

Test Report No.: RF20251225B001-FCC15.247_WIFI(11n40)+LE_Report

VARIANT FCC TEST REPORT

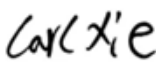
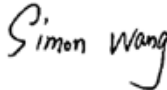
(Part 15, Subpart C)

Applicant:	Honeywell International Inc
Address:	9680 Old Bailes Road, Fort Mill, SC 29707 United States

Manufacturer or Supplier:	Honeywell International Inc
Address:	9680 Old Bailes Road, Fort Mill, SC 29707 United States
Product:	Mobile Computer
Brand Name:	Honeywell
Model Name:	CT45-L1N-G
FCC ID:	HD5-CT45L1NG
Date of tests:	Dec, 25, 2025 ~ Apr. 01, 2026

The tests have been carried out according to the requirements of the following standard:

☒ **FCC Part 15, Subpart C, Section 15.247**☒ **ANSI C63.10-2020****CONCLUSION: The submitted sample was found to COMPLY with the test requirement**

Prepared by Carl Xie Engineer / Mobile Department	Approved by Simon Wang Manager / Mobile Department
	
Date: Apr. 01, 2026	Date: Apr. 01, 2026

Boomwave Test (Shenzhen) Co., Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report. The results documented in this report apply only the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility assure that additional production units of the model are manufactured with identical electrical and mechanical components. All sample tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise. without written approval of Boomwave Test (Shenzhen) Co., Ltd., the test report shall not be reproduced except in full.



Test Report No.: RF20251225B001-FCC15.247_WIFI(11n40)+LE_Report

TABLE OF CONTENTS

RELEASE CONTROL RECORD	3
1. SUMMARY OF TEST RESULTS.....	4
1.1 MEASUREMENT UNCERTAINTY	5
2 GENERAL INFORMATION	6
2.1 GENERAL DESCRIPTION OF EUT	6
2.2 DESCRIPTION OF TEST MODES	8
2.2.1 CONFIGURATION OF SYSTEM UNDER TEST	9
2.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL.....	9
2.3 DUTY CYCLE OF TEST SIGNAL	11
2.4 GENERAL DESCRIPTION OF APPLIED STANDARDS	11
2.5 DESCRIPTION OF SUPPORT UNITS	12
3 TEST TYPES AND RESULTS.....	13
3.1 CONDUCTED EMISSION MEASUREMENT	13
3.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT	13
3.1.2 TEST INSTRUMENTS.....	13
3.1.3 TEST PROCEDURES	14
3.1.4 DEVIATION FROM TEST STANDARD	14
3.1.5 TEST SETUP	15
3.1.6 EUT OPERATING CONDITIONS	15
3.1.7 TEST RESULTS	16
3.2 RADIATED EMISSION MEASUREMENT	18
3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT	18
3.2.2 TEST INSTRUMENTS.....	19
3.2.3 TEST PROCEDURES	20
3.2.4 DEVIATION FROM TEST STANDARD	20
3.2.5 TEST SETUP	21
3.2.6 EUT OPERATING CONDITIONS	22
3.2.7 TEST RESULTS	23
4 PHOTOGRAPHS OF THE TEST CONFIGURATION	39
5 MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	
40	
6 APPENDIX: THE ORIGINAL REPORT	41



Test Report No.: RF20251225B001-FCC15.247_WIFI(11n40)+LE_Report

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
W7L-P21080006RF13	Original release	Sep. 01, 2021
W7L-P21040030RF13	Based on the original report W7L-P21080006RF13 Changed LCM to screen HD(1280*720), removing a 2nd BLE and Supercap, Increase the RTC battery, Detail refer to Product Equality Declaration	Sep. 09, 2021
RF20251225B001-FCC15.247_WIFI(11n40)+LE_Report	Based on the report W7L-P21040030RF13 (FCC ID: HD5-CT45L1NG). The new product add alternate parts, the electrical specs of the alternate part is equivalent to the current part. This report update the SW version, verify power, CE and RSE worst case. The verify results of conducted power are similar or lower. So this report updates CE and the low frequency data and the high frequency data (802.11n(HT40)_CH9 & BLE 2M_CH0) of RSE, other data please refer to the report W7L-P21040030RF13.	Nov. 28, 2025



Test Report No.: RF20251225B001-FCC15.247_WIFI(11n40)+LE_Report

1. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	TEST LAB*
15.207	AC Power Conducted Emission	Compliance	A
15.205 15.209	Radiated Emissions	Compliance	A
15.247(d)	Out of band Emission Measurement	See note	--
15.247(a)(2)	6dB bandwidth	See note	--
15.247(b)	Conducted Output power	See note	--
15.247(e)	Power Spectral Density	See note	--
15.203	Antenna Requirement	See note	--

Note: Please refer to report W7L-P21040030RF13 (FCC ID: HD5-CT45L1NG).

*Test Lab Information Reference

Lab A:

Boomwave Test (Shenzhen) Co., Ltd.

Lab Address:

Rm B38, Warehouse A5(Chiwan #1), #3 Chiwan 4th Rd, Chiwan Comm, Zhaoshang St, Nanshan Dist, Shenzhen, Guangdong, Shenzhen, China

Accredited Test Lab Cert 7607.01

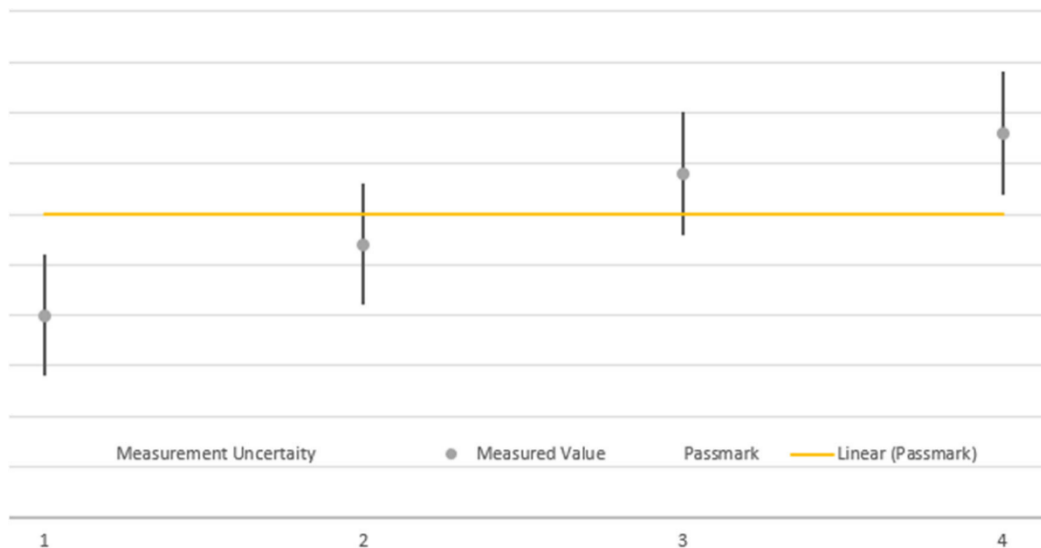
The FCC Site Registration No. is 646781; The Designation No. is CN1429.

1.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	UNCERTAINTY
AC Power Conducted emissions	±2.70dB
Radiated emissions (9KHz~30MHz)	±2.68dB
Radiated emissions (30MHz~1GHz)	±4.98dB
Radiated emissions (1GHz ~6GHz)	±4.70dB
Radiated emissions (6GHz ~18GHz)	±4.60dB
Radiated emissions (18GHz ~40GHz)	±4.12dB
Conducted emissions	±4.01dB
Occupied Channel Bandwidth	±43.58KHz
Conducted Output power	±2.06dB
Power Spectral Density	±0.85 dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k = 2$.



The verdicts in this test report are given according the above diagram:

Case	Measured Value	Uncertainty Range	Verdict
1	below pass mark	below pass mark	Passed
2	below pass mark	within pass mark	Passed
3	above pass mark	within pass mark	Failed
4	above pass mark	above pass mark	Failed

That means, the laboratory applies, as decision rule (see ISO/IEC 17025:2017), the so-called shared risk principle.

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Mobile Computer	
BRAND NAME	Honeywell	
MODEL NAME	HD5-CT45L1NG	
NOMINAL VOLTAGE	5Vdc (adapter) 3.85Vdc (Lithium-ion cell, battery)	
MODULATION	BLE	GFSK
	2.4G WIFI	DSSS, OFDM
TRANSMISSION RATE	BT_LE: 0.125 Mbps /0.5 Mbps /1 Mbps/2 Mbps	
	802.11b: 11/5.5/2.0/1.0 Mbps	
	802.11g: 54/48/36/24/18/9/6 Mbps	
	802.11n(HT20): up to 65 Mbps	
	802.11n(HT40): up to 135 Mbps	
OPERATING FREQUENCY	2412-2462MHz for 11b/g/n(HT20) 2402-2480MHz for BT-LE(GFSK) 2422-2452MHz for 11n(HT40)	
MAX. OUTPUT POWER	WLAN: 169.82mW (Maximum)	
	BT-LE: 4.88mW (Maximum)	
ANTENNA GAIN*	☒ Provided by client	
	BLE	0.51dBi
	2.4G WIFI	0.51dBi
ANTENNA TYPE	BLE	PIFA Antenna
	2.4G WIFI	PIFA Antenna
HW VERSION	V1.0	
SW VERSION	OS.11.003-HON.11.003	
I/O PORTS	Refer to user's manual	
CABLE SUPPLIED	N/A	

NOTE:

- For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

Test Report No.: RF20251225B001-FCC15.247_WIFI(11n40)+LE_Report

2. The EUT incorporates a SISO function. Physically, the EUT provides one completed transmitter and one receiver.

MODULATION MODE	TX/RX FUNCTION
802.11b	1TX/1RX
802.11g	1TX/1RX
802.11n(HT20)	1TX/1RX
802.11n(HT40)	1TX/1RX
BT_LE(1MHz)	1TX/1RX
BT_LE(2MHz)	1TX/1RX
BT_LE(S2)	1TX/1RX
BT_LE(S8)	1TX/1RX

3. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
4. Antenna gain and EUT conducted cable loss are provided by the customer, and the laboratory will record the results based on these items that involve these two parameters.
5. This product includes the following six SKU which hardware is exactly same, the difference is described as following, Sample 1 was full test, sample 2 verify the worst case, check worst case Radiated emission:

SAMPLE	EUT CONFIGURATION INFORMATION
1	SKU ID:CT45-L1N-27D120G ,Assembled Scanner Imager: 7-S0703
2	SKU ID:CT45-L1N-28D120G ,Assembled Scanner Imager: 8 - N6803/S0803
3	SKU ID: CT45-L1N-28D120T, Assembled with Scanner: 8 - N6803/S0803 for Turkey Only
4	SKU ID: CT45-L1N-27D120T, Assembled with Scanner: 7-S0703 for Turkey Only
5	SKU ID:CT45-L1N-28D220C, Assembled with Scanner: 8 - N6803/S0803 for China Only with Android non-GMS
6	SKU ID:CT45-L1N-27D220C, Assembled with Scanner: 7-S0703 for China Only with Android non-GMS

6. List of Accessory:

ACCESSORIES	BRAND	MODEL	SPECIFICATION
Battery	Honeywell	CT50-BTSC	Capacity : 3.85vdc 4020mAh
AC Adapter	HONOR	ADS-12B-06 05010E	I/P:100-240Vac, 0.3A O/P: 5Vdc, 2A
USB Cable	Honeywell	CT40-SN	Shielded, 1.25meter
Earphone	VIVO	N/A	Shielded, 1.27meter
LCD Panel	TZD	TS5099	5.0" HD(1280*720)

2.2 DESCRIPTION OF TEST MODES

11 channels are provided for 802.11b, 802.11g and 802.11n (HT20):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2412 MHz	7	2442 MHz
2	2417 MHz	8	2447 MHz
3	2422 MHz	9	2452 MHz
4	2427 MHz	10	2457 MHz
5	2432 MHz	11	2462 MHz
6	2437 MHz		

7 channels are provided for 802.11n (HT40):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
3	2422 MHz	7	2442 MHz
4	2427 MHz	8	2447 MHz
5	2432 MHz	9	2452 MHz
6	2437 MHz		

40 channels are provided for BT-LE (GFSK):

CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480

2.2.1 CONFIGURATION OF SYSTEM UNDER TEST

Please see section 4 photographs of the test configuration for reference.

2.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports.
The worst case was found when positioned on Y axis for radiated emission. Following test modes were selected for the final test, and the final worst case is marked in boldface and recorded in the report:

EUT CONFIGURE MODE	APPLICABLE TO				MODE
	RE<1G	RE≥1G	PLC	APCM	
-	√	√	√	√	-

Where **RE<1G**: Radiated Emission below 1GHz

RE≥1G: Radiated Emission above 1GHz

PLC: Power Line Conducted Emission

APCM: Antenna Port Conducted Measurement

NOTE: No need to concern of Conducted Emission due to the EUT is powered by battery.

RADIATED EMISSION TEST (BELOW 1GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ The following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11nHT40	3 to 9	9	OFDM	MCS0
BT-LE	1 to 38	1	GFSK	2.0

RADIATED EMISSION TEST (ABOVE 1GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

- ☒ The following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11n HT40	3 to 9	9	OFDM	MCS0
BT-LE	1 to 38	1	GFSK	2.0

Test Report No.: RF20251225B001-FCC15.247_WIFI(11n40)+LE_Report

POWER LINE CONDUCTED EMISSION TEST

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11n HT40	3 to 9	9	OFDM	MCS0

TEST CONDITION			
APPLICABLE TO	ENVIRONMENTAL CONDITIONS	TEST VOLTAGE	TESTED BY
PLC	23deg. C, 70%RH	DC 5.0V By Adapter	Carl Xie
RE<1G	23deg. C, 70%RH	DC 5.0V By Adapter	Carl Xie
RE≥1G	23deg. C, 70%RH	DC 5.0V By Adapter	Carl Xie



Test Report No.: RF20251225B001-FCC15.247_WIFI(11n40)+LE_Report

2.3 DUTY CYCLE OF TEST SIGNAL

Please refer to report W7L-P21040030RF13 (FCC ID: HD5-CT45L1NG).

2.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C, Section 15.247

KDB 558074 D01 DTS Meas Guidance v05r02

ANSI C63.10-2020

Note :

1. All test items have been performed and recorded as per the above standards.
2. The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (Certification). The test report has been issued separately.



Test Report No.: RF20251225B001-FCC15.247_WIFI(11n40)+LE_Report

2.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Laptop	Lenovo	Thinkpad E14	SL10W47313	N/A
2	PC Adapter	Lenovo	ADLX65YCC3D	N/A	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	USB Line: Shielded, Detachable 1.25m;
2	PC USB Line: Unshielded, Detachable, 1.0m;

3 TEST TYPES AND RESULTS

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.
3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

3.1.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Pulse limiter	SCHWARZBECK	VTSD 9561F	01579	2025/7/22	2026/7/21
ESR.EMI TEST RECEIVER	Rohde&SCHWARZ	ESR	101405	2025/6/30	2026/6/29
LISN	SCHWARZBECK	NSLK 8127	01216	2025/8/27	2026/8/26
Cable	Tonscend	/	/	2025/7/22	2026/7/21

NOTE:

1. The test was performed in CE shielded room.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.



Test Report No.: RF20251225B001-FCC15.247_WIFI(11n40)+LE_Report

3.1.3 TEST PROCEDURES

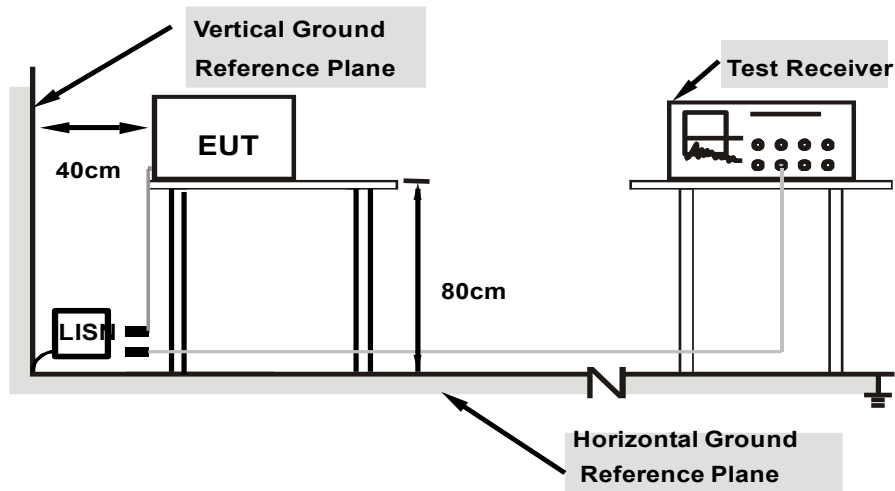
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE: All modes of operation were investigated and the worst-case emissions are reported.

3.1.4 DEVIATION FROM TEST STANDARD

No deviation.

3.1.5 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

For the actual test configuration, please refer to the attached file (Test Setup Photo).

3.1.6 EUT OPERATING CONDITIONS

- Turned on the power and connected of all equipment.
- EUT was operated according to the type used was description in manufacturer's specifications or the User's Manual.

Test Report No.: RF20251225B001-FCC15.247_WIFI(11n40)+LE_Report

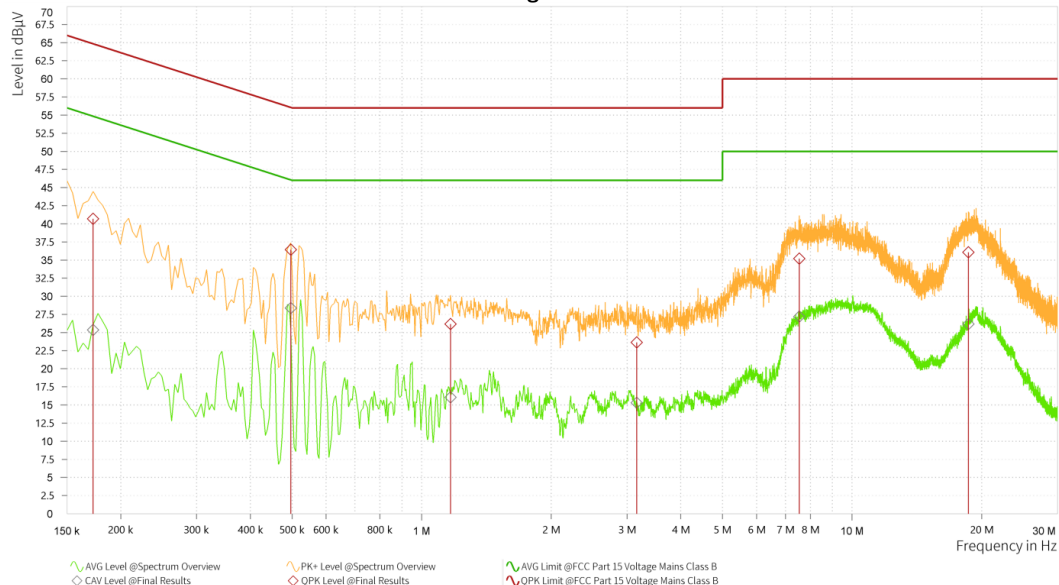
3.1.7 TEST RESULTS

CONDUCTED WORST-CASE DATA			
Frequency Range	150KHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120Vac, 60Hz	Environmental Conditions	26deg. C, 51%RH
Tested By	Carl Xie		

Rg	Frequency [MHz]	QPK Level [dBμV]	QPK Limit [dBμV]	QPK Margin [dB]	CAV Level [dBμV]	CAV: AVG Limit [dBμV]	CAV Margin [dB]	Correction [dB]	Line	Meas. BW [kHz]
1	0.173	40.70	64.84	24.14	25.37	54.84	29.47	9.79	L1	9.000
1	0.497	36.43	56.06	19.63	28.38	46.06	17.68	9.75	L1	9.000
1	1.167	26.18	56.00	29.82	16.07	46.00	29.93	9.78	L1	9.000
1	3.161	23.65	56.00	32.35	15.30	46.00	30.70	9.96	L1	9.000
1	7.539	35.19	60.00	24.81	27.18	50.00	22.82	10.53	L1	9.000
1	18.641	36.07	60.00	23.93	26.18	50.00	23.82	13.20	L1	9.000

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Limit value -Emission level
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



Test Report No.: RF20251225B001-FCC15.247_WIFI(11n40)+LE_Report

Frequency Range	150KHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120Vac, 60Hz	Environmental Conditions	26deg. C, 51%RH
Tested By	Carl Xie		

Rg	Frequency [MHz]	QPK Level [dBμV]	QPK Limit [dBμV]	QPK Margin [dB]	CAV Level [dBμV]	CAV: AVG Limit [dBμV]	CAV Margin [dB]	Correction [dB]	Line	Meas. BW [kHz]
1	0.164	40.75	65.28	24.53	25.24	55.28	30.04	9.79	N	9.000
1	0.492	29.21	56.13	26.92	21.29	46.13	24.84	9.75	N	9.000
1	1.244	24.16	56.00	31.84	13.12	46.00	32.88	9.78	N	9.000
1	3.152	21.60	56.00	34.40	11.33	46.00	34.67	9.96	N	9.000
1	10.329	34.15	60.00	25.85	23.09	50.00	26.91	11.06	N	9.000
1	24.401	28.47	60.00	31.53	20.30	50.00	29.70	13.71	N	9.000

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Limit value -Emission level
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



Boomwave Test (Shenzhen)
Co., Ltd.

Rm B38, Warehouse A5(Chiwan #1), #3 Chiwan
4th Rd, Chiwan Comm, Zhaoshang St, Nanshan
Dist, Shenzhen, Guangdong, Shenzhen, China

Mobile: +86 15118052731
Email:shimin.wang@boomwavelab.com

3.2 RADIATED EMISSION MEASUREMENT

3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

FREQUENCIES (MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

Test Report No.: RF20251225B001-FCC15.247_WIFI(11n40)+LE_Report

3.2.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	Euroshieldpn-CT0001143-1216	2025/7/3	2026/7/2
BiConiLog Antenna	ETS-LINDGREN	3143B	161965	2025/7/17	2026/7/16
Horn Antenna	SCHWARZBECK	BBHA9120D	3297	2025/9/27	2026/9/26
Horn Antenna	STEATITE	QWH-SL-18-40-K-SG QMS-00361	15433	2025/7/19	2026/7/18
Preamplifier	Tonscend	TPA184045	AP24L8060388	2025/7/3	2026/7/2
MXE EMI Receiver	keysight	N9038B	MY50018017	2025/7/1	2026/6/30
MXG Vector Signal Generator	Keysight	N5183B	MY59100137	2025/6/30	2026/6/29
Preamplifier	Tonscend	TPA001330	806JSAPO40804251015	2025/6/30	2026/6/29
Preamplifier	Tonscend	TPA011845	AP24L8060392	2025/6/30	2026/6/29
Attenuator 6DB	SHX	TS2-6-6-A	230927166	2025/6/30	2026/6/29
Attenuator 6DB	SHX	TS2-6-6-A	230927165	2025/6/30	2026/6/29
Active Receive Loop Antenna	SCHWARZBECK	FMZB 1519 B	00173	2025/6/30	2026/6/29
Temp. & Humi. Recorder	Kejian	HTC-01	157246	2025/7/2	2026/7/1
HIGH pass FILTER_1-18	EWT	EWT-57-0222	EWT-57-0222	2025/6/30	2026/6/29
HIGH pass FILTER_7-18	EWT	EWT-57-0223	EWT-57-0223	2025/6/30	2026/6/29
HIGH pass FILTER_3-18	EWT	EWT-57-0221	EWT-57-0221	2025/6/30	2026/6/29
DC~1GHz Lowpass Filter	EWT	EWT-56-0649	EWT-56-0649	2025/7/3	2026/7/2
Cable 1	N/A	N/A	N/A	2025/9/28	2026/9/27
Cable 2	N/A	N/A	N/A	2025/9/28	2026/9/27
Cable 3	N/A	N/A	N/A	2025/9/28	2026/9/27

NOTE:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
2. The test was performed in 3m Chamber.
3. The FCC Site Registration No. is 646781; The Designation No. is CN1429.

3.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, For battery operated equipment, the equipment tests shall be perform using fresh batteries. The turntable was rotated to maximize the emission level.

Note:

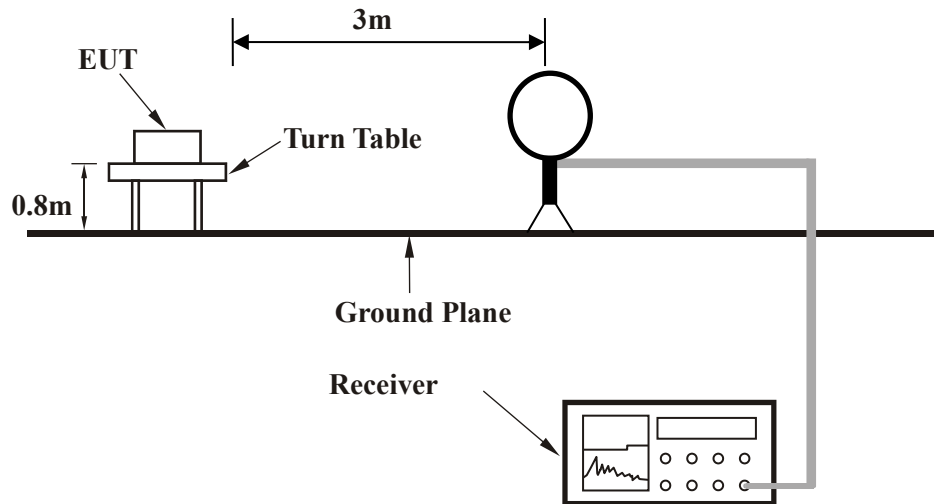
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor ($10 \log(1/\text{duty cycle})$).
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.
5. All modes of operation were investigated and the worst-case emissions are reported.

3.2.4 DEVIATION FROM TEST STANDARD

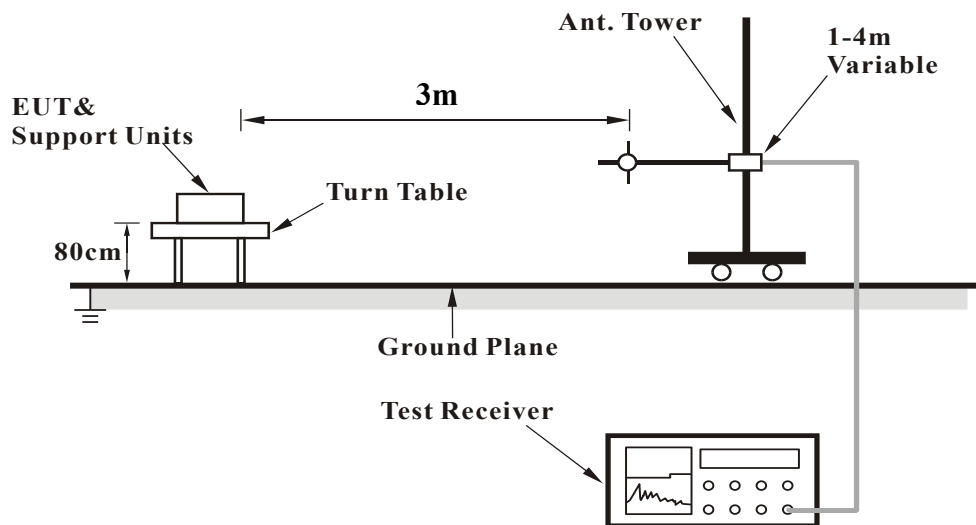
No deviation

3.2.5 TEST SETUP

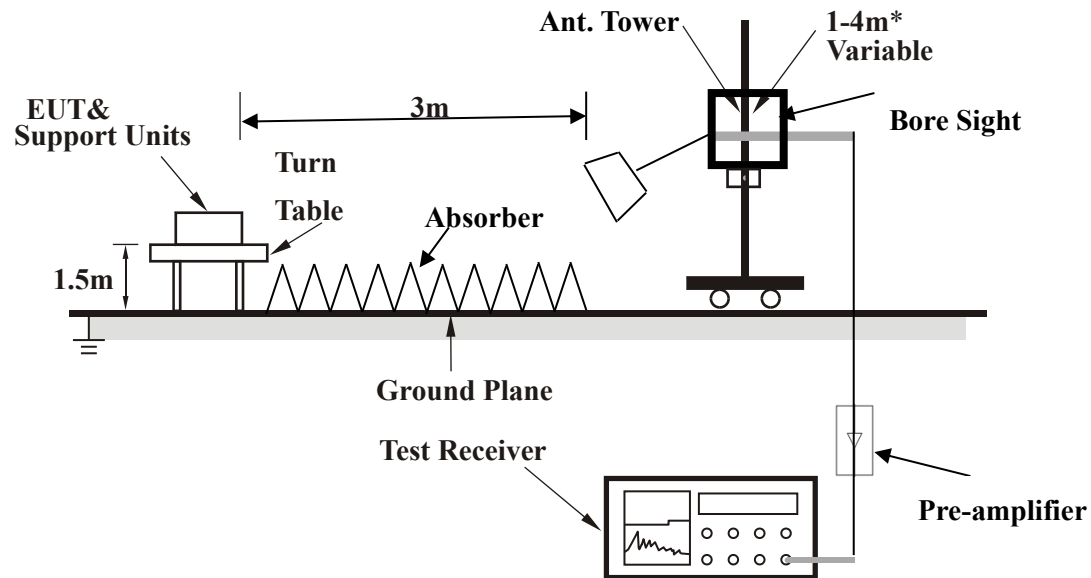
<Frequency Range 9KHz~30MHz >



< Frequency Range 30MHz~1GHz >



<Frequency Range above 1GHz>



Note: Above 1G is a directional antenna

Depends on the EUT height and the antenna 3dB beamwidth both, refer to section 7.3 of CISPR 16-2-3.

For the actual test configuration, please refer to the attached file (Test Setup Photo).

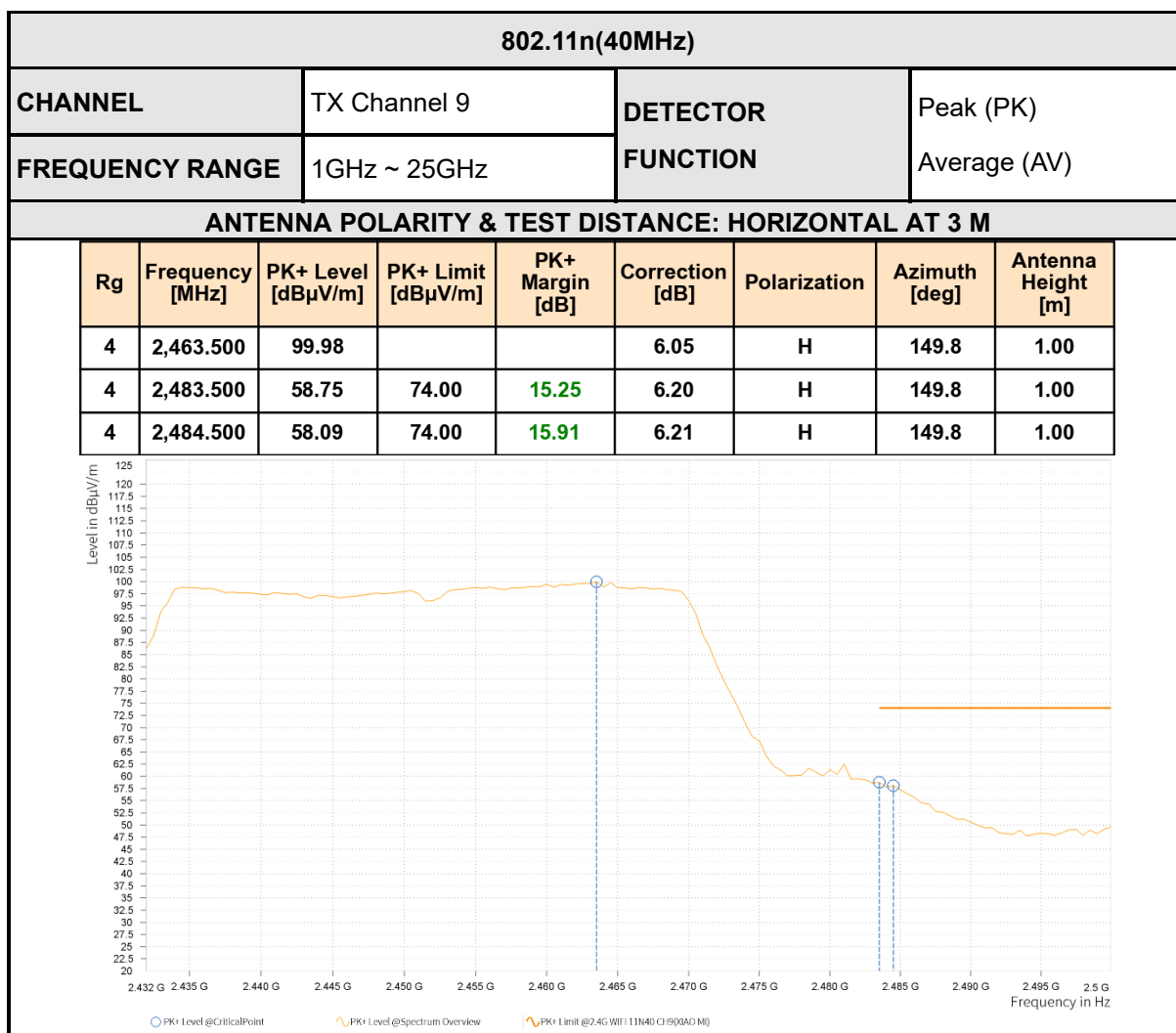
3.2.6 EUT OPERATING CONDITIONS

- Set the EUT under full load condition and placed them on a testing table.
- Set the transmitter part of EUT under transmission condition continuously at specific channel frequency.
- The necessary accessories enable the EUT in full functions.

Test Report No.: RF20251225B001-FCC15.247_WIFI(11n40)+LE_Report

3.2.7 TEST RESULTS

BANDEDGE MEASUREMENT

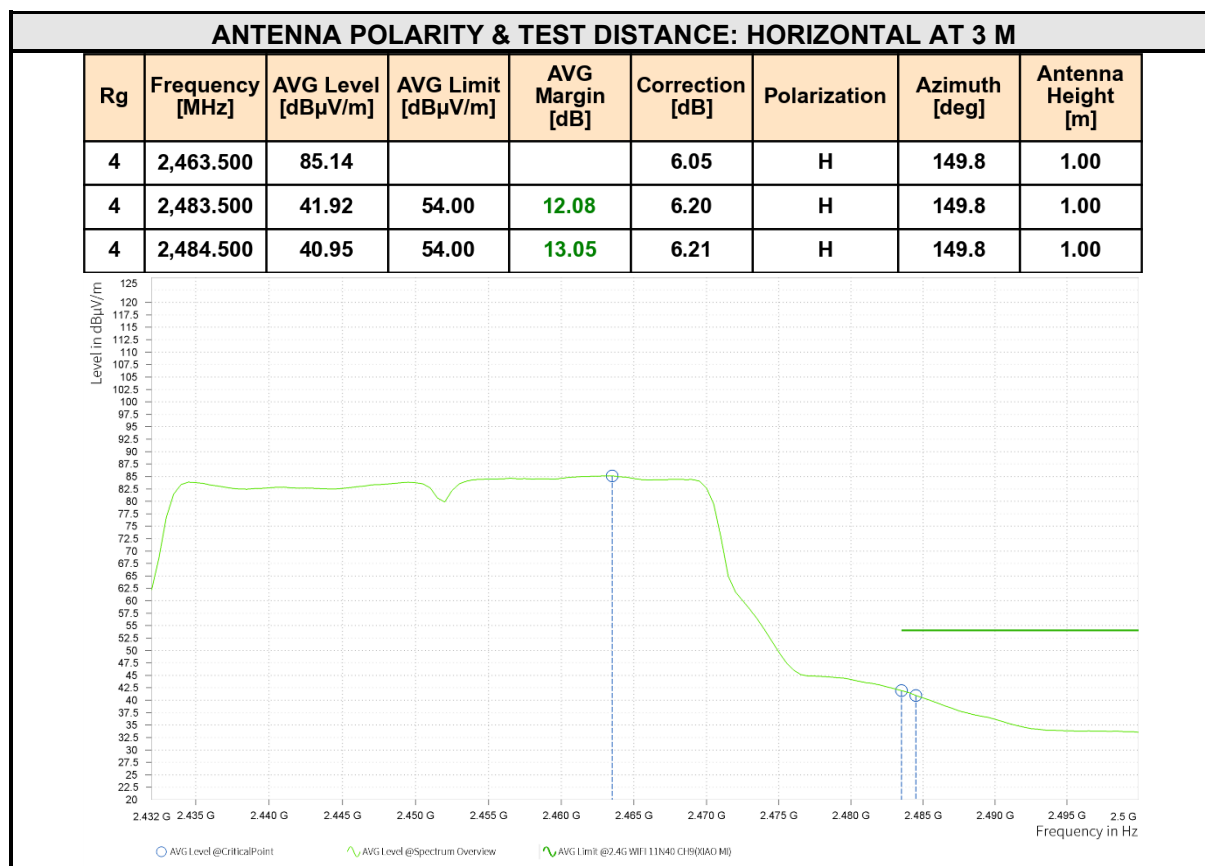


Boomwave Test (Shenzhen)
Co., Ltd.

Rm B38, Warehouse A5(Chiwan #1), #3 Chiwan
4th Rd, Chiwan Comm, Zhaoshang St, Nanshan
Dist, Shenzhen, Guangdong, Shenzhen, China

Mobile: +86 15118052731
Email:shimin.wang@boomwavelab.com

Test Report No.: RF20251225B001-FCC15.247_WIFI(11n40)+LE_Report

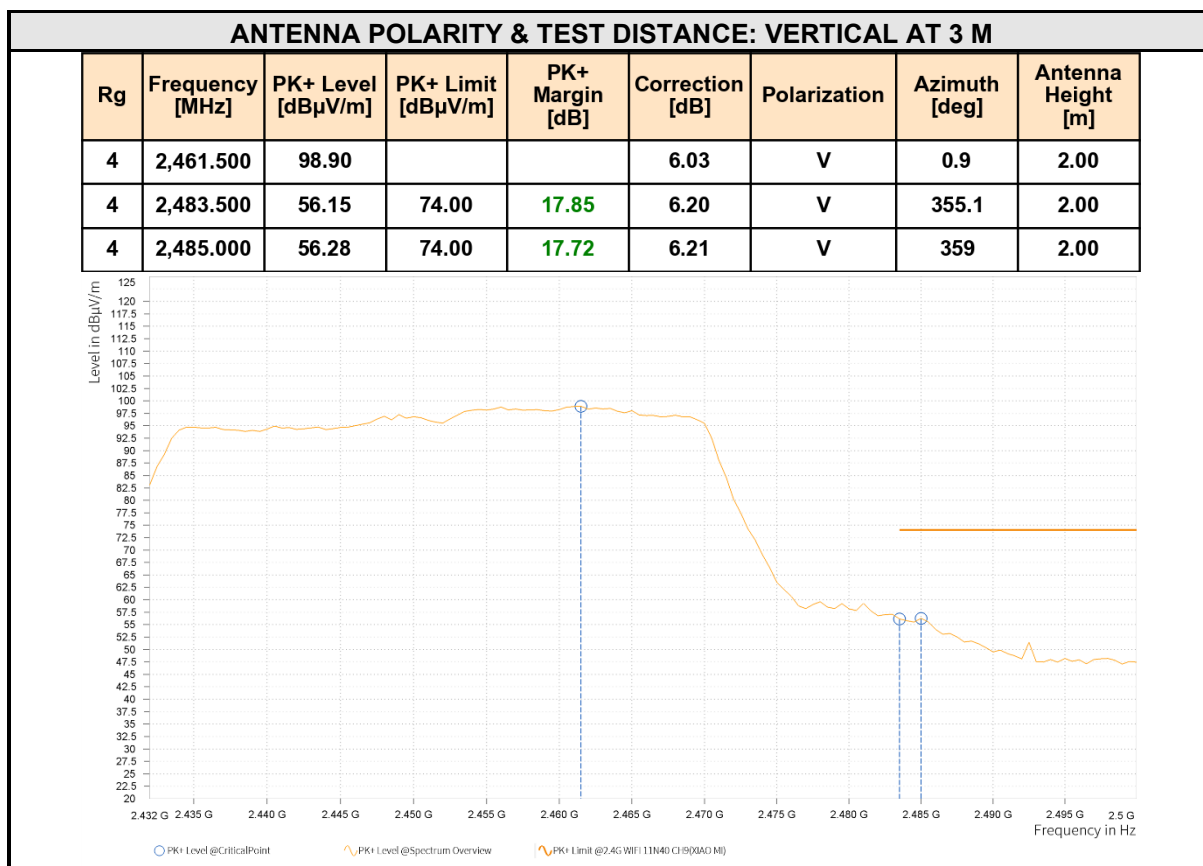


Boomwave Test (Shenzhen)
Co., Ltd.

Rm B38, Warehouse A5(Chiwan #1), #3 Chiwan
4th Rd, Chiwan Comm, Zhaoshang St, Nanshan
Dist, Shenzhen, Guangdong, Shenzhen, China

Mobile: +86 15118052731
Email:shimin.wang@boomwavelab.com

Test Report No.: RF20251225B001-FCC15.247_WIFI(11n40)+LE_Report

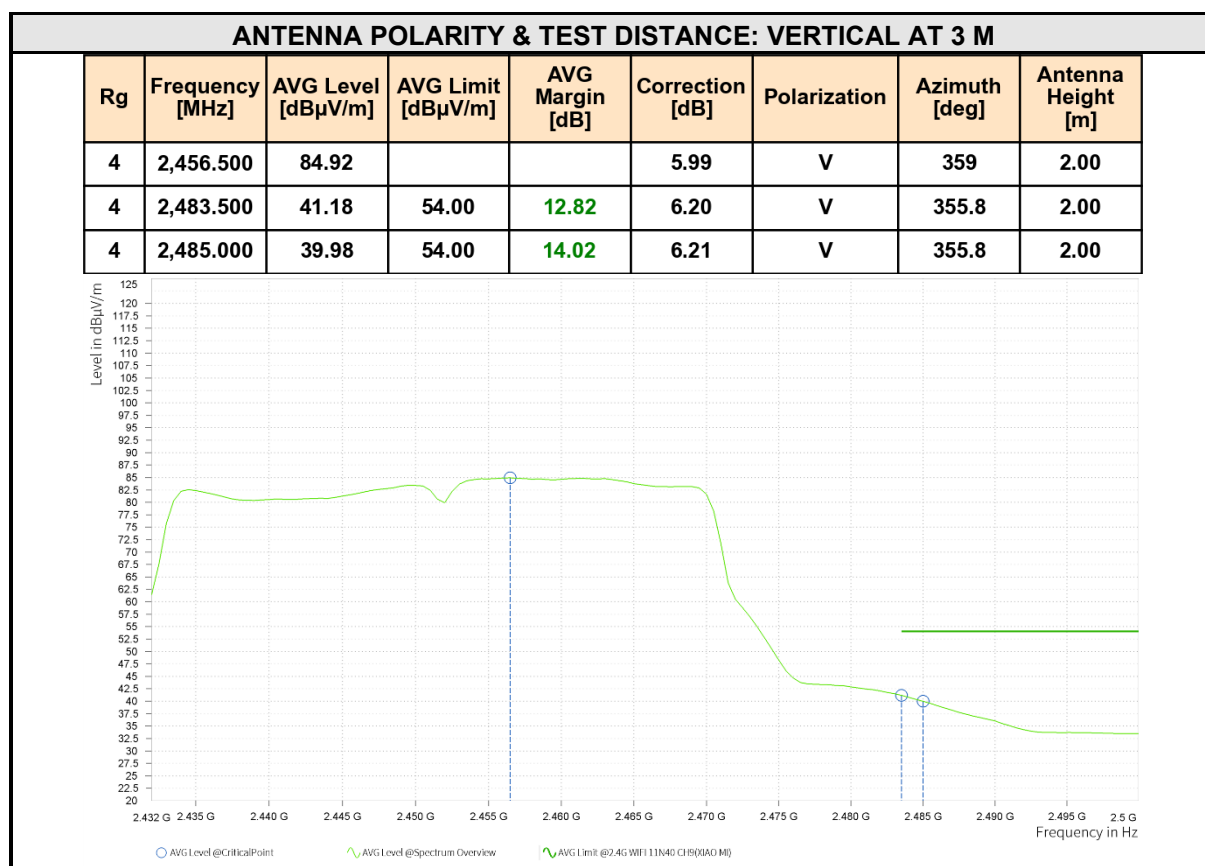


Boomwave Test (Shenzhen)
Co., Ltd.

Rm B38, Warehouse A5(Chiwan #1), #3 Chiwan
4th Rd, Chiwan Comm, Zhaoshang St, Nanshan
Dist, Shenzhen, Guangdong, Shenzhen, China

Mobile: +86 15118052731
Email:shimin.wang@boomwavelab.com

Test Report No.: RF20251225B001-FCC15.247_WIFI(11n40)+LE_Report



REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
2. Margin value = Limit value- Emission level.
3. 2412MHz: Fundamental frequency.

Test Report No.: RF20251225B001-FCC15.247_WIFI(11n40)+LE_Report

RADIATED EMISSION

BELOW 1GHz WORST-CASE DATA

NOTE: The 9K~30MHz amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

802.11n(40MHz)									
CHANNEL		TX Channel 9			DETECTOR FUNCTION		Quasi-Peak (QP)		
FREQUENCY RANGE		30MHz ~ 1GHz							
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M									
Rg	Frequency [MHz]	QPK Level [dBμV/m]	QPK Limit [dBμV/m]	QPK Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]
1	45.375	24.50	40.00	15.50	-8.93	H	355.1	2.00	120.000
1	72.729	19.76	40.00	20.24	-14.79	H	219.7	2.00	120.000
1	140.823	15.41	43.50	28.09	-14.40	H	219.7	2.00	120.000
1	216.337	15.86	46.00	30.14	-9.93	H	219.7	2.00	120.000
1	253.246	19.53	46.00	26.47	-7.48	H	355.1	2.00	120.000
1	393.314	20.91	46.00	25.09	-3.01	H	355.1	2.00	120.000

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor

2. Margin value = Limit value- Emission level.

Level in dBμV/m

55

50

47.5

45

42.5

40

37.5

35

32.5

30

27.5

25

22.5

20

17.5

15

12.5

10

7.5

5

2.5

0

-2.5

-5

-7.5

-10

-12.5

-15

-17.5

-20

30 M

40 M

50 M

60 M

70 M

80 M

100 M

200 M

300 M

400 M

500 M

600 M

700 M

800 M

1 G

Frequency in Hz

◇ QPK Level @Final Results

▽ QPK Limit @FCC LIMIT

Test Report No.: RF20251225B001-FCC15.247_WIFI(11n40)+LE_Report

CHANNEL	TX Channel 9		DETECTOR		Quasi-Peak (QP)				
FREQUENCY RANGE	30MHz ~ 1GHz		FUNCTION						
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M									
Rg	Frequency [MHz]	QPK Level [dBμV/m]	QPK Limit [dBμV/m]	QPK Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]
1	47.121	27.79	40.00	12.21	-9.72	V	359.1	1.00	120.000
1	107.794	18.86	43.50	24.64	-11.18	V	4.8	1.00	120.000
1	176.373	25.20	43.50	18.30	-12.43	V	219.8	2.00	120.000
1	242.236	15.61	46.00	30.39	-8.89	V	4.8	1.00	120.000
1	318.042	18.12	46.00	27.88	-6.20	V	355.2	2.00	120.000
1	496.085	20.71	46.00	25.29	-3.10	V	355.2	2.00	120.000

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor

2. Margin value = Limit value- Emission level.

Level in dBμV/m

55

50

47.5

45

42.5

40

37.5

35

32.5

30

27.5

25

22.5

20

17.5

15

12.5

10

7.5

5

2.5

0

-2.5

-5

-7.5

-10

-12.5

-15

-17.5

-20

30 M

40 M

50 M

60 M

70 M

80 M

90 M

100 M

110 M

120 M

130 M

140 M

150 M

160 M

170 M

180 M

190 M

200 M

210 M

220 M

230 M

240 M

250 M

260 M

270 M

280 M

290 M

300 M

310 M

320 M

330 M

340 M

350 M

360 M

370 M

380 M

390 M

400 M

410 M

420 M

430 M

440 M

450 M

460 M

470 M

480 M

490 M

500 M

510 M

520 M

530 M

540 M

550 M

560 M

570 M

580 M

590 M

600 M

610 M

620 M

630 M

640 M

650 M

660 M

670 M

680 M

690 M

700 M

710 M

720 M

730 M

740 M

750 M

760 M

770 M

780 M

790 M

800 M

810 M

820 M

830 M

840 M

850 M

860 M

870 M

880 M

890 M

900 M

910 M

920 M

930 M

940 M

950 M

960 M

970 M

980 M

990 M

1 G

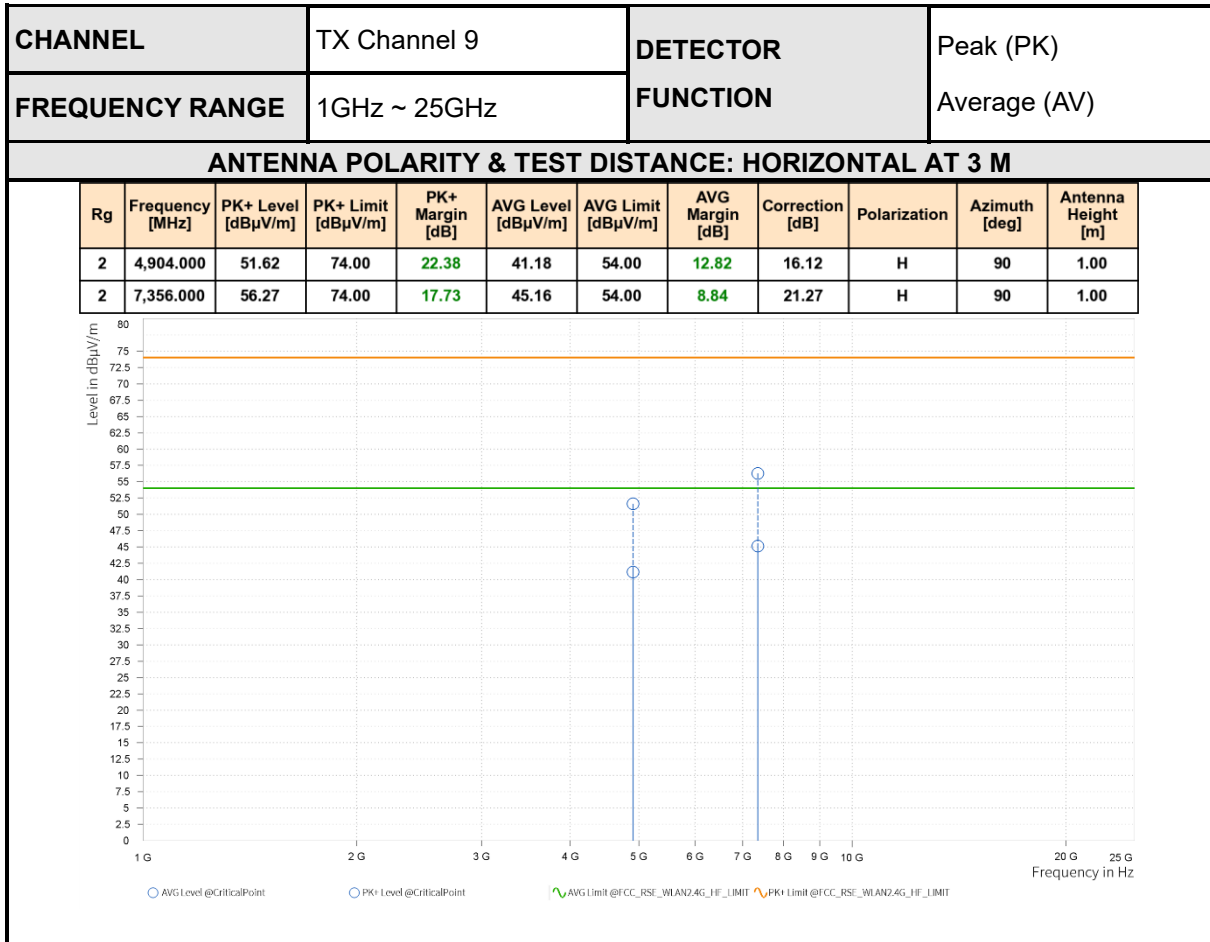
◇ QPK Level @Final Results

▽ QPK Limit @FCC LIMIT

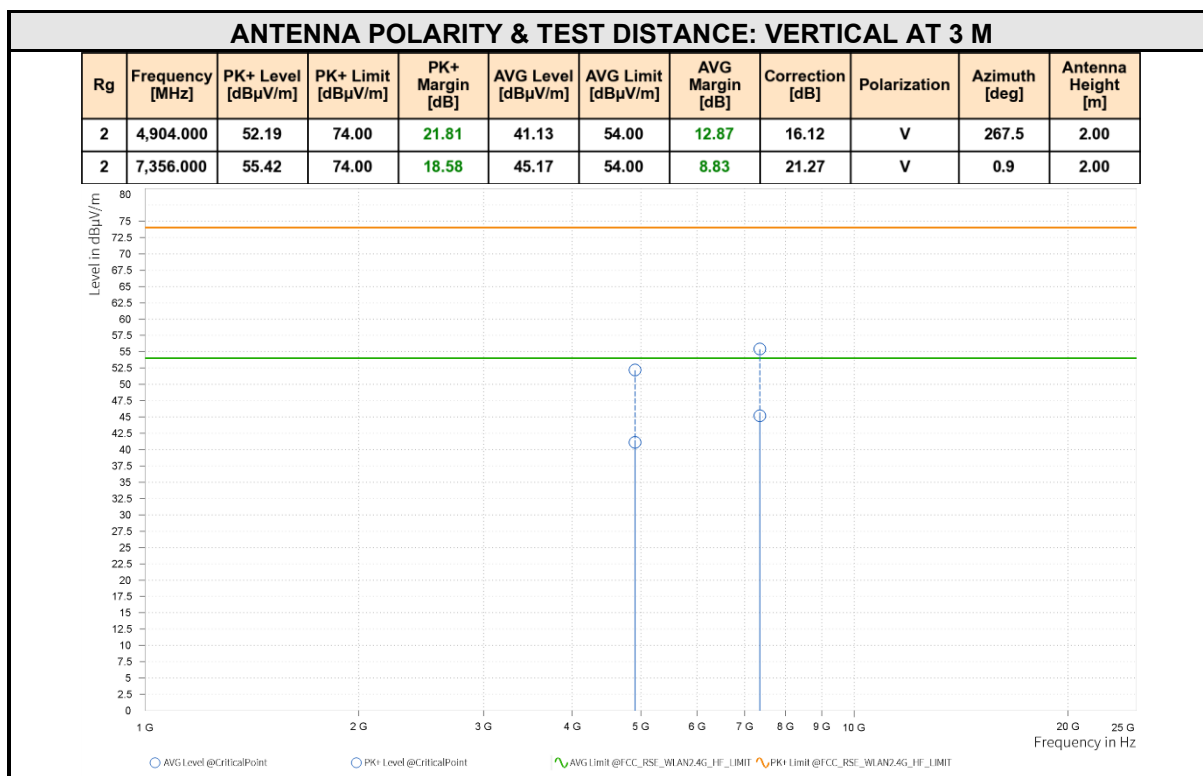
ABOVE 1GHz WORST-CASE DATA

Note:

1. For radiated emissions testing , the full testing range of different modes have been scanned , only the worst case harmonic data is reported in the sheet.
2. All other emissions were greater than 20dB below the limit was not recorded



Test Report No.: RF20251225B001-FCC15.247_WIFI(11n40)+LE_Report

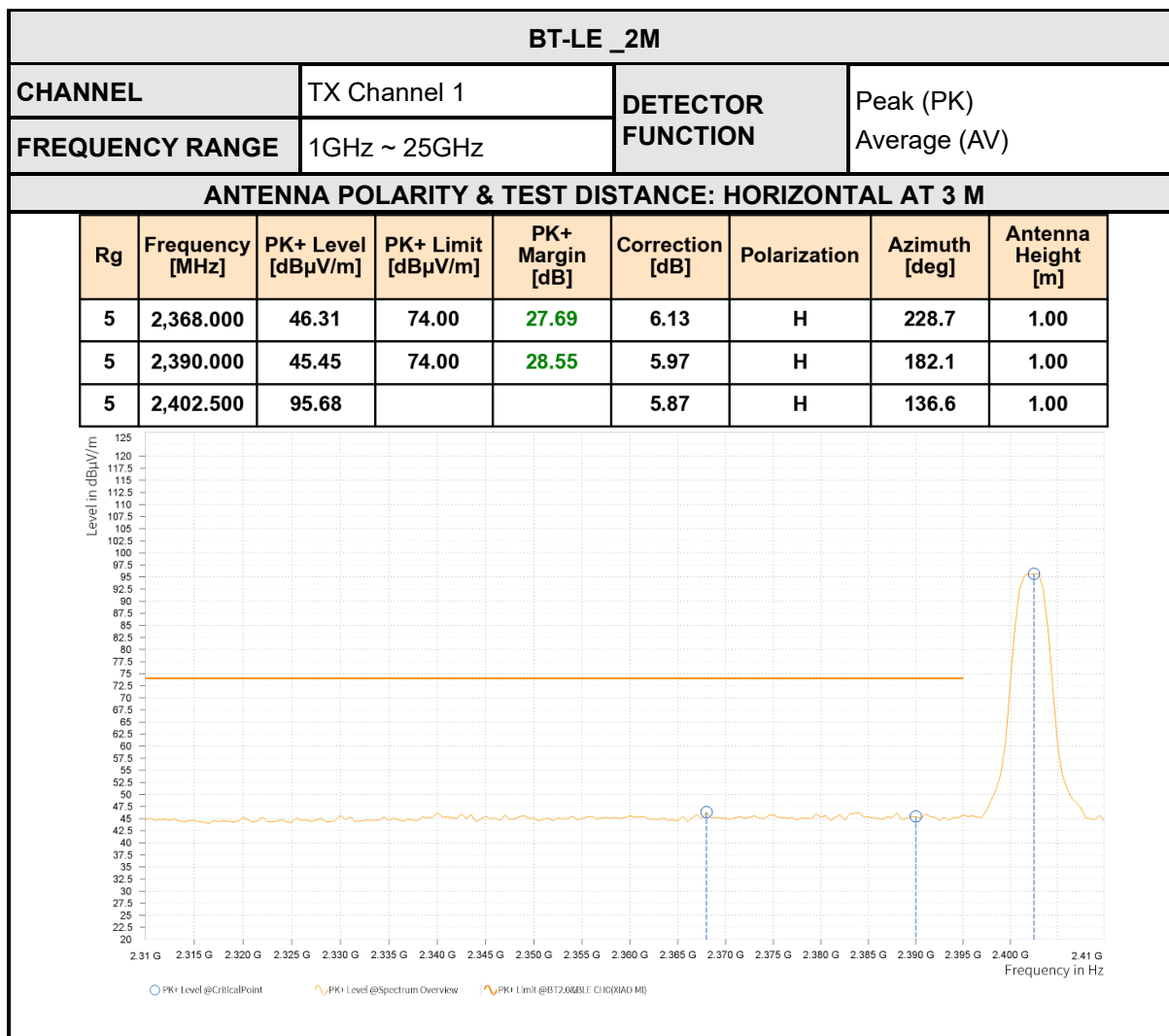


REMARKS:

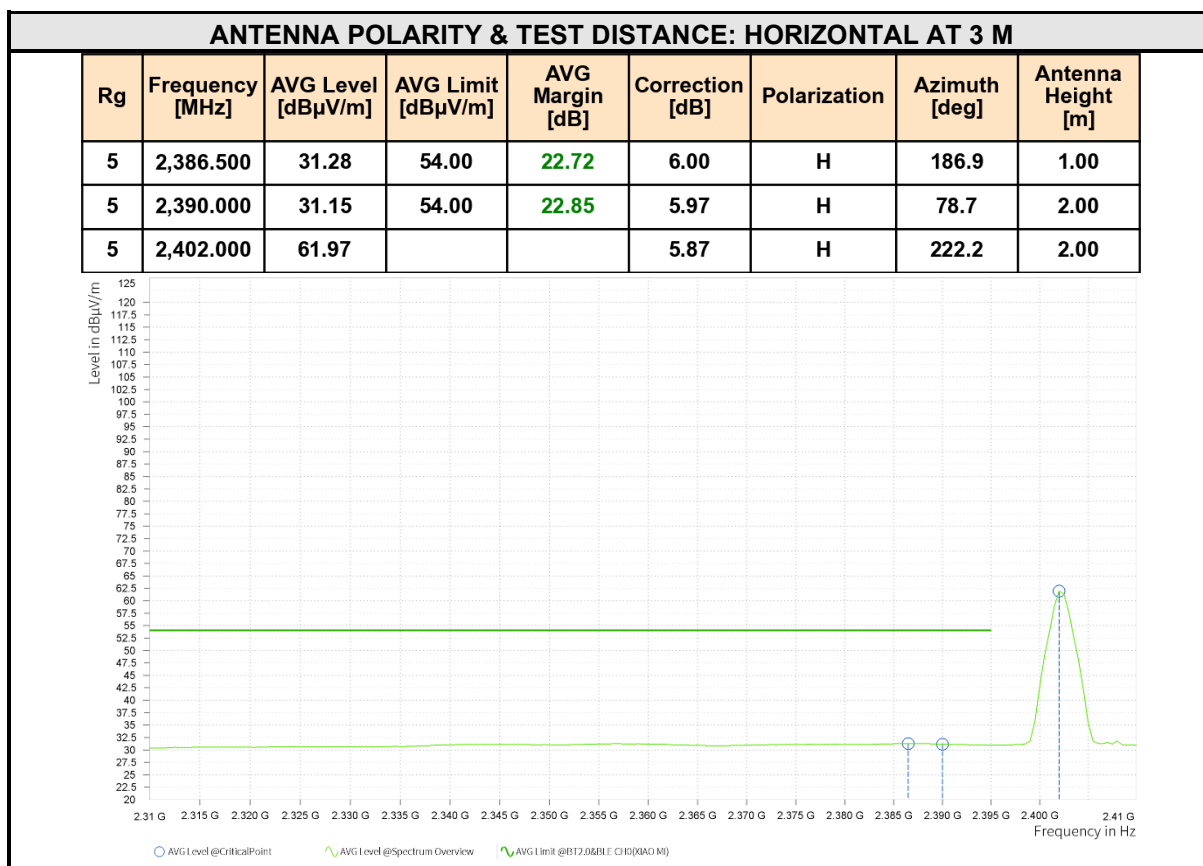
1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
2. Margin value = Limit value- Emission level.
3. 2437MHz: Fundamental frequency.

Test Report No.: RF20251225B001-FCC15.247_WIFI(11n40)+LE_Report

BANDEDGE MEASUREMENT



Test Report No.: RF20251225B001-FCC15.247_WIFI(11n40)+LE_Report

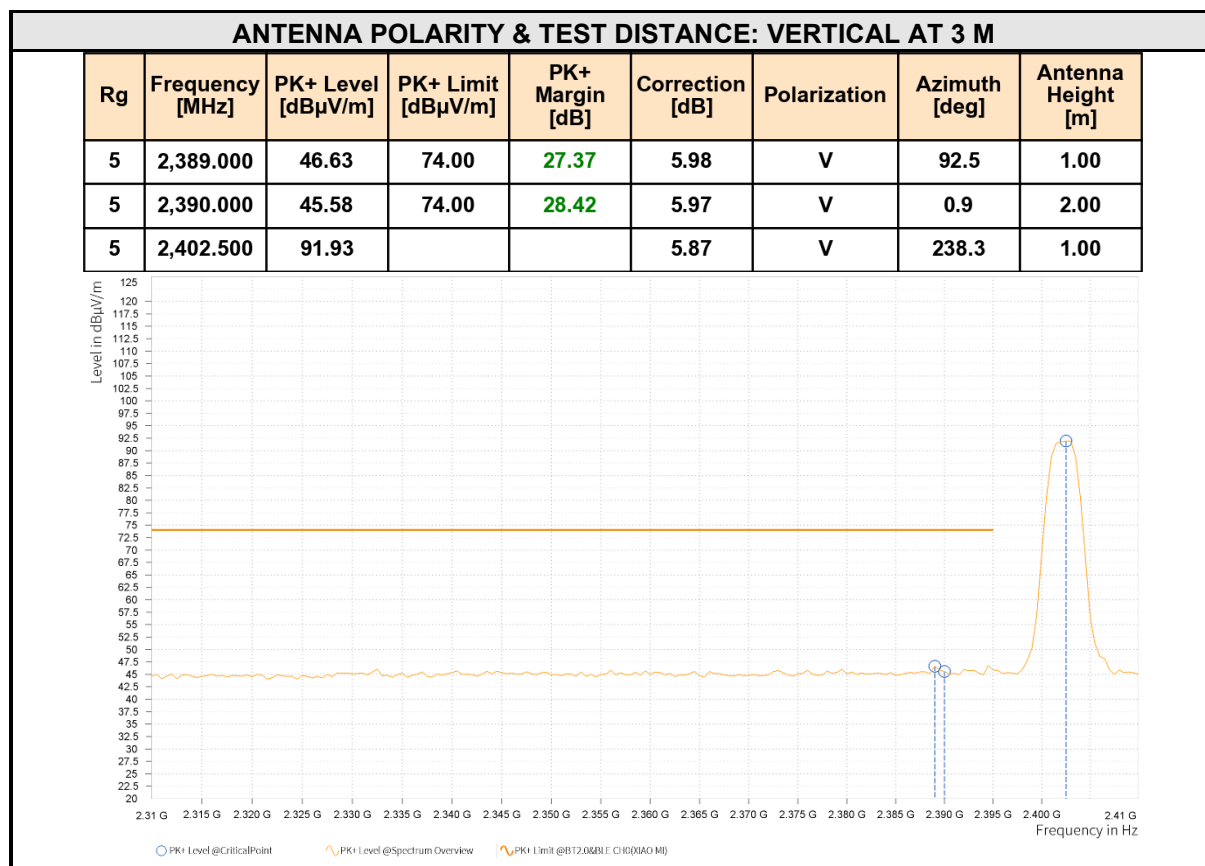


Boomwave Test (Shenzhen)
Co., Ltd.

Rm B38, Warehouse A5(Chiwan #1), #3 Chiwan
4th Rd, Chiwan Comm, Zhaoshang St, Nanshan
Dist, Shenzhen, Guangdong, Shenzhen, China

Mobile: +86 15118052731
Email:shimin.wang@boomwavelab.com

Test Report No.: RF20251225B001-FCC15.247_WIFI(11n40)+LE_Report

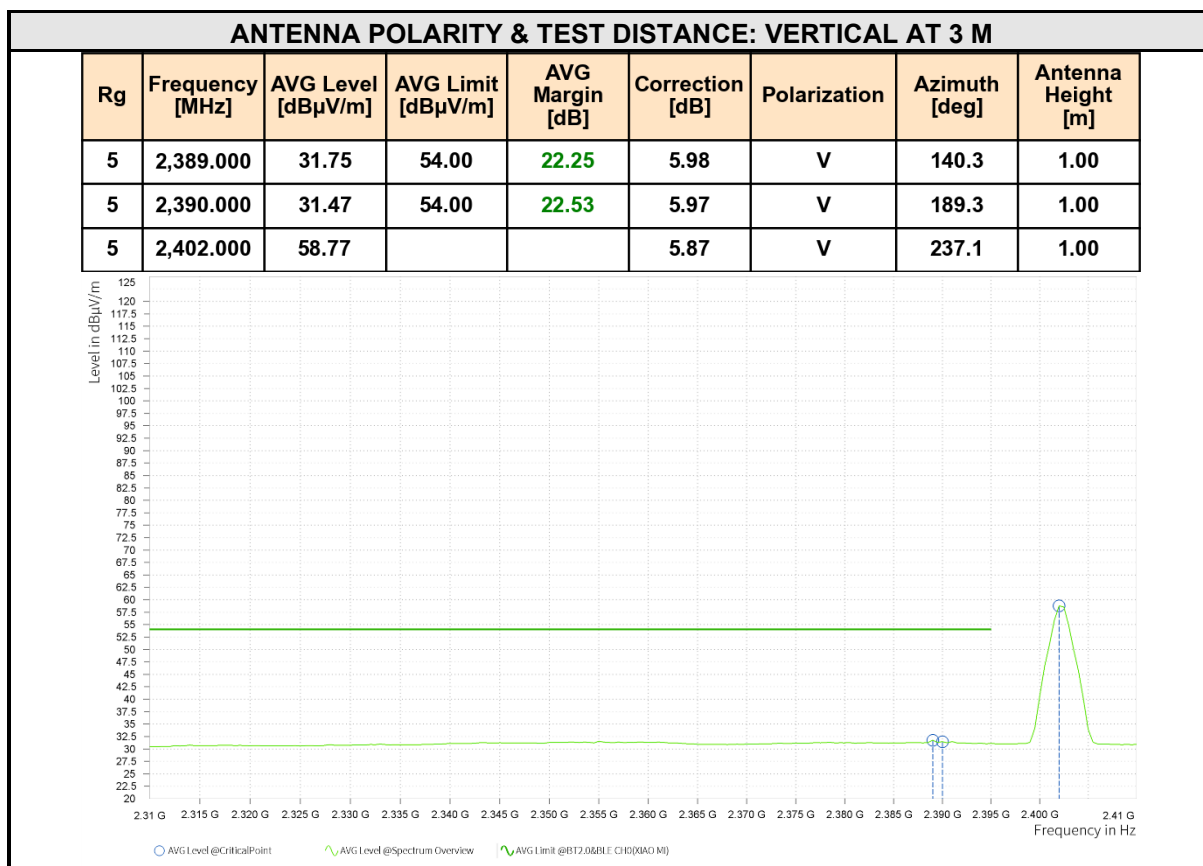


Boomwave Test (Shenzhen)
Co., Ltd.

Rm B38, Warehouse A5(Chiwan #1), #3 Chiwan
4th Rd, Chiwan Comm, Zhaoshang St, Nanshan
Dist, Shenzhen, Guangdong, Shenzhen, China

Mobile: +86 15118052731
Email:shimin.wang@boomwavelab.com

Test Report No.: RF20251225B001-FCC15.247_WIFI(11n40)+LE_Report



REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
2. Margin value = Limit value–Emission level.
3. 2404MHz: Fundamental frequency.

Test Report No.: RF20251225B001-FCC15.247_WIFI(11n40)+LE_Report

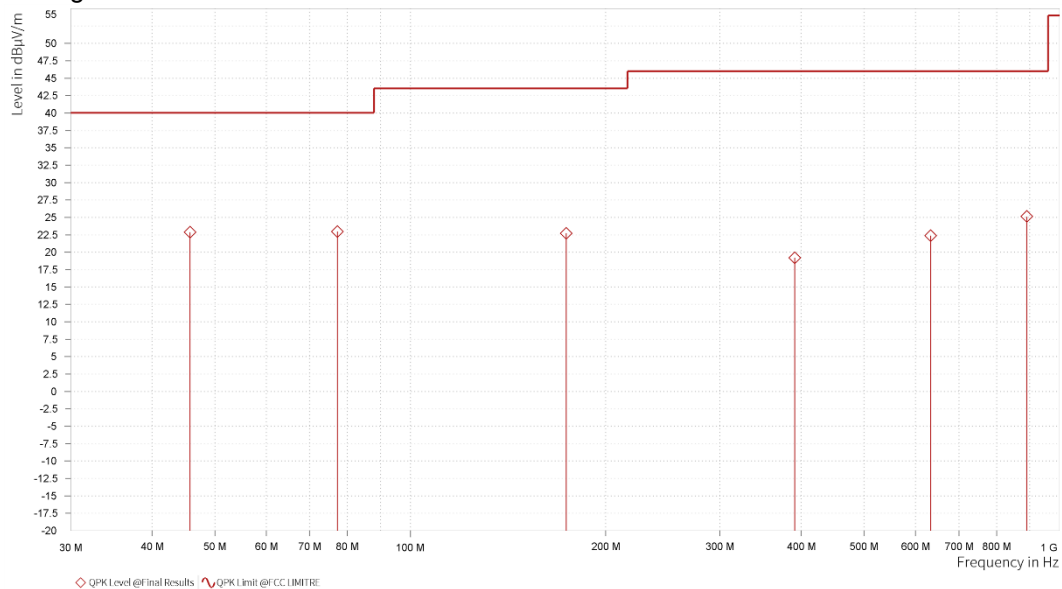
RADIATED EMISSION

BELOW 1GHz WORST-CASE DATA

BT-LE_2M										
CHANNEL		TX Channel 1			ODETECTOR FUNCTION			Quasi-Peak (QP)		
FREQUENCY RANGE		30MHz ~ 1GHz								
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
	Rg	Frequency [MHz]	QPK Level [dBμV/m]	QPK Limit [dBμV/m]	QPK Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]
	1	45.811	22.87	40.00	17.13	-10.22	H	1	1.00	120.000
	1	77.191	22.96	40.00	17.04	-16.44	H	176.7	2.00	120.000
	1	173.851	22.70	43.50	20.80	-13.74	H	183.3	1.00	120.000
	1	391.131	19.18	46.00	26.82	-4.48	H	4.8	1.00	120.000
	1	633.195	22.38	46.00	23.62	-2.35	H	183.3	1.00	120.000
	1	890.342	25.11	46.00	20.89	1.59	H	355.2	2.00	120.000

REMARKS:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
- The other emission levels were very low against the limit.
- Margin value = Limit value – Emission Level



Test Report No.: RF20251225B001-FCC15.247_WIFI(11n40)+LE_Report

CHANNEL		TX Channel 1		DETECTOR FUNCTION		Quasi-Peak (QP)			
FREQUENCY RANGE		30MHz ~ 1GHz							
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M									
Rg	Frequency [MHz]	QPK Level [dBμV/m]	QPK Limit [dBμV/m]	QPK Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]
1	43.968	30.81	40.00	9.19	-10.37	V	183.3	1.00	120.000
1	83.787	17.25	40.00	22.75	-16.12	V	4.9	1.00	120.000
1	110.947	16.07	43.50	27.43	-12.56	V	4.9	1.00	120.000
1	317.217	16.00	46.00	30.00	-7.24	V	4.9	1.00	120.000
1	624.853	22.29	46.00	23.71	-2.26	V	355.8	2.00	120.000
1	898.538	25.23	46.00	20.77	1.85	V	0.9	2.00	120.000

REMARKS:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
- The other emission levels were very low against the limit.
- Margin value = Limit value – Emission Level

Legend: ◇ QPK Level @ Final Results ▽ QPK Limit @ FCC LIMIT

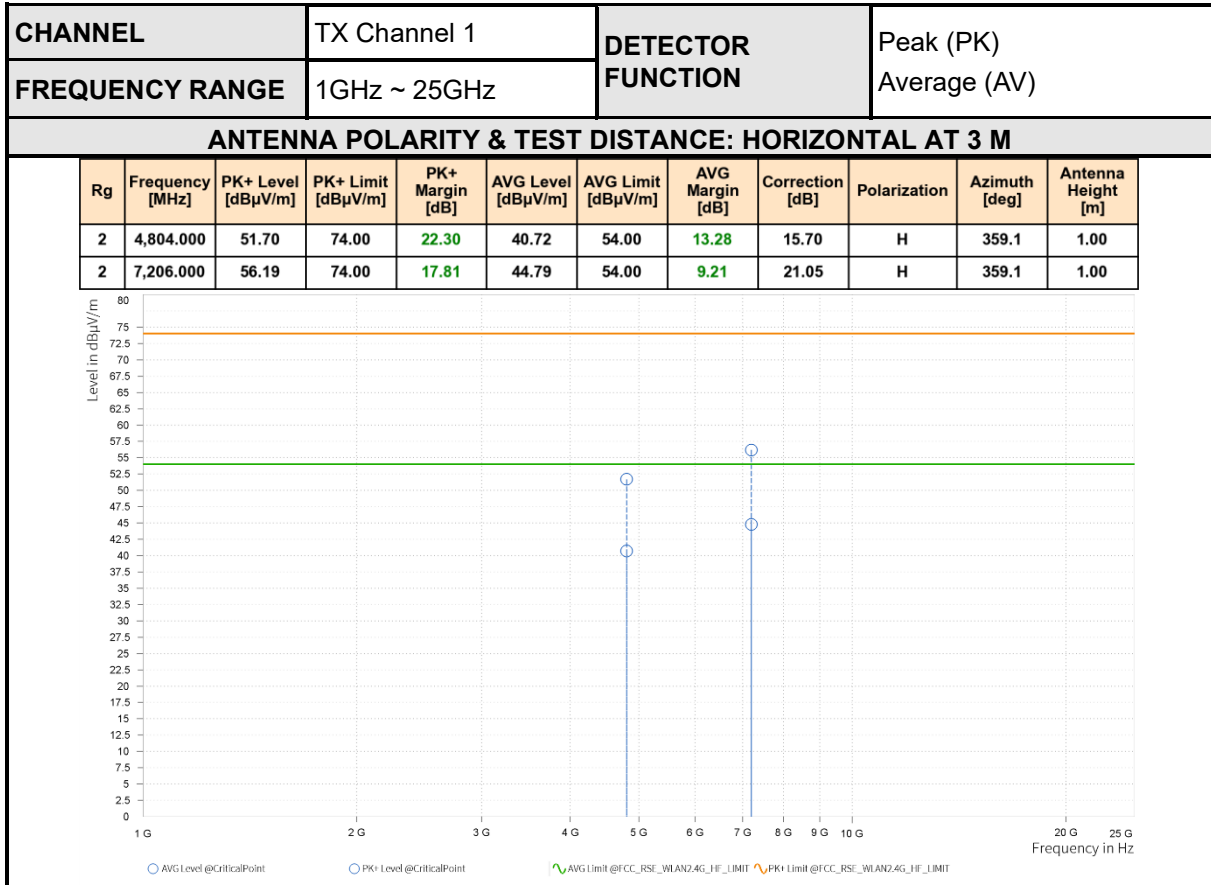


Test Report No.: RF20251225B001-FCC15.247_WIFI(11n40)+LE_Report

ABOVE 1GHz TEST DATA

Note:

1. For radiated emissions testing , the full testing range of different modes have been scanned , only the worst case harmonic data is reported in the sheet.
2. All other emissions were greater than 20dB below the limit was not recorded

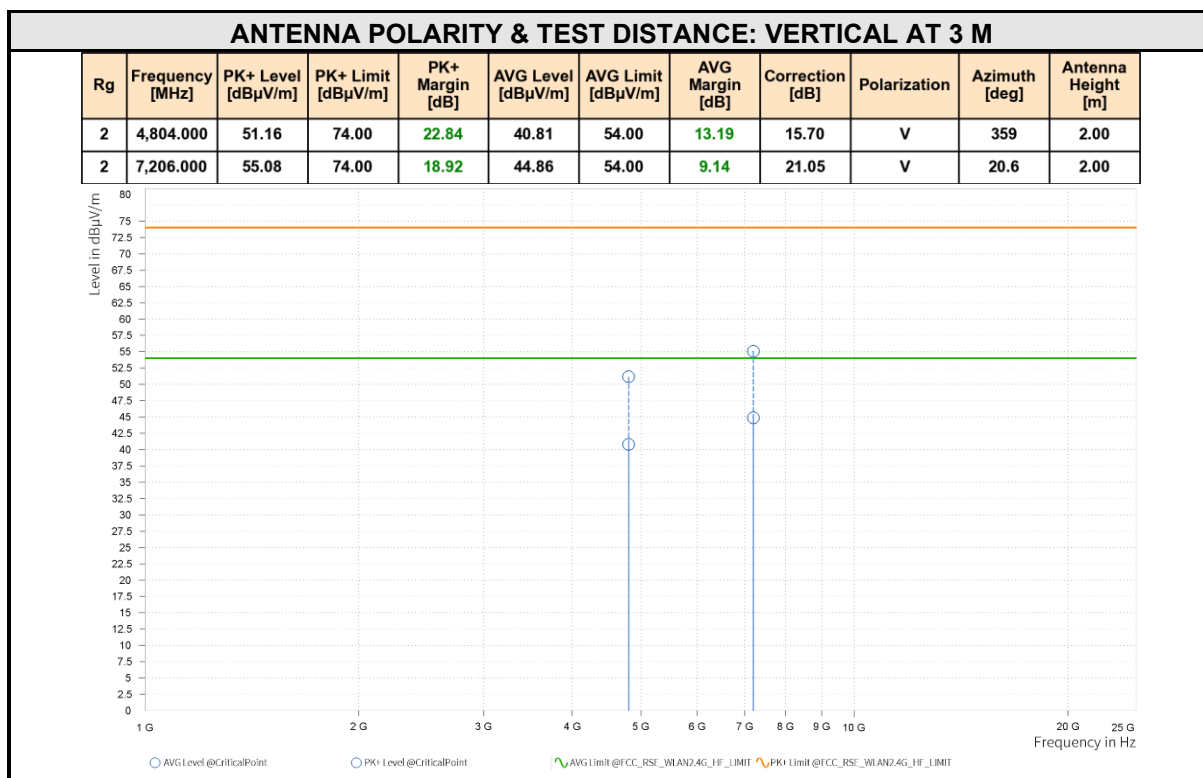


Boomwave Test (Shenzhen)
Co., Ltd.

Rm B38, Warehouse A5(Chiwan #1), #3 Chiwan
4th Rd, Chiwan Comm, Zhaoshang St, Nanshan
Dist, Shenzhen, Guangdong, Shenzhen, China

Mobile: +86 15118052731
Email:shimin.wang@boomwavelab.com

Test Report No.: RF20251225B001-FCC15.247_WIFI(11n40)+LE_Report



REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor.
2. Margin value = Limit value–Emission level.
3. 2440MHz: Fundamental frequency.



Test Report No.: RF20251225B001-FCC15.247_WIFI(11n40)+LE_Report

4 PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).



Test Report No.: RF20251225B001-FCC15.247_WIFI(11n40)+LE_Report

5 MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.



Test Report No.: RF20251225B001-FCC15.247_WIFI(11n40)+LE_Report

6 APPENDIX: THE ORIGINAL REPORT

Boomwave Test (Shenzhen)
Co., Ltd.

Rm B38, Warehouse A5(Chiwan #1), #3 Chiwan
4th Rd, Chiwan Comm, Zhaoshang St, Nanshan
Dist, Shenzhen, Guangdong, Shenzhen, China

Mobile: +86 15118052731
Email:shimin.wang@boomwavelab.com

VARIANT FCC TEST REPORT

(Part 15, Subpart C)

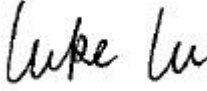
Applicant:	Honeywell International Inc Honeywell Safety and Productivity Solutions
Address:	9680 Old Bailes Road, Fort Mill, SC 29707 United States

Manufacturer or Supplier:	Honeywell International Inc Honeywell Safety and Productivity Solutions
Address:	9680 Old Bailes Road, Fort Mill, SC 29707 United States
Product:	Mobile Computer
Brand Name:	Honeywell
Model Name:	CT45-L1N-G
FCC ID:	HD5-CT45L1NG
Date of tests:	Jun. 19, 2021 ~ Sep. 08, 2021

The tests have been carried out according to the requirements of the following standard:

- ☒ **FCC Part 15, Subpart C, Section 15.247**
- ☒ **ANSI C63.10-2013**

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Prepared by Simon Wang Engineer / Mobile Department	Approved by Luke Lu Manager / Mobile Department
 Date: Sep. 09, 2021	 Date: Sep. 09, 2021

This report is governed by, and incorporates by reference, CPS Conditions of Service as posted at the date of issuance of this report at <http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/terms-conditions> and is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon request for accredited tests. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.



TABLE OF CONTENTS

RELEASE CONTROL RECORD	4
1 SUMMARY OF TEST RESULTS.....	5
1.1 MEASUREMENT UNCERTAINTY	5
2 GENERAL INFORMATION	6
2.1 GENERAL DESCRIPTION OF EUT	6
2.2 DESCRIPTION OF TEST MODES	8
2.2.1 CONFIGURATION OF SYSTEM UNDER TEST	9
2.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL.....	9
2.3 DUTY CYCLE OF TEST SIGNAL	12
2.4 GENERAL DESCRIPTION OF APPLIED STANDARDS	14
2.5 DESCRIPTION OF SUPPORT UNITS	14
3 TEST TYPES AND RESULTS.....	15
3.1 CONDUCTED EMISSION MEASUREMENT	15
3.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT	15
3.1.2 TEST INSTRUMENTS.....	15
3.1.3 TEST PROCEDURES	16
3.1.4 DEVIATION FROM TEST STANDARD	16
3.1.5 TEST SETUP	17
3.1.6 EUT OPERATING CONDITIONS	17
3.1.7 TEST RESULTS	18
3.2 RADIATED EMISSION MEASUREMENT	20
3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT	20
3.2.2 TEST INSTRUMENTS.....	21
3.2.3 TEST PROCEDURES	22
3.2.4 DEVIATION FROM TEST STANDARD	22
3.2.5 TEST SETUP	23
3.2.6 EUT OPERATING CONDITIONS	24
3.2.7 TEST RESULTS	25
3.3 6 DB BANDWIDTH MEASUREMENT	53
3.3.1 LIMITS OF 6DB BANDWIDTH MEASUREMENT	53
3.3.2 TEST INSTRUMENTS.....	53
3.3.3 TEST PROCEDURE.....	53
3.3.4 DEVIATION FROM TEST STANDARD	54



3.3.5	TEST SETUP	54
3.3.6	EUT OPERATING CONDITIONS	54
3.3.7	TEST RESULTS	55
3.4	CONDUCTED OUTPUT POWER.....	63
3.4.1	LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT.....	63
3.4.2	TEST SETUP	63
3.4.3	TEST INSTRUMENTS.....	63
3.4.4	TEST PROCEDURES	63
3.4.5	DEVIATION FROM TEST STANDARD	63
3.4.6	EUT OPERATING CONDITIONS	63
3.4.7	TEST RESULTS	64
3.4.7.1	MAXIMUM PEAK OUTPUT POWER	64
3.4.7.2	AVERAGE OUTPUT POWER (FOR REFERENCE).....	66
3.5	POWER SPECTRAL DENSITY MEASUREMENT	68
3.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	68
3.5.2	TEST SETUP	68
3.5.3	TEST INSTRUMENTS.....	68
3.5.4	TEST PROCEDURE.....	68
3.5.5	DEVIATION FROM TEST STANDARD	68
3.5.6	EUT OPERATING CONDITION	68
3.5.7	TEST RESULTS	69
3.6	OUT OF BAND EMISSION MEASUREMENT	77
3.6.1	LIMITS OF OUT OF BAND EMISSION MEASUREMENT	77
3.6.2	TEST SETUP	77
3.6.3	TEST INSTRUMENTS.....	77
3.6.4	TEST PROCEDURE.....	77
3.6.5	DEVIATION FROM TEST STANDARD	78
3.6.6	EUT OPERATING CONDITION	78
3.6.7	TEST RESULTS	78
4	PHOTOGRAPHS OF THE TEST CONFIGURATION	95
5	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	96



**BUREAU
VERITAS**

Test Report No.: W7L-P21040003RF13

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
W7L-P21080006RF13	Original release	Sep. 01, 2021
W7L-P21040030RF13	Based on the original report W7L-P21080006RF13 Changed LCM to screen HD(1280*720), removing a 2nd BLE and Supercap, Increase the RTC battery, Detail refer to Product Equality Declaration	Sep. 09, 2021



1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)		
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT
15.207	AC Power Conducted Emission	Compliance
15.205 15.209	Radiated Emissions	Compliance
15.247(d)	Out of band Emission Measurement	Compliance
15.247(a)(2)	6dB bandwidth	Compliance
15.247(b)	Conducted Output power	Compliance
15.247(e)	Power Spectral Density	Compliance
15.203	Antenna Requirement	Compliance

1.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	UNCERTAINTY
AC Power Conducted emissions	±2.70dB
Radiated emissions (30MHz~1GMHz)	±4.98dB
Radiated emissions (1GMHz ~6GMHz)	±4.70dB
Radiated emissions (6GMHz ~18GMHz)	±4.60dB
Radiated emissions (18GMHz ~40GMHz)	±4.12dB
Conducted emissions	±4.01dB
Occupied Channel Bandwidth	±43.58KHz
Conducted Output power	±2.06dB
Power Spectral Density	±0.85 dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k = 2$.



2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Mobile Computer
BRAND NAME	Honeywell
MODEL NAME	CT45-L1N-G
NOMINAL VOLTAGE	3.85Vdc (Lithium-ion cell, battery)
MODULATION	DSSS, OFDM, GFSK
TRANSMISSION RATE	802.11b: 11/ 5.5/ 2.0 / 1.0 Mbps 802.11g: 54/ 48/ 36 / 24 / 18 / 9/ 6 Mbps 802.11n20: up to 65 Mbps 802.11n40: up to 135 Mbps BT_LE: 0.125 Mbps /0.5 Mbps /1 Mbps/2 Mbps
OPERATING FREQUENCY	2412-2462MHz for 11b/g/n(HT20) 2422-2452MHz for 11n(HT40) 2402-2480MHz for BT-LE(GFSK)
MAX. OUTPUT POWER	WLAN: 169.82mW (Maximum) BT-LE: 4.88mW (Maximum)
ANTENNA TYPE	PIFA Antenna with 0.51dBi gain
HW VERSION	V1.0
SW VERSION	OS.11.002-HON.11.002
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	USB cable: unshielded without ferrite, 1.25 meter Earphone cable: unshielded without ferrite, 1.27 meter

**Test Report No.: W7L-P21040003RF13****NOTE:**

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. This product includes the following six SKU which hardware is exactly same, the difference is described as following, Sample 1 was full test, sample 2 verify the worst case, check worst case Radiated emission:

SAMPLE	EUT CONFIGURATION INFORMATION
1	SKU ID:CT45-L1N-27D120G ,Assembled Scanner Imager: 7-S0703
2	SKU ID:CT45-L1N-28D120G ,Assembled Scanner Imager: 8 - N6803/S0803
3	SKU ID: CT45-L1N-28D120T, Assembled with Scanner: 8 - N6803/S0803 for Turkey Only
4	SKU ID: CT45-L1N-27D120T, Assembled with Scanner: 7-S0703 for Turkey Only
5	SKU ID:CT45-L1N-28D220C, Assembled with Scanner: 8 - N6803/S0803 for China Only with Android non-GMS
6	SKU ID:CT45-L1N-27D220C, Assembled with Scanner: 7-S0703 for China Only with Android non-GMS

3. The EUT incorporates a SISO function. Physically, the EUT provides one transmitter and one receiver.

MODULATION MODE	TX/RX FUNCTION
802.11b	1TX /1RX
802.11g	1TX /1RX
802.11n (20MHz)	1TX /1RX
802.11n (40MHz)	1TX /1RX
BT_LE(1MHz)	1TX /1RX
BT_LE(2MHz)	1TX /1RX
BT_LE(S2)	1TX /1RX
BT_LE(S8)	1TX /1RX

4. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

List of Accessory:

ACCESSORIES	BRAND	MODEL	SPECIFICATION
Battery	Honeywell	CT50-BTSC	Capacity : 3.85vdc 4020mAh
AC Adapter	HONOR	ADS-12B-06 05010E	I/P:100-240Vac, 0.3A O/P: 5Vdc, 2A
USB Cable	Honeywell	CT40-SN	Shielded, 1.25meter
Earphone	VIVO	N/A	Shielded, 1.27meter
LCD Panel	TZD	TS5099	5.0" HD(1280*720)



2.2 DESCRIPTION OF TEST MODES

11 channels are provided for 802.11b, 802.11g and 802.11n (HT20):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2412 MHz	7	2442 MHz
2	2417 MHz	8	2447 MHz
3	2422 MHz	9	2452 MHz
4	2427 MHz	10	2457 MHz
5	2432 MHz	11	2462 MHz
6	2437 MHz		

7 channels are provided for 802.11n (HT40):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
3	2422MHz	7	2442MHz
4	2427MHz	8	2447MHz
5	2432MHz	9	2452MHz
6	2437MHz		

40 channels are provided for BT-LE (GFSK):

CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480



2.2.1 CONFIGURATION OF SYSTEM UNDER TEST

Please see section 5 photographs of the test configuration for reference.

2.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports.

The worst case was found when positioned on Y axis for radiated emission. Following test modes were selected for the final test, and the final worst case is marked in boldface and recorded in the report:

EUT CONFIGURE MODE	APPLICABLE TO				MODE
	RE<1G	RE≥1G	PLC	APCM	
-	√	√	√	√	-

Where **RE<1G**: Radiated Emission below 1GHz

RE≥1G: Radiated Emission above 1GHz

PLC: Power Line Conducted Emission

APCM: Antenna Port Conducted Measurement

NOTE: No need to concern of Conducted Emission due to the EUT is powered by battery.

RADIATED EMISSION TEST (BELOW 1GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11n HT20	1 to 11	11	OFDM	MCS0
BT-LE	0 to 39	39	GFSK	2.0

**RADIATED EMISSION TEST (ABOVE 1GHz):**

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	1.0
802.11g	1 to 11	1, 6, 11	OFDM	6.0
802.11n HT20	1 to 11	1, 6, 11	OFDM	MCS0
802.11n HT40	3 to 9	3, 6, 9	OFDM	MCS0
BT-LE	0 to 39	0,19, 39	GFSK	0.125&0.5&1&2

POWER LINE CONDUCTED EMISSION TEST

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11n HT20	1 to 11	11	OFDM	MCS0

BANDEDGE MEASUREMENT:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11b	1 to 11	1, 11	DSSS	1.0
802.11g	1 to 11	1, 11	OFDM	6.0
802.11n HT20	1 to 11	1, 11	OFDM	MCS0
802.11n HT40	3 to 9	3, 9	OFDM	MCS0
BT-LE	0 to 39	0, 39	GFSK	0.125&0.5&1&2

**ANTENNA PORT CONDUCTED MEASUREMENT:**

- ☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	CCK	1.0
802.11g	1 to 11	1, 6, 11	OFDM	6.0
802.11n HT20	1 to 11	1, 6, 11	OFDM	MCS0
802.11n HT40	3 to 9	3, 6, 9	OFDM	MCS0
BT-LE	0 to 39	0,19, 39	GFSK	0.125&0.5&1&2

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	TEST VOLTAGE	TESTED BY
RE<1G	23deg. C, 70%RH	DC 3.85V By Battery	Carl Xie
RE≥1G	23deg. C, 70%RH	DC 3.85V By Battery	Carl Xie
PLC	25deg. C, 52%RH	DC 3.85V By Battery	Lily Zhao
APCM	25deg. C, 60%RH	DC 3.85V By Battery	Lily Zhao



2.3 Duty Cycle of Test Signal

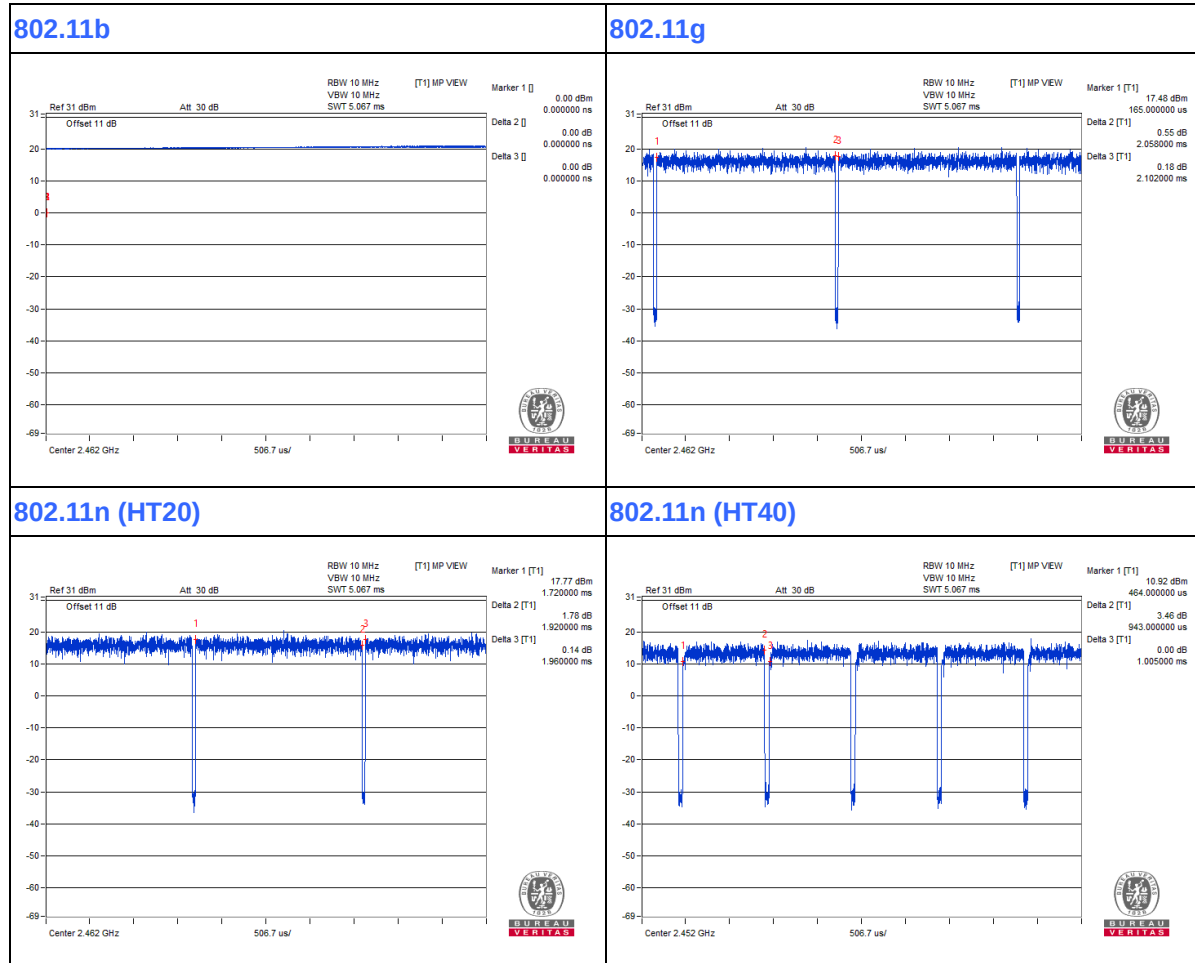
WIFI 2.4GHz

802.11b: Duty cycle = 100%, Duty factor shall not be considered

802.11g: Duty cycle = $2.058/2.102=0.979<98\%$, Duty factor = $10 * \log(1/0.979)=0.092$

802.11n (HT20): Duty cycle = $1.92/1.96=0.98=98\%$, Duty factor shall not be considered

802.11n (HT40): Duty cycle = $0.943/1.005=0.938<98\%$, Duty factor = $10 * \log(1/0.938)=0.278$





BUREAU
VERITAS

Test Report No.: W7L-P21040003RF13

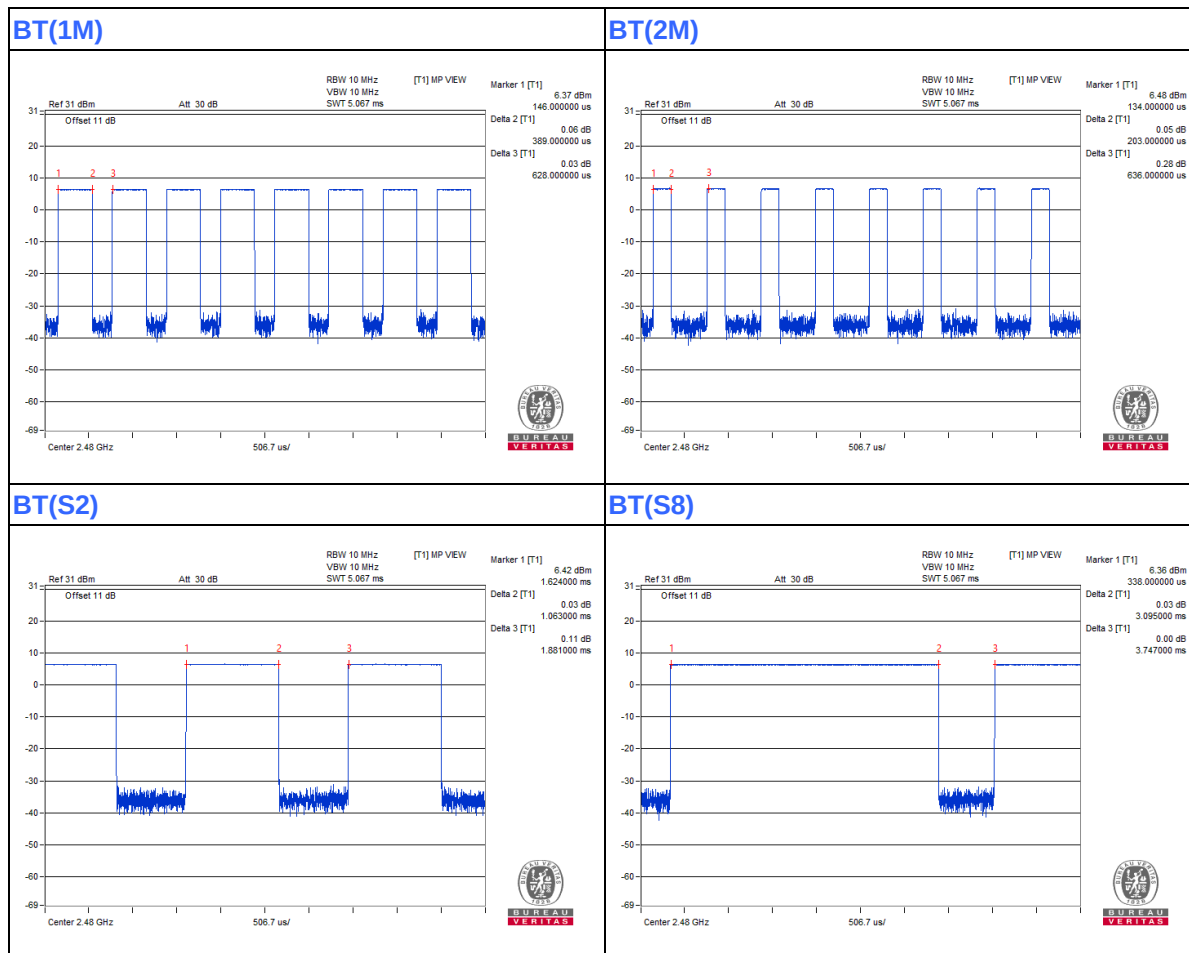
BT LE

1BLE -1M: Duty cycle = $0.389/0.628=0.619 < 98\%$, Duty factor = $10 * \log(1/0.619) = 2.083$

1BLE -2M: Duty cycle = $0.203/0.636=0.319 < 98\%$, Duty factor = $10 * \log(1/0.319) = 4.962$

1BLE -S2: Duty cycle = $1.063/1.881=0.565 < 98\%$, Duty factor = $10 * \log(1/0.565) = 2.480$

1BLE -S8: Duty cycle = $3.095/3.747=0.826 < 98\%$, Duty factor = $10 * \log(1/0.826) = 0.830$





2.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C, Section 15.247

KDB 558074 D01 DTS Meas Guidance v05r02

ANSI C63.10-2013

Note :

1. All test items have been performed and recorded as per the above standards.
2. The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (Certification). The test report has been issued separately.

2.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Desktop	Lenovo	M73 SFF	PC04GRQV	N/A
2	Desktop	Lenovo	M73 SFF	PC06CS27	N/A
3	Laptop	Lenovo	Thnikpad T450	PC-049PT1	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	AC Line: Unshielded, Detachable 1.5m
2	AC Line: Unshielded, Detachable 1.5m
3	AC Line: Unshielded, Detachable 1.5m



3 TEST TYPES AND RESULTS

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

- NOTE:**
1. The lower limit shall apply at the transition frequencies.
 2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.
 3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

3.1.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESR3	101900	Mar. 03,21	Mar. 02,22
EMC32 test software	Rohde&Schwarz	EMC32	NA	NA	NA
LISN network	Rohde&Schwarz	ENV216	101922	Feb. 22,21	Feb. 21,22

NOTE:

1. The test was performed in CE shielded room.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.



3.1.3 TEST PROCEDURES

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

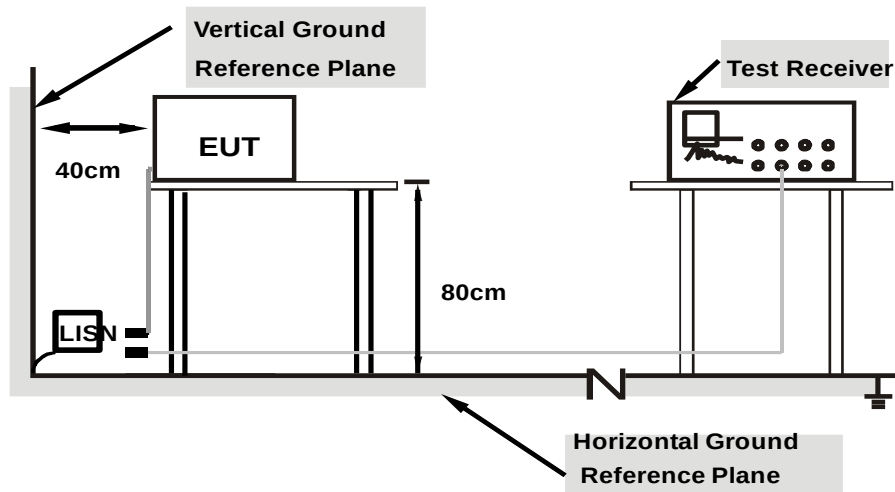
NOTE: All modes of operation were investigated and the worst-case emissions are reported.

3.1.4 DEVIATION FROM TEST STANDARD

No deviation.



3.1.5 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

For the actual test configuration, please refer to the attached file (Test Setup Photo).

3.1.6 EUT OPERATING CONDITIONS

- a. Turned on the power and connected of all equipment.
- b. EUT was operated according to the type used was description in manufacturer's specifications or the User's Manual.