TCT 通测检测
TESTING CENTRE TECHNOLOGY

TEST REPORT

FCC ID. ..... :	2AURQ-Q75	
Test Report No..... :	TCT210602E021	
Date of issue..... :	Jun. 16, 2021	
Testing laboratory ..... :	SHENZHEN TONGCE TESTING LAB	
Testing location/ address:	TCT Testing Industrial Park Fuqiao 5th Industrial Zone, Fuhai Street, Bao'an District Shenzhen, Guangdong, 518103, People's Republic of China	
Applicant's name..... :	MISTEL CO LTD	
Address..... :	10F 4 No17 Ln91 Sec1 Neihu Rd Neihu Dist, TAIPEI CITY 114, Taiwan	
Manufacturer's name ... :	ShenZhen Senbiz Industry Co., Ltd	
Address..... :	Building A, No 11, 1st row, Xinfa Industrial Zone, XingQiao, ShaJing Town, Bao'an District, ShenZhen, Guangdong, China 518125	
Standard(s) ..... :	FCC CFR Title 47 Part 15 Subpart C Section 15.249 ANSI C63.10:2013	
Test item description ..... :	Mechanical Keyboard	
Trade Mark ..... :	MISTEL	
Model/Type reference..... :	Q75, M75, Z75, M83, Z83	
Rating(s)..... :	DC 3.0V(2*AAA Battery)	
Date of receipt of test item ..... :	Jun. 02, 2021	
Date (s) of performance of test..... :	See dates for each test case	
Tested by (+signature) ... :	Aaron Mo	Aaron Mo
Check by (+signature).... :	Beryl Zhao	Beryl Zhao
Approved by (+signature):	Tomsin	Tomsin

SHENZHEN TONGCE TESTING LAB TCT

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1. General Product Information

1.1. EUT description

Test item description .....:	Mechanical Keyboard
Model/Type reference.....:	Q75
Sample Number.....:	TCT210602E021-0101
Operation Frequency .....:	2408MHz - 2468MHz
Number of Channel .....:	3
Modulation Technology .....:	GFSK
Antenna Type.....:	PCB Antenna
Antenna Gain.....:	3.85dBi
Rating(s).....:	DC 3.0V(2*AAA Battery)
Remark.....:	/

Note: The antenna gain listed in this report is provided by applicant, and the test laboratory is not responsible for this parameter.

1.2. Model(s) list

No.	Model No.	Tested with
1	Q75	☒
Other models	M75, Z75, M83, Z83	☐

Note: Q75 is tested model, other models are derivative models. The models are identical in circuit and PCB layout, only different on the model names and shell material. So the test data of Q75 can represent the remaining models.

1.3. Operation Frequency

Channel	Frequency	Channel	Frequency	Channel	Frequency
0	2408MHz	1	2437MHz	2	2468MHz

2. Test Result Summary

Requirement	CFR 47 Section	Result
Antenna Requirement	§15.203	PASS
AC Power Line Conducted Emission	§15.207	PASS
Field Strength of Fundamental	§15.249 (a)	PASS
Spurious Emissions	§15.249 (a) (d)/ §15.209	PASS
Band Edge	§15.249 (d)/ §15.205	PASS
20dB Occupied Bandwidth	§15.215 (c)	PASS

Note:

1. Pass: Test item meets the requirement.

2. Fail: Test item does not meet the requirement.

3. N/A: Test case does not apply to the test object.

4. The test result judgment is decided by the limit of test standard.

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

3. General Information

3.1. Test Environment and Mode

Operating Environment:		
Condition	Conducted Emission	Radiated Emission
Temperature:	25.0 °C	25.0 °C
Humidity:	55 % RH	55 % RH
Atmospheric Pressure:	1010 mbar	1010 mbar
Test Mode:		
Engineering mode:	Keep the EUT in continuous transmitting by select channel and modulations	
The sample was placed 0.8m & 1.5m for the measurement below & above 1GHz above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. 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, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case(Z axis) are shown in Test Results of the following pages.		

3.2. 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.

Equipment	Model No.	Serial No.	FCC ID	Trade Name
Notebook Computer	G3 3500	00342-36088-99832-AAOEM	/	DELL
Adapter	HA130PM190	CN-0CY0JM-CH200-0B6-7405-A01	/	DELL

Note:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.

2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4. Facilities and Accreditations

4.1. Facilities

The test facility is recognized, certified, or accredited by the following organizations:

- FCC - Registration No.: 645098
  SHENZHEN TONGCE TESTING LAB
  Designation Number: CN1205
  The testing lab has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.
- IC - Registration No.: 10668A-1
  SHENZHEN TONGCE TESTING LAB
  CAB identifier: CN0031
  The testing lab has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing.

4.2. Location

SHENZHEN TONGCE TESTING LAB.
Address: TCT Testing Industrial Park Fuqiao 5th Industrial Zone, Fuhai Street, Bao'an District Shenzhen, Guangdong, 518103, People's Republic of China
TEL: +86-755-27673339

4.3. Measurement Uncertainty

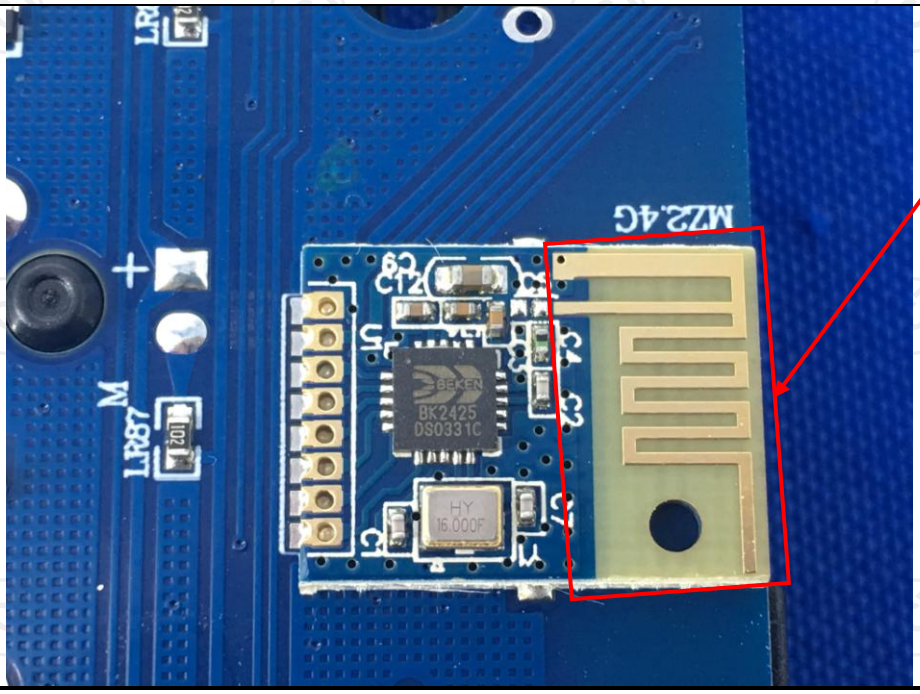
The reported uncertainty of measurement y ± U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

No.	Item	MU
1	Conducted Emission	± 3.10 dB
2	RF power, conducted	± 0.12 dB
3	Spurious emissions, conducted	± 0.11 dB
4	All emissions, radiated(<1 GHz)	± 4.56 dB
5	All emissions, radiated(1 GHz - 18 GHz)	± 4.22 dB
6	All emissions, radiated(18 GHz- 40 GHz)	± 4.36 dB

5. Test Results and Measurement Data

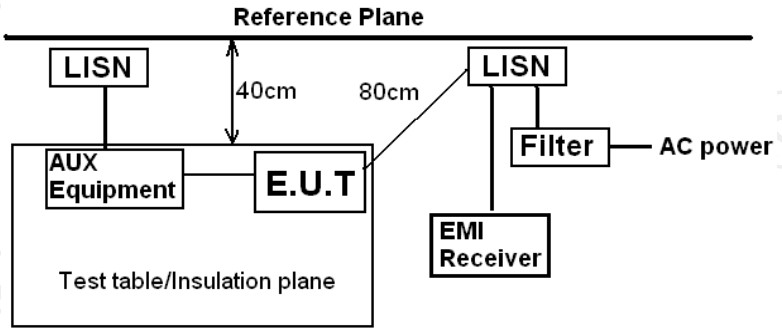
5.1. Antenna Requirement

Standard requirement:	FCC Part15 C Section 15.203
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.	
E.U.T Antenna:	
The EUT antenna is PCB antenna which permanently attached, and the best case gain of the antenna is 3.85dBi.	



5.2. Conducted Emission

5.2.1. Test Specification

<table>
<tr><td>Test Requirement:</td><td>FCC Part15 C Section 15.207</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10:2013</td></tr>
<tr><td>Frequency Range:</td><td>150 kHz to 30 MHz</td></tr>
<tr><td>Receiver setup:</td><td>RBW=9 kHz, VBW=30 kHz, Sweep time=auto</td></tr>
<tr><td>Limits:</td><td>
<table>
<tr><td rowspan="2">Frequency range (MHz)</td><td colspan="2">Limit (dBuV)</td></tr>
<tr><td>Quasi-peak</td><td>Average</td></tr>
<tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr>
<tr><td>0.5-5</td><td>56</td><td>46</td></tr>
<tr><td>5-30</td><td>60</td><td>50</td></tr>
</table>
</td></tr>
<tr><td>Test Setup:</td><td>


Remark:
E.U.T: Equipment Under Test
LISN: Line Impedence Stabilization Network
Test table height=0.8m
</td></tr>
<tr><td>Test Mode:</td><td>Transmitting mode with modulation</td></tr>
<tr><td>Test Procedure:</td><td>1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment.
2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).
3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.</td></tr>
<tr><td>Test Result:</td><td>PASS</td></tr>
</table>

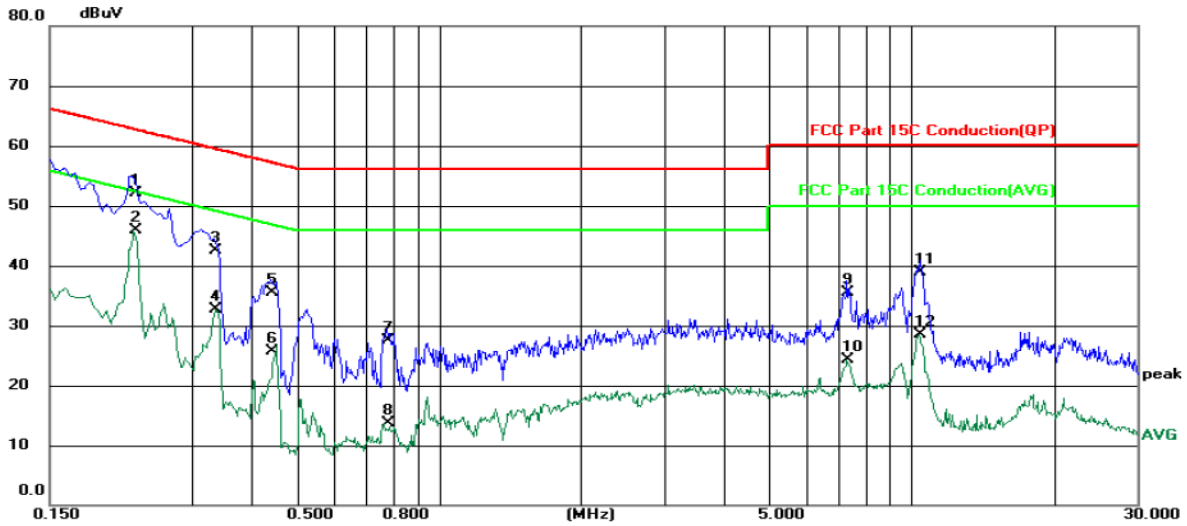
5.2.2. Test Instruments

Conducted Emission Shielding Room Test Site (843)				
Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Test Receiver	R&S	ESCI3	100898	Jul. 27, 2021
LISN-2	Schwarzbeck	NSLK 8126	8126453	Sep. 11, 2021
Line-5	TCT	CE-05	N/A	Sep. 02, 2021
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A

5.2.3. Test data

Please refer to following diagram for individual

Conducted Emission on Line Terminal of the power line (150 kHz to 30MHz)



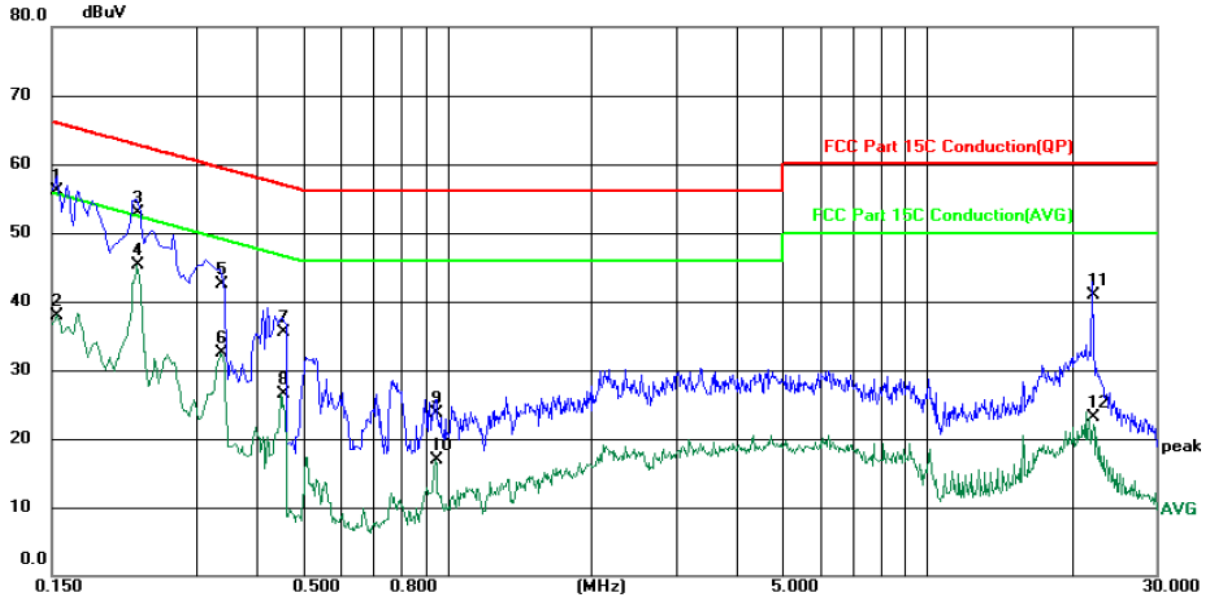
Site	Phase: *L1*	Temperature: 23.8 (C)
Limit: FCC Part 15C Conduction(QP)	Power: DC 5 V(Notebook Computer Input AC 120 V/60 Hz	Humidity: 47 %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2268	42.80	9.38	52.18	62.57	-10.39	QP	
2	*	0.2268	36.49	9.38	45.87	52.57	-6.70	AVG	
3		0.3339	33.20	9.32	42.52	59.35	-16.83	QP	
4		0.3339	23.41	9.32	32.73	49.35	-16.62	AVG	
5		0.4420	26.30	9.27	35.57	57.02	-21.45	QP	
6		0.4420	16.52	9.27	25.79	47.02	-21.23	AVG	
7		0.7780	18.20	9.29	27.49	56.00	-28.51	QP	
8		0.7780	4.47	9.29	13.76	46.00	-32.24	AVG	
9		7.3260	25.80	9.61	35.41	60.00	-24.59	QP	
10		7.3260	14.68	9.61	24.29	50.00	-25.71	AVG	
11		10.4460	29.20	9.68	38.88	60.00	-21.12	QP	
12		10.4460	18.91	9.68	28.59	50.00	-21.41	AVG	

Note:

Freq. = Emission frequency in MHz
Reading level (dBµV) = Receiver reading
Corr. Factor (dB) = LISN factor + Cable loss
Measurement (dBµV) = Reading level (dBµV) + Corr. Factor (dB)
Limit (dBµV) = Limit stated in standard
Margin (dB) = Measurement (dBµV) – Limits (dBµV)
Q.P. =Quasi-Peak
AVG =average
** is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz.*

Conducted Emission on Neutral Terminal of the power line (150 kHz to 30MHz)



Site	Phase: *N*	Temperature: 23.8 (C)
Limit: FCC Part 15C Conduction(QP)	Power: DC 5 V(Notebook Computer Input AC 120 V/60 Hz	Humidity: 47 %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1539	46.70	9.46	56.16	65.79	-9.63	QP	
2		0.1539	28.54	9.46	38.00	55.79	-17.79	AVG	
3		0.2260	43.60	9.34	52.94	62.60	-9.66	QP	
4	*	0.2260	35.92	9.34	45.26	52.60	-7.34	AVG	
5		0.3379	33.20	9.35	42.55	59.25	-16.70	QP	
6		0.3379	23.21	9.35	32.56	49.25	-16.69	AVG	
7		0.4540	26.30	9.28	35.58	56.80	-21.22	QP	
8		0.4540	17.19	9.28	26.47	46.80	-20.33	AVG	
9		0.9500	14.30	9.37	23.67	56.00	-32.33	QP	
10		0.9500	7.56	9.37	16.93	46.00	-29.07	AVG	
11		22.1180	30.90	10.06	40.96	60.00	-19.04	QP	
12		22.1180	13.08	10.06	23.14	50.00	-26.86	AVG	

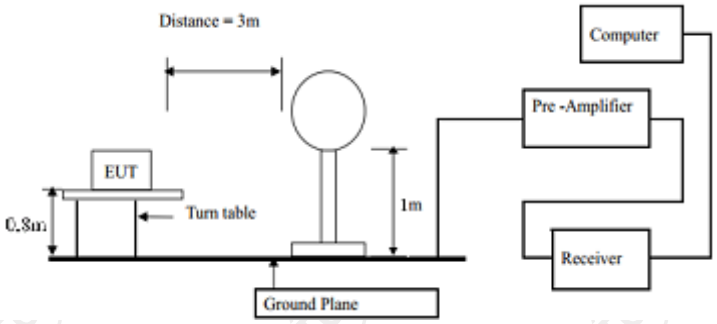
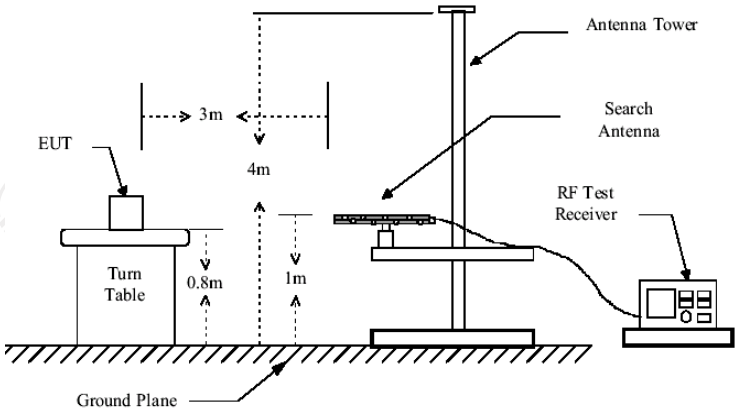
Note:

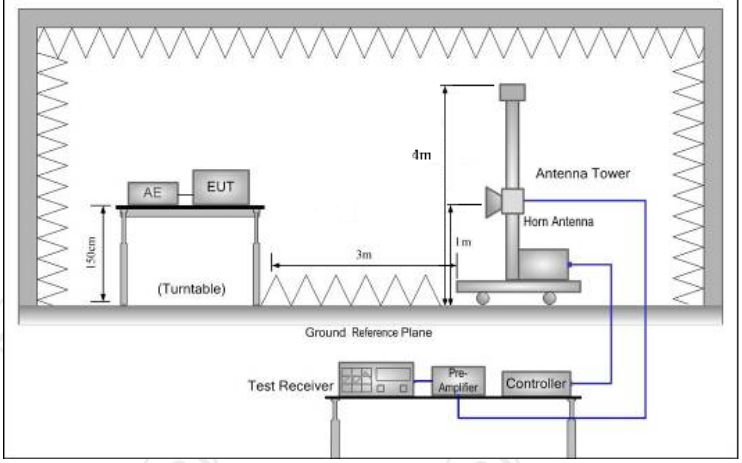
Freq. = Emission frequency in MHz
Reading level (dBµV) = Receiver reading
Corr. Factor (dB) = LISN factor + Cable loss
Measurement (dBµV) = Reading level (dBµV) + Corr. Factor (dB)
Limit (dBµV) = Limit stated in standard
Margin (dB) = Measurement (dBµV) – Limits (dBµV)
Q.P. =Quasi-Peak AVG =average
** is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz.*

5.3.Radiated Emission Measurement

5.3.1. Test Specification

<table>
<tr><td>Test Requirement:</td><td>FCC Part15 C Section 15.209</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10:2013</td></tr>
<tr><td>Frequency Range:</td><td>9 kHz to 25 GHz</td></tr>
<tr><td>Measurement Distance:</td><td>3 m</td></tr>
<tr><td>Antenna Polarization:</td><td>Horizontal & Vertical</td></tr>
<tr><td>Receiver Setup:</td><td>
<table>
<tr><td>Frequency</td><td>Detector</td><td>RBW</td><td>VBW</td><td>Remark</td></tr>
<tr><td>9kHz- 150kHz</td><td>Quasi-peak</td><td>200Hz</td><td>1kHz</td><td>Quasi-peak Value</td></tr>
<tr><td>150kHz-30MHz</td><td>Quasi-peak</td><td>9kHz</td><td>30kHz</td><td>Quasi-peak Value</td></tr>
<tr><td>30MHz-1GHz</td><td>Quasi-peak</td><td>120kHz</td><td>300kHz</td><td>Quasi-peak Value</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak Value</td></tr>
<tr><td>Peak</td><td>1MHz</td><td>10Hz</td><td>Average Value</td></tr>
</table>
</td></tr>
<tr><td>Limit(Field strength of the fundamental signal):</td><td>
<table>
<tr><td>Frequency</td><td>Limit (dBuV/m @3m)</td><td>Remark</td></tr>
<tr><td rowspan="2">2400MHz-2483.5MHz</td><td>94.00</td><td>Average Value</td></tr>
<tr><td>114.00</td><td>Peak Value</td></tr>
</table>
</td></tr>
<tr><td>Limit(Spurious Emissions):</td><td>
<table>
<tr><td>Frequency</td><td>Limit (dBuV/m @3m)</td><td>Remark</td></tr>
<tr><td>0.009-0.490</td><td>2400/F(KHz)</td><td>Quasi-peak Value</td></tr>
<tr><td>0.490-1.705</td><td>24000/F(KHz)</td><td>Quasi-peak Value</td></tr>
<tr><td>1.705-30</td><td>30</td><td>Quasi-peak Value</td></tr>
<tr><td>30MHz-88MHz</td><td>40.0</td><td>Quasi-peak Value</td></tr>
<tr><td>88MHz-216MHz</td><td>43.5</td><td>Quasi-peak Value</td></tr>
<tr><td>216MHz-960MHz</td><td>46.0</td><td>Quasi-peak Value</td></tr>
<tr><td>960MHz-1GHz</td><td>54.0</td><td>Quasi-peak Value</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>54.0</td><td>Average Value</td></tr>
<tr><td>74.0</td><td>Peak Value</td></tr>
</table>
</td></tr>
<tr><td>Limit (band edge) :</td><td>Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.</td></tr>
<tr><td>Test Procedure:</td><td>1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber in below 1GHz, 1.5m above the ground in above 1GHz. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. The antenna 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.</td></tr>
</table>

	4. 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. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
Test setup:	For radiated emissions below 30MHz  30MHz to 1GHz  Above 1GHz (The diagram below shows the test setup that is utilized to make the measurements for emission from 1GHz to the tenth harmonic of the highest fundamental frequency or to 40GHz emissions, whichever is lower.)

	
Test results:	PASS

5.3.2. Test Instruments

Radiated Emission Test Site (966)				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Test Receiver	ROHDE&SCHWARZ	ESIB7	100197	Jul. 27, 2021
Spectrum Analyzer	ROHDE&SCHWARZ	FSQ40	200061	Sep. 11, 2021
Pre-amplifier	EM Electronics Corporation CO.,LTD	EM30265	07032613	Sep. 02, 2021
Pre-amplifier	HP	8447D	2727A05017	Sep. 02, 2021
Loop antenna	ZHINAN	ZN30900A	12024	Sep. 05, 2022
Broadband Antenna	Schwarzbeck	VULB9163	340	Sep. 04, 2022
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Sep. 04, 2022
Horn Antenna	A-INFO	LB-180400-KF	J211020657	Sep. 04, 2022
Antenna Mast	Keleto	RE-AM	N/A	N/A
Line-4	TCT	RE-high-04	N/A	Sep. 02, 2021
Line-8	TCT	RE-01	N/A	Jul. 27, 2021
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A

5.3.3. Test Data

Field Strength of Fundamental

Frequency (MHz)	Emission PK (dBuV/m)	Horizontal /Vertical	Limits PK (dBuV/m)	Margin (dB)
2408	82.61	H	114	-31.39
2408	77.36	V	114	-36.64
2437	79.57	H	114	-34.43
2437	80.81	V	114	-33.19
2468	82.74	H	114	-31.26
2468	81.53	V	114	-32.47

Frequency (MHz)	Emission AV (dBuV/m)	Horizontal /Vertical	Limits AV (dBuV/m)	Margin (dB)
2408	46.20	H	94	-47.80
2408	44.74	V	94	-49.26
2437	42.32	H	94	-51.68
2437	44.54	V	94	-49.46
2468	44.54	H	94	-49.46
2468	44.67	V	94	-49.33

Spurious Emissions

Frequency Range (9 kHz-30MHz)

Frequency (MHz)	Level@3m (dBμV/m)	Limit@3m (dBμV/m)
--	--	--
--	--	--
--	--	--
--	--	--

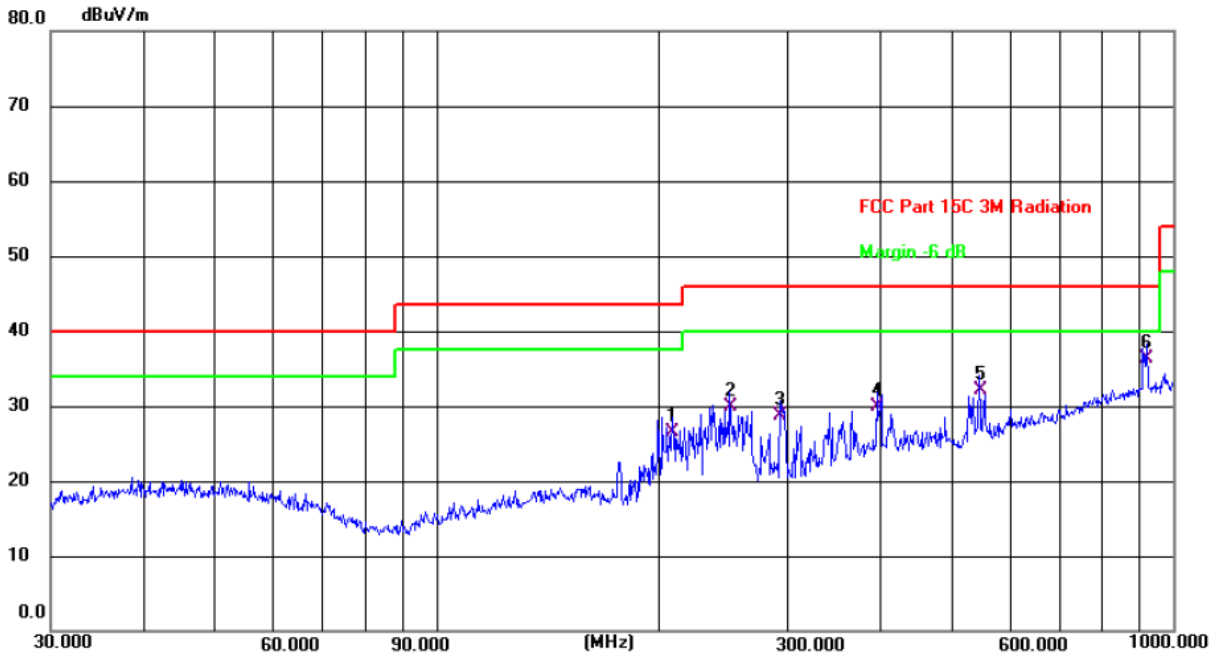
Note: *1. Emission Level=Reading+ Cable loss-Antenna factor-Amp factor.*

2. The emission levels are 20 dB below the limit value, which are not reported. It is deemed to comply with the requirement.

3. For fundamental frequency, RBW >20dB BW , VBW>=RBW, PK detector is for PK value, RMS detector is for AV value.

Frequency Range (30MHz-1GHz)

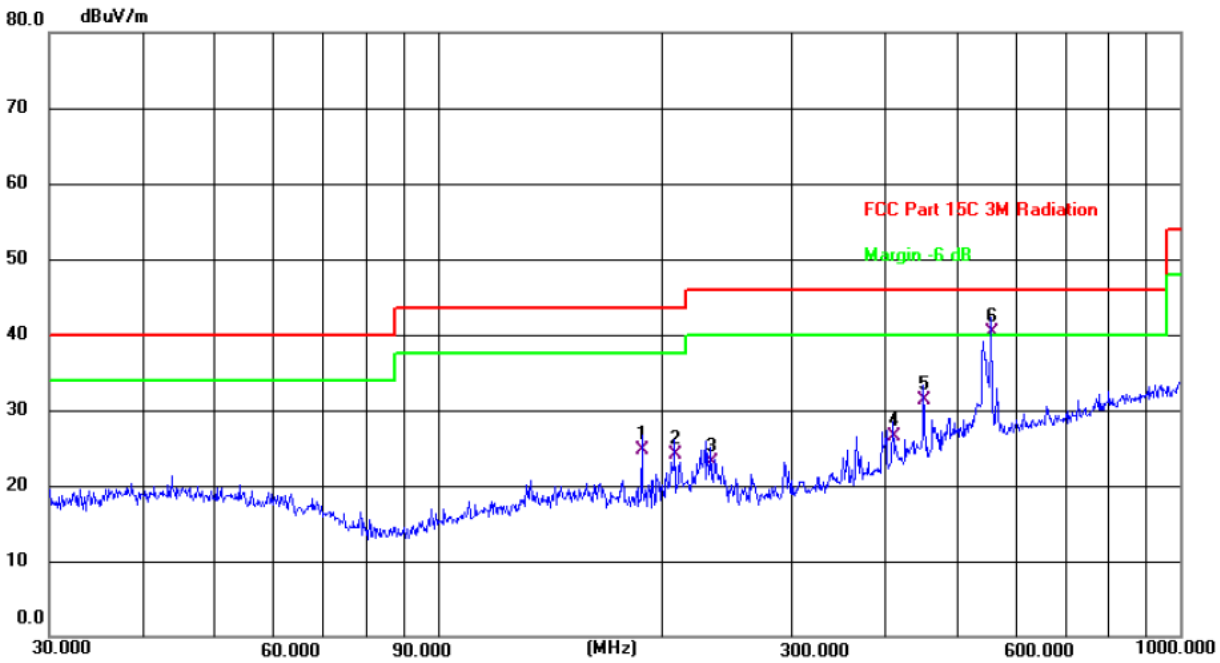
Horizontal:



Site	Polarization: *Horizontal*	Temperature:	23.2(C)
Limit: FCC Part 15C 3M Radiation	Power: DC 3V	Humidity:	53 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	209.3129	15.58	11.00	26.58	43.50	-16.92	QP	P	
2	250.3012	17.16	12.79	29.95	46.00	-16.05	QP	P	
3	293.0842	14.78	13.86	28.64	46.00	-17.36	QP	P	
4	396.2415	13.34	16.48	29.82	46.00	-16.18	QP	P	
5	545.1826	12.01	20.09	32.10	46.00	-13.90	QP	P	
6 *	922.5157	10.32	25.91	36.23	46.00	-9.77	QP	P	

Vertical:



Site

Limit: FCC Part 15C 3M Radiation

Polarization: *Vertical*

Power: DC 3V

Temperature: 23.2(C)

Humidity: 53 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	188.4125	13.25	11.39	24.64	43.50	-18.86	QP	P	
2	208.5803	13.15	10.97	24.12	43.50	-19.38	QP	P	
3	233.3487	10.84	12.28	23.12	46.00	-22.88	QP	P	
4	410.3825	9.74	16.83	26.57	46.00	-19.43	QP	P	
5	451.1350	13.50	17.83	31.33	46.00	-14.67	QP	P	
6 *	556.7744	19.85	20.37	40.22	46.00	-5.78	QP	P	

Note: *Measurements were conducted in all channels (high, middle, low), and the worst case (Low channel) was submitted only.*

Above 1GHz

Low channel: 2408MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBuV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
4816	H	49.76	---	-3.94	45.82	---	74	54	-8.18
7224	H	45.21	---	0.52	45.73	---	74	54	-8.27
---	---	---	---	---	---	---	---	---	---
4816	V	48.55	---	-3.94	44.61	---	74	54	-9.39
7224	V	44.27	---	0.52	44.79	---	74	54	-9.21
---	---	---	---	---	---	---	---	---	---

Middle channel: 2437MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
4874	H	50.84	---	-3.98	46.86	---	74	54	-7.14
7311	H	44.32	---	0.57	44.89	---	74	54	-9.11
---	---	---	---	---	---	---	---	---	---
4874	V	50.56	---	-3.98	46.58	---	74	54	-7.42
7311	V	43.83	---	0.57	44.40	---	74	54	-9.60
---	---	---	---	---	---	----	---	---	---

High channel: 2468MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
4936	H	51.07	---	-3.98	47.09	---	74	54	-6.91
7404	H	47.14	---	0.57	47.71	---	74	54	-6.29
---	---	---	---	---	---	---	---	---	---
4936	V	50.98	---	-3.98	47.00	---	74	54	-7.00
7404	V	44.46	---	0.57	45.03	---	74	54	-8.97
---	---	---	---	---	---	---	---	---	---

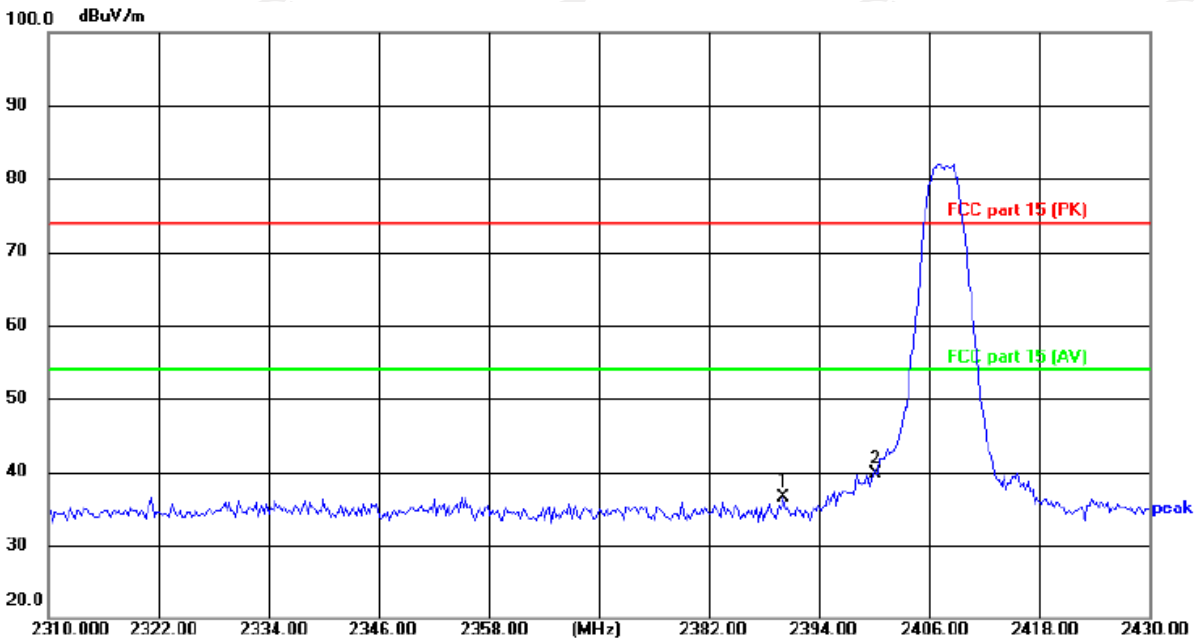
Note:

1. *Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss – Pre-amplifier*
2. *Margin (dB) = Emission Level (Peak) (dBμV/m)-Average limit (dBμV/m)*
3. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
4. *Measurements were conducted from 1 GHz to the 10th harmonic of highest fundamental frequency.*
5. *Data of measurement shown "---"in the above table mean that the reading of emissions is attenuated more than 20 dB below the limits or the field strength is too small to be measured.*
6. *All the restriction bands are compliance with the limit of 15.209.*

Band Edge Requirement

Lowest channel 2408:

Horizontal:

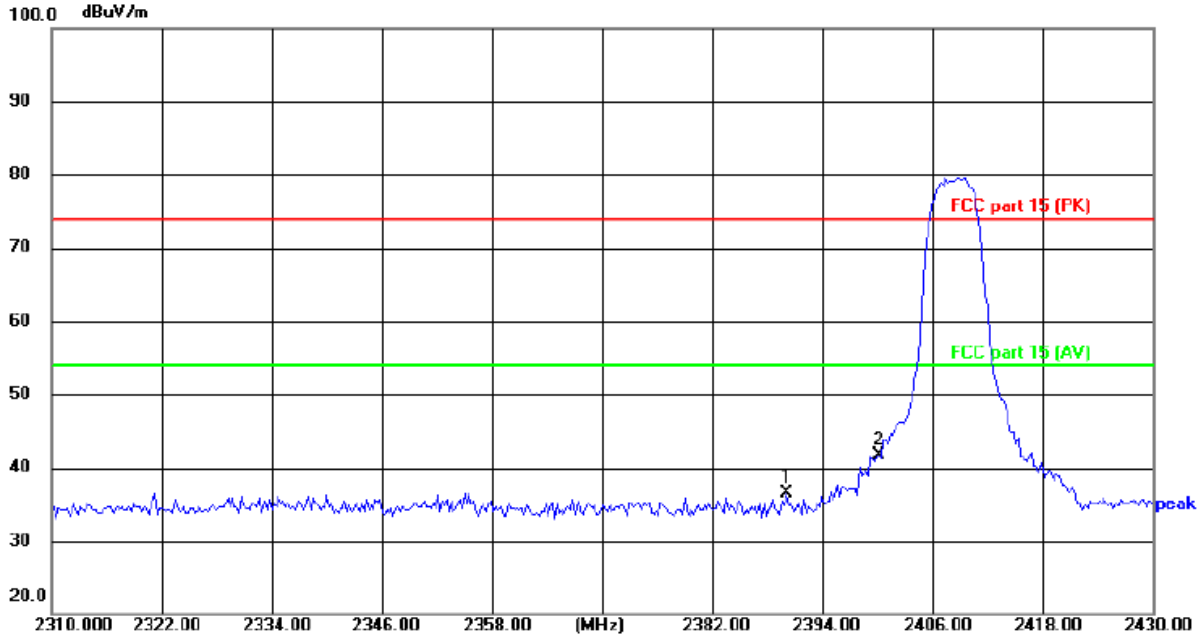


Site | Polarization: *Horizontal* | Temperature: 25(℃)

Limit: FCC part 15 (PK) | Power: DC 3V | Humidity: 55 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2390.000	49.67	-13.15	36.52	74.00	-37.48	peak
2 *	2400.000	52.84	-13.12	39.72	74.00	-34.28	peak

Vertical:



Site

Limit: FCC part 15 (PK)

Polarization: *Vertical*

Power: DC 3V

Temperature: 25(℃)

Humidity: 55 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2390.000	49.67	-13.15	36.52	74.00	-37.48	peak
2 *	2400.000	54.84	-13.12	41.72	74.00	-32.28	peak

Highest channel 2468:

Horizontal:

Site	Polarization: *Horizontal*	Temperature:	25(℃)
Limit: FCC part 15 (PK)	Power: DC 3V	Humidity:	55 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	2483.500	48.03	-12.84	35.19	74.00	-38.81	peak

Vertical:

Site

Limit: FCC part 15 (PK)

Polarization: *Vertical*

Power: DC 3V

Temperature: 25(℃)

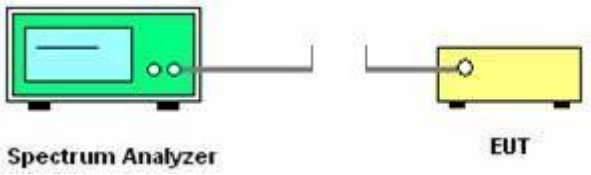
Humidity: 55 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	2483.500	48.20	-12.84	35.36	74.00	-38.64	peak

Note: *Measurements were conducted in all channels (high, middle, low), and the worst case (Low channel) was submitted only.*

5.4. 20dB Occupied Bandwidth

5.4.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.215(c)
Test Method:	ANSI C63.10: 2013
Limit:	N/A
	1. According to the follow Test-setup, keep the relative position between the artificial antenna and the EUT. 2. Set to the maximum power setting and enable the EUT transmit continuously. 3. Use the following spectrum analyzer settings for 20dB Bandwidth measurement. Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel; RBW≥1% of the 20 dB bandwidth; VBW≥RBW; Sweep = auto; Detector function = peak; Trace = max hold. 4. Measure and record the results in the test report.
Test setup:	
Test Mode:	Transmitting mode with modulation
Test results:	PASS

5.4.2. Test Instruments

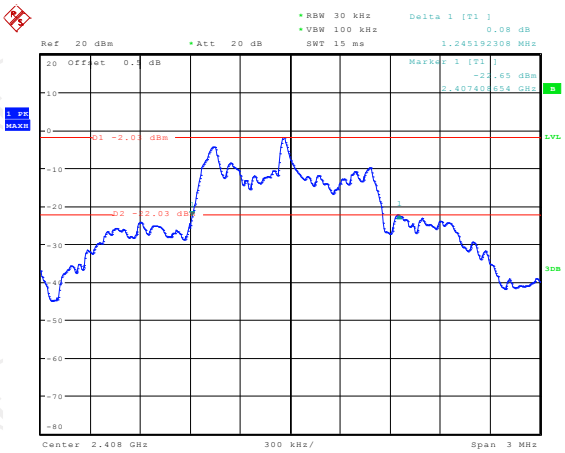
Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	R&S	FSU	200054	Sep. 11, 2021

5.4.3. Test data

Test Channel	20dB Occupy Bandwidth (kHz)	Limit	Conclusion
Lowest	1245.19	---	PASS
Middle	1230.77	---	PASS
Highest	1264.42	---	PASS

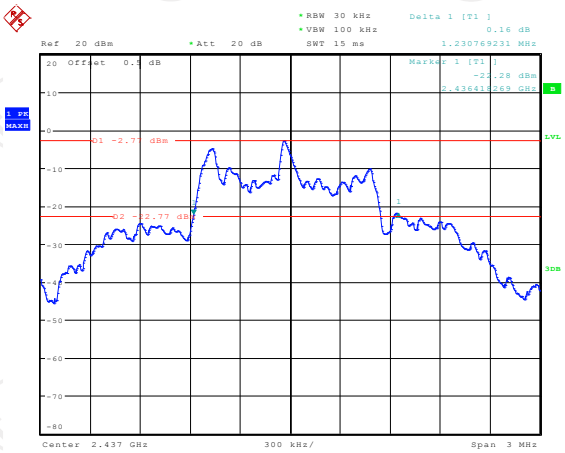
Test plots as follows:

Lowest channel



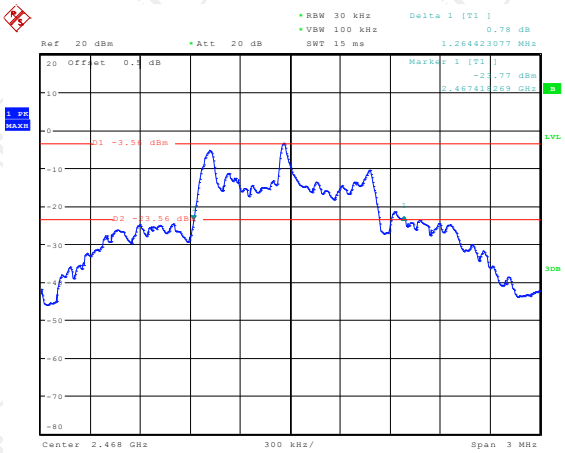
Date: 11.JUN.2021 17:32:59

Middle channel



Date: 11.JUN.2021 17:30:35

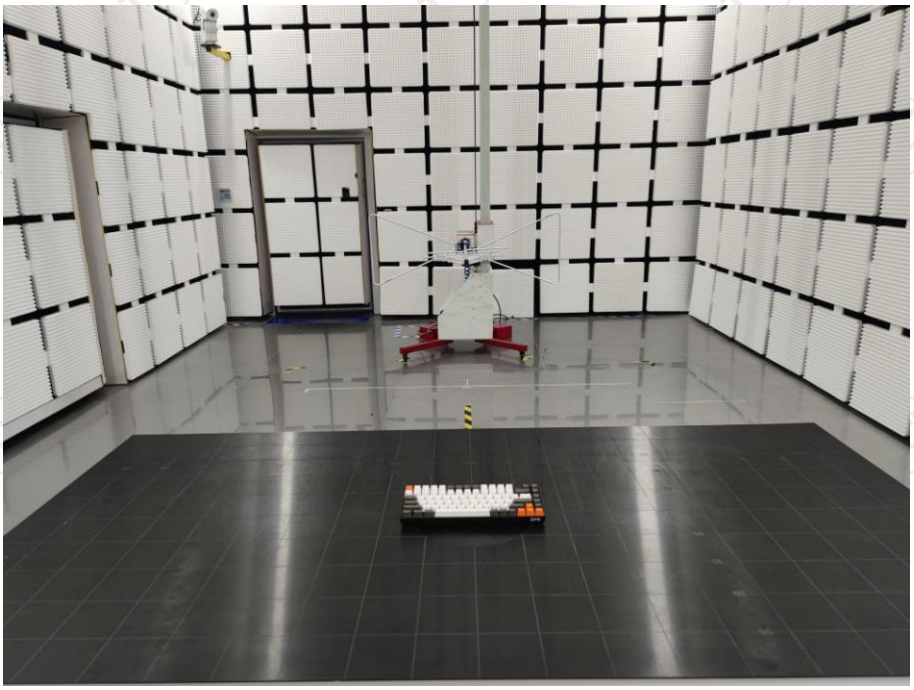
Highest channel



Date: 11.JUN.2021 17:31:51

Appendix A: Photographs of Test Setup

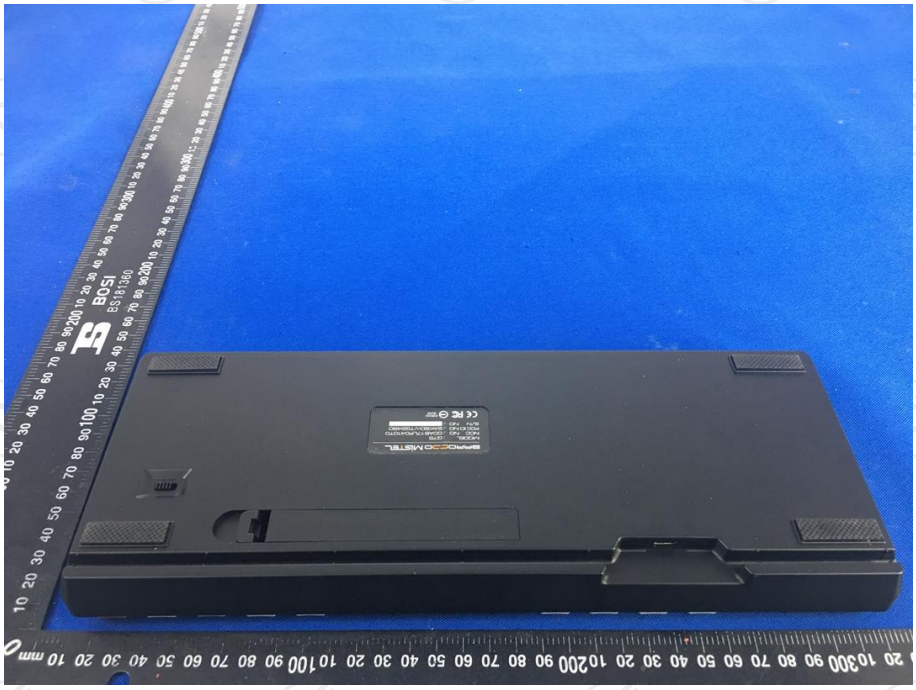
Product: Mechanical Keyboard
Model: Q75
Radiated Emission



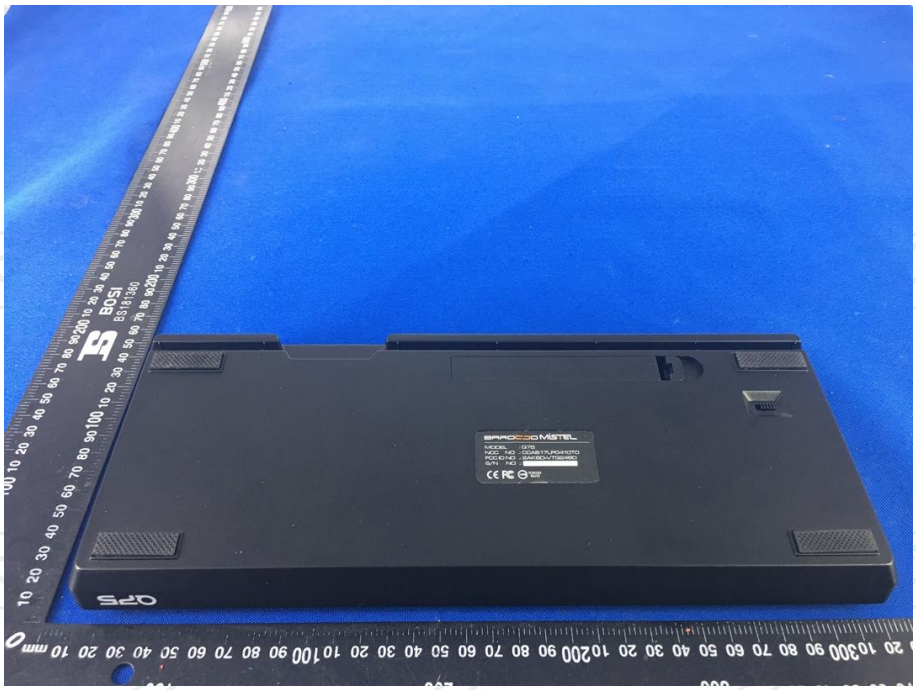
CE

Appendix B: Photographs of EUT

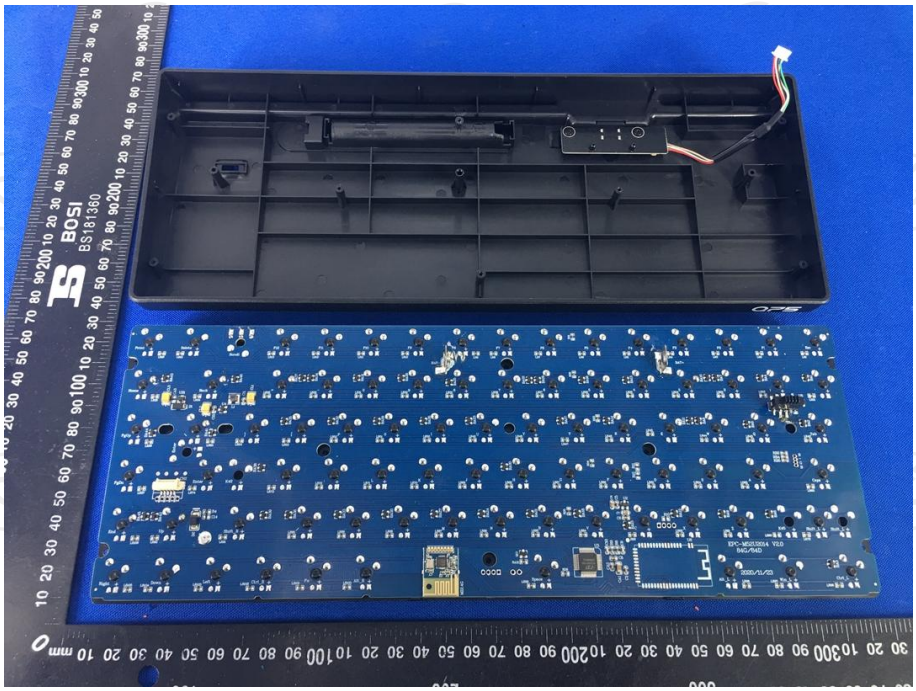
Product: Mechanical Keyboard
Model: Q75
External Photos

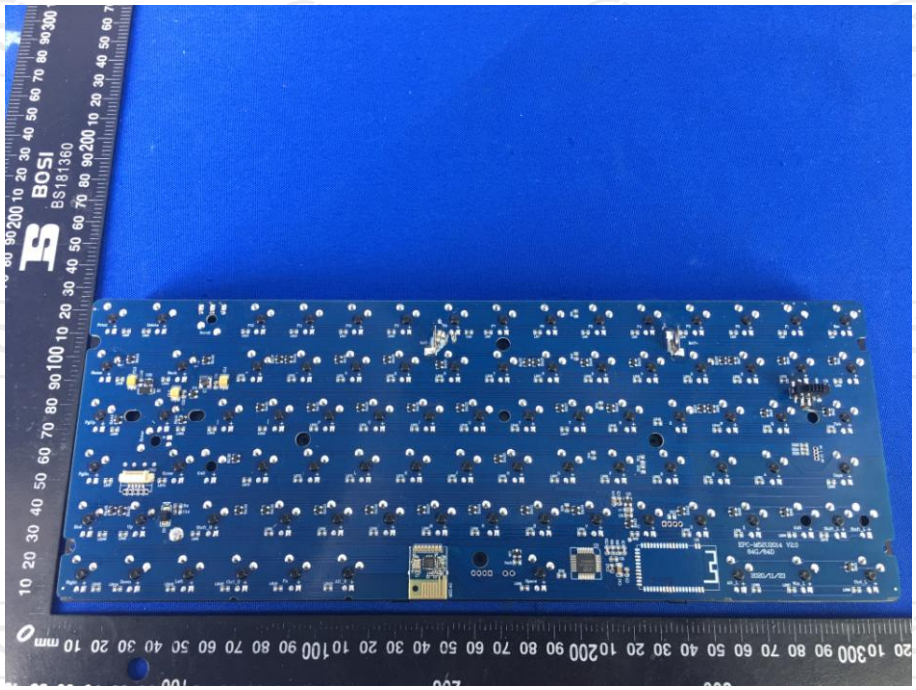


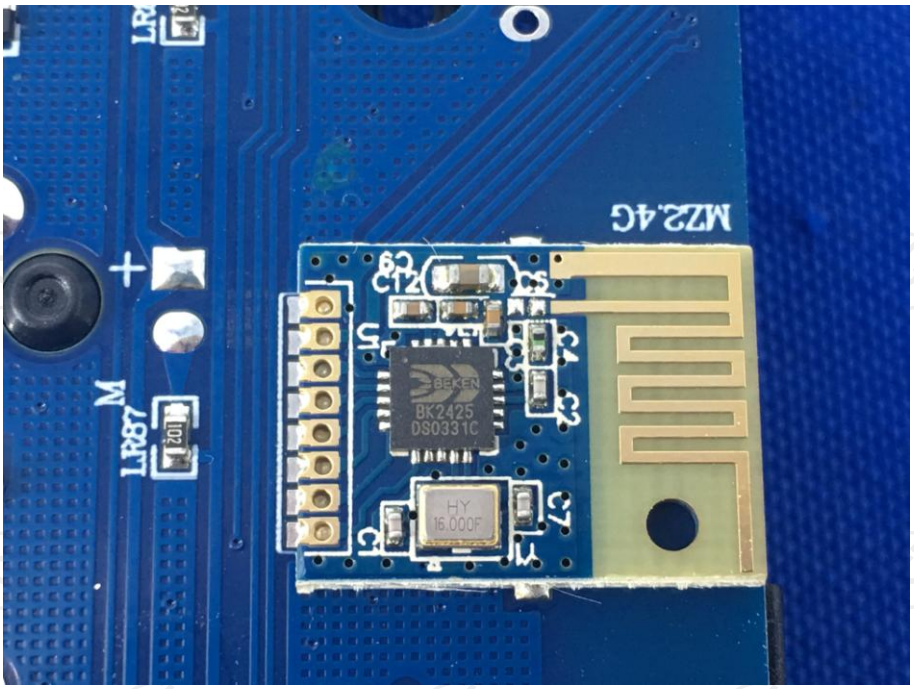
Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com



Product: Mechanical Keyboard
Model: Q75
Internal Photos



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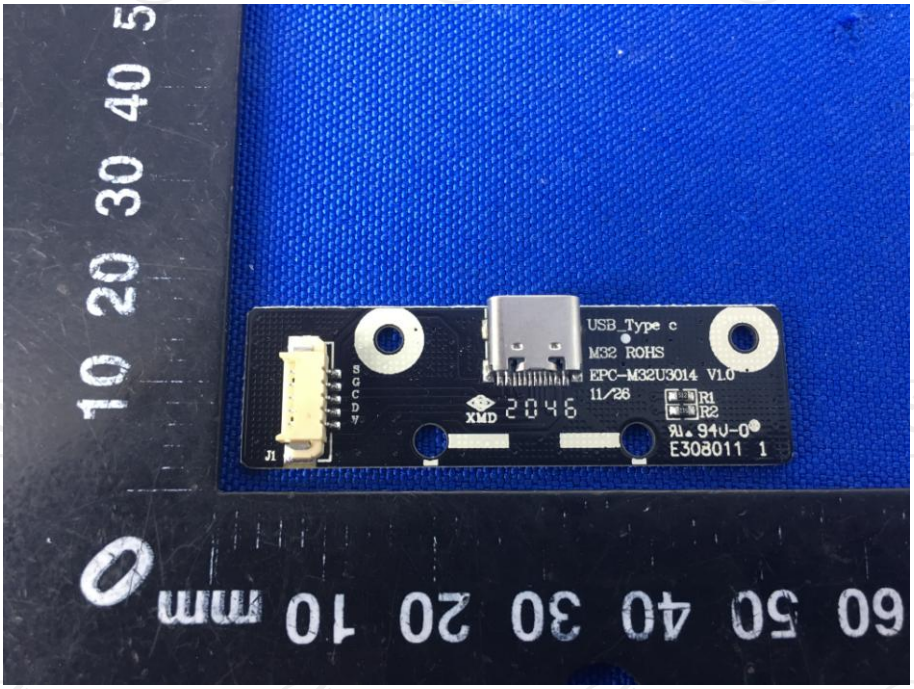
HY
16.000F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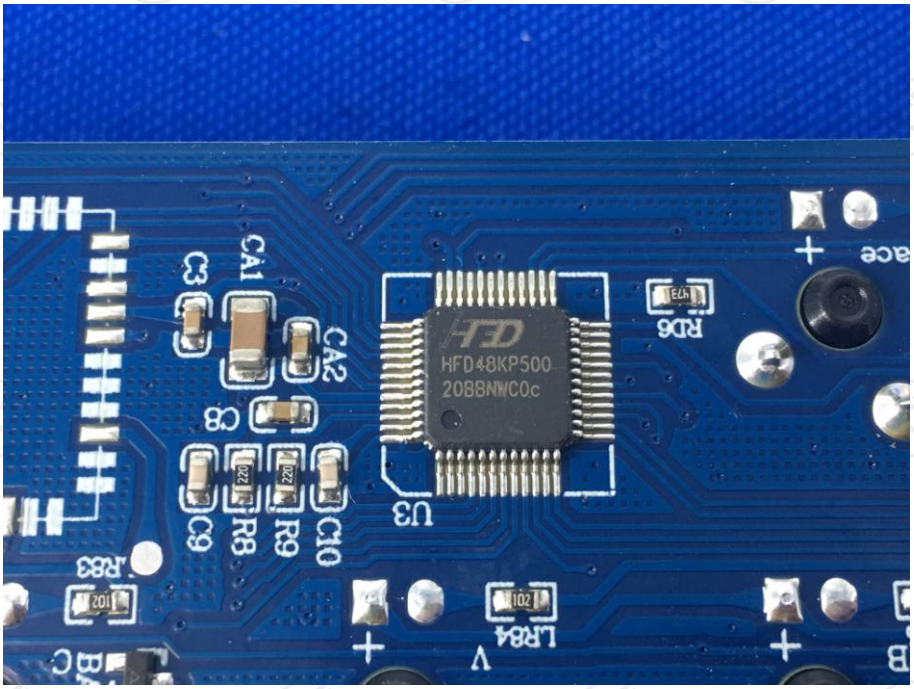
M32 ROHS
EPC-M32U3014 V1.0
11/26
XMD
2046
E308011 1



********END OF REPORT********