



FCC TEST REPORT

FCC ID: 2A5EQ-2401KB1

Product	:	Mechanical Keyboard
Model Name	:	NB-1041 Pro, NB-841 Pro
Brand	:	LTC
Report No.	:	PTC24022310301E-FC03
Prepared for		
LTC Networking Limited		
FLAT/RM 1205, 12/F Tai Sang Bank Building 130-132 DES Voeux Road Central HongKong		
Prepared by		
Precise Testing & Certification Co., Ltd.		
Building 1, No. 6, Tongxin Road, Dongcheng Street, Dongguan, Guangdong, China		



1 TEST RESULT CERTIFICATION

Applicant's name : LTC Networking Limited

Address : FLAT/RM 1205, 12/F Tai Sang Bank Building 130-132 DES Voeux Road
Central HongKong

Manufacture's name : Dongguan Weiji Electronic Technology Co., Ltd.

Address : NO.595,Jienan Road,Xiaojiejiao,Humen Town,Dongguan City

Product name : Mechanical Keyboard

Model name : NB-1041 Pro, NB-841 Pro

Standards : FCC Part15 Subpart C, Paragraph 15.249

Test procedure : ANSI C63.10: 2013

Test Date : Mar. 08, 2024 to Mar. 20, 2024

Date of Issue : Mar. 20, 2024

Test Result : Pass

This device described above has been tested by PTC, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

This report shall not be reproduced except in full, without the written approval of PTC, this document may be altered or revised by PTC, personal only, and shall be noted in the revision of the document.

Test Engineer:

A handwritten signature in black ink, appearing to read 'Jack Zhou'.

Jack Zhou / Engineer

Technical Manager:

A handwritten signature in black ink, appearing to read 'Simon Pu'.

Simon Pu / Manager



Contents

	Page
1 TEST RESULT CERTIFICATION	2
2 TEST SUMMARY	5
2.1 TEST SITE	6
3 GENERAL INFORMATION	7
3.1 GENERAL DESCRIPTION OF E.U.T.	7
3.2 CHANNEL LIST	8
4 EQUIPMENT DURING TEST	10
4.1 EQUIPMENTS LIST	10
4.2 MEASUREMENT UNCERTAINTY	12
4.3 DESCRIPTION OF SUPPORT UNITS	12
5 CONDUCTED EMISSION	13
5.1 E.U.T. OPERATION	13
5.2 EUT SETUP	13
5.3 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	14
5.4 MEASUREMENT PROCEDURE	14
5.5 CONDUCTED EMISSION LIMIT	14
5.6 MEASUREMENT DESCRIPTION	14
5.7 CONDUCTED EMISSION TEST RESULT	14
6 RADIATED EMISSION AND BAND EDGE	17
6.1 TEST STANDARD AND LIMIT	17
6.2 TEST SETUP	18
6.3 TEST PROCEDURE	19
6.4 TEST DATA	20
7 20DB BANDWIDTH TEST	27
7.1 TEST STANDARD AND LIMIT	27
7.2 TEST SETUP	27
7.3 TEST PROCEDURE	27
7.4 TEST DATA	28
8 ANTENNA REQUIREMENT	30
8.1 TEST STANDARD AND REQUIREMENT	30
8.2 ANTENNA CONNECTED CONSTRUCTION	30



9 TEST SETUP PHOTOGRAPH 31

10 EUT PHOTOGRAPH33



2 Test Summary

Standard Section	Test Item	Result
15.203	Antenna Requirement	PASS
15.207	Conducted Emission	PASS
15.249	Radiated Emission	PASS
15.215(c)	20dB Bandwidth	PASS
15.249(d)	Band Edge	PASS
Remark: "N/A" is an abbreviation for Not Applicable.		

Remark:N/A



Report No.: PTC24022310301E-FC03

2.1 Test Site

Precise Testing & Certification Co., Ltd.

Address: Building 1, No. 6, Tongxin Road, Dongcheng Street, Dongguan, Guangdong, China

FCC Registration Number: 790290

A2LA Certificate No.: 4408.01

IC Registration Number: 12191A

FCC Designation Number: CN1219



3 General Information

3.1 General Description of E.U.T.

Product Name	:	Mechanical Keyboard
Model Name	:	NB-1041 Pro
Additional model	:	NB-841 Pro
Model difference	:	Different model names
Operation Frequency	:	2402-2479MHz
Modulation	:	GFSK
Number of Channels	:	78
Antenna installation	:	PCB antenna
Antenna Gain	:	1.58dBi
Hardware Version	:	V03
Software Version	:	V103
Test sample No.	:	PTC24022310301E-1/2,PTC24022310301E-2/2.



3.2 Channel List

The EUT has been tested under its typical operating condition. Pre-defined engineering program for regulatory testing used to control the EUT for staying in continuous transmitting. Only the worst case data were reported.

The EUT has been associated with peripherals pursuant to ANSI C63.10-2013 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: radiation (9 KHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

The details of test channels and bandwidth were for RF conductive measurement.

Channel List:

Channel List					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2402	2	2403	3	2404
4	2405	5	2406	6	2407
7	2408	8	2409	9	2410
10	2411	11	2412	12	2413
13	2414	14	2415	15	2416
16	2417	17	2418	18	2419
19	2420	20	2421	21	2422
22	2423	23	2424	24	2425
25	2426	26	2427	27	2428
28	2429	29	2430	30	2431
31	2432	32	2433	33	2434
34	2435	35	2436	36	2437
37	2438	38	2439	39	2440
40	2441	41	2442	42	2443
43	2444	44	2445	45	2446



46	2447	47	2448	48	2449
49	2450	50	2451	51	2452
52	2453	53	2454	54	2455
55	2456	56	2457	57	2458
58	2459	59	2460	60	2461
61	2462	62	2463	63	2464
64	2465	65	2466	66	2467
67	2468	68	2469	69	2470
70	2471	71	2472	72	2473
73	2474	74	2475	75	2476
76	2477	77	2478	78	2479

Note:

1. Test of channel was included the lowest 2402MHz, middle 2446MHz and highest frequency 2479MHz in highest data rate and to perform the test, then record on this report.
2. EUT used the new batteries during test.



4 Equipment During Test

4.1 Equipments List

RF Conducted Test

Name of Equipment	Manufacturer	Model	Serial No.	Characteristics	Last Calibration	Calibration Interval
MXG Signal Analyzer	Agilent	N9020A	SER MY5111038	10Hz-26.5GHz	Aug.17, 2023	1 Year
Coaxial Cable	CDS	79254	46107086	10Hz-30GHz	Aug.17, 2023	1 Year
Power Meter	Anritsu	ML2495A	0949003	300MHz-40GHz	Aug.17, 2023	1 Year
Power Sensor	Anritsu	MA2411B	0917017	300MHz-40GHz	Aug.17, 2023	1 Year
Test S/W	Tonscend	JS1120-3	/	/	/	/

Remark: The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.

Radiated Emissions(Test Frequency from 9KHz-18GHz)

Name of Equipment	Manufacturer	Model	Serial No.	Characteristics	Last Calibration	Calibration Interval
EMI Test Receiver	Rohde&Schwarz	ESPI7	101671	9KHz-7GHz	Aug. 17,2023	1 Year
Loop Antenna	Schwarzbeck	FMZB 1519	192	9 KHz -30MHz	Aug. 17,2023	1 Year
Bilog Antenna	SCHWARZBECK	VULB9160	9160-3355	25MHz-2GHz	Aug. 17,2023	1 Year
Preamplifier (low frequency)	SCHWARZBECK	BBV 9475	9745-0013	1MHz-1GHz	Aug. 17,2023	1 Year
Cable	IMRO	AK-9515E(9m)	Cable-L	9KHz-3GHz	Aug. 17,2023	1 Year
Spectrum Analyzer	Rohde&Schwarz	FSV40	6625-01-588-5515	9KHz-40GHz	Aug. 17,2023	1 Year
Horn Antenna	SCHWARZBECK	9120D	9120D-1246	1GHz-18GHz	Aug. 17,2023	1 Year
Power Amplifier	ZHINAN	ZN3380C	15002	1GHz-26.5GHz	Aug. 17,2023	1 Year



Report No.: PTC24022310301E-FC03

Horn Antenna	SCHWARZBECK	BBHA 9170	9170-1066	15GHz-40GHz	Jul. 19, 2023	1 Year
Amplifier	SCHWARZBECK	BBV 9721	9721-205	18GHz-40GHz	Jul. 19, 2023	1 Year
Cable	H+S	CBL-26	N/A	1GHz-26.5GHz	Aug. 17,2023	1 Year
RF Cable	R&S	R204	R21X	1GHz-40GHz	Aug. 17,2023	1 Year
Test S/W	Tonscend	TS+	/	/	/	/

Conducted Emissions

Name of Equipment	Manufacturer	Model	Serial No.	Characteristics	Calibration Date	Calibration Interval
EMI Test Receiver	Rohde&Schwarz	ESCI	101417	9KHz-3GHz	Aug. 17, 2023	1 Year
Artificial Mains Network	Rohde&Schwarz	ENV216	102453	9KHz-300MHz	Aug. 17, 2023	1 Year
Artificial Mains Network	Rohde&Schwarz	ENV216	101342	9KHz-300MHz	Aug. 17, 2023	1 Year
Limiter	R&S	ESH3-Z2	0357.8810.54-102808-NB	0Hz-30MHz	Aug. 16,2023	1 Year
RF Switch	DIAMOND ANTENNA	CX-210	/	0.09MHz-6GHz	Mar. 24,2023	1 Year
Test S/W	Tonscend	JS32-CE	/	/	/	/

4.2 Measurement Uncertainty

Parameter	Uncertainty
RF output power, conducted	$\pm 1.0\text{dB}$
Power Spectral Density, conducted	$\pm 2.2\text{dB}$
Radio Frequency	$\pm 1 \times 10^{-6}$
Bandwidth	$\pm 1.5 \times 10^{-6}$
Time	$\pm 2\%$
Duty Cycle	$\pm 2\%$
Temperature	$\pm 1^\circ\text{C}$
Humidity	$\pm 5\%$
DC and low frequency voltages	$\pm 3\%$
Conducted Emissions (150kHz~30MHz)	$\pm 3.64\text{dB}$
Radiated Emission(30MHz~1GHz)	$\pm 5.03\text{dB}$
Radiated Emission(1GHz~25GHz)	$\pm 4.74\text{dB}$
Radiated Emission(9KHz~30MHz)	$\pm 3.15\text{dB}$

4.3 Description of Support Units

Equipment	Model No.	Series No.	Parameters
Adapter	KSAS050180030 0M2	N/A	N/A
Notebook	TPN-C126	N/A	N/A

5 Conducted Emission

Test Requirement	: FCC CFR 47 Part 15 Section 15.207
Test Method	: ANSI C63.10: 2013
Test Result	: PASS
Frequency Range	: 150kHz to 30MHz
Class/Severity	: Class B

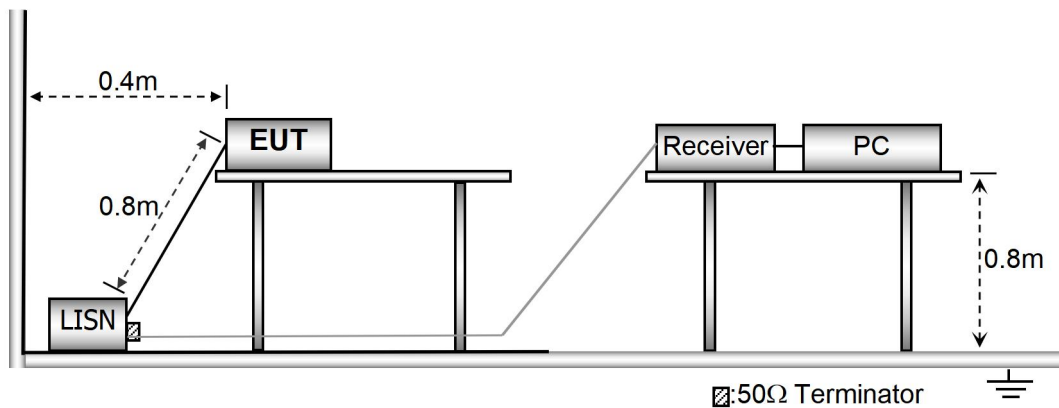
5.1 E.U.T. Operation

Operating Environment :

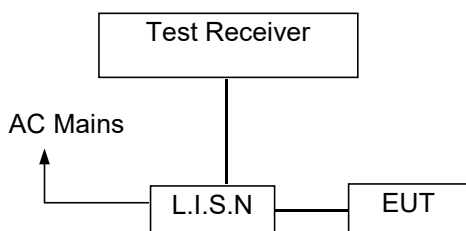
Temperature	: 25.5 °C
Humidity	: 51 % RH
Atmospheric Pressure	: 101.2kPa

5.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.10:2013.



5.3 Test SET-UP (Block Diagram of Configuration)



5.4 Measurement Procedure

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured was complete.

5.5 Conducted Emission Limit

Conducted Emission		
Frequency(MHz)	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	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.

5.6 Measurement Description

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

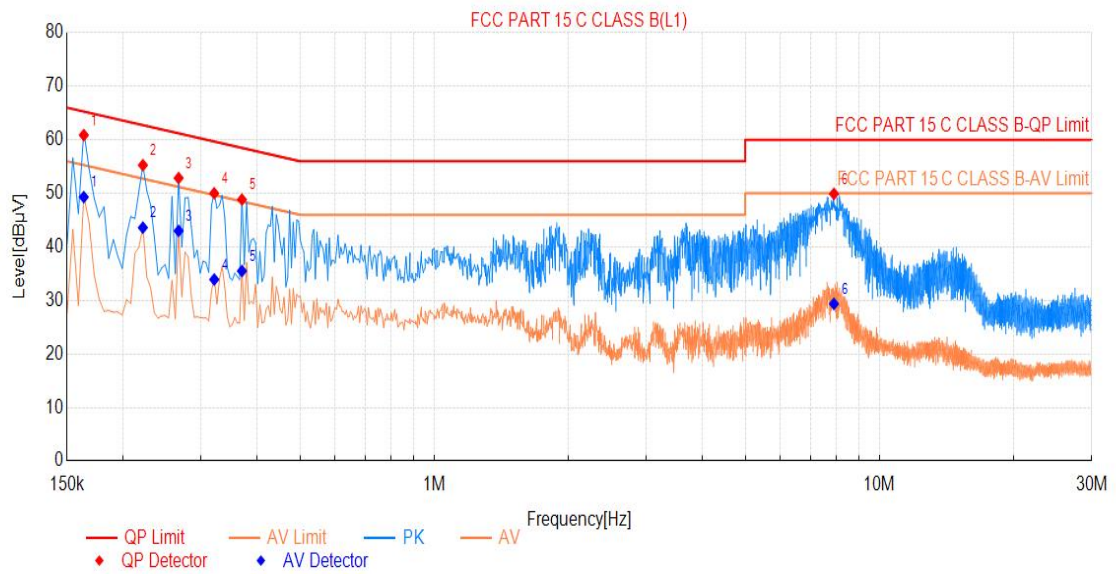
5.7 Conducted Emission Test Result

Conducted emission at 120V is assessed, and emission at 120V represents the worst case. All the modulation modes were tested the data of the worst mode (GFSK) are recorded in the following pages and the others modulation methods do not exceed the limits.



Line -120V/60Hz:

Report No.: PTC24022310301E-FC03



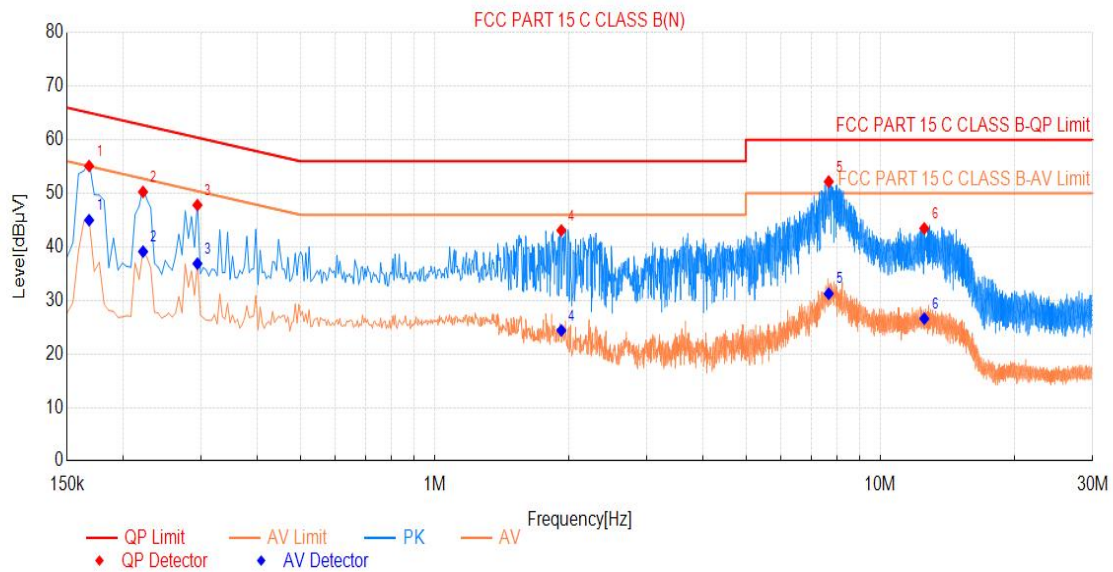
Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Verdict
1	0.164	-0.09	60.88	65.28	4.40	49.31	55.28	5.97	PASS
2	0.222	-0.09	55.27	62.74	7.47	43.60	52.74	9.14	PASS
3	0.267	-0.08	52.85	61.21	8.36	43.00	51.21	8.21	PASS
4	0.321	-0.07	50.02	59.68	9.66	33.91	49.68	15.77	PASS
5	0.371	-0.08	48.85	58.49	9.64	35.50	48.49	12.99	PASS
6	7.913	-0.16	49.91	60.00	10.09	29.37	50.00	20.63	PASS



Neutral -120V/60Hz:

Report No.: PTC24022310301E-FC03



Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Verdict
1	0.168	-0.09	55.10	65.06	9.96	44.99	55.06	10.07	PASS
2	0.222	-0.09	50.27	62.74	12.47	39.12	52.74	13.62	PASS
3	0.294	-0.07	47.81	60.41	12.60	36.87	50.41	13.54	PASS
4	1.928	-0.07	43.08	56.00	12.92	24.39	46.00	21.61	PASS
5	7.674	-0.16	52.19	60.00	7.81	31.27	50.00	18.73	PASS
6	12.575	-0.41	43.46	60.00	16.54	26.60	50.00	23.40	PASS

Note:QP Margin[dB]= QP Limit[dBμV]- QP Value[dBμV], AV Margin[dB]= AV Limit[dBμV]- AV Value[dBμV].



6 Radiated Emission and Band Edge

6.1 Test Standard and Limit

Test Standard	FCC Part15 C Section 15.209 and 15.205				
Test Limit	Frequency (MHz)	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
	0.009MHz~0.490MHz	2400/F(kHz)	-	-	300
	0.490MHz~1.705MHz	24000/F(kHz)	-	-	30
	1.705MHz~30MHz	30	-	-	30
	30MHz~88MHz	100	40.0	Quasi-peak	3
	88MHz~216MHz	150	43.5	Quasi-peak	3
	216MHz~960MHz	200	46.0	Quasi-peak	3
	960MHz~1000MHz	500	54.0	Quasi-peak	3
	Above 1000MHz	500	54.0	Average	3
		-	74.0	Peak	3

Remark:

(1)The lower limit shall apply at the transition frequency.

(2) 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

Test Standard	FCC Part15 C Section 15.249					
Test Limit	Frequency (MHz)	Field Strength of fundamental (millivolts /meter)	Field Strength of Harmonics (microvolts/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
	2400~2483.5	50	-	114.0	Peak	3
	2400~2483.5	50	-	94.0	Average	3
	2400~2483.5	-	500	74.0	Peak	3
	2400~2483.5	-	500	54.0	Average	3

Remark:

(1) 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

6.2 Test Setup

Figure 1. Below 30MHz

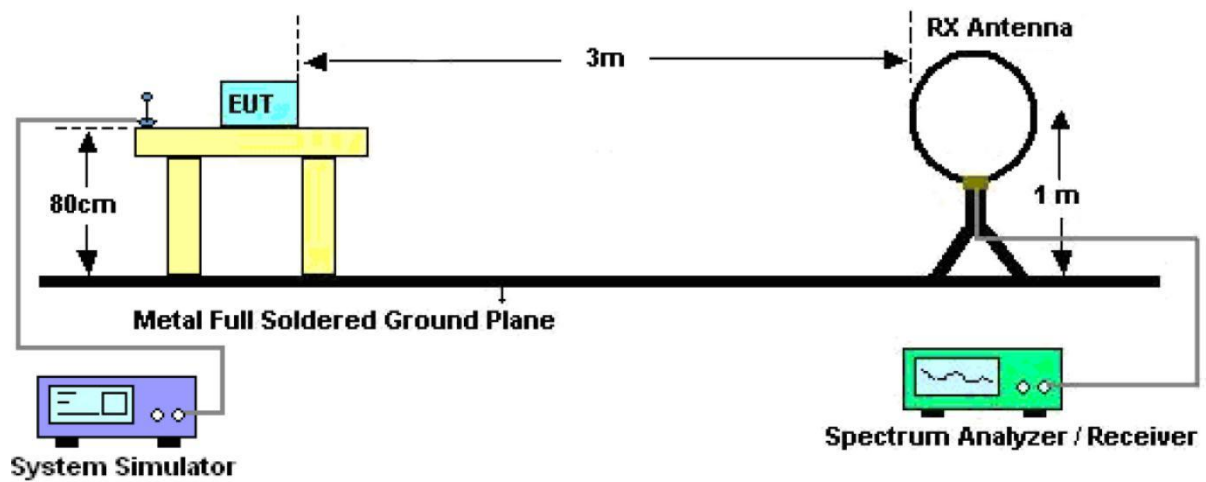


Figure 2. 30MHz to 1GHz

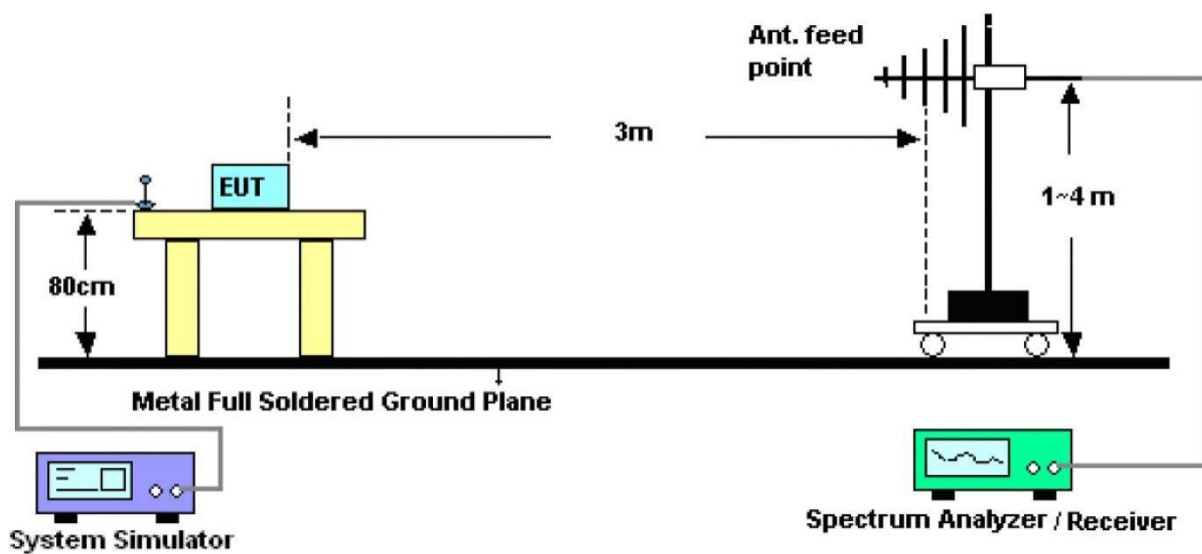
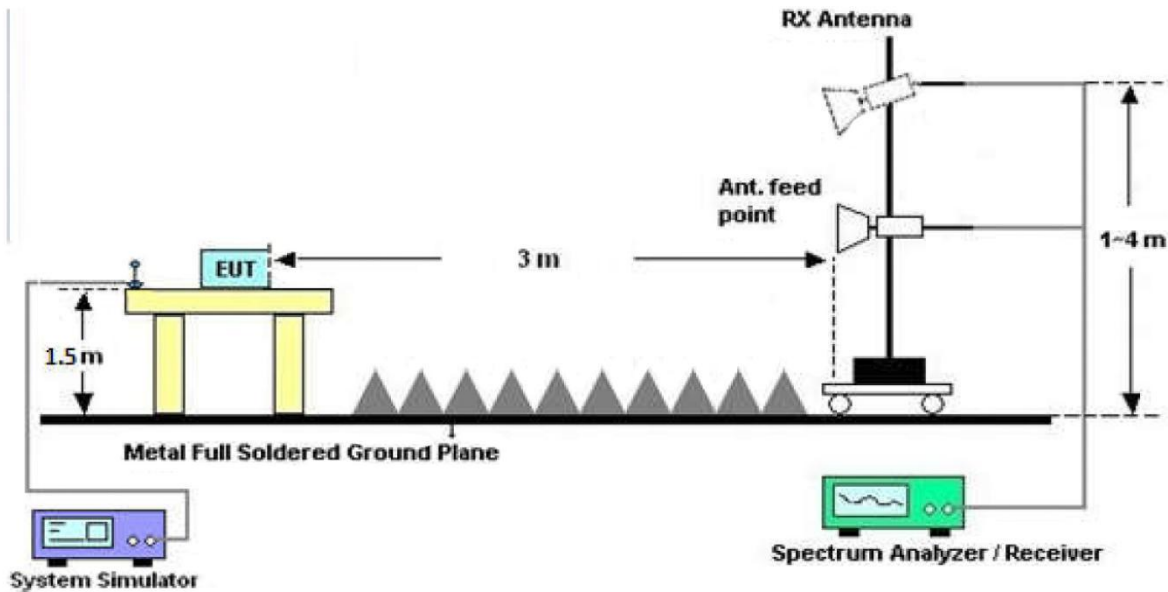


Figure 3. Above 1 GHz



6.3 Test Procedure

For below 1GHz: The EUT is placed on a turntable, which is 0.8m above the ground plane.

For above 1GHz: The EUT is placed on a turntable, which is 1.5m above the ground plane.

The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Rotated the EUT through three orthogonal axes to determine the maximum emissions, both horizontal and vertical polarization of the antenna are set on test. The EUT is tested in 9*6*6 Chamber. The device is evaluated in xyz orientation.

For the radiated emission test above 1GHz:

Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.

For 9kHz to 150kHz, Set the spectrum analyzer as:

RBW = 200Hz, VBW =1kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.



For 150kHz to 30MHz, Set the spectrum analyzer as:

RBW = 9KHz, VBW =30kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For 30MHz to 1000MHz, Set the spectrum analyzer as:

RBW = 100kHz, VBW =300kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For above 1GHz,Set the spectrum analyzer as:

RBW =1MHz, VBW =1MHz, Detector= Peak, Trace mode= Max hold, Sweep- auto couple.

RBW =1MHz, VBW =10Hz, Detector= Average, Trace mode= Max hold, Sweep- auto couple.

6.4 Test Data

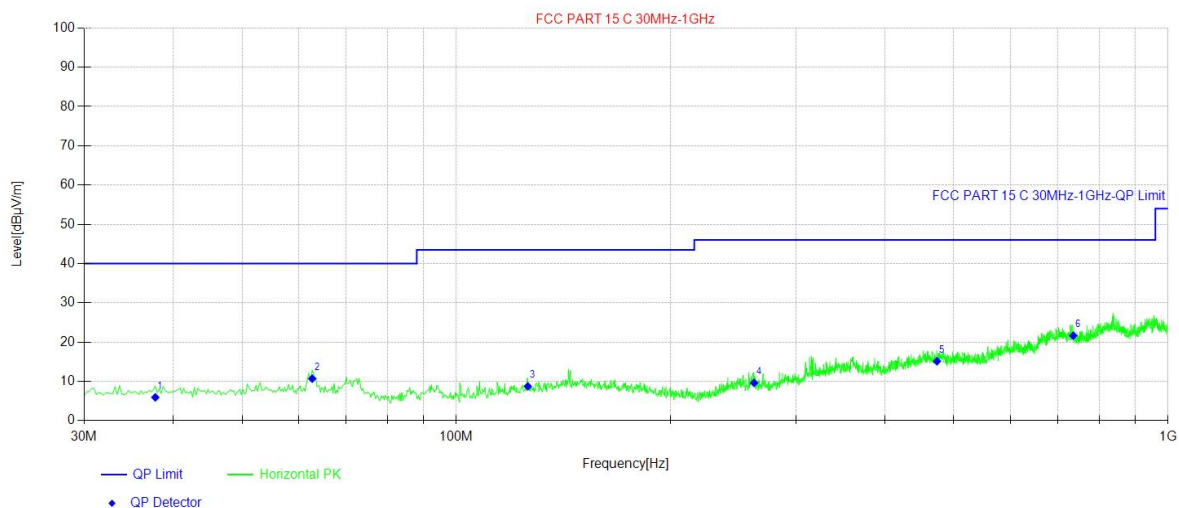
PASS

During the test, Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the X-axis is the worst case.

The test results of 9kHz-30MHz was attenuated more than 20dB below the permissible limits, so the results don't record in the report.

During the test, pre-scan all the modes, and found the Middle channel which is the worst case, only the worst case is recorded in the report

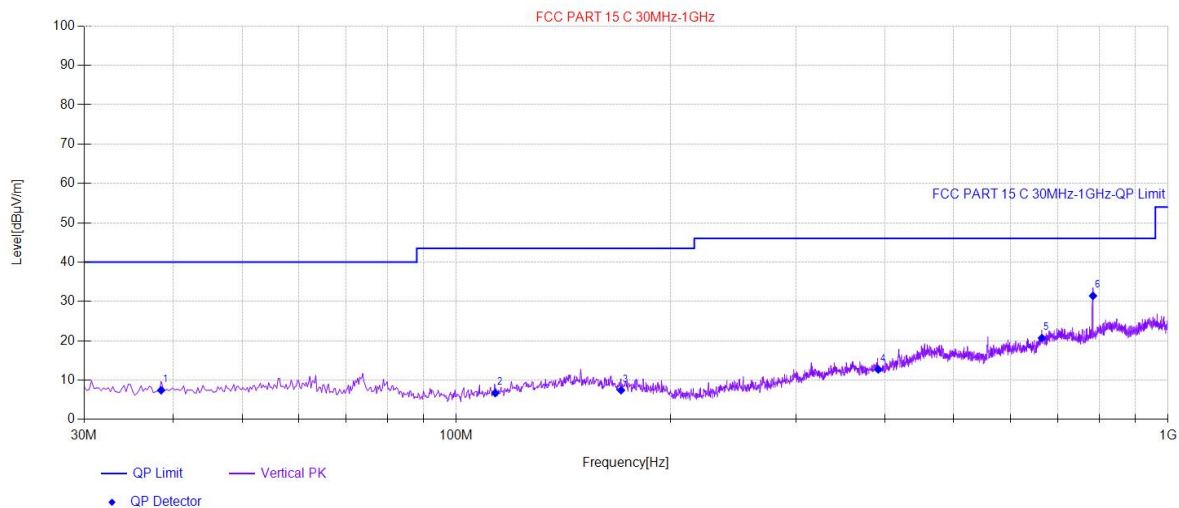
Test plot for Horizontal



Final Data List[QP]										
NO.	Freq. [MHz]	QP Reading [dBμV/m]	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity	Verdict
1	37.76	23.76	-17.82	5.94	40.00	34.06	100	125	Horizontal	PASS
2	62.74	28.55	-17.84	10.71	40.00	29.29	100	243	Horizontal	PASS
3	126.03	26.16	-17.41	8.75	43.50	34.75	100	70	Horizontal	PASS
4	262.07	26.37	-16.75	9.62	46.00	36.38	100	108	Horizontal	PASS
5	473.53	26.15	-11.02	15.13	46.00	30.87	100	246	Horizontal	PASS
6	735.92	26.73	-5.08	21.65	46.00	24.35	100	155	Horizontal	PASS

Remark: Emission Level = Reading + Cable Loss + ANT Factor - AMP Factor

Test plot for Vertical



Final Data List[QP]										
NO.	Freq. [MHz]	QP Reading [dBμV/m]	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity	Verdict
1	38.49	25.23	-17.81	7.42	40.00	32.58	100	293	Vertical	PASS
2	113.42	25.51	-18.80	6.71	43.50	36.79	100	24	Vertical	PASS
3	170.41	24.65	-17.22	7.43	43.50	36.07	100	175	Vertical	PASS
4	391.57	25.96	-13.24	12.72	46.00	33.28	100	35	Vertical	PASS
5	664.87	27.22	-6.53	20.69	46.00	25.31	100	320	Vertical	PASS
6	784.42	35.5	-4.08	31.42	46.00	14.58	100	186	Vertical	PASS

Remark: Emission Level = Reading + Cable Loss + ANT Factor - AMP Factor



Test Frequency 1GHz-25GHz

Test Mode: CH1 (Low channel)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.	Detector
2402.0000	94.56	31.12	2.18	35.33	92.53	114	-21.47	V	Peak
2402.0000	81.56	31.12	2.18	35.33	79.93	94	-14.07	V	AVG
4804.0000	49.51	34.01	2.58	34.65	51.45	74	-22.55	V	Peak
4804.0000	37.84	34.01	2.58	34.65	40.17	54	-13.83	V	AVG
7208.0000	46.94	36.16	2.97	35.07	51.00	74	-23.00	V	Peak
7208.0000	36.87	36.16	2.97	35.07	37.96	54	-16.04	V	AVG
2402.0000	95.50	31.12	2.18	35.33	93.47	114	-20.53	H	Peak
2402.0000	81.08	31.12	2.18	35.33	79.45	94	-14.55	H	AVG
4804.0000	48.28	34.01	2.58	34.65	50.22	74	-23.78	H	Peak
4804.0000	36.27	34.01	2.58	34.65	38.60	54	-15.40	H	AVG
7208.0000	47.06	36.16	2.97	35.07	51.12	74	-22.88	H	Peak
7208.0000	35.54	36.16	2.97	35.07	36.63	54	-17.37	H	AVG



Test Mode: CH45 (Middle channel)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.	Detector
2446.0000	95.63	31.12	2.2	34.51	94.44	114	-19.56	V	Peak
2446.0000	81.14	31.22	2.2	34.51	80.05	94	-13.95	V	AVG
4892.0000	49.86	34.98	2.49	34.14	53.19	74	-20.81	V	Peak
4892.0000	37.29	34.98	2.49	34.14	40.62	54	-13.38	V	AVG
7338.0000	47.62	36.01	3.01	34.56	52.08	74	-21.92	V	Peak
7338.0000	36.29	36.01	3.01	34.56	40.75	54	-13.25	V	AVG
2446.0000	92.02	31.12	2.2	34.51	90.83	114	-23.17	H	Peak
2446.0000	84.35	31.12	2.2	34.51	83.16	94	-10.84	H	AVG
4892.0000	49.21	34.98	2.49	34.14	52.54	74	-21.46	H	Peak
4892.0000	36.84	34.98	2.49	34.14	40.17	54	-13.83	H	AVG
7338.0000	46.50	36.01	3.01	34.56	50.96	74	-23.04	H	Peak
7338.0000	36.87	36.01	3.01	34.56	41.33	54	-12.67	H	AVG



Test Mode: CH78(High channel)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.	Detector
2479.0000	94.62	31.65	2.23	36.07	92.43	114	-21.57	V	Peak
2479.0000	83.58	31.65	2.23	36.07	81.39	94	-12.61	V	AVG
4958.0000	49.38	35.06	2.6	34.93	52.11	74	-21.89	V	Peak
4958.0000	37.81	35.06	2.6	34.93	40.54	54	-13.46	V	AVG
7437.0000	46.95	36.19	3.12	35.11	51.15	74	-22.85	V	Peak
7437.0000	36.79	36.19	3.12	35.11	40.99	54	-13.01	V	AVG
2479.0000	94.64	31.65	2.23	36.07	92.45	114	-21.55	H	Peak
2479.0000	83.61	31.65	2.23	36.07	81.42	94	-12.58	H	AVG
4958.0000	49.75	35.06	2.6	34.93	52.48	74	-21.52	H	Peak
4958.0000	38.00	35.06	2.6	34.93	40.73	54	-13.27	H	AVG
7437.0000	46.35	36.19	3.12	35.11	50.55	74	-23.45	H	Peak
7437.0000	35.71	36.19	3.12	35.11	39.91	54	-14.09	H	AVG

Note: 1. The testing has been conformed to 10*2402MHz=24020MHz. 10*2446MHz=24460MHz.

10*2479MHz=24790MHz.

2. All other emissions more than 30dB below the limit.
3. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
Emission Level = Reading + Factor
Margin=Emission Level-Limit



Spurious Emission in Restricted Band 2310-2390MHz and 2483.5-2500MHz

Test Mode: Low Channel 2402MHz									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over (dB)	Polarity H/V	Test Value
2390.00	40.85	29.15	3.41	34.01	39.40	74	-34.60	H	Peak
2400.00	57.06	29.16	3.43	34.01	55.64	74	-18.36	H	Peak
2390.00	40.26	29.15	3.41	34.01	38.81	74	-35.19	V	Peak
2400.00	56.28	29.16	3.43	34.01	54.86	74	-19.14	V	Peak
2390.00	34.21	29.15	3.41	34.01	32.76	54	-21.24	H	AV
2400.00	40.94	29.16	3.43	34.01	39.52	54	-14.48	H	AV
2390.00	36.32	29.15	3.41	34.01	34.87	54	-19.13	V	AV
2400.00	44.37	29.16	3.43	34.01	42.95	54	-11.05	V	AV

Test Mode: High Channel 2479MHz									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over (dB)	Polarity H/V	Test Value
2483.50	47.63	29.28	3.53	34.03	46.41	74	-27.59	H	Peak
2500.00	40.64	29.30	3.56	34.03	39.47	74	-34.53	H	Peak
2483.50	47.18	29.28	3.53	34.03	45.96	74	-28.04	V	Peak
2500.00	40.92	29.30	3.56	34.03	39.75	74	-34.25	V	Peak
2483.50	38.91	29.28	3.53	34.03	37.69	54	-16.31	H	AV
2500.00	33.18	29.30	3.56	34.03	32.01	54	-21.99	H	AV
2483.50	39.09	29.28	3.53	34.03	37.87	54	-16.13	V	AV
2500.00	32.13	29.30	3.56	34.03	30.96	54	-23.04	V	AV

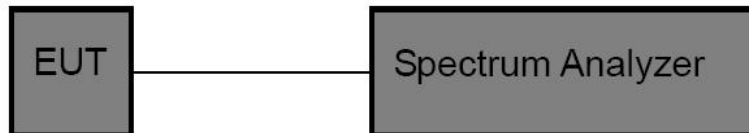


7 20dB Bandwidth Test

7.1 Test Standard and Limit

Test Standard	FCC Part15 C Section 15.249
---------------	-----------------------------

7.2 Test Setup



7.3 Test Procedure

1. Place the EUT on the table and set it in the transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as:
RBW = 1% to 5% of the OBW, $VBW \geq 3 \times RBW = 100\text{kHz}$,
Detector= Average
Trace mode= Max hold.
Sweep- auto couple.
4. Mark the peak frequency and -20dB (upper and lower) frequency.
5. Repeat until all the rest channels are investigated.



7.4 Test Data

Test Item : 20dB Bandwidth
 Test Voltage : DC 3.7V
 Test Result : PASS

Test Mode : TX
 Temperature : 22.4°C
 Humidity : 55%RH

Frequency (MHz)	Bandwidth (MHz)	Result
2402MHZ	1.065	PASS
2446MHZ	1.060	PASS
2479MHZ	1.061	PASS





Test Mode: Low



Test Mode: Middle



Test Mode: High



8 Antenna Requirement

8.1 Test Standard and Requirement

Test Standard	FCC Part15 Section 15.203
Requirement	1) 15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

8.2 Antenna Connected Construction

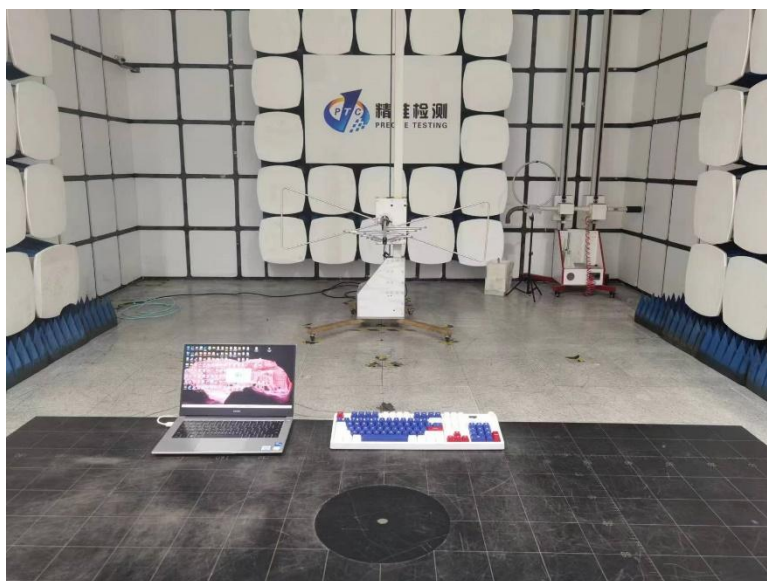
The antenna is a PCB Antenna which permanently attached, and the best case gain of the antenna is 1.58 dBi. It complies with the standard requirement.

9 TEST SETUP PHOTOGRAPH

CONDUCTED EMISSION TEST

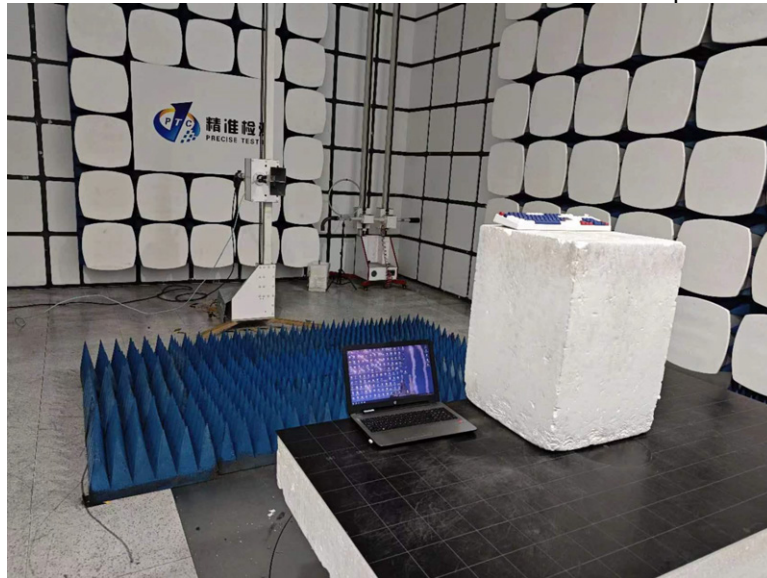


RADIATED EMISSION TEST

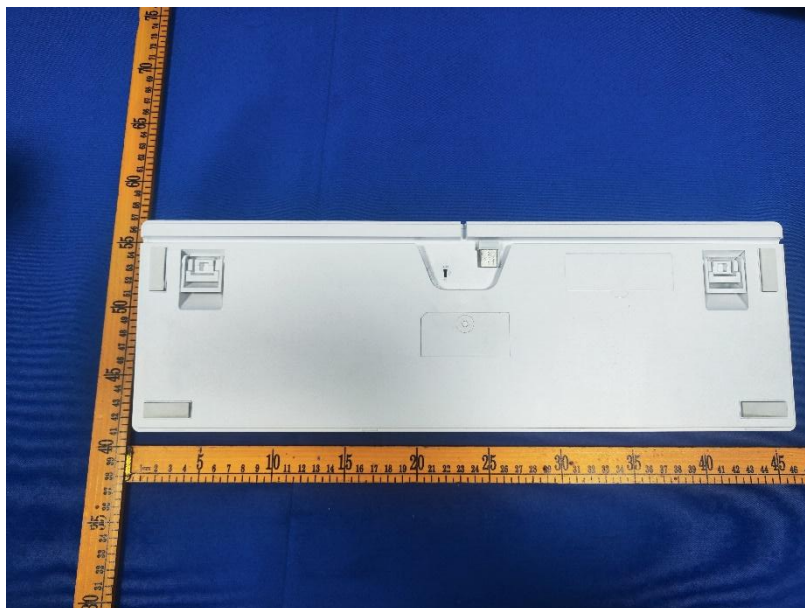


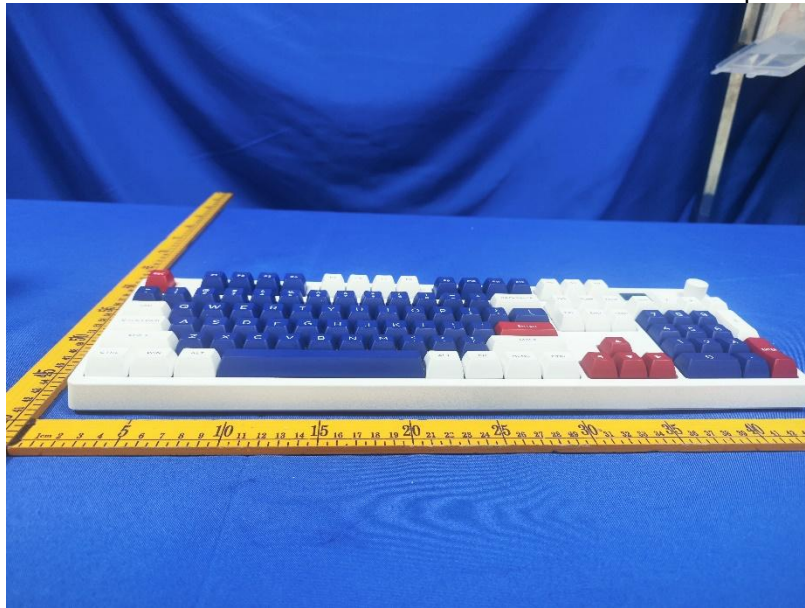


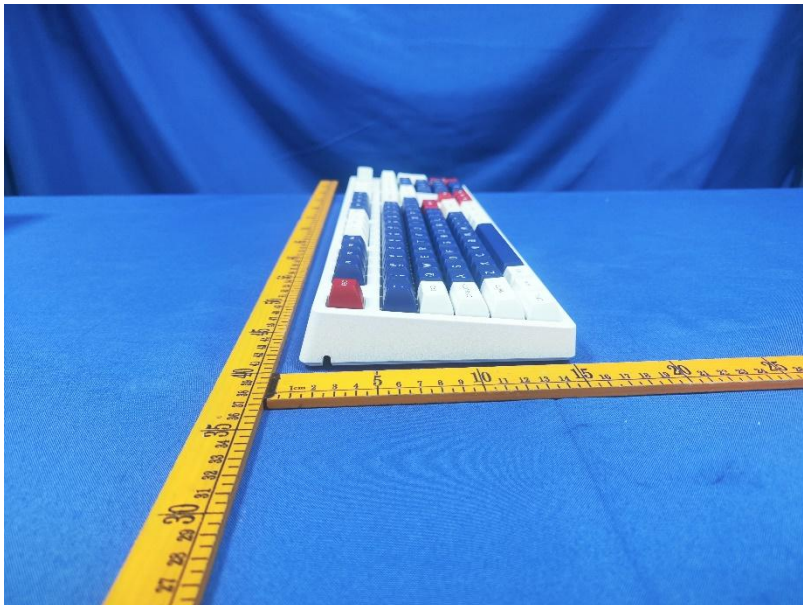
Report No.: PTC24022310301E-FC03



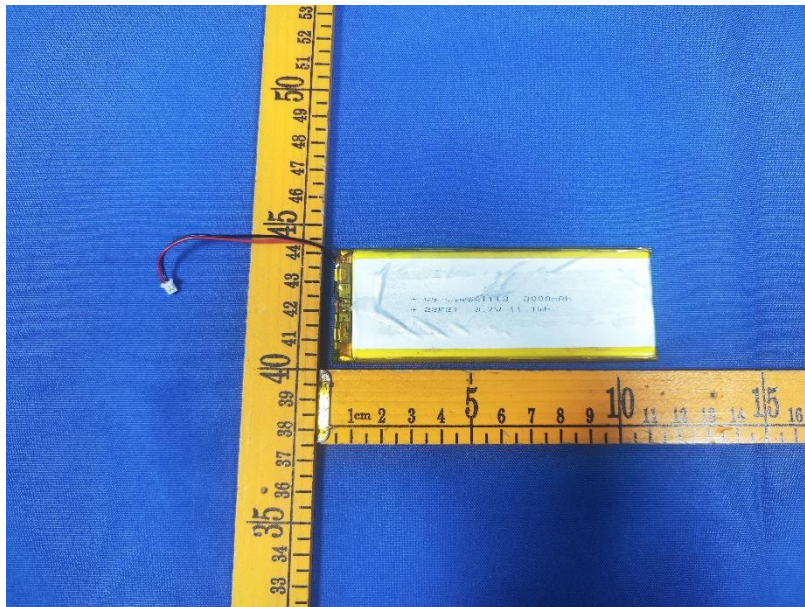
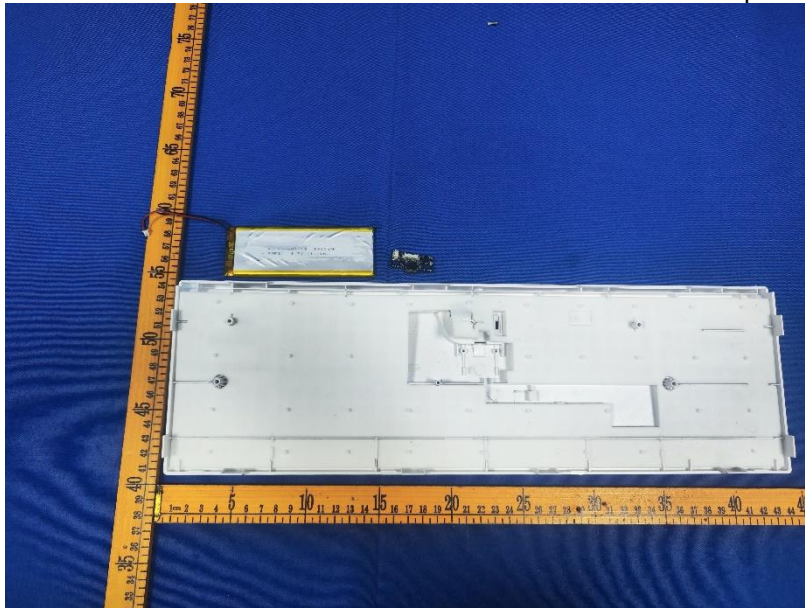
10 EUT PHOTOGRAPH

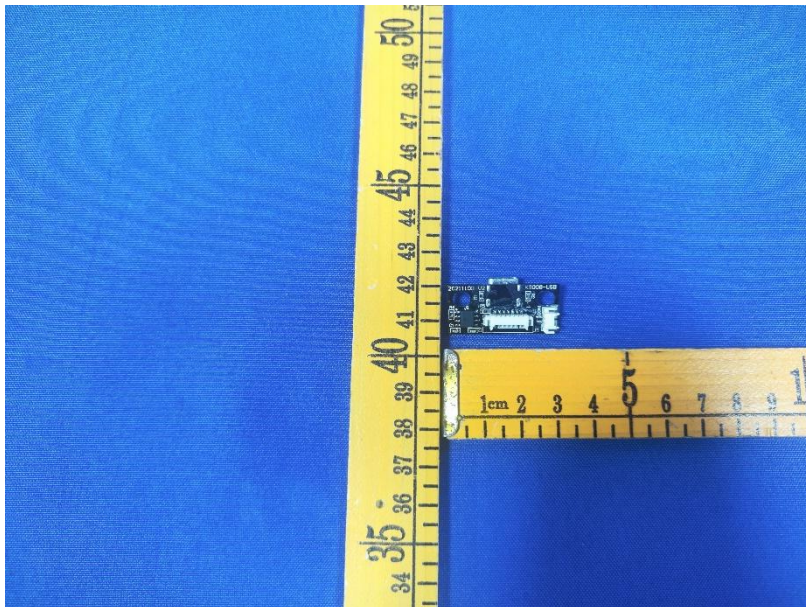
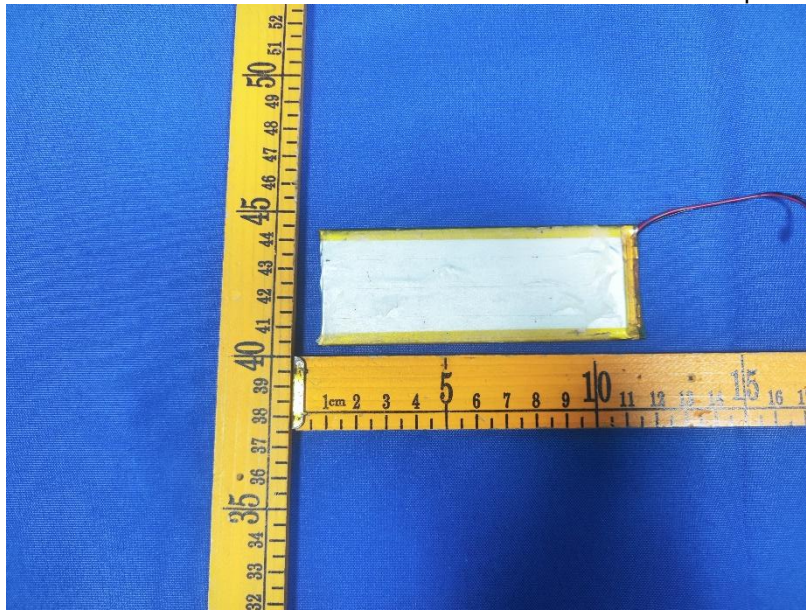


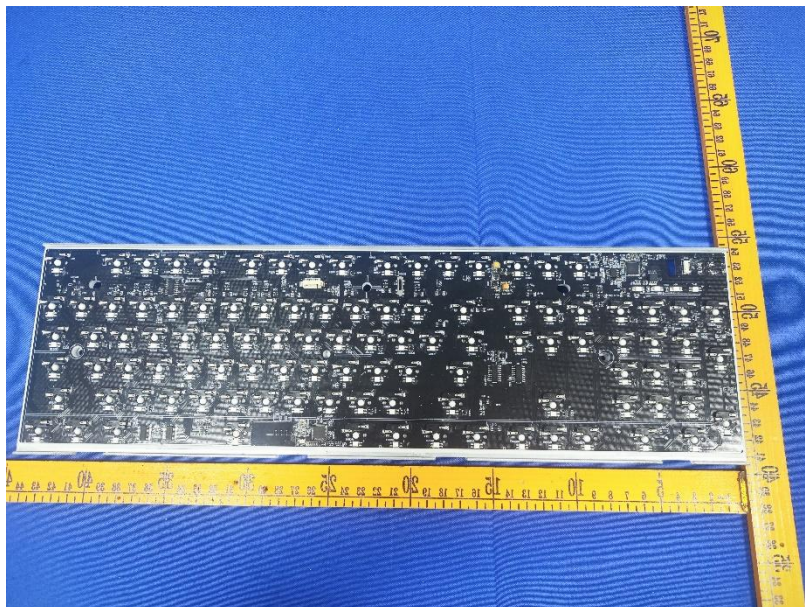
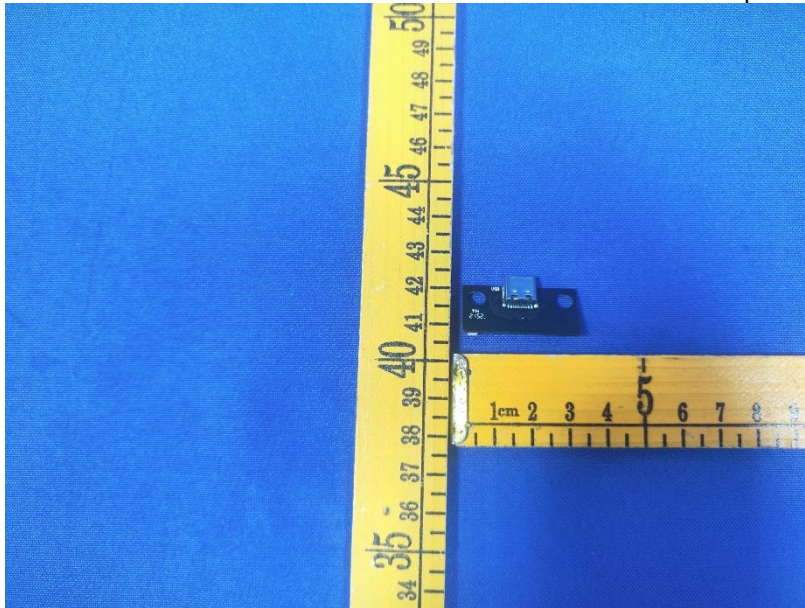


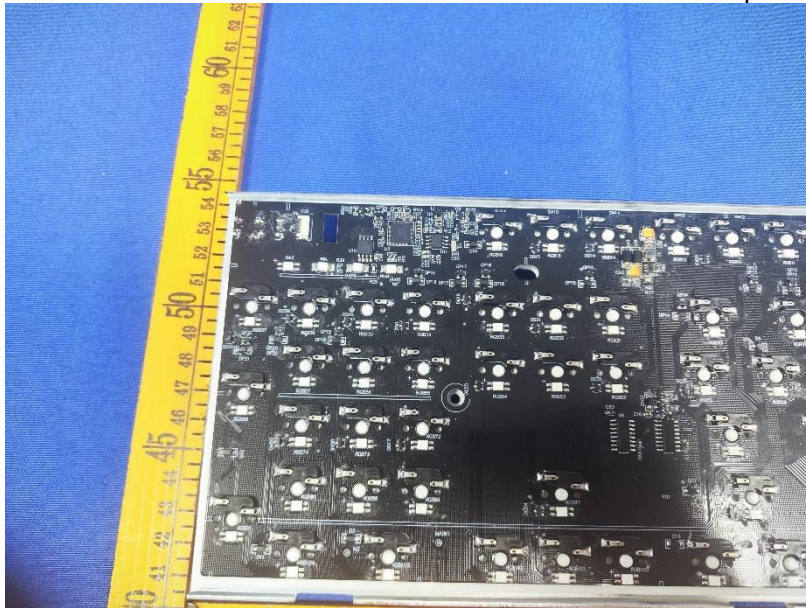


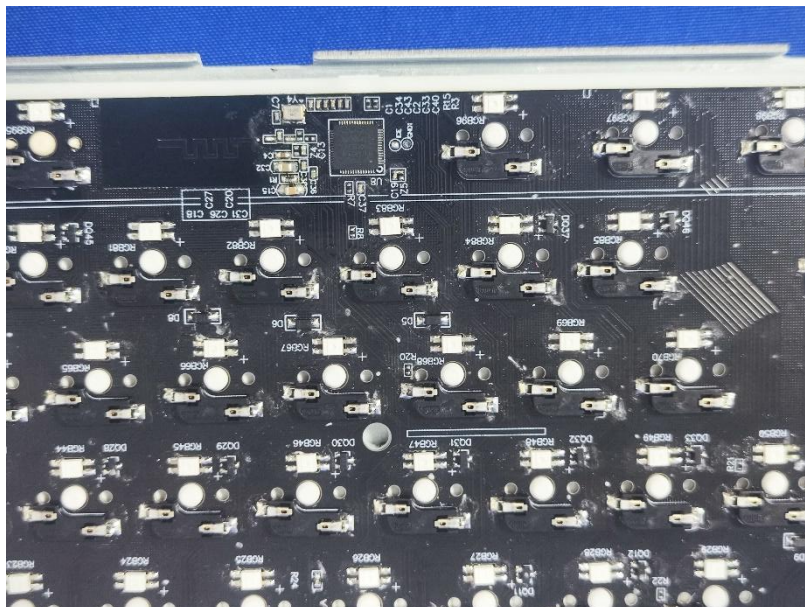


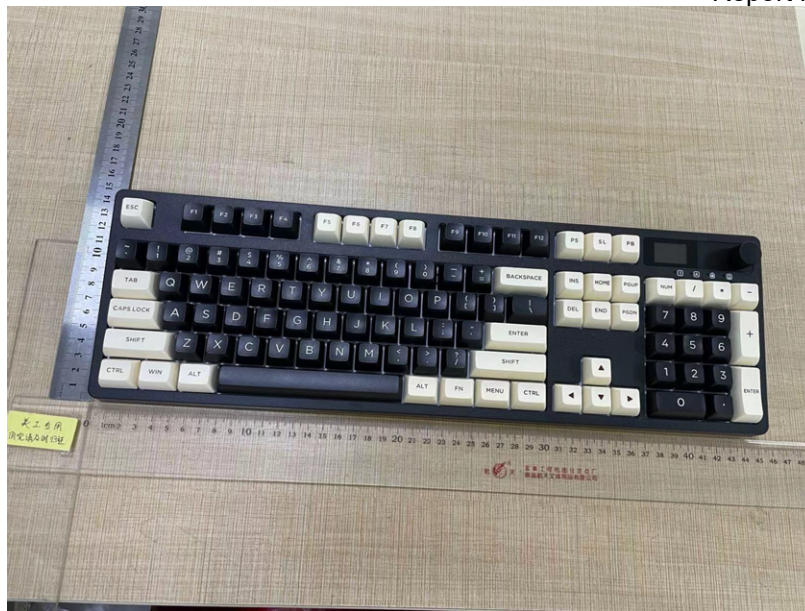




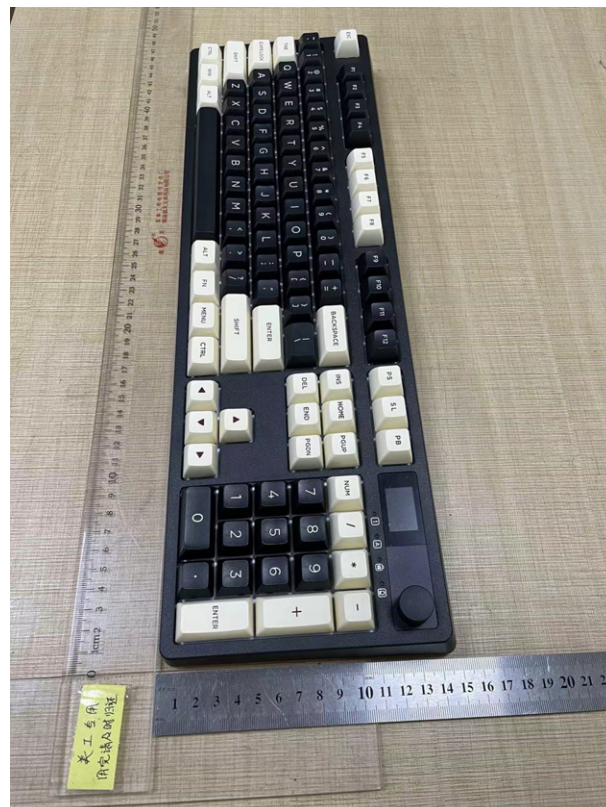












*****THE END REPORT*****