44	36.15	50.00	13.85	Average
12	11.579	10.66	0.15	9.90	20.31	41.02	60.00	18.98	QP

Remarks: 1. Emission Level(dBµV)= AMN Factor(dB) + Cable Loss(dB) + Pulse Att.(dB) + Reading(dBµV).

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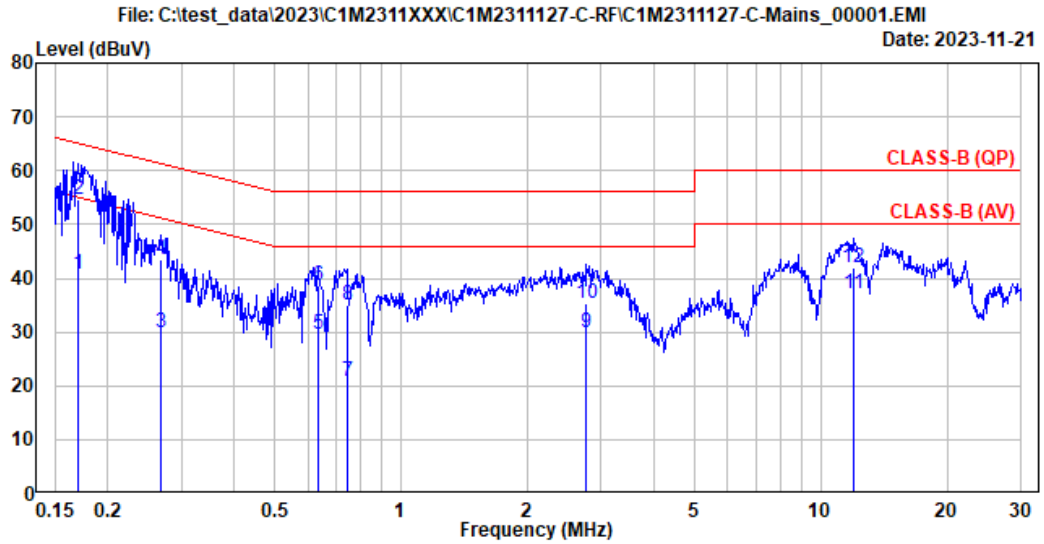
Test Date	2023/11/21	Temp./Hum.	26℃/57%
Test Voltage	AC 120V 60Hz (Via AC Adapter)	Tested By	Bruce Tseng



Site No. : No.8 Shielded Room
Instrument 1 : Receiver ESR(774)
Instrument 2 : ENV432 (567)(A)|CE-08|ESH3-Z2 (354)
Limit : CLASS-B (QP)
Environment : 26*C/57%
EUT Model : 15Z90ST
Test Mode : Operating

Data No. : 1
Phase : Line
Test Rating : 120Vac/60Hz
Engineer : Bruce

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBµV)	Emission Level (dBµV)	Limits (dBµV)	Margin (dB)	Remark
1	0.171	10.22	0.03	9.85	20.79	40.89	54.92	14.03	Average
2	0.171	10.22	0.03	9.85	34.42	54.52	64.92	10.40	QP
3	0.269	10.22	0.03	9.85	9.89	29.99	51.16	21.17	Average
4	0.269	10.22	0.03	9.85	23.23	43.33	61.16	17.83	QP
5	0.633	10.23	0.04	9.85	9.36	29.48	46.00	16.52	Average
6	0.633	10.23	0.04	9.85	18.48	38.60	56.00	17.40	QP
7	0.743	10.23	0.04	9.85	0.67	20.79	46.00	25.21	Average
8	0.743	10.23	0.04	9.85	15.05	35.17	56.00	20.83	QP
9	2.770	10.26	0.07	9.86	9.76	29.95	46.00	16.05	Average
10	2.770	10.26	0.07	9.86	15.05	35.24	56.00	20.76	QP
11	11.931	10.48	0.15	9.90	16.60	37.13	50.00	12.87	Average
12	11.931	10.48	0.15	9.90	21.53	42.06	60.00	17.94	QP

Remarks: 1. Emission Level(dBµV)= AMN Factor(dB) + Cable Loss(dB) + Pulse Att.(dB) + Reading(dBµV).

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A.2 RADIATED EMISSION

Test Date	2023/11/15	Temp./Hum.	22℃/61%
Test Voltage	AC 120V 60Hz (Via AC Adapter)	Tested By	Hua Wu

A.2.1 Emissions within Restricted Frequency Bands

A.2.1.1 Frequency 9kHz~30MHz

The emissions (9kHz~30MHz) not reported for there is no emission be found.

A.2.1.2 Frequency Below 1GHz

Mode	802.11ax-HE20	Frequency	TX 2442MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
34.042	22.48	1.28	26.51	34.70	31.94	40.00	8.06	Peak
135.892	17.31	2.72	26.09	34.58	28.52	43.50	14.98	Peak
148.825	16.64	2.86	26.02	36.23	29.71	43.50	13.79	Peak
224.808	16.77	3.65	25.77	39.87	34.51	46.00	11.49	Peak
277.350	18.56	4.15	25.69	37.72	34.73	46.00	11.27	Peak
377.583	21.03	5.28	26.34	34.56	34.53	46.00	11.47	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
34.042	22.48	1.28	0.00	14.94	38.70	40.00	1.30	QP
84.967	13.96	2.11	26.35	37.31	27.03	40.00	12.97	Peak
150.442	16.53	2.88	26.02	37.23	30.62	43.50	12.88	Peak
274.925	18.52	4.13	25.69	34.65	31.60	46.00	14.40	Peak
398.600	21.53	5.50	26.50	32.67	33.20	46.00	12.80	Peak
482.667	22.89	6.26	27.06	33.65	35.74	46.00	10.26	Peak

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Mode	BLE (2Mbps)	Frequency	TX 2480MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
34.042	22.48	1.28	26.51	33.92	31.17	40.00	8.83	Peak
131.850	17.44	2.67	26.11	33.27	27.27	43.50	16.23	Peak
151.250	16.48	2.89	26.01	35.76	29.12	43.50	14.38	Peak
224.808	16.77	3.65	25.77	39.02	33.67	46.00	12.33	Peak
274.117	18.51	4.12	25.69	38.99	35.92	46.00	10.08	Peak
377.583	21.03	5.28	26.34	33.17	33.13	46.00	12.87	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
33.233	22.77	1.27	0.00	14.76	38.80	40.00	1.20	QP
84.967	13.96	2.11	26.35	38.17	27.89	40.00	12.11	Peak
151.250	16.48	2.89	26.01	36.68	30.04	43.50	13.46	Peak
270.075	18.44	4.08	25.70	33.69	30.50	46.00	15.50	Peak
378.392	21.05	5.29	26.35	34.41	34.40	46.00	11.60	Peak
495.600	23.06	6.36	27.13	32.60	34.89	46.00	11.11	Peak

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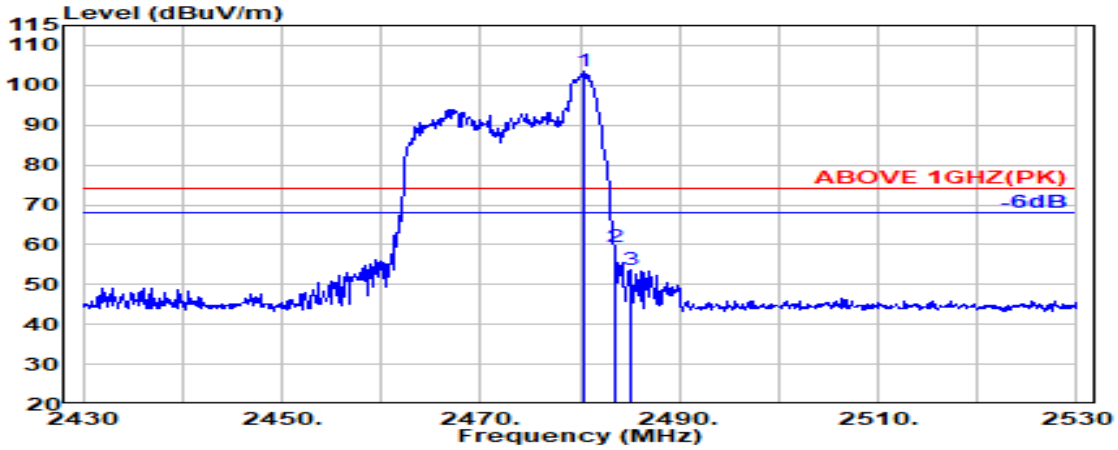
A.2.1.3 Frequency Above 1 GHz to 10th harmonics

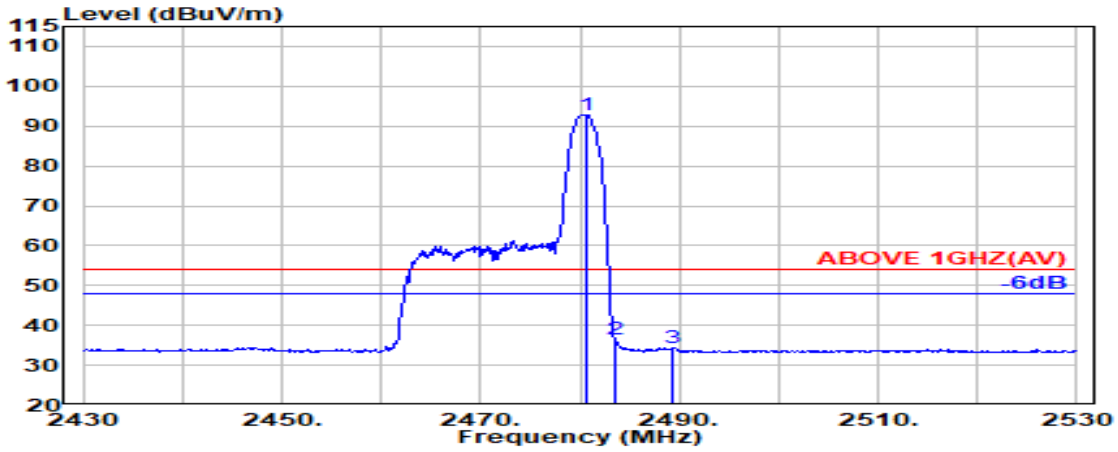
Band Edge:

Mode	802.11ax-HE20	Frequency	TX 2472MHz
		RU Configuration	26/8



Antenna at Horizontal Polarization

	Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
@	2480.500	28.46	6.16	34.53	103.42	103.52	---	---	Peak
	2483.500	28.47	6.17	34.53	59.34	59.44	74.00	14.56	Peak
	2485.100	28.47	6.17	34.53	53.47	53.58	74.00	20.42	Peak



Antenna at Horizontal Polarization

	Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
@	2480.600	28.46	6.16	34.53	92.83	92.93	---	---	Average
	2483.500	28.47	6.17	34.53	36.46	36.57	54.00	17.43	Average
	2489.300	28.48	6.18	34.53	34.24	34.37	54.00	19.63	Average

Remark: The "@" means fundamental frequency, it is ignored in this section.

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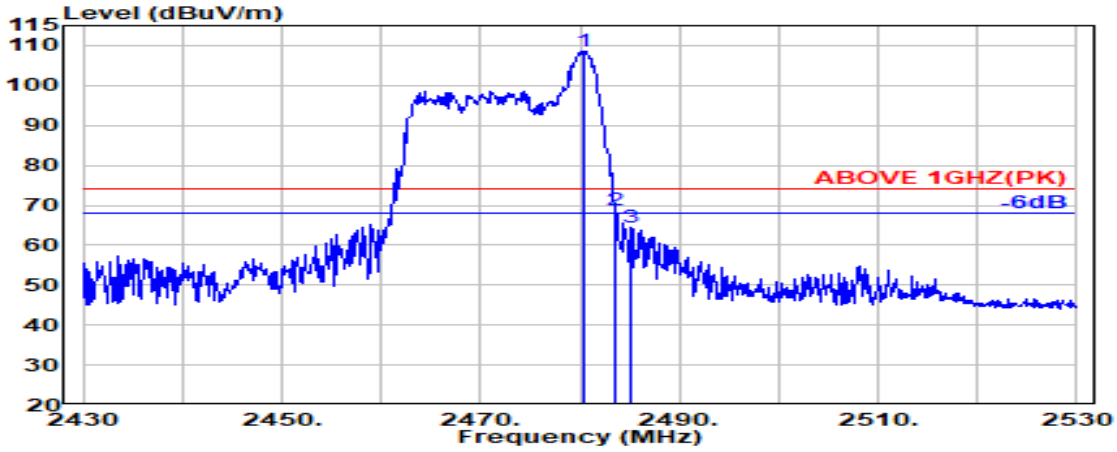
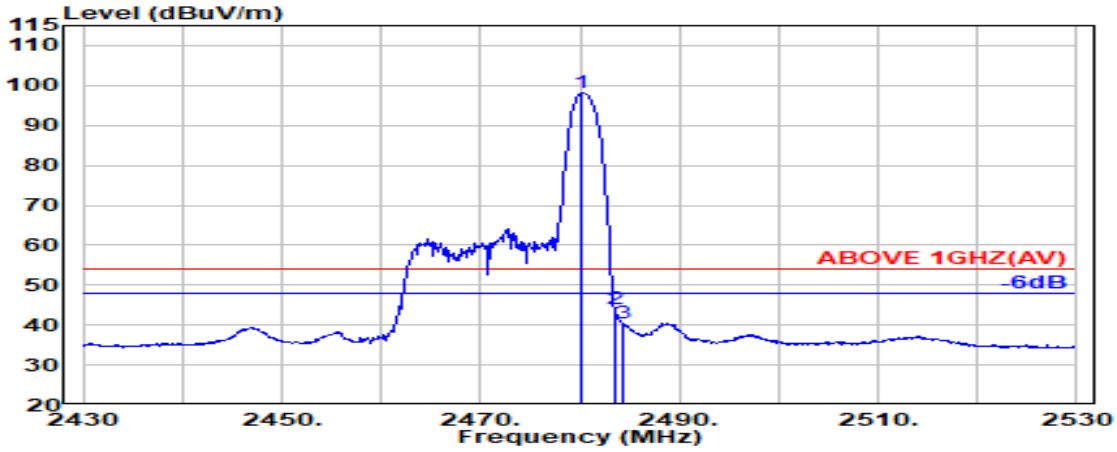
Mode	802.11ax-HE20	Frequency	TX 2472MHz
		RU Configuration	26/8



Antenna at Vertical Polarization

	Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
@	2480.500	28.46	6.16	34.53	108.58	108.68	---	---	Peak
	2483.500	28.47	6.17	34.53	68.79	68.90	74.00	5.10	Peak
	2485.200	28.47	6.17	34.53	64.28	64.39	74.00	9.61	Peak



Antenna at Vertical Polarization

	Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
@	2480.100	28.46	6.16	34.53	98.17	98.27	---	---	Average
	2483.500	28.47	6.17	34.53	44.02	44.13	54.00	9.87	Average
	2484.400	28.47	6.17	34.53	40.22	40.33	54.00	13.67	Average

Remark: The "@" means fundamental frequency, it is ignored in this section.

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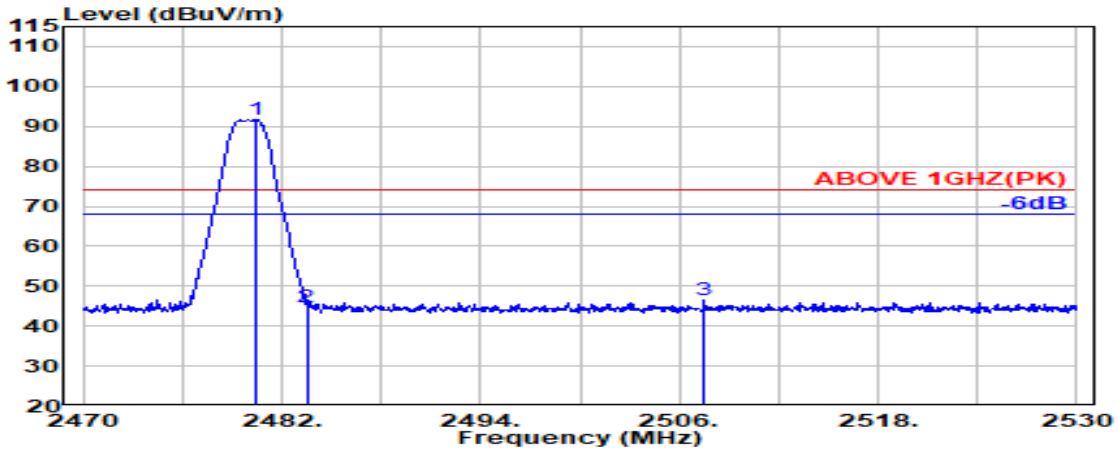
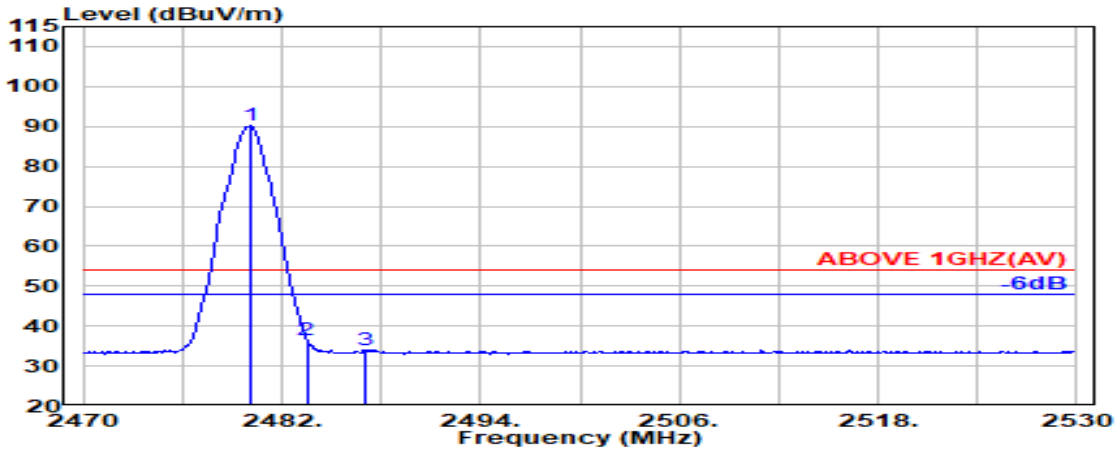
Mode	BLE (2Mbps)	Frequency	TX 2480MHz



Antenna at Horizontal Polarization

	Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
@	2480.450	28.46	6.16	34.53	91.55	91.65	---	---	Peak
	2483.500	28.47	6.17	34.53	44.77	44.87	74.00	29.13	Peak
	2507.450	28.55	6.20	34.53	46.36	46.57	74.00	27.43	Peak



Antenna at Horizontal Polarization

	Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
@	2480.100	28.46	6.16	34.53	90.01	90.11	---	---	Average
	2483.500	28.47	6.17	34.53	36.51	36.62	54.00	17.38	Average
	2487.000	28.47	6.17	34.53	34.04	34.15	54.00	19.85	Average

Remark: The "@" means fundamental frequency, it is ignored in this section.

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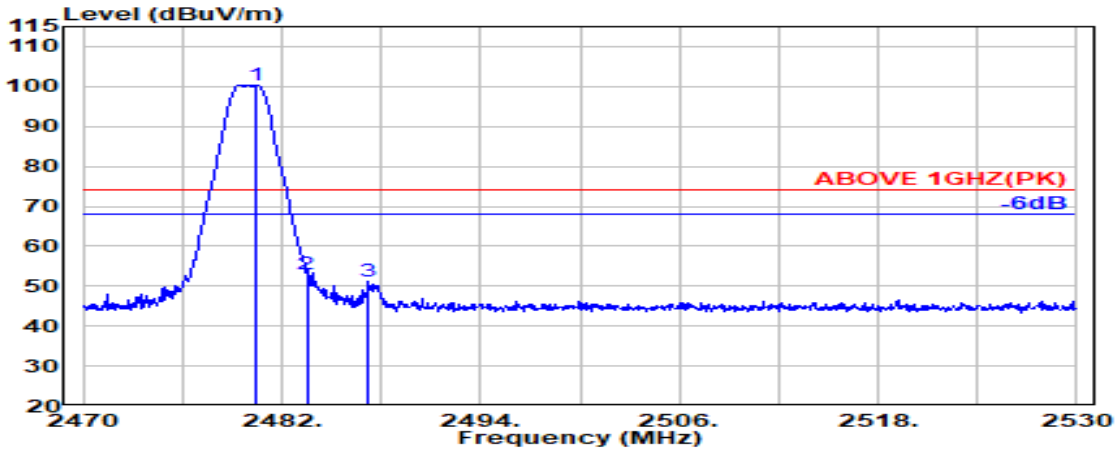
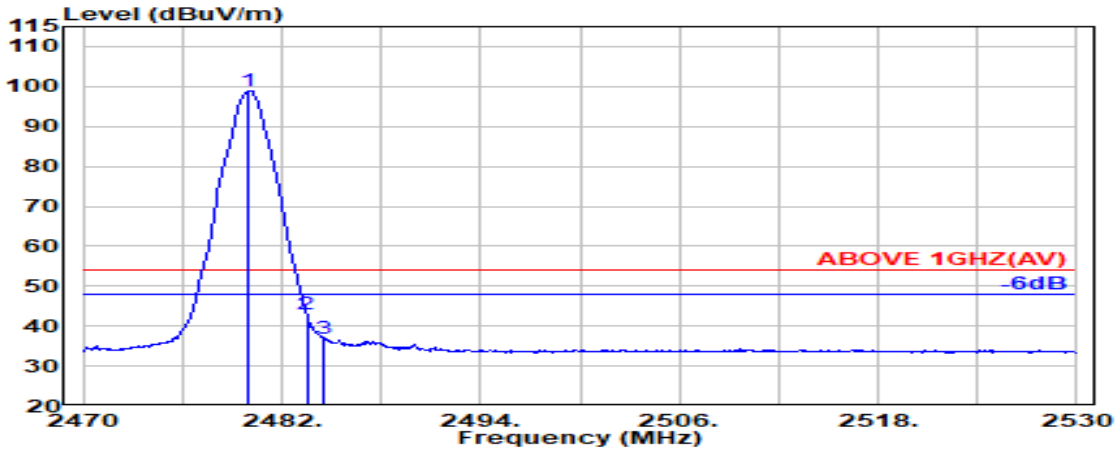
Mode	BLE (2Mbps)	Frequency	TX 2480MHz



Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
@ 2480.450	28.46	6.16	34.53	100.36	100.46	---	---	Peak
2483.500	28.47	6.17	34.53	52.95	53.05	74.00	20.95	Peak
2487.250	28.47	6.17	34.53	51.02	51.14	74.00	22.86	Peak



Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
@ 2480.000	28.46	6.16	34.53	98.85	98.95	---	---	Average
2483.500	28.47	6.17	34.53	42.86	42.97	54.00	11.03	Average
2484.500	28.47	6.17	34.53	36.76	36.87	54.00	17.13	Average

Remark: The "@" means fundamental frequency, it is ignored in this section..

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A.2.2 Emissions outside the frequency band:

The emissions (up to 25GHz) not reported for there is no emission be found.

Mode	802.11n-HT40	Frequency	TX 2442MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4884.000	33.24	8.38	34.42	35.52	42.71	54.00	11.29	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4884.000	33.24	8.38	34.42	36.55	43.74	54.00	10.26	Peak

Mode	BLE (2Mbps)	Frequency	TX 2402MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4804.000	33.01	8.32	34.43	36.51	43.41	54.00	10.59	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4804.000	33.01	8.32	34.43	37.91	44.81	54.00	9.19	Peak

A.2.3 Emissions in Non-restricted Frequency Bands:

Pursuant to ANSI C63.10:2013 that emission levels below the FCC 15.209(a)/RSS-Gen Section 8.9 table 4 general radiated emissions limits is not required.

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A.3 MAXIMUM PEAK OUTPUT POWER

Test Date	2023/11/15 ~ 23	Temp./Hum.	23 ~ 24°C/51 ~ 55%
Cable Loss	0.5dB	Tested By	Harry Huang
Test Voltage	AC 120V, 60Hz (via AC Adapter)		

A.3.1 Peak Output Power

- SPOT Check

Mode	Centre Frequency (MHz)	Peak Output Power (dBm)		Max Peak Output Power (dBm)	Antenna Gain (dBi)		E.I.R.P (dBm)[Note2]	Limit
		Aux	Main		Aux	Main		
802.11b	2412	22.74	22.83	22.83	3.70	3.20	26.44	<30dBm (Maximum Peak Output Power) <36dBm (E.I.R.P)
	2442	23.09	23.12	23.12	3.90	3.60	26.99	
	2462	22.81	22.76	22.81	3.90	3.60	26.71	
	2467	22.38	21.94	22.38	3.90	3.60	26.28	
	2472	20.35	19.40	20.35	3.90	3.60	24.25	
802.11g	2412	20.99	21.04	21.04	3.70	3.20	24.69	
	2417	22.69	23.44	23.44	3.70	3.20	26.64	
	2442	24.05	23.74	24.05	3.90	3.60	27.95	
	2457	22.77	22.69	22.77	3.90	3.60	26.67	
	2462	20.73	20.99	20.99	3.90	3.60	24.63	
	2467	19.21	19.07	19.21	3.90	3.60	23.11	
	2472	16.89	16.78	16.89	3.90	3.60	20.79	

Note: 1. The results have been included cable loss.
2. E.I.R.P.= The Max. of Peak Output Power (AUX or Main)(dBm)+ Antenna Gain (dBi).
3. We did spot check for output power and all output power values keep identical or lower thus other conducted items is exempt.

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Mode	Centre Frequency (MHz)	Peak Output Power (dBm)		Total Peak Output Power Note2(dBm)	Directional Gain Note3(dBi)	E.I.R.P Note4 (dBm)	Limit
		Aux	Main				
802.11n-HT20	2412	19.04	18.79	21.93	3.46	25.39	<30dBm (Maximum Peak Output Power) <36dBm (E.I.R.P)
	2417	21.09	21.63	24.38	3.46	27.84	
	2422	22.06	22.50	25.30	3.75	29.05	
	2442	23.30	23.83	26.58	3.75	30.33	
	2457	22.05	22.25	25.16	3.75	28.91	
	2462	19.35	19.19	22.28	3.75	26.03	
	2467	15.43	15.33	18.39	3.75	22.14	
	2472	10.95	11.11	14.04	3.75	17.79	
802.11n-HT40	2422	19.87	20.15	23.02	3.46	26.48	
	2442	20.72	20.88	23.81	3.75	27.56	
	2452	20.10	20.36	23.24	3.75	26.99	
	2457	13.94	13.65	16.81	3.75	20.56	
	2462	11.83	12.36	15.11	3.75	18.86	
802.11ax-HE20	2412	19.38	19.46	22.43	3.46	25.89	
	2417	21.33	21.59	24.47	3.46	27.93	
	2437	22.12	22.68	25.42	3.75	29.17	
	2442	23.40	23.85	26.64	3.75	30.39	
	2457	22.36	22.66	25.52	3.75	29.27	
	2462	19.57	19.04	22.32	3.75	26.07	
	2467	15.48	15.19	18.35	3.75	22.10	
	2472	11.45	11.06	14.27	3.75	18.02	
802.11ax-HE40	2422	20.03	19.81	22.93	3.46	26.39	
	2442	20.54	21.17	23.88	3.75	27.63	
	2452	19.07	19.97	22.55	3.75	26.30	
	2457	13.65	13.54	16.61	3.75	20.36	
	2462	11.81	11.73	14.78	3.75	18.53	

Note: 1. The results have been included cable loss.

2. According to KDB 662911 D01 E)1), Total peak power = sum to individual output power
3. According to KDB 662911 D01 d) ii), transmit signals are completely uncorrelated, then
   Directional gain = 10 log[($10^{G1/10} + 10^{G2/10} + \ldots + 10^{GN/10}$)/$N_{ANT}$] dBi
   2400MHz: Directional gain = 10 log[($10^{3.2/10} + 10^{3.7/10}$)/2]= 3.46dBi
   2450MHz: Directional gain = 10 log[($10^{3.6/10} + 10^{3.9/10}$)/2]= 3.75dBi
   The MIMO is uncorrelated and supported SDM(Spatial Division Multiplexing) mode only. This radio device doesn't support beamforming and Cyclic Delay Diversity (CDD).
4. E.I.R.P.= The Total Peak Output Power (dBm)+ Directional Gain (dBi).
5. We did spot check for output power and all output power values keep identical or lower thus other conducted items is exempt.

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Mode	Centre Frequency (MHz)	RU Configuration	Peak Output Power (dBm)		Total Peak Output Power Note2(dBm)	Directional Gain Note3(dBi)	E.I.R.P Note4 (dBm)	Limit
			Aux	Main				
802.11ax-HE20	2412	26/30	22.36	22.30	25.34	3.46	28.80	<30dBm (Maximum Peak Output Power) <36dBm (E.I.R.P)
		52/37	22.56	22.16	25.37	3.46	28.83	
		106/53	22.19	21.95	25.08	3.46	28.54	
	2472	26/8	18.87	18.45	21.68	3.75	25.43	
		52/40	19.10	18.86	21.99	3.75	25.74	
		106/54	18.81	19.22	22.03	3.75	25.78	
802.11ax-HE40	2422	242/61	19.60	19.63	22.63	3.46	26.09	
	2462	242/62	17.69	17.29	20.50	3.75	24.25	

Note: 1. The results have been included cable loss.

2. According to KDB 662911 D01 E)1), Total peak power = sum to individual output power
3. According to KDB 662911 D01 d) ii), transmit signals are completely uncorrelated, then
   Directional gain = 10 log[($10^{G1/10} + 10^{G2/10} + \ldots + 10^{GN/10}$)/$N_{ANT}$] dBi
   2400MHz: Directional gain = 10 log[($10^{3.2/10} + 10^{3.7/10}$)/2]= 3.46dBi
   2450MHz: Directional gain = 10 log[($10^{3.6/10} + 10^{3.9/10}$)/2]= 3.75dBi
   The MIMO is uncorrelated and supported SDM(Spatial Division Multiplexing) mode only. This radio device doesn't support beamforming and Cyclic Delay Diversity (CDD).
4. E.I.R.P.= The Total Peak Output Power (dBm)+ Directional Gain (dBi).
5. We did spot check for output power and all output power values keep identical or lower thus other conducted items is exempt.

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Mode	Centre Frequency (MHz)	Peak Output Power (dBm)	Antenna Gain (dBi)	E.I.R.P (dBm)[Note2]	Limit
		Aux	Aux		
BLE (1Mbps)	2402	5.81	3.70	9.51	<30dBm (Maximum Peak Output Power) <36dBm (E.I.R.P)
	2440	5.96	3.90	9.86	
	2480	5.84	4.20	10.04	
BLE (2Mbps)	2402	6.14	3.70	9.84	
	2440	6.13	3.90	10.03	
	2480	6.44	4.20	10.64	
BLE (PHY Coded S2)	2402	5.95	3.70	9.65	
	2440	6.13	3.90	10.03	
	2480	6.34	4.20	10.54	
BLE (PHY Coded S8)	2402	5.77	3.70	9.47	
	2440	6.02	3.90	9.92	
	2480	5.97	4.20	10.17	

Note: 1. The results have been included cable loss.
2. E.I.R.P.= The Peak Output Power (dBm)+ Antenna Gain (dBi).
3. We did spot check for output power and all output power values keep identical or lower thus other conducted items is exempt.

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Mode	Centre Frequency (MHz)	Peak Output Power (dBm)		Max Peak Output Power (dBm)	Antenna Gain (dBi)		E.I.R.P (dBm)Note 2	Limit
		Aux	Main		Aux	Main		
802.11b	2412	23.19	23.13	23.19	3.70	3.20	26.89	<30dBm (Maximum Peak Output Power) <36dBm (E.I.R.P)
	2442	23.36	23.18	23.36	3.90	3.60	27.26	
	2462	23.22	23.17	23.22	3.90	3.60	27.12	
	2467	22.59	22.31	22.59	3.90	3.60	26.49	
	2472	20.76	19.80	20.76	3.90	3.60	24.66	
802.11g	2412	21.14	21.38	21.38	3.70	3.20	24.84	
	2417	23.16	23.56	23.56	3.70	3.20	26.86	
	2442	24.05	23.98	24.05	3.90	3.60	27.95	
	2457	23.16	22.78	23.16	3.90	3.60	27.06	
	2462	21.22	21.13	21.22	3.90	3.60	25.12	
	2467	19.26	19.07	19.26	3.90	3.60	23.16	
	2472	17.10	16.86	17.10	3.90	3.60	21.00	

Note: 1. The results have been included cable loss.
2. E.I.R.P.= The Max. of Peak Output Power (AUX or Main)(dBm)+ Antenna Gain (dBi).

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Mode	Centre Frequency (MHz)	Peak Output Power (dBm)		Total Peak Output Power Note2(dBm)	Directional Gain Note3(dBi)	E.I.R.P Note4 (dBm)	Limit
		Aux	Main				
802.11n-HT20	2412	19.26	19.15	22.22	3.46	25.68	<30dBm (Maximum Peak Output Power) <36dBm (E.I.R.P)
	2417	21.49	21.73	24.62	3.46	28.08	
	2422	22.39	22.76	25.59	3.75	29.34	
	2442	23.58	24.05	26.83	3.75	30.58	
	2457	22.54	22.64	25.60	3.75	29.35	
	2462	19.53	19.36	22.46	3.75	26.21	
	2467	15.65	15.64	18.66	3.75	22.41	
	2472	11.35	11.13	14.25	3.75	18.00	
802.11n-HT40	2422	20.16	20.27	23.23	3.46	26.69	
	2442	20.84	21.35	24.11	3.75	27.86	
	2452	20.15	20.57	23.38	3.75	27.13	
	2457	14.07	13.80	16.95	3.75	20.70	
	2462	12.00	12.46	15.25	3.75	19.00	
802.11ax-HE20	2412	19.42	19.47	22.46	3.46	25.92	
	2417	21.67	21.83	24.76	3.46	28.22	
	2422	22.61	23.02	25.83	3.75	29.58	
	2442	23.72	23.99	26.87	3.75	30.62	
	2457	22.66	22.81	25.75	3.75	29.50	
	2462	19.86	19.50	22.69	3.75	26.44	
	2467	15.75	15.64	18.71	3.75	22.46	
	2472	11.64	11.45	14.56	3.75	18.31	
802.11ax-HE40	2422	20.05	20.02	23.05	3.46	26.51	
	2442	20.84	21.39	24.13	3.75	27.88	
	2452	19.40	20.21	22.83	3.75	26.58	
	2457	13.91	13.90	16.92	3.75	20.67	
	2462	12.12	12.08	15.11	3.75	18.86	

Note: 1. The results have been included cable loss.

2. According to KDB 662911 D01 E)1), Total peak power = sum to individual output power
3. According to KDB 662911 D01 d) ii), transmit signals are completely uncorrelated, then
   Directional gain = 10 log[($10^{G1/10}$ + $10^{G2/10}$ + … + $10^{GN/10}$)/N_{ANT}] dBi
   2400MHz: Directional gain = 10 log[($10^{3.2/10}$ +$10^{3.7/10}$)/2]= 3.46dBi
   2450MHz: Directional gain = 10 log[($10^{3.6/10}$ +$10^{3.9/10}$)/2]= 3.75dBi
   The MIMO is uncorrelated and supported SDM(Spatial Division Multiplexing) mode only. This radio device doesn't support beamforming and Cyclic Delay Diversity (CDD).
4. E.I.R.P.= The Total Peak Output Power (dBm)+ Directional Gain (dBi).

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Mode	Centre Frequency (MHz)	RU Configuration	Peak Output Power (dBm)		Total Peak Output Power Note2(dBm)	Directional Gain Note3(dBi)	E.I.R.P Note4 (dBm)	Limit
			Aux	Main				
802.11ax-HE20	2412	26/30	22.63	22.44	25.55	3.46	29.01	<30dBm (Maximum Peak Output Power) <36dBm (E.I.R.P)
		52/37	22.82	22.65	25.75	3.46	29.21	
		106/53	22.61	22.45	25.54	3.46	29.00	
	2472	26/8	18.90	18.78	21.85	3.75	25.60	
		52/40	19.17	19.15	22.17	3.75	25.92	
		106/54	19.21	19.25	22.24	3.75	25.99	
802.11ax-HE40	2422	242/61	19.79	19.82	22.82	3.46	26.28	
	2462	242/62	17.97	17.73	20.86	3.75	24.61	

Note: 1. The results have been included cable loss.

2. According to KDB 662911 D01 E)1), Total peak power = sum to individual output power

3. According to KDB 662911 D01 d) ii), transmit signals are completely uncorrelated, then
Directional gain = 10 log[($10^{G1/10} + 10^{G2/10} + \ldots + 10^{GN/10}$)/$N_{ANT}$] dBi
2400MHz: Directional gain = 10 log[($10^{3.2/10} + 10^{3.7/10}$)/2]= 3.46dBi
2450MHz: Directional gain = 10 log[($10^{3.6/10} + 10^{3.9/10}$)/2]= 3.75dBi
The MIMO is uncorrelated and supported SDM(Spatial Division Multiplexing) mode only. This radio device doesn't support beamforming and Cyclic Delay Diversity (CDD).

4. E.I.R.P.= The Total Peak Output Power (dBm)+ Directional Gain (dBi).

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Mode	Centre Frequency (MHz)	Peak Output Power (dBm)	Antenna Gain (dBi)	E.I.R.P (dBm)[Note2]	Limit
		Aux	Aux		
BLE (1Mbps)	2402	6.19	3.70	9.89	<30dBm (Maximum Peak Output Power) <36dBm (E.I.R.P)
	2440	6.27	3.90	10.17	
	2480	6.25	4.20	10.45	
BLE (2Mbps)	2402	6.19	3.70	9.89	
	2440	6.26	3.90	10.16	
	2480	6.46	4.20	10.66	
BLE (PHY Coded S2)	2402	6.10	3.70	9.80	
	2440	6.23	3.90	10.13	
	2480	6.40	4.20	10.60	
BLE (PHY Coded S8)	2402	6.16	3.70	9.86	
	2440	6.21	3.90	10.11	
	2480	6.39	4.20	10.59	

Note: 1. The results have been included cable loss.
2. E.I.R.P.= The Peak Output Power (dBm)+ Antenna Gain (dBi).

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A.3.2 Average Output Power (Reporting only)

Mode	Centre Frequency (MHz)	Average Output Power (dBm)		Duty cycle factor (dB) 10log (1/x)	Max Average Output Power (dBm)	Antenna Gain (dBi)		E.I.R.P (dBm)[Note 2]	Limit
		Aux	Main			Aux	Main		
802.11b	2412	19.77	19.42	0.123	19.89	3.70	3.20	23.47	<30dBm (Maximum Peak Output Power) <36dBm (E.I.R.P)
	2442	19.84	19.81		19.96	3.90	3.60	23.74	
	2462	19.65	19.59		19.77	3.90	3.60	23.55	
	2467	19.10	18.68		19.22	3.90	3.60	23.00	
	2472	16.83	15.41		16.95	3.90	3.60	20.73	
802.11g	2412	15.85	16.64	0.501	17.14	3.70	3.20	19.84	
	2417	18.43	18.73		19.23	3.70	3.20	22.13	
	2442	18.93	19.28		19.78	3.90	3.60	22.88	
	2457	18.30	17.94		18.80	3.90	3.60	22.20	
	2462	16.40	16.18		16.90	3.90	3.60	20.30	
	2467	13.88	13.45		14.38	3.90	3.60	17.78	
	2472	11.20	10.55		11.70	3.90	3.60	15.10	

Note: 1. The results have been included cable loss.
2. E.I.R.P.= The Max. of Average Output Power (AUX or Main)(dBm)+ Antenna Gain (dBi).
3. Max Average Output Power (dBm) = Max of each average output power (dBm)+ Duty Cycle Factor (dB) when duty cycle is less than 98%.
4. We did spot check for output power and all output power values keep identical or lower thus other conducted items is exempt.

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Mode	Centre Frequency (MHz)	Average Output Power (dBm)		Duty cycle factor (dB) 10log (1/x)	Total Average Output Power Note 2 (dBm)	Directional Gain Note 3 (dBi)	Average Output Power (E.I.R.P) Note 4 (dBm)	Limit
		Aux	Main					
802.11n-HT20	2412	13.82	14.17	N/A	17.01	3.46	20.47	<30dBm (Maximum Peak Output Power) <36dBm (E.I.R.P)
	2417	16.38	15.89		19.15	3.46	22.61	
	2422	16.92	16.88		19.91	3.75	23.66	
	2442	18.92	19.31		22.13	3.75	25.88	
	2457	17.00	17.64		20.34	3.75	24.09	
	2462	13.65	14.01		16.84	3.75	20.59	
	2467	10.00	9.73		12.88	3.75	16.63	
	2472	5.03	5.21		8.13	3.75	11.88	
802.11n-HT40	2422	13.04	13.29	N/A	16.18	3.46	19.64	
	2442	14.28	14.68		17.49	3.75	21.24	
	2452	13.27	13.57		16.43	3.75	20.18	
	2457	7.02	7.07		10.06	3.75	13.81	
	2462	5.34	5.36		8.36	3.75	12.11	
802.11ax-HE20	2412	13.87	13.99	N/A	16.94	3.46	20.40	
	2417	16.24	16.25		19.26	3.46	22.72	
	2422	16.74	17.24		20.01	3.75	23.76	
	2442	18.82	19.15		22.00	3.75	25.75	
	2457	17.33	17.36		20.36	3.75	24.11	
	2462	14.40	14.36		17.39	3.75	21.14	
	2467	10.71	10.03		13.39	3.75	17.14	
	2472	5.33	5.15		8.25	3.75	12.00	
802.11ax-HE40	2422	13.30	13.86	N/A	16.60	3.46	20.06	
	2442	13.86	14.19		17.04	3.75	20.79	
	2452	13.19	13.20		16.21	3.75	19.96	
	2457	6.58	7.07		9.84	3.75	13.59	
	2462	4.91	4.98		7.96	3.75	11.71	

Note: 1. The results have been included cable loss.

2. According to KDB 662911 D01 E)1), Total Ave power = sum to individual output power + duty cycle factor (dB), when duty cycle is less than 98%.
3. According to KDB 662911 D01 d) ii), transmit signals are completely uncorrelated, then
   Directional gain = 10 log[$(10^{G1/10} + 10^{G2/10} + \ldots + 10^{GN/10})/N_{ANT}$] dBi
   2400MHz: Directional gain = 10 log[$(10^{3.2/10} + 10^{3.7/10})/2$]= 3.46dBi
   2450MHz: Directional gain = 10 log[$(10^{3.6/10} + 10^{3.9/10})/2$]= 3.75dBi
   The MIMO is uncorrelated and supported SDM(Spatial Division Multiplexing) mode only. This radio device doesn't support beamforming and Cyclic Delay Diversity (CDD).
4. E.I.R.P.= The Total Average Output Power (dBm)+ Directional Gain (dBi).
5. We did spot check for output power and all output power values keep identical or lower thus other conducted items is exempt.

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Mode	Centre Frequency (MHz)	RU Configuration	Average Output Power (dBm)		Duty cycle factor (dB) 10log	Total Average Output Power Note2(dBm)	Directional Gain Note3(dBi)	Average Output Power (E.I.R.P)Note4	Limit
			Aux	Main					
802.11ax-HE20	2412	26/30	17.29	17.39	0.339	20.69	3.46	24.15	<30dBm (Maximum Peak Output Power) <36dBm (E.I.R.P)
		52/37	18.05	17.67	0.146	21.02	3.46	24.48	
		106/53	17.63	17.62	N/A	20.64	3.46	24.10	
	2472	26/8	4.64	4.78	0.339	8.06	3.75	11.81	
		52/40	5.87	5.70	0.146	8.94	3.75	12.69	
		106/54	6.18	6.19	N/A	9.20	3.75	12.95	
802.11ax-HE40	2422	242/61	14.04	14.83	N/A	17.46	3.46	20.92	
	2462	242/62	6.16	6.15	N/A	9.17	3.75	12.92	

Note: 1. The results have been included cable loss.

2. According to KDB 662911 D01 E)1), Total Ave power = sum to individual output power + duty cycle factor (dB), when duty cycle is less than 98%.
3. According to KDB 662911 D01 d) ii), transmit signals are completely uncorrelated, then
   Directional gain = 10 log[($10^{G1/10}$ + $10^{G2/10}$ + … + $10^{GN/10}$)/N_{ANT}] dBi
   2400MHz: Directional gain = 10 log[($10^{3.2/10}$ +$10^{3.7/10}$)/2]= 3.46dBi
   2450MHz: Directional gain = 10 log[($10^{3.6/10}$ +$10^{3.9/10}$)/2]= 3.75dBi
   The MIMO is uncorrelated and supported SDM(Spatial Division Multiplexing) mode only. This radio device doesn't support beamforming and Cyclic Delay Diversity (CDD).
4. E.I.R.P.= The Total Average Output Power (dBm)+ Directional Gain (dBi).
5. We did spot check for output power and all output power values keep identical or lower thus other conducted items is exempt.

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● Original FCC ID: BEJNT-15Z90RT & IC: 2703H-15Z90RT Power

Mode	Centre Frequency (MHz)	Average Output Power (dBm)		Duty cycle factor (dB) 10log (1/x)	Max Average Output Power (dBm)	Antenna Gain (dBi)		E.I.R.P (dBm)Note 2	Limit
		Aux	Main			Aux	Main		
802.11b	2412	19.81	19.75	N/A	19.81	3.70	3.20	23.51	<30dBm (Maximum Peak Output Power) <36dBm (E.I.R.P)
	2442	20.07	19.87		20.07	3.90	3.60	23.97	
	2462	19.87	19.81		19.87	3.90	3.60	23.77	
	2467	19.11	18.77		19.11	3.90	3.60	23.01	
	2472	16.84	15.51		16.84	3.90	3.60	20.74	
802.11g	2412	16.30	16.80	0.106	16.91	3.70	3.20	20.00	
	2417	18.46	19.11		19.22	3.70	3.20	22.31	
	2442	19.28	19.42		19.53	3.90	3.60	23.18	
	2457	18.43	18.04		18.54	3.90	3.60	22.33	
	2462	16.40	16.24		16.51	3.90	3.60	20.30	
	2467	14.31	13.88		14.42	3.90	3.60	18.21	
	2472	11.43	10.97		11.54	3.90	3.60	15.33	

Note: 1. The results have been included cable loss.
2. E.I.R.P.= The Max. of Average Output Power (AUX or Main)(dBm)+ Antenna Gain (dBi).
3. Max Average Output Power (dBm) = Max of each average output power (dBm)+ Duty Cycle Factor (dB) when duty cycle is less than 98%.

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Mode	Centre Frequency (MHz)	Average Output Power (dBm)		Duty cycle factor (dB) 10log (1/x)	Total Average Output Power Note 2 (dBm)	Directional Gain Note 3 (dBi)	Average Output Power (E.I.R.P) Note 4 (dBm)	Limit
		Aux	Main					
802.11n-HT20	2412	14.16	14.58	N/A	17.39	3.46	20.85	<30dBm (Maximum Peak Output Power) <36dBm (E.I.R.P)
	2417	16.53	16.63		19.59	3.46	23.05	
	2422	17.44	17.63		20.55	3.75	24.30	
	2442	19.36	19.44		22.41	3.75	26.16	
	2457	17.55	17.90		20.74	3.75	24.49	
	2462	14.53	14.59		17.57	3.75	21.32	
	2467	10.64	10.41		13.54	3.75	17.29	
	2472	5.50	5.60		8.56	3.75	12.31	
802.11n-HT40	2422	13.84	13.87	N/A	16.87	3.46	20.33	
	2442	14.63	15.22		17.95	3.75	21.70	
	2452	13.91	14.24		17.09	3.75	20.84	
	2457	7.39	7.61		10.51	3.75	14.26	
	2462	5.92	5.80		8.87	3.75	12.62	
802.11ax-HE20	2412	14.61	14.72	N/A	17.68	3.46	21.14	
	2417	16.41	16.82		19.63	3.46	23.09	
	2422	17.64	18.02		20.84	3.75	24.59	
	2442	19.44	19.60		22.53	3.75	26.28	
	2457	17.76	17.75		20.77	3.75	24.52	
	2462	14.80	14.68		17.75	3.75	21.50	
	2467	11.09	10.56		13.84	3.75	17.59	
	2472	5.62	5.54		8.59	3.75	12.34	
802.11ax-HE40	2422	13.67	14.07	N/A	16.88	3.46	20.34	
	2442	14.30	14.88		17.61	3.75	21.36	
	2452	13.57	13.72		16.66	3.75	20.41	
	2457	7.05	7.40		10.24	3.75	13.99	
	2462	5.36	5.40		8.39	3.75	12.14	

Note: 1. The results have been included cable loss.

2. According to KDB 662911 D01 E)1), Total Ave power = sum to individual output power + duty cycle factor (dB), when duty cycle is less than 98%.
3. According to KDB 662911 D01 d) ii), transmit signals are completely uncorrelated, then
   Directional gain = 10 log[$(10^{G1/10} + 10^{G2/10} + \ldots + 10^{GN/10})/N_{ANT}$] dBi
   2400MHz: Directional gain = 10 log[$(10^{3.2/10} + 10^{3.7/10})/2$]= 3.46dBi
   2450MHz: Directional gain = 10 log[$(10^{3.6/10} + 10^{3.9/10})/2$]= 3.75dBi
   The MIMO is uncorrelated and supported SDM(Spatial Division Multiplexing) mode only. This radio device doesn't support beamforming and Cyclic Delay Diversity (CDD).
4. E.I.R.P.= The Total Average Output Power (dBm)+ Directional Gain (dBi).

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Mode	Centre Frequency (MHz)	RU Configuration	Average Output Power (dBm)		Duty cycle factor (dB) 10log	Total Average Output Power Note2(dBm)	Directional Gain Note3(dBi)	Average Output Power (E.I.R.P)Note4	Limit
			Aux	Main					
802.11ax-HE20	2412	26/30	17.55	17.52	0.297	20.84	3.46	24.30	<30dBm (Maximum Peak Output Power) <36dBm (E.I.R.P)
		52/37	18.14	18.10	0.155	21.29	3.46	24.75	
		106/53	18.01	17.95	N/A	20.99	3.46	24.45	
	2472	26/8	5.08	5.27	0.297	8.48	3.75	12.23	
		52/40	5.99	6.06	0.155	9.19	3.75	12.94	
		106/54	6.24	6.21	N/A	9.24	3.75	12.99	
802.11ax-HE40	2422	242/61	14.49	14.83	0.182	17.86	3.46	21.32	
	2462	242/62	6.23	6.36	0.182	9.49	3.75	13.24	

Note: 1. The results have been included cable loss.

2. According to KDB 662911 D01 E)1), Total Ave power = sum to individual output power + duty cycle factor (dB), when duty cycle is less than 98%.
3. According to KDB 662911 D01 d) ii), transmit signals are completely uncorrelated, then
   Directional gain = 10 log[($10^{G1/10}$ + $10^{G2/10}$ + … + $10^{GN/10}$)/N_{ANT}] dBi
   2400MHz: Directional gain = 10 log[($10^{3.2/10}$ +$10^{3.7/10}$)/2]= 3.46dBi
   2450MHz: Directional gain = 10 log[($10^{3.6/10}$ +$10^{3.9/10}$)/2]= 3.75dBi
   The MIMO is uncorrelated and supported SDM(Spatial Division Multiplexing) mode only. This radio device doesn't support beamforming and Cyclic Delay Diversity (CDD).
4. E.I.R.P.= The Total Average Output Power (dBm)+ Directional Gain (dBi).

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APPDNDIX B

TEST PHOTOGRAPHS

(Model: 15Z90ST)